

DDS Function Generator Selection Guide

	TFG3500A series	TFG3600E series	TFG3500 series	TFG3200 series	TFG3500E series	TFG3200E series
Display	TFT LCD	TFT LCD	TFT LCD	Blue LCD	TFT LCD	Blue LCD
Channel	2	2	2	2	2	2
Min.frequency	Channel A 40uHz Channel B 10mHz	1uHz 1uHz	40uHz 10mHz	40uHz 10mHz	1uHz 1uHz	1uHz 1uHz
Max.frequency	Channel A 10MHz, 20MHz, 40MHz Channel B 1MHz	5MHz, 10MHz, 15MHz, 20MHz 1MHz	10MHz, 20MHz, 40MHz, 60MHz 1MHz	10MHz, 20MHz, 40MHz, 60MHz 1MHz	5MHz, 10MHz, 15MHz, 20MHz 1MHz	5MHz, 10MHz, 15MHz, 20MHz 1MHz
Frequency resolution	Channel A 40uHz~2kHz: 40uHz >2kHz: 40mHz Channel B 40mHz	1uHz 1uHz	40uHz~2kHz: 40uHz >2kHz: 40mHz 10mHz	40uHz~2kHz: 40uHz >2kHz: 40mHz 10mHz	1uHz 1uHz	1uHz 1uHz
Arbitrary waveform	√, channel B	√, channel A & B				
Arbitrary waveform types	8 types, channel B	8 types				
Memory 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 Channel B 40 types	32 types 40 types	3 types 32 types	3 types 32 types	32 types 32 types	32 types 32 types
Sampling rate	Channel A 180MSa/s Channel B 100MSa/s	100MSa/s 12.5MSa/s	180MSa/s 12.5MSa/s	180MSa/s 12.5MSa/s	100MSa/s 12.5MSa/s	100MSa/s 12.5MSa/s
Sine	40uHz~10MHz/20MHz/40MHz	40mHz~5MHz/10MHz/15MHz/20MHz	40uHz~10MHz/20MHz/40MHz/60MHz	40uHz~10MHz/20MHz/40MHz/60MHz	1uHz~5MHz/10MHz/15MHz/20MHz	1uHz~5MHz/10MHz/15MHz/20MHz
Square	TFG-3510A: 40uHz~10MHz Others: 40uHz~20MHz	1uHz~5MHz	TFG-3510/3210: 40uHz~10MHz Others: 40uHz~20MHz	TFG-3510/3210: 40uHz~10MHz Others: 40uHz~20MHz	1uHz~5MHz	1uHz~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	Channel A	Channel A
Burst	Channel A Channel B	1uHz~5MHz/10MHz/15MHz/20MHz 40mHz~1MHz	40mHz~1MHz	40mHz~1MHz	1uHz~5MHz/10MHz/15MHz/20MHz 1uHz~1MHz	1uHz~5MHz/10MHz/15MHz/20MHz 1uHz~1MHz
Pulse	Channel A Channel B	40uHz~10MHz 1uHz~100kHz	40mHz~100kHz	40mHz~100kHz	1uHz~1MHz 1uHz~100kHz	1uHz~1MHz 1uHz~100kHz
TTL output	Channel A Channel B	1uHz~1MHz 1uHz~1MHz	40uHz~10MHz/20MHz/40MHz/60MHz	40uHz~10MHz/20MHz/40MHz/60MHz	1uHz~1MHz 1uHz~1MHz	1uHz~1MHz 1uHz~1MHz
RS232 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

Twintex instrument

TFG3600 Series Arbitrary Function Generator



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 41 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: RS232 interface

Twintex instrument

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Specifications

Model	TFG-3660	TFG-36100	TFG-36120
Frequency range	1uHz~60MHz	1uHz~100MHz	1uHz~120MHz
Waveform	Sine, Square, Ramp, Pulse, White noise, Index Up, Index Down, Sinc, ECG wave		
Frequency			
Sine	1uHz~60MHz	1uHz~100MHz	1uHz~120MHz
Square	1uHz~30MHz	1uHz~50MHz	1uHz~60MHz
Ramp	500uHz~20MHz	500uHz~25MHz	500uHz~30MHz
Pulse	1uHz~1MHz	1uHz~1MHz	1uHz~1MHz
White noise	30MHz DC (-3db)	40MHz DC (-3db)	50MHz DC (-3db)
Arbitrary waveform			
Frequency range	1uHz~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)		
Frequency counter (optional)			
Frequency range	100mHz~200MHz		
Voltage range	100mVpp~20Vpp		
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°C Humidity: <80%		
Standard accessories	Power cord x1, Operation manual x1, software CD x1, RS232 cable x1, BNC-BNC cable X1, test lead x1		
Dimension	415x295x195 (mm)		
Weight	3.5 kg		

TFG3500A Series Arbitrary Function Generator



Features

- ✓ Max. output frequency 10MHz/20MHz/40MHz
- ✓ 3.5-inch TFT LCD display
- ✓ Direct Digital Synthesis technology (DDS)
- ✓ Minimum output amplitude: 1mV (high impedance)
- ✓ Maximum resolution: 1uVpp (high impedance)
- ✓ 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: RS232 interface, USB interface, 200MHz frequency counter

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DDS Function Generator

Specifications

Model	TFG-3510A	TFG-3520A	TFG-3540A
Frequency range	40uHz~10MHz	40uHz~20MHz	40uHz~40MHz
Waveform (CHA)			
Waveform types	Sine, Square, Pulse, DC		
Waveform length	4~16000 points		
Amplitude resolution	10 bits		
Sampling rate	180MSa/s		
Harmonic distortion	$\geq 50\text{dBc}$ ($\leq 1\text{MHz}$) $\geq 45\text{dBc}$ ($\leq 10\text{MHz}$) $\geq 40\text{dBc}$ ($\leq 20\text{MHz}$) $\geq 30\text{dBc}$ ($\leq 40\text{MHz}$)		
Sine wave total distortion	$\leq 0.1\%$ (20Hz~200kHz)		
Pulse & Square wave	Rise/fall time: $\leq 20\text{ns}$, Overshoot: $\leq 5\%$		
Square wave duty cycle	50.0%		
Frequency (CHA)			
Frequency range	Sine 40uHz~10MHz	40uHz~20MHz	40uHz~40MHz
	Square 40uHz~10MHz	40uHz~20MHz	40uHz~20MHz
	Pulse 40uHz~10MHz	40uHz~10MHz	40uHz~10MHz
	Internal standard freq. Temperature compensation 26MHz		
Resolution	40uHz (40uHz~2kHz); 40mHz (>2kHz)		
Accuracy	$\pm(5 \times 10^{-5} + 40\text{mHz})$		
Stability	$\pm 1 \times 10^{-6}$ / 3 hours (small TCXO)		
Pulse (CHA)			
Duty ratio	1%~99% (frequency $\leq 1\text{MHz}$) 10%~99% (frequency $\leq 10\text{MHz}$)		
Amplitude (CHA)			
Amplitude range	1mVpp~20Vpp (high impedance)		
Max. resolution	1uVpp (high impedance)		
Accuracy	$\pm 1\% + 1\text{mVrms}$ (high impedance, RMS, frequency 1kHz)		
Stability	$\pm 0.5\%$ / 3 hours		
Flatness	$\pm 5\%$ (frequency <5MHz) $\pm 10\%$ (frequency <10MHz) $\pm 20\%$ (frequency >10MHz)		
Output impedance	50 Ω		
Sine wave amplitude setting range (50 Ω)	1mVpp ~ 10Vpp, when output frequency $\leq 10\text{MHz}$ 1mVpp ~ 7Vpp, when output frequency $\leq 40\text{MHz}$		
Amplitude setting range (high impedance)	1mVpp ~ 20Vpp, when output frequency $\leq 10\text{MHz}$ 1mVpp ~ 14Vpp, when output frequency $\leq 40\text{MHz}$		
DC Offset (CHA)			
Offset range	(offset + 0.5 x peak-to-peak amplitude) $\leq 2\text{mVdc}$ x attenuation coefficient (when peak-to-peak amplitude ≤ 4 , auto attenuation) (offset + 0.5 x peak-to-peak amplitude) $\leq 10\text{mVdc}$ x attenuation coefficient (when peak-to-peak amplitude ≥ 4 , auto attenuation)		
Max. resolution	20mV (high impedance)		
Accuracy	$\pm(1\% + 20\text{mV})$ (amplitude $\leq 4\text{Vpp}$)		
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		

Twintex instrument

Model	TFG-3510A	TFG-3520A	TFG-3540A
Frequency range	40uHz~10MHz	40uHz~20MHz	40uHz~40MHz
Frequency Modulation (FM) (CHA)			
FM deviation	0%~20%		
External signal input amplitude	20Vpp (-10V~+10V)		
External FM	carrier frequency accuracy $\leq 10^{-3}$, modulation error $\leq \pm 20\%$		
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	$\leq 2\%$		
Modulating depth	0%~120%		
Relative modulating error	$\leq \pm 5\%$		
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		
Frequency	Length: 1024 points Amplitude resolution: 8 bits Sampling rate : 100Msa/s Sine: 10mHz ~ 1MHz, other waveforms: 10mHz ~ 50kHz Resolution : 40mHz Accuracy: $\pm(1 \times 10^{-5} + 40\text{mHz})$		
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: <45VA		
Environmental condition	Temperature: 0 ~ 40°C, Humidity: <80%		
Standard accessories	Power cord x1, Operation manual x1, software CD X1, USB cable x1, RS232 cable x1, BNC-BNC cable X1, test lead x1		
Dimension	415x295x195 (mm)		
Weight	4 kg		

Twintex instrument

TFG3600E Series Arbitrary Function Generator



Features

- ✓ Max. output frequency 5MHz/10MHz/15MHz/20MHz
- ✓ 3.5-inch TFT LCD display
- ✓ Direct Digital Synthesis technology (DDS)
- ✓ Sampling rate 100Msa/s, vertical resolution 8 bit, waveform length 1k pts
- ✓ 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, CHA & CHB ADD functions, TTL output
- ✓ Over voltage protection, over current protection, short circuit protection, reverse voltage protection
- ✓ Standard parts: RS232 interface, 200MHz frequency counter
- ✓ Optional parts: power amplifier

Twintex instrument

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DDS Function Generator

Specifications

Model	TFG-3605E	TFG-3610E	TFG-3615E	TFG-3620E
Frequency range	1uHz~5MHz	1uHz ~10MHz	1uHz ~15MHz	1uHz ~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: 1uHz~Max.frequency Other waveforms: 1uHz ~1MHz		Square wave: 1uHz~5MHz	
Resolution	1uHz			
Accuracy	±(5×10 ⁻⁵)			
Stability	±5×10 ⁻⁶ /3 hours			
Amplitude (CHA)				
Amplitude range	2mVpp~20Vpp, 1uHz ~10MHz (high impedance) 2mVpp~15Vpp, 10MHz~15MHz (high impedance) 2mVpp~8Vpp, 15MHz~20MHz (high impedance)			
Resolution	20mVpp (amplitude>2Vpp), 2mVpp (amplitude<2Vpp)			
Accuracy	± (1% +2 mVrms) (high impedance, RMS, frequency 1kHz)			
Stability	±0.5% / 3 hours			
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			

Twintex instrument

Model	TFG-3605E	TFG-3610E	TFG-3615E	TFG-3620E
Frequency range	1uHz~5MHz	1uHz ~10MHz	1uHz ~15MHz	1uHz ~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: 1uHz~1MHz; Other waveforms: 1uHz ~100kHz Resolution: 1uHz Accuracy: $\pm(1 \times 10^{-5})$			
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 $\leq 20\text{ns}$			
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				
Interface	RS232 serial port 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: <45VA			
Environmental condition	Temperature: 0 ~ 40°C Humidity: <80%			
Standard accessories	Power cord x1, Operation manual x1, software CD x1, RS232 cable x1, BNC-BNC cable X1, test lead x1			
Dimension	415x295x195 (mm)			
Weight	3.5 kg			

TFG3500 Series Function Generator



TFG-3510



TFG-3210

Features

- ✓ Max. output frequency 10MHz/20MHz/40MHz/60MHz
- ✓ TFG3500 series with 3.5-inch TFT LCD display, TFG3200 series with blue LCD display
- ✓ Direct Digital Synthesis technology (DDS)
- ✓ 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: RS232 interface, USB interface, 200MHz frequency counter,
- ✓ Optional parts: power amplifier

Twintex instrument

DDS Function Generator

Specifications

Model	TFG-3510 TFG-3210	TFG-3520 TFG-3220	TFG-3540 TFG-3240	TFG-3560 TFG-3260
Frequency range	40uHz~10MHz	40uHz~20MHz	40uHz~40MHz	40uHz~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 40uHz~2kHz, resolution 40uHz			
Square wave range	40uHz~10MHz	40uHz~20MHz	40uHz~20MHz	40uHz~20MHz
Accuracy	±(5×10 ⁻⁵ + 40mHz)			
Stability	±5×10 ⁻⁶ / 3 hours			
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% + 2 mVrms) (high impedance, RMS, frequency 1kHz)			
Stability	±0.5% / 3 hours			
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%			

Twintex instrument

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				
Interface	USB Universal Serial Bus Interface RS232 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: <45VA			
Environmental condition	Temperature: 0 ~ 40°C Humidity: <80%			
Standard accessories	Power cord x1, Operation manual x1, BNC-BNC cable X1, test lead x1			
Dimension	415x295x195 (mm)			
Weight	3.5 kg			

Twintex instrument

DDS Function Generator

TFG3500E Series Low Cost Function Generator



TFG-3505E



TFG-3205E

Features

- ✓ Max. output frequency 5MHz/10MHz/15MHz/20MHz
- ✓ TFG3500E series with 3.5-inch TFT LCD display, TFG3200E series with blue LCD display
- ✓ Direct Digital Synthesis technology (DDS)
- ✓ 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, CHA & CHB ADD functions, TTL output
- ✓ Over voltage protection, over current protection, short circuit protection, reverse voltage protection
- ✓ Standard parts: 200MHz frequency counter
- ✓ Optional parts: RS232 interface, power amplifier

Twintex instrument

DDS Function Generator

Specifications

Model	TFG-3505E TFG-3205E	TFG-3510E TFG-3210E	TFG-3515E TFG-3215E	TFG-3520E TFG-3220E
Frequency range	1uHz ~5MHz	1uHz ~10MHz	1uHz ~15MHz	1uHz ~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: 1uHz ~Max.frequency Other waveforms: 1uHz ~1MHz		Square wave: 1uHz ~5MHz	
Resolution	1uHz			
Accuracy	±(5×10 ⁻⁵)			
Stability	±5×10 ⁻⁶ /3 hours			
Amplitude (CHA)				
Amplitude range	2mVpp~20Vpp, 1uHz ~10MHz (high impedance) 2mVpp~15Vpp, 10MHz~15MHz (high impedance) 2mVpp~8Vpp, 15MHz~20MHz (high impedance)			
Resolution	20mVpp (amplitude>2Vpp), 2mVpp (amplitude<2Vpp)			
Accuracy	± (1% +2 mVrms) (high impedance, RMS, frequency 1kHz)			
Stability	±0.5% / 3 hours			
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			
Burst (CHA)				
Carrier signal	CHA signal			
Trigger signal	TTL_A signal			
Burst counts	1~65000 cycles			
Burst mode	Internal TTL, External, Single			

Twintex instrument

DDS Function Generator



Model	TFG-3505E TFG-3205E	TFG-3510E TFG-3210E	TFG-3515E TFG-3215E	TFG-3520E TFG-3220E
Frequency range	1uHz ~5MHz	1uHz ~10MHz	1uHz ~15MHz	1uHz ~20MHz
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: 1uHz~1MHz; Other waveforms: 1uHz ~100kHz Resolution: 1uHz Accuracy: $\pm (1 \times 10^{-5})$			
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 $\leq 20\text{ns}$			
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)				
Interface	RS232 serial port 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: <45VA			
Environmental condition	Temperature: 0 ~ 40°C Humidity: <80%			
Standard accessories	Power cord x1, Operation manual x1, BNC-BNC cable X1, test lead x1			
Dimension	415x295x195 (mm)			
Weight	3.5 kg			

Specifications are subject to change without prior notice.

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