

The **I-V600** model is an **I-V Curve** and functional test verification (Voc, Isc) instrument compliant with IEC/EN60891, IECEN60904-1-2 and IEC/EN62446 guidelines. **I-V600** tests the performance and functionality of **Monofacial** and **Bifacial** PV modules/strings.

### **I-V CURVE TRACER (PERFORMANCE/ACCEPTANCE TEST)**

**I-V600** verifies the performance of PV strings in compliance with IEC/EN60891 guideline by tracking the I-V curve on installations **up to 1500VDC** and **40ADC**. Through solar irradiation and temperature measurements of the PV modules (in wireless combination with the **SOLAR03** remote unit), I-V600 extrapolates the **@STC** curves (**Standard Test Condition**: 1000W/m<sup>2</sup>, 25°C, AM 1.5) comparing them with the ratings provided by the module manufacturer. The large internal database stores up to 1000 different manufacturers and up to 1000 modules associated with each manufacturer directly, easily programmable by touch-screen display.

### **FUNCTIONAL TEST (IVCK)**

**I-V600** verifies the functionality of PV strings in accordance with IEC/EN62446 guideline by measuring, with or without solar radiation, the open circuit voltage (Voc) and the short circuit current (Isc) in operating conditions (**@OPC**) **up to 1500VDC** and **40ADC**. By measuring solar radiation and temperature of the PV modules (in wireless combination with the **SOLAR03** remote unit), I-V600 extrapolates the values **@ STC** (**Standard Test Condition**: 1000W/m<sup>2</sup>, 25°C, AM 1.5) and compares them with the ratings provided by the module manufacturer.

### **I-V600 EXTENDS THE CHARGE OF THE INTERNAL BATTERIES**

To increase the autonomy of the batteries and allow them to be recharged, I-V600 is equipped with a professional internal **BMS (Battery Management System)** algorithm which automatically recovers energy from the discharge of the module capacities at the end of an I-V test and from the voltage present on the inputs. A valid aid in case you need to carry out many tests in rapid succession.





## 1. ELECTRICAL SPECIFICATIONS

Accuracy calculated as  $\pm[\% \text{reading} + (\text{number dgts} \times \text{resolution})]$  at  $23^\circ\text{C} \pm 5^\circ\text{C}$ ,  $<80\% \text{RH}$

### DMM – Multimeter function – DC Voltage

Range [V]	Resolution [V]	Accuracy
3 ÷ 1500	1	$\pm (1.0\% \text{reading} + 2 \text{dgt})$

### I-V CURVE TEST

#### DC Voltage @ OPC

Range [V]	Resolution [V]	Accuracy (*)
15.0 ÷ 1500.0	0.1	$\pm(0.2\%V_{oc})$

(\*) In compliance with IEC/EN60904-1; The measurement starts if  $V_{DC} > 15V$  and module capacitance  $< 30\mu F$

#### DC Current @ OPC

Range [A]	Resolution [A]	Accuracy (*)
0.20 ÷ 40.00	0.01	$\pm(0.2\%i_{sc})$

(\*) In compliance with IEC/EN60904-1;  $I_{scmin} = 0.2A$  and module capacitance  $< 30\mu F$

#### DC Power @ OPC ( $V_{DC} > 30V$ )

Range [W] (**)	Resolution [W]	Accuracy (*)
50 ÷ 9999	1	$\pm(1.0\% \text{reading} + 6 \text{dgt})$
10.00k ÷ 99.99k	0.01k	

(\*)  $V_{DC} \geq 30V$  and module capacitance  $< 30\mu F$

(\*\*) Max measurable power considers a FF of 0.7  $\rightarrow P_{max} = 1500V \times 40A \times 0.7 = 42.00kW$

#### DC Voltage @ STC

Range [V]	Resolution [V]	Accuracy
3.0 ÷ 1500.0	0.1	$\pm(4.0\% \text{reading} + 2 \text{dgt})$

#### DC Current @ STC

Range [A]	Resolution [A]	Accuracy
0.20 ÷ 40.00	0.01	$\pm(4.0\% \text{reading} + 2 \text{dgt})$

#### DC Power @ STC (referred @ 1 module)

Range [W]	Resolution [W]	Accuracy
50 ÷ 9999	1	$\pm(4.0\% \text{reading} + 2 \text{dgt})$





## FUNCTIONAL TEST (IVCK)

### DC Voltage @ OPC

Range [V]	Resolution [V]	Accuracy (*)
15.0 ÷ 1500.0	0.1	±(0.2%Voc)

(\*) In compliance with IEC/EN60904-1; The measurement starts if VDC > 15V and module capacitance <30µF

### DC Current @ OPC

Range [A]	Resolution [A]	Accuracy (*)
0.20 ÷ 40.00	0.01	±(0.2%isc)

(\*) In compliance with IEC/EN60904-1; Iscmin = 0.2A and module capacitance <30µF

### DC Voltage @ STC

Range [V]	Resolution [V]	Accuracy
3.0 ÷ 1500.0	0.1	±(4.0%reading+2dgts)

### DC Current @ STC

Range [A]	Resolution [A]	Accuracy
0.20 ÷ 40.00	0.01	±(4.0%reading+2dgts)






## 2. GENERAL SPECIFICATIONS

### DISPLAY AND MEMORY

Characteristics:	Color TFT, capacitive touch screen, 7", 800x480pxl
Type of memory:	Memory card, max 32GB (not expandable)
Module database:	ca. 63,000 saved modules
Storable data:	9999 test IVCK or I-V curve

### POWER SUPPLY:

Internal power supply:	8x1.5V alkaline battery type LR6, AA or 8x1.2V rechargeable battery NiMH type LR6, AA
External power supply:	100-440VAC/15VDC, 50/60Hz <b>CAT IV 300V (use only HT adapter)</b>
Battery charging algorithm:	via inputs P1, C1, P2, C2
Battery charging system (BMS):	energy recovered from I-V curve measurements
Consumption:	8W
Low battery indication:	"  " symbol shown on the display
Charging time:	approx. 4 hours
Battery life (@ 0°C ÷ 40°C):	8 hours in the following conditions: <ul style="list-style-type: none"><li>➤ Battery capacity: 2000mAh</li><li>➤ PV string voltage: 800V</li><li>➤ Work cycles: 80 measurements/hour</li><li>➤ Instrument connected to the modules for 30s/measurement</li><li>➤ Instrument disconnected for 15s/measurement</li></ul> 1 ÷ 10min selectable (disabling)
Auto Power OFF:	

### OUTPUT INTERFACE

PC interface:	USB-C and WiFi
Interface with SOLAR03:	Bluetooth connection (up to 100m in free space)

### MECHANICAL CHARACTERISTICS

Dimensions (L x W x H):	336 x 300 x 132mm (13 x 12 x 5in)
Weight (included batteries):	5.5kg (11lv)
Mechanical protection:	IP40 (open case), IP67 (closed case)

### ENVIRONMENTAL CONDITIONS OF USE

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

### REFERENCE GUIDELINES

Safety:	IEC/EN61010-1, IEC/EN61010-2-030,
EMC:	IEC/EN61326-1
Safety measurement accessories:	IEC/EN61010-031
I-V Test:	IEC/EN60891, IECEN60904-1-2
IVCK Test:	IEC/EN62446, IECEN60904-1-2
Insulation:	double insulation
Pollution degree:	2
Radio:	ETSI EN300328, ETSIEN301489-1, ETSIEN301489-17
Measurement category:	CAT III 1500VDC, max 1500VDC between inputs

**This instrument complies with the requirements of the European Low Voltage Directive 2014/35/EU (LVD), the Directive 2014/30/EU (EMC) and the RED regulation 2014/53/EU**  
**This instrument complies with the requirements of the European Directive 2011/65/EU (RoHS) and the European Directive 2012/19/EU (WEEE)**

