

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



NEW

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



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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 : ± 20 ppm
- * High Frequency Stability : ± 20 ppm
- * 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)

Based on Direct Digital Synthesized (DDS) technology and unique FPGA design, 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.

SFG-2000/2100 Series include four members in each family at 4MHz, 7MHz, 10MHz and 20MHz bandwidth, respectively. SFG-2100 Series has additional functions of Sweep, AM/FM modulation, and External Counter. As a result of the ± 20 ppm stability level and output waveform accuracy, SFG-2000/2100 Series well fits 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.

SPECIFICATIONS								
	SFG-2000 Series				SFG-2100 Series			
MAIN								
Frequency	SFG-2004	SFG-2007	SFG-2010	SFG-2020	SFG-2104	SFG-2107	SFG-2110	SFG-2120
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 50 Ω load)							
Impedance	50 Ω $\pm 10\%$							
Attenuator	-20dB ± 1 dBx2							
DC Offset	< -5V ~ > +5V(into 50 Ω 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)	$\leq \pm 0.3$ dB, 0.1Hz~1MHz; $\leq \pm 0.5$ dB, 1MHz~4MHz; $\leq \pm 2$ dB, 4MHz~10MHz							
TRIANGLE WAVE								
Linearity	$\geq 98\%$, 0.1Hz~100kHz; $\geq 95\%$, 100kHz~1MHz							
SQUARE WAVE								
Symmetry	$\pm 1\%$ of period + 4ns, 0.1Hz~100kHz							
Rise or Fall Time	≤ 25 ns at maximum output.(into 50 Ω load)							
CMOS OUTPUT								
Level	4Vpp ± 1 Vpp~15Vpp ± 1 Vpp adjustable; Rise or Fall Time ≤ 120 ns							
TTL OUTPUT								
Level	≥ 3 Vpp; FanOut: 20 TTL load; Rise or Fall Time: ≤ 25 ns							
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), DC~1MHz(EXT)			
Frequency	—				100Hz~5MHz(-3dB)			
Carrier BW	—				≤ 10 Vpp for 100% modulation			
EXT Modulation Sensitivity	—							
FREQUENCY MODULATION								
Deviation & Modulation	—				≥ 0 ~ ± 50 kHz, center at 1MHz,			
Frequency	—				400Hz fixed(INT), 1kHz fixed(EXT)			
EXT Modulation Sensitivity	—				≤ 10 Vpp for 10% modulation(center at 1kHz)			
FREQUENCY COUNTER								
Range	—				5Hz~150MHz			
Accuracy	—				Time base accuracy ± 1 count			
Time base	—				± 20 ppm(23 $^{\circ}$ C ± 5 ^{\circ}C) after 30 minutes warm up			
Resolution	—				The maximum resolution is 100nHz for 1Hz and 0.1Hz for 100MHz			
Input Impedance	—				1M Ω /150pf			
Sensitivity	—				≤ 35 mVrms (5Hz~100MHz)			
	—				≤ 45 mVrms (100MHz~150MHz)			



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 Setting memories							
POWER SOURCE	AC115V ±10%, AC230V ±10%/-15%, 50/60Hz							
DIMENSION & WEIGHT	266(W)×107(H)×293(D) mm; Approx. 3.1kg				266(W)×107(H)×293(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 × 1, Power Cord × 1	
GTL-101 ×1 (SFG-2000 Series)	
GTL-101 ×2 (SFG-2100 Series)	

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

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		✓		✓		✓		✓