SDS5000X Series
Digital Storage Oscilloscope

ⓈSIGLENT®

SIGLENT TECHNOLOGIES CO.,LTD

SDS5104X/SDS5102X
SDS5054X/SDS5052X
SDS5034X/SDS5032X

Product Overview

SIGLENT's SDS5000X series Digital Storage Oscilloscopes are available in bandwidths of 1 GHz, 500 MHz and 350 MHz, have a maximum sample rate of 5 GSa/s, maximum record length of 250 Mpts/ch, and display up to 4 analog channels + 16 digital channels mixed signal analysis ability.

The SDS5000X series employs Siglent's SPO technology with a maximum waveform capture rate of up to 110,000 wfm/s (normal mode, up to 500,000 wfm/s in Sequence mode), 256-level intensity grading display function plus a color temperature display mode. It also employs an innovative digital trigger system with high sensitivity and low jitter. The trigger system supports multiple powerful triggering modes including serial bus triggering. History waveform recording, Sequence acquisition, Search and Navigate functions allow for extended waveform records to be captured, stored, and analyzed. An impressive array of measurement and math capabilities, options for a 25 MHz arbitrary waveform generator, as well as serial decoding are also features of the SDS5000X.

The large 10.1'' display capacitive touch screen supports multi-touch gestures, with the addition of user-friendly one-button design for most commonly used functions, can greatly improve the operation efficiency of the SDS5000X. It also supports mouse and external keyboard control.
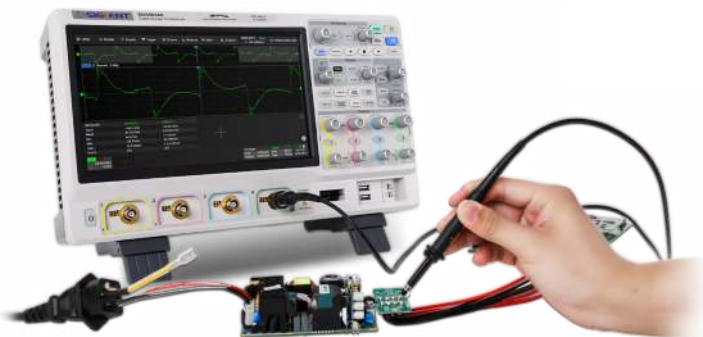
Key Features

- 1 GHz, 500 MHz, 350 MHz models with real-time sample rate up to 5 GSa/s
- SPO technology
  - Waveform capture rates up to 110,000 wfm/s (normal mode), and 500,000 wfm/s (sequence mode)
  - Supports 256-level intensity grading and color temperature display modes
  - Record length up to 250 Mpts/ch, 500 Mpts in total for all 4 channels
  - Digital trigger system
- Intelligent trigger: Edge, Slope, Pulse, Window, Runt, Interval, Dropout, Pattern, Qualified, Nth edge, Setup/hold, Delay and Video (HDTV supported). Trigger zone helps to simplify advanced triggering
- Serial bus triggering and decoder, supports protocols I2C, SPI, UART, CAN, LIN, CAN FD, FlexRay, I2S and MIL-STD-1553B
- Low background noise, supports 0.5 mV/div to 10 V/div voltage scales
- Segmented acquisition (Sequence) mode, dividing the maximum record length into multiple segments (up to 100,000), according to trigger conditions set by the user, with a very small dead time between segments to capture the qualifying event
- History waveform record (History) function, the maximum recorded waveform length is 100,000 frames
- Automatic measurement function on 50+ parameters, supports statistics with histogram, trend, Gating measurement, Math measurement, History measurement and Ref measurement
- Math function (2 Mpts FFT, addition, subtraction, multiplication, division, integration, differential, square root, etc.), supports formula editor
- Abundant data analysis functions such as Search, Navigate, Digital Voltmeter, Counter, Waveform Histogram, Bode plot and Power Analysis
- High Speed hardware-based Average, ERES (Enhanced Resolution)
- High Speed hardware-based Mask Test function, with Mask Editor tool for creating user-defined masks
- 16 digital channels (optional) with sample rate up to 1.25 GSa/s, record length up to 62.5 Mpts
- 25 MHz function / arbitrary waveform generator, built-in multiple predefined waveforms
- Large 10.1" TFT-LCD display with 1024 * 600 resolution; Capacitive touch screen supports multi-touch gestures
- Supports external mouse and keyboard
- 10 types of one-button shortcuts
- Multiple interfaces: USB Host, USB Device (USBTMC), LAN (VXI-11, telnet, socket, web), Pass/Fail, Trigger Out, 10 MHz In, 10 MHz Out, VGA output
- Built-in web server supports remote control by the LAN port using a web browser
- Supports SCPI remote control commands

Models and Key Specifications

Model	SDS5034X SDS5032X	SDS5054X SDS5052X	SDS5104X SDS5102X
Bandwidth	350 MHz	500 MHz	1GHz
Sample rate (Max.)	5 GSa/s (interleaving mode)*, 2.5 GSa/s (non-interleaving mode**)		
Analog channels	2/4 + EXT		
Memory depth (Max.)	250 Mpts/ch (interleaving mode), 125 Mpts/ch (non-interleaving mode)		
Waveform capture rate (Max.)	110,000 wfm/s (normal mode), 500,000 wfm/s (sequence mode)		
Trigger type	Edge, Slope, Pulse width, Window, Runt, Interval, Dropout, Pattern, Video, Qualified, Nth edge, Setup/hold, Delay		
Serial trigger and decode	I2C, SPI, UART, CAN, LIN, CAN FD, FlexRay, I2S, MIL-STD-1553B		
Digital channel (optional)	16-channel; maximum waveform capture rate up to 1.25 GSa/s; record length up to 62.5 Mpts		
Waveform generator (optional)	Single channel, frequency up to 25 MHz, 125 MSa/s sample rate, 16 kpts waveform memory		
I/O	USB Host, USB Device, LAN, Pass/Fail, Trigger Out, 10 MHz In, 10 MHz Out, VGA Output		
Probe (standard)	1 probe supplied for each channel		
Display	10.1" TFT-LCD with capacitive touch screen (1024*600)		

- interleaving mode: only one of CH1/CH2 and/or only one of CH3/CH4 activated
- non-interleaving mode: both CH1/CH2 or both CH3/CH4 activated
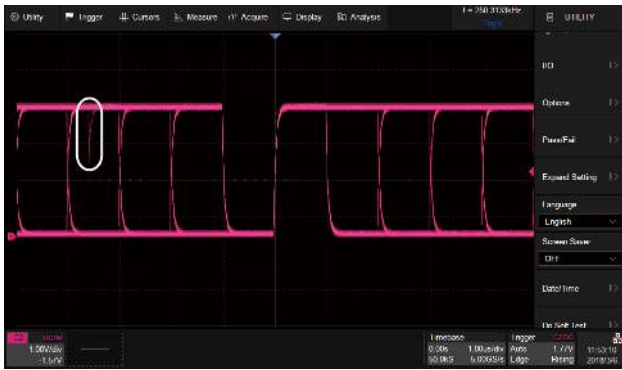
Functions & Characteristics

### 10.1" TFT-LCD display with capacitive touch screen
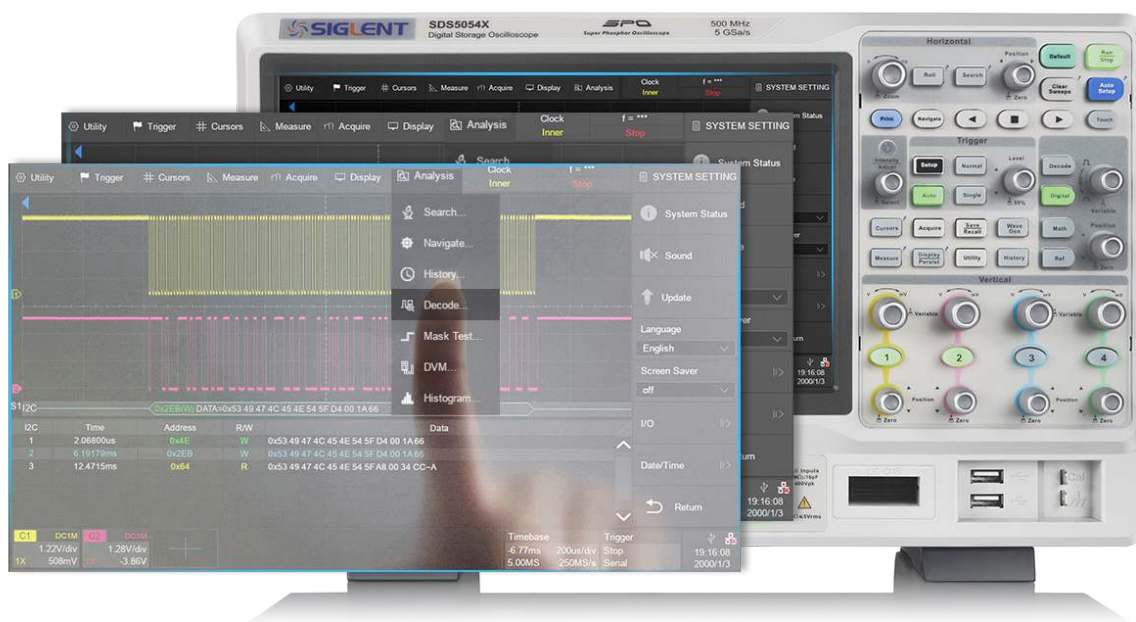
- 10.1" display with 1024*600 resolution
- Capacitive touch screen, supporting multi-touch gestures, can move or scale the waveform traces quickly by finger-touch movements, which greatly improves the operation efficiency.

⚡ Up to 110,000 wfm/s waveform update rate

With a waveform update rate of up to 110,000 wfm/s, the oscilloscope can easily capture unusual or low-probability events. In Sequence mode the waveform capture rate can reach 500,000 wfm/s

⚡ Record Length of up to 250 Mpts/ch

Full 5 GSa/s sample rate @ 5 ms/div
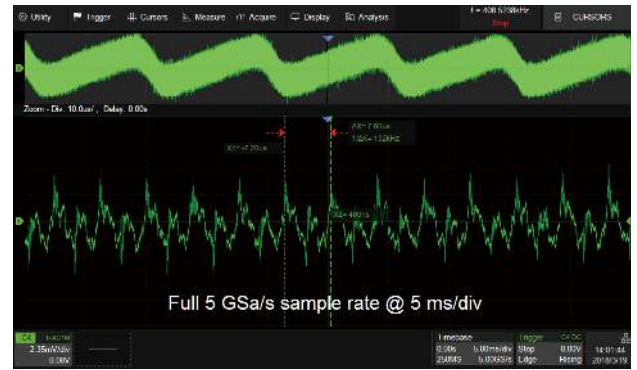
Using hardware-based Zoom technique and record length of up to 250 Mpts, users can select a slower timebase without compromising the sample rate, and then quickly zoom in to focus on the area of interest

## ⚡ Measurements of a Variety of Parameters

Parameter measurements includes 4 categories: horizontal, vertical, miscellaneous and CH delay providing a total of 50+ different types of measurements. Measurements can be performed within a specified gate period. Measurements on Math, Reference and History frames are supported

## ⚡ Parameter statistics function

Statistics shows the current value, maximum value, minimum value, standard deviation and mean value of up to 5 parameters simultaneously. Histogram is available to show the probability distribution of a parameter. Trend is available to show the parameter value vs. time.

Multiple Trigger Functions
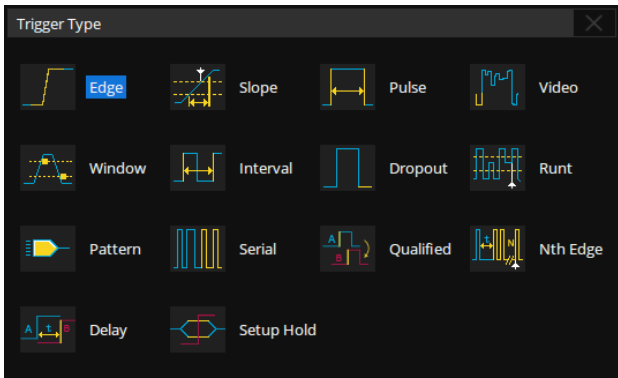
Edge, Slope, Pulse, Video, Windows, Runt, Interval, Dropout, Pattern, Qualified, Nth edge, Setup/hold, Delay and serial trigger
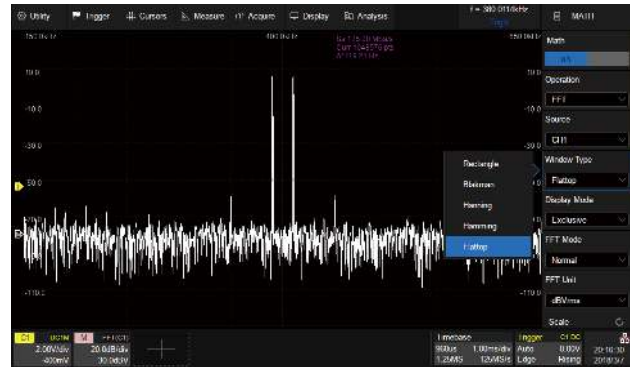
Trigger Zone
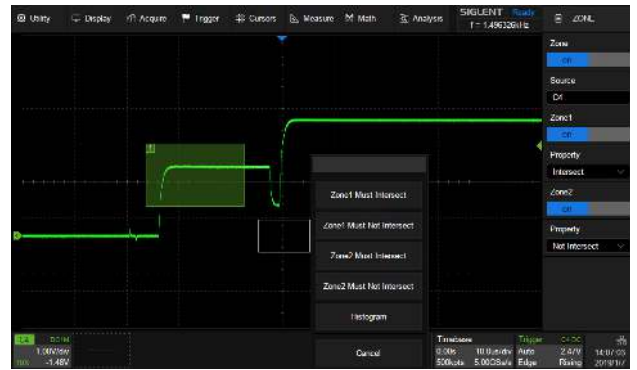
Trigger Zone is available for advanced triggering

Advanced Math Function

In addition to the traditional (+, -, X, /) operations, FFT, integration, differential, square root and so on are supported. Formula Editor is available for more complex operations. 2 math traces are available.


Hardware accelerated FFT supports up to 2 Mpts operation. This provides high frequency resolution with a fast refresh rate. The FFT function also supports a variety of window functions so that it can adapt to different spectrum measurement needs. Three modes (Normal, Average and Max hold) can satisfy different requirements for observing the power spectrum. Auto peak detection and markers are supported.

History Mode

History function can record up to 100,000 frames of waveforms. The recording is executed automatically, so that the customer can play back the history waveforms at any time in order to observe unusual events and quickly locate the area of interest using the cursors or measurements

Sequence Mode
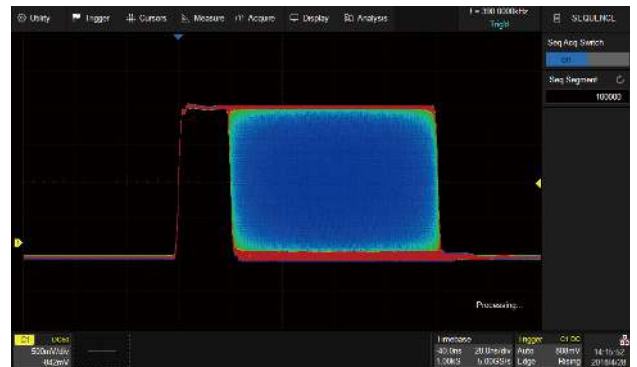
Segmented memory collection will store the waveform into multiple memory segments (up to 100,000) and each segment will store a triggered waveform as well the dead time information. The interval between segments can be as small as 2 μs. All of the segments can be played back using the History function

Search and Navigate

The SDS5000X can search events specified by the user in a frame. Events flagged by the Search can be recalled automatically using Navigate. It can also navigate by time (delay position) and history frames

Hardware-based Average and Eres Acquisition

Normal   Average   ERES
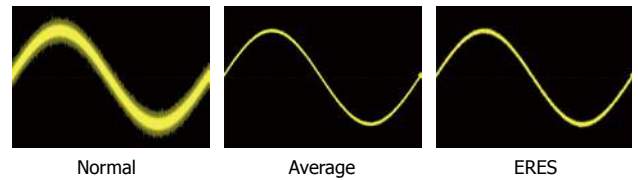
Average and ERES (Enhanced Resolution) acquisition modes are hardware-based, allowing the waveforms to be captured at a faster rate

Hardware-based High Speed Mask Test Function
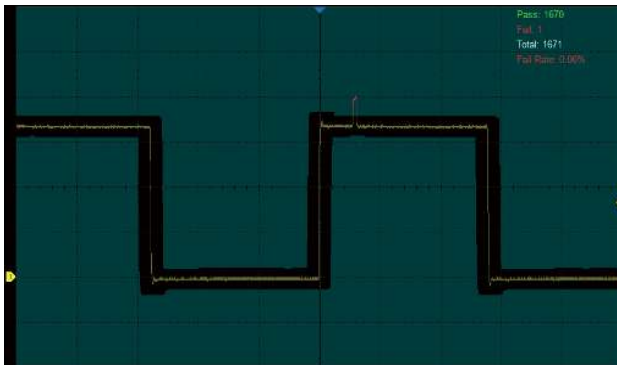
The SDS5000X utilizes a hardware-based Mask Test function, performing up to 18,000 Pass / Fail decisions each second. It is easy to generate user-defined test templates in order to provide trace mask comparisons, making it suitable for long-term signal monitoring or automated production line testing
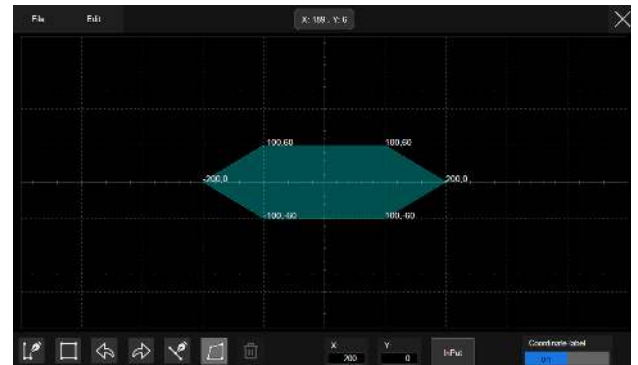
Built-in Mask Editor application helps to create custom masks

256-level Intensity Grading and Color Temperature Display Modes
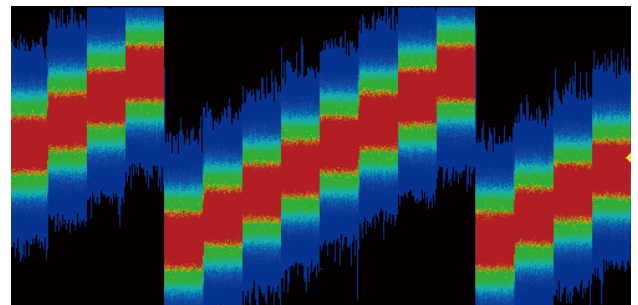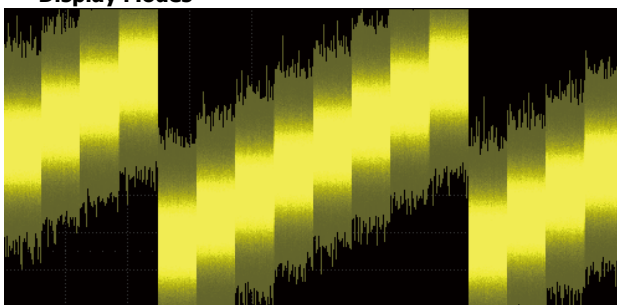
⚡ Serial Bus Decode
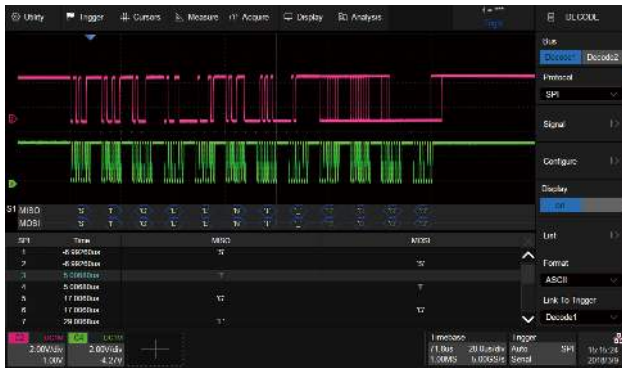
Display the decoded characters through the events list. Bus protocol information can be quickly and intuitively displayed in tabular form. I2C, SPI, UART, CAN, LIN, CAN FD, FlexRay, I2S and MIL-STD-1553B are supported

⚡ Waveform Histogram
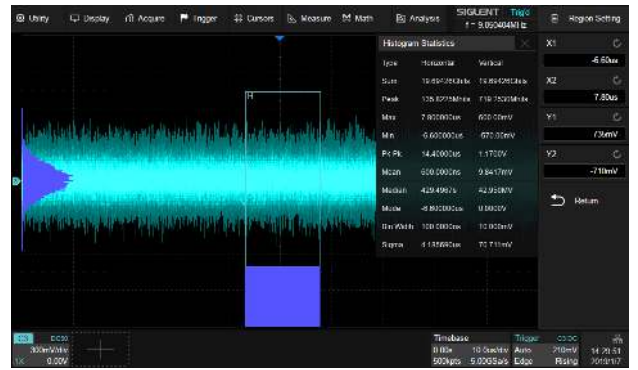
The Waveform Histogram feature provides a statistics view of the waveform in horizontal and vertical directions

⚡ Bode Plot

The SDS5000X can control the USB AWG module or a stand-alone SIGLENT SDG generator, to scan the amplitude and phase frequency response of the DUT, and display the data as a Bode Plot. This makes it possible to replace expensive network analyzer in some applications.

### ⚡ Power Analysis (Optional)

The Power Analysis option provides a full suite of power measurements and analysis, which greatly improve the measurement efficiency in switching power supplies and power devices design.

⚡ Digital Voltmeter Function

4-digit voltmeter and 7-digit frequency counter. Any analog channel can be selected as a source. Bar, Histogram and Trend diagrams are supported

⚡ Web control

With the new embedded web server, users can control the oscilloscope from a simple web page. This provides wonderful remote troubleshooting and monitoring capabilities.

Digital Channels / MSO (Optional)

Four analog channels plus 16 digital channels enable users to acquire and trigger on the waveforms then analyze the pattern, simultaneously with one instrument

25 MHz Function/Arbitrary Waveform Generator (Optional)

the SDS5000X can control the SAG1021I USB Function/Arbitrary waveform generator to output waveform with up to 25 MHz frequency and ±3 V amplitude. Six basic waveforms plus multiple types of arbitrary waveforms are built-in

Complete Connectivity

USB Host, USB Device (USBTMC), LAN (VXI-11, telnet, socket, web), Pass/Fail, Trigger Out, 10 MHz In/Out and VGA output

Specifications

All specifications are not guaranteed unless the following conditions are met:
• The oscilloscope calibration period is current
• The oscilloscope has been working continuously for at least 30 minutes at the specified temperature (18℃ ~ 28℃)

Acquire System (analog channel)

Sample rate	5 GSa/s (interleaving mode), 2.5 GSa/s (non-interleaving mode)
Memory depth	250 Mpts (interleaving mode), 125 Mpts (non-interleaving mode)
Peak detect	400 ps
Average	4, 16, 32, 64, 128, 256, 512, 1024, 2048, 4096, 8192, 16384, 32768, 65536
ERES	Enhanced bit: 0.5, 1, 1.5, 2, 2.5, 3
Sequence	Up to 100,000 segments, interval between triggers = 2 μs min
History	Up to 100,000 frames
Interpolation	sinx/x, x

Vertical System	SDS5034X SDS5032X	SDS5054X SDS5052X	SDS5104X SDS5102X
Bandwidth (-3dB) @50 Ω	350 MHz*	500 MHz**	1 GHz**
Rise time (typical) @50 Ω	1.0 ns	0.7 ns	0.4 ns
Vertical range	8 divisions		
Vertical scale (probe 1X)	1 MΩ: 500 μV/div – 10 V/div(setting range), 1 mV/div – 10 V/div(specified range)		
	50 Ω: 500 μV/div – 1 V/div(setting range), 1 mV/div – 1 V/div(specified range)		
DC gain accuracy	< 1.5%, ≥5mV/div < 3.0%, <5mV/div		
Offset range (probe 1X)	500 μV/div ~ 100 mV/div: ± 1V 102 mV/div ~ 1 V/div: ± 10 V 1.02 V/div ~ 10 V/div: ± 100 V		
Offset accuracy	±(1.5%*offset+1.5%*full scale+1mV)		
Bandwidth flatness (>2 mV/div, @50 Ω)	10 kHz ~ BW/10: ±0.5 dB BW/10 ~ BW/3: ±0.8 dB BW/3 ~ BW2/3: +1.0 dB, -1.2 dB BW2/3 ~ BW: +2.0 dB, -2.5 dB		
Bandwidth limit	20 MHz (±40%) 200 MHz (±40%)		
Low frequency response (AC coupling -3 dB)	5 Hz (typical)		
Overshoot (150 ps pulse @50 Ω)	<10% (typical)	<10% (typical)	<15% (typical)
Max. Input voltage	1 MΩ ≤ 400 Vpk(DC + AC), (DC~10 kHz) 50 Ω ≤ 5 Vrms, ±10 V Peak		
Coupling	DC, AC, GND		
Impedance	(1 MΩ±2%) || (16 pF±2 pF) 50 Ω: 50 Ω±1%		
SFDR	≥ 32 dBc		
CH to CH Isolation (@50Ω)	DC ~ 100 MHz >40 dB 100 MHz ~ BW: ≥34 dB		
Probe Attenuation	1X, 10X, 100X, custom		

* Below 1 mV/div (included) the bandwidth is limited to 200 MHz
** Below 2.45 mV/div (included) the bandwidth is limited to 200 MHz

Horizontal System	SDS5034X SDS5032X	SDS5054X SDS5052X	SDS5104X SDS5102X
Time scale	1 ns/div – 1000 s/div	500 ps/div – 1000 s/div	200 ps/div – 1000 s/div
Waveform update rate	Up to 110,000 wfm/s		
Intensity grading	256-level		
Display mode	Y-T，X-Y, Roll		
Roll mode	≥ 50 ms/div		
Skew (CH1~CH4)	< 150 ps		
Time base Accuracy	±1ppm initial; ±1ppm 1st year aging; ±3.5ppm 10-year aging		

Trigger System

Mode	Auto, Normal, Single			
Level	Internal: ±4.1 div from the center of the screen			
	EXT: ±0.61 V			
	EXT/5: ±3.05 V			
Hold off range	By time: 8 ns ~ 30 s (8 ns step)			
	By event: $1 \sim 10^8$			
Coupling (CH1 ~ CH4)	DC: Passes all components of the signal AC: Blocks DC components and attenuates signals below 8 Hz LFRJ: Attenuates the frequency components below 1.2 MHz HFRJ: Attenuates the frequency components above 740 kHz Noise RJ: Increases the trigger hysteresis			
Coupling (EXT)	DC: Passes all components of the signal AC: Blocks DC components and attenuates signals below 10 Hz LFRJ: Attenuates the frequency components below 400 kHz HFRJ: Attenuates the frequency components above 1.6 MHz			
Accuracy (typical)	CH1 ~ CH4: ±0.2 div EXT: ±0.3 div			

			Noise RJ = OFF	Noise RJ = ON
Sensitivity	CH1 ~ CH4:	>10 mV/div:	0.3 div	0.7 div
		5 mV/div~10 mV/div:	0.5 div	0.7 div
		≤2 mV/div:	1 div	1.5 div
	EXT: 200 mVpp DC ~ 10 MHz 300 mVpp 10 MHz ~ bandwidth			
	EXT/5: 1 Vpp DC ~ 10 MHz; 1.5 Vpp 10 MHz ~ bandwidth			

Jitter	<9ps RMS (typical) for ≥300MHz sine and ≥6 divisions peak to peak amplitude for vertical gain settings from 2.5mV/div to 10V/div. <5ps RMS (typical) for ≥500MHz sine and ≥6 divisions peak to peak amplitude for vertical gain settings from 2.5mV/div to 10V/div.
Displacement	Pre-Trigger: 0 ~ 100% memory Delay-Trigger: 0 ~ 5,000 div
Zone	Up to 2 zones Source: CH1~CH4 Property: Intersect, Not Intersect

Edge Trigger

Slope	Rising, Falling, Rising & Falling
Source	CH1~CH4/EXT/(EXT/5)/AC Line/D0~D15

Slope Trigger	
Slope	Rising, Falling
Source	CH1 ~ CH4
Limit range	<, >, < >, > <
Time range	2 ns ~ 20 s
Resolution	1 ns
Pulse Width Trigger	
Polarity	+wid, -wid
Limit Range	<, >, < >, > <
Source	CH1~CH4/D0~D15
Pulse Width Range	2 ns ~ 20 s
Resolution	1 ns
Video Trigger	
Standard	NTSC, PAL, 720p/50, 720p/60, 1080p/50, 1080p/60, 1080i/50, 1080i/60, Custom
Source	CH1~CH4
Synchronization	Any, Select
Trigger Condition	Line, Field
Window Trigger	
Window type	Absolute, Relative
Source	CH1~CH4
Interval Trigger	
Slope	Rising, Falling
Limit Range	<, >, < >, > <
Source	CH1~CH4/D0~D15
Time Range	2 ns ~ 20 s
Resolution	1 ns
Dropout Trigger	
Timeout type	Edge, State
Source	CH1~CH4/D0~D15
Slope	Rising, Falling
Time Range	2 ns ~ 20 s
Resolution	1 ns
Runt Trigger	
Slope	Rising, Falling
Limit Range	<, >, < >, > <
Source	CH1~CH4
Time Range	2 ns ~ 20 s
Resolution	1 ns

Pattern Trigger	
Pattern Setting	Don't Care, Low, High
Logic	AND, OR, NAND, NOR
Source	CH1~CH4/D0~D15
Limit Range	<, >, < >, > <
Time Range	2 ns ~ 20 s
Resolution	1 ns
Qualified Trigger	
Type	State, State with Delay, Edge, Edge with Delay
Qualified Source	CH1~CH4/D0~D15
Edge Trigger Source	CH1~CH4/D0~D15
Nth Edge Trigger	
Source	CH1~CH4/D0~D15
Delay Trigger	
Slope	Rising, Falling
Source A	CH1~CH4/D0~D15
Source B	CH1~CH4/D0~D15
Limit Range	<, >, < >, > <
Time Range	2 ns ~ 20 s
Resolution	1 ns
Setup/Hold Trigger	
Type	Setup, Hold
Clock Source	CH1~CH4/D0~D15
Data Source	CH1~CH4/D0~D15
Limit Range	<, >, < >, > <
Time Range	2 ns ~ 20 s
Resolution	1 ns
Serial Trigger	
Protocol	I2C, SPI, UART, CAN, LIN, CAN FD, FlexRay, I2S, MIL-STD-1553B
Source	CH1~CH4/D0~D15
I2C Trigger	Type: Start, Stop, Restart, No Ack, EEPROM, Address & Data, Data Length
SPI Trigger	Type: Date
UART Trigger	Type: Start, Stop, Data, Parity Error
CAN Trigger	Type: All, Remote, ID, ID+Data, Error
LIN Trigger	Type: Break, Frame ID, ID+Data, Error
CAN FD Trigger	Type: Start, Remote, ID, ID+Data, Error
FlexRay Trigger	Type: TSS, Frame, Symbol, Errors
I2S Trigger	Type: Data, Mute, Clip, Glitch, Rising Edge, Falling Edge

Serial Decoder	
Decoders	2
Threshold	-4.1 ~ 4.1 div
List	1 ~ 7 lines
Decoder type	Full duplex
I2C	
Signal	SCL, SDA
Address	7 bit, 10 bit
SPI	
Signal	CLK, MISO, MOSI, CS
Edge Select	Rising, Falling
Chip select	Active high, active low, clock timeout
Bit Order	LSB, MSB
UART	
Signal	RX, TX
Data Width	5 bit, 6 bit, 7 bit, 8 bit
Parity Check	None, Odd, Even
Stop Bit	1 bit, 1.5 bit, 2 bit
Idle Level	Low, high
Bit Order	LSB, MSB
CAN	
Source	CH1~CH4/D0~D15
LIN	
LIN Specification Package Revision	Ver1.3, Ver2.0
Baud Rate	5 kbps, 10 kbps, 20 kbps, 50 kbps, 100 kbps, 125 kbps, 250 kbps, 500 kbps, 800 kbps, 1 Mbps, Custom
CAN FD	
Source	CH1~CH4/D0~D15
Nominal Baud Rate	10 kbps, 25 kbps, 50 kbps, 100 kbps, 250 kbps, 1 Mbps, Custom
Data Baud Rate	500 kbps, 1 Mbps, 2 Mbps, 5 Mbps, 8 Mbps, 10 Mbps, Custom
FlexRay	
Source	CH1~CH4/D0~D15
Data Baud Rate	2.5 Mbps, 5 Mbps, 10 Mbps, Custom
I2S	
Signal	BCLK, WS, DATA
Audio Variant	Audio-I2S, Audio-LJ, Audio-RJ
Start Bits	0~32
Data Bits	0~32
MIL-STD-1553B	
Source	CH1~CH4

Measurement

Source	CH1~CH4, Math, Ref, History, Zoom
Mode	Simple, Advanced
No. of Measurements	Display 12 measurements at the same time (Display mode = M2)
Range	Screen, Gating
Measurement Parameters	
Vertical	Max, Min, Pk-Pk, Top, Base, Amplitude, Mean, Cycle Mean, Stdev, Cycle Stdev, RMS, Cycle RMS, Median, Cycle Median, FOV, FPRE, ROV, RPRE, L@T
Horizontal	Period, Freq, Time@max, Time@min, +Width, -Width, 10-90%Rise, 90-10%Fall, 20-80%Rise, 80-20%Fall, +BWidth, -BWidth, +Duty, -Duty, Delay, T@M, CCJ
Miscellaneous	+Area, -Area, Area, AbsArea, Cycles, Rising Edges, Falling Edges, Edges, Ppulses, Npulses
Delay	Phase, FRFR, FRFF, FFFR, FFFF, FRLR, FRLF, FFLR, FFLF, Skew
Statistics	Current, Mean, Min, Max, Sdev, Count, Histogram, Trend
Statistics count	Unlimited, 1~1024
Cursors	
Source	CH1~CH4, D0~D15, Math, Ref, Histogram
Type	Manual : Time X1, X2, (X1-X2), (1/ΔT) Voltage/ampere Y1, Y2, (Y1-Y2) Track: Time X1, X2, (X1-X2)

Math

Traces	F1, F2
Operation	+, -, *, /, FFT, d/dt, ∫dt, square root, Identity, Negation, |x|, Sign, e^x, 10^x, ln, lg, Formula Editor
FFT	Length: 2 Mpts, 1 Mpts, 512 kpts, 256 kpts, 128 kpts, 64 kpts, 32 kpts, 16 kpts, 8 kpts, 4 kpts, 2 kpts Window: Rectangular, Blackman, Hanning, Hamming, Flattop Display: Full Screen, Split, Exclusive Mode: Normal, Max hold, Average Tools: Peaks, Markers

Analysis

Search

Source	CH1~CH4, history
Mode	Edge, Slope, Pulse, Interval, Runt
Copy setting	Copy from trigger, Copy to trigger

Navigate

Type	Search event, Time, History frame

Mask Test

Source	CH1~CH4, Z1~Z4
Mask creating	Auto (Create mask), Customized (Mask Editor, optional)
Mask test speed	Up to 18,000 frames/s
Store failed frames	To history, To screenshot

DVM

Source	CH1~CH4
Mode	DC mean, DC RMS, AC RMS, Peak-peak, Amplitude
Plot	Bar, Histogram, Trend

Bode Plot

Source	CH1~CH4
Supported signal sources	SAG1021I, SDG series waveform generators Connection: USB, LAN
Sweep type	Simple, Vari-level
Frequency	Mode: Linear, Logarithmic Range: 10 Hz ~ 120 MHz
Measure	Upper cutoff frequency, Lower cutoff frequency, Bandwidth, Gain margin, Phase margin

Power Analysis (Optional)

Measure	Power quality, Current Harmonics, Inrush current, Switching loss, Slew rate, Modulation, Output ripple, Turn on/turn off, Transient response, PSRR, Efficiency

Histogram

Source	CH1~CH4
Type	Horizontal, Vertical, Both

Counter

Source	CH1~CH4
Frequency resolution	7 digits
Totalizer	Counter on edges, support Gate and Trigger

Function/Arbitrary Waveform Generator (Optional)

Channels	1
Max. Output Frequency	25 MHz
Sampling Rate	125 MSa/s
Frequency Resolution	1 µHz
Frequency Accuracy	±50 ppm
Vertical Resolution	14-bit
Amplitude Range	-1.5 V ~ +1.5 V (into 50 Ω) -3 V ~ +3 V (into Hi-Z)
Waveforms	Sine, Square, Ramp, Pulse, DC, Noise, 45 Arbs
Output Impedance	50 Ω±2%
Protection	Over voltage protection, Current limit
Insulation Voltage	±42 Vpk (for SAG1021I only)
Sine	
Frequency	1 µHz ~ 25 MHz
Offset accuracy (10 kHz)	±(1%*offset setting value +3 mVpp)
Amplitude flatness	±0.3 dB, compare to 10 kHz, 5 Vpp
SFDR	DC ~ 1 MHz -60 dBc 1 MHz ~ 5 MHz -55 dBc 5 MHz ~ 25 MHz -50 dBc
Harmonic distortion	DC ~ 5 MHz -50 dBc 5 MHz ~ 25 MHz -45 dBc
Square/Pulse	
Frequency	1 µHz ~ 10 MHz
Duty cycle	1% ~ 99%
Edge	< 24 ns (10% ~ 90%)
Overshoot	< 3% (typical, 1 kHz, 1 Vpp)
Pulse width	> 50 ns
Jitter (cycle-cycle)	< 500 ps + 10 ppm
Ramp	
Frequency	1 µHz~ 300 kHz
Linearity	< 0.1% of Pk-Pk (typical, 1 kHz, 1 Vpp, 50% symmetry)
Symmetry	0% ~ 100%
DC	
Offset range	±1.5 V (into 50 Ω) ±3 V (into Hi-Z)
Accuracy	±(|setting value|*1%+3 mV)

Noise	
Bandwidth	>25 MHz (-3dB)
Arb	
Frequency	1 µHz ~ 5 MHz
Waveform memory	16 kpts
Sample rate	125 MSa/s
Wave import	From EasyWave or U-disk

Digital Channels (Optional)

No. of Channels	16
Max. Sampling Rate	1.25 GSa/s
Memory Depth	62.5 Mpts/ch
Min. Detectable Pulse Width	3.3 ns
Level Group	D0~D7, D8~D15
Level Range	-10 V~10 V
Logic Type	TTL, CMOS, LVCMOS3.3 , LVCMOS2.5, custom
Skew	D0~D15: ±1 sampling interval Digital to Analog: ± (1 sampling interval +1 ns)

I/O

Standard	3 USB Hosts, 1 USB Device, LAN, AUX(Pass/Fail+Trigger Out), 10 MHz In/ Out
Pass/Fail	3.3 V TTL output
Ext Trigger Channel	Ext≤1.5 Vrms, Ext/5≤7.5 Vrms

Display

Display Type	10.1 TFT LCD
Resolution	1024×600
Contrast	500:1 (typical)
Backlight	500 nit
Range	8 x 10 grid
Touch screen type	Capacitive

Waveform Display

Type	Dot, vector
Persistence Time	OFF, 1 s, 5 s, 10 s, 30 s, infinite
Color Display	Normal, Color

Environmental

Temperature	Operating: 10 °C ~ 40 °C Non-operating: -20 °C ~ 60 °C
Humidity	Operating: 85%RH, 40 °C , 24 hours Non-operating: 85%RH, 65 °C, 24 hours
Altitude	Operating: ≤3,000 m Non-operating: ≤15,266 m
Electromagnetic Compatibility	2014/30/EU Execution Standard EN 61326-1:2013
Safety	2014/35/EU Execution Standard EN 61010-1:2010

Power Supply

Input Voltage & Frequency	100 ~ 240 Vrms 50/60 Hz 100 ~ 120 Vrms 400 Hz
Power consumption	100 W max., 70 W typical, 4 W typical in standby mode

Mechanical

Dimensions	Length*Width*Height = 370 mm×144 mm×231 mm
Weight	N.W 3.9 kg(2-ch); 4.0 kg(4-ch) G.W 5.4 kg(2-ch); 5.6 kg(4-ch)

Ordering Information

Mode	Description
SDS5104X	1 GHz, 4 CH, 5 GSa/s (Max.)
SDS5102X	1 GHz, 2 CH, 5 GSa/s (Max.)
SDS5054X	500 MHz, 4 CH, 5 GSa/s (Max.)
SDS5052X	500 MHz, 2 CH, 5 GSa/s (Max.)
SDS5034X	350 MHz, 4 CH, 5 GSa/s (Max.)
SDS5032X	350 MHz, 2 CH, 5 GSa/s (Max.)

Standard Accessories
USB cable x1
Quick start x1
Passive probe (SP3050A) x2 (2-ch model); x4 (4-ch model)
Certificate of calibration x1
Power cord x1

Optional Accessories	
SDS-5000X-4BW05	350 MHz to 500 MHz bandwidth upgrade (4-ch model) *
SDS-5000X-2BW05	350 MHz to 500 MHz bandwidth upgrade (2-ch model) *
SDS-5000X-4BW10	500 MHz to 1 GHz bandwidth upgrade (4-ch model)
SDS-5000X-2BW10	500 MHz to 1 GHz bandwidth upgrade (2-ch model)
SDS-5000X-FG	Waveform generator software
SAG1021I	25 MHz isolated USB function/arbitrary waveform generator
SDS-5000X-16LA	16 digital channels (software)
SPL2016	16-channel logic probe
SDS-5000X-I2S	I2S trigger & decode
SDS-5000X-CANFD	CAN FD trigger & decode
SDS-5000X-FlexRay	FlexRay trigger & decode
SDS-5000X-1553B	MIL-STD-1553B trigger & decode
SDS-5000X-PA	Power Analysis
STB3	STB3 demo signal source
SAP1000	1 GHz active probe
HPB4010	High voltage probe
CPL5100/CP4020/CP4050/CP4070/ CP4070A/CP5030/ CP5030A/CP5150/ CP5500	Current probe
DPB1300/DPB4080/DPB5150/ DPB5150A/DPB5700/ DPB5700A	High voltage differential probe

* SDS5034X/SDS5032X cannot be upgraded to SDS5104X/SDS5102X

SDS5000X Series
Digital Storage Oscilloscope

SIGLENT®

About SIGLENT

SIGLENT is an international high-tech company, concentrating on R&D, sales, production and services of electronic test & measurement instruments.

SIGLENT first began developing digital oscilloscopes independently in 2002. After more than a decade of continuous development, SIGLENT has extended its product line to include digital oscilloscopes, function/arbitrary waveform generators, RF generators, digital multimeters, DC power supplies, spectrum analyzers, vector network analyzers, isolated handheld oscilloscopes, electronic load and other general purpose test instrumentation. Since its first oscilloscope, the ADS7000 series, was launched in 2005, SIGLENT has become the fastest growing manufacturer of digital oscilloscopes. We firmly believe that today SIGLENT is the best value in electronic test & measurement.

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