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OWON CM2100

OWON CM2100 Digital AC/DC Clamp Meter Instruction Manual

Model: CM2100

Introduction

This manual provides essential information for the safe and effective operation of your OWON CM2100 Digital AC/DC Clamp Meter. Please read this manual thoroughly before use and retain it for future reference. The CM2100 is a portable, true RMS clamp meter designed for measuring AC/DC current, AC/DC voltage, resistance, capacitance, diode, and non-contact voltage (NCV).

Safety Information

WARNING: To avoid electric shock or personal injury, read and understand all safety information before using this product.

- Always adhere to local and national safety codes.
- Do not use the meter if it appears damaged or if the insulation is compromised.
- 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 when working 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 switch is in the correct position for the measurement being performed.
- Do not operate the meter around explosive gas, vapor, or dust.
- Always use appropriate personal protective equipment (PPE).

Product Overview and Components

Familiarize yourself with the various parts of your CM2100 clamp meter before operation.

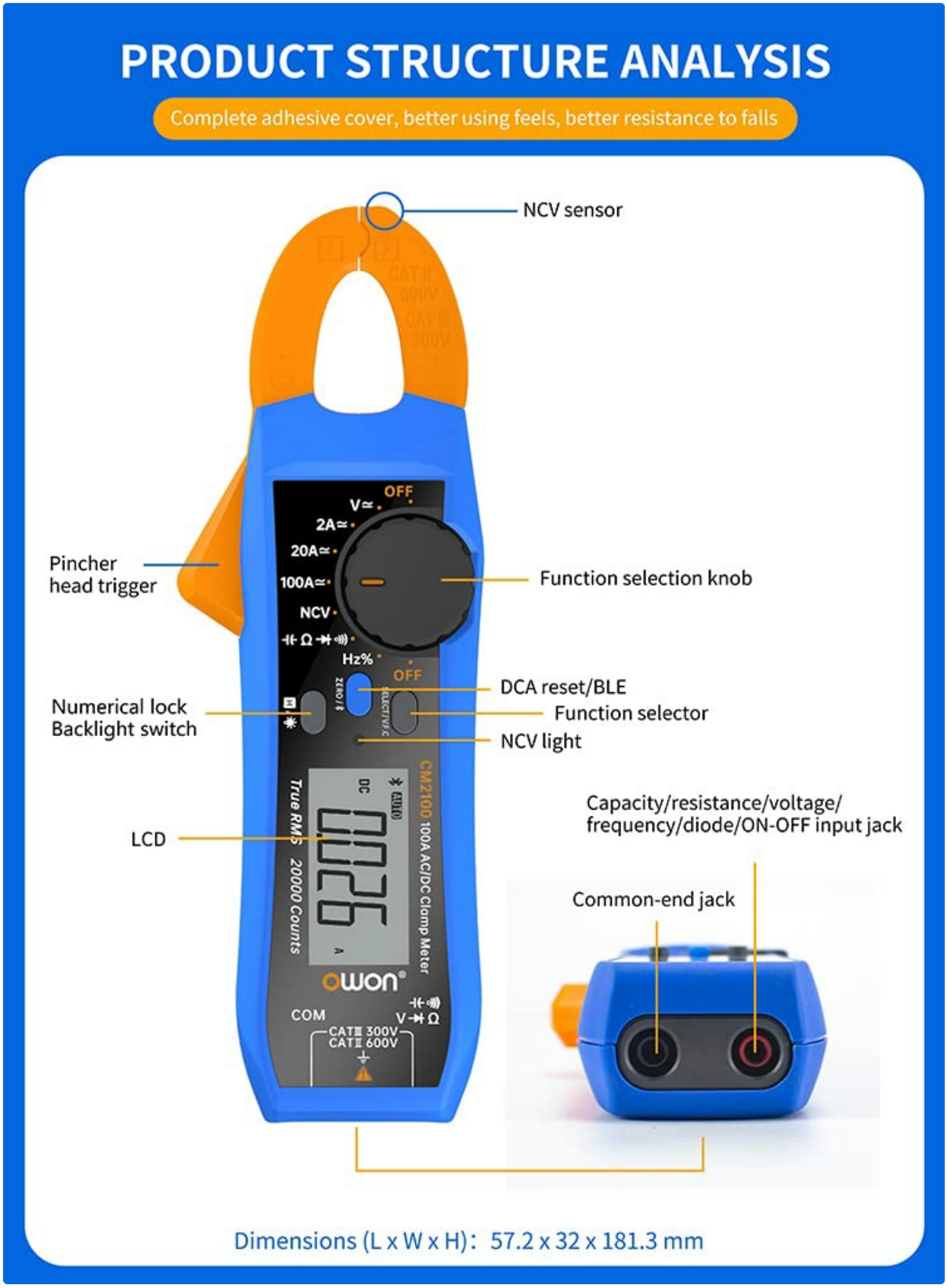

Image: Detailed diagram of the OWON CM2100 clamp meter, highlighting its key components such as the NCV sensor, pincher head trigger, function selection knob, DCA reset/BLE button, function selector, NCV light, LCD display, numerical lock/backlight switch, capacity/resistance/voltage/frequency/diode/ON-OFF input jack, and common-end jack. Dimensions are also indicated.

1. **NCV Sensor:** Detects non-contact voltage.
2. **Pincher Head Trigger:** Opens and closes the clamp jaws.
3. **Function Selection Knob:** Rotates to select different measurement modes (e.g., V~, V=, A~, A=, Ω, NCV, VFC, Hz%).
4. **DCA Reset/BLE Button:** Used for DC current zeroing and Bluetooth (BLE) activation on compatible models (CM2100B).

5. **Function Selector:** Toggles between specific functions within a mode (e.g., AC/DC voltage, resistance/capacitance).
6. **NCV Light:** Illuminates to indicate non-contact voltage detection.
7. **LCD Display:** Shows measurement readings, units, and indicators.
8. **Numerical Lock/Backlight Switch:** Locks the current reading (HOLD) and activates the display backlight.
9. **Input Jacks:** For connecting test leads for voltage, resistance, capacitance, diode, and continuity measurements.
10. **Common-End Jack:** The negative (-) input for test leads.

What's in the Box

Upon opening the package, verify that all items listed below are present and undamaged.

Image: Contents of the OWON CM2100 package, including the CM2100 clamp meter, a pair of multimeter test leads (red and black), a small bolt driver, a quick guide, and a soft carrying bag.

1. OWON CM2100 Clamp Meter

2. Multimeter Test Leads (Red and Black)
3. Bolt Driver (for battery compartment)
4. Quick Guide
5. Soft Carrying Bag

Setup

Battery Installation

1. Ensure the meter is turned OFF.
2. Locate the battery compartment on the back of the meter.
3. Use the provided bolt driver to loosen the screw securing the battery cover.
4. Remove the battery cover.
5. Insert the Lithium Metal battery (included) according to the polarity markings inside the compartment.
6. Replace the battery cover and tighten the screw.

Initial Power On

Rotate the function selection knob from OFF to any measurement function to power on the meter. The LCD display will illuminate.

Operating Instructions

Function Selection

Rotate the central knob to select the desired measurement function. The meter features an automatic range for most measurements, simplifying operation.

Image: Overview of the OWON CM2100's multiple measurement functions, including Resistance (Ω), NCV, VFC, HOLD, ON/OFF (continuity), LCD, Capacitance, Diode, Overload Protection, Low Battery Alert, Buzzing Prompt, and True RMS. It also highlights the 20000 counts, auto range, AC/DC voltage, and AC/DC current measurement capabilities.

Measurement Modes

- **AC/DC Current Measurement (A~ / A=):**
  Rotate the knob to the 'A~' or 'A=' position. Press the trigger to open the clamp jaws and enclose a single conductor. Ensure the conductor is centered within the jaws for accurate readings. The display will show the current value. For

DC current, press the DCA Reset button to zero the reading before measurement.

- **AC/DC Voltage Measurement (V~ / V=):**
  Insert the red test lead into the VΩHz input jack and the black test lead into the COM jack. Rotate the knob to 'V~' for AC voltage or 'V=' for DC voltage. Connect the test leads in parallel to the circuit or component to be measured. The display will show the voltage value.
- **Resistance Measurement (Ω):**
  Insert test leads as for voltage. Rotate the knob to the 'Ω' position. Connect the test leads across the component. The display will show the resistance value in Ohms (Ω).
- **Capacitance Measurement:**
  Insert test leads as for voltage. Rotate the knob to the 'Ω' position and use the Function Selector button to cycle to capacitance mode (usually indicated by 'nF', 'µF'). Connect the test leads across the capacitor. The display will show the capacitance value.
- **Diode Test:**
  Insert test leads as for voltage. Rotate the knob to the 'Ω' position and use the Function Selector button to cycle to diode test mode (indicated by a diode symbol). Connect the red lead to the anode and the black lead to the cathode of the diode. The display will show the forward voltage drop.
- **Continuity Test:**
  Insert test leads as for voltage. Rotate the knob to the 'Ω' position and use the Function Selector button to cycle to continuity mode (indicated by a buzzer symbol). If the resistance is below a certain threshold, the buzzer will sound, indicating continuity.
- **Non-Contact Voltage (NCV) Detection:**
  Rotate the knob to the 'NCV' position. Bring the NCV sensor (top part of the clamp meter) close to an AC voltage source. The NCV light will illuminate, and an audible beep will sound, with increasing frequency as the meter gets closer to the voltage source.
- **VFC (Variable Frequency Drive) Measurement:**
  Rotate the knob to the 'VFC' position. This mode is designed for measuring AC voltage and frequency of variable frequency drives, providing more stable readings in such environments.
- **Frequency (Hz%) Measurement:**
  Rotate the knob to the 'Hz%' position. This mode measures the frequency of AC signals. Connect test leads as for voltage measurement. The display will show the frequency in Hertz (Hz).

Additional Functions

- **HOLD Function:** Press the HOLD button (often combined with backlight) to freeze the current reading on the display. Press again to release.
- **Backlight:** Press and hold the HOLD/Backlight button to activate the display backlight for better visibility in low-light conditions. Press and hold again to turn off.
- **True RMS:** The CM2100 is a True RMS meter, meaning it accurately measures AC voltage and current for both sinusoidal and non-sinusoidal waveforms.
- **Bluetooth Communication (CM2100B model only):** If you have the CM2100B model, activate Bluetooth by pressing the BLE button. This allows remote data viewing and instrument control via a compatible smartphone application.

Image: Examples of the OWON CM2100 clamp meter in use, demonstrating capacitance measurement for maintenance, NCV (Non-Contact Voltage) inductive measurement, circuit board resistance measurement, and diode measurement.

Maintenance

Cleaning

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

Battery Replacement

When the low battery indicator appears on the display, replace the battery promptly to ensure accurate measurements. Refer to the "Battery Installation" section under Setup for instructions.

Storage

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

Troubleshooting

Problem	Possible Cause	Solution
Meter does not power on.	Dead or incorrectly installed battery.	Check battery polarity or replace the battery.
No reading or "OL" displayed.	Overload, open circuit, or incorrect function selected.	Ensure the circuit is closed, select the correct function, or check if the measured value exceeds the meter's range.
Inaccurate readings.	Low battery, poor test lead connection, or external interference.	Replace battery, ensure secure connections, move away from strong electromagnetic fields.
NCV not detecting voltage.	Weak signal, incorrect distance, or meter malfunction.	Ensure the sensor is close to the AC source. Test with a known live circuit.

Specifications

Parameter	Value
Brand	OWON
Model	CM2100 (QD-CM2100)
Measurement Type	Ammeter, Voltmeter
Display Counts	20000 Counts
True RMS	Yes
AC/DC Current	Up to 100A
AC/DC Voltage	Up to 600V
AC Frequency Response	Up to 1000Hz
Non-Contact Voltage (NCV)	Yes
VFC Function	Yes
Bluetooth Communication	Available on CM2100B model
Batteries	1 Lithium Metal battery (included)
Item Weight	0.5 Kilograms (1.1 pounds)
Dimensions (L x W x H)	9.84 x 5.91 x 7.09 inches (25 x 15 x 18 cm approx.)
Certifications	CE, RoHS

Warranty and Support

OWON products are designed for reliability and performance. For warranty information or technical support, please refer to the official OWON website or contact your local distributor. Keep your purchase receipt as proof of purchase for warranty claims.
For further assistance, you may visit the OWON Store on Amazon.

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