



I-V500W

I-V CURVE TRACER **1500V**

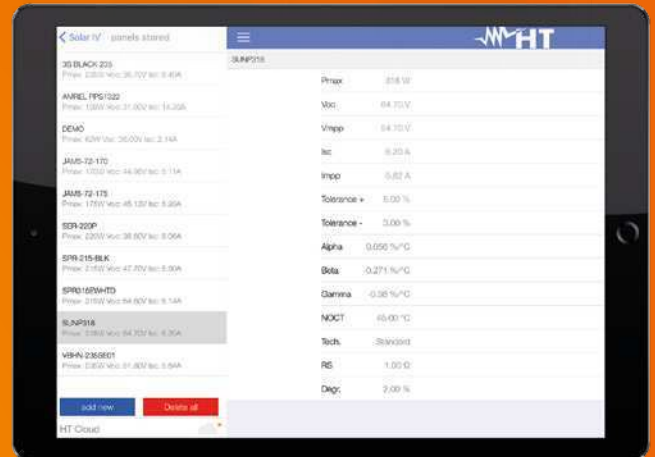


FREE Download
App HTANALYSIS
for iOS & Android devices



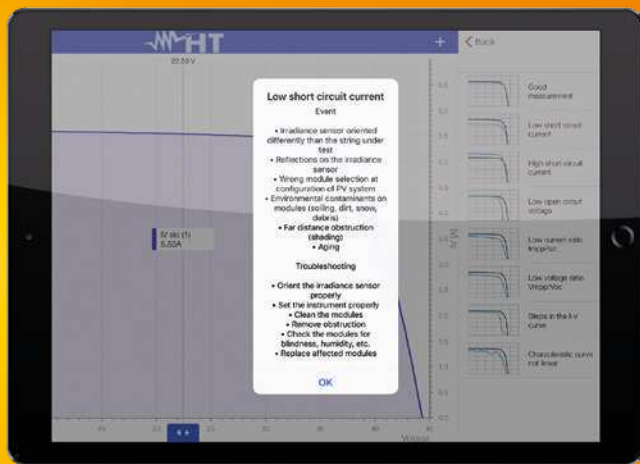
Module Database, More than 30,000.

Manage the modules in your instrument
through your mobile device.
Add new, Delete or check what is inside
your I-V Curve Tracer.



Troubleshooting Assistant.

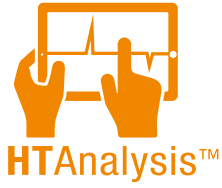
The only App that helps you with online FAQ.
Depending on the outline of the I-V Curve you have
measured, the app will **suggest you the possible
causes** of the problem that you have faced.



HT Cloud Share. Whenever, whatever and wherever.

Download the FREE App HTANALYSIS to use HTCloud
database and **share measures** with your colleagues
anytime and **from any place on the planet**.
Upload your measures onto HTCloud to find
them on your PC software TOPVIEW real-time.





HTANALYSIS. I-V Curve and much more.

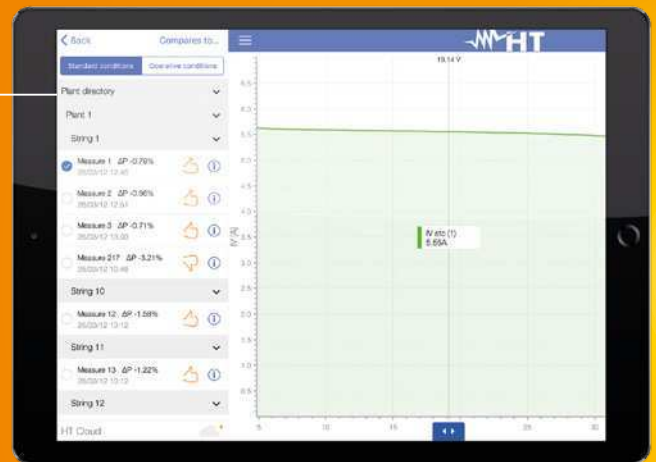


I-V Curve and much more.

With your mobile device, HTANALYSIS helps you to understand the problems you may have in the PV Installations.

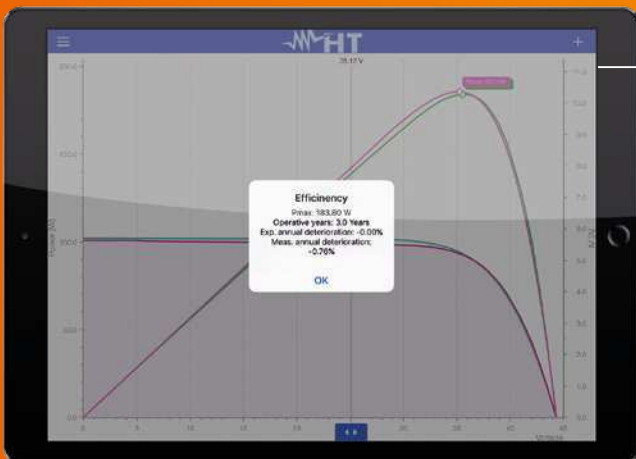
Data Analysis. OK or NOT OK?

Select your I-V Curve and analyze it. You can add a **photo**, an **audio note**, a **text note** and a **video**. Yes, all can be completed on the field.



Expected degradation. What is the truth? Jump Function

Enter the installation date of the PV system and the app will tell you the truth about the real performance drop.



1500V

UP TO
15A

128PTS

Works with
the NEW HTApp™

MULTI
STRING
auto Sequence™

I-V Curve Measurement

- › **I-V Curve** measurement up to **1500V** and **15A***
- › **Power measurement** of **modules** and **strings**
- › **Open-circuit voltage (Voc)** up to **1500V**
- › **Short-circuit current (Isc)** up to **15A**
- › **Irradiance measurement** with **HT304N** remote sensor
- › **Ambient and Panel** temperature with **PT300N** probe**
- › **Wireless environmental measurements** with **Solar 02** remote unit**
- › **No distance limits for environmental measurements** with **Solar 02** remote unit

* 1000V/15A or 1500V/10A ** Check standard and optional accessories



Irradiance sensor HT304N.



Solar02 remote unit.



Only one person needed to measure.

Why I-V500w?

- › **1500V & 15A:** Suitable also for new PV plants with 1500VDC string voltage.
- › **Compact, lightweight and On-board screen:** I-V500w needs only one person thanks to the on-board screen and returns immediate test results with OK or NOT OK outcome.
- › **Multi-String Auto Start:** Just few seconds to measure, save data and move to next string.
- › **Wi-Fi Connection:** Connect your smartphone or tablet to download and analyze in details your measures with exclusive features like Troubleshooting Assistant, Jump function and others available only on the APP HTANALYSIS.



Multi-String Auto Start

Dramatically decrease your PV String testing time with the NEW KITKELVIN. **KITKELVIN provides an Auto Sequence function to HT Curve Tracers to reduce testing time up to 75%!** KITKELVIN provides 2 leads for a single operator to move from string to string in a combiner box for fast testing. The Auto-sequence is Start, Acquire, Manual store, Rearm. The Start command is automatically initiated when the operator connects the probes across a string or panel, with Voc triggering the next acquisition sequence.

All that you need is KITKELVIN Test Leads Accessory.



FLD	STR	MOD
021	001	134
022	002	135
023	003	136
024	004	137
025	005	138
026	006	139
027	007	140
028	008	141

Select MEM I-V

Memory and Module Database

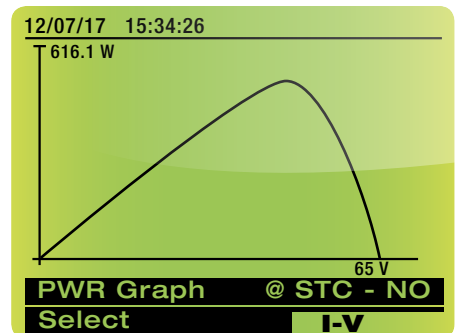
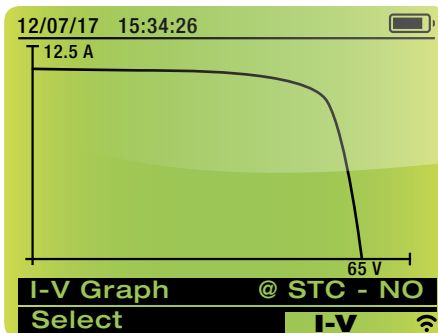
No need for external storage. The Internal Memory can store up to **249 I-V Curves** (128 test points) and up to **999 Quick Checks of Voc & Isc**. The intuitive User Interface (UI) provides easy access to all of your stored data including I-V Curves, power curves and numerical values in the table while in use. To ease measurement set up, HT Solar instruments **store up to 30 modules to ensure you have all panels in the field being tested.** When you get to the field, you are ready to go for the entire day!

Measurement Results (OPC & STC)

The acquired I-V data or the **operating conditions (OPC)** is the **true data acquired during I-V curve test**. Taking the panel characteristics, the environmental measures (Irradiance & Temp) the instrument **transforms these data points (OPC)** to create the **equivalent STC (Standard Test Condition)** curve **to evaluate** if the panel or string is **operating to specification**.

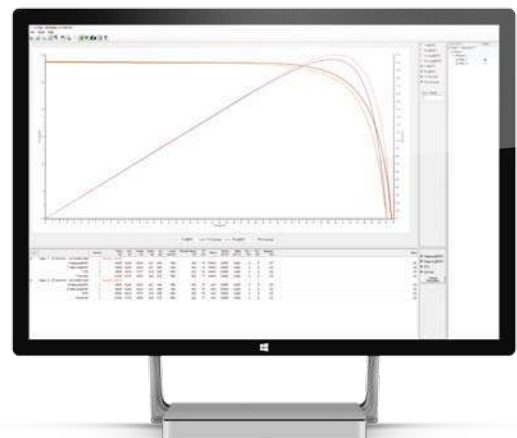
Parameter	Value	Unit
Voc	65.0	V
Vmpp	52.9	V
Imp	10.58	A
Isc	11.33	A
Pmax	560	W
FF	0.76	%
DPmax	76.1	%

Results @ STC - NO
Select I-V



Report creation with TopView Software

Measuring Solar Field is often only the beginning of your project. Customers want to see proof their fields are working as promised. **HT's Copyrighted Software, TopView makes the business of report generation a breeze.** Easy download, customized naming of data fields, **File storing and sharing trough HT Cloud, analyzing capabilities** and **display options to your preference.** You can compare Strings, Combiner boxes even Farms year over year to make describing the state of the field intuitive and obvious. In addition, TopView incorporates standard templates for professional-looking reports customizable with your logo and company information.



CROSS TABLE FUNCTIONS



SOLAR I-Ve



I-V500w



I-V400w



PVCHECKs

MAINTENANCE AND EFFICIENCY OF THE PHOTOVOLTAIC SYSTEM

Continuity of protective conductors with 200mA	-	-	-	•
Insulation measurement with test voltage 250, 500, 1000VDC	-	-	-	•
I-V Curve measurement on single module or string	• 1500V/10A 1000V/15A	• 1500V/10A 1000V/15A	• 1000V/15A	-
Voc and Isc measurement on single module or string	• 1500V/10A 1000V/15A	• 1500V/10A 1000V/15A	• 1000V/15A	• 1000V/15A
Single-Phase Inverter efficiency measurement	• 1MPPT (3MPPT with MPP300)	-	-	-
Three-Phase Inverter efficiency measurement	• with MPP300	-	-	-
DC efficiency of the photovoltaic field	•	-	-	•
Use of remote unit SOLAR-02 with RF connection	•	•	•	•
Measurement of irradiation with reference cell	•	•	•	•
Temperature measurement of PV module and environment	•	•	•	•

POWER LOGGING

DC voltage, current and power	• 1MPPT (3MPPT with MPP300)	-	-	• 1 MPPT
AC voltage, current and power	• Single-phase (3-phase with MPP300)	-	-	-
Measuring range for efficiency measurement	1500VDC / 265VAC	-	-	1000VDC

MEMORY AND RECORDING

Recording with selectable integration period	5s-60m	-	-	5s-60m
Indicative memory duration (in days @ PI=10min @ max number of parameters)	8	-	-	8
Internal memory capacity	249 I-V Curves 999 Voc-Isc Tests	249 I-V Curves 999 Voc-Isc Tests	249 I-V Curves 999 Voc-Isc Tests	999 Locations

REAL-TIME DISPLAY

Summary table of main electric parameters	•	•	•	•
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ADDITIONAL CHARACTERISTICS

Measurement category	CAT III 300V	CAT III 300V	CAT III 300V	CAT III 300V
LCD display with backlight	•	•	•	•
PC interface with software for Windows	•	•	•	•
Integrated WiFi interface	•	•	•	-
Custom management of internal PV module database	•	•	•	•
Auto power off	•	•	•	•
Indication of recording duration for efficiency measurement	•	-	-	•
Help on line on the display	•	•	•	•
Size (LxWxH) (mm)	235x165x75	235x165x75	235x165x75	235x165x75
Weight in kg (batteries included)	1.2	1.2	1.2	1.2
Reference standard for safety	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1	IEC/EN61010-1
Order Code	HV000IVE	HV00500W	HV00400W	HV00PVCS

Accessories provided

- **KITGSC4** Set of 4 cables banana 4mm, 2m + 4 alligator clips
- **KITPVMC3** Set of 2 adapters with connector compliance MC3
- **KITPVMC4** Set of 2 adapters with connector compliance MC4
- **HT304N** Reference cell for irradiance measurement with set of fixed screws
- **M304** Mechanical inclinometer for detection of sun incidence angle
- **VA500** Hard carrying case
- **SP-5100** Hands-free kit
- **TOPVIEW2006** PC Windows software + optical/USB connection cable
- **User's manual on CD-ROM**
- **Quick start guide**
- **Calibration certificate** ISO9000 for I-V500w
- **Calibration certificate** ISO9000 for HT304N

Electrical specifications

VDC Voltage @ OPC

Range (V) (*): 15.0 ÷ 1499.9

Resolution (V): 0.1 ÷ 0.3

Accuracy: $\pm(0.5\%rdg+2dgt)$

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

IDC Current @ OPC

Range (A): 0.10 ÷ 15.00

Resolution (A): 0.01

Accuracy: $\pm(1.0\%rdg+2dgt)$

Max Power @ OPC (Vmpp >30V, Impp >2A)

Range (W) (*): 50 ÷ 99999

Resolution (W): 1

Accuracy: $\pm(1.0\%rdg+6dgt)$

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

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

Range (V): 5.0 ÷ 999.9

Resolution (V): 0.1

Accuracy (*, **): $\pm(4.0\%rdg+2dgt)$

IDC Current (@ STC), I-V, IVCK

Range (A): 0.10 ÷ 99.00

Resolution (A): 0.01

Accuracy (**): $\pm(4.0\%rdg+2dgt)$

Max Power @ STC (Vmpp >30V, Impp >2A)

Range (W) (*, **): 50 ÷ 99999

Resolution (W): 1

Global accuracy (**): $\pm(5.0\%rdg+1dgt)$

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. $\geq 700W/m^2$, spectrum AM 1.5, solar incidence vs perpendicular. $\leq \pm 25^\circ$, Cells Temp. [15..65°C]
- Global accuracy include contribute of solar sensor and its measuring circuit

Irradiance (with reference cell)

Range (mV): 1.0 ÷ 100.0

Resolution (mV): 0.1

Accuracy: $\pm(1.0\%rdg+5dgt)$

Temperature of module (with auxiliary PT1000 probe)

Range (°C): -20.0 ÷ 100.0

Resolution (°C): 0.1

Accuracy: $\pm(1.0\%rdg+1^\circ C)$

Optional Accessories

- **SOLAR-02** Remote unit
- **PT300N** PT1000 probe for cell temperature measurement
- **KITPVEXT25M** Set of 2 cables banana 4mm, Green/Black, 25m
- **MPP300** Accessory to check on PV plants with multi MPPT up to 3
- **KITKELVIN** Auto Start test leads kit

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

I-V500w internal power supply: 6x1.5V alkaline batteries type LR6, AA, AM3, MN 1500

Autonomy of I-V500w: > 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

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): 235x165x75mm

Weight (batteries included): 1.2kg

Environmental conditions:

Reference temperature: 23°C \pm 5°C

Working temperature: 0° ÷ 40°C

Working humidity: <80%HR

Storage temperature (batt. not included): -10 ÷ 60°C

Storage humidity: <80%HR

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

Max altitude of use: 2000m





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