

## Aexit MF-110

# Aexit MF-110 Analog Multimeter Instruction Manual

Model: MF-110

## 1. INTRODUCTION

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The Aexit MF-110 Analog Multimeter is a compact, battery-powered device designed for basic electrical measurements. It provides an analog display for measuring AC/DC voltage, DC current, and electrical resistance. This manual provides essential information for the safe and effective use of your MF-110 multimeter.

## 2. SAFETY INFORMATION

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Always observe the following safety precautions when using the Aexit MF-110 Analog Multimeter to prevent personal injury or damage to the device or equipment under test.

- **Read the Manual:** Familiarize yourself with the operation and safety warnings before use.
- **Inspect Before Use:** Before each use, inspect the multimeter and test leads for any damage. Do not use if damaged.
- **Voltage Limits:** Do not apply voltage or current that exceeds the maximum rated values for each range.
- **Proper Range Selection:** Always select the appropriate measurement function and range before connecting the test leads to the circuit.
- **Avoid Live Circuits:** Do not change ranges or functions while the test leads are connected to a live circuit.
- **Insulated Leads:** Use only the provided insulated test leads. Keep fingers behind the finger guards on the probes.
- **Battery Replacement:** Ensure the multimeter is disconnected from all circuits before opening the battery compartment.
- **Environmental Conditions:** Use the multimeter in dry conditions. Avoid use in wet or damp environments.

### 3. PACKAGE CONTENTS

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Verify that all items are present upon unpacking your Aexit MF-110 Analog Multimeter:

- 1 x Aexit MF-110 Analog Multimeter
- 1 x Pair of Color-Coded Test Probe Leads (Red and Black)

*Note: 1 x AA Battery is required for operation and is not included.*

### 4. PRODUCT OVERVIEW

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**Figure 1:** Aexit MF-110 Analog Multimeter with test probes. This image displays the Aexit MF-110 Analog Multimeter, a compact device designed for electrical measurements. It features an analog display with multiple scales for different measurement types, a central rotary dial for range selection, and input jacks for the included red and black test probes. The model number 'MF-110' is clearly visible on the front panel.

## Key Components:

- **Analog Display:** Shows measurement readings via a needle on various scales.
- **Rotary Function/Range Switch:** Used to select the desired measurement type (ACV, DCV, DCmA, Ohm) and range.
- **Input Jacks:** Ports for connecting the test leads. Typically, the black lead connects to the common (COM) jack, and the red lead connects to the positive (+) jack.
- **Test Probes:** Color-coded leads (red for positive, black for common) with pointed tips for making contact with circuits.

## 5. SETUP

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### 5.1 Battery Installation

The MF-110 Multimeter requires one (1) AA battery for operation. Ensure the multimeter is powered off and disconnected from any circuits before proceeding.

1. Locate the battery compartment cover on the back of the multimeter.
2. Carefully remove the cover.
3. Insert one AA battery, observing the correct polarity (+ and -) as indicated inside the compartment.
4. Replace the battery compartment cover securely.

### 5.2 Connecting Test Leads

Connect the test leads to the multimeter as follows:

1. Insert the black test lead into the jack labeled with a minus sign (-) or 'COM' (Common).
2. Insert the red test lead into the jack labeled with a plus sign (+) or 'VΩmA' (Voltage, Ohms, Milliampères).

## 6. OPERATING INSTRUCTIONS

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Before taking any measurements, ensure the battery is installed and the test leads are correctly connected.

### 6.1 DC Voltage Measurement (DCV)

To measure DC voltage:

1. Set the rotary switch to the desired DCV range (10V, 50V, 250V, or 1000V). Always start with the highest range if the voltage is unknown.
2. Connect the red test probe to the positive (+) side of the circuit and the black test probe to the negative (-) side.
3. Read the voltage value from the appropriate DCV scale on the analog display.

### 6.2 AC Voltage Measurement (ACV)

To measure AC voltage:

1. Set the rotary switch to the desired ACV range (10V, 50V, 250V, or 1000V). Start with the highest range if the voltage is unknown.
2. Connect the test probes across the AC voltage source. Polarity is not critical for AC measurements.
3. Read the voltage value from the appropriate ACV scale on the analog display.

### 6.3 DC Current Measurement (DCmA)

To measure DC current:

1. **Important:** Current measurements require the multimeter to be connected in series with the circuit. This means breaking the circuit and inserting the multimeter.
2. Set the rotary switch to the desired DCmA range (0.5mA, 50mA, or 500mA). Start with the highest range.
3. Disconnect power to the circuit.
4. Break the circuit at the point where you want to measure current.
5. Connect the red test probe to the higher potential side and the black test probe to the lower potential side of the break.
6. Apply power to the circuit.
7. Read the current value from the appropriate DCmA scale on the analog display.
8. After measurement, disconnect power, remove the multimeter, and restore the circuit.

### 6.4 Resistance Measurement ( $\Omega$ )

To measure resistance:

1. **Important:** Ensure the circuit or component under test is completely de-energized before measuring resistance.
2. Set the rotary switch to the desired Ohm ( $\Omega$ ) range (x10, x100, or x1K).
3. Touch the tips of the red and black test probes together. The needle should move to zero. If it does not, adjust the ' $\Omega$  ADJ' knob (if present) to calibrate.
4. Connect the test probes across the component whose resistance you wish to measure.
5. Read the resistance value from the Ohm scale on the analog display and multiply by the selected range multiplier (e.g., if reading is 50 on x100 range, resistance is  $50 \times 100 = 5000\Omega$ ).

### 6.5 Decibel Measurement (dB)

The MF-110 also includes a decibel scale. Refer to the specific scale markings on the analog display for dB readings, typically used in conjunction with AC voltage measurements.

## 7. MAINTENANCE

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### 7.1 Cleaning

Wipe the multimeter casing with a damp cloth and mild detergent. Do not use abrasive cleaners or solvents. Ensure the device is dry before use.

### 7.2 Battery Replacement

When the display needle does not move or readings become inaccurate, the AA battery may need replacement. Follow the battery installation steps in Section 5.1.

### 7.3 Storage

Store the multimeter in a cool, dry place away from direct sunlight and extreme temperatures. If storing for extended periods, remove the battery to prevent leakage.

## 8. TROUBLESHOOTING

- **No Reading / Needle Not Moving:**
  - Check if the battery is installed correctly and has sufficient charge.
  - Ensure test leads are properly connected to the multimeter and the circuit.
  - Verify the rotary switch is set to the correct function and range.
  - Check for continuity in the test leads themselves.
- **Inaccurate Readings:**
  - Ensure the correct range is selected for the measurement.
  - For resistance measurements, ensure the circuit is de-energized.
  - Calibrate the Ohm scale by touching probes together and adjusting the ' $\Omega$  ADJ' knob.
  - Replace the battery if it is low.

## 9. SPECIFICATIONS

Feature	Specification
Model	MF-110
DC Voltage Ranges	10V, 50V, 250V, 1000V
AC Voltage Ranges	10V, 50V, 250V, 1000V
DC Current Ranges	0.5mA, 50mA, 500mA
Resistance Ranges	x10 $\Omega$ , x100 $\Omega$ , x1K $\Omega$
Decibel Range	-20 to +22dB
Power Source	1 x AA Battery (not included)
Body Dimensions	9 x 6 x 3 cm (3.5" x 2.3" x 1.2")
Net Weight	75g (2.65 ounces)
Material	Plastic, Electronic Parts
Test Lead Cable Length	40cm (15.7")

## 10. WARRANTY AND SUPPORT

For warranty information or technical support regarding your Aexit MF-110 Analog Multimeter, please contact the manufacturer or your point of purchase. Keep your purchase receipt as proof of purchase.

