

Automatic Soiling Sensor

The Automatic Soiling Sensor is a device designed to measure energy losses caused by dirt and dust accumulating on the surfaces of photovoltaic (PV) panels due to environmental conditions. This sensor detects the amount of dust accumulating on the panels and helps determine the need for regular maintenance and cleaning of commercial and industrial facilities. If the soiling rate obtained from the sensor is 10%, this indicates a 10% energy loss in the facility. Thus, users can take necessary precautions based on the soiling level to improve energy efficiency.

The Automatic Soiling Sensor includes two irradiance sensors, one defined as 'clean' and the other as 'dirty', a water tank with a pump that performs the cleaning process, and an electronic panel housing the sensor's electronic components.

According to the sensor's measurement principle, the dirty irradiance sensor is left to accumulate dust under the same conditions as the solar panels in the field, while the clean irradiance sensor is cleaned daily by an automatic cleaning system. The sensor, utilizing its specialized software, filters and compares data received from the dirty and clean irradiance sensors to calculate a soiling rate in compliance with the IEC 61724 standard. According to this standard, the soiling rate should be calculated as a single daily average value within the time range of ± 2 hours from local noon, excluding low irradiance values and unstable weather conditions. Additionally, the Automatic Soiling Sensor stores the collected data for one year, allowing the user to get the backup of this data at any time.



Benefits and Features

- Data Recording and Downloading
- Quick & Easy Installation
- Automatic Cleaning System
- Free Software Update
- SunSpec Compilicant
- SEVEN Remote Setup Service
- SEVEN Customer Support
- 2 Years Warranty

Models

3S-SMS-MB & 3S-SMS-MB-24V

The 3S-SMS-MB model operates with 100-240 V AC, while the 3S-SMS-MB-24V model operates with 24 V DC. The only difference between these two models is the power supply; all other features are similar. Users who choose the 3S-SMS-MB model can connect the sensor directly to the main voltage. Users who opt for the 3S-SMS-MB-24V model, need to use a 24 V DC, 5 A power supply to operate the sensor.



3S-SMS-GW & 3S-SMS-GW-24V

Automatic Soiling Sensors can be used with systems such as dataloggers, SCADA, and PLCs that operate using the Modbus protocol. In cases where these or similar systems are not available on-site, or a specific monitoring system is required, Gateway models can be preferred. A special monitoring page has been designed within the V-Sensor monitoring system for the Automatic Soiling Sensor. These models transmit the data received from the sensor to the V-Sensor monitoring system, allowing users to remotely track data via the internet. There is no technical difference between our Gateway models and standard Automatic Soiling Sensor. Like the standard models, Gateway models are also offered in two different options, depending on the power supply chosen.

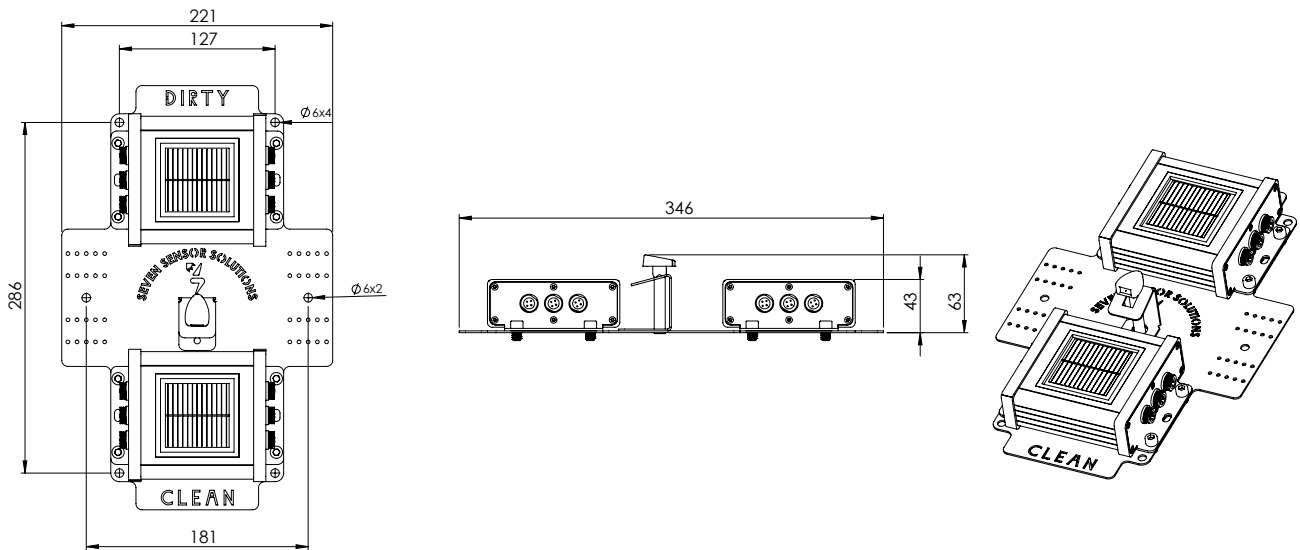


Technical Specifications

Item Codes	3S-SMS-MB, 3S-SMS-GW, 3S-SMS-MB-24V, 3S-SMS-GW-24V
Soiling Ratio	0% - 100%
Resolution	0,1%
Uncertainty	≤ 1%
Data Output	RS485 up to 38400 Baud
Communication Protocol	Modbus RTU
Output Rate	1/s
Operating Temperature Range	-20°C - 85°C
Operating Humidity Range	0% - 100% RH
Power Supply	110-240V AC or 24V 5A DC
Power Consumption	Pump Passive: Max. 20 mA @ 24V DC Pump Active: Max. 3 A @ 24V DC
Communication Cable	3 m LI2Y(st)C11Y PUR Cable (UV and weather-resistant)
Galvanic Isolation	1000 V between power supply and RS485 bus
Water Tank Capacity	18 Liters
Water Consumption	36 Liters/year (Refilling required twice a year)
Washing Liquid	Pure Water: 100% (Should be used when the ambient temperature is above 0°C) Pure Water: 65% + Antifreeze: 35% (Should be used when the ambient temperature is below 0°C)
Water Hose Length	5 m (on request up to 20m)
Max. Water Line Height	5 m
Protection Class	IP54 (Optional IP65)
Weight	10.5 kg
Standard	IEC61724-1 (Annex C)
Origin	TÜRKİYE

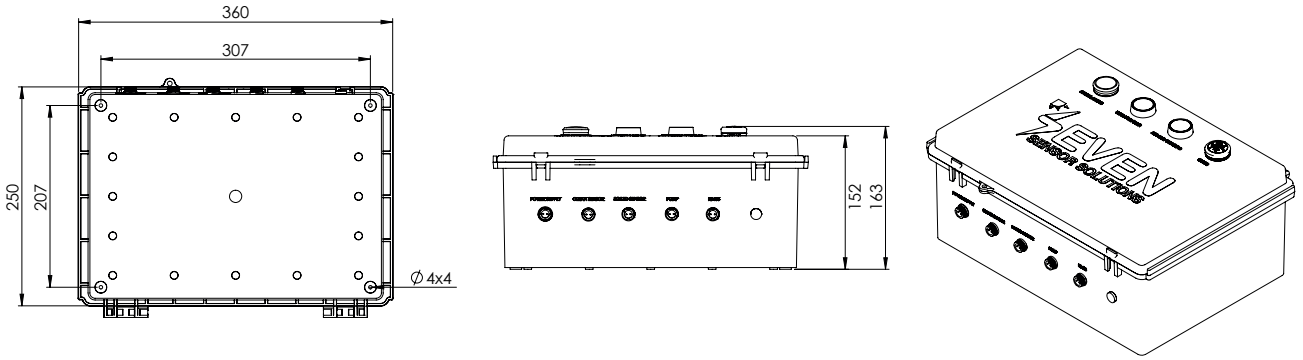
Technical Drawings

Irradiance Sensors

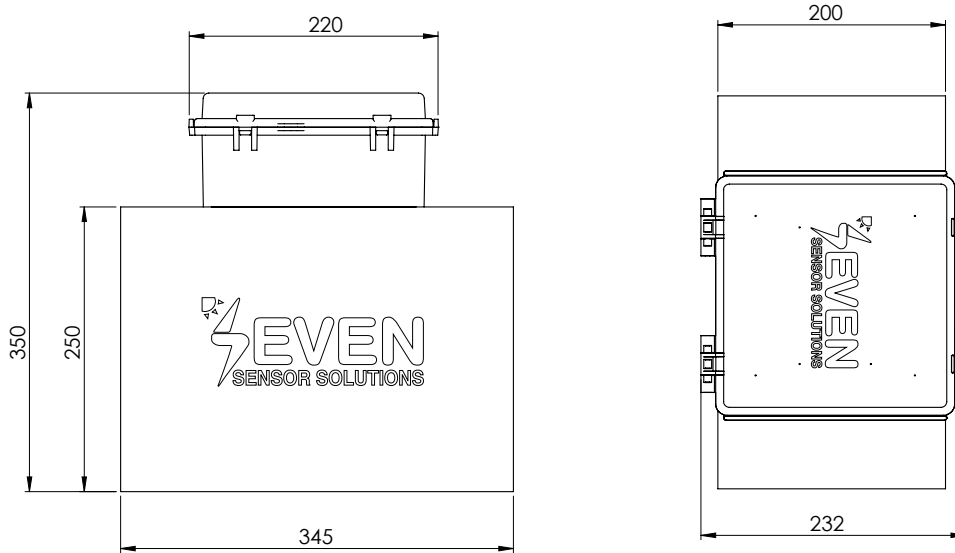


Technical Drawings

Electronic Panel



Water Tank



Note: All dimensions are in mm

*SEVEN has the right to make modifications on this documentation without notice.