DDS Function Generator Selection Guide

		TFG3500A series	TFG3600E series	TFG3500 series	TFG3200 series	TFG3500E series	TFG3200E series
Display		TFT LCD	TFT LCD	TFT LCD	Mono LCD	TFT LCD	Mono LCD
Output channel		2	2	2	2	2	2
Min.frequency	Channel A	40µHz	1µHz	40µHz	40µHz	1µHz	1µHz
	Channel B	10mHz	1µHz	10mHz	10mHz	1µHz	1µHz
Max.frequency	Channel A	10MHz, 20MHz, 40MHz	5MHz, 10MHz, 15MHz, 20MHz	10MHz, 20MHz, 40MHz, 60MHz	10MHz, 20MHz, 40MHz, 60MHz	5MHz, 10MHz, 15MHz, 20MHz	5MHz, 10MHz, 15MHz, 20MHz
	Channel B	1MHz	1MHz	1MHz	1MHz	1MHz	1MHz
Frequency resolution	Channel A	40µHz~2kHz: 40µHz / >2kHz: 40mHz	1µHz	40µHz~2kHz: 40µHz / >2kHz: 40mHz	40µHz~2kHz: 40µHz / >2kHz: 40mHz	1µHz	1µHz
	Channel B	40mHz	1µHz	10mHz	10mHz	1µHz	1µHz
Arbitrary waveform		√, channel B	√, channel A & B				
Arbitrary waveform types		8 types, channel B	8 types				
Waveform length		4~16000 points	1024 points	4~16000 points	4~16000 points	1024 points	1024 points
Amplitude resolution		10 bits	8 bits	10 bits	10 bits	8 bits	8 bits
Waveforms	Channel A	3 types	32 types	3 types	3 types	32 types	32 types
	Channel B	40 types	40 types	32 types	32 types	32 types	32 types
Sampling rate	Channel A	180MSa/s	100MSa/s	180MSa/s	180MSa/s	100MSa/s	100MSa/s
	Channel B	100MSa/s	12.5MSa/s	12.5MSa/s	12.5MSa/s	12.5MSa/s	12.5MSa/s
Sine		40µHz~10MHz/20MHz/40MHz	1µHz~5MHz/10MHz/15MHz/20MHz	40µHz~10MHz/20MHz/40MHz/60MHz	40µHz~10MHz/20MHz/40MHz/60MHz	1µHz~5MHz/10MHz/15MHz/20MHz	1µHz~5MHz/10MHz/15MHz/20MHz
Square		TFG-3510A: 40µHz~10MHz / Others: 40µHz~20MHz	1µHz~5MHz	TFG-3510/3210: 40µHz~10MHz / Others: 40µHz~20MHz	TFG-3510/3210: 40µHz~10MHz / Others: 40µHz~20MHz	1µHz~5MHz	1µHz~5MHz
CHA alone		√	√	√	√	√	√
CHB alone		√	√	√	√	√	√
CHA, CHB ADD		√		√	√		
Modulation (CHA)		AM, FM, FSK, PSK	FM, FSK, PSK, ASK	AM, FM, FSK, PSK, ASK	AM, FM, FSK, PSK, ASK	FM, FSK, PSK, ASK	FM, FSK, PSK, ASK
Sweep	Frequency	Channel A	Channel A	Channel A	Channel A	Channel A	Channel A
	Amplitude		Channel A			Channel A	Channel A
Burst	Channel A		1µHz~5MHz/10MHz/15MHz/20MHz			1µHz~5MHz/10MHz/15MHz/20MHz	1µHz~5MHz/10MHz/15MHz/20MHz
	Channel B	40mHz~1MHz	1µHz~1MHz	40mHz~1MHz	40mHz~1MHz	1µHz~1MHz	1µHz~1MHz
Pulse	Channel A	40µHz~10MHz	1µHz~1MHz			1µHz~1MHz	1µHz~1MHz
	Channel B		1µHz~100kHz	40mHz~100kHz	40mHz~100kHz	1µHz~100kHz	1µHz~100kHz
TTL output	Channel A		1µHz~1MHz			1µHz~1MHz	1µHz~1MHz
	Channel B		1µHz~1MHz	40µHz~10MHz/20MHz/40MHz/60MHz	40µHz~10MHz/20MHz/40MHz/60MHz	1µHz~1MHz	1µHz~1MHz
RS-232 interface		Standard	Standard	Standard	Standard	Optional	Optional
USB interface		Standard		Standard	Standard		
Frequency counter 200MHz		Standard	Standard	Standard	Standard	Standard	Standard
Power amplifier		Optional	Optional	Optional	Optional	Optional	Optional
Variable offset		√	√	√	√	√	√
Variable duty cycle		√	√	√	√	√	√
Save/Recall		40 sets	40 sets	40 sets	40 sets	40 sets	40 sets

TFG3600 Series Arbitrary Function Generator

Introduction

The TFG3600 series are arbitrary waveform/function generators with maximum frequency of 60MHz, 100MHz and 120MHz.

The TFG3600 series adopts DDS (Direct Digital Synthesis) technology provide outstanding performance and system features. A high 41 bits resolution, 300MSa/s sampling rate, 512k pts memory length provide outstanding environment for editing arbitrary waveform directly through user interface. Additionally, wide frequency bandwidth of Square, Ramp and Pulse waveforms, multiple modulations (AM, FM, PM, FSK, PWM), 40 sets memories and multiple-protection designs make TFG3600 series an ideal solution for industrial, scientific research and educational applications.

Features

✔ Max. output frequency 60MHz/100MHz/120MHz

✔ 3.5-inch TFT LCD display

✔ Direct Digital Synthesis technology (DDS)

✔ Sampling rate up to 300MSa/s

✔ Vertical resolution 14 bits

✔ Waveform memory length 512k pts

✔ 40 sets panel setting save & recall

✔ Modulations: AM, FM, PM, FSK, PWM-Internal or External

✔ Sweep: Lin, Log

✔ Over voltage protection, over current protection, short circuit protection, reverse voltage protection

✔ Numeric keyboard and rotary dial for data input

✔ Standard parts: USB interface, RS-232 interface, RJ-45 LAN interface

Product photo

TFG-3660

DDS Function Generator

Specifications

Model	TFG-3660	TFG-36100	TFG-36120
Frequency range	**1µHz~60MHz**	**1µHz~100MHz**	**1µHz~120MHz**
Waveform	Sine, Square, Ramp, Pulse, White noise, Index Up, Index Down, Sinc, ECG wave		
Frequency			
Sine	1µHz~60MHz	1µHz~100MHz	1µHz~120MHz
Square	1µHz~30MHz	1µHz~50MHz	1µHz~60MHz
Ramp	500µHz~20MHz	500µHz~25MHz	500µHz~30MHz
Pulse	1µHz~1MHz	1µHz~1MHz	1µHz~1MHz
White noise	30MHz DC (-3db)	40MHz DC (-3db)	50MHz DC (-3db)
Arbitrary waveform			
Frequency range	1µHz~25MHz		
Waveform length	2pts~512k pts		
Amplitude resolution	14 bits		
Sampling rate	300MSa/s		
Amplitude			
50Ω	1mVpp~10Vpp (≤10MHz) 1mVpp~5Vpp (≤80MHz) 1mVpp~2.5Vpp (>80MHz)		
High impedance	2mVpp~20Vpp (≤10MHz) 2mVpp~10Vpp (≤80MHz) 2mVpp~5Vpp (>80MHz)		
Modulation			
Modulation mode	AM, FM, PM, FSK, PWM-Internal or External		
Modulation frequency	2mHz~20kHz (FSK: 2mHz~100kHz)		
Remote control	USB Universal Serial Bus Interface		
	RS-232 serial interface		
	RJ-45 LAN interface		
General			
Operation characteristics	Key operation for all functions, menu display, rotary dial adjustment		
Display	3.5-inch TFT LCD Language: English, Chinese (simplified), Chinese (traditional)		
Power requirements	Power requirement: AC100-240V Frequency: 45~440Hz Power Consumption: Max.50VA		
Environmental condition	Temperature: 0~40℃ Humidity: <80%		
Standard accessories	Power cord ×1, Operation manual ×1, Software CD ×1, USB cable ×1, RS-232 cable ×1, BNC-BNC cable ×1, Test lead ×1		
Dimension	415×295×195mm		
Weight	3.5kg		

DDS Function Generator

Twintex

TFG3500A Series Arbitrary Function Generator

Introduction

The TFG3500A series are arbitrary waveform/function generators with maximum frequency of 10MHz, 20MHz and 40MHz. The TFG3500A series are based on DDS (Direct Digital Synthesis) technology providing outstanding performance and system features for basic scientific and industrial requirements.

The 10 bits resolution, 180MSa/s sampling rate, 16k pts memory length, 32 built-in waveforms and 8 user-defined arbitrary waveforms create various waveforms for different needs. A free PC software for USB and RS232 interfaces control, multiple modulations (AM, FM, FSK, ASK), 40 sets memories and multiple-protection designs make TFG3500A series an ideal solution for an accurate and affordable signal source for industrial, scientific research and educational applications.

Features

- ✔ Max. output frequency 10MHz/20MHz/40MHz
- ✔ 2 output channels
- ✔ 3.5-inch TFT LCD display
- ✔ Direct Digital Synthesis technology (DDS)
- ✔ Minimum output amplitude: 1mV, Maximum resolution: 1μVpp
- ✔ Sampling rate 180Msa/s, vertical resolution 10 bits, waveform length 16000 points
- ✔ 32 standard or built-in waveforms, and 8 sets user's defined waveforms in channel B
- ✔ 40 sets panel setting save & recall
- ✔ Modulations: FM, AM, FSK, PSK
- ✔ Frequency sweep, amplitude sweep, burst, CHA & CHB ADD functions
- ✔ Over voltage protection, over current protection, short circuit protection, reverse voltage protection
- ✔ Numeric keyboard and rotary dial for data input
- ✔ Standard parts: USB interface, RS-232 interface, 200MHz frequency counter
- ✔ Optional parts: power amplifier

Product photo

TFG-3510A

DDS Function Generator

Specifications

Model		TFG-3510A	TFG-3520A	TFG-3540A
Frequency range		**40µHz~10MHz**	**40µHz~20MHz**	**40µHz~40MHz**
Waveform (CHA)				
Waveform types		Sine, Square, Pulse, DC		
Waveform length		4~16000 points		
Amplitude resolution		10 bits		
Sampling rate		180MSa/s		
Harmonic distortion		≥50dBc (≤1MHz) ≥45dBc (≤10MHz) ≥40dBc (≤20MHz) ≥30dBc (≤40MHz)		
Sine wave total distortion		≤0.1% (20Hz~200kHz)		
Pulse & Square wave		Rise/fall time: ≤20ns, Overshoot: ≤5%		
Square wave duty cycle		50.0%		
Frequency (CHA)				
Frequency range	Sine	40µHz~10MHz	40µHz~20MHz	40µHz~40MHz
	Square	40µHz~10MHz	40µHz~20MHz	40µHz~20MHz
	Pulse	40µHz~10MHz	40µHz~10MHz	40µHz~10MHz
	Internal standard freq: Temperature compensation 26MHz			
Resolution		40µHz (40µHz~2kHz); 40mHz (>2kHz)		
Accuracy		$\pm(5\times10^{-5}+40\text{mHz})$		
Stability		$\pm1\times10^{-6}$ /3hours (small TCXO)		
Pulse (CHA)				
Duty ratio		1%~99% (frequency ≤1MHz) 10%~99% (frequency ≤10MHz)		
Amplitude (CHA)				
Amplitude range		1mVpp~20Vpp (high impedance)		
Max. resolution		1uVpp (high impedance)		
Accuracy		±1%+1mV rms (high impedance, RMS, frequency 1kHz)		
Stability		±0.5% /3hours		
Flatness		±5% (frequency <5MHz) ±10% (frequency <10MHz) ±20% (frequency >10MHz)		
Output impedance		50Ω		
Sine wave amplitude setting range (50Ω)		1mVpp~10Vpp, when output frequency ≤10MHz 1mVpp~7Vpp, when output frequency ≤40MHz		
Amplitude setting range (high impedance)		1mVpp~20Vpp, when output frequency ≤10MHz 1mVpp~14Vpp, when output frequency ≤40MHz		
DC Offset (CHA)				
Offset range		(offset+0.5×peak-to-peak amplitude) ≤2mVdc×attenuation coefficient (when peak-to-peak amplitude ≤4, auto attenuation) (offset+0.5×peak-to-peak amplitude) ≤10mVdc×attenuation coefficient (when peak-to-peak amplitude ≥4, auto attenuation)		
Max. resolution		20mV (high impedance)		
Accuracy		±(1%+20mV) (amplitude ≤4Vpp)		
Sweep (CHA)				
Sweep type		Frequency sweep, amplitude sweep		
Sweep range		Free to set starting point and end point		
Sweep step		Higher than any value of the resolution		
Sweep rate		100ms~600s/step		
Sweep direction		Up, Down, Up-Down		
Sweep mode		Linearity, logarithmic		
Control mode		Auto sweep or manual sweep		
Frequency Modulation (FM) (CHA)				
Carrier waveform		Sine wave or square wave, with frequency same as master waveform		
Modulating mode		Internal or external		
Modulating signal		40 types internal waveforms or external signals		
Modulating signal frequency		40mHz~50kHz		

DDS Function Generator

Model	TFG-3510A	TFG-3520A	TFG-3540A
Frequency range	**40µHz~10MHz**	**40µHz~20MHz**	**40µHz~40MHz**

Frequency Modulation (FM) (CHA)			
FM deviation	0%~20%		
External signal input amplitude	20Vpp (-10V~+10V)		
External FM	carrier frequency accuracy ≤10^{-3}, modulation error ≤ ±20%		

Amplitude Modulation (AM) (CHA)			
Carrier waveform	Sine wave or square wave, with frequency same as master waveform		
Modulating mode	Internal or external		
Modulating signal	40 types internal waveforms or external signals		
Modulating signal frequency	40mHz~50kHz		
Distortion	≤2%		
Modulating depth	0%~120%		
Relative modulating error	≤±5%		
External signal input amplitude	20Vpp (-10V~+10V)		

Shift Keying (CHA)			
FSK	Free to set carrier waveform frequency and hopping frequency		
PSK	Hopping phase: 0~360°, resolution: 11.25°		
Control mode	Internal		
Alternative rate	10ms~60s		

CHB output Characteristics			
Waveform	Waveforms: 32 types waveforms, including Sine, Square, Triangle, saw tooth, ladder, etc. And 8 types of user's defined waveforms Length: 1024 points Amplitude resolution: 8 bits Sampling rate : 100Msa/s		
Frequency	Sine: 10mHz~1MHz, other waveforms: 10mHz~50kHz Resolution : 40mHz Accuracy: ±(1×10^{-5}+40mHz)		
Amplitude	Amplitude range : 100mVpp~20Vpp (high impedance) Amplitude resolution : Max.2mVpp Output impedance : 50Ω		
Harmonics (CHB is used as the harmonic signal of CHA)	Harmonic Time: 0.1~250.0 times Harmonic Frequency <1MHz Phase Adjustment: 1 degree/step		
Burst	CHB signal is used as burst signal Frequency of CHB: 40mHz~1MHz Burst Frequency: 30mHz~50kHz Burst Count: 1~65000 cycles Burst Mode: continuous burst, single burst, external burst		

Frequency counter			
Testing frequency range	1Hz~200MHz		
Input signal amplitude	100mVpp~20Vpp		
Low pass filter	Cut off frequency 100kHz		
Testing time	10ms~60.0s		

General			
Operation characteristics	Key operation for all functions, menu display, rotary dial adjustment		
Display	Display: TFT Language: English, Chinese (simplified), Chinese (traditional)		
Power Requirements	Power Requirements: AC220V (1±10%) / AC110V (1±10%)		
	Frequency: 50Hz/60Hz(1±5%)		
	Power Consumption: <50VA		
Environmental condition	Temperature: 0 ~ 40℃, Humidity: <80%		
Standard accessories	Power cord ×1, Operation manual ×1, Software CD ×1, USB cable ×1, RS-232 cable ×1, BNC-BNC cable ×1, Test lead ×1		
Dimension	415×295×195mm		
Weight	4kg		

DDS Function Generator

Twintex

TFG3600E Series Arbitrary Function Generator

Introduction

The TFG3600E series are arbitrary waveform/function generators with maximum frequency of 5MHz, 10MHz, 15MHz and 20MHz. The TFG3600E series are based on DDS (Direct Digital Synthesis) technology providing flexible performance and system features for basic scientific and industrial requirements.

The 8 bits resolution, 100MSa/s sampling rate, 1024 pts memory length, 32 built-in waveforms and 8 user-defined arbitrary waveforms create various waveforms for different needs. A free PC software for USB and RS232 interfaces control for creating and analyzing waveforms. The TFG3600E series have additional functions of multiple modulations (AM, FM, FSK, ASK), 200MHz external counter, 40 sets memories and multiple protections. Stable output frequency, high accuracy and low distortion make TFG3600E series an ideal solution for an accurate and affordable signal source for industrial, scientific research and educational applications.

Features

- ✔ Max. output frequency 5MHz/10MHz/15MHz/20MHz
- ✔ 2 output channels
- ✔ 3.5-inch TFT LCD display
- ✔ Direct Digital Synthesis technology (DDS)
- ✔ Sampling rate100Msa/s, vertical resolution 8 bit, waveform length 1024 points
- ✔ Arbitrary waveform function, 8 sets of users defined waveforms
- ✔ Output waveforms: 32 built-in waveforms and 8 sets of user defined waveforms
- ✔ 40 sets panel setting save & recall
- ✔ Min.1mV (50Ω) waveform output with good stability
- ✔ Modulations: FM, FSK, PSK, ASK
- ✔ Frequency sweep, burst, TTL output
- ✔ Over voltage protection, over current protection, short circuit protection, reverse voltage protection
- ✔ Standard parts: RS-232 interface, 200MHz frequency counter
- ✔ Optional parts: power amplifier

Product photo

TFG-3605E

DDS Function Generator

Specifications

Model	TFG-3605E	TFG-3610E	TFG-3615E	TFG-3620E
Frequency range	**1μHz~5MHz**	**1μHz ~10MHz**	**1μHz ~15MHz**	**1μHz ~20MHz**
Waveform (CHA)				
Waveform types	32 pre-stored waveforms and 8 user defined arbitrary 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 (1MHz~20MHz)			
Sine wave total distortion	≤1% (20Hz~200kHz)			
Square wave	Rise/fall edge time: ≤35ns Overshoot: ≤10% Duty cycle: 1%~99%			
Frequency (CHA)				
Frequency range	Sine wave: 1μHz~Max.frequency Square wave: 1μHz~5MHz Other waveforms: 1μHz~1MHz			
Resolution	1μHz			
Accuracy	$\pm 5 \times 10^{-5}$			
Stability	$\pm 5 \times 10^{-6}$ /3hours			
Amplitude (CHA)				
Amplitude range	2mVpp~20Vpp, 1μHz~10MHz (high impedance) 2mVpp~15Vpp, 10MHz~15MHz (high impedance) 2mVpp~8Vpp, 15MHz~20MHz (high impedance)			
Resolution	20mVpp (amplitude>2Vpp), 2mVpp (amplitude<2Vpp)			
Accuracy	± (1%+2mV rms) (high impedance, RMS, frequency 1kHz)			
Stability	±0.5% /3hours			
Flatness	±5% (frequency of 10MHz or below), ±10% (frequency above 10MHz)			
Output impedance	50Ω			
DC Offset (CHA)				
Offset range	±10V (high impedance, attenuation 0 dB)			
Resolution	20mVdc			
Accuracy	±(1%+20mVdc)			
Sweep (CHA)				
Sweep type	Frequency sweep, amplitude sweep			
Sweep range	Free to set starting point and end point			
Sweep step	Higher than any value of the resolution			
Sweep rate	10ms~60ms/step			
Sweep direction	Up, Down, Up-Down			
Sweep mode	Linear, logarithmic			
Control mode	Auto sweep or manual sweep			
Frequency Modulation (FM) (CHA)				
Carrier signal	CHA waveforms			
Modulation signal	Internal signal of CHB or External signal			
Modulation deviation	0%~20%			
Burst (CHA)				
Carrier signal	CHA signal			
Trigger signal	TTL_A signal			
Burst counts	1~65000 cycles			
Burst mode	Internal TTL, External, Single			
Shift keying (CHA)				
FSK	Free to set carrier waveform frequency and hopping frequency			
ASK	Free to set carrier waveform amplitude and hopping amplitude			
PSK	Hopping phase: 0~360°, Max. resolution: 1°			
Alternative rate	10ms~60s			

DDS Function Generator

Model	TFG-3605E	TFG-3610E	TFG-3615E	TFG-3620E
Frequency range	**1µHz~5MHz**	**1µHz ~10MHz**	**1µHz ~15MHz**	**1µHz ~20MHz**
CHB output characteristics				
Waveform	32 pre-stored waveforms and 8 user defined arbitrary waveforms including: Sine, Square, Triangle, Ramp, Pulse etc. Length: 1024 points Sampling range : 12.5Msa/s Amplitude resolution : 8 bits Square wave duty cycle : 1%~99%			
Frequency	Range: Sine wave: 1µHz~1MHz; Other waveforms: 1µHz~100kHz Resolution: 1µHz Accuracy: $\pm1\times10^{-5}$			
Amplitude	Range: 50mVpp~20Vpp (high impedance) Resolution: 20mVpp Output impedance : 50Ω			
Burst	Carrier signal: CHB signal Trigger signal: TTL_B signal Burst count : 1~65000 cycles Burst mode : Internal TTL, External, Single			
TTL output				
Waveform characteristics	Square wave, rise/fall time ≤20ns			
Frequency characteristics	40mHz~1MHz			
Amplitude characteristics	TTL and CMOS compatible, low<0.3V, high>4V			
Frequency counter				
Testing frequency range	1Hz~200MHz			
Input signal amplitude	100mVpp~20Vpp			
Remote control	RS-232 serial interface			
Power amplifier (optional)				
Max. output power	7W (8Ω), 1W (50Ω)			
Max. output voltage	22Vpp			
Frequency bandwidth	1Hz~200kHz			
General				
Operation characteristics	Key operation for all functions, menu display, rotary dial adjustment			
Display	Display: TFT LCD Language: English, Chinese (simplified), Chinese (traditional)			
Power requirements	Power Requirements: AC220V (1±10%) / AC110V (1±10%) Frequency: 50Hz/60Hz(1±5%) Power Consumption: <50VA			
Environmental condition	Temperature: 0~40℃ Humidity: <80%			
Standard accessories	Power cord ×1, Operation manual ×1, Software CD ×1, RS-232 cable ×1, BNC-BNC cable ×1, Test lead ×1			
Dimension	415×295×195mm			
Weight	3.5kg			

DDS Function Generator

TFG3500 Series Function Generator

Features

The TFG3500 series are function generators with maximum frequency of 10MHz, 20MHz, 40MHz and 60MHz. The TFG3200 series are LOW-COST function generators with exactly same specifications as TFG3500 series. The TFG3500 and TFG3200 series are 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, 32 built-in waveforms create various waveforms for different needs. A free PC software for USB and RS232 interfaces for system control. The TFG3500 series have additional functions of multiple modulations (AM, FM, FSK, ASK), 200MHz external counter, 40 sets memories and multiple protections. Stable output frequency, high accuracy and low distortion make TFG3500 and TFG3200 series 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
- TFG3500 series with 3.5-inch TFT LCD display, TFG3200 series with Mono 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 standard or built-in waveforms
- 40 sets panel setting save & recall
- Modulations: FM, AM, FSK, PSK, ASK
- Frequency sweep, burst, CHA & CHB ADD functions, TTL output
- 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

TFG-3210

DDS Function Generator

Specifications

Model	TFG-3510 TFG-3210	TFG-3520 TFG-3220	TFG-3540 TFG-3240	TFG-3560 TFG-3260
Frequency range	**40µHz~10MHz**	**40µHz~20MHz**	**40µHz~40MHz**	**40µHz~60MHz**
Waveform (CHA)				
Waveform types	Sine, Square, Pulse, DC			
Waveform length	4~16000 points			
Amplitude resolution	10 bits			
Sampling rate	180MSa/s			
Harmonic distortion	≥50dBc (<1MHz) ≥40dBc (1MHz~20MHz) ≥30dBc (20MHz~40MHz)			
Sine wave total distortion	≤0.5% (20Hz~200kHz)			
Pulse & Square wave	Rise/fall time: ≤20ns, Overshoot: ≤5%			
Square wave duty cycle	50%			
Frequency (CHA)				
Frequency range	2kHz~Max.frequency, resolution 40mHz 40µHz~2kHz, resolution 40µHz			
Square wave range	40µHz~10MHz	40µHz~20MHz	40µHz~20MHz	40µHz~20MHz
Accuracy	±(5×10^{-5}+40mHz)			
Stability	±5×10^{-6} /3hours			
Pulse (CHA)				
Duty cycle	0.1%~99.9%			
Amplitude (CHA)				
Amplitude range	2mVpp~20Vpp (high impedance)			
Resolution	20mVpp (amplitude>2V), 2mVpp (amplitude<2V)			
Accuracy	± (1%+2mV rms) (high impedance, RMS, frequency 1kHz)			
Stability	±0.5% /3hours			
Flatness	±5% (frequency <1MHz) ±10% (frequency of 1MHz~10MHz) ±20% (frequency of 10MHz~60MHz)			
Output impedance	50Ω			
Sine wave amplitude setting range (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)				
Offset range	±10V (high impedance)			
Resolution	20mV			
Accuracy	±(1%+20mV)			
Sweep (CHA)				
Linear sweep on frequency or amplitude				
Sweep range	Free to set starting point and end point			
Sweep step	Higher than any value of the resolution			
Sweep rate	10ms~60s/step			
Sweep direction	Up, Down, Up-Down			
Manual sweep	Step/time			
Frequency Modulation (FM) (CHA)				
Modulating signal	Internal or External waveforms			
Modulation deviation	0%~20%			
Amplitude Modulation (AM) (CHA)				
Modulating signal	Internal or External waveforms			
Modulation depth	0%~120%			

DDS Function Generator

Model	TFG-3510 TFG-3210	TFG-3520 TFG-3220	TFG-3540 TFG-3240	TFG-3560 TFG-3260
Shift Keying (CHA)				
FSK	Free to set carrier waveform frequency and hopping frequency			
ASK	Free to set carrier waveform amplitude and hopping amplitude			
PSK	Hopping phase: 0~360°, resolution: 11.25°			
Alternative rate	10ms~60s			
CHB output Characteristics				
Waveform	Waveforms: 32 types waveforms, including Sine, Square, Triangle, saw tooth, ladder, etc. Length: 1024 points Amplitude resolution: 8 bits Sampling rate : 12.5Msa/s			
Frequency	Range: Sine wave: 10mHz~1MHz; Other waveforms: 10mHz~100kHz Resolution : 10mHz Accuracy: $\pm(1{\times}10^{-5}+10\text{mHz})$			
Amplitude	Amplitude range : 50mVpp~20Vpp (high impedance) Amplitude resolution : 20mVpp Output impedance : 50Ω			
Harmonics (CHB is used as the harmonic signal of CHA)	Harmonic Time: 0.1~250.0 times Harmonic Frequency <1MHz Phase Adjustment: coarse adjustment: 11.25 degree/step, fine adjustment: 2 degree/step			
Burst	CHB signal is used as burst signal Frequency of CHB: 40mHz~1MHz Burst Frequency: 30mHz~50kHz Burst Count: 1~65000 cycles Burst Mode: continuous burst and single burst			
TTL Output				
Waveform characteristics	Square wave			
Rise and fall time	≤20ns			
Frequency characteristics	Same as CHA			
Amplitude characteristics	TTL, CMOS compatible, low<0.3V, high>4V			
Frequency Counter				
Testing frequency range	1Hz~200MHz			
Input signal amplitude	100mVpp~20Vpp			
Remote Control	USB Universal Serial Bus Interface RS-232 serial 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	Display: TFT LCD Language: English, Chinese (simplified), Chinese (traditional)			
Power Requirements	Power Requirements: AC220V (1±10%) / AC110V (1±10%) Frequency: 50Hz/60Hz(1±5%) Power Consumption: <50VA			
Environmental condition	Temperature: 0~40℃ Humidity: <80%			
Standard accessories	Power cord ×1, Operation manual ×1, Software CD ×1, USB cable ×1, RS-232 cable ×1, BNC-BNC cable ×1, Test lead ×1			
Dimension	415×295×195mm			
Weight	3.5kg			

DDS Function Generator

TFG3500E Series Low Cost Function Generator

Introduction

The TFG3500E series are function generators with maximum frequency of 5MHz, 10MHz, 15MHz and 20MHz. TFG3200E series are LOW-COST function generator with exactly same specifications as TFG3500E series. The TFG3500E and TFG3200E series are based on DDS (Direct Digital Synthesis) technology providing flexible performance and system features for basic scientific and industrial requirements.

The 8 bits resolution, 100MSa/s sampling rate, 1024 pts memory length, 32 built-in waveforms create various waveforms for different needs. A free PC software for RS232 interface control for system control. The TFG3500E and TFG3200E series have additional functions of multiple modulations (FM, FSK, ASK), 200MHz external counter, 40 sets memories and multiple protections. Stable output frequency, high accuracy and low distortion make TFG3500E and TFG3200E series an ideal solution for an accurate and affordable signal source for industrial, scientific research and educational applications.

Features

- ✔ Max. output frequency 5MHz/10MHz/15MHz/20MHz
- ✔ 2 output channels
- ✔ TFG3500E series with 3.5-inch TFT LCD display, TFG3200E series with Mono LCD display
- ✔ Direct Digital Synthesis technology (DDS)
- ✔ Sampling rate 100Msa/s, vertical resolution 8 bits, waveform length 1024 points
- ✔ Min.1mV (50Ω) waveform output with good stability
- ✔ 32 standard or built-in waveforms
- ✔ 40 sets panel setting save & recall
- ✔ Modulations: FM, FSK, PSK, ASK
- ✔ Frequency sweep, burst, TTL output
- ✔ Over voltage protection, over current protection, short circuit protection, reverse voltage protection
- ✔ Standard parts: 200MHz frequency counter
- ✔ Optional parts: RS-232 interface, power amplifier

Product photo

TFG-3505E

TFG-3205E

DDS Function Generator

Specifications

Model	TFG-3505E TFG-3205E	TFG-3510E TFG-3210E	TFG-3515E TFG-3215E	TFG-3520E TFG-3220E
Frequency range	**1μHz ~5MHz**	**1μHz ~10MHz**	**1μHz ~15MHz**	**1μHz ~20MHz**
Waveform (CHA)				
Waveform types	32 types waveforms, including Sine, Square, Pulse, etc.			
Waveform length	1024 points			
Vertical resolution	8 bits			
Sampling rate	100MSa/s			
Sine harmonic distortion	≥40dBc (<1MHz) ≥35dBc (1MHz~20MHz)			
Sine wave total distortion	≤1% (20Hz~200kHz)			
Square wave	Rise/fall edge time: ≤35ns Overshoot: ≤10% Duty cycle: 1%~99%			
Frequency (CHA)				
Frequency range	Sine wave: 1μHz~Max.frequency　　　Square wave: 1μHz~5MHz Other waveforms: 1μHz~1MHz			
Resolution	1μHz			
Accuracy	±5×10^{-5}			
Stability	±5×10^{-6}/3hours			
Amplitude (CHA)				
Amplitude range	2mVpp~20Vpp, 1μHz~10MHz (high impedance) 2mVpp~15Vpp, 10MHz~15MHz (high impedance) 2mVpp~8Vpp, 15MHz~20MHz (high impedance)			
Resolution	20mVpp (amplitude>2Vpp), 2mVpp (amplitude<2Vpp)			
Accuracy	± (1%+2mV rms) (high impedance, RMS, frequency 1kHz)			
Stability	±0.5% /3hours			
Flatness	±5% (frequency of 10MHz or below) ±10% (frequency above 10MHz)			
Output impedance	50Ω			
DC Offset (CHA)				
Offset range	±10V (high impedance, attenuation 0 dB)			
Resolution	20mVdc			
Accuracy	±(1%+20mVdc)			
Sweep (CHA)				
Sweep type	Frequency sweep, amplitude sweep			
Sweep range	Free to set starting point and end point			
Sweep step	Higher than any value of the resolution			
Sweep rate	10ms~60ms/step			
Sweep direction	Up, Down, Up-Down			
Sweep mode	Linear, Logarithmic			
Control mode	Auto sweep or manual sweep			
Frequency Modulation (FM) (CHA)				
Carrier signal	CHA waveforms			
Modulating signal	Internal signal of CHB or External signal			
Modulating deviation	0%~20%			
Shift Keying (CHA)				
FSK	Free to set carrier frequency and hop frequency			
ASK	Free to set carrier amplitude and hop amplitude			
PSK	hop phase 0~360°, max. resolution 1°			
Alternative rate	10ms~60s			

DDS Function Generator

Model	TFG-3505E TFG-3205E	TFG-3510E TFG-3210E	TFG-3515E TFG-3215E	TFG-3520E TFG-3220E
Frequency range	**1µHz ~5MHz**	**1µHz ~10MHz**	**1µHz ~15MHz**	**1µHz ~20MHz**
Burst (CHA)				
Carrier signal	CHA signal			
Trigger signal	TTL_A signal			
Burst counts	1~65000 cycles			
Burst mode	Internal TTL, External, Single			
CHB output Characteristics				
Waveform	32 types waveforms, including Sine, Square, Pulse Length: 1024 points Sampling range : 12.5Msa/s Amplitude resolution : 8 bits Square wave duty cycle : 1%~99%			
Frequency	Range: Sine wave: 1µHz~1MHz; Other waveforms: 1µHz~100kHz Resolution: 1µHz Accuracy: $\pm1\times10^{-5}$			
Amplitude	Range: 50mVpp~20Vpp (high impedance) Resolution: 20mVpp Output impedance : 50Ω			
Burst	Carrier single: channel B signal Trigger signal: TTL_B signal Burst count : 1~65000 cycles Burst mode : Internal TTL, External, Single			
TTL output				
Waveform characteristics	Square wave, rise/fall time ≤20ns			
Frequency characteristics	10mHz~1MHz			
Amplitude characteristics	TTL and CMOS compatible, low<0.3V, high>4V			
Frequency counter				
Testing frequency range	1Hz~200MHz			
Input signal amplitude	100mVpp~20Vpp			
Remote control (optional)	RS-232 serial 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	Display: TFT LCD Language: English, Chinese (simplified), Chinese (traditional)			
Power requirements	Power Requirements: AC220V (1±10%) / AC110V (1±10%) Frequency: 50Hz/60Hz(1±5%) Power Consumption: <50VA			
Environmental condition	Temperature: 0~40℃ Humidity: <80%			
Standard accessories	Power cord ×1, Operation manual ×1, BNC-BNC cable ×1, Test lead ×1			
Dimension	415×295×195mm			
Weight	3.5kg			

Specifications are subject to change without prior notice.