

Data Sheet

Function/Arbitrary Waveform Generator

- ◆ DDS technology, dual-channel output
- ◆ 125MSa/s sample rate, 14bit vertical resolution.
- ◆ 5 types of standard output waveform, built-in 46 arbitrary waveforms(include DC)
- ◆ Complete set of modulation functions: AM, FM, PM, FSK, ASK, PWM, linear/logarithmic sweep, burst
- ◆ Abundant input/output: waveform output, Synchronous signal output, External modulation source input, 10MHz clock input, external trigger input, internal trigger output etc
- ◆ Channel duplication function
- ◆ Built-in accurate frequency counter enables to measure ranges 100mHz-200MHz (single channel)
- ◆ Standard interfaces: USB Device, USB Host, Optional interface: GPIB
- ◆ Supplied with powerful arbitrary editing software
- ◆ Remote control support



Application fields:

- ◆ Analog sensor
- ◆ Simulation environment signals
- ◆ Circuit function test
- ◆ IC test
- ◆ Researching and training

Edit arbitrary waveform

Enables edition of 14-bit 16kpts arbitrary output waveforms, Arbitrary editing software EasyWave provides 9 standard waveforms: Sine, Square, Ramp, Pulse, ExRise, ExpFall, Sinc, Noise and DC, which meets all engineers' basic needs; In addition, it provides plenty of ways of manual drawing, point-to-point line drawing and arbitrary point drawing. It facilitates to create complex waveforms; Multi-file screen management helps users to edit multiple-waveform simultaneously. It provides 10 Storage in non-volatile RAM. You can edit and store more waveforms by EasyWave.

Reasonable price & Outstanding performance

SDG1000 series Function/Arbitrary Waveform Generator is a new family member of SIGLENT with friendly design: 3.5 inch TFT-LCD display; Built-in Chinese/English language; Online help function; Support USB and internal storage, facilitate files management; Special connection terminal for grounding.

Arbitrary waveform output

Built-in 46 arbitrary waveforms (include DC), including math, engineering and other commonly-used waveforms.

Complete set of modulation functions, sweep output,

burst output

- ◆ Complete set of modulation functions: AM, DSB-AM, FM, PM, FSK, ASK, PWM, the modulation waveform can be observed directly, which it is suitable for education and training;
- ◆ Sweep output: change output frequency from starting frequency to ending one within sweeping time, Sweeping time range: 1ms~500s. The carrier can be Sine, Square, Triangle and Arbitrary waveforms.
- ◆ Burst output: It can periodically generate pulse sequence. Internal counter and external control signal are available to control burst output.

Dual-channel

Duplicating function

- ◆ Channel duplicating: allows to duplicate parameters from one channel to the other.

Built-in frequency counter

Wide frequency range: 100mHz~200MHz.
Measurable parameters: frequency, period, duty-cycle, positive pulse width, negative pulse width
Setting: it can set DC/AC coupling, trigger level and high frequency rejection.

Specification

Model	SDG1010	SDG1025	SDG1050
Max. output frequency	10MHz	25MHz	50MHz
Output channels	2		
Sample rate	125MSa/s		
Arbitrary waveform length	16kpts		
Frequency resolution	1 μ Hz		
vertical resolution	14bits		
Waveform	Sine, Square, Ramp, Pulse, Gaussian Noise. 46 built-in arbitrary waveforms (include DC)		
Modulation	AM, DSB-AM, FM, PM, FSK, ASK, PWM, Sweep, Burst		
Frequency counter	Frequency range:100mHz~200MHz		
Standard interface	USB Host & Device		
Dimension	W x H x D=229mm x 105mm x 281mm		

Attention:

All these specifications apply to the SDG1000 Series Function/Arbitrary Waveform Generator unless otherwise explanation. To satisfy these specifications, the following conditions must be met first:

1. The instrument has been operating continuously for more than 30 minutes within specified operating temperature range (18°C~28°C).
2. The temperature variation does not exceed 5°C.

Note: all specifications are guaranteed unless where noted 'typical'.

Frequency Specification			
	SDG1010	SDG1025	SDG1050
Waveform	Sine, Square, Ramp, Pulse, Noise, Arbitrary		
Sine	1μHz ~ 10MHz	1μHz ~ 25MHz	1μHz ~ 50MHz
Square	1μHz ~ 10MHz	1μHz ~ 25MHz	1μHz ~ 25MHz
Pulse	500μHz ~ 5MHz	500μHz ~ 5MHz	500μHz ~ 5MHz
Ramp/Triangular	1μHz ~ 300kHz	1μHz ~ 300kHz	1μHz ~ 300kHz
Gaussian white noise	>10MHz (-3dB)	>25MHz (-3dB)	50MHz (-3dB)
Arbitrary	1μHz ~ 5MHz	1μHz ~ 5MHz	1μHz ~ 5MHz
Resolution	1μHz		
Accuracy	Within 90days: ±50ppm; within 1 year: ±100ppm 18°C~28°C		
Temperature coefficient	<5ppm/°C		

Sine Spectrum Purity	
Harmonic Distortion	CH1/CH2
DC~1MHz	-60dBc
1MHz~5MHz	-53dBc
5MHz~25MHz	-35dBc
25MHz~50MHz	-32dBc
Total harmonic waveform distortion	DC~20kHz, 1Vpp<0.2%
Spurious signal(non-harmonic)	DC~1MHz<-70dBc 1MHz~10MHz<-70dBc+6dB/octave
Phase noise	10kHz Offset, -108dBc/Hz (typical value)

Square		
Rise/fall time	<12ns (10% ~ 90%)	
Overshoot	<5% (typical, 1kHz, 1Vpp)	
Duty Cycle	1μHz ~ 10MHz	20%~80%
	10MHz~20MHz	40%~60%
	20MHz~25MHz	50%
Asymmetric(50% Duty Cycle)	1% of period+20ns (typical, 1kHz, 1Vpp)	
Jitter	0.1% of period (typical, 1kHz, 1Vpp)	

Ramp/Triangle	
Linearity	<0.1% of Peak value output (typical, 1kHz, 1Vpp, 100% symmetric)
Symmetry	0%~100%

Pulse	
Pulse width	1998s, Max. 16ns, Min. 1ns resolution
Rise/Fall time (10% ~ 90%, typical, 1 kHz, 1Vpp)	7ns
Duty Cycle	0.1% Resolution
Overshoot	<5%
Jitter (pk-pk)	8ns

Arbitrary	
Waveform length	16k points
Vertical resolution	14bits
Sample rate	125MSa/s
Min. Rise/Fall time	7ns (typical)
Jitter(pk-pk)	8ns (typical)
Storage in non-volatile RAM memory (10 in total)	10 waveforms

Output Specification		
Output	CH1	CH2
Amplitude	2mVpp~10Vpp (50Ω, ≤10MHz) 2mVpp~5Vpp (50Ω, >10MHz) 4mVpp~20Vpp (HiZ, ≤10MHz) 4mVpp~10Vpp (HiZ, >10MHz)	2mVpp~3Vpp (50Ω) 4mVpp~6Vpp (HiZ)
Vertical accuracy (100 kHz sine)	±(0.3dB+1mVpp of setting value)	±(0.3dB+1mVpp of setting value)
Amplitude flatness (compared to 100 kHz sine, 5Vpp)	±0.3 dB	
Channel phase deviation	< 400ps (classic value, sine, 50MHz, 4vpp)	
Cross talk	<-70dBc	

DC Offset		
Range(DC)	±5V (50Ω) ±10V (high impedance)	±1.5V (50Ω) ±3V (high impedance)
Offset accuracy	±(setting offset value *1%+3mV)	±(setting offset value *1%+3mV)

Waveform Output		
Impedance	50Ω (typical)	50Ω (typical)

AM Modulation(CH1/CH2)	
Carrier	Sine, Square, Ramp, Arbitrary (except DC)
Source	Internal/External
Modulation waveform	Sine, Square, Ramp, Noise, Arbitrary (2mHz ~ 20kHz)
Modulation depth	0% ~ 120%
FM Modulation(CH1/CH2)	
Carrier	Sine, Square, Ramp, Arbitrary (except DC)
Source	Internal/External
Modulation waveform	Sine, Square, Ramp, Noise, Arbitrary (2mHz~20kHz)
Frequency deviation	0 ~0.5*bandwidth 1mHz resolution
PM Modulation(CH1/CH2)	
Carrier	Sine, Square, Ramp, Arbitrary (except DC)
Source	Internal/External
Modulation waveform	Sine, Square, Ramp, Noise, Arbitrary (2mHz~20kHz)
Phase Deviation	0~360° ,0.1°Resolution
FSK Modulation(CH1/CH2)	
Carrier	Sine, Square, Ramp, Arbitrary (except DC)
Source	Internal/External
Modulation waveform	50% duty-cycle square waveform (2mHz~50kHz)
ASK Modulation(CH1/CH2)	
Carrier	Sine, Square, Ramp, Arbitrary (except DC)
Source	Internal/External
Modulation waveform	50%duty-cycle square waveform (2mHz~50kHz)
PWM Modulation(CH1/CH2)	
Frequency	500μHz~20kHz

Source	Internal/External
Modulation waveform	Sine, Square, Ramp, Arbitrary (except DC)
External Modulation range	-6V~+6V (maximum width deviation)
Sweep(CH1/CH2)	
Carrier	Sine, Square, Ramp, Arbitrary (except DC)
Type	linear/logarithmic
Direct	Up/down
Sweep time	1ms~500s
Trigger source	Manual, external, internal
Burst(CH1/CH2)	
Waveform	Sine, Square, Ramp, Pulse, Arbitrary (except DC)
Type	Count (1~50,000 periods), infinite, Gated
Start/Stop phrase	0°~+360°
Internal period	1μs~500s
Gated source	External trigger
Trigger source	Manual, External or Internal

Rear Panel Connector

External modulation	±6 V=100% modulation >5kΩ input impedance
External trigger	TTL compatible
Note: The external input voltage can't be over ±6V, otherwise instrument gets damaged.	

Trigger Input

Input Level	TTL compatible
Slope	Up or down (optional)
Pulse width	>100ns
Input impedance	>5kΩ, DC coupling

Trigger Output

Voltage level	TTL compatible
Pulse width	>400ns
Output impedance	50Ω (typical)
Max. frequency	1MHz

Reference Frequency Input

Voltage level	5 Vpp ~ 5.5 Vpp
Frequency range	10MHz±1kHz
Input impedance	>5kΩ,AC coupling

SYNC Output

Voltage level	TTL compatible
Pulse width	>50ns
Output impedance	50Ω (typical)
Max. frequency	2MHz

Frequency Counter

Measurement	Frequency, Period, Positive/negative pulse width, duty cycle		
Frequency range	Single Channel:100mHz~200MHz		
Frequency resolution	6bits/s		
Voltage range (non-modulated signal)			
Manual	DC coupling	DC offset range	±1.5VDC
		100mHz~100MHz	50mVrms~±2.5V
		100MHz~200MHz	100mVrms~±2.5V
	AC coupling	1Hz~100MHz	50mVrms~5Vpp
		100MHz~200MHz	100mVrms~5Vpp
Pulse width and duty-cycle measurement	1Hz~10MHz (50mVrms~5Vpp)		
Input adjustment	Input impedance		1MΩ
	Coupling mode		AC,DC
	High-frequency rejection		ON/OFF
Trigger level range	-3V~ +1.8V		

General Specification

Display	
Display type	3.5 inch TFT-LCD
Resolution	320×RGB×240
Color depth	24bit
Contrast Ratio	350:1 (typical)
Luminance	300cd/m ² (typical)
Power	
Voltage	100~240 VAC _{RMS} , 50/60Hz 100~120 VAC _{RMS} , 440Hz
Consumption	50W Max
Fuse	1.25A, 250V
Environment	
Temperature	Operation:0℃ ~40℃
	Storage:-20℃ ~60℃
Humidity range	Below +35℃:≤90% relative humidity
	+35℃~+40℃:≤60% relative humidity
Altitude	Operation: below 3,000 meters
	Storage: below 15,000 meters
Electromagnetic Compatibility	2004/108/EC Directive
	Applicable standards EN 61326-1:2006
	EN 61000-3-2:2006 + A2:2009
	EN 61000-3-3:2008
Safety	2006/95/EC Low Voltage Directive
	EN 61010-1:2010/EN 61010-031:2002+A1:2008
	UL 61010-1:2012,CAN/CSA-C22.2 No.61010-1:2012
	UL 61010-2-030:2012,CAN/CSA-C22.2 No.61010-2-030:2012
Others	
Dimension	Width:229mm
	Height:105mm
	Depth:281mm
Weight	N.W: 2.6Kg
	G.W: 3.4Kg
IP protection	
IP20	
Calibration Cycle	
1year	

About SIGLENT

SIGLENT is an international high-tech company, concentrating on R&D, sales, production and services of test & measurement instruments.

SIGLENT began to research and develop the Digital Oscilloscope independently in 2002. After a decade of development products have included digital oscilloscopes, isolated handheld oscilloscopes, function/arbitrary waveform generators, digital multimeters, DC power supplies, spectrum analyzers, and other general purpose test instrumentation. Since SIGLENT's first oscilloscope, the ADS 7000 series produced in 2005, SIGLENT has maintained the highest annual growth rate and has been the fastest developing DSO manufacturer over the past 10 years. Nowadays, SIGLENT Technologies is the leading manufacturer of oscilloscopes by shipments in China.

Distributor:

Welectron.

Haid-und-Neu-Str. 7
76131 Karlsruhe, Germany
Phone: +49 721 909819-90
Email: info@welectron.com
Web: www.welectron.com

Headquarters:

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

USA:

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

Europe:

SIGLENT TECHNOLOGIES EUROPE GmbH
Liebigstraße 2-20, Gebäude 14
22113 Hamburg, Germany
Phone: +49 819-95946
Fax: +49 819-95947
Email: info-eu@siglent.com
Web: www.siglenteu.com

Follow us on
Facebook: SiglentTech

