SMA

Precise
> Complete system monitoring for PV-plants
> Measurement of insolation, module temperature, ambient temperature and wind speed

Easy to Use
> Easy installation right next to the solar modules
> Integration into existing systems via serial interface RS485
> Compatible with Sunny WebBox and Sunny Boy Control
> Data analysis using a PC or in the Sunny Portal

SUNNY SENSORBOX
Perfect performance monitoring

It is one of the smallest measurement units available and extremely easy to install: the new Sunny SensorBox from SMA. This has been specially developed to improve PV-system performance analysis even further – at an attractive price. The Sunny SensorBox now lets you acquire data concerning the ambient conditions such as solar irradiation and module temperature in order to give you the ability to detect malfunctions or yield losses as early as possible. With this we satisfy the demands from PV-plant operators for perfect plant performance monitoring – and make a further contribution towards optimal yield security.
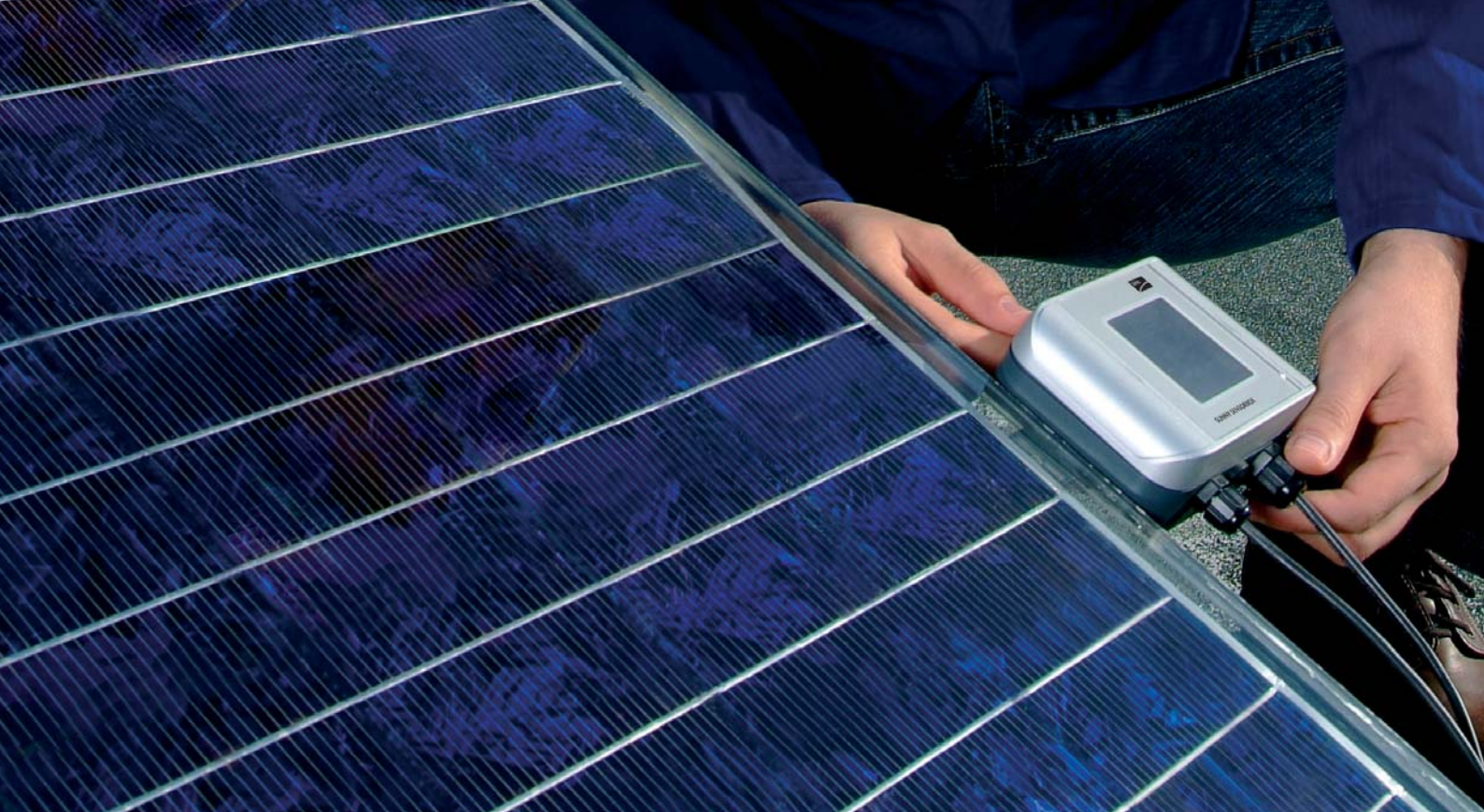
SUNNY SENSORBOX

Innovation and precision for your performance monitoring

Complete system monitoring easily installed

The Sunny SensorBox is installed outdoors at the solar generator, and comes with an integrated solar cell, which measures solar irradiation. The module temperature is measured by means of the temperature sensor which is included. From the present solar irradiation level and the module temperature, it is possible to calculate the expected output, and to compare it with the actual measured output of the inverters. Temporary or continuous yield losses caused by unknown failure sources are therefore a thing of the past.

... extendable

Once the Sunny SensorBox has been equipped according to the modules, it is simply connected with the inverter to a Sunny WebBox with an RS485 data connection. From there, the data can be transferred to a PC for further processing, or to the Sunny Portal for automatic performance analysis. The Sunny SensorBox also enables the connection of additional sensors, e. g. to measure the ambient temperature or wind speed for calculations which are even more precise. This ensures reliable system monitoring for operators – and maximum yield security.

Communication with the Sunny WebBox or the Sunny Boy Control via serial interface RS485

Continuous comparison of real and potential yield (performance ratio) in Sunny Portal in order to avoid yield losses
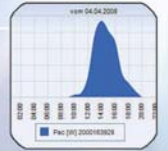
Compact solution as a supplement to the PV plant monitoring with all relevant ambient conditions

Measurement of insolation, module temperature and also – as an option – ambient temperature and wind speed

Easy installation. Data transmission and voltage supply via a single cable possible

Performance ratio as a quality indicator

Shadowing, defects, surface contamination and gradual malfunctions such as deteriorating modules have a serious impact on the generator yield and the overall performance and are not to be underestimated. Particularly annoying for the operator is the fact that the losses in yield could have been avoided in most cases – if the error had been detected in time. The system efficiency of the PV-plant (performance ratio) is therefore an essential value. The performance ratio indicates the ratio of actual yield to the theoretically possible yield. Since the performance ratio indicates how the irradiated energy on the generator side is exploited, it is the decisive quality factor for the performance of the entire PV system. This is where the Sunny SensorBox comes into play.

How to determine the performance ratio

You simply divide the actual energy yield through the possible energy yield. While the inverter measures the actual energy, the possible energy yield is determined according to the efficiency of the modules, the module surface and the recorded insolation. Good grid connected PV systems reach performance ratios of between 60 % and 80 % – ratios under this value can indicate malfunctions of the system.

Technical Data
SUNNY SENSORBOX

	Sunny SensorBox	
Interfaces		
to the data logger (Sunny WebBox, Sunny Boy Control)	RS485	
Internal sensor		
Solar irradiation	ASI solar module, Precision ±8 % Range 0 ... 1500 W/m²	
External sensor		
Module temperature	Platinum Sensor (Pt100) attachable Range –20 °C ... +110 °C Precision ±0.5 °C	
Optional sensors		
Ambient temperature	Platinum Sensor (Pt100) Range –30 °C ... +80 °C Precision ±0.5 °C	
Wind measurement	Thies Clima external anemometer Range 0.8 m/s ... 40 m/s (max. 60 m/s short term) Precision ±0.5 m/s	
Power supply		
via RS485 line	Via external power supply (Power Injector)	
Protection rating		
in accordance with DIN EN 60529	IP65	
Mechanical data		
Width / height / depth (mm)	120 / 90 / 50	
Weight	500 g	

Schematic diagram of Sunny SensorBox

External Sensors e.g.:

Module temperature (included in scope of delivery)

Outside temperature (optional)

Wind speed (optional)

SUNNY SENSORBOX with integrated Irradiation sensor

RS485

Power Injector

RS485

Acquisition, evaluation and storage of the measuring data in Sunny WebBox

RS485

Sunny Mini Central, Sunny Boy

Windy Boy

Sunny Island, Sunny Backup

Sunny Portal

Flash View

PC

Sunny Matrix

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