

## W1000 Compensating Conductor



### Product Features

Grade	Sheathing material	Wire Size	Customization
R、S、B、K、N、E、J、T etc.	Various materials such as PVC, PFA, fiberglass, High Silica, etc	Provide multiple wire gauges for selection	Can support various customization requirements based on temperature range, insulation, shielding, waterproofing, etc

### Product Description

Compensation wires are a pair of insulated wires with the same nominal value as the electromotive force of the matched thermocouple. Its function is to connect the reference end of the thermocouple to a location far away from heat sources or with a relatively constant ambient temperature to compensate for the errors caused by temperature changes at their connection to the thermocouple.

When the distance between the instrument and the thermocouple is far, in order to ensure measurement accuracy, the most ideal solution is to extend the thermocouple according to the original metal wire and connect. This method has high accuracy, but the material cost is very expensive; Another alloy compensation with similar electromotive force characteristics to thermocouples can be chosen, with high cost-effectiveness, easier to use.

Compensation wires can use multiple strands of small diameter wires to improve the flexibility of the circuit, which is convenient for wiring and can also shield external interference.

The quality selection of compensating wires will directly affect the accuracy of temperature measurement and control.



## Technical Parameter

Wire specification table:

AWG	Outer diameter		Sectional area	
	Metric mm	British inch	Shares * Diameter (mm <sup>2</sup> )	
20	0.813	0.032	0.5189	
22	0.643	0.0253	0.3247	7*0.25
24	0.511	0.0201	0.2047	7*0.20
26	0.404	0.0159	0.1281	7*0.15
28	0.32	0.0126	0.0804	7*0.12
30	0.254	0.01	0.0507	7*0.10
36	0.127	0.005	0.0127	

Temperature resistance table for each material:

Material	Maximum temperature resistance	Waterproof
PVC	105	Yes
PFA	260	Yes
Glass fibre	480	No
High silica 800	800	No

Electromotive force and allowable error:

The positive and negative electrodes of the compensating wire are paired and welded into a thermocouple. When the temperature at the measuring end is 100 °C, 200 °C, and the temperature at the reference end is 0 °C, the electrical resistance is measured

The electromotive force should comply with the graduation table of the corresponding thermocouple, and its allowable error should comply with the provisions of the following table.

Thermocouples	Compensation wire temperature range / °C	Allowable error / $\mu$ V		Thermocouple end temperature /
		Precision	Common	
S	0~100/200	$\pm 30$ ( $\pm 2.5^{\circ}\text{C}$ )	$\pm 60$ ( $\pm 5^{\circ}\text{C}$ )	1000
R	0~100/200	$\pm 30$ ( $\pm 2.5^{\circ}\text{C}$ )	$\pm 60$ ( $\pm 5^{\circ}\text{C}$ )	1000
K	0~100/200	$\pm 44$ ( $\pm 1.1^{\circ}\text{C}$ )	$\pm 88$ ( $\pm 2.2^{\circ}\text{C}$ )	900
N	0~100/200	$\pm 43$ ( $\pm 1.1^{\circ}\text{C}$ )	$\pm 86$ ( $\pm 2.2^{\circ}\text{C}$ )	900
E	0~100/200	$\pm 81$ ( $\pm 1.0^{\circ}\text{C}$ )	$\pm 138$ ( $\pm 1.7^{\circ}\text{C}$ )	500
J	0~100/200	$\pm 62$ ( $\pm 1.1^{\circ}\text{C}$ )	$\pm 123$ ( $\pm 2.2^{\circ}\text{C}$ )	500
T	0~100/200	$\pm 30$ ( $\pm 0.5^{\circ}\text{C}$ )	$\pm 60$ ( $\pm 1^{\circ}\text{C}$ )	300



Thermocouples

B

S

R

K

E

J

T

N

Accuracy

S – Precision

G– Common

Insulation layer material

V– PVC

F– PFA 260 degrees

B– Glass fibre

H– High silica

Y – Customized

Sheathing material

V– PVC

F– PFA

B– Glass fibre

H– High silica

Ni– Nickel based alloy

Y– Customized

Shield

S-Stainless steel weaving

A-Aluminum film internal shielding

SA-Aluminum film+stainless steel weaving

N-None

Specifications and Dimensions

7\*0.3– 7 Strand\*0.3mm Diameter

0.8– 0.8mm Diameter

7\*0.2– 7 Strand\*0.2mm Diameter

0.5– 0.5mm Diameter

7\*0.12– 7 Strand\*0.12mm Diameter

0.3– 0.3mm Diameter

0.127– 0.127mm Diameter

Y– Other

Special requirements

XX–Customized

10

20

30

40

50

60

70

W1000 Compensation Wire

Selection rules:

Requirement: Equipped with K-type thermocouple compensation wire, with a maximum operating temperature of 200 °C, shielded, 7 \* 0.2

Model selection: W1000-KSFFSA-7 \* 0.2