



## 4. ELECTRICAL SPECIFICATIONS

Accuracy is indicated as  $\pm$  (% readings + no. of digits) at 23°C  $\pm$  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	$\leq 2$	0.1	$\pm (0.5\% \text{ rdg} + 2 \text{ dgt})$	10M $\Omega$

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	$\leq 2$	0.1	$\pm (0.5\% \text{ rdg} + 2 \text{ dgt})$	10M $\Omega$

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	$\pm (1.0\% \text{ rdg} + 2 \text{ dgt})$	10	$\pm 10\text{ms}$

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  $\pm 1$  to  $\pm 30\%$

### 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	$\pm (1.0\% \text{ rdg} + 2 \text{ dgt})$	10	$\pm 10\text{ms}$

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  $\pm 1$  to  $\pm 30\%$

### 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	$\pm(2.0\% \text{rdg}+60\text{V})$	$\pm 10\text{ms}$	78 $\mu\text{s}$ – 2.5ms (SLOW)
100 ÷ 1000				
-6000 ÷ -100	15	$\pm(10\% \text{rdg}+100\text{V})$		20 $\mu\text{s}$ - 160 $\mu\text{s}$ (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	$\leq 3$	0.1	$\pm (0.5\% \text{rdg} + 0.06\% \text{FS})$	510k $\Omega$	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	$\leq 3$	0.1	$\pm (0.5\% \text{rdg} + 0.24\% \text{FS})$	510k $\Omega$	5V
50.0 ÷ 300.0			$\pm (0.5\% \text{ rdg} + 0.06\% \text{FS})$		

(\*) 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	$\leq 3$	0.1	$\pm (0.5\% \text{ rdg} + 0.06\% \text{FS})$	510k $\Omega$	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	$\pm(1.0\%rdg+0.4\%FS)$	10ms	$\pm 10ms$

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	$\pm (0.2\% rdg + 1dgt)$

**Voltage and current harmonics**

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

(\*) 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	$\pm (1.0\%rdg + 6dgt)$	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	$\pm (1.0\%rgd + 6dgt)$	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**