

SIGNAL GENERATORS

The definition of versatility, Tektronix signal generators create a virtually unlimited range of standard and custom signals, from sine or pulse to ideal or distorted and anything in between.



	TSG4100A	AFG31000	AFG3000C	AFG2000	AFG1000
Bandwidth	Internal 6 MHz, External 200 MHz	250 MHz, 150 MHz, 100 MHz, 50 MHz, 25 MHz	240 MHz, 150 MHz, 100 MHz, 50 MHz, 25 MHz, 10 MHz	20 MHz	25 MHz, 60 MHz
Channels	1 LF and 1 RF	1 or 2 (independent or synchronized)	1 or 2 (independent or synchronized)	1	2
Memory Depth	16M bits	16Mpts (standard) 128Mpts (optional)	4 x 128 k points	4 x 128 k points	8 k -1 M points
Standard Waveforms	CW	Sine, Square, Pulse, Ramp, Noise, DC, Sin(x)/x, Gaussian, Lorentz, Exponential Rise, Exponential Decay, Haversine	Sine, Sine(x)/x, Square, DC, Ramp, Gaussian, Exponential Decay, Pulse, Lorentz, Noise, Arbitrary, Haversine, Exponential Rise	Sine, Sine(x)/x, Square, DC, Ramp, Gaussian, Exponential Decay, Pulse, Lorentz, Noise, Arbitrary, Haversine, Exponential Rise	Sine, Square, Pulse, Ramp, Noise, and 45 Frequently Used Arbitrary Waveforms
Modulation	AM/FM/PM/Pulse, ASK/FSK/ PSK/QAM/CPM/VSB, GSM, GSM-EDGE, W-CDMA, APCO-25, DECT, NADC, PDC, TETRA, and Audio clip (Analog AM and FM)	AM, FM, PM, FSK, PWM	AM, FM, PM, FSK, PWM, External	AM, FM, PM, FSK, PWM, External	AM, FM, PM, FSK, ASK, PSK, PWM, External
Additional Modes	External IQ Waveform Input, Custom IQ Waveform Generation, ARB Waveform Generation (Remote Mode), Additive White Gaussian noise	Basic (continuous, modulation, sweeping, burst); Advanced (continuous, sequence, triggered, gated)	Sweep, Burst, Add Noise Impairment	Sweep, Burst, Add Noise Impairment	Sweep, Burst

CHOOSING YOUR SIGNAL GENERATOR

Below are common features that you may want to consider when choosing a signal generator for your application.

1 Sample (Clock) Rate

Sample rate, usually specified in terms of megasamples or gigasamples per second, denotes the maximum clock or sample rate at which the instrument can operate. The sample rate affects the frequency of the main output signal. In general, you should choose an instrument where the sampling frequency is twice that of the highest spectral frequency component of the generated signal to ensure accurate signal reproduction. The maximum sample rate also determines the smallest time increment that can be used to create waveforms. Typically this figure is simply the result of the calculation: $T = 1/F$, where T is the timing resolution in seconds and F is the sample rate.

2 Memory Depth (Record Length)

Memory depth, or record length, plays an important role in signal fidelity because it determines how many points of data can be stored to define a waveform. Deeper memory enables you to store more waveform detail and/or more cycles of the desired waveform.

3 Vertical (Amplitude) Resolution

Vertical resolution pertains to the binary word size, in bits, of the instrument's DAC, with more bits equating to higher resolution. The vertical resolution of the DAC defines the amplitude accuracy and distortion of the reproduced waveform. Although more is better, there is a general trade-off for most arbitrary waveform instruments; the higher the resolution, the lower the sample rate.

4 Features and Capabilities

Tektronix signal generators offer a range of features and output capabilities. When choosing your signal generator, you should also evaluate standard waveforms, modulation capabilities, output amplitude and waveform editing software to ensure that the instrument meets your needs.

4SIGNAL GENERATORS SELECTION

SIGNAL GENERATORS: ARBITRARY WAVEFORM GENERATORS

Tektronix arbitrary waveform generators enable complex signal generation with simple, easy to use tools. The AWG family provides leading-edge performance with sample rates up to 50 GS/s, up to 4 channels, and software packages that simplify the creation of these complex signals. The unparalleled flexibility, speed, and fidelity of the Tektronix AWGs make them an ideal solution for high speed serial, optical communications, radar test, and electronic warfare.



	AWG5000	AWG5200	AWG70000
Channel	2-4	2-8	1-2
Sampling Rate	Up to 1.2 GS/s	Up to 10 GS/s	1.5 KS/s – 50 GS/s
Bandwidth	300MHz	2GHz	14GHz
Analog Channel Vertical Resolution	14 bits	16 bits	10 bits
Memory	16M point per channel (32M optional)	Up to 2Gpts per channel	2GS - 8GS
Output Frequency Range	480 MHz	2 GHz (4 GHz)	20 GHz
Portability	Rack Mounted	Rack Mounted	Rack Mounted
Code Compatibility (with current AWG5k)	Yes	Yes	—
AFG Mode	No	No	No
Digital Outputs	28-bit optional on 2-ch models, 1-2 markers/channel	4 markers/channel, 32 max	None
Multi-unit Synchronization	—	Yes	Yes
Output Amplitude	370ns (basic)/2µs (adv.)	Up to 5Vp-p	250mV – 500mV (single ended), 500mV – 1.0V (differential)
Sequencing	YES	Yes	YES
Applications	Radar, research, and electrical test	Radar, electronic warfare, threat emitters, advanced research: quantum research, baseband 5G, electrical test and advanced labs	RF/MW communications and defense electronics, high-speed serial communications, mixed signal design and test, clock source, optical and advanced research
Additional Modes	—	SourceXpress	SourceXpress



AFG1000 Series

The AFG1000 Series Arbitrary/Function Generator offers the best price performance ratio in its class. It's tailored for educational users with 25 MHz, 60 MHz bandwidth, 2 output channels, and 1 mV_{p-p} to 10 V_{p-p} output amplitude across full bandwidth. It generates all kinds of waveforms needed in a lab.

MODEL	AFG1022	AFG1062
Analog Channels	2	2
Output Bandwidth	25 MHz	60 MHz
Analog Sample Rate	125 MS/s	300 MS/s
Memory Depth	8 k	1 M
Amplitude (into 50 ohm)	1mV _{p-p} to 10V _{p-p}	1mV _{p-p} to 10V _{p-p}
Built-in Frequency Counter	200 MHz, 6 digits	200 MHz, 6 digits

- Full functional AFG with multiple run modes and a built-in 200 MHz frequency counter
- 1 mV_{p-p} to 10 V_{p-p} output amplitude across full frequency range
- Intuitive UI with 3.95" color display provides quick access to functions and parameters, and gives full confidence on settings
- Fully supports TekSmartLab™
- 5-year warranty
- A functional AFG with modulation, sweep and burst modes.
- AFG1000 fully supported by TekSmartLab™.



SHIPS WITH PRODUCT

Power Cord
 USB Cable
 CD-ROM with Programmer Manual, Service Manual
 BNC to BNC cables
 Fuses
 Calibration Certificate

RECOMMENDED ACCESSORIES

174-4401-00: USB type A to type B cable – three feet
 174-6053-00: Cable, USB 2.0 Compliant, type A Male to type B male, 6 feet long
 012-1732-00: BNC to BNC CABLE - three feet
 159-0107-00: Fuse, cartridge; 5 x 20 mm, 2 A, 250 V, time-delay
 159-0397-00: Fuse, cartridge; 5 x 20 mm, 4 A, 250 V, time-delay



AFG2000

Usually, generating a range of signals requires investing in a high-end signal generator. But with the Tektronix AFG2000 Arbitrary Function Generator, that's no longer the case. With 20 MHz bandwidth, 14-bit resolution, and 250 MS/s sample rate, it can create simple and complex signals. But perhaps its most impressive feature is its entry-level price.

MODEL	AFG2021
Analog Channels	1
Output Bandwidth	20 MHz
Analog Sample Rate	250 MS/s
Memory Depth	4 x 128 k
Amplitude (into 50 Ω)	10 mV _{p-p} to 10 V _{p-p}

- NIST-traceable calibration with high reliability
- Form factor is ideal for both benchtop and rack mount applications
- Powerful pulse generation combined with adjustable edge time, flexible duty cycle, and PWM mode
- Wide frequency range (1 μHz to 20 MHz) supports amplifier and filter testing applications.
- Quickly modify, create and transfer waveforms using the included ArbExpress® software.



SHIPS WITH PRODUCT

User Manual
 Power Cord
 USB Cable
 BNC to BNC cable
 CD-ROM with Programmer Manual, Service Manual, LabVIEW and IVI Drivers
 CD-ROM with ArbExpress® Software
 NIST-traceable Calibration Certificate

RECOMMENDED ACCESSORIES

Cables

012-1732-00: BNC cable shielded, 3 ft.
 012-0991-00: GPIB cable, double shielded
 011-0049-02: 50Ω BNC Terminator

Accessories

RMU2U: Rackmount kit
 159-0454-00: Fuse set, 3pcs, 0.125 A

INSTRUMENT OPTIONS

Opt. GL: GPIB/LAN Interface (configured at time of purchase)

RECOMMENDED SERVICE

SILV200: 5-year Extended Warranty

LEARN MORE 📄 Download the Application Note "Replicating Real World Signals with an Arbitrary/Function Generator."

SIGNAL GENERATORS



AFG3000C Series

Test complex designs faster with a fully loaded function generator. Featuring 12 standard waveforms, plus arbitrary capability and many modulation options, this generator supports a wide range of application needs. Add in best-in-class performance and 25 shortcut keys and you have a generator that's loaded with features and light on complexity.

MODEL	AFG3011C	AFG3021C	AFG3022C	AFG3051C	AFG3052C
Analog Channels	1	1	2	1	2
Output Bandwidth	10 MHz	25 MHz	25 MHz	50 MHz	50 MHz
Analog Sample Rate	250 MS/s	250 MS/s	250 MS/s	1 GS/s ($\leq 16k$), 250 MS/s ($> 16k$)	
Memory Depth	4 x 128 k	4 x 128 k	4 x 128 k	4 x 128 k	4 x 128 k
Amplitude (into 50 Ω)	20 mV _{p-p} to 20 V _{p-p}	10 mV _{p-p} to 10 V _{p-p}	10 mV _{p-p} to 10 V _{p-p}	10 mV _{p-p} to 10 V _{p-p}	10 mV _{p-p} to 10 V _{p-p}

MODEL	AFG3101C	AFG3102C	AFG3151C	AFG3152C	AFG3251C	AFG3252C
Analog Channels	1	2	1	2	1	2
Output Bandwidth	100 MHz	100 MHz	150 MHz	150 MHz	240 MHz	240 MHz
Analog Sample Rate	1 GS/s ($\leq 16k$), 250 MS/s ($> 16k$)				2 GS/s ($\leq 16k$), 250 MS/s ($> 16k$)	
Memory Depth	4 x 128 k	4 x 128 k	4 x 128 k	4 x 128 k	4 x 128 k	4 x 128 k
Amplitude (into 50 Ω)	20 mV _{p-p} to 10 V _{p-p}	20 mV _{p-p} to 10 V _{p-p}	20 mV _{p-p} to 10 V _{p-p}	20 mV _{p-p} to 10 V _{p-p}	50 mV _{p-p} to 5 V _{p-p}	50 mV _{p-p} to 5 V _{p-p}

- High sample rate and stable time base ensure signal precision and stability
- 25 shortcut buttons and 5.6" color display provide quick access to functions and parameters, and give full confidence on settings
- 9 models with up to 240 MHz bandwidth and up to 20 V_{p-p} output amplitude cover customer needs in most applications
- Free ArbExpress software enables an easy way to create, edit and load arbitrary waveforms
- Large color display shows your settings and waveforms at a single glance.
- Create and modify waveforms with ease with the included ArbExpress® software.



SHIPS WITH PRODUCT

Quick Start User Manual; Power Cord; USB cable; BNC to BNC cable; CD-ROM with Specifications and Performance Verification Manual, Programmer Manual, Service Manual, LabVIEW and IVI Drivers; CD-ROM with ArbExpress™ Software; NIST-traceable Calibration Certificate.

RECOMMENDED ACCESSORIES

Cables

012-1732-00: BNC cable shielded, 3 ft.
011-0049-02: 50 Ω BNC terminator
012-0991-00: GPIB cable, double shielded

Accessories

RM3100: Rackmount kit

RECOMMENDED SERVICE

SILV400: 5-year Extended Warranty

LEARN MORE 📄 Download the "Replicating Real World Signals with an Arbitrary/Function Generator" Application Note.



AFG31000 Series

The Tektronix AFG31000 Series is a high-performance AFG with built-in arbitrary waveform generation, real-time waveform monitoring, and the largest touchscreen on the market. Providing advanced waveform generation and programming capabilities, waveform verification, and a modern touch-screen interface, the new AFG31000 is sure to delight and simplify the job of every researcher and engineer.

MODEL	AFG31021	AFG31022	AFG31051	AFG31052	AFG1101
Number of Channels	1	2	1	2	1
Sine Frequency Range	25 MHz	25 MHz	50 MHz	50 MHz	100 MHz
Sample Rate	250 MS/s	250 MS/s	500 MS/s	500 MS/s	1 GS/s
Waveform Memory size	16 MSA/ch (128Mpt optional)	16 MSA/ch (128Mpt optional)	16 MSA/ch (128Mpt optional)	16 MSA/ch (128Mpt optional)	16 MSA/ch (128Mpt optional)
Maximum Amplitude (into 50 Ω)	1 mV _{p-p} to 10 V _{p-p}	1 mV _{p-p} to 10 V _{p-p}	1 mV _{p-p} to 10 V _{p-p}	1 mV _{p-p} to 10 V _{p-p}	1 mV _{p-p} to 10 V _{p-p}

MODEL	AFG31102	AFG31151	AFG31152	AFG1251	AFG1252
Number of Channels	2	1	2	1	2
Sine Frequency Range	100 MHz	150 MHz	150 MHz	250 MHz	250 MHz
Sample Rate	1 GS/s	2 GS/s	2 GS/s	2 GS/s	2 GS/s
Waveform Memory size	16 MSA/ch (128Mpt optional)	16 MSA/ch (128Mpt optional)	16 MSA/ch (128Mpt optional)	16 MSA/ch (128Mpt optional)	16 MSA/ch (128Mpt optional)
Maximum Amplitude (into 50 Ω)	1 mV _{p-p} to 10 V _{p-p}	1 mV _{p-p} to 5 V _{p-p}	1 mV _{p-p} to 5 V _{p-p}	1 mV _{p-p} to 5 V _{p-p}	1 mV _{p-p} to 5 V _{p-p}

- Advanced features and capabilities enable you to generate test signals quickly and easily
- 10 models with up to 250 MHz frequency range and up to 128Mpts of arbitrary waveform memory
- 9-inch capacitive touchscreen user interface works like a smart device so you can pinch, zoom and scroll to easily locate settings and parameters on the simplified menu and find shortcuts to frequently used settings.
- Built-in ArbBuilder lets you create and edit arbitrary waveforms on the instrument, eliminating the need to connect to a PC
- Sequencing option adds the ability to program long, complex waveforms with up to 256 steps
- Simplified multi-unit synchronization with an onscreen wizard that leads you through the process of configuring and synchronizing multiple generators
- Compatible with TekBench™ software to help students set up, control, and analyze test results in the lab
- Upgrade bandwidth, memory, and waveform sequencing after purchase without returning unit to the factory

SHIPS WITH PRODUCT

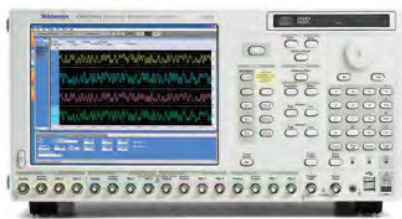
AFG31000 Series Arbitrary Function Generator Compliance, Installation, and Safety Instructions, power cord, NIST-traceable calibration certificate, BNC-BNC cable (2x for dual channel models, 1x for single channel models), USB cable, three-year standard warranty on parts and labor.

RECOMMENDED ACCESSORIES

012-1732-00: BNC cable shielded, 3 ft.
011-0049-02: 50 Ω BNC terminator
012-0991-00: GPIB cable, double shielded

RECOMMENDED SERVICE

C3: Calibration Service 3 Years; C5: Calibration Service 5 Years; D1: Calibration Data Report; D3: Calibration Data Report 3 Years (with Opt. C3); D5: Calibration Data Report 5 Years (with Opt. C5); R5: Repair Service 5 Years (including warranty); T3: Three Year Total Protection Plan; T5: Five Year Total Protection Plan.

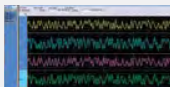


AWG5000 Series

With 14-bit vertical resolution up to 1.2 GS/s, 4 analog and 32 digital channel outputs, the AWG5000 Series Arbitrary Waveform Generator is the ideal solution for versatile mixed signal generation. The AWG5000 Series gives you a unique combination of analog and digital output performance, allowing you to generate analog and digital IQ, as well as IF signals in a single instrument. With the addition of advance sequencing and dynamic jump capability, extremely complex waveforms can easily be created to more closely simulate real-world environments.

MODEL	AWG5002C	AWG5012C	AWG5014C
Analog Channels	2	2	4
Analog Bandwidth	Up to 230 MHz	Up to 300 MHz	Up to 300 MHz
Digital Channel	28	28	—
Output Frequency	240 MHz	480 MHz	480 MHz
Record Length	16M point per channel (32M optional)	16M point per channel (32M optional)	16M point per channel (32M optional)
Max Sample Rate	600 MS/s	1.2 GS/s	1.2 GS/s
Vertical Resolution	14 bits	14 bits	14 bits

- I/Q modulator test
- Consumer electronics
- Serial data
- RF Baseband Signal Generation
- 4 synchronized channels in a single instrument.
- Quickly modify, create and transfer waveforms using either RFXpress or SerialXpress.



SHIPS WITH PRODUCT

USB Mouse, Compact USB Keyboard, Front Cover, Power Cable, Lead set for DC output, Software CD and Instructions, Documentation CD with Browser, Quick Start User Manual and Registration Card and Certificate of Calibration.

RECOMMENDED ACCESSORIES

Cables

012-1690-xx: Pin Header Cable, SMA Cable, 40 in. (102 cm)
012-1503-xx: SMB Cable, 20 in. (51 cm)

Accessories

016-1983-xx: Rackmount kit
016-1979-xx: Front Removable HDD Bay

RECOMMENDED SERVICE

R3DW: Repair Service Coverage 3 Years
R5DW: Repair Service Coverage 5 Years

SOFTWARE

See page 39-40 for more information

RFXpress® Software for AWG5000, AWG70000 (RFX100)
SerialXpress® Software for AWG5000, AWG70000 (SDX100)



AWG70000 Series

The industry-leading AWG70000 Series arbitrary waveform generator represents the cutting edge in sample rate, signal fidelity, and waveform memory. Featuring up to 50 GS/s, 10-bit vertical resolution and unparalleled signal fidelity, the AWG70000 Series enables the easy generation of complex signals in wideband RF, coherent optical, high speed serial receiver test and advanced physics research applications.

MODEL	AWG70001A	AWG70002A
Sample Rate	1.5 KS/s to 50 GS/s	1.5 KS/s to 25 GS/s
Maximum Frequency	20.0 GHz	10.0 GHz
Analog Bandwidth	14 GHz	14 GHz
Rise Time	27 ps	22 ps
Dynamic Range (SFDR)	Up to -80 dBc	Up to -80 dBc
DAC Resolution	10 bits	10 bits
Output Voltage	1.0 Vp-p (Differential)	1.0 Vp-p (Differential)
Output Amplitude (single-ended)	-70 dBm to 25 dBm (Option-AC)	-70 dBm to 25 dBm (Option-AC)
Waveform Memory	Standard: 2G Samples, Optional: 16G Samples	Standard: 2G Samples, Optional: 8G Samples
Channels	1 (Differential)	2 (Differential)

- Generate wide bandwidth signals at baseband, IF and RF frequencies with excellent dynamic range
- Accelerate designs and research by generating waveforms that could not previously be created
- Add impairments to waveforms, eliminating the need for additional hardware
- Ability to sync multiple units together to increase transmission bandwidth
- Seamlessly import waveforms from MATLAB, and other software packages.
- Waveforms captured on scopes or spectrum analyzers can be played back on the AWG.

SHIPS WITH PRODUCT: Keyboard, Mouse, Power Cord

SOFTWARE AND PLUGINS

See page 39-40 for more information

Multitone, Notches & Chirp Plug-in for AWG70000 Series, AWG5200 Series, and SourceXpress®; Environment Plug-in for the AWG5200, AWG70000, and SourceXpress; Generic Pre-compensation Plug-in for AWG70000 Series, AWG 5200 Series, and SourceXpress; Spread Spectrum Clocking (SSC) Plug-in for AWG70000 series, AWG 5200 Series and SourceXpress; S-Parameters Plug-in for AWG70000A, AWG 5200 Series and SourceXpress; RF Generic Plug-in for AWG70000 Series, AWG 5200 Series and SourceXpress; High Speed Serial Plug-in for AWG70000, AWG 5200 Series and SourceXpress; Optical Plug-In for AWG70000, AWG 5200 Series and SourceXpress; Radar Plug-In for AWG70000, AWG 5200 Series and SourceXpress; OFDM Plug-In for AWG70000, AWG 5200 Series and SourceXpress.

RECOMMENDED SERVICE

R3: 3-year Extended Warranty; R5: 5-year Extended Warranty; C3: Calibration Service 3 Years; C5: Calibration Service 5 Years; R3DW: Repair Service Coverage 3 Years; R5DW: Repair Service Coverage 5 Years

RECOMMENDED ACCESSORIES: Option-AC

OPTION AC FOR AWG70001

Option AC adds a single-ended AC coupled connector to the front panel of the single channel AWG70001A Arbitrary Waveform Generator. This option adds an additional amplified and attenuated path to the AWG70001, expanding its output to -77 dBm to 18 dBm at 11 GHz and -90 dBm to 20 dBm at 14 GHz.

For more information visit:

tek.com/datasheet/awg70001a-arbitrary-waveform-generator-option-ac-datasheet

SIGNAL GENERATORS



AWG5200 Series

The Tektronix 5200A Arbitrary Waveform Generator has the cleanest signal on the market at an unbeatable price per channel. With code compatibility, you can fast forward integration and scaling while simplifying waveform design. Test and validate sensitive devices requiring lots of inputs at a low cost, without sacrificing performance.

MODEL	AWG5202	AWG5204	AWG5208
Channel	2	4	8
Sample Rate/ Frequency	1.5 KS/s - 10 GS/s (4 GHz)	1.5 KS/s - 10 GS/s (4 GHz)	1.5 KS/s - 10 GS/s (4 GHz)
Resolution	16 bit	16 bit	16 bit
SFDR (DC-1.25GHz)	<-70 dBc	<-70 dBc	<-70 dBc
Analog BW (at -3 db x)	2 GHz	2 GHz	2 GHz
Output	DC Out: 1.5Vp-p Diff (standard); DC High Voltage Out: 10mV to 5.0Vp-p single ended, BW DC-370MHz (option); AC Out: -17 to -5 dBm single-ended, BW 10MHz to 2.0 GHz (standard); Amp AC Out: -85 to +10 dBm single-ended, BW 10MHz to 2 GHz (option)		

- 16 bits of DAC resolution, low noise floor, good RF performance ensures accurate, detailed signals
- Up to 8 channels/unit at a low cost per channel
- 2 GS of memory per channel and a sequencer conserves memory
- Multi-unit synchronization ensures efficient scaling for research or radar applications
- Quick, flexible test setup
- Easily integrate AWG5200 with complex test set ups.
- Scale based on your needs with multi-unit synchronization.

SHIPS WITH PRODUCT

USB Mouse, Compact USB Keyboard, Power Cord, One 50 Ω SMA Terminator per Channel, Installation and Safety Manual, Certificate of Calibration

RECOMMENDED ACCESSORIES

Cables

012-1690-xxSMA: Cable, 40 in. (102 cm); 012-1503-xx SMB: Cable, 20 in. (51 cm)

Accessories

GF-RACK3U: Rackmount kit; 016-1979-xx: Front Removable HDD Bay

SOFTWARE AND PLUGINS

See page 39-40 for more information

Multitone, Notches & Chirp Plug-in for AWG70000 Series, AWG5200 Series, and SourceXpress®; Environment Plug-in for the AWG5200, AWG70000, and SourceXpress; Generic Pre-compensation Plug-in for AWG70000 Series, AWG 5200 Series, and SourceXpress; Spread Spectrum Clocking (SSC) Plug-in for AWG70000 series, AWG 5200 Series and SourceXpress; S-Parameters Plug-in for AWG70000A, AWG 5200 Series and SourceXpress; RF Generic Plug-in for AWG70000 Series, AWG 5200 Series and SourceXpress; High Speed Serial Plug-in for AWG70000, AWG 5200 Series and SourceXpress; Optical Plug-In for AWG70000, AWG 5200 Series and SourceXpress; Radar Plug-In for AWG70000, AWG 5200 Series and SourceXpress; OFDM Plug-In for AWG70000, AWG 5200 Series and SourceXpress

RECOMMENDED SERVICE

R3: 3-year Extended Warranty; R5: 5-year Extended Warranty; C3: Calibration Service 3 Years; C5: Calibration Service 5 Years; R3DW: Repair Service Coverage 3 Years; R5DW: Repair Service Coverage 5 Years

LEARN MORE 📄 Download the "Fundamentals of Radar Measurements" Primer.

LEARN MORE 📄 Download "Overcoming RF Signal Generation Challenges in Quantum Computing."

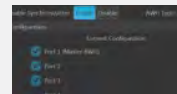


AWG5200 Series AWG5200 Series

The AWG5200 Series enables synchronization of up to four AWG70001A or AWG70002A units, allowing up to eight channels to be aligned to the same clock, pattern jump and trigger inputs.

MODEL	AWG5200
Description	AWG Synchronization Hub
Key Spec	Random Jitter (typical): 315 fs RMS Skew Repeatability/Accuracy: $\leq 5\text{ ps}$
Key Spec	Total Jitter (typical): 13 ps_{p-p}
Key Spec	Instrument to Instrument Skew: $\pm 10\text{ ps}$

- Synchronize signal output from two to four AWG70000 instruments
- Synchronize each channel to within $\pm 10\text{ ps}$
- Enable validation and compliance testing of high speed silicon and communications devices
- Controlled directly in the AWG and requires no additional AWG software.



SHIPS WITH PRODUCT

AWG Communication Cables; Phase-matched Clock Cables; Calibration Deskew Cables; Power Cord.



SourceXpress™

SourceXpress signal design and generation software allows you to build complex, difficult to code waveforms on your PC. SourceXpress is free software that controls, runs waveform generation plug-ins and emulates the AWG5200 and AWG70000 environment on your PC. Create custom signals in its sophisticated, easy to use interface, before loading and playing them on Tektronix AWGs. SourceXpress plug-ins provide specialty generation solutions for RF, radar, high speed serial, and optical applications.

- Build, add impairments and customize your signals before emulating them on an AWG instrument running on your PC
- Create waveforms, sequences, and sub-sequences and control multiple, synchronized AWGs from one instance
- Import common waveform files, including MATLAB, SerialXpress, RFXpress, and more
- Pre-compensate, apply S-parameters, or add jitter, impairments, multipath, and Doppler to waveforms
- Install plug-ins that expand your signal design capabilities and use one interface
- Applications specific plug-ins, like Optical, seamlessly integrate as tabs into the SourceXpress UI.
- The SourceXpress pulse train allows users to add an array of impairments, modulation schemes, and more.



SOURCEXPRESS PLUG-INS

PRECOM: General Precompensation

HSS: High Speed Serial

MTONE: Multi-Tone and Chirp

RFGEN: RF Generic

SPARA: S-Parameter

SSC: Spread Spectrum Clock (SSC)

OPTICAL: Optical

ENVM: Environment Plug-in

SOFTWARE AND PLUGINS

See page 39-40 for more information

Multitone, Notches & Chirp Plug-in for AWG70000 Series, AWG5200 Series, and SourceXpress®

Environment Plug-in for the AWG5200, AWG70000, and SourceXpress

Generic Pre-compensation Plug-in for AWG70000 Series, AWG 5200 Series, and SourceXpress

Spread Spectrum Clocking (SSC) Plug-in for AWG70000 series, AWG 5200 Series and SourceXpress

S-Parameters Plug-in for AWG70000A, AWG 5200 Series and SourceXpress

RF Generic Plug-in for AWG70000 Series, AWG 5200 Series and SourceXpress

High Speed Serial Plug-in for AWG70000, AWG 5200 Series and SourceXpress

Optical Plug-In for AWG70000, AWG 5200 Series and SourceXpress

Radar Plug-In for AWG70000, AWG 5200 Series and SourceXpress

OFDM Plug-In for AWG70000, AWG 5200 Series and SourceXpress

LEARN MORE ▶ View the SourceXpress Software Demo.

SIGNAL GENERATOR PLUG-INS



Radar

Create multiple customized pulses and pulse groups to simulate multiple target returns and antenna scanning

- Create custom modulation types such as LFM, Barker, Polyphase Codes, Step FM and nonlinear RF
- Simulate antenna scanning with different beam profiles
- Generate pulse trains with staggered PRI, frequency-hopping and pulse-to-pulse amplitude variation to simulate Swerling target models

tek.com/datasheet/radar-plug-datasheet



OFDM Plug-In

Configure and create complete multiple, definable OFDM frames with preamble, header and payload

- Use presets for standard compliant frames for wireless standards like Wi-Fi, WiMAX or define your own using subcarrier modulation formats including BPSK, QPSK, QAM (16, 32, 64, 256, 512, 1024), and 8-PSK
- Add impairments and define frequency hopping and gated noise to simulate practical environments for receiver testing

tek.com/datasheet/ofdm-plug-datasheet



Environment

Create specific RF environments waveforms for advanced application testing

- Extensive waveform creation capabilities for applications such as, real world wireless scenarios/ environments simulation/ emulation for EW monitoring, radar receiver testing with interfering signals, and MIMO and Phased Array Antennae
- Specify up to 50 scenarios to define your environment, including WiMAX, WiFi, GSM, CDMA, W-CDMA, DVB-T, Noise, Bluetooth, LTE, OFDM, Radar and more

tek.com/environment-plug-awg5200-series-and-awg70000-series



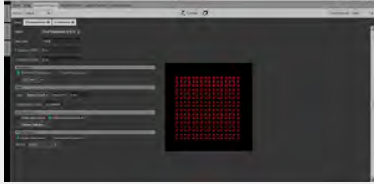
High Speed Serial

Simplify signal creation and jitter simulations to reduce development and test time.

- Create the exact waveforms required for thorough and repeatable design validation, margin, characterization, and conformance testing
- Create worst-case scenarios to stress receivers by accurately controlling the Crest Factor of the random jitter

tek.com/product-software/high-speed-serial-plug-in

SIGNAL GENERATOR SOFTWARE, OPTIONS, & PLUG-INS



Optical Plug-In

Advanced waveforms for testing optical communication components and devices

- Define and generate complex dual polarization modulation schemes with separately configured baseband data
- Create optical waveforms using a variety of predefined modulation schemes such as, BPSK, QPSK, OQPSK, OOK, NRZ, up to 8 PAM, and up to QAM1024 – including QAM8
- Generate data streams from variety of predefined patterns, a PRBS 31 generator, or define your own custom arbitrary data stream.

tek.com/optical-plug-awg70000-series-and-sourceexpress



Multi-Tone, Notches and Chirp

Create clean, precise signals

- Notch out frequencies by setting the start and end frequency of choice
- When generating chirps, set high-to-low or low-to-high frequency sweeps and define chirp characteristics by sweep time or sweep rate
- Create tones desired start and end frequency, and user defined resolution, spacing or number of tones.

tek.com/signal-generator-software/multitone-chirp-awg-plugin



Generic Pre-compensation

Advanced capabilities to synthesize digitally modulated baseband, IF, and RF/microwave signals

- Create correction coefficients that can be applied on waveforms to get flat frequency and linear phase response
- Support for a variety of modulations waveform types and applications including RF, IF, or IQ and NRZ signals IQ

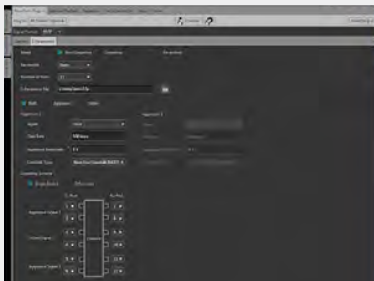
tek.com/signal-generator-software/generic-precompensation-plugin



RF Generic

- Advanced capabilities to synthesize digitally modulated baseband, IF, and RF/microwave signals supporting a wide range of modulation schemes.

tek.com/product-software/rf-generic-plug-in

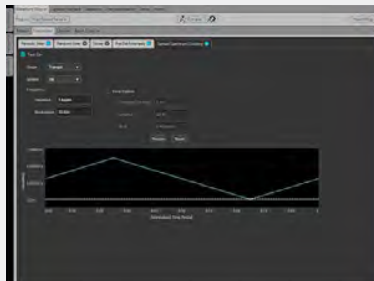


S-Parameter

Precise channel or device emulation

- Generate S-parameter files using a vector network analyzer and combine with the base pattern to recreate channel characteristics
- Inverse filtering to de-embed the effects of the channel from the system.
- The S-parameter plug-in also enables the ISI capability within the High-Speed Serial plug-in

tek.com/datasheet/awg70000a-s-parameters-applications



Spread Spectrum Clock (SSC)

Full support for common modulation profiles

- Supports SSC modulation addition with precisely controlled profile, spread, deviation, and df/dt
- Enables the addition Triangular, Sinusoidal, Up-/Down-/Center-frequency, and user-defined frequency spreading schemes to the base pattern
- Designed to also run on an external PC via the SourceXpress PC application

tek.com/datasheet/spread-spectrum-clocking-applications-datasheet-awg70000a-series-and-sourceexpress%20AE



D-PHYXpress and C-PHYXpress Software

Powerful and easy to use waveform synthesis for D-PHY and C-PHY RX testing

- Create High Speed (HS), Low Power (LP) and High Speed Low Power (HS-LP) patterns with MIPI CTS required Jitter and Noise
- Supports conformance and margin testing per CTS specifications
- Remotely generate D-PHY and C-PHY waveforms on the Arbitrary Waveform Generator
- Available on the AWG70000

tek.com/mipi-0

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