1. ELECTRICAL SPECIFICATIONS

Accuracy is indicated as ± [%rdg + (numbers of digits*resolution)] at 23°C ± 5°C, <80%HR

DC VOLTAGE

Range	Resolution	Accuracy	Input impedance	Overload protection
50.000mV	0.001mV	±(0.05%rdg+30dgt)	10MΩ // <100pF	1000VDC/ACrms
500.00mV	0.01mV	±(0.05%rdg+5dgt)		
5.0000V	0.0001V			
50.000V	0.001V			
500.00V	0.01V			
1000.0V	0.1V			

AC TRMS VOLTAGE

Range	Resolution	Accuracy (**) (Sinusoidal waveform)	Input impedance	Overload protection
50.000mV	0.001mV	±(0.7%rdg+20dgt) (40Hz ÷ 70Hz) ±(1.5%rdg+40dgt) (71Hz ÷ 10kHz)	10MΩ // <100pF	1000VDC/ACrms
500.00mV	0.01mV			
5.0000V	0.0001V	±(0.5%rdg+20dgt) (40Hz ÷ 70Hz) ±(1.5%rdg+40dgt) (71Hz ÷ 1kHz) ±(3.0%rdg+80dgt) (1.001kHz ÷ 10kHz)		
50.000V	0.001V			
500.00V	0.01V			
1000.0V (*)	0.1V			

Frequency range: 40Hz ÷ 10kHz ;
(**) For values <5% of each range add 20dgt to the accuracy
(*) Frequency range of this range: 40Hz ÷ 1kHz
For non-sinusoidal voltages, consider the following crest factors (CF):
1.4 ≤ FC < 2.0 → Add 1.0% reading to accuracy
2.0 ≤ FC < 2.5 → Add 2.5% reading to accuracy
2.5 ≤ FC ≤ 3.0 → Add 4.0% reading to accuracy
Accuracy in AC+DC mode: AC accuracy + DC accuracy + 1.0%reading
Accuracy in HFR mode: AC accuracy + 1.0%reading (40Hz ÷ 400Hz)
Cutting frequency in HFR mode: 800Hz (-3dB) ; Characteristic attenuation: approx. -24dB

DC CURRENT

Range	Resolution	Accuracy	Max. meas. time	Overload protection
50.000mA	0.001mA	±(0.05%rdg + 5dgt)	1min (input A) 10min (input mA)	max 440mA
1.0000A	0.0001A			

AC TRMS CURRENT

Range	Resolution	Accuracy	Max. meas. time	Overload protection
50.000mA	0.001mA	±(1.0%rdg + 20dgt) (40Hz ÷ 70Hz) ±(2.0%rdg + 20dgt) (71Hz ÷ 10kHz)	1min (input A) 10min (input mA)	max 440mA
1.0000A	0.0001A			

(*) For values <5% of each range add 20dgt to the accuracy ; Frequency range: 40Hz ÷ 10kHz
Input impedance: 0.1Ω (input A), 13Ω (input mA)
For non-sinusoidal currents, consider the same conditions of TRMS AC Voltage

RESISTANCE

Range	Resolution	Accuracy	Output current	Overload protection
500.00Ω	0.01Ω	±(0.2%rdg+30dgt)	1mA	1000VDC/ACrms
5.0000kΩ	0.0001kΩ	±(0.2%rdg+10dgt)	100µA	
50.000kΩ	0.001kΩ		10µA	
500.00kΩ	0.01kΩ	±(0.5%rdg+10dgt)	1µA	
5.0000MΩ	0.0001MΩ	±(1.0%rdg+10dgt)	100nA	
50.000MΩ (*)	0.001MΩ	±(2.0%rdg+10dgt)	10nA	

(*) Little instability for < 20 dgt
Max open voltage: approx 3.5V

CONTINUITY TEST

Range	Buzzer	Accuracy	Open voltage	Overload protection
500.0Ω	<30Ω	±(0.1%rdg+30dgt)	approx 3.5V	1000VDC/ACrms

DIODE TEST

Range	Test current	Accuracy	Open voltage	Overload protection
2.000V	±1mA	±(1.0%rdg+10dgt)	approx ±3V	1000VDC/ACrms

FREQUENCY AC VOLTAGE/CURRENT

Range	Resolution	Accuracy	Overload protection
500.00Hz	0.01Hz	±3dgt	1000VDC/ACrms max 440mA
5.0000kHz	0.0001kHz		
50.000kHz	0.001kHz		
100.00kHz	0.01kHz		

Minimum frequency value: 5Hz

Sensitivity of signal for frequency measurement

Function	Range	Sensitivity (peak to peak value)	
		5Hz ÷ 10kHz	10kHz ÷ 100kHz
AC mV	50.000mV	10mV	100mV
	500.00mV		
AC V	5.0000V	1V	1V
	50.000V	1V	not specified
	500.00V		
	1000.0V		
AC A	50.000mA	10mA	
	1.000A	300mA	

GENERATED DC CURRENT – Programmable output

Range	Resolution	Accuracy	Overload protection
0.000÷20.000mA	0.001mA	±(0.05%rdg+5dgt)	max 440mA
4.000÷20.000mA			

Power supply: battery level > 4.5V
External power supply simulated mode: 6V ÷ 48V

HT ITALIA SRL
Via della Boaria 40 - 48018 Faenza (RA)- Italy
Tel: +39-0546-621002 - Fax: +39-0546-621144
email: export@htitalia.it - web: http://www.ht-instruments.com

GENERATED DC CURRENT – Output ramp

Ramp type	Description	Action
	Linear slow ramp	0% →100% →0% in 40s
	Linear fast ramp	0% →100% →0% in 20s
	Step slow ramp	0% →100% →0% with steps of 15s
	Step fast ramp	0% →100% →0% with steps of 5s

Output voltage: 32.0VDC: Output voltage accuracy: ±5.0% of reading
Power supply: battery level > 4.5V
External power supply in simulation mode: 6V ÷ 48V

LOOP POWER (Loop current)

Function	Range	Accuracy	Driver	Overload protection
LOOP	50.000mA	±(0.05%rdg + 5dgt)	30V / 1.25kΩ	max 440mA
250Ω HART			24V / 1kΩ	

Output voltage: 32.0VDC: Output voltage accuracy: ±5.0% of reading
Power supply: battery level > 4.5V
External power supply in simulation mode: 6V ÷ 48V

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2. GENERAL SPECIFICATIONS

Display:
- LCD display, 5 digit with maximum reading 50000 counts with sign, decimal point
- Automatic polarity indication
- "**OL**" over range indication

Features:
- Data HOLD
- MAX/MIN/AVG for maximum, minimum and average values
- Auto Backlight for automatic activation of backlit
- AUTOTEST for automatic detection of AC or DC measurements
- AC+DC for measurement of DC component overlapped to the alternate signal
- HFR for AC voltage measurement with 800Hz cut-off frequency
- Internal memory for saving/recall data
- RANGE for manual range selection
- REL for relative measurement
- Auto Power OFF after 20 minutes of idleness

Internal memory:
- Max 100 locations

Low battery indication:
- The symbol "  " appears when the battery voltage is low

Environmental conditions:
- Working temperature/humidity: -10°C ÷ 30°C, <85%RH
  30°C ÷ 40°C, <75%RH
  40°C ÷ 50°C, <45%RH
- Storage temperature/humidity: -20°C ÷ 60°C, <80%HR

General information:
- Max height of use: 2000m
- Pollution degree: 2
- Insulation: double insulation

Power supply:
- 4 x 1.5V alkaline batteries type AA IEC LR6

Sizes:
- 207(L)x95(W)x52(H) mm

Weight (included batteries):
- 630g

Applied standards:
- Safety: IEC/EN61010-1, EN61010-2-030
- Measurement category: CAT IV 600V – CAT III 1000V

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

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