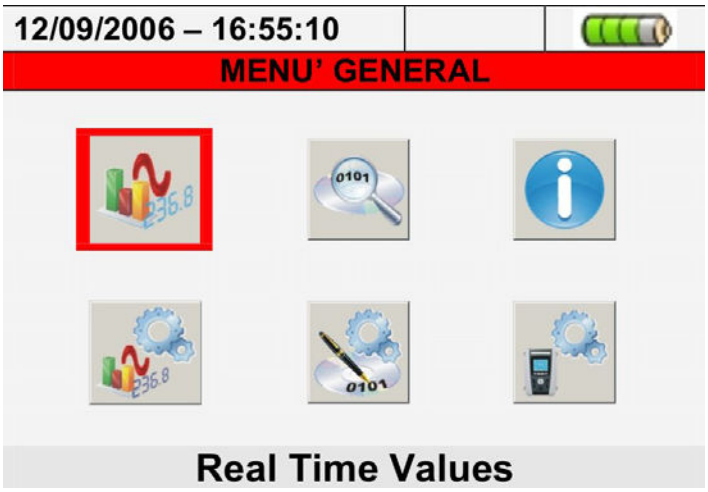
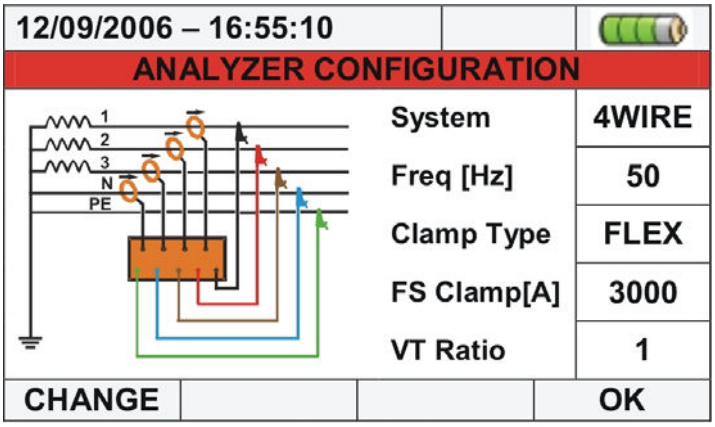
1. PQA82X INNOVATIVE FEATURES

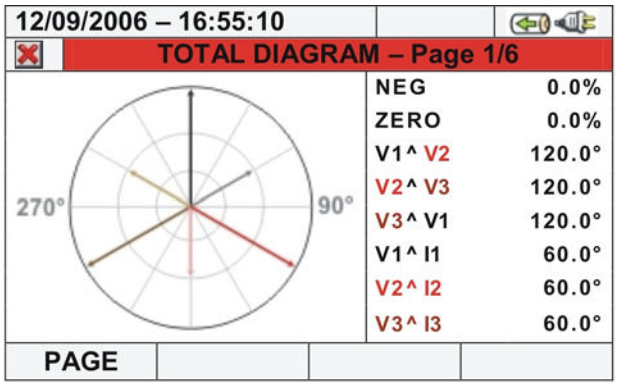
A wide (320x240pxls) graphical color TFT display with “touch screen” to surf the internal functions by using the supplied pointer pen



User friendly icon type interface



A synoptic connection scheme on the display helps the user while connecting the instrument to the installation under test



The “Vectorial Diagram” shows the mutual phase angles between voltages and currents vectors

The internal memory (15Mbytes) can be expanded by using the compact flash cards. The instrument has also an USB type A socket to drive USB peripherics like pen drives

MENU GENERAL

Real Time Values icon permits to open the screens of real time values of each measured parameters

Recording Results icon permits the access to all saved recordings and the erasable of internal memory it’s possible

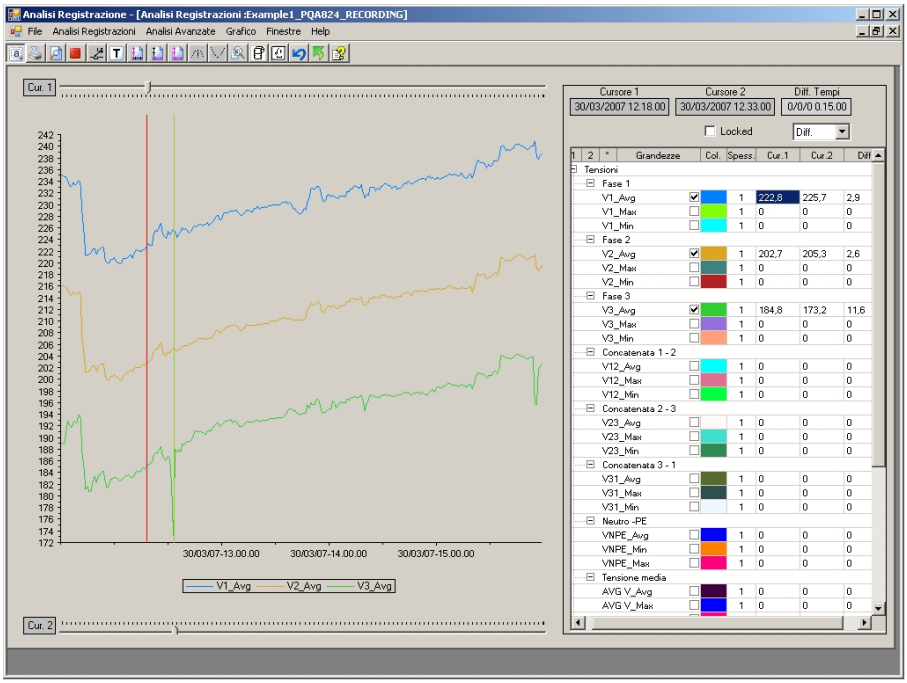
Meter Information icon permits the access to a section dedicated to general information of meter

Analyzer Settings icon permits to define the simple and advanced configurations relative to the connection of meter to the installation

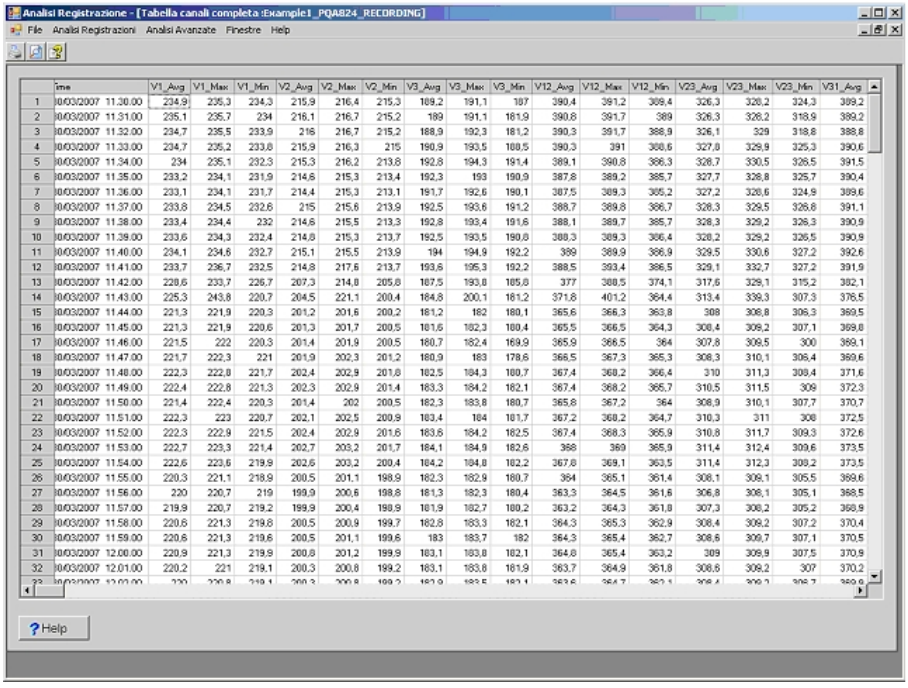
By pressing **HELP** key on the keyboard an help on line appears on the display to support the user

2. TOPVIEW SOFTWARE FEATURES

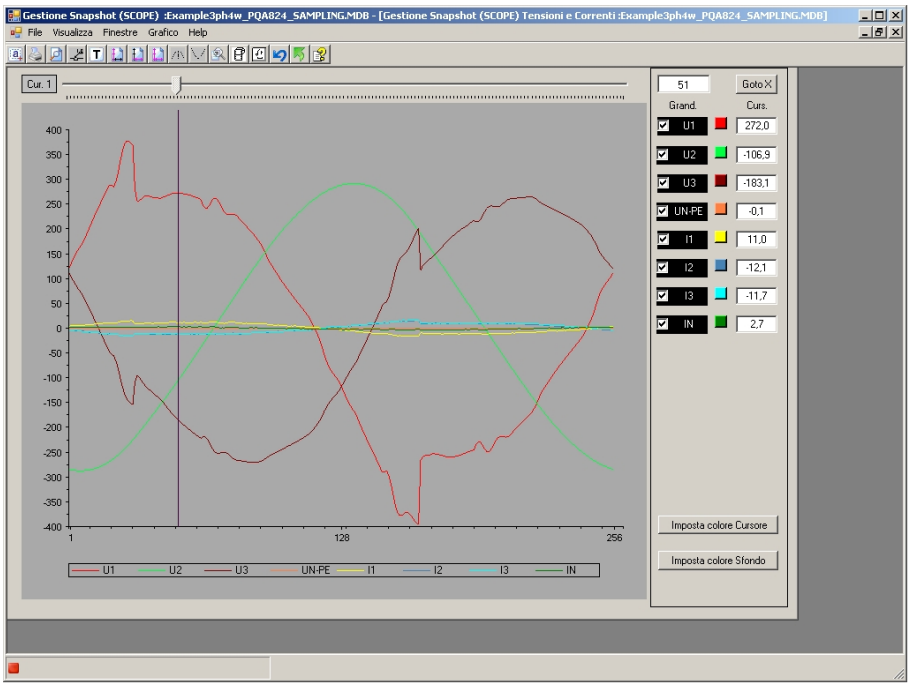
The professional **TOPVIEW** software, available for **Windows® 98/ME/2000/NT/XP/Vista** platforms, supplied with PQA82x meters, permits the numerical/graphic view of all recorder data, print report creation with customers customization (logos, text…), print previews, export in XLS and PDF files and much more.



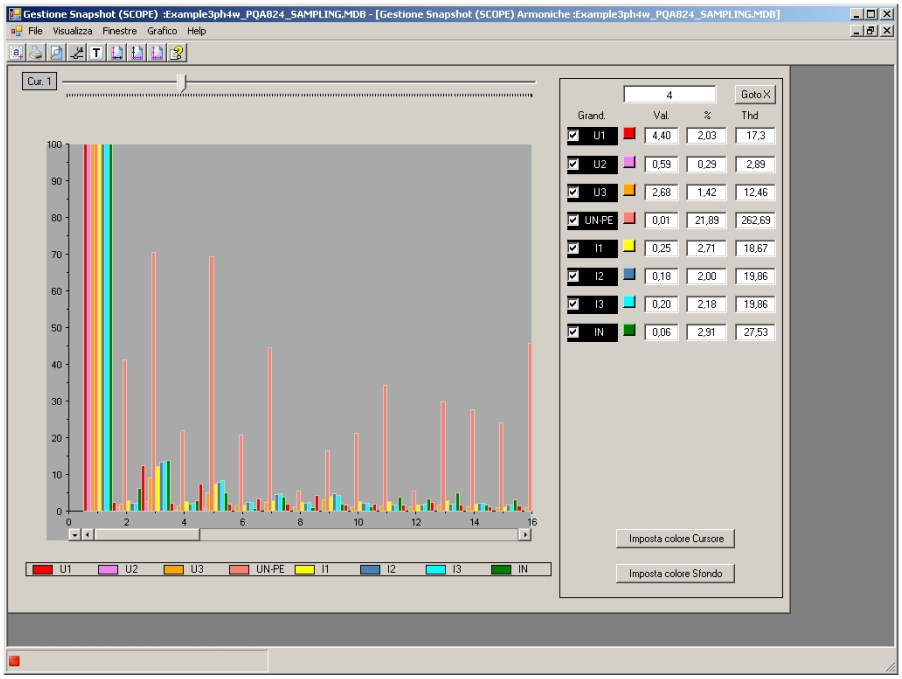
Graphic view window of recorded data with tree selection type structure



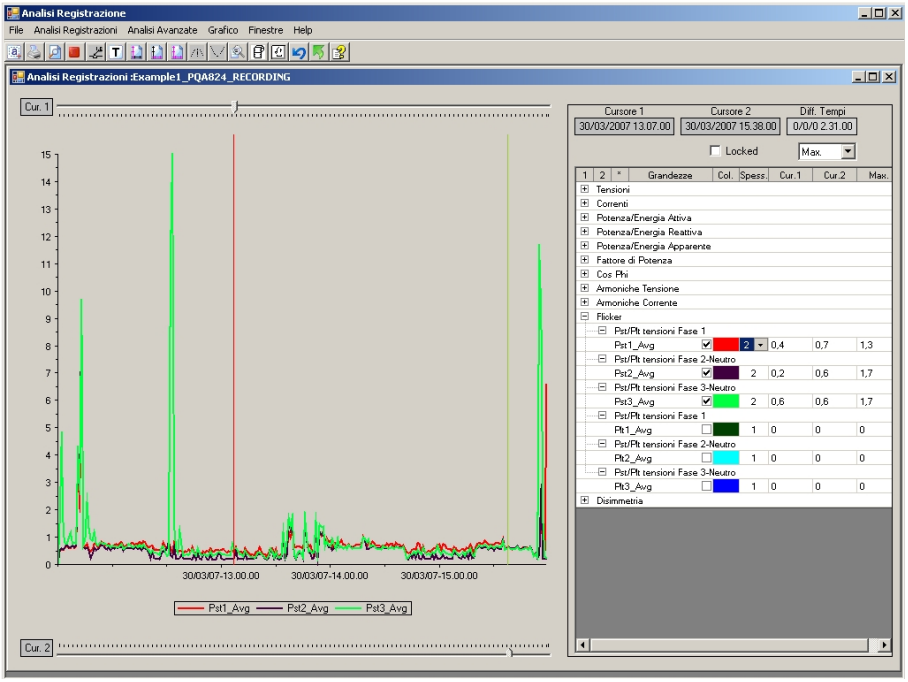
Numerical view window of all recorded data divided by integrated period



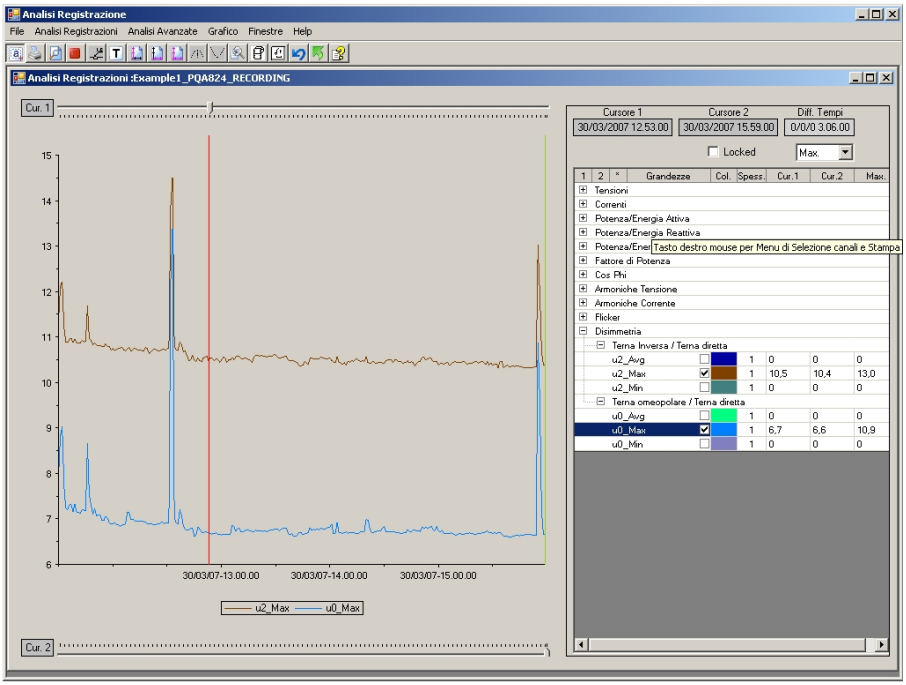
Real time Waveform screen of each parameters



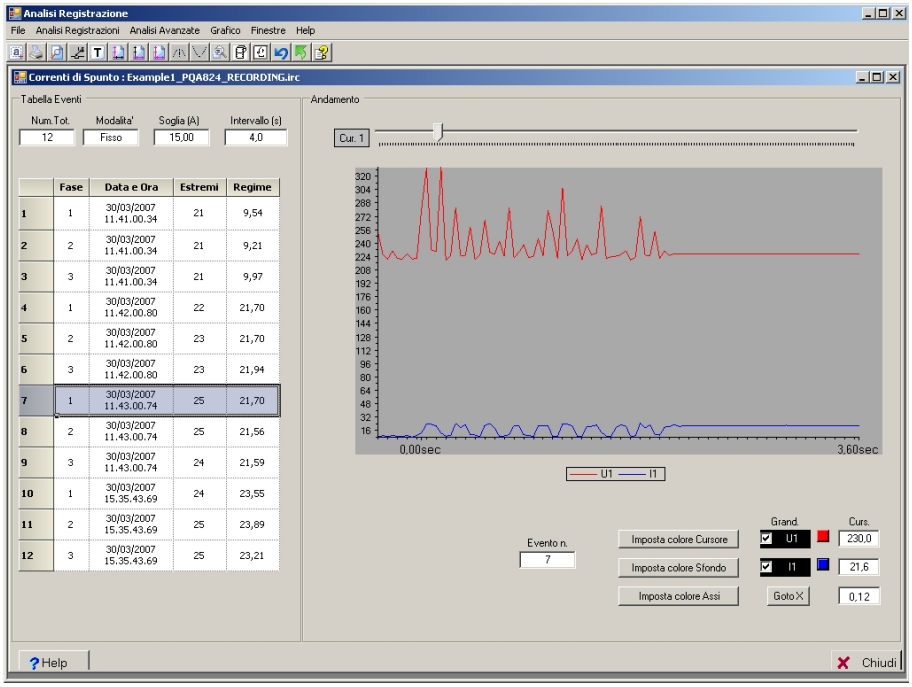
Histogram screen of harmonic analysis of voltage and currents up to 49° order



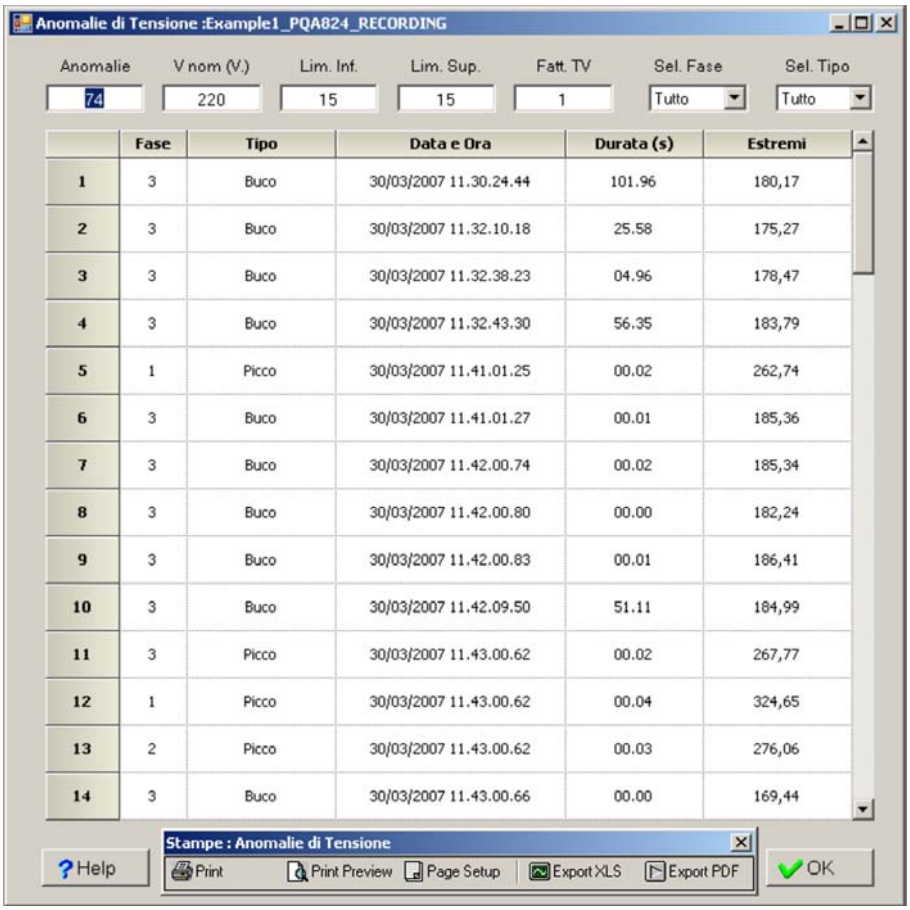
Numerical/graphical screen of voltage Flicker



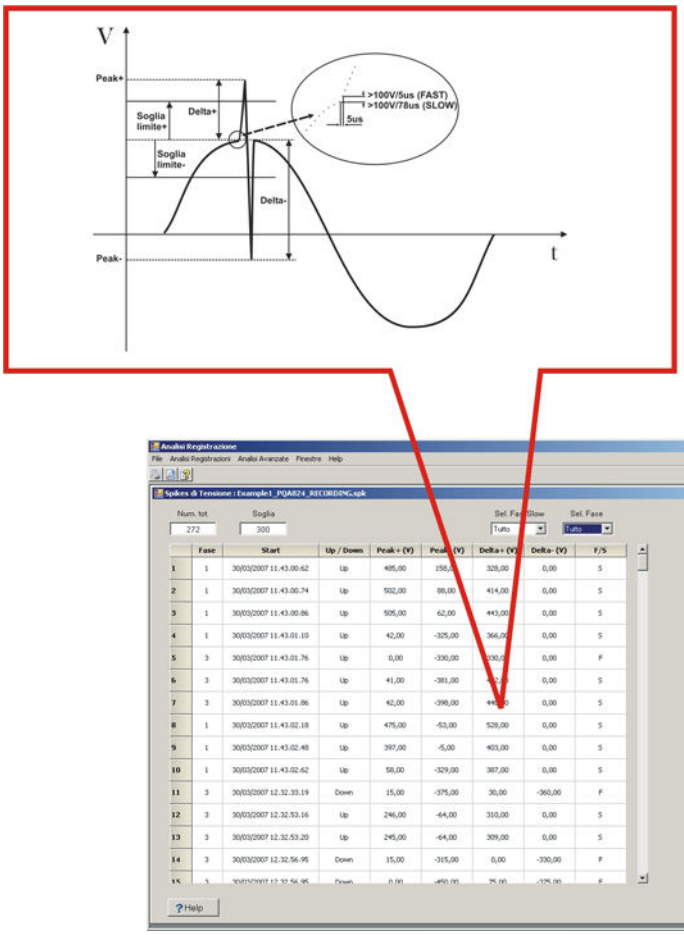
Numerical/graphical screen of voltage unbalance



Numerical/graphical analysis rush current events with 10ms resolution



Numerical screen of voltage anomalies (sags, swells) events with 10ms resolution. Directly export operation both in XLS and PDF format files



Numerical analysis of voltage spikes events with 5µs resolution (PQA824 only)

3. MODELS AND FEATURES

Measurements	PQA823	PQA824
Phase-Phase, Phase-Neutral, Phase-Ground AC TRMS voltages	✓	✓
DC voltages	✓	✓
Phases and neutral AC TRMS currents	✓	✓
DC currents	✓	✓
Power factor	✓	✓
Active, reactive and apparent powers and energies	✓	✓
DC power	✓	✓
Voltage harmonics up to the 49th order	✓	✓
Current harmonics up to the 49th order	✓	✓
Voltage anomalies (sags, swells) with 10ms resolution	✓	✓
Flicker in compliance to EN50160	✓	✓
Voltage unbalance in compliance to EN50160	✓	✓
Inrush currents	✓	✓
Voltage spikes and fast transients (5µs resolution)		✓

4. ELECTRICAL SPECIFICATIONS

Accuracy is indicated as ± (% readings + no. of digits) at 23°C ± 5°C, con 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 ÷ 600.0	≤ 2	0.1	± (0.5% rdg + 2 dgt)	10MΩ

The meter could 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 ÷ 1000.0	≤ 2	0.1	± (0.5% rdg + 2 dgt)	10MΩ

The meter could 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 (ms)	Time accuracy
2.0 ÷ 600.0	0.2	± (1.0% rdg + 2 dgt)	10	± 10ms

Maximum crest factor: 2
The meter could be connected to external VTs with selectable ratio from 1 to 3000
The voltage threshold can be set from ±1 to ±30%

Phase - phase voltage anomalies, three phase systems

Range (V)	Voltage resolution (V)	Voltage accuracy	Time resolution (ms)	Time accuracy
2.0 ÷ 1000.0	0.2	± (1.0% rdg + 2 dgt)	10	± 10ms

Maximum crest factor: 2
The meter could be connected to external VTs with selectable ratio from 1 to 3000
The voltage threshold can be set from ±1 to ±30%

Voltage spikes – Phase-Ground Voltage single / three phase systems (only PQA824)

Range (V)	Voltage resolution (V)	Voltage accuracy	Time accuracy (50Hz)	Detection time (50Hz)
-1000 ÷ -100	1	±(2.0%rdg+60V)	± 10ms	78µs – 2.5ms (SLOW)
100 ÷ 1000				
-6000 ÷ -100	15	±(10%rdg+100V)		20µs - 160µs (FAST)
100 ÷ 6000				

Detection threshold selectable from 100V to 5000V
Max number of detectable events: 20000

DC/AC TRMS current with standard STD transducer clamp

Range (mV)	Crest factor	Resolution (mV)	Accuracy (*)	Input impedance	Overload protection
0.0 ÷ 1000.0	≤ 3	0.1	± (0.5%rdg + 0.06%FS)	510kΩ	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 ÷ 49.9	≤ 3	0.1	± (0.5%rdg+ 0.24%FS)	510kΩ	5V
50.0 ÷ 300.0			± (0.5% rdg + 0.06%FS)		

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

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

Range (A)	Crest factor	Resolution (A)	Accuracy (*)	Input impedance	Overload protection
0.0 ÷ 3000.0	≤ 3	0.1	± (0.5% rdg + 0.06%FS)	510kΩ	5V

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

Inrush current

Range	Voltage resolution(V)	Voltage accuracy	Time resolution (50Hz)	Time accuracy (50Hz)
Depending on type of clamp	Depending on type of clamp	±(1.0%rdg+0.4%FS)	10ms	±10ms

Max crest factor = 3 ; Max number of detectable events: 1000

Frequency (voltmetric and amperometric inputs)

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

Voltage and current harmonics

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

(*) Add to the error of correspondent TRMS parameters

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

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)

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

Flicker Pst1', Pst, PLt

Range	Resolution	Accuracy
0.0 ÷ 10.0	0.1	Compliance to EN50160

5. GENERAL SPECIFICATIONS

DISPLAY:

Features:	graphic TFT with backlight, ¼ VGA (320 x 240)
Touch screen:	present
Colours:	65536
Contrast:	adjustable

POWER SUPPLY:

Internal power supply:	Li-ION, 3.7V rechargeable battery
Battery life:	> 6 hours
External power supplier:	AC/DC adapter
Auto power off:	after 5 minutes without using the instrument (no external power)

MEMORY AND PC INTERFACE

Every parameter could be stored into the memory, the instrument saves the MIN, AVG and MAX value of the parameters each integration period which could 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 could store **SIMULTANEOUSLY** the following parameters:

- voltages, currents, power factors, powers, energies, etc.
- ingoing and outgoing power
- voltage anomalies
- voltage unbalance
- voltage and current harmonics
- flicker
- voltage spikes (PQA824 only)

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
Insulation:	class 2 (double insulation)
Pollution degree:	2
Overvoltage category:	CAT IV 600V to ground, max 1000V between inputs
Use:	max altitude 2000m
Power Quality:	IEC / EN50160
Quality of electrical power:	IEC / EN61000-4-30 class B
Flicker:	IEC / EN61000-4-15, IEC / EN50160
Unbalance:	IEC / EN61000-4-7, IEC / EN50160

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