

SDG7000A Arbitrary Waveform Generator

 **Easy Pulse**

True Arb



Key Features

- Dual channel differential/single-ended output, 16-bit LVDS/LVTTL digital bus output
- High-performance sampling system with 5GSa/s sample rate and 14-bit vertical resolution
- 1 GHz maximum bandwidth
- Generates arbitrary waveform with sample rates of 0.01 Sa/s ~ 2.5 GSa/s, with maximum memory depth of 512 Mpts, and provides segment editing / playback functions
- Generates vector signals with up to 500 MS/s symbol rate
- Generates low jitter pulses with 1 ns minimum pulse width and 500ps minimum edge
- Up to 1 GHz bandwidth White Gaussian Noise and the bandwidth is adjustable
- Supports PRBS up to 312.5 Mbps
- The digital bus can output digital signals up to 1 Gbps
- Supports analog/digital modulation, sweeping and bursting
- Enhanced dual channel operation functions: inter channel tracking, coupling and copying; Dual channel superposition function; Supports mutual modulation between channels
- The 24 Vpp analog output is superimposed with ± 12 Vdc offset to provide a maximum output range of ± 24 V (48 V)
- High precision Frequency Counter
- 5-inch capacitive touch screen with resolution of 800x480; Supports external mouse and keyboard operation; Supports WebServer to control the instruments remotely
- Supports multiple interfaces: 10MHz In, 10MHz Out, Trigger In/Out, Markers etc
- Supports SCPI command for easy integration into test systems

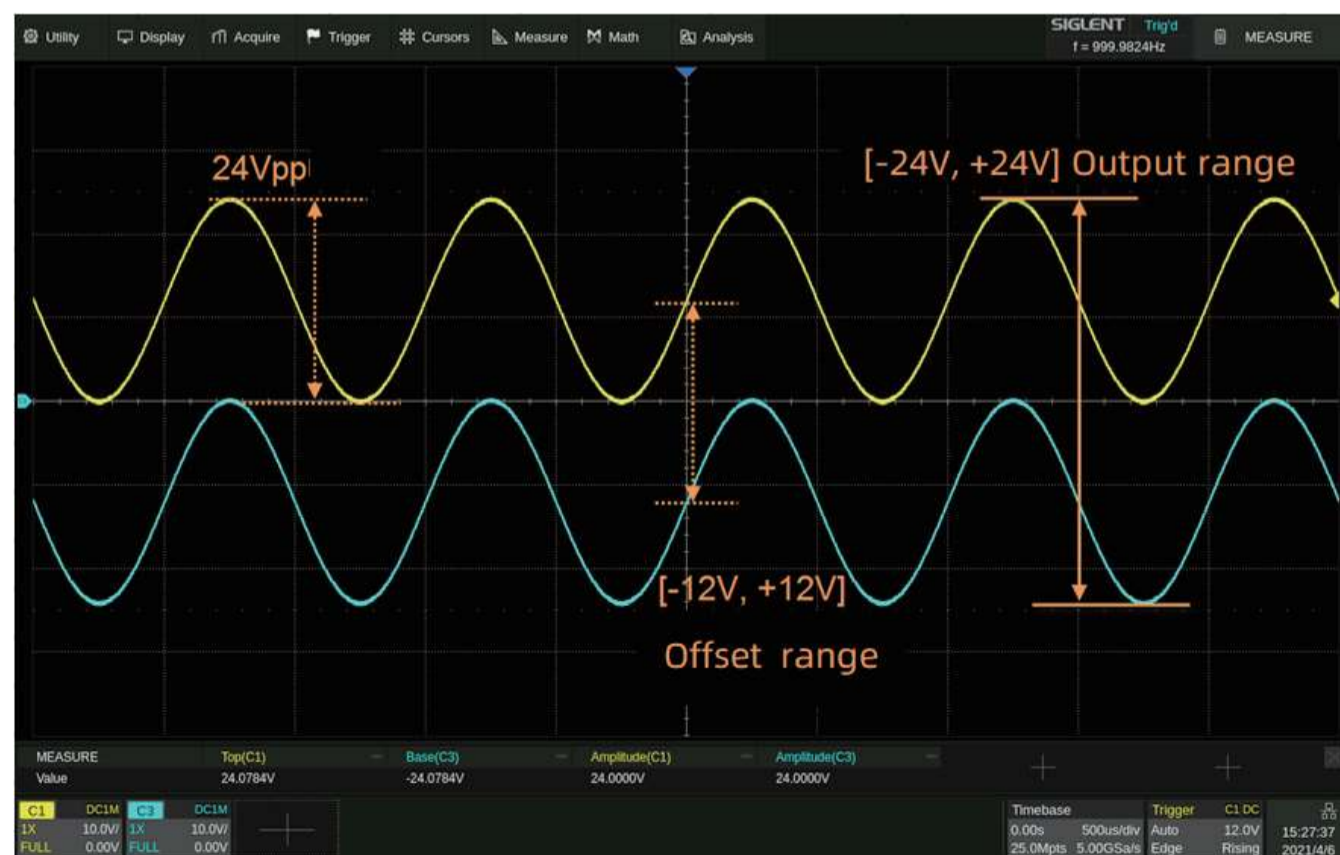
Characteristics

• Multi-functional Waveform Generator



The SDG7000A series integrates multiple waveform generator functions from DC to continuous waves up to 1 GHz, which can replace RF signal generators in some applications. It adopts Siglent's TrueArb point-by-point arbitrary waveform generation technology, which enables user-adjustable output sample rates from 0.01 Sa/s to 2.5 GSa/s with excellent jitter performance and the generation of I/Q vector signals with a maximum settable bandwidth greater than 500 MHz. Using the benefits of Siglent's EasyPulse architecture, a low jitter pulse with a minimum pulse width of 1 ns can be generated. The SDG7000A also features a Gaussian noise output with adjustable bandwidth, Pseudo-random code generation, an optional 16 channels of digital signal output for synthesizing digital communications, and much more.

• Wide Range Amplitude Output



24Vpp analog output superimposed with ± 12 Vdc offset, providing a maximum output range of ± 24 V (48 V).

Waveform Generator

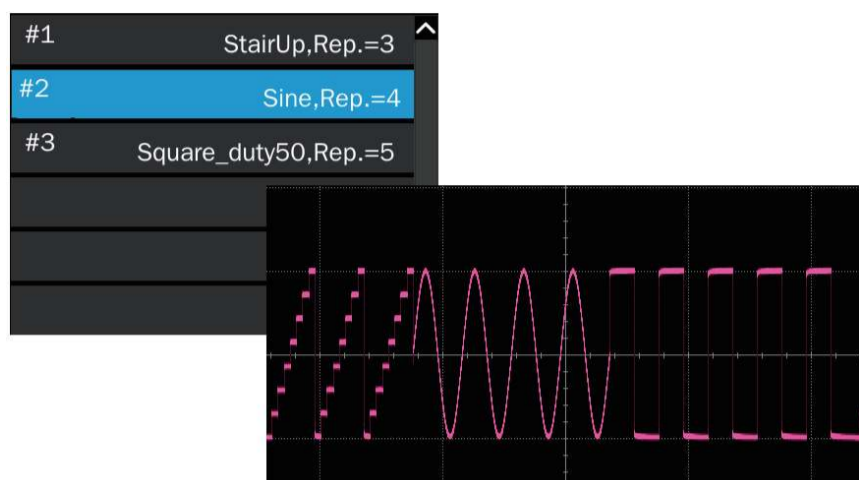
• Excellent Arbitrary Waveform Generation

AFG mode

uses traditional DDS technology to generate arbitrary waveforms

AWG mode

uses the innovative TrueArb technology, with an adjustable sample rate from 0.01 Sa/s~ 2.5 GSa/s and jitter less than 20 ps. It not only has all the advantages of traditional DDS technology, but also overcomes its intrinsic jitter and distortion defects. The flexible platform also provides zero order hold, linear and sinc interpolation methods for increased flexibility when creating complex waveforms.



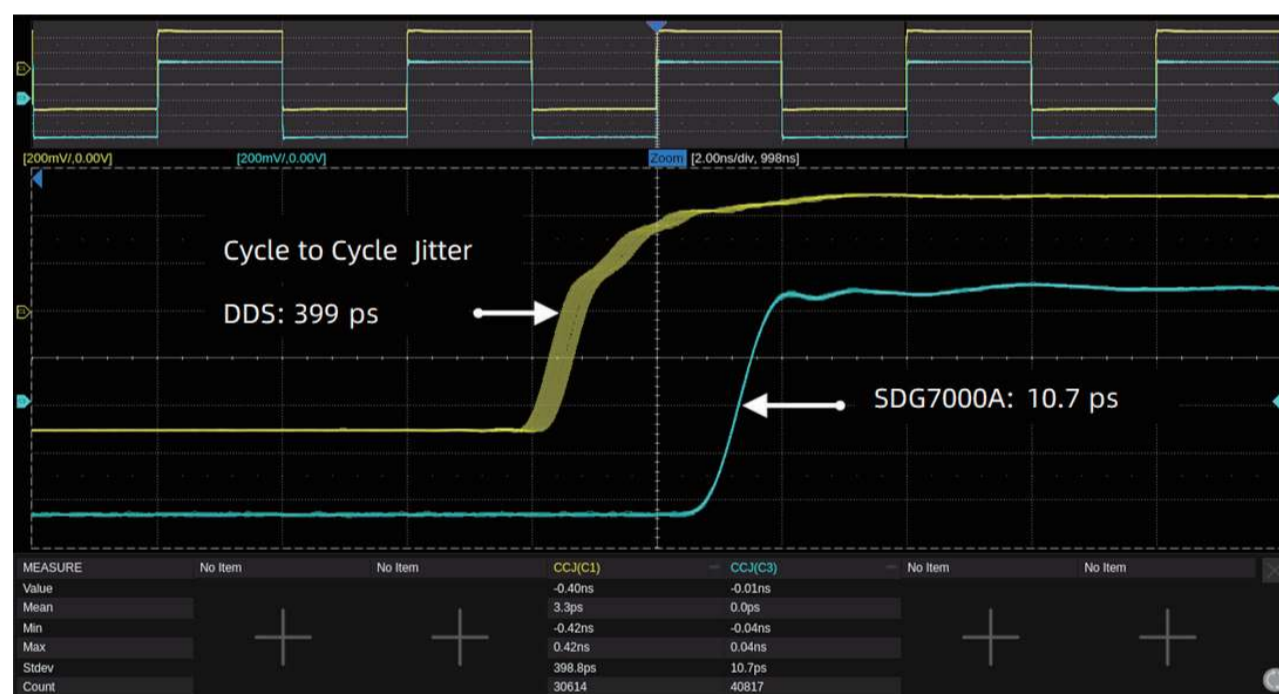
Sequence editing and playback

The SDG7000A supports up to 1024 arbitrary wave segments, each of which can be set with a maximum of 65535 repetitions. When switching between segments, the output seamlessly moves from the last point of the previous segment to the first point of the next segment without generating an idle level. It is suitable for applications with high requirements for waveform switching.

EasyWaveX

supports extensive arbitrary wave editing functions including manual, linear, coordinate, and equation drawing that facilitate rapid generation of the required waveforms. The EasyWaveX editing software is embedded in the SDG7000A, and can also be installed in a computer, interacting with the SDG7000A over USB or LAN interfaces.

• High-Speed Low Jitter Pulse



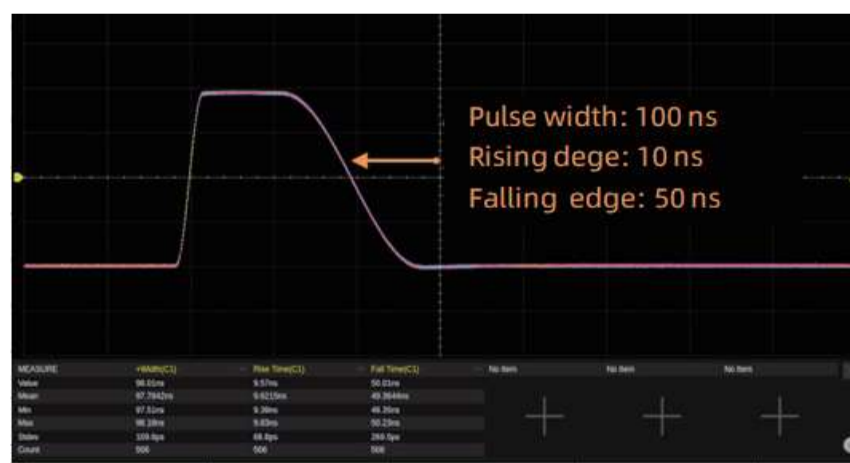
Low jitter

When a Square/Pulse waveform is generated by traditional DDS, there can be additional jitter if the sample rate is not an integer-related multiple of the output frequency. EasyPulse technology successfully overcomes this weakness in DDS designs and helps to produce low jitter Square/Pulse waveforms.



High speed

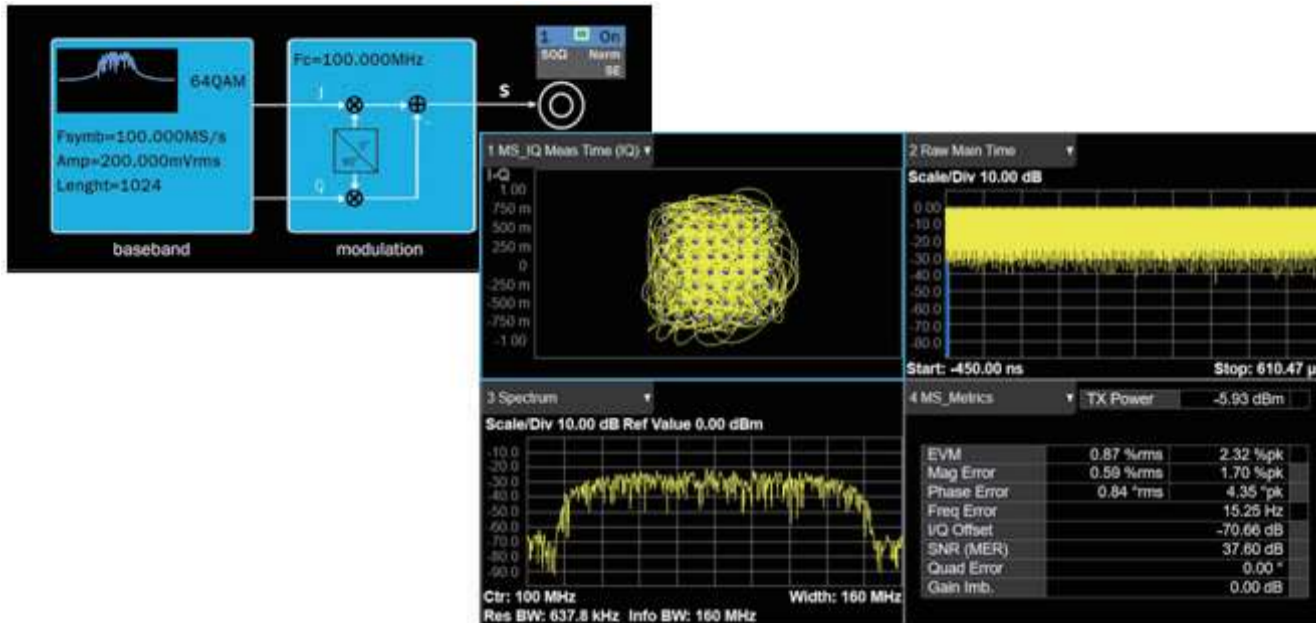
The minimum 1 ns pulse width, can be generated at any frequency. The pulse width can be finely adjusted in steps of 10 ps.



Flexible edge

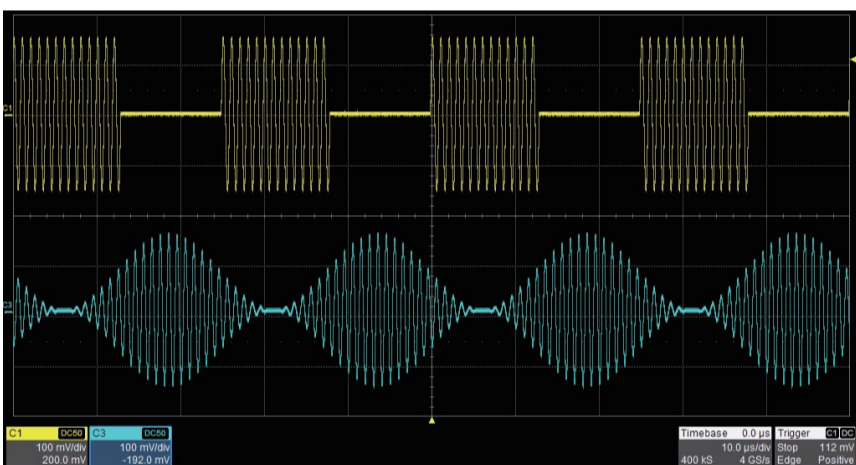
Adjustable fine step resolution to 100 ps. The minimum edge is 500 ps and can be generated at any frequency. The rising/ falling edge can be set respectively and can be used to generate asymmetric pulse

• Vector Signal Output (Optional)



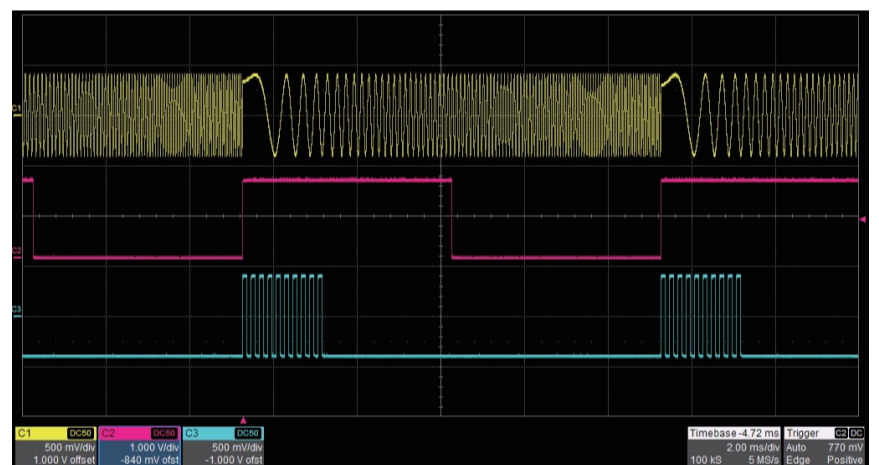
The SDG7000A can generate common modulation types of IQ signals, such as ASK, FSK, PSK, QAM. With the innovative resampling technology, excellent EVM performance can be obtained at any symbol rate between 250 S/s ~ 500 MS/s. The built-in digital quadrature modulator can modulate the carrier of the IQ signal to any frequency between 0 Hz~1 GHz. The EasyIQ software can be used to generate and edit various types of IQ signals.

• Complex Signal Generator



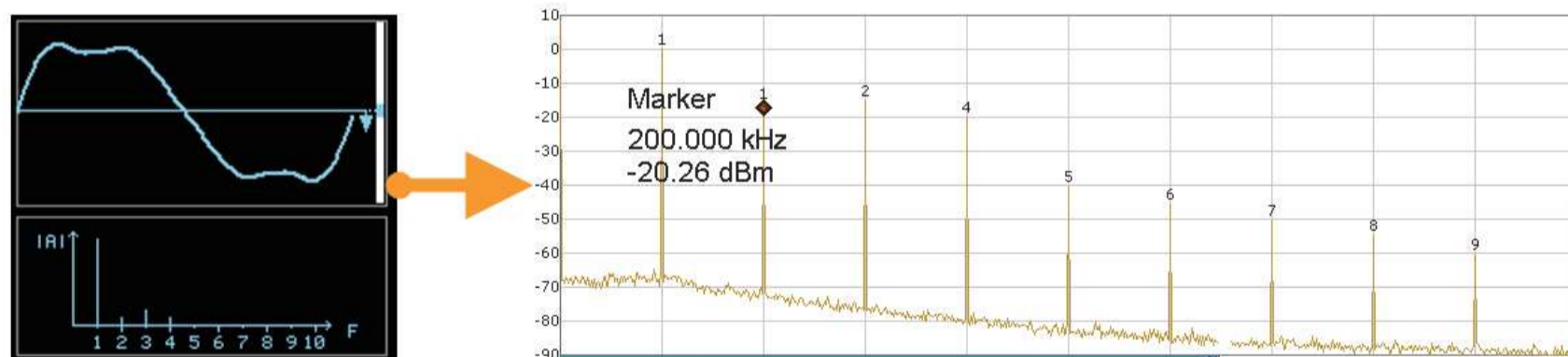
Modulation

A variety of analog and digital modulation modes such as AM, FM, PM, FSK, ASK, PSK, DSB-SC, and PWM are supported. There are three modulation sources: Internal, External, and Channel.



Sweep and Burst

Sweep supports "Line" and "Log" modes, while Burst enables "NCycle" and "Gated" modes. Both Sweep and Burst support trigger sources: Internal, External, and Manual.

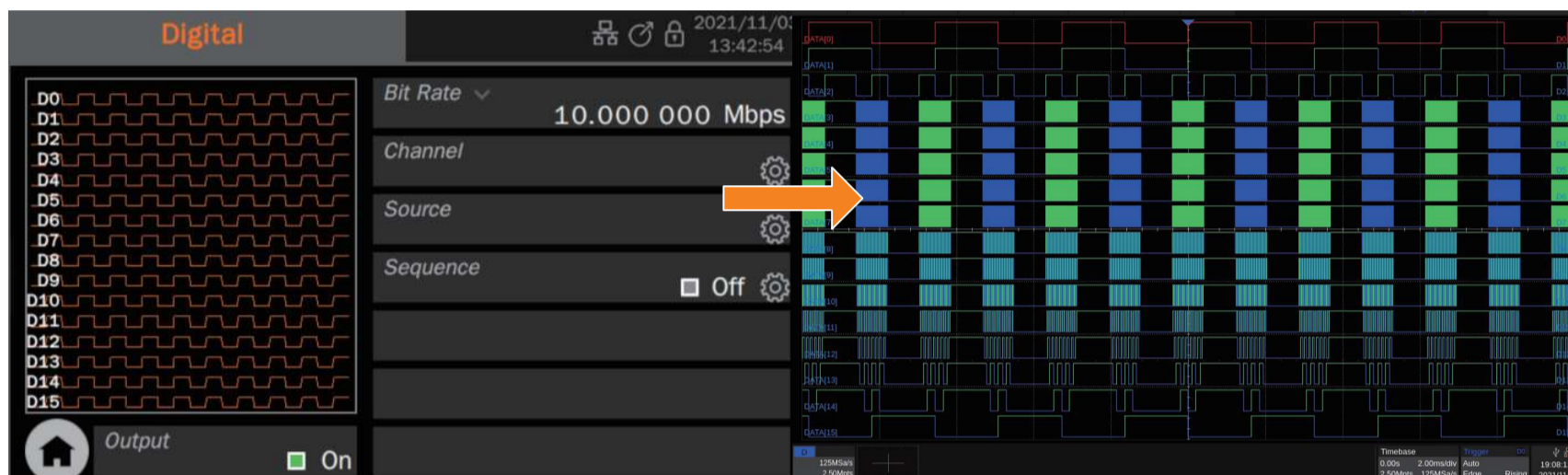


Harmonics Function

provides the ability to add higher-order elements to your signal.

Waveform Generator

• 16 Channel Digital Output (Optional)



Purchase the corresponding digital bus kit to get 16-channel LVTTTL or LVDS output with a bit rate of 1 μ bps ~ 1 Gbps. Combine the digital bus with the analog channels to realize mixed-signal outputs.

• Enhanced Dual Channel Functionality

Two Dual-Channel Operation Mode



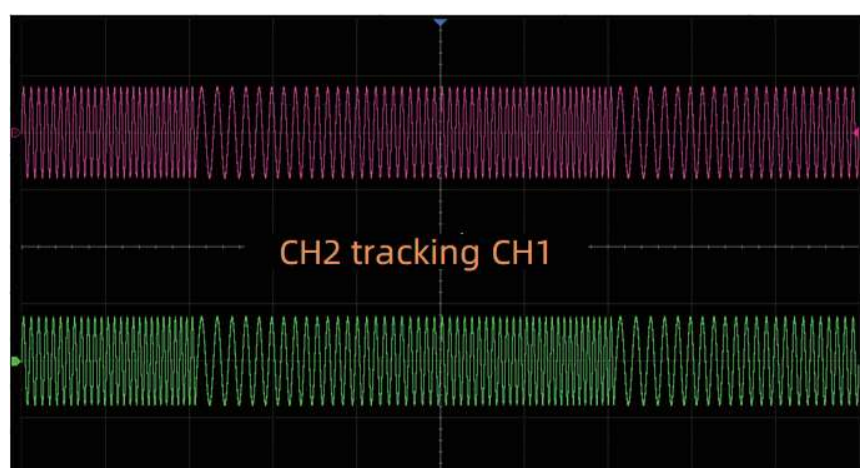
Independent mode

enables the two channels to be used as two independent generators. Independent mode also eliminated the discontinuity on the output when parameters (frequency, amplitude) change.



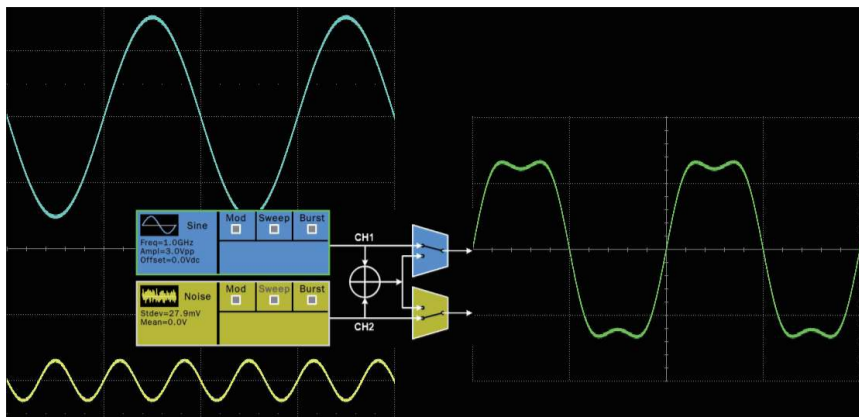
Phase-Locked mode

Automatically aligns the phases of each output.



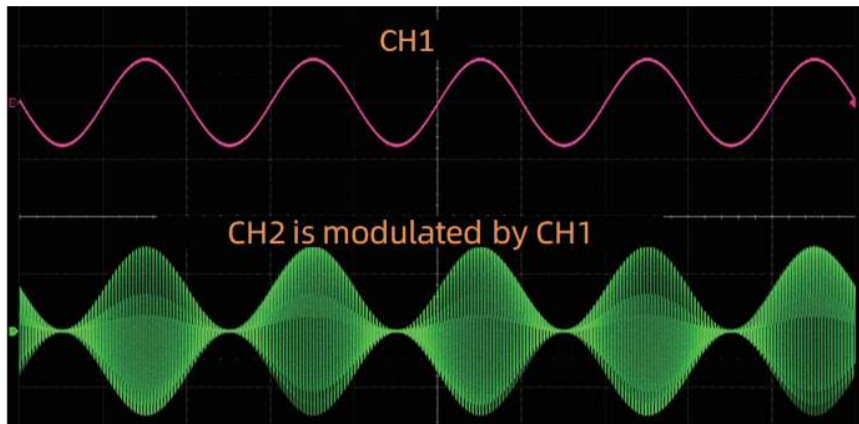
Track/Copy/Coupling

The track, copy and coupling functions between the two channels can quickly transfer the parameters of one channel to the other according to the requirements, greatly simplify the operation and meet the requirements of fast and synchronous switching waveforms.



Waveform Combining

Superimposes CH1 and CH2 waveforms internally and provides the combined waveform to a user-selected output. It easily combines basic waveforms, random noise, modulation signals, sweep signals, burst signals, EasyPulse waveforms, and TrueArb waveforms without external connections or complex editing.



Channel Modulation

One channel can modulate the other without external connections. This feature provides an easy method for complex modulation waveform creation. The modulating wave channel can be directly output and compared with the modulated signal.



● SigIQPro Signal Generation Software (Optional)

SigIQPro is a flexible PC-based signal generation software that takes signal generation to a whole new level, making it easy to generate complex signals that are fully compliant with Bluetooth, IoT and other communication standards. SIGLENT instruments and SigIQPro signal generation software integrate simulation, design and test to easily meet the needs of users at all stages of design, R&D, and production.

Specifications

Model	SDG7102A	SDG7052A	SDG7032A
Number of channels	2 Differential/Single-ended		
Bandwidth	1 GHz	500 MHz	350 MHz
Sample rate	5 GSa/s		
Vertical resolution	14-bit		
Arbitrary waveform	0.01 Sa/s ~ 2.5 GSa/s sample rate; 24 pts ~ 512 Mpts/ch memory depth, with segment editing and playback		
Vector signal (Optional)	500 MS/s max symbol rate; Carrier DC ~ 1 GHz settable. Includes modulation modes such as ASK, PSK, FSK and QAM. EasyIQ software provides vector signal creation and editing		
Continuous waveform	Up to 1GHz, supports harmonic generation function		
Pulse	Min pulse width 1 ns, min. edge 500 ps pulse with low jitter, the rise/fall edge is independently fine adjustable, and the pulse width is fine adjustable		
Noise	Bandwidth 1 mHz ~ 1 GHz adjustable		
PRBS	Bit rate 1 μ bps ~ 312.5 Mbps, length PRBS3 ~ PRBS32		
Complex signal generation	Supports internal/external modulation, AM, FM, PM, PWM, FSK, PSK, ASK, etc.; Supports sweep; Support burst		
Dual-channel function	Inter channel tracking, coupling, and copying. Dual channel superposition function. Supports mutual modulation between channels		
Output range	24 Vpp analog output superimposed \pm 12 V DC offset, supports a maximum output range of \pm 24 V (48 V)		
Digital bus(Optional)	16-bit, LVTTTL or LVDS output Bit rate: 1 μ bps ~ 1 Gbps		
Interface	USB 2.0 Host x3, USB 2.0 Device(USBTMC) LAN 10M/100M (VXI-11/Telnet/Socket/WebServer) EXT MOD/CNT, 10MHz In, 10MHz Out, Marker x2, Trigger In/Out		
Interaction	5" TFT-LCD with capacitive touch screen (800x480) Supports mouse operation Supports Webserver Supports SCPI control		

Ordering Information

Product Description	
SDG7102A	1 GHz, 5 GSa/s, 14-bit, 512 Mpts, 5-inch capacitive touch screen
SDG7052A	500 MHz, 5 GSa/s, 14-bit, 512 Mpts, 5-inch capacitive touch screen
SDG7032A	350 MHz, 5 GSa/s, 14-bit, 512 Mpts, 5-inch capacitive touch screen
Standard Configurations	
USB cable×1	
BNCcoaxial cable×2	
Quick start ×1	
Power cord ×1	
Wireless mouse×1	
Optional Configurations	Model
20 dB Attenuator	ATT-20dB
Single Instrument Rack Mount Kit	SSG-RMK
USB-GPIB Adapter	USB-GPIB
High precision OCXO (Installed at the factory, cannot be added after purchase)	10M_OCXO_L
Digital Bus Kit-LVTTL	DIG-LVTTL
Digital Bus Kit-LVDS (Without RF cables)	DIG-LVDS
Digital Bus Kit-LVDS (With 32 RF cables)	DIG-LVDS-2
IQ Signal Generator Function (software)	SDG-7000A-IQ
350 MHz to 500 MHz bandwidth upgrade (software)	SDG-7000A-BW05
500 MHz to 1 GHz bandwidth upgrade (software)	SDG-7000A-BW10