



## 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 [V]	Resolution [V]	Accuracy	Input impedance	Overload protection
-1500.0 ÷ 1500.0	0.1	±(1.0%rdg + 3dgt)	1MΩ	1500VDC

Absolute voltage values <0.3V are zeroed

### AC, AC+DC TRMS VOLTAGE

Range [V]	Resolution [V]	Accuracy	Input impedance	Overload protection
1.0 ÷ 999.9	0.1	±(1.0%rdg + 3dgt)	1MΩ	1000VDC/ACrms

Fundamental: 50/60Hz ± 15%, Bandwidth: 42.5Hz ÷ 1725Hz

Max. Crest Factor: 3 for voltage ≤470Vrms, 1.41 for voltage >470Vrms

Voltage RMS values <1V and values with frequency external range 42.5Hz ÷ 1725Hz are zeroed

### DC VOLTAGE – MAX/MIN/CREST

Funzione	Range [V]	Resolution [V]	Accuracy	Response time
MAX/MIN	-1500.0 ÷ 1500.0	0.1	±(3.5%rdg + 5dgt)	200ms
CREST				1ms

Input impedance: 1MΩ ; Absolute voltage values <0.3V are zeroed

### AC, AC+DC TRMS VOLTAGE – MAX/MIN/CREST

Funzione	Range [V]	Resolution [V]	Accuracy	Response time
MAX/MIN	1.0 ÷ 999.9	0.1	±(3.5%rdg + 5dgt)	200ms
CREST	-1500.0 ÷ 1500.0			1ms

Input impedance: 1MΩ; Fundamental: 50/60Hz ± 15%, Bandwidth: 42.5Hz ÷ 1725Hz

Max. Crest Factor: 3 for voltage ≤470Vrms, 1.41 for voltage >470Vrms

MAX/MIN values <1V, CREST values <1.4 and MAX/MIN/CREST values with frequency external range 42.5Hz ÷ 1725Hz are zeroed

### DC CURRENT

Range [A]	Resolution [A]	Accuracy	Overload protection
0.1 ÷ 999.9	0.1	±(2.0%rdg + 5dgt)	1000ADC/ACrms

### AC, AC+DC TRMS CURRENT

Range [A]	Resolution [A]	Accuracy	Overload protection
1.0 ÷ 999.9	0.1A	±(1.0%rdg + 5dgt)	1000ADC/ACrms

Fundamental: 50/60Hz ± 15%, Bandwidth: 42.5Hz ÷ 1725Hz ; Max. Crest Factor: 3 for current ≤515Arms, 1.41 for current >515A

Current RMS values <1A and values with frequency external range 42.5Hz ÷ 1725Hz are zeroed

### DC/AC TRMS CURRENT – MAX/MIN

Range [A]	Resolution [A]	Accuracy	Response time	Overload protection
1.0 ÷ 999.9	0.1	±(3.5%rdg + 5dgt)	1s	1000VDC/ACrms

Fundamental: 50/60Hz ± 15%, Bandwidth: 42.5Hz ÷ 1725Hz ; Max. Crest Factor: 3 for current ≤515Arms, 1.41 for current >515A

MAX/MIN values <1A and MAX/MIN values with frequency external range 42.5Hz ÷ 1725Hz are zeroed

### INRUSH CURRENT (DC, AC+DC TRMS) – DYNAMIC INRUSH

Range [A]	Resolution [A]	Accuracy (*)	Overload protection
1.0 ÷ 99.9	0.1	±(2.0%rdg + 5dgt)	1000ADC/ACrms
10 ÷ 999	1A		

(\*) Accuracy declared for frequency: DC, (50±0.5)Hz, (60±0.5)Hz

Crest factor: 3, Sample frequency: 4kHz, Response time: Peak: 1ms, Max RMS : calculated on: 16.7, 20, 50, 100, 150, 200ms



# HT9023

Rel. 1.01 of 06/07/20

DC/AC, AC+DC TRMS power clamp meter up to 1500VDC

Pag 2 of 4

## RESISTANCE AND CONTINUITY TEST

Range [ $\Omega$ ]	Resolution [ $\Omega$ ]	Accuracy	Buzzer	Overload protection
0.0 ÷ 199.9	0.1	$\pm(1.0\%rdg + 5dgt)$	1 $\Omega$ ÷ 150 $\Omega$	1000VDC/ACrms
200 ÷ 1999	1			
2.00k ÷ 19.99k	0.01k			
20.0k ÷ 29.9k	0.1k			

## FREQUENCY WITH TEST LEADS AND JAWS

Range [Hz]	Resolution [Hz]	Accuracy	Overload protection
42.5 ÷ 69.0	0.1	$\pm(1.0\%rdg + 5dgt)$	1500VDC / 1000ADC/ACrms

Voltage range for frequency measure: 0.5 ÷ 1000V / Current range for frequency measure with jaws: 1 ÷ 1000A

## PHASE SEQUENCE INDICATION AND PHASE CONFORMITY WITH 1-WIRE

Voltage range [V]	Frequency range [Hz]	Overload protection
100 ÷ 1000	45 ÷ 66	1000VDC/ACrms

Input impedance: 1.3M $\Omega$ 

## DC POWER

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

(\*) Accuracy referred for Voltage > 10V, Current  $\geq$  2A

## AC, AC+DC ACTIVE, APPARENT POWER

Range [kW, kVA]	Resolution [kW, kVA]	Accuracy (*)
0.001 ÷ 9.999 (**)	0.001	$\pm(3.0\%rdg + 10dgt)$
10.00 ÷ 99.99	0.01	
100.0 ÷ 999.9	0.1	

(\*) Accuracy referred for sinusoidal waveform, 42.5..69Hz, Voltage > 10V, Current  $\geq$  10A, Pf  $\geq$  0.5(\*\*) For Current <10A add  $\pm$ 7%rdg to the accuracy

## AC REACTIVE POWER

Range [kVAR]	Resolution [kVAR]	Accuracy (*)
0.001 ÷ 9.999 (**)	0.001	$\pm(3.0\%rdg + 10dgt)$
10.00 ÷ 99.99	0.01	
100.0 ÷ 999.9	0.1	

(\*) Accuracy referred for sinusoidal waveform, 42.5..69Hz, Voltage > 10V, Current  $\geq$  10A, Pf  $\leq$  0.9(\*\*) For Current <10A add  $\pm$ 4%rdg to the accuracy

## AC, AC+DC TRMS AC ACTIVE ENERGY

Range [kWh]	Resolution [kWh]	Accuracy (*)
0.001 ÷ 9.999(**)	0.001	$\pm(3.0\%rdg + 10dgt)$
10.00 ÷ 99.99	0.01	
100.0 ÷ 999.9	0.1	

(\*) Accuracy referred for sinusoidal waveform, 42.5..69Hz, Voltage > 10V, Current  $\geq$  10A, Pf  $\geq$  0.5(\*\*) For Current <10A add  $\pm$ 7%rdg to the accuracy

## AC, AC+DC TRMS AC REACTIVE ENERGY

Range [kVARh]	Resolution [kVARh]	Accuracy (*)
0.001 ÷ 9.999 (**)	0.001	$\pm(3.0\%rdg + 10dgt)$
10.00 ÷ 99.99	0.01	
100.0 ÷ 999.9	0.1	

(\*) Accuracy referred for sinusoidal waveform, 42.5..69Hz, Voltage > 10V, Current  $\geq$  10A, Pf  $\leq$  0.9(\*\*) For Current <10A add  $\pm$ 4%rdg to the accuracy



## POWER FACTOR/ $\cos\phi$

Range	Resolution	Accuracy (*)
0.20i ÷ 1.00 ÷ 0.20c	0.01	$\pm(2.0\%rdg+2dgt)$

(\*) Input impedance: 1M $\Omega$ , Accuracy referred for sinusoidal waveform, 42.5..69Hz, Voltage > 10V, Current  $\geq$  2A

## VOLTAGE / CURRENT HARMONICS

Harmonic order	Fund. frequency [Hz]	Resolution [V], [A]	Accuracy (* no zeroed values)
0 (DC)	42.5 ÷ 69.0	0.1V /0.1A	$\pm(10.0\%rdg+5dgt)$
1 ÷ 25			$\pm(5.0\%rdg+5dgt)$
THD%		0.1%	$\pm(10.0\%rdg+5dgt)$

(\*) Voltage harmonics are zeroed in the below conditions:

- 1st harmonic: if value < 1.0V ; DC, 2nd to 25th harmonics: if harmonic value <0.5% of fundamental value or if value <1.0V

(\*) Current harmonics are zeroed in the below conditions:

- 1st harmonic: if value <1.0A; DC, 2nd to 25th harmonics: if harmonic value <0.5% of fundamental value or if value <1.0A



## 2. GENERAL SPECIFICATIONS

### General specifications

Aggregation time (IP):	1, 5, 10, 30, 60, 120, 300, 600 or 900s programmable
Inrush current acquiring threshold:	programmable between 2A ÷ 90A and 5A ÷ 900A in steps of 1A
Inrush current detection modes:	Fixed
Inrush current response times:	1ms (peak), 16.7,20,50,100,150,200ms (max RMS value)
Memory capacity:	2Mbytes
Interface to PC/mobile devices:	WiFi

### Recordings/Autonomy

Inrush current snapshots saving:	max 20 (each with max 10 events)
Log + Snapshot saving:	max 99 files
Sampling rate:	128 sample/period (basic sample)
Max Rec autonomy (hours)	ca 2.1 x IP. e.g: IP=60s →ca126hours → ca 5days

### Mechanical characteristics

Dimensions /L x W x H):	252 x 88 x 44mm
Weight (including battery):	420g
Max conductor size:	45mm
Mechanical protection:	IP20

### Power supply

Battery type:	2 batteries 1.5V type AAA IEC LR03
Battery life:	approx. 40h (continue use in "W" position)
Auto Power Off:	approx. 5 minutes of idleness (disable)

### Display

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

### Climatic conditions

Reference temperature:	23°C ± 5°C
Operating temperature:	0°C ÷ 40 °C
Operating humidity:	<80%RH
Storage temperature:	-10°C ÷ 60°C
Storage humidity:	<70%RH
Max height of use:	2000m

### Reference guidelines

Safety:	IEC/EN 61010-1, IEC/EN61010-2-032
EMC:	IEC/EN61326-1, EN301489-17V3.1.1, EN301328V2.1.1
Safety of test leads:	IEC/EN61010-031
Insulation:	double insulation
Pollution level :	2
Measurement category:	CAT IV 600V, CAT III 1000V to ground

**This instrument satisfies the requirements of Low Voltage Directive 2014/35/EU (LVD) and of EMC Directive 2014/30/EU**

**This instrument satisfies the requirements of 2011/65/EU (RoHS) directive and 2012/19/EU (WEEE) directive**

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## Laboratoire de maintenance et de calibrage

Le laboratoire des Pays-Bas est accrédité RvA selon la norme EN-ISO/IEC 17025. Cette accréditation est valable pour différentes grandeurs, telles que spécifiées dans le champ d'application associé au numéro d'accréditation K105. Les certificats de calibrage RvA sont acceptés à l'international et équivalents à ceux de BELAC.



## Service Mobile

Outre les laboratoires d'étalonnage fixes de Zaventem et de Capelle aan den IJssel, nous disposons également d'un laboratoire itinérant appelé "Service mobile". Nos services peuvent venir vers vous, en offrant une qualité équivalente.

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- Précision démontrable par le certificat d'étalonnage actuel
- Conseils avisés
- Les instruments sont livrés avec leurs accessoires

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- Formations et séminaires
- Vidéos de démonstration et d'instruction
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Comptoir de service



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Formations et séminaires



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