

# IVT-SOLAR Cell Tester

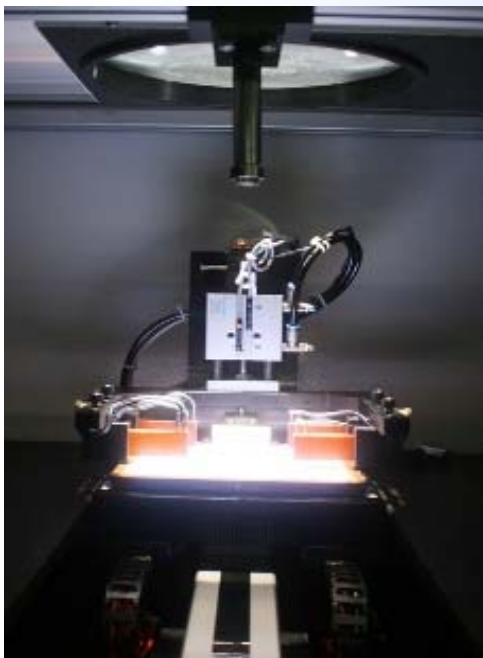
## KEY FEATURES

- **Constant lighting, Class AAA Solar simulator** with shutter to control light exposure time. Measurement & Illumination Time is 0.1sec for 100 points of I-V readings. Light Illumination time is programmable.
- **System is applicable for all types of Cell:**  
Mono & Poly silicon Cell;  
Thin film, Si, CdTe, CIGS;  
III-V Multi-junction.
- **High Measurement Accuracy & High Repeatability**  
System is incorporated with Temperature controlled vacuum chuck, a calibrated reference cell traceable to ISE Fraunhofer, four-point probes method, and light intensity auto feedback control to eliminate the impact of Xenon lamp lifetime span.
- **High traceability**  
Test methods, procedure & equipments are traceable to International standard ASTM, IEC, and JIS.



VS 6820

The new VS-6820 provides Cell manufactories & laboratories a new experience in testing and measuring of photovoltaic cells. It is not only providing the most complete coverage of testing items and measurement requirements from most international standards but also creating the task also much easier and faster ever than before for researchers.



Following four Test Sequence & criteria of each parameter are programmable and runs automatically:

### A complete I-V measurement in Light condition:

- Short circuit Current,  $I_{sc}$ ,
- Open circuit Voltage,  $V_{oc}$ ,
- Peak Power,  $P_{max}$ ,  $V_{mp}$ , &  $I_{mp}$
- Cell Efficiency,  $\eta$ , & Fill Factor FF
- Cell Temperature, & Light intensity

### A complete I-V measurement at Dark Condition:

- Shunt resistance,  $R_{sh}$ ,
- Leakage current at specified voltage;

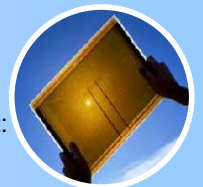
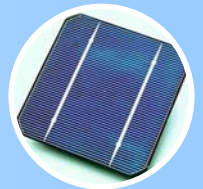
### A complete I-V measurement at three light intensities:

- Series Resistance ( $R_s$ ) Measurement

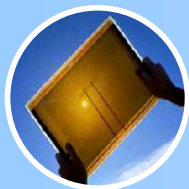
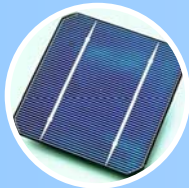
### A complete I-V measurement at different Cell

### Temperature: Temperature Coefficient measurement:

- Temperature coefficient of  $I_{sc}$ :  $\alpha$  (mA/°C)
- Temperature coefficient of  $V_{oc}$ :  $\beta$  (mV/°C)
- Temperature coefficient of  $P_{max}$ :  $\gamma$  (mw/°C)



# I-V-T-SOLAR Cell Tester



## Specification

Rev. 04

Model No		VS - 6821		
Solar Cell Size		8"	6" & 5"	
<b>a</b>	<b>Solar Simulator</b>			
	-- Applicable Standard:	JIS Standard		
	-- Lighting method:	Xenon Lamp, Continuously		
	-- Spectral match	< ±25%, Class A		
	-- Non-uniformity	< ±2%, Class A		
	-- Temporal Instability	< ±1%, Class A		
	-- Light Intensity:	0.7 to 1.5 kW/m <sup>2</sup>		
	-- Spectral Distribution:	AM1.5G		
	-- Illuminated Area (Minimum)	> 200x200 mm <sup>2</sup>	180 x 180 mm <sup>2</sup>	156 x 156 mm <sup>2</sup>
<b>b</b>	<b>Electronic Load</b>	Four - Quadrant E-load		
	-- Voltage Range	0 -- ±20V		
	-- Current Range	1µA to 9A/(10A);		
	-- Measurement Accuracy: Voltage	± 0.015%		
	-- Measurement Accuracy: Current	± 0.15%		
	-- Measurement method	4 wires, voltage sensing separated from current probes		
	-- Sweep Time	0.1 sec to 7 sec adjustable;		
	-- Measurement Speed	1ms per I-V reading		
<b>c</b>	<b>Thermal Chuck</b>			
	-- Chuck Size:	200 mm x 200 mm		
	-- Thermal control element	Four Peltier Type element		
	-- Temperature setting range	15°C to 65°C @ Ambient Temp 25°C		
	-- Temp control Accuracy	±0.2°C		
	-- Temp Meas Accuracy	±0.5°C		
<b>d</b>	<b>Contact Probe</b>			
	-- Bottom Contact	Copper Plate with Vacuum Suction		
	-- Top Contact probes	Four - Six Busbars, three probes/bar		
	-- Wire method	V+, V-, Vs+ & Vs- are separated		
	-- Probing Method	Auto: Linear Motor for Chuck movement In & Out + Pneumatic cylinder for Probing mechanism Up & Down		
	-- Optional	Manually Operation		
<b>e</b>	<b>Calibrated Reference Cell</b>			
	-- Cell Material	Monocrystalline Silicon		
		Calibrated in ISE Fraunhofer with certificate		
<b>f</b>	<b>Workstation, Computer</b>			
	-- Workstation	Width: 1260mm x Depth: 880mm x Height: 1200mm		
	-- PC, c/w 17" LCD Monitor	Industrial PC or desktop PC, c/w 17" LCD Monitor		
<b>g</b>	<b>I-V Characteristic Measurement Software</b>			
	-- Applicable standard	IEC 60904 - 1; ASTM - E948-05		
	-- Measured Parameters	Voc, Isc, Jsc, Pmax, Vmp, Imp, η, FF, Rs, Rsh		
		Complete I-V, P-V Curve		
	-- I-V Curve Normalization	Temperature & Light Irradiance Normalization		
<b>h</b>	<b>Test data Processing &amp; Reporting</b>			
	-- I-V curve raw test data	Yes		
	-- Test Sequence & calculated parameters	Yes		
	-- Test Report	Option		
	-- Temp Coefficient Test report	Option		

For more information, please contact

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