



200 °C Series



Nickel sensor with wires



For medium temperatures



Benefits & characteristics



- Excellent long-term stability
- Connections remain in shape

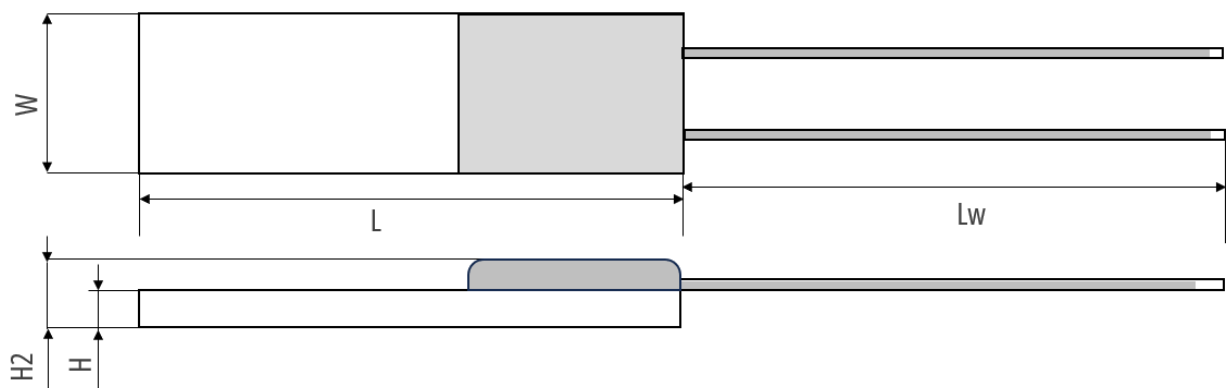


- Easy interchangeability
- Small dimensions



- Simple linearization
- Vibration and temperature shock resistant
- Customer-specific sensor available upon request

Illustration ¹⁾



¹⁾ for actual size see dimensions in order information

H = Substrate Height

H2 = Height

W = Width

L = Length

L_w = Wire length

Dimension tolerances:

W ±0.2 mm, L ±0.2 mm, H ±0.1 mm, H2 ±0.3 mm,

L_w (up to 30 mm) ±1 mm



Technical Data

Operating temperature range: -60 °C to +200 °C

Nominal resistance: *

100 Ω at 0 °C

500 Ω at 0 °C

1000 Ω at 0 °C

Characteristics curve: *

6180 ppm/K (Nickel ND)

5000 ppm/K (Nickel NL)

6370 ppm/K (Nickel NJ) **

6720 ppm/K (Nickel NA) ***

Long-term stability: < 0.1 % at 1000 h at maximal operating temperature

Tolerance class ¹⁾ : *	iST reference	T > 0 °C
(dependent on temperature range)	A	$0.2 + 0.0035 \times t $
	B	$0.4 + 0.007 \times t $
	C	$0.8 + 0.014 \times t $

1) For tolerances <0 °C please check application note

Connection:*

Ag-wire, Ø 0.25 mm (solderable, weldable)

Cu/Ag-wire, PTFE AWG30 (solderable, weldable)

Cu/Ag-wire, PTFE AWG26 (solderable, weldable)

Cu/Ag-wire, Ø 0.4 mm (solderable, weldable)

Ni/Au-flat wire, 0.2 x 0.4 mm (solderable, weldable, crimpable)

CuP-SIL wire post-plated with Sn (solderable, crimpable)

Alternative wire construction: * Inverted welding

Recommended applied current:²⁾

1 mA at 100 Ω

0.5 mA at 500 Ω

0.3 mA at 1000 Ω

2) Self-heating must be considered

Other alternatives: *

Metallized backside

Substrate thickness

Sintered powder

* Customer-specific alternatives available

** 6370 ppm/K (Nickel NJ) 891 Ω at 0 °C only

*** 6720 ppm/K (Nickel NA) 120 Ω at 0 °C only



Order Information



Nominal Resistance	Size	Dimensions (L x W x H / H2 in mm)	Class*	Order code	Product name (secondary reference)	Wire length in mm	Special
2W (Ag-wire, Ø 0.25 mm)							
6180 ppm/K (Nickel ND)							
100 Ω	232	2.3 x 2.0 x 0.65 / 1.3	Class A	103075	ND0K1.232.2W.A.010	10	
100 Ω	232	2.3 x 2.0 x 0.65 / 1.3	Class B	103073	ND0K1.232.2W.B.010	10	
100 Ω	232	2.3 x 2.0 x 0.65 / 1.3	Class A	103074	ND0K1.232.2W.A.015	15	
100 Ω	232	2.3 x 2.0 x 0.65 / 1.3	Class B	103072	ND0K1.232.2W.B.015	15	
1000 Ω	232	2.3 x 2.0 x 0.65 / 1.3	Class A	103085	ND1K0.232.2W.A.015	15	
1000 Ω	232	2.3 x 2.0 x 0.65 / 1.3	Class B	103139	ND1K0.232.2W.B.015	15	
100 Ω	325	3.0 x 2.5 x 0.65 / 1.3	Class A	103078	ND0K1.325.2W.A.010	10	
100 Ω	325	3.0 x 2.5 x 0.65 / 1.3	Class B	103077	ND0K1.325.2W.B.010	10	
200 Ω	520	5.0 x 2.0 x 0.65 / 1.3	Class A	On request	ND0K2.520.2W.A.015	15	
200 Ω	520	5.0 x 2.0 x 0.65 / 1.3	Class B	103082	ND0K2.520.2W.B.015	15	
300 Ω	520	5.0 x 2.0 x 0.65 / 1.3	Class A	On request	ND0K3.520.2W.A.015	15	
300 Ω	520	5.0 x 2.0 x 0.65 / 1.3	Class B	103179	ND0K3.520.2W.B.015	15	
500 Ω	520	5.0 x 2.0 x 0.65 / 1.3	Class A	On request	ND0K5.520.2W.A.010	10	
500 Ω	520	5.0 x 2.0 x 0.65 / 1.3	Class B	103084	ND0K5.520.2W.B.010	10	
500 Ω	520	5.0 x 2.0 x 0.65 / 1.3	Class A	103267	ND0K5.520.2W.A.015	15	
500 Ω	520	5.0 x 2.0 x 0.65 / 1.3	Class B	103266	ND0K5.520.2W.B.015	15	
1000 Ω	520	5.0 x 2.0 x 0.65 / 1.3	Class A	103089	ND1K0.520.2W.A.010	10	
1000 Ω	520	5.0 x 2.0 x 0.65 / 1.3	Class B	103087	ND1K0.520.2W.B.010	10	
5000 Ω	525	5.0 x 2.5 x 0.65 / 1.3	Class A	On request	ND5K0.525.2W.A.010	10	
5000 Ω	525	5.0 x 2.5 x 0.65 / 1.3	Class B	103106	ND5K0.525.2W.B.010	10	
1000 Ω	538	5.0 x 3.8 x 0.65 / 1.3	Class A	On request	ND1K0.538.2W.A.015	15	
1000 Ω	538	5.0 x 3.8 x 0.65 / 1.3	Class B	103098	ND1K0.538.2W.B.015	15	
100 Ω	505	5.0 x 5.0 x 0.65 / 1.3	Class A	On request	ND0K1.505.2W.A.010	10	
100 Ω	505	5.0 x 5.0 x 0.65 / 1.3	Class B	103202	ND0K1.505.2W.B.010	10	
1000 Ω	102	10.0 x 2.0 x 0.65 / 1.3	Class A	On request	ND1K0.102.2W.A.015	15	
1000 Ω	102	10.0 x 2.0 x 0.65 / 1.3	Class B	103102	ND1K0.102.2W.B.015	15	



Nominal Resistance	Size	Dimensions (L x W x H / H2 in mm)	Class*	Order code	Product name (secondary reference)	Wire length in mm	Special
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2W (Ag-wire, Ø 0.25 mm)

5000 ppm/K (Nickel NL)

1000 Ω	520	5.0 x 2.0 x 0.65 / 1.3	Class A	103113	NL1K0.520.2W.A.010	10	
1000 Ω	520	5.0 x 2.0 x 0.65 / 1.3	Class B	103111	NL1K0.520.2W.B.010	10	
1000 Ω	525	5.0 x 2.5 x 0.65 / 1.3	Class A	On request	NL1K0.525.2W.A.010	10	
1000 Ω	525	5.0 x 2.5 x 0.65 / 1.3	Class B	103117	NL1K0.525.2W.B.010	10	
10000 Ω	525	5.0 x 2.5 x 0.65 / 1.3	Class A	On request	NL10K.525.2W.A.010	10	
10000 Ω	525	5.0 x 2.5 x 0.65 / 1.3	Class B	103121	NL10K.525.2W.B.010	10	

2I (Cu/Ag-wire, AWG 30, PTFE-insulated)

6180 ppm/K (Nickel ND)

100 Ω	325	3.0 x 2.5 x 0.65 / 1.3	Class A	On request	ND0K1.325.2I.A.030	30	
100 Ω	325	3.0 x 2.5 x 0.65 / 1.3	Class B	103079	ND0K1.325.2I.B.030	30	

Nickel NL (5000ppm/K)

1000 Ω	520	5.0 x 2.0 x 0.65 / 1.3	Class A	On request	NL1K0.520.2I.A.050	50	
1000 Ω	520	5.0 x 2.0 x 0.65 / 1.3	Class B	103241	NL1K0.520.2I.B.050	50	
1000 Ω	520	5.0 x 2.0 x 0.65 / 1.3	Class A	On request	NL1K0.520.2I.A.100	100	
1000 Ω	520	5.0 x 2.0 x 0.65 / 1.3	Class B	103240	NL1K0.520.2I.B.100	100	

2K (Cu/Ag-wire, AWG 26)

6180 ppm/K (Nickel ND)

1000 Ω	520	5.0 x 2.0 x 0.65 / 1.3	Class A	On request	ND1K0.520.2K.A.058	58	
1000 Ω	520	5.0 x 2.0 x 0.65 / 1.3	Class B	103093	ND1K0.520.2K.B.058	58	
1000 Ω	538	5.0 x 3.8 x 0.65 / 1.3	Class A	On request	ND1K0.538.2K.A.026	26	
1000 Ω	538	5.0 x 3.8 x 0.65 / 1.3	Class B	103235	ND1K0.538.2K.B.026	26	

5000 ppm/K (Nickel NL)

1000 Ω	520	5.0 x 2.0 x 0.65 / 1.3	Class A	150748	NL1K0.520.2K.A.165	165	
1000 Ω	520	5.0 x 2.0 x 0.65 / 1.3	Class B	103230	NL1K0.520.2K.B.165	165	
1000 Ω	520	5.0 x 2.0 x 0.65 / 1.3	Class A	150749	NL1K0.520.2K.A.215	215	
1000 Ω	520	5.0 x 2.0 x 0.65 / 1.3	Class B	103231	NL1K0.520.2K.B.215	215	



Nominal Resistance	Size	Dimensions (L x W x H / H2 in mm)	Class*	Order code	Product name (secondary reference)	Wire length in mm	Special
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2K (Cu/Ag-wire, Ø 0.4 mm)

6180 ppm/K (Nickel ND)

1000 Ω	520	5.0 x 2.0 x 0.65 / 1.3	Class A	On request	ND1K0.520.2K.A.007	7	
1000 Ω	520	5.0 x 2.0 x 0.65 / 1.3	Class B	103162	ND1K0.520.2K.B.007	7	
1000 Ω	538	5.0 x 3.8 x 0.65 / 1.3	Class A	103245	ND1K0.538.2K.A.010	10	
1000 Ω	538	5.0 x 3.8 x 0.65 / 1.3	Class B	103244	ND1K0.538.2K.B.010	10	

5000 ppm/K (Nickel NL)

1000 Ω	520	5.0 x 2.0 x 0.65 / 1.3	Class A	On request	NL1K0.520.2K.A.007	7	
1000 Ω	520	5.0 x 2.0 x 0.65 / 1.3	Class B	103143	NL1K0.520.2K.B.007	7	
1000 Ω	520	5.0 x 2.0 x 0.65 / 1.3	Class A	On request	NL1K0.520.2K.A.020	20	
1000 Ω	520	5.0 x 2.0 x 0.65 / 1.3	Class B	103140	NL1K0.520.2K.B.020	20	

2FW (Ni/Au-flat wire, 0.2 x 0.4 mm (HxW))

6180 ppm/K (Nickel ND)

1000 Ω	520	5.0 x 2.0 x 0.65 / 1.3	Class A	103173	ND1K0.520.2FW.A.007	7	
1000 Ω	520	5.0 x 2.0 x 0.65 / 1.3	Class B	103172	ND1K0.520.2FW.B.007	7	
1000 Ω	325	3.0 x 2.5 x 0.65 / 1.3	Class A	On request	ND0K1.325.2I.A.030	30	
1000 Ω	325	3.0 x 2.5 x 0.65 / 1.3	Class B	103079	ND0K1.325.2I.B.030	30	

5000 ppm/K (Nickel NL)

1000 Ω	520	5.0 x 2.0 x 0.65 / 1.3	Class A	103175	NL1K0.520.2FW.A.007	7	
1000 Ω	520	5.0 x 2.0 x 0.65 / 1.3	Class B	103174	NL1K0.520.2FW.B.007	7	

2S (CuP-SIL wire post-plated with Sn, 10 mm)

6180 ppm/K (Nickel ND)

1000 Ω	525	5.0 x 2.5 x 0.65 / 1.3	Class A	103097	ND1K0.525.2S.A	10	
1000 Ω	525	5.0 x 2.5 x 0.65 / 1.3	Class B	103096	ND1K0.525.2S.A	10	
5000 Ω	525	5.0 x 2.5 x 0.65 / 1.3	Class A	103108	ND5K0.525.2S.A	10	
5000 Ω	525	5.0 x 2.5 x 0.65 / 1.3	Class B	103107	ND5K0.525.2S.B	10	
100 Ω	538	5.0 x 3.8 x 0.65 / 1.3	Class A	On request	ND0K1.538.2S.A	10	
100 Ω	538	5.0 x 3.8 x 0.65 / 1.3	Class B	103080	ND0K1.538.2S.B	10	



Nominal Resistance	Size	Dimensions (L x W x H / H2 in mm)	Class*	Order code	Product name (secondary reference)	Wire length in mm	Special
200 Ω	538	5.0 x 3.8 x 0.65 / 1.3	Class A	On request	ND0K2.538.2S.A	10	
200 Ω	538	5.0 x 3.8 x 0.65 / 1.3	Class B	103083	ND0K2.538.2S.B	10	
1000 Ω	538	5.0 x 3.8 x 0.65 / 1.3	Class A	103100	ND1K0.538.2S.A	10	
1000 Ω	538	5.0 x 3.8 x 0.65 / 1.3	Class B	103099	ND1K0.538.2S.B	10	
100 Ω	505	5.0 x 5.0 x 0.65 / 1.3	Class A	On request	ND0K1.505.2S.A	10	
100 Ω	505	5.0 x 5.0 x 0.65 / 1.3	Class B	On request	ND0K1.505.2S.B	10	
5000 ppm/K (Nickel NL)							
1000 Ω	425	4.0 x 2.5 x 0.65 / 1.3	Class A	103126	NL1K0.425.2S.A	10	
1000 Ω	425	4.0 x 2.5 x 0.65 / 1.3	Class B	103109	NL1K0.425.2S.B	10	
1000 Ω	525	5.0 x 2.5 x 0.65 / 1.3	Class A	On request	NL1K0.525.2S.A	10	
1000 Ω	525	5.0 x 2.5 x 0.65 / 1.3	Class B	103118	NL1K0.525.2S.B	10	
5000 Ω	525	5.0 x 2.5 x 0.65 / 1.3	Class A	On request	NL5K0.525.2S.A	10	
5000 Ω	525	5.0 x 2.5 x 0.65 / 1.3	Class B	103127	NL5K0.525.2S.B	10	
500 Ω	538	5.0 x 3.8 x 0.65 / 1.3	Class A	On request	NL0K5.538.2S.A	10	
500 Ω	538	5.0 x 3.8 x 0.65 / 1.3	Class B	103144	NL0K5.538.2S.B	10	

Additional Documents

Application Note

Document name: ATN_E



Order Information

Nickel Sensor - Secondary reference



Material

N = Nickel

S = special

TCR

A = ANSI 6720 ppm/K J = 6370 ppm/K

B = Balco M = 5696 ppm/K

D = 6180 ppm/K C = 4280 ppm/K (GOST 6651-2009)

L = 5000 ppm/K S = special

Resistance in Ω at 0 °C

Size in mm

Operating temperature range

1 = -60 °C to + 150 °C

2 = -60 °C to + 200 °C

3 = -60 °C to + 300 °C

Connection

S = SIL

I = insulated wire

W = wire

FW = flat wire

FK = flat wire customer specific

K = customer-specific

E = enameled Cu-wire

Tolerance class ($T > 0$ °C)

A = $0.2 + 0.0035 \times |t|$

B = $0.4 + 0.007 \times |t|$

C = $0.8 + 0.014 \times |t|$

K = customer-specific

Wire length in mm

Special

T = substrate thickness 0.25 mm

M = metallized backside

W = sintered powder

U = inverted welding

S = special

N L 1K0. 520. 2 FW. B. 007.



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