ARBITRARY FUNCTION GENERATOR

AFG-2100/2000 Series

CE USB PC Software

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

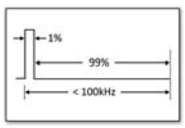
20MSa/s sampling rate, 10 bit vertical resolution and 4k point memory equip AFG-2100/2000 the arbitrary waveform capacity. User can create waveform by mean of either point by point input from front panel or PC software.

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.

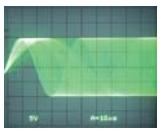
1% Adjustable Duty Cycle of Square Wave

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.



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.

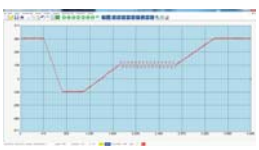


Fully Digital Entry Design

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.

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

GW INSTEK
Simply Reliable

SPECIFICATIONS

			AFG-2100 Series			AFG-2000 Series		
MODELS			**AFG-2105**	**AFG-2112**	**AFG-2125**	**AFG-2005**	**AFG-2012**	**AFG-2025**
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	0.1Hz~12MHz	0.1Hz~25MHz
		Ramp	0.1Hz ~ 1MHz					
	Resolution	**Sine,Square,Ramp**	0.1Hz					
	Accuracy	**Stability**	±20ppm					
		Aging	±1ppm, per 1 year					
		Tolerance	≤ 10mHz					
OUTPUT CHARACTERISTICS	**Amplitude**	**Range**	≤ 20MHz : 1mVpp~10Vpp(50Ω); 2mVpp~20Vpp(open-circuit) ≤ 25MHz : 1mVpp~5Vpp(50Ω); 2mVpp~10Vpp(open-circuit)					
		Accuracy	±2% of setting ±1mVpp;(at 1kHz/into 50Ω without DC offset)					
		Resolution	1mV or 3digits					
		Flatness	±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/into 50Ω)					
		Units	Vpp, Vrms, dBm					
	Offset	**Range**	±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					
		Accuracy	2% of setting+10mV+0.5% of amplitude					
	Waveform Output	**Impedance**	50Ω typical (fixed); >300kΩ (output disabled)					
		Protection(main output)	Short-circuit protected ; Overload relay auto matically disables main output					
	SYNC Output	**Level**	TTL-compatible into >1kΩ					
		Impedance	50Ω nominal					
		Rise or Fall Time	≤ 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~Max Frequency					
	Sweep Time		1ms~500s					
	Source		Internal/External					
FSK	**Carrier Waveforms**		Sine, Square, Triangle			–		
	Modulating Waveforms		50% duty cycle square					
	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					
	Sensitivity		35mVrms~30Vrms (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 x 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 Arbitrary Waveform Editing Software **Driver** USB driver