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## MESTEK CM87C

# MESTEK CM87C Digital Clamp Meter Multimeter

Instruction Manual

## 1. PRODUCT OVERVIEW

The MESTEK CM87C is a True-RMS digital clamp meter designed for accurate and safe measurement of various electrical parameters. It features a 6000-count display and a maximum current capacity of 600A. This versatile tool is suitable for electricians, DIY enthusiasts, and professionals, helping to quickly and safely diagnose electrical issues in automotive, industrial, or home settings.



Figure 1: MESTEK CM87C Digital Clamp Meter with included test leads, thermocouple, and carrying case.

### Key Features:

- **6000 Counts Display:** Provides high-resolution readings.
- **True-RMS Measurement:** Ensures accurate readings for non-sinusoidal waveforms.
- **600A Max Current:** Capable of measuring high AC/DC currents.
- **Multiple Measurement Functions:** AC/DC Current, AC/DC Voltage, Inrush Current, Capacitance, Resistance, Continuity, Diode, Frequency, Temperature.
- **Specialized Modes:** VFD (Variable Frequency Drive Filtering) and LoZ (Low Input Impedance) for enhanced accuracy.
- **Non-Contact Voltage (NCV) Detection:** Safely detects voltage without direct contact.
- **Live Wire Detection:** Identifies live wires for safety.
- **User-Friendly Design:** Large backlit LCD display, built-in flashlight, data hold, low battery indicator, auto shut-off, Max/Min recording.
- **Durable Construction:** Dual-color molded housing with ergonomic soft rubber grip for comfort and slip resistance.
- **Safety Features:** 600V overload protection with visual and audible warnings.

## 2. SAFETY INFORMATION

Always prioritize safety when working with electrical equipment. This device is designed with safety in mind, but proper usage is crucial to prevent injury or damage.

- **Overload Protection:** The meter features 600V overload protection. If AC/DC voltage exceeds 600V, the LCD backlight will turn red and an audible buzzer will activate to warn you.
- **Current Measurement:** When using the clamp to measure current, ensure you clamp around a **single live wire**, not the entire power cable, to obtain accurate readings and prevent damage.
- **Insulation:** The dual-color molded housing provides superior comfort and slip resistance, enhancing safety during use.
- **Battery Safety:** Use only the specified battery type (2 x 1.5V AAA). Do not mix old and new batteries or different types.



Figure 2: Internal view of the CM87C, highlighting its robust construction and battery compartment.

## 3. SETUP

### 3.1. Battery Installation

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

### 3.2. Connecting Test Leads

For voltage, resistance, capacitance, diode, continuity, and frequency measurements, connect the included test leads:

- Insert the red test lead into the 'INPUT' jack.
- Insert the black test lead into the 'COM' jack.

### 3.3. Connecting Thermocouple

For temperature measurements, connect the included thermocouple:

- Insert the thermocouple's banana plugs into the 'INPUT' (red) and 'COM' (black) jacks.

## 4. OPERATING INSTRUCTIONS

Familiarize yourself with the function knob and buttons for various measurements.

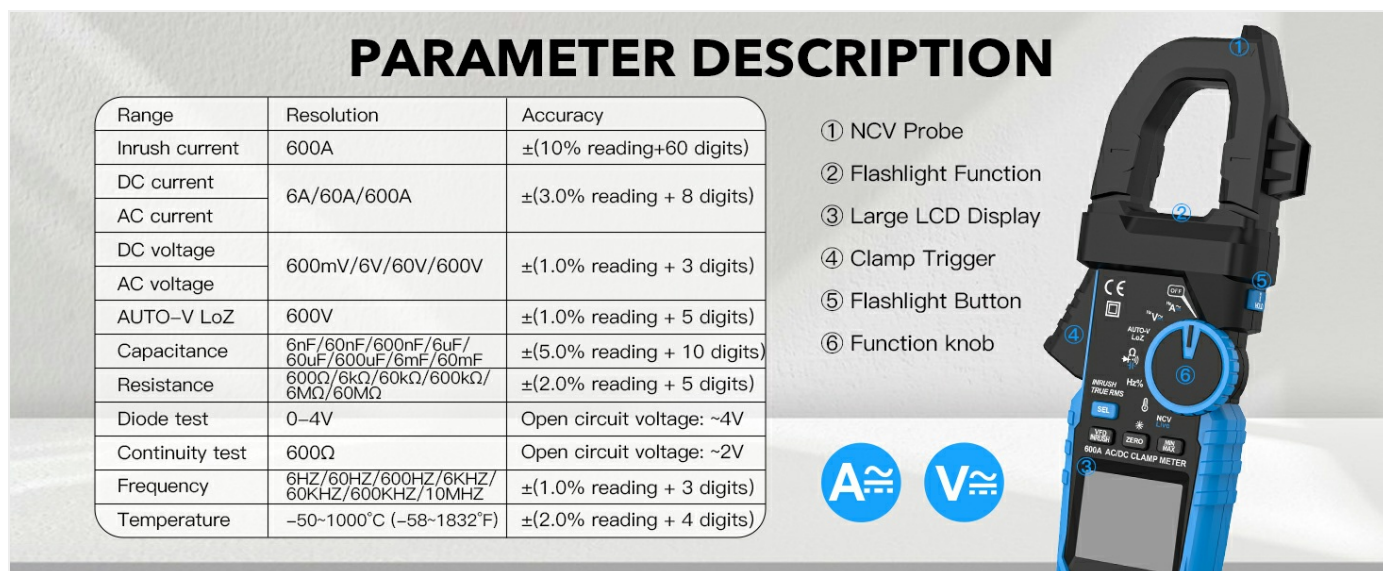


Figure 3: Overview of MESTEK CM87C components and measurement ranges.

### 4.1. Power On/Off and Display Features

- Turn the function knob to the desired measurement mode to power on the device. Turn to 'OFF' to power off.
- **Backlight:** Press the 'SEL' button briefly to toggle the backlight on/off for the large LCD display.
- **Flashlight:** Press and hold the 'HOLD' button to activate the built-in flashlight, useful in dark environments.
- **Data Hold:** Briefly press the 'HOLD' button to freeze the current reading on the display. Press again to release.
- **Max/Min:** Press the 'MIN/MAX' button to record the maximum or minimum values during a measurement.
- **Auto Shut-off:** The meter will automatically shut off after approximately 15 minutes of inactivity to conserve battery life.

# Large LCD Screen with Flashlight and Backlight



Figure 4: The large LCD screen with active backlight and flashlight for improved visibility.

## 4.2. Current Measurement (AC/DC)

1. Turn the function knob to the 'A~' (AC Current) or 'A=' (DC Current) position.
2. Open the clamp jaw by pressing the clamp trigger.
3. Enclose only a single live conductor within the clamp jaw. Ensure the jaw is fully closed.
4. Read the current value on the display.
5. For DC current measurement, press the 'ZERO' button to clear any residual readings before testing.

# Safe and Efficient Tool

For electrical testing, your ideal partner



Figure 5: Demonstrating AC and DC current measurement using the clamp jaw.

## 4.3. Voltage Measurement (AC/DC)

1. Turn the function knob to the 'V~' (AC Voltage) or 'V=' (DC Voltage) position. The meter supports auto-ranging.
2. Connect the red test lead to the positive (+) point and the black test lead to the negative (-) or common point of the circuit.
3. Read the voltage value on the display.
4. The meter also features an 'AUTO-V LoZ' mode for automatic recognition of AC/DC voltage with low input impedance, providing higher accuracy.

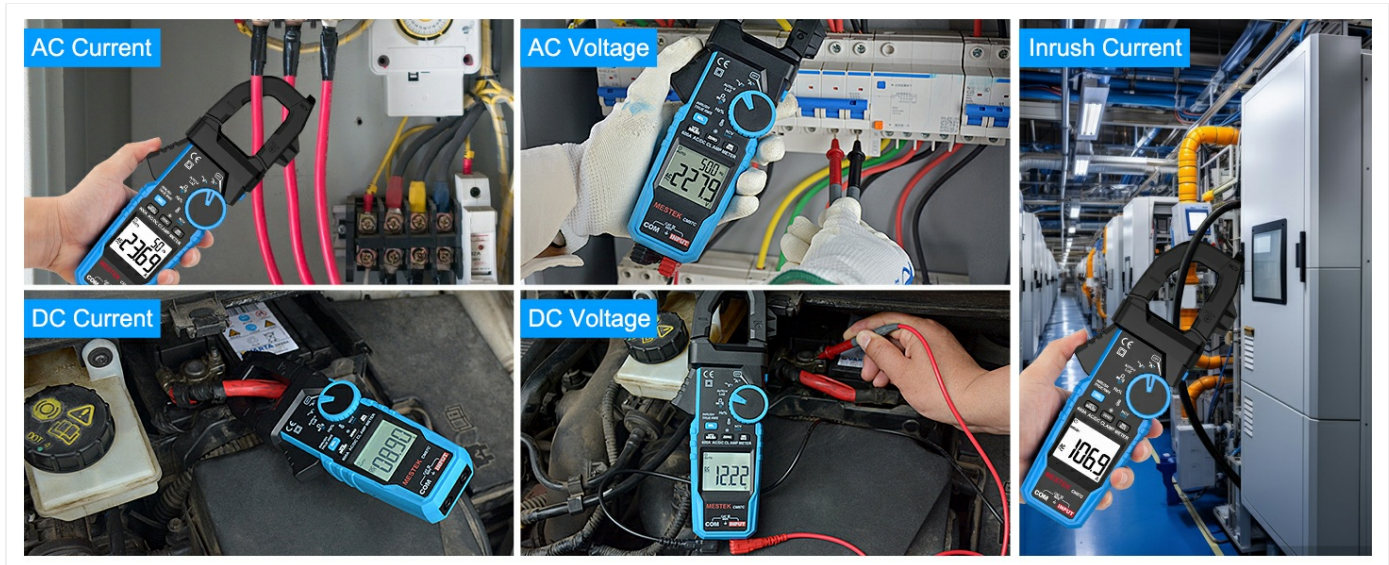


Figure 6: Automatic recognition of AC/DC voltage using the test leads.

#### 4.4. Inrush Current Measurement

The Inrush function measures the maximum current at the moment a machine or motor starts up. This helps in quickly identifying startup problems.

- Turn the function knob to the 'INRUSH' position.
- Clamp the meter around the single live wire of the device to be tested.
- Activate the device and observe the inrush current reading.
- **Note:** This function measures AC Inrush only, not DC.

# Inrush Current Test

Inrush current measurement range is 600A



Figure 7: Measuring inrush current with the CM87C clamp meter.

## 4.5. Non-Contact Voltage (NCV) Detection

The NCV function allows you to detect the presence of AC voltage without making physical contact with the conductor.

1. Turn the function knob to the 'NCV' position.
2. Move the NCV probe (top part of the clamp jaw) close to the conductor or outlet.
3. The meter will indicate voltage presence with an audible alarm and a visual 'H' (high voltage) or 'L' (low voltage) on the display.

# Non-contact Voltage Testing

Safe Design with Audial and Visual Alarm



Figure 8: Safe non-contact voltage detection with audible and visual alarms.

## 4.6. Live Wire Detection

This function helps identify live wires in a circuit.

1. Turn the function knob to the 'Live' position.
2. Touch the red test lead to the wire you want to test.
3. If the wire is live, the meter will beep and display 'Live'.

## 4.7. Temperature Measurement

The meter can measure temperature using the included thermocouple.

1. Turn the function knob to the '°C/°F' position.
2. Connect the thermocouple to the 'INPUT' and 'COM' jacks.
3. Place the thermocouple tip on the surface or in the liquid/air conditioning port you wish to measure.
4. Press the 'SEL' button to switch between Celsius (°C) and Fahrenheit (°F).



Figure 9: Measuring temperature of a liquid using the provided thermocouple.

#### 4.8. Resistance, Capacitance, Diode, and Continuity Measurement

These functions are accessed by turning the function knob to the 'Ω' (Ohms) position and using the 'SEL' button to cycle through modes.

- **Resistance (Ω):** Measures electrical resistance.
- **Capacitance (⇄):** Measures capacitance of components.
- **Diode (→|):** Tests diodes for forward voltage drop.
- **Continuity (⌚):** Checks for electrical continuity with an audible buzzer.

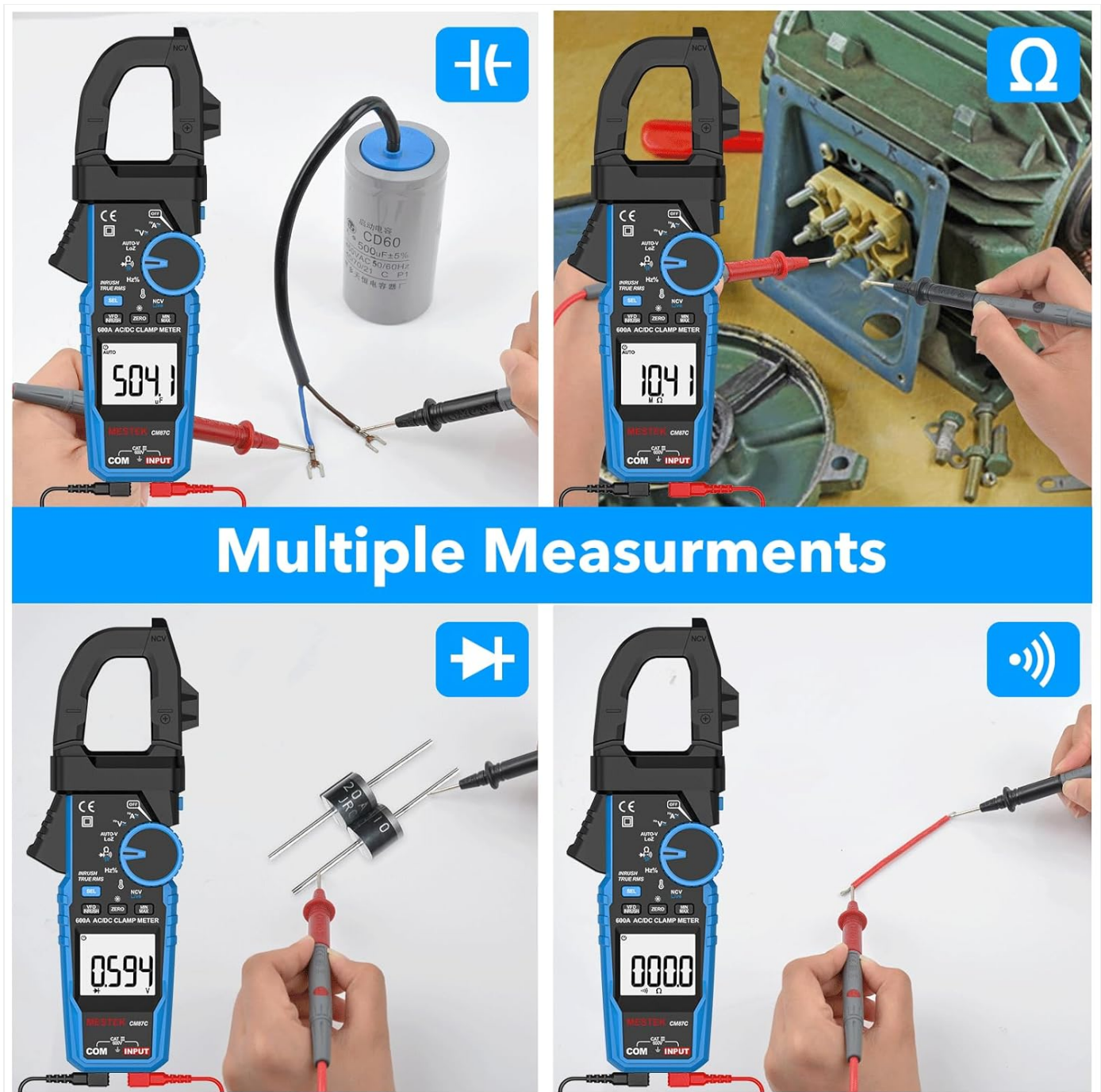


Figure 10: Examples of capacitance, resistance, diode, and continuity measurements.

#### 4.9. Frequency Measurement (Hz%)

Measures the frequency of AC signals.

1. Turn the function knob to the 'Hz%' position.
2. Connect the test leads across the circuit where you want to measure frequency.
3. Read the frequency value on the display.

### 5. MAINTENANCE

Proper maintenance ensures the longevity and accuracy of your MESTEK CM87C.

- **Cleaning:** Wipe the meter's surface with a soft, damp cloth. Do not use abrasive cleaners or solvents.
- **Storage:** When not in use for extended periods, remove the batteries to prevent leakage. Store the meter in its hard case in a cool, dry place, away from direct sunlight and extreme temperatures.
- **Battery Replacement:** Replace batteries promptly when the low battery indicator appears on the display to ensure accurate

readings.

## 6. TROUBLESHOOTING

If you encounter issues with your MESTEK CM87C, refer to the following common problems and solutions:

Problem	Possible Cause	Solution
Meter does not power on.	Dead or incorrectly installed batteries.	Check battery polarity; replace batteries.
Inaccurate readings.	Low battery; incorrect mode selection; poor test lead connection.	Replace batteries; ensure correct function mode; check test lead connections.
No NCV detection.	Not close enough to voltage source; NCV mode not selected.	Ensure NCV mode is active; move probe closer to the live conductor.
DC Current reading is not zero before measurement.	Residual magnetism in clamp.	Press the 'ZERO' button to clear the reading before clamping.

If the problem persists, please contact MESTEK customer service for further assistance.

## 7. SPECIFICATIONS

Parameter	Value
Model Number	CM87C
Display Counts	6000 Counts
Max Current (Clamp)	600A (AC/DC)
Overload Protection Voltage	600V
Power Source	2 x 1.5V AAA Batteries (included)
Product Dimensions (L x W x H)	7.8 x 3.9 x 1.7 inches
Weight	0.63 ounces (without batteries)
Jaw Opening	30mm (1.18 inches)
Temperature Range	-50~1000°C / -58~1832°F
Automatic Measuring Range	Yes
Auto-shutdown Time	Approx. 15 minutes
Backlight Auto-off	Approx. 3 minutes
Flashlight Auto-off	Approx. 5 minutes

## 8. WHAT'S IN THE BOX

- MESTEK CM87C Digital Clamp Multimeter
- Test Leads (Red and Black)
- Thermocouple
- Screwdriver
- Multimeter Hard Case
- 2 x 1.5V AAA Batteries

- User Manual (this document)

## 9. WARRANTY AND SUPPORT

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MESTEK is committed to providing high-quality products and excellent customer service.

- **Warranty:** MESTEK provides 24 months after-sale service.
- **Technical Support:** 7/24 technical support is available.
- **Replacement Policy:** If the clamp meter is damaged within 24 months of purchase, please contact MESTEK customer service for a replacement.

For any inquiries or support, please visit the official MESTEK store or contact their customer service team.

