

## Nickel Thin Film Temperature Sensor

Nickel thin film elements are characterized by a relatively high temperature coefficient. Typical applications include bearing temperature monitoring, HVAC temperature monitoring, and stator winding temperature monitoring

Nominal Resistance $R_0$	Accuracy	Part Number
500	DIN 43760	100 488-1

<b>Specification</b>	DIN 43760
<b>Temperature Range</b>	-60 °C to +250 °C
<b>Temperature Coefficient</b>	6180 ppm/K
<b>Lead wire material</b>	nickel
<b>Protective coating</b>	high-temperature epoxy
<b>Self-heating</b>	0,3K/mW in air
<b>Response time</b>	Water ( $v = 0,2\text{m/sec.}$ ) $t_{0,9} = 0,3 \text{ sec.}$ Air ( $v = 1\text{m/sec.}$ ) $t_{0,9} = 9 \text{ sec.}$
<b>Operating Current, Maximum</b>	5 mA

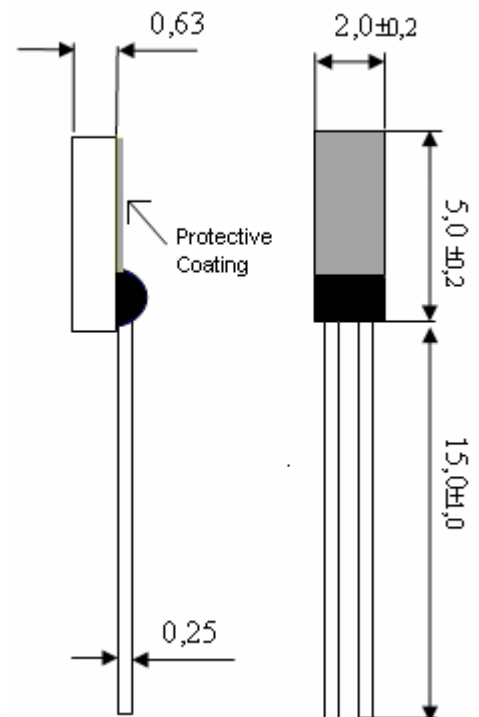
### Polynomial of a nickel resistor in accordance with DIN 43760:

$$R(\vartheta) = R_0 \times (1 + 5,481 \times 10^{-3} \times \vartheta + 6,650 \times 10^{-6} \times \vartheta^2 + 2,805 \times 10^{-11} \times \vartheta^4 + 2,000 \times 10^{-17} \times \vartheta^6)$$

### Maximum permissible tolerance as a function of temperature (DIN 43760):

$$\vartheta < 0^\circ\text{C}: F = \pm(0,4 + 0,028 \times \vartheta) \text{ } ^\circ\text{C}$$

$$\vartheta > 0^\circ\text{C}: F = \pm(0,4 + 0,007 \times \vartheta) \text{ } ^\circ\text{C}$$



All technical data serves as a guideline and does not guarantee any particular properties to the product.

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