

# Irradiance measurement – Pyranometer Model SP-100

WIKA data sheet PE 81.02

## Applications

- To measure irradiance in W/m<sup>2</sup>, resulting from radiant fluxes incident upon a plane surface in Solar Monitoring for PV, Solar Energy Research & Development, Weather and Agriculture monitoring applications
- Advance Meteorological & climate networks

## Special features

- Fully compliant with ISO 9060:2018 spectrally flat Class A specifications
- Precision Thermopile Sensor for high sensitivity
- Analog & digital output (4- 20 mA) for easy integration into data acquisition systems of Modbus RTU serial communication
- IP67 to suit harsh environments



Pyranometer, model SP-100

## Description

**Irradiance measurement – Pyranometer (SP series)** The Model SP-100 Pyranometer is an advanced, high-precision instrument designed for the measurement of global solar irradiance on a horizontal plane. It is engineered to meet the most stringent requirements for accuracy and reliability, making it ideal for use in meteorological networks, solar energy applications, and environmental monitoring.

The pyranometer measures the solar radiation received from the entire hemisphere, integrating the direct, diffuse, and reflected solar energy. It complies with ISO 9060:2018 standards, spectrally flat Class A specifications. Model SP-100 has 180° hemispherical field of view ensuring comprehensive coverage of incident solar radiation.

This ensures that the pyranometer accurately measures all relevant components of solar radiation. The Model SP-100 features a weatherproof, corrosion-resistant housing made from anodized aluminium and UV-stabilized acrylic domes. The housing is rated IP67, providing excellent protection against dust, water, and environmental pollutants.

The pyranometer comes with a levelling screw and a built-in spirit level to ensure proper alignment of the sensor and allows for easy installation on a variety of surfaces, including poles, tripods, and flat surfaces.

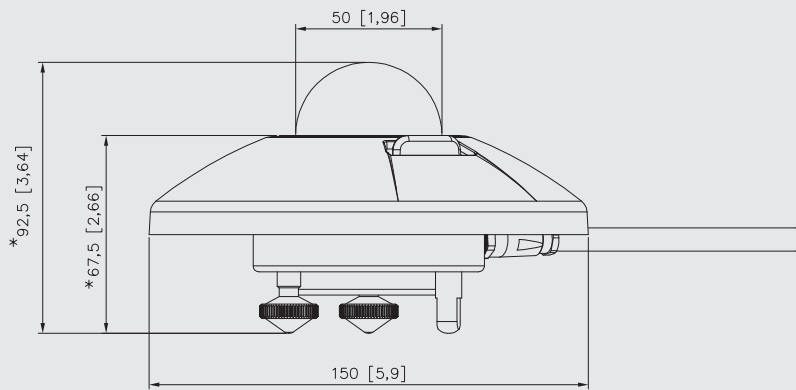
## Specifications

Model SP-100 Pyranometer	
Classification to ISO 9060:2018	Class A
Spectral Range	200 to 3000 nm
Sensitivity	7 to 14 $\mu$ V/W/m <sup>2</sup>
Supply voltage	5 to 30V DC
Expected output range (-200 to 2000 W/m <sup>2</sup> )	0 to 1V
Expected output range (0 to 2000 W/m <sup>2</sup> )	4 to 20mA
Serial output	RS485 Modbus ® RTU
Maximum operational irradiance	4000 W/m <sup>2</sup>
Response time (63%)	<4s
Response time (95%)	< 5s
<b>Zero offsets (unventilated)</b>	
(a) Thermal radiation (at 200 W/m <sup>2</sup> )	< 7W/m <sup>2</sup>
(b) Temperature change (5 K/h)	< 2W/m <sup>2</sup>
(c) Total zero offset	< 10W/m <sup>2</sup>
Additional signal processing errors	<2W/m <sup>2</sup>
Non-stability (change/year)	< 0.8%
Non-linearity (100 to 1000 W/m <sup>2</sup> )	< 0.5%
Directional response (up to 80° with 1000 W/m <sup>2</sup> beam)	< 10W/m <sup>2</sup>
Clear sky GHI spectral error	< 0.5%
Tilt response (0° to 90° at 1000 W/m <sup>2</sup> )	< 0.5%
Temperature response	< 1% (-10°C to +40°C)
Field of view	180°
Accuracy of bubble level	< 0.1°
Temperature sensor output	Pt-100
Detector type	Thermopile
Operating and storage temperature range	-40°C to +80°C
Humidity range	0 to 100%
MTBF (Mean Time Between Failures)	> 10 years
Ingress Protection (IP) rating	IP67
Software, Windows™	WIKA solar power
Power consumption	<2W
Surge protection	EN 61000-6-2 (Industrial Environments) EN 61000-4-5 (Surge Immunity Testing) 2 +/- 1 kV
Recalibration Duration	2 years
Interconnecting cable	10 m

# tested at DAVOS(WRR)

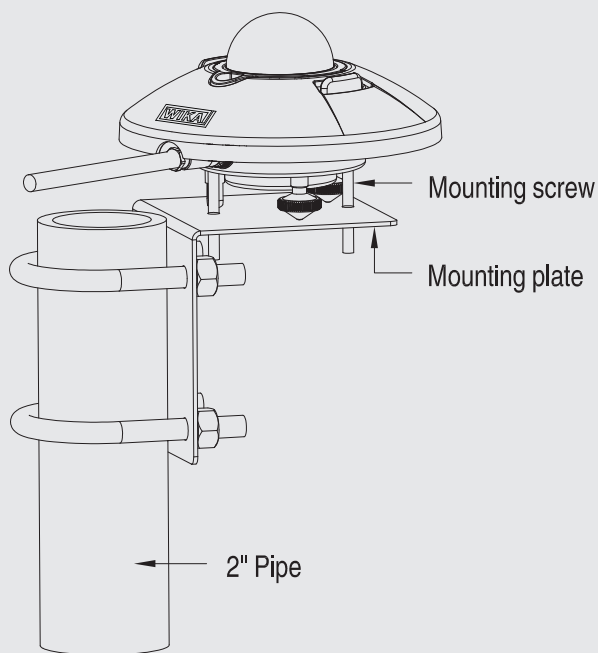
# tested at NISE(autonomous R&D institute under Ministry of New and Renewable Energy)

## Dimensions in mm [inch]

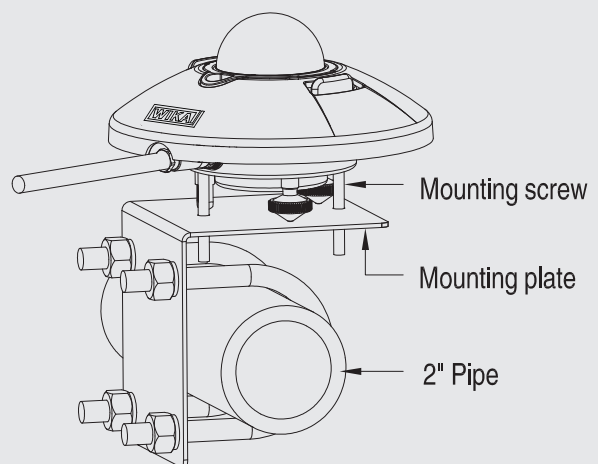


\* Will change with respect to height adjustment through adjustable leg

### Pipe Mounting – Vertical



### Pipe Mounting – Horizontal



# 2" pipe mounting (for reference only) mounting bracket will be in customer scope

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**WIKAI Instruments India Pvt. Ltd.**  
128 SIDCO North Phase  
Ambattur Industrial Estate, Chennai 600 098  
Tel. +91 44 2625 2017 / 2018 / 9840919318  
switch.sales@wika.com  
www.wika.co.in