

TEKTRONIX

AWG7051

The Tektronix AWG7051 is a high-performance Arbitrary Waveform Generator (AWG) belonging to the AWG7000 Series. Designed for challenging signal stimulus applications in high-speed serial, RF, and semiconductor testing, the AWG7051 offers a 5 GS/s sample rate and a 10-bit vertical resolution, delivering superior signal fidelity and flexible signal creation under an open Windows XP environment.

SPECIFICATIONS

General

Interfaces	GPIB, LAN (10/100/1000Base-T), USB 2.0 (front and rear), VGA, DVI-D
Display	10.4-inch color TFT-LCD touch screen, 1024 × 768 (XGA)

Physical

Power Supply	100 to 240 V AC, 47 to 63 Hz, maximum 450 W
Operating Temperature	10 °C to 40 °C °C
Dimensions (W×H×D)	439 mm × 245 mm × 462 mm mm
Weight	16.5 kg kg

Core Signal Generation

Number of Channels	1
Sampling Rate Range	10 MS/s to 5 GS/s
Vertical Resolution	10-bit (no marker outputs) or 8-bit (with 2 marker outputs)
Standard Waveform Memory Depth	32 Mpoints
Optional Waveform Memory Depth	64 Mpoints (Option 01)
Operating Modes	Continuous, Triggered, Gated, Sequence
Direct Output Bandwidth (Analog)	Up to 3.5 GHz (typical)

Analog Output Parameters

Output Configuration	Differential or Single-ended (Direct out), Single-ended (DC-coupled out)
Output Impedance	50 Ω
Amplitude Range (Direct Output)	50 mVp-p to 1.0 Vp-p (differential, into 50 Ω); 25 mVp-p to 0.5 Vp-p (single-ended, into 50 Ω)
Amplitude Range (DC-Coupled Output)	500 mVp-p to 2.0 Vp-p (single-ended, into 50 Ω)
Amplitude Resolution	1 mV
DC Offset Range (Direct Output)	±0.1 V (into 50 Ω)
DC Offset Range (DC-Coupled Output)	±2.0 V (into 50 Ω)

Marker & Auxiliary Outputs

Number of Marker Channels	2 (variable level)
Marker Amplitude	300 mVp-p to 2.7 Vp-p (into 50 Ω)
Marker Output Level Range	-1.1 V to +1.6 V (into 50 Ω)
Marker Rise/Fall Time	150 ps (20% to 80%, typical)
Marker Delay Control Range	Up to 300 ps
Marker Delay Control Resolution	1 ps

Clock & Timebase System

Internal Clock Frequency Accuracy	± 1 ppm
External Reference Input Frequency Range	10 MHz, 20 MHz, 100 MHz (within ± 10 ppm)
External Reference Input Level	-2 dBm to +4 dBm
Reference Output Frequency	10 MHz (± 1 ppm)

Trigger & Sequencing

Trigger Modes	Continuous, Triggered, Gated, Sequence
Sequence Length	1 to 16,000 steps
Sequence Loop Count	1 to 65,536 or infinite
Trigger Input Connector Type	BNC (front panel)
Trigger Input Impedance	1 k Ω or 50 Ω
Trigger Input Threshold Range	-5.0 V to +5.0 V (into 1 k Ω); -1.8 V to +1.8 V (into 50 Ω)

System & Software

Internal Operating System	Windows XP Professional
Internal Drive Capacity	≥ 40 GB (removable hard disk drive)

Environmental & Compliance

Storage Temperature Range	-20 $^{\circ}\text{C}$ to +60 $^{\circ}\text{C}$
Operating Humidity Range	8% to 80% RH (non-condensing)
Operating Altitude Limit	Up to 3,000 m (10,000 ft)

Analog Output Performance

Direct Output Rise/Fall Time	≤ 135 ps (20% to 80% at 1.0 Vp-p)
Direct Output Harmonic Distortion	≤ -45 dBc (at 100 MHz, 1.0 Vp-p, typical)
Direct Output Non-Harmonic Spurious	≤ -60 dBc (10 MHz to 5 GHz, typical)
Direct Output Connector Type	SMA (differential)

Marker Output

Marker Output Connector Type	SMA (front panel)
Marker Output Impedance	50 Ω

Clock and Reference

External Clock Input Frequency Range	10 MHz to 5.8 GHz
External Clock Input Connector	SMA (rear panel)
External Clock Input Impedance	50 Ω (AC coupled)
External Clock Input Level	-10 dBm to +6 dBm
External Reference Input Connector	BNC (rear panel)
External Reference Input Impedance	50 Ω (AC coupled)
Reference Output Connector	BNC (rear panel)
Reference Output Impedance	50 Ω (AC coupled)
Reference Output Level	1.2 Vp-p into 50 Ω (2.4 Vp-p open circuit)

Trigger and Gate

Trigger Input Minimum Pulse Width	20 ns
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Power and General

Power Consumption	450 VA
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Display

Display Size	10.4 in
Display Resolution	1024 $\times$ 768 pixels
Display Type	TFT Color LCD with touchscreen

Waveform Characteristics

Waveform Granularity	1 point
Minimum Waveform Length	1 point
Waveform Import Formats	Tektronix AWG5000/7000 (.wfm), AWG400/500/600 (.wfm, .pat), Text (.txt), MATLAB (.mat)

Outputs - Clock and Sync

Clock Output Impedance	50 Ω
Clock Output Connector	SMA
Clock Output Amplitude	0.5 Vp-p to 1.0 Vp-p into 50 Ω

Outputs - Auxiliary

Trigger Output Connector	SMA
Trigger Output Impedance	50 Ω
Trigger Output Amplitude	1.0 V into 50 Ω

Outputs - Marker

Marker Jitter	4 ps RMS (typical)
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Direct DAC Output (Option 02)

Option 02 Configuration	Differential
Option 02 Connector Type	SMA
Option 02 Impedance	50 Ω
Option 02 Amplitude Range	500 mVp-p to 1.0 Vp-p (differential)

Power Requirements

AC Input Voltage	100 to 240 V AC
AC Input Frequency	47 to 63 Hz

Environmental

Operating Vibration	0.27 G RMS (5 to 500 Hz)
Non-operating Vibration	2.28 G RMS (5 to 500 Hz)
Non-operating Shock	Half-sine, 11 ms duration, 30 G peak

Regulatory & Compliance

Safety Certifications	UL 61010-1, CAN/CSA-C22.2 No. 61010-1, EN 61010-1, IEC 61010-1
EMC Compliance	EN 61326-1, EN 61000-3-2, EN 61000-3-3

TECHNOLOGY

Arbitrary Waveform Generation

APPLICATIONS

Electronic design verification, RF signal synthesis, high-speed serial data testing, and semiconductor device characterization

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