

## TFG3600E Series

### Introduction

The TFG3600E series are arbitrary waveform/function generators with maximum frequency of 5MHz, 10MHz, 15MHz and 20MHz, based on Direct Digital Synthesis (DDS) 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. Free PC software for RS-232 interface control.

The TFG3600E series have additional functions of multiple modulations FM, FSK, ASK and PSK, 200MHz external frequency 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)
- ✓ Min. output amplitude 1mV (50Ω) with good stability
- ✓ Sampling rate 100MSa/s, vertical resolution 8 bit, waveform length 1024 points
- ✓ Arbitrary waveform function
- ✓ 32 built-in waveforms and 8 user-defined arbitrary waveforms
- ✓ 40 sets save & recall for panel settings
- ✓ Modulations: FM, FSK, ASK, PSK
- ✓ Frequency sweep, amplitude sweep, burst and TTL output functions
- ✓ Over voltage, over current, short circuit and reverse voltage protections
- ✓ High speed rotary dial and keypad input
- ✓ Standard RS-232 interface for PC remote control
- ✓ Standard 200MHz external frequency counter
- ✓ Optional power amplifier

### Product photo

TFG-3605E



**TWINTEX** • [www.twintex.com.tw](http://www.twintex.com.tw)

Taipei, Taiwan: Tel: +886-02-2915 0101 • Fax: +886-02-2916 0101  
Shenzhen, China: Tel.: +86-755-2812 9890 • Fax: +86-755-2814 9802

## Specifications

Model		TFG-3605E	TFG-3610E	TFG-3615E	TFG-3620E
Output frequency		1μHz~5MHz	1μHz~10MHz	1μHz~15MHz	1μHz~20MHz
<b>Waveform</b>					
Output waveform		32 built-in waveforms, including Sine, Square, Triangle, Ramp, Pulse, etc. 8 user-defined arbitrary waveforms			
Waveform length		1024 points			
Vertical resolution		8 bits			
Sampling rate		100MSa/s			
Sine	Harmonic distortion	≥40dBc (<1MHz); ≥35dBc (1~20MHz)			
	Total distortion	≤1% (20Hz~200kHz)			
Square	Rise/fall time	≤35ns			
	Overshoot	≤10%			
	Duty cycle	1%~99%			
<b>Frequency</b>					
Range	Sine	1μHz~5MHz	1μHz~10MHz	1μHz~15MHz	1μHz~20MHz
	Square	1μHz~5MHz			
	Other	1μHz~1MHz			
Resolution		1μHz			
Accuracy		±5×10 <sup>-5</sup>			
Stability		±5×10 <sup>-6</sup> /3hours			
<b>Output characteristics</b>					
Amplitude	Range	2mVpp~20Vpp (open circuit, ≤10MHz)			
		2mVpp~15Vpp (open circuit, 10MHz~15MHz)			
		2mVpp~8Vpp (open circuit, 15MHz~20MHz)			
	Resolution	20mVpp (amplitude>2Vpp); 2mVpp (amplitude<2Vpp)			
	Accuracy	±(1%+2mVrms) (open circuit, 1kHz, sine)			
	Stability	±0.5% /3hours			
	Flatness	±5% (<10MHz); ±10% (>10MHz)			
Output impedance		50Ω			
Offset	Range	±10V (open circuit, attenuation 0 dB)			
	Resolution	20mVdc			
	Accuracy	±(1%+20mVdc)			
<b>Sweep</b>					
Parameter		Frequency, Amplitude			
Range		Free to set start and stop point			
Time		100ms~900s			
Direction		Up, Down, Up-Down			
Mode		Linearity, Logarithmic			
Control		Auto sweep or manual sweep			
<b>Frequency Modulation (FM)</b>					
Carrier signal		CHA signal			
Modulating signal		CHB or external signal			
Deviation		0%~20%			
<b>Shift Keying</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: 1°			
Alternative rate		10ms~60s			

<b>Burst</b>	
Carrier signal	CHA signal
Trigger signal	TTL_A signal
Burst counts	1~65000 cycles
Trigger source	Internal TTL, External, Single
<b>CHB output characteristics</b>	
Output waveform	32 built-in waveforms, including Sine, Square, Triangle, Ramp, Pulse, etc. 8 user-defined arbitrary waveforms
Waveform length	1024 points
Vertical resolution	8 bits
Sampling rate	12.5MSa/s
Frequency range	Sine: 1μHz~1MHz; Other: 1μHz~100kHz
Frequency resolution	1μHz
Frequency accuracy	$\pm 1 \times 10^{-5}$
Amplitude range	50mVpp~20Vpp (open circuit)
Amplitude resolution	20mVpp
Output impedance	50Ω
CHB signal is used as burst signal	
Carrier signal	CHB signal
Trigger signal	TTL_B signal
Burst counts	1~65000 cycles
Trigger source	Internal TTL, External, Single
<b>TTL output</b>	
Waveform	Square, rise/fall time $\leq 20$ ns
Frequency	10mHz~1MHz
Amplitude	TTL, CMOS compatible, low<0.3V, high>4V
<b>Frequency counter</b>	
Frequency range	1Hz~200MHz
Input amplitude	100mVpp~20Vpp
<b>Power amplifier (optional)</b>	
Max. output power	7W (8Ω), 1W (50Ω)
Max. output voltage	22Vpp
Frequency bandwidth	1Hz~200kHz
<b>General</b>	
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	RS-232 interface
Operating environment	0~40°C, <80%RH
Power source	AC110V/220V $\pm 10\%$ selectable, 50/60Hz, Max. 45VA
Accessories	Power cord x1, Operation manual x1, Software CD x1, RS-232 cable x1, BNC-BNC cable x1, Test lead x1
Dimension (WxHxD)	260x110x385mm
Weight	3.5kg