

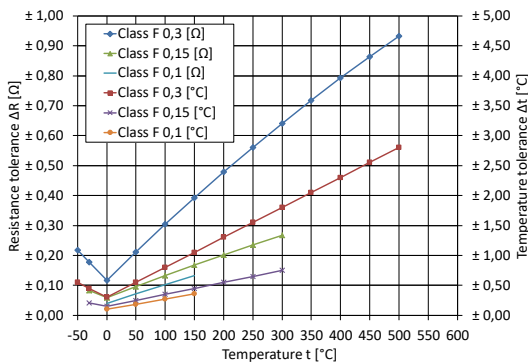
## Technical Data

Resistance at 0°C (R <sub>0</sub> )	100 Ω			
Temperature coefficient (0°C up to +100°C)	3.85 · 10 <sup>-3</sup> K <sup>-1</sup>			
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)			
AuPd5, Pt	-50 °C up to +600 °C			
Measurement current (DC) at 25 °C	1.0 mA			
Maximal permissible peak current (DC) at 25 °C	3.0 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 <sub>0,5</sub> = 0.07s, T <sub>0,9</sub> = 0.2s			
Flowing air (v = 1 m/s)	T <sub>0,5</sub> = 4 s, T <sub>0,9</sub> = 10 s			
Resistance values [Ω] at Temperature t				
t	Tolerance class			
	1/10 Din F0,3 [Ω] *)	F 0,1 [Ω]	F 0,15 [Ω]	F 0,3 [Ω]
0 °C	100 ± 0.012 *)	100 ± 0.04	100 ± 0.06	100 ± 0.12
+100°C	138.51 ± 0.1 *)	138.51 ± 0.10	138.51 ± 0.13	138.51 ± 0.30

\*) These temperature sensor elements are selected only to 1/10 Din F 0,3 at 0°C. The resistance tolerance of these temperature sensor elements at lower or higher temperatures is generally higher (e.g. F 0,1 at 100°C).

R <sub>t</sub> measuring point	2 mm from wire end							
Maximal Resistance Change at UCT 250 h	< 0.1 %							
Specification	DIN EN 60751							
Type	Film sensor							
<b>Technology:</b> Advanced thin-film-technology (ceramic carrier with a structured platinum layer, covered with a passivating layer)								
<b>Operating conditions:</b> Unprotected application only in dry environments without any contamination								
<b>Conformity:</b> 2011/65/EU: Restriction of the use of Hazardous Substances Directive (RoHS)								
Dimensions [mm]								
	FMC2105 2x2.3x1.3	FMC2105 2x2.3x1.0	Leads	AgPd5	NiAu	NiPt	AuPd5	Pt
H1 [mm]	1.3 ± 0.2	1 ± 0.2	l [mm]	15 ± 1	15 ± 1	10 ± 1	10 ± 1	7 ± 1
H2 [mm]	0.65	0.4	d [mm]	0,25	0,2	0,2	0,25	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:

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

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<sub>t</sub> ... Resistance [Ω] at temperature t

R<sub>0</sub> ... 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 (ø d x l [mm] lead material)	Operating temperature range [°C]
FMC 2105 2x2,3x1.3	F 0,15	0.25x15 AgPd5	-50/+400
FMC 2105 2x2,3x1.0	F 0,3	0.2x10 NiPt	-50/+500

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