QuickSun® 600

All-in-one module testing station for the mass production of PV modules

- ✓ **A+A+A+ solar simulator, EL, hipot, ground bond, visual, and bypass diode tests**
- ✓ **Reliable results for the highest efficiency modules (PERC, HJT, IBC, bifacial)**
- ✓ **Maximized productivity: 150 modules per hour**
- ✓ **Minimized factory footprint of 7 m²**
- ✓ **Low total cost of ownership**

QuickSun 600 is a fully automated solar simulator for IV testing PV modules with dimensions up to 105 × 205 cm². A full collection of other back-end module tests, such as EL imaging, hipot, ground bond, visual, and bypass diode tests, is integrated into the system, and a throughput of 150 modules per hour is achieved by loading in the modules directly at a standard production line height and synchronizing all the tests carefully with each other.

Solar Simulation

A detailed test report is included with every simulator, proving a class A+A+A+ performance with respect to spectrum, irradiance non-uniformity, and short-term instability (STI). The Xenon technology spectrum is continuous, from 300 nm up to 1,200 nm, and it complies without any reservations with the future standard IEC 60904-9 Ed. 3. Long-term instability (LTI) is also within class A+ tolerances during the 40-ms-long flash pulse – even the high efficiency and capacitance IBC and HJT modules can be measured accurately by applying the Capacitance Compensation Method (CAC). This scientifically justified procedure enables the measurement of the steady-state I-V curve in only 40 ms, eliminating the need for longer flash pulses. The QuickSun 600 testing chamber is inherently designed to enable the single-side testing of bifacial modules at elevated intensities. The applied test procedures and reports comply fully with the standards IEC 60904-1 and IEC 60904-9.

EL, Visual, and Bypass Diode Tests

EL images having a 200-µm pixel resolution are recorded with six 8.3-MP CCD cameras, enabling software-based automatic image analysis to identify and categorize small faults, such as micro-cracks and finger interruptions. Bypass diodes are tested according to the functionality test specified in the standard IEC 61215-2, and a high-resolution image of the cell side of the module is recorded and used to analyze such features as cell-to-cell distance, particle contamination, and ribbon misalignment.

Electrical Safety

QuickSun 600 has the capability to perform hipot and ground bond tests, as stipulated in the applicable UL and IEC standards. The actual leakage current is measured with a sensitive enough instrument that enables a run-time diagnosis of both contacting reliability and real module leakage characteristics. Ground bond is tested with proprietary sensors that eliminate the need to penetrate the frame surface oxide.

Key Characteristics

Contacting	J-Box / contact adapter; 4-wire / Kelvin	
Load	Feedback controlled MOSFET	Adjustable bias 0–4.5 V
Voltage sweep	Isc -> Voc, Voc -> Isc	Capacitance Compensation Method (CAC)
Voltage measurement	1–100 V (other scales on request)	Accuracy better than 0.2 %
Current measurement	0.5–25 A (other scales on request)	Accuracy better than 0.2 %
Irradiance control	200–1200 W/m²	Resolution 1 W/m²
Pmp repeatability	(Max-min) / (max+min) < 0.25 %	Std. < 0.1 %
Average flash tube life time	500 000 flashes	
EL image	40 MP	Typ. exposure time 3–5 secs
Hipot	Max 6.5 kV	0.1 nA measurement sensitivity
Ground Bond	0.2 mohm sensitivity	
Visual image	120 MP	
Operation temperature	15–35 ºC	
Mains utilities	3~, 400 Vac, 3 x 16 A, 50–60 Hz	CDA 4–6 bar
Total dimensions, weight	320 x 203 x 160 cm	900 kg

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Specifications subject to change without notice

5 | 2018