



## 1. ELECTRICAL SPECIFICATIONS

Accuracy calculated as  $\pm[\% \text{reading} + (\text{num dgt} * \text{resolution})]$  ta  $18^{\circ}\text{C} \div 28^{\circ}\text{C}$ ,  $<75\% \text{HR}$ 

### DC VOLTAGE


Range (*)	Resolution	Accuracy	Input impedance	Overload protection
600.0mV	0.1mV	$\pm(0.9\% \text{rdg} + 5 \text{dgt})$	$>10 \text{M}\Omega$	1000VDC/ACrms
6.000V	0.001V			
60.00V	0.01V			
600.0V	0.1V			
1000V	1V	$\pm(1.2\% \text{rdg} + 5 \text{dgt})$		

(\*) HIREs feature not active. With HIREs feature active, multiply x10 the dgts of the accuracy

### AC TRMS VOLTAGE

Range (*)	Resolution	Accuracy (**)		Overload protection
		50Hz $\div$ 1kHz	1kHz $\div$ 5kHz	
600.0mV	0.1mV	$\pm(1.0\% \text{rdg} + 5 \text{dgt})$	$\pm(3.0\% \text{rdg} + 5 \text{dgt})$	1000VDC/ACrms
6.000V	0.001V			
60.00V	0.01V			
600.0V	0.1V			
1000V	1V		Not specified	

(\*) HIREs feature not active. With HIREs feature active, multiply x10 the dgts of the accuracy

(\*\*) Accuracy specified from 5% to 100% of the measuring range and crest factor  $\leq 3$ , Input impedance:  $> 10 \text{M}\Omega$ Accuracy PEAK function:  $\pm(10\% \text{rdg} + 30 \text{dgt})$ , Response time PEAK function: 1msAccuracy  function:  $\pm(1.5\% \text{rdg} + 5 \text{dgt})$  ( $f \leq 60 \text{Hz}$ ),  $\pm(3.0\% \text{rdg} + 5 \text{dgt})$  ( $60 \text{Hz} \leq f \leq 1 \text{kHz}$ ), not specified ( $f: 1 \div 5 \text{kHz}$ )For not sinusoidal waveforms the accuracy is:  $\pm(4.5\% \text{rdg} + 10 \text{dgt})$  ( $50 \text{Hz} \div 1 \text{kHz}$ ),  $\pm(10.0\% \text{rdg} + 10 \text{dgt})$  ( $1 \text{kHz} \div 5 \text{kHz}$ )

### AC+DC TRMS VOLTAGE

Range (*)	Resolution	Accuracy (50Hz $\div$ 1kHz)	Input impedance	Overload protection
600.0mV (*)	0.1mV	$\pm(1.5\% \text{rdg} + 10 \text{dgt})$	$>10 \text{M}\Omega$	1000VDC/ACrms
6.000V	0.001V			
60.00V	0.01V			
600.0V	0.1V			
1000V	1V			

(\*) HIREs feature not active. With HIREs feature active, multiply x10 the dgts of the accuracy

### DC/AC TRMS VOLTAGE WITH LOW IMPEDANCE (LoZ)

Range (*)	Resolution	Accuracy (**)	Input impedance	Overload protection
6.000V	0.001V	$\pm(3.0\% \text{rdg} + 40 \text{dgt})$	ca $3 \text{k}\Omega$	1000VDC/ACrms
60.00V	0.01V			
600.0V	0.1V			
1000V	1V			

(\*) HIREs feature not active. With HIREs feature active, multiply x10 the dgts of the accuracy

(\*\*) AC+DC accuracy:  $\pm(3.5\% \text{rdg} + 40 \text{dgt})$ 

### DIODE TEST

Range	Max test current	Open voltage
	$<1.5 \text{mA}$	2.8V

### 4-20mA% READINGS

Range	Resolution	Accuracy	Readings
-25% $\div$ 125%	0.1%	$\pm 50 \text{dgt}$	0mA=-25%, 4mA=0%, 20mA=100%, 24mA=125%



## DC CURRENT

Range (*)	Resolution	Accuracy	Overload protection
600.0μA	0.1μA	±(1.5%rdg+5dgt)	Fast Fuse 0.8A/1kVAC/DC (inputs mA, μA)
6000μA	1μA		
60.00mA	0.01mA		
600.0mA	0.1mA		
10.00A	0.01A		Fast Fuse 10A/1kVAC/DC (input 10A)

(\*) HIRES feature not active. With HIRES feature active, multiply x10 the dgts of the accuracy

## AC TRMS CURRENT

Range (*)	Resolution	Accuracy (**)		Overload protection
		50Hz ÷ 1kHz	1kHz ÷ 5kHz	
600.0μA	0.1μA	±(2.5%rdg+5dgt)	±(3.5%rdg+5dgt)	Fast Fuse 0.8A/1kVAC/DC (inputs mA, μA)
6000μA	1μA			
60.00mA	0.01mA			
600.0mA	0.1mA			
10.00A	0.01A			Fast Fuse 10A/1kVAC/DC (input 10A)

(\*) HIRES feature not active. With HIRES feature active, multiply x10 the dgts of the accuracy

(\*\*) Accuracy specified from 5% to 100% of the measuring range, Accuracy PEAK function: ±(10%rdg + 30dgt)

For not sinusoidal waveforms the accuracy is: ±(4.5%rdg + 10dgt) (50Hz÷1kHz), ±(10.0%rdg + 10dgt) (1kHz÷5kHz)

Accuracy AC+DC: ±(2.8%rdg+5dgt) (50Hz ÷ 1kHz)

## DC CURRENT WITH TRANSDUCER CLAMPS

Range (*)	Output ratio	Resolution	Accuracy (**)	Overload protection	
1000mA	1000mV/1000mA	1mA	±(1.5%rdg + 6dgt)	1000VDC/ACrms	
10A	100mV/1A	0.01A			
30A					
40A					
100A	10mV/1A	0.1A			±(1.5%rdg + 26dgt)
300A					±(1.5%rdg + 6dgt)
400A	1mV/1A	1A			±(1.5%rdg + 26dgt)
1000A					±(1.5%rdg + 6dgt)

(\*) HIRES feature not active. With HIRES feature active, multiply x10 the dgts of the accuracy

(\*\*) Accuracy referred to only instrument without transducer clamp

## AC TRMS CURRENT WITH TRANSDUCER CLAMPS

Range (*)	Output ratio	Resolution	Accuracy (**, ***)	Overload protection	
1000mA	1000mV/1000mA	1mA	±(2.5%rdg + 10dgt)	1000VDC/ACrms	
10A	100mV/1A	0.01A			
30A					
40A					
100A	10mV/1A	0.1A			±(3.5%rdg + 30dgt)
300A					±(2.5%rdg + 10dgt)
400A	1mV/1A	1A			±(2.5%rdg + 10dgt)
1000A					±(3.5%rdg + 30dgt)
3000A			±(2.5%rdgh + 10dgt)		

(\*) HIRES feature not active. With HIRES feature active, multiply x10 the dgts of the accuracy

(\*\*) Accuracy referred to only instrument without transducer clamp

(\*\*\*) Accuracy specified from 5% to 100% of the measuring range; For pulse waveforms the accuracy is: ±(10.0%rdg + 10dgt)

Accuracy PEAK function: ±(10%rdg + 30dgt), AC+DC TRMS current: accuracy (50Hz÷1kHz): ±(3.0%rdg + 10dgt)

For not sinusoidal waveforms the accuracy is: ±(4.5%rdg + 10dgt) (50Hz÷1kHz)

**RESISTANCE AND CONTINUITY TEST**

Range (*)	Resolution	Accuracy	Buzzer	Overload protection
600.0Ω	0.1Ω	±(2.0%rdg+9dgt)	<35Ω	1000VDC/ACrms
6.000kΩ	0.001kΩ	±(1.2%rdg+5dgt)		
60.00kΩ	0.01kΩ			
600.0kΩ	0.1kΩ			
6.000MΩ	0.001MΩ	±(2.0%rdg+10dgt)		
60.00MΩ	0.01MΩ			

(\*) HIREs feature not active. With HIREs feature active, multiply x10 the dgts of the accuracy

**FREQUENCY (Electrical circuits)**

Range (*)	Resolution	Accuracy	Sensitivity	Overload protection
40.00Hz ÷ 10.00kHz	0.01Hz	±(0.5%rdg)	15Vrms	1000VDC/ACrms

(\*) HIREs feature not active. With HIREs feature active, multiply x10 the dgts of the accuracy

**FREQUENCY (Electronic circuits)**

Range (*)	Resolution	Accuracy	Sensitivity	Overload protection
60.000Hz	0.001Hz	±(1.0%rdg+2dgt)	>2.0Vrms min (20% < duty < 80%, <100kHz) 5Vrms min (20% < duty < 80%, >100kHz)	1000VDC/ACrms
600.00Hz	0.01Hz			
6.0000kHz	0.0001kHz			
60.000kHz	0.001kHz			
600.00kHz	0.01kHz			
6.0000MHz	0.0001MHz			
10.000MHz	0.001MHz			

(\*) HIREs feature not active. With HIREs feature active, multiply x10 the dgts of the accuracy

**DUTY CYCLE**

Range (*)	Resolution	Accuracy	Overload protection
0.1 ÷ 99.9%	0.01%	±(1.2%rdg+2dgt)	1000VDC/ACrms

(\*) HIREs feature not active. With HIREs feature active, multiply x10 the dgts of the accuracy

Pulse width: 100μs ÷ 100ms ; Frequency: 5Hz ÷ 100kHz

**CAPACITANCE**

Range	Resolution	Accuracy	Overload protection
60.00nF	0.01nF	±(3.5%rdg+10dgt)	1000VDC/ACrms
600.0nF	0.1nF		
6.000μF	0.001μF	±(2.5%rdg+10dgt)	
60.00μF	0.01μF		
600.0μF	0.1μF		
6.000mF	0.001mF	±(3.5%rdg+10dgt)	

**TEMPERATURE WITH TYPE K PROBE**

Range	Resolution	Accuracy (*)	Overload protection
-40.0°C ÷ 600.0°C	0.1°C	±(2.0%rdg+3°C)	1000VDC/ACrms
600°C ÷ 760°C	1°C		
-58.0°F ÷ 600.0°F	0.1°F	±(2.0%rdg+5.5°F)	
600°F ÷ 1400°F	1°F		

(\*) Accuracy referred to instrument without probe



## 2. GENERAL SPECIFICATIONS

### Display:

- LCD, 3 ½ dgt (6000counts) and 4½dgt (60000 counts) decimal point and bargraph
- Automatic polarity indication
- Backlight
- "OL" over range indication
- Response time: 3/s
- Conversion: TRMS

### Features:

- Data HOLD, Auto HOLD
- MAX/MIN
- PEAK (Voltage and Current)
- RANGE
- REL
- DC 4-20mA% current readings

### Power supply:

- 4 x 1.5V alkaline batteries type AAA LR03
- Battery life: ca 18h (backlight ON), ca 60h (backlight OFF)
- Auto Power OFF after 15 minutes of idleness

### Mechanical specifications

- Dimensions (L x W x H): 175 x 85 x 55mm
- Weight (included batteries): 360g
- Mechanical protection: IP40

### Environmental conditions:

- Working temperature: 5°C ÷ 40°C
- Working humidity: <80%RH
- Storage temperature: -20°C ÷ 60°C
- Storage humidity: <80%RH
- Altitude max of use: 2000m

### Reference guidelines:

- Safety : IEC/EN61010-1
- EMC : IEC/EN61326-1
- Pollution degree: 2
- Insulation: double insulation
- Measurement category: CAT IV 600V – CAT III 1000V

**This product conforms to the prescriptions of the European directive on low voltage 2014/35/EU and to EMC directive 2014/30/EU**

**This product conforms to the prescriptions of the European directive 2011/65/EU (RoHS) and the European directive 2012/19/EU (WEEE)**