



DUST MONITORING SENSOR MODEL NO: HS-SMS012



PRODUCT OVERVIEW

The HS-SMS012 is a precision dust monitoring sensor specifically designed for photovoltaic (PV) solar power plants. It continuously measures transmission loss caused by dust and contaminants on solar panel glass surfaces, providing real-time data on cleanliness levels and system efficiency impact.

KEY APPLICATION

- Installed on photovoltaic panel frames
- Measures dust accumulation impact on light transmittance
- Optimizes cleaning schedules and maintenance operations
- Supports compliance with IEC 61724-1 specifications

TECHNICAL SPECIFICATIONS

DETECTION SPECIFICATIONS

Parameter	Specification
Detection Method	Active blue light emission with continuous multi-frequency modulation
Measurement Range	50% to 100% cleanliness
Resolution	0.1%
Light Source	Blue LED (UV-rich environment stable)
Interference Resistance	High immunity to external light sources and sunlight

ENVIRONMENTAL SPECIFICATIONS

Parameter	Specification
Ambient Temperature	-20°C to +80°C
Backplane Temperature (Monitored)	-60°C to +100°C
Operating Humidity	0% to 100% RH
IP Rating	IP65 (Waterproof)
Installation Orientation	Any angle (0° to 180°)



ELECTRICAL SPECIFICATIONS

Specifications	Parameters
Power Supply	12V DC $\pm 10\%$
Maximum Power Consumption	<5W
Communication Protocol	RS485 Modbus
Baud Rate Options	2400, 4800, 9600, 19200, 57600, 115200 bps
Default Modbus Address	1 (configurable 0-255)
Communication Distance	Up to 1200m (RS485)

OUTPUT CHANNELS

Channel	Parameter	Unit	Data Range	Resolution
01H	Sensor 1 Cleanliness	%	50-100	0.1%
02H	Sensor 2 Cleanliness	%	50-100	0.1%
03H	Average Cleanliness	%	50-100	0.1%
04H	Backplane Temperature	$^{\circ}\text{C}$	-60 to +100	0.1 $^{\circ}\text{C}$
05H	Photovoltaic Cell Voltage	V	0-9	0.1V

SENSOR FUNCTIONS

STANDARD FEATURES

- **Real-time Dust Monitoring:** Continuous measurement of panel surface cleanliness
- **Temperature Compensation:** Automatic compensation for ambient temperature variations
- **Installation Angle Output:** Reports solar panel tilt angles (X and Y axes)
- **Inclination Monitoring:** X-axis and Y-axis angle detection (0 $^{\circ}$ to 180 $^{\circ}$)
- **Day/Night Operation:** Active light emission allows 24/7 operation regardless of sunlight
- **No Maintenance Required:** Only needs cleaning synchronized with module cleaning
- **Alarm Thresholds:** Configurable cleanliness alarm thresholds for each channel

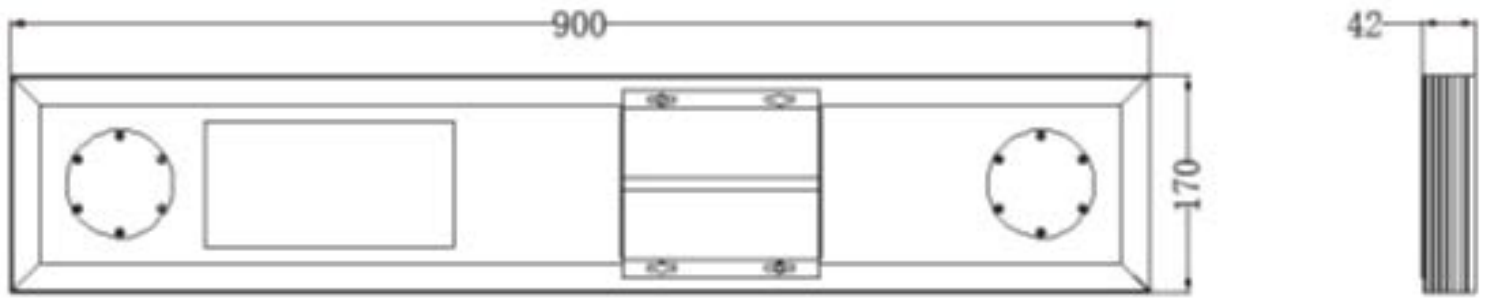




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HEYSENSE



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

