

Filmeasure 2100

Air-Float Spectrum Transmittance Station for PV Glass

Patent Technology PID:052002

- ▶ Innovative technology for directly measuring large glass
- ▶ Propose $T_{AM1.5}$ comprehensive evaluation standard
- ▶ 90% market share
- ▶ Indispensable instrument for solar PV Industry



Meet SEMI PV47-0513 - Specification for Anti-Reflective-Coated Glass, Used in Crystalline Silicon Photovoltaic Modules international standard

As the main participants of PV SEMI international standard SEMI PV47-0513 - Specification for Anti-Reflective-Coated Glass, Used in Crystalline Silicon Photovoltaic Modules, the participant of industry standard JC/T2170-2013 Anti-reflective coated glass for photovoltaic modules and the drafter of the industry standard Test method of transmittance for patterned glass, Aoptek Scientific Co.,Ltd. first put forward the Effective Spectral Energy Transmittance $T_{AM1.5}$ conception and apply to this instrument, we take the silicon slice energy response curve and illumination into account, gaining actual photoelectric conversion rate.

Application: Super clear patterned glass, super clear patterned AR coated glass, TCO coated glass

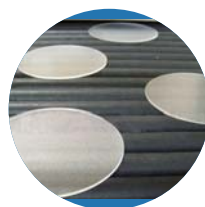
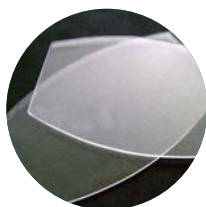
Filmeasure 2100

Air-Float Spectrum Transmittance Station for PV Glass

This instrument is mainly used in solar low-iron patterned glass manufacturers, low-iron patterned glass AR coating enterprises and solar photovoltaic module manufacturers, it can rapidly measure spectral transmittance for super clear patterned glass and super patterned AR coated glass. .

The maximum measurable size of sample is $2\text{m} \times 1\text{m}$ and the instrument can calculate Y , x , y , L^* , a^* , b^* , $T_{AM1.5}$, etc.. Using this device we can easily and fast measure multi-points on large pieces of glass and calculate the average transmittance, each point difference and other parameters. Thus to control and monitor glass quality.

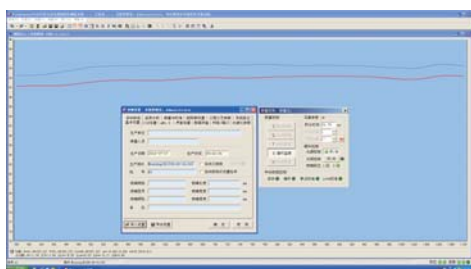
This equipment is initiated by Aoptek and its original model is GST3, which has independent intellectual property rights. The first set was developed in 2005 and has been widely recognized by users. In 2013 our company participated in the international SEMI standard setting, SEMI standard adopt the evaluation mathematical model of this equipment, and made it as the standard measuring instruments.



Features

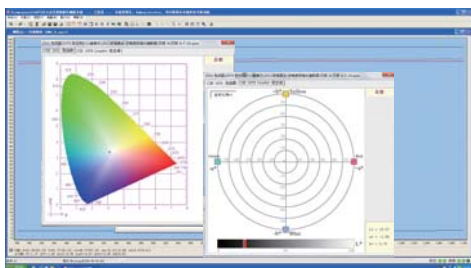
- Network connection, flexible configuration;
- Large piece of glass can float on the plate, easily moved;
- Direct measurement without polishing;
- Automatic and dynamic calibration, drift-free for long run;
- Special optical structure designed to eliminate vibrate and ambient light;
- Compare overlapped spectrum curves before and after coating, supervise AR;
- Self-developed software with rich graphical interface;
- With self-inspection, error alarm and records.
- The performance and function of this equipment are independent, so computer can be upgraded or replaced by users.

Function



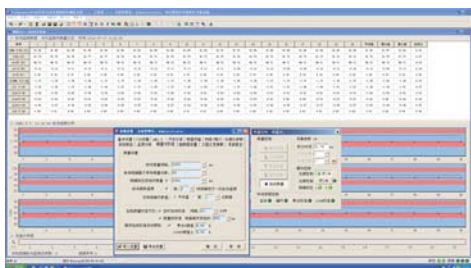
Rapid transmittance spectral measurement

Rapidly measure solar light PV glass spectral transmittance and automatically, get $T_{AM1.5}$, visible light transmittance Y , x , y ; L^* , a^* , b^* and other color parameters. Y -coordinate can be adjusted by your needs, magnify the spectral curve for convenient observation. You can set target curve and monitor AR performance.



Rapid transmittance color analysis

Auto longitudinal measurement and single point measurement, it can measure big or small samples. Measuring points and time intervals can be adjusted by production needs. System is calibrated automatically after test, displaying real-time Y , x , y values in CIE1931 standard color zone and L^* , a^* , b^* values in CIE1976 standard color zone.



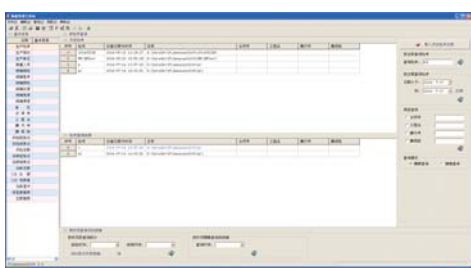
Multi-functional quality control

Display real-time spectral transmittance curve of each piece of glass, draw measuring result tendency curve. You can set ΔY , ΔL^* , Δa^* , Δb^* , ΔE , $T_{AM1.5}$ and other quality evaluations and alarm thresholds.



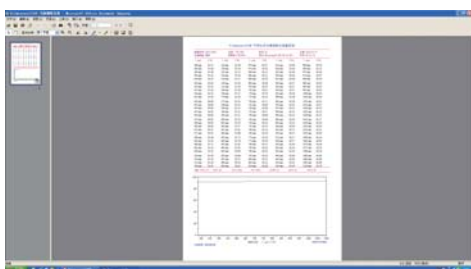
Innovative effective transmittance analysis

We all know that the visible transmittance and the average transmission are unsuitable for PV patterned glass. While the effective transmittance $T_{AM1.5}$ to show patterned glass performance is more reasonable, because it take ASTM G173 standard solar spectrum AM1.5, standard PV cell energy response curve (EQE) into account.



Convenient data storage and query

The instrument can store data by batches number and manage results automatically. Software provide fuzzy or precise query function, users can search batch number by name or date. The software also has advanced query function, you may search data by contract number, project name, film code, film specification and so on. Spectral data can be exported to EXCEL for further propose.



Abundant report print function

The software can set multi-level users corresponding to different operating authorization. Users can print color parameters, spectral curve, spectral data, current interface and historical data, historical tendency and so on. Before measuring the sample, you can fill the related information like the production date, batch number, glass specifications, models and so on, which can be printed in the report.

Parameters

Measuring Geometric Conditions	vertical lighting, integrating sphere receiving;
Spectrum Measurement Interval	1nm
Integrating Sphere Diameter	Φ100mm
Calibration Modes	automatic or maunual calibration
Spectral Range	380nm ~ 1100nm
Dimensions	2100mm×1500mm×1500mm
spectrum Half Width	3 ~ 5 nm
Measuring Mode	automatic or manual measuring
Wavelength Accuracy	< 0.3 nm
Max Power	2kW
Measuring Speed	≤1000ms for one measurement of each point (relate to integrating time)
Temperature	0℃ ~ 40℃
Measuring Size	Max 2000mm × 1000mm, Min 100mm × 100mm
Light Source	12V, 50W I

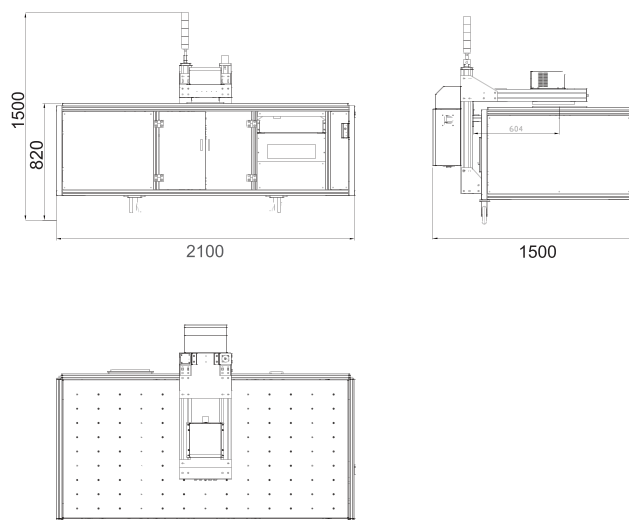
Accessory

Item	Description	Quantity
1	Sample Holder	1
2	Dell PC	1
3	Wireless Keyboard & Mouse	1
4	T14E2214HCN 22 inch LCD	1
5	LCD Rotating Bracket	1
6	Key to Control Box	1
7	Standby Lamp	10
8	Standby Lamp holder	10
9	User Manual	1
10	Software Disc	1
11	300×300 Glass Sample	1
12	Certificate	1

Consumables

Item	Description	Model
1	Standby lamp	DC12V50W-B-MT
2	Standby ceramic lamp holder	K509D

Specification



Package

Package: wooden box

Package size:

1. main engine: 1600mm×630mm×1200mm

2. Air-float Station: 2330mm×1240mm×1050mm

Net weight: 150Kg Gross weight: 320Kg



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