



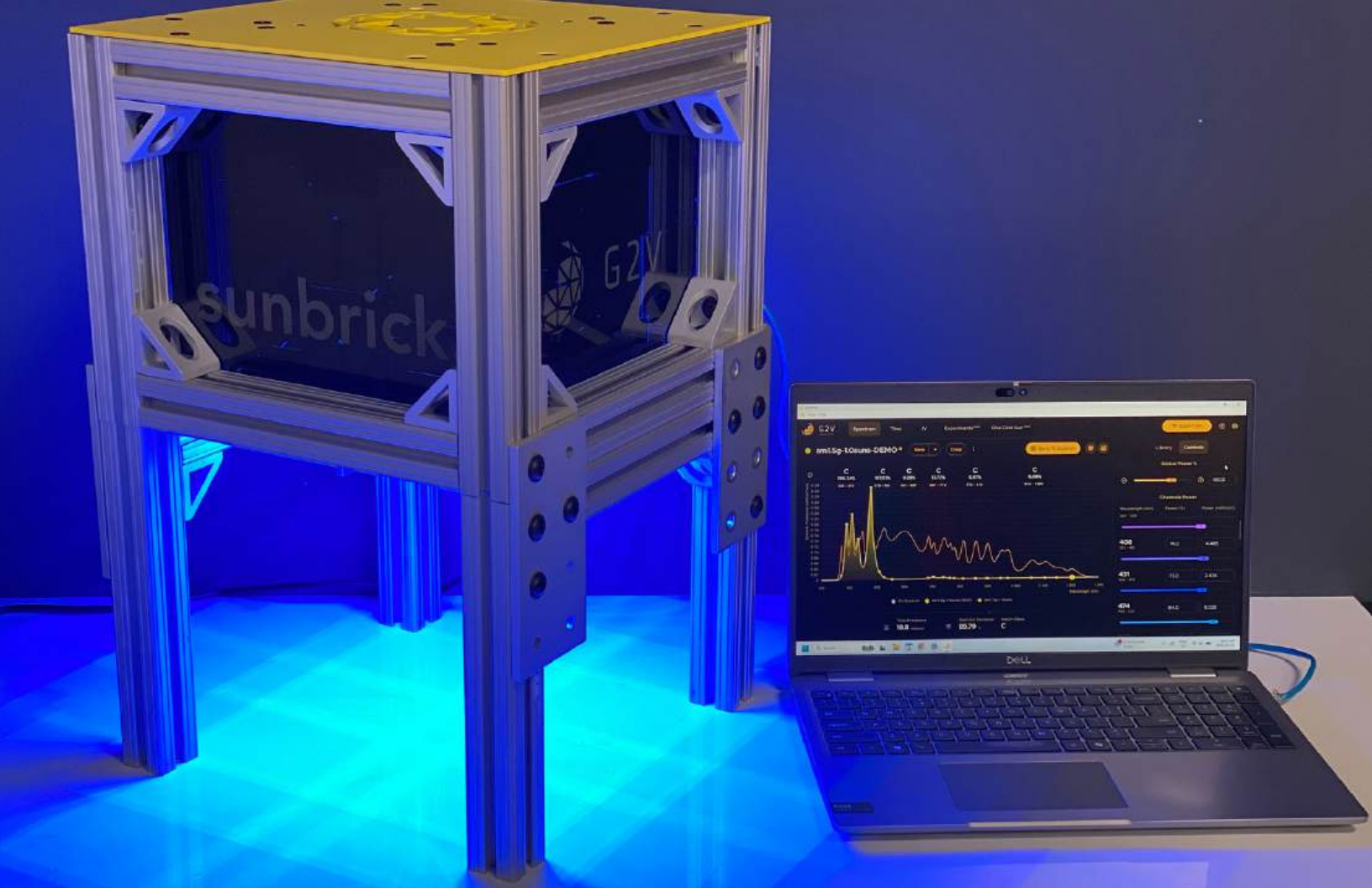
G2V

ENGINEER THE SUN

LED SOLAR SIMULATION

Class A+A+A+ Engineered Sunlight™

The Future of Solar Simulators and Solar Simulation



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BENEFITS OF LED ILLUMINATION



Minimal
warm-up time



No bulb
replacement



No explosive
bulb failure



Tunable
wavelengths

LEDs are solid-state devices that require minimal maintenance, nor do they have the hazards related to pressurized gas lamps.

LED solar simulators provide enhanced functionality, including tunable output that enables a greater breadth of research capabilities in various fields, such as photovoltaics, aerospace, photochemistry, material testing, wearables, and more.

sunbrick.TM

CLASS A+A+A+ SOLAR SIMULATOR

THE SUNBRICK PROVIDES CLASS A+A+A+ LIGHT ON A BUDGET

The Sunbrick is now Class A+A+A+ with a starting illumination of 15 cm x 15 cm, a wavelength range of 350 nm - 1200 nm, and a price on par with traditional xenon lamps.

The Sunbrick outshines the competition through its exceptional Class A+ IEC 60904-9:2020 quality, 32 tunable wavelength channels, Python API access and native Keithley* Source Measure Units (SMUs) integration.

*An LED solar simulator created to make
xenon obsolete*

*2400 and 2400 models only



1 X 1
~
15 CM X 15 CM

Our second generation Sunbrick: -
Rebuilt from the ground up

MODERN GUI

~
SHARE YOUR PRESETS





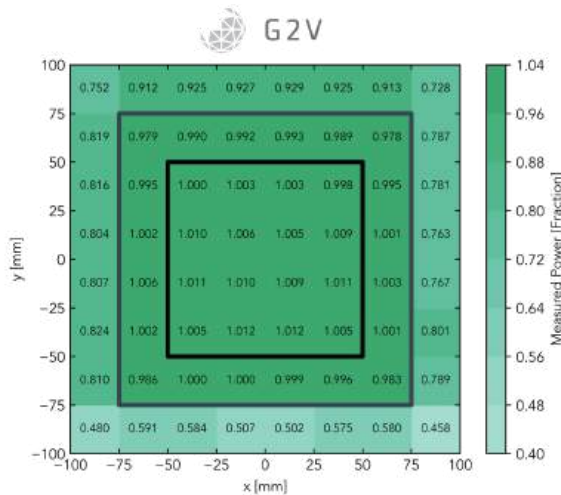
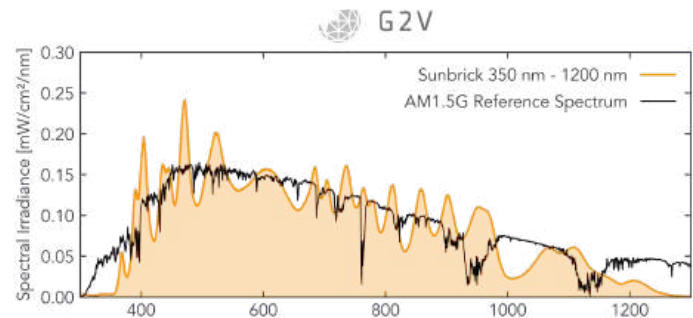
CLASS A+A+A+

The Sunbrick meets and exceeds the Class A+A+A+ quality outlined by the IEC-60904-9:2020 standards to deliver world-class light

Class A+ Spectral Match

The spectral match is a measure of accuracy between the output of a solar simulator and a target spectra. It is evaluated using the amount of light produced within specific wavelength bands compared to the standard spectra and reported as a “spectral mismatch”.

The Sunbrick produces an AM1.5G spectral mismatch <9%, exceeding the IEC-60904-9:2020 Class A+ standard.



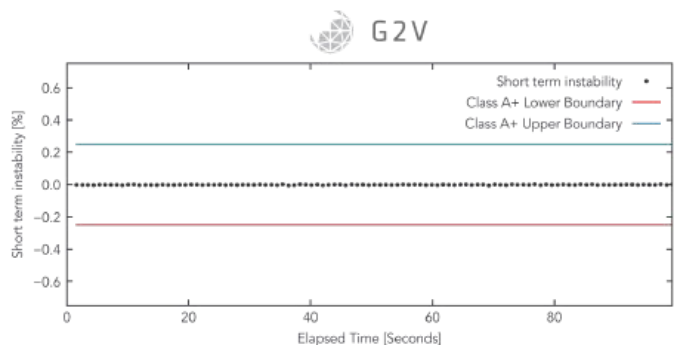
Class A+ Spatial Non-Uniformity

Spatial non-uniformity describes the distribution and consistency of irradiance over an area. It is calculated from the difference of the maximum and minimum irradiance values in an area.

With a Sunbrick, you receive one sun-equivalent irradiance with a spatial non-uniformity <1%.

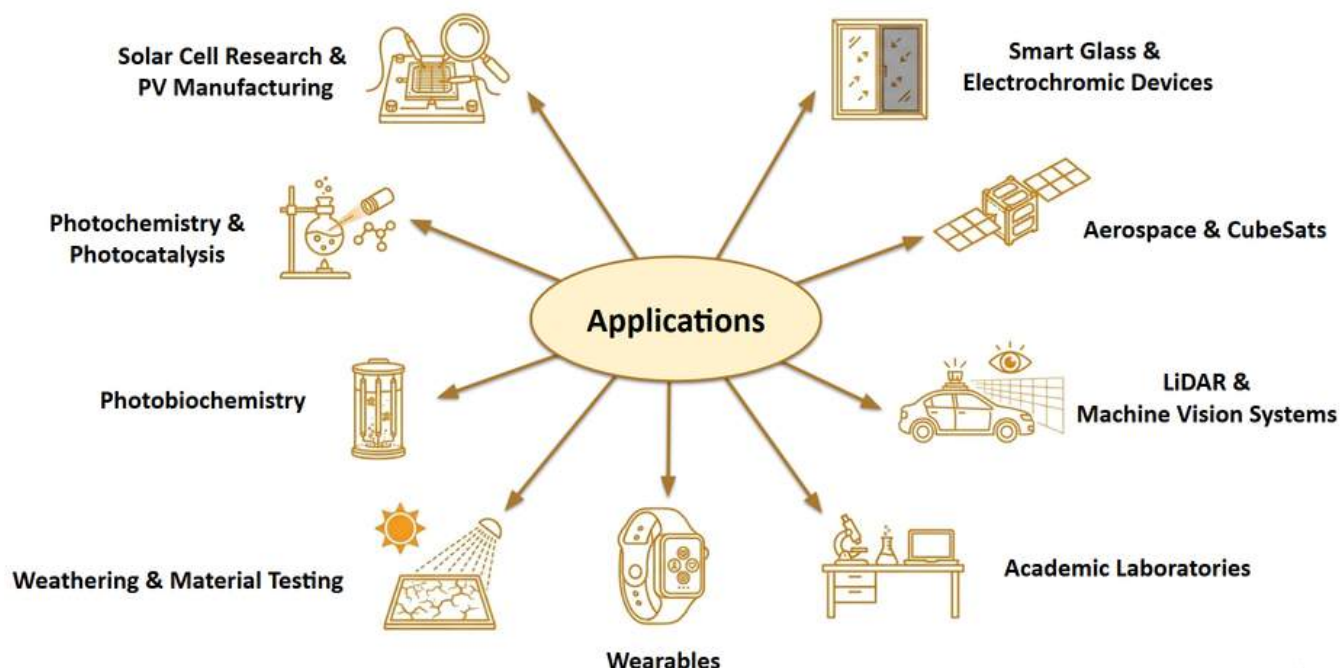
Class A+ Temporal Instability

Temporal instability measures the consistency of light output over a period of time. The Sunbrick’s short-term temporal instability (STI) (over 120 seconds) is <0.025%, and its long-term temporal instability (LTI) is <1%, exceeding IEC 60904-9:2020 Class A+ requirements for STI and LTI.





General Specifications	Value	Units	Notes
Type of Solar Simulator	Steady-state	N/A	Uses continuous-wave LEDs
Mounting Configuration	Vertical and Horizontal	N/A	With the provided stand
Intensity Adjustment Range	0 - 150	%	0.1 - 1.5 suns AM1.5G in 0.1 increments
Class A+ Illumination Area	10 x 10	cm	100 cm ²
Class A Illumination Area	15 x 15	cm	225 cm ²
Nominal Working Distance	15	cm	Coplanar with mirror edges
Illumination Angle	Lambertian	N/A	FWHM of a single white LED is 125°
Active Operating Temperature	20 - 27	°C	
Ambient % Relative Humidity	30 - 60	%	
Size	33.4 x 33.4 x 25.4	cm	W x L x H illumination head only
Weight	22.1, 16.5	kg	Standard leg configuration, Illumination Head Only
I/O Connectors	Ethernet		
Software Compatibility	Windows 10 or later		
Automation Capability	Python API		
Warranty	2 Years		



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Solar simulation enables far more than photovoltaic testing. By delivering precise, controllable light, it allows researchers and engineers to study how materials, devices, and systems respond under realistic and repeatable conditions. From driving chemical reactions in photocatalysis to replicating biological light environments, from accelerating material degradation to validating aerospace components under AM0, the same foundation applies.

The ability to control spectrum, intensity, and stability makes it possible to test with confidence across disciplines such as smart materials, machine vision, wearables, and academic research. This breadth of applications reflects a single underlying need: reliable, programmable sunlight that removes uncertainty and enables meaningful results.

Specifications	Value	Units	Notes
Approved Standards	IEC-60904-9:2020		
Spectral Mis-match	<9	%	Exceeds Class A+
Spatial Non-uniformity	<0.025	%	Exceeds Class A+
Temporal Instability	<1	%	Exceeds Class A+
Spectral Range	350 - 1200	nm	
SKU Spectral Code	KLMN+		Lambertian
Tuneable Channels	32		23 unique channels
Irradiance Control Range	8.3 - 99.3	mW/cm ²	0.1 - 1.2 suns AM1.5G



pico.TM SOLAR SIMULATOR

CLASS A+AA

The Pico provides world-class controllable illumination, complete with software-controlled spectra and traceable calibration - all with no bulbs, filters, or moving parts.

The Pico can replicate the standard solar spectra, including AM1.5G and AM0 to AM10, with a button. It can also account for geography, season, and specific times of day with our One-Click SunTM proprietary software. Minimal warm-up time and long LED lifetimes mean the Pico is both nimble and built to last.



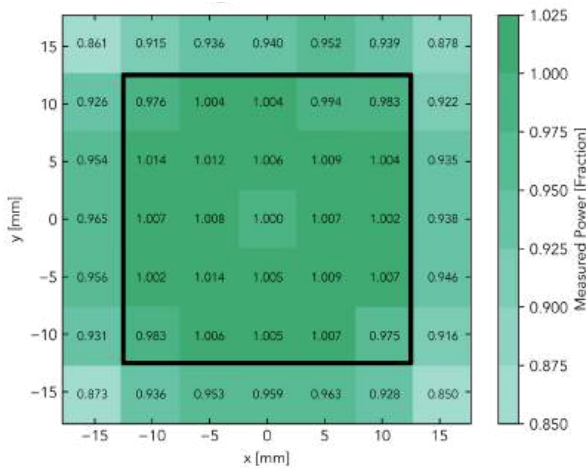
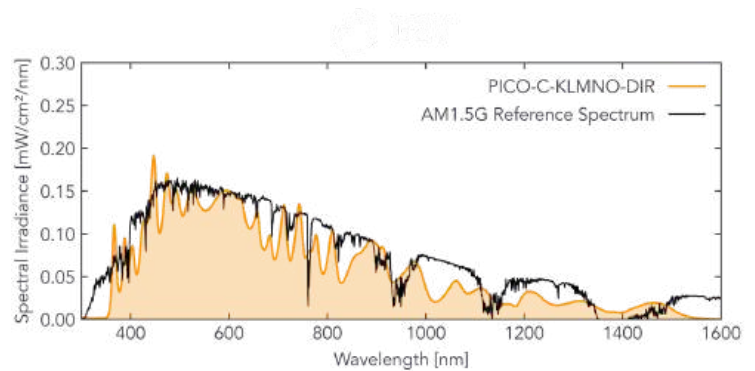
CLASS AAA

The standards that govern solar simulation are JIS C 8904-9, IEC 60904-9, and ASTM-E927, and are used to determine the quality and accuracy of a solar simulator's illumination.

Class A Spectral Match

The spectral match is a measure of accuracy between the output of a solar simulator and a target spectra. It is evaluated using the amount of light produced within specific wavelength bands compared to the standard spectra and reported as a "spectral mismatch".

All G2V Pico models produce an AM1.5G spectral mismatch < 5%, exceeding the ASTM E927 Class A standard by a factor of 5x.



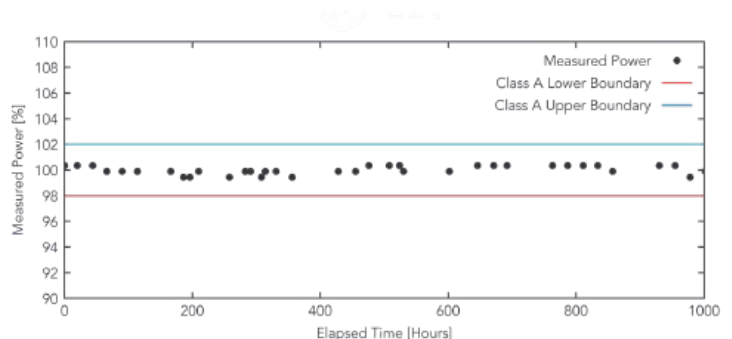
Class A Spatial Non-Uniformity

Spatial non-uniformity describes the distribution and consistency of irradiance over an area. It is calculated from the difference of the maximum and minimum irradiance values in an area.

With a Pico, you receive one sun-equivalent irradiance with a spatial non-uniformity < 2% in a 2.5 cm x 2.5 cm square area.

Class A Temporal Instability

Temporal instability measures the consistency of light output over a period of time. The Pico's short-term temporal instability (STI) (over 100 seconds) is < 0.1%, and its long-term temporal instability (LTI) (over 1000 hours) is < 2%, exceeding IEC 60904-9 Class A requirements for STI and LTI, as well as the general Class A temporal instability requirements of ASTM E927 and JIS C 8904-9.





PICO SOLAR SIMULATOR

Packages



PICO

With our Pico Lite package, your turnkey system will include the Pico, stand, power supply, power connections, and standard variable software.

The Variable software lets you control the spectrum with 32 tunable LED channels. In addition to the enhanced spectrum control, you have access to our Python API integration and one-click sun.



PICO CHARACTERIZATION

Our Pico Characterization package takes everything in the Lite package and adds in IV characterization for photovoltaics research. The IV can measure: Efficiency, Voc, Isc, Im, Vm, FF, Shunt and Series R.



PICO ADVANCED CHARACTERIZATION

For experts in out there changing the world that need additional measurements our Pico Advanced Characterization package adds in low-res EQE on top of our Characterization package.

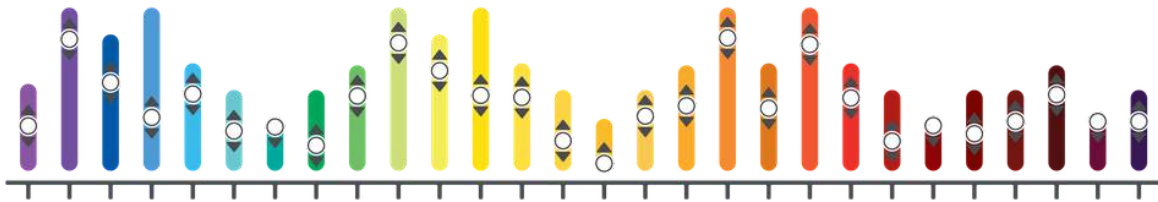




PICO SOFTWARE



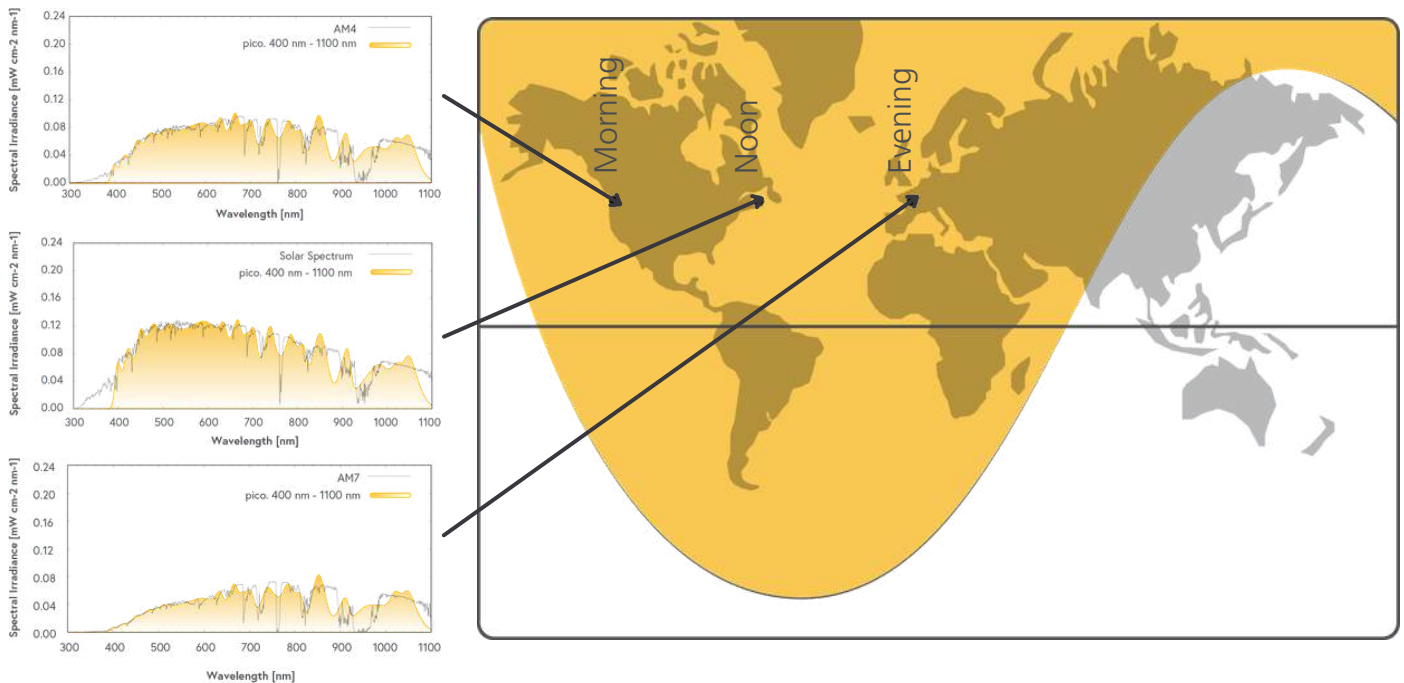
VARIABLE MODULE



Enables complete programmable intensity control of 32 tunable channels for arbitrary spectral design. Load programmable spectral presets from AM0-AM10 and AM1.5G. Enjoy the freedom to save, download, and load your own spectral functions.



ONE-CLICK SUN



One-Click Sun™ software enables users to replicate irradiance and spectrum based on geography, season, and time of day. Our software was crafted to be simple, accurate, and easily configurable. Select any point in the world to within 1° Latitude/Longitude, and let our software simulate a realistic day-night cycle, at up to 500x regular speed.



IV UPGRADE MODULE

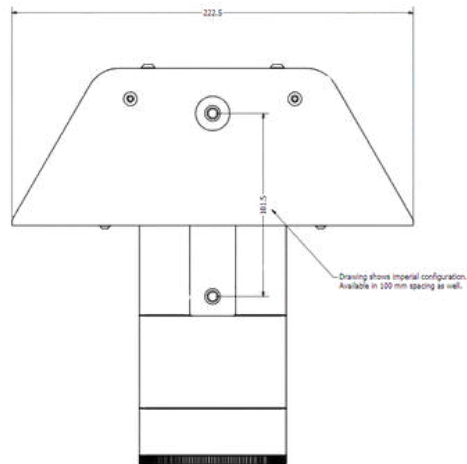
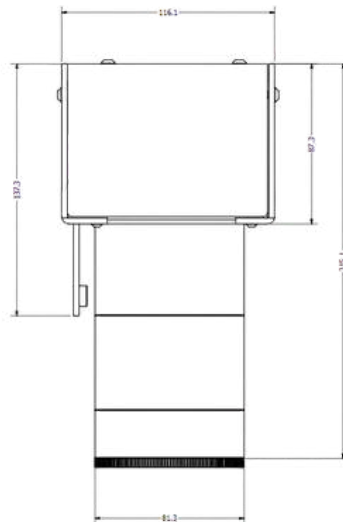
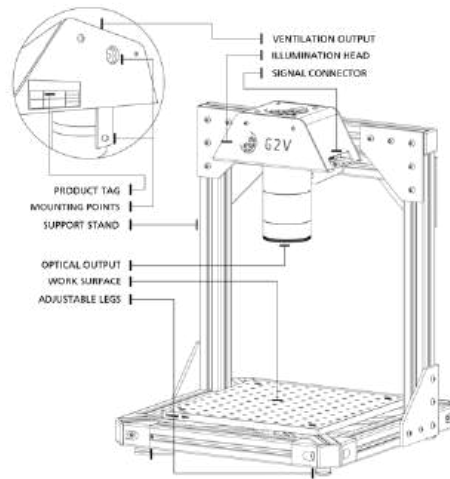
Offering plug-and-play power conversion efficiency measurement and report generation for solar cell characterization, the IV Module includes software as well as an integrated source-meter unit (providing between -13 V and +13 V with 16 bit resolution, and between -30 mA and +30 mA with 4 μ A resolution). The IV Module seeks measurement precision, as the module seeks your target voltage through an iterative process until converging and generating a high-accuracy IV pair. Automated analytical approximations fit the data and then report key solar cell parameters.



LOW-RESOLUTION EQE UPGRADE MODULE

The low-resolution EQE provides wavelength-resolved measurements of your solar cell's performance under active conditions, with individual narrow-band LEDs providing arbitrary perturbation strength. Run with a low-noise variable-gain amplifier with variable integration time, the module can detect and amplify device currents over 16,000x.

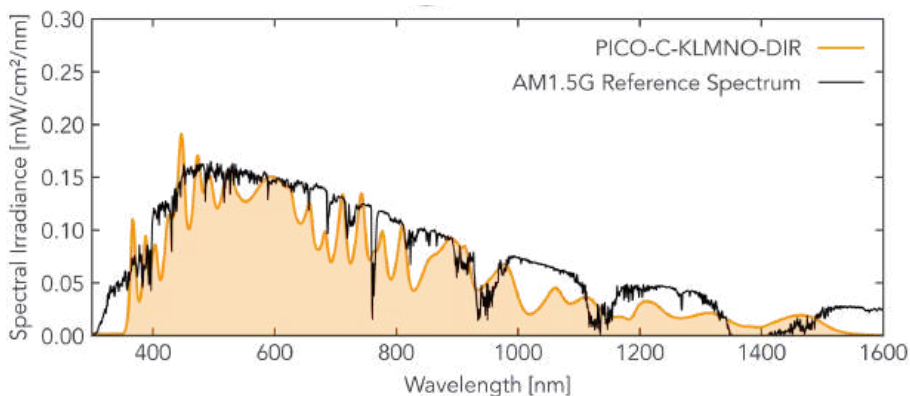




Specifications	KLMNO
ASTM E927 / IEC 60904-9 / JIS C 8904-9	Exceeds Class AAA IEC Specifications
Spectral Mis-match	<5%
Spatial Non-uniformity	<2%
Temporal Instability	<0.1%
Spectral Range (nm)	350 - 1500
Working Distance	7 cm
Tuneable Channels	32
Calibrated Output Irradiance (1.0 suns AM1.5G)	87.9

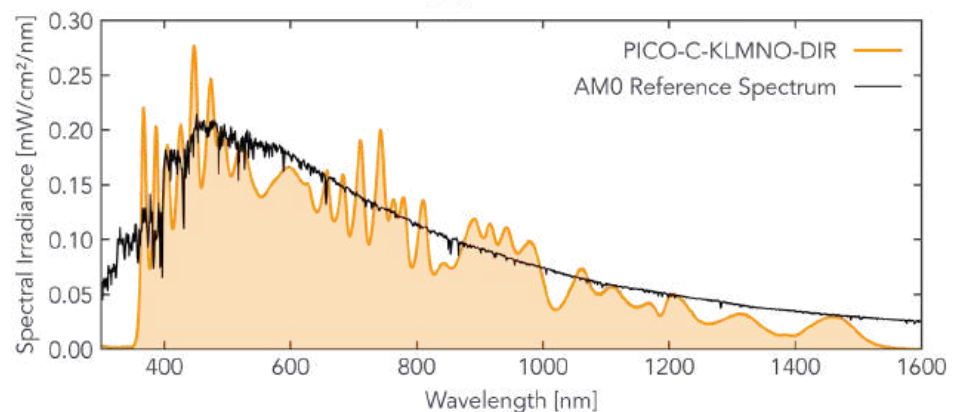


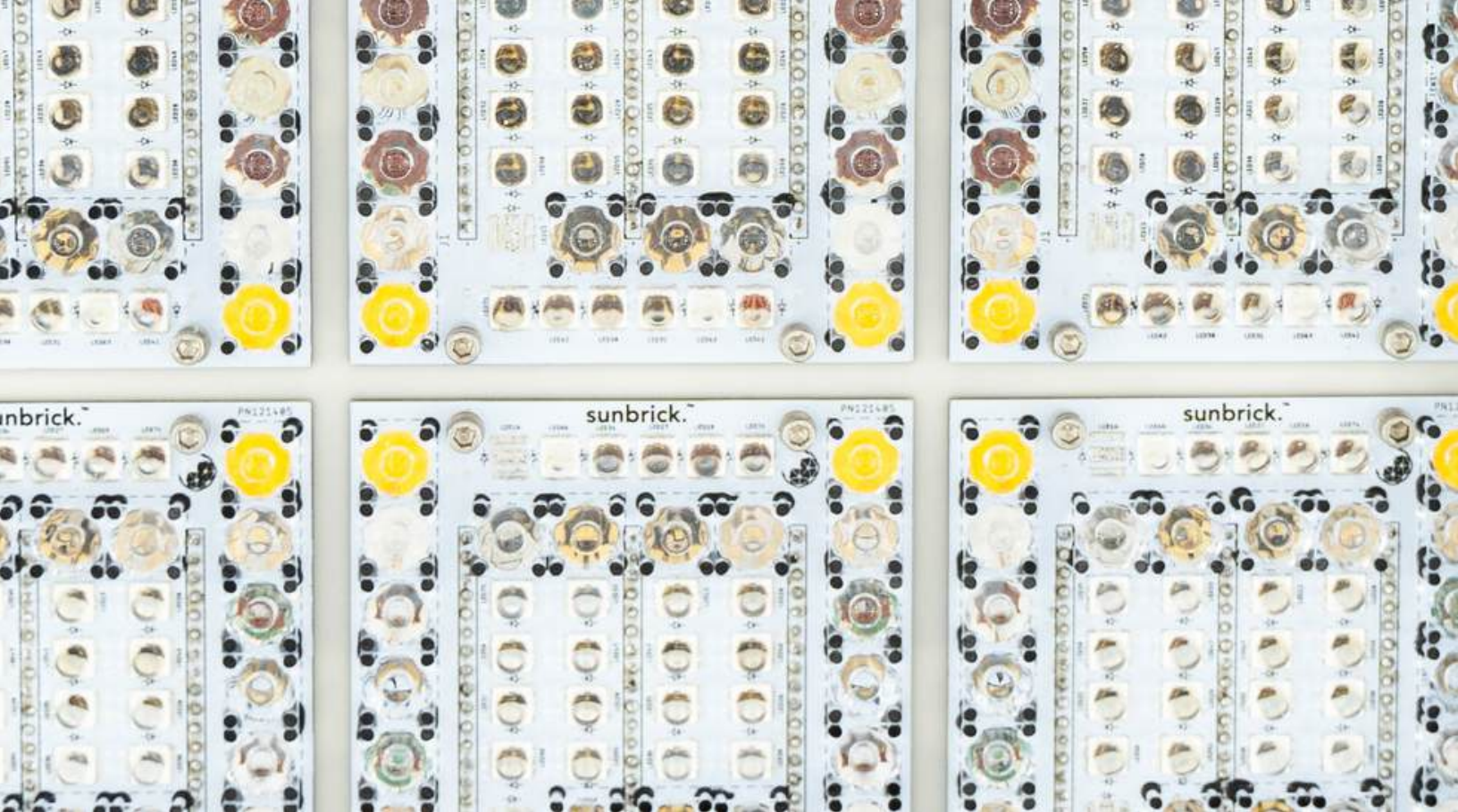
General Specifications	Value	Units	Notes
Type of Solar Simulator	Steady-state	N/A	Uses continuous-wave LEDs
Mounting Configuration	Two M6-threaded holes separated by 100 mm	N/A	Two 1/4"-20-threaded holes separated by 4" (imperial model)
Intensity Adjustment Range	0 - 110	%	0.1 - 1.1 suns AM1.5G in 0.1 increments
Class A Illumination Area	2.5 x 2.5	cm	
Safe Operating Temperature	15 - 40	°C	
Angle of Emission	< 30	°	Directed
Illumination Head Size	(21.5 x 22.3 x 11.6)	cm	
Weight	2.2	kg	4.4 lbs (illumination head)
Unit Lifetime	10,000	hours	Expected minimum lifespan
Warranty	2	year	Optional extension available



PICO - AM1.5G (KLMNO)

PICO - AM0 (KLMNO)





WHO WE ARE

G2V Optics (G2V) was founded in 2015 to apply innovative technology and data-driven, collaborative design toward solutions for this generation's global issues. Starting with the highest precision spectral replication ever produced, G2V now provides a suite of advanced lighting products to push the boundaries of research in renewable energy, aerospace, material science, and innovative industries requiring quality light.

Our software-controlled, adjustable-spectra LED solar simulators enable researchers to unlock the potential of tomorrow's solar-powered devices. Our highly-configurable lights accommodate a wide variety of test applications and setups by replicating geographic conditions of sunlight anywhere on Earth or beyond.

When spectral precision matters for your research, let G2V Engineer the Sun™.



G2V
ENGINEER THE SUN

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This brochure was published in 2026. For the latest G2V Optics news, product information, and events, please visit our website or social media accounts.