

NanoVIP® CUBE PLUS™



Analizzatore della Qualità dell'Energia per sistemi monofase, bifase, trifase (bilanciati e non), in bassa e media tensione con tecnologia MRH™.

Power Quality analyzer for mono, bi, three phases (balanced and unbalanced), medium and low voltages systems with MRH™ technology.



NanoVIP® CUBE+™ è un potente e versatile analizzatore della Qualità dell'Energia che, oltre a svolgere misure e campagne autonome, può partecipare ad una rete di misura multipunto MRH™.

E' possibile l'upgrade hardware da un sistema NanoVIP® CUBE™ a NanoVIP® CUBE+™.

EN The NanoVIP® CUBE+™ is a powerful and versatile Power Quality analyzer due to the implementation of **MRH™ technology** that allows it to participate to an MRH™ measuring network. With NanoVIP CUBE+™ you get more than one standalone powerful analyzer as it can work also as a **measuring client** of a NanoVIP® QUADRA™ master set.

POTENZA DI ANALISI CON LA FLESSIBILITÀ DEI SISTEMI MRH™

- ✓ Utilizzabile su impianti: monofase, bifase, trifase equilibrati e non, con o senza neutro
- ✓ Può operare in una **rete di misura MRH™** come client elettrico poichè integra NanoVIP MRH™ technology
- ✓ Modalità di misura MRH™ disponibili: Standalone, Point, Net, Generator, Load, Inverter, Storage, Event
- ✓ Funzionalità **One Shot UPS™** per misurare rapidamente sistemi UPS
- ✓ Analisi energetica tradizionale completa (V, I, P, Q, S, F, PF, THD%, valori istantanei, minimi, massimi, medi, contatori di energia assorbita e generata sia trifase che per ogni singola fase).
- ✓ Analisi dei parametri di qualità dell'energia
- ✓ Armoniche di corrente e tensione per ogni fase e per il neutro fino alla 50°
- ✓ Sbilanciamento delle fasi di tensione
- ✓ Interruzioni di rete, sovratensioni, buchi di tensione
- ✓ Test di conformità alla normativa EN 50160
- ✓ Misura reale della corrente di neutro
- ✓ Visualizzazione delle forme d'onda di correnti e tensioni
- ✓ Impostazione di 4 fasce tariffarie con visualizzazione dei relativi costi
- ✓ Configurazione e visualizzazione di 20 allarmi su grandezze e soglie impostabili

MEASUREMENT PRECISION WITH MRH™ FLEXIBILITY

- ✓ It can work on networks: single-phase, two-phase, three-phase balanced with or without neutral, three-phase unbalanced with or without neutral
- ✓ It includes all the NanoVIP® CUBE™ features.
- ✓ It can operate as an **MRH™ network** electrical client as it includes the NanoVIP MRH™ technology
- ✓ MRH™ available modes: Standalone, Point, Net, Generator, Load, Inverter, Storage, Event
- ✓ **One Shot UPS™** function to easily measure UPS™ systems efficiency
- ✓ Network outages, surges, sags
- ✓ Conformance testing to EN 50160
- ✓ Real measurement of the neutral current
- ✓ Display of the waveforms of currents and voltages
- ✓ 4 tariff bands setting with the related costs display
- ✓ Configuration and display of alarms on sizes 20 and settable
- ✓ Display of the time course of selectable parameters (trend)
- ✓ Automatic check of the correct connection of the implant tool
- ✓ Realization of long-term measurement campaigns (over 24 independently, unlimited if connected to the network)
- ✓ Multilanguage

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CASE:

Dimensions	203x116x53mm
Material	ABS with self-extinguishing V0 grade
Protection class	IP30
Weight	580 g

DISPLAY:

Dimensions	68x68mm
Type	128x128 FSTN Negative dot matrix graphic LCD
Backlight	White LED
Languages	English - Spanish - Italian - German - French

KEYPAD:

Type	Membrane keypad with 10 double-function keys
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POWER SUPPLY:

External power supply	wall-plug switching; input 100-240VAC $\pm 10\%$ 47-63Hz with interchangeable plug; output 7.5VDC - 12W
Battery pack	4 x AA NiMH 2100mAh
Duration of the battery charge	>24h (wireless off)

CONNECTING SYSTEMS:

Systems frequencies	50Hz – 60Hz – 400Hz
Single phase	✓
Two phase	✓
Three-phase, 3-wires, balanced	✓
Three-phase, 3-wires, unbalanced	✓
4-phase, 4-wires, balanced	✓
4-phase, 4-wires, unbalanced	✓

CONNECTIONS:

Voltages	Flexible cables L = 1.5m; 2.5mm ² - 36A; 1000V CAT III - 600V CAT IV with a 4mm, 90° protected blade plug connector, crocodile clips with a 45mm opening (for sections up to 32mm) and magnetic captors
Currents	Elcontrol Energy Net interchangeable amperometric sensors
Solar radiation	Elcontrol Energy Net solar meter
PT100	-
Anemometer	-
Transducers	-

FUNCTIONS:

Traditional electrical analysis	V, I, P, Q, S, F, PF, THD(V)%, THD(I)%, $\cos\phi$, ϕ , peaks, minimums, maximums, averages, max. demands, etc.
Neutral current	Measured
Three phase counters	kWh, kVAh, kVAh, both absorbed that generated
Counters for each single phase	kWh, kVAh, kVAh, both absorbed that generated
Cogeneration	✓
Waveforms	V & I
Harmonics	Values and histograms up to the 50 th order
Sags	Dips, swells & interruptions
Transients	Overvoltages & overcurrents
Unbalance	✓
Test EN 50160	✓
Inrush current	✓
DC measures	✓
K factor	Up to the 25 th order
Alarms	Displayed

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Alarms log	5 at display
Tariff bands	4
Energy costs	✓
IEC 61724 network parameters	✓
Test EN 82.25	-
OSU™ (One Shot UPS)	✓
Measurement campaigns	unlimited, up to fill the memory card

MEASUREMENTS:

Sampling frequency	128 samples per cycle (adaptive in 40Hz-70Hz range) 16 samples per cycle at 400Hz
Data record rate	1 sec.
Data storage rate	User selectable: 1", 5", 3", 1', 5', 15'
Type of connections available	Three-phase (3 or 4 leads), two-phase (2 leads), and single phase grid
Type of grid which can be connected	Low and medium voltage (LV and MV)

VOLTAGE (TRMS)

Channels	3 channels with common neutral + 1 independent, auxiliary channel
Input impedance	4 Mohm
Scales	2
Direct measurement	Phase-phase: 7-1000VAC 40-70Hz Phase-neutral: 5-600VAC 40-70Hz Aux: 5-1000VAC 40-70Hz, 10-1400VDC
Measurement with VT	Ratio: 1-60000 Maximum value which can be displayed: 20MV
Permanent overload	Phase-phase: 1200VAC Phase-neutral: 700VAC Aux: 1200VAC, 1700VDC
Sensitivity	5VAC Phase-neutral, 7VAC Phase-phase, 10VDC

CURRENT (TRMS)

Channels	5 independent channels
Input impedance	10KOhm
Scales	4
Measurement with current clamps	Ratio: 1-60000 Maximum value which can be displayed: 500KA
Sensitivity	0,2% of F.S.

POWERS

Single phase power	Values < 999 GW, Gvar, GVA
Total power	Values < 999 GW, Gvar, GVA

POWER COUNTERS

Maximum value before reset	99999999 kWh, kvarh, kVAh
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ACCURACY

RMS voltages:

Scale 1	$\pm 0.25\% + 0.1\%FS^{(2)}$	@ RMS V < 350VAC ⁽¹⁾
Scale 2	$\pm 0.25\% + 0.05\%FS^{(2)}$	@ RMS V > 350VAC ⁽¹⁾

RMS currents:

Scale 1	$\pm 0.25\% + 0.1\%FS^{(2)}$	@ RMS I < 5% IN clamp ⁽¹⁾
Scale 2	$\pm 0.25\% + 0.05\%FS^{(2)}$	@ 5% < RMS I < 20% IN clamp ⁽¹⁾
Scale 3	$\pm 0.25\% + 0.05\%FS^{(2)}$	@ 20% < RMS I < 50% IN clamp ⁽¹⁾
Scale 4	$\pm 0.25\% + 0.05\%FS^{(2)}$	@ > 50% IN clamp ⁽¹⁾

Power	$\pm 0.5\% + 0.05\%FS^{(2)}$
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Power Factor (PF)	$\pm 0.5^\circ$
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Frequency	± 0.01 Hz (40-70Hz)
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Active power count (kW)	Class 0.5
Reactive power count (kVar)	Class 1
HARMONIC ANALYSIS	Up to 50 th order Up to 7 th at 400Hz
ANALYSIS of EN50160 parameters	
Interruptions	>500mS
Dips	>500mS
Swells	>500mS
Transient ANALYSIS	
Swells and overcurrents	>150uS
Inrush current analysis	RMS continuous sampling every 2 periods – Duration 1, 2, 5, 10 sec.
COMMUNICATION:	
MRH™	✓
Server mode	-
Connectable MRH™ clients	-
Client mode	✓
Zigbee®	✓
Maximum distance outdoor	600m (point to point)
Maximum distance indoor	60m (point to point)
Mesh network	✓
Wireless to PC	-
USB	to PC
DATA STORAGE:	
Internal memory	64kB
External memory	Micro SD (2GB included)
OPERATING CONDITIONS:	
Operating temperature	-10 to +55 °C
Storage temperature	-20 to +85 °C
Relative humidity	Max 95%
Maximum altitude a.s.l. (600V CAT III)	2000 m
EC COMPLIANCE:	
Directives	93/68/EEC (Low Voltage Electrical Equipment); 89/336/EEC and 2004/108/EC (EMC - Electromagnetic Compatibility); 2006/95/EC - 72/23/EEC (LVD - Low Voltage Directive); 2002/95/EC (RoHS - Restriction of Hazardous Substances); 2002/96/EC and 2003/108/EC (WEEE - Waste Electrical and Electronic Equipment); IEC 61724
REFERENCE STANDARDS:	
Safety	EN 61010-1
Electromagnetic Compatibility (EMC)	EN 61326 EN 61326/A1 EN 61326/A2 EN 61326/A3
Temperature	IEC 60068-2-1 (Operating temperature) IEC 60068-2-2 (Storing temperature)
Vibrations	IEC 60068-2-6
Humidity	IEC 60068-2-30 (Humidity)
Overload	IEC 60947-1