

Spi-Cell Sorter™

High-Throughput Automated Solar Cell Tester

The Spi-Cell Sorter™ sorts photovoltaic cells according to their electrical performance, tested under simulated sunlight. A pulsed xenon lamp with an optical filter provides a close match to the Air Mass 1.5 Global solar spectrum. The spectrum meets the highest International and ASTM specifications (ASTM E927 Class A). The system features automatic cell handling of coinstacked cells and sorts the tested cells into ten output bins.

A computer with user-friendly software adjusts the lamp intensity, controls the measurement process and cell handling, and acquires cell performance data. The data, as a full I-V curve, allows sorting by a variety of selectable criteria. The computer plots the I-V curve and displays a variety of cell characteristics. Curves and data can be printed and stored on disk.



Sorts PV cells according to electrical performance



Automated cell handling gently positions each cell for electrical testing under simulated sunlight



Tested cells are sorted into output bins according to the cell's electrical performance.

FEATURES AND BENEFITS

Measures and displays the following cell parameters:

- Complete I-V curve
- Peak power, P_{mp}
- Series resistance, R_S
- Open circuit voltage, V_{oc}
- Cell efficiency, η
- Shunt resistance, R_{sh}
- Short-circuit current, I_{sc}
- Fill factor, FF
- Cell temperature, °C

Illumination uniformity within $\pm 2\%$

Single pulse light source, filtered to Class A spectrum

Low duty cycle reduces heat build up and prolongs life of the optics

Monitor cell, traceable to NREL standard

Four-point probe for accurate measurements

Computer system and software package for operation, measurements, data analysis, printed output, and disk storage



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Spi-Cell Sorter Specifications			
Maximum Solar Cell Dimensions	210 mm x 210 mm (8 in. x 8 in.)		
Light Source	1 kW pulsed xenon arc lamp, filtered to AM1.5 Global spectrum (ASTM E927) Intensity range 70 to 110 mW/cm ² Lamp lifetime > 1,000,000 flashes		
Illumination Uniformity	±2% over 156 mm x 156 mm area ±3% over 210 mm x 210 mm area		
Nominal Throughput	1000 cells/hour		
Measurement Range	Voltage 4 ranges: 1.25, 2.5, 5, 10 V	Current 0 - 20 A	
Resolution	Voltage 16 bit (full scale)	Current 16 bit (full scale)	
Equipment Dimensions	Length 191 cm (70 in.)	Width 345 cm (136 in.)	Height 196 cm (77 in.)
Equipment Net Weight	910 kg (2000 lbs)		
Utilities Requirements	Electricity 200 - 240 VAC, 40 A, 50/60 Hz, single phase Compressed air 550 kPa (80 psi)		
Certifications	CE		



Touchscreen monitor and keyboard user interface