HANMATEK HO52S

HANMATEK HO52S 3-in-1 Handheld Oscilloscope Multimeter with Waveform Generator

Instruction Manual

1. Introduction

This manual provides detailed instructions for the safe and effective operation of your HANMATEK HO52S 3-in-1 Handheld Oscilloscope Multimeter with Waveform Generator. Please read this manual thoroughly before use and retain it for future reference.

2. Safety Information

Always observe basic safety precautions when using this device to reduce the risk of fire, electric shock, or personal injury.

- Ensure the device is powered off before connecting or disconnecting probes.
- Do not exceed the maximum input voltage ratings (750VAC and 1000VDC for multimeter mode).
- Verify probe connections are secure before taking measurements.
- Avoid using the device in wet or damp conditions.
- Do not attempt to repair or modify the device; refer servicing to qualified personnel.

3. Key Features

The HANMATEK HO52S combines three essential functions in one compact handheld device:

- **Oscilloscope Mode:** Dual channel, 50MHz bandwidth, 125MSa/s real-time sampling rate, 8k record length, 10000wfms/s waveform refresh rate. Features include cursor measurement, four automatic measurement functions, XY function, and one-key automatic setting.
- **Multimeter Mode:** 4 1/2 digits (20000 counts) true RMS digital display. Standard voltage, current, resistance, diode, continuity, and capacitance tests. Automatic range function, maximum input voltage 750VAC/1000VDC. Independent multimeter and oscilloscope inputs, read hold, and relative measurement functions.
- **Signal Generator:** Maximum waveform output frequency up to 25MHz. Outputs sine waves, sawtooth waves, square waves, pulse waves, and built-in special waveforms.
- **Save Function:** Stores 4 sets of settings, 4 reference waveforms, 4 images, and 4 CSV format waveforms for easy comparison and analysis.
- **Connectivity:** USB Type-C interface for mobile power supply and adapter charging. Supports computer connection for reading stored images and CSV waveforms.
- **Power Efficiency:** Ultra-low power consumption (less than 3W), providing approximately 6 hours of continuous operation.

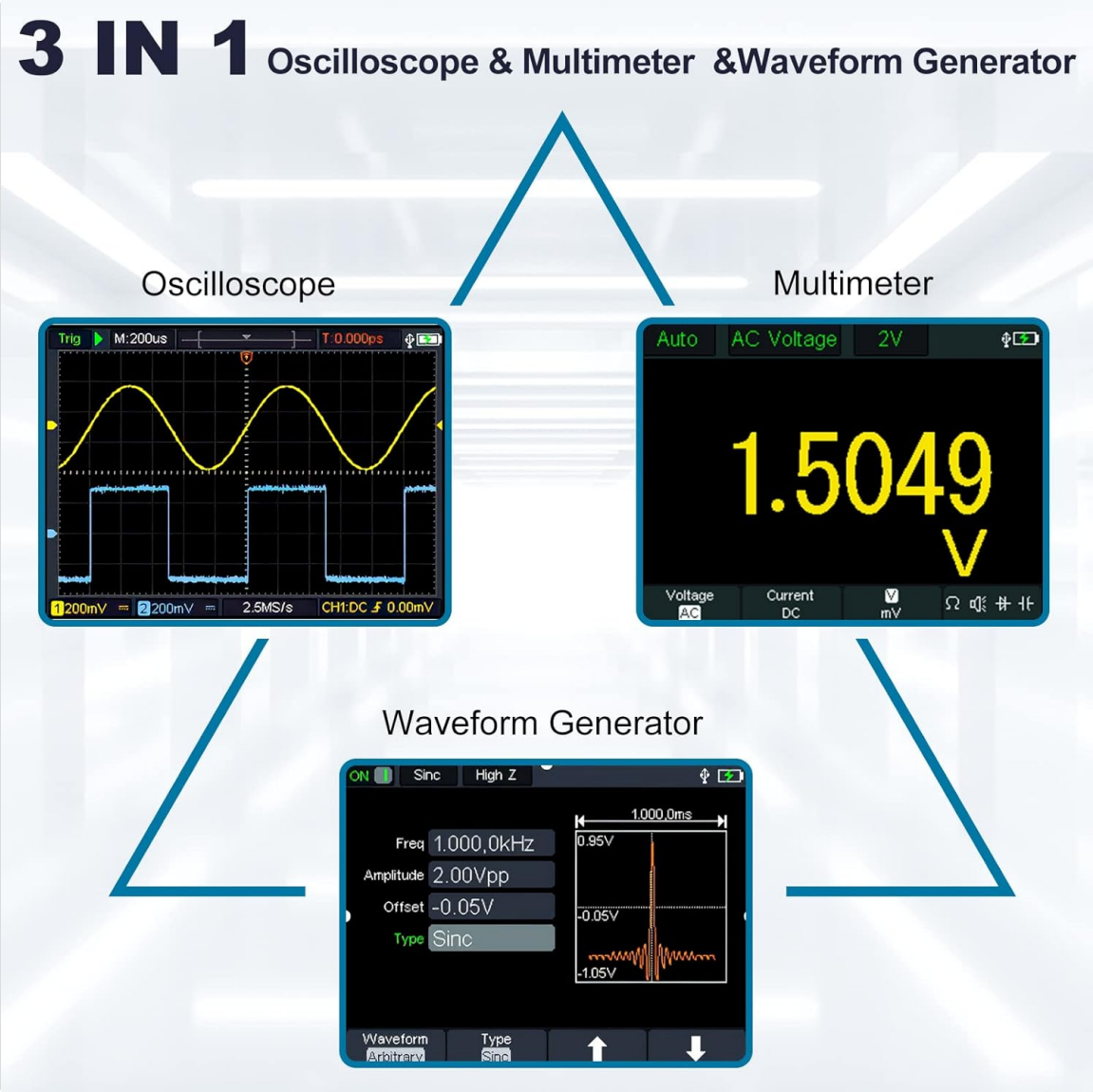

Figure 3.1: Overview of the HO52S 3-in-1 functionality.

4. Package Contents

Verify that all items are present and in good condition upon opening the package:

- 1 x HANMATEK HO52S 3-in-1 Handheld Digital Oscilloscope / Multimeter / Signal Generator
- 1 x Carrying Bag
- 2 x Oscilloscope Probes
- 1 x Adapter
- 1 x USB Cable
- 1 x Multimeter Pen
- 1 x User Manual
- 1 x Calibration Oscilloscope
- 1 x CD (for software download)

Figure 4.1: Included accessories and main unit.

5. Product Overview

The HANMATEK HO52S features a 3.5-inch TFT screen and an intuitive button layout for ease of use.

5.1 Front Panel Controls

Figure 5.1: Front panel and side view with labeled components.

- **Display Area:** 3.5-inch TFT screen for waveform and measurement display.
- **F1-F4 Keys:** Multi-function keys, context-sensitive.
- **Mode Key:** Switches between oscilloscope, multimeter, and signal generator modes.
- **CH1/2 Key:** Channel switch key for oscilloscope.
- **HDR Key:** Return key.
- **System Key:** Enters system settings.
- **Save Key:** Enters save settings.
- **Power Switch:** Turns the device on/off.
- **Trig/Δ Key:** Trigger menu for oscilloscope, relative value key for multimeter.
- **Auto Key:** Automatic setting for oscilloscope, range key for multimeter.
- **Run/Stop Key:** Starts/stops waveform acquisition for oscilloscope, hold value key for multimeter.
- **Navigation Keys:** Up, Down, Left, Right, and Enter for menu navigation and parameter adjustment.

5.2 Input/Output Ports

- **Oscilloscope Input (CH1, CH2):** BNC connectors for oscilloscope probes.

- **Waveform Generator Output (GEN Out):** BNC connector for signal output.
- **Multimeter Input Ports (A, mA, COM, VΩHz+):** Standard multimeter jacks.
- **USB Type-C Port:** For charging and PC communication.
- **Calibration Signal:** 3.3V/1kHz square wave signal output.

6. Initial Setup

6.1 Powering On/Off

1. To power on, long press the **Power Switch** button.
2. To power off, long press the **Power Switch** button again.

6.2 Charging the Device

Connect the provided USB Type-C cable to the device's USB port and the adapter to a power outlet. The device supports charging via mobile power banks as well.

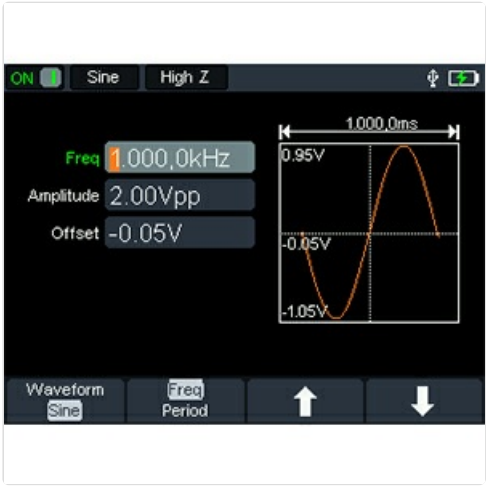

Figure 6.1: USB Type-C charging.

6.3 Language Selection

Upon first power-on, you may be prompted to select a language. Use the navigation keys to select your preferred language (e.g., English) and press the Enter key to confirm.

7. Operating Modes

Press the **Mode** button to switch between Oscilloscope, Multimeter, and Signal Generator functions.

7.1 Oscilloscope Mode

Connect oscilloscope probes to the CH1 or CH2 BNC inputs. Ensure the probe's magnification setting (1X or 10X) matches the device's setting for accurate readings.

Figure 7.1: Oscilloscope waveform display.

- **Auto-Set:** Press the **Auto** button for automatic waveform setup.
- **Trigger:** Use the **Trig/Δ** button to access trigger settings. Adjust trigger level and mode (Edge, Video, Pulse, Slope) for stable waveform display.
- **Cursor Measurement:** Enable cursors to precisely measure voltage (V) and time (T) differences on the waveform.
- **Save:** Press the **Save** button to store waveform data or screenshots.

7.2 Multimeter Mode

Connect the multimeter test leads to the appropriate input jacks (COM, VΩHz+, mA, 10A) based on the measurement type.

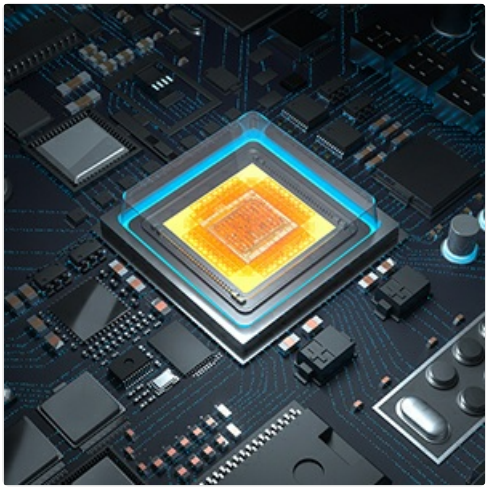

Figure 7.2: Multimeter voltage measurement.

- **Function Selection:** Use the navigation keys to select desired measurement function (Voltage, Current, Resistance, Diode, Continuity, Capacitance).
- **Auto Range:** Press the **Auto** button to enable or disable auto-ranging.
- **Hold:** Press the **Run/Stop** button to hold the current reading.
- **Relative Measurement:** Use the **Trig/Δ** button to activate relative measurement mode.

7.3 Signal Generator Mode

Connect the output of the signal generator (GEN Out) to the circuit or device under test.

Figure 7.3: Signal generator settings.

- **Waveform Selection:** Use the navigation keys to select the desired waveform type (Sine, Square, Sawtooth, Pulse, etc.).
- **Parameter Adjustment:** Adjust frequency, amplitude, and offset using the navigation keys.

8. Advanced Functions

8.1 PC Connection

Connect the HO52S to a computer using the provided USB cable. The device will be recognized as a USB flash drive, allowing you to access and transfer stored images and CSV waveform data for further analysis.

Figure 8.1: PC connection for data transfer.

8.2 Self-Calibration

The device features a self-calibration function to maintain accuracy. Refer to the on-screen menu in System Settings for initiating calibration.

9. Troubleshooting

- **Inaccurate Readings:** Ensure probe magnification settings (1X/10X) on both the probe and the device match. Select the correct coupling mode (DC for DC signals, AC for AC signals).
- **Unstable Waveform:** Verify proper grounding of the probe. Adjust the trigger level to approximately 50% of the signal amplitude. Switch the trigger mode to Normal or Single for non-periodic signals.
- **Waveform Not Displayed/Appears in Corner:** Adjust the time base and vertical sensitivity settings. Fine-tune the trigger level. For low-frequency signals (below 45Hz), manual adjustment of frequency may be required as auto-calibration might not be effective.
- **Device Not Responding:** Check battery level. If fully charged, try a factory reset via System Settings (note: this will erase all previous settings).

10. Specifications

Feature	Specification
Model Number	HO52S
Brand	HANMATEK
Product Dimensions	23 x 13 x 7 cm
Item Weight	1.07 kg
Power Source	Corded Electric (USB Type-C)
Batteries	1 x 12V battery (included)
Maximum Operating Voltage	1000 Volts
Measurement Type	Multimeter
Specification Met	ETL
Country of Origin	China

Figure 10.1: Device dimensions.

11. Warranty and Support

For warranty information, technical support, or service inquiries, please refer to the contact information provided with your product packaging or visit the official HANMATEK website. Keep your purchase receipt as proof of purchase.

Related Documents - HO52S

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 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.
HANMATEK  Multi-Functions Wire Tracker WT1 User Manual	[HANMATEK WT1 Multi-Functions Wire Tracker User Manual] Comprehensive user manual for the HANMATEK WT1 Multi-Functions Wire Tracker, detailing its features, operation, safety instructions, and technical specifications for efficient cable testing and network maintenance.