



RK210-03 Dust Monitoring System



Overview

The accumulation of soiling on the glass surfaces of solar modules is a primary factor influencing the power generation efficiency of photovoltaic (PV) power plants. A soiling monitoring device employing blue-light pollutant measurement technology can be readily installed within the PV array and seamlessly integrated into the power plant management system. This device, mounted on the frame of the PV panel, quantifies the reduction in sunlight reaching the modules by measuring the proportion of pollutants (Soiling Ratio, SR). This functionality enables operations and maintenance personnel to determine when pollutant levels reach critical thresholds and assess whether initiating the cleaning process is necessary. The device requires minimal maintenance, with only periodic cleaning of its external components needed. Given the varying soiling rates across different areas of large-scale PV power plants, compliance with the IEC 61724-1 standard necessitates multi-point measurements. Compared to conventional solutions, this product offers significantly reduced procurement, installation, and maintenance costs, enhancing its cost-effectiveness.

Features

Continuous optical measurement	24-hour monitoring
Multi filter technology	High monitoring sensitivity
Closed loop optical structure	Temperature compensation
Clean at the same time as photovoltaic panels	On-site calibration

Technical Parameter

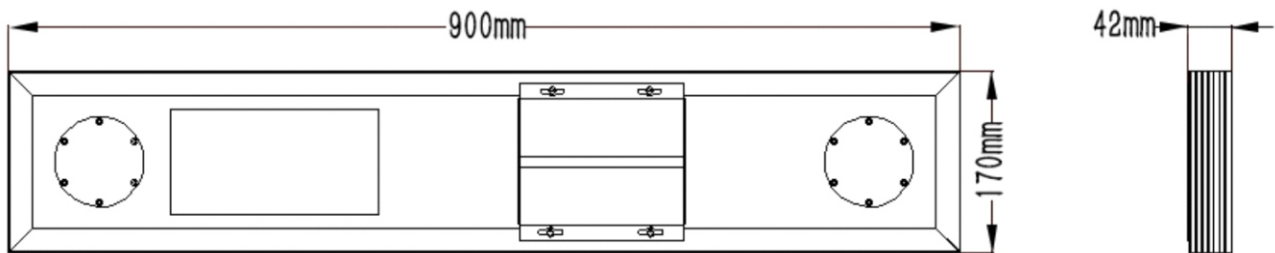
Item	Technical Specification	Remark
Technical principles	Continuous multi frequency blue light diffuse scattering closed-loop technology	
Execution standard	IEC61724-1:2017	
Soiling ratio (SR) range	100% - 50%	SR = 100-TL(Transmission Loss)
Accuracy	± 1%	90-100%
	± 3%	80-90%
	± 5%	50~80%
PV module temperature	Principle:PT100	Optional
	Measurement range : - 50~150°C	
	Accuracy: ± 0.5° C Resolution: 0.1°C	
GPS	Positioning accuracy: 10m	Optional
Output	RS485	Optional
	Relay	
Communication	Modbus-RTU	
Supply	12~24VDC	
Maximum power consumption	<2.5W @DC12V	Low-power design
Alarm threshold	Can set upper and lower threshold values	

Technical Parameter

Item	Technical Specification	Remark
Stability	$\pm 1\%$ /year	
Operating environment	-40°C-+60°C@0-90%RH	
Weight	3.5kg	Net weight
Size	900 * 170 * 42mm	
Cable length	20m	
Ingress protection	IP65	
Storage condition	10°C-60°C@20%-90%RH	

Dimensions

Unit:mm

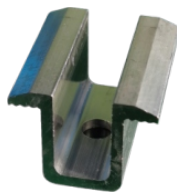


Installation

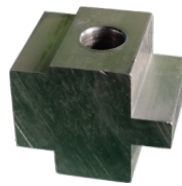
1. Installation Accessories Description



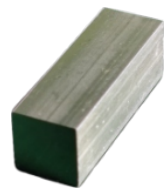
4×M8×70mmHex Screws



4×Dust Monitoring
Mounting Bracket Type A



4 × Dust Monitoring
Mounting Bracket Type C



4 × Dust Monitoring
Mounting Bracket Type D



4 × M8 Flat Washers

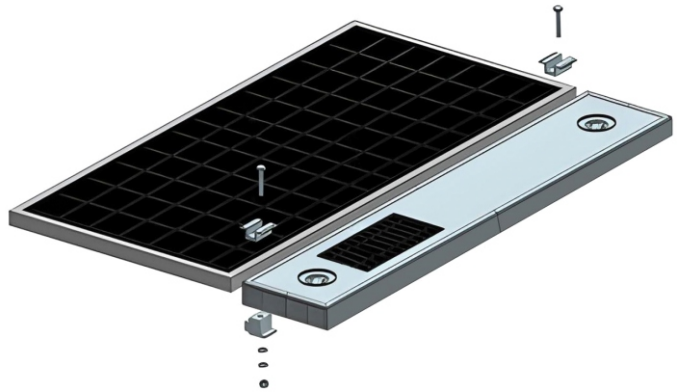
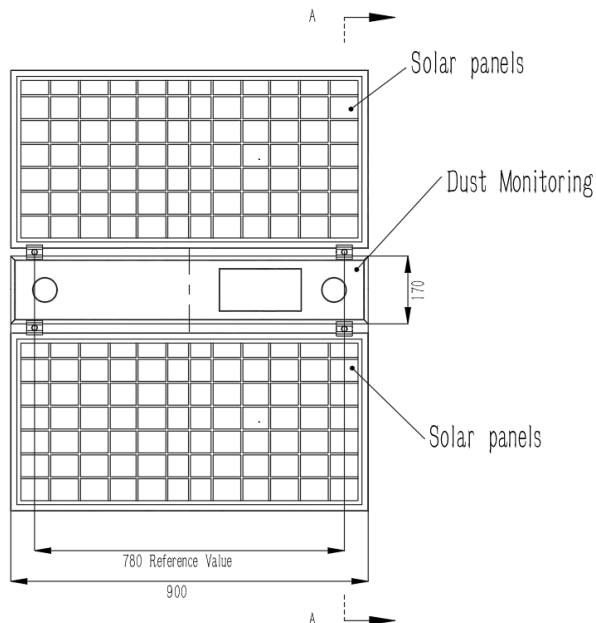


4 × M8 Spring Washers



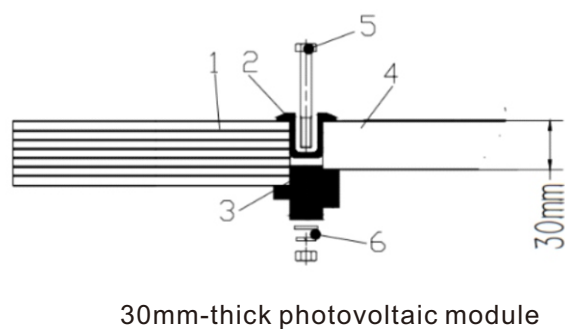
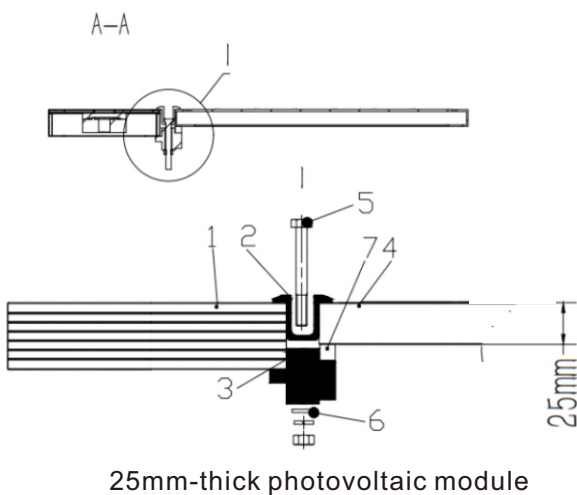
4 × M8 Hex Nuts

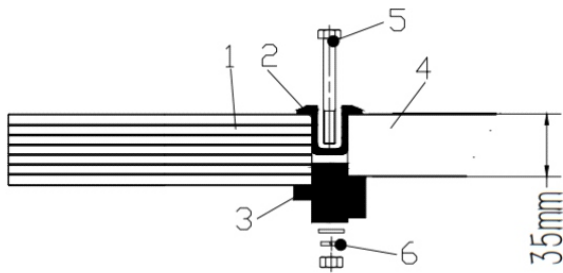
2. Installation Diagram



3. Installation methods for solar panels with varying thicknesses

Installation Diagram for 25, 30, 35mm-Thick Solar Panels

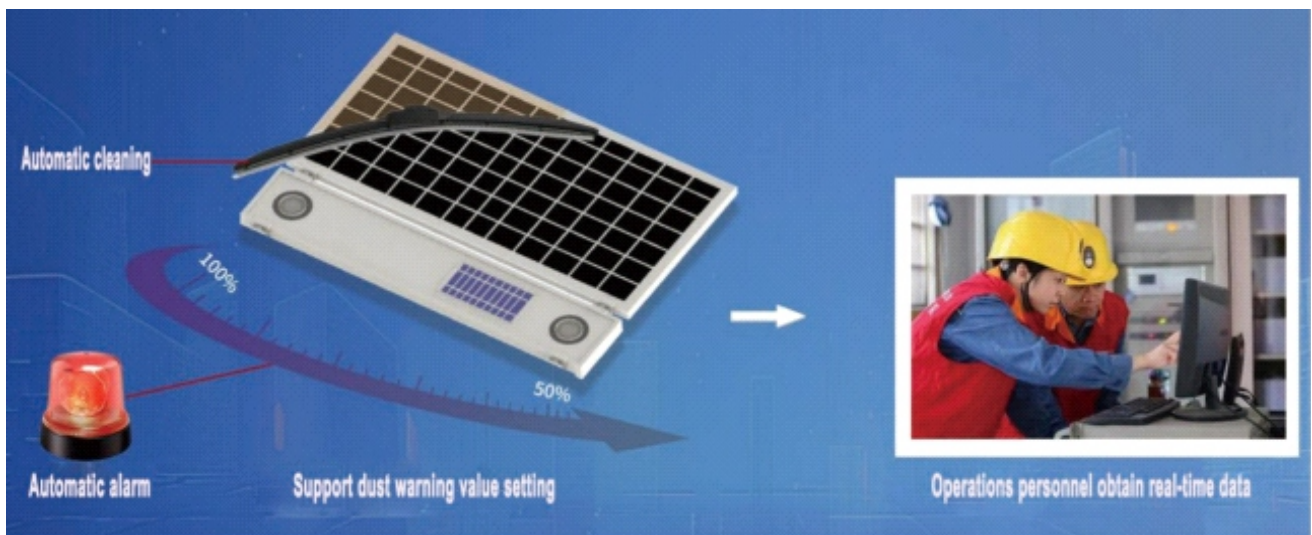




35mm-thick photovoltaic module

1	Dust Monitoring System	5	M8×70mmHex Screws
2	Dust Monitoring Mounting Bracket Type A	6	M8 Hex Nut, M8 Flat Washer, M8 Spring Washer
3	Dust Monitoring Mounting Bracket Type C	7	Dust Monitoring Mounting Bracket Type D
4	Solar panels		

Dust Threshold Warning Linkage



Revision time	Reviser	Current Version	Remarks
20250404	Lee	V5.0	