Date Sheet

Digital Storage Oscilloscope

DSO5202P DSO5102P DSO5072P

Features & Benefits

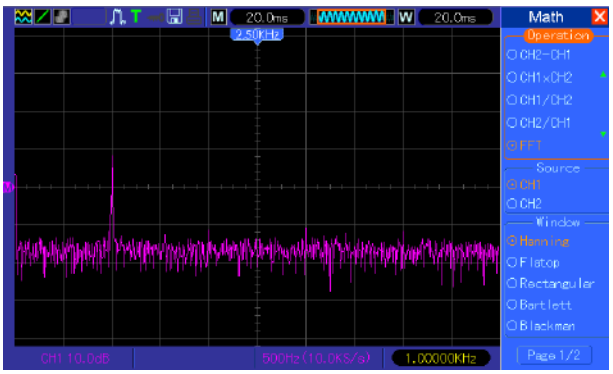
- 200/100/70MHz Bandwidths
- 1GSa/s Real Time Sample Rate
- Trigger mode: Edge, Pulse Width, Video, Slop, Overtime, Alternative trigger etc.
- Provides software for PC real-time analysis

Applications

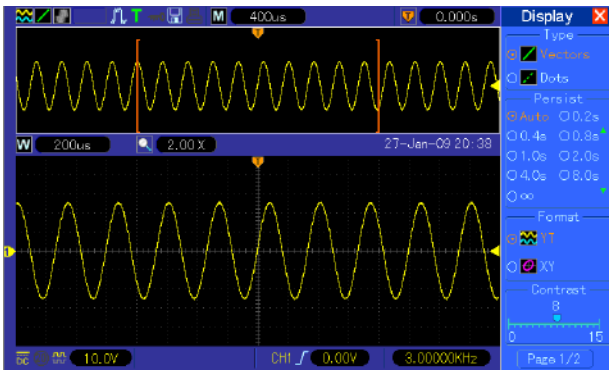
- Design and Debug
- Education and training
- Manufacturing Test and Quality Control
- Service and Repair
- Electronic Circuit Designing and Testing.

Ease-of-Use Feature

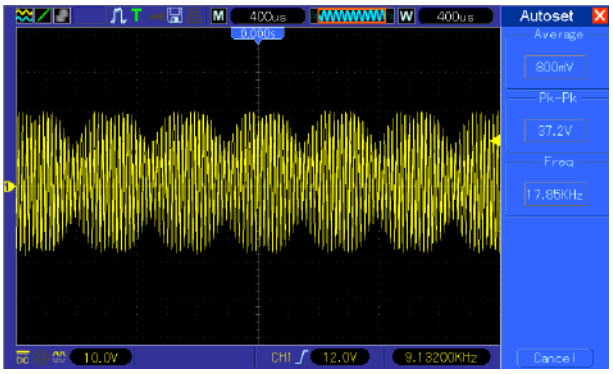
- Five math functions, +, -, *, /, and FFT functions.
- 32 automatic measurements and track measurement via cursor automatically.
- Large (7.0-inch) color display,WVGA(800x480)
- Support U disk and local files storage.
- Pass/Fail Function enables to output testing results
- Built in Bode diagram Assistant.



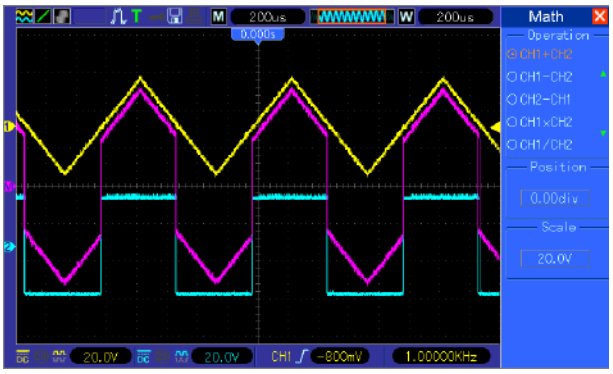
FFT



Dual-window Mode (Full Screen)



Autoset



Math: CH1+CH2

Troubleshooting

If the oscilloscope is no display of waveforms on the screen when the oscilloscope is turned on, follow these steps:

I. Check the probe to assure its proper connection to the input BNC;
II. Check the channel switch (such as CH1, CH2 menu buttons) to make sure it has been turned on;
III. Check the input signal to verify it has been connected to the probe correctly;
IV. Affirm that all measured circuits have signals to output;
V. Turn up the magnitude for DC signals with large magnitude;
VI. In addition, you may press the Auto Measure button to perform an automatic detection of signals at first.

Designed to Make Your Work Easy

The DSO Series oscilloscopes are designed with the ease of use and familiar operation you have come to expect from Hantek

Help When You Need It, Where You Need It

The built-in Help menu provides you with important information on your oscilloscope's features and functions. Help is provided in the same languages as the user interface.

Performance You Need at a Price You Can Afford

The DSO5000B Series Digital Storage Oscilloscope provides you with affordable performance in a compact design. Packed with standard features-including USB connectivity, 32 automated measurements, limit testing, data loading, and context-sensitive make the instruments help you get more done in less time. Digital Precision for Accurate Measurements With up to 200MHz bandwidth and 1GS/s maximum sample rate, no other digital storage oscilloscope offers as much bandwidth and sample rate for the price. Hantek provides real-time sampling with a minimum of 10X oversampling on all channels, all the time to accurately capture your signals.

Easy PC Connectivity

Easily capture, save, and analyze measurements results by connecting to your PC with the rear-panel USB device port. Simply pull screen images and waveform data into the stand-alone desktop application.

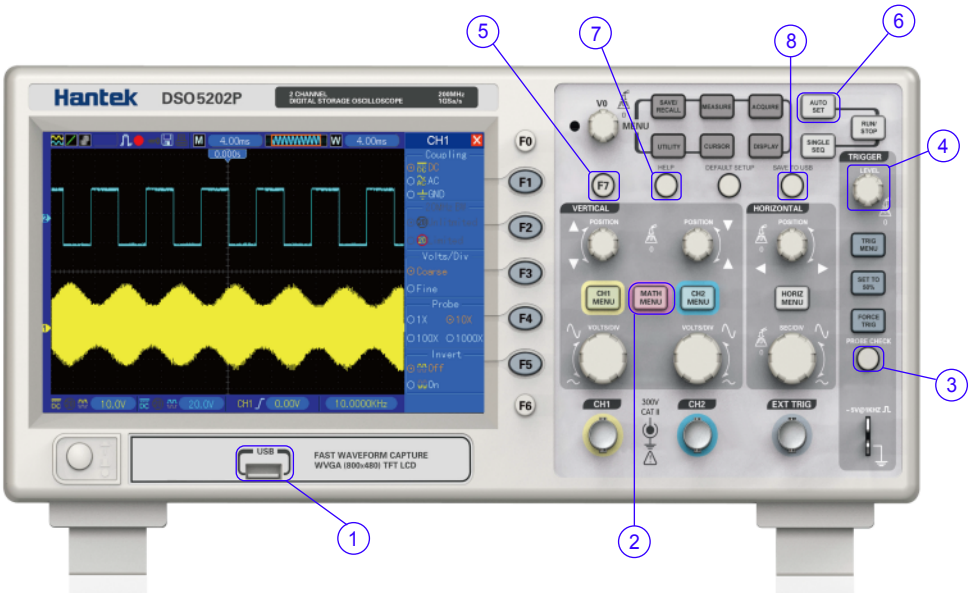
Characteristics

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	
Input Coupling	AC, DC, GND
Input Impendance	1MΩ±2% ‖ 20pF±3pF
Probe Attenuation	1X, 10X
Supported Probe Attenuation Factor	1X, 10X, 100X, 1000X
Max. Input Voltage	CAT I and CAT II: 300VRMS (10×); Installation Category 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	24K
SEC/DIV Range	2ns/div to 40s/div, in a 2, 4, 8 sequence, DSO5202P 4ns/div to 40s/div, in a 2, 4, 8 sequence, DSO5102P/DSO5072P
Sample Rate and Delay Time Accuracy	±50ppm（at over any ≥1ms time interval)
Position Range	DSO5202P: 2ns/div to 10ns/div; (-4div x s/div) to 20ms; DSO5102P/DSO5072P: 20ns/div to 80us/div; (-8div x s/div) to 40ms; 200us/div to 40s/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
Volts/Div Range	2mV/div~10V/div
Position Range	2mV/div to 200mV/div; ±2V; 200mV/div to 5V/div; ±50V
Bandwidth	DSO5202P: 200MHz; DSO5102P: 100MHz; DSO5072P: 60MHz;
Rise time at BNC(typical)	DSO5202P: 1.8ns; DSO5102P: 3.5ns; DSO5072P: 5ns;
Analog Bandwidth in Normal and Average Modes at BNC or with probe, DC Coupled	2mV/div to 20mV/div, ±400mV; 50mV/div to 200mV/div, ±2V; 500mV/div to 2V/div, ±40V; 5V/div, ±50V
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, 5V/div to 10mV/div; ±4% for Normal or Average acquisition mode, 5mV/div to 2mV/div.
DC Measurement Accuracy, Average Acquisition Mode	When vertical displacement is zero, and N ≥16:± (3% × reading + 0.1div + 1mV) only 10mV/div or greater is selected; When vertical displacement is not zero, and N≥16: ± [3% × (reading + vertical position) + 1% of vertical position + 0.2div]; Add 2mV for settings from 2mV/div to 200mV/div; add 50mV for settings from 200mV/div to 5V/div
Volts Measurement Repeatability, Average Acquisition Mode	Delta volts between any two averages of ≥16 waveforms acquired under same setup and ambient conditions
Trigger	
Trigger Types	Edge, Video, Pulse, Slope, Over time, Alternative
Trigger Source	CH1, CH2, EXT, EXT/5, AC Line
Trigger Modes	Auto, Normal
Coupling Type	DC, AC, Noise Reject, HF Reject, LF Reject
Trigger Sensitivity *(Edge Trigger Type)*	**DC(CH1,CH2):** 1div from DC to 10MHz;1.5div from 10MHz to 100MHz; 2div from 100MHz to 200MHz;
	DC(EXT): 200mV from DC to 100MHz; 350mV from 100MHz to 200MHz;
	DC(EXT/5): 1V from DC to 100MHz;1.75V from 100MHz to 200MHz;
	AC: Attenuates signals below 10Hz
	HF Reject: Attenuates signals above 80kHz
	LF Reject: Same as the DC-coupled limits for frequencies above 150KHz; Attenuates signals below 150KHz
Trigger Level Range	CH1/CH2: ±8 divisions from center of screen; EXT: ±1.2V; EXT/5:±6V
Trigger Level Accuracy*(typical)* Accuracy is for signals having rise and fall times ≥20ns	CH1/CH2: 0.2div × volts/div within ±4 divisions from center of screen; EXT: ± (6% of setting + 40mV); EXT/5: ± (6% of setting + 200mV);
Set Level to 50%*(typical)*	Operates with input signals ≥50Hz
Trigger Holdoff range	100ns-10s
Video Trigger	
Video Trigger Type	CH1, CH2: Peak-to-peak amplitude of 2 divisions; EXT: 400mV; EXT/5: 2V
Signal Formats and Field Rates	Supports NTSC, PAL and SECAM broadcast systems for any field or any line Line range: 1-525(NTSC), 1-625(PAL/SECAM)
Holdoff Range	100ns ~ 10s
Pulse Width Trigger	
Pulse Width Trigger Mode	Trigger when (< , >, = , or ≠); Positive pulse or Negative pulse
Pulse Width Trigger Point	**Equal:** The oscilloscope triggers when the trailing edge of the pulse crosses the trigger level.
	Not Equal: If the pulse is narrower than the specified width, the trigger point is the trailing edge. Otherwise, the oscilloscope triggers when a pulse continues longer than the time specified as the Pulse Width.
	Less than: The trigger point is the trailing edge.
	Greater than (also called overtime trigger): The oscilloscope triggers when a pulse continues longer than the time specified as the Pulse Width
Pulse Width Range	20ns ~ 10s
Overtime Trigger	
Over Time Mode	Rising edge or Falling edge
Time Range	20ns ~ 10s

Slope Trigger	
Slope Trigger Mode	Trigger when (< , > , = , or ≠); Positive slope or Negative slope
Slope Trigger Point	**Equal**: The oscilloscope triggers when the waveform slope is equal to the set slope. **Not Equal**: The oscilloscope triggers when the waveform slope is not equal to the set slope. **Less than**: The oscilloscope triggers when the waveform slope is less than the set slope. **Greater than**: The oscilloscope triggers when the waveform slope is greater than the set slope.
Time Range	20ns ~ 10s
Alternative Trigger	
Trigger on CH1	Internal Trigger: Edge, Pulse Width, Video, Slope
Trigger on CH2	Internal Trigger: Edge, Pulse Width, Video, Slope
Trigger Frequency Counter	
Readout Resolution	6 digits
Accuracy *(typical)*	±30ppm (including all frequency reference errors and ±1 count errors)
Frequency Range	AC coupled, from 4Hz minimum to rated bandwidth
Signal Source	Pulse Width or Edge Trigger modes: all available trigger sources; The Frequency Counter measures trigger source at all times, including when the oscilloscope acquisition pauses due to changes in the run status, or acquisition of a single shot event has completed. Pulse Width Trigger mode: The oscilloscope counts pulses of significant magnitude inside the 1s measurement window that qualify as triggerable events, such as narrow pulses in a PWM pulse train if set to < mode and the width is set to a relatively small time. Edge Trigger mode: The oscilloscope counts all edges of sufficient magnitude and correct polarity. Video Trigger mode: The Frequency Counter does not work.
Measurement	
Cursor Measurement	**Manual:** Voltage difference between cursors: △V; Time difference between cursors: △T; Reciprocal of △T in Hertz (1/ΔT); **Tracing:** The voltage and time at a waveform point
Auto Measuerment	Frequency, Period, Mean, Pk-Pk, Cycli RMS, Minimum, Maximum, Rise time, Fall Time, +Pulse Width, -Pulse Width, Delay1-2Rise, Delay1-2Fall, +Duty, -Duty, Vbase, Vtop, Vmid, Vamp, Overshoot, Preshoot, Preiod Mean, Preiod RMS, FOVShoot, RPREShoot, BWIDTH, FRF, FFR, LRR, LRF, LFR, LFF
Display	
Display Type	7 inch 64K color TFT (diagonal liquid crystal)
Display Resolution	800 horizontal by 480 vertical pixels
Display Contrast	Adjustable (16 gears) with the progress bar
Probe Compensator Output	
Output Voltage *(typical)*	About 5Vpp into ≥1MΩ load
Frequency*(typical)*	1KHz
Power Supply	
Supply Voltage	100-120VACRMS(±10%), 45Hz to 440Hz, CAT Ⅱ 120-240VACRMS(±10%), 45Hz to 66Hz, CAT Ⅱ
Power Consumption	<30W
Fuse	2A, T rating, 250V
Environmental	
Temperature	Operating: 32℉ to 122℉ (0℃ to 50℃); Nonoperating: -40℉ to 159.8℉ (-40℃ to +71℃)
Cooling Method	Convection
Humidity	+104℉ or below (+40℃ or below): ≤90% relative humidity; 106℉ to 122℉ (+41℃ to 50℃): ≤60% relative humidity
Altitude	Operating: Below 3,000m (10,000 feet); Nonoperaring: Below 15,000m(50,000 feet)
Mechanical	
Size	Packing: Length 385mm; Width 200mm; Height 245mm Without Packing: Length 313mm; Width 108mm; Height 142mm
Weight	2.08KG(without Packing; 3.5KG(with Packing)

▶ Font Panel Features



① **USB Host Port** -- Conveniently use your USB flash drive to store your personal oscilloscope setups, screen shots,and waveform data of later use, Also ues the USB host port to easily update your instrument firmware.

② **Math Menu** -- Easy and precise On-board Analysis, FFT and waveform add, subtract, and multiply math functions come standard on all models. FFT function displays frequency domain spectrums for fast harmonic distortion analysis or other frequency based analysis.

③ **Probe Check** -- Quickly verity that your probe is calibrated and operating properly

④ **Triggers** -- Quickly capture your event of interest with advanced triggers including Pulse Width, Edge, slope, Overtime and line selectable video triggers.

⑤ **F7 Button** -- Push this button in single-window mode to switch between dotted line display and cross display. Push it in dual-window mode to perform auto cruise.

⑥ **Autoset** -- Simplify setup with smart Autoset function which identifies the type of waveform, asjusts controls to produce a usable display of input signal, and allows you to select how the waveform should be presented.This function can be used to adjust the horizontal and vertical scales of the oscilloscope automatically and set the trigger coupling, type, position, slope, level and mode, etc., to acquire a stable waveform display. Automatically set the oscilloscope controls to generate a usable display of the input signals.

⑦ **Help** -- Help system with topics covering all of its features. Built in context-sensitive help further eases the operation by providing indexed and linked topics that allow you to selectively learn about the operation of various oscilloscope features and functions.

⑧ **Save to USB** -- Save all displays on the screen to a USB device, just like the screen capturing function of a computer.

▶ Rear Panel Features

⑨ **USB Device Port Combined with PC** -- Easily communicate with other instruments, peripherals or system via usb. The USB port allows you full programmable controls for automated measurements and remote display and archiving.

⑩ **Integrated Handle --** Easily carry your light instruments from a place to another.

▶ Standard Accessories

Probe	X1, X10 two passive probes. The passive probes have a 6MHz bandwidth (rated 100Vrms CAT III) when the switch is in the X1 position, and a maximum bandwidth (rated 300Vrms CAT II) when the switch is in the X10 position. Each probe consists of all necessary fittings.
Power Cord	A power cord special for this product. In addition to the power cord shipped with your instrument, you may purchase another one certified for the country of use.
Warranty Card	A warranty card. When there appears something wrong with the product, it can be returned for repair under warranty.
USB Line	A USB A-B line, used to connect external devices with USB-B interface like a printer or to establish communications between PC and the oscilloscope.
CD	A software installation CD. It contains the user manual of DSO5000B(MV), giving particular descriptions on the DSO5000B(MV) series oscilloscopes.