



Item #1011 112 432
Model #DMM-8301

USE AND CARE GUIDE

TRUE RMS MANUAL-RANGING MULTIMETER



Questions, problems, missing parts? Before returning to the store,
call Commercial Electric Customer Service
8 a.m. - 7 p.m., EST, Monday - Friday, 9 a.m. - 6 p.m., EST, Saturday

1-877-527-0313
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Retain this manual for future use.

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THANK YOU

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Safety Information

Please read this manual carefully and pay attention to related safe working standards before using this meter. Protection provided by the instrument will be impaired if used in a manner not specified by the manufacturer.

SAFETY SYMBOLS

Symbol	Definition
	Indicates important safety information.
	Caution! Indicates a potentially hazardous situation.
	Caution, possibility of electric shock.
	Equipment protected throughout by DOUBLE INSULATION or REINFORCED INSULATION.
	Read instruction before use.
	Protective conductor terminal.
	The fuse must be replaced with the rating specified in this manual.
	Conforms to UL STD. 61010-1, 61010-2-033. Certified to CSA STD. C22.2 NO. 61010-1, 61010-2-033.
CAT II	(Measurement Category II) is applicable to test and measuring circuits connected directly to utilization points (socket outlets and similar points) of the low-voltage MAINS installation.
CAT III	(Measurement Category III) is applicable to test and measuring circuits connected to the distribution part of the building's low-voltage MAINS installation.

Safety Information (continued)

PRECAUTIONS

WARNING: Measure known voltage with the meter to verify that the meter is working properly. If the meter is working abnormally, stop using it immediately. A protective device may be damaged. If there is any doubt, have the meter inspected by a qualified technician.

WARNING: Do not use the meter or test leads if they look damaged. Check to see if the test wire has insulation damage or bare metal. Check test wire continuity. If the wire is damaged, replace it with a new one before using the meter.

WARNING: When testing voltage that exceeds 30V AC voltage RMS or 60V DC, be particularly careful to avoid electric shock.

WARNING: Before measuring current, check the meter's fuse and turn off power to the circuit before connecting the meter to the circuit.

WARNING: Do not operate the meter with the case (or any part of case) removed or damaged.

WARNING: When the battery low voltage indicator illuminates, replace the battery immediately. A low battery will cause meter reading errors and may result in electric shock or personal injury.

WARNING: Do not operate the meter around explosive gas, vapor, or dust.

WARNING: When measuring, use the correct jack, and select the proper function and measuring range.

WARNING: When making connections, connect the common test lead before connecting the live test lead. When disconnecting, disconnect the live test lead before disconnecting the common test lead.

WARNING: Do not use under direct sunlight or high temperatures.

WARNING: Do not measure voltages exceeding the rated voltage marked on the meter.

WARNING: Disconnect power to the circuits and discharge all high-voltage capacitors before testing resistance, continuity, diodes, or capacitance.

WARNING: Before changing functions, disconnect the test leads from the circuit under test.

WARNING: For all DC functions, including manual or auto ranging, avoid the risk of shock due to a possible inaccurate reading by verifying the presence of any AC voltages. Firstly, use the AC function and then select DC voltage range equal to or greater than the AC range.

WARNING: Use only with CAT III and CAT IV rated test leads.

Safety Information (continued)



WARNING: Do not attempt to measure resistance or continuity on a live circuit.



CAUTION: To avoid damage to the meter, do not exceed the maximum limits of the input values shown in the specification tables.



CAUTION: When the range of the value to be measured is unknown, check that the range initially set on the meter is the highest possible setting or, wherever possible, choose the auto-ranging mode.



CAUTION: When maintaining the meter, use replacement parts specified by the manufacturer.



CAUTION: If the current under measurement is higher than the selected value for a long period, overheating may take place, compromising the safety and operation of the inner circuits.



NOTE: The hazardous voltage indicator " ζ " will appear for AC voltages >30V rms or DC voltages >30V.



CAUTION: Pay attention to the battery polarity when changing the battery.



CAUTION: When maintaining the meter, use replacement parts specified by the factory.



CAUTION: When repairing televisions or carrying out measurements on power-switching circuits, remember that high-amplitude voltage pulse at the test points can damage the meter. Use of a TV filter will attenuate any such pulse.



CAUTION: Check the batteries before use. Replace the batteries if the low battery symbol appears on the LCD display.



CAUTION: Before you take a measurement, turn the function/range switch to the desired range.



NOTE: Keep your fingers behind the protection guards while measuring.

Safety Information (continued)

FCC COMPLIANCE STATEMENT



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.



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.



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.

The Home Depot, Inc.
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Warranty

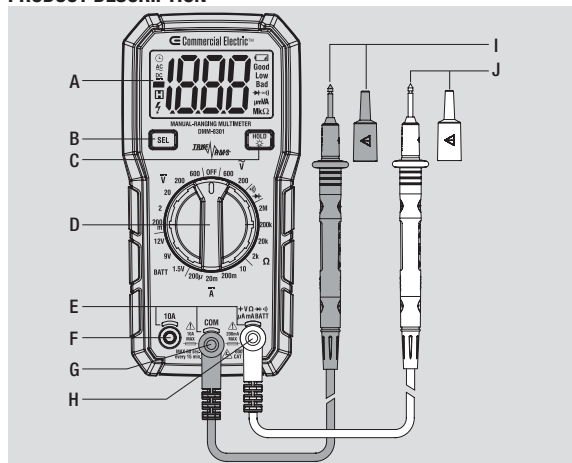
WARRANTY: 12 months

For one year from the date of purchase, this product is warranted against any defects in material or workmanship. This warranty is void if this product is ever used while providing commercial services or if rented to another person.

Contact the Customer Service Team at 1-877-527-0313 or visit www.homedepot.com.

Pre-Operation

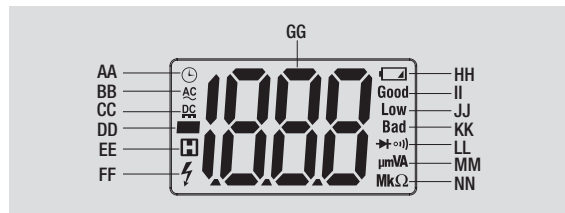
PRODUCT DESCRIPTION



Part	Name	Description
A	LCD display	Display the measured readings.
B	SEL button	Press SEL button to select Continuity/Diode.
C	Data hold/ Backlight button	Press to hold the current reading on the display, press again to exit the hold mode. Long press to turn on/off the LCD backlight
D	Rotary switch	Rotate to select a measurement mode.
E	Leads alert LED indicators	Indicate the right jack for leads input.
F	10A jack	Connect to the red test lead to measure DC 10A current.
G	Common (COM) Jack	Connect to the black test lead.
H	Positive input jack	Connect to the red test lead to measure voltage, $\mu\text{A}/\text{mA}$ current, resistance, continuity, diode, and battery.
I	Black test lead with removable cap	Connect to COM jack.
J	Red test lead with removable cap	Connect to positive input jack or 10A positive input jack.

Pre-Operation (continued)

LCD DISPLAY DEFINITIONS



Part	Symbol	Description
AA	⏻	Active auto power off indicator
BB	AC	Alternating current indicator
CC	DC	Direct current indicator
DD	■	Numerical value polarity indicator (negative sign)
EE	⏻	Data hold indicator
FF	⚡	High voltage warning symbol (> 30V AC RMS or 30V DC)
GG	12.34	Measurement display value
HH	⏻	Low battery indicator
II	Good	Battery in good status indicator
JJ	Low	Battery in low status indicator
KK	Bad	Battery in bad status indicator
LL	⤴	Diode measurement function indicator
LL	⏻	Continuity measurement indicator
MM	μ	Micro (value x 10^{-6})
MM	m	Mili (value X 10^{-3})
MM	V	Volts (Voltage)
MM	A	Amps (Current)
NN	M	Mega (value X 10^6)
NN	k	Kilo (value X 10^3)
NN	Ω	Ohms (Resistance)

Pre-Operation (continued)

PRODUCT SPECIFICATIONS

Component	Specification
LCD display	2000 counts
Sampling frequency	3 samples per second
Fuse protection	F: 10A/ 600V, 6 X 30 mm (Rated breaking capacity: 10kA) F: 200mA/ 600V, 5 X 20 mm (Rated breaking capacity: 1kA)
Battery	2 X AAA 1.5V batteries
Accuracy	Accuracy is specified for a period of one year after calibration and at 18°C to 28°C (64°F to 82°F) with relative humidity up to 80%. Accuracy specifications take the form of: $\pm$ (% of reading + number of least significant digits).
AC response	True RMS
Low battery indication	 on the display
Over-range indication	LCD displays "OL"
Polarity indication	"  " displayed for negative polarity
Operating altitude	< 6560 ft. (2000 m)
Operation environment	32°F to 104°F (0°C to 40°C), < 70% relative humidity, indoor use only.
Storage temperature	14°F to 122°F (-10°C to 50°C), < 80% relative humidity, battery removed.
Pollute degree	2
Safety rating	CAT III 600V, Class 2, Double insulation.
Size	6.44 X 3.19 X 1.82 in (163.5 X 81 X 46.4 mm)
Weight	Approx. 10.2 oz (290 g), battery included.

DC VOLTAGE SPECIFICATIONS

Measuring Range	Resolution	Accuracy
200.0mV	0.1mV	$\pm$ (0.5% of reading + 3 digits)
2.000V	1mV	
20.00V	0.01V	
200.0V	0.1V	$\pm$ (0.8% of reading + 3 digits)
600V	1V	

□ Maximum Input Voltage: 600V DC

Pre-Operation (continued)

AC VOLTAGE SPECIFICATIONS

Measuring Range	Resolution	Accuracy
200.0V	0.1V	$\pm$ (1.0% of reading + 3 digits)
600V	1V	$\pm$ (1.2% of reading + 5 digits)

- Maximum Input Voltage: 600V AC RMS
- Frequency Range: 50 to 60Hz; All AC Voltage ranges are specified from 5% of range to 100% of range.

DC CURRENT SPECIFICATIONS

Measuring Range	Resolution	Accuracy
200.0μA	0.1μA	$\pm$ (1.0% of reading + 5 digits)
20.00mA	10μA	
200.0mA	100μA	
10A	10mA	$\pm$ (2.0% of reading + 5 digits)

- Overload Protection: F: 10A/ 600V, F: 200mA/ 600V.
- Maximum Input: μA/mA setting: 200mA DC
10A setting: 10A DC (30 sec. max with reduced accuracy)
- When measured current is greater than 2A, the continuous measurement time cannot be more than 2 minutes. Disconnect the current and wait 10 minutes before you take another measurement.

RESISTANCE SPECIFICATIONS

Measuring Range	Resolution	Accuracy
200.0Ω	0.1Ω	$\pm$ (0.8% of reading + 3 digits)
2000Ω	1Ω	
20.00kΩ	0.01kΩ	
200.0kΩ	0.1kΩ	
2MΩ	0.01MΩ	$\pm$ (1.0% of reading + 3 digits)

- Overload Protection: 250V RMS AC or 250V DC

DIODE AND AUDIBLE CONTINUITY SPECIFICATIONS

Measuring Range	Resolution
	Displays the approximate diode positive voltage.
	When the resistance is lower than 50Ω the meter will beep.

- Overload Protection: 250V RMS AC or 250V DC

Pre-Operation (continued)

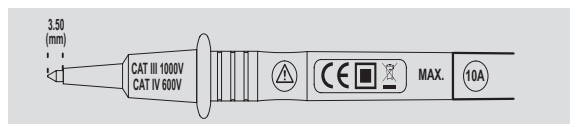
BATTERY VOLTAGE SPECIFICATIONS

Position	Resolution	Load Impedance
1.5V	0.001V	100Ω
9V	0.01V	450Ω
12V	0.01V	120Ω

□ Overload Protection: F: 200mA/600V

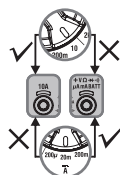
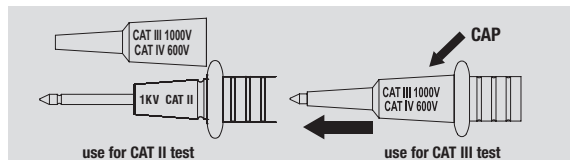
TESTING IN CAT III / CAT IV MEASUREMENT LOCATIONS

Ensure the test leads shield is pressed firmly in place. Failure to use the CAT III / CAT IV shield increases arc-flash risk.



TESTING IN CAT II MEASUREMENT LOCATIONS

CAT III/ CAT IV shields may be removed for CAT II locations. This will allow testing on recessed conductors such as standard wall outlets. Take care not to lose the shields.

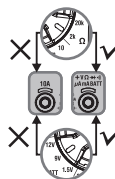


WARNING:

- 10A range measurements: must insert RED test lead to left probe 10A socket ONLY.
- mA range measurements: must insert RED test lead to right probe mA socket and do not use these ranges to measure HIGH VOLTAGE.

MISUSE CAN RESULT IN BLOWN FUSE!

Pre-Operation (continued)



WARNING:

- All other measurements: must insert RED test leads to the right socket.
 - Do not use these ranges to measure HIGH VOLTAGE.
- MISUSE CAN RESULT IN UNIT DEFECT OR BLOWN FUSE!**

SEL BUTTON

- Press SEL button (B) to select audible continuity or diode function when the rotary switch (D) rotate to continuity/diode settings.

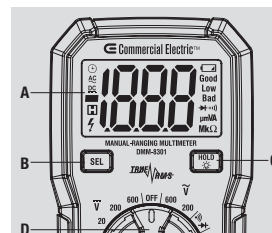
DATA HOLD BUTTON

Data hold mode causes the meter to stop updating the data on the LCD display (A). To enter and exit data hold mode:

- Press Data hold/ Backlight button (C) to freeze the current measurement on the LCD display (A) and the "HOLD" icon appears.
- Press again to release the display and return to live measurement and the "HOLD" icon disappears.

AUTO POWER OFF

- By default, the meter automatically enters a sleep state after 5 minutes inactivity. Press any button to active the working mode.
- To disable the auto power off function, rotate the rotary switch (D) to OFF position, hold the Data hold/ Backlight button (C), and rotate the rotary switch (D) to any working position. The beeper will sound, the auto power off icon "⏻" will disappear, indicating that the auto power off function is successfully turned off.



BACKLIGHT BUTTON

- Press and hold Data hold/ Backlight button (C) for 2 seconds to turn on or off the backlight.
- Backlight will automatically turns off after approximately 3 minutes.

LEAD ALERT LEDS

- When the rotary switch (D) is rotated to a measurement setting, the lead alert LED indicators (E) will illuminate green to indicate that the test leads should be inserted into the appropriate jacks. The lights will automatically turn off after 2 minutes. To disable the lead alert LED indicators (E), power the meter ON while holding the SEL button (B).

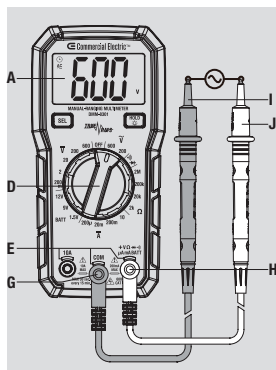
NOTE: Lead alert function will reactivate by default when the meter powers OFF or when the rotary switch is rotated.

Operation

1 AC Voltage Measurement ($\leq 600V$)

WARNING: Do not attempt to measure over 600V or 200mA.

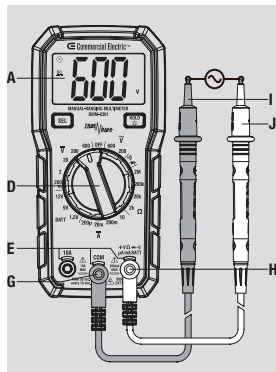
- Rotate the rotary switch (D) to the highest V AC ($\bar{V}$) setting (600V). Insert the RED test lead (J) into positive input jack (H) and BLACK test lead (I) into COM jack (G) according to leads alert LED indicators (E).
- Apply test leads (I and J) to the circuit to be tested to measure voltage, and rotate the rotary switch (D) to lower range V AC ($\bar{V}$) setting to obtain higher resolution measurements.
- Read the data on the LCD display (A).



2 DC Voltage Measurement ($\leq 600V$)

- Rotate the rotary switch (D) to the highest V DC ($\bar{V}$) setting (600V). Insert the RED test lead (J) into positive input jack (H) and BLACK test lead (I) into COM jack (G) according to leads alert LED indicators (E).
- Apply test leads (I and J) to the circuit to be tested to measure voltage, and rotate the rotary switch (D) lower range V DC ($\bar{V}$) settings to obtain higher resolution measurements.
- Read the data on the LCD display (A).

NOTE: When in a voltage setting and the test leads are open, readings of order mV may appear on the display. This is noise and is normal. By touching the test leads together to close the circuit the meter will measure zero volt.

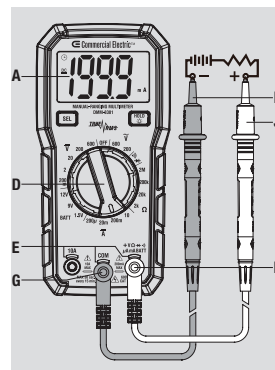


Operation (continued)

3 DC Current Measurement ($\leq 200mA$)

WARNING: Do not attempt to measure more than 200mA.

- For mA DC current less than 200mA, rotate the rotary switch (D) to the highest mA DC ($\bar{A}$) setting (200mA).
- Insert the RED test lead (J) into positive input jack (H) and BLACK test lead (I) into COM jack (G) according to leads alert LED indicators (E).
- Remove power from circuit, open circuit at measurement point, connect meter in the circuit using the test leads (I and J), apply power to circuit.
- Rotate the rotary switch (D) lower range A DC ($\bar{A}$) settings to obtain higher resolution measurements.
- Read the data on the LCD display (A).

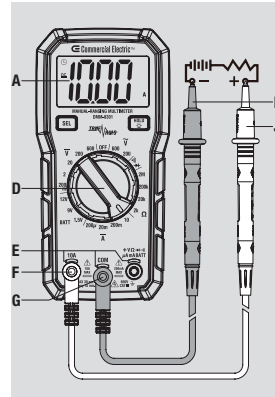


4 DC Current Measurement ($200mA \leq DCA \leq 10A$)

WARNING: Do not attempt to measure more than 10A.

WARNING: When measuring current greater than 5A, a measurement time of 30 seconds followed by 15 minutes of recovery time is recommended.

- For 10A DC current with more than 200mA but less than 10A, rotate the rotary switch (D) to the highest A DC ($\bar{A}$) setting (10A).
- Insert the RED test lead (J) into 10A input jack (F) and BLACK test lead (I) into COM jack (G) according to leads alert LED indicators (E).
- Remove power from circuit, open circuit at measurement point, connect meter in the circuit using the test leads (I and J), and apply power to circuit.
- Read the data on the LCD display (A).



Operation (continued)

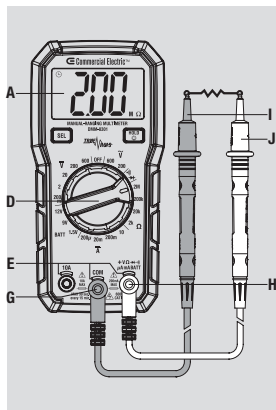
5 Resistance Measurement



WARNING: Do not attempt to measure resistance on a live circuit.

- Rotate the rotary switch (D) to the highest resistance (Ω) setting (2M Ω). Insert the RED test lead (J) into positive input jack (H) and BLACK test lead (I) into COM jack (G) according to leads alert LED indicators (E).
- Remove power from circuit.
- Measure resistance by connecting test leads (I and J) to object and rotate the rotary switch (D) to lower resistance (Ω) settings to obtain higher resolution measurements.
- Read the data on the LCD display (A).

NOTE: When in a resistance mode and the test leads are open (not connected across a resistor or objects), or when a failed resistor is under test, the display will indicate OL. This is normal.

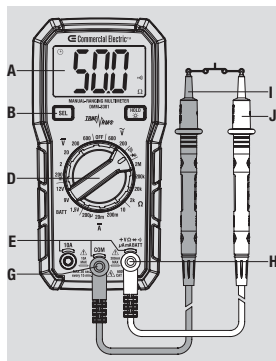


6 Continuity Check



WARNING: Do not attempt to measure continuity with live circuit.

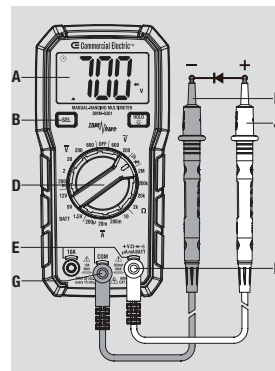
- Rotate the rotary switch (D) to continuity/diode ($\rightarrow$ ∇) setting. Insert the RED test lead (J) into positive input jack (H) and BLACK test lead (I) into COM jack (G) according to leads alert LED indicators (E).
- Press SEL button (B) to select continuity function. The " $\rightarrow$ ∇ " icon will show on the LCD display (A).
- Remove power from circuit.
- Test for continuity by connecting conductor or circuit with test leads (I and J). If resistance is measured less than 50 Ω , an audible signal will sound and display will show a resistance value. If circuit is open, display will show "OL".



Operation (continued)

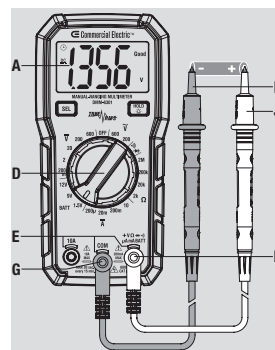
7 Diode Test

- Rotate the rotary switch (D) to continuity/diode ($\rightarrow$ ∇) setting. Insert the RED test lead (J) into positive input jack (H) and BLACK test lead (I) into COM jack (G) according to leads alert LED indicators (E).
- Press SEL button (B) to select diode function. The " $\rightarrow$ ∇ " icon will show on the LCD display (A).
- Connect the BLACK test lead (I) to the negative pole and the RED test lead (J) to the positive pole of the measured diode.
- The LCD display (A) shows the forward bias value of the measured diode. If the poles of the test leads are connected inversely, the meter displays "OL".



8 Battery Voltage Measurement

- Rotate the rotary switch (D) to 1.5V or 9V or 12V battery (BATT) test setting. Insert the RED test lead (J) into positive input jack (H) and BLACK test lead (I) into COM jack (G) according to leads alert LED indicators (E).
- Connect BLACK test lead (I) to negative (-) and RED test lead (J) to positive (+) terminal of battery.
- Read the battery status indicator (Good/Weak/ Bad) and value on the LCD display (A). Once "bad" battery indicator appears, the tested battery should be replaced.



Battery	Good (DC)	Low (DC)	Bad (DC)
12V battery	$\geq 10.5V$	7.6 to 10.4V	$\leq 7.5V$
9V battery	$\geq 7.8V$	5.7 to 7.7V	$\leq 5.6V$
1.5V battery	$\geq 1.31V$	0.95 to 1.3V	$\leq 0.94V$

Maintenance



WARNING: Before you open the meter, always disconnect it from all sources of electrical current and make sure you are not charged with static electricity, which may destroy the internal components.



WARNING: To avoid injury or damage to the meter, do not wet the inner parts of the meter. Before opening the case or battery cover, remove the connecting cable between the test probe and input signal.



WARNING: Any adjustment, maintenance, or repair work carried out on the meter while it is live should be carried out by a qualified electrician.



WARNING: To avoid risk of electric shock, disconnect leads from any voltage source before accessing fuses.



WARNING: Only use the specified batteries and fuses for replacement. See the Product Specifications section of this manual for more information.



WARNING: When you open the meter, remember that some internal capacitors can retain a dangerous voltage level even after the instrument is switched off.



WARNING: To prevent electrical hazard or shock, turn off the meter and disconnect the test leads and any input signals before removing the battery cover.



WARNING: Do not use this meter until the rear cover is placed back on the meter and the screws are tightened.



WARNING: Change the battery when the battery symbol appears on the LCD in order to avoid incorrect data, which could lead to electric shock or personal injury.



CAUTION: Do not mix old and new batteries. Do not mix alkaline, standard (carbon-zinc), or rechargeable (ni-cad, ni-mh, etc) batteries.

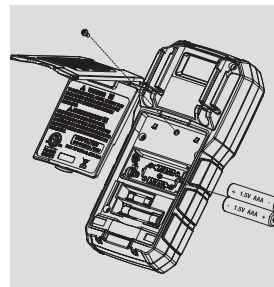


CAUTION: If the meter is not going to be used for a long time, take out the battery and do not store the meter in high temperature or high humidity environment.

Maintenance (continued)

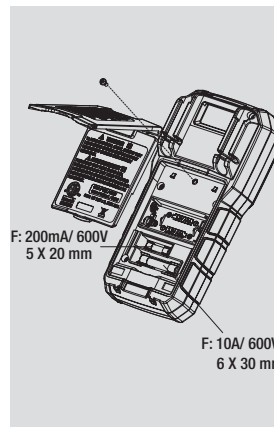
BATTERY REPLACEMENT

- Once  indicator is displayed on the LCD display (A), batteries must be replaced.
- Turn the meter off by rotating the rotary switch (D) to the OFF position.
- Disconnect the RED test lead (J) and BLACK test lead (I) and any connectors from the terminals on the meter.
- Remove one screw from battery door.
- Replace with two fresh 1.5V AAA batteries in the battery slot (note proper polarity).
- Assemble battery cover and fasten securely with screw.



FUSE REPLACEMENT

- Fuse may blow if more than 200mA is applied to the positive input jack (H) or more than 10A is applied to the 10A jack (F), or voltage has applied to function with current setting. To access fuses:
- Turn the meter off by rotating the rotary switch (D) to the OFF position.
- Disconnect the RED test lead (J) and BLACK test lead (I) and any connectors from the terminals on the meter.
- Remove one screw from battery door.
- Replace blown fuse(s) with:
VΩ(μA/mA) input jack: 200mA/ 600V, 5 X 20mm.
10A input jack: 10A/ 600V, 6 X 30mm.
- Assemble battery cover and fasten securely with screw.



Maintenance (continued)

TEST LEAD REPLACEMENT

If the insulation on the leads is damaged, replace the test leads. Replacement test leads must meet the manufacturer's specifications (EN 61010-031 standard, 1000V CAT III/ 600V CAT IV 10A, or better).

Care and Cleaning

- ☐ Keep the meter dry. If it gets wet, wipe it off.
- ☐ Keep the meter clean. Wipe off dirt with a soft cloth dampened with water. Do not use chemicals, cleaning solvents, or detergents.
- ☐ Use and store the meter within normal temperature ranges. Extreme temperatures can reduce the life of the electronic parts and cause distortion or melting of plastic parts.
- ☐ Handle the meter gently and carefully. Dropping it can damage the electronic parts or the case.
- ☐ Use only fresh batteries of the recommended size and type. Ensure batteries are inserted with the correct polarity. Remove old or weak batteries so they do not leak and damage the unit.
- ☐ Do not mix old and new batteries. Do not mix different types of batteries such as alkaline, carbon-zinc, or rechargeable batteries. Non-rechargeable batteries are not to be recharged.
- ☐ If the meter is to be stored for an extend period, remove the batteries to prevent damage to the unit. Periodically wipe the case with a damp cloth and mild detergent.
- ☐ Repairs or service are not covered in this manual and should only be carried out by a qualified trained technician.