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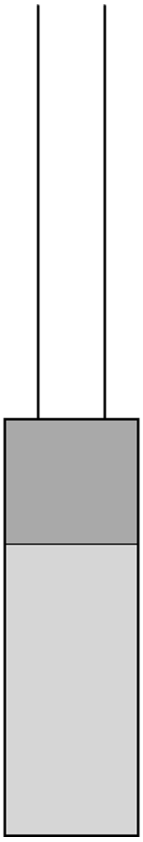
Platinum-chip temperature sensors to EN 60 751



- **for temperatures from -50 to +600°C**
- **with nominal values of 100, 500 and 1000Ω**
- **standard nominal values and tolerances**
- **small sizes, from 2mm x 2.5mm**
- **special selection available**

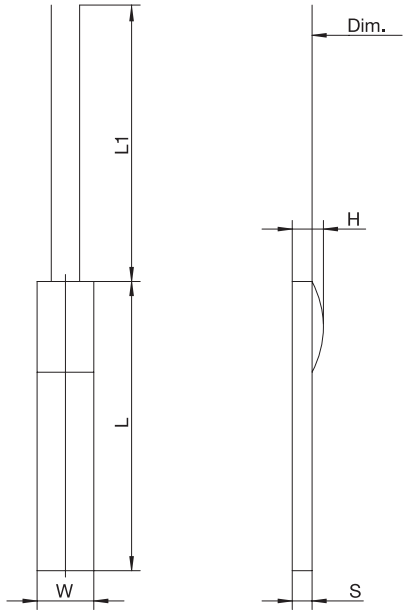
Small dimensions, fast response, high-resistance nominal values and considerable insensitivity to shock and vibration when fixed, as well as high measurement accuracy and long-term stability - these are the advantages of this cost-effective style. Applications include many tasks in measurement and control engineering.

Type designation

P	platinum resistance material to EN 60 751
C	chip style
A	connecting wires
1.	1 measurement winding
20	width W in 0.1mm (2.0mm)
10	length L in mm (10mm)
.1	nominal value 100Ω at 0°C
.5	nominal value 500Ω at 0°C
.10	nominal value 1000Ω at 0°C
L	temperature range from -50 to +250°C
S	temperature range from -50 to +400°C
M	temperature range from -50 to +550°C
H	temperature range from -50 to +600°C

Temperature sensors up to 250°C with connecting wires and nominal values of 100, 500 and 1000Ω at 0°C

Type	Sensor body W	L	H	S	Connecting wires Dim.	L1	R_L	Material	Sales No.	
Tolerance class B ±(0.3 + 0.005 • |t|)°C, alpha = 3.850 • 10^{-3}°C^{-1}										
PCA 1.2003.1 L	2.0	2.5	1.3	0.6	Ø 0.25	15	0.8	Ag/Pd	90/00047580	●
PCA 1.2005.1 L	2.0	5	1.3	0.6	0.2 x 0.3	10	0.3	Ag	90/00063260	●
PCA 1.2010.1 L	2.0	10	1.3	0.6	0.2 x 0.3	10	0.3	Ag	90/00044789	●
PCA 1.2005.5 L	2.0	5	1.3	0.6	0.2 x 0.3	10	0.3	Ag	90/00063261	●
PCA 1.2010.5 L	2.0	10	1.3	0.6	0.2 x 0.3	10	0.3	Ag	90/00048147	●
PCA 1.2010.10 L	2.0	10	1.3	0.6	0.2 x 0.3	10	0,3	Ag	90/00062565	●



Note:
The specified nominal value refers to the standard length L1 of the connecting wires, with the measurement point 2mm from the open end of the wires. A change in the wire length may result in appreciable changes in resistance.
R_L = longitudinal resistance of a single connecting wire at 0°C in mΩ/mm.

Platinum-chip temperature sensors must not be used unprotected in a humid environment or for direct measurement in liquids.

All dimensions in mm.

● Available from stock.

Item 1

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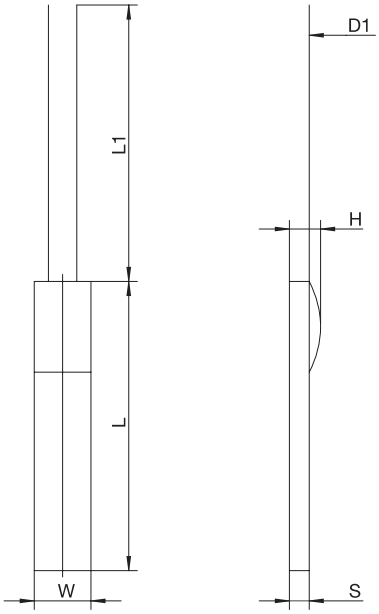
Temperature sensors up to 400°C with connecting wires and nominal values of 100, 500 and 1000Ω at 0°C

Type	Sensor body				Connecting wires				Sales No.	
	W	L	H	S	D1	L1	R_L	Material		
Tolerance class B ±(0.3 + 0.005 • |t|)°C, alpha = 3.850 • 10^{-3}°C^{-1}										
PCA 1.2003.1 S	2.0	2.5	1.3	0.6	0.20	10	2.8	Pt-Ni	90/00358363	●
PCA 1.2005.1 S	2.0	5	1.3	0.6	0.20	10	2.8	Pt-Ni	90/00089206	●
PCA 1.2010.1 S	2.0	10	1.3	0.6	0.20	10	2.8	Pt-Ni	90/00089203	●
PCA 1.2005.5 S	2.0	5	1.3	0.6	0.20	10	2.8	Pt-Ni	90/00089207	●
PCA 1.2010.5 S	2.0	10	1.3	0.6	0.20	10	2.8	Pt-Ni	90/00089204	●
PCA 1.2005.10 S	2.0	5	1.3	0.6	0.20	10	2.8	Pt-Ni	90/00358358	●
PCA 1.2010.10 S	2.0	10	1.3	0.6	0.20	10	2.8	Pt-Ni	90/00089205	●
Tolerance class A ±(0.15 + 0.002 • |t|)°C, alpha = 3.850 • 10^{-3}°C^{-1}										
PCA 1.2003.1 S	2.0	2.5	1.3	0.6	0.20	10	2.8	Pt-Ni	90/00358365	●
PCA 1.2005.1 S	2.0	5	1.3	0.6	0.20	10	2.8	Pt-Ni	90/00089225	●
PCA 1.2010.1 S	2.0	10	1.3	0.6	0.20	10	2.8	Pt-Ni	90/00089222	●
PCA 1.2005.5 S	2.0	5	1.3	0.6	0.20	10	2.8	Pt-Ni	90/00089226	●
PCA 1.2010.5 S	2.0	10	1.3	0.6	0.20	10	2.8	Pt-Ni	90/00089223	●
PCA 1.2005.10 S	2.0	5	1.3	0.6	0.20	10	2.8	Pt-Ni	90/00358359	●
PCA 1.2010.10 S	2.0	10	1.3	0.6	0.20	10	2.8	Pt-Ni	90/00089224	●



Note:
The specified nominal value refers to the standard length L1 of the connecting wires, with the measurement point 2mm from the open end of the wires. A change in the length of the wire can lead to appreciable changes in resistance.
R_L = longitudinal resistance of a single connecting wire at 0°C in mΩ/mm.

Platinum-chip temperature sensors must not be used unprotected in a humid environment or for direct measurement in liquids.

All dimensions in mm.

● Available from stock.

Item 2

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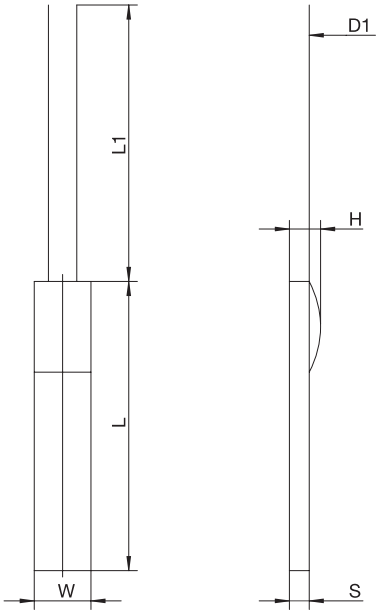
Temperature sensors up to 550°C with connecting wires and a nominal value of 100, 500 and 1000Ω at 0°C

Type	Sensor body				Connecting wires				Sales No.	
	W	L	H	S	D1	L1	R_L	Material		
Tolerance class B ±(0.3 + 0.005 • |t|)°C, alpha = 3.850 • 10^{-3}°C^{-1}										
PCA 1.2005.1 M	2.0	5	1.3	0.6	0.20	10	2.8	Pt-Ni	90/00387456	●
PCA 1.2005.5 M	2.0	5	1.3	0.6	0.20	10	2.8	Pt-Ni	90/00387465	●
PCA 1.2010.10 M	2.0	10	1.3	0.6	0.20	10	2.8	Pt-Ni	90/00387460	●
Tolerance class A ±(0.15 + 0.002 • |t|)°C, alpha = 3.850 • 10^{-3}°C^{-1}										
PCA 1.2005.1 M	2.0	5	1.3	0.6	0.20	10	2.8	Pt-Ni	90/00387455	●
PCA 1.2005.5 M	2.0	5	1.3	0.6	0.20	10	2.8	Pt-Ni	90/00387449	●
PCA 1.2010.10 M	2.0	10	1.3	0.6	0.20	10	2.8	Pt-Ni	90/00387459	●



Note:
The specified nominal value refers to the standard length L1 of the connecting wires, with the measurement point 2mm from the open end of the wires. Changes in the length of the wire can lead to appreciable changes in resistance.
R_L = longitudinal resistance of a single connecting wire at 0°C in mΩ/mm.

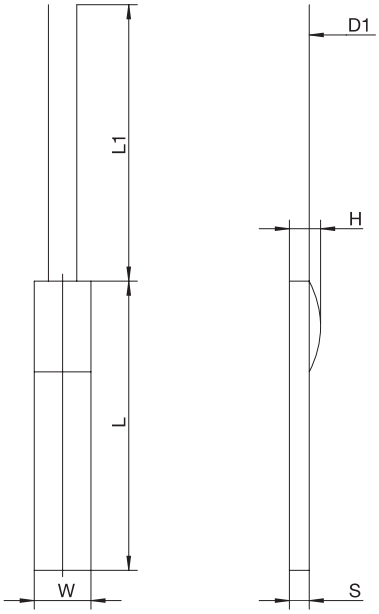
Platinum-chip temperature sensors must not be used unprotected in a humid environment or for direct measurement in liquids.

All dimensions in mm.

● Available from stock. Item 3

Temperature sensors up to 600°C with connecting wires and a nominal value of 100 and 1000Ω at 0°C

Type	Sensor body				Connecting wires				Sales No.	
	W	L	H	S	D1	L1	R_L	Material		
Tolerance class B ±(0.3 + 0.005 • |t|)°C, alpha = 3.850 • 10^{-3}°C^{-1}										
PCA 1.2010.1 H	2.0	10	1.2	0.6	0.25	10	2.3	Pd	90/00053198	●
PCA 1.2010.10 H	2.0	10	1.2	0.6	0.25	10	2.3	Pd	90/00044796	●
Tolerance class A ±(0.15 + 0.002 • |t|)°C, alpha = 3.850 • 10^{-3}°C^{-1}										
PCA 1.2010.1 H	2.0	10	1.2	0.6	0.25	10	2.3	Pd	90/00343069	●
PCA 1.2010.10 H	2.0	10	1.2	0.6	0.25	10	2.3	Pd	90/00343064	●



Note:
The specified nominal value refers to the standard length L1 of the connecting wires, with the measurement point 2mm from the open end of the wires. A change in the length of the wires can lead to appreciable changes in resistance.
R_L = longitudinal resistance of a single connecting wire at 0°C in mΩ/mm.

Platinum-chip temperature sensors must not be used unprotected in a humid environment or for direct measurement in liquids.

All dimensions in mm.

● Available from stock. Item 4

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Self-heat coefficient, response times and measurement tolerances of the temperature sensors

Item	Type		Nominal value in Ω at 0°C	Self-heat coefficient in E in °C/mW		Response times in sec	
				water	air	$t_{0.5}$	$t_{0.9}$
1	PCA 1.2003.1 L	●	1 x 100	0.02	0.2	0.1	0.3
	PCA 1.2005.1 L	●	1 x 100	0.02	0.2	0.1	0.3
	PCA 1.2010.1 L	●	1 x 100	0.02	0.2	0.1	0.3
	PCA 1.2005.5 L	●	1 x 500	0.02	0.2	0.1	0.3
	PCA 1.2010.5 L	●	1 x 500	0.01	0.2	0.2	0.4
	PCA 1.2010.10 L	●	1 x 1000	0.01	0.2	0.2	0.3
2	PCA 1.2003.1 S	●	1 x 100	0.02	0.2	0.1	0.3
	PCA 1.2005.1 S	●	1 x 100	0.02	0.2	0.1	0.3
	PCA 1.2010.1 S	●	1 x 100	0.02	0.2	0.1	0.3
	PCA 1.2005.5 S	●	1 x 500	0.02	0.2	0.1	0.3
	PCA 1.2010.5 S	●	1 x 500	0.01	0.2	0.2	0.4
	PCA 1.2005.10 S	●	1 x 1000	0.02	0.2	0.1	0.3
	PCA 1.2010.10 S	●	1 x 1000	0.02	0.2	0.1	0.3
3	PCA 1.2005.1 M	●	1 x 100	0.02	0.2	0.1	0.3
	PCA 1.2005.5 M	●	1 x 500	0.02	0.2	0.1	0.3
	PCA 1.2010.10 M	●	1 x 1000	0.02	0.2	0.1	0.3
4	PCA 1.2010.1 H	●	1 x 100	0.02	0.2	0.1	0.3
	PCA 1.2010.10 H	●	1 x 1000	0.01	0.2	0.2	0.3

Response times:
The values for $t_{0.5}$ and $t_{0.9}$ were determined in circulating water (v = 0.4m/sec).

Measurement conditions for self-heat coefficient:
flow velocity for water v = 0.2m/sec and air v = 2m/sec

Self-heating:
A current has to pass through a temperature sensor in order to measure its electrical resistance. This current produces a certain amount of self-heating of the temperature sensor, depending on the external influences. The size of the self-heat error depends on the power supplied $P = I^2 \bullet R$, the amount of heat dissipated via the measured medium, the thermal mass of the sensor and its surface area. The specific properties are combined into a coefficient, so that the self-heat error is given by:

$\Delta t = I^2 \bullet R \bullet E$

The coefficient E varies with the measurement conditions and changes if the sensor is built into a protective fitting.

Measurement tolerances

Tolerances in mm

L	W	H	S	**L1**
±0.5	±0.2	±0.2	±0.1	+5-3

● Available from stock.