OWON XDM1241

OWON XDM1241 Bench-Type Digital Multimeter User Manual

Model: XDM1241

1. Product Overview

The OWON XDM1241 is a high-accuracy bench-type digital multimeter designed for precise electrical measurements. It features a 3.5-inch 480x320 TFT LCD screen with backlight, offering a clear dual-line display. With 55,000 counts and DC voltage accuracy up to 0.05%, it provides reliable readings for various applications. The device includes a built-in rechargeable lithium battery for portability and supports True RMS AC voltage/current measurement.

Key features include data recording (manual and auto, up to 1,000 points), trend analysis in chart mode, and SCPI support for computer communication. It also offers multi-function testing capabilities such as diode testing, continuity, and temperature measurement. The design incorporates an anti-burn replaceable fuse for enhanced safety.

2. Safety Information

Before operating the OWON XDM1241 Digital Multimeter, please read and understand all safety instructions. Failure to follow these instructions may result in electric shock, fire, or damage to the device.

- **General Safety:** Always use the multimeter according to its specifications and intended use. Do not operate the device if it appears damaged or is not functioning correctly.
- **Electrical Shock Hazard:** Avoid contact with live circuits. Ensure test leads are properly connected before applying power. Do not measure voltage on circuits exceeding the maximum rated input of 1000V.
- **Fuse Protection:** The multimeter is equipped with internal fuses for protection. Only replace fuses with the specified type and rating to maintain safety. Refer to the maintenance section for fuse replacement instructions.
- **Environment:** Use the multimeter in a dry environment. Avoid exposure to moisture, extreme temperatures, or explosive atmospheres.
- **Probes and Accessories:** Use only test leads and accessories supplied or recommended by OWON. Ensure test leads are in good condition, free from cracks or damaged insulation.

3. Product Components and Layout

3.1 Front Panel

The front panel of the XDM1241 features the display, control buttons, and input terminals.

Image: Front panel of the OWON XDM1241 Digital Multimeter, showing the display, menu selection keys, measure function keys, power button, range/arrow keys, operate keys, and signal input terminals.

1. **Display:** 3.5-inch TFT LCD screen for showing measurement readings and menu options.
2. **Menu Selection Keys:** Buttons adjacent to the display for navigating menus and selecting options.
3. **Measure Function Keys:** Buttons for selecting specific measurement functions (e.g., voltage, current, frequency, temperature).
4. **Power Button:** Turns the device on or off.
5. **Range/Arrow Keys:** Used to adjust measurement ranges or navigate through menu options.
6. **Operate Keys:** General operation buttons for various functions.
7. **Signal Input:** Terminals for connecting test leads for different measurements (10A, mA/uA, COM, V/Ohm/Hz/Temp).

3.2 Rear Panel

The rear panel provides power input and communication ports.

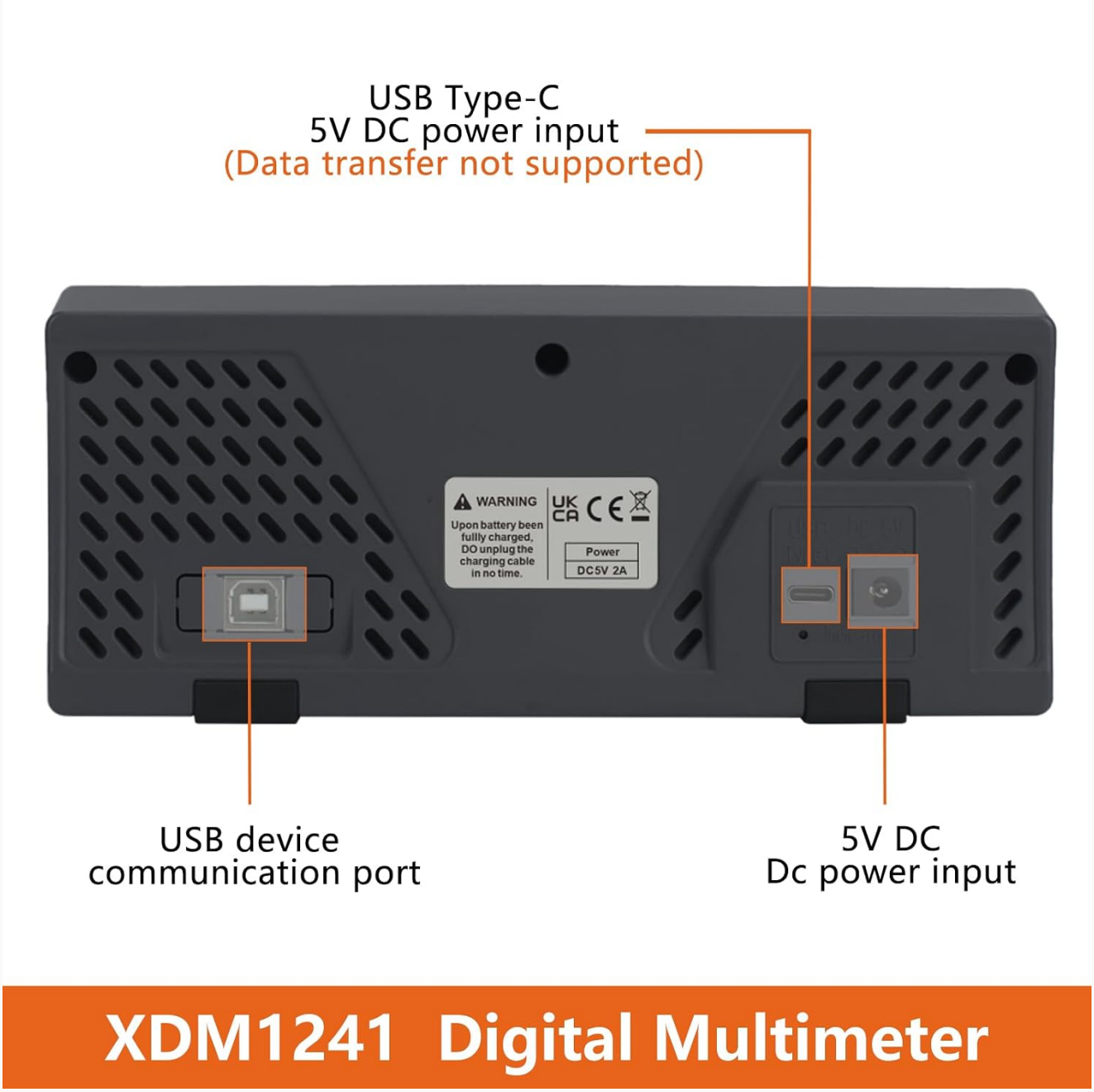

Image: Rear panel of the OWON XDM1241 Digital Multimeter, highlighting the USB Type-C 5V DC power input and the USB device communication port.

- **USB Type-C 5V DC Power Input:** Used for charging the internal battery and powering the device. Note: This port does not support data transfer.
- **USB Device Communication Port:** Used for connecting the multimeter to a computer for data transfer and remote control via SCPI.

4. Setup

4.1 Unpacking and Inspection

Upon receiving your OWON XDM1241, carefully unpack all components and inspect for any signs of damage. If any damage is found, contact your supplier immediately.

Image: The OWON XDM1241 Digital Multimeter displayed with its standard accessories, including test leads, USB cable, and power adapter.

The package should include:

- OWON XDM1241 Digital Multimeter
- Test Leads (red and black)
- USB Cable
- Power Adapter
- User Manual (this document)

4.2 Powering the Device

The XDM1241 comes with a built-in rechargeable lithium battery. For initial use or if the battery is low, connect the provided power adapter to the USB Type-C port on the rear panel and plug it into a power outlet. The device can be operated while charging.

4.3 Connecting Test Leads

Always ensure the multimeter is off before connecting test leads. Connect the black test lead to the 'COM' (Common) input terminal. Connect the red test lead to the appropriate input terminal based on the measurement you intend to perform:

- **VΩHz°C:** For voltage, resistance, frequency, and temperature measurements.
- **mAµA:** For milliampere and microampere current measurements.
- **10A:** For high current (up to 10 Amperes) measurements.

5. Operating Instructions

5.1 Basic Measurements

To perform a measurement:

1. Press the **Power** button to turn on the multimeter.
2. Connect the test leads to the appropriate input terminals for your desired measurement type.
3. Select the desired measurement function using the**Measure Function Keys** (e.g., V for voltage, A for current, Ω for resistance).
4. Connect the test probes to the circuit or component under test.
5. Read the measurement value on the display.

5.2 Data Record Function

The XDM1241 supports both manual and automatic data recording. Up to 1,000 data points can be stored in the internal memory. The auto recording time interval can be set from 15 ms to 9999 s.

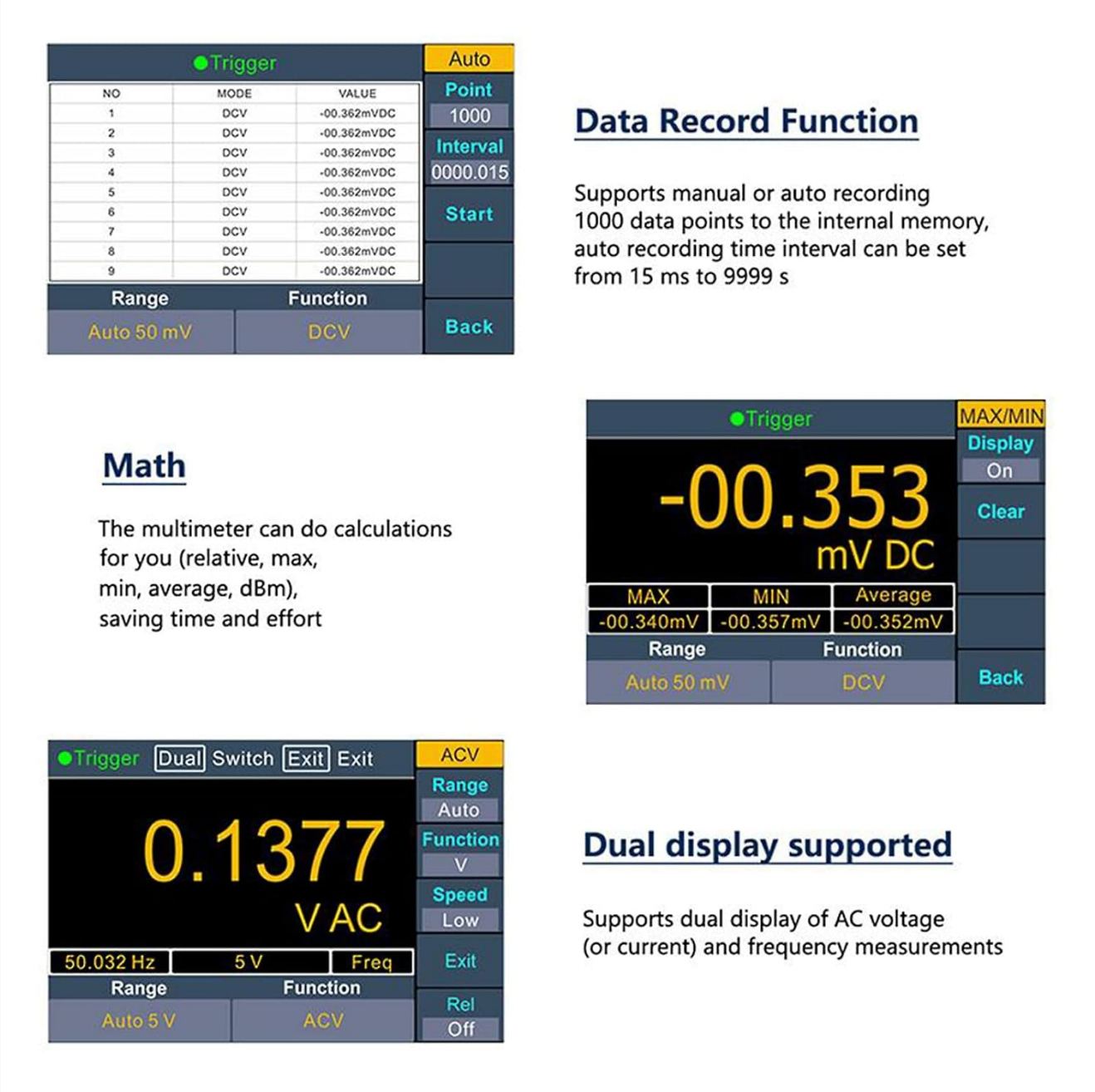

Image: The multimeter's display illustrating the Data Record function setup, Math functions (MAX/MIN/Average), and the Dual Display mode showing AC voltage and frequency simultaneously.

To use the data record function:

- Press the **Record** button.
- Use the menu selection keys to choose between manual or auto record mode.
- Configure the recording interval if using auto record.
- Start the recording.
- Recorded data can be exported to a computer via the USB device communication port for further analysis.

5.3 Math Functions

The multimeter can perform various mathematical calculations on measurements, including relative, maximum, minimum, average, and dBm. This feature helps in analyzing data directly on the device.

- Press the **Math** button to access these functions.
- Select the desired calculation from the menu.

5.4 Dual Line Display

The XDM1241 supports a dual-line display, allowing you to view two different measurement parameters simultaneously, such as AC voltage and its frequency.

- Press the **Dual** button to activate or deactivate this mode.

5.5 Computer Communication (SCPI)

The multimeter supports SCPI commands for remote control and data transfer when connected to a computer via the USB device communication port.

Image: The OWON XDM1241 Digital Multimeter connected to a laptop, demonstrating its capability to communicate with a computer via the USB port for reading measurements, remote control, and data logging.

Refer to the OWON website for specific software and SCPI command documentation.

6. Maintenance

6.1 Cleaning

To clean the multimeter, use a soft cloth dampened with mild detergent. Do not use abrasive cleaners or solvents. Ensure the device is powered off and disconnected from all circuits before cleaning.

6.2 Fuse Replacement

The XDM1241 features an anti-burn design with replaceable fuses. The line fuse is located in a plastic fuse box below the power line input on the rear panel. A spare fuse is included for convenience.

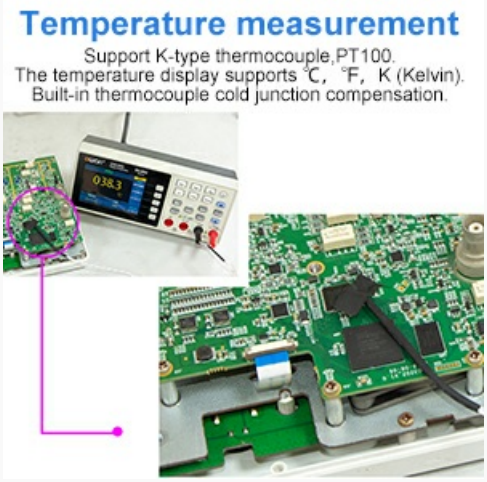

Image: Internal view of the OWON XDM1241 circuit board, highlighting the locations of the 10A and mA/uA fuses, indicating a high safety rating.

To replace a fuse:

1. Ensure the multimeter is powered off and disconnected from all power sources and test circuits.
2. Locate the fuse compartment on the rear panel or by carefully opening the device as per service instructions (if applicable and safe to do so).
3. Carefully remove the old fuse.
4. Insert a new fuse of the exact same type and rating. Using an incorrect fuse can compromise safety and damage the device.
5. Securely close the fuse compartment.

6.3 Battery Care

To prolong the life of the rechargeable lithium battery:

- Avoid fully discharging the battery frequently.
- Charge the battery regularly, even if the device is not in use for extended periods.
- Store the device in a cool, dry place when not in use.

7. Troubleshooting

This section provides solutions to common issues you might encounter with your XDM1241 multimeter.

Problem	Possible Cause	Solution
Device does not power on.	Low battery or no power connection.	Connect the power adapter to the USB Type-C port and charge the battery. Ensure the power adapter is plugged into a live outlet.
No reading or 'OL' (Overload) displayed.	Incorrect function selected, open circuit, or measurement exceeds range.	Verify the correct function is selected. Check for continuity in the circuit. Select a higher range if available or ensure the measurement is within the device's limits.
Inaccurate readings.	Poor test lead connection, environmental interference, or device malfunction.	Ensure test leads are securely connected. Move away from strong electromagnetic fields. If the problem persists, contact support.

Problem	Possible Cause	Solution
Fuse blown during current measurement.	Current exceeded fuse rating.	Replace the fuse with one of the correct type and rating. Refer to Section 6.2. Ensure future measurements are within the device's current limits.
Cannot connect to computer.	Incorrect USB port used, driver issue, or software problem.	Ensure you are using the USB device communication port (not the Type-C power port). Install necessary drivers. Check computer software settings.

8. Specifications

Below are the key specifications for the OWON XDM1241 Bench-Type Digital Multimeter.

Parameter	Value
Model	XDM1241
Display	3.5-inch 480x320 TFT LCD
Counts	55,000
DC Voltage Accuracy	Up to 0.05%
True RMS	AC Voltage / Current Measurement
Data Record Points	1,000 (manual/auto)
Power Source	Battery Powered (Rechargeable Lithium Battery)
Communication Interface	USB (SCPI support)
Safety Compliance	CE, RoHS, UL
Included Components	Device, Test Leads, USB Cable, Power Adapter
Dimensions (approx.)	200mm x 64mm x 86.5mm
Weight (approx.)	0.45 kg

9. Warranty and Support

9.1 Warranty Information

For detailed warranty information regarding your OWON XDM1241 Digital Multimeter, please refer to the official OWON website or contact your point of purchase. Warranty terms typically cover manufacturing defects for a specified period from the date of purchase.

9.2 Technical Support

If you encounter any issues or have questions not covered in this manual, please contact OWON technical support. Support resources, including FAQs, software downloads, and contact information, can be found on the official OWON website:

www.owon.com

When contacting support, please have your product model (XDM1241) and serial number ready.

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