

# Weather Monitoring Station



**Our Weather Monitoring Station (WMS) automatically monitors site meteorological conditions and photovoltaic panel temperature in real-time, transmitting sensor's data to the Logics PowerAMR IoT based monitoring platform.**

The all-in-one weather monitoring station contains the essential environmental sensor set needed for solar monitoring and smart farming.

The expanded sensor set enables plant management across a broad range of plant sizes.

The all-in-one weather station reduces the installation, support and maintenance cost while improving the robustness and manageability of the PV plant monitoring solution/ smart farming.

## Key Components

The expanded sensor set enables plant management across a broad range of plant sizes & requirement.

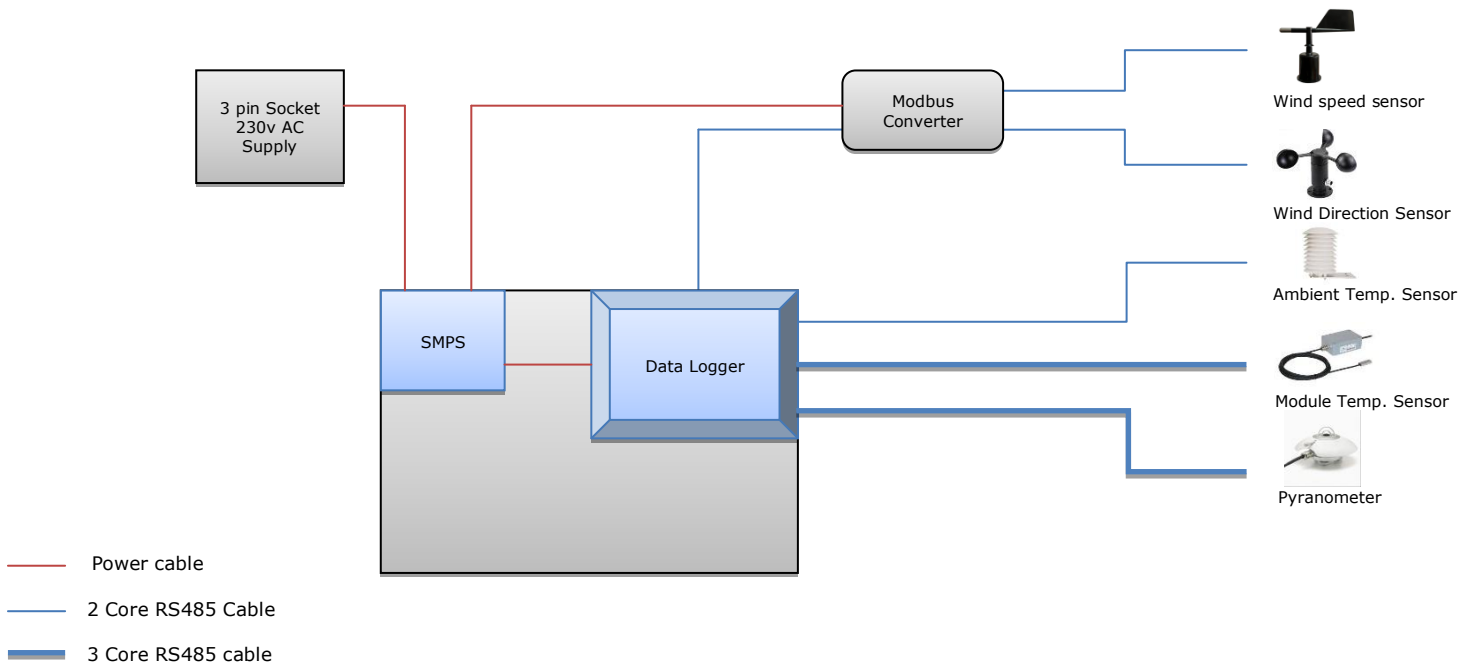
The WMS is delivered ready for installation and requires the installer to mechanically mount the sensors on a Mounting Stand, Insert SIM card in the data logger and connect with power and communication cable. The key components of WMS include-

- Weather sensors & accessories
- Tripod Stand
- Data Logger set
- IoT Platform

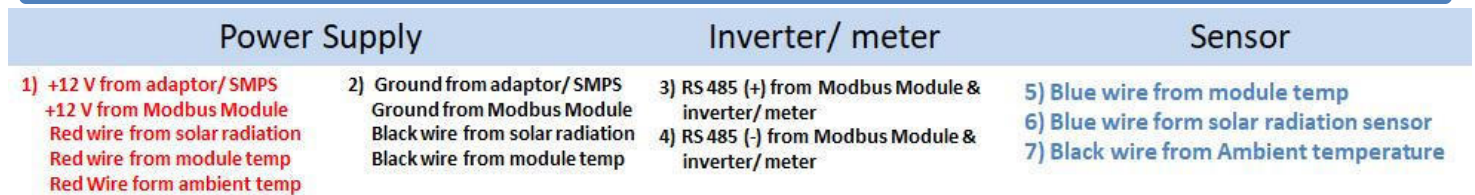
## Key Features

- WMS supports multiple sensor set: ambient temperature, solar irradiance (Pyranometer), back of module temperature, wind sensors, rain gauge , Humidity sensor, Air pressure sensor.
- Compatibility with 7 Sensors
- No on-site configuration, calibration or any software installation is required
- GSM/ LAN/ WiFi supported Data Logger with Inbuilt memory
- Plug and play system

## System Architecture



## Connection Diagram of WMS and Data Logger



## Technical Specifications

### Technical data and types

#### Sensors

Ambient temperature	Range: 0°C to 100°C, Accuracy +/- 0.5°C
PV panel temperature	Range: 0°C to 100°C, Accuracy +/- 0.5°C
Solar Radiation sensor	Range 0 to 1800 W/m2 Accuracy +/- 5% Temperature Range -40°C to 65°C
Wind Speed Sensor	Range 0 to 250km/h (0 to 69m/s) Sensor Type: Three Cup Accuracy +/- 3% Start wind Speed 0.5m / s Temperature range -40°C to 65°C
Wind Direction Sensor	Range 0-360 degrees Accuracy +/-3% Temperature range -40°C to 65°C Sensor Type: Wind vane potentiometer Type

### WMS DATA LOGGER SPECIFICATIONS

#### Communication

Serial port	RS-485 2 wire, Modbus RTU,
Recommended cable	Cat. 6/ RS485/ orequivalent

#### Power supply

DC power supply input	8-32 VDC
Supply Current	0.08A at 12 VDC

#### Compliance

Humidity	0 to 100% Condensing
Enclosure	IP 65

#### Physical parameters

Dimensions	105mmx95mmx24mm
Weight	160gm
Operating Temperature	-10°C to 55°C

#### Mounting Stand

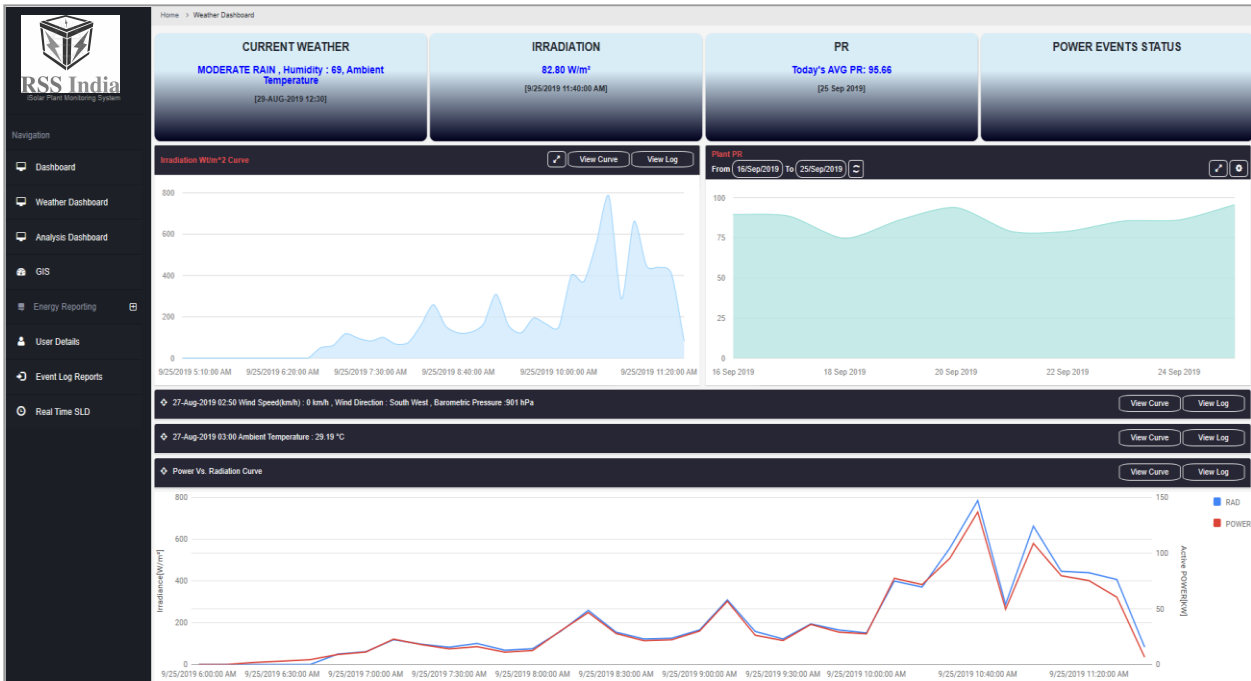
Material Type	MS, Power coated
Stand Type	Tripod
Height	8 feet

#### Warranty

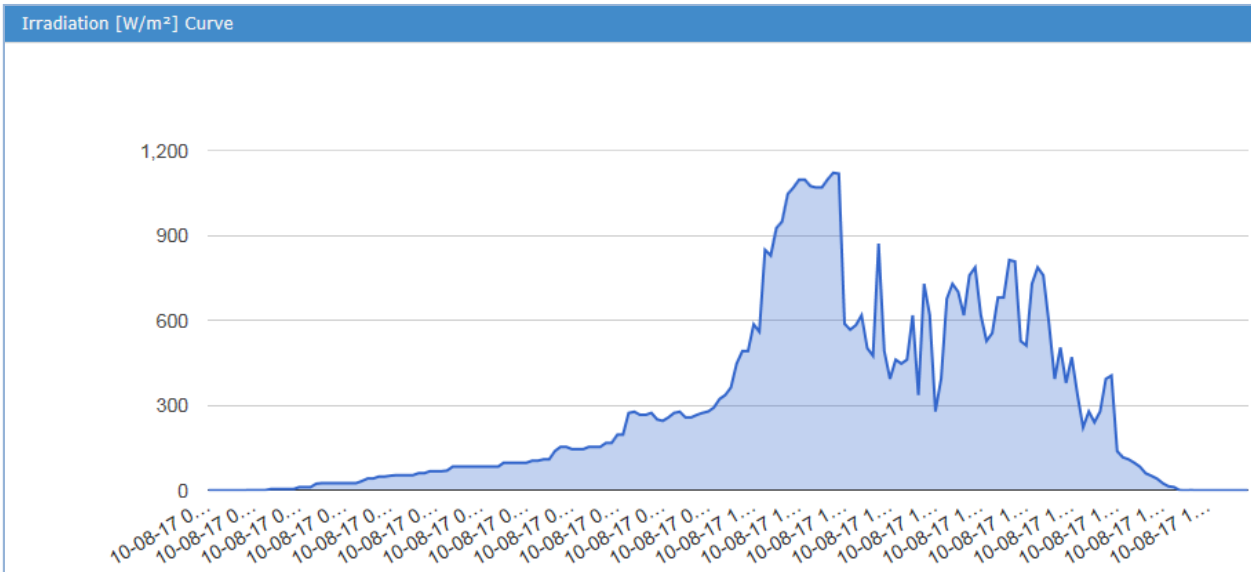
Standard warranty	1 year
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WMS IoT Platform

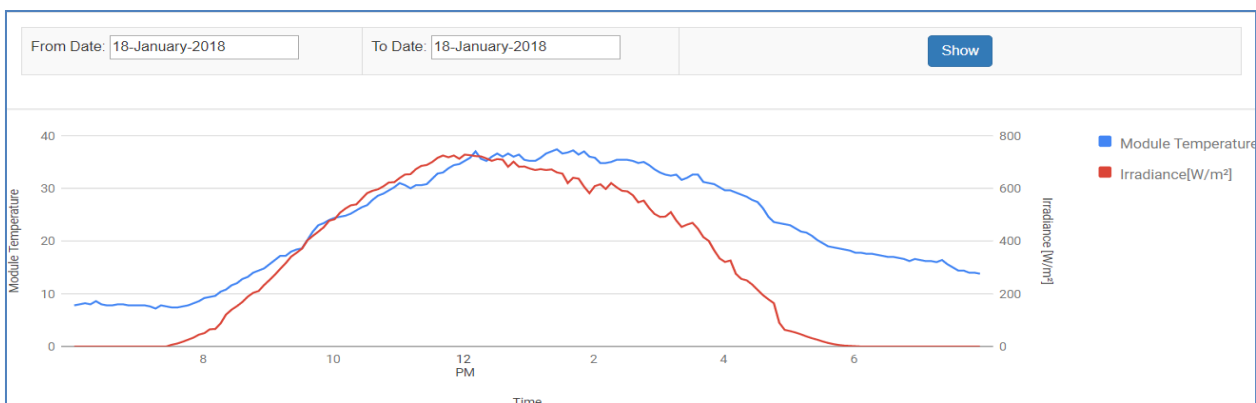
WMS Dashboard



Irradiation Curves



Intelligent Analysis & Multiple graphs comparison



**Sensors Installation**

**Solar Radiation Sensor/ Pyranometer**

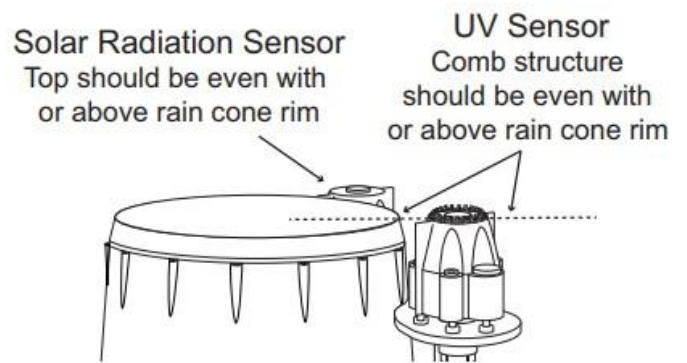
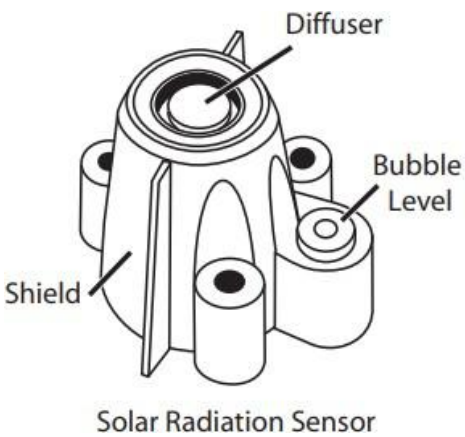
Pyranometer is to be mounted in an easy-to-reach location in order to clean the dome regularly and carry out maintenance. At the same time, make sure that no buildings, constructions, trees or obstructions exceed the horizontal plane where the pyranometer lies. If this is not possible, select a site where obstructions in the path of the sun from sunrise to sunset do not exceed 5 degrees of elevation. N.B The presence of obstructions on the horizon line affects significantly the measurement of direct irradiance

Pyranometer is to be located far from any kind of obstruction, which might reflect sunlight (or sun shadow) onto the pyranometer itself.

The sunlight sensor must be installed at the same azimuth and tilt angle than the PV array .

**Mounting**

- Using the bubble level on the sensor as a guide, adjust the sensor until it is level by tightening or loosening the screws. The top of the Solar Radiation sensor should be even with or slightly above the rim of the rain cone. The entire comb structure of the UV Radiation sensor should be above the rim of the rain cone
- Final leveling of the sensor(s) should be done with the ISS mounted in its operating location
- Ensure that the cables are free of crimps. Secure them to the support tubes with the provided cable ties so that they will not fray in the wind.
- Shade the sensor and make sure the reading changes



## Ambient Temperature sensor

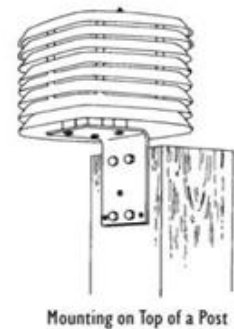
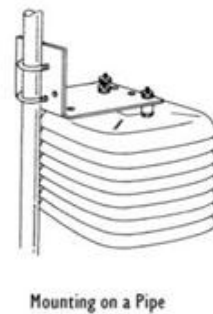
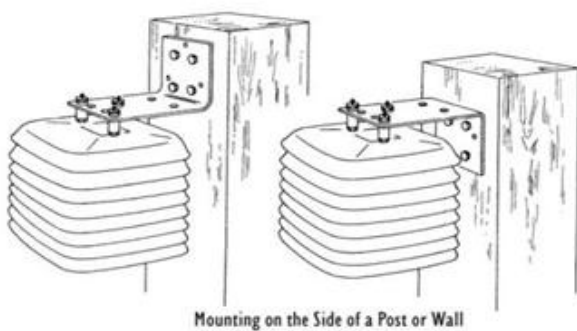
The Ambient Temperature Sensor comes factory-assembled inside the radiation shield. The radiation shield bracket can be mounted to a pipe (1.0 - 2.0 in. diameter), using the supplied U-bolt.

The radiation shield can be installed anywhere in the vicinity of the PV array.

It is recommended to place the Ambient Temperature Sensor on the north side (in the northern hemisphere) of the array, otherwise you must provide array shading setback

### Mounting

- The Solar Radiation Shield may be mounted in three orientations.
- On the side of a wooden post or a wall.
- On a metal pipe with outside diameter between 1 in. and 1-1/4 in. (25 mm and 31 mm) On top of a wood post.



## Module Temperature Sensor

This sensor is designed to attach directly to any solar panel. When placed on the center back side of the panel, it accurately measures the temperature of the panel.

Prior to installation of the PV temperature sensor onto the PV panel, the installation area of the panel back should be thoroughly cleaned. This cleaning will ensure a good bond between sensor and panel and allow for accurate panel temperature readings.

After cleaning, peel off the protective adhesive tape on the temperature sensor and stick it onto the back of the panel. Firmly press the sensor into place.



## Mounting

- Select a PV module that remains non-shaded throughout the day.
- Peel the backing from the adhesive tape and press the sensor firmly against the surface.
- Do not attempt to extend or shorten the pre-assembled 2.5 m cable.
- The module temperature sensor is affixed to the back of the PV module.
- Tie the sensor cable off in a way that does not pull on the sensor
- It is recommended to fix the sensor and the cable with an additional adhesive tape.



## Wind Speed Sensor

The wind speed sensor comes in three different parts. We have the sensor body, the anemometer cup wheel and an Allen key to mount the cup wheel on the sensor body. There are different ways to mount the sensor.

When selecting your mounting system, take into consideration that you will occasionally need to access the anemometer for preventive maintenance and possible component replacement.

The goal of installing a wind speed meter (anemometer) is to position it in a location where the wind flows freely and is not influenced by nearby objects.

For the most accurate wind speed readings, mount the sensor as the highest object for 50 feet in all directions.

## Mounting

- Cups should be on the top of the sensor.
- Mount vertically.



## Wind Direction Sensor

The goal of installing a wind direction meter is to position it in a location where the wind flows freely and is not influenced by nearby objects.

For the most accurate readings, mount the sensor as the highest object for 50 feet in all directions.

## Mounting

- Allow sufficient clearance for the wind sensor. Install the wind sensor away from buildings or any other objects that might affect the airflow
- Try to make the sensors the highest object around. 7 feet or more above the surrounding obstructions is best
- The sensor must be mounted in an upright position; otherwise, water can enter the sensor and destroy it



## Tools and Materials Needed

- Wrench or pliers
- Wire cutters and stripper
- Multimeter
- Drill with 3/16 in drill bit (4.7 mm) to drill pilot holes
- Adjustable wrench or 11/32 in. wrench and 7/16 in
- Electrical Tapes to cover the wire

We pursue a policy of continuous research and product development, Specifications and features are subject to change without notice

