SCS600 Series Solar Cell Quantum Efficiency System, EQE/IQE, 300–2500 nm

Model SCS600 Series · waveqvanta.com/products/scs600-series-solar-cell-quantum-efficiency-system



Measures EQE, IQE, spectral response and IPCE of solar cells made from a wide range of materials.

The SCS600 series measures the quantum efficiency and spectral response of solar cells of various materials using the substitution method against a calibrated standard detector, for university and institute labs as well as industrial R&D and production QC. It works with Keithley 2612B and 2636B source meters for accurate data acquisition and bias testing, and a large sample chamber with double doors simplifies sample loading. Xenon, tungsten and dual-source versions cover 300–1100 nm (1700 nm optional) up to 300–2500 nm.

Key features

- EQE, IQE, spectral response and IPCE measurement with integrated Jsc calculation
- Xenon and tungsten light sources with stability better than 99% for repeatable substitution-method results
- All-reflective optical path avoids chromatic aberration, so the spot size stays the same at every wavelength
- 150 W xenon lamp delivering more than 6 mW/cm^2 at 500 nm
- Bias light and bias voltage tests, light beam induced current (LBIC) measurement, AC and DC data acquisition
- Monitoring CCD camera for spot observation and precise sample positioning
- Measures samples inside glove boxes and vacuum chambers; IPCE-PVK glove-box accessory available

Specifications

Measurement Functions	EQE, IQE, spectral response, IPCE, integrated Jsc, LBIC
Measurement Method	Substitution method against standard detector
Light Source	Xenon (XE), tungsten (TH) or dual source (XT)
Wavelength Range	300–1100 nm (XE, 1700 nm optional); 400–2500 nm (TH); 300–2500 nm (XT)
Wavelength Accuracy	±0.2 nm
Wavelength Repeatability	±0.1 nm
Minimum Scanning Step	0.005 nm
Diffraction Gratings	Three gratings: 1200, 600 and 300 lines/mm
Wavelength Resolution	FWHM 0.1 nm (300 mm focal length, 1200 g/mm grating, 0.01 mm slit)
Filter Wheel	Motorized, software controlled
Light Source Stability	> 99%
Xenon Lamp	150 W, > 6 mW/cm^2 at 500 nm
Light Spot Size	1 × 1 mm^2 to 10 × 10 mm^2
Sample Dimensions	50 × 50 mm^2 to 100 × 100 mm^2
Data Acquisition	AC and DC modes; compatible with Keithley 2612B and 2636B source meters
Bias Tests	Bias light and bias voltage
Monitoring	CCD camera

Bias LEDs, 365–550 nm	M365L 420 mW, M405L 400 mW, M450L 320 mW, M550L 50 mW
Bias LEDs, 610–980 nm	M610L 80 mW, M690L 100 mW, M760L 100 mW, M880L 50 mW, M980L 50 mW
Glove Box Accessory IPCE-PVK	Fits standard glove box, external light source, 3D sample adjustment, dual door, CCD
Probe Stage IV-F1	Vacuum adsorption, large cells, I-V, max. sample 100 × 100 mm
Probe Stage IV-F2	Vacuum adsorption, small cells, I-V, max. sample 50 × 50 mm
Probe Stage QE-F4	Two 3D probes, oxygen-free copper base electrode, QE, max. 30 × 30 mm
Probe Stage QE-F6-C	3M test clip, 2D adjustable, I-V/QE, max. 100 × 100 mm, dye-sensitized cells
Probe Stage QE-F6-D	Back-electrode stage, rotary selector for multi-cell samples, I-V/QE, max. 35 × 35 mm
Probe Stage QE-F6-H	Gas-sealed back-electrode stage, rotary selector, gas circulation, max. 35 × 35 mm

Model overview

Model	Light Source	Wavelength Range	Repeatability 200–400 nm	Repeatability 400–1000 nm	Repeatability 1000–1700 nm
SCS600-XE	Xenon	300–1100 nm (1700 nm optional)	≤2%	≤1%	≤1.5%
SCS600-TH	Tungsten	400–2500 nm	–	≤1%	≤1.5%
SCS600-XT	Dual (xenon + tungsten)	300–2500 nm	≤2%	≤1%	≤1.5% (1000–2500 nm)

Typical applications

- Quantum efficiency of solar cells of various materials
- Multi-cell samples measured with LED bias light
- Dye-sensitized solar cells
- Air-sensitive samples in glove boxes
- University and institute photovoltaic research
- Industrial R&D and production quality control