Hantek DSO2C10

Hantek DSO2C10 Digital Storage Oscilloscope User Manual

Model: DSO2C10

1. Introduction

This manual provides essential information for the safe and effective operation of your Hantek DSO2C10 Digital Storage Oscilloscope. The DSO2C10 is a dual-channel oscilloscope featuring a 100MHz bandwidth and a 1GS/s real-time sample rate, designed for accurate waveform analysis in various applications. Please read this manual thoroughly before using the instrument to ensure proper functionality and to prevent damage.

2. Safety Information

Observe the following safety precautions to prevent injury and avoid damage to the instrument or any connected products.

- **Power Source:** Connect the instrument to a power source that matches the voltage and frequency specifications indicated on the rear panel.
- **Grounding:** Ensure the instrument is properly grounded to prevent electric shock. Do not defeat the grounding conductor.
- **Probe Safety:** Use only probes supplied or recommended by Hantek. Ensure probes are rated for the voltage being measured.
- **Environmental Conditions:** Operate the oscilloscope in a dry environment, away from moisture, dust, and extreme temperatures.
- **Ventilation:** Do not block ventilation openings. Adequate airflow is necessary to prevent overheating.
- **Servicing:** Refer all servicing to qualified service personnel. Do not attempt to open the instrument casing unless explicitly instructed.

3. Package Contents

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



Image 3.1: Hantek DSO2C10 Digital Storage Oscilloscope with all standard accessories.

- Hantek DSO2C10 Digital Storage Oscilloscope Unit
- Two Oscilloscope Probes (1X/10X switchable)
- Power Cord
- USB Cable
- User Manual (this document)
- Additional accessories may include test leads, clips, and other specialized connectors depending on the specific kit.



Image 3.2: A closer look at the various accessories included with the Hantek DSO2C10, such as probes, test leads, and power cables.

4. Product Overview

4.1 Front Panel

The front panel houses the display, control buttons, and input connectors for channels 1 and 2, along with the external trigger input.



Image 4.1: Front view of the Hantek DSO2C10, showing the screen, control knobs, and input ports.

- **Display Screen:** Shows waveforms, measurement data, and menu options.
- **Vertical Controls:** Adjust voltage scale (VOLTS/DIV) and position for each channel.
- **Horizontal Controls:** Adjust time scale (SEC/DIV) and horizontal position.
- **Trigger Controls:** Set trigger level, mode, and type to stabilize waveforms.
- **Function Buttons (F1-F6):** Context-sensitive buttons for menu navigation and quick settings.
- **CH1/CH2 Inputs:** BNC connectors for connecting oscilloscope probes.
- **EXT TRIG/GEN OUT:** External trigger input or function generator output (if applicable to model).

4.2 Rear Panel

The rear panel includes the power input, USB port for data transfer, and ventilation openings.



Image 4.2: Rear view of the Hantek DSO2C10, showing the power input, USB port, and ventilation.

- **Power Input:** Connector for the AC power cord.
- **USB Host Port:** For connecting USB storage devices (e.g., flash drives) to save data.
- **USB Device Port:** For connecting the oscilloscope to a computer for remote control or data transfer.
- **Ventilation Openings:** Ensure these are not obstructed to allow for proper cooling.

5. Setup

5.1 Power Connection

1. Connect the provided power cord to the power input on the rear panel of the oscilloscope.
2. Plug the other end of the power cord into a grounded AC power outlet.
3. Press the power button on the front panel to turn on the instrument.

5.2 Probe Connection and Compensation

Proper probe compensation is crucial for accurate measurements.

1. Connect an oscilloscope probe to the CH1 input BNC connector.
2. Attach the probe tip to the oscilloscope's probe compensation output (usually a square wave test point on the front panel).
3. Connect the probe's ground clip to the oscilloscope's ground terminal.
4. Set the probe attenuation switch (on the probe itself) to 10X.
5. Adjust the oscilloscope's vertical (VOLTS/DIV) and horizontal (SEC/DIV) controls to display a stable square wave.
6. Using a small screwdriver, adjust the compensation trimmer on the probe until the square wave corners are sharp and flat, without overshoot or undershoot.
7. Repeat for CH2 if using a second probe.

6. Operating Instructions

This section outlines basic operational procedures for the Hantek DSO2C10.

6.1 Basic Waveform Display

1. Ensure the oscilloscope is powered on and probes are compensated.
2. Connect the probe to the circuit point you wish to measure.
3. Adjust the **VOLTS/DIV** knob for the active channel to set the vertical scale.
4. Adjust the **SEC/DIV** knob to set the horizontal time scale.
5. Adjust the **TRIGGER LEVEL** knob to stabilize the waveform on the screen.
6. Use the **AUTOSET** button for an automatic optimal display of the input signal.



Image 6.1: The oscilloscope screen showing a single channel waveform, demonstrating basic signal acquisition.

6.2 Dual Channel Operation

The DSO2C10 supports simultaneous display and measurement of two signals.

1. Connect probes to both CH1 and CH2 inputs.
2. Ensure both channels are enabled (usually via dedicated buttons or menu options).
3. Adjust **VOLTS/DIV** and vertical position independently for each channel.
4. The **SEC/DIV** control applies to both channels simultaneously.
5. Use the trigger controls to stabilize the desired waveform, often triggering on one channel to observe the relationship with the other.



Image 6.2: The oscilloscope displaying two distinct waveforms on CH1 and CH2, illustrating dual-channel measurement capability.

6.3 Automatic Measurements

The DSO2C10 offers a range of automatic measurements to quickly analyze waveform parameters.

- Press the **MEASURE** button to access the automatic measurement menu.
- Use the function buttons (F1-F6) or navigation controls to select desired measurements (e.g., Frequency, Period, Vpp, Vrms, Rise Time, Fall Time).
- The selected measurements will be displayed on the screen, providing real-time data.

6.4 Saving Data

Waveforms and screen captures can be saved to a USB flash drive.

1. Insert a FAT32 formatted USB flash drive into the USB Host port on the rear panel.
2. Press the **SAVE/RECALL** button.
3. Select the desired save type (e.g., Waveform, Setup, Image) using the menu options.
4. Confirm the save operation.

7. Maintenance

7.1 Cleaning

To maintain the instrument's appearance and performance:

- Disconnect the power cord before cleaning.
- Use a soft cloth dampened with mild detergent and water to clean the exterior.
- Do not use abrasive cleaners or solvents.
- Ensure no liquid enters the instrument.

7.2 Firmware Updates

Hantek may release firmware updates to improve performance or add features. Check the official Hantek website for the latest firmware for your DSO2C10 model. Firmware updates typically involve downloading a file to a USB drive and following on-screen instructions on the oscilloscope.

8. Troubleshooting

This section provides solutions to common issues you might encounter.

Problem	Possible Cause	Solution
No display after power on	Power cord not connected; Power button not pressed; Internal fault.	Check power cord connection; Press power button firmly; Contact support if issue persists.
No waveform displayed	Probe not connected; Signal too small/large; Incorrect vertical/horizontal settings; Trigger not set correctly.	Ensure probe is connected to input and circuit; Adjust VOLTS/DIV and SEC/DIV; Adjust trigger level or use AUTOSET.
Waveform is unstable or rolling	Trigger level incorrect; Trigger mode unsuitable; No signal.	Adjust trigger level; Change trigger mode (e.g., Edge, Video); Verify signal presence.
Inaccurate measurements	Probe not compensated; Incorrect probe attenuation setting; Environmental interference.	Perform probe compensation (Section 5.2); Ensure probe attenuation matches oscilloscope setting; Minimize external interference.

9. Specifications

Key technical specifications for the Hantek DSO2C10 Digital Storage Oscilloscope.

- **Model:** DSO2C10
- **Bandwidth:** 100 MHz
- **Channels:** 2 Analog Channels
- **Real-time Sample Rate:** 1 GSa/s
- **Memory Depth:** 8M points
- **Probe Attenuation Factor:** 1X, 10X, 100X, 1000X
- **Automatic Measurements:** Frequency, Period, Mean, Peak-to-Peak, RMS, Minimum, Maximum, Rising Time, Falling Time, +Width, -Width, Base, Top, Middle, Amplitude, Overshoot, Preshoot, Rising Edge Phase Difference, Falling Edge Phase Difference, +Duty, -Duty, Period Mean, PRMS, FOVshoot, ROVshoot, BWIDTH, FRF, FFR, LRR, LRF, LFR, LFF.
- **AWG Function:** Not included in DSO2C10 model.

- **Product Dimensions:** Approximately 12.5 x 5.5 x 5.9 inches
- **Product Weight:** Approximately 6.39 Pounds
- **Manufacturer:** Qingdao Hantek Electronic Co., Ltd.

10. Warranty and Support

For warranty information and technical support, please refer to the documentation provided with your purchase or visit the official Hantek website. Keep your purchase receipt as proof of purchase for warranty claims.

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