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OWON CM2100

OWON CM2100 Mini Digital Clamp Meter Instruction Manual

Model: CM2100 | Brand: OWON

1. INTRODUCTION

This manual provides comprehensive instructions for the safe and effective operation, maintenance, and troubleshooting of the OWON CM2100 Mini Digital Clamp Meter. The CM2100 is a versatile instrument designed for measuring AC/DC current, AC/DC voltage, resistance, capacitance, diode, and frequency, featuring True RMS measurement and Non-Contact Voltage (NCV) detection.



Figure 1.1: OWON CM2100 Mini Digital Clamp Meter and included accessories, including test leads, a carrying pouch, and a quick guide.

2. SAFETY INFORMATION

WARNING: To avoid electric shock or personal injury, read all safety information before using this product. Use the meter only as specified in this manual, or the protection provided by the meter may be impaired.

- Always adhere to local and national safety codes.
- Do not use the meter if it appears damaged or if it is not operating properly.
- Do not apply more than the rated voltage, as marked on the meter, between the terminals or between any terminal and earth ground.
- Use caution with voltages above 30V AC RMS, 42V peak, or 60V DC. These voltages pose a shock hazard.
- Remove the test leads from the meter before opening the battery cover.
- Ensure the function knob is in the correct position for the desired measurement.
- Do not measure current on circuits with voltage exceeding 600V.
- Always disconnect power to the circuit and discharge all high-voltage capacitors before testing resistance,

continuity, or capacitance.

3. PRODUCT OVERVIEW

3.1 Components and Controls



Figure 3.1: Key components of the CM2100 Clamp Meter, including the NCV sensor, pincher head trigger, function selection knob, LCD, and input jacks.

1. **NCV Sensor:** Detects non-contact voltage.
2. **Pincher Head Trigger:** Opens and closes the clamp jaws.
3. **Function Selection Knob:** Selects the desired measurement mode (Voltage, Current, NCV, Resistance, Capacitance, Diode, Frequency).
4. **Numerical Lock / Backlight Switch:** Toggles data hold and LCD backlight.
5. **LCD:** Digital display for measurement readings.
6. **DCA Reset / BLE / Function Selector:** Button for specific functions like DC current zeroing, Bluetooth (if

applicable), and cycling through sub-functions.

7. **NCV Light:** Illuminates when non-contact voltage is detected.

8. **Input Jacks:**

- **VΩHzCAPDiode:** Input for voltage, resistance, frequency, capacitance, and diode measurements.
- **COM:** Common (negative) input for all measurements.

3.2 Key Features



Figure 3.2: Overview of the CM2100's primary measurement capabilities and features.

- **Multimeter Functionality:** Measures AC/DC current, AC/DC voltage, resistance, capacitance, and diode.
- **mA Level AC/DC Resolution:** High resolution (100A 1mA) for testing small currents.
- **Non-Contact Voltage (NCV) Test:** Detects AC voltage or electromagnetic fields without direct contact.
- **VFC Function:** Reduces interference from high-frequency signals for more accurate measurements.
- **True RMS:** Provides accurate readings for non-sinusoidal waveforms.
- **Auto Range:** Automatically selects the appropriate measurement range.
- **Data Retention (HOLD):** Freezes the displayed reading.
- **On-off Measurement (Continuity):** Checks for circuit continuity with an audible indicator.
- **Compact Design:** Small and portable for easy carrying.

4. SETUP

4.1 Battery Installation

The OWON CM2100 requires 2 AAA batteries for operation.

1. Ensure the meter is turned OFF.
2. Locate the battery compartment on the back of the meter.

3. Use a screwdriver to open the battery cover.
4. Insert 2 AAA batteries, observing the correct polarity (+ and -) as indicated inside the compartment.
5. Replace the battery cover and secure it with the screw.

4.2 Initial Checks

Before first use, inspect the meter and test leads for any signs of damage. Ensure the insulation on the test leads is intact and there are no exposed wires. If any damage is found, do not use the meter.

5. OPERATING INSTRUCTIONS

To begin, turn the function selection knob to the desired measurement mode. Connect test leads to the appropriate input jacks for voltage, resistance, capacitance, or diode measurements. For current measurements, use the clamp jaws.

5.1 AC/DC Current Measurement (Clamp)

The CM2100 can measure AC and DC current up to 100A with 1mA resolution.

1. Turn the function knob to the "2A", "20A", or "100A" AC or DC current range.
2. For DC current, press the "DCA Reset" button to zero the reading before clamping.
3. Press the pincher head trigger to open the clamp jaws.
4. Enclose only one conductor within the clamp jaws. Ensure the jaws are fully closed.
5. Read the current value on the LCD.

5.2 AC/DC Voltage Measurement

1. Turn the function knob to the "V~" (AC Voltage) or "V-" (DC Voltage) position.
2. Insert the red test lead into the "VΩHzCAPDiode" jack and the black test lead into the "COM" jack.
3. Connect the test probes in parallel to the circuit or component to be measured.
4. Read the voltage value on the LCD.

5.3 Resistance Measurement



Figure 5.1: Measuring resistance on a circuit board using the CM2100.

1. Turn the function knob to the "Ω" (Resistance) position.
2. Insert the red test lead into the "VΩHzCAPDiode" jack and the black test lead into the "COM" jack.
3. Ensure the circuit or component is de-energized before connecting the probes.
4. Connect the test probes across the component to be measured.
5. Read the resistance value on the LCD.

5.4 Capacitance Measurement



Figure 5.2: Measuring capacitance of a component with the CM2100.

1. Turn the function knob to the "CAP" (Capacitance) position.
2. Insert the red test lead into the "VΩHzCAPDiode" jack and the black test lead into the "COM" jack.
3. Ensure the capacitor is fully discharged before connecting the probes.
4. Connect the test probes across the capacitor.
5. Read the capacitance value on the LCD.

5.5 Diode Test



Figure 5.3: Testing a diode using the CM2100.

1. Turn the function knob to the "Diode" position.
2. Insert the red test lead into the "VΩHzCAPDiode" jack and the black test lead into the "COM" jack.
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 to check for open circuit (OL) for a good diode.

5.6 Non-Contact Voltage (NCV) Test

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

1. Turn the function knob to the "NCV" position.
2. Move the NCV sensor (top of the clamp jaw) close to the conductor or electrical outlet.
3. The NCV light will illuminate and an audible beep will sound if AC voltage is detected. The intensity of the light and frequency of the beep may indicate signal strength.

5.7 Frequency (Hz%) Measurement



Figure 5.4: Measuring frequency using the CM2100.

1. Turn the function knob to the "Hz%" position.
2. Insert the red test lead into the "VΩHzCAPDiode" jack and the black test lead into the "COM" jack.

- 3. Connect the test probes in parallel to the circuit where frequency is to be measured.
- 4. Read the frequency value on the LCD.

5.8 Data Hold Function

To freeze the current reading on the LCD, press the "Numerical Lock / Backlight Switch" button briefly. Press it again to release the hold function.

5.9 Backlight Function

To activate the LCD backlight, press and hold the "Numerical Lock / Backlight Switch" button. Press and hold again to turn off the backlight.

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 battery indicator appears on the LCD, replace the batteries promptly to ensure accurate measurements. Refer to Section 4.1 for battery installation instructions.

6.3 Storage

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

7. TROUBLESHOOTING

Problem	Possible Cause	Solution
Meter does not turn on.	Dead or incorrectly installed batteries.	Check battery polarity; replace batteries.
No reading or "OL" displayed.	Open circuit; incorrect range; test leads not connected properly.	Check circuit continuity; select appropriate range; ensure leads are fully inserted.
Inaccurate readings.	Low battery; external interference; incorrect function selected.	Replace batteries; move away from strong electromagnetic fields; verify function knob position.
NCV function not detecting voltage.	Weak signal; incorrect distance from source; faulty sensor.	Ensure close proximity to the AC voltage source; test on a known live circuit. If issue persists, contact support.

8. SPECIFICATIONS

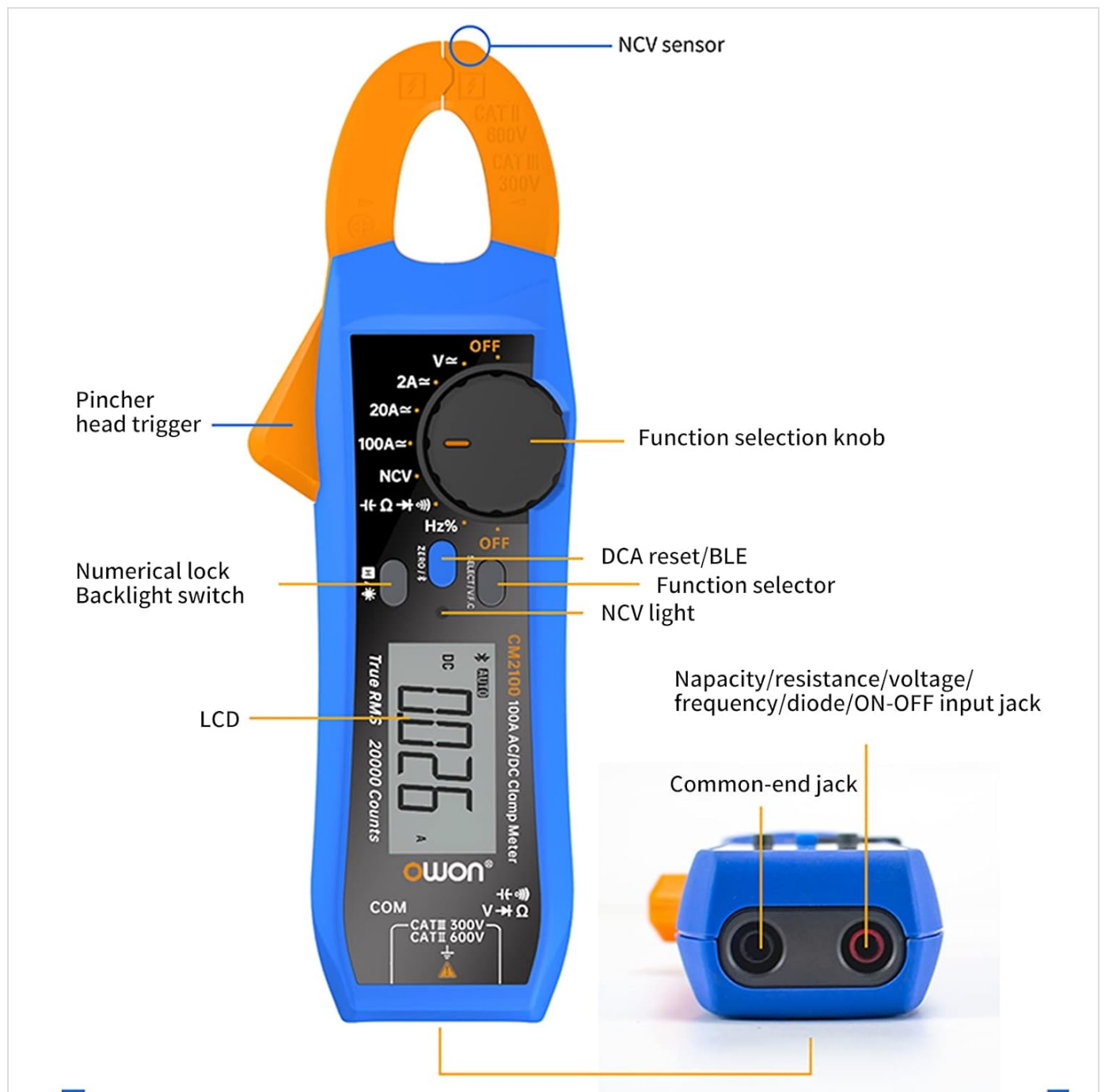


Figure 8.1: Physical dimensions of the CM2100 Clamp Meter.

Parameter	Value
Model Number	CM2100
Product Dimensions	0.39 x 0.87 x 0.18 inches (10 x 22 x 4.5 mm)
Item Weight	13.05 ounces (0.37 Kilograms)
Power Source	Battery Powered (2 AAA batteries required)
Brand	OWON
Color	Blue
AC/DC Current Range	Up to 100A (1mA resolution)
Display Counts	20000 Counts (True RMS)

Parameter	Value
Safety Rating	CAT II 600V, CAT III 300V

9. WARRANTY AND SUPPORT

For warranty information and technical support, please refer to the official OWON website or contact their customer service directly. Keep your purchase receipt as proof of purchase for any warranty claims.

OWON Official Website: www.owon.com

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