

Sunmeter PRO SUNSPEC



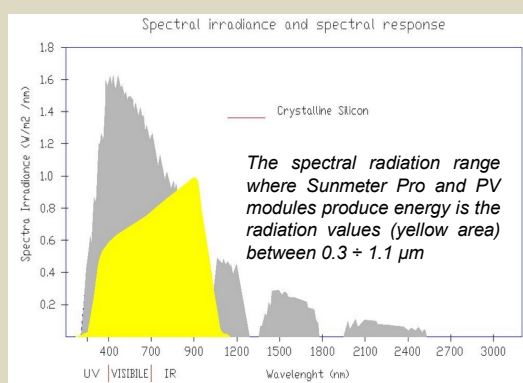
Sunmeter PRO SUNSPEC is a digital photovoltaic pyranometer (or irradiance sensor) equipped with a monocrystalline silicon cell laminated with a high performance glass. This sensor has a digital output (RS485 bus interface). Manufacturing and Calibrations are done following the **IEC 61215, IEC 60904-2;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

Measurement features

Sunmeter PRO SUNSPEC has a **photovoltaic cell** which is laminated with a **high performance antireflective glass for photovoltaic modules and E.V.A.** It communicates according to the SunSpec standard. SunSpec is implemented in some latest-generation inverters (FIMER/ ABB and other brands) to communicate with various peripherals.

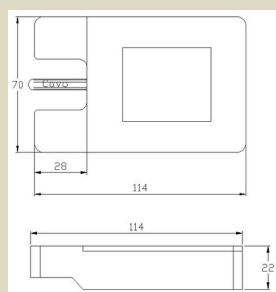
All Sunmeters are calibrated with our Primary Reference cell calibrated periodically by **ISFH Institute**, accredited by **Dakks**. Thanks to its performances (**measurement precision $\leq \pm 2.1\%$**) Sunmeter PRO SUNSPEC is used to realize accurate measurement of solar radiation of medium-large PV systems.

Spectrum of interest



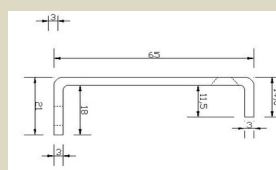
Calibration

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



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 is used to calculate the P.R (Performance Ratio) in inverters * where the SunSpec standard is implemented.

* Ask us the updated list of the inverters on the market

SUNMETER SENSOR		
Product	Sunmeter PRO SUNSPEC	
Reference Standard	IEC 60904-2 IEC 60904-4 IEC 60904-10 IEC 61724-1	
Output	Digital	
Input Range	Irradiance	0 ÷ 1500 W / m ²
	Spectral range	0,3 μm ÷ 1,1 μm
	Temperature	-30 ÷ +90 °C (with external PT100)
Output	Digital	RS485, standard Modbus RTU Mapped to SUNSPEC specifications
Output precision	Irradiance	$\leq \pm 2\%$ ⁽¹⁾
	Temperature	$\leq \pm 0.5\%$ °C
	Response Time	< 100ms
Sensor Type	Photovoltaic Pyranometer	
Supply	Ext. Current loop	9 ÷ 30 Vdc protected against reverse polarity, short circ.
Electronics non-linearity	$\pm 0,03\%$ of range	
Temperature drift. -30 + 90°C	$< \pm 0,2\%$ at 1000 W/m ²	
Overall measurement uncertainty	$\pm 2,1\%$ @ 1000 W/m ²	
Uncertainty reference cell	$\pm 1,2\%$ (ISFH , accredited by Dakks)	
PV cell	monocrystalline silicon	
Encapsulant	Glass + E.V.A. + Poliester	
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.



SUNSPEC register map

Start	End	#	Name	Type	Units	Scale Factor	Costants	Description
0001	0002	2	C_SunSpec_ID	uint32	N/A	N/A	SunS	Well-known value. Uniquely identifies this as a SunSpec Modbus Map
0003	0003	1	C_SunSpec_DID	uint16	N/A	N/A	0x0001	Well-known value. Uniquely identifies this as a SunSpec Common Model block
0004	0004	1	C_SunSpec_Length	uint16	registers	N/A	65	Length of common model block
0005	0020	16	C-Manufacturer	String(32)	N/A	N/A	"SOL SOL"	Well-known value
0021	0036	16	C-Model	String(32)	N/A	N/A	"SM1-485 PRO"	Manufacturer specific value
0037	0044	8	C-Options	String(16)	N/A	N/A	"0"	Manufacturer specific value
0045	0052	8	C-Version	String(16)	N/A	N/A	"80,00-03.01"	Manufacturer specific value
0053	0068	16	C-Serial Number	String(32)	N/A	N/A	"Serial"	Manufacturer specific value
0059	0069	1	C-Device Address	uint16	N/A	N/A	65	Modbus ID
Sunspec Irradiance Model Registers								
0083	0083	1	C_SunSpec_DID	int16	N/A	0	302	Well-known value. Uniquely identifies this as a SunSpec Irradiance Model
0084	0084	1	C_SunSpec_Length	int16	N/A	0	5	Variable length model block $= (5 \cdot n)$, where n = number of sensors blocks
0085	0085	1	E_Irradiance_Global_Horizontal_1	uint16	W/m ²	0	N/A	Global Horizontal Irradiance
0086	0086	1	E_Irradiance_Plane-of-Array_1	uint16	W/m ²	0	Measured	Plane-of-Array Irradiance
0087	0087	1	E_Irradiance_Diffuse_1	uint16	W/m ²	0	N/A	Diffuse Irradiance
0088	0088	1	E_Irradiance_Direct_1	uint16	W/m ²	0	N/A	Direct Irradiance
0089	0089	1	E_Irradiance_Other_1	uint16	W/m ²	0	N/A	Some other type Irradiance
SunSpec Back of Module Temperature Registers								
0090	0090	1	C_SunSpec_DID	int16	N/A	0	303	Well-known value. Uniquely identifies this as a SunSpec Back of Module temperature Model
0091	0091	1	C_SunSpec_Length	int16	N/A	0	2	Variable length model block $= (5 \cdot n)$, where n = number of sensors blocks
0092	0092	1	E_BOM_Temp_1	int16	°C	-1	Measured	Back of Module temperature
0093	0093	1	E_BOM_Temp_2	int16	°C	-1	N/A	Back of Module temperature
End of Block Registers								
0094	0094	1	End of Sunspec Block	uint16	N/A	N/A	0xFFFF	End of SunSpec Block
0095	0095	1	C_Sunspec_Length	uint16	N/A	0	0	Terminate length, zero