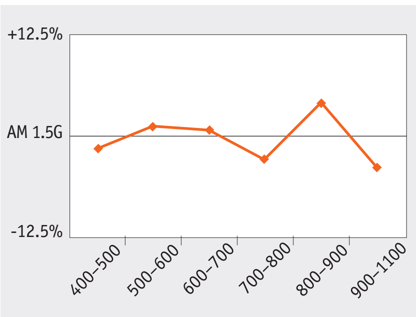
QuickSun® 130E

Cell Solar Simulator

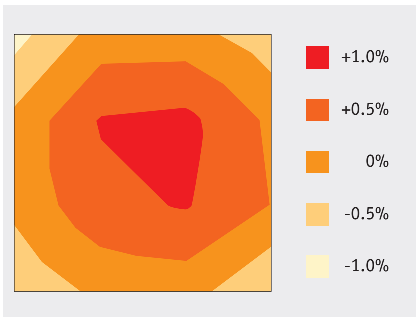
QuickSun 130E is a versatile manually operated Xenon flash simulator for testing both ordinary and high capacitance crystalline silicon solar cells.

QuickSun 130E exceeds the ordinary Class A criterions of IEC904-9 ed. 2 with clear margin providing enhanced IV characteristics accuracy. The applicable test methods and procedures are inspected by SGS Fimko Ltd in order to guarantee the compliance and traceability not only with the above standard but also with IEC904-1 ed. 2 which specifies the IV measurement conditions.

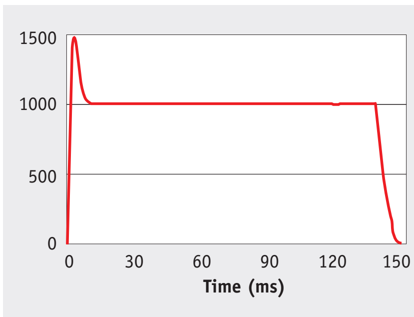
Spectrum: Class A+



Irradiance non-uniformity: Class A+



STI and LTI: Class A+



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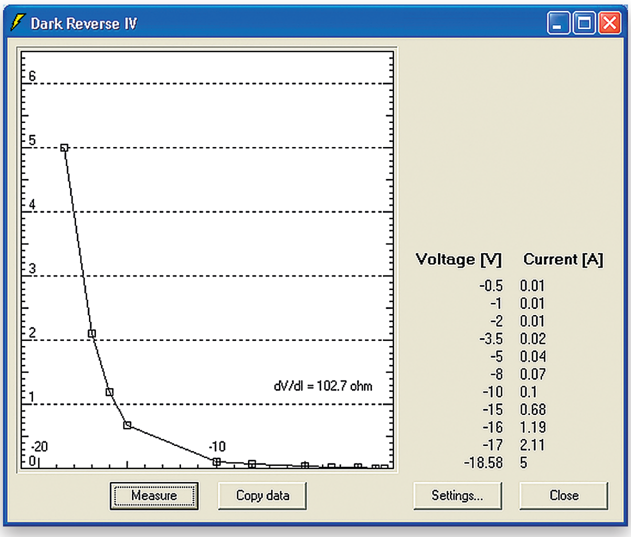
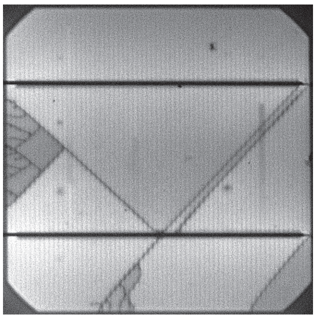
QuickSun software is designed to provide flexibility for different end-users from fully automated large scale production lines to smaller factories and research laboratories. Full remote control of the software and all its features is possible through a TCP interface and measurement data is automatically transferred to an external database using an ODBC interface.

Manually operated Kelvin contacted test jig is easily adjustable for crystalline silicon cells having either three, four or five bus bars. Also the back contact plate has isolated voltage probes eliminating the reproducibility drift inherent with ordinary test jig designs.

Temperature correction coefficients can be measured when the test jig is equipped with an optional temperature controller for heating the cells up to 70 °C. Correction coefficients are calculated and evaluated automatically as described in the standard IEC 60891 ed 2. while QuickSun software measures IV characteristics at different temperatures.

Dark reverse IV characteristics can be measured with the DR-IV option providing information both on shunt and avalanche characteristics at elevated reverse voltages.





EL imaging instrumentation can be easily integrated with the basic QuickSun 130E and an analysis software license from a recognized supplier is available. Better than 100 µm pixel resolution images are recorded within a few seconds exposure delay.

Complete 2-diode model and its equivalent circuit components can be evaluated with Irradiance Decay Analysis Method (IDCAM). Utmost physical reliability is achieved by applying a two step analysis procedure. During the first step diffusion and recombination diodes as well the shunt resistance are extracted while the cell is in open circuit. Thereafter series resistance is solved with equal accuracy and reliability that is achievable with the three IV graph procedure described in the standard IEC60891 ed 2.

Extended test area up to 32 x 42 cm e.g. for testing also mini modules is readily available. Irradiance non-uniformity is measured with a 2 x 2 cm^2 sensor which guarantees that also thin film samples which typically have small area cells will be measured accurately. Flash pulse duration and throughput are optimized for each case individually.

IV measurement characteristics

Contacting	4-wire / Kelvin	
Load	feedback controlled MOSFET	adjustable bias 0 – 4.5 V
Voltage sweep	linear and double slope alternatives	Isc -> Voc, Voc -> Isc; average of both
Voltage measurement	1 – 4 V (other scales on request)	accuracy 0.2 % / 512 samples
Current measurement	0.5 – 25 A (other scales on request)	accuracy 0.2 % / 512 samples
Irradiance control	200 – 1200 W/m²	resolution 1 W/m² / 512 samples
Module temperature (IR)	0 – 75 °C	accuracy 1 °C
Monitor cell temperature	0 – 75 °C	accuracy 1 °C
Pmp repeatability	< 0.1% (1σ/ave)	
Average flash tube life time	300 000 flashes	
Operation temperature	15 – 35 °C	
Mains utilities	1~, 110 / 230 Vac, 20 / 10 A, 50-60 Hz	

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