



## INSTRUCTION MANUAL

### MT1887<sup>IV</sup>

### 1500V DC MULTIMETER



**TRUE RMS**



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## 1. INTRODUCTION

This meter measures AC/DC Voltage, AC/DC Current, Resistance, Capacitance, Frequency (electrical & electronic), Duty Cycle, Diode Test, and Continuity plus Thermocouple Temperature. It features a waterproof, rugged design for heavy duty use. Proper use and care of this meter will provide many years of reliable service.

## 2. SAFETY SYMBOLS



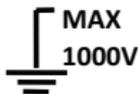
This symbol adjacent to another symbol, terminal or operating device indicates that the operator must refer to an explanation in the Operating Instructions to avoid personal injury or damage to the meter.



This WARNING symbol indicates a potentially hazardous situation, which if not avoided, could result in death or serious injury.



This CAUTION symbol indicates a potentially hazardous situation, which if not avoided, may result in damage to the product.



This symbol advises the user that the terminal(s) so marked must not be connected to a circuit point at which the voltage with respect to earth ground exceeds (in this case) 1000 VAC or VDC.



This symbol adjacent to one or more terminals identifies them as being associated with ranges that may, in normal use, be subjected to particularly hazardous voltages. For maximum safety, the meter and its test leads should not be handled when these terminals are energized.



This symbol indicates that a device is protected throughout by double insulation or reinforced insulation.

### PER IEC1010 OVERVOLTAGE INSTALLATION CATEGORY

#### OVERVOLTAGE CATEGORY I

Equipment of OVERVOLTAGE CATEGORY I is equipment for connection to circuits in which measures are taken to limit the transient overvoltages to an appropriate low level.

**Note** – Examples include protected electronic circuits.

#### OVERVOLTAGE CATEGORY II

Equipment of OVERVOLTAGE CATEGORY II is energy-consuming equipment to be supplied from the fixed installation.

**Note** – Examples include household, office, and laboratory appliances.

#### OVERVOLTAGE CATEGORY III

Equipment of OVERVOLTAGE CATEGORY III is equipment in fixed installations.

**Note** – Examples include switches in the fixed installation and some equipment for industrial use with permanent connection to the fixed installation.

#### OVERVOLTAGE CATEGORY IV

Equipment of OVERVOLTAGE CATEGORY IV is for use at the origin of the installation.

**Note** – Examples include electricity meters and primary over-current protection equipment

### 3. SAFETY INSTRUCTIONS

This meter has been designed for safe use, but must be operated with caution. The rules listed below must be carefully followed for safe operation.

1. **NEVER** apply voltage or current to the meter that exceeds the specified maximum:

Input Protection Limits	
Function	Maximum Input
V DC or V AC	1500VDC/1000V AC RMS
mA AC/DC	500mA 1000V fast acting fuse
A AC/DC	10A 1000V fast acting fuse (10A for 30 seconds max every 15 minutes)
Frequency, Resistance, Capacitance, Duty Cycle, Diode Test, Continuity	1000VDC/AC RMS
Temperature	1000VDC/AC RMS
Surge Protection	8kV peak per IEC 61010

2. **USE EXTREME CAUTION** when working with high voltages.
3. **DO NOT** measure voltage if the voltage on the "COM" input jack exceeds 1000V above earth.
4. **NEVER** connect the meter leads across a voltage source while the function switch is in the current, resistance, or diode mode. Doing so can damage the meter.
5. **ALWAYS** discharge filter capacitors in power supplies and disconnect the power when making resistance or diode tests.
6. **ALWAYS** turn off the power and disconnect the test leads before opening the covers to replace the fuse or batteries.
7. **NEVER** operate the meter unless the back cover and the battery and fuse covers are in place and fastened securely.
8. If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

#### 4. CONTROLS AND JACKS

1 - 40,000 count LCD display

2 - REL button

3 - RANGE button

4 - MODE/Bluetooth button

5 - Function switch

6 - mA,  $\mu$ A and 10A input jacks

7 - COM input jack

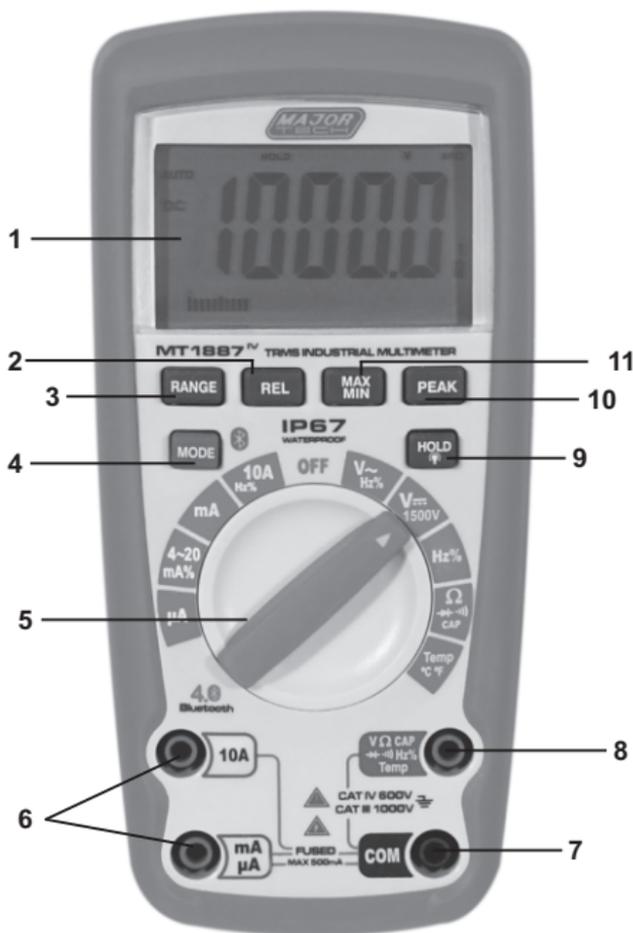
8 - Positive input jack

9 - HOLD and  (Backlight) button

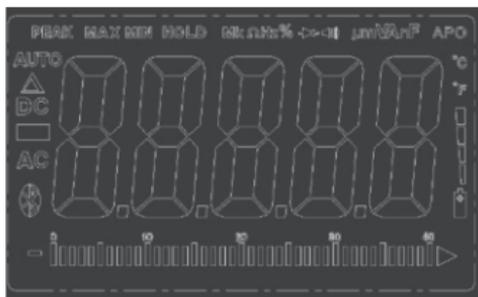
10 - PEAK button

11 - MAX/MIN button

**Note:** Tilt stand and battery compartment are on rear of unit.



## 5. SYMBOLS USED ON LCD



V	Volts	$\mu$	micro ( $10^{-6}$ )
A	Amperes	m	milli ( $10^{-3}$ )
~	Alternating current	k	kilo ( $10^3$ )
—	Direct current	M	mega ( $10^6$ )
-	Minus sign	OL	Overload
$\Omega$	Ohms		Auto Power Off
•))	Continuity		Low battery
	Diode test	AUTO	Autoranging
F	Farads (capacitance)	HOLD	Display hold
Hz	Hertz (frequency)	MAX/MIN/AVG	Maximum/Minimum/Average
%	Percent (duty ratio)	Peak	Peak hold
$^{\circ}\text{C}$	Degrees Centigrade	REL	Relative
$^{\circ}\text{F}$	Degrees Fahrenheit		Bluetooth®
n	nano ( $10^{-9}$ )		

## 6. OPERATING INSTRUCTIONS



**WARNING:** Risk of electrocution. High-voltage circuits, both AC and DC, are very dangerous and should be measured with great care.

1. ALWAYS turn the function switch to the **OFF** position when the meter is not in use.
2. If "OL" appears in the display during a measurement, the value exceeds the range you have selected. Change to a higher range.

## 6.1. DC VOLTAGE MEASUREMENTS

**CAUTION:** Do not measure DC voltages if a motor on the circuit is being switched ON or OFF. Large voltage surges may occur that can damage the meter.

1. Set the function switch to the "**VDC**" position.
2. Insert the black test lead banana plug into the negative **COM** jack. Insert the red test lead banana plug into the positive **V** jack.
3. Touch the black test probe tip to the negative side of the circuit. Touch the red test probe tip to the positive side of the circuit.
4. Read the voltage on the display.

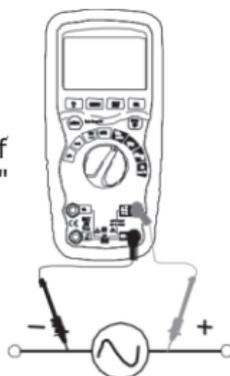


## 6.2. AC VOLTAGE (FREQUENCY, DUTY CYCLE) MEASUREMENTS

**WARNING:** Risk of Electrocution. The probe tips may not be long enough to contact the live parts inside some 240V outlets for appliances because the contacts are recessed deep in the outlets. As a result, the reading may show 0 volts when the outlet actually has voltage on it. Make sure the probe tips are touching the metal contacts inside the outlet before assuming that no voltage is present.

**CAUTION:** Do not measure AC voltages if a motor on the circuit is being switched ON or OFF. Large voltage surges may occur that can damage the meter.

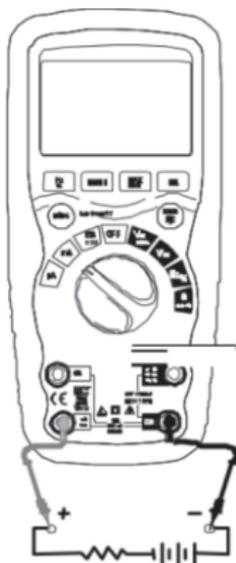
1. Set the function switch to the green **VAC/Hz/%** position.
2. Insert the black test lead banana plug into the negative **COM** jack. Insert red test lead banana plug into the positive **V** jack.
3. Touch the black test probe tip to the neutral side of the circuit. Touch the red test probe tip to the "live" side of the circuit.
4. Read the voltage on the display.
5. Press the **MODE** button to indicate "**Hz**".
6. Read the frequency in the display.
7. Press the **MODE** button again to indicate "**%**".
8. Read the % of duty cycle on the display.



### 6.3. DC CURRENT MEASUREMENTS

**CAUTION:** Do not make 20A current measurements for longer than 30 seconds. Exceeding 30 seconds may cause damage to the meter and/or the test leads.

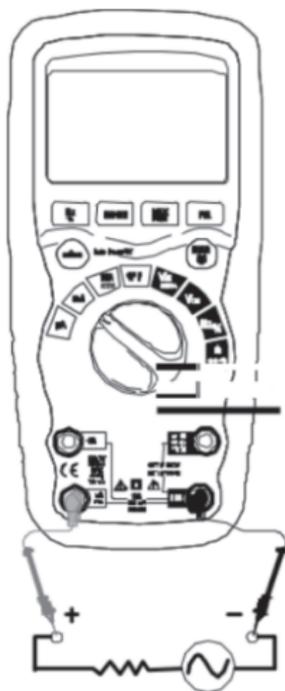
1. Insert the black test lead banana plug into the negative **COM** jack.
2. For current measurements up to 4000 $\mu$ A DC, set the function switch to the yellow  **$\mu$ A** position and insert the red test lead banana plug into the  **$\mu$ A/ mA** jack.
3. For current measurements up to 400mA DC, set the function switch to the yellow **mA** position and insert the red test lead banana plug into the  **$\mu$ A/ mA** jack.
4. For current measurements up to 10A DC, set the function switch to the yellow **10A/HZ/%** position and insert the red test lead banana plug into the **10A** jack.
5. Press the **MODE** button to indicate "**DC**" on the display.
6. Remove power from the circuit under test, then open up the circuit at the point where you wish to measure current.
7. Touch the black test probe tip to the negative side of the circuit. Touch the red test probe tip to the positive side of the circuit.
8. Apply power to the circuit.
9. Read the current on the display.



## 6.4. AC CURRENT (FREQUENCY, DUTY CYCLE) MEASUREMENTS

**CAUTION:** Do not make 20A current measurements for longer than 30 seconds. Exceeding 30 seconds may cause damage to the meter and/or the test leads.

1. Insert the black test lead banana plug into the negative **COM** jack.
2. For current measurements up to  $4000\mu\text{A AC}$ , set the function switch to the yellow  **$\mu\text{A}$**  position and insert the red test lead banana plug into the  **$\mu\text{A}/\text{mA}$**  jack.
3. For current measurements up to  $400\text{mA AC}$ , set the function switch to the yellow  **$\text{mA}$**  position and insert the red test lead banana plug into the  **$\mu\text{A}/\text{mA}$**  jack.
4. For current measurements up to  $10\text{A AC}$ , set the function switch to the yellow  **$10\text{A}/\text{HZ}/\%$**  position and insert the red test lead banana plug into the  **$10\text{A}$**  jack.
5. Press the **MODE** button to indicate "**AC**" on the display.
6. Remove power from the circuit under test, then open up the circuit at the point where you wish to measure current.
7. side of the circuit. Touch the red test probe tip to the "live" side of the circuit.
8. Apply power to the circuit.
9. Read the current on the display.
10. Press and hold the **MODE** button to indicate "**Hz**".
11. Read the frequency on the display.
12. Momentarily press the **MODE** button again to indicate "**%**".
13. Read the % duty cycle on the display.
14. Press and hold the **MODE** button to return to current measurement.



## 6.5. RESISTANCE MEASUREMENTS

**WARNING:** To avoid electric shock, disconnect power to the unit under test and discharge all capacitors before taking any resistance measurements. Remove the batteries and unplug the line cords.

1. Set the function switch to the  $\Omega$  CAP  $\rightarrow$   $\bullet$ ) position.
2. Insert the black test lead banana plug into the negative **COM** jack. Insert the red test lead banana plug into the positive **W** jack.
3. Press the **MODE** button to indicate "W" on the display.
4. Touch the test probe tips across the circuit or part under test. It is best to disconnect one side of the part under test so the rest of the circuit will not interfere with the resistance reading.
5. Read the resistance on the display.



## 6.6. CONTINUITY CHECK

**WARNING:** To avoid electric shock, never measure continuity on circuits or wires that have voltage on them.

1. Set the function switch to the  $\Omega$  CAP  $\rightarrow$   $\bullet$ ) position.
2. Insert the black lead banana plug into the negative **COM** jack. Insert the red test lead banana plug into the positive **W** jack.
3. Press the **MODE** button to indicate "•))" and " $\Omega$ " on the display.
4. Touch the test probe tips to the circuit or wire you wish to check.
5. If the resistance is less than approximately  $35\Omega$ , the audible signal will sound. If the circuit is open, the display will indicate "OL".



## 6.7. DIODE TEST

1. Set the function switch to the  **$\Omega$  CAP**  $\rightarrow \bullet \gg$  position.
2. Insert the black test lead banana plug into the negative **COM** jack and the red test lead banana plug into the positive **V** jack.
3. Press the **MODE** button to indicate " $\rightarrow \bullet$ " and "**V**" on the display.
4. Touch the test probes to the diode under test. Forward voltage will typically indicate 0.400 to 0.700V. Reverse voltage will indicate "**OL**". Shorted devices will indicate near 0V and an open device will indicate "**OL**" in both polarities.



## 6.8. CAPACITANCE MEASUREMENTS

**⚠ WARNING:** To avoid electric shock, disconnect power to the unit under test and discharge all capacitors before taking any capacitance measurements. Remove the batteries and unplug the line cords.

1. Set the rotary function switch to the  **$\Omega$  CAP**  $\rightarrow \bullet \gg$  position.
2. Insert the black test lead banana plug into the negative **COM** jack. Insert the red test lead banana plug into the positive **V** jack.
3. Press the **MODE** button to indicate "**F**".
4. Touch the test leads to the capacitor to be tested.
5. Read the capacitance value on the display.



## 6.9. TEMPERATURE MEASUREMENTS

1. Set the function switch to the **Temp** position.
2. Insert the Temperature Probe into the input jacks, making sure to observe the correct polarity.
3. Press the **MODE** button to indicate "**°C**" or "**°F**".
4. Touch the Temperature Probe head to the part whose temperature you wish to measure. Keep the probe touching the part under test until the reading stabilizes (about 30 seconds).
5. Read the temperature on the display.

**Note:** The temperature probe is fitted with a type K mini connector. A mini connector to banana connector adaptor is supplied for connection to the input banana jacks.



## 6.10. FREQUENCY (DUTY CYCLE) MEASUREMENTS (ELECTRONIC)

1. Set the function switch to the **Hz/%** position.
2. Insert the black lead banana plug into the negative **COM** jack and the red test lead banana plug into the positive **Hz** jack.
3. Touch the test probe tips to the circuit under test.
4. Read the frequency on the display.
5. Press the MODE button to indicate "%".
6. Read the % duty cycle on the display.



## 6.11. 4 – 20mA% MEASUREMENTS

1. Set up and connect as described for DC mA measurements.
2. Set the rotary function switch to the **4-20mA%** position.
3. The meter will display loop current as a % with 0mA=-25%, 4mA=0%, 20mA=100%, and 24mA=125%.

## 6.12. NON-CONTACT AC VOLTAGE MEASUREMENTS



**WARNING:** Risk of Electrocution. Before use, always test the Voltage Detector on a known live circuit to verify proper operation

1. Touch the probe tip to the live conductor or insert into the live side of the electrical outlet.
2. If AC voltage is present, the back light will flash a bright red.
3. The auto off feature will turn the meter off after 15 minutes, the NCV function keeps on working when test the AC Voltage and Set the function switch to the **OFF** position the NCV function can not work.

**NOTE:** The conductors in electrical cord sets are often twisted. For best results, rub the probe tip along a length of the cord to assure placing the tip in close proximity to the live conductor.

**NOTE:** The detector is designed with high sensitivity. Static electricity or other sources of energy may randomly trip the sensor. This is normal operation

### 6.13. AUTO RANGING/MANUAL RANGE SELECTION

When the meter is first turned on, it automatically goes into Auto Ranging. This automatically selects the best range for the measurements being made and is generally the best mode for most measurements. For measurement situations requiring that a range be manually selected, perform the following:

1. Press the **RANGE** key. The "**AUTO**" display indicator will turn off.
2. Press the **RANGE** key to step through the available ranges until you select the range you want.
3. To exit the Manual Ranging mode and return to Auto ranging, press and hold the **RANGE** key for 2 seconds.

**Note:** Manual ranging does not apply for the Temperature functions.

### 6.14. MIN/MAX

1. Press the **MAX/MIN** key to activate the MAX/MIN recording mode. The display icon "**MAX**" will appear. The meter will display and hold the maximum reading and will update only when a new "max" occurs.
2. Press the **MAX/MIN** key again and the display icon "**MIN**" will appear. The meter will display and hold the minimum reading and will update only when a new "min" occurs.
3. To exit **MAX/MIN** mode press and hold the MAX/MIN key for 2 seconds.

### 6.15. RELATIVE MODE

The relative measurement feature allows you to make measurements relative to a stored reference value. A reference voltage, current, etc. can be stored and measurements made in comparison to that value. The displayed value is the difference between the reference value and the measured value. Note: Relative mode does not operate in the 4-20mA function.

1. Perform the measurement as described in the operating instructions.
2. Press the **REL** button to store the reading in the display and the "**REL**" indicator will appear on the display.
3. The display will now indicate the difference between the stored value and the measured value.
4. Press the **REL** button to exit the relative mode.

### 6.16. DISPLAY BACKLIGHT

1. Press the **HOLD/**  key for >1 second to turn the backlight on. The backlight will flash a bright blue.
2. The backlight will automatically turn off after 10 seconds.

## 6.17. HOLD

The hold function freezes the reading in the display. Press the **HOLD** key momentarily to activate or to exit the **HOLD** function.

## 6.18. PEAK HOLD

The Peak Hold function captures the peak AC or DC voltage or current. The meter can capture negative or positive peaks as fast as 1 millisecond in duration. Momentarily press the **PEAK** button, "**PEAK**" and "**MAX**" will display. The meter will update the display each time a higher positive peak occurs. Press the PEAK button again, "**MIN**" will display. The meter will update the display each time a lower negative peak occurs. Press and hold the **PEAK** button for more than 1 second to exit PEAK Hold mode. Auto Power Off feature will be disabled automatically in this mode.

## 6.18. MODE/BLUETOOTH

Press the **MODE**  button to select AC or DC, Frequency or Duty Cycle, Resistance, Continuity or Diode Test and °C or °F.

Bluetooth® allows readings to be displayed and stored on mobile devices. To activate Bluetooth®, press and hold the MODE  button until the "" symbol appears on the LCD display. Bluetooth® should be disabled when not connected to a mobile device in order to conserve battery power. To turn off Bluetooth®, press and hold the **MODE**  button until the "" symbol no longer appears on the display.

### **Note: Bluetooth Connect:**

1. Turn on the Bluetooth function on the instrument using Menu Button
2. Turn on the Bluetooth of the Smartphone, press the **Meterbox Pro** icon and enter into the home interface. Then press **Connect Device** icon on the home interface, Bluetooth device name will appear.
3. Touch the device name listed in Bluetooth devices list to connect the meter.

Detailed information about **Meterbox Pro** available on the APP help file.

**Meterbox Pro for Android:** Please search in Google Play with keyword Meterbox Pro, download and run.

**Meterbox Pro for iOS:** Please search in the Apple Store with keyword Meterbox Pro, download and run.

## 6.19. LOW BATTERY INDICATION

With a fresh battery installed, the battery icon  with four lines above it will be displayed in the lower right corner of the LCD. The lines will disappear as the battery is used. When the icon  appears alone in the display, the battery should be replaced.

## 6.20. AUTO POWER OFF

The auto off feature will turn the meter off after 15 minutes. To disable the auto power off feature, hold down the **MODE** button and turn the meter on. "**APO d**" will appear in the display. Turn the meter off and then on again to re-enable the auto power off feature.

## 7. MAINTENANCE

 **WARNING:** To avoid electric shock, disconnect the test leads from any source of voltage before removing the back cover or the battery or fuse covers.

 **WARNING:** To avoid electric shock, do not operate your meter until the battery and fuse covers are in place and fastened securely.

This Multimeter is designed to provide years of dependable service, if the following care instructions are performed:

1. **KEEP THE METER DRY.** If it gets wet, wipe it off.
2. **USE AND STORE THE METER IN NORMAL TEMPERATURES.** Temperature extremes can shorten the life of the electronic parts and distort or melt plastic parts.
3. **HANDLE THE METER GENTLY AND CAREFULLY.** Dropping it can damage the electronic parts or the case.
4. **KEEP THE METER CLEAN.** Wipe the case occasionally with a damp cloth. DO NOT use chemicals, cleaning solvents, or detergents.
5. **USE ONLY FRESH BATTERIES OF THE RECOMMENDED SIZE AND TYPE.** Remove old or weak batteries so they do not leak and damage the unit.
6. **IF THE METER IS TO BE STORED FOR A LONG PERIOD OF TIME,** the batteries should be removed to prevent damage to the unit.

## 7.1. BATTERY INSTALLATION

**WARNING:** To avoid electric shock, disconnect the test leads from any source of voltage before removing the battery cover.

1. Turn power off and disconnect the test leads from the meter.
2. Open the rear battery cover by removing two screws (B) using a Phillips head screwdriver.
3. Insert the battery into battery holder, observing the correct polarity.
4. Put the battery cover back in place. Secure with the screws.

**WARNING:** To avoid electric shock, do not operate the meter until the battery cover is in place and fastened securely.



**NOTE:** If your meter does not work properly, check the fuses and batteries to make sure that they are still good and that they are properly inserted.

## 7.2. REPLACING THE FUSES

**WARNING:** To avoid electric shock, disconnect the test leads from any source of voltage before removing the meter cover.

1. Disconnect the test leads from the meter.
2. Remove the protective rubber holster.
3. Remove the battery cover (two "B" screws) and the battery.
4. Remove the six "A" screws securing the rear cover.
5. Gently remove the old fuse and install the new fuse into the holder.
6. Always use a fuse of the proper size and value (0.5A/1000V fast blow for the 400mA range 10A/1000V fast blow for the 10A range).
7. Replace and secure the rear cover, battery and battery cover.

**WARNING:** To avoid electric shock, do not operate the meter until the fuse cover is in place and fastened securely.

## 8. SPECIFICATIONS

### 8.1. DC VOLTAGE

Range	Resolution	Accuracy
400.0mV	0.1mV	$\pm 0.2\%$ of reading $\pm 15$ digits
4V	0.0001V	$\pm 0.1$ of reading $\pm 6$ digits
40V	0.001V	
400V	0.01V	
1500V	1.0V	$\pm 0.1\%$ of reading $\pm 6$ digits

### 8.2. AC VOLTAGE 50 to 1000Hz

Range	Resolution	Accuracy
4V	0.0001V	$\pm 1.0\%$ of reading $\pm 8$ digits
40V	0.001V	
400V	0.01V	
1000V	0.1V	

All AC voltage ranges are specified from 5% of range to 100% of range >750Hz,  $\pm(1.5\%$  reading + 8 digits)

### 8.3. DC CURRENT

Range	Resolution	Accuracy
400uA	0.01uA	$\pm 1.0\%$ of reading $\pm 3$ digits
4000uA	0.1uA	
40mA	0.001mA	
400mA	0.01mA	
10A	0.001A	

(10A: 30 sec max with reduced accuracy)

### 8.4. AC CURRENT

Range	Resolution	Accuracy
400uA	0.1uA	$\pm 1.5\%$ of reading $\pm 8$ digits
4000uA	1uA	
40mA	0.01mA	
400mA	0.1mA	
10A	0.01A	

(10A: 30 sec max with reduced accuracy). All AC voltage ranges are specified from 5% of range to 100% of range.

**NOTE:** Accuracy is stated at 18°C to 28°C (65°F to 83°F) and less than 75% RH.

## 8.5. RESISTANCE

Range	Resolution	Accuracy
400Ω	0.01Ω	±0.5% of reading ± 15 digits
4kΩ	0.0001KΩ	±0.5% of reading ± 8 digits
40kΩ	0.001KΩ	
400KΩ	0.01KΩ	
4MΩ	0.001MΩ	±2.0% of reading ± 10 digits
40MΩ	0.01MΩ	

## 8.6. CAPACITANCE

Range	Resolution	Accuracy
40nF	0.01nF	±2.5% of reading ± 40 digits
400nF	0.1nF	
4μF	0.001μF	±2.5% of reading ± 10 digits
40μF	0.01μF	
400μF	0.1μF	
4000μF	1μF	±(5% reading + 10 digits)
40mF	0.01mF	Not specified

## 8.7. FREQUENCY (ELECTRONIC) (AUTO-RANGING)

Range	Resolution	Accuracy
40Hz	0.001Hz	±(0.1% reading + 1 digits)
400Hz	0.01Hz	
4kHz	0.0001kHz	
40kHz	0.001kHz	
400kHz	0.01kHz	
4MHz	0.0001MHz	
40MHz	0.001MHz	
100MHz	0.01MHz	Not specified

Sensitivity: 20V RMS min. at 20% to 80% duty cycle and <100kHz;  
5V RMS min at 20% to 80% duty cycle and >100kHz.

## 8.8. FREQUENCY (ELECTRICAL)

Range	Resolution	Accuracy
40.00~400Hz	0.01Hz	±(0.5% reading)

Sensitivity: 15V RMS @ 20% to 80%, 5A RMS Duty Cycle: Not specified

## 8.9. DUTY CYCLE

Range	Resolution	Accuracy
5.0 to 95.0%	0.01%	$\pm(1.2\% \text{ reading} + 2 \text{ digits})$

Pulse frequency range: 40Hz - 10kHz, Pulse amplitude:  $\pm 5V$  (100 $\mu$ s - 100ms)

## 8.10. TEMPERATURE - (TYPE-K)

Range	Resolution	Accuracy
-50°C to 1000°C	1 °C	$\pm 1.0\%$ of reading + 2.5°C
-58 to 1832°F	1°F	$\pm 1.0\%$ of reading + 4.5°F Meter only, probe accuracy not included

## 8.11. 4-20mA%

Range	Resolution	Accuracy
25 to 125%	0.01%	$\pm 50$ digits

0mA=-25%, 4mA=0%, 20mA=100%, 24mA=125%

**Note:** Accuracy specifications consist of two elements:

- (% reading) – This is the accuracy of the measurement circuit.
- (+ digits) – This is the accuracy of the analog to digital converter.

## 8.12. GENERAL SPECIFICATIONS

Function	Range
Enclosure	Double molded, waterproof
Shock	(Drop Test) 6.5 feet (2 meters)
Diode Test	Test current of 1.5mA maximum, open circuit voltage 3.2V DC typical
Continuity Check	Audible signal will sound if the resistance is less than 35Ω (approx.), test current <0.35mA
PEAK	Captures peaks >1ms
Temperature Sensor	Requires type K thermocouple
Input Impedance	>10MΩ VDC & >3MΩ VAC
AC Response	True RMS
AC True RMS:	The term stands for "Root-Mean-Square," which represents the method of calculation of the voltage or current value. Average responding multimeters are calibrated to read correctly only on sine waves and they will read inaccurately on non-sine wave or distorted signals. True rms meters read accurately on either type of signal.
ACV Bandwidth	50Hz to 1000Hz
Crest Factor	≤3 at full scale up to 500V, decreasing linearly to ≤1.5 at 1000V
Display	40,000 counts backlit liquid crystal with bar graph
Overrange indication	"OL" is displayed
Auto Power Off	15 minutes (approximately) with disable feature
Polarity	Automatic (no indication for positive); Minus (-) sign for negative
Measurement Rate	3 times per second, nominal
Low Battery Indication	"  " is displayed if battery voltage drops below operating voltage
Battery	One 9 volt (NEDA 1604) battery
Fuses	mA, μA ranges; 0.5A/1000V ceramic fast blow A range; 10A/1000V ceramic fast blow

## 8.12. GENERAL SPECIFICATIONS Cont.

Function	Range
Operating Temperature	5°C to 40°C (41°F to 104°F)
Storage Temperature	-20°C to 60°C (-4°F to 140°F)
Operating Humidity	Max 80%
Storage Humidity	<80% up to 31°C decreasing linearly to 50% at 40°C
Operating Altitude	2000 meters maximum.
Weight	342g (includes holster).
Size	187 x 81 x 50mm (includes holster)
Safety	This meter is intended for origin of installation use and protected, against the users, by double insulation per EN61010-1 and IEC61010-1 2nd Edition (2001) to Category IV 600V and Category III 1000V; Pollution Degree 2. The meter also meets UL 61010-1, 2nd Edition (2004), CAN/CSA C22.2 No. 61010-1 2nd Edition (2004), and UL 61010B-2-031, 1st Edition (2003) ,61010-2-033.





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