

INDOOR TEMPERATURE SENSORS IN ABB DESIGN

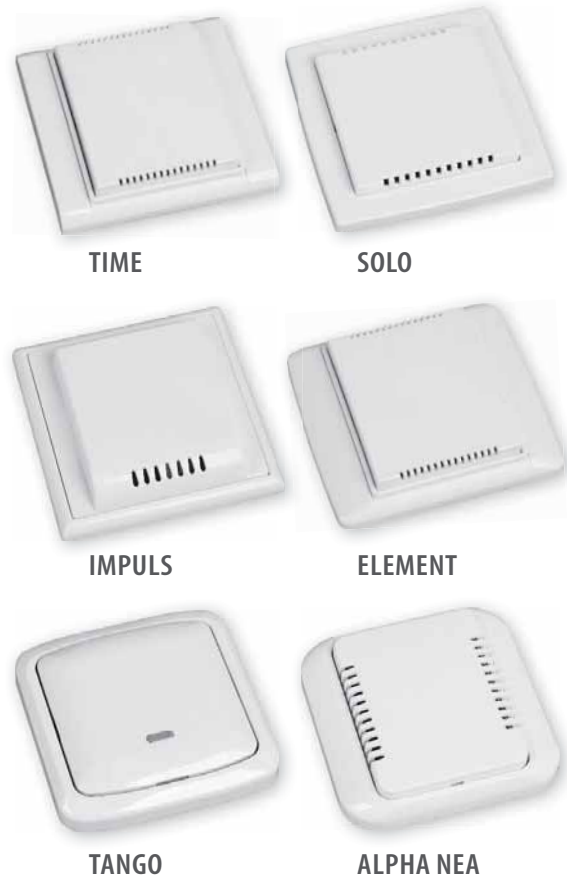
DESCRIPTION AND APPLICATION

These resistance-type sensors are intended for temperature measurements in interiors and that is why they meet high aesthetic demands. Standard temperature operating range is between 5 and 55 °C (-20 to 75 °C for a short time).

The sensor design is based on the standard design of household wiring material of ABB - Alpha nea, Impuls, Solo, Tango, Time and Element. The standard colour for the Alpha nea line is white matte. For Solo, Tango, Element and Time – white, and alpine white for the Impuls line.

The sensors can be utilised for 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.



DECLARATION, CERTIFICATES, CALIBRATION

Declaration of Conformity – in accordance with EN ISO/IEC 17050-1 standard as amended for sensors with resistance output.

EC Declaration of Conformity – in accordance with Act No. 22/1997 Coll. as amended for sensors with an output of 4 to 20 mA and 0 to 10 V.

Calibration – we perform standard calibration of resistance temperature sensors in accordance with EN ISO/IEC 17025 standard in the temperature range of the stated type of sensor.



Upon the wishes of the customer, sensors can be supplied in the designs of the following companies: SCHNEIDER, LEGRAND, UNICA.

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	T1 = 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 TANGO	NS 700 xxxx	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	Enclosure 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 (V _{CC})	11 to 30 V DC	15 to 30 V DC	Recommended value NS 500: 12 V DC NS 700: 24 V DC
Maximum ripple V _{CC}	0.5 %	0.5 %	
Load resistance	50(V _{CC} -10) Ω	> 50 kΩ	
Sensing element break	> 24 mA	> 10.5 V	
Sensing element short	< 3 mA	~ 0 V	

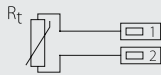
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OTHER PARAMETERS

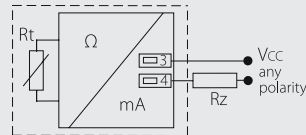
Accuracy class	Ni sensing elements: B class, $\Delta t = \pm (0.4 + 0.007t)$, for $t \geq 0$; $\Delta t = \pm (0.4 + 0.028 t)$, for $t \leq 0$ in °C; Pt sensing elements: B class according to IEC 751, $\Delta t = \pm (0.3 + 0.005 t)$ in °C; NTC 20 k Ω : ± 1 °C for the range 0 to 70 °C
Measuring error for NS 500 xxxx	± 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 enclosure	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
Weight	approximately 0.1 kg

WIRING DIAGRAM

Sensors with resistance-type output

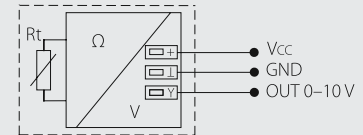


With the converter 4 to 20 mA



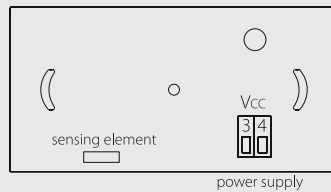
NS 500 ABB

With the converter 0 to 10 V



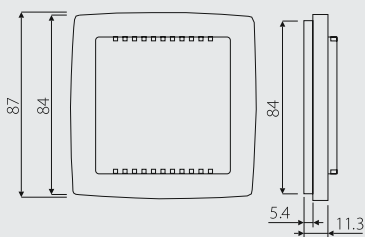
NS 700 ABB

Operating position of the sensor DPS NS 500 ABB

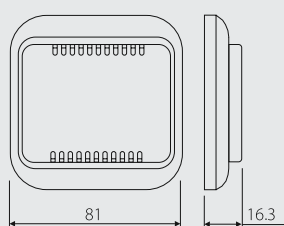


DIMENSIONAL DRAFT

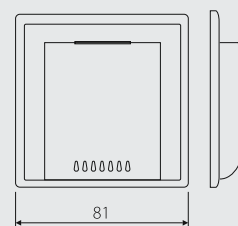
Design: **SOLO**
Sensor series: NS x0x SOLO
PTS x00 SOLO
HS 100 SOLO



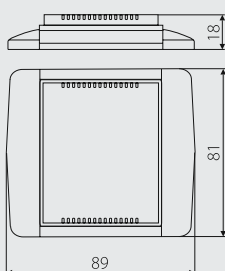
Design: **ALPHA NEA**
Sensor series: NS x0x ALPHA
PTS x00 ALPHA
HS 100 ALPHA



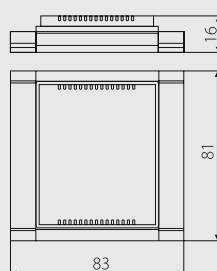
Design: **IMPULS**
Sensor series: NS x0x IMPULS
PTS x00 IMPULS
HS 100 IMPULS



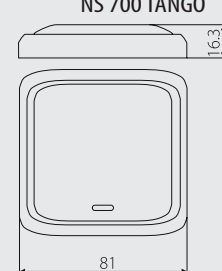
Design: **ELEMENT**
Sensor series: NS x0x ELEMENT
PTS x00 ELEMENT
HS 100 ELEMENT
NS 700 ELEMENT



Design: **TIME**
Sensor series: NS x0x TIME
PTS x00 TIME
HS 100 TIME
NS 700 TIME



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



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■ 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 x 14. 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 WIRING DIAGRAM section.

■ CUSTOMER SPECIFIC MODIFICATIONS

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

- option enclosing two sensors
- option enclosing non-standard temperature sensors (DALLAS, TSic, KTY, SMT, etc.)
- class A precision type of temperature element (with the exception of sensors Ni 10000/5000, Ni 10000/6180, T1 = Ni 2226, thermistor NTC 20 kΩ)
- option of three- or four-wire connection
- the colour of plastic sensor parts – according to the manufacturer's swatch