



SOILING SENSOR

MODEL NO: HS-SMS010



HeySense Soiling Sensor is designed to measure the loss of energy production due to soiling caused by environmental factors on photovoltaic panels. The Soiling Sensor is used to know the production losses due to soiling. If soiling level read from the sensor is 10%, it means that there is 10% energy loss in the facility (PV Soiling = Energy Loss)

The measured Soiling Level is transferred to dataloggers and receiver units via a 2-wire RS485 bus with Modbus RTU protocol, and it is SunSpec compliant.

OVERVIEW

The Soiling station HS-SMS010 24V is useful device for maintaining solar panel efficiency! By detecting and quantifying the amount of dust accumulation, the Soiling Sensor helps ensure that solar panels are operating at their peak performance. It's especially valuable for large-scale commercial and industrial solar installations, where even small losses in efficiency can add up over time.

The 10% soiling rate represents a significant energy loss, so this kind of monitoring can help businesses decide when cleaning or maintenance is needed. It not only saves energy but also prolongs the life of the panels by preventing potential long-term damage from dirt buildup.

WORKING PRINCIPLE

The two irradiance sensors—one for “clean” and one for “dirty” panels—seem to serve as a direct comparison mechanism. The clean sensor would measure the amount of sunlight hitting the panels when they are free from dirt, while the dirty sensor measures the irradiance when dust has accumulated. By comparing the two, the system can estimate the degree of energy loss due to soiling.

This approach of using a clean and dirty irradiance sensor is quite clever and aligns with best practices for monitoring and assessing solar panel performance. The fact that the clean sensor is maintained with daily cleaning, while the dirty sensor accumulates dust under actual field conditions, ensures that the data comparison is as close to real-world conditions as possible.

The use of specialized software to filter and compare data between the two sensors is key to obtaining accurate measurements. By excluding low irradiance values and unstable weather conditions, the system can more reliably calculate the soiling rate according to the IEC 61724 standard. This standard is well-regarded in the solar industry for evaluating the performance of PV systems, ensuring that the soiling rate reflects actual energy losses without being skewed by variables like weather fluctuations.



The automatic calculation of a daily average soiling rate within a ± 2 -hour window from local noon is another excellent touch. It makes the measurement period consistent and reduces the impact of shadows or angle variations that could affect irradiance outside those hours.

The data storage feature for up to one year is also quite valuable. This allows for historical tracking of soiling trends, which can help with maintenance scheduling, performance forecasting, and identifying long-term patterns in dust accumulation based on environmental factors.

Overall, it seems like the Soiling Sensor, with its integration options, provides a comprehensive and adaptable solution for monitoring and maintaining the efficiency of solar panel systems. Are there any additional monitoring or alerting features in the V-Sensor system, such as notifications or thresholds for cleaning interventions.

Model Number	HS-SMS010
Soiling Ratio	0% - 100%
Resolution	0.1%
Uncertainty	$\leq 1\%$
Irradiance	0...1600 W/m ²
Followed 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%
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	244 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 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.)



Email: sales@heydayventures.co.in



Website: www.heyday-ventures.com



Works: Heyday Ventures Part B, Back Side, ground floor, plot no-4, KH-132, Neb Sarai, New Delhi - 110068, India



Phone: +91 11 6926 1931