CAMPBELL SCIENTIFIC
WHEN MEASUREMENTS MATTER

SI-111

Infrared Radiometer with Standard Field of View

Determine an Object's Surface Temperature without Physical Contact

Overview

The SI-111, manufactured by Apogee, is a precision infrared radiometer that determines the surface temperature of an object without physical contact. It measures both the subject's surface temperature and the sensor-body temperature. A Campbell Scientific datalogger uses these measurements to calculate the correct temperature of the subject.

Benefits and Features

- Compatible with most Campbell Scientific dataloggers
- Measures surface temperature continuously in the field
- Provides road surface, plant canopy, soil surface, snow surface, and water surface temperature measurements
- Avoids influencing the temperature providing more accurate measurements
- Ideal for providing spatial averages
- Rugged construction—two temperature probes housed in an aluminum body with a germanium window

Detailed Description

The SI-111 consists of a thermopile, which measures surface temperature, and a thermistor, which measures sensor body temperature. The two temperature sensors are housed in a rugged aluminum body that contains a germanium window.

Both the thermopile and the thermistor output a millivolt signal that most of our dataloggers can measure. The datalogger uses the Stefan-Boltzman equation to correct for the effect of sensor body temperature on the target temperature. The corrected readings yield an absolute accuracy of ±0.2°C from -10° to +65°C.

Field of View (FOV)

The SI-111 has a 22-degree half-angle field-of-view (FOV). The FOV is reported as the half-angle of the apex of the cone formed by the target (cone base) and the detector (cone apex). The target is a circle from which 98% of the radiation viewed by the detector is being emitted.

Note: Prior to November 2008, the SI-111 was named the IRR-P.

Specifications

Input Power	2.5 V excitation (for thermistor)
Response Time	< 1 s (to changes in target temperature)
Target Temperature Output Signal	60 µV per °C difference from sensor body
Body Temperature Output Signal	0 to 2500 mV
Optics	Germanium lens
Wavelength Range	8 to 14 µm (corresponds to atmospheric window)
Field of View (FOV)	22° half angle
Operating Temperature Range	-55° to +80°C
Operating Relative Humidity Range	0 to 100% RH
Cable Description	4.5 m (14.76 ft) twisted, shielded 4-conductor wire with Santoprene casing, ending in pigtails
Absolute Accuracy	›› ±0.2°C (-10° to +65°C) ›› ±0.5°C (-40° to +70°C)
Uniformity	›› ±0.1°C (-10° to +65°C) ›› ±0.3°C (-40° to +70°C)
Repeatability	›› ±0.05°C (-10° to +65°C) ›› ±0.1°C (-40° to +70°C)
Diameter	2.3 cm (0.9 in.)
Length	6 cm (2.4 in.)
Weight	190 g (6.7 oz)

For comprehensive details, visit: **www.campbellsci.com.au/si-111**

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