Mastech MS8233B

Mastech MS8233B Digital Multimeter Instruction Manual

Model: MS8233B

1. Introduction

The Mastech MS8233B is a compact, handheld digital multimeter designed for measuring AC/DC voltage, DC current, resistance, diode, continuity, and temperature. It features a 2000-count display, data hold function, and low battery indication, making it suitable for various electrical testing applications in domestic and electronics environments.

2. Safety Information

To ensure safe operation and service of the meter, please read this manual thoroughly before use. Failure to observe safety warnings can result in severe injury or death.

- Always ensure the meter is in good working condition before use.
- Do not apply more than the rated voltage, which is 600V CAT III.
- Use caution when working with voltages above 30V AC RMS, 42V peak, or 60V DC, as these pose a shock hazard.
- Always disconnect the test leads from the circuit before changing functions.
- Replace the battery immediately when the low battery indicator appears.
- Do not operate the meter if the battery cover is not properly closed.
- Adhere to local and national safety codes.

3. Product Overview

The Mastech MS8233B Digital Multimeter features a clear display, a rotary function switch, and dedicated input jacks for various measurements.

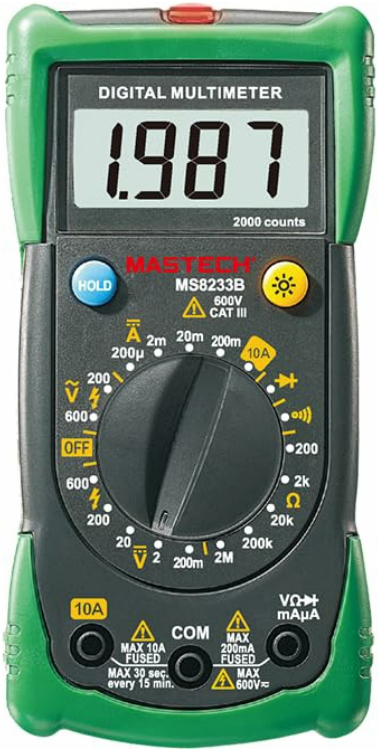

Figure 3.1: Front view of the Mastech MS8233B Digital Multimeter. This image displays the LCD screen, rotary function switch, input jacks, and control buttons.

3.1 Components

- **LCD Display:** Shows measurement readings, units, and function indicators.
- **Function Rotary Switch:** Used to select the desired measurement function (e.g., V~, V-, A-, Ω, Diode, Continuity, Temp).
- **HOLD Button:** Freezes the current reading on the display.
- **Backlight Button:** Activates the display backlight for improved visibility in low-light conditions.
- **VΩmA Input Jack:** Positive input for voltage, resistance, diode, continuity, and current measurements up to 200mA.
- **COM Input Jack:** Common (negative) input for all measurements.
- **10A Input Jack:** Positive input for high current measurements (up to 10A).

4. Setup

4.1 Battery Installation

The MS8233B requires 2 LR44 batteries for operation. Ensure the batteries are installed correctly before first use or when replacing them.

1. Turn off the multimeter and disconnect all test leads.
2. Locate the battery compartment on the back of the meter.
3. Use a screwdriver to open the battery compartment cover.
4. Insert the 2 LR44 batteries, observing the correct polarity (+ and -).
5. Replace the battery compartment cover and secure it with the screw.

5. Operating Instructions

Before taking any measurements, ensure the test leads are properly connected to the meter and the circuit under

test.

5.1 General Operation

1. Turn the rotary switch from the "OFF" position to the desired measurement function.
2. Connect the test leads to the appropriate input jacks and the circuit.
3. Read the measurement value on the LCD display.
4. To turn off the meter, rotate the switch back to the "OFF" position.

5.2 DC Voltage Measurement (V-)

- Set the rotary switch to the desired DC Voltage range (e.g., 200mV, 2V, 20V, 200V, 600V).
- Connect the red test lead to the VΩmA jack and the black test lead to the COM jack.
- Connect the test leads across the component or circuit to be measured.

5.3 AC Voltage Measurement (V~)

- Set the rotary switch to the desired AC Voltage range (e.g., 200V, 600V).
- Connect the red test lead to the VΩmA jack and the black test lead to the COM jack.
- Connect the test leads across the AC voltage source.

5.4 DC Current Measurement (A-)

- Set the rotary switch to the desired DC Current range (e.g., 200µA, 2mA, 20mA, 200mA, 10A).
- For currents up to 200mA, connect the red test lead to the VΩmA jack. For currents up to 10A, connect the red test lead to the 10A jack. Always connect the black test lead to the COM jack.
- Connect the meter in series with the circuit to measure the current.
- **Caution:** Do not attempt to measure currents exceeding 200mA through the VΩmA jack or 10A through the 10A jack.

5.5 Resistance Measurement (Ω)

- Set the rotary switch to the desired Resistance range (e.g., 200Ω, 2kΩ, 20kΩ, 200kΩ, 2MΩ).
- Connect the red test lead to the VΩmA jack and the black test lead to the COM jack.
- Connect the test leads across the resistor or component to be measured. Ensure the circuit is de-energized.

5.6 Diode Test

- Set the rotary switch to the Diode symbol.
- Connect the red test lead to the VΩmA jack and the black test lead to the COM jack.
- Connect the red test lead to the anode and the black test lead to the cathode of the diode. The display will show the forward voltage drop.
- Reverse the leads. An open circuit (OL) reading indicates a good diode. A reading in both directions or no reading indicates a faulty diode.

5.7 Continuity Test

- Set the rotary switch to the Continuity symbol.
- Connect the red test lead to the VΩmA jack and the black test lead to the COM jack.
- Connect the test leads across the circuit or component. If the resistance is less than approximately 60Ω, the buzzer will sound, indicating continuity.

5.8 Temperature Measurement

While the product title mentions temperature, the MS8233B model's detailed specifications do not explicitly list a temperature function. If your specific unit includes this feature, typically you would:

- Set the rotary switch to the Temperature function (usually marked with °C or °F).
- Connect a K-type thermocouple (if included) to the VΩmA and COM jacks, observing polarity.
- Place the thermocouple probe at the point where temperature needs to be measured.

5.9 Data Hold Function

- Press the "HOLD" button to freeze the current reading on the display.
- Press the "HOLD" button again to release the reading and resume live measurements.

5.10 Backlight Function

- Press the backlight button (often marked with a sun symbol) to turn on the display backlight.
- Press the button again to turn off the backlight.

6. Maintenance

6.1 Battery Replacement

When the low battery indicator appears on the display, replace the batteries as described in Section 4.1. Always use 2 new LR44 batteries.

6.2 Cleaning

Wipe the case with a damp cloth and mild detergent. Do not use abrasives or solvents. Ensure the meter is completely dry before use.

7. Troubleshooting

- **No Display/Faint Display:** Check battery installation and charge. Replace batteries if necessary.
- **"OL" or "1" on Display:** Indicates an over-range condition or open circuit. Select a higher range or check connections.
- **Incorrect Readings:** Ensure correct function selection, proper lead connection, and that the circuit is de-energized for resistance/diode tests.
- **No Continuity Buzzer:** Check if the resistance is above 60Ω or if the function is correctly selected.

8. Specifications

The following table outlines the technical specifications for the Mastech MS8233B Digital Multimeter.

MS8233B Features

- Display 2000 counts
- Diode Open Voltage 3.0V
- Continuity Buzzer <60Ω
- Data Hold
- Low Battery Display

Specifications	Range	Resolution	Accuracy
DC Voltage	200mV/2V/20V/200V 600V	0.1mV/1mV/10mV/0.1V 1V	±(0.5%+3) ±(0.5%+3)
AC Voltage	200V 600V	100mV 1V	±(1.2%+10) ±(1.2%+10)
DC Current	200µA/2mA/20mA/200mA 10A	0.1µA/1µA/10µA/0.1mA 0.01A	±(1.0%+3) ±(3.0%+5)
Resistance	200Ω/2kΩ/20kΩ/200kΩ 2MΩ	0.1Ω/1Ω/10Ω/0.1kΩ 1kΩ	±(0.8%+4) ±(0.8%+4)

Figure 8.1: Detailed specifications for the Mastech MS8233B, including ranges, resolutions, and accuracies for various measurements.

Mastech MS8233B Key Specifications

Specification	Value
Display	2000 Counts
Diode Open Voltage	3.0V
Continuity Buzzer	<60Ω
Data Hold	Yes
Low Battery Display	Yes
DC Voltage Range	200mV, 2V, 20V, 200V, 600V
AC Voltage Range	200V, 600V

Specification	Value
DC Current Range	200µA, 2mA, 20mA, 200mA, 10A
Resistance Range	200Ω, 2kΩ, 20kΩ, 200kΩ, 2MΩ
Safety Rating	CAT III 600V
Power Source	2 x LR44 Batteries (included)
Product Dimensions	20 x 15 x 25 cm
Item Weight	1 Kilogram
Manufacturer	MASTECH
Item Model Number	YQ-MS8233B
Country of Origin	Taiwan

DIGITAL MULTIMETERS
MANUAL RANGING

CAT II CAT III CAT IV								
Model	MAS838	MS8233A	MS8233B	MS8233C	MS8238	MS8261	MS8264	MS8269
Page	38	39	40	41	42	43	44	445
Safety Rating	CAT II 600V	CAT III 600V	CAT III 600V	CAT III 600V	CAT III 600V	CAT II 1000V CAT III 600V	CAT II 1000V CAT III 600V	CAT II 1000V CAT III 600V
Display Counts	2000	2000	2000	2000	2000	2000	2000	2000
Auto Ranging								
Auto Power Off						•	•	•
True RMS								
DC Voltage	600V	600V	600V	600V	600V	1000V	1000V	1000V
AC Voltage	600V	600V	600V	600V	600V	750V	750V	750V
DC Current	10A	10A	10A	10A	10A	10A	10A	10A
AC Current						10A	10A	10A
Resistance	2MΩ	2MΩ	2MΩ	2MΩ	2MΩ	200MΩ	200MΩ	20MΩ
Capacitance						20μF	20μF	20μF
Frequency							20kHz	
Duty Cycle								
Type K Temparature	-20~1000°C			-20~1000°C -4~1832°F			-20~1000°C	-20~1000°C
Battery Test					•			
Diode	•	•	•	•	•	•	•	•
Continuity	•	•	•	•	•	•	•	•
Display Backlight			•	•		•	•	
Work Light								
Data Hold	•	•	•	•		•	•	•
NCV			•	•				
Inductance								20H
hFE Transistor						•	•	•
Dual Display								
MAX								
MAX/MIN								
MAX/MIN/AVG								
Relative Measurement								
Peak Measurement								
DWELL Test								
TACH Test								

Figure 8.2: A comparison table showing features across various Mastech digital multimeter models, including the MS8233B.

9. Warranty and Support

For warranty information, technical support, or service inquiries, please refer to the documentation provided with your purchase or contact your retailer. Keep your purchase receipt as proof of purchase for any warranty claims.