IMARS Dual83380

IMARS Dual Channel Handheld Oscilloscope, Multimeter, and Signal Generator User Manual

Model: Dual83380

1. Introduction

The IMARS Dual Channel Handheld Oscilloscope, Multimeter, and Signal Generator is a versatile 3-in-1 professional test tool designed for accurate electronic measurements. It integrates a 70MHz dual-channel analog bandwidth oscilloscope with a 200MS/s sampling rate, a 20000-count True RMS digital multimeter, and a built-in signal generator capable of outputting adjustable sine, triangle, and square waves.

This device is engineered to provide high performance and convenience for professionals and hobbyists in various applications, including electronics repair, appliance repair, research, education, and automotive diagnostics.

Image: The IMARS 3-in-1 device displaying its oscilloscope, multimeter, and signal generator modes.

Image: Key features of the IMARS 3-in-1 device, highlighting its technical capabilities and safety.

2. Safety Information

This device complies with the IEC1010-1 safety standard and features a CAT II 1000V overvoltage rating. To ensure safe operation, please observe the following:

- **Dual Fuse Protection:** The device is equipped with dual fuse protection (200mA/250V resettable + 10A/125V single-use) to guard against overload damage.
- **Overvoltage Alarm:** A 24V DC/AC overvoltage audible/visual alarm provides real-time danger reminders during operation.
- **Proper Use:** Always use the correct measurement range and input terminals for the task. Do not exceed the maximum input values.
- **Inspection:** Before each use, inspect the test leads and the device for any damage. Do not use if damaged.

3. Device Overview

The IMARS handheld device features a compact and durable design with a clear display and intuitive controls.

- **Display:** A 2.4-inch color TFT display provides clear readings. It features an 8-level adjustable backlight for visibility in various lighting conditions.
- **Controls:** Intuitive rotary switch and function keys allow for quick mode and range adjustments. A one-click AUTO function simplifies waveform capture and range selection.
- **Integrated Flashlight:** An integrated one-key flashlight assists in low-light environments and emergency situations.
- **Mute Function:** A one-click mute function allows for quiet operation in sensitive environments, while retaining critical alerts like overvoltage warnings and continuity beeps.
- **Copper OSC Jack:** Features solid copper OSC jacks for low contact resistance, anti-oxidation, and zero signal loss, ensuring stable and accurate monitoring.

Image: Front view of the IMARS device, highlighting its display and control layout.

Image: User-friendly features such as adjustable backlight, flashlight, mute, and auto-sleep.

Image: Detail of the copper OSC jack, designed for stable and accurate signal monitoring.

Image: A guide to the device's buttons and input terminals, explaining their functions.

4. Setup

Before using the device, ensure it is properly charged and the test leads are correctly connected.

4.1. Charging the Device

The device is powered by a replaceable 18650 lithium battery. Charge the device using the provided Type-C 5V fast charging cable. Connect the cable to the Type-C port on the device and a compatible USB power source.

4.2. Connecting Test Leads

Connect the test leads to the appropriate input terminals on the device based on the measurement mode you intend to use. For oscilloscope functions, connect the BNC probes to the CH1 and CH2 inputs. For multimeter functions, connect the red lead to the VΩCx/mA/10A terminal (depending on measurement) and the black lead to the COM terminal.

Image: The device with test probes connected, ready for dual-channel oscilloscope measurement.

5. Operating Modes

The IMARS device offers three primary operating modes: Oscilloscope, Multimeter, and Signal Generator.

5.1. Oscilloscope Function

This mode allows for the visualization and analysis of electrical signals. It features a 70MHz bandwidth and a 200MS/s sampling rate for capturing high-frequency signals and detailed waveforms. The dual-channel capability enables synchronous acquisition and direct waveform comparison.

- **Waveform Capture:** Connect the oscilloscope probes to the circuit points you wish to measure.
- **AUTO Function:** Press the AUTO button for automatic waveform capture and range selection, simplifying setup for both beginners and experts.
- **Adjustments:** Use the function keys and rotary switch to adjust time base, vertical sensitivity, trigger settings, and coupling modes (DC/AC).

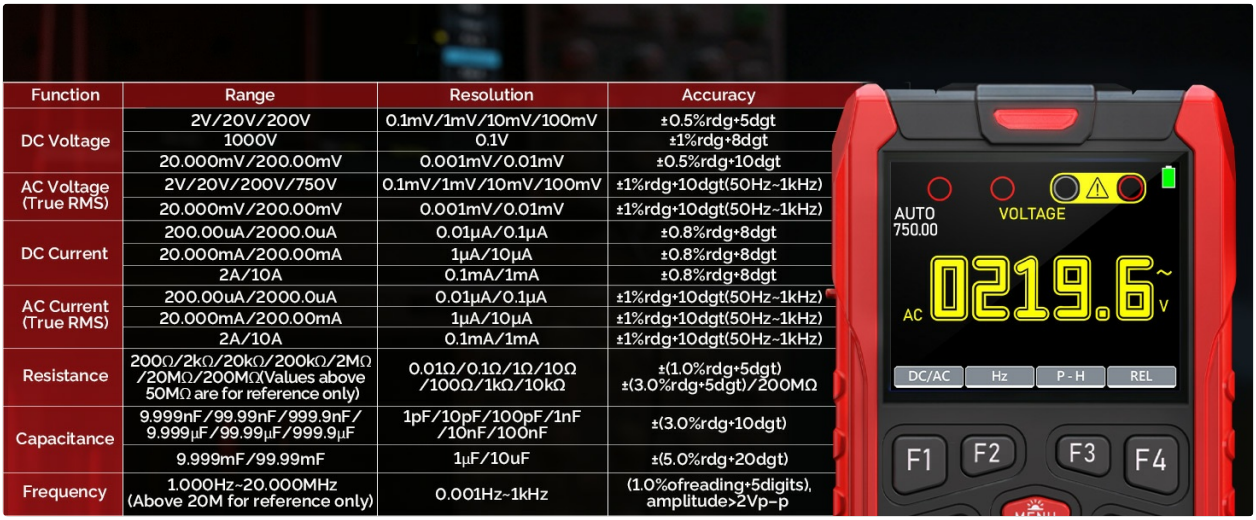

Image: The oscilloscope displaying two synchronized waveforms for comparison.

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Video: Demonstrates the versatile features of the 2-channel 3-in-1 Oscilloscope Multimeter, showcasing its capabilities in waveform analysis.

5.2. Multimeter Function

The digital multimeter provides 20000 counts with True RMS accuracy for precise electrical testing. It supports a comprehensive range of measurements:

- **Voltage:** AC/DC voltage measurement.
- **Current:** AC/DC current measurement.
- **Resistance:** Measure circuit resistance.
- **Capacitance:** Measure capacitance values.
- **Frequency/Duty Cycle:** Measure signal frequency and duty cycle.
- **Diode/Continuity:** Test diodes and check for circuit continuity.

Image: The multimeter display showing a 4.5-digit, 20000-count reading with True RMS accuracy.

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Video: A guide on how to use the 3-in-1 Oscilloscope Multimeter Signal Generator, including resistance measurement.

5.3. Signal Generator Function

The built-in signal generator can output various waveforms for testing and calibration purposes.

- **Waveform Types:** Generate sine, triangle, and square waves.
- **Adjustable Parameters:** Adjust output frequency and amplitude as needed for your application.

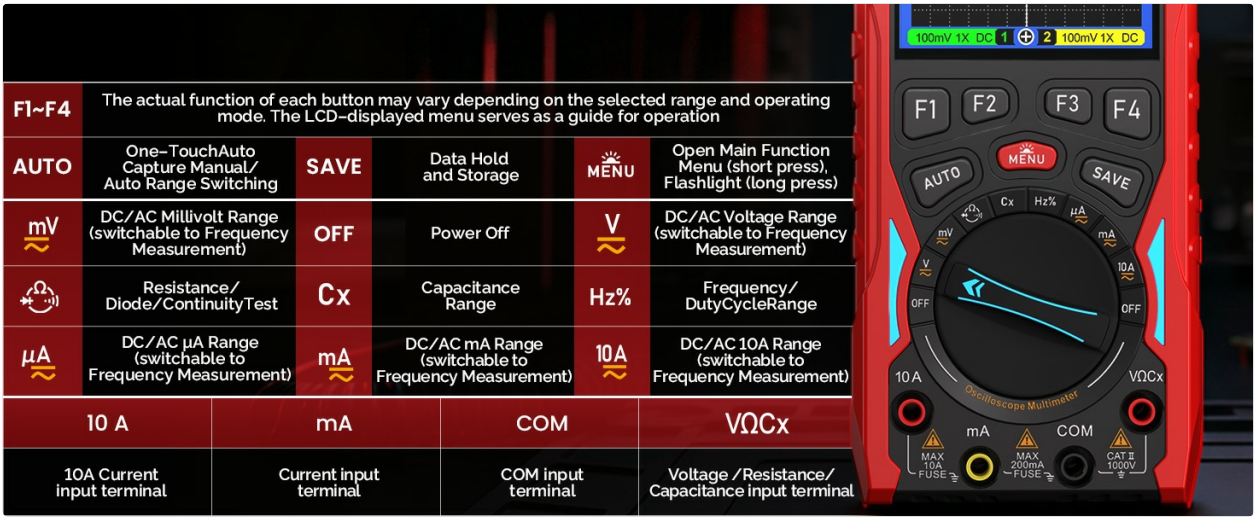

Image: The device displaying various waveforms generated for testing and diagnostics.

6. Data Management

The device offers significant storage capacity for measurement data and waveforms, facilitating traceability and analysis.

- **Storage Capacity:** Stores up to 1000 sets of multimeter measurement data and 200 oscilloscope waveform records.
- **Save/Recall Function:** Use the one-touch save/recall function to preserve and retrieve critical test data for post-analysis and comparison. No external storage device is required.

Image: The device's display illustrating the one-click save and recall function for waveforms and multimeter data.

7. Power Management

The device is designed with smart power management features to optimize battery life and operational convenience.

- **Battery:** Powered by a replaceable 18650 lithium battery, providing approximately 4 hours of continuous use.

- **Charging:** Supports Type-C 5V fast charging.
- **Auto Sleep:** Features a customizable auto sleep function, adjustable from 5 to 60 minutes, with an option to disable for continuous operation. This prevents battery over-discharge and extends runtime.
- **Backlight:** The 8-level adjustable backlight helps conserve battery power by allowing users to set appropriate brightness for different environments.

Image: User-friendly features such as adjustable backlight, flashlight, mute, and auto-sleep.

8. Maintenance

Proper maintenance ensures the longevity and reliable performance of your device.

- **Keep Dry:** Dry the instrument immediately if it gets wet. Do not use the device until it is completely dry.
- **Temperature Management:** Use and store the instrument at room temperature. Avoid extreme temperatures to prevent damage to electronic components and plastic parts.
- **Physical Handling:** Handle the device with care; avoid rough handling or dropping. Prevent damage to the LCD screen, internal components, and housing.
- **Cleaning:** Wipe the instrument regularly with a damp cloth and a small amount of mild detergent. Do not use abrasive materials, solvents, or alcohol for cleaning.

9. Troubleshooting

Refer to the following table for common issues and their solutions:

Issue / Maintenance Item	Solutions / Operation Steps
No display / No response to buttons	1. Check if the internal battery is depleted or improperly connected. 2. Rotate the dial to OFF for 5 seconds, then switch back to a measurement position. 3. Ensure the battery is charged and installed correctly.
Unable to perform any measurement	Check the condition of test leads (use the continuity function to short the leads and verify normal connection).

Issue / Maintenance Item	Solutions / Operation Steps
Unable to measure current	1. **mA Terminal:** Equipped with a self-resetting fuse – disconnect the input and wait up to 10 minutes for automatic recovery. 2. **10A Terminal:** Equipped with a single-use fuse – replace the blown fuse with the same specification (10A/125V).

10. Specifications

Detailed technical specifications for the IMARS Dual Channel Handheld Oscilloscope, Multimeter, and Signal Generator.

10.1. General Specifications

- **Brand:** IMARS
- **Model:** Dual83380
- **Power Source:** Battery Powered (Replaceable 18650 Lithium Battery)
- **Display:** 2.4-inch Color TFT with 8-level adjustable backlight
- **Safety Standard:** IEC1010-1, CAT II 1000V
- **Dimensions:** Approximately 3.3" × 6.3" × 1.3"
- **Weight:** Approximately 7.8 oz

10.2. Oscilloscope Specifications

Image: Detailed specifications for the oscilloscope function.

10.3. Multimeter Specifications

Category	Issue / Maintenance Item	Solutions / Operation Steps
Troubleshooting	No display / No response to buttons	1. Check if the internal battery is depleted or improperly connected. 2. Rotate the dial to OFF for 5 seconds, then switch back to a measurement position. 3. Ensure the battery is charged and installed correctly.
	Unable to perform any measurement	Check the condition of test leads (use the continuity function to short the leads and verify normal connection).
	Unable to measure current	1. mA Terminal: Equipped with a self-resetting fuse – disconnect the input and wait up to 10 minutes for automatic recovery. 2. 10A Terminal: Equipped with a single-use fuse – replace the blown fuse with the same specification (10A/125V).

Image: Detailed specifications for the multimeter function.

10.4. Signal Generator Specifications

Category	Issue / Maintenance Item	Solutions / Operation Steps
Routine Maintenance	Keep the device dry	1. Dry the instrument immediately if it gets wet. 2. Do not use the device until it is completely dry.
	Temperature management	1. Use and store the instrument at room temperature. 2. Avoid extreme temperatures to prevent damage to electronic components and plastic parts.
	Physical handling	1. Handle the device with care; avoid rough handling or dropping. 2. Prevent damage to the LCD screen, internal components and housing.
	Cleaning	1. Wipe the instrument regularly with a damp cloth and a small amount of mild detergent. 2. Do not use abrasive materials, solvents or alcohol for cleaning.

Image: Detailed specifications for the signal generator function.

11. Warranty and Support

For warranty information, technical support, or service inquiries, please refer to the contact information provided with your purchase or visit the official IMARS website. Keep your proof of purchase for warranty claims.