



INSTRUMENTS
SATRAP DAMA
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Mineral Insulated Thermocouple Model TR 602

Protection Tube

Construction	Bare Ends
Material	SS 304, 310, 316, 321-Inconel 600
length "A"	Order in different lengths (1 Cm to 50 M)
length "B"	Order in different lengths (20 Cm to 50 M)
Process connection	Extension cover

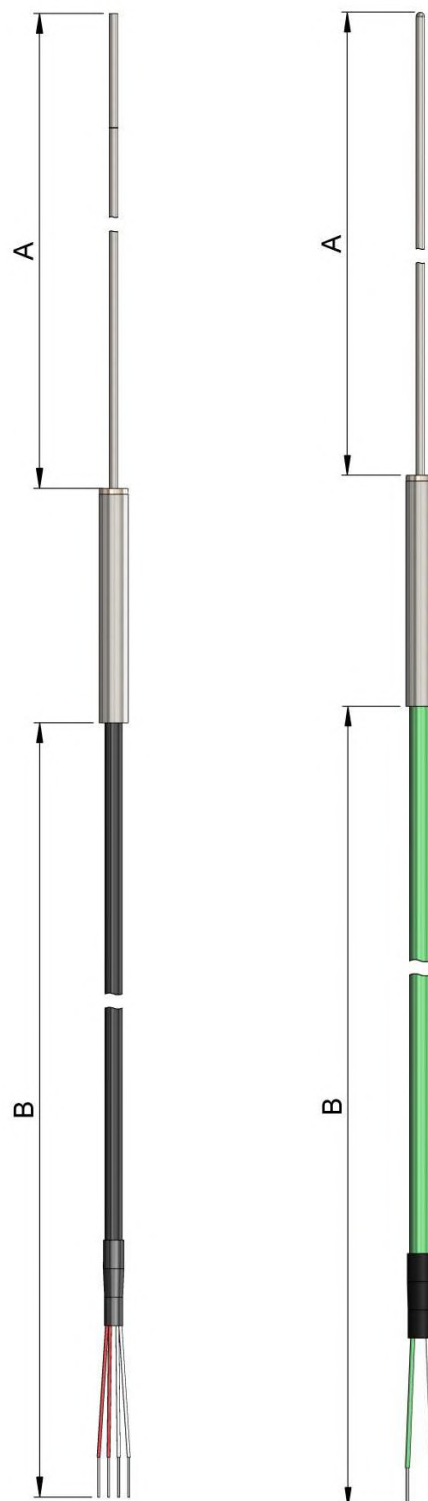
Sensor Type

Calibration K	Nickel-Chromium/Nickel-Aluminum
Calibration J	Iron (Fe) / Constantan (Cu-Ni)
Calibration E	Nickel-Chromium / Copper-Nickel
Calibration N	Nicrosil / Nisil
Calibration T	Copper / Copper-Nickel
RTD (PT100 - PT1000)	Specify by customer
Accuracy	According to IEC 584-1 / DIN 43710
Number of sensors	Simplex or Duplex

End Termination

Free Ended (Non-Tin-Plated)
Terminal Block Ceramic
Temperature Transmitter
Standard Plug / Socket Connector
Miniature Plug / Socket Connector
Head Connection

We manufacture types thermocouples to your specifications or as replacements to existing sensors. We have manufactured thermocouples for near 15 years and are solely focused on the design and manufacture of temperature sensors.



Thermocouple



Technical Information

What is MI Cable?

Mineral Insulated cables, or simply MI cables, are cables in which conductors or wires are enclosed by a metal jacket and insulated with hard-packed Magnesium Oxide (MgO). This basic construction provides high-temperature capability, exceptional electrical isolation, and physical protection for the conductors especially when subjected to harsh environments. (Sounds quite suitable for applications that would otherwise be impossible, right?) Here are the exploded guts for the inquisitive mind: From the outside in, MI cable consists of:

Metal Sheath:

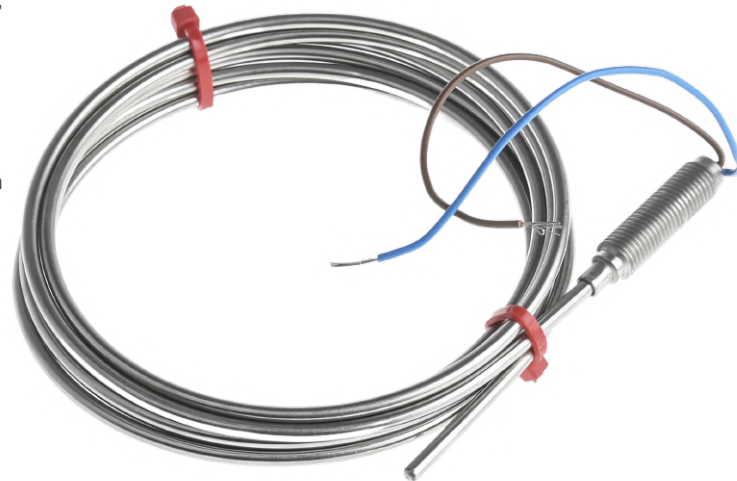
Metal sheaths can consist of a number of different metals including 304, 310, 316, 321 Stainless Steel (SS) as well as Inconel® 600. In the most extreme cases, a customized sheath can be manufactured to withstand temperatures up to 1150°C (2102°F).

Conductor wire:

Conductors can be made from a variety of materials, the most common include thermocouple alloys, copper, nickel, nickel-plated copper, constantan and others. The number of conductors will vary from 1 to 6 or more, depending on the application where it will be used.

Magnesium Oxide (MgO):

MgO is used to isolate the conductors from the external sheath and from each other. This is a great material to use due to its dielectric constant, rounded grain structure, high-temperature capability, and its chemical inertness.



Thermocouple

MI Cable with Thermocouples and RTDs

MI cable is typically used in the construction of temperature sensors including thermocouples and resistance temperature detectors (RTDs). The high temperature, high vibration, and formability of MI cable allows for thermocouples to be made as small as 0.010" in diameter, and RTDs that are rugged enough to withstand high temperature and high vibration applications. MI cable can also be used as an extension cable connecting thermocouples and RTDs with their accompanying meter, controller, data acquisition device, wireless transmitter, or other instrumentation. MI cable is also used for maintaining circuit integrity for fireproof applications, which is out of the scope of this article.

“Where” Applications or “When” to Use!

RTD and Thermocouple Sensors Constructed Using MI Cable are Used Extensively in Various Applications such as:

- Solid waste incinerators
- Sintering powdered metals
- Firing ceramic materials
- Gas or oil fired furnaces
- Fuel fired heat exchangers
- Box furnaces
- Nuclear or hydrocarbon based energy plants
- And many more...



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