



# MICROTHERM

Temperature sensor

PT series

Type

PT100

PT500

PT1000



## Applications

- Motors
- Electric drives
- E-mobility plug
- Medical technology
- Building technology
- Predictive maintenance

## Benefits

- High accuracy and reliability
- Long-term stability
- Wide temperature range
- Small dimensions and weight
- Short response time

## Description

The PT-series temperature sensors describe a family of sensors that use a positive temperature coefficient with nearly linear characteristic. It is a precise and high performance choice suitable for use in measurement equipments and control systems. The PT-series contains various options in resistances: PT100, PT500 and PT1000 whereas the figure refers to the given resistance value at 0°C. Our PT-sensors are based on thin film technology chips which allow the completed sensor unit to be designed in smallest shapes. Standard designs are sealed by potting and consequently the mechanical stability is high and the sensor provides short response times. Beside the regular tolerance class B, advanced classes are available. Further to the standard types we offer a wide range of executions for specific customer applications.



## Technical data

description	characteristics		
	PT100	PT500	PT1000
type	PT100	PT500	PT1000
typical resistance at 0°C	100 Ω	500 Ω	1000 Ω
operating temperature range	-40°C ... 175°C		
insulation resistance (100V DC / 20°C)	≥ 100 MΩ		
dielectric strength (standard insulation)	2 kV		
measuring current	0.3 to 1.0 mA	0.1 to 0.7 mA	0.1 to 0.3 mA

Platinum resistance temperature detector (PRTD) according to DIN EN 60751, standard execution class B, TK = 3850ppm/K; measuring current: self-heating has to be considered

## Standard types

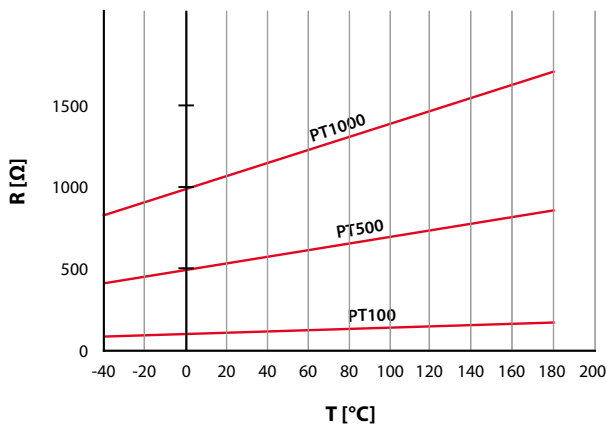
type	code	illustration	drawing dimensions (mm)	technical description
PT100 PT500 PT1000	G919			housing PPS, potted, AWG24
PT100 PT500 PT1000	G920			housing PPS, potted, AWG24 / AWG26
PT100 PT500 PT1000	G921			housing PPS, potted, AWG20 / AWG24
PT100 PT500 PT1000	G922			housing stainless steel (ø3 on request), potted, AWG24
PT100	U450			-30°C to 125°C, resin, cable 2-wire / 3-wire (sheath: XLPE grey, single leads: teflon), dielec. strength 750VAC

Other options on request: Tolerance class A / lead wire AWG / lead length / lead color / high temperature PT max. 250°C

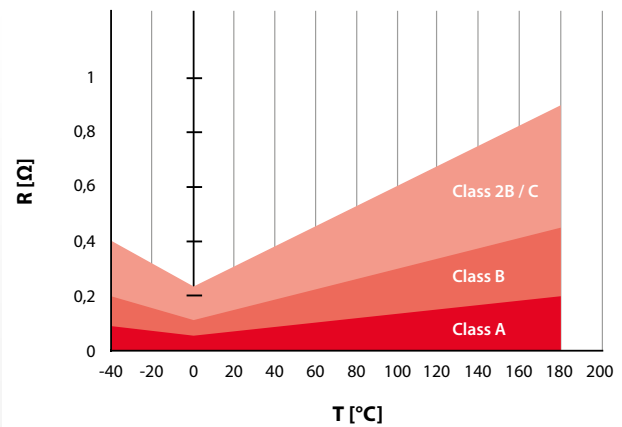
## Temperature vs. resistance

T °C	-40	-20	0	20	40	60	80	100	120	140	160	180
PT100	84,27	92,16	100	107,79	115,54	123,24	130,90	138,51	146,07	153,58	161,05	168,48
tol. ±Ω	0,20	0,16	0,12	0,16	0,19	0,23	0,27	0,30	0,34	0,37	0,41	0,44
PT500	421,35	460,80	500	538,97	577,70	616,21	654,48	692,53	730,34	767,92	805,27	842,39
tol. ±Ω	0,99	0,79	0,59	0,78	0,97	1,15	1,34	1,52	1,70	1,87	2,05	2,22
PT1000	842,71	921,60	1000	1077,94	1155,41	1232,42	1308,97	1385,06	1460,68	1535,84	1610,54	1684,78
tol. ±Ω	1,98	1,57	1,17	1,55	1,93	2,30	2,67	3,03	3,39	3,75	4,10	4,44

## Characteristics curve



## Resistance error



## Tolerance class

tolerance class designation		limiting deviation
tolerance acc. to DIN EN 60751 2009-05	tolerance acc. to DIN EN 60751 1996-07	$ t $ = absolute value of temperature in °C without consideration of the sign
F 0.15	Class A	$\pm (0.15 + 0.002  t )$
F 0.30	Class B	$\pm (0.3 + 0.005  t )$
F 0.60	Class 2B / C	$\pm (0.6 + 0.01  t )$



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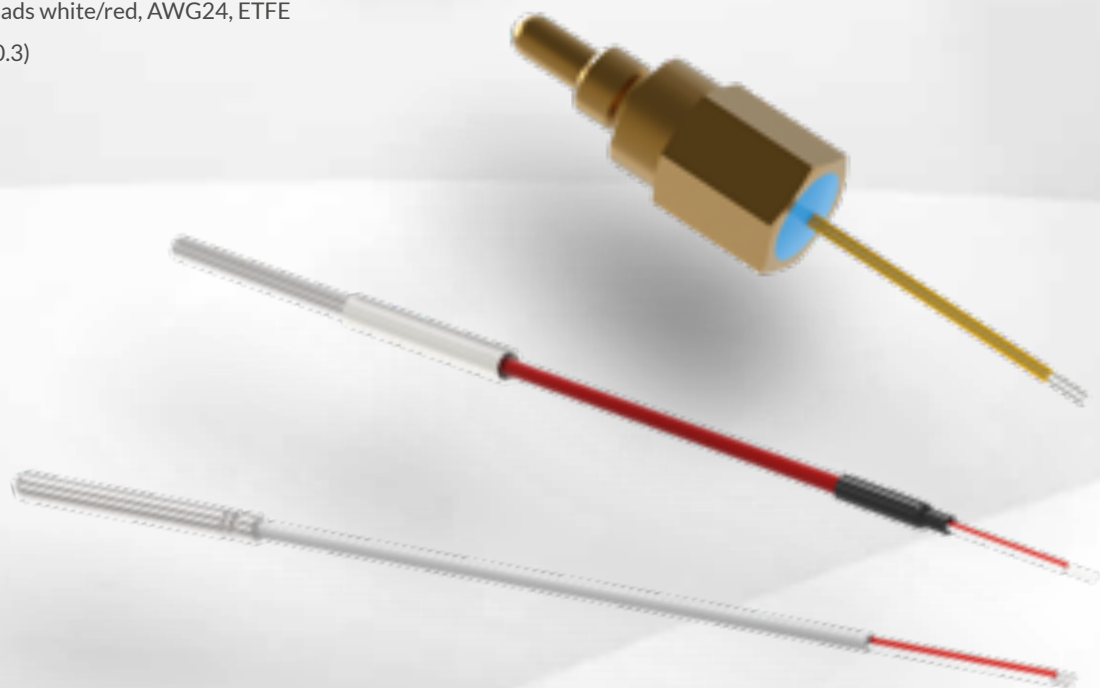
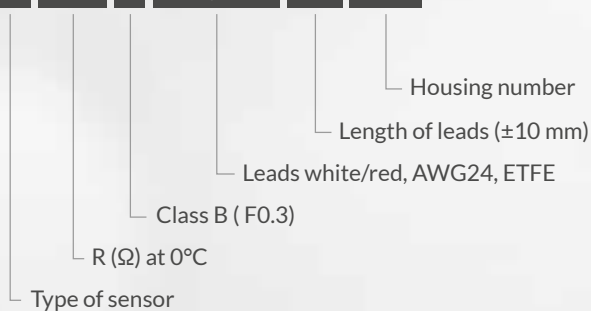
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## Standard types

lead (stranded)	code	temp. max.	operating voltage	approx. Ø insulation	approx. cross section	material	UL-Style
white	L390	200°C	600V	1.0 mm	AWG26 / 0.14 mm <sup>2</sup>	ETFE	10086
red	L396						
white	L360			1.2 mm	AWG24 / 0.24 mm <sup>2</sup>		
red	L366						
white	L370			1.6 mm	AWG20 / 0.50 mm <sup>2</sup>		
red	L376						

## Ordering example standard types

PT 1000 B L360/L366 500 G919



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