HANMATEK HO52

HANMATEK HO52 3.5-inch Digital Oscilloscope and Multimeter User Manual

Model: HO52 | Brand: HANMATEK

1. INTRODUCTION

This user manual provides comprehensive instructions for the safe and effective operation of your HANMATEK HO52 Digital Oscilloscope and Multimeter. The HO52 is a versatile 2-in-1 handheld device combining a dual-channel oscilloscope with a 4 1/2 digit true RMS multimeter. Please read this manual thoroughly before using the device to ensure proper functionality and to prevent damage.

Image 1.1: The HANMATEK HO52 device shown with its standard accessories, including probes and a carrying bag.

2. PRODUCT OVERVIEW AND FEATURES

The HANMATEK HO52 integrates essential measurement tools into a compact, portable design. It features a 3.5-inch TFT display for clear waveform and measurement readings.

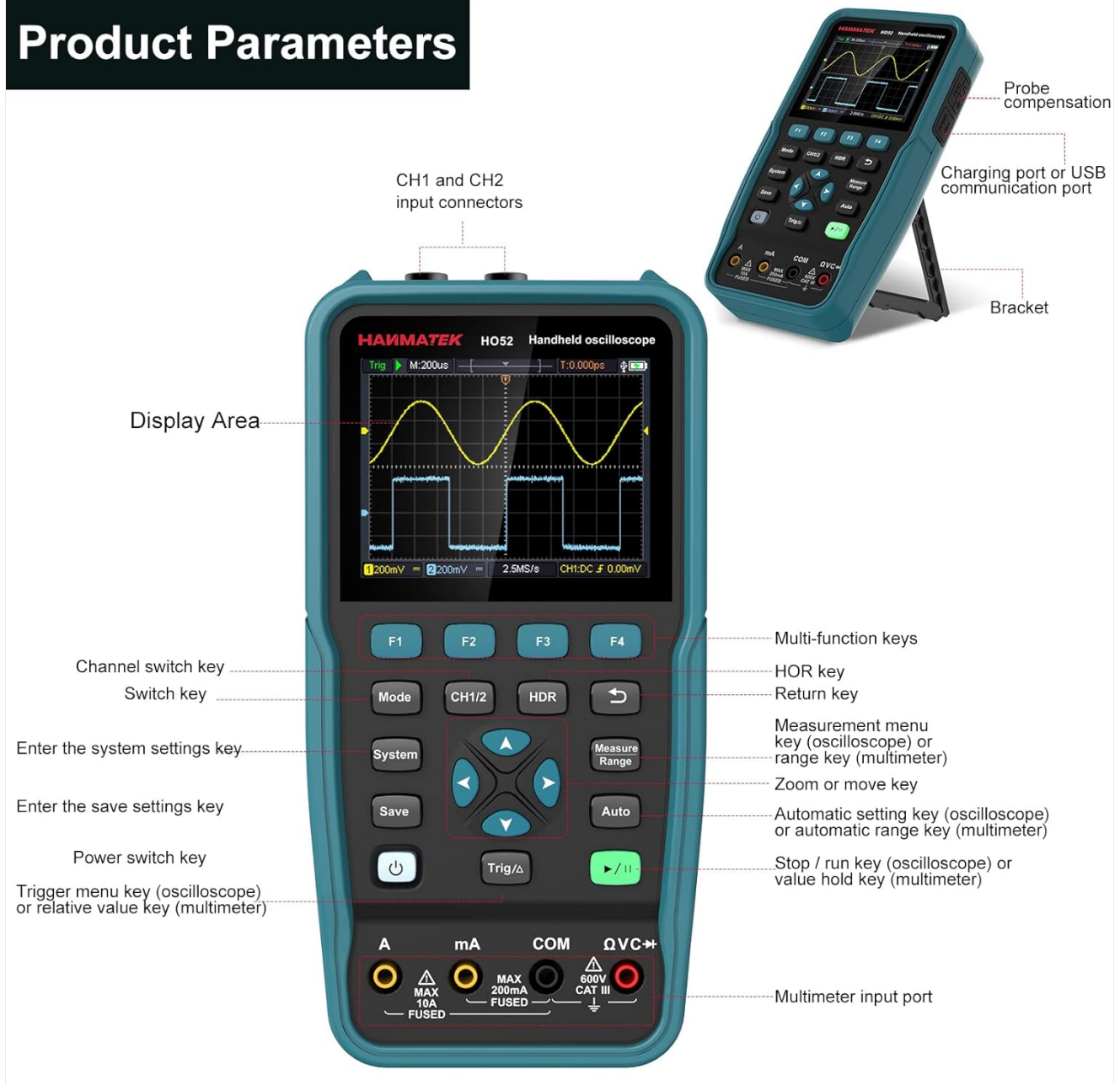### 2.1 Key Components and Controls

Product Parameters

Probe compensation

Charging port or USB communication port

Bracket

CH1 and CH2 input connectors

Display Area

Channel switch key

Switch key

Enter the system settings key

Enter the save settings key

Power switch key

Trigger menu key (oscilloscope) or relative value key (multimeter)

Multi-function keys

HOR key

Return key

Measurement menu key (oscilloscope) or range key (multimeter)

Zoom or move key

Automatic setting key (oscilloscope) or automatic range key (multimeter)

Stop / run key (oscilloscope) or value hold key (multimeter)

Multimeter input port

Image 2.1: Labeled diagram of the HO52, highlighting the display area, multi-function keys, channel input connectors, and multimeter input ports.

- **Display Area:** 3.5-inch TFT screen for waveform display and measurement data.
- **Multi-function Keys (F1-F4):** Context-sensitive keys for various operations.
- **Mode Key:** Switches between Oscilloscope and Multimeter modes.
- **CH1/2 Key:** Selects or toggles oscilloscope channels.
- **System Key:** Accesses system settings.
- **Save Key:** Saves waveforms, parameters, or images.
- **Navigation Keys:** Used for menu navigation and adjusting parameters.
- **Auto Key:** One-key automatic setup for oscilloscope or auto-ranging for multimeter.
- **Trig/Δ Key:** Controls trigger settings in oscilloscope mode or relative measurement in multimeter mode.
- **Power Switch Key:** Turns the device on or off.
- **CH1 and CH2 Input Connectors:** BNC connectors for oscilloscope probes.
- **Multimeter Input Ports:** Standard ports for multimeter test leads (mA, COM, VΩC+).
- **Charging Port/USB Communication Port:** USB Type-C port for charging and PC connection.

2.2 Oscilloscope Mode Capabilities

- **Bandwidth:** Up to 50MHz.
- **Channels:** Dual channel input.
- **Real-time Sampling Rate:** 250MSa/s (single channel), 125MSa/s (dual channel).
- **Waveform Refresh Rate:** Up to 10000wfms/s.
- **Record Length:** Up to 8k points.
- **Automatic Measurements:** 7 types of automatic measurement functions.
- **Cursor Measurement:** For precise waveform analysis.
- **X-Y Function:** For phase comparison.
- **One-key Auto-setting:** Quickly optimizes display settings for detected signals.

2.3 Multimeter Mode Capabilities

- **Display:** 4 1/2 digits true RMS.
- **Measurements:** Standard voltage (AC/DC), current (AC/DC), resistance, diode, continuity, and capacitance tests.
- **Auto-range Function:** Simplifies measurement setup.
- **Maximum Input Voltage:** 750V AC, 1000V DC.
- **Independent Inputs:** Multimeter and oscilloscope inputs are independent.
- **Data Hold:** Freezes the current measurement on the display.
- **Relative Measurement:** Measures the difference from a reference value.

Image 2.2: The HO52 demonstrating its dual functionality as both an oscilloscope and a multimeter.

3. PACKAGE CONTENTS

Verify that all items listed below are present in your package. If any items are missing or damaged, please contact your vendor.

- 1 x HANMATEK HO52 Digital Oscilloscope
- 1 x Carrying Bag
- 1 x Oscilloscope Probe
- 1 x Power Adapter
- 1 x USB Type-C Cable
- 1 x Multimeter Test Lead Set (pen)
- 1 x User Manual (this document)
- 1 x CD (containing software and additional resources)
- 1 x Calibration Pen

Image 3.1: All components included in the HANMATEK HO52 product package.

4. SETUP

4.1 Initial Charging

Before first use, fully charge the device. Connect the provided USB Type-C cable to the HO52's charging port and the other end to the power adapter. Plug the adapter into a suitable power outlet. The charging indicator on the device will show the charging status. A full charge typically takes several hours.

4.2 Connecting Oscilloscope Probes

For oscilloscope measurements, connect the BNC end of the oscilloscope probe to either the CH1 or CH2 input connector on the top of the device. Ensure a secure connection by twisting the BNC connector until it locks. Attach the probe's ground clip to the circuit's ground point and the probe tip to the test point.

4.3 Connecting Multimeter Test Leads

For multimeter measurements, insert the red test lead into the VΩC+ port and the black test lead into the COM port. For current measurements, insert the red test lead into the mA port (for milliampere measurements) or the 10A port (if available

on your model, for higher current measurements) and the black test lead into the COM port. Always ensure correct polarity and port selection for the measurement type.

5. OPERATING INSTRUCTIONS

5.1 Power On/Off

Press and hold the **Power Switch Key** (usually located at the bottom left of the control panel) for a few seconds to turn the device on or off.

5.2 Mode Selection

Press the **Mode Key** to toggle between Oscilloscope mode and Multimeter mode. The display will change to reflect the active mode.

5.3 Oscilloscope Operation

Image 5.1: A typical oscilloscope display showing a waveform and relevant settings.

1. **Connecting Probes:** Ensure probes are correctly connected to CH1 or CH2 and to the circuit under test.
2. **Auto-Set Function:** Press the **Auto Key** to automatically adjust the vertical, horizontal, and trigger settings for a stable waveform display. This is recommended for initial setup.
3. **Adjusting Vertical Scale (Volts/Div):** Use the navigation keys to select and adjust the vertical scale for each channel.
4. **Adjusting Horizontal Scale (Time/Div):** Use the navigation keys to select and adjust the horizontal time base.
5. **Trigger Settings:** Press the **Trig/Δ Key** to access trigger menu. Adjust trigger level, source, and type (edge, pulse, etc.) to stabilize the waveform.
6. **Measurements:** The HO52 offers 7 automatic measurements. These are typically displayed on the screen. Use cursor measurement for more specific points by activating the cursor function via the menu.
7. **X-Y Mode:** Access X-Y mode through the system or display menu to observe Lissajous figures for phase difference analysis.

5.4 Multimeter Operation

1. **Connecting Test Leads:** Ensure test leads are correctly inserted into the VΩC+, mA, or COM ports based on the desired measurement.
2. **Selecting Function:** Use the navigation keys or dedicated function keys (if available) to select the desired measurement type (e.g., DC Voltage, AC Voltage, Resistance, Capacitance, Diode, Continuity). The device typically auto-ranges, but manual range selection may be available.
3. **Taking Measurements:** Apply the test leads to the circuit or component. The measurement value will be displayed on the screen.

4. **Data Hold:** Press the appropriate function key (often F4 or a dedicated hold button) to freeze the current reading on the display.
5. **Relative Measurement:** Press the **Trig/Δ Key** in multimeter mode to activate relative measurement, setting the current reading as a reference.

5.5 Saving Data

The HO52 allows saving various data types:

- **Parameters:** Save up to 4 groups of device settings.
- **Reference Waveforms:** Store up to 4 reference waveforms for comparison with live signals.
- **Images:** Capture up to 4 screen images.
- **CSV Waveforms:** Save up to 4 waveform data sets in CSV format for external analysis.

To save, press the **Save Key** and follow the on-screen prompts to select the data type and storage location.

5.6 PC Connection

Image 5.2: The HO52 connected to a computer, demonstrating data transfer capabilities.

Connect the HO52 to a computer using the provided USB Type-C cable. The device will be recognized as a USB mass storage device, allowing you to access and transfer saved images and CSV waveform files. Refer to the included CD for any necessary PC software or drivers.

6. MAINTENANCE

6.1 Cleaning

Regularly clean the device with a soft, dry cloth. For stubborn dirt, a slightly damp cloth with mild detergent can be used, ensuring no liquid enters the device. Do not use abrasive cleaners or solvents.

6.2 Battery Care

To prolong battery life, avoid fully discharging the device frequently. If storing for an extended period, charge the

battery to approximately 50% and recharge every few months. Use only the provided adapter or a compatible USB Type-C power source for charging.

6.3 Calibration

The HO52 features an auto-calibration function. It is recommended to perform auto-calibration periodically or if you suspect measurement inaccuracies. Access the auto-calibration function through the system settings menu. Follow the on-screen instructions, which typically involve disconnecting all probes and leads before initiating the process.

7. TROUBLESHOOTING

- **Device does not power on:**
  - Ensure the battery is charged. Connect the device to the power adapter and try again.
  - Verify the power button is pressed and held for the required duration.

- **No waveform displayed in Oscilloscope mode:**
  - Check if probes are correctly connected to the device and the circuit.
  - Ensure the probe's ground clip is securely connected to the circuit ground.
  - Press the **Auto Key** to automatically adjust settings.
  - Verify the input signal is within the device's measurement range and bandwidth.

- **Unstable waveform:**
  - Adjust the trigger level and trigger type (edge, pulse) to stabilize the waveform.
  - Ensure the signal amplitude is sufficient for stable triggering.

- **Incorrect multimeter readings:**
  - Verify test leads are inserted into the correct ports (VΩC+, mA, COM).
  - Ensure the correct measurement function (voltage, current, resistance) is selected.
  - Check the continuity of the test leads.

- **Device not recognized by PC:**
  - Ensure the USB Type-C cable is securely connected to both the HO52 and the computer.
  - Try a different USB port on your computer.
  - Install any necessary drivers from the provided CD or HANMATEK's official website.
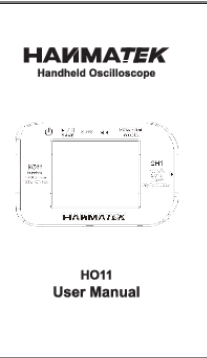
8. SPECIFICATIONS

Feature	Specification
Model	HO52
Display	3.5-inch TFT Color Display
Oscilloscope Bandwidth	50MHz
Oscilloscope Channels	2
Real-time Sampling Rate	250MSa/s (Single Channel), 125MSa/s (Dual Channel)
Record Length	8k points
Waveform Refresh Rate	10000wfms/s
Multimeter Display	4 1/2 digits, True RMS
Max Multimeter Input Voltage	750V AC, 1000V DC
Connectivity	USB Type-C (Charging, PC Communication)

Power Source	Internal Battery, External Power Adapter
Dimensions (L x W x H)	19.9 x 3.9 x 10 cm (7.83 x 1.54 x 3.94 inches)
Weight	Approximately 453.59 grams (1 pound)

9. WARRANTY AND SUPPORT

HANMATEK products typically come with a standard manufacturer's warranty. For specific warranty terms, duration, and conditions, please refer to the warranty card included in your product package or visit the official HANMATEK website. For technical support, troubleshooting assistance, or service inquiries, please contact HANMATEK customer service through their official channels. Keep your purchase receipt as proof of purchase for warranty claims.

Related Documents - HO52

HO Single Channel Series Handle Oscilloscope User Manual	[HANMATEK HO Single Channel Series Handheld Oscilloscope User Manual](#) Comprehensive user manual for the HANMATEK HO Single Channel Series handheld oscilloscope, covering safety information, operation, technical specifications, and troubleshooting.
HANMATEK (image) One machine in hand, worry-free testing HO50 Series 2-CH Handheld Oscilloscope	[HANMATEK HO50 Series Handheld Oscilloscope, Multimeter, and Waveform Generator](#) Discover the HANMATEK HO50 Series 2-CH Handheld Oscilloscope, a versatile 3-in-1 instrument combining an oscilloscope, multimeter, and waveform generator. Ideal for outdoor maintenance, on-site measurements, and automotive diagnostics, featuring a 3.5-inch high-resolution LCD, long battery life, and USB Type-C connectivity.
HANMATEK Handheld Oscilloscope HO11 User Manual	[Hanmatek HO11 Handheld Oscilloscope User Manual](#) Comprehensive user manual for the Hanmatek HO11 handheld oscilloscope, detailing its features, operation, and technical specifications. Learn how to use the device for various electronic measurement scenarios.

Digital Storage Oscilloscope Quick Guide	**Hanmatek DOS1102 Digital Storage Oscilloscope Quick Guide** A quick guide to the Hanmatek DOS1102 Digital Storage Oscilloscope, covering safety precautions, front and rear panel descriptions, control area functions, user interface, and basic operations like probe compensation and auto measurements.
DOS1104 Digital Storage Oscilloscope USER_MANUAL	**HANMATEK DOS1104 Digital Storage Oscilloscope User Manual and Specifications** Detailed user manual for the HANMATEK DOS1104 Digital Storage Oscilloscope, covering safety precautions, quick start guide, operational procedures, interface explanation, PC communication, and comprehensive technical specifications.
HAИMATEK	**HANMATEK DOS1202 Digital Oscilloscope: General Safety Instructions** Safety instructions for the HANMATEK DOS1202 Digital Oscilloscope, covering general warnings to prevent injury and product damage. Available in multiple languages.