

FEATURES

- Sine, Square, Triangular, Noise and Arbitrary waveforms
- 0.1 Hz resolution of Sine, Square and Triangular waveforms
- 20 MSa/s sampling rate, 10 bit vertical resolution and 4 Kpts memory
- 1% to 99% adjustable duty cycle for Square waveform
- Waveform parameter setting through numeric keypad entry and knob selection

RS PRO AFG21012 Function Generator 12MHz (Sinewave) USB

RS Stock No.: 123-3530



RS Professionally Approved Products bring to you professional quality parts across all product categories. Our product range has been tested by engineers and provides a comparable quality to the leading brands without paying a premium price.

Product Description

RS Pro AFG-21000/AFG-21100 AFGs use direct digital synthesis (DDS) to generate signals at precise frequencies through a unique memory access and clocking mechanism. They offer an accurate and affordable signal source covering the output of Sine, Square (Pulse), Ramp (Triangle), Noise and Arbitrary waveforms. The 20 MSa/s sampling rate, 10 bit vertical resolution and 4 Kpts memory of the AFG-21000/AFG-21100 Series provide users with a flexible environment in which specific waveform output can be created as required. The application range of these user-friendly instruments is greatly extended by their 0.1 Hz resolution of Sine, Square and Triangle waveforms and the 1% ~ 99% adjustable duty cycle of the Square (Pulse) waveform. The individual AFG-2000/AFG-2100 models are differentiated by frequency band and the AFG-2100 models have the additional features of AM/FM/FSK Modulation, Sweep and Frequency Counter.

General Specifications

Series	Pro AFG-21000 and AFG-21100 Series
Model Number	AFG-21012
Waveform Types	Sine, Square, Ramp, Noise, Arbitrary Waveform
Display Type	LCD
Frequency Range (Square, Pulse and Arbitrary Waveform)	0.1Hz - 5/12/25 MHz
Time Base Accuracy	±20ppm
Input Impedance	1 kΩ
Output Impedance	>300 (Output Disabled) kΩ, 50 (Fixed) Ω
Digital Frequency	Yes
Digital Amplitude and Offset	Yes
Internal Linear and Log Sweep	Yes
Variable Sweep	Yes
FM Modulation	Yes
Internal and External Amplitude Modulation	Yes
STORE/RECALL	10 Groups of Setting Memories
Interface Type	USB

Arbitrary Function

Sample Rate	20MSa/s
Repetition Rate	10MHz
Waveform Length	4k point
Amplitude Resolution	10 bit

Frequency Characteristics

Signal Type	Range	Resolution	Accuracy
Sine	0.1Hz - 5MHz	0.1Hz	±20ppm
Square	0.1Hz - 5MHz	0.1Hz	±20ppm
Ramp (Triangular)	0.1Hz - 1MHz	0.1Hz	±20ppm

Output Characteristics

Amplitude	Range	1mVpp to 10Vpp(into 50), 0.1Hz~20MHz; 2mVpp~20Vpp(open-circuit), 0.1Hz to 20MHz
	Accuracy	±2% of setting ±1mVpp;(at 1kHz,>10mVpp)
	Resolution	0.1mV or 3digits
	Flatness	±1%(0.1dB) 100kHz; ±3%(0.3dB) 5MHz; ±4%(0.4dB) 12MHz; ±20%(2dB) 20MHz; ±5%(0.4dB) 25MHz
	Units	Vpp, Vrms, dBm
Offset	Range	±5Vpk ac+dc(into 50); ±10Vpk ac+dc(open circuit); ±2.5Vpk ac+dc(into 50) for Ω Ω 20MHz~25MHz; ±5Vpk ac+dc(open circuit) for 20MHz~25MHz
	Accuracy	2% of setting + 5mV+ 0.5% of amplitude
Waveform Output	Impedance	50ohm typical (fixed); >300kohm (output disabled)
	Protection	Short-circuit protected ; Overload relay automatically 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

Square Wave Characteristics

Rise/Fall Time	≤ 25ns at maximum output (into 50 load)
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% to 100% (0.1% Resolution)

Modulation Characteristics

Parameters	AM	FM
Carrier Waveforms	Sine, Square, Triangle	Sine, Square, Triangle
Modulating Waveforms	Sine, Square, Triangle	Sine, Square, Triangle
Modulating Frequency	2 mHz~20 kHz (Int); DC~20KHz (Ext)	2 mHz~20 kHz (Int); DC~20KHz (Ext)
Depth	0% to 120.0%	-
Deviation	-	DC to Max Frequency
Source	Internal/External	Internal/External

Sweep Characteristics

Waveforms	Sine, Square, Triangle
Type	Linear or Logarithmic
Start/Stop Frequency	0.1Hz to Max Frequency
Sweep Time	1ms to 500s
Source	Internal / External

FSK Characteristics

Carrier Waveforms	Sine, Square, Triangle
Modulating Waveforms	50% duty cycle square
Internal Rate	2mHz to 20kHz
Modulation Rate	2mHz to 100kHz (INT); DC to 100kHz (Ext)
Frequency Range	0.1Hz to Maximum Frequency
Source	Internal / External

Frequency Counter

Range	5Hz to 150MHz
Accuracy	Time Base accuracy ± 1 count
Time base	± 20 ppm (23 ± 5) after 30minutes warm up
Resolution	100nHz for 1Hz, 0.1Hz for 100MHz
Input Impedance	1Kohm /1pf
Sensitivity	35mVrms to 30Vms (5Hz~150MHz)

Electrical Specifications

Input Voltage	AC100 240V
Power Consumption	25VA
Plug Type	UK
Safety Category Level	CAT II

Mechanical Specifications

Dimensions	266mm×107mm×293mm
Width	266mm
Length	293mm
Height	107mm
Weight	Approx. 250kg

Operation Environment Specifications

Altitude	2000meters
Relative Humidity	$\leq 80\%$
Operating Temperature Range	0°C -40°C
Storage Temperature Range	-10°C -70°C

Approvals

Compliance/Certifications	CE
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Stock No. : Model :

123-3529

AFG-21005

124-0226

AFG-21025

123-3532

AFG-21112

123-3530

AFG-21012

123-3531

AFG-21105

123-3533

AFG-21125

