

SOLAR RADIATION / DATA SHEET

SS207-02

Pyranometer Sensor

Thermoelectric sensor for measuring solar radiation across a 0.3–3 μm spectral range.

Overview

- Uses a thermoelectric sensing element to convert absorbed solar radiation into a temperature-difference EMF.
- A transparent double-layer glass cover provides up to 95% transmittance and helps reduce convection effects.
- Analog and standard RS485 Modbus-RTU output options are available with simple wiring.
- Temperature compensation supports more accurate measurement within the specified range.



Measurement range 0–2000 W/m ²	Spectral range 0.3–3 μm	Resolution 1 W/m ²	Accuracy ±3%
Key Advantages • Thermoelectric sensing element with temperature compensation. • Double-layer glass cover with up to 95% transmittance and surface treatment to reduce dust adhesion. • 0.3–3 μm spectral range, short response time and small error as specified in the source material. • Compact form factor with analog and RS485 output options.		Application Scenarios • Solar-energy utilization and solar-resource monitoring. • Meteorological observation. • Agricultural radiation measurement. • Building-material weathering and atmospheric-pollution studies.	

MEASUREMENT PRINCIPLE

Technical Principle

The thermoelectric sensing element absorbs solar radiation through a high-absorption black coating and converts the resulting thermal effect into a temperature-difference electromotive force. Temperature compensation is provided to support accurate solar-radiation measurement. The double-layer glass cover is described as reducing the influence of air convection and blocking radiation from the outer cover. A scattering and shading ring can be used for diffuse-radiation measurement.



SYSTEM DATA

Technical Specifications

Item	Specification
Power supply	10–30 V DC
Output mode	RS485 (standard Modbus-RTU); 4–20 mA current output; 0–5 V / 0–10 V voltage output
Power consumption	RS485: 0.2 W; 4–20 mA: 0.7 W; 0–5 V / 0–10 V: 0.22 W
Operating temperature	–40°C to +60°C
Operating humidity	0–95%RH, non-condensing
Sensitivity	7–14 $\mu\text{V}\cdot\text{W}^{-1}\cdot\text{m}^2$
Internal resistance	200–400 Ω
Response time (95%)	≤ 30 s
Non-linearity error	$\leq \pm 3\%$
Directional response error	$\leq \pm 30$ W/m ²
Temperature response error	$\leq \pm 3\%$ (–30°C to +50°C)
Angular response error	$\leq \pm 5\%$
Spectral range	0.3–3 μm
Measurement range	0–2000 W/m ²
Resolution	1 W/m ²
Accuracy	$\pm 3\%$
Annual stability	$\leq \pm 3\%$
Cosine response error	$\leq \pm 5\%$
Tilt response error	$\leq 2\%$
Zero drift	≤ 6 W/m ²

Note: Output-specific power consumption values are retained from the supplied source table.

OUTPUT & INTERFACE

Output and Communication

Choose the output mode according to the host controller and installation wiring. The output options below are taken from the supplied source material.

Output mode	Interface	Source configuration details
Digital	RS485 / Modbus-RTU	Standard Modbus-RTU 485 output; power consumption 0.2 W
Analog	4–20 mA / 0–5 V / 0–10 V	4–20 mA current output: 0.7 W; 0–5 V / 0–10 V voltage output: 0.22 W

ORDERING INFORMATION

Product Selection

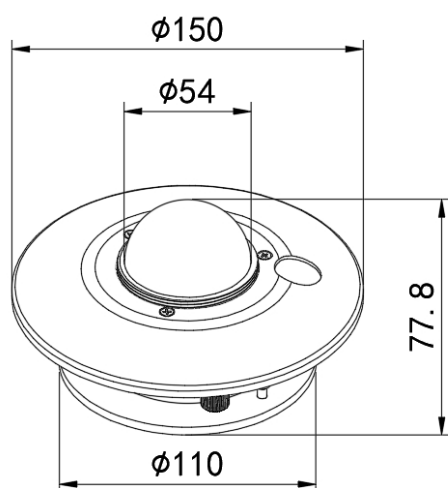
Use the code segments below to specify the output mode and housing. Codes and descriptions are translated from the supplied source table.

Category	Code	Description
Base model	SS207-02	Pyranometer 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

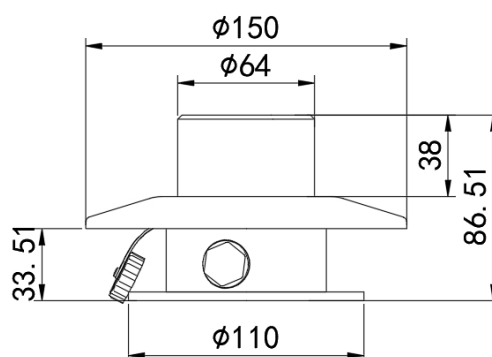
MECHANICAL DATA

Mechanical Dimensions & Installation

The supplied drawings show the circular sensor body and its principal dimensions. Numeric dimensions are retained from the source material.



Perspective dimensions: Ø150, Ø110, Ø54; height 77.8 mm



Side dimensions: Ø150, Ø110, Ø64; height 86.51 mm

INSTALLATION & OPERATION

Installation Notes

Follow the selected output version and the supplied mechanical drawings during installation. The following notes summarize the supplied product information.

- Install the sensor with the sensing surface unobstructed and aligned for solar-radiation measurement.
- Provide a 10–30 V DC supply and select RS485 or analog wiring according to the ordered output code.
- Keep the double-layer glass cover clean and avoid covering the sensing surface during operation.
- Use the scattering and shading ring where diffuse-radiation measurement is required, as described in the source material.
- Confirm the selected output code and aluminum-alloy housing option before commissioning.

SS207-02 Pyranometer Sensor

Pyroelectric solar radiation sensor

✓ High protection



Thermoelectric solar-radiation measurement

Configuration & Support Summary

- Select the output mode and aluminum-alloy housing through the ordering code.
- RS485 Modbus-RTU, 4–20 mA, 0–5 V and 0–10 V options are listed in the source configuration.
- The sensor provides temperature compensation and a 95% response time of ≤ 30 s.
- Engineering support is available for product selection, customization and technical integration.

Horizontal calibration

Equipped with horizontal bubble and calibration screw for convenient on-site adjustment



CONTACT / SUPPORT

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Product selection, customization and technical support



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