

# 25MHz~60MHz ARBITRARY WAVEFORM FUNCTION GENERATOR

AFG-2025/2040/2060

The AFG-5200 series arbitrary waveform/function generators with maximum frequency of 25MHz, 40MHz and 60MHz were designed based on Direct Digital Synthesis (DDS) technology providing high fidelity, low jitter performance function signal and arbitrary waveform signal.

The AFG-5200 series are equipped with 150MSa/s sampling rate, 14 bits vertical resolution,  $\pm 1$ ppm high stability and high accuracy waveform output, 250MHz frequency counter as well as digital modulations of AM, DSSC AM, FM, PM, ASK, FSK, BPSK. Built-in USB device, USB host and RS232 interface supports easy remote control. 4.3-inch TFT LCD display, user-friendly interface design and keyboard layout bring excellent operation experience for users.



AFG-2060



AFG-2025



AFG-2040

## Features

- Frequency range 1 $\mu$ Hz~25MHz/40MHz/60MHz
- 2 independent output channels at same frequency range for main waveforms
- 4.5-inch TFT LCD display
- Min. output amplitude 1mVpp (50 $\Omega$ ), total distortion 0.2%
- Sampling rate 150MSa/s, vertical resolution 14 bits, waveform length 16k points
- 6 standard waveforms, 50 built-in waveforms and 12 user-defined arbitrary waveforms
- 10 sets save & recall for operating parameters
- Modulations: AM, DSSC AM, FM, PM, ASK, FSK, BPSK
- Synchronous output, external modulation input, trigger input, external reference input and count input
- Linearity/Logarithmic sweep signal and Burst signal
- Channel coupling, parameter (frequency, amplitude, offset, phase) coupling and point frequency replication tracking
- Strong arbitrary waveform building software & support SCPI commands
- Over voltage, over current, short circuit and reverse voltage protections
- Standard interface: RS232, USB device, USB Host



# Technical Specification

AFG-2025/2040/2060

Model		AFG-2025	AFG-2040	AFG-2060
<b>Output Frequency</b>				
Range	Sine	1μHz ~ 25MHz	1μHz ~ 40MHz	1μHz ~ 60MHz
	Square	1μHz ~ 5MHz	1μHz ~ 10MHz	1μHz ~ 15MHz
	Ramp	1μHz ~ 500kHz	1μHz ~ 1MHz	1μHz ~ 1MHz
	Pulse	1μHz ~ 5MHz	1μHz ~ 10MHz	1μHz ~ 15MHz
	Noise	30MHz white noise (-3dBm)		
	Arbitrary	1μHz ~ 6.5MHz		
Resolution & Accuracy		1μHz, $\pm 5 \times 10^{-5}$		
<b>Waveform</b>				
Output waveform		Sine, Square, Ramp, Pulse, Noise, Arb, DC		
Waveform length		8~16384 points (CHA), 8~2048 point (CHB)		
Vertical resolution & Sampling rate		14 bits, 150MSa/s		
Sine	Harmonics distortion	< -70dBc, < 20kHz < -50dBc, 20kHz ~ 1MHz		
		< -40dBc, 1MHz ~ 30MHz < -30dBc, 30MHz ~ 60MHz		
	Total distortion	$\leq 0.2\%$ ( $20\text{Hz} \leq f \leq 100\text{kHz}$ )		
Square	Rise/fall edge	18ns		
Pulse	Duty cycle & Edge jitter	0.1% ~ 99.9%, $\leq 150\text{ps rms}$		
Ramp	Symmetry & Non-linearity	0.0% ~ 100.0%, $\leq 0.1\%$ , 5%~95% of signal		
Noise	Repeat cycle	>50 years		
Arbitrary	Sampling rate	1μSa/s ~ 50MSa/s		
	Vertical resolution	14 bits		
<b>Output Characteristics</b>				
Amplitude	CHA range	High impedance : 2mVpp~20Vpp $\leq 20\text{MHz}$ 2mVpp~10Vpp $\leq 60\text{MHz}$		
		50Ω : 1mVpp~10Vpp $\leq 20\text{MHz}$ 1mVpp~5Vpp $\leq 60\text{MHz}$		
	CHB range	High impedance : 2mVpp~6Vpp $\leq 60\text{MHz}$ 50Ω : 1mVpp~3Vpp $\leq 60\text{MHz}$		
	Flatness (1kHz)	$\pm 0.1\text{dB}$ (<100kHz), $\pm 0.3\text{dB}$ (100kHz ~ 10MHz), $\pm 0.5\text{dB}$ (10MHz ~ 60MHz)		
Offset	CHA level range	High impedance : $\pm(10\text{V DC} \sim \text{AC peak}/2)$ 50Ω : $\pm(5\text{V DC} \sim \text{AC peak}/2)$		
	CHB level range	High impedance : $\pm(189.3\text{ mV DC} \sim \text{AC peak}/2)$ 50Ω : $\pm(94.7\text{ mV DC} \sim \text{AC peak}/2)$		
	CHA accuracy	$\pm 1\%$ offset setting value $\pm 0.25\%$ amplitude setting value $\pm 2\text{mV}$		
	CHB accuracy	$\pm 1\%$ offset setting value $\pm 0.25\%$ amplitude setting value $\pm 3\text{mV}$		
Modulation	AM modulation depth	0.0%~120.0%		
	FM modulation deviation	0 ~ fc/2		
	PM modulation range	0.0°~360.0°		
	FSK	1μHz~Fsinemax (Sine), 1μHz~15MHz (Square/Pulse), 1μHz~1MHz (Ramp)		
	BPSK	0.0°~360.0°		
	ASK	2mVpp~ 20Vpp		
Sweep	Sweep mode & time	Linearity/Logarithmic, 0.001s~1000s		
	Trigger source	Int/Ext/Bus, 1μ ~ 1000S, resolution 1μS		
Burst	Mode & Interval time	N Cycle/Gated		
	Burst numbers	1~1000000, resolution 1		
Pulse	Pulse width	28.5 ns ~ period - 28.5 ns		
	Overshoot & Edge jitter	$\leq 2\%$ (CHA) (50Ω), $\leq 150\text{ps rms}$		
Frequency Counter range & resolution		0.1Hz~250 MHz, 6 digits/s		
Interface		USB Device, USB Host, RS232		
Power source		AC100~240V, 47~63Hz, Max. 30VA		
Accessories		Power cord x1, Operation manual x1, Software CD x1, USB cable x1, RS-232 cable x1, BNC-BNC cable x1, Test lead x1		
Dimension		Chassis: 260Wx110Hx385D mm Instrument: 295Wx195Hx415D mm		
Weight		4kg		

