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Data Sheet
July 30, 2026

TEKTRONIX

Tektronix AWG510 waveform Generator 1 Gb/s with option 03

Tektronix AWG510 Waveform Generator 1 Gb/s with Option 03 The Tektronix AWG510 isasingle-channel differential Arbitrary Waveform Generator in the AWG500 Series. Tektronix documentation describes it as a 1 GS/s (1 GHz point-rate clock) instrument with a 10-bit DAC and up to 4 M-word waveform memory. Option 03 adds Digital Data Out capability that bypasses the DAC to directly output waveform-memory digital data from rear-panel connectors. The AWG510 is intended for communications design and test, optical communications simulation, pulse generation, and real-world waveform simulation. Typical uses include generating modulated and digitally encoded signals, simulating reflections/crosstalk/ground bounce, creating NRZ data with variable duty cycle, and injecting controlled jitter, EMP/EMI, power-supply noise, or transducer-like stimuli. The Tektronix AWG510 isasingle-channel differential Arbitrary Waveform Generator in the AWG500 Series. Tektronix documentation describes it as a 1 GS/s (1 GHz point-rate clock) instrument with a 10-bit DAC and up to 4 M-word waveform memory. Option 03 adds Digital Data Out capability that bypasses the DAC to directly output waveform-memory digital data from rear-panel connectors. The AWG510 is intended for communications design and test, optical communications simulation, pulse generation, and real-world waveform simulation. Typical uses include gen

MODEL	CALIBRATION
Tektronix AWG510	Available on request
CONDITION	STATUS
Used	In stock
RFQ / SKU	LISTING
AWG510	https://aumictechlabs.com/products/awg510-2/

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This unit

The Tektronix AWG510 is a single-channel arbitrary waveform generator delivering 1 GS/s sample rate and 4 Mword execution memory for complex signal synthesis. It generates standard waveforms - sine, square, triangle, noise, DC, and ramp - alongside real-time noise injection and custom arbitrary patterns up to 4,194,048 points. Option 03 adds an independent 10-bit digital data output port, enabling combined analog-digital signal generation up to 12 bits wide at 1 GHz.Technical Specifications Sampling Rate: 1 GS/s Waveform Memory: 4,194,048 points (256–4,194,048 range, multiples of 4) D/A Resolution: 10 bits Output Amplitude: 20 mVp-p to 2 Vp-p into 50 Ω load (4 V maximum into 50 Ω) Output Offset: ±2 V range, 1 mV resolution Output Flatness: 3% Output Accuracy: 0.25% Rise/Fall Time: ≤2.5 ns (amplitude >1.0 Vp-p); ≤1.7 ns (amplitude ≤1.0 Vp-p), measured 10%–90% Output Impedance: 50 Ω Frequency Accuracy: 0.001% Clock Accuracy: ±1 ppm within 1 year at 25 °C Phase Noise @ 1 GHz: –80 dBc/Hz (10 kHz offset); –100 dBc/Hz (100 kHz offset)Key Features Sequence Memory: Up to 8000 steps with counter range 1–65,536 or infinite looping Marker Outputs: 2 markers × 1 bit from 4,194,048-word marker memory Digital Data Port (Option 03): Independent 10-bit-wide data output; 12-bit generation with marker integration Internal Storage: 3 GB hard disk drive and 1.44 MB floppy drive; optional 78 MB flash disk GPIB & Ethernet: Remote programmability and operation Power Requirements: 90–250 VAC, 48–63 Hz; 400 W consumptionTypical Applications Disk drive testing, serial data communication, biomedical signal simulation, and design verification requiring anomalous signal injection (glitches, drift, noise).Compatibility & Integration GPIB and Ethernet interfaces support remote instrument control and waveform file transfers.

Features & description

From manufacturer datasheet

Features

• Single-channel differential analog output (CH1 and CH1 complement) • Maximum sampling / point rate of 1.0000000 GHz (1 GS/s) • 10-bit vertical resolution DAC • Up to about 4 M points of waveform memory • Real-time sequencing for nearly infinite-length waveform chains • Two marker outputs associated with the analog channel • Option 03: 10-bit Digital Data Out (D0 to D9) up to 1 GHz • External clock and 10 MHz reference inputs • Built-in real-time noise generation capability • Graphical waveform editors and on-screen editing • GPIB and Ethernet remote interfaces

AWG510 Characteristics / Specifications

PARAMETER	VALUE
Output Impedance	50 Ohm
Normal Out Amplitude Range (typical family)	approximately 0.020 Vpp to 2 Vpp into 50 Ohm
Offset Range (typical family)	approximately -1.000 V to +1.000 V into 50 Ohm
Direct DA Out	about 0.5 Vp-p into 50 Ohm with fast edges (rise/fall typically less than or equal to 700 ps)
Filters	Bessel low-pass selections such as 10, 20, 50, and 100 MHz Option 03 Digital Data Out
Function	Bypasses the DAC to output waveform-memory digital data directly
Digital Outputs	D0 to D9 (10 bits)
Maximum Digital Rate	up to 1 GHz
Connectors	Rear-panel SMB DIGITAL DATA OUT
Level Capability (family Opt. 03)	Hi/Lo programmable, approximately -2.0 V to 2.0 V into 50 Ohm (0.1 Vp-p to 4 Vp-p); twice that into high impedance
AWG510 Opt. 03 Note	Enables loading a 10-bit digital data signal on channel two and outputting it from the rear-panel digital connectors; marker output is not available from the digital channel on AWG510 Option 03 Auxiliary I/O
Markers	Two arbitrary markers for the AWG510 analog channel
Clock Out	ECL 100K compatible, front-panel BNC
Trigger In	Front-panel BNC with programmable threshold
External Sample Clock In	Approximately 10 MHz to 900 MHz 10 MHz Reference In: Rear-panel BNC
Event Trigger Input	Multi-bit event/strobe interface Storage And Control
Internal Hard Disk	Standard mass storage (family typically 10 GB class)
Floppy Disk	3.5 in, 1.44 MB
Interfaces	GPIB (IEEE-488) and Ethernet (10Base-T)
Operating Temperature	10 C to +40 C
Nonoperating Temperature	-20 C to +60 C

PARAMETER	VALUE
Line Voltage	100 to 240 VAC, 48 to 63 Hz
Power Consumption	Up to about 600 W / 8 A maximum (family rating) Operational Notes The AWG510 differs from the AWG520 primarily by providing one differential analog channel rather than two single-ended channels. With Option 03 installed, the instrument can serve as bothahigh-speed arbitrary analog source and a 10-bit digital pattern source at up to 1 GHz.
Bandwidth	(typical family, 0.5 V amplitude): about 300 MHz (-3 dB)

General Specifications & Supplementary Characteristics

PARAMETER	VALUE
Operating temperature	10 C to +40 C
Operating Temperature	10 C to +40 C
Nonoperating Temperature	-20 C to +60 C
Line Voltage	100 to 240 VAC, 48 to 63 Hz
Power Consumption	Up to about 600 W / 8 A maximum (family rating) Operational Notes The AWG510 differs from the AWG520 primarily by providing one differential analog channel rather than two single-ended channels. With Option 03 installed, the instrument can serve as bothahigh-speed arbitrary analog source and a 10-bit digital pattern source at up to 1 GHz.

Full OEM specifications

Complete technical content extracted from the manufacturer datasheet. Sparse OEM tables are reconstructed as tables below; other text is preserved as paragraphs.

Specifications

Specifications

PARAMETER	VALUE
Model	AWG510
Instrument Type	Arbitrary Waveform Generator
Channels	1 differential analog channel (CH1 / CH1 complement)
Maximum Clock / Sample Rate	1 GS/s (50.000000 kHz to 1.0000000 GHz)
Clock Resolution	8 digits
Internal Clock Accuracy	+/-1 ppm
DAC Resolution	10 bits
Waveform Memory	256 to 4,194,048 points in multiples of four (4 M-word class memory)
Sequence Length	1 to 8,000 steps
Sequence Repeat Counter	1 to 65,536 or infinite
Operating Modes	Continuous, Triggered, Gated, Enhanced (sequence-controlled)

Analog Output (Family Characteristics)

Analog Output (Family Characteristics)

PARAMETER	VALUE
Output Impedance	50 Ohm
Normal Out Amplitude Range (typical family)	approximately 0.020 Vpp to 2 Vpp into 50 Ohm
Offset Range (typical family)	approximately -1.000 V to +1.000 V into 50 Ohm

Small-signal Bandwidth (typical family, 0.5 V amplitude): about 300 MHz (-3 dB)
Direct DA Out: about 0.5 Vp-p into 50 Ohm with fast edges (rise/fall typically less than or equal to 700 ps)
Filters: Bessel low-pass selections such as 10, 20, 50, and 100 MHz

Option 03 Digital Data Out
Option Name: Digital Data Out (Option 03)

Specifications

PARAMETER	VALUE
Function	Bypasses the DAC to output waveform-memory digital data directly
Digital Outputs	D0 to D9 (10 bits)

PARAMETER	VALUE
Maximum Digital Rate	up to 1 GHz
Connectors	Rear-panel SMB DIGITAL DATA OUT
Level Capability (family Opt. 03)	Hi/Lo programmable, approximately -2.0 V to 2.0 V into 50 Ohm (0.1 Vp-p to 4 Vp-p); twice that into high impedance

AWG510 Opt. 03 Note: Enables loading a 10-bit digital data signal on channel two and outputting it from the rear-panel digital connectors; marker output is not available from the digital channel on AWG510 Option 03

Auxiliary I/O

Specifications

PARAMETER	VALUE
Markers	Two arbitrary markers for the AWG510 analog channel
Clock Out	ECL 100K compatible, front-panel BNC
Trigger In	Front-panel BNC with programmable threshold
External Sample Clock In	Approximately 10 MHz to 900 MHz

10 MHz Reference In: Rear-panel BNC
Event Trigger Input: Multi-bit event/strobe interface

Storage And Control

Specifications

PARAMETER	VALUE
Internal Hard Disk	Standard mass storage (family typically 10 GB class)
Floppy Disk	3.5 in, 1.44 MB
Interfaces	GPIB (IEEE-488) and Ethernet (10Base-T)

Optional Storage: Opt. 10 flash disk / standby; Opt. 11 removable hard disk

Environmental And Power

Environmental And Power

PARAMETER	VALUE
Operating Temperature	10 C to +40 C
Nonoperating Temperature	-20 C to +60 C
Line Voltage	100 to 240 VAC, 48 to 63 Hz
Power Consumption	Up to about 600 W / 8 A maximum (family rating)

Operational Notes
The AWG510 differs from the AWG520 primarily by providing one differential analog channel rather than two single-ended channels. With Option 03 installed, the instrument can serve as bothahigh-speed arbitrary analog source and a 10-bit digital pattern source at up to 1 GHz.

Notes

This manual OEM source was compiled from Tektronix AWG510 & AWG520 user/service manuals and AWG500-series datasheet material covering the AWG510 with Option 03 Digital Data Out.

Available from Aumictech

Used and refurbished unit evaluated in-house. Calibration: Available on request. Used · In stock.

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Generated July 30, 2026