

Application

- Measuring range:
0 .. +1200°C (base metal thermocouples)
0 .. +1800°C (noble metal thermocouples)
- Replaceable measuring element for thermocouple thermometers

Features

- Easy to replace during operation

Measuring insert W4 for thermocouple thermometers is made of internal thermocouple wires insulated from each with ceramic insulation. This provides the sensor with high temperature resistance as well as electrical insulation.

Screw clamps on the ceramic block enable easy connection of the sensor with the connection wires.

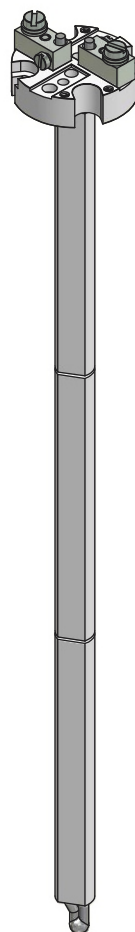
Other versions

This data sheet contains only a small portion of our program of supplying measuring inserts for thermocouple thermometers.

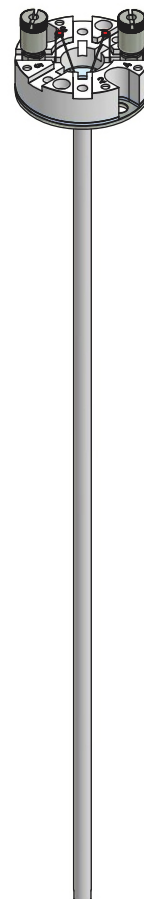
Other designs:

- with non-standard wire diameter,
- with no ceramic insulation.

Other versions can be supplied upon customer's request.



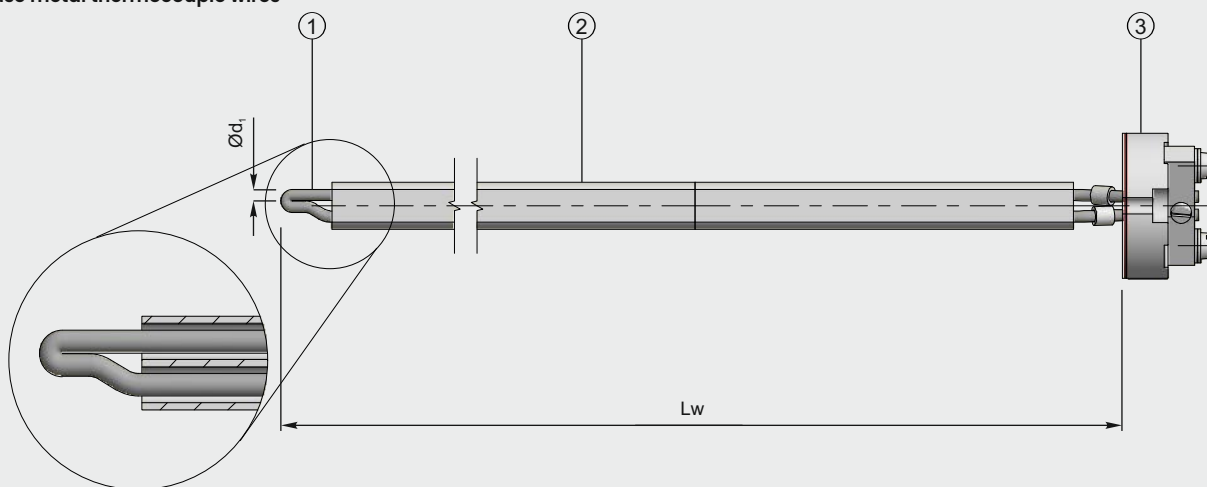
Measuring insert W4
(base metal wires)



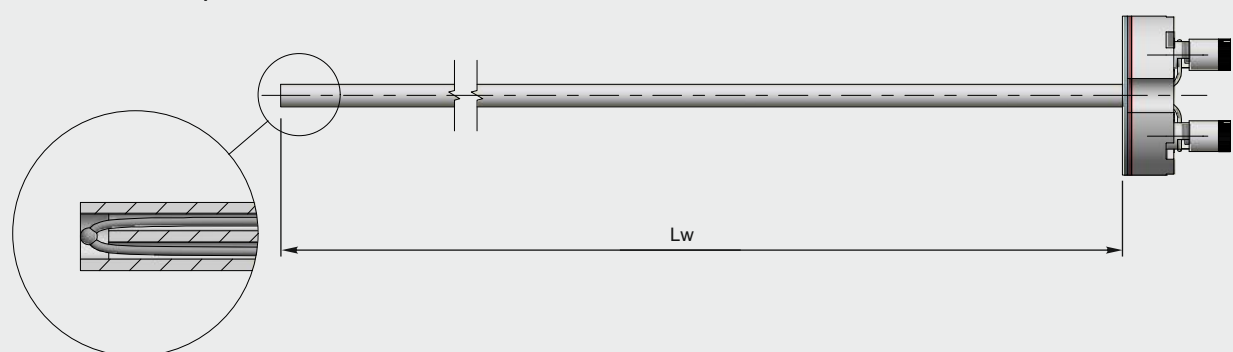
Measuring insert W4
(noble metal thermocouples)

Designs

Measuring insert
base metal thermocouple wires



Measuring insert
noble metal thermocouple wires



- ① - Thermocouple wire
- ② - Ceramic isolator
- ③ - Ceramic terminal block

Temperature		°C	900	1000	1100	1200	1300	1400	1500	1600	1700	1800
Nominal value	Type K	mV	37.33	41.28	45.12	48.84	-	-	-	-	-	-
	Type N	mV	32.37	36.26	40.09	43.85	-	-	-	-	-	-
	Type R	mV	9.21	10.51	11.85	13.23	14.63	16.04	17.45	18.85	-	-
	Type S	mV	8.45	9.59	10.76	11.95	13.16	14.37	15.58	16.78	-	-
	Type B	mV	3.96	4.83	5.78	6.79	7.85	8.96	10.10	11.26	12.43	13.59

Tolerance

The PN-EN 60584 Standard defines the formulas for calculating acceptable measure tolerance. More information available in the general thermocouple thermometer sheet.

Type J (Fe-CuNi)

Class	Temperature range	Tolerance
1	-40 °C .. +375 °C	± 1.5 °C
	+375 °C .. +750 °C	± 0.0040 x t
2	-40 °C .. +333 °C	± 2.5 °C
	+333 °C .. +750 °C	± 0.0075 x t

Type S (PtRh10-Pt), Type R (PtRh13-Pt)

Class	Temperature range	Tolerance
1	0 °C .. +1100 °C	± 1.0 °C
	+1100 °C .. +1600 °C	± [1+0.003 (t-1100)]
2	0 °C .. +600 °C	± 1.5 °C
	+600 °C .. +1600 °C	± 0.0025 x t

Type K (NiCr-Ni), Type N (NiCrSi-NiSi)

Class	Temperature range	Tolerance
1	-40 °C .. +375 °C	± 1.5 °C
	+375 °C .. +1000 °C	± 0.0040 x t
2	-40 °C .. +333 °C	± 2.5 °C
	+333 °C .. +1200 °C	± 0.0075 x t

Type B (PtRh30-PtRh6)

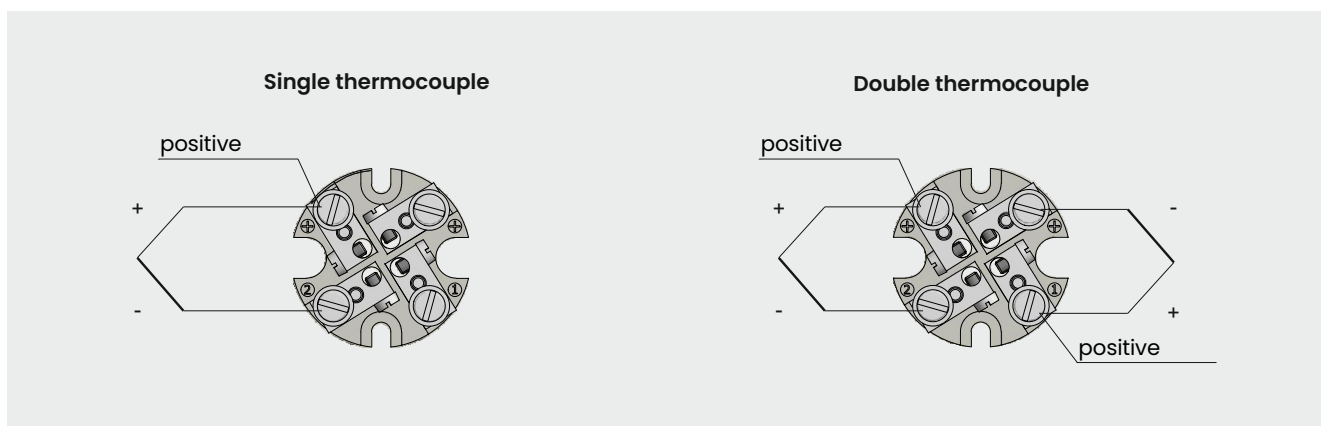
Class	Temperature range	Tolerance
2	+600 °C .. +1700 °C	± 0.0025 x t

Dimensions of ceramic isolator

Dimensions of ceramic isolator depends on thermocouple wire diameter. Standard thermocouple wires presented below.

Wire diameter [mm]	Thermocouple type / Isolator dimensions				
	K	N	J	R/S	B
Ø0.35	-	-	-	Ø3.5, Ø8.5	-
Ø0.50	-	-	-	Ø8.5	Ø8.5
Ø2.00	Ø9x50	Ø9x50	Ø9x50	-	-
Ø3.00	12x8x100, Ø16	12x8x100, Ø16	-	-	-

Electrical connection on ceramic block



Ordering code

1 2 3 4 5 6
 W4 - - - -

1	<input type="text"/>	Version	
		2	Single thermocouple, with ceramic terminal block
		BK	Double thermocouple, with ceramic terminal block Single thermocouple, without ceramic terminal block
2	<input type="text"/>	Thermocouple type	
		J	Type J (Fe-CuNi)
		K	Type K (NiCr-Ni)
		N	Type N (NiCrSi-NiSi)
		S	Type S (PtRh10%-Pt)
		B	Type B (PtRh30%-PtRh6%)
xxx	other, please specify		
3	<input type="text"/>	Thermocouple wire diameter d,	
		0.35	Ø 0.35 mm
		0.5	Ø 0.50 mm
		2	Ø 2.0 mm
		3	Ø 3.0 mm
xxx	other, please specify		
4	<input type="text"/>	Length Lw [mm]	
		525	525 mm
		735	735 mm
		1025	1025 mm
		1425	1425 mm
		2025	2025 mm
xxx	other, please specify		
5	<input type="text"/>	Tolerance	
		1	Class 1 according to PN-EN 60584-2
2	Class 2 according to PN-EN 60584-2		
6	<input type="text"/>	Dimensions of ceramic isolator	
		3.5	Ø 3.5 mm
		8.5	Ø 8.5 mm
		9x50	Ø 9x50 mm
		12x8x100	12x8x100 mm
		16x100	Ø 16x100 mm
xxx	other, please specify		

Example

Measuring insert W4K-3-525-1-12x8x100
 (sensor 1xK, thermocouple wire dia. Ø3.0 mm, length Lw=525 mm, class 1, ceramic isolators 12x8x100 mm).

Measuring insert W4S-0.35-1025-1-8.5
 (sensor 1xS, thermocouple wire dia. Ø0.35 mm, length Lw=1025 mm, class 1, ceramic isolator Ø8.5 mm).