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 ±[reading + value] at 23°C ±5°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]	Udin [V]	Resolution [V]	Accuracy (V<20%Udin)	Accuracy Class S (20% ÷ 120% Udin)
0.00 ÷ 999.99	100 ÷ 690	0.01	±(1.0%rdg+10dgt)	± (0.5%UdinMIN)

Udin = 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	±0.05Hz
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	±(1.0%UdinMIN)	±2 cycles

Udin = nominal system voltage; Anomaly hysteresis: 2%; Frequency range: 42.5Hz ÷ 69.0Hz; Udin voltage frequency: 100 ÷ 690V ;
Limit threshold: ±1% ÷ ±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	±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	±(2.0%rdg+0.5mV)
100 ÷ 999.9		±(2.0%rdg) Class S

Signal values <1mV are zeroed; Frequency range: 42.5Hz ÷ 69.0Hz; Crest factor: ≤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	±(2.0%rdg+42.5µV)
2.55 ÷ 25.5		±(2.0%rdg) Class S

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

AC TRMS Current (FLEX Transducer – FS=3000A) Class S (IEC/EN61000-4-30)		
Range [mV]	Resolution [µV]	Accuracy
0.85 ÷ 25.5	85	±(2.0%rdg+425µV)
25.5 ÷ 255		±(2.0%rdg) Class S

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

AC TRMS Current (FLEX Transducer – FS=6000A) Class S (IEC/EN61000-4-30)		
Range (mV)	Resolution (µV)	Accuracy
1.7 ÷ 51.0	170	±(2.0%rdg+850µV)
51.0 ÷ 510		±(2.0%rdg) Class S

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

AC TRMS Current (FLEX Transducer – FS=10000A) Class S (IEC/EN61000-4-30)		
Range [mV]	**Resolution [µV]**	**Accuracy**
1.7 ÷ 85.0	283	±(2.0%rdg+1400µV)
85.0 ÷ 850		±(2.0%rdg)

Signal values <1.7mV are zeroed; Frequency range: 42.5Hz ÷ 69.0Hz; Crest factor: ≤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	½ cycle	±(2%rdg +0.5mV)	± ½ cycle

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

Inrush current - (FLEX Transducer – FS=300A)				
Range [mV]	**Voltage Resolution [µV]**	**Time Resolution**	**Voltage Accuracy**	**Time Accuracy**
0.085 ÷ 25.5	8.5	½ cycle	±(2%rdg +42.5µV)	½ cycle

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

Inrush current - (FLEX Transducer – FS=3000A)				
Range [mV]	**Voltage Resolution [µV]**	**Time Resolution**	**Voltage Accuracy**	**Time Accuracy**
0.85 ÷ 255	85	½ cycle	±(2%rdg +425µV)	½ cycle

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

Inrush current - (FLEX Transducer – FS=6000A)				
Range [mV]	**Voltage Resolution [µV]**	**Time Resolution**	**Voltage Accuracy**	**Time Accuracy**
1.7 ÷ 510	170	½ cycle	±(2%rdg +425µV)	½ cycle

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

Inrush current - (FLEX Transducer – FS=10000A)				
Range (mV)	**Voltage Resolution [µV]**	**Time Resolution**	**Voltage Accuracy**	**Time Accuracy**
1.7 ÷ 850	283	½ cycle	±(2%rdg +710µV)	½ cycle

Signal values <1.7mV are zeroed; Frequency range: 42.5Hz ÷ 69.0Hz; Crest factor: ≤1.8

Voltage Harmonics / Inter-Harmonics - Class S (IEC/EN61000-4-30)				
Order	**Condition**	**Udin [V]**	**Resolution [V]**	**Accuracy**
DC ÷ 63°	Uh ≥ 3%Udin	100 ÷ 690	0.01	±10%rdg
	Uh <3%Udin			±0.30%Udin

Udin = nominal system voltage
Max accuracy of 2 times level specified in IEC/EN61000-4-7 Class II ; Frequency range: 42.5Hz ÷ 69.0Hz
Measurement range from 10% to 100% of the Class 3 electromagnetic environment described in IEC/EN61000-2-4

Current Harmonics / Inter-Harmonics - Class S (IEC/EN61000-4-30)			
Order	**Condition**	**Resolution (A)**	**Accuracy**
DC ÷ 63°	Ih ≥ 10%FS	0.1	±10%rdg
	Ih <10%FS		±0.30%FS

FS = Full scale transducer clamp; Frequency 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 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	0.001 x FS 0.01 x FS 0.1 x FS 0.001k x FS 0.01k x FS 0.1k x FS 1k x FS	±(2.0%rdg)
50 ÷ 1000			±(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%Udin], 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 10.00k .. 99.99k	5 0.05k	±(2.0%rdg)
25.5 ÷ 850	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

Reactive Power/Energy AC – (V:[80%..120%Udin], 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 10.00 x FS ÷ 99.99 x FS 100.0 x FS ÷ 999.9 x FS 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	0.001 x FS 0.01 x FS 0.1 x FS 0.001k x FS 0.01k x FS 0.1k x FS 1k x FS	±(2.0%rdg)
100 ÷ 1000			±(1.5%rdg)

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

Reactive Power/Energy AC – (V:[80%..120%Udin], 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 1.000k ÷ 9.999k 10.00k ÷ 99.99k 100.0k ÷ 999.9k 1000k ÷ 9999k	0.5 0.005k 0.05k 0.5k 5k	±(2.0%rdg)
2.55 ÷ 25.5			±(1.5%rdg)

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

Reactive Power/Energy AC – (V:[80%..120%Udin], I: FS = 3000A], cosφ=0.5) – FLEX Clamp			
Current Range [mV]	**Range [VAr] [Varh]**	**Resolution [VAr] [Varh]**	**Accuracy**
5.10 ÷ 25.5	0 ÷ 9999 10.00k ÷ 99.99k 100.0k ÷ 999.9k 1000k ÷ 9999k 1.000M ÷ 9.999M	5 0.05k 0.5k 5k 0.005M	±(2.0%rdg)
25.5 ÷ 255			±(1.5%rdg)

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

Reactive Power/Energy AC – (V:[80%..120%Udin], I: FS = 6000A], cosφ=0.5) – FLEX Clamp			
Current Range [mV]	**Range [VAr] [Varh]**	**Resolution [VAr] [Varh]**	**Accuracy**
10.2 ÷ 51.0	0 .. 9999 10.00k .. 99.99k 100.0k .. 999.9k 1000k .. 9999k 1.000M .. 9.999M	5 0.05k 0.5k 5k 0.005M	±(2.0%rdg)
51.0 ÷ 510			±(1.5%rdg)

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

Reactive Power/Energy AC – (V:[80%..120%Udin], I: FS = 10000A], cosφ=0.5) – FLEX Clamp			
Current Range [mV]	**Range [VAr] [Varh]**	**Resolution [VAr] [Varh]**	**Accuracy**
10.2 ÷ 51.0	0 .. 9999 10.00k .. 99.99k 100.0k .. 999.9k 1000k .. 9999k 1.000M .. 9.999M	5 0.05k 0.5k 5k 0.005M	±(2.0%rdg)
51.0 ÷ 850			±(1.5%rdg)

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

Power Factor and cosφ – (V: [80%..120%Udin], I: >10% FS clamp		
Range	**Resolution**	**Accuracy**
0.20 ÷ 1.00	0.01	±0.04

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

3. GENERAL SPECIFICATIONS

FINSTRUMENT FUNCTIONS	
Periodic analysis (TRMs values):	Voltages (5 channels), Currents (4 channels), Active, Reactive, Apparent Powers, Power factors and cosφ (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, 15 min, 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 max 32GB (HC Class U1)
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
E NVIRONMENTAL 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)