

Platinum Temperature Sensor Pt1000 FMC 0,8x3

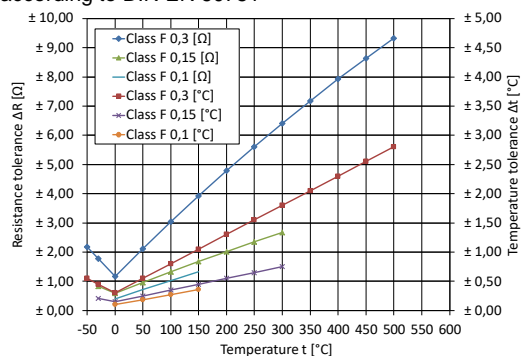
Technical Data

Resistance at 0°C	1000 Ω
Temperature coefficient (0 °C up to +100 °C)	3.85 · 10 ⁻³ K ⁻¹
Tolerance classes according to DIN EN 60751	<ul style="list-style-type: none"> • 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	-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	0.1 mA
Maximal permissible peak current (DC) at 25 °C	0.3 mA
Insulation resistance	> 10 MΩ
Self-heating at 0 °C	< 0.5 K / mW
Thermal response time	
Flowing water (v = 0.2 m/s)	T _{0,5} = 0.05 s, T _{0,9} = 0.2 s
Flowing air (v = 1 m/s)	T _{0,5} = 4 s, T _{0,9} = 10 s
Resistance value [Ω] at	
Temperature	Tolerance class
	F 0,1 [Ω] F 0,15 [Ω] F 0,3 [Ω]
0 °C	1000 ± 0.4 1000 ± 0.6 1000 ± 1.2
+100 °C	1385.1 ± 1 1385.1 ± 1.3 1385.1 ± 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 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]																						
	<table border="1"> <thead> <tr> <th></th> <th>Pt1000 FMC 0.8x3x0.7</th> <th>Pt1000 FMC 0.8x3x1</th> <th>Leads</th> <th>AgPd5</th> <th>NiPt</th> <th>Pt</th> </tr> </thead> <tbody> <tr> <td>H1 [mm]</td> <td>0.7 - 0.2</td> <td>1 ± 0.2</td> <td>l [mm]</td> <td>15 ± 1</td> <td>10 ± 1</td> <td>7 ± 1</td> </tr> <tr> <td>H2 [mm]</td> <td>0.4</td> <td>0.4</td> <td>d [mm]</td> <td>0,15</td> <td>0,15</td> <td>0,15</td> </tr> </tbody> </table>		Pt1000 FMC 0.8x3x0.7	Pt1000 FMC 0.8x3x1	Leads	AgPd5	NiPt	Pt	H1 [mm]	0.7 - 0.2	1 ± 0.2	l [mm]	15 ± 1	10 ± 1	7 ± 1	H2 [mm]	0.4	0.4	d [mm]	0,15	0,15	0,15
	Pt1000 FMC 0.8x3x0.7	Pt1000 FMC 0.8x3x1	Leads	AgPd5	NiPt	Pt																
H1 [mm]	0.7 - 0.2	1 ± 0.2	l [mm]	15 ± 1	10 ± 1	7 ± 1																
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Functional performance

according to DIN EN 60751



Picture 1: Resistance and temperature tolerances of Pt1000 (Please note - the operating temperature range depends on lead material!)

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

$$R_t = R_0 \cdot (1 + A \cdot t + B \cdot t^2 + C \cdot (t - 100) \cdot t^3)$$

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

$$R_t = R_0 \cdot (1 + A \cdot t + B \cdot t^2)$$

Tolerance classes according to DIN EN 60751:

Class F 0,1 (0°C - +150°C): Δt = ± (0.1 + 0.0017 · | t |)

Class F 0,15 (-30°C - +300°C): Δt = ± (0.15 + 0.002 · | t |)

Class F 0,3 (-50°C - +500°C): Δt = ± (0.3 + 0.005 · | t |)

Whereby:

R_t ... Resistance [Ω] at temperature t

R₀ ... Resistance [Ω] at 0 °C

t ... Temperature [°C]

Δt ... Permissible temperature deviation at t [°C]

$$A = 3.9083 \cdot 10^{-3} \text{ °C}^{-1}$$

$$B = - 5.775 \cdot 10^{-7} \text{ °C}^{-2}$$

$$C = - 4.183 \cdot 10^{-12} \text{ °C}^{-4}$$

Fields of application

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

Ordering examples

Construction	Class of accuracy	Leads (∅ d x l [mm] lead material)	Operating temperature range [°C]
Pt1000 FMC 0.8x3x0.7	F 0,15	0.15x15 AgPd5	- 50/+400
Pt1000 FMC 0.8x3x1	F 0,3	0.15x10 NiPt	- 50/+500

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