

# 110PV

## Surface Mount Thermistor

The 110PV surface mount thermistor typically measures the back of photovoltaic (PV) module temperature, but it also can measure other surface temperatures. PV module temperature is an important measurement in solar energy applications since the output of a PV module is affected by its temperature. As the temperature of the PV module increases, its output decreases.

The 110PV probe incorporates a thermistor for measuring temperature from  $-40^{\circ}$  to  $+135^{\circ}\text{C}$ . The thermistor is encased in an aluminum disk that protects the thermistor and promotes heat transfer from surfaces.

### Mounting

For temperatures up to  $70^{\circ}\text{C}$ , an adhesive tab on the probe's aluminum disk fastens the 110PV to the measurement surface. If the temperature may exceed  $70^{\circ}\text{C}$ , Kapton tape or high temperature epoxy is recommended to secure the probe to the measurement surface. Kapton tape is available from Campbell Scientific (see Ordering Information).

The 110PV can be submerged to 50 ft, but the probe's adhesive tab is not intended for submersion. Therefore the 110PV must be mounted to the measurement surface via a user-supplied method that is compatible with submersion.

### Ordering Information

#### Temperature Probe for Harsh Environments

**110PV-L** Surface Mount Temperature Probe with user-specified cable length. Enter cable length (in feet) after the -L. Must choose a cable termination option (see below).

#### Cable Termination Options (choose one)

- PT** Cable terminates in stripped and tinned leads for direct connection to a datalogger's terminals.
- PW** Cable terminates in a connector for attachment to a prewired enclosure.
- CWS** Cable terminates in a connector for attachment to a CWS900-series interface. Connection to a CWS900-series interface allows this sensor to be used in a wireless sensor network.

#### Common Accessory

**27015** Roll of Kapton tape for locations where the temperature may exceed  $70^{\circ}\text{C}$ .



### Specifications

**Measurement Range:**  $-40^{\circ}$  to  $+135^{\circ}\text{C}$

**Survival Range:**  $-50^{\circ}$  to  $+140^{\circ}\text{C}$

#### Temperature Uncertainty:

| Temperature                                   | Tolerance                 |
|---|---------------------------|
| $-40^{\circ}\text{C}$ to $70^{\circ}\text{C}$ | $\pm 0.2^{\circ}\text{C}$ |
| $71^{\circ}$ to $105^{\circ}\text{C}$         | $\pm 0.5^{\circ}\text{C}$ |
| $106^{\circ}$ to $135^{\circ}\text{C}$        | $\pm 1^{\circ}\text{C}$   |

#### Time Constant In Air:

| Test      | $\tau$      |
|-----------|-------------|
| Still Air | 252 seconds |
| Surface   | 25 seconds  |

#### Maximum Water

**Submersion Depth:** 50 ft (21 psi)

#### Steinhart-Hart Linearization

**Equation Error (maximum):**  $0.0024^{\circ}\text{C}$  at  $-40^{\circ}\text{C}$

**Maximum Lead Length:** 1000 ft (304.8 m)

**Disk Diameter:** 1.0 in. (2.54 cm)

**Overall Probe Length:** 2.5 in. (6.35 cm)

#### Overmolded Joint Dimensions

**Width:** 0.44 in. (1.12 cm)  
**Height:** 0.58 in. (1.47 cm)  
**Length:** 2.25 in. (5.72 cm)

**Cable Diameter:** 0.245 in. (0.622 cm)

#### Material

**Disk:** Anodized Aluminum  
**Cable Jacket:** Santoprene  
**Cable/Probe Connection:** Santoprene

**Weight:** 0.2 lb with 10.5 ft cable  
(90.7 g with 3.2 m cable)

