

## 1. GENERAL DESCRIPTION

Thanks to a new design, advanced technology and graphical user interface, the **PQA924 Class S** power analyzer has dramatically reduced the complexity of power quality analysis and effectively improved troubleshooting situations.

The **PQA924** is designed to perform power quality studies with automated measurements, a touch screen user interface and configuration, high accuracy specifications and a simplified reporting platform.

The **PQA924** is designed to perform power quality measurements according to **IEC/EN61000-4-30** guideline, offering advanced auto-configuration functions and intuitive software for analyzing results and generating reports. The **PQA924** also offers high accuracy (**Class S**) which is commonly used in advanced power quality investigations.

The **PQA924** can record **up to 3180 channels** and voltage-current events simultaneously:

- **Up to 386** channels Max, Min, Average between network parameters (130 categories: frequency, voltages, currents, powers, etc.)
- **Up to 2225** harmonic data (63rd order voltages, harmonic currents, amplitudes and phases, 63rd order harmonic powers, amplitude, THD%, k-factors)
- **Up to 536** inter-harmonic data (63rd inter-harmonic groups for voltages and currents, THI%)
- **Up to 24** channels on energy data (active and reactive energies)
- **Up to 6 channels** on flicker data (Pst, Plt voltages)
- Voltage anomalies events such as dips, swells and interruptions with 10ms (50Hz) resolution
- Fast transient voltage events with 1μs resolution
- Inrush currents



## 2. TECHNICAL SPECIFICATIONS

Accuracy calculated as  $\pm[\text{reading} + \text{value}]$  at 23°C  $\pm 5^\circ\text{C}$ , <70%RH and not declared for values outside the indicated measuring ranges

### AC TRMS Voltage (L-L / L-N) – Class S (IEC/EN61000-4-30)

Range [V]	U <sub>din</sub> [V]	Resolution [V]	Accuracy (V<20%U <sub>din</sub> )	Accuracy Class S (20% ÷ 120% U <sub>din</sub> )
0.00 ÷ 999.99	100 ÷ 690	0.01	$\pm(1.0\%rdg+10dgt)$	$\pm(0.5\%U_{dinMIN})$

U<sub>din</sub> = nominal system voltage; Max crest factor: 1.5

The instrument can be connected to external CTs with a transformation ratio included in the range: 1 ÷ 9999

### Frequency - Class S (IEC/EN61000-4-30)

Range [Hz]	Resolution [Hz]	Accuracy
42.50 ÷ 57.50	0.01	$\pm 0.05\text{Hz}$
51.00 ÷ 69.00		

Signal frequency detected between inputs L1-N o L1-L2

### Voltage anomalies – (L-L / L-N) – Class S (IEC/EN61000-4-30)

Range [V]	Voltage Resolution [V]	Anomalies Resolution	Durat. Anom. Resolution	Voltage Accuracy	Time Accuracy
1.00 ÷ 999.99	0.01	½ cycle	1 cycle	$\pm(1.0\%U_{dinMIN})$	$\pm 2$ cycles

U<sub>din</sub> = nominal system voltage; Anomaly hysteresis: 2%; Frequency range: 42.5Hz ÷ 69.0Hz; U<sub>din</sub> voltage frequency: 100 ÷ 690V ; Limit threshold:  $\pm 1\% \pm 30\%$  ; Voltage crest factor: 1.41

### Fast transients – (L-PE - Single/Threephase systems) – Class S (IEC/EN61000-4-30)

Range [V]	Voltage resolution [V]	Time resolution [s]	Accuracy
-8000 ÷ 8000	10	1μ	$\pm 3\%FS$

Max number of recordable events: 2000; Frequency range: 42.5Hz ÷ 69.0Hz; Minimum thres.: 200V/μs ; Set threshold: 50V ÷ 8kV

### Flicker (Single/Threephase systems) – Class S (IEC/EN61000-4-30)

Parameter	Range	Resolution	Accuracy
Pst	0.400 ÷ 4.000	0.001	10%
Plt			

### AC TRMS Current (Standard Transducer clamp STD) Class S (IEC/EN61000-4-30)

Range [mV]	Resolution [mV]	Accuracy
1.0 ÷ 99.9	0.1	$\pm(2.0\%rdg+0.5mV)$
100 ÷ 999.9		$\pm(2.0\%rdg)$ Class S

Signal values <1mV are zeroed; Frequency range: 42.5Hz ÷ 69.0Hz; Crest factor:  $\leq 3$

### AC TRMS Current (FLEX Transducer – FS=300A) Class S (IEC/EN61000-4-30)

Range [mV]	Resolution [μV]	Accuracy
0.085 ÷ 2.55	8.5	$\pm(2.0\%rdg+42.5\mu V)$
2.55 ÷ 25.5		$\pm(2.0\%rdg)$ Class S

Signal values <85μV are zeroed; Frequency range: 42.5Hz ÷ 69.0Hz; Crest factor:  $\leq 3$

### AC TRMS Current (FLEX Transducer – FS=3000A) Class S (IEC/EN61000-4-30)

Range [mV]	Resolution [μV]	Accuracy
0.85 ÷ 25.5	85	$\pm(2.0\%rdg+425\mu V)$
25.5 ÷ 255		$\pm(2.0\%rdg)$ Class S

Signal values <850μV are zeroed; Frequency range: 42.5Hz ÷ 69.0Hz; Crest factor:  $\leq 3$

### AC TRMS Current (FLEX Transducer – FS=6000A) Class S (IEC/EN61000-4-30)

Range (mV)	Resolution (μV)	Accuracy
1.7 ÷ 51.0	170	$\pm(2.0\%rdg+850\mu V)$
51.0 ÷ 510		$\pm(2.0\%rdg)$ Class S

Signal values <1.7mV are zeroed; Frequency range: 42.5Hz ÷ 69.0Hz; Crest factor:  $\leq 3$



### AC TRMS Current (FLEX Transducer – FS=10000A) Class S (IEC/EN61000-4-30)

Range [mV]	Resolution [ $\mu$ V]	Accuracy
1.7 ÷ 85.0	283	$\pm(2.0\%rdg+1400\mu V)$
85.0 ÷ 850		$\pm(2.0\%rdg)$

Signal values <1.7mV are zeroed; Frequency range: 42.5Hz + 69.0Hz; Crest factor:  $\leq 1.8$

### Inrush current - (Standard Transducer clamp STD)

Range [mV]	Voltage Resolution [mV]	Time Resolution	Voltage Accuracy	Time Accuracy
1.0 ÷ 999.9	0.1	$\frac{1}{2}$ cycle	$\pm(2\%rdg + 0.5mV)$	$\pm \frac{1}{2}$ cycle

Signal values <1mV are zeroed; Frequency range: 42.5Hz + 69.0Hz; Crest factor:  $\leq 3$

### Inrush current - (FLEX Transducer – FS=300A)

Range [mV]	Voltage Resolution [ $\mu$ V]	Time Resolution	Voltage Accuracy	Time Accuracy
0.085 ÷ 25.5	8.5	$\frac{1}{2}$ cycle	$\pm(2\%rdg + 42.5\mu V)$	$\frac{1}{2}$ cycle

Signal values <85 $\mu$ V are zeroed; Frequency range: 42.5Hz + 69.0Hz; Crest factor:  $\leq 3$

### Inrush current - (FLEX Transducer – FS=3000A)

Range [mV]	Voltage Resolution [ $\mu$ V]	Time Resolution	Voltage Accuracy	Time Accuracy
0.85 ÷ 255	85	$\frac{1}{2}$ cycle	$\pm(2\%rdg + 425\mu V)$	$\frac{1}{2}$ cycle

Signal values <850 $\mu$ V are zeroed; Frequency range: 42.5Hz + 69.0Hz; Crest factor:  $\leq 3$

### Inrush current - (FLEX Transducer – FS=6000A)

Range [mV]	Voltage Resolution [ $\mu$ V]	Time Resolution	Voltage Accuracy	Time Accuracy
1.7 ÷ 510	170	$\frac{1}{2}$ cycle	$\pm(2\%rdg + 425\mu V)$	$\frac{1}{2}$ cycle

Signal values <1.7mV are zeroed; Frequency range: 42.5Hz + 69.0Hz; Crest factor:  $\leq 3$

### Inrush current - (FLEX Transducer – FS=10000A)

Range (mV)	Voltage Resolution [ $\mu$ V]	Time Resolution	Voltage Accuracy	Time Accuracy
1.7 ÷ 850	283	$\frac{1}{2}$ cycle	$\pm(2\%rdg + 710\mu V)$	$\frac{1}{2}$ cycle

Signal values <1.7mV are zeroed; Frequency range: 42.5Hz + 69.0Hz; Crest factor:  $\leq 1.8$

### Amplitude Voltage Harmonics / Interharmonics - Class S (IEC/EN61000-4-30)

Order	Condition	U <sub>din</sub> [V]	Resolution [V]	Accuracy
DC ÷ 63°	U <sub>h</sub> $\geq$ 3%U <sub>din</sub>	100 ÷ 690	0.01	$\pm 10\%rdg$
	U <sub>h</sub> < 3%U <sub>din</sub>			$\pm 0.30\%U_{din}$

U<sub>din</sub> = nominal system voltage, Frequency fundamental range: 42.5Hz + 69.0Hz

### Phase Voltage Harmonics - Class S (IEC/EN61000-4-30)

Order	Condition	U <sub>din</sub> [V]	Resolution [°]	Accuracy
DC ÷ 63°	U <sub>h</sub> $\geq$ 3%U <sub>din</sub>	100 ÷ 690	0.01	$\pm 10\%rdg$
	U <sub>h</sub> < 3%U <sub>din</sub>			$\pm 0.30\%U_{din}$

U<sub>din</sub> = nominal system voltage, Frequency fundamental range: 42.5Hz + 69.0Hz

### Amplitude Current Harmonics / Interharmonics - Class S (IEC/EN61000-4-30)

Order	Condition	Resolution [A]	Accuracy
DC ÷ 63°	I <sub>h</sub> $\geq$ 10%FS	0.1	$\pm 10\%rdg$
	I <sub>h</sub> < 10%FS		$\pm 0.30\%FS$

FS = Full scale transducer clamp; Frequency fundamental range: 42.5Hz + 69.0Hz



### Phase Current Harmonics - Class S (IEC/EN61000-4-30)

Order	Condition	Resolution [°]	Accuracy
DC ÷ 63°	Ih ≥ 10%FS	0.01	±(order h x 1°)
	Ih <10%FS		±(2 x order h x 1°)

FS = Full scale transducer clamp; Frequency fundamental range: 42.5Hz ÷ 69.0Hz

### Power Harmonics - Class S (IEC/EN61000-4-30)

Voltage condition	Current condition	Udin [V]	Resolution [W]	Accuracy
Uh ≥ 3%Udin	Ih ≥ 10%FS	100 ÷ 690	0.1	±(20%rdg+10dgt)
	Ih <10%FS			±(0.30%FS+10%rdg+10 dgt)
Uh <3%Udin	Ih ≥ 10%FS			±(0.30%Udin+10%rdg+10 dgt)
	Ih <10%FS			±(0.30%Udin+0.30%FS+10 dgt)

FS = Full scale transducer clamp ; Udin = nominal system voltage, Frequency fundamental range: 42.5Hz ÷ 69.0Hz

### Active/Apparent Power/Energy (V: [80%..120%Udin], I:FS[1..3000A], cosφ = 1) – STD Clamp

Current Range [mV]	Range [W], [Wh], [VA]	Resolution [W] [Wh], [VA]	Accuracy
10 ÷ 50	0.000 x FS ÷ 9.999 x FS 10.00 x FS ÷ 99.99 x FS 100.0 x FS ÷ 999.9 x FS	0.001 x FS 0.01 x FS 0.1 x FS	±(2.0%rdg)
50 ÷ 1000	1.000k x FS ÷ 9.999k x FS 10.00k x FS ÷ 99.99k x FS 100.0k x FS ÷ 999.9k x FS 1000k x FS ÷ 9999k x FS	0.001k x FS 0.01k x FS 0.1k x FS 1k x FS	±(1.5%rdg)

FS = Full scale clamp; Fundamental frequency: 42.5 ÷ 69Hz, Sinusoidal voltages and currents

### Active/Apparent Power/Energy (V: [80%..120%Udin], I:FS=300A, cosφ = 1) – FLEX Clamp

Current Range [mV]	Range [W], [Wh], [VA]	Resolution [W] [Wh], [VA]	Accuracy
0.255 ÷ 1.275	0.0 ÷ 999.5 1.000k ÷ 9.999k	0.5 0.005k	±(2.0%rdg)
1.275 ÷ 25.5	10.00k ÷ 99.99k 100.0k ÷ 999.9k 1000k ÷ 9999k	0.05k 0.5k 5k	±(1.5%rdg)

Fundamental frequency: 42.5 ÷ 69Hz, Sinusoidal voltages and currents

### Active/Apparent Power/Energy (V: [80%..120%Udin], I:FS=3000A, cosφ = 1) – FLEX Clamp

Current Range [mV]	Range [W], [Wh], [VA]	Resolution [W] [Wh], [VA]	Accuracy
2.55 ÷ 12.75	0 ÷ 9999 10.00k ÷ 99.99k	5 0.05k	±(2.0%rdg)
12.75 ÷ 255	100.0k ÷ 999.9k 1000k ÷ 9999k 1.000M ÷ 9.999M	0.5k 5k 0.005M	±(1.5%rdg)

Fundamental frequency: 42.5 ÷ 69Hz, Sinusoidal voltages and currents

### Active/Apparent Power/Energy (V: [80%..120%Udin], I:FS=6000A, cosφ = 1) – FLEX Clamp

Current Range [mV]	Range [W], [Wh], [VA]	Resolution [W] [Wh], [VA]	Accuracy
5.1 ÷ 25.5	0 .. 9999 10.00k .. 99.99k	5 0.05k	±(2.0%rdg)
25.5 ÷ 510	100.0k .. 999.9k 1000k .. 9999k 1.000M .. 9.999M	0.5k 5k 0.005M	±(1.5%rdg)

Fundamental frequency: 42.5 ÷ 69Hz, Sinusoidal voltages and currents



### Active/Apparent Power/Energy (V: [80%..120%U<sub>din</sub>], I: FS=10000A, cosφ = 1) – FLEX Clamp

Current Range [mV]	Range [W], [Wh], [VA]	Resolution [W] [Wh], [VA]	Accuracy
5.1 ÷ 25.5	0 .. 9999	5	±(2.0%rdg)
25.5 ÷ 850	10.00k .. 99.99k	0.05k	±(1.5%rdg)
	100.0k .. 999.9k	0.5k	
	1000k .. 9999k	5k	
	1.000M .. 9.999M	0.005M	

Fundamental frequency: 42.5 ÷ 69Hz, Sinusoidal voltages and currents

### Reactive Power/Energy AC – (V:[80%..120%U<sub>din</sub>], I: FS [1..3000A], cosφ=0.5) – STD Clamp

Current Range [mV]	Range [VAr] [Varh]	Resolution [VAr] [Varh]	Accuracy
20 ÷ 100	0.000 x FS ÷ 9.999 x FS	0.001 x FS	±(2.0%rdg)
100 ÷ 1000	10.00 x FS ÷ 99.99 x FS	0.01 x FS	±(1.5%rdg)
	100.0 x FS ÷ 999.9 x FS	0.1 x FS	
	1.000k x FS ÷ 9.999k x FS	0.001k x FS	
	10.00k x FS ÷ 99.99k x FS	0.01k x FS	
	100.0k x FS ÷ 999.9k x FS	0.1k x FS	
	1000k x FS ÷ 9999k x FS	1k x FS	

FS = Full scale clamp; Fundamental frequency: 42.5 ÷ 69Hz, Sinusoidal voltages and currents

### Reactive Power/Energy AC – (V:[80%..120%U<sub>din</sub>], I: FS = 300A, cosφ=0.5) – FLEX Clamp

Current Range [mV]	Range [VAr] [Varh]	Resolution [VAr] [Varh]	Accuracy
0.510 ÷ 2.55	0.0 ÷ 999.5	0.5	±(2.0%rdg)
2.55 ÷ 25.5	1.000k ÷ 9.999k	0.005k	±(1.5%rdg)
	10.00k ÷ 99.99k	0.05k	
	100.0k ÷ 999.9k	0.5k	
	1000k ÷ 9999k	5k	

Fundamental frequency: 42.5 ÷ 69Hz, Sinusoidal voltages and currents

### Reactive Power/Energy AC – (V:[80%..120%U<sub>din</sub>], I: FS = 3000A, cosφ=0.5) – FLEX Clamp

Current Range [mV]	Range [VAr] [Varh]	Resolution [VAr] [Varh]	Accuracy
5.10 ÷ 25.5	0 ÷ 9999	5	±(2.0%rdg)
25.5 ÷ 255	10.00k ÷ 99.99k	0.05k	±(1.5%rdg)
	100.0k ÷ 999.9k	0.5k	
	1000k ÷ 9999k	5k	
	1.000M ÷ 9.999M	0.005M	

Fundamental frequency: 42.5 ÷ 69Hz, Sinusoidal voltages and currents

### Reactive Power/Energy AC – (V:[80%..120%U<sub>din</sub>], I: FS = 6000A, cosφ=0.5) – FLEX Clamp

Current Range [mV]	Range [VAr] [Varh]	Resolution [VAr] [Varh]	Accuracy
10.2 ÷ 51.0	0 .. 9999	5	±(2.0%rdg)
51.0 ÷ 510	10.00k .. 99.99k	0.05k	±(1.5%rdg)
	100.0k .. 999.9k	0.5k	
	1000k .. 9999k	5k	
	1.000M .. 9.999M	0.005M	

Fundamental frequency: 42.5 ÷ 69Hz, Sinusoidal voltages and currents





# PQA924

Rel 2.02 – 18/03/25

## Professional Class S Network Quality Analyzer

Pag 6 of 8

### Reactive Power/Energy AC – (V:[80%..120%U<sub>din</sub>], I: FS = 10000A], cosφ=0.5) – FLEX Clamp

Current Range [mV]	Range [VAr] [Varh]	Resolution [VAr] [Varh]	Accuracy
10.2 ÷ 51.0	0 .. 9999	5	±(2.0%rdg)
51.0 ÷ 850	10.00k .. 99.99k	0.05k	±(1.5%rdg)
	100.0k .. 999.9k	0.5k	
	1000k .. 9999k	5k	
	1.000M .. 9.999M	0.005M	

Fundamental frequency: 42.5 ÷ 69Hz, Sinusoidal voltages and currents

### Power Factor and cosφ – (V: [80%..120%U<sub>din</sub>], I: >10% FS clamp

Range	Resolution	Accuracy
0.20 ÷ 1.00	0.01	±0.04

Fundamental frequency: 42.5 ÷ 69Hz, Sinusoidal voltages and currents



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WHERE  
WE ARE



### 3. GENERAL SPECIFICATIONS

#### FINSTRUMENT FUNCTIONS

Periodic analysis (TRMs values):	Voltages (5 channels), Currents (4 channels), Active, Reactive, Apparent Powers, Power factors and $\cos\phi$ (4 quadrants), Active and Reactive Energies (4 quadrants), Voltage dissymmetry, Flicker, Peak values
Harmonic analysis:	Voltage Histograms, Currents (amplitude/phase), Powers (amplitude), Inter-harmonics, K Factor up to the 63rd order, THD%, THI%, Incoming and outgoing harmonics
Signal waveforms:	Voltages, Currents
Vectorial diagrams:	Voltages, Currents
Voltage anomalies:	Dips, peaks, interruptions (max 2000 events)
Fast voltage transients:	up to 8kV (max 2000 events)
Inrush currents: max	2000 events

#### RECORDINGS

Number of measurable parameters:	3180 + voltage/current events
Integration Period (IP):	0.2s, 3s, 10s, 15s, 18s, 30s, 1min, 5min, 10min, 15min, 30min, 60min, 120m
Frequency integration period:	1s ÷ 30s
Harmonic integration period:	0.2s, 3s, 6s, 10s, 12s, 15s, 18s, 30s, 1min, 5min, 10min, 15min, 30min, 60min, 120min
Maximum recording size:	512MB (all parameters)
Measuring autonomy:	approx. 408 days (IP= 10min), approx. 3 hours (IP= 0.2s)

#### DISPLAY

Characteristics:	3.5" (320x240pxl) graphic display, TFT, colors, backlit resistive touch screen
Brightness adjustment:	programmable

#### POWER SUPPLY

Internal power supply:	6x 1.5V alkaline batteries - type AA LR06 or 6x1.2V rechargeable NiMH batteries - type AA LR06
Charging time:	approx. 6 hours
Charger power pack:	100-415VAC/15VDC, 8W, 50/60Hz
Auto Power Off:	after 5 minutes of non-use (without power pack)

#### MEMORY AND PC INTERFACES

Memory for data storage:	External memory card ( <b>minimum writing speed 10MB/s</b> )
Interface with PC:	USB-C, WiFi, Ethernet (RJ45 input)

#### MECHANICAL CHARACTERISTICS

Dimensions (L x P x H):	235 x 165 x 75mm ; (9 x 6 x 3in)
Weight (battery included):	1.2 kg ; (2.5lv)
Mechanical protection:	IP40

#### ENVIRONMENTAL CONDITIONS FOR USE

Reference temperature:	23°C ± 5°C ; (73°F ± 41°F)
Working temperature:	-10°C ÷ 50°C ; (14°F ÷ 122°F)
Relative humidity:	10°C ÷ 30°C → <95%RH (non-condensing) 30°C ÷ 40°C → <75%RH (non-condensing) 40°C ÷ 50°C → <45%RH (non-condensing)
Storage temperature:	-20°C ÷ 60°C ; (-4°F ÷ 140°F)
Storage humidity:	<80%RH
Max. altitude of use:	2000m ; (6562ft)



### REFERENCE GUIDELINES

Instrument safety:	IEC/EN61010-1, IEC/EN61010-2-030, IEC/EN61010-2-033
EMC:	IEC/EN61326-1
Technical literature:	IEC/EN61187
Safety of measuring accessories:	IEC/EN61010-031, IEC/EN61010-2-032
Insulation:	double insulation
Pollution grade:	2
Measurement category:	CAT IV 600V, CAT III 1000V to Earth max 1000V between inputs
Network quality	IEC/EN61000-4-30 – Class S
Network voltage quality:	EN50160
Flicker:	IEC/EN61000-4-15
Harmonics, Inter-harmonics, Unbalance:	IEC/EN61000-4-7

**This instrument complies with the requirements of the Low Voltage Directive 2014/35/EU (LVD) and the EMC Directive 2014/30/EU and RED Directive 2014/53/EU**

**This instrument complies with the requirements of European Directive 2011/65/EU (RoHS) and European Directive 2012/19/EU (WEEE)**

