Hantek 6254BD

Hantek 6254BD 4-Channel Oscilloscope with Arbitrary Waveform Generator User Manual

Model: 6254BD

1. Introduction

This manual provides detailed instructions for the proper use, setup, and maintenance of the Hantek 6254BD 4-Channel Oscilloscope with Arbitrary Waveform Generator. Please read this manual thoroughly before operating the device to ensure optimal performance and safety.

2. Product Overview

The Hantek 6254BD is a compact, USB-powered device combining a 4-channel digital oscilloscope with an arbitrary waveform generator. It offers a 250MHz bandwidth and a 1GSa/s real-time sampling rate, making it suitable for various electronic testing and measurement applications.

2.1 Key Features

- **4 Analog Channels:** Simultaneous measurement across four independent channels.
- **Integrated Arbitrary Waveform Generator (AWG):** Provides a 200MSa/s DDS output with 12-bit vertical resolution, including standard and arbitrary waveforms.
- **High Performance:** 250MHz bandwidth and 1GSa/s real-time sampling rate.
- **Extensive Measurement Functions:** Over 20 automatic measurement functions, Pass/Fail test, resourceful trigger functions, dynamic cursor tracking, waveform record and replay.
- **Software Compatibility:** Supports Windows 7, 8, 10, Android (via H-scope/Openscope), Linux (via Openhantek), and OSX (via virtual machine).
- **Compact and Durable Design:** Anodized aluminum casing for heat and abrasive resistance, powered via USB 2.0.
- **Development Support:** Provides a secondary development library (DLL) with Labview, VB, and VC examples.

2.2 Package Contents



Figure 1: Hantek 6254BD Oscilloscope and included accessories. The image displays the main oscilloscope unit, four oscilloscope probes, a USB cable, two BNC-to-alligator clip cables, and a BNC-to-BNC cable.

The Hantek 6254BD package typically includes the main oscilloscope unit, four oscilloscope probes, a USB cable for PC connection, two BNC-to-alligator clip cables, and a BNC-to-BNC cable for the arbitrary waveform generator output.

3. Setup

Follow these steps to set up your Hantek 6254BD oscilloscope.

3.1 Hardware Connection

1. **Connect to Computer:** Use the provided USB 2.0 cable to connect the Hantek 6254BD unit to an available USB port on your computer. The device is powered via this USB connection.
2. **Connect Probes:** Attach the oscilloscope probes to the BNC input connectors (CH1, CH2, CH3, CH4) on the side

of the device. Ensure a secure connection.

3. **Connect AWG (Optional):** If using the arbitrary waveform generator, connect a BNC cable from the "GEN OUT" port to your circuit or test point.



Figure 2: Side view of the Hantek 6254BD. This image highlights the USBXI port, the 5V==1A USB power/data input, the GEN OUT BNC connector for the arbitrary waveform generator, and the four BNC input channels (CH1, CH2, CH3, CH4).

3.2 Software Installation

The Hantek 6254BD requires software to operate. Install the appropriate software for your operating system.

- **Windows:** Insert the provided software CD or download the latest drivers and application from the official Hantek website. Follow the on-screen instructions for installation. Supported versions include Windows 7, Windows 8, and Windows 10.
- **Android:** Utilize applications such as H-scope or Openscope.
- **Linux:** Use Openhantek software.
- **OSX:** Operation is possible through a virtual machine environment running a compatible Windows operating system.

Note: Ensure drivers are correctly installed for the device to be recognized by the software. Refer to the Hantek support resources for specific driver installation guides if issues arise.

4. Operating Instructions

The Hantek 6254BD software interface is designed to be similar to traditional benchtop oscilloscopes, facilitating ease of use.

4.1 Oscilloscope Functionality



Figure 3: The Hantek 6254BD connected to a desktop computer, displaying waveforms on the software interface. This illustrates the device in a typical operational setup.

- **Waveform Display:** After connecting the device and launching the software, waveforms from the connected probes will be displayed. Adjust vertical scale (Volts/Div) and horizontal scale (Time/Div) as needed.

- **Triggering:** Utilize the resourceful trigger functions to stabilize waveforms. Options typically include Edge, Pulse, Video, Slope, and Alternate triggers.
- **Measurements:** Access over 20 automatic measurement functions for parameters such as frequency, period, peak-to-peak voltage, RMS, and more.
- **Cursors:** Employ dynamic cursor tracking to manually measure voltage and time differences on the waveform.
- **Pass/Fail Test:** Configure masks to automatically check if waveforms meet specified criteria.
- **Waveform Record and Replay:** Capture and review transient events or long-duration signals.
- **FFT Spectrum Analyzer:** Analyze the frequency components of your signals.
- **Serial Bus Decoding:** Supports decoding of various serial bus protocols, displaying information in a table format.



Figure 4: The Hantek 6254BD connected to a tablet, showcasing the display of multiple waveforms across its four channels. This demonstrates the multi-channel capability and portability.

4.2 Arbitrary Waveform Generator (AWG)

The integrated AWG can generate various standard and custom waveforms.

- **Waveform Selection:** Choose from built-in standard waveforms (sine, square, triangle, etc.) or create custom arbitrary waveforms.
- **Parameter Adjustment:** Set frequency, amplitude, offset, and other parameters through the software interface.
- **Output:** The generated waveform is output through the "GEN OUT" BNC connector.

5. Specifications

Parameter	Value
Model	6254BD
Analog Channels	4
Bandwidth	250 MHz
Real-time Sampling Rate	1 GSa/s
Memory Depth	64K
Vertical Resolution	8 bits
Input Sensitivity	2mV-10V/DIV
Arbitrary Waveform Generator (AWG)	200MSa/s DDS, 12-bit vertical resolution
Interface	USB 2.0
Product Dimensions	6.89 x 0.98 x 4.13 inches
Product Weight	1.98 Pounds



Figure 5: Visual representation of key specifications for the Hantek 6254BD, including 250MHz analog bandwidth, 64K storage depth, and 1GSa/s real-time sampling rate.

6. Maintenance

Proper maintenance ensures the longevity and accuracy of your Hantek 6254BD oscilloscope.

- **Cleaning:** Use a soft, dry cloth to clean the exterior of the device. Avoid abrasive cleaners or solvents.
- **Storage:** Store the device in a cool, dry environment, away from direct sunlight and extreme temperatures.
- **Probe Care:** Handle oscilloscope probes carefully. Avoid bending or stressing the cables excessively.
- **Calibration:** It is recommended to perform a software calibration before critical measurements, especially after the device has warmed up for at least 20 minutes.

7. Troubleshooting

This section addresses common issues you might encounter with the Hantek 6254BD.

- **Device Not Recognized:**
  - Ensure the USB cable is securely connected to both the device and the computer.
  - Verify that the correct drivers are installed for your operating system. Reinstall drivers if necessary.
  - Try connecting to a different USB port or another computer to rule out port or computer-specific issues.
- **Software Freezes or Crashes:**
  - Ensure your operating system and software are up to date.
  - Close other demanding applications running on your computer.
  - Restart the software and the device.
- **Noisy or Unstable Waveforms:**
  - Ensure proper grounding of the oscilloscope and the circuit under test.
  - Check probe connections for looseness or damage.
  - Allow the device to warm up for at least 20 minutes before taking critical measurements.
  - Perform a software calibration.
- **Arbitrary Waveform Generator Output Issues:**
  - Verify the output frequency and amplitude settings in the software.
  - Ensure the BNC cable from "GEN OUT" is correctly connected.

If you encounter persistent issues not covered here, refer to the official Hantek support resources or community forums.

8. Support and Resources

Hantek provides resources for users and developers:

- **Software Updates:** Check the official Hantek website for the latest software and firmware updates.
- **Development Library:** A secondary development library (DLL) is available for custom application development.
- **Programming Examples:** Examples for Labview, VB, and VC are provided to assist with integration and custom programming.
- **Online Community:** User forums and communities may offer additional troubleshooting tips and shared knowledge.

For direct technical assistance, please contact Hantek customer support through their official channels.

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Example: How do I reset this device or fix this error?

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