5MHz~20MHz LOW-COST DDS FUNCTION GENERATOR

DFG-2005/2010/2020

The DFG-2000 series LOW-COST function generators with maximum frequency of 5MHz, 10MHz and 20MHz were designed based on Direct Digital Synthesis (DDS) technology providing flexible performance and system features for basic scientific and industrial requirements. These models are equipped with 8 bit resolution, 100MSa/s sampling rate, 1024 pts memory length and 32 built-in waveforms for various waveforms for different needs.

The DFG-2000 series have additional functions of multiple modulations of FM, FSK, ASK and PSK, 200MHz external frequency counter, 40 sets memories and multiple protections. Low-cost, stable output frequency, high accuracy and low distortion make DFG-2000 series an ideal solution for an accurate and affordable signal source for industrial, scientific research and educational applications.

DFG-2020

DFG-2005

DFG-2010

Features

- Max. output frequency of 5MHz/10MHz/20MHz
- 2 output channels
- Direct Digital Synthesis technology (DDS)
- Min. output amplitude 1mV (50Ω) with good stability
- Sampling rate 100MSa/s, vertical resolution 8 bits and waveform length 1024 points
- 32 built-in waveforms
- 40 sets save & recall for panel settings
- Modulations: FM, FSK, ASK, PSK
- Frequency sweep, amplitude sweep, burst and TTL output functions
- Over voltage, over current, short circuit and reverse voltage protections
- High speed rotary dial and keypad input
- Standard 200MHz external frequency counter
- RS-232 interface for PC remote control
- RS232 cable & RS232 to USB cable provided

DFG-2005/2010/2020

Technical Specification

Model		DFG-2005	DFG-2010	DFG-2020
Output frequency		1μHz~5MHz	1μHz~10MHz	1μHz~20MHz
Waveform				
Output waveform		32 built-in waveforms, including Sine, Square, Triangle, Ramp, Pulse, etc.		
Waveform length		1024 points		
Vertical resolution		8 bits		
Sampling rate		100MSa/s		
Sine	Harmonic distortion	≥40dBc (<1MHz); ≥35dBc (1~20MHz)		
	Total distortion	≤1% (20Hz~200kHz)		
Square	Rise/fall time	≤35ns		
	Overshoot	≤10%		
	Duty cycle	1%~99%		
Frequency				
Range	Sine	1μHz~5MHz	1μHz~10MHz	1μHz~20MHz
	Square	1μHz~5MHz		
	Other	1μHz~1MHz		
Resolution		1μHz		
Accuracy		$\pm 5 \times 10^{-5}$		
Stability		$\pm 5 \times 10^{-6}$/3hours		
Output characteristics				
Amplitude	Range	2mVpp~20Vpp (open circuit, ≤10MHz)		
		2mVpp~15Vpp (open circuit, 10MHz~15MHz)		
		2mVpp~8Vpp (open circuit, 15MHz~20MHz)		
	Resolution	20mVpp (amplitude>2Vpp); 2mVpp (amplitude<2Vpp)		
	Accuracy	±(1%+2mVrms) (open circuit, 1kHz, sine)		
	Stability	±0.5% /3hours		
	Flatness	±5% (<10MHz); ±10% (>10MHz)		
	Output impedance	50Ω		
Offset	Range	±10V (open circuit, attenuation 0 dB)		
	Resolution	20mVdc		
	Accuracy	±(1%+20mVdc)		
Sweep				
Parameter		Frequency, Amplitude		
Range		Free to set start and stop point		
Time		100ms~900s		
Direction		Up, Down, Up-Down		
Mode		Linearity, Logarithmic		
Control		Auto sweep or manual sweep		
Frequency Modulation (FM)				
Carrier signal		CHA signal		
Modulating signal		CHB or external signal		
Deviation		0%~20%		

Model	DFG-2005	DFG-2010	DFG-2020
Shift Keying			
FSK	Free to set the hop frequency and the carrier frequency		
ASK	Free to set the hop amplitude and the carrier amplitude		
PSK	Hop phase: 0~360°, resolution: 1°		
Alternative rate	10ms~60s		
Burst			
Carrier signal	CHA signal		
Trigger signal	TTL_A signal		
Burst counts	1~65000 cycles		
Trigger source	Internal TTL, External, Single		
CHB output characteristics			
Output waveform	32 built-in waveforms, including Sine, Square, Triangle, Ramp, Pulse, etc.		
Waveform length	1024 points		
Vertical resolution	8 bits		
Sampling rate	12.5MSa/s		
Frequency range	Sine: 1μHz~1MHz; Other: 1μHz~100kHz		
Frequency resolution	1μHz		
Frequency accuracy	$\pm 1 \times 10^{-5}$		
Amplitude range	50mVpp~20Vpp (open circuit)		
Amplitude resolution	20mVpp		
Output impedance	50Ω		
CHB signal is used as burst signal			
Carrier signal	CHB signal		
Trigger signal	TTL_B signal		
Burst counts	1~65000 cycles		
Trigger source	Internal TTL, External, Single		
TTL output			
Waveform	Square, rise/fall time ≤20ns		
Frequency	10mHz~1MHz		
Amplitude	TTL, CMOS compatible, low<0.3V, high>4V		
Frequency counter			
Frequency range	1Hz~200MHz		
Input amplitude	100mVpp~20Vpp		
General			
Operation characteristics	Key operation for all functions, Menu display, Rotary dial adjustment		
Display	Mono LCD		
Interface	Optional RS-232 interface		
Operating environment	0~40℃, <80%RH		
Power source	AC110V/220V±10% selectable, 50/60Hz, Max. 45VA		
Standard accessories	Power cord x1, Operation manual x1, BNC-BNC cable x1, Test lead x1, Software CD x1, USB Cable x1, RS-232 cable x1		
Dimension (WxHxD)	260x110x385mm		
Weight	3.5kg		