Platinum Temperature Sensor **Pt100 FMC 3x10**

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:	
AgPd5, Au-coated Ni-wire	-50 °C up to +400 °C
Pt-coated Ni-wire	-50 °C up to +500 °C (short-time up to +550°C)
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	< 0.4 K / mW
Thermal response time	
Flowing water (v = 0.2 m/s)	$T_{0.5}$ = 0.07 s, $T_{0.9}$ = 0.4 s
Flowing air (v = 1 m/s)	$T_{0.5}$ = 8 s, $T_{0.9}$ = 30 s

Resistance value [Ω] at

Temperature	Tolerance class	
	F 0,15 [Ω]	F 0,3 [Ω]
0 °C	100 ± 0.06	100 ± 0.12
+100 °C	138.5± 0.13	138.5.1 ± 0.3

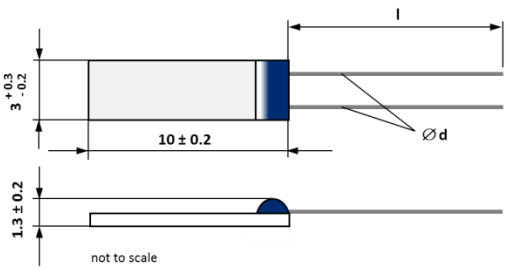
R_t measuring point	2 mm from wire end
Maximal Resistance Change at UCT 250 h	< 0.1 %
Specification	DIN EN 60751
Type	Film sensor

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

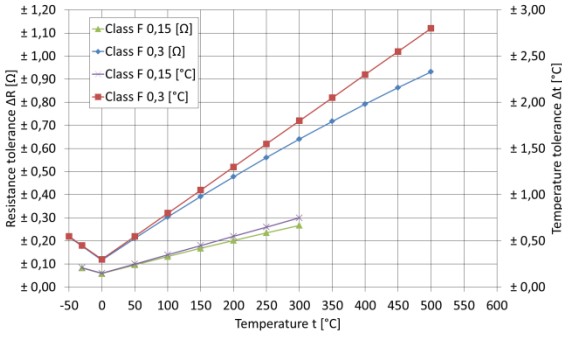
Dimensions [mm]



Leads	AgPd5	NiAu	NiPt	Pt
l [mm]	15 ± 1	10 ± 1	10 ± 1	7 ± 1
d [mm]	0,25	0,2	0,2	0,2

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 0,15 (-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 (ø d x l [mm] lead material)	Operating temperature range [°C]
Pt100 FMC 3x10	**F 0,15**	**0.25x15 AgPd5**	**- 50/+400**
Pt100 FMC 3x10	**F 0,3**	**0.2x10 NiPt**	**- 50/+500**

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

Made in Germany

UST Umweltsensortechnik GmbH, Dieselstr. 2 und 4, 99331 Geratal OT Geschwenda, Germany
Tel.+49 36205 713-0
Fax +49 36205 713-10
info@umweltsensortechnik.de
www.umweltsensortechnik.de