

## 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.



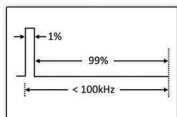
#### Amplitude and DC Offset Display

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.



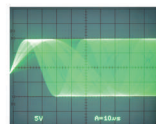
#### 1% Adjustable Duty Cycle of Square Wave

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.



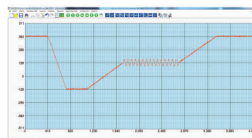
#### Fully Digital Entry Design

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 ~ 8/12/25 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



## SPECIFICATIONS

		AFG-2105	AFG-2112	AFG-2125	AFG-2005	AFG-2012	AFG-2025	
<b>WAVEFORMS ARITRARY FUNCTION</b>	<b>Sample Rate</b> <b>Repetition Rate</b> <b>Waveform Length</b> <b>Amplitude Resolution</b>	Sine, Square, Ramp 20 MSa/s 10MHz 4k point 10 bit						
<b>FREQUENCY CHARACTERISTICS</b>	<b>Range</b> Sine / Square Triangle, Ramp <b>Resolution</b> <b>Stability</b> <b>Aging</b> <b>Tolerance</b>	0.1Hz~5MHz	0.1Hz~12MHz	0.1Hz~25MHz	0.1Hz~5MHz	0.1Hz~12MHz	0.1Hz~25MHz	
<b>OUTPUT CHARACTERISTICS</b>	<b>Amplitude</b> Range  Accuracy Resolution Flatness  Units  Offset Range Accuracy Waveform Output Impedance Protection  SYNC Output Level Impedance Rise or Fall Time	≤20MHz:1mVpp~10Vpp( into 50Ω);2mVpp~20Vpp(open-circuit) ≤25MHz:1mVpp~5Vpp( into 50Ω);2mVpp~10Vpp(open-circuit) ±1% of setting ±1 mVpp;(at 1 kHz,>10 mVpp) 0.1 mV or 3 digits ±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) Vpp, Vrms, dBm ±5 Vpk ac +dc (into 50Ω);±10Vpk ac +dc (Open circuit) 1% of setting + 2 mV+ 0.5% of amplitude 50Ω typical (fixed); > 10MΩ (output disabled) Short-circuit protected ;Overload relay auto-matically disables main output TTL-compatible into>1kΩ 50Ω nominal ≤25ns						
<b>SINEWAVE CHARACTERISTICS</b>	<b>Harmonic Distortion</b>	-55dBc, DC~1MHz, Ampl>1Vpp ; -45dBc, 1MHz~5MHz, Ampl>1Vpp ; -30dBc, 5MHz~20MHz, Ampl>1Vpp						
<b>SQUAREWAVE CHARACTERISTICS</b>	<b>Rise/Fall Time</b> <b>Overshoot</b> <b>Asymmetry</b> <b>Variable Duty Cycle</b>	≤25ns at maximum output (into 50Ωload) < 5% 1% of period+1 ns 1%~99%≤100kHz; 10%~90%≤2MHz;20.0%~80.0%≤5MHz ; 40.0%~60.0%≤10MHz ; 50%≤25MHz ; (1% Resolution for full Frequency Range)						
<b>RAMP CHARACTERISTICS</b>	<b>Linearity</b> <b>Variable Symmetry</b>	< 0.1% of peak output 0%~100%(0.1% Resolution)						
<b>AM MODULATION</b>	<b>Carrier Waveforms</b> <b>Modulating Waveforms</b> <b>Modulating Frequency</b> <b>Depth</b>	Sine, Square, Triangle Sine, Square, Triangle 2 mHz to 20 kHz (Int);DC to 20KHz (Ext) 0% to 120.0%			-			
<b>FM MODULATION</b>	<b>Carrier Waveforms</b> <b>Modulating Waveforms</b> <b>Modulating Frequency</b> <b>Deviation</b>	Sine, Square, Triangle Sine, Square, Triangle 2 mHz to 20 kHz (Int);DC to 20KHz (Ext) DC to Max Frequency			-			
<b>FSK</b>	<b>Sweep Time</b> <b>Carrier Waveforms</b> <b>Modulating Waveforms</b> <b>Internal Rate</b> <b>Frequency Range</b>	1ms~500s Sine, Square, Triangle 50% duty cycle square 2mHz~20kHz 0.1Hz~Max Frequency			-			
<b>SWEEP</b>	<b>Waveforms</b> <b>Type</b> <b>Start/Stop Frequency</b>	Sine, Square, Triangle Linear or Logarithmic 0.1Hz to Max Frequency			-			
<b>FREQUENCY COUNTER</b>	<b>Range</b> <b>Accuracy</b> <b>Time base</b> <b>Resolution</b> <b>Input Impedance</b> <b>Sensitivity</b>	5Hz~150MHz Time Base accuracy±1count ±20ppm (23°C ± 5°C) after 30 minutes warm up The maximum resolution is:100nHz for 1Hz,0.1Hz for 100MHz 1MΩ/150pf ≤35mVrms(5Hz~100MHz) ; ≤45mVrms(100MHz~150MHz)			-			
<b>STORE/RECALL</b>		10 Groups of Setting Memories						
<b>INTERFACE</b>		USB(Device)						
<b>POWER SOURCE</b>		AC100 ~ 240V , 50 ~ 60Hz						
<b>POWER CONSUMPTION</b>		65 VA						
<b>DIMENSIONS &amp; WEIGHT</b>		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  
**AFG-2000 Series** Arbitrary Waveform Function Generator

### 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 Driver** FreeWave software  
USB driver

Global Headquarters

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