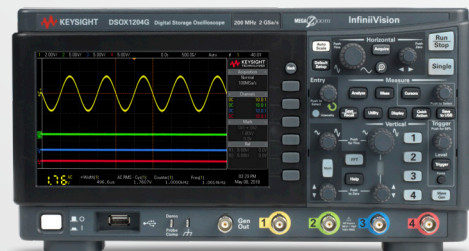


Keysight Basic Instruments

May 2019 - July 2019



SPOTLIGHT

Take Your Power Design to New Heights with the Next Generation of Electronic Loads

Power conversion testing is growing in complexity. Designers working on today's power conversion systems for the satellite, avionics, and medical industries have new and ever-changing test requirements. This results in a great demand for high-performance power and electronic load testing solutions.

While power technology has evolved drastically for power sources, electronic load solutions have lagged in speed and functionality. An outdated electronic load solution negatively impacts production schedules, cost of testing, and product quality.

OUTDATED LOAD SOLUTIONS INCREASE TEST TIME

Testing devices such as batteries, DC to DC converters, power supplies, and smart chargers requires a new level of sophistication in output loading. While traditional methods involving fixed resistors and relays might seem low cost and simple in the short term, the long-term results are much more costly in both time and money. Manually changing a resistor during a test incurs a cost both in time and manpower. We need a flexible and modern electronic load solution that enable easy automation.

NEW ELECTRONIC LOADS COMPLETES DC POWER CONVERSION SOLUTION

The new Keysight N6790 series electronic load adds to the existing industry standard N6700 modular power system platform. The N6700 modular power system offers over 34 different power supply modules allowing the flexibility to create a custom power solution. The new additions are the N6791A and N6792A electronic load modules, which are rated at 100W and 200W respectively. The addition of these electronic

load modules creates a complete end to end DC power conversion solution on the N6700 modular power system platform. Now you can calculate DC efficiency by measuring both input and output power in a single solution.

The N6790 series electronic loads offer a powerful built-in arb which allows you to emulate complex dynamic loading waveforms. It offers four different operating modes, constant voltage, constant current, constant resistance, and constant power. As part of the N6700 platform, it also comes with a data logging function and tools for data analysis. This solution comes in a standard 1U form factor minimizing your rack space and maximizing your test goals.

For more information, go to www.keysight.com/find/N6791A



E36300 Series triple output DC power supplies

 BenchVue software enabled

 E36300 Series Data Sheet

 www.keysight.com/find/e36300

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



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

Signal Analyzers | www.keysight.com/find/sa

N9000B CXA signal analyzer

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

 BenchVue software enabled

 CXA Data Sheet

 www.keysight.com/find/cxa

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



InfiniiVision oscilloscopes



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

BenchVue software enabled

www.keysight.com/find/infiniivision

MODEL	DESCRIPTION	BANDWIDTH	CHANNELS	SAMPLE RATE	MEMORY DEPTH	STANDARD WARRANTY	CALIBRATION PERIOD	SPECIAL TRIGGERS	BUILT-IN INSTRUMENTS*		
NEW 1000 X-Series 1000X Data Sheet Videos	Basic R&D bench – 50,000 wfms/s update rate – 7-inch display – Serial bus options	50 MHz to 200 MHz	2, 4	Up to 2 GSa/s	Up to 1 Mpts and segmented memory standard	3 years	5 years	Serial protocol	20 MHz FG, 5-digit counter, and frequency response analyzer		
2000 X-Series 2000X Data Sheet Videos	Basic R&D bench – 200,000 wfms/s update rate – 8.5-inch display – Serial bus options	70 MHz to 200 MHz	2, 2+8, 4, 4+8	Up to 2 GSa/s		5 years	2 years	Serial protocol	20 MHz FG, 5-digit counter		
3000T X-Series 3000X Data Sheet Videos	Everything the 2000X has plus – 1,000,000 wfms/s update rate – Advanced math and power analysis – Capacitive touch screen	100 MHz to 1 GHz	2, 2+16, 4, 4+16	Up to 5 GSa/s	4 Mpts and segmented memory standard	3 years	3 years	Near Field Communication (NFC) Trigger, Serial protocol, Zone touch	20 MHz AWG, 8-digit counter, totalizer and frequency response analyzer		
4000 X-Series 4000X Data Sheet Videos	Everything the 3000T has plus – 12.1-inch capacitive touch screen – FFT, USB 2.0 pre-compliance – Up to four active probes	200 MHz to 1.5 GHz							Up to four active probes	3 years	Dual 20 MHz AWG, 5-digit counter and frequency response analyzer
6000 X-Series 6000X Data Sheet Videos	Everything the 4000X has plus – 450,000 wfms/s update rate – Multi-touch display – Voice control – Jitter and real-time eye diagram analysis	1 GHz to 6 GHz							Up to 20 GSa/s	2 years	Dual 20 MHz AWG, 10-digit counter, totalizer and frequency response analyzer

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



InfiniiVision software applications

SERIAL PROTOCOLS AND TRIGGERING

I²C, SPI, RS232, UART, USB 2.0, CAN, CXPI, LIN, FlexRay, Audio, MIL-STD 1553, ARINC 429, and more

FEATURES

Dual-channel WaveGen, jitter, real-time eye diagram, integrated voltmeter, 10-digit counter, mask limits, USB signal quality, video/TV, power analysis, frequency response analysis via Bode plot, near field communication testing, and more.

See the complete list of apps at www.keysight.com/find/scope-apps

DOWNLOAD YOUR NEXT INSIGHT

Keysight software is downloadable expertise. www.keysight.com/find/software

NEW DAQ970A data acquisition / switch units

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

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



PLUS

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

BenchVue software enabled

www.keysight.com/find/DAQ970A

DAQ970 Data Sheet

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

E5063A ENA vector network analyzer

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



BenchVue software enabled

www.keysight.com/find/e5063a

Keysight electronic calibration kits

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

1. Optional capability.

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

33500B and 33600A Series waveform generators

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

BenchVue software enabled

www.keysight.com/find/function-generators

33500B and 33600A Data Sheet



MODEL	DESCRIPTION	CHANNELS	FREQUENCY RANGE	PULSE	ARBITRARY WAVEFORMS			
					STD/OPT ARB	# BITS	SAMPLE RATE	MEMORY/CHANNEL
33509B 33510B	Exclusive Trueform waveform technology with < 40 ps jitter and < 0.04% THD.	1 2	20 MHz	20 MHz	Optional	16	160 MSa/s	1 M Standard, 16 M Optional
33511B 33512B		1 2			Standard			
33519B 33520B		1 2	Optional					
33521B 33522B		1 2	30 MHz	30 MHz	Standard		250 MSa/s	
					Standard			
33611A 33612A		Exclusive Trueform waveform technology at higher frequency ranges with < 1 ps jitter < 0.03% THD.	1 2	80 MHz	80 MHz		Standard	
33621A 33622A	1 2		120 MHz	100 MHz	1 GSa/s			

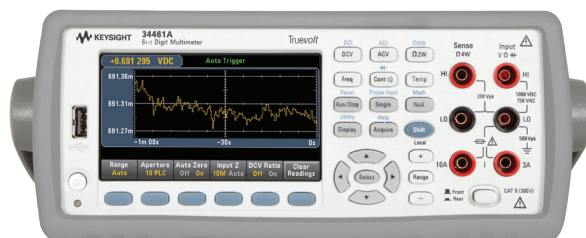
Truevolt digital multimeters

BenchVue software enabled

34460A, 34461A, 34465A, 34470A Data Sheet

www.keysight.com/find/truevolt

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



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

Keysight Streamline Series | USB Instruments

Vector Network Analyzers and Oscilloscopes

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

- ▶ www.keysight.com/find/usb-vna
- ▶ www.keysight.com/find/usb-scope



Compact form. Zero compromise.

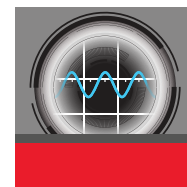
	VECTOR NETWORK ANALYZER (VNA)	OSCILLOSCOPE
Models:	P9370A, P9371A	P9241A, P9242A, P9243A
Bandwidth:	300 kHz to 6.5 GHz	200 MHz, 500 MHz, and 1 GHz
Additional capabilities:	Full 2-port	2 analog channels
	Ability to extend the number of ports	5 GSa/s
	Same calibration and metrology as all trusted Keysight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

BenchVue Software | www.keysight.com/find/benchvue

BenchVue control, automation and analysis software

BenchVue software for the PC makes it simple to connect, record and achieve results across multiple instruments with no programming.

- Configure the most commonly used controls and measurements from instruments
- Visualize multiple measurements simultaneously
- Easily log and export data and screen images in just a few clicks for faster analysis
- Create automated test sequences fast with minimal instrument knowledge
- Download a free 30-day trial today



Look for this icon throughout this flyer to identify BenchVue enabled instruments (600 Keysight instruments, and counting).

- ▶ Play BenchVue examples and learn how to increase your productivity and make the most of your bench
- ▶ Download a free 30-day trial
- ☰ BenchVue Software Data Sheet



See our complete list of current promotions:
www.keysight.com/find/promotions

The Keysight Bench

Only Keysight delivers the industry's largest selection of bench instruments and ground-breaking Keysight BenchVue software — the intuitive way to view, capture, and export the data you collect from your bench with no need for programming.



Technical data and pricing subject to change without notice.

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Published in USA, April 17, 2019
5992-0112EN

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