GuliTech GM-MAS830B

Digital Multimeter User Manual

Model: MAS830B, MAS830L, MAS838 Series

Brand: GuliTech

1. Introduction

This user manual provides essential information for the safe and effective operation of your GuliTech MAS830 Series Digital Multimeter. This instrument is designed for measuring AC/DC voltage, DC current, resistance, and performing diode and continuity tests. Please read this manual thoroughly before use and retain it for future reference.

Figure 1: GuliTech MAS830B Digital Multimeter

2. Safety Information

Always observe the following safety precautions to prevent electric shock or personal injury, and to avoid damage to the meter or to the equipment under test.

- Do not apply voltage or current to the meter that exceeds the specified maximum.
- Use extreme caution when working with voltages above 30V AC RMS, 42V peak, or 60V DC. Such voltages pose a shock hazard.
- Always disconnect the test leads from the circuit before changing functions or ranges.
- Ensure the correct function and range are selected for the measurement.
- Inspect the test leads for damaged insulation or exposed metal before use. Replace if damaged.
- Do not operate the meter if it appears damaged or if it is not operating properly.
- Do not operate the meter in explosive gas, vapor, or dust environments.
- Remove the test leads from the meter before opening the battery cover.

3. Product Overview

The GuliTech MAS830 series digital multimeters are compact, handheld devices designed for basic electrical measurements. Key components include:

- **LCD Display:** Shows measurement readings and indicators.
- **Function/Range Switch:** Rotary switch to select desired measurement type and range.
- **Input Jacks:** Terminals for connecting test leads (COM, VΩmA, 10A).
- **HOLD Button:** Freezes the current display reading.
- **hFE Transistor Socket:** For testing transistor gain (MAS830L and MAS838 models).

Figure 2: Key features of the MAS830B Digital Multimeter.

Figure 3: Packaging details highlighting features and specifications.

4. Setup

4.1 Battery Installation

The MAS830 series multimeters require 2 LR44 batteries (included). To install or replace batteries:

1. Ensure the multimeter is turned off and test leads are disconnected.
2. Locate the battery compartment on the back of the unit.
3. Use a screwdriver to open the battery cover.
4. Insert the batteries, observing correct polarity (+ and -).
5. Replace the battery cover and secure it with the screw.

A low battery indicator will appear on the display when battery replacement is needed.

5. Operating Instructions

This section details how to perform various measurements with your digital multimeter. Always ensure the correct function and range are selected before connecting the test leads to the circuit.

5.1 AC/DC Voltage Measurement

1. Set the rotary switch to the desired ACV (V~) or DCV (V-) range.
2. Insert the black test lead into the "COM" jack and the red test lead into the "VΩmA" jack.
3. Connect the test probes across the component or circuit to be measured.
4. Read the voltage value on the LCD display.

5.2 DC Current Measurement

1. Set the rotary switch to the desired DCA (A-) range.
2. For currents up to 200mA, insert the red test lead into the "VΩmA" jack. For currents up to 10A, insert the red test lead into the "10A" jack. The black test lead always goes into "COM".
3. Open the circuit where current is to be measured and connect the meter in series with the circuit.
4. Read the current value on the LCD display.

5.3 Resistance Measurement

1. Set the rotary switch to the desired Resistance (Ω) range.
2. Insert the black test lead into the "COM" jack and the red test lead into the "VΩmA" jack.
3. Connect the test probes across the resistor or component to be measured. Ensure the circuit is de-energized.
4. Read the resistance value on the LCD display.

5.4 Diode Test

1. Set the rotary switch to the Diode (♦) position.
2. Insert the black test lead into the "COM" jack and the red test lead into the "VΩmA" jack.
3. Connect the red probe to the anode and the black probe to the cathode of the diode.
4. The display will show the forward voltage drop. Reverse the probes; the display should show "OL" (open loop) for a good diode.

5.5 Continuity Test

1. Set the rotary switch to the Continuity (•))) position.
2. Insert the black test lead into the "COM" jack and the red test lead into the "VΩmA" jack.
3. Connect the test probes across the circuit or component.
4. If the resistance is less than 70 ±30Ω, the buzzer will sound, indicating continuity.

5.6 hFE Transistor Test (MAS830L and MAS838 models only)

1. Set the rotary switch to the hFE position.

2. Identify if the transistor is NPN or PNP.
3. Insert the transistor leads (Emitter, Base, Collector) into the corresponding holes in the hFE socket.
4. The display will show the hFE (DC current gain) value of the transistor.

5.7 Data Hold Function

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

Video 1: Demonstration of GuliTech MAS830 Series Digital Multimeter functions, including AC/DC Voltage, DC Current, Data Hold, hFE transistor test, Diode test, and Continuity test.

6. Maintenance

6.1 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.

6.2 Battery Replacement

Refer to Section 4.1 for battery installation and replacement instructions. Replace batteries promptly when the low battery indicator appears to ensure accurate readings.

7. Troubleshooting

Problem	Possible Cause	Solution
No display or dim display	Dead or low batteries	Replace batteries (2 LR44).
"OL" (Overload) displayed	Measurement exceeds selected range or open circuit.	Select a higher range or check circuit connection.
Incorrect readings	Incorrect function/range selected, poor test lead connection, or damaged leads.	Verify settings, ensure good contact, or replace test leads.
Buzzer not sounding during continuity test	Resistance is too high or open circuit.	Check the circuit for breaks or high resistance.

8. Specifications

The following table outlines the general and measurement specifications for the MAS830 series digital multimeters.

Feature	Description
Display	2000 counts
Diode Open Voltage	3.0V
Data Hold	Yes
Low Battery Display	Yes
Continuity Buzzer	Sounds at <70 ±30Ω

Feature	Description
Power Supply	2 LR44 batteries (included)
Product Dimensions	6.3 x 3.54 x 1.97 inches
Item Weight	0.5 Kilograms (1.1 Pounds)
Safety Rating	CAT II 600V

8.1 Measurement Ranges and Accuracy

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

MASTECH MAS830B

Features

- Display 2000 counts
- Diode Open Voltage 3.0V
- Data Hold
- Low Battery Display
- Continuity Buzzer <70 ±30Ω

General

- Power Supply : 1x9V 6F22 Battery
- Product Size : 145mmx76mmx40mm/5.7"x3"x1.57"
- Product Weight : 202g/0.44lb
- Certificate : CE / ETL / RoHS

Accessories

- Test leads
- User's manual

Specifications	Range	Resolution	Accuracy
DC Voltage	200mV/2V/20V/200V 600V	0.1mV/1mV/10mV/0. 1V 1V	±(0.5%+3) ±(0.8%+5)
AC Voltage	200V/600V	0.1V/1V	±(1.2%+10)
C Current	20μA 200μA/2mA 20mA 200mA 10A	0.01μA 0.1μA/1μA 10μA 0.1mA 10mA	±(1.0%+3) ±(1.0%+3) ±(1.0%+5) ±(1.5%+5) ±(3.0%+10)
Resistance	200Ω 2kΩ/20kΩ/200kΩ 2MΩ	0.1Ω 1Ω/10Ω/0.1kΩ 1kΩ	±(0.8%+5) ±(0.8%+2) ±(1.0%+5)

Figure 4: Detailed specifications and features of the MAS830B model.

DIGITAL MULTIMETERS

MANUAL RANGING

CAT II CAT III CAT IV								
Model	M3900	M830B	M830BZ	M832	M838	MAS830	MAS830B	MAS830L
Page	30	31	32	33	34	35	36	37
Safety Rating	CAT II 1000V CAT III 600V	CAT II 600V	CAT II 600V	CAT II 600V	CAT II 600V	CAT III 600V	CAT III 600V	CAT III 600V
Display Counts	2000	2000	2000	2000	2000	2000	2000	2000
Auto Ranging								
Auto Power Off								
True RMS								
DC Voltage	1000V	600V	600V	600V	600V	600V	600V	600V
AC Voltage	750V	600V	600V	600V	600V	600V	600V	600V
DC Current	10A	10A	10A	10A	10A	10A	10A	10A
AC Current	10A							
Resistance	20MΩ	2MΩ	2MΩ	2MΩ	2MΩ	2MΩ	2MΩ	2MΩ
Capacitance								
Frequency								
Duty Cycle								
Type K Temparature					-20~1370°C			
Battery Test								
Diode	•	•	•	•	•	•	•	•
Continuity	•		•	•	•	•		•
Display Backlight								•
Work Light								•
Data Hold						•		•
NCV								
Inductance								
hFE Transistor	•	•		•	•			•
Dual Display								
MAX								
MAX/MIN								
MAX/MIN/AVG								
Relative Measurement								
Peak Measurement								
DWELL Test								
TACH Test								

Figure 5: Comparison of features across MAS830, MAS830B, and MAS830L models.

9. Warranty and Support

For warranty information or technical support, please refer to the contact details provided with your purchase or visit the official GuliTech website. Keep your purchase receipt as proof of purchase.