



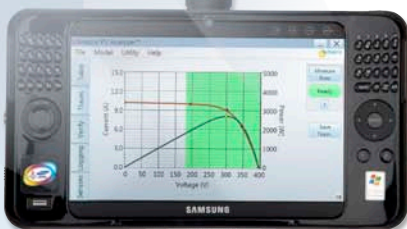
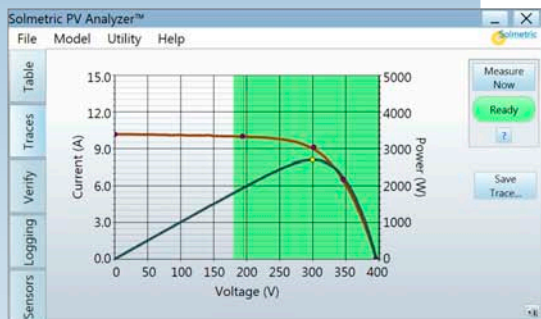
# Solmetric® PV Analyzer™

## Measure a PV string in seconds

- One electrical connection
- One measurement
- Complete performance verification

## Fast and Accurate Performance Verification

- Commission new PV arrays with confidence
- Troubleshoot arrays quickly
- Demonstrate fulfillment of contract obligations
- Record an array performance baseline



PC not included



*I had the great fortune of learning about PV through the eyes of an IV curve tracer. I consider that education a critical part of my success in understanding and troubleshooting how PV systems operate. Now that these devices are so much more affordable, there is no good reason to not get one.*

—Bill Brooks

## Key Features

- I-V curve tracing
- Built-in predictive models for performance evaluation
- Irradiance and temperature measurement options
- Wireless convenience and flexibility
- 600V, 20A



# Solmetric

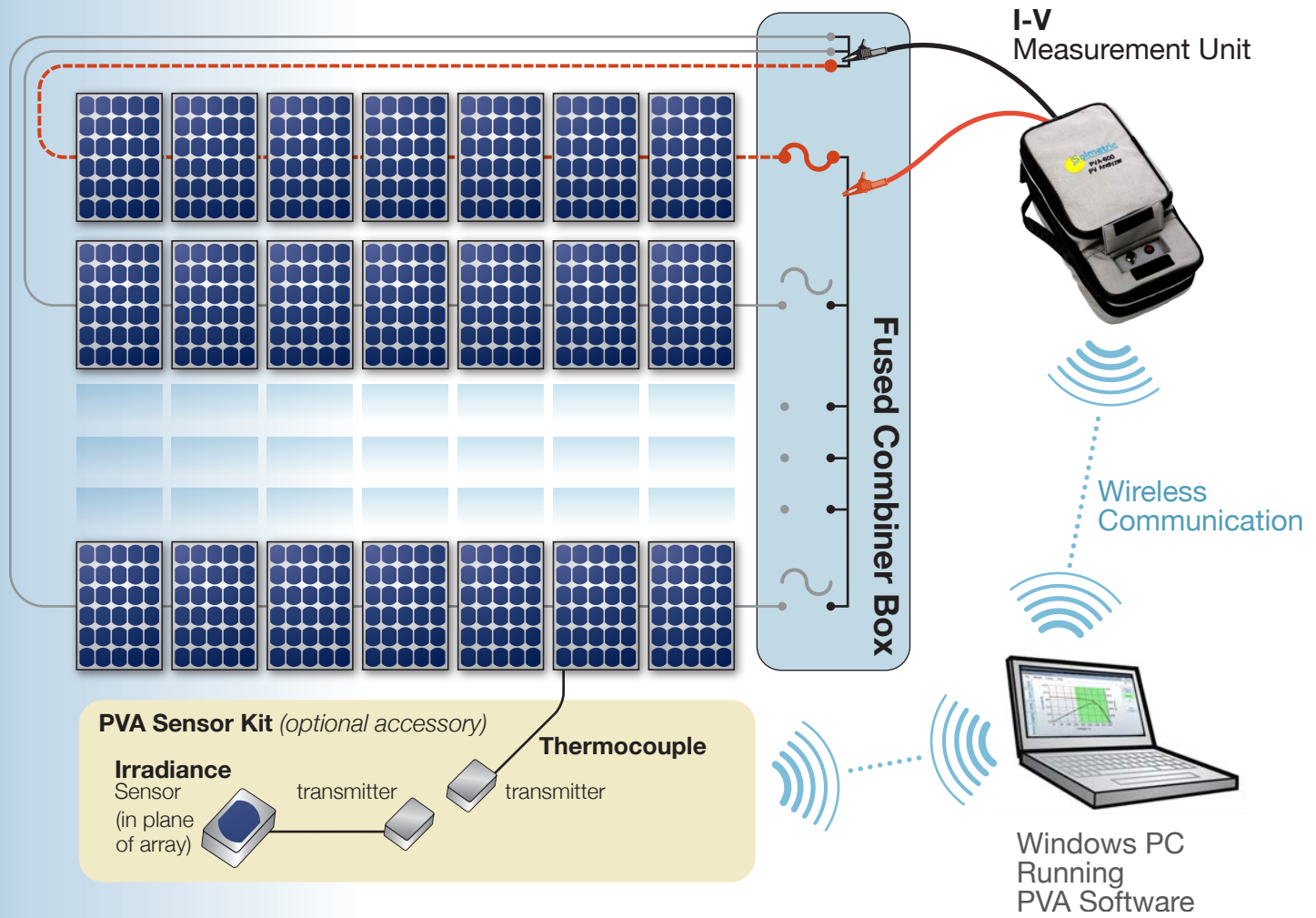
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# PVA-600 Set Up, Irradiance and Temperature

## Application Setup

Testing one string at a time at a fused combiner box



## Irradiance and Temperature

Measuring the irradiance and temperature along with the I-V curve allows deeper analysis of array performance. The **PVA-600** provides multiple options.

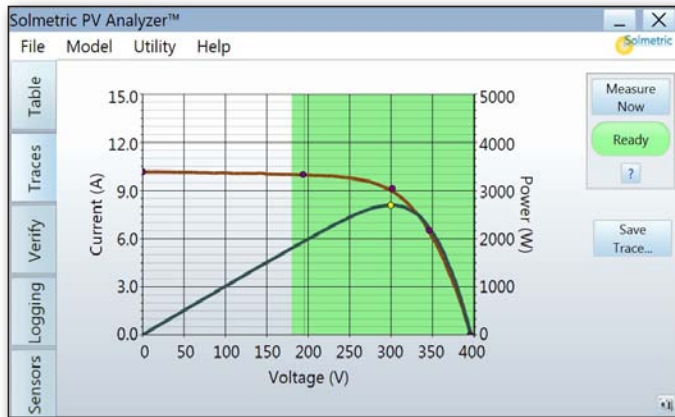
### 1. Wireless Sensor Kit

The accessory Wireless Sensor Kit automatically captures sensor data at the time the I-V curve is measured. This saves time, reduces errors, and improves measurement accuracy under changing atmospheric conditions. (Irradiance and temperature can also be entered manually.)

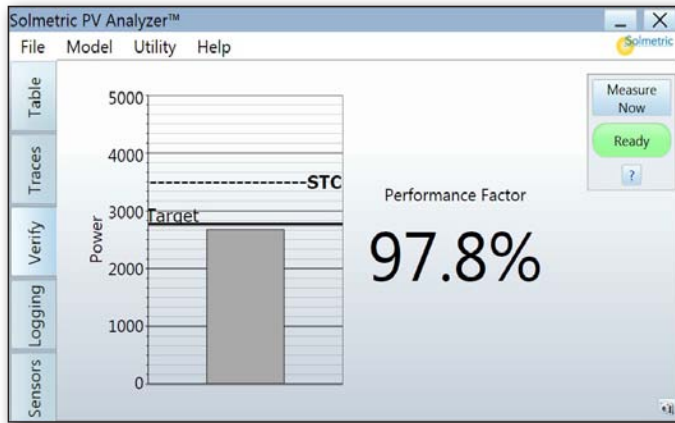
### 2. "Array-as-sensor" mode

In some applications it is an advantage to automatically calculate the irradiance, the temperature, or both from the measured I-V curve. This allows detailed comparison of measured and predicted curve I-V curve shape, even under changing irradiance and temperature, and requires no external sensors.

## PV Analyzer User Interface



I-V and P-V curves of a healthy PV string. Inverter MPPT voltage range is highlighted in green.



Display of measured versus predicted maximum power values.

The figure shows the Solmetric PV Analyzer software interface. The main window displays a tabular summary comparing predicted and measured results. The table is divided into 'Active' and 'Snapshots' sections. The 'Active' section shows predicted and measured values for various parameters. The 'Snapshots' section shows two sets of measured values (Meas 1 and Meas 2) for comparison.

	Predicted	Measured	Meas 1	Meas 2
Pmax (W)	2751.07	2697.92	2682.37	2697.92
Vmp (V)	301.52	299.61	298.76	299.61
Imp (A)	9.12	9.00	8.98	9.00
Voc (V)	395.45	395.44	394.04	395.44
Isc (A)	10.16	10.16	10.19	10.16
Tpv (C)	55.9			
Epoa (W/m <sup>2</sup> )	931			
Rseries (Ohms)		0.03	0.03	0.03

Tabular summary compares predicted and measured results. "Snapshot" function allows comparison of multiple results as an aid to troubleshooting.

The figure shows the Solmetric PV Analyzer software interface. The main window displays the configuration settings for a PV model. The 'Detailed Performance Model' is selected. The 'Location' is set to 'Sharp NT-175U1'. The 'Modules / String' is set to 'Sandia'. The 'Simple Performance Model' is also visible. The 'Sensor Methods' section shows the number of modules in string (10) and the number of strings in parallel (2).

Setting up built-in PV models for comparison with measurement results.

## PV Model Choices

Performance evaluations always require comparison of measured results with a reference. For installed PV arrays, the reference is a PV model. The **Solmetric PV Analyzer** compares measured and modeled array performance, taking into account the existing irradiance and temperature.

Three built-in models ensure coverage of all types of PV modules:

### 1. Sandia model

- The most comprehensive PV model
- Developed by Sandia National Laboratories
- Based on module measurements taken in independent laboratories
- Accounts for all performance-related factors of a PV module

### 2. Five-parameter model

- Developed by U. Wisconsin Solar Energy Lab
- Obtained from CEC NSHP program
- Based on independent lab measurements
- Broader range of covered PV modules

### 3. Single-point model

This model predicts the maximum power voltage and current at the existing irradiance and temperature. Based on data sheet STC values, this model can be used with almost any PV module with basic specifications.

## Ordering Information

### PVA-600 PV Analyzer

#### Includes

- I-V Measurement Unit with soft carrying case
- PVA Software for Windows™
- Wireless USB Interface (for Windows laptop or tablet)
- Connector saver jumper set (two short m-f MC-4 jumpers)
- MC-4 to MC-3 adaptor cable set (*contact Solmetric for other connector styles*)
- Battery charger (AC adapter)

#### Optional Accessories

##### Wireless Sensor Kit:

- Irradiance sensor and wireless transmitter
- Thermocouples (5) and wireless transmitter
- Wireless USB Interface (connects to Windows laptop or tablet)

#### Computer Requirements

Microsoft Windows™ 7 (64-bit or 32-bit), Windows Vista (32-bit only), Windows XP SP3 / **Processor speed** >700 MHz / **RAM** >500 MB / **Hard Drive Space** >100 MB / **Min. Display resolution** 1024 by 600 pixels / **USB ports** 2 USB ports or one port using an external USB expander

Watch the PV Analyzer video online [www.solmetric.com/videos1.html](http://www.solmetric.com/videos1.html)

## To Purchase

#### Online

[www.solmetric.com](http://www.solmetric.com)

#### Call

Toll-free in US: 877-263-5026  
Tel: +1-707-823-4600




#### Headquarters

117 Morris St. Suite 100  
Sebastopol, CA 95472  
[www.solmetric.com](http://www.solmetric.com)  
email: [info@solmetric.com](mailto:info@solmetric.com)  
Tel: +1-707-823-4600  
Fax: +1-707-823-4620

## General Information

Characteristic	Description
<b>High efficiency PV modules</b>	Solmetric's I-V measurement technology is specially designed to accurately measure high-efficiency, back-contact PV modules as well as standard modules.
<b>Measurement range selection</b>	Measurement circuitry automatically optimizes to best measure the PV module or string
<b>Control &amp; display unit</b>	User-provided Windows computer, eg. laptop or tablet
<b>PC to measurement unit interface</b>	Wireless USB adaptor (provided)
<b>Wireless range</b>	10–50 meters depending on line of sight.
<b>Module/Inverter data</b>	On-board database with thousands of PV modules and inverters. Updates provided at Solmetric website.
<b>Inverter limits</b>	Maximum power tracking range of user-selected inverter is superimposed on the I-V graph as a reference check on the system design.
<b>Carrying case</b>	Measurement unit includes a factory-installed padded soft case, with handle, shoulder strap and accessory pouch.
<b>Protection features</b>	Automatic safeguards protect against damage from over-temperature, over-voltage, over-current, and reverse polarity.
<b>Dimensions</b>	16 in. x 8 in. x 5 in. (not including cable pouch or PV leads)

## Electrical Specifications

Parameter	Value
<b>PV voltage measurement range</b>	0–600 V DC
<b>PV current measurement range</b>	0–20 A DC
<b>Recommended minimum Voc</b>	20 V DC
<b>Recommended minimum Isc</b>	1 A DC
<b>I-V measurement cycle time</b>	4s (typical)
<b>I-V measurement time (I-V sweep)</b>	80–240 ms
<b>Measurement points per trace</b>	100 (typical)
<b>Ambient operating temperature range *</b>	0 to +50 deg C
<b>Storage temperature</b>	-20 to +60 deg C
<b>Battery life (continuous operation)</b>	12 hours between charges
<b>Charging time</b>	6 hours
<b>Safety</b>	IEC-61010  CAT III, 600 V
<b>Protection</b>	Over-voltage, over-current, over-temperature

#### About Solmetric

Solmetric provides accurate, time-saving solutions for solar professionals.

#### Site Evaluation



#### PV Design



#### PV Verification

