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Hantek Hantek6074BC

Hantek 6074BC_N USB Digital Storage Oscilloscope User Manual

Model: Hantek6074BC

1. Introduction

This manual provides essential information for the safe and efficient operation of your Hantek 6074BC_N PC-based USB Digital Storage Oscilloscope. The Hantek 6074BC_N is a 4-channel device featuring a 1GSa/s real-time sampling rate and up to 250MHz bandwidth, designed for various measurement and analysis tasks. It connects to your computer via USB, utilizing its display and processing power.



Figure 1.1: Hantek 6074BC_N Oscilloscope in a typical setup, demonstrating its PC-based operation with a tablet displaying waveforms and probes connected to a circuit board. The device supports multiple operating systems including Windows 7/8/10.

2. Safety Information

Please read the following safety precautions carefully to avoid injury and prevent damage to this product or any products connected to it. This device is designed for use by trained personnel only.

- **Ground the Product:** Ensure the computer it is connected to is properly grounded.
- **Observe All Terminal Ratings:** To prevent fire or shock hazard, observe all ratings and markings on the product.
- **Do Not Operate Without Covers:** Do not operate the product with covers or panels removed.
- **Avoid Exposed Circuitry:** Do not touch exposed connections or components when power is present.
- **Do Not Operate in Wet/Damp Conditions:** Do not operate the product in wet or damp conditions.
- **Do Not Operate in Explosive Atmosphere:** Do not operate the product in an explosive atmosphere.
- **Keep Product Surfaces Clean and Dry:** Keep the measurement probes and device surfaces clean and dry.

- **Use Proper Probes:** Use only probes and accessories specified for use with this product.

3. Package Contents

Verify that your package contains the following items. If any items are missing or damaged, please contact your dealer.

- Hantek 6074BC_N Oscilloscope Unit
- USB Cable
- Oscilloscope Probes (typically 2 or 4, depending on model variant)
- Software CD (or download link for drivers and application)
- User Manual (this document, or quick start guide)



Figure 3.1: Example of oscilloscope probes included with the device. These probes connect to the BNC inputs on the oscilloscope and to the circuit under test.

4. Product Overview

4.1 Key Features

- 4 Independent Analog Channels
- 1GSa/s Real-time Sampling Rate
- 70MHz Bandwidth (up to 250MHz depending on model variant)
- 2mV-10V/DIV Input Sensitivity
- 64K Memory Depth
- USB2.0 Interface for PC Connectivity (Plug and Play)
- Pass/Fail Test Functionality
- Resourceful Trigger Functions
- Dynamic Cursor Tracking
- Waveform Record and Replay Function
- FFT Spectrum Analyzer Functionality
- Support for Windows 7/8/10 Operating Systems
- More than 20 kinds of automatic measurement functions.

4.2 Device Interfaces



Figure 4.1: Front and rear panel interfaces of the Hantek 6074BC_N. The front panel features four BNC input connectors for channels CH1 through CH4. The rear panel includes a 5V===1A USB port for PC connection and power, and a USBXI standard interface.

- **CH1, CH2, CH3, CH4 (Front Panel):**BNC connectors for connecting oscilloscope probes. These are the analog input channels.
- **USB (Rear Panel):** Standard USB Type-B port for connecting the oscilloscope to your PC. This port also provides power to the device.
- **USBXI (Rear Panel):** A standard interface for potential expansion or specific applications.



Figure 4.2: Physical dimensions of the Hantek 6074BC_N unit, showing its compact size for portability.

5. Setup

5.1 Software and Driver Installation

1. **Insert Software CD:** Insert the provided software CD into your computer's CD-ROM drive. If no CD is provided, download the latest drivers and application software from the official Hantek website.
2. **Run Installer:** Locate and run the setup executable (e.g., "setup.exe").
3. **Follow On-Screen Instructions:** Follow the prompts to install the necessary drivers and the Hantek oscilloscope application software. It is recommended to install drivers before connecting the device.
4. **Restart Computer:** After installation, restart your computer if prompted.

5.2 Hardware Connection

1. **Connect USB Cable:** Connect one end of the supplied USB cable to the USB port on the rear panel of the Hantek

6074BC_N and the other end to an available USB port on your computer. The device will power on automatically.

2. **Connect Probes:** Attach the BNC connector of the oscilloscope probes to the desired input channels (CH1, CH2, CH3, CH4) on the front panel of the device.
3. **Probe Compensation (Optional but Recommended):** Before making critical measurements, it is good practice to compensate your probes. Connect the probe tip to a known square wave source (often a calibration output on traditional oscilloscopes, or a stable signal generator). Adjust the probe compensation trimmer until the square wave appears flat-topped without overshoot or undershoot.

6. Operating Instructions

Once the software is installed and the hardware is connected, launch the Hantek oscilloscope application on your computer.

6.1 Basic Waveform Display

1. **Launch Software:** Double-click the Hantek oscilloscope application icon on your desktop or from the Start Menu.
2. **Connect Signal:** Connect the probe tip to the signal you wish to measure. Ensure the probe's ground clip is connected to the ground of the circuit under test.
3. **Adjust Vertical Scale (Volts/Div):** Use the software controls to adjust the vertical sensitivity (Volts/Division) for each active channel until the waveform fits appropriately on the screen.
4. **Adjust Horizontal Scale (Time/Div):** Use the software controls to adjust the horizontal time base (Time/Division) to view the desired number of cycles of the waveform.
5. **Position Waveform:** Use the vertical and horizontal position controls to move the waveform for better viewing.

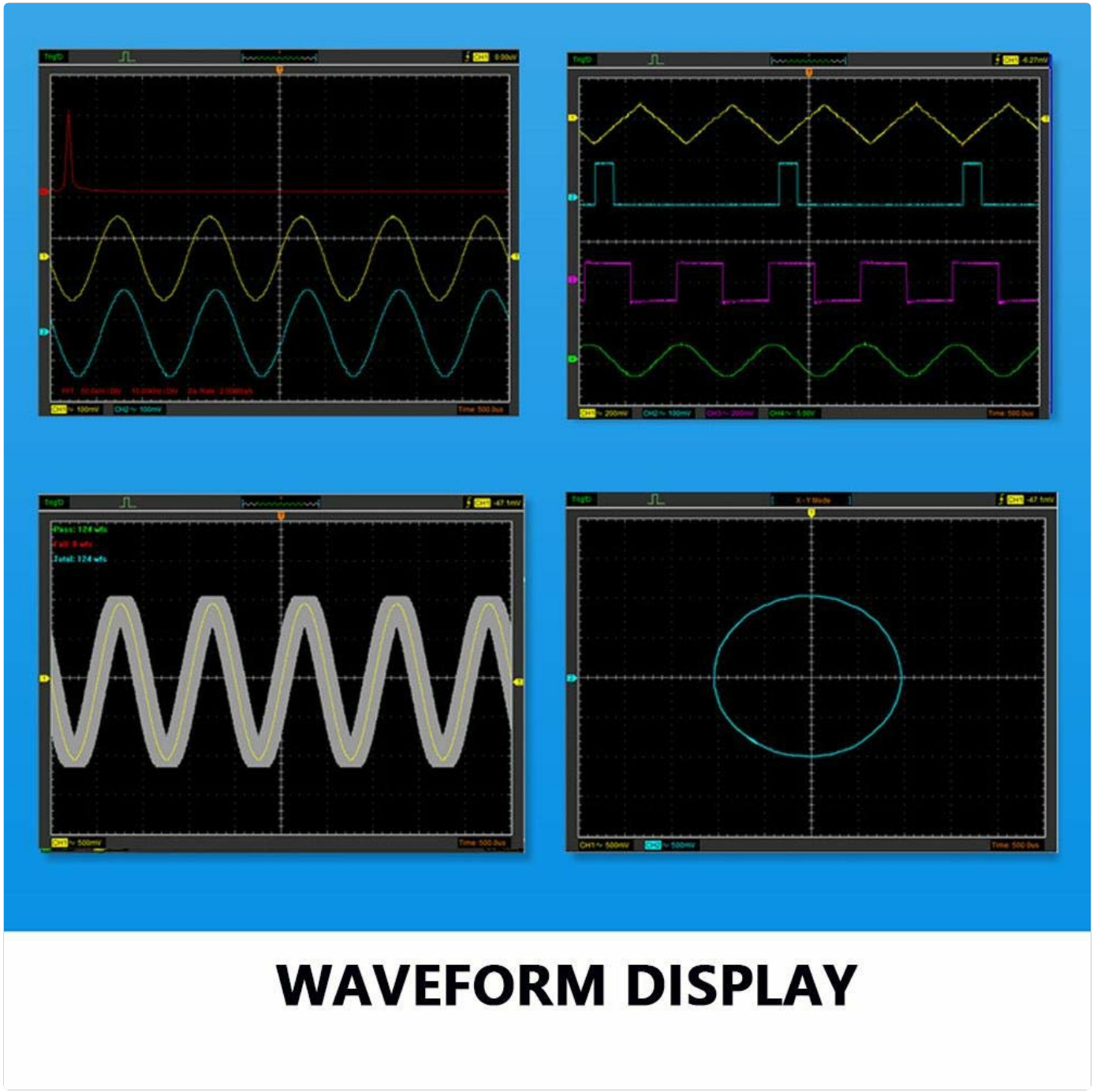


Figure 6.1: Examples of various waveform displays possible with the Hantek 6074BC_N, illustrating its versatility in signal visualization.

6.2 Triggering

Triggering stabilizes repetitive waveforms. The Hantek software provides various trigger modes:

- **Trigger Mode:** Select Auto, Normal, or Single. Auto mode triggers even without a stable signal. Normal mode triggers only when the signal meets the trigger conditions. Single mode captures one event and then stops.
- **Trigger Source:** Select the channel (CH1-CH4) or external source that will be used for triggering.
- **Trigger Type:** Edge, Pulse, Video, Slope, etc. (specific types depend on software version). Edge triggering is most common.
- **Trigger Level:** Adjust the trigger level to a voltage point on the waveform where you want the trigger to occur.
- **Trigger Slope:** Select rising edge or falling edge for edge triggering.

6.3 Measurements

The software offers automatic measurements and cursor measurements.

- **Automatic Measurements:** Access the "Measure" menu to select parameters like Vpp (peak-to-peak voltage), Vmax, Vmin, Frequency, Period, Rise Time, Fall Time, etc. The results will be displayed on the screen.
- **Cursor Measurements:** Activate horizontal (time) and vertical (voltage) cursors. Drag them to specific points on the waveform to measure time differences (ΔT) and voltage differences (ΔV).

6.4 FFT Spectrum Analyzer

The Fast Fourier Transform (FFT) function allows you to view the frequency components of your signal.

- **Activate FFT:** Select the FFT function from the software menu.
- **Select Source:** Choose the input channel (CH1-CH4) whose frequency spectrum you want to analyze.
- **Adjust Settings:** Configure FFT settings such as window type (e.g., Hanning, Rectangular), display format (dBV, Vrms), and frequency range.

6.5 Waveform Record and Replay

This feature allows you to capture and store waveforms for later analysis.

- **Record:** Use the record function to capture a sequence of waveforms over time.
- **Replay:** Play back recorded waveforms to analyze transient events or compare signals.

7. Maintenance

- **Cleaning:** Clean the exterior of the device with a soft, damp cloth. Do not use abrasive cleaners or solvents. Ensure the device is powered off and disconnected from the PC before cleaning.
- **Storage:** When not in use, store the oscilloscope and its accessories in a clean, dry environment, away from direct sunlight and extreme temperatures.
- **Probe Care:** Handle probes carefully. Avoid bending cables sharply. Store probes neatly to prevent damage.
- **Software Updates:** Periodically check the Hantek official website for software and firmware updates to ensure optimal performance and access to new features.

8. Troubleshooting

Problem	Possible Cause	Solution
Device not recognized by PC.	Drivers not installed or corrupted. USB cable faulty. USB port issue.	Reinstall drivers. Try a different USB cable. Try a different USB port on the PC. Check Device Manager for unknown devices.
No waveform displayed.	No signal input. Probe not connected correctly. Vertical/horizontal scale incorrect. Trigger not set properly.	Ensure signal is present at probe tip. Check probe connection to device and circuit. Adjust Volts/Div and Time/Div. Adjust trigger level and mode (try Auto trigger).
Waveform is unstable or rolling.	Trigger settings are incorrect.	Adjust trigger level, source, and slope. Ensure trigger mode is set to Normal or Auto for repetitive signals.
Software crashes or freezes.	Software bug. Incompatible system. Outdated drivers.	Update software and drivers to the latest version. Ensure your PC meets minimum system requirements. Try reinstalling the software.

9. Specifications

Brand	Hantek
Model Number	Hantek6074BC
Channels	4
Bandwidth	70MHz (up to 250MHz depending on variant)
Real-time Sampling Rate	1GSa/s
Memory Depth	64K
Input Sensitivity	2mV-10V/DIV
Interface	USB 2.0
Operating System Support	Windows 7/8/10
Item Weight	1 kg
Package Dimensions	23.6 x 17.2 x 7.6 cm

10. Warranty and Support

For warranty information, technical support, or service inquiries, please refer to the warranty card included with your product or visit the official Hantek website. You may also contact your local distributor or reseller for assistance.
Hantek Official Website: www.hantek.com

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