

FMT-350: Light I-V Testing for Modules



Advanced analysis of solar modules including light I-V and Suns-Voc data. Capability to accurately measure high-efficiency modules.

Product Overview

The FMT instrument has been designed to have the highest possible accuracy for measuring high-efficiency silicon solar modules. This is accomplished using a patented multflash technology.

The standard analysis includes the commonly reported parameters for module testers, but is supplemented with the Suns-Voc analysis that precisely indicates the source of power loss due to shunt and series resistance effects.

FMT System Capabilities

Primary applications:

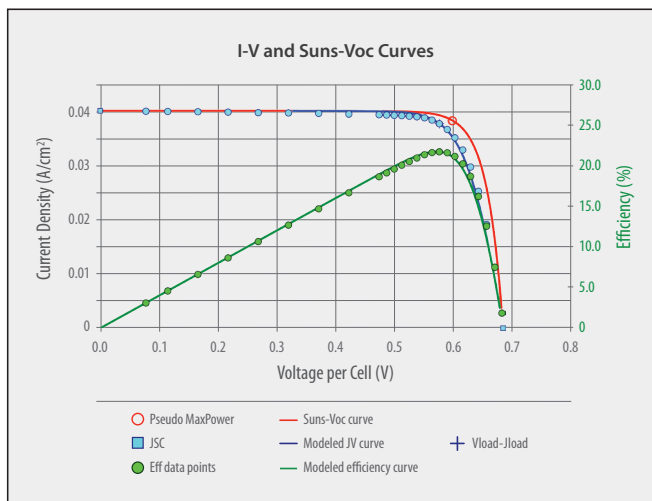
- One-sun flash module testing

Analysis techniques:

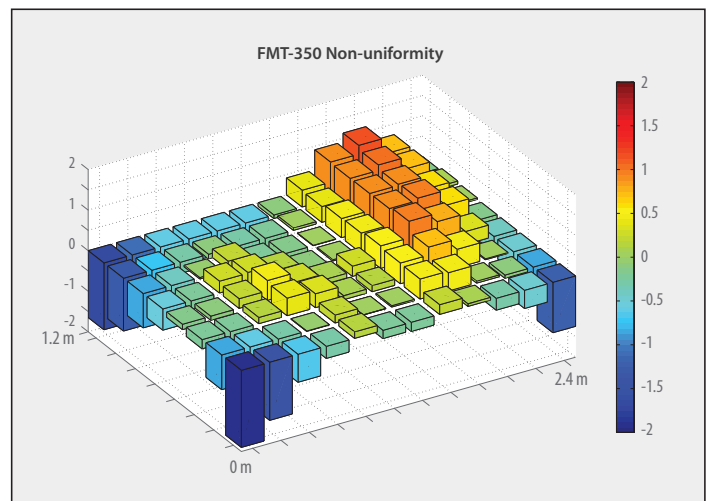
- Suns-Voc curve
- 3-point production testing utilizing Suns-Voc, J_{sc} , V_{load}
- Efficiency versus intensity characteristic
- I-V curves at multiple intensities

Measures any crystalline silicon module, including high-capacitance, high-efficiency modules, using patented electronic load technology.

Over 6 GW of product has been tested to date using the FMT instrument. It is also ideal for R&D.



The FMT interface displays both I-V and Suns-Voc data. This permits direct comparisons of module data to cell data and quick identification of series resistance, shunting, and cell mismatch.



The FMT-350 illumination area non-uniformity is Class A ($\pm 2\%$) uniformity over a 1 x 1.5 m test area. The figure above shows data from a setup that achieved Class A ($\pm 2\%$) uniformity over 1.2 x 2.4 m.

FMT Specifications

Instrument Specifications

Available measurements

- Voc, Isc, Vmp, Imp, FF, Rs, Rsh
- Suns-Voc parameters

Measurement modes

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

Current range

- 0–10 A

Voltage range

- 0–100 V (other available)

Available intensity range

- 0.2–1.3 suns

Non-uniformity

- $\pm 2\%$ 1 x 1.5 m

Simulator class

- Class A non-uniformity over 1.5 x 1 m
- Class A temporal stability
- Class C spectrum, standard (Class A spectrum, optional)

Warranty

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



Facility Requirements

Ambient operating temperature

- 20°C–25°C

Power requirements

- Computer with monitor: 200 W
- Light source: 1 kW 20 A

Dimensions

- 5-m distance from source to module required for Class A non-uniformity
- Computer: 47 x 14 x 42 cm (L x W x H)
- Load box: 26 x 31 x 5 cm (L x W x H)
- Flash power supply: 54 x 48 x 22 cm (L x W x H)

Universal mains voltage

- 100–240 VAC 50/60 Hz

Special facilities requirements

- Darkened room or tunnel (2.5 x 2.5 m cross section typical)



High-throughput flash power supply.

FMT Components

- Electronic load and current, voltage interconnections
- 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.

Quotes are valid for 60 days.

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

