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› Hantek DSO5102P Digital Storage Oscilloscope User Manual

## Hantek DSO5102P

# Hantek DSO5102P Digital Storage Oscilloscope

User Manual

## 1. OVERVIEW

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The Hantek DSO5102P is a high-performance digital storage oscilloscope designed for various electronic measurement applications. It features two channels, a 100MHz bandwidth, and a 1GSa/s real-time sampling rate, making it suitable for hobbyists, educational institutions, and small repair shops.

Key capabilities include waveform storage, USB connectivity for data transfer and system upgrades, and a large color TFT LCD for clear waveform display.

## 2. PACKAGE CONTENTS

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Upon unpacking, verify that all items listed below are present and in good condition. If any items are missing or damaged, contact your supplier immediately.



- 1.Oscilloscope\*1
- 2.Probe\*2
- 3.USB Cable\*1
- 4.CD Disc\*1
- 5.EU Power Cable\*1



Image: The Hantek DSO5102P oscilloscope shown with its complete set of accessories, including probes, USB cable, power cable, and a CD.

- Hantek DSO5102P Digital Storage Oscilloscope Unit (x1)
- Oscilloscope Probes (x2)
- USB Cable (x1)
- Power Cord (x1) - *Note: Power cord type may vary by region. An adapter or replacement may be required for some regions.*
- CD-ROM with Software and Documentation (x1)
- Certification/Warranty Card (x1)

### 3. PRODUCT FEATURES

- **Bandwidth:** 100MHz
- **Channels:** 2 Analog Channels

- **Real-time Sample Rate:** 1GSa/s
- **Record Length:** 40K points
- **Display:** Large 7-inch 64K color TFT LCD with 800x480 resolution
- **Connectivity:** USB Host for U-disk storage, USB Device for PC communication and remote control
- **Measurement Functions:** Supports 32 types of automatic waveform measurements.
- **Trigger Modes:** Edge, Pulse, Video, Slope, Alternate.
- **Storage:** Capable of storing over 1000 waveform information sets.
- **Additional Features:** Data hold, relative mode, system upgrade via USB.

## 4. CONTROLS AND INDICATORS

Familiarize yourself with the front panel controls and indicators for efficient operation.

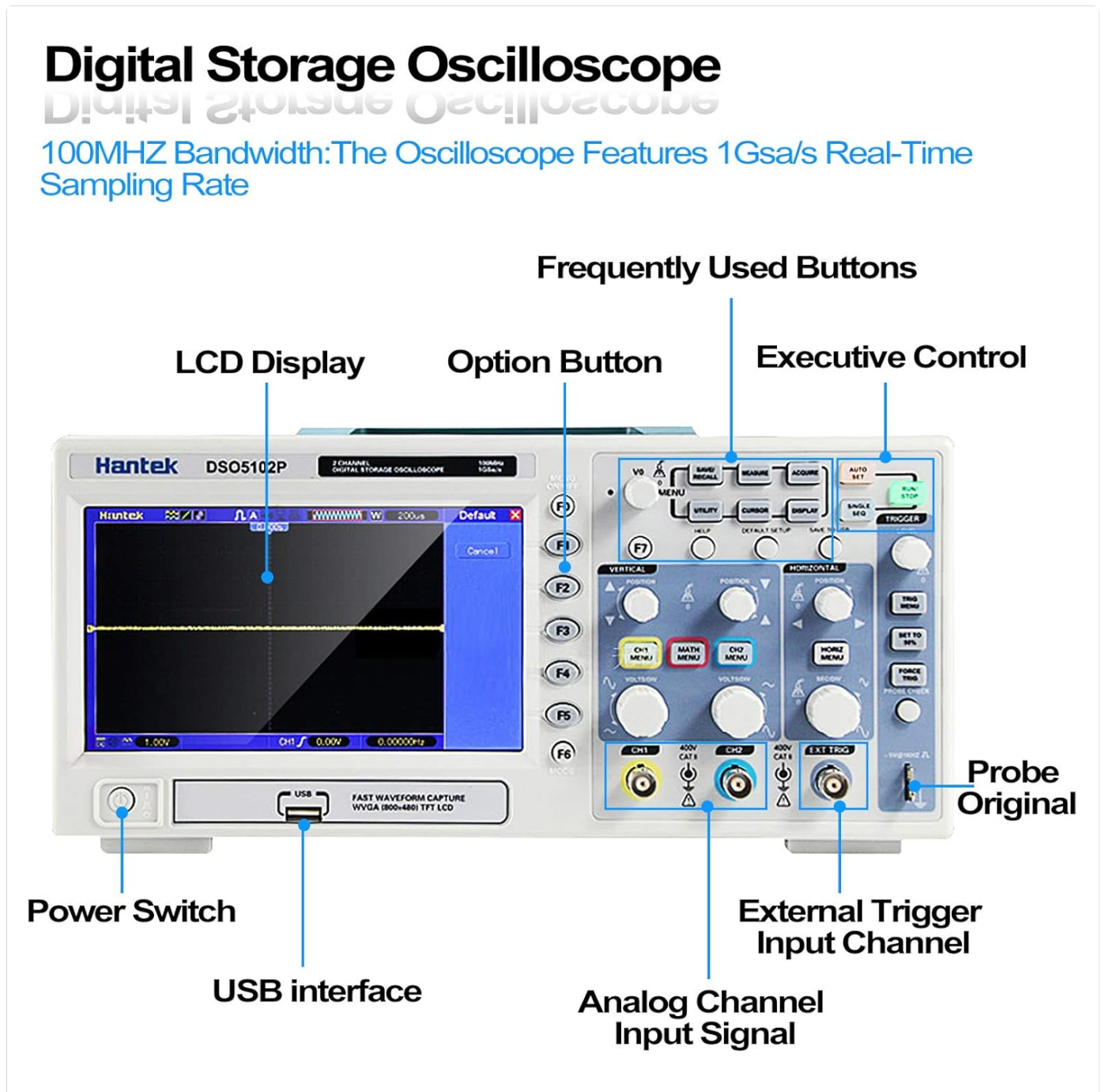


Image: Detailed view of the Hantek DSO5102P front panel, highlighting key components such as the LCD Display, Power Switch, USB Interface, Analog Channel Input Signal, External Trigger Input Channel, Probe Original, Frequently Used Buttons, Option Buttons, and

- **LCD Display:** 7-inch color screen for waveform display and menu navigation.
- **Power Switch:** Located on the front lower left, used to turn the device on/off.
- **USB Interface:** For connecting USB storage devices (U-disk) and PC communication.
- **Analog Channel Input (CH1, CH2):** BNC connectors for connecting oscilloscope probes.
- **External Trigger Input (EXT TRIG):** BNC connector for external trigger signals.
- **Probe Original (Compensation Output):** Used for probe compensation adjustment.
- **Frequently Used Buttons:** Includes buttons for Menu, Utility, Cursor, Display, Acquire, Measure, Auto Set, Run/Stop, Single, and Trigger.
- **Option Buttons (F1-F6):** Context-sensitive function buttons corresponding to on-screen menus.
- **Executive Controls:** Knobs and buttons for Vertical (position, volts/div), Horizontal (position, sec/div), and Trigger level adjustments.

## 5. SETUP

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1. **Unpacking and Inspection:** Carefully remove the oscilloscope and all accessories from the packaging. Inspect for any signs of physical damage.
2. **Power Connection:** Connect the provided power cord to the oscilloscope's power input on the rear panel and then to a suitable AC power outlet. Ensure the voltage matches the device's requirements.
3. **Initial Power On:** Press the Power Switch on the front panel. The device will perform a self-test and display the main interface.
4. **Probe Connection:** Connect the oscilloscope probes to the CH1 and/or CH2 BNC input connectors. Ensure a secure connection by twisting the probe connector clockwise until it locks.
5. **Probe Compensation:**

Before taking measurements, it is crucial to compensate the probes to ensure accurate readings. This adjusts the probe's capacitance to match the oscilloscope's input impedance.

- Connect the probe tip to the Probe Original (compensation output) terminal on the front panel.
- Connect the probe ground clip to the ground terminal next to the compensation output.
- Press the **AUTO SET** button. The oscilloscope will display a square wave.
- Adjust the compensation screw on the probe body (usually a small plastic screw) using a non-metallic tool until the square wave displayed on the screen has flat tops and bottoms with sharp corners, indicating proper compensation.



Image: The Hantek DSO5102P oscilloscope with a single probe connected to the probe compensation output, ready for adjustment.

6. **Software Installation (Optional):** If you plan to connect the oscilloscope to a PC for remote control or data analysis, install the software from the provided CD-ROM or download the latest version from the Hantek website. Follow the on-screen instructions for installation.

## 6. OPERATING INSTRUCTIONS

This section provides basic instructions for common oscilloscope operations.

### 6.1 Basic Waveform Measurement

1. **Connect Probe to Circuit:** Connect the compensated probe to the circuit point you wish to measure. Ensure the probe's ground clip is connected to the circuit's ground reference.
2. **Auto Set:** Press the **AUTO SET** button. The oscilloscope will automatically adjust the vertical, horizontal, and trigger settings to display a stable waveform.
3. **Adjust Vertical Scale (Volts/Div):** Use the **VERTICAL POSITION** knob and **VOLTS/DIV** knob for the respective channel (CH1 or CH2) to adjust the vertical position and amplitude scale of the waveform.

4. **Adjust Horizontal Scale (Sec/Div):** Use the **HORIZONTAL POSITION** knob and **SEC/DIV** knob to adjust the horizontal position and time base of the waveform.
5. **Adjust Trigger Level:** Use the **TRIGGER LEVEL** knob to set the trigger point on the waveform. This stabilizes the display of repetitive signals.

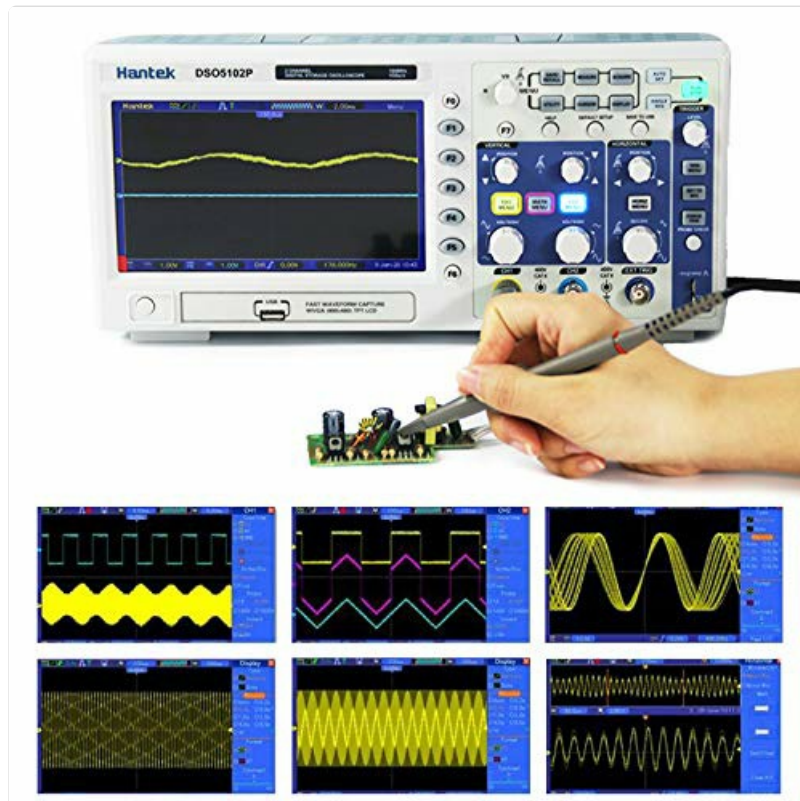


Image: The Hantek DSO5102P oscilloscope in operation, showing a hand holding a probe on a circuit board, alongside examples of different waveforms (sine, square, sawtooth, triangular, complex modulated signals) displayed on the screen.

## 6.2 Automatic Measurements

The DSO5102P supports 32 types of automatic measurements. To access these:

1. Press the **MEASURE** button.
2. Use the option buttons (F1-F6) and executive controls to select the desired measurement parameters (e.g., Vpp, Vmax, Freq, Period, Rise Time).
3. The selected measurements will be displayed on the screen.

## 6.3 Saving Waveforms and Settings

The oscilloscope allows saving waveforms and instrument settings to internal memory or a USB flash drive.

- **To Save:** Press the **SAVE/RECALL** button. Select the save type (Waveform, Setup, or Bitmap) and destination (internal or U-disk).
- **To Recall:** Press the **SAVE/RECALL** button. Select the recall type and source.

## 7. MAINTENANCE

- **Cleaning:**

Regularly clean the exterior of the oscilloscope with a soft, damp cloth. Do not use abrasive cleaners or solvents that could damage the casing or screen. Ensure the device is powered off and unplugged before cleaning.

- **Ventilation:**

Ensure the ventilation openings on the rear and sides of the oscilloscope are clear of obstructions to allow for proper

airflow and heat dissipation. Adequate ventilation is crucial for long-term stable operation.



Image: Rear view of the Hantek DSO5102P oscilloscope, illustrating the ventilation grilles designed for fast heat dissipation, ensuring safe operation over extended periods.

- **Storage:**

When not in use, store the oscilloscope in a dry, dust-free environment, away from direct sunlight and extreme temperatures. Use the original packaging or a suitable carrying case for protection during transport.

- **Firmware Updates:**

Periodically check the Hantek official website for firmware updates. Updates can improve performance, add features, or fix bugs. Follow the instructions provided with the firmware update package carefully.

## 8. TROUBLESHOOTING

Problem	Possible Cause	Solution
No display after power on.	Power cord not connected, power switch off, or power supply issue.	Check power cord connection. Ensure power switch is ON. Verify power outlet is functional.
Waveform is unstable or distorted.	Incorrect probe compensation, improper trigger settings, or probe connection issues.	Perform probe compensation. Adjust trigger level and mode. Ensure probe is securely connected to the circuit and oscilloscope.
No waveform displayed.	Input signal too small, vertical scale too high, or channel turned off.	Adjust Volts/Div to a more sensitive range. Ensure the channel is enabled. Check signal source.
USB storage not recognized.	Incompatible USB format, faulty USB drive, or connection issue.	Ensure USB drive is formatted to FAT32. Try a different USB drive. Reconnect the USB drive.
PC software connection issues.	Driver not installed, incorrect COM port, or firewall blocking.	Install the correct USB driver. Verify COM port settings in software. Temporarily disable firewall for testing.

## 9. SPECIFICATIONS

Parameter	Value
Model	DSO5102P
Bandwidth	100 MHz

Parameter	Value
Channels	2
Real-time Sample Rate	1 GSa/s
Record Length	40K points
Display	7-inch 64K Color TFT LCD (800x480 resolution)
Interface	USB Host, USB Device
Input Impedance	1 MΩ ± 2%, in parallel with 10 pF ± 5 pF
Max Input Voltage	400V (DC+AC Peak) CAT I, CAT II
Dimensions (L x W x H)	313mm x 142mm x 108mm (approx. 12.3 x 5.6 x 4.3 inches)
Weight	Approx. 2.08 kg (4.59 lbs)



Image: The Hantek DSO5102P oscilloscope with its physical dimensions (length, width, height) clearly marked.

## 10. WARRANTY AND SUPPORT

Hantek products typically come with a standard manufacturer's warranty. Please refer to the warranty card included in your package for specific terms and conditions, including warranty period and coverage details.

For technical support, product inquiries, or warranty claims, please contact Hantek customer service through their official website or the contact information provided in your product documentation. Keep your purchase receipt and serial number handy when contacting support.

Official Hantek Website: [www.hantek.com](http://www.hantek.com)

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This manual is for informational purposes only. Specifications are subject to change without notice.