

SOLAR RADIATION MONITORING / DATA SHEET

SS207-07

Automatic Solar Tracking Radiation Transmitter

A fully automatic solar-tracking transmitter that combines optical and GPS tracking to measure direct and scattered solar radiation, sunshine duration, solar angles and position data. Dual tracking keeps the platform aligned through changing light conditions, while 485 Modbus-RTU communication supports unattended outdoor monitoring.

Overview

- Direct and scattered radiation plus sunshine duration, solar angles and GPS data.
- Dual optical and GPS tracking supports automatic alignment in changing conditions.
- Thermopile direct-radiation sensing with multi-layer shade rings.
- 0.3-3 μm spectral range, 0-2000 W/m^2 range and $\pm 3\%$ accuracy.



Measured Direct & scattered radiation	Range 0-2000 W/m^2	Tracking 1° accuracy	Output 485
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Key Functions

- Dual tracking modes: optical + GPS; GPS-only or optical-only configurable.
- Automatic sun-position calculation and unattended day-long alignment.
- Thermopile direct-radiation sensor with multi-layer shade rings.
- Aluminum structure for outdoor operation and 485 Modbus-RTU communication.

Applications

- Photovoltaic and solar-thermal system monitoring.
- Solar-building and solar-laboratory research.
- Agricultural and forestry ecological radiation studies.
- Meteorological and climate research.

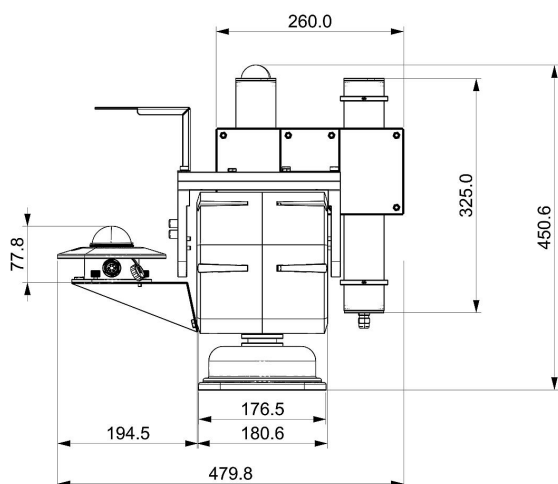
SYSTEM DATA

Technical Specifications

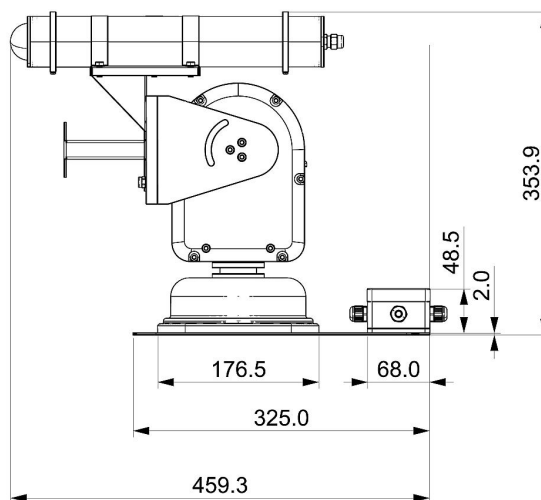
Item	Specification
Tracking / Load	1° tracking accuracy; 10 kg load
Adjustment Angles / Mode	Vertical 0-90°; horizontal 0-300°; solar + GPS tracking
Supply / Power	12 V DC; 8.5 W
Measurement / Resolution	0-2000 W/m^2 ; 1 W/m^2
Spectral Range / Accuracy	0.3-3 μm ; $\pm 3\%$
Sensitivity / Internal Resistance	7-14 $\mu\text{V} \cdot \text{W}^{-1} \cdot \text{m}^2$; 200-400 Ω
Response / Nonlinearity	$\leq 30\text{ s}$ (95%); $\leq \pm 3\%$
Directional / Temperature Response	$\leq \pm 30\text{ W}/\text{m}^2$; $\leq \pm 3\%$ (-30 to +50 °C)
Annual / Cosine / Tilt Stability	$\leq \pm 3\%$; $\leq \pm 5\%$; $\leq 2\%$
Zero Drift / Interface	$\leq 6\text{ W}/\text{m}^2$; 485 Modbus-RTU
Operating Conditions	-30 to +60 °C; 0-95% RH, non-condensing
Communication	8-bit binary; 8 data bits; no parity; 1 stop bit; CRC
Baud / Address	1200-115200 bit/s configurable; 4800 default; address 0x01
Data Outputs	Direct, scattered and horizontal radiation; sunshine duration; GPS status/coordinates

HARDWARE

Transmitter Dimensions



Front dimensions | 479.8 mm overall width | 450.6 mm height



Side dimensions | 459.3 mm overall length | 353.9 mm height

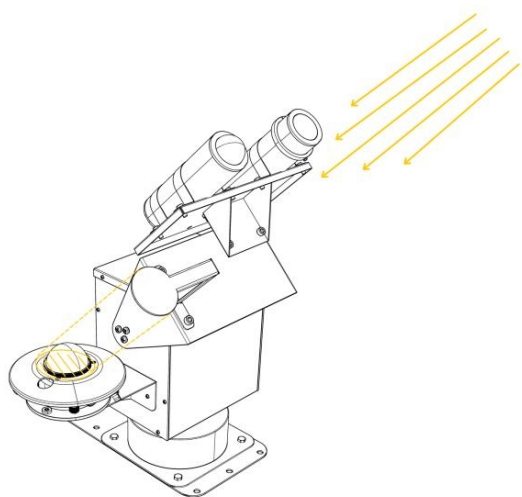
INTERFACE

RS485 Wiring

Wire colour	Function
Brown	Power positive, 12 V DC
Black	Power negative
Yellow	485-A
Blue	485-B

INSTALLATION

Automatic Tracking Installation



Automatic tracking and radiation measurement principle

Installation Requirements

- Fix the direct-radiation and shade plates to the gimbal with the supplied M6×15 hardware.
- Mount the scattering support and sensor using the supplied M4 hardware.
- Secure the gimbal and controller to the mounting plate; install the assembly on a level plane or arm.
- Orient the controller side toward true north and confirm the direction with a compass.
- Connect the 485/power wiring by colour, verify the wiring, then energize the system.

SELECTION

Product Configuration

Item	Available configuration
Product code	SS207-07 automatic solar-tracking radiation transmitter
Measurement	Direct and scattered radiation; sunshine duration; solar angles; GPS status/coordinates
Tracking / modes	Optical + GPS tracking; GPS-only or optical-only configurable
Output / communication	485 / Modbus-RTU; 1200-115200 bit/s; 4800 default
Mechanical design	Motorized gimbal, thermopile head, multi-layer shade ring and aluminum structure
Included accessories	Direct-radiation sensor, solar tracker, mounting plate, screws, 2 m waterproof cable, certificate and warranty card

Service note: keep the optical apertures and shade rings clean, verify the true-north orientation and tracking mode after maintenance, and never wire or service the unit while powered.

CONTACT / SUPPORT

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