

# Introduction

The RS485 Photosynthetically Active Radiation (PAR) Sensor is designed to measure the amount of light that plants can utilize during photosynthesis. It operates within the **spectral range of 400-700nm**, which corresponds to the light needed for plant growth. The sensor converts sunlight into a voltage signal that is directly proportional to the intensity of the incident radiation, with sensitivity that follows the cosine of the light's angle of incidence. This high-precision sensor is equipped with a specially treated dust cover to prevent environmental interference, ensuring reliable measurements. The sensor supports Modbus-RTU communication via RS485 and operates with a wide DC voltage range of 5-30V, making it compatible with various platforms like [Arduino](#).

## Wide Voltage Range and Easy Integration

The sensor operates with a DC power supply from 5-30V, offering flexibility for integration into diverse systems. It supports RS485 communication using the standard Modbus-RTU protocol, making it simple to interface with Arduino and similar platforms for data collection.

## High Precision and Reliability

The sensor features high-precision photoelectric elements with wide spectrum absorption, ensuring accurate measurements of photosynthetically active radiation (PAR) in the 400-700nm range. Additionally, the sensor's cosine corrector guarantees an accurate response to varying light angles, essential for precise environmental monitoring.

## Durable and Weather-Resistant

Constructed with a metal aluminum shell and rated IP67 for protection against dust and water, the sensor is highly durable and suitable for use in harsh outdoor environments. The specially treated dust cover ensures long-term stability by minimizing the effects of environmental contamination.



RS485 PAR sensor measures photosynthetically active radiation (PAR) for plant photosynthesis.

## Applications

- Agricultural Monitoring: Measuring light intensity for optimizing crop growth and assessing plant health.
- Photovoltaic Systems: Monitoring solar radiation for efficient solar energy generation.
- Environmental and Ecological Research: Collecting data on radiation levels to support environmental studies and ecological conservation efforts.

## Specification

- Power Supply: DC 5-30V
- Working Current:  $<10\text{mA}$
- Output Mode: RS485
- Measurement Range:  $0\text{--}2500\ \mu\text{mol}/\text{m}^2\cdot\text{s}$
- Wavelength Range: 400-700nm
- Accuracy:  $\pm 5\%$  ( $1000\ \mu\text{mol}/\text{m}^2\cdot\text{s}$  @ 550nm, 60%RH, 25°C)
- Resolution:  $1\ \mu\text{mol}/\text{m}^2\cdot\text{s}$
- Response Time: 10  $\mu\text{s}$
- Non-Linearity:  $<\pm 1\%$

- Annual Stability:  $\leq \pm 2\%$
- Cosine Response:  $\leq \pm 10\%$
- Operating Temperature:  $-25^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$
- Protection Level: IP67
- Sensor Cable Length: 20cm
- Adapter Cable Length: 70cm

## Shipping List

- RS485 PAR Sensor x1
- Adapter Cable x1
- Screw Package x1

## Documents

- [Product Wiki](#)