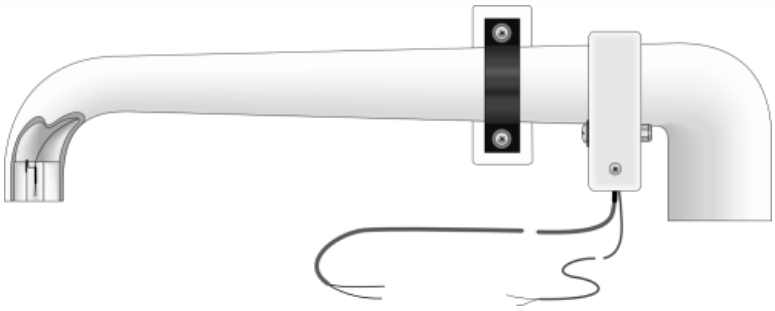
CAMPBELL SCIENTIFIC
WHEN MEASUREMENTS MATTER

ASPTC-L

Aspirated Thermocouple with Mounts



Highly Accurate Air Temperature

Fine-wire thermocouple in aspirated radiation shield

Overview

The ASPTC-L consists of a type-E fine-wire thermocouple mounted in a fan-aspirated radiation shield to provide highly accurate air temperature measurements. You can use one ASPTC to measure absolute air temperature, or you can use two ASPTCs to make delta temperature measurements. Often, the ASPTC replaces, or is measured in addition to, the TCBR thermocouples in a Bowen ratio system.

Benefits and Features

- Uses fine-wire thermocouple for accurate air temperature measurements
- Includes aspirated radiation shield
- High-powered fan reduces solar loading

Detailed Description

The ASPTC's radiation shield is an elongated tube constructed from white UV-stabilized polyethylene that provides low thermal conductivity and heat retention. A fan draws air across the measurement junction, which reduces solar loading on the thermocouple. The radiation shield also protects the thermocouple, increasing the thermocouple's durability.

The ASPTC's fine-wire thermocouple consists of a chromel wire and a constantan wire joined at a measurement junction. A voltage potential is generated when the measurement end of the thermocouple is at a different temperature than the reference end of the thermocouple. The magnitude of the voltage potential is related to the temperature difference. Therefore, temperature can be determined by measuring the differences in potential created at the junction of the two wires.

A reference temperature measurement (typically measured at the data logger wiring panel) is required. Options for measuring the reference temperature include:

- Thermistor built into the CR6, CR800, CR850, CR1000, or CR3000 wiring panel
- PRT built into the wiring panel of the CR9050 or CR9051E input module for the CR9000X Measurement and Control System

Specifications

Shield Material	UV-stabilized polyethylene
Large Diameter	5.8 cm (2.3 in.)
Small Diameter	4.6 cm (1.8 in.)
Power Cable Diameter	0.5 cm (0.2 in.)
Signal Cable Diameter	0.3 cm (0.1 in.)
Length	53.3 cm (21 in.)
Height	14.7 cm (5.8 in.)
Weight	0.86 kg (1.9 lb)

Fan

Air Velocity at Thermocouple	5.5 m/s (@ 12 Vdc)
Life Expectancy	65,000 h (@ 30°C)
Current Drain	260 mA (@ 12 Vdc)
Operating Voltage	9 to 13 Vdc
Operating Temperature Range	-10° to +70°C
Polarity Protection	Reverse polarity protected

Thermocouple

Type	Chromel-Constantan
Typical Output	60 µV/°C
Accuracy	Refer to the *Thermocouple Measurement* section in the data logger manual.
Diameter	0.0762 mm (0.003 in.)