

AFG-2100/2000 Series



Innovation and Value in Waveform Design

The AFG-2100/2000 Series Arbitrary Function Generators are DDS based signal generators covering the output of Sine, Square, Ramp, Noise and 20MSa/s Arbitrary waveform. The 0.1Hz resolution and 1% ~ 99% adjustable duty cycle of Square(Pulse) waveform greatly extend its application range in various fields. The AFG-2100/2000 Series includes 6 models in three frequency bands of 5MHz, 12MHz and 25MHz. Besides the features of AFG-2000, AFG-2100 also carries additional features of AM/FM/FSK Modulation, Sweep and Frequency Counter. The 3.5" color LCD will clearly display the digital waveform parameters set through front panel. The entire Series is equipped with USB Device interface for remote control and importing waveform data from PC.

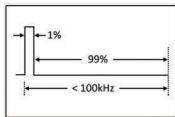
Built-In Arbitrary Waveform Function

20MSa/s sampling rate, 10 bit vertical resolution and 4k point memory equip AFG-2100/2000 the arbitrary waveform capacity. User can create waveform by mean of either point by point input from front panel or PC software.



1% Adjustable Duty Cycle of Square Wave

The AFG-2100/ 2000 Series provides 1% ~ 99% variable duty cycle for its square waveform output. This feature allows generating the pulse waveform to simulate a spike signal or a transient signal.



Fully Digital Entry Design

The fully digital entry design of AFG-2100/2000 Series improves the setting uncertainty of conventional Function Generator and therefore significantly increases the accuracy of its waveform output. The 3.5" LCD screen allows user to see the parameter value change in detail when the adjustment is in progress.



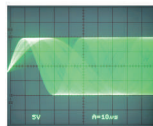
Amplitude and DC Offset Display

In addition to the setting parameters, the amplitude, DC offset values are also displayed on the LCD screen. Three amplitude units, Vpp, Vrms and dBm, can be selected and exchanged.



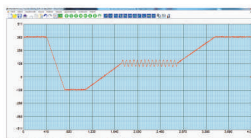
AM/FM/FSK, Sweep, Counter(AFG-2100 only)

AFG-2100 models are equipped with additional AM/FM/FSK Modulation, Sweep and Frequency Counter functions. The 150MHz frequency counter saves user the cost of purchasing a standalone frequency counter.



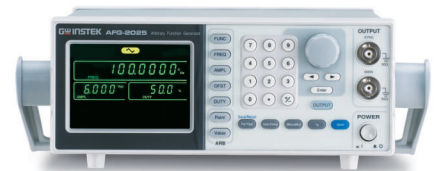
Arbitrary Waveform Editing Software

A free arbitrary waveform editing software is available which is used to edit the arbitrary waveform on PC. After completing the waveform editing, it can be downloaded to AFG through USB interface for waveform output.



FEATURES

- 0.1Hz ~ 5/12/25 MHz with in 0.1Hz Resolution
- Sine, Square, Ramp, Noise and Arbitrary Waveform
- 20MSa/s Sampling Rate, 10 bit Vertical Resolution and 4k point Memory for Arbitrary Waveform
- 1% ~ 99% Adjustable Duty Cycle for Square Waveform
- Waveform Parameter Setting Through Numeric Keypad Entry & Knob Selection
- Amplitude, DC Offset and Other Key Setting Information Shown on the 3.5" LCD Screen Simultaneously
- AM/FM/FSK Modulation, Sweep, and Frequency Counter functions (AFG-2100 only)
- USB Device Interface for Remote Control and Waveform Editing
- PC Arbitrary Waveform Editing Software



AFG-2000 Series Front

APPLICATIONS

- Audio Products Frequency Characteristics Measurement
- Pulse Signal as Trigger or Synchronization Signal for Electronic Product Testing
- Pulse Noise Simulation
- Reference Clock Signal of Electronic Device
- Vibration Signal Simulation
- Noise Simulation for Communication System Educational Lab



SPECIFICATIONS

	AFG-2100 Series			AFG-2000 Series			
	AFG-2105	AFG-2112	AFG-2125	AFG-2005	AFG-2012	AFG-2025	
MODELS	Sine, Square, Ramp, Noise, Arbitrary Waveform						
WAVEFORMS	Sine, Square, Ramp, Noise, Arbitrary Waveform						
ARITRARY FUNCTION	Sample Rate	20MSa/s					
	Repetition Rate	10MHz					
	Waveform Length	4k point					
	Amplitude Resolution	10 bit					
FREQUENCY CHARACTERISTICS	Range	Sine/Square	0.1Hz~5MHz	0.1Hz~12MHz	0.1Hz~25MHz	0.1Hz~5MHz	
		Ramp	0.1Hz ~ 1MHz				
	Resolution	Sine,Square,Ramp	0.1Hz				
	Accuracy	Stability	±20ppm				
		Aging	±1ppm, per 1 year				
		Tolerance	≤1mHz				
OUTPUT CHARACTERISTICS	Amplitude	Range	1mVpp~10Vpp(into 50Ω), 0.1Hz~20MHz; 2mVpp~20Vpp(open-circuit), 0.1Hz~20MHz				
		Accuracy	1mVpp~5Vpp(into 50Ω), 20MHz~25MHz; 2mVpp~10 pp(open-circuit), 20MHz~25MHz				
		Resolution	±2% of setting ±1mVpp;(at 1kHz,>10mVpp)				
		Flatness	0.1mV or 3digits				
		Units	±1% (0.1dB) ≤ 100kHz; ±3% (0.3dB) ≤ 5MHz; ±4% (0.4dB) ≤ 12MHz; ±20% (2dB) ≤ 20MHz; ±5% (0.4dB) ≤ 25MHz; (sine wave relative to 1 kHz)				
		Offset	Range	Vpp, Vrms, dBm			
			Accuracy	±5Vpk ac+dc(into 50Ω); ±10Vpk ac+dc(open circuit); ±2.5Vpk ac+dc(into 50Ω) for 20MHz~25MHz; ±5Vpk ac+dc(open circuit) for 20MHz~25MHz			
		Waveform Output	Impedance	2% of setting + 5mV+ 0.5% of amplitude			
			Protection(main output)	50Ω typical (fixed); >300kΩ (output disabled)			
		SYNC Output	Level	Short-circuit protected ; Overload relay auto matically disables main output			
		Impedance	TTL-compatible into >1kΩ				
		Rise or Fall Time	50Ω nominal				
			≤25ns				
SINE WAVE CHARACTERISTICS	Harmonic Distortion	-55 dBc DC ~ 200kHz, Ampl > 0.1Vpp; -50 dBc 200kHz ~ 1MHz, Ampl > 0.1Vpp -35 dBc 1MHz ~ 5MHz, Ampl > 0.1Vpp; -30 dBc 5MHz ~ 25MHz, Ampl > 0.1Vpp					
SQUAREWAVE CHARACTERISTICS	Rise/Fall Time	≤25ns at maximum output (into 50Ωload)					
	Overshoot	< 5%					
	Asymmetry	1% of period+1 ns					
	Variable Duty Cycle	1%~99%≤100kHz ; 20.0%~80.0%≤5MHz ; 40.0%~60.0%≤10MHz ; 50%≤25MHz (1% Resolution for full Frequency Range)					
RAMP CHARACTERISTICS	Linearity	< 0.1% of peak output					
	Variable Symmetry	0%~100%(0.1% Resolution)					
AM MODULATION	Carrier Waveforms	Sine, Square, Triangle					
	Modulating Waveforms	Sine, Square, Triangle					
	Modulating Frequency	2 mHz~20 kHz (Int); DC~20KHz (Ext)			-		
	Depth	0%~120.0%					
	Source	Internal/External					
FM MODULATION	Carrier Waveforms	Sine, Square, Triangle					
	Modulating Waveforms	Sine, Square, Triangle					
	Modulating Frequency	2 mHz~20 kHz (Int); DC~20KHz (Ext)			-		
	Deviation	DC to Max Frequency					
	Source	Internal/External					
SWEEP	Waveforms	Sine, Square, Triangle					
	Type	Linear or Logarithmic					
	Start/Stop Frequency	0.1Hz to Max Frequency			-		
	Sweep Time	1ms~500s					
	Source	Internal/External					
FSK	Carrier Waveforms	Sine, Square, Triangle					
	Modulating Waveforms	50% duty cycle square					
	Internal Rate	2mHz~20kHz			-		
	Modulation Rate	2mHz~100kHz(INT); DC~100kHz(Ext)					
	Frequency Range	0.1Hz~Max Frequency					
	Source	Internal/External					
FREQUENCY COUNTER	Range	5Hz~150MHz					
	Accuracy	Time Base accuracy ± 1count					
	Time base	±20ppm(23°C±5°C)after 30minutes warm up			-		
	Resolution	100nHz for 1Hz, 0.1Hz for 100MHz					
	Input Impedance	1KΩ/1pf					
	Sensitivity	35mVrms~30Vms (5Hz~150MHz)					
STORE/RECALL	10 Groups of Setting Memories						
INTERFACE	USB(Device)						
DISPLAY	LCD						
POWER SOURCE	AC100 ~ 240V , 50 ~ 60Hz						
POWER CONSUMPTION	25 VA						
OPERATING ENVIRONMENT	Temperature to satisfy the specification: 18~28°C; Operating temperature: 0~40°C Relative Humidity: ≤80%, 0~40°C; ≤70%, 35~40°C; Installation category: CAT II						
OPERATING ALTITUDE	2000 meters						
STORAGE TEMPERATURE	-10~70°C, Humidity: ≤70%						
DIMENSIONS & WEIGHT	266(W)×107(H)×293(D) mm ; Approx. 2.5 kg						

Specifications subject to change without notice. FG-2000GD3DH

ORDERING INFORMATION	
AFG-2005	5MHz Arbitrary Waveform Function Generator
AFG-2105	5MHz Arbitrary Waveform Function Generator
AFG-2012	12MHz Arbitrary Waveform Function Generator
AFG-2112	12MHz Arbitrary Waveform Function Generator
AFG-2025	25MHz Arbitrary Waveform Function Generator
AFG-2125	25MHz Arbitrary Waveform Function Generator

ACCESSORIES			
CD (user manual + software) × 1, Quick Start Guide × 1, Power cord × 1			
AFG-2100 Series - GTL-101 Test Lead × 2, Instruction Manual × 1, Power cord × 1			
AFG-2000 Series - GTL-101 Test Lead × 1, Instruction Manual × 1, Power cord × 1			
OPTIONAL ASSESSORIES			
GTL-246 USB Cable, USB 2.0 Type A - Type B, 4P			
FREE DOWNLOAD			
PC Software	FreeWave software	Driver	USB driver

Global Headquarters
GOOD WILL INSTRUMENT CO., LTD.
 No.7-1, Jhongsing Road, Tucheng Dist., New Taipei City 236, Taiwan
 T +886-2-2268-0389 F +886-2-2268-0639
 E-mail: marketing@goodwill.com.tw

GW INSTEK
 Simply Reliable
www.gwinstek.com