**SUNNY SENSORBOX**

The weather station for PV plants

The Sunny SensorBox is installed directly onto the modules and measures the sun radiation and temperature. In combination with Sunny WebBox and Sunny Portal, it provides a continuous target-actual comparison of plant performance. This makes it possible to detect shade, dirt, and gradually declining performance in a generator and thus maximizes yield security.

Additional sensors for optional measurement of ambient temperature or wind speed permit more precise calculations.

<table>
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<tr>
<th>Reliable</th>
<th>Informative</th>
<th>Easy to install</th>
<th>Data analysis on any PC or in the Sunny Portal</th>
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<tr>
<td>• Rapid error detection via continuous target-actual comparison of plant performance</td>
<td>• Precise acquisition of irradiation intensity, module temperature, ambient temperature and wind speed values</td>
<td>• Easy installation on the solar generator</td>
<td>• Data analysis on any PC or in the Sunny Portal</td>
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<td></td>
<td></td>
<td>• Simple integration into existing PV plants via RS485</td>
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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 aligned to the modules, it is simply connected with the inverters 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.
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.

**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.
## Technical data

### Communication

**Data logger communication**

- RS485 or SMA Power Injector with Bluetooth to Sunny WebBox

### Interfaces

- **Sunny WebBox and Power Injector**
- **RS485**
- **SMA Power Injector with Bluetooth**

### Power supply

**Input voltage**

- 100 V – 240 V AC, 50 / 60 Hz

**Power consumption**

- < 1 W

### Environmental conditions in operation

**Ambient temperature**

- -25 °C ... +70 °C

**Protection rating (as per EN 60529)**

- IP65

### General data

**Dimensions (W / H / D) in mm**

- 120 / 50 / 90

**Weight**

- 500 g

**Mounting location**

- Outdoor

### Deployment options

- Mounting plate, roof bracket

### Language versions – manual

- German, English, French, Italian, Spanish, Dutch, Czech, Portuguese, Greek, Korean

### Features

**Operation**

- via the Sunny WebBox interface

**Warranty**

- 5 years

**Certificates and approvals**

- www.SMA-Solar.com

### Accessories

- Mounting plate
- Roof bracket
- Wind sensor
- Wall mounting bracket for wind sensor
- PT100 ambient temperature sensor
- PT100 module temperature sensor
- RS485 Power Injector
- SMA Power Injector with Bluetooth

#### Standard features

- ○

#### Optional features

- ●

#### Not available

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### Communication with the Sunny WebBox via RS485

### Continuous monitoring of generator performance in Sunny Portal

### Measurement of radiation and module temperature (plus optional measurement of ambient temperature and wind speed)

### Easy installation data transmission and energy supply via a common cable

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SMA Solar Technology AG