Sinton instruments

Product Note

FCT-650: Flash Testing for Solar Cell R&D

The FCT-650 can accommodate cells up to 230mm with both conventional and back contact designs.

Advanced analysis of solar cells including light I-V and Suns-Voc measurements. Accurately measure high-efficiency conventional or back-contact solar cells.

Product Overview

The FCT-650 has been designed to have the highest possible accuracy for measuring high-efficiency solar cells. This is done using patented Voltage Modulation technology to neutralize the capacitive effects in I-V measurements. The FCT-650 offers high-resolution, high-speed data acquisition with simultaneous current-voltage-illumination sampling.

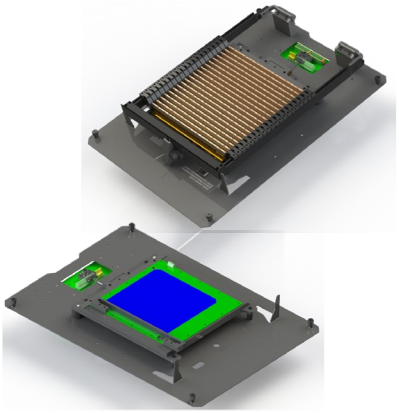
The MultiFlash analysis package includes standard cell test outputs supplemented with the Suns-Voc analysis that precisely indicates the source of power loss with accurate shunt and series resistance measurements. EL image acquisition add on is also available.

System Capabilities

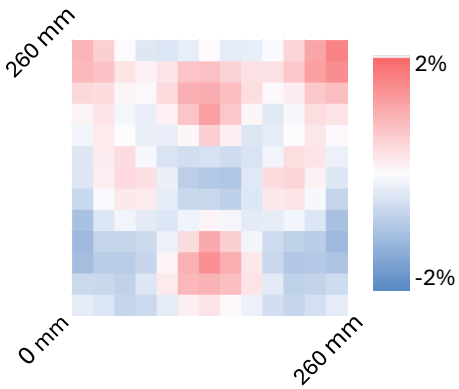
- Measure conventional I-V parameters
- Measure advanced Suns-Voc and lifetime parameters for accurate cell characterization and power loss analysis
- Monitor and optimize the production process

Available Measurements

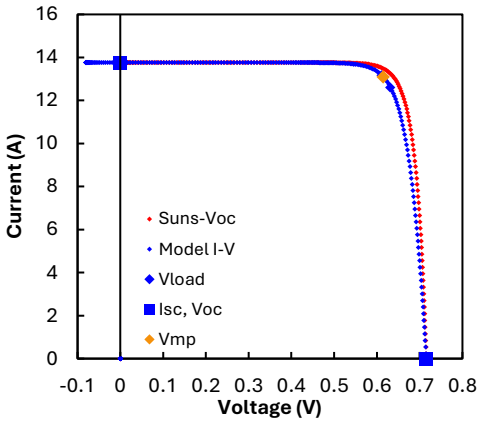
- I-V
- Suns-Voc
- Carrier recombination lifetime including J_{0e} and bulk lifetime
- Substrate doping and thickness
- Power loss by mechanism
- MultiSuns Analysis



Conventional front contact test chuck (top) and custom back-contact chuck (bottom) can be easily swapped in the system to test any cell design.



Class A non-uniformity over 260 x 260 mm



Example graphical result data showing I-V and Suns-Voc data.

Instrument Specifications

Available Measurements

- V_{oc}, I_{sc}, V_{mp}, I_{mp}, FF, R_s, dark R_{sh}
- Suns-Voc
- Lifetime (τ_{eff}, τ_{bulk}, $\tau_{@Vmp}$) and Emitter Saturation Current Density (J_{0e})
- Substrate doping and thickness
- Forward and reverse dark I-V
- Power loss by mechanism
- Current biasing for EL imaging

Current Measurement Range

- 40 A

Voltage Measurement Range

- 20 V

Temperature Control

- Adjustable, active temperature control, 15 – 80°C

Cell Measurement Options

- Wafer size: up to 230mm
- Standard front-contact cell test chuck with 18 probe bars (up to 22 available for 230m cells)
- Custom back contact test chucks available

Available Intensity Range

- 0.1 to 2 suns

IEC 60904-9 Classification

- Class A or better non-uniformity of irradiance over 260 x 260 mm
- Class A or better spectrum (other spectra available)
- Class A temporal stability

Warranty

- One-year limited warranty on all parts and software

CE

Facility Requirements

Ambient Operating Temperature

- 20°C to 25°C

Power Requirements

- One dedicated single-phase circuit (10A)
- 100 – 240 VAC 50/60 Hz

Dimensions (L x W x H)

- Base: 70 x 66 91 cm
- Flash Engine: 38 x 38 x 61 cm
- Fully assembled: 70 x 66 x 155 cm

System Components

- FCT-650 Instrument
- Electronic Loadbox
- EL camera (optional)
- Xenon flash
- Class A filter
- Signal cables
- Windows PC with installed, configured software
- Monitor, keyboard, and mouse
- High-resolution, high-speed data acquisition
- Sinton Instruments MultiFlash software package

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.
- Quotes are valid for 60 days.
- For our full product line, visit our website at: www.sintoninstruments.com

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