技术咨询和询价:010-68940148

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康高特-HT PVCHECKs光伏测试系

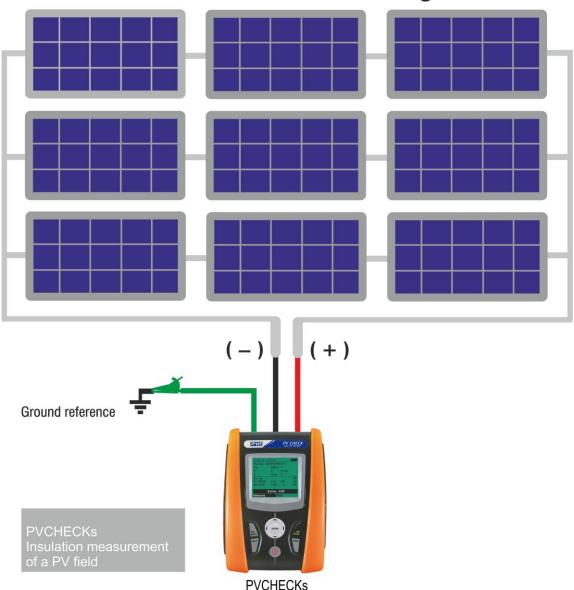
Safety, commissioning and performance tester of PV plants

The multifunction instrument PVCHECKs performs prompt and safe electrical checks required for a PV system (DC section) and controls of the functionality of modules / strings in accordance with IEC/EN62446 guidelines.

PVCHECKs: safety checks

PVCHECKs verifies continuity of protective conductors (and associated connections) and measures insulation resistance of the active conductors on a module, a string, or a photovoltaic field in accordance with IEC/EN62446 guidelines, so avoiding to use any external switch to short-circuit positive and negative terminals.

PV field not connected to ground



Direct measurement of insulation resistance on a PV Field not connected to ground





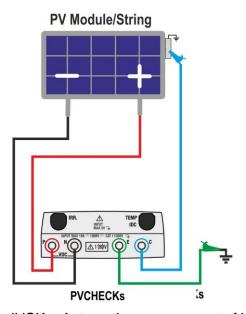


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PVCHECKs: functionality checks

PVCHECKs verifies functionality of a PV string in accordance with the IEC/EN62446 guidelines by measuring open circuit voltage and short-circuit current under operating conditions **up to 15A** and extrapolating the results referred to the STC (by measuring the solar radiation). Finally, it displays measurements as well as comparison with the PV strings previously tested.



SOLAR-02

SOLAR-02

PVCHECKs

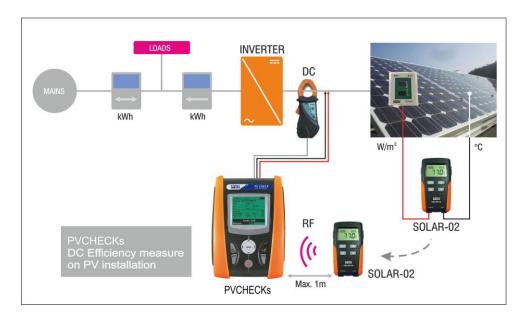
PV Module/String

Test IVCK – Automatic measurement of Voc, Isc + Insulation + Continuity on a PV Module/String without irradiance measurement

Test IVCK – Automatic measurement of Voc, Isc + Insulation + Continuity on a PV Module/String with irradiance measurement with optional accessories SOLAR-02 and HT304N

PVCHECKs: performance checks

PVCHECKs analyses the performance of a PV array (DC) under the operating conditions (connected to the inverter) displaying the generated power and the efficiency of the PV plant in accordance with IEC/EN62446.







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2. ELECTRICAL SPECIFICATIONS

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

2.1. PERFORMANCE TEST

DC Voltage		
Range (V)	Resolution (V)	Uncertainty
5.0 ÷ 199.9	0.1	1 (1 00/rdg 1 2dgt)
200.0 ÷ 999.9	0.5	\pm (1.0%rdg + 2dgt)

DC Current (by mean external clamp)		
Range (mV)	Resolution (mV)	Uncertainty
-1100 ÷ -5	0.1	+ (0 F0/rdg + 0 6m)/)
5 ÷ 1100	U. I	± (0.5%rdg + 0.6mV)

DC current is always positive ;DC current zeroed if the related voltage value is < 5mV

FS DC clamp [A]	Resolution [A]	Minimum read value [A]
1< FS ≤ 10	0.001	0.05
10< FS ≤ 100	0.01	0.5
100< FS ≤ 1000	0.1	5

DC Power (Vmeas > 150)	V)		
Clamp FS (A)	Range (W])	Resolution (W)	Uncertainty
1< FS ≤ 10	0.000k ÷ 9.999k	0.001k	\pm (1.5%rdg + 3dgt)
10< FS ≤ 100	0.00k ÷ 99.99k	0.01k	(Imeas < 10%FS) ±(1.5%rdg)
100< FS ≤ 1000	0.0k ÷ 999.9k	0.1k	(Imeas ≥ 10%FS)

Irradiance (by mean I	HT304k)	
Range (mV)	Resolution (mV)	Uncertainty
1 ÷ 40.0	0.02	±(1.0%rdg + 0.1mV)

Temperature (by mean P	T300N)	
Range (°C)	Resolution (°C)	Uncertainty
-20.0 ÷ 100.0	0.1	± (1.0%rdg +1°C)





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2.2. FUNCTIONALITY TEST (IVCK)

DC Voltage @ OPC		
Range (V)	Resolution (V)	Uncertainty
5.0 ÷ 199.9	0.1	1/4 00/rda (2dat)
200 ÷ 999	1	\pm (1.0%rdg+2dgt)

Minimum VPN voltage to start the test: 15V

DC Current @ OPC		
Range (A)	Resolution (A)	Uncertainty
0.10 ÷ 15.00	0.01	±(1.0%rdg+2dgt)

DC Voltage @ STC		
Range (V)	Resolution (V)	Uncertainty
5.0 ÷ 199.9	0.1	±(4.00/rdg 2dgt)
200 ÷ 999	1	\pm (4.0%rdg+2dgt)

DC Current @ STC		
Range (A)	Resolution (A)	Uncertainty
0.10 ÷ 15.00	0.01	±(4.0%rdg+2dgt)

Irradiance (by mean HT304k)		
Range (mV)	Resolution (mV)	Uncertainty
1 ÷ 40.0	0.02	±(1.0%rdg + 0.1mV)

Temperature (by mean PT30	0N)	
Range (°C)	Resolution (°C)	Uncertainty
-20.0 ÷ 100.0	0.1	± (1.0%rda +1°C)



CAUTION

Do not use the instrument for IVCK tests <u>on PV modules with efficiency >19%</u>. Check the technical characteristics of the PV modules **before** carrying out the tests in order to avoid possible damage to the instrument





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2.3. SAFETY TEST

Continuity Test (LOWΩ)			
Range [Ω]	Resolution [Ω]	Uncertainty	
0.00 ÷ 1.99	0.01		
2.0 ÷ 19.9	0.1	\pm (2.0%rdg + 2dgt)	
20 ÷ 199	1		

Test current >200mA DC up to 2Ω (test leads included), Resolution 1mA, Uncertainty $\pm (5.0\% \text{rdg} + 5 \text{dgt})$ Open loop voltage

Insulation Test (M Ω) – Mode TIMER					
Test voltage [V]	Range [MΩ]	Resolution [M Ω]	Uncertainty		
250, 500, 1000	0.01 ÷ 1.99	0.01			
	2.0 ÷ 19.9	0.1	±(5.0%rdg+ 5dgt)		
	20 ÷ 199	1			

Open voltage: Short circuit current: < 1.25 * nominal test voltage <15mA (peak) for all test voltages

Resolution 1V, uncertainty \pm (5.0%rdg + 5dgt) @ Rmis> 0.5% FS Generated voltage

> 1mA with load = $1k\Omega$ x Vnom Test current

Insulation Test (M Ω) – Mode FIELD (*), STRING (**)					
Test voltage [V]	Range [MΩ]	Resolution [M Ω]	Uncertainty (***)		
250	0.1 ÷ 1.9	0.1	±(20.0%rdg+ 5dgt)		
	2 ÷ 99	1			
500	0.1 ÷ 1.9	0.1			
	2 ÷ 99	1			
1000	0.1 ÷ 1.9	0.1			
	2 ÷ 99	1			

(*) For FIELD mode (**) For STRING mode if VPN >1V the minimum voltage VEP and VEN for the calculation of Ri(+) and Ri(-) is 1V

minimum VPN voltage to start the test: 15V

Open voltage <1.25 x nominal test voltage

Short circuit current < 15mA (peak) for each test voltage

resolution 1V, accuracy ±(5.0%reading + 5digits) @ Rmis> 0.5% FS Generated voltage

> 1mA with $1k\Omega$ @ Vnom Rated current measured

(***) For FIELD mode: add 5 dgts to the accuracy if [Max (R+,R-) / Min (R+,R-) \geq 100]





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3. GENERAL SPECIFICATIONS

DISPLAY AND MEMORY:

Features: 128x128pxl custom LCD with backlight

Memory: max 999 test

POWER SUPPLY:

PVCHECK internal power supply: 6x1.5V alkaline batteries type AA LR06
Battery life: approx.120 hours (DC efficiency test)
SOLAR-02 power supply: 4x1.5V alkaline batteries type AAA LR03

SOLAR-02 max recording time (@ IP=5s): approx 1.5h (@ PI=5s); approx 8gg (@ PI = 600s)

OUTPUT INTERFACE

PC communication port: optical/USB

Interface with SOLAR-02: wireless RF communication (max distance 1m)

CHARACTERISTIC OF RADIO MODULE

Frequency range: $2.400 \div 2.4835 \text{GHz}$

 $\begin{array}{ll} \text{R\&TTE category:} & \text{Class 1} \\ \text{Max transmission power:} & 30 \mu\text{W} \\ \text{Max RF connection distance:} & 1 \text{m} \\ \end{array}$

MECHANICAL FEATURES

Size (L x W x H): 235 x 165 x 75mm

Weight (batteries included): 1.2kg Mechanical protection: IP40

ENVIRONMENTAL CONDITIONS:

Reference temperature: $23^{\circ}\text{C} \pm 5^{\circ}\text{C}$ Working temperature: $0^{\circ}\text{C} \div 40^{\circ}\text{C}$ Working humidity: <80%RH Storage temperature (remove the batteries): $-10^{\circ}\text{C} \div 60^{\circ}\text{C}$ Storage humidity: <80%RH Max height of use: 2000m

GENERAL REFERENCE STANDARDS:

Safety: IEC/EN61010-1
EMC: IEC/EN61326-1
Safety of measurement accessories: IEC/EN61010-031

Measurements: IEC/EN62446 (PV performance, IVCK)

IEC/EN 61557-1, 2, -4 (LOW Ω , M Ω)

Insulation: double insulation

Pollution degree: 2

Overvoltage category: CAT III 300V to ground

Max 1000V DC between inputs

This instrument satisfies the requirements of Low Voltage Directive 2014/35/EU (LVD) and of EMC Directive 2014/30/EU

This instrument satisfies the requirements of 2011/65/EU (RoHS) directive and 2012/19/EU (WEEE) directive



