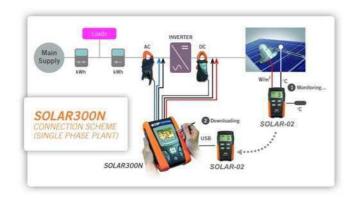
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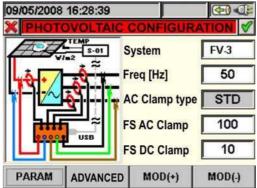
1. SOLAR300N MAIN FEATURES



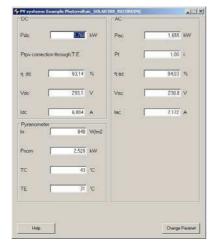
SOLAR300N performs all tests on PV plants by using of SOLAR-02 remote unit which, after a preliminary synchronisation, save in independent way the values of irradiance and temperature. Only at the end of test the remote unit should be connected again with the master unit to download the recorded data



With SOLAR-02 remote unit the irradiance and temperature measured values are shown at display also in independent mode (ideal solution during a pre-test on installation) besides test/recording with SOLAR300N



A synoptic connection scheme on the display helps the user while connecting the instrument to the installation (Single or Three phase) under test



Final result of a PV test performed with SOLAR300N and downloaded by TopView software. Possible export in XLS and PDF format files



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2. ELECTRICAL SPECIFICATIONS

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

DC Voltage			
Range (V)	Resolution (V)	Accuracy	Input impedance
0.0 ÷ 1000.0	0.1	± (0.5%rdg + 2dgt)	10ΜΩ

Voltage values <2.0V are zeroed

AC TRMS Voltage – Phase-Neutral – Single Phase / Three Phase plants					
Range (V) Resolution (V) Accuracy Input impedance					
0.0 ÷ 600.0	0.1	± (0.5%rdg + 2dgt)	10ΜΩ		

Voltage values <2.0V are zeroed

Max. crest factor: 2

AC TRMS Voltage – Phase - Phase - Three Phase plants					
Range (V) Resolution (V) Accuracy Input impedance					
0.0 ÷ 1000.0	0.1	± (0.5%rdg + 2dgt)	10ΜΩ		

Voltage values <2.0V are zeroed

Max. crest factor: 2

AC Voltage Anomalies – Phase-Neutral Single Phase plants						
Range (V) Resolution Accuracy Resolution Accuracy Voltage (V) Voltage Time (ms)						
$0.0 \div 600.0$	0.2	± (1.0%rdg+2dgt)	10	± 10ms		

Max. crest factor: 2

Voltage values <2.0V are zeroed

The meter could be connected to external VTs with selectable ratio from 1 to 3000

Voltage threshold adjustable from ± 1 to $\pm 30\%$

AC Voltage Anomalies – Phase-Phase Three Phase plants						
Range (V)	Range (V) Resolution Accuracy Resolution Accuracy Voltage (V) Voltage Time (ms)					
0.0 ÷ 1000.0 0.2 $\pm (1.0\% \text{rdg} + 2 \text{dgt})$ 10 $\pm 10 \text{ms}$						

Max. crest factor: 2

Voltage values <2.0V are zeroed

Voltage threshold adjustable from ±1 to ±30%

AC Voltage	AC Voltage spikes – Phase-Earth voltage – Single/Three phase plants					
Range (V)	nge (V) Resolution Accuracy Response Voltage (V) Voltage interval (50Hz)			Accuracy Time (50Hz)		
-1000 ÷ -100 100 ÷ 1000	1	±(2.0%rdg+60V)	78μs – 2.5ms (SLOW)	± 10ms		
-6000 ÷ -100 100 ÷ 6000	15	±(10%rdg+100V)	5μs - 160μs (FAST)	± TOTHS		

Adjustable threshold from 100V to 5000V Max number of recorded spikes: 20000

DC and AC TRMS Current with external transducers (STD)					
Range (mV)	Resolution (mV)	Input impedance	Overload protection		
0.0 ÷ 1000.0	0.1	± (0.5%rdg + 0.06%FS)	510kΩ	5V	

FS = full scale of the clamp

Max. crest factor: 3 (AC current)

Measurements performed through clamps 1V output voltage at nominal current

Current values < 0.1%FS are zeroed

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AC Current with FLEX transducer – NPV systems – Range 300A					
Range (A)	Resolution (A)	Input impedante	Overload protection		
$0.0 \div 49.9$	0.1	±(0.5%rdg+0.24%FS)	510kΩ	5V	
50.0 ÷ 300.0	0.1	±(0.5%rdg+0.06%FS)	310K22	50	

Measure performed by HTFLEX33D clamp, crest factor max = 3

Current values < 1A are zeroed

	AC Current with FLEX transducer – NPV systems – Range 3000A					
Range (A) Resolution (A) Accuracy Input impedante Overload protection					Overload protection	
	0.0 ÷ 3000.0	0.1	±(0.5%rdg+0.06%FS)	510kΩ	5V	

Measure performed by HTFLEX33D clamp, crest factor max = 3

Current values < 5A are zeroed

Ac Inrush current					
Range (A)	Resolution (A)	Accuracy	Resolution time (ms) at 50Hz	Accuracy time (ms) at 50Hz	
Dep.on clamp	Dep.on clamp	±(1.0%rdg+0.4%FS)	10	±10	

Max crest factor = 3

Max number of recording anomalies: 1000

Voltage and Current Harmonics					
Range (Hz) Resolution Accuracy (*)					
DC ÷ 49 th	0.1V / 0.1A	± (5%rdg + 5dgt)			

(*) To be added to the accuracy of the related RMS parameter

DC Power (Vmeas >				
Parameter	FS clamp	Range [W]	Resolution [W]	Accurcay
	10A	0.000 ÷ 9.999k	0.001k	
POWER	100A	0.00 ÷ 99.99k	0. 01k	\pm (0.7%rdg+3dgt)
	1000A	0.1 ÷ 999.9k	0.1k	

Vmeas = voltage which the power measurement is performed

AC Power Single and	d Three phase	(@ PF = 1, Vmea	as > 200V, Imeas	s > 10% FS clamp)
Parameter [W, VAR, VA]	FS clamp	Range [W, VAR, VA]	Resolution [W, VAR, VA]	Accuracy
A all a same as	FS ≤ 1A	0 ÷ 9.999k	0.1 ÷ 0.001k	
Active power Reactive power	1A ≤ FS ≤10A	$0.000 \div 99.99k$	$0.001k \div 0.01k$	± (0.7%rdg+3dgt)
Apparent power	10A ≤ FS ≤100A	0.00 ÷ 999.9k	0.01k ÷ 0.1k	± (0.7 % dy+3dyt)
, ippa. o.n. powor	$100A \le FS \le 3kA$	0.0 ÷ 9.999M	0.1k ÷ 0.01M	

Vmeas = voltage which the power measurement is performed

AC Energy Single and Three phase (@ PF = 1, Vmeas > 200V, Imeas > 10% FS clamp				
Parameter [Wh, VARh, VAh]	FS clamp	Range [Wh, VARh, VAh]	Resolution [Wh, VARh, VAh]	Accuracy
Active energy Reactive energy Apparent energy	FS ≤ 1A	0 ÷ 9.999k	0.1 ÷ 0.001k	
	1A ≤ FS ≤10A	0.000 ÷ 99.99k	0.001k ÷ 0.01k	± (0.7%rdg+3dgt)
	$10A \le FS \le 100A$	0.00 ÷ 999.9k	0.01k ÷ 0.1k	
, apparont onergy	$100A \le FS \le 3kA$	0.0 ÷ 9.999M	0.1k ÷ 0.01M	

Vmeas = voltage which the power measurement is performed

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Frequency		
Range (Hz)	Resolution (Hz)	Accuracy
42.5 ÷ 69.0Hz	0.1	±(0.2%rdg+1dgt)

Power factor (cosφ) – Single Phase / Three Phase plants				
Range	Resolution [°]	Accuracy [°]		
0.20 ÷ 0.50		1.0		
0.50 ÷ 0.80	0.01	0.7		
0.80 ÷ 1.00		0.6		

Flicker – Single/Three phase plants				
Parameters	Ange	Resolution	Accuracy	
Pst1', Pst	0.0 ÷ 10.0	0.1	Compliance to EN50160	
Plt	0.0 ÷ 10.0	0.1	Compliance to ENSUT60	

Irradiance (by SOLAR-01 unit and PYRA input)				
Range (mV)	Resolution (mV)	Accurcay	Overload protection	
0.00 ÷ 12.0	0.01	1 (1 00/ rdg . Edgt)	5V	
0.0 ÷ 120.0	0.1	± (1.0%rdg + 5dgt)	3 V	

Irradiance (by SOLAR-02 unit and PYRA/CELL input)			
Range (W/m²)	Resolution (W/m²) Accurcay		
0 ÷ 1400	1 + INT (100 * 0.1/K)	±(1.0%rdg + INT(1000 * 0.1/K)	

K = sensitivity of irradiance sensor used (expressed in mV/kW/m² or in uV/W/m²)

Probe sensitività	Range (mV)	Resolution (mV)	Accuracy
K<10	0.00 ÷ 15.00	0.01	±(1.09/ rdg + 0.1 m)/)
K≥10	0.00 ÷ 65.00	0.02	±(1.0%rdg+0.1mV)

Temperature (by SOLAR-01 unit and TEMP input)			
Range (°C)	Resolution (°C)	Accuracy	Overload protection
0 ÷ 100	1	± (1.0%rdg +2dgt)	5V

Temperature (by SOLAR-02 unit and TEMP input)		
Range (°C)	Resolution (°C)	Accuracy
-20 ÷ 100	0.1	± (1.0%rdg +1°C)

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3. GENERAL SPECIFICATIONS

DISPLAY:

Features: graphic TFT with backlight, 1/4 VGA (320 x 240pxl)

Touch screen: present
Colours: 64k
Contrast: adjustable

POWER SUPPLY:

SOLAR300 internal power supply: Li-ION, 3.7V rechargeable battery

Battery life: > 6 hours

External power supplier: AC/DC 100-240V 50/60Hz / 5VDC adapter

Auto power off: after 5 minutes without using the instrument (no external power)

SOLAR-01 power supply: 2x1.5V alkaline batteries type AA LR06 SOLAR-02 power supply: 4x1.5V alkaline batteries type AAA LR03

SOLAR-0x max recording time (@ IP=5s): approx 1.5h

MEMORY AND PC INTERFACE

Internal memory: 15 Mbyte

External memory:

External memory:

Operative system:

USB memory stick compact flash card Windows CE

PC communication port: USB

MECHANICAL FEATURES

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

Weight (batteries included): 1.0 kg IP degree: 1P50

ENVIRONMENTAL CONDITIONS:

Reference temperature: $23^{\circ}\text{C} \pm 5^{\circ}\text{C}$ Working temperature: $0^{\circ} \div 40^{\circ}\text{C}$ Working humidity: < 80% UR Storage temperature (batt. not included): $-10 \div 60^{\circ}\text{C}$ Storage humidity: < 80% UR

GENERAL REFERENCE STANDARDS:

Safety: IEC/EN61010-1

Safety of measurement accessories: IEC/EN61010-031, IEC/EN61010-2-032

Insulation: double insulation

Pollution degree: 2

Overvoltage category: CAT IV 600V to ground, max 1000V between inputs

Max altitude of use: 2000m

Quality networks: IEC/EN50160

Quality networks: IEC/EN50160

Quality of power measurements: IEC/EN61000-4-30 class B

Flicker: IEC/EN61000-4-30 class B IEC/EN61000-4-15, IEC/EN50160 Unbalance: IEC/EN61000-4-7, IEC/EN50160

This instrument complies with the requirements of the European Low Voltage Directives 2006/95/EEC (LVD) and EMC 2004/108/EEC

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