# SDS1000X-E Series Super Phosphor Oscilloscope





#### 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, 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
- 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)
- 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
- Je 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)

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.

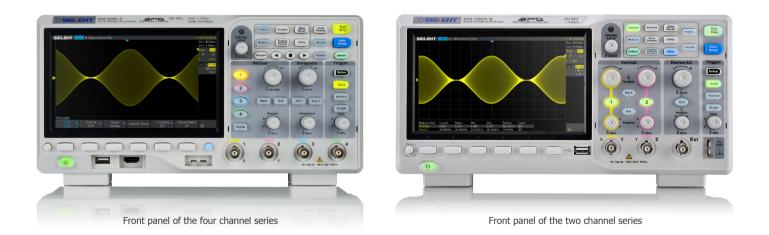
The four channel series support even more functions, including: searching and navigating, on-screen Bode plot, 16 digital channels (Option), an external USB powered 25 MHz AWG module (Option), a USB WIFI adapter (Option), and an embedded application that allows remote control via web browser.

## Models and key Specification

Model	SDS1104X-E	SDS1204X -E SDS1202X-E
Bandwidth	100 MHz	200 MHz
Sampling Rate (Max.)	Two channel series have a single 1 GSa/s ADC, fou channels are enabled, each channel has a maximum spair is active, that channel has sample rate of 1 GSa/	sample rate of 500 MSa/s. When a single channel per
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
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/n, WPA-PSK, the adapter must be supplied	by Siglent to ensure working
I/O	USB Host, USB Device, LAN, Pass/Fail, Trigger Out, Sb	us (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	

## **Function & Characteristics**

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

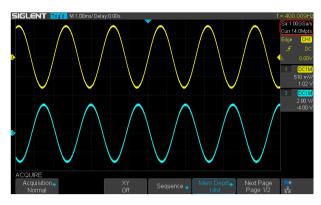


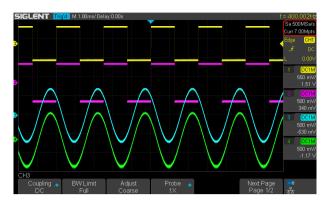
• 7 -inch TFT -LCD display with 800 \* 480 resolution

• 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

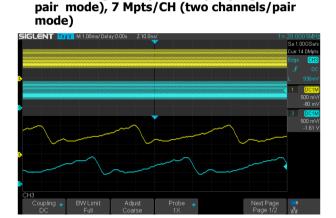
## **Function & Characteristics**

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.



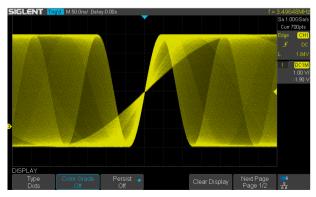
Record Length of up to 14 Mpts (single channel/

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

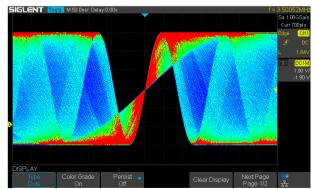


With a waveform capture rate of up to 400,000 wfm/s (sequence mode), the oscilloscope can easily capture the unusual or low-probability events.



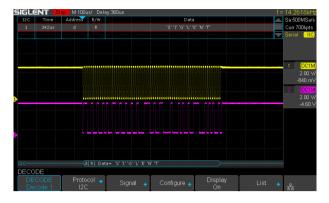
#### 256 -Level Intensity Grading and Color Temperature Display

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.



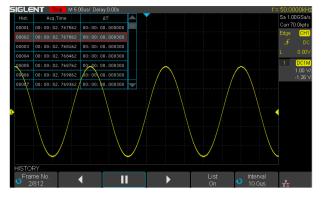
The color temperature display is similar to the intensity-graded trace function, but the trace occurrence is represented by different colors (color "temperature") as opposed to changes in the intensity of one color. Red colors represents the more frequent events, while blue is used to mark points that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

Serial Bus Decoding Function (Standard)



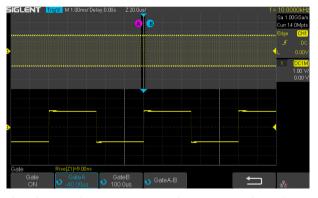
SDS1000X-E displays the decoding through the events list. Bus protocol information can be quickly and intuitively displayed in a tabular format.

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



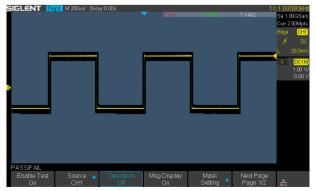
Playback the latest triggered events using the history function. Segmented memory collection will store trigger events into multiple (Up to 80,000) memory segments, each segment will store triggered waveforms and timestamp of each frame.

#### 🜆 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



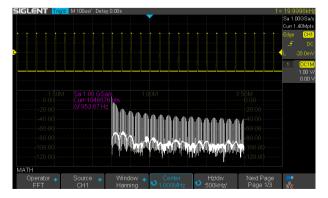
The SDS1000X-E utilizes a hardware-based Pass/Fail function, performing up to 40,000 Pass / Fail decisions each second. Easily generate user defined test templates provide trace mask comparison making it suitable for long-term signal monitoring or automated production line testing.

#### It a measurement to 14 M points



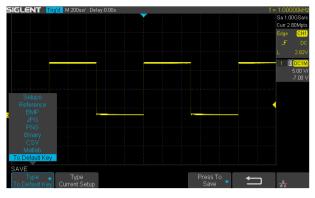
SDS1004X-E can measure all sampled data points up to 14 Mpts. This ensures the accuracy of measurements while the math co-processor decreases measurement time and increases ease-of-use.

#### I M points FFT



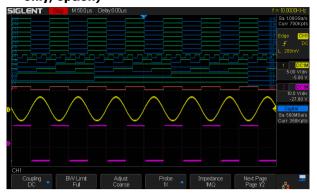
The new math co-processor enables FFT analysis of incoming signals using up to 1 M samples per waveform. This provides high frequency resolution with a fast refresh rate. The FFT function also supports a variety of window functions so that it can adapt to different spectrum measurement needs.

#### 🜆 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)

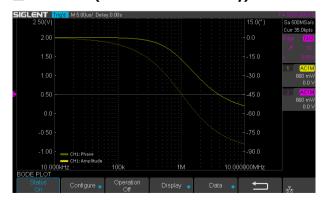


16 digital channels enables users to acquire and trigger on the waveforms then analyze the pattern, simultaneously with one instrument.

#### 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 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.



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 100Mbps LANs, 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 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
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 $\Omega$ ±2%)    (15 pF ±2 pF) (Four channel series) DC: (1 M $\Omega$ ±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 )
	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 $\leq 0.5$ division (<1 mV/div)
Noise	ST-DEV $\leq 0.2$ division (<2 mV/div)
	ST-DEV $\leq 0.1$ division ( $\geq 2$ mV/div)
SFDR including harmonics	≥35 dB
DC Gain Accuracy	≤±3.0%: 5 mV/div-10 V/div
DC Galli Accuracy	≤±4.0%: ≤2 mV/div
Offset Accuracy	±(1%* Offset+1.5%*8*div+2 mV): ≥2 mV/div
	±(1%* Offset+1.5%*8*div+500 uV): ≤1 mv/div
Directime	Typical 1.8 ns (SDS1204X-E/SDS1202X-E)
Risetime	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 step)

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

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Daa Width5 ki, 6 ki 7 ki, 8 kiParity CheckNon, Odd, EvenStop Bit1 ki, 1, 5 ki, 2 kiI de LevalHigh, LowBaud Rate (Selectable)60/1200/400/400/96001920/38400/57600/11520 bit/sBaud Rate (Selectable)30 bit/s > Cousoouo bit/sContriguer30 bit/s > Cousoouo bit/sContriguerSar Remote, ID, ID + Data, ErrorSourceAl channelsFormatFor La CousonuoPate FormatSar Remote, ID, 1D + Data, ErrorData FormatSar Remote, ID, 1D + Data, ErrorData FormatFor La CousonuoBack Rate, IDSar (Sar Cousonuo)Data FormatSar Remote, ID, 1D + Data, ErrorData FormatSar Remote, ID, 1D + Data, ErrorData FormatSar Remote, ID, 1D + Data, ErrorData FormatSar Remote, ID, 1D + Data, ErrorContriguerSar Remote, ID, 1D + Data, ErrorData FormatId chanelsFormatId chanelsSourceId chanelsSourceId chanelsSourceId chanelsSourceId chanelsSourceId chanelsSourceId chanelsSourceId cousonuSourceId cousonuSour	Limit Range	=, >, <
Parly CheckNone, Odd, EvenStop Bitbit, 1.5 bit, 2 bitIdle LevelHigh, LowBaud Rate (Selectable)Sol/200/4900/9500/15200 bit/sBaud Rate (Selectable)Sol/200/200/9500/15200 bit/sBaud Rate (Selectable)Sol/200/200/9500/15200 bit/sCMTiggerStar Remote, JD Lep Ast, ErrorSourceAl channelsSourceAl chanelsParly Barten (Selectable)Sol/200/1520 bit/sParly Barten (Selectable)Sol/200/200 bit/sSourceSol/200/200 bit/sSourceSol/200/200 bit/sParly Barten (Selectable)Sol/200/200 bit/sSourceSol/200/200 bit/sSourceSol/200/200 bit/sSourceSol/200/200 bit/sSourceSol/200/200 bit/sSourceSol/200 bit/sSourceSol/	Data Length	1 byte
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Ide LevelHigh, LowBaud Rate (Selectable)60/1200/400/9600/15200 bit/sBaud Rate (Selectable)30 bit/s ~ 500000 bit/sContrisonContrisonForditonStar Remote, Dir Da ta, ErrorSourceInd IndineFormatFor (Selectable)Da La formatHexLa formatHexBaud Rate, Dir Da ta, Star (Selectable)Selectable)Baud Rate, Dir Da ta, Star (Selectable)Selectable)Baud Rate, Dir Da ta, Star (Selectable)Selectable)Baud Rate, Dir Da ta, Star (Selectable)Selectable)SourceSelectable)ConditionSelectable)Baud Rate, Dir Da ta, Selectable)Selectable)SourceSelectable)Baud Rate, Dir Da ta, Selectable)Selectable)SourceSelectable)Baud Rate, Selectable)Selectable)SourceSelectable)SourceSelectable)SourceSelectable)SourceSelectable)SourceSelectable)SourceSelectable)SourceSelectable)SourceSelectable)SourceSelectable)SourceSelectable)SourceSelectable)SourceSelectable)SourceSelectable)SourceSelectable)SourceSelectable)SourceSelectable)SourceSelectable)SourceSelectable)SourceSelectable)	Parity Check	None, Odd, Even
Baud Rate (Selectable)On/200/2400/4800/960019200/38400/57600/115200 bit/sBaud Rate (Custom)300 bit/s ~ 500000 bit/sConditionSat Remote, DL, D + Data, ErrorConditionAl channelsSourceAll channelsDa FormatFroData FormatHexData LengthNo (20 / 20 / 20 / 20 / 20 / 20 / 20 / 20	Stop Bit	1 bit, 1.5 bit, 2 bit
Baud Rate (Custom)30 bit/s ~ 500000 bit/sCAN triggerConditionStart Renote, D, D + Data, ErrorSourceAl channelsTourceTo (1 bit), EXT (29 bit)Data FormatHexData Atength1~2 byteBaud RateSto (1 bit (25 bit), Sto (1 bit),	Idle Level	High, Low
CAN TriggerConditionStar Remote, ID, ID + Data, ErrorSourceAll channelsSourceTO (11 bit), EXT (29 bit)Data FormatHexData Length1~2 byteBaud RateStol (12 bit), EXT (29 bit) (12 bit), Stol (25 bit), Stol (	Baud Rate (Selectable)	600/1200/2400/4800/960019200/38400/57600/115200 bit/s
ConditionKar Remote, Dia Pata, ErrorSourceAl chanelsToStol (Dia Dia)Da LongStol (Dia)Data FormatHexData Longth- 2 bytaBaud RateStol (Dia)DrittiggerStol (Dia)ConditionReal, Fanel (Dia)SourceAl chanelsData FormatI bytaSourceStol (Dia)Data FormatStol (Dia) <td>Baud Rate (Custom)</td> <td>300 bit/s ~ 5000000 bit/s</td>	Baud Rate (Custom)	300 bit/s ~ 5000000 bit/s
SourceAl channelsSourceAl channelsIDSTD (11 bit), EXT (29 bit)Data FormatHexData LengthI<2 byte	CAN Trigger	
ID     STD (11 bit), EXT (29 bit)       Data Format     Hex       Data Longth     -       Data Atea     -       Baud Rate     5 (10 k20 k50 k500 k500 k500 k500 k500 k500	Condition	Start Remote, ID, ID + Data, Error
Data FormatHexData Length~2 byteBaud Rate5 k10 k/20 k/50 k/500 k/	Source	All channels
Data Length1~2 byteBaud Rate5 /10 /20 /20 /20 /20 /20 /20 /20 /20 /20 /2	ID	STD (11 bit), EXT (29 bit)
Baud Rate5 k/10 k/20 k/50 k/100 k/125 k/250 k/500 k/800 k/1 M bit/sLIN TriggerConditionBreak, Frame ID, ID+Data, ErrorSourceAll channelsID1 byteData FormatHexData Length1 ~ 2 byteBaud Rate (Selectable)Gol/1200/4800/9600/19200 bit/s	Data Format	Hex
LIN TriggerConditionBreak, Frame ID, ID+Data, ErrorSourceAll channelsID1 byteData FormatHexData Length1 ~ 2 byteBaud Race (Selectable)Gol/2002/000/19200 bit/s	Data Length	1~2 byte
ConditionBreak, Frame ID, ID+Data, ErrorSourceAll channelsID1 byteData FormatHexData Length1 ~ 2 byteBaud Rate (Selectable)Gol/1200/9600/19200 bit/s	Baud Rate	5 k/10 k/20 k/50 k/100 k/125 k/250 k/500 k/800 k/1 M bit/s
SourceAl channelsID1 byteData FormatHexData Length1 ~ 2 byteBaud Rate (Selectable)60/1200/4800/9600/19200 bit/s	LIN Trigger	
ID1 byteData FormatHexData Length1 ~ 2 byteBaud Rate (Selectable)60/1200/4800/9600/19200 bit/s	Condition	Break, Frame ID, ID+Data, Error
Data Format Hex   Data Length 1 ~ 2 byte   Baud Rate (Selectable) 600/1200/4800/9600/19200 bit/s	Source	All channels
Data Length     1 ~ 2 byte       Baud Rate (Selectable)     600/1200/2400/4800/9600/19200 bit/s	ID	1 byte
Baud Rate (Selectable) 600/1200/2400/4800/9600/19200 bit/s	Data Format	Hex
	Data Length	1 ~ 2 byte
Baud Rate (Custom)300 bit/s ~ 20 kbit/s	Baud Rate (Selectable)	600/1200/2400/4800/9600/19200 bit/s
	Baud Rate (Custom)	300 bit/s ~ 20 kbit/s

Serial Decoder	
Number of Decoders	2
I2C Decoder	
Signal	SCL, SDA
Address	7 bits, 10 bits
Threshold	-4.5 ~ 4.5 div
List	1 ~ 7 lines
SPI Decoder	
Signal	SCL,MISO, MOSI, CS (2 channel scopes can only use 2 signal identifiers)
Edge Select	Rising, Falling
Bit Order	MSB, LSB
Threshold	-4.5 ~ 4.5 div
List	1 ~ 7 lines
UART Decoder	
Signal	RX, TX
Data Width	5 bit, 6 bit, 7 bit, 8 bit
Parity Check	None, Odd, Even
Stop Bit	1 bit, 1.5 bit, 2 bit
Idle Level	Low, High
Threshold	-4.5 ~ 4.5 div
List	1 ~ 7 lines
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 Decoder	
LIN Specification Package Revision	Ver1.3, Ver2.0
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	Display 4 measurements 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%
nonzonal (ninc)	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 , ∫dt , √
FFT window	Rectangular, Blackman, Hanning, Hamming, Flattop
FFT display	Full Screen, Split, Exclusive

ChanelIMax. Output Frequency55 MHzSampin Rate125 MSa/sFrequency Resolution14 μtzFrequency Resolution14 bitAmplitude Range1.5 - +1.5 V (SO2 load) - 3 + 3 V (High'z Load)Warform Type56 ne. Square, Ramp, Pulse, Noise, DC and 45 built-in warformsOutput Impedance50 acres/Protection50 acres/Protection50 acres/Protection50 acres/Protection50 acres/Protection50 acres/Oright Accuracy (10 HHz)4(Ho*Offset Setting Value + 3 mVpp)Offset Accuracy (10 HHz)6(Ho*Es Staffset)Minibude Flamss6.3 dBOffset Setting Value + 3 mVpp)Marce Solution510 acres/Minibude Flamss6.3 dBOffset Setting Value + 3 mVpp)Minibude Flamss6.3 dBOffset Setting Value + 3 mVpp)Minibude Flamss6.2 S HHz - 50 dBcState 2 S HHz - 50 BCS	USB AWG Module (four cha	annel series only, option)		
Sampling Rate125 MSa/sFrequency Resolution1,μfzFrequency Accuracy±50 ppmVertical Resolution14-bitAmplitude Range1.5 ~ +1.5 V (Stok load) - 3 ~ +3 V (High - Load)Waveform TypeSine, Square, Ramo, Puke, Noise, DC and 45 built-in waveformsOutput impedance50 0.42%ProtectionOver-Voltage Protection, Current-Limiting ProtectionStree1.4 μf × - 25 MHzFrequency1 μf × - 25 MHzOffset Accuracy (10 kHz)4 (19% Offset Setting Value +3 mVpp)Affinition	Channel	1		
Frequency Resolutionμ μ 2Frequency Accuracy450 ppmVertical Resolution4-bitAmplitude Range-1.5 ~ 1.5 V (500 load)	Max. Output Frequency	25 MHz		
Frequency Accuracy±50 ppmVertical Resolution14-bitAmplitude Range-1.5 ~ +1.5 V (50Ω load) - 3 ~ +3 V (High-Z load)Wavelorn TypeSine, Square, Ramp, Pulse, Noise, DC and 45 bult-in waveformsOutput impedance50 9±2%Protection50 9±2%Protection50 9±2%Protection0×19/90 Protection, Current-Limiting ProtectionProtection1 µHz ~ 25 MHzOffset Accuracy (10 kHz)4(1%*Offset Setting Value +3 mVpp)Amplitude flatness (10 kHz, 5 Vpp)0.3 dBPrequency1 µHz ~ 60 dBcSFDRDC ~ 1 MHz ~ 60 dBcBTHz ~ 25 MHz - 55 dBc5 MHz ~ 25 MHz - 50 dBcMHz ~ 5 MHz ~ 55 dBc5 MHz ~ 25 MHz - 50 dBc7 MHz ~ 50 ME7 MHz ~ 50 MBc7 Mitz ~ 25 MHz - 50 dBc7 Mitz ~ 51 MHz ~ 50 dBc7 Mitz ~ 25 MHz - 10 MHz7 Negrifia time0 vershoot (1 kHz) 1Vpp, iSym)9 Newshoot (1 kHz) 1Vpp, iSym)7 Network7 Networ	Sampling Rate	125 MSa/s		
Vertical Resolution14-bitAmplitude Range-1.5 ~ + 1.5 V (502 load)Amplitude Range-1.5 ~ + 1.5 V (502 load)Vaveform TypeSine, Square, Ramp, Pulse, Noise, DC and 45 built-in waveformsOutput impedance50 £2%ProtectionOver-Voltage Protection, Current-Umiting ProtectionSine	Frequency Resolution	1 µHz		
Applitude Range-1.5 ~ +1.5 V (502 load)-3 ~ +3 V (High-Z load)Waveform TypeSine, Square, Ramp, Pulse, Noise, DC and 45 built-in waveformsOutput impedance50 0±2%ProtectionOver-Voltage Protection, Current-Limiting ProtectionStreFrequency1 µlt ~ 25 Mt/zOffset Accuracy (10 kt/z)±(1%*0ffset Setting Value +3 mVpp)Amplitude flatness (10 ktrz, 5 ypp)±0.3 dBDC ~ 1 Mt/z ~ 50 dBc1 Mt/z ~ 50 dBcFrequency0 Kriz ~ 55 dBcMtrz ~ 50 Mt/z ~ 50 dBc5 Mt/z ~ 50 dBcTotal ~ 50 dBc5 Mt/z ~ 50 dBcTotal ~ 50 Mt/z ~ 50 dBc5 Mt/z ~ 50 dBcFrequency1 µlt/z ~ 10 Mt/zMt/z ~ 50 Mt/z ~ 50 dBc5 Mt/z ~ 50 dBcStDar1 µlt/z ~ 10 Mt/zFrequency1 µlt/z ~ 10 Mt/zNu Cycle% 99%Store/Pulse1 µlt/z ~ 10 Mt/zFrequency1 µlt/z ~ 10 Mt/zOvershoot (1 ktrz, 1 Vpp, Typica)< 3% (typical 1 ktrz, 1 Vpp)	Frequency Accuracy	±50 ppm		
Indext styleInstructionSine Square, Ramp, Pulse, Noise, DC and 45 built-in waveformsOutput impedance50.942%Protectionover-Voltage Protection, Current-Limiting ProtectionSineSineFrequency1.µtlz ~ 25.MHzOffset Accuracy (10 kHz)4.(19*0fiste Setting Value +3 mVpp)Angiltude flatness (10 kHz, 5 Vpp)0.3.dBDC ~ 1.MHz ~ 60 dBc1.MHz ~ 5.MHz - 55 dBcSFDRDC ~ 1.MHz ~ 50 dBcAtt ~ 25.MHz ~ 50 dBc1.MHz ~ 25.MHz - 50 dBcStotacy 2.De kPDDC ~ 5.MHz ~ 5.0 dBcStotacy 2.De kFrequency1.µtlz ~ 1.0 MHzMutDise/FaltimeStotacy 2.De kFrequency1.µtlz ~ 1.0 MHzNational (11 kHz, 1.Vpp, Typical)National (12 kHz, 1.Vpp,	Vertical Resolution	14-bit		
Waveform TypeSine, Square, Ramp, Pulse, Noise, DC and 45 built-in waveformsOutput impedance $50  \Omega \pm 2\%$ Protectionover-Voltage Protection, Current-Limiting ProtectionSineImpediate Protection, Current-Limiting ProtectionSine $(1 \mu t 2 - 25  M t 2$ Prequency $1 \mu t 2 - 25  M t 2$ Offset Accuracy (10 kHz) $4(1\% ' Offset Setting Value + 3 m Vpp)$ Amplitude flatness (10 kHz, 5 Vpp) $0.3  d B$ DC ~ 1 MHz ~ 60 dBC $DC ~ 1  M Hz ~ 50  d BC$ SFDR $DC ~ 1  M Hz ~ 50  d BC$ MHz ~ 25 M Hz ~ 50 dBC $DC ~ 5  M Hz ~ 50  d BC$ DC ~ 5 M Hz ~ 50 dBC $DC ~ 5  M Hz ~ 50  d BC$ DC ~ 5 M Hz ~ 50 $d BC$ $DC ~ 5  M Hz ~ 50  d BC$ Pulse $DC ~ 5  M Hz ~ 50  d BC$ Steg/Fall time $24  ns (10\% - 90\%)$ Overshoot (1 kHz, 1 Vpp, Typical) $3\% (typical 1 kHz, 1 Vpp)$ Pulse Width $50  ns$ Jitter $50  ns + 10  pm$ Pulse Width $50  ns + 10  pm + 10  pm$	Amplitude Range	-1.5 ~ +1.5 V (50Ω load)		
Output impedance     50 #2%       Protection     Over-Voltage Protection, Current-Limiting Protection       Frequency     1 µHz ~ 25 MHz       Offset Accuracy (10 kHz)     4 (1% 'Offset Setting Value + 3 mVpp)       Amplitude flatness (10 kHz, 5 Vpp) $-0.3$ dB       DC ~ 1 MHz ~ 60 dBc $-0.5$ MHZ ~ 50 dBc       SFDR     DC ~ 1 MHz ~ 60 dBc       MBL     DC ~ 1 MHz ~ 50 dBc       ME     DC ~ 5 MHz ~ 50 dBc       ME     DC ~ 5 MHz ~ 50 dBc       ME     DC ~ 5 MHz ~ 50 dBc       Stellar     Stellar       Stellar     Stellar       ME     Stellar       Stellar     Stellar       ME     Stellar       Stellar     Stellar       ME     Stellar       ME     Stellar       Stellar     Stellar       ME     Stellar       Stellar     Stellar       ME     Stellar       ME     Stellar       ME     Stellar       Stellar     Stellar       Stelar     Stelar <t< td=""><td></td><td>-3 ~ +3 V (High-Z load)</td></t<>		-3 ~ +3 V (High-Z load)		
ProtectionOver-Voltage Protection, Current-Limiting ProtectionSineFrequency1 µHz ~ 25 MHzOffset Accuracy (10 kHz)4 (1% *Offset Setting Value + 3 mVpp)Offset Accuracy (10 kHz) $4 0.3  dB$ Amplitude flatness (10 kHz, 5 Vpp) $0 C ~ 1  MHz ~ 60  dBc$ SFDR $D C ~ 1  MHz ~ 60  dBc$ Applitude 7 S MHz ~ 50  dBcMathematical Stress (10 kHz, 2 S MHz - 50  dBcDC ~ 5  MHz ~ 50  dBcBD $D C ~ 5  MHz ~ 50  dBc$ Steare/PulseFrequency1 µHz ~ 10  MHzDuty CycleRise/Fall time0 c > 4 ns (10% ~ 90%)Quershoot (1 kHz, 1 Vpp, Typical)Quershoot (1 kHz, 1 Vpp, Typical)Viscle 1 1 kHzPanelFrequencyJitterConstant StressProtectionProtectionProtectionProtectionDirectionOperationOperationDirectionStressStressOffset StressStressDirectionStressStressStressStressStressStressStressStressStressStressStressStressStressStressStressStressDirectionStressStressStressStressStressStressStressStress	Waveform Type	Sine, Square, Ramp, Pulse, Noise, DC and 45 built-in waveforms		
Sine     Frequency   1 µHz ~ 25 MHz     Offset Accuracy (10 kHz)   ±(1% °Offset Setting Value + 3 mVpp)     Amplitude flatness (10 kHz, 5 Vpp)   ±0.3 dB     DC ~ 1 MHz ~ 60 dBc   DC ~ 1 MHz ~ 60 dBc     SFDR   DC ~ 1 MHz ~ 50 dBc     MtHz ~ 25 MHz ~ 50 dBc   5 MHz ~ 25 MHz ~ 50 dBc     BD   DC ~ 5 MHz ~ 50 dBc     5 MHz ~ 25 MHz ~ 45 dBc   5 MHz ~ 25 MHz ~ 45 dBc     Sequency     1 µHz ~ 10 MHz   5 MHz ~ 25 MHz ~ 45 dBc     Sequency     1 µHz ~ 10 MHz   10 W 2 With ~ 90%     Stey/Fall time   < 24 ns (10% ~ 90%)	Output impedance	50 Ω±2%		
Frequency1 µHz ~ 25 MHzOffset Accuracy (10 kHz)4(1%*Offset Setting Value + 3 mVpp)Amplitude flatness (10 kHz, 5 Vpp)±0.3 dBDC ~ 1 MHz ~ 60 dBc1 MHz ~ 5 MHz ~ 55 dBcAmplitude flatness (10 kHz, 25 MHz - 55 dBc5 MHz ~ 25 MHz - 50 dBcAmplitude flatness (10 kHz, 25 MHz - 50 dBcC ~ 5 MHz - 50 dBcAmplitude flatness 	Protection	Over-Voltage Protection, Current-Limiting Protection		
Offset Acuracy (10 kHz)±(1%*0ffset Setting Value +3 mVpp)Amplitude flatness (10 kHz, 5 Vpp)±0.3 dBDC ~ 1 MHz ~ 60 dBcAmplitude flatness (10 kHz ~ 50 MBz ~ 55 dBcFDRDC ~ 5 MHz ~ 50 dBcHDDC ~ 5 MHz ~ 50 dBcDC ~ 5 MHz ~ 50 dBcDC ~ 5 MHz ~ 50 dBcSteare/PulseFrequency1 µHz ~ 10 MHzDty Cycle10 w 2 90%Rise/Fall time< 24 ns (10% ~ 90%)	Sine			
Amplitude fiatness (10 kHz, 5 Spp)a.3 dBDC - 1 MHz - 60 dBCMHZ - 50 dBC1 MHZ - 50 MHZ - 50 dBCMHZ - 25 MHZ - 50 dBCMBC - 5 MHZ - 50 dBCMHZ - 50 MHZ - 50 dBCSquare/PulseFrequery1 MHZ - 10 MHZNuty Cycle1 MHZ - 10 MHZNuty Cycle2 Aris (10% - 90%)Nuty Cycle1 key Fialt ine2 Aris (10% - 90%)Nuty Cycle2 Aris (10% - 90%)Nuty Cycle3 (by cjucial kHz, 1 Vp)Nuty Cycle3 (by cjucial kHz, 1 Vp)Nuty Cycle1 Mat - 2 So Mat - 50 Sp1 Mat - 50 Sp1 Mat - 50	Frequency	1 μHz ~ 25 MHz		
(10 kHz, 5 Vpp)     عال 10 kHz     5 kB     DC ~ 1 MHz ~ 60 dBc     A       SFDR     1 MHz ~ 5 MHz ~ 55 dBc     1 MHz ~ 50 MHz ~ 50 dBc     1 MHz ~ 25 MHz ~ 50 dBc     1 MHz ~ 20 MHz     1 MHz ~ 20 MHz ~ 20 MHz ~ 20 MHz     1 MHz ~ 20 MIZ ~ 20 M	Offset Accuracy (10 kHz)	±(1%*Offset Setting Value +3 mVpp)		
SFDR     IME ~ 5 MHz ~ 55 dBc       MB     5 MHz ~ 50 dBc       HD     C ~ 5 MHz ~ 50 dBc       MD     C ~ 5 MHz ~ 50 dBc       Strace Source     5 Mtz ~ 25 MHz ~ 45 dBc       Strace Source     MH ~ 10 MHz       Strace Source     1 MH ~ 10 MHz       Duty Cycle     1 MH ~ 10 MHz       Strace Source     1 MH ~ 10 MHz       Noty Cycle     1 MH ~ 10 MHz       Strace Source     3 Mit ~ 10 MHz       Duty Cycle     1 MH ~ 10 MHz       Strace Source     3 Mit ~ 10	•	±0.3 dB		
He5 MHz ~ 25 MHz - 50 dBcHDC ~ 5 MHz ~ 50 dBc5 MHz ~ 25 MHz ~ 50 dBc5 MHz ~ 25 MHz ~ 45 dBcSquare/PulseFrequency1 µHz ~ 10 MHzDvt Cycle1% ~ 99%Rise/Fall time< 24 ns (10% ~ 90%)		DC ~ 1 MHz -60 dBc		
HD     C ~ 5 MHz ~ 50 dBc       5 MHz ~ 25 MHz 45 dBc       Square/Pulse       Frequency     1 µHz ~ 10 MHz       Duty Cycle     1 µHz ~ 10 MHz       Rise/Fall time     24 ns (10% ~ 90%)       Overshoot (1 kHz,1 Vpp, Typical)     < 3% (typical 1 kHz, 1 Vpp)	SFDR	1 MHz ~ 5 MHz -55 dBc		
HD     5 MHz ~ 25 MHz ~45 dBc       Square/Pulse        Frequency     1 μHz ~ 10 MHz       Duty Cycle     1% ~ 99%       Rise/Fall time     <24 ns (10% ~ 90%)		5 MHz ~ 25 MHz -50 dBc		
5 MHz ~ 25 MHz - 45 dBc     Square/Pulse     Frequency   1 µHz ~ 10 MHz     Duty Cycle   1% ~ 99%     Rise/Fall time   < 24 ns (10% ~ 90%)	НП	DC ~ 5 MHz -50 dBc		
Frequency     1 μHz ~ 10 MHz       Duty Cycle     1% ~ 99%       Rise/Fall time     < 24 ns (10% ~ 90%)		5 MHz ~ 25 MHz -45 dBc		
Duty Cycle     1% ~ 99%       Rise/Fall time     < 24 ns (10% ~ 90%)	Square/Pulse			
Rise/Fall time     < 24 ns (10% ~ 90%)	Frequency	1 μHz ~ 10 MHz		
Overshoot (1 kHz,1 Vpp, Typical) < 3% (typical 1 kHz, 1 Vpp)	Duty Cycle	1% ~ 99%		
Pulse Width > 50 ns   Jitter < 500 ps + 10 ppm	Rise/Fall time	< 24 ns (10% ~ 90%)		
Jitter     < 500 ps + 10 ppm	Overshoot (1 kHz,1 Vpp, Typical)	< 3% (typical 1 kHz, 1 Vpp)		
Ramp       Frequency     1 μHz ~ 300 kHz       Linearity (Typical)     < 0.1% of Pk-Pk (Typical, 1 kHz, 1 Vpp, 50% Symmetry)	Pulse Width	> 50 ns		
Frequency1 μHz ~ 300 kHzLinearity (Typical)< 0.1% of Pk-Pk (Typical, 1 kHz, 1 Vpp, 50% Symmetry)	Jitter	< 500 ps + 10 ppm		
Linearity (Typical) < 0.1% of Pk-Pk (Typical, 1 kHz, 1 Vpp, 50% Symmetry)	Ramp			
	Frequency	1 μHz ~ 300 kHz		
Symmetry 0% ~ 100%	Linearity (Typical)	< 0.1% of Pk-Pk (Typical, 1 kHz, 1 Vpp, 50% Symmetry)		
	Symmetry	0% ~ 100%		

	±1.5 V (50 Ω load)	
Offset range	±3 V (High-Z load)	
Accuracy	±( offset *1%+3 mV)	
Noise		
Bandwidth	>25 MHz (-3 dB)	
Arbitrary Wave		
Frequency	1 μHz ~ 5 MHz	
Wave Length	16 kpts	
Sampling Rate	125 MSa/s	
Lead in	EasyWave and U-Disk	
Digital Channels (four chanı	nel series only, option)	
No. of Channels	16	
Max. Sampling Rate	1 GSa/s	
Memory Depth	14 Mpts/CH	
Min. Detectable Pulse Width	4 ns	
Level Group	D0~D7, D8~D15	
Level Range	-8 V ~ 8 V	
Logic Type	TTL, CMOS, LVCMOS3.3, LVCMOS2.5, custom	
Skew	D0~D15: ±1 sampling interval Digital to Analog: ± (1 sampling interval +1 ns)	
I/O		
Standard	USB Host (1 for two channel series, and 2 for four channel series), USB Device, LAN, Pass/Fail, Trigger Out	
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 (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	
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 $^\circ\!\!\mathbb{C}$ , 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)		
	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)		
	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	5000	
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
	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 AWG Module Hardware (four channel series only)	SAG1021		
	WIFI Software (four channel series only)	SDS1000X-E-WIFI		
	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		