Spectrafy™
solar spectral sensors

SolarSIM-D2

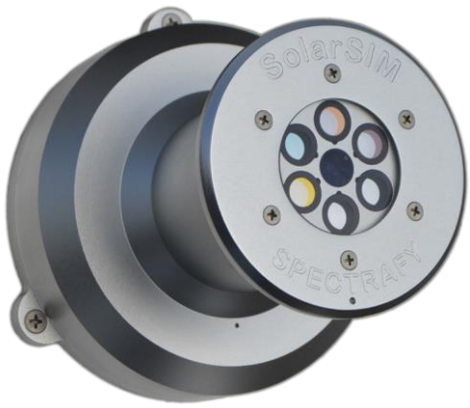
Direct Solar Spectral Irradiance Meter

The SolarSIM-D2 is the world's first full-spectrum, solar spectral irradiance meter. It was developed following years of research aimed at reducing the complexity of solar spectral measurement.

The result is a highly accurate, reliable device, rigorous enough for use in **academic research**, and affordable enough for **industry**.

The SolarSIM-D2 uses low-cost silicon photodiodes, coupled with hard-coated optical filters to measure the solar spectral irradiance in several narrow wavelength bands.

The SolarSIM-D2's proprietary software then uses these measurements to resolve the complete solar spectrum, in addition to major atmospheric processes, such as aerosol optical depth, ozone thickness and precipitable water vapour.

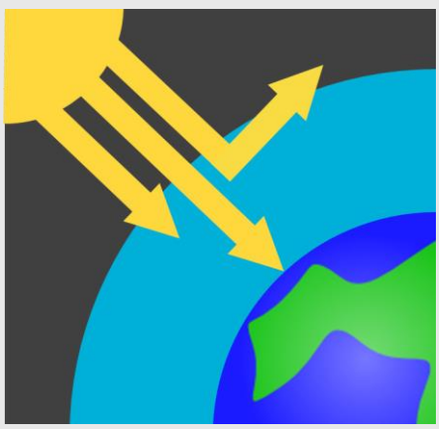


> *Spectrafy's products offer our customers the best solar spectral measurement solution in the market today – by a mile*

ACCURATE - Operated by some of the most demanding labs and under the most stringent environments, the SolarSIM-D2 consistently performs as one of the world's best solar sensors.

RELIABLE - With no moving parts, the SolarSIM-D2's simple, rugged design makes installation a breeze and minimizes operation and maintenance costs.

VERSATILE - The SolarSIM-D2 integrates the functionality of multiple **spectroradiometers**, a **pyheliometer**, a **spectro-heliometer**, a **sun photometer** and an **ozone spectrophometer** into a single device. Any or all of its capabilities can be independently purchased and enabled, providing a scalable solution that adapts as site needs change.



HOW DOES THE SOLARSIM-D2 ACHIEVE HIGH ACCURACY?

The SolarSIM technology is based upon the insight that sunlight is a constrained light source. The extraterrestrial solar spectrum is known, through decades of measurement, to an extremely high level of accuracy and there are only a handful of phenomena that impact the sun's spectrum as it passes through our atmosphere.

The SolarSIM-D2 use a series of highly accurate sensors combined with proprietary algorithms to quantify the spectral impact of atmospheric components such as aerosols, water vapour, ozone and Raleigh scattering. This approach enables the SolarSIM-D2 to generate highly accurate,
high-resolution solar spectra, over the full 280-4000mn wavelength range.

Specifications

Total Irradiance (DNI)

ISO 9060 Classification	First Class Pyrheliometer
Spectral Range	280-4000 nm
Custom Range Selection	Yes
Maximum Irradiance	2000 W/m^2
Response Time (95%)	< 0.5 s
Zero offset B	< 1W/m^2
Non-stability (change/year)	0.5%
Non-linearity	0.5%
Spectral Selectivity	negligible
Temperature Response	0 %

Spectral Irradiance

Wavelength Range	280-4000 nm
Spectral Resolution (FWHM)	1 nm
Wavelength Accuracy	± 0.1 nm
Acquisition Rate	< 1 s
Exposure Time	< 1 ms
Temperature Dependency	negligible

Atmospheric Parameters (AOD, PWV, O_3)

Number of Channels	unlimited
AOD Measurement Uncertainty	±(0.005 +/- 0.01/AM)
Precipitable Water Vapour Uncertainty	< 1 mm
OzoneMeasurementUncertainty(dailyaverage)	3%
Wavelength Accuracy	< 2 nm
Non-Stability	0.2 %/yr

General

Weight	1.3 kg
Dimensions	124 x 124 x 108 mm
Power Supply	12 VDC
Power Consumption	< 1W
Communication	2-wire RS-485. Direct to PC, serial over ethernet or data logger
Operating Temperature	-30 to 65 °C
Humidity Range	0 to 100 % RH

FIND OUT MORE.

Learn more about how Spectrafy's revolutionary SolarSIM technology is able to resolve high accuracy solar spectral irradiance:

https://spectrafy.com/technology/overview

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4 Florence Street, Suite 204, Ottawa, Canada K2P 0W7 | 1-613-237-2020 | info@spectrafy.com | www.spectrafy.com