

Technical Data

| | |
|---|---|
| Resistance at 0 °C | 100 Ω |
| Temperature coefficient (0 °C up to +100 °C) | $3.85 \cdot 10^{-3} \text{ K}^{-1}$ |
| 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 | 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) | $T_{0,5} = 0.05 \text{ s}, T_{0,9} = 0.2 \text{ s}$ |
| Flowing air (v = 1 m/s) | $T_{0,5} = 4 \text{ s}, T_{0,9} = 10 \text{ s}$ |
| Resistance value [Ω] at | |
| Temperature | Tolerance class |
| | F 0,1 [Ω] F 0,15 [Ω] F 0,3 [Ω] |
| 0 °C | 100 ± 0.04 100 ± 0.06 100 ± 0.12 |
| +100 °C | 138.51 ± 0.1 138.51 ± 0.13 138.51 ± 0.3 |

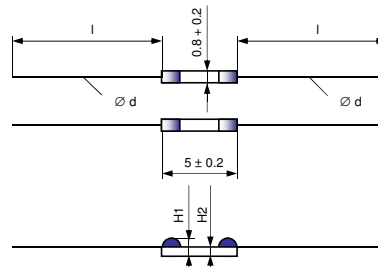
| | |
|--|--------------------|
| R_t measuring point | 2 mm from wire end |
| Maximal Resistance Change at UCT 250 h | < 0.1 % |
| Specification | DIN EN 60751 |
| Type | Film sensor |

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

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

Conformity: 2002/95/EC Restriction of the use of Hazardous Substances Directive (RoHS)

Dimensions [mm]

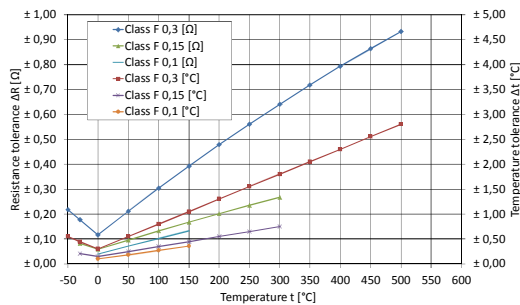


| | Pt100 FMC 0.8x5x0.7 axial | Pt100 FMC 0.8x5x1 axial | Pt100 FMC 0.8x5x1.3 axial | Leads | AgPd5 | NiPt 1) | Pt |
|---------|---------------------------|-------------------------|---------------------------|--------|--------|---------|--------|
| H1 [mm] | 0.7 ± 0.2 | 1 ± 0.2 | 1.3 ± 0.2 | l [mm] | 15 ± 1 | 10 ± 1 | 17 ± 1 |
| H2 [mm] | 0.27 | 0.4 | 0.65 | d [mm] | 0.15 | 0.15 | 0.15 |

1) not available with H1 = 0.7 mm and H2 = 0.27 mm

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): $\Delta t = \pm (0.1 + 0.0017 \cdot |t|)$

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_0 ... Resistance [Ω] at 0 °C

t ... Temperature [°C]

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

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

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

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

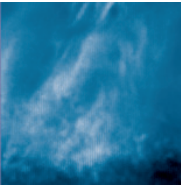
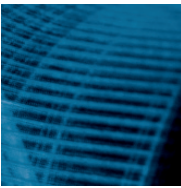
Fields of application

- 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] |
|---------------------------|-------------------|------------------------------------|----------------------------------|
| Pt100 FMC 0.8x5x1 axial | F 0,15 | 0.15x15 AgPd5 | - 50/+400 |
| Pt100 FMC 0.8x5x1.3 axial | F 0,3 | 0.15x10 NiPt | - 50/+500 |

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



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