

UniformSun

Measurement of the Solar Irradiance Distribution of Sun Simulators



The UniformSun measuring enables simple and extremely precise measurement of the solar irradiance distribution of sun simulators. UniformSun's very high measurement rate of up to 10,000 measurements per second means it is also suitable for flashlight sun simulator (flashers) measurements. Thanks to its modular design, in which each PV cell functions as a sensor element and is separately encapsulated in a glass EVA laminate, interaction between individual measuring surfaces, for example, as a result of light coupling between neighbouring surfaces, is ruled out.

In the overall design, emphasis was placed on replicating the optical characteristics of a conventional PV module in order to achieve representative results for sun simulators, where the test object influences the solar irradiance distribution.

To attain the best possible measurement accuracy, each sensor element was individually calibrated by the Institute for Solar Energy Research (ISFH) in Hameln.

The results, which included the non-homogeneity (NH) across the measuring surface, the absolute values of the solar irradiance as well as the change in solar irradiance over time of the individual measurement points, were recorded as per IEC 60904-9.



UniformSun Measurement System (mounted in a Sun Simulator)

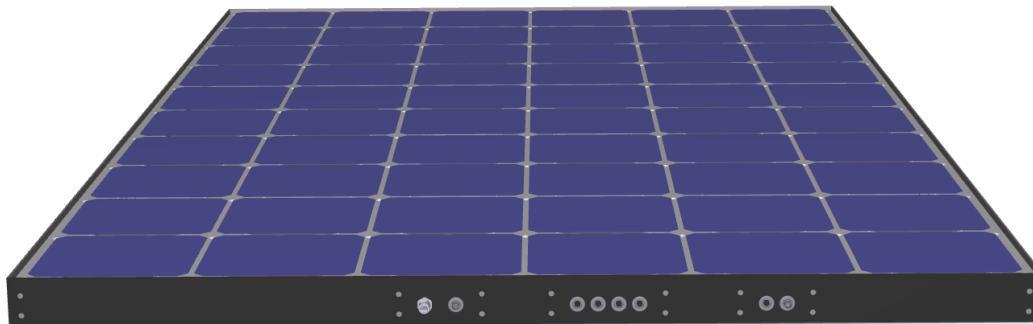
Photo: Institut für Solarenergieforschung GmbH (ISFH) – Hameln – Germany

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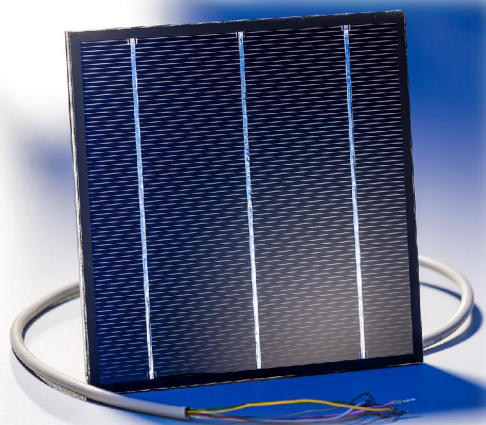
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Technical Data:

Size	1600 mm x 940 mm resp. Custom specific
Number of Sensor Elements	60 (10 x 6) resp. Custom specific
Sensor Element	Monocrystalline Si- Solarcell, full-square 156 mm x 156 mm resp. Custom specific
Temperature Measurement	Pt1000 for each Sensor Element
Uncertainty NH	0.25%
Sample Rate	Up to 10,000 Samples per Second
Connectors	Power Supply, USB, external Sensors
Temperature Range Operation	+5 to +50 °C
Temperature Range Storage	+5 to +50 °C
Scope of Delivery	<ul style="list-style-type: none"> - UniformSun Measurement Module - External Irradiance Sensor Si-02-Pt100-4L - Power Supply - USB Cable - Software



Measurement System UniformSun



Sensor Element UniformSun

Photo: Institut für Solarenergieforschung GmbH
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