CAMPBELL SCIENTIFIC®
WHEN MEASUREMENTS MATTER

SI-111

Infrared Radiometer

Overview

The SI-111 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. Our CR200(X)-series dataloggers are not compatible.

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

Technical 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.

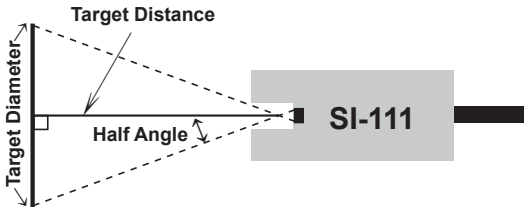
Both the thermopile and the thermistor output a millivolt signal that most of our dataloggers can measure. The datalogger uses the Stefan-Boltzman equation to correct for the effect of sensor body temperature on the target temperature. The corrected readings yield an absolute accuracy of ±0.2°C from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

Mounting

The SI-111 is often fastened to a CM200-series crossarm, a tripod or tower mast, or a user-supplied pole using a CM230, CM230XL, or CM220 mount. The CM230 and CM230XL are adjustable inclination mounts that allow the SI-111 to be mounted perpendicular to the target surface when the target surface is on an incline. The CM230XL is similar to the CM230, but the CM230XL places the SI-111 further from the pole or crossarm. The SI-111 may also be attached directly to a user-supplied camera tripod.

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.



Ordering Information

Infrared Radiometers	
SI-111	Precision Infrared Radiometer with 4.5 m (15 ft) cable.
SI-111-PW	Precision Infrared Radiometer with 4.5 m (15 ft) cable and connector for attaching sensor to a prewired enclosure.

Mounting	
CM230	Adjustable Angle Mounting Kit that allows the SI-111 to be pointed at the surface of interest
CM230XL	Adjustable Angle Mounting Kit, Extended Length. Allows the SI-111 to be pointed at the surface of interest
CM220	Right Angle Mounting Kit

Specifications

- Accuracy

	-10° to +65°C	-40° to +70°C
Absolute Accuracy	±0.2°C	±0.5°C
Uniformity	±0.1°C	±0.3°C
Repeatability	±0.05°C	±0.1°C

- 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 (15 ft) twisted, shielded 4-conductor wire with Santoprene casing
- Diameter: 2.3 cm (0.9 in)
- Length: 6 cm (2.4 in)
- Weight: 190 g (6.7 oz)