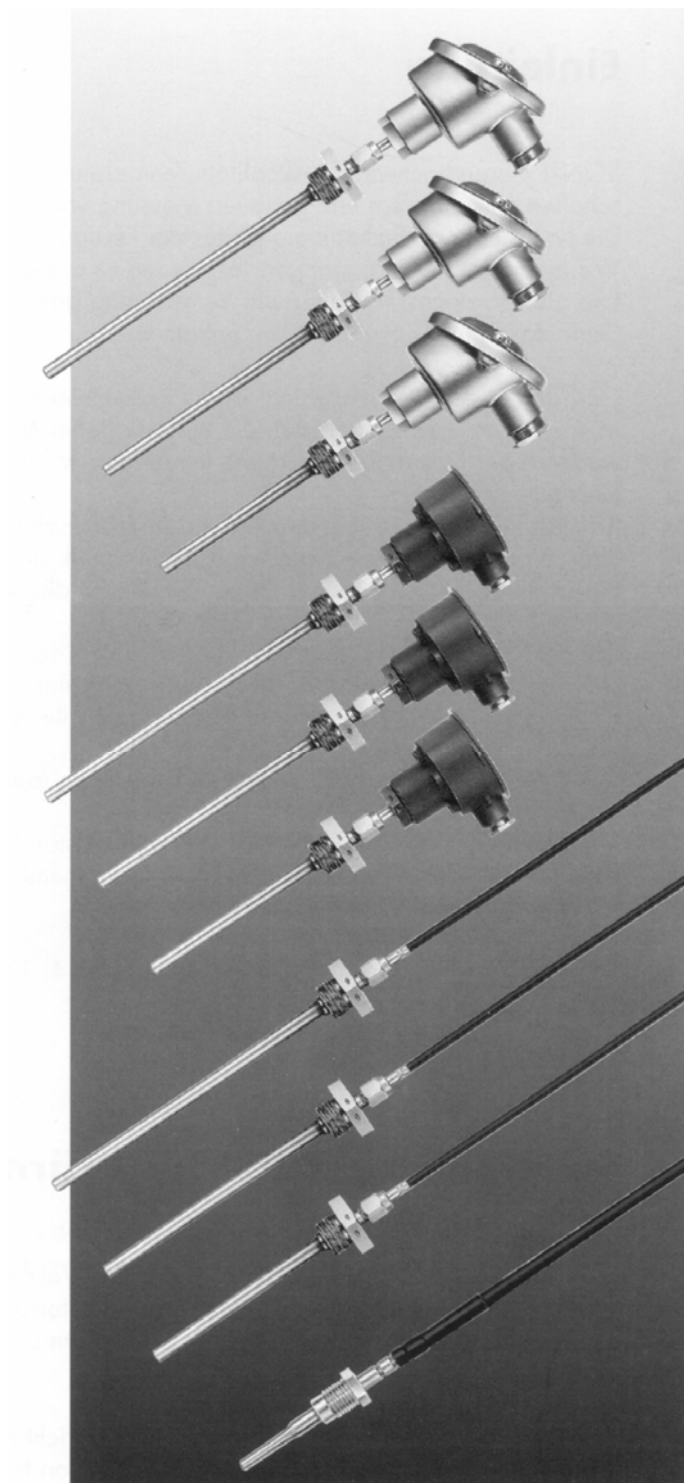


Electrical Resistance thermometer



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Introduction

Sontex develops and produces quality temperature sensors for fast and precise temperature measurement for various applications.

The high-standing technology came out from the production of temperature sensors pairs for heat meters. These highly precise and exact temperature sensors are used for the energy consumption measurement used for billing.

Heat meter integrator unit's work with largest measuring resolution, whereby the employment of high-quality temperature sensors is of greatest importance. In many other applications, like temperature sensors in the building technology or in industrial regulation and control, quality criteria are not to be neglected.

Sontex offers a very interesting program of electrical resistance thermometers in standard versions and also in customized special execution.

Sontex develops and produces platinum -, Nickel, NTC and PTC temperature sensor for liquids, air, gases or also for semisolid materials.

Sontex uses highly exact platinum laboratory resistors according to DIN IEC 751 or according to the applications also temperature-dependent semiconductor resistors.

Single sensors

Electrical resistance thermometers for all applications of the measuring and automatic control.



Measuring elements	Platinum, Nickel, NTC, PTC or other one on request
Measuring range	Standard 0°C...200°C Higher or lower temperatures on request
Sensor pipe	High-grade steel 1.4571
Protection pocket	Brass or high-grade steel 1.4571

Approvals

The temperature sensors of the company Sontex have approvals according to OIML, PTB and also according to the European standard EN1434.

Accreditation as calibration station for quantities of warm water and water

The Swiss Federal Office of Metrology and Accreditation (METAS) gave 1996 to the inspection facility of the Sontex SA the accreditation as calibration facility for heating and water quantities.

The testing facilities are maintained and supervised in accordance with the European standard EN 45001. With the accreditation also the relevant requirements of the standard ISO 9002 are fulfilled.



Ordering

With orders of standard products the indication of the part number is sufficient. With special executions we ask to provide the following data:

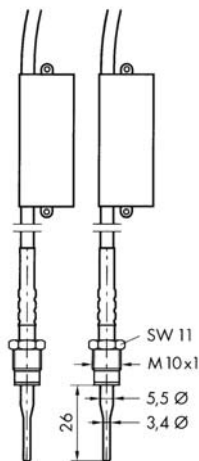
- Nominal length (L)
- Sensor type Platinum-, Nickel, NTC or PTC- temperature sensor
- Resistance value with Platinum Pt100, 500, 1'000 or 10'000
- Type of the pairs, example CEN or EN1434
- Cable type und length
- Detailed description of the dimensions
- If possible a small drawing

Remark: Special execution only on request.

Technical references

Standards	In principle the temperature sensor program of this assortment is according to the European EN1434. National standards are, if not exceeding the EN1434 are also considered.
Measuring elements	The platinum measuring elements correspond to the DIN IEC751. In order to reach the highest possible measuring accuracy, all temperature sensors are exactly paired by means of computers. The temperature sensors are also available on request unpaired.
Connection wires	<p>General the conditions of the cable lengths are to be considered in accordance with EN1434.</p> <p>2-wire technology With pairs of sensors in 2 wire technology using firmly attached cables both cables must have of the same length. With pairs of sensors with connection heads, the cables which can be attached must be absolutely of the same length.</p> <p>4-wire technology With pairs of sensors in 4-wire technology using firmly attached cables or with connection heads the cable lengths can be different.</p>
Marking	The temperature sensors are provided with sensor identification labels allowing the identification of the pairs. Additionally, the following information is indicated: serial number, temperature range, type of sensor and the necessary verification sign. With the temperature sensors with connection heads the identification label is glued on to the connection head. Compact heat meters with fixed soldered temperature sensors do not require a sensor identification label.
Noise Influences	With danger of electrical or electromagnetic influences, sensors in 2- and 4-wire technology are to be used with shielded cables or shielded cables at the connection heads. The shielding is to be connected to the ground of the integrator. The longer the sensor cables, the more likely the possibility of noise influences.
Sensor installation	<p>With protection pockets The sensors and the protection pockets are built in such a way, that no considerable delays of the heat transfer takes place. The use of protection pockets or ball valves represents a substantial safety factor, since with a sensor dismantling for checking or recalibration no hot water can withdraw.</p> <p>Sensor without protection pockets (direct sensor) With the direct immersing sensors the largest measuring accuracy and fastest response time are reached. In place of protection pockets, screw-in nipples, ball valves, T-fittings or welding sleeves are used.</p>
Safety reference	When inappropriately dismantling the direct immersing sensors, danger of accidents exists! The installation and removal should be made only by authorized and skilled persons.
Installation guidelines	The assembly instructions and the installation recommendations in accordance with EN1434 are to be considered.

Platinum temperature sensor 26 mm, diameter 3.4 mm



Mod460		TS	OE 96	22.30
Pt 500		27.01/038	C 050	84.02
460R539	180 °C	N° d'approbation: 01.00.582.004.1	DS 2340	130 °C 0...180 °C
00260001				

Mod460		TS	OE 96	22.30
Pt 500		27.01/038	C 050	84.02
460R539	180 °C	N° d'approbation: 01.00.582.004.1	DS 2340	130 °C 0...180 °C
00260001				

- Measuring element: Pt 500 or Pt100 platinum resistor according to DIN IEC 751
- Mating: Computer-paired in accordance with CEN 1434, special mating with high order on request
- Measuring range: Standard version 0°C...150°C
- Connection: Temperature resistant silicon cable
- Circuit: Standard version in 2-wire technology
- Material: Sensor pipe, stainless high-grade steel 1.4571
- Nominal pressure: PN16

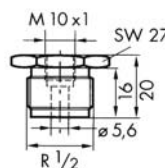
Standard versions temperature sensors

Order number	Measuring element	Sensor flag	Shielding	Wire	Cable length
0460R538	Pt500	with	with	2-Leiter	2 m
0460R553	Pt500	with	without	2-Leiter	2 m
0460R555	Pt500	without	with	2-Leiter	1.4 m

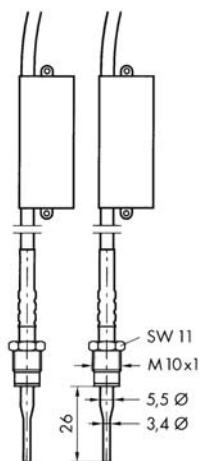
Screw-in nipple for the platinum temperature sensors 26 mm, diameter 3.4 mm

Material: Brass

Order number	Thread
0460P101	1/2" – M10 x 1



Platinum temperature sensor 31 mm, diameter 6 mm



Mod460		TS	OE 96	22.30
Pt 500		27.01/038	C 050	84.02
460R539	180 °C	N° d'approbation: 01.00.582.004.1	DS 2340	130 °C 0...180 °C
00260001				

Mod460		TS	OE 96	22.30
Pt 500		27.01/038	C 050	84.02
460R539	180 °C	N° d'approbation: 01.00.582.004.1	DS 2340	130 °C 0...180 °C
00260001				

- Measuring element: Pt 500 or Pt100 platinum resistor according to DIN IEC 751
- Mating: Computer-paired in accordance with CEN 1434, special mating with high order on request
- Measuring range: Standard version 0°C...150°C
- Connection: Temperature resistant silicon cable
- Circuit: Standard version in 2-wire technology
- Material: Sensor pipe, stainless high-grade steel 1.4571
- Nominal pressure: Sensor PN16, protection pocket PN25

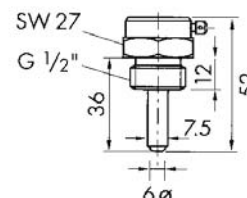
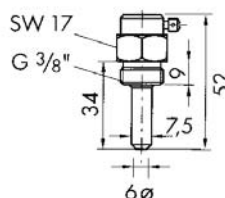
Standard versions temperature sensors

Order number	Measuring element	Sensor flag	Shielding	wire	Cable length
0460R030	Pt500	with	without	2-wire	2 m
0460R032	Pt500	with	with	2-wire	2 m
0460R270	Pt100	with	without	2-wire	2 m

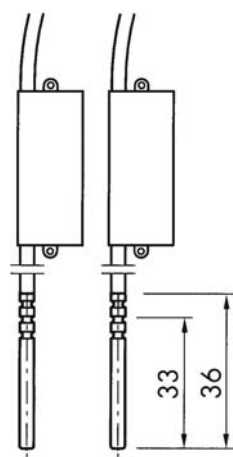
Protection pockets for the platinum temperature sensors 31 mm, diameter 6 mm

Material: Brass

Order number	Thread
0460A206	1/2"
0460A202	3/8"

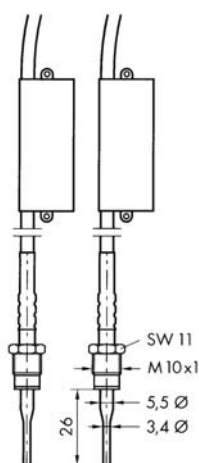


Platinum temperature sensor 33 mm, diameter 5 mm



Mod460		TS	OE 96	22.30
Pt 500	507	27.01/038	C 050	84.02
460R539	180 °C	DS 2340	130 °C	0...180 °C
00260001	N° d'approbation: 01.00.582.004.1			

Mod460		TS	OE 96	22.30
Pt 500	507	27.01/038	C 050	84.02
460R539	180 °C	DS 2340	130 °C	0...180 °C
00260001	N° d'approbation: 01.00.582.004.1			



Measuring element:	Pt 500 or Pt100 platinum resistor according to DIN IEC 751
Mating:	Computer-paired in accordance with CEN 1434, special mating with high order on request
Measuring range:	Standard version 0°C...150°C
Connection:	Temperature resistant silicon cable
Circuit:	Standard version in 2-wire technology
Material:	Sensor pipe, stainless high-grade steel 1.4571
Nominal pressure:	Sensor PN16, protection pocket PN25

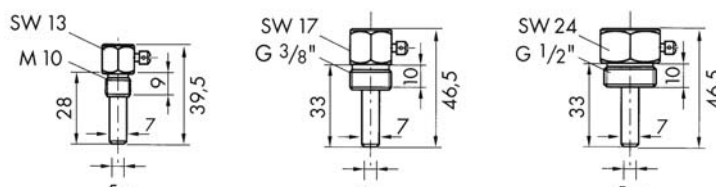
Standard versions temperature sensors

Order number	Measuring element	Sensor flag	Shielding	Wire	Cable length
0460R036	Pt500	with	without	2-wire	2 m

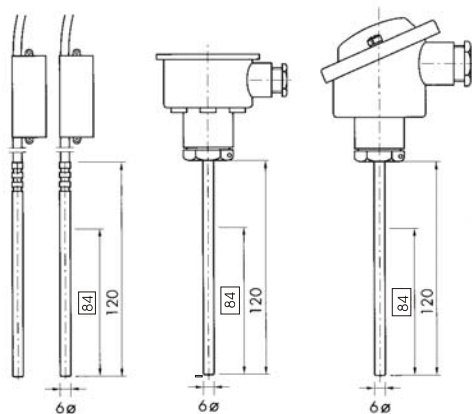
Protection pocket for the platinum temperature sensors 33 mm, diameter 5 mm

Material: Brass

Order number	Thread
0460A..	1/2"
0460A..	3/8"
0460A..	M10 x 1

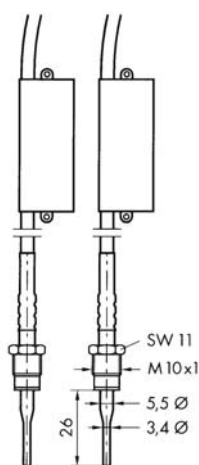


Platinum temperature sensor 84 mm, diameter 6 mm



Mod460		TS	OE 96	22.30
Pt 500	507	27.01/038	C 050	84.02
460R539	180 °C	N° d'approbation:		
00260001		01.00.582.004.1		
		DS 2340	130 °C	0...180 °C

Mod460		TS	OE 96	22.30
Pt 500	507	27.01/038	C 050	84.02
460R539	180 °C	N° d'approbation:		
00260001		01.00.582.004.1		
		DS 2340	130 °C	0...180 °C



- Measuring element: Pt 500 or Pt100 platinum resistor according to DIN IEC 751
- Mating: Computer-paired in accordance with CEN 1434, special mating with high order on request
- Measuring range: Standard version 0°C...150°C (0°C...180°C with connection head)
- Connection: Temperature resistant silicon cable
- Connection head: Plastic, cable entry PG16 with sealable cover or light alloy DIN 43765 form B, Cable entry PG16
- Circuit: Standard version in 2-wire or 4-wire technology
- Material: Sensor pipe, stainless high-grade steel 1.4571
- Nominal pressure: Sensor PN16, protection pocket PN25

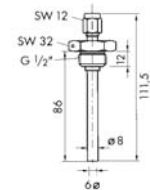
Standard versions temperature sensors

Order number	Measuring element	Sensor flag	Shielding	Wire	Cable length
0460R531	Pt500	with	without	2-wire	2 m
0460R539	Pt500	with	with	2-wire	2 m
0460R611	Pt100	with	without	2-wire	2 m
0460R850	Pt500	without	DIN 43765	4-wire	
0460R853	Pt500	without	DIN plastic	4-wire	
0460R903	Pt100	without	DIN plastic	4-wire	
0460R910	Pt100	without	DIN 43765	4-wire	

Protection pockets for the platinum temperature sensors 84 mm, diameter 6 mm

Material: stainless high-grade steel 1.4571 with high pressure-safe squeezing ring connection

Order number	Thread
460A207	1/2"

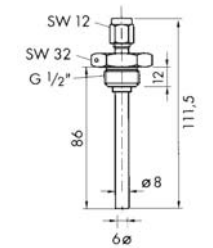
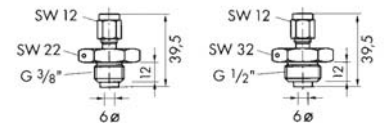


Screw-in nipple for the temperature sensors 84 - 174 mm, diameter 6 mm

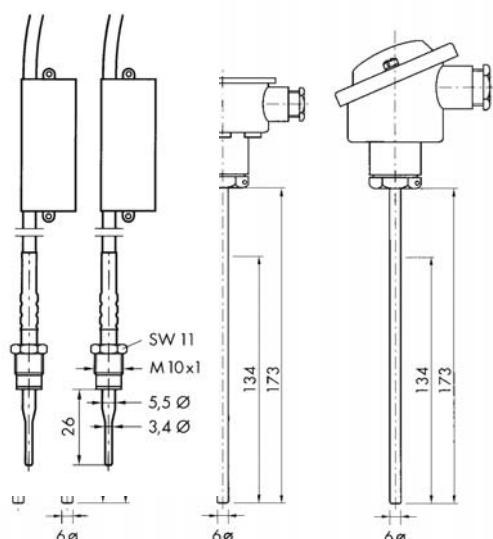
For the installation of a direct immersing temperature sensors

Material: stainless high-grade steel 1.4571 with high pressure-safe squeezing ring connection

Order number	Thread
0460A211	1/2"
0460A210	3/8"



Platinum temperature sensor 134 mm, diameter 6 mm



Mod460		Sontex	TS	OE 96	22.30
Pt 500			27.01/038	C 050	84.02
460R539	180 °C	N° d'approbation:	DS 2340	130 °C	0...180 °C
00260001		01.00.582.004.1			

Mod460		Sontex	TS	OE 96	22.30
Pt 500			27.01/038	C 050	84.02
460R539	180 °C	N° d'approbation:	DS 2340	130 °C	0...180 °C
00260001		01.00.582.004.1			

- Measuring element: Pt 500 or Pt100 platinum resistor according to DIN IEC 751
- Mating: Computer-paired in accordance with CEN 1434, special mating with high order on request
- Measuring range: Standard version 0°C...150°C (0°C...180°C with connection head)
- Connection: Temperature resistant silicon cable
- Connection head: Plastic, cable entry PG16 with sealable cover or light alloy DIN 43765 form B, Cable entry PG16
- Circuit: Standard version in 2-wire or 4-wire technology
- Material: Sensor pipe, stainless high-grade steel 1.4571
- Nominal pressure: Sensor PN16, protection pocket PN25

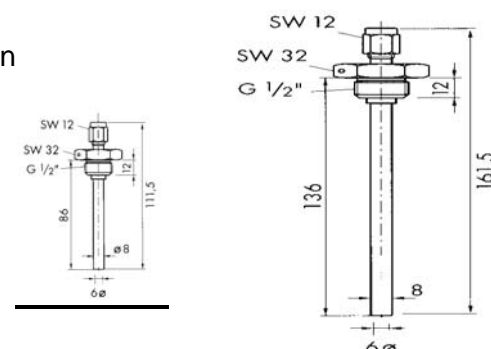
Standard versions temperature sensors

Order number	Measuring element	Sensor flag	Shielding	Wire	Cable length
0460R532	Pt500	with	without	2-wire	2 m
0460R547	Pt500	with	with	2-wire	2 m
0460R612	Pt100	with	without	2-wire	2 m
0460R851	Pt500	without	DIN 43765	4-wire	
0460R854	Pt500	without	DIN plastic	4-wire	
0460R904	Pt100	without	DIN plastic	4-wire	
0460R911	Pt100	without	DIN 43765	4-wire	

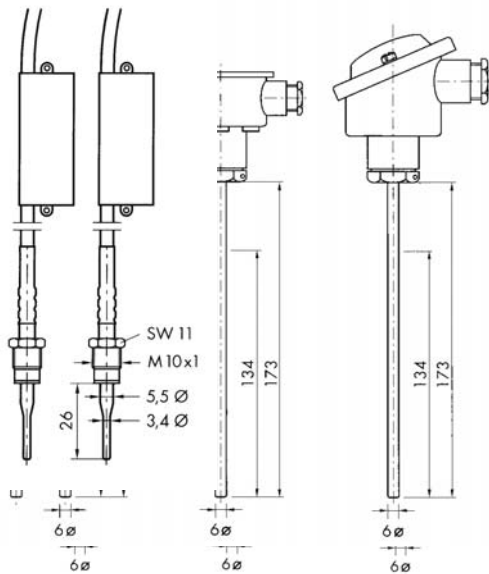
Protection pocket for the platinum temperature sensors 134 mm, Diameter 6 mm

Material: stainless high-grade steel 1.4571 with high pressure-safe squeezing ring connection

Order number	Thread
460A208	1/2"



Platinum temperature sensor 174 mm, diameter 6 mm



Mod460 Pt 500 460R539 00260001		TS 27.01/038 DS 2340	OE 96 C 050 130 °C	22.30 84.02 0...180 °C
Mod460 Pt 500 460R539 00260001		TS 27.01/038 DS 2340	OE 96 C 050 130 °C	22.30 84.02 0...180 °C
Mod460 Pt 500 460R539 00260001		TS 27.01/038 DS 2340	OE 96 C 050 130 °C	22.30 84.02 0...180 °C
Mod460 Pt 500 460R539 00260001		TS 27.01/038 DS 2340	OE 96 C 050 130 °C	22.30 84.02 0...180 °C

- Measuring element: Pt 500 or Pt100 platinum resistor according to DIN IEC 751
Mating: Computer-paired in accordance with CEN 1434, special mating with high order on request
Measuring range: Standard version 0°C...150°C (0°C...180°C with connection head)
Connection: Temperature resistant silicon cable
Connection head: Plastic, cable entry PG16 with sealable cover or light alloy DIN 43765 form B, Cable entry PG16
Circuit: Standard version in 2-wire or 4-wire technology
Material: Sensor pipe, stainless high-grade steel 1.4571
Nominal pressure: Sensor PN16, protection pocket PN25

Standard versions temperature sensors

Order number	Measuring element	Sensor flag	Shielding	Wire	Cable length
0460R533	Pt500	with	without	2-wire	2 m
0460R548	Pt500	with	with	2-wire	2 m
0460R852	Pt500	without	DIN 43765	4-wire	
0460R855	Pt500	without	DIN plastic	4-wire	
0460R905	Pt100	without	DIN plastic	4-wire	
0460R912	Pt100	without	DIN 43765	4-wire	

Protection pocket for the platinum temperature sensors 174 mm, diameter

Material: stainless high-grade steel 1.4571 with high pressure-safe squeezing ring connection

Order number	Thread
460A209	1/2"

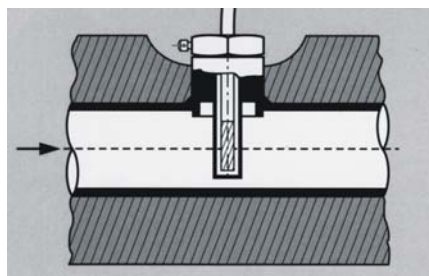


Insulation in accordance with SIA

Temperature sensor overall lengths in dependence of the pipe diameters and thick-ness of the thermal insulation in accordance with SIA (Schweizerischer Ingenieur- und Architektenverein - Swiss engineer and architect association)

Pipe		Outside Ø mm	Insulation thickness D with temperature difference K			Welding sleeve		Sensor and protection pocket nominal length mm
Nominal size mm	"		K< 40°C D mm	K40- 80°C D mm	K> 80°C D mm	d "	l mm	
15	1/2	21,3	30	40	50	3/8 1/2	20	31 33
20	3/4	26,9	40	40	50	3/8 1/2	20	31 33
25	1	33,7	40	50	---	3/8 1/2	20	31 33
25	1	33,7	---	---	60	1/2	60	84
32	1 1/4	42,4	40	50	60	1/2	60	84
40	1 1/2	48,3	40	50	60	1/2	60	84
50	2	60,3	50	60	60	1/2	60	84
65	2 1/2	76,1	50	60	---	1/2	60	84
65	2 1/2	76,1	---	---	80	1/2	80	134
80	3	88,9	50	60	80	1/2	80	134
100	4	114,8	60	80	80	1/2	80	134
125	5	139,7	80	80	80	1/2	80	134
150	6	165,1	80	80	100	1/2	80	174
200	8	219,1	80	80	100	1/2	80	174

For an exact temperature measurement a thermal insulation of the sensor installation zone is absolutely necessary



Permissible insulation



The insulation should never cover the temperature sensor cable.

Installation recommendations according to EN1434

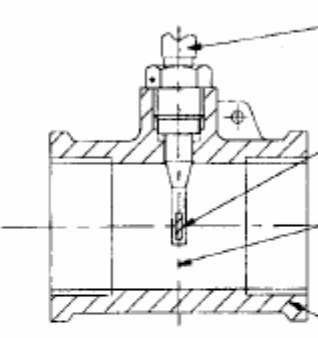
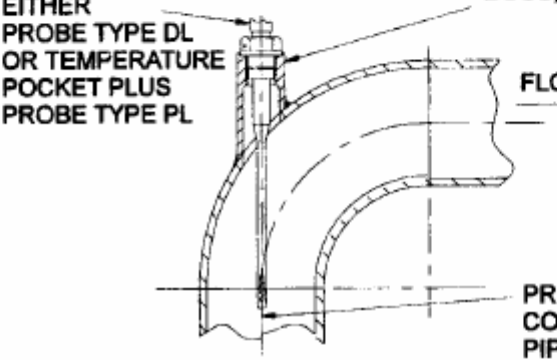
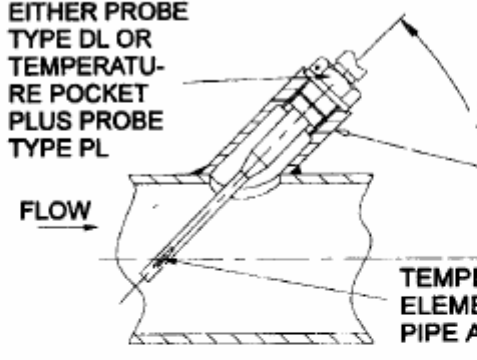
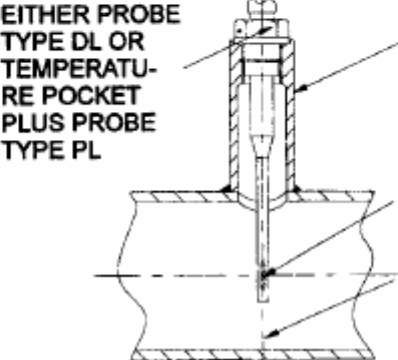
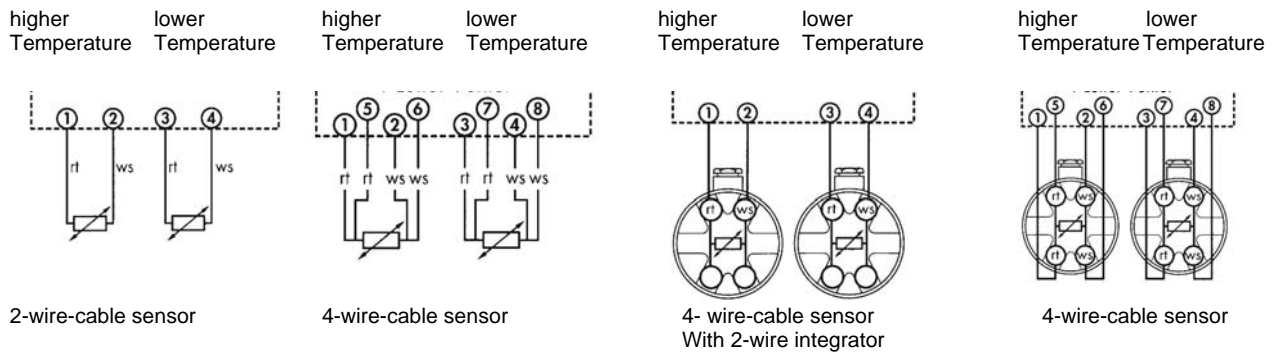
TYPE OF PROBE INSTALLATION	PIPE SIZE	INSTALLATION RECOMMENDATIONS
<p>A</p> <p>IN THREADED PIPE FITTING</p>	<p>DN15 DN20 DN25</p>	<p>FOR PROBE TYPE DS ONLY</p>  <p>TEMPERATURE SENSING ELEMENT INSERTED TO AXIS OF FITTING OR BEYOND</p> <p>PROBE AXIS PERPENDICULAR TO AXIS OF FITTING AND IN THE SAME PLANE</p> <p>PIPE FITTING, SEE FIG. A.7</p>
<p>B</p> <p>IN BEND</p>	<p>≤ DN50</p>	<p>EITHER PROBE TYPE DL OR TEMPERATURE POCKET PLUS PROBE TYPE PL</p>  <p>BOSS, SEE FIG. A.6b</p> <p>FLOW →</p> <p>PROBE AXIS COINCIDENT WITH PIPE AXIS</p>
<p>C</p> <p>ANGLED PROBE</p>	<p>≤ DN50</p>	<p>EITHER PROBE TYPE DL OR TEMPERATURE POCKET PLUS PROBE TYPE PL</p>  <p>BOSS, SEE FIG. A.6b</p> <p>45°</p> <p>FLOW →</p> <p>TEMPERATURE SENSING ELEMENT INSERTED TO PIPE AXIS OR BEYOND</p>
<p>D</p> <p>PERPENDICULAR PROBE</p>	<p>DN65 TO DN250</p>	<p>EITHER PROBE TYPE DL OR TEMPERATURE POCKET PLUS PROBE TYPE PL</p>  <p>BOSS, SEE FIG. A.6a</p> <p>TEMPERATURE SENSING ELEMENT INSERTED TO PIPE AXIS OR BEYOND</p> <p>PROBE AXIS PERPENDICULAR TO AXIS OF FITTING AND IN THE SAME PLANE</p>

Diagram of connections of the temperature sensors



2-wire connection without connection head

In this most usual connection circuit, the resistance of the cable is to be added to the resistance of the sensor. For the heat measurement, not the absolute temperature is important, but the exact temperature difference, therefore both sensor cables must be of identical length (resistance). The sensors are exactly computer-paired at the factory and may be used only in the original mating.

4-wire connection with connection head

Through the wire 1 and 2 a constant current value flows. Through the wire 5 and 6 the voltage changes of the Pt resistance is measured. In this connection circuit type, sensors with larger or unequal cable length can be used, since the resistance of the wire has no influence.

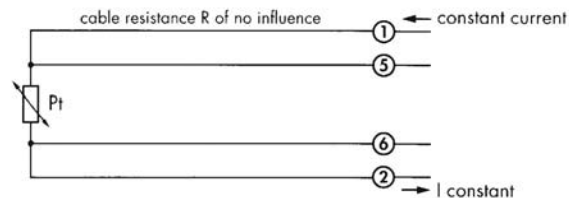
2-wire connection

Measuring result = Resistance Pt100 or Pt500 + cable resistance

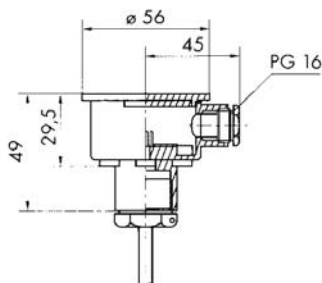


4-wire connection

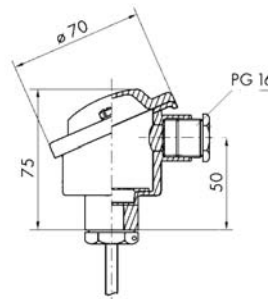
Measuring result = Resistance Pt100 or Pt500 + cable resistance
The cable resistance is not to be considered with 4-wire technology



Dimensions of the DIN-connection head

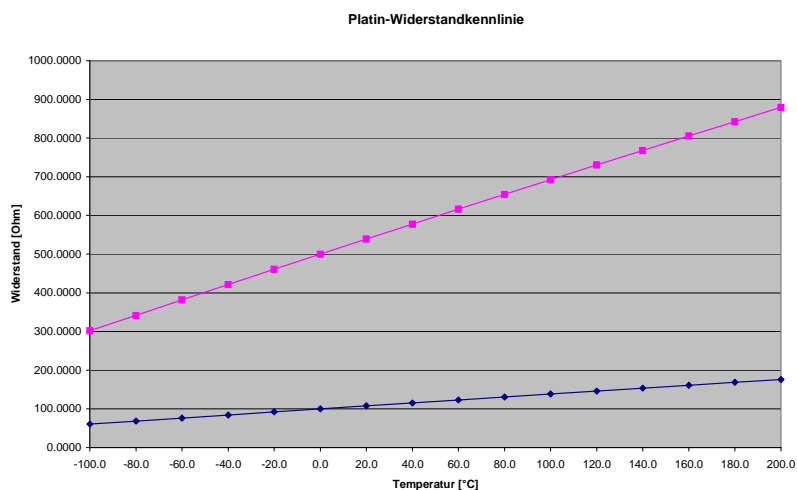
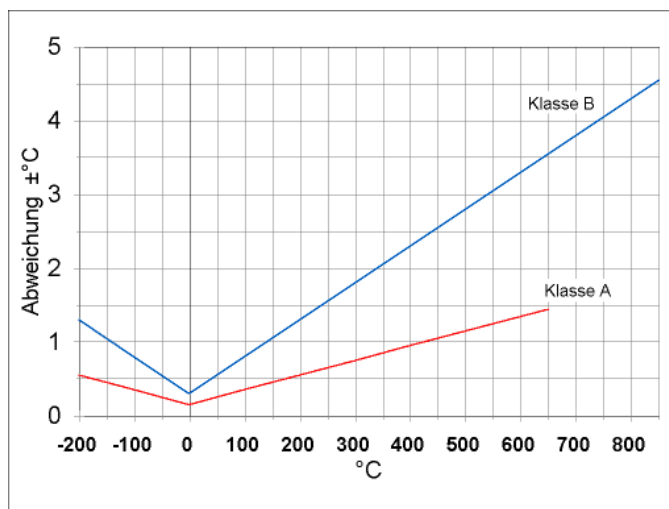


Plastic head



Light alloy head

Characteristics of the temperature sensors according to DIN IEC751



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We reserve the right to make technical modifications