Hantek DSO5072P

Hantek DSO5072P Digital Storage Oscilloscope User Manual

Models: DSO5072P, DSO5102P, DSO5202P

1. Introduction

This manual provides comprehensive instructions for the safe and effective use of your Hantek DSO5072P Digital Storage Oscilloscope. It covers essential topics from initial setup and basic operation to advanced features, maintenance, and troubleshooting. Please read this manual thoroughly before operating the device to ensure optimal performance and safety.

2. Safety Information

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

- **Hazardous Voltage:** The device contains hazardous voltage inside. Do not remove the cover unless by specified personnel.
- **Power Source:** Ensure the oscilloscope is connected to a power source within the specified voltage range (AC 100-240V, 45-440Hz, 30W MAX).
- **Grounding:** Always ensure the oscilloscope is properly grounded to prevent electric shock.
- **Environment:** Operate the device in a dry, well-ventilated area, away from direct sunlight, high temperatures, and excessive dust.
- **Probes:** Use only probes rated for the voltage and current levels you intend to measure. Ensure probes are properly calibrated before use.
- **Maintenance:** Refer all servicing to qualified service personnel.

3. Package Contents

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

- Hantek DSO5072P Digital Storage Oscilloscope Unit
- Power Cable

- USB Cable (Type A to Type B)
- Two (2) Oscilloscope Probes (with accessories)
- User Manual
- Software CD

Figure 3.1: Hantek DSO5072P Oscilloscope and included accessories.

The following video demonstrates the unboxing and initial overview of a similar Hantek oscilloscope model (MSO5102D), which shares many common features with the DSO5072P series.

Video 3.1: Unboxing and overview of a Hantek MSO5102D oscilloscope, demonstrating typical package contents and initial inspection.

4. Product Overview

Familiarize yourself with the main components and interfaces of your oscilloscope.

4.1 Front Panel

The front panel features the main display, function buttons, and control knobs for vertical, horizontal, and trigger settings. A USB host port is available for connecting USB storage devices, and a multi-pin connector is present for specific accessories or expansion.

Figure 4.1: Various views of the Hantek oscilloscope, highlighting the front panel controls and display.

4.2 Rear Panel

The rear panel includes the power input connector and a USB device port for PC connectivity, allowing for remote control and data sharing.

Figure 4.2: Rear view of the oscilloscope, showing the power input, USB port, and safety warning.

5. Setup

Follow these steps for initial setup of your oscilloscope.

5.1 Power Connection

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

5.2 Probe Connection

1. Connect the BNC connector of an oscilloscope probe to one of the Channel 1 (CH1) or Channel 2 (CH2) inputs on the front panel.
2. Ensure the probe's ground clip is securely attached to the ground terminal of the circuit under test.

5.3 Powering On

Press the power button located on the front panel to turn on the oscilloscope. The device will undergo a boot sequence, and the display will show the Hantek logo before presenting the waveform interface.

Video 5.1: Demonstration of powering on a Hantek MSO5102D oscilloscope and initial display, showing the boot process

and default screen.

6. Basic Operation

This section covers fundamental operations for capturing and analyzing waveforms.

6.1 Using the Test Signal

The oscilloscope provides a 1kHz square wave test signal, useful for calibrating probes and verifying basic functionality. Connect a probe to the dedicated test signal output on the front panel.

6.2 Adjusting Vertical and Horizontal Scales

- **Vertical (Volts/Div):** Use the **VOLTS/DIV** knob for the selected channel to adjust the vertical scale, changing the voltage represented by each vertical division on the screen.
- **Horizontal (Time/Div):** Use the **TIME/DIV** knob to adjust the horizontal scale, changing the time represented by each horizontal division.
- **Position:** Use the **POSITION** knobs for vertical and horizontal adjustments to move the waveform on the screen.

6.3 AutoSet Function

The **AUTOSET** button automatically adjusts the vertical, horizontal, and trigger settings to display a stable waveform. This is a quick way to get a view of your signal.

Video 6.1: Demonstration of connecting a probe to the test signal, adjusting scales, and using the AutoSet function on a Hantek MSO5102D oscilloscope.

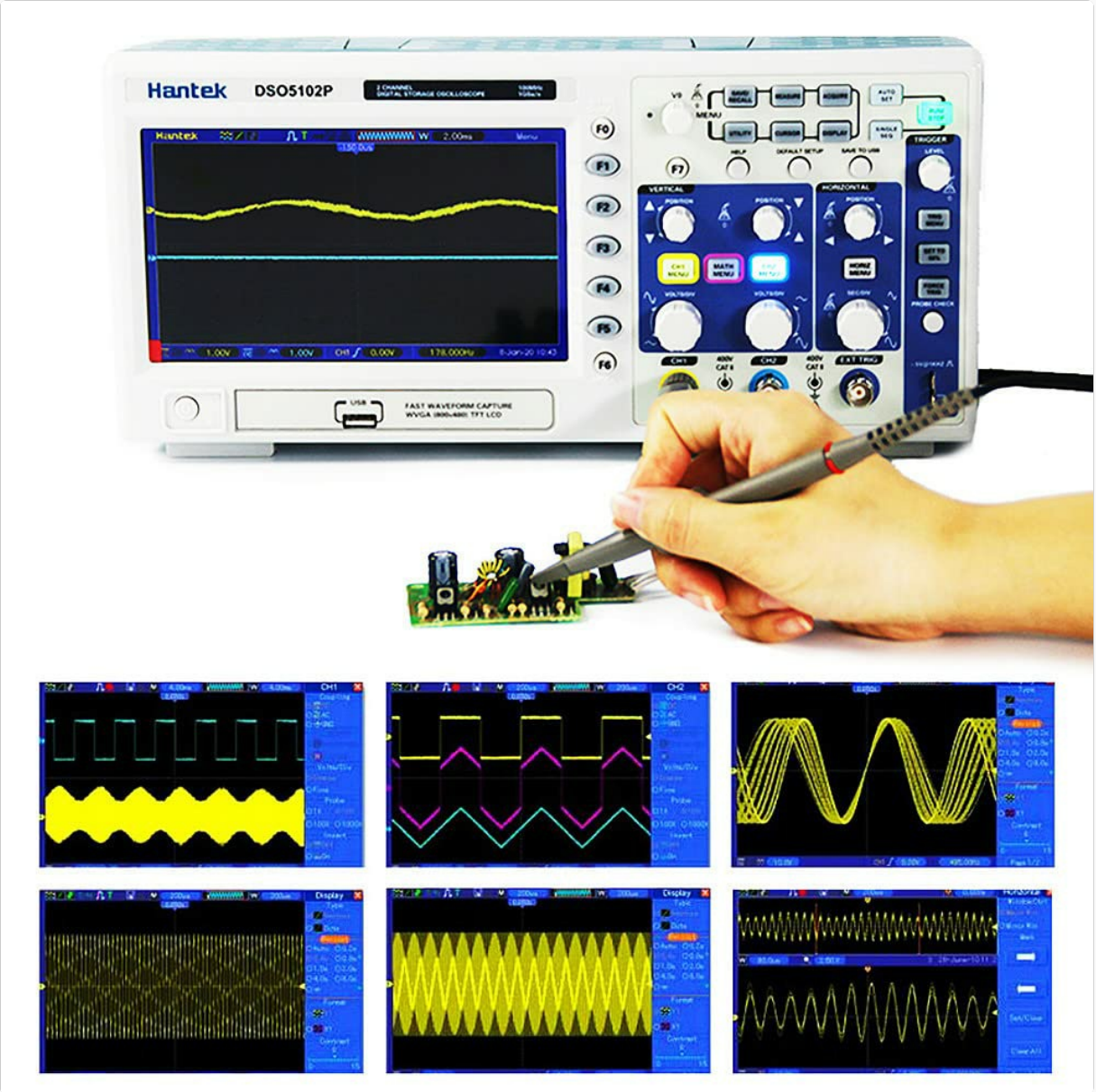

Figure 6.1: The Hantek oscilloscope displaying various types of waveforms, illustrating its measurement capabilities.

7. Specifications

Key technical specifications for the Hantek DSO5072P series oscilloscopes:

Feature	DSO5202P	DSO5102P	DSO5072P
Bandwidth	200MHz	100MHz	70MHz
Channels	2		
Real-Time Sample Rate	1GSa/s		
Equivalent Sample Rate	25GS/s		
Record Length	40K		
Rise Time (BNC typical)	1.8ns	3.5ns	5ns
Vertical Resolution	8-bit resolution, all channel sampled simultaneously		
Input Impedance	1MΩ±2% || 20pF±3pF		

Feature	DSO5202P	DSO5102P	DSO5072P
Max Input Voltage	CAT II: 300VRMS (10×), Installation Category; CAT III: 150VRMS (1×)		
Product Dimensions	8.66 x 5.91 x 4.72 inches		
Item Weight	1.1 Pounds		

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;		

Figure 7.1: Detailed specifications for the Hantek DSO5000P series oscilloscopes.

8. Maintenance

Proper maintenance ensures the longevity and accuracy of your oscilloscope.

- **Cleaning:** Use a soft, damp cloth to clean the exterior of the oscilloscope. Avoid abrasive cleaners or solvents that could damage the casing or screen.
- **Storage:** Store the device in a cool, dry environment, away from direct sunlight and extreme temperatures.
- **Probe Care:** Handle probes carefully. Avoid bending or stressing the cables. Store them properly to prevent damage to the tips and connectors.
- **Ventilation:** Ensure the ventilation openings on the device are not blocked to prevent overheating.

9. Troubleshooting

If you encounter issues with your oscilloscope, try the following common troubleshooting steps:

- **No Power:** Check the power cable connection to both the oscilloscope and the power outlet. Ensure the power button is pressed.
- **No Display:** If the power indicator is on but the screen is blank, try restarting the device. If the issue persists, contact support.
- **No Signal on Screen:** Verify that probes are correctly connected to both the oscilloscope input and the circuit under test. Check probe settings (e.g., 1X/10X attenuation). Use the AutoSet function.
- **Unstable Waveform:** Adjust the trigger level and mode. Ensure the horizontal time base is appropriate for the signal frequency.
- **Incorrect Measurements:** Calibrate your probes using the built-in test signal. Verify the probe attenuation setting on the oscilloscope matches the physical probe setting.

10. Warranty and Support

Hantek products are designed for reliability and performance. For warranty information, technical support, or service inquiries, please refer to the official Hantek website or contact your local distributor. Keep your purchase receipt as proof of purchase for warranty claims.