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solar spectral sensors

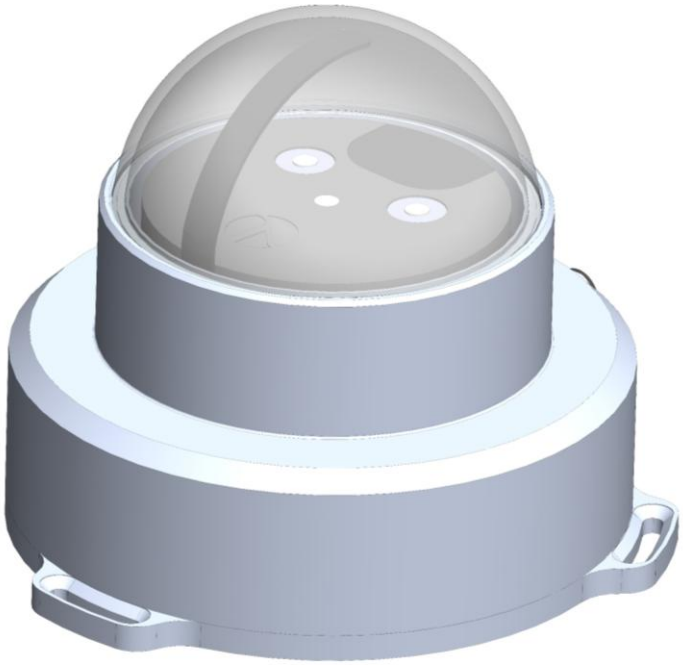
SolarBand-C3US

The SolarBand-C3US represents an exciting step forward in the measurement of diffuse solar irradiance. The SolarBand-C3US combines the accuracy of an automated shadow band with the reliability of a fully enclosed system to provide accurate, affordable measurements of diffuse, global and direct irradiance, from a single, digital sensor with no external moving parts.

Optimized for the US market, the SolarBand-C3US employs four photodiodes (two global, two diffuse) and an automated, internal shadow band to measure global and diffuse irradiances simultaneously. The shadow band is mounted to an internal motor that slowly rotates over the course of each day, ensuring that the diffuse sensor remains continuously shaded.

The SolarBand-C3US is built for ease-of-use and is equipped with industry-standard features such as RS-485 Modbus communication, internal diagnostics, built-in heating and third-party calibration support, while also introducing on-board GPS and automated alignment verification.

- Measures GHI, DHI and DNI
- Internal automated shadow band
- No external moving parts
- Automated alignment verification
- Digital RS-485 communication
- Onboard tilt sensor and GPS
- Internal heating
- Third-party recalibration support
- Compliant with IEC61724-1 Class A monitoring
- Broadband and spectrally matched irradiance values



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SolarBand-C3US: Specifications

Diffuse Horizontal Irradiance

Accuracy (k=2)	± 4% Daily integral ± 4% ± 5 W/m² hourly average ± 5% ± 5 W/m² individual readings
Measurement range	0 - 2000 W/m²
Response time (95%)	< 0.1s
Non-stability (change per year)	< 0.2%
Non-linearity	< 0.5%
Zero offset A	n/a
Zero offset B	n/a
Spectral range	300-1130nm
Temperature response (-10 °C - +40 °C)	< 0.5% (on-board temp. correction)
Latitude capability	-90° to +90°

Global Horizontal Irradiance

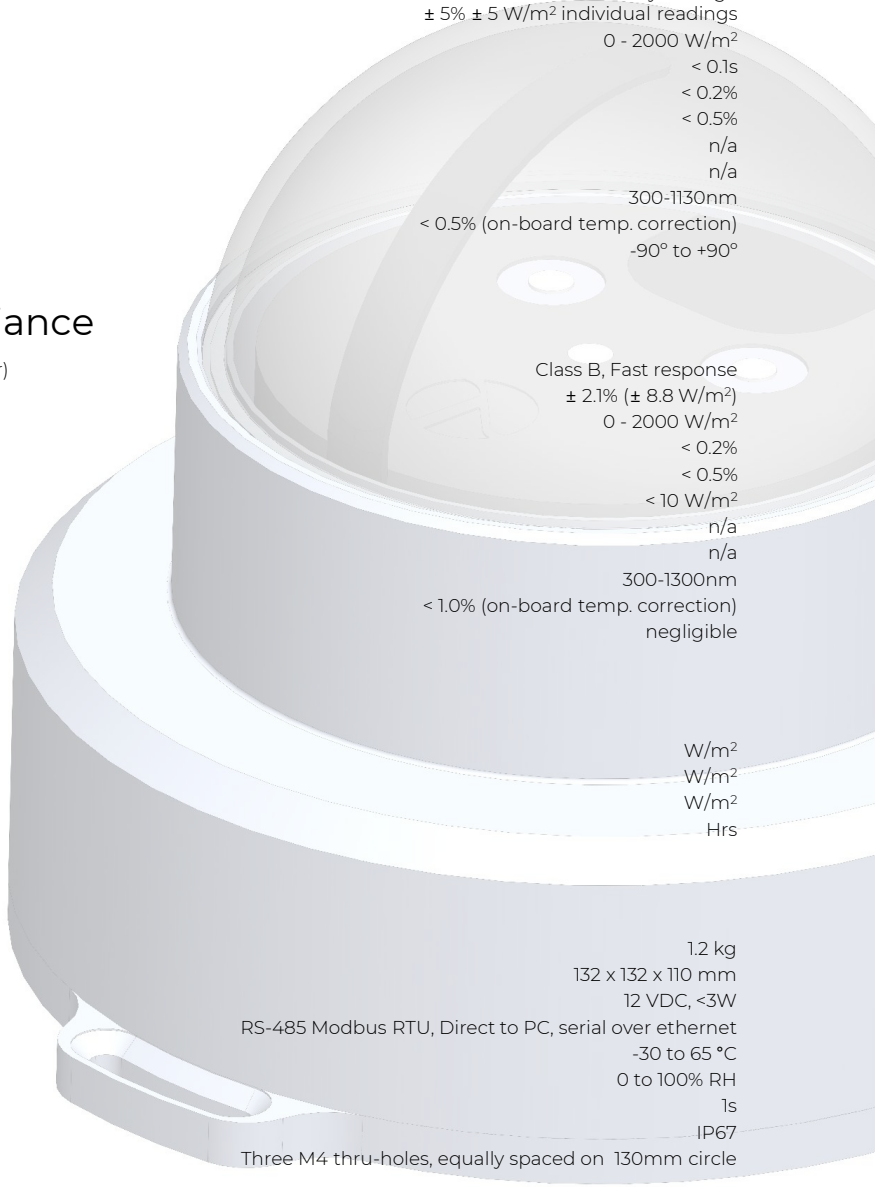
ISO 9060:2018 classification (excl. spectral error)	Class B, Fast response
Max. spectral error (per ISO9060:2018)	± 2.1% (± 8.8 W/m²)
Measurement range	0 - 2000 W/m²
Non-stability (change per year)	< 0.2%
Non-linearity	< 0.5%
Cosine error	< 10 W/m²
Zero offset A	n/a
Zero offset B	n/a
Spectral range	300-1300nm
Temperature response (-10 °C - +40 °C)	< 1.0% (on-board temp. correction)
Tilt response	negligible

Measurands

Global horizontal solar irradiance	W/m²
Diffuse horizontal solar irradiance	W/m²
Direct normal solar irradiance (calculated)	W/m²
Sunshine duration	Hrs

General

Weight	1.2 kg
Dimensions	132 x 132 x 110 mm
Power supply and use	12 VDC, <3W
Communication	RS-485 Modbus RTU, Direct to PC, serial over ethernet
Operating temperature range	-30 to 65 °C
Humidity range	0 to 100% RH
Max measurement frequency	1s
Ingress protection rating	IP67
Mounting	Three M4 thru-holes, equally spaced on 130mm circle



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