

## 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           | $\pm(1.0\%\text{rdg}+10\text{dgt})$ | $\pm(0.5\%\text{U}_{\text{dinMIN}})$            |

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                 | $\pm(1.0\%\text{U}_{\text{dinMIN}})$ | $\pm 2$ 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                 | $\pm 3\%\text{FS}$ |

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             | $\pm(2.0\%\text{rdg}+0.5\text{mV})$ |
| 100 ÷ 999.9 |                 | $\pm(2.0\%\text{rdg})$ 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 [μV]   | Resolution [μV] | Accuracy                               |
|--------------|-----------------|----------------------------------------|
| 0.085 ÷ 2.55 | 8.5             | $\pm(2.0\%\text{rdg}+42.5\mu\text{V})$ |
| 2.55 ÷ 25.5  |                 | $\pm(2.0\%\text{rdg})$ 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 [μV]  | Resolution [μV] | Accuracy                              |
|-------------|-----------------|---------------------------------------|
| 0.85 ÷ 25.5 | 85              | $\pm(2.0\%\text{rdg}+425\mu\text{V})$ |
| 25.5 ÷ 255  |                 | $\pm(2.0\%\text{rdg})$ 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             | $\pm(2.0\%\text{rdg}+850\mu\text{V})$ |
| 51.0 ÷ 510 |                 | $\pm(2.0\%\text{rdg})$ 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<br>10.00 x FS ÷ 99.99 x FS<br>100.0 x FS ÷ 999.9 x FS                                  | 0.001 x FS<br>0.01 x FS<br>0.1 x FS               | ±(2.0%rdg) |
| 50 ÷ 1000          | 1.000k x FS ÷ 9.999k x FS<br>10.00k x FS ÷ 99.99k x FS<br>100.0k x FS ÷ 999.9k x FS<br>1000k x FS ÷ 9999k x FS | 0.001k x FS<br>0.01k x FS<br>0.1k x FS<br>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<br>1.000k ÷ 9.999k                      | 0.5<br>0.005k             | ±(2.0%rdg) |
| 1.275 ÷ 25.5       | 10.00k ÷ 99.99k<br>100.0k ÷ 999.9k<br>1000k ÷ 9999k | 0.05k<br>0.5k<br>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<br>10.00k ÷ 99.99k<br>100.0k ÷ 999.9k | 5<br>0.05k<br>0.5k        | ±(2.0%rdg) |
| 12.75 ÷ 255        | 1000k ÷ 9999k<br>1.000M ÷ 9.999M               | 5k<br>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<br>10.00k .. 99.99k<br>100.0k .. 999.9k | 5<br>0.05k<br>0.5k        | ±(2.0%rdg) |
| 25.5 ÷ 510         | 1000k .. 9999k<br>1.000M .. 9.999M                | 5k<br>0.005M              | ±(1.5%rdg) |

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



| Active/Apparent Power/Energy (V: [80%..120%U <sub>in</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<br>100.0k .. 999.9k<br>1000k .. 9999k<br>1.000M .. 9.999M | 0.05k<br>0.5k<br>5k<br>0.005M | ±(1.5%rdg) |

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

| Reactive Power/Energy AC – (V:[80%..120%U <sub>in</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<br>10.00 x FS ÷ 99.99 x FS<br>100.0 x FS ÷ 999.9 x FS                                  | 0.001 x FS<br>0.01 x FS<br>0.1 x FS               | ±(2.0%rdg) |
| 100 ÷ 1000                                                                                         | 1.000k x FS ÷ 9.999k x FS<br>10.00k x FS ÷ 99.99k x FS<br>100.0k x FS ÷ 999.9k x FS<br>1000k x FS ÷ 9999k x FS | 0.001k x FS<br>0.01k x FS<br>0.1k x FS<br>1k x FS | ±(1.5%rdg) |

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

| Reactive Power/Energy AC – (V:[80%..120%U <sub>in</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<br>10.00k ÷ 99.99k<br>100.0k ÷ 999.9k<br>1000k ÷ 9999k | 0.005k<br>0.05k<br>0.5k<br>5k | ±(1.5%rdg) |

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

| Reactive Power/Energy AC – (V:[80%..120%U <sub>in</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<br>100.0k ÷ 999.9k<br>1000k ÷ 9999k<br>1.000M ÷ 9.999M | 0.05k<br>0.5k<br>5k<br>0.005M | ±(1.5%rdg) |

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

| Reactive Power/Energy AC – (V:[80%..120%U <sub>in</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<br>100.0k .. 999.9k<br>1000k .. 9999k<br>1.000M .. 9.999M | 0.05k<br>0.5k<br>5k<br>0.005M | ±(1.5%rdg) |

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



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

| Current Range [mV] | Range<br>[VAr] [Varh]                                                                   | Resolution<br>[VAr] [Varh]         | Accuracy   |
|--------------------|-----------------------------------------------------------------------------------------|------------------------------------|------------|
| 10.2 ÷ 51.0        | 0 .. 9999<br>10.00k .. 99.99k<br>100.0k .. 999.9k<br>1000k .. 9999k<br>1.000M .. 9.999M | 5<br>0.05k<br>0.5k<br>5k<br>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%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



### 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, 120min          |
| 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 ; (2.5lb)                 |
| 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)<br>30°C ÷ 40°C → <75%RH (non-condensing)<br>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,<br>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<br>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)**

