1. GENERAL DESCRIPTION (*)

With a new design, advanced technology, and graphical user interface, the **PQA924 Class S** network analyzer dramatically reduced the complexity of power quality analysis and improved troubleshooting.

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

PQA924, due to its high accuracy, can be used either in statistical energy quality surveys or in applications required for contractual compliance measurements without dispute with utilities. Every critical event related to energy quality is considered by the instrument: with fast transients **up to 8kV**, with harmonic analysis up to to 63rd order, with voltage sags and swells and flicker in order to characterize at 100% the power supply system.

The **PQA924** can record **up to 3177 channels** and voltage/currents events simultaneously:

➢ Up to 386 channels Max, Min, Average between network parameters (130 categories: frequency, voltages, currents, powers, etc.)
➢ Up to 2225 harmonic data (63° order voltage, harmonic currents, amplitudes, and phases, 63° order harmonic powers, amplitudes, THD%, k factors
➢ Up to 536 inter-harmonic data (63° inter-harmonic groups for voltages and currents, THD%)
➢ Up to 24 channels on energy data (active and reactive energies)
➢ Up to 6 channels on flicker data (Pst, Plt voltages)
➢ Events such as power sags, spikes and interruptions
➢ Fast transient voltage events
➢ Inrush currents

(*) The technical specifications are subject to change without notice

2. GENERAL CHARACTERISTICS

FUNCTIONS	NOTE
Measurement category	CAT IV 600V~, CAT III 1000V~ max 1000V between inputs
Accuracy: Class S (voltage and current)	✔
Managements different types of transducers on Phase and Neutral	✔
Automatic input setting Horrent voltage/C	✔
Auto recognition clamp types (Standard / Flexible) and measurement ranges	✔
Rated reference voltage (Udin):	100 ÷ 690V
Selectable electrical systems	• Single phase 2-wire+PE • Single-phase 3-wire (two-phase) • Three-phase, 3-wire ARON connection • Three-phase 4-wire • Two-phase 3-wire 2 1/2 elements (US systems) • Two-phase 3-wire Open Delta (USA systems) • Split-phase 3-fili Open WYE (USA systems) • Three-phase 4-wire Open WYE (USA systems) • Three Phase 4-Wire High Leg (USA systems)
Main electrical parameters considered:	• Voltages L-N, L-L, L-PE (TRMS) • Phase and Neutral Currents (TRMS) • Active, Reactive, Apparent power (4 quadrants) • Cosphi and Power Factor (4 quadrants) • Active, Reactive, Apparent Energies (4 quadrants)
Crest factor, THD%, K-factor	✔
Harmonics (up to 63rd order):	• Amplitude • Phase • Incoming / Outgoing
Power harmonic measurement (up to 63rd order)	• Amlitude • Incoming / Outgoing
Interharmonic Measurement (up to 63rd order):	✔
Voltage dissymmetry and unbalance current	✔
Voltage anomalies: sags, swells, interruptions with waveform graphs	✔ (max 2000 events)
Fast voltage transients up to 8kV with waveform graphs	✔ (max 2000 events)
Flicker	✔
Inrush currents with waveform graphs	✔ (max 2000 events)
EN5016 Analysis	✔
Integration period (IP):	0.2,3,10,15,18,30s, 1,5,10,15, 30, 60,120min
Max number of parameters that can be registered:	3177
32GB SD-Card for data storage. Maximum data size per recording 2GB, Duration (example): 2weeks, 450 parameters selected, PI =1sec	✔
PC connection	USB-C, WiFi, Rete Ethernet
Color display graphic touch screen 320 x 240pxl	✔
Sound keys	✔

Power supply:	• External power supply A0080
	(CAT IV 300, CAT III 600V, 100..415V/15VDC, 50/60Hz)
	• Internal: (recording time > 6hhours)
	  o 6 x1.5V AA type alkaline batteries
	  o 6 x1.2V rechargeable batteries NiMH type AA

Mechanical protection:	IP40

Environmental conditions:	• Working temperature: -10°C ÷ 50°C
	• Humidity:10°C ÷ 30°C: 95% RH (nor condensation)
	  30°C ÷ 40°C: 75% RH (nor condensation)
	  40°C ÷ 50°C: 45% RH (nor condensation)

3. TECHNICAL SPECIFICATIONS (*)

Accuracy denoted as ±[%reading + value] at 23°C, <70RH ; *Clamp transducer accuracies not included*

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

Range (V)	Udin (V)	Resolution (V)	Accuracy
0.00 ÷ 999.99	100 ÷ 690	0.01	± (0.5%UdinMIN=0.5V)

Udin = system rated voltage: 100,105,110,115,120,125,127,150,190,200,208,216,220,230,240,250,277,346,380,400,415, 433, 440, 480, 575, 690V ; Max crest factor: 1.5 ; Frequency range: 42.5Hz ÷ 69.0Hz

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

Range (V)	Udin (V)	Resolution Voltage (V)	Resolution Tempo (ms)	Accuracy Voltage	Accuracy Time
1.00 ÷ 999.99	100 ÷ 690	0.01	1 cycle	±(1.0%UdinMIN=1V)	±2 cycles

Udin = system rated voltage: 100, 105, 110, 115, 120, 125, 127, 150, 190, 200, 208, 216, 220, 230, 240, 250, 277, 346, 380, 400, 415, 433, 440, 480, 575, 690V ; Hysteresis: 2%; Frequency range: 42.5Hz ÷ 69.0Hz

Voltage spike – (L-PE - Mono/Three phase systems) – Class S (IEC/EN61000-4-30)

Range (V)	Accuracy	Voltage Resolution (V)	Time Resolution
-8000 ÷ 8000	±3.0%FS	10	1µs

Max number of recordable events: 2000; Frequency range: 42.5Hz ÷ 69.0Hz; Minimum threshold: 200V/µs

Flicker (Single/Three-phase Systems) – Class S (IEC/EN61000-4-30)

Parameter	Range	Resolution	Accuracy (Class A)
Pinst	0.400 ÷ 4.000	0.001	8%
Pst			10%
Plt			

AC Current TRMS (STD Standard transducer) Class S (IEC/EN61000-4-30)

Range (mV)	Resolution (mV)	Accuracy
1.0 ÷ 99.9	0.1	±(2.0%read+0.5mV)
100 ÷ 999.9		±(2.0%reading) S-Class

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%read+42.5µV)
2.55 ÷ 25.5		±(2.0%reading) S-Class

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%read+425µV)
25.5 ÷ 255		±(2.0%reading) S-Class

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%reading + 850µV)
51.0 ÷ 510		±(2.0%reading) S-Class

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%reading + 1400µV)
85.0 ÷ 850		±(2.0%reading)

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

Inrush Currents - (STD standard transducer)

Range (mV)	Resolution Voltage (mV)	Accuracy	Resolution Time	Accuracy Time
1.0 ÷ 999.9	0.1	±(2%reading +0.5mV)	1/2 cycle	± 1/2 cycle

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

Inrush - (FLEX transducer – FS=300A)

Range (mV)	Resolution Voltage (µV)	Accuracy Voltage	Resolution Time	Accuracy Time
0.085 ÷ 25.5	8.5	±(2%reading +42.5µV)	1/2 cycle	± 1/2 cycle

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

Inrush - (FLEX transducer – FS=3000A)

Range (mV)	Resolution Voltage (µV)	Accuracy Voltage	Resolution Time	Accuracy Time
0.85 ÷ 255	85	±(2%reading +425µV)	1/2 cycle	± 1/2 cycle

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

Inrush currents - (FLEX transducer – FS=6000A)

Range (mV)	Resolution Voltage (µV)	Accuracy Voltage	Resolution Time	Accuracy Time
1.7÷ 510	170	±(2%reading +425µV)	1/2 cycle	± 1/2 cycle

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

Inrush currents - (FLEX transducer – FS=10000A)

Range (mV)	Resolution Voltage (µV)	Accuracy Voltage	Resolution Time	Accuracy Time
1.7÷ 850	283	±(2%reading +710µV)	1/2 cycle	± 1/2 cycle

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

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

Range (Hz)	Resolution (Hz)	Accuracy
42.5 ÷ 57.5	0.01	±0.05Hz
51.0 ÷ 69.0		

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

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

Order	Condition	Udin (V)	Resolution (V)	Accuracy
DC ÷ 63°	Uh ≥ 3%Udin	100 ÷ 690	0.01	±10%reading
	Uh <3%Udin			±0.30Udin%

Udin = system rated voltage: 100, 105, 110, 115, 120, 125, 127, 150, 190, 200, 208, 216, 220, 230, 240, 250, 277, 346, 380, 400, 415, 433, 440, 480, 575, 690V
Maximum Accuracy equal to 2 times the level specified in IEC/EN61000-4-7 Class II ; Frequency range: 42.5Hz ÷ 69.0Hz
Measuring range from 10% to 100% of the electromagnetic environment in Class 3 described in IEC/EN61000-2-4

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

Order	Condition	Resolution (A)	Accuracy
DC ÷ 63°	Ih >=10%FS	0.1	±10%reading
	Ih <10%FS		±0.30%FS

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

AC Active Power – (V:[80%.. 120%Udin], I: FS [1..3000A], cosφ=1) – STD transducer

Current range [mV]	Range [W]	Resolution [W]	Accuracy
1 ÷10	0.000 x FS ÷ 9.999 x FS 10.00 x FS ÷ 99.99 x FS	0.001 x FS 0.01 x FS	Not available
10 ÷ 50	100.0 x FS ÷ 999.9 x FS 1.000k x FS ÷ 9.999k x FS 10.00k x FS ÷ 99.99k x FS	0.1 x FS 0.001k x FS 0.01k x FS	±(2.0%reading)
50 ÷ 1000	100.0k x FS ÷ 999.9k x FS 1000k x FS ÷ 9999k x FS	0.1k x FS 1k x FS	±(1.5%reading)

FS = full scale clamp; Fundamental frequency: 42.5Hz ÷ 69Hz, Crest factor voltage and current: 1.41

AC Active Power – (V:[80%.. 120%Udin], I: FS = 300A], cosφ=1) – FLEX transducer

Current range [mV]	Range [W]	Resolution [W]	Accuracy
0.085 ÷ 0.255	0.0 ÷ 999.5 1.000k ÷ 9.999k	0.5 0.005k	Not available
0.255 ÷ 1.275	10.00k ÷ 99.99k	0.05k	±(2.0%reading)
1.275 ÷ 25.5	100.0k ÷ 999.9k 1000k ÷ 9999k	0.5k 5k	±(1.5%reading)

Fundamental frequency: 42.5Hz ÷ 69Hz, Crest factor voltage and current:1.41

AC Active Power – (V:[80%.. 120%Udin], I: FS = 3000A], cosφ=1) – FLEX transducer

Current range [mV]	Range [W]	Resolution [W]	Accuracy
0.85 ÷ 2.55	0 ÷ 9999 10.00k ÷ 99.99k	5 0.05k	Not available
2.55 ÷ 12.75	100.0k ÷ 999.9k	0.5k	±(2.0%reading)
12.75 ÷ 255	1000k ÷ 9999k 1.000M ÷ 9.999M	5k 0.005M	±(1.5%reading)

Fundamental frequency: 42.5Hz ÷ 69Hz, Crest factor voltage and current: 1.41

AC Active Power – (V:[80%.. 120%Udin], I: FS = 6000A], cosφ=1) – FLEX transducer

Current range [mV]	Range [W]	Resolution [W]	Accuracy
1.7 ÷ 5.1	0 ÷ 9999 10.00k ÷ 99.99k	5 0.05k	Not available
5.1 ÷ 25.5	100.0k ÷ 999.9k	0.5k	±(2.0%reading)
25.5 ÷ 510	1000k ÷ 9999k 1.000M ÷ 9.999M	5k 0.005M	±(1.5%reading)

Fundamental frequency: 42.5Hz ÷ 69Hz, Crest factor voltage and current: 1.41

AC Active Power – (V:[80%.. 120%Udin], I: FS = 10000A], cosφ=1) – FLEX transducer

Current range [mV]	Range [W]	Resolution [W]	Accuracy
1.7 ÷ 5.1	0 ÷ 9999 10.00k ÷ 99.99k	5 0.05k	Not available
5.1 ÷ 25.5	100.0k ÷ 999.9k	0.5k	±(2.0%reading)
25.5 ÷ 850	1000k ÷ 9999k 1.000M ÷ 9.999M	5k 0.005M	±(1.5%reading)

Fundamental frequency: 42.5Hz ÷ 69Hz, Crest factor voltage and current: 1.41

AC Reactive Power – (V:[80%..120%Udin], I: FS [1..3000A], cosφ=0.5) – STD clamp

Current range [mV]	Range [VAr]	Resolution [VAr]	Accuracy
1 ÷10	0.000 x FS ÷ 9.999 x FS 10.00 x FS ÷ 99.99 x FS	0.001 x FS 0.01 x FS	Not available
10 ÷50	100.0 x FS ÷ 999.9 x FS 1.000k x FS ÷ 9.999k x FS 10.00k x FS ÷ 99.99k x FS	0.1 x FS 0.001k x FS 0.01k x FS	±(2.0%reading)
50 ÷ 1000	100.0k x FS ÷ 999.9k x FS 1000k x FS ÷ 9999k x FS	0.1k x FS 1k x FS	±(1.5%reading)

FS = full scale clamp; Fundamental frequency: 42.5 ÷ 69Hz, Crest factor voltage and current: =1.41

AC Reactive Power – (V:[80%.. 120%Udin], I: FS = 300A, cosφ=0.5) – FLEX clamp

Current range [mV]	Range [VAr]	Resolution [VAr]	Accuracy
0.085 ÷ 0.510	0.0 ÷ 999.5	0.5	Not available
	1.000k ÷ 9.999k	0.005k	
0.510 ÷ 2.55	10.00k ÷ 99.99k	0.05k	±(2.0%reading)
	100.0k ÷ 999.9k	0.5k	
2.55 ÷ 25.5	1000k ÷ 9999k	5k	±(1.5%reading)

Fundamental frequency: 42.5Hz ÷ 69Hz, Crest factor voltage and current: 1.41

AC Reactive Power – (V:[80%.. 120%Udin], I: FS = 3000A, cosφ=0.5) – FLEX clamp

Current range [mV]	Range [VAr]	Resolution [VAr]	Accuracy
0.85 ÷ 5.10	0 ÷ 9999	5	Not available
	10.00k ÷ 99.99k	0.05k	
5.10 ÷ 25.5	100.0k ÷ 999.9k	0.5k	±(2.0%reading)
	1000k ÷ 9999k	5k	
25.5 ÷ 255	1.000M ÷ 9.999M	0.005M	±(1.5%reading)

Fundamental frequency: 42.5Hz ÷ 69Hz, Crest factor voltage and current: 1.41

AC Reactive Power – (V:[80%.. 120%Udin], I: FS = 6000A, cosφ=0.5) – FLEX clamp

Current range [mV]	Range [VAr]	Resolution [VAr]	Accuracy
1.7 ÷ 10.2	0 ÷ 9999	5	Not available
	10.00k ÷ 99.99k	0.05k	
10.2 ÷ 51.0	100.0k ÷ 999.9k	0.5k	±(2.0%reading)
	1000k ÷ 9999k	5k	
51.0 ÷ 510	1.000M ÷ 9.999M	0.005M	±(1.5%reading)

Fundamental frequency: 42.5Hz ÷ 69Hz, Crest factor voltage and current: 1.41

AC Reactive Power – (V:[80%.. 120%Udin], I: FS = 10000A, cosφ=0.5) – FLEX clamp

Current range [mV]	Range [VAr]	Resolution [VAr]	Accuracy
1.7 ÷ 10.2	0 ÷ 9999	5	Not available
	10.00k ÷ 99.99k	0.05k	
10.2 ÷ 51.0	100.0k ÷ 999.9k	0.5k	±(2.0%reading)
	1000k ÷ 9999k	5k	
51.0 ÷ 850	1.000M ÷ 9.999M	0.005M	±(1.5%reading)

Fundamental frequency: 42.5Hz ÷ 69Hz, Crest factor voltage and current: 1.41

(*) The technical specifications are subject to change without notice

4. GENERAL SPECIFICATIONS (*)

DISPLAY:
Features:	graphic, color TFT 3.5", resistive touch screen, backlit

POWER SUPPLY:
Internal power supply:	6x1. 5V alkaline batteries type AA IEC LR6 or 6x1.2V NiMH rechargeable batteries type AA IEC LR6
Battery charging condition:	charging possible with ambient temp. between 0°C and 40°C
Battery life in charge (@ Temp = 20°C):	> 6 hours continuous recording
External power supply:	A0080 adapter (100 ÷ 415V, CAT IV300, 15V)
Auto-off:	after 5 minutes of non-use (without power supply)

MEMORY AND PC INTERFACE
Memory:	External SD card 32GB (HC Class 1)
PC interface:	USB-C, Ethernet, WiFi

MECHANICAL CHARACTERISTICS
Dimensions (W x W x H):	225 x 165 x 75mm
Weight (including battery):	1.2kg
Mechanical protection:	IP40

ENVIRONMENTAL CONDITIONS:
Reference temperature:	23°C ± 5°C
Operating temperature:	-10°C ÷ 40°C
Permissible 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
Max height of use:	2000m

REFERENCE GUIDELINES:
Safety:	IEC/EN61010-1, IEC/EN61010-2-030
EMC:	IEC/EN61326-1
Insulation:	double insulation
Pollution degree:	2
Measurement category:	CAT IV 600V, CAT III 1000V to ground max 1000V between inputs
Measurements:	IEC/EN61000-4-30 – **Class S** (Voltages and Currents)
Network Quality:	EN50160
Flicker:	IEC/EN61000-4-15
Harmonics, Inter-harmonics, Unbalanced:	IEC/EN61000-4-7

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WHERE
WE ARE