



→ **TRMS**



ORDER CODE **HR000401**

# HT401

PROFESSIONAL MULTIMETER FOR AC+DC  
TRMS MEASUREMENT AND LoZ INPUT

Professional digital multimeter in **TRMS** with **6000 measuring spots** which mainly carries out measurements of **AC/DC voltage** and **AC/DC current**. Among the many functions of the device there are the **AC+DC mode**, used to consider also **continuous components possibly overlapping the alternate signal** and AC voltage measurements in conditions of **low impedance (LoZ)** in order to **reduce the influences** when measuring between adjacent conductors.

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## Functions

- DC/AC TRMS voltage
- DC/AC TRMS current
- AC+DC measurements
- AC voltage measurement with low impedance "LoZ"
- "VoltSense" for AC voltage detection without contact
- Resistance and Continuity test
- Frequency
- Diode test
- Capacitance
- Temperature with K-type probe
- Data HOLD, MAX/MIN/PEAK
- Relative measurement
- Automatic/Manual Range
- Backlight, Bargraph
- Auto Power OFF



## Technical Specifications

### DC voltage

- Measuring range: 0.01mV ÷ 1000V
- Resolution: 0.01mV ÷ 0.1V
- Basic accuracy: ±(0.08%reading + 2 digits)
- Protection: 1000V DC/ACrms

### AC TRMS voltage

- Measuring range: 0.01mV ÷ 1000V
- Resolution: 0.01mV ÷ 0.1V
- Basic accuracy: ±(0.8%reading + 5 digits)
- Protection: 1000V DC/ACrms

### DC current

- Measuring range: 0.01mA ÷ 10A
- Resolution: 0.01mA ÷ 0.01A
- Basic accuracy: ±(0.8%reading + 3 digits)
- Protection: Fuse F440mA/1000V - Fuse F11A/1000V

### AC TRMS current

- Measuring range: 0.01mA ÷ 10A
- Resolution: 0.01mA ÷ 10A
- Basic accuracy: ±(1.2%reading + 3 digits)
- Protection: Fuse F440mA/1000V - Fuse F11A/1000V

### Resistance and Continuity test

- Measuring range: 0.1Ω ÷ 40MΩ
- Resolution: 0.1Ω ÷ 0.01MΩ
- Basic accuracy: ±(0.8%reading + 2 digits)
- Continuity test: <30Ω
- Protection: 1000V DC/ACrms

### Frequency

- Measuring range: 0.01Hz ÷ 100kHz
- Resolution: 0.01Hz ÷ 0.01kHz
- Basic accuracy: ±(0.1%reading + 2 digits)
- Protection: 1000V DC/ACrms

### Capacitance

- Measuring range: 0.001μF ÷ 10mF
- Resolution: 0.001μF ÷ 0.01mF
- Basic accuracy: ±(1.2%reading + 2 digits)
- Protection: 1000V DC/ACrms

### Temperature with K-type probe

- Measuring range: -40°C ÷ 400°C
- Resolution: 0.1°C
- Basic accuracy: ±(1.0%reading + 10 digits)
- Protection: 1000V DC/ACrms



## Main features

Display:	LCD, 4 digits, 6000 dots
Power supply:	1x9V alkaline battery type 6F22
Battery life:	150 hours
Auto Power OFF:	after 20 minutes' idling
Safety:	IEC/EN61010-1
Measurement category:	CAT III 1000V, CAT IV 600V
Insulation:	Double insulation
Pollution level:	2
Max height:	2000m
Size (LxWxH):	190x94x48mm
Weight (batteries included):	460g



## Included accessories

4413-2	Pair of test leads
TK101	K-type wire probe
T10	Adapter for K-type probes
	Protective case, battery and user manual



## 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	Overload protection
60.00mV	0.01mV	$\pm(0.08\%rdg+10dgt)$	1000VDC/ACrms
600.0mV	0.1mV	$\pm(0.08\%rdg+2dgt)$	
6.000V	0.001V		
60.00V	0.01V		
600.0V	0.1V		
1000V	1V		

Input impedance:  $10M\Omega // <100pF$

### AC TRMS VOLTAGE

Range	Resolution	Accuracy (50Hz ÷ 1kHz)	Overload protection
60.00mV	0.01mV	$\pm(1.2\%rdg+5dgt)$	1000VDC/ACrms
600.0mV	0.1mV		
6.000V	0.001V	$\pm(0.8\%rdg+5dgt)$	
60.00V	0.01V		
600.0V	0.1V		
1000V	1V		

Input impedance:  $10M\Omega // <100pF$

For non-sinusoidal voltages add the herewith correction on accuracies:

Crest factor  $1.4 \div 2.0 \rightarrow$  add  $1.0\%rdg$

Crest factor da  $2.0 \div 2.5 \rightarrow$  add  $2.5\%rdg$

Crest factor da  $2.5 \div 3.0 \rightarrow$  add  $4.0\%rdg$

Max crest factor: 3.0 ( $0 \div 3000 dgt$ ); 2.0 ( $3000 \div 5000 dgt$ ); 1.6 ( $5000 \div 6000 dgt$ )

PEAK HOLD feature: specified accuracy  $\pm 150dgt$

### AC+DC TRMS VOLTAGE

Range	Resolution	Accuracy (50Hz ÷ 1kHz)	Overload protection
60.00mV	0.01mV	$\pm(2.0\%rdg+10dgt)$	1000VDC/ACrms
600.0mV	0.1mV		
6.000V	0.001V	$\pm(2.0\%rdg+5dgt)$	
60.00V	0.01V		
600.0V	0.1V		
1000V	1V		

Input impedance:  $10M\Omega // <100pF$

For non-sinusoidal voltages consider the indication of AC TRMS voltage

PEAK HOLD feature: specified accuracy  $\pm 150dgt$

### AUTO -V VOLTAGE (Voltage measurement with low impedance)

Range	Resolution	Accuracy (50Hz ÷ 1kHz)	Overload protection
600.0V DC	0.1V	$\pm(0.8\%rdg+3dgt)$	1000VDC/ACrms
1000V DC	1V		
600.0V AC	0.1V		
1000V AC	1V		

Input impedance: approx  $3k\Omega$

For non-sinusoidal voltages consider the indication of AC TRMS voltage



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### DC CURRENT

Range	Resolution	Accuracy	Overload protection
60.00mA	0.01mA	$\pm(0.8\%rdg+3dgt)$	Fuse 440mA/1kVAC/DC,10kA (input mA) Fuse 11A/1kVAC/DC,20kA (input A)
600.0mA	0.1mA		
6.000A	0.001A		
10.00A	0.01A		

### AC TRMS CURRENT

Range	Resolution	Accuracy (50Hz ÷ 1kHz)	Overload protection
60.00mA	0.01mA	$\pm(1.2\%rdg+3dgt)$	Fuse 440mA/1kVAC/DC,10kA (input mA) Fuse 11A/1kVAC/DC,20kA (input A)
600.0mA	0.1mA		
6.000A	0.001A		
10.00A	0.01A		

For non-sinusoidal current consider the indication of AC TRMS voltage  
PEAK HOLD feature: specified accuracy  $\pm 150dgt$

### AC+DC TRMS CURRENT

Range	Resolution	Accuracy (50Hz ÷ 1kHz)	Overload protection
60.00mA	0.01mA	$\pm(2.0\%rdg+5dgt)$	Fusibile 440mA/1kVAC/DC,10kA (ingresso mA) Fusibile 11A/1kVAC/DC,20kA (ingresso A)
600.0mA	0.1mA		
6.000A	0.001A		
10.00A	0.01A		

For non-sinusoidal current consider the indication of AC TRMS voltage  
PEAK HOLD feature: specified accuracy  $\pm 150dgt$

### RESISTANCE

Range	Resolution	Accuracy	Open voltage	Overload protection
600.0 $\Omega$	0.1 $\Omega$	$\pm(0.8\%rdg+5dgt)$	<2.5V	1000VDC/ACrms
6.000k $\Omega$	0.001k $\Omega$	$\pm(0.8\%rdg+2dgt)$	<0.6V	
60.00k $\Omega$	0.01k $\Omega$			
600.0k $\Omega$	0.1k $\Omega$			
6.000M $\Omega$	0.001M $\Omega$			
40.00M $\Omega$	0.01M $\Omega$	$\pm(1.0\%rdg+5dgt)$		

### CONTINUITY TEST

Range	Resolution	Accuracy	Overload protection
600.0 $\Omega$	0.1 $\Omega$	$\pm(0.8\%rdg+5dgt)$	1000VDC/ACrms

Max open voltage: 2.5V  
Max test current: approx 1mA  
Active buzzer: R <30 $\Omega$

### DIODE TEST

Range	Resolution	Accuracy	Open voltage	Overload protection
2.000V	1mV	$\pm(1.5\%rdg+2dgt)$	<2.5V	1000VDC/ACrms

Max test current: 0.4mA





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### FREQUENCY

Range	Resolution	Accuracy	Overload protection
100.00Hz	0.01Hz	$\pm(0.1\%rdg+2dgt)$	1000VDC/ACrms
1000.0Hz	0.1Hz		
10.000kHz	0.001kHz		
100.00kHz	0.01kHz		

Minimum value read: 1Hz

Sensitivity: > 5.0Vp-p (ACV 1Hz ÷ 10kHz) ; > 10Vp-p (ACV 10kHz ÷ 100kHz) ; > 2mA<sub>p-p</sub> (AC mA) ; > 0.2A<sub>p-p</sub> (AC A)

### CAPACITANCE

Range	Resolution	Accuracy	Meas. Time	Overload protection
1.000μF	0.001μF	$\pm(1.2\%rdg+2dgt)$	<0.7s	1000VDC/ACrms
10.00μF	0.01μF			
100.0μF	0.1μF			
1.000mF	0.001mF			
10.00mF	0.01mF			
			<3s	

### TEMPERATURE WITH TYPE K PROBE

Range	Resolution	Accuracy (*)	Overload protection
-40.0°C ÷ 400.0°C	0.1°C	$\pm(1.0\%rdg+10dgt)$	1000VDC/ACrms
-40.0°F ÷ 752°F	0.1°F	$\pm(1.0\%rdg+18dgt)$	

(\*) Accuracy referred to the instrument without probe





## 2. GENERAL SPECIFICATIONS


**Display:**

- LCD display, 4 digit with maximum reading 6000 counts with sign, decimal point and bargraph
- Automatic polarity indication
- Backlight
- "OL" over range indication

**Features:**

- Data HOLD
- MAX/MIN for maximum and minimum value
- PEAK for peak measurement
- VOLTSENSE for AC voltage detection without contact
- AC+DC for measurement of DC component overlapped to the alternate signal
- AUTO-V for AC/DC voltage measurement with low impedance
- RANGE for manual range selection
- REL for relative measurement
- Auto Power OFF after 20 minutes of idleness

**Low battery indication:**

- The symbol "" appears when the battery voltage is low

**Environmental conditions:**

- Working temperature/humidity:  $-10^{\circ}\text{C} \div 50^{\circ}\text{C}$ ,  $<80\%HR$
- Storage temperature/humidity:  $-20^{\circ}\text{C} \div 60^{\circ}\text{C}$ ,  $<80\%HR$

**General information:**

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

**Power supply:**

- 1 x 9V alkaline battery type NEDA1604, JIS006P, IEC6F22

**Sizes:**

- 190(L)x94(W)x48(H) mm

**Weight (included batteries):**

- 460g

**Applied standards:**

- Safety: IEC/EN61010-1, UL61010-1
- 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**