Hantek®

Digital Storage Oscilloscope / DSO4000C Series

Hantek
DSO4202C
VERTICAL
GENERATOR

Hantek
DSO4202C
VERTICAL
GENERATOR

Hantek
DSO4072C
MENU
HORIZ
TRIGGER
SEC/DIV
VERTICAL
GENERATOR
POSITION
VOLT/DIV
CH1
CH2
EXT.TRIG

Hantek
DSO4072C
SD CARD
USB
VERTICAL
GENERATOR

DIGITAL STORAGE OSCILLOSCOPE
5000SERIES
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DSO4000C Series

Product introduction：
2 Channel Digital Oscilloscope. 1 Channel Arbitrary/Function Waveform Generator. The Keys for osilloscope and waveform generator is seperated for convenient to operate it simultaneously. Oscilloscope: 200/100/70MHz Bandwidth, 1GSa/s Sample Rate. 25MHz Arbitrary waveform generator, 12 bits resolution, 200MHz DDS, 7 inch 64K color LCD display, Resolution 800x480.

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- Accessories
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Model	DSO4202C	DSO4102C	DSO4072C
Oscilloscope			
Sample Rate	Sampling Rate Range: 1GSa/s		
	Equivalent Sample Rate: 25GSa/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% ‖20pF±3pF		
Probe Attenuation	1X, 10X		
Supported Probe Attenuation Factor	1X, 10X, 100X, 1000X		
Maximum Input Voltage	CAT I and CAT II: 300VRMS (10×)		
	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	1GS/s		

Waveform Interpolation	(sin x)/x		
Record Length	40K		
SEC/DIV Range	2ns/div to 40s/div		
Sample Rate and Delay Time Accuracy	±50ppm（at over any ≥1ms time interval)		
Position 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 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		
Position Range	2mV/div to 10V/div		
Bandwidth	200MHz	100MHz	70MHz
Rise Time at BNC(typical)	1.8ns	3.5ns	5ns
Offset Range	2mV/div to 20mV/div, ±400mV; 50mV/div to 200mV/div, ±1V 500mV/div to 2V/div, ±40V; 5V/div to 10V/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, 10V/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 10V/div		
Volts Measurement Repeatability, Average Acquisition Mode	Delta volts between any two averages of ≥16 waveforms acquired under same setup and ambient conditions		

Trigger System	
Trigger Types	Edge, Video, Pulse, Slope, Over time, Alternative
Trigger Source	CH1, CH2, EXT, EXT/5, AC Line
Trigger Modes	Auto, Normal, Single
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 Full;
	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
	CH1/CH2: ±8 divisions from center of screen;
Trigger Level Range	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
Video Trigger	
Video Trigger Type	CH1, CH2: Peak-to-peak amplitude of 2 divisions;
	EXT: 400mV;
	EXT/5: 2V
Signal Formats and Field Rates, Video Trigger Type	Supports NTSC, PAL and SECAM broadcast systems for any field or any line
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
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
Overtime Trigger	
Over Time Mode	Rising edge or Falling edge
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.
Measure	
Cursor Measurement	Voltage difference between cursors: △V
	Time difference between cursors: △T
	Reciprocal of △T in Hertz (1/ΔT)
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
Signal Source Mode	
Waveform Impedance	DC-25MHz
Sample Rate	200MHzDDS
Output Waveform	Arbitrary wave/square wave/sine wave/triangle wave/trapezoidal wave/pulse wave/DC
Frequency Resolution	0.1%
Waveform Depth	2KSa
Vertical Resolution	12bit
Frequency Stability	＜30ppm
Waveform Range	-3.5V~+3.5V
Output Impedance	50Ω
Output Current	50mA Ipeak=50mA
System BW	25M
Harmonic Distortion	-50dBc（1KHz），-40dBc（10KHz）
General Features	
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, CATII
	120-240VACRMS(±10%), 45Hz to 66Hz, CATII
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	Length 385mm, Width 200mm, Height 245mm
Weight	3.5KG(with Packing); 2.08KG(without Packing)