

PV210

Solar PV tester and I-V curve tracer

The PV210 provides a highly efficient and effective test and diagnostic solution for PV systems, carrying out all commissioning tests required by IEC 62446 and performing fast and accurate measurement of I-V curves in accordance with IEC 61829.

With direct connection to individual PV modules or strings using the supplied lead sets, tests can be conducted easily and within a matter of seconds at the press of a single button.

A high contrast display is clearly visible in direct sunlight and shows open circuit voltage, short circuit current, maximum power point voltage, current and power, as well as the fill factor of the PV module or system under test, and insulation resistance (as part of an auto sequence or a discrete probe to probe measurement). If the measured curve deviates from the expected profile, the PV210 alerts the user to this, identifying the need for further analysis.

Detailed and color I-V and power curves, can be viewed instantly once data is transferred to the PVMobile Android App using wireless NFC connectivity. PVMobile displays measured I-V and power curves for visual analysis of the curve shape, enabling common problems such as shading, defective cells or poor electrical connections to be identified.

The PV210 is available as part of the Solarlink test kit which includes the Survey 200R irradiance meter. As well as being a comprehensive survey tool, the Survey 200R wirelessly transmits irradiance and temperature data to the PV210 so that it can be transferred to the PVMobile app alongside the rest of the test data. PVMobile can be used to convert measured data to STC for comparison with manufacturer's published data.



The PV210 has a large onboard memory, capable of storing up to 999 sets of complete I-V curve and electrical test data, while full test and measurement data can be downloaded to a PC via USB connection, providing full traceability of system performance. In addition, data can be exported from the PVMobile app and sent from the field to the office for further analysis if required.

The PV210 is compatible with SolarCert Elements v2 software which can be used to compile comprehensive system records and produce professional reports. SolarCert Elements v2 enables more comprehensive data analysis and converts measured data to STC for comparison with manufacturer's data.

Key Features

- Lightweight, handheld and fast
- Affordable and efficient PV diagnostic tool
- Easy and fast push button operation
- All-in-one commissioning tests and I-V curve tracing, in accordance with international standards IEC 62446 and IEC 61829
- Instantly view detailed I-V curves in the field using the Android PVMobile App
- Instantly send data from the field back to the office using Android PVMobile App
- Tests individual PV modules or strings
- Clear results display, even in direct sunlight
- Wirelessly receives irradiance and temperature measurements from Survey 200R
- Full traceability of system performance
- Compatible with SolarCert Elements v2 software

Electrical/Analysis Test Functions

- I-V curve tracing, in accordance with IEC 61829
- Earth/ground continuity
- Insulation resistance (auto short circuit test and point-to-point)
- Voltage measurement
- Open circuit voltage up to 1000VDC
- Maximum power point voltage up to 1000VDC
- Short circuit current up to 15ADC
- Maximum power point current up to 15ADC
- Fill factor
- Operating current (using supplied current clamp)
- DC power

PV210 Users

- PV system installers
- PV O&M technicians
- PV module manufacturers

Download your FREE guide to PV testing at www.seaward-groupusa.com/pvguide

► **Instantly view detailed I-V and power curves in the field using the Android PVMobile App**

Simply touch an NFC-enabled Android device running the PVMobile app to your PV210. Detailed I-V characteristic measurements are transferred, allowing the I-V and power curve to be viewed in full color detail. PVMobile also enables I-V curve correction for standard test conditions (STC 1000 W/m², 25°C) using irradiance and temperature data from the Survey 200R irradiance meter, to allow comparison with manufacturer's curve data, included in the comprehensive PVMobile database.



Find out more about the PVMobile Android app
www.seaward-groupusa.com/PVMobile



◀ **With the PVMobile Android App you can:**

- View I-V and power curves in full color and high definition detail
- Pinch and zoom to observe deviations from a normal curve, and to see Mpp region in more detail
- Select points on the curve to read actual voltage and current
- Transfer data back to the office from a remote location*
- View I-V curves and measurement data clearly, even in direct sunlight
- Avoid the need to take a laptop on-site
- Transfer measurement data to the PVMobile App instantly by touching your NFC-enabled Android device against the PV210

► **Lightweight, handheld and fast**

Extremely portable, lightweight and battery powered, the PV210 is easy to move around when testing several strings in a system. Commissioning tests, irradiance, temperature and I-V characteristics can all be recorded at the press of a button.**



*Data export from PVMobile is a premium feature and requires subscription.

**Irradiance and temperature measurements require Solar Survey 200R, available separately or as part of the Solarlink Test Kit.



► **Cost effective and efficient PV diagnostic tool**

Comprehensive measurement features with easy-to-use one button testing provides the ideal solution for periodic testing, performance analysis and fault diagnosis.

► **All-in-one commissioning tests and I-V curve tracing**

Easily carry out all performance, safety and diagnostic checks on PV systems using the same fast and simple test instrument.



► **Easy and fast push button operation**

The PV210 offers an extremely fast testing solution, carrying out all electrical tests in a matter of seconds, for straightforward and hassle free testing of even the largest of PV systems.

► **Tests individual PV modules or strings**

Directly connect the PV210 to an individual module or a full string, and choose whether to carry out a full auto sequence test or an individual test, depending on your requirements.





► **Clear results display, even in direct sunlight**

The PV210 display screen is clearly visible even in direct sunlight, ensuring you are able to complete the testing process in the fastest time possible, and view measurements at a glance.

► **Wirelessly receive irradiance and temperature measurements from Solar Survey 200R**

Using Seaward Solarlink™ connectivity, the PV210 can wirelessly capture and record real-time irradiance, ambient temperature and PV module temperature measurements from the Survey 200R multifunction irradiance meter (available as part of the Solarlink™ Test Kit). This means that all measurements can be recorded simultaneously, as required by the IEC 62446 and IEC 61829 standards.



► **Full traceability of system performance**

The PV210 has a large onboard memory which stores up to 999 sets of PV test and diagnostic data, ensuring large systems can be tested continuously, and enabling test data to be downloaded to a PC, in CSV format, for full traceability.

► **Compatible with SolarCert Elements v2 software**

When used with the optional SolarCert Elements v2 software program, test and measurement data can be stored alongside other system information to produce comprehensive records. Measured data can be converted to STC for comparison with manufacturer's data held in the comprehensive database. In addition, professional inspection and test reports can be prepared, including IEC 62446 measurements and IEC 61829 I-V curve plots.



► PV210 Kit options

		Part Number
PV210 Standard Test Kit	<ul style="list-style-type: none"> ■ PV210 PV tester and I-V curve tracer ■ AC/DC current clamp ■ 2 x MC4 test lead (red & black) ■ 2 x 1.5m 4mm test leads/probes + alligator clips ■ Type A to mini B USB cable ■ 6 x alkaline battery (AA) 1.5V ■ Quick Start Guide ■ Rugged carry bag ■ PV210 Calibration Certificate <p>Download link for entry level PC datalogger software, operating instructions, USB driver for download to PC and SolarCert Elements v2 software demo</p>	389A912
PV210 Solarlink™ Test Kit	<p>As per the PV210 standard test kit PLUS</p> <p>Survey 200R multi-function irradiance meter with suction mount PV module temperature sensor</p>	389A912K

Technical Specifications

Ground continuity / resistance measurement

Display range	0.00Ω to 199Ω
Measurement range	0.01Ω to 199Ω
Accuracy	2% + 5 digits
Resolution	0.01Ω maximum
Open circuit test voltage	4VDC, nominal
Test leads zero	Zero up to 10 Ω, by Zero button
Number of measurements	5,000 1 second tests
Audible / visible warning	≥ 30VAC/DC at inputs
User protection	Test inhibited if ≥ 30VAC/DC at inputs

Insulation resistance (auto short circuit test)

Display range	0.1MΩ to 20MΩ
Measurement range	0.1MΩ to 20MΩ
Accuracy	5% + 5 digits
Resolution	0.1MΩ maximum
Open circuit test voltage	250, 500, 1000V (as per IEC 61557-2)
Test current	1mA nominal as per IEC 1557-2
Short circuit test current	<2mA
Number of measurements	5,000 1 second tests
Audible / visible warning	≥ 30VAC/DC at inputs
User protection	Test inhibited if ≥ 30VAC/DC at inputs

Insulation resistance (point to point)

Display range	0.05MΩ to 300MΩ
Measurement range	0.05MΩ to 300MΩ
Accuracy	5% + 5 digits
Resolution	0.01MΩ maximum
Open circuit test voltage	250, 500, 1000V (as per IEC 61557-2)
Short circuit test current	<1mA
Number of measurements	5,000 1 second tests
Audible / visible warning	≥ 30VAC/DC at inputs
Circuitry protection	Test inhibited if ≥ 30VAC/DC at inputs

Voltage measurement (via 4mm probes)

Display range	30V – 440VAC/DC
Measurement range	30V – 440VAC/DC
Resolution	1V
Accuracy	±(5%+2d)

Vo/c voltage measurement (via PV test leads)

Display range	0.0V – 1000VDC
Measurement range	5.0V – 1000VDC
Resolution	0.1V
Accuracy	±(0.5%+2d)
Enunciators	DC voltage polarity correct or reversed

Is/c current measurement (via PV test leads)

Display range	0.0A – 15.0ADC
Measurement range	0.5A – 15.0ADC
Resolution	0.1A
Accuracy	±(1%+2d)

Operating current (via DC current clamp)

Display range	0.0A – 40.0A AC/DC
Measurement range	0.1A – 40.0A AC/DC
Resolution	0.1A
Accuracy	±(5% + 2 digits)

DC power

Display range	0.0W – 40.0kW
Measurement range	10W – 40.0kW
Resolution	10W max
Accuracy	±(6% + 2 digits)

I-V curve

Voltage measurement range	5.0V – 1000V
Voltage measurement accuracy	±(0.5%+2d)
Current measurement range	0.5A – 15.0A
Current measurement accuracy	1%
Power measurement range	5W – 15kW
Power measurement accuracy	2%

General Specifications

Case dimensions and weight

Weight	2.3lb (unit)
Dimensions	10.4 x 4.2 x 2.3"
Display	Custom LCD with backlight
Power source	6 x 1.5V AA cells
Battery life	>1000 test sequences
Auto power down	User programmable
Onboard memory	Up to 999 complete test datasets

Connectivity

USB download to PC (CSV format)
Wireless 'Solarlink™' to Survey 200R (range c. 30m / 100ft)
NFC transfer of data to PVMobile Android App
iOS devices not supported

Optional accessories

Survey 200R irradiance meter mounting bracket (396A979)
Survey 200R suction mount PV module temperature sensor (396A980)
Survey 200R irradiance meter with suction mount PV module temperature sensor (396A927) (also available as part of PV210 Solarlink test kit)
MC4 to test probe test leads (red & black) (388A953)
Sunclix test lead adaptors (396A960)
MC3 test lead adaptors (396A958)
Fused test leads – 1 pair of fused red and black test probes and alligator clips (44B075)
SolarCert Elements test reporting & certification v2 software (393A910)
Solar power clamp (396A961)
SolarTag PV installation / DC warning labels (396A952 / 396A953)
PV inspection report pad (396A954)
PV array report pad (396A955)
PV verification certificate pad (396A956)
Pack of 3 PV test reports and certificate pads (396A957)

App compatibility

Compatible with Android version 4.2 Jelly Bean
iOS devices not supported

Software compatibility

Compatible with SolarCert Elements v2 software
(English language only)

Services

2 year warranty (subject to terms and conditions, register your product at www.seaward-groupusa.com)

Go to www.seaward-groupusa.com/service-center for more information about our services and calibration

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