

Spi-Sun Simulator™

Solar Simulators and PV Module QA Testers

Spi-Sun Simulator™ photovoltaic module testing systems feature light sources that closely match the solar spectrum while avoiding the excessive solar cell heating caused by continuous sources. Spire's simulators can test either crystalline or thin film modules and can be integrated into your fully automated module production line, or operated in manual mode. In automatic mode, a programmed process sequence provides consistent module testing and offers optional automated loading and unloading of modules. In manual mode, the controls can be operated as desired.

Options:

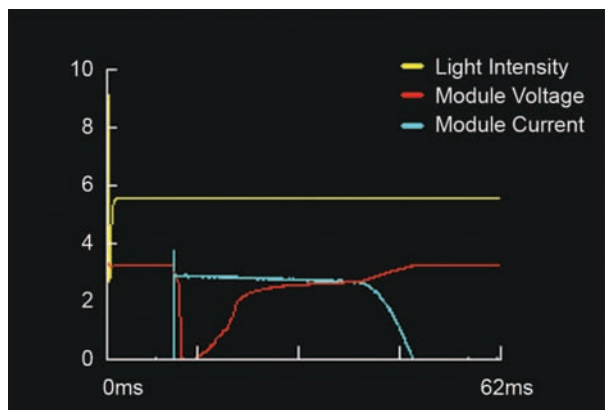
The Spi-Sun Simulator is available with the Module QA Tester. This integrated automation system allows for efficient module alignment, transport, probing and testing. The Module QA option adds high voltage isolation and ground continuity testing, automatic labeling of modules, and automated load and unload of modules.



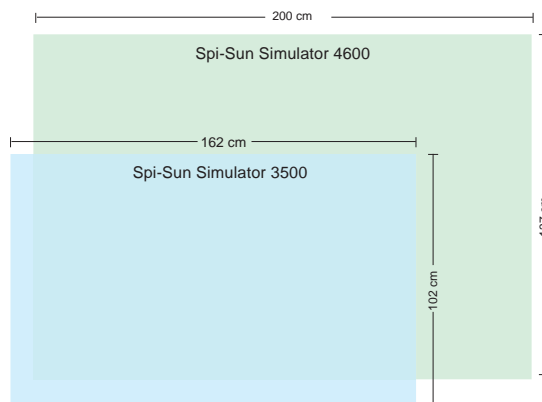
High accuracy and throughput: 240 modules/hour

Spi-Sun Simulator Models:

All simulators are available with either Multi-Pulse (MP) or Single Long Pulse (SLP) light options, and with optional Module QA test system. The SLP is capable of testing crystalline and thin film, single and tandem junction modules.



The Single Long Pulse light source provides exceptional stability as shown in this graph. The temporal stability is $\pm 0.2\%$ at an intensity of $1,000 \text{ W/m}^2$.



Maximum Module Dimensions

FEATURES AND BENEFITS

Class AAA performance

Accurate fill factor regardless of cell type

Reduces handling requirements for high throughput

Available with single long-pulse or multi-pulse light sources

Available with optional module QA test system



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Simulator Models	Spi-Sun Simulator 4600 MP	Spi-Sun Simulator 3500 MP	Spi-Sun Simulator 4600 SLP	Spi-Sun Simulator 3500 SLP
Maximum Module Dimensions (cm)	200 x 137	162 x 102	200 x 137	162 x 102
Light Source				
Number of Lamps	2	1	2	1
Lamp Type	Multi-Pulse filtered xenon tube		Single Long Pulse filtered xenon tube	
Pulse Width	1ms		20 to 80 ms at 1,000 W/m ²	
Spectrum	+/-25%, AM1.5G (Class A)		+/-25%, AM1.5G (Class A)	
Irradiance Temporal Stability	+/-1% (Class A)		+/-0.2% (Class A)	
Irradiance Spatial Uniformity	+/-2% (Class A)		+/-2% (Class A)	
Lamp Life	> 10,000,000 flashes		> 100,000 flashes	
Measurement Range				
Range of Light Intensity	700-1,100 W/m ²		200-1,100 W/m ²	
Measure Time	30-45 sec		< 1 sec	
Power/Module (max)	500 W		1,000 W	
Voltage Ranges	3 ranges (2, 25, 150 V full-scale)		5 ranges (2.5, 10, 25, 100, 250 V full-scale)	
Current Ranges	3 ranges (0.2, 2, 20 A full-scale)		4 ranges (3, 6, 12, 24 A full-scale)	
I/V Resolution	0.003%		0.003%	
Throughput				
Handling Time	15 sec (typical manual handling)		15 sec (typical manual handling)	
Total Cycle Time	45-60 sec		15 sec	
Modules/Hour	60		240	
System Specifications (not including control cabinet)				
Length x Width x Height (cm)	298 x 201 x 91	229 x 198 x 91	298 x 201 x 91	229 x 198 x 91
Net Weight	1,230 kg (2,700 lbs)	955 kg (2,100 lbs)	1,230 kg (2,700 lbs)	955 kg (2,100 lbs)
Utility Requirements with Module QA option				
Electricity	220 VAC +/-10%, 30 A, Single Ph, 50/60 Hz		220 VAC +/-10%, 30 A, Single Ph, 50/60 Hz	
Compressed Air	80-100 psi (550-690 kPa), 8 SCFM (3.7 SLPS)		80-100 psi (550-690 kPa), 8 SCFM (3.7 SLPS)	
Options				
Module QA Test System	High voltage isolation and ground continuity testing; automated load and unload of modules; optional automatic labeling of modules		High voltage isolation and ground continuity testing; automated load and unload of modules; optional automatic labeling of modules	
Length x Width x Height (cm)	201 x 714 x 259	198 x 655 x 259	201 x 714 x 259	198 x 655 x 259
Net Weight	1,910 kg (4,210 lbs)	1,635 kg (3,604 lbs)	1,910 kg (4,210 lbs)	1,635 kg (3,604 lbs)