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Platinum-chip temperature sensors with connection wires according to DIN EN 60751:2009 / IEC 60751:2008

- For temperatures from -70 to +600 °C
- Standardized nominal values and tolerances
- Resistance values from 20 to 2000 Ω
- Linear characteristic curve
- Quick response behavior
- Good vibration resistance
- Affordable

Introduction

Platinum-chip temperature sensors belong to the category of thin-film technology temperature sensors. They are produced by JUMO using the latest state-of-the-art technology under clean-room conditions. The platinum layer acting as the active layer is applied to a ceramic body in a sputter process and subsequently given a meander-structure in a lithographic process. Fine adjustment is then carried out in a laser trimming process. To protect the sensor against external influences and to provide insulation, the platinum meander is coated with a special glass layer once the adjustment is completed. The electrical connection is made by connection wires welded onto the contact surfaces. Depending on the version, the connection wires can be made of different materials, while their length and diameter can also vary to a certain extent. An additional glass layer applied to the contact surface fastens the connection wires and also acts as a strain relief.

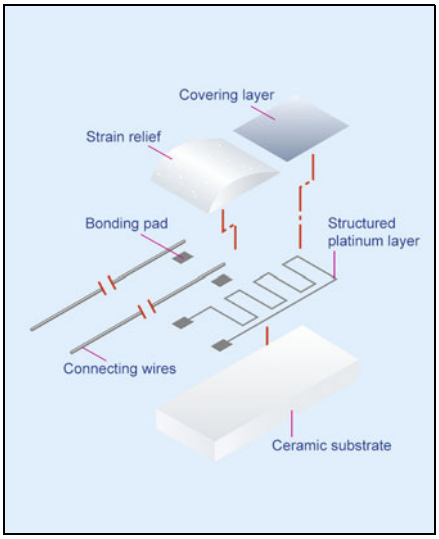
Platinum-chip temperature sensors with the PCA design type are available ex works in various versions as Pt100, Pt500, or Pt1000 temperature sensors. Special nominal values can be manufactured upon request. Platinum-chip temperature sensors are also available in small sizes with high ohmic load. Their low net weight allows very fast response times. When installed as fixed units, they also provide excellent vibration resistance. The operating temperature depends on the respective version and, in normal cases, ranges from -70 to +600 °C. When accepting certain nominal value offsets and/or hysteresis effects that occur within specific limits, these platinum-chip temperature sensors can also be used for temperatures well below -70 °C.

For most temperature applications required by the market, platinum-chip temperature sensors are used as an active component for temperature acquisition. They are typically used in the following industries: heating, ventilation, and air-conditioning technology, medical and laboratory technology, white goods, automobiles and commercial vehicles, as well as mechanical and industrial engineering.

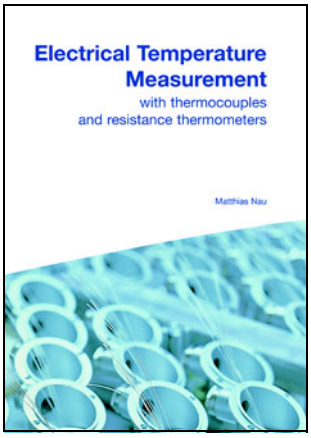
JUMO platinum temperature sensors

Construction and application of platinum temperature sensors	Data sheet 906000
Platinum-ceramic temperature sensors	Data sheet 906022
Platinum-chip temperature sensors with connection wires	Data sheet 906121
Platinum-chip temperature sensors on circuit boards	Data sheet 906122
Platinum-chip temperature sensors with terminal clamps	Data sheet 906123
Platinum-chip temperature sensors in SMD design type	Data sheet 906125

Design type PCA



Technical literature



The revised version of this book was reviewed due to changed standards and further developments. The principle of the internationally approved "Guide of the expression of uncertainty in measurement" (abbreviated: GUM) ISO guide is particularly conveyed by the new chapter "Measurement uncertainty". In addition, a chapter on explosion protection for thermometers has been added.

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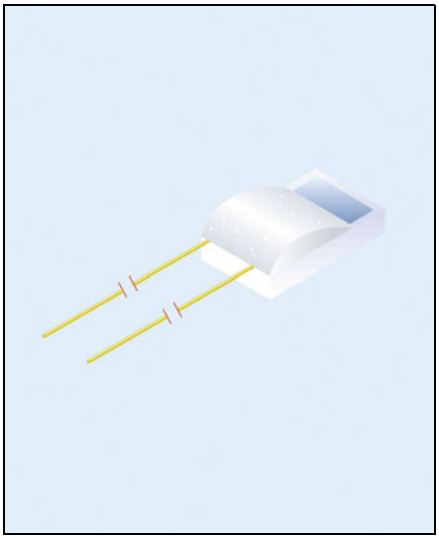
Platinum-chip temperature sensors with nickel connection wires (gold-plated) according to DIN EN 60751:2009 / IEC 60751:2008

Design type PCA/EG



Brief description

Platinum-chip temperature sensors are based on a temperature-dependent resistance, the curve and admissible tolerance of which are defined in the international IEC 60751:2008 standard. They combine the favorable features of platinum temperature sensors with the advantages of large-scale production. They are characterized by standardization and universal interchangeability as well as high measuring accuracy, excellent long-term stability, and good reproducibility of the electric features. Demand for large quantities has led to a notable price reduction over the last few years. For this reason, platinum-chip temperature sensors are also a real alternative to thermistors based on the principle of semi-conductors in terms of pricing.
Platinum-chip temperature sensors in the version "EG" can be universally used and are suitable for a wide range of applications in low and higher temperature ranges up to 500 °C. Short-term use of the sensors at up to 550 °C is admissible. The gold-plated connection wires are suitable for all common connection technologies: welding, soldering, and crimping. The operating temperature range is -70 to +500 °C.

Item overview

Temperature sensor						Connection wire				Part no. for tolerance class			
Type	R_0/Ω	B	L	H	S	Material	D1	L1	R_L in mΩ/mm	F0.1 (Class AA)	F0.15 (Class A)	F0.3 (Class B)	F0.6 (Class 2B)
PCA 1.1505.1EG	1×100	1.5	5.0	1.0	0.38	NiAu	0.20	10	2.4	00693656F	00693654F	00693651F	Upon request
PCA 1.1505.10EG	1×1000	1.5	5.0	1.0	0.38	NiAu	0.20	10	2.4	00693663F	00693662F	00693658F	Upon request
PCA 1.2003.1EG	1×100	2.0	2.5	1.3	0.64	NiAu	0.20	10	2.4	00692526F	00663905F	00663850F	Upon request
PCA 1.2003.10EG	1×1000	2.0	2.5	1.3	0.64	NiAu	0.20	10	2.4	00692528F	00692527F	00665252F	Upon request
PCA 1.2005.1EG	1×100	2.0	5.0	1.3	0.64	NiAu	0.20	10	2.4	00692062F	00692061F	00692053F	Upon request
PCA 1.2005.10EG	1×1000	2.0	5.0	1.3	0.64	NiAu	0.20	10	2.4	00691992F	00691986F	00691984F	Upon request

Dimension tolerances:
$\Delta B = \pm 0.2$ / $\Delta L = \pm 0.5$ / $\Delta H = \pm 0.2$ / $\Delta S = \pm 0.1$ / $\Delta D1 = \pm 0.01$ / $\Delta L1 = \pm 0.5$
Dimensions in mm.

Definition of tolerance classes
see data sheet 906000
"F" = Folding box (blister)

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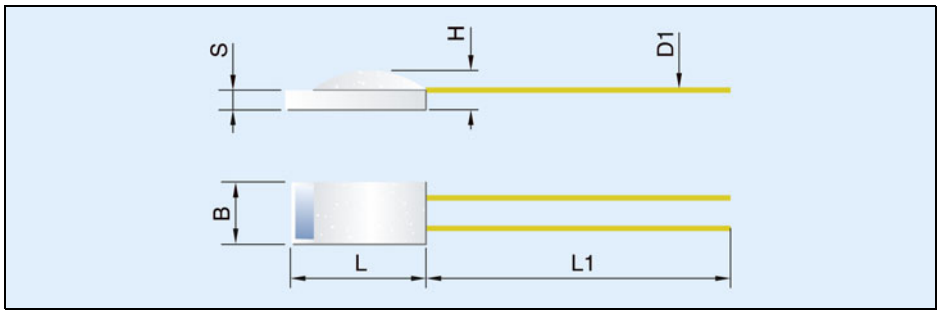
Dimensional drawing



Technical data for type PCA/EG

Standard	DIN EN 60751:2009 / IEC 60751:2008
Temperature coefficient	α = 3.850 × 10^{-3} °C^{-1} (between 0 and 100 °C)
Temperature range	-70 to +500 °C (temporarily 550 °C)
Tolerance	Temperature validity range, class F0.1 (class AA): -50 to +200 °C Temperature validity range, class F0.15 (class A): -70 to +300 °C Temperature validity range, class F0.3 (class B): -70 to +500 °C Temperature validity range, class F0.6 (class 2B): -70°to +500 °C
Measuring/maximum current	Pt100 recommended 1.0 mA, maximum 7 mA Pt500 recommended 0.7 mA, maximum 3 mA Pt1000 recommended 0.1 mA, maximum 1 mA
Operating conditions	Platinum-chip temperature sensors must be protected when used in a humid environment or in aggressive atmospheres. Direct immersion into liquids is also not admissible. The user may have to carry out some checks before using the sensors. **Please also refer to the installation instructions B 906121.4 "Information for the application of platinum-chip temperature sensors."**
Connection wires	These temperature sensors are equipped with connection wires made of gold-plated pure nickel wire. The connection wires are suitable for welded, soldered, and crimp connections. During further assembly work, it is essential to avoid exerting lateral pressure loads on the connections. Ensure that the horizontal traction on individual connection wires does not exceed 8 N. Avoid unnecessary bending of the connection wires because this will weaken the material and could lead to the connection wires breaking. Please also refer to point 3 "Connection techniques" in our installation instructions. Longer connection wires (up to a length of 300 mm, in one piece) can also be fitted as an optional extra. Extension wires or insulated stranded wires in any lengths can also be fitted later as an alternative to this. In this case, however, take into account that this may result in restrictions concerning the operating temperature.
Measuring point	The specified nominal value relates to the standard connection wire length L1. The measured value is taken 2 mm in front of the open wire end. Changes to the wire length will lead to changes in the resistance, which may mean the tolerance class is no longer met.
Long-term stability	Max. R_0 drift 0.05 % per year (for definition, see data sheet 906000)
Low-temperature application	Taking into account a nominal value drift and hysteresis effect that occur to a certain extent, temperature measurements down to -200 °C are also possible. Further details are available upon request.
Insulation resistance	> 10 MΩ at room temperature
Self-heating	$\Delta t = I^2 \times R \times E$ (for definition, see data sheet 906000)
Packaging	Standard packaging: folding box (blister), packaging unit: 100 pieces, loose Blister belt: upon request Cardboard box: temperature sensors with connection wires > 30 mm On tape (on foil): upon request, over- or under-delivery ±3 %
Storage	In the standard or belt packaging option, JUMO temperature sensors in design type PCA/EG can be stored for at least 12 months under normal ambient conditions. It is not admissible to store the sensors in aggressive atmospheres, corrosive media, or in high humidity.
Compliant with RoHS 2011/65/EU and 2015/863/EU	Yes
Compliant with REACH 1907/2006	Yes

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Self-heating coefficients and response times for type PCA/EG

Type	Self-heating coefficient E in K/mW		Response times in seconds			
	Water (v = 0.2 m/s)	Air (v = 2 m/s)	In water (v = 0.4 m/s)		In air (v = 1 m/s)	
			$t_{0.5}$	$t_{0.9}$	$t_{0.5}$	$t_{0.9}$
PCA 1.1505.1EG	0.02	0.2	0.1	0.3	3	8
PCA 1.1505.10EG	0.02	0.2	0.1	0.3	3	8
PCA 1.2003.1EG	0.02	0.2	0.1	0.3	3	9
PCA 1.2003.10EG	0.02	0.2	0.1	0.3	3	9
PCA 1.2005.1EG	0.02	0.2	0.1	0.3	3	9
PCA 1.2005.10EG	0.02	0.2	0.1	0.3	3	9

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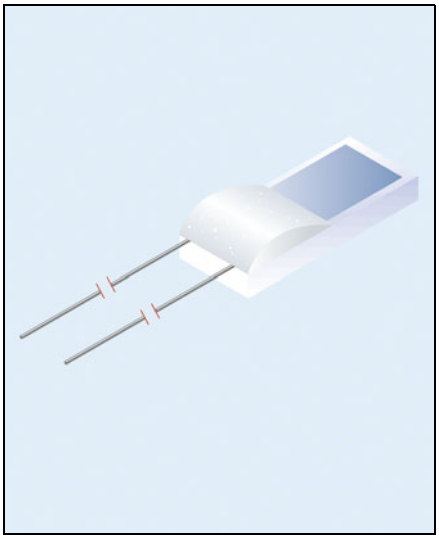
Platinum-chip temperature sensors with nickel connection wires according to DIN EN 60751:2009 / IEC 60751:2008

Design type PCA/E



Brief description

Platinum-chip temperature sensors are based on a temperature-dependent resistance, the curve and admissible tolerance of which are defined in the international IEC 60751:2008 standard. They combine the favorable features of platinum temperature sensors with the advantages of large-scale production. They are characterized by standardization and universal interchangeability as well as high measuring accuracy, excellent long-term stability, and good reproducibility of the electric features. Demand for large quantities has led to a notable price reduction over the last few years. For this reason, platinum-chip temperature sensors are also a real alternative to thermistors based on the principle of semi-conductors in terms of pricing.
Platinum-chip temperature sensors in the version "E" can be universally used and are suitable for a wide range of applications in low and higher temperature ranges up to 500 °C. Short-term use of the sensors at up to 550 °C is admissible. The metallically bare connection wires are particularly suitable for an electrical connection based on welded or hard-soldered joints. Soft-soldered joints are possible under certain circumstances. The operating temperature range is -70 to +500 °C.

Item overview

Temperature sensor						Connection wire				Part no. for tolerance class			
Type	R_0/Ω	B	L	H	S	Material	D1	L1	R_L in mΩ/mm	F0.1 (Class AA)	F0.15 (Class A)	F0.3 (Class B)	F0.6 (Class 2B)
PCA 1.1505.1E	1×100	1.5	5.0	1.0	0.38	Ni	0.20	10	2.4	00623306F	00623291F	00622624F	Upon request
PCA 1.2003.1E	1×100	2.0	2.5	1.3	0.64	Ni	0.20	10	2.4	00596146F	00596145F	00596142F	Upon request
PCA 1.2003.1E	1×100	2.0	2.5	1.3	0.64	Ni	0.20	75	2.4	Upon request	Upon request	00592657P	Upon request
PCA 1.2005.1E	1×100	2.0	5.0	1.3	0.64	Ni	0.20	10	2.4	00524128F	00524127F	00524126F	00588807O
PCA 1.2005.1E	1×100	2.0	5.0	1.3	0.64	Ni	0.25	55	1.3	Upon request	Upon request	00579512P	-
PCA 1.2005.5E	1×500	2.0	5.0	1.3	0.64	Ni	0.20	10	2.4	Upon request	Upon request	Upon request	Upon request
PCA 1.2005.10E	1×1000	2.0	5.0	1.3	0.64	Ni	0.20	10	2.4	00524129F	00524130F	00527856F	Upon request
PCA 1.2005.10E	1×1000	2.0	5.0	1.3	0.64	Ni	0.25	55	1.3	Upon request	Upon request	00517230P	Upon request

Dimension tolerances:
ΔB = ±0.2 / ΔL = ±0.5 / ΔH = ±0.2 / ΔS = ±0.1 / ΔD1 = ±0.01 / ΔL1 = ±0.5
Dimensions in mm.

Definition of tolerance classes
see data sheet 906000
"F" = Folding box (blister)
"O" = On tape (on foil)
"P" = Cardboard box for sensors with connection wires > 30 mm

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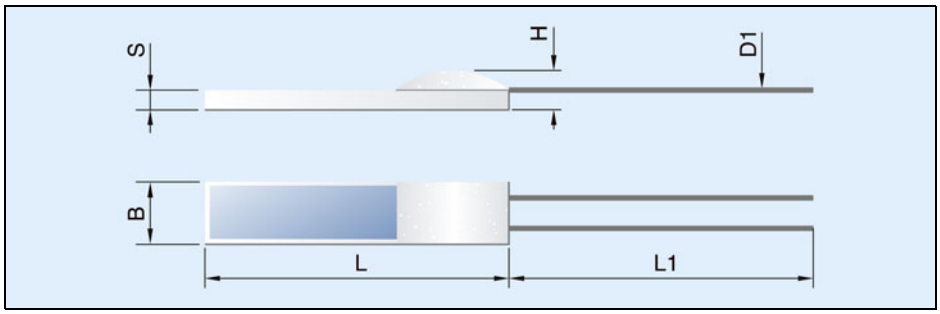
Dimensional drawing



Technical data for type PCA/E

Standard	DIN EN 60751:2009 / IEC 60751:2008
Temperature coefficient	α = 3.850 × 10^{-3} °C^{-1} (between 0 and 100 °C)
Temperature range	-70 to +500 °C (temporarily 550 °C)
Tolerance	Temperature validity range, class F0.1 (class AA): -50 to +200 °C Temperature validity range, class F0.15 (class A): -70 to +300 °C Temperature validity range, class F0.3 (class B): -70 to +500 °C Temperature validity range, class F0.6 (class 2B): -70°to +500 °C
Measuring/maximum current	Pt100 recommended 1.0 mA, maximum 7 mA Pt500 recommended 0.7 mA, maximum 3 mA Pt1000 recommended 0.1 mA, maximum 1 mA
Operating conditions	Platinum-chip temperature sensors must be protected when used in a humid environment or in aggressive atmospheres. Direct immersion into liquids is also not admissible. The user may have to carry out some checks before using the sensors. **Please also refer to the installation instructions B 906121.4 "Information for the application of platinum-chip temperature sensors."**
Connection wires	These temperature sensors are equipped with connection wires made of pure nickel wire. The connection wires are suitable for welded and soft-soldered/hard-soldered joints. During further assembly work, it is essential to avoid exerting lateral pressure loads on the connections. Ensure that the horizontal traction on individual connection wires does not exceed 6 N. Avoid unnecessary bending of the connection wires because this will weaken the material and could lead to the connection wires breaking. Please also refer to point 3 "Connection techniques" in our installation instructions. Longer connection wires (up to a length of 300 mm, in one piece) can also be fitted as an optional extra. Extension wires or insulated stranded wires in any lengths can also be fitted later as an alternative to this. In this case, however, take into account that this may result in restrictions concerning the operating temperature.
Measuring point	The specified nominal value relates to the standard connection wire length L1. The measured value is taken 2 mm in front of the open wire end. Changes to the wire length will lead to changes in the resistance, which may mean the tolerance class is no longer met.
Long-term stability	Max. R_0 drift 0.05 % per year (for definition, see data sheet 906000)
Low-temperature application	Taking into account a nominal value drift and hysteresis effect that occur to a certain extent, temperature measurements down to -200 °C are also possible. Further details are available upon request.
Insulation resistance	> 10 MΩ at room temperature
Self-heating	$\Delta t = I^2 \times R \times E$ (for definition, see data sheet 906000)
Packaging	Standard packaging: folding box (blister), packaging unit: 100 pieces, loose Blister belt: upon request Cardboard box: temperature sensors with connection wires > 30 mm On tape (on foil): upon request, over- or under-delivery ±3 %
Storage	In the standard or belt packaging option, JUMO temperature sensors in design type PCA/E can be stored for at least 12 months under normal ambient conditions. It is not admissible to store the sensors in aggressive atmospheres, corrosive media, or in high humidity.
Compliant with RoHS 2011/65/EU and 2015/863/EU	Yes
Compliant with REACH 1907/2006	Yes

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Self-heating coefficients and response times for type PCA/E

Type	Self-heating coefficient E in K/mW		Response times in seconds			
	Water (v = 0.2 m/s)	Air (v = 2 m/s)	In water (v = 0.4 m/s)		In air (v = 1 m/s)	
			$t_{0.5}$	$t_{0.9}$	$t_{0.5}$	$t_{0.9}$
PCA 1.1505.1E	0.02	0.2	0.1	0.3	3	8
PCA 1.2003.1E	0.02	0.2	0.1	0.3	3	9
PCA 1.2005.1E	0.02	0.2	0.1	0.3	3	9
PCA 1.2005.5E	0.02	0.2	0.1	0.3	3	9
PCA 1.2005.10E	0.02	0.2	0.1	0.3	3	9

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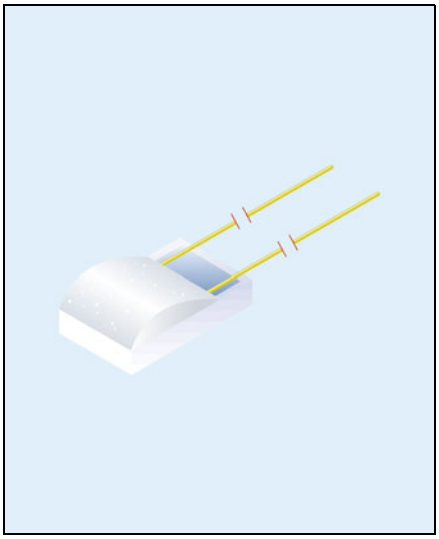
Platinum-chip temperature sensors with nickel connection wires (gold-plated) according to DIN EN 60751:2009 / IEC 60751:2008

Design type PCA/ER and EBR



Brief description

Platinum-chip temperature sensors are based on a temperature-dependent resistance, the curve and admissible tolerance of which are defined in the international IEC 60751:2008 standard. They combine the favorable features of platinum temperature sensors with the advantages of large-scale production. They are characterized by standardization and universal interchangeability as well as high measuring accuracy, excellent long-term stability, and good reproducibility of the electric features. Demand for large quantities has led to a notable price reduction over the last few years. For this reason, platinum-chip temperature sensors are also a real alternative to thermistors based on the principle of semi-conductors in terms of pricing.
Platinum-chip temperature sensors in the version "ER" or "EBR" can be universally used and are suitable for a wide range of applications in low and higher temperature ranges up to 500 °C, although this can also vary depending on the type of mounting. As a basic principle, short-term use of the temperature sensor at up to 550 °C is also admissible. The gold-plated connection wires are suitable for all common connection technologies: welding, soldering, and crimping. The ER/EBR sensor features connection wires that are reversed/run in the opposite direction relative to the middle of the sensor (see figure), and it can be provided with a solderable nickel/gold metal layer on the rear/underside as an optional extra (type EBR). The metal layer enables direct thermal contact with another body via a solder connection.

Item overview

Temperature sensor						Connection wire				Part no. for tolerance class			
Type	R_0/Ω	B	L	H	S	Material	D1	L1	R_L in mΩ/mm	F0.1 (Class AA)	F0.15 (Class A)	F0.3 (Class B)	F0.6 (Class 2B)
PCA 1.1702.1ER	1×100	1.7	2.2	1.0	0.38	NiAu	0.15	10	4.4	Upon request	Upon request	00722609F	Upon request
PCA 1.1702.1EBR	1×100	1.7	2.2	1.0	0.38	NiAu*	0.15	10	4.4	Upon request	Upon request	00722566F	Upon request
PCA 1.1702.10ER	1×1000	1.7	2.2	1.0	0.38	NiAu	0.15	10	4.4	Upon request	Upon request	00722565F	Upon request
PCA 1.1702.10EBR	1×1000	1.7	2.2	1.0	0.38	NiAu*	0.15	10	4.4	Upon request	Upon request	00722395F	Upon request

Dimension tolerances:
ΔB = ±0.2 / ΔL = ±0.5 / ΔH = ±0.2 / ΔS = ±0.1 / ΔD1 = ±0.01 / ΔL1 = ±0.5
Dimensions in mm.

Definition of tolerance classes
see data sheet 906000
"F" = Folding box (blister)

Type extension ER: nickel/gold wire that is reversed/runs in the opposite direction relative to the middle of the temperature sensor (R stands for reverse)
Type extension EBR: like type ER, but with a metallized/solderable rear/underside

* Nickel/gold also the material of the metallized rear/underside

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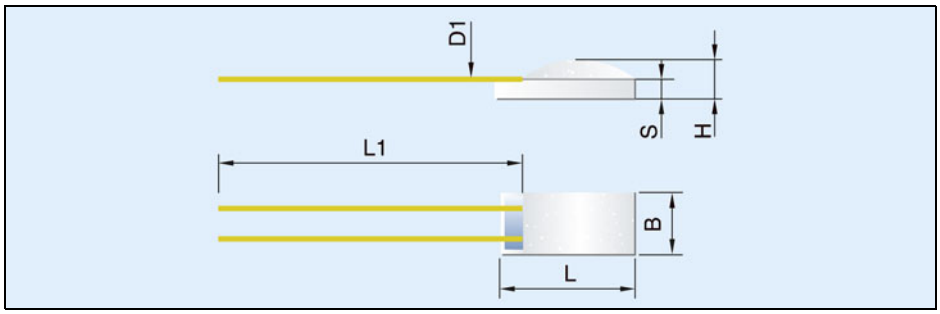
Dimensional drawing



Technical data for type PCA/ER and EBR

Standard	DIN EN 60751:2009 / IEC 60751:2008
Temperature coefficient	$\alpha = 3.850 \times 10^{-3}\ °C^{-1}$ (between 0 and 100 °C)
Temperature range	-70 to +500 °C (temporarily 550 °C); deviations possible depending on the type of mounting
Tolerance	Temperature validity range, class F0.1 (class AA): -50 to +200 °C Temperature validity range, class F0.15 (class A): -70 to +300 °C Temperature validity range, class F0.3 (class B): -70 to +500 °C Temperature validity range, class F0.6 (class 2B): -70°to +500 °C
Measuring/maximum current	Pt100 recommended 0.5 mA, maximum 2 mA Pt1000 recommended 0.05 mA, maximum 0.2 mA
Operating conditions	Platinum-chip temperature sensors must be protected when used in a humid environment or in aggressive atmospheres. Direct immersion into liquids is also not admissible. The user may have to carry out some checks before using the sensors. **Please also refer to the installation instructions B 906121.4 "Information for the application of platinum-chip temperature sensors."**
Connection wires	These temperature sensors are equipped with connection wires made of gold-plated pure nickel wire. The connection wires are suitable for welded, soldered, and crimp connections. During further assembly work, it is essential to avoid exerting lateral pressure loads on the connections. Ensure that the horizontal traction on individual connection wires does not exceed 4 N. Avoid unnecessary bending of the connection wires because this will weaken the material and could lead to the connection wires breaking. Use a suitable tool when bending the wires. Please also refer to point 3 "Connection techniques" in our installation instructions. As an optional extra, the temperature sensors can also be ordered with longer connection wires ex works. Extension wires or insulated stranded wires in any lengths can also be fitted later as an alternative to this. In this case, however, take into account that this may result in restrictions concerning the operating temperature.
Metallized rear	Material of coating on rear: nickel/gold Application: optimized for soft-soldering in a reflow method.
Measuring point	The specified nominal value relates to the standard connection wire length L1. The measured value is taken 2 mm in front of the open wire end. Changes to the wire length will lead to changes in the resistance, which may mean the tolerance class is no longer met.
Long-term stability	Max. R_0 drift 0.05 % per year (for definition, see data sheet 906000)
Low-temperature application	Taking into account a nominal value drift and hysteresis effect that occur to a certain extent, temperature measurements down to -200 °C are also possible. Further details are available upon request.
Insulation resistance	> 10 MΩ at room temperature
Self-heating	$\Delta t = I^2 \times R \times E$ (for definition, see data sheet 906000)
Packaging	Standard packaging: folding box (blister), packaging unit: 100 pieces, loose Blister belt: upon request Cardboard box: temperature sensors with connection wires > 30 mm On tape (on foil): upon request, over- or under-delivery ±3 %
Storage	In the standard or belt packaging option, JUMO temperature sensors in design type PCA/ER and EBR can be stored for at least 12 months under normal ambient conditions. It is not admissible to store the sensors in aggressive atmospheres, corrosive media, or in high humidity.
Compliant with RoHS 2011/65/EU and 2015/863/EU	Yes
Compliant with REACH 1907/2006	Yes

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Self-heating coefficients and response times for type PCA/ER and EBR

Type	Self-heating coefficient E in K/mW		Response times in seconds			
	Water (v = 0.2 m/s)	Air (v = 2 m/s)	In water (v = 0.4 m/s)		In air (v = 1 m/s)	
			$t_{0.5}$	$t_{0.9}$	$t_{0.5}$	$t_{0.9}$
PCA 1.1702.1ER	0.041	0.2	0.1	0.3	3	8
PCA 1.1702.1EBR	0.041	0.2	0.1	0.3	3	8
PCA 1.1702.10ER	0.041	0.2	0.1	0.3	3	9
PCA 1.1702.10EBR	0.041	0.2	0.1	0.3	3	9

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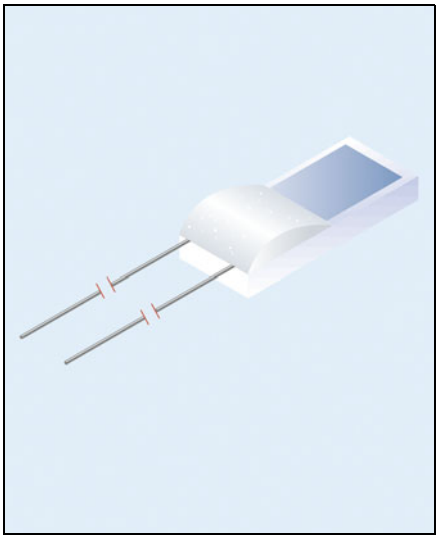
Platinum-chip temperature sensors with nickel connection wires (tin-plated) according to DIN EN 60751:2009 / IEC 60751:2008

Design type PCA/ET



Brief description

Platinum-chip temperature sensors are based on a temperature-dependent resistance, the curve and admissible tolerance of which are defined in the international IEC 60751:2008 standard. They combine the favorable features of platinum temperature sensors with the advantages of large-scale production. They are characterized by standardization and universal interchangeability as well as high measuring accuracy, excellent long-term stability, and good reproducibility of the electric features. Demand for large quantities has led to a notable price reduction over the last few years. For this reason, platinum-chip temperature sensors are also a real alternative to thermistors based on the principle of semi-conductors in terms of pricing.
Platinum-chip temperature sensors in the version "ET" can be universally used and are suitable for a wide range of applications in low and higher temperature ranges up to 500 °C. Short-term use of the sensors at up to 550 °C is admissible. The tin-plated connection wires are particularly suitable for an electrical connection based on soft-soldered joints. The operating temperature range is -70 to +500 °C.

Item overview

Temperature sensor						Connection wire					Part no. for tolerance class			
Type	R_0/Ω	B	L	H	S	Material	D1	L1	L2	R_L in mΩ/mm	F0.1 (Class AA)	F0.15 (Class A)	F0.3 (Class B)	F0.6 (Class 2B)
PCA 1.1505.1ET	1×100	1.5	5	1.0	0.38	Ni	0.20	10	7	2.4	00642841F	00642839F	00642817F	00614587O
PCA 1.1505.10ET	1×1000	1.5	5	1.0	0.38	Ni	0.20	10	7	2.4	00642886F	00642883F	00642842F	Upon request
PCA 1.2005.1ET	1×100	2.0	5	1.3	0.64	Ni	0.20	10	7	2.4	00604449F	00604441F	00603419F	Upon request
PCA 1.2005.10ET	1×1000	2.0	5	1.3	0.64	Ni	0.20	10	7	2.4	00642808F	00603418F	00603416F	00597200O

Dimension tolerances:
ΔB = ±0.2 / ΔL = ±0.5 / ΔH = ±0.2 / ΔS = ±0.1 / ΔD1 = ±0.01 / ΔL1 = ±0.5 / ΔL2 = -0/+3 mm
Dimensions in mm.

Definition of tolerance classes
see data sheet 906000
"F" = Folding box (blister)
"O" = On tape (on foil)

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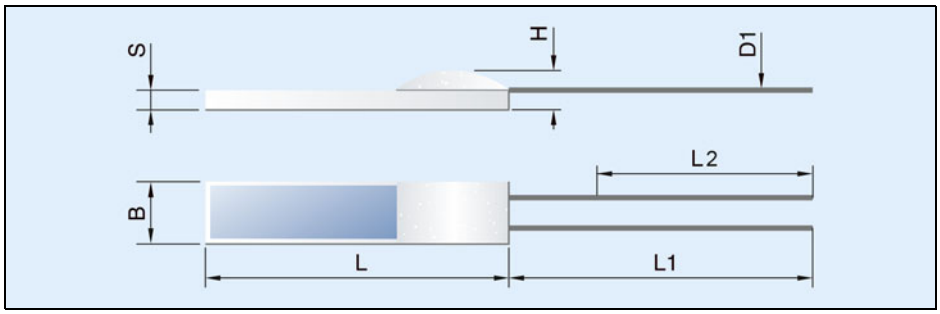
Dimensional drawing



Technical data for type PCA/ET

Standard	DIN EN 60751:2009 / IEC 60751:2008
Temperature coefficient	α = 3.850 × 10^{-3} °C^{-1} (between 0 and 100 °C)
Temperature range	-70 to +500 °C (temporarily 550 °C)
Tolerance	Temperature validity range, class F0.1 (class AA): -50 to +200 °C Temperature validity range, class F0.15 (class A): -70 to +300 °C Temperature validity range, class F0.3 (class B): -70 to +500 °C Temperature validity range, class F0.6 (class 2B): -70°to +500 °C
Measuring/maximum current	Pt100 recommended 1.0 mA, maximum 7 mA Pt500 recommended 0.7 mA, maximum 3 mA Pt1000 recommended 0.1 mA, maximum 1 mA
Operating conditions	Platinum-chip temperature sensors must be protected when used in a humid environment or in aggressive atmospheres. Direct immersion into liquids is also not admissible. The user may have to carry out some checks before using the sensors. **Please also refer to the installation instructions B 906121.4 "Information for the application of platinum-chip temperature sensors."**
Connection wires	These temperature sensors are equipped with connection wires made of tin-plated pure nickel wire. The connection wires are suitable for soft-soldered joints. During further assembly work, it is essential to avoid exerting lateral pressure loads on the connections. Ensure that the horizontal traction on individual connection wires does not exceed 6 N. Avoid unnecessary bending of the connection wires because this will weaken the material and could lead to the connection wires breaking. Please also refer to point 3 "Connection techniques" in our installation instructions. Longer connection wires (up to a length of 300 mm, in one piece) can also be fitted as an optional extra. Extension wires or insulated stranded wires in any lengths can also be fitted later as an alternative to this. In this case, however, take into account that this may result in restrictions concerning the operating temperature. Due to the soft-soldered joint, this part of the connection wires is designed for a maximum of +150 °C.
Measuring point	The specified nominal value relates to the standard connection wire length L1. The measured value is taken 2 mm in front of the open wire end. Changes to the wire length will lead to changes in the resistance, which may mean the tolerance class is no longer met.
Long-term stability	Max. R_0 drift 0.05 % per year (for definition, see data sheet 906000)
Low-temperature application	Taking into account a nominal value drift and hysteresis effect that occur to a certain extent, temperature measurements down to -200 °C are also possible. Further details are available upon request.
Insulation resistance	> 10 MΩ at room temperature
Self-heating	$\Delta t = I^2 \times R \times E$ (for definition, see data sheet 906000)
Packaging	Standard packaging: folding box (blister), packaging unit: 100 pieces, loose Blister belt: upon request Cardboard box: temperature sensors with connection wires > 30 mm On tape (on foil): upon request, over- or under-delivery ±3 %
Storage	In the standard or belt packaging option, JUMO temperature sensors in design type PCA/ET can be stored for at least 12 months under normal ambient conditions. It is not admissible to store the sensors in aggressive atmospheres, corrosive media, or in high humidity.
Compliant with RoHS 2011/65/EU and 2015/863/EU	Yes
Compliant with REACH 1907/2006	Yes

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Self-heating coefficients and response times for type PCA/ET

Type	Self-heating coefficient E in K/mW		Response times in seconds			
	Water (v = 0.2 m/s)	Air (v = 2 m/s)	In water (v = 0.4 m/s)		In air (v = 1 m/s)	
			$t_{0.5}$	$t_{0.9}$	$t_{0.5}$	$t_{0.9}$
PCA 1.1505.1ET	0.02	0.2	0.1	0.3	3	8
PCA 1.1505.10ET	0.02	0.2	0.1	0.3	3	8
PCA 1.2005.1ET	0.02	0.2	0.1	0.3	3	9
PCA 1.2005.10ET	0.02	0.2	0.1	0.3	3	9

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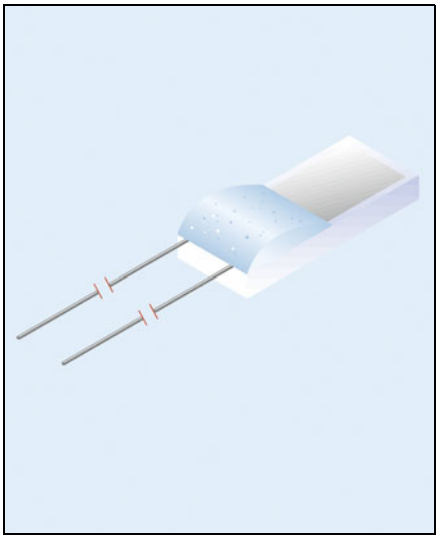
Platinum-chip temperature sensors with connection wires according to DIN EN 60751:2009 / IEC 60751:2008

Design type PCA/S



Brief description

Platinum-chip temperature sensors are based on a temperature-dependent resistance, the curve and admissible tolerance of which are defined in the international IEC 60751:2008 standard. They combine the favorable features of platinum temperature sensors with the advantages of large-scale production. They are characterized by standardization and universal interchangeability as well as high measuring accuracy, excellent long-term stability, and good reproducibility of the electric features. Demand for large quantities has led to a notable price reduction over the last few years. For this reason, platinum-chip temperature sensors are also a real alternative to thermistors based on the principle of semi-conductors in terms of pricing.
The preferred applications for platinum-chip temperature sensors in the version "S" are those with operating temperatures exceeding 180 °C. They are particularly suitable for an electrical connection based on a welded, crimp, or hard-soldered joint. The connection wires are made of a solid platinum wrapped wire and are very strong. The operating temperature range is -70 to +400 °C.

Item overview

Temperature sensor						Connection wire				Part no. for tolerance class		
Type	R_0/Ω	B	L	H	S	Material	D1	L1	R_L in mΩ/mm	F0.1 (Class AA)	F0.15 (Class A)	F0.3 (Class B)
PCA 1.2003.1S	1×100	2.0	2.5	1.3	0.64	Pt-Ni	0.20	10	2.8	00358368F 00415816B	00358365F 00415815B	00358363F 00415811B
PCA 1.2005.1S	1×100	2.0	5.0	1.3	0.64	Pt-Ni	0.20	10	2.8	00309664F 00415804B	00089225F 00415803B	00089206F 00415801B
PCA 1.2005.1S	1×100	2.0	5.0	1.3	0.64	Pt-Ni	0.20	20	2.8	00364145F -	Upon request -	00357968F -
PCA 1.2005.5S	1×500	2.0	5.0	1.3	0.64	Pt-Ni	0.20	10	2.8	00309666F 00415807B	00089226F 00415806B	00089207F 00415805B
PCA 1.2005.5S	1×500	2.0	5.0	1.3	0.64	Pt-Ni	0.20	20	2.8	00364146F -	Upon request -	00357969F -
PCA 1.2005.10S	1×1000	2.0	5.0	1.3	0.64	Pt-Ni	0.20	10	2.8	00358360F 00415810B	00358359F 00415809B	00358358F 00415808B
PCA 1.2005.10S	1×1000	2.0	5.0	1.3	0.64	Pt-Ni	0.20	20	2.8	Upon request -	Upon request -	00358285F -
PCA 1.2010.1S	1×100	2.0	10	1.3	0.64	Pt-Ni	0.20	10	2.8	00309674F 00415794B	00089222F 00415793B	00089203F 00415792B
PCA 1.2010.1S	1×100	2.0	10	1.3	0.64	Pt-Ni	0.20	20	2.8	Upon request -	Upon request -	00067265F -
PCA 1.2010.5S	1×500	2.0	10	1.3	0.64	Pt-Ni	0.20	10	2.8	00309676F 00415797B	00089223F 00415796B	00089204F 00415795B
PCA 1.2010.10S	1×1000	2.0	10	1.3	0.64	Pt-Ni	0.20	10	2.8	00309681F 00415800B	00089224F 00415799B	00089205F 00415798B
PCA 1.2010.20S	1×2000	2.0	10	1.3	0.64	Pt-Ni	0.20	10	2.8	Upon request Upon request	Upon request Upon request	00417435F 00417434B

Dimension tolerances:
ΔB = ±0.2 / ΔL = ±0.5 / ΔH = ±0.2 / ΔS = ±0.1 / ΔD1 = ±0.01 / ΔL1 = ±0.5
Dimensions in mm.

Definition of tolerance classes
see data sheet 906000
"F" = Folding box (blister)
"B" = Blister belt (upon request)

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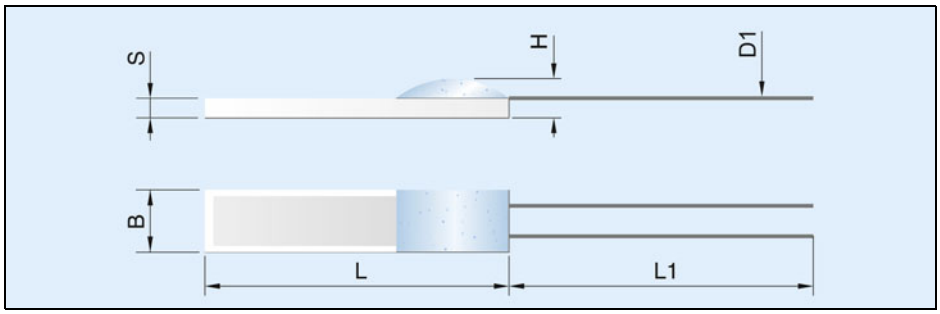
Dimensional drawing



Technical data for type PCA/S

Standard	DIN EN 60751:2009 / IEC 60751:2008
Temperature coefficient	α = 3.850 × 10^{-3} °C^{-1} (between 0 and 100 °C)
Temperature range	-70 to +400 °C
Tolerance	Temperature validity range, class F0.1 (class AA): -50 to +200 °C Temperature validity range, class F0.15 (class A): -70 to +300 °C Temperature validity range, class F0.3 (class B): -70 to +400 °C
Measuring/maximum current	Pt100 recommended 1.0 mA, maximum 7 mA Pt500 recommended 0.7 mA, maximum 3 mA Pt1000 recommended 0.1 mA, maximum 1 mA Pt2000 recommended 0.1 mA, maximum 1 mA
Operating conditions	Platinum-chip temperature sensors must be protected when used in a humid environment or in aggressive atmospheres. Direct immersion into liquids is also not admissible. The user may have to carry out some checks before using the sensors. **Please also refer to the installation instructions B 906121.4 "Information for the application of platinum-chip temperature sensors."**
Connection wires	These temperature sensors are equipped with connection wires made of a platinum wrapped wire with a nickel core. The connection wires are suitable for crimp, welded, and hard-soldered joints. During further assembly work, it is essential to avoid exerting lateral pressure loads on the connections. Ensure that the horizontal traction on individual connection wires does not exceed 10 N. Avoid unnecessary bending of the connection wires because this will weaken the material and could lead to the connection wires breaking. Please also refer to point 3 "Connection techniques" in our installation instructions. Longer connection wires (up to a length of 300 mm, in one piece) can also be fitted as an optional extra. Extension wires made of silver wire or insulated stranded wires in any lengths can also be fitted later as an alternative to this. In this case, however, take into account that this may result in restrictions concerning the operating temperature.
Measuring point	The specified nominal value relates to the standard connection wire length L1. The measured value is taken 2 mm in front of the open wire end. Changes to the wire length will lead to changes in the resistance, which may mean the tolerance class is no longer met.
Long-term stability	Max. R_0 drift 0.05 % per year (for definition, see data sheet 906000)
Low-temperature application	Taking into account a nominal value drift and hysteresis effect that occur to a certain extent, temperature measurements down to -200 °C are also possible. Further details are available upon request.
Insulation resistance	> 10 MΩ at room temperature
Self-heating	$\Delta t = I^2 \times R \times E$ (for definition, see data sheet 906000)
Packaging	Standard packaging: folding box (blister), packaging unit: 100 pieces, loose Blister belt: upon request Cardboard box: temperature sensors with connection wires > 30 mm
Storage	In the standard or belt packaging option, JUMO temperature sensors in design type PCA/S can be stored for at least 12 months under normal ambient conditions. It is not admissible to store the sensors in aggressive atmospheres, corrosive media, or in high humidity.
Compliant with RoHS 2011/65/EU and 2015/863/EU	Yes
Compliant with REACH 1907/2006	Yes

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Self-heating coefficients and response times for type PCA/S

Type	Self-heating coefficient E in K/mW		Response times in seconds			
	Water (v = 0.2 m/s)	Air (v = 2 m/s)	In water (v = 0.4 m/s)		In air (v = 1 m/s)	
			$t_{0.5}$	$t_{0.9}$	$t_{0.5}$	$t_{0.9}$
PCA 1.2003.1S	0.02	0.2	0.1	0.3	3	9
PCA 1.2005.1S	0.02	0.2	0.1	0.3	3	9
PCA 1.2005.5S	0.02	0.2	0.1	0.3	3	9
PCA 1.2005.10S	0.02	0.2	0.1	0.3	3	9
PCA 1.2010.1S	0.02	0.2	0.1	0.3	3	9
PCA 1.2010.5S	0.01	0.2	0.2	0.4	3	9
PCA 1.2010.10S	0.01	0.2	0.2	0.4	3	9
PCA 1.2010.20S	0.01	0.2	0.2	0.4	3	9

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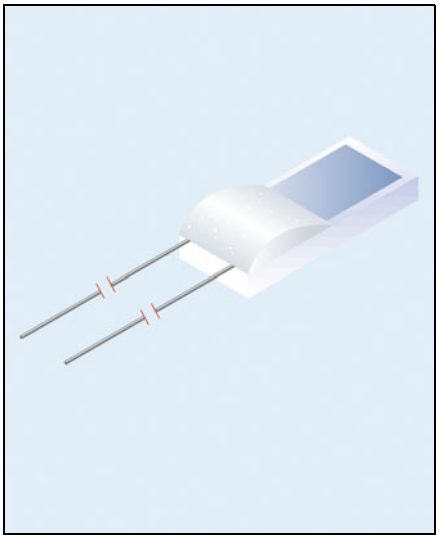
Platinum-chip temperature sensors with connection wires according to DIN EN 60751:2009 / IEC 60751:2008

Design type PCA/M



Brief description

Platinum-chip temperature sensors are based on a temperature-dependent resistance, the curve and admissible tolerance of which are defined in the international IEC 60751:2008 standard. They combine the favorable features of platinum temperature sensors with the advantages of large-scale production. They are characterized by standardization and universal interchangeability as well as high measuring accuracy, excellent long-term stability, and good reproducibility of the electric features. Demand for large quantities has led to a notable price reduction over the last few years. For this reason, platinum-chip temperature sensors are also a real alternative to thermistors based on the principle of semi-conductors in terms of pricing.
Platinum-chip temperature sensors in the version "M" offer the widest range of implementation possibilities for most applications. The temperature sensors feature a particularly wide temperature measuring range from -70 to +550 °C. A wide range of different versions is already available on stock. Available miniature versions can also considerably simplify assembly in situations where only little space is available. Another advantage is the special coating method used for this version, allowing the sensor to be used unprotected in humid ambient air. Typical application examples include air conditioning technology and industrial humidity measuring technology.

Item overview

Temperature sensor						Connection wire				Part no. for tolerance class		
Type	R_0/Ω	B	L	H	S	Material	D1	L1	R_L in mΩ/mm	F0.1 (Class AA)	F0.15 (Class A)	F0.3 (Class B)
PCA 1.1505.1M	1×100	1.5	5.0	1.0	0.38	Pt-Ni	0.20	10	2.8	00409843F 00417179B	00409841F 00417177B	00409840F 00417178B
PCA 1.1505.1M	1×100	1.5	5.0	1.0	0.38	Pt-Ni	0.20	15	2.8	00430392F 00430396B	00430393F 00430394B	00430391F 00430395B
PCA 1.1505.5M	1×500	1.5	5.0	1.0	0.38	Pt-Ni	0.20	10	2.8	00409847F 00417185B	00409845F 00417183B	00409844F 00417184B
PCA 1.1505.10M	1×1000	1.5	5.0	1.0	0.38	Pt-Ni	0.20	10	2.8	00409850F 00417182B	00409849F 00417180B	00409848F 00417181B
PCA 1.1505.10M	1×1000	1.5	5.0	1.0	0.38	Pt-Ni	0.20	15	2.8	00625678F Upon request	00625677F Upon request	00425409F Upon request
PCA 1.2003.1M	1×100	2.0	2.5	1.3	0.64	Pt-Ni	0.20	10	2.8	00526951F	00489996F	00489994F
PCA 1.2003.1M	1×100	2.0	2.5	1.3	0.64	Pt-Ni	0.20	13	2.8	00412342F 00415833B	00412341F 00415834B	00412318F 00415832B
PCA 1.2003.10M	1×1000	2.0	2.5	1.3	0.64	Pt-Ni	0.20	10	2.8	00623370F	00623367F	00592065F
PCA 1.2005.1M	1×100	2.0	5.0	1.3	0.64	Pt-Ni	0.20	10	2.8	00387454F 00415836B	00387455F 00415837B	00387456F 00415835B
PCA 1.2005.5M	1×500	2.0	5.0	1.3	0.64	Pt-Ni	0.20	10	2.8	00387453F 00415839B	00387449F 00415840B	00387465F 00415838B
PCA 1.2005.10M	1×1000	2.0	5.0	1.3	0.64	Pt-Ni	0.20	10	2.8	00412308F 00415842B	00412311F 00415843B	00412307F 00415841B
PCA 1.2010.1M	1×100	2.0	10	1.3	0.64	Pt-Ni	0.20	10	2.8	00412338F 00415845B	00412337F 00415846B	00412339F 00415844B
PCA 1.2010.5M	1×500	2.0	10	1.3	0.64	Pt-Ni	0.20	10	2.8	Upon request Upon request	Upon request Upon request	Upon request Upon request
PCA 1.2010.10M	1×1000	2.0	10	1.3	0.64	Pt-Ni	0.20	10	2.8	00387458F 00415848B	00387459F 00415849B	00387460F 00415847B

Dimension tolerances:
$\Delta B = \pm 0.2$ / $\Delta L = \pm 0.5$ / $\Delta H = \pm 0.2$ / $\Delta S = \pm 0.1$ / $\Delta D1 = \pm 0.01$ / $\Delta L1 = \pm 0.5$
Dimensions in mm.

Definition of tolerance classes
see data sheet 906000
"F" = Folding box (blister)
"B" = Blister belt (upon request)

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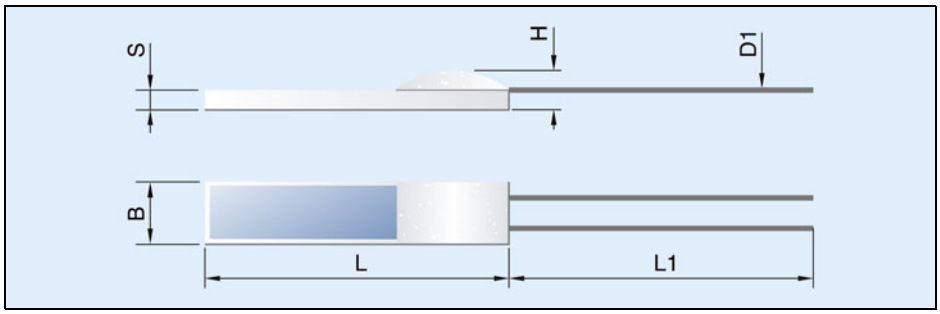
Dimensional drawing



Technical data for type PCA/M

Standard	DIN EN 60751:2009 / IEC 60751:2008
Temperature coefficient	α = 3.850 × 10^{-3} °C^{-1} (between 0 and 100 °C)
Temperature range	-70 to +550 °C
Tolerance	Temperature validity range, class F0.1 (class AA): -50 to +200 °C Temperature validity range, class F0.15 (class A): -70 to +300 °C Temperature validity range, class F0.3 (class B): -70 to +550°C
Measuring/maximum current	Pt100 recommended 1.0 mA, maximum 7 mA Pt500 recommended 0.7 mA, maximum 3 mA Pt1000 recommended 0.1 mA, maximum 1 mA
Operating conditions	Platinum-chip temperature sensors must be protected when used in a humid environment or in aggressive atmospheres. Direct immersion into liquids is also not admissible. The user may have to carry out some checks before using the sensors. **Please also refer to the installation instructions B 906121.4 "Information for the application of platinum-chip temperature sensors."**
Connection wires	These temperature sensors are equipped with connection wires made of a platinum wrapped wire with a nickel core. The connection wires are suitable for crimp, welded, and hard-soldered joints. During further assembly work, it is essential to avoid exerting lateral pressure loads on the connections. Ensure that the horizontal traction on individual connection wires does not exceed 10 N. Avoid unnecessary bending of the connection wires because this will weaken the material and could lead to the connection wires breaking. Please also refer to point 3 "Connection techniques" in our installation instructions. Longer connection wires (up to a length of 300 mm, in one piece) can also be fitted as an optional extra. Extension wires made of silver wire or insulated stranded wires in any lengths can also be fitted later as an alternative to this. Take into account that there may be restrictions concerning the operating temperature.
Measuring point	The specified nominal value relates to the standard connection wire length L1. The measured value is taken 2 mm in front of the open wire end. Changes to the wire length will lead to changes in the resistance, which may mean the tolerance class is no longer met.
Long-term stability	Max. R_0 drift 0.05 % per year (for definition, see data sheet 906000)
Low-temperature application	Taking into account a nominal value drift and hysteresis effect that occur to a certain extent, temperature measurements down to -200 °C are also possible. Further details are available upon request.
Insulation resistance	> 10 MΩ at room temperature
Self-heating	$\Delta t = I^2 \times R \times E$ (for definition, see data sheet 906000)
Packaging	Standard packaging: folding box (blister), packaging unit: 100 pieces, loose Blister belt: upon request Cardboard box: temperature sensors with connection wires > 30 mm
Storage	In the standard or belt packaging option, JUMO temperature sensors in design type PCA/M can be stored for at least 12 months under normal ambient conditions. It is not admissible to store the sensors in aggressive atmospheres, corrosive media, or in high humidity.
Compliant with RoHS 2011/65/EU and 2015/863/EU	Yes
Compliant with REACH 1907/2006	Yes

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Self-heating coefficients and response times for type PCA/M

Type	Self-heating coefficient E in K/mW		Response times in seconds			
	Water (v = 0.2 m/s)	Air (v = 2 m/s)	In water (v = 0.4 m/s)		In air (v = 1 m/s)	
			$t_{0.5}$	$t_{0.9}$	$t_{0.5}$	$t_{0.9}$
PCA 1.1505.1M	0.02	0.2	0.1	0.3	3	8
PCA 1.1505.5M	0.02	0.2	0.1	0.3	3	8
PCA 1.1505.10M	0.02	0.2	0.1	0.3	3	8
PCA 1.2003.1M	0.02	0.2	0.1	0.3	3	9
PCA 1.2003.10M	0.02	0.2	0.1	0.3	3	9
PCA 1.2005.1M	0.02	0.2	0.1	0.3	4	16
PCA 1.2005.5M	0.02	0.2	0.1	0.3	4	16
PCA 1.2005.10M	0.02	0.2	0.2	0.3	4	16
PCA 1.2010.1M	0.02	0.2	0.3	0.5	7	22
PCA 1.2010.5M	0.01	0.2	0.3	0.5	7	22
PCA 1.2010.10M	0.01	0.2	0.3	0.5	7	22

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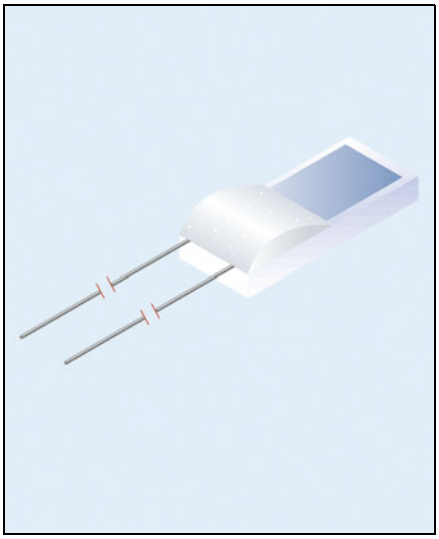
Platinum-chip temperature sensors with connection wires according to DIN EN 60751:2009 / IEC 60751:2008

Design type PCA/H



Brief description

Platinum-chip temperature sensors are based on a temperature-dependent resistance, the curve and admissible tolerance of which are defined in the international IEC 60751:2008 standard. They combine the favorable features of platinum temperature sensors with the advantages of large-scale production. They are characterized by standardization and universal interchangeability as well as high measuring accuracy, excellent long-term stability, and good reproducibility of the electric features. Demand for large quantities has led to a notable price reduction over the last few years. For this reason, platinum-chip temperature sensors are also a real alternative to thermistors based on the principle of semi-conductors in terms of pricing.
The preferred applications for platinum-chip temperature sensors in the version "H" are those with particularly high and permanently high operating temperatures. They are suitable for an electrical connection based on the melting and laser melting method as well as hard-soldered joints. The connection wires are made of pure palladium. The operating temperature range is designed for -70 to +600 °C.

Item overview

Temperature sensor						Connection wire				Part no. for tolerance class		
Type	R_0/Ω	B	L	H	S	Material	D1	L1	R_L in mΩ/mm	F0.1 (Class AA)	F0.15 (Class A)	F0.3 (Class B)
PCA 1.2010.1H	1×100	2	10	1.2	0.64	Pd	0.25	10	2.3	00343070F 00415851B	00343069F 00415852B	00053198F 00415850B
PCA 1.2010.5H	1×500	2	10	1.2	0.64	Pd	0.25	10	2.3	Upon request Upon request	Upon request Upon request	Upon request Upon request
PCA 1.2010.10H	1×1000	2	10	1.2	0.64	Pd	0.25	10	2.3	00343065F 00415855B	00343064F 00415856B	00044796F 00415854B

Dimension tolerances:
ΔB = ±0.2 / ΔL = ±0.5 / ΔH = ±0.2 / ΔS = ±0.1 / ΔD1 = ±0.01 / ΔL1 = ±0.5
Dimensions in mm.

Definition of tolerance classes
see data sheet 906000
"F" = Folding box (blister)
"B" = Blister belt (upon request)

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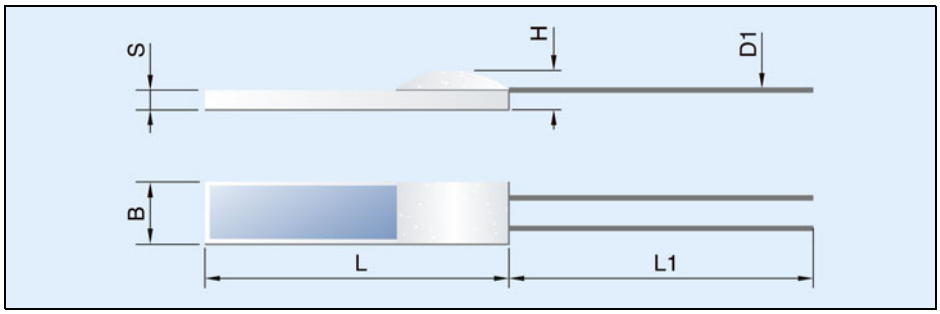
Dimensional drawing



Technical data for type PCA/H

Standard	DIN EN 60751:2009 / IEC 60751:2008
Temperature coefficient	α = 3.850 × 10^{-3} °C^{-1} (between 0 and 100 °C)
Temperature range	-70 to +600 °C
Tolerance	Temperature validity range, class F0.1 (class AA): -50 to +200 °C Temperature validity range, class F0.15 (class A): -70 to +300 °C Temperature validity range, class F0.3 (class B): -70 to +600 °C
Measuring/maximum current	Pt100 recommended 1.0 mA, maximum 7 mA Pt1000 recommended 0.1 mA, maximum 1 mA
Operating conditions	Platinum-chip temperature sensors must be protected when used in a humid environment or in aggressive atmospheres. Direct immersion into liquids is also not admissible. The user may have to carry out some checks before using the sensors. **Please also refer to the installation instructions B 906121.4 "Information for the application of platinum-chip temperature sensors."**
Connection wires	These temperature sensors are equipped with connection wires made of pure palladium. The connection wires are suitable for the melting and laser melting method as well as hard-soldered joints. During further assembly work, it is essential to avoid exerting lateral pressure loads on the connections. Ensure that the horizontal traction on individual connection wires does not exceed 6 N. Avoid unnecessary bending of the connection wires because this will weaken the material and could lead to the connection wires breaking.
Measuring point	The specified nominal value relates to the standard connection wire length L1. The measured value is taken 2 mm in front of the open wire end. Changes to the wire length will lead to changes in the resistance, which may mean the tolerance class is no longer met.
Long-term stability	Max. R_0 drift 0.05 % per year (for definition, see data sheet 906000)
Low-temperature application	Taking into account a nominal value drift and hysteresis effect that occur to a certain extent, temperature measurements down to -200 °C are also possible. Further details are available upon request.
Insulation resistance	> 10 MΩ at room temperature
Self-heating	$\Delta t = I^2 \times R \times E$ (for definition, see data sheet 906000)
Packaging	Standard packaging: folding box (blister), packaging unit: 100 pieces, loose Blister belt: upon request Cardboard box: temperature sensors with connection wires > 30 mm
Storage	In the standard or belt packaging option, JUMO temperature sensors in design type PCA/H can be stored for at least 12 months under normal ambient conditions. It is not admissible to store the sensors in aggressive atmospheres, corrosive media, or in high humidity.
Compliant with RoHS 2011/65/EU and 2015/863/EU	Yes
Compliant with REACH 1907/2006	Yes

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Self-heating coefficients and response times for type PCA/H

Type	Self-heating coefficient E in K/mW		Response times in seconds			
	Water (v = 0.2 m/s)	Air (v = 2 m/s)	In water (v = 0.4 m/s)		In air (v = 1 m/s)	
			$t_{0.5}$	$t_{0.9}$	$t_{0.5}$	$t_{0.9}$
PCA 1.2010.1H	0.02	0.2	0.3	0.5	7	22
PCA 1.2010.5H	0.02	0.2	0.3	0.5	7	22
PCA 1.2010.10H	0.01	0.2	0.3	0.5	7	22

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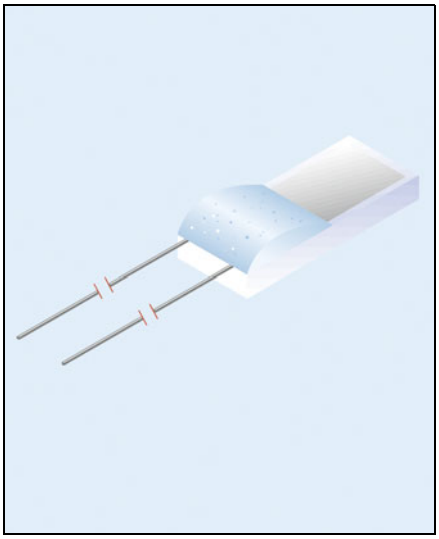
Platinum-chip temperature sensors with connection wires according to DIN EN 60751:2009 / IEC 60751:2008

Design type PCA/L



Brief description

Platinum-chip temperature sensors are based on a temperature-dependent resistance, the curve and admissible tolerance of which are defined in the international IEC 60751:2008 standard. They combine the favorable features of platinum temperature sensors with the advantages of large-scale production. They are characterized by standardization and universal interchangeability as well as high measuring accuracy, excellent long-term stability, and good reproducibility of the electric features. Demand for large quantities has led to a notable price reduction over the last few years. For this reason, platinum-chip temperature sensors are also a real alternative to thermistors based on the principle of semi-conductors in terms of pricing.
The preferred application for platinum-chip temperature sensors in the version "L" is the assembly of various probes with connecting cable. They are particularly suitable for an electrical connection based on soft-soldered joints. The connection wires are made of pure silver and ideal for this type of connection.
For this reason, the operating temperature range is designed for -70 to +250 °C. However, the maximum temperature is +350 °C to allow for further applications.

Item overview

Temperature sensor						Connection wire				Part no. for tolerance class		
Type	R_0/Ω	B	L	H	S	Material	Dim.	L1	R_L in mΩ/mm	F0.1* (Class AA)*	F0.15* (Class A)*	F0.3 (Class B)
PCA 1.2005.1L	1×100	2	5	1.3	0.64	Ag	0.2 × 0.3	10	0.3	00063358F* 00415828B*	00417995F* 00415827B*	00063260F 00415826B
PCA 1.2005.5L	1×500	2	5	1.3	0.64	Ag	0.2 × 0.3	10	0.3	00063359F* 00415831B*	00417996F* 00415830B*	00063261F 00415829B
PCA 1.2005.10L	1×1000	2	5	1.3	0.64	Ag	0.2 × 0.3	15	0.3	00535790B*	00535798B*	00534968B
PCA 1.2010.1L	1×100	2	10	1.3	0.64	Ag	0.2 × 0.3	10	0.3	00047408F* 00415819B*	00062559F* 00415818B*	00044789F 00415817B
PCA 1.2010.1L	1×100	2	10	1.3	0.64	Ag	0.2 × 0.3	30	0.3	Upon request -	Upon request -	00323380F -
PCA 1.2010.5L	1×500	2	10	1.3	0.64	Ag	0.2 × 0.3	10	0.3	00049133F* 00415822B*	Upon request 00415821B*	00048147F 00415820B
PCA 1.2010.10L	1×1000	2	10	1.3	0.64	Ag	0.2 × 0.3	10	0.3	00062567F* 00415825B*	00062566F* 00415824B*	00062565F 00415823B

Dimension tolerances:
ΔB = ±0.2 / ΔL = ±0.5 / ΔH = ±0.2 / ΔS = ±0.1 / ΔDim. = approx. dimensions / ΔL1 = ±0.5
Dimensions in mm.

(class A) upon request. We recommend using

Definition of tolerance classes
see data sheet 906000
"F" = Folding box (blister)
"B" = Blister belt (upon request)
* Tolerance class F0.1 (class AA) and F0.15 type PCA/ET for these tolerance classes.

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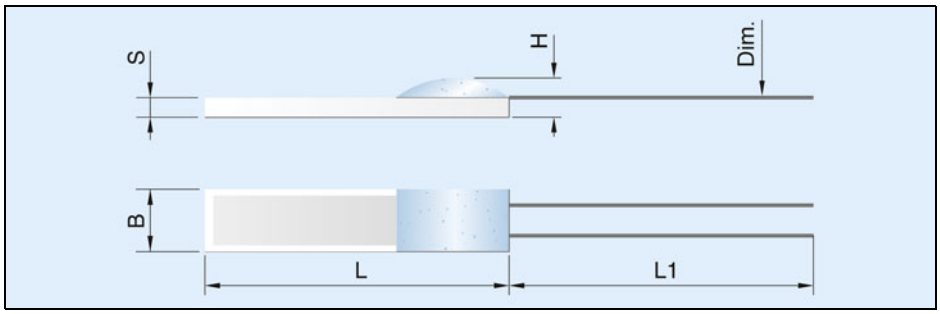
Dimensional drawing



Technical data for type PCA/L

Standard	DIN EN 60751:2009 / IEC 60751:2008
Temperature coefficient	α = 3.850 × 10^{-3} °C^{-1} (between 0 and 100 °C)
Temperature range	-70 to +250 °C (+350 °C)
Tolerance	Temperature validity range, class F0.1 (class AA): -50 to +200 °C Temperature validity range, class F0.15 (class A): -70 to +300 °C Temperature validity range, class F0.3 (class B): -70 to +350 °C
Measuring/maximum current	Pt100 recommended 1.0 mA, maximum 7 mA Pt500 recommended 0.7 mA, maximum 3 mA Pt1000 recommended 0.1 mA, maximum 1 mA
Operating conditions	Platinum-chip temperature sensors must be protected when used in a humid environment or in aggressive atmospheres. Direct immersion into liquids is also not admissible. The user may have to carry out some checks before using the sensors. **Please also refer to the installation instructions B 906121.4 "Information for the application of platinum-chip temperature sensors."**
Connection wires	These temperature sensors are equipped with connection wires made of pure silver. The connection wires are particularly suitable for soft-soldered joints. During further assembly work, it is essential to avoid exerting lateral pressure loads on the connections. Ensure that the horizontal traction on individual connection wires does not exceed 5 N. Avoid unnecessary bending of the connection wires because this will weaken the material and could lead to the connection wires breaking. Please also refer to point 3 "Connection techniques" in our installation instructions. Longer connection wires up to a length of 300 mm (in one piece) can be fitted as an optional extra. Upon request, as an alternative, extension wires in any lengths or insulated stranded wires can also be fitted later.
Measuring point	The specified nominal value relates to the standard connection wire length L1. The measured value is taken 2 mm in front of the open wire end. Changes to the wire length will lead to changes in the resistance, which may mean the tolerance class is no longer met.
Long-term stability	Max. R_0 drift 0.05 % per year (for definition, see data sheet 906000)
Low-temperature application	Taking into account a nominal value drift and hysteresis effect that occur to a certain extent, temperature measurements down to -200 °C are also possible. Further details are available upon request.
Insulation resistance	> 10 MΩ at room temperature
Self-heating	$\Delta t = I^2 \times R \times E$ (for definition, see data sheet 906000)
Packaging	Standard packaging: folding box (blister), packaging unit: 100 pieces, loose Blister belt: upon request Cardboard box: temperature sensors with connection wires > 30 mm
Storage	In the standard or belt packaging option, JUMO temperature sensors in design type PCA/L can be stored for at least 12 months under normal ambient conditions. It is not admissible to store the sensors in aggressive atmospheres, corrosive media, or in high humidity. As the connection wires of this version are made of pure silver, the shelf life can be extended when stored in air-tight packaging and in a dark environment. Otherwise, silver tends to tarnish over time, making soldering more difficult.
Compliant with RoHS 2011/65/EU and 2015/863/EU	Yes
Compliant with REACH 1907/2006	Yes

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Self-heating coefficients and response times for type PCA/L

Type	Self-heating coefficient E in K/mW		Response times in seconds			
	In water (v = 0.2 m/s)	In air (v = 2 m/s)	In water (v = 0.4 m/s)		In air (v = 1 m/s)	
			$t_{0.5}$	$t_{0.9}$	$t_{0.5}$	$t_{0.9}$
PCA 1.2005.1L	0.02	0.2	0.1	0.3	4	16
PCA 1.2005.5L	0.02	0.2	0.1	0.3	4	16
PCA 1.2005.10L	0.02	0.2	0.1	0.3	4	16
PCA 1.2010.1L	0.02	0.2	0.3	0.3	7	22
PCA 1.2010.5L	0.01	0.2	0.3	0.5	7	22
PCA 1.2010.10L	0.01	0.2	0.3	0.5	7	22