

NEW

**Introducing the
33210A function/
arbitrary waveform
generator**

See page 6



Pay less for high-quality waveforms for your device under test

- System-ready interfaces with GPIB, USB, and LAN (LXI-C)
- IntuiLink Waveform Editor software included

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Technical data subject to change.

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Authorized Distributor

Agilent Authorized Distributors meet rigorous qualifications for business ethics, financial stability and customer-driven culture. Many offer focused expertise in specific industries and technical sectors, and all are backed by training and support from Agilent factory experts.

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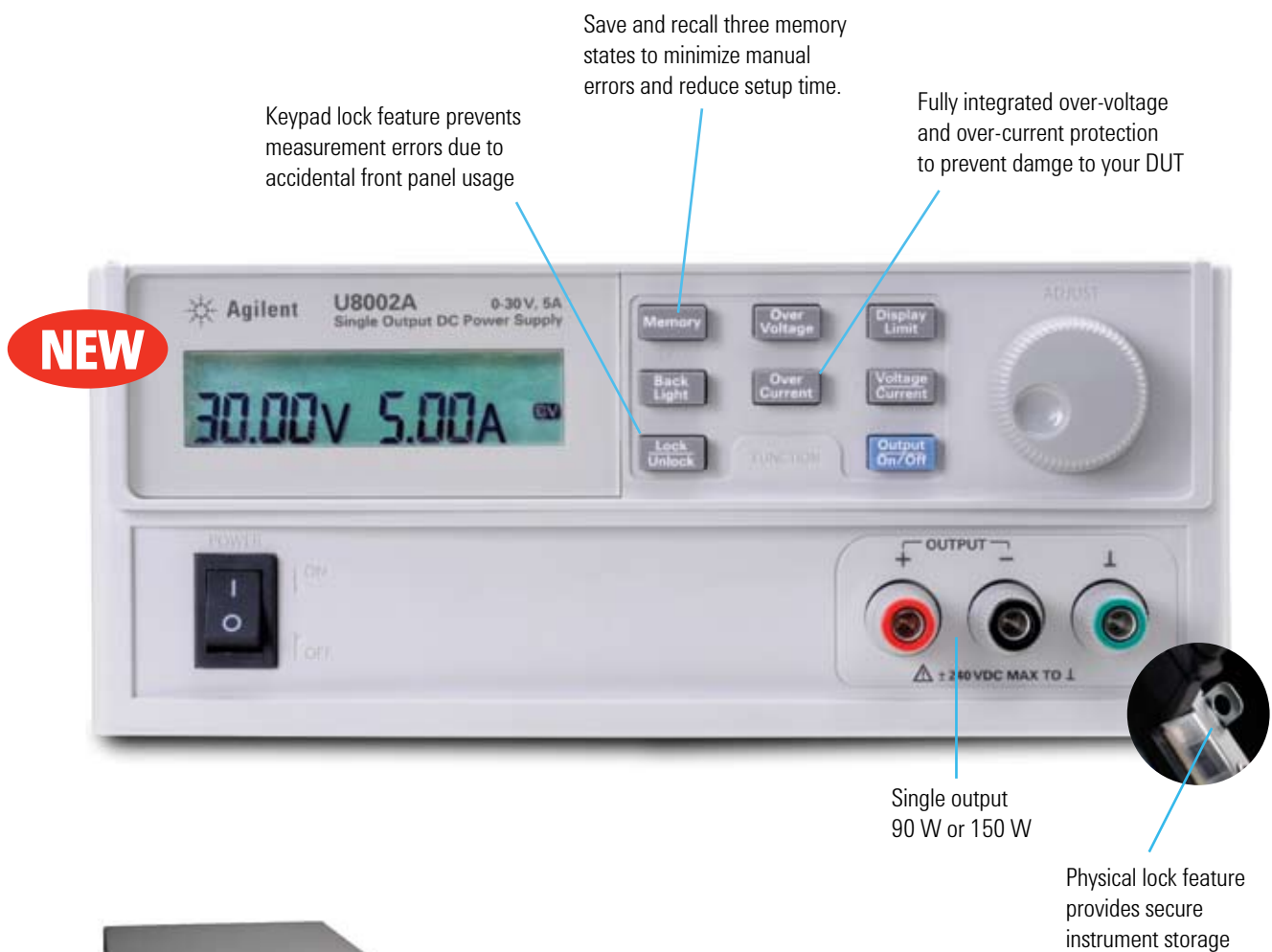
Agilent U8000 DC power supplies

Get extra features and functions without spending more

U8000 Series 90- to 150-W single-output, non-programmable DC power supplies include extra features — typically found only in more-expensive supplies. The U8000 Series delivers excellent value for applications in electronics manufacturing and educational settings.

Solid, reliable DC power at the right price

- Low output noise (as low as 1 mVrms) minimizes interference into your DUT
- Excellent 0.01% load and line regulation for steady output power levels
- Fast load transient response time (50 msec) reduces test time and manufacturing cost



	GPIB	Output	Range	Voltage	Current	Power
U80001A	N	1	1	30 V	3 A	90 W
U80002A	N	1	1	30 V	5 A	150 W

Agilent E3600 Family of DC power supplies

Reliable power, repeatable results

Quiet, stable, reliable DC power. For environments that need to watch test costs as closely as they watch test results.

- Extremely low output noise—as low as 1 mVp-p/0.2mVrms
- Tight 0.01% load and line regulation for steady output power levels
- Fast load transient response time (<50 μ s)
- Choice of models from 30 to 200 W output power
- Convenient front-panel programming and/or GPIB and RS-232

E3610A-17A/20A/30A manual DC power supplies

- Up to 120 V and 6 A—just the power you need
- 30 to 60 W—single, double and triple outputs
- 10-turn pots—make fine adjustments easily

E3631A-34A programmable DC power supplies

- System-level performance without the high price
- 80 to 200 W—single or triple output for more power options
- Rotary knob and self-guiding keypads—precise adjustments for output resolution



E3640A-49A programmable DC power supplies

- Remote sensing—eliminate voltage regulation errors due to drop in load leads
- Front and rear output terminals—flexible measurement setup
- Internal non-volatile memory—store and recall setups fast

E3610A-17A/20A/30A

	GPIB	Output	Range	Voltage	Current	Power
E3610A	N	1	2	8 V 15 V	3 A 2 A	30 W
E3611A	N	1	2	20 V 35 V	1.5 A 0.85 A	30 W
E3612A	N	1	2	60 V 120 V	0.5 A 0.25 A	30 W
E3614A	N	1	1	8 V	6 A	48 W
E3615A	N	1	1	20 V	3 A	60 W
E3616A	N	1	1	35 V	1.7 A	60 W
E3617A	N	1	1	60 V	1 A	60 W
E3620A	N	2	1	25 V	1 A	50 W
E3630A	N	3	1	6 V 20 V -20 V	2.5 A 0.5 A 0.5 A	35 W

E3631A-34A

	GPIB	Output	Range	Voltage	Current	Power
E3631A	Y	3	1	25 V -25 V 6 V	1 A 1 A 5 A	80 W
E3632A	Y	1	2	15 V 30 V	7 A 4 A	120 W
E3633A	Y	1	2	8 V 20 V	20 A 10 A	200 W
E3634A	Y	1	2	25 V 50 V	7 A 4 A	200 W

E3640A-49A

	GPIB	Output	Range	Voltage	Current	Power
E3640A	Y	1	2	8 V 20 V	3 A 1.5 A	30 W
E3641A	Y	1	2	35 V 60 V	0.8 A 0.5 A	30 W
E3642A	Y	1	2	8 V 20 V	5 A 2.5 A	50 W
E3643A	Y	1	2	35 V 60 V	1.4 A 0.8 A	50 W
E3644A	Y	1	2	8 V 20 V	8 A 4 A	80 W
E3645A	Y	1	2	35 V 60 V	2.2 A 1.3 A	80 W
E3646A	Y	2	2	8 V 20 V	3 A 1.5 A	60 W
E3647A	Y	2	2	35 V 60 V	0.8 A 0.5 A	60 W
E3648A	Y	2	2	8 V 20 V	5 A 2.5 A	100 W
E3649A	Y	2	2	35 V 60 V	1.4 A 0.8 A	100 W

Agilent makes over 200 models of power supplies — 5 W up to 6.6 kW.

Get more information at www.agilent.com/find/dcpower



Agilent N5700 Series system DC power supplies

Save valuable rack space with these compact, high-power, single-output power supplies

- 24 affordable models in a compact, 1U package to save you rack space
- Multiple I/O interfaces standard — LAN, USB and GPIB — to simplify test-system development
- Easy front-panel operation



750 W Models	
N5741A	6 V, 100 A, 600 W
N5742A	8 V, 90 A, 720 W
N5743A	12.5 V, 60 A, 750 W
N5744A	20 V, 38 A, 760 W
N5745A	30 V, 25 A, 760 W
N5746A	40 V, 19 A, 760 W

1500 W Models	
N5761A	6 V, 180 A, 1080 W
N5762A	8 V, 165 A, 1320 W
N5763A	12.5 V, 120 A, 1500 W
N5764A	20 V, 76 A, 1520 W
N5765A	30 V, 50 A, 1500 W
N5766A	40 V, 38 A, 1520 W

Agilent N6700 low-profile modular power system

Squeeze 4 DC power supplies in 1U of rack space with this fast and flexible modular power system

- Multiple-output power supply system lets you mix and match from 22 different 50-W, 100-W, or 300-W DC power modules
- Multiple interfaces standard — LAN, USB and GPIB — to simplify test-system development
- Improve your throughput with fast settling times and fast command processing (<1 ms)



(Modules must be used with N6700 mainframe, sold separately)

50 W Models		100 W Models		300 W Models	
N6731B	5 V, 10 A	N6741B	5 V, 20 A	N6773A	20 V, 15 A
N6732B	8 V, 6.25 A	N6742B	8 V, 12.5 A	N6774A	35 V, 8.5 A
N6733B	20 V, 2.5 A	N6743B	20 V, 5 A	N6775A	60 V, 5 A
N6734B	35 V, 1.5 A	N6744B	35 V, 3 A	N6776A	100 V, 3 A
N6735B	60 V, 0.8 A	N6745B	60 V, 1.6 A	N6753A	20 V, 50 A
N6736B	100 V, 0.5 A	N6746B	100 V, 1 A	N6754A	60 V, 20 A
N6751A	50 V, 5 A	N6752A	50 V, 10 A		
N6761A	50 V, 1.5 A	N6762A	50 V, 3 A		

Agilent N6705A DC power analyzer

Gain insights into your DUT's power consumption — in minutes, not hours — without writing a single line of code

- Save time and increase your productivity for sourcing and measuring DC voltage and current into your DUT — this instrument integrates up to four advanced power supplies with DMM, scope, arb, and data logger features
- Tailor the N6705A to meet your needs using the same modules listed for the N6700 (above)



Buy the function/arbitrary waveform generator that you need—don't sacrifice quality

Agilent 33200 family function/arbitrary waveform generators

Produce clean, low-distortion signals with THD less than 0.04% and flatness as low as ± 0.1 dB

33220A: Low-cost and full-featured function generator provides arbitrary waveforms at no extra cost. Includes a 64K point arbitrary waveform generator standard as well as sine and square waves up to 20 MHz.

33250A: Competitively priced 80-MHz function/arbitrary waveform generator – if you need higher frequency than the 33220A offers



33220A



33250A

Pulse generation with variable edge

Standard waveforms—including sine and square wave, ramp, pulse, noise and burst 10 MHz or 80 MHz

Arbitrary waveforms 2 points to 64 K points at 50 MSa/s or 200 MSa/s
Optional for the 33210A, standard on the 33220A and 33250A

External frequency reference synchronizes to an external 10 MHz clock or another 33210A, 33220A, 33250A – Optional for the 33210A and 33220A, standard on the 33250A

NEW



33210A

Intuitive, task-oriented front panel

LXI

33210A: A cost-effective solution that provides low-distortion, highly accurate signals

Triple versatility; optimum signal fidelity

81150A: Integrated 120 MHz pulse, function/arbitrary waveform and noise generator – three instruments in one – with pulse capabilities, higher bandwidth, 13 standard functions and more than 80 measurements available

- Intrinsic jitter < 8 ps RMS at any frequency
- Flexible noise and selectable crest factor for realistic test signals



Helpful selection hints:

- The new **33210A** offers an entry level basic function generator with the ability to upgrade to an arbitrary waveform generator
- The **33250A** offers the same features as the **33220A** but with a higher frequency range (80 MHz)
- For greater flexibility, consider the **81150A**, which combines the capabilities of a pulse generator, a function/arbitrary waveform generator and a noise generator
- The **81100A** family provides bandwidth to 660 MHz and capabilities for specialty or digital applications

	NEW 33210A	33220A	33250A	81150A
Sine wave frequency	10 MHz	20 MHz	80 MHz	240 MHz
Standard waveforms	Sine, square, ramp, pulse, noise, DC volts	Sine, square, pulse, triangle, ramp, noise, sin(x)/x, exponential rise and fall, cardiac, DC volts		Pulse, sine, square, triangle, sin(x)/x, ramp, noise
Arbitrary waveforms	Optional 8K-points, sin(x)/x, exponential rise and fall, cardiac,	2 to 64 K points		14-bit, 2 GSa/s
Sample rate	50 MSa/s	50 MSa/s	200 MSa/s	2 GSa/s
Modulation	AM, FM PWM, sweep and burst (all internal/external)	AM, FM, PM, FSK, PWM, sweep and burst (all internal/external)	AM, FM, FSK, sweep and burst (all internal/external)	FM, AM, PW, PWM, FSK modulation capabilities up to 10 MHz
Burst	Gated, N-cycle	Gated, N-cycle	Gated, N-cycle	Gated, N-cycle
Noise generation	7 MHz	9 MHz	50 MHz	120 MHz
Pulse width range	40 ns	20 ns	20 ns	4.16 ns (period – 4.16 ns)
Connectivity	GPIB, USB, LAN, LXI class C compliant (IntuiLink software included)	GPIB, USB, LAN, LXI class C compliant (IntuiLink software included)	GPIB/RS-232	GPIB, USB, LAN, LXI class C compliant (IntuiLink software included)

Agilent 81100A pulse pattern generator family

Flexible pulses and patterns for digital designs

A pulse pattern generator family covering a frequency range from 15 MHz up to 660 MHz. Fully triggerable and with variable width, delay and transition time.

8114A	15 MHz, 100 V/2A
81101A	50 MHz, 10 Vpp
81104A	80 MHz, up to 10 Vpp
81110A	165 MHz/10 V or 330 MHz/3.8 V
81130A	400 MHz/3.8 V or 660 MHz/2.5 V



Lab accuracy at production-line speeds

Choose the best benchtop DMM for your application

34401A 6½ digit:

The industry-standard DMM

system capable with configuration rates starting at 26/sec and autorange rate (DCV) >30/sec

- IntuiLink PC connectivity software included, GPIB and RS-232 standard, USB with adaptor, SCPI commands for easy system use
- 1,000 readings/sec in ASCII format across the GPIB bus at 4½ digits continuous

34405A economy DMM:

5½ digits with dual display at an affordable price

- 16 measurement functions including temperature and capacitance
- 120,000 counts resolution
- 0.025% DC voltage accuracy



5½ digit 34405A

12 measurement functions including 4 W Ohm, continuity and diode test

Store up to 512 readings in internal memory

Limit testing ratio and min/max average



6½ digit 34401A

3 Hz to 300 kHz AC bandwidth

Null allows you to remove lead resistance and other fixed offsets in your measurements

0.0035% 1-year DCV accuracy
0.06% 1-year ACV accuracy
01% basic Ohms accuracy

34410/11A 6½ digit high-performance DMM:
Fast, accurate and affordable bench and system testing

- Data logger with 50,000 reading non-volatile memory
- Built-in LAN, USB 2.0 and GPIB interfaces standard
- LXI Class C compliant
- Intuilink software included
- 1u high version available for manufacturing applications



6½ digit 34411A

34420A 7½ digit nanovolt/micro-ohm meter:
High-sensitivity multimeter optimized for low-level measurements

- 0.1-ppm transfer accuracy
- High sensitivity for low-level measurements
- Low-noise voltage measurements with resistance and temperature functions
- 100 pV / 100 nOhm sensitivity

3458A high-speed DMM:
Get both high accuracy and high system throughput

- 0.1-ppm transfer accuracy
- 8-ppm 1 year dcV accuracy, optional 4-ppm
- 0.05 ppm dcV transfer accuracy
- Superior AC voltage measurements

Helpful selection hints:

- The **3458A** offers the highest resolution (8½ digits) but is the most expensive model
- **Lower-cost DMMs** do not include the more accurate 4-wire resistance measurements
- If the DMM will be **part of a system**, consider how fast readings can be transferred to the computer
- The **34411A** offers the highest reading speed for a 6½ digit unit (50,000 readings/sec)

	34405A	34401A	34410A	34411A	3458A	34420A
Description	Benchtop DMM, dual display	Benchtop DMM	Benchtop DMM, dual display		Benchtop DMM	Nanovolt/μΩ meter
	Slightly lower performance and price point than 34401A	Industry standard for accuracy, speed, measurement ease and versatility	More measurements, faster readings over the bus than 34401A	Highest throughput of benchtop DMMs, best choice for system use	Highest resolution and accuracy, recognized worldwide as the standard in high-performance DMMs	Very accurate, low-level measurements
Digits of resolution	5 ½	6 ½	6 ½		8 ½	7 ½
Measurement speed (rdgs/s)	19	1,000	10,000	50,000	100,000	250
Basic measurements	DC and AC voltage, DC and AC current, 2-wire Ω, frequency	DC and AC voltage, DC and AC current, 2- and 4-wire resistance, frequency, period and capacitance				DC voltage, 2- and 4-wire Ω, low power Ω, ratio
Temperature	Thermistor	N/A	Thermistor, RTD	Thermistor, RTD	Thermistor, RTD	Direct SPRT, RTD, thermistor, thermocouple
Connectivity	USB 2.0	GPIB, RS-232	LAN, USB 2.0, GPIB, plus LXI class C compliant		GPIB	GPIB, RS-232
	IntuiLink software—provides a toolbar in Microsoft® Word and Excel to import multimeter data for further analysis					IntuiLink software

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Agilent U1600 Series handheld oscilloscopes

Get maximum versatility for troubleshooting in the factory or field

Use this full-featured, dual-channel scope with built-in DMM and data logger capability for high-performance troubleshooting on the go.

- Capture glitches easily with flexible triggering and 200 MSa/s sampling rate
- Uncover subtle details with 125 kB memory per channel, zoom functions and large 4½ color LCD display
- Perform quick waveform analysis with waveform math
- Document results easily using the standard USB 2.0 interface

	U1602A	U1604A with FFT math functionality
Bandwidth	20-MHz	40-MHz
Sample rate	200 MSa/s interleaved, 100 MSa/s each channel (50 s/div to 125 ns/div)	200 MSa/s interleaved, 100 MSa/s each channel (50 s/div to 250 ns/div)
Memory depth	125 kilobytes/channel	



Agilent U1200 Series handheld DMMs

Check more, fix more, spend less!

These affordable, rugged handhelds put precision measurements in the palm of your hand.

U1240 Series handheld DMMs feature true RMS readings on a 10,000-count display. Adjustable backlighting helps you do your job even in subdued lighting conditions, while prolonging battery life.

U1250 Series handheld DMMs combine the functions of a full-featured DMM and frequency counter, so you can make temperature measurements and output square waves with one unit. And accessories are included at no extra cost.



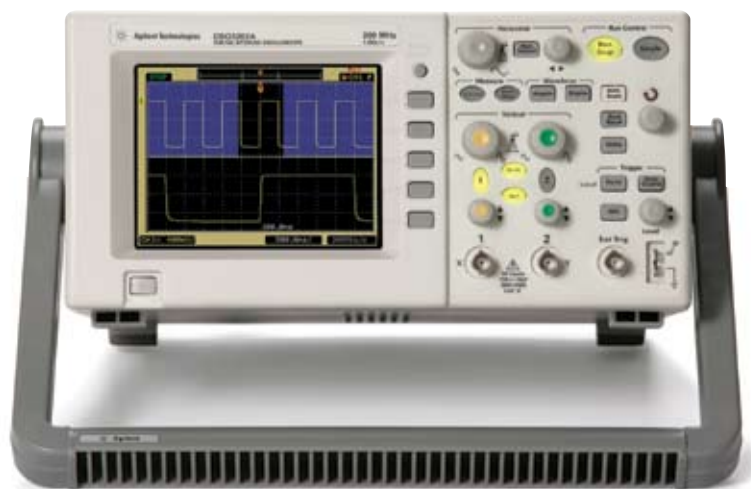
	U1241A	U1242A	U1251A	U1252A
Digits	4	4	4½	4½
Standard functions	Voltage, current, resistance, frequency, continuity with beeper, diode test, min/max, hold		Capacitance, temperature, peak, dB/dBm	
Advanced functions	Harmonic ratio, dual and differential temperature measurements		20 MHz frequency counter, programmable square wave generator	
Accuracy	0.09% basic DC voltage accuracy		Up to 0.025% basic DC voltage accuracy	

Agilent 3000 Series oscilloscopes

Full-featured scopes on a budget

The 3000 Series provides deep insight into signal details—without digging deep into your budget.

- Large 15-cm (5.9 in) color display
- Advanced measurement and triggering—edge, pulse-width, and line-selectable video
- 20 automatic measurements
- Segmented memory acquisition
- 5 standard math functions with FFT
- Pass/fail testing based on user-defined masks
- Digitally filter unwanted portions of input signals
- 3-year standard warranty



	DSO3062A	DSO3102A	DSO3152A	DSO3202A
Bandwidth	60 MHz	100 MHz	150 MHz	200 MHz
Channels	2			
Sampling rate	1 GSa/s (1 channel), 500 MSa/s (2 channels)			
Memory	4 kpts per channel			
Connectivity	USB*, GPIB and RS-232 optional			

* USB device standard; USB host optional with module N2865A

Oscilloscope probes

Get the most from your oscilloscope

Using the right probe is the first step in making reliable measurements. For every oscilloscope we sell, we offer a variety of different probes, each with different strengths. To get the best performance from your oscilloscope, choose the right probes for your applications.

Recommended probes for Agilent oscilloscopes

	U1600 Series	3000 Series		5000 Series		6000/7000 Series	
Scope bandwidth	20-40 MHz	60-150 MHz	200 MHz	100-300 MHz	500 MHz	100 MHz	300 MHz-1 GHz
Probe interface	BNC	BNC		AutoProbe Lite		BNC	AutoProbe Lite
Passive probe 1:1	U1560A			10070C			
Passive probe 10:1	U1561A	N2862A	N2863A	N2863A	10073C 1165A, 1171A	10074C	10073C 1165A, 1171A
High-voltage passive probe 100:1	U1562A			10076C			
High-voltage passive probe 1000:1				N2771A			
Low Z				1163A			
Active single-ended probe				1144A*	1156A 1145A* 1144A*	1156A, 1144A* or 1130A with SE probe accessory	
Active differential probe (high speed)		1144A*		1144A*	1130A* 1141A*	1130A* or 1141A*	
Active differential probe (high voltage)				N2771A*			
Current probe		1146A, N2780A/81A/82A/83A*		1146A 1147A, N2780A/81A/82A/83A*		1146A, N2780A/81A/ 82A/83A*	1146A, N2780A/81A/ 82A/83A*

* Requires additional accessories

Agilent InfiniiVision Series Oscilloscopes

Engineered for the best signal visibility

Thanks to MegaZoom III technology, every InfiniiVision scope provides responsive deep memory allowing you to see subtle signal details and infrequent events that other scopes miss.

All InfiniiVision 5000, 6000, and 7000 Series scopes feature:

- Patented MegaZoom III designed to uncover elusive details by capturing up to 100,000 deep-memory waveforms per second
- Responsive deep memory
- Standard 3-year warranty
- XGA display with 256 intensity levels to show subtle signal detail
- XVGA out standard, USB, LAN
- Wide range of applications—see table below

InfiniiVision

Agilent InfiniiVision 7000 Series oscilloscopes

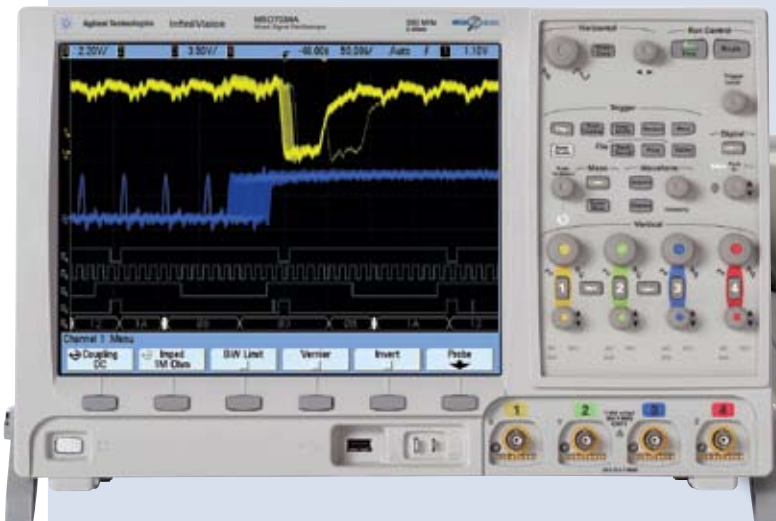
Engineered for the best signal visibility

- 12.1" display—nearly 40% larger than the nearest competitor
- DSO and MSO models from 350 MHz to 1 GHz for analog, digital or serial measurements
- 8 Mpts memory standard

Agilent InfiniiVision 6000 Series oscilloscopes

Integrated measurements for analog, digital, and serial designs

- DSO and MSO models from 100 MHz to 1 GHz for analog, digital, or serial measurements
- Battery option
- 8 Mpts memory standard
- 1U high version available for manufacturing applications



7000 Series



6000 Series

Agilent Infiniium 8000 Series oscilloscopes

Deep signal analysis for superior insight

Measure a huge variety of signal types and speeds to address a range of analog, digital and serial design challenges. Ideal for mixed-signal and embedded designs incorporating SDRAM, FPGAs, microprocessors and DSPs.



Agilent InfiniiVision 5000 Series oscilloscopes

Affordable performance in a compact package

- DSO models from 100 MHz to 500 MHz for analog and/or serial measurements
- Compact form factor with GPIB
- Up to 8 Mpts memory



5000 Series

Gain even greater insight into your problem with powerful

InfiniiVision

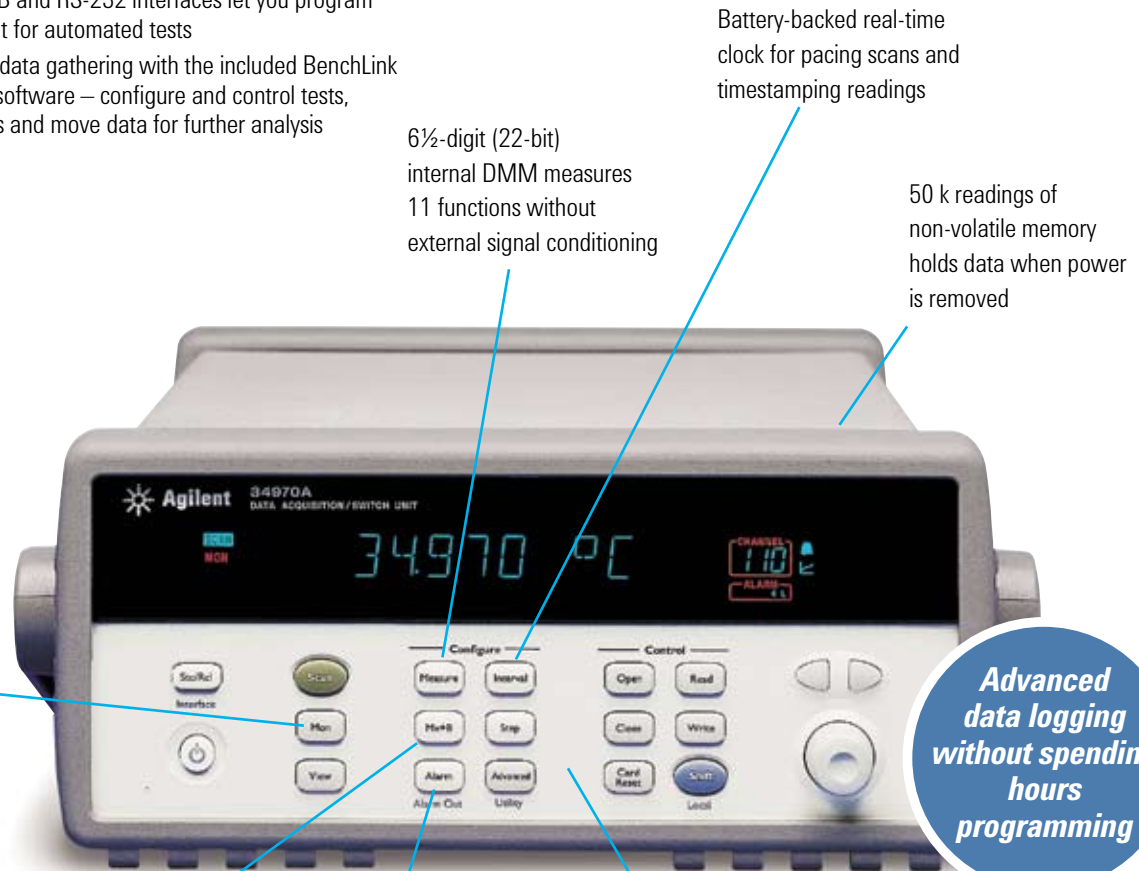
applications

Model	Description	5000	6000	7000
B4610A	Offline viewing	X	X	X
N5406A	Xilinx FPGA dynamic probe		MSO	MSO
N5423A	I ² C/SPI serial trigger and decode	4 ch	4 ch	4 ch
N5424A	CAN/LIN triggering and decode	4 ch	4 ch	4 ch
N5432A	FlexRay triggering and decode		MSO	MSO
N5434A	Altera FPGA dynamic probe		MSO	MSO
N5454A	Segmented memory	X	X	X
N5457A	RS-232/UART serial decode and trigger	4 ch	4 ch	4 ch
U1881A	Power measurement		X	X
89601A	Vector signal analysis		X	X

Agilent 34970A data acquisition/switch unit

Agilent performance at a fraction of the cost of other standalone data acquisition systems

- Get the flexibility you need with a 3-slot mainframe and your choice of 8 plug-in modules
- Standard GPIB and RS-232 interfaces let you program the instrument for automated tests
- Simplify your data gathering with the included BenchLink Data Logger software – configure and control tests, display results and move data for further analysis



*For a convenient way to collect and analyze your data, expand the capabilities of Agilent 34970A data acquisition/switch units with **Agilent BenchLink 34830A Data Logger Pro software***

Eight modules to choose from:

	34901A	34902A	34903A	34904A	34905A	34906A	34907A			34908A
Description	20-channel multiplexer	16-channel multiplexer	20-channel actuator/GP switch	4x8 matrix	Dual 4-channel RF mux, 50 Ω	Dual 4-channel RF mux, 75 Ω	Multifunction module			40-channel single-ended
Type	2-wire armature (4-wire selectable)	2-wire reed (4-wire selectable)	SPDT/Form C	2-wire armature	Common low (unterminated)	Common low (unterminated)	Two 8-bit digital I/O ports	26-bit, 100-kHz event counter	Two 16-bit analog outputs	40-channel single-ended multiplexer
Speed (ch/sec)	60	250	120	120	60	60	N/A	N/A	N/A	60
Max voltage	300 V	300 V	300 V	300 V	42 V	42 V	42 V	42 V	±12 V	300 V
Max current	1 A	50 mA	1 A	1 A	0.7 A	0.7 A	400 mA	N/A	10 mA	1 A

Agilent 34980A multifunction data acquisition switch/measure unit

A compact platform at a compact price

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

- High-performance switching—up to 560 2-wire multiplexer channels or 1024 matrix cross-points in one mainframe
- Optional built-in 6½-digit DMM—make 11 measurements with more than 3000 readings/sec
- Built-in Ethernet, USB 2.0, and GPIB
- BenchLink Data Logger software (34826A) for high-speed data logging with no programming



LXI

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 NEW	High-density switch	512-crosspoint reed matrix
34939A NEW	High-density switch	64-channel Form A channels up to 10 W
34937A/38A	GP switches	1A and 5A
34941A/42A	RF switches	50 to 75 Ohms
34945	µW switch/attenuation driver	Drive 64 coils
34946A/47A NEW	µW switches	SPDT switch to 20 GHz, 1- or 2-wire configurations
34950A-34959A	System control	D/A, DIO, Counter & breadboard to choose from



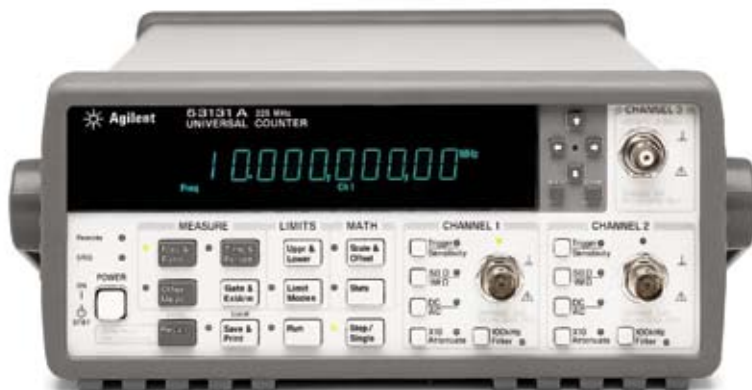
**Advanced
data logging
without spending
hours
programming**

For a convenient way to collect and analyze your data, expand the capabilities of Agilent 34980A data acquisition/switch units with **Agilent BenchLink 34832A Data Logger Pro software**

Agilent 53131A universal frequency counter

Fast, precise measurements and a host of high-end features at an affordable price

- Make accurate measurements quickly and easily with the intuitive interface and one-button access to frequently used functions
- Real-time digital signal processing for higher resolution measurements in a fraction of the time it takes other counters
- Automated limit tests and one-button measurement setups for fast, easy operation
- Choose an optional third channel for measurements up to 12.4 GHz.



Additional Agilent frequency counters

Agilent 53132A universal frequency counter

For applications requiring higher resolution than the 53131A

- Up to 12-digits/sec frequency resolution and 150-ps time interval resolution
- Advanced arming mode for time interval measurements

Agilent 53181A RF frequency counter

An easy-to-use counter that's optimized for RF applications

- Digit-blanking function lets you easily eliminate unnecessary digits when you want to read measurements quickly
- For higher-frequency measurements, choose an optional second channel that provides measurements up to 1.5 GHz, 3 GHz, 5 GHz, or 12.4 GHz

Model	53131A	53132A	53181A
Type	2 Channel* Universal; optional 3rd Channel		1 Channel RF; optional 2nd Channel
Measurements	Frequency, frequency ratio, time interval, period, rise/fall time, positive/negative pulse width, duty cycle, phase, totalize, peak voltage, time interval average, time interval delay		Frequency, frequency ratio (with optional Channel 2), period, peak voltage
Analysis	Automatic limit testing, math (scale and offset), statistics (minimum, maximum, mean, standard deviation)		
Frequency range (optional)	DC to 225 MHz (3, 5 or 12.4 GHz)	DC to 225 MHz (3, 5 or 12.4 GHz)	DC to 225 MHz (1.5, 3, 5 or 12.4 GHz)
Resolution (frequency, time interval)	10 digits/s, 500 ps	12 digits/s, 150 ps	10 digits/s, RF
Connectivity	Standard IntuiLink software, GPIB, and RS-232 (print only)		

* Channel 2 can only be used to make frequency, period, ratio, and voltage measurements – measurements on Channel 1 and Channel 2 are made sequentially.

GPIB, LAN and USB tools for PC/instrument connectivity

The easiest way to plug instruments into the work environment

CONVERTERS

Mix and match virtually any combination of instruments and interfaces.

You can establish error-free connections in less than 15 minutes using Agilent IO Libraries Suite.

From...	To converter...	To PC via...	Features
GPIB...	▶ Agilent 82357B USB/GPIB interface	▶ ...USB	<ul style="list-style-type: none"> • High-speed USB 2.0 with auto configuration • GPIB transfer rate of more than 1.15 MB/s • Connect to up to 14 instruments
GPIB...	▶ Agilent E5810A LAN/GPIB gateway	▶ ...LAN	<ul style="list-style-type: none"> • Share equipment and collaborate globally • 10BASE-T/100BASE-TX LAN for remote control of GPIB instruments • Digital display and built-in Web browser for easy setup/configuration
GPIB...	▶ Agilent E5813A networked 5-port USB hub	▶ ...USB	<ul style="list-style-type: none"> • Connect USB devices anywhere on the LAN • Eliminates 5-meter distance limitation for USB • No switches to set, no PC cards to install

GPIB CARDS

Easily control instruments and exchange data with maximum throughput

Agilent 82350B PCI high-performance GPIB interface card

Speed	Built-in buffering: speeds up to 900 KB/s
Size	Full PCI height
Power	5 V

Agilent 82351A PCIe™-GPIB interface card

Speed	1.4 MB/s transfer rate
Size	Compact half-height
Power	3.3 V



GPIB CABLES




Easily connect your GPIB instruments with a PC GPIB interface using reliable and durable Agilent GPIB cables. These cables are available in various lengths ranging from 0.5 meter (1.6 ft) to 8 meters (26.2 ft). Daisy-chain multiple cables together if necessary.

10833A/B/C/D/F or G GPIB Cables



Low Cost Spectrum Analyzers

Choose from a growing selection of portable, low-cost instruments

	N9320B spectrum analyzer	N9340B handheld spectrum analyzer	N1996 CSA spectrum analyzer
	Basic and affordable spectrum analyzer offering the performance and speed best in its class, boosts productivity and reduces cost for you	Optimized for field use, superior performance with lowest DANL, narrowest minimum RBW and fastest test speed in its class	Basic spectrum analyzer covering broadest frequency range from 100 kHz to 6 GHz, with built in VSWR bridge and powerful stimulus response measurement suite
			
Frequency range	9 kHz to 3 GHz	100 kHz to 3 GHz	100 kHz to 6 GHz
Resolution bandwidth (RBW)	10 Hz to 1 MHz	30 Hz to 1 MHz in 1-3-10 sequence	10 Hz to 5 MHz
DANL	-130 dBm -148 dBm w/preamp	-144 dBm w/preamp	-156 dBm w/preamp
TOI	+13 dBm	+10 dBm at 200 kHz offset	+18 dBm

N9320B spectrum analyzer

Professional performance, compact size and unbeatable value

Now get improved measurement reliability and new features to make your job easier with the N9320B, the optimized basic spectrum analyzer for effective and accurate measurements

- Overall amplitude accuracy: $<\pm 1.5$ dB
- Minimum non-zero span sweep: <10 ms
- Optional tracking generator: 100 kHz to 3 GHz
- Optional AM/FM demodulation
- Power meter function with Agilent U2000 series USB power sensor support
- LAN and USB connectivity, with optional GPIB interface
- Multi-language user interface: 11 languages



Pair the N9320B spectrum analyzer with an N9310A signal generator.

See page 20 for details.

N9340B 3-GHz handheld spectrum analyzer

New bright display and powerful features for testing in the field

If you need a reliable, accurate and detailed picture of your spectrum, put the speed and performance of Agilent spectrum analysis to work.

Exceptional usability

- 6.5" TFT color screen with bright display for use in all lighting conditions
- Back-lit keys for night use
- 4 hours of continuous battery operation – recharge or swap the battery in the field
- Modern USB and LAN connectivity for data transfer and remote control

Superior performance and powerful features

- Lowest DANL and narrowest RBW in its class
- Optional AM/FM and ASK/FSK modulation analysis
- 1-button power measurements: channel power, OBW, and ACPR



N1996A Agilent CSA spectrum analyzers

Price, performance, portability... PERFECT

The N1996A combines low price, great performance, and a highly portable design that takes quality measurements anywhere, anytime.

- Best-in-class usable dynamic range
- Two models: 100 kHz to 3 or 6 GHz
- Wide range of video bandwidths
- Adjustable sweep time
- Enhanced channel power measurements for radio standards analysis
- 2 hours of continuous battery operation
- Only 7.5 kg (16.5 lbs)
- Many options available to customize your spectrum analyzer



Agilent N9310A signal generator

Capability, reliability and affordability for generating CW and modulated RF signals

- Ideal for benchtop R&D, education, field measurements, and signal monitoring and manufacturing
- Rugged body, lightweight frame, large display and full-size front panel
- Standard USB connectivity for test automation and memory stick support
- 9 kHz to 3 GHz frequency coverage with 0.1 Hz resolution
- Wide bandwidth (40 MHz) IQ modulator for generating digital modulated signals from your own custom IQ signals



Pair the N9310A signal generator with the N9320B spectrum analyzer to maximize your productivity, minimize your cost.

- Both start at 9 kHz to meet EMC testing requirements
- Both are easy to use with additional functionality built in

The N9320B spectrum analyzer offers built-in one button measurements for Channel power, ACPR, SEM, OBW, TOI.

The N9310A signal generator has built-in analog modulation capabilities to generate modulated AM, FM, QM and pulse signals easily. Add the optional analog IQ input capability and generate complex IQ modulated signals such as GSM, CDMA and OFDM signals from custom IQ inputs.



Agilent E4418B/19B power meter

Make accurate CW and average power measurements faster and more affordably

- Accelerate tests with faster range switching and measurement throughput up to 200 readings/s over GPIB
- Simple operation via uncluttered front panel
- Optional battery operation for field use



Additional power meters and sensors

EPM-P Series power meters (E4416A/17A)

Advanced capabilities for advanced power measurements

- Accurately profile complex modulation formats of up to 5 MHz video bandwidth with 20 M-samples per second continuous sampling rate
- PC software included for power and statistical analysis
- High throughput—up to 1,000 corrected readings/s via GPIB

P-Series power meters (N1911A/12A)

Accurate, fast and repeatable power measurements for R&D and manufacturing environments

- Ideal for aerospace/defense, wireless communications and wireless 802.11a/b/g networking
- Capture single-shot and repetitive events over a wide bandwidth with 30-MHz video bandwidth and 100 Msamples per second continuous sampling capability
- Comprehensive power, time, and statistical measurements

Agilent power sensors

Stable, repeatable measurements for a wide variety of applications

NEW N8480-Series family: Thermocouple-based sensors offer exceptional accuracy and superior usability

- Built-in EEPROM feature for ease of use
- Extended dynamic range of 5 dB at lower range
- Improved linearity and accuracy
- Backward compatibility with EPM, EPM-P and P-Series power meters

- **8480 family:** Average power using both diode and thermocouple technology
- **E-Series family:** Includes E441x wide dynamic range CW sensors, E9300 wide dynamic range average power sensors, E9320 peak and average power sensors
- **P-Series family:** Peak and average power measurements of wide-bandwidth modulated signals using diode technology

Model number	Number of channels	Frequency range	NEW N8480-Series sensors	P-Series sensors	E-Series E9320 sensor	E-Series E9300 sensors	E-Series CW sensors	8480 Series sensors	Standard interfaces
E4416A	1	9 kHz to 110 GHz	-35 dbm to +20 dBm	N/A	-65 dBm to +20 dBm	-60 dBm to +44 dBm	-70 dBm to +20 dBm	-70 dBm to +44 dBm	GPIB, RS-232
E4417A	2	9 kHz to 110 GHz	-35 dbm to +20 dBm	N/A	-65 dBm to +20 dBm	-60 dBm to +44 dBm	-70 dBm to +20 dBm	-70 dBm to +44 dBm	GPIB, RS-232
E4418B	1	9 kHz to 110 GHz	-35 dbm to +20 dBm	N/A	N/A	-60 dBm to +44 dBm	-70 dBm to +20 dBm	-70 dBm to +44 dBm	GPIB, RS-232
E4419B	2	9 kHz to 110 GHz	-35 dbm to +20 dBm	N/A	N/A	-60 dBm to +44 dBm	-70 dBm to +20 dBm	-70 dBm to +44 dBm	GPIB, RS-232
N1911A	1	9 kHz to 110 GHz	-35 dbm to +20 dBm	-35 dBm to +20 dBm	-65 dBm to +20 dBm	-60 dBm to +44 dBm	-70 dBm to +20 dBm	-70 dBm to +44 dBm	GPIB, LAN, USB
N1912A	2	9 kHz to 110 GHz	-35 dbm to +20 dBm	-35 dBm to +20 dBm	-65 dBm to +20 dBm	-60 dBm to +44 dBm	-70 dBm to +20 dBm	-70 dBm to +44 dBm	GPIB, LAN, USB

Agilent U2000 Series USB power sensors

Fast, accurate measurements over long distances

Travel light, save space, and get measurements on the go. The U2000 Series provides fast average-power measurements from RF and microwave devices over long cables via the USB port—no separate power meter required.

- Precision power sensors plug directly into PC- or USB-enabled Agilent instruments (with firmware upgrade)
- Simple setup via USB plug-and-play—no external power needed
- Long-distance measurements using USB-to-LAN hub internal zeroing without disconnecting the DUT—Up to 250 average power readings per second
- >1,000 readings/sec average power measurement under-buffer mode
- Accuracy: < 0.12 dB (50 MHz at 0 dBm)
- Now compatible with handheld spectrum analyzer turning it into an accuracy power meter particularly useful for installation and maintenance.



High-power USB average-power sensors

- Enhanced firmware enables time-gated measurements and frequency sweeping (free and self-upgrade firmware for existing USB power sensor users)
- Built-in attenuator to enable power measurement up to +44 dBm. Eliminates the use of external attenuator and improve mismatch.

NEW



Model	Frequency range	Power range	Connector type
U2000A	10 MHz to 18 GHz	-60 dBm to +20 dBm	Type-N
U2000B	10 MHz to 18 GHz	-30 dBm to +44dBm	Type-N
U2000H	10 MHz to 18 GHz	-50 dBm to +30dBm	Type-N
U2001A	10 MHz to 6 GHz	-60 dBm to +20 dBm	Type-N
U2001B	10 MHz to 6 GHz	-30 dBm to +44dBm	Type-N
U2001H	10 MHz to 6 GHz	-50 dBm to +30dBm	Type-N
U2002A	50 MHz to 24 GHz	-60 dBm to +20 dBm	3.5 mm
U2002H	50 MHz to 24 GHz	-50 dBm to +30dBm	3.5 mm
U2004A	9 kHz to 6 GHz	-60 dBm to +20 dBm	Type-N

Agilent RF and microwave test accessories

Over 200 accessories—the key to getting great performance, accuracy, and flexibility

Agilent J7211A/B/C attenuation control unit

Highly accurate and automated measurements for benchtop and ATE applications of attenuators



Attenuators

32 models for signal conditioning and control

- Long operating life—5 million cycles
- RF repeatability 0.03 dB
- Average power: 1 W, 2 W, 25 W

Agilent 11713B/C switch driver

Remote or front-panel drive control for programmable attenuators and electromechanical or solid state switches

L-Series electromechanical switches

Reliable, economical switching with low insertion loss

- 0.03 dB insertion loss repeatability—guaranteed for 2 million cycles
- Excellent isolation, typically >80 dB at 26.5 GHz



Model	Frequency range	Type	Attenuation
8490G	DC to 67 GHz	Fixed	3, 6, 10, 20, 30, 40 dB
8491A	DC to 12.4 GHz	Fixed	3, 6, 10, 20, 30, 40, 50, 60 dB
8494B	DC to 18 GHz	Manual	0 to 11 dB, 1 dB steps
8496B	DC to 18 GHz	Manual	0 to 110 dB, 10 dB steps
8494H	DC to 18 GHz	Programmable	0 to 11 dB, 1 dB steps
8496H	DC to 18 GHz	Programmable	0 to 110 dB, 10 dB steps

Model	Frequency range	Type	Connector
L7104A/B/C	DC to 4/20/26.5 GHz	Terminated/SP4T	SMA (f)
L7106A/B/C	DC to 4/20/26.5 GHz	Terminated/SP6T	SMA (f)
L7204A/B/C	DC to 4/20/26.5 GHz	Unterminated/SP4T	SMA (f)
L7206A/B/C	DC to 4/20/26.5 GHz	Unterminated/SP6T	SMA (f)
L7222C	DC to 26.5 GHz	Transfer	SMA (f)

LCR Resistance Meter

Agilent E4980A precision LCR meter

Precise, reliable, high-speed test for both high and low impedance measurements

- Five times faster than the Agilent 4284A LCR meter
- Make accurate, repeatable measurements from 20 Hz to 2 MHz

Simple and intuitive operation

Easily configure measurements with soft keys (same interface as Agilent 4284A) and one-touch front panel keys

High-resolution LCD display

Full, 7-digit display and 6 display modes for clear and easy viewing

USB interface

(memory devices only)
Easily save measurement states, data logs, and screen captures to USB memory devices

LXI



DC source

Low-noise DC source port provides more measurement flexibility, and enables a one-box solution, making an additional DC source or multimeter unnecessary. 0 to ± 10 V

100 μV to 2 Vrms/20 Vrms variable test signals

Provides high signal levels to evaluate AC voltage characteristics

Professional performance, compact size and unbeatable value

N9320B

Built to perform
Priced to compete

kHz ~ 3 GHz



Now get improved measurement reliability and new features to make your job easier with the N9320B spectrum analyzer.

- Frequency range: 9 kHz to 3 GHz
- Minimum non-zero span sweep: < 10 ms
- Resolution bandwidth (RBW): 10 Hz – 1 MHz
- Overall amplitude accuracy: ± 1.5 dB

Find out how to make your RF tests better, faster, and more affordably with the ideal combo: the N9320B and N9310A signal generator.

See pages 18 and 20.

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Work with your favorite distributor to make all of your everyday equipment purchases

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Count on in-depth expertise and the information you need to make smart decisions

Rest easy, knowing you're always covered by Agilent warranty, maintenance, and calibration services

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