

First Class Pyranometer - SSR11



SSR11 Specifications

ISO classification: First Class

Spectral range: 305 to 2800 nm

Sensitivity (nominal): 15 $\mu\text{V}/\text{W}/\text{m}^2$

Response time (95%): 13 sec.

Directional error (1000 W/m^2 beam): ± 20 W/m^2

Range: 0 to 2000 W/m^2

Non-linearity (to 1000 W/m^2): $\pm 1\%$

Temperature range: -40 to $+80^\circ\text{C}$

Temperature dependence: $< \pm 0.1\%$ / $^\circ\text{C}$

Calibration traceability: WRR

Non stability (drift): $< \pm 1\%$ per year

Cable length: 5 meter standard
(longer lengths optional)

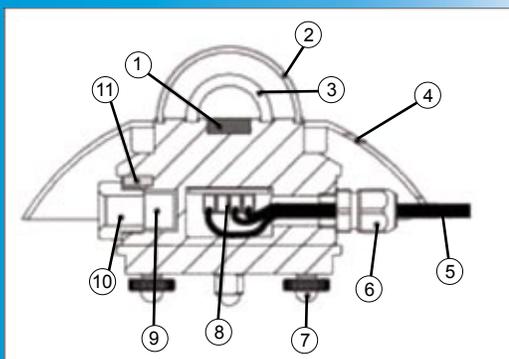


Figure 1: SSR11 pyranometer.
(1) sensor, (2, 3) glass domes, (5) cable, standard length 5 m, (9) desiccant.

The SSR11 is a research grade solar radiation sensor (otherwise known as a pyranometer), intended for global and surface reflected short-wave (SW) solar irradiance studies. The SSR11 is a 'First Class' compliant instrument, as per the latest ISO and WMO pyranometer standards.

The SSR11 pyranometer is suitable for measuring global short-wave solar irradiance incidenting a plane surface, offering a full 180° field of view (FOV). Capable of measuring up to two suns, $2000 \text{ W}/\text{m}^2$, the SSR11 is also well suited for higher intensity indoors artificial lamp measurement applications.

Employing entirely passive thermopile-based sensing technology, the SSR11 generates a low level DC millivolt output signal proportional to the solar short-wave flux received at the detector surface. The instrument design serves to reduce the possibility of wind related signal noise and thermal offset related error effects by employing a set (two) of precision ground and polished glass domes, resulting in improved measurement accuracy.

Determining short-wave solar irradiance requires connection to either a data logger or digital voltmeter with a measurement resolution of ten micro-volts or better; simply divide the SSR11 millivolt output signal by the factory supplied calibration factor to arrive at irradiance in W/m^2 units. Typical SSR11 measurement applications include scientific meteorological observations, building physics, climate and solar collector/PV panel efficiency testing. For conventional horizontal plane mounting applications requiring accurate leveling, the SSR11 is equipped standard with adjustable leveling feet and a bulls-eye bubble level; see leveling feet (7) and bubble level (11) illustration in Figure 1. The SSR11 signal cable can be easily installed and replaced by the user, thus minimizing down-time and expense otherwise associated with instrument re-cabling by the manufacturer.

Applicable Standards

ISO 9060 and 9847, WMO (World Meteorological Organization) and ASTM E824-94. The SR11 can also be used for stability estimations according to EPA (EPA-454/R-99-005); also see LP02 ISO Second Class Pyranometer model for lower cost instrument alternative.

Applications

- Agrometeorology
- Climatology / Meteorology
- Industrial Light Measurement & Process Control
- Material Testing Research
- Solar Collector & PV Panel Efficiency Validation

Note: Above applications are inclusive of, but not limited to the entire SSR11 application range.

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