

## DATA SHEET



## THERMOCOUPLE

**MODEL EIRB-10**

### INTRODUCTION

The Encardio-rite offers T-type thermocouple (Copper-Constantan) for the measurement of internal temperature in concrete structures. It consists of two dissimilar metals, joined together at one end. When the junction of the two metals is heated or cooled a voltage is produced that can be correlated back to the temperature.

### FEATURES

- Rugged construction
- Quick and easy readout
- Excellent heat resistant
- Outstanding insulating properties
- Good thermal stability
- Rust and corrosion resistant
- Suitable for monitoring during construction

### APPLICATION

- For verifying design assumptions during construction.
- Temperature rise during process of curing concrete.



## DESCRIPTION

Thermocouple measurement consists of a thermocouple wire with two dissimilar conductors joined at one end to form a hot junction. Type T thermocouple is one the most stable thermocouple. It consist of positive leg made of Copper wire and negative leg made of Constantan alloy (mixture of 55% Copper and 45% Nickel) wire. This end is sealed against corrosion and placed at the required locations of temperature measurement. The other end of the thermocouple wire is connected to a suitable thermocouple connector to form a cold junction.

In T type thermocouple, copper has a much higher thermal conductivity than the alloys which are generally used in thermocouple construction. In T type thermocouple only copper wire touches the probes. As both conductors are non-magnetic, there is no Curie point due to which there is no immediate change in characteristics of the thermocouple.

The insulation used in T type thermocouple is mainly Kapton. Due to its great advantages such as fast response, compact size, broad temperature range, formability, weld ability, durability, accuracy, thermal shock and vibration resistance, Kapton insulation makes an excellent choice for geotechnical applications.

The thermocouple readout displays a direct reading of the temperature at the installed location and automatically compensates for the temperature at the cold junction.

## Key advantages of T type thermocouple

- They prove to have a high stability at sub-zero temperatures due to which it is used in a wide variety of cryogenic and low temperature applications
- Type T thermocouples can be used in atmosphere with inert pressures
- It provide high level of accuracy as it can perform well in presence of moisture without oxidizing
- Can be used for long term use, with over 10 years of service life.

## SPECIFICATION

Thermocouple type	Type T
Conductor Material	Copper (+) and Constantan (-)
Wire insulation	Kapton
Temperature range (thermocouple grade wire)	-185 °C to 300°C
Cold junction temperature	Ambient
Connector type miniature	Glass filled Nylon
Thermocouple readout	
Sensor type	T type Copper-Constantan
Measuring range	-200°C to 400°C
Accuracy	Standard: $\pm 1.20^{\circ}\text{C}$ ; Optional: $\pm 0.5^{\circ}\text{C}$
Resolution	0.1°C
Operation temperature and humidity	0°C ~ 50°C, <80% RH
Storage Temperature and Humidity	-10 C ~ 60 C, <70% RH
Power requirement	AA size batteries, up to 1500 hours of continuous work
Input protection at thermocouple input	24V AC/DC maximum

\*All specifications are subject to change without prior notice

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