SpeSense
SpeSense Technologies Inc.

PAR SENSOR / DATA SHEET

SS207-01

Photosynthetically Active Radiation Sensor

A compact PAR sensor for measuring photosynthetically active radiation in the 400–700 nm band. The photoelectric sensing element generates a voltage signal proportional to incident radiation and supports digital or analog signal output according to configuration.

SPECTRAL RESPONSE	MEASUREMENT RANGE	RESOLUTION	ACCURACY
400–700 nm	0–2500 μ mol/m²·s	1 μ mol/m²·s	±5%*

* Accuracy reference condition: 1000 μ mol/m²·s, 550 nm, 60%RH, 25°C.

Key Advantages

- High-precision photoelectric sensing element with broad spectral absorption.
- High-quality cosine corrector supports standard cosine response.
- Integrated bubble level and adjustment handwheels simplify field levelling.
- Aluminum-alloy housing with IP67 protection rating.

Application Scenarios

- Meteorological observation and environmental monitoring.
- Agricultural research and plant-growth studies.
- Atmospheric pollution and radiation-related research.

MEASUREMENT PRINCIPLE

Technical Principle

The PAR sensor uses a photoelectric sensing principle. Its high-precision sensing element provides broad spectral absorption across 400–700 nm. When illuminated, the element generates a voltage signal proportional to incident radiation, while its response to the incident angle follows the cosine relationship. The dust-resistant cover treatment reduces dust adhesion and helps limit environmental interference with the internal element.

For digital configurations, the sensor supports standard Modbus-RTU communication over RS485. Analog configurations provide 4–20 mA, 0–5 V, or 0–10 V output according to the selected code.

SYSTEM DATA

Technical Specifications

Item	Specification
Power supply	RS485 / 4–20 mA / 0–5 V: 7–30 V DC; 0–10 V: 24 V DC
Output mode	RS485 (standard Modbus-RTU); 4–20 mA current output; 0–5 V voltage

Item	Specification
	output; 0–10 V voltage output
Power consumption	RS485: 0.06 W; 4–20 mA / 0–5 V / 0–10 V: 0.7 W
Operating temperature	−25°C to +60°C
Spectral response	400–700 nm
Measurement range	0–2500 μ mol/m²·s
Resolution	1 μ mol/m²·s
Accuracy	±5% (1000 μ mol/m²·s, 550 nm, 60%RH, 25°C)
Response time	0.1 s
Non-linearity	≤±1%
Annual stability	≤±2%

Note: Values and test conditions are retained from the supplied source table. Output-specific power supply and power consumption apply according to the selected output configuration.

OUTPUT & INTERFACE

Output and Communication

Select the interface according to the host controller and ordered configuration. The sensor provides one of the following output modes.

Output mode	Interface	Source configuration details
Digital	RS485 / Modbus-RTU	Standard Modbus-RTU 485 communication; power consumption 0.06 W.
Analog	4–20 mA / 0–5 V / 0–10 V	4–20 mA, 0–5 V and 0–10 V analog output options; power consumption 0.7 W.

ORDERING INFORMATION

Product Selection

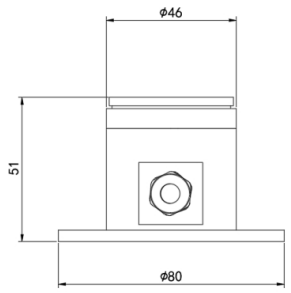
Use the model segments below to specify the output mode and aluminum-alloy housing. The base model is presented under the requested SpeSense model number.

Category	Code	Description
Base model	**SS207-02**	Photosynthetically active radiation sensor
Digital output	**N01-**	RS485 output with standard Modbus-RTU protocol
Current output	**I20-**	4–20 mA current output
Voltage output	**V05-**	0–5 V voltage output
Voltage output	**V10-**	0–10 V voltage output
Housing	**AL**	Aluminum-alloy housing

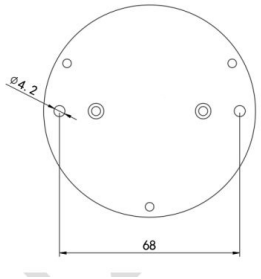
MECHANICAL DATA

Mechanical Dimensions & Installation

The supplied drawings show the cylindrical sensor body, circular mounting plate and principal mounting dimensions. Dimensions are retained from the source material.



Side view: Ø46 mm body, Ø80 mm base, 51 mm height.



Mounting pattern: Ø4.2 mm holes, 68 mm center spacing.

Installation Notes

- Level the unobstructed sensing surface with the integrated bubble level and handwheels.
- Follow the mounting pattern, verify output wiring and keep the cover clean.

Configuration & Support Summary

Select RS485 / Modbus-RTU or analog output for the host controller. AL denotes aluminum-alloy housing. SpeSense supports product selection and technical integration.

CONTACT / SUPPORT

SpeSense Technologies Inc.

SpeSense Technologies Inc.

Add: No. 9 Yuhe Road, Guitang Subdistrict, Yuhua District, Changsha City

Tel: +86-731-85222616

Email: info@spesense.com

Web: www.spesense.com

For product selection, customization, integration and technical support, contact SpeSense Technologies Inc.

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