SUNNY SENSORBOX

Reliable

- Rapid error detection via continuous target-actual comparison of plant performance

Informative

- Precise acquisition of irradiation intensity, module temperature, ambient temperature and wind speed values

Easy to install

- Easy installation on the solar generator
- Simple integration into existing PV plants via RS485

- Data analysis on any PC or in the Sunny Portal

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.

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.

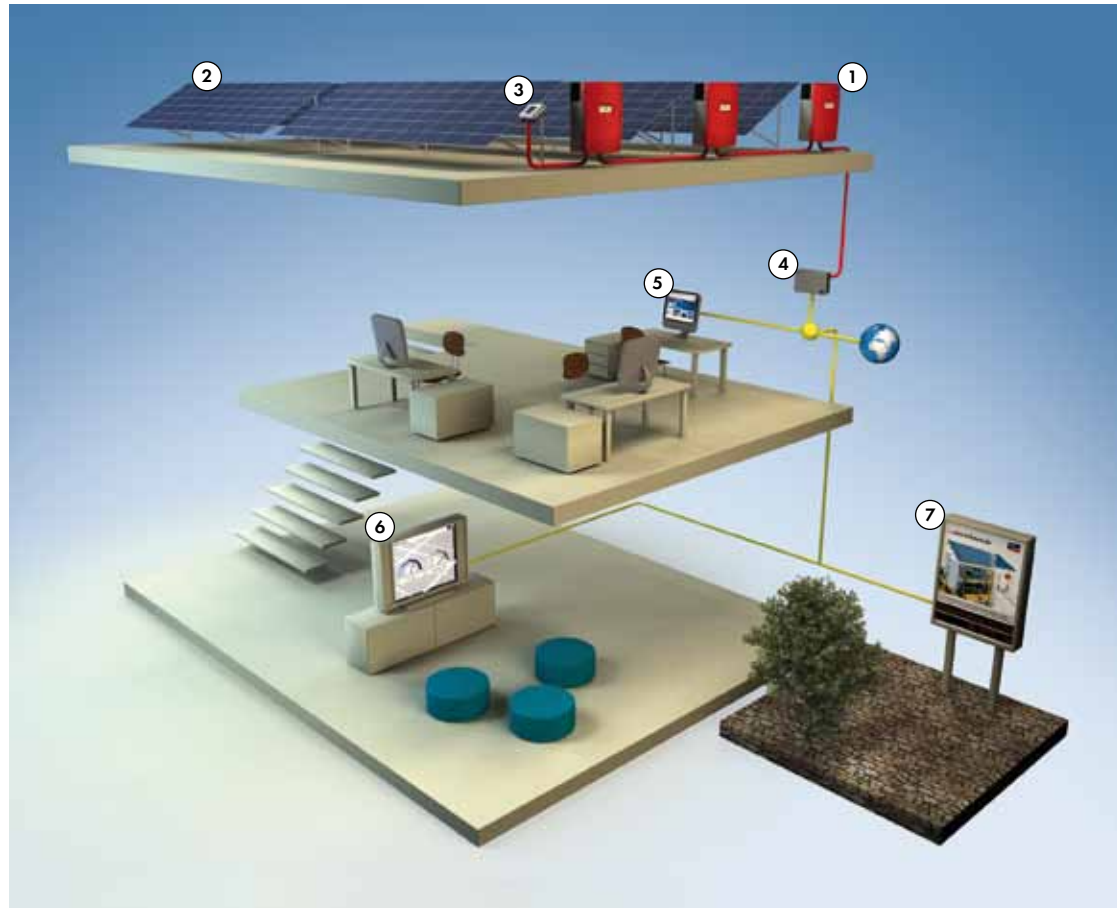## Typical system design – Cable Transmission

Electricity Generation
① SUNNY MINI CENTRAL
② Solar generator

System Monitoring
③ SUNNY SENSORBOX
④ SUNNY WEBBOX
⑤ SUNNY PORTAL
⑥ FLASHVIEW
⑦ SUNNY MATRIX

— RS485
— Local network / Internet

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	
Communication		
Data logger communication	RS485 or SMA Power Injector with *Bluetooth* to Sunny WebBox	
Interfaces		
Sunny WebBox and Power Injector	1x SMACOM / spring terminals	
Max. communication range		
RS485	1.200 m	
SMA Power Injector with *Bluetooth*	100 m	
Power supply		
Power supply	RS485 Power Injector SMA Power Injector with *Bluetooth*	
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	O	
Roof bracket	O	
Wind sensor	O	
Wall mounting bracket for wind sensor	O	
PT100 ambient temperature sensor	O	
PT100 module temperature sensor	●	
RS485 Power Injector	●	
SMA Power-Injector with *Bluetooth*®	O	

● Standard features   O Optional features   — Not available

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