

# PV Soiling Measurement

Model ES-DC1



## Main features

- New generation of multi-frequency blue light diffuse scattering closed-loop technology, with its active light source detection method, is unaffected by day or night.
- The small panel uses solar industry-standard materials, making it waterproof, moisture-proof, and corrosion-resistant.
- Strong compatibility and enables data sharing. It can use as a standalone dust monitoring system or into SCADA system.
- No maintenance is required; simply clean it in the same way when cleaning the photovoltaic modules.

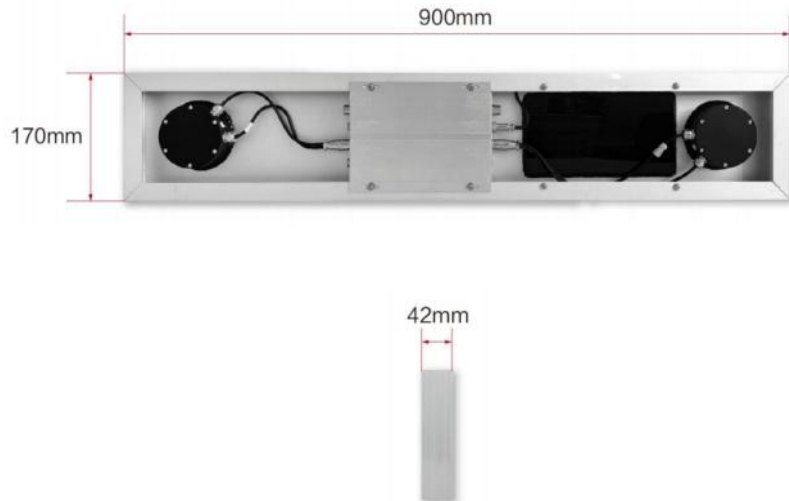
## Introduction

For photovoltaic (PV) power generation systems operating for extended periods, dust accumulation on solar panels directly impacts power generation efficiency. Dust on the panel surface reflects, scatters, and absorbs solar radiation, significantly reducing solar transmittance and consequently decreasing the amount of solar radiation received by the panel, thus lowering the output power.

The ES-DC1 PV soiling dust monitoring system is primarily used in PV arrays within solar power plants, installed on the frame of the PV panels. This system monitors dust accumulation on the power plant surface in real time, providing a scientific basis for cleaning and maintenance through intelligent data analysis. Suitable for PV power plants of all sizes, whether large centralized or distributed, it effectively improves power generation efficiency and reduces operation and maintenance costs, making it an indispensable intelligent management tool for the PV industry.

## Dimension

Unit:mm



## Specification

Product Parameters	Parameter Description	Remark
Contamination Ratio	Dual sensor value 50~100%	
	Measurement range 90~100%	Measurement accuracy $\pm 1\% + 1\%FS$ of reading
	Measurement range 80~90%	Measurement accuracy $\pm 2\%$
Contamination Ratio Measurement Accuracy	Measurement range 50~80%	Measurement accuracy $\pm 5\%$ , Processed by internal sophisticated algorithms
Stability	Better than full range by 1% (per year)	
Backplane Temperature Sensor	Measurement range: -50~150°C Accuracy: 0.2°C Resolution: 0.1°C	Optional
GPS Positioning	Operating voltage: 3.3V-5V Operating current: 40-80mA Positioning accuracy: Average 10m	Optional
Output Method	RS485 Modbus	
	Linked Output (Passive Normally Open Contact)	Generally used to connect cleaning equipment, relay
Alarm threshold	Upper and Lower Thresholds Can Be Set	
Operating voltage	DC12V(Permissible Voltage Range DC9~30V)	
Current range	70~200mA @DC12V	
Maximum power consumption	<2.5W@DC12V	Low power design
Operating temperature	-40°C ~ +60°C	
Operating humidity	0 ~ 90%RH	
Weight	3.5Kg	Net weight
Dimensions	900mm*170mm*42mm	Net size
Sensor cable length	20m	

## Order guide

ES-DC1	Dust monitoring system		
	CODE	Signal output	
	S	RS485	
	L	Linked Output (Passive Normally Open Contact)	
		CODE	Optional functions
		T	Backplane Temperature Sensor
	G	GPS Positioning	
ES-DC1	S	-	Order example