1 - ELECTRICAL SPECIFICATIONS

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

DC Voltage

Range [V]	Resolution [V]	Accuracy
10.0 ÷ 265.0	0.1	±(0.7% rdg + 0.4V)

Voltage values <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	±(0.5% rdg + 0.2V)

Max Crest Factor =1.5, Voltage values <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	±(1.0%rdg + 0.2V)

Max Crest Factor =1.5, Voltage values <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	±(1.0%rdg + 2dgt)	± ½ cycle

DC TRMS Current by external clamp transducer – STD clamps

Range [mV]	Resolution [mV]	Accuracy	Overload protection
5.0 ÷ 219.9	1	±(0.7%rdg + 1mV)	10V
220.0 ÷ 999.9		±0.7% rdg	

Current values correspondent to a voltage < 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	±(0.5%rdg + 0.6mV)	10V
220.0 ÷ 999.9			±0.5% rdg	

Current values correspondent to a voltage < 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	8.5µV	±(0.5%rdg +0.007mV)	10V

Max Crest Factor =1.5, Current values <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	85µV	±(0.5%rdg + 0.15mV)	10V

Max Crest Factor =1.5, Current values <5A are zeroed

Frequency

Range [Hz]	Resolution [Hz]	Accuracy
42.5 ÷ 65.0	0.1	±(0.2% rdg + 0.1Hz)

DC Power – (Vmeas>200V)

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

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 ÷ 25th	0.3V / 0.1% FS clamp	±(5.0% rdg + 2dgt)
26th ÷ 33th		±(10% rdg + 2dgt)
34th ÷ 49th		±(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 Cosφ
- Phase and Total Active energy (Class 2 EN61036), Reactive energy (Class 3 IEC1268)
- All channels concerning Powers, Pf, cosφ 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