

ARTISAN®
TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

Artisan Technology Group
(217) 352-9330 | sales@artisantg.com | artisantg.com

Full-service, independent repair center
with experienced engineers and technicians on staff.

We buy your excess, underutilized, and idle equipment
along with credit for buybacks and trade-ins.

Custom engineering
so your equipment works exactly as you specify.

- Critical and expedited services
- In stock / Ready-to-ship
- Leasing / Rentals / Demos
- ITAR-certified secure asset solutions

Expert team | Trust guarantee | 100% satisfaction

All trademarks, brand names, and brands appearing herein are the property of their respective owners.

Visit our website - *Click HERE*

Tektronix®

Arbitrary Waveform Generators

AWG7000 Series Datasheet



The industry-leading AWG7000 Series arbitrary waveform generators (AWG) represent a cutting edge benchmark in performance, sample rate, signal fidelity, and timing resolution. With up to 24 GS/s and 10-bit vertical resolution, the AWG7000 Series of AWGs delivers the industry's best signal stimulus solution for ever-increasing measurement challenges. This allows for easy generation of very complex signals, including complete control over signal characteristics.

Key performance specifications

- Generates complex wideband signals across a frequency range of up to 9.6 GHz
- Generates modulation bandwidths of up to 5.3 GHz (-3 dB)
- Vertical resolution up to 10 bit available.
- Generate signals up to 1 GHz modulation bandwidths with 54 dBc SFDR

Key features

- Wideband RF/MW modulation bandwidth
- Waveform sequencing and sub-sequencing
  - Enables creation of infinite waveform loops, jumps, and conditional branches
  - Enhance the ability to replicate real-world signal behavior
- Dynamic jump capability
  - Enables the creation of complex waveforms that respond to changing external environments
- Deep memory
  - Enables the creation of long complex waveform sequences
- Intuitive user interface shortens test time
- Integrated PC supports network integration and provides a built-in DVD, removable hard drive, LAN, eSATA, and USB ports
- Playback of oscilloscope and real-time spectrum analyzer captured signals, including enhancements such as adding predistortion effects
- Waveform vectors imported from third-party tools such as MathCAD, MATLAB, excel, and others

Applications

- Wideband RF/MW for communications and defense electronics
  - Wideband direct RF/MW output up to 9.6 GHz carrier
- High-speed serial Communications
  - Up to 6 Gb/s data rate for complex serial data streams (4x oversampling, interleaved)
  - Provides any profile multilevel signals to allow timing (Jitter) margin testing without external power combiners
- Mixed signal design and test
  - 2-channel analog plus 4-channel marker outputs
- High-speed, low-jitter data/pulse and clock source
- Real-world, ideal, or distorted signals – generates any combination of signal impairments simultaneously

Unparalleled performance

The capabilities of the AWG7000 series are further enhanced by the addition of key features:

Equation editor

The Equation Editor is an ASCII text editor that uses text strings to create waveforms by loading, editing, and compiling equation files. The editor provides control and flexibility to create more complex waveforms using customer-defined parameters.

Waveform sequencing and sub-sequencing

Real-time sequencing creates infinite waveform loops, jumps, and conditional branches for longer pattern-length generation suitable for replicating real-world behavior of serial transmitters.

Dynamic Jump

The Dynamic Jump capability enables the creation of complex waveforms by enabling the ability to dynamically jump to any predefined index in a waveform sequence. Users can define up to 256 distinct jump indexes that respond to changing external environments.

LXI Class C

Using the LXI Web Interface, you can connect to the AWG7000 Series through a standard web browser by simply entering the AWG's IP address in the address bar of the browser. The web interface enables viewing of instrument status and configuration, as well as status and modification of network settings. All web interaction conforms to the LXI Class C specification.

Wideband RF signal generation

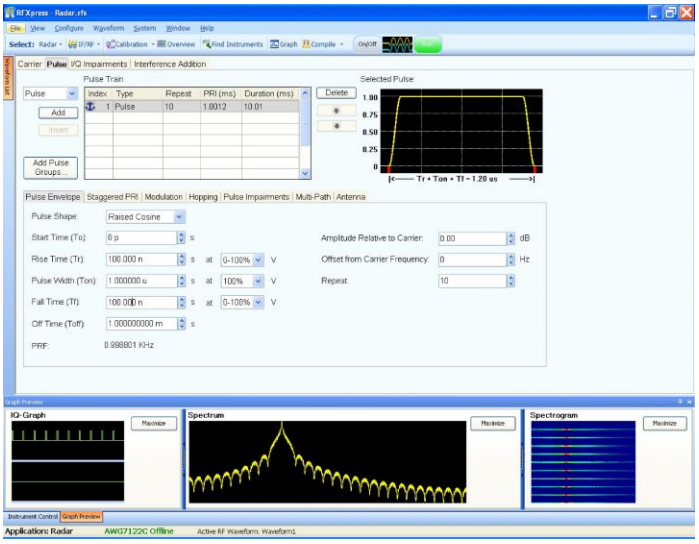
Creating RF signals is becoming more and more complex, making it more difficult for RF engineers to accurately create the signals required for conformance and margin testing. When combined with RFXpress, the AWG7000 Series can address these tough design challenges. RFXpress is a software package that digitally synthesizes modulated baseband, IF, and RF signals taking signal generation to new levels by fully exploiting the wideband signal generation capabilities of the AWG7000 Series arbitrary waveform generators (AWGs). Together the AWG7000 and RFXpress provide engineers with "bandwidth on demand", which is the ability to generate wideband modulated signals up to 5.3 GHz (-3 dB) anywhere within the 9.6 GHz frequency range.

The latest digital RF technologies often exceed the capabilities of other test instruments because of the need to generate the wide-bandwidth and fast-changing signals that are increasingly seen in many RF applications such as radar, RF comms, OFDM, and UWB. When used in conjunction with RFXpress the AWG7000 Series supports a wide range of modulation formats and simplifies the task of creating complex RF waveforms. The AWG7000 Series instruments provide customers with ways to generate fully modulated baseband, intermediate frequency (IF) signals, or directly generated RF waveforms.

Radar signal creation

Generating advanced radar signals often demands exceptional performance from an AWG in terms of sample rate, analog bandwidth, and memory. The Tektronix AWG7000 Series sets a new industry standard for advanced radar signal generation, by delivering wide modulation bandwidths up to 5.3 GHz (-3 dB). With a sample rate of up to 24 GS/s the AWG7000 Series can directly generate RF signals never before possible from an AWG. In instances where IQ generation is desired, the AWG7000 offers the ability to oversample the signal, thereby improving signal quality.

The AWG7000 and RFXpress are the perfect solution for creating complex radar signals. Customers are provided with the ultimate flexibility in creating custom radar pulse suites. Modulation types such as LFM,Barker and Polyphase Codes, Step FM, and Nonlinear FM are easily created using the AWG, and the flexibility of RFXpress enables the creation of waveforms requiring customer-defined modulation types. The AWG and RFXpress combo also has the ability to generate pulse trains with staggered PRI to resolve range and doppler ambiguity, frequency hopping for Electronic Counter-Counter Measures (ECCM), and pulse-to-pulse amplitude variation to simulate Swerling target models including antenna scan patterns, clutter, and multipath effects.



AWG radar pulses created with AWG7000 and RFXpress.

Environment signal creation

Radar signals must coexist with other commercial standard signals sharing the same spectrum and are still expected to perform with no performance degradation. This isn't unreasonable given its mission-critical operations. To meet this expectation, a radar designer has to thoroughly test all the corner cases at the design/debug stage. The AWG7000 and RFXpress Environment plug-in offers extreme flexibility to define and create these worst-case scenarios.

You can specify up to 25 signals to define your environment, including WiMAX, WiFi, GSM, GSM-EDGE, EGPRS 2A, EGPRS2B, CDMA, W-CDMA, DVB-T, Noise, and CW Radar. This plug-in also allows you to seamlessly import signals from other RFXpress plug-ins (including Radar, Generic Signal, etc.), as well as from Matlab® and from Tektronix spectrum analyzers and oscilloscopes, into your environment. You can also configure PHY parameters of your standard-specific signals. You can define the carrier frequency, power, start time, and duration for all the signals in your environment, so you have full control over the way these signals interact/interfere with each other.

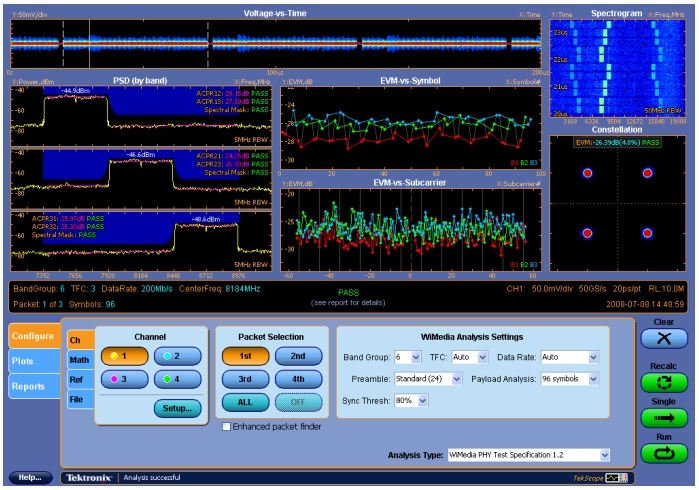
Generic OFDM creation

In today's wireless world, OFDM is becoming the modulation method of choice for transmitting large amounts of digital data over short and medium distances. The need for wide bandwidths and multiple carriers create challenges for engineers who need to create OFDM signals to test their RF receivers. The AWG7000 Series, when coupled with RFXpress, allows users to configure every part of the OFDM signal definition. Engineers can build signals symbol-by-symbol to create a complete OFDM frame or let the RFXpress software choose default values for some signal aspects. The AWG/RFXpress combo supports a variety of data coding formats that include Reed Solomon, Convolution, and Scrambling. Users also have the ability to define each subcarrier in the symbol which can be configured independently for type, modulation, and base data. The RFXpress software gives visibility into all aspects of the OFDM signal by providing a symbol table that gives a summary of all the carriers in the selected symbol. OFDM packets/frames can be built by specifying the spacing between the symbols/frames and parts of the OFDM packets can be stressed by adding gated noise.

UWB WiMedia (UWBCF/UWBCT)

Ultra-Wideband (UWB) wireless is a growing technology that is designed for low-power, short-range wireless applications. UWB has emerged as the leading technology for applications like wireless Universal Serial Bus (USB). UWB radios, like generic OFDM radios, require wide signal bandwidths and multiple carriers, but UWB designs also require short-duration pulses and transmit Power Spectral Densities (PSDs) near the thermal noise floor which can make creating UWB test signals very difficult. Fortunately, the AWG7000 Series and RFXpress offer a solid solution for the generation of UWB test signals.

The AWG7000 and RFXpress have the capability to digitally synthesize and generate signals in the UWB spectrum. For either custom UWB signal or ones defined for the latest WiMedia specification, the AWG7000 solution can recreate signals that are required to band hop in real time over a 1.6 GHz modulation bandwidth. The RFXpress software gives users complete control over the characteristics of their UWB signals including the preamble synchronization sequences, cover sequences, and TFCs. For WiMedia applications all six band groups (BG1 to BG6) can be generated in either IQ, IF, or direct RF signals, giving users 3 different options for creating/up-converting the signals when using an AWG7000 instrument.

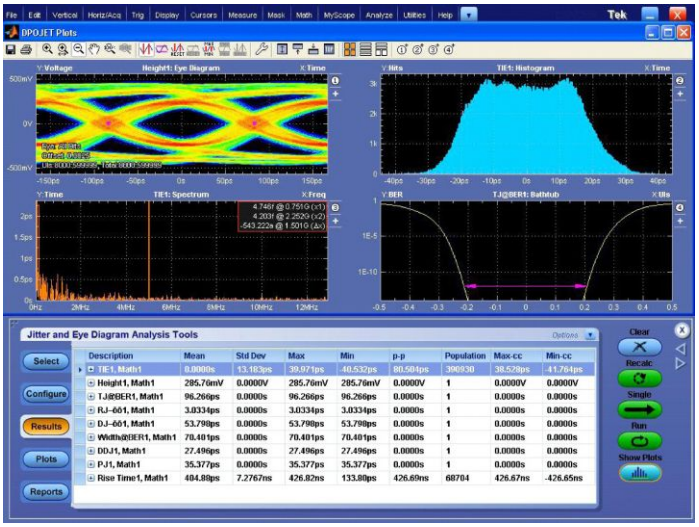


Direct WiMedia signals are easily created with the AWG7000 and RFXpress.

High speed serial signal generation

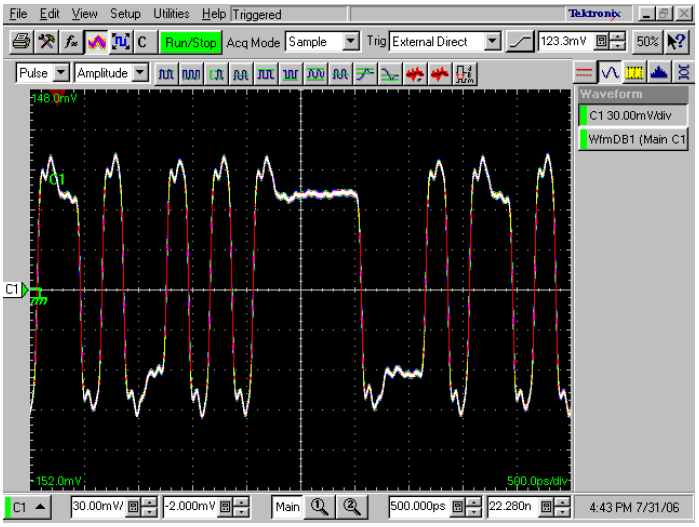
Serial signals are made up entirely of simple ones and zeros - binary data. Historically engineers have used data generators to create digital signals. As clock rates have increased these simple ones and zeros have begun to look more like analog waveforms because embedded in the digital data are analog events. The zero rise time and the perfectly flat tops of textbook digital signals no longer represent reality. Electronic environments have noise, jitter, crosstalk, distributed reactances, power supply variations, and other shortcomings. Each takes its toll on the signal. A real-world digital "square wave" rarely resembles its theoretical counterpart. Since the AWG7000 Series is an analog waveform source it is the perfect single-box solution that is used to create digital data streams and mimic the analog imperfections that occur in real-world environments. The AWG7000 Series uses direct synthesis techniques which allow engineers to create signals that embody the effects of propagation through a transmission line. Rise times, pulse shapes, delays, and aberrations can all be controlled with the AWG7000 Series instruments. When used in conjunction with the SerialXpress software package, engineers are provided control over every aspect of their digital signals reaching speeds of up to 6 Gb/s. This is exactly what is needed for rigorous receiver testing requirements.

SerialXpress is an integrated SW tool that enables AWG7000 Series instruments to create a variety of digital data impairments such as jitter (Random, Periodic, Sinusoidal), noise, pre/de-emphasis, duty cycle distortion, Inter-symbol Interference (ISI), Duty Cycle Distortion (DCD), and Spread Spectrum Clocking (SSC). The transmission environments of both board and cables can be emulated using touchstone files uploaded into SerialXpress. The AWG7000 and SerialXpress solution also provides base pattern waveforms for many of today's high-speed serial applications such as SATA, Display Port, SAS, PCI-E, USB, and Fibre Channel.



Easily create digital data impairments with the AWG7000 and SerialXpress.

For high-speed serial applications the AWG7000 Series offers the industry's best solution for addressing challenging signal stimulus issues faced by digital designers who need to verify, characterize, and debug complex digital designs. The file-based architecture uses direct synthesis to create complex data streams and provides users with the simplicity, repeatability, and flexibility required to solve the toughest signal generation challenges in high-speed serial communication applications.



Digital data with de-emphasis added using the AWG7000 and SerialXpress.

Performance you can count on

Depend on Tektronix to provide you with performance you can count on. In addition to industry-leading service and support, this product comes backed by a one-year warranty as standard.

AWG7122C Specifications

Model overview

		Normal: w/ Amplifier 2 Channel	Direct: w/o Amplifier 2 Channel	Wideband: Option 02 2 Channel	Wideband: Option 06 2 Channel	Interleaved: Option 06 1 Channel
Digital to analog converter						
	Sample rate (nominal)	10 MS/s to 12 GS/s				12 GS/s to 24 GS/s
	Resolution (nominal)	10 bit (no markers selected) or 8 bit (markers selected)				
Sin (x)/x Roll-off						
	Sin (x)/x (-1 dB)	3.1 GHz				6.2 GHz
	Sin (x)/x (-3 dB)	5.3 GHz				10.6 GHz

Frequency domain characteristics - AWG7122C

Effective frequency output Fmaximum (specified) is determined as "sample rate / oversampling rate" or "SR / 2.5"

Fmaximum 4.8 GHz

Option 6 (interleaved) 9.6 GHz

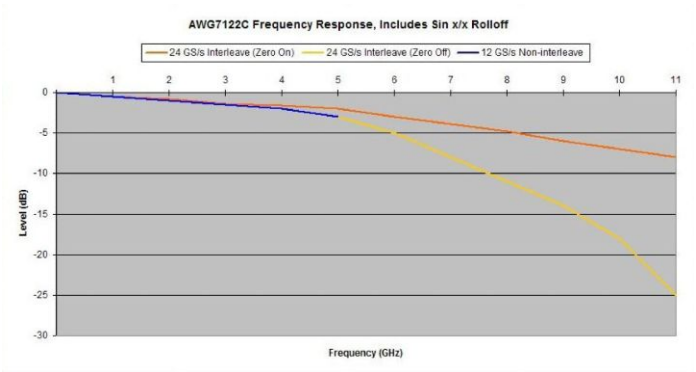
Effective frequency switching time Minimum frequency switching time from selected waveforms in sequence mode is determined as "1/Fmaximum"

Standard switching time (Ts) 106 µs

Option 08 (fast frequency switching)

Switching time (Ts)	Option 6 (interleaved)
208 ps	104 ps

Frequency response



Modulation bandwidth Modulation bandwidth is defined as the lower of the sin(x)/x bandwidth or the calculated percentage of rise time bandwidth (as shown).

	Normal: w/ Amplifier 2 Channel	Direct: w/o Amplifier 2 Channel	Wideband: Option 02 2 Channel	Wideband: Option 06 2 Channel	Interleaved: Option 06 1 Channel
-1 dB BW = 0.923 × (-1 dB TrBW), typical	Up to 400 MHz	Up to 1.8 GHZ	up to 3.1 GHz	up to 3.1 GHz	Up to 3.3 GHz (Zero On) Up to 3.1 GHz (Zero Off)
-3 dB BW = 0.913 × (-1 dB TrBW), typical	Up to 680 MHz	Up to 3.2 GHz	Up to 5.3 GHz	Up to 5.3 GHz	Up to 5.6 GHz (Zero On) Up to 5.3 GHz (Zero Off)

Frequency domain characteristics - AWG7122C

Output amplitude

Amplitude levels are measured as single-ended outputs. Amplitude level will be 3 dBm higher when using differential (both) outputs.

Range (typical)

Normal: w/ Amplifier 2 Channel	Direct: w/o Amplifier 2 Channel	Wideband: Option 02 2 Channel	Wideband: Option 06 2 Channel	Interleaved: Option 06 1 Channel
-22 dBm to 10 dBm	-22 dBm to 4 dBm	-2 dBm to 4 dBm	-2 dBm to 4 dBm	Zero On: -8 dBm to -2 dBm Zero Off: -2 dBm to 4 dBm

Resolution (typical)

0.01 dB

Accuracy (typical)

At -2 dBm level, with no offset, ±0.3 dB

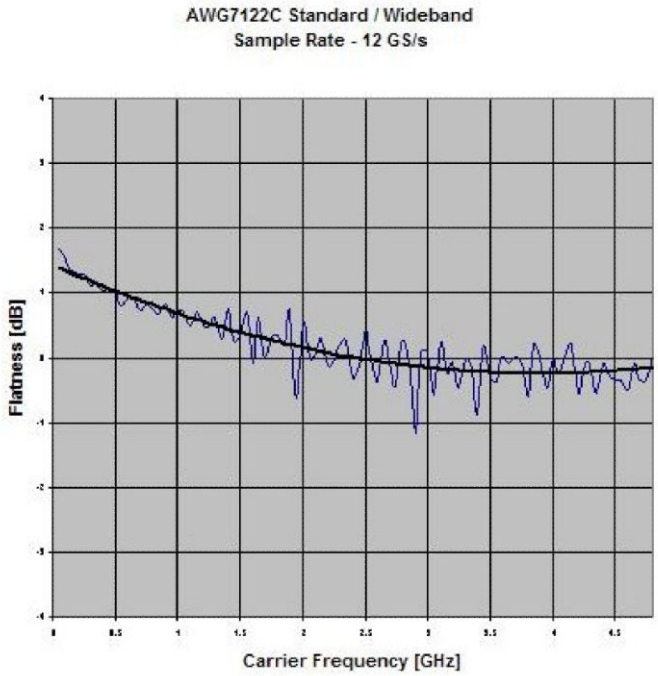
Frequency domain characteristics - AWG7122C

Output flatness (typical)

Mathematically corrected for characteristic Sin (x)/x roll-off, uncorrected by external calibration methods.

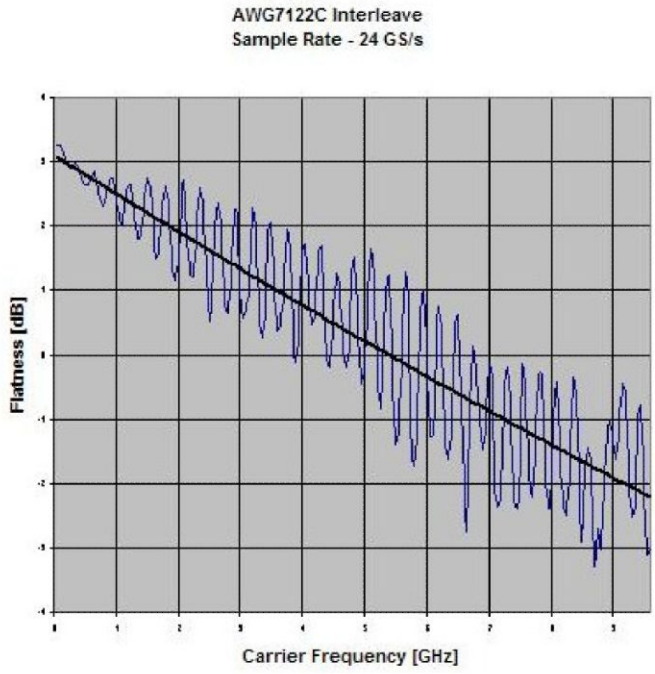
Normal: w/ Amplifier 2 Channel	Direct: w/o Amplifier 2 Channel	Wideband: Option 02 2 Channel	Wideband: Option 06 2 Channel	Interleaved: Option 06 1 Channel
±1.0 dB, from 50 MHz to 4.8 GHz	±1.0 dB, from 50 MHz to 4.8 GHz	±1.0 dB, from 50 MHz to 4.8 GHz	±1.0 dB, from 50 MHz to 4.8 GHz	±2.5 dB, from 50 MHz to 9.6 GHz

AWG7122C Standard/Wideband Flatness (typical)



Frequency domain characteristics - AWG7122C

AWG7122C Interleave Flatness (typical)



Output match

SWR (typical)

Normal: w/ Amplifier 2 Channel	Direct: w/o Amplifier 2 Channel	Wideband: Option 02 2 Channel	Wideband: Option 06 2 Channel	Interleaved: Option 06 1 Channel
DC to 1.5 GHz, 1.2:1 1.5 to 4.8 GHz, 1.7:1	DC to 1.5 GHz, 1.2:1 1.5 to 4.8 GHz, 1.7:1	DC to 1.5 GHz, 1.2:1 1.5 to 4.8 GHz, 1.7:1	DC to 1.5 GHz, 1.2:1 1.5 to 4.8 GHz, 1.7:1	DC to 1.5 GHz, 1.2:1 1.5 to 4.8 GHz, 1.3:1 4.8 to 9.6 GHz, 1.5:1

Time domain characteristics - AWG7122C

Data rate

Bit rate determined as "sample rate / 4 points per cycle", allowing full impairment generation

Bit rate (nominal)

Normal: w/ Amplifier 2 Channel	Direct: w/o Amplifier 2 Channel	Wideband: Option 02 2 Channel	Wideband: Option 06 2 Channel	Interleaved: Option 06 1 Channel
3 Gb/s	3 Gb/s	3 Gb/s	3 Gb/s	6 Gb/s

Rise/fall time

Rise/fall time measured at 20% to 80% levels, related by a factor of 0.75 to the industry standard of 10% to 90% levels

Tr/Tf (typical)

Normal: w/ Amplifier 2 Channel	Direct: w/o Amplifier 2 Channel	Wideband: Option 02 2 Channel	Wideband: Option 06 2 Channel	Interleaved: Option 06 1 Channel
350 ps	75 ps	35 ps	35 ps	42 ps

Time domain characteristics - AWG7122C

Rise time bandwidth

Rise-time bandwidth converted from rise-time, assumed Gaussian transition, characteristics through analog output circuitry and cabling

Tr bandwidth (-1 dB BW = 0.197/Tr) (typical)

Normal: w/ Amplifier 2 Channel	Direct: w/o Amplifier 2 Channel	Wideband: Option 02 2 Channel	Wideband: Option 06 2 Channel	Interleaved: Option 06 1 Channel
430 MHz	2.0 GHz	4.3 GHz		3.6 GHz

Tr bandwidth (-3 dB BW = 0.339/Tr) (typical)

750 MHz	3.5 GHz	7.5GHz		6.2 GHz

Low-pass filter

Bessel type: 50 and 200 MHz	--

Output amplitude

Range (typical)

Normal: w/ Amplifier 2 Channel	Direct: w/o Amplifier 2 Channel	Wideband: Option 02 2 Channel	Wideband: Option 06 2 Channel	Interleaved: Option 06 1 Channel
100 mV_{p-p} to 4.0 V_{p-}	100 mV_{p-p} to 2.0 V_{p-}	1.0 V_{p-p} to 2.0 V_{p-}		Zero On: 500 mV_{p-p} to 1.0 V_{p-p} Zero Off: 1.0 V_{p-p} to 2.0 V_{p-p}

Resolution (typical)

1.0 mV

Accuracy (typical)

At 0.5 V, with no offset, ±(3% of amplitude ±2 mV)	Zero On: ±(8% of level ±2 mV) Zero Off: ±(4% of level ±2 mV)

Offset

Range (typical)

Normal: w/ Amplifier 2 Channel	Direct: w/o Amplifier 2 Channel	Wideband: Option 02 2 Channel	Wideband: Option 06 2 Channel	Interleaved: Option 06 1 Channel
±0.5 V	--			

Resolution (typical)

1.0 mV	--

Accuracy (typical)

At minimum amplitude, ±(2.0% of offset ±10 mV)	--

Output distortion - AWG7122C

Spurious Free Dynamic Range (SFDR)

SFDR is determined as a function of the directly generated carrier frequency. Harmonics not included

DC to 1.0 GHz carrier -54 dBc

1.0 to 2.4 GHz carrier -46 dBc

2.4 to 3.5 GHz carrier -38 dBc

Output distortion - AWG7122C

3.5 to 4.8 GHz carrier

-30 dBc

4.8 to 9.6 GHz carrier

Normal: w/ Amplifier 2 Channel	Direct: w/o Amplifier 2 Channel	Wideband: Option 02 2 Channel	Wideband: Option 06 2 Channel	Interleaved: Option 06 1 Channel
Clock: 12 GS/s, 10-bit operation Frequency: 50 MHz to 4.8 GHz Level: 4 dBm (1 V_{p-p}) Offset: None				Clock: 24 GS/s, 10-bit operation Frequency: 50 MHz to 9.6 GHz Level: -2 dBm (0.5 V_{p-p})
--				-26 dBc

Spurious Free Dynamic Range - when viewed as a modulation bandwidth (typical)

When viewed as a modulation bandwidth and used with external frequency up-conversion, the specifications will hold and be independent of carrier frequency with proper conversion circuitry design. Harmonics not included

DC to 1.0 GHz bandwidth (-1 dB)

-54 dBc

DC to 2.4 GHz bandwidth (-1 dB)

-46 dBc

DC to 3.5 GHz bandwidth (-1 dB)

Normal: w/ Amplifier 2 Channel	Direct: w/o Amplifier 2 Channel	Wideband: Option 02 2 Channel	Wideband: Option 06 2 Channel	Interleaved: Option 06 1 Channel
Clock: 12 GS/s, 10-bit operation Modulation Bandwidth: Up to 2.5 GHz Level: 4 dBm (1 V_{p-p}) Offset: None				Clock: 24 GS/s, 10-bit operation Modulation Bandwidth: Up to 3.5 GHz Level: -2 dBm (0.5 V_{p-p})
--				-38 dBc

Harmonic and non-harmonic distortion

Harmonic distortion

Normal: w/ Amplifier 2 Channel	Direct: w/o Amplifier 2 Channel	Wideband: Option 02 2 Channel	Wideband: Option 06 2 Channel	Interleaved: Option 06 1 Channel
Clock: 12 GS/s, 10-bit operation 32-point waveform 375 MHz output Amplitude: 4 dBm (1 V_{p-p}) Offset: None				Clock: 24 GS/s, 10-bit operation 32-point waveform 750 MHz output Amplitude: -2 dBm (0.5 V_{p-p})
< -35 dBc	< -42 dBc			< -40 dBc

Non-harmonic distortion

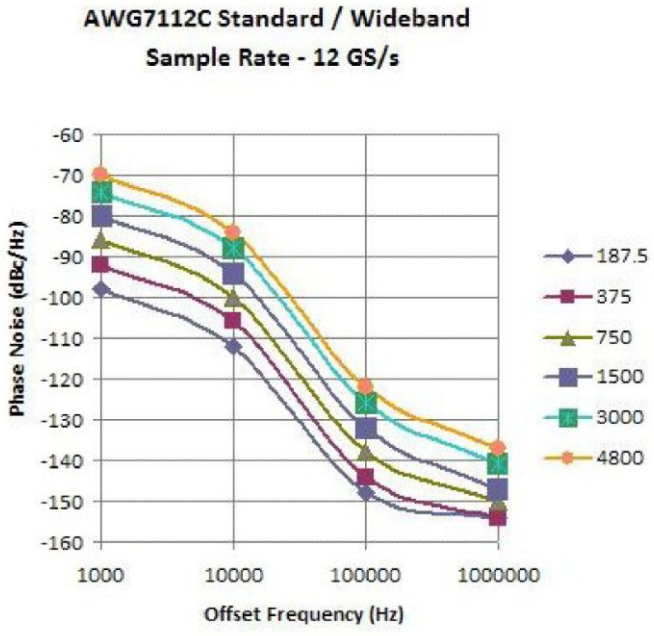
Clock: 12 GS/s, 10-bit operation 32-point waveform 375 MHz output Amplitude: 4 dBm (1 V_{p-p}) Offset: None				Clock: 24 GS/s, 10-bit operation 32-point waveform 750 MHz output Amplitude: -2 dBm (0.5 V_{p-p})
< -50 dBc				< -45 dBc

Output distortion - AWG7122C

Phase noise distortion

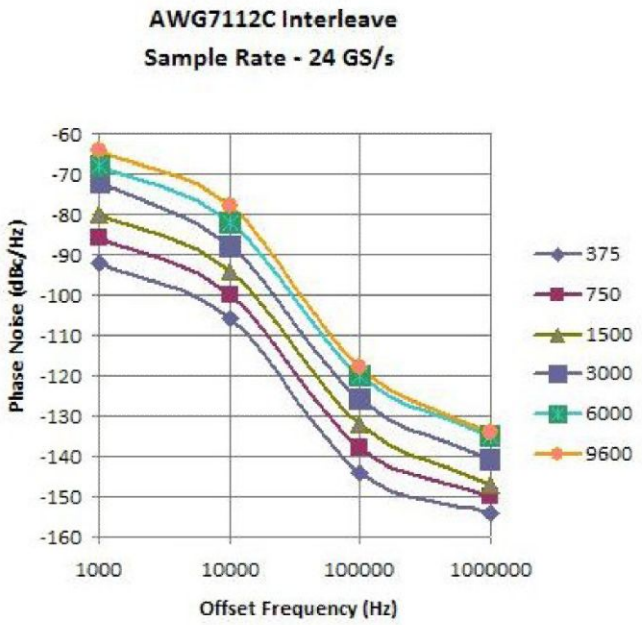
Normal: w/ Amplifier 2 Channel	Direct: w/o Amplifier 2 Channel	Wideband: Option 02 2 Channel	Wideband: Option 06 2 Channel	Interleaved: Option 06 1 Channel
Clock: 12 GS/s, 10-bit operation 32-point waveform 375 MHz output Amplitude: 4 dBm (1 V_{p-p}) Offset: None				Clock: 24 GS/s, 10-bit operation 32-point waveform 750 MHz output Amplitude: -2 dBm (0.5 V_{p-p})
< –90 dBc/Hz at 10 kHz offset				< –85 dBc/Hz at 10 kHz offset

AWG7122C Standard/Wideband Phase Noise (typical).



AWG7122C Interleave Phase Noise (typical).

Output distortion - AWG7122C



Jitter

	Normal: w/ Amplifier 2 Channel	Direct: w/o Amplifier 2 Channel	Wideband: Option 02 2 Channel	Wideband: Option 06 2 Channel	Interleaved: Option 06 1 Channel
Random jitter (typical) - 1010 clock pattern, RMS value	1.6 ps	0.9 ps			
Total jitter (typical) - 2^{15} - 1 data pattern (at 10^{-12} BER), P-P value	50 ps at 0.5 Gb/s	30 ps at 3 Gb/s	20 ps from 2 to 6 Gb/s		

Output pulse - AWG7122C

	Normal: w/ Amplifier 2 Channel	Direct: w/o Amplifier 2 Channel	Wideband: Option 02 2 Channel	Wideband: Option 06 2 Channel	Interleaved: Option 06 1 Channel
Tr/Tf (typical)	350 ps	75 ps	35 ps		42 ps

	Normal: w/ Amplifier 2 Channel	Direct: w/o Amplifier 2 Channel	Wideband: Option 02 2 Channel	Wideband: Option 06 2 Channel	Interleaved: Option 06 1 Channel
Timing skew (typical)	<20 ps (between each channel) (+) Pos and (-) Neg outputs				<12 ps (between each channel) (+) Pos and (-) Neg outputs

	Normal: w/ Amplifier 2 Channel	Direct: w/o Amplifier 2 Channel	Wideband: Option 02 2 Channel	Wideband: Option 06 2 Channel	Interleaved: Option 06 1 Channel
Delay from marker output(typical)	50 MHz: 10.15 ns ±0.15 ns 200 MHz: 4.05 ns ±0.05 ns	25 ns ±0.05 ns	0.58 ns ±0.05 ns		0.85 ns ±0.05 ns

Output distortion - AWG7122C

Interleave skew adjustment (typical)

Normal: w/ Amplifier 2 Channel	Direct: w/o Amplifier 2 Channel	Wideband: Option 02 2 Channel	Wideband: Option 06 2 Channel	Interleaved: Option 06 1 Channel
--				Skew adjust: ±180 degree against sample rate (e.g. 24 GS/s: 83 ps = 360 degrees with 0.1 degree resolution)

Interleave level adjustment (typical)

Normal: w/ Amplifier 2 Channel	Direct: w/o Amplifier 2 Channel	Wideband: Option 02 2 Channel	Wideband: Option 06 2 Channel	Interleaved: Option 06 1 Channel
--				Level adjust: 1 mV resolution

AWG7082C Specifications

All specifications are guaranteed unless noted otherwise. All specifications apply to all models unless noted otherwise.

Model overview

		Normal: w/ Amplifier 2 Channel	Direct: w/o Amplifier 2 Channel	Wideband: Option 02 2 Channel	Wideband: Option 06 2 Channel	Interleaved: Option 06 1 Channel
Digital to analog converter						
	Sample rate (nominal)	8 MS/s to 10 GS/s				8 GS/s to 16 GS/s
	Resolution (nominal)	10 bit (no markers selected) or 8 bit (markers selected)				
Sin (x)/x Roll-off						
	Sin (x)/x (-1 dB)	2.1 GHz				4.2 GHz
	Sin (x)/x (-3 dB)	3.5 GHz				7.0 GHz

Frequency domain characteristics - AWG7082C

Effective frequency output — Fmaximum (specified) is determined as "sample rate / oversampling rate" or "SR / 2.5"

Fmaximum — 3.2 GHz

Option 6 (interleaved) — 6.4 GHz

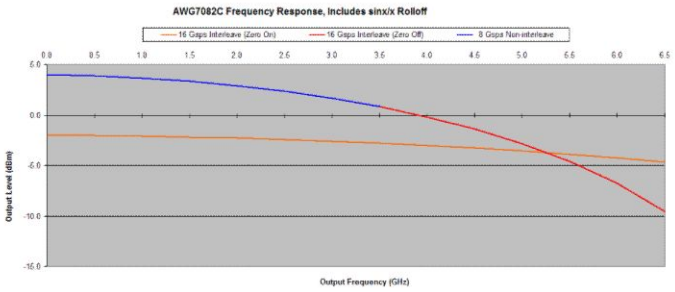
Effective frequency switching time — Minimum frequency switching time from selected waveforms in sequence mode is determined as "1/Fmaximum"

Standard switching time (Ts) — 160 µs

Option 08 (fast frequency switching)

Switching time (Ts)	Option 6 (interleaved)
313 ps	156 ps

Frequency response



Modulation bandwidth — Modulation bandwidth is defined as the lower of the sin(x)/x bandwidth or the calculated percentage of rise time bandwidth (as shown)

	Normal: w/ Amplifier 2 Channel	Direct: w/o Amplifier 2 Channel	Wideband: Option 02 2 Channel	Wideband: Option 06 2 Channel	Interleaved: Option 06 1 Channel
-1 dB BW = 0.923 × (-1 dB TrBW), typical	Up to 400 MHz	Up to 1.8 GHZ	up to 2.1 GHz	up to 2.1 GHz	Up to 3.3 GHz (Zero On) Up to 3.1 GHz (Zero Off)
-3 dB BW = 0.913 × (-3 dB TrBW), typical	Up to 680 MHz	Up to 3.2 GHz	Up to 3.5 GHz	Up to 3.5 GHz	Up to 5.6 GHz (Zero On) Up to 5.3 GHz (Zero Off)

Frequency domain characteristics - AWG7082C

Output amplitude

Amplitude levels are measured as single-ended outputs

Amplitude level will be 3 dBm higher when using differential (both) outputs

Range (typical)

Normal: w/ Amplifier 2 Channel	Direct: w/o Amplifier 2 Channel	Wideband: Option 02 2 Channel	Wideband: Option 06 2 Channel	Interleaved: Option 06 1 Channel
-22 dBm to 10 dBm	-22 dBm to 4 dBm	-2 dBm to 4 dBm	-2 dBm to 4 dBm	Zero On: -8 dBm to -2 dBm Zero Off: -2 dBm to 4 dBm

Resolution (typical) 0.01 dB

Accuracy (typical) At -2 dBm level, with no offset, ±0.3 dB

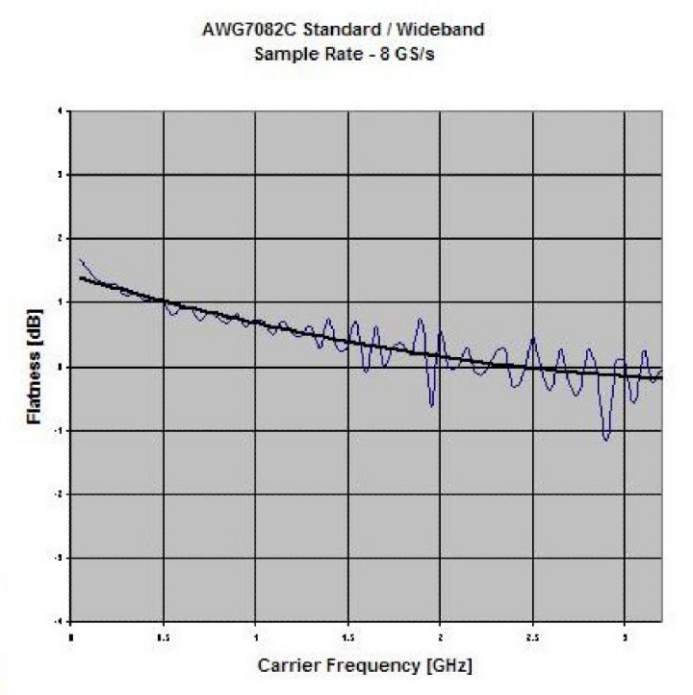
Frequency domain characteristics - AWG7082C

Output flatness (typical)

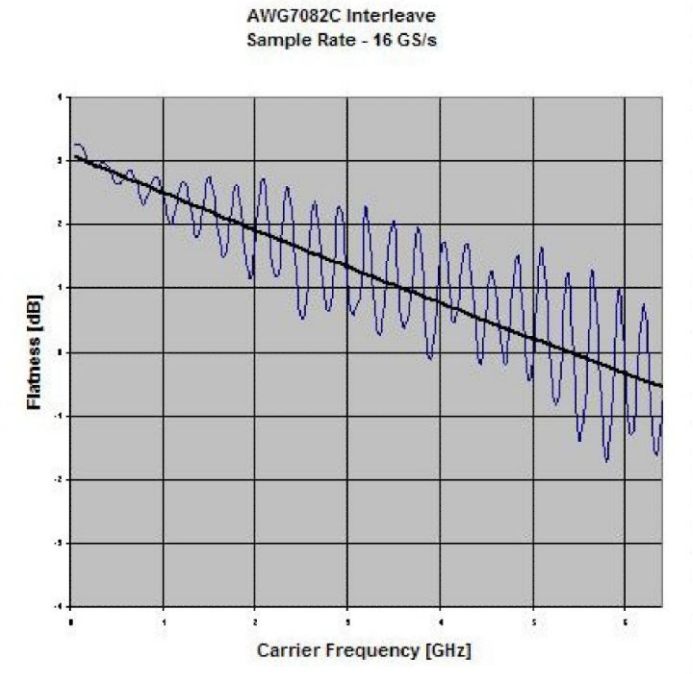
Mathematically corrected for characteristic Sin (x)/x roll-off, uncorrected by external calibration methods

Normal: w/ Amplifier 2 Channel	Direct: w/o Amplifier 2 Channel	Wideband: Option 02 2 Channel	Wideband: Option 06 2 Channel	Interleaved: Option 06 1 Channel
±1.0 dB, from 50 MHz to 3.2 GHz	±1.0 dB, from 50 MHz to 3.2 GHz	±1.0 dB, from 50 MHz to 3.2 GHz	±1.0 dB, from 50 MHz to 3.2 GHz	±2.5 dB, from 50 MHz to 6.4 GHz

AWG7082C Standard/Wideband Flatness (typical).



AWG7082C Interleave Flatness (typical).



Time domain characteristics- AWG7082C

Data rate

Bit rate determined as "sample rate / 4 points per cycle", allowing full impairment generation

Bit rate (nominal)

Normal: w/ Amplifier 2 Channel	Direct: w/o Amplifier 2 Channel	Wideband: Option 02 2 Channel	Wideband: Option 06 2 Channel	Interleaved: Option 06 1 Channel
2 Gb/s				4 Gb/s

Rise/fall time

Rise/fall time measured at 20% to 80% levels, related by a factor of 0.75 to the industry standard of 10% to 90% levels

Tr/Tf (typical)

Normal: w/ Amplifier 2 Channel	Direct: w/o Amplifier 2 Channel	Wideband: Option 02 2 Channel	Wideband: Option 06 2 Channel	Interleaved: Option 06 1 Channel
350 ps	75 ps	35 ps		42 ps

Rise time bandwidth

Rise-time bandwidth converted from rise-time, assumed Gaussian transition, characteristics through analog output circuitry and cabling

Tr bandwidth (-1 dB BW = 0.197/Tr), typical

Normal: w/ Amplifier 2 Channel	Direct: w/o Amplifier 2 Channel	Wideband: Option 02 2 Channel	Wideband: Option 06 2 Channel	Interleaved: Option 06 1 Channel
430 MHz	2.0 GHz	4.3 GHz		3.6 GHz

Tr bandwidth (-3 dB BW = 0.339/Tr), typical

750 MHz	3.5 GHz	7.5GHz		6.2 GHz

Low-pass filter, typical

Bessel type: 50 and 200 MHz	--

Output amplitude

Range (typical)

Normal: w/ Amplifier 2 Channel	Direct: w/o Amplifier 2 Channel	Wideband: Option 02 2 Channel	Wideband: Option 06 2 Channel	Interleaved: Option 06 1 Channel
100 mV_{p-p} to 4.0 V_{p-}	100 mV_{p-p} to 2.0 V_{p-}	1.0 V_{p-p} to 2.0 V_{p-}		Zero On: 500 mV_{p-p} to 1.0 V_{p-p} Zero Off: 1.0 V_{p-p} to 2.0 V_{p-p}

Resolution (typical)

1.0 mV

Accuracy (typical)

At 0.5 V, with no offset, ±(3% of amplitude ±2 mV)	Zero On: ±(8% of level ±2 mV) Zero Off: ±(4% of level ±2 mV)

Offset

Range (typical)

Normal: w/ Amplifier 2 Channel	Direct: w/o Amplifier 2 Channel	Wideband: Option 02 2 Channel	Wideband: Option 06 2 Channel	Interleaved: Option 06 1 Channel
±0.5 V	--			

Resolution (typical)

1.0 mV	--

Accuracy (typical)

At minimum amplitude, ±(2.0% of offset ±10 mV)	--

Output distortion - AWG7082C

Spurious Free Dynamic Range (SFDR), typical

SFDR is determined as a function of the directly generated carrier frequency. Harmonics not included

DC to 1.0 GHz carrier

-54 dBc

1.0 to 2.4 GHz carrier

-46 dBc

2.4 to 3.5 GHz carrier

-40 dBc

3.5 to 4.8 GHz carrier

Normal: w/ Amplifier 2 Channel	Direct: w/o Amplifier 2 Channel	Wideband: Option 02 2 Channel	Wideband: Option 06 2 Channel	Interleaved: Option 06 1 Channel
Clock: 12 GS/s, 10-bit operation Frequency: 50 MHz to 3.2 GHz Level: 4 dBm (1 V_{p-p}) Offset: None				Clock: 24 GS/s, 10-bit operation Frequency: 50 MHz to 6.4 GHz Level: -2 dBm (0.5 V_{p-p})
--				-32 dBc

4.8 to 9.6 GHz carrier

Clock: 12 GS/s, 10-bit operation Frequency: 50 MHz to 3.2 GHz Level: 4 dBm (1 V_{p-p}) Offset: None				Clock: 24 GS/s, 10-bit operation Frequency: 50 MHz to 6.4 GHz Level: -2 dBm (0.5 V_{p-p})
--				-26 dBc

Spurious Free Dynamic Range - when viewed as a modulation bandwidth, typical

When viewed as a modulation bandwidth and used with external frequency up-conversion, the specifications will hold and be independent of carrier frequency with proper conversion circuitry design. Harmonics not included

DC to 1.0 GHz bandwidth (-1 dB)

-54 dBc

DC to 2.4 GHz bandwidth (-1 dB)

-46 dBc

DC to 3.5 GHz bandwidth (-1 dB)

Normal: w/ Amplifier 2 Channel	Direct: w/o Amplifier 2 Channel	Wideband: Option 02 2 Channel	Wideband: Option 06 2 Channel	Interleaved: Option 06 1 Channel
Clock: 8 GS/s, 10-bit operation Modulation Bandwidth: Up to 1.9 GHz Level: 4 dBm (1 V_{p-p}) Offset: None				Clock: 16 GS/s, 10-bit operation Modulation Bandwidth: Up to 3.0 GHz Level: -2 dBm (0.5 V_{p-p})
--				-38 dBc

Output distortion - AWG7082C

Harmonic and non-harmonic distortion

Harmonic distortion

Normal: w/ Amplifier 2 Channel	Direct: w/o Amplifier 2 Channel	Wideband: Option 02 2 Channel	Wideband: Option 06 2 Channel	Interleaved: Option 06 1 Channel
Clock: 8 GS/s, 10-bit operation 32-point waveform 250 MHz output Amplitude: 4 dBm (1 V_{p-p}) Offset: None				Clock: 16 GS/s, 10-bit operation 32-point waveform 500 MHz output Amplitude: -2 dBm (0.5 V_{p-p})
< -35 dBc	< -42 dBc			< -40 dBc

Non-harmonic distortion

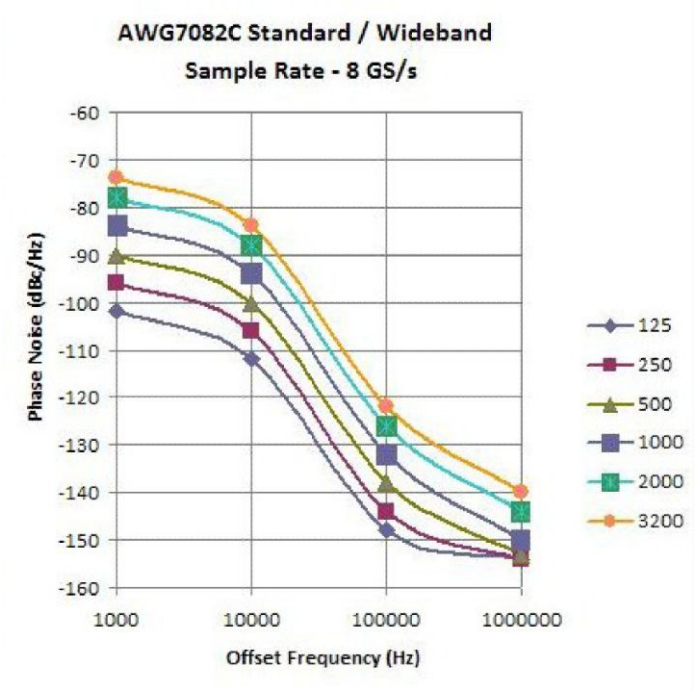
Normal: w/ Amplifier 2 Channel	Direct: w/o Amplifier 2 Channel	Wideband: Option 02 2 Channel	Wideband: Option 06 2 Channel	Interleaved: Option 06 1 Channel
Clock: 8 GS/s, 10-bit operation 32-point waveform 250 MHz output Amplitude: 4 dBm (1 V_{p-p}) Offset: None				Clock: 16 GS/s, 10-bit operation 32-point waveform 500 MHz output Amplitude: -2 dBm (0.5 V_{p-p})
< -50 dBc				< -45 dBc

Output distortion - AWG7082C

Phase noise distortion

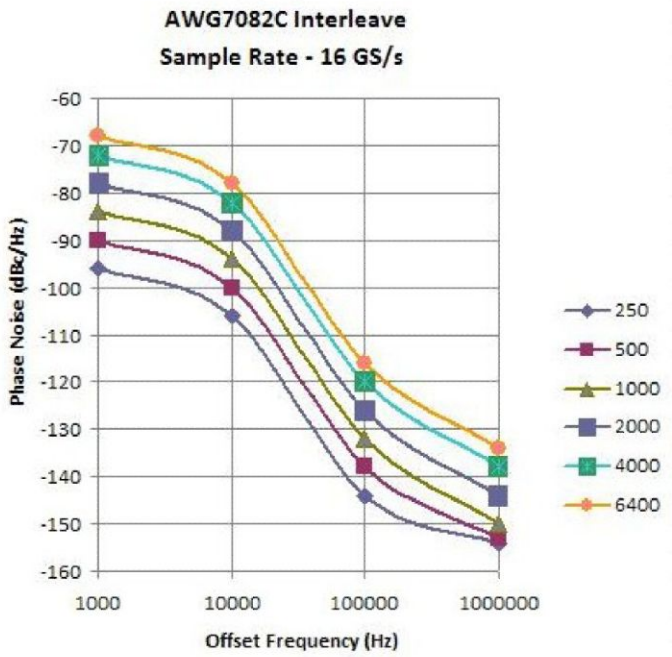
Normal: w/ Amplifier 2 Channel	Direct: w/o Amplifier 2 Channel	Wideband: Option 02 2 Channel	Wideband: Option 06 2 Channel	Interleaved: Option 06 1 Channel
Clock: 8 GS/s, 10-bit operation 32-point waveform 250 MHz output Amplitude: 4 dBm (1 V_{p-p}) Offset: None				Clock: 16 GS/s, 10-bit operation 32-point waveform 500 MHz output Amplitude: -2 dBm (0.5 V_{p-p})
< -90 dBc/Hz at 10 kHz offset				< -85 dBc/Hz at 10 kHz offset

AWG7082C Standard/Wideband Phase Noise (typical)



Output distortion - AWG7082C

AWG7082C Interleave Phase Noise (typical).



Jitter

Random jitter (typical), 1010 clock pattern, RMS value	**Normal: w/ Amplifier 2 Channel**	**Direct: w/o Amplifier 2 Channel**	**Wideband: Option 02 2 Channel**	**Wideband: Option 06 2 Channel**	**Interleaved: Option 06 1 Channel**
	1.6 ps	0.9 ps			
Total jitter (typical), 12^{15} - 1 data pattern (at 10^{-12} BER), P-P value	50 ps at 0.5 Gb/s	30 ps at 3 Gb/s	20 ps from 2 to 6 Gb/s		

Output pulse characteristics

All specifications apply to all models unless noted otherwise.

Tr/Tf (typical)	**Normal: w/ Amplifier 2 Channel**	**Direct: w/o Amplifier 2 Channel**	**Wideband: Option 02 2 Channel**	**Wideband: Option 06 2 Channel**	**Interleaved: Option 06 1 Channel**
	350 ps	75 ps	35 ps		42 ps

Timing skew (typical)	**Normal: w/ Amplifier 2 Channel**	**Direct: w/o Amplifier 2 Channel**	**Wideband: Option 02 2 Channel**	**Wideband: Option 06 2 Channel**	**Interleaved: Option 06 1 Channel**
	<20 ps (between each channel) (+) Pos and (-) Neg outputs				<12 ps (between each channel) (+) Pos and (-) Neg outputs

Output distortion - AWG7082C

Delay from marker output(typical)

Normal: w/ Amplifier 2 Channel	Direct: w/o Amplifier 2 Channel	Wideband: Option 02 2 Channel	Wideband: Option 06 2 Channel	Interleaved: Option 06 1 Channel
50 MHz: 10.15 ns ±0.15 ns 200 MHz: 4.05 ns ±0.05 ns	2.25 ns ±0.05 ns	0.58 ns ±0.05 ns		0.85 ns ±0.05 ns

Interleave skew adjustment (typical)

Normal: w/ Amplifier 2 Channel	Direct: w/o Amplifier 2 Channel	Wideband: Option 02 2 Channel	Wideband: Option 06 2 Channel	Interleaved: Option 06 1 Channel
--				Skew adjust: ±180 degree against sample rate (e.g. 24 GS/s: 83 ps = 360 degrees with 0.1 degree resolution)

Interleave level adjustment (typical)

Normal: w/ Amplifier 2 Channel	Direct: w/o Amplifier 2 Channel	Wideband: Option 02 2 Channel	Wideband: Option 06 2 Channel	Interleaved: Option 06 1 Channel
--				Level adjust: 1 mV resolution

Common specifications - AWG7122C and AWG7082C

All specifications are guaranteed unless noted otherwise. All specifications apply to all models unless noted otherwise.

Hardware characteristics

Outputs

Number of outputs

Normal: w/ Amplifier 2 Channel	Direct: w/o Amplifier 2 Channel	Wideband: Option 02 2 Channel	Wideband: Option 06 2 Channel	Interleaved: Option 06 1 Channel
2 channels, non-interleave				1 channel, interleave

Output connector Differential, SMA (front panel)

Output impedence 50 Ω

Waveform length

Normal: w/ Amplifier 2 Channel	Direct: w/o Amplifier 2 Channel	Wideband: Option 02 2 Channel	Wideband: Option 06 2 Channel	Interleaved: Option 06 1 Channel
Standard: to 32M points				Standard: to 64M points
Extended memory: to 64M points				Extended memory: to 128M points

Number of waveforms 1 to 16,200

Sequence length/counter 1 to 16,000 steps; 1 to 65,536 count

Run modes

- **Continuous** Waveform is iteratively output. If a sequence is defined, the sequence order and repeat functions are applied
- **Triggered** Waveform is output only once when an internal, external, programmatic (GPIB, LAN), or manual trigger is received
- **Gated** Waveform begins output when gate is "True" and resets when gate is "False"
- **Sequence** Waveform is output as defined by the sequence selected
- **Jump** Synchronous and asynchronous

Sampling clock

- **Resolution** 8 digits
- **Accuracy** Within ±(1 ppm + Aging), Aging: Within ±1 ppm per year

Internal trigger generator

- **Range** 1.0 µs to 10.0 s
- **Resolution** 3 digits, 0.1 µs minimum

Output skew control

- **Range** -100 to 100 ps
- **Resolution** 1 ps
- **Accuracy** ±(10% of setting + 10 ps)

Software characteristics

Operating system / Peripherals / IO	Windows 7
	4 GB memory
	300 GB Solid State Drive (std) / 1 TB Mechanical Hard Disk Drive (opt) (rear-panel removable, optional front mount kit)
	CD/DVD drive (front panel)
	Included USB compact keyboard and mouse
	USB 2.0 compliant ports (6 total - 2 front, 4 rear)
	PS/2 mouse and keyboard connections (rear panel)
	RJ-45 Ethernet connector (rear panel) supports 10/100/1000BASE-T
	DVI-I Video (rear panel) for external monitor
	eSATA (rear panel)
Display characteristics	LED backlit monitor with touch screen, 10.4 in. (264 mm) 1024 × 768 (V) XGA
Waveform file import capability	Import waveform format by series:
	*.AWG file created by Tektronix AWG5000 or AWG7000 Series
	*.PAT, *.SEQ, *.WFM and *.EQU file formats created by Tektronix arbitrary waveform generators such as the AWG400/500/600/700 Series
	*.IQT and *.TIQ files from Tektronix real-time spectrum analyzer
	*.TFW file created by Tektronix AFG3000 Series arbitrary/function generators
	*.DTG file created by Tektronix DTG5000 Series data timing generators
	*.WFM or *.ISF file created by Tektronix TDS/DPO Series oscilloscopes text file (*.TXT)
Waveform file export capability	Export waveform format by series:
	Tektronix AWG400/500/600/700 (*.wfm or *.pat) and text format
Software driver for third-party applications	IVI-COM driver, MATLAB library
Instrument control / data transfer	
GPIB	Remote control and data transfer (conforms to IEEE-Std 488.1, compatible with IEEE-Std 488.2 and SCPI-1999.0)
Ethernet	Remote control and data transfer (conforms to IEEE-Std 802.3)
TekLink	Remote control and data transfer (proprietary bus for Tektronix product high-speed interconnection and communication)
LAN eXtensions for Instrumentation (LXI)	Class LXI Class C Version 1.3

Auxiliary outputs

Markers

Number

Normal: w/ Amplifier 2 Channel	Direct: w/o Amplifier 2 Channel	Wideband: Option 02 2 Channel	Wideband: Option 06 2 Channel	Interleaved: Option 06 1 Channel
Total: 4 (2 per channel)				Total: 2 (2 per channel)

Style Differential

Connector SMA (front panel)

Impedance 50 Ω

Level (into 50 Ω) Amplitude levels are measured between differential outputs (+) to (-)

Single-ended output amplitude level will be one-half the voltage levels below

Window	-2.8 V to 2.8 V
Amplitude	1.0 V_{p-p} to 2.8 V_{p-p}
Resolution	10 mV
Accuracy	±(10% of setting + 75 mV)
Rise/fall time (20% to 80%)	45 ps (1.0 V_{p-p}, Hi: 1.0 V, Lo: 0.0 V)

Timing skew

Intra-skew (typical)	<13 ps (between each channel (+) Pos and (-) Neg output)
In-channel (typical)	<30 ps (between Marker 1 and Marker 2 outputs)

Delay control

Range	0 - 300 ps
Resolution	1 ps
Accuracy	±(5% of setting + 50 ps)

Jitter

Random RMS (typical)	1 ps
Total p-p (typical)	30 ps (2^{15} - 1 PN pattern at 10^{-12} BER)

10 MHz reference out

Amplitude 1.2 V_{p-p} into 50 Ω, maximum 2.5 V open

Connector BNC (rear panel)

Impedance 50 Ω, AC coupled

Synchronization clock output

Frequency 1/64 of the sample clock frequency

Amplitude 1.0 V_{p-p} into 50 Ω

DC outputs

Number 4, independently controlled

Range -3.0 to 5.0 V

Resolution 10 mV

Accuracy ±(3% of setting + 120 mV)

Connector 2×4 pin header (front panel)

Current (max) ±30 mA

Auxiliary inputs

Trigger / gate in

Polarity Pos or Neg

Range 50 Ω: ±5 V, 1 kΩ: ±10 V

Connector BNC (front panel)

Impedance 50 Ω, 1 kΩ

Threshold

Level	-5.0 V to 5.0 V
Resolution	0.1 V

Trigger to output uncertainty

Asynchronous (typical)	Between internal/external clock and trigger timing: 0.5 ns at 12 GS/s, 0.7 ns at 10 GS/s, 0.8 ns at 9 GS/s, 0.9 ns at 8 GS/s, 1.0 ns at 6 GS/s
Synchronous (typical)	Between external clock and trigger timing: 12 GS/s, X1 clock divider, synchronous trigger mode with specific timing (120 ps_{p-p}, 30 ps_{RMS})
Synchronous (typical)	Between external 10 MHz reference and trigger timing: 12 GS/s setting, synchronous trigger mode with specific timing (120 ps_{p-p}, 30 ps_{RMS})
Synchronous (typical)	Between external variable reference and trigger timing: 2n (n: integer) clock reference, synchronous trigger and specific timing (50 ps_{p-p}, 10 ps_{RMS})

Trigger mode

Minimum pulse width	20 ns
Trigger hold-off	832 × sampling period - 100 ns
Delay to output	128 × sampling period + 250 ns

Gated mode

Minimum pulse width	1024 x sampling period + 10 ns
Delay to output	640 x sampling period + 260 ns

Dynamic jump

Connector 15-pin DSUB on rear panel

Level TTL +5 V compliant inputs, 3.3 V LV CMOS level

Impedance Pull up to 3.3 V by 1 kΩ resistor

Strobe Must strobe jump destination

Event in

Polarity Pos or Neg

Range 50 Ω: ±5 V, 1 kΩ: ±10 V

Connector BNC (front panel)

Impedance 50 Ω, 1 kΩ

Threshold

Level	-5.0 to 5.0 V
Resolution	0.1 V

Sequence mode

Minimum pulse width	20 ns
Event hold-off	900 × sampling period + 150 ns
Delay to output	1024 × sampling period + 280 ns (Jump timing: asynchronous jump)

External clock in

Input voltage range 1.4 V_{p-p} to 2.2 V_{p-p}, 7 dBm to 11 dBm

Frequency range 6 GHz to 12 GHz (acceptable frequency drift of ±0.1%)

Clock divider 1/1, 1/2, 1/4...1/256

Auxiliary inputs

Connector BNC (rear panel)

Impedance 50 Ω, AC coupled

Fixed reference clock

Input voltage range 0.2 V_{p-p} to 3.0 V_{p-p}

Frequency range 10 MHz, 20 MHz, 100 MHz (within ±0.1%)

Connector BNC (rear panel)

Impedance 50 Ω, AC coupled

Variable reference clock in

Input voltage range 0.2 V_{p-p} to 3.0 V_{p-p}

Frequency range 5 MHz to 800 MHz (acceptable frequency drift is ±0.1%)

Multiplier rate

Normal: w/ Amplifier 2 Channel	Direct: w/o Amplifier 2 Channel	Wideband: Option 02 2 Channel	Wideband: Option 06 2 Channel	Interleaved: Option 06 1 Channel
1 to 2400				2 to 4800

Connector BNC (rear panel)

Impedance 50 Ω, AC coupled

Physical characteristics

Dimensions

Height

mm	inches
245	9.6

Width

465	18.0

Depth

500	19.7

Weight

Net (instrument)

kg	lb.
19	41.9

Net (with packaging)

28	61.7

Mechanical cooling Clearance

Top/bottom

cm	inches
2	0.8

Side

15	6

Rear

7.5	3

Power supply

Rating 100 to 240 V AC, 47 to 63 Hz

Consumption 450 Watts

EMC environment and safety

Temperature

Operational	10 to 40 °C
Non-operational	20 to 60 °C

Humidity

Operational	5% to 80% relative humidity (% RH) at up to 30 °C, 5% to 45% relative humidity above 30 °C up to 50 °C
Non-operational	5% to 90% relative humidity (% RH) at up to 30 °C, 5% to 45% relative humidity above 30 °C up to 50 °C

Altitude

Operational	Up to 10,000 ft. (3,048 m)
Non-operational	Up to 40,000 ft. (12,192 m)

Vibration

Sine

Operational	0.33 mm p-p (0.013 in p-p) constant displacement, 5 to 55 Hz
Non-operational	NA

Random

Operational	0.27 g RMS, 5 to 500 Hz, 10 minutes per axis
Non-operational	2.28 g RMS, 5 to 500 Hz, 10 minutes per axis

Mechanical

Operational	Half-sine mechanical shocks, 30 g peak, 11 ms duration, 3 drops in each direction of each axis
Non-operational	Half-sine mechanical shocks, 10 g peak, 11 ms duration, 3 drops in each direction of each axis

Regulatory

Safety	UL61010-1, CAN/CSA-22.2, No.61010-1-04, EN61010-1, IEC61010-1
Emissions	EN55011 (Class A), IEC61000-3-2, IEC61000-3-3
Immunity	IEC61326, IEC61000-4-2/3/4/5/6/8/11

Regional certifications

Europe	EN61326
Australia/New Zealand	AS/NZS 2064

Ordering information

Models

AWG7122C	12.0 GS/s (24 GS/s interleaved), 8/10 bit, 32M point, 2-channel arbitrary waveform generator.
AWG7082C	8.0 GS/s (16 GS/s interleaved), 8/10 bit, 32M point, 2-channel arbitrary waveform generator.

Instrument options

PowerPlugOptions

Opt. A0	North America power plug (115 V, 60 Hz)
Opt. A1	Universal Euro power plug (220 V, 50 Hz)
Opt. A2	United Kingdom power plug (240 V, 50 Hz)
Opt. A3	Australia power plug (240 V, 50 Hz)
Opt. A4	North America power plug (240 V, 50 Hz)
Opt. A5	Switzerland power plug (220 V, 50 Hz)
Opt. A6	Japan power plug (100 V, 50/60 Hz)
Opt. A10	China power plug (50 Hz)
Opt. A11	India power plug (50 Hz)
Opt. A12	Brazil power plug (60 Hz)
Opt. A99	No power cord

Language options

Opt. L0	English manual
Opt. L5	Japanese manual
Opt. L7	Simplified Chinese manual
Opt. L8	Traditional Chinese manual
Opt. L10	Russian manual

Language options include translated front-panel overlay for the selected language(s).

Application software

SDX100	Jitter-generation software package (includes USB dongle)
Opt. ISI	S-parameter and ISI creation (requires SDX100 as prerequisite)
Opt. SSC	Spread Spectrum Clock addition option (requires SDX100 as prerequisite)

Service options

Opt. C3	Calibration Service 3 Years
Opt. C5	Calibration Service 5 Years
Opt. CA1	Single Calibration or Functional Verification
Opt. D1	Calibration Data Report

Opt. D3	Calibration Data Report 3 Years (with Opt. C3)
Opt. D5	Calibration Data Report 5 Years (with Opt. C5)
Opt. R3	Repair Service 3 Years (including warranty)
Opt. R5	Repair Service 5 Years (including warranty)

Post sales service options (e.g. AWG7122C-CA1)

CA1	Single calibration or functional verification
R5DW	Repair service coverage 5 years
R2PW	Repair service coverage 2 years post warranty
R1PW	Repair service coverage 1 year post warranty

Product upgrade options

AWG70CUP

Option	Product	Description
M02	AWG7122C	Upgrade to add waveform record length, 32M point to 64M point
M01	AWG7082C	
B02	AWG7122C	Upgrade to add wide bandwidth output
B01	AWG7082C	
D01	All AWG7000C models	Additional removable disk - solid state
D02	All AWG7000C models	Additional removable disk - mechanical
S02	AWG7122C	Upgrade from Standard to Opt. 08 (fast sequence switching)
S01	AWG7082C	
S49	AWG7122C	Upgrade to add sub-sequencing and dynamic jump
S29	AWG7082C	

Product options - AWG7122, AWG7082

Opt. 01	Waveform record length expansion (from 32M point to 64M point)
Opt. 01	Waveform record length expansion (from 32M point to 64M point)
Opt. 02	Wideband output (alternative output)
Opt. 05	Removable mechanical HDD (1 TB)
Opt. 06	Interleaved output at 24 GS/s (AWG7122C), 16 GS/s (AWG7082C) (includes Opt. 02 - Wide bandwidth output)
Opt. 08	Fast sequence switching
Opt. 09	Sub-sequencing and Dynamic Jump option (sub-sequencing files created for legacy AWG400, AWG500, AWG600, and AWG700 instrument are compatible with this option)
Opt. RFX	Adds RFXpress (RFX100) software to the AWG
Opt. RDR	Adds radar signal generation to RFXpress [1]
Opt. SPARA	Adds S-parameter emulation to RFXpress [1]
Opt. OFDM	Adds OFDM signal generation to RFXpress [1]

1 Requires Opt. RFX

Opt. ENV	Adds environment signal generation to RFXpress [1]
Opt. ENV01	Bundling option - Opt. ENV + Opt. RDR [1]
Opt. ENV02	Bundling option - Opt. ENV + Opt. RDR + Opt. OFDM [1]
Opt. ENV03	Bundling option - Opt. ENV + Opt. RDR + Opt. OFDM + Opt. SPARA [1]
Opt. ENV04	Bundling option - Opt. ENV + Opt. RDR + Opt. OFDM + Opt. SPARA + Opt. UWBCT [1]
Opt. UWBCF	Adds UWB-WiMedia conformance signal generation to RFXpress [1]
Opt. UWBCT	Adds UWB-WiMedia custom and conformance signal generation to RFXpress [1]

StandardAccessories

xxx-xxxx-xx	Accessory pouch
xxx-xxxx-xx	Front cover
xxx-xxxx-xx	USB mouse
xxx-xxxx-xx	Compact USB keyboard
xxx-xxxx-xx	Lead set for DC output
xxx-xxxx-xx	AWG7000C Series product software CD and instructions
xxx-xxxx-xx	Documentation CD with browser
xxx-xxxx-xx	Installation and safety manual
—	Certificate of calibration
—	Power cord
---	one year warranty

Recommended accessories

Item		Description	Part number
Pin header			
	SMA cable	40 in. (102 cm)	012-1690-xx
	SMB cable	20 in. (51 cm)	012-1503-xx
Rackmount kit		Rackmount kit with instructions	016-1983-xx
Front removable HDD bay		Front removable HDD bay	016-1979-xx
Quick Start user manual		English	071-2481-xx
		Japanese	071-2482-xx
		Simplified Chinese	071-2483-xx
		Traditional Chinese	071-2484-xx
		Russian	020-2971-xx
Service manual		Service manual, English	Visit Tektronix website

Tektronix is registered to ISO 9001 and ISO 14001 by SRI Quality System Registrar.

Product(s) complies with IEEE Standard 488.1-1987, RS-232-C, and with Tektronix Standard Codes and Formats.

ASEAN / Australasia (65) 6356 3900
Belgium 00800 2255 4835*
Central East Europe and the Baltics +41 52 675 3777
Finland +41 52 675 3777
Hong Kong 400 820 5835
Japan 81 (3) 6714 3010
Middle East, Asia, and North Africa +41 52 675 3777
People's Republic of China 400 820 5835
Republic of Korea +822 6917 5084, 822 6917 5080
Spain 00800 2255 4835*
Taiwan 886 (2) 2656 6688

Austria 00800 2255 4835*
Brazil +55 (11) 3759 7627
Central Europe & Greece +41 52 675 3777
France 00800 2255 4835*
India 000 800 650 1835
Luxembourg +41 52 675 3777
The Netherlands 00800 2255 4835*
Poland +41 52 675 3777
Russia & CIS +7 (495) 6647564
Sweden 00800 2255 4835*
United Kingdom & Ireland 00800 2255 4835*

Balkans, Israel, South Africa and other ISE Countries +41 52 675 3777
Canada 1 800 833 9200
Denmark +45 80 88 1401
Germany 00800 2255 4835*
Italy 00800 2255 4835*
Mexico, Central/South America & Caribbean 52 (55) 56 04 50 90
Norway 800 16098
Portugal 80 08 12370
South Africa +41 52 675 3777
Switzerland 00800 2255 4835*
USA 1 800 833 9200

* European toll-free number. If not accessible, call: +41 52 675 3777

For Further Information. Tektronix maintains a comprehensive, constantly expanding collection of application notes, technical briefs and other resources to help engineers working on the cutting edge of technology. Please visit www.tek.com.

Copyright © Tektronix, Inc. All rights reserved. Tektronix products are covered by U.S. and foreign patents, issued and pending. Information in this publication supersedes that in all previously published material. Specification and price change privileges reserved. TEKTRONIX and TEK are registered trademarks of Tektronix, Inc. All other trade names referenced are the service marks, trademarks, or registered trademarks of their respective companies.

12 Feb 2016 76W-22259-18

www.tek.com

Artisan Technology Group is an independent supplier of quality pre-owned equipment

Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

Learn more!

Visit us at **artisantg.com** for more info on price quotes, drivers, technical specifications, manuals, and documentation.

Artisan Scientific Corporation dba Artisan Technology Group is not an affiliate, representative, or authorized distributor for any manufacturer listed herein.

We're here to make your life easier. How can we help you today?

(217) 352-9330 | sales@artisantg.com | artisantg.com

ARTISAN® TECHNOLOGY GROUP