

**MASTECH®**

**MS8239B**

**DIGITAL MULTIMETER**

**USER'S MANUAL**

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## **LIMITED WARRANTY AND LIMITATION OF LIABILITY**

**This MS8239B product from MASTECH will be free from defects in material and workmanship for one year from the date of purchase. This warranty does not cover fuses, disposable batteries, or damage from drops, neglect, misuse, alteration, contamination, or abnormal conditions of operation or handling. Resellers are not authorized to extend any other warranty on MASTECH's behalf. To obtain service during the warranty period, contact your nearest MASTECH authorized service center to obtain return authorization information and then send the product to that Service Center with a description of the problem.**

### **Out of the Box**

Check the Meter and accessories thoroughly before using the Meter. Contact your local distributor if the Meter or any components are damaged or malfunction.

## Accessories

- Test Leads 1set
- 1.5V AAA Battery 2pcs
- User's Manual

## Safety Information

 **WARNING**






**TO REDUCE THE RISK OF FIRE, ELECTRICAL SHOCK, PRODUCT DAMAGE OR PERSONAL INJURY, PLEASE FOLLOW THE SAFETY INSTRUCTIONS DESCRIBED IN THE USER'S MANUAL. READ THE USER'S MANUAL BEFORE USING THE METER.**

 **WARNING**

**TO ENSURE SAFE OPERATION AND LIFE OF THE METER, DO NOT PLACE THE METER IN ANY ENVIRONMENT WITH HIGH PRESSURE, HIGH TEMPERATURE, DUST, EXPLOSIVE GAS OR VAPOR.**

- Avoid shaking, dropping or any kind of impacts when using or transporting the Meter.
- To avoid electric shock or personal injury, repairs or servicing not covered in this manual should be performed only by qualified personnel.
- Avoid direct exposure to sunlight to ensure extended life of the Meter.
- Do not place Meter in a strong magnetic field; this may cause false readings.
- Use only the batteries indicated in the Technical Spec.
- Avoid exposing batteries to humidity. Replace batteries as soon as the low battery indicator appears.
- Please keep the original packing for future shipping purposes (ex. Calibration)
- After opening the box, check for any damage during delivery.

## Safety Symbols on the Meter


	Important safety information, please refers to the user manual
	Earth ground
	Indicates compliance with requirements for double insulation
	Possible of high voltage
	Fuse must be replaced with ratings specified in the manual.

### Important Safety Information

- Never use the Meter to measure voltages that might exceed 600V DC/AC above earth ground.
- Always be careful when working with voltages above 60V DC or 30V AC RMS. Keep fingers behind the probe barriers while measuring.
- Never connect the Meter leads across a voltage source while the rotary switch is in the resistance, diode or continuity mode. Doing so can damage the Meter.
- Do not perform resistance, diode and continuity measurements on powered circuits.

- Inspect test leads and probes for cracks, breaks or crazes on the insulation before using the Meter.
- Repair or maintenance should be implemented by trained personnel.

## Certification

- **CAT III:** This meter has meet IEC61010-1 standard with an overvoltage category (600V CAT III) and pollution degree 2.
-  The Meter is compiled to EMC requirements.

## Introduction

### Overview

The MS8239B is a compact and portable multifunction digital multimeter featuring an easy-to-read LCD screen. Basic functions include: AC/DC voltage, AC/DC current, resistance, diode, continuity measurements and battery test. This MS8239B is ideal for any entry level use.

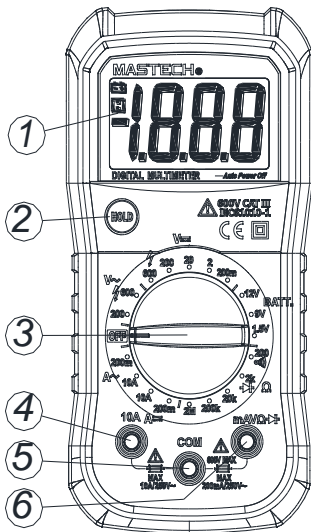


## Figures and Components

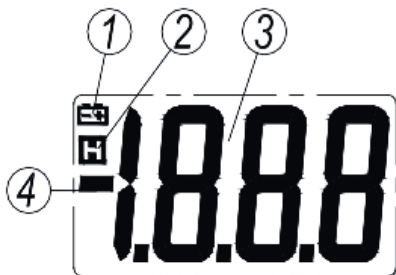
### Buttons and Components



1. LCD (liquid-crystal display)
2. **HOLD** Button
3. Rotary Switch
4. 10A Input Jack
5. **COM** Input Jack
6. mA/V/ $\Omega$ /→Input Jack

## Front Panel





## Display Description



1.  Low Battery Indicator
2.  Hold
3. Reading Display
4. Polarity

# Using the Meter

## Preparation

- Switch on the power by turning the rotary switch. If the battery voltage is lower than 2.8V, the “” symbol will appear and the batteries should be replaced.
- The “” symbol next to the input lead shows that the input voltage or current should not exceed the specified value in order to protect the internal circuit from damage.
- Turn the rotary switch to the required function and range to be measured.
- Choose the highest range when the value to be measured is unknown.
- When making connection, connect the common test lead first and then the powered test lead.
- Removed the charged test lead first when disconnecting.

### Readings Hold

- Press “**HOLD**” button to hold the readings of current measurement.
- Press “**HOLD**” button again to release the hold.

### DC/AC Voltage Measurement



#### **WARNING**

**USE CAUTION WHEN MEASUREING HIGH VOLTAGE CIRCUITS TO AVOID ELECTRICAL SHOCK AND INJURY. DO NOT TEST VOLTAGES HIGHER THAN DC/AC 600V.**

- Plug the black test lead into “**COM**” jack and the red test lead into “**V**” jack.
- Set the rotary switch to “**V~**” (AC), or “**V =** ” (DC) position in the corresponding range.
- Connect the test leads to the voltage source or load for measurement.
- Read the result on the LCD. The polarity symbol denotes the polarity of the end connected by the red test lead.

**NOTE:**

- At a small voltage range, unsteady readings will appear before the test leads makes contact with the circuit. This is normal since the Meter is highly sensitive. When the test leads are connected to the circuit, the true reading will be shown.
- Under any range mode, when '1.' is shown on the LCD it means the measurement has exceeded the allowable range. A higher range should be selected.
- When the value to be measured is unknown, select the highest range first and lower the range accordingly.

**AC/DC Current Measurement****WARNING**

**USE CAUTION WHEN MEASUREING HIGH VOLTAGE CIRCUITS. TO AVOID ELECTRICAL SHOCK AND INJURY. DO NOT TEST VOLTAGES HIGHER THAN DC/AC 600V.**

- Plug the black test lead into the “**COM**” jack.
- Set the rotary switch to “**A~**” (AC) or “**A =** ” (DC) position in the corresponding range. For example, when the current to be measured is under 200mA, plug the red test lead into “**mA**” jack and turn the switch to “**200mA**”; when the current to be measured is over 200mA but under 10A, plug the red test lead into the “**10A**” jack and turn the switch to “**10A**”.
- Connect the test leads to the circuit.
- Read the result on the display.
- The polarity symbol denotes the polarity of the red test lead.

**NOTE:**

- Under any range mode, when ‘**1.**’ is shown on the LCD it means the measurement has exceeded the allowable range; a higher range should be selected.
- When the value to be measured is unknown, select the highest range first and then lower the range accordingly.
- “**⚠**” indicates the maximum current of the mA jack is 200mA and the maximum current of the 10A jack is 10A. At the 10A

jack, current exceeding the limit will blow the fuse.

## Resistance Measurement



### WARNING

**TO AVOID ELECTRICAL SHOCK AND INJURY  
POWER OFF THE CIRCUIT AND DISCHARGE THE  
CAPACITANCE BEFORE MEASURING RESISTANCE.**

- Plug the black test lead into the “COM” jack and the red test lead into the “ $\Omega$ ” jack.
- Set the rotary switch to the “ $\Omega$ ” position with corresponding range.
- Connect the test leads to the ends of the resistor or circuit.
- Read the numbers on the LCD.

### NOTE:

Under any range mode, when only ‘1.’ is shown on the LCD, it means the measurement has exceeded the range and a higher range should be selected. When the input is open, ‘1.’ is displayed on the LCD to indicate overload. For measuring resistance above 1M $\Omega$ , it may take a few seconds to get a steady reading. This is normal for high resistance measurements.



## Diode

- Plug the black test lead into the **COM** jack and the red test lead into the **→+** jack.
- Set the rotary switch to the **→+** range position and select a proper range.
- Connect the red test lead to the anode and the black test lead to the cathode of the diode for testing.
- Read the result on the LCD.

### NOTE:

- The Meter will show approximate forward voltage drop of the diode.
- When the test leads are reversed or opened, '1.' will appear on the LCD.

## Continuity



### WARNING

**TO AVOID ELECTRICAL SHOCK AND INJURY  
POWER OFF THE CIRCUIT AND DISCHARGE THE  
CAPACITANCE BEFORE MEASURING CONTINUITY**

- Plug the black test lead into the “**COM**” jack and the red test lead into “mA/V/Ω/→+” jack.

- Set the rotary switch to the “ $\Omega$ ” position.
- Connect the test leads to two ends of the circuit. If resistance of the circuit is less than  $50\Omega$  the built-in buzzer will sound.

## 1.5V 9V and 12V Battery Test

- To check if the battery is in good or bad condition, switch the rotary switch to “**BATT**” and choose the voltage according to the battery type.
- Connect the red lead (+) to the (+) side of battery and black lead (-) to the (-) side.
- Read off the result from the display.

# Specifications

## General Specification

- Maximum voltage between terminals and earth ground: 600V DC/AC
- Operating altitude: max. 2000 meters (7000 ft.)
- Display: 3.5" LCD
- Maximum value of display: 1999
- Polarity indication: automatic; '- for negative polarity.
- Overload indication: '1.'
- Sampling time: approx. 3 times/ second
- Function and Unit display
- Fuse protection 1: F200mA/250V
- Fuse protection 2: FF10A/600V
- Power Supply : 1.5V×2 AAA batteries
- Battery low indication: "⊖" on LCD
- Operating Temperature: 0°C to 40°C (32°F to 104°F)
- Storage Temperature: -10°C to 60°C (10°F to 140°F)
- Dimension: 147×76.2×41mm (5.8 x 3 x 1.6 in.)

- Weight: approximate 230g (7.6oz) including batteries

## Technical Specifications

### DC Voltage

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

Input Impedance:  $1M\Omega$

Maximum input voltage: 600V DC or AC RMS.

### NOTE:

- At small voltages range, unsteady readings will appear before the test leads make contact with the circuit. This is normal since the meter is highly sensitive. When the test leads connect to the circuit, the true reading will be shown.

### AC Voltage

Range	Resolution	Accuracy
200V	0.1V	± (1.2% of reading + 10 digits)
600V	1V	

Input Impedance: 1M $\Omega$

Maximum input voltage: 600V DC or AC RMS.

Frequency response: 40Hz~400Hz, sine wave RMS  
(Average response)

#### NOTE:

- At small voltage ranges, unsteady readings will appear before the test leads make contact with the circuit. This is normal since the meter is highly sensitive. When the test leads connect to the circuit, the true reading will be shown.

### AC Current

Range	Resolution	Accuracy
200mA	0.1mA	±(1.2% of reading +5 digits)

10A	10mA	$\pm(2.5\% \text{ of reading} + 10 \text{ digits})$
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Overload protection:

- mA: Fuse (F200mA/250V)
- 10A: Fuse (FF10A/600V) protection.

Maximum input current:

- mA: 200mA DC or AC RMS
- 10A: 10A DC or AC RMS

Frequency response: 40Hz~400Hz, sine wave RMS  
(Average response)

**NOTE:**

When measured current is greater than 2A, continuous measurement time cannot be more than 2 minutes. Disconnect the current and wait 10 minutes before making another measurement.

**DC Current**

Range	Resolution	Accuracy
200mA	100 $\mu$ A	$\pm(1.0\% \text{ of reading} + 5 \text{ digits})$
10A	10mA	$\pm(2.0\% \text{ of reading} + 10 \text{ digits})$

Overload protection:

- mA: Fuse (F200mA/250V)
- 10A: Fuse (FF10A/600V)

Maximum input current:

- mA: 200mA DC or AC RMS
- 10A: 10A DC or AC RMS

**NOTE:**

When measured current is greater than 2A, continuous measurement time cannot be more than 2 minutes. Disconnect the current and wait 10 minutes before making another measurement.

**Resistance**


Range	Resolution	Accuracy
200Ω	0.1Ω	±(0.8% of reading + 5 digits)
2kΩ	1Ω	
20kΩ	10Ω	
200kΩ	100Ω	
2MΩ	1kΩ	

Open circuit voltage: ~0.25V

Overload protection: 250V DC or RMS AC

**Diode Test**

	Max. V	Resolution	Function
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	2V	1mV	Displaying approximate forward voltage of diode
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Overload Protection: 250V DC or RMS AC

### Continuity Test

	Function
•))	Built-in buzzer will sound if resistance is lower than 60Ω.

Overload Protection: 250V DC or RMS AC

### Battery Test


Measuring Range	Resolution	Built-in Load Resistance
12V	0.01V	300Ω
9V	0.01V	1.8kΩ
1.5V	0.001V	36Ω

## Maintenance and Repair

### Repair

Please follow these steps closely if the Meter is not functioning properly:



- Check batteries; replace with new batteries if low battery indicator “

## Test Leads Replacement



### **WARNING**

**REPLACE THE TEST LEADS WITH IDENTICAL OR  
COMPATIBLE LEADS. LEAD SPEC: 1000V 10A.**

Replace new leads if the current leads are worn.

## Replacing Batteries

Follow these steps to replace batteries:


- Turn off the Meter.
- Loosen the battery compartment door screw, and remove the door from the case bottom.
- Remove the batteries and replace the batteries with new batteries.
- Reattach the battery compartment door to the case bottom and tighten the screw.

## Replacing Fuse

Fuses rarely need replacement. Almost all blows are the result of operation error.

- Loosen the battery compartment door screws like in the **Replace Batteries**.
- Remove the red rubber cover.
- Remove the screws located in the back.
- Replace the blown fuse with one at the specified rating.
- Replace and tighten the screws located in the back.
- Put back on the red rubber cover.
- Put the battery cover back and tighten the screws.



 Do not recycle