

Global Solar Module Soiling Sensor Supply, Demand and Key Producers, 2026-2032

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Abstracts

The global Solar Module Soiling Sensor market size is expected to reach \$ 80.44 million by 2032, rising at a market growth of 7.5% CAGR during the forecast period (2026-2032).

In 2025, global Solar Module Soiling Sensor production reached approximately 11,000 units, with an average global market price of around 4,250 US\$/unit.

Solar Module Soiling Sensor is a specialized monitoring device designed to quantify the accumulation of dust, sand, salt, pollen, and other contaminants on the glass surface of photovoltaic modules, which cause light transmittance reduction and power generation losses. Adopting optical measurement principles such as blue light closed-loop technology, it integrates a reference sensing unit and a soiled sensing unit to calculate the real-time soiling ratio (SR) and relative power loss, featuring compact structure, low power consumption, and easy installation on PV panel frames. Equipped with standard communication interfaces like RS485 and Modbus, it enables seamless data transmission to plant SCADA or cloud platforms, supporting continuous, unattended monitoring across large-scale ground-mounted, distributed, and desert-region PV systems.

Driven by the global expansion of solar PV capacity and growing awareness of intelligent O&M, demand for soiling sensors rises prominently as soiling-induced generation losses remain a critical unaddressed issue, especially in arid, industrial, and coastal regions. Traditional calendar-based cleaning is inefficient and costly, creating strong market need for data-driven, precision monitoring solutions that optimize cleaning cycles, reduce water and labor waste, and improve power output consistency. Significant business opportunities lie in developing high-precision, low-cost sensor

models for diverse application scenarios, integrating AI-based loss prediction and cleaning recommendation algorithms, partnering with PV EPCs, O&M service providers, and inverter manufacturers for bundled solutions, and penetrating emerging solar markets with underdeveloped monitoring infrastructure, while compliance with international standards further enhances product competitiveness in the fast-growing renewable energy monitoring segment.

This report studies the global Solar Module Soiling Sensor production, demand, key manufacturers, and key regions.

This report is a detailed and comprehensive analysis of the world market for Solar Module Soiling Sensor and provides market size (US\$ million) and Year-over-Year (YoY) Growth, considering 2025 as the base year. This report explores demand trends and competition, as well as details the characteristics of Solar Module Soiling Sensor that contribute to its increasing demand across many markets.

Highlights and key features of the study

Global Solar Module Soiling Sensor total production and demand, 2021-2032, (Units)

Global Solar Module Soiling Sensor total production value, 2021-2032, (USD Million)

Global Solar Module Soiling Sensor production by region & country, production, value, CAGR, 2021-2032, (USD Million) & (Units), (based on production site)

Global Solar Module Soiling Sensor consumption by region & country, CAGR, 2021-2032 & (Units)

U.S. VS China: Solar Module Soiling Sensor domestic production, consumption, key domestic manufacturers and share

Global Solar Module Soiling Sensor production by manufacturer, production, price, value and market share 2021-2026, (USD Million) & (Units)

Global Solar Module Soiling Sensor production by Measurement Principle, production, value, CAGR, 2021-2032, (USD Million) & (Units)

Global Solar Module Soiling Sensor production by Application, production, value, CAGR, 2021-2032, (USD Million) & (Units)

This report profiles key players in the global Solar Module Soiling Sensor market based on the following parameters - company overview, production, value, price, gross margin, product portfolio, geographical presence, and key developments. Key companies covered as a part of this study include Kipp & Zonen, Campbell Scientific, Atonometrics, Fracsun, Seven Sensor, Entec Solar, Rika Sensor, EKO Instruments, sun-X GmbH, etc.

This report also provides key insights about market drivers, restraints, opportunities,

new product launches or approvals.

Stakeholders would have ease in decision-making through various strategy matrices used in analyzing the World Solar Module Soiling Sensor market

Detailed Segmentation:

Each section contains quantitative market data including market by value (US\$ Millions), volume (production, consumption) & (Units) and average price (US\$/Unit) by manufacturer, by Measurement Principle, and by Application. Data is given for the years 2021-2032 by year with 2025 as the base year, 2026 as the estimate year, and 2027-2032 as the forecast year.

Global Solar Module Soiling Sensor Market, By Region:

United States

China

Europe

Japan

South Korea

ASEAN

India

Rest of World

Global Solar Module Soiling Sensor Market, Segmentation by Measurement Principle:

Optical Transmittance Type

Reference-Cell Comparison Type

Twin-Module Comparison Type

Image-Based Detection Type

Others

Global Solar Module Soiling Sensor Market, Segmentation by Measurement Accuracy Level:

Standard Accuracy Type: 3%5% Soiling Loss

High Accuracy Type: 1%3% Soiling Loss

Precision Accuracy Type: 1% Soiling Loss

Others

Global Solar Module Soiling Sensor Market, Segmentation by Cleaning Method:

Manual-Cleaning Type

Automatic-Cleaning Type

Maintenance-Free Type

Global Solar Module Soiling Sensor Market, Segmentation by Application:

Residential

Commercial

Industrial

Agricultural

Others

Companies Profiled:

Kipp & Zonen

Campbell Scientific

Atonometrics

Fracsun

Seven Sensor

Entec Solar

Rika Sensor

EKO Instruments

sun-X GmbH

Key Questions Answered:

1. How big is the global Solar Module Soiling Sensor market?
2. What is the demand of the global Solar Module Soiling Sensor market?
3. What is the year over year growth of the global Solar Module Soiling Sensor market?
4. What is the production and production value of the global Solar Module Soiling Sensor market?
5. Who are the key producers in the global Solar Module Soiling Sensor market?
6. What are the growth factors driving the market demand?

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