



Thermocouple High Temperature Detectors

Description:

Thermocouples consist of two distinct metals that provide a means of sensing different levels of temperature in a variety of processes. By combining 2 distinct metals the thermocouple is able to produce a temperature dependant voltage. That specific voltage, as long as it's within the temperature range is able to interpret accurate temperature measurements. These different forms of thermocouples can be constructed in various ways as some contain flexible wires smaller than human hairs and sheath wires that go up to half an inch in diameter. With this specific variety no voltage is produced at the thermocouple junction, only in areas of the sensor that are temperature gradient.

Construction

Material types offered:

- PVC (Polyvinyl Chloride)
- FEP (Fluorinated ethylene propylene)
- TFE (Tetrafluoroethylene)
- Fiberglass

Applications

Type J: The type J is used in older equipment, to monitor temperatures of inert materials and in vacuum applications.

Type K: Process plants, such as chemical production and petroleum refineries, as well as heating appliance safety.

Type T: Food processing and production to identify potential food safety hazards.

Type N: Is used in profiling ovens, furnaces and kilns.

Type E: Used in cryogenics or cold-temperature environments.

Thermocouple different grades offered:

Type J Thermocouple (Iron / Constantan): The type J thermocouple is very common, but has a more restricted range than the others reaching temperature limits ranging from -40°C to 760°C . Type J thermocouple is a cost effective choice that although isn't as strong as other alternatives, is still continuously reliable.

Type K Thermocouple (Nickel-Chromium / Nickel-Alumel): The type K is a very common type of thermocouple. The Type K thermocouple is more accurate and reliable than Type J, as the temperature range is much wider. Type K thermocouple is very reliable and has a very wide temperature range of -200°C to $+1350^{\circ}\text{C}$.

Type T Thermocouple (Copper / Constantan): The Type T thermocouple is very stable and has a temperature range of -200°C to $+350^{\circ}\text{C}$. Type T is often used in cryogenics and ultra low freezers usually located in laboratories, because of its ability to operate in extremely low temperatures.

Type N Thermocouple (Nicrosil / Nisil): The Type N has very similar accuracy and temperature limits as Type K. The type N thermocouple has overall better performance and better repeatability than Type K, thus making it slightly more expensive for its operational temperature of -270°C to $+1300^{\circ}\text{C}$.

Type E Thermocouple (Nickel-Chromium / Constantan): The Type E thermocouple is able to handle stronger signals and higher accuracy than previous Types J or K. The stronger signal that Type E provides enables this specific grade to be used for testing heating appliance safety, for temperature ranges between -50°C to $+740^{\circ}\text{C}$ and narrow range between -110°C to $+140^{\circ}\text{C}$.

What is the difference between thermocouple wire and extension wire?

Extension grade wire is a lower grade, cost effective choice. It is applied by extending from the thermocouple probe to the instrument receiving the signal, where the user can then visually see the results. The Extension wire also has a lower temperature range in which the wire can be used effectively.

Type	Thermocouple	Extension
J		
K		
T		
N		
E		