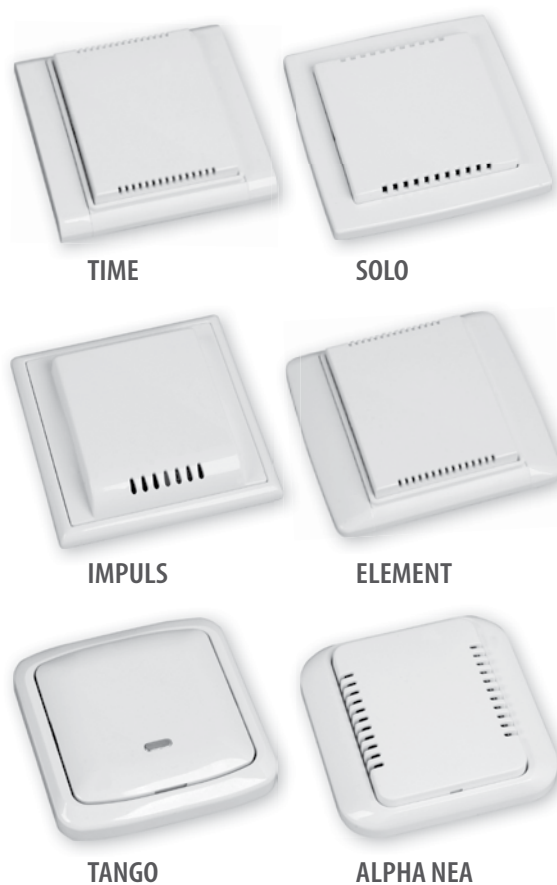


DESCRIPTION AND APPLICATION

These resistance-type sensors are intended for temperature measurements in interiors and that is why they meet high aesthetic demands. The basic concept of their design is derived from products of the ABB company, particularly from the Alpha Nea, Impuls, Solo, Tango, Time and Element household electronic appliances.

They consist of a plastic frame with a casing, and a printed circuit board on which a terminal board and a resistance-type temperature sensing element are located. Plastic components are made of the ABS material. For the Alpha Nea series, matted white is the standard colour. Solo, Tango, Element and Time series come in white colour as a standard, whereas Impuls series are bright white by default. The sensors are designed for installation in areas protected from the influence of water and they meet the IP 30 ingress protection requirements (Alpha, Time, Element, Solo), the IP 20 ingress protection (Impuls) and the IP 50 ingress protection (Tango) according to the EN 60 529 standard.

These sensors can be used with all control systems which are compatible with the sensing elements or outputs listed in the table of sensing element types according to an output signal. Standard temperature operating range is between 5 and 55 °C (-20 to 75 °C for a short time). The sensors are to be used in a chemically non-aggressive environment.



SPECIFICATIONS

BASIC DATA

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

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

*) maximum power consumption

Sensor type	NS 500 xxxx	NS 700 TANGO	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	-30 to 60 °C	Connection head ambient temperature 5 to 55 °C (for short period -20 to 75 °C)
	0 to 35 °C	0 to 35 °C	
	0 to 100 °C	0 to 100 °C	
	0 to 150 °C	0 to 150 °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 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 xxxx	$\pm 0,5$ °C (with correction), $-0,5$ to $2,2$ °C (without correction)
Measuring error for NS 700 TANGO	$< 0,6$ % of the measuring range, minimum $0,5$ °C
Sensor connection	according to the wiring diagram
Recommended wire cross section	0,35 to 1,5 mm ²
Ingress protection	IMPULS – IP20; ALPHA NEA, SOLO, ELEMENT, TIME – IP 30; TANGO – IP50 according to EN 60 529
Material of the connection head	ABS
Operating conditions	ambient temperature: 5 to 55 °C (for a short period -20 to 75 °C)
	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

With the converter 4 to 20 mA

NS 500 ABB

With the converter 0 to 10 V

NS 700 ABB

Operating position of the sensor DPS NS 500 ABB

DIMENSIONAL DRAFT

Design: SOLO
Sensor series: NS x0x SOLO
PTS x00 SOLO
HS 100 SOLO

Design: ALPHA NEA
Sensor series: NS x0x ALPHA
PTS x00 ALPHA
HS 100 ALPHA

Design: IMPULS
Sensor series: NS x0x IMPULS
PTS x00 IMPULS
HS 100 IMPULS

Design: ELEMENT
Sensor series: NS x0x ELEMENT
PTS x00 ELEMENT
HS 100 ELEMENT
NS 500 ELEMENT

Design: TIME
Sensor series: NS x0x TIME
PTS x00 TIME
HS 100 TIME
NS 500 TIME

Design: TANGO
Sensor series: NS x0x TANGO
PTS x00 TANGO
HS 100 TANGO
NS 500 TANGO
NS 700 TANGO

SENSOR INSTALLATION AND SERVICING

ALPHA NEA, TANGO:

The lead-in cable is connected to the terminal boards according to the wiring diagram by pushing it through the 9 mm opening in the printed board. The recommended wire cross section is 0.35 to 1.5 mm². The printed board should be inserted in the frame and screwed to the wiring box by means of screws M3 x14. The openings in the board enable to proper turning of the printed board and the frame on the wall. Finally, the cover is inserted in the frame by slight pressure.

IMPULS, SOLO, ELEMENT, TIME:

The lead-in cable is connected to the terminal boards according to the wiring diagram by pushing it through the 9 mm opening in the printed board. The recommended wire cross section is 0.35 to 1.5 mm². The printed board should be screwed to the wiring box by means of screws M3 x 10. The openings in the board enable to proper turning of the printed board and the frame on the wall. Finally, the frame is put on the printed board and the cover is inserted in the frame by slight pressure. By disassembly the reverse order is used. The cover is unfastened by slight leverage by means of flat screwdriver. 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 installing and connecting the sensor to the sequential evaluating electrical equipment the sensor is ready to use. The sensor does not require any special servicing or maintenance. The operating position is presented in the draft in points 3 and 4.

CUSTOMER SPECIFIC MODIFICATIONS

REGARDING TO SENSORS MANUFACTURED IN A STANDARD VERSION THE FOLLOWING PARAMETERS CAN BE MODIFIED:

- possibility to encapsulate two sensing elements
- possibility to use the 3-wire or a 4-wire connection
- A class of accuracy (except for the Ni 10000/5000, Ni 10000/6180, Ni 2226, and thermistor NTC20 kW sensing elements)
- various colours of plastic parts of the sensor – according to colour card of producer
- possibility to encapsulate other resistance-type elements for temperature measurements: KTY, SMT 160 - 30 etc.

HOW TO ORDER

Interior temperature sensors

	1	0	0	C	C	D	D	0	F	0	0	0	0
output 4–20 mA				0	A								
output 0–10 V				0	V								
Ni 1000/5000 (N1), class B				0	1								
Ni 1000/5000 (N1), class A				0	2								
Ni 1000/6180 (N1A), class B				0	3								
Ni 1000/6180 (N1A), class A				0	4								
Pt 100/3850, class B				0	6								
Pt 100/3850, class A				0	7								
Pt 500/3850, class B				0	9								
Pt 500/3850, class A				1	0								
Pt 1000/3850, class B				1	1								
Pt 1000/3850, class A				1	2								
Ni 891				1	4								
NTC 20 kΩ				1	5								
Ni 2226				1	6								
Ni 10000/5000 (N10), class B				1	7								
Ni 10000/6180 (N10A), class B				1	8								
with resistive output						0	0						
-30 to 60 °C						0	1						
0 to 35 °C						0	2						
0 to 100 °C						0	3						
0 to 150 °C						0	4						
color: white									2				
Alpha nea										0	1		
Impuls										0	2		
Solo										0	3		
Tango										0	4		
Time										0	5		
Element										0	6		

WHEN ORDERING GOODS, THE FOLLOWING DATA ARE REQUIRED:

Required data	Example
Type of product	NS 100 ALPHA NEA
Colour	white

The accuracy class is the B class if not stated otherwise.

DELIVERY

The sensors are packed in the box by 1 or 2 pieces

In addition, the following document may be provided together with the product:

calibration sheet; the EU Certificate of Conformity (with the sensors NS 500 xxxx and NS 700 TANGO).