



## MODEL GEO-SR11 FIRST CLASS SOLAR RADIATION SENSOR



Figure 1 GEO-SR11 First Class pyranometer

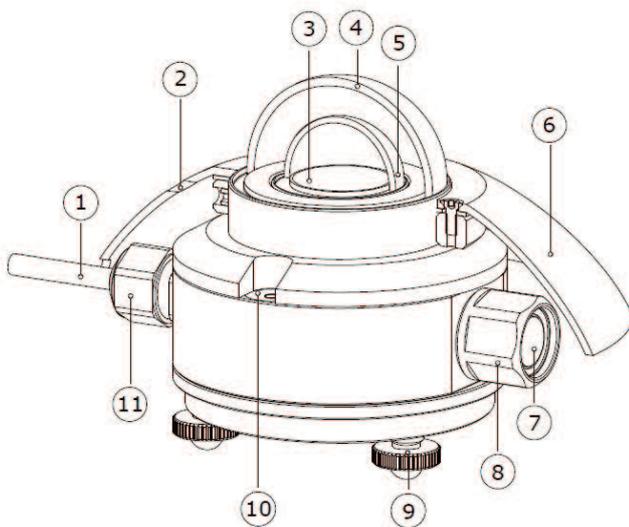


Figure 2 GEO-SR11 overview: (1) cable, (2) opening for fixation of sun screen, (3) thermal sensor with black coating, (4) outer dome, (5) inner dome, (6) sun screen, (7) humidity indicator, (8) desiccant holder, (9) levelling feet, (10) bubble level, (11) cable gland

### ACCESSORIES

AC100/AC420 amplifiers, LI18 handheld readout.  
Additional cable length in multiples of 5m (optional)

**GEO-SR11** is a high accuracy solar radiation sensor that can be applied in general high accuracy observations. It complies with the "First Class" specifications within the latest ISO 9060 and WMO standards. It is the preferred instrument for outdoor PV system performance monitoring, according to the ASTM E2848 standard.

### INTRODUCTION

**GEO-SR11** measures the solar radiation received by a plane surface from a 180° field of view angle. This quantity, expressed in  $W/m^2$ , is called "hemispherical" or "global" solar radiation. **GEO-SR11** pyranometer can be employed outdoors under the sun, as well as indoors with lamp-based solar simulators. Its orientation depends on the application and may be horizontal, tilted (for plane of array radiation) or inverted (for reflected radiation).

Employing two glass domes, certain measurement errors are reduced; in particular thermal offsets, so that a high measurement accuracy can be attained.

Calibration of **GEO-SR11** pyranometer has been improved; the latest calibration method results in an uncertainty of the sensitivity of 1.8 %, compared to typical uncertainties of higher than 2.8 % for this pyranometer class.

Some of the **GEO-SR11** suggested uses are PV system performance monitoring, general solar resource monitoring, indoor simulated solar testing and meteorological networks. **GEO-SR11** may be also used, in combination with appropriate software, to estimate sunshine duration.

Applicable instrument classification standards are ISO 9060 and WMO-No. 8. Calibration is according to ISO 9847. PV related standards are ASTM E2848 and IEC 61724.

### SPECIFICATIONS

ISO classification:	First Class
Zero offset a (resp to 200 $W/m^2$ ):	< $\pm 5 W/m^2$ unventilated
Spectral range:	285 to 3000 nm
Sensitivity (nominal):	15 $\mu V/(W/m^2)$
Operating temperature:	-40° to +80°C
Irradiance range :	0 to 2000 $W/m^2$
Temperature response:	< $\pm 2\%$ (-10° to +40°C)
Calibration traceability:	WRR
Required heater power:	1.5 W @ 12VDC
Calibration uncertainty:	< 1.8% (k=2)
Response time (95%):	18 s
Cable length:	5 m (standard)