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Model: MF-47

1. INTRODUCTION

This manual provides detailed instructions for the safe and effective use of the Jumplushion MF-47 Analog Multimeter. The MF-47 is a versatile, battery-powered analog device designed for measuring AC and DC voltage, DC current, resistance, and battery voltage. It is suitable for various applications including educational settings, home electronics, and general maintenance tasks.

2. SAFETY INFORMATION

Always observe the following safety precautions to prevent electric shock or damage to the meter:

- Do not apply voltage to the meter that exceeds the maximum rated voltage for the selected range.
- Exercise extreme caution when working with live circuits.
- Always disconnect power to the circuit and discharge high-voltage capacitors before measuring resistance or continuity.
- Ensure the test leads are in good condition, without cracks or damaged insulation.
- Never operate the meter if it appears damaged or if the case is open.
- Replace batteries promptly when the low battery indicator appears to ensure accurate readings.
- Do not use the meter in wet environments or explosive atmospheres.

3. PRODUCT OVERVIEW

The Jumplushion MF-47 Analog Multimeter features a clear analog display and a rotary switch for function and range selection. Key components include the meter display, range selector knob, test lead input jacks, and zero adjustment controls.



Figure 1: Front view of the MF-47 Analog Multimeter with included test leads. This image shows the main analog display, the rotary function/range selector, and the input terminals for the test probes.

4. SETUP

4.1 Battery Installation

The MF-47 requires one 1.5V RL7 battery and one 9V RL190 battery (not included). To install:

1. Locate the battery compartment cover on the back of the multimeter.
2. Remove the screw(s) securing the cover and open it.
3. Insert the 1.5V and 9V batteries, observing the correct polarity (+/-).
4. Replace the cover and secure it with the screw(s).

4.2 Connecting Test Leads

Connect the red test lead to the positive (+) input jack and the black test lead to the common (COM) input jack. Ensure connections are firm.



Figure 2: Close-up view of the red and black test leads. The red lead connects to the positive terminal, and the black lead connects to the common (COM) terminal of the multimeter.

4.3 Zero Adjustment

Before taking resistance measurements, short the test leads together and adjust the "Ω ADJ" knob until the needle points to zero on the resistance scale. This ensures accurate resistance readings.

5. OPERATING INSTRUCTIONS

Always select the appropriate function and range before connecting the test leads to the circuit under test. If the value is unknown, start with the highest range and work downwards.

5.1 Measuring DC Voltage (DCV)

1. Set the rotary switch to the desired DCV range (e.g., 0.25V, 1V, 2.5V, 10V, 50V, 250V, 500V, 1000V).
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 from the DCV scale on the analog display.

5.2 Measuring AC Voltage (ACV)

1. Set the rotary switch to the desired ACV range (e.g., 10V, 50V, 250V, 500V, 1000V, 2500V).
2. Connect the test leads across the AC voltage source.
3. Read the voltage value from the ACV scale on the analog display.

5.3 Measuring DC Current (DCmA)

1. Set the rotary switch to the desired DCmA range (e.g., 0.05mA, 0.5mA, 5mA, 50mA, 500mA).
2. **WARNING:** To measure current, the meter must be connected in series with the circuit. Break the circuit and insert the meter.
3. Connect the red test lead to the higher potential side and the black test lead to the lower potential side.
4. Read the current value from the DCmA scale.

5.4 Measuring Resistance (Ω)

1. Ensure the circuit is de-energized before measuring resistance.
2. Set the rotary switch to the desired resistance range (e.g., x1, x10, x100, x1k, x10k Ohm).
3. Perform zero adjustment as described in Section 4.3.
4. Connect the test leads across the component to be measured.
5. Read the resistance value from the Ω scale and multiply by the range multiplier.

5.5 Measuring Battery Voltage (BATT)

1. Set the rotary switch to the BATT range (e.g., 1.2V, 1.5V, 2V, 3V, 3.6V).
2. Connect the red test lead to the positive terminal of the battery and the black test lead to the negative terminal.
3. Read the battery voltage from the BATT scale.

5.6 Measuring Capacitance (C)

The MF-47 supports capacitance measurement. Refer to the specific Cx ranges on the rotary switch (Cx1, Cx10, Cx100, Cx1k, Cx10k). Ensure the capacitor is fully discharged before measurement. Connect the leads across the capacitor and read the value from the appropriate scale.



Figure 3: An individual using the MF-47 Analog Multimeter to perform measurements on a circuit board, demonstrating a typical application of the device.

6. MAINTENANCE

6.1 Cleaning

Wipe the meter with a dry, soft cloth. Do not use abrasives or solvents. Keep the display clean for optimal readability.

6.2 Battery Replacement

When the meter's readings become erratic or the needle does not zero correctly, it may be time to replace the batteries. Follow the steps in Section 4.1 for battery installation.

6.3 Storage

If the meter is not used for an extended period, remove the batteries to prevent leakage and store the device in a cool, dry place away from direct sunlight.

7. TROUBLESHOOTING

- **No reading or erratic needle movement:** Check battery charge and connections. Ensure test leads are properly inserted and not damaged. Verify the correct function and range are selected.
- **Incorrect resistance reading:** Perform zero adjustment (Section 4.3). Ensure the circuit is de-energized.
- **Meter does not power on:** Check battery installation and ensure batteries are fresh.

8. SPECIFICATIONS

Parameter	Value
Product Name	Analog Multimeter
Model	MF-47
Power Supply	1 x 1.5V RL7, 1 x 9V RL190 (not included)
DC Voltage Ranges	0.25V, 1V, 2.5V, 10V, 50V, 250V, 500V, 1000V
AC Voltage Ranges	10V, 50V, 250V, 500V, 1000V, 2500V
DC Current Ranges	0.05mA, 0.5mA, 5mA, 50mA, 500mA
Resistance Ranges	x1, x10, x100, x1k, x10k Ohm
Battery Test Ranges	1.2V, 1.5V, 2V, 3V, 3.6V
Audio Level	14dB, 22dB, 28dB
Resistor Box	0.5, 5, 50, 500, 5K, 20K, 50K, 200K, 1M, 2.25M, 4.5M, 9M, 22.5M
Capacitance Measurement	Cx1, Cx10, Cx100, Cx1k, Cx10k (C uf)
Dimensions (L*W*H)	18.7 x 11.8 x 4.7cm (7.4" x 4.6" x 1.9")
Net Weight	323g

9. WARRANTY AND SUPPORT

For warranty information or technical support, please contact your retailer or the manufacturer directly. Please retain your purchase receipt as proof of purchase.

Manufacturer: Jumplushion