

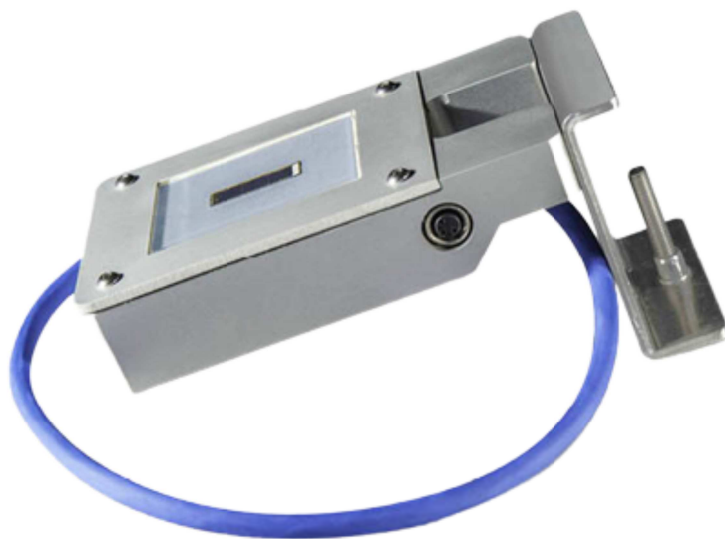
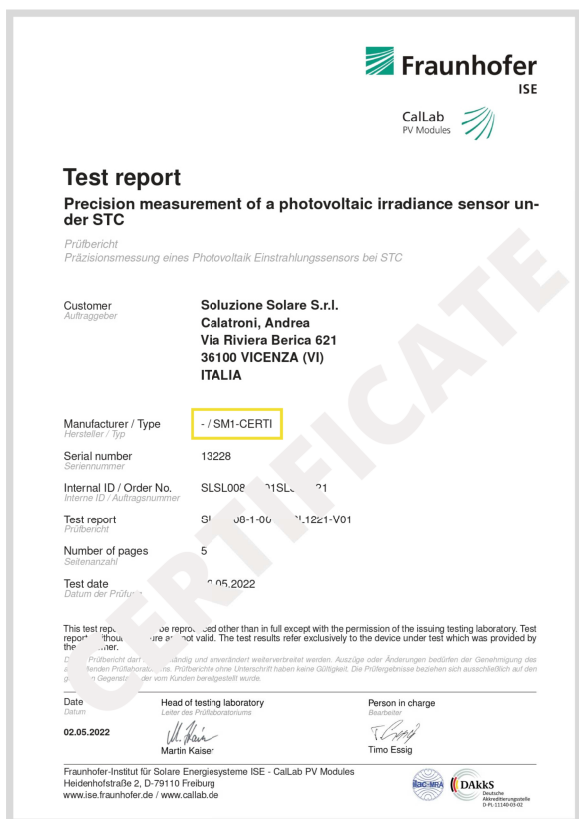
Sunmeter PRO Certified



Sunmeter PRO Certified is a **IEC 61724-1:2021 Class “A”** digital photovoltaic pyranometer (or irradiation sensor) equipped with a mono crystalline silicon cell. This sensor is calibrated by Fraunhofer Institute for Solar Energy Systems (DAKKS accredited.). This sensor is available with digital output only. Manufacturing and Calibrations are done following the **IEC 61215, IEC 60904-1; 60904-4; 60904-10 regulations and IEC 61724-1:2021 compliant**. The calibration performed by **Fraunhofer** is done under standard test conditions (STC) in accordance with **IEC 60904-1** with a **pulsed solar simulator class A+A+A+**.

Measurement features

Sunmeter PRO Certified has a **photovoltaic cell** which is laminated with a **high performance anti reflective glass for photovoltaic modules**. The advantage of the high linearity and stability along the time of our mono crystalline cells is added to the photovoltaic glass; **these two features together improve the accuracy of the actual value measurement for all possible solar inclinations**. Comparative observations lead us to affirm that the irradiance measurement uncertainty is better than **± 1.9%**. **WPVS Reference Solar Cell** is used for reference. **Sunmeter Pro Certified** is used to realize accurate measurement of solar radiation of medium and large PV systems.



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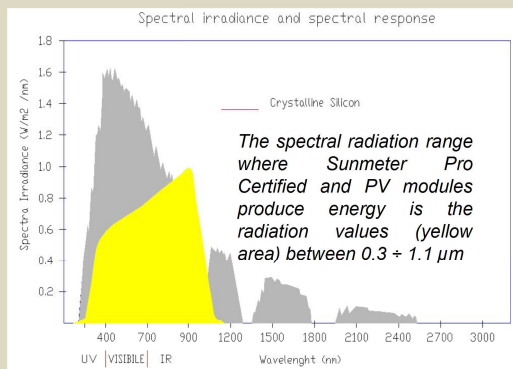
(calibrated by Fraunhofer Institute for Solar Energy Systems)

- **Class A IEC 61724-1:2021 compliant**
- **Certified by Fraunhofer Institute for Solar Energy Systems (DAKKS accredited.)**
- **Output Precision Irradiance ≤ ± 1.9%**
- **Built with Mono crystalline silicon cell**
- **More indicated for (POA) measurements ***
- **Same spectral response as PV panels**
- **Performance degradation of less than 1% per year**



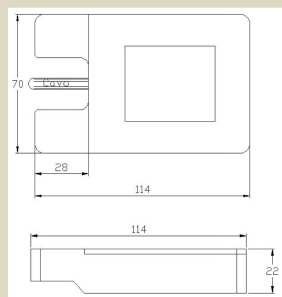
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Spectrum of interest



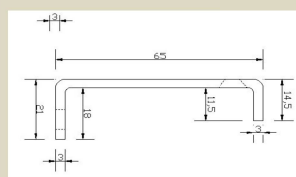
Calibration

Each SM PRO CERTIFIED is calibrated by **Fraunhofer Institute for Solar Energy Systems** (DAKKS accredited.)



Physical features

- Silicon sensor
- laminated in glass
- anodized aluminum housing
- high durability
- practical mounting bracket with screw clamp
- UV-resistant cable.



Most common uses

It's used to calculate **P/R** (Performance Ratio) of medium-large PV systems.

SUNMETER SENSOR		
Product	Sunmeter PRO Certified	
Reference Standard	IEC 60904-2 IEC 60904-4 IEC 60904-10 IEC 61724-1 IEC 60904-1	
Output	Digital	
Input Range	Irradiance	$0 \div 1500 \text{ W/m}^2$
	Spectral range	$0,3 \mu\text{m} \div 1,1 \mu\text{m}$
	Temperature	$-30 \div +90 \text{ }^\circ\text{C}$ (with external PT100)
Output	Digital	RS485, standard Modbus RTU protocol
	Analog	NA
Output precision	Irradiance	$< \pm 1.9 \%^{(1)}$
	Temperature	$\leq \pm 0.5 \text{ }^\circ\text{C}$
	Response Time	$< 100\text{ms}$
Sensor Type	Photovoltaic Pyranometer	
Supply	Ext. Current loop	$9 \div 30 \text{ Vdc}$ protected against reverse polarity, short circ.
Electronics non-linearity	$\pm 0,03\%$ of range	
Temperature drift. $-30 + 90^\circ\text{C}$	$< \pm 0,2\%$ at 1000 W/m^2	
Overall measurement uncertainty	$\pm 2 \% @ 1000 \text{ W/m}^2$	
Uncertainty reference cell	WPVS Reference Solar Cell 073-2019 (PTB)	
Encapsulant	Glass + E.V.A. + Poliester	
PV cell	monocrystalline silicon	
Cable	50cm UV-resistant cable with Male connector	
Connectors	Male M12 8 pin, IP67 (main) Female M8 3pin, IP67 (temp. probe)	
	Female M12 8 pin, IP67 for field installation	
Dimensions	114x70x22 mm without fixing bracket	
Weight	357 g	
IP code	IP 65	
(1): Note: recalibration advised after 18-24 months and then after 2 years.		

