Campbell SCIENTIFIC

SR11
First Class Pyranometer

High-Quality Solar Radiation Sensor

Double glass dome

Overview

The SR11, manufactured by Hukseflux Thermal Sensors and cabled by Campbell Scientific, is an ISO-first-class pyranometer that monitors solar radiation for the full solar spectrum range. It produces a millivolt signal that is measured directly by a Campbell Scientific data logger. The SR11 can provide solar radiation measurements for a variety of meteorological applications.

Benefits and Features

- Compatible with most Campbell Scientific data loggers
- Measures reflected solar radiation when inverted
- Provides measurements in direct sunlight, under plant canopies, when the sky is cloudy, and in artificial light
- Desiccant-filled drying cartridge prevents dew from forming on the inner sides of the domes
- Includes bubble level and leveling screws, eliminating the need for a separate leveling base and simplifying installation
- Acceptable for providing the solar radiation data used in stability estimations
- Double glass dome

Technical Description

The SR11 measures solar radiation with a high-quality blackened thermopile protected by two glass domes. The blackened thermopile provides a flat spectral response for the full solar spectrum range, which allows the SR11 to be used under plant canopies or lamps, when the sky is cloudy, and for reflected radiation measurements.

The SR11 includes a bubble level, three adjusting screws, and a cable gland. The bubble level and adjusting screws allow the sensor to be leveled without using a leveling base. The gland facilitates cable replacement. Two SR11 pyranometers can be mounted back-to-back to make a low-cost albedometer.

Because the SR11 is a first-class pyranometer, it is acceptable for providing the solar radiation data used in stability estimations (EPA Meteorological Monitoring Guidance for Regulatory Modeling Applications, pages 2-10).

Mounting

The SR11 should be mounted away from all obstructions and reflective surfaces that might adversely affect the measurement. It typically mounts to a mast, crossarm, or pole (2.54 to 5.33 cm [1.0 to 2.1 in.] OD) via the CM255 or CM255LS mounting stand. The CM265 mounting kit is also available if mounting the pyranometer near the end cap of the NexTracker Torque Tube.

Specifications

Sensor	High-quality blackened thermopile protected by two glass domes
Measurement Description	Monitors solar radiation for the full solar spectrum range
ISO Classification	Class B (first class)
Spectral Range	285 to 3000 nm
Sensitivity	15 µV/W/m^2 (nominal)
Temperature Response	< ±2% (-10° to +40°C)
Response Time	18 s (for 95% response)
Zero Offset	5 W m^{-2} unventilated (response to 200 W m^{-2} net thermal radiation)
Non-Stability	< ±1% change per year
Directional Error	±20 W m^{-2} (response for beam radiation)
Tilt Error	< ±2% (0 to 90° at 1000 W m^{-2})
Level Accuracy	< 1 %
Impedance	40 to 60 Ω
Operating Temperature Range	-40° to +80°C
Dome Diameter	5 cm (2.0 in.)
Dome Thickness	2 and 4 mm (0.08 and 0.16 in.)
Width	13.6 cm (5.4 in.)
Height	9 cm (3.5 in.)
Weight	0.75 kg (1.65 lb) with 4.57 m (15 ft) cable

For comprehensive details, visit: www.campbellsci.eu/sr11

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