



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

**1-888-526-6193**

**HOMEDEPOT.COM**

Retain this manual for future use.



Item # 1001 418 355  
Model # MS8301A

## USE AND CARE GUIDE

### DIGITAL MULTIMETER



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

**1-888-526-6193**

**HOMEDEPOT.COM**

#### ***THANK YOU***









*We appreciate the trust and confidence you have placed in Commercial Electric through the purchase of this digital multimeter. We strive to continually create quality products designed to enhance your home. Visit us online to see our full line of products available for your home improvement needs. Thank you for choosing Commercial Electric!*

## Table of Contents

Table of Contents.....	2	Resistance Specifications .....	8
Safety Information.....	2	Diode and Circuit On-Off Specifications .....	9
Warranty.....	4	Battery Voltage Specifications .....	9
Pre-Operation.....	5	Operation .....	9
Product Description .....	5	Maintenance .....	16
LCD Display Definitions .....	6	Replacing the Battery and Fuse.....	16
Product Specifications .....	6	Test Lead Replacement .....	17
DC Voltage Specifications .....	7	Care and Cleaning .....	17
AC Voltage Specifications .....	7		
DC Current Specifications .....	8		


## 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.


Symbols	Definition
	Indicates important safety information
	Caution, possibility of electric shock.
	Alternating current (AC).
	Direct current (DC).
	The fuse must be replaced with the rating specified in this manual.
	Equipment protected throughout by DOUBLE INSULATION or REINFORCED INSULATION.
	Conforms to UL STD. 61010-1, 61010-2-030 and 61010-031.
	PROTECTIVE CONDUCTOR TERMINAL.
<b>CAT III</b>	(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:** This manual contains information and warnings necessary for safe operation and maintenance of the meter. It is recommended that you read and understand this instruction manual thoroughly prior to using the meter. Failure to understand these instructions and to comply with the warnings and instructions contained herein can result in serious injury or damage.


 **WARNING:** Full compliance with safety standards can be guaranteed only with test leads supplied.


 **WARNING:** Before taking measurements of voltage with the probe, make sure there is no electronic element connected to the test socket of the transistor.


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


 **WARNING:** When the meter is linked to measurement circuits, do not touch unused terminals.


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


 **WARNING:** Do not measure voltages above 600V in Category III installations.


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

 **WARNING:** Use caution when working with voltages above 60VDC or 30V AC RMS. Such voltages pose a shock hazard.

 **WARNING:** Never perform resistance or continuity measurements on live circuits.

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

 **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.

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

## Safety Information (continued)

**CAUTION:** When the instrument is measuring, do not touch the input terminal not in use.

**CAUTION:** Before turning the function/range switch, make sure the probe is open with the circuit being measured.

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

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

## 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 UNDESIRABLE 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.

## Warranty

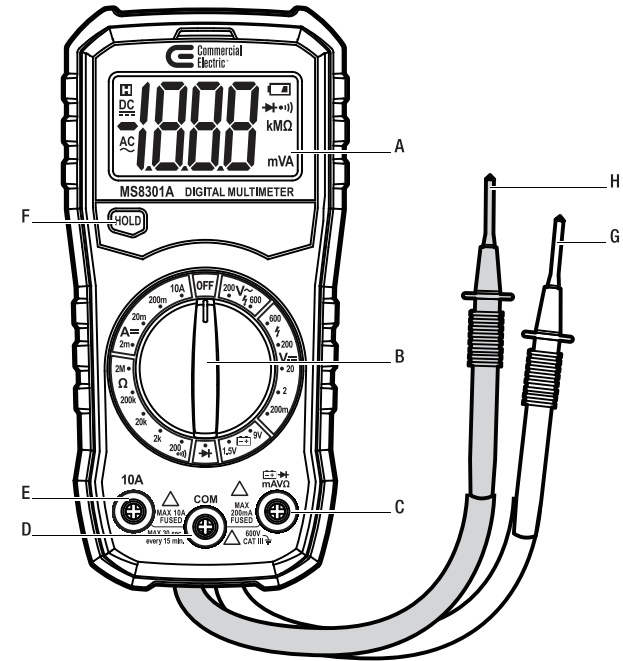
**WARRANTY:** 12 months

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 1-888-526-6193 or visit [www.homedepot.com](http://www.homedepot.com).

## Pre-Operation

### Product Description



Part	Description	Quantity
A	LCD display	1
B	Function and range switch	1
C	VΩmA jack	1
D	COM jack	1
E	10A jack	1
F	Data hold button	1
G	Red test lead	1
H	Black test lead	1

## Pre-Operation (continued)

### LCD Display Definitions




LCD Term	Description
AA	Low battery indicator
BB	Negative reading indicator
CC	AC voltage or current indicator
DD	DC voltage or current indicator
EE	Diode and continuity test mode
FF	Data hold mode
GG	Resistance indicator
HH	mV Millivolt and mA Milliamps

### PRODUCT SPECIFICATIONS

Component	Specification
Environmental conditions	600V CAT III
Altitude	Up to 2000 meters
Battery	2 x AAA 1.5 V batteries
Fuse protection	F1:FF 10A H 600V F2:FF 400mA H 600V

## Pre-Operation (continued)

Component	Specification
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: ± (% of reading + number of least significant digits).
Display	2000 counts
Low voltage indication	 on the display
Over range indication	LCD displays "OL"
Polarity indication	"-" displayed for negative polarity
Operating environment	0°C - 40°C (32°F - 104°F), <80% relative humidity
Storage temperature	-10°C - 50°C (14°F - 122°F), <70% relative humidity, battery removed
Size	150 x 74 x 48 mm
Weight	Approximately 220 g (battery included)

### DC VOLTAGE SPECIFICATIONS

Measuring Range	Resolution	Accuracy
200mV	0.1mV	±(0.5% of rdg ±3 digits)
2V	1mV	
20V	10mV	
200V	100mV	
600V	1V	±(0.8% of rdg ±5 digits)

#### Additional Specifications:

- Overload Protection: 200mV range: 250V DC or RMS AC
- Remaining ranges: 600V DC or RMS AC

### AC VOLTAGE SPECIFICATIONS



## Pre-Operation (continued)

Measuring Range	Resolution	Accuracy
200V	100mV	$\pm(1.0\%$ of rdg $\pm 10$ digits)
600V	1V	$\pm(1.2\%$ of rdg $\pm 10$ digits)

### Additional Specifications:

- Overload Protection: 600V DC or RMS AC
- Frequency Range: 40 - 400Hz
- Display Response: Average response (calibrated in rms of sine wave)

## DC CURRENT SPECIFICATIONS

Measuring Range	Resolution	Accuracy
2mA	1uA	$\pm(1.0\%$ of rdg + 3 digits)
20mA	10uA	$\pm(1.0\%$ of rdg + 5 digits)
200mA	100uA	$\pm(1.5\%$ of rdg + 5 digits)
10A	10mA	$\pm(3.0\%$ of rdg + 10 digits)

### Additional Specifications:

- Overload Protection: F1:FF 10A H 600V, F2:FF 400 mA H 600V, 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 $\Omega$	0.1 $\Omega$	$\pm(1.2\%$ of rdg + 5 digits)
2k $\Omega$	1 $\Omega$	$\pm(0.8\%$ of rdg + 2 digits)
20k $\Omega$	10 $\Omega$	
200k $\Omega$	100 $\Omega$	
2M $\Omega$	1k $\Omega$	$\pm(1.0\%$ of rdg + 5 digits)

### Additional Specifications:

- Maximum Open Circuit Voltage: 2.4V
- Overload Protection: 250V DC or RMS AC

## Pre-Operation (continued)

## DIODE AND CIRCUIT ON-OFF SPECIFICATIONS

Measuring Range	Description
	Displays the approximate diode positive voltage.
	When the on-resistance is smaller than $(70\pm 30)\Omega$ , the built-in buzzer sounds.

### Additional Specifications:

- Overload Protection: 250V DC or RMS AC

## BATTERY VOLTAGE SPECIFICATIONS


Position	Resolution	Load Impedance
1.5V	0.001V	47 $\Omega$
9V	0.01V	300 $\Omega$


### Additional Specifications:


- Overload Protection: F2:FF 400mA H 600V

## Operation

### BEFORE YOU TAKE A MEASUREMENT

 **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.

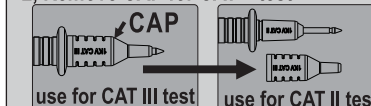
 **CAUTION:** Check the batteries before use. If the batteries are low, the battery symbol appears on the LCD display. Replace the batteries if the low battery symbol appears on the LCD display.

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

1, While in operate, please insert test leads into proper socket and position to prevent insufficient reading or tolerance value.

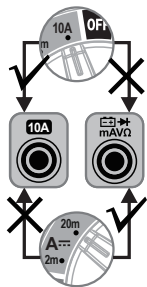


2, Remove CAP for CAT II test



 **WARNING:** Before using, please remove the sticker.

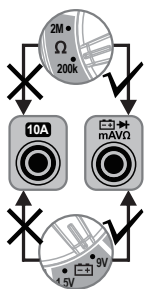
## Operation (continued)



### WARNING:

1. 10A range measurement must insert RED test lead to left probe socket ONLY.
2. mA range measurement must insert RED test lead to Right probe socket and do not use these range to measure HIGH VOLTAGE.

**MISUSE CAN RESULT FUSE BLOWN**



### WARNING:

1. All other range measurement must insert RED test lead to the RIGHT socket.
2. Do not use these range to measure HIGH VOLTAGE

**MISUSE CAN RESULT UNIT DEFECT OR FUSE BLOWN**

## 1 Using Data Hold Mode

- Press Data Hold Button (F) to hold the measurement on display
- Press again to release the display and return to measurement.



## Operation (continued)

### 2 Completing a Battery Voltage Measurement

- Insert the RED test lead to VΩ socket (C) and BLACK test lead to COM socket (D), and rotate function knob switch (B) to 1.5V or 9V battery test setting.
- Connect BLACK test lead to negative and RED test lead to positive terminal of battery.



Black Test Lead Red Test Lead

### 3 Completing an AC or DC Voltage Measurement

#### AC Voltage Measurement (≤600V)

- Insert the RED test lead to VΩ socket "C" and BLACK test lead to COM socket (D), and rotate function knob switch "B" to the highest V AC (V~) setting (600V).
- Measure voltage and rotate function knob switch to lower range V AC (V~) settings to receive highest resolution measurements (600V).

**NOTE:** Do not attempt to measure over 600V or 200mA

#### DC Voltage Measurement (≤600V)

- Insert the RED test lead to VΩ socket (C) and BLACK test lead to COM socket (D), and rotate function knob switch (B) to the highest V DC (V=) setting (600V).
- Measure voltage and rotate function knob switch to lower range V DC (V=) settings to receive highest resolution measurements (600V).



Black Test Lead Red Test Lead

## Operation (continued)

### 4 Completing a Resistance Measurement

- Insert the RED test lead to V $\Omega$  socket **C** and BLACK test lead to COM socket **D**, and rotate function knob switch **B** to the highest  $\Omega$  setting (2M $\Omega$ ).
- De-energize the circuit.
- Measure resistance by connecting test lead to object and rotate the function knob switch **B** to lower range  $\Omega$  to receive highest resolution measurements.



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 O.L. This is normal.



## Operation (continued)

### 5 Performing a Diode Test

- Insert the RED test lead to V $\Omega$  socket **C** and BLACK test lead to COM socket **D**, and rotate function knob switch **B** to (→|+) setting.
- Measure the diode with test lead. The measure reading will show on display indicates forward bias, OL indicates reverse bias. An open device will show OL on both polarities.



## Operation (continued)

### 6 Completing a Continuity Measurement

- Insert the RED test lead to V $\Omega$  socket **C** and BLACK test lead to COM socket **D**, and rotate function knob switch **B** to ( **•|** ) setting.
- De-energize the circuit
- For continuity measurement by connecting conductor or circuit with test leads. If resistance is measured less than 40 $\Omega$ , an audible signal will sound and display will show a resistance value. If circuit is open, display will show "OL".



Black Test Lead Red Test Lead

**NOTE:** Do not attempt to measure continuity with live circuit.

## Operation (continued)

### 7 Performing a DC Current Measurement

#### DC Current less than 200mA

- For mA DC Current less than 200mA, Insert the RED test lead to V $\Omega$  socket **C** and BLACK test lead to COM socket **D**, and rotate function knob switch **B** to the highest mA DC setting (200mA).



Black Test Lead Red Test Lead

#### DC Current 200mA to 10A

- For 10A DC current with more than 200mA but less than 10A, Insert the RED test lead to 10A socket **E** and BLACK test lead to COM socket **D**, and rotate function knob switch **B** to 10A DC setting (10A).

**NOTE:** Do not attempt to measure more than 10A

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



Red Test Lead Black Test Lead

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



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

## REPLACING THE BATTERY AND FUSE



**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:** 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.



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



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




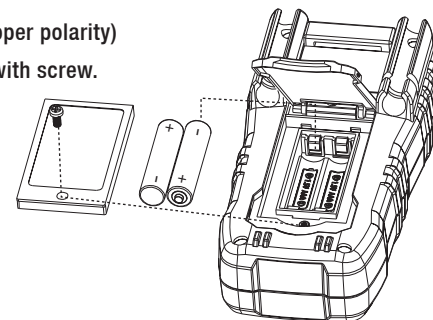
**WARNING:** Only use the specified batteries and fuses for replacement. See the Product Specifications section of this manual for more information.

- Ensure the meter is off.
- Disconnect the black and red test leads and/or any connectors from the terminals on the meter.
- Use a screwdriver to unscrew and remove the battery cover located on the back of the meter. If you are replacing the fuse, unscrew the screws on the four corners of back of the meter.
- Remove the used batteries or damaged fuse.



## Maintenance (continued)

### Battery Replacement

- When (  ) indicator is displayed on LCD, batteries must be replaced.
- Remove screw from battery door
- Replace 2 x AAA batteries (Note proper polarity)
- Replace battery cover and secure with screw.



### Fuse Replacement

- Fuse may blow if more than 200mA is applied to the V $\Omega$  socket (  ), more than 10A is applied to the 10A socket (  ), or Voltage has applied to function with current setting. To replace fuse:
- Remove 4 screws from the back and each screw from the corner. Replace blown fuse(s) with:

V $\Omega$ (mA) socket: 6.3x32mm 400mA/600V

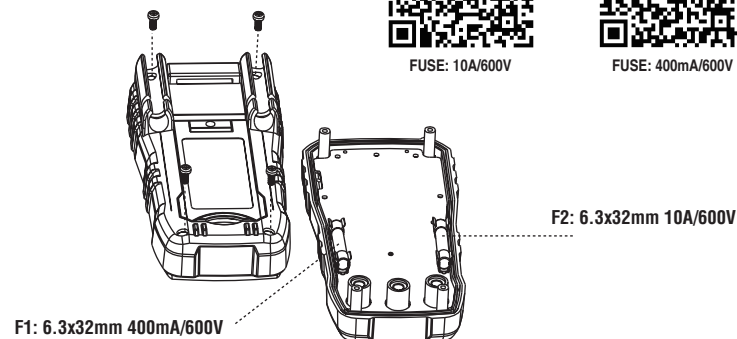
10A socket: 6.3x32mm 10A/600V



FUSE: 10A/600V



FUSE: 400mA/600V



## 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, 600V CAT III 10A, or better).

### Care and Cleaning

- Periodically wipe the case with a damp cloth and mild detergent.
- Do not use abrasives or solvents.
- Dirt or moisture in the terminals can affect readings.