

MacSolar (full version) - Insolation Meter SOL-MAC

The extended version MacSolar combines:

- a sensor for measuring global radiation,
- a sensor for measuring temperature,
- a display and operation unit,
- a solar power supply and
- a computer-assisted simulator for photovoltaic modules



in a weather-proof casing, with mounting fixture for wall or roof.

By measuring the current light intensity and temperature, typical characteristics of solar plants are simulated by the integrated computer. Thus, plumbers, architects or owners can quickly carry out an exact yield check of an installed solar plant.

Yield checks can be performed over any period of time by registering average values.

Using the data-logger method, data are periodically stored in the internal memory. Via interface cord they can be transmitted to a PC. An optional software package is available for this (see below).

With this combination MacSolar is an ideal complement to simulation programs and a valuable extension for checking the yield of solar plants. Furthermore, MacSolar can also be used for meteorological measurements.

MacSolar Software

The interface package consists of:

- D-Sub 9 cable (optional with USB-cord)
- software SLMread (data transmission in ASCII file)
- software MacView (data evaluation into graphic or table)

Technical data MacSolar

Measuring range / Resolution

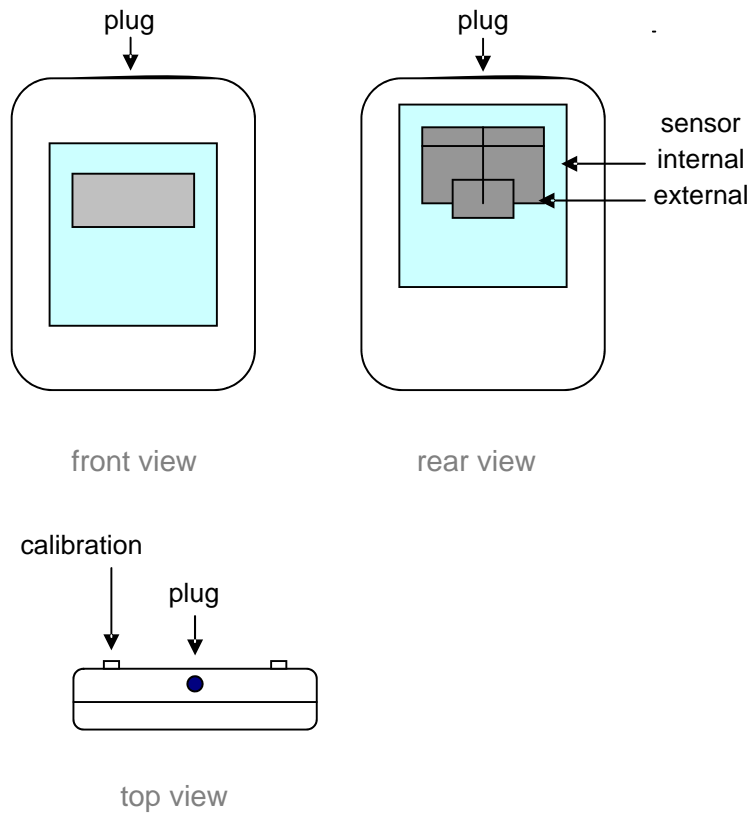
	P _{tot}		T	P _n		n U		n I	hour
Unit	W/m ²	°C	%	%	%	h			
values	0 ... 1500	-40 ... +35	0 ... 150	0 ... 150	0 ... 150	0	...	9999	
Resolution	1	0.1	0.1	0.1	0.1	0.1	/	1	

- Overall accuracy P_{tot} < 3% ± 1 digit (50...1.000W/m² / AM1,5 / normal incidence(*2) / T_{modul} = 0...+50°C)
- Overall accuracy T < 3K ± 1 digit (-25...+75°C)
- Weight (without mounting) 170g or 6oz
- Certification CE / EN50081, EN50082, EN60068
- Calibration according to IEC904/3
- Calibration certificate on request
- Warranty 2 years
- Power consumption (sleep mode) 0,6 mW
- Power consumption (active Mode) 4 mW
- Rated power of integr. Solar panel 180mW *1
- Power supply externa 9 – 12 V / 20mA
- Data storage capacity 256 kbit
- Data transmission seriell (RS232), USB on request
- Ambient temperature range -20 ... +50°C
- Max. ambient humidity 95%
- Dimensions (without mounting) 130 x 90 x 30mm or 5.1 x 3.5 x 1.2 inches

*1 at standard test conditions: P_{tot} = 1.000 W/m², spectrum AM1.5, T = 25 °C *2 as certified by FhG ISE Freiburg in Germany

MacSolar Sensor- Version (S1-018c)

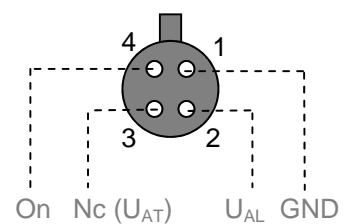
Scheme Output Plug and Sensors



Connections Output Plug

Plug: Binder, Type 719

View from top on the plug



GND = Ground
U_{AL} = Output light intensity
U_{AT} = Output temperature (optional)
On = Device enable
(Connect to ground in plug)

Note:

We recommend the use of a sealant (e. g., silicone) for the plug when installed outside.

Calibration of the external sensor

only by SOLARC or after consulting SOLARC

Technical Specification

sensor construction	Cz-Si, mono crystalline under acrylic glass
housing	plastic, UV-resistant and waterproof (IP65)
ambient temperature T_U	-20 ... + 45°C
power consumption	< 0.3 mW (with temperature sensor < 1 mW)
certificates	CE / EN 50081, 50082, 55014, 55022, 60068, 60529, IEC68

Light Intensity Sensor

range light intensity	0 ... 1400 W/m ² (spectrum AM1.5), external power 0 ... 1300 W/m ² (spectrum AM1.5), internal power
output voltage U_{AL}	0 ... 7 V DC ($P_{tot} = 0 ... 1400 \text{ W/m}^2$)
output current I_{AL}	0.1 mA max.
linearity error ¹⁾	< 1 % $\pm 8 \text{ mV}$
temperature error	< 1 % ($T_U = -20 ... +45^\circ\text{C}$)
spectral error ²⁾	< 3 %
cosine error	< 4 % within incident angle range 60°
total error ²⁾	< 5 %
long term drift ³⁾	< 1 % / year

Temperature Sensor (optional)

range module temperature	-20 ... +85°C
output voltage U_{AT}	424 mV (0°C) + 6.25 mV / K
output current I_{AT}	0.1 mA max.
deviation	$\pm 3\text{K}$ in the range -20 ... +85°C

¹⁾ as certified by FhG-ISE Freiburg, Germany

²⁾ monthly average values at daylight in middle Europe

³⁾ not guaranteed for long-term outdoor usage