

## TEMPERATURE PROBES



### DESCRIPTION AND APPLICATION

The temperature probes are designed to be used for contact temperature measurements of solid, liquid or gaseous substances in various branches of industry, e. g. in the food-processing industry, chemical industry, cooling technology etc.

By construction and features, these temperature probes can be classified as follows:

1. Contact probes – S x031/150, S x033/250
2. Air temperature probes – 200-80/x, 100-60/x, S x042/150
3. Stick-in probes – S x051/150, S x061/200, Sx061/250, S x301/220, S x091/200, S x091/260
4. Special probes – S x071, S x081



In the standard version these probes are fitted with the sensing elements as specified in the table of the common specifications. The temperature probes use the two-wire connection. All probes using the Ni 1000/6180 resistance-type sensing element (accuracy class A) can be used in combination with the SENSITEST 204C or SENSITEST 2004C digital thermometers.

The probes are meant for operation in a chemically non-aggressive environment. They cannot be used for temperature measurements on equipment under electric voltage (alive).

### DECLARATION, CERTIFICATES, CALIBRATION

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

**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.

### SPECIFICATIONS

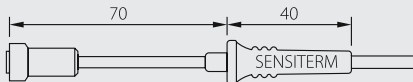
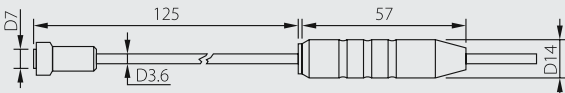
#### COMMON SPECIFICATIONS

Type of sensing element	Ni 1000/5000, Ni 1000/6180, Ni 891, Pt 100, Pt 500, Pt 1000, NTC 20 kΩ (specified for individual probes)
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 kΩ: $\pm 1$ °C for the range 0 to 70 °C
Maximum measuring DC current	Pt 100 – 3 mA; Pt 500 – 1.5 mA; Pt 1000, Ni 1000, Ni 891 – 1 mA; T1 = Ni 2226 – 0.7 mA; Ni 10000 – 0.3 mA; NTC 20 kΩ – kW – maximum power dissipation 1 mW
Connection of probes	2-wire
Cable lengths	1, 2, 5, 10 m

#### Contact probes S x031, S x033

These temperature probes are intended to measure the contact temperature of solid substances having a plane and smooth surface. The probes consist of a metal case terminated by a special bowl to contact the surface to be measured, further of a grip with the lead-in cable of a standard length of 1 m. The resistance-type sensing element is located in brass bowl, which is firmly inserted in a special rubber case, reducing the influence of the ambient on the measurement results. The design of the individual probes is illustrated in the following drawings.

Type of sensing element	Ni 1000/5000, Ni 1000/6180, Pt 100, Pt 1000
Material of the contact brass	Aluminium alloy
Material of the pipe	S x031, S x033 stainless steel 1.4301
Material of the grip	S x031 polypropylene S x033 teflon
Lead-in cable	S x031 shielded, silicone insulation 2 x 0.07 mm <sup>2</sup> S x033 shielded, silicone insulation 2 x 0.22 mm <sup>2</sup>

Probe	Dimensional draft of contact probes	Temperature range of usage/ Temperature resistance of the grip
S x031/150		-30 to 150 °C / -15 to 120 °C
S x033/250		-30 to 250 °C / -30 to 250 °C


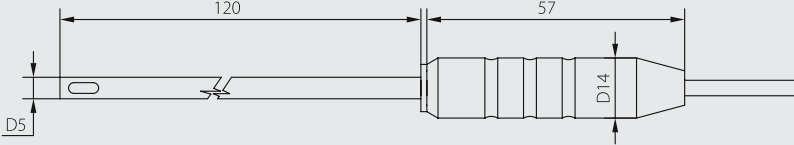
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**Air temperature probes 200-80/x, 100-60/x, S x042/150**

These temperature probes are intended for temperature measurement of air and gaseous media. The S x042 probe is characterised by a metal perforated probe tip (for fast response), a grip and a lead-in cable of a standard length of 1 m. Constructed of stainless steel and high quality components, the S x042 probe is suitable for temperature monitoring purposes in the **food-processing industry** as well.

The resistance-type sensing element is placed in the perforated probe tip, whereby a direct contact to the gaseous substance to be measured, and a fast response to temperature changes are secured. The design of the individual probes is illustrated in the following drawings.

Type of sensing element	Ni 1000/5000, Ni 1000/6180, Pt 100, Pt 1000
Material of the cavity	Nickel plated copper
Material of the metal case	S x042 stainless steel 1.4301
Material of the grip	S x042 teflon
Type of connector	200-80/E ELKA K1321 200-80/C CINCH
Lead-in cable	shielded silicone 2 x 0.22 mm <sup>2</sup>

Probe	Dimensional draft of air temperature probes	Temperature operating range
200-80/x 100-60/x		-30 to 80 °C
S x042/150		-30 to 150 °C

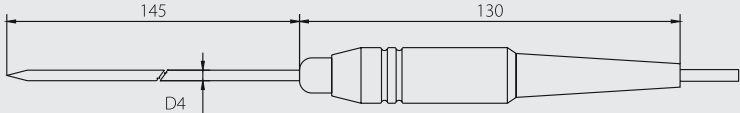
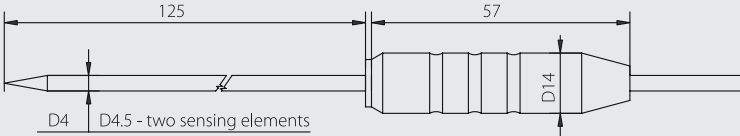
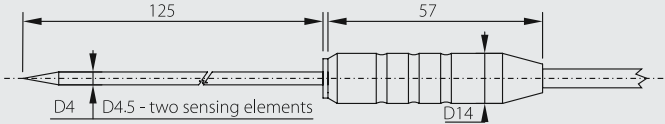
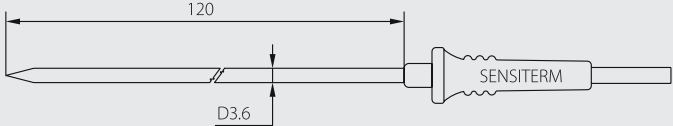
**Stick-in probes for temperature measurement in the food-processing industry**

**S x051, S x061/200, S x061/250, S x091/200, S x091/260 and universal S x301/220**

These temperature probes are intended to measure the contact temperature of solid substances. They can be used also for temperature measurement of liquid and gaseous substances. These probes consist of a metal case terminated by a tip, further of a grip with the lead-in cable of a standard length of 1 m. Constructed of stainless steel and high quality components, the S x051, S x061 and the S x091 probes are suitable for temperature monitoring purposes in the **food-processing industry** as well.

The resistance-type sensing element is placed in the tip of the metal probe. The design of the individual probes is illustrated in the following drawings.

Type of sensing element	All types of resistance sensing elements
Ingress protection	S x061, S x051, S x091 - IP 68 h 1 m, S x301 - IP 65
Material of the metal case	stainless steel 1.4301
Material of the grip	S x051 silicone S x061 teflon S x301 polypropylene S x091/260 PEEK
Lead-in cable	S x061/250, S x091/260 – shielded teflon 2 x 0.14 mm <sup>2</sup> others – shielded silicone 2 x 0.22 mm <sup>2</sup>

Probe	Dimensional draft of stick-in probes	Temperature operating range
S x051/150		-30 to 150 °C
S x061/200		-30 to 200 °C
S x061/250		-30 to 250 °C (for a short period to 300°C)
S x301/220		-30 to 220 °C Temperature resistance of the grip -15 to 120 °C

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Probe	Dimensional draft of stick-in probes	Temperature operating range
S x091/200		-30 to 200 °C
S x091/260		-30 to 260 °C (for a short period to 300°C)

Special temperature probes: S x071, S x081

The temperature probe **S x071** is intended to measure temperature of solids. Constructed with a special probe tip and the use of stainless steel material, make this a perfect sensor for temperature measurements of deep frozen food products, even down to -30 °C.

The temperature probe **S x081** is intended to measure temperature of solids. Thanks to the smart probe design and the stainless steel construction, the probe is suitable for food-processing industrial applications, such as measure temperature in blast chillers or in deep freezing equipment. The operating temperature range is -20 to 80 °C.

Type of sensing element	S x071, S x081 all types S x071A, S x081A all types
Ingress protection	IP 67
Material of the metal case	stainless steel 1.4301
Material of the grip	S x071, S x081 stainless steel 1.4301
Lead-in cable	S x071A, S x081A shielded silicone 2 x 0.22 mm <sup>2</sup>
Type of connection	S x071, S x081 CINCH S x071A, S x081A grommet for cable

Probe	Dimensional draft of room probes	Temperature range of usage
S x071 S x071A		-30 to 50 °C
S x081 S x081A		-20 to 80 °C

DEFINING THE SENSING ELEMENT TYPE IN THE PROBE DESIGNATION

x (in the probe designation)	1	P	2	3	6	7	0	9	TCK
Sensing element type	Pt 100	Pt 500	Pt 1000	2 x Pt 100	NTC 20 kΩ	Ni 1000/5000	Ni 1000/6180	Ni 891	TCK J