Ingco DM2002

Ingco DM2002 600V Digital Multimeter User Manual

Model: DM2002

1. Introduction

The Ingco DM2002 Digital Multimeter is a versatile and precise instrument designed for measuring various electrical parameters. It features a 2000 counts LCD display with backlight, ensuring clear readings in diverse environments. This multimeter is suitable for use in laboratories, factories, and homes, offering stable performance and high accuracy.

Key capabilities include measuring AC/DC voltage, AC/DC current, resistance, capacitance, frequency, and temperature. Its robust construction ensures durability and extended usage.

2. Safety Information

Always adhere to safety precautions when using any electrical testing equipment. Failure to do so may result in electric shock, injury, or damage to the meter or equipment under test.

- Ensure the multimeter is in good working condition before use. Inspect test leads for damage.
- Do not apply voltage or current that exceeds the maximum rated values for the meter. This meter is rated for 600V.
- Always disconnect power to the circuit before connecting or disconnecting test leads, especially when measuring current or resistance.
- Use caution when working with voltages above 30V AC RMS, 42V peak, or 60V DC, as these pose a shock hazard.
- Ensure the function switch is set to the correct range before making measurements.
- Do not operate the meter if the battery cover is not properly closed.
- Replace batteries promptly when the low battery indicator appears to ensure accurate readings.

3. Product Overview

The Ingco DM2002 Digital Multimeter features a clear LCD display, a rotary function switch, and input jacks for test leads.


INGCO
2000 Counts
DM2002 DIGITAL MULTIMETER
HOLD
OFF
20M
2M
200k
20k
2k
200
Ω
20
200
600
V~
600
200
20
V⎓
2
200m
10
200m
20m
A⎓
600V CAT III
10A
COM
VΩmA
10A
MAX
UNFUSED
MAX
200mA/250V

Figure 1: Front view of the Ingco DM2002 Digital Multimeter, showing the LCD display, rotary switch, and input terminals. The device is yellow and black.

3.1 Components

- **LCD Display:** Shows measurement readings, units, and function indicators.
- **Function Switch:** Rotary dial to select measurement modes (Voltage, Current, Resistance, etc.).
- **HOLD Button:** Freezes the current reading on the display.
- **Input Jacks:** Terminals for connecting test leads (COM, VΩmA, 10A).

4. Setup

4.1 Battery Installation

The Ingco DM2002 requires alkaline batteries for operation. Ensure the correct polarity when inserting batteries.

1. Locate the battery compartment on the back of the multimeter.
2. Use a screwdriver to open the battery compartment cover.
3. Insert the required alkaline batteries, observing the polarity markings (+ and -).
4. Replace the battery compartment cover and secure it with the screw.

4.2 Connecting Test Leads

Proper connection of test leads is essential for accurate and safe measurements.

- Insert the black test lead into the 'COM' (Common) input jack.
- For most measurements (voltage, resistance, capacitance, frequency, temperature, and small currents), insert the red test lead into the 'VΩmA' input jack.
- For measuring large currents (up to 10A), insert the red test lead into the '10A' input jack. Ensure the function switch is set to the appropriate current range.

5. Operating Instructions

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

5.1 Measuring AC/DC Voltage (V~ / V-)

1. Connect the black test lead to 'COM' and the red test lead to 'VΩmA'.
2. Set the function switch to the desired AC Voltage (V~) or DC Voltage (V-) range.
3. Connect the test probes in parallel across the component or circuit to be measured.
4. Read the voltage value on the LCD display.

5.2 Measuring AC/DC Current (A~ / A-)

Caution: Never connect the multimeter in parallel with a voltage source when measuring current, as this can damage the meter and pose a safety risk.

1. Connect the black test lead to 'COM'.

2. For currents up to 200mA, connect the red test lead to 'VΩmA'. For currents up to 10A, connect the red test lead to '10A'.
3. Set the function switch to the desired AC Current (A~) or DC Current (A-) range.
4. Open the circuit where the current is to be measured and connect the multimeter in series with the circuit.
5. Read the current value on the LCD display.

5.3 Measuring Resistance (Ω)

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

5.4 Measuring Capacitance (F)

1. Ensure the capacitor is fully discharged before measurement to prevent damage to the meter.
2. Connect the black test lead to 'COM' and the red test lead to 'VΩmA'.
3. Set the function switch to the Capacitance (F) range.
4. Connect the test probes across the capacitor terminals.
5. Read the capacitance value on the LCD display.

5.5 Measuring Frequency (Hz) and Temperature (°C/°F)

Refer to the specific markings on the rotary switch for Frequency (Hz) and Temperature (°C/°F) functions. The connection method for these measurements typically involves the 'COM' and 'VΩmA' jacks, often requiring a dedicated temperature probe for temperature measurements (not included with all multimeters).

5.6 HOLD Function

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

6. Maintenance

6.1 Cleaning

Wipe the meter's casing with a damp cloth and mild detergent. Do not use abrasives or solvents. Ensure the meter is dry before use.

6.2 Battery Replacement

When the low battery indicator appears on the display, replace the batteries as described in Section 4.1. Always use new alkaline batteries of the specified type.

6.3 Fuse Replacement

If the current measurement function stops working, the fuse may need replacement. This typically requires opening the meter's casing. Refer to the meter's internal markings for the correct fuse type and rating (e.g., 200mA/250V for mA range, 10A for 10A range). Only replace with a fuse of the identical type and rating.

6.4 Storage

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

7. Troubleshooting

- **No Display / Faint Display:** Check battery installation. Replace batteries if low battery indicator is present or if display is faint.
- **Incorrect Readings:** Ensure the function switch is set to the correct range. Check test lead connections. Verify the circuit is properly connected.
- **Current Measurement Not Working:** Check the fuse. Replace if blown (refer to Section 6.3).
- **'OL' or '1' on Display:** Indicates overload or out-of-range measurement. Select a higher range or verify circuit connection.

8. Specifications

The following table details the technical specifications of the Ingco DM2002 Digital Multimeter.

Figure 2: Ingco DM2002 Digital Multimeter with approximate dimensions shown for scale.

Specification	Value
Model Number	DM2002
Manufacturer	Ingco
Display	2000 Counts LCD with Backlight
Max Voltage Rating	600 Volts
Item Weight	200 g (0.2 Kilograms)
Product Dimensions	23 x 11.7 x 4.9 cm
Power Source Type	Corded Electric (refers to general category, device is battery powered)
Batteries Required	Yes
Battery Cell Type	Alkaline
Specification Met	ISO 9001
Minimum Operating Voltage	20 Volts

Specification	Value
Lower Temperature Rating	30 Degrees Fahrenheit
Upper Temperature Rating	200 Degrees Fahrenheit

9. Warranty and Support

For warranty information and technical support, please refer to the documentation provided with your purchase or contact the retailer or manufacturer directly. Specific warranty terms may vary by region and seller.