20 MHz/10MHz/7MHz/4MHz DDS FUNCTION GENERATOR

SFG-2100 Series (20/10/7/4 MHz)

Based on the Direct Digital Synthesized (DDS) technology and unique FPGA design, the SFG-2000/2100 Series Function Generators are built with exceptionally high performance far exceeding that of any conventional function generators at a very competitive price. Stable output frequency, low distortion, and fine frequency resolution are the most remarkable characteristics of this product series.

The SFG-2000/2100 Series include four members in each family at 4MHz, 7MHz, 10MHz and 20MHz bandwidth(perivd), The SFG-2100 Series have additional functions of Sweep, AM/FM modulation, and External Counter. As a result of the ±20ppm stability level and output waveform accuracy, The SFG-2000/2100 Series well fit into a wide variety of applications, such as signal generator for experiment labs, reference signal for PLL (Phase Locked Loop), and calibration and adjustment source for electronic devices.

SFG-2000 Series (20/10/7/4 MHz)

FEATURES

* DDS Technology and FPGA Chip Design
* Frequency Range:0.1Hz~4/7/10/20 MHz
* High Frequency Accuracy : ±20ppm
* High Frequency Stability : ±20ppm
* Frequency Resolution : 100mHz
* Low Distortion Sine Wave : -55dBc, 0.1Hz ~ 200kHz
* Front Panel Setting Save/Recall with 10 Groups of Setting Memories
* Built-in 9 Digits, 150MHz/High Resolution Counter (SFG-2100 Series Only)
* INT/EXT AM/FM Modulation (SFG-2100 Series Only)
* LIN/LOG Sweep Mode (SFG-2100 Series Only)

SPECIFICATIONS

	SFG-2000 Series				SFG-2100 Series			
MAIN								
	SFG-2004	SFG-2007	SFG-2010	SFG-2020	SFG-2104	SFG-2107	SFG-2110	SFG-2120
Frequency								
Range(For Sine, Square)	0.1Hz~ 4MHz	0.1Hz~ 7MHz	0.1Hz~ 10MHz	1Hz~ 20MHz	0.1Hz~ 4MHz	0.1Hz~ 7MHz	0.1Hz~ 10MHz	1Hz~ 20MHz
Range(For Triangle)	0.1Hz~1MHz (1Hz ~ 1MHz for SFG-2020/2120)							
Resolution	0.1Hz (1Hz for SFG-2020/2120)							
Stability	±20 ppm							
Accuracy	±20 ppm							
Aging	±5 ppm / year							
Output Function	Sine, Square, Triangle							
Amplitude Range	2mV ~ 10Vpp(into 50Ω load)							
Impedance	50Ω±10%							
Attenuator	-20dB±1dBx2							
DC Offset	<-5V ~ >+5V(into 50Ω load)							
Duty Control	20% to 80% , 2Hz ~1MHz (Square wave only)							
Range Resolution	1%							
Display	9 digits LED display							
SINE WAVE								
Harmonics Distortion	-55dBc,0.1Hz～200kHz; -40dBc,0.2MHz～4MHz; -30dBc,4MHz～10MHz (Specification applied to both TTL/CMOS OFF and from MAX. to 1/10 level)							
Flatness(Relative to 1kHz)	<±0.3dB, 0.1Hz~1MHz; <±0.5dB, 1MHz~4MHz; <±2dB, 4MHz~10MHz							
TRIANGLE WAVE								
Linearity	≥98%,0.1Hz～100kHz;≥95%,100kHz～1MHz							
SQUARE WAVE								
Symmetry	±1% of period +4ns, 0.1Hz～100kHz							
Rise or Fall Time	≤25ns at maximum output.(into 50Ω load)							
CMOS OUTPUT								
Level	4Vpp±1Vpp～15Vpp±1Vpp adjustable; Rise or Fall Time≤120ns							
TTL OUTPUT								
Level	≥3Vpp							
Fan Out	20 TTL load							
Rise and Fall Time	≤ 25ns							
SWEEP OPERATION								
Rate	—				100:1 ratio max. and adjustable(*)			
Time					1Sec～30Sec adjustable(**)			
Mode					Lin./Log. switch selector			
AMPLITUDE MODULATION								
Depth & Modulation	—				0～100% ; 400Hz(INT),			
Frequency					DC～1MHz(EXT)			
Carrier BW					100Hz～5MHz(-3dB)			
EXT Modulation Sensitivity					≤10Vpp for 100%modulation			
FREQUENCY MODULATION								
Deviation & Modulation	—				≥±50kHz,center at 1MHz,			
Frequency					400Hz fixed(INT),1kHz fixed(EXT)			
EXT Modulation Sensitivity					≤10Vpp for 10% modulation(center at 1kHz)			
FREQUENCY COUNTER								
Range	—				5Hz～150MHz			
Accuracy					Time base accuracy±1count			
Time base					±20ppm(23℃±5℃)after 30 minutes warm up			
Resolution					100nHz for 1Hz ; 0.1Hz for 100MHz			
Input Impedance					1MΩ/150pf			
Sensitivity					≤35mVrms (5Hz~100MHz)			
					≤45mVrms (100MHz~150MHz)			

NOTE : 1.(*) In order to get the maximum sweep span, the sweep time needs to be tuned on when adjusting the sweep span.
2.(**) When the sweep time is too long, the stop frequency will reach and stay at the maximum frequency of the instrument until the end of the sweep cycle.

SFG-2100 Series

Rear Panel

SPECIFICATIONS

	SFG-2000 Series				SFG-2100 Series			
	SFG-2004	SFG-2007	SFG-2010	SFG-2020	SFG-2104	SFG-2107	SFG-2110	SFG-2120
STORE/RECALL FUNCTION								
	10 groups of panel settings							
POWER SOURCE								
	AC115V±10%, AC230V+10%/-15%, 50/60Hz							
DIMENSION & WEIGHT								
	266(W)x107(H)x293(D) mm; Approx. 3.1kg				266(W)x107(H)x293(D) mm; Approx. 3.2kg			

ORDERING INFORMATION

SFG-2004 4MHz DDS Function Generator
SFG-2007 7MHz DDS Function Generator
SFG-2010 10MHz DDS Function Generator
SFG-2020 20MHz DDS Function Generator
SFG-2104 4MHz DDS Function Generator with Counter, Sweep & AM, FM Modulation
SFG-2107 7MHz DDS Function Generator with Counter, Sweep & AM, FM Modulation
SFG-2110 10MHz DDS Function Generator with Counter, Sweep & AM, FM Modulation
SFG-2120 20MHz DDS Function Generator with Counter, Sweep & AM, FM Modulation

ACCESSORIES :
User manual x 1, Power Cord x 1
GTL-101 test lead x1 (SFG-2000 Series)
GTL-101 test lead x2 (SFG-2100 Series)

SELECTION GUIDE

FREQUENCY RANGE	4MHz		7MHz		10MHz		20MHz	
MODEL	SFG-2004	SFG-2104	SFG-2007	SFG-2107	SFG-2010	SFG-2110	SFG-2020	SFG-2120
DUTY	✓	✓	✓	✓	✓	✓	✓	✓
TTL/CMOS	✓	✓	✓	✓	✓	✓	✓	✓
DC OFFSET	✓	✓	✓	✓	✓	✓	✓	✓
LIN/LOG SWEEP		✓		✓		✓		✓
AM/FM MODULATION		✓		✓		✓		✓
EXT COUNTER		✓		✓		✓		✓

SIGNAL SOURCES