PROMINENT SOLUTION PROVIDER IN SOLAR SEGMENT FOR MONITORING AND CONTROL NEEDS

SOZ03- Irradiance Sensor Datasheet & Installation Guide

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SOZ03 Introduction

SOZ03 is Mono Crystalline Silicon Solar Cell (50 x 50 mm²) laminated under special toughened Glass for long-term usability, This comes with weatherproof enclosure and a PG Gland for connection.

Features

- ✓ NES – Germany make
- ✓ High precision shunt resistor directly soldered to the terminals of the cell
- ✓ Linear output signal in the range 0...1500 W/m²
- ✓ Individual calibration of each sensors in the natural sunlight close to AM 1,5 spectrum by
- ✓ means of a compatible calibrated reference cell
- ✓ Accuracy of monthly sums compared to a W.M.O. class 1 Pyranometer
- ✓ According to ISO 9060: better ±5 % under standard conditions.
- ✓ Very small drift of <0.3 / year (experience since 1989)

Specifications

Type - Mono crystalline Silicon Solar Cell Size
Casing -50x 50 mm² Housing Material UV-resistant PVC plastic IP65
Storage Temperature- -45° to +70°C
Range 0 - 1800 W/m2 (Actual might vary, as per tag/sticker on sensor)
Calibration interval period recommended- 1 Year

Output
MODBUS OUTPUT – RS485 Output in D+ & D- (Optional, for modbus additional Converter is required)
Analog Output - Current output 4-20 mA
Analog Output - Voltage Output 0-5 V

Working Principle

SOZ03 sensor is based on the absorption of electromagnetic radiation by a detector element. The sensor has a detector element that absorbs the electromagnetic radiation and generates a small electrical current. This current is proportional to the intensity of the radiation and can be measured and used to calculate the irradiance.
The SOZ03 sensor also has electronic circuitry that amplifies the electrical current generated by the detector element and converts it into a signal that can be read in required output.

INSTALLATION

Location for sensors installation

 The sensor should be placed at a distance from the PV panels in the same level that allows it to accurately measure the intensity of sunlight that is absorbed by the PV cells. It is to be mounted in an area where there is no obstruction in the path of the sunlight from sunrise to sunset or shadow cast on device by any things as obstructions may affect the measurement of irradiance . sensor should be mounted such that its surface can be cleaned on regular basis and mainly it should be avoided fromdusty locations.

Tools Required
• Adjustable Wrench or pliers
• Wire cutters or stripper
• Multi meter and laptop for rs485 based sensors
• Cable ties and Electrical tape

Mounting

- ➢ Once the basic Installation at the locations chosen is completed, final leveling of the sensor(s) should be done in its operating location. Please note Small errors in alignment can produce significant errors
- ➢ Try to limit obstructions to below 5 degrees, for minimal effect
- ➢ Make sure that the cables are free of bends and crimps. And the Gland is at the bottom facing down and tightened fully to avoid water inflow
- ➢ post installation, check the readings by covering or shading the sensor to see whether the reading changes accordingly.
- ➢ Final position can be adjusted by adjusting the leveling screws.

Calibration and Reading

In case of MODBUS Output – sensors are pre calibrated and Gives default output.

In case of Analog Output -

- IF **Output is voltage based** : 0 - 5 VDC (0- 1800 W/m2)
- IF **Output current based:** 4-20mA (0-1800 W/m2)

$$W/m2 = 112.5 \ (Output \ in \ mA - 4)$$

Caution: Wipe the surfaces of the shield with a damp cloth to remove dirt and dust on regular basis and also check for the loose connections or tilt angle of time to time basis.

NOTE
These sensors are not manufactured or owned by esenz and are only resold. Warranty of this sensor is as per the terms and conditions of original manufacturer. There may be slight deviation in actual v/c expected value.All the accuracies and technical specs are as per the manufacturer, as this sensor do not come under any class and is of low accuracy compared to class 1 and class 2 sensors. For better accuracy and minimum errors, it's advised to use standard class 1 or 2 sensors