Mastech MAS830L

MASTECH MAS830L Digital Multimeter User Manual

Model: MAS830L

1. Introduction

Thank you for choosing the MASTECH MAS830L Digital Multimeter. This device is a compact, battery-powered, handheld digital multimeter designed for measuring DC and AC voltage, DC current, resistance, diode, and continuity. It features a 2000-count display, data hold function, low battery indication, and a continuity buzzer. This manual provides essential information for safe and effective operation of your multimeter.

2. Safety Information

To ensure safe operation and service of the meter, follow these instructions carefully. Failure to observe these safety warnings can result in severe injury or death.

- Always ensure the function switch is in the correct position before making any measurements.
- Do not apply more than the rated voltage, as marked on the meter, between the terminals or between any terminal and earth ground. The maximum input for AC/DC Voltage is 600V.
- Use extreme caution when working with voltages above 60V DC or 30V AC RMS. Such voltages pose a shock hazard.
- Disconnect the circuit power and discharge all high-voltage capacitors before measuring resistance or continuity.
- Never measure current on a circuit with voltage present unless the meter is connected in series with the load.
- Do not operate the meter if it appears damaged or if the insulation on the test leads is compromised.
- Remove the test leads from the meter before opening the battery cover.
- The meter is designed for CAT II 600V overvoltage category.

3. Product Overview

The MASTECH MAS830L Digital Multimeter features a clear LCD display, a rotary function switch, and multiple input jacks for various measurements.

Figure 3.1: Front view of the MASTECH MAS830L Digital Multimeter, showing the LCD display, rotary switch, and input terminals.

3.1 Key Components:

- **LCD Display:** Shows measurement readings, units, and function indicators.
- **Function Switch:** Rotary switch to select the desired measurement function (e.g., V~, V-, A-, Ω, Diode, Continuity).
- **"HOLD" Button:** Freezes the current reading on the display.
- **"COM" Jack:** Common input terminal for all measurements. Connect the black test lead here.
- **"VΩmA" Jack:** Input terminal for voltage, resistance, and current measurements up to 200mA. Connect the red test lead here for these functions.
- **"10A" Jack:** Input terminal for high current measurements (up to 10A). Connect the red test lead here for 10A DC current measurements. This input is fused.

4. Setup

4.1 Battery Installation:

The MASTECH MAS830L requires two LR44 batteries (included). If the low battery indicator appears on the display, replace the batteries promptly to ensure accurate readings.

1. Ensure the multimeter is turned OFF and disconnect all test leads from the input terminals.
2. Locate the battery compartment cover on the back of the meter.
3. Use a screwdriver to remove the screw securing the battery cover.
4. Carefully remove the cover and replace the old batteries with new LR44 batteries, observing the correct polarity (+ and -).
5. Replace the battery cover and secure it with the screw.

4.2 Connecting Test Leads:

Always connect the black test lead to the "COM" (Common) input jack. Connect the red test lead to the appropriate input jack based on the measurement you intend to make:

- For Voltage (V), Resistance (Ω), Diode, and Continuity measurements, connect the red lead to the "VΩmA" jack.
- For DC Current measurements up to 200mA, connect the red lead to the "VΩmA" jack.
- For DC Current measurements up to 10A, connect the red lead to the "10A" jack.

5. Operating Instructions

Before taking any measurement, ensure the test leads are correctly connected and the function switch is set to the desired range.

5.1 Measuring DC Voltage (V-):

1. Connect the black test lead to the "COM" jack and the red test lead to the "VΩmA" jack.
2. Set the function switch to the desired DC Voltage range (e.g., 200mV, 2V, 20V, 200V, 600V). If the voltage is unknown, start with the highest range (600V) and decrease as necessary.
3. Connect the test probes across the component or circuit to be measured, observing polarity.
4. Read the voltage value on the LCD display.

5.2 Measuring AC Voltage (V~):

1. Connect the black test lead to the "COM" jack and the red test lead to the "VΩmA" jack.
2. Set the function switch to the desired AC Voltage range (e.g., 200V, 600V). Start with the highest range if the voltage is unknown.
3. Connect the test probes across the component or circuit to be measured.
4. Read the voltage value on the LCD display.

5.3 Measuring DC Current (A-):

1. **IMPORTANT:** To measure current, the meter must be connected in series with the circuit. Disconnect power to the circuit before connecting the meter.
2. For currents up to 200mA, connect the black test lead to "COM" and the red test lead to "VΩmA". For currents up to 10A, connect the red test lead to the "10A" jack.
3. Set the function switch to the desired DC Current range (e.g., 200µA, 2mA, 20mA, 200mA, 10A).
4. Open the circuit where current is to be measured and connect the meter in series.
5. Apply power to the circuit and read the current value on the LCD display.
6. After measurement, disconnect power, remove the meter, and restore the circuit.

5.4 Measuring Resistance (Ω):

1. Connect the black test lead to the "COM" jack and the red test lead to the "VΩmA" jack.
2. Set the function switch to the desired Resistance range (e.g., 200Ω, 2kΩ, 20kΩ, 200kΩ, 2MΩ).
3. Ensure the circuit or component is de-energized before measuring resistance.
4. Connect the test probes across the component to be measured.
5. Read the resistance value on the LCD display.

5.5 Diode Test ( ):

1. Connect the black test lead to the "COM" jack and the red test lead to the "VΩmA" jack.
2. Set the function switch to the Diode test position.
3. Connect the red probe to the anode and the black probe to the cathode of the diode. The display will show the forward voltage drop (typically 0.5V to 0.8V for silicon diodes).
4. Reverse the probes. The display should show "OL" (Open Loop) for a good diode.

5.6 Continuity Test (📳):

1. Connect the black test lead to the "COM" jack and the red test lead to the "VΩmA" jack.
2. Set the function switch to the Continuity test position.
3. Connect the test probes across the circuit or component.
4. If the resistance is less than approximately 70 ±30Ω, the built-in buzzer will sound, indicating continuity. The display will also show the resistance value.

5.7 Data Hold:

Press the "HOLD" button to freeze the current reading on the LCD display. Press it again to release the hold function and resume live readings.

6. Maintenance

6.1 Battery Replacement:

When the low battery indicator appears on the display, replace the two LR44 batteries as described in Section 4.1. Using the meter with a low battery may result in inaccurate readings.

6.2 Fuse Replacement (10A Input):

The 10A input jack is protected by a fuse. If the meter does not read current on the 10A range, the fuse may be blown. To replace the fuse:

1. Ensure the multimeter is turned OFF and disconnect all test leads.
2. Open the battery compartment cover as described in Section 4.1.
3. Locate the fuse holder. Carefully remove the old fuse and replace it with a new fuse of the same type and rating (e.g., 10A/250V FUSED, as indicated on the meter).
4. Replace the battery cover and secure it with the screw.

6.3 Cleaning:

Wipe the case with a damp cloth and mild detergent. Do not use abrasives or solvents. Periodically clean the input terminals with a cotton swab and alcohol to prevent poor contact from dirt or moisture.

7. Troubleshooting

Problem	Possible Cause	Solution
No display or faint display.	Low or dead batteries.	Replace batteries (refer to Section 4.1).
Incorrect readings.	Incorrect function selected; Test leads not properly connected; Low battery.	Select correct function; Ensure leads are fully inserted; Replace batteries.

Problem	Possible Cause	Solution
"OL" (Overload) displayed.	Input value exceeds selected range; Open circuit (for resistance/continuity).	Select a higher range; Check circuit for breaks.
No current reading on 10A range.	10A fuse is blown.	Replace the 10A fuse (refer to Section 6.2).

8. Specifications

The following table outlines the general and electrical specifications for the MASTECH MAS830L Digital Multimeter.

DIGITAL MULTIMETER

MAS830L

SKU NO.: MAS830LCBGLO
UPC CODE: 810053671993
EAN CODE: 8435394777726

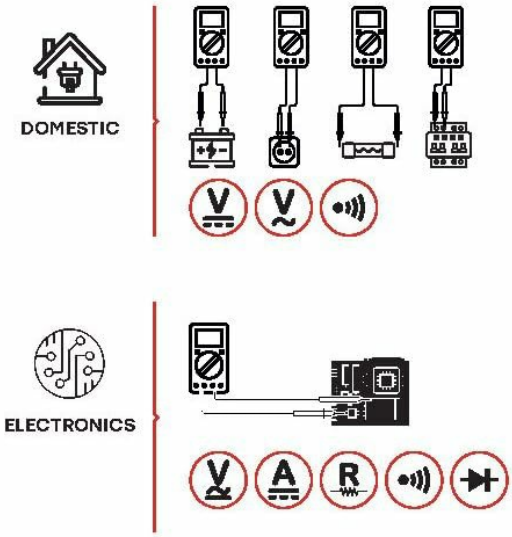
FEATURE

- Diode Open Voltage 3.0V.
- Data Hold.
- Low Battery Display.
- Continuity Buzzer <70 ±30Ω.

SPECIFICATIONS

AC Voltage 600V	DC Voltage 600V	DC Current 10A
Resistance 2MΩ	Display Counts 2000	Continuity <70±30Ω

MAIN APPLICATIONS



CONTENTS

- 145×76×40mm 5.7"×3"×1.57" 202g/0.44lb
- 1×9V 6F22 Battery
- Test Leads
- Calibration Certificate
- Quick Start Guide

PACKAGING INFORMATION

- **Color Box** L145×W60×H188mm
- **Carton Box** 40×32×31.5cm
- X 20PCS

Figure 8.1: Detailed specifications and contents for MASTECH MAS830L.

Parameter	Specification
Display	2000 Counts LCD
DC Voltage (V-)	200mV / 2V / 20V / 200V / 600V
AC Voltage (V~)	200V / 600V

Parameter	Specification
DC Current (A-)	200µA / 2mA / 20mA / 200mA / 10A
Resistance (Ω)	200Ω / 2kΩ / 20kΩ / 200kΩ / 2MΩ
Diode Open Voltage	3.0V
Continuity Buzzer	Less than 70 ±30Ω
Data Hold	Yes
Low Battery Display	Yes
Power Source	2 x LR44 batteries (included)
Product Dimensions	6.3 x 3.54 x 1.97 inches (160 x 90 x 50 mm)
Item Weight	1.1 Pounds (0.5 kg)
Safety Rating	CAT II 600V
Manufacturer	MASTECH/MGL
Model Number	GL-MAS830L

9. Warranty and Support

For warranty information and technical support, please refer to the documentation provided with your purchase or contact the manufacturer directly. The manufacturer of this product is MASTECH/MGL.
For further assistance, you may visit the official Mastech website or contact their customer service department. Please have your product model number (MAS830L) and purchase details ready when seeking support.