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## Low-Cost DDS Function Generator



Product No : TFG3200\_Series

### Product Description

The TFG3200 series are LOW-COST 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.

The 10 bits resolution, 180MSa/s sampling rate, 16k pts memory length, and 32 built-in waveforms create various waveforms for different needs. Optional PC software for RS-232 interfaces for system control, and optional 200MHz frequency counter for external signal measuring.. The TFG3200 series have additional functions of multiple modulations (FM, AM, FSK, ASK, PSK), 40 sets memories and multiple protections. Low-cost, multi-functional, high accuracy, the TFG3200 series provides an ideal solution for an accurate and affordable signal source for industrial, scientific research and educational applications.

- ★ Max. output frequency 10MHz/20MHz/40MHz/60MHz
- ★ 2 output channels
- ★ 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 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
- ★ Optional parts: RS-232 interface, 200MHz frequency counter, power amplifier

Model		TFG-3210	TFG-3220	TFG-3240	TFG-3260
Frequency range		40μHz~10MHz	40μHz~20MHz	40μHz~40MHz	40μHz~60MHz
<b>Waveform (CHA)</b>					
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%			
<b>Frequency (CHA)</b>					
Range	Sine	40μHz~10MHz	40μHz~20MHz	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>Amplitude (CHA)</b>					
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% (frequency1~10MHz); ±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			

<b>DC Offset (CHA)</b>	
Range	±10V (high impedance, attenuation 0 dB)
Resolution	20mVdc
Accuracy	±(1%+20mVdc)
<b>Sweep (CHA)</b>	
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
<b>Frequency Modulation (FM) (CHA)</b>	
Modulating signal	Internal or external signal
FM deviation	0%~20%
<b>Amplitude Modulation (AM) (CHA)</b>	
Modulating signal	Internal or external signal
AM depth	0%~120%
<b>Shift Keying (CHA)</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>Waveform (CHB)</b>	
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
<b>Frequency (CHB)</b>	
Range	Sine: 10mHz~1MHz; Other: 10mHz~100kHz
Resolution	10mHz
Accuracy	±(1x10 <sup>-5</sup> +10mHz)
<b>Amplitude (CHB)</b>	
Range	50mVpp~20Vpp (high impedance)
Resolution	2mVpp
Output impedance	50Ω

<b>Harmonic (CHB)</b>	
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
<b>Burst (CHB)</b>	
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
<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 (optional)</b>	
Testing frequency range	1Hz~200MHz
Input signal amplitude	100mVpp~20Vpp
<b>Remote Control (optional)</b>	USB interface, RS-232 interface
<b>Power amplifier (optional)</b>	
Max.output power	7W (8Ω), 1W (50Ω)
Max.output voltage	22Vpp
Frequency bandwidth	1Hz~200kHz
<b>Common characteristics</b>	
Operation characteristics	Key operation for all functions, Menu display, Rotary dial adjustment
Display	Mono LCD
Language	English, Chinese (simplified), Chinese (traditional)
Power source	AC110V/220V±10% selectable, 50/60Hz, Max. 45VA
Environmental condition	0~40°C, <80%RH
Standard accessories	Power cord x1, Operation manual x1, BNC-BNC cable x1, Test lead x1
Optional accessories	Software CD x1, USB cable x1, RS-232 cable x1
Dimension	385x260x110mm
Weight	3.5kg

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