SDS1000X-E Series Super Phosphor Oscilloscope





Distribuido por Hameg Instruments, S.L. c. Doctor Trueta, 44 bajos - 08005 Barcelona/Spain Telf.: +34 93 430 15 97 Fax: +34 321 22 01 Mail: info@hameg.es Web: www.hameg.es

Key Features

100 MHz, 200 MHz bandwidth models

- Two channel series have one 1 GSa/s ADC, four channel series have two 1 GSa/s ADCs. When all channels are enabled, each channel has a maximum sample rate of 500 MSa/s. When a single channel per ADC is active, it has sample rate of 1 GSa/s
- The newest generation of SPO technology
 - Waveform capture rate up to 100,000 wfm/s (normal mode), and 400,000 wfm/s (sequence mode)
 - Supports 256-level intensity grading and color display modes Record length up to 14 Mpts
 - Digital trigger system
- Intelligent trigger: Edge, Slope, Pulse Width, Window, Runt, Interval, Time out (Dropout), Pattern
- Serial bus triggering and decoding (Standard), supports protocols IIC, SPI, UART, RS232, CAN, LIN
- 🚣 Video trigger, supports HDTV
- Low background noisewith voltage scales from 500 μV/div to 10 V/div
- 10 types of one-button shortcuts, supports Auto Setup, Default, Cursors, Measure, Roll, History, Display/Persist, Clear Sweep, Zoom and Print
- Segmented acquisition (Sequence) mode, divides the maximum record length into multiple segments (up to 80,000), according to trigger conditions set by the user, with a very small dead time segment to capture the qualifying event.
- History waveform record (History) function, maximum recorded waveform length is 80,000 frames.
- Automatic measurement function for 38 parameters as well as Measurement Statistics, Zoom, Gating, Math, History and Reference functions
- 1 Mpts FFT
- Math and measurement functions use all sampled data points (up to 14 Mpts)
- Math functions (FFT, addition, subtraction, multiplication, division, integration, differential, square root)
- Preset key can be customized for user settings or factory "defaults"
- Security Erase mode
- High Speed hardware based Pass/ Fail function
- MSO, 16 digital channels (four channel series only, option)
- Bode plot (four channel series only)
- Search and navigate (four channel series only)
- USB AWG module (four channel series only, option)
- USB WIFI adapter (four channel series only, option)
- Heb Browser based control (four channel series only)
- Large 7 inch TFT -LCD display with 800 * 480 resolution
- Multiple interface types: USB Host, USB Device (USB -TMC), LAN Pass / Fail, Trigger Out
- Supports SCPI remote control commands
- Supports Multi-language display and embedded online help

SDS1104X-E SDS1204X-E SDS1202X-E

Product overview

SIGLENT's new SDS1000X-E Super Phosphor Oscilloscopes feature two channel and four channel models. The two channel model is available with a 200 MHz analog bandwidth, a single ADC with a 1 GSa/s maximum sample rate, and a single memory module with 14 Mpts of sample memory. The four channel scope is available in 100 and 200 MHz models and incorporates two 1 GSa/s ADCs and two 14 Mpts memory modules. When all channels are enabled, each channel has sample rate of 500 MSa/s and a standard record length of 7 Mpts. When only a single channel per ADC is active, the maximum sample rate is 1 GSa/s and the maximum record length is 14 Mpts. For ease -of -use, the most commonly used functions can be accessed with its user- friendly front panel design.

The SDS1000X-E series employs a new generation of SPO (Super -Phosphor Oscilloscope) technology that provides excellent signal fidelity and performance. The system noise is also lower than similar products in the industry. It comes with a minimum vertical input range of 500 uV/div, an innovative digital trigger system with high sensitivity and low jitter, and a waveform capture rate of 400,000 frames/sec (sequence mode). The SDS1000X-E also employs a 256-level intensity grading display function and a color temperature display mode not found in other models in this class. SIGLENT's latest oscilloscope offering supports multiple powerful triggering modes including serial bus triggering. Serial bus decoding for IIC, SPI, UART, CAN, LIN bus types is included. The X-E models also include History waveform recording, and sequential triggering that enable extended waveform recording and analysis. Another powerful addition is the new 1 million point FFT math function that gives the SDS1000X-E very high frequency resolution when observing signal spectra. The new digital design also includes a hardware co-processor that delivers measurements quickly and accurately without slowing acquisition and front-panel response. The features and performance of SIGLENT's new SDS1000X-E cannot be matched anywhere else in this price class.

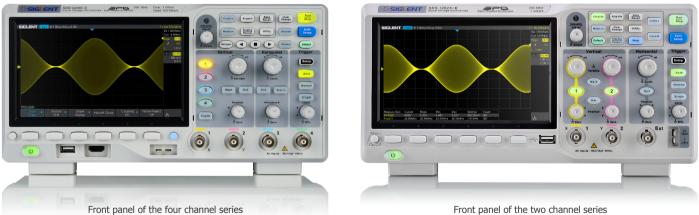
The four channel series includes even more functions, including: searching and navigating, on-screen Bode plot, 16 digital channels (Option), an external USB powered 25 MHz AWG module (Option), a USB WIFI adapter (Option), and an embedded application that allows remote control via web browser.

Models and key Specification

Model	SDS1104X-E	SDS1204X -E SDS1202X-E		
Bandwidth	100 MHz	200 MHz		
SamplingRate (Max.)	Two channel series have a single 1 GSa/s ADC, four channel series have two 1 GSa/s ADCs. When channels are enabled, each channel has a maximum sample rate of 500 MSa/s. When a single channel pair is active, that channel has sample rate of 1 GSa/s			
Channels	4 (four channel series) 2+EXT (two channel series)			
Memory Depth (Max.)	7 Mpts/CH (not interleave mode); 14 Mpts/CH (interleave mode)			
Waveform Capture Rate (Max.)	100,000 wfm/s (normal mode), 400,000 wfm/s (seque	ence mode)		
Trigger Type	Edge, Slope, Pulse Width, Window, Runt, Interval, Dropout, Pattern, Video			
Serial Trigger and decoder (Standard)	IIC, SPI, UART/RS232, CAN, LIN			
16 Digital Channels (four channel series only, option)	' Maximum waveform capture rate up to 1 GSa/s, Record length up to 14 Mpts/CH			
USB AWG module (four channel series only, option)	One channel, 25 MHz, sample rate of 125 MHz, wave	length of 16 kpts		
Bode plot (four channel series only)	Minimum start frequency of 10 Hz, minimum scan ba MHz (dependent on Oscilloscope and AWG bandwidth			
USB WIFI adapter (four channel series only, option)	802.11b/g/b, WPA-PSK, the adapter must be supplied	by Siglent to ensure working		
I/O	USB Host, USB Device, LAN, Pass/Fail, Trigger Out, Sbus (Siglent MSO)			
Probe (Std)	4 pcs passive probe PP510 4/2 pcs passive probe PP215			
Display	7 inch TFT -LCD (800x480)			
Weight	Four channel series: Without package 2.6 Kg; With package 3.8 Kg Two channel series: Without package 2.5 Kg; With package 3.5 Kg			

Function & Characteristics

7 inch TFT-LCD display and 10 one-button menus

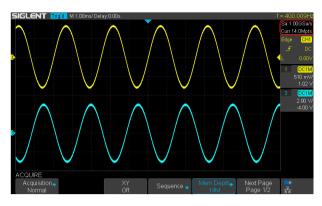


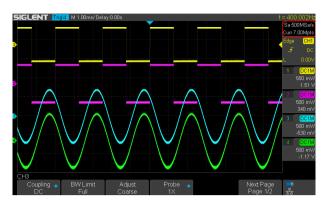
• 7 -inch TFT -LCD display with 800 * 480 resolution

• Most commonly used functions are accessible using 10 different one-button operation keys: Auto Setup, Default, Cursor, Measure, Roll, History, Persist, Clear Sweep, Zoom, Print

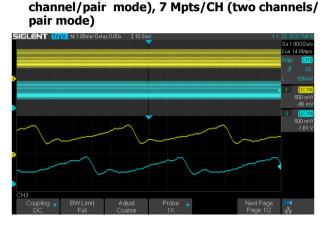
Function & Characteristics

When all channels are enabled, each channel has a maximum sample rate of 500 MSa/s. When a single channel per pair is active, that channel has sample rate of 1 GSa/s





The four channel series has two 1 GSa/s ADC chips (channel 1 and 2 share one, channel 3 and 4 share another), so that each channel can achieve sample rates up to 500 MSa/and work on bandwidths of 200 MHz when all channels are enabled.



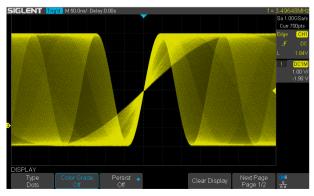
Record Length of Up to 14 Mpts (single

Using hardware-based Zoom technologies and max record length of up to 14 Mpts, users are able to oversample to capture for longer time periods at higher resolution and use the zoom feature to see more details within each signal.

Waveform Capture Rate Up to 400,000 wfm/s

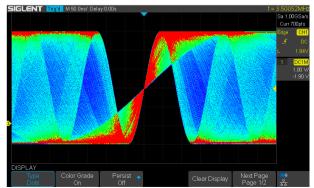


With a waveform capture rate of up to 400,000 wfm/s (sequence mode), the oscilloscope can easily capture the unusual or low-probability events.



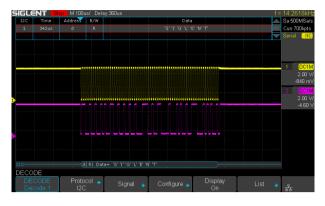
256 -Level Intensity Grading and Color Temperature Display

SPO display technology provides for fast refresh rates. The resulting intensity-graded trace is brighter for events that occur with more frequency and dims when the events occur with less frequency.



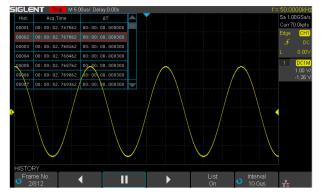
The color temperature display is similar to the intensity-graded trace function, but the trace occurrence is represented by different colors (color "temperature") as opposed to changes in the intensity of one color. Red colors represents the more frequent events, while blue is used to mark points that occur lest frequently.

Serial Bus Decoding Function (Standard)



SDS1000X-E displays the decoding through the events list. Bus protocol information can be quickly and intuitively displayed in a tabular format.

History Waveforms (History) Mode and Segmented Acquisition (Sequence)



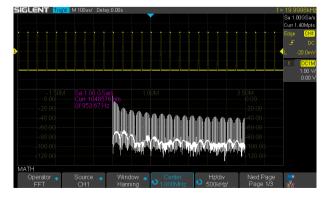
Playback the latest triggered events using the history function. Segmented memory collection will store trigger events into multiple (Up to 80,000) memory segments, each segment will store triggered waveforms and timestamp each frame.

It a measurement to 14 M points



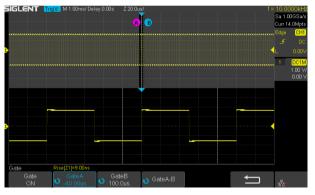
At any one timebase, SDS1000X-E can measure using all 14 M sample points. This ensures the accuracy of measurements while the math coprocessor decreases measurement time and increases ease-of-use.

I M points FFT



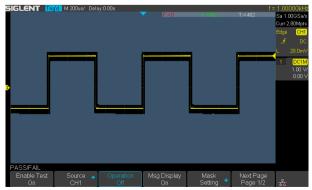
The new math co-processor enables FFT analysis of incoming signals using up to 1 M samples per waveform. This provides high frequency resolution with a fast refresh rate. The FFT function also supports a variety of window functions so that it can adapt to different spectrum measurement needs.

星 Gate and Zoom Measurement



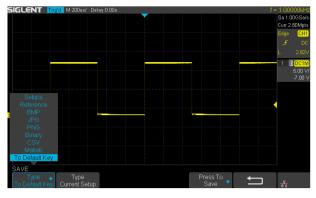
Through Gate and Zoom measurement, the user can specify an arbitrary interval of waveform data analysis and statistics. This helps avoid measurement errors that can be caused by invalid or extraneous data, greatly enhancing the measurements' validity and flexibility.

Hardware-Based High Speed Pass/ Fail function



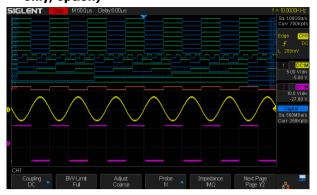
The SDS1000X-E utilizes a hardware-based Pass/Fail function, performing up to 40,000 Pass / Fail decisions each second. Easily generate user defined test templates provide trace mask comparison making it suitable for long-term signal monitoring or automated production line testing.

🜆 Customizable Default Key



The current parameters of the oscilloscope can be preset to Default Key through the Save menu.

16 Digital Channels/MSO (four channel series only, option)

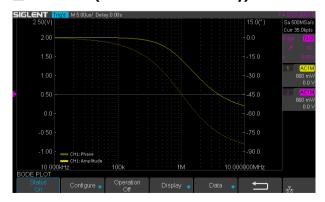


16 digital channels enables users to acquire and trigger on the waveforms then analyze the pattern, simultaneously with one instrument.

Search and Navigate (four channel series only)



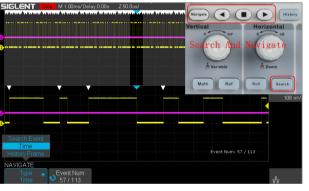
The SDS1000X-E can search events specified by the user in a frame. It can also navigate by time (delay position) and historical frames.



Bode Plot (four channel series only)



SDS1000X-E can control the USB AWG module, control an independent SIGLENT SDG instrument, scan an object's amplitude and phase frequency response, and display the data as a Bode Plot. It can also show the result lists, and export the data to a USB disk.



USB WIFI Adapter (four channel series only, option)



WiFi control of instrumentation can provide a convenient and safe method of configuring and collecting data. This new feature works with a SIGLENT approved WiFi adapter to provide wireless control and communications with SIGLENT 4 channel scopes. The adapter must be supplied by Siglent to ensure working. USB 25 MHz AWG Module (four channel series only, option)



The four channel series supports a USB 25 MHz function/arbitrary waveform generator that is operated from the USB host connection. Functions include Sine, Square, Ramp, Pulse, Noise, DC and 45 built-in waveforms. The arbitrary waveforms can be accessed and edited by the SIGLENT EasyWave PC software.

Complete Connectivity



Back panel of the four channel series

SDS1000X -E supports USB Host, USB Device (USB -TMC), LAN(VXI -11), Pass/Fail and Trigger Out



Back panel of the two channel series

Web control (four channel series only)

Version Update Screen Reflect Save Screen Default Auto Setup Run/Stop	Gingle TrigLev50%					- 00	introl Pane	i sci	N Command
GLENT 1070 M 100ar Delay 000a	f = 99 99976 to Se 1000 Sevent Horizon	tal							
	Curr 14 Olgts Edge Com H Scale:	146	Delay.	0	6.4				
	J DC L BODV Acquire								
	1 CC1M 1.00 V/ Mode:	Normal	Dec.	01 +	Mem Dept	1456			
	00 v								
		Edge •	Source	CHI ·	Trig Mode	A40 •	Trip Level	0.00	W •
	Slope:	Rising •	Holdott	or •					
	Coupling	DC .	Noise Re	ett Of	•				
	Display								
1000ER 1000 • Source • Stope • Hotdotf Close Coupling • Noisel DC 0		Vectors •	Persist	or •					
easurement	Vertical								
d Measure On CT On CT On CT On CT	0n Cl Channels	Channel 1		Channel 2		Channel 3		Channel	
assee Type: + + +	* Switch:	on 01		06 51		05 C		On C	1
208: V V V	* V-Scale.	1.00	V *	1.00	٧. ٧	1.00	V *	1.00	V V
sut.	V-Positor	0.00	uV •	0.00	07 *	0.00	97. *	0.00	W *
	Coupling	DC .		DC *		DC .		DC	*
	0Vi-Limit	or		or •		or •		0f	*
	Proba	112		1X *		100 1		1X	

With the new embedded web server, users can control the 4 channel scopes from a simple web page. This provides wonderful remote troubleshooting and monitoring capabilities.

Specifications

Acquire System	
Sampling Rate	1 GSa/s (single channel/pair), 500 MSa/s (two channels/pair)
Memory Depth	Max 14 Mpts/Ch (single channel/pair), 7 Mpts/Ch (two channels/pair)
Peak Detect	2 nsec (Four channel series)
	4 nsec (Two channel series)
Average	Averages:4, 16, 32, 64, 128, 256, 512, 1024
Eres	Enhance bits:0.5, 1.5, 2, 2.5, 3; Selectable
Waveform interpolation	Sin(x)/x, Linear

Input	
Channels	4 (Four channel series) 2+EXT (Two channel series)
Coupling	DC, AC, GND
Impedance	DC: (1 M Ω ±2%) (15 pF ±2 pF) (Four channel series) DC: (1 M Ω ±2%) (18 pF ±2 pF) (Two channel series)
Max.Input voltage	$1 \text{ M}\Omega \leq 400 \text{ Vpk(DC + Peak AC <=10 kHz)}$
CH to CH Isolation	DC-Max BW >40 dB
Probe attenuation	0.1X, 0.2X, 0.5X, 1X, 2X, 5X, 10X1000X, 2000X, 5000X, 10000X

Vertical System	
Bandwidth (-3 dB)	200 MHz (SDS1204X-E/SDS1202X-E) 100 MHz (SDS1104X-E)
Vertical Resolution	8-bit
Vertical Scale (Probe 1X)	500 µV/div - 10 V/div (1-2-5 sequence)
Offset Range (Probe 1X)	500 μV- 150 mV: ± 2 V
Oliset Ralige (Flobe 1X)	152 mV- 1.5 V: ± 20 V
Bandwidth Limit	20 MHz ±40%
	DC- 10% (BW): ± 1 dB
Bandwidth Flatness	10%- 50% (BW): ± 2 dB
	50%- 100% (BW): + 2 dB/-3 dB
Low Frequency Response (AC -3 dB)	≤10 Hz (at input BNC)
	ST-DEV \leq 0.5 division (<1 mV/div)
Noise	ST-DEV ≤0.2 division (<2 mV/div)
	ST-DEV ≤ 0.1 division (≥ 2 mV/div)
SFDR including harmonics	≥35 dB
DC Gain Accuracy	≤±3.0%: 5 mV/div-10 V/div
	≤±4.0%: ≤2 mV/div
Offeret Accuracy	±(1%* Offset+1.5%*8*div+2 mV): ≥2 mV/div
Offset Accuracy	±(1%* Offset+1.5%*8*div+500 uV): ≤1 mv/div
Risetime	Typical 1.8 ns (SDS1204X-E/SDS1202X-E)
RISELITIE	Typical 3.5 ns (SDS1104X-E)
Overshoot (500 ps Pulse)	<10%

SDS1000X-E Series Digital Oscilloscope

Horizontal System	
Timebase Scale	1.0 ns/div-100 s/div
Channel Skew	<100 ps
Waveform Capture Rate	Up to 100,000 wfm/s (normal mode), 400,000 wfm/s (sequence mode)
Intensity grading	256 Levels
Display Format	Y -T, X -Y,Roll
Timebase Accuracy	±25 ppm
Roll Mode	50 ms/div-100 s/div (1-2-5 step)

Trigger System	
Trigger Mode	Auto, Normal, Single
	Internal: ±4.5 div from the center of the screen
Trigger Level	EXT: ±0.6 V (Two channel series)
	EXT/5: ±3 V (Two channel series)
Holdoff Range	80 ns- 1.5 s
Trigger Coupling	AC DC LFRJ HFRJ Noise RJ
	DC: Passes all components of the signal
Coupling Frequency Response	AC: Blocks DC components and attenuates signals below 8 Hz
couping requercy response	LFRJ: Blocks the DC component and attenuates the low-frequency components below 2 MHz
	HFRJ: Attenuates the high-frequency components above 1.2 MHz
	DC: Passes all components of the signal
Coupling Frequency Response	LFRJ: Blocks the DC component and attenuates the low-frequency components below 10 KHz
	HFRJ: Attenuates the high-frequency components above 500 KHz
components below 10 KHz	Internal: ±0.2 div
	EXT (Two channel series): ±0.4 div
	DC - Max BW 0.6 div
	EXT (Two channel series): 200 mVpp DC- 10 MHz
Trigger Sensitivity	300 mVpp 10 MHz - BW frequency
	EXT/5 (Two channel series): 1 Vpp DC – 10 MHz
	1.5 Vpp 10 MHz -BW frequency
Trigger Jitter	< 100 ps
Trigger Displacement	Pre-Trigger: 0 - 100% Memory
	Delay Trigger: 0 to 10,000 div
Edge Trigger	
Slope	Rising, Falling, Rising&Falling
Source	All channels/ EXT/ (EXT/5)/ AC Line (Two channel series) All channels/ AC Line (Four channel series)
Slope Trigger	
Slope	Rising, Falling
LimitRange	< , > , <> , ><
Source	All channels
TimeRange	2 ns- 4.2 s
Resolution	1 ns

Pulse Trigger	
Polarity	+wid , -wid
Limit Range	< , > , <> , ><
Source	All channels
Pulse Range	2 ns ~ 4.2 s
Resolution	1 ns
Video Trigger	
Signal Standard	NTSC, PAL, 720p/50, 720p/60, 1080p/50, 1080p/60, 1080i/50, 1080i/60, Custom
Source	All channels
Sync	Any, Select
Trigger condition	Line, Field
Window Trigger	
Window Type	Absolute, Relative
Source	All channels
Interval Trigger	
Slope	Rising, Falling
Limit Range	< , > , <> , > <
Source	All channels
Time Range	2 ns ~ 4.2 s
Resolution	1 ns
Dropout Trigger	
Timeout Type	Edge, State
Source	All channels
Slope	Rising, Falling
Time Range	2 ns ~ 4.2 s
Resolution	1 ns
Runt Trigger	
Polarity	+wid , -wid
Limit Range	< , > , <> , ><
Source	All channels
Time Range	2 ns ~ 4.2 s
Resolution	1 ns
Pattern Trigger	
Pattern Setting	Invalid, Low, High
Logic	AND, OR, NAND, NOR
Source	All channels
Limit Range	< , > , <> , > <
Time Range	2 ns ~ 4.2 s

Serial Trigger	
I2C Trigger	
Condition	Start, Stop, Restart, No Ack, EEPROM, 7 bits Address & Data, 10 bits Address & Data, Data Length
Source (SDA/SCL)	All channels
Data format	Hex
Limit Range	EEPROM: =, >, <
Data Length	EEPROM: 1 byte Addr & Data: 1 ~ 2 byte Data Length: 1 ~ 12 byte
R/W bit	Addr & Data: Read, Write, Do not care
SPI Trigger	
Condition	Data
Source (CS/CL/Data)	All channels
Data format	Binary
Data Length	4 ~ 96 bit
Bit Value	0, 1, X
Bit Order	LSB, MSB
UART/ RS232 Trigger	
Condition	Start, Stop, Data, Parity Error
Source (RX/TX)	All channels
Data format	Hex
Limit Range	=, >, <
Data Length	1 byte
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	High, Low
Baud (Selectable)	600/1200/2400/4800/960019200/38400/57600/115200 bit/s
(Custom)	300 bit/s ~ 334000 bit/s
CAN Trigger	
Condition	All, Remote, ID, ID + Data, Error
Source	All channels
ID	STD (11 bit), EXT (29 bit)
Data Format	Hex
Data Length	1~2 byte
Baud Rate (Selectable)	5 k/10 k/20 k/50 k/100 k/125 k/250 k/500 k/800 k/1 M bit/s
Baud Rate (Custom)	5 kbit/s~1 Mbit/s
LIN Trigger	
Condition	Break, Frame ID, ID+Data, Error
Source	All channels
ID	1 byte
Data Format	
Bata Format	Hex
Data Length	
	Hex

Ze DecoderiginalSL, SDAkidress> bits, 10 bitsthreshold- 4.5 - 4.5 divisita- 7 linesSPI Decoder- 7 linessignalSC, MISO, SC *NOTE 2 channel scopes can only use 2 signal identifierside SelectRisin, Fallingde LevelLow, Highde LevelNot, SC *NOTE 2 channel scopes can only use 2 signal identifierside SelectNot, Sch NOTE 2 channel scopes can only use 2 signal identifierside SelectNot, Sch NOTE 2 channel scopes can only use 2 signal identifierside LevelNot, Sch NOTE 2 channel scopes can only use 2 signal identifierside SelectNot, Sch NOTE 2 channel scopes can only use 2 signal identifierside SelectNot, Sch NOTE 2 channel scopes can only use 2 signal identifierside SelectNot, Sch NOTE 2 channel scopes can only use 2 signal identifierside SelectNot, Sch NOTE 2 channel scopes can only use 2 signal identifiersif ArderNot, Sch NOTE 2 channel scopes can only use 2 signal identifiersif ArderNot, Sch NOTE 2 channel scopes can only use 2 signal identifiersif ArderNot, Sch NOTE 2 channel scopes can only use 2 signal identifiersif ArderNot, Sch NOTE 2 channel scopes can only use 2 signal identifiersif ArderNot, Sch NOTE 2 channel scopes can only use 2 signal identifiersif ArderNot, Sch NOTE 2 channel scopes can only use 2 signal identifiersif ArderNot, Sch NOTE 2 channel scopes can only use 2 signal identifiersif ArderNot, Sch NOTE 2 channel scopes can only use 2 signal identifie
Address 7 bits, 10 bits Threshold -4.5 ~ 4.5 div ist 1 ~ 7 lines ist 1 ~ 7 lines SPI Decoder SPI Decoder isignal SCL/MISO, MOSI, CS *NOTE 2 channel scopes can only use 2 signal identifiers isignal SCL/MISO, MOSI, CS *NOTE 2 channel scopes can only use 2 signal identifiers isidge Select Rising, Falling dle Level Low, High dle Level Low, High threshold 4.5 ~ 4.5 div threshold 1 ~ 7 lines threshold 1 ~ 7 lines tignal RX TX tignal So bit, 6 bit, 7 bit, 8 bit threshold Sone, Odd, Even storp Bit Jone, Odd, Even tigte Level Low, High tle Level Low, High tle Level Low, High
As for a series ist 4.5 ~ 4.5 div ist 1 ~ 7 lines ist - 7 lines ist SCI,MISO, MSSI, CS *NOTE 2 channel scopes can only use 2 signal identifiers isto SCI,MISO, MSSI, CS *NOTE 2 channel scopes can only use 2 signal identifiers isto Sci,MISO, MSSI, CS *NOTE 2 channel scopes can only use 2 signal identifiers isto Sci,MISO, MSSI, CS *NOTE 2 channel scopes can only use 2 signal identifiers isto Sci,MISO, MSSI, CS *NOTE 2 channel scopes can only use 2 signal identifiers isto Sci,MISO, MSSI, CS *NOTE 2 channel scopes can only use 2 signal identifiers isto Sci,MISO, MSSI, CS *NOTE 2 channel scopes can only use 2 signal identifiers isto Sci,MISO, MSSI, CS *NOTE 2 channel scopes can only use 2 signal identifiers isto Sci,MISO, MS, CS *NOTE 2 channel scopes can only use 2 signal identifiers isto MSB, SE isto Sci,MISO, MSB, Sci,MISO
ist a vince of the set
SPI Decoder Signal SCL,MISO, MOSI, CS *NOTE 2 channel scopes can only use 2 signal identifiers Sidge Select Rising, Falling dle Level Low, High Sid Order MSB, LSB Threshold -4.5 ~ 4.5 div sits Order -4.5 ~ 4.5 div Jack Threshold Jack Sid Order Jack Sid Select Jack
SignalSCL,MISO, MOSI, CS *NOTE 2 channel scopes can only use 2 signal identifiersSidge SelectRising, Fallingdle LevelLow, Highdid LevelMSB, LSBhreshold-4.5 ~ 4.5 divJarce Note Note Note Note Note Note Note Not
Edge SelectRising, Fallingde LevelLow, Highbit OrderMSB, LSBThreshold-4.5 « 4.5 divtir A volume-4.5 « 4.5 divImprove SelectionImprove SelectionBit, 6 bit, 7 bit, 8 bitAutomotionatop BitNone, Odd, Evenatop BitIn St, 15 bit, 2 bitatop BitIn St, 15 bit, 2 bitatop BitSone, Add, Selectionatop Bit
dle LevelLow, HighSit OrderMSB, LSBThreshold-4.5 divInstance-4.5 divJART/RS232 Decoder-SignalRX, TXData Width5 bit, 6 bit, 7 bit, 8 bitParty CheckNone, Odd, EvenSitop Bit1 bit, 15 bit, 2 bitdle LevelLow, HighThreshold6.5 ~ 4.5 div
Bit OrderMSB LSBThreshold-4.5 ~ 4.5 divList1 ~ 7 linesJART/ RS232 DecoderJara WidthRx TXSignalRx 10Arity CheckSit, 6 bit, 7 bit, 8 bitArity CheckNone, Odd, EvenSite p Bit1 bit, 1.5 bit, 2 bitSite p BitLow, HighThreshold-4.5 civ)
Threshold-4.5 « 4.5 divist1 ~ 7 linesJART/ RS232 DecoderXSignalKX, TXData Width5 bit, 6 bit, 7 bit, 8 bitParity CheckNone, Odd, EvenSignal die Level1 bit, 1.5 bit, 2 bitAlexander5 bit, 6 bit, 7 bit, 8 bitAlexander1 bit, 1.5 bit, 2 bitAlexander1 bit, 1.5 bit, 2 bitAlexander4.5 « 4.5 div
isit 1 ~ 7 lines DART/ RS232 Decoder Image: Comparison of the state of the stat
JART/ RS232 Decoder Signal RX, TX Data Width 5 bit, 6 bit, 7 bit, 8 bit Parity Check None, Odd, Even Signal de Level Libit, 1.5 bit, 2 bit Parity Check Libit, 2 bit Bit, 6 bit, 7 bit, 8 bit Signal
SignalRX, TXData Width5 bit, 6 bit, 7 bit, 8 bitParity CheckNone, Odd, EvenStop Bit1 bit, 1.5 bit, 2 bitde LevelLow, HighThreshold4.5 ~ 4.5 div
Data Width5 bit, 6 bit, 7 bit, 8 bitParity CheckNone, Odd, EvenStop Bit1 bit, 1.5 bit, 2 bitdle LevelLow, HighThreshold4.5 ~ 4.5 div
Parity Check None, Odd, Even Stop Bit 1 bit, 1.5 bit, 2 bit dle Level Low, High Threshold 4.5 ~ 4.5 div
Stop Bit 1 bit, 1.5 bit, 2 bit dle Level Low, High Threshold -4.5 ~ 4.5 div
dle Level Low, High Threshold -4.5 ~ 4.5 div
Threshold -4.5 ~ 4.5 div
ist 1 ~ 7 lines
CAN Decoder
Signal CAN_H, CAN_L
Source CAN_H, CAN_L, CAN_L-CAN_L
Threshold -4.5 ~ 4.5 div
ist 1 ~ 7 lines
IN Decoder
IN Specification Package Revision Ver1.3, Ver2.0
Threshold -4.5 ~ 4.5 div
ist 1 ~ 7 lines

Measurement					
Source	All channels, A	NI channels in Zoom, Math, All References, History			
Number of Measurements	Display 5 mea	surements at the same time			
Measurement Range	Screen region, Gate region				
Measurement Parameters (38 Types)					
	Max	Highest value in input waveform			
	Min	Lowest value in input waveform			
	Pk-Pk	Difference between maximum and minimum data values			
	Ampl	Difference between top and base in a bimodal signal, or between max and min in an unimodal signal			
	Тор	Value of most probable higher state in a bimodal waveform			
	Base	Value of most probable lower state in a bimodal waveform			
	Mean	Average of all data values			
	Cmean	Average of data values in the first cycle			
Vertical (Voltage)	Stdev	Standard deviation of all data values			
	Cstd	Standard deviation of all data values in the first cycle			
	VRMS	Root mean square of all data values			
	Crms	Root mean square of all data values in the first cycle			
	FOV	Overshoot after a falling edge; (base-min)/Amplitude			
	FPRE	Overshoot before a falling edge; (max-top)/Amplitude			
	ROV	Overshoot after a rising edge; (max-top)/Amplitude			
	RPRE	Overshoot before a rising edge; (base-min)/Amplitude			
	Level@X	the voltage value of the trigger point			
	Period	Period for every cycle in waveform at the 50% level, and positive slope			
	Freq	Frequency for every cycle in waveform at the 50% level, and positive slope			
	+Wid	Width measured at 50% level and positive slope			
	-Wid	Width measured at 50% level and negative slope			
	Rise Time	Duration of rising edge from 10-90%			
	Fall Time	Duration of falling edge from 90-10%			
Horizontal (Time)	Bwid	Time from the first rising edge to the last falling edge, or the first falling edge to the last rising edge at the 50% crossing			
	+Dut	Ratio of positive width to period			
	-Dut	Ratio of negative width to period			
	Delay	Time from the trigger to the first transition at the 50% crossing			
	Time@Level	Time from the trigger to each rising edge at the 50% crossing. When Statistics is Off, it shows the time from the trigger to the last rising edge at the 50% crossing. When Statistics is On, it shows the Current, Mean, Min, Max, Standard Deviation of time from the trigger to each rising edge at the 50% crossing in multiple frames (number = Count).			
	Phase	Calculate the phase difference between two edges			
	FRR	Time between the first rising edges of the two channels			
	FRF	Time from the first rising edge of channel A to the first falling edge of channel B			
	FFR	Time from the first falling edge of channel A to the first rising edge of channel B			
	FFF	Time from the first falling edge of channel A to the first falling edge of channel B			
Delay	LRR	Time from the first rising edge of channel A to the last rising edge of channel B			
	LRF	Time from the first rising edge of channel A to the last falling edge of channel B			
	LFR	Time from the first falling edge of channel A to the last rising edge of channel B			
	LFF	Time from the first falling edge of channel A to the last falling edge of channel B			
	Skew	Time of source A edge minus time of nearest source B edge			

Measurement	
Cursors	Manual : Time X1, X2, (X1-X2), (1/ΔT) Voltage Y1, Y2, (Y1-Y2) Track: Time X1, X2, (X1-X2)
Statistics	Current, Mean, Min, Max, Stdev, Count
Counter	Hardware 6 bit counter (channels are selectable)

Math Function				
Operation FFT window	+, -, *, /, FFT, d/dt, ∫dt, √			
	Rectangular, Blackman, Hanning, Hamming, Flattop			
FFT display	Full Screen, Split, Exclusive			
	Number of Decoders 2			
USB AWG Module (four char	inel series only, option)			
Channel	1			
Max. Output Frequency	25 MHz			
Sampling Rate	125 MSa/s			
Frequency Resolution	1 μHz			
Frequency Accuracy	±50 ppm			
Vertical Resolution	14-bits			
AmplitudeRange	-1.5 ~ +1.5 V (50Ω)			
	-3 ~ +3 V (High-Z)			
Waveform Type	Sine, Square, Ramp, pulse, Noise, DC and 45 built-in waveforms			
Output impedance	50 Ω±2%			
Protection	Over-Voltage Protection, Current-Limiting Protection			
Sine				
Frequency	1 μHz ~ 25 MHz			
Offset Accuracy (10 kHz)	±(1%*Offset Setting Value +1 mVpp)			
Amplitude flatness (10 kHz, 5 Vpp)	±0.3 dB			
	DC ~ 1 MHz -60 dBc			
SFDR	1 MHz ~ 5 MHz -55 dBc			
	5 MHz ~ 25 MHz -50 dBc			
HD	DC ~ 5 MHz -50 dBc			
שוי	5 MHz ~ 25 MHz -45 dBc			
Square/Pulse				
Frequency	1 μHz ~ 10 MHz			
Duty Cycle	1% ~ 99%			
Rise/Fall time	< 24 ns (10% ~ 90%)			
Overshoot (1 kHz,1 Vpp, Typical)	< 3% (typical 1 kHz, 1 Vpp)			
Pulse Width	> 50 ns			
Jitter	< 500 ps + 10 ppm			
Ramp				
Frequency	1 µHz ~ 300 kHz			
Linearity (Typical)	< 0.1% of Pk-Pk (Typical, 1 kHz, 1 Vpp, 100% Symmetry)			
Symmetry	0% ~ 100% (Adjustable)			

SDS1000X-E Series Digital Oscilloscope

Image: Process of the second of the	DC																																																													
Image: Process of the second of the		±1.5 V (50 Ω)																																																												
Noise >25 Mitz (-3 dB) Arbitrary Wave I µHz ~ 5 MHz Frequency 1 µHz ~ 5 MHz Wave Length 16 kpts Samphing Rate 125 Ms/s ead in Eas/Wave and U-Disk Digital Channels (four channels 16 Vave Length 16 Vas. of Channels 16 Vas. Sampling Rate 12 GSa/s Vas. of Channels 16 Vas. Sampling Rate 12 GSa/s Vas. of Channels 16 Vas. Sampling Rate 12 GSa/s Vas. of Channels 4 ns Vas. of Channels 4 Npts/CH Vas. of Channels 90 -DJ. Dse-D15 vas. Group 00 -DJ. Dse-D15 vas. of Channels 13 V ~ 3 V vas. of Channels Do-DJ.S: ±1 sampling interval ±1 ns) VDO Digital to Analog: ± (1 sampling interval ±1 ns) Vas. Samodard USB Moke, USB Devlee, LAN, Pass/Fail, Trigger Out Sasyley Color 24 bits Sayley Rosolution 800×480 Sayley Rosolution 24 bits <td>Offset range</td> <td>±3 V (High-Z)</td>	Offset range	±3 V (High-Z)																																																												
andwidth>25 MHz (-3 dB)Arbitrany Wave1 µHz ~ 5 MHzFrequency1 µHz ~ 5 MHzWave Length16 kptsSamping Rate26 SMs/aead nEasyWave and U-DiskDigital Channels (four char-stree only, option)Digital Channels (four char-stree only, option)Adv Colspan="2">Adv Colspan="2"	Accuracy	±(offset *1%+3 mV)																																																												
Arbitrary Wave I µHz - 5 MHz requency 1 µHz - 5 MHz Wave Length 16 kpts sampling Rate 125 MSs/s cad in EasyWave and U-Disk Digital Channels (four char-veries only, option) 0 No. of Channels 16 Acs. Sampling Rate 16Sa/s Memory Depth 14 Mpts/CH Memory Depth 4 Npts/CH Memory Depth 00-07, D8-D15 exel Group D0-07, D8-D15 exel Group D0-07, D8-D15 exel Group D0-015: ±1 sampling interval bigital to Analog: ± (1 sampling interval bigital to Sampling interval +1 ns) /// D0-015: ±1 sampling interval bigital to Analog: ± (1 sampling interval bigital to Analog: ± (1 sampling interval +1 ns) // D0-015: ±1 sampling interval bigital to Analog: ± (1 sampling interval +1 ns) // D0-101: ±1 sampling interval +1 ns) //	Noise																																																													
requency1 µth = 5 MHzNave Length16 kptssampling Rate125 MSa/sead inEadyave and U-DiakDigital Channels (box	Bandwidth	>25 MHz (-3 dB)																																																												
Wave Length 16 kpts sampling Rate 125 MSa/s sampling Rate 125 MSa/s Digital Channels (four channels 16 Adv. Sampling Rate 16 Sa/s teemory Depth 14 Mpts/CH teemory Depth 4 Mpts/CH teemory Depth 4 Mpts/CH teemory Depth 4 Npts/CH teed Group 00-D7, D8-D15 cevel Range -3 V ~ 3 V cevel Range -3 V ~ 3 V ogic Type TTL, CMOS, LVCMOS2.5, custom bigital to Analogis ±(1 sampling interval +1 ns) Digital to Analogis ±(1 sampling interval +1 ns) teeper Saver 3.3 V TTL Output Display Type >10.00 TTL CU Dupt Display Type >20.00 A80 Display Color 2000 A80 Display Color 200.13 Saver Bange 3.0 nit atage 3.0 nit Saver Saver 3.0 VECtor Display Mode Dof, Vector Display Mode Dof, Vector Display Mode Diff. Sec, S Sec, 10 Sec, 30 Sec, Infinite	Arbitrary Wave																																																													
samping Rate12 MS/sLead inEas/Wave and U-DiskDigital Channels (four charmels series only, option)No. of Channels15Max. Sampling Rate16 Sa/sHemory Depth14 Mpts/CHHin. Detectable Pulse Width4 Npts/CHevel Group00-07, D8-D15evel Group00-07, D8-D15evel Range3 V - 3 Vogic TypeTL, CMOS, LVCMOS2.5, customogica TypeTL, CMOS, LVCMOS2.5, custombigtal to Analog: ± (1 sampling interval ±1 ns)bigtal to Sigtal to Analog: ± (1 sampling interval ±1 ns)bigtal to Analog: ± (1 sampling interval ±1 ns)bigta	Frequency	1 μHz ~ 5 MHz																																																												
ead inEasyNave and U-DiskDigital Channels (four charmesIAv. of ChannelsIAv. Sampling RateI Sa/sAreanoy DepthI Mpts/CHAver Or Dip DepthI Mpts/CHevel GroupDo-D7, D8-O15evel GroupTL, CMOS3.3, U/CMOS2.5, customevel GroupDo-D5: ±1 sampling interval bigtat to Analog: ± (1 sampling interval ± 1 ns)or Dip Sampling interval ± 1 ns)Or Dip Sampling interval ± 1 ns)StandardUSB Device, LAN, Pass/Fall, Trigger OutDisplay TypeVert OutputDisplay TypeSind TFT LCDDisplay TypeSind TFT LCDDisplay TypeSind TFT LCDDisplay RoloSind CalcaDisplay GoodSind CalcaDisplay GoodSind CalcaDisplay GoodSind CalcaDisplay RoloSind CalcaDisplay RoloSind CalcaDisplay GoodSind CalcaDisplay ModeSind Calca	Wave Length	16 kpts																																																												
Digital Channels (four channels series only, option)40. of Channels1641. Sac	Sampling Rate	125 MSa/s																																																												
No. of ChannelsI6Max. Sampling Rate16Sa/sAtencory Depth14 Mpts/CHHin. Detectable Pulse Width4 nsexel GroupDo~D7, D8~D15exel GroupDo~D7, D8~D15exel Range-3 V ~ 3 Vbegic TypeTL, CMOS, LVCMOS2.3, LVCMOS2.5, customobjc TypeDo~D15: ±1 sampling interval Do~D15: ±1 sampling interval herval Do~D15: ±1 sampling interval herval Do~D15: ±1 sampling interval +1 ns)f/OJoseph Kongetf/DJoseph KongetJoseph KongetJos	Lead in	EasyWave and U-Disk																																																												
Ass. Sampling Rate1 GSa/s44 Mps/CH4 Mps/CH4. No6 Mps/CH5. No	Digital Channels (four ch	nannel series only, option)																																																												
Henry Deph14 Mpts/CHHin, Detectable Pulse Width4 nsLevel GroupDo-D7, D8-D15Level Group-3 V ~ 3 VLogic TypeTL, CMOS, LVCMOS2.3, LVCMOS2.5, customLogic TypeTL, CMOS, LVCMOS3.3, LVCMOS2.5, customLogic TypeTL, CMOS, LVCMOS2.5, customLogic TypeStandardJost Host, USB Device, LAN, Pass/Fail, Trigger OutPass/Fail3.3 V TL OutputDisplay (Screen)StandardDisplay Type7-inch TFT LCDDisplay Type7-inch TFT LCDDisplay Color24 bitContrast (Typical)800×480Standard80.14 divisionsDisplay Color24 bitDisplay ModeDo, VectorDisplay ModeDo, VectorDisplay ModeOf, 1 Sec, S Sec, 10 Sec, 30 Sec, InfiniteDisplay Color DisplayNormal, ColorStoren Saver1 min, 5 min, 10 min, 30 min, 1 hour, Off	No. of Channels	16																																																												
Ans Level Group Do-07, D8-D15 Level Group J0-07, D8-D15 Level Range -3 V ~ 3 V Level Range TL, CMOS, LVCMOS3.3, LVCMOS2.5, custom Level Range Do-015: ±1 sampling interval Digital to Analog: ± (1 sampling interval ±1 ns) Kew(2) Do-015: ±1 sampling interval Digital to Analog: ± (1 sampling interval ±1 ns) K/O Standard VSB Host, USB Device, LAN, Pass/Fail, Trigger Out 3.3 V TTL Output Display (Screen) Standard Display Screens Standard Display Color Analog: ± 0 Display Color Standard Display Mode Standard Display Mode Display Color Display Mode Dit, Sex, 5 Sex, 10 Sex, 30 Sex, Infinite	Max. Sampling Rate	1 GSa/s																																																												
evel GroupDo-D7, D8~D15evel Group-3 V ~ 3 Vevel GroupTL, CMOS, LVCMOS3.3, LVCMOS2.5, customskew(2)Do-D15: :st sampling interval bgital to Analog: ± (1 sampling interval + 1 ns)t/OUSB Host, USB Device, LAN, Pass/Fail, Trigger OutstandardUSB Host, USB Device, LAN, Pass/Fail, Trigger Outaskey(2)3.3 V TL OutputDisplay (Screen)3.1 VTL OutputDisplay Screen)-inch TFT LCDDisplay Color4 bitStandard300 × 480Standard500: 1Standard500: 1Standard300 nitColortast (Typical)500 nitDisplay (Maveform)	Memory Depth	14 Mpts/CH																																																												
Ave Name3 V ~ 3 VLogic TypeTL, CMOS, LVCMOS3.3, LVCMOS2.5, customLogic TypeTL, CMOS, LVCMOS3.3, LVCMOS2.5, customSkew[2]Do~D15: ±1 sampling interval Digital to Analog: ± (1 sampling interval +1 ns)Logic TypeUSB Host, USB Device, LAN, Pass/Fail, Trigger OutLogic Type3.3 V TL OutputDisplay (Screen)3.3 V TL OutputDisplay Type7-inch TFT LCDDisplay Resolution800<480	Min. Detectable Pulse Width	4 ns	Joint of the second s	Level Group	D0~D7, D8~D15	Skew[2] Do~D15: ±1 sampling interval gigital to Analog: ± (1 sampling interval +1 ns) C/O C/O Standard USB Host, USB Device, LAN, Pass/Fail, Trigger Out Standard Standard Standard Standard Standard Standard Standard Standard Standard USB Host, USB Device, LAN, Pass/Fail, Trigger Out Standard Standard <th< td=""><td>Level Range</td><td>-3 V ~ 3 V</td></th<>	Level Range	-3 V ~ 3 V	Digital to Analog: ± (1 sampling interval +1 ns) Job Job Job <thjob< th=""> Job Job</thjob<>	Logic Type	TTL, CMOS, LVCMOS3.3, LVCMOS2.5, custom	StandardUSB Host, USB Device, LAN, Pass/Fail, Trigger OutPass/Fail3.3 V TL OutputDisplay Coreen)	Skew[2]		Pass/Fail 3.3 V TL Output Display (Screen) - Display Type 7-inch TFT LCD Display Resolution 800×480 Display Color 24 bit Contrast (Typical) 500:1 Backlight 300 nit Range 8 x 14 divisions Display Mode Dot, Vector Persist Time Off, 1 Sec, 5 Sec, 10 Sec, 30 Sec, Infinite Color Display Normal, Color Screen Saver 1 min, 5 min, 10 min, 30 min, 1 hour, Off	I/O		Display (Screen) 7-inch TFT LCD Display Resolution 800×480 Display Color 24 bit Contrast (Typical) 500:1 Backlight 300 nit Bange 8 x 14 divisions Display Mode Dot, Vector Persist Time Off, 1 Sec, 5 Sec, 10 Sec, 30 Sec, Infinite Color Display Normal, Color Starter Saver 1 min, 5 min, 10 min, 30 min, 1 hour, Off	Standard	USB Host, USB Device, LAN, Pass/Fail, Trigger Out	Display Type7-inch TFT LCDDisplay Resolution800×480Display Color24 bitContrast (Typical)500:1Backlight300 nitRange8 x 14 divisionsDisplay ModeDot, VectorDisplay ModeDot, VectorContrast TimeOff. 1 Sec, 5 Sec, 10 Sec, 30 Sec, InfiniteContrast Conserver1 min, 5 min, 1 hour, Off	Pass/Fail	3.3 V TTL Output	Display Resolution800×480Display Color24 bitContrast (Typical)500:1Backlight300 nitRange8 x 14 divisionsDisplay ModeDot, VectorDisplay ModeDot, VectorColor DisplayOff, 1 Sec, 5 Sec, 10 Sec, 30 Sec, InfiniteColor DisplayNormal, ColorSeren Saver1 min, 5 min, 10 min, 30 min, 1 hour, Off	Display (Screen)		Display Color24 bitContrast (Typical)500:1Backlight300 nitRange8 x 14 divisionsDisplay (Waveform)0t, VectorDisplay ModeDot, VectorPersist TimeOff, 1 Sec, 5 Sec, 10 Sec, 30 Sec, InfiniteColor DisplayNormal, ColorSecen Saver1 min, 5 min, 10 min, 30 min, 1 hour, Off	Display Type	7-inch TFT LCD	Contrast (Typical)500:1Backlight300 nitBacklight300 nitBacklight8 x 14 divisionsDisplay (Waveform)Dot, VectorDisplay ModeDot, VectorPersist TimeOff, 1 Sec, 5 Sec, 10 Sec, 30 Sec, InfiniteColor DisplayNormal, ColorScreen Saver1 min, 5 min, 10 min, 30 min, 1 hour, Off	Display Resolution	800×480	Backlight300 nitRange8 x 14 divisionsDisplay (Waveform)Dot, VectorDisplay ModeDot, VectorPersist TimeOff, 1 Sec, 5 Sec, 10 Sec, 30 Sec, InfiniteColor DisplayNormal, ColorScreen Saver1 min, 5 min, 10 min, 30 min, 1 hour, Off	Display Color	24 bit	Range 8 x 14 divisions Display (Waveform) Display Mode Display Mode Dot, Vector Persist Time Off, 1 Sec, 5 Sec, 10 Sec, 30 Sec, Infinite Color Display Normal, Color Screen Saver 1 min, 5 min, 10 min, 30 min, 1 hour, Off	Contrast (Typical)	500:1	Display (Waveform) Dot, Vector Display Mode Dot, Vector Persist Time Off, 1 Sec, 5 Sec, 10 Sec, 30 Sec, Infinite Color Display Normal, Color Screen Saver 1 min, 5 min, 10 min, 30 min, 1 hour, Off	Backlight	300 nit	Display Mode Dot, Vector Persist Time Off, 1 Sec, 5 Sec, 10 Sec, 30 Sec, Infinite Color Display Normal, Color Screen Saver 1 min, 5 min, 10 min, 30 min, 1 hour, Off	Range	8 x 14 divisions	Persist Time Off, 1 Sec, 5 Sec, 10 Sec, 30 Sec, Infinite Color Display Normal, Color Screen Saver 1 min, 5 min, 10 min, 30 min, 1 hour, Off	Display (Waveform)		Color Display Normal, Color Screen Saver 1 min, 5 min, 10 min, 30 min, 1 hour, Off	Display Mode	Dot, Vector	Screen Saver 1 min, 5 min, 10 min, 30 min, 1 hour, Off	Persist Time	Off, 1 Sec, 5 Sec, 10 Sec, 30 Sec, Infinite		Color Display	Normal, Color	anguage Simplified Chinese, Traditional Chinese, English, French, Japanese, Korean, German, Russian, Italian, Portuguese	Screen Saver	1 min, 5 min, 10 min, 30 min, 1 hour, Off		Language	Simplified Chinese, Traditional Chinese, English, French, Japanese, Korean, German, Russian, Italian, Portuguese
Min. Detectable Pulse Width	4 ns																																																													
Joint of the second s	Level Group	D0~D7, D8~D15																																																												
Skew[2] Do~D15: ±1 sampling interval gigital to Analog: ± (1 sampling interval +1 ns) C/O C/O Standard USB Host, USB Device, LAN, Pass/Fail, Trigger Out Standard Standard Standard Standard Standard Standard Standard Standard Standard USB Host, USB Device, LAN, Pass/Fail, Trigger Out Standard Standard <th< td=""><td>Level Range</td><td>-3 V ~ 3 V</td></th<>	Level Range	-3 V ~ 3 V																																																												
Digital to Analog: ± (1 sampling interval +1 ns) Job Job Job <thjob< th=""> Job Job</thjob<>	Logic Type	TTL, CMOS, LVCMOS3.3, LVCMOS2.5, custom																																																												
StandardUSB Host, USB Device, LAN, Pass/Fail, Trigger OutPass/Fail3.3 V TL OutputDisplay Coreen)	Skew[2]																																																													
Pass/Fail 3.3 V TL Output Display (Screen) - Display Type 7-inch TFT LCD Display Resolution 800×480 Display Color 24 bit Contrast (Typical) 500:1 Backlight 300 nit Range 8 x 14 divisions Display Mode Dot, Vector Persist Time Off, 1 Sec, 5 Sec, 10 Sec, 30 Sec, Infinite Color Display Normal, Color Screen Saver 1 min, 5 min, 10 min, 30 min, 1 hour, Off	I/O																																																													
Display (Screen) 7-inch TFT LCD Display Resolution 800×480 Display Color 24 bit Contrast (Typical) 500:1 Backlight 300 nit Bange 8 x 14 divisions Display Mode Dot, Vector Persist Time Off, 1 Sec, 5 Sec, 10 Sec, 30 Sec, Infinite Color Display Normal, Color Starter Saver 1 min, 5 min, 10 min, 30 min, 1 hour, Off	Standard	USB Host, USB Device, LAN, Pass/Fail, Trigger Out																																																												
Display Type7-inch TFT LCDDisplay Resolution800×480Display Color24 bitContrast (Typical)500:1Backlight300 nitRange8 x 14 divisionsDisplay ModeDot, VectorDisplay ModeDot, VectorContrast TimeOff. 1 Sec, 5 Sec, 10 Sec, 30 Sec, InfiniteContrast Conserver1 min, 5 min, 1 hour, Off	Pass/Fail	3.3 V TTL Output																																																												
Display Resolution800×480Display Color24 bitContrast (Typical)500:1Backlight300 nitRange8 x 14 divisionsDisplay ModeDot, VectorDisplay ModeDot, VectorColor DisplayOff, 1 Sec, 5 Sec, 10 Sec, 30 Sec, InfiniteColor DisplayNormal, ColorSeren Saver1 min, 5 min, 10 min, 30 min, 1 hour, Off	Display (Screen)																																																													
Display Color24 bitContrast (Typical)500:1Backlight300 nitRange8 x 14 divisionsDisplay (Waveform)0t, VectorDisplay ModeDot, VectorPersist TimeOff, 1 Sec, 5 Sec, 10 Sec, 30 Sec, InfiniteColor DisplayNormal, ColorSecen Saver1 min, 5 min, 10 min, 30 min, 1 hour, Off	Display Type	7-inch TFT LCD																																																												
Contrast (Typical)500:1Backlight300 nitBacklight300 nitBacklight8 x 14 divisionsDisplay (Waveform)Dot, VectorDisplay ModeDot, VectorPersist TimeOff, 1 Sec, 5 Sec, 10 Sec, 30 Sec, InfiniteColor DisplayNormal, ColorScreen Saver1 min, 5 min, 10 min, 30 min, 1 hour, Off	Display Resolution	800×480																																																												
Backlight300 nitRange8 x 14 divisionsDisplay (Waveform)Dot, VectorDisplay ModeDot, VectorPersist TimeOff, 1 Sec, 5 Sec, 10 Sec, 30 Sec, InfiniteColor DisplayNormal, ColorScreen Saver1 min, 5 min, 10 min, 30 min, 1 hour, Off	Display Color	24 bit																																																												
Range 8 x 14 divisions Display (Waveform) Display Mode Display Mode Dot, Vector Persist Time Off, 1 Sec, 5 Sec, 10 Sec, 30 Sec, Infinite Color Display Normal, Color Screen Saver 1 min, 5 min, 10 min, 30 min, 1 hour, Off	Contrast (Typical)	500:1																																																												
Display (Waveform) Dot, Vector Display Mode Dot, Vector Persist Time Off, 1 Sec, 5 Sec, 10 Sec, 30 Sec, Infinite Color Display Normal, Color Screen Saver 1 min, 5 min, 10 min, 30 min, 1 hour, Off	Backlight	300 nit																																																												
Display Mode Dot, Vector Persist Time Off, 1 Sec, 5 Sec, 10 Sec, 30 Sec, Infinite Color Display Normal, Color Screen Saver 1 min, 5 min, 10 min, 30 min, 1 hour, Off	Range	8 x 14 divisions																																																												
Persist Time Off, 1 Sec, 5 Sec, 10 Sec, 30 Sec, Infinite Color Display Normal, Color Screen Saver 1 min, 5 min, 10 min, 30 min, 1 hour, Off	Display (Waveform)																																																													
Color Display Normal, Color Screen Saver 1 min, 5 min, 10 min, 30 min, 1 hour, Off	Display Mode	Dot, Vector																																																												
Screen Saver 1 min, 5 min, 10 min, 30 min, 1 hour, Off	Persist Time	Off, 1 Sec, 5 Sec, 10 Sec, 30 Sec, Infinite																																																												
	Color Display	Normal, Color																																																												
anguage Simplified Chinese, Traditional Chinese, English, French, Japanese, Korean, German, Russian, Italian, Portuguese	Screen Saver	1 min, 5 min, 10 min, 30 min, 1 hour, Off																																																												
	Language	Simplified Chinese, Traditional Chinese, English, French, Japanese, Korean, German, Russian, Italian, Portuguese																																																												

Environments		
Temperature	Operating: 10° C ~ +40°C	
	Non-operating: -20° C ~ $+60^{\circ}$ C	
Humidity	Operating: 85% RH, 40℃ , 24 hours	
	Non-operating: 85% RH, 65 $^\circ \!\!\! \mathbb{C}$, 24 hours	
Height	Operating: ≤3000 m	
	Non-operating: ≤15,266 m	
Electromagnetic Compatibility	2004/108/EC)	
	Execution Standard EN 61326-1:2006	
	EN 61000-3-2:2006 + A2:2009, EN 61000-3-3:2008	
Safety	2006/95/EC	
Execution Standard EN 61010-1:2010/ EN 61010-2-030:2010		

Power Supply			
Input Voltage	100 ~ 240 VAC, CAT II, Auto selection		
Frequency	50/60/400 Hz		
Power	25 W Max		
Mechanical (Four channel series)			
	Length: 312 mm		
Dimensions	Width: 132.6 mm		
	Height: 151 mm		
Weight	N.W: 2.6 kg; G.W: 3.8 kg		

Mechanical (Two channel series)		
Dimensions	Length: 312 mm	
	Width: 134 mm	
	Height: 150 mm	
Weight	N.W: 2.5 Kg; G.W: 3.5 Kg	

Probes and Accessories

Probe	Picture	Model	Description
Passive	PB470		Bandwidth: 70 MHz, 1X/10X, 1M/10 Mohm, 300 V/600 V
	PP510		Bandwidth: 100 MHz, 1X/10X, 1M/10 Mohm,300 V/600 V
	PP215	8888	Bandwidth: 200 MHz, 1X/10X, 1M/10 Mohm, 300 V/600 V
Current Probe	CP4020		Bandwidth: 100 KHz, Max. continuous current: 20 Arms, Peak current: 60 A Switch Ratio: 50 mV/A, 5 mV/A, Accuracy: 50 mV/A (0.4 A-10 Apk) \pm 2%, 5 mV/A (1 A-60 Apk) \pm 2%, 9 V battery source
	CP4050		Bandwidth: 1 MHz, Max. continuous current: 50 Arms, Peak current: 140 A Switch Ratio: 500 mV/A, 50 mV/A Accuracy: 500 mV/A (20 mA-14 ApK) \pm 3% \pm 20 mA , 50 mV/A (200 mA- 100 ApK) \pm 4% \pm 200 mA, 50 mV/A (100 A-140 ApK) \pm 15% max, 9V battery source
	CP4070		Bandwidth: 150 KHz, Max. continuous current: 70 Arms, Peak current: 200 A Switch Ratio: 50 mV/A, 5 mV/A, Accuracy: 50 mV/A (0.4 A-10 ApK) \pm 2%, 5 mV/A (1 A-200 ApK) \pm 2%, 9V battery source
	CP4070A		Bandwidth: 300 KHz, Max. continuous current: 70 Arms, Peak current: 200 A Switch Ratio: 100 mV/A, 10 mV/A, Accuracy: 100 mV/A (50 m A-10 ApK) \pm 3% \pm 50 mA , 10 mV/A (500 mA-40 ApK) \pm 4% \pm 50 mA, 10 mV/A (40 A-200 ApK) \pm 15% max, 9 V battery source
	CP5030		Bandwidth: 50 MHz, Max. continuous current: 30 Arms, Peak current: 50 A Switch Ratio: 100 mV/A, 1 V/A, Accuracy: 1 V/A (\pm 1% \pm 1 mA), 100 mV/A (\pm 1% \pm 10 mA), DC 12 V/ 1.2 A power adapter
	СР5030А		Bandwidth: 100 MHz, Max. continuous current: 30 Arms, Peak current: 50 A Switch Ratio: 100 mV/A, 1 V/A, Accuracy: 1 V/A (\pm 1% \pm 1 mA), 100 mV/A (\pm 1% \pm 10 mA), DC 12V/1.2A power adapter
	CP5150		Bandwidth: 12 MHz, Max. continuous current: 150 Arms, Peak current: 300 A Switch Ratio: 100 mV/A, 10 mV/A, Accuracy: 100 mV/A (\pm 1% \pm 10 mA), 10 mV/A (\pm 1% \pm 100 mA), DC 12 V/1.2 A power adapter
	CP5500		Bandwidth: 5 MHz, Max. continuous current: 500 Arms, Peak current: 750 A Switch Ratio: 100 mV/A, 10 mV/A, Accuracy: 100 mV/A (\pm 1% \pm 10 mA), 10 mV/A (\pm 1% \pm 100 mA), DC 12 V/1.2 A power adapter
Differential Probe	DPB4080		Bandwidth: 50 MHz, Differential Range: 800 V (DC + Peak AC), 100 X/200 X/500 X/1000 X, Accuracy: ±1%, DC 9 V/1 A power adapter

Probe	Picture	Model	Description
Differential Probe	DPB5150		Bandwidth: 70 MHz, Differential Range: 1500 V (DC + Peak AC),50 X/500 X Accuracy: ±2%, DC 5 V/1 A USB adapter
	DPB5150A		Bandwidth: 100 MHz, Differential Range: 1500 V (DC + Peak AC), 50X/500X , Accuracy: ±2% DC 5 V/1 A USB adapter
	DPB5700		Bandwidth: 70 MHz, Differential Range: 7000 V (DC + Peak AC), 100X/1000X , Accuracy: ±2%, DC 5 V/1 A USB adapter
	DPB5700A		Bandwidth: 100 MHz Differential Range: 7000 V (DC + Peak AC), 100X/1000X Accuracy: ±2% DC 5 V/1 A USB adapter
High Voltage	HPB4010		Bandwidth: 40 MHz Differential Range: DC 10 KV, AC (rms): 7 KV (sine), AC (Vpp): 20 KV (Pulse) 1000X Accuracy: ≤3%
Isolated front end	ISFE		The USB Device interface allows a connection into the GPIB interface. USB-GPIB adapter allows the oscilloscope to easily send and receive commands through the GPIB. USB follows the USB2.0 specification. GPIB follows the IEEE488.2 standard.
Demo Board	STB-3	Output signals include square waves, sine, AM, fast edge , pulse, PWM, CAN, LIN etc. Used in teaching and demonstrations.	
USB AWG Module	SAG1021	SACTO21 Set Value Automatic to active Signal Entry	Output Sine, Square, Ramp, pulse, Noise, DC and 45 built-in waveforms. The arbitrary waveforms can be accessed and edited by the EasyWave PC software

Ordering information				
Product Name	SDS1000X-E Series Digital Oscilloscope			
	SDS1104X-E 100 MHz Four Channels			
	SDS1204X-E 200 MHz Four Channels			
	SDS1202X-E 200 MHz Two Channels			
	USB Cable -1			
	Quick Start -1			
Standard Accessories	Passive Probe -4/2			
	Certification -1			
	Power Cord -1			
	16 Channels MSO Software (four channel series only)	SDS1000X-E-16LA		
	16 Channels Logic Analyzer (four channel series only)	SLA1016		
	AWG Software (four channel series only)	SDS1000X-E-FG		
	USB AWG Module Hardware (four channel series only)	SAG1021		
	WIFI Software (four channel series only)	SDS1000X-E-WIFI		
Optional Accessories	USB WIFI Adapter (four channel series only)	TL_WN725N		
	Isolated Front End	ISFE		
	STB Demo Source	STB-3		
	High Voltage Probe	HPB4010		
	Current Probes	CP4020/CP4050/CP4070/CP4070A/CP5030/CP5030A/ CP5150/CP5500		
	Differential Probes	DPB4080/DPB5150/DPB5150A/DPB5700/DPB5700A		

SDS1000X-E Series Super Phosphor Oscilloscope



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, digital multimeters, DC power supplies, spectrum analyzers, isolated handheld oscilloscopes 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.

Headquarter:

SIGLENT TECHNOLOGIES CO., LTD. Add: Bldg No.4 & No.5, Antongda Industrial Zone, 3rd Liuxian Road, Bao'an District, Shenzhen, 518101, China. Tel: + 86 755 3661 5186 Fax: + 86 755 3359 1582 Email: sales@siglent.com; Website: http://www.siglent.com/ens/

USA:

SIGLENT Technologies America, Inc 6557 Cochran Rd Solon, Ohio 44139 Tel: 440-398-5800 Toll Free: 877-515-5551 Fax: 440-399-1211 Email: info@siglent.com Website: www.siglentamerica.com

Europe:

SIGLENT TECHNOLOGIES EUROPE GmbH ADD: Liebigstrasse 2-20, Gebaeude 14, 22113 Hamburg Germany Tel: +49(0)-819-95946 Fax: +49(0)-819-95947 Email: info-eu@siglent.com Website: www.siglenteu.com Distribuido por Hameg Instruments, S.L.

www.siglent.es - info@siglent.es - www.hameg.es - email@hameg.es