SPECIFICATIONS

MODEL		AFG-1125/AFG-1125P	AFG-1225/AFG-1225P
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 Sine/Square Ramp Resolution Accuracy Stability Aging Tolerance	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 50 Ω 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, Upramp, Dnramp 2mHz ~ 20kHz 0% ~ 120.0% Internal	
FM MODULATION	Carrier Waveforms Modulating Waveforms Modulating Frequency Peak Deviation Source	Sine, Square, Ramp, Sine, Square, Triangle, Upramp, Dnramp 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, Upramp, Dnramp 2mHz ~ 20kHz 0° ~ 360° Internal	
SUM	Carrier Waveforms Modulating Waveforms Modulation Frequency SUM Depth Source	Sine, Square, Ramp, Pulse, Noise Sine, Square, Triangle, Upramp, Dnramp 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 1μHz ~ 15MHz(sine), 1μHz ~ 15MHz(Square), 1μHz ~ 1MHz(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-1125P/AFG-1225P	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.

ORDERING INFORMATION

AFG-1125 25MHz Single Channel USB Modular Arbitrary Function Generator
AFG-1225 25MHz Dual Channel USB Modular Arbitrary Function Generator
AFG-1125P 25MHz Single Channel USB Modular Arbitrary Function Generator Plus Power Supply
AFG-1225P 25MHz Dual Channel USB Modular Arbitrary Function Generator Plus Power Supply

ACCESSORIES

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-1125/1125P) **GTL-105A** Test Lead x 1 (only AFG-1125P/1225P)
GTL-101 BNC-Alligator Test Lead x 2 (only AFG-1225/1225P)

OPTIONAL ASSESSORIES

DS2-FH1 Module extension bay & USB Type A to Type A/B cable
GPA-501 Power Adapter
GPA-502 Power Adapter (with University plug)
GTL-246 USB Type A to Type B cable
GTL-201A Ground lead

ISO-TECH
P. O. Box 99
Corby
Northants NN17 9RS
England
Tel: +44(0) 1536 201234

AFG-1125/1125P/1225/1225P

USB Modular Arbitrary Function Generator

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
- User Friendly 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

ISO-TECH

The brand new AFG-1125/1225 Series 25MHz USB modular arbitrary function generator has four models for selections. The AFG-1125/1225 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 IDS-2000A Series digital oscilloscope.

The main features of the AFG-1125/1225 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 IDS-2000A FG APP, can select from the 66 built-in function waveforms to conduct arbitrary waveform editing. The AFG-1125/1225 Series, with functions of AM/FM/PM/FSK/SUM modulation, frequency sweep, burst and coupling, is suitable for various communications applications.

The AFG-1125/1225 Series collocates with the FG APP of IDS-2000A digital oscilloscope through USB interface. While conducting stand-alone operation, the AFG-1125/1225 Series utilizes USB interface, which allows users to quickly set up their required tests by the simple connection feature. AWES (arbitrary waveform editing software) PC software is provided to enter settings speedily and easily for measurement. Users can select required waveforms from arbitrary waveform editor.

The model, channel, and power arrangements of the AFG-1125/1225 Series are as follows :

	AFG-1125	AFG-1125P	AFG-1225	AFG-1225P
Channels	1	1	2	2
DC Power	NA	Yes	NA	Yes

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

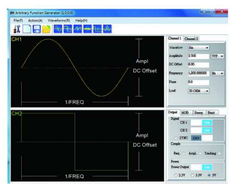
Power Supply Methods for the AFG-1125/1225 Series are as Follows :

- For stand-alone operation, an external 5V power supply (GPA-502 is optional) is required.
- The USB interface of the IDS-2000A Series DSO provides power when AFG-1125/2225 collocates with IDS-2000A digital oscilloscope.
- An external 5V power supply (GPA-502 is optional) is required when AFG-1125P/2225P collocates with IDS-2000A digital oscilloscope.

A. FLEXIBILITY OF ARBITRARY WAVEFORM EDITING

5-in-1 Multi-Functional Test System

Power Adapter Option



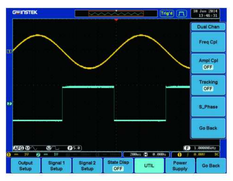
Stand-alone Operation With PC Software

The AFG-1125/1225 Series provides arbitrary waveform sampling rate of 120 MSa/s, 10 bit resolution and the arbitrary waveform editing function with 4k point memory. The easy-to-use external AWES PC software interface allows users to quickly and conveniently operate the AFG-1125/1225 Series. Arbitrary waveforms can be produced through four methods as follows :

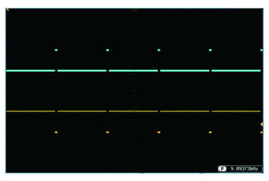
* The AFG-1125/1225 Series collocates with the FG APP of IDS-2000A Series DSO to produce point-by-point output arbitrary waveforms.
* The AFG-1125/1225 Series collocates with GDS-2000A Series DSO to directly duplicate and produce retrieved waveform signals.
* Edit complicated waveforms via AWES PC software.
* Support programs such as MATLAB and Excel to upload CSV files into AWES PC software.

A seamless connection between the AFG-1125/1225 Series and the IDS-2000A Series DSO fulfills the possibility of realizing the five-in-one multi-functional test system, which includes oscilloscope, logic analyzer, digital voltage meter, function generator and power supply. The compact design of the AFG-1125/1225 Series truly saves a lot of laboratory space.

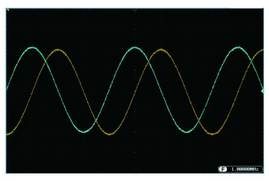
B. CORRELATED FUNCTIONS OF DUAL-CHANNEL OUTPUT



Equivalent Function in Dual-Channel



Differential Signal



Quadrature (Sine and Cosine) Signal

AFG-1225/1225P dual channel models support independent channel or correlated channel applications. Three correlated 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.

USB MODULAR ARBITRARY FUNCTION GENERATOR SOLUTION FOR ORDERING

MAIN FUNCTION \ MODEL	AFG-1225P	AFG-1225	AFG-1125P	AFG-1125
Stand-alone Operation	GPA-501 option GTL-246 option	GPA-501 option GTL-246 option	GPA-501 option GTL-246 option	GPA-501 option GTL-246 option
Collocation with IDS-2000A Series MSO	DH2-FH1 option GPA-501 option	DH2-FH1 option	DH2-FH1 option GPA-501 option	DH2-FH1 option

AFG-1225P

AFG-1225

AFG-1125P

AFG-1125

USB MODULAR ARBITRARY FUNCTION GENERATOR SELECTION GUIDE

MAIN FUNCTION \ MODEL	AFG-1225P	AFG-1225	AFG-1125P	AFG-1125
Analog Channel	2	2	1	1
Frequency Range	25MHz	25MHz	25MHz	25MHz
Frequency Resolution	1 μ Hz	1 μ Hz	1 μ Hz	1 μ Hz
Sample Rate	120MSa/s	120MSa/s	120MSa/s	120MSa/s
Vertical Resolution	10-bit	10-bit	10-bit	10-bit
Memory Length	4k Points	4k Points	4k Points	4k Points
Impedance Switch	50Ω / Hi-Z	50Ω / Hi-Z	50Ω / Hi-Z	50Ω / Hi-Z
Sine/Square/Pulse	✓	✓	✓	✓
Triangle/Ramp	✓	✓	✓	✓
Noise	✓	✓	✓	✓
Burst	✓	✓	✓	✓
TTL/Sync Output	✓	✓	✓	✓
Sweep	✓	✓	✓	✓
AM/FM/PM/FSK	✓	✓	✓	✓
USB Device	✓	✓	✓	✓
SUM	✓	✓	–	–
DC Power Supply	✓	–	✓	–

PANEL INTRODUCTION