Solmetric®
PV Analyzer

PV Analyzer™
I-V Curve Tracer

SolSensor™
Wireless PV Reference Sensor
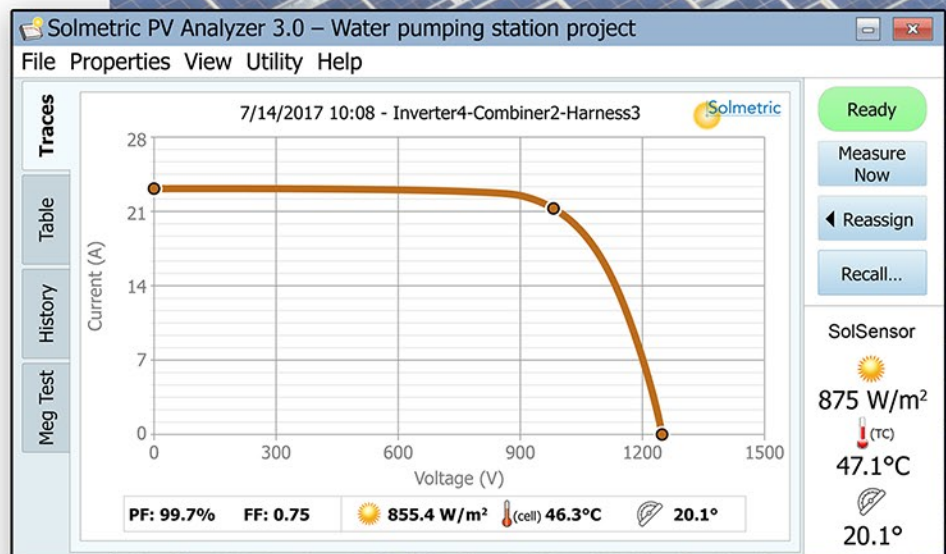
Measure your
Return On Irradiance™

Save time, reduce risk, and maximize ROI during:

- Commissioning
- O&M
- Auditing
- Troubleshooting

Industry Leading Features

- I-V curves up to 1500V and 30A

- Highest measurement throughput, even in hot environments

- Measures high efficiency modules, including Mono, Perc, and HJT

- Predictive model gives most reliable Go/NoGo testing

- Largest user interface and clear visualization of performance issues
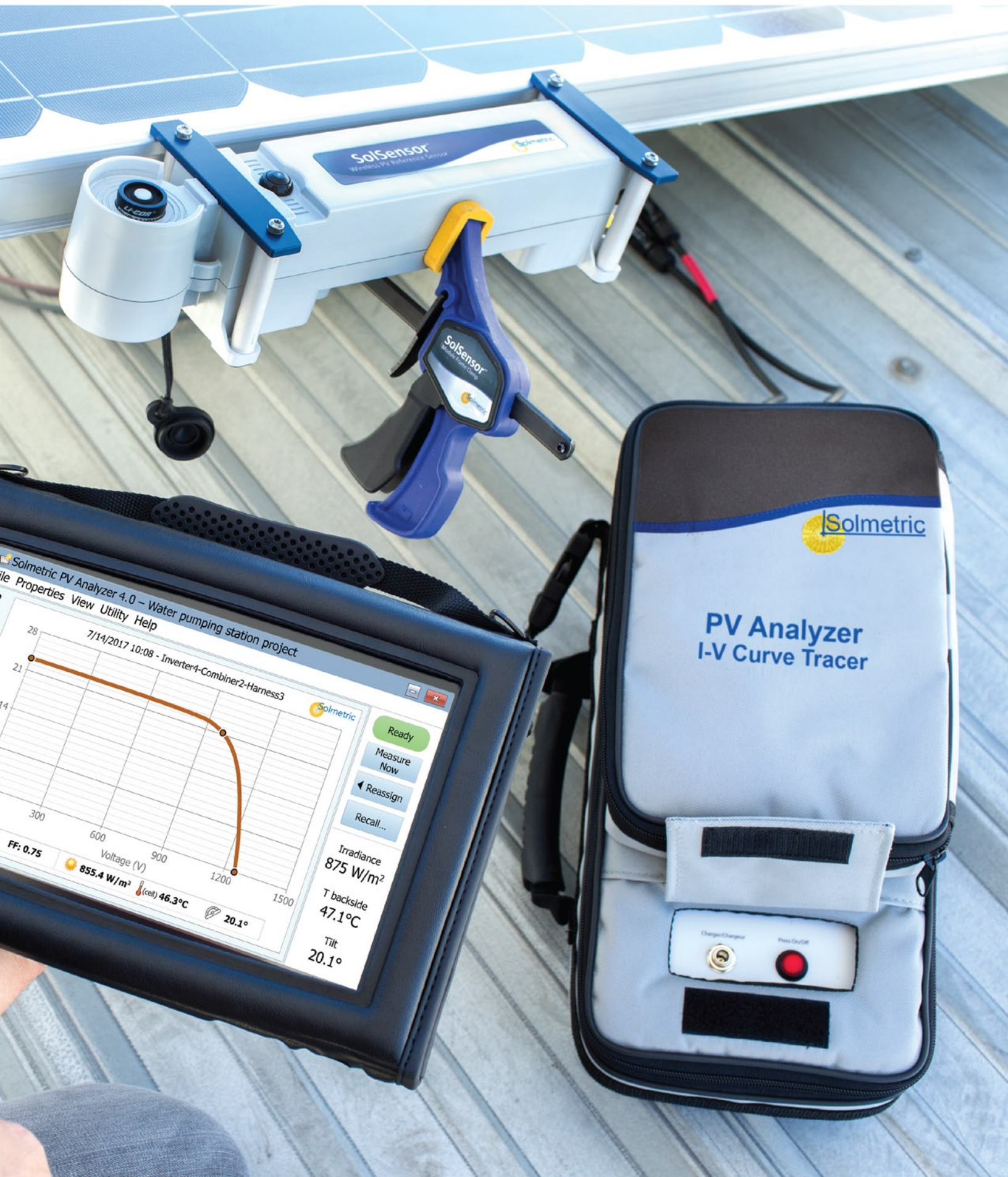
SolSensor   PVA -1500T   PVA -1500HE

NOW MEASURES 30A HIGH EFFICIENCY STRINGS

Solmetric PV Analyzer 3.0 – Water pumping station project

File Properties View Utility Help

Traces | Table | History | Meg Test

7/14/2017 10:08 - Inverter4-Combiner2-Harness3

Current (A)

Voltage (V)

Ready

Measure Now

◀ Reassign

Recall...

SolSensor

875 W/m²

(TC)
47.1°C

20.1°

PF: 99.7%   FF: 0.75   855.4 W/m²   (cell) 46.3°C   20.1°

Solmetric

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Made in USA

I-V Curve Measurement

The PV Analyzer meaures the I-V (curent vs voltage) curve of a PV string (or module) using a capacitive load. The measurement is typically performed at a combiner box using the fuses to select the string under test. The number of I-V curve points can 100 or 500. In addition to the I-V curve, the PVA also generates the P-V curve, Isc, Voc, Imp, Vmp, Pmax, Fill Factor, and Performance Factor (the ratio of measured to expected maximum power).

Setup

1. Deploy SolSensor
2. Open DC disconnect
3. Lift string fuses
4. Clip test leads to buss bars

Measurement

5. Insert a fuse
6. Measure I-V curve
7. Save result
8. Repeat for next string...

High-Efficiency Modules

The design of the PV Analyzer is optimized to accurately measure all types of PV modules. Strings of modern high-current, high-efficiency modules, including monocrystalline, PERC, HJT, and bi-facial, pose a particular challenge for many I-V curve tracers. Few curve tracers are capable of handling the in-rush current caused by the high capacitance associated with high efficiency modules. The Solmetric PV Analyzer is specifically designed to properly measure strings of these challenging modules up to 30 Amps.

## High Throughput in Hot Conditions

All I-V curve tracers absorb energy with each measurement. The PVA's high thermal capacity allows it to commission 3.5 MW of PV in an hour without overheating, even in environments exceeding 110°F ambient.

Time-Saving Interface

With a tablet PC as your user interface, perform more tests per hour and display the data in multiple, easy to read formats.
Save your measurements by touching your customized array tree at the branch you are measuring.
The software automatically calculates the expected I-V curve and displays the Performance Factor.
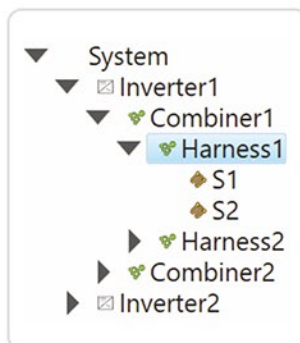
SolSensor
Wireless PV Reference Sensor

SolSensor provides irradiance, temperature, and module tilt data to the PV model. The model uses this information to predict the I-V curve shape at operating conditions, and to translate the measured curve to STC. SolSensor clamps to the module frame, automatically orienting the irradiance ensor in the plane of the array.

Irradiance & Temperature Accuracy

The spectral response of SolSensor's silicon photodiode sensor is corrected for the PV technology under test. Special factors are provided for multi- and mono-crystalline cells as well as CdTe and other thin film technologies. The sensor is temperature compensated and the angular response of each unit is calibrated for rotation and elevation. As a result, SolSensor is accurate over a broad range of technologies, sky conditions, and sun angles, allowing I-V curve measurements earlier and later in the day.

SolSensor provides two external thermocouple inputs for measuring module backside temperatures. Effective cell temperature can also be calculated directly from the measured I-V curve per IEC 60904-5. The PVA's **Smart**Temp feature, optionally, blends these two methods for best accuracy.

Wireless Interfaces

The I-V Unit and Solsensor communicate wirelessly with your PC via wifi with a line-of-sight wireless range of 100 meters. That means no wires underfoot, quick setup, the ability to move around while troubleshooting strings, and measure multiple combiner boxes with a single SolSensor setup.

Data Analysis and Reporting

The Solmetric Data Analysis Tool, provided with the PV Analyzer, generates tables of all the measurements for each within a project, histograms showing how the data for each parameter is distributed, and population charts of I-V graphs enabling quick identification of outliers. It also automates the process of preparing detailed, professional reports of your measurement results.
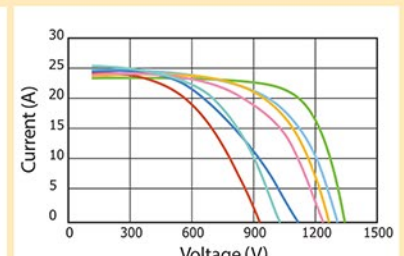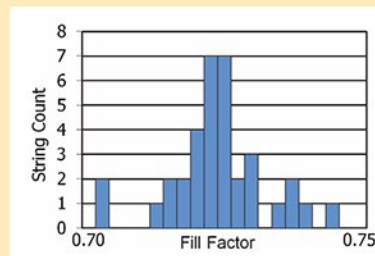
GENERAL INFORMATION

Characteristic	Description
High-efficiency PV Modules	Engineered to accurately measure high-efficiency, as well as standard, PV modules & strings.
User Interface	Bright, colorful graphics and touch screen controls for operator efficiency, ease-of-use, and in-field analysis. Runs on user's Windows tablet or laptop.
Wireless Interfaces	Wireless interface between user's tablet or laptop, I-V unit, and SolSensor.
Advanced PV Models	Accurately predicts performance at operating conditions. Checks your results immediately.
Equipment Database	Models for 70,000+ PV modules with automatic updates. Ability to create custom modules.
Included in PVA Kit	I-V Unit, SolSensor, Windows application, Alligator test leads, MC-4 tool, Chargers, Data Analysis Tool, SolSensor clamp, 2 thermocouples plus adhesive discs, Sensor cleaning supplies.
Options	Transit case (included with PVA-1500HE), Field charging kit, Training.

SPECIFICATIONS

	PVA-1000	PVA-1500V4	PVA-1500T	PVA-1500HE
Voltage Range (Voc)	20 to 1000V DC	20 to 1500V DC		
Voltage Accuracy	±0.5% ± 0.25V			
Current Accuracy	±0.5% ± 0.04A			
Power Accuracy	±1.7% ± 1.0W (current ≥ 3A)			
I-V Trace Points	100 or 500 Selectable			
I-V Sweep Duration	0.05 to 2s. Typically 0.2s for PV Strings.			
Operating Temperature (ambient)	32 to 113°F (0 to +45°C)			
Weight	14 lb			16 lb
Dimensions	17" x 8.5" x 6"			21" x 8.5" x 6"
Safety and Regulatory	TÜV CERTIFIED CE CAT III **1000V**	TÜV CERTIFIED CAT III **1500V**		
Maximum Current (Isc)				
Module Efficiency <19%	20/30A DC	30A DC		
Module Efficiency ≥19%		10A DC *		30A DC
Measurement Throughput				
Sweep-to-sweep delay (@Voc ≤ 1350V)		<18s	<9s	
Max # I-V sweeps per hour (@Voc ≤ 1350V)		200 sweeps/hr	400 sweeps/hr	
Max megawatts measured per hour **		2.6 MW/hr	3.5 MW/hr	
**Thermal Capacity--# I-V Sweeps Before PVA Must Cool Down **				
77°F Ambient, 18s Sweep-to-sweep delay		800	Unlimited	
77°F Ambient, 9s Sweep-to-sweep delay		N/A	Unlimited	
113°F Ambient, 18s Sweep-to-sweep delay		225	450	
113°F Ambient, 9s Sweep-to-sweep delay		N/A	330	
SolSensor				
Irradiance Accuracy	±2% Typical (600 to 1500 W/m², Si cells)			
Cell Temperature Accuracy	±2°C Typical, SmartTemp Method			
Tilt Accuracy	±2° Typical (0 to 45°)			
Update Interval	Irradiance: 0.1s, Temperature: 1s			
Wireless Range	100m (Open line of sight)			

* Strings of high efficiency modules ≥19% efficiency cannot be measured in parallel or have a current over 10A.

** Assumes reference PV system with Voc = 1300V, Vmp = 1100V, Imp = 25A, 16 strings per combiner, 5 min to move to next combiner with no measurements. No direct sunlight on I-V unit.

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