

Sunmeter PRO COUNTER

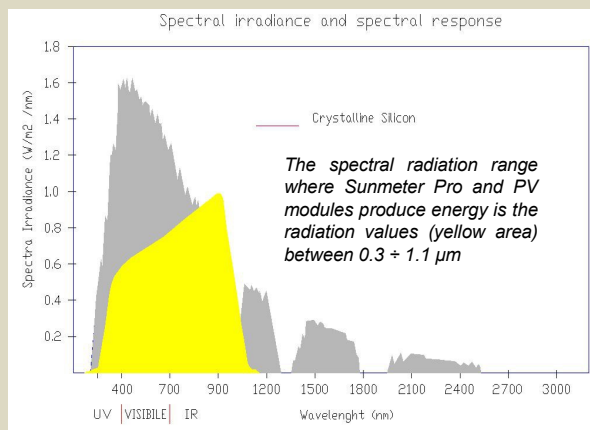
Sunmeter PRO COUNTER is a digital photovoltaic pyranometer (or irradiation sensor) equipped with a monocrystalline silicon cell laminated with a performing glass. This sensor has a digital output (RS485 bus interface). Manufacturing and Calibrations are done following the **IEC 60904-2; 60904-4; 60904-10; IEC 61215** regulations.

Measurement features

Sunmeter PRO COUNTER has a **photovoltaic cell** which is laminated with a performing **antireflective glass for photovoltaic modules and E.V.A.** The advantage of high linearity and stability of our monocrystalline cells is added to the photovoltaic glass; these two characteristics together improve its **accuracy of values along all the day hours while durability is improved**. As result, it has **enhanced the measurement accuracy of $\pm 2.1\%$** .

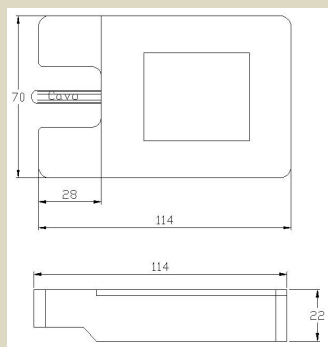
All Sunmeters are calibrated with our Primary Reference cell calibrated periodically by **Fraunhofer Institute** (DE), accredited by **Dakks**. Thanks to its performances, Sunmeter Pro is used to realize accurate measurement of solar radiation that involved PV modules.

Spectrum of interest



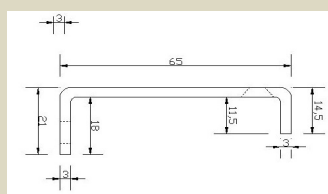
Calibration

Each SM PRO is factory calibrated, from a primary sensor referred to an accredited radiometer.



Physical features

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



Most common uses

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

SENSORE SUMMETER COUNTER		
Product	Sunmeter PRO C.	
Reference Standard	IEC 60904-2 IEC 60904-4 IEC 60904-10	
Output	Digital Modbus	
Input Range	Irradiation	0 ÷ 1250 W / m ²
	Spectral range	0,3 µm ÷ 1,1 µm
	Temperature	-30 ÷ +85 °C (with external PT100)
Output	Irradiation	0 ÷ 1250 [W/m ²]
	Temperature	- 30 ÷ +85 [°C]
	Energy counter 1	Integral of W/m ² received
	Energy counter 2	Integral of W/m ² above a threshold
	Count reset command (total and partial)	
	Status bit on accidental shutdown	
	Other status and info bit ³ [vedi nota]	
Output precision	Irradiation	<± 2.1 % ⁽²⁾
	Temperature	≤ ± 0.5 °C
	Response Time	< 100 ms
Type of sensor	Photovoltaic Pyranometer	
Supply	Ext. Current loop	9 ÷ 32 Vdc protected against reverse polarity, short circ.
Encapsulant	Glass + E.V.A. + Polyester	
Cable	50cm UV resistant cable with Male connector	
Connectors	Male M12 8 pin, IP67 (main)	
	Female M8 3pin, IP67 (temp. probe)	
Dimensions	Female M12 8 pin, IP67 for field installation	
Dimensions	114x70x22 mm without fixing bracket	
IP grade	IP 65	

(2) Note: first recalibration included in the price. Recommended after the first 18 months.

(3) Note: this irradiance sensor is suitable for companies that develop monitoring systems and system integrators, as it provides interesting data for the calculation of PR even in terms of kWh, statistics, events.

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Please note that the data is stored in the non-volatile memory of the solar meter so even in the event of a power failure the accumulated value is maintained. In the event that, for various reasons, the solarimeter suffers power supply interruptions, the solarimeter would return the values corresponding only to the period of operation.

To understand if there was an anomalous interruption, there is the counter of the restarts available which increases with each switching on, then its variation indicates to the data logger that the meters may not reflect the solar energy actually reached on that given surface.

In order for this solarimeter to be used effectively it is important that the data logger stores the value of the meters at the end of each day, such as also the value of the energy produced by the PV plant on that day. In this way it will be possible to compare data on the energy produced and the radiation received and therefore to make accurate P.R. for each day.

Table of the most significant Modbus registers

Register	Description	Type	Access	NV save
0x0101	Current irradiation level [W/m ²], range 0 ÷ 1250, decimal	Word	R	
0x0102	Current PT100 temperature [°C], range -30 ÷ +90, 2 - complement value, fixed point 14.2 format (14 bits integer, 2 bits fractional)	Word	R	
0x0103	Status , bit coded [see complete Modbus Sheet]		R	
0x0104	Counter number switching range 0 ÷ 65535, roll-over in overflow cases	Word	R	
0x0105 0x0106	Least significant and more significant bytes of Total energy Counter , in Wh/m ² .	Double Word	R	
0x0107 0x0108	Least significant and more significant bytes of threshold energy Counter , in Wh/m ² .	Double Word	R	
0x0109 0x010A	Least significant and more significant bytes of external enabling energy Counter , in Wh/m ² .	Double Word	W	
0x8301	Commands for Statistics Registers ; Accepted values are: 0x1111 for to erase ALL counters (Counter of power-on, N# of power on, all Energy Counters). 0x2222 for to erase ALL energy counter 0x3333 for to erase the Threshold Energy Counter and 'external enabling counter' 0x4444 for to erase the 'external enabling counter' 0xABCD for to force the saving of statistics.	Integer bit	W	
0x800C	Threshold for energy counter , in W/m ² , default 50, range 0-2000. Value can be modified during its job.	Word	R/W	