

250 MS/sec Arbitrary Waveform Generator



AWG2021.

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AWG2021

Characteristics

Standard Waveshapes

Sine, square, triangle, ramp, pulse, arbitrary, linked sequence and DC.

Arbitrary Waveforms

Execution Memory -

Waveform: 256 Kwords. Marker: 256 Kwords x 2-Bits.
Data Points of Waveform Size: 64 to 256 K in multiples of 8.

Real-time Sequencer Memory - 8 K individual waveforms.

Loop Counter: 1 to 65,535 repeats.
Burst Mode Counter: 1 to 64 K cycles.

Catalog Memory Clock

Frequency Range - 10 Hz to 250 MHz.

Resolution - 4 digit.

Accuracy - 50 ppm (+15°C to +30°C).

Skew between CH 1 and CH 2 (Opt. 02 only) - Within 4 ns.

Operating Modes

Continuous - Output continuous at programmed waveshape, frequency, amplitude and offset.

Triggered - Output quiescent until triggered by an external, GPIB or manual trigger; then generates a sequence only one time.

Gated - Same as triggered mode except period is executed only for the duration of the gated signal until the sequence started is completed.

Burst - Output quiescent until triggered by an external, GPIB or manual trigger; then generates "n" sequences or cycles.

Waveform Advance - Continuously generates the waveform in a predefined sequence; the next trigger advances to the next waveform in sequence.

Autostep - Generates the predefined waveform once in the Autostep File; the next trigger advances the waveform.

Main Output

Amplitude (Excluding ADD and Multiply Operation) -

Digital-to-Analog Resolution: 1/4096 (12-Bits).

Range: 0.05 V to 5 V_{p-p} into 50 Ohm DC.

Accuracy: 0.05 V to 0.5 V, $\pm(0.5\%$ of amplitude +5 mV);
0.501 V to 5 V, $\pm(1\%$ of amplitude +25 mV).

Offset -

Range: -2.5 V to +2.5 V into 50 Ohm, (-100 mA to +100 mA).

Resolution: 0.2 mA.

Accuracy: $\pm(1\%$ of offset +0.2 mA).

Pulse Response -

15°C to +30°C: Flatness, within 3% after 20 ns from rise/fall edges; Aberrations, within 7% +10 mV.

+10°C to +40°C: Rise/Fall Time, < 4.2 ns; Flatness, within 5% after 20 ns from rise/fall edges; Aberrations, within 9% +10 mV.

Impedance - Typically 50 Ohm.

Sinewave (Amplitude 1 V, 100 kHz Reference) -

Flatness: Within 4%.

THD: 1.0 V, ≤ 50 dBc, 0.5 V, ≤ 66 dBc.

Spurious: ≤ 66 dBc.

Channel Summing (OPT.&NBSP;02 Only)

AM (Multiply) -

Output: Within 5%.

Frequency Response: DC to 30 MHz.

External AM -

Sensitivity: 2 V_{p-p} ($\pm 5\%$) signal produces 100% modulation.

Frequency Response: CH 1, DC to 30 MHz; Ext. Signal, DC to 4 MHz.

Add -

Output: Within 5%.

Frequency Response: DC to 30 MHz.

Filters

3 dB Cutoff Frequency -

1 MHz: Within 20%.

5 MHz: Within 20%.

20 MHz: Within 20%.

50 MHz: Within 20%.

Delay -

1 MHz: Typically 390 ns.

5 MHz: Typically 78 ns.

20 MHz: Typically 18 ns.

50 MHz: Typically 11 ns.

Auxiliary Outputs

Markers 1 and 2 -

Marker 1 Amplitude: >1.2 V into 50 Ohm, >2.4 V into open circuit.

Marker 2 Amplitude: >1.2 V into 50 Ohm, >2.4 V into open circuit.

Impedance: 50 Ohm.

Marker to Signal Delay: Within 15 ns.

Sync -

Amplitude: >1.2 V into 50 Ohm, >2.4 V into open circuit.

Impedance: 50 Ohm.

Sync to Signal Delay: Within 15 ns.

Clock -

Amplitude: 1 V \pm 0.3 V into 50 Ohm.

Impedance: 50 Ohm.

Digital Data Out (Opt. 03) -

Level: Differential ECL compatible.

Output Signals: Data (D0 to D11).

Skew Between Data: Within 1 ns.

Clock to Data Delay: Within 3 ns.

Connector: 68-Pin mini-D sub.

Auxiliary Inputs

Trigger -

Threshold Level: -5 V to +5 V.

Resolution: 0.1 V.

Accuracy: $\pm(5\% \times \text{Level} + 0.1 \text{ V})$.

Pulse Width: 15 ns minimum.

Input Swing: 0.2 V minimum.

Maximum Input Volts: 10 V_{p-p} when 1 megaohm selected;
5 V RMS when 50 Ohm selected.

Impedance: 1 megaohm with 30 pF max.

Trigger to Output Signal Delay: External Clock, 100 ns
maximum +1 clock.

Trigger Holdoff - 5 μs maximum.

AM (Opt. 02 only) -

Range: 2 V_{p-p} (-1 V to +1 V) for 100% modulation.

Maximum Input: ±5 V_{p-p}, 10 kilohm impedance.

System Clock -

Threshold Level: 0.3 V ±0.1 V.

Input Swing: 0.8 V minimum.

Pulse Width: 2 ns minimum.

Maximum Input Voltage: ±2 V_{p-p}.

Impedance: 50 Ohm.

Frequency Range: Up to 250 MHz phase coherent.

Programmable Interface

GPIB - IEEE 488.2-1987 compatible.

RS-232 - 9-Pin D connector.

Environmental

Temperature -

Operating: +10°C to +40°C.

Nonoperating: -20°C to +60°C.

Temperature Change -

Operating: +15°C per hour (no condensation).

Nonoperating: +30°C per hour (no condensation).

Humidity -

Operating: 20% to 80% (no condensation).

Nonoperating: 5% to 90% (no condensation).

Altitude -

Operating: To 4.5 km (15,000 ft.). Maximum operating
temperature decreases 1°C for each 300 m above 1.5 km.

Nonoperating: To 15 km (50,000 ft.).

Vibration - Operating: 0.33 mm p-p, 10 Hz to 55 Hz for
15 minutes.

Shock - Nonoperating: 30 G (1/2 sine) 11 ms duration.

Bench Handling - Operating: Drop from 10 cm (4 in.) tilt or 45°, whichever is less.

EMC -

Emissions: Within limits of FCC CFR 47, Part 15, Subpart B, Class A; VFG 243; EN55022, B; EN6055-2.

Immunity: Within limits of IEC 801-3, IEC 801-2, IEC 801-4.

Electrical Discharge - Operating max test voltage: 15 kV (150 pF through 150 Ohm).

Safety - UL1244, CSA231, EN61010-1, IEC61010-1.

Power

Source Power -

Voltage Ranges: 90 to 127 V AC or 90 to 250 V AC.

Line Frequency: 90 to 127 V, 48 to 440 Hz; 90 to 250 V, 48 to 63 Hz.

Maximum Current - 4 A at 50 Hz, 90 V.

Maximum Power Dissipation - 300 W.

Fuse Rating - UL 198.6 (3AG): 6 AFAST, 250 V. IEC 127:5 A (T), 250 V.

Physical Characteristics

Dimensions	mm	in.
Height (with feet)	164	6.4
Width (with handle)	362	14.3
Length (with front cover)	491	19.25
Length (with handle extended)	576	22.2
Weight	kg	lbs.
Net	10.7	23.6

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Product(s) complies with IEEE Standard 488.2-1987.



Product Area Assessed: The planning, design/development and manufacture of electronic Test and Measurement instruments.



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