

CELL

LIVS

(LINE I-V Scanner)



For quality screening. . . .
For evaluation and analysis of
deterioration or defects. . . .



※本製品は、(独)産業技術総合研究所の研究成果を活用しています。(特許第4765052号)

CELL SYSTEM Co., Ltd.



LIVS (LINE I-V Scanner) **PVC-3300T**

OVER VIEW

This system, PVC-3300T, adopts a new measuring method which is different from many existing testers using solar simulator.

PVC-3300T is that,

- 1) a light-source head (linearly aligned LED's) moves from end to end over the entire light-receiving surface,
- 2) and the optical I/V characteristics of each linear division are measured sequentially at every step,
- 3) then using the information of the inner-surface distribution, that is of parameters obtained by scanning, PVC-3300T diagnoses and evaluates performance uniformity and detects defective points of the tested panel.

It is speedy; scanning time of entire surface of a 300mm x 300mm sized panel is about 10 seconds (*1) (*2).

(*1) When measuring I/V under the following conditions: 5mm-scanning width x 60 lines and 200 steps per line.

(*2) Display speed is not considered. Scanning time may change depending on response speed of the tested panel.

FEATURE

1. PVC-3300T can diagnose modules of up to the maximum testing size.
2. The light-source head scans the surface of a module. Then I/V characteristics of each line of the whole area will be measured and defective points are detected.
3. The light-source head is a combination of white and infrared LED's. This two-color combination enables to obtain the characteristics information in the depth direction of a thin film. (Different output power for each white and infrared LED's can be assigned.)
4. The irradiance of the light source is $80\text{mW}/\text{cm}^2$, that is 80% of a solar simulator ($100\text{mW}/\text{cm}^2$).
5. It takes only about 10 seconds for scanning the entire 300mm x 300mm area.
6. Isc (short-circuit current), Voc (release voltage), Pmax (maximum output power), and FF (fill factor) are calculated in real time, so these characteristic values can be applied to Quality judgment at a production line.

SPECIFICATIONS

1. Test Object

- Test Object Thin-film, Dye-sensitized, and Organic thin-film Solar cells
- Max. Panel Size 300mm (L) x 300mm (W)

2. Voltage Generation Unit

- Output Voltage -10V to +50V
- Output Current -3A to +3A
- Step Voltage 0.01V (Min. resolution ability)
- Step Time Interval 20 μ sec. (Min. time)
- Number of Steps Max. 600 steps

3. Measuring Unit

3-1 Measuring items and Measuring range

- Measuring Line Pitch 5mm (Line Pitch can set from 1mm)
- Applied Voltage -10V to +50V (20 μ sec./sample)
- Output Current -30mA to +30mA (20 μ sec./sample)
-3A to +3A (when DARK I/V measured)
- LED Drive Current (4ch) 0A to 1A (100m sec./sample)
- LED Output Light (4ch) 0W to 1W (100m sec./sample)
- LED Temperature 0 to 100 degrees C (100m Sec./sample)

3-2 Saving Data

- I/V Characteristics Data (I, V) x 600 steps x 60 lines
- Characteristics Values (Isc, Voc, Pmax) x 60 lines

4. Light Source Unit

- Lamp White and Infrared LED array
- Irradiance 80mW/cm²
- Driving Voltage MAX. 72V x 4ch
- Driving Current MAX. 1A x 4ch
- Profile Slit Light 5mm (W) x 370mm (L)
The slit light of the 1mm width (option)
- Control Mode ACC (Constant Current Control) or
APC (Constant Power Control)
- LED Cooling Air cooling

5. Scanning Unit

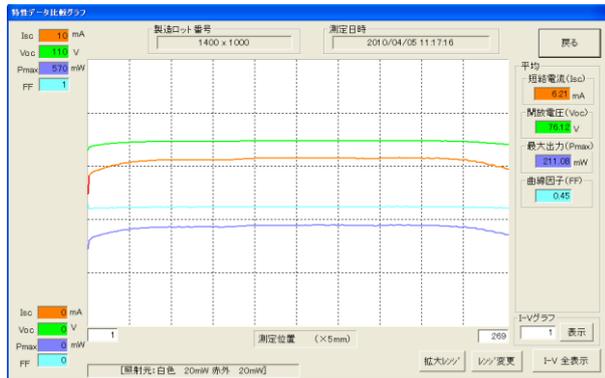
- Scanning Method Movement of Light-source Head by AC servomotor
- Scanning Speed Max. 50mm/sec.
- Scanning Distance Max. 350mm

6. Others

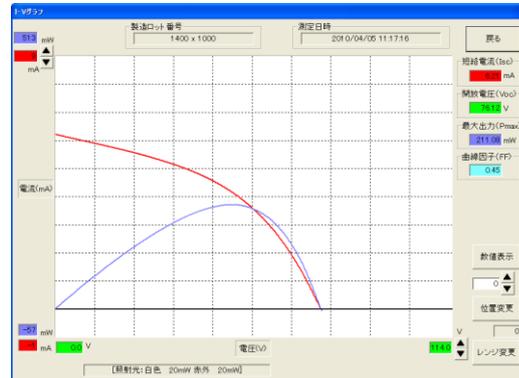
- Power Source AC100V 6A (0.6KW)
- Dimensions 580 (W) x 851 (D) x 285 (H) mm
- Weight 30kg or less

MEASUREMENT EXAMPLES

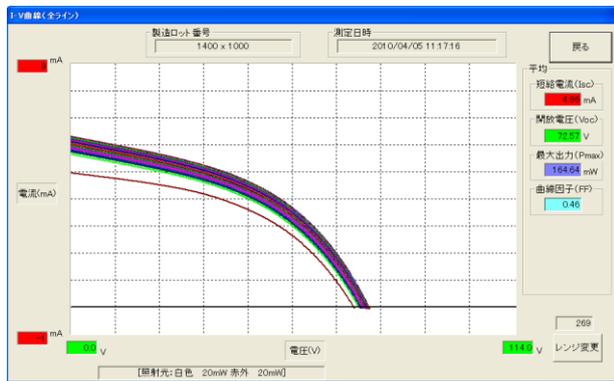
1. Comparison of Characteristics Data



2. I/V Curve



3. I/V Curve Comparison

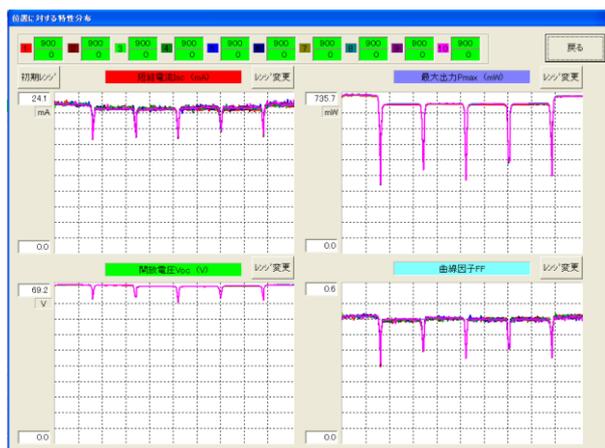


4. Numerical Display of Characteristics Values

	短絡電流(Isc)	開放電圧(Voc)	最大出力(Pmax)	曲線因子(FF)
平均値	6.21 mA	761.6 V	211.08 mW	0.45
標準偏差	0.001	0.001	0.001	0.001
最小値	6.20	761.5	211.0	0.45
最大値	6.22	761.7	211.1	0.45

Lot No.	Isc (mA)	Voc (V)	Pmax (mW)	FF
1	4.8620	72.5700	154.6350	0.4572
2	5.4480	73.8650	183.7330	0.4468
3	5.7310	74.1320	187.2630	0.4400
4	5.7770	74.2290	188.3910	0.4411
5	5.8110	74.4730	190.9230	0.4412
6	5.8340	74.5660	191.8850	0.4411
7	5.8410	74.6300	192.3360	0.4412
8	5.8570	74.7410	193.3530	0.4417
9	5.8820	74.8200	194.5840	0.4420
10	5.9100	74.9880	195.8450	0.4423
11	5.9340	75.0250	197.0150	0.4424
12	5.9500	75.1070	197.6250	0.4422
13	5.9550	75.1350	197.8490	0.4422
14	5.9640	75.2000	198.6130	0.4428
15	5.9880	75.3050	199.8560	0.4432
16	6.0130	75.3910	201.0160	0.4434
17	6.0310	75.4430	201.7200	0.4433
18	6.0360	75.4900	201.8870	0.4431
19	6.0450	75.4980	202.2620	0.4432
20	6.0540	75.5560	203.0050	0.4438
21	6.0700	75.6160	203.9210	0.4439
22	6.0890	75.6840	204.7130	0.4442
23	6.1060	75.7150	205.2390	0.4439
24	6.1090	75.7270	205.3520	0.4439
25	6.1110	75.7310	205.4580	0.4440
26	6.1160	75.7580	205.7660	0.4441
27	6.1300	75.8290	206.6350	0.4445
28	6.1460	75.8910	207.3660	0.4447
29	6.1580	75.9080	207.7030	0.4445

5. Comparison of Characteristics Values for Locations



6. Correlativity among Characteristics Values



* Specifications and design are subject to change without notice.

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