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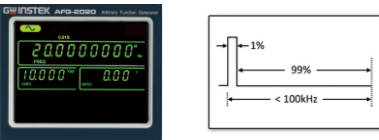
Built-In Arbitrary Waveform Function
20MSa/s sampling rate, 10 bit vertical resolution and 4k point memory equip AFG-2100/2000 the arbitrary waveform capacity. User can create waveform by mean of either point by point input from front panel or PC software.

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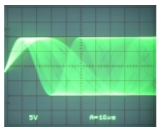
Arbitrary Waveform Editing Software
A free arbitrary waveform editing software is available which is used to edit the arbitrary waveform on PC. After completing the waveform editing, it can be downloaded to AFG through USB interface for waveform output.
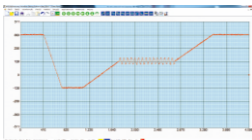
FEATURES

- 0.1Hz ~ 5/12/25 MHz with in 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

AFG-2000/2100 Series

GW INSTEK
Simply Reliable

SPECIFICATIONS

			AFG-2105	AFG-2112	AFG-2125	AFG-2005	AFG-2012	AFG-2025
WAVEFORMS ARITRARY FUNCTION	Sample Rate		Sine,Square,Ramp 20 MSa/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
	Triangle, Ramp		1MHz					
	Resolution		0.1Hz					
	Stability		±20 ppm					
	Aging		±1 ppm, per 1 year					
	Tolerance		< 10 mHz					
OUTPUT CHARACTERISTICS	Amplitude	Range	≤20MHz:1mVpp~10Vpp(into 50Ω);2mVpp~20Vpp(open-circuit) ≤25MHz:1mVpp~5Vpp(into 50Ω);2mVpp~10Vpp(open-circuit)					
		Accuracy	±1% of setting ±1 mVpp;(at 1 kHz,>10 mVpp)					
		Resolution	0.1 mV or 3 digits					
		Flatness	±1%(0.1dB)≤100kHz;± 3%(0.3dB)≤5MHz;± 5%(0.4dB)≤12MHz ±20%(2dB)≤20MHz;± 5% (0.4dB)≤25MHz;(sine wave relative to 1 kHz)					
		Units	Vpp, Vrms, dBm					
	Offset	Range	±5 Vpk ac +dc (into 50Ω);±10Vpk ac +dc (Open circuit)					
		Accuracy	1% of setting + 2 mV+ 0.5% of amplitude					
	Waveform Output	Impedance	50Ω typical (fixed); > 10MΩ (output disabled)					
		Protection	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					
SINEWAVE CHARACTERISTICS	Harmonic Distortion		-55dBc, DC~1MHz, Ampl>1Vpp ; -45dBc, 1MHz~5MHz, Ampl>1Vpp ; -30dBc, 5MHz~20MHz, Ampl>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; 10%~90%≤2MHz;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 to 20 kHz (Int);DC to 20KHz (Ext)					
	Depth		0% to 120.0%					
FM MODULATION	Carrier Waveforms		Sine, Square, Triangle			—		
	Modulating Waveforms		Sine, Square, Triangle					
	Modulating Frequency		2 mHz to 20 kHz (Int);DC to 20KHz (Ext)					
	Deviation		DC to Max Frequency					
FSK	Sweep Time		1ms~500s			—		
	Carrier Waveforms		Sine, Square, Triangle					
	Modulating Waveforms		50% duty cycle square					
	Internal Rate		2mHz~20kHz					
	Frequency Range		0.1Hz~Max Frequency					
SWEEP	Waveforms		Sine, Square, Triangle			—		
	Type		Linear or Logarithmic					
	Start/Stop Frequency		0.1Hz to Max Frequency					
FREQUENCY COUNTER	Range		5Hz~150MHz			—		
	Accuracy		Time Base accuracy±1count					
	Time base		±20ppm (23℃ ± 5℃) after 30 minutes warm up					
	Resolution		The maximum resolution is:100nHz for 1Hz,0.1Hz for 100MHz					
	Input Impedance		1MΩ/150pf					
	Sensitivity		≤35mVrms(5Hz~100MHz) ;≤45mVrms(100MHz~150MHz)					
STORE/RECALL			10 Groups of Setting Memories					
INTERFACE			USB(Device)					
POWER SOURCE			AC100 ~ 240V , 50 ~ 60Hz					
POWER CONSUMPTION			65 VA					
DIMENSIONS & WEIGHT			266(W)×107(H)×293(D) mm ; Approx. 3.2 kg			266(W)×107(H)×293(D) mm ; Approx. 3.1 kg		

Specifications subject to change without notice. FG-2000GD1DH

ORDERING INFORMATION
AFG-2100 Series   Arbitrary Waveform Function Generator
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ACCESSORIES
AFG-2100 Series - GTL-110 × 2, Instruction Manual × 1, Power cord × 1
AFG-2000 Series - GTL-110 × 1, Instruction Manual × 1, Power cord × 1

OPTIONAL ASSESSORIES
GTL-242   USB Cable, USB 2.0 Type A - Type B, 4P

FREE DOWNLOAD
PC Software   FreeWave software
Driver   USB driver