

Manual Soiling Sensor



SEVEN Soiling Sensor is designed to measure the loss of energy production due to pollution caused by environmental factors in photovoltaic panels. The Soiling sensor, which is suitable for commercial, utility, industrial and rooftop projects, notifies the user of production losses due to pollution. If soiling ratio read from the sensor is 10%, it means that there is 10% energy loss in the facility.

PV Soiling = Energy Loss

SEVEN Soiling Sensor calculates the soiling ratio of the PV system by comparing the irradiance values received from the two clean and dirty irradiance sensors. While the dirty irradiance sensor in the system is exposed to contamination in the same way as the panels, the clean irradiance sensor is cleaned manually by the user with a wet cloth. SEVEN Sensor has a 3S-SMS-MB model that performs this cleaning process automatically. Monitoring systems give the user energy loss by comparing the two irradiance values according to the data received from the cleaned and dirty irradiance sensors.

$$\text{Soiling Ratio} = \left[1 - \frac{\text{Normalized Irradiance}_{(\text{Dirty Cell})}}{\text{Normalized Irradiance}_{(\text{Clean Cell})}} \right] \times 100$$

According to IEC 61724-1, the soiling ratio should be calculated as a single soiling ratio with a daily average. It is recommended to calculate only one soiling ratio per day for the system because although SEVEN provides instantaneous soiling ratio values, frequent measurements are affected by irradiation fluctuations. According to the IEC 61724-1 standard, low irradiation values and unstable weather conditions should not be included in the calculation. In addition, these measurements must be made within ± 2 hours from local noon time. The user decides on the cleaning of the module by checking the soiling ratio to avoid loss of production and increase the efficiency of the PV system.

Benefits and Features

- Economic Solution
- Fast & Simple to Install
- Manual Cleaning of Dirty Sensor
- Free Software Update
- SunSpec Compliant
- SEVEN Remote Setup Service
- SEVEN Customer Support
- 2 Years Warranty

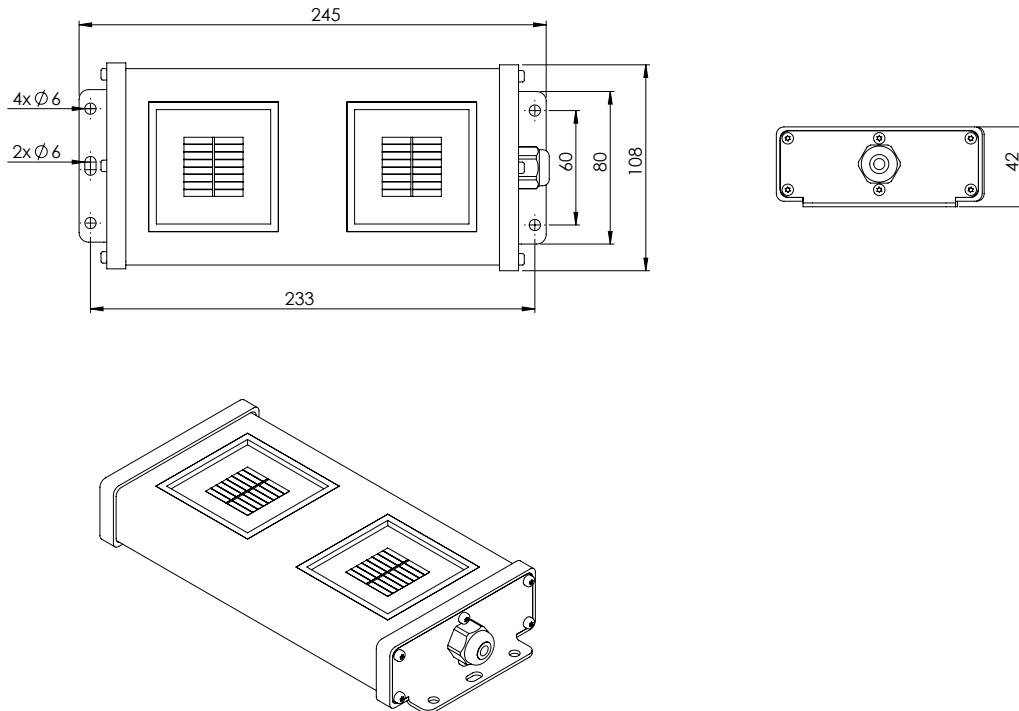
3S-SMS-MB-M

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Technical Specifications

	3S-SMS-MB-M
Soiling Ratio	0% - 100%
Resolution	0,1%
Uncertainty	≤1%
Irradiance	0...1600 W/m ²
Follower Standard	IEC61724-1 (Annex C)
Data Output	RS485 up to 38400 Baud
Communication Protocol	Modbus RTU
Output Rate	1/s
Operating Temperature Range	-40°C to +85°C
Operating Humidity Range	0 to 100 %RH
Power Supply	12 to 30 V DC
Power Consumption	20 mA @ 24 V DC
Electrical Connection	3 m LIYYC11Y PUR Cable, UV and weather resistant
Galvanic Isolation	1000 V between power supply and RS485 Bus
IP Rating	IP 65
Dimensions	245 mm x 108 mm x 42 mm (W x L x H)
Weight	500 g
Calibration	Each sensor is calibrated under Class AAA Sun Simulator as per IEC 60904-2 and IEC 60904-4 by using a reference cell calibrated by ISFH-Germany
Test	Each sensor is tested under natural sunlight by using a calibrated reference cell from Fraunhofer ISE, Germany.
Origin	TÜRKİYE

Technical Drawings



Note: All dimensions are in mm.