![Chipsmall logo]

Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

Contact us

SFG-20X

5 & 10 MHz Arbitrary/Function Signal Generators

Applications

The SFG-20X Series Signal Generators are ideally suited for applications where value and quality are equally important such as for:

- Educational labs
- Technical schools
- Internal training facilities
- Hobbyists

Overview

The Global Specialties SFG-20X Serieis are single channel function/arbitrary waveform generators, capable of generating a 10 MHz sine wave (SFG-210). They have an informative, easy-to-read color display, user-friendly controls and a numeric keypad which allows users to easily configure waveform properties. In addition, they features non-volatile built-in memory to create, store, and recall arbitrary waveforms up to 16,000 points with 14-bit vertical resolution. 46 predefined arbitrary waveforms are also available for output. A standard USB interface on the rear panel allows users to easily interface with application software to create and load arbitrary waveforms into the instrument.

Features

- 5 MHz Bandwidth (SFG-205)
- 10 MHz Bandwidth (SFG-210)
- 125 MSa/s sample rate
- 14 bit vertical resolution
- 3.5-inch TFT-LCD color display
- USB interface
- 16k pts arbitrary waveform memory
- 88 built-in predefined arbitrary waveforms
- Store/recall up to 10 instrument settings
- DDS technology
- 5 standard output waveforms
- 46 built-in arbitrary waveforms
- Modulations: AM, DSB-AM, FM, PM, FSK, ASK, PWM, Sweep, and Burst
- EasyWave arbitrary waveform editing software included

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SDG800 Series DataSheet

Specification

Model	SFG-205	SFG-210
Max. output frequency	5 MHz	10 MHz
Output channels	1	
Sample rate	125MSa/s	
Arbitrary waveform length	16kpts	
Frequency resolution	1µHz	
vertical resolution	14bits	
Waveform	Sine, Square, Ramp, Pulse, Gaussian Noise. 46 built-in arbitrary waveforms (including DC)	
Modulation	AM, DSB-AM, FM, PM, FSK, ASK, PWM, Sweep, Burst	
Standard interface	USB Host & USB Device	
Dimension	W x H x D=229mm x 105mm x 281mm	

Attention:

All specifications apply to the SFG-20X 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 (18ºC~28°C.
2. The temperature variation does not exceed 5℃.

Note: All specifications subject to change.

Frequency Specification

Model	SFG-205	SFG-210	
Waveform	Sine, Square, Ramp, Pulse, Noise, Arbitrary		
Sine	1µHz ~ 5MHz	1µHz ~ 10MHz	1µHz ~ 30MHz
Square	1µHz ~ 5MHz	1µHz ~ 10MHz	1µHz ~ 10MHz
Pulse	500µHz ~ 5MHz		
Ramp/Triangular	1µHz ~ 300kHz		
Gaussian White noise	>5MHz (-3dB)	>10MHz (-3dB)	>30MHz (-3dB)
Arbitrary	1µHz ~ 5MHz		
Resolution	1µHz		
Accuracy	Within 90days ±50ppm within 1 year ±100ppm		
Temperature Coefficient	<5ppm/°C		

Sine Wave

Harmonic Distortion	DC~1MHz <-60dBc
	1MHz~10MHz <-55dBc
	10MHz~30MHz <-50dBc
Total Harmonic Waveform Distortion	DC~20kHz,1Vpp<0.2%
Spurious Signal (non-harmonic)	DC~1MHz<-70dBc 1MHz~10MHz<-60dBc 10MHz~30MHz<-55dBc
Phase Noise	10kHz Offset,–108dBc/Hz (typical value)

Square Wave

Rise/fall time	<24ns(10% ~ 90%)
Overshoot	<5%(typical,1kHz,1Vpp)
Duty Cycle	20%~80%
Asymmetric (50% Duty Cycle)	1% of period+20ns(typical,1kHz,1Vpp)
Jitter	500ps + 0.001% of period

Ramp/Triangle Wave

Linearity	<0.1% of Vpp(typical,1kHz,1Vpp,100% symmetric)
Symmetry	0%~100%

Pulse Wave

Pulse width	16ns, Min. 1ns resolution
Rise/Fall time (10% ~ 90%,typical)	20ns~1.6ks
Duty Cycle	0.1%Resolution
Overshoot	<5%
Jitter(pk-pk)	500ps + 0.001% of period

SFG-20X Series DataSheet

Arbitrary Wave

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

Output Specification

Amplitude	2mVpp~10Vpp(50Ω,≤10MHz) 2mVpp~5Vpp(50Ω,>10MHz) 4mVpp ~ 20 Vpp（High impedance, <10MHz） 4mVpp ~ 10Vpp（High impedance,>10MHz）
Vertical accuracy (100 kHz sine)	±(1mVpp +0.3dB of setting value)
Amplitude flatness (compared to 100 kHz sine,5Vpp)	±0.3 dB
Impedance	50Ω
Protection	short-circuit protection

DC Offset

Range(DC)	±5V(50Ω) ±10V(High-Z)
Offset accuracy	±(|setting offset value|*1%+3mV)

AM Modulation

Carrier	Sine, Square, Ramp, Arbitrary(except DC)
Modulation waveform	Sine, Square, Ramp, Noise, Arbitrary (2mHz ~ 20kHz)
Modulation depth	0% ~ 120%

DSB-AM Modulation

Carrier	Sine, Square, Ramp, Arbitrary(except DC)
Modulation waveform	Sine, Square, Ramp, Noise, Arbitrary (2mHz ~ 20kHz)
Modulation depth	0% ~ 120%

FM Modulation

Carrier	Sine, Square, Ramp, Arbitrary(except DC)
Modulation waveform	Sine, Square, Ramp, Noise, Arbitrary(2mHz~20kHz)
Frequency deviation	0 ~0.5*bandwidth 1mHz resolution

PM Modulation	
Carrier	Sine, Square, Ramp, Arbitrary(except DC)
Modulation waveform	Sine, Square, Ramp, Noise, Arbitrary (2mHz~20kHz)
Phase Deviation	0~360° ,0.1°Resolution

FSK Modulation	
Carrier	Sine, Square, Ramp, Arbitrary(except DC)
Modulation waveform	50% duty-cycle square waveform(2mHz~50kHz)

ASK Modulation	
Carrier	Sine, Square, Ramp, Arbitrary(except DC)
Modulation waveform	50%duty-cycle square waveform(2mHz~50kHz)

PWM Modulation	
Frequency	500μHz~20kHz
Modulation waveform	Sine, Square, Ramp, Arbitrary(except DC)

Sweep	
Carrier	Sine, Square, Ramp, Arbitrary(except DC)
Type	linear/logarithmic
Direct	Up/down
Sweep time	1ms~500s
Trigger source	Manual, external, internal

Burst	
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

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

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

SFG-20X Series DataSheet

General Specification

Display	
Display type	3.5 inch TFT-LCD
Resolution	320×RGB×240
Color depth	24 bit
Contrast Ratio	350:1(typical)
Luminance	300 cd/m^2(typical)
Power	
Voltage	100~240 VAC$_{RMS,}$ 45~66Hz,CATII
	100~127 VAC$_{RMS,}$ 45~440Hz,CATII
Consumption	<30 W
Fuse	1.25 A,250 V
Environment	
Temperature	Operation:0°C~40°C
	Storage:-20°C~60°C
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
Others	
Dimension	Width: 229 mm
	Height: 105 mm
	Depth: 281 mm
Weight	N.W: 2.6 kg
	G.W: 3.4 kg
IP protection	
IP2X	
Calibration Cycle	
1year	

Standard Accessories

● **Quick Start Guide (printed)**
● **Power Cord**
● **USB Cable**
● **EasyWave Software (download)**
● **User Manual (download)**