



## 1 - ELECTRICAL SPECIFICATIONS

Accuracy indicated as  $\pm$  [%rdg + (no. dgts \* resolution)] at 23 °C  $\pm$  5 °C, <75%HR

### DC Voltage

Range [V]	Resolution [V]	Accuracy
10.0 ÷ 265.0	0.1	$\pm(0.7\% \text{ rdg} + 0.4V)$

Voltage values &lt;10.0V are zeroed

### AC TRMS Voltage – Phase to Neutral

Range [V]	Frequency [Hz]	Resolution [V]	Accuracy
10.0 ÷ 265.0	42.5 ÷ 65.0	0.1	$\pm(0.5\% \text{ rdg} + 0.2V)$

Max Crest Factor =1.5, Voltage values &lt;10.0V are zeroed

### AC TRMS Voltage – Phase to Phase

Range [V]	Frequency [Hz]	Resolution [V]	Accuracy
50.0 ÷ 460	42.5 ÷ 65.0	0.1	$\pm(1.0\% \text{ rdg} + 0.2V)$

Max Crest Factor =1.5, Voltage values &lt;10.0V are zeroed

### Voltage Anomalies – Phase to Neutral

Range [V]	Resolution Voltage [V]	Resolution Time	Accuracy Voltage	Accuracy [ms]
15.0 ÷ 265.0	0.2	10ms	$\pm(1.0\% \text{ rdg} + 2\text{dgt})$	$\pm \frac{1}{2}$ cycle

### DC TRMS Current by external clamp transducer – STD clamps

Range [mV]	Resolution [mV]	Accuracy	Overload protection
5.0 ÷ 219.9	1	$\pm(0.7\% \text{ rdg} + 1\text{mV})$	10V
220.0 ÷ 999.9		$\pm 0.7\% \text{ rdg}$	

Current values correspondent to a voltage &lt; 5mV are zeroed

### AC TRMS Current by external clamp transducer – STD clamps

Range [mV]	Frequency [Hz]	Resolution [mV]	Accuracy	Overload protection
5.0 ÷ 219.9	42.5 ÷ 65.0	1	$\pm(0.5\% \text{ rdg} + 0.6\text{mV})$	10V
220.0 ÷ 999.9			$\pm 0.5\% \text{ rdg}$	

Current values correspondent to a voltage &lt; 5mV are zeroed

### AC TRMS Current by external clamp transducer – Flex (100A AC range – 85uV/A)

Range [mV]	Frequency [Hz]	Resolution	Accuracy	Overload protection
0.085 ÷ 8.50	42.5 ÷ 65.0	8.5 $\mu$ V	$\pm(0.5\% \text{ rdg} + 0.007\text{mV})$	10V

Max Crest Factor =1.5, Current values &lt;1A are zeroed

### AC TRMS Current by external clamp transducer – Flex (1000A AC range – 85uV/A)

Range [mV]	Frequency [Hz]	Resolution	Accuracy	Overload protection
0.425 ÷ 85.0	42.5 ÷ 65.0	85 $\mu$ V	$\pm(0.5\% \text{ rdg} + 0.15\text{mV})$	10V

Max Crest Factor =1.5, Current values &lt;5A are zeroed

### Frequency

Range [Hz]	Resolution [Hz]	Accuracy
42.5 ÷ 65.0	0.1	$\pm(0.2\% \text{ rdg} + 0.1\text{Hz})$

### DC Power – (Vmeas>200V)

Clamp FS [A]	Range [W] [Wh]	Resolution [W] [Wh]	Accuracy
1 < FS $\leq$ 10	0.000k ÷ 9.999k	0.001k	$\pm(1.0\% \text{ rdg} + 5W)$
	10.00k ÷ 99.99k	0.01k	$\pm(1.0\% \text{ rdg} + 50W)$
10 < FS $\leq$ 200	0.00k ÷ 99.99k	0.01k	$\pm(1.0\% \text{ rdg} + 50W)$
	100.0k ÷ 999.9k	0.1k	$\pm(1.0\% \text{ rdg} + 500W)$
200 < FS $\leq$ 1000	0.0k ÷ 999.9k	0.1k	$\pm(1.0\% \text{ rdg} + 0.5\text{kW})$
	1000k ÷ 9999k	1k	$\pm(1.0\% \text{ rdg} + 5\text{kW})$

Vmeas = Voltage in which the power is measured

**Power/Energy – (Vmeas>200V, Pf=1)**

Clamp FS [A]	Range [W] [Wh]	Resolution [W] [Wh]	Accuracy
1 < FS ≤ 10	0.000k ÷ 9.999k	0.001k	±(0.7%rdg + 3W/Wh)
	10.00k ÷ 99.99k	0.01k	±(0.7%rdg+30W/Wh)
10 < FS ≤ 200	0.00k ÷ 99.99k	0.01k	±(0.7%rdg+30W/Wh)
	100.0k ÷ 999.9k	0.1k	±(0.7%rdg+300W/Wh)
200 < FS ≤ 1000	0.0k ÷ 999.9k	0.1k	±(0.7%rdg+0.3kW/kWh)
	1000k ÷ 9999k	1k	±(0.7%rdg+3kW/kWh)

Vmeas = Voltage in which the power is measured

**Power factor (Cosφ)**

Range (cosφ)	Resolution	Accuracy (°)
0.20 ÷ 0.50	0.01	0.6
0.50 ÷ 0.80		0.7
0.80 ÷ 1.00		1.0

**Voltage/Current harmonics**

Range	Maximum resolution	Base accuracy
DC ÷ 25 <sup>th</sup>	0.3V / 0.1% FS clamp	±(5.0% rdg + 2dgt)
26 <sup>th</sup> ÷ 33 <sup>th</sup>		±(10% rdg + 2dgt)
34 <sup>th</sup> ÷ 49 <sup>th</sup>		±(15% rdg + 2dgt)

Harmonics will be zeroed:

- DC harmonics: DC value <0.5% 1st Harmonic value or if DC value < 0.5% FS clamp
- 1st Harmonic: 1st Harmonic value <0.5% FS clamp
- 2nd ÷ 49th Harmonics: 2nd ÷ 49th values <0.5% 1st Harmonic value or <0.5% FS clamp



## 2. GENERAL SPECIFICATIONS

### ELECTRICAL SYSTEMS

- Single Phase,
- 3 Phase without Neutral
- 3 Phase with Neutral

### CHANNELS RECORDED SIMULTANEOUSLY

- Phase to Neutral and Phase to Phase voltages
- Voltage anomalies (sags, swells, breaks)
- Voltage unbalance
- Phase currents, neutral current
- Voltages and currents harmonics (DC,1,2,...49)
- Phase and Total Active, Reactive, Apparent power
- Phase and Total Power factor and  $\cos\phi$
- Phase and Total Active energy (Class 2 EN61036), Reactive energy (Class 3 IEC1268)
- All channels concerning Powers, Pf,  $\cos\phi$  and Harmonics are automatically managed as generated and consumed.
- Number of recorded parameters: 383 (fixed)
- Max number of voltage anomalies: 65530
- Integration Period: 5, 10, 30s, 1, 2, 5, 10, 15, 60min.
- Recording autonomy: > 30 days with integrated period of 10 minutes
- Memory capacity: 8Mbyte

### POWER SUPPLY:

Internal power supply:	Rechargeable battery LI-ION
Battery autonomy:	> 6h (WiFi on), >15h (WiFi off)
External power supply:	By mean Red/Yellow plugs, 100V ÷ 415V, 50/60Hz 45mA@100V, 30mA@230V, 20mA@415V

### COMMUNICATION INTERFACE

PC (Windows), Tablet/Smartphone(iOS, Android): USB (PC only) / WiFi

### MECHANICAL FEATURES:

Dimensions (L x W x H):	245 x 210 x 110mm
Weight:	1.5kg

### WORKING ENVIRONMENTAL CONDITIONS:

Reference temperature:	23°C ± 5°C
Working temperature:	0°C ÷ 40°C
Allowed relative humidity:	<80%RH
Storage temperature:	-10°C ÷ 60°C
Storage humidity:	<80%RH

### POWER/ENERGY MEASUREMENTS REFERENCE GUIDELINES:

Features of voltage supplied by public utilities:	EN50160 (flicker and frequency analysis not performed)
Active energy static counters for AC current	EN61036 (Class 2)
Reactive energy static counters for AC current	IEC1268 (Class 3)

### GENERAL REFERENCE GUIDELINES:

Safety of measuring instruments:	IEC/EN61010-1
Insulation:	double insulation
Pollution degree:	2
Encapsulation:	IP65 (case board closed)
Measurement category:	CAT IV 300VAC to ground, max 460V between Inputs
Max height of use:	2000m

**This instrument complies with the prescriptions of the European directive on low voltage 2014/35/EU (LVD) and EMC directive 2014/30/EU**