

# 40MHz ~ 60MHz DDS FUNCTION GENERATOR

## DFG-2040 & DFG-2060



DFG-2040



DFG-2060

The DFG-2040 & DFG-2060 DDS function generators with high frequency of 40MHz and 60MHz are designed based on Direct Digital Synthesis (DDS) technology providing flexible performance and system features for basic scientific and industrial requirements.

The 10 bits resolution, 180MSa/s sampling rate, 16k pts memory length, and 32 built-in waveforms create various waveforms for different needs. PC software for USB and RS-232 interfaces control and 200MHz frequency counter are provided.

These models have additional functions of multiple modulations FM, AM, FSK, ASK and PSK, 40 sets memories and multiple protections. Low-cost, multi-functional, high accuracy and low distortion make them an ideal solution for an accurate and affordable signal source for industrial, scientific research and educational applications.

## Features

- Max. output frequency of 40MHz & 60MHz
- 2 output channels
- Direct Digital Synthesis technology (DDS)
- Min. output amplitude 1mV (50Ω) with good stability
- Sampling rate 180MSa/s, vertical resolution 10 bits, waveform length 16000 points
- 32 built-in waveforms
- 40 sets save & recall for panel settings
- Modulations: FM, AM, FSK, ASK, PSK
- Frequency sweep, amplitude sweep, burst, CHA & CHB ADD and TTL output functions
- Over voltage, over current, short circuit and reverse voltage protections
- High speed rotary dial and keypad input
- 200MHz external frequency counter
- USB & RS-232 interface for PC remote control
- USB cable & RS232 cable provided



# Technical Specification

Model		DFG-2040	DFG-2060
Output frequency		40μHz~40MHz	40μHz~60MHz
<b>Waveform</b>			
Output waveform		Sine, Square, Pulse, DC	
Waveform length		4~16000 points	
Vertical resolution		10 bits	
Sampling rate		180MSa/s	
Sine	Harmonic distortion	≥50dBc (<1MHz); ≥40dBc (1~20MHz); ≥30dBc (>20MHz)	
	Total distortion	≤0.5% (20Hz~200kHz)	
Square	Rise/fall time	≤20ns	
	Overshoot	≤5%	
	Duty cycle	50.00%	
Pulse	Rise/fall time	≤20ns	
	Overshoot	≤5%	
	Duty cycle	0.1%~99.9%	
<b>Frequency</b>			
Range	Sine	40μHz~40MHz	40μHz~60MHz
	Square	40μHz~20MHz	
	Other	40μHz~10MHz	
Resolution		40μHz (40μHz~2kHz); 40mHz (>2kHz)	
Accuracy		±(5x10 <sup>-5</sup> +40mHz)	
Stability		±5x10 <sup>-6</sup> /3hours	
<b>Output characteristics</b>			
Amplitude	Range	1m Vpp~10Vpp (into 50Ω, ≤10MHz)	
		1m Vpp~5Vpp (into 50Ω, 10MHz~40MHz)	
		1m Vpp~2Vpp (into 50Ω, ≥40MHz)	
		2m Vpp~20Vpp (open circuit, ≤10MHz)	
		2m Vpp~10Vpp (open circuit, 10MHz~40MHz)	
		2m Vpp~4Vpp (open circuit, ≥40MHz)	
	Resolution	20mVpp (amplitude>2V); 2mVpp (amplitude<2V)	
	Accuracy	±(1%+2mVrms) (open circuit, 1kHz, sine)	
Stability	±0.5% /3hours		
Flatness	±5% (<1MHz); ±10% (1~10MHz); ±20% (>10MHz)		
Output impedance	50Ω		
Offset	Range	±10V (open circuit, attenuation 0 dB)	
	Resolution	20mVdc	
	Accuracy	±(1%+20mVdc)	
<b>Sweep</b>			
Parameter		Frequency, Amplitude	
Range		Free to set start and stop point	
Time		100ms~600s	
Direction		Up, Down, Up-Down	
Mode		Linearity, Logarithmic	
Control		Auto sweep or manual sweep	
<b>Frequency Modulation (FM)</b>			
Modulating signal		Internal or external signal	
Deviation		0%~20%	



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<b>Amplitude Modulation (AM)</b>		
Modulating signal	Internal or external signal	
Depth	0%~120%	
<b>Shift Keying</b>		
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: 11.25°	
Alternative rate	10ms~60s	
<b>CHB output characteristics</b>		
Output waveform	32 built-in waveforms, including Sine, Square, Triangle, Saw tooth, Ladder, etc.	
Waveform length	1024 points	
Vertical resolution	8 bits	
Sampling rate	12.5MSa/s	
Frequency range	Sine: 10mHz~1MHz; Other: 10mHz~100kHz	
Frequency resolution	10mHz	
Frequency accuracy	$\pm(1 \times 10^{-5} + 10\text{mHz})$	
Amplitude range	50mVpp~20Vpp (open circuit)	
Amplitude resolution	2mVpp	
Output impedance	50Ω	
CHB signal is used as the harmonic signal of CHA		
Harmonic times	0.1~250.0 times	
Harmonic frequency	<1MHz	
Phase adjustment	Coarse: 11.5°/step; Fine: 2°/step	
CHB signal is used as burst signal		
Frequency of CHB	40mHz~1MHz	
Burst frequency	10mHz~50kHz	
Burst count	1~65000 cycles	
Trigger source	Continuous, Single	
<b>TTL output</b>		
Waveform	Square, rise/fall time ≤20ns	
Frequency	Same as CHA signal	
Amplitude	TTL, CMOS compatible, low<0.3V, high>4V	
<b>Frequency counter</b>		
Frequency range	1Hz~200MHz	
Input amplitude	100mVpp~20Vpp	
<b>General</b>		
Operation characteristics	Key operation for all functions, Menu display, Rotary dial adjustment	
Interface	USB and RS-232 interface	
Operating environment	0~40°C, <80%RH	
Power source	AC 110V/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	

