I-V500w

MULTIFUNCTIONAL INSTRUMENT FOR PV SYSTEM
MAINTENANCE AND TROUBLESHOOTING

CODE **HV00500W**

I-V500w

MULTIFUNCTIONAL INSTRUMENT FOR PV SYSTEM MAINTENANCE AND TROUBLESHOOTING

- **I-V Curve up to 1500V** and **10A or 1000V/15A**
- **Module** or **string power** measurement
- **Open-circuit voltage (Voc)** up to **1500V**
- **Short-circuit current (Isc)** up to **15A**
- **Irradiation** measurement via **HT304k probe**
- **Environmental** and **Cell Temperature** via **PT300N probe**
- Wireless **environmental measurements** with **SOLAR-02 remote unit** with RF connection
- **No distance limit** for environmental measurements with **SOLAR-02 remote unit**
- **Outcome: OK or NOT OK** for each measurement

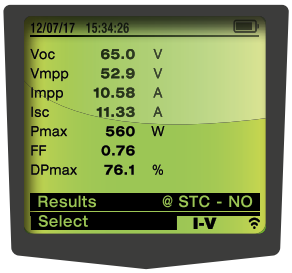
Wi Fi

I-V CURVE *MAX* **15A**

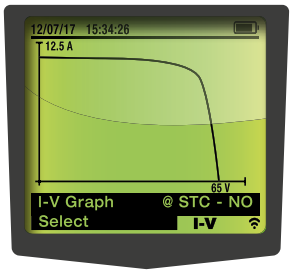
MAX **1500 V**

OK

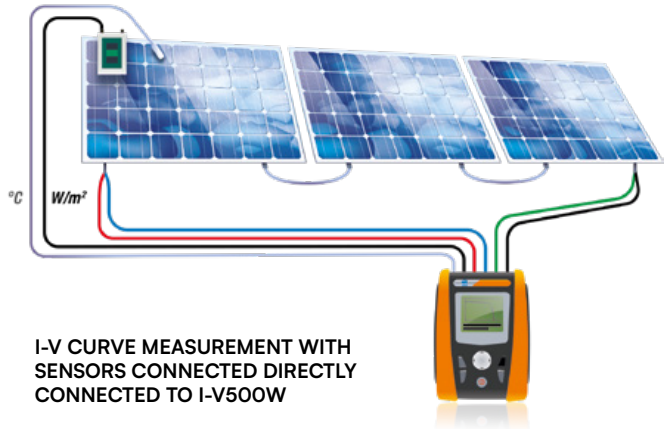
CERTIFICATE OF CALIBRATION



Details of each parameter in I-V curve outcome: OK



I-V curve outcome: OK



I-V CURVE MEASUREMENT WITH SENSORS CONNECTED DIRECTLY CONNECTED TO I-V500W

TECHNICAL DATA SHEET

TECHNICAL **SPECIFICATIONS**

I-V curve detection on PV modules and strings	1500V/10A - 1000V/15A
Rapid IVCK test for Voc and Isc measurement on PV modules and strings	VOC 1500V / ISC 15A
Internal memory	249 I-V curves
Use of SOLAR-02 remote unit with RF connection	●
Management of customisable internal PV module database	●
Measurement of cell and ambient temperature	●
Direct front irradiation measurement with reference solar cell	●
Summary table of main electric parameters	●
Optical/USB or Wi-Fi interface for data download to PC	●
Integrated Wi-Fi and compatibility with HTANALYSIS app	●
Backlit LCD display	●
Auto Power OFF	●
Measurement category	CAT II 1000V DC, CAT III 300V AC, Max 1000V AC, Max 1500V DC between inputs

GENERAL **SPECIFICATIONS**

Dimensions (L x W x H)	235 x 165 x 75mm
Weight (batteries included)	1.3 kg
Protection rating	IP40
Operating temperature	from 0°C to 40°C
Operating humidity	<80% RH
Power supply	6x1.5V batteries, type AA LR06 or 6x1.2V batteries, type AA NiMH

ACCESSORIES

STANDARD **ACCESSORIES**

KITGSC4	Set of 4 banana cables 4mm + 4 alligator clips
KITPVMC4	Set of 2 adapters with MC4 compatible connectors
HT304K	Reference cell for measuring irradiation complete with bracket and fixing screws
M304	Mechanical inclinometer to detect the correct solar incidence angle
VA500	Rigid carrying case
SP-5100	Set of straps for shoulder instrument use
C2006	Optics/USB connection cable
Calibration report	
Quick start guide	
Complete user manual and management software available online	

OPTIONAL **ACCESSORIES**

SOLAR-02	Remote unit
PT300N	PT1000 probe for measuring cell temperature
KITPVMC3	Set of 2 adapters with MC3 compatible connectors
KITPVEXT25M	Set of 2 banana cables 4mm, Green/Black, 25m
KITKELVIN	Set of 2 cables with 4 banana connectors and integrated Red/Black leads, 1.5m

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1. ELECTRICAL SPECIFICATIONS

Accuracy is calculated as ± [% reading + (number of dgts) x resolution] at 23 °C ± 5 °C, <80%HR

I-V, IVCK: VDC Voltage @ OPC

Range (V) (*)	Resolution (V)	Accuracy (*)
15.0 ÷ 99.9	0.1	±(0.5%rdg+2dgt)
100.0 ÷ 1499.9	0.3	

(*) The I-V curve measurements start for VDC > 15V and the accuracy is defined for VDC > 20V

I-V, IVCK: IDC Current @ OPC

Range (A) (*)	Resolution (A)	Accuracy
0.10 ÷ 15.00	0.01	±(1.0%rdg+2dgt)

(*) Maximum allowed current = 15A for Voc≤1000V; Maximum allowed current = 10A for Voc>1000V

I-V: DC Power @ OPC (Vmpp >30V, Impp >2A)

Range (W) (*)	Resolution (W)	Accuracy
50 ÷ 99999	1	±(1.0%rdg+6dgt)

Vmpp = Maximum power voltage, Impp = Maximum Power Current
(*) Max measurable value of Power must include FF value(~ 0.7) → Pmax = 1000V x 15A x 0.7 = 10500W
→ Pmax = 1500V x 10A x 0.7 = 10500W

I-V, IVCK: VDC Voltage (@ STC)

Range (V)	Resolution (V)	Accuracy (*,**)
5.0 ÷ 999.9	0.1	±(4.0%rdg+2dgt)

I-V: IDC Current (@ STC)

Range (A)	Resolution (A)	Accuracy (**)
0.10 ÷ 99.00	0.01	±(4.0%rdg+2dgt)

I-V: DC Power @ STC (Vmpp >30V, Impp >2A)

Range (W) (*, **)	Resolution (W)	Accuracy (**)
50 ÷ 99999	1	±(5.0%rdg+1dgt)

Vmpp = Maximum power voltage, Impp = Maximum Power Current
(*) Measurements start for VDC > 15V and the accuracy is defined for VDC > 20V
(**) Test conditions:

- Test cond.: Steady Irrad.≥700W/m^2 , spectrum AM 1.5,solar incidence vs perpendicular. ≤ ± 25°, Cells Temp. [15..65°C]
- Accuracy include contribute of solar sensor and its measuring circuit

Irradiance (with reference cell)

Range (mV)	Resolution (mV)	Accuracy
1.0 ÷ 100.0	0.1	±(1.0%rdg+5dgt)

Temperature of module (with auxiliary PT1000 probe)

Range (°C)	Resolution (°C)	Accuracy
-20.0 ÷ 100.0	0.1	±(1.0%rdg+1°C)

CAUTION

Do not use the instrument for I-V Curve measurements and IVCK tests **on PV modules with efficiency >19%**. Check the technical characteristics of the PV modules **before** carrying out the tests in order to avoid possible damage to the instrument

2. GENERAL SPECIFICATIONS

DISPLAY AND MEMORY:	
Features:	128x128pxl custom LCD with backlight
Memory capacity:	256kbytes
Saved data:	249 curves (I-V curve test), 999 IVCK
POWER SUPPLY:	
Internal power supply:	6x1.5V alkaline batteries type AA, LR06
Battery life::	> 249 curve (I-V curve test), 999 IVCK test
SOLAR-02 power supply:	4x1.5V alkaline batteries type AAA LR03
SOLAR-02 max recording time (@ IP=5s):	approx 1.5h
Auto Power OFF:	after 5 min of idleness
RF MODULE SPECIFICATIONS:	
Frequency range:	2.412 ÷ 2.462GHz
Modulation:	802.11b Compatibility: DSSS (CCK-11, CCK-5.5, DQPSK-2, DBPSK-1), 802.11g: OFDM
R&TTE category:	Class 1
Max transmission power:	30µW
Max distance of RF connection:	1m
OUTPUT INTERFACE	
PC communication port:	optical/USB and WiFi
Interface with SOLAR-02 :	wireless RF communication (max distance 1m)
MECHANICAL FEATURES	
Dimensions (L x W x H):	235 x 165 x 75mm
Weight (batteries included):	1.2kg
Mechanical protection:	IP40
ENVIRONMENTAL CONDITIONS:	
Reference temperature:	23°C ± 5°C
Working temperature:	0°C ÷ 40°C
Working humidity:	<80%RH
Storage temperature (batt. not included):	-10°C ÷ 60°C
Storage humidity:	<80%RH
Max altitude of use:	2000m
GENERAL REFERENCE STANDARDS:	
Safety:	IEC/EN61010-1
EMC:	IEC/EN61326-1
Safety of measurement accessories:	IEC/EN61010-031
I-V curve measurement:	IEC/EN60891 (I-V curve test) IEC/EN60904-5 (Temperature measurement)
Insulation:	double insulation
Pollution degree:	2
Overvoltage category:	CAT II 1000V DC, CAT III 300V AC to ground Max 1500V among inputs P1, P2, C1, c2

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