INSTRUCTION MANUAL

MT1005

1000V AC/DC MULTIMETER





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1. INTRODUCTION

Professional True RMS Industrial Digital Multimeter and TFT color LCD display, providing fast ND converting sampling time, high accuracy, built-in datalogging and Trend Capture features. It can trace any interruption problems of the equipment and watch on without person. It is easy to find and solve the problems of the production equipment, providing Bluetooth technology and memory the datasheets. It has much safer measurements. This meter measures AC/DC Voltage, AC/DC Current, Resistance, Capacitance, Frequency (electrical & electronic), Duty Cycle, Diode Test and Continuity plus Thermocouple Temperature. It can store and recall data. 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



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 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.



Equipment is protected by double or reinforced insulation



Indicates the terminal(s) so marked must not be connected to a circuit where the voltage with respect to earth ground exceeds the maximum safety rating of the meter.

WARNING

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

CAUTION

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

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 a fixed installation and some equipment for industrial use with a 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

2.1. 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.

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

Input Protection Limits

Function	Maximum Input
V DC or VA C	1000V DC/AC RMS
mA AC/DC	800mA l000V fast acting fuse
A AC/DC	10A 1000V fast acting fuse (20A for 30 seconds max every 10 minutes)
Frequency, Resistance, capacitance, Duty Cycle, Diode Test, Continuity	1000V DC/AC RMS
Temperature	1000V DC/AC RMS
Surge Protection: 8kV peak per IEC 61010	

USE EXTREME CAUTION when working with high voltages.

DO NOT measure voltage if the voltage on the "COM" input jack exceeds 1000V above earth ground.

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.

ALWAYS discharge filter capacitors in power supplies and disconnect the power when making resistance or diode tests.

ALWAYS turn off the power and disconnect the test leads before opening the covers to replace the fuse or batteries.

NEVER operate the meter unless the back cover and the battery and fuse covers are in place and fastened securely. If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

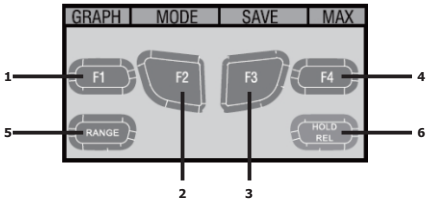
3. FEATURES

3.1. Understanding the Push Buttons

The 6 push buttons on the front of the Meter activate features that augment the function selected using the rotary switch, navigate menus or control power to Meter circuits.

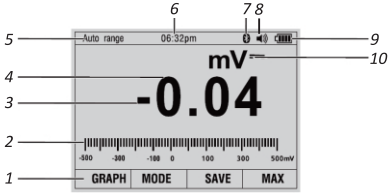
3.2. Meter Description

1 - **F1** button, Default switch to Graph measure.
2 - **F2** button, Default modes related to the rotary switch function.
3 - **F3** button, Default into save mode, default display and wake up for APO.
4 - **F4** button, Default modes **MIN/MAX** starts and stops **MIN/MAX** recording.
5 - **RANGE**, Into manual range and select range of the measurement. When Pressing the **RANGE** button for more than 1 second the instrument will return to **AUTO RANGE**.
6 - **HOLD/REL**, Freezes the present reading on the display and allows the display to be saved. If Pressing the **HOLD/REL** button for more than 1 second will switch to **RELATIVE MODE**.



3.3. Understanding the Display

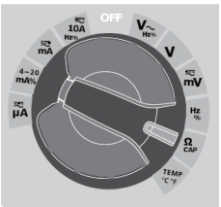
1 - Labels on the LCD display indicate the function of the button just below the displayed label.
2 - Analog bargraph display of the input signal.
3 - Minus sign Indicates a negative reading.
4 - Displays measurement information about the input signal.
5 - Indicates the range the Meter is in and the ranging mode (auto or manual)
6 - Indicates the time set in the internal clock.
7 - Bluetooth symbol indicates when the meter's bluetooth is enabled
8 - Indicates the Meter's beeper is enabled (not associated with the continuity beeper).
9 - Indicates the charge level of the batteries
10 - Indicates the units of measure.



3.4. Understanding the Rotary Switch

Select a primary measurement function by positioning the rotary switch to one of the icons around its perimeter. For each function, the Meter presents a standard display for that function (range, measurement units, and modifiers). Button choices made in one function do not carry over into another function.

V~	AC voltage measurements.
V-	DC and AC+DC voltage measurements.
mV	DC(AC) milli-volts measurements.
Ω CAP	Resistance, Diode test, Capacitance and Continuity Measurements.
Hz%	Frequency measurements.
Temp	Temperature measurements.
A	AC, DC amps measurements.
mA	AC, DC milliamps measurements.
4-20 mA%	% 4-20MA measurements.
uA	AC, DC microampere measurements up to 5,000 µA.



3.5. Using the Input Terminals

All functions except Current use the VOHMS and COM input terminals. The two Current input terminals

10A	Input for 0A to 10.00A Current (20VA overload for 30 seconds on, 10 minutes off)
µA mA	Input for 0A to 600mA Current measurements.
COM	Return terminal for all measurements.
VΩ →|◁)) Hz% CAP Temp	Input for Voltage, Continuity, Resistance, Diode test, Conductance, Capacitance.



4. OPERATION

4.1. AC Voltage 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 inside the outlets. As a result, the reading may show 0V when the outlet actually has voltage present. 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.

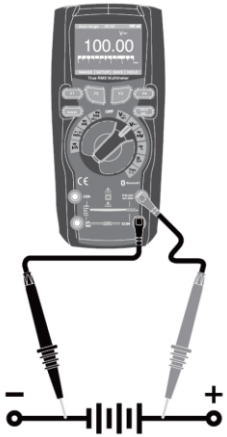


1. Set the function switch to the yellow **VAC** position.
2. Insert the black test lead banana plug into the negative **COM** jack. Insert the red test lead banana plug into the positive **V** jack.
3. Read the Voltage in the main display

4.2. DC Voltage Measurements

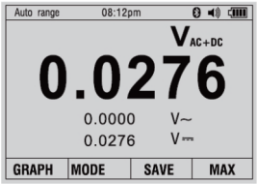
CAUTION: Do not measure **DC** voltages if a motor on the circuit is being switched **ON or OFF**. Large voltage surges may occur that can damage the meter.

1. Set the function switch to the yellow **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. Read the Voltage in the display.



4.3. AC + DC

1. Set the function switch to the yellow **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 jack.
3. Press the **MODE** key to indicate "AC + DC" on the display.
4. Read AC + DC measurement value in the display.



4.4. mV Voltage Measurements

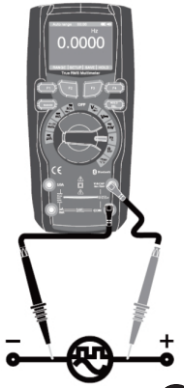
CAUTION: Do not measure **mV** voltages if a motor on the circuit is being switched **ON or OFF**. Large voltage surges may occur that can damage the meter.

1. Set the function switch to the yellow **mV** position.
2. Press the **MODE** key. Switch to **mVDC (mVAC)**.
3. Insert the black test lead banana plug into the negative **COM** jack. Insert the red test lead banana plug into the positive **V** jack.
4. Read the **mV** voltage in the display



4.5. Frequency Measurements

1. Set the function switch to the yellow **Hz%** position.
2. Insert the black test lead banana plug into the negative **COM** jack. Insert the red test test lead banana plug into the positive **V** jack.
3. Read the Frequency in the display.



4.6. 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 yellow **Ω CAP** position.

2. Insert the black test lead banana plug into the negative **COM** jack. Insert the red test lead banana plug into the positive **Ω** Jack.

3. Read the resistance in the display.

4.7. Continuity Check

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 yellow **Ω CAP** position.

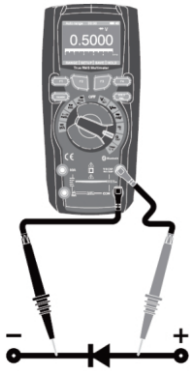
2. Press the **MODE** key. Switch to Conductance.

3. Insert the black test lead banana plug into the negative **COM** jack.
   Insert the red test lead banana plug into the positive jack.

4. If the resistance is less than approximately **50Ω**, the audible signal will sound. If the circuit is open, the display will indicate "**OL**".

4.8. Diode Test

1. Set the function switch to the yellow **Ω CAP** position.
2. Press the **MODE** key. Switch to Diode.
3. Insert the black test lead banana plug into the negative **COM** jack and the red test lead banana plug into the positive **V** jack.
4. Forward voltage will typically indicate 0.400 to 3.200V. Reverse voltage will indicate "**OL**". Shorted devices will indicate near 0V and an open device will indicate "**OL**" in both polarities.



4.9. 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 yellow **Ω CAP** position.
2. Press the **MODE** key. Switch to **CAP**.
3. Insert the black test lead banana plug into the negative **COM** jack. Insert the red test lead banana plug into the positive **V** jack.
4. Read the Capacitance value in the display.



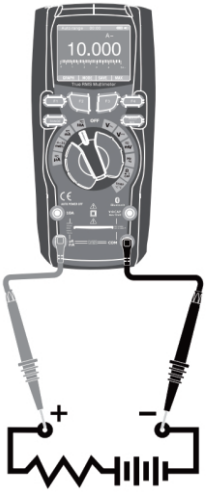
4.10. Temperature Measurements



1. Set the function switch to the yellow **TEMP (°C or °F)** position.
2. Press the **MODE** key. Switch to **TEMP (°C or °F)**.
3. Insert the Temperature Probe into the input jacks, making sure to observe the correct polarity.
4. Read the temperature in the display

4.11. 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.

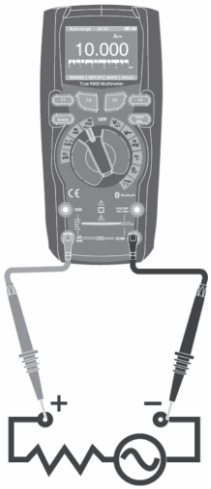


1. Insert the black test lead banana plug into the negative **COM** jack.
2. For current measurements up to 5000µA DC, set the function switch to the yellow **µA** position and insert the red test lead banana plug into the **µA/mA** jack.
3. For current measurements up to 500mA DC, set the function switch to the yellow **mA** position and insert the red test lead banana plug into the **µA/mA** jack.
4. For current measurements up to 10A DC, set the function switch to the yellow **10A** position and insert the red test lead banana plug into the **10A** jack.
5. Press the **MODE** key to indicate "DC" on the display.
6. Read the current in the display.

4.12. AC Current Measurements

CAUTION: Do not make **10A** 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 5000µA AC, set the function switch to the yellow **µA** position and insert the red test lead banana plug into the **µA/mA** jack.
3. For current measurements up to 500mA AC, set the function switch to the yellow **mA** position and insert the red test lead banana plug into the **µA/mA** jack.
4. For current measurements up to 10A AC, set the function switch to the yellow **10A** position and insert the red test lead banana plug into the **10A** jack.
5. Press the **MODE** key to indicate "AC" on the display.
6. Read the current in the display.

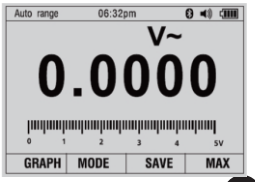


4.13. 4 — 20mA Measurements

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%.

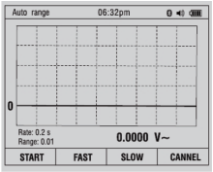
5. UNDERSTANDING THE DISPLAYS

Default Display

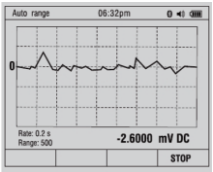


5.1. Graph Measure

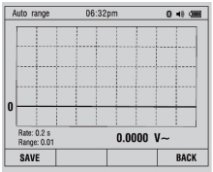
1. Press **Graph (F1)** key, the meter will switch to Graph measure.
2. Press the **START** key.
3. Press the **FAST** or **SLOW** key to adjust the sampling rate.
4. Press the **CANCEL** key to exit Graph and return to normal measurement mode



Press the **STOP** key.

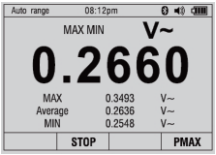


Press the **SAVE** key to save the Graph.
Press the **BACK** key to return.



5.2. Capturing Minimum and Maximum Values

To activate the **MAX/MIN** mode, Press **MIN/MAX(F4)** key,
at the measurement mode.
As shown in the Figure, the Meter displays at the top of the measurement page, the **MAX/MIN** start date and the amount of time at the bottom of the page. In addition, the recorded maximum, average, and minimum values appear in the secondary display with their respective elapsed times.



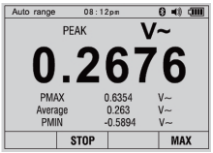
To stop a **MIN/MAX** recording session, press the **STOP** key.
The summary information in the display freezes, and the label function

changes to allow saving the collected data. Pressing the **CLOSE** key exits the **MIN/MAX** record session without saving the collected data.

To save the **MIN/MAX** screen data, the **MIN/MAX** session must be ended by pressing the **STOP** key. Next, press the **SAVE** key.

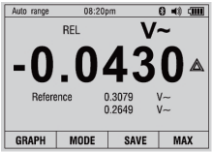
5.3. Capturing Peak Values

To activate the peak mode, at AC measure **MIN/MAX** mode, Press the **PMAX(F4)** button.



5.4. Relative Values

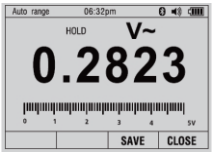
To activate the relative mode, Press the **HOLD/REL** button for more than 1 second.



5.5. Hold Mode

To freeze the display for any function, press the **HOLD** button.

Press the **SAVE** key to save to memory. Press the **CLOSE** key to return to measurement.



5.6. Save Function

Press the **SAVE(F3)** key to enter the save menu.

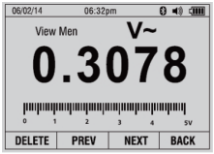


5.7. Storing Individual Measurement Data

For common measurement functions, a snapshot of the screen data is saved by pressing the **SAVE** key. Then press the **DOWN(F3)** key to save the selected item, press the **ENTER(F1)** key.

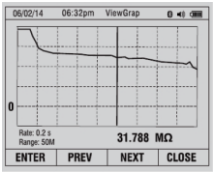
5.8. Viewing Memory Data

Viewing data stored in the Meter's memory is performed through the **SAVE** menu. Press the **DOWN (F3)** key.
Position the menu selector next to the menu item labeled **ViewM**.
Press the **ENTER(F1)** key.

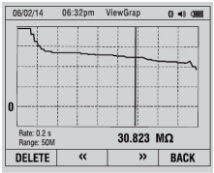


5.9. Viewing Graph Data

Viewing data stored in the Meter's memory is performed through the **SAVE** menu. Press the **DOWN (F3)** key.
Position the menu selector next to the menu item labeled **Graph**.
Press the **ENTER(F1)** key.

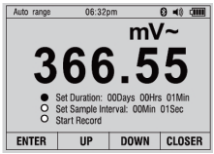


Press the **«** and **»** keys to move cursor.



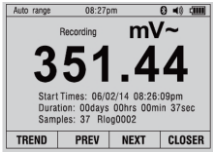
5.10. Recording Measurement Data

Press the **SAVE** key.
Then press the **DOWN (F3)** key to **Record** the selected item, press the **ENTER(F1)** key. Press the **START** key to start recording. The recording session will continue until the allocated memory is used, the batteries expire, the rotary switch is moved. The session is terminated by pressing the **STOP** key.

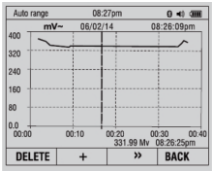


5.11. Viewing Trend Data

Viewing data stored in the Meter's memory is performed through the **SAVE** menu.
Press the **DOWN (F3)** key. Position the menu selector next to the menu item labeled **ViewR** and press the **ENTER(F1)** key.
Press the **TREND(F1)** key.

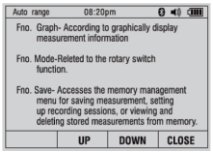


Press the **+** key to increase Graph resolution.
Press the **»** keys to move cursor.



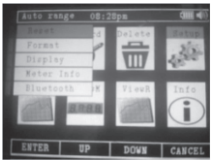
5.12. Info

Viewing data stored in the Meter's memory is performed through the **SAVE** menu.
Press the **DOWN (F3)** key. Position the menu selector next to the menu item labeled **INFO** and press the **ENTER(F1)** key.



5.13. Setup Options

Viewing data stored in the Meter's memory is performed through the **SAVE** menu.
Press the **DOWN (F3)** key. Position the menu selector next to the menu item labeled **SETUP** and press the **ENTER(F1)** key.



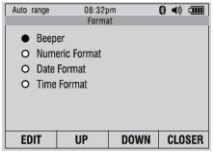
5.14. Resetting Meter

The Meter's setup options can be reset to default values through the setup menu. Open the **setup** menu.
Position the menu selector next to the menu item labeled **RESET** and press the **ENTER** key. Then Position the menu selector next to the menu item labeled **SETUP** and press the **OK** key.
A message will appear asking to confirm the reset action.
Press the **OK** key to perform the reset.

5.15. Meter Info

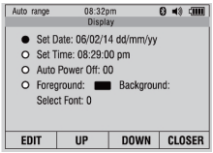
The Meter Info selection lists the serial number and firmware version. Open the setup menu. Position the menu selector next to the menu item labeled **METER INFO** and press the **ENTER** key.

5.16. Setting Format



Open the setup menu. Position the menu selector next to the menu item labeled **FORMAT** and press the **ENTER** key. Using the cursor buttons, move the menu selector next to the menu item labeled **Numeric (Date\Time)** format, press the **EDIT** key to edit, select 0.0000(0,0000), MM/DD/YY(DD/MM/YY) and 24 HOUR(12 HOUR) format.

5.17. Setting Display



Open the setup menu. Position the menu selector next to the menu item labeled **DISPLAY** and press the **ENTER** key.

5.18. Setting Date and Time

Open the setup menu. Position the menu selector next to the menu item labeled **DISPLAY** and press the **ENTER** key.
Next, position the menu selector either next to the **Set Date** item or **Set Time** item and press the **EDIT** key.

5.19. Auto Power Off

Open the setup menu. Position the menu selector next to the menu item labeled **DISPLAY** and press the **ENTER** key. Then position the menu selector next to the menu item labeled **POWER OFF** and press the **EDIT** key. To set **AUTO POWER OFF**. Use **UP** and **DOWN** to adjust the time to one of the preset values. 0 is disable the timeout feature. Press the **OK** key to set the selected time. Press the **CLOSE** key to return.

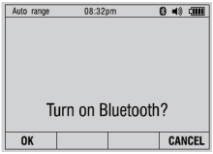
5.20. Foreground and Background

Open the setup menu. Position the menu selector next to the menu item labeled **DISPLAY** and press the **ENTER** key. Then Position the menu selector next to the menu item labeled **FOREGROUND AND BACKGROUND** and press the **OK** key. Use **UP** and **DOWN** to adjust.

5.21. Set Font

Open the setup menu. Position the menu selector next to the menu item labeled **DISPLAY** and press the **ENTER** key. Then Position the menu selector next to the menu item labeled **SELECT FONT** and press the **EDIT** key. Use **UP** and **DOWN** to adjust.

5.22. Bluetooth



You can use the bluetooth communication link and transfer the contents of a meter's memory to a PC or Smart Phone.
Open the setup menu. Position the menu selector next to themenu item labeled **Bluetooth** and press the **Enter** key.
"Turn on Bluetooth" and press **OK**,
"Turn off Bluetooth" and press **OK**.

6. REPLACING THE BATTERIES

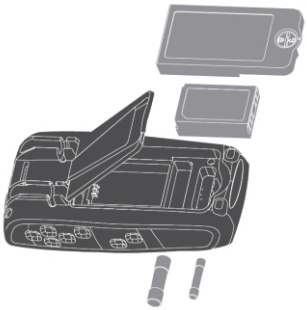
Refer to Figure and replace the batteries as follows:

1. Turn the Meter off and remove the test leads from the terminals.
2. Remove the battery door assembly by using a flat end screwdriver to turn the battery door screw one-half turn counterclockwise.
3. Replace the battery with 7.4V charge battery. Observe proper polarity.
4. Reinstall the battery door assembly and secure it by turning the screw one-half turn clockwise.

7. REPLACING THE FUSES

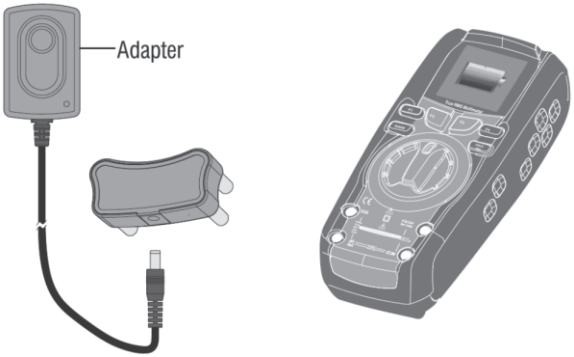
Refer to Figure, examine or replace the Meter's fuses as follows:

1. Turn the Meter off and remove the test leads from the terminals.
2. Remove the battery door assembly by using a flat end screwdriver to turn the battery door screw one-half turn counterclockwise.
3. Remove the fuse by gently prying one end loose, then sliding the fuse out of its bracket.
4. Install only specified replacement fuses.
5. Reinstall the battery door assembly and secure it by turning the screw one-half turn clockwise



8. LI-ION BATTERY CHARGE

1. Set the function switch to the **OFF/CHG** position.
2. Insert the socket into the Meter Input port, and connect the Adapter to the switch socket. Then Insert the Adapter into a Power socket.
3. A charge symbol will be displayed on the TFT color LCD display.



Enclosure	Double molded, waterproof
Shock (Drop Test)	2 meters (6.5 feet)
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 50Ω (approx.), test current <0.35mA
PEAK	Captures peaks >1ms
Temperature Sensor	Requires type K thermocouple
Input Impedance	>10MΩ VDC & >9MΩ VAC
AC Response	True RMS

9. FUNCTIONS

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 20,000Hz
Display	50,000 count TFT LCD
Overrange indication	"OL" is displayed
Auto Power Off	5-30minutes (approximately) with disable feature
Polarity	Automatic (no indication for positive); Minus (-) sign for negative
Measurement Rate	20 times per second, nominal
Low Battery Indication	" " is displayed if battery voltage drops below operating voltage
Battery	One 7.4V Li-ion battery
Fuses	mA, µA ranges; 0.8A/1000V ceramic fast blow. A range; 10A/1000V ceramic fast blow
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% up to 87°F (31°C) decreasing linearly to 50% at 40°C (104°F)
Storage Humidity	50% at 40°C (104°F)
Operating Altitude	<80% 2000 meters (7000ft.) maximum.
Safety	This meter is intended for origin of installation use and protected 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 UL610101B-2-031, 1st Edition (2003)

10. SPECIFICATIONS

10.1. AC Voltage

Range	Resolution	50/60Hz	<1kHz	<5kHz	<20kHz[1]
500mV	0.01mV	±0.5%+5	±1.0%+5	±3.0%+5	±5.5%+20
5V	0.0001V				
50V	0.001V				
500V	0.01V		±1.5%+10	±3.5%+10	Unspecified
1000V	0.1V			Unspecified	Unspecified

[1] upper 10% of range

10.2. DC Voltage

Range	Resolution	Accuracy
500mV [1]	0.01mV	(0.1% + 5 digits)
5V	0.0001V	(0.05% + 5 digits)
50V	0.001V	
500V	0.01V	
1000V	0.1V	(0.1% + 5 digits)

[1] when using the relative mode (REL Q) to compensate for offset

10.3. (AC + DC)

Range	Resolution	<1kHz	<5kHz
5V	0.0001V	(1.2% + 20)	(3.0% + 20)
50V	0.001V		
500V	0.01V		
1000V	0.1V		

10.4. Resistance

Range	Resolution	Accuracy
500Ω[1]	0.01Ω	0.20% + 10
5kΩ	0.0001kΩ	0.20% + 5
50kΩ	0.001kΩ	
500kΩ	0.01kΩ	0.50% + 5
5MΩ	0.0001MΩ	
50MΩ	0.001MΩ	2.0% + 10

[1] When using the relative mode (REL Q) to compensate for offsets.

10.5. Temperature (Type-K)

Range	Resolution	Accuracy
-200 to 1350°C	0.1°C	±(1.0% reading + 3.0°C) ±(1.0% reading + 5.4°C) (probe accuracy not included)

1. Does not include thermocouple probe error.
2. Accuracy specification assumes ambient temperature stable to ±1°C.
3. When in use for a long period of time, the reading will increase 2°C.
4. <-50°C Temp Range accuracy ±(3%+5°C)

10.6. DC Current

Range	Resolution	Accuracy
500µA	0.01µA	±0.2% + 5
5000µA	0.1µA	
50mA	0.001mA	
500mA	0.01mA	±0.3% + 8
10A	0.001A	±0.5% + 8

10.7. AC Current

Range	Resolution	<1KHZ	<5KHZ
500µA	0.01µA	±(0.8% + 5)	±(3% + 5)
5000µA	0.1µA		
50mA	0.001mA		
500mA	0.01mA		
10A	0.001A		

(20A: 30 sec max with reduced accuracy)
All AC current ranges are specified from 5% of the range to 100% of range

10.8. Capacitance

Range	Resolution	Accuracy
5nF[1]	0.001nF	±(1.5% + 20)
50nF	0.01nF	±(1.5% + 8)
500nF	0.1nF	±(1.0% + 8)
5µF	0.001µF	±(1.5% + 8)
50µF	0.01µF	±(1.0% + 8)
500µF	0.1µF	±(1.5% + 8)
10mF	0.01mF	±(2.5% + 20)

[1] With a film capacitor or better, using relative mode (REL Δ) to compensate for offsets.

10.9. Frequency (electronic)

Range	Resolution	Accuracy
50Hz	0.001Hz	±(0.01% + 5)
500Hz	0.01Hz	
5kHz	0.0001kHz	
50kHz	0.001kHz	
500kHz	0.01kHz	
5MHz	0.0001MHz	
10MHz	0.001MHz	unspecified

Sensitivity: 2V RMS min. @ 20% to 80% duty cycle and <100kHz; 5V RMS min @ 20% to 80% duty cycle and >100kHz

10.10. Frequency

Range	Resolution	Accuracy
10.00Hz-10kHz	0.01Hz - 0.001kHz	±(0.5% reading)

10.11. Duty Cycle (electrical)

Range	Resolution	Accuracy
0.1 to 99.90%	0.01%	Sensitivity: 2Vrm ±(1.2% reading +2 digits)

Pulse width: 100µs - 100ms, Frequency: 5Hz to 10kHz



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