

OWON CMS101

OWON CMS101 AC/DC Clamp Meter with Oscilloscope and Recorder Function User Manual

Model: CMS101 | Brand: OWON

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1. INTRODUCTION

The OWON CMS101 is a versatile 3-in-1 AC/DC clamp meter designed for comprehensive electrical measurements. It integrates the functionalities of a clamp meter, an oscilloscope, and a data recorder into a single, portable device. With 20,000 counts True RMS, it provides accurate and reliable measurements for a wide range of applications. Its Bluetooth connectivity allows for remote control, data recording, and analysis via a smartphone application.

Key Features:

- **Multifunctional 3-in-1 Tool:** Combines AC/DC clamp meter, oscilloscope, and recorder functions.
- **High Accuracy:** 20,000 counts True RMS for precise measurements.
- **Simultaneous Waveform Analysis:** Oscilloscope function measures current and voltage waveforms concurrently.
- **Bluetooth Data Recording:** Connects to smartphones (Android/iOS) via the i-meter app for recording, viewing, comparing, analyzing, and saving measurement data.
- **Remote Control & Safety Alerts:** Remote operation and customizable alarm thresholds for safety.
- **User-Friendly Design:** 2.8-inch IPS LCD with wide viewing angle, dual-theme display, and 38mm narrow-edge jaw for tight spaces.
- **Durable & Convenient:** Powered by a 18650 lithium battery for long-term use, tactile button operation, and Non-Contact Voltage (NCV) detection.



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✓ Pinza amperimétrica CA/CC

✓ Función de registrador

✓ Función de osciloscopio



Figure 1: The OWON CMS101 highlighting its three core functions: AC/DC Clamp Meter, Recorder, and Oscilloscope.

2. SAFETY INFORMATION

Please read all safety information carefully before using the OWON CMS101. Failure to follow these instructions may result in electric shock, fire, or personal injury.

- Always inspect the device and test leads for damage before use. Do not use if damaged.
- Ensure the battery compartment is securely closed before operation.
- Do not apply voltage or current that exceeds the maximum rated values specified in the technical specifications.
- Use 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 under test before making connections or breaking connections.
- Do not operate the device in explosive atmospheres or in the presence of flammable gases or dust.
- Ensure your hands are dry and wear appropriate personal protective equipment (PPE) when performing electrical measurements.
- Do not attempt to repair or modify the device. Refer all servicing to qualified personnel.
- Adhere to all local and national safety codes.
- Always verify readings with a known good source or secondary method, especially for safety-critical applications.

3. PRODUCT OVERVIEW

The OWON CMS101 is designed for ease of use and durability. Familiarize yourself with its components and controls.



Figure 2: Product structure diagram with key components and button functions labeled.

Key Components:

- **Clamp Jaw:** For non-contact AC/DC current measurement. Features a 38mm narrow-edge design for accessibility.
- **LCD IPS Display:** 2.8-inch screen with wide viewing angle and dual-theme display for clear readability in various lighting conditions.
- **Function Buttons (F1-F4):** Context-sensitive buttons for menu navigation and mode-specific operations.
- **Navigation Buttons:** Up/Down/Left/Right for menu and setting adjustments.
- **Power Button:** Short press to power on, long press to power off. Short press after power-on to switch between Oscilloscope and Multimeter modes.
- **DMM/OSC Switch:** Dedicated button to toggle between Digital Multimeter and Oscilloscope modes.
- **Input Terminals:** For connecting test leads for voltage, resistance, continuity, diode, and other measurements.
- **NCV Sensor:** Non-Contact Voltage detection area.
- **Battery Compartment:** Houses the 18650 lithium battery.

LCD IPS de 2,8 pulgadas

Amplio ángulo de visión para una visualización más clara de los valores y las formas de onda.



38mm

A,DC Auto 20 A

-05.73 A

A,AC Maun 200 A

100.00 Hz INRUSH HOLD

098.4 A

Pantalla con dos temas

Se adapta a las distintas condiciones de iluminación para garantizar una visualización más nítida.

Figure 3: The 2.8-inch IPS LCD display, demonstrating clear value and waveform visualization with dual theme options.



Figure 4: Details of the OWON CMS101, including the 18650 lithium battery power, full silicone button membrane, and durable ABS rubber-coated design.

4. SETUP

4.1 Battery Installation

1. Locate the battery compartment cover on the back of the device.
2. Open the cover and insert the provided 18650 lithium battery, ensuring correct polarity.
3. Close the battery compartment cover securely.

4.2 Powering On/Off

- **To Power On:** Press the **POWER** button briefly.
- **To Power Off:** Press and hold the **POWER** button until the display turns off.

4.3 Bluetooth Connection and App Installation

1. Download the "i-meter" application from your smartphone's app store (available for Android and iOS).
2. Ensure Bluetooth is enabled on your smartphone and on the CMS101 device.
3. Open the i-meter app and follow the on-screen instructions to pair with your CMS101 device.
4. Once connected, you can remotely control the device and access data recording features.

5. OPERATION

5.1 Switching Modes (Multimeter / Oscilloscope)

After powering on, briefly press the **POWER** button to toggle between Digital Multimeter (DMM) mode and Oscilloscope (OSC) mode.

5.2 Clamp Meter (AC/DC Current Measurement)

The clamp meter function allows for non-contact measurement of AC and DC current up to 1000A.

1. Ensure the device is in DMM mode.
2. Press the jaw release trigger to open the clamp jaw.
3. Position the clamp jaw around a single conductor (not a bundle of wires) through which the current flows. Ensure the jaw is fully closed.
4. Read the current value displayed on the LCD screen.
5. Use the function buttons (F1-F4) to select AC or DC current measurement if not auto-ranging.

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Figure 5: The OWON CMS101 in use, measuring current by clamping around a conductor.

5.3 Oscilloscope Function

In Oscilloscope mode, the CMS101 can display and analyze current and voltage waveforms simultaneously.

1. Switch the device to OSC mode.
2. Connect the test leads to the appropriate input terminals for voltage measurement, or use the clamp for current waveform.
3. The display will show the waveform. Use the navigation buttons and function buttons (F1-F4) to adjust settings such as time base, voltage range, and trigger.
4. The oscilloscope provides measurement values including maximum, minimum, peak-to-peak, and average values.

Función de grabación

Los usuarios se conectan al instrumento a través de Bluetooth, registran automáticamente los valores medidos y los muestran en un gráfico para visualizar las tendencias. Los datos registrados (en formato CSV) pueden compartirse con un ordenador para su análisis.

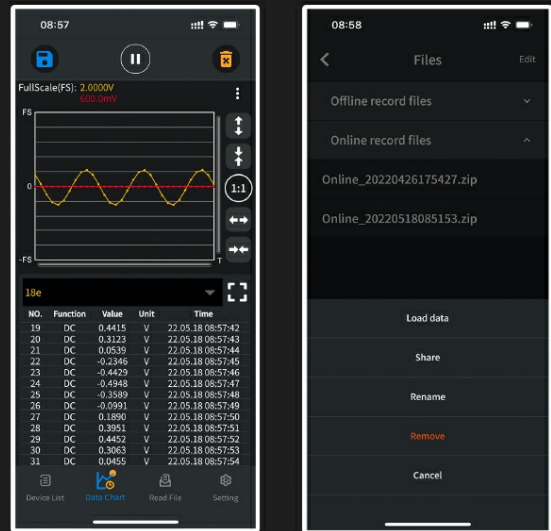


Figure 6: The device capable of measuring current and voltage waveforms for comprehensive analysis.

5.4 Recorder Function (Data Logging)

The recorder function allows you to log measurement data over time and analyze it using the i-meter smartphone app.

1. Ensure the CMS101 is connected to your smartphone via Bluetooth.
2. Open the i-meter app and navigate to the recording section.
3. Start the recording function. The app will automatically log measured values and display trends graphically.
4. Recorded data (in CSV format) can be shared and analyzed on a computer.

Comparative Analysis of Multiple Instruments

Control remotovia smartphone cumple los requisitos especiales de las pruebas, lo que permite conectar varios dispositivos para realizar análisis comparativos.

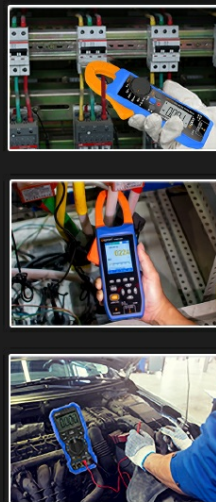


Figure 7: The i-meter app displaying recorded data in graphical and tabular formats, with options for file management.

5.5 Other Measurement Functions

The CMS101 supports various other measurement capabilities:

- **Voltage (V):** AC and DC voltage measurement.
- **Resistance (Ω):** Measures electrical resistance.
- **Continuity:** Audible alert for continuous circuits.
- **Diode Test:** Checks diode functionality.
- **Frequency (Hz):** Measures signal frequency.
- **Non-Contact Voltage (NCV):** Detects AC voltage without physical contact.

- **Data Hold (HOLD):** Freezes the current reading on the display.
- **Auto Ranging (AUTO):** Automatically selects the appropriate measurement range.
- **Auto Power Off (APO):** Conserves battery life by automatically turning off after a period of inactivity.
- **MAX/MIN:** Records maximum and minimum values during a measurement session.
- **True RMS:** Provides accurate readings for non-sinusoidal waveforms.



Figure 8: Icons representing the various measurement functions available on the OWON CMS101.

6. MAINTENANCE

6.1 Cleaning

To clean the device, wipe the case with a damp cloth and a mild detergent. Do not use abrasives or solvents. Ensure the device is powered off and disconnected from any circuits before cleaning.

6.2 Battery Care

- Recharge the 18650 lithium battery when the low battery indicator appears.
- If the device will not be used for an extended period, remove the battery to prevent leakage.
- Dispose of batteries according to local regulations.

6.3 Storage

Store the device in a cool, dry place, away from direct sunlight and extreme temperatures. Keep it out of reach of children.

7. TROUBLESHOOTING

If you encounter issues with your OWON CMS101, refer to the following common problems and solutions:

Problem	Possible Cause	Solution
Device does not power on.	Low or depleted battery. Incorrect battery installation.	Charge or replace the 18650 lithium battery. Ensure battery is inserted with correct polarity.

Problem	Possible Cause	Solution
Inaccurate readings (e.g., non-zero reading with no input, or 0V with mains voltage).	Sensor offset or calibration issue. Environmental interference. Device malfunction.	Perform a zero-adjustment if available in the menu. Ensure no strong magnetic fields are nearby. If problem persists, contact customer support for calibration or service.
Bluetooth connection fails.	Bluetooth not enabled on device/phone. App not installed or outdated. Device too far from phone.	Ensure Bluetooth is active on both devices. Reinstall or update the i-meter app. Keep devices within Bluetooth range.
Display is dim or unreadable.	Low battery. Backlight setting.	Charge the battery. Adjust backlight brightness via menu settings.
No reading when clamping.	Clamp jaw not fully closed. Clamping around multiple conductors. Incorrect mode selected.	Ensure jaw is fully closed around a single conductor. Verify correct AC/DC current mode is selected.

8. SPECIFICATIONS

Below are the technical specifications for the OWON CMS101:

Feature	Detail
Model Number	OWON-CMS101
Product Dimensions	24.8 x 9.4 x 3.8 cm
Weight	820 g
Power Source	18650 Lithium Battery
Display	2.8-inch IPS LCD
Jaw Opening	38 mm
Counts	20,000 counts True RMS
Connectivity	Bluetooth (Android/iOS app)
Certifications	CE Certified, RoHS Compliant
Functions	AC/DC Clamp Meter, Oscilloscope, Data Recorder, NCV, True RMS, Max/Min, Hold, Auto Ranging, Auto Power Off, Frequency, Resistance, Continuity, Diode Test

9. WARRANTY & SUPPORT

9.1 Warranty Information

OWON products are covered by a limited warranty against defects in materials and workmanship. The specific warranty period may vary by region and product. Please retain your proof of purchase for warranty claims. For detailed warranty

terms and conditions, refer to the official OWON website or contact customer support.

9.2 Customer Support

If you have any questions, require technical assistance, or need to report a problem with your OWON CMS101, please contact OWON customer support. You can typically find contact information on the official OWON website or through your retailer.

- **Online Support:** Visit the official OWON website for FAQs, software downloads, and support resources.
- **Email Support:** Refer to your product packaging or the OWON website for the appropriate support email address.
- **Phone Support:** Contact numbers may be available on the OWON website for your region.

When contacting support, please have your product model (CMS101) and purchase details ready.

PRODUCT OVERVIEW VIDEO

Watch this video for a visual overview of the OWON CMS101's features and functionalities.

Your browser does not support the video tag.

Video: An official product video demonstrating the OWON CMS101's 3-in-1 capabilities, measurement functions, and user interface. This video provides a dynamic visual guide to the device's operation and key features.

