

TEMPERATURE SENSORS



CAPTEUR DE TEMPERATURE A RESISTANCE

PT 100 - PT500 - PT1000



Measure,
Control and Log Data



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1 RESISTANCE TEMPERATURE SENSORS

Resistive sensors react to varying temperatures by changing the resistance of the built-in resistor.

THERMORESISTORS

These changes are characteristic for each thermoresistor and expressed through the temperature coefficient of resistance (TCR). TCR specifies the relative change in resistance caused by the temperature change of 1°C. We mark it with the α symbol. Knowing the resistance R_T of the thermoresistor in the initial temperature T_p , we can determine its resistance R in any other temperature.

$$R = R_T \cdot (1 + \alpha (T - T_p))$$



Thermoresistors are made of metals characterized by the following properties:

- as high as possible temperature resistance coefficient,
- as high as possible resistance, that will allow making resistors with small size,
- as high as possible melting point,
- constant physical properties,
- corrosion resistance,
- repeatability of the properties of elements with identical shapes,
- continuous temperature-resistance relation with no hysteresis.

Platinum (Pt) is a metal that suitably meets the above-mentioned criteria. It is used in the production of ceramic and thin-film thermoresistor.

THERMISTORS

Thermistors are another type of resistance temperature sensor made by sintering semiconducting and binding materials. The most commonly used materials are nickel, cobalt, manganese, iron, vanadium, and titanium oxides. When selecting thermistor materials, you should primarily pay attention to their resistivity. This value ranges from $10^{-4} \div 10^{12} \Omega \cdot m$. Temperature dependence between the temperature and resistance for the thermistor is calculated based on the following formula:

$$R_T = A \cdot \exp\left(\frac{B}{T}\right)$$

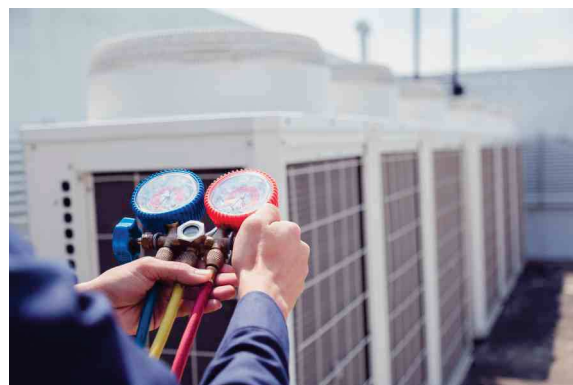
where:

- A - coefficient corresponding to the resistance for temperature approaching infinity,
- B - material constant

There are two main types of thermistors: NTC (Negative Temperature Coefficient) and PTC (Positive Temperature Coefficient). NTC thermistors lower their resistance as temperature rises, while PTC thermistors operate oppositely by increasing resistance with rising temperature. The temperature coefficient of the thermistor α_T is described by the formula:

$$\alpha_T = \frac{1}{R_T} \cdot \frac{d \cdot R_T}{d \cdot T}$$

At room temperature (25°C), this coefficient for NTC thermistors ranges from -2,5 %/K to -6 %/K





SCR100

- temperature range $-50 \div 200^{\circ}\text{C}$
- operating temperature of connection heads max. 150°C
- stainless steel sheath
- optional: sensor with a replaceable measuring insert
- possibility of mounting a 4...20 mA or 0...10 V temperature transmitter
- connection head DANW with local display

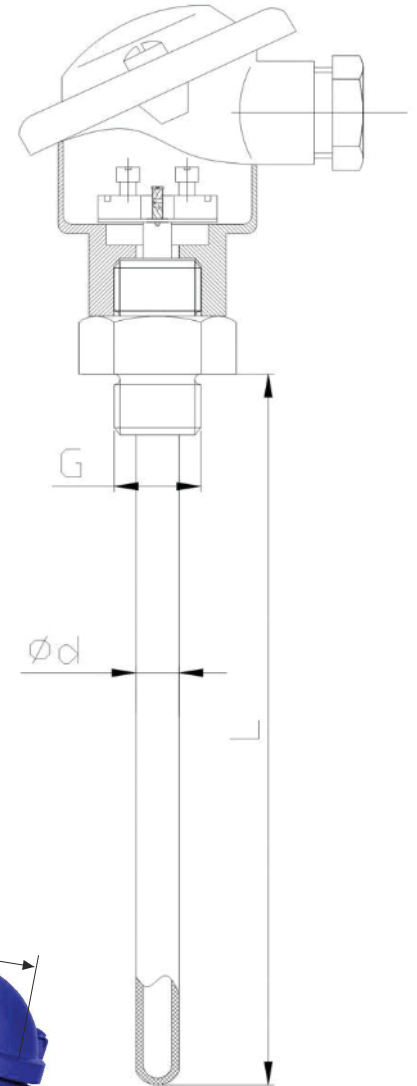
The resistance thermometer **SCR100** consists of an optional exchangeable measuring insert, outer protective tube (thermowell) and aluminum connection head, where mounting a temperature transmitter with 4...20 mA or 0...10V output signal is possible. The measuring insert represents the replaceable element of the complete sensor, which reduces time and costs of maintenance of the measuring apparatus installed in the object.

Application areas:

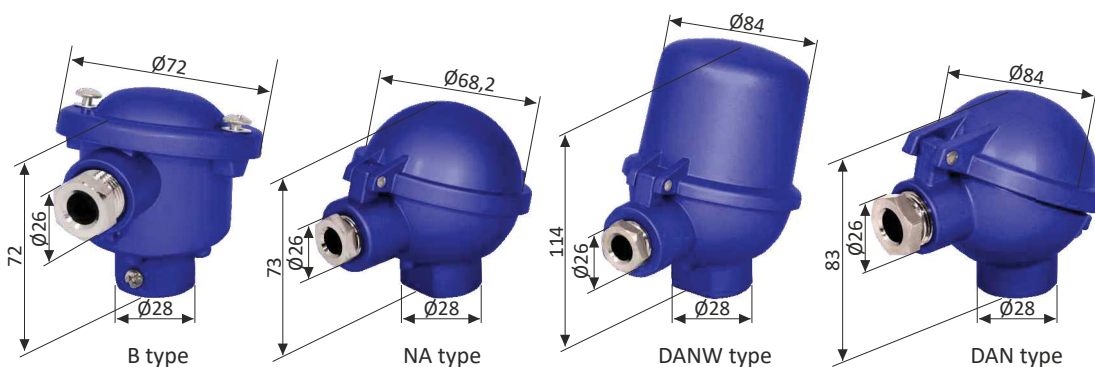
- machine construction, tanks or containers,
- fine chemical industry,
- light energy industry,
- general industrial services.

TECHNICAL DATA

Sensing element	Pt100, Pt500 or Pt1000 (2-, 3- or 4-wire)
Measuring range	$-50 \div 200^{\circ}\text{C}$
Connection head	B, NA or other, operating temperature $-40 \div 150^{\circ}\text{C}$
Class	A, B or 1/3 B
Sheath	material: stainless steel 1.4541 or other nominal length: 100 mm, 160 mm or other diameter: $4 \div 15$ mm
Process connection	G1/2", M20x1,5 or other



CONNECTION HEAD TYPES

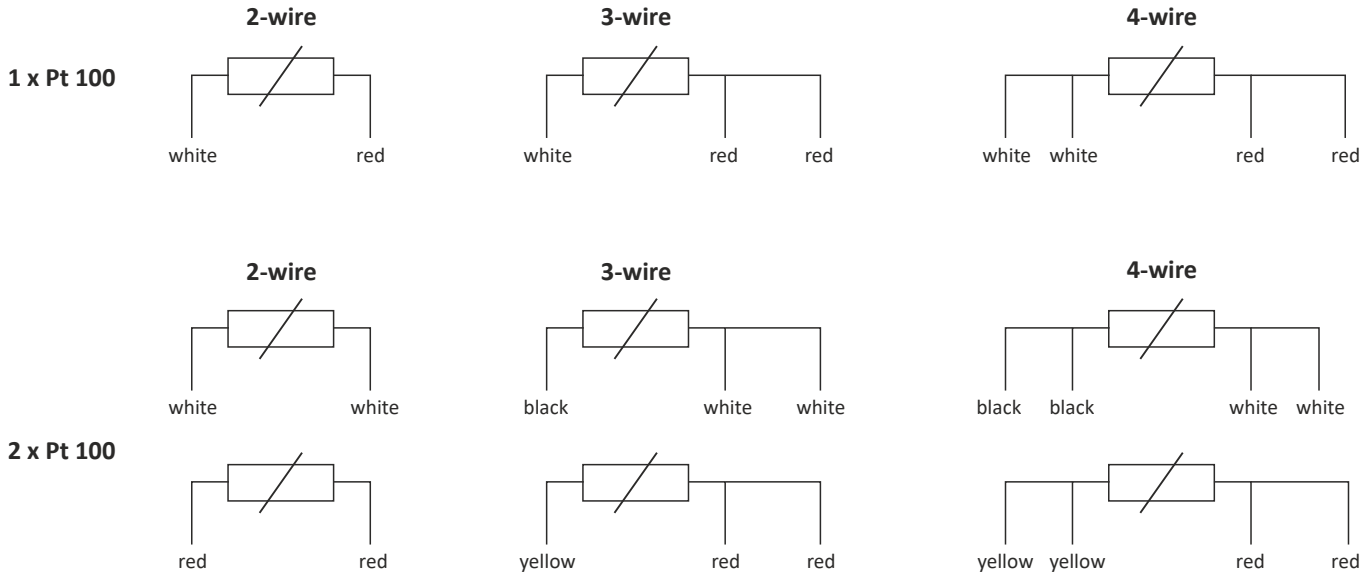


RESISTOR TOLERANCE ACC. TO PN-EN 60751

Class	Tolerance [$^{\circ}\text{C}$]
1/3B	$t = 0,10 + 0,002 \times t $
A	$t = 0,15 + 0,002 \times t $
B	$t = 0,30 + 0,005 \times t $



ELECTRICAL CONNECTION



ORDERING

SCR100-X-X-X-X-X-X-X-X-X-X

<p>temperature sensor:</p> <p>1 : single 2 : double PP : with transmitter</p> <p>sensing element:</p> <p>Pt 100 Pt 500 Pt 1000 other, please specify</p> <p>connection head:</p> <p>B NA other, please specify</p> <p>sheath length (L):</p> <p>100 mm 160 mm other, please specify [mm]</p> <p>measuring insert:</p> <p>BW : non-replaceable W : replaceable</p>	<p>sensor measuring range or temperature transmitter settings: please specify</p> <p>measuring circuit:</p> <p>2 : 2-wire 3 : 3-wire 4 : 4-wire</p> <p>accuracy class:</p> <p>A B 1/3B</p> <p>process connection:</p> <p>G1/2" M20x1,5 other, please specify</p> <p>sheath diameter (Ød):</p> <p>4 mm 6 mm 9 mm other, please specify</p>
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Ordering example:

SCR100-1-Pt100-B-100-W-9-M20x1,5-B-2-250°C

Single RTD temperature sensor, 1xPt100, B tolerance class, 2-wire, measuring insert replaceable, B head type, process connection: M20x1,5, sheath diameter Ø9 mm and length L=100 mm, sensor measuring range 250°C.





SCR101

- temperature range $-50 \div 550^{\circ}\text{C}$
- operating temperature of connection heads max. 150°C
- stainless steel sheath
- optional: sensor with a replaceable measuring insert
- possibility of mounting a 4...20 mA or 0...10 V temperature transmitter
- connection head DANW with local display

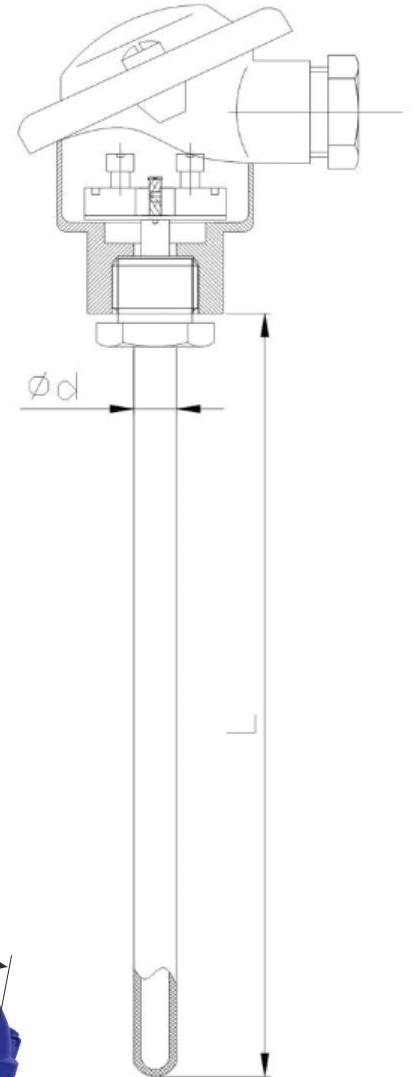
The resistance thermometer **SCR101** consists of an optional exchangeable measuring insert, outer protective tube (thermowell) and aluminum connection head, with mounting a temperature transmitter with 4...20 mA or 0...10V output signal is possible. The measuring insert represents the replaceable element of the complete sensor, which reduces the time and costs of maintenance of the measuring apparatus installed in the object. Compression fittings allow simple adaptation to the required insertion length at the installation point.

Application areas:

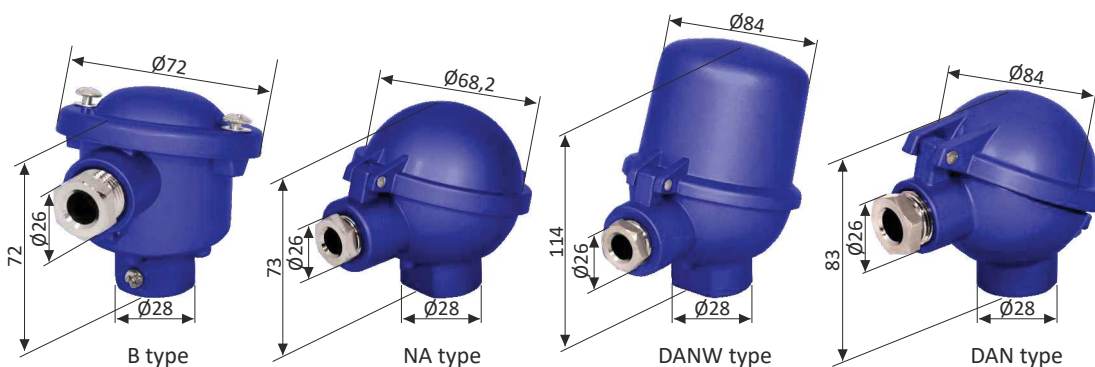
- machine construction, tanks or containers,
- fine chemical industry,
- light energy industry,
- food industry,
- general industrial services.

TECHNICAL DATA

Sensing element	Pt100, Pt500 or Pt1000 (2-, 3- or 4-wire)
Measuring range	$-50 \div 550^{\circ}\text{C}$
Connection head	B, NA or other, operating temperature $-40 \div 150^{\circ}\text{C}$
Class	A, B or 1/3 B
Sheath	material: stainless steel 1.4541 or other nominal length: 100 mm, 160 mm or other diameter: $4 \div 15$ mm



CONNECTION HEAD TYPES



RESISTOR TOLERANCE ACC. TO PN-EN 60751

Class	Tolerance [$^{\circ}\text{C}$]
1/3B	$t = 0,10 + 0,002 \times t $
A	$t = 0,15 + 0,002 \times t $
B	$t = 0,30 + 0,005 \times t $



OPTIONAL ACCESORIES



S type flange
(stainless steel)

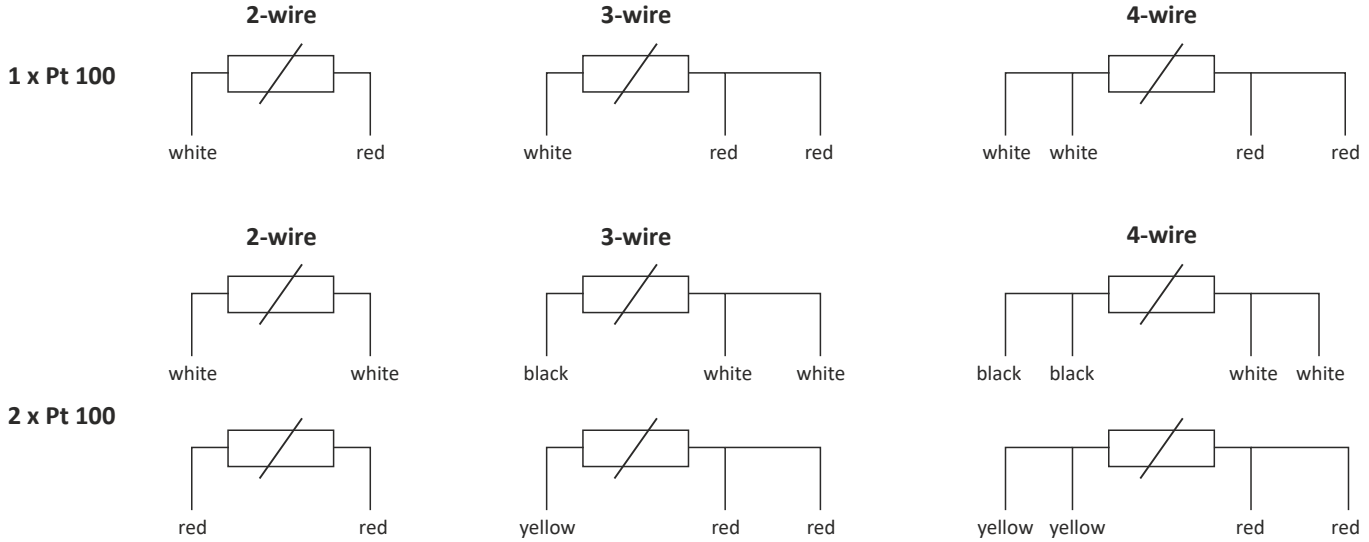


T type flange
(PTFE)



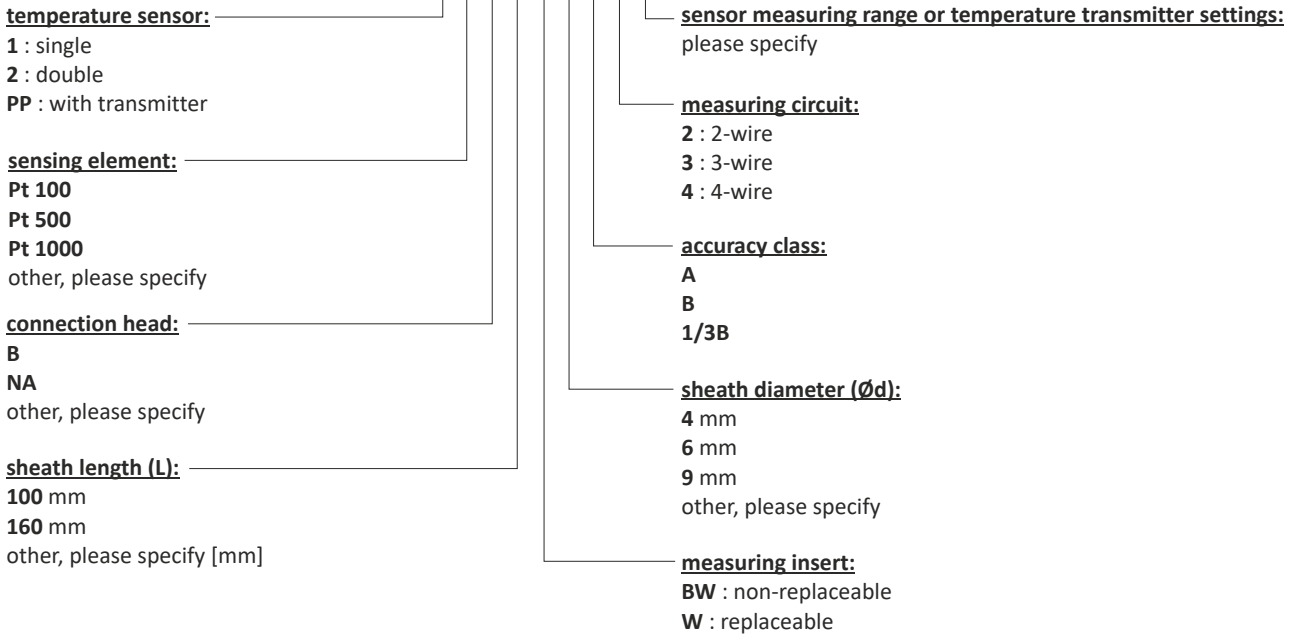
Threaded holder (fitting)
with a compression ferrule
(brass or stainless steel)

ELECTRICAL CONNECTION



ORDERING

SCR101-X-X-X-X-X-X-X-X



Ordering example:

SCR101-1-Pt100-B-100-BW-6-B-2-150°C

Single RTD temperature sensor, 1xPt100, B tolerance class, 2-wire, non-replaceable measuring insert, B head type, sheath diameter Ø9 mm and length L=100 mm, sensor measuring range 150°C.





SCR102

- temperature range $-50 \div 550^{\circ}\text{C}$
- operating temperature of connection heads max. 150°C
- stainless steel sheath
- mounting flange
- possibility of mounting a 4...20 mA or 0...10 V temperature transmitter
- connection head DANW with local display

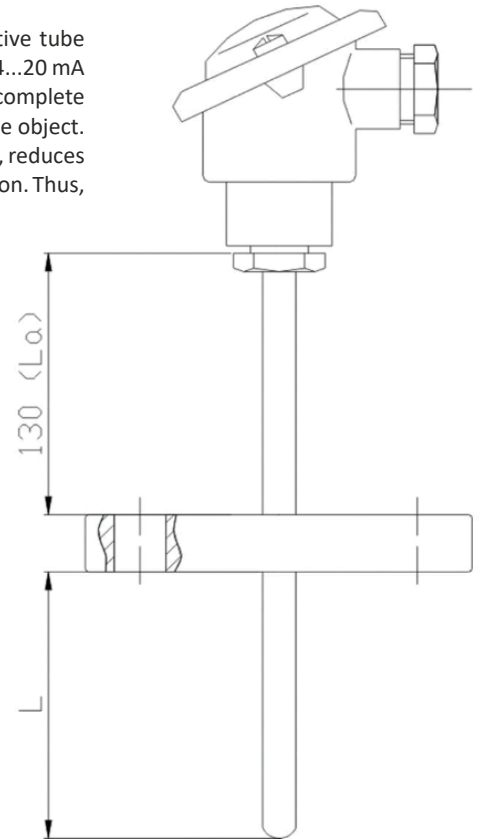
The resistance thermometer **SCR102** consists of an exchangeable measuring insert, outer protective tube (thermowell) with neck, and aluminum connection head. Mounting a temperature transmitter with 4...20 mA or 0...10V output signal is possible. The measuring insert represents the replaceable element of the complete sensor, which reduces the time and costs of maintenance of the measuring apparatus installed in the object. Spring fixation of the measuring insert provides perfect pressure to the bottom of the protecting tube, reduces the time of reaction of temperature changes, and increases the accuracy. It also reduces natural vibration. Thus, mechanical and electrical defects can be avoided.

Application areas:

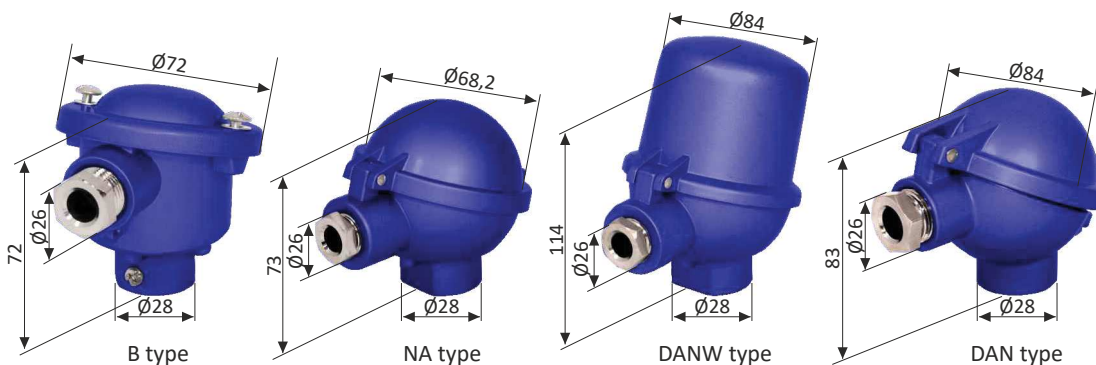
- fine chemical industry,
- light energy industry,
- general industrial services.

TECHNICAL DATA

Sensing element	Pt100, Pt500 or Pt1000 (2-, 3- or 4-wire)
Measuring range	$-50 \div 550^{\circ}\text{C}$
Connection head	B, NA or other, operating temperature $-40 \div 150^{\circ}\text{C}$
Class	A, B or 1/3 B
Sheath	material: stainless steel 1.4541 or other nominal length: 130 mm (standard) or other diameter: $4 \div 15$ mm flange DN20, DN25 or other



CONNECTION HEAD TYPES

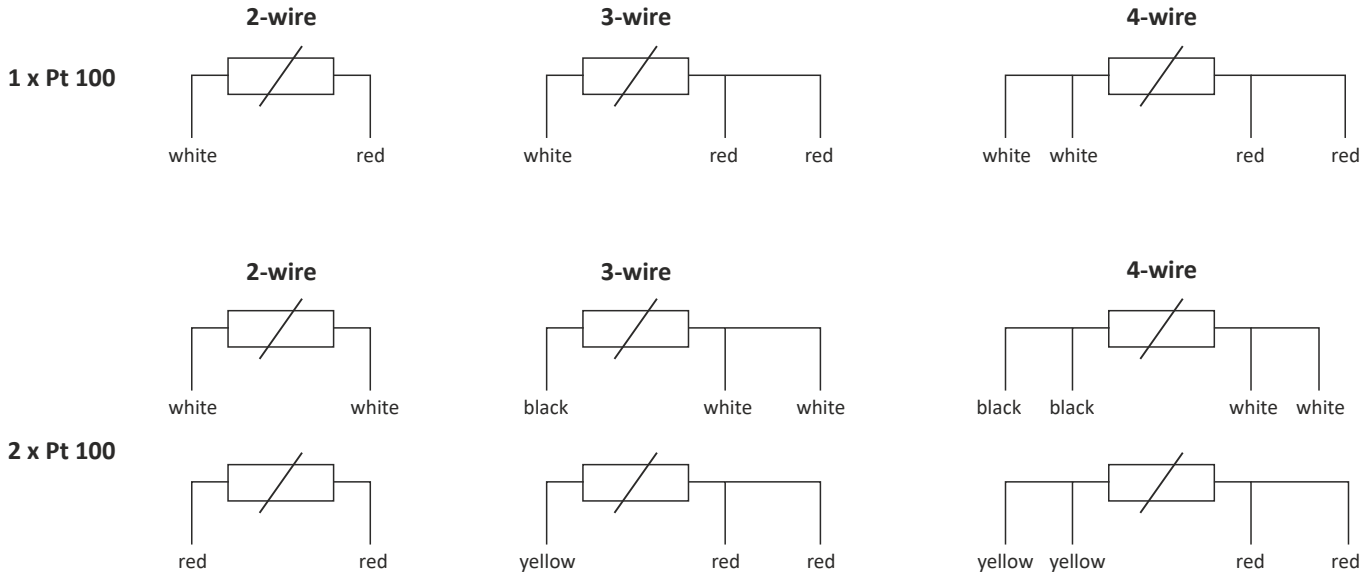


RESISTOR TOLERANCE ACC. TO PN-EN 60751

Class	Tolerance [$^{\circ}\text{C}$]
1/3B	$t = 0,10 + 0,002 \times t $
A	$t = 0,15 + 0,002 \times t $
B	$t = 0,30 + 0,005 \times t $



ELECTRICAL CONNECTION



ORDERING

SCR102-X-X-X-X-X-X-X-X-X

- temperature sensor:**
 - 1 : single
 - 2 : double
 - PP : with transmitter
- sensing element:**
 - Pt 100
 - Pt 500
 - Pt 1000
 - other, please specify
- connection head:**
 - B
 - NA
 - other, please specify
- sheath length (L):**
 - 100 mm
 - 160 mm
 - other, please specify [mm]
- length La [mm]:**
 - S : 130 mm (standard)
 - other, please specify
- sensor measuring range or temperature transmitter settings:**
 - please specify
- measuring circuit:**
 - 2 : 2-wire
 - 3 : 3-wire
 - 4 : 4-wire
- accuracy class:**
 - A
 - B
 - 1/3B
- flange:**
 - DN20 (PN100)
 - DN25 (PN100)
 - other, please specify
- sheath diameter (Ød):**
 - 6 mm
 - 9 mm
 - 12 mm
 - other, please specify

Ordering example:

SCR102-1-Pt100-B-100-S-9-DN20(PN100)-B-2-150°C

Single RTD temperature sensor, 1xPt100, B tolerance class, 2-wire, B head type, sheath diameter Ø9 mm and length L=100 mm, process connection flange DN20(PN100), sensor measuring range 150°C.





SCR103

- temperature range $-50 \div 550^{\circ}\text{C}$
- operating temperature of connection heads max. 150°C
- stainless steel sheath
- threaded process connection
- optional: sensor with a replaceable measuring insert
- possibility of mounting a 4...20 mA or 0...10 V temperature transmitter
- connection head DANW with local display

The resistance thermometer **SCR103** consists of an exchangeable measuring insert, outer protective tube (thermowell) with neck, and aluminum connection head. Mounting a temperature transmitter with 4...20 mA or 0...10V output signal is possible. The measuring insert represents the replaceable element of the complete sensor, which reduces the time and costs of maintenance of the measuring apparatus installed in the object. Spring fixation of the measuring insert provides perfect pressure to the bottom of the protecting tube, reduces the time of reaction of temperature changes, and increases the accuracy. It also reduces natural vibration. Thus, mechanical and electrical defects can be avoided.

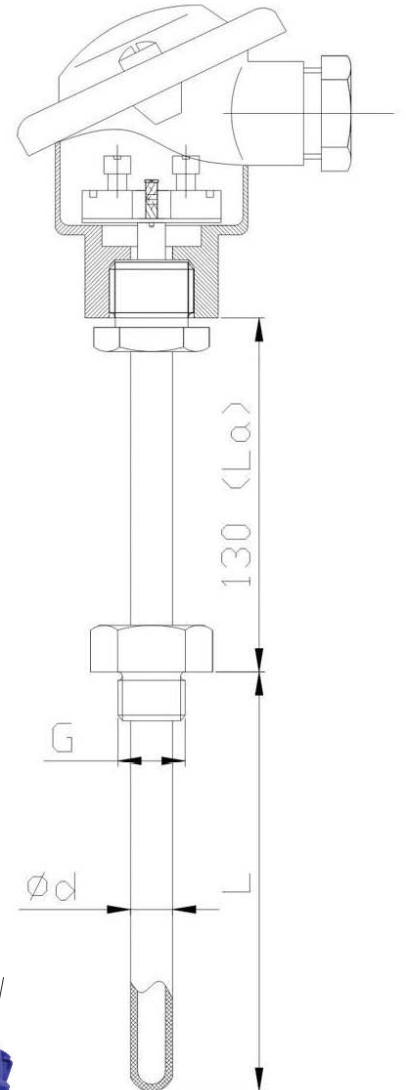
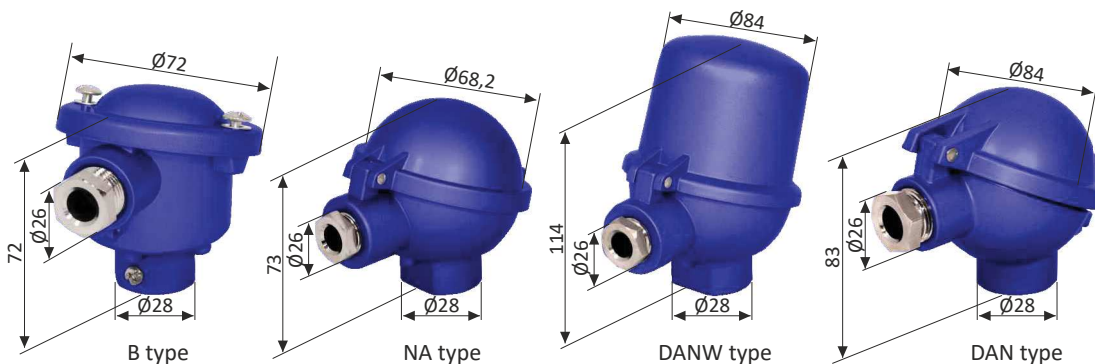
Application areas:

- fine chemical industry,
- light energy industry,
- general industrial services.

TECHNICAL DATA

Sensing element	Pt100, Pt500 or Pt1000 (2-, 3- or 4-wire)
Measuring range	$-50 \div 550^{\circ}\text{C}$
Connection head	B, NA or other, operating temperature $-40 \div 150^{\circ}\text{C}$
Class	A, B or 1/3 B
Sheath	material: stainless steel 1.4541 or other nominal length: 130 mm (standard) or other diameter: $4 \div 15$ mm
Process connection	G1/2", M20x1,5 or other

CONNECTION HEAD TYPES

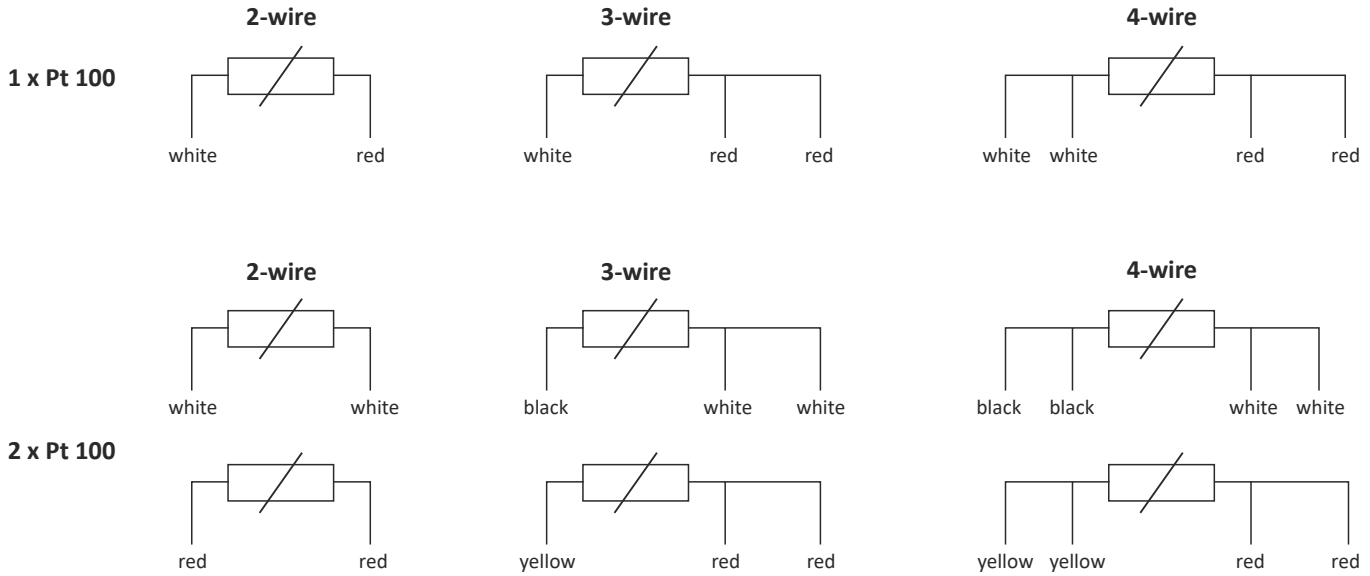


RESISTOR TOLERANCE ACC. TO PN-EN 60751

Class	Tolerance [$^{\circ}\text{C}$]
1/3B	$t = 0,10 + 0,002 \times t $
A	$t = 0,15 + 0,002 \times t $
B	$t = 0,30 + 0,005 \times t $



ELECTRICAL CONNECTION



ORDERING

SCR103-X-X-X-X-X-X-X-X-X-X

<p>temperature sensor:</p> <ul style="list-style-type: none"> 1 : single 2 : double PP : with transmitter <p>sensing element:</p> <ul style="list-style-type: none"> Pt 100 Pt 500 Pt 1000 other, please specify <p>connection head:</p> <ul style="list-style-type: none"> B NA other, please specify <p>sheath length (L):</p> <ul style="list-style-type: none"> 100 mm 160 mm other, please specify [mm] <p>length La [mm]:</p> <ul style="list-style-type: none"> S : 130 mm (standard) other, please specify 	<p>sensor measuring range or temperature transmitter settings:</p> <p>please specify</p> <p>measuring circuit:</p> <ul style="list-style-type: none"> 2 : 2-wire 3 : 3-wire 4 : 4-wire <p>accuracy class:</p> <ul style="list-style-type: none"> A B 1/3B <p>process connection:</p> <ul style="list-style-type: none"> G1/2" M20x1,5 other, please specify <p>sheath diameter (Ød):</p> <ul style="list-style-type: none"> 4 mm 6 mm 9 mm other, please specify <p>measuring insert:</p> <ul style="list-style-type: none"> BW : non-replaceable W : replaceable
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Ordering example:

SCR103-1-Pt100-B-100-S-W-6-M20x1,5-B-2-250°C

Single RTD temperature sensor, 1xPt100, B tolerance class, 2-wire, measuring insert replaceable, B head type, process connection: M20x1,5, sheath diameter ø6 mm and length L=100 mm, sensor measuring range 250°C.





SCR104

- temperature range $-50 \div 550^{\circ}\text{C}$
- operating temperature of connection heads max. 150°C
- stainless steel sheath
- threaded process connection
- optional: sensor with a replaceable measuring insert
- possibility of mounting a 4...20 mA or 0...10 V temperature transmitter
- connection head DANW with local display

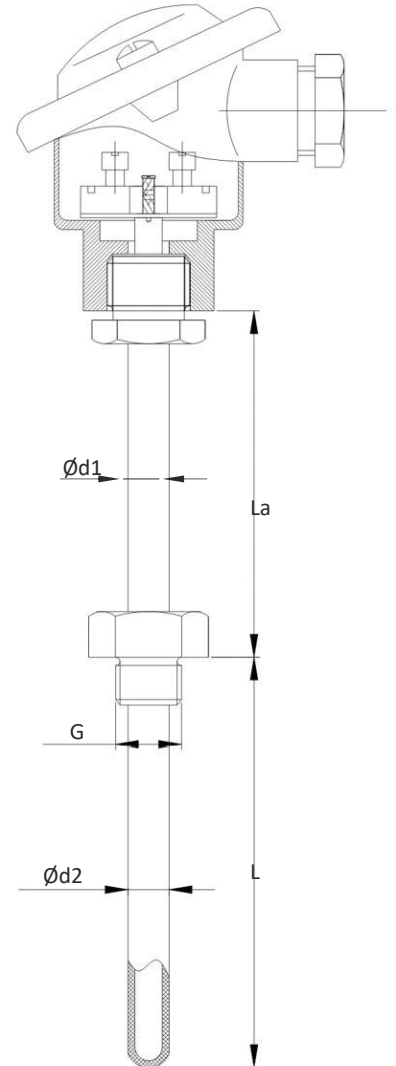
The resistance thermometer **SCR104** consists of an exchangeable measuring insert, outer protective tube (thermowell) with neck, and aluminum connection head. Mounting a temperature transmitter with 4...20 mA or 0...10V output signal is possible. The measuring insert represents the replaceable element of the complete sensor, which reduces the time and costs of maintenance of the measuring apparatus installed in the object. Spring fixation of the measuring insert provides perfect pressure to the bottom of the protecting tube, reduces the time of reaction of temperature changes, and increases the accuracy. It also reduces natural vibration. Thus, mechanical and electrical defects can be avoided.

Application areas:

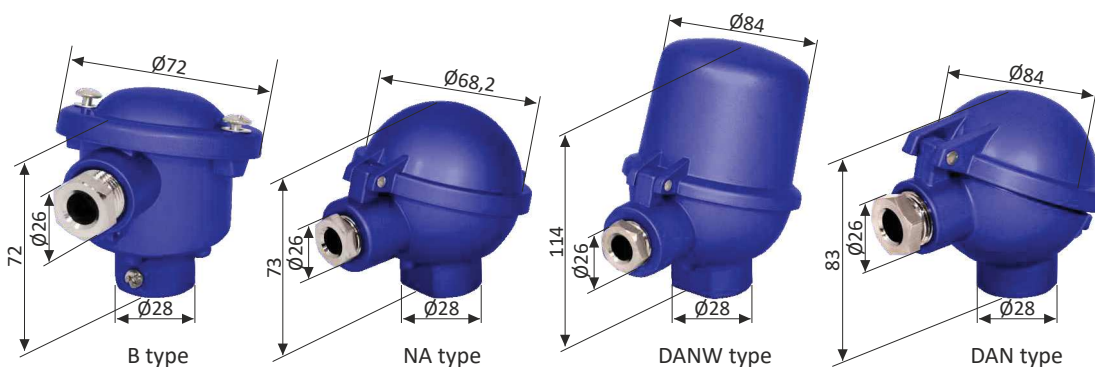
- fine chemical industry,
- light energy industry,
- general industrial services.

TECHNICAL DATA

Sensing element	Pt100, Pt500, Pt1000, Ni100 (2-, 3- or 4-wire)
Measuring range	$-50 \div 550^{\circ}\text{C}$
Connection head	B, NA or other, operating temperature $-40 \div 150^{\circ}\text{C}$
Class	A, B or 1/3 B
Sheath	material: stainless steel 1.4541 or other nominal length: 130 mm (standard) or other diameter: $4 \div 22$ mm
Process connection	G1/2", M20x1,5, 1/2 NPT or other



CONNECTION HEAD TYPES

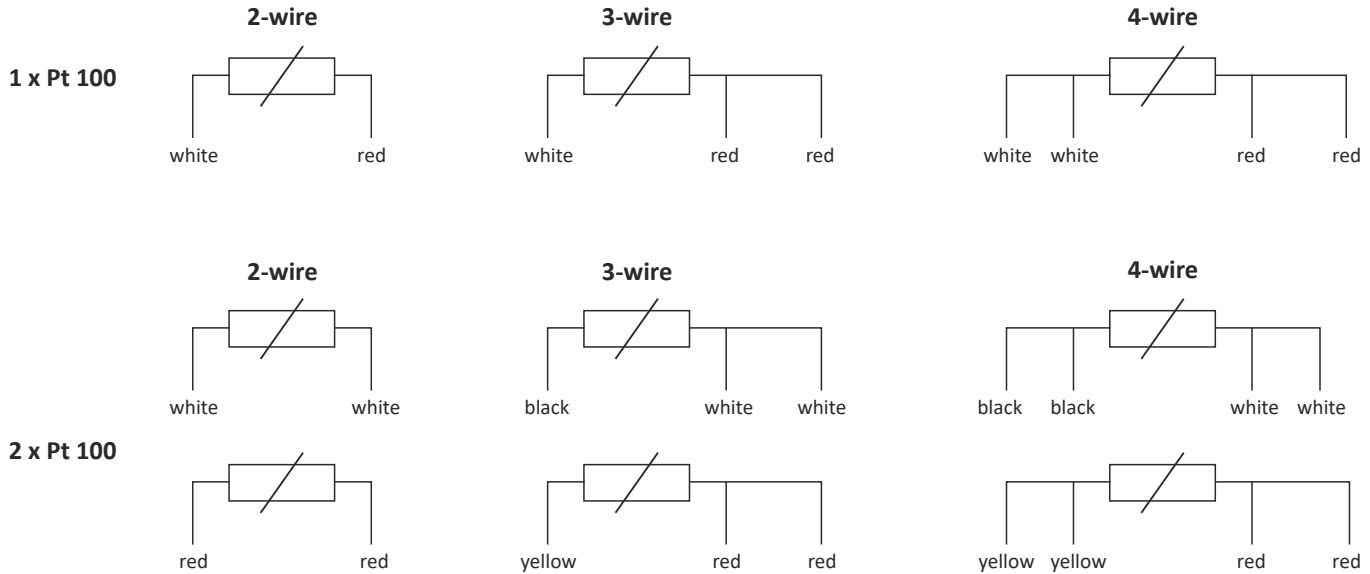


RESISTOR TOLERANCE ACC. TO PN-EN 60751

Class	Tolerance [$^{\circ}\text{C}$]
1/3B	$t = 0,10 + 0,002 \times t $
A	$t = 0,15 + 0,002 \times t $
B	$t = 0,30 + 0,005 \times t $



ELECTRICAL CONNECTION



ORDERING

SCR104-X-X-X-X-X-X-X-X-X-X

temperature sensor:

1 : single
2 : double
PP : with transmitter

sensing element:

Pt 100
Pt 500
Pt 1000
other, please specify

connection head:

B
NA
other, please specify

sheath length (L):

100 mm
160 mm
other, please specify [mm]

length La [mm]:

S : 130 mm (standard)
other, please specify

sensor measuring range or temperature transmitter settings:
please specifymeasuring circuit:

2 : 2-wire
3 : 3-wire
4 : 4-wire

accuracy class:

A
B
1/3B

process connection:

G1/2"
M20x1,5
other, please specify

sheath diameter (∅d2/∅d1):

4/6 : ∅ 4/6 mm
6/8 : ∅ 6/8 mm
7/9 : ∅ 7/9 mm
other, please specify

measuring insert:

BW : non-replaceable
W : replaceable

Ordering example:

SCR104-1-Pt100-B-100-S-W-6/8-G1/2-B-2-250°C

Single RTD temperature sensor, 1xPt100, B tolerance class, 2-wire, measuring insert replaceable, B connection head, process connection: G1/2, sheath diameter d1 ∅6 mm, length L=100 mm, sheath diameter d2 ∅8 mm and length L=130 mm, sensor measuring range 250°C.



SCR105

- temperature range $-50 \div 200^{\circ}\text{C}$
- operating temperature of connection heads max. 100°C
- stainless steel sheath
- MA type connection head
- possibility of mounting a 4...20 mA or 0...10 V temperature transmitter
- outer thermowell with process connection



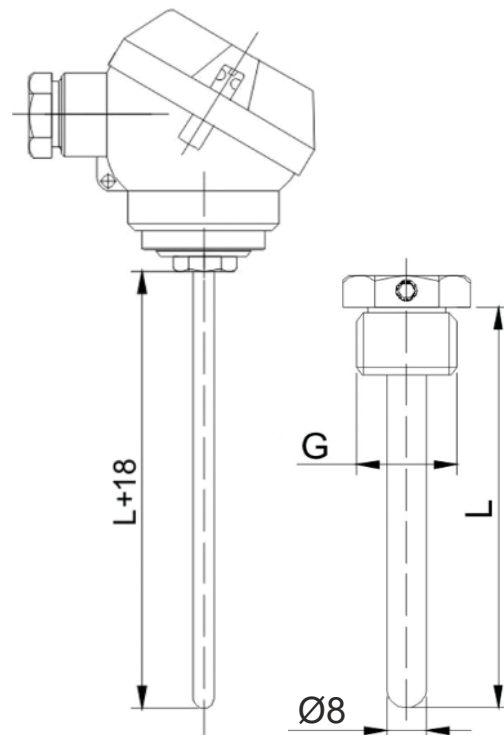
Resistance thermometer **SCR105** consists of a non-exchangeable measuring insert, outer protective tube with threaded process connection (thermowell), and aluminum connection head. Miniature connection head MA type reduces the size of complete sensor construction to make possible installation in confined areas.

Application areas:

- fine chemical industry,
- light energy industry,
- general industrial services.

TECHNICAL DATA

Sensing element	Pt100, Pt500 or Pt1000 (2-, 3- or 4-wire)
Measuring range	$-50 \div 200^{\circ}\text{C}$
Connection head	MA, aluminum, operating temperature $-40 \div 100^{\circ}\text{C}$
Class	A, B or 1/3 B
Sheath	material: stainless steel 1.4541 or other nominal length: 100 mm (standard) or other diameter: 8 mm
Process connection	G1/2", M20x1,5 or other



CONNECTION HEAD



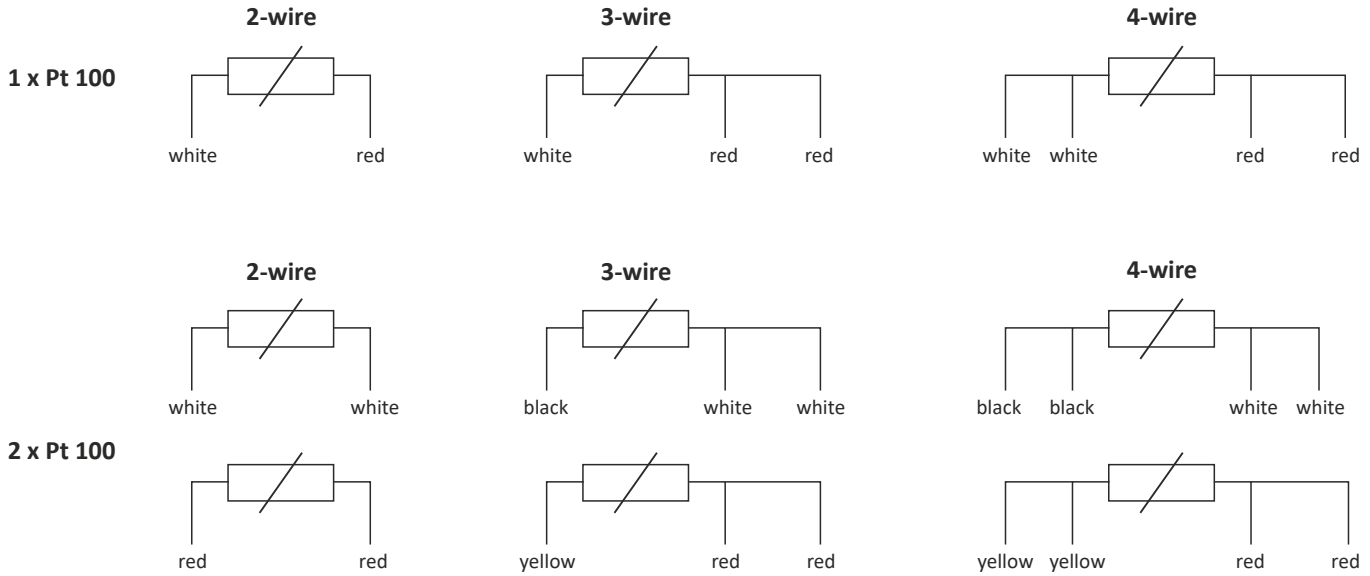
typ MA

RESISTOR TOLERANCE ACC. TO PN-EN 60751

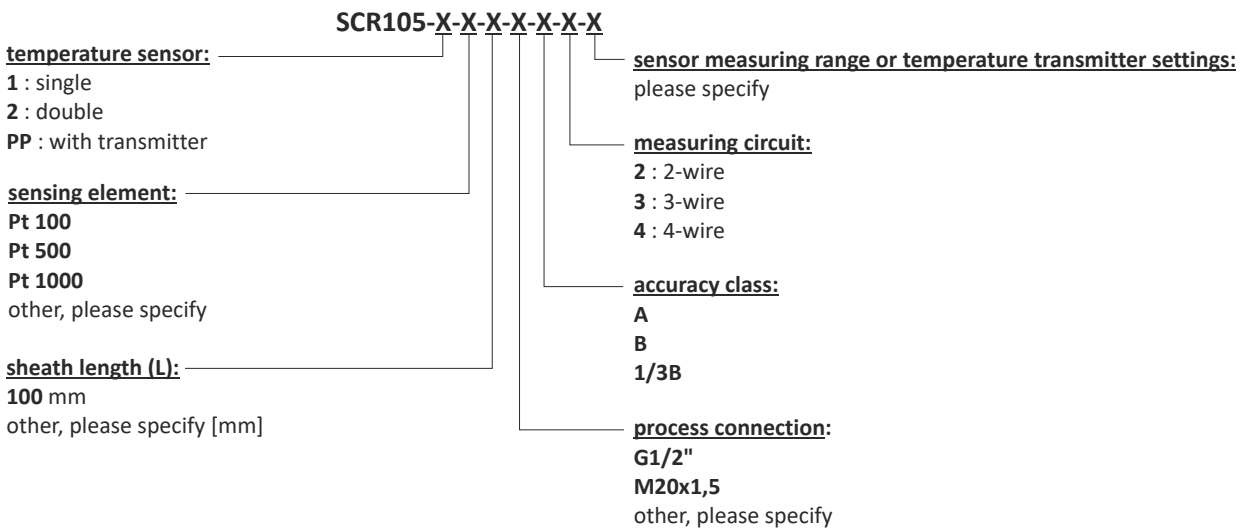
Class	Tolerance [$^{\circ}\text{C}$]
1/3B	$t = 0,10 + 0,002 \times t $
A	$t = 0,15 + 0,002 \times t $
B	$t = 0,30 + 0,005 \times t $



ELECTRICAL CONNECTION



ORDERING



Ordering example:

SCR105-1-Pt100-100-G1/2"-B-2-100°C

Single RTD temperature sensor, 1xPt100, B tolerance class, 2-wire, process connection: G1/2, sheath length L=100 mm, sensor measuring range 100°C.



SCR106

- temperature range $-50 \div 200^{\circ}\text{C}$
- operating temperature of connection heads max. 100°C
- stainless steel sheath
- MA type connection head
- possibility of mounting a 4...20 mA or 0...10 V temperature transmitter
- outer thermowell with process connection



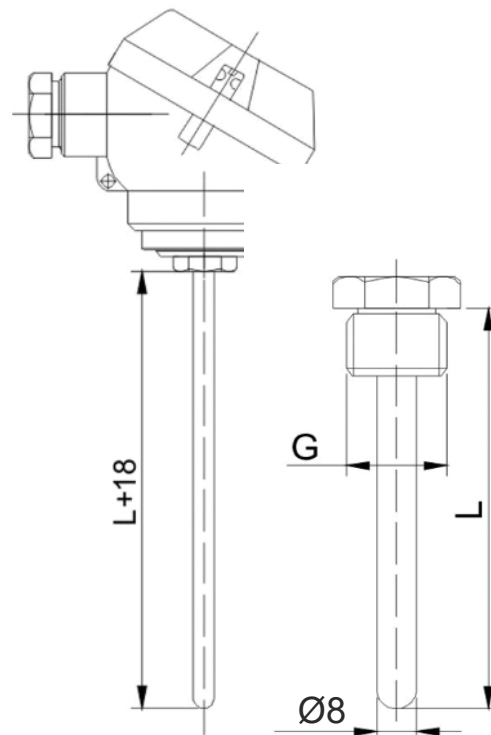
Resistance thermometer **SCR106** consists of a non-exchangeable measuring insert, outer protective tube with threaded process connection (thermowell), and aluminum connection head. Miniature connection head MA type reduces the size of complete sensor construction to make possible installation in confined areas.

Application areas:

- fine chemical industry,
- light energy industry,
- general industrial services.

TECHNICAL DATA

Sensing element	Pt100, Pt500 or Pt1000 (2-, 3- or 4-wire)
Measuring range	$-50 \div 200^{\circ}\text{C}$
Connection head	MA, aluminum, operating temperature $-40 \div 100^{\circ}\text{C}$
Class	A, B or 1/3 B
Sheath	material: stainless steel 1.4541 or other nominal length: 100 mm (standard) or other diameter: 8 mm
Process connection	G1/2", M20x1,5 or other



CONNECTION HEAD

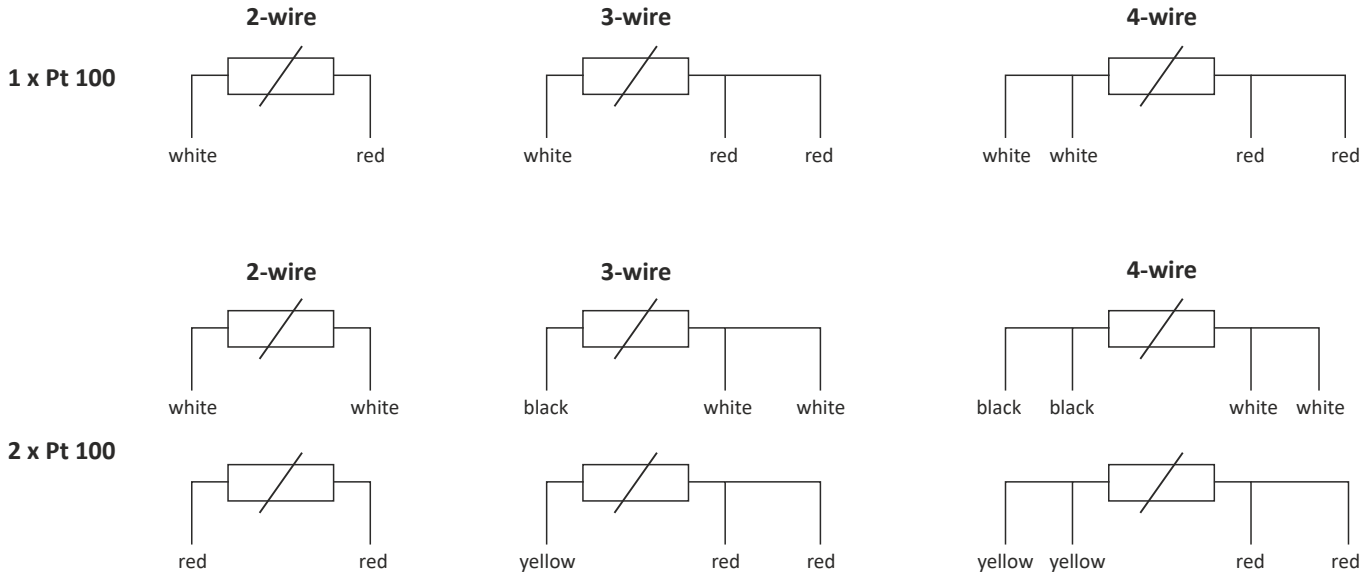


typ MA

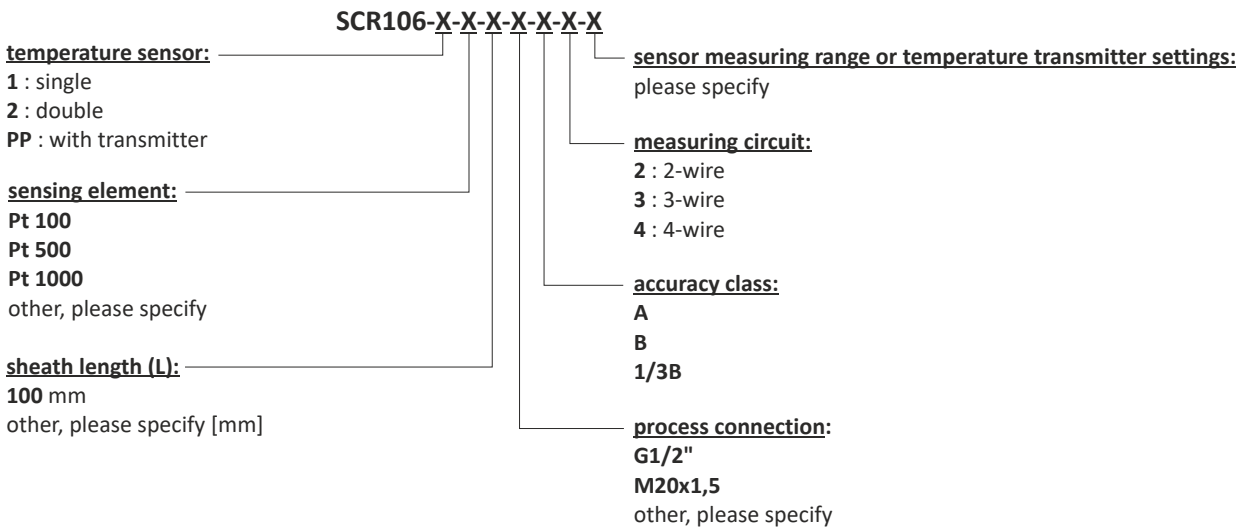
RESISTOR TOLERANCE ACC. TO PN-EN 60751

Class	Tolerance [$^{\circ}\text{C}$]
1/3B	$t = 0,10 + 0,002 \times t $
A	$t = 0,15 + 0,002 \times t $
B	$t = 0,30 + 0,005 \times t $

ELECTRICAL CONNECTION



ORDERING



Ordering example:
SCR106-1-Pt100-100-G1/2"-B-2-100°C
 Single RTD temperature sensor, 1xPt100, B tolerance class, 2-wire, process connection: G1/2, sheath length L=100 mm, sensor measuring range 100°C.



SCR107

- temperature range $-50 \div 200^{\circ}\text{C}$
- operating temperature of connection heads max. 100°C
- stainless steel sheath
- MA type connection head
- possibility of mounting a 4...20 mA or 0...10 V temperature transmitter
- outer thermowell with process connection



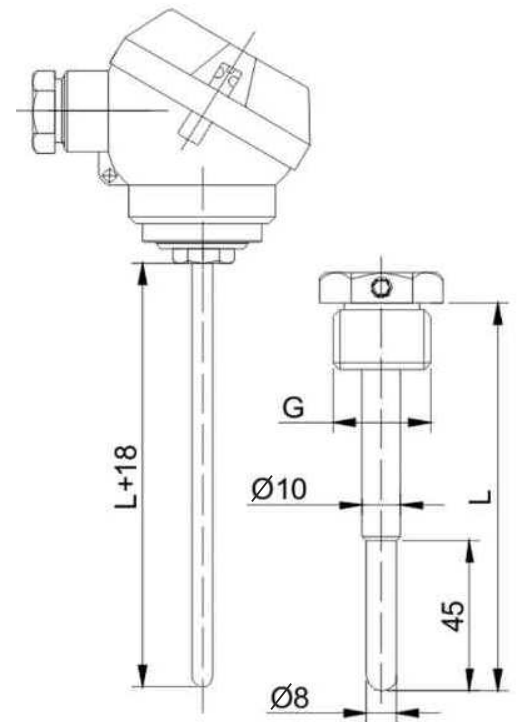
Resistance thermometer **SCR107** consists of a non-exchangeable measuring insert, outer protective tube with threaded process connection (thermowell), and aluminum connection head. Miniature connection head MA type reduces the size of complete sensor construction to make possible installation in confined areas.

Application areas:

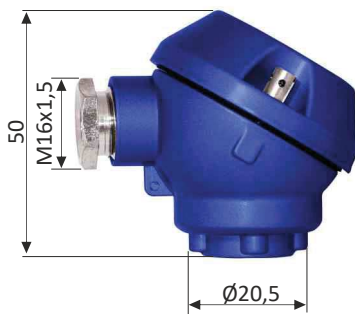
- fine chemical industry,
- light energy industry,
- general industrial services.

TECHNICAL DATA

Sensing element	Pt100, Pt500 or Pt1000 (2-, 3- or 4-wire)
Measuring range	$-50 \div 200^{\circ}\text{C}$
Connection head	MA, aluminum, operating temperature $-40 \div 100^{\circ}\text{C}$
Class	A, B or 1/3 B
Sheath	material: stainless steel 1.4541 or other nominal length: 100 mm (standard) or other diameter: 8 / 10 mm
Process connection	G1/2", M20x1,5 or other



CONNECTION HEAD

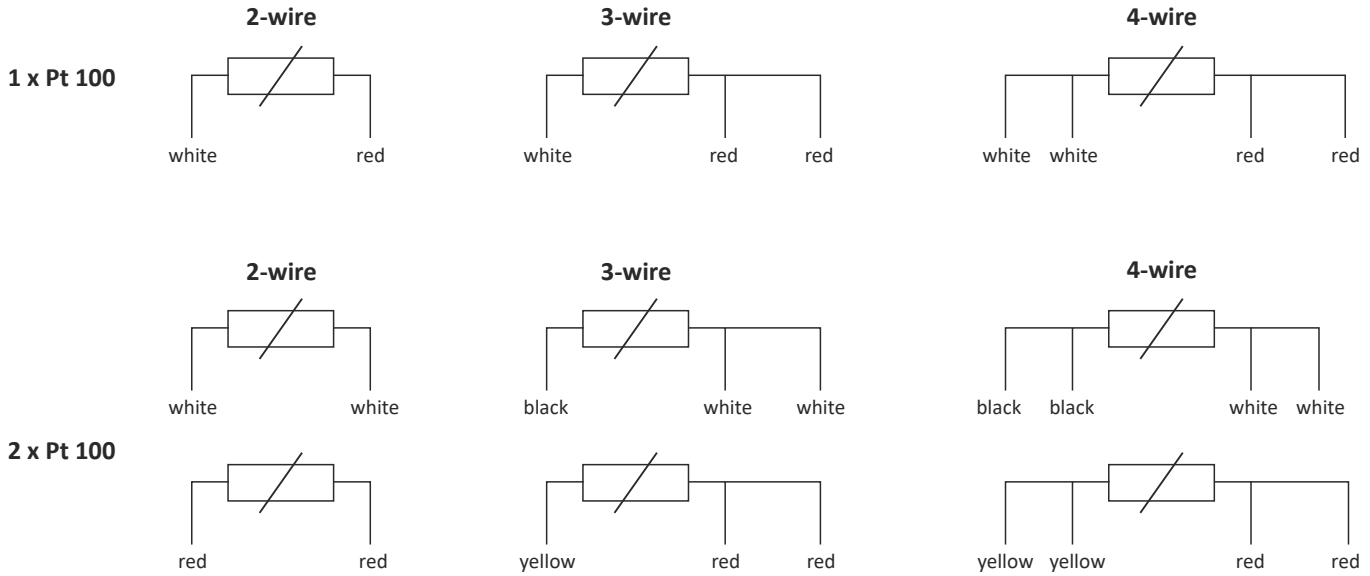


typ MA

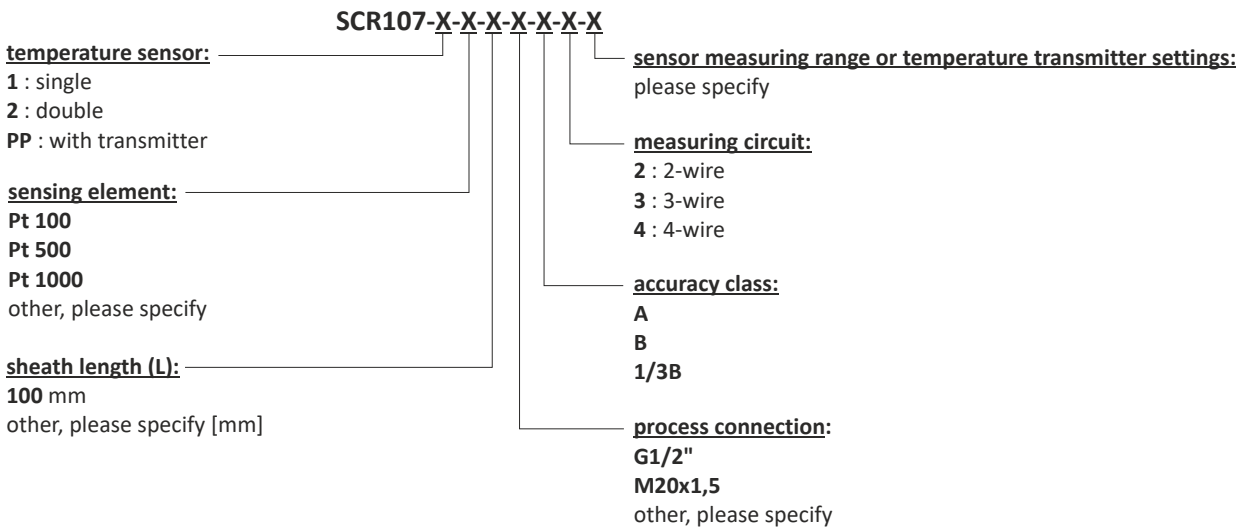
RESISTOR TOLERANCE ACC. TO PN-EN 60751

Class	Tolerance [$^{\circ}\text{C}$]
1/3B	$t = 0,10 + 0,002 \times t $
A	$t = 0,15 + 0,002 \times t $
B	$t = 0,30 + 0,005 \times t $

ELECTRICAL CONNECTION



ORDERING



Ordering example:
SCR107-1-Pt100-100-G1/2"-B-2-100°C
 Single RTD temperature sensor, 1xPt100, B tolerance class, 2-wire, process connection: G1/2, sheath length L=100 mm, sensor measuring range 100°C.





SCR108

- mineral insulated resistance sensor
- connection head
- short response time for temperature change
- small dimensions for operation in hard-to-reach places
- resistance to vibrations and the possibility of bending
- thermowell made of acid-resistant steel

Resistance thermometers **SCR108** are made of metal-sheathed cables with internal wires (Cu or Ni). They are insulated from each other, with the outer sheath with magnesium oxide (MgO) powder. It provides the sensor with high vibration resistance, flexibility, as well as temperature resistance, and good electrical insulation. These sensors are designed for direct temperature measuring in places with difficult access. There are also used in every application, where it is required to use flexible and small diameter probe, with high resistance to shock, vibration, and short response time to temperature changes. Due to tight pressing of the insulating layer (MgO) and the appropriate structure of the inner wires and the sheath, the sensors can be bent with a minimal the radius of curvature of three times the outer diameter of the sheath.

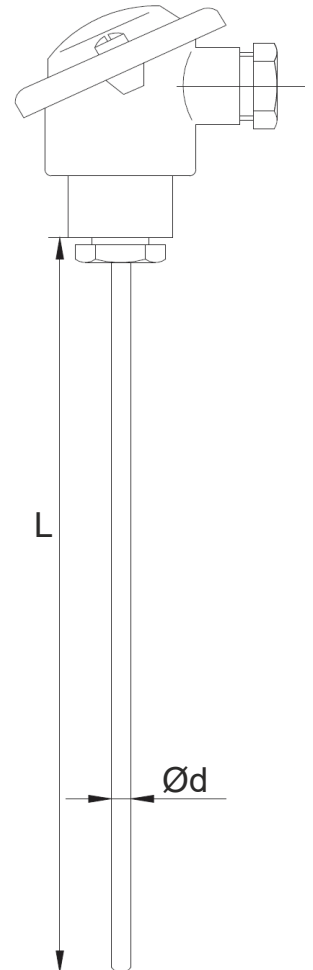
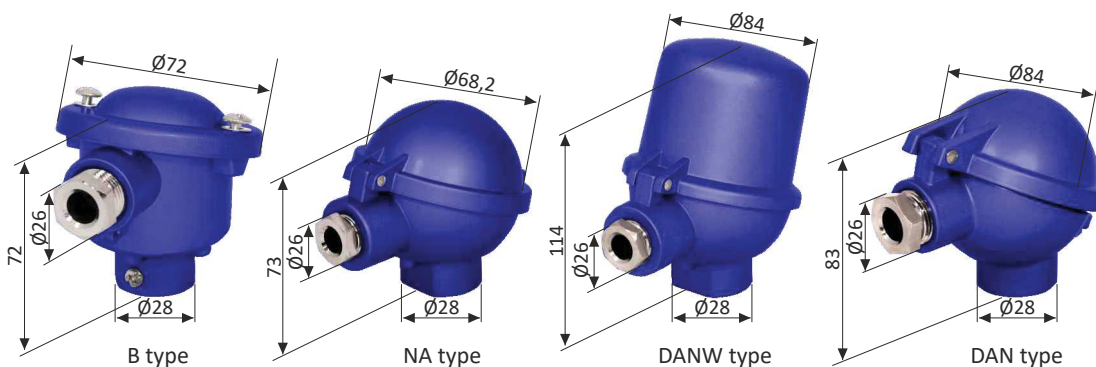
Application areas:

- general machinery and equipment design,
- measuring temperature of liquids, gases and solid bodies,
- all branches of industry,
- measurement laboratories.

TECHNICAL DATA

Sensing element	Pt100, Pt500, Pt1000, Ni100 (2-, 3- or 4-wire)
Measuring range	-50 ÷ 550°C
Connection head	B, NA, MA, DAN or other, operating temperature -40 ÷ 150°C
Class	A or B
Thermowell	material: stainless steel 1.4541 or other any nominal length (specified when ordering) diameter: 1,5 ÷ 8 mm

CONNECTION HEAD TYPES

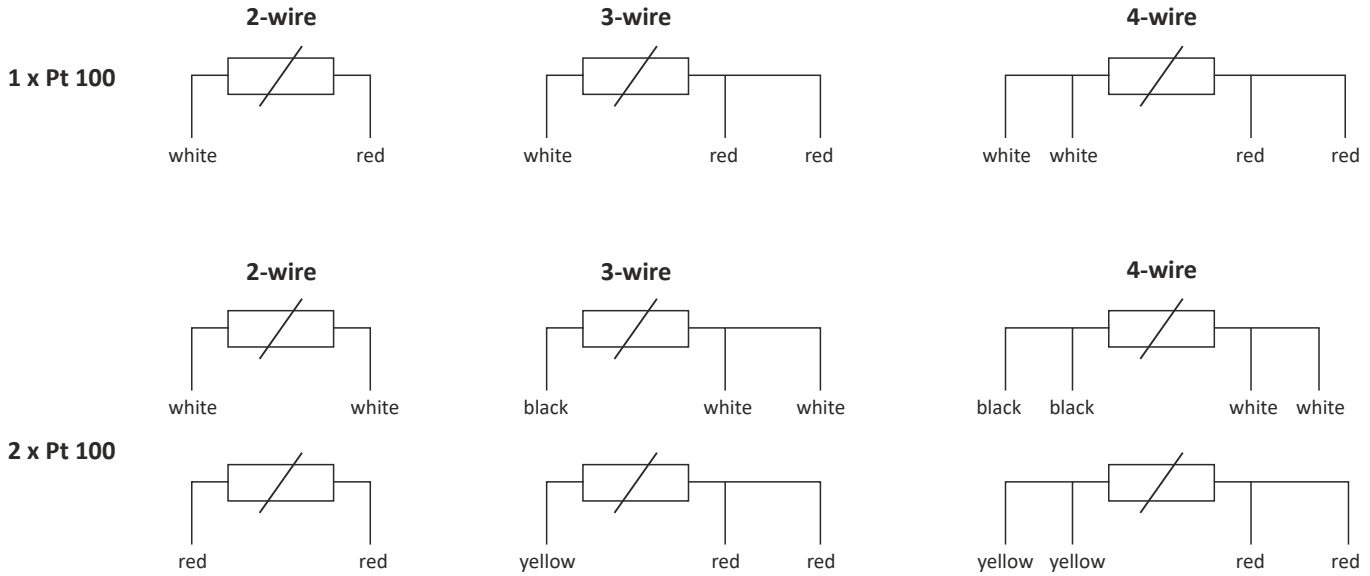


RESISTOR TOLERANCE ACC. TO PN-EN 60751

Class	Tolerance [°C]
A	$t = 0,15 + 0,002 \times t $
B	$t = 0,30 + 0,005 \times t $

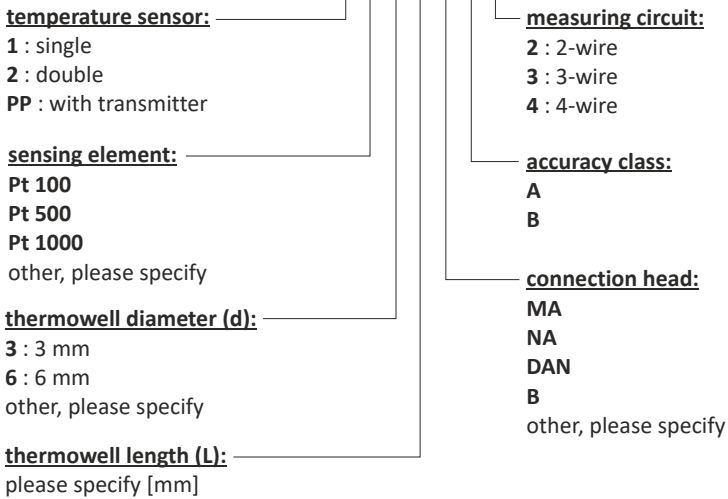


ELECTRICAL CONNECTION



ORDERING

SCR108-X-X-X-X-X-X



Ordering example:

SCR108-1-Pt100-3-500-B-B-2

Mineral insulated RTD temperature sensor, 1xPt100, sheath diameter 3.0 mm, B tolerance class, 2-wire measuring circuit, length L=500 mm, connection head B type



SCR200



- temperature range $-50 \div 400^{\circ}\text{C}$ (depending on the cable used)
- stainless steel sheath
- minimum sheath length: 15 mm
- any maximum sheath length
- thermowell spring protection against excessive cable bending

Resistance thermometers **SCR200** are designed for fitting directly into a drilled hole or process. Consist of a thermometric resistor, protection tube made out of stainless steel, and connection cable.

Application areas:

- fine chemical industry,
- light energy industry,
- general industrial services.

CONNECTION CABLES

Diagram	Insulation design	Temperature range	Code
	- double fiberglass - stainless steel - cond: nickel plated copper	$-50 \div 400^{\circ}\text{C}$	WS
	- PVC - cond: nickel plated copper	105°C max.	PVC
	- teflon - stainless steel - teflon - cond: nickel plated copper	260°C max.	TOT
	- teflon - stainless steel - cond: nickel plated copper	260°C max.	TO
	- silicon - stainless steel - silicon - cond: nickel plated copper	180°C max.	SOS
	- silicon - silicon - cond: nickel plated copper	250°C max.	SS
	- teflon - teflon - cond: nickel plated copper	260°C max.	TT

ORDERING

SCR200-X-X-X-X-X-X-X-X

temperature sensor:

- 1 : single
- 2 : double

sensing element:

- Pt 100
- Pt 500
- Pt 1000
- other, please specify

construction:

- P : straight
- K : angular

sheath diameter (Ød):

- 4 mm
- 5 mm
- 6 mm
- other, please specify

sheath length (L):

- 50 mm (standard)
- 100 mm
- other, please specify [mm]

measuring circuit:

- 2 : 2-wire
- 3 : 3-wire
- 4 : 4-wire

accuracy class:

- A
- B
- 1/3B

connection cable length:

- 1500 : 1,5 linear meter
- other, please specify [mm]

insulation types of connection cable:

- PVC : PVC / PVC (110°C max.)
- TS : teflon / silicon (180°C max.)
- SS : silicon / silicon (250°C max.)
- WS : double fiberglass / stainless steel (400°C max.)

Ordering example:

SCR200-1-Pt100-6-50-WS-1500-B-2

Single RTD temperature sensor 1xPt100, B tolerance class, 2-wire, thermowell diameter 6 mm and length 50 mm, fiberglass insulation, cable length 1500 mm



SCR201



- temperature range $-50 \div 400^{\circ}\text{C}$ (depending on the cable used)
- stainless steel sheath
- minimum sheath length: 15 mm, minimum sheath diameter: 2 mm
- any maximum sheath length
- thermowell spring protection against excessive cable bending

Resistance thermometers **SCR201** are designed for fitting directly into a drilled hole or process. Consist of a thermometric resistor, a protection tube made out of stainless steel, and a connection cable. Insertion length, thermowell diameter, process connection thread, number of sensors, accuracy, cable length, and insulation can be selected individually for the respective application.

Application areas:

- fine chemical industry,
- light energy industry,
- general industrial services.

CONNECTION CABLES

Diagram	Insulation design	Temperature range	Code
	- double fibreglass - stainless steel - cond: nickel plated copper	$-50 \div 400^{\circ}\text{C}$	WS
	- PVC - cond: nickel plated copper	105°C max.	PVC
	- teflon - stainless steel - teflon - cond: nickel plated copper	260°C max.	TOT
	- teflon - stainless steel - cond: nickel plated copper	260°C max.	TO
	- silicon - stainless steel - silicon - cond: nickel plated copper	180°C max.	SOS
	- silicon - silicon - cond: nickel plated copper	250°C max.	SS
	- teflon - teflon - cond: nickel plated copper	260°C max.	TT

ORDERING

SCR201-X-X-X-X-X-X-X-X-X-X

temperature sensor:

- 1 : single
- 2 : double

sensing element:

- Pt 100
- Pt 500
- Pt 1000
- other, please specify

sheath diameter (Ød):

- 4 mm
- 5 mm
- other, please specify

sheath length (L):

- 50 mm (standard)
- 100 mm
- other, please specify [mm]

process connection:

- G1/2"
- M10x1
- M14x1,5
- other, please specify

measuring circuit:

- 2 : 2-wire
- 3 : 3-wire
- 4 : 4-wire

accuracy class:

- A
- B
- 1/3B

connection cable length:

- 1500 : 1,5 linear meter
- other, please specify [mm]

insulation types of connection cable:

- PVC : PVC / PVC (110°C max.)
- TS : teflon / silicon (180°C max.)
- SS : silicon / silicon (250°C max.)
- WS : double fibreglass / stainless steel (400°C max.)

Ordering example:

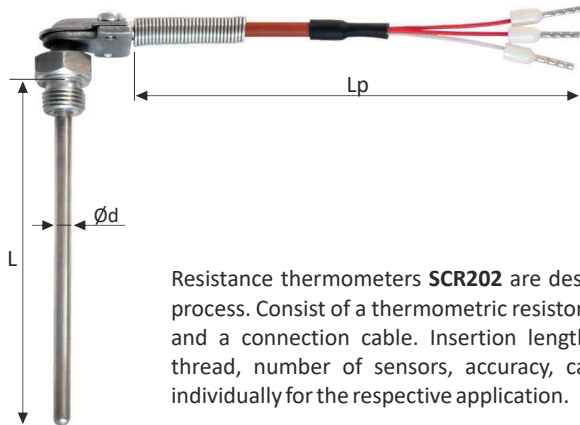
SCR201-1-Pt100-5-50-M14x1,5-WS-1500-B-2

Single RTD temperature sensor, 1xPt100, class B, 2-wire, process connection M14x1,5 mm, thermowell diameter 5 mm and length 50 mm, fibreglass insulation, cable length 1500 mm



SCR202

- temperature range $-50 \div 400^{\circ}\text{C}$ (depending on the cable used)
- stainless steel sheath
- minimum sheath length: 15 mm, minimum sheath diameter: 2 mm
- any maximum sheath length
- thermowell spring protection against excessive cable bending



Resistance thermometers **SCR202** are designed for fitting directly into a drilled hole or process. Consist of a thermometric resistor, a protection tube made out of stainless steel, and a connection cable. Insertion length, thermowell diameter, process connection thread, number of sensors, accuracy, cable length, and insulation can be selected individually for the respective application.

Application areas:

- fine chemical industry,
- light energy industry,
- general industrial services.

CONNECTION CABLES

Diagram	Insulation design	Temperature range	Code
	- double fiberglass - stainless steel - cond: nickel plated copper	$-50 \div 400^{\circ}\text{C}$	WS
	- PVC - cond: nickel plated copper	105°C max.	PVC
	- teflon - stainless steel - teflon - cond: nickel plated copper	260°C max.	TOT
	- teflon - stainless steel - cond: nickel plated copper	260°C max.	TO
	- silicon - stainless steel - silicon - cond: nickel plated copper	180°C max.	SOS
	- silicon - silicon - cond: nickel plated copper	250°C max.	SS
	- teflon - teflon - cond: nickel plated copper	260°C max.	TT

ORDERING

SCR202-X-X-X-X-X-X-X-X

temperature sensor:

- 1 : single
- 2 : double

sensing element:

- Pt 100
- Pt 500
- Pt 1000
- other, please specify

sheath diameter (Ød):

- 4 mm
- 5 mm
- other, please specify

sheath length (L):

- 50 mm (standard)
- 100 mm
- other, please specify [mm]

process connection:

- G1/2"
- M10x1
- M14x1,5
- other, please specify

measuring circuit:

- 2 : 2-wire
- 3 : 3-wire
- 4 : 4-wire

accuracy class:

- A
- B
- 1/3B

connection cable length:

- 1500 : 1,5 linear meter
- other, please specify [mm]

insulation types of connection cable:

- PVC : PVC / PVC (110°C max.)
- TS : teflon / silicon (180°C max.)
- SS : silicon / silicon (250°C max.)
- WS : double fiberglass / stainless steel (400°C max.)

Ordering example:

SCR202-1-Pt100-4-100-M14x1,5-WS-1500-B-2

Single RTD temperature sensor, 1xPt100, class B, 2-wire, process connection M14x1,5 mm, thermowell diameter 4 mm and length 100 mm, fiberglass insulation, cable length 1500 mm



SCR203



- temperature range $-50 \div 400^{\circ}\text{C}$ (depending on the cable used)
- stainless steel sheath
- assembly screw hole in thermowell allows to mount sensor
- thermowell spring protection against excessive cable bending

Resistance thermometers **SCR203** are designed for fitting directly into a drilled hole or process. Consist of a thermometric resistor, a protection tube made out of stainless steel, and a connection cable. Insertion length, thermowell diameter, process connection thread, number of sensors, accuracy, cable length, and insulation can be selected individually for the respective application.

Application areas:

- fine chemical industry,
- light energy industry,
- general industrial services.

CONNECTION CABLES

Diagram	Insulation design	Temperature range	Code
	- double fiberglass - stainless steel - cond: nickel plated copper	$-50 \div 400^{\circ}\text{C}$	WS
	- PVC - cond: nickel plated copper	105°C max.	PVC
	- teflon - stainless steel - teflon - cond: nickel plated copper	260°C max.	TOT
	- teflon - stainless steel - cond: nickel plated copper	260°C max.	TO
	- silicon - stainless steel - silicon - cond: nickel plated copper	180°C max.	SOS
	- silicon - silicon - cond: nickel plated copper	250°C max.	SS
	- teflon - teflon - cond: nickel plated copper	260°C max.	TT



Sheath diameter	Mounting hole diameter (d1)	Width (d)
Ø 4 mm	Ø 3,2 mm	6 mm
Ø 6 mm	Ø 4,2 mm	8 mm
Ø 6 mm	Ø 5,2 mm	10 mm

ORDERING

SCR203-X-X-X-X-X-X-X

temperature sensor:

- 1 : single
- 2 : double

sensing element:

- Pt 100
- Pt 500
- Pt 1000
- other, please specify

mounting hole diameter (Ød1):

- Ø3,2 mm
- Ø4,2 mm
- other, please specify

insulation types of connection cable:

- PVC : PVC / PVC (110°C max.)
- TS : teflon / silicon (180°C max.)
- SS : silicon / silicon (250°C max.)
- WS : double fiberglass / stainless steel (400°C max.)

measuring circuit:

- 2 : 2-wire
- 3 : 3-wire
- 4 : 4-wire

accuracy class:

- A
- B
- 1/3B

connection cable length:

- 1500 : 1,5 linear meter
- other, please specify [mm]

Ordering example:

SCR203-1-Pt100-3,2-WS-1500-B-2

Single RTD temperature sensor, 1xPt100, B tolerance class, 2-wire, mounting hole diameter 3,2 mm, fiberglass insulation, cable length 1500 mm



SCR204



- temperature range $-50 \div 400^{\circ}\text{C}$ (depending on the cable used)
- stainless steel sheath
- standard diameter and length process connection with table
- thermowell spring protection against excessive cable bending

Resistance thermometers **SCR204** are designed for screw-fitting directly into a process or machine parts. Consist of a thermometric resistor, threaded process connection made out of stainless steel, and connection cable. Process connection thread, number of sensors, accuracy, cable length, and insulation can be selected individually for the respective application.

Application areas:

- fine chemical industry,
- light energy industry,
- general industrial services.

CONNECTION CABLES

Diagram	Insulation design	Temperature range	Code
	- double fiberglass - stainless steel - cond: nickel plated copper	$-50 \div 400^{\circ}\text{C}$	WS
	- PVC - cond: nickel plated copper	105°C max.	PVC
	- teflon - stainless steel - teflon - cond: nickel plated copper	260°C max.	TOT
	- teflon - stainless steel - cond: nickel plated copper	260°C max.	TO
	- silicon - stainless steel - silicon - cond: nickel plated copper	180°C max.	SOS
	- silicon - silicon - cond: nickel plated copper	250°C max.	SS
	- teflon - teflon - cond: nickel plated copper	260°C max.	TT



Thread (G)	Length (L1)
M8x1	10 mm
M10x1	10 mm
M12x1	10 mm
M16x1,5	15 mm
M20x1,5	20 mm
G1/8"	10 mm
G1/4"	12 mm
G1/2"	20 mm
1/8 NPT	11 mm
1/4 NPT	14 mm
1/2 NPT	18 mm

ORDERING

SCR204-X-X-X-X-X-X-X-X

temperature sensor:

- 1 : single
- 2 : double

sensing element:

- Pt 100
- Pt 500
- Pt 1000
- other, please specify

process connection:

- G1/2"
- M10x1
- M20x1,5
- other, please specify

process connection length (L1):

- standard (according to the table)
- other, please specify [mm]

measuring circuit:

- 2 : 2-wire
- 3 : 3-wire
- 4 : 4-wire

accuracy class:

- A
- B
- 1/3B

connection cable length:

- 1500 : 1,5 linear meter
- other, please specify [mm]

insulation types of connection cable:

- PVC : PVC / PVC (110°C max.)
- TS : teflon / silicon (180°C max.)
- SS : silicon / silicon (250°C max.)
- WS : double fiberglass / stainless steel (400°C max.)

Ordering example:

SCR204-1-Pt100-M10x1-WS-10-1500-B-2

Single RTD temperature sensor, 1xPt100, B tolerance class, 2-wire measuring circuit, threaded thermowell connection M10x1 with standard length 10 mm, fiberglass insulation, cable length 1500 mm



SCR205



- temperature range $-50 \div 400^{\circ}\text{C}$ (depending on the cable used)
- sheath made of aluminum, brass or stainless steel
- thermowell spring protection against excessive cable bending

Resistance thermometers **SCR205** are designed for assembling directly onto machine parts or other construction elements. Consist of a thermoresistor, protection tube made out of stainless steel, aluminum, or brass, and connection cable.

Application areas:

- fine chemical industry,
- light energy industry,
- general industrial services.

CONNECTION CABLES

Diagram	Insulation design	Temperature range	Code
	- double fiberglass - stainless steel - cond: nickel plated copper	$-50 \div 400^{\circ}\text{C}$	WS
	- PVC - cond: nickel plated copper	105°C max.	PVC
	- teflon - stainless steel - teflon - cond: nickel plated copper	260°C max.	TOT
	- teflon - stainless steel - cond: nickel plated copper	260°C max.	TO
	- silicon - stainless steel - silicon - cond: nickel plated copper	180°C max.	SOS
	- silicon - silicon - cond: nickel plated copper	250°C max.	SS
	- teflon - teflon - cond: nickel plated copper	260°C max.	TT



ORDERING

SCR205-X-X-X-X-X-X-X-X

temperature sensor:

- 1 : single
- 2 : double

sensing element:

- Pt 100
- Pt 500
- Pt 1000
- other, please specify

sheath material:

- A : aluminum (standard)
- S : stainless steel
- M : brass

sheath length (L):

- 50 mm (standard)
- other, please specify [mm]

measuring circuit:

- 2 : 2-wire
- 3 : 3-wire
- 4 : 4-wire

accuracy class:

- A
- B
- 1/3B

connection cable length:

- 1500 : 1,5 linear meter
- other, please specify [mm]

insulation types of connection cable:

- PVC : PVC / PVC (110°C max.)
- TS : teflon / silicon (180°C max.)
- SS : silicon / silicon (250°C max.)
- WS : double fibreglass / stainless steel (400°C max.)

Ordering example:

SCR205-1-Pt100-A-50-WS-1500-B-2

Single RTD temperature sensor, 1xPt100, B tolerance class, 2-wire measuring circuit, aluminum thermowell with standard length 50 mm, fibreglass insulation, connection cable length 1500 mm



SCR206



- temperature range $-50 \div 400^{\circ}\text{C}$ (depending on the cable used)
- stainless steel or brass sheath
- mounting through the hole M4
- thermowell spring protection against excessive cable bending

Resistance thermometers **SCR206** are designed for assembling directly onto machine parts or other construction elements. Consist of a thermoresistor, protection tube made out of stainless steel, aluminum, or brass, and connection cable.

Application areas:

- fine chemical industry,
- light energy industry,
- general industrial services.

CONNECTION CABLES

Diagram	Insulation design	Temperature range	Code
	- double fiberglass - stainless steel - cond: nickel plated copper	$-50 \div 400^{\circ}\text{C}$	WS
	- PVC - cond: nickel plated copper	105°C max.	PVC
	- teflon - stainless steel - teflon - cond: nickel plated copper	260°C max.	TOT
	- teflon - stainless steel - cond: nickel plated copper	260°C max.	TO
	- silicon - stainless steel - silicon - cond: nickel plated copper	180°C max.	SOS
	- silicon - silicon - cond: nickel plated copper	250°C max.	SS
	- teflon - teflon - cond: nickel plated copper	260°C max.	TT



ORDERING

SCR206-X-X-X-X-X-X

temperature sensor:

- 1 : single
- 2 : double

sensing element:

- Pt 100
- Pt 500
- Pt 1000
- other, please specify

sheath material:

- S : stainless steel
- M : brass

insulation types of connection cable:

- PVC : PVC / PVC (110°C max.)
- TS : teflon / silicon (180°C max.)
- SS : silicon / silicon (250°C max.)
- WS : double fiberglass / stainless steel (400°C max.)

measuring circuit:

- 2 : 2-wire
- 3 : 3-wire
- 4 : 4-wire

accuracy class:

- A
- B
- 1/3B

connection cable length:

- 1500 : 1,5 linear meter
- other, please specify [mm]

Ordering example:

SCR206-1-Pt100-M-WS-1500-B-2

Single RTD temperature sensor, 1xPt100, B tolerance class, 2-wire measuring circuit, brass thermowell, fiberglass insulation, connection cable length 1500 mm



SCR207



- temperature range $-50 \div 400^{\circ}\text{C}$ (depending on the cable used)
- stainless steel sheath
- minimum sheath length: 15 mm, minimum sheath diameter: 2 mm
- thermowell spring protection against excessive cable bending

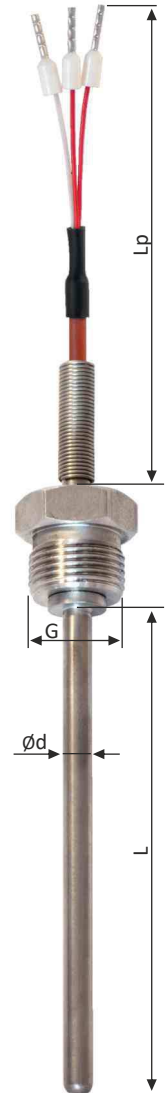
Resistance thermometers **SCR207** are designed for assembling directly onto machine parts or other construction elements. Consist of a thermoresistor, protection tube made out of stainless steel, aluminum, or brass, and connection cable.

Application areas:

- fine chemical industry,
- light energy industry,
- general industrial services.

CONNECTION CABLES

Diagram	Insulation design	Temperature range	Code
	- double fiberglass - stainless steel - cond: nickel plated copper	$-50 \div 400^{\circ}\text{C}$	WS
	- PVC - cond: nickel plated copper	105°C max.	PVC
	- teflon - stainless steel - teflon - cond: nickel plated copper	260°C max.	TOT
	- teflon - stainless steel - cond: nickel plated copper	260°C max.	TO
	- silicon - stainless steel - silicon - cond: nickel plated copper	180°C max.	SOS
	- silicon - silicon - cond: nickel plated copper	250°C max.	SS
	- teflon - teflon - cond: nickel plated copper	260°C max.	TT



ORDERING

SCR207-X-X-X-X-X-X-X-X

temperature sensor:

- 1 : single
- 2 : double

sensing element:

- Pt 100
- Pt 500
- Pt 1000
- other, please specify

sheath diameter (Ød):

- 4 mm
- 5 mm
- other, please specify

sheath length (L):

- 50 mm (standard)
- 100 mm
- other, please specify [mm]

process connection:

- M12x1 (standard)
- G1/2"
- M14x1,5
- other, please specify

measuring circuit:

- 2 : 2-wire
- 3 : 3-wire
- 4 : 4-wire

accuracy class:

- A
- B
- 1/3B

connection cable length:

- 1500 : 1,5 linear meter
- other, please specify [mm]

insulation types of connection cable:

- PVC : PVC / PVC (110°C max.)
- TS : teflon / silicon (180°C max.)
- SS : silicon / silicon (250°C max.)
- WS : double fiberglass / stainless steel (400°C max.)

Ordering example:

SCR207-1-Pt100-6-50-M14x1,5-WS-1500-B-2

Single RTD temperature sensor, 1xPt100, B tolerance class, 2-wire measuring circuit, process connection M14x1,5, thermowell diameter $\varnothing 6$ mm, length L=50 mm, fiberglass insulation, connection cable length 1500 mm



SCR208



- temperature range $-50 \div 400^{\circ}\text{C}$ (depending on the cable used)
- stainless steel sheath
- adjustable spring force of sensor
- different types of sheath
- bayonet of any length

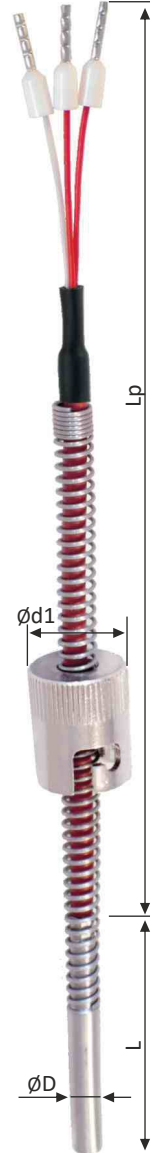
Resistance thermometers **SCR208** are designed for screw-fitting directly into the machine body or parts. The adjustable spring force of the sensor mounting provides optimum measurement conditions in the environment where vibrations appear. SCR208 sensor consists of a thermometric resistor, protection tube made out of stainless steel, connection cable, adjustable bayonet cap with spring. The sensor can be additionally equipped with a bayonet adaptor.

Application areas:

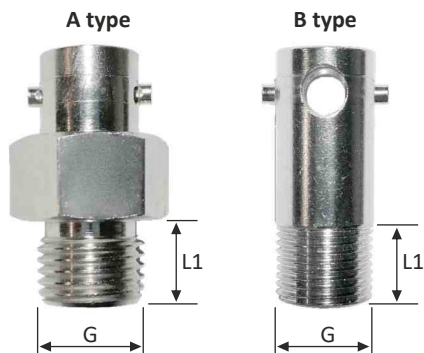
- plastic industry,
- movable and replaceable machine parts.

CONNECTION CABLES

Diagram	Insulation design	Temperature range	Code
	- double fiberglass - stainless steel - cond: nickel plated copper	$-50 \div 400^{\circ}\text{C}$	WS
	- PVC - cond: nickel plated copper	105°C max.	PVC
	- teflon - stainless steel - teflon - cond: nickel plated copper	260°C max.	TOT
	- teflon - stainless steel - cond: nickel plated copper	260°C max.	TO
	- silicon - stainless steel - silicon - cond: nickel plated copper	180°C max.	SOS
	- silicon - silicon - cond: nickel plated copper	250°C max.	SS
	- teflon - teflon - cond: nickel plated copper	260°C max.	TT

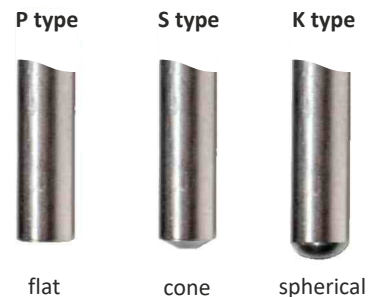


BAYONET TYPES

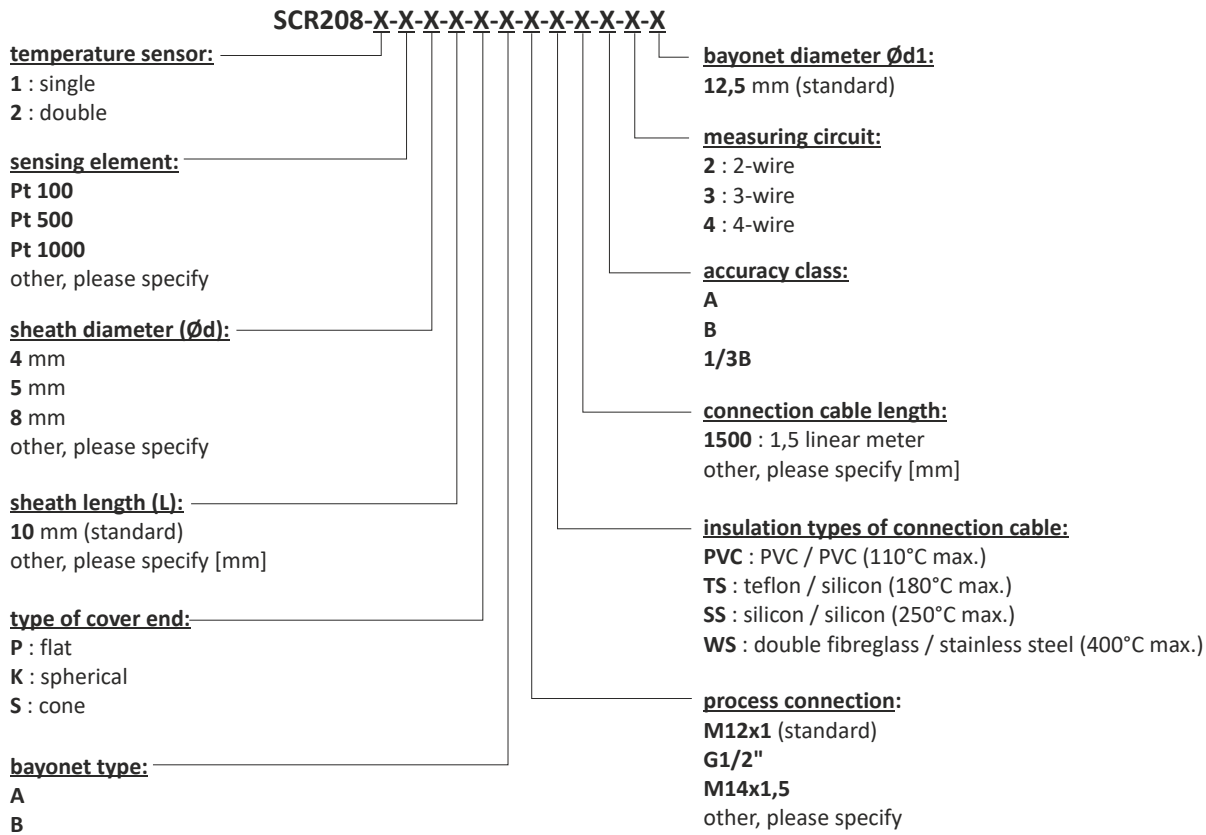


Thread (G)	Length (L1)
M20x1,5	15 mm
G1/2"	15 mm
M14x1,5	10 mm
M10x1	8 mm

COVER END TYPES



ORDERING



Ordering example:

SCR208-1-Pt100-6-10-S-A-M14x1,5-WS-1500-B-2-12,5

Single RTD temperature sensor, 1xPt100, sheath length L=10 mm, connection cable length 1500 mm, fibreglass insulation, B tolerance class, 2-wire measuring circuit, threaded bayonet adaptor connection M14x1,5 mm, bayonet cap diameter Ø12,5 mm.



SCR209



- temperature range $-50 \div 400^{\circ}\text{C}$ (depending on the cable used)
- brass sheath with a specially contoured shape
- hose-clip with sensor

Resistance thermometers **SCR209** are designed for assembling directly onto pipelines or other cylindrical elements. Hose-clip allows mounting sensors on a pipeline system. SCR209 consists of a thermometric resistor, protection tube made out of brass, hose-clip and connection cable.

Application areas:

- temperature measurement of pipelines and other cylindrical elements,
- general industrial services.

CONNECTION CABLES

Diagram	Insulation design	Temperature range	Code
	- double fiberglass - stainless steel - cond: nickel plated copper	$-50 \div 400^{\circ}\text{C}$	WS
	- PVC - cond: nickel plated copper	105°C max.	PVC
	- teflon - stainless steel - teflon - cond: nickel plated copper	260°C max.	TOT
	- teflon - stainless steel - cond: nickel plated copper	260°C max.	TO
	- silicon - stainless steel - silicon - cond: nickel plated copper	180°C max.	SOS
	- silicon - silicon - cond: nickel plated copper	250°C max.	SS
	- teflon - teflon - cond: nickel plated copper	260°C max.	TT



ORDERING

SCR209-X-X-X-X-X-X

temperature sensor:		measuring element diameter:
1 : single		22 mm
2 : double		other, please specify
sensing element:		measuring circuit:
Pt 100		2 : 2-wire
Pt 500		3 : 3-wire
Pt 1000		4 : 4-wire
other, please specify		accuracy class:
insulation types of connection cable:		A
PVC : PVC / PVC (110°C max.)		B
TS : teflon / silicon (180°C max.)		1/3B
SS : silicon / silicon (250°C max.)		connection cable length:
WS : double fiberglass / stainless steel (400°C max.)		1500 : 1,5 linear meter
		other, please specify [mm]

Ordering example:

SCR209-1-Pt100-TS-1500-B-2-22

Single RTD temperature sensor, 1xPt100, B tolerance class, 2-wire measuring circuit, single conductors in teflon insulation, hose-clip match to $\varnothing 22$ mm, connection cable length 1500 mm



SCR210



- temperature range $-10 \div 300^{\circ}\text{C}$ (depending on the cable used)
- various magnetic surfaces
- thermowell spring protection against excessive cable bending

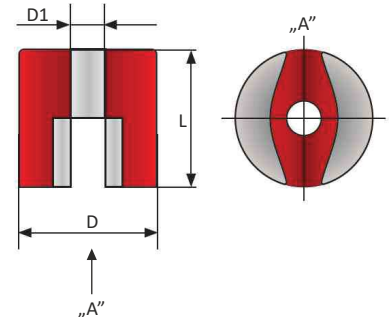
Resistance thermometers **SCR210** are suitable for temperature measurement on the ferrous surface up to a maximum of 450°C . SCR210 sensor consists of thermometric resistor, magnetic surface, and connection cable.

Application areas:

- temperature measurement of ferrous material,
- general industrial services.

CONNECTION CABLES

Diagram	Insulation design	Temperature range	Code
	- double fiberglass - stainless steel - cond: nickel plated copper	$-50 \div 400^{\circ}\text{C}$	WS
	- PVC - cond: nickel plated copper	105°C max.	PVC
	- teflon - stainless steel - teflon - cond: nickel plated copper	260°C max.	TOT
	- teflon - stainless steel - cond: nickel plated copper	260°C max.	TO
	- silicon - stainless steel - silicon - cond: nickel plated copper	180°C max.	SOS
	- silicon - silicon - cond: nickel plated copper	250°C max.	SS
	- teflon - teflon - cond: nickel plated copper	260°C max.	TT



ORDERING

SCR210-X-X-X-X-X-X

- temperature sensor:**
 - 1 : single
 - 2 : double
- sensing element:**
 - Pt 100
 - Pt 500
 - Pt 1000
 - other, please specify
- magnetic surface (with table):**
 - M1
 - M2
 - M3
 - M4
- measuring circuit:**
 - 2 : 2-wire
 - 3 : 3-wire
 - 4 : 4-wire
- accuracy class:**
 - A
 - B
 - 1/3B
- connection cable length:**
 - 1500 : 1,5 linear meter
 - other, please specify [mm]
- insulation types of connection cable:**
 - T : single cond teflon (260°C max.)
 - WS1 : single cond fiberglass (400°C max.)
 - other, please specify

Ordering example:

SCR210-1-Pt100-M1-T-1500-B-2

Single RTD temperature sensor, 1xPt100, B tolerance class, 2-wire measuring circuit, magnet type M1, single conductors in teflon insulation, connection cable length 1500 mm

MAGNETIC SURFACE

Magnetic surface	Diameter D	Diameter D1	Length L	Adhesion force
M1	$\varnothing 13 \text{ mm}$	$\varnothing 4,2 \text{ mm}$	10 mm	7 [N]
M2	$\varnothing 19 \text{ mm}$	$\varnothing 5,4 \text{ mm}$	13 mm	19 [N]
M3	$\varnothing 25 \text{ mm}$	$\varnothing 5,4 \text{ mm}$	16 mm	29 [N]
M4	$\varnothing 32 \text{ mm}$	$\varnothing 7 \text{ mm}$	25 mm	66 [N]



SCR211



- temperature range $-50 \div 400^{\circ}\text{C}$ (depending on the cable used)
- stainless steel sheath
- minimum sheath diameter: 3 mm
- any length of the sheath
- stainless steel grooved handle
- spring protection against excessive cable bending
- sensor connection standard or mini plug

Resistance thermometers **SCR211** are industrial standard sensors with high accuracy and stability. They are intended for industrial and laboratory applications. Thanks to their design of tight thermowell with a stainless steel handle, they can be used in a dry environment as well as in wet baths. Lead wire can be with the insulated bare ends ready for being assembled to a connector or directly to a measuring device.

Application areas:

- food industry, warehouses,
- general industrial services.

TECHNICAL DATA

Sensing element	Pt100, Pt500, Pt1000 (2-, 3- or 4-wire)
Measuring range	$-60 \div 450^{\circ}\text{C}$ (depending on the cable used)
Process connection	standard or mini plug
Class	A or B
Thermowell	material: stainless steel 1.4541 length: 100 mm (standard) diameter: 3,5 or 4 mm
Cable	type with table, standard length 1500 mm or other according to order

CONNECTION CABLES

Diagram	Insulation design	Temperature range	Code
	- double fiberglass - stainless steel - cond: nickel plated copper	$-50 \div 400^{\circ}\text{C}$	WS
	- PVC - cond: nickel plated copper	105°C max.	PVC
	- teflon - stainless steel - teflon - cond: nickel plated copper	260°C max.	TOT
	- teflon - stainless steel - cond: nickel plated copper	260°C max.	TO
	- silicon - stainless steel - silicon - cond: nickel plated copper	180°C max.	SOS
	- silicon - silicon - cond: nickel plated copper	250°C max.	SS
	- teflon - teflon - cond: nickel plated copper	260°C max.	TT



OPTIONAL EQUIPMENT



„mini” plug



„standard” plug

ORDERING

SCR211-X-X-X-X-X-X-X-X-X-X

temperature sensor:

1 : single
2 : double
PP : with transmitter

sensing element:

Pt 100
Pt 500
Pt 1000
other, please specify

sheath diameter (Ød):

3,5 mm
4 mm
other, please specify

sheath length (L):

100 mm (standard)
other, please specify [mm]

cable design:

P : straight
S : twisted (PVC-105°C)

sensor measuring range or temperature transmitter settings:
please specify

process connection:

WS : standard plug
WM : mini plug
- : no process connection

measuring circuit:

2 : 2-wire
3 : 3-wire
4 : 4-wire

accuracy class:

A
B
1/3B

connection cable length:

1500 : 1,5 linear meter
other, please specify [mm]

insulation types of connection cable:

PVC : PVC / PVC (110°C max.)
TS : teflon / silicon (180°C max.)
SS : silicon / silicon (250°C max.)
WS : double fibreglass / stainless steel (400°C max.)

Ordering example:

SCR211-1-Pt100-4-100-P-TS-1500-B-2-100°C

Single RTD temperature sensor, 1xPt100, B tolerance class, 2-wire measuring circuit, sheath diameter 4 mm and length 100 mm, teflon insulation, sensor measuring range 100°C.



SCR212



- temperature range $-50 \div 400^{\circ}\text{C}$ (depending on the cable used)
- stainless steel sheath
- minimum sheath diameter: 3 mm
- any length of the sheath
- stainless steel smooth handle
- spring protection against excessive cable bending
- sensor connection standard or mini plug

Resistance thermometers **SCR212** are industrial standard sensors with high accuracy and stability. They are intended for industrial and laboratory applications. Thanks to their design of tight thermowell with a stainless steel handle, they can be used in a dry environment as well as in wet baths. Lead wire can be with the insulated bare ends ready for being assembled to a connector or directly to a measuring device.

Application areas:

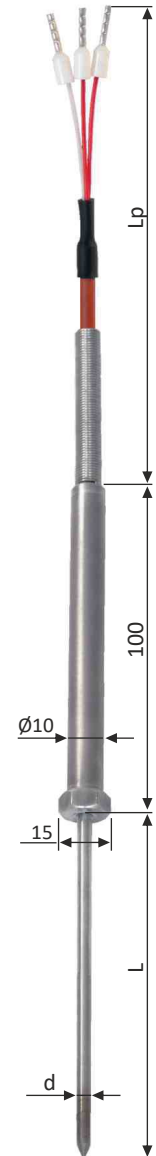
- food industry, warehouses,
- general industrial services.

TECHNICAL DATA

Sensing element	Pt100, Pt500, Pt1000 (2-, 3- or 4-wire)
Measuring range	$-60 \div 450^{\circ}\text{C}$ (depending on the cable used)
Process connection	standard or mini plug
Class	A or B
Thermowell	material: stainless steel 1.4541 length: 100 mm (standard) diameter: 3,5 or 4 mm
Cable	type with table, standard length 1500 mm or other according to order

CONNECTION CABLES

Diagram	Insulation design	Temperature range	Code
	- double fiberglass - stainless steel - cond: nickel plated copper	$-50 \div 400^{\circ}\text{C}$	WS
	- PVC - cond: nickel plated copper	105°C max.	PVC
	- teflon - stainless steel - teflon - cond: nickel plated copper	260°C max.	TOT
	- teflon - stainless steel - cond: nickel plated copper	260°C max.	TO
	- silicon - stainless steel - silicon - cond: nickel plated copper	180°C max.	SOS
	- silicon - silicon - cond: nickel plated copper	250°C max.	SS
	- teflon - teflon - cond: nickel plated copper	260°C max.	TT



OPTIONAL EQUIPMENT



„mini” plug



„standard” plug

ORDERING

SCR212-X-X-X-X-X-X-X-X-X-X

temperature sensor:

1 : single
2 : double
PP : with transmitter

sensing element:

Pt 100
Pt 500
Pt 1000
other, please specify

sheath diameter (Ød):

3,5 mm
4 mm
other, please specify

sheath length (L):

100 mm (standard)
other, please specify [mm]

cable design:

P : straight
S : twisted (PVC-105°C)

sensor measuring range or temperature transmitter settings:
please specify

process connection:

WS : standard plug
WM : mini plug
- : no process connection

measuring circuit:

2 : 2-wire
3 : 3-wire
4 : 4-wire

accuracy class:

A
B
1/3B

connection cable length:

1500 : 1,5 linear meter
other, please specify [mm]

insulation types of connection cable:

PVC : PVC / PVC (110°C max.)
TS : teflon / silicon (180°C max.)
SS : silicon / silicon (250°C max.)
WS : double fibreglass / stainless steel (400°C max.)

Ordering example:

SCR212-1-Pt100-4-100-P-TS-1500-B-2-150°C

Single RTD temperature sensor, 1xPt100, B tolerance class, 2-wire measuring circuit, sheath diameter 4 mm and length 100 mm, teflon insulation, sensor measuring range 150°C.



SCR300



with „mini“ plug or socket

- mineral insulated resistance sensor
- different types of sensor connections
- accurate measurement and short reaction time to temperature changes
- small dimensions enable working in hard-to-reach places
- resistance to vibrations and the possibility of bending
- sheath made of acid-resistant steel

Resistance thermometers **SCR300** are made of metal-sheathed cables with internal wires (Cu or Ni). They are insulated from each other, with the outer sheath with magnesium oxide (MgO) powder. It provides the sensor with high vibration resistance, flexibility, as well as temperature resistance, and good electrical insulation. These sensors are designed for direct temperature measuring in places with difficult access. There are also used in every application, where it is required to use flexible and small diameter probe, with high resistance to shock, vibration, and short response time to temperature changes. Due to tight pressing of the insulating layer (MgO) and the appropriate structure of the inner wires and the sheath, the sensors can be bent with a minimal the radius of curvature of three times the outer diameter of the sheath.








Application areas:

- general machinery and equipment design,
- measuring temperature of liquids, gases and solid bodies,
- all branches of industry,
- measurement laboratories.

TECHNICAL DATA

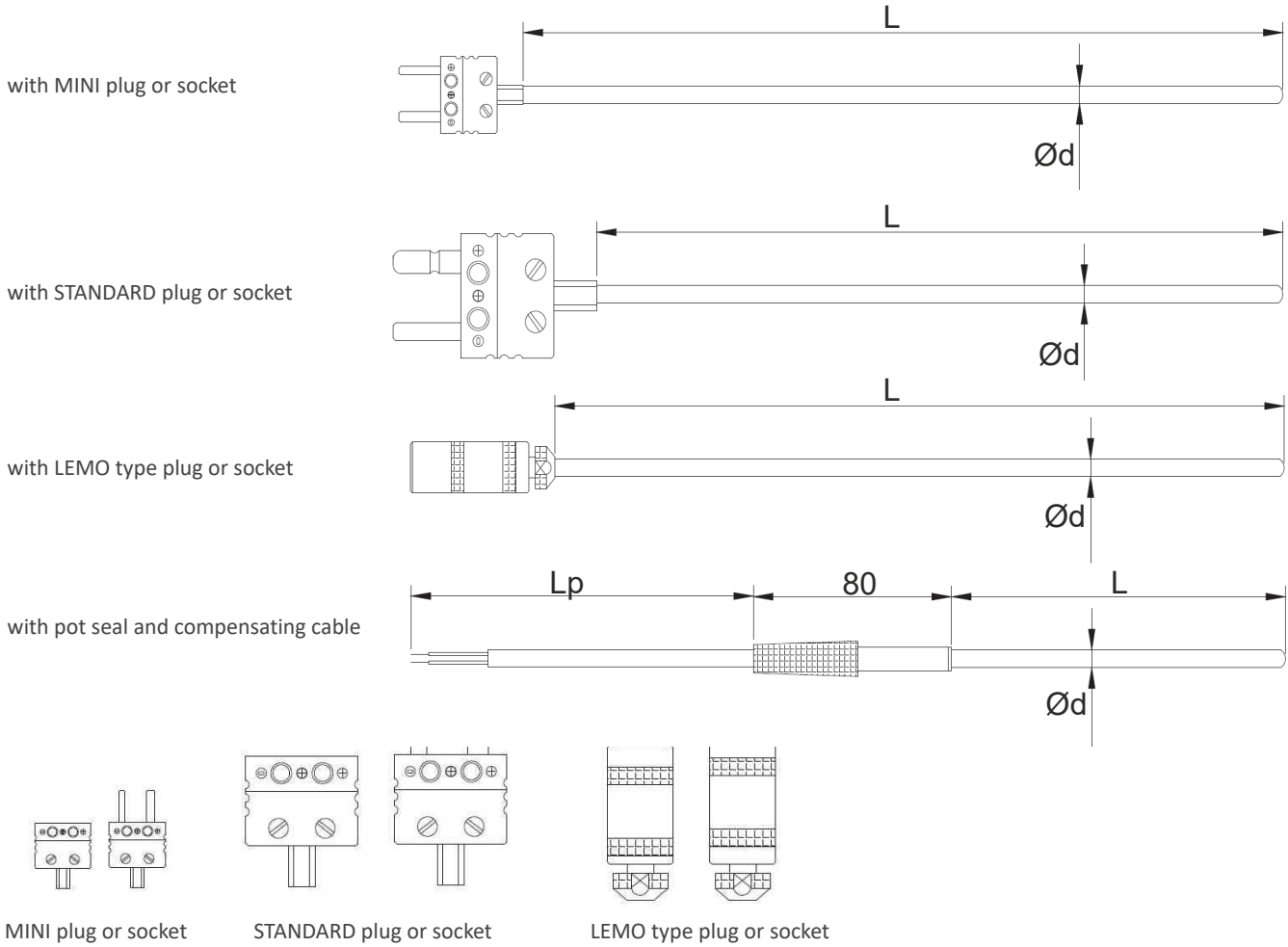
Sensing element	Pt100, Pt500, Pt1000 (2-, 3- or 4-wire)
Measuring range	-50 ÷ 400°C
Process connection	standard / mini / Lemo plug or socket
Class	A or B
Thermowell	material: stainless steel 1.4541 length: any diameter: 1,5 ÷ 8 mm
Cable	type with table, standard length 1500 mm or other according to order

CONNECTION CABLES

Diagram	Insulation design	Temperature range	Code
	- double fiberglass - stainless steel - cond: nickel plated copper	-50 ÷ 400°C	WS
	- PVC - cond: nickel plated copper	105°C max.	PVC
	- teflon - stainless steel - teflon - cond: nickel plated copper	260°C max.	TOT
	- teflon - stainless steel - cond: nickel plated copper	260°C max.	TO
	- silicon - stainless steel - silicon - cond: nickel plated copper	180°C max.	SOS
	- silicon - silicon - cond: nickel plated copper	250°C max.	SS
	- teflon - teflon - cond: nickel plated copper	260°C max.	TT



CONSTRUCTION



ORDERING

SCR300-X-X-X-X-X-X-X-X-X

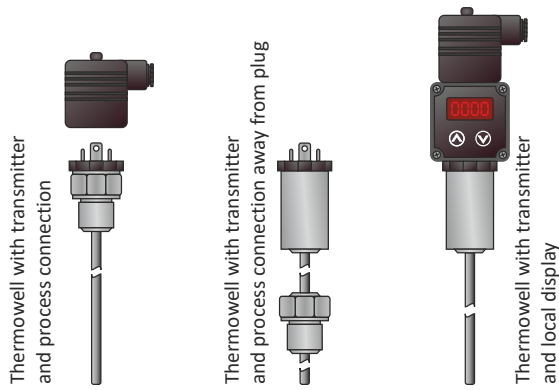
- temperature sensor:**
 - 1 : single
 - 2 : double
- construction:**
 - A : MINI plug or socket
 - B : STANDARD plug or socket
 - C : LEMO type plug or socket
 - D : with pot seal and compensating cable
- sensing element:**
 - Pt 100
 - Pt 500
 - Pt 1000
 - other, please specify
- sheath diameter (Ød):**
 - 3 mm
 - 6 mm
 - other, please specify
- sheath length (L):**
 - please specify [mm]
- measuring circuit:**
 - 2 : 2-wire
 - 3 : 3-wire
 - 4 : 4-wire
- accuracy class:**
 - A
 - B
- connection type:**
 - G : socket
 - W : plug
- connection cable length:**
 - 1500 : 1,5 linear meter
 - other, please specify [mm]
- insulation types of connection cable:**
 - PVC : PVC / PVC (110°C max.)
 - TS : teflon / silicon (180°C max.)
 - SS : silicon / silicon (250°C max.)
 - WS : double fibreglass / stainless steel (400°C max.)

Ordering example:

SCR300-1-B-Pt100-6-500-TS-1500-W-A-2

Single mineral insulated RTD temperature sensor, 1xPt100, A tolerance class, 2-wire measuring circuit, thermowell diameter Ø6 mm, length L=500 mm, teflon/silicon insulation, connection cable length 1500 mm, standard size plug.





SCR400

- sensor with GDM plug and display
- temperature range $-50 \div 550^{\circ}\text{C}$ (depending on construction)
- stainless steel sheath
- thermowell spring protection against excessive cable bending
- possibility of mounting a 4...20 mA or 0...10 V temperature transmitter
- local LED display optionally

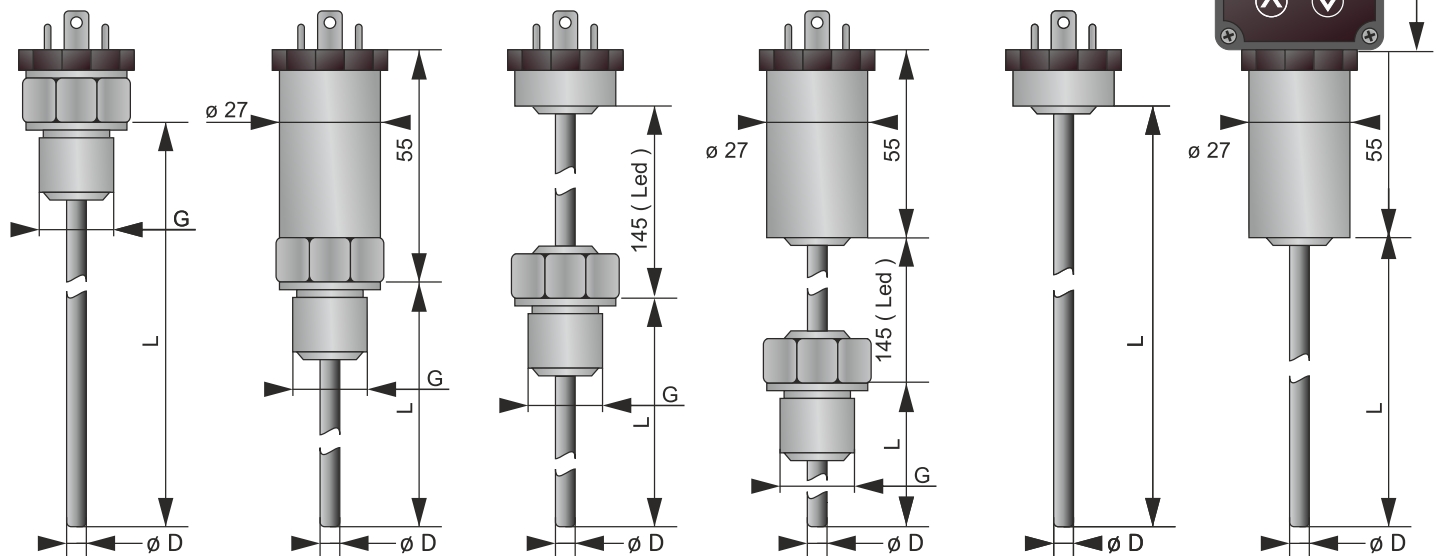
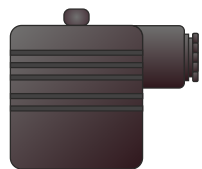
Resistance thermometer **SCR400** consists of a non-replaceable measuring insert, a welded protection tube with process connection, and a Hirschmann brand GDM type socket. The measuring transmitter is installed into the top part of the casing. The sensor with a built-in 4...20 mA transmitter can be equipped with a local LED display. The immersion length of the sensor, process connection, length of the thermowell, shape, and material of the sheath can be selected depending on the requirements of the application.

Application areas:

- equipment/tank design,
- technological process installations in all branches of industry,
- machine design,
- heating systems, air conditioning and ventilation.

TECHNICAL DATA

Sensing element	Pt100, Pt500, Pt1000 (2-, 3- or 4-wire)
Measuring range	$-50 \div 100^{\circ}\text{C}$ (thermowell with process connection); $-50 \div 550^{\circ}\text{C}$ (thermowell with process connection away from plug and without process connection)
Process connection	G1/2", M20x1,5
Class	A or B
Thermowell	material: stainless steel 1.4541 length: any diameter: $4 \div 15$ mm



Construction without transmitter, with process connection

Construction with transmitter and process connection

Construction without transmitter, with process connection away from plug

Construction with transmitter, with process connection away from plug

Construction without process connection and transmitter

Construction without process connection, with transmitter and local display

ORDERING

SCR400-X-X-X-X-X-X-X-X-X

temperature sensor:

- 1 : single
- 2 : double
- PP : with transmitter
- L : with transmitter and local display

sensing element:

- Pt 100
- Pt 500
- Pt 1000
- other, please specify

construction:

- P : without process connection
- GB : with process connection
- GN : with process connection away from plug

shift (only for GN construction):

- : standard L=35 mm
- other, please specify

sheath diameter (ØD):

- 4 mm
- 5 mm
- 6 mm
- other, please specify

output signal or temperature transmitter settings:
please specify

measuring circuit

(sensor without transmitter):

- 2 : 2-wire
- 3 : 3-wire
- 4 : 4-wire

accuracy class:

- A
- B

process connection (for GB and GN):

- M20x1,5
- G1/2"
- other, please specify

sheath length (L):

- 100 mm (standard)
- other, please specify

Ordering example:

SCR400-PP-Pt100-GB-6-100-G1/2"-A-4..20mA 0-100°C

RTD temperature sensor with transmitter, 1xPt100, A tolerance class, thermowell diameter Ø6 mm, length L=100 mm, construction with process connection G1/2", transmitter 4..20 mA with range 0-100°C.



SCR500

- temperature range $-50 \div 200^{\circ}\text{C}$
- possibility of mounting a 4...20 mA or 0...10 V temperature transmitter
- stainless steel sheath with or without perforation, small diameter
- connection via terminal connector strip
- IP 65 protection degree



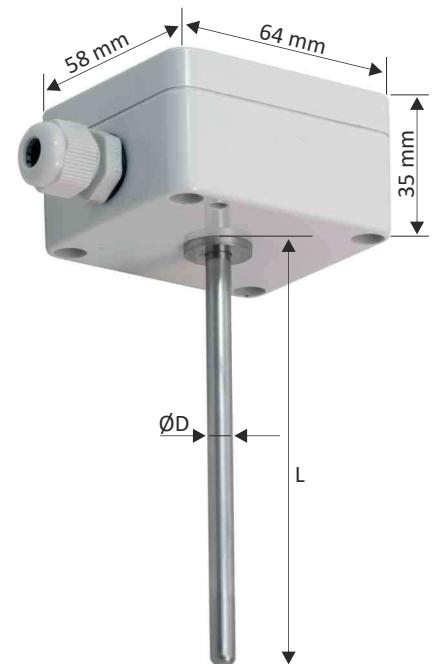
Resistance thermometers **SCR500** are designed for ambient temperature measurement. There is a possibility of assembling a programmable temperature transmitter with a 4...20 mA output signal into the housing. The protection tube with perforation allows for quick and precise temperature measurement, thanks to direct contact of thermometric resistor with ambient temperature.

Application areas:

- ambient temperature measurement in rooms and outside,
- warehouses and cold stores,
- offices,
- air-conditioning and ventilation installations.

TECHNICAL DATA

Sensing element	Pt100, Pt500, Pt1000 (2-, 3- or 4-wire)
Measuring range	$-50 \div 200^{\circ}\text{C}$
Case measuring range	$-20 \div 80^{\circ}\text{C}$ (ABS); $-40 \div 80^{\circ}\text{C}$ (aluminum); $-40 \div 120^{\circ}\text{C}$ (polycarbonate)
Class	A or B
Thermowell	with or without perforation, stainless steel 1.4541
Case dimensions (WxHxD)	64 x 58 x 35 mm (ABS, aluminum or polycarbonate) 82 x 80 x 55 mm (sensor with transmitter 4...20 mA or 0...10V)



ORDERING

SCR500-X-X-X-X-X-X-X-X-X-X

temperature sensor:

- 1 : single
- 2 : double
- PP : with transmitter

sensing element:

- Pt 100
- Pt 500
- Pt 1000
- other, please specify

sheath diameter (ØD):

- 4 mm
- 5 mm
- 6 mm
- other, please specify

sheath length (L):

- 100 mm (standard)
- other, please specify

case material:

- PW : polycarbonate
- ABS : ABS
- AL : aluminum

output signal and temperature transmitter settings:

please specify

sheath type:

- Z : without perforation
- P : with perforation

measuring circuit:

- 2 : 2-wire
- 3 : 3-wire
- 4 : 4-wire

accuracy class:

- A
- B

process connection

- M10x1
- M20x1,5
- G1/2"
- other, please specify

sensor mounting:

- BG : without process connection
- UG : with process connection

Ordering example:

SCR500-PP-Pt100-4-100-PW-UG-M10x1-B-2-Z-0-80°C
RTD temperature sensor with transmitter, 1xPt100, B tolerance class, 2-wire measuring circuit, polycarbonate case. Sheath without perforation, diameter 4 mm and length 100 mm, sensor mounting with process connection M10x1. Temperature range 0-80°C



SCR501

- temperature range $-50 \div 200^{\circ}\text{C}$
- possibility of mounting a 4...20 mA or 0...10 V temperature transmitter
- stainless steel sheath with or without perforation, small diameter
- connection via terminal connector strip
- IP 65 protection degree

Resistance thermometers **SCR500** are designed for ambient temperature measurement inside and outside residential, office and industrial spaces. There is a possibility of assembling a programmable temperature transmitter with a 4...20 mA output signal into the housing. The protection tube with perforation allows for quick and precise temperature measurement, thanks to direct contact of thermometric resistor with ambient temperature.

Application areas:

- ambient temperature measurement in rooms and outside,
- warehouses and cold stores,
- offices,
- air-conditioning and ventilation installations.

TECHNICAL DATA

Sensing element	Pt100, Pt500, Pt1000 (2-, 3- or 4-wire)
Measuring range Case measuring range	$-50 \div 200^{\circ}\text{C}$ $-20 \div 80^{\circ}\text{C}$ (ABS); $-40 \div 80^{\circ}\text{C}$ (aluminum); $-40 \div 120^{\circ}\text{C}$ (polycarbonate)
Class	A or B
Thermowell	with or without perforation, stainless steel 1.4541
Case dimensions (WxHxD)	64 x 58 x 35 mm (ABS, aluminum or polycarbonate) 82 x 80 x 55 mm (sensor with transmitter 4...20 mA or 0...10V)

ORDERING

SCR501-X-X-X-X-X-X-X-X

temperature sensor:	output signal and temperature transmitter settings:
1 : single	please specify
2 : double	sheath type:
PP : with transmitter	Z : without perforation
sensing element:	P : with perforation
Pt 100	measuring circuit:
Pt 500	2 : 2-wire
Pt 1000	3 : 3-wire
other, please specify	4 : 4-wire
sheath diameter (ØD):	accuracy class:
5 mm	A
6 mm	B
8 mm	case material:
other, please specify	PW : polycarbonate
sheath length (L):	ABS : ABS
50 mm (standard)	AL : aluminum
other, please specify	

Ordering example:

SCR501-1-Pt100-6-50-PW-B-2-Z-0-80°C

Single RTD temperature sensor, 1xPt100, B tolerance class, 2-wire measuring circuit, polycarbonate case. Sheath without perforation, diameter 6 mm and length 50 mm. Temperature range 0-80°C



SCR502



- temperature range $-50 \div 200^{\circ}\text{C}$
- possibility of mounting a 4...20 mA or 0...10 V temperature transmitter
- stainless steel sheath with or without perforation, small diameter
- connection via terminal connector strip
- IP 65 protection degree

Resistance thermometers **SCR502** are designed for ambient temperature measurement inside residential, office and industrial spaces. There is possibility of assembling programmable temperature transmitter with 4...20 mA or 0...10V output signal into housing. The housing with perforation ensures quick and accurate measurement. The interesting appearance of the sensor allows for installation in residential houses, ensuring appropriate aesthetics.

Application areas:

- ambient temperature measurement in rooms,
- warehouses and cold stores,
- offices,
- air-conditioning and ventilation installations.

TECHNICAL DATA

Sensing element	Pt100, Pt500, Pt1000 (2-, 3- or 4-wire)
Measuring range	$-40 \div 80^{\circ}\text{C}$
Class	A or B
Thermowell	with or without perforation, stainless steel 1.4541
Case dimensions (WxHxD)	67 x 67 x 23 mm

ORDERING

SCR502-X-X-X-X-X

temperature sensor:

- 1 : single
- 2 : double
- PP : with transmitter

sensing element:

- Pt 100
- Pt 500
- Pt 1000
- other, please specify

accuracy class:

- A
- B

output signal and temperature transmitter settings:

please specify

sheath type:

- Z : without perforation
- P : with perforation

measuring circuit:

- 2 : 2-wire
- 3 : 3-wire
- 4 : 4-wire

Przykład zamówienia:

SCR502-1-Pt100-B-2-Z-0-80°C

Single RTD temperature sensor, 1xPt100, B tolerance class, 2-wire measuring circuit. Sheath without perforation, temperature range 0-80°C

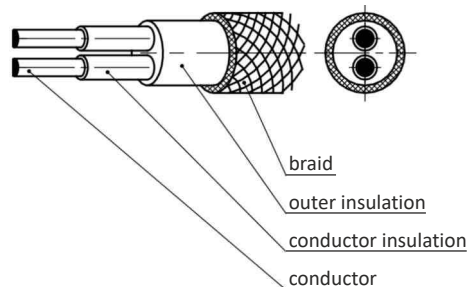


COMPENSATION AND THERMOCOUPLE CABLES



- insulation resistance: min 10 MΩ x km
- range of execution: up to 25 pairs
- voltage testing: 1000V

Compensation and extension (thermocouple) cables are the elements of measuring installation connecting thermocouple sensor with measuring devices such as a controller, indicator, or temperature recorder. Extension cables are made of the same materials as thermocouples, whereas compensation cables are made of substitute materials with properties similar to thermocouples. The cable insulation is selected according to ambient conditions and operating temperature.



CABLE STRUCTURE AND COLOURS ACC. TO EU IEC 584-3

Type	Compensation cable	Extension cable	Composition		Insulation colour	
			Conductor +	Conductor -	Conductor +	Conductor -
T		TX	Cu	CuNi	Brown	White
J		JX	Fe	CuNi	Black	White
E		EX	NiCr	CuNi	Violet	White
K		KX	NiCr	NiAl	Green	White
K	KCA		Fe	410 Alloy	Green	White
N		NX	Nicrosil	Nisil	Pink	White
R	RCA		Cu	11 Alloy	Orange	White
S	SCA		Cu	11 Alloy	Orange	White
B	BC		Cu	Cu	Grey	White

ORDERING

SP88X-X-X-X-X-XxX

thermocouple type:

- TX : TC T, extension cable
- JX : TC J, extension cable
- KX : TC K, extension cable
- EX : TC E, extension cable
- NX : TC N, extension cable
- KCA : TC K, compensation cable
- RCA : TC R, compensation cable
- SCA : TC S, compensation cable
- BC : TC B, compensation cable

conductor insulation:

- Yc : PVC (-20 ÷ 105°C)
- Si : silicon (-50 ÷ 200°C)
- F : teflon (-50 ÷ 260°C)
- WS : fiberglass (-50 ÷ 400°C)

conductor type:

- D : solid wire
- L : standed wire

conductor cross section:

- 2x0,22 : 0,22 mm²
- 2x0,50 : 0,50 mm²
- 2x0,70 : 0,70 mm²
- 2x1,00 : 1,00 mm²
- 2x1,50 : 1,50 mm²

number of conductor pairs:

- 2 : 2 pairs
- 3 : 3 pairs
- 4 : 4 pairs
- 5 : 5 pairs

braid:

- : none
- ek : zinc-plated copper wire
- u : steel wire

outer insulation:

- Yc : PVC (-20 ÷ 105°C)
- Si : silicon (-50 ÷ 200°C)
- F : teflon (-50 ÷ 260°C)
- WS : fiberglass (-50 ÷ 400°C)

Ordering example:
KX-Si-L-u-2x0,22



SZS99 - STANDARD PLUG AND SOCKET CONNECTORS FOR TEMPERATURE SENSORS

Plugs and sockets are elements of measuring systems used to connect temperature sensors to measuring devices such as controllers, indicators, and recorders. The variety of types allows to apply them to the majority of thermocouples and resistance thermometers under various environmental conditions and operating temperatures. Solid pins ensure a reliable connection.

1. SZS99 Standard plug / socket (200°C max.)

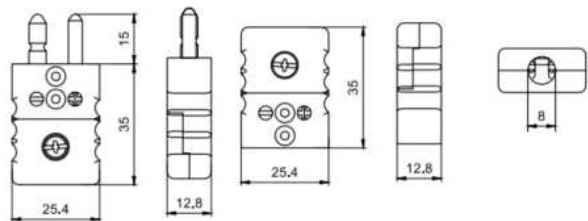
Temperature range	200°C max.
Lead wire diameter	8 mm max.
Conductor cross-section	from $\varnothing 0.2$ mm to $\varnothing 2$ mm
Casing colour	acc. to IEC-584: J: black, K: green, N: pink, T: brown, R and S: orange



ORDERING

SZS99-X-X

sensing element: _____ **connector type:** _____
J : TC J (Fe-CuNi) **W** : plug
K : TC K (Ni-CrNi) **G** : coupler
N : TC N (NiCrSi-NiSi) **WG** : set
T : TC T (Cu-CuNi)
R : TC R (PtRh13%-Pt)
S : TC S (PtRh10%-Pt)
Pt100 : Cu type (for resistance sensors)
 other, please specify



2. SZS99HT Standard high-temperature plug / socket (350°C max.)

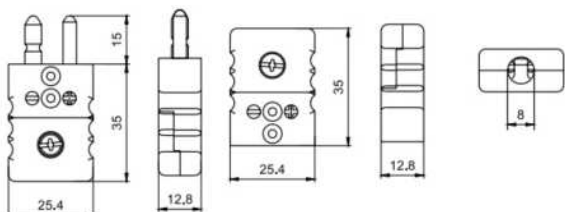
Temperature range	350°C max.
Lead wire diameter	8 mm max.
Conductor cross-section	from $\varnothing 0.2$ mm to $\varnothing 2$ mm
Casing colour	brown



ORDERING

SZS99HT-X-X

sensing element: _____ **connector type:** _____
J : TC J (Fe-CuNi) **W** : plug
K : TC K (Ni-CrNi) **G** : coupler
N : TC N (NiCrSi-NiSi) **WG** : set
T : TC T (Cu-CuNi)
R : TC R (PtRh13%-Pt)
S : TC S (PtRh10%-Pt)
Pt100 : Cu type (for resistance sensors)
 other, please specify



3. SZS99C Standard ceramic plug / socket (650°C max.)

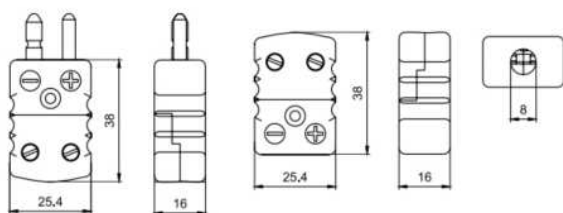
Temperature range	650°C max.
Lead wire diameter	8 mm max.
Conductor cross-section	from $\varnothing 0.2$ mm to $\varnothing 2$ mm
Casing colour	white



ORDERING

SZS99C-X-X

sensing element: _____ **connector type:** _____
J : TC J (Fe-CuNi) **W** : plug
K : TC K (Ni-CrNi) **G** : coupler
N : TC N (NiCrSi-NiSi) **WG** : set
T : TC T (Cu-CuNi)
R : TC R (PtRh13%-Pt)
S : TC S (PtRh10%-Pt)
 other, please specify

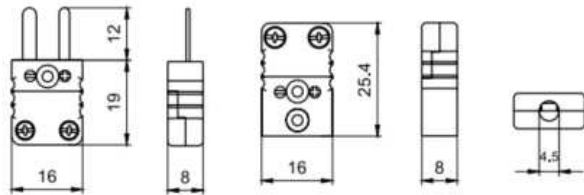


SZM99 - MINIATURE PLUG AND SOCKET CONNECTORS FOR TEMPERATURE SENSORS

Plugs and sockets are elements of measuring systems used to connect temperature sensors to measuring devices such as controllers, indicators, and recorders. The variety of types allows to apply them to the majority of thermocouples and resistance thermometers under various environmental conditions and operating temperatures. Solid pins ensure a reliable connection.

1. SZM99 Miniature plug / socket (200°C max.)

Temperature range	200°C max.
Lead wire diameter	4.5 mm max.
Conductor cross-section	from $\varnothing 0.002$ mm to $\varnothing 0.6$ mm
Casing colour	acc. to IEC-584: J: black, K: green, N: pink, T: brown, R and S: orange



coupler



plug

ORDERING

SZM99-X-X

sensing element:

J : TC J (Fe-CuNi)
 K : TC K (Ni-CrNi)
 N : TC N (NiCrSi-NiSi)
 T : TC T (Cu-CuNi)
 R : TC R (PtRh13%-Pt)
 S : TC S (PtRh10%-Pt)

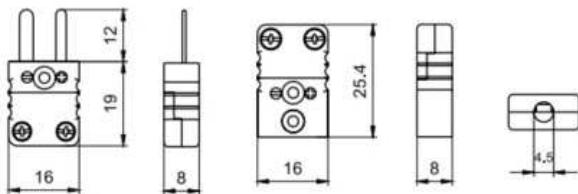
Pt100 : Cu type (for resistance sensors)
 other, please specify

connector type:

W : plug
 G : coupler
 WG : set

2. SZM99HT Miniature high-temperature plug / socket (350°C max.)

Temperature range	350°C max.
Lead wire diameter	4.5 mm max.
Conductor cross-section	from $\varnothing 0.002$ mm to $\varnothing 0.6$ mm
Casing colour	brown

high-temperature
couplerhigh-temperature
plug

ORDERING

SZM99HT-X-X

sensing element:

J : TC J (Fe-CuNi)
 K : TC K (Ni-CrNi)
 N : TC N (NiCrSi-NiSi)
 T : TC T (Cu-CuNi)
 R : TC R (PtRh13%-Pt)
 S : TC S (PtRh10%-Pt)

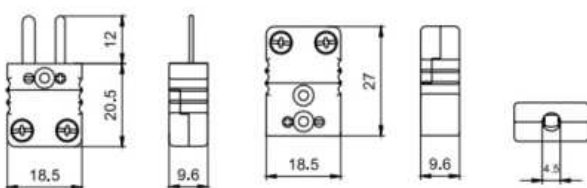
Pt100 : Cu type (for resistance sensors)
 other, please specify

connector type:

W : plug
 G : coupler
 WG : set

3. SZM99C Miniature ceramic plug / socket (650°C max.)

Temperature range	650°C max.
Lead wire diameter	4.5 mm max.
Conductor cross-section	from $\varnothing 0.002$ mm to $\varnothing 0.6$ mm
Casing colour	white

ceramic
couplerceramic
plug

ORDERING

SZM99C-X-X

sensing element:

J : TC J (Fe-CuNi)
 K : TC K (Ni-CrNi)
 N : TC N (NiCrSi-NiSi)
 T : TC T (Cu-CuNi)
 R : TC R (PtRh13%-Pt)
 S : TC S (PtRh10%-Pt)

other, please specify

connector type:

W : plug
 G : coupler
 WG : set

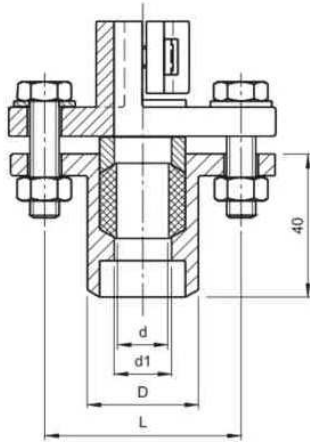


FASTENERS FOR FASTENING THE TEMPERATURE SENSORS

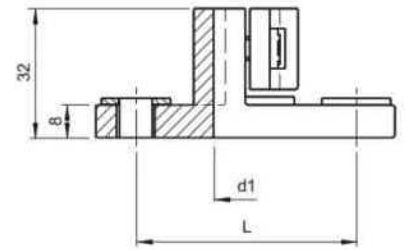
Compression fittings and mounting brackets are used as accessories for temperature sensors without threaded fittings and flanges. They are used for sensor mounting in a place of measurement, they allow immersion length adjustment since they can be mounted anywhere along the sheath. Compression fittings assure an excellent seal up to 0,1 MPa.

SUZ - MOUNTING BRACKETS

SUZ11



SUZ21



ORDERING

SUX-X-X

bracket type:

- 11 : counter flange
- 21 : stop flange

sheath diameter:

- 15 : Ø 15 mm
- 22 : Ø 22 mm
- 32 : Ø 32 mm

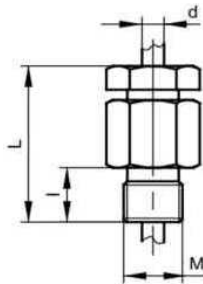
seal:

- T : teflon
- SC : ceramic rope

Bracket type	d [mm]	d1 [mm]	D [mm]	L [mm]
SUZ11-15	Ø15	16	35	55
SUZ21-15	Ø15	16	-	55
SUZ11-22	Ø22	23	40	70
SUZ21-22	Ø22	23	-	70
SUZ11-32	Ø32	33	50	70
SUZ21-32	Ø32	33	-	70

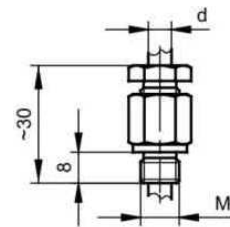
SUG - COMPRESSION FITTINGS

SUG-1



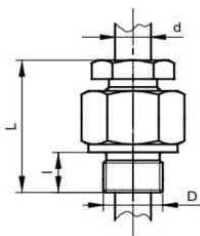
Fitting type	Thread	d [mm]
SUG-1-6	M16x1,5	Ø6
SUG-1-8	M16x1,5	Ø8
SUG-1-12	M20x1,5	Ø12
SUG-1-15	M24x2	Ø15
SUG-1-20	M30x2	Ø20

SUG-3



Fitting type	Thread	d [mm]
SUG-3-1	M8x1	Ø1
SUG-3-1,5	M8x1	Ø1,5
SUG-3-2	M8x1	Ø2
SUG-3-3	M10x1	Ø3
SUG-3-45	M10x1	Ø4,5
SUG-3-6	M10x1	Ø6
SUG-3-8	M12x1	Ø8

SUG-8



Fitting type	Thread	d [mm]	L [mm]	l [mm]	SW
SUG-8-6	M20x1,5 G1/2	Ø6	50	15	30
SUG-8-8		Ø8			
SUG-8-10		Ø10			
SUG-8-12		Ø12			
SUG-8-14	M27x2 G3/4	Ø14	55	20	36
SUG-8-15		Ø15			

ORDERING

SUGX-X

version:

- 1 : material: zinc-coated steel A10, seal: ceramic rope
- 3 : material: stainless steel 1.4541, seal: stainless steel ring 1.4541
- 8 : material: stainless steel 1.4541, seal: stainless steel ring 1.4541, teflon

sheath diameter:

- 6 : Ø 6 mm
- 8 : Ø 8 mm
- other, acc. to the tables

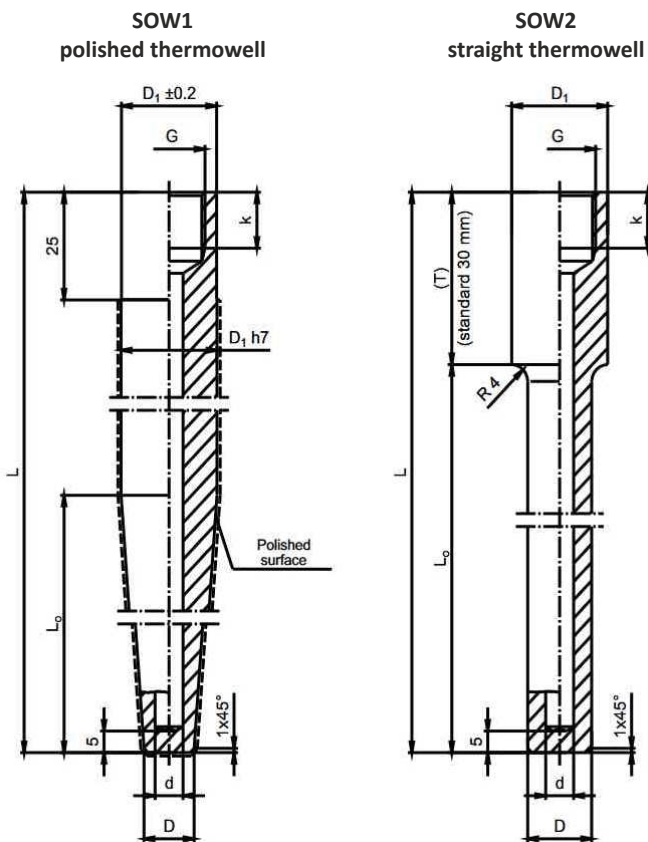


THERMOWELLS, CERAMIC TUBES AND INSULATION RODS FOR THERMOCOUPLES

SOW - DRILLED THERMOWELLS

Drilled thermowells are used as security elements to protect temperature sensors in harsh applications where high pressure occurs.

The whole element is made of one piece of the material with deep drilling over the entire length. They are used in heavy industry, food, chemical, and power industry.



Bore diameter d	Min. thermowell diameter D	Max. thermowell length L
Ø3,5	Ø10	400
Ø7	Ø12	700
Ø9	Ø15	600
Ø12	Ø18	700
Ø12	-	1400
Ø14	Ø20	600

Thread type G	Thread length k	Min. diameter of lagging extension D ₁
M14x1,5	13	Ø18
M18x1,5	15	Ø24
M20x1,5	15	Ø26
G1/2	15	Ø26
M27x2	20	Ø32
G3/4	20	Ø32

TECHNICAL DATA

Max. temperature	depends on material and dimension
Bore diameter	from 3.5 mm to 14 mm
Thread	M14x1,5; M18x1,5; M20x1,5; M27x2; G1/2; G3/4
Material	1.4404, 1.4541, 1.4571, 1.7335

ORDERING

SOWX-X-X-X-X-X-X-X

thermowell type:

- 1 : polished
- 2 : straight

thermowell diameter D:

- 15 mm
- other, please specify

weaning diameter D₁:

- 24 mm
- other, please specify

bore diameter d:

- 7 mm
- other, please specify

material:

- A : 1.4541 steel
- B : 1.4571 steel
- C : 1.4404 steel
- D : 1.7335 steel
- other, please specify

length L₀:

- 100 mm
- other, please specify

total length L:

- 300 mm
- other, please specify

thread length k:

- acc. to the table

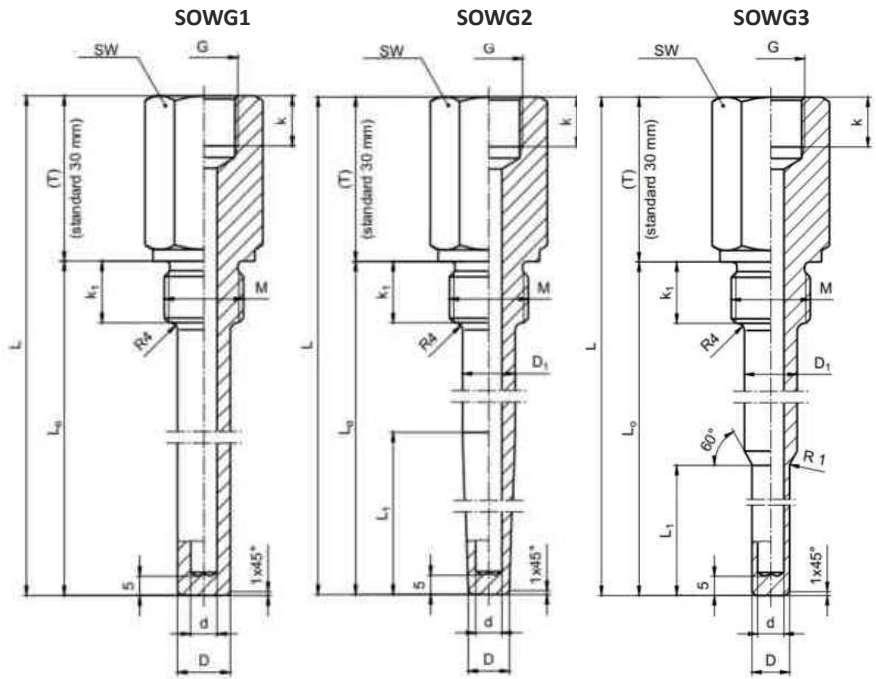
thread type G:

- M18x1,5
- other, acc. to the table



SOWG - THREADED DRILLED THERMOWELLS

Drilled thermowells are used as security elements to protect temperature sensors in harsh applications where high pressure occurs. The whole element is made of one piece of the material with deep drilling over the entire length. They are used in heavy industry, food, chemical, and power industry. The thermowell is screwed in a place of measurement via the threaded connector.



TECHNICAL DATA

Max. temperature	depends on material and dimension
Bore diameter	from 3.5 mm to 14 mm
Thread	M20x1,5; M27x2; G1/2; G3/4, 1/2 NPT, 3/4 NPT
Material	1.4404, 1.4541, 1.4571, 1.7335

Bore diameter d	Min. thermowell diameter D	Max. thermowell length L
Ø3,5	Ø10	400
Ø7	Ø12	700
Ø9	Ø15	600
Ø12	Ø18	700
Ø12	-	1400
Ø14	Ø20	600

ORDERING

SOWGX-X-X-X-X-X-X-X-X-X-X

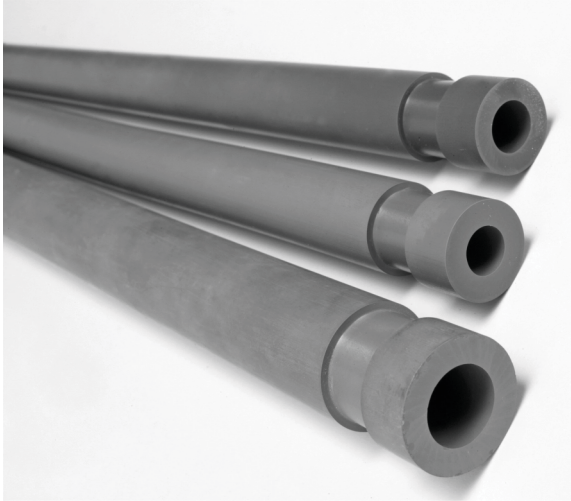
- thermowell type:**
 - 1 : straight
 - 2 : tapered
 - 3 : stepped
- thread type M:**
 - M20x1,5
 - other, acc. to the table
- thread length k₁:**
 - acc. to the table
- thermowell diameter D:**
 - 15 mm
 - other, please specify
- thermowell diameter D₁ *:**
 - 24 mm
 - other, please specify
- bore diameter d:**
 - 7 mm
 - other, please specify
- material:**
 - A : 1.4541
 - B : 1.4571
 - C : 1.4404
 - D : 1.7335
 - other, please specify
- length L₁ *:**
 - 100 mm
 - other, please specify
- length L₀:**
 - 100 mm
 - other, please specify
- total length L:**
 - 300 mm
 - other, please specify
- thread length k:**
 - acc. to the table
- thread type G:**
 - M20x1,5
 - other, acc. to the table

Thread type M	Thread length k ₁	Hexagon dimensions SW	Thread type G	Thread length k
M20x1,5	14	27	M20x1,5 G1/2 1/2 NPT	15
G1/2	14	27		
1/2 NPT	20	27		
M27x2	16	32		
G3/4	16	32		
3/4 NPT	20	27		
G1	18	41		

* does not apply to the straight thermowell



CERAMIC SYALON THERMOWELL



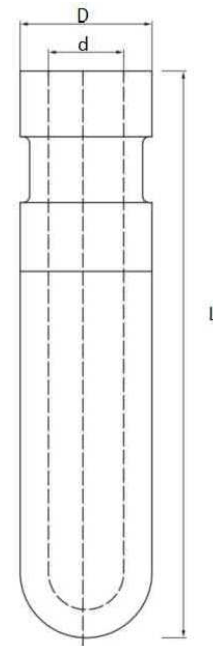
SOCS

- made of special ceramic - syalon
- very long time working in liquid aluminum
- thermal shock resistance
- very high wear resistance
- low coefficient of thermal expansion (no need for preheating)

Syalon **SOCS** is a silicon nitride alloy with unique properties such as high strength, low weight, excellent thermal shock resistance. It is also corrosion and erosion-resistant. Moreover, syalon thermowell is vacuum-tight and is high electrical resistant. It exhibits high mechanical strength at extremely high temperatures (above 1000°C in the air). These properties combined with very high wear resistance make syalon thermowell an excellent application choice for molten aluminum, zinc, tin, and lead.

TECHNICAL DATA

Max. operating temperature	1400°C
Density	> 3.2 g/cm ³
HRA hardness	> 92
Porosity	0 %
Thermal conductivity	22 W/MxK
Flexural strength	930 MPa



ORDERING

SOCS-X-X

outer diameter D: _____ **length L:** _____
specify in mm

16 mm
22 mm
28 mm
30 mm
45 mm

DIMENSIONS

Outer diameter D [mm]	Inner diameter d [mm]	Max. length L [mm]
Ø16	Ø8	900
Ø22	Ø12	1000
Ø28	Ø16	1400
Ø30	Ø18	1400
Ø45	Ø25	1400



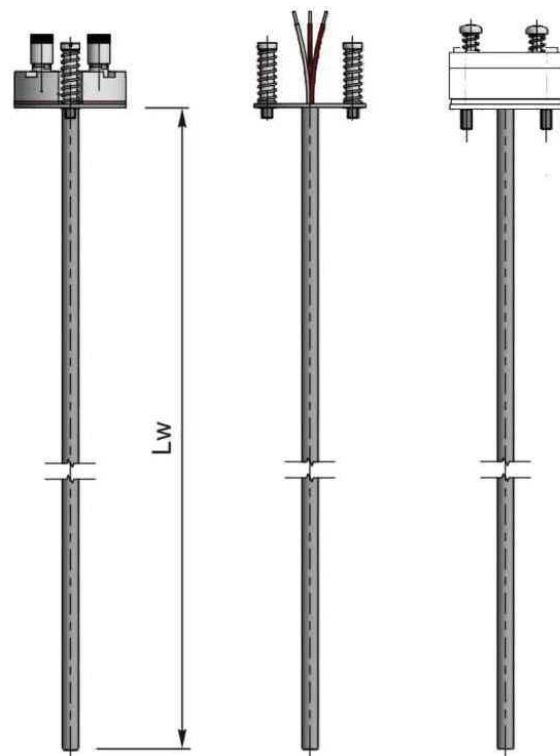
MEASURING INSERTS FOR TEMPERATURE SENSORS



SWP1

- measuring insert for resistance thermometers
- MgO isolator
- measuring range $-50 \div 550^{\circ}\text{C}$
- metal sheath made of stainless steel
- resistance to vibrations
- short reaction time to temperature changes
- possibility of mounting a 4...20 mA or 0...10 V temperature transmitter

The measuring inserts **SWP1** for resistance thermometers are designed for installation in a protection thermowell. Operation without thermowell is only recommended in certain applications. These measuring inserts are made from flexible, mineral-insulated sheathed cable. The sensor is fitted in a rigid tube on the end of the measuring insert. Apart from being flexible, this model has outstanding vibration resistance.



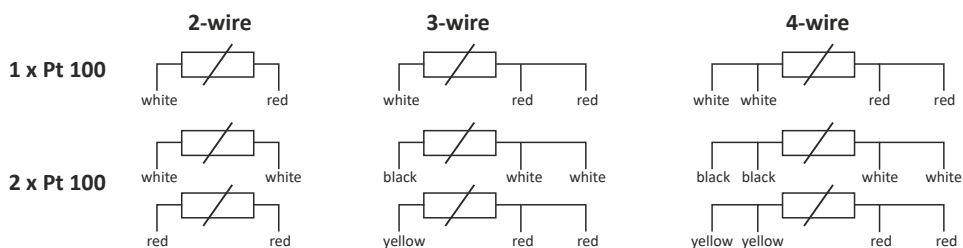
TECHNICAL DATA

Sensing element	Pt 100
Measurement range	$-50 \div 550^{\circ}\text{C}$
Class	A or B
Material	stainless steel

RESISTOR TOLERANCE ACC. TO PN-EN 60751

Class	Tolerance [$^{\circ}\text{C}$]
A	$t = 0,15 + 0,002 \times t $
B	$t = 0,30 + 0,005 \times t $

ELECTRICAL CONNECTION



ORDERING

SWP1-X-X-X-X-X-X

temperature sensor:

- 1 : single
- 2 : double

construction:

- A : with ceramic block
- B : without ceramic block
- PP : with transmitter

insert diameter:

- 3 mm
- 4.5 mm
- 6 mm
- 8 mm
- other, please specify

sensor measuring range or temperature transmitter settings:

please specify

measuring circuit:

- 2 : 2-wire
- 3 : 3-wire
- 4 : 4-wire

accuracy class:

- A
- B

insert length L_w :

- 100 mm
- 150 mm
- 240 mm
- other, please specify



MEASURING INSERTS FOR TEMPERATURE SENSORS



SWP2

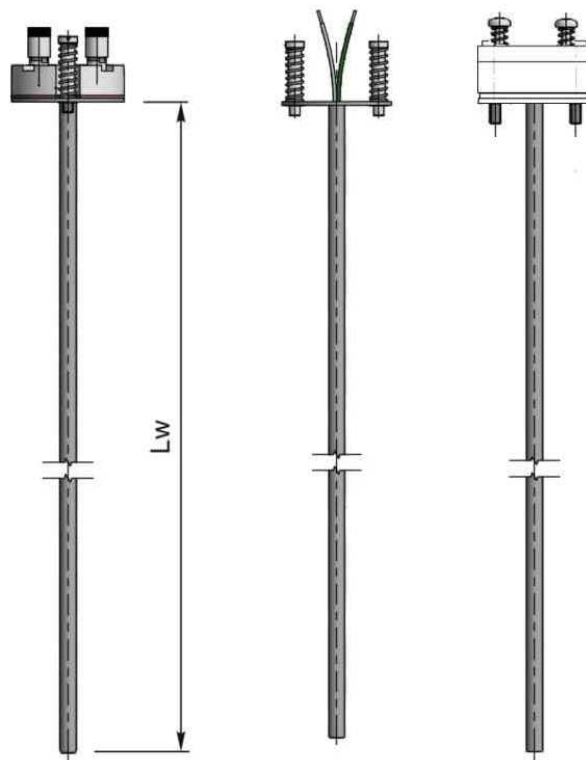
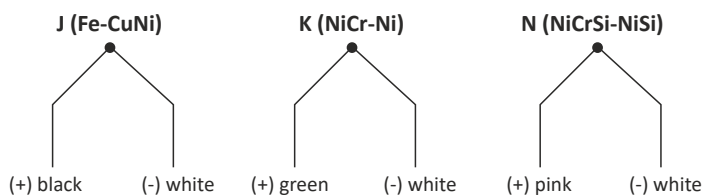
- measuring insert for thermocouples
- MgO isolator
- measuring range $-40 \div 1200^{\circ}\text{C}$ depending on thermocouple
- metal sheath made of Inconel 600 alloy
- resistance to corrosion and vibrations
- short reaction time to temperature changes
- possibility of mounting a 4...20 mA or 0...10 V temperature transmitter

The measuring insert **SWP2** for thermocouple thermometers is made of metal sheathed cable with internal wires insulated from each other and from the outer sheath with magnesium oxide (MgO) powder. This provides the sensor with high vibration resistance, flexibility as well as resistance to temperature and electrical insulation.

TECHNICAL DATA

Sensing element	J, K, N thermocouple (single, double)
Measuring range	$-40 \div 1200^{\circ}\text{C}$ (depending on thermocouple)
Class	1 or 2
Material	Inconel 600

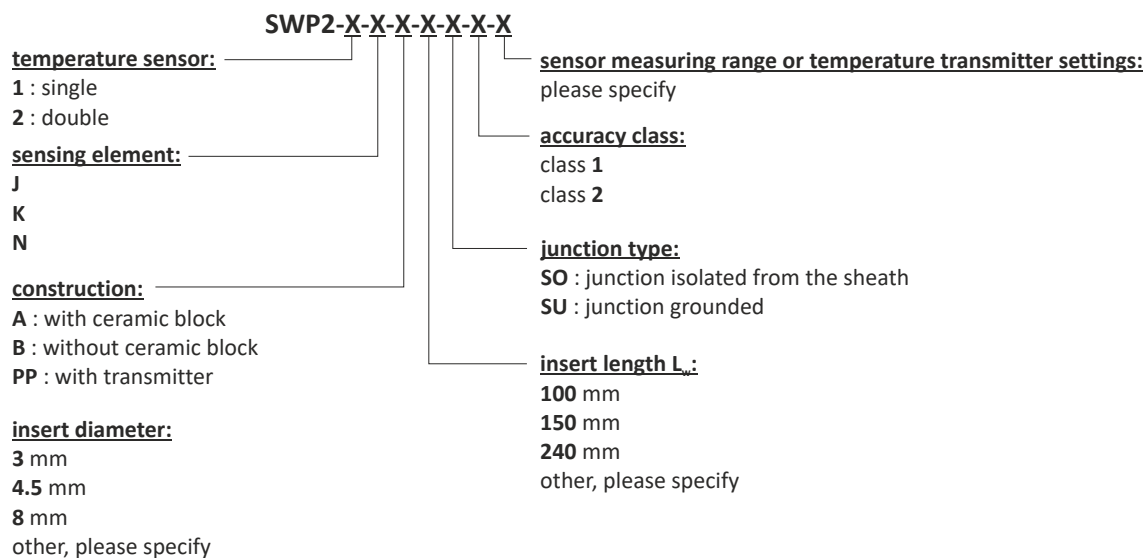
ELECTRICAL CONNECTION



THERMOCOUPLES TOLERANCE ACC. TO PN-EN 60584

Thermocouple	I Class		II Class	
	Temperature range	Tolerance	Temperature range	Tolerance
J (Fe-CuNi)	$-40 \div 750^{\circ}\text{C}$	$\pm 1,5^{\circ}\text{C}$	$-40 \div 750^{\circ}\text{C}$	$\pm 2,5^{\circ}\text{C}$
K (NiCr-Ni)	$-40 \div 1000^{\circ}\text{C}$	$\pm 0,0040^{\circ}\text{C} \times t $	$-40 \div 1200^{\circ}\text{C}$	$\pm 0,0075^{\circ}\text{C} \times t $
N (NiCrSi-NiSi)	$-40 \div 1000^{\circ}\text{C}$		$-40 \div 1200^{\circ}\text{C}$	

ORDERING



MEASURING INSERTS FOR TEMPERATURE SENSORS



SWP3

- measuring insert for thermocouples
- ceramic isolator
- measuring range +1800°C depending on thermocouple
- sheath made of C610 (60% Al₂O₃)
- long-term measurement of high temperatures
- short reaction time to temperature changes

Measuring insert **SWP3**, in a ceramic cover (C610), for thermocouple thermometers, is made of internal thermocouple wires insulated from each other with ceramic insulation. This provides the sensor with high temperature resistance as well as electrical insulation.

TECHNICAL DATA

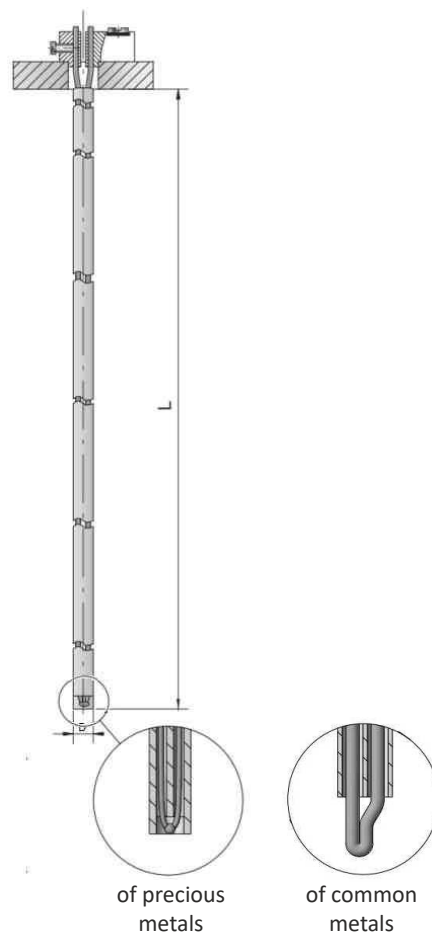
Sensing element	J, K, N, R, S, B thermocouple (single, double)
Measuring range	0 ÷ 1200°C thermocouples of common metals 0 ÷ 1800°C thermocouples of precious metals
Class	1 or 2
Material	mullite 610 ceramics

CERAMIC ISOLATOR DIMENSIONS

Wire diameter	thermocouple type / isolator dimensions				
	K	N	J	R/S	B
0.35 mm	-	-	-	Ø3.5 mm; Ø8.5 mm Ø8.5 mm	-
0.50 mm	-	-	-		Ø8.5 mm
2.00 mm	Ø9x50 mm 12x8x100 mm Ø16x100 mm	Ø9x50 mm 12x8x100 mm Ø16x100 mm	Ø9x50 mm	-	-
3.00 mm			-	-	-

THERMOCOUPLES TOLERANCE ACC. TO PN-EN 60584

Thermocouple	Class 1		Class 2	
	Temperature range	Tolerance	Temperature range	Tolerance
J (Fe-CuNi)	-40 ÷ 750°C	± 1,5°C	-40 ÷ 750°C	± 2,5°C
K (NiCr-Ni)	-40 ÷ 1000°C	± 0,0040°C x t	-40 ÷ 1200°C	± 0,0075°C x t
N (NiCrSi-NiSi)	-40 ÷ 1000°C		-40 ÷ 1200°C	
B (PtRh30-PtRh6)	-	-	600 ÷ 1700°C	± 0.0025°C x t
R (PtRh13-Pt)	0 ÷ 1100°C	± 1.0°C	0 ÷ 600°C	± 1.5°C
S (PtRh10-Pt)	1100 ÷ 1600°C	± [1+0,003(t-1100)]°C	600 ÷ 1600°C	± 0.0025°C x t



ORDERING

SWP3-X-X-X-X-X

temperature sensor:

- 1 : single
- 2 : double

sensing element:

- K
- R
- B
- other, please specify

construction:

- A : with ceramic block
- B : without ceramic block

thermocouple wire diameter:

- 0.35 mm
- 0.5 mm
- 2 mm
- 3 mm
- other, please specify

accuracy class:

- class 1
- class 2

insert length L_i:

- 100 mm
- 150 mm
- 240 mm
- other, please specify

ceramic isolator dimensions:

- 3.5 : Ø3,5 mm
- 8.5 : Ø8,5 mm
- 9x50 : Ø9x50 mm
- 12x8x100 : 12x8x100 mm
- 16:100 : Ø16x100 mm
- other, please specify





Siege social :

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