SDS2000X HD Digital Storage Oscilloscope release

June 09, 2022

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As digital speeds and device complexity continue to increase, signals under test are getting more complex, engineers are more challenged to isolate anomalies in their devices. Test tools for such applications require wide dynamic range measurements to look at very small signals in the presence of relatively large amplitudes. The new high-resolution SDS2000X HD series of oscilloscopes from SIGLENT are available in bandwidths of 100, 200, and 350 MHz. They are based on a new 2 GSa/s, 12-bit ADC front end that features an exceptionally low noise floor which provides more signal details and enables Engineers to get more accurate waveform measurements.

The vertical resolution of an oscilloscope refers to the ratio of the highest input signal the oscilloscope can handle to the smallest signal amplitude it can detect. With higher resolution measurements, waveform details become more visible, quantization noise is reduced, and measurement accuracy improve.

The Siglent SDS2000X HD series is a next-generation oscilloscope using a 12-bit ADC and low noise front-end, which has 16 times the signal resolution capability of a traditional 8-bit oscilloscope. The SDS2000X HD series displays signal details in finer detail, make more precise measurements, have higher voltage offsets, and better accuracy than traditional 8-bit oscilloscopes. (Figure 1 & 2)

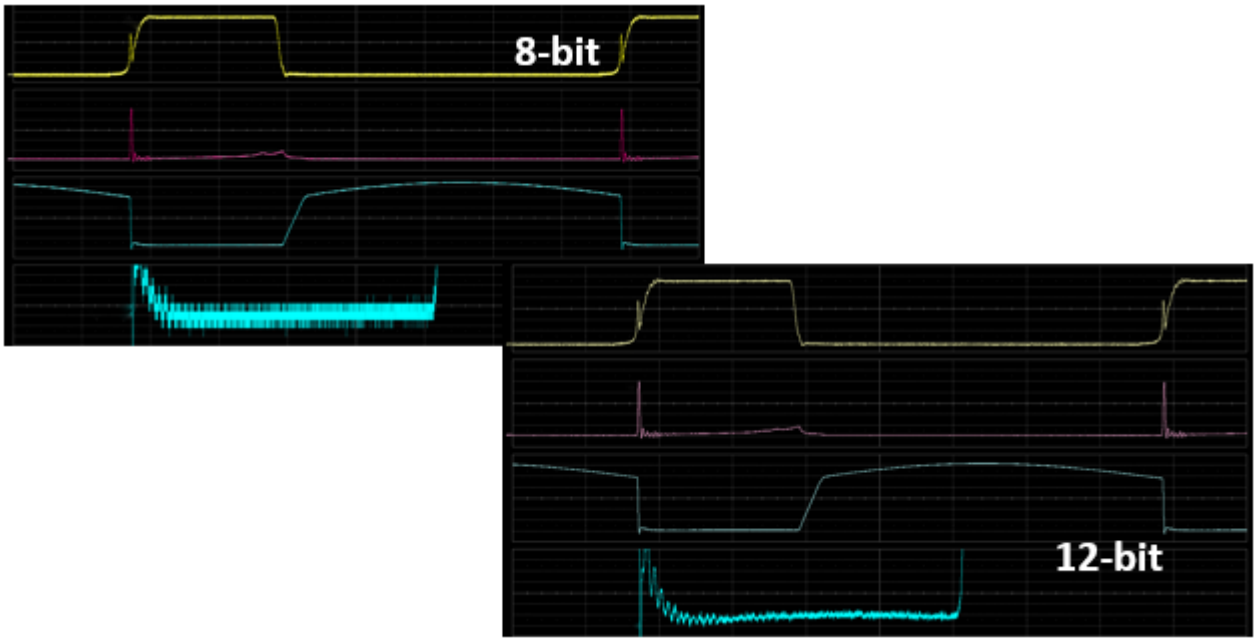

Figure 1: An 8-bit resolution acquisition shows a blurred saturation voltage trace with details buried in quantization noise but the 12-bit oscilloscope clearly shows details of the saturation voltage.

Full Scale	Smallest Voltage Step	
	8-bit	12-bit
80 V	312.5 mV	19.5 mV
40 V	156.2 mV	9.76 mV
20 V	78.1 mV	4.88 mV
8 V	31.3 mV	1.95 mV
4 V	15.6 mV	976 µV
1.6 V	6.3 mV	390 µV
800 mV	3.1 mV	195 µV
400 mV	1.56 mV	97.6 µV
160 mV	625 µV	39 µV
80 mV	313 µV	19.5 µV
40 mV	156 µV	9.76 µV
16 mV	62.5 µV	3.9 µV
8 mV	31.2 µV	1.95 µV

Figure 2: When measuring an 8 V signal, the smallest detectable voltage variation is 1.95 mV, compared with 31.3 mV on an 8-bit ADC.

The SDS2000X HD series also includes several time-saving features. They include deep memory with a

maximum record length of 200 Mpts/ch and display 4 analog channels and an optional 16 digital channels for mixed signal analysis. They employ Siglent's SPO technology with a maximum waveform capture rate of up to 100,000 wfm/s (up to 500,000 wfm/s in Sequence mode), 256-level intensity grading display function plus a color temperature display mode.

SDS2000X HD also employs an innovative digital trigger system with high sensitivity and low jitter. The trigger system supports multiple powerful triggering modes including serial bus triggering. An impressive array of measurement and math capabilities, options for a 25 MHz arbitrary waveform generator, as well as serial decoding are also features of the SDS2000X HD.

If you are a power supply designer, medical device Engineer, or working on systems where accuracy and resolution are critical, the SIGLENT SDS2000X HD 12-bit oscilloscope is an ideal solution to your test needs.

North American Headquarters

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

European Sales Offices

SIGLENT TECHNOLOGIES EUROPE GmbH
Staetzlinger Str. 70
86165 Augsburg, Germany
Tel: +49(0)-821-666 0 111 0
Fax: +49(0)-821-666 0 111 22
info-eu@siglent.com
www.siglenteu.com

Asian Headquarters

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