

True RMS Digital Multimeter User Manual



**Please read this manual before switching the unit on.
Important safety information inside.**

True RMS Digital Multimeter User Manual





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1. Introduction

Professional True RMS Industrial Digital Multimeter and TFT color LCD display, providing fast A/D converting sampling time, high accuracy, built-in datalogging and Trend Capture features. It can trace any interrupted problems of the equipments and watch on without person. It is easy to find and solve the problems of the production equipments, providing Bluetooth technology and memory the datasheets. It is much more safe measurements.

This meter measures AC/DC Voltage, AC/DC Current, Resistance, Capacitance, Frequency(electrical & electronic), Duty Cycle, Diode Test, Insulation 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.

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 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	1000VDC/AC rms
mA AC/DC	500mA 1000V fast acting fuse
A AC/DC	10A 1000V fast acting fuse (20A 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 ground.

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.

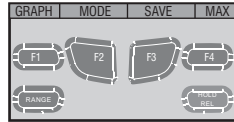
7-NEVER operate the meter unless the back cover and the battery and fuse covers are in place and fastened securely.

If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

4. Feature

4-1. 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.



F1 Software key. Default switch to Graph measure.

F2 Software key. Default modes related to the rotary switch function

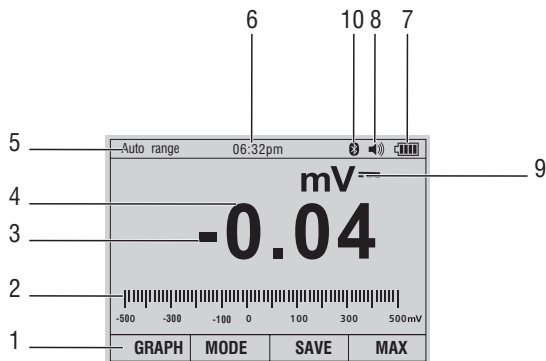
F3 Software key. Default into save mode default Display. And wake up for APO.

F4 Software key. Default modes MINMAX starts and stops MINMAX recording.

RANGE Into manual range and select range of the measure. If Pressing the Range button for greater than 1 second will return Auto Range.

HOLD/REL Freezes the present reading in the display and allows the display to be saved. If Pressing the HOLD/REL button for greater than 1 second will switch relative mode.

4-2. Understanding the Display



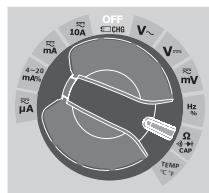
- 1-Soft key labels Indicates the function of the button just below the displayed label.
- 2-Bar graph Analog display of the input signal.
- 3-Minus sign Indicates a negative reading.
- 4-Displays measurement information about the input signal.
- 5-Indicates the range the Meter is in and the ranging mode (auto or manual)
- 6-Time Indicates the time set in the internal clock.
- 7-Battery level Indicates the charge level batteries.
- 8-Beeper Indicates the Meter's beeper is enabled (not associated with the continuity beeper).
- 9-Units Indicates the units of measure.
- 10-Bluetooth indicates



4-3. 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.

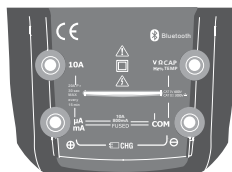
V~	AC voltage measurements
V-	DC and AC + DC voltage measurements.
mV	DC(AC) milli-volts measurements.
Ω $\rightarrow$ CAP	Resistance, Diode test, capacitance and CONTINUITY measurements.
Hz%	Frequency measurements.
Temp	Temperature measurements.
A	Temperature measurements.
mA	AC, dc amps measurements.
4-20 mA%	AC, dc milliamps measurements.
uA	% 4-20MA measurements. AC, dc microampere measurements up to 5,000 uA.



4-4. Using the Input Terminals

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

10A	Input for 0 A to 10.00 A current (20VA overload for 30 seconds on, 10 minutes off),
μA mA	Input for 0 A to 500 mA current measurements.
COM	Return terminal for all measurements.
V Ω $\rightarrow$ CAP Temp	Input for voltage, continuity, resistance, diode test, conductance, capacitance.



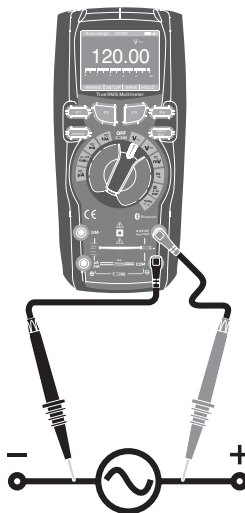
5. Measure Function

5-1. 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 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.

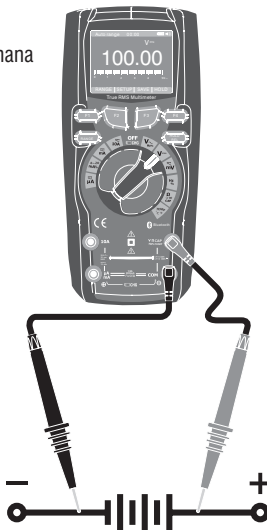
1. Set the function switch to the **VAC** position.
2. Insert the black test lead banana plug into the negative **COM** jack. Insert red test lead banana plug into the positive **V** jack.
3. Read the voltage in the main display



5-2. DC Voltage Measurements

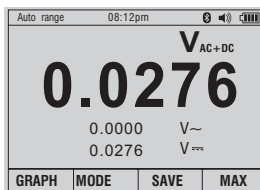
CAUTION: Do not measure DC voltages if a motor on the circuit is being switched **ON** or **OFF**. Large voltage surges may occur that can damage the meter.

1. Set the function switch to the **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.



5-3. AC+DC

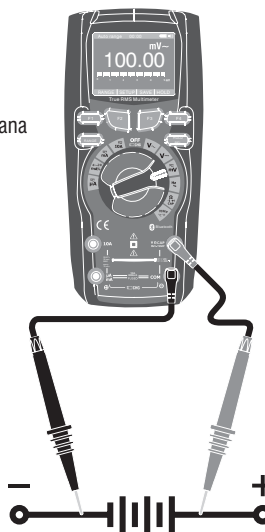
1. Set the function switch to the **VDC** position.
2. Insert the black test lead banana plug into the negative **COM** jack. Insert the red test lead banana plug into the positive jack.
3. Press the **MODE** button to indicate "AC+DC" on the display.
4. Read AC+DC measurement value in the display.



5-4. mV Voltage Measurements

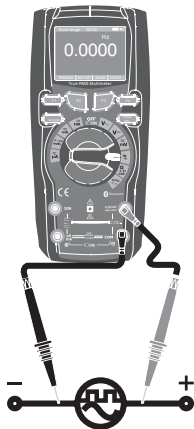
CAUTION: Do not measure mV voltages if a motor on the circuit is being switched **ON or OFF**. Large voltage surges may occur that can damage the meter.

1. Set the function switch to the **mV** position.
2. Press the softkey labeled Mode. switch **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



5-5. Frequency Measurements

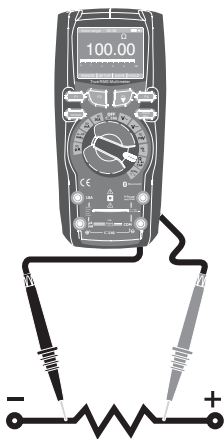
1. Set the function switch to the **Hz%** position.
2. Insert the black test lead banana plug into the negative **COM** jack. Insert the red test lead banana plug into the positive **V** jack.
3. Read the Frequency in the display



5-6. Resistance Measurements

To avoid electric shock, disconnect power to the unit under test and discharge all capacitors before taking any resistance measurements.

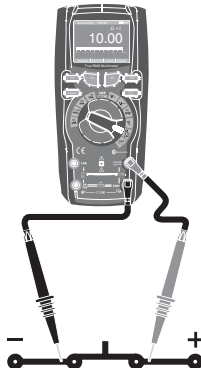
- Remove the batteries and unplug the line cords.
1. Set the function switch to the **Ω CAP**   position.
 2. Insert the black test lead banana plug into the negative **COM** jack. Insert the red test lead banana plug into the positive **Ω** Jack.
 3. Read the resistance in the display.



5-7. Continuity Check

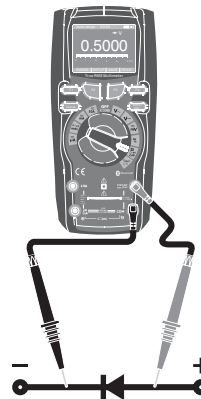
WARNING: To avoid electric shock, disconnect power to the unit under test and discharge all capacitors before taking any resistance measurements. Remove the batteries and unplug the line cords.

1. Set the function switch to the Ω CAP $\rightarrow \bullet \cdot \cdot \cdot$ position.
2. Press the softkey labeled Mode. 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 25Ω , the audible signal will sound. If the circuit is open, the display will indicate "OL".



5-8. Diode Test

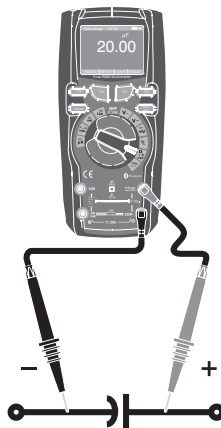
1. Set the function switch to the Ω CAP $\rightarrow \bullet \cdot \cdot \cdot$ position.
2. Press the softkey labeled Mode. Switch to Diode.
3. Insert the black test lead banana plug into the negative **COM** jack and the red test lead banana plug into the positive **V** jack.
4. Forward voltage will 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.



5-9. Capacitance Measurements

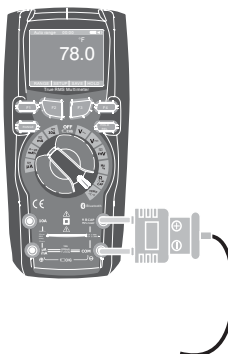
WARNING: To avoid electric shock, disconnect power to the unit under test and discharge all capacitors before taking any capacitance measurements. Remove the batteries and unplug the line cords.

1. Set the rotary function switch to the **Ω CAP** position.
2. Press the softkey labeled Mode. 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



5-10. Temperature Measurements

1. Set the function switch to the **TEMP(C or F)** position.
2. Press the softkey labeled Mode. Switch **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

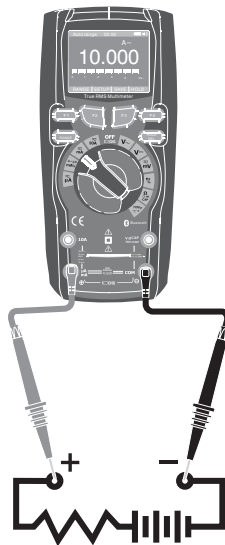


5-11. DC Current Measurements

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 $5000\mu\text{A}$ DC, set the function switch to the **μA** position and insert the red test lead banana plug into the **$\mu\text{A}/\text{mA}$** jack.
3. For current measurements up to 500mA DC, set the function switch to the **mA** position and insert the red test lead banana plug into the **$\mu\text{A}/\text{mA}$** jack.
4. For current measurements up to 10A DC, set the function switch to the **10A** 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. Read the current in the display.

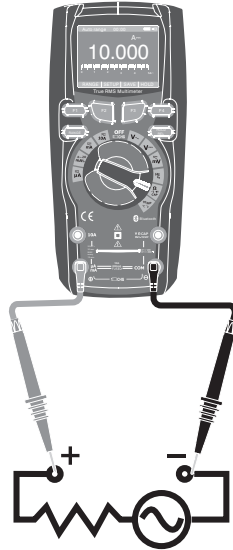


5-12. AC Current Measurements

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.

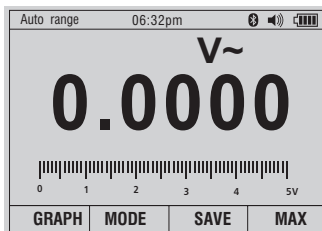
1. Insert the black test lead banana plug into the negative **COM** jack.
2. For current measurements up to $5000\mu\text{A}$ AC, set the function switch to the **μA** position and insert the red test lead banana plug into the **$\mu\text{A}/\text{mA}$** jack.
3. For current measurements up to 500mA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



5-13. % 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 $0\text{mA} = -25\%$, $4\text{mA} = 0\%$, $20\text{mA} = 100\%$, and $24\text{mA} = 125\%$.

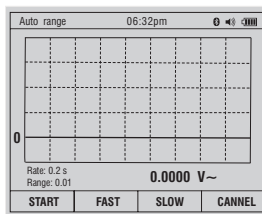
6. Default Display



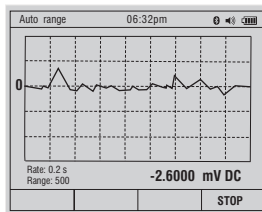
6-1. Graph Measure

Press Software key label **Graph (F1)**, Meter will switch to Graph measure.

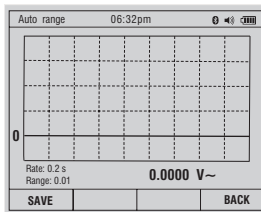
Press soft key **START** button. Press **FAST** or **SLOW** soft keys to adjust sampling rate. Press **CANCEL** soft key to exit Graph and return to normal measurement mode



Press **STOP** soft key.

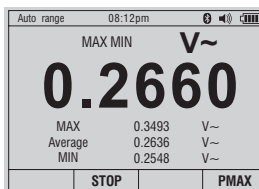


Press SAVE soft key to save Graph. Press BACK soft key to return.



6-2. Capturing Minimum and Maximum Values

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

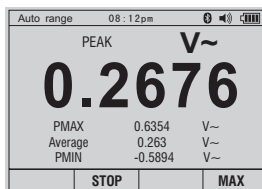


To stop a MINMAX recording session, press the Softkey labeled Stop. The summary information in the display freezes, and the softkeys change function to allow saving the collected data. Pressing the softkey labeled Close exits the MIN MAX record session without saving the collected data.

To save the MIN MAX screen data, the MIN MAX session must be ended by pressing the softkey labeled Stop. Next, press the softkey labeled Save.

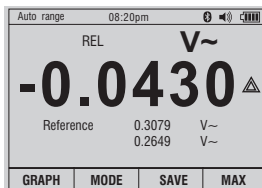
6-3. Capturing Peak Values

To activate the peak mode, at AC measure MINMAX mode, Press Software key labeled PMAX(F4).



6-4. Relative Values

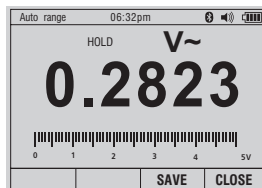
To activate the relative mode, Press the HOLD/REL button for greater than 1 second.



6-5. Hold Mode

To freeze the display for any function, press key HOLD.

Press key save to memory. And press close return measure.



6-6. Save Function

Then pressing the labeled **SAVE(F3)**, into save menu.

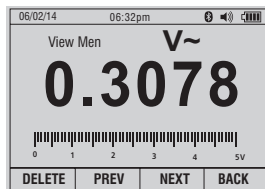


6-7. Storing Individual Measurement Data

For common measurement functions, a snapshot of the screen data is saved by pressing the softkey labeled **Save**. Then pressing the labeled **DOWN(F3)** to the **Save** select item, pressing the softkey labeled **ENTER(F1)**

6-8. Viewing Memory Data

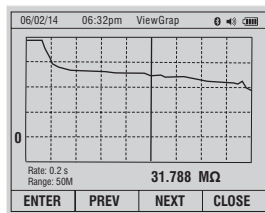
Viewing data stored in the Meter's memory is performed through the save menu. Press the softkey labeled **DOWN (F3)**. Position the menu selector next to the menu item labeled **ViewM**. And pressing the softkey labeled **ENTER(F1)**



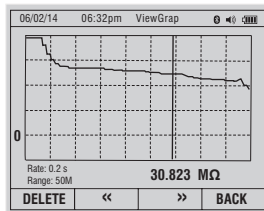
6-9. Viewing Graph Data

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

Pressing the softkey labeled **ENTER(F1)**

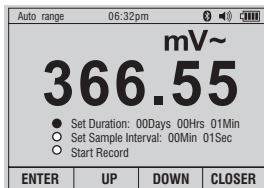


Press the << and >> soft keys to move cursor



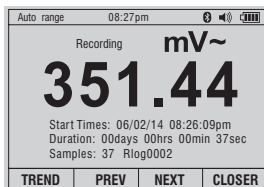
6-10. Recording Measurement Data

Press the softkey labeled **Save**. Then pressing the labeled **DOWN (F3)** to the **Record** select Item, pressing the softkey labeled **ENTER(F1)**. Press the softkey labeled **Start** to start records. The recording session will continue until the allocated memory is used, the batteries expire, the rotary switch is moved, or the session is terminated by pressing the softkey labeled **Stop**



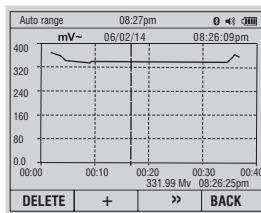
6-11. Viewing Trend Data

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



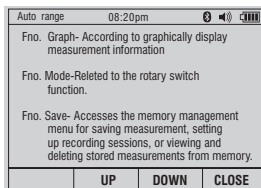
Press the softkey labeled **TREND (F1)**

Press the + soft key to increase Graph resolution. Press the >> soft keys to move cursor.



6-12. Info

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



7. Setup Options

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



7-1. Resetting Meter

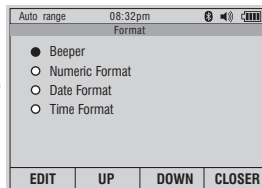
The Meter's setup options can be reset to default values through the setup menu. Open the setup menu. Position the menu selector next to the menu item labeled **RESET** and press the key **Enter**. Then Position the menu selector next to the menu item labeled **SETUP** and press the key **OK**. Then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

7-2. Meter Info

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

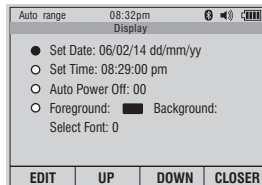
7-3. Setting Format

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



7-4. Setting Display

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



7-5. Setting Date and Time

Open the setup menu. Position the menu selector next to the menu item labeled **Display** and press the key **Enter**.

Next, position the menu selector next to either the Set Date item or Set Time item and press the softkey labeled Edit.

7-6. Auto Power Off

Open the setup menu. Position the menu selector next to the menu item labeled **Display** and press the key **Enter**. Then Position the menu selector next to the menu item labeled POWER OFF and press the key EDIT.

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 softkey labeled OK to set the selected time. Press the softkey labeled Close to return.

7-7. Foreground and Background

Open the setup menu. Position the menu selector next to the menu item labeled **Display** and press the key **Enter**. Then Position the menu selector next to the menu item labeled **Foreground and Background** and press the key OK. Use UP and DOWN to adjust.

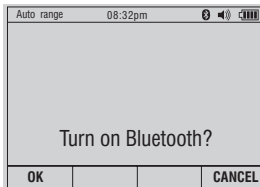
7-8. Set Font

Open the setup menu. Position the menu selector next to the menu item labeled **Display** and press the key **Enter**. Then Position the menu selector next to the menu item labeled **select font** and press the key EDIT. Use UP and DOWN to adjust.

7-9. Bluetooth

You can use the Bluetooth communication link and transfer the contents of a meter's memory to a PC.

Open the setup menu. Position the menu selector next to the menu item labeled **Bluetooth** and press the key **Enter**. "Turn on Bluetooth" and press OK , "Turn off Bluetooth" and press OK.



7-10. Replacing the Batteries

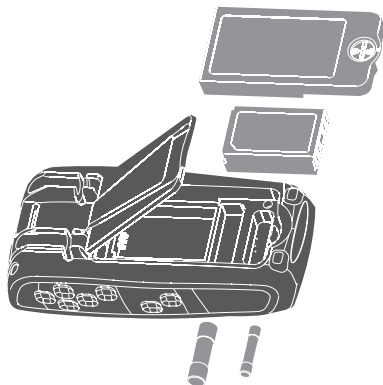
Refer to Figure and replace the batteries as follows:

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

7-11. Replacing the Fuses

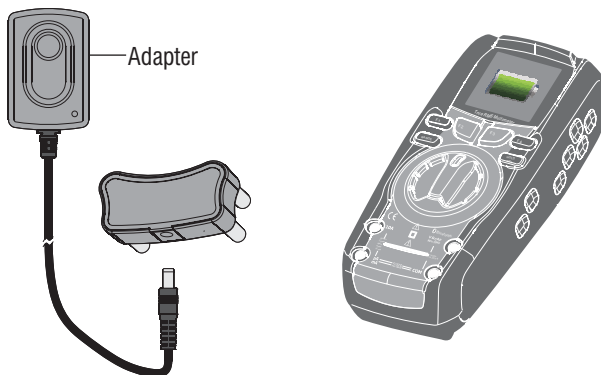
Referring to Figure , examine or replace the Meter's fuses as follows:

1. Turn the Meter off and remove the test leads from the terminals.
2. Remove the battery door assembly by using a standard blade 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



7-12 Li-ion Battery Charge

1. Set the function switch to the OFF/CHG position.
2. Insert the socket into the Meter Input port. And the Adapter connected to the switch socket.
Then Insert the Adapter into Power socket.
3. Display charge symbol in TFT color LCD display



Enclosure	Double molded, waterproof
Shock (Drop Test)	6.5 feet (2 meters)
Diode Test	Test current of 0.9mA maximum, open circuit voltage 3.2V DC typical
Continuity Check	Audible signal will sound if the resistance is less than 25Ω (approx.), test current $<0.35\text{mA}$
PEAK	Captures peaks $>1\text{ms}$
Temperature Sensor	Requires type K thermocouple
Input Impedance	$>10\text{M}\Omega$ VDC & $>9\text{M}\Omega$ 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 20000Hz
Display	50,000 count TFTLCD
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 7.2 volt (NEDA 1604) battery
Fuses	mA, μ A 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
Storage Humidity	50% at 40°C (104°F)
Operating Altitude	<80% 7000ft. (2000meters) maximum.
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)

8. Specifications

AC Voltage	Range	Resolution	50/60HZ	<1KHZ	<5kHz	<20KHZ[1]
	500mV	0.01mV	$\pm 0.5\%$ +5	$\pm 1.0\%$ +5	$\pm 3.0\%$ +5	$\pm 5.5\%$ +20
	5V	0.0001V				
	50V	0.001V				
	500V	0.01V		$\pm 1.5\%$ +10	$\pm 3.5\%$ +10	unspecified
	1000V	0.1V			unspecified	unspecified

[1] upper 10 % of range,

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

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

(AC+DC)			<1KHZ	<5KHZ
	5V	0.0001V	(1.2% + 20)	(3.0% + 20)
	50V	0.001V		
	500V	0.01V		
	1000V	0.1V		

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

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

Function	Range	Resolution	Accuracy	
Temp (type-K)	-200 to 1350 °C	0.1 °C	± (1.0% reading + 3.0°C) ± (1.0% reading + 5.4°F) (probe accuracy not included)	
			1. Does not include error of the thermocouple probe.	
			2. Accuracy specification assumes ambient temperature stable to ±1 °C.	
			3. Use a long time, reading will increase 2 °C.	
DC Current	500μA	0.01μA	±0.2%+5	
	5000μA	0.1μA	±0.2%+5	
	50mA	0.001mA	±0.2%+5	
	500mA	0.01mA	±0.3%+8	
	10A	0.001A	±0.5%+8	
AC Current			<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 range to 100% of range			
Capacitance	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 zero residual.			

Function	Range	Resolution	Accuracy
Frequency (electronic)	50Hz	0.001Hz	$\pm(0.01\% + 5)$
	500Hz	0.01Hz	$\pm(0.01\% + 5)$
	5kHz	0.0001kHz	$\pm(0.01\% + 5)$
	50kHz	0.001kHz	$\pm(0.01\% + 5)$
	500kHz	0.01kHz	$\pm(0.01\% + 5)$
	5MHz	0.0001MHz	$\pm(0.01\% + 5)$
	10MHz	0.001MHz	unspecified
Sensitivity: 2V rms min. @ 20% to 80% duty cycle and <100kHz; 5Vrms min @ 20% to 80% duty cycle and > 100kHz.			
Frequency (electrical)	10.00Hz-10KHz	0.01Hz - 0.001KHz	$\pm(0.5\% \text{ reading})$
	Sensitivity: 2Vrms		
Duty Cycle	0.1 to 99.90%	0.01%	$\pm(1.2\% \text{ reading} + 2 \text{ digits})$
	Pulse width: 100 μ s - 100ms, Frequency: 5Hz to 150kHz		

FCC and IC warning:

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions : (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna.
Increase the separation between the equipment and receiver.
Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
Consult the dealer or an experienced radio/TV technician for help

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

This device complies with FCC and Industry Canada RF radiation exposure limits set forth for general population (uncontrolled exposure).

This device must not be collocated or operating in conjunction with any other antenna or transmitter.