

## HT9022

### CLAMP-ON POWER QUALITY ANALYZER WITH BLUETOOTH CONNECTION

HT9022 is a combination of a power quality analyzer, a phase sequence/conformity detector, a clamp meter and a voltage detector in one single handy device. The advanced design of HT9022 ensures reliable and accurate measurements under a wide range of operating conditions. HT9022 is the ideal instrument for troubleshooting power quality problems, calculating power factor correctors, recording energy consumption, recording DC power, etc.

Unlike the data loggers that take snapshots of the electrical parameters in regular intervals, losing what happens between an interval and the next, HT9022 continuously records all electrical parameters as a true power quality analyzer. The internal memory enables long-term recording for further download to (and analysis at) a PC, a PDA or a smartphone. HT9022 is flexible and portable to grant the user the most reliable measurements with an easy-to-use interface.



#### FUNCTIONS

Measuring/recording of DC and AC+DC TRMS voltage
Measuring/recording of DC and AC+DC TRMS current
Phase sequence and conformity
Measuring/recording of active, reactive and apparent power, power factor in single-phase and balanced three-phase systems
Measuring/recording of active, reactive and apparent energy in single-phase and balanced three-phase systems
Measuring/recording V / I harmonics up to the 25th order and THD%
Measuring/recording of DC power
Measuring/recording of current and voltage frequency
Resistance measurement and continuity test with buzzer
Inrush current
Non-contact AC voltage detection with built-in sensor

#### GENERAL SPECIFICATIONS

Display:	Dot matrix 128x128 with backlight
Power supply:	2x1,5V batteries AAA
Battery life:	>50h
Internal memory:	2Mb
PC interface:	Bluetooth
Safety:	IEC / EN61010-1, IEC / EN61010-2 - 032
Installation category:	CAT IV 600V to the ground, max 1000V between the inputs
Insulation:	double insulation
Pollution degree:	2
Max diameter of the clamped cable:	45mm
Size (LxWxH):	252x88x44mm
Weight (included batteries):	420g

#### ACCESSORIES

Couple of test leads
Carrying bag
Batteries
ISO9000 calibration certificate
User manual



**HT9022**  
HP009022



## 1. ELECTRICAL SPECIFICATIONS

Accuracy is calculated as [% rdg + (number of dgt) x resolution]. It is referred to 23°C ± 5°C, <80%RH

### DC Voltage

Range	Resolution	Accuracy	Input impedance	Overload protection
0.5 ÷ 999.9V	0.1V	±(1.0%rdg + 4dgt)	2.6MΩ	1000VDC/ACrms

### (AC+DC) TRMS Voltage

Range	Resolution	Accuracy		Overload protection
0.5 ÷ 999.9V	0.1V	43 ÷ 63Hz	10 ÷ 43Hz, 63 ÷ 400Hz	1000VDC/ACrms
		±(1.0%rdg + 3dgt)	±(3.5%rdg + 3dgt)	

Input impedance: 2.6MΩ; Max. Crest factor: 1.41

### AC/DC Voltage – MAX/MIN/CREST

Range	Resolution	Accuracy	Response time	Overload protection
0.5 ÷ 999.9V	0.1V	±(3.5%rdg + 5dgt)	1s	1000VDC/ACrms

Input impedance: 2.6MΩ; Max. Crest factor: 1.41

### DC Current

Range	Resolution	Accuracy	Overload protection
0.5 ÷ 999.9A	0.1A	±(2.0%rdg + 5dgt)	2000ADC/ACrms

### AC (AC+DC) TRMS Current

Range	Resolution	Accuracy		Overload protection
0.5 ÷ 999.9A	0.1A	43 ÷ 63Hz	10 ÷ 43Hz, 63 ÷ 400Hz	2000VDC/ACrms
		±(2.0%rdg + 4dgt)	±(3.5%rdg + 5dgt)	

Max. Crest factor: 3

### AC/DC Current – MAX/MIN/CREST

Range	Resolution	Accuracy	Response time	Overload protection
0.5 ÷ 999.9A	0.1A	±(3.5%rdg + 5dgt)	1s	1000VDC/ACrms

Max. Crest factor: 3

### Resistance and Continuity test

Range	Resolution	Accuracy	Buzzer	Overload protection
0.0Ω ÷ 59.9kΩ	0.1Ω	±(1.0%rdg + 5dgt)	1Ω ÷ 150Ω	1000VDC/ACrms x 60s

### Frequency with test leads and jaws

Range	Resolution	Accuracy	Overload protection
10.0 ÷ 99.9Hz	0.1Hz	±(1.0%rdg + 5dgt)	1000VDC/ACrms
100 ÷ 400Hz	1Hz		2000ADC/ACrms

Voltage range for frequency measurement with test leads : 0.5 ÷ 1000V / Current range for frequency measurement with jaws: 0.5 ÷ 1000A

### DC Power

Range [kW]	Resolution [kW]	Accuracy
0.00 ÷ 99.99	0.01	±(3.0%rdg + 3dgt)
100.0 ÷ 999.9	0.1	

Accuracy defined for: Voltage > 10V, Current ≥ 2A

**Active, Reactive, Apparent Power**

Range [kW, kVAR, KVA]	Resolution [kW, kVAR, kVA]	Accuracy
0.00 ÷ 99.99	0.01	$\pm(2.0\%rdg + 3dgt)$ (*)
100.0 ÷ 999.9	0.1	$\pm(3.0\%rdg + 3dgt)$ (**)

(\*) Accuracy defined for: sinusoidal waveform 10..65Hz, Voltage > 10V, Current  $\geq$  2A, Pf: 0.5

(\*\*)Accuracy defined for: sinusoidal waveform >65Hz, Voltage > 10V, Current  $\geq$  5A, Pf: 0.5

**Active, Reactive Energy**

Range [kWh, kVARh]	Resolution [kWh, kVARh]	Accuracy
0.00 ÷ 99.99	0.01	$\pm(2.0\%rdg + 3dgt)$ (*)
100.0 ÷ 999.9	0.1	$\pm(3.0\%rdg + 3dgt)$ (**)

(\*) Accuracy defined for: sinusoidal waveform 10..65Hz, Voltage > 10V, Current  $\geq$  2A, Pf: 0.5

(\*\*) Accuracy defined for: sinusoidal waveform >65Hz, Voltage > 10V, Current  $\geq$  5A, Pf: 0.5

**Power Factor**

Range	Resolution	Accuracy
0.20 ÷ 1.00	0.01	$\pm 3^\circ$

Accuracy defined for: sinusoidal waveform 10..65Hz, Voltage > 10V, Current  $\geq$  2A, Pf: 0.5

Accuracy defined for: sinusoidal waveform >65Hz, Voltage > 10V, Current  $\geq$  5A, Pf: 0.5

**Voltage / Current Harmonics**

Harmonic order	Fund. Frequency[Hz]	Resolution [V], [A]	Accuracy
1 ÷ 25	10 ÷ 75	0.1	$\pm(5.0\%rdg + 5dgt)$
1 ÷ 8	76 ÷ 400		

**Phase sequence indication and phase conformity with 1-wire (\*)**

Voltage range	Frequency range	Input impedance
100 ÷ 1000V	40 ÷ 70Hz	1.3M $\Omega$

(\*) On standard conditions: instrument correctly gripped, standard shoes, standard floor, etc



## 2. GENERAL SPECIFICATIONS

### Internal memory and recording parameters conditions

Number of saved parameters:	60 parameters
Integration period (IP):	1, 5, 10, 30, 60, 120, 300, 600 or 900s programmable
Inrush current acquiring threshold:	programmable between 5A and 900A in steps of 1A
Inrush current detection modes:	Fix, Variable
Inrush current sample window acquiring:	1/1 (acquiring samples each half period) 1/2 (acquiring samples one half period every two) 1/4 (acquiring samples one half period every four)
Max number of saved events:	10
Max number of saved recordings:	20
Memory capacity:	2Mbytes
Recording autonomy:	approx. 2.1 days (@ 60 parameters & IP = 900s)
Interface to PC:	Bluetooth protocol

### Radio module characteristics

Radio:	Bluetooth™ 2.00
Frequency:	2.4 GHz (2400-2483.5MHz)
Power:	Class 2
Baud rate:	57600 baud

### Mechanical characteristics

Size:	252(L) x 88(La) x 44(H)mm
Weight (including battery):	420g
Max conductor size:	45mm

### Supply

Battery type:	2 batteries 1.5V type AAA IEC LR03
Battery life:	approx. 53 hours of continuous use in power/energy measures
Auto Power Off:	approx. 5 minutes of idleness

### Display

Characteristics:	graphic dot matrix, 128x128pxl with backlight
Sample rate:	128 samples/period (@ 50Hz)
Display update rate:	1 times/sec
Conversion mode:	TRMS

### Climatic conditions

Reference temperature:	23°C ± 5°C
Operating temperature:	0 ÷ 40 °C
Operating humidity:	<80%RH
Storage temperature:	-10 ÷ 60 °C
Storage humidity:	<70%RH

### Reference standards

Comply with:	IEC/EN 61010-1, IEC/EN61010-2-032
Safety of test leads:	IEC/EN61010-031
Insulation:	double insulation
Pollution:	level 2
For inside use, max height:	2000m
Installation category:	CAT IV 600V to ground, max 1000V between inputs

**This product conforms to the prescriptions of the European directive on low voltage 2006/95/EEC and to EMC directive 2004/108/EEC**