

## 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. Please read this manual thoroughly before using the device and keep it for future reference. The Hantek DSO2C10 is a 2-channel, 100MHz bandwidth digital storage oscilloscope designed for various electrical testing and measurement applications.

## 2. SAFETY INFORMATION

Always observe the following safety precautions to prevent injury and avoid damage to the instrument or any connected devices.

- Do not open the instrument casing. Hazardous voltage is present inside. Servicing should only be performed by qualified personnel.
- Ensure the power supply voltage matches the instrument's requirements.
- Use only the power cord and accessories supplied or specified by Hantek.
- Do not operate the instrument in wet or damp conditions.
- Avoid operating in explosive atmospheres.
- Connect the ground terminal of the probe to earth ground before connecting the probe to the circuit under test.
- Disconnect power to the circuit under test before making or breaking connections.
- Maximum input voltage: 300VRMS (10X probe attenuation). Exceeding this limit can damage the device.

## 3. PACKAGE CONTENTS

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

- 1 x Hantek DSO2C10 Digital Storage Oscilloscope

- 1 x USB Data Cable
- 1 x Test Probe (Clip Line)
- 1 x Power Cable



Figure 3.1: Hantek DSO2C10 Oscilloscope with its standard accessories, including the USB cable, test probe, and power cable.

## 4. PRODUCT OVERVIEW

### 4.1 Front Panel

The front panel features the LCD display, control buttons, input channels, and various function keys for operating the oscilloscope.

# Digital Storage Oscilloscope

150MHz Bandwidth: The Oscilloscope Features 1Gsa/s Real-Time Sampling Rate



**Figure 4.1:** Detailed view of the Hantek DSO2C10 front panel, highlighting the LCD Display, Option Buttons (F1-F6), Executive Controls (e.g., MENU, UTILITY, CURSOR, DISPLAY, SAVE TO USB, DECODE, TRIGGER LEVEL), Vertical and Horizontal controls, Analog Channel Input Signals (CH1, CH2), External Trigger Input Channel, USB Interface, and Power Switch.

## 4.2 Rear Panel

The rear panel includes the power input and ventilation.



**Figure 4.2:** Rear view of the Hantek DSO2C10, displaying the AC power inlet, USB ports, and ventilation grilles. A warning label regarding hazardous voltage is also visible.

### 4.3 Side Panel

The side panel provides additional ventilation and structural support.

## 32 automatic measurements



Figure 4.3: Side view of the Hantek DSO2C10, showing the robust casing and ventilation slots designed for heat dissipation.

## 5. SETUP

- Power Connection:** Connect the provided power cable to the AC power inlet on the rear panel of the oscilloscope and then to a suitable power outlet.
- Power On:** Press the power switch located on the front panel to turn on the oscilloscope.
- Probe Connection:** Connect the test probe to one of the analog input channels (CH1 or CH2) on the front panel. Ensure the probe's ground clip is securely connected to the ground of the circuit under test.
- Probe Compensation:** Before taking measurements, compensate the probe to ensure accurate readings. Connect the probe to the probe compensation output (usually a square wave signal) and adjust the probe's compensation trimmer until a flat-top square wave is displayed on the screen.

## 6. OPERATING INSTRUCTIONS

### 6.1 Basic Operation

- **Channel Selection:** Use the CH1/CH2 buttons to enable or disable channels and access their settings.
- **Vertical Scale (VOLTS/DIV):** Adjust the vertical scale using the dedicated knob for each channel to control the voltage per division displayed on the screen.
- **Vertical Position:** Use the vertical position knob to move the waveform up or down on the screen.
- **Horizontal Scale (SEC/DIV):** Adjust the horizontal scale knob to control the time per division, affecting the time base of the waveform.
- **Horizontal Position:** Use the horizontal position knob to move the waveform left or right on the screen.
- **Trigger Level:** Adjust the trigger level knob to stabilize the waveform display. The trigger point determines where the waveform capture begins.
- **Auto Set:** Press the 'AUTO SET' button for automatic adjustment of vertical, horizontal, and trigger settings to display a stable waveform.

## 6.2 Measurement Functions

The DSO2C10 offers a variety of measurement and analysis capabilities:

- **Automatic Measurements:** The device supports 32 types of automatic measurements, including maximum, minimum, peak-to-peak, frequency, period, rise time, fall time, and more. Access these via the 'MEASURE' menu.
- **Cursor Measurements:** Use horizontal and vertical cursors to manually measure voltage and time differences on the waveform.
- **Digital Voltmeter (DVM):** Features a 5-bit digital voltmeter and a 6-bit hardware frequency indicator for precise readings.
- **Protocol Decoding:** Supports decoding and analysis for RS232/UART, I2C, SPI, CAN, and LIN protocols.
- **FFT Function:** Perform Fast Fourier Transform (FFT) to analyze the frequency components of a signal.

## 6.3 Data Storage and Connectivity

- **Save Data:** The oscilloscope can save data in multiple formats, including settings, waveform data, reference waveforms, CSV files, and images. Use the 'SAVE TO USB' button for quick storage to a USB drive.
- **USB Interface:** Connect to a computer via the USB host/device interface for data transfer and remote control using SCPI commands.

## 7. MAINTENANCE

- **Cleaning:** Clean the instrument's exterior with a soft, damp cloth. Do not use abrasive cleaners or solvents. Ensure the device is powered off and unplugged before cleaning.
- **Ventilation:** Keep the ventilation openings clear of dust and obstructions to ensure proper airflow and prevent overheating.
- **Storage:** When not in use, store the oscilloscope in a dry, dust-free environment away from direct sunlight and extreme temperatures.
- **Calibration:** Periodic calibration by qualified service personnel is recommended to maintain measurement accuracy.

## 8. TROUBLESHOOTING

This section provides solutions to common issues. For problems not listed here, please contact Hantek customer support.

- **No Power:** Ensure the power cable is securely connected to both the oscilloscope and the power outlet. Verify

the power outlet is functional. Check the power switch position.

- **No Waveform Display:** Check if the input channel is enabled. Verify the probe is correctly connected and compensated. Adjust the vertical (VOLTS/DIV) and horizontal (SEC/DIV) scales. Use the 'AUTO SET' function. Ensure the trigger level is set appropriately.
- **Unstable Waveform:** Adjust the trigger level and trigger source. Check the trigger mode (e.g., Edge, Pulse). Ensure the input signal is within the oscilloscope's measurement range.
- **Incorrect Measurements:** Verify probe attenuation settings match the physical probe (1X, 10X, etc.). Perform probe compensation. Ensure the input coupling (AC/DC/GND) is appropriate for the signal being measured.

## 9. SPECIFICATIONS

The following table details the technical specifications of the Hantek DSO2C10 Digital Storage Oscilloscope.

Feature	Specification
Model	DSO2C10
Channels	2CH
Bandwidth	100 MHz
Sample Rate	1 GSa/s (single channel), 500 MSa/s (two channels)
Memory Depth	8M
Vertical Range	2mV/div ~ 10V/div
Vertical Resolution	8 bits (up to 12 bits high resolution)
Input Coupling	DC, AC, GND
Input Impedance	1M $\Omega$ $\pm$ 2%    20pF $\pm$ 3pF
Probe Attenuation Factor	1 $\times$ , 10X, 100X, 1000X
Maximum Input Voltage	300VRMS (10X)
Voltage Class	300V CAT II
Trigger Types	Edge, Pulse Width, Video, Slope, Overtime, Window, Pattern, Interval, Delay, UART, LIN, CAN, SPI, IIC
Protocol Decoding	RS232/UART, I2C, SPI, CAN, LIN
Automatic Measurements	32 types with statistics (Max, Min, Std Dev, etc.)
Digital Voltmeter	5-bit DVM, 6-bit hardware frequency indicator
Data Storage Formats	Settings, Waveform, Reference Waveform, CSV, Image
External Interfaces	USB Host/Device
Remote Control	SCPI commands

Feature	Specification
Display Type	7" TFT LCD display diagonally
Dimensions	318 x 140 x 150 mm (approximate)
Weight	2.61 kg (approximate)

## 9.1 Model Comparison

For reference, here is a comparison of the DSO2C10 with other Hantek models:

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Model	DSO2C10	DSO2C15	DSO2D10	DSO2D15
Channels	2CH	2CH	2CH+1CH	2CH+1CH
Bandwidth	100MHZ	150MHZ	100MHZ	150MHZ
Sample Rate	1GSa/S	1GSa/S	1GSa/S	1GSa/S
Storage depth	8M	8M	8M	8M
Built-in signal source	N/A	N/A	1CH	1CH
Rise Time at BNC ( typical)	3.5NS	2.3NS	3.5NS	2.3NS
Display type	7" TFT LCD display diagonally	7" TFT LCD display diagonally	7" TFT LCD display diagonally	7" TFT LCD display diagonally
Oscilloscope size	318*140*150mm	318*140*150mm	318*140*150mm	318*140*150mm

**Figure 9.1:** Comparison of key specifications across different Hantek oscilloscope models, including channels, bandwidth, sample rate, storage depth, built-in signal source, rise time, display type, and oscilloscope size.

## 10. WARRANTY AND SUPPORT

Hantek products are designed for reliability and performance. For warranty information, please refer to the documentation provided with your purchase or contact your local Hantek distributor. For technical support,



troubleshooting assistance, or service inquiries, please visit the official Hantek website or contact their customer service department.

