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Mastech M300

Mastech M300 Mini Digital Multimeter User Manual

Model: M300

1. INTRODUCTION

The Mastech M300 is a compact, 13-range mini digital multimeter designed for basic electrical measurements. It is capable of measuring AC/DC voltage up to 500 volts, DC current up to 200 mA, resistance, diode continuity, and features a buzzer for continuity checks. Its attached test leads make it highly portable and convenient for various applications.

2. SAFETY INFORMATION

WARNING: To avoid electrical shock, remove input leads before opening the case. To prevent fire, install the fuse with the specified amp/volt ratings.

- Always ensure the multimeter is set to the correct range before making measurements.
- Do not attempt to measure voltages or currents exceeding the specified maximum limits.
- Exercise extreme caution when working with live circuits.
- Inspect test leads for damage before each use. Do not use if insulation is compromised.
- Never open the multimeter casing unless absolutely necessary for maintenance (e.g., fuse replacement) and ensure it is disconnected from all power sources.
- This device is rated for CAT III 600V.

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WARNING

TO AVOID ELECTRICAL SHOCK,
REMOVE INPUTS BEFORE OPENING
CASE.

TO PREVENT FIRE, INSTALL FUSE
WITH AMP/VOLT RATINGS SHOWN:

— F 250mA/250V

POWER SUPPLY:12V---,GP-23AX1



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Figure 2.1: Rear view of the Mastech M300 multimeter, displaying important safety warnings regarding electrical shock and fuse specifications. The battery compartment is also visible.

3. PRODUCT FEATURES

- Measures AC/DC Voltage up to 500V.
- Measures DC Current up to 200mA.
- Measures Resistance (0-2MΩ).
- Diode and Continuity Test with Buzzer.
- Low power consumption for extended battery life.
- Overload indication for safety.
- Integrated test leads for convenience.



Figure 3.1: Front view of the Mastech M300 Mini Digital Multimeter, showing the LCD display, rotary switch, function buttons, and integrated red and black test leads.

4. PACKAGE CONTENTS

Upon opening the package, please verify that all items are present and undamaged:

- Mastech M300 Mini Digital Multimeter (with attached test leads)
- SR44 3V Batteries (x2, pre-installed)
- User Manual

5. SETUP

5.1 Battery Installation/Replacement

The Mastech M300 uses two SR44 3V batteries, which are typically pre-installed. If replacement is needed:

1. Ensure the multimeter is turned OFF and disconnect all test leads from any circuits.
2. Locate the battery compartment on the back of the unit (refer to Figure 2.1).
3. Carefully open the battery compartment cover.
4. Remove the old batteries and insert new SR44 3V batteries, observing the correct polarity (+/-).
5. Securely close the battery compartment cover.

5.2 Connecting Test Leads

The Mastech M300 features integrated test leads. Ensure they are securely attached to the meter and free from any damage before use.

6. OPERATING INSTRUCTIONS

Before making any measurement, ensure the multimeter is set to the appropriate function and range. The rotary switch is used to select the desired measurement type.

6.1 Measuring DC Voltage (V-)

1. Set the rotary switch to the desired DC Voltage range (e.g., 500V, 200V, 20V, 2V, 200mV). Start with the highest range if the voltage is unknown.
2. Connect the red test lead to the positive (+) side of the circuit and the black test lead to the negative (-) side.
3. Read the voltage value on the LCD display.

6.2 Measuring AC Voltage (V~)

1. Set the rotary switch to the desired AC Voltage range (e.g., 500V, 200V). Start with the highest range if the voltage is unknown.
2. Connect the test leads across the AC voltage source.
3. Read the voltage value on the LCD display.

6.3 Measuring DC Current (A-)

CAUTION: To measure current, the multimeter must be connected in series with the circuit. Never connect the multimeter in parallel across a voltage source when in current mode, as this can damage the meter and the circuit.

1. Set the rotary switch to the desired DC Current range (e.g., 200mA, 20mA, 2mA, 200 μ A).
2. Break the circuit where you want to measure current.
3. Connect the red test lead to the higher potential side of the break and the black test lead to the lower potential side, completing the circuit through the multimeter.
4. Read the current value on the LCD display.

6.4 Measuring Resistance (Ω)

CAUTION: Ensure the circuit or component is completely de-energized before measuring resistance. Measuring resistance on a live circuit can damage the multimeter.

1. Set the rotary switch to the desired Resistance range (e.g., 2M Ω , 200k Ω , 20k Ω , 2k Ω , 200 Ω).
2. Connect the test leads across the component whose resistance you wish to measure.

3. Read the resistance value on the LCD display.

6.5 Diode Test

1. Set the rotary switch to the Diode symbol ($\rightarrow|-$).
2. Connect the red test lead to the anode of the diode and the black test lead to the cathode. The display will show the forward voltage drop.
3. Reverse the leads. The display should show 'OL' (Open Loop) for a good diode.

6.6 Continuity Test

1. Set the rotary switch to the Continuity symbol (BZ).
2. Connect the test leads across the component or wire you wish to test.
3. If there is continuity (low resistance), the buzzer will sound, and the display will show a low resistance value. If there is no continuity, the display will show 'OL'.

7. MAINTENANCE

7.1 Cleaning

To clean the multimeter, wipe the case with a damp cloth and a mild detergent. Do not use abrasives or solvents. Ensure the unit is completely dry before use.

7.2 Fuse Replacement

If the current measurement function stops working, the fuse may need replacement. Refer to the safety warnings on the back of the unit for fuse specifications (F 250mA/250V).

1. Ensure the multimeter is turned OFF and disconnect all test leads.
2. Open the multimeter casing (this typically involves removing screws on the back).
3. Locate the fuse and carefully remove it.
4. Replace with a fuse of the exact same type and rating (F 250mA/250V).
5. Securely close the casing.

8. TROUBLESHOOTING

- **No Display / Faint Display:** Check battery charge. Replace batteries if necessary.
- **Incorrect Readings:** Ensure the rotary switch is set to the correct function and range. Verify test lead connections. Ensure the circuit is de-energized for resistance measurements.
- **No Current Measurement:** Check the fuse. Replace if blown (refer to Section 7.2).
- **'OL' (Overload) Display:** The measured value exceeds the selected range. Switch to a higher range or verify the circuit.

9. SPECIFICATIONS

Model Number	M300
DC Voltage Range	Up to 500V
AC Voltage Range	Up to 500V

DC Current Range	Up to 200mA
Resistance Range	0-2MΩ
Diode Test	Yes
Continuity Test	Yes (with Buzzer)
Power Source	2 x SR44 3V Batteries
Dimensions	12.07 x 1.91 x 6.99 cm
Weight	90 g
Safety Rating	CAT III 600V

10. WARRANTY AND SUPPORT

This Mastech M300 Mini Digital Multimeter comes with a **1-year warranty** from the date of purchase, covering manufacturing defects. Please retain your proof of purchase for warranty claims. For technical support, warranty service, or inquiries, please contact Mastech customer service through their official website or the retailer where the product was purchased.