

# LEDs COPY THE SUN

The SINUS-2100-t is the ideal solar simulator for production lines for solar modules. Its nearly perfect simulation of the sun's spectrum enables highly accurate solar cell efficiency measurement at minimum operating costs due to the long life time of LEDs. LED's present the new benchmark:

## FEATURES

- Multi color LED-based light source for perfect copy of the sun
- Long exposure time for high-efficiency solar modules
- Low operating costs
- Auto-calibration of intensity, uniformity and spectrum
- Small footprint
- Sunny side down for easy integration in production lines
- Fast cycle time
- Calibrated high-end components
- 14-bit technology
- Intuitive, ergonomic user interface (touchscreen)
- Exceeds class AAA criteria

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**CLASSIFICATION**

	<b>SINUS-2100-t</b>	<b>Class AAA requirements</b>
Spectral Match	Class A+    0.875 - 1.125	0.75 - 1.25
Non-uniformity of irradiance	Class A    < 2%	2%
Short-term instability (STI)	Class A    Synchronized	Synchronized
Long term instability (LTI)	Class A+    < 1%	2%

**SPECTRAL QUALITY**

<b>Wavelength range (nm)</b>	<b>SINUS-2100-t</b>	<b>AM1.5</b>
400 - 500	18.4%	18.4%
500 - 600	19.9%	19.9%
600 - 700	18.4%	18.4%
700 - 800	14.9%	14.9%
800 - 900	12.5%	12.5%
900 - 1,100	15.9%	15.9%
400 - 1,100	100%	100%

**FUNCTIONALITY**

IV curve measurement	Under illumination
Solar cell parameter analytics	Voc, Isc, FF, Pmpp and efficiency
Temperature correction	Solar cell parameters are adjusted according to IEC 60904-5, IEC 60891
User defined analytics	Open software interface allows export of all measured data for analysis and import of classification criteria
EL measurement	Electroluminescence camera can be optionally integrated for micro-crack detection
Hi-pot test	The hi-pot test can be optionally integrated

**PRODUCT FEATURES**

Spectrum	AM1.5, AM0 or any customer defined spectrum possible with light engine including illumination by single colors
Irradiance time	As required: from 10 ms up 80 ms, longer flash times can have negative impact on stability.
Flash-to-flash time interval	10-60 s
Voltage resolution	0.025%
Current resolution	0.025%
Accuracy	< 0.1%
Number of measurement points	As required: up to 5000
Test area	For modules with up to 72 solar cell (6 inch).
Module orientation	Sunny side down
Bifaciality	A second light source can be added for simultaneous front and rear side illumination

**SCOPE OF DELIVERY**

Light engine in table configuration  
Power supply  
IV electronics  
Industrial PC  
Touch screen  
Keyboard with trackball or mouse  
Cables

Specifications subject to technical changes, SINUS-2100-t 2018\_09\_07

**CONTACT**

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