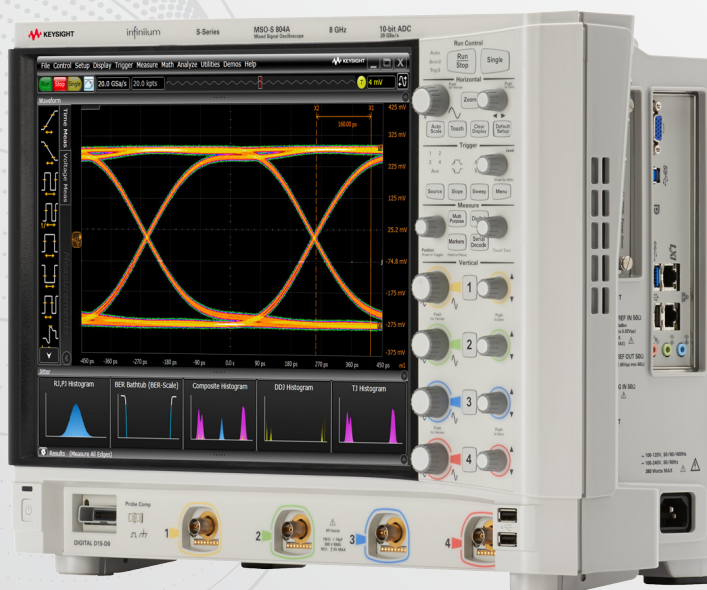


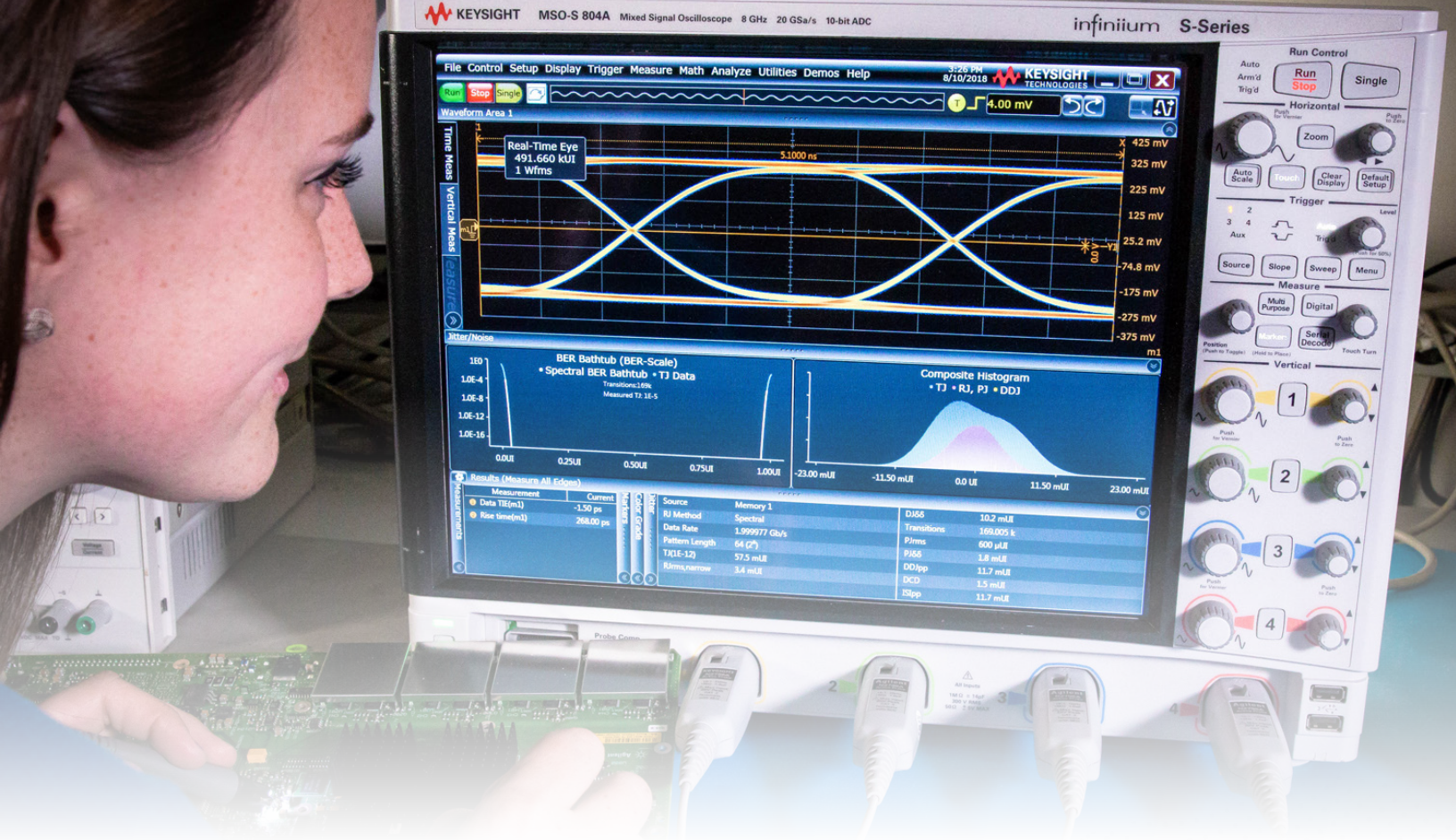
# Keysight Basic Instruments

November 2019 - January 2020



## New Infiniium S-Series Oscilloscopes

Superior Signal Integrity to  
Connect, Discover, and Solve



## SPOTLIGHT

### See the True Performance of Your Device

Debugging and characterizing your designs can be difficult when you are trying to comply with today's strict design requirements. Compact designs with additional I/Os and multiple power buses can all lead to signal integrity issues. To solve these design challenges, you'll need accurate test equipment to quickly and easily identify anomalies and characterize signal quality.

The Infiniium S-Series oscilloscopes were designed with your signal integrity challenges in mind. The S-Series has a low-noise floor, low jitter, high ENOB, and up to 16 bits of resolution to ensure you are seeing a clean and true representation of your signal.

Not only do you need an accurate representation on your oscilloscope, but tools that make signal connections and characterization intuitive and fast. The S-Series is compatible with a vast selection of probes and high-speed digital debug tools. Verify the quality of your power supplies, digital busses, clocks, and analog signals in just a few short steps.

#### CONNECT TO YOUR DEVICE

Over 50 unique probes and over 450 accessories help you connect to even the most difficult devices and hard-to-reach test points. This includes probes with low loading, high bandwidth, and high precision. Zero insertion force (ZIF) tips; BNC or SMA connections; and innovative QuickTips help you connect to ICs, PCBs, and more.

#### DISCOVER

The S-Series' excellent signal integrity gives you the widest eye diagrams possible in a world of shrinking margins. Clean results are combined with hundreds of standard measurements to help you discover hidden bugs. Know what is happening inside your device, without a doubt.

#### SOLVE

With the addition of deep-dive applications like noise and jitter analysis, protocol decodes, power integrity tests, and RF capabilities, you can get to the next level of understanding. Analysis applications enable you to identify the root-cause of any signal anomalies you may find in your design.

For more information about S-Series oscilloscopes, visit:

<https://www.keysight.com/find/S-Series>

## X-Series Signal Generators\*

To know your device's behavior, you'll take many paths. That's the idea behind the Keysight Technologies X-Series signal generators. They produce the signals you need—from simple to complex, from clean to dirty—to test your design within and beyond its limits.

The X-Series is crafted to create signals capable of testing your very best devices. From the pure and precise MXG to the cost-effective EXG and general-purpose CXG, the X-Series helps you generate true performance.

 [X-Series RF Signal Generators Technical Overview](#)

 [X-Series Signal Generators Website](#)

	MXG-ANALOG	EXG-ANALOG	CXG-VECTOR
<b>Model number</b>	<b>N5181B</b>	<b>N5171B</b>	<b>N5166B</b>
Frequency range	9 kHz to 6 GHz	9 kHz to 6 GHz	9 kHz to 6 GHz
Max. output power	+24 dBm	+21 dBm	+18 dBm
Frequency switching (list mode)	800 $\mu$ s	800 $\mu$ s	5 ms
Level accuracy	$\pm$ 0.6 dB	$\pm$ 0.6 dB	$\pm$ 0.6 dB
SSB phase noise (1 GHz, 20 kHz offset)	-146 dBc/Hz	-122 dBc/Hz	-119 dBc/Hz
Harmonics (at 1 GHz)	-35 dBc	-35 dBc	-35 dBc
Analog modulation	AM, FM, PM, and pulse modulation	AM, FM, PM, and pulse modulation	AM, FM, PM, and pulse modulation
Digital Modulation	N/A	N/A	120 MHz bandwidth

\* From selected distributors only



## N9000B CXA signal analyzer\*

Whether you are rapidly updating a next-generation product or revising an existing design, the CXA signal analyzer helps you perform signal characterization, circuit design verification, and troubleshooting. The CXA's built-in capabilities enable you to perform essential frequency, power, spurious and distortion measurements without overspending your budget.

 PathWave BenchVue software supported

 [CXA Data Sheet](#)

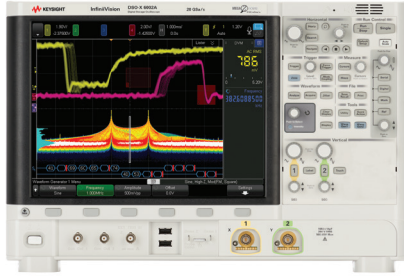
 [www.keysight.com/find/cxa](http://www.keysight.com/find/cxa)

- Characterize signals and devices with general-purpose spectrum analysis and one-button PowerSuite measurements
- Frequency: 9 kHz to 26.5 GHz
- Frequency options: 3, 7.5, 13.6, 26.5 GHz
- -163 dBm DANL at 1 GHz (preamp on)
- -110 dBc/Hz Phase Noise at 1 GHz (10 kHz offset)
- Built-in tracking generator
- USB 2.0, LAN, GPIB and LXI Class C compliance

\* From selected distributors only



**InfiniiVision oscilloscopes**



- Up to 1,000,000 waveforms/sec update rate
- MegaZoom IV responsive, uncompromised smart memory
- Multiple instrument functionality
- Upgradable: bandwidth, MSO, serial analysis, built-in WaveGen function generator, or digital voltmeter and counter

PathWave BenchVue software included with instrument

[www.keysight.com/find/infiniivision](http://www.keysight.com/find/infiniivision)

**Supercharge Your Bandwidth** For a limited time, get more bandwidth for the same price on select 4-channel mixed signal oscilloscopes.

MODEL	DESCRIPTION	BANDWIDTH	CHANNELS	SAMPLE RATE	MEMORY DEPTH	STANDARD WARRANTY	CALIBRATION PERIOD	BUILT-IN INSTRUMENTS
<b>NEW 1000 X-Series</b> 1000X Data Sheet Videos	Basic R&D bench - 50,000 wfms/s update rate - 7-inch display - Serial bus options	50 MHz to 200 MHz	2, 4	Up to 2 GSa/s	Up to 1 Mpts and segmented memory standard	3 years	5 years	DVM, frequency counter, frequency response analyzer, 20 MHz FG
<b>2000 X-Series</b> 2000X Data Sheet Videos	Basic R&D bench - 200,000 wfms/s update rate - 8.5-inch display - Serial bus options	70 MHz to 200 MHz	2, 2+8, 4, 4+8	Up to 2 GSa/s		5 years	2 years	20 MHz FG, 5-digit counter*
<b>3000T X-Series</b> 3000X Data Sheet Videos	Everything the 2000X has plus - 1,000,000 wfms/s update rate - Advanced math and power analysis - Capacitive touch screen	100 MHz to 1 GHz	2, 2+16, 4, 4+16	Up to 5 GSa/s	4 Mpts and segmented memory standard	3 years	3 years	20 MHz AWG, 8-digit counter
<b>4000 X-Series</b> 4000X Data Sheet Videos	Everything the 3000T has plus - 12.1-inch capacitive touch screen - FFT, USB 2.0 pre-compliance - Up to four active probes	200 MHz to 1.5 GHz						Dual 20 MHz AWG, 5-digit counter and frequency response analyzer*
<b>6000 X-Series</b> 6000X Data Sheet Videos	Everything the 4000X has plus - 450,000 wfms/s update rate - Multi-touch display - Voice control - Jitter and real-time eye diagram analysis	1 GHz to 6 GHz						Up to 20 GSa/s
<b>NEW Infiniium S-Series</b> Data Sheet Videos	R&D bench	500 MHz to 8 GHz	4, 4+16	Up to 20 GSa/s	Up to 800 Mpts	Keysight Care	NA	Digital channels, Digital Signal Analysis (DSA)

\* All models have built-in protocol analyzer and 3-digit DVM.



**NEW** Added value software packages - now get more functionality.

	AUTOMOBILE	AEROSPACE & DEFENSE	EMBEDDED	POWER	USB	NFC	ULTIMATE BUNDLE
1000X	D1200AUTA	NA	D1200EMBA	NA	NA	NA	NA
2000X	D2000AUTA	NA	D2000GENA	NA	NA	NA	D2000BDLA
3000X/T	D3000AUTA	D3000AERA	D3000GENA	D3000PWRA	NA	D3000NFCA	D3000BDLA
4000X	D4000AUTA	D4000AERA	D4000GENA	D4000PWRA	D4000USBA	D4000NFCA	D4000BDLA
6000X	D6000AUTA	D6000AERA	D6000GENA	D6000PWRA	D6000USBA	NA	D6000BDLA
P9240A	P9240AUTB	P9240AERB	P9240GENB	NA	NA	P9240NFCB	P9240BDLB
M9240A	M9240AUTB	M9240AERB	M9240GENB	M9240PWRA	NA	M9240NFCB	M9240BDLB

**DOWNLOAD YOUR NEXT INSIGHT**

Keysight software is downloadable expertise.  
[www.keysight.com/find/software](http://www.keysight.com/find/software)

**DAQ970A data acquisition / switch units**

Get the next-generation data acquisition (DAQ) system with a 3-slot mainframe and your choice of 8 plug-in modules. Interface with the DAQ using Keysight BenchVue DAQ software, the intuitive graphical front panel with task oriented, self-guiding menus, or a web browser.

- Advanced 6½ digit internal DMM with improved accuracy and faster measurement speed
- Ability to measure very low current ranges (1 µA DC and 100 µA AC) and higher resistance range (1000 MΩ)
- New auto-calibration that compensates for internal drifts caused by time and temperature changes
- 3497XA compatible, program and configuration

*PLUS*

- All modules have been updated to have improved switching speeds and accuracies
- DAQM900A solid state multiplexer with scan rate speed of up to 450 channels/sec

 PathWave BenchVue software included with instrument

 [www.keysight.com/find/DAQ970A](http://www.keysight.com/find/DAQ970A)

 [DAQ970 Data Sheet](#)

DESCRIPTION	34970/72A MODULES	DAQ970A MODULES	KEY SPECIFICATIONS
20-channel solid-state multiplexer	-	DAQM900A	Up to 450 ch/s
20-channel multiplexer + 2 current channels	34901A	DAQM901A	Armature 2/4 wire, 60 ch/s (80 ch/s for DAQ970A), up to 300 V, 1 A
16-channel multiplexer	34902A	DAQM902A	Reed 2/4 wire, 250 ch/s, up to 300 V, 50 mA
20-channel actuator/GP switch	34903A	DAQM903A	SPDT/Form C, 120 ch/s, up to 300 V, 1 A
4 x8 matrix	34904A	DAQM904A	Armature 2-wire, 120 ch/s, up to 300 V, 1 A
2 GHz, dual 4-channel, RF mux, 50Ω	34905A	DAQM905A	Common low (not terminated), 60 ch/s up to 42 V, 0.7 A
Multifunction module	34907A	DAQM907A	Two 8-bit digital I/O ports, up to 42 V, 400 mA 26-bit 100 kHz event counter, up to 42 V Two 16-bit analog outputs, up to ±12 V, 10 mA
40-channel single-ended multiplexer	34908A	DAQM908A	Common low (no 4-wire meas.) 60 ch/s, up to 300 V, 1 A



## N6700 Modular Power System



**N6700:** Ideal DC power supply solution for automated test systems

- Small 1U mainframe (400, 600, 1200 W); holds up to four output modules per mainframe
- Over 30 programmable DC modules - Each offers unique capabilities, voltage/current combinations, and performance
- New DC Electronic load modules, 100 & 200 W, allow current to be sourced and sunk in the same mainframe

**N6705C:** Deep insight into DUT power consumption—without assembling a complex test system

- Integrated benchtop unit holds up to four N6700 Series modules (600 W total)
- DMM, scope, arb, and data logger features
- Source/measure units and application-specific software

PathWave BenchVue software included with instrument

[N6705C Data Sheet](#)  
[N6700C, N6701C, and N6702C Data Sheet](#)

[www.keysight.com/find/n6700](http://www.keysight.com/find/n6700)

## E36300 Series triple output DC power supplies



- Large display shows voltages and currents for all three outputs
- Programming/readback accuracy as low as 0.03%
- Low output ripple and noise less than 2 mVpp/350 uVrms
- Data logging plus output sequencing and coupling
- Front and rear output terminals
- Color-coded outputs and individual knobs for voltage and current
- LAN (LXI Core), USB, and GPIB (optional)

PathWave BenchVue software included with instrument

[E36300 Series Data Sheet](#)

[www.keysight.com/find/e36300](http://www.keysight.com/find/e36300)

MODEL	E36311A			E36312A			E36313A		
	Economy model			Most popular			Twice the current		
Power	80 W			80 W			160 W		
Channels	1	2	3	1	2	3	1	2	3
DC output Rating (0 to 40 °C)	0 to 6 V 0 to 5 A	0 to +25 V 0 to 1 A	0 to -25 V 0 to 1 A	0 to 6 V 0 to 5 A	0 to 25 V 0 to 1 A	0 to 25 V 0 to 1 A	0 to 6 V 0 to 10 A	0 to 25 V 0 to 2 A	0 to 25 V 0 to 2 A

**Need More Power?** See the E36200 Series 200 and 400 W autoranging power supplies.

## 33500B and 33600A Series waveform generators

- Generate Trueform arbitrary waveforms with high fidelity and less jitter and harmonic distortion
- Ease of use features, such as modulation, sweep, burst, dual-channel coupling and IQ baseband signal player



PathWave BenchVue software included with instrument

[www.keysight.com/find/function-generators](http://www.keysight.com/find/function-generators)

[33500B and 33600A Data Sheet](#)

MODEL	DESCRIPTION	CHANNELS	FREQUENCY RANGE	PULSE	ARBITRARY WAVEFORMS						
					STD/OPT ARB	# BITS	SAMPLE RATE	MEMORY/CHANNEL			
33509B 33510B	Exclusive Trueform waveform technology with < 40 ps jitter and < 0.04% THD.	1 2	20 MHz	20 MHz	Optional	16	160 MSa/s	1 M Standard, 16 M Optional			
33511B 33512B		1 2			Standard						
33519B 33520B		1 2	30 MHz	Optional							
33521B 33522B		1 2		Standard							
33611A 33612A		Exclusive Trueform waveform technology at higher frequency ranges with < 1 ps jitter < 0.03% THD.	1 2	80 MHz	80 MHz		Standard		14	660 MSa/s	4 M Standard, 64 M Optional
33621A 33622A			1 2	120 MHz	100 MHz					1 GSa/s	

## Digital Multimeters | [www.keysight.com/find/dmm](http://www.keysight.com/find/dmm)

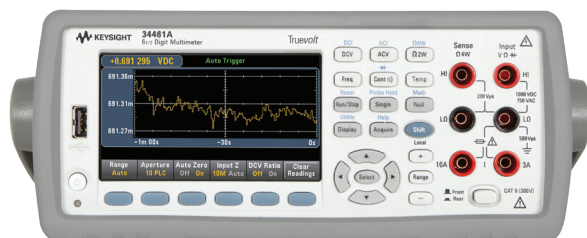
### Truevolt digital multimeters

PathWave BenchVue software included with instrument

[34460A, 34461A, 34465A, 34470A Data Sheet](#)

[www.keysight.com/find/truevolt](http://www.keysight.com/find/truevolt)

- 6½ and 7½ digit performance
- Graphical capabilities such as trend and histogram charts
- Measure very low current, 1 µA range with pA resolution, allowing measurements on very low power devices
- Auto calibration to compensate for temperature drift
- Basic measurements: DCV, ACV, DCI, ACI, 2- and 4-wire resistance, frequency, period, continuity, diode, temperature, capacitance



MODEL	DESCRIPTION	DIGITS OF RESOLUTION	MAX READING RATE AT 4½ DIGITS (RDGS/S)	BUILT-IN PC INTERFACES
34460A	New industry standard. Display DMM results in ways you never have before and measure with unquestioned Truevolt confidence.	6½	300	USB; optional GPIB, LAN
34461A			1,000	USB, LAN; optional GPIB
34465A	More measurements, higher speed, better accuracy, and more memory than the 34461A. Comes with digitizer and advanced triggering capability.	6½	50,000	USB, LAN; optional GPIB
34470A		7½		

## E5063A ENA vector network analyzer\*

- Various frequency options to suit your test needs and budget, upgradable at any time
- PCB manufacturing test capability with Option 011
- Support for six languages via softkey and the embedded help manual in English/Simplified Chinese
- Supports all Keysight calibration kits including the N755xA economy ECal module

ENA SERIES E5063A HIGHLIGHTS	
Frequency	50 kHz to 500 M, 1.5, 3, 4.5, 6.5, 8.5, 14 or 18 GHz
Test port	2-port 50 Ω S-parameter test set
Dynamic range	117 dB (spec.), 122 dB (typ.)
Trace noise	0.005 dBrms (spec.), 0.002 dBrms (typ.)
Source power	-20 to 0 dBm
Key software capability	Fixture simulator, Time domain analysis/Test Wizard option <sup>1</sup> , Wireless power transfer analysis <sup>1</sup> , and Materials measurement <sup>2</sup>
Interface	LAN, USB (front 2, rear 4), USBTMC, GPIB <sup>2</sup> , Handler I/O <sup>2</sup>

1. Optional capability.  
2. External software (Keysight N1500A Material Measurement Suite) required.



PathWave BenchVue software supported

[www.keysight.com/find/e5063a](http://www.keysight.com/find/e5063a)

Keysight electronic calibration kits

\* From selected distributors only

## Keysight Streamline Series | USB Instruments

### Vector Network Analyzers and Oscilloscopes

- Multiple new compact, faceless, USB instruments
- Common technology and measurement capabilities as benchtop and modular instruments
- Perfect for component and subassembly test, R&D labs, and light manufacturing
- Small footprint in size, weight, and power
- Perfect for a rack at 1U high

[www.keysight.com/find/usb-vna](http://www.keysight.com/find/usb-vna)

[www.keysight.com/find/usb-scope](http://www.keysight.com/find/usb-scope)



Compact form. Zero compromise.

	VECTOR NETWORK ANALYZER (VNA)*	OSCILLOSCOPE
<b>Models:</b>	P9370A, P9371A	P9241A, P9242A, P9243A
<b>Bandwidth:</b>	300 kHz to 6.5 GHz	200 MHz, 500 MHz, and 1 GHz
<b>Additional capabilities:</b>	Full 2-port Ability to extend the number of ports Same calibration and metrology as all trusted Keysight VNAs	2 analog channels 5 GSa/s 1,000,000 wfms/s Zone triggering 6-in-1 instrument: Arbitrary Waveform Generator, frequency Response Analyzer, Digital Voltmeter, Counter, Protocol Analyzer

\* From selected distributors only



## Supercharge your Bandwidth

For a limited time, get more bandwidth for the same price on select 4-channel mixed signal oscilloscopes.

**Ends March 31, 2020**

## Boost your Benchtop

For a limited time, get a free handheld DMM with your purchase of an eligible digital multimeter, function/waveform generator, or power supply mainframe.

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**See our complete list of current promotions:**

[www.keysight.com/find/promotions](http://www.keysight.com/find/promotions)

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PathWave BenchVue Lab Management and Control Solution | [www.keysight.com/find/LMS](http://www.keysight.com/find/LMS)


**Control. Automate. Simplify.**

PathWave BenchVue Lab management and control solution BV9111B allows centralized control of instruments, and provides control and automation of the instruments.

- Configure the most commonly used controls and measurements from instruments.
- Easily log and export data and screen images in just a few clicks for faster analysis.
- Create automated test sequences fast with minimal instrument knowledge.

# PATHWAVE

BenchVue is now PathWave BenchVue, part of Keysight's **PathWave Software Platform**

 [Download a free 30-day trial](#)

 [BenchVue Data Sheet](#)



Technical data and pricing subject to change without notice.

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Published in USA, November 5, 2019  
5992-0112EN

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