

USB MODULAR ARBITRARY FUNCTION GENERATOR



The brand new AFG-100/200 Series USB modular arbitrary function generator has four models for selections. The AFG-100/200 Series arbitrary function generator with many unique features such as light weight, handy, and USB interface compatible is an ideal choice for the applications at the general laboratories in applying stand-alone operation or collocation with the GDS-2000A Series digital oscilloscope.

The model, channel, and power arrangements of the AFG-100/200 Series are as follows:

	AFG-125	AFG-125P	AFG-225	AFG-225P
Channels	1	1	2	2
DC Power	NA	Yes	NA	Yes

DC power selections include 2.5V, 3.3V, and 5V.

One external 5V power supply (optional GPA-501) and PC software are required to independently operate the AFG-100/200 Series. When the AFG-100/200 Series is collocating with the GDS-2000A Series digital oscilloscope, the USB port of the GDS-2000A Series will provide the AFG-100/200 Series with necessary power.

The main features of the AFG-100/200 Series are output amplitude of 2.5Vpp (connecting with a load of 50 ohms), frequency range reaching 25MHz, frequency resolution of 1μHz, and built-in sine waveform, square waveform, triangle waveform, and noise signal. Square waveform can adjust the duty cycle from 1% to 99% and it can be utilized as pulse signal. Users, via the GDS-2000A APP, can select from the 66 built-in function waveforms to conduct arbitrary waveform editing. The AFG-100/200 Series, with functions of AM/FM/PM/FSK/SUM modulation, frequency sweep, burst and coupling, is suitable for various communications applications.

The AFG-100/200 Series provides arbitrary waveform sampling rate of 120 MSa/s, 10 bit resolution and arbitrary waveform editing function with 4k point memory to produce true point-by-point arbitrary waveform output. The easy-to-use external software interface allows users to quickly and conveniently operate the AFG-100/200 Series.

The AFG-100/200 Series connects the GDS-2000A series digital oscilloscope through the USB interface to directly duplicate and produce the retrieved waveform signals. Users can edit the required waveforms by the external computer software and send the edited waveforms to the AFG-100/200 Series to produce signals. The external computer program supports importing CSV format files.

AFG-225/225P dual channel models support independent channel or related channel applications. Three related functions are coupling, tracking and phase.

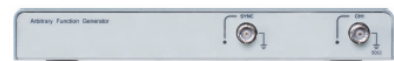
- * The coupling function allows users to freely set ratio and offset values for frequency and amplitude of both channels to realize that all parameters are simultaneously effective for both channels. The measurement of the Third-Order Intercept Point for an amplifier and the simulations of two different frequency oscillators outputting signals are two application examples for the coupling function.
- * The tracking function can produce 180 degree phase offset differential signals with same frequency and amplitude.
- * The phase function allows users to freely set phase parameters for both channels such as sine and cosine waveform signals.

The sum modulation function can sum up two signals into one and output this signal via one channel. One of the related applications is to sum up sine waveform and noise to execute speaker distortion tests.

AFG-125/125P/225/225P

FEATURES

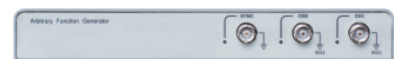
- Output Amplitude Range From 1mVpp to 2.5Vpp (into 50Ω)
- Wide Frequency Ranges From 1μHz ~ 25MHz (sine wave)
- 1μHz Resolution in Full Range
- Built-in Standard 120MSa/s, 10bit, 4k Points Arbitrary Function for Both Channels
- True Dual-Channel Output, CH2 Provides the Same Characteristics as CH1
- Dual-Channel Supports Couple, Tracking, Phase Operations
- 1% ~ 99% Adjustable Duty Cycle for Square Waveform
- Friendly User Interface for Easy Parameter Setting and Parameters Display
- Multiple Editing Methods to Edit Arbitrary Waveform Easily
- Built-in Standard AM/FM/PM/FSK/SUM/ Sweep/Burst
- USB Device Interface for Remote Control and Waveform Editing



AFG-125



AFG-125P



AFG-225



AFG-225P

APPLICATIONS

- Power Supply / Transformer Simulations
- Laboratory and Educational Research
- Pulse Signal as Trigger or Synchronization
- Audio Electronics Applications
- Analog Circuit Testing

AFG-100/200 Series

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SPECIFICATIONS			
MODEL		AFG-125/AFG-125P	AFG-225/AFG-225P
OUTPUT CHANNELS		1	2
WAVEFORMS		Sine, Square, Ramp, Pulse, Noise, ARB	
ARBITRARY FUNCTIONS	Sample Rate Repetition Rate Waveform Length Amplitude Resolution Non-Volatile Memory	120 MSa/s 60MHz 4k points 10 bits 4k points	
FREQUENCY CHARACTERISTICS	Range Ramp Resolution Accuracy Stability Aging Tolerance	Sine/Square 1μHz~25MHz 1μHz~1MHz 1μHz ±20 ppm ±1 ppm, per 1 year ≤1 mHz	
OUTPUT CHARACTERISTICS	Amplitude Range Accuracy Resolution Flatness Units Offset Range Accuracy	GPA-501 power supply: 1mVpp ~ 2.5Vpp (into 50Ω), 2mVpp ~ 5Vpp (open-circuit) USB power supply: 1mVpp ~ 2Vpp (into 50Ω), 2mVpp ~ 4Vpp (open-circuit) ±2% of setting ±1 mVpp (at 1 kHz) 1mV or 3 digits ±1%(0.1dB) ≤100kHz, ±3%(0.3 dB) ≤5MHz, ±5%(0.4 dB) ≤12MHz, ±10%(0.9dB) ≤25MHz (sine wave relative to 1kHz) Vpp, Vrms, dBm GPA-501 power supply: ±1.25 Vpk ac +dc (into 50Ω), ±2.5Vpk ac +dc (Open circuit) USB power supply: ±1 Vpk ac +dc (into 50Ω), ±2 Vpk ac +dc (Open circuit) 2% of setting + 10mV+ 0.5% of amplitude	
WAVEFORM OUTPUT	Impedance Protection	50Ω typical (fixed), > 10MΩ (output disabled) Short-circuit protected. Overload relay automatically disables main output	
SINE WAVE CHARACTERISTICS	Harmonic Distortion	≤-50 dBc DC ~ 1MHz, Ampl >1Vpp ≤-35 dBc 1MHz ~ 5MHz, Ampl >1Vpp; ≤-30 dBc 5MHz ~ 25MHz, Ampl > 1Vpp	
SQUARE WAVE CHARACTERISTICS	Rise/Fall Time Overshoot Asymmetry Variable duty Cycle	≤10ns at maximum output. (into 50Ω load) ≤2% 1% of period +5 ns 1.0% ~ 99.0% ≤100kHz; 10% to 90% ≤ 1MHz, 50% ≤ 25MHz	
RAMP CHARACTERISTICS	Linearity Variable Symmetry	< 0.1% of peak output 0% to 100% (0.1% Resolution)	
PULSE CHARACTERISTICS	Period Pulse Width Overshoot Accuracy Jitter	40ns ~ 2000s 20ns ~ 1999.9s ≤2% 0.1%+20ns 20ppm +10ns	
AM MODULATION	Carrier Waveforms Modulating Waveforms Modulating Frequency Depth Source	Sine, Square, Ramp, Pulse, Arb Sine, Square, Triangle, Up ramp, Dn ramp 2mHz ~ 20kHz 0% ~ 120.0% Internal	
FM MODULATION	Carrier Waveforms Modulating Waveforms Modulating Frequency Peak Deviation Source	Sine, Square, Ramp, Sine, Square, Triangle, Up ramp, Dn ramp 2mHz ~ 20kHz DC to Max Frequency Internal	
SWEEP	Waveforms Type Start/Stop Freq Sweep Time Source	Sine, Square, Ramp, Linear or Logarithmic 1μHz to Max Frequency 1ms ~ 500s Internal / Manual	
FSK	Carrier Waveforms Modulating Waveforms Modulation Rate Frequency Range Source	Sine, Square, Ramp, Pulse 50% duty cycle square 2mHz ~ 100 kHz 1μHz to Max Frequency Internal	
PM	Carrier Waveforms Modulating Waveforms Modulation Frequency Phase deviation Source	Sine, Square, Ramp Sine, Square, Triangle, Up ramp, Dn ramp 2mHz ~ 20kHz 0° ~ 360° Internal	
SUM	Carrier Waveforms Modulating Waveforms Modulation Frequency SUM Depth Source	Sine, Square, Ramp, Pulse, Noise Sine, Square, Triangle, Up ramp, Dn ramp 2mHz to 20kHz 0% ~ 100.0% Internal	
SYNC OUTPUT	Type Level Assignment Polarity Fan-out Impedance	Sync, Sweep Marker, Burst Marker or Arbitrary Waveform Marker TTL Compatible into 50Ω Channel 1 or Channel 2 Normal or Inverted ≥4 TTL Load 50Ω Typical	
DUAL CHANNEL FUNCTION	Phase Track Coupling	-180° ~ 180° (Square and Pulse can not be change, Phase is 0°), Synchronize phase CH2~CH1 OR CH1~CH2 Frequency(Ratio or Difference), Amplitude & DC Offset	
BURST	Waveforms Frequency Burst Count Start/Stop Phase Internal Period Gate Source Trigger Source	Sine, Square, Ramp, Arb 1uHz~15 MHz(sine), 1uHz~15 MHz(Square), 1uHz~1 MHz (Ramp) 1 ~ 65535 cycles or Infinite -360 ~ +360 1ms ~ 500s External Trigger Single or Internal Rate	
TRIGGER DELAY	N-Cycle, Infinite	0s to 655350ns	
SAVE/RECALL		10 Groups of Setting Memories	
POWER OUTPUT	Only AFG-125P/AFG-225P	Output Voltage : (2.5V/3.3V/5V)±5%, Output Current : 0.6A	
INTERFACE		USB (Device)	
GENERAL SPECIFICATIONS	Power Source Power Consumption Operating Environment Operating Altitude Storage Temperature	DC 5V 10 W (Max) Temperature to satisfy the specification : 18 ~ 28°C, Operating temperature : 0 ~ 40°C Relative Humidity : < 80%, 0 ~ 40°C, Installation category : CAT II 2000 Meters -10~70°C, Humidity : ≤70%	
DIMENSIONS & WEIGHT		215(W) x 35 (H) x 107(D) mm, Approx. 1kg	

Specifications subject to change without notice. AFG-100200GD1DH

ORDERING INFORMATION		OPTIONAL ASSESSORIES	
AFG-125	25MHz Single Channel USB Modular Arbitrary Function Generator	DS2-FH1	Module extension bay & USB Type A to Type A/B cable
AFG-225	25MHz Dual Channel USB Modular Arbitrary Function Generator	GPA-501	Power Adapter
AFG-125P	25MHz Single Channel USB Modular Arbitrary Function Generator Plus Power Supply	GPA-502	Universal Power Adaptor
AFG-225P	25MHz Dual Channel USB Modular Arbitrary Function Generator Plus Power Supply	GTL-246	USB Type A to Type B cable
ACCESSORIES		GTL-201A	Ground lead
Quick Start Guide x 1, CD-ROM with AFG Software and User Manual x 1			
GTL-101	BNC-Alligator Test Lead x 1 (only AFG-125/125P)	GTL-105A	Test Lead x 1 (only AFG-125P/225P)
GTL-101	BNC-Alligator Test Lead x 2 (only AFG-225/225P)		

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