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Arbitrary Waveform/Function Generator



Product No : TFG3500A_Series

Product Description

The TFG3500A series are arbitrary waveform/function generators with maximum frequency of 10MHz, 20MHz and 40MHz, based on Direct Digital Synthesis (DDS) 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. Free PC software for USB and RS-232 interfaces control. The TFG3500A series have additional functions of multiple modulations FM, AM, FSK and PSK, 200MHz external frequency counter, 40 sets memories and multiple protections. Stable output frequency, high accuracy and low distortion make TFG3500A series an ideal solution for an accurate and affordable signal source for industrial, scientific research and educational applications.

- ★ Max. output frequency 10MHz/20MHz/40MHz
- ★ 2 output channels
- ★ 3.5-inch TFT LCD display
- ★ Direct Digital Synthesis technology (DDS)
- ★ Min. output amplitude 1mV, high resolution 1 μ Vpp
- ★ Sampling rate 180MSa/s, vertical resolution 10 bits, waveform length 16000 points
- ★ 32 built-in waveforms and 8 user-defined arbitrary waveforms from CHB
- ★ 40 sets save & recall for panel settings
- ★ Modulations: FM, AM, FSK, PSK
- ★ Frequency sweep, amplitude sweep, burst and CHA&CHB ADD functions
- ★ Over voltage, over current, short circuit and reverse voltage protections
- ★ High speed rotary dial and keypad input
- ★ Standard USB and RS-232 interface for PC remote control
- ★ Standard 200MHz external frequency counter
- ★ Optional power amplifier

Model		TFG-3510A	TFG-3520A	TFG-3540A
Output frequency		40μHz~10MHz	40μHz~20MHz	40μHz~40MHz
Waveform				
Output waveform		Sine, Square, Pulse, DC		
Waveform length		4~16000 points		
Vertical resolution		10 bits		
Sampling rate		180MSa/s		
Sine	Harmonic distortion	≥50dBc (<1MHz); ≥45dBc(1~10MHz); ≥40dBc (10~20MHz); ≥30dBc (>20MHz)		
	Total distortion	≤0.1% (20Hz~200kHz)		
Square	Rise/fall time	≤20ns		
	Overshoot	≤5%		
	Duty cycle	50.0%		
Pulse	Rise/fall time	≤20ns		
	Overshoot	≤5%		
	Duty cycle	1%~99% (≤1MHz)		
Frequency				
Range	Sine	40μHz~10MHz	40μHz~20MHz	40μHz~40MHz
	Square	40μHz~10MHz	40μHz~10MHz	40μHz~20MHz
	Pulse	40μHz~10MHz		
Internal standard frequency		Temperature compensation 26MHz		
Resolution		40μHz (40μHz~2kHz); 40mHz (>2kHz)		
Accuracy		±(5×10 ⁻⁶ +40mHz)		
Stability		±1×10 ⁻⁶ /3hours (small TCXO)		
Output characteristics				
Amplitude	Range	1mVpp~10Vpp (into 50Ω, ≤10MHz)		
		1mVpp~7Vpp (into 50Ω, 10MHz~40MHz)		
		1mVpp~20Vpp (open circuit, ≤10MHz)		
		1mVpp~14Vpp (open circuit, 10MHz~40MHz)		
	Resolution	1μVpp (open circuit)		
	Accuracy	±(1%+1mVrms) (open circuit, 1kHz, sine)		
	Stability	±0.5% /3hours		
	Flatness	±5% (<5MHz); ±10% (5~10MHz); ±20% (>10MHz)		
	Output impedance	50Ω		
	Offset	Range	±10V (open circuit, attenuation 0 dB)	
Resolution		20mVdc		

	Accuracy	$\pm(1\%+20\text{mVdc})$
Sweep		
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	
Frequency Modulation (FM)		
Carrier signal	Sine or square, frequency range same as main signal	
Modulating signal	CHB or external signal	
Modulating frequency	Same as CHB signal	
Deviation	0%~20%	
Source	Internal or external	
Amplitude Modulation (AM)		
Carrier signal	Sine or square, frequency range same as main signal	
Modulating signal	CHB or external signal	
Modulating frequency	Same as CHB signal	
Distortion	$\leq 2\%$	
Depth	0%~120%	
Source	Internal or external	
Relative modulating error	$\leq \pm 5\%$	
Shift Keying		
FSK	Free to set the hop frequency and the carrier frequency	
PSK	Hop phase: 0~360°, resolution: 11.25°	
Control	Internal	
Alternative rate	10ms~60s	
CHB output characteristics		
Output waveform	32 built-in waveforms, including Sine, Square, Triangle, Saw tooth, Ladder, etc. 8 user-defined arbitrary waveforms	
Waveform length	1024 points	
Vertical resolution	8 bits	
Sampling rate	100MSa/s	
Frequency range	Sine: 10mHz~1MHz; Other: 10mHz~50kHz	
Frequency resolution	40mHz	

Frequency accuracy	$\pm(1 \times 10^{-5} + 40 \text{mHz})$
Amplitude range	100mVpp~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	1°/step
CHB signal is used as burst signal	
Frequency of CHB	40mHz~1MHz
Burst frequency	10mHz~50kHz
Burst count	1~65000 cycles
Trigger source	Internal, Single, TTL
Frequency counter	
Frequency range	1Hz~200MHz
Input amplitude	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)
Interface	USB interface, RS-232 interface
Operating environment	0~40°C, <80%RH
Power source	AC110V/220V±10% selectable, 50/60Hz, Max. 45VA
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(WxHxD)	260x110x385mm
Weight	4kg

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