SDS1000X HD

digital oscilloscope

Data sheet

CN01D

深圳市鼎阳科技股份有限公司
SIGLENT TECHNOLOGIES CO.,LTD

SDS1074X HD

SDS1104X HD

SDS1204X HD

SDS1072X HD

SDS1102X HD

SDS1202X HD

Product overview

SDS1000X HD series high-resolution digital oscilloscopes with the highest

12-bit vertical resolution, excellent noise floor performance and vertical measurement

accuracy can meet higher precision measurement needs. SDS1000X HD has a

maximum bandwidth of 200 MHz, a sampling rate of up to 2 GSa/s, 2/4 analog channels

and 16 digital channels, and a storage depth of up to 100 Mpts.

SDS1000X HD adopts SPO technology, with a waveform capture rate as high as

500,000 frames/second, with 256 brightness levels and color temperature display; innovative

New digital trigger system with high trigger sensitivity and small trigger jitter; supports

rich intelligent triggering, serial bus triggering and decoding; supports history

   (History) mode, segmented acquisition (Sequence), template testing, search,

navigation, Bode plot and power analysis and other advanced analysis modes; equipped with

Rich measurement and mathematical operation functions. SDS1000X HD adopts

10.1-inch capacitive touch screen supports multiple gestures to control waveforms and

The common operations of the menu, combined with multiple one-touch operation buttons on the front

panel, greatly optimize the efficiency of operating the oscilloscope and improve the user experience.

Features and Benefits

Analog channel bandwidth: up to 200 MHz; real-time sampling rate up to

2 GSa/s

vertical resolution: 12-bit low

noise floor, as low as 70 ÿVrms at full 200 MHz bandwidth

SPO technology

ÿ Waveform capture rate up to 500,000 frames/second (Sequence

mode), 120,000 frames/second (normal mode)

ÿ Supports 256 levels of waveform brightness and color temperature display

ÿ Storage depth up to 100 Mpts ÿ Digital triggering

Intelligent triggering: edge, slope, pulse width, window, runt, interval,

Timeout, pattern, video trigger (HDTV supported), premise edge,

Nth edge, delay, setup/hold time

Serial bus triggering and decoding, supported protocols include standard I2C,

SPI, UART, CAN, LIN, CAN FD (decode only), FlexRay

   (decoding only)

Segment acquisition (Sequence) mode, the maximum storage depth can be divided

into 80,000 equal segments. According to the trigger conditions set by the user, the

Very small dead time segments capture qualifying events.

History mode (History), can record up to 80,000 frame waveforms and dozens of

automatic measurement functions, supporting measurement statistics, Gating measurement,

Math measurement, History measurement, Ref measurement. Supports 4 independent

waveform operations for histogram and

trend chart statistics of measurement parameters, supports 2M point FFT and more than

20 common time domain operations; supports custom expressions to achieve complex nesting

Operation

Multiple advanced data analysis and processing capabilities: search and navigation, high-speed

Mask test, Bode plot, power analysis (option), counter, etc.

16 digital channels (option)

25 MHz arbitrary waveform generator (optional)

10.1-inch capacitive touch display, resolution 1024*600 Rich interfaces: SBUS

(Siglent logic analyzer interface), 3 USB Hosts, USB Device (USBTMC), LAN

ÿ VXI-11/Telnet/Socket+SCPI ÿÿ Pass/Fail

Trigger Out, etc.

support external mouse and keyboard operations; built-in WebServer support

Control instruments via web page

Supports rich SCPI remote control commands

Multi-language display and embedded online help

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Model and main parameters

model	SDS1074X HD SDS1072X HD	SDS1104X HD SDS1102X HD	SDS1204X HD SDS1202X HD
Number of channels	4+EXT (4-channel series: SDSxxx4X HD) 2+EXT (2-channel series: SDSxxx2X HD)		
bandwidth	70 MHz	100 MHz	200 MHz
Maximum real-time sampling rate	Single channel mode: 2 GSa/s Dual channel mode: 1 GSa/s Quad channel mode: 500 MSa/s		
Maximum storage depth	Single channel mode: 100 Mpts/ch Dual channel mode: 50 Mpts/ch Quad channel mode: 25 Mpts/ch		
Waveform capture rate	Normal mode: up to 120,000 wfm/s; Sequence mode: up to 500,000 wfm/s		
vertical resolution	12-bit		
Trigger type	Edge, Slope, Pulse width, Window, Runt, Interval, timeout (Dropout), pattern, video, premise edge (Qualified), Nth edge (Nth edge), delay (Delay), setup/hold time (Setup/Hold time), serial trigger		
Serial triggering and decoding	standard: I 2C, SPI, UART, CAN, LIN, CAN FD (decoding only), FlexRay (decoding only)		
Measurement	More than 50 parameter measurements, and supports histogram, trend graph and trajectory graph		
computation	statistics. 4-channel 2M point FFT spectrum analysis; addition, subtraction, multiplication, division, integral, differential, square root, average, ERES, absolute value, sign, equivalent , negation, logarithm, exponential, interpolation, maximum hold, minimum hold and other time domain operations; Supports formula editor to implement complex nested operations		
data analysis and processing tools	Search, navigation, history, mask test, Bode plot, power analysis (optional), counter		
Digital channels (optional)	16 channels, 1GSa/s sampling rate, 10 Mpts/ch storage depth		
USB Arbitrary Waveform Generator (optional)	Single channel, maximum output frequency 25MHz, sampling rate 125MSa/s, waveform length 16kpts, isolated output		
interface	SBUS (Siglent logic analyzer interface), USB 2.0 Host x3, USB 2.0 Device, 10M/100M LAN, external trigger input, auxiliary output (TRIG OUT, PASS/FAIL) 4 sets/2 sets passive probe PB470 4 sets/2 Set of		
Probe	passive probes PP510 4 sets/2 sets of passive probes PP215		
show	10.1-inch capacitive touch display, resolution 1024*600		

design feature

High-resolution oscilloscope to meet higher-precision testing needs
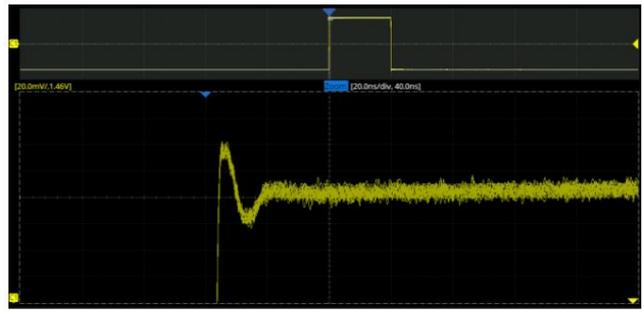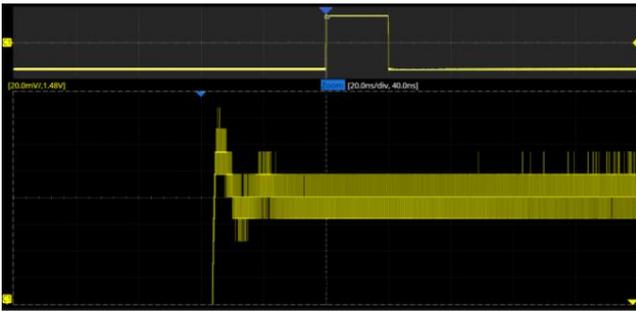
12-bit high-resolution sampling, superimposed horizontal and vertical Zoom functions, taking into account both overall and detailed observation of waveforms
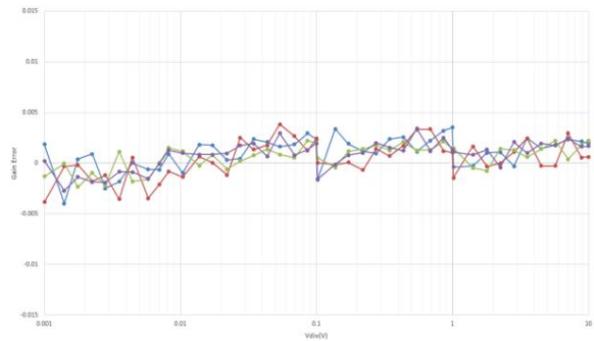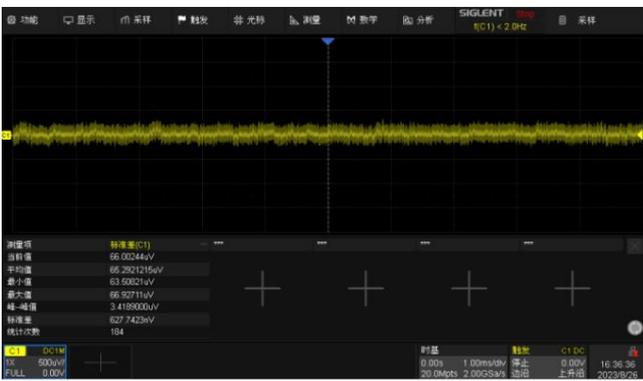
Excellent noise floor performance, the noise floor value at the full bandwidth of 200 MHz is only

is 70 ÿVrms, allowing the 12-bit ADC to fully utilize its performance

0.5% DC gain accuracy

Excellent user interface and user experience

ÿ Equipped with a large 10.1-inch TFT-LCD display with a resolution of

1024*600 ÿ

Flat capacitive touch screen, specially defined for oscilloscope operation

Various gestures greatly improve the efficiency of instrument control

ÿ Embedded WebServer, can be accessed remotely through the web page

and operating the oscilloscope

ÿ Support mouse and keyboard operation

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High refresh rate helps catch anomalies quickly
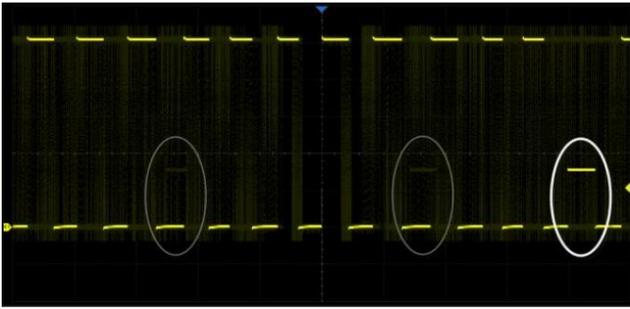
120,000 frames/second in normal mode, 500,000 in Sequence mode

The frame/second waveform refresh rate enables the oscilloscope to easily capture low-probability anomalies.

common events

Large storage depth takes into account both overall and details
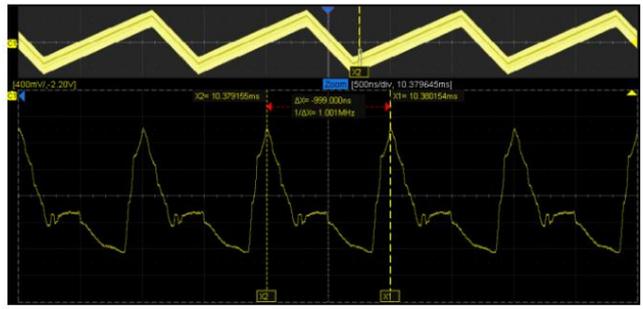
Maximum 100 Mpts/channel deep storage enabling users to use higher

The sampling rate captures a longer signal, combining horizontal and vertical

Zoom function to achieve both overall and detailed consideration

Rich advanced triggering functions

Has rich trigger functions, including edge, slope, pulse width, video,

Window, interval, timeout, runt, pattern, premise edge, Nth edge,

Delay, setup/hold time and multiple bus triggers (serial trigger)

Various mathematical operation functions

4 independent Math waveforms, supporting more than 20 commonly used mathematical operations,

Supports custom operation expressions in the formula editor to implement complex embeddings

set of operations
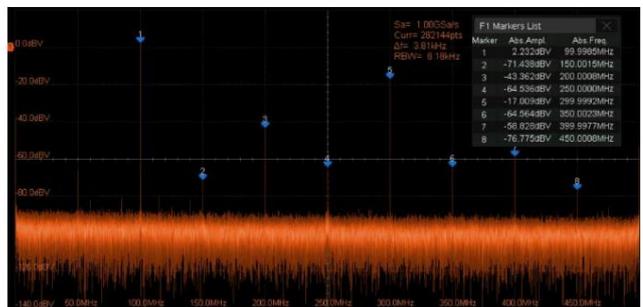
Through the hardware-accelerated FFT function, the maximum number of operation points is 2M points,

which provides superior spectrum resolution while still maintaining a high spectrum refresh rate. Supports a

variety of window functions, supports normal, average, maximum hold and other modes, and supports

automatic marking of peak points

Rich measurement functions
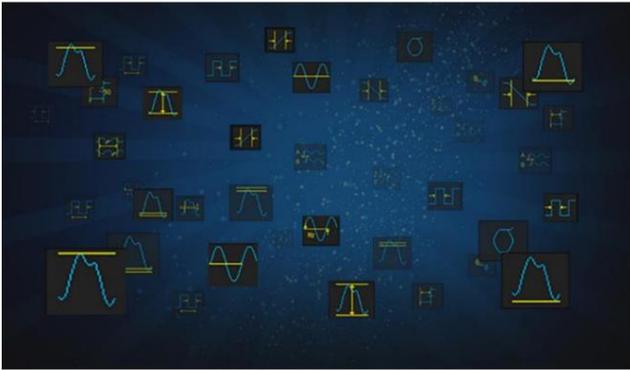
Measurement types include horizontal, vertical, inter-channel delay and mixed measurements.

There are more than 50 parameters in the quantity category. Measurement sources include analog channels, digital channels

Traces, mathematical operations, reference waveforms, historical frames, etc.

Statistical functions for measured parameters

The parameter statistics function can display five measured values of any parameter: current value,

Average value, minimum value, maximum value, standard deviation; up to simultaneous measurement systems

12 different parameters are included. Histogram statistics can visually display parameters

probability distribution; trend graphs and trajectory graphs can reflect the changes of parameters over time

Change patterns.

In addition, for measurements in the horizontal direction (such as period, pulse width, etc.), the traditional

method of obtaining only one measurement value per frame is abandoned. The measurement values of all

specified horizontal items in a frame are calculated and included in statistics. Big mention

Improved testing efficiency

History mode
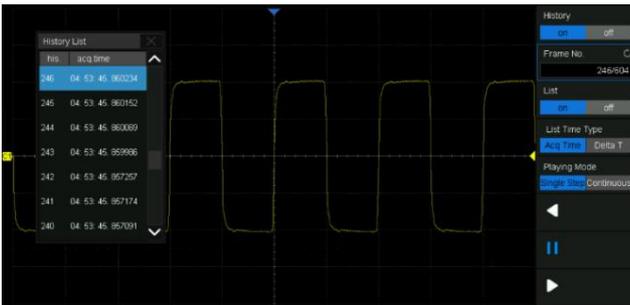
Can record up to 80,000 frames of waveforms; automatically records in real time and can be recalled at any time

Play historical waveforms to observe abnormal events, and quickly use cursors or measurement parameters to

Locate the source of the problem; record failed frames of template tests

Segmented collection (Sequence)
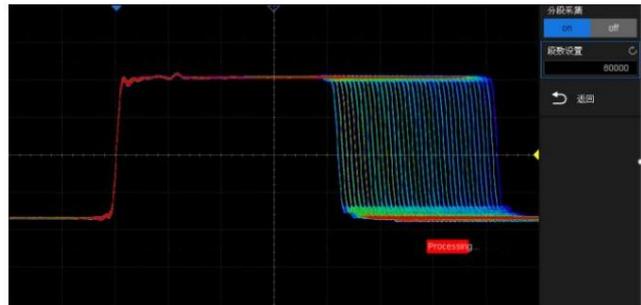
Segmented acquisition divides the waveform storage space into multiple segments, and each segment stores a

Trigger frames can collect up to 80,000 trigger events.

The Sequence cycle can minimize the interval between trigger events (as small as 2ÿs) and increase the

probability of capturing abnormal events.

All waveform segments collected in Sequence mode can be

Map to the screen, and you can also play back single frames through History

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Search and Navigate
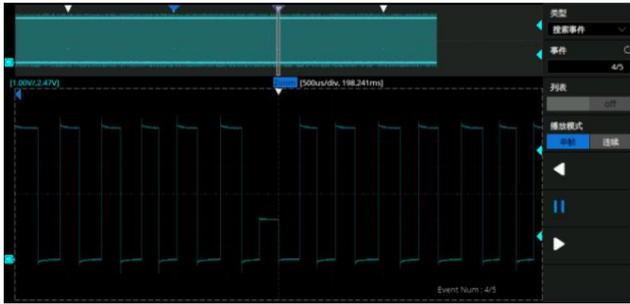
By specifying conditions, a frame of waveform is automatically searched and events that meet

the conditions are identified. Combined with the navigation function, you can quickly locate the

event of interest, and then use the oscilloscope's analysis function to conduct a detailed

analysis of the event, eliminating the time and inconvenience of manual search. Navigation can search

Search event navigation, you can also navigate time and historical frames

Serial bus decoding function
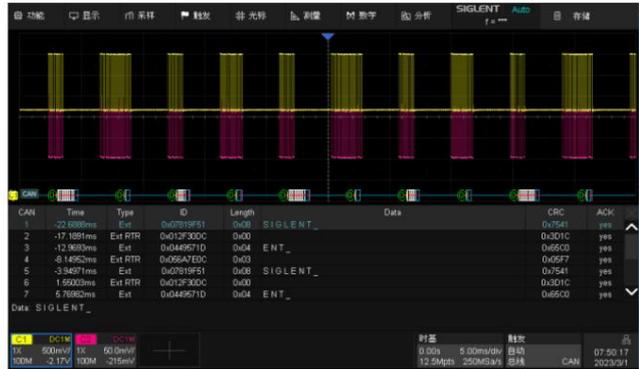
Through the event list display decoding, the bus protocol information can be quickly

and intuitively displayed in table form. Support I 2C, SPI, UART, CAN,

LIN, CAN FD, FlexRay multiple protocols

High-speed mask testing implemented in hardware
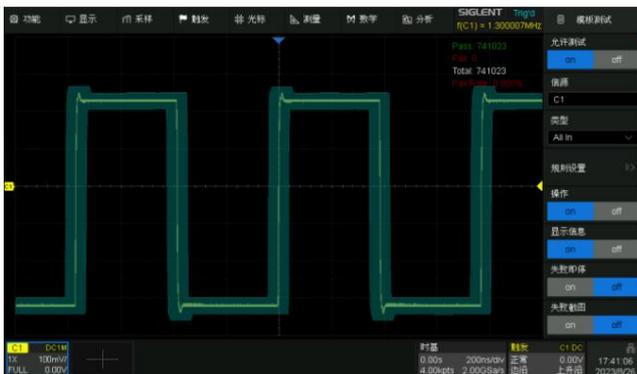
Hardware-based template testing function, up to 80,000 times per second

test. Generate templates based on user-defined vertical and horizontal tolerances, compared to

Compare whether the signal under test touches the template. If the signal under test touches the template, test

If the test fails, you can pre-set the collection stop and buzzer when the test fails.

Alarm, automatically screenshot failed frames, suitable for long-term unattended monitoring of

abnormal signals
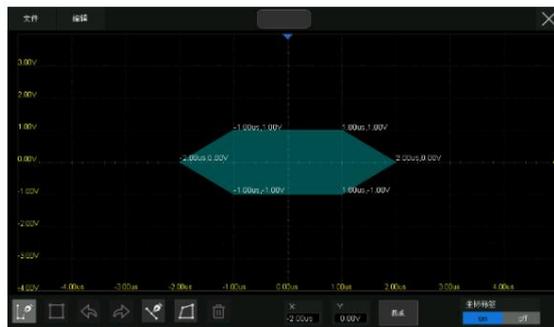
The built-in Mask Editor tool (optional) is used to create and edit user-defined

defined template

Bode plot

Power analysis (optional)
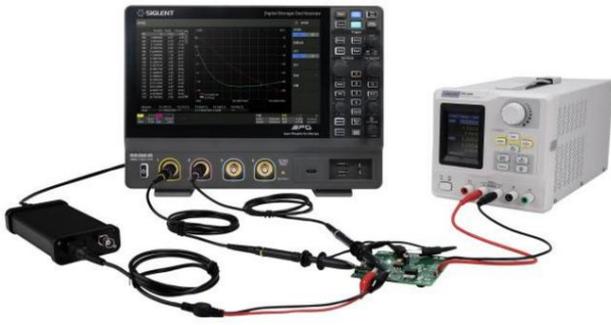
Use the Bode plot to test the frequency response or loop stability of the system.

Field replaces expensive network analyzers. Available with optional waveform generator or

SDG Series Arbitrary Waveform Generator

The power analysis option can help users quickly measure and analyze power electronics

Multiple items in the domain such as power quality, harmonics, inrush current, switching

Loss, output ripple, transient response, power supply rejection ratio, power efficiency, etc.

16 digital channels (optional)

25MHz USB arbitrary waveform generator (optional)
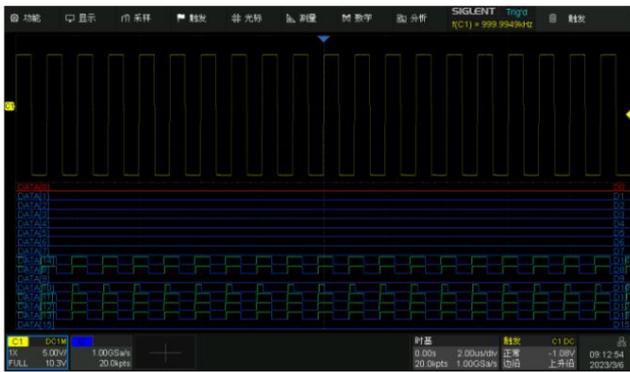
Using the 16-channel logic analyzer probe SLA1016, 16-channel

Digital channel acquisition function. Digital channels are combined with analog channels to achieve

Mixed signal acquisition and analysis capabilities
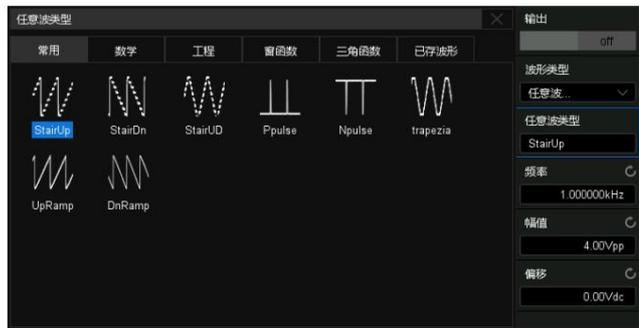
Connect to 25MHz USB arbitrary waveform generator through USB Host

module, integrating sine wave, square wave, triangle wave, pulse wave, noise, direct

stream and 45 built-in arbitrary waveforms. Users can also edit arbitrary waveforms through

EasyWave host computer software.

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Specifications

Unless otherwise stated, all specifications are guaranteed to be met under the following conditions:

ÿ The product is within the calibration validity period

ÿ In the ambient temperature range of 18 ÿ ~ 28 ÿ, and the instrument works continuously for more than 30 minutes

Acquisition (analog channel)	
Maximum real-time sampling rate	Single channel mode: 2 GSa/s Dual channel mode: 1 GSa/s Quad channel mode: 500 MSa/s
Storage depth	Single channel mode: 100 Mpts/ch Dual channel mode: 50 Mpts/ch Quad channel mode: 25 Mpts/ch
Waveform capture rate	Normal mode: up to 120,000 wfm/s Sequence mode: up to 500,000 wfm/s
Waveform intensity level	Level 256
Peak detection	Minimum detectable pulse width 2 ns
Sequence mode	Maximum 80000 frames, minimum interval between two triggers = 2ÿs
History mode	Maximum 80000 frames
interpolation method	sinx/xÿx

Vertical (analog channel)	
Number of channels	4+EXT (4-channel series) 2+EXT (2-channel series)
Bandwidth (-3dB) @50ÿ	SDS1074X HDÿSDS1072X HDÿ70 MHz SDS1104X HDÿSDS1102X HDÿ100 MHz SDS1204X HDÿSDS1202X HDÿ200 MHz*1
Bandwidth flatness@50ÿ	DC ~ 10% (rated bandwidth): ± 1dB 10% ~ 50% (rated bandwidth): ± 2dB 50% ~ 100% (rated bandwidth): + 2dB/-3dB
bandwidth limit	20 MHzÿ20MHz ±40%
Rise time @50ÿ (typ.)	SDS1074X HD, SDS1072X HD: typical value 5.0ns SDS1104X HD, SDS1102X HD: typical value 3.5ns SDS1204X HD, SDS1202X HD: typical value 1.8ns
vertical resolution	12-bit
Effective number of digits ENOB *2 (Typical)	8.4-bit
Noise Floor *3 (rms, @50ÿ, Typical, 1 mV/div)	70 ÿV (full bandwidth)

vertical scale range	8 cells	
Vertical gear (Probe ratio 1X)	1 Mÿÿ0.5 mV/div – 10 V/div	
	50 ÿÿ0.5 mV/div – 1 V/div	
DC gain accuracy (Typical value)	0.5 mV/div ~ 4.95 mV/divÿ± 1.5%ÿ	
	5 mV/div ~ 10 V/divÿ± 0.5%ÿ	
DC offset accuracy	± (0.5% DC offset setting + 0.5% full scale + 1 mV)	
offset range (Probe ratio 1X)	1 Mÿÿ	0.5 mV/div ~ 5 mV/divÿ± 1.6 Vÿ
		5.1 mV/div ~ 10 mV/divÿ± 4 Vÿ
		10.2 mV/div ~ 20 mV/divÿ± 8 Vÿ
		20.5 mV/div ~ 100 mV/divÿ± 8 Vÿ
		102 mV/div ~ 200 mV/divÿ± 80 Vÿ
		205 mV/div ~ 1 V/divÿ± 80 Vÿ
		1.02 V/div ~ 10 V/divÿ± 400 Vÿ
	50 ÿÿ	0.5 mV/div ~ 5 mV/divÿ± 1.6Vÿ
		5.1 mV/div ~ 10 mV/divÿ± 4 Vÿ
		10.2 mV/div ~ 20 mV/divÿ± 8 Vÿ
		20.5 mV/div ~ 10 0mV/divÿ± 8 V
AC coupling cutoff frequency	2 Hz (typ.)	
(-3dB) Overshoot (150 ps , fast edge @50ÿ, typical)	10%	
Input coupling	DCÿACÿGND	
input resistance	1 Mÿÿ(1 Mÿ ±2%) || (17 pF ±2 pF) 50 ÿ: 50 ÿ ±1%	
Maximum input voltage	1 Mÿ ÿ 400 Vpk (DC + AC)ÿDC~10 kHz 50 ÿ ÿ 5V rms	
SFDR (spurious free dynamic	ÿ 35 dBc	
range) channel isolation	DCÿMax BWÿ>40dB	
Probe attenuation coefficient	1X, 10X, 100X, custom	

*1: 200 MHz in single and dual channel modes, 100 MHz in other modes

*2: 24.99 MHz, -0.25 dBFS input, 20 mV/div range

*3: Take the standard deviation (Stdev) value of vertical measurement

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level	
Horizontal gear	1 ns/div – 1000 s/div
Horizontal scale range	10 squares
display mode	Y-TÿX-YÿRoll
Roll mode	ÿ 50 ms/div
channel offset ÿCH1~CH4ÿ	< 100 ps
Time base accuracy	±25ppm

trigger		
trigger mode	Automatic, normal, single	
Trigger level range	Channel trigger: ± 4.5 divisions (from zero level position) EXTÿ± 0.61 V EXT/5ÿ± 3.05 V	
Trigger holdoff range	Time: 8 ns ~ 30 s (8 ns step)	
Coupling mode	AC coupled AC DC coupled DC Low frequency suppression LFRJ High frequency suppression HFRJ Noise SuppressionNoise RJ	
Trigger level accuracy (Typical value)	CH1ÿCH4ÿ± 0.2 div EXTÿ± 0.3 div	
Trigger sensitivity	CH1ÿCH4ÿ	DCÿMax BW 0.6div
	EXTÿ	200 mVppÿDCÿ200 MHz
	EXT/5ÿ	1 VppÿDCÿ200 MHz
trigger jitter	CH1ÿCH4ÿ<100ps EXTÿ< 200 ps rms	
Trigger displacement	Pre-trigger: 0~100% storage depth Delay trigger: 0ÿ10000 div	
edge triggered		
source	CH1~CH4/EXT/(EXT/5)/AC Line/D0~D15	
Trigger edge	rising edge, falling edge, alternating	
slope trigger		
source	CH1~CH4	
Trigger edge	rising edge, falling edge	
limitation factor	Less than, greater than, within range, outside range	
time setting	2 nsÿ20 s, resolution 1ns	
Pulse width trigger		

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source	CH1~CH4/D0~D15
polarity	Positive pulse width, negative pulse width
limitation factor	Less than, greater than, within range, outside range
time setting	2 nsÿ20 s, resolution 1ns
video trigger	
source	CH1~CH4
standard	NTSC, PAL, 720p/50, 720p/60, 1080p/50, 1080p/60, 1080i/50, 1080i/60, custom
Synchronize	Arbitrary choice
Triggering conditions	OK, field
window trigger	
source	CH1~CH4
window type	Absolutely, relatively
interval trigger	
source	CH1~CH4/D0~D15
Trigger edge	rising edge, falling edge
limitation factor	Less than, greater than, within range, outside range
time setting	2 nsÿ20 s, resolution 1ns
Timeout trigger	
source	CH1~CH4/D0~D15
timeout type	edge, state
Triggering conditions	rising edge, falling edge
time setting	2 nsÿ20 s, resolution 1ns
runt trigger	
source	CH1~CH4
polarity	Positive pulse width, negative pulse width
limitation factor	Less than, greater than, within range, outside range
time setting	2 nsÿ20 s, resolution 1ns
pattern trigger	
source	CH1~CH4/D0~D15
Pattern settings	No attention, low, high
Logic	And, or, and not, or not
limitation factor	Less than, greater than, within range, outside range
time setting	2 nsÿ20 s, resolution 1ns
premise edge trigger	
type	Level, level and time-limited, edge, edge and time-limited
Prerequisite signal source	CH1~CH4
Edge trigger source	CH1~CH4
Nth edge trigger	

source	CH1~CH4
slope	rising edge, falling edge
free time	8 ns ~ 20 s, resolution 1 ns
number of edges	1 ÿ 65535
delayed trigger	
Source A	CH1~CH4
Source B	CH1~CH4
slope	rising edge, falling edge
limitation factor	Less than, greater than, within range, outside range
time setting	2 nsÿ20 s, resolution 1ns
serial bus trigger	
source	CH1~CH4/D0~D15
Bus type	Standard configuration: I2C, SPI, UART, CAN, LIN
I 2C trigger	Trigger conditions: start, stop, restart, no response, address + data, EEPROM, data length
SPI trigger	Trigger condition: data
UART trigger	Trigger conditions: start, stop, data, verification error
CAN trigger	Trigger conditions: start, remote frame, identifier, identifier + data, error
LIN trigger	Trigger conditions: interval, identifier, identifier+data, data error

Serial bus decoding	
Number of decodes	2 way
threshold level	-4.5ÿ4.5 div
list row	Lines 1 to 7
I2C decoding	
source	CH1~CH4/D0~D15
Signal	SCLÿSDA
Address type	7-bitÿ10-bit
SPI decoding	
source	CH1~CH4/D0~D15
Signal	CLK,MISO,MOSI,CS
clock edge	rising edge, falling edge
Chip Select	Active high, active low, clock timeout
bit order	Least significant bit (LSB), most significant bit (MSB)
UART decoding	
source	CH1~CH4/D0~D15
Signal	RXÿTX
data width	5 bitsÿ6 bitsÿ7 bitsÿ8 bits

parity check	None, odd digits, even digits, 1 parity, 0 parity
Stop bit	1 bitÿ1.5 bitsÿ2 bits
idle level	high level, low level
bit order	Least significant bit (LSB), most significant bit (MSB)
CAN decoding	
source	CH1~CH4/D0~D15
LIN decoding	
LIN protocol version	Ver 1.3ÿVer 2.0
source	CH1~CH4/D0~D15
baud rate	600 bps, 1200 bps, 2400 bps, 4800 bps, 9600 bps, 19200 bps, customized
CAN FD decoding	
source	CH1~CH4
Standard 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 decoding	
source	CH1~CH4
baud rate	2.5 Mbps, 5 Mbps, 10 Mbps, custom

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Measurement	
Automatic measurement	
source	CH1~CH4ÿD0~D15ÿZ1~Z4ÿF1~F4ÿRefÿHistory
Measurement mode	Basic measurement, advanced measurement
Measuring range	screen, gate
Vertical measurement parameters	Maximum value, minimum value, peak-to-peak value, amplitude, top value, bottom value, average value, period average, standard deviation, Period standard deviation, root mean square, period root mean square, median, period median, falling extremity, falling preextremity, Rising overexcitation, rising pre-excitation, Level@Trigger cycle,
Horizontal measurement parameters	frequency, maximum value time, minimum value time, positive pulse width, negative pulse width, 10-90% rise time, 90-10% Fall time, rise time, fall time, positive pulse train width, negative pulse train width, positive duty cycle, negative duty cycle, Delay, Time@Middle, adjacent period jitter positive area,
Mixed measurement parameters	negative area, effective area, absolute area, AC positive area, AC negative area, AC effective area, AC absolute area, number of cycles, number of rising edges, number of falling edges, total number of edges, number of positive pulses, number of negative pulses, Rising edge slope, falling edge slope
Channel delay parameters	Phase, FRFR, FRFF, FFFR, FFFF, FRLR, FRLF, FFLR, FFLF, delay, Tsu@R, Tsu@FÿTh@RÿTh@F
measurement statistics	Current value, average value, minimum value, maximum value, standard deviation, statistical times, histogram, trend graph, trajectory graph
Cursor measurement	
source	CH1~CH4ÿD0~D15ÿF1~F4ÿRef
Cursor type	Manual cursor measures time (X1, Measurement cursor

Operation	
aisle	F1~F4
source	CH1~CH4ÿZ1~Z4ÿF1~F4
operator	Addition, subtraction, multiplication, division, FFT, derivative, integral (supports integral threshold), square root, average, ERES, absolute value, Sign, identity, opposite, logarithm, exponential, interpolation, max hold, min hold, formula editor
FFT	Points: 1K-2M, variable Window type: rectangular window, Blackman window, Hanning window, Hemming window, flat top window Display: full screen, half screen, spectrum only Modes: Normal, Max Hold, Average Tools: Peak Search, Marker

data analysis	
search	
source	CH1~CH4
model	Edge, slope, pulse width, interval, runt
set up	Copy from trigger, copy to trigger
navigation	
type	Search events, times, historical frames
template test	
source	CH1~CH4ÿZ1~Z4
template	Automatically created based on waveforms, user-defined (created through Mask Editor)
Mask test rate	Up to 80000 frames/second (dot display), 20000 frames/second (line display)
Bode plot	
source	CH1~CH4
signal source	USB arbitrary waveform generator, SDG series function/arbitrary waveform generator (connection method: USB, LAN)
Scan type	constant amplitude, variable amplitude
frequency	Scan mode: linear, logarithmic Scan range: 10 Hz ~ 120 MHz
Measurement items	Upper limit cutoff frequency, lower limit cutoff frequency, bandwidth, gain margin, phase margin
Power analysis (optional)	
Analysis item	Power quality, current harmonics, inrush current, switching losses, slew rate, modulation analysis, output ripple, turn on/off, Transient response, power supply rejection ratio, power efficiency
counter	
source	CH1~CH4
frequency meter	7 bits
counter	Edge counting, supports gate control and triggering

Digital channel (option)	
Sampling Rate	1GSa/s
Storage depth	10 Mpts/ch
minimum identifiable pulse width 3.3 ns	
threshold level range	-10V~10V
logic level type	TTL, CMOS, LVCMOS3.3, LVCMOS2.5, user-defined
Channel-to-channel deviation	Between digital channels: ± 1 sample interval Between digital channel and analog channel (when digital channel triggers): ± (1 sampling interval + 1 ns) Between digital channel and analog channel (when analog channel triggers): ±4ns

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USB arbitrary waveform generator (option)	
Number of channels	1
Maximum output frequency	25 MHz
Sampling Rate	125 MSa/s
frequency resolution	1ÿHz
Frequency accuracy	± 50 ppm
vertical resolution	14-bit
Output amplitude range	-1.5 Vÿ+1.5 V (50ÿ load) -3 Vÿ+3 V (high resistance load)
Output waveform type	Sine wave, square wave, pulse wave, triangle wave, noise, DC and 45 built-in arbitrary waves
Output impedance	50ÿ ±2%
Protect	Overvoltage protection, current limiting protection
sine wave	
frequency	1ÿHzÿ25 MHz
Vertical accuracy (10 kHz)	± (1% of setting value +3 mVpp)
Amplitude flatness	±0.3 dB relative to 10 kHz, 5 Vpp
SFDR (spurious-free dynamic range)	DC ~ 1 MHzÿ-60 dBc 1 MHz ~ 5 MHzÿ-55 dBc 5 MHz ~ 25 MHzÿ-50 dBc
HD (harmonic distortion)	DC ~ 5 MHzÿ-50 dBc 5 MHz ~ 25 MHzÿ-45 dBc
Square wave/pulse wave	
frequency	1ÿHzÿ10 MHz
duty cycle	1%ÿ99%
Rise/fall time < < 24 ns (10%~90%)	
overshoot	< 3% (typ., 1 kHz, 1 Vpp)
pulse width	> 50 ns
Jitter (cycle to cycle) < 500 ps + 10 ppm	
triangle wave	
Frequency Range	1ÿHzÿ300 kHz
linearity	< 0.1% of output peak (typ., 1 kHz, 1 Vpp, 50% symmetry)
symmetry	0%ÿ100%
DC	
Voltage offset	±1.5 V (50ÿ load) ±3 V (high resistance load)
Offset accuracy	± (|Set offset value|*1%+3 mV)
noise	
Bandwidth(-3dB)	> 25 MHz

arbitrary wave	
frequency	1ÿHzÿ5 MHz
Arbitrary wave length	16 kpts
Sampling Rate	125 MSa/s
Import method	Host computer import, U disk import, channel waveform direct import

interface	
front panel	USB 2.0 Host x 2ÿ SBUS: Siglent logic analyzer interface Probe calibration signal: 1 kHz, 3 V square wave
rear panel	USB 2.0 Hostÿ USB 2.0 Deviceÿ LAN: 10M/100M Ethernet interface (RJ45 terminal); External trigger input, EXT: ÿ 1.5 Vrms, EXT/5: ÿ 7.5 Vrms; Auxiliary output: including TRIG OUT (3.3 V LVCMOS), PASS/FAIL OUT (3.3 V TTL)

show	
Display	10.1-inch color capacitive touch screen
resolution	1024×600
Contrast Ratio (Typical)	500:1
Backlight Intensity (Typical) 500 nit	

display setting	
Display range	8 x 10 grid
Waveform display mode	point, vector
Persistence settings	Off, 1 second, 5 seconds, 10 seconds, 30 seconds, infinite
Screen display mode	Normal, color temperature
Display language	Simplified Chinese, Traditional Chinese, English, French, Japanese, German, Spanish, Russian, Italian, Portuguese
Built-in help system	Simplified Chinese, English

environment	
ambient temperature	Working: 0ÿ~ +50ÿ Non-working: -30ÿ~ +70ÿ
Humidity range	Working: 5% ~ 90% RH, 30ÿ, the upper limit is derated to 50% RH at 50ÿ, Non-working: 5% ~ 95% RH
Altitude	Working: ÿ3,000 m, 25ÿ Non-working: ÿ15,000m

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electromagnetic compatibility	Comply with EMC directive (2014/30/EU), comply with or better than IEC 61326-1:2012/EN61326-1:2013 (based on this requirement)		
	conducted disturbance	CISPR 11/EN 55011	CLASS A group 1ÿ 150 kHz-30 MHz
	Radiation harassment	CISPR 11/EN 55011	CLASS A group 1ÿ 30 MHz-1 GHz
	Electrostatic discharge (ESD)	IEC 61000-4-2/EN 61000-4-2	4.0 kV (contact), 8.0 kV (air)
	Radio frequency electromagnetic field immunityIEC 61000-4-3/EN 61000-4-3		10 V/mÿ80 MHz to 1 GHzÿÿ 3 V/mÿ1.4 GHz to 2 GHzÿÿ 1 V/mÿ2.0 GHz to 2.7GHzÿ
	electrical fast transient Burst (EFT)	IEC 61000-4-4/EN 61000-4-4	2 kV (AC input port)
	surge	IEC 61000-4-5/EN 61000-4-5	1 kV (live to neutral) 2 kV (fire/neutral to ground)
	Radio frequency continuous conduction Immunity	IEC 61000-4-6/EN 61000-4-6	3 Vÿ0.15-80MHz
	voltage sag vs. short interruption	IEC 61000-4-11/EN6 1000-4-11	Voltage sag: 0% UT during 1 cycleÿ 40% UT during 10/12 cyclesÿ 70% UT during 25/30 cycles Short interruption: 0% UT during 250/300 cycles
safety regulations	UL 61010-1:2012/R: 2018-11ÿCAN/CSA-C22.2 No. 61010-1:2012/A1:2018-11. UL 61010-2-030:2018ÿCAN/CSA-C22.2 No. 61010-2-030:2018.		
RoHS	Comply with EU 2015/863		

power supply	
Enter specifications	100ÿ240 Vrmsÿ50/60 Hz
power	120W maximum, 70W typical, standby 4W typical

Mechanical structure	
size	Width × Height × Thickness = 317.2 mm × 236.0 mm × 149.0 mm (including knobs and supporting feet)
weight	Net weight 4.1 kg, gross weight 5.6 kg

Ordering Information

Product number	Product Description
SDS1204X HD	4 channels, 200 MHz bandwidth, 2 GSa/s sampling rate
SDS1104X HD	4 channels, 100 MHz bandwidth, 2 GSa/s sampling rate
SDS1074X HD	4 channels, 70 MHz bandwidth, 2 GSa/s sampling rate
SDS1202X HD	2 channels, 200 MHz bandwidth, 2 GSa/s sampling rate
SDS1102X HD	2 channels, 100 MHz bandwidth, 2 GSa/s sampling rate
SDS1072X HD	2 channels, 70 MHz bandwidth, 2 GSa/s sampling rate

Standard accessories	quantity
USB data cable	1
quick guide	One
Passive probe	1 set/channel
Calibration certificate	1 serving
power cable	1

Optional accessories	Specifications and models
Arbitrary waveform generator option (software) SDS1000XHD-FG	
USB Isolated Arbitrary Waveform Generator Hardware SAG1021I	
16-channel digital channel option (software)	SDS1000XHD-16LA
16-channel logic analyzer hardware	SLA1016
Power Analysis Option (Software)	SDS1000XHD-PA
Phase calibration board	DF2001A

![SIGLENT logo]

Optional accessories

Optional accessories	picture	model	Product specification description
demo board		STB-3	The output signals include square wave, sine wave, AM signal, fast edge, Typical signals such as pulse, PWM, I 2C, CAN, LIN, etc.
USB isolation arbitrary waveform generator		SAG1021I	25 MHz USB isolated arbitrary waveform generator module, integrating sine wave, square wave, triangle wave, pulse wave, noise, DC and 45 kinds of built-in arbitrary waves. Users can also use the EasyWave host computer Software to edit arbitrary waveforms
16-way logic Analyzer hardware		SLA1016	Logic analyzer kit that connects to the SDS1000X HD provides 16 digital channels.
Phase calibration board		DF2001A	Power analysis accessories for calibrating current and voltage probes phase.

About Dingyang

SIGLENT is an industry leader in the field of general electronic test and measurement instruments. At the same time, it is also the first A-share

listed company in the general electronic test and measurement instrument industry.

In 2002, the founder of Dingyang Technology began to focus on the research and development of oscilloscopes, and in 2005, he successfully

developed the first digital oscilloscope. After years of development, Dingyang's products have expanded to digital oscilloscopes, handheld

oscilloscopes, function/arbitrary waveform generators, spectrum analyzers, vector network analyzers, RF/microwave signal sources, desktop multimeters,

Basic test and measurement instrument products such as DC power supplies and electronic loads are one of the few manufacturers in the world

that can simultaneously develop, produce and sell the four main products of general electronic test and measurement instruments: digital

oscilloscopes, signal generators, spectrum analyzers and vector network analyzers. 1. National key "little giant" enterprise. It is also domestic

Very few of the main competitors have these four main products at the same time, and all four main products have entered the high-end market.

Manufacturers in the end field. The company is headquartered in Shenzhen, and has established subsidiaries in Cleveland, USA and Augsburg,

Germany, as well as a branch in Chengdu. Its products are exported to more than 80 countries and regions around the world. SIGLENT has

become a world-renowned test and measurement instrument brand.

contact us

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statement

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