Sinton instruments

Product Note

# Light I-V Testing for Solar Cells

*Sinton Instruments' family of cell testers is capable of accommodating conventional or back-side cells of any size and contact arrangement by using its interchangeable cell chuck.*

**Advanced analysis of solar cells including light I-V and Suns-Voc data. Capability to accurately measure high-efficiency conventional or backside-contact solar cells. One-sun or concentrator instruments available.**

## Product Overview

The cell test family of instruments has been designed to have the highest possible accuracy for measuring high-efficiency silicon solar cells. This is accomplished using a patented multiflash technology.

The standard analysis includes the commonly reported parameters for cell testers, but is supplemented with the Suns-Voc analysis that precisely indicates the source of power loss due to shunt and series resistance effects. The CCT family of concentrator testers allows the user to view the efficiency versus intensity curves and light I-V curves at multiple intensities based on a short automated series of measurements.

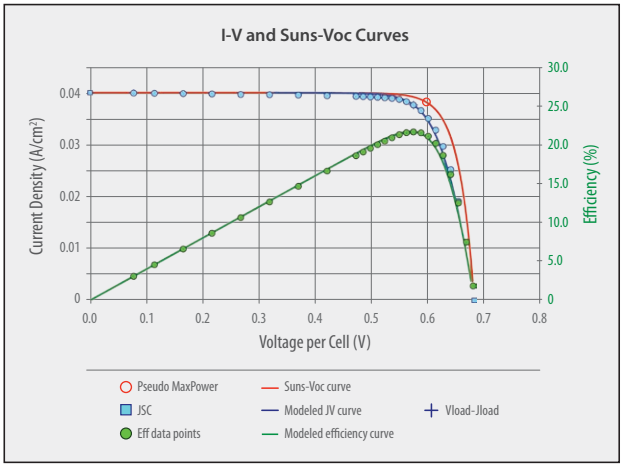
## System Capabilities

Available instruments:

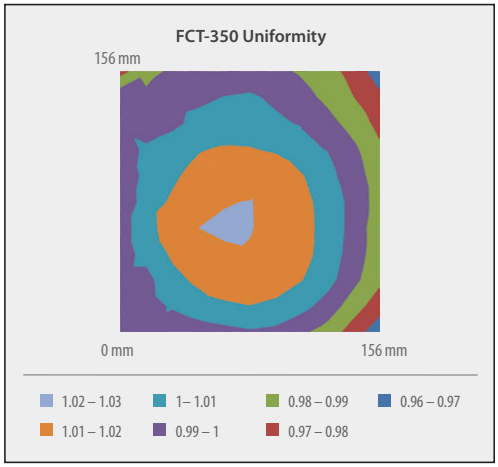
- One-sun cell flash testing (FCT)
- 20-sun medium concentration cell testing (CCT)
- 1000-sun high concentration cell testing (HCCT)

Analysis techniques:

- Suns-Voc curve
- 3-point production testing utilizing Suns-Voc, Jsc, Vload
- Family of I-V curves versus intensity
- Efficiency versus intensity characteristic




*The instrument interface displays both I-V and Suns-Voc data. This permits quick identification of shunt and series resistance effects.*




*The uniformity of the FCT-350 is Class A (±2%) over 156 mm x 156 mm.*

## Specifications

### Instrument Specifications

**Available measurements**
- Voc, Isc, Vmp, Imp, FF, Rs, Rsh
- Efficiency versus intensity
- Suns-Voc parameters

**Measurement modes**
- Full I-V
- 3-point measurement (Voc, Isc, Vload)
- Hunt for Vmp (optimized sequence to take data at Vmp)

**Available intensity range**
- 0–1.2 suns (FCT)
- 0–20 suns (CCT)
- 50–1000 suns (HCCT)

**Current range**
- 0–10 A (FCT)
- 0–50 A (CCT or HCCT)

**Voltage range**
- 0–10 V

**Uniformity**
- ±2% 156 x 156 mm (FCT)
- ±2% 100 x 100 mm (CCT at 20 suns)
- ±2% 20 x 20 mm (HCCT at 100 suns)

**Temperature range**
- 25°C–40°C

**Simulator class**
- Class AAA options available (ask for details). TJ cells can be spectrally matched using the HCCT.

**Warranty**
- One-year limited warranty on all parts and software
- Service agreement also available

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### Facility Requirements

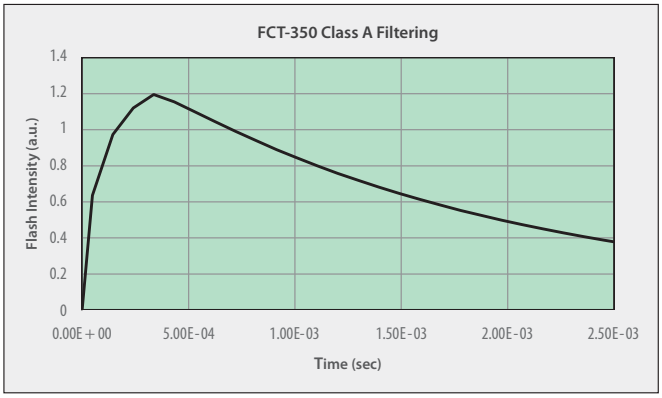
**Ambient operating temperature**
- 20°C–25°C

**Power requirements**
- Instrument: 80 W
- Computer with monitor: 200 W
- Light source: 60 W

**Dimensions**
- FCT/CCT: typically 150 x 45 x 42 cm
- HCCT: custom footprint

**Universal mains voltage**
- 100–240 VAC 50/60 Hz

**Special facilities requirements**
- Vacuum: 20 in Hg




*All measurements made from 0.5 to 1.2 suns will be in the Class A spectral range.*

## Instrument Components

- Electronic load and current, voltage interconnections
- Temperature-controlled chuck
- Programmable flashlamp and supply
- Windows PC with installed, configured software and monitor
- Sinton Instruments data acquisition and analysis software package
- High-resolution, high-speed data acquisition with simultaneous I-V-illumination sampling

## Purchasing Information

For a quote, please contact quotes@sintoninstruments.com

We are happy to accommodate custom requirements. Please inquire about a quote for your specific needs.

For our full product line, visit our website at: www.sintoninstruments.com

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