Hantek DSO5072P, DSO5102P, DSO5202P

Hantek DSO5000P Series Digital Storage Oscilloscope User Manual

Models: DSO5072P, DSO5102P, DSO5202P

1. Introduction

The Hantek DSO5000P series digital storage oscilloscopes (DSO) are versatile and high-performance instruments designed for various electronic measurement tasks. This series includes models DSO5072P, DSO5102P, and DSO5202P, offering bandwidths of 70MHz, 100MHz, and 200MHz respectively, with a 1GSa/s real-time sample rate. These oscilloscopes feature a large 7.0-inch color display (WVGA 800x480) and a record length of up to 40K, making them suitable for detailed signal analysis in educational, industrial, and research environments.
This manual provides essential information for the safe and efficient operation, setup, and maintenance of your Hantek DSO5000P series oscilloscope.

2. Key Features

- Bandwidths: 70MHz (DSO5072P), 100MHz (DSO5102P), 200MHz (DSO5202P)
- 1GSa/s Real-Time Sample Rate
- Large 7.0-inch WVGA (800x480) Color Display
- Record Length up to 40K points
- Multiple Automatic Measurements
- Trigger Modes: Edge, Pulse Width, Line Selectable Video, Slope, Overtime
- USB Host and Device Connectivity for PC Analysis
- Four Math Functions, including FFT

3. Safety Information

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

- **Power Source:** Use only the specified power adapter and voltage. Ensure the power cord is properly grounded.
- **Environment:** Operate the oscilloscope in a dry, well-ventilated area, away from direct sunlight, dust, and corrosive gases. Avoid extreme temperatures.
- **Probes:** Use only probes rated for the voltage and current being measured. Ensure probes are properly connected before applying power.

- **Ventilation:** Do not block the ventilation openings on the instrument.
- **Servicing:** Refer all servicing to qualified service personnel. Do not attempt to open or repair the instrument yourself.

4. Package Contents

Verify that your package contains the following items:

- Hantek DSO5000P Series Digital Storage Oscilloscope
- Two Passive Probes (1X/10X switchable)
- Power Cord
- USB Cable
- CD-ROM with PC Software and User Manual
- Quick Guide

5. Setup

Follow these steps to set up your oscilloscope for initial use.

5.1 Physical Overview

Familiarize yourself with the front, rear, and side panels of the oscilloscope.

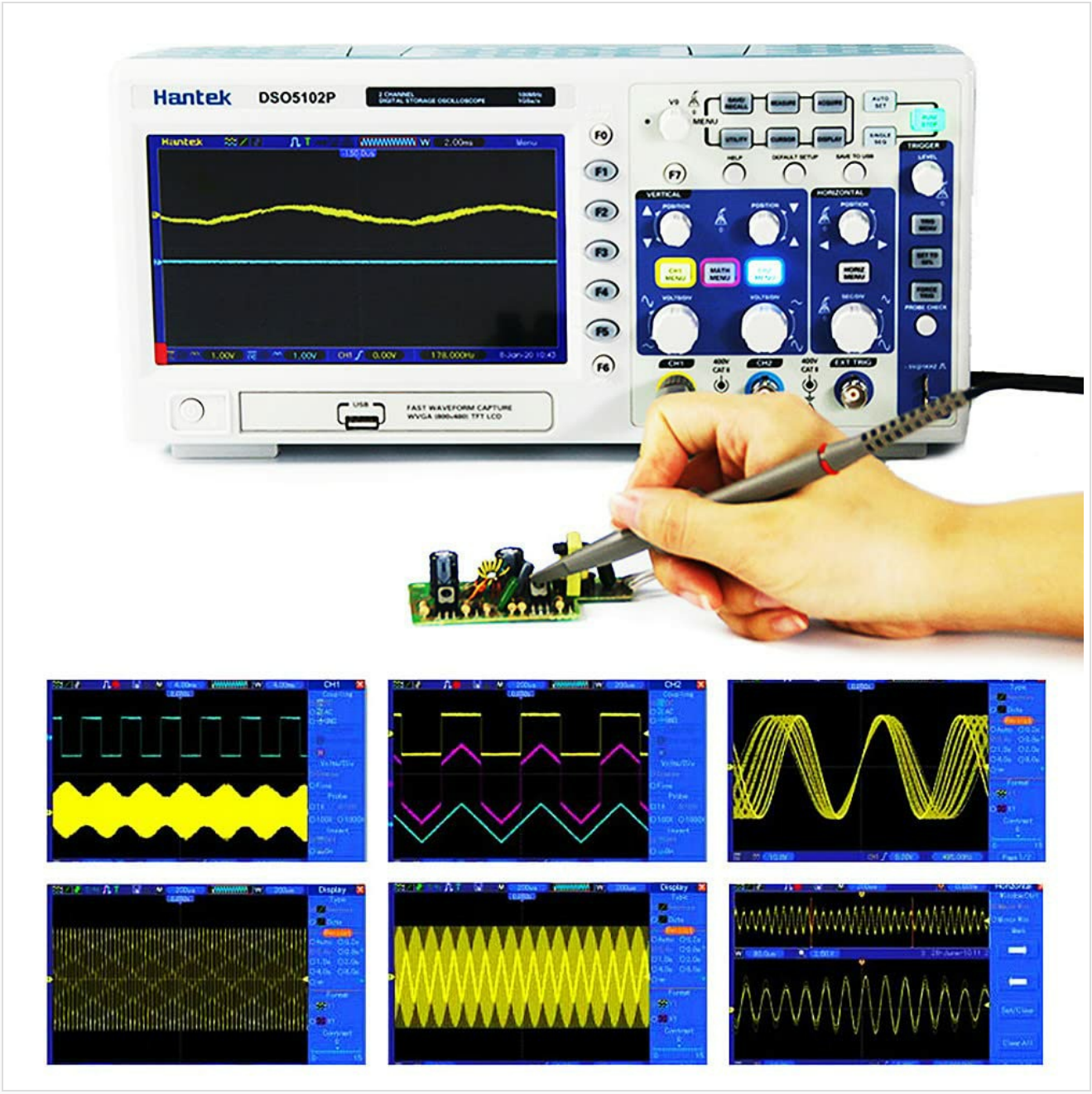
This image displays the front, rear, and side views of the Hantek DSO5102P oscilloscope, highlighting its physical layout and connection ports.

5.2 Power Connection

1. Connect the power cord to the AC input on the rear panel of the oscilloscope.
2. Plug the other end of the power cord into a grounded AC power outlet.

5.3 Probe Connection and Compensation

1. Connect a passive probe to one of the input channels (CH1 or CH2) on the front panel.
2. Attach the probe ground clip to the ground terminal on the oscilloscope.
3. Set the probe attenuation switch (if applicable) to 10X.
4. Connect the probe tip to the probe compensation output terminal (usually a square wave signal).
5. Power on the oscilloscope by pressing the power button.
6. Adjust the probe compensation trimmer on the probe until the square wave displayed on the screen has flat tops and bottoms, without overshoot or undershoot.



This image shows the Hantek DSO5102P oscilloscope actively measuring signals on a circuit board using a connected probe.

6. Operating Instructions

This section covers basic operation of the DSO5000P series oscilloscopes.

6.1 Front Panel Controls

The front panel is organized into several functional areas:

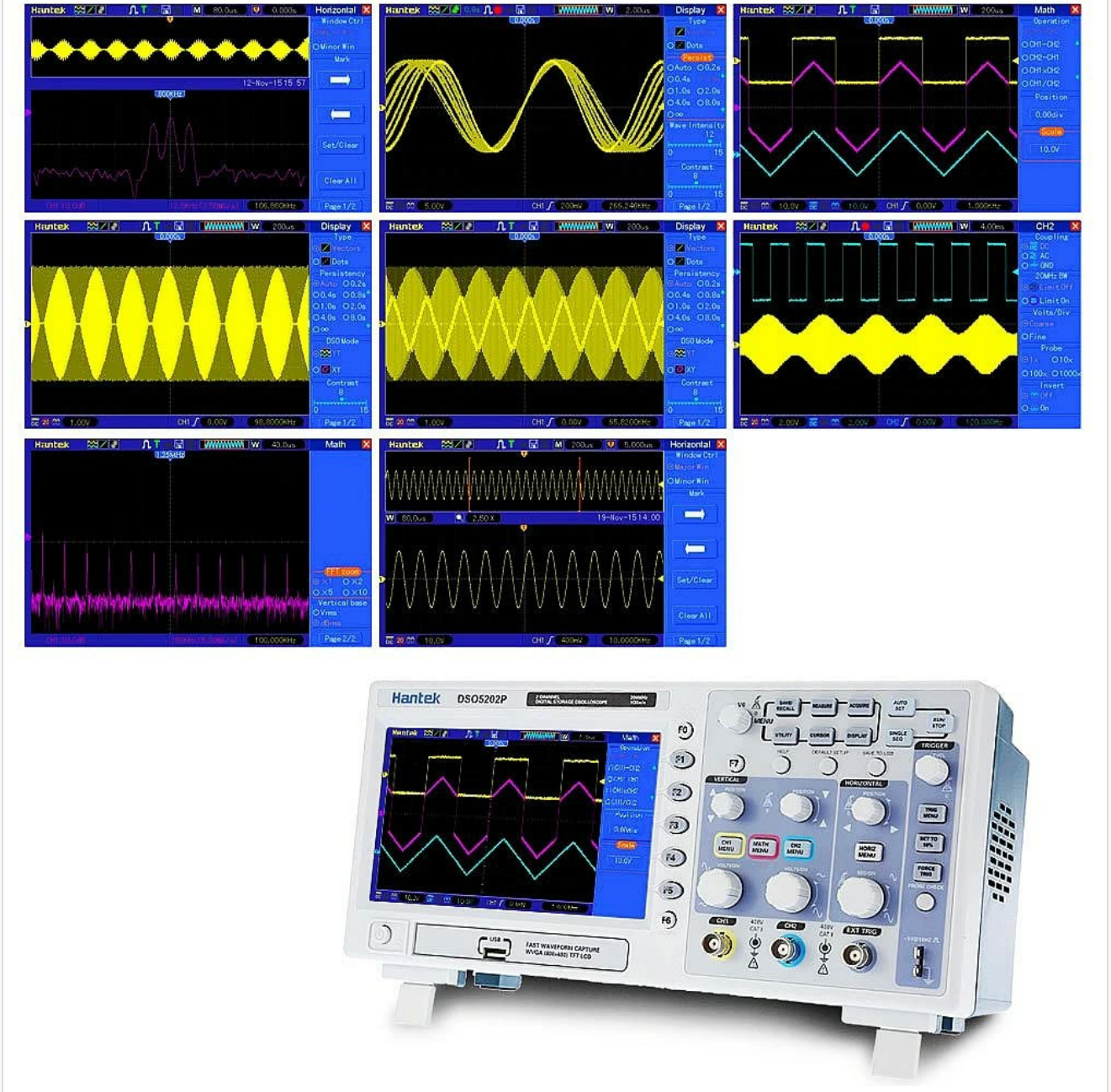
- **Vertical Controls:** Adjust voltage per division (Volts/Div) and position for each channel.
- **Horizontal Controls:** Adjust time per division (Sec/Div) and horizontal position.
- **Trigger Controls:** Set trigger level, mode, and type to stabilize waveforms.
- **Function Buttons (F1-F6):** Context-sensitive buttons for menu navigation and selections.
- **Measurement Buttons:** Access automatic measurement functions.
- **Utility Buttons:** Save/Recall, Acquire, Display, Cursor, Math, etc.

This image provides a detailed front view of the Hantek DSO5102P oscilloscope, illustrating the layout of its display, control knobs, and function buttons.

6.2 Basic Waveform Display

1. Connect a signal source to CH1.
2. Press the **AUTOSET** button for automatic waveform display optimization.
3. Adjust the **VERTICAL POSITION** and **VOLTS/DIV** knobs to fine-tune the vertical scale and position of the waveform.
4. Adjust the **HORIZONTAL POSITION** and **SEC/DIV** knobs to fine-tune the horizontal scale and position.
5. Adjust the **TRIGGER LEVEL** knob to stabilize the waveform.

This image displays several examples of waveforms captured and analyzed on the oscilloscope screen, demonstrating its measurement capabilities.



This image presents a grid of six different oscilloscope screen captures, illustrating the device's ability to display and analyze various signal types simultaneously.

6.3 Using Automatic Measurements

Press the **MEASURE** button to access the automatic measurement menu. Use the function buttons (F1-F6) to select desired measurements such as Vpp, Vmax, Vmin, Frequency, Period, Rise Time, Fall Time, etc. The results will be displayed on the screen.

6.4 PC Connectivity

Connect the oscilloscope to a computer using the provided USB cable. Install the PC software from the included CD-ROM. This software allows for real-time data analysis, waveform storage, and remote control of the oscilloscope from your computer.

7. Maintenance

7.1 Cleaning

To clean the instrument, use a soft cloth dampened with mild detergent and water. Do not use abrasive cleaners or solvents that may damage the casing or screen. Ensure the instrument is powered off and disconnected from all

power sources before cleaning.

7.2 Storage

When not in use, store the oscilloscope in a clean, dry environment, away from extreme temperatures and humidity. Protect the screen from scratches and impacts.

8. Troubleshooting

If you encounter issues with your oscilloscope, refer to the following common problems and solutions:

- **No Display:** Ensure the power cord is securely connected and the power button is pressed. Check the brightness settings.
- **No Waveform:** Verify that probes are correctly connected to the input channels and the signal source. Check probe compensation and attenuation settings. Use the AUTOSET function.
- **Unstable Waveform:** Adjust the trigger level and trigger mode. Ensure the trigger source is correctly selected.
- **Incorrect Measurements:** Check probe attenuation settings (1X/10X) and ensure they match the oscilloscope's channel settings. Perform probe compensation.
- **PC Software Connection Issues:** Ensure the USB cable is properly connected and the correct drivers are installed on your PC. Restart both the oscilloscope and the PC.

For persistent issues, contact Hantek customer support.

9. Specifications

Detailed technical specifications for the Hantek DSO5000P series oscilloscopes.

Model	DSO5202P	DSO5102P	DSO5072P
Acquisition			
Sample Rate	Real-Time Sample: 1GS/s Equivalent Sample: 25GS/s		
Acquisition Modes			
Normal	Normal data only		
Peak Detect	High-frequency and randon glith capture		
Average	Wavefom Average, selectable 4,8,16,32,64,128		
Inputs			
Inputs Coupling	AC, DC, GND		
Inpits Impendance	1MΩ±2% ll20pF±3pF		
Probe Attenuation	1X, 10X		
Supported Probe Attenuation Factor	1X, 10X, 100X, 1000X		
Maximum Input Voltage	CAT I and CAT II: 300VRMS (10×), Installation Category; CAT III: 150VRMS (1×); Installation Category II: derate at 20dB/decade above 100kHz to 13V peak AC at 3MHz* and above. For non-sinusoidal waveforms, peak value must be less than 450V. Excursion above 300V should be of less than 100ms duration. RMS signal level including all DC components removed through AC coupling must be limited to 300V. If these values are exceeded, damage to the oscilloscope may occur.		
Horizontal			
Sample Rate Range	500MS/s--1GS/s		
Waveform Interpolation	(sin x)/x		
Record Length	40K		
SEC/DIV Range	2ns/div to 80s/div		
Sample Rate and Delay Time Accuracy	±50ppm (at over any ≥1ms time interval)		
Offset Range	2ns/div to 8ns/div; (-8div x s/div) to 20ms;	20ns/div to 80us/div; (-8div x s/div) to 40ms; 200us/div to 80s/div; (-8div x s/div) to 400s	
Delta Time Measurement Accuracy (Full Bandwidth)	Single-shot, Normal mode:± (1 sample interval +100ppm × reading + 0.6ns); >16 averages:± (1 sample interval + 100ppm × reading + 0.4ns); Sample interval = s/div ÷ 200		
Vertical			
Vertical Resolution	8-bit resolution, all channel sampled simultaneously		
Position Range	2mV/div to 20mV/div, ±400mV; 50mV/div to 200mV/div, ±2V 500mV/div to 2V/div, ±40V; 5V/div to 10V/div, ±50V		
Bandwidth	200MHz	100MHz	70MHz
Rise Time at BNC(typical)	1.8ns	3.5ns	5ns
Math	+, -, *, /, FFT		
FFT	Windows: Hanning, Flatop, Rectamgular, Bartlett, Blackman; 1024 sample point		
Bandwidth Limit	20MHz		
Low Frequency Response (-3db)	≤10Hz at BNC		
DC Gain Accuracy	±3% for Normal or Average acquisition mode, 10V/div to 10mV/div; ±4% for Normal or Average acquisition mode, 5mV/div to 2mV/div		
DC Measurement Accuracy,	When vertical displacement is zero, and N ≥16:± (3% × reading + 0.1div + 1mV) only 10mV/div or greater is selected;		

This image presents a comprehensive table detailing the technical specifications for the DSO5072P, DSO5102P, and DSO5202P models.

General Specifications

Parameter	Value
Manufacturer	Hantek
Part Number	Q-DSO5202P
Item Weight	3 Kilograms
Product Dimensions	10 x 31.5 x 14 cm; 3 kg
Discontinued by Manufacturer	No
Size (Model)	DSO5202P
Color	Multicolored
Style	Bench Oscilloscope
Material	Acrylonitrile Butadiene Styrene

Parameter	Value
Wattage	1 W
Measurement System	Metric
Measurement Accuracy	0.3%
Certifications	CE, ISO 9001, RoHS
Included Components	DSO5202P (main unit, probes, power cord, USB cable, software CD)
Item Dimensions (LxWxH)	10 x 31.5 x 14 cm
ASIN	B0C72HY47Z
Date First Available on Amazon.co.jp	2023/6/4

Performance Specifications

Parameter	DSO5202P	DSO5102P	DSO5072P
Bandwidth	200MHz	100MHz	70MHz
Sample Rate (Real-Time)	1GSa/s		
Equivalent Sample Rate	25GS/s		
Acquisition Modes	Normal, Peak Detect, Average (4, 8, 16, 32, 64, 128)		
Record Length	40K		
Inputs Coupling	AC, DC, GND		
Input Impedance	1MΩ ±2% || 20pF ±3pF		
Probe Attenuation	1X, 10X, 100X, 1000X		
Maximum Input Voltage	CAT I and CAT II: 300VRMS (10×), Installation Category II: derate at 20dB/decade above 100kHz to 13V peak AC at 3MHz*. For non-sinusoidal waveforms, peak value must be less than 450V. Excursion above 300V should be of less than 100ms duration. RMS signal level including all DC components removed through AC coupling must be limited to 300V. If these values are exceeded, damage to the oscilloscope may occur.		
Horizontal Sample Rate Range	500MS/s – 1GS/s		
Waveform Interpolation	(sin x)/x		

Parameter	DSO5202P	DSO5102P	DSO5072P
SEC/DIV Range	2ns/div to 80us/div		
Sample Rate and Delay Time Accuracy	±50ppm (at over any ≥1ms time interval)		
Offset Range	2ns/div to 8ns/div: 20ns/div to 80us/div: (-8div x s/div) to 40ms; 200us/div to 80s/div: (-8div x s/div) to 400s		
Delta Time Measurement Accuracy (Full Bandwidth)	Single-shot, Normal mode: ± (1 sample interval + 100ppm × reading + 0.6ns); >16 averages: ± (1 sample interval + 100ppm × reading + 0.4ns); Sample interval = s/div ÷ 200		
Vertical Resolution	8-bit resolution, all channel sampled simultaneously		
Position Range	2mV/div to 20V/div: ±400mV; 50mV/div to 20V/div: ±2V; 500mV/div to 2V/div: ±40V; 5V/div to 10V/div: ±250V		
Rise Time at BNC (typical)	1.8ns	3.5ns	5ns
Math Functions	+, -, ×, ÷, FFT		
FFT Windows	Hanning, Flatop, Rectangular, Bartlett, Blackman; 1024 sample point		
Bandwidth Limit	20MHz		
Low Frequency Response (-3dB)	≤10Hz at BNC		
DC Gain Accuracy	±3% for Normal or Average acquisition mode, 10V/div to 10mV/div; ±4% for Normal or Average acquisition mode, 5mV/div to 2mV/div		
DC Measurement Accuracy	When vertical displacement is zero, and N ≥16: ± (3% × reading + 0.1div + 1mV) only 10mV/div or greater is selected.		

10. Warranty and Support

Hantek products are designed for reliability and performance. This product is covered by a standard manufacturer's warranty against defects in materials and workmanship. Please refer to the warranty card included in your package for specific terms and conditions.
For technical support, troubleshooting assistance, or warranty claims, please contact Hantek customer service

through their official website or the contact information provided with your product. When contacting support, please have your product model number and purchase date available.