

Technical Datasheet

PAR SENSOR **Photosynthetically Active Radiation** **Atmos SERIES - PAR50**



PAR SENSOR

Photosynthetically Active Radiation

Atmos SERIES - PAR50

The Polwax PAR50 is a high-precision Photosynthetically Active Radiation (PAR) sensor designed to measure light intensity within the 400 to 700 nm spectrum — the key range for photosynthesis. It's built to support agricultural, horticultural, and environmental research applications where light measurement accuracy is essential. With its robust construction and versatile output options, the PAR50 ensures reliable performance in diverse environmental conditions.

The built-in sensor adopts high-precision photoelectric sensing element, which has high spectral responsivity and sensitive response to the spectrum of 400~700nm. A high-quality cosine corrector is used to ensure a standard cosine response, which greatly reduces the measurement error.

Features

- **Accurate Light Measurement**
- **High Accuracy and Stability**
- **Wide Measuring Range**
- **Output Signal : 4 - 20 mA / 0 - 10 V**
- **Rugged Design**
- **Protection Rating: IP65 for outdoor and harsh environment use**
- **Low Power Consumption**
- **Compact and Durable Design**
- **User-Friendly Configuration**
- **Energy Efficient**
- **Integrated Temperature Compensation**
- **Easy Integration**
- **Fast Response Time**
- **Advanced Communication RS-485**



Installation Guide

Select Mounting Location: Ensure the sensor has a clear, unobstructed view of the light source.

Mount Securely: Use the M20 threaded base or mount it flat on a bracket.

Connect Wiring: Match output wiring to the desired signal type (RS485, 0-10V, or 4-20mA).

Calibrate if Needed: For precise scientific studies, periodic calibration may be recommended.



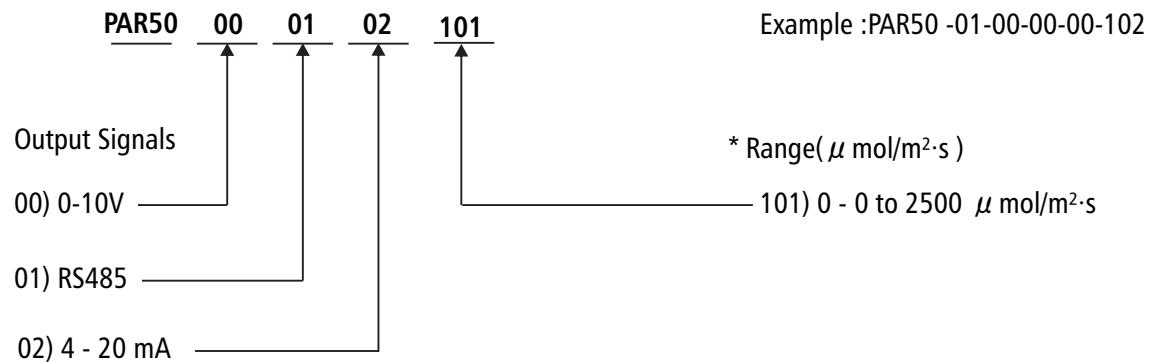


Technical Details

Measurement Range	0 to 2500 $\mu\text{mol}/\text{m}^2\cdot\text{s}$
Accuracy	$\pm 3\%$ Full Scale
Spectral Range	400 to 700 nm
Response Time	≤ 1 seconds
Power Supply	12-24V DC
Output Options	4-20mA, 0-10V, RS485 (Modbus RTU)
Operating Temperature	-40°C to 85°C
Response Time	< 1 second
Ingress Protection	IP65
Housing Material	UV-resistant polymer
Cable Length	3 meters (customizable)
Weight	200 grams
Sensor Body	50mm diameter x 80mm length
Mounting Thread	M20 x 1.5

Model Selection Chart

Polwax PAR50



* Customized Range available on request

Note: All ranges are bi-directional
(Specifications subject to change)

Dimensions

Polwax PAR50



Case Study 1: Boosting Tomato Yield in a Controlled Greenhouse

Client: Green Grow Farms

Challenge: GreenGrow Farms, a commercial tomato grower, faced inconsistent yields due to fluctuating sunlight levels. Their existing light measurement setup lacked accuracy, leading to overuse of supplemental LED lighting and increased operational costs.

Solution: The farm installed Polwax PAR50 sensors in multiple greenhouse zones, connected to their climate control system via RS485.

Results:

- ✓ **Precision Light Control:** The PAR50 provided real-time, high-accuracy PAR readings, allowing growers to adjust LED intensity only when natural light dropped below optimal levels.
- ✓ **Energy Savings:** LED usage dropped by 27%, reducing electricity costs.
- ✓ **Increased Yield:** Consistent light exposure improved plant health and boosted tomato yield by 18%.
- ✓ **Long-Term Reliability:** The sensor performed flawlessly across summer heatwaves and winter chills.



Case Study 2: Enhancing Hydroponic Lettuce Production

Client: FreshLeaf Hydroponics

Challenge: FreshLeaf Hydroponics struggled to maintain consistent growth rates for lettuce crops due to uneven artificial light distribution in their vertical farming system. This resulted in delayed harvest cycles and inconsistent crop quality.

Solution:

Polwax PAR50 sensors were installed at different vertical levels to monitor light intensity variations across the growing shelves. The data was fed into their automation system, enabling dynamic control of LED lighting per shelf.

Results:

- ✓ **Uniform Light Distribution:** Each shelf maintained the optimal light intensity, ensuring even growth across all levels.
- ✓ **Improved Crop Quality:** Lettuce heads grew uniformly in size and color, reducing rejected produce by 22%.
- ✓ **Faster Harvest Cycles:** Consistent light levels accelerated growth, allowing FreshLeaf to harvest 5 days earlier on average.





POLWAX Group has got an experienced, highly-qualified project team conducting extensive R&D operations. Owing to that, goods holding the POLWAX brand feature customer-tailored flexibility and meet requirements of various industries.

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