

Platinum-chip temperature sensors in SMD style on epoxy card to EN 60 751

- for temperatures from -20 to +150°C
- Reference values Pt100, Pt500 and Pt1000
- standardized nominal values and tolerance
- pre-assembled measuring insert
- automated processing is possible
- SMD temperature sensors offer a price advantage

Introduction

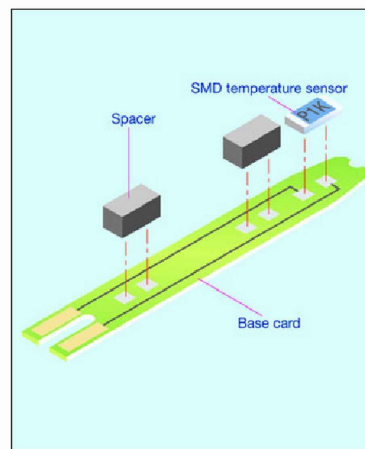
PCSE style platinum-chip temperature sensors constitute a pre-assembled measurement insert. The epoxy card carries an assembled platinum SMD temperature sensor as the active component to acquire the temperature.

The resistance signal is transmitted to the contact areas on opposing sides, via thin tracks. The connection is made through solder contacts, so that a variety of different connecting cables can be soldered on with ease. In addition, spacers are fitted on the card, which make it possible to center the card within the protection tube. Furthermore, they also ensure that the safety distance required for the insulation between temperature sensor and protection tube is maintained.

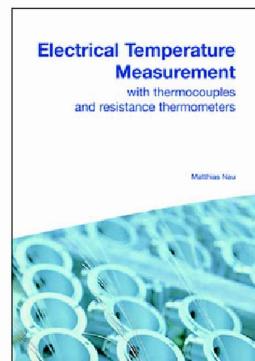
PCSE style platinum-chip temperature sensors are available from stock as Pt100, Pt500 and Pt1000 measuring inserts.

The application temperature range covers -20 to +150°C.

PCSE style



Technical publication



This revised edition takes account of altered standards and recent developments. The new chapter "Measurement uncertainty" incorporates the basic concept of the internationally recognized ISO guideline "Guide to the expression of uncertainty in measurement" (abbreviated: GUM). In addition, the chapter on explosion protection for thermometers has been updated in view of the European Directive 94/9/EC, which has been in force since 1st July 2003.

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JUMO platinum temperature sensors

Construction and application of platinum temperature sensors	Data Sheet 90.6000
Platinum-glass temperature sensors	Data Sheet 90.6021
Platinum-ceramic temperature sensors	Data Sheet 90.6022
Platinum-foil temperature sensors	Data Sheet 90.6023
Platinum-glass temperature sensors with glass extension	Data Sheet 90.6024
Platinum-chip temperature sensors with connecting wires	Data Sheet 90.6121
Platinum-chip temperature sensors on epoxy card	Data Sheet 90.6122
Platinum-chip temperature sensors with terminal clamps	Data Sheet 90.6123
Platinum-chip temperature sensors in cylindrical style	Data Sheet 90.6124
Platinum-chip temperature sensors in SMD style	Data Sheet 90.6125

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Brief description

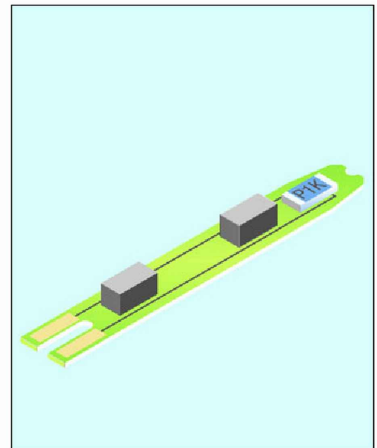
The PCSE style greatly facilitates the fabrication of different probe variations with connecting cable, having been conceived especially as a measuring insert.

The pre-assembled measuring insert with the SMD temperature sensor can be inserted directly into a protection fitting, after soldering on a connecting cable. The card largely protects the temperature sensor against damage. This construction eliminates any tilting of the temperature sensor as well as the bending and short-circuiting of connecting wires.

Another advantage of this style is that any possible tension on the connecting cable cannot be directly transmitted to the SMD temperature sensor. Furthermore, the thin tracks between the connection contact and temperature sensor minimize wrong measurements caused by heat conduction. In addition, the measuring inserts specified provide the possibility of automated processing, enabling a reduction in production costs.

PCSE style platinum-chip temperature sensors are available as Pt100, Pt500 and Pt1000 measuring inserts. The application temperature spans -20 to +150°C. Please note that, for design reasons, such measurement inserts can only be delivered as a complete panel (also see Technical data).

PCSE style



Temperature sensors in cardboard box packaging

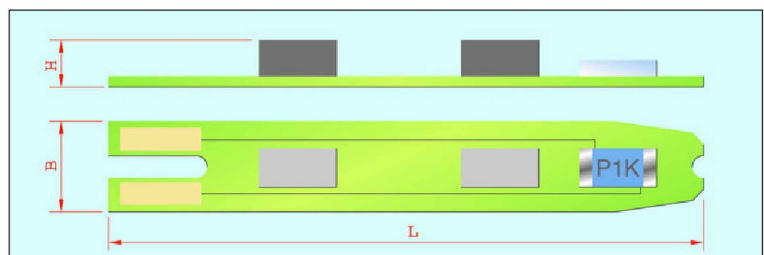
Type	R ₀ /Ω	Temperature sensor		
		B	L	H
PCSE 1.4315.1	1x100	4.3	15	2.2
PCSE 1.4315.5	1x500	4.3	15	2.2
PCSE 1.4315.10	1x1000	4.3	15	2.2
PCSE 1.4328.1	1x100	4.3	28	2.2
PCSE 1.4328.5	1x500	4.3	28	2.2
PCSE 1.4328.10	1x1000	4.3	28	2.2

Dim. tolerances: ΔB = ±0.2 / ΔL = ±0.5 / ΔH = ±0.2
Dimensions in mm.

Sales No. for tolerance class		
1/3 DIN B	A	B
-	-	90/00419974
-	-	on request
-	-	90/00404832
-	-	90/00360388
-	-	90/00360391
-	-	90/00374858

For a definition of the tolerance classes, see Data Sheet 90.6000

Dimensional drawing



Technical data

Standard	EN 60 751		
Temperature coefficient	$\alpha = 3.850 \times 10^{-3} \text{ }^{\circ}\text{C}^{-1}$ (between 0 and 100°C)		
Temperature range	-20 to +150°C		
Tolerance	Temperature validity range Class B: -20 to +150°C		
Measuring current	Pt100	recommended: 1.0mA	
	Pt500	recommended: 0.7mA	
	Pt1000	recommended: 0.1mA	
Maximum current	Pt100	7.0mA	
	Pt500	3.0mA	
	Pt1000	1.0mA	
Operating conditions	Platinum-chip temperature sensors may not be used unprotected in humid ambient conditions or corrosive atmospheres. The user may have to carry out some checks before operation. Please also refer to the Installation Instructions B 90.6121.4 “Notes on the application of platinum-chip temperature sensors.”		
Long-term stability	max. R_0 drift 0.05 %/year (see Data Sheet 90.6000 for definitions)		
Insulation resistance	>10MΩ at room temperature		
Self-heating	$\Delta t = I^2 \times R \times E$ (see Data Sheet 90.6000 for definitions)		
Packaging	For design reasons, the measuring inserts can only be delivered as a complete panel. The individual cards are wrapped in film and delivered packed in a cardboard box. One panel contains the following quantity of temperature sensors: Type: PCSE 1.4315.x = 132 items, Type: PCSE 1.4328.x = 99 items		
Storage	In the standard packaging, JUMO temperature sensors, PCSE style, can be stored for at least 12 months under normal ambient conditions. It is not permissible to store the sensors in aggressive atmospheres, corrosive media, or in high humidity.		

Self-heating coefficients and response times

Type	Self-heating coefficient E in °C/mW		Response times in seconds			
	in water (v = 0.2m/sec)	in air (v = 2m/sec)	in water (v = 0.4m/sec)		in air (v = 1m/sec)	
			t _{0.5}	t _{0.9}	t _{0.5}	t _{0.9}
PCSE 1.4315.1	0.03	0.4	0.2	0.4	3	9
PCSE 1.4315.5	0.03	0.4	0.2	0.4	3	9
PCSE 1.4315.10	0.03	0.4	0.2	0.4	3	9
PCSE 1.4328.1	0.03	0.4	0.2	0.4	3	9
PCSE 1.4328.5	0.03	0.4	0.2	0.4	3	9
PCSE 1.4328.10	0.03	0.4	0.2	0.4	3	9