



## 1. ELECTRICAL SPECIFICATIONS

Accuracy is indicated as  $\pm [\%rdg + (\text{numbers of digits} \times \text{resolution})]$  at  $23^{\circ}\text{C} \pm 5^{\circ}\text{C}$ ,  $<80\%HR$

### DC VOLTAGE

Range	Resolution	Accuracy	Input impedance	Overload protection
50.000mV	0.001mV	$\pm(0.05\%rdg+30dgt)$	10M $\Omega$ // <100pF	1000VDC/ACrms
500.00mV	0.01mV	$\pm(0.05\%rdg+5dgt)$		
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	$\pm(0.7\%rdg+20dgt)$ (40Hz $\div$ 70Hz)	10M $\Omega$ // <100pF	1000VDC/ACrms
500.00mV	0.01mV	$\pm(1.5\%rdg+40dgt)$ (71Hz $\div$ 10kHz)		
5.0000V	0.0001V	$\pm(0.5\%rdg+20dgt)$ (40Hz $\div$ 70Hz)		
50.000V	0.001V	$\pm(1.5\%rdg+40dgt)$ (71Hz $\div$ 1kHz)		
500.00V	0.01V	$\pm(1.5\%rdg+40dgt)$ (71Hz $\div$ 1kHz)		
1000.0V (*)	0.1V	$\pm(3.0\%rdg+80dgt)$ (1.001kHz $\div$ 10kHz)		

Frequency range: 40Hz  $\div$  10kHz ;

(\*\*) For values <5% of each range add 20dgt to the accuracy

(\*) Frequency range of this range: 40Hz  $\div$  1kHz

For non-sinusoidal voltages, consider the following crest factors (CF):

$1.4 \leq FC < 2.0 \rightarrow$  Add 1.0% reading to accuracy

$2.0 \leq FC < 2.5 \rightarrow$  Add 2.5% reading to accuracy

$2.5 \leq FC \leq 3.0 \rightarrow$  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  $\div$  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	$\pm(0.05\%rdg + 5dgt)$	1 min (input A)	max 440mA
1.0000A	0.0001A		10min (input mA)	

### AC TRMS CURRENT

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

(\*) For values <5% of each range add 20dgt to the accuracy ; Frequency range: 40Hz  $\div$  10kHz

Input impedance: 0.1 $\Omega$  (input A), 13 $\Omega$  (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	not specified
	50.000V	1V	
	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



## 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:  $\pm 5.0\%$  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	$\pm(0.05\%rdg + 5dgt)$	30V / 1.25k $\Omega$	max 440mA
250 $\Omega$ HART			24V / 1k $\Omega$	

Output voltage: 32.0VDC: Output voltage accuracy:  $\pm 5.0\%$  of reading

Power supply: battery level > 4.5V

External power supply in simulation mode: 6V ÷ 48V



## 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 backlight
- 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%RH

### 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**