Keysight & Our Distributor Network

RIGHT *Instrument.* RIGHT *Expertise.*
Delivered RIGHT *Now.*

Distribution Products Catalog

NOVEMBER 2023

KEYSIGHT

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Keysight & Our Distributor Network

RIGHT *Instrument.* **RIGHT** *Expertise.*
Delivered **RIGHT** *Now.*

Keysight and our network of Keysight Authorized Distributors have teamed up to provide fast, easy access to the world's largest selection of off-the-shelf T&M instruments. It's the best of both worlds: Keysight's measurement expertise and product breadth combined with speed, convenience and same-day shipping from our distribution partners.

It's never been easier to get the right instrument in the right hands, right away.

To find a Keysight Authorized Distributor nearest you visit www.keysight.com/find/distributors

What's New

PZ2100 Series High-Channel Density Precision SMU

High-channel density precision SMU solution that integrates flexible SMU module options into a small 1U footprint at a lower cost/ch and with wide application coverage from DC to dynamic measurements.

See page 40

www.keysight.com/find/pz2100

N9912C and C-Series FieldFox RF Analyzers

The N9912C FieldFox is truly a software-defined instrument, with flexible analyzer configurations and selectable frequency ranges of 3 kHz, or 4, 6.5, or 10 GHz. The C-Series FieldFox provides lower starting frequencies for the SA and VNA, and the N9915A covers up to 10 GHz.

See page 24

www.keysight.com/find/FieldFox

E36150A Series DC High-Power Supply

Built for performance and advanced characterization, the E36150 Series now offers an automotive option with ISO standard power transient presets and simulations.

See page 37

www.keysight.com/find/dcpowersupplies

SR101EDUA Digital Learning Platform

The SR101EDUA web-based software suite provides lab management, instrument control, and learning resources subsystems. Streamline your teaching workflow with full integration of all the tools.

See page 4

www.keysight.com/find/sr101edua

KeysightCare Technical Support

Look for this icon throughout the catalog to identify products with KeysightCare Technical Support included or supported.

See page 48

www.KeysightCare.com

KEYSIGHTCARE

PathWave BenchVue Software: Control. Automate. Simplify.

Keysight PathWave BenchVue PC software resolves bench test issues with simple connections and control of instruments. Now you can quickly move past the test development phase, create automated test sequences, and achieve results faster. The Test Flow app helps you automate and quickly see test results without the need for instrument programming. Use the dedicated instrument apps for easy configuration of commonly used measurements and setups. You can select from a variety of powerful PathWave BenchVue apps that enable you to significantly reduce test development time.

Lab management apps provide centralized lab instrument configuration, track assets, and lab administration.

Use PathWave BenchVue apps to:

- Configure the most used Keysight instrument's measurements and controls
- See multiple measurements simultaneously
- Quickly log and export data and screen images for fast analysis
- Create automated test sequences fast with minimal instrument knowledge
- Centrally manage and configure lab stations

Look For This Icon

throughout the catalog to identify products with PathWave BenchVue Basic software supported. www.keysight.com/find/BVBasic

PathWave BenchVue software supports over 700 Keysight instruments including apps for most of the products in this catalog. Visit www.keysight.com/find/benchvueinstruments for details.

UPDATE: Transition of BenchVue Included License to BenchVue Basic App!

We are excited to share a significant update regarding the transition from the BenchVue Included License to the all-new PathWave BenchVue Basic App. As part of our commitment to enhancing your experience, we have made this transition, making it easier for you to access and use the PathWave BenchVue Basic software. Starting now, the BenchVue Included License, previously included with the purchase of new hardware, is now available as the BenchVue Basic App, which you can download for free at www.keysight.com/find/BVBasic. This transition eliminates the need for license installation or redemption, allowing you to immediately access the powerful PathWave BenchVue software without any additional steps.

NEW PathWave Instrument Robotic Process Automation (RPA)

Automate away complexity and repetitiveness with the interactive no-code automation companion RPA and accelerate your debug and development. Verify circuits without the need for SCPI scripts or device driver commands.

- Interactive automation without coding
- Workflow flexibility with no predefined sequences
- Parameterization and automation of user interface interactions

Learn more at www.keysight.com/find/rpa

DOWNLOAD YOUR NEXT INSIGHT

Keysight software is downloadable expertise. From first simulation through first customer shipment, we deliver the tools your team needs to accelerate from data to information to actionable insight. **Learn more at** www.keysight.com/find/software

Curriculum-based teaching solutions and lab management software

Keysight Industry-ready Remote Access Lab

Keysight's industry-ready remote access lab solution offers you a convenient way to make the switch to online learning. This end-to-end solution is designed for complete remote setup of your basic instrument lab and covers your needs from web-based lab management and scheduling administration to instrument control and remote access for measurement and analysis.

Learn more at https://www.keysight.com/us/en/industries/education/teaching-solutions.html

NEW SR101EDUA Digital Learning Platform

Engineering educators can enhance their teaching methods, stay abreast of industry trends, and maximize their lab resource utilization with Keysight's SR101EDUA. Keysight SR101EDUA is a web-based digital learning suite with access to university engineering lab resources, measurement data analysis tools, and industry-relevant learning resources. The software provides lab management, instrument control, and learning resources subsystems.

Key software modules:

- PW8400EDU test sequencer and web interface to control instruments and characterizes designs.
- PW9300EDU remote collaborative learning tool with a built-in IMS LTI connection and single-sign-on (SSO) authentication that integrates with your favorite learning management system (LMS) or identity provider.

Learn more at www.keysight.com/find/sr101edua

PW9111EDU PathWave BenchVue Lab Management and Control Solution

Integrate with existing Learning Management Systems (LMS) such as Moodle, Blackboard, Canvas, and others.

- PW9111EDU is desktop-based providing centralized instrument configuration lab overview and asset tracking for educators teaching labs.
- Includes Keysight PathWave BenchVue Lab apps (instrument control, automation, analysis, and instrument firmware update) and the BV9001B BenchVue Complete Control Collection.
- Easy instrument control, data capture, data logging, monitoring and report generation for test bench students

Learn more at www.keysight.com/find/PW9111EDU

U3851A RF Microwave Teaching Solution

- RF Microwave circuit design, simulation and measurement courseware, 5G NR n3
- Brings industry design experience into the classroom and covers the complete design flow to successfully develop 5G and IoT wireless application
- Courseware includes a modular prototype kit using a 1.8 GHz receiver module, lab sheets and problem-based assignments for use with recommended instruments and design software

Learn more at www.keysight.com/find/u3851a

U3810 Series Advanced IoT Teaching Lab Solution

Keysight's IoT teaching solution combines instruments, software, and courseware including slides and a training kit for lots of hands-on learning. Students learn practical design and test techniques with topics that include IoT fundamentals and cybersecurity, wireless communication, battery power analysis, pre-compliance, and more.

Learn more at www.keysight.com/find/engineeringteachingsolutions

Smart Bench Essentials Series General Purpose Bench Instruments

Accelerate Your Design with Connected Insights

Keysight's instruments test station solution is ideal for university teaching labs. The remote accessible basic instrument lab offers optional web-based lab management and scheduling administration for instrument measurement and analysis. The small benchtop hardware provides industry-grade performance, with Signature 7" color displays, USB and LAN for PC connections, and is paired with PathWave application software. The DMM, function generator, triple-output DC power supply and 1000 X-Series oscilloscope measurement capabilities provide a reliable test station solution at an attractive price.

EDU34450A Digital Multimeter

- 5.5 digit resolution and up to 0.015% basic DCV accuracy
- 11 measurement functions including temperature
- 5,000 points logging memory
- USB flash drive support

Learn more at www.keysight.com/find/EDU34450A

EDU36311A Triple Output Power Supply

- Three independent power supplies: 5 V, 6 A; 30 V, 1 A; 30 V, 1 A
- Output ripple and noise: < 5 mVpp/1 mVrms
- Fast load transient response time (<50 µs)
- Overvoltage, over current, and over-temperature protection

Learn more at www.keysight.com/find/EDU36311A

EDU33210A Series Function Generators

- 20 MHz Bandwidth EDU33211A (single ch), and EDU33212A (dual ch)
- Built-in modulation and 17 popular waveforms
- 16-bit arbitrary waveform capability with memory of up to 8 MSa/channel

Learn more at www.keysight.com/find/EDU33212A

EDUX/DSOX 1000 X-Series Oscilloscopes

- 50 MHz to 200 MHz bandwidth
- 2- and 4-channel models
- Up to 2 GSa/s sampling rate
- Standard serial analysis and Bode plot measurements (G models)

Learn more at www.keysight.com/find/1000X-Series

Remotely control your bench instruments

Configure PathWave BenchVue to remotely monitor and control bench instruments from a different location. This allows remote teaching/learning labs to be monitored by a teacher or for engineers to remotely control systems across the world.

Remote Learning with PathWave Lab Operations Software

The Keysight Essential Bench

The deepest bench in the industry

Only Keysight delivers the industry's largest selection of bench instruments and groundbreaking PathWave BenchVue software—the zero-programming way to view, capture, and export the data you collect from your bench. To see the full portfolio of essential bench products offered by Keysight Authorized Distributors, visit www.keysight.com/find/essentialbench

1. PathWave BenchVue software

Capture, visualize, and share data from multiple instruments with no need for programming.

See page 3

2. Oscilloscopes

See more of your signals and solve your toughest challenges with innovative scope technology.

See pages 7-14

3. Power supplies

Enable faster, safer testing with built-in measurements, battery drain analysis/characterization, full DUT protection, and output sequencing.

See pages 36-41

4. Function/arbitrary waveform generators

Validate the most challenging designs with True*form* arbitrary waveforms, modulation, and two-channel synchronization.

See pages 19-20

5. Data acquisition/switch units

Simplify ad hoc testing with temperature and electrical signal measurement flexibility, universal channels, and no external signal conditioning.

See pages 21-22

6. Frequency counters/timers

Expand your measurement and analysis capabilities with histograms, trend/strip charts, statistics, data logging, and more.

See page 18

7. Digital multimeters (DMMs)

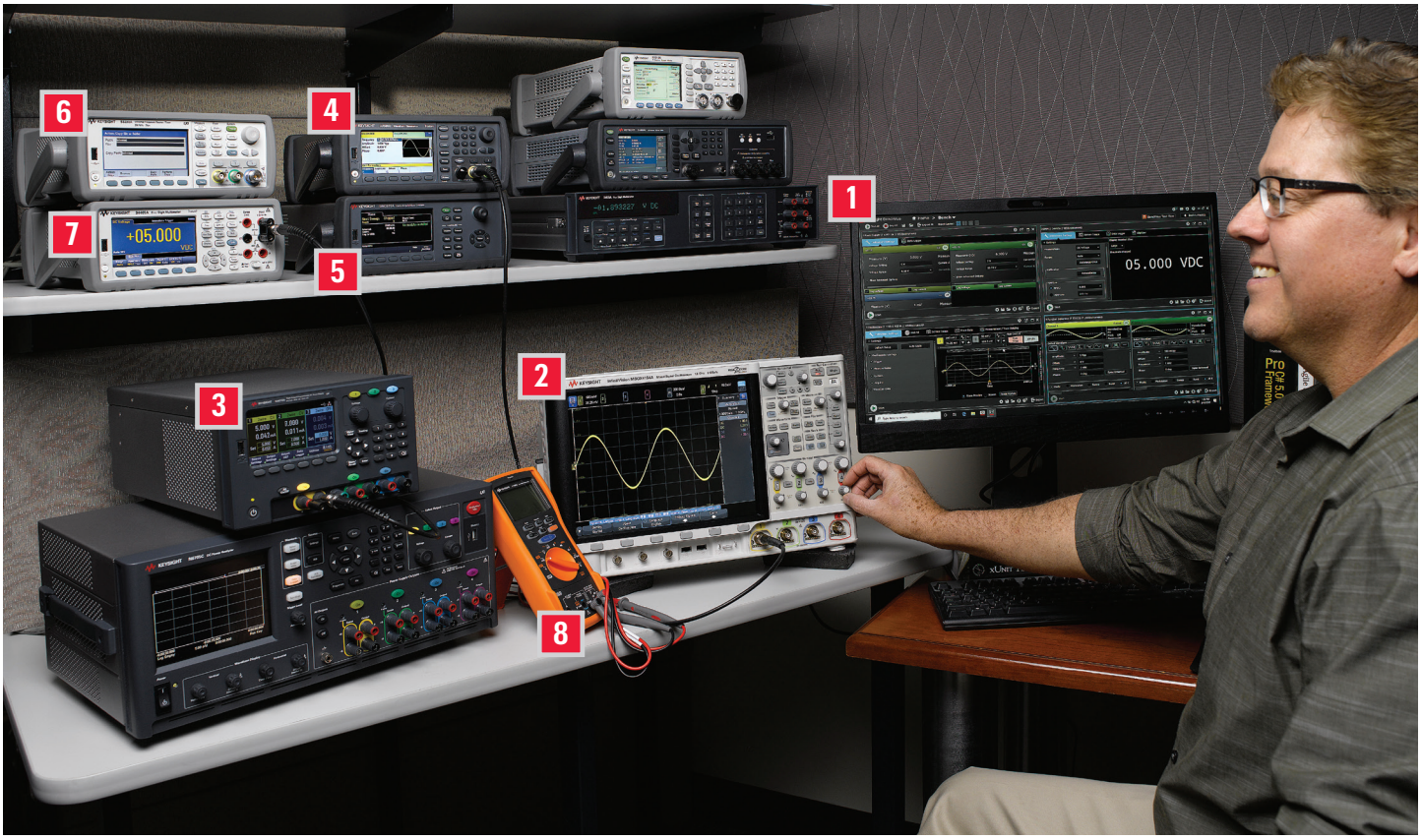
Capture measurements quickly with graphical displays, on-screen analysis, and auto calibration.

See pages 15-17

8. Handheld instruments

Handle a wider range of challenges with thermal image temperature measurements and fully featured multimeters with frequency counters, square waves, and wireless connectivity.

See pages 24-27



Digital Storage (DSO) and Mixed Signal (MSO) Oscilloscopes

Get products to market faster. Keysight's award-winning oscilloscopes provide the fastest update rates, capacitive touch screen, and the most software options.

Produce the highest-performing products. Make measurements you can trust with industry-leading signal integrity and a large selection of probes.

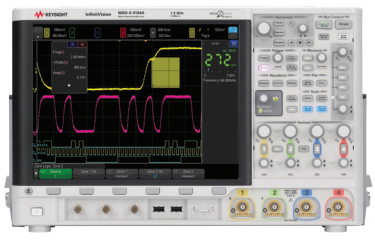
Achieve the lowest cost of ownership. Keysight's oscilloscopes let you integrate several instruments in one mainframe and easily upgrade.

	1000 X-Series	2000 X-Series[1]	3000G X-Series	4000 X-Series	6000 X-Series	EXR-Series
						
Bandwidth	50 to 200 MHz	70 to 200 MHz	100 MHz to 1 GHz	200 MHz to 1.5 GHz	1 GHz to 6 GHz	500 MHz to 6 GHz[3]
Memory (Max)	2 Mpts	1 Mpts	4 Mpts	4 Mpts	4 Mpts	1.6 Gpts
Sample rate (Max)	2 GSa/s	2 GSa/s	5 GSa/s	5 GSa/s	20 GSa/s	16 GSa/s[3]
Channels	2 or 4 analog	2 or 4 analog + 8 digital[2]	2 or 4 analog + 16 digital[2]	2 or 4 analog + 16 digital2	2 or 4 analog + 16 digital[2]	4 or 8 analog + 16 digital (optional)
Display	7.0"	8.5"	8.5" capacitive touch	12.1" capacitive touch	12.1" capacitive touch	15.6" capacitive touch
Update rate	200,000 wfms/s on DSO models	200,000 wfms/s	1,000,000 wfms/s	1,000,000 wfms/s	450,000 wfms/s	>200,000 wfms/s
Touch zone triggering	—	—	Yes	Yes	Yes	Yes
Instrument integration	FRA (Bode plot) 5-digit counter 3-digit DVM 20 MHz WaveGen Protocol analyzer	5-digit counter 3-digit DVM 20 MHz Function Gen Protocol Analyzer Logic Analyzer	FRA (Bode plot) 8-digit counter 3-digit DVM 20 MHz AWG Protocol Analyzer Logic Analyzer	FRA (Bode plot) 5-digit counter 3-digit DVM 20 MHz dual AWG Protocol Analyzer Logic Analyzer	FRA (Bode plot) 10-digit counter 3-digit DVM 20 MHz dual AWG Protocol Analyzer Logic Analyzer	FRA (Bode Plot) 10-digit counters 4-digit DVM 50 MHz AWG Protocol Analyzer Logic Analyzer

1. 2000X specifications for models manufactured after March 5, 2018, older models can be upgraded using DSOX2PLUS option.
2. +8 or +16 digital channels on mixed-signal oscilloscope models or DSO-to-MSO upgrade kits.
3. On all channels simultaneously – no interleaving of memory or sample rate

InfiniiVision USB oscilloscopes, P9241/42/43A, See page 23 for details.






InfiniiVision 1000 X-Series 50 to 200 MHz

Get measurements you can count on to create designs that will change the future.

- Fast 200,000 waveforms/second update rate enhances signal visibility
- Key features for education customers: Automatic Bode plot measurements with Bode plot training kit (standard on "G" models), integrated waveform generator, free education kit, online help, standard 10:1/1:1 switchable passive probes
- Enhanced usability with PathWave BenchVue software to quickly capture and log measurement data, get screen images, and traces for insight into your test challenges
- Standard serial protocol analysis and trigger on all models

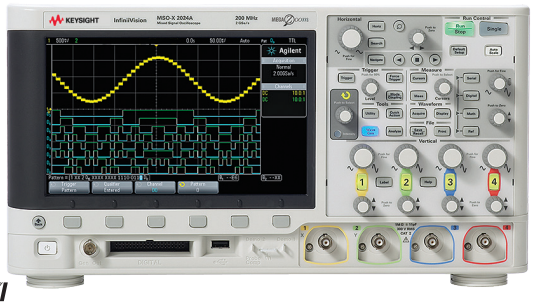
www.keysight.com/find/1000X-Series

Model series	Bandwidth (–3 dB)	Input channels	Sampling rate	Memory depth	Waveform update rate	Serial (standard)	Built-in WaveGen
EDUX1052A	50 MHz	2	1 GSa/s	200 kpts	100,000 wfms/s	I2C and UART/RS232	No
EDUX1052G							Yes
DSOX1202A	70 MHz, upgradeable to 100 and 200 MHz		2 GSa/s	2 Mpts	200,000 wfms/s	I2C, SPI, UART/RS232, CAN, and LIN	No
DSOX1202G							Yes
DSOX1204A		4					No
DSOX1204G							Yes

Standard LAN connection now available on all models

InfiniiVision 2000 X-Series oscilloscopes

Breakthrough technology delivers more scope for the same budget



- 70 to 200 MHz economy scopes
- Hardware based mask testing as well as serial protocol trigger and decode for I^2C, SPI, RS-232/UART, CAN, LIN
- Fully upgradeable: add bandwidth, digital channels, serial protocol trigger and decodes, measurement applications and WaveGen
- 5-year standard warranty

www.keysight.com/find/2000X-Series

Model series[1]	Bandwidth (–3 dB)	Input channels		Sampling rate	Memory depth	Waveform update rate
		DSOX	MSOX			
2002A	70 MHz	2	2 + 8	2 GSa/s	1 Mpts	200,000 wfms/s
2004A		4	4 + 8			
2012A	100 MHz	2	2 + 8			
2014A		4	4 + 8			
2022A	200 MHz	2	2 + 8			
2024A		4	4 + 8			

1. 2000X specifications for models manufactured after January 1, 2018, older models can be upgraded using DSOX2PLUS option.

KEYSIGHTCARE

PathWave BenchVue Basic software supported.

InfiniiVision 3000G X-Series oscilloscopes

Touch, discover, solve

- 100 MHz to 1 GHz digital storage and mixed signal scopes
- Standard zone triggering
- 1,000,000 waveforms/sec update rate
- Mixed domain analysis with time/frequency measurement correlation
- 8 additional standard features including a built-in waveform generator, waveform and measurement histograms, protocol decodes, mask limit testing, and more
- Fully upgradeable: add bandwidth, digital channels, or measurement applications are customer installable at anytime
- Calibration period of 3 years

www.keysight.com/find/3000G

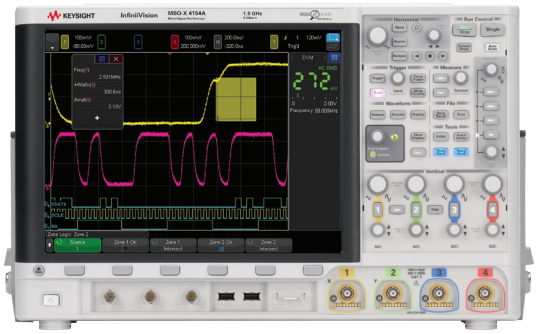
LXI

InfiniiVision 4000 X-Series oscilloscopes

Oscilloscope experience redefined

- 200 MHz to 1.5 GHz digital storage and mixed signal scopes
- 12.1-inch capacitive touch display
- Standard zone triggering
- 1,000,000 waveforms/sec update rate
- Built-in dual channel 20 MHz WaveGen function/arbitrary generator with modulation capability

www.keysight.com/find/4000X



LXI

Model series	Bandwidth (–3 dB)	Input channels DSOX	Input channels MSOX	Sampling rate	Memory depth	Display size and type	Waveform update rate	Calculated rise time (10 to 90%)
3012G	100 MHz	2	2 + 16	5 GSa/s half channel, 2.5 GSa/s all channel	Standard 4 Mpts, standard segment memory	8.5-inch capacitive touch display with standard zone trigger	> 1 million wfms/s	≤ 3.5 ns
3014G		4	4 + 16					
3022G	200 MHz	2	2 + 16					≤ 1.75 ns
3024G		4	4 + 16					
3032G	350 MHz	2	2 + 16					≤ 1 ns
3034G		4	4 + 16					
3052G	500 MHz	2	2 + 16					≤ 700 ps
3054G		4	4 + 16					
3102G	1 GHz	2	2 + 16					≤ 450 ps
3104G		4	4 + 16					
4022A	200 MHz	2	2 + 16			12.1-inch high-definition capacitive touch display		≤ 1.75 ns
4024A		4	4 + 16					
4032A	350 MHz	2	2 + 16					≤ 1 ns
4034A		4	4 + 16					
4052A	500 MHz	2	2 + 16					≤ 700 ps
4054A		4	4 + 16					
4104A	1 GHz	4	4 + 16					≤ 450 ps
4154A	1.5 GHz[1]	4	4 + 16					≤ 300 ps

1. 1.5 GHz real-time bandwidth in half-channel mode or full-channel equivalent time mode.

KEYSIGHTCARE

PathWave BenchVue Basic software supported.

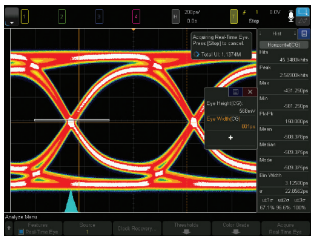
InfiniiVision 6000 X-Series oscilloscopes

The new standard in price performance

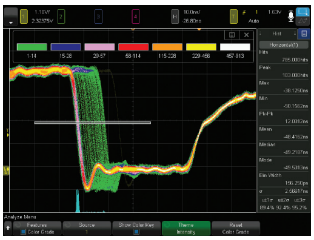
- 1 to 6 GHz digital storage and mixed signal scopes
- 12.1-inch capacitive multi-touch screen with Zone touch trigger
- Superior noise floor and waveform update rate
- Standard histogram and color grade, plus enhanced color FFT
- Optional jitter and real-time eye-diagram analysis
- Voice control in 14 languages

www.keysight.com/find/6000X-Series

LXI



Bandwidth standard



New visualization standard

Integration standard

Model series	Bandwidth (–3 dB)	Input channels DSOX	Input channels MSOX	Sampling rate	Memory depth	Display size and type	Waveform update rate
6002A	1 to 6 GHz	2	2 + 16	20 GSa/s	4 Mpts	12.1-inch capacitive multi-touch screen, Hardware InfiniiScan Zone touch trigger	450,000 wfms/s
6004A		4	4 + 16				

Applications—Engineered to Turn Measurements into Answers

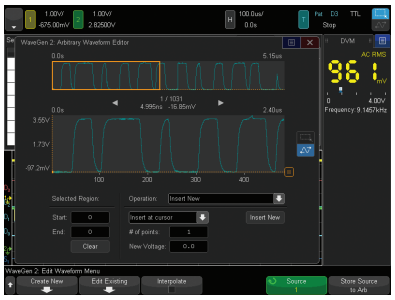
You need fast, accurate answers to your measurement questions. That's why Keysight offers the broadest selection of compliance and debugging applications in the industry. Keysight applications work with your oscilloscope to quickly and easily provide exceptional insight into your signals.

Increase specialized functionality

Instantly integrate instruments or upgrade your scope's functionality

The Education Training Kit and built-in DVM are now standard on all InfiniiVision oscilloscopes.

Applications	1000 X-Series	2000 X-Series	3000G X-Series	4000 X-Series	6000 X-Series	EXR Series
WaveGen function generator	Standard on G models	DSOX-2WAVEGEN	Standard on G models			
WaveGen arbitrary/function generator			Standard on G models	DSOX-4WAVEGEN2	DSOX-6WAVEGEN2	EXR2WAV
Frequency Response Analysis (FRA)	Standard on G models		Standard on G models	Included with any software option		
DSO to MSO upgrade kit		DSOX2MSO	DSOXT3MSO	DSOXPERFMSO	DSOX6MSO	EXR2MSO
Bode plot training kit	DSOXBODE available on all models except 2000 X-Series					

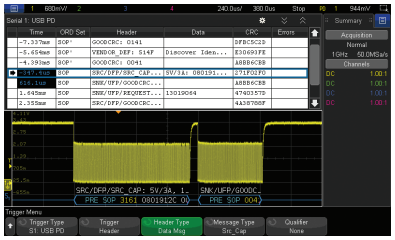


Debug your designs faster

Industry-specific software options

Applications	1000 X-Series	2000 X-Series	3000G X-Series	4000 X-Series	6000 X-Series	P924xA[2]
Automotive	Standard[1]	D2000AUTB	D3000AUTB	D4000AUTB	D6000AUTB	P924OAUTC
Aerospace & Defense			D3000AERB	D4000AERB	D6000AERB	P924OAERC
Embedded	Standard	D2000GENB	D3000GENB	D4000GENB	D6000GENB	P924OGENC
Power			D3000PWRB	D4000PWRB	D6000PWRB	
USB			D3000USBB	D4000USBB	D6000USBB	
Ultimate Bundle		D2000BDLB	D3000BDLB	D4000BDLB	D6000BDLB	P924OBDLC

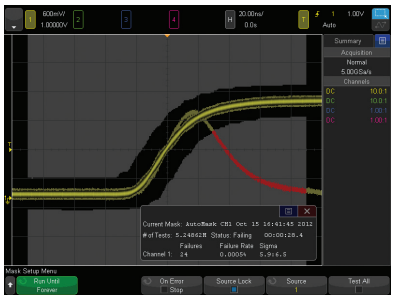
1. DSO models only 2. Refer to page 22 for P924xA oscilloscopes



Simplify your job

PC-based software, limit testing and segmented memory all help organize your data

Applications	1000 X-Series	2000 X-Series	3000G X-Series	4000 X-Series	6000 X-Series	EXR Series
Mask/waveform limit testing	Standard on DSO models	•	Standard	•	•	Standard
Segmented memory	Standard on DSO models	Standard	Standard	Standard	Standard	Standard
Infiniium Offline PC-based analysis software	•	•	•	•	•	•
Software application bundle		•	•	•	•	•
Jitter					•	•
PathWave BenchVue Basic	Download PathWave BenchVue Basic software for all models, free at www.keysight.com/find/BVBasic					



Save with InfiniiVision Application Bundles

Up to 25% off hardware, software, and accessories

Learn more!

Application Bundles			
Automotive	DSO3054GAUT	Better	DSOX3054G, D3000AUTB, DP0010A, DP0021A-009
	MSO4154AAUT	Best	MSOX4154A, D4000BDLBX, DSOX4WAVEGEN2, DP0010A, DP0021A-009
Power	DSO3054GPWR	Better	DSOX3054G, D3000PWRB, N2790A, 1147B, U1880A
	MSOX4154PWR	Best	MSOX4154A, D4000BDLB, DSOX4WAVEGEN2, N2790A, M7026A, U1880A
Jitter	DSOX6004JIT	Better	DSOX6004A, D6000BDLB, DSOX6WAVEGEN2, N2750A
	MSOX6004JIT	Best	MSOX6004A, DSOX6004A-02G, D6000BDLB, DSOX6WAVEGEN2, N2751A

KEYSIGHTCARE

PathWave BenchVue Basic software supported except where noted.

Infiniium EXR-Series oscilloscopes

An 8 channel MSO that's powerful, easy to own, intuitive to use

- Identify physical-layer issues as fast as possible with fast update rate of >200,000 wfm/s and exclusive Fault Hunter technology
- Debug even the most sensitive signals with up to 16 bits of resolution and typical noise as low as 43 µV
- Verify power integrity and distribution easily with dedicated probes, accessories, and automated applications with step-by-step setup wizards
- Troubleshoot serial buses at the protocol layer with dozens of automatic measurements, triggers, decodes, and compliance applications
- Test, debug, and characterize designs according to compliance standards with automated measurements

www.keysight.com/find/EXR

Keep track of instrument calibration intervals with your instrument's built-in PathWave Calibration Advisor software and make measurements with confidence.

4 Channel Models	8 Channel Models	Bandwidth	Optional MSO	Sampling rate	Memory depth	Display size and type	Waveform Update Rate	Vertical resolution
EXR054A	EXR058A	500 MHz	16 ch	16 GSa/s	100 Mpts/ch (std) Options up to 400 Mpts/ch or 1.6 Gpts/ch	15.6" Full HD touchscreen, VGA and DisplayPort for external monitors	>200,000 wfm/s	10 bits at full bandwidth Up to 16 bits in high resolution
EXR104A	EXR108A	1 GHz						
EXR204A	EXR208A	2 GHz						
EXR254A	EXR258A	2.5 GHz						
EXR404A	EXR408A	4 GHz						
EXR604A	EXR608A	6 GHz						

Save with Infiniium Application Bundles

40% off subscription-based software bundles.

Model Number	Description
D9110ESSB	Essential Bundle
D9110AUTB	Automotive Bundle
D9110MILB	Aerospace and Defense Bundle
D9110HSSB	High-Speed Serial Bundle
D9110SINB	Signal Integrity Bundle
D9110POWB	Power Bundle
D9110PREB	Premium Bundle

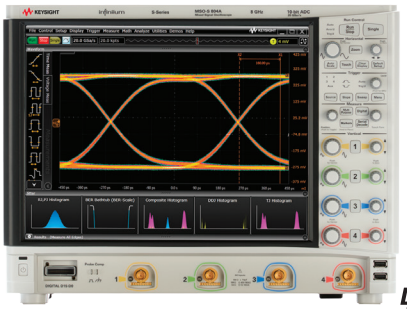
KEYSIGHTCARE

PathWave BenchVue Basic software supported except where noted.

Infiniium S-Series oscilloscopes

- 10-bit ADC to full 8 GHz bandwidth
- Up to 16 bits resolution (at reduced bandwidth)
- Low-noise front end and RF capability
- Dedicated software/probes for Power Integrity and Signal Integrity test
- Advanced jitter measurements
- Supports many probe technologies
- Download PathWave BenchVue Basic software for free at www.keysight.com/find/BVBasic

www.keysight.com/find/s-series



DSO/MSO models	Bandwidth	Channels	Sampling rate	Memory depth	Display size and type	Vertical resolution
S054A	500 MHz	DSO: 4 analog MSO: 4 analog, 16 digital	20 GSa/s on 2 channels, 10 GSa/s on 4 channels	100 Mpts/ch (standard) Option up to 800 Mpts/ch (2 channel)	15" XGA capacitive Touchscreen, VGA and DisplayPort for external monitors	10 bits at full bandwidth Up to 16 bits in high resolution
S104A	1 GHz					
S204A	2 GHz					
S254A	2.5 GHz					
S404A	4 GHz					
S604A	6 GHz[1]					
S804A	8 GHz[1]					

1. Bandwidth is for 2 channels. Bandwidth for 4 channels is 4 GHz.

Infiniium Analysis, Protocol, and Compliance Software

The EXR and S-Series support a superset of automated oscilloscope software applications to help you debug, validate, and characterize your designs faster. Visit the oscilloscope software web page to learn more.

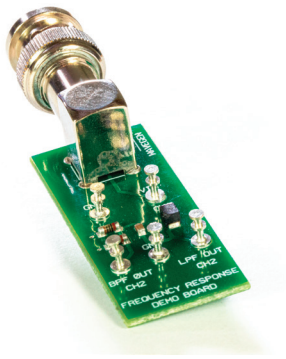
Analysis Software	
D9010JITA	EZJIT
D9011PAMA	PAM-N Analysis
D9010POWA	Power Integrity
D9010SCNA	InfiniiScan Trigger
D9010ASIA	Advanced Signal Integrity
D9010UDAA	User Defined Application
D9010DMBA	De-Embedding

Protocol Triggering / Decode Software	
D9010LSSP	Low Speed Serial (I^2C, SPI, and more)
D9010EMBP	Embedded (PCIe, USB, and more)
D9010AUTP	Low Speed Automotive (CAN, LIN, and more)
D9020AUTP	High Speed Automotive (100BASE-T1 and more)
D9010MPLP	MIPI Low Speed (RFFE, I^3C, SPMI)
D9010MCDP	MIPI CSI/DSI (C-PHY and D-PHY)
D9010MPMP	MIPI M-PHY (DigRF, LLI, CSI-3, UniPro, and more)
D9010MILP	Military (ARINC 429, MIL-STD 1553, SpaceWire)
D9011BDLP	D9010LSSP+EMBP+AUTP+MPLP+MILP

Compliance Software	
D9021HDMC	HDMI
D9010USBC	USB 2.0
D9030DDRC	DDR/LPDDR 3
D9040PCIP	PCIe Gen 1, 2, 3, 4
D9010CPHC	MIPI C-PHY
D9020DPHC	MIPI D-PHY
D9040MPHC	MIPI M-PHY
AE6910T	Auto Ethernet Tx

DSOXBODE Bode Plot Training Kit

The DSOXBODE Bode plot training kit is compatible with most InfiniiVision scopes, including all "G" model InfiniiVision 1000 X-Series oscilloscopes, and consists of a series R-L-C circuit board with a BNC input that attaches directly to the output of an oscilloscope's WaveGen function generator. The labeled test points are for probing V_{IN} and bandpass filter output (BPF_{OUT}) or low-pass filter output (LPF_{OUT}). The training kit includes a downloadable comprehensive tutorial and lab guide for engineering students and professors. The training guide begins with a frequency response measurements tutorial, fill-in-the-blank questions, and step-by-step lab instructions for performing both manual and automatic Bode plots measurements using Keysight InfiniiVision oscilloscopes.



Probes — Engineered for Signal Access and Measurement Accuracy

To get top performance from your scope, you need the right probe for your application. Keysight offers a broad selection.

Hi-Z+ Passive Probing System

The best of passive and active probes in one.

- PP0001A: 1 GHz bandwidth passive probe with input voltages up to 300 V CAT II*
- PP0002A: 800 MHz passive probe that provides more than 1 kV of input voltage*
- PP0003A: MMCX-Compatible, 1 GHz passive probe with a 30 V CAT II input voltage range

*Requires the use of the PP0004A adapter

DP0001A high voltage differential probe

Confidently Test Your Power Converters, WBG Devices, and More

- High voltage differential probe for high voltage, high speed power device testing
- Measure up to 2 kV mains isolated, 1 kV CAT III and 400 MHz
- Unmatched electrical performance - flat frequency response and high CMRR
- Includes 1 year of KeysightCare Assured

www.keysight.com/find/DP0001A

KEYSIGHTCARE

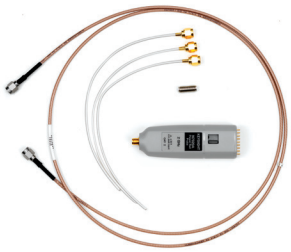
N7020A/24A power rail probe

Industry's most accurate view of DC power rail behavior up to 6 GHz

- 2 or 6 GHz single-ended active probe for power rail noise measurements
- 16x less noise than a conventional 1:1 differential probe
- Low DC loading with input impedance of 50 kΩ
- Large offset range (±24 V) enables use of a scope's max vertical sensitivity

www.keysight.com/find/N7020A

KEYSIGHTCARE



	1000 X-Series	2000 X-Series	3000G X-Series	4000 X-Series	6000 X-Series
Scope bandwidth	50 to 200 MHz	70 to 200 MHz	100 MHz to 1 GHz	200 MHz to 1.5 GHz	1 to 6 GHz
Probe interface	BNC	BNC	AutoProbe Lite	AutoProbe	
Standard probe (scope bandwidth)	N2140A (70 MHz/100 MHz) N2142A (50 MHz)	N2841A (70 MHz/100 MHz) N2842A (200 MHz)	N2843A (all)	N2894A (all)	
Passive probe 1:1	N2140A/ N2142A	10070D, N2870A	10070D, N2870A, PP0001A/2A/3A (requires PP0004A adapter)		
10:1	N2140A/ N2142A	N2841A, N2842A, N7007A	N2841A, N2842A, N2890A, N2871A, N7007A	N2894A, N7007A	
High-voltage passive probe 100:1	10076C				
Low Z passive probe	—	—	N2874A, N2876A		
Active differential probes (high speed)	—	—	N2750A, 1130B[1]		N2750A/51A/52A, 1130B/31B/32B[1]
(high voltage)	N2791A, N2891A	N2791A, N2891A	N2790A/91A, N2891A, N2804A/05A, DP0001A, DP0010A/11A/12A/13A		
Active single-ended probe	—	—	N2795A/96A/97A, N7020A	N2795A/96A/97A, N7020A	N2795A/96A/97A, N7020A[3]
Current probe	1146B, N2780B/81B/82B/83B[2], N7040A/41A/42A	1146B, N2780B/81B/82B/83B[2], N7040A/41A/42A	1146B, 1147B, N2893A, N2780B/81B/82B/83B[2], N2820A/21A , N7026A, N7040A/41A/42A		

1. Order one or more InfiniiMax. Probe heads or connectivity kits required per amplifier model shown. 2. Requires N2779A power supply. 3. With 6000X Series ordered after February 1, 2016

KEYSIGHTCARE

PathWave BenchVue Basic software supported.

True*volt* Digital Multimeters

Lower DC current ranges and faster reading rates, allows enhanced measurements

Get more details quickly – with graphical capabilities such as trend and histogram

Measure low-power devices – with the ability to measure very low current with the 1 µA range with pA resolution.

Maintain calibrated measurements – with auto calibration to compensate for temperature drift throughout your workday

34460A / 34461A Basic True*volt* DMMs

- Up to 1,000 readings / s at 6½ digits
- 12 measurement functions including temperature
- Up to 10 k readings internal memory
- Color, graphical display, with built-in graphics, math, and statistics
- 34461A DMM is a replacement for the previous-generation 34401A model

34465A / 34470A Performance True*volt* DMMs

- DCV measurement accuracy of 16-30 ppm
- Measure sleep and standby current with pico-amp resolution
- View DC and AC volts with dual display
- 1 µA range and up to 50,000 rdgs / sec
- Up to 50 k readings standard internal memory and 2 M readings option

	Bench / System		Performance	
	34460A	34461A	34465A	34470A
Digits of resolution	6½	6½	6½	7½
1 year DCV accuracy	0.0075%	0.0035%	0.0030%	0.0016%
Maximum measurement speed (readings / s)	300	1,000	50,000	50,000
DC, True RMS AC voltage ranges	100 mV – 750 V	100 mV – 750 V	100 mV – 750 V	100 mV – 750 V
DC, True RMS AC current ranges	100 µA – 3 A	100 µA – 10 A	1 µA – 10 A	1 µA – 10 A
2- and 4-wire resistance ranges	100 Ω – 100 MΩ	100 Ω – 100 MΩ	100 Ω – 1 GΩ	100 Ω – 1 GΩ
Frequency range	3 Hz – 300 kHz	3 Hz – 300 kHz	3 Hz – 300 kHz	3 Hz – 300 kHz
Diode / continuity	5 V / yes	5 V / yes	5 V / yes	5 V / yes
Other measurements	Capacitance, temperature, period			
Connectivity	USB, LAN (opt), and GPIB (opt)	USB, LAN, and GPIB (opt)		

Digital Multimeters

Lab accuracy at production-line speeds

U3606B 5½ digit multimeter / 30 W DC power supply

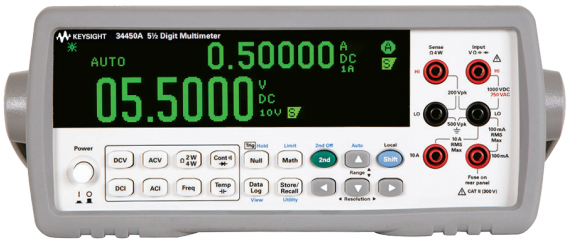
Get twice the measurement functionality in half the space

- Allows simultaneous supply-and-measure operations
- DMM: 120,000 count resolution with DCV accuracy 0.025%
- Power supply: Four output ranges with over-voltage and over-current protection, auto ramp and scan function and square-wave output
- Securable with PC-grade physical lock

34450A 5½ digit dual-display DMM

Achieve throughput breakthrough in a low-cost DMM

- 11 measurement functions, including temperature and capacitance
- Built-in histogram and basic statistical functions
- Ultra-bright OLED with dual display capability
- Up to 50,000 memory points, log up to 14 hours of data
- Download PathWave BenchVue Basic software for free at www.keysight.com/find/BVBasic



B2980B Series femto / picoammeter and electrometer / high resistance meter

Confidently measure down to 0.01 fA and up to 10 PΩ with the world's only graphical picoammeter / electrometer.

- Current measurement resolution of 0.01 fA (0.01 x 10^{-15} A)
- Resistance measurements up to 10 PΩ (10 x 10^{15} Ω)
- 4.3" liquid crystal display for numeric, graph, trend chart, and histogram viewing
- Battery-powered versions available for low-level measurements in the presence of AC power line noise

http://www.keysight.com/find/b2980

KEYSIGHTCARE

PathWave BenchVue Basic software supported except where noted.

34420A 7½ digit nanovolt/micro-ohm meter

High sensitivity for low-level measurements, plus resistance and temperature

- 1.3 nVrms, 8 nVpp noise performance
- 100 pV/100 nΩ sensitivity
- Low-noise voltage measurements with resistance and temperature functions

3458A 8½ digit performance DMM

High precision and high-performance measurement solution

- 8½ digit resolution with 0.1 ppm transfer accuracy
- Measurements include DC & AC voltage, DC & AC current, 2- and 4-wire resistance, frequency and temperature
- Up to 100,000 readings/s
- Similar performance, specifications, and 100% code compatible with the previous version
- 148K memory for data logging
- PathWave BenchVue software not supported

53200 Series RF and universal frequency counters/timers

Accelerate measurement and analysis with histograms, trend charts and statistics

- 350 MHz, with options up to 15 GHz
- Advanced capabilities: histograms, trending, data logging, optional pulse/burst microwave measurements
- Up to 20 ps single-shot time interval measurements
- Continuous, gap-free measurements, with time stamps on signal edges
- Onboard memory for 1 M readings
- 53181A, 53131A, 53132A counter emulation mode

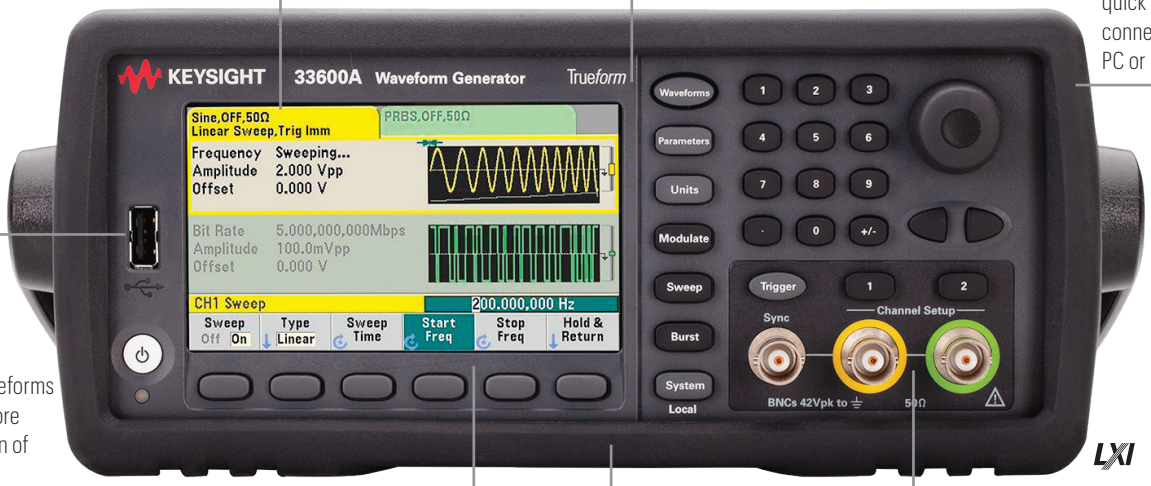
53210A
53220A
53230A

LXI

	53210A	53220A	53230A
Type	1 channel; optional RF channel	2-channel universal; optional RF channel	
Measurements	Frequency, frequency ratio, period, max./min./peak-to-peak input voltage		
		Time interval, rise/fall time, single period, pulse width, duty cycle, phase, totalize	
		NA	Timestamp/modulation domain analysis
Analysis	Math: smoothing (reading moving average), scaling, Δ-change, null		
	Statistics: mean, standard deviation, max., peak-to-peak, count; full color display for trendline, histograms		
		Allan deviation	
Frequency range (optional)	DC to 350 MHz (6 or 15 GHz)		
Frequency resolution	10 digits/s	12 digits/s	
Time interval	NA	100 ps	20 ps
Connectivity	USB, LAN, and GPIB		

True*form* Waveform Generators

Superior signal fidelity with True*form* technology provides the highest resolution, lowest distortion and lowest jitter when compared to DDS function/arbitrary waveform generators all at a comparable price.



33500B and 33600A Series Waveform Generators with True*form* Technology

Key Features

- High-bandwidth pulses with selectable leading and trailing edge times
- Capability to sum any two signals with either the 1- or 2-channel version
- Pseudo-random binary sequences (PRBS) with standard sequence numbers
- True*form* arbitrary waveforms with sequencing
- Dual-channel frequency and amplitude coupling, differential, and combined channels
- Choose among models with the capability you need now and easily upgrade later
- Baseband IQ player available on 2-channel arb models
- Download PathWave BenchVue Basic software for free at www.keysight.com/find/BVBasic

	33509B 33510B	33511B 33512B	33519B 33520B	33521B 33522B	33611A	33612A	33621A	33622A
Number of channels	1/2				1	2	1	2
Frequency	1 µHz to 20 MHz		1 µHz to 30 MHz		1 µHz to 80 MHz		1 µHz to 120 MHz	
Standard waveforms	Sine, square, ramp, pulse, triangle, Gaussian noise, PRBS (pseudorandom binary sequence), DC							
Arbitrary waveforms	Optional	1 MSa/channel 16 M	Optional	1 MSa/channel 16 M	4 MSa/channel standard, 64 MSa/channel optional			
Sampling rate, resolution	160 MSa/s, 16 bits		250 MSa/s, 16 bits		660 MSa/s, 14-bits		1 GSa/s, 14-bits	
Modulation types	AM, FM, PM, FSK, BPSK, PWM, Sum (carrier + modulation)							
Operating modes	Continuous, modulate, frequency sweep, burst							
PRBS	7, 9, 11, 15, 20, 23				3...32 and all integers inbetween			
Sweep	Linear, logarithmic and frequency list							
Burst	Counted or gated							
Timebase	TCXO standard, OCXO optional for higher stability							
Total harmonic distortion and jitter	<0.04% THD and <40 ps jitter				<0.03% THD and < 1 ps jitter			
Options and security	NISPOM and file security, OCXO high-stability timebase							
Connectivity	USB, LAN, GPIB				USB, LAN, GPIB (optional)			

KEYSIGHTCARE

PathWave BenchVue Basic software supported.

EDU33210A Series Function Generators

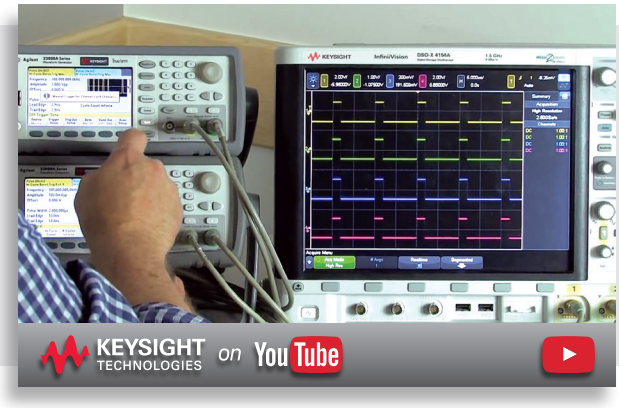
Get all the standard functions and waveforms with the most stable, lowest-distortion function generator in its class. It offers the standard signals and features you expect and features that give you the capabilities and flexibility you need to get your job done quickly, no matter how complex

	EDU33211A	EDU33212A
Maximum frequency	20 MHz	
Number of Channels	1	2
Standard waveforms	Sine, Square, Ramp, Pulse, Triangle, Gaussian Noise, PRBS Pseudorandom Binary Sequence, DC	
Built-in arbitrary waveforms	Cardiac, Exponential Fall, Exponential Rise, Gaussian Pulse, Haversine, Lorentz, D-Lorentz, Negative Ramp, Sinc	
User-defined arbitrary waveforms	Up to 8 Msa per channel; with up to 1 MSA per waveform	
Operating modes	Continuous, Modulate, Frequency Sweep, Gated Burst	
Modulation types	AM, FM, PM, FSK, BPSK, PWM	

Don't know how to phase synchronize multiple waveform generators?

Watch this video to see how easy it is.

Synchronizing Multiple Waveform Generators



PathWave BenchVue Software

Data Acquisition Control & Analysis

Easily control Keysight data acquisition units to configure channels, execute scan lists and log data. Clearly analyze or view measurement data using visualization tools and a broad choice of display options.

PathWave BenchVue software supports 34970A, 34972A, 34980A, DAQ970A, DAQ973A and modules.

http://www.keysight.com/find/benchvueDAQapp

34980A multifunction data acquisition switch/measure unit

Achieve maximum versatility in a minimum footprint

This 8-slot mainframe includes a choice of 21 optional plug-in modules for custom configurations. As a one-instrument solution it is ideal for medium to high-density switch/measure applications in design verification, automated test, and data acquisition applications.

- Optional built-in 6½ digit DMM—make 11 measurements with up to 3,000 readings/s
- High-performance switching—up to 560 2-wire multiplexer channels or 4,092 matrix cross-points in one mainframe
- Built-in USB, LAN, and GPIB

21 modules to choose from

Model	Description	Key specifications
34921A-25A	Multiplexers	Up to 300 V/1 A
34931A-33A	Matrix switches	Up to 128 crosspoints
34934A	High-density matrix switch	512-crosspoint reed matrix
34937A/38A	GP switches	1 A and 5 A
34939A	High-density GP switch	64-channel Form A channels up to 60 W
34941A/42A	RF switches	50 Ω or 75 Ω
34945A	µW switch/attenuation driver	Drive 64 coils
34946A/47A	µW switches	SPDT switch to 26.5 GHz
34950A-34959A	System control	Choose from D/A, DIO, counter and breadboard

DAQ970A / DAQ973A data acquisition systems

This data acquisition (DAQ) system includes a 3-slot mainframe and your choice of 9 plug-in modules. Interface with the DAQ using Keysight PathWave BenchVue DAQ software or a web browser.

- Advanced 6½ digit internal DMM with high accuracy and fast measurement speed
- Measure very low current ranges (1 µA DC and 100 µA AC) and higher resistance range (1000 MΩ)
- Auto-calibration that compensates for internal drifts caused by time and temperature changes
- 3497XA compatible, program and configuration
- LAN and USB for easy PC connectivity (DAQ973A includes additional GPIB)
- Improved module switching speeds and accuracies
- DAQM900A solid state multiplexer and DAQM909A 4-channel digitizer modules
- DAQM909A 4 channel simultaneous sampling digitizer module, up to 800 kSa/sec sample rate

Modules for DAQ970A and DAQ973A Systems

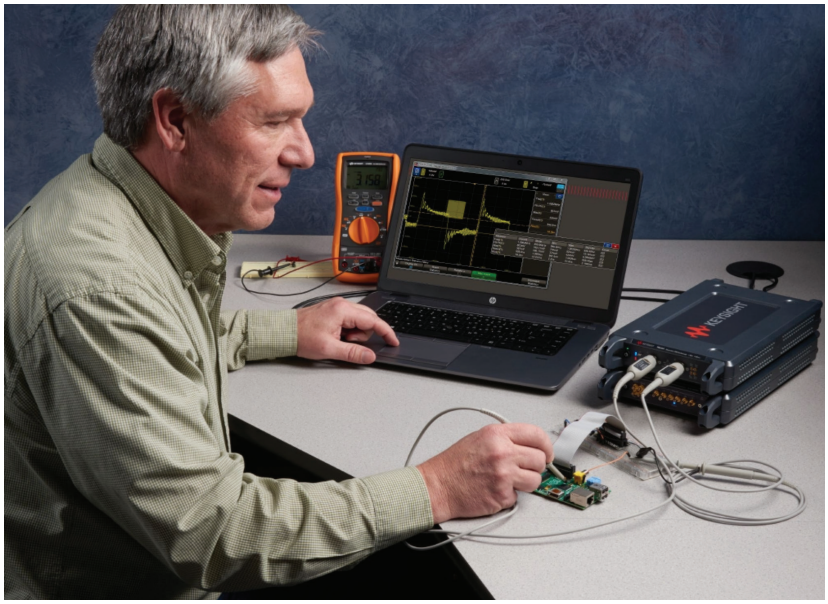
Description	Modules	Key specifications
20-channel solid-state multiplexer	DAQM900A	Up to 450 ch/s
20-channel multiplexer + 2 current channels	DAQM901A	Armature 2/4 wire, 60 ch/s (80 ch/s for DAQ970A), up to 300 V, 1 A
16-channel multiplexer	DAQM902A	Reed 2/4 wire, 250 ch/s, up to 300 V, 50 mA
20-channel actuator/GP switch	DAQM903A	SPDT/Form C, 120 ch/s, up to 300 V, 1 A
4x8 matrix	DAQM904A	Armature 2-wire, 120 ch/s, up to 300 V, 1 A
2 GHz, dual 4-channel, RF mux, 50 Ω	DAQM905A	Common low (not terminated, 60 ch/s up to 42 V, 0.7 A
Multifunction module	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	DAQM908A	Common low (no 4-wire meas.) 60 ch/s (80 ch/s for DAQ970A), up to 300 V, 1 A
4-channel simultaneous sampling digitizer	DAQM909A	Differential inputs, up to 800kSa/s sampling rate, 24-bit resolution

USB Products

Compact form with zero compromise in performance

- Faceless USB instruments controlled via PC
- Same technology and measurements as Keysight benchtop and modular instruments
- High-performance USB 3.0 or Thunderbolt 3 interface

www.keysight.com/find/streamline-series



	Vector Network Analyzer (VNA)	Oscilloscope
Model	P9370A to P9375A, P9370B to P9375B, P9377B, P9382B, P9384B	P9241A, P9242A, P9243A[1]
Bandwidth	300 kHz to 26.5 GHz (P937xA), 9 kHz to 20 GHz (P937xB, P938xB), 100 kHz to 26.5, 44 GHz (P937xB)	200 MHz, 500 MHz and 1 GHz
Key Features	Full 2- or 4-port, Extendable number of ports, Same calibration and metrology as all trusted Keysight VNAs, Automatic fixture removal, Time domain analysis, Enhanced time-domain analysis with TDR (P937xB/8xB only), Scalar/mixer converter measurements	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
PathWave BenchVue supported	No	Yes

1. See page 11 for P924xA supported X-Series oscilloscope software application bundles.

USB modular instruments

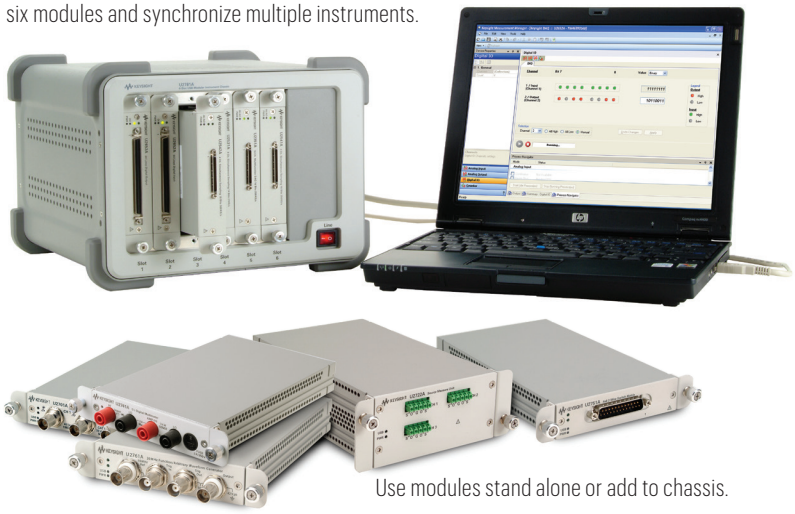
U2701A/02A	100/200 MHz oscilloscope
U2722A/23A	3-channel source measure unit
U2741A	5½ digit digital multimeter
U2761A	20 MHz function generator
U2751A	4x8 switch matrix

USB modular data acquisition

U2300 Series	USB modular multifunction DAQ devices
U2600 Series	USB modular isolated digital I/O devices
U2802A	31-channel thermocouple input module

PathWave BenchVue software supports U2300 and U2600 series modular DAQ instruments.

U2781A USB modular product chassis can host up to six modules and synchronize multiple instruments.



Use modules stand alone or add to chassis.

Converters	
82357B	USB/GPIB interface
E5810B	LAN/GPIB/USB gateway

GPIB cards, cables, and adapters	
82350C	High performance PCIe GPIB interface card
10834A	GPIB to GPIB adapter
10833A/B/C/D/F or G	GPIB cables

To learn more, visit: www.keysight.com/find/connectivity

The Keysight RF Bench and Handheld Instruments

Reach higher in RF — with confidence

Keysight Authorized Distributors now offer a range of RF instruments that deliver tremendous value, balancing excellent performance with affordable pricing. To see the full portfolio of RF products offered by Keysight Authorized Distributors, visit: www.keysight.com/find/rf

1. FieldFox Handheld Analyzers

Quality measurements in the field with rugged handheld instruments.

See pages 25-27

2. Spectrum/signal analyzers

From general purpose spectrum analysis to next-level signal demodulation analysis, we have you covered.

See pages 28-29

3. Audio analyzer and signal generators

Assure quality while minimizing the cost of your general-purpose testing with reliable RF performance and capability.

See pages 30-31

4. Power sensors and meters

Meters and sensors cover numerous frequency and power ranges to accurately measure the power of RF and microwave signals.

See page 32

5. RF & Microwave test accessories

Keysight test accessories complete your test solution and eliminate the weak links in your measurement system.

See page 33

6. Network analyzers

Industry standard of middle-range vector network analyzer, providing best-in-class performance, for passive device test.

See page 34

7. LCR meters

Bring unparalleled accuracy to your lab for component evaluation.

See page 44

KEYSIGHTCARE

PathWave BenchVue Basic software supported.

FieldFox Handheld Analyzers

Quality measurements ranging from RF to mmWave in the field: carry precision with you

Measuring up and earning a spot in your field kit is the driving idea behind Keysight's FieldFox handheld analyzers. Compact and lightweight at 3.34 kg or 7.35 lbs, FieldFox eliminates the need to transport benchtop equipment to the field or carry multiple instruments. FieldFox offers budget flexibility allowing you to choose the capabilities you need today and easily upgrade later.

Precise and portable

- Maximum frequency from 4 to 54 GHz across family of 44 models
- Measurement results agree with those obtained with benchtop analyzers
- Compact form factor measures 29 x 19 x 8 cm (11.5 x 7.4 x 3.2 in) approximately
- Light weight at just 3.34 kg (7.35 lbs) approximately

Rugged and weather resistant

- Dust-free design with no internal fans or vents extends reliability in harsh environments
- Weather-resistant design withstands salty, humid environments
- MIL-PRF-28800F Class 2 compliant

NEW N9912C FieldFox RF Analyzer

Achieve high-performance analysis, for test and troubleshooting of a wide range of high frequency and wireless applications with the C-Series FieldFox providing accurate, comprehensive spectrum and network analysis from 3 kHz, up to 4, 6.5 or 10 GHz.

- Save time in the field with this single, rugged handheld analyzer that can be solely software license-key defined as test needs evolve.
- Choose your analyzer capabilities, including a mix of VNA, CAT, and SA with different frequency coverages. You can also add more capabilities and extend maximum frequency later when needed.

NEW C-Series FieldFox RF Analyzers

Get similar high-performance as A/B models but with a lower starting frequency up to 3 kHz, and for the N9915C increased maximum frequency range up to 10 GHz.

	Combination analyzers				Vector network analyzers		Spectrum analyzers	
Model number		**N9912C**	**N9913/4/5C**				**N9933/4/5C**	
Maximum frequency range		3 kHz to 4, 6.5, 10 GHz	3 kHz to 4, 6.5, 10 GHz				3 kHz to 4, 6.5, 10 GHz	
Model number			**N9913/4/5/6/7/8B**	**N9950/1/2/3B**			**N9933/4/5/6/7/8B**	**N9960/1/2/3B**
Maximum frequency range			30 kHz to 4, 6.5, 9, 14, 18, 26.5 GHz	300 kHz to 32, 44, 50, 54 GHz			9 kHz to 4, 6.5, 9, 14, 18, 26.5 GHz	9 kHz to 32, 44, 50, 54 GHz
Model number	**N9912A**		**N9913/4/5/6/7/8A**	**N9950/1/2A**	**N9923A**	**N9925/6/7/8A**	**N9935/6/7/8A**	**N9960/1/2A**
Maximum frequency range	2 MHz to 4, 6.5 GHz		30 kHz to (5 kHz optional) 4, 6.5, 9, 14, 18, 26.5 GHz	300 kHz to 32, 44, 50 GHz	2 MHz to 4, 6 GHz	2 MHz to 9, 14, 18, 26.5 GHz	100 kHz to 4, 6.5, 9, 14, 18, 26.5 GHz	100 kHz to 32, 44, 50 GHz
Cable and antenna analyzer	Standard	Optional	Standard		Optional		Optional (VSWR & RL)	
Vector network analyzer	Optional (1 port)	Optional			Standard		—	
QuickCal	Optional	—	Optional[1]	—	Optional		—	
Full 2-port S-parameters	—	Optional			Optional		—	
VNA time domain	Optional						—	
Spectrum analyzer	Optional				—		Standard	
Analysis bandwidth	—	10 MHz (standard), (Optional 40, 120 MHz[2])			—		10 MHz (standard), (Optional 40, 120 MHz[2])	
Real-time spectrum analyzer	—	Optional			—		Optional	
Indoor/Outdoor mapping	—	Optional			—		Optional	
Pathwave VSA software support	—	Optional			—		Optional	
Over-the-Air 5G NR	—	Optional	Optional (B- and C-Series only)		—		Optional (B- and C-Series only)	
Over-the-Air LTE FDD	—	Optional			—		Optional	
Over-the-Air LTE TDD	—	Optional			—		Optional	
EMF measurements	—	Optional			—		Optional	
Analog Demodulation	Optional				—		Optional	
Noise figure analyzer	—	—	Optional		—		Optional	
IQ analyzer	Optional	—	Optional		—		Optional	
IQ streaming	Optional	—	Optional		—		Optional	
EMI measurement	Optional				—		Optional	
Interference analyzer	Optional				—		Optional	
Extended range transmission analysis (ERTA)	Optional	—	Optional		—		Optional	
Tracking generator	Optional				—		Optional	
Vector voltmeter	Optional				Optional		—	
Built-in power meter	Optional				—	Optional	Optional	
USB power sensor support	Optional				Optional		Optional	
DC voltage source	—	Optional			—	Optional	Optional	
GPS receiver	Optional				Optional		Optional	
Remote control capability[3]	Optional				Optional		Optional	

1. QuickCal is not available on models N991xB or N995xA/B, or N991xC.
2. Available on B- and C-Series models only (with exception of N9912C that goes up to 40 MHz maximum bandwidth).
3. Supports an iOS device or an Android device to remotely control a FieldFox analyzer.

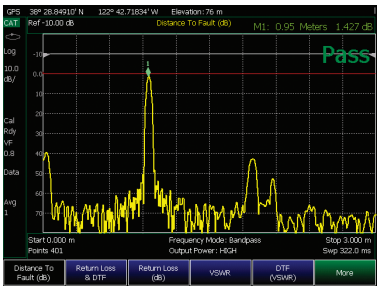
Increased Precision is Here with Wider Bandwidth

Given the new dynamics of wideband, microwave and millimeter wave (mmWave) communications, Keysight has developed the next generation FieldFox Microwave/mmWave Analyzer with 120 MHz of real-time bandwidth and enhanced RF performance to address the ever increasing demands of 5G NR (FR1 and FR2), satellite communications, signal monitoring, and RADAR/EW applications.

The FieldFox base combination model functions as a cable and antenna tester and can be configured to support over 20 key RF, microwave, and mmWave instrument functions including signal analyzer, full 2-port vector network analyzer, real-time spectrum analyzer, over-the-air demodulation, CW signal source, power meter, and many more, in an all-in-one field proof package.

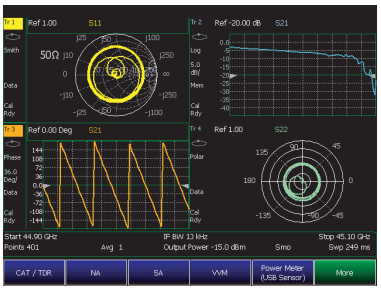
Cable and antenna analyzer

- Distance-to-fault (DTF) and return loss/VSWR
- 1-port cable loss, optional 2-port insertion loss, and time-domain reflectometry (TDR)
- Optional integrated QuickCal for simple field measurements – no calibration kit required



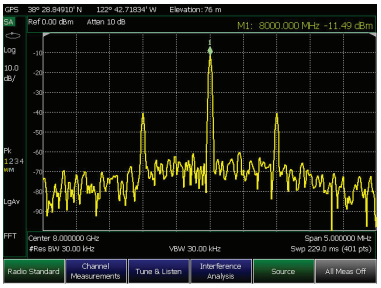
Vector network analyzer

- All four S-parameters, magnitude and phase
- Time-domain analysis, mixed-mode reflection S-parameters
- CalReady, QuickCal, full 2-port cal, TRL, waveguide cal, ECal support, and a Guided Calibration Wizard



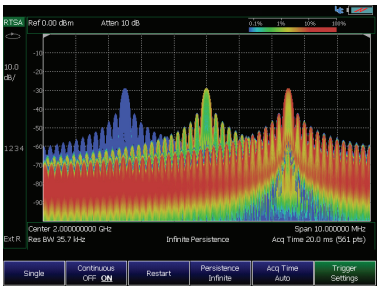
Spectrum analyzer

- Unprecedented amplitude accuracy of ± 0.2 dB with InstAlign — no warm-up required
- Tracking generator, independent source, and preamplifier covering the full frequency range
- Channel power (CHP), occupied bandwidth (OBW), interference analysis, analog demodulation



Real-time spectrum analyzer (RTSA)

- Capture signals as short as 5.52 µs with 100% POI with a maximum 120 MHz real-time bandwidth and full amplitude accuracy
- Cover signal frequency up to 54 GHz



Enhancement continues...

Keysight continues to invest in FieldFox to make it more versatile helping customers to address the increasing demands due to rapidly evolving technologies. The latest enhancements include:

- N9912C, the most flexible FieldFox analyzer, offers truly software-defined combination of options including analyzer types and frequency coverages
- N991xC/3xC C-Series FieldFox analyzers with the frequency coverage from 3 kHz up to 10 GHz
- Expanding the FieldFox application library such as adding optional Time Difference of Arrival (TDoA)

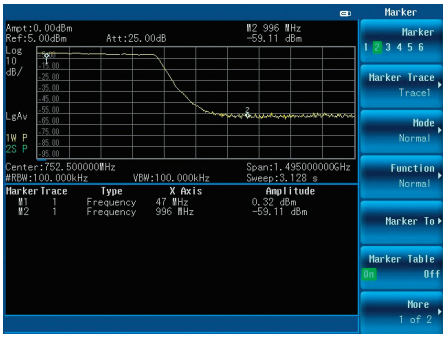
Basic Spectrum Analyzers (BSA) Series

Proven reliability on your bench

For a low-cost spectrum analyzer, targeting general purpose and consumer electronics test, the BSA-C family has grown and now includes the N9321C (4 GHz), N9322C (7 GHz), N9323C (13 GHz) and N9324C (20 GHz). The BSA-C modules provide a full frequency range from RF to µW with one code set.

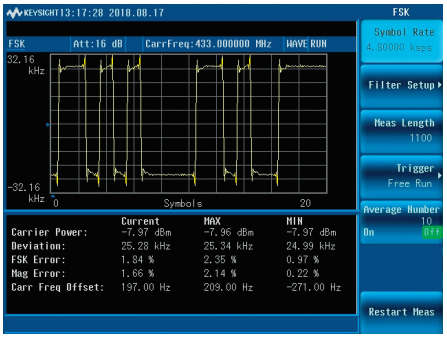
N9324C

Key specifications	N9321C	N9322C	N9323C	N9324C
Frequency range	9 kHz – 4 GHz	9 kHz – 7 GHz	1 MHz – 13.6 GHz	1 MHz – 20 GHz
Reference aging rate	± 1 ppm, ± 0.1 ppm (w/Opt. PFR)			
Amplitude accuracy	± 0.6 dB		± 0.7 dB	
Displayed average noise level, 1 GHz	-149 dBm		-140 dBm	
Resolution bandwidth	10 Hz – 3 MHz			
Third-Order Intercept (TOI)	+15 dBm			
Standard attenuator	50 dB, in 1 dB steps		50 dB, in 5 dB steps	
Phase noise, 1 MHz offset	-121 dBc/Hz		-119 dBc/Hz	



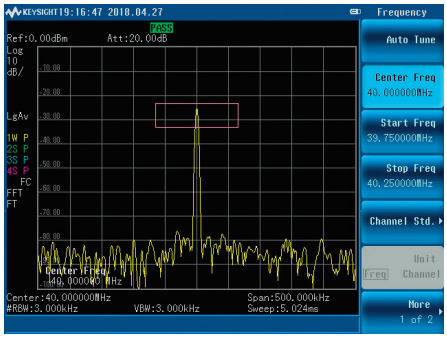
Tracking generator option (N9321C-TG4, N9322/3/4C-TG7)

This option provides a signal source with an RF output that follows the tuning of the spectrum analyzer and increases test coverage for component-level characterization, such as insertion loss, amplifier gain, and frequency response.



ASK/FSK demodulation analysis (DMA) option

Make one-button ASK/FSK signals measurements in low power, low data rate RF, and IoT device applications for fast signal characterizations, including transmission power, FSK deviation, FSK error, and carrier frequency offset.



Window limit feature

Quickly determine the pass/fail of measurement results for frequency and power test criteria using the automatic signal peak marker. This feature will simultaneously analyze the upper and lower limits of signal frequency and power and generate an audio alert for signals outside the passing margins.

RF and microwave accessories kit

An assortment of antenna, filters, attenuators, cables, adapters, and close-field probes provide a complete solution when using Keysight handheld and benchtop solutions.

www.keysight.com/find/n9311x

N9311X-100
Near Field Probes

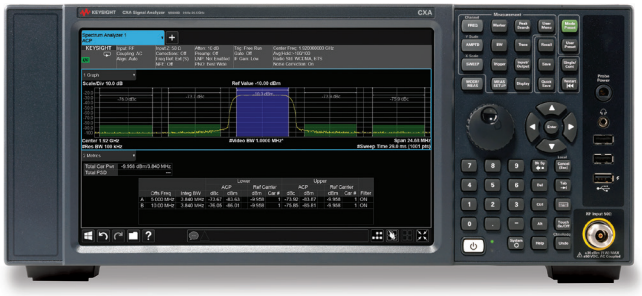
N9000B CXA X-Series signal analyzer

(9 kHz to 3.0, 7.5, 13.6 or 26.5 GHz)

Master the essentials with the CXA

Whether you're 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 let you perform essential measurements of frequency, power, spurious and distortion without overspending your budget.

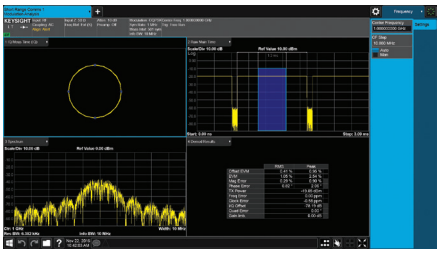
- Characterize signals and devices with general-purpose spectrum analysis and one-button PowerSuite measurements
- -163 dBm DANL @ 1 GHz (preamp on)
- Phase Noise (10 kHz offset) -110 dBc/Hz at 1 GHz
- 25 MHz analysis bandwidth
- Up to 6 GHz built-in tracking generator for stimulus/response measurements
- USB 2.0, LAN, GPIB and LXI Class C compliance
- Use X-Series measurement applications for signal demodulation analysis

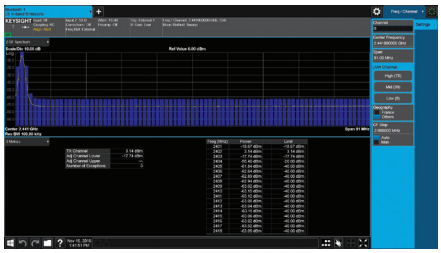


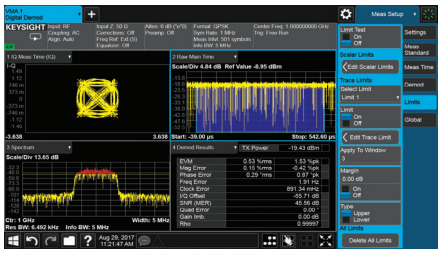
Enable deeper insight into signal quality– Equip your CXA signal analyzer with X-Series measurement applications

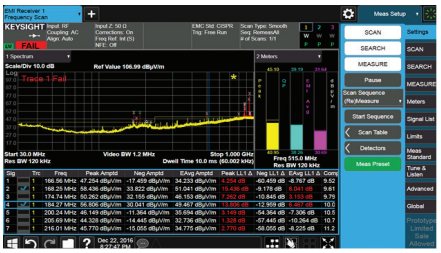
X-Series measurement applications for CXA

These apps provide fast, one-button RF conformance measurements to help you design, evaluate, and manufacture devices and equipment.









Featured apps	Description
General purpose	Analog demodulation, phase noise, noise figure, pulse analysis, vector modulation analyzer (VMA), EMI emission measurements
Cellular communications	W-CDMA/HSPA+, LTE/LTE-Advanced FDD, NB-IoT and eMTC, LTE/LTE-Advanced TDD, GSM/EDGE/EVO
Wireless connectivity	WLAN 802.11, *Bluetooth*®, *Bluetooth 5*, ZigBee/Z-Wave

Complete offering available at www.keysight.com/find/x-series_apps

Need an ESA spectrum analyzer replacement?

Migrate from the ESA to the CXA on Keysight's website: www.keysight.com/find/CXA

X-Series Signal Generators

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

CXG X-Series RF vector signal generator

Cost-effective RF vector signal generation

With a flexible, dependable vector signal generator, you're ready for your next measurement challenge. The Keysight N5166B CXG RF vector signal generator supports essential receiver and general-purpose tests. Produce the signals you need from simple to complex, or clean to dirty. You may also playback Signal Studio waveforms for functional verification of your devices.

Accelerate product testing on multiple levels: design/engineering verification, design enhancement, throughput, cost reduction, and beyond. The CXG signal generator offers you with dependable performance at the right price.

MXG X-Series RF analog signal generator

Reach better performance

The pure and precise MXG X-Series signal generators are fine-tuned to be your "golden transmitter" in R&D. Whether you're pushing for a linear RF chain or an optimized link budget, MXG models deliver what you need: phase noise, output power, and more.

- Test radar receiver sensitivity or characterize ADCs
- Characterize nonlinear PA behavior

EXG X-Series RF analog signal generator

Achieve faster throughput

The cost-effective EXG X-Series signal generators are optimized for manufacturing test. Analog models provide the signals you need for basic parametric testing of components, functional verification of receivers, and virtually anything in between.

- Verify receiver performance by simulating complex analog modulation scena
- Maximize throughput with < 800 µs of frequency and power switching

To reduce cost of ownership, the X-Series signal generators are designed for high reliability and fast, easy calibration, service, and repair.

	MXG: N5181B RF analog	EXG: N5171B RF analog	CXG: N5166B RF vector
Frequency range	9 kHz to 3 or 6 GHz	9 kHz to 1, 3 or 6 GHz	9 kHz to 3 or 6 GHz
Phase noise (20 kHz offset)	–146 dBc/Hz at 1 GHz	–122 dBc/Hz at 1 GHz	–119 dBc/Hz typical
Spurious (non-harmonic)	–96 dBc at 1 GHz	–72 dBc at 1 GHz	–72 dBc at 1 GHz
Output power (1 GHz)	+26 dBm	+26 dBm	+18 dBm
Switching speed	≤ 800 µs	≤ 800 µs	5 ms
Internal IQ modulation			60 or 120 MHz
Features	LF function generator, Step/list sweep USB power meter, PathWave BenchVue software supported		Narrow pulse modulation Custom digital modulation
	AM, FM, PM, Pulse, Pulse train		

KEYSIGHTCARE

PathWave BenchVue Basic software supported.

U8903B performance audio analyzer

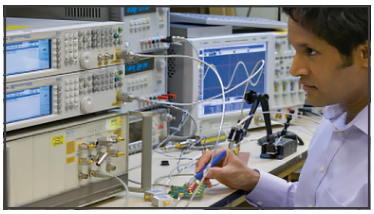
Measure and quantify analog and digital audio signals with a single box

- Combined functionality of a distortion meter, SINAD meter, frequency counter, AC voltmeter, DC voltmeter and FFT analyzer with a low-distortion audio source
- Configure 2 to 8 analog analyzer channels
- Two-in-one digital card covers AES3, SPDIF and DSI formats
- Measure speech quality with PESQ and POLQA options
- Measure audio quality directly from *Bluetooth* signal

KEYSIGHTCARE

Knowledge Center "How To" Videos

Within the Knowledge Center, KeysightCare provides "How to" instrument and software videos with answers and demonstrations to solve instrument setup and feature usability questions. Here are just a few examples.



Signal Sources (4 courses)

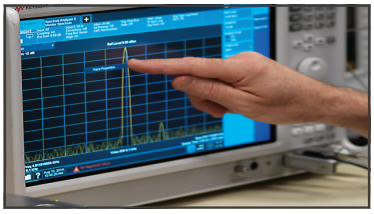
Instrument videos explore common measurement issues, their effect on measurement results, and how to resolve them.

https://technicalsupport.keysight.com/series/signal-sources-measurement-issues

Software

Learn about Pathwave, Signal Studio, 86900 VSA, X-Apps, and other Keysight software applications

https://technicalsupport.keysight.com/page/software



Spectrum Analyzers (5 courses)

Instrument videos explore common measurement issues, their effect on measurement results, and how to resolve them.

https://technicalsupport.keysight.com/series/spectrum-analyzer-issues

Vector Network Analyzers (5 courses)

Instrument videos explore common measurement issues, their effect on measurement results, and how to resolve them.

https://technicalsupport.keysight.com/series/vna-issues

USB and LAN Power Sensors

USB power sensors plug directly into your PC or enabled Keysight instrument and give you the capability to measure power in a compact and portable form factor. All models feature internal zeroing to eliminate external calibration. Setup is fast and easy; just connect and start measuring immediately with PathWave BenchVue software.

U/L2050/60 X-Series USB/LAN peak and average wide dynamic range power sensors

- 10 MHz to 6/18/33/40/50/54/67 GHz; wide power range, from –70 to +0/26 dBm
- Extremely fast measurement speed of 50,000 readings per second
- LAN/power over Ethernet (PoE) based sensor with thermal vacuum option (U2049XA-TVA, or L2065/66/67XT LAN power sensor)

U2020 X-Series USB peak and average power sensors

- 50 MHz to 18/40/50 GHz; –45 to +20 dBm power range
- Fast pulse analysis with 30 MHz video bandwidth
- Greater than 25,000 readings per second

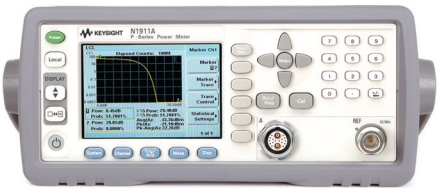
U8480 Series USB thermocouple power sensors

- Wide frequency range DC/10 MHz to 18/33/50/67/120 GHz; –35 to +20 dBm power range
- Fastest available thermal power sensor
- Reference level accuracy with linearity less than 0.8 percent

U2000 Series USB average power sensors

- 9 kHz to 6/18/24/26 GHz
- –60 to +20 dBm or -30 to +44 dBm power range

Power Meters



P-Series N1911/12A (single-channel/dual-channel)

- Key measurements: peak, average, peak-to-average ratio, rise time, fall time, and pulse width
- 30 MHz video bandwidth; 13 ns rise/fall time
- Single-shot real-time capture at 100 Msamples per second
- 22 predefined signal formats, including LTE
- USB, LAN and GPIB standard; LXI Core compliant

EPM Series N1913/14B (single-channel/dual-channel)

- Color LCD screen with Keysight color code front panel
- Compatible with all legacy average (except thermistor) and all USB power sensors (including USB peak power sensors with limited to average power measurement)
- Multi-channel power measurement up to 4 (2 legacy + 2 USB power sensors)
- USB, LAN, and GPIB standard; LXI Core compliant

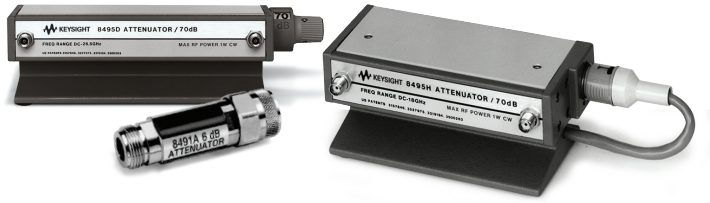
Use these compatible sensors with your Keysight power meters

	Model number	N8480 Series sensors	P-Series sensors	E-Series E9320 sensors	E-Series E9300 sensors	E-Series CW sensors	8480D Series sensors	E/V/W8486A waveguide sensors
P-Series	N1912A	–35 to +20 dBm –5 to +44 dBm	–35 to +20 dBm	–65 to +20 dBm	–60 to +20 dBm –30 to +44 dBm	–70 to +20 dBm	–70 to –20 dBm	–70 to –20 dBm –35 to +20 dBm
	N1911A							
EPM Series	N1914B		N/A	N/A				
	N1913B							
	E4417A			–65 to +20 dBm				
	E4416A							

Eliminate the Weak Links in Your Measurement System

RF and microwave manual and programmable step attenuators

- Fast, precise signal-level control up to 50 GHz
- High reliability and exceptional repeatability reduces downtime
- Attenuation range of 121 dB in 1 dB steps



Fixed attenuators

- Precise attenuation, flat frequency response, and low SWR over broad frequency range up to 67 GHz

Model	Frequency range (DC to)	Type	Attenuation
8494G	4 GHz	Programmable	0 to 11 dB, 1 dB steps
8491A	12.4 GHz	Fixed	3, 6, 10, 20, 30, 40, 50, 60 dB
8495B	18 GHz	Manual	0 to 70 dB, 10 dB steps
8495D	26.5 GHz	Manual	0 to 110 dB, 10 dB steps

Model	Frequency range (DC to)	Type	Attenuation
84904L	40 GHz	Programmable	0 to 11 dB, 1 dB steps
8490G	67 GHz	Fixed	3, 6, 10, 20, 30, 40 dB
J7204/5 A/B	6/18 GHz	One box 4/5 channels	0 to 121 dB, 1 dB steps

J7201A/B/C attenuation control units, DC to 6/18/26.5 GHz, 0 to 101/121 dB, 1 dB steps

- Attenuation sweep function defines the sweep time (- 50 ms to 10 s; 50 ms incremental), number of cycles and step size
- Relative attenuation step function
- Attenuation steps - 0 dB to 101/121 dB, 101/121 dB to 0 dB for the preset number of cycles (1 to 1000)
- 0.03 dB insertion loss repeatability
- Includes 1 year of KeysightCare Assured

KEYSIGHTCARE

U9422A/B/C SPDT, U9424A/B/C SP4T, and U9428A/B/C SP8T FET Solid State Switches, 300 kHz to 26.5/50/54 GHz

- Broad operating frequency range from 300 kHz to 26.5/50/54 GHz
- Prevent damage to sensitive components with low video leakage
- Flexible USB with multiport configuration to PXIe and USB VNA, or solder options
- Includes 1 year of KeysightCare Assured

KEYSIGHTCARE

U7104/6E/N/F, U7108/10A/B/C

- Broad selection of configuration SP4T, SP6T, SP8T and SP10T with operating frequency from DC to 9/20/26.5/50/54/67 GHz
- Superior isolation of more than 65 dB to 67 GHz and low VSWR
- Extend the number of test ports and achieve lower cost-per-port test without compromising performance for multi-DUT or multiport device measurement

E5061B ENA Series vector network analyzer

- Choose 50 Ω or 75 Ω inputs
- Hardware options 3L3, 3L4/3L5 for applications, including power integrity
- Down to 5 Hz frequency
- Combine network and impedance analysis (+Option 005)
- PathWave BenchVue software supported

E5063A ENA vector network analyzer

- Many frequency options, upgradable at any time
- Option 011 for PCB manufacturing test
- Six languages supported via softkey
- Help in English/Simplified Chinese
- All Keysight calibration kits supported, including ECal modules
- PathWave BenchVue software supported

P937xA/B and P938xB vector network analyzers

- Most compact VNA for easy sharing between test locations
- Wide choice of frequency ranges up to 44 GHz
- Ability to extend the number of test ports (max 8-port)
- Measurements, automated code capabilities, calibration metrology and intuitive GUI are the same as trusted Keysight VNAs
- Support of Electronic Calibration (ECal) modules for easy and quick calibration

	E5061B	E5063A	P937xA	P937xB/P938xB
Form factor	Benchtop	Benchtop	Compact	Compact
Test port	2-port 50 Ω or 75 Ω	2-port 50 Ω	2-port 50 Ω	2-port 50 Ω (P937xB), 4-port 50 Ω (P938xB)
Connector type	Type-N	Type-N	3.5 mm	3.5 mm (up to 26.5 GHz), 2.4 mm (44 GHz)
Minimum frequency	5 Hz (Option 3L3/3L4/3L5) 100 kHz (Option 1xx/2xx)	100 kHz (Settable to 50 kHz)	300 kHz	9 kHz (up to 20 GHz models), 100 kHz (above 20 GHz models)
Maximum frequency	0.5, 1.5, 3 GHz	0.5, 1.5, 3, 4.5, 6.5, 8.5, 14, 18 GHz	4.5, 6.5, 9, 14, 20, 26.5 GHz	4.5, 6.5, 9, 14, 20, 26.5, 44 GHz (P937xB) 9, 20 GHz (P938xB)
Dynamic range	120 dB (spec.)	117 dB (spec.), 122 dB (typ.)	115 dB (spec.), 122 dB (typ.)	115 dB (spec.), 122 dB (typ)
Cycle time (2-port measurements, 201 points, narrowband)	21 msec	19 msec	23 msec	15 msec

ECal Modules

Achieve faster calibration with zero wait time using the Keysight ECal modules with three series offering a choice of frequency and connections.

8509xD Series electronic calibration modules (ECal)

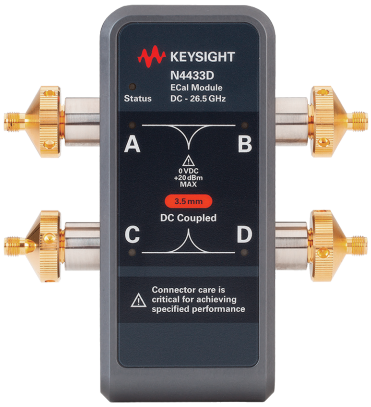
- 2-ports, frequency coverage from DC/300 kHz to 6/7.5/9 GHz frequency range.
- Connector choices of type Type-N (50 ohm), Type-N (75 Ohm), 3.5 mm, 7-16, 4.3-10, Type F (75 ohm) with mixed connector option available for one of the port.
- USB interface for direct control with PNA, ENA, PXIe and Streamline series of network analyzers.
- Precision, accurate transfer standards of calibration
- Supported by trusted Keysight vector network analyzer

N7550 Series electronic calibration modules (ECal)

- Frequency coverage from DC to 4, 6.5, 9, 14, 18, 26.5 GHz
- Supports Type-N and 3.5 mm connectors
- Smaller, lighter 2-port ECal module
- Zero wait time for faster calibration
- Convenience of ECal with the performance of an economy mechanical kit

N443xD Series electronic calibration modules (ECal)

- 4-ports, frequency coverage from DC to 13.5, 18, 26.5 GHz
- Connector choices of Type-N, 3.5 mm, 7-16, 4.3-10
- Efficient single calibration standard
- Precision, accurate transfer standards
- Supported by Keysight vector network analyzers



KEYSIGHTCARE

PathWave BenchVue Basic software supported.

Power Supply Collection

Low-noise, accuracy and speed

Our broad selection of both bench-friendly and system-ready instruments meet your test challenges from basic to your most complex.

DC bench power supplies

E3600 Series	E36100 Series	E36300 Series	E36200 Series	E36150 Series
				
• 15 models • 1 or 2 outputs • 30 to 200 W • A model for every application	• 5 models • 1 output • 30 to 40 W • Testing low power devices	• 3 models • 3 outputs • 80 or 160 W • Power and characterizing devices	• 4 autoranging models • 1 or 2 outputs • 200 or 400 W • Mid-power characterization	• 2 autoranging models • 1 output • 800 W • High power and advanced features

DC system power supplies

N6700 Modular Series	N5700 Series	N8700 Series	N8900 Series
			
• 35+ modules • 1 to 4 outputs per mainframe • 50 to 500 W per output • Modular flexible to expand and change with your testing needs over time	• 24 models • 1 output • 750 or 1500 W • Meets your test needs up to 1500 W in a compact 1 U size	• 21 models • 1 output • 3300 or 5200 W • Meets your high-power test needs in a compact size	• 28 models • 1 output • 5000, 10000, or 15000 W • Flexibility to expand up to 100 kW to meet your highest power test needs

DC power analyzer and sources

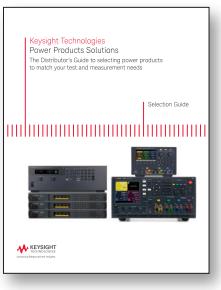
N6705 DC power analyzer	B2961/62B low-noise source	B2900B/BL source measure units	PZ2100 Series source measure units
			
• 35+ modules • 1 to 4 outputs • 50 to 500 W per output • Characterize your devices in real-time without a PC	• 2 models • 1 or 2 output • 6.5 digit resolution • Component testing, low noise voltage/current source 10 µVrms	• 6 models • 1 or 2 output • 5.5 or 6.5 digit resolution • Component I-V measurements without PC programming	• 5 modules, flexible for expanding and changing with test needs • 1 to 20 outputs in a 1U full rack space • Lower cost/ch and smaller footprint

Power Supplies

Keysight offers more than 300 power products to meet your specific needs

The Keysight Power Products Selection Guide helps you choose your instrument by the number of outputs, output power characteristics, packaging, special features and application specific solutions.

www.keysight.com/find/PowerBrochureDisty



KEYSIGHTCARE

PathWave BenchVue Basic software supported.

E36100 Series DC power supplies

Designs change—and so should your DC power supply. Meet the E36100, engineered to power your designs safely during manual tests or automated sequences.

- Choose the best model for your needs: five models offer up to 5 A or 100 V
- Save space on your bench, 2U ¼-form factor
- Connect for computer control with standard LAN (LXI Core) and USB connectivity
- Easily view the high-contrast OLED display from anywhere on your bench, even from a sharp angle

Model	Voltage	Current	Power
E36102B	6 V	5 A	30 W
E36103B	20 V	2 A	40 W
E36104B	35 V	1 A	35 W
E36105B	60 V	0.6 A	36 W
E36106B	100 V	0.4 A	40 W

E3600 Series DC power supplies

Reliable power, repeatable results

For environments that need to watch test costs as closely as they watch test results.

- Extremely low output noise—as low as 1 mV_{pp}/0.2 mVrms
- Tight 0.01% load and line regulation for steady output power levels
- Fast load transient response time (<50 µs)
- 15 models from 30 to 200 W output power, 2-3U high
- Convenient front-panel, GPIB, and RS-232 programming (except on E3620A and E3630A)

E3640A

Model	Output	Range	Voltage	Current	Power
E3632A	1	2	15 V 30 V	7 A 4 A	120 W
E3633A	1	2	8 V 20 V	20 A 10 A	200 W
E3634A	1	2	25 V 50 V	7 A 4 A	200 W
E3620A	2	1	25 V	1 A	50 W
E3630A	3	1	6 V 20 V -20 V	2.5 A 0.5 A 0.5 A	35 W
E3640A	1	2	8 V 20 V	3 A 1.5 A	30 W
E3641A	1	2	35 V 60 V	0.8 A 0.5 A	30 W
E3642A	1	2	8 V 20 V	5 A 2.5 A	50 W
E3643A	1	2	35 V 60 V	1.4 A 0.8 A	50 W
E3644A	1	2	8 V 20 V	8 A 4 A	80 W
E3645A	1	2	35 V 60 V	2.2 A 1.3 A	80 W
E3646A	2	2	8 V 20 V	3 A 1.5 A	60 W
E3647A	2	2	35 V 60 V	0.8 A 0.5 A	60 W
E3648A	2	2	8 V 20 V	5 A 2.5 A	100 W
E3649A	2	2	35 V 60 V	1.4 A 0.8 A	100 W

E36300 Series DC power supplies

With low output ripple/noise and accurate voltage/current measurement, you can test with confidence—and power your next insight.

- Triple output power supply with independent or tracking outputs
- Low output ripple and noise: < 2 mVpp/350 µVrms
- Data logging plus output sequencing and coupling
- Modern I/O (USB, LAN and optional GPIB)

E36200 Series DC power supplies

Autoranging architecture provides more current at all voltage setting. More usable power means that these 200 and 400 W supplies can test your power hungry devices.

- Single or dual outputs. Dual outputs can be internally combined into a single output with 400 W
- Low output ripple and noise: < 350 µVrms
- Data logging plus output sequencing and coupling
- Modern I/O (USB, LAN and optional GPIB)

E36150 Series DC high-power supply

Built for performance with advanced characterization capabilities to meet your high-power test requirements. The E36150A Series offers great performance at an affordable price.

- Two autoranging modes, 30V/80A and 60V/40A
- Detachable high current front binding post for safe/easy wire connection
- Peak power handling
- Software options: PathWave PS App with BenchVue Test Flow, and BV9200/1B Pathwave BenchVue Advance Power Control and Analysis
- Scope view (option), and AWG (option)
- NEW Automotive option with ISO standard power transient presets and simulations

Model	Power	Outputs	DC output Rating (0 to 40 °C)	
E36300 Series				
E36311A	80 W	1	0 to 6 V	0 to 5 A
		2	0 to +25 V	0 to 1 A
		3	0 to –25 V	
E36312A	80 W	1	0 to 6 V	0 to 5 A
		2	0 to 25 V	0 to 1 A
		3		
E36313A	160 W	1	0 to 6 V	0 to 10 A
		2	0 to 25 V	0 to 2 A
		3		
E36200 Series				
E36231A	200 W	1	0 to 30 V	0 to 20 A
E36232A			0 to 60 V	0 to 10 A
E36233A	400 W	1	0 to 30 V	0 to 20 A
		2		
E36234A	400 W	1	0 to 60 V	0 to 10 A
		2		
E36150 Series				
E36154A	800 W	1	0 to 30 V	0 to 80 A
E36155A			0 to 60 V	0 to 40 A

N6700 low-profile modular power system

Accelerate ATE with small, flexible, fast DC power

- Small size: up to 4 power supply outputs and/or electronic load inputs in 1U of rack space
- Streamline tasks with built-in measurements, output sequencing, flexible triggering and digital I/O; LIST mode for user-defined arbitrary waveforms (module dependent)
- Fast output response and command processing (<1 ms)
- Perform remote programming with USB, LAN, and GPIB

Mainframes

Model	Description
N6700C	Low-profile MPS (400 W)
N6701C	Low-profile MPS (600 W)
N6702C	Low-profile MPS (1200 W)

LXI

Modules

Model	Type	Maximum power	Voltage	Current	Number of slots used	Number of ranges	Ripple & noise (Vp-p)	Programming accuracy	Up or down programming time with load (typical)
N6731B	Basic	50 W	0-5 V	0-10 A	1	1	10 mV	0.1% + 19 mV	20 ms
N6732B		50 W	0-8 V	0-6.25 A			12 mV	0.1% + 19 mV	
N6733B		50 W	0-20 V	0-2.5 A			14 mV	0.1% + 20 mV	
N6734B		50 W	0-35 V	0-1.5 A			15 mV	0.1% + 35 mV	
N6735B		50 W	0-60 V	0-0.8 A			25 mV	0.1% + 60 mV	
N6736B		50 W	0-100 V	0-0.5 A			30 mV	0.1% + 100 mV	
N6741B		100 W	0-5 V	0-20 A			20 mV	0.1% + 19 mV	
N6742B		100 W	0-8 V	0-12.5 A			12 mV	0.1% + 19 mV	
N6743B		100 W	0-20 V	0-5 A			14 mV	0.1% + 20 mV	
N6744B		100 W	0-35 V	0-3 A			15 mV	0.1% + 35 mV	
N6745B		100 W	0-60 V	0-1.6 A			25 mV	0.1% + 60 mV	
N6746B		100 W	0-100 V	0-1 A			30 mV	0.1% + 100 mV	
N6773A		300 W	0-20 V	0-15 A			20 mV	0.1% + 20 mV	
N6774A		300 W	0-35 V	0-8.5 A			22 mV	0.1% + 35 mV	
N6775A		300 W	0-60 V	0-5 A			35 mV	0.1% + 60 mV	
N6776A		300 W	0-100 V	0-3 A			45 mV	0.1% + 100 mV	
N6777A		300 W	0-150 V	0-2 A			68 mV	0.1% + 150 mV	
N6751A	Performance	50 W	0-50 V	0-5 A	1	Autoranging	4.5 mV	0.06% + 19 mV	0.2 ms
N6752A		100 W	0-50 V	0-10 A	1		4.5 mV	0.06% + 19 mV	0.2 ms
N6753A		300 W	0-20 V	0-50 A	2		5 mV	0.06% + 10 mV	0.4 ms
N6754A		300 W	0-60 V	0-20 A	2		6 mV	0.06% + 25 mV	0.35 ms
N6755A		500 W	0-20 V	0-50 A	2		5 mV	0.06% + 10 mV	0.5 ms
N6756A		500 W	0-60 V	0-17 A	2		6 mV	0.06% + 25 mV	0.7 ms
N6761A	Precision	50 W	0-50 V	0-1.5 A	1	Autoranging	4.5 mV	0.016% + 6 mV	0.6 ms
N6762A		100 W	0-50 V	0-3 A	1		4.5 mV	0.016% + 6 mV	0.6 ms
N6763A		300 W	0-20 V	0-50 A	2		5 mV	0.03% + 5 mV	0.4 ms
N6764A		300 W	0-60 V	0-20 A	2		6 mV	0.03% + 12 mV	0.35 ms
N6765A		500 W	0-20 V	0-50 A	2		5 mV	0.03% + 5 mV	0.5 ms
N6766A		500 W	0-60 V	0-17 A	2		6 mv	0.03% + 12 mV	0.7 ms
N6781A	Source Measure Unit (SMU)	20 W	0-20 V	0±3 A	1	Multiple	12 mV	0.025% + 200 µV	15-300 µs
N6782A		20 W	0-20 V	0±3 A	1		12 mV	0.025% + 200 µV	
N6784A		20 W	0±20 V	0±3 A	1		12 mV	0.025% + 200 µV	
N6785A		80 W	0-20 V	0±8 A	2		15 mV	0.025% + 1.8 mV	12-300 µs
N6786A		80 W	0-20 V	0±8 A	2		15 mV	0.025% + 1.8 mV	
N6791A	DC Electronic Load	100 W	0-60 V	0-20 A	1	Multiple	N/A	0.03% + 7.2 mV	N/A
N6792A		200 W	0-60 V	0-40 A	2		N/A	0.03% + 7.2 mV	N/A

N5700 and N8700 Series DC system power supplies

Basic high-power, single output power supplies

- 45 affordable models in compact 1U (750 and 1500 W) and 2U (3.3 and 5 kW) packages
- Built-in measurements and advanced programming features simplify system design
- Perform remote programming with USB, LAN, and GPIB

750 W models	
N5741A	0-6 V, 0-100 A, 600 W
N5742A	0-8 V, 0-90 A, 720 W
N5743A	0-12.5 V, 0-60 A, 750 W
N5744A	0-20 V, 0-38 A, 760 W
N5745A	0-30 V, 0-25 A, 760 W
N5746A	0-40 V, 0-19 A, 760 W
N5747A	0-60 V, 0-12.5 A, 750 W
N5748A	0-80 V, 0-9.5 A, 760 W
N5749A	0-100 V, 0-7.5 A, 750 W
N5750A	0-150 V, 0-5 A, 750 W
N5751A	0-300 V, 0-2.5 A, 750 W
N5752A	0-600 V, 0-1.3 A, 780 W

1500 W models	
N5761A	0-6 V, 0-180 A, 1080 W
N5762A	0-8 V, 0-165 A, 1320 W
N5763A	0-12.5 V, 0-120 A, 1500 W
N5764A	0-20 V, 0-76 A, 1520 W
N5765A	0-30 V, 0-50 A, 1500 W
N5766A	0-40 V, 0-38 A, 1520 W
N5767A	0-60 V, 0-25 A, 1500 W
N5768A	0-80 V, 0-19 A, 1520 W
N5769A	0-100 V, 0-15 A, 1500 W
N5770A	0-150 V, 0-10 A, 1500 W
N5771A	0-300 V, 0-5 A, 1500 W
N5772A	0-600 V, 0-2.6 A, 1560 W

3.3 kW models	
N8731A	0-8 V, 0-400 A, 3200 W
N8732A	0-10 V, 0-330 A, 3300 W
N8733A	0-15 V, 0-220 A, 3300 W
N8734A	0-20 V, 0-165 A, 3300 W
N8735A	0-30 V, 0-110 A, 3300 W
N8736A	0-40 V, 0-85 A, 3300 W
N8737A	0-60 V, 0-55 A, 3300 W
N8738A	0-80 V, 0-42 A, 3300 W
N8739A	0-100 V, 0-33 A, 3300 W
N8740A	0-150 V, 0-22 A, 3300 W
N8741A	0-300 V, 0-11 A, 3300 W
N8742A	0-600 V, 0-5.5 A, 3300 W

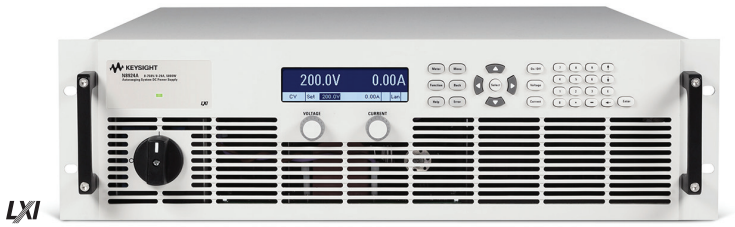
5 kW models	
N8754A	0-20 V, 0-250 A, 5000 W
N8755A	0-30 V, 0-170 A, 5100 W
N8756A	0-40 V, 0-125 A, 5000 W
N8757A	0-60 V, 0-85 A, 5100 W
N8758A	0-80 V, 0-65 A, 5200 W
N8759A	0-100 V, 0-50 A, 5000 W
N8760A	0-150 V, 0-34 A, 5100 W
N8761A	0-300 V, 0-17 A, 5100 W
N8762A	0-600 V, 0-8.5 A, 5100 W

Non-GPIB option not available in Korea.

N8900 Series autoranging high-power system supplies

Do the job of multiple power supplies with a single high-power autoranging DC power supply

- 5, 10 and 15 kW single output, autoranging programmable DC power for Automated Test Equipment (ATE) applications
- 28 models that offer up to 1500 V or 510 A
- Easily parallel to create "one" power supply with up to 100 kW of power
- Director / follower (group) operation, 10 store / recall states, Web server



N8924A

DC output ratings

5 kW models (1 phase line-to line)		
N8920A	80 V, 170 A	208 VAC (187 – 229 VAC)
N8921A	200V, 70 A	
N8923A	500V, 30 A	
N8924A	750 V, 20 A	
N8940A	80 V, 170 A	400 VAC (360 – 440 VAC)
N8941A	200V, 70 A	
N8943A	500V, 30 A	
N8944A	750 V, 20 A	

10 kW models (L1, L2, L3, PE)		
N8925A	80 V, 340 A	208 VAC (187 – 229 VAC)
N8926A	200V, 140 A	
N8928A	500V, 60 A	
N8929A	750 V, 40 A	
N8930A	1000 V, 30 A	
N8945A	80 V, 340 A	400 VAC (360 – 440 VAC)
N8946A	200V, 140 A	
N8948A	500V, 60 A	
N8949A	750 V, 40 A	
N8950A	1000 V, 30 A	

15 kW models (L1, L2, L3, PE)		
N8931A	80 V, 510 A	208 VAC (187 – 229 VAC)
N8932A	200V, 210 A	
N8934A	500V, 90 A	
N8935A	750 V, 60 A	
N8937A	1500 V, 30 A	
N8951A	80 V, 510 A	400 VAC (360 – 440 VAC)
N8952A	200V, 210 A	
N8954A	500V, 90 A	
N8955A	750 V, 60 A	
N8957A	1500 V, 30 A	

NEW PZ2100A Series High-Channel Density Precision SMU Solution

High-channel density precision SMU solution that integrates flexible SMU module options into a small 1U footprint.

- Save cost and valuable rack space
- Wide application converted from DC to dynamic measurements
- Simple integration and time efficiency
- PX011x accessories, specifically for PZ2100

www.keysight.com/find/pz2100

	Module	Ch/slot	Range	Resolution	Pulse	Digitizing
High Resolution	PZ2110A	1 Ch/2 slot	210 V/315 mA	10 fA	315 mA/20 µs	1.25 MSa/s
High Speed	PZ2120A	1 Ch/1 slot	60 V/3.5A (10.5 A pulse)	100 fA	10.5 A/10 µs	1 MSa/s
	PZ2121A					15 MSa/s
High Density	PZ2130A	5 Ch/1 slot	30 V/500 mA (Ch1 & 2: +750 mA)	100 pA	N/A	250 kSa/s
	PZ2131A			10 pA	500 mA (Ch1&2: +750 mA)/100 µs	500 kSa/s

B2900B/BL Series source measure unit (SMU)

Best-in-class source and measurement performance

- Innovative graphical user interface: I-V measurement without PC programming
- High sourcing and measurement resolution 10 fA/100 nV
- Wide output range (210 V / 3 A DC / 10.5 A pulse)
- Complimentary software control options for your application needs

www.keysight.com/find/B2900

B2912B

Model	B2901BL	B2910BL	B2901B	B2902B	B2911B	B2912B
Number of channels	1	1	1	2	1	2
Maximum voltage	21 V	210 V				
Maximum current (DC)	1.5 A		3.03 A			
Output resolution	5.5 digit				6.5 digit	
Output noise (10 Hz to 20 MHz)	3 mVrms					
Measurement resolution	6.5 digit					

N6781/85A SMUs

The N6781A and N6785A two-quadrant SMUs will power, characterize, and test battery-powered devices like smart phones.

- Stable, glitch-free sourcing and sinking (charge/eLoad)
- Seamless dynamic measurements down to nA
- Utilize with BV9211B PathWave BenchVue software to perform battery profiling and emulation, current drain analysis, and cycle testing. Software also works with N6700C, N6701C, and N6702C low-profile mainframes.
- Integrate with the N6705C power anaylzer (page 41)

N6781A

N6785A

N6705C DC power analyzer

Use the N6705C DC power analyzer for sourcing and measuring DUT DC voltage and current.

- Integrates capabilities of up to four power supplies along with DMM, scope, ARB and data logger
- Select from over 35 different modules that offer different performance and power levels for critical test requirements
- Integrate the right module with basic, precise, or performance options to meet automotive, industrial, or IoT specifications
- Select any combination of N6700 Series modules (page 38)
- Pair with BV9200B PathWave BenchVue software to control and analyze measurements from up to four N6705 mainframes (16 power supplies) from a PC

BV9211B PathWave BenchVue Software N6705C

SMU Modules

E36731A battery emulator

Validate and extend your battery life, with the E3671A.

This battery emulator combines a power supply, and an electronic load, and works with Keysight PathWave BenchVue Advanced Battery Test and Emulation software.

- Power up to 200W, 30V, 20A
- Profile batteries through charge/discharge to create a unique battery model
- Emulate charge states to reduce test time, improve safety, and test repeatability
- Visually charge/discharge batteries to determine run time

Model Comparison

Power supply	Power	200 W	
	Voltage	0 to 30 V	
	Current	0 to 20 A	
Power Supply Readback accuracy	Voltage	0.025% + 1.5 mV	
	Current	Low, 0.1 A	0.035% + 10 µA
		Mid, 2 A	0.03% + 300 µA
		High, 20 A	0.05% + 250 µA

Electronic load	Power	250 W	
	Voltage	0 to 60 V	
	Current	0 to 40 A	
Electronic Load Readback accuracy	Voltage	Low, 15 V	0.03% + 4.2 mV
		High, 60 V	0.03% + 15 mV
	Current	Low, 4 A	0.05% + 820 µA
		High, 40 A	0.03% + 7.2 mA

B2960B Series low-noise power sources

Best-in-class noise performance

- Ultra-low noise performance with the external low-noise filter (10 µVrms)
- High sourcing resolution (6.5 digit, 100 nV/10 fA)
- Innovative sourcing capability and superior GUI

www.keysight.com/find/B2960

B2962B

Model	B2961B/62B Low Noise Power Source	N1298C Low Noise Filter	N1298B Ultra-Low Noise Filter	N1298A High Current Ultra-Low Noise Filter
Number of channels	1 or 2			
Maximum voltage	210 V		42 V	21 V
Maximum current (DC)	3.03 A		105 mA	500 mA
Output noise (10 Hz to 20 MHz)	3 mVrms	350 µVrms	10 µVrms	
Measurement resolution	4.5 digit			

EL30000 Series Bench DC electronic loads

Providing superior performance in a compact bench form factor.

- Operate in constant current (CC), constant voltage (CV), constant resistance (CR), or constant power (CP) modes
- Perform static and dynamic tests
- Transfer data via USB drive, LAN, USB, or optional GPIB
- Conduct precise analysis with the built-in scope and data logger

Model	Number of inputs	Input power	DC input voltage	DC input current
EL34143A	1	350 W	150 V	60 A
EL34243A	2	600 W	150 V	60 A per input, 120 A parallel

N6790A DC electronic load modules for N6700-Series

Use loads with the N6700C/01C/02C modular power supply or on the bench with the N6705C DC power analyzer to characterize power supplies, batteries, supercapacitors, and PV cells.

- Built-in data logger records voltages and currents eliminating the need for an external oscilloscope or multimeter.
- Operate in constant current (CC), constant voltage (CV), constant resistance (CR), or constant power (CP) modes

N6791A

N6792A

Model	Maximum power	Voltage	Current	Number of slots used	Number of ranges
N6791A	100 W	60 V	20 A	1	2
N6792A	200 W	80 V	40 A	2	2

N3300 Series DC electronic loads

Accelerate manufacturing test with fast electronic loads.

- N3300A (full rack, 6 slots) and N3301A (half rack, 2 slots) mainframes
- Combine modules up to 6 modules as single, parallel, or series outputs
- Simultaneously measure voltage and current in constant current (CC), constant voltage (CV), and constant resistance (CR) mode
- Waveform digitalization and 4, 096 data point buffer for transient analysis

N3300A

Input ratings	N3302A	N3303A	N3304A	N3305A	N3306A	N3307A
Current	0–30 A	0–10 A	0–60 A	0–60 A	0–120 A	0–30 A
Voltage	0–60 V	0–240 V	0–60 V	0–150 V	0–60 V	0–150 V
Maximum power at 40 °C	150 W	250 W	300 W	500 W	600 W	250 W

AC6800B and 6800C Series Basic and Performance AC Power Sources

Engineer dependability into your designs with stable, reliable AC power

Test your designs with confidence, knowing that your products will perform as designed—even if they encounter fluctuating voltages from the AC power grid, extreme inrush currents, or transient spikes. Keysight's two families of AC power sources provide the capabilities you need for thorough AC testing, from basic power to more sophisticated source and measurement needs.

Both families also produce DC power, either alone or as a DC offset to an AC waveform.

AC6800B Series basic AC sources

A basic AC source alternative featuring stable and reliable power

- Four models, up to 4000 VA
- Intuitive user interface—if you've used a Keysight DC power supply, these will feel very familiar to you
- Flexible I/O: USB and LAN (standard), and GPIB (optional)
- Access and control the source remotely using a standard Web browser

6800C Series performance AC sources/analyzers

The complete AC power test solution

- Three models, up to 1750 VA
- Virtual front panel
- Extensive power measurement capabilities
- I/O: USB, LAN, GPIB and RS-232
- Built-in arbitrary waveform generator to simulate many types of power waveforms

	AC6800B Series Basic AC Sources				6800C Series Performance AC Sources		
	AC6801B	AC6802B	AC6803B	AC6804B	6811C	6812C	6813C
Phases	Single-phase						
Maximum output power	500 VA	1000 VA	2000 VA	4000 VA	375 VA	750 VA	1750 VA
AC output mode							
Voltage range	155 Vrms/310 Vrms				300 Vrms		
Maximum rms current	5 A/2.5 A	10 A/5 A	20 A/10 A	40 A/20 A	3.25 A	6.5 A	13 A
Maximum peak current	15 A/7.5 A	30 A/15 A	60 A/30 A	120 A/60 A	40 A	40 A	80 A
Frequency	40 to 500 Hz				45 Hz to 1 kHz		
DC output mode							
Voltage range	219 V/438 V				425 V		
Max current	4 A/2 A	8 A/4 A	16 A/8 A	32 A/16 A	2.5 A	5 A	10 A
Max instantaneous current	12 A/6 A	24 A/12 A	48 A/24 A	96 A/48 A	40 A	40 A	80 A
Power capacity	400 W	800 W	1600 W	3200 W	285 W	575 W	1350 W
Measurements and I/O							
Measurements	Voltage, current, power				Voltage, current, power		
Transients and advanced measurements	N/A Basic transient capability via optional analog card (AC68ALGU)				Includes preprogrammed standard waveforms and transient generation system		
					AC source analyzer graphical user interface		
I/O	USB and LAN/LXI Core with remote Web interface Optional GPIB (AC68GPBU)				USB, LAN/LXI Core, GPIB, RS-232, and remote Web interface		

LCR Meters

Keysight LCR meters provide the best combination of accuracy, speed, and versatility at affordable prices for both R&D and production applications.

E4980A/AL precision LCR meter

Industry-leading combination of accuracy, speed, versatility and upgradability

- Exceptionally low noise at both low and high impedance
- 20 Hz to 2 MHz, test frequency with 4-digit resolution (E4980A)
- 20 Hz to 300 kHz/500 kHz/1 MHz, test frequency with 4-digit resolution (E4980AL)
- Frequency upgradable to 500 kHz or 1 MHz (E4980AL)
- 0.05% basic impedance accuracy
- PathWave BenchVue software supported

E4981A/B capacitance meter

Fast, accurate, and repeatable measurement

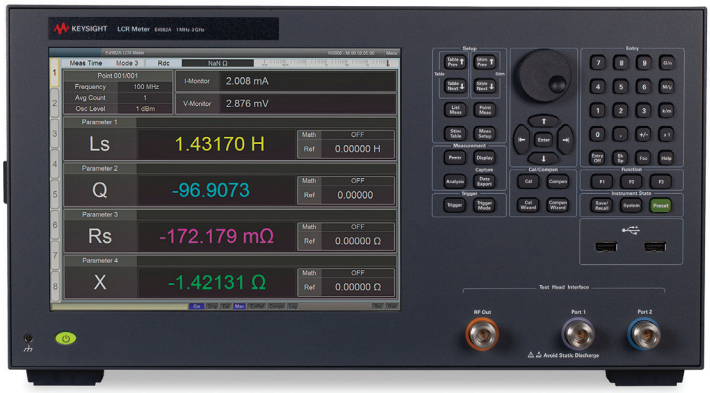
- Ideal for reliable high-speed measurements for high-volume ceramic capacitor manufacturing
- 120 Hz / 1 kHz / 1 MHz test frequencies (E4981A/B-001)
- 120 Hz / 1 kHz test frequencies (E4981A/B-002)
- High-speed measurement: 2.3 ms (1 MHz), 3.0 ms (1 kHz), 11.0 ms (120 Hz)
- Accurate C-D testing: 0.07%, 0.0005

The E4981B is a direct replacement of the "A" model.

The E4981A capacitance meters are available for order through November 31, 2024

E4982A LCR meter

Best performance for the passive component manufacturing such as SMD inductors and EMI filters



- Four frequency options: 1 MHz to 300 MHz / 500 MHz / 1 GHz / 3 GHz, upgradable
- High-speed measurement: 0.9 ms (Mode 1), 2.1 ms (Mode 2), 3.7 ms (Mode 3)
- 0.8% basic accuracy with unparalleled measurement repeatability
- Wide impedance measurement range from 140 mΩ to 4.8 kΩ
- 1 kHz frequency resolution

Handheld Digital Multimeters

Rich features and robust design for real-world conditions

- Up to 60,000 counts and 0.025% basic DCV accuracy, accurate true-RMS AC measurements and up to 800 hours of battery life (U1280 Series)
- High-contrast OLED display with 160° viewing angle (U1273AX, U1273A, U1253B)
- Re-invented with ergonomic design and dust- and water-resistant with IP 67 (U1240C, U1280 Series), and operating temperature as low as -40 °C (U1273AX)
- CAT III 1000 V and CAT IV 600 V over-voltage protection (U1240, U1240C, U1250, U1270 and U1280 Series)

Recommended for	Model	Counts	Bandwidth	Voltage AC/DC	Current AC/DC	Battery life	Additional features	Additional features
Electrical, HVAC and utilities	U1231A	6,000	1 kHz	600 mV to 600 V	NA	500 hours	Built-in flashlight, continuity alert with flashing backlight, Z_{Low}	N/A
	U1232A				60 µA to 10 A			
	U1233A							V_{sense}*
Installation and maintenance	U1241B	10,000	2 kHz	1 V to 1000 V	1 mA to 10 A	300 hours	Switch counter	N/A
	U1242B							Harmonic ratio, dual and differential temperature measurements
	U1241C			100 mV to 1000 V		400 hours	Built-in LED flashlight	N/A
	U1242C							Harmonic ratio, dual and differential temperature measurements, V_{sense}*, Z_{Low}
Electronics troubleshooting	U1251B	50,000	30 kHz	50 mV to 1000 V	500 µA to 10 A	72 hours	NA	N/A
	U1252B		100 kHz			36 hours	20 MHz frequency counter, programmable square wave generator	
	U1253B					8 hours**		
Industrial	U1271A	30,000	20 kHz	300 mV to 1000 V	300 µA to 10 A	300 hours	Low pass filter High altitude rated (3000 m)	AC and/or DC voltage check
	U1272A		100 kHz	30 mV to 1000 V				Low impedance mode, offset compensation
	U1273A/AX					30–60 hours		
Electronics troubleshooting	U1281A	60,000	30 kHz	60 mV to 1000 V	600 µA to 10 A	800 hours	N/A	
	U1282A		100 kHz				Frequency counter, square wave output, V_{sense}*, low pass filter	

*V_{sense} is a non-contact voltage detector. **Rechargeable.

U1700 Series handheld capacitance and LCR meters

Save time with auto-ID and one-button access

- Auto-identification of L, C and R; and detailed component analysis with DCR, Z, ESR, D, Q and Θ functions.
- Tolerance and compare modes for quick component sorting
- One-button access to measurements

U1733C

	U1701B	U1731C	U1732C	U1733C
Counts	11,000	20,000	20,000	20,000
Capacitance	1000 pF to 199.99 mF	200 pF to 20 mF	20 pF to 20 mF	20 pF to 20 mF
Inductance	N/A	200 µH to 2000 H	20 µH to 2000 H	20 µH to 2000 H
Resistance	N/A	2 Ω to 200 MΩ	2 Ω to 200 MΩ	2 Ω to 200 MΩ
Frequency	N/A	100 Hz, 120 Hz , 1 kHz	100 Hz, 120 Hz, 1 kHz, 10 kHz	100 Hz, 120 Hz, 1 kHz, 10 kHz, 100 kHz
Additional features	Dual display, min./max./avg. recording, data logging to PC			

Handheld clamp meters

Save money without compromising safety or convenience

Use clamp meters to measure high voltage and current (up to 1000V and 1000A) and avoid the need to disconnect high current cables. The clamp meters have built-in DMMs, with lower resolutions than typical dedicated DMMs, to be used for preventative maintenance and quick verifications.

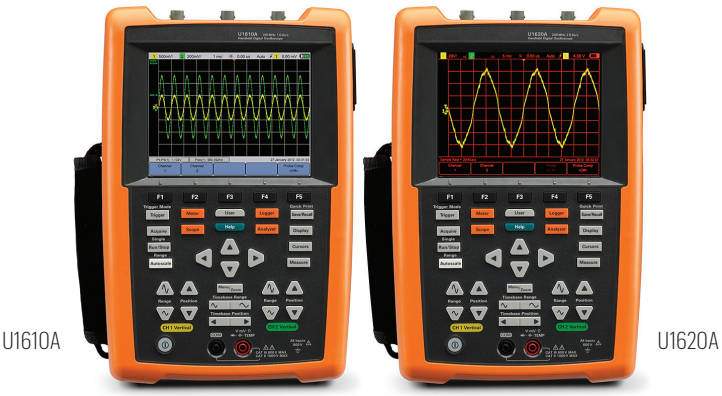
- Large 2-inch jaw size (U1210 Series)
- Includes DMM capabilities: resistance, capacitance, frequency and temperature
- CAT IV 600 V and CAT III 1000 V safety ratings (U1210 Series)

U1213A

U1600 Series handheld oscilloscopes

Maximum versatility for more rigorous troubleshooting

- 5.7-inch VGA TFT LCD display with indoor, outdoor, and night-vision viewing modes
- Two independent, isolated channels
- Up to 2 GSa/s sample rate and up to 2 Mpts deep memory to zoom in on critical details



	U1610A	U1620A
Oscilloscope channel count	2	2
Bandwidth	100 MHz	200 MHz
Maximum sampling rate	1 GSa/s interleaved, 500 MSa/s per channel	2 GSa/s interleaved, 1 GSa/s per channel
Maximum recording length	120 kpts interleaved, 60 kpts per channel	2 Mpts interleaved, 1 Mpts per channel
Internal scope storage	10 setups and waveforms can be saved and recalled internally	
Rise time	3.50 ns typical	1.75 ns typical
Additional features	Indoor, outdoor and night vision mode, built-in DMM, data logger capability, dual windows zoom	

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- Keep your project schedules on track and receive priority repair coverage with a 7 business day committed turnaround time (excluding shipment and customs processing).

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