EMOS M0400

EMOS eM400 Digital Clamp Multimeter

User Manual - Model M0400

1. Introduction

Thank you for choosing the EMOS eM400 Digital Clamp Multimeter. This versatile instrument is designed for precise measurement of AC/DC voltage, AC/DC current, resistance, diode, circuit continuity, and temperature. It is an essential tool for electrical maintenance, installation, and troubleshooting, ensuring safety and accuracy in your work.

Please read this manual thoroughly before operating the device to ensure safe and efficient use.

2. Safety Information

Always adhere to the following safety precautions to prevent personal injury or damage to the multimeter or equipment under test.

- Do not exceed the maximum input values specified for each range.
- Exercise extreme caution when working with voltages above 30V AC RMS, 42V peak, or 60V DC. These voltages pose a shock hazard.
- Always disconnect power to the circuit and discharge all high-voltage capacitors before performing resistance, continuity, or diode tests.
- Ensure the test leads are in good condition, free from cracks or damaged insulation.
- Do not operate the multimeter if it appears damaged or if the case is open.
- Use the correct function and range for each measurement.
- The device is rated CAT III 600V. Do not use it for measurements exceeding this category or voltage.
- Replace the battery immediately when the low battery indicator appears to ensure accurate readings.

3. Product Overview

The EMOS eM400 Digital Clamp Multimeter is designed for ease of use and durability. Familiarize yourself with its components:

Figure 3.1: EMOS eM400 Digital Clamp Multimeter with connected test leads.

Figure 3.2: EMOS eM400 Digital Clamp Multimeter showing the main unit and its features.

3.1 Components:

1. **Clamp Jaw:** Used for non-contact AC/DC current measurement.
2. **Jaw Trigger:** Opens the clamp jaw.
3. **Function Rotary Switch:** Selects the desired measurement function (Voltage, Current, Resistance, Diode, Continuity, Temperature, OFF).
4. **LCD Display:** Shows measurement readings, units, and function indicators.
5. **SELECT Button:** Toggles between AC/DC modes for voltage/current, or between different functions within a single rotary switch position (e.g., Diode/Continuity).
6. **HOLD Button:** Freezes the current reading on the display.
7. **Input Jacks (COM, VΩmA):** Connection points for test leads for voltage, resistance, diode, continuity, and temperature measurements.

3.2 Included Accessories:

- EMOS eM400 Digital Clamp Multimeter

- Test Leads (Red and Black)
- Leather Carrying Case
- Instruction Manual

Figure 3.3: The included leather carrying case for safe storage and transport.

4. Setup

4.1 Battery Installation:

The EMOS eM400 requires two 1.5V AA batteries for operation.

1. Ensure the multimeter is turned OFF.
2. Locate the battery compartment on the back of the unit.
3. Use a screwdriver to open the battery compartment cover.
4. Insert two 1.5V AA batteries, observing the correct polarity (+/-) as indicated inside the compartment.
5. Replace the battery compartment cover and secure it with the screw.

4.2 Connecting Test Leads:

For voltage, resistance, diode, continuity, and temperature measurements, connect the test leads as follows:

- Insert the black test lead into the 'COM' (common) input jack.
- Insert the red test lead into the 'VΩmA' input jack.

5. Operating Instructions

5.1 Power On/Off:

Rotate the Function Rotary Switch from the 'OFF' position to any desired measurement function to turn the multimeter ON. To turn it OFF, rotate the switch back to the 'OFF' position.

5.2 Automatic Shut-Off:

The multimeter features an automatic shut-off function to conserve battery life. If no operation is performed for approximately 15 minutes, the device will automatically power off. Press any button or rotate the function switch to reactivate it.

5.3 AC/DC Current Measurement (Clamp Function):

Use the clamp jaw to measure current without breaking the circuit.

1. Set the Function Rotary Switch to the 'A~' (AC Current) or 'A=' (DC Current) position. Use the SELECT button to toggle between AC and DC if needed.
2. Press the Jaw Trigger to open the clamp jaw.
3. Enclose only one conductor (wire) within the clamp jaw. Ensure the jaw is fully closed.
4. Read the current value on the LCD display.

5.4 AC/DC Voltage Measurement:

To measure voltage, connect the test leads.

1. Set the Function Rotary Switch to the 'V~' (AC Voltage) or 'V=' (DC Voltage) position. Use the SELECT button to toggle between AC and DC if needed.
2. Connect the black test lead to the 'COM' terminal and the red test lead to the 'VΩmA' terminal.
3. Connect the test probes in parallel to the circuit or component you wish to measure.
4. Read the voltage value on the LCD display.

5.5 Resistance Measurement:

To measure resistance, ensure the circuit is de-energized.

1. Set the Function Rotary Switch to the 'Ω' (Resistance) position.
2. Connect the black test lead to 'COM' and the red test lead to 'VΩmA'.
3. Connect the test probes across the component whose resistance you want to measure.
4. Read the resistance value on the LCD display.

5.6 Diode Test:

To test diodes, ensure the circuit is de-energized.

1. Set the Function Rotary Switch to the 'Diode/Continuity' position. Press SELECT to ensure diode test mode is

active (diode symbol will appear).
2. Connect the black test lead to 'COM' and the red test lead to 'VΩmA'.
3. Connect the red probe to the anode and the black probe to the cathode of the diode. A forward voltage drop will be displayed. Reverse the probes; the display should show 'OL' (Open Loop) for a good diode.

5.7 Continuity Test:

To check for circuit continuity, ensure the circuit is de-energized.

1. Set the Function Rotary Switch to the 'Diode/Continuity' position. Press SELECT to ensure continuity test mode is active (buzzer symbol will appear).
2. Connect the black test lead to 'COM' and the red test lead to 'VΩmA'.
3. Connect the test probes across the circuit or component. If continuity exists (resistance below approx. 50Ω), the buzzer will sound.

5.8 Temperature Measurement:

The multimeter can measure temperature using a K-type thermocouple (not included, but compatible).

1. Set the Function Rotary Switch to the '°C' position.
2. Connect the K-type thermocouple to the 'COM' and 'VΩmA' input jacks, observing polarity.
3. Place the thermocouple tip on the object or area whose temperature you wish to measure.
4. Read the temperature value on the LCD display.

5.9 HOLD Function:

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

6. Maintenance

6.1 Cleaning:

Wipe the case with a damp cloth and mild detergent. Do not use abrasives or solvents. Keep the input terminals free of dirt and moisture.

6.2 Battery Replacement:

When the low battery indicator appears on the display, replace the batteries as described in Section 4.1. Always use fresh 1.5V AA batteries.

6.3 Storage:

If the multimeter is not used for an extended period, remove the batteries to prevent leakage and damage. Store the device in its leather carrying case in a cool, dry place, away from direct sunlight and extreme temperatures.

7. Troubleshooting

If you encounter issues with your EMOS eM400, refer to the following common problems and solutions:

Problem	Possible Cause	Solution

Problem	Possible Cause	Solution
No display or dim display	Dead or low batteries; Incorrect battery polarity	Replace batteries; Check battery orientation
Incorrect readings	Wrong function/range selected; Damaged test leads; External interference	Select correct function/range; Inspect/replace test leads; Move away from strong electromagnetic fields
Multimeter turns off unexpectedly	Auto power-off activated; Low battery	Press any button to reactivate; Replace batteries
Clamp jaw not closing properly	Obstruction in jaw mechanism	Inspect and clear any debris from the jaw mechanism

8. Specifications

Detailed technical specifications for the EMOS eM400 Digital Clamp Multimeter:

Figure 8.1: Back of the product packaging with detailed specifications.

Parameter	Range / Value
AC Voltage	4 V – 600 V
AC Current	400 A
DC Voltage	400 mV – 600 V
DC Current	400 A
Resistance	400 Ω – 40 MΩ
Temperature	-20 °C to +1,000 °C
Diode Test	Yes
Continuity Test	Yes (with buzzer)

Parameter	Range / Value
Display	Clear LCD Display
Memory Function	Data Hold
Low Battery Display	Yes
Automatic Shut-off	Yes
Power Supply	2 x 1.5 V AA batteries
Safety Rating	CAT III 600V
Dimensions	12.2 x 5.94 x 2.52 inches (approx.)
Weight	15.87 ounces (approx.)

9. Warranty and Support

EMOS products are manufactured to high-quality standards. For warranty information, please refer to the warranty card included with your product or visit the official EMOS website. Keep your purchase receipt as proof of purchase.

9.1 Manufacturer Contact:

EMOS spol. s r.o.
Lipnická 2844
Přerov I-Město, 750 02 Přerov
Czech Republic

For further assistance, product information, or to download the latest version of this manual, please visit the official EMOS website: www.emos.eu