

TEKTRONIX

AWG5012B

The Tektronix AWG5012B is a high-performance 2-channel Arbitrary Waveform Generator from the AWG5000B series, offering a 14-bit DAC resolution, up to 1.2 GS/s sample rate, and up to 32 M points memory depth. Designed to meet the challenging signal stimulus demands of wireless baseband and high-speed digital designs, it features an integrated Windows XP PC platform with digital data outputs and variable-level markers.

SPECIFICATIONS

General

Interfaces	USB, LAN, GPIB
Display	10.4-inch LCD touch screen

Physical

Power Supply	100 to 240 V AC, 47 to 63 Hz
Operating Temperature	10 to 40 °C °C
Dimensions (W×H×D)	429 mm × 245 mm × 460 mm mm
Weight	19.5 kg

Channel Configuration & Core Architecture

Number of Channels	2
DAC Resolution	14 bits
Maximum Sample Rate	1.2 GS/s
Signal Outputs	Differential or Single-ended
Digital Data Outputs	28 bits (Ch1 / Ch2)

Arbitrary Waveform Performance

Waveform Memory Depth	16 M points (standard), up to 32 M points (with Option 01)
Effective RF Frequency Output	370 MHz
Rise/Fall Time	0.95 ns (10% to 90%) at 0.6 Vp-p
Edge Timing Shift Control Resolution	80 ps

Standard Waveform Performance

Spurious-Free Dynamic Range (SFDR)	80 dBc (1 MHz), 64 dBc (10 MHz)
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Output Characteristics

Amplitude Range (Single-ended)	Up to 2.25 Vp-p into 50 Ω
Amplitude Range (Differential)	Up to 4.5 Vp-p into 50 Ω
Output Impedance	50 Ω
Inter-Channel Skew Control Range	± 5 ns
Inter-Channel Skew Control Resolution	10 ps
Digital Data Output Amplitude	Up to 3.7 Vp-p single-ended into 50 Ω
Digital Data Output Rise/Fall Time	300 ps (20% to 80%) at 0 to 1 V

Sequencing & Modulation

Maximum Sequence Steps	8,000 steps
Waveform Loops	Infinite

Trigger & Synchronization

Marker Outputs	4 (2 per channel)
Marker Output Amplitude	Up to 3.7 Vp-p single-ended into 50 Ω
Marker Rise/Fall Time	300 ps (20% to 80%) at 0 to 1 V
Marker Delay Control Range	Up to 1 ns
Marker Delay Control Resolution	50 ps

System Connectivity & Control

Operating System	Windows XP
Storage	Removable Hard Disk Drive
Optical Drive	Built-in DVD

Operating Modes

Run Modes	Continuous, Triggered, Gated, Sequence
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Clock & Sampling

Sampling Frequency Accuracy	± 1 ppm
Sampling Frequency Resolution	8 digits

Waveform Specifications

Minimum Waveform Length	1 point
Waveform Granularity	1 point

Trigger & Event Inputs

Trigger Input Impedance	1 k Ω or 50 Ω (switchable)
Trigger Threshold Range	-5.0 V to 5.0 V (1 k Ω), -2.0 V to 2.0 V (50 Ω)
Trigger Threshold Resolution	0.1 V

External Reference Input

External Reference Input Frequency	10 MHz, 20 MHz, 100 MHz (within ± 10 ppm)
External Reference Input Impedance	50 Ω
External Reference Input Amplitude	0.2 Vp-p to 3.0 Vp-p

Spectral Purity

Harmonic Distortion	<-45 dBc (at 1.2 GS/s, 10 MHz, standard output)
Non-Harmonic Spurious	<-70 dBc (at 1.2 GS/s, up to 600 MHz, standard output)
Phase Noise	-110 dBc/Hz at 10 kHz offset (typical, 10 MHz carrier)

Sequence Specifications

Sequence Repeat Counter Range	1 to 65,536 or Infinite
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Time Domain Characteristics

Random Jitter	5 ps RMS (typical)
Total Jitter	50 ps p-p (typical)

Analog Outputs

Low-pass Filters	20 MHz, 50 MHz, 100 MHz, 200 MHz, or Through
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Clock & Reference

External Clock Input Frequency	10 MHz to 1.2 GHz
External Clock Input Amplitude	0.2 Vp-p to 1.5 Vp-p
External Clock Input Impedance	50 Ω
10 MHz Reference Output Amplitude	1.2 Vp-p into 50 Ω
10 MHz Reference Output Impedance	50 Ω

Auxiliary Inputs/Outputs

ADD Input Bandwidth	DC to 100 MHz
ADD Input Impedance	50 Ω
ADD Input Amplitude Range	± 1.0 V

Interfaces

LAN Port	10/100/1000Base-T Ethernet (RJ-45)
GPIB Port	IEEE 488.2 compatible
Front USB Ports	2 $\times$ USB 2.0
Rear USB Ports	4 $\times$ USB 2.0
LXI Compliance	LXI Class C

Environmental

Operating Humidity	5% to 80% RH (non-condensing)
Storage Humidity	5% to 90% RH (non-condensing)
Operating Altitude	Up to 3,000 m (10,000 ft)
Storage Altitude	Up to 12,000 m (40,000 ft)

Display & User Interface

Display Size	10.4 in.
Display Resolution	1024 × 768 (XGA)
Touch Screen	Integrated

Triggering

Trigger Delay to Output	245 ns (typical)
Trigger Minimum Pulse Width	10 ns

TECHNOLOGY

Arbitrary Waveform Generation

APPLICATIONS

Wireless baseband I/Q communication, digital consumer product design, data conversion equipment testing, and semiconductor validation

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