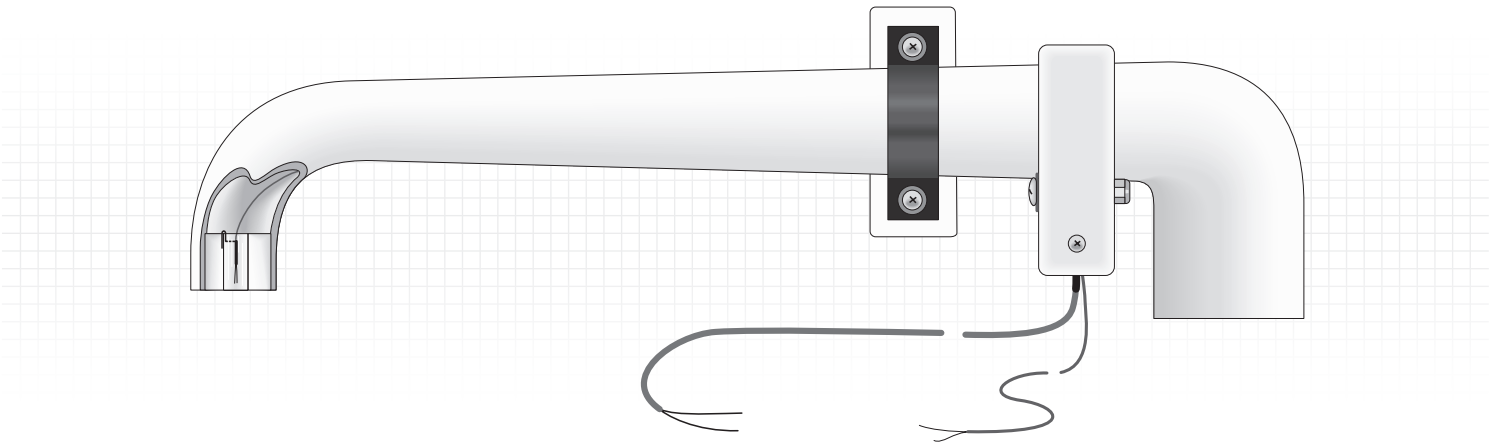
CAMPBELL SCIENTIFIC®
WHEN MEASUREMENTS MATTER

ASPTC

Aspirated Thermocouple

Highly Accurate Air Temperature

Fine-wire thermocouple in aspirated radiation shield



Overview

The ASPTC* consists of a type-E fine-wire thermocouple mounted in a fan-aspirated radiation shield to provide highly accurate air temperature measurements. One ASPTC can measure absolute air temperature, or two ASPTCs can 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

Technical Description

Aspirated Radiation Shield

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.

Thermocouple

The ASPTC's thermocouple is comprised 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 datalogger 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

**The ASPTC is not compatible with our CR200(X)-series dataloggers.*

Mounting

The ASPTC can be mounted to a tripod or tower via the UT018-5 crossarm or a user-supplied crossarm that has a square cross section of 3.8 cm by 3.8 cm (1.5 inch by 1.5 inch).

Power Considerations

The ASPTC is typically powered with a user-supplied deep cycle battery that is recharged with an SP20R, SP50, or SP90 solar panel; for high current drain systems two SP90 solar panels may be used to provide 180 W of power. The datalogger's rechargeable battery can only be used if it is connected to ac power. For help on analyzing your system's power requirements, refer to our Power Supply brochure or application note.

Ordering Information

Aspirated Thermocouple	
ASPTC	Aspirated Thermocouple with Radiation Shield.. Must specify signal and power cable lengths (see below).

Cable Lengths	
-L	After the -L, enter the signal cable length in feet. A 15-ft length is typically used.
-LP	After the -LP, enter the power cable length in feet. A 15-ft length is typically used.

Mounts	
UT018-5	Tower Mounting Bracket with 5-ft Crossarm

Specifications

- Shield Material: UV stabilized polyethylene
- Power Cable Diameter: 0.5 cm (0.2 in)
- Signal Cable Diameter: 0.3 cm (0.1 in)
- Weight: 0.86 kg (1.9 lb)

Thermocouple

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

Fan

- Air Velocity at Thermocouple: 5.5 m at 12 Vdc
- Life Expectancy: 65,000 hr at 30°C
- Current Drain: 260 mA at 12 Vdc
- Operating Voltage Range: 9 to 13 Vdc
- Operating Temperature Range: -10° to 70°C
- Reverse Polarity Protected