Analizzatori portatili
Portable analyzers

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MADE IN ITALY

Analizzatori portatili NanoVIP®

Portable power quality analyzers NanoVIP®

Reti Monofase e Trifase bilanciate

Single-Phase and three-phase balanced networks

1 canale di misurazione della tensione (1 fase + neutro) per tensioni AC e DC	EN	1 voltage channel (1 phase + neutral) for AC and DC voltages
1 canale per correnti AC e DC		1 channel for AC/DC currents

TWO™

Connessione WiFi	EN	With WiFi connectivity
Controllo remoto totale		Full remote control
Connessione al Cloud		Cloud connectivity

TWO WF

4 ingressi di trasduzione per sensori (4..20mA, 0..1V e PT) intercambiabili e configurabili	EN	4 input for transducers (4..20mA, 0..1V and PT) interchangeable, and configurable
4 modalità precaricare per trasduzione indipendente, pompa, generatore, chiller		4 preloaded modes: independent inputs, pump, generator and chiller
Collegabile a reti MRH™		MRH™ technology

TWO Plus

MRH™

Reti Monofase, bifase e trifase (bilanciate e non)

Single, two and three phases networks (balanced and not)

4 canale di misurazione della tensione (3 fasi con neutro e un canale ausiliario indipendente) per tensioni AC e DC	EN	4 voltage channel3 (3 phase with neutral + 1 independent auxiliary) for AC and DC voltages
5 ingressi di corrente (3 indipendenti, uno di neutro e un ausiliario) per misurazioni in AC e DC		5 current inputs (3 independent, 1 neutral and 1 auxiliary) for AC/DC measurements

CUBE™

Connessione WiFi	EN	With WiFi connectivity
Controllo remoto totale		Full remote control
Connessione al Cloud		Cloud connectivity

CUBE WF

Connessione 3G GSM	EN	With 3G GSM connectivity
Controllo remoto		Remote control
Connessione al Cloud		Cloud connectivity

CUBE 247

Collegabile a reti MRH™	EN	MRH™ technology

CUBE PLUS

MRH™

MADE IN ITALY

MRH™

NanoVIP® QUADRA™

QUADRA master

Analizzatore master per reti MRH™

Master analyzer for MRH™ measurement networks

Reti di misura di energie eterogenee (elettrico, solare e termomeccanico)	EN	Heterogeneous measuring networks: electrical, solar, thermomechanical
Riconoscimento automatico dei client		Auto recognition of network clients and roles
Autoconfigurazione di rete		Self setting of MRH™ measuring network
Modalità standalone e rete MRH™ (elettrico, solare ed eterogeneo)		Standalone and MRH™ measuring mode; electrical, solar and heterogeneous
Misurazioni puntuali e di rete in tempo reale		Local and remote realtime measurements

QUADRA DE

Client elettrico DE per reti MRH™

Electrical client analyzer for MRH™ measurement networks

Totale misura della Power quality	EN	Full Power Quality analysis
Riconoscimento automatico delle pinze		Automatic plier recognition
Controllo remoto		Remote control

QUADRA DS

Client solare DS per reti MRH™

Solar client for MRH™ measurement networks

Misura DC uscita pannello/stringa	EN	DC panel/string output measurement
4 ingressi per temperatura pannello, temperatura ambiente, irraggiamento e velocità del vento		2 temperature inputs (panel, ambient), solar radiation and wind speed input
Controllo remoto		Remote control

QUADRA DGP

Client termomeccanico DGP per reti MRH™

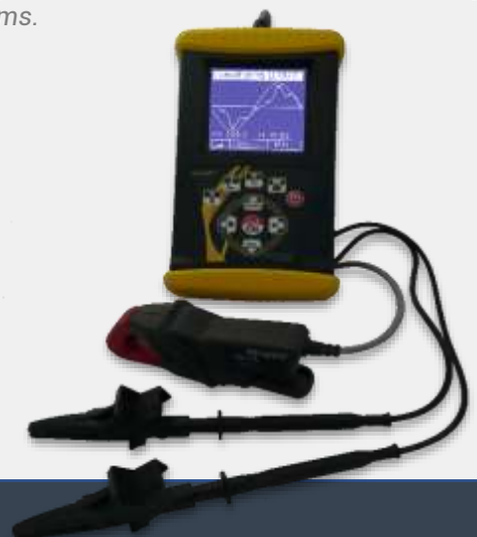
Thermomechanical client for MRH™ measurement networks

1 canale per Power Quality eletrica (monofase, bifase e trifase bilanciato)	EN	1 electrical Power Quality channel (monophase, biphase and three phase balanced)
4 ingressi di trasduzione per sensori (4..20mA, 0..1V e PT) intercambiabili e configurabili		4 input for transducers (4..20mA, 0..1V and PT) interchangeable, and configurable
4 modalità precaricare per trasduzione indipendente, pompa, generatore, chiller		4 preloaded modes: independent inputs, pump, generator and chiller

NanoVIP® TWO™

Analizzatore portatile della Qualità dell'Energia per sistemi monofase, bifase, trifase bilanciati, in bassa e media tensione.

Portable Power Quality analyzer for mono, bi, three phases balanced, medium and low voltages systems.



NanoVIP® TWO™ è un avanzato dispositivo dotato di tutte le funzioni necessarie alla misurazione ed il monitoraggio sia dei consumi elettrici che della power quality che permette un'analisi professionale adeguata alle più elevate esigenze.
Può essere utilizzato su reti monofase, trifase (3 o 4 fili equilibrato) in bassa e media tensione.

EN NanoVIP® TWO™ is an advanced device that has all the functions required to measure and monitor the electrical consumption and the power quality of a network that allows adequate professional analysis to the highest demands. It can be used on single-phase, three-phase networks (3 or 4-wire balanced) in low and medium voltage.

Preciso nella misura, facile nell'uso

- LCD grafico che permette un'ampia duttilità nella visualizzazione (menu multilingua, forme d'onda, istogrammi, personalizzazioni delle pagine, disegni, schemi, immagini, etc.)
- **Software PC NanoStudio** dedicato tramite il quale è possibile effettuare analisi evolute dei dati memorizzati
- 1 canale di misurazione della tensione (1 fase + neutro) fino a 600V CAT III, con la possibilità di misurare anche la tensione continua, con la precisione dello ±0,25%+err.FS
- 1 ingresso di corrente con la possibilità di misurare anche la corrente continua, con la precisione dello ±0,25%+err.FS
- Verifica automatica della correttezza di connessione dell'apparecchio alla rete
- Possibilità di utilizzare pinze amperometriche flessibili fino a 3000A o altri captori con fondo scala impostabile dall'utente
- Batterie ad alta capacità che consentono un'autonomia di campagna superiore alle 24 ore anche in assenza di alimentazione di rete; nessun limite di campagna se collegato alla rete
- Potente motore di calcolo che permette oltre alla misurazione di tutte le grandezze elettriche standard (V I P Q A F PF THD% ecc.) in vero valore efficace (TRMS): armoniche fino alla 50°, dips, swells, microinterruzioni e molte altre
- **20 allarmi** (generici, swells, dips e interruzioni)

Measure precision, easiness of use

- LCD graphic display that allows wide flexibility in the (multilingual menu, waveforms, histograms, personalized pages, drawings, diagrams, pictures, etc.)
- PC Software NonoStudio dedicated through which you can make advanced analysis of the data stored on uSD
- 1 voltage measuring channel (1 phase + neutral) up to 600V CAT III, with the possibility to also measure the DC voltage, with the precision of the 0,25% + err.FS
- 1 current input with the possibility to also measure the DC current, with the precision of the 0,25% + err.FS
- Automatic verification of the correctness of the device connected to the network
- Possibility to use flexible current probe up to 3000A or other captors with full scale set by the user
- High capacity batteries that allow a range of campaign more than 24 hours even in the absence of mains power; no country limit when connected to the network
- Calculation engine Powerful allowing besides the measuring of all standard electrical parameters (V I P Q A F PF THD% etc.) True RMS (TRMS): harmonics up to the 50th, dips, swells, micro interruptions and many other
- 20 alarms (generic, swells, dips and interruptions)
- Energy Measurement in 4 time zones (rates) set

Caratteristiche tecniche

Technical details

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
POWER SUPPLY:	
External power supply	wall-plug switching; input 100-240VAC ±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)
CONNACTABLE 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	-
PT100	-
Anemometer	-
Transducers	-
FUNCTIONS:	
Traditional electrical analisys	V, I, P, Q, S, F, PF, THD(V)%, THD(I)%, cosφ, φ, peaks, minimums, maximums, averages, max. demands, etc.
Neutral current	Measured
Three phase counters	kWh, kVArh, kVAh, both absorbed that generated
Counters for each single phase	kWh, kVArh, kVAh, both absorbed that generated
Cogeneration	✓
Waveforms	V & I
Harmonics	Values and histograms up to the 50th order; up to 7th at 400Hz
Sags	Dips, swells & interruptions
Transients	Overvoltages & overcurrents
Unbalance	-
Test EN 50160	✓
Inrush current	✓
DC measures	✓
K factor	Up to the 25th order
Alarms	Displayed
Alarms log	5 at display
Tariff bands	4
Energy costs	✓
IEC 61724 network parameters	-

NanoVIP® TWO™

Test EN 82.25		-
OSU™ (One Shot UPS)		-
Measurament 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 balanced), 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	2 channels with common neutral
	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	1 channel
	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
ACCURACY		
	RMS voltages:	
	Scale 1	±0.25% + 0.1%FS [2] @ RMS V < 350VAC [1]
	Scale 2	±0.25% + 0.05%FS [2] @ RMS V > 350VAC [1]
	RMS currents:	
	Scale 1	±0.25% + 0.1%FS [2] @ RMS I < 5% IN clamp [1]
	Scale 2	±0.25% + 0.05%FS [2] @ 5% < RMS I < 20% IN clamp [1]
	Scale 3	±0.25% + 0.05%FS [2] @ 20% < RMS I < 50% IN clamp [1]
	Scale 4	±0.25% + 0.05%FS [2] @ > 50% IN clamp [1]
	Power	±0.5% + 0.05%FS [2]
	Power Factor (PF)	±0.5°
	Frequency	±0.01 Hz (40-70Hz)
	Active power count (kW)	Class 0.5
	Reactive power count (kVar)	Class 1
HARMONIC ANALISYS		Up to 50th order Up to 7th at 400Hz
ANALYSIS of EN50160 parameters		
	Interruptions	>500mS
	Dips	>500mS

Caratteristiche tecniche

Technical details

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	-
WiFi	-
3G	-
Wireless to PC	-
Cloud connectivity	-
Remote control	via USB
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

NanoVIP® TWO WF™

Analizzatore della Qualità dell'Energia per sistemi monofase e trifase bilanciati, dotato di connettività wifi.

Power Quality analyzer for mono and three phases balanced systems, that includes wifi connettivity.

NanoVIP® TWO WF™ è un analizzatore della Qualità dell'energia portatile, compatto e potente per uso professionale; può essere utilizzato su reti monofase, bi-fase, trifase bilanciate, in bassa e media tensione.
Grazie alla connettività WiFi può essere totalmente pilotato e monitorato da remoto così come scaricare autonomamente i dati sul Cloud Elcontrol.

EN NanoVIP® TWO WF™ is a portable Power Quality Analyzer, compact and powerful for professional use; it can work on single-phase, bi-phase and three-phase balanced, low and medium voltage networks.
Thanks to its WiFi connectivity it can be monitored and driven by remote as well as upload data autonomously on the Elcontrol Cloud.

Potenza di analisi e connettività wifi

- Leggero, maneggevole, multilingua, con performance al top della sua categoria
- 1 canale di misura della tensione (1 fase + neutro) fino a 600V CAT III, con la possibilità di misurare anche tensioni continue
- 1 canale per le correnti con la possibilità di misurare anche correnti continue
- Precisione in corrente e tensione 0,25% + errore FS
- 4 canali indipendenti per trasduttori (4..20mA, 0..1V, PT)
- 4 modalità precaricate per analisi di sistemi/impianti: chiller, pump, supply and sensors
- Batteria ad alta capacità per garantire la totale copertura lavorativa sotto batteria
- 20 allarmi (5 generici, 5 swells, 5 dips and 5 interruptions)
- Calcolo della spesa elettrica con fino a 4 tariffe
- Misurazione dell'energia in 4 fascie orarie (tariffe) impostabili

Precise in measure, versatile and wifi

- Lightweight, handy, multilingual, with top performance in its category
- 1 voltage measuring channel (1 phase + neutral) up to 600V CAT III, with the possibility to measure even continuous voltages
- 1 current channel with the possibility of measuring even continuous currents
- Currents and voltages accuracy 0.25% + FS error
- 4 independent channels for transducers (4..20mA, 0..1V, PT)
- 4 preloaded mode for system / plant analysis: chiller, pump, supply and sensors
- High-capacity battery to provide total under battery cover
- 20 alarms (5 generics, 5 swells, 5 dips and 5 interruptions)
- Calculation of electric charge with up to 4 rates

Caratteristiche tecniche

Technical details

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
POWER SUPPLY:	
External power supply	wall-plug switching; input 100-240VAC ±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)
CONNACTABLE 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	-
PT100	-
Anemometer	-
Transducers	Up to 4 independent (4..20mA, 0..1V, PT)
FUNCTIONS:	
Traditional electrical analisys	V, I, P, Q, S, F, PF, THD(V)%, THD(I)%, cosφ, φ, peaks, minimums, maximums, averages, max. demands, etc.
Neutral current	Measured
Three phase counters	kWh, kVArh, kVAh, both absorbed that generated
Counters for each single phase	kWh, kVArh, kVAh, both absorbed that generated
Cogeneration	✓
Waveforms	V & I
Harmonics	Values and histograms up to the 50th order; up to 7th at 400Hz
Sags	Dips, swells & interruptions
Transients	Overvoltages & overcurrents
Unbalance	-
Test EN 50160	✓
Inrush current	✓
DC measures	✓
K factor	Up to the 25th order
Alarms	Displayed
Alarms log	5 at display
Tariff bands	4
Energy costs	✓
IEC 61724 network parameters	✓

NanoVIP® TWO WF™

Test EN 82.25		-
OSU™ (One Shot UPS)		-
Measurament 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 balanced), 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	2 channels with common neutral
	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	1 channel
	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
ACCURACY		
	RMS voltages:	
	Scale 1	±0.25% + 0.1%FS [2] @ RMS V < 350VAC [1]
	Scale 2	±0.25% + 0.05%FS [2] @ RMS V > 350VAC [1]
	RMS currents:	
	Scale 1	±0.25% + 0.1%FS [2] @ RMS I < 5% IN clamp [1]
	Scale 2	±0.25% + 0.05%FS [2] @ 5% < RMS I < 20% IN clamp [1]
	Scale 3	±0.25% + 0.05%FS [2] @ 20% < RMS I < 50% IN clamp [1]
	Scale 4	±0.25% + 0.05%FS [2] @ > 50% IN clamp [1]
	Power	±0.5% + 0.05%FS [2]
	Power Factor (PF)	±0.5°
	Frequency	±0.01 Hz (40-70Hz)
	Active power count (kW)	Class 0.5
	Reactive power count (kVar)	Class 1
HARMONIC ANALISYS		Up to 50th order Up to 7th at 400Hz
ANALYSIS of EN50160 parameters		
	Interruptions	>500mS
	Dips	>500mS

Caratteristiche tecniche

Technical details

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	✓
WiFi	✓
3G	-
Wireless to PC	✓
Cloud connectivity	✓
Remote control	✓
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

NanoVIP® TWO PLUS™

MRH™

Analizzatore della Qualità dell'Energia per sistemi monofase e trifase bilanciati, dotato di 4 ingressi indipendenti per trasduttori.

Power Quality analyzer for mono and three phases balanced systems, that includes four independent input channels for transducers.

NanoVIP® TWO PLUS™ è un analizzatore della Qualità dell'energia portatile, compatto e potente per uso professionale; può essere utilizzato su reti monofase, bi-fase, trifase bilanciate, in bassa e media tensione.
In aggiunta ai canali elettrici, dispone di 4 canali indipendenti per leggere qualsiasi tipo di trasduttore: 4..20mA, 0..1V o PT.

EN NanoVIP® TWO PLUS™ is a portable Power Quality Analyzer, compact and powerful for professional use; it can work on single-phase, bi-phase and three-phase balanced, low and medium voltage networks.
In addition to the electrical channels, it has 4 independent channels for reading any type of transducer: 4..20mA, 0..1V or PT

Potenza di analisi e massima versatilità

- Leggero, maneggevole, multilingua, con performance al top della sua categoria
- 1 canale di misura della tensione (1 fase + neutro) fino a 600V CAT III, con la possibilità di misurare anche tensioni continue
- 1 canale per le correnti con la possibilità di misurare anche correnti continue
- Precisione in corrente e tensione 0,25% + errore FS
- 4 canali indipendenti per trasduttori (4..20mA, 0..1V, PT)
- 4 modalità precaricate per analisi di sistemi/impianti: chiller, pump, supply and sensors
- Batteria ad alta capacità per garantire la totale copertura lavorativa sotto batteria
- 20 allarmi (5 generici, 5 swells, 5 dips and 5 interruptions)
- Calcolo della spesa elettrica con fino a 4 tariffe
- Misurazione dell'energia in 4 fascie orarie (tariffe) impostabili

Precise in measure, versatile and powerfull

- Lightweight, handy, multilingual, with top performance in its category
- 1 voltage measuring channel (1 phase + neutral) up to 600V CAT III, with the possibility to measure even continuous voltages
- 1 current channel with the possibility of measuring even continuous currents
- Currents and voltages accuracy 0.25% + FS error
- 4 independent channels for transducers (4..20mA, 0..1V, PT)
- 4 preloaded mode for system / plant analysis: chiller, pump, supply and sensors
- High-capacity battery to provide total under battery cover
- 20 alarms (5 generics, 5 swells, 5 dips and 5 interruptions)
- Calculation of electric charge with up to 4 rates

Caratteristiche tecniche

Technical details

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
POWER SUPPLY:	
External power supply	wall-plug switching; input 100-240VAC ±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)
CONNACTABLE 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	-
PT100	-
Anemometer	-
Transducers	Up to 4 independent (4..20mA, 0..1V, PT)
FUNCTIONS:	
Traditional electrical analisys	V, I, P, Q, S, F, PF, THD(V)%, THD(I)%, cosφ, φ, peaks, minimums, maximums, averages, max. demands, etc.
Neutral current	Measured
Three phase counters	kWh, kVArh, kVAh, both absorbed that generated
Counters for each single phase	kWh, kVArh, kVAh, both absorbed that generated
Cogeneration	✓
Waveforms	V & I
Harmonics	Values and histograms up to the 50th order; up to 7th at 400Hz
Sags	Dips, swells & interruptions
Transients	Overvoltages & overcurrents
Unbalance	-
Test EN 50160	✓
Inrush current	✓
DC measures	✓
K factor	Up to the 25th order
Alarms	Displayed
Alarms log	5 at display
Tariff bands	4
Energy costs	✓
IEC 61724 network parameters	✓

NanoVIP® TWO PLUS™

Test EN 82.25		-
OSU™ (One Shot UPS)		-
Measurament 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 balanced), 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	2 channels with common neutral
	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	1 channel
	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
ACCURACY		
	RMS voltages:	
	Scale 1	±0.25% + 0.1%FS [2] @ RMS V < 350VAC [1]
	Scale 2	±0.25% + 0.05%FS [2] @ RMS V > 350VAC [1]
	RMS currents:	
	Scale 1	±0.25% + 0.1%FS [2] @ RMS I < 5% IN clamp [1]
	Scale 2	±0.25% + 0.05%FS [2] @ 5% < RMS I < 20% IN clamp [1]
	Scale 3	±0.25% + 0.05%FS [2] @ 20% < RMS I < 50% IN clamp [1]
	Scale 4	±0.25% + 0.05%FS [2] @ > 50% IN clamp [1]
	Power	±0.5% + 0.05%FS [2]
	Power Factor (PF)	±0.5°
	Frequency	±0.01 Hz (40-70Hz)
	Active power count (kW)	Class 0.5
	Reactive power count (kVar)	Class 1
HARMONIC ANALISYS		Up to 50th order Up to 7th at 400Hz
ANALYSIS of EN50160 parameters		
	Interruptions	>500mS
	Dips	>500mS

Caratteristiche tecniche

Technical details

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	✓
WiFi	-
3G	-
Wireless to PC	-
Cloud connectivity	-
Remote control	via USB
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

NanoVIP® CUBE™

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

Portable Power Quality analyzer for mono, bi, three phases (balanced and unbalanced), medium and low voltages systems.

NanoVIP® CUBE™ è un moderno e potente analizzatore portatile di rete sviluppato per l'analisi professionale dei consumi e della power quality delle reti elettriche più complesse.
Può essere utilizzato su reti monofase, bifase, trifase in bassa e media tensione. Le funzionalità evolute e il software di analisi in dotazione lo rendono uno strumento adatto alle esigenze professionali più gravose.

EN NANOVIP® CUBE™ is a modern, powerful, portable network analyzer developed for professional analysis of consumption and power quality of the most complex electrical networks.
It can be used on single-phase, two-phase, three-phase (balanced and unbalanced) networks, low and medium voltage

Precisione nella misura, potenza nell'analisi

- Utilizzabile su impianti: monofase, bifase, trifase equilibrato con o senza neutro, trifase squilibrato con o senza neutro
- 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° (7° a 400Hz)
- 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
- Visualizzazione dell'andamento nel tempo di grandezze selezionabili (trend)
- Check automatico del corretto collegamento dello strumento all'impianto
- Realizzazione di campagne di misura di lunga durata (oltre 24 in autonomia, illimitato se collegato alla rete)
- Batterie ricaricabili ad alta capacità che garantiscono oltre 24h di lavoro

Measurement precision , powerful analysis

- Can work on networks: single-phase, two-phase, three-phase balanced with or without neutral, three-phase unbalanced with or without neutral
- Full traditional energy analysis (V, I, P, Q, S, F, PF, THD%, instantaneous values / minimum / maximum / average, energy meters absorbed and generated both three-phase for each phase).
- Analysis of power quality parameters
- The current and voltage harmonics for each phase and for the neutral up to 50°
- Imbalance of power phases
- 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
- Capable to do long-term measurement campaigns (over 24 independently, unlimited if connected to the network)
- High capacity rechargeable batteries that guaranties over 24h of work

Caratteristiche tecniche

Technical details

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
POWER SUPPLY:	
External power supply	wall-plug switching; input 100-240VAC ±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	-
PT100	-
Anemometer	-
Transducers	-
FUNCTIONS:	
Traditional electrical analisys	V, I, P, Q, S, F, PF, THD(V)%, THD(I)%, cosφ, φ, peaks, minimums, maximums, averages, max. demands, etc.
Neutral current	Measured
Three phase counters	kWh, kVArh, kVAh, both absorbed that generated
Counters for each single phase	kWh, kVArh, kVAh, both absorbed that generated
Cogeneration	✓
Waveforms	V & I
Harmonics	Values and histograms up to the 50th order
Sags	Dips, swells & interruptions
Transients	Overvoltages & overcurrents
Unbalance	✓
Test EN 50160	✓
Inrush current	✓
DC measures	✓
K factor	Up to the 25th order
Alarms	Displayed
Alarms log	5 at display
Tariff bands	4
Energy costs	✓
IEC 61724 network parameters	✓

NanoVIP® CUBE™

Test EN 82.25		-
OSU™ (One Shot UPS)		-
Measurament 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
ACCURACY		
	RMS voltages:	
	Scale 1	±0.25% + 0.1%FS [2] @ RMS V < 350VAC [1]
	Scale 2	±0.25% + 0.05%FS [2] @ RMS V > 350VAC [1]
	RMS currents:	
	Scale 1	±0.25% + 0.1%FS [2] @ RMS I < 5% IN clamp [1]
	Scale 2	±0.25% + 0.05%FS [2] @ 5% < RMS I < 20% IN clamp [1]
	Scale 3	±0.25% + 0.05%FS [2] @ 20% < RMS I < 50% IN clamp [1]
	Scale 4	±0.25% + 0.05%FS [2] @ > 50% IN clamp [1]
	Power	±0.5% + 0.05%FS [2]
	Power Factor (PF)	±0.5°
	Frequency	±0.01 Hz (40-70Hz)
	Active power count (kW)	Class 0.5
	Reactive power count (kVar)	Class 1
HARMONIC ANALISYS		Up to 50th order Up to 7th at 400Hz
ANALYSIS of EN50160 parameters		
	Interruptions	>500mS
	Dips	>500mS

Caratteristiche tecniche

Technical details

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	-
Maximum distance indoor	-
Mesh network	-
WiFi	-
3G	-
Wireless to PC	-
Cloud connectivity	-
Remote control	via USB
Wireless to PC	-
USB	to PC
DATA STORAGE:	
Internal memory	64kB
External memory	Micro SD (4GB 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

NanoVIP® CUBE WF™

Analizzatore portatile della Qualità dell'Energia per sistemi monofase, bifase, trifase (bilanciati e non), in bassa e media tensione dotato di connettività WiFi.

Portable Power Quality analyzer for mono, bi, three phases (balanced and unbalanced), medium and low voltages systems with embedded WiFi connectivity.

NanoVIP® CUBE WF™ è un moderno e potente analizzatore portatile di rete sviluppato per l'analisi professionale dei consumi e della power quality delle reti elettriche più complesse.
Può essere utilizzato su reti monofase, bifase, trifase in bassa e media tensione. Le funzionalità evolute, la connettività WiFi e la possibilità di **completo controllo remoto** lo rendono uno strumento adatto alle esigenze professionali più gravose.

EN NANOVIP® CUBE™ is a modern, powerful, portable network analyzer developed for professional analysis of consumption and power quality of the most complex electrical networks.
It can be used on single-phase, two-phase, three-phase (balanced and unbalanced) networks, low and medium voltage.
The WiFi connectivity and the capability to be **fully driven from remote**, make this analyzer an high-end device to face the most demanding applications.

Potenza di analisi, connettività WiFi

- Utilizzabile su impianti: monofase, bifase, trifase equilibrato con o senza neutro, trifase squilibrato con o senza neutro
- 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° (7° a 400Hz)
- 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
- Visualizzazione dell'andamento nel tempo di grandezze selezionabili (trend)
- Check automatico del corretto collegamento dello strumento all'impianto
- Realizzazione di campagne di misura di lunga durata (oltre 24 in autonomia, illimitato se collegato alla rete)
- Batterie ricaricabili ad alta capacità che garantiscono oltre 24h di lavoro
- **Completamente pilotabile da remoto tramite NanoRemote™**
- **Collegabile al cloud Elcontrol**

Powerful analysis, WiFi connectivity

- Can work on networks: single-phase, two-phase, three-phase balanced with or without neutral, three-phase unbalanced with or without neutral
- Full traditional energy analysis (V, I, P, Q, S, F, PF, THD%, instantaneous values / minimum / maximum / average, energy meters absorbed and generated both three-phase for each phase).
- Analysis of power quality parameters
- The current and voltage harmonics for each phase and for the neutral up to 50°
- Imbalance of power phases
- 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
- Capable to do long-term measurement campaigns (over 24 independently, unlimited if connected to the network)
- High capacity rechargeable batteries that guaranties over 24h of work
- **Fully drivable from remote through NanoRemote™ application**
- **Ready to be connected to Elcontrol Cloud**

Caratteristiche tecniche

Technical details

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
POWER SUPPLY:	
External power supply	wall-plug switching; input 100-240VAC ±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	-
PT100	-
Anemometer	-
Transducers	-
FUNCTIONS:	
Traditional electrical analisys	V, I, P, Q, S, F, PF, THD(V)%, THD(I)%, cosφ, φ, peaks, minimums, maximums, averages, max. demands, etc.
Neutral current	Measured
Three phase counters	kWh, kVArh, kVAh, both absorbed that generated
Counters for each single phase	kWh, kVArh, kVAh, both absorbed that generated
Cogeneration	✓
Waveforms	V & I
Harmonics	Values and histograms up to the 50th order
Sags	Dips, swells & interruptions
Transients	Overvoltages & overcurrents
Unbalance	✓
Test EN 50160	✓
Inrush current	✓
DC measures	✓
K factor	Up to the 25th order
Alarms	Displayed
Alarms log	5 at display
Tariff bands	4
Energy costs	✓
IEC 61724 network parameters	✓

NanoVIP® CUBE WF™

Test EN 82.25		-
OSU™ (One Shot UPS)		-
Measurament 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
ACCURACY		
	RMS voltages:	
	Scale 1	±0.25% + 0.1%FS [2] @ RMS V < 350VAC [1]
	Scale 2	±0.25% + 0.05%FS [2] @ RMS V > 350VAC [1]
	RMS currents:	
	Scale 1	±0.25% + 0.1%FS [2] @ RMS I < 5% IN clamp [1]
	Scale 2	±0.25% + 0.05%FS [2] @ 5% < RMS I < 20% IN clamp [1]
	Scale 3	±0.25% + 0.05%FS [2] @ 20% < RMS I < 50% IN clamp [1]
	Scale 4	±0.25% + 0.05%FS [2] @ > 50% IN clamp [1]
	Power	±0.5% + 0.05%FS [2]
	Power Factor (PF)	±0.5°
	Frequency	±0.01 Hz (40-70Hz)
	Active power count (kW)	Class 0.5
	Reactive power count (kVar)	Class 1
HARMONIC ANALISYS		Up to 50th order Up to 7th at 400Hz
ANALYSIS of EN50160 parameters		
	Interruptions	>500mS
	Dips	>500mS

Caratteristiche tecniche

Technical details

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	-
Maximum distance indoor	-
Mesh network	-
WiFi	✓
3G	-
Wireless to PC	✓
Cloud connectivity	✓
Remote control	✓
Wireless to PC	✓
USB	to PC
DATA STORAGE:	
Internal memory	64kB
External memory	Micro SD (4GB 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

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 powerfull 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

Potente, wireless, con la flessibilità 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
- Configurazione e visualizzazione di 20 allarmi su grandezze e soglie impostabili

Measurement precision and 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
- Llong-term measurement campaigns (over 24 independently, unlimited if connected to the network)

Caratteristiche tecniche

Technical details

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
POWER SUPPLY:	
External power supply	wall-plug switching; input 100-240VAC ±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 analisys	V, I, P, Q, S, F, PF, THD(V)%, THD(I)%, cosφ, φ, peaks, minimums, maximums, averages, max. demands, etc.
Neutral current	Measured
Three phase counters	kWh, kVArh, kVAh, both absorbed that generated
Counters for each single phase	kWh, kVArh, kVAh, both absorbed that generated
Cogeneration	✓
Waveforms	V & I
Harmonics	Values and histograms up to the 50th order
Sags	Dips, swells & interruptions
Transients	Overvoltages & overcurrents
Unbalance	✓
Test EN 50160	✓
Inrush current	✓
DC measures	✓
K factor	Up to the 25th order
Alarms	Displayed
Alarms log	5 at display
Tariff bands	4
Energy costs	✓
IEC 61724 network parameters	✓

NanoVIP® CUBE PLUS™

MRH™

	Test EN 82.25	-
	OSU™ (One Shot UPS)	✓
	Measurament 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
	ACCURACY	
	RMS voltages:	
	Scale 1	±0.25% + 0.1%FS [2] @ RMS V < 350VAC [1]
	Scale 2	±0.25% + 0.05%FS [2] @ RMS V > 350VAC [1]
	RMS currents:	
	Scale 1	±0.25% + 0.1%FS [2] @ RMS I < 5% IN clamp [1]
	Scale 2	±0.25% + 0.05%FS [2] @ 5% < RMS I < 20% IN clamp [1]
	Scale 3	±0.25% + 0.05%FS [2] @ 20% < RMS I < 50% IN clamp [1]
	Scale 4	±0.25% + 0.05%FS [2] @ > 50% IN clamp [1]
	Power	±0.5% + 0.05%FS [2]
	Power Factor (PF)	±0.5°
	Frequency	±0.01 Hz (40-70Hz)
	Active power count (kW)	Class 0.5
	Reactive power count (kVar)	Class 1
	HARMONIC ANALISYS	Up to 50th order Up to 7th at 400Hz
	ANALYSIS of EN50160 parameters	
	Interruptions	>500mS
	Dips	>500mS

Caratteristiche tecniche

Technical details

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	✓
WiFi	-
3G	-
Wireless to PC	-
Cloud connectivity	-
Remote control	via USB
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

NanoVIP® CUBE 247™

Analizzatore della Qualità dell'Energia per sistemi monofase, bifase, trifase (bilanciati e non), in bassa e media tensione con connettività GSM 3G™ per una comunicazione senza limitazioni.

Power Quality analyzer for mono, bi, three phases (balanced and unbalanced), medium and low voltages systems with 3G™ technology to guarantee unlimited connectivity..

NanoVIP® CUBE 247™ è un potente e versatile analizzatore della Qualità dell'Energia che, oltre a svolgere misure e campagne autonome, può connettersi alla rete 3G garantendo il massimo della connettività.

E' possibile l'upgrade hardware da un sistema NanoVIP® CUBE™ a NanoVIP® CUBE 247™..

EN The NanoVIP® CUBE 247™ is a powerfull and versatile Power Quality analyzer that, thanks to the implementation of 3G™ technology, guarantees an unlimited connectivity.

It is possible to upgrade latest NanoVIP® CUBE™ models to NanoVIP® CUBE 247™

Potente, preciso, sempre connesso

- Utilizzabile su impianti: monofase, bifase, trifase equilibrato con o senza neutro, trifase squilibrato con o senza neutro
- 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° (7° a 400Hz)
- 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
- Visualizzazione dell'andamento nel tempo di grandezze selezionabili (trend)
- Check automatico del corretto collegamento dello strumento all'impianto
- Realizzazione di campagne di misura di lunga durata (oltre 24 in autonomia, illimitato se collegato alla rete)
- Batterie ricaricabili ad alta capacità che garantiscono oltre 24h di lavoro in modalità AirPlane e oltre 8h in connessione continua alla rete.
- Connessione al cloud Elcontrol

Powerful, precise, always connected

- Can work on networks: single-phase, two-phase, three-phase balanced with or without neutral, three-phase unbalanced with or without neutral
- Full traditional energy analysis (V, I, P, Q, S, F, PF, THD%, instantaneous values / minimum / maximum / average, energy meters absorbed and generated both three-phase for each phase).
- Analysis of power quality parameters
- The current and voltage harmonics for each phase and for the neutral up to 50°
- Imbalance of power phases
- 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
- Capable to do long-term measurement campaigns (over 24 independently, unlimited if connected to the network)
- High capacity rechargeable batteries that guaranties over 24h of work in Airplane Mode and over 8h in continuous 3G connection.
- Ready to connect to Elcontrol Cloud

Caratteristiche tecniche

Technical details

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
POWER SUPPLY:	
External power supply	wall-plug switching; input 100-240VAC ±10% 47-63Hz with interchangeable plug; output 7.5VDC - 12W
Battery pack	4 x AA NiMh 2100mAh
Duration of the battery charge	>24h (Airplane mode), >8h in continuous connection
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	-
PT100	-
Anemometer	-
Transducers	-
FUNCTIONS:	
Traditional electrical analisys	V, I, P, Q, S, F, PF, THD(V)%, THD(I)%, cosφ, φ, peaks, minimums, maximums, averages, max. demands, etc.
Neutral current	Measured
Three phase counters	kWh, kVArh, kVAh, both absorbed that generated
Counters for each single phase	kWh, kVArh, kVAh, both absorbed that generated
Cogeneration	✓
Waveforms	V & I
Harmonics	Values and histograms up to the 50th order
Sags	Dips, swells & interruptions
Transients	Overvoltages & overcurrents
Unbalance	✓
Test EN 50160	✓
Inrush current	✓
DC measures	✓
K factor	Up to the 25th order
Alarms	Displayed
Alarms log	5 at display
Tariff bands	4
Energy costs	✓
IEC 61724 network parameters	-

NanoVIP® CUBE 247™

Test EN 82.25		-
OSU™ (One Shot UPS)		✓
Measurament 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
ACCURACY		
	RMS voltages:	
	Scale 1	±0.25% + 0.1%FS [2] @ RMS V < 350VAC [1]
	Scale 2	±0.25% + 0.05%FS [2] @ RMS V > 350VAC [1]
	RMS currents:	
	Scale 1	±0.25% + 0.1%FS [2] @ RMS I < 5% IN clamp [1]
	Scale 2	±0.25% + 0.05%FS [2] @ 5% < RMS I < 20% IN clamp [1]
	Scale 3	±0.25% + 0.05%FS [2] @ 20% < RMS I < 50% IN clamp [1]
	Scale 4	±0.25% + 0.05%FS [2] @ > 50% IN clamp [1]
	Power	±0.5% + 0.05%FS [2]
	Power Factor (PF)	±0.5°
	Frequency	±0.01 Hz (40-70Hz)
	Active power count (kW)	Class 0.5
	Reactive power count (kVar)	Class 1
HARMONIC ANALISYS		Up to 50th order Up to 7th at 400Hz
ANALYSIS of EN50160 parameters		
	Interruptions	>500mS
	Dips	>500mS

Caratteristiche tecniche

Technical details

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	✓
WiFi	-
3G	✓
Wireless to PC	-
Cloud connectivity	✓
Remote control	-
USB	to PC
DATA STORAGE:	
Internal memory	64kB
External memory	Micro SD (4GB 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

NanoVIP® QUADRA™

Sistema di misura wireless portatile della qualità delle energie: elettrico, solare e termomeccanico.

Portable wireless Power Quality measurement system for any energy field: electrical, solar and thermomechanical.

NANOVIP® QUADRA™ e la **tecnologia MRH™** rappresentano la soluzione innovativa per i moderni analizzatori di fascia alta.

La tecnologia MRH™ consente di misurare in **tempo reale** la qualità dell'energia e della potenza su **reti distribuite ed eterogenee complesse**; grazie alla connettività wireless non richiede alcun cablaggio e aumenta drasticamente la facilità di installazione e di utilizzo.

La **connessione wireless** potente ed affidabile permette di effettuare in tempo reale misure simultanee su reti distribuite garantendo il collegamento **outdoor fino a 600m e indoor a 60m**.

La **strategia mesh** della rete consente di raggiungere enormi estensioni di rete, poiché ogni dispositivo ripete segnali attraverso la rete.

EN **NANOVIP® QUADRA™** and **MRH™ technology** represent a brand new solution for modern high-end analyzers.

MRH™ technology makes it possible to perform **realtime** energy and power quality measurements on **spread and etherogeneous networks**; thanks to its wireless capability it does not require any wiring and boosts up easiness of installation and usage.

Its **powerfull and reliable wireless connectivity** makes it possible to performe realtime and concurrent measures with a maximum **point to point distance of 600m outdoor and 60m indoor**.

The **mesh strategy** of the network makes it possible to reach huge network extensions, because each device repeats signals through the network.

Powered by MRH™ technology

NanoVIP® QUADRA™ utilizza la tecnologia MRH™ che, grazie a soluzioni hardware e firmware specifiche, è in grado di offrire ai propfessionisti del settore energetico la possibilità di eseguire misure:

- Multipunto
- In Tempo reale
- Eterogenee

La tecnologia MRH™ finalmente supera la difficoltà di catturare eventi quando e dove si sono effettivamente verificati; rende le verifiche e le misure elettriche più sicure, più facili e veloci permettendo ai professionisti di monitorare facilmente più punti critici di una rete contemporaneamente e in tempo reale.

Powered by MRH™ technology

NanoVIP® QUADRA™ is powered by MRH™ technology that, thanks to specific hardware and firmware solutions, is capable to offer to energy field professionals the possibility to make measures:

- Multipoint
- Realtime
- Heterogeneous

MRH™ technology finaly overcomes the difficulty to catch events where and when they are really originated; it makes multipoint electrical checks safer, easier ans quicker allowing users to patrol many critical points of a network in realtime and remotely.

Funzionalità analizzatori MRH™

Main MRH™ analyzers features

	Master	DE	DS	DGP	TWO+	CUBE+
MAIN:						
Master operating	✓					
Client operating		✓	✓	✓	✓	✓
Standalone	✓				✓	✓
Siingle point monitoring	✓	✓	✓	✓	✓	✓
USB connection	✓	✓	✓	✓	✓	✓
uSD card	✓	✓	✓	✓	✓	✓
Local survey data storage	✓	✓	✓	✓	✓	✓
ELECTRICAL:						
AC measurement	✓	✓		✓	✓	✓
DC measurement	✓	✓	✓	✓	✓	✓
Harmonics	✓	✓			✓	✓
Transients	✓				✓	✓
Inrush	✓				✓	✓
Wave form	✓	✓		✓	✓	✓
Counters	✓	✓		✓	✓	✓
Alarms	✓				✓	✓
Active, Reactive and Apparent PE	✓	✓			✓	✓
Tariffs	✓				✓	✓
EN 50160 test	✓				✓	✓
EN 61724 parameters	✓	✓	✓	✓	✓	✓
SOLAR:						
Solar meter input	✓		✓	✓	✓	
Solar measurements	✓		✓			
Panel and panel strings verification (CEI 82-25)	✓		✓			
Multi lines solar systems verification (CEI 82-25)	✓					
Multi lines solar system realtime measurements	✓					
THERMOMECHANICAL:						
PT inputs			✓	✓	✓	
Wind speed input			✓	✓	✓	
4..20mA transducers inputs				4	4	
0..1V transducers inputs				4	4	
WIRELESS CONNECTIVITY:						
Max indoor point to point distance	60m	60m	60m	60m	60m	60m
Max outdoor point to point distance	600m	600m	600m	600m	600m	600m

NanoVIP® QUADRA master™

Analizzatore portatile wireless della Qualità dell'Energia per sistemi monofase, bifase, trifase (bilanciati e non), BT, MT e fotovoltaico.

Portable Power Quality analyzer for mono, bi, three phases (balanced and unbalanced), medium and low voltages systems and photovoltaic ones.

NanoVIP® QUADRA™ implementa la tecnologia MRH™ che permette di funzionare sia come un analizzatore di potenza portatile standard, sia come controller di una vasta rete di misurazione MRH™.

In modalità master di una rete di misurazione MRH™ può contemporaneamente effettuare misurazioni locali e raccogliere da più punti e in tempo reale misure eterogenee tramite altri dispositivi MRH™

EN NANOVIP® QUADRA™ implements MRH™ technology, so it can work as a standard portable power analyzer as well as a master of a wide MRH™ measuring network. As master of an MRH network it can simultaneously make standard local measurements and collect Multipoint, Realtime and Heterogeneous measurements from other MRH devices.

Potente, preciso, wireless; non solo reti elettriche

- Autoconfigurazione della rete wireless
- Riconoscimento automatico dei dispositivi disponibili
- Configurazione automatica della composizione della rete
- Massima distanza di collegamento punto-punto indoor: 60m
- Massima distanza di collegamento punto-punto outdoor: 600m
- Modalità solare standalone e solare rete
- Può operare su reti: monofase, bifase, trifase equilibrata con o senza neutro, trifase sbilanciato con o senza neutro e fotovoltaico
- Analisi Power Quality energetica tradizionale completa.
- Può misurare energie e potenze eterogenee: solari, carichi elettrici, generatori, sistemi di stoccaggio, connessioni multiple di rete, eolici, UPS, inverter ecc
- Permette l'analisi in tempo reale dei parametri generali di qualità dell'alimentazione di reti complesse e distribuite
- Spettro armonico per ogni fase e per il neutro fino al 50 °
- Interruzioni di rete, sovratensioni, sottotensioni
- Prove di conformità alla norma EN 50160
- Misura reale del neutro corrente
- Visualizzazione delle forme d'onda delle correnti e tensioni
- Realizzazione di campagne di misura a lungo termine (oltre 24 in modo indipendente, senza limiti, se collegato alla rete)

Powerful, precise, wireless; not only electrical measures

- Self setting wireless network connection
- Auto recognition of available devices
- Auto configuration of network composition
- Max indoor point to point distance: 60m
- Max outdoor point to point distance: 600m
- Standalone and network solar mode
- Can work on networks: single-phase, two-phase, three-phase balanced with or without neutral, three-phase unbalanced with or without neutral
- Full traditional energy analysis (V, I, P, Q, S, F, PF, THD%, instantaneous values / minimum / maximum / average, energy meters absorbed and generated both three-phase for each phase).
- Can measure heterogeneous energies and power: solar, elevtrical loads, generators, storage systsems, multiple grid connections, eolic, UPS, inverters etc
- Realtime analysis of overall power quality parameters of spread complex network
- The current and voltage harmonics for each phase and for the neutral up to 50°
- Imbalance of power phases
- Network outages, surges, sags
- Conformance testing to EN 50160
- Real measurement of the neutral current
- Display of the waveforms of currents and voltages
- Configuration and display of alarms on sizes 20 and settable
- Automatic check of the correct connection of the implant tool
- Realization of long-term measurement campaigns (over 24 independently, unlimited if plugged

Caratteristiche tecniche

Technical details

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
POWER SUPPLY:	
External power supply	wall-plug switching; input 100-240VAC ±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) > 18h (wireless on)
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	✓
PT100	-
Anemometer	-
Transducers	-
FUNCTIONS:	
Traditional electrical analisys	V, I, P, Q, S, F, PF, THD(V)%, THD(I)%, cosφ, φ, peaks, minimums, maximums, averages, max. demands, etc.
Neutral current	Measured
Three phase counters	kWh, kVArh, kVAh, both absorbed that generated
Counters for each single phase	kWh, kVArh, kVAh, both absorbed that generated
Cogeneration	✓
Waveforms	V & I
Harmonics	Values and histograms up to the 50th order
Sags	Dips, swells & interruptions
Transients	Overvoltages & overcurrents
Unbalance	✓
Test EN 50160	✓
Inrush current	✓
DC measures	✓
K factor	Up to the 25th order
Alarms	Displayed
Alarms log	5 at display
Tariff bands	4
Energy costs	✓

NanoVIP® QUADRA master™

IEC 61724 network parameters		✓
Test EN 82.25		✓
OSU™ (One Shot UPS)		✓
Measurament 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
ACCURACY		
	RMS voltages:	
	Scale 1	±0.25% + 0.1%FS [2] @ RMS V < 350VAC [1]
	Scale 2	±0.25% + 0.05%FS [2] @ RMS V > 350VAC [1]
	RMS currents:	
	Scale 1	±0.25% + 0.1%FS [2] @ RMS I < 5% IN clamp [1]
	Scale 2	±0.25% + 0.05%FS [2] @ 5% < RMS I < 20% IN clamp [1]
	Scale 3	±0.25% + 0.05%FS [2] @ 20% < RMS I < 50% IN clamp [1]
	Scale 4	±0.25% + 0.05%FS [2] @ > 50% IN clamp [1]
	Power	±0.5% + 0.05%FS [2]
	Power Factor (PF)	±0.5°
	Frequency	±0.01 Hz (40-70Hz)
	Active power count (kW)	Class 0.5
	Reactive power count (kVar)	Class 1
HARMONIC ANALISYS		Up to 50th order Up to 7th at 400Hz
ANALYSIS of EN50160 parameters		
	Interruptions	>500mS

Caratteristiche tecniche

Technical details

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	5
Client mode	-
Zigbee®	-
Maximum distance outdoor	600 m
Maximum distance indoor	60 m
Mesh network	✓
WiFi	-
3G	-
Wireless to PC	-
Cloud connectivity	-
Remote control	via USB
USB	to PC
DATA STORAGE:	
Internal memory	64kB
External memory	Micro SD (4GB 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

NanoVIP® DE™

Dispositivo di misurazione elettrica remoto per reti MRH™.

Remote electrical measuring device for MRH™ networks.

NanoVIP® DE™ è un potente analizzatore di qualità dell'energia remoto da collegare a un dispositivo master NANOVIP® QUADRA™.

NANOVIP® DE™ può eseguire un ampio spettro di misure elettriche e inviarle al dispositivo master in tempo reale per combinarle con altre misure da ulteriori punti di misura remoti.

EN NANOVIP® DE™ is a powerfull remote power quality analyzer to be connected to a NANOVIP® QUADRA™ master device.

NANOVIP® DE™ can perform a wide spectrum of electrical measures and send them to master device to be realtime combined with other measures retrieved by additional remote measure points.

Misure ovunque in totale sicurezza

- Autoconnessione alla rete MRHTM
- Modalità client di rete
- Massima distanza di collegamento punto-punto indoor: 60m
- Massima distanza di collegamento punto-punto outdoor: 600m
- Può operare su reti: monofase, bifase, trifase equilibrata con o senza neutro, trifase sbilanciato con o senza neutro
- Analisi Power Quality energetica tradizionale completa.
- Permette l'analisi in tempo reale dei parametri generali di qualità dell'alimentazione di reti complesse e distribuite
- Spettro armonico per ogni fase e per il neutro fino al 50 °
- Interruzioni di rete, sovratensioni, sottotensioni
- Misura reale del neutro corrente
- Visualizzazione delle forme d'onda delle correnti e tensioni
- Realizzazione di campagne di misura a lungo termine (oltre 24 in modo indipendente, senza limiti, se collegato alla rete)
- Multilingua

Measurements everywhere safely

- Self setting wireless network connection
- Max indoor point to point distance: 60m
- Max outdoor point to point distance: 600m
- MRH network client mode
- Can work on networks: single-phase, two-phase, three-phase balanced with or without neutral, three-phase unbalanced with or without neutral
- Full traditional power quality analysis.
- Can measure heterogeneous energies and power: solar, elevtrical loads, generators, storage systsems, multiple grid connections, eolic, UPS, inverters etc
- The current and voltage harmonics for each phase and for the neutral up to 50°
- Imbalance of power phases
- Real measurement of the neutral current
- Display of the waveforms of currents and voltages
- 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

Caratteristiche tecniche

Technical details

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
POWER SUPPLY:	
External power supply	wall-plug switching; input 100-240VAC ±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) > 18h (wireless on)
CONNECTING SYSTEMS:	
Systems frequencies	50Hz – 60Hz
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	-
PT100	-
Anemometer	-
Transducers	-
FUNCTIONS:	
Traditional electrical analisys	V, I, P, Q, S, F, PF, THD(V)%, THD(I)%, cosφ, φ, peaks, minimums, maximums, averages, max. demands, etc.
Neutral current	Measured
Three phase counters	kWh, kVArh, kVAh, both absorbed that generated
Counters for each single phase	kWh, kVArh, kVAh, both absorbed that generated
Cogeneration	✓
Waveforms	V & I
Harmonics	Values and histograms up to the 50th order
Sags	Dips, swells & interruptions
Transients	Overvoltages & overcurrents
Unbalance	✓
Test EN 50160	-
Inrush current	✓
DC measures	✓
K factor	Up to the 25th order
Alarms	-
Alarms log	-
Tariff bands	-
Energy costs	-

NanoVIP® DE™

IEC 61724 network parameters		✓
Test EN 82.25		-
OSU™ (One Shot UPS)		-
Measurament campaigns		unlimited, up to fill the memory card
MEASUREMENTS:		
Sampling frequency		128 samples per cycle (adaptive in 40Hz-70Hz range)
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
ACCURACY		
	RMS voltages:	
	Scale 1	±0.25% + 0.1%FS [2] @ RMS V < 350VAC [1]
	Scale 2	±0.25% + 0.05%FS [2] @ RMS V > 350VAC [1]
	RMS currents:	
	Scale 1	±0.25% + 0.1%FS [2] @ RMS I < 5% IN clamp [1]
	Scale 2	±0.25% + 0.05%FS [2] @ 5% < RMS I < 20% IN clamp [1]
	Scale 3	±0.25% + 0.05%FS [2] @ 20% < RMS I < 50% IN clamp [1]
	Scale 4	±0.25% + 0.05%FS [2] @ > 50% IN clamp [1]
	Power	±0.5% + 0.05%FS [2]
	Power Factor (PF)	±0.5°
	Frequency	±0.01 Hz (40-70Hz)
	Active power count (kW)	Class 0.5
	Reactive power count (kVar)	Class 1
HARMONIC ANALISYS		Up to 50th order Up to 7th at 400Hz
ANALYSIS of EN50160 parameters		
	Interruptions	>500mS
	Dips	>500mS

Caratteristiche tecniche

Technical details

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	600 m
Maximum distance indoor	60 m
Mesh network	✓
WiFi	-
3G	-
Wireless to PC	-
Cloud connectivity	-
Remote control	-
USB	✓
DATA STORAGE:	
Internal memory	64kB
External memory	Micro SD (4GB 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

NanoVIP® DS™

Dispositivo di misurazione elettrica remoto per impianti fotovoltaici in reti MRH™.

Remote electrical measuring device for photovoltaic systems within MRH™ networks.

NanoVIP® DS™ è un potente analizzatore di qualità dell'energia remoto per la misura di singoli pannelli o stringhe fotovoltaici. Rileva tutte le grandezze necessarie alla misura e verifica di un impianto fotovoltaico (Temperature pannello e ambiente, irraggiamento, velocità del vento e parametri elettrici), inviandoli in temo reale a un dispositivo master NANOVIP® QUADRA™.

EN NanoVIP® DS™ is a powerful remote power quality analyzer for measuring individual panels or photovoltaic strings. It detects all the necessary parameters for the measurement and verification of a photovoltaic system (panel and environment temperatures, irradiation, wind speed and electrical parameters), sending them in real time to a NANOVIP® QUADRA™ master device.

Misure solari distribuite, in tempo reale e wireless

- Autoconnessione alla rete MRHTM
- Modalità client di rete
- Massima distanza di collegamento punto-punto indoor: 60m
- Massima distanza di collegamento punto-punto outdoor: 600m
- Temperatura pannelli (sonda in dotazione)
- Temperatura ambiente (sonda in dotazione)
- Irraggiamento solare (solarimetro in dotazione)
- Velocità del vento (anemometro opzionale)
- Misure DC per singoli pannelli e/o stringhe di pannelli
- E' possibile effettuare test differenziati per singola calata in impianti solari complessi
- Tutti dati locali sono disponibili in tempo reale sul dispositivo QUADRA master
- Test 82.25 per singolo ramo
- Realizzazione di campagne di misura a lungo termine (oltre 24 in modo indipendente, senza limiti, se collegato alla rete)
- Multilingua

Realtime solar measurements, wireless, everywhere

- Self setting wireless network connection
- Max indoor point to point distance: 60m
- Max outdoor point to point distance: 600m
- MRH network client mode
- Panel temperature (PT sensor supplied)
- Ambient temperature (PT sensor supplied)
- Solar radiation via solar meter (included in package)
- Wind speed (anemometer is optional)
- DC data for each panel or string of panel
- Possible to differentiate test result per each group of panels
- Realtime data available set by set on QUADRA master device
- Realization of long-term measurement campaigns (over 24 independently, unlimited if connected to the network)
- Multilanguage

Caratteristiche tecniche

Technical details

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
POWER SUPPLY:	
External power supply	wall-plug switching; input 100-240VAC ±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) > 18h (wireless on)
CONNECTING SYSTEMS:	
Systems frequencies	50Hz – 60Hz
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	✓
PT100	✓
Anemometer	✓
Transducers	✓ (anemometer not included in package)
FUNCTIONS:	
Traditional electrical analisys	V, I, P, peaks, minimums, maximums, averages, max. demands, etc.
Neutral current	-
Three phase counters	kWh, kVArh, kVAh, both absorbed that generated
Counters for each single phase	kWh, kVArh, kVAh, both absorbed that generated
Cogeneration	✓
Waveforms	-
Harmonics	-
Sags	-
Transients	-
Unbalance	-
Test EN 50160	-
Inrush current	-
DC measures	-
K factor	-
Alarms	-
Alarms log	-
Tariff bands	-
Energy costs	-

NanoVIP® DS™

IEC 61724 network parameters		✓
Test EN 82.25		✓
OSU™ (One Shot UPS)		-
Measurament campaigns		unlimited, up to fill the memory card
MEASUREMENTS:		
Sampling frequency		128 samples per cycle (adaptive in 40Hz-70Hz range)
Data record rate		1 sec.
Data storage rate		User selectable: 1", 5", 3", 1', 5', 15'
Type of connections available		DC single phase PV output line
Type of grid which can be connected		Low and medium voltage (LV and MV)
VOLTAGE (TRMS)		
	Channels	1 independent DC 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	1 channel
	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
ACCURACY		
	RMS voltages:	
	Scale 1	±0.25% + 0.1%FS [2] @ RMS V < 350VAC [1]
	Scale 2	±0.25% + 0.05%FS [2] @ RMS V > 350VAC [1]
	RMS currents:	
	Scale 1	±0.25% + 0.1%FS [2] @ RMS I < 5% IN clamp [1]
	Scale 2	±0.25% + 0.05%FS [2] @ 5% < RMS I < 20% IN clamp [1]
	Scale 3	±0.25% + 0.05%FS [2] @ 20% < RMS I < 50% IN clamp [1]
	Scale 4	±0.25% + 0.05%FS [2] @ > 50% IN clamp [1]
	Power	±0.5% + 0.05%FS [2]
	Power Factor (PF)	±0.5°
	Frequency	±0.01 Hz (40-70Hz)
	Active power count (kW)	Class 0.5
	Reactive power count (kVar)	Class 1
HARMONIC ANALISYS		Up to 50th order Up to 7th at 400Hz
ANALYSIS of EN50160 parameters		
	Interruptions	>500mS
	Dips	>500mS

Caratteristiche tecniche

Technical details

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	600 m
Maximum distance indoor	60 m
Mesh network	✓
WiFi	-
3G	-
Wireless to PC	-
Cloud connectivity	-
Remote control	-
USB	✓
DATA STORAGE:	
Internal memory	64kB
External memory	Micro SD (4GB 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

NanoVIP® DGP™

Dispositivo wireless remoto di misurazione elettrica e lettura trasduttori per reti MRH™.

Remote wireless device for electrical measuring and transducers reading for MRH™ networks.

NanoVIP® DGP™ è un potente analizzatore di qualità dell'energia (mono, bi e trifase bilanciato) e un versatile e potente lettore di trasduttori 4..20mA, 0..1V e PT, integrabile in una rete MRH™ tramite il collegamento ad un dispositivo master NANOVIP® QUADRA™.

NANOVIP® DGP™ include 4 modalità preprogrammate per la misura delle prestazioni di sistemi termomeccanici come pompe, chiller e generatori.

EN NanoVIP® DGP™ is a powerful Power Quality Analyzer (mono, bi and three-phase balanced) and a versatile and flexible transducers reader (4..20mA, 0..1V and PT); it can be linked to an MRH ™ network via a NANOVIP® QUADRA™ master device.

NANOVIP® DGP ™ includes 4 preloaded modes for measuring systems like pumps, chillers and gensets.

Qualsiasi misura ovunque

- Autoconnessione alla rete MRHTM
- Modalità client di rete
- Massima distanza di collegamento punto-punto indoor: 60m
- Massima distanza di collegamento punto-punto outdoor: 600m
- Può operare su reti: monofase, bifase, trifase equilibrata con o senza neutro, trifase sbilanciato con o senza neutro
- Analisi Power Quality energetica tradizionale completa.
- Permette l'analisi in tempo reale dei parametri generali di qualità dell'alimentazione di reti complesse e distribuite
- Un canale elettrico per reti: monofase, bifase, trifase equilibrata con o senza neutro
- Fino a 4 trasduttori indipendenti completamente configurabili
- Trasduttori interfacciabili: mA, V ot PT
- 4 modalità precaricate: Sensors, Pump, Chiller e Supply
- Conforme a IEC 61724
- Può misurare granbdezze eterogenee: idrauliche, chimiche, solari, carichi elettrici, generatori, storage systems, ecc
- Realizzazione di campagne di misura a lungo termine (oltre 24 in modo indipendente, senza limiti, se collegato alla rete)

Any measure everywhere

- Self setting wireless network connection
- Max indoor point to point distance: 60m
- Max outdoor point to point distance: 600m
- MRH network client mode
- Can work on networks: single-phase, two-phase, three-phase balanced with or without neutral, three-phase unbalanced with or without neutral
- Full traditional power quality analysis.
- Can measure heterogeneous energies and power: solar, elevtrical loads, generators, storage systsems, multiple grid connections, eolic, UPS, inverters etc
- Up to four transducers, fully settable
- Available transducer types: mA, V ot PT
- Four preloaded modes: Sensors, Pump, Chiller and Supply
- Fully integrated within IEC 61724 logic
- One electrical channel: single-phase, two-phase, three-phase balanced with or without neutral
- Full traditional energy analysis (V, I, P, Q, S, F, PF, THD% on electrical channel.
- Can measure heterogeneous energies and power: hydraulic, chemical, solar, electrical loads, generators, storage systsems, multiple grid connections, eolic, UPS, inverters etcRealization of long-term measurement campaigns (over 24 independently, unlimited if connected to the network)

Caratteristiche tecniche

Technical details

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
POWER SUPPLY:	
External power supply	wall-plug switching; input 100-240VAC ±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) > 18h (wireless on)
CONNECTING SYSTEMS:	
Systems frequencies	50Hz – 60Hz
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	✓
PT100	✓
Anemometer	✓
Transducers	4..20mA, 0..1V
FUNCTIONS:	
Traditional electrical analisys	V, I, P, Q, S, F, PF, THD(V)%, THD(I)%, cosφ, φ, peaks, minimums, maximums, averages, max. demands, etc.
Neutral current	Measured
Three phase counters	kWh, kVArh, kVAh, both absorbed that generated
Counters for each single phase	kWh, kVArh, kVAh, both absorbed that generated
Cogeneration	✓
Waveforms	V & I
Harmonics	Values and histograms up to the 50th order
Sags	Dips, swells & interruptions
Transients	Overvoltages & overcurrents
Unbalance	-
Test EN 50160	-
Inrush current	-
DC measures	✓
K factor	Up to the 25th order
Alarms	-
Alarms log	-
Tariff bands	-
Energy costs	-

NanoVIP® DGP™

IEC 61724 network parameters		✓
Test EN 82.25		-
OSU™ (One Shot UPS)		-
Measurament campaigns		unlimited, up to fill the memory card
MEASUREMENTS:		
Sampling frequency		128 samples per cycle (adaptive in 40Hz-70Hz range)
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
ACCURACY		
	RMS voltages:	
	Scale 1	±0.25% + 0.1%FS [2] @ RMS V < 350VAC [1]
	Scale 2	±0.25% + 0.05%FS [2] @ RMS V > 350VAC [1]
	RMS currents:	
	Scale 1	±0.25% + 0.1%FS [2] @ RMS I < 5% IN clamp [1]
	Scale 2	±0.25% + 0.05%FS [2] @ 5% < RMS I < 20% IN clamp [1]
	Scale 3	±0.25% + 0.05%FS [2] @ 20% < RMS I < 50% IN clamp [1]
	Scale 4	±0.25% + 0.05%FS [2] @ > 50% IN clamp [1]
	Power	±0.5% + 0.05%FS [2]
	Power Factor (PF)	±0.5°
	Frequency	±0.01 Hz (40-70Hz)
	Active power count (kW)	Class 0.5
	Reactive power count (kVar)	Class 1
HARMONIC ANALISYS		Up to 50th order Up to 7th at 400Hz
ANALYSIS of EN50160 parameters		
	Interruptions	>500mS
	Dips	>500mS

Caratteristiche tecniche

Technical details

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	600 m
Maximum distance indoor	60 m
Mesh network	✓
WiFi	-
3G	-
Wireless to PC	-
Cloud connectivity	-
Remote control	-
USB	✓
DATA STORAGE:	
Internal memory	64kB
External memory	Micro SD (4GB 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

NanoVIP®

		TWO	TWO+	TWO WF	CUBE	CUBE+	CUBE WF	CUBE 247	Master	DE	DS	DGP	Nano Flex	200A	1000A	5A	DC clamp
TWO	4NAN2N	1															
	4NAN2	1											1				
	4NAN2A	1												1			
	4NAN2B	1											1	1			
	4NAN2C	1												1		1	
TWO+	4NAN2PN		1														
	4NAN2P		1										1				
	4NAN2PA		1											1			
	4NAN2PB		1										1	1			
	4NAN2PC		1											1		1	
TWO WF	4NAN2WFN			1													
	4NAN2WF			1									1				
	4NAN2WFA			1										1			
	4NAN2WFB			1									1	1			
	4NAN2WFC			1										1		1	
CUBE	4NAN3N				1												
	4NAN3				1								3				
	4NAN3A				1									3			
	4NAN3B				1								3	3			
	4NAN3C				1									3		3	
CUBE+	4NAN3PN					1											
	4NAN3P					1							3				
	4NAN3PA					1								3			
	4NAN3PB					1							3	3			
	4NAN3PC					1								3		3	
CUBE WF	4NAN3WFN						1										
	4NAN3WF						1						3				
	4NAN3WFA						1							3			
	4NAN3WFB						1						3	3			
	4NAN3WFC						1							3		3	
CUBE 247	4NAN3247N							1									
	4NAN3247							1					3				
	4NAN3247A							1						3			
	4NAN3247B							1					3	3			
	4NAN3247C							1						3		3	
QUADRA	4NANQ								1				3				
	4NANQA								1					3			
	4NANQB								1				3	3			
	4NANQC								1				3	3	3		
	4NANQD								1						3		
	4NANQN								1								
	4NANQS								1				3				1
	4NANQDE									1			3				
	4NANQDEA									1				3			
	4NANQDEN									1							
	4NANQDS										1						1
	4NANQDSN										1						
	4NANQDGP											1	1	1		1	
	4NANQKDE								1	1			6				
	4NANQKDS								1		1		3				1
	4NANQKDGP								1			1	3				
	4NANQKSE								1	1			6				1
	4NANQKCP					1			1				6				

		Big bag	Small bag	Solar meter	4.20mA cable	0..1V cable	PT100	Voltage cable	Croco	Voltage captor	Magnet captor	uSD	Battery	Power Supply	Calibr. Certiif.
TWO	4NAN2N		1					2	1	1		1	1	1	1
	4NAN2		1					2	1	1		1	1	1	1
	4NAN2A	1						2	1	1		1	1	1	1
	4NAN2B	1						2	1	1		1	1	1	1
	4NAN2C	1						2	1	1		1	1	1	1
TWO+	4NAN2PN		1		2	2	2	2	1	1		1	1	1	1
	4NAN2P		1		2	2	2	2	1	1		1	1	1	1
	4NAN2PA	1			2	2	2	2	1	1		1	1	1	1
	4NAN2PB	1			2	2	2	2	1	1		1	1	1	1
	4NAN2PC	1			2	2	2	2	1	1		1	1	1	1
TWO WF	4NAN2WFN		1					2	1	1		1	1	1	1
	4NAN2WF		1					2	1	1		1	1	1	1
	4NAN2WFA	1						2	1	1		1	1	1	1
	4NAN2WFB	1						2	1	1		1	1	1	1
	4NAN2WFC		1					2	1	1		1	1	1	1
CUBE	4NAN3N		1					4	4			1	1	1	1
	4NAN3		1					4	4			1	1	1	1
	4NAN3A	1						4	4			1	1	1	1
	4NAN3B	1						4	4			1	1	1	1
	4NAN3C	1						4	4			1	1	1	1
CUBE+	4NAN3PN		1					4	4			1	1	1	1
	4NAN3P		1					4	4			1	1	1	1
	4NAN3PA	1						4	4			1	1	1	1
	4NAN3PB	1						4	4			1	1	1	1
	4NAN3PC	1						4	4			1	1	1	1
CUBE WF	4NAN3WFN		1					4	4			1	1	1	1
	4NAN3WF		1					4	4			1	1	1	1
	4NAN3WFA	1						4	4			1	1	1	1
	4NAN3WFB	1						4	4			1	1	1	1
	4NAN3WFC	1						4	4			1	1	1	1
CUBE 247	4NAN3247N		1					4	4			1	1	1	1
	4NAN3247		1					4	4			1	1	1	1
	4NAN3247A	1						4	4			1	1	1	1
	4NAN3247B	1						4	4			1	1	1	1
	4NAN3247C	1						4	4			1	1	1	1
QUADRA	4NANQ		1					4	4		4	1	1	1	1
	4NANQA	1						4	4		4	1	1	1	1
	4NANQB	1						4	4		4	1	1	1	1
	4NANQC	1						4	4		4	1	1	1	1
	4NANQD	1						4	4		4	1	1	1	1
	4NANQN		1					4	4		4	1	1	1	1
	4NANQS	1		1			2	6	6		6	1	1	1	1
	4NANQDE		1					4	4		4	1	1	1	1
	4NANQDEA	1						4	4		4	1	1	1	1
	4NANQDEN		1					4	4		4	1	1	1	1
	4NANQDS	1		1			2	2	2		2	1	1	1	1
	4NANQDSN	1		1				2	2		2	1	1	1	1
	4NANQDGP		1		2	2	2	2	1	1	2	1	1	1	1
	4NANQKDE		2					8	8		8	2	2	2	2
	4NANQKDS	1	1	1			2	6	6		6	2	2	2	2
	4NANQKDGP		2		2	2		4	4		4	2	2	2	2
	4NANQKSE	1	1	1				8	8		8	2	2	2	2
	4NANQKCP		2					8	8		8	2	2	2	2

Pinze amperometriche
Current sensors

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NanoFlex™

Sensori di corrente flessibili basati sul principio dei Rogowski coils, permettono la misura di un ampio range di correnti.

Flexible current sensors based on the Rogowski coils principle, allow the measurement of a wide range of currents.

NanoFlex™ è un sensore di corrente con una parte attiva (bobina Rogowski) caratterizzata da una **elevata flessibilità** che ne permette l'installazione nelle posizioni più impegnative. Il particolare sistema di chiusura ne permette un facile utilizzo anche con i guanti di sicurezza. Non essendo soggette a fenomeni di saturazione magnetica, offrono una **elevatissima linearità**, un **basso sfasamento** e **un'ampia gamma di misura**.

EN **NanoFlex™** is a current sensor with an active part (**Rogowski coil**) characterized by a high flexibility that allows it to be installed in the most demanding positions. The particular locking system allows easy use even with safety gloves. Not subject to magnetic saturation phenomena, they offer a very **high linearity**, a **low phase shift** and a **wide measuring range**.

PRECISA, FLESSIBILE, RESISTENTE, CON UN AMPIO CAMPO DI MISURA

- Utilizzabile su analizzatori della famiglia NanoVIP® senza necessità di alimentazione o amplificazione esterna.
- Dotata di sistema di riconoscimento automatico se utilizzata sui più recenti analizzatori della serie NanoVIP®: TWO™, CUBE™ e QUADRA™
- Cordone di soli 5,5mm di diametro.
- Flessibile e leggera
- Progettato per la misura di correnti alternate in un ampio range di valori: da 6A a 3000A
- Grazie alle sue caratteristiche meccaniche può essere facilmente avvolta in due spire per portarne il range di misura da 3A a 1500A con un aumento della precisione stessa
- Ottima risposta alle rapide variazioni di corrente, non essendo soggetta all'induzione delle correnti di Fourier.
- Altissima linearità dovuta all'assenza di saturazione magnetica anche in presenza di correnti molto alte, come nel caso della trasmissione di energia elettrica, saldatura elettrica o applicazioni che implicano impulsi ad alta potenza
- Il particolare sistema di chiusura ne permette un uso sicuro anche indossando i guanti di sicurezza

FLEXIBLE, PRECISE, STRONG WITH A WIDE RANGE OF MEASUREMENT

- Can be used on NanoVIP® family analyzers without the need for external power supply or amplification.
- Equipped with automatic recognition system if used on the latest NanoVIP® series analyzers: TWO™, CUBE™ and QUADRA™
- Cord only 5.5mm in diameter.
- Flexible and light
- Designed for the measurement of alternating currents in a wide range of values: from 6A to 3000A
- Thanks to its mechanical characteristics it can easily be wound in two turns to bring its measuring range from 3A to 1500A with an increase in precision itself
- Excellent response to rapid changes in current, not being subject to induction of Fourier currents.
- Very high linearity due to the absence of magnetic saturation even in the presence of very high currents, such as in the case of electricity transmission, electric welding or applications involving high power pulses
- The particular closing system allows safe use even when wearing safety gloves

Code	Description
4AAZARP	NanoFlex™ Rogowski [6A – 3000A] 400mm
4AAZ6ARP	NanoFlex™ Rogowski [6A – 3000A] 600mm

Caratteristiche tecniche

Technical details

ELECTRICAL SPECIFICATIONS[1]:	
Measured range	6A up to 3000A
Operating voltage	600V rms or DC (CAT IV) 1000V rms or DC (CAT III)
Voltage at sensor terminals	39,1µV/A at 50Hz on 10kΩ load
Accuracy	≤ 1 % + 0.3 A (only sensor)
Linearity	<0.3%
Phase shift	-90° ± 0,5° at 50 Hz
Interchangeability error	≤ 0.5% (maximum error between 2 sensor for the same measurement point)
Influence of temperature	0.05%/10 °k from -20 °C to +60 °C
Influence of humidity	0.1% from 10% to 90% RH
Influence of conductor position with non sensor deformation:	≤ 1.5%
Influence of adjacent conductor placed 1cm from sensor:	≤ 0.7% of the adjacent current at 50Hz
Influence of sensor deformation (flattened/oblong shape):	≤ 0.5%
Common mode rejection	≥ 100dB for a voltage of 600V / 50Hz applied between the sensor enclosure and the secondary
[1] Conditions of reference	23 °C ± 5 °K, 20% to 75% RH Continuous external DC magnetic field (earth field) < 40 A/m Absence of external AC magnetic field External electrical field < 1 V/m Position of conductor measured: centred in the measurement coil Shape of measurement coil: quasi-circular Measurement instrument input impedance (oscilloscope) ≥ 1 MΩ Frequency and form of signal measured: 40 to 400 Hz sinusoidal

MECHANICAL SPECIFICATIONS:	
Dimensions	Ø of sensor: 5.5mm approx. Sensor lenght: 400mm Output cable length: 2m
Weight	60g
Operating temperature	-20 °C to +60 °C
Storage temperature	-40 °C to +80 °C
Max temperature of clamped conductor (measured)	≤ 90 °C
Operating altitude	0 to 2000 m (for 600V CAT III)
Storage altitude	≤ 12000m
Casing protection rating (leakproofing)	IP50 according to EN 60529/A1 Ed.06/2000
Self-extinguishing capability	UL94 V0

SAFETY	
Electrical safety	Class II equipment with double or reinforced insulation between the primary and the secondary (winding connected to the connection cable) as per EN 61010-1 & EN 61010-2-032: - 1000V CAT III, pollution degree 2 - 600V ACT III, pollution degree 2 - Type-B sensor

UltraFlex™

Sensori di corrente flessibili basati sul principio dei Rogowski coils, permettono la misura di correnti fino a 6000A e (opzionalmente) oltre.

Flexible current sensors based on the Rogowski coils principle, allow the measurement currents up to 6000A and (optionally) higher ones.

UltraFlex™ è un sensore di corrente con una parte attiva (bobina Rogowski) caratterizzata da una **struttura robusta ed affidabile** che permette la misura di alte correnti (fino a **6000A**) nelle posizioni più impegnative, grazie al cordone di **600mm**. Non essendo soggette a fenomeni di saturazione magnetica, offrono una **elevatissima linearità**, un **basso sfasamento** e **un'ampia gamma di misura**.

EN **UltraFlex™** is a current sensor with an active part (**Rogowski coil**) characterized by a robust and reliable structure that allows to measure high currents (up to **6000A**) in the most demanding positions, thanks to its **600mm** coil length. Not subject to magnetic saturation phenomena, they offer a very **high linearity**, a **low phase shift** and a **wide measuring range**.

PRECISA, ROBUSTA, CON UN AMPIO CAMPO DI MISURA FINO AD ALTISSIME CORRENTI

- Utilizzabile su analizzatori della famiglia NanoVIP® senza necessità di alimentazione o amplificazione esterna.
- Cordone di soli 8,0 mm di diametro.
- Robusta e affidabile.
- Progettato per la misura di correnti alternate in un ampio range di valori: fino a 6000A
- Opzionalmente fornibile per correnti più elevate
- Grazie al cordone di 600mm può essere facilmente avvolta negli spazi più critici.
- Ottima risposta alle rapide variazioni di corrente, non essendo soggetta all'induzione delle correnti di Fourier.
- Altissima linearità dovuta all'assenza di saturazione magnetica anche in presenza di correnti molto alte, come nel caso della trasmissione di energia elettrica, saldatura elettrica o applicazioni che implicano impulsi ad alta potenza
- Il particolare sistema di chiusura ne permette un uso sicuro anche indossando i guanti di sicurezza

FLEXIBLE, STRONG WITH A WIDE RANGE OF MEASUREMENT UP TO HIGH CURRENTS

- Can be used on NanoVIP® family analyzers without the need for external power supply or amplification.
- Cord only 8,0 mm in diameter.
- Flexible and reliable
- Designed for the measurement of alternating currents in a wide range of values: up to 6000A
- Optionally can be supplied for higher currents
- Thanks to its 600mm coil length it can easily be wound in difficult conditions
- Excellent response to rapid changes in current, not being subject to induction of Fourier currents.
- Very high linearity due to the absence of magnetic saturation even in the presence of very high currents, such as in the case of electricity transmission, electric welding or applications involving high power pulses
- The particular closing system allows safe use even when wearing safety gloves

Codice/Code	Descrizione / Description
4AAALG6000	UltraFlex™ Rogowski [6000A] 600mm

Caratteristiche tecniche

Technical details

ELECTRICAL SPECIFICATIONS[1]:	
Measured range	6000A (optionally higher currents can be provided)
Operating voltage	600V rms or DC (CAT IV) 1000V rms or DC (CAT III)
Voltage at sensor terminals [2]	19,55µV/A at 50Hz on 10kΩ load
Accuracy	≤ 2%
Frequency range	approximately 8 Hz to 20 kHz the range depends on the coil length
Test voltage	7400 Vrms / 1 min
[1] Conditions of reference	23 °C ± 2 °C, 20% to 75% RH Position of conductor measured: centred in the measurement coil Shape of measurement coil: quasi-circular Measurement instrument input impedance (oscilloscope) ≥ 1 MΩ Frequency and form of signal measured: 40 to 400 Hz sinusoidal
[2] Output levels	The Rogowski coil output is proportional to the rate of change of current. The calculation formula is: Ampere rms x Hertz x K x 10-6, where K depends on manufacturing. The K value is 2 for 100 mV model and 0.8 for 40 mV model.

MECHANICAL SPECIFICATIONS:	
Dimensions	Ø of sensor: 5.5mm approx. Sensor lenght: 600mm (optionally different measures available) Output cable length: 2m
Weight	90g
Locking system	Bayonet holder
Operating temperature	-20 °C to +80 °C
Storage temperature	-40 °C to +80 °C
Self-extinguishing capability	UL94 V0

SAFETY	
Electrical safety	EN61010-1, EN61010-031, EN61010-2-031, EN61010-2-032 standards

AmpFlex™

Sensori di corrente flessibili basati sul principio dei Rogowski coils, permettono la misura di correnti fino a 1000A e con cordone 800mm

Flexible current sensors based on the Rogowski coils principle, allow the measurement currents up to 1000A and 800mm coil length.

AmpFlex™ è un sensore di corrente con una parte attiva (bobina Rogowski) caratterizzata da una **struttura robusta ed affidabile** che permette la misura di alte correnti (fino a **1000A**) nelle posizioni più impegnative, grazie al cordone di **800mm**. Non essendo soggette a fenomeni di saturazione magnetica, offrono una **elevatissima linearità**, un **basso sfasamento** e **un'ampia gamma di misura**.

EN **AmpFlex™** is a current sensor with an active part (**Rogowski coil**) characterized by a robust and reliable structure that allows to measure high currents (up to **1000A**) in the most demanding positions, thanks to its **800mm** coil length. Not subject to magnetic saturation phenomena, they offer a very **high linearity**, a **low phase shift** and a **wide measuring range**.

PRECISA, ROBUSTA, CON UN CORDONE DA 800MM

- Utilizzabile su analizzatori della famiglia NanoVIP® senza necessità di alimentazione o amplificazione esterna.
- Cordone di 12,0 mm di diametro.
- Robusta e affidabile.
- Progettato per la misura di correnti alternate in un ampio range di valori: fino a 1000A
- Grazie al cordone di 800mm può essere facilmente avvolta negli spazi più critici.
- Ottima risposta alle rapide variazioni di corrente, non essendo soggetta all'induzione delle correnti di Fourier.
- Altissima linearità dovuta all'assenza di saturazione magnetica anche in presenza di correnti molto alte, come nel caso della trasmissione di energia elettrica, saldatura elettrica o applicazioni che implicano impulsi ad alta potenza
- Il particolare sistema di chiusura ne permette un uso sicuro anche indossando i guanti di sicurezza

FLEXIBLE, STRONG WITH 800MM COIL LENGTH

- Can be used on NanoVIP® family analyzers without the need for external power supply or amplification.
- Cord with 12,0 mm in diameter.
- Flexible and reliable
- Designed for the measurement of alternating currents in a wide range of values: up to 1000A
- Thanks to its 800mm coil length it can easily be wound in difficult conditions
- Excellent response to rapid changes in current, not being subject to induction of Fourier currents.
- Very high linearity due to the absence of magnetic saturation even in the presence of very high currents, such as in the case of electricity transmission, electric welding or applications involving high power pulses
- The particular closing system allows safe use even when wearing safety gloves

Codice/Code	Descrizione / Description
4AAXX	AmpFlex™ Rogowski [1000A] 800mm

Caratteristiche tecniche

Technical details

ELECTRICAL SPECIFICATIONS[1]:	
Measured range	up to 1000A
Operating voltage	600V rms or DC (CAT IV) 1000V rms or DC (CAT III)
Voltage at sensor terminals	39,1µV/A at 50Hz on 10kΩ load
Accuracy	≤ 2 % + 0.3 A (only sensor)
Linearity	<0.3%
Phase shift	-90° ± 0,5° at 50 Hz
Interchangeability error	≤ 0.5% (maximum error between 2 sensor for the same measurement point)
[1] Conditions of reference	23 °C ± 5 °K, 20% to 75% RH Continuous external DC magnetic field (earth field) < 40 A/m Absence of external AC magnetic field External electrical field < 1 V/m Position of conductor measured: centred in the measurement coil Shape of measurement coil: quasi-circular Measurement instrument input impedance (oscilloscope) ≥ 1 MΩ Frequency and form of signal measured: 40 to 400 Hz sinusoidal

MECHANICAL SPECIFICATIONS:	
Dimensions	Ø of sensor: 12,0 mm approx. Sensor lenght: 800mm Output cable length: 2m
Weight	60g
Operating temperature	-20 °C to +60 °C
Storage temperature	-40 °C to +80 °C
Max temperature of clamped conductor (measured)	≤ 90 °C
Operating altitude	0 to 2000 m (for 600V CAT III)
Storage altitude	≤ 12000m
Casing protection rating (leakproofing)	IP65 according to EN 60529/A1 Ed.06/2000
Self-extinguishing capability	UL94 V0

SAFETY	
Electrical safety	Class II equipment with double or reinforced insulation between the primary and the secondary (winding connected to the connection cable) as per EN 61010-1 & EN 61010-2-032: - 1000V CAT III, pollution degree 2 - 600V ACT III, pollution degree 2 - Type-B sensor

MN13™

Pinza amperometrica per correnti alternate da 0.5 A a 200 A caratterizzata da dimensioni ridotte e un'elevata ergonomia.

Amperometric mini-clamp for AC currents from 0.5 A to 200 A with with reduced dimensions and high ergonomics.

La pinza amperometrica MN13 è utilizzabile su tutti gli analizzatori della famiglia **NanoVIP®** per la misura delle correnti alternate fino a 200 A; è dotata di un sistema di **riconoscimento automatico** da parte dell'analizzatore che rende molto semplice il suo settaggio.

Le dimensioni particolarmente compatte ne fanno uno strumento altamente ergonomico, facilmente collocabile e con una minima occupazione di spazio.

EN The MN13 current clamp can be used on all analyzers of the **NanoVIP®** family to measure AC currents up to 200 A; it is equipped with an **automatic recognition system** by the analyzer that makes its setting very simple.

The particularly **compact dimensions** make it a highly ergonomic tool, easy to place and with minimal space requirements.

COMPATTA, RESISTENTE E PRECISA

- Utilizzabile su analizzatori della famiglia NanoVIP® senza necessità di alimentazione o amplificazione esterna.
- Dotata di sistema di riconoscimento automatico se utilizzata sui più recenti analizzatori della serie NanoVIP®: TWO™, CUBE™ e QUADRA™
- Progettato per la misura di correnti alternate in un ampio range di valori: da 0.5A a 200A
- Compatta e leggera
- La forma delle pinze rende facile l'aggancio sui cavi, anche nelle zone più ridotte.
- Le pinze possono afferrare conduttori fino a 20 mm di diametro.
- La precisione che offre su tutto il campo di misura le consente un utilizzo molto ampio (dal civile all'industriale)
- La conformazione ne permette un uso sicuro anche indossando i guanti di sicurezza
- Dispone opzionalmente di adattatori per l'utilizzo con analizzatori Elcontrol di vecchia generazione, cioè privi di riconoscimento automatico delle pinze

COMPACT, STRONG AND PRECISE

- Can be used on NanoVIP® family analyzers without the need for external power supply or amplification.
- Equipped with automatic recognition system if used on the latest NanoVIP® series analyzers: TWO™, CUBE™ and QUADRA™
- Designed for the measurement of alternating currents in a wide range of values: from 0.5A to 200A
- Compact and light
- The shape of the pliers makes it easy to hook onto the cables, even in the smallest areas.
- The grippers can grip conductors up to 20 mm in diameter.
- The precision that it offers on the whole measuring range allows it a very wide use (from civil to industrial)
- The shape allows a safe use even when wearing safety gloves
- Optionally adapters are available to use it on older generation of Elcontrol analyzers, without automatic clamp recognition

Codice/Code	Descrizione / Description
4AR10RP	MN13-EL [0,1A – 200A]

Caratteristiche tecniche

Technical details

ELECTRICAL SPECIFICATIONS[1]:	
Measured range	0,5 A up to 240A
Operating voltage	600V rms
Output signal	5 mV AC / A AC (1,2 V for 240A)
Accuracy and Phase shift	<table><tr><td>Primary current</td><td>0.5 A ... 5 A</td><td>5 A ... 15 A</td><td>15 A ... 40 A</td><td>40 A ... 100 A</td><td>100 A ... 240 A</td></tr><tr><td>% Accuracy of output signal</td><td>≤ 2 % + 0.5 mV</td><td colspan="2">≤ 1 % + 0.25 mV</td><td>≤ 1 %</td><td>≤ 0.5 %</td></tr><tr><td>Phase shift</td><td>not specified</td><td>≤ 7°</td><td>≤ 5°</td><td>≤ 3°</td><td>≤ 1.5°</td></tr></table>
Bandwidth	40 Hz ...10 kHz
Crest factor	3 for a current of 200A rms
Maximum currents	200 A continuous for a frequency ≤ 1 kHz (derating proportional to the inverse of frequency beyond)
Common mode voltage	600 V category III and pollution degree 2
Influence of adjacent conductor:	≤ 15mA / A at 50 Hz
Influence of conductor position in jaws:	≤ 0.5 % of output signal at 50 / 60 Hz
Influence of DC current >20A overlying on the nominal current:	≤ 5%
Influence of frequency[2]:	< 3% of output signal from 40Hz...1kHz < 12% of output signal from 1kHz...10kHz
Influence of crest factor:	< 3% of output signal for a crest factor of 3 and current of 200A rms
[1] Conditions of reference	23 °C ± 5 °K, 20% to 75% RH Continuous external DC magnetic field (earth field) < 40 A/m Absence of external AC magnetic field External electrical field < 1 V/m Position of conductor measured: centred in the measurement coil Shape of measurement coil: quasi-circular Measurement instrument input impedance (oscilloscope) ≥ 1 MΩ Frequency and form of signal measured: 40 to 400 Hz sinusoidal
[2]	Out of reference domain

MECHANICAL SPECIFICATIONS:	
Dimensions	135x51x30 mm
Weight	180g
Operating temperature	-10 °C to +55 °C
Storage temperature	-40 °C to +70 °C
Influence of temperature:	≤ 15% of output signal per 10 °K
Relative humidity for operation:	0 to 85% RH decreasing linearly above 35 °C
Influence of relative humidity:	< 0.2 % of output signal from 10% to 85% RH
Operating altitude	0 to 2000 m (for 600V CAT III)
Storage altitude	≤ 12000m
Clamping capacity:	Cable: Ø max 20 mm Busbar: 1 busbar of 20 x 5 mm
Drop test:	1 m (IEC 68-2-32)
Shock resistance:	100 g 6 ms ½ period (IEC 68-2-27)
Vibration resistance:	10/55/10 Hz, 0.15mm (IEC 68-2-6)
Casing protection rating	IP40 (IEC 529)
Self-extinguishing capability	Casing: UL94 V2 Jaws: UL94 V0

SAFETY	
Electrical safety	Class II equipment with double or reinforced insulation between the primary and the secondary (winding connected to the connection cable) as per EN 61010-1 & EN 61010-2-032: - 1000V CAT III, pollution degree 2 - 600V ACT III, pollution degree 2 - Type-B sensor

MN95™

Pinza amperometrica per correnti AC da 0.01A a 5.0A caratterizzata da dimensioni ridotte e un'elevata precisione.

Amperometric mini-clamp for AC currents from 0.01A to 5.0A with with reduced dimensions and high precision.

La pinza amperometrica MN95 è utilizzabile su tutti gli analizzatori della famiglia **NanoVIP®** per la misura delle correnti alternate fino a 5 A; è dotata di un sistema di **riconoscimento automatico** da parte dell'analizzatore che rende molto semplice il suo settaggio.

Le dimensioni particolarmente compatte ne fanno uno strumento altamente ergonomico, facilmente collocabile e con una minima occupazione di spazio.

EN The MN95 current clamp can be used on all analyzers of the **NanoVIP®** family to measure AC currents up to 5 A; it is equipped with an **automatic recognition system** by the analyzer that makes its setting very simple.

The particularly **compact dimensions** make it a highly ergonomic tool, easy to place and with minimal space requirements.

COMPATTA, RESISTENTE E PRECISA

- Utilizzabile su analizzatori della famiglia NanoVIP® senza necessità di alimentazione o amplificazione esterna.
- Altissima precisione nelle misura
- Dotata di sistema di riconoscimento automatico se utilizzata sui più recenti analizzatori della serie NanoVIP®: TWO™, CUBE™ e QUADRA™
- Progettato per la misura di correnti alternate in un ampio range di valori: da 0.01A a 5A
- Compatta e leggera
- La forma delle pinze rende facile l'aggancio sui cavi, anche nelle zone più ridotte.
- Le pinze possono afferrare conduttori fino a 20 mm di diametro.
- La precisione che offre su tutto il campo di misura le consente un utilizzo molto ampio (dal civile all'industriale)
- La conformazione ne permette un uso sicuro anche indossando i guanti di sicurezza
- Dispone opzionalmente di adattatori per l'utilizzo con analizzatori Elcontrol di vecchia generazione, cioè privi di riconoscimento automatico delle pinze

COMPACT, STRONG AND PRECISE

- Can be used on NanoVIP® family analyzers without the need for external power supply or amplification.
- Very high precision
- Equipped with automatic recognition system if used on the latest NanoVIP® series analyzers: TWO™, CUBE™ and QUADRA™
- Designed for the measurement of alternating currents in a wide range of values: from 0.01A to 5A
- Compact and light
- The shape of the pliers makes it easy to hook onto the cables, even in the smallest areas.
- The grippers can grip conductors up to 20 mm in diameter.
- The precision that it offers on the whole measuring range allows it a very wide use (from civil to industrial)
- The shape allows a safe use even when wearing safety gloves
- Optionally adapters are available to use it on older generation of Elcontrol analyzers, without automatic clamp recognition

Codice/Code	Descrizione / Description
4AAYVRP	MN95-EL [0,01A – 5A]

Caratteristiche tecniche

Technical details

ELECTRICAL SPECIFICATIONS[1]:

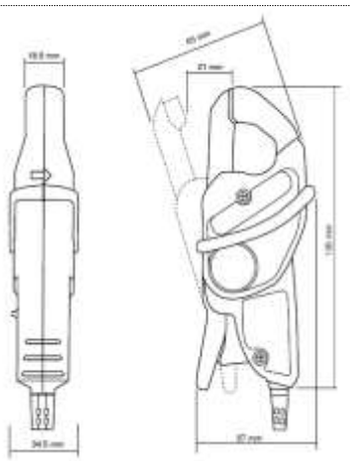
Measured range	0,01 A up to 6 A
Operating voltage	600V rms
Output signal	200 mV AC / A AC (1,2 V for 6A)
Accuracy and Phase shift	

Primary current	0.01A...0.1A	0.1A...1A	1A...6A
Accuracy in % of output signal	≤ 2%	0.5%	≤ 0,5%
Phase shift	Not specified	≤ 1.3°	0.7°

Bandwidth	40 Hz ...10 kHz
Crest factor	3 for a current of 6A rms
Maximum currents	6 A continuous for a frequency ≤ 10 kHz (derating proportional to the inverse of frequency beyond)
Common mode voltage	600 V category III and pollution degree 2
Influence of adjacent conductor:	≤ 15mA / A at 50 Hz
Influence of conductor position in jaws:	≤ 0.5 % of output signal at 50 / 60 Hz
Influence of DC current >20A overlying on the nominal current:	≤ 3%
Influence of frequency[2]:	< 5% from 20 to 1kHz < 10% from 1kHz to 10 kHz
Influence of crest factor:	< 3% of output signal for a crest factor < 5 with current < 6A rms
[1] Conditions of reference	23 °C ± 5 °K, 20% to 75% RH Continuous external DC magnetic field (earth field) < 40 A/m Absence of external AC magnetic field External electrical field < 1 V/m Position of conductor measured: centred in the measurement coil Shape of measurement coil: quasi-circular Measurement instrument input impedance (oscilloscope) ≥ 1 MΩ Frequency and form of signal measured: 40 to 400 Hz sinusoidal
[2]	Out of reference domain

MECHANICAL SPECIFICATIONS:

Dimensions	135x51x30 mm
Weight	180g
Operating temperature	-10 °C to +55 °C
Storage temperature	-40 °C to +70 °C
Influence of temperature:	≤ 15% of output signal per 10 °K
Relative humidity for operation:	0 to 85% RH decreasing linearly above 35 °C
Influence of relative humidity:	< 0.2 % of output signal from 10% to 85% RH
Operating altitude	0 to 2000 m (for 600V CAT III)
Storage altitude	≤ 12000m
Clamping capacity:	Cable: Ø max 20 mm Busbar: 1 busbar of 20 x 5 mm
Drop test:	1 m (IEC 68-2-32)
Shock resistance:	100 g 6 ms ½ period (IEC 68-2-27)
Vibration resistance:	10/55/10 Hz, 0.15mm (IEC 68-2-6)
Casing protection rating	IP40 (IEC 529)
Self-extinguishing capability	Casing: UL94 V2 Jaws: UL94 V0



SAFETY

Electrical safety	Class II equipment with double or reinforced insulation between the primary and the secondary (winding connected to the connection cable) as per EN 61010-1 & EN 61010-2-032: - 1000V CAT III, pollution degree 2 - 600V ACT III, pollution degree 2 - Type-B sensor

C107™

Pinza amperometrica per correnti alternate da 0.1 A a 1000 A caratterizzata da un'ottima precisione e stabilità di misura in tutto il range.

Amperometric mini-clamp for AC currents from 0.1 A to 1000 A with high measurement precision and stability all over the range.

La forma rotonda delle ganasce garantisce una elevata precisione e uno sfasamento minimo.
Dispone di un sistema di regolazione degli elementi magnetici e una struttura particolarmente resistente.
La **capacità di serraggio** di conduttori con diametro fino a fino a **52 mm** permette di realizzare misure di corrente sulla maggior parte dei conduttori installati sugli impianti industriali in Cat.III 600V.

EN The C107 round jaw shape and the uniformly-distributed winding guarantee **accuracy and minimum phase difference**.
It is equipped with an oscillating magnetic element adjustment system. Its **Ø 52 mm clamping capacity** allows current measurements on most conductors on CAT III 600 V industrial applications.

ROBUSTA, PRECISA E AFFIDABILE

- Utilizzabile su analizzatori della famiglia NanoVIP® senza necessità di alimentazione o amplificazione esterna.
- Dotata di sistema di riconoscimento automatico se utilizzata sui più recenti analizzatori della serie NanoVIP®: TWO™, CUBE™ e QUADRA™
- Progettato per la misura di correnti alternate in un ampio range di valori: da 0.1A a 1000A
- Minimo sfasamento
- Resistente e affidabile
- Le ganasce possono afferrare conduttori fino a 52 mm di diametro.
- Dotata di un sistema di controllo dell'apertura progressiva delle ganasce
- Dotata di sistema di regolazione degli elementi magnetici
- La precisione che offre su tutto il campo di misura le consente un utilizzo molto ampio (dal civile all'industriale)
- La conformazione ne permette un uso sicuro anche indossando i guanti di sicurezza
- Dispone opzionalmente di adattatori per l'utilizzo con analizzatori Elcontrol di vecchia generazione, cioè privi di riconoscimento automatico delle pinze

COMPACT, STRONG AND PRECISE

- Can be used on NanoVIP® family analyzers without the need for external power supply or amplification.
- Equipped with automatic recognition system if used on the latest NanoVIP® series analyzers: TWO™, CUBE™ and QUADRA™
- Designed for the measurement of alternating currents in a wide range of values: from 0.1A to 1000A
- Minimum phase difference
- Robust and reliable
- The grippers can grip conductors up to 52 mm in diameter.
- Progressive grippers opening control system
- Oscillating magnetic element adjustment system
- The precision that it offers on the whole measuring range allows it a very wide use (from civil to industrial)
- The shape allows a safe use even when wearing safety gloves
- Optionally adapters are available to use it on older generation of Elcontrol analyzers, without automatic clamp recognition

Codice/Code	Descrizione / Description
4AAWSRP	C107 [1000A]

Caratteristiche tecniche

Technical details

ELECTRICAL SPECIFICATIONS[1]:

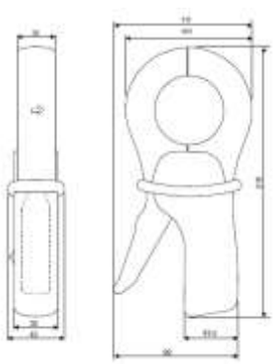
Measured range	0,1 A up to 1200A
Operating voltage	600V rms
Output signal	1 mV AC / A AC (1 V for 1000A)
Accuracy and Phase shift	

Primary current	0.1 A...10 A	10 A	50 A	200 A	1000 A	1200 A
% Accuracy of output signal	≤ 3 % + 0.1 mV	≤ 3 %	≤ 1.5 %	≤ 0.75 %	≤ 0.5 %	≤ 0.5 %
Phase shift	not specified	≤ 3°	≤ 1.5°	≤ 0.75°	≤ 0.5°	≤ 0.5°

Bandwidth	30 Hz ...10 kHz
Crest factor	≤ 6 for a current ≤ 3000 A peak (500 A rms)
Maximum currents	1000 A continuous for a frequency ≤ 1 kHz (limitation proportional to the inverse frequency beyond)
Common mode voltage	600 V category III and pollution degree 2
Influence of adjacent conductor:	≤ 1 µV / A at 50 Hz
Influence of conductor position in jaws:	≤ 0.1 % of output signal for frequencies ≤ 400 Hz
Influence of DC current >20A overlying on the nominal current:	< 1% of output signal for a current ≤ 30A DC
Influence of frequency[2]:	< 1% of output signal from 30Hz...48Hz < 0,5% of output signal from 56Hz...1kHz < 1% of output signal from 1kHz...5kHz
Influence of crest factor:	< 1% of output signal for crest factor ≤ 6 with current ≤ 3000A peak (500A rms)
[1] Conditions of reference	23 °C ± 5 °K, 20% to 75% RH Continuous external DC magnetic field (earth field) < 40 A/m Absence of external AC magnetic field External electrical field < 1 V/m Position of conductor measured: centred in the measurement coil Shape of measurement coil: quasi-circular Measurement instrument input impedance (oscilloscope) ≥ 1 MΩ Frequency and form of signal measured: 40 to 400 Hz sinusoidal
[2]	Out of reference domain

MECHANICAL SPECIFICATIONS:

Dimensions	216 x 111 x 45 mm
Weight	550g
Operating temperature	-10 °C to +55 °C
Storage temperature	-40 °C to +70 °C
Influence of temperature:	≤ 0.1 % of output signal per 10 °K
Relative humidity for operation:	0 to 85% RH decreasing linearly above 35 °C
Influence of relative humidity:	< 0.1 % of output signal from 10% to 85% RH
Operating altitude	0 to 2000 m (for 600V CAT III)
Storage altitude	≤ 12000m
Clamping capacity:	Cable: Ø max 52 mm Busbar: 1 busbar of 50 x 5 mm / 4 busbars of 30 x 5 mm
Drop test:	1 m (IEC 68-2-32)
Shock resistance:	100 g 6 ms ½ period (IEC 68-2-27)
Vibration resistance:	5/15 Hz 1.5 mm; 15/25 Hz 1 mm; 25/55 Hz 0.25 mm; (IEC 68-2-6)
Self-extinguishing capability	Casing: UL94 V2 Jaws: UL94 V0



SAFETY

Electrical safety	Class II equipment with double or reinforced insulation between the primary and the secondary (winding connected to the connection cable) as per EN 61010-1 & EN 61010-2-032: - 1000V CAT III, pollution degree 2 - 600V ACT III, pollution degree 2 - Type-B sensor

PAC11™

Pinza amperometrica ad effetto Hall per la misura di correnti continue ed alternate.

Amperometric clamp based on Hall effect to measure AC ad DC currents.

La pinza PAC11 ad effetto Hall permette la misura di correnti Ac e DC.

La **capacità di serraggio** permette di misurare su conduttori con diametro fino a **30 mm** e piccole barre.

Il metodo ZeroDC semplificato ne rende l'uso particolarmente semplice e intuitivo.

EN The PAC11 is a Hall-effect current clamp for measuring direct and alternating currents.

This clamp has 2 scales for better measurement resolution and accuracy, it includes a simplified ZeroDC adjustment system and the possibility to deactivate the automatic standby function.

VERSATILE, SEMPLICE NELL'USO E POTENTE

- Utilizzabile su analizzatori della famiglia NanoVIP® senza necessità di alimentazione o amplificazione esterna.
- Dotata di sistema di riconoscimento automatico se utilizzata sui più recenti analizzatori della serie NanoVIP®: TWO™, CUBE™ e QUADRA™
- Progettato per la misura di correnti alternate fino a 400V e continue fino a 600V
- Doppia scala
- Resistente e affidabile
- Le ganasce possono afferrare conduttori fino a 30 mm di diametro.
- Dotata di un sistema di disattivazione dello stand-by automatico
- La precisione che offre su tutto il campo di misura le consente un utilizzo molto ampio (dal civile all'industriale)
- La conformazione ne permette un uso sicuro anche indossando i guanti di sicurezza
- Dispone opzionalmente di adattatori per l'utilizzo con analizzatori Elcontrol di vecchia generazione, cioè privi di riconoscimento automatico delle pinze

VERSATILE, EASY TO USE AND POWERFUL

- Can be used on NanoVIP® family analyzers without the need for external power supply or amplification.
- Equipped with automatic recognition system if used on the latest NanoVIP® series analyzers: TWO™, CUBE™ and QUADRA™
- Designed for the measurement of alternating currents up to 400V and direct currents up to 600V
- Double scale
- Robust and reliable
- The grippers can grip conductors up to 30 mm in diameter.
- Automatic stand-by can be bypassed
- The precision that it offers on the whole measuring range allows it a very wide use (from civil to industrial)
- The shape allows a safe use even when wearing safety gloves
- Optionally adapters are available to use it on older generation of Elcontrol analyzers, without automatic clamp recognition

Codice/Code	Descrizione / Description
4AABUS	PAC11 AC/DC

Caratteristiche tecniche

Technical details

ELECTRICAL SPECIFICATIONS[1]:

Measured range	AC: 0,2 A up to 400A (600A peak) DC: 0,4 A up to 600A
Operating voltage	600V rms
Overload	2000A DC and 100A AC up to 1kHz
Accuracy and Phase shift	

Calibre	60 A	600 A
Current range	0.2 A ... 40 A (60 A peak) 0.4 A ... 60 A DC	0.5 A ... 400 A (600 A peak) 0.5 A ... 600 A DC
Output signal	10 mV/A	1 mV/A
% Accuracy of output signal [1]	0.5 A...40 A: 1.5 % ±5 mV 40 A...60 A DC: 1.5 %	0.5 A...100 A: 1.5 % ±1 mV 100 A...400 A DC: 2 % 400 A...600 A DC: 2.5 %
Phase shift (45...65 Hz) [1]	10 A...20 A: < 3° 20 A...40 A: < 2°	10 A...100 A: < 2° 100 A...400 A: < 1.5°
Noise	DC...1 kHz: < 8 mV DC...5 kHz: < 12 mV 0.1 Hz...5 kHz: < 2 mV	DC...1 kHz: < 1 mV DC...5 kHz: < 1.5 mV 0.1 Hz...5 kHz: < 500 µV
Rise/fall time	≤ 100 µs from 10 % to 90 % of the voltage value	≤ 70 µs from 10 % to 90 % of the voltage value

Bandwidth	DC...10 kHz at -3dB
Common mode voltage	600 V rms
Influence of adjacent conductor:	< 10mA/A at 50 Hz
Influence of conductor position in jaws:	0.5 % of the reading
Influence of DC current >20A overlying on the nominal current:	< 1% of output signal for a current ≤ 30A DC
Battery	9V alkaline
Battery lasting time	50 hours
[1] Conditions of reference	23 °C ± 5 °K, 20% to 75% RH Continuous external DC magnetic field (earth field) < 40 A/m Absence of external AC magnetic field External electrical field < 1 V/m Position of conductor measured: centred in the measurement coil Shape of measurement coil: quasi-circular Measurement instrument input impedance (oscilloscope) ≥ 1 MΩ Frequency and form of signal measured: 40 to 400 Hz sinusoidal

B102™

La pinza B102 viene impiegata per la misurazione delle correnti di dispersione.

The B102 clamp is designed for measuring leakage current diverted towards the earth.

La pinza B102 viene impiegata per la **misurazione delle correnti di dispersione**.

Consente di localizzare il guasto o di anticiparlo, senza scollegare le apparecchiature collegate.

È stata realizzata in particolare per individuare le **correnti deboli di guasto** sui circuiti di potenza.

EN The B102 clamp is designed for measuring leakage current diverted towards the earth.

It enables the fault to be located or anticipated without disconnecting the equipment linked.

It is specially designed to detect low fault currents on power circuits.

VERSATILE, SEMPLICE NELL'USO E POTENTE

- Utilizzabile su analizzatori della famiglia NanoVIP® senza necessità di alimentazione o amplificazione esterna.
- Progettato per la misura di correnti deboli di dispersione
- Resistente e affidabile
- Le ganasce possono afferrare conduttori fino a 115 mm di diametro.
- Utilizzo su sistemi monofase o trifase, con correnti in fase o non in fase e su circuiti equilibrati o no
- La conformazione ne permette un uso sicuro anche indossando i guanti di sicurezza

VERSATILE, EASY TO USE AND POWERFUL

- Can be used on NanoVIP® family analyzers without the need for external power supply or amplification.
- Designed for the measurement of leakage currents
- Robust and reliable
- The grippers can grip conductors up to 115 mm in diameter.
- used on single or multi-phase systems, with phased or unphased currents and on balanced or unbalanced circuits
- The shape allows a safe use even when wearing safety gloves

Codice/Code	Descrizione / Description
4AADM	B102

Caratteristiche tecniche

Technical details

ELECTRICAL SPECIFICATIONS[1]:

Measured range	4A rating: 0,5 mA up to 4A 400A rating: 0,5 mA up to 400A
Operating voltage	600V rms
Overload	2000A DC and 100A AC up to 1kHz
Accuracy and Phase shift	4A rating

Ip	0.5 mA to 10 mA	10 mA to 100 mA	100 mA to 4A
Intrinsic error	3% + 1 mV	0.5 % + 0.5 mV	0.5 % + 0.5 mV
Dephasing	Not specified	< 15°	< 10°

400A rating

Ip	0.5 A to 10A	10A to 100A	100A to 400A
Intrinsic error	0.5% + 0.5 mV	0.35% + 0.5 mV	0.35% + 1 mV
Dephasing	Not specified	< 60'	< 40'

Output/input ratio	1 mV AC / A AC
Overloads	Ip limit current: permanent 400 AC RMS Peak current: < 1000A. Permissible transient di/dt: ≤30 A/µs. Conductor temperature: ≤ 70°C with a maximum peak of 90°C.
Frequency	From 48 Hz to 1 kHz.
[1] Conditions of reference	23 °C ± 5 °K, 20% to 75% RH Continuous external DC magnetic field (earth field) < 40 A/m Absence of external AC magnetic field External electrical field < 1 V/m Position of conductor measured: centred in the measurement coil Shape of measurement coil: quasi-circular Measurement instrument input impedance (oscilloscope) ≥ 1 MΩ Frequency and form of signal measured: 40 to 400 Hz sinusoidal

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