

RICHMETERS RM404B

RICHMETERS RM404B Handheld Digital Multimeter

INSTRUCTION MANUAL

1. Important Safety Information

Please read and understand all safety information and operating instructions before using this multimeter. Failure to follow these instructions may result in electric shock, fire, or damage to the meter or the equipment under test.

- Always ensure the test leads are in good condition and properly connected before making any measurements.
- Do not apply voltage or current that exceeds the maximum rated values for the meter.
- 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 testing resistance, continuity, diodes, or capacitance.
- Do not operate the meter if it appears damaged or if the case is open.
- Replace the battery immediately when the low battery indicator appears to ensure accurate readings.
- This meter is rated for CAT II 600V. Do not use it for measurements in higher category installations.

2. Package Contents

Verify that all items listed below are present and undamaged:

- RICHMETERS RM404B Digital Multimeter
- Test Leads (Red and Black)
- User Manual (this document)



Image: The RICHMETERS RM404B Digital Multimeter shown with its included red and black test leads.

3. Product Overview

Familiarize yourself with the components of your RM404B Digital Multimeter:

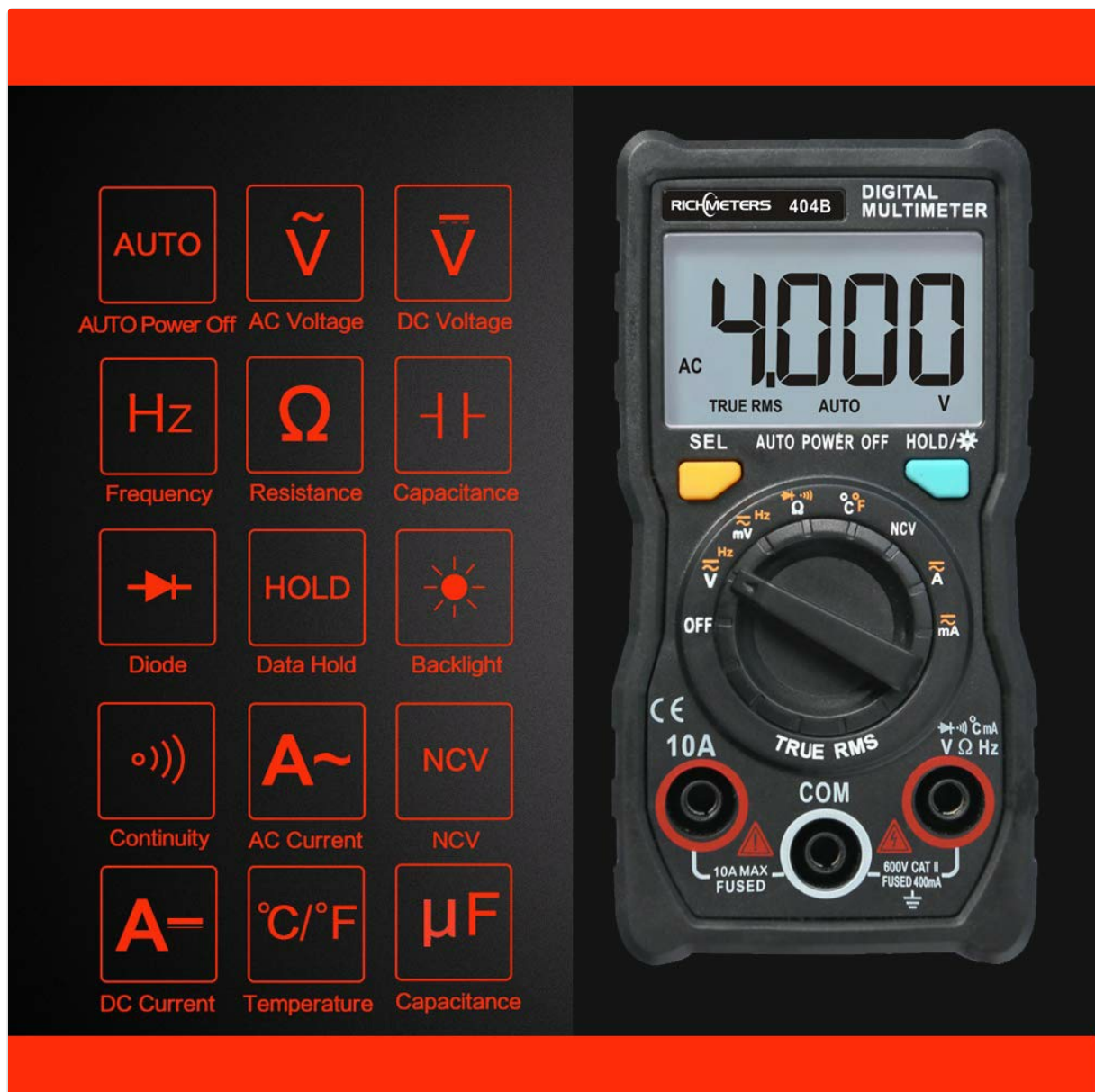


Image: A detailed diagram of the RM404B multimeter, highlighting its key components such as the LCD display, function switch key, rotary switch, input sockets, and COM measurement input terminal.

1. **LCD Display Screen:** Shows measurement readings, units, and function indicators.
2. **Function Switch Key (SEL):** Used to select sub-functions within a rotary switch position (e.g., AC/DC, Diode/Continuity).
3. **AUTO POWER OFF / HOLD/* Button:** Short press for Data Hold, long press for Backlight. Auto Power Off is an automatic feature.
4. **Rotary Switch:** Selects the primary measurement function (e.g., Voltage, Resistance, Current).
5. **Input Socket (VΩHz):** Positive input terminal for Voltage, Resistance, Frequency, Diode, Continuity, and Temperature measurements.
6. **COM Measurement Input Terminal:** Common (negative) input terminal for all measurements.
7. **Input Socket (10A):** Positive input terminal for 10A AC/DC current measurements.
8. **Input Socket (mA):** Positive input terminal for milliampere (mA) AC/DC current measurements.

4. Setup and Initial Operation

4.1 Battery Installation

The RM404B is powered by batteries. To install or replace batteries:

1. Ensure the multimeter is turned OFF and disconnect all test leads.
2. Locate the battery compartment cover on the back of the meter.
3. Use a screwdriver to remove the screw(s) securing the cover.
4. Insert new batteries, observing correct polarity (+ and -).
5. Replace the battery compartment cover and secure it with the screw(s).

4.2 Connecting Test Leads

Always connect the black test lead to the COM terminal. Connect the red test lead to the appropriate input terminal based on the measurement type:

- For Voltage, Resistance, Frequency, Diode, Continuity, Temperature: Connect the red lead to the **VΩHz** terminal.
- For 10A Current: Connect the red lead to the **10A** terminal.
- For mA Current: Connect the red lead to the **mA** terminal.

4.3 Powering On/Off

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

5. Operating Instructions

This section details how to perform various measurements with your RM404B multimeter.

5.1 Measuring DC Voltage (V₋)

1. Set the Rotary Switch to the **V** position. The meter will typically default to DC Voltage. If not, press the **SEL** button to select DC Voltage.
2. Connect the black test lead to the **COM** terminal and the red test lead to the **VΩHz** terminal.
3. Connect the test probes across the component or circuit to be measured, ensuring parallel connection.
4. Read the voltage value on the LCD display.

5.2 Measuring AC Voltage (V_~)

1. Set the Rotary Switch to the **V** position. Press the **SEL** button to select AC Voltage if necessary.
2. Connect the black test lead to the **COM** terminal and the red test lead to the **VΩHz** terminal.
3. Connect the test probes across the component or circuit to be measured, ensuring parallel connection.
4. Read the voltage value on the LCD display.

5.3 Measuring Resistance (Ω)

1. Set the Rotary Switch to the **Ω** position.
2. Connect the black test lead to the **COM** terminal and the red test lead to the **VΩHz** terminal.
3. Ensure the circuit is de-energized before connecting the probes across the resistor or component.
4. Read the resistance value on the LCD display.

5.4 Measuring Frequency (Hz)

1. Set the Rotary Switch to the **Hz** position.
2. Connect the black test lead to the **COM** terminal and the red test lead to the **VΩHz** terminal.
3. Connect the test probes across the circuit where frequency is to be measured.
4. Read the frequency value on the LCD display.

5.5 Measuring Temperature (°C/°F)

1. Set the Rotary Switch to the °C/°F position.
2. Connect the temperature probe (if included and compatible) to the **COM** and **VΩHz** terminals, observing polarity.
3. Place the temperature probe at the location where temperature is to be measured.
4. Read the temperature value on the LCD display. Use the **SEL** button to switch between Celsius and Fahrenheit if available.

5.6 Diode Test (→|←)

1. Set the Rotary Switch to the →|← position. Press **SEL** to select Diode Test if necessary.
2. Connect the black test lead to the **COM** terminal and the red test lead to the **VΩHz** terminal.
3. Connect the red probe to the anode and the black probe to the cathode of the diode.
4. Read the forward voltage drop on the LCD. Reverse the probes; the display should show OL (Open Loop) for a good diode.

5.7 Continuity Test (♩)

1. Set the Rotary Switch to the ♩ position. Press **SEL** to select Continuity Test if necessary.
2. Connect the black test lead to the **COM** terminal and the red test lead to the **VΩHz** terminal.
3. Connect the test probes across the circuit or component.
4. If the resistance is below approximately 50Ω, the meter will emit an audible beep, indicating continuity.

5.8 Measuring DC Current (A– / mA–)

1. Set the Rotary Switch to the **A** or **mA** position. Press **SEL** to select DC Current.
2. Connect the black test lead to the **COM** terminal. Connect the red test lead to the **10A** terminal for high current or **mA** terminal for low current.
3. **WARNING:** Ensure the circuit is de-energized before breaking the circuit and connecting the meter in series.
4. Connect the meter in series with the circuit to be measured.
5. Apply power to the circuit and read the current value on the LCD display.

5.9 Measuring AC Current (A~ / mA~)

1. Set the Rotary Switch to the **A** or **mA** position. Press **SEL** to select AC Current.
2. Connect the black test lead to the **COM** terminal. Connect the red test lead to the **10A** terminal for high current or **mA** terminal for low current.
3. **WARNING:** Ensure the circuit is de-energized before breaking the circuit and connecting the meter in series.
4. Connect the meter in series with the circuit to be measured.
5. Apply power to the circuit and read the current value on the LCD display.

5.10 Non-Contact Voltage (NCV) Detection

The NCV function allows for detection of AC voltage without direct contact with conductors.

1. Set the Rotary Switch to the **NCV** position.
2. Move the top part of the multimeter (where the NCV sensor is located) close to the conductor or outlet you wish to test.
3. The meter will indicate the presence of AC voltage through an audible beep and/or visual indicator on the display.



Image: The RM404B multimeter being used to detect non-contact voltage near an electrical wall outlet, illustrating the NCV function.

6. Maintenance

6.1 Cleaning

Wipe the meter's case with a damp cloth and a mild detergent. Do not use abrasives or solvents. Ensure the meter is completely 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 the specified battery type.

6.3 Fuse Replacement

If the current measurement functions stop working, the fuse may need replacement. Refer to the specifications for the correct fuse type and rating. Fuse replacement should only be performed by qualified personnel.

7. Troubleshooting

If the multimeter is not functioning correctly, refer to the following common issues:

- **No Display:** Check battery installation and charge. Ensure the rotary switch is not in the "OFF" position.
- **Incorrect Readings:** Verify correct function selection, proper test lead connection, and that the circuit is within the meter's measurement range. Replace batteries if low.
- **Current Measurement Not Working:** Check the fuse. Ensure test leads are connected to the correct current input terminals (10A or mA).
- **"OL" Display:** Indicates an overload or open circuit. For resistance, it means the resistance is too high or the circuit is open. For diode test, it indicates an open diode in reverse bias.

8. Specifications

8.1 General Specifications

- **Brand:** RICHMETERS
- **Model:** RM404B
- **Power Source:** Battery Powered
- **Style:** Digital
- **Item Weight:** 121 Grams
- **Safety Rating:** CAT II 600V



Image: The physical dimensions of the RM404B multimeter, showing a height of 118mm, width of 60mm, and depth of 25mm.

8.2 Electrical Specifications

Function	Range	Resolution	Accuracy	MAX. Value	Other
DC Voltage (V)	4.000V	0.001V	±(0.5%+3)	600V	
	40.00V	0.01V			
	400.0V	0.1V			
	600V	1V			
DC Voltage (mV)	40.00mV	0.01mV	±(0.5%+3)	400mV	
	400.0mV	0.1mV			
AC Voltage	4.000V	0.001V	±(1.0%+3)	600V	Frequency Response: 40Hz-1kHz
	40.00V	0.01V			

(V) Function	400.0V Range	0.1V Resolution	Accuracy	MAX. Value	Frequency Response: 40Hz-1kHz Other
	600V	1V			
AC Voltage (mV)	40.00mV	0.01mV	±(1.0%+3)	400mV	Frequency Response: 40Hz-1kHz
	400.0mV	0.1mV			
DC Current (A)	10.00A	0.01A	±(1.2%+3)	10A	MAX. Current: 10A (no more than 15 seconds)
	40.00A	0.01A			
DC Current (mA)	40.00mA	0.01mA	±(1.2%+3)	400mA	No Voltage input at this mode
	400.0mA	0.1mA			
AC Current (A)	10.00A	0.01A	±(1.5%+3)	10A	Frequency Response(AC): 40Hz-1kHz
	40.00A	0.01A			
AC Current (mA)	40.00mA	0.01mA	±(1.5%+3)	400mA	
	400.0mA	0.1mA			
Resistance	400.0Ω	0.1Ω	±(0.5%+3)	40MΩ	No Voltage input at this mode
	4.000kΩ	0.001kΩ			
	40.00kΩ	0.01kΩ			
	400.0kΩ	0.1kΩ	±(1.5%+3)		
	4.000MΩ	0.001MΩ			
	40.00MΩ	0.01MΩ			
Frequency	4.000Hz	0.001Hz	±(1%+2)	3.00MHz	
	40.00Hz	0.01Hz			
	400.0Hz	0.1Hz			
	4.000kHz	0.001kHz			
	40.00kHz	0.01kHz			
	3.00MHz	0.001MHz			
Temperature	-30°C~1000°C (-22°F~1832°F)				
Diode	V (DC forward current is 5mA, voltage is 3V)				No Voltage input at this mode
Continuity	V (no more than 50Ω)				

9. Warranty and Support

RICHMETERS products are designed for reliability and performance. For warranty information, please refer to the documentation provided at the time of purchase or contact your retailer.

For technical support, troubleshooting assistance, or service inquiries, please contact the seller or manufacturer directly. Keep your purchase receipt as proof of purchase for any warranty claims.