Waveform and Function Generators

CATALOG



KEYSIGHT

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Keysight Benchtop Waveform and Function Generators

One family. Three performance grades. 3 classes.



ESSENTIAL

WG1-class

- 20 MHz Bandwidth
- 250 MSa/s Maximum sample rate



ADVANCED

WG2-class

- 20 MHz to 100 MHz Bandwidth
- 160 MSa/s to 320 MSa/s Maximum sample rate



EXPERT

WG3-class

- 80 MHz to 120 MHz Bandwidth
- 660 MSa/s to 1 GSa/s Maximum sample rate

Introduction

Keysight Waveform and Function Generators — from basic waveform generation to cutting-edge research

Keysight waveform and function generators are now offered in three capability classes across three performance grades. Essential, our most affordable, entry-level waveform and function generators includes the WG1-class, offering the widest range of everyday measurements. Advanced includes the WG2-class, increasing the bandwidth and maximum sampling rate. Expert includes WG3-class, taking bandwidths to 120 MHz with arbitrary waveforms. A comprehensive library of waveform and function generator resources are available to help you find the performance grade and class best suited to your lab.



Generate reliable, high-fidelity waveforms

Waveform generators create a wide range of signals used in diverse applications, from simple mathematical functions to complex high-speed modulations used in digital standards compliance test. Keysight offers comprehensive resources to help you build knowledge on waveform and function generator applications, so you can select the best instrument for your application.

Here are a few examples of the resources that will help you select the waveform and function generator that is right for you:







Benchtop Waveform and Function Generators

Keysight benchtop waveform and function generators enable you to test and troubleshoot electronic devices, characterize components and systems, and deliver controlled outputs to a device under test (DUT) to replicate real-world conditions. Our benchtop waveform and function generators ensure stable, reliable signals across a wide frequency range. Select the waveform and function generator you need below based on bandwidth, number of channels, arbitrary waveform generation capability, and more. Explore our wide range of benchtop waveform and function generators from Essential to Expert performance grades to find the one that is right for your application.







	Essential **WG1-class**	Advanced **WG2-class**	Expert **WG3-class**
Bandwidth	**20 MHz**	**20 MHz to 100 MHz**	**80 MHz to 120 MHz**
Number of channels	**1, 2**	**1, 2**	**1, 2**
Arbitrary waveforms	**Yes**	**Varies**	**Yes**
Maximum sampling rate	**250 MSa/s**	**160 MSa/s to 320 MSa/s**	**660 MSa/s to 1 GSa/s**
Interface	**USB, LAN**	**USB, LAN, GPIB**	**USB, LAN, GPIB**
Brands included	**EDU33210 Series**	**33500 Series**	**33600 Series**
	Explore	Explore	Explore

Essential Benchtop Waveform and Function Generators

Reliable, entry-level waveform generation

Keysight WG1-class Essential waveform and function generators include the EDU33210 series. They provide built-in waveforms and modulation capabilities for reliable waveform generation, ideal for both commercial and teaching labs. With a large 7-inch color display, intuitive interface, and remote connectivity via USB and LAN, our Essential waveform and function generators provide the versatility and reliability needed for troubleshooting circuits, simulating communication signals, or teaching waveform fundamentals. Choose one of our popular configurations or configure one specific to your application.

Learn more about our Essential benchtop waveform function generators

Built-in waveforms

Includes 17 built-in waveforms, including sine, square, ramp and pulse, and specialty waveforms like exponential fall / rise, Gaussian pulse, and Lorentz.

Large color display

The high-resolution, 7-inch color display provides clear, real-time visualization of waveform settings and output signals, improving usability and reducing errors.

Remote connectivity

USB and LAN interfaces provide remote access, enabling PC-based operation and real-time waveform analysis through instrument control and logging software.

Modulation capabilities

Provides six built-in modulation types — AM, FM, PM, FSK, BPSK, and PWM — for testing communication protocols like RFID, DVB-S, and Zigbee®.

Class	Included Brands	Range of Performance Specifications				
		Bandwidth	Number of Channels	Arbitrary Waveforms	Maximum Sample Rate	Interface
WG1	EDU33210 Series	20 MHz	1 to 2	Yes	250 MSa/s	USB, LAN

Buy / Get quote

Advanced Benchtop Waveform and Function Generators

Precise signal generation for complex signal environments

Keysight WG2-class Advanced waveform and function generators include the 33500 Series. They provide clean, precise signals for simulating real-world conditions and ensuring reliable device characterization in complex signal environments like multitone communication signals in RF systems, pulse-modulated waveforms in radar and digital communications, and frequency hopping in wireless communications. With ultra-low jitter and minimal total harmonic distortion (THD), our Advanced waveform and function generators enable realistic simulation and reliable testing of devices in high-signal-complexity scenarios. Choose one of our popular configurations or configure one specific to your application.

Learn more about our Advanced benchtop waveform function generators

Signal integrity

As low as < 40 ps jitter and < 0.04% THD, signals are clean and precise, ideal for realistic simulation and reliable device characterization.

Variable bandwidth noise

Precise control and generation of noise signals enable the realistic simulation of noisy environments, matching the spectral characteristics of your DUT.

Waveform summing

Generate dual-tone signals by combining two independent waveforms into a single output, superimposing complex signals without extra hardware.

Flexible pulse generation

Generate pulses with precise parameter control, fast edges, and enhanced modulation for applications like radar simulation and digital communications.

Class	Included Brands	Range of Performance Specifications				
		Bandwidth	Number of Channels	Arbitrary Waveforms	Maximum Sample Rate	Interface
WG2	33500 Series	20 MHz to 100 MHz	1 to 2	Varies	160 MSa/s to 320 MSa/s	USB, LAN, GPIB

View popular configurations

Expert Waveform and Function Generators

High-performance signal generation for mission-critical tests

Keysight WG3-class Expert waveform and function generators include the 33600 Series. They deliver the speed, precision, and memory required to test demanding applications such as automotive electronic control units — including braking systems and airbags — IoT device validation and aerospace and defense systems. Their high bandwidth and fast sampling rate enable the reproduction of complex waveforms required in radar, wireless communications, and high-resolution sensor simulations. Enhanced triggering capabilities ensure precise synchronization with critical events, timing analysis, and protocol validation. Choose one of our popular configurations or configure one specific to your application.

Learn more about our Expert benchtop waveform function generators

High bandwidth

Signals feature sharp transitions and rich harmonics for accurate reproduction of fast edges and high-bandwidth details across a wide frequency range.

Fast sampling rate

Enables precise reconstruction of high-frequency, complex waveforms required for accurate communications and radar testing that require high-speed sampling.

Enhanced triggering

Features like trigger delay, holdoff, burst mode, and gated output enable signal generation to be tightly synchronized with specific system events or conditions.

Deep memory

Generate long, complex arbitrary waveforms with up to 64 MSa of memory per channel, ideal for waveform sequencing and looping in automated test setups.

Class	Included Brands	Range of Performance Specifications				
		Bandwidth	Number of Channels	Arbitrary Waveforms	Maximum Sample Rate	Interface
WG3	33600 Series	80 MHz to 120 MHz	1 to 2	Yes	660 MSa/s to 1 GSa/s	USB, LAN, GPIB

View popular configurations

Modular Arbitrary Waveform Generators

Scalable signal generation for manufacturing test and cutting-edge research

Keysight modular arbitrary waveform generators (AWGs) offer high-performance, scalable signal generation for higher-level testing in high-speed digital, RF, and optical applications. For modular, space-efficient systems with many synchronized channels in environments like manufacturing test, PXIe AWGs are ideal — they fit into smaller chassis and support high-density setups in a limited rack space. For ultra-high sampling rates, high bandwidth, and exceptional signal fidelity, AXIe AWGs deliver up to 256 GSa/s and 80 GHz bandwidth with low phase noise and jitter, making them well-suited for cutting-edge research in next-generation wireless and optical communications. With multiple models available, choose the right modular AWG for your application.

Learn more about our modular arbitrary waveform generators

Modular architecture

Supports high channel density and scalability for multichannel applications like quantum computing, beamforming in phased array radar, and 5G, 6G, and Wi-Fi 6 / 7 testing.

Channel synchronization

Generate and control multiple independent waveform outputs that require precise timing, phase alignment, and coherence across multiple signal channels.

Enhanced sequencing

Dynamically control the playback order, timing, and conditions under which waveform segments are played to emulate real-world, time-varying signal environments.

Signal generation software

Create, customize, and control complex waveforms, from standards-compliant signals like 5G to terabit transmission — without writing any code.

Bandwidth	**200 MHz to 80 GHz**
Number of channels	**1 to 8 channels**
Maximum sampling rate	**500 MSa/s to 256 GSa/s**



Pulse Generators

High-performance pulse generation with precise timing

Keysight PW1-class Pulse Generators include the 81100A Series. They deliver high-speed pulse signals with picosecond-level timing precision and low signal distortion. They provide finely controlled pulse and pattern signals with extremely fast edge transitions, low intrinsic jitter, and programmable voltage levels, making them well-suited for generating clock, trigger, and data signals in high-speed digital and mixed-signal test environments. With flexible triggering, enhanced timing control, and remote programmability, they can emulate real-world signal conditions and enable you to perform timing margin analysis. Choose one of our popular configurations or configure one specific to your application.

Learn more about our pulse waveform generators

Pulse signal generation

Generate highly accurate and configurable pulse signals with controlled timing, amplitude, and edge transitions, critical for testing the performance and timing of digital and mixed-signal devices.

Low intrinsic jitter

Minimize measurement uncertainty with jitter as low as a few picoseconds, enabling accurate characterization of timing-critical components such as high-speed serial links and clock circuits.

Flexible triggering

Supports internal and external trigger sources, manual triggering, gated mode, burst mode, and programmable trigger delay to accurately reproduce real-world signal conditions.

Remote programmability

Standard interfaces like USB, LAN, and GPIB, used with SCPI commands, allow remote control and enable integration into automated test systems — critical for high-throughput testing.

Bandwidth	**240 MHz to 3.35 GHz**
Number of channels	**1,2**
Function	**Pulse function arbitrary noise generator, pulse pattern generator**

View popular configurations



Software and Accessories

Find compatible software and accessories for your waveform and function generator

Explore our wide range of waveform and function generator software, including waveform creation, signal analysis, instrument control, data logging, and compliance testing. These tools support a wide variety of applications, from basic signal generation to complex high-speed digital and optical communication testing. Our waveform and function generator software also enables compliance testing with the latest industry standards like 5G, WLAN, MIPI®, and HDMI. To complete your setup, choose from a selection of compatible probes, cables, and connectivity kits tailored to your application needs.



Enhance your waveform and function generator with a wide range of specialty software:

- lab management software
- instrument control and data logging software
- WLAN 802.11 signal generation software
- Pulse building software
- electrical receiver conformance test for OIF-CEI 4.0
- electrical receiver conformance test for IEEE 802.3bs
- MIPI C-PHY^{SM} receiver conformance test
- HDMI receiver compliance test

Explore software



Get more functionality out of your waveform function generator by pairing it with the right accessories, including:

- cables
- connectivity kits
- rack-mount kits
- chassis
- stacking kits
- transit cases and covers

Explore accessories

Keysight Support Services

Explore the services that are right for you

Keysight Support Services can reduce your learning curve, enhance your uptime, guarantee the accuracy of your testing equipment, and provide the expertise you require, precisely when and where you need it.

Maximize your instrument uptime, quickly optimize your test measurements, and get the answers you need at our fastest available times. KeysightCare curated support plans bundle critical services with prioritized response and turnaround times. **High-performance instruments include one year of KeysightCare Assured.**

Explore support services



Calibration

Ensure your test system performs to specification and meets local and global standards.



Repair

Restore equipment to original functionality and specifications with trained technicians.



KeysightCare

Innovate at speed with curated support plans and prioritized response and turnaround times.



Education

Make measurements quickly with eLearning and in-house, instructor-led training.



Keysight Support

Get 24x7 access to service requests, case management help, and technical articles.

Keysight enables innovators to push the boundaries of engineering by quickly solving design, emulation, and test challenges to create the best product experiences. Start your innovation journey at www.keysight.com.

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