DDS Function Generator

TFG3500 Series

Introduction

The TFG3500 series are function generators with maximum frequency of 10MHz, 20MHz, 40MHz and 60MHz, based on DDS (Direct Digital Synthesis) technology providing flexible performance and system features for basic scientific and industrial requirements.

The10 bits resolution, 180MSa/s sampling rate, 16k pts memory length, and 32 built-in waveforms create various waveforms for different needs. A free PC software for USB and RS-232 interfaces for system control. The TFG3500 series have additional functions of multiple modulations (FM, AM, FSK, ASK, PSK), 200MHz external counter, 40 sets memories and multiple protections. Stable output frequency, high accuracy and low distortion make TFG3500 an ideal solution for an accurate and affordable signal source for industrial, scientific research and educational applications.

Features

- ✓ Max. output frequency 10MHz/20MHz/40MHz/60MHz
- ✓ 2 output channels
- ✓ 3.5-inch TFT LCD display
- ✓ Direct Digital Synthesis technology (DDS)
- ✓ Sampling rate 180MSa/s, vertical resolution 10 bits, waveform length 16000 points
- ✓ Min. 1mV (50Ω) waveform output with good stability
- ✓ 32 built-in waveforms
- ✓ 40 sets panel setting save & recall
- ✓ Modulations: FM, AM, FSK, ASK, PSK
- ✓ Frequency sweep, amplitude sweep, burst, CHA & CHB Add and TTL output functions
- ✓ Over voltage protection, over current protection, short circuit protection, reverse voltage protection
- ✓ Standard parts: RS-232 interface, USB interface, 200MHz frequency counter,
- ✓ Optional parts: power amplifier

Product photo

TFG-3510

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Specifications

Model		TFG-3510	TFG-3520	TFG-3540	TFG-3560
Frequency range		**40μHz~10MHz**	**40μHz~20MHz**	**40μHz~40MHz**	**40μHz~60MHz**
Waveform (CHA)					
Type		Sine, Square, Pulse, DC			
Length		4~16000 points			
Vertical resolution		10 bits			
Sampling rate		180MSa/s			
Harmonic distortion of sine		≥50dBc (<1MHz); ≥40dBc (1~20MHz); ≥30dBc (>20MHz)			
Total distortion of sine		≤0.5% (20Hz~200kHz)			
Rise/fall time of pulse & square		≤20ns			
Overshoot of pulse & square		≤5%			
Duty cycle of square		50.0%			
Duty cycle of pulse		0.1%~99.9%			
Frequency (CHA)					
Range	Sine	40μHz~10MHz	40μHz~20MHz	40μHz~40MHz	40μHz~60MHz
	Square	40μHz~20MHz			
	Other	40μHz~10MHz			
Resolution		40μHz (40μHz~2kHz); 40mHz (>2kHz)			
Accuracy		±($5x10^{-5}$+40mHz)			
Stability		±$5x10^{-6}$ /3hours			
Amplitude (CHA)					
Range		2mVpp~20Vpp (high impedance)			
Resolution		20mVpp (amplitude>2V); 2mVpp (amplitude<2V)			
Accuracy		± (1%+2mVrms) (high impedance, RMS, frequency 1kHz)			
Stability		±0.5% /3hours			
Flatness		±5% (frequency <1MHz); ±10% (frequency 1~10MHz); ±20% (frequency >10MHz)			
Output impedance		50Ω			
Amplitude setting range of sine (50Ω)		1mVpp~10Vpp, when output frequency ≤10MHz 1mVpp~5Vpp, when output frequency ≤40MHz 1mVpp~2Vpp, when output frequency ≥ 40MHz			
Amplitude setting range (high impedance)		2mVpp~20Vpp, when output frequency ≤10MHz 2mVpp~10Vpp, when output frequency ≤40MHz 2mVpp~4Vpp, when output frequency ≥40MHz			
DC Offset (CHA)					
Range		±10V (high impedance, attenuation 0 dB)			
Resolution		20mVdc			
Accuracy		±(1%+20mVdc)			
Sweep (CHA)					
Parameter		Frequency, Amplitude			
Range		Free to set starting point and end point			
Time		100ms~600s			
Direction		Up, Down, Up-Down			
Mode		Linearity, Logarithmic			
Control		Auto sweep or manual sweep			
Frequency Modulation (FM) (CHA)					
Modulating signal		Internal or external signal			
FM deviation		0%~20%			
Amplitude Modulation (AM) (CHA)					
Modulating signal		Internal or external signal			
AM depth		0%~120%			

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Shift Keying (CHA)	
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
Waveform (CHB)	
Type	32 built-in waveforms, including Sine, Square, Triangle, Saw tooth, Ladder, etc.
Length	1024 points
Vertical resolution	8 bits
Sampling rate	12.5MSa/s
Frequency (CHB)	
Range	Sine: 10mHz~1MHz; Other: 10mHz~100kHz
Resolution	10mHz
Accuracy	$\pm(1x10^{-5}+10mHz)$
Amplitude (CHB)	
Range	50mVpp~20Vpp (high impedance)
Resolution	2mVpp
Output impedance	50Ω
Harmonic (CHB)	
CHB signal is used as the harmonic signal of CHA	
Number of times	0.1~250.0 times
Frequency	<1MHz
Phase adjustment	Coarse: 11.5°/step; Fine: 2°/step
Burst (CHB)	
CHB signal is used as burst signal	
Frequency of CHB	40mHz~1MHz
Burst frequency	10mHz~50kHz
Burst count	1~65000 cycles
Trigger mode	Continuous, Single
TTL Output	
Waveform	Square, rise/fall time ≤20ns
Frequency	Same as CHA signal
Amplitude	TTL, CMOS compatible, low<0.3V, high>4V
Frequency Counter	
Testing frequency range	1Hz~200MHz
Input signal amplitude	100mVpp~20Vpp
Remote Control	USB interface, RS-232 interface
Power amplifier (optional)	
Max. output power	7W (8Ω), 1W (50Ω)
Max. output voltage	22Vpp
Frequency bandwidth	1Hz~200kHz
Common characteristics	
Operation characteristics	Key operation for all functions, Menu display, Rotary dial adjustment
Display	3.5” TFT LCD
Language	English, Chinese (simplified), Chinese (traditional)
Power source	AC110V/220V±10% selectable, 50/60Hz, Max. 45VA
Environmental condition	0~40℃, <80%RH
Standard accessories	Power cord x1, Operation manual x1, Software CD x1, USB cable x1, RS-232 cable x1, BNC-BNC cable x1, Test lead x1
Dimension	385x260x110mm
Weight	3.5kg

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