IMARS HO-23

IMARS HO-23 Dual Channel Handheld Oscilloscope User Manual

Model: HO-23

1. Introduction

The IMARS HO-23 is a versatile 3-in-1 diagnostic tool, integrating a dual-channel oscilloscope, a full-function multimeter, and a high-performance signal generator into a single portable device. This instrument is designed for various applications, including automotive diagnostics, industrial maintenance, and electronics troubleshooting. It offers high precision, comprehensive measurement capabilities, and smart data management features.

This manual provides detailed instructions for the safe and effective use of your IMARS HO-23 device. Please read it thoroughly before operation and retain it for future reference.

2. Safety Information

To ensure safe operation and prevent damage to the device or injury to yourself, observe the following safety precautions:

- Operate the device only in dry, indoor environments.
- Avoid exposure to high temperatures, excessive humidity, or strong magnetic fields.
- Do not attempt to open or modify the device. Refer all servicing to qualified personnel.
- Ensure all probes and cables are in good condition before use. Do not use damaged accessories.
- Adhere to the specified input voltage limits for all functions to prevent overload.
- Always disconnect power from the circuit under test before connecting or disconnecting probes, especially when measuring high voltages.
- Use caution when working with live circuits. Wear appropriate personal protective equipment.

3. Package Contents

Verify that all items are present in the package:

- 1 x IMARS HO-23 Handheld Oscilloscope
- 1 x Type-C Charging Cable
- 1 x Carry Bag
- Necessary Probes and Accessories (e.g., oscilloscope probes, multimeter test leads)

Image: The IMARS HO-23 device shown with its complete set of accessories, including probes, cables, and a carry bag.

4. Device Overview

The IMARS HO-23 integrates three primary functions: an oscilloscope, a multimeter, and a signal generator. This design streamlines diagnostic workflows by providing multiple tools in one compact unit.

Image: An illustration highlighting the 3-in-1 functionality of the IMARS HO-23, showing its oscilloscope, multimeter, and signal generator capabilities.

Controls and Display

The device features a 2.8-inch LCD for clear display of waveforms and measurement data. Navigation is managed through a central directional pad and dedicated function buttons (F1-F4, MENU, AUTO, SAVE, Utility, Trig/▲, CH1, CH2).

- **Power Button:** Located centrally, used for turning the device on and off.
- **Function Buttons (F1-F4):** Context-sensitive buttons for various settings and modes.
- **MENU Button:** Accesses the main menu for configuration options.
- **AUTO Button:** Automatically adjusts oscilloscope settings for optimal waveform display.
- **SAVE Button:** Initiates data and waveform saving.
- **Utility Button:** Accesses utility functions.
- **Trig/▲ Button:** Adjusts trigger settings in oscilloscope mode.
- **CH1/CH2 Buttons:** Selects or configures channels.
- **Input Terminals:** Dedicated ports for oscilloscope probes (CH1, CH2) and multimeter test leads (10A, mA,

COM, VΩCap).

5. Setup

5.1 Initial Charging

Before first use, fully charge the device. Connect the provided Type-C cable to the device's charging port and to a compatible USB power adapter (not included). The 4000mAh battery supports 15W fast charging and provides up to 10 hours of continuous use.

Image: A visual representation of the IMARS HO-23's internal 4000mAh battery and the Type-C fast charging port.

5.2 Connecting Probes

Depending on the desired function, connect the appropriate probes:

- **For Oscilloscope:** Connect the oscilloscope probes to the CH1 and/or CH2 BNC connectors. Ensure a secure connection.
- **For Multimeter:** Connect the red test lead to the VΩCap or 10A/mA terminal and the black test lead to the COM terminal.

6. Operating Instructions

6.1 Power On/Off

Press and hold the central power button to turn the device on or off.

6.2 Oscilloscope Mode

The HO-23 features a 70MHz dual-channel oscilloscope with a 200MSa/s sampling rate and 2Kpts record depth, capable of capturing high-frequency signals with precision. It supports ±400V high-voltage input.

Image: The IMARS HO-23 display showing a captured waveform, emphasizing its 70MHz bandwidth capability for detailed signal analysis.

- **Channel Selection:** Use the CH1 and CH2 buttons to enable or disable channels.
- **Vertical Scale (Volts/Div):** Adjust the vertical scale using the directional pad or dedicated buttons to fit the waveform on the screen.
- **Horizontal Scale (Time/Div):** Adjust the horizontal scale to view more or less of the waveform over time.

- **Trigger Settings:** Use the Trig/▲ button to configure trigger type, source, and level for stable waveform display.
- **AUTO Function:** Press the AUTO button for automatic adjustment of vertical, horizontal, and trigger settings.
- **Advanced Features:** Access math operations, cursor measurement, persistence mode, and XY mode through the MENU or Utility buttons for in-depth analysis.

6.3 Multimeter Mode

The integrated multimeter provides accurate measurements for various electrical parameters.

Image: A collage demonstrating the IMARS HO-23 performing DC voltage, AC voltage, diode test, and capacitance measurements.

- **AC/DC Voltage:** Measures up to 1000V.
- **Resistance:** Measures up to 60MΩ.
- **Capacitance:** Measures up to 100mF.
- **Frequency:** Measures from 10Hz to 10MHz.
- **Diode Test and Continuity:** Available functions for component testing.

Select the desired measurement function using the appropriate buttons or menu options. Connect test leads to the correct input terminals (VΩCap for voltage/resistance/capacitance/frequency, 10A/mA for current, COM for common ground).

6.4 Signal Generator Mode

The built-in signal generator can output various waveforms for testing circuits or simulating sensor signals.

Image: The IMARS HO-23 screen showing examples of generated sine, square, and triangle waveforms with adjustable frequency and amplitude.

- **Waveform Types:** Generates Sine, Square, and other waveforms.
- **Frequency Adjustment:** Adjust frequency with 1Hz fine stepping.
- **Amplitude and Duty Cycle:** Configure output amplitude and duty cycle as needed.

Access the signal generator function through the menu. Connect the output to the circuit under test using appropriate cables.

6.5 Data Management and Display

The device allows for efficient data and waveform management.

Image: A graphic illustrating the IMARS HO-23's capacity to store 200 waveforms and 2000 data sets, with examples of stored waveforms.

- **One-Click Save:** Use the SAVE button to store up to 2000 data sets and 200 waveforms.
- **File Transfer:** Transfer saved files to a PC via the Type-C connection for further analysis and reporting.
- **Display Features:** The 2.8-inch LCD supports live and reference waveform comparison, enhancing analysis capabilities.

7. Specifications

Feature	Specification
Model	HO-23 Dual Channel Handheld Oscilloscope
Bandwidth	70MHz
Sampling Rate	200MSa/s

Feature	Specification
Record Depth	2Kpts
Input Voltage Range	±400V
Multimeter Functions	AC/DC Voltage (up to 1000V), Resistance (60MΩ), Capacitance (100mF), Frequency (10Hz–10MHz)
Signal Generator	Sine, Square waveforms, 1Hz fine stepping
Battery	4000mAh rechargeable lithium battery
Charging	15W Type-C fast charging
Continuous Use	Up to 10 hours
Display	2.8-inch LCD, supports live and reference waveform comparison
Storage	Saves up to 2000 data sets and 200 waveforms
Package Dimensions	9.45 x 7.09 x 1.97 inches; 2.12 Pounds
Manufacturer	IMARS

8. Maintenance

8.1 Cleaning

Wipe the device with a soft, dry cloth. Do not use abrasive cleaners or solvents. Ensure the device is powered off and disconnected from any power source before cleaning.

8.2 Storage

When not in use, store the device in its carry bag in a dry, cool place, away from direct sunlight, high temperatures, humidity, and strong magnetic fields. Ensure the battery is partially charged (around 50%) for long-term storage to prolong battery life.

9. Troubleshooting

If you encounter issues with your IMARS HO-23, consider the following general troubleshooting steps:

- **Device does not power on:** Ensure the battery is charged. Connect the device to a Type-C charger and try again.
- **No signal displayed in Oscilloscope mode:** Check probe connections. Ensure the probe is properly connected to the circuit under test. Adjust vertical and horizontal scales, and trigger settings. Use the AUTO button.
- **Incorrect multimeter readings:** Verify that the test leads are connected to the correct input terminals for the selected measurement function. Ensure the circuit under test is within the device's measurement range.
- **Device freezes or behaves erratically:** Try restarting the device. If the issue persists, contact customer support.

10. Warranty and Support

For warranty information, technical support, or service inquiries, please contact IMARS customer service through the retailer where the product was purchased or visit the official IMARS website. Please have your product model (HO-23) and purchase details available when contacting support.