



I-V600

Advanced multifunction instrument for I-V curve measurements up to 1500V and 40A



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Photovoltaic tester **IV 600** is a multifunction **I-V curve tracer** meeting IEC/EN60891. **IV 600** tests performance and functionality of **single face** and **bifacial** modules in PV systems.

IV 600: I-V curve tracing (performance/acceptance test)

IV 600 verifies the performance of PV strings in accordance with IEC/EN60891 by **tracing the I-V curve up to 1,500V and 40A**. Through the solar radiation and PV module temperature measurements (main unit wirelessly connected and/or synchronized to the remote unit SOLAR03), IV 600 extrapolates curves to the STC (Standard Test Conditions: 1000W/m², 25°C, AM 1.5) and compares them to the nominal values provided by the module manufacturer. The wide internal database already stores more than **40,000** modules, more modules can be added. Finally, IV 600 provides a positive or negative outcome (OK/NO).

IV 600: Functionality checks

IV 600 verifies the functionality of PV strings in accordance with IEC/EN62446 by measuring the open circuit voltage and short-circuit current under operating conditions **up to 1,500V and 40A**. According to the requirements of IEC/EN62446, IV 600 displays measures as well as their comparison to the previously tested PV strings. Through the solar radiation and PV module temperature measurements (main unit wirelessly connected and/or synchronized to the remote unit SOLAR03), IV 600 extrapolates measures to the STC (Standard Test Conditions: 1000W/m², 25°C, AM 1.5) and compares them to the nominal values provided by the module manufacturer. The wide internal database already stores more than **40,000** modules, more modules can be added. Finally, IV 600 provides a positive or negative outcome (OK/NO).

IV 600: A green solution that never runs out of battery

To minimize battery consumption and allow battery recharging under any condition, IV 600 includes a revolutionary, **patent pending BMS (Battery Management System)** that automatically recovers energy from the test procedure to recharge the batteries. In addition, IV 600 is powered by the PV module/string under test that also recharges the instrument's batteries to never run out of power.

1. GENERAL FEATURES

Feature	Note
Ratings	CAT III 1500VDC
PV module type - all most common types of photovoltaic module	<ul style="list-style-type: none"> • Single face • Bifacial
I-V curve – voltage range	15V – 1500V DC
I-V curve – current range	0.1A – 40A DC
DMM (input voltages)	✓
Wireless environmental parameters measurement (free field; max 100m, bluetooth connection with SOLAR03 required)	<ul style="list-style-type: none"> • Irradiance • Module temperature
Commissioning tests @ OPC (OPerating Conditions)	<ul style="list-style-type: none"> • Open circuit voltage (Voc) • Short circuit current (Isc)
Commissioning tests @ STC (Standard Test Conditions) (free field; max 100m, bluetooth connection with SOLAR03 required)	<ul style="list-style-type: none"> • Open circuit voltage (Voc) • Short circuit current (Isc)
Performance/Acceptance tests @ OPC (OPerating Conditions) – I-V curve:	✓
Performance/Acceptance tests @ STC (Standard Test Conditions) (free field; max 100m, bluetooth connection with SOLAR03 required)	<ul style="list-style-type: none"> • I-V curve • Outcome (OK/NO)
PV module datasheet data base	> 40,000 internal
Memory	9999 Test
Data transfer / Communication port	USB-C and WiFi
Touch screen colour graphic LCD	800 x 600 pxl
Help on line	✓
Buzzer	✓
Power supply	<ul style="list-style-type: none"> • Internal batteries • Instrument inputs • External power supply
Batteries	<ul style="list-style-type: none"> • 8 x 1.5V alkaline AA • 8 x 1.2V rechargeable AA
Temperature range	-10°C – +50°C
Waterproof	IP67 (closed) – IP40 (open)



2. ELECTRICAL SPECIFICATIONS

Accuracy is calculated as \pm [% readings + (no. of digits) * resolution] at 23 °C \pm 5 °C, relative humidity <80%HR

2.1. DMM

DC Voltage

Range (V)	Resolution (V)	Uncertainty
3 ÷ 1500	1	\pm (1.0%rdg + 2dgt)

AC TRMS Voltage

Range (V)	Resolution (V)	Uncertainty
3 ÷ 1000	1	\pm (1.0%rdg + 3dgt)

Frequency range: 42.5 ÷ 69Hz ; Voltages zeroed for measured value <3V

2.2. FUNCTIONAL TEST

IV CHECK - DC Voltage @ OPC

Range (V)	Resolution (V)	Uncertainty
3.0 ÷ 1500.0	0.1	\pm (0.2%rdg + 2dgt)

Minimum VPN voltage to start the test: 15V

IV CHECK - DC Current @ OPC

Range (A)	Resolution (A)	Uncertainty
0.10 ÷ 40.00	0.01	\pm (0.2%rdg + 2dgt)

PV module stray capacitance: max 30uF

IV CHECK - DC Voltage @ STC

Range (V)	Resolution (V)	Uncertainty
3.0 ÷ 1500.0	0.1	\pm (4.0%rdg + 2dgt)

IV CHECK - DC Current @ STC

Range (A)	Resolution (A)	Uncertainty
0.10 ÷ 40.00	0.01	\pm (4.0%rdg + 2dgt)

PV module stray capacitance: max 30uF



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2.3. PERFORMANCE TEST

IV TEST - DC Voltage @ OPC

Range (V)	Resolution (V)	Uncertainty
3.0 ÷ 1500.0	0.1	$\pm(0.2\%rdg+2dgt)$

Minimum VPN voltage to start the test: 15V

IV TEST - DC Current @ OPC

Range (A)	Resolution (A)	Uncertainty
0.10 ÷ 40.00	0.01	$\pm(0.2\%rdg+2dgt)$

PV module stray capacitance: max 30uF

IV TEST - DC Voltage @ STC

Range (V)	Resolution (V)	Uncertainty
3.0 ÷ 1500.0	0.1	$\pm(4.0\%rdg+2dgt)$

IV TEST - DC Current @ STC

Range (A)	Resolution (A)	Uncertainty
0.10 ÷ 40.00	0.01	$\pm(4.0\%rdg+2dgt)$

PV module stray capacitance: max 30uF

IV TEST - DC Power @ OPC

Range (W)	Resolution (W)	Uncertainty
50 ÷ 9999	1	$\pm(1.0\%rdg+6dgt)$
10.00k ÷ 99.99k	0.01k	$\pm(1.0\%rdg+6dgt)$

PV module stray capacitance: max 30uF

IV TEST - DC Power @ STC (ref. to 1 PV module)

Range (W)	Resolution (W)	Uncertainty
50 ÷ 9999	1	$\pm(4.0\%rdg+2dgt)$

PV module stray capacitance: max 30uF

PV module type

All most common types of photovoltaic module, single face as well as **bifacial**



3. GENERAL SPECIFICATIONS

DISPLAY AND MEMORY:

Features:	Color graphic touch screen LCD 800x600
Memory:	max 9999 test, 3 levels of marker
Internal Data Base of PV module:	> 40,000

POWER SUPPLY:

Internal:	8x1.5V type AA alkaline or 8x1.2V type AA NiMH rechargeable battery
External:	PV inputs (Vmin 40V) Power supply adapter A0061 (100-415V, CAT IV 300, CAT III 600V)
Battery life:	IV and IVCK: >1,000 tests

IV 600 battery life is also extended by BMS (**Battery Management System – patent pending**) that recovers energy absorbed while tracing the IV curve to recharge the batteries.

OUTPUT INTERFACE

PC communication:	USB Type C and WiFi
SOLAR-03 communication:	BT communication (max distance 100m – outdoor free field)

MECHANICAL FEATURES

Dimensions (L x W x H):	335 x 289 x 155mm; (13.1 x 11.4 x 6.1in)
Weight (batteries included):	6kg; (212 ounces)
Mechanical protection:	IP67 (case closed), IP40 (open)

ENVIRONMENTAL CONDITIONS:

Reference temperature:	23°C ± 5°C ; (73°F ± 41°F)
Operating temperature:	-10°C ÷ 50°C ; (14°F ÷ 122°F)
Allowable relative humidity:	<80%RH
Storage temperature:	-20°C ÷ 60°C ; (-4°F ÷ 140°F)
Storage humidity:	<80%RH
Max. operating altitude:	2000m (6562ft)

GENERAL REFERENCE STANDARDS:

Safety:	IEC/EN61010-1, 61010-2-030
EMC:	IEC/EN61326-1
Safety of measurement accessories:	IEC/EN61010-031
Measurements:	IEC 60891, IEC/EN62446-1 (PV performance, IVCK)
Technical documentation:	IEC EN 61187
Insulation:	double insulation
Pollution degree:	2
Overvoltage category:	CAT III 1500V to ground, Max 1500VDC among inputs
Max. operating altitude:	2000m (6562ft)

This instrument satisfies the requirements of Directives:
RED: Directive 2014/53/EU, LVD: Directive 2014/35/EU, EMCD: Directive 2014/30/EU
RoHS: Directive 2011/65/EU, WEEE: Directive 2012/19/EU



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