

DESCRIPTION AND APPLICATION

These resistance-type sensors are intended for temperature measurement of gaseous substances in water-protected rooms. The sensor consists of a plastic connection head, in which a terminal board and a resistance-type temperature sensing element are encased. The plastic connection head is made of LEXAN 500R (grey, ivory) or ABS (white) material. The sensors meet the IP 30 ingress protection requirements according to the EN 60529 standard.

A pleasing design and the high-quality material used for its production guarantee a non-disturbing appearance even in rooms where high aesthetic claims are posed. 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 standard temperature range in which the sensors are allowed to be utilised is -30 to 100 °C. The sensors are designed to be operated in a chemically non-aggressive environment.



SPECIFICATIONS

BASIC DATA

Sensor type	NS 100	NS 101	NS 102	NS 300	NS 301
Type of sensing element	Ni 1000/5000	Ni 1000/6180	Ni 891	Ni 10000/5000	Ni 10000/6180
Measuring range	-30 to 100 °C Lexan 500R 5 to 55 °C (for short period -20 to 75 °C) ABS				
Maximum measuring DC current	1 mA	1 mA	1 mA	0,3 mA	0,3 mA

Sensor type	NS 103	PTS 100	PTS 200	PTS 300	HS 100
Type of sensing element	Ni 2226	PT 100/3850	PT 500/3850	PT 1000/3850	termistor NTC 20 kΩ
Measuring range	-30 to 100 °C Lexan 500R 5 to 55 °C (for short period -20 to 75 °C) ABS				
Maximum measuring DC current	0,7 mA	3 mA	1,5 mA	1 mA	1 mW *)

*) maximum power consumption

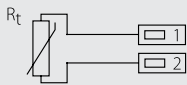
Sensor type	NS 500	NS 700	Note
Type of sensing element	Pt 1000/3850	Pt 1000/3850	
Output	4 to 20 mA	0 to 10 V	
Measuring ranges	-30 to 60 °C 0 to 35 °C 0 to 100 °C 0 to 150 °C	-30 to 60 °C 0 to 35 °C 0 to 100 °C 0 to 150 °C	Connection head ambient temperature -30 to 80 °C LEXAN 5 to 55 °C ABS (for short period -20 to 75 °C)
Voltage supply (U_{NAP})	11 to 30 V DC	15 to 30 V DC	Recommended value NS 500: 12 V DC NS 700: 24 V DC
Maximum ripple U_{NAP}	0,5 %	0,5 %	
Load resistance	$50(U_{NAP}-10) \Omega$	> 50 kΩ	
Sensing element break	> 24 mA	> 10,5 V	
Sensing element short	< 3,5 mA	~ 0 V	

OTHER PARAMETERS

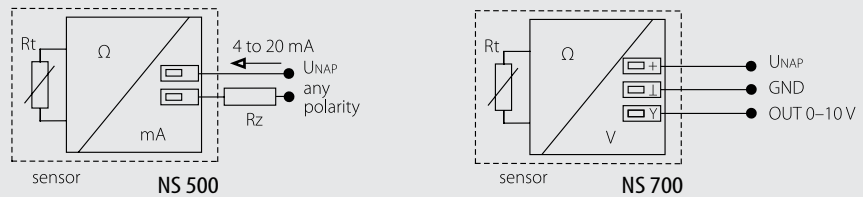
Accuracy class	Ni sensing elements: B class, $\Delta t = \pm (0,4 + 0,007t)$, for $t \geq 0$; $\Delta t = \pm (0,4 + 0,028 t)$, for $t \leq 0$ in °C; Pt sensing elements: B class according to IEC 751, $\Delta t = \pm (0,3 + 0,005 t)$ in °C NTC 20 k Ω : ± 1 °C for the range 0 to 70 °C
Measuring error for NS 500	$\pm 1,5$ °C
Measuring error for NS 700	< 0,6 % of the measuring range, minimum 0,5 °C
Sensor connection	according to the wiring diagram
Time response	$\tau_{0.5} < 8$ s (in air streaming at the velocity 1 m.s ⁻¹)
Recommended wire cross section	0,35 to 1,5 mm ²
Ingress protection	IP 30 according to EN 60 529
Material of the connection head	LEXAN 500R (grey, ivory), ABS (white colour) ambient temperature: -30 to 100 °C LEXAN -30 to 80 °C LEXAN with a converter
Operating conditions	5 to 55 °C (for a short period -20 to 75 °C) ABS relative humidity: max 85 % (at the ambient temperature 25 °C) atmospheric pressure: 87 to 107 kPa
Mass	approximately 0,1 kg

WIRING DIAGRAM

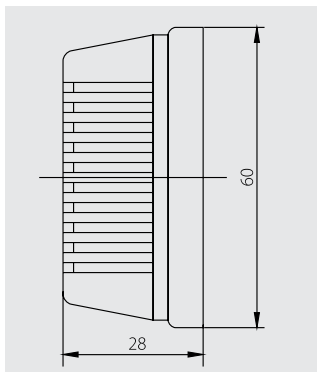
Sensors with resistance-type output



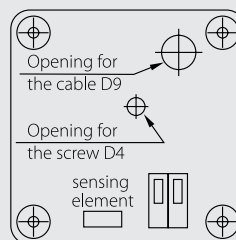
Sensors with converter



DIMENSIONAL DRAFT



Operating position NS 500



SENSOR INSTALLATION AND SERVICING

Prior to connecting the supply lead-in cable, separate the perforated lid from the plastic box base. While doing this, proceed carefully not to mechanically damage the sensing element or the converter components. The lead-in cable is connected according to the wiring diagram by pushing it through the 9 mm opening and fastening it in the WAGO terminals. The recommended wire cross section is 0.35 to 1.5 mm².

In case the lead-in cable is laid in the vicinity of high voltage conductors or those supplying equipment creating disturbing electromagnetic field (e.g. inductive load equipment), a shielded cable should be used.

After connecting the lead-in cable the box base is to be fastened to a plane surface by using a screw with a diameter of maximum 4 mm. In the last installation step the perforated lid is put into the corresponding base openings and snapped in.

After installing and connecting the sensor to the sequential evaluating electrical equipment the sensor is ready to use. The sensor does not require any special attendance or maintenance. Except for the NS 500 type it can be situated in any operating position. The NS 500 operation position is illustrated in the paragraph 4.