

PLATINUM - TEMPERATURE SENSORS

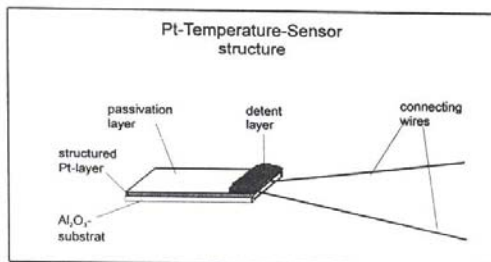
Traditional products of STG Pt-Temperature Sensors in thin-layer-technology. These sensor elements are used in measuring instruments and they are stable against vibration and extreme conditions of application.

Temperature sensors are applicable in measuring and controlling devices:

- ⇒ in industry
- ⇒ in medicine
- ⇒ in car industry
- ⇒ in agriculture
- ⇒ in energy- and environmental technic

PT-TEMPERATURE SENSORS ARE DIFFERENT IN:

- ⇒ measuring range
- ⇒ nominal resistance
- ⇒ geometric dimension
- ⇒ size



basic values

type	temperature range	connecting wire
FMS 2000	- 50 °C ... + 400 °C	Ag5Pd Ø=0,25 mm
FMA 2000	- 50 °C ... + 400 °C	Ag5Pd Ø=0,25mm vertical on the Chip
FMP 2000	- 50 °C ... + 600 °C	Platinum Ø=0,20mm

Tab 1: types of Pt-Temperature Sensors

basic values for temperature range
- 50 °C ... + 600 °C (DIN IEC 751)

average temperature coefficient
between 0 °C and 100 °C $3,85 \times 10^{-3} \text{ K}^{-1}$

The basic values for Pt-Temperature Sensors can be calculated according the following equation:

temperature range - 50 °C ... 0 °C:

$$R_t = R_0 (1 + At + Bt^2 + C(t-100) t^3)$$

temperature range: 0 °C ... + 600 °C:

$$R_t = R_0 (1 + At + Bt^2)$$

R_t - resistance in Ω
for temperature t
 R_0 - nominal resistance for 0 °C
 t - temperature in °C

$$A = 3,90802 \times 10^{-3} \text{ } ^\circ\text{C}^{-1}$$

$$B = - 5,802 \times 10^{-7} \text{ } ^\circ\text{C}^{-2}$$

$$C = - 4,2735 \times 10^{-12} \text{ } ^\circ\text{C}^{-4}$$

The Temperature Sensors which we described in our prospect will be deliver as tolerance class B in principle.

$$t \text{ in } ^\circ\text{C} = \pm (0,3 + 0,005 [t]) \text{ bei } 0^\circ\text{C}$$

t = temperature

Sensors of tolerance class A are available for special exactness on inquiry and for an extra charge.

$$t \text{ in } ^\circ\text{C} = \pm (0,15 + 0,002 [t]) \text{ bei } 0^\circ\text{C}$$

t = temperature

We can offer Sensors with following special tolerance ranges for many applications. These Sensors are available also on inquiry.

$$\pm 0,15 \text{ } ^\circ\text{C bei } 0^\circ\text{C and } \pm 0,1 \text{ } ^\circ\text{C bei } 0^\circ\text{C}$$

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Temperature Sensors are available for applications with lower exactness in enlarged tolerance and for a good price.

$\pm 0,45\text{ °C bei }0\text{ °C und } \pm 1,5\text{ °C bei }0\text{ °C}$

The deviations in °C are valid for all nominal resistance and the deviations in Ohm (Ω) are valid for Pt 100 only. The deviation for other nominal resistance has to multiply by the factor $R_0/100$.

temperature in °C	permitted deviations			
	class A		class B	
	in Ohm	in °C	in Ohm	in °C
- 50	$\pm 0,10$	$\pm 0,25$	$\pm 0,21$	$\pm 0,5$
0	$\pm 0,06$	$\pm 0,15$	$\pm 0,12$	$\pm 0,3$
100	$\pm 0,13$	$\pm 0,35$	$\pm 0,30$	$\pm 0,8$
200	$\pm 0,20$	$\pm 0,55$	$\pm 0,48$	$\pm 1,3$
300	$\pm 0,27$	$\pm 0,75$	$\pm 0,64$	$\pm 1,8$
400	$\pm 0,33$	$\pm 0,95$	$\pm 0,79$	$\pm 2,3$
500	$\pm 0,38$	$\pm 1,15$	$\pm 0,93$	$\pm 2,8$
600	$\pm 0,43$	$\pm 1,35$	$\pm 1,06$	$\pm 3,3$

tab 2:permitted deviations

t in °C	0	- 10	- 20	- 30	- 40	-50
	100,00	96,09	92,16	88,22	84,27	80,31

tab 3 :basic value for Pt 100 from - 50 °C ... 0 °C (DIN IEC 751)

t in °C	0	20	40	60	80
0	100,00	107,79	115,54	123,24	130,89
100	138,50	146,06	153,58	161,04	168,46
200	175,84	183,17	190,45	197,69	204,88
300	212,02	219,12	226,17	233,17	240,13
400	247,04	253,90	260,72	267,49	274,22
500	280,90	287,53	294,11	300,65	307,15
600	313,59				

tab 4:basic value for Pt 100 from 0 °C ... + 600 °C (DIN IEC 751)

