

VEGA78

Professional power quality analyzer



Information

Thanks to an innovative development, the instrument VEGA78 allow carrying out analysis and tests on single-phase and three-phase electric systems with and without neutral. The instrument display in real time the values of all fundamental electric quantities which characterize the electric system being tested (voltage, current, active power, reactive power, apparent power, power factor, etc.), showing the waveforms of voltages and currents. VEGA78 is used for testing and analysing the quality of the electric service provided by the Electric Power Supplier, for analysing single-phase and three-phase electric users such as offices and industries, when diagnosing voltage anomalies by taking advantage of the possibility of recording electric quantities. The instrument also allows evaluating the harmonic content introduced by non-linear loads such as computers, TV sets, controlled electric motors, etc. which can cause the RCD's tripping or a neutral overheating. The instrument are supplied with the PC management software, which further expands the analysis possibilities of the data acquired.

Function

- TRMS P-N, P-P, P-PE voltage measures (5 inputs)
- TRMS current on phases and neutral (4inputs)
- Active, reactive and apparent powers measures
- Active, reactive and apparent energies measures
- Power factors measure
- Frequency measure
- Max 251 selected parameters at the same time
- Integrated period selectable from 1s to 60min
- Harmonic analysis of voltage and current up to 49th component
- Voltage anomalies (sags, swells) with 10ms resolution
- Numerical and graphical (waveforms) visualization
- Histogram visualization of harmonic analysis
- Vectorial diagram of voltages and currents
- Voltage unbalance
- Predefined recordings of parameters
- TFT colour display with "touch screen"
- 15Mbytes internal memory for recordings saving
- Using of external compact flash and USB pen drives
- USB interface for PC connection
- Windows software for recordings analysis
- Rechargeable Li-Ion battery and external AC/D adapter
- Contextual help selectable on each screen
- Virtual keyboard at display

Accessories

STANDARD

KIT800 : Set of 5 cables + 5 alligator clips
HTFLEX33D : Flexible clamp 3000A AC, diameter 174mm, 4 pcs
A0055 : External adapter AC/DC recharging battery
YABAT0003HT0 : Li-ION rechargeable battery
PT400 : Touch pen
TOPVIEW2007 : Windows software + USB cable C2007
BORSA2051N : Soft carrying bag
User manual on CD-ROM
Quick reference guide
ISO9000 calibration certificate

OPTIONAL

HT4005N : Rigid clamp 5-100A AC, diameter 20mm
HT96U : Rigid clamp 1-100-1000A AC, diameter 54mm
HT97U : Rigid clamp 10-100-1000A AC, diameter 54mm
HP30C2 : Rigid clamp 200-2000A AC, diameter 70mm
HP30C3 : Rigid clamp 3000A AC, diameter 70mm
HT98U : Rigid clamp 1000A DC, diameter 50mm
HT903 : Accessory for connection to external CTs
CF800 : Compact Flash card
MCR800 : Compact Flash card reader
A0056 : External adapter 110V AC 50-60Hz/12VDC
SP-0400 : Set of straps for use of meter on neck
606-IECN : Connector with magnetic test lead

Standards

EMC 2004/108/CE Directive
CE MARK

IEC/EN61000-4-30 Class B
LVD 2006/95/CE Directive

1. ELECTRICAL SPECIFICATIONS

Accuracy is calculated as \pm [% readings + (no. of digits * resolution)] at 23°C \pm 5°C, relative humidity <60%HR

TRMS AC/DC phase - neutral / phase - ground voltage, single / three phase systems

Range (V)	Crest factor	Resolution (V)	Accuracy	Input impedance
2.0 \div 600.0	≤ 2	0.1	\pm (0.5%rdg + 2dgt)	10M Ω

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

TRMS AC/DC phase - phase voltage, three phase systems

Range (V)	Crest factor	Resolution (V)	Accuracy	Input impedance
2.0 \div 1000.0	≤ 2	0.1	\pm (0.5%rdg + 2dgt)	10M Ω

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

Phase - neutral voltage anomalies, single / three phase systems

Range (V)	Voltage resolution (V)	Voltage accuracy	Time resolution (50/60Hz)	Time accuracy (50/60Hz)
2.0 \div 600.0	0.2	\pm (1.0%rdg + 2dgt)	10ms	\pm 10ms

Maximum crest factor: 2; the meter can be connected to external VTs with selectable ratio from 1 to 3000

The voltage threshold can be set from ± 1 to $\pm 30\%$

Phase - phase voltage anomalies, three phase systems

Range (V)	Voltage resolution (V)	Voltage accuracy	Time resolution (50/60Hz)	Time accuracy (50/60Hz)
2.0 \div 1000.0	0.2	\pm (1.0%rdg + 2dgt)	10ms	\pm 10ms

Maximum crest factor: 2; the meter can be connected to external VTs with selectable ratio from 1 to 3000

The voltage threshold can be set from ± 1 to $\pm 30\%$

AC TRMS current with standard STD transducer clamp

Range (mV)	Crest factor	Resolution (mV)	Accuracy (*)	Input impedance	Overload protection
0.0 \div 1000.0	≤ 3	0.1	\pm (0.5%rdg + 0.06%FS)	510k Ω	5V

(*) Accuracy of the transducer excluded ; FS = Full Scale clamp ; current values <0.1%FC are zeroed

TRMS AC current with flex FlexINT transducer – 300A full scale (**)

Range (A)	Crest factor	Resolution (A)	Accuracy (*)	Input impedance	Overload protection
0.0 \div 49.9	≤ 3	0.1	\pm (0.5%rdg+ 0.24%FS)	510k Ω	5V
50.0 \div 300.0			\pm (0.5%rdg + 0.06%FS)		

(*) Accuracy of the transducer excluded ; FS = Full Scale clamp ; current values <1A are zeroed

(**) The 300A range is selectable inside of the instrument

TRMS AC current with flex FlexINT transducer – 3000A full scale

Range (A)	Crest factor	Resolution (A)	Accuracy (*)	Input impedance	Overload protection
0.0 \div 3000.0	≤ 3	0.1	\pm (0.5% rdg + 0.06%FS)	510k Ω	5V

(*) Accuracy of the transducer excluded ; FS = Full Scale clamp ; current values <5A are zeroed

Frequency (voltmetric and amperometric inputs)

Range (Hz)	Resolution (Hz)	Accuracy
42.5 \div 69.0	0.1	\pm (0.2%rdg + 1dgt)

Voltage and current harmonics

Range (Hz)	Resolution (*)	Accuracy
DC \div 25 th	0.1V / 0.1A	\pm (5%rdg + 5dgt)
26 th \div 33 rd		
34 th \div 49 th		

(*) Add to the error of correspondent TRMS parameters

Power – Single phase and three phase systems (@cosφ>0.5, Vmis>60V, STD clamp)

Parameter [W, VAR, VA]	FS clamp	Range [W, VAR, VA]	Accuracy	Resolution [W, VAR, VA]
Active Power Reactive Power Apparent Power	FS ≤ 1A	0.0 – 999.9	± (1.0%rdg + 6dgt)	0.1
		1.000 – 9.999k		0.001k
	1A < FS ≤ 10A	0.000 – 9.999k		0.001k
		10.00 – 99.99k		0.01k
	10A < FS ≤ 100A	0.00 – 99.99k		0.01k
		100.0 – 999.9k		0.1k
	100A < FS ≤ 3000A	0.0 – 999.9k		0.1k
		1.000 – 9.999M		0.001M

FS = full scale clamp ; Vmis = voltage reference for power measurement

Energy – Single phase and three phase systems (@ cosφ>0.5, Vmis>60V, STD clamp)

Parameter [Wh, VARh, VAh]	FS clamp	Range [Wh, VARh, VAh]	Accuracy	Resolution [Wh, VARh, VAh]
Active Energy Reactive Energy Apparent Energy	FS ≤ 1A	0.0 – 999.9	± (1.0%rgd + 6dgt)	0.1
		1.000 – 9.999k		0.001k
	1A < FS ≤ 10A	0.000 – 9.999k		0.001k
		10.00 – 99.99k		0.01k
	10A < FS ≤ 100A	0.00 – 99.99k		0.01k
		100.0 – 999.9k		0.1k
	100A < FS ≤ 3000A	0.0 – 999.9k		0.1k
		1.000 – 9.999M		0.001M

FS = full scale clamp ; Vmis = voltage reference for power measurement

Power factor (cosφ)

Range	Resolution	Accuracy
0.20 ÷ 0.50	0.01	1.0
0.50 ÷ 0.80		0.7
0.80 ÷ 1.00		0.6

2. GENERAL SPECIFICATIONS

DISPLAY:

Features:	graphic TFT with backlight, ¼ VGA (320 x 240)
Touch screen:	present
Colours:	64K
Contrast:	adjustable

POWER SUPPLY:

Internal power supply:	Li-ION, 3.7V rechargeable battery
Battery life:	> 3 hours
External power supplier:	AC/DC adapter 100-240V 50/60Hz / 5VDC
Auto Power Off:	after 5 minutes of idleness (no external power)

MEMORY AND PC INTERFACE

Every parameter can be stored into the memory. The instrument saves the MIN, AVG and MAX values of the parameters each integration period which can be: 1, 2, 5, 10, 30 seconds, 1, 2, 5, 10, 15, 30, 60 minutes

Maximum parameters to be stored:	251
Memory:	> 3 months @ 251 parameters and integration period = 15 min
Internal memory:	15 Mbyte
External memory:	USB pen drive
External memory:	compact flash card
Operative system:	Windows CE
PC communication port:	USB

The instrument can store **SIMULTANEOUSLY** all the parameters like:

- voltages, currents, power factors, powers, energies, etc.
- ingoing and outgoing power
- voltage anomalies
- voltage and current harmonics
- voltage unbalance

MECHANICAL FEATURES

Dimensions:	235 (W) x 165 (L) x 75 (D) mm
Weight (batteries included):	1.0 kg
IP degree:	IP50

ENVIRONMENTAL CONDITIONS:

Reference temperature:	23°C ± 5°C
Working temperature:	0° ÷ 40°C
Working humidity:	< 80% UR
Storage temperature (batt. not included):	-10 ÷ 60°C
Storage humidity:	< 80% UR

GENERAL REFERENCE STANDARDS:

Safety:	IEC/EN61010-1, IEC/EN61010-031, IEC/EN61010-2-032
Insulation:	double insulation
Pollution degree:	2
Overvoltage category:	CAT IV 600V to ground, max 1000V between inputs
Max height of use:	2000m
Harmonics:	IEC/EN61000-4-30 Class B, IEC/EN50160
Unbalance:	IEC/EN61000-4-30 Class B, IEC/EN50160

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