Platinum Temperature Sensor **Pt100 FMC 0,5x5**

Technical Data

Resistance at 0°C	100 Ω
Temperature coefficient (0 °C up to +100 °C)	$3.85 \cdot 10^{-3}$ K^{-1}
Tolerance classes according to DIN EN 60751	• F 0,1 (0°C - +150°C) • F 0,15 (-30°C - +300°C) • F 0,3 (-50°C - +500°C)
Operating temperature range depending on lead material: Pt	 -50 °C up to +600 °C
Measurement current (DC) at 25 °C	1 mA
Maximal permissible peak current (DC) at 25 °C	3 mA
Insulation resistance	> 10 MΩ
Self-heating at 0 °C	< 0.5 K / mW
Thermal response time Flowing water (v = 0.2 m/s) Flowing air (v = 1 m/s)	 $T_{0.5}$ = 0.05 s, $T_{0.9}$ = 0.2 s $T_{0.5}$ = 4 s, $T_{0.9}$ = 10 s

Temperature	Resistance value R_t at temperature t in tolerance class		
	F 0,1 [Ω]	F 0,15 [Ω]	F 0,3 [Ω]
t [°C]	R_t [Ω]	R_t [Ω]	R_t [Ω]
0	100 ± 0.04	100 ± 0.06	100 ± 0.12
+100	138.51 ± 0.1	138.51±0.13	138.51 ± 0.3

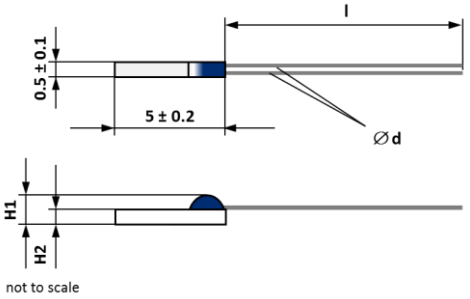
R_t measuring point	2 mm from wire end
Maximal Resistance Change at UCT 250 h	< 0.1 %
Specification	DIN EN 60751
Type	Film sensor

Technology: Advanced thin-film-technology (ceramic carrier with a micro-structured platinum layer, covered with a passivation layer)

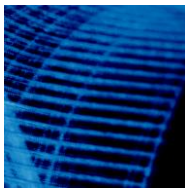
Operating conditions: Unprotected application only in dry environments without any contamination

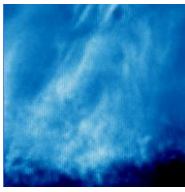
Conformity: 2011/65/EU Restriction of the use of Hazardous Substances Directive (RoHS)

Dimensions [mm]



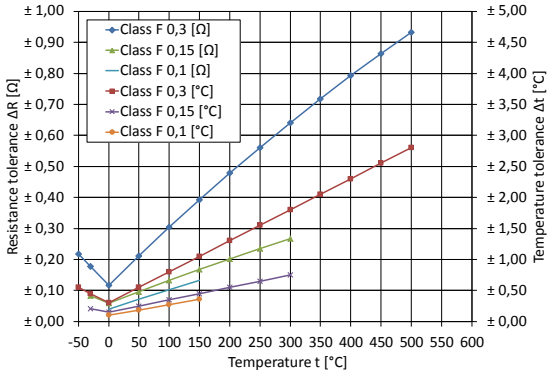
	Pt100 FMC 0.5x5x0.7	Pt100 FMC 0.5x5x1	Leads	Pt
H1 [mm]	0.7 ± 0.2	1 ± 0.2	l [mm]	7 ± 1
H2 [mm]	0.4	0.4	Ød [mm]	0,1





Functional performance

according to DIN EN 60751



Picture 1: Resistance and temperature tolerances of Pt100 (Please note - the operating temperature range depends on lead material!)

Temperature range from -50 °C up to 0 °C:

$R_t = R_o \cdot (1 + A \cdot t + B \cdot t^2 + C \cdot (t - 100\ °C) \cdot t^3)$

Temperature range from 0°C up to +600°C:

$R_t = R_o \cdot (1 + A \cdot t + B \cdot t^2)$

Tolerance classes according to DIN EN 60751:

Class F 0,1 (0°C - +150°C): $\Delta t = \pm (0.1 + 0.0017 \cdot |t|)$

Class F 0,15 (-30°C - +300°C): $\Delta t = \pm (0.15 + 0.002 \cdot |t|)$

Class F 0,3 (-50°C - +500°C): $\Delta t = \pm (0.3 + 0.005 \cdot |t|)$

Whereby:

R_t … Resistance [Ω] at temperature t

R_o … Resistance [Ω] at 0 °C

t … Temperature [°C]

Δt …Permissible temperature deviation at t [°C]

A = $3.9083 \cdot 10^{-3}$ °C^{-1}

B = $- 5.775 \cdot 10^{-7}$ °C^{-2}

C = $- 4.183 \cdot 10^{-12}$ °C^{-4}

Fields of application

- Industrial electronics
- Building automation
- Automotive electronics
- Energy and environmental engineering
- Safety and medical engineering

Ordering examples

Construction	Class of accuracy	Leads (ød x l [mm] lead material)	Operating temperature range [°C]
Pt100 FMC 0.8x3x0.7	**F 0,3**	**0.1x7 Pt**	**- 50/+600**
Pt100 FMC 0.8x3x1	**F 0,15**	**0.1x7 Pt**	**- 50/+600**

Other classes of accuracy and wire lengths are available on request.

UST Umweltsensortechnik GmbH is certified according to

TÜV NORD CERT GmbH IATF 16949

TÜV NORD CERT GmbH ISO 14001

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