

Solmetric PV Analyzer™

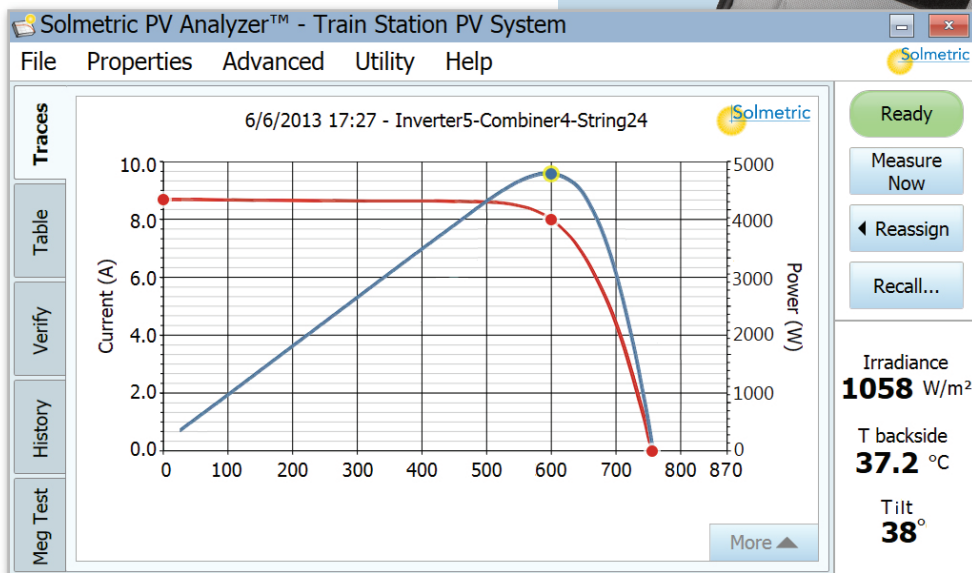
PVA-1000S
1000V I-V Curve Tracer

SolSensor™
Wireless PV Reference Sensor

Measure your Return On Irradiance™

Save time, reduce risk, and maximize ROI during:

- Commissioning
- O&M
- Auditing
- Troubleshooting



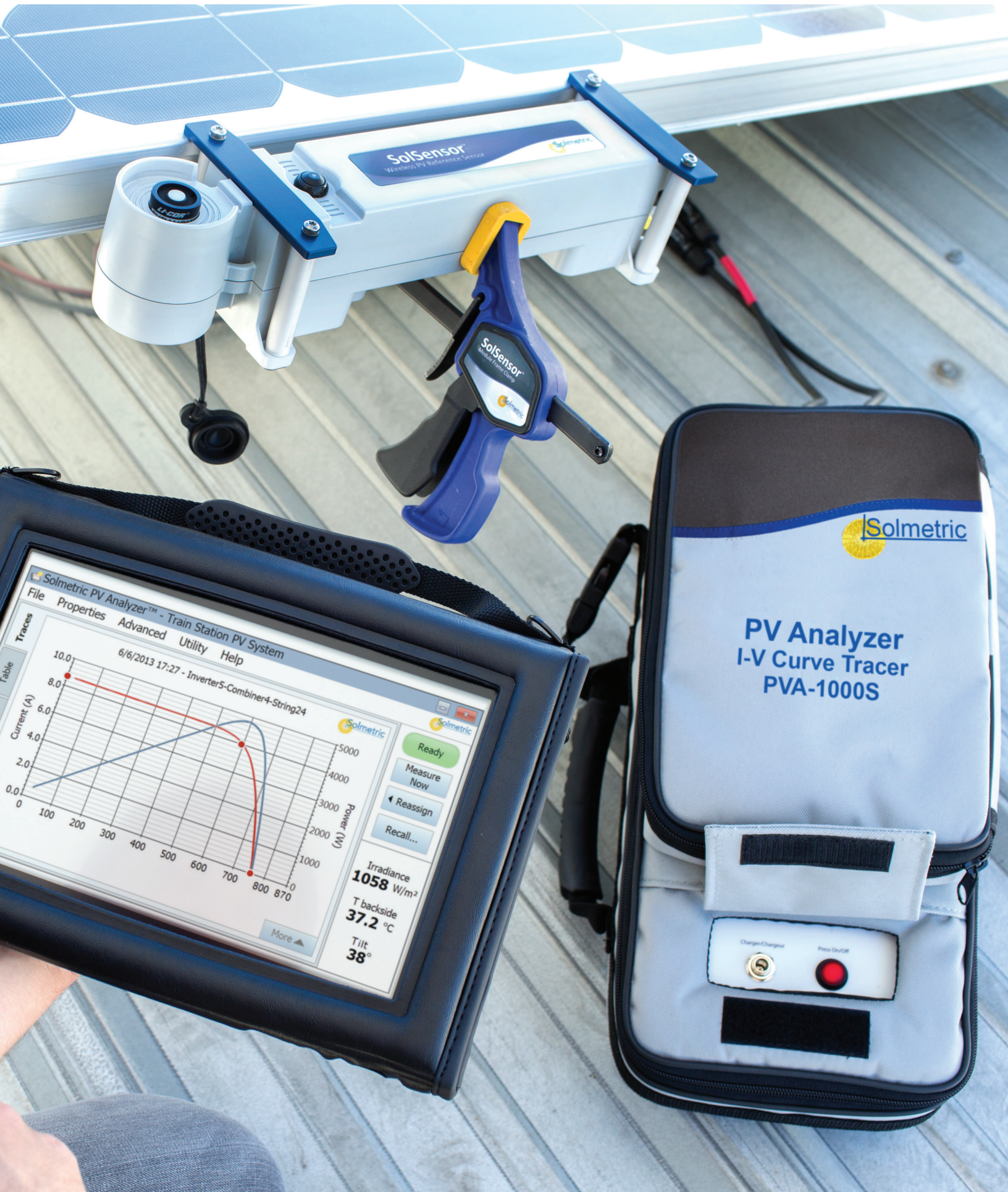
**Expert Tools.
Better Solar.**

See all our solutions at
www.solmetric.com

Industry Leading Features

- Highest throughput
- Best I-V accuracy
- Best irradiance and temperature accuracy
- Most reliable Go/No Go test limits
- Longest wireless sensor range
- Largest and brightest user interface

PV Array Commissioning / O&M / Auditing / Troubleshooting





I-V Curve Measurement Process

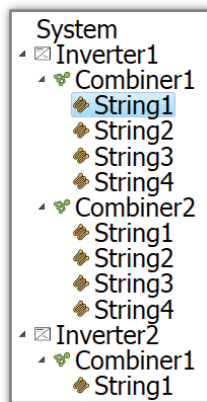
In large PV systems, string performance is measured at a combiner box. The DC disconnect is opened, the fuses are lifted, and the PV Analyzer's test leads are clipped to the buss bars. Fuses are inserted one at a time to measure the strings. The measurements capture each string's entire I-V curve, including I_{sc} , I_{mp} , V_{mp} , V_{oc} , and P_{max} .

Advanced Performance Modeling

The PV Analyzer checks the measured I-V curve against the prediction of an advanced PV model, taking into account spectral, angular, and low light effects. The database of more than 12,000 modules is updated automatically when web connected.

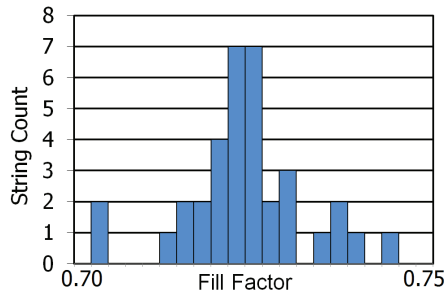
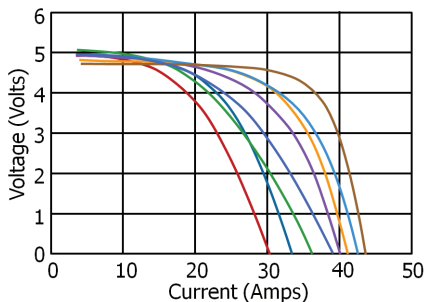
Time-Saving User Interface

The PV Analyzer's friendly PC interface with touch screen controls means faster measurements and greater flexibility in displaying and analyzing your data. A string measurement is saved by simply touching the location in the Array Navigator tree. A 1MW, 1000V system takes less than 2 hours of actual measurement time.



Analyzing and Reporting

Managing and analyzing data in the office can be just as important as collecting the data in the field. The I-V Data Analysis Tool automates analysis, normalizes populations of data, summarizes the results in easy to understand graphs and tables, and generates customizable reports of your commissioning or auditing results. Tables, histograms and I-V overlay plots provide deeper insight into your data. The graphs below show a family of I-V curves of modules with PID issues, and a typical distribution of Fill Factor values for strings in a commercial array.



SolSensor

Wireless irradiance and temperature sensors make array measurement safer and more productive. Solmetric's SolSensor Wireless PV Reference Sensor represents a leap forward in every feature and specification.



Irradiance

SolSensor's basic irradiance calibration is traceable to the World Radiometric Reference. Solmetric further calibrates for angle of incidence to achieve high accuracy earlier and later in the day.

Nearly simultaneous measurement of irradiance, temperature, and the I-V curve improves the agreement between the predictive model and the measured I-V curve under conditions of moving clouds.

SolSensor self-aligns in the plane of the array, removing another common source of irradiance error. A built-in tilt meter automatically provides module tilt, simplifying performance model setup.

Sensor redeployment can take up a significant part of your measurement day. SolSensor's industry-leading 100m transmission range means big time savings on large arrays.

SolSensor's auxiliary irradiance sensor input interfaces with matched reference cells and specialized sensors for high efficiency and thin film modules.

Cell Temperature

The PV Analyzer offers several methods for determining PV cell temperature for the performance model. The Blended Temperature™ determines PV cell temperature using a combination of a module backside thermocouple and the Equivalent Cell Temperature derived from the measured I-V curve. At high irradiance, the blend shifts toward ECT, and at low irradiance toward the thermocouple value. The blended method provides higher precision than backside-only, infrared, or ambient temperature/windspeed methods, reducing the effects of non-uniform temperature across the string under test. Temperature can also be taken from the thermocouple alone, or entered manually.

PV Analyzer Includes:

- I-V Measurement Unit with rugged carrying case
- PVA Software for Windows™
- Wireless USB Interface for Windows™ laptop or tablet
- Connector savers, MC-4 to MC-3 adaptors, MC-4 connector tool
- Battery charger (AC adapter)

SolSensor Includes:

- Sensor unit
- Module Frame Clamp
- Ruggedized K-type thermocouples (2)
- Thermocouple attachment adhesive discs (50)
- SolSensor tool lanyard
- Irradiance sensor cleaning supplies
- Shoulder bag



SolSensor Tripod Mount Kit:

- Leveling Unit
- Tilt & Rotation Unit
- SolSensor Adapter Plate
- Integral mechanical compass with declination adjust
- Soft case

General Information

Characteristic	Description
High-efficiency PV modules	Engineered to accurately measure high-efficiency PV modules & strings with higher effective capacitance.
PC user interface	Innovative touch-screen interface with bright, colorful graphics and touch screen controls for operator efficiency, ease-of-use, and in-field analysis. Runs on user's standard Windows laptop or tablet.
Wireless interfaces	Long range 802.15.4 mesh network ensures reliable connection. Speeds setup, no wires underfoot. More flexibility in troubleshooting.
Advanced PV models	Accurately predicts performance at both STC and current conditions. Checks your results immediately.
MPPT range indicator	On-screen indicator helps you identify poorly sized strings.
Equipment databases	Models for 12,000+ PV modules. Automatic updates.

PV Analyzer Preliminary Specifications

Parameter	PVA-1000S	PVA-600S
PV voltage range	0-1000 V	0-600 V
Current range	0-20 A	
Voltage accuracy	±0.5% ± 0.25 V	
Current accuracy	±0.5% ±40 mA	
Voltage resolution	0.025 V	
Current resolution	0.5 mA	
Measurement duration	4s (typical)	
I-V sweep duration	80-240 ms	
I-V trace points	250 nominal	
Operating temp range	0 to 50 °C	
Battery life	12 hours of continuous operation	
Protection features	Over-voltage, -current, -temperature, reverse polarity	
Safety	IEC-61010, TUV  , CE CAT III, 1000 V	IEC-61010, TUV  , CE CAT III, 600 V

SolSensor Preliminary Specifications

Parameter	Value
Irradiance accuracy	±2% typical, 0 to 1,500 W/m ²
Cell temp. accuracy	±2°C typical, Blended Temperature method
Tilt accuracy	±1 degree typical, 0-90 degree
Measurement interval	Irradiance: 0.1s Temperature: 1s
Wireless range	100m with open line of sight
Operating temp	0 to 50 °C



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