SDS1000X-E Series

Super Phosphor Oscilloscope





tienda.logicbus.com.mx logicbus.com ventas@logicbus.com sales@logicbus.com México +52 (33)-3854-5975 USA +1 (619) 619-7350

Key Features

- 사 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, CAN, LIN
- 🖊 Video trigger, supports HDTV
- 🚣 Low background noise with voltage scales from 500 μV/div to 10 V/div
- I0 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, four-channel series support Peaks, Markers, a variety of numbers
- 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, Measuring Power Supply Control Loop Response (four-channel series only)
- Version Search and navigate (four channel series only)
- USB AWG module (four channel series only, option)
- USB WIFI adapter (four channel series only, option)
- Web 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
- J- Supports SCPI remote control commands
- VXI-11+SCPI, Telnet(Port 5024)+SCPI and Socket(Port 5025)+SCPI programming over LAN
- J- Supports web control and virtual panel for both PC and mobile terminals
- Web update rate of up-to 10times/s provides nearly real-time updating with SDS1000X-E(four channel series only)

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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 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 are 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 points 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.

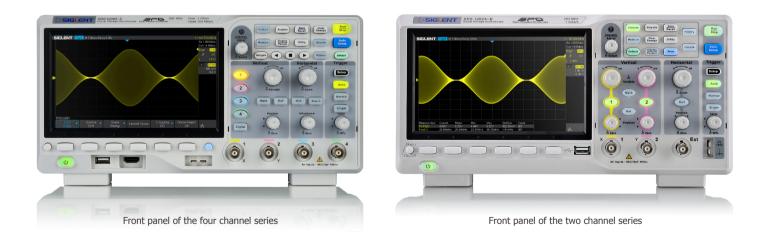
The four channel series support even more functions, including: searching and navigating, on-screen Bode plot, 16 digital channels (Option), an external USB powered 25 MHz AWG module (Option), a USB WIFI adapter (Option), and an embedded application that allows remote control via web browser.

Models and key Specification

Model	SDS1104X-E	SDS1204X -E SDS1202X-E
Bandwidth	100 MHz	200 MHz
Sampling Rate (Max.)		ur channel series have two 1 GSa/s ADCs. When all sample rate of 500 MSa/s. When a single channel per /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, Dro	opout, Pattern, Video
Serial Trigger and decoder (Standard)	IIC, SPI, UART, CAN, LIN	
16 Digital Channels (four channel series only, option)	Maximum waveform capture rate up to 1 GSa/s, Reco	rd 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, isolated output (SAG1021I only)
Bode plot (four channel series only)	Minimum start frequency of 10 Hz, minimum scan back MHz (dependent on Oscilloscope and AWG bandwidth	andwith of 500 Hz, maximum scan bandwidth of 120), 500 maximum scan frequency points
USB WIFI adapter (four channel series only, option)	802.11b/g/n, WPA-PSK, the adapter must be supplied	by Siglent to ensure working
I/O	USB Host, USB Device, LAN, Pass/Fail, Trigger Out, St	ous (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 pa Two channel series: Without package 2.5 kg; With pa	5 5

Function & Characteristics

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

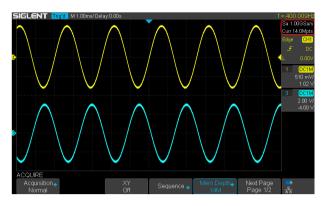


• 7 -inch TFT -LCD display with 800 * 480 resolution

• 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

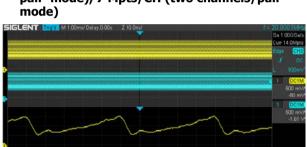
Function & Characteristics

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





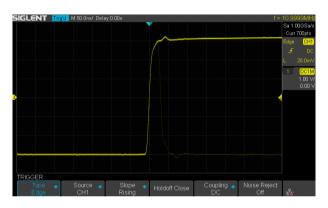
The four channel series has two 1 GSa/s ADC chips (channel 1 and 2 share one, channel 3 and 4 share another), so that each channel can achieve sample rates up to 500 MSa/s and work on bandwidths of 200 MHz when all channels are enabled.



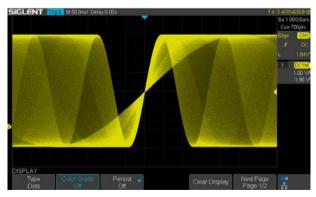
Record Length of up to 14 Mpts (single channel/ pair mode), 7 Mpts/CH (two channels/pair mode)

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

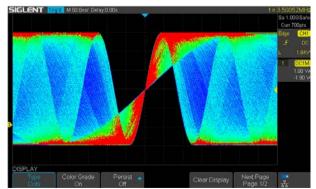


With a waveform capture rate of up to 400,000 wfm/s (sequence mode), the oscilloscope can easily capture the unusual or low-probability events.



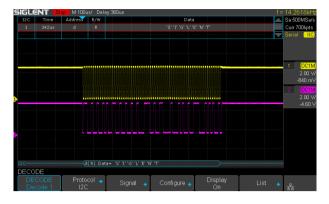
256 -Level Intensity Grading and Color Temperature Display

SPO display technology provides 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.



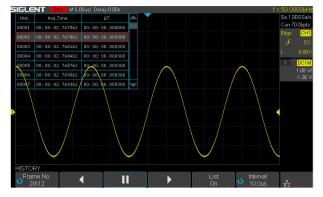
The color temperature display is similar to the intensity-graded trace function, but the trace occurrence is represented by different colors (color "temperature") as opposed to changes in the intensity of one color. Red colors represents the more frequent events, while blue is used to mark points that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

Serial Bus Decoding Function (Standard)



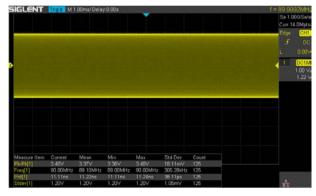
SDS1000X-E displays the decoding through the events list. Bus protocol information can be quickly and intuitively displayed in a tabular format.

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



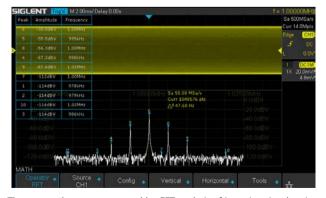
Playback the latest triggered events using the history function. Segmented memory collection will store trigger events into multiple (Up to 80,000) memory segments, each segment will store triggered waveforms and timestamp of each frame.

I True measurement to 14 M points



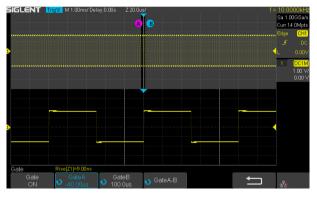
SDS1004X-E can measure all sampled data points up to 14 Mpts. This ensures the accuracy of measurements while the math co-processor decreases measurement time and increases ease-of-use.

I M point used to calculate the FFT



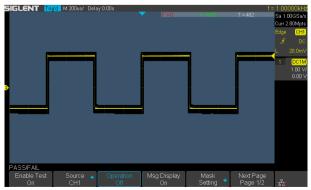
The new math co-processor enables FFT analysis of incoming signals using up to 1 M samples per waveform. This provides high frequency resolution with a fast refresh rate. The FFT function also supports a variety of window functions so that it can adapt to different spectrum measurement needs. Four-channel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

Gate and Zoom Measurement



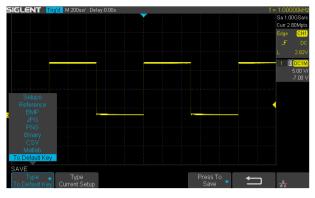
Through Gate and Zoom measurement, the user can specify an arbitrary interval of waveform data analysis and statistics. This helps avoid measurement errors that can be caused by invalid or extraneous data, greatly enhancing the measurements' validity and flexibility.

Hardware-Based High Speed Pass/ Fail function



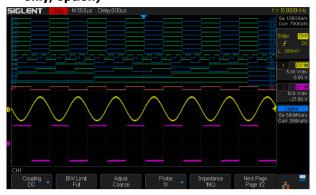
The SDS1000X-E utilizes a hardware-based Pass/Fail function, performing up to 40,000 Pass / Fail decisions each second. Easily generate user defined test templates provide trace mask comparison making it suitable for long-term signal monitoring or automated production line testing.

4 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 or control an independent SIGLENT SDG instrument, scan a devices amplitude and phase frequency response, and display the data as a Bode Plot. There is also a Vari-level Mode for accurately measuring Power Supply Control Loop Response (PSRR). 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.



With the new embedded web server, users can control the SDS1xx4X-E from a simple web page. This provides wonderful remote troubleshooting and monitoring capabilities. The web page has PC and mobile styles that include an embedded virtual control panel

Real-time update screen in web page (four channel series only)



With 100 Mbps LAN connection, the web page can update the waveforms at a rate of up to 10 times/s. The new information on SDS1000X-E can be updated to web page in real-time, including waveform data and measurements. When viewed on a PC, the screen can be displayed in full screen mode. With this feature and a PC VGA interface, you can easily use a projector or other video display device to deliver the screen information to a larger audience.

Web control (four channel series only)

Complete Connectivity



Back panel of the four channel series



Back panel of the two channel series

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

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 ns (Four channel series)
	4 ns (Two channel series)
Average	Averages:4, 16, 32, 64, 128, 256, 512, 1024
Eres	Enhance bits:0.5, 1.5, 2, 2.5, 3
Waveform interpolation	Sin(x)/x, Linear

Input	
Channels	4 (Four channel series) 2+EXT (Two channel series)
Coupling	DC, AC, GND
Impedance	DC: $(1 M\Omega \pm 2\%) \parallel (15 pF \pm 2 pF)$ (Four channel series) DC: $(1 M\Omega \pm 2\%) \parallel (18 pF \pm 2 pF)$ (Two channel series)
Max.Input voltage	1 MΩ: ≤400 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)
	500uV~118mV: ±2V
Offset Range (Probe 1X)	120mV~1.18V: ±20V
	1.2V~10V: ±200V
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)	≤2 Hz (at input BNC)
	ST-DEV ≤ 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
De Gain Accuracy	≤±4.0%: ≤2 mV/div
Offset Accuracy	±(1%* Offset+1.5%*8*div+2 mV): ≥2 mV/div
Onset Accuracy	±(1%* Offset+1.5%*8*div+500 uV): ≤1 mv/div
Risetime	Typical 1.8 ns (SDS1204X-E/SDS1202X-E)
KISEUIIIE	Typical 3.5 ns (SDS1104X-E)
Overshoot (500 ps Pulse)	<10%

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 sequence)

Trigger System	
Trigger Mode	Auto, Normal, Single
Trigger Level	Internal: ±4.5 div from the center of the screen
	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
coupling requency 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 (EXT, Two channels series)	AC: Blocks DC components and attenuates signals below 20 Hz
	LFRJ: Blocks the DC components and attenuates low-frequency components below 7 khz
	HFRJ: Attenuates high-frequency components above 160 khz
Trigger Accuracy (typical)	Internal: ±0.2 div
Trigger Accuracy (typical)	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

SDS1000X-E Series Digital Oscilloscope

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
Resolution	1 ns

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 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 Rate (Selectable)	600/1200/2400/4800/960019200/38400/57600/115200 bit/s
Baud Rate (Custom)	300 bit/s ~ 5000000 bit/s
CAN Trigger	
Condition	Start 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	5 k/10 k/20 k/50 k/100 k/125 k/250 k/500 k/800 k/1 M bit/s
LIN Trigger	
Condition	Break, Frame ID, ID+Data, Error
Source	All channels
ID	1 byte
Data Format	Hex
Data Length	1 ~ 2 byte
Baud Rate (Selectable)	600/1200/2400/4800/9600/19200 bit/s
Baud Rate (Custom)	300 bit/s ~ 20 kbit/s

ZDecode Signal SCL, SDA Address Jolis, 10 bits Threshold 4.5 ~ 4.5 dw Threshold 1~7 lines Start Start Signal SCL, MISO, MOSI, CS (2 channel scopes can only use 2 signal identifiers) Signal SCL, MISO, MOSI, CS (2 channel scopes can only use 2 signal identifiers) Signal SCL, MISO, MOSI, CS (2 channel scopes can only use 2 signal identifiers) Signal SCL, MISO, MOSI, CS (2 channel scopes can only use 2 signal identifiers) Signal SCL, MISO, MOSI, CS (2 channel scopes can only use 2 signal identifiers) Signal SCL, MISO, MOSI, CS (2 channel scopes can only use 2 signal identifiers) Signal Signal, Saling, Falling Threshold Signal Scope Signal (3 chance) Signal Signal Scope Signal (3 chance) Signal<	Serial Decoder	
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Edge SelectRising, FallingBit OrderMSB, LSBThreshold-4.5 ~ 4.5 divList- ~ 7 linesUNT OF COLSPACESignalRx TXData WidthS bit, 6 bit, 7 bit, 8 bitParity CheckNone, Odd, EvenStop BitIbit, 15 bit, 2 bitJet LevelNone, Odd, EvenIde LevelKu, HighThreshold-5 ~ 4.5 divStop Bit-5 ~ 4.5 divStop Bit-6 N-CStop Bit-7 InesStop Bit-7 InesStop Bit-7 InesStop Bit-7 Stop BitStop Bit <td>SPI Decoder</td> <td></td>	SPI Decoder	
Bit OrderM8g. LSBThreshold4.5 ~ 4.5 divList1 ~ 1 liss3 ~ 1 liss3 K 3 K 3 K 3 K 3 K 3 K 3 K 3 K 3 K 3 K	Signal	SCL,MISO, MOSI, CS (2 channel scopes can only use 2 signal identifiers)
Threshold4.5 ~ 4.5 divList~ 7 linesKKSignalKX TAData WidthSit, 6 bit, 7 bit, 8 bitParity CheckNone, Odd, EvenStop Bit1 bit, 1.5 bit, 2 bitIde LevelKow, HighThreshold4.5 ~ 4.5 divSignal1.6 ° A.5 divSignalColst, Colst,	Edge Select	Rising, Falling
List i ~ 7 lines UART Decoder Signal Rx Tx Data Width Sib (a	Bit Order	MSB, LSB
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SignalRx TXData WidthSit, 6 bit, 7 bit, 8 bitParity CheckNone, Odd, EvenStop Bit1 bit, 1 S bit, 2 bitIde LevelLow, HighThreshold4.5 ~ 4.5 divThreshold- 7 linesSignalCM_HCAL_CAL_CAL_CAL_CAL_CAL_CAL_CAL_CAL_CAL_	List	1 ~ 7 lines
Data Width5 bit, 6 bit, 7 bit, 8 bitParity CheckNone, Odd, EvenStop Bit1 bit, 1.5 bit, 2 bitIde LevelLow, HighThreshold-4.5 ~ 4.5 divThreshold- 7 IneaCAT DecoderSignalCM, H, CAN_LStoree- 4.5 ~ 4.5 divStoree- 4.5 ~ 4.5 divIt reshold- 5. ~ 4.5 divStoree- 6.5 ~ 4.5 divStoree- 7.1 IneaIt reshold- 7.1 IneaIt storee- 7.1 IneaLit Storee- 7.1 Inea <td>UART Decoder</td> <td></td>	UART Decoder	
Parity CheckNone, Odd, EvenStop Bit1bt, 1.5 bit, 2 bitIde LevelLow, HighThreshold4.5 ~ 4.5 divList- ~ 1 lines- ~ 1 linesCM-MCAN_LStandaCAN_HCAN_LCAN_LACAN_LStore- ~ 1 linesList- ~ 1 linesList- ~ 1 linesStore- ~ 1 linesList- ~ 1 linesStore- ~ 1 linesList- ~ 1 linesL	Signal	RX, TX
Stop Bit1 bit, 1.5 bit, 2 bitIde LevelLow, HighThreshold4.5 ~ 4.5 divList1 ~ 7 linesCAN DecoderSignalCAN_H, CAN_L, CAN_H-CAN_LStoreeCAN_H, CAN_L, CAN_H-CAN_LThreshold4.5 ~ 4.5 divList1 ~ 7 linesList1 ~ 7 linesList1 ~ 7 linesList1 ~ 7 linesList1 ~ 7 linesLin Specification Package RevisionVer1.3, Ver2.0Lin Specification Package Revision4.5 ~ 4.5 divLin Specification Package RevisionVer1.3, Ver2.0Lin Specification Package Revision4.5 ~ 4.5 divLin Specification Package RevisionVer1.3, Ver2.0Lin Specification Package RevisionVer1.3, Ver2.0 <td< td=""><td>Data Width</td><td>5 bit, 6 bit, 7 bit, 8 bit</td></td<>	Data Width	5 bit, 6 bit, 7 bit, 8 bit
Idle LevelLow, HighThreshold-4.5 « A.5 divList1 ~ 7 linesCAN DecoderSignalCM_H, CAN_LSourceCM_H, CAN_L-CAN_LThreshold-4.5 « A.5 divList1 ~ 7 linesList1 ~ 7 linesList1 ~ 7 linesList- 5 . SignalList- 6 . SignalList- 6 . SignalList- 6 . SignalList- 7 linesList- 7 linesList- 5 . SignalList- 5 . Signal	Parity Check	None, Odd, Even
Threshold -4.5 a Via Threshold 1 ~ 7 Iies List 1 ~ 7 Iies Signal CAN_H, CAN_L Source CAN_H, CAN_L, CAN_H-CAN_L Threshold -4.5 ~ 4.5 div List 1 ~ 7 Iies List -4.5 ~ 4.5 div List -4.5 ~ 4.5 div List 1 ~ 7 Iies List 1 ~ 7 Iies List -4.5 ~ 4.5 div List -4.5 ~ 4.5 div List -4.5 ~ 4.5 div List -5.7 List List -4.5 ~ 4.5 div List -4.5 ~ 4.5 div List -5.7 List List	Stop Bit	1 bit, 1.5 bit, 2 bit
List1 ~ 7 linesCAN DecoderSignalCM_H, CAN_LSourceCM_H, CAN_L+CAN_LACAThreshold-4.5 ~ 4.5 divList1 ~ 7 linesLIN DecoderLIN Specification Package RevisionFurs. Specification Package RevisionAr State Schler-5.5 divLineshold-5.5 div <td>Idle Level</td> <td>Low, High</td>	Idle Level	Low, High
CAN Decoder Signal CAN_H, CAN_L Source CAN_H, CAN_L, CAN_H-CAN_L Threshold -4.5 ~ 4.5 div List 1 ~ 7 lines LIN Specification Package Revision Ver1.3, Ver2.0 Threshold -4.5 ~ 4.5 div	Threshold	-4.5 ~ 4.5 div
SignalCAN_H, CAN_LSourceCAN_H, CAN_H-CAN_LThreshold-4.5 ~ 4.5 divList1 ~ 7 linesLIN DecoderLIN Specification Package RevisionVer1.3, Ver2.0Threshold-4.5 ~ 4.5 div	List	1 ~ 7 lines
SourceCAN_H, CAN_H-CAN_LThreshold-4.5 ~ 4.5 divList1 ~ 7 linesLIN DecoderLIN Specification Package RevisionVer1.3, Ver2.0Threshold-4.5 ~ 4.5 div	CAN Decoder	
Threshold -4.5 ~ 4.5 div List 1 ~ 7 lines LIN Decoder -4.5 ~ 4.5 div Lin Specification Package Revision Ver1.3, Ver2.0 Threshold -4.5 ~ 4.5 div	Signal	CAN_H, CAN_L
List 1 ~ 7 lines LIN Decoder Ver1.3, Ver2.0 Threshold -4.5 ~ 4.5 div	Source	CAN_H, CAN_L, CAN_H-CAN_L
LIN Specification Package Revision Ver1.3, Ver2.0 Threshold -4.5 ~ 4.5 div	Threshold	-4.5 ~ 4.5 div
LIN Specification Package RevisionVer1.3, Ver2.0Threshold-4.5 ~ 4.5 div	List	1 ~ 7 lines
Threshold -4.5 ~ 4.5 div	LIN Decoder	
	LIN Specification Package Revision	Ver1.3, Ver2.0
List 1 ~ 7 lines	Threshold	-4.5 ~ 4.5 div
	List	1 ~ 7 lines

Measurement		
Source	All channels, A	All channels in Zoom, Math, All References, History
Number of Measurements		surements at the same time . 5 measurements displayed in statistics table.
Measurement Range	Screen region,	
Measurement Paramete	rs (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	Time between the middle threshold points of two consecutive, like-polarity edges
	Freq	Reciprocal of period
	+Wid	Time difference between the 50% threshold of a rising edge to the 50% threshold of the next falling edge of the pulse
	-Wid	Time difference between the 50% threshold of a falling edge to the 50% threshold of the next rising edge of the pulse
	Rise Time	Duration of rising edge from 10-90%
Horizontal (Time)	Fall Time	Duration of falling edge from 90-10%
	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	Phase difference between two edges
Delay	FRR	Time from the first rising edge of channel A to the following first rising edge of channel B
	FRF	Time from the first rising edge of channel A to the following first falling edge of channel B
	FFR	Time from the first falling edge of channel A to the following first rising edge of channel B
	FFF	Time from the first falling edge of channel A to the following first falling edge of channel B
	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 6-digit counter (channels are selectable)

Math Function	
Operation	+ , - , * , / , FFT , d/dt , ʃdt , $$
FFT window	Rectangular, Blackman, Hanning, Hamming, Flattop
FFT display	Full Screen, Split, Exclusive

USB AWG Module (four channel 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-bit		
Amplitude Range	-1.5 \sim +1.5 V (50 Ω load)		
	-3 \sim +3 V (High-Z load)		
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		
Insulation Voltage	±42 Vpk (for SAG2021I only)		
Sine			
Frequency	$1 \mu\text{Hz} \sim 25 \text{MHz}$		
Offset Accuracy (10 kHz)	±(1%*Offset Setting Value +3 mVpp)		
Amplitude flatness (10 kHz, 5 Vpp)	±0.3 dB		
	$DC \sim 1 \text{ MHz}$ -60 dBc		
SFDR	$1 \text{ MHz} \sim 5 \text{ MHz}$ -55 dBc		
	5 MHz \sim 25 MHz $-$ 50 dBc		
HD	$DC \sim 5 \text{ MHz}$ -50 dBc		
	5 MHz \sim 25 MHz -45 dBc		
Square/Pulse			
Frequency	$1 \ \mu Hz \sim 10 \ MHz$		
Duty Cycle	1% ~ 99%		
Rise/Fall time	< 24 ns (10% \sim 90%)		
Overshoot (1 kHz,1 Vpp, Typical)	< 3% (typical 1 kHz, 1 Vpp)		
Pulse Width	> 50 ns		
Jitter	< 500 ps + 10 ppm		
Ramp			
Frequency	$1 \mu\text{Hz} \sim 300 \text{kHz}$		
Linearity (Typical)	< 0.1% of Pk-Pk (Typical, 1 kHz, 1 Vpp, 50% Symmetry)		
Symmetry	$0\% \sim 100\%$		

Noise >255 MHz (-3 dB) Arbitrary Wave I µHz ~ 5 MHz Frequency 1 µHz ~ 5 MHz Nave Length 16 kpts Samphing Rate 125 MSa/s acad in EasyWave and U-Disk Digital Channels (four channels conly, option) No. of Channels 16 Ads. Sampling Rate 16 Sa/s Hencory Depth 14 Mpts/CH Very Controls 16 Sa/s Hencory Depth 14 Mpts/CH Very Controls 16 Sa/s Hencory Depth 14 Mpts/CH Very Controls 16 Sa/s Hencory Depth 4 Mpts/CH Very Controls 16 Sa/s evel Group 00 -D:D, Sa-D15 evel Group 0D -D:D Sa-D15 evel Group D0-D:D:S + 1 sampling interval Digital to Analog: # (1 sampling interval Digital to Analog: # (1 sampling interval P) CO 20 Sampling Sampling Niterval Digital to Analog: # (1 sampling interval P) 20 Sampling	DC	
iiii iiii bickcaracy iiii koccaracy iiii koccaracy >25 Mit (: 3 dB) korder >25 Mit (: 3 dB) korder >25 Mit (: 3 dB) korder 1 kp dE korder Korder 1 kp d		±1.5 V (50 Ω load)
Noise Sector of Control Bandwidth >25 MHz (-3 dB) Arbitrary Wave I µHz - 5 MHz Frequency 1 µHz - 5 MHz Wave Length 16 kpts Samphing Rate 125 MSA/s ead in EasyWave and U-Disk Digital Channels (four channels series only, option) No. of Channels 16 Max. Sampling Rate 16 Sa/s Hemory Depth 14 Mpts/CH Hemory Depth 4 Mpts/CH Value ell Group 00-D-D, Be-D15 exel Group 00-D-D, Be-D15 exel Group 00-D-D5, Lengthal (Liconos), LVCMOS3.3, LVCMOS2.5, custom Jungic Type TTL, CMOS, LVCMOS3.3, LVCMOS2.5, custom Server Do-D15: ±1 sampling interval ±1 ns) V/O Sampling Interval ±1 ns) Display (Screen) 200-V15: ±1 sampling interval ±1 ns) Display (Screen) 200-V16 Display (Screen) 200-V16 Sampling Rate 200 vHz Sampling Rate 200 vHz Sampling Rate 200 vHz Sampling Rate <td>Offset range</td> <td>±3 V (High-Z load)</td>	Offset range	±3 V (High-Z load)
standwidth >25 MH2 (-3 dB) Arbitrary Wave I µH2 ~ 5 MH2 irequency I µH2 ~ 5 MH2 kave length 16 kpts isanping Rate 16 kpts cad in EasyMave and U-Diak Digital Channels (four channels series only, option) Digital Channels (four channels series only, option) Optical Series only, option) Optical Channels (four channels series only, option) Optical Channels (four channels series only, option) No. of Channels A fly kg/CH Adv Series only, option) Optical Channels Series, and Series, a	Accuracy	±(offset *1%+3 mV)
Arbitrary Wave I µHz - 5 MHz Frequency 1 µHz - 5 MHz Nave Length 16 kpts sampling Rate 125 MSa/s ead in EsyWave and U-Disk Digital Channels (four channels series only, option) No. of Channels 16 Sav/Save and U-Disk Varia Ka: Sampling Rate 16 Sav/Save and U-Disk Varia V 4 Na Varia V 8 V	Noise	
requency1 µtz - 5 MtzWave Length16 kptsWave Length16 kptsBangling Rate125 MSa/sLead inEarly wave and U-DiskDigital Channels (four character series only, option)16No. of Channels16Ass. Sampling Rate165/sAss. Sampling Rate165/sMarken Sampling Rate105/sMarken Sampling Rate100-07. DBx-D15Level Group00-07. DBx-D15Level Group00-07. DBx-D15Level Group00-07. DBx-D15Level Range00-07. SDx-D15Level Range00-07. SDx-D15Level Range00-07. SDx-D15Level Group00-07. SDx-D15Level Range00-07. SDx-D15	Bandwidth	>25 MHz (-3 dB)
Wave Length 16 kpts Sampling Rate 125 MSa/s Laad in EasyWave and U-Disk Digital Channels (four channel series only, option) No. of Channels 16 Memory Depth 16 Sa/s Veneory Depth 4 Mpts/CH Min. Detectable Pulse Width 4 ns Area Sampling Rate 8 V ~ 8 V Level Group 00~07, D8~D15 Level Range 8 V ~ 8 V Logic Type TL, CMOS, LVCMOS3.3, LVCMOS2.5, custom Level Range 05B Host (1 for two channel series), and 2 for four channel series), USB Device, LAN, Pass/Fail, Trigger Out Saps/Fail 3.3 V TL Output Display Type 7-Inch TFT LCD Display Npp 800~480 Saps/Fail 900 vit Saps/Pailo 900-11 Sapslay Npp 500-1 Sapslay Npp 500-1 Sapslay Noto 800 vit Sapslay Noto 900 vit Sapslay Mode 0ct, Vector Display Mode 0ct, Vector Sapslay Mode 0ct, Vector </td <td>Arbitrary Wave</td> <td></td>	Arbitrary Wave	
sampling Rate12 Ms/sLead inEasyWave and U-DiskDigital Channels (four charmeries only, option)No. of Channels16Max. Sampling Rate16 Sa/sMemory Depth14 Mpts/CHMin. Detectable Pulse Width4 nsevel Group00-D7, D8-D15evel Group00-D7, D8-D15evel Group78 V ~ 8 Vserver Group00-D7, D8-D15evel Group00-D1evel Group00	Frequency	1 μHz ~ 5 MHz
Addition EasyNave and U-Disk Digital Channels (four channels colly, option) I No. of Channels 16 Max. Sampling Rate 16Ss/s Memory Depth 14 Mpts/CH Memory Depth 14 Mpts/CH Level Group 0x-07, D8-D15 Level Group 0x-07, D8-D15 Level Range 8V ~ 8 V Logic Type TL, CMOS CLOMOS3.3, LVCMOS2.5, custom Logic Type TL, CMOS LVCMOS3.3, LVCMOS2.5, custom Logic Type TL, CMOS LVCMOS3.3, LVCMOS2.5, custom Samdard USB Host (1 for two channel series, and 2 for four channel series), USB Device, LAN, Pass/Fail, Trigger Out Jass/Fail 3.3 V TL Output Display Type Jench TFT LCD Display Robotion 800×480 Display Robotion 600.1 Sate Sate Sate Sate Sate Sate Sate Sate	Wave Length	16 kpts
Digital Channels (four channels series only, option) vo. of Channels 16 vo. of Channels 1GSa/s Menory Depth 14 Mpts/CH vere Group Do~D7, D8~D15 exvel Group Do~D7, D8~D15 exvel Group D0~D15: ±1 sampling interval exvel Range 8V ~ 8 V exvel Range D0~D15: ±1 sampling interval ±1 ns) bigital to Analog: ± (1 sampling interval ±1 ns) Do~D15: ±1 sampling interval ±1 ns) t/O USB Host (1 for two channel series, and 2 for four channel series), USB Device, LAN, Pass/Fail, Trigger Out ass/Fail 30 TL Output Display (Screen) Vincomponential series), and 2 for four channel series), USB Device, LAN, Pass/Fail, Trigger Out SasyFail 30 TL Output Display (Screen) Vincomponential series, and 2 for four channel series), USB Device, LAN, Pass/Fail, Trigger Out SasyFail 300 TL Output Display Coreen Vincomponential series, and 2 for four channel series), USB Device, LAN, Pass/Fail, Trigger Out Display Mode 000 TL Ostat (1 for two channel series, and 2 for four channel series), USB Device, LAN, Pass/Fail, Trigger Out Display Mode	Sampling Rate	125 MSa/s
No. of Channels6Max. Sampling Rate16Sa/sMemory Depth14 Mpts/CHMin. Detectable Pulse Width4 nsacvel Group00~07, D8~015acvel Group00~07, D8~015acvel Group-8 V ~ 8 Vacvel Group00~015: ±1 sampling interval D0~015: ±1 sampling interval ±1 ns)StewD0~015: ±1 sampling interval D0~015: ±1 sampling interval ±1 ns)StewD0~015: ±1 sampling interval ±1 ns)StedardUSB Host (1 for two channel series, and 2 for four channel series), USB Device, LAN, Pass/Fail, Trigger Out 3.3 V TL OutputDisplay Kereen>VDisplay Kereen>90~480Display Cofor40 thContrast (Typical)300 nitBandard00 nitContrast (Typical)300 nitBandard00 nitDisplay Mode0/x 480Display Mode0/x 40.Display Mode0/x 40.Contrast (Typical)0/x 40.Display Mode0/x 40.Display Mode0/x 40.Contrast (Typical)0/x 40.Display Mode0/x 40.Contrast (Typical)0/x 40.Display Mode0/x 40.Contrast (Typical)0/x 40.Display Mode0/x 40.Contrast (Typical)0/x 40.Display Mode0/	Lead in	EasyWave and U-Disk
Ass. sampling RateIsGa/sMemory Depth14 Mpts/CHMin. Detectable Pulse Width4 nsLevel Group0x-D7, D8-D15Level Group15 V × 8VLevel RangeTL, CMOS, LIXCMOS2.5, customLogic TypeTL, CMOS, LIXCMOS2.5, customLogic TypeSignal to Analog: ± (1 sampling interval ± 1 ns)StandardUS Host (1 for two channel series), and 2 for four channel series), USB Device, LAN, Pass/Fail, Trigger OutDisplar KoreenSignal to Analog: ± (1 sampling interval ± 1 ns)Displar KoreenSignal to Analog: ± (1 sampling interval ± 1 ns)Displar KoreenSignal to Analog: ± (1 sampling interval ± 1 ns)Displar KoreenSignal to Analog: ± (1 sampling interval ± 1 ns)Displar KoreenSignal to Analog: ± (1 sampling interval ± 1 ns)Displar KoreenSignal to Analog: ± (1 sampling interval ± 1 ns)Displar KoreenSignal to Analog: ± (1 sampling interval ± 1 ns)Displar KoreenSignal to Analog: ± (1 sampling interval ± 1 ns)Displar KoreenSignal to Analog: ± (1 sampling interval ± 1 ns)Displar KoreenSignal to Analog: ± (1 sampling interval ± 1 ns)Displar KoreenSignal to Analog: ± (1 sampling interval ± 1 ns)Displar KoreenSignal to Analog: ± (1 sampling interval ± 1 ns)Displar KoreenSignal to Analog: ± (1 sampling interval ± 1 ns)Displar KoreenSignal to Analog: ± (1 sampling interval ± 1 ns)Displar KoreenSignal to Analog: ± (1 sampling interval ± 1 ns)Displar KoreenSignal to Analog: ± (1 sampling interval ± 1 ns)	Digital Channels (four ch	nannel series only, option)
Memory Depth14 Mpts/CHMin. Detectable Pulse Width4 nsLevel GroupDo-D7, D8-D15Level Group48 V ~ 8 VLogic TypeTL, CMOS, LVCMOS3.3, LVCMOS2.5, customLogic TypeTL, CMOS, LVCMOS3.3, LVCMOS2.5, customSekwDo-D15: ±1 sampling interval bigital to Analog: ± (1 sampling interval +1 ns)K/OStandardLypeUSB Host (1 for two channel series, and 2 for four channel series), USB Device, LAN, Pass/Fail, Trigger Out 3.3 V TL. OutputDisplay (Screen)StandardDisplay Type7-Inch TFT LCDDisplay Resolution800×480Solox480800×480Contrast (Typical)500:1Contrast (Typical)500:1Standard8.14 divisionsDisplay Mode0x, VectorPass/Fine0x, 10 sec, 5 Sec, 10 Sec, 30 Sec, 1nfiniteDisplay Mode0x, VectorStandard0xoral, ColorStart Display0xoral, ColorStart Display10 sin, 10 min, 30 min, 1 hour, Off	No. of Channels	16
Number A ns Level Group Do-07, D8-D15 Level Range -8 V ~ 8 V Level Range TL, CMOS, LVCMOS3.3, LVCMOS2.5, custom Level Range Do-015: ±1 sampling interval Digital to Analog: ± (1 sampling interval) Digital to Analog: ± (1 sampling interval + ns) Kew Do-015: ±1 sampling interval Digital to Analog: ± (1 sampling interval + ns) Kew USB Host (1 for two channel series, and 2 for four channel series), USB Device, LAN, Pass/Fail, Trigger Out Apas/Fail USB Host (1 for two channel series, and 2 for four channel series), USB Device, LAN, Pass/Fail, Trigger Out Display (Screen) 3.3 V TTL Output Display (Screen)	Max. Sampling Rate	1 GSa/s
evel GroupDo-D7, D8~D15evel Group-8 V ~ 8 VLogic TypeTL, CMOS, LVCMOS3.3, LVCMOS2.5, customskewDo-D15: ±1 sampling interval bigital to Analog: ± (1 sampling interval + 1 ns)t/OUtranspireJSB Host (1 for two channel series, and 2 for four channel series), USB Device, LAN, Pass/Fail, Trigger Out 3, 3 V TL OutputDisplay (Screen)JSB Host (1 for two channel series, and 2 for four channel series), USB Device, LAN, Pass/Fail, Trigger Out 3, 3 V TL OutputDisplay (Screen)	Memory Depth	14 Mpts/CH
Ave Range-8 V ~ 8 VLogic TypeTL, CMOS, LVCMOS3.3, LVCMOS2.5, customSkewDo-D15: ±1 sampling interval Digital to Analog: ± (1 sampling interval +1 ns)JobDigital to Analog: ± (1 sampling interval +1 ns)JOJSE Host (1 for two channel series, and 2 for four channel series), USB Device, LAN, Pass/Fail, Trigger OutJosJSB Host (1 for two channel series, and 2 for four channel series), USB Device, LAN, Pass/Fail, Trigger OutDisplay (Screen)JSE Host (1 for two channel series, and 2 for four channel series), USB Device, LAN, Pass/Fail, Trigger OutDisplay Type7.inch TFT LCDDisplay Resolution800×480Display Color4 bitContrast (Typical)900 nitBandard900 nitRange000 nitBandardbix (AdvisionsDisplay ModeDo, VectorDisplay ModeDo, VectorDisplay ModeDo, Vector, JSE, See, 10 See, JSE, InfiniteColor DisplayMornal, ColorSeren SaverInin, 5 min, 10 min, 30 min, 1 hour, Off	Min. Detectable Pulse Width	4 ns
Logic Type TL, CMOS, LVCMOS3.3, LVCMOS2.5, custom Logic Type TL, CMOS, LVCMOS3.3, LVCMOS2.5, custom Skew Dio/D15: ±1 sampling interval Digital to Analog: ± (1 sampling interval +1 ns) LO Logic Type Standard USB Host (1 for two channel series, and 2 for four channel series), USB Device, LAN, Pass/Fail, Trigger Out Standard USB Host (1 for two channel series, and 2 for four channel series), USB Device, LAN, Pass/Fail, Trigger Out Standard USB Host (1 for two channel series, and 2 for four channel series), USB Device, LAN, Pass/Fail, Trigger Out Standard USB Host (1 for two channel series, and 2 for four channel series), USB Device, LAN, Pass/Fail, Trigger Out Display (Screen) 3.3 V TL Output Display Type 7-inch TFT LCD Standard 800×480 Coloratst (Typical) 800×480 Contrast (Typical) 500:1 Standard 8 x 14 divisions Display (Waveform) 500 nit Display Mode Dot, Vector Off 1 Sec, 5 Sec, 10 Sec, 30 Sec, Infinite Color Display Normal, Color Standard 1 min, 5 min, 10 min, 30 min, 1 hour, Off	Level Group	D0~D7, D8~D15
Skew DovD15: ±1 sampling interval Digital to Analog: ± (1 sampling interval + 1 ns) JOD	Level Range	-8 V ~ 8 V
Digital to Analog: ± (1 sampling interval +1 ns) Image:	Logic Type	TTL, CMOS, LVCMOS3.3, LVCMOS2.5, custom
StandardUSB Host (1 for two channel series, and 2 for four channel series), USB Device, LAN, Pass/Fail, Trigger OutPass/Fail3.3 V TL OutputDisplay (Screen)7.inch TF LCDDisplay Resolution600×480Display Color24 bitContrast (Typical)500:1Backlight300 nitAnge8.14 divisionsDisplay ModeDi, Sc, S Sec, 10 Sec, 30 Sec, InfiniteDisplay Mode0.ft Sec, S Sec, 10 Sec, 30 Sec, InfiniteContrast Time0.ft Sec, S Sec, 10 Sec, 30 Sec, InfiniteParsist Time0.ft Sec, S Sec, 10 Sec, 30 Sec, InfiniteContrast Contrast Contrast Color DisplayNormal, ColorStandard1.int, 5 min, 10 min, 30 min, 1 hour, Off	Skew	
Pass/Fail 3.3 V TTL 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 Of, 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 Type 7-inch TFT LCD Display Resolution 800×480 Display Color 24 bit Contrast (Typical) 500:1 Backlight 300 nit 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	Standard	USB Host (1 for two channel series, and 2 for four channel series), USB Device, LAN, Pass/Fail, Trigger Out
Display Type7-inch TFT LCDDisplay Resolution800×480Display Color24 bitContrast (Typical)500:1Backlight300 nitRange8 x 14 divisionsDisplay ModeDot, VectorPersist TimeDot, Vector, 30 Sec, 1nfiniteColor DisplayMormal, ColorStarten Saver1 min, 5 min, 10 min, 30 min, 1 hour, Off	Pass/Fail	3.3 V TTL Output
Display Resolution800×480Display Color24 bitContrast (Typical)500:1Backlight300 nitRange8 x 14 divisionsDisplay ModeDx VectorDisplay ModeDx VectorColor DisplayMona, ColorColor DisplayNormal, ColorSeren Saver1 min 5 min 10 min 30 min 1 hour, Off	Display (Screen)	
Display Color 24 bit Contrast (Typical) 500:1 Sacklight 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	Display Type	7-inch TFT LCD
Contrast (Typical)500:1Backlight300 nitBacklight300 nitBange8 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) 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

SDS1000X-E Series Digital Oscilloscope

Environments			
Temperature	Operating: $10^{\circ}C \sim +40^{\circ}C$		
	Non-operating: $-20^{\circ}C \sim +60^{\circ}C$		
Humidity	Operating: 85% RH, 40℃ , 24 hours		
	Non-operating: 85% RH, 65° C , 24 hours		
Height	Operating: ≤3000 m		
	Non-operating: ≤15,266 m		
Compliance	LVD IEC 61010-1:2010		
Compliance	EMC EN61326-1:2013		

Power Supply		
Input Voltage	100 - 240 Vrms (± 10%), 50 / 60 Hz 100 - 120 Vrms (± 10%), 400 Hz	
Power	50W Max(Four channel series) 25W Max(Two channel series)	

Mechanical (Four channel series)		
Dimensions	Length: 312 mm	
	Width: 132.6 mm	
	Height: 151 mm	
Weight	N.W: 2.6 kg; G.W: 3.8 kg	

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

Probes and Accessories

Probe	Model	Picture	Description
Passive	PP510		Bandwidth: 100 MHz, 1X/10X, 1M/10 Mohm,300 V/600 V Bandwidth: 200 MHz, 1X/10X, 1M/10 Mohm, 300 V/600 V
	PP215	66666	
	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
Current Probe	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
	CP5030A		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	Model	Picture	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, I2C, CAN, LIN etc. Used in teaching and demonstrations.
USB AWG Module	SAG1021	SACIO21 Internation	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
Rack Mount	SDS1X-E-RMK		The height is 4U, shared by Two Channels and For Channels

Ordering information					
	SDS1000X-E Series Digital Oscilloscope				
Product Name	SDS1104X-E 100 MHz Four Channels				
Product Name	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 Isolated AWG Module Hardware (four channel series only)	SAG1021I			
	WIFI Software (four channel series only)	SDS1000X-E-WIFI			
Optional Accessories	USB WIFI Adapter (four channel series only)	TL_WN725N			
Optional Accessories	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			
	Rack Mount	SDS1X-E-RMK			

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, 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.

Teléfonos / Phone number

Mex: +52 (33)-3854-5975 +52 (33)-3823-4349 USA: +1 (619) 619-7350

Página Web / Website

tienda.logicbus.com.mx logicbus.com

Correo electrónico / E-mail

ventas@logicbus.com sales@logicbus.com





Av. Fray Antonio Alcalde 1822 Miraflores, 44270 Guadalajara, Jal

8280 Clairemont Mesa Blvd Suite 122 San Diego, CA 92111