

## 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 = 0,2m/sec.) $t_{0,9} = 0,3$ sec. Air (v= 1m/sec.) $t_{0,9} = 9$ sec.
<b>Operating Current, Maximum</b>	5 mA

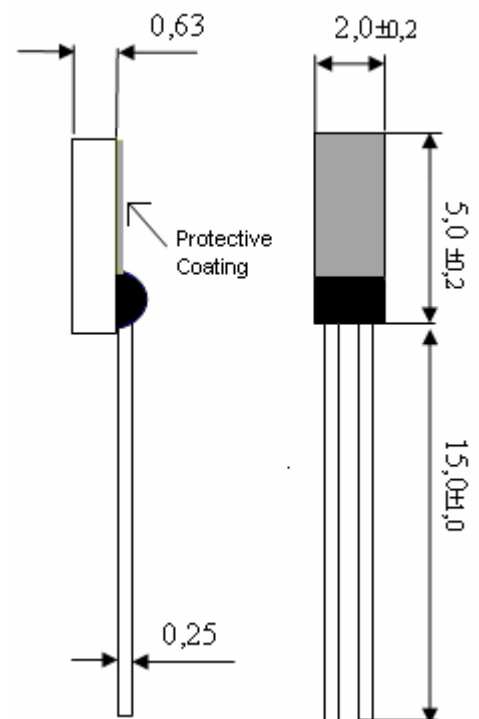
### Polynomial of a nickel resistor in accordance with DIN 43760:

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

### 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.

## Heraeus Sensor Technology USA

1901 Route 130  
 North Brunswick, NJ 08902  
 Phone 732-940-4400 Fax 732-940-4445  
 Email info.hst-us@heraeus.com  
 www.hst-us.com