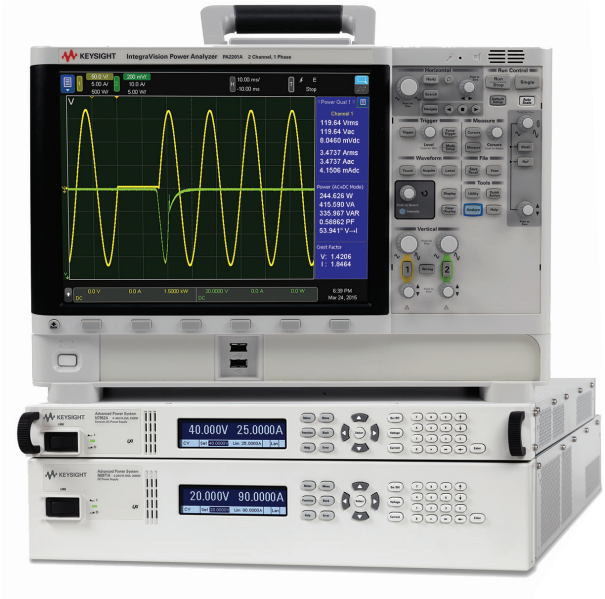
SELECTION GUIDE

November 2021

# Power Products Solutions

A guide to selecting power products to match your test and measurement needs.





KEYSIGHT TECHNOLOGIES

# Introduction

## Power your next insight -

Today, your products are changing the way we all work and play — wearables, electric vehicles, and beyond. For more than 50 years, Keysight system and benchtop DC power supplies have been changing the way engineers prove their design, understand the issues and ensure product quality. On a bench or in a system, our supplies are ready for your application, offering optimal choices in voltage, current, capability and performance. Test with confidence with Keysight — and power your next insight.

# PathWave BenchVue Software: Control. Automate. Simplify.

Keysight PathWave BenchVue software for the PC eliminates many of the issues around bench testing. By making it simple to connect, control instruments, and automate test sequences, you can quickly move past the test development phase and access results faster than ever before. Dedicated instrument apps allow you to quickly configure the most commonly used measurements and setups for each instrument family. Rapidly build custom test sequences with the integrated Test Flow app to automate and visualize test results without the need for instrument programming. Powerful BenchVue apps enable you to significantly reduce test development time.

## Use PathWave BenchVue apps to:

- Configure the most commonly used controls and measurements from your Keysight instruments
- Visualize multiple measurements simultaneously
- Easily log and export data and screen images in just a few clicks for faster analysis
- Quickly create automated test sequences with minimal instrument knowledge
- Access deeper instrument controls and measurement solutions
- Save time with software that offers multiple instrument apps in one platform

PathWave BenchVue software works with hundreds of Keysight digital multimeters, power supplies, function/waveform generators, spectrum analyzers, data acquisition units, network analyzers, oscilloscopes, power meters, power sensors, electronic loads, universal counters and more – look for the BenchVue enabled icon for compatible products.

Start accelerating your workflow today and download a 30-day trial version at www.keysight.com/find/BenchVue

## Look For This Icon

throughout the catalog to identify PathWave BenchVue software enabled products.

## Specific PathWave BenchVue software for power products

| Software products | Model number | Key features | Link |
|---|---|---|---|
| PathWave BenchVue Power Supply App | BV0003B | Easily set parameters, build automated tests, and visualize power output and voltage/current over time. | https://www.keysight.com/my/en/product/BV0003B/pathwave-benchvue-power-supply-app.html |
| PathWave BenchVue Electronic Load App | BV0012B | Easily set parameters, build automated tests, and visualize power output and voltage/current over time for better device characterization. | https://www.keysight.com/my/en/product/BV0012B/pathwave-benchvue-electronic-load-app.html |
| PathWave BenchVue Advanced Power Control and Analysis – Single Instrument Connection | BV9201B | Take full advantage of capabilities built-in to your advance power supply. Characterize voltage and current usage, even generate power arbitrary waveforms. Supported N6705C, N7900 and RP7900 series. | https://www.keysight.com/my/en/product/BV9201B/benchvue-advanced-power-control-analysis-single-instrument-connection.html |
| PathWave BenchVue Advanced Power Control and Analysis for Multiple Instrument Connections | BV9200B | Take full advantage of capabilities built-in to your advance power supply. Characterize voltage and current usage, even generate power arbitrary waveforms. Control and analyze voltage and current measurements from multiple N6705C, N7900 or RP7900 Series. | https://www.keysight.com/my/en/product/BV9200B/benchvue-advanced-power-control-analysis-for-multiple-instrument-connections.html |
| PathWave BenchVue Advanced Battery Test And Emulation Software for a Single Instrument | BV9211B | Achieve higher accuracy, repeatability, and safety with an emulation based on a unique battery model. Your model will allow you to determine your device's power consumption, emulate an actual battery, and import existing battery models. | https://www.keysight.com/my/en/product/BV9211B/advanced-battery-test-and-emulation-software-for-a-single-instrument.html |
| PathWave BenchVue Advanced Battery Test And Emulation Software for Multiple Instruments | BV9210B | Achieve higher accuracy, repeatability, and safety with an emulation based on a unique battery model. Your model will allow you to determine your device's power consumption, emulate an actual battery, and import existing battery models. | https://www.keysight.com/my/en/product/BV9210B/advanced-battery-test-and-emulation-software-for-multiple-instru.html |

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# Power Supply Categories

E36340 DC power supply

## Basic

Affordable, quiet and stable power supplies for both manual and simple computer-controlled operation. The Keysight line of basic bench power supplies is optimized to provide DC power in applications where speed and accuracy are a low consideration. These power supplies are a high-value fit for the bench and in a system rack.

## Performance

Speed, precision and advanced programming features make the performance power supplies the right choice when the DC power supply is a factor in test performance. With features such as DUT protection, fast programming times and downloadable V and I sequences, these DC power supplies can reduce your risk during test and system development.

N6705C DC power analyzer

## Specialty

Sometimes it is best to have a power supply with unique capabilities that are tailored to a specific application. For example, the Keysight 66300 Mobile Communications DC Sources are designed to emulate the unique characteristics of a battery for mobile device testing and maintain those characteristics even when using long load leads, such as in an ATE system. The Keysight E4360 Solar Array Simulator simulates solar panel I-V characteristics for satellite development and testing.

6811C AC power source/analyzer

## Modular

Keysight offers fully programmable power supplies in a modular format: the N6700 low-profile modular power system, N6705C DC power analyzer, and 66000 modular power system series. With this feature, you now have an extensive choice of power options—from basic through performance. Additionally, all modules interact in the same way at a single interface node, which simplifies system architecture and reduces cost when the test system inevitably changes.

DC electronic load mainframe

## AC sources

Keysight provides a full line of basic and performance AC sources to help you test a variety of AC-powered devices. Basic sources provide reliable power while performance sources provide advanced measurements and waveform generation.

## DC electronic loads

Electronic loads sink current and dissipate power in an accurate and controlled manner. Connected to circuit under test, an electronic load provides a convenient way to vary the load on the circuit's output in order to understand the circuit's performance.

N6790 Series DC Electronic Loads

Keysight offers two families of electronic loads, the N3300 family which is a modular, multiple output family; and the new N6790 Series DC Electronic Load. The N6790A Series is available in the N6700C, N6701C, N6702C low profile modular mainframe system and the N6705C DC Power Analyzer mainframe for bench use.

# Selecting the Right System and Benchtop DC Power Supply For Your Application

We have designed the selection guide to make easy to pick the correct power supply based on your requirements. If your selection is driven by voltage and current requirements, please visit the tables found on pages 11 and 12. From there you can go to the product page(s) for more detail.

When you have specialized requirements that need features such as source and measure, it is quite easy to select from a set of power supplies that are designed exactly for those requirements. Refer to page 23 for specialty power products.

But when you have more complex requirements and you know the power supply is an important part of your test bench, where do you start and what do you need to consider?

Of course you need to select the right voltage and current, but there are other factors to consider when selecting a benchtop DC power supply for your applications. This guide gives a definition of the feature, states why it's important, and tells you how to use that feature when specifying the right power supply. In addition, the product families are listed so you can quickly see which product best fits your application. With that information, you can go to the product pages for detailed specifications.

## Use the following information to help select the features you need in a DC power supply. Then go to the product page(s) for more detail.

## Output characteristics

| | | **Ripple and noise < 10 mVp-p** | | **Ripple and noise 10 to 500 mVp-p** | |
|---|---|---|---|---|---|
| **Ripple and noise**<br>Use the ripple and noise specification to determine what, if any, affects these variations will have on your circuit or device. | Ideally, an output is free from any variations in voltage. In practice, there are periodic variations, called ripple, and random variations, called noise. Typically specified as either Vrms or Vp-p, the most useful spec is Vp-p. With Vp-p you will know the maximum variation away from the DC setpoint. | 66309B-32A<br>B2961B-62B<br>E3600 Series<br>E36300 Series<br>N6751A-66A<br>N6781A-84A<br>N6900 Series<br>N7900 Series<br>U8031A-32A | p35<br>p17<br>p13<br>p13<br>p19<br>p27<br>p18<br>p18<br>p13 | E36100 Series<br>N5700 Series<br>N6731B-46B<br>N6773A-77A<br>N6785A-86A<br>N8700 Series<br>N8900 Series<br>RP7900 Series<br>U8001A-02A | p13<br>p14<br>p19<br>p19<br>p35<br>p14<br>p15<br>p26<br>p13 |
| | | **Accuracy < 0.03%** | | **Accuracy > 0.05%** | |
| **Programming accuracy**<br>Use programming accuracy to determine if the power supply can produce a voltage and current within the precision needed by your device. | Programming accuracy is a measure of how closely the output will be to the setpoint. Specified as a percent of output plus an offset, you can calculate whether or not the power supply has the precision required. In addition, many power supplies have built-in voltmeters and ammeters to measure its output. | B2961B-62B<br>E36300 Series<br>N6751A-66A<br>N6781A-82A<br>N6784A-86A<br>N6900 Series<br>N7900 Series | p17<br>p13<br>p19<br>p27<br>p35<br>p18<br>p18 | E3600 Series<br>E36100 Series<br>N5700 Series<br>N6731B-46B<br>N6773A-77A<br>N6783A<br>N8700 Series<br>N8900 Series<br>RP7900 Series<br>U8000 Series | p13<br>p13<br>p14<br>p19<br>p19<br>p35<br>p15<br>p15<br>p26<br>p13 |

# Selecting the Right System and Benchtop DC Power Supply For Your Application (Continued)

## Output characteristics (Continued)

| | | FAST output response < 15 ms | | MEDIUM output response < 200 ms | |
|---|---|---|---|---|---|
| **Output response**<br>Use this specification to select the power supply that is fast enough for your application. | When the setpoint changes it will take some time before the output reaches the setting. How fast it reaches the setpoint is a result of its regulation design and the output bandwidth. The specifications are typically for a voltage change from 10 to 90% of its rated output or a load change of 50 to 100%. | 66300 Series<br>B2961B-62B<br>N6751A-66A<br>N6781A-86A<br>N6900 Series<br>N7900 Series | p35<br>p17<br>p19<br>p27<br>p18<br>p18 | E36100 Series<br>E36300 Series<br>N5700 Series<br>N6731B-46B<br>N6773A-77A<br>N8700 Series<br>N8900 Series<br>RP7900 Series<br>U8001A-02A | p13<br>p13<br>p14<br>p19<br>p19<br>p14<br>p15<br>p25<br>p13 |

## Control

| | | Manual only | | Computer and manual control |
|---|---|---|---|---|
| **Computer interface**<br>Specify power supplies with the appropriate hardware and software interface for computer control. | Many DC power supplies have both manual and computer control. Some are only manually controlled. Hardware interfaces for DC power supplies include GPIB, USB, and LAN (LXI Core). Software interfaces include the SCPI language and drivers such as IVI-C, IVI-COM, and VXI plug&play. | E3620A-30A<br>U8000 Series | p13<br>p13 | All others |

| | | WITH analog input | | WITHOUT analog input |
|---|---|---|---|---|
| **Analog voltage control signal**<br>Specify a power supply with an analog input whenever you need to amplify the power or need to track an analog voltage. | Some power supplies provide an analog voltage control input to cause the voltage output to follow this input. Essentially, it amplifies the power since the power supply can provide current up to its rated maximum. | N5700 Series<br>N8700 Series<br>N8900 Series | p14<br>p14<br>p15 | All others |

## Output measurements

| | | | | Built-in measurement |
|---|---|---|---|---|
| **Measure V & I output**<br>Specify power supplies with built-in measurements whenever you need to check the actual voltage and current. | Many power supplies have a built in voltmeter and ammeter to read back their own output. The measurements can be displayed on the front panel or queried by a computer connected to the interface. These measurements are particularly useful in computer-controlled systems. Measurement (or read back) accuracy is specified as a percent of full scale plus an offset. | | | All others |

# Selecting the Right System and Benchtop DC Power Supply For Your Application (Continued)

## Packaging

| | | QUARTER rack | | HALF rack | | FULL rack |
|---|---|---|---|---|---|---|
| **Physical size**<br>Use the size specification to match bench or system use. | Keysight power supplies have standard EIA 19-inch rack dimensions. The width is either half rack width or full rack width while the height ranges from 1U to 5U (1.75 to 8.57 in). While any size can be used on the bench or in a system rack, the half rack width is generally better for bench applications while the full rack width works well in system racks. Of special note is the 1U height of the N5700 and N6700 Series. | E36100 Series | p13 | B2961B-62B<br>E3600 Series<br>E36300 Series<br>U8000 Series | p17<br>p13<br>p13<br>p13 | All others |
| | | **FRONT terminals** | | **REAR terminals** | | |
| **Front or rear output terminals**<br>Select the model with its output terminals in the best location for your application on either the bench or in a system rack. | The output terminals can be located on the front of the power supply or the rear. System and high-current power supplies have their outputs located on the rear panel while bench and some low current power supplies have outputs on the front. | B2961B-62B<br>E3620A-30A<br>E36100 Series<br>N6705C<br>U8000 Series | p17<br>p13<br>p13<br>p20<br>p13 | All others | | |
| | | **SINGLE outputs** | | **MULTIPLE outputs** | | |
| **Number of outputs**<br>Specify multiple outputs per unit when you need to save space on the bench or in a system rack. | Keysight power supplies are configured with 1 to 8 outputs per unit. Multiple output power supplies can save space on the bench or in a rack. Of special note are the 66000 and N6700 modular mainframes that can hold up to 8 and 4 modules respectively. | All others | | B2961B-62B<br>E3620-31A<br>E3646A-49A<br>E36300 Series<br>E4360 mfg<br>N6700 mfr<br>N6705C<br>U8031A-32A | p17<br>p13<br>p13<br>p13<br>p36<br>p19<br>p20<br>p13 | |


mfr = mainframes for the E4360, N6700, N6707C, N6705C and 66000 modular power supplies

# Selecting the Right System and Benchtop DC Power Supply For Your Application (Continued)

## Specialty

| | | WITH DUT protection | | WITHOUT DUT protection | |
|---|---|---|---|---|---|
| **DUT protection**<br>Select power supplies with DUT protection whenever your load may be damaged by over voltage or over current. | Many power supplies can be set for a maximum voltage and current to protect the device under test (DUT). When set, the power supply will limit the voltage and/or current regardless of the load. This feature provides a margin of safety when something goes wrong. | All others | | E3620A-31A | p13 |
| | | **WITH LIST memory** | | **WITHOUT LIST memory** | |
| **Computer Interface**<br>Specify power supplies with the appropriate hardware and software interface for computer control. | Many DC power supplies have both manual and computer control. Some are only manually controlled. Hardware interfaces for DC power supplies include GPIB, USB, and LAN (LXI Core). Software interfaces include the SCPI language and drivers such as IVI-C, IVI-COM, and VXI plug&play. | B2961B-62B<br>E4360 Series<br>N6700 Series<br>N6705C<br>N6900 Series<br>N7900 Series<br>RP7900 Series | p17<br>p37<br>p19<br>p20<br>p18<br>p18<br>p26 | All others | |
| | | **WITH optional relays** | | **WITHOUT optional relays** | |
| **Output disconnect or polarity reversal**<br>Select power supplies with optional output relays when your application requires power to be physically disconnected from the device. | Automatic connect, disconnect, and polarity reversal can be accomplished with programmable output relays. By doing so, you will eliminate an external relay and have an easy method to programmatically actuate the relay. | 66300 Series<br>N6700 Series<br>N7900 Series | p35<br>p19<br>p18 | All others | |

# DC Voltage and Current At a Glance

| | | | Voltage ranges: 5 to 40 V | | |
|---|---|---|---|---|---|
| **Model numbers** | **Page** | **Outputs** | **5 to 9 V** | **12 to 20 V** | **21 to 40 V** |
| 66309B-32A | 35 | 1 to 2 | | 0 to 15 V, 3 A (all 663xx) | |
| E36102B-06B | 13 | 1 | 0 to 6 V, 5 A (E36102B) | 0 to 20 V, 2 A (E36103B) | 0 to 35 V, 1A (E36104B) |
| E3620A | 13 | 2 | | | 0 to 25 V, 1 A (E3620A x2) |
| E36311A-13A | 13 | 3 | 0 to 6 V, 5 A (E36311A-12A)<br>0 to 6 V, 10 A (E36313A) | | 0 to ± 25 V, 1 A (E36311A x 2)<br>0 to 25 V, 1 A (E36312A x 2)<br>0 to 25 V, 2 A (E36313A x 2) |
| E3630A-31A | 13 | 3 | 0 to 6 V, 2.5 (E3630A x1)<br>0 to 6 V, 5 A (E3631A x1) | 0 to ± 20 V, 0.5 A (E3630A x2) | 0 to ± 25 V, 1 A (E3631A x2) |
| E3632A-34A [2] | 13 | 1 | 0 to 8 V, 20 A (E3633A r1) | 0 to 15 V, 7 A (E3632A r1)<br>0 to 20 V, 10 A (E3633A r2) | 0 to 30 V, 4 A (E3632A r2)<br>0 to 25 V, 7 A (E3634A r1) |
| E3640A-45A [2] | 13 | 1 | 0 to 8 V, 3 A (E3640A r1)<br>0 to 8 V, 5 A (E3642A r1)<br>0 to 8 V, 8 A (E3644A r1) | 0 to 20 V, 1.5 A (E3640A r2)<br>0 to 20 V, 2.5 A (E3642A r2)<br>0 to 20 V, 4 A (E3644A r2) | 0 to 35 V, 0.8 A (E3641A r1)<br>0 to 35 V,1.4 A (E3643A r1)<br>0 to 35 V, 2.2 A (E3645A r1) |
| E3646A-49A [2] | 13 | 2 | 0 to 8 V, 3 A (E3646A r1)<br>0 to 8 V, 5 A (E3648A r1) | 0 to 20 V, 1.5 A (E3646A r2)<br>0 to 20 V, 2.5 A (E3648A r2) | 0 to 35 V, 0.8 A (E3647A r1)<br>0 to 35 V, 1.4 A (E3649A r1) |
| N5741A-52A | 14 | 1 | 0 to 6 V, 100 A (N5741A)<br>0 to 8 V, 90 A (N5742A) | 0 to 12.5 V, 60 A (N5743A)<br>0 to 20 V, 38 A (N5744A) | 0 to 30 V, 25 A (N5745A)<br>0 to 40 V, 19 A (N5746A) |
| N5761A-72A | 14 | 1 | 0 to 6 V, 180 A (N5761A)<br>0 to 8 V, 165 A (N5762A) | 0 to 12.5 V, 120 A (N5763A)<br>0 to 20 V, 76 A (N5764A) | 0 to 30 V, 50 A (N5765A)<br>0 to 40 V, 38 A (N5766A) |
| N6731B-36B | 19 | 1 to 4 [1] | 0 to 5 V, 10 A (N6731B)<br>0 to 8 V, 6.25 A (N6732B) | 0 to 20 V, 2.5 A (N6733B) | 0 to 35 V, 1.5 A (N6734B) |
| N6741B-46B | 19 | 1 to 4 [1] | 0 to 5 V, 20 A (N6741B)<br>0 to 8 V, 12.5 A (N6742B) | 0 to 20 V, 5 A (N6743B) | 0 to 35 V, 3 A (N6744B) |
| N6751A-52A<br>N6761A-62A<br>N6773A-77A | 19 | 1 to 4 [1] | | 0 to 20 V, 15 A (N6773A) | 0 to 35 V, 8.5 A (N6774A) |
| N6753A-56A<br>N6763A-66A | 19 | 2 [1] | | 0 to 20 V, 50 A (N6753A)<br>0 to 20 V, 50 A (N6755A)<br>0 to 20 V, 50 A (N6763A)<br>0 to 20 V, 50 A (N6765A) | |
| N6781A-86A | 26 | 1 to 4 [1] | 0 to 6 V, +3 to-2 A (N6783A-MFG)<br>0 to 8 V, +3 to-2 A (N6783A-BAT) | 0 to 20 V, ± 3 A (N6781A-82A)<br>0 to ±20 V, ± 3 A (N6784A)<br>0 to 20V, ± 8 A (N6785-86A) | |
| N6950A-52A, N6970A-72A<br>N7950A-52A, N7970A-72A | 18<br>18 | 1<br>1 | 0 to 9 V, 100 A (N69/N7950A)<br>0 to 9 V, 200 A (N69/N7970A) | 0 to 20 V, 50 A (N69/N7951A)<br>0 to 20 V, 100 A (N69/N7971A) | 0 to 40 V, 25 A (N69/N7952A)<br>0 to 40 V, 50 A (N69/N7972A) |
| N8731A-42A | 14 | 1 | 0 to 8 V, 400 A (N8771A) | 0 to 10 V, 300 A (N8732A)<br>0 to 15 V, 220 A (N8733A)<br>0 to 20 V, 165 A (N8734A) | 0 to 30 V, 110 A (N8735A)<br>0 to 40 V, 85 A (N8736A) |
| N8754A-62A | 14 | 1 | | 0 to 20 V, 250 A (N8754A) | 0 to 30 V, 170 A (N8755A)<br>0 to 40 V, 125 A (N8756A) |
| RP7931A-36A | 26 | 21 | | 0-20 V, ± 400 A (RP7931A/41A) | |
| RP7941A-46A | 26 | 21 | | 0-20 V, ± 800 A (RP7933A/43A) | |
| U8001A | 13 | 1 | | | 0 to 30 V, 3 A |
| U8002A | 13 | 1 | | | 0 to 30 V, 5 A |
| U8031A | 13 | 3 | | | 0 to 30 V, 6 A (Output 1 and 2); 5 V, 3 A (Output 3) |
| B1500A | 31 | 1 to 10 [3] | 50 to 80 V: 0 to ± 200 V, ± 0.1 A to ± 1 A | 100 to 210 A: 0 to ± 200 V, ± 0.1 A to ± 1 A | |
| B2901A/02A/11A/12A | 28 | 1 to 2 | 0 to ± 210 V, ± 0.105 A to ± 3 A | 0 to ± 210 V, ± 0.105 A to ± 3 A | |
| B2901BL | 28 | 1 | 0 to 21 V, 0 to ±1.5 A | | |
| B2910BL | 28 | 1 | 0 to ±210 V, 0 to ±1.5 A | 0 to ±210 V, 0 to ±1.5 A | |
| B2901B/02B/11B/12B | 28 | 1 to 2 | 0 to ±210 V, 0 to ±3 A | 0 to ±210 V, 0 to ±3 A | |

1. Power modules that require a modular mainframe (66000 Series, N6700 Series, N6705).
2. Dual range power supplies; r1 denotes range 1; r2 denotes range 2.

# DC Voltage and Current At a Glance (Continued)

| | | | Voltage ranges: 50 to 1500 V | | |
|---|---|---|---|---|---|
| **Model numbers** | **Page** | **Outputs** | **30 to 80 V** | **100 to 210 V** | **1500 to 2000 V** |
| EDU36311A | 16 | 3 | 0 - 6 V, 5 A | 0 - 30 V, 1 A | 0 - 30 V, 1 A |
| B2961B-62B | 17 | 1 to 2 | 0 to ±210 V, 0 to ±3 A | 0 to ±210 V, 0 to ±3 A | |
| B2961A-62A | 17 | 1 to 2 | 0 to ± 210 V, ± 0.105 A to ± 3 A | 0 to ± 210 V, ± 0.105 A to ± 3 A | |
| E36102B-06B | 13 | 1 | 0 to 60 V, 0.6A (E36105B) | 0 to 100 V, 0.4 A (E36106B) | |
| E3632A-34A [2] | 13 | 1 | 0 to 50 V, 4 A (E3634A r2) | | |
| E3640A-45A [2] | 13 | 1 | 0 to 60 V, 0.5 A (E3641A r2)<br>0 to 60 V, 0.8 A (E3643A r2)<br>0 to 60 V, 1.3 A (E3645A r2) | | |
| E3646A-49A [2] | 13 | 2 | 0 to 60 V, 0.5 A (E3647A r2)<br>0 to 60 V, 0.8 A (E3649A r2) | | |
| E4361A-62A | 37 | 1 to 2 [1] | 0 to 65 V, 8.5 A (E4361A) | 0 to 130 V, 5 A (E4362A) | |
| E5260/70 | 30 | 1 to 8 [1] | 50 to 80V: 0 to ± 200 V, ± 0.1 A to ± 1 A | 100 to 210 A: 0 to ± 200 V, ± 0.1 A to ± 1 A | |
| E5262/63 | 30 | 2 | 50 to 80 V | 0 to ± 200 V, ± 0.2 A (E5262A); 0 to ± 200 V, ± 0.2 A to ± 1 A (E5263A) | |
| | | | 100 to 210 A | 0 to ± 200 V, + 0.2 A to 1 A | |
| | | | | 0 to ± 200 V, ± 0.2 A (E5262A); 0 to ± 200 V, ± 0.2 A to ± 1 A (E5263A) | |
| N5741A-52A | 14 | 1 | 0 to 60 V, 12.5 A (N5747A)<br>0 to 80 V, 9.5 A (N5748A) | 0 to 100 V, 7.5 A (N5749A)<br>0 to 150 V, 5 A (N5750A) | 0 to 300 V, 2.5 A (N5751A)<br>0 to 600 V, 1.3 A (N5752A) |
| N5761A-72A | 14 | 1 | 0 to 60 V, 25 A (N5767A)<br>0 to 80 V, 19 A (N5768A) | 0 to 100 V, 15 A (N5769A)<br>0 to 150 V, 10 A (N5770A) | 0 to 300 V, 5 A (N5771A)<br>0 to 600 V, 2.6 A (N5772A) |
| N6731B-36B | 19 | 1 to 4 [1] | 0 to 60 V, 0.8 A (N6735B) | 0 to 100 V, 0.5 A (N6736B) | |
| N6741B-46B | 19 | 1 to 4 [1] | 0 to 60 V, 1.6 A (N6745B) | 0 to 100 V, 1 A (N6746B) | |
| N6751A-52A<br>N6761A-62A<br>N6773A-77A | 19 | 1 to 4 [1] | 0 to 50 V, 5 A (N6751A)<br>0 to 50 V, 10 A (N6752A)<br>0 to 50 V, 1.5 A (N6761A)<br>0 to 50 V, 3 A (N6762A)<br>0 to 60 V, 5 A (N6775A) | 0 to 100 V, 3 A (N6776A)<br>0 to 150 V, 2 A (N6777A) | |
| N6753A-56A<br>N6763A-66A | 19 | 2 [1] | 0 to 60 V, 20 A (N6754A)<br>0 to 60 V, 17 A (N6756A)<br>0 to 60 V, 20 A (N6764A)<br>0 to 60 V, 17 A (N6766A) | | |
| N6953A-54A<br>N6973A-77A<br>N7953A-54A<br>N7973A-77A | 18<br>18<br>18<br>18 | 1<br>1<br>1<br>1 | 0 to 60 V, 16.7 A (N69/N7953A)<br>0 to 60 V, 33.3 A (N69/N7973A)<br>0 to 80 V, 12.5 A (N69/N7954A)<br>0 to 80 V, 25 A (N69/N7974A) | 0 to 120 V, 16.7 A (N69/N7976A)<br>0 to 160 V, 12.5 A (N69/N7977A) | |
| N8731A-42A | 14 | 1 | 0 to 60 V, 55 A (N8737A)<br>0 to 80 V, 42 A (N8738A) | 0 to 100 V, 33 A (N8739A)<br>0 to 150 V, 22 A (N8740A) | 0 to 300 V, 11 A (N8741A)<br>0 to 600 V, 5.5 A (N8742A) |
| N8754-62A | 14 | 1 | 0 to 60 V, 85 A (N8757A)<br>0 to 80 V, 42 A (N8738A) | 0 to 100 V, 50 A (N8759A)<br>0 to 150 V, 34 A (N8760A) | 0 to 300 V, 17 A (N8761A)<br>0 to 600 V, 8.5 A (N8762A) |
| N8920A-57A<br>N8937APV/57APV | 15<br>15 | 1<br>1 | 0 to 80 V, 170 A (N8920A/40A)<br>0 to 80 V, 340 A (N8925A/45A)<br>0 to 80 V, 510 A (N8931A/51A) | 0 to 200 V, 70 A (N8921A/41A)<br>0 to 200 V, 140 A (N8926A/46A)<br>0 to 200 V, 210 A (N8932A/52A) | 0 to 500 V, 30 A (N8923A/43A)<br>0 to 500 V, 60 A (N8928A/48A)<br>0 to 500 V, 90 A (N8934A/54A)<br>0 to 750 V, 20 A (N8924A/44A)<br>0 to 750 V, 40 A (N8929A/49A)<br>0 to 750 V, 60 A (N8935A/55A)<br>0 to 1000 V, 30 A (N8930A/50A)<br>0 to 1500 V, 30 A (N8937A/57A/APV) |
| RP7931A-36A<br>RP7941A-46A<br>RP7951A-53A<br>RP7961A-63A<br>RP7951A-53A<br>RP7961A-63A<br><br>RP7972A<br>RP7982A<br>RP7983ARP7985A | 26<br>26<br>26<br>26<br>26<br>26<br><br>26<br>26<br>26<br>26 | 1<br>1<br>1<br>1<br>1<br>1<br><br>1<br>1<br>1<br>1 | 0-80 V, ± 125 A (RP7932A/42A)<br>0-80 V, ± 250 A (RP7935A/45A) | 0-160 V, ± 125 A (RP7936A/46A) | 0-500 V, ± 20 A (RP7951A/61A)<br>0-500 V, ± 40 A (RP7952A/62A)<br><br>0-950 V, ± 20 A (RP7953A/63A)<br>0 to 500 V, ± 20 A (RP7951A/61A)<br>0 to 500 V, ± 40 A (RP7952A/62A)<br>0 to 950 V, ± 20 A (RP7953A/63A)<br>0 to 1000 V ± 60A<br>0 to 1000 V ± 90 A<br>0 to 2000 V ± 30 A<br>0 to 2000 V ± 30 A |
| U8032A | 13 | 3 | 0 to 60 V, 3 A (Output 1 and 2);<br>5 V, 3 A (Output 3) | | |

1. Power modules that require a modular mainframe (66000 Series, N6700 Series, N6705).
2. Dual range power supplies; r1 denotes range 1; r2 denotes range 2.
3. Maximum number of modules depends on the configuration.

# E36300, E36200, E36100, E3600 and U8000 Series Bench Power Supplies

## E36100B Series (Link)

The E36100B series will impress you from every angle, size, display and I/O.

- Small footprint 2U 1/4 rack
- Up to 100V, up to 5A
- Clean and stable DC power
- Excellent programming and readback accuracy
- LAN (LXI Core), and USB
- Rack mount up to 4 units

## E36200 Series (Link)

The Keysight E36200 Series autoranging bench power supply can power devices that typically require higher- output power supplies with larger watt ratings.

- Autoranging outputs to provide maximum current at all voltages.
- 4.3-inch LCD color display
- Intuitive, easy-to-use front panel interface
- Auto series/parallel connection

## E36300 Series (Link)

The triple output E36300 Series gives you the performance of system power supplies at an affordable price.

- 4.3” color LCD Display
- Intuitive, easy-to-use front panel interface
- Meter view to display more info on a selected channel
- Auto series/parallel connection

## E3630 (Link), E3640 (Link) and U8000 (Link) Series

The E3630 and E3640 Series offers an extensive choice of voltages, programmability, and number of outputs.

The U8000 Series offers more affordable DC power and provides features typical only found in programmable power supplies (like output sequencing, save/recall, and more).

BenchVue software enabled

| | Model | Power (W) | Maximum V (V) | Maximum I (A) | Number of outputs | Number of ranges | Computer interface | Ripple and noise mVp-p | Program. or meter res. mV | Size [2] |
|---|---|---|---|---|---|---|---|---|---|---|
| Basic | E36311A | 80 | 6 V/+25 V/-25 V | 5 A/1 A/1 A | 3 | 1 | USB | 2 | 1 | ½ RU w x 3 RU h |
| | E36312A | 80 | 6 V/25 V/25 V | 5 A/1 A/1 A | 3 | 1 | LAN, USB, GPIB | 2 | 1 | |
| | E36313A | 160 | 6 V/25 V/25 V | 10 A/2 A/2 A | 3 | 1 | | 2 | 1 | |
| | E36102B | 30 | 6 | 5 | 1 | 1 | LAN, USB | 10 | 1 | ¼ RU w x 2 RU h |
| | E36103B | 40 | 20 | 2 | 1 | 1 | | 30 | 1 | |
| | E36104B | 35 | 35 | 1 | 1 | 1 | | 60 | 2 | |
| | E36105B | 36 | 60 | 0.6 | 1 | 1 | | 100 | 3 | |
| | E36106B | 40 | 100 | 0.4 | 1 | 1 | | 150 | 6 | |
| | E36231A | 200 | 30 | 20 | 1 | 1 | LAN, USB, GPIB | 4 | 1 | ½ RU w x 3 RU h |
| | E36232A | 200 | 60 | 10 | 1 | 1 | | 3 | 3 | |
| | E36233A | 400 | 30 | 20 | 2 | 1 | | 4 | 1 | |
| | E36234A | 400 | 60 | 10 | 2 | 1 | | 3 | 3 | |
| | E3632A | 120 | 15 V r1 / 30 V r2 | 7 A r1 / 4 A r2 | 1 | 2 | GPIB | 2 | 1 | ½ RU w x 3 RU h |
| | E3633A | 200 | 8 V r1 / 20 V r2 | 20 A r1 / 10 A r2 | 1 | 2 | | 3 | 1 | |
| | E3634A | 200 | 25 V r1 / 50 V r2 | 7 A r1 / 4 A r2 | 1 | 2 | | 3 | 3 | |
| | E3640A | 30 | 8 V r1 / 20 V r2 | 3 A r1 / 1.5 A r2 | 1 | 2 | GPIB | 5 | 5 | ½ RU w x 2 RU h |
| | E3641A | 30 | 35 V r1 / 60 V r2 | 0.8 A r1 / 0.5 A r2 | 1 | 2 | | 8 | 5 | |
| | E3642A | 50 | 8 V r1 / 20 V r2 | 5 A r1 / 2.5 A r2 | 1 | 2 | | 5 | 5 | |
| | E3643A | 50 | 35 V r1 / 60 V r2 | 1.4 A r1 / 0.8 A r2 | 1 | 2 | | 8 | 5 | |
| | E3644A | 80 | 8 V r1 / 20 V r2 | 8 A r1 / 4 A r2 | 1 | 2 | | 5 | 5 | |
| | E3645A | 80 | 35 V r1 / 60 V r2 | 2.2 A r1 / 1.3 A r2 | 1 | 2 | | 8 | 5 | |
| | E3646A | 60 | 8 V r1 / 20 V r2 | 3 A r1 / 1.5 A r2 | 2 | 2 | GPIB | 5 | 5 | ½ RU w x 3 RU h |
| | E3647A | 60 | 35 V r1 / 60 V r2 | 0.8 A r1 / 0.5 A r2 | 2 | 2 | | 8 | 5 | |
| | E3648A | 100 | 8 V r1 / 20 V r2 | 5 A r1 / 2.5 A r2 | 2 | 2 | | 5 | 5 | |
| | E3649A | 100 | 35 V r1 / 60 V r2 | 1.4 A r1 / 0.8 A r2 | 2 | 2 | | 8 | 5 | |
| | U8001A | 90 | 30 | 3 | 1 | 1 | No | 12 | 10 | ½ RU w x 2 RU h |
| | U8002A | 150 | 30 | 5 | 1 | 1 | | 12 | 10 | |
| | U8031A | 375 | 30 | 6 | 3 | 1 | No | 10 | 10 | ½ RU w x 4 RU h |
| | U8032A | 375 | 60 | 3 | 3 | 1 | | 10 | 10 | |

1. Output 1 / Output 2 / Output 3.
2. NOTE: RU refers to rack unit of a standard 19” EIA equipment rack. The width is either 1/2 or full The height is in number of rack units which are 1.75” (44.4 mm) each. For example: a 3 RU h has a height of 5.25” (133.3 mm).

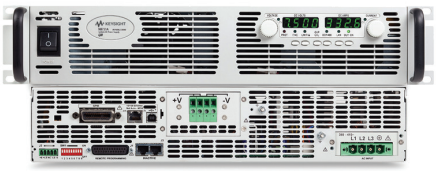
# N5700 (Link) and N8700 (Link) Series ATE System DC Power Supplies

## Space-saving power supplies with modern interfaces

Now get up to 5200 W in a compact, 2U package with the N8700 Series or up to 1560 W in a compact, 1U package with the N5700 Series. Both series offers solid performance and a variety of basic and enhanced capabilities.

- Remote programming via GPIB, LAN and USB interfaces with the SCPI command set (drivers available)
- Analog control and monitoring of output voltage and current
- Connect multiple supplies in parallel or series for greater output current or voltage respectively
- Built-in measurements
- Front panel control and advanced programmable features
- Built-in protection features such as OVP, OCP, UVL, and OTP
- LXI Core compliant

BenchVue software enabled



N8731A: Front/back

N5749A: Front/back

1. RU refers to rack unit of a standard 19" EIA equipment rack. The width is either ½ or full. The height is in number of rack units which are 1.75" (44.4 mm) each. For example: a 3 RU h has a height of 5.25" (133.3 mm).

| | Model | Power (W) | Maximum V (V) | Maximum I (A) | Number of outputs | Number of ranges | Ripple and noise mVp-p | Programming accuracy % + mV | Transient response (ms) | Size [1] |
|---|---|---|---|---|---|---|---|---|---|---|
| Basic | N5741A | 600 | 6 | 100 | 1 | 1 | 60 | 0.5 + 3 | ≤ 1.5 | Full RU w x 1 RU h |
| | N5742A | 720 | 8 | 90 | 1 | 1 | 60 | 0.5 + 4 | ≤ 1.5 | |
| | N5743A | 750 | 12.5 | 60 | 1 | 1 | 60 | 0.5 + 6.25 | ≤ 1.5 | |
| | N5744A | 760 | 20 | 38 | 1 | 1 | 60 | 0.5 + 10 | ≤ 1 | |
| | N5745A | 750 | 30 | 25 | 1 | 1 | 60 | 0.5 + 15 | ≤ 1 | |
| | N5746A | 760 | 40 | 19 | 1 | 1 | 60 | 0.5 + 20 | ≤ 1 | |
| | N5747A | 750 | 60 | 12.5 | 1 | 1 | 60 | 0.5 + 30 | ≤ 1 | |
| | N5748A | 760 | 80 | 9.5 | 1 | 1 | 80 | 0.5 + 40 | ≤ 1 | |
| | N5749A | 750 | 100 | 7.5 | 1 | 1 | 80 | 0.5 + 50 | ≤ 1 | |
| | N5750A | 750 | 150 | 5 | 1 | 1 | 100 | 0.5 + 75 | ≤ 2 | |
| | N5751A | 750 | 300 | 2.5 | 1 | 1 | 150 | 0.5 + 150 | ≤ 2 | |
| | N5752A | 780 | 600 | 1.3 | 1 | 1 | 300 | 0.5 + 300 | ≤ 2 | |
| | N5761A | 1080 | 6 | 180 | 1 | 1 | 60 | 0.5 + 3 | ≤ 1.5 | Full RU w x 1 RU h |
| | N5762A | 1320 | 8 | 165 | 1 | 1 | 60 | 0.5 + 4 | ≤ 1.5 | |
| | N5763A | 1500 | 12.5 | 120 | 1 | 1 | 60 | 0.5 + 6.25 | ≤ 1.5 | |
| | N5764A | 1520 | 20 | 76 | 1 | 1 | 60 | 0.5 + 10 | ≤ 1 | |
| | N5765A | 1500 | 30 | 50 | 1 | 1 | 60 | 0.5 + 15 | ≤ 1 | |
| | N5766A | 1520 | 40 | 38 | 1 | 1 | 60 | 0.5 + 20 | ≤ 1 | |
| | N5767A | 1500 | 60 | 25 | 1 | 1 | 60 | 0.5 + 30 | ≤ 1 | |
| | N5768A | 1520 | 80 | 19 | 1 | 1 | 80 | 0.5 + 40 | ≤ 1 | |
| | N5769A | 1500 | 100 | 15 | 1 | 1 | 80 | 0.5 + 50 | ≤ 1 | |
| | N5770A | 1500 | 150 | 10 | 1 | 1 | 100 | 0.5 + 75 | ≤ 2 | |
| | N5771A | 1500 | 300 | 5 | 1 | 1 | 150 | 0.5 + 150 | ≤ 2 | |
| | N5772A | 1560 | 600 | 2.6 | 1 | 1 | 300 | 0.5 + 300 | ≤ 2 | |
| | N8731A | 3200 | 8 | 400 | 1 | 1 | 60 | 0.05 + 4 | < 1 | Full RU w x 2 RU h |
| | N8732A | 3300 | 10 | 330 | 1 | 1 | 60 | 0.05 + 5 | < 1 | |
| | N8733A | 3300 | 15 | 220 | 1 | 1 | 60 | 0.05 + 7.5 | < 1 | |
| | N8734A | 3300 | 20 | 165 | 1 | 1 | 60 | 0.05 + 10 | < 1 | |
| | N8735A | 3300 | 30 | 110 | 1 | 1 | 60 | 0.05 + 15 | < 1 | |
| | N8736A | 3400 | 40 | 85 | 1 | 1 | 60 | 0.05 + 20 | < 1 | |
| | N8737A | 3300 | 60 | 55 | 1 | 1 | 60 | 0.05 + 30 | < 1 | |
| | N8738A | 3360 | 80 | 42 | 1 | 1 | 80 | 0.05 + 40 | < 1 | |
| | N8739A | 3300 | 100 | 33 | 1 | 1 | 100 | 0.05 + 50 | < 1 | |
| | N8740A | 3300 | 150 | 22 | 1 | 1 | 100 | 0.05 + 75 | < 2 | |
| | N8741A | 3300 | 300 | 11 | 1 | 1 | 300 | 0.05 + 150 | < 2 | |
| | N8742A | 3300 | 600 | 5.5 | 1 | 1 | 500 | 0.05 + 300 | < 2 | |
| | N8754A | 5000 | 20 | 250 | 1 | 1 | 75 | 0.025 + 15 | < 1 | Full RU w x 2 RU h |
| | N8755A | 5100 | 30 | 170 | 1 | 1 | 75 | 0.025 + 22.5 | < 1 | |
| | N8756A | 5000 | 40 | 125 | 1 | 1 | 75 | 0.025 + 30 | < 1 | |
| | N8757A | 5100 | 60 | 85 | 1 | 1 | 75 | 0.025 + 45 | < 1 | |
| | N8758A | 5200 | 80 | 65 | 1 | 1 | 100 | 0.025 + 60 | < 1 | |
| | N8759A | 5000 | 100 | 50 | 1 | 1 | 100 | 0.025 + 75 | < 1 | |
| | N8760A | 5100 | 150 | 34 | 1 | 1 | 120 | 0.025 + 112.5 | < 2 | |
| | N8761A | 5100 | 300 | 17 | 1 | 1 | 300 | 0.025 + 225 | < 2 | |
| | N8762A | 5100 | 600 | 8.5 | 1 | 1 | 500 | 0.025 + 450 | < 2 | |

# N8900 Series Autoranging System DC Power Supplies (Link)

## High-power, autoranging output does the job of multiple supplies

The N8900 Series autoranging DC power supplies provide unprecedented flexibility by offering a wide range of voltage and current combinations at full power. Just one N8900 does the job of multiple power supplies! It's like having many power supplies in one!

- Up to 1500 V, up to 510 A
- 5 kW, 10 kW and 15 kW models in a small 3U package
- Easily parallel to create "one" power supply with > 100 kW of power
- Protection from over-voltage, over-current and over-temperature
- Control via GPIB, USB, LAN (LXI Core), and analog programming

BenchVue software enabled

| | Model | Power (W) | Maximum V (V) | Maximum I (A) | Number of outputs | Number of ranges | Ripple and noise mVp-p | Programming accuracy 0.1% mV | Transient response (ms) | AC input voltage (VAC) | Size [1] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Basic | N8920A | 5000 | 80 | 170 | 1 | 1 | 200 | ≤ 80 | ≤ 1.5 | 208 | |
| | N8921A | 5000 | 200 | 70 | 1 | 1 | 300 | ≤ 200 | ≤ 1.5 | 208 | |
| | N8923A | 5000 | 500 | 30 | 1 | 1 | 350 | ≤ 500 | ≤ 1.5 | 208 | |
| | N8924A | 5000 | 750 | 20 | 1 | 1 | 800 | ≤ 750 | ≤ 1.5 | 208 | |
| | N8925A | 10000 | 80 | 340 | 1 | 1 | 200 | ≤ 80 | ≤ 1.5 | 208 | |
| | N8926A | 10000 | 200 | 140 | 1 | 1 | 300 | ≤ 200 | ≤ 1.5 | 208 | |
| | N8928A | 10000 | 500 | 60 | 1 | 1 | 350 | ≤ 500 | ≤ 1.5 | 208 | Full RU w x 3 RU h |
| | N8929A | 10000 | 750 | 40 | 1 | 1 | 800 | ≤ 750 | ≤ 1.5 | 208 | |
| | N8930A | 10000 | 1000 | 30 | 1 | 1 | 800 | ≤ 1000 | ≤ 1.5 | 208 | |
| | N8931A | 15000 | 80 | 510 | 1 | 1 | 200 | ≤ 80 | ≤ 1.5 | 208 | |
| | N8932A | 15000 | 200 | 210 | 1 | 1 | 300 | ≤ 200 | ≤ 1.5 | 208 | |
| | N8934A | 15000 | 500 | 90 | 1 | 1 | 350 | ≤ 500 | ≤ 1.5 | 208 | |
| | N8935A | 15000 | 750 | 60 | 1 | 1 | 800 | ≤ 750 | ≤ 1.5 | 208 | |
| | N8937A | 15000 | 1500 | 30 | 1 | 1 | 1000 | ≤ 1500 | ≤ 1.5 | 208 | |
| | N8940A | 5000 | 80 | 170 | 1 | 1 | 200 | ≤ 80 | ≤ 1.5 | 400 | |
| | N8941A | 5000 | 200 | 70 | 1 | 1 | 300 | ≤ 200 | ≤ 1.5 | 400 | |
| | N8943A | 5000 | 500 | 30 | 1 | 1 | 350 | ≤ 500 | ≤ 1.5 | 400 | |
| | N8944A | 5000 | 750 | 20 | 1 | 1 | 800 | ≤ 750 | ≤ 1.5 | 400 | |
| | N8945A | 10000 | 80 | 340 | 1 | 1 | 200 | ≤ 80 | ≤ 1.5 | 400 | |
| | N8946A | 10000 | 200 | 140 | 1 | 1 | 300 | ≤ 200 | ≤ 1.5 | 400 | |
| | N8948A | 10000 | 500 | 60 | 1 | 1 | 350 | ≤ 500 | ≤ 1.5 | 400 | |
| | N8949A | 10000 | 750 | 40 | 1 | 1 | 800 | ≤ 750 | ≤ 1.5 | 400 | Full RU w x 3 RU h |
| | N8950A | 10000 | 1000 | 30 | 1 | 1 | 800 | ≤ 1000 | ≤ 1.5 | 400 | |
| | N8951A | 15000 | 80 | 510 | 1 | 1 | 200 | ≤ 80 | ≤ 1.5 | 400 | |
| | N8952A | 15000 | 200 | 210 | 1 | 1 | 300 | ≤ 200 | ≤ 1.5 | 400 | |
| | N8954A | 15000 | 500 | 90 | 1 | 1 | 350 | ≤ 500 | ≤ 1.5 | 400 | |
| | N8955A | 15000 | 750 | 60 | 1 | 1 | 800 | ≤ 750 | ≤ 1.5 | 400 | |
| | N8957A | 15000 | 1500 | 30 | 1 | 1 | 1000 | ≤ 1500 | ≤ 1.5 | 400 | |

1. RU refers to rack unit of a standard 19" EIA equipment rack. The width is either ½ or full. The height is in number of rack units which are 1.75" (44.4 mm) each. For example: a 3 RU h has a height of 5.25" (133.3 mm).

www.keysight.com/find/power

# NEW EDU36311A Smart Bench Essentials DC Power Supply (Link)

## Combine Triple Outputs with Powerful Software for Deeper Insights

The Keysight EDU36311A triple-output DC bench power supply comes with a robust design and usability at an affordable price. Its 90 W electrically isolated channels supply clean and reliable power. The 7-inch color wide video graphics array (WVGA) display gives you a clear view – from instrument set up to the output status. You can easily control the E36311A triple-output DC bench power supply remotely via USB or LAN. This solution includes Keysight's PathWave BenchVue power supply application software for the PC.


### Key benefits

Clean, reliable power
- low output ripple and noise
- excellent programming / readback accuracy
- exceptional line / load regulation
- superior overvoltage, overcurrent, and overtemperature protection

Convenient benchtop capabilities
- independent power supplies (three) in one box
- low acoustic noise
- device protection against overvoltage and overcurrent

Intuitive and easy-to-use interfaces
- 7-inch color display
- distinctive color-coded channels
- individual knobs for voltage and current
- flexible connection using LAN (LXI) or USB

| Performance specifications | EDU36311A | | |
|---|---|---|---|
| Power output | 90 W | | |
| DC output rating (0 to 40°C) | 1 | 2 | 3 |
| | 0 to 6 V | 0 to 30 V | 0 to 30 V |
| | 0 to 5 A | 0 to 1 A | 0 to 1 A |
| Load regulation ± (% of output + offset) | | | |
| Voltage | < 0.01% + 2 mV | | |
| Current | < 0.2% + 10 mA | | |
| Line regulation ± (% of output + offset) | | | |
| Voltage | < 0.01% + 2 mV | | |
| Current | < 0.2% + 10 mA | | |
| Accuracy 12 months (23 °C ± 5 °C) | | | |
| Programming accuracy ± (% of output + offset) | | | |
| Voltage | 0.1% + 5 mV | 0.05% + 10 mV | |
| Current | 0.1% + 10 mA | 0.2% + 5 mA | |
| Readback accuracy ± (% of output + offset) | | | |
| Voltage | 0.1% +5 mV | 0.05% + 10 mV | |
| Current | 0.1% +10 mA | 0.2% + 5 mA | |
| Load transient recovery time (Time to recover within the settling band following a load change from 50% to 100% and from 100% to 50% of full load) | | | |
| Voltage settling band | 15 mV | | |
| Time | < 50 µS | | |

BenchVue software enabled

# B2960 Series 6.5 Digit Low Noise Source Power Supplies (Link)

The B2960 Series 6.5 Digit Low Noise Source Power Supplies is an advanced low cost power supply/source offering:

- 6.5 digit precision, wide and bipolar (4-quadrant) output
- Both voltage(100 nV to 210 V) and current(10 fA – 3A DC/10.5 A pulsed) source modes
- 10 µVrms (1 nVrms/√Hz at 10 kHz) output noise with external ultra-low noise filter
- 100 nV/10 fA sourcing resolution
- Precision arbitrary waveform generation capability (1 MHz to 10 kHz)
- Programmable output resistance and emulation
- Time domain voltage/current monitoring on the front panel

BenchVue software enabled

These superior capabilities allow tests and evaluation that conventional power supply/sources cannot do. They make the B2960 series an ideal companion instruments for use with other instruments such as oscilloscopes, network analyzers, spectrum analyzers, frequency counters, digital multi meters, nanovoltmeters, etc. The Keysight B2960 series can support the difficult measurement challenges faced by researchers, electronic development engineers and electronic technicians working on advanced devices and materials.

Since the Keysight B2960 series instruments are highly stable current/ voltage sources, ideal for evaluating the physical properties of materials and many types of samples, they ensure that you can detect all tiny signal variations emanating from materials under test.


B2962B

| | Model | | | B2961A/ 62A | B2961A/62A with HC-ULNF (High current ultra low noise filter) | B2961A/62A with ULNF (Ultra low noise filter) | B2961A/62A with LNF (Low noise filter) |
|---|---|---|---|---|---|---|---|
| Performance | Number of channels | | | 1 or 2 | 1 or 2 | 1 or 2 | 1 or 2 |
| | Max output | Voltage | | ± 210 V | ± 21 V | ± 42 V | ± 210 V |
| | | Current | DC | ± 3.03 A | ± 500 mA | ± 105 mA | ± 3.03 A |
| | | | Pulsed | ± 10.5 A | ± 500 mA | ± 105 mA | ± 10.5 A |
| | | Power | | 31.8 W | 10.5 W | 4.4 W | 31.8 W |
| | Source | Max digits | Digits | 6 ½ | 6 ½ | 6 ½ | 6 ½ |
| | | Min resolution | Voltage | 100 nV | 100 nV | 100 nV | 100 nV |
| | | | Current | 10 pA | 1 nA | 10 pA | 10 pA |
| | Noise | 0.1 Hz to 10 Hz | | < 5 µVpp | < 5 µVpp | < 5 µVpp | < 5 µVpp |
| | | | | < 1 pApp | < 1 pApp | < 1 pApp | < 1 pApp |
| | | 10 Hz to 20 MHz | | 3 mVrms | 10 µVrms | 10 µVrms | 350 µVrms |
| | | | | | 1 nVrms/√Hz at 10 kHz | 1 nVrms/√Hz at 10 kHz | |
| | Measurement | Max digits | Digits | 4 ½ | 4 ½ | 4 ½ | 4 ½ |
| | Min programmable interval for arbitrary waveform | | | 10 µs (100,000 pts/s) | 10 µs (100,000 pts/s) | 10 µs (100,000 pts/s) | 10 µs (100,000 pts/s) |

# N6900 (Link) and N7900 (Link) Advanced Power System (APS)

## Overcome your toughest power test challenges

With Advanced Power System (APS) 1 kW and 2 kW system power supplies, you get a new level of power supply performance. VersaPower architecture delivers industry-leading specifications and innovative features for today's advanced ATE power testing needs—the fastest, most accurate, integrated power system.

- Accelerate test-system throughput with industry-leading speed
- Capture your DUT's current profile with accurate measurements
- Reduce your ATE development time and cost with highly integrated capabilities

BenchVue software enabled

### Need high performance in your ATE system?

Choose the Keysight N6900 Series APS DC Power Supply.

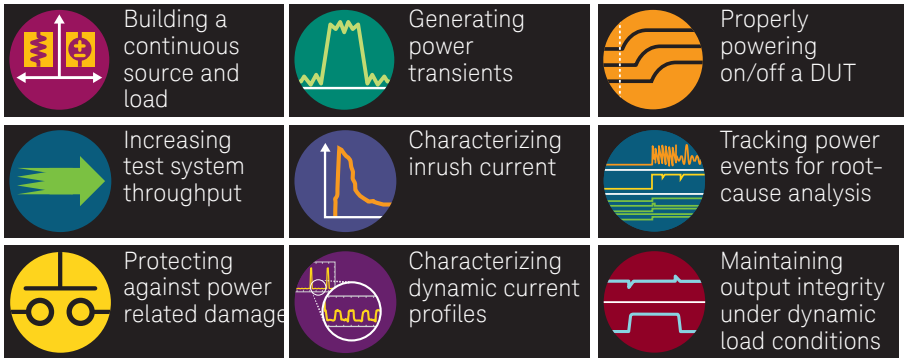
### Need high speed dynamic sourcing and measurement?

Choose the Keysight N7900 Series APS Dynamic DC Power Supply.

### Get lots of power in a small test-system footprint

Two power ranges deliver a large amount of power in a small test-system footprint.


**Overcome a wide variety of power test challenges with the APS.**




| | Model | Power (W) | Maximum V (V) | Maximum I (A) | Number of outputs | Number of ranges | Ripple and noise mVp-p | Programming accuracy % mV | Transient response (µs) | Size [1] |
|---|---|---|---|---|---|---|---|---|---|---|
| Performance | N6950A | 1000 | 9 | 100 | 1 | 1 | 9 | 0.03 + 1.5 | 100 | Full RU w x 1 RU h |
| | N6951A | 1000 | 20 | 50 | 1 | 1 | 9 | 0.03 + 3 | 100 | |
| | N6952A | 1000 | 40 | 25 | 1 | 1 | 9 | 0.03 + 6 | 100 | |
| | N6953A | 1000 | 60 | 16.7 | 1 | 1 | 9 | 0.03 + 9 | 100 | |
| | N6954A | 1000 | 80 | 12.5 | 1 | 1 | 9 | 0.03 + 12 | 100 | |
| | N6970A | 2000 | 9 | 200 | 1 | 1 | 9 | 0.03 + 1.5 | 100 | Full RU w x 2 RU h |
| | N6971A | 2000 | 20 | 100 | 1 | 1 | 9 | 0.03 + 3 | 100 | |
| | N6972A | 2000 | 40 | 50 | 1 | 1 | 9 | 0.03 + 6 | 100 | |
| | N6973A | 2000 | 60 | 33 | 1 | 1 | 9 | 0.03 + 9 | 100 | |
| | N6974A | 2000 | 80 | 25 | 1 | 1 | 9 | 0.03 + 12 | 100 | |
| | N6976A | 2000 | 120 | 16.7 | 1 | 1 | 30 | 0.03 + 17 | 100 | |
| | N6977A | 2000 | 160 | 12.5 | 1 | 1 | 30 | 0.03 + 24 | 100 | |
| | N7950A | 1000 | 9 | 100 | 1 | 1 | 9 | 0.03 + 1 | 100 | Full RU w x 1 RU h |
| | N7951A | 1000 | 20 | 50 | 1 | 1 | 9 | 0.03 + 2 | 100 | |
| | N7952A | 1000 | 40 | 25 | 1 | 1 | 9 | 0.03 + 4 | 100 | |
| | N7953A | 1000 | 60 | 16.7 | 1 | 1 | 9 | 0.03 + 6 | 100 | |
| | N7954A | 1000 | 80 | 12.5 | 1 | 1 | 9 | 0.03 + 8 | 100 | |
| | N7970A | 2000 | 9 | 200 | 1 | 1 | 9 | 0.03 + 1 | 100 | Full RU w x 2 RU h |
| | N7971A | 2000 | 20 | 100 | 1 | 1 | 9 | 0.03 + 2 | 100 | |
| | N7972A | 2000 | 40 | 50 | 1 | 1 | 9 | 0.03 + 4 | 100 | |
| | N7973A | 2000 | 60 | 33 | 1 | 1 | 9 | 0.03 + 6 | 100 | |
| | N7974A | 2000 | 80 | 25 | 1 | 1 | 9 | 0.03 + 8 | 100 | |
| | N7976A | 2000 | 120 | 16.7 | 1 | 1 | 30 | 0.03 + 11 | 100 | |
| | N7977A | 2000 | 160 | 12.5 | 1 | 1 | 30 | 0.03 + 14 | 100 | |

1. RU refers to rack unit of a standard 19" EIA equipment rack. The width is either 1 or 2 or full. The height is in number of rack units which are 1.75" (44.4 mm) each. For example: a 3 RU h has a height of 5.25" (133.3 mm).

# N6700 Low-Profile Modular Power System (Link)

## Extensive family of modular power in a 1U package

The N6700 Series 1U-high, multiple-output programmable DC power supply and DC electronic load systems which give you the flexibility to optimize performance, power and price to match your test needs.

- Small size: Up to 4 outputs in 1U of rack space
- Mainframes are available with 400 W, 600 W, or 1200 W capability
- DC electronic load modules available with 60 to 200 W capability
- Mix and match from 36 different DC power modules, ranging 50 W, 100 W, 300 W, or 500 W
- Streamline your tasks with built-in measurements, output sequencing, and optional LIST mode, built-in digitizer and disconnect relays
- Ultra fast command processing time (< 1 ms) reduces test time
- Computer control via GPIB, USB, and LAN (LXI Core)

BenchVue software enabled

N6702C

## N6700 low-profile modular power system mainframe

| Model | Power (W) | Max # modules | Physical size [1] |
|---|---|---|---|
| N6700C | 400 | 4 | |
| N6701C | 600 | 4 | Full RU w x 1 RU h |
| N6702C | 1200 | 4 | |

| | Model | Power (W) | Maximum V (V) | Maximum I (A) | Number of outputs | Number of slots occupied | Number of ranges | Ripple and noise mVp-p | Programming accuracy % + mV | Transient response (µs) |
|---|---|---|---|---|---|---|---|---|---|---|
| Basic | N6731B | 50 | 5 | 10 | 1 | 1 | 1 | 10 | 0.1 + 19 | < 200 |
| | N6732B | 50 | 8 | 6.25 | 1 | 1 | 1 | 12 | 0.1 + 19 | < 200 |
| | N6733B | 50 | 20 | 2.5 | 1 | 1 | 1 | 14 | 0.1 + 20 | < 200 |
| | N6734B | 50 | 35 | 1.5 | 1 | 1 | 1 | 15 | 0.1 + 35 | < 200 |
| | N6735B | 50 | 60 | 0.8 | 1 | 1 | 1 | 25 | 0.1 + 60 | < 200 |
| | N6736B | 50 | 100 | 0.5 | 1 | 1 | 1 | 30 | 0.1 + 100 | < 200 |
| | N6741B | 100 | 5 | 20 | 1 | 1 | 1 | 11 | 0.1 + 19 | < 200 |
| | N6742B | 100 | 8 | 12.5 | 1 | 1 | 1 | 12 | 0.1 + 19 | < 200 |
| | N6743B | 100 | 20 | 5 | 1 | 1 | 1 | 14 | 0.1 + 20 | < 200 |
| | N6744B | 100 | 35 | 3 | 1 | 1 | 1 | 15 | 0.1 + 35 | < 200 |
| | N6745B | 100 | 60 | 1.6 | 1 | 1 | 1 | 25 | 0.1 + 60 | < 200 |
| | N6746B | 100 | 100 | 1 | 1 | 1 | 1 | 30 | 0.1 + 100 | < 200 |
| | N6773A | 300 | 20 | 15 | 1 | 1 | 1 | 20 | 0.1 + 20 | < 250 |
| | N6774A | 300 | 35 | 8.5 | 1 | 1 | 1 | 22 | 0.1 + 35 | < 250 |
| | N6775A | 300 | 60 | 5 | 1 | 1 | 1 | 35 | 0.1 + 60 | < 250 |
| | N6776A | 300 | 100 | 3 | 1 | 1 | 1 | 45 | 0.1 + 100 | < 250 |
| | N6777A | 300 | 150 | 2 | 1 | 1 | 1 | 68 | 0.1 + 150 | < 250 |
| Performance | N6751A | 50 | 50 | 5 | 1 | 1 | Autoranging | 4.5 | 0.06 + 19 | < 100 |
| | N6752A | 100 | 50 | 10 | 1 | 1 | Autoranging | 4.5 | 0.06 + 19 | < 100 |
| | N6753A | 300 | 20 | 50 | 1 | 2 | Autoranging | 5 | 0.06 + 10 | < 100 |
| | N6754A | 300 | 60 | 20 | 1 | 2 | Autoranging | 6 | 0.06 + 25 | < 100 |
| | N6755A | 500 | 20 | 50 | 1 | 2 | Autoranging | 5 | 0.06 + 10 | < 100 |
| | N6756A | 500 | 60 | 17 | 1 | 2 | Autoranging | 6 | 0.06 + 25 | < 100 |
| Precision | N6761A | 50 | 50 | 1.5 | 1 | 1 | Autoranging | 4.5 | 0.016 + 6 | < 100 |
| | N6762A | 100 | 50 | 3 | 1 | 1 | Autoranging | 4.5 | 0.016 + 6 | < 100 |
| | N6763A | 300 | 20 | 50 | 1 | 2 | Autoranging | 5 | 0.03 + 5 | < 100 |
| | N6764A | 300 | 60 | 20 | 1 | 2 | Autoranging | 6 | 0.03 + 12 | < 100 |
| | N6765A | 500 | 20 | 50 | 1 | 2 | Autoranging | 5 | 0.03 + 5 | < 100 |
| | N6766A | 500 | 60 | 17 | 1 | 2 | Autoranging | 6 | 0.03 + 12 | < 100 |

**Specialty**

Additional N6780 series source measure unit modules and application specific modules available, see page 23.

**DC Electronic Loads**

Additional N6790 Series DC electronic loads, see page 19

# N6705C DC Power Analyzer (Link)

## Quickly understand your device's power consumption

Gain insight into your device's power consumption in minutes without writing a single line of code. The N6705C combines one to four DC power supplies, or DC electronic loads, a DMM, an oscilloscope, an arbitrary waveform generator, and a data logger in one integrated package.

- Saves time—no programming required and it eliminates the need to gather multiple instruments
- Flexible, modular system—mix and match power modules to optimize your testing
- Uses the same modules as the N6700 Series low-profile modular power supply—see page 17
- DC electronic load modules available with 60 to 200 W capability
- Computer control via GPIB, USB, and LAN (LXI Core)

BenchVue software enabled

| Function | Description |
|---|---|
| Output speed | Voltage changes as fast as 160 µs per step voltage change |
| Voltmeter accuracy | Up to 0.025% + 50 µV, up to 18-bit resolution |
| Ammeter accuracy | Up to 0.025% + 8 nA, up to 18-bit resolution |
| Arbitrary waveform | Bandwidth up to 100 kHz, output power up to 300 W |
| Scope function | Digitizes voltage and current at up to 200 kHz, up to 512 k points, up to 18-bits resolution |
| Data logger function | Measurement interval from 20 µs to 60 s, maximum of 500 Mreadings per data log |
| Non-volatile data storage | 4 GB |

# N6790 Series DC Electronic Loads (Link)

## Programmable loads with measurements

The N6790 Series DC electronic loads give you flexibility for testing power supplies in a 1U footprint. The built-in measurement system provides both accuracy and convenience and eliminates the need for a DMM, external shunts and wiring. The N6790 multiple-input models are fast, accurate, and ideal for high-volume manufacturing.

- High speed digitizing capability
- Increase test throughput with short command processing time
- Test multiple power supply outputs with up to 4 modules with 60 to 200 W capability
- Operate in constant current, constant voltage, constant resistance and constant power modes
- Measure voltage and current simultaneously
- Use in parallel for greater current sinking capability
- Built-in arbitrary waveform generator

BenchVue software enabled

**N6700 mainframes**

| Model | Max # modules | Physical size [1] |
|---|---|---|
| N6791A in N6700 Low Profile Mainframe | 4 | 1 RU h |
| N6791A in N6705C Power Analyzer | 4 | 4 RU h |
| N6792A in N6700 Low Profile Mainframe | 2 | 1 RU h |
| N6792A in N6705C DC Power Analyzer | 2 | 4 RU h |

**N6790 modules**

| Loads | Model | Input power, W | Maximum input, V | Maximum input, I | Constant current accuracy, % + mA | Constant voltage accuracy, % + mV | Current measurement accuracy, % + mA | Voltage measurement accuracy, % + mV | Width, slot |
|---|---|---|---|---|---|---|---|---|---|
| | N6791A | 100 | 60 | 20 | 0.04 + 0.46 | 0.03 + 7.2 | 0.04 + 0.40 | 0.03 + 7.2 | 1 |
| | N6792A | 200 | 60 | 40 | 0.04 + 0.92 | 0.03 + 7.2 | 0.04 + 0.82 | 0.03 + 7.2 | 2 |

1. RU refers to rack unit of a standard 19" EIA equipment rack. The width is either ½ or full. The height is in number of rack units which are 1.75" (44.4 mm) each. For example, a 3 RU h has a height of 5.25" (133.3 mm).

# NEW EL30000 Series Bench Electronic Loads (Link)

## Visualize Your Test Insights in Real Time

The Keysight EL30000 Series Bench electronic load with a built-in data logger provides new levels of test insights for your devices like power supplies, batteries, DC to DC converters, and more. View voltage and current trends to make real-time decisions, rather than waiting hours for a test to complete. At the heart of the EL30000 is a highly accurate measurement system that provides real-time updates to the large display. Single and dual-channel models are available with up to 600 W for measurements that require more power. Start your test with confidence and finish with results you trust.

- Test voltages up to 150 V
- Sink current up to 60 or 120 A
- Use operating modes: constant voltage (CV), constant current (CC), constant resistance (CR), constant power (CP)
- Save data internally or to an external USB flash drive
- Improve load regulation with four-wire remote sense
- Create dynamic load profiles with device's LIST function
- Connect with USB, LAN (LXI Core), and optional GPIB

BenchVue software enabled

| Performance specifications (23 °C ± 5 °C) | | EL33133A | EL34143A | EL34243A | |
|---|---|---|---|---|---|
| Maximum input power | | 250 W | 350 W | 300 W | 300 W |
| Channel | | 1 | 1 | 1 | 2 |
| Input ratings (0 to 43 °C) | | 0 to 150 V | 0 to 150 V | 0 to 150 V | 0 to 150 V |
| | | 0 to 40 A | 0 to 60 A | 0 to 60 A | 0 to 60 A |
| Parallel mode current[1] | | NA | NA | 120A | 120 A |
| **Programming accuracy ± (% of output + offset)** | | | | | |
| Constant current mode[2] | Low | 0.05% + 820 µA | 0.04% + 130 µA | | |
| | Medium | – | 0.04% + 2 mA | | |
| | High | 0.05% + 7.2 mA | 0.04% + 12 mA | | |
| Constant voltage mode | Low, 15 V | 0.03% + 4.2 mV | 0.02% + 3 mV | | |
| | High, 150 V | 0.03% + 15 mV | 0.02% + 15 mV | | |
| **Readback accuracy ± (% of output + offset)** | | | | | |
| Current[2] | Low | 0.05% + 820 µA | 0.04% + 120 µA | | |
| | Medium | – | 0.04% + 1.8 mA | | |
| | High | 0.05% + 7.2 mA | 0.04% + 9.6 mA | | |
| Voltage | Low, 15 V | 0.03% + 4.2 mV | 0.02% + 3 mV | | |
| | High 150 V | 0.03% + 15 mV | 0.02% + 15 mV | | |

1. Do not connect the dual inputs on EL34243A in series, parallel mode is only allowed for CC, CR, and CP.
2. Current ranges:
   EL33133A – Low = 4 A; High = 40 A
   EL34143A/EL34243A – Low = 0.6 A; Medium = 6 A; High = 60 A

# N3300 Series DC Electronic Loads (Link)

## Programmable loads with measurements

The N3300 Series DC electronic loads give you flexibility for testing power supplies and other devices requiring a load. The built-in measurement system provides both accuracy and convenience and eliminates the need for a DMM, external shunts and wiring. The N3300 multiple-input models are fast, accurate, and ideal for high-volume manufacturing.

- Increase test throughput with short command processing time and stored command sequences
- Test multiple power supply outputs with up to 6 modules with 150 to 600 W capability
- Operate in constant current, constant voltage, or constant resistance modes
- Measure voltage and current simultaneously
- Use in parallel for greater current sinking capability
- Computer control with GPIB

BenchVue software enabled

**N3300 mainframes**

| Model | Max # modules | Physical size [1] |
|---|---|---|
| N3300A | 6 | Full RU w x 4 RU h |
| N3301A | 2 | ½ RU w x 4 RU h |

**N3300 modules**

| Loads | Model | Input power, W | Maximum input, V | Maximum input, I | Constant current accuracy, % + mA | Constant voltage accuracy, % + mV | Current measurement accuracy, % + mA | Voltage measurement accuracy, % + mV | Width, slot |
|---|---|---|---|---|---|---|---|---|---|
| | N3302A | 150 | 60 | 30 | 0.1 + 10 | 0.1 + 8 | 0.05 + 6 | 0.05 + 8 | 1 |
| | N3303A | 250 | 240 | 10 | 0.1 + 7.5 | 0.1 + 40 | 0.05 + 5 | 0.05 + 20 | 1 |
| | N3304A | 300 | 60 | 60 | 0.1 + 15 | 0.1 + 8 | 0.05 + 10 | 0.05 + 8 | 1 |
| | N3305A | 500 | 150 | 60 | 0.1 + 15 | 0.1 + 20 | 0.05 + 10 | 0.05 + 16 | 2 |
| | N3306A | 600 | 60 | 120 | 0.1 + 37.5 | 0.1 + 8 | 0.05 + 20 | 0.05 + 8 | 2 |
| | N3307A | 250 | 150 | 30 | 0.1 + 15 | 0.1 + 20 | 0.05 + 6 | 0.05 + 16 | 1 |

1. RU refers to rack unit of a standard 19" EIA equipment rack. The width is either ½ or full. The height is in number of rack units which are 1.75" (44.4 mm) each. For example, a 3 RU h has a height of 5.25" (133.3 mm).

# AC Power Sources

## An integrated AC power solution

Keysight offers two families of AC power sources to meet your AC test challenges —from basic to complex. The AC6800 Series of basic AC sources offer stable, reliable power with models available up to 4000 VA. The 6800C series of performance AC sources provide a complete AC test solution with built in arbitrary waveform generator to simulate many types of power waveforms, at power levels up to 1750 VA. Both families may also be used to produce DC power, either alone or as a DC offset to an AC waveform. All models are backed with global support.

6800C Series

AC6800B Series

## AC6800B Series Basic AC Power Sources (Link)

### The quality and capability you need.

- Models up to 4000 VA are available to meet your basic AC power source and measurement requirements
- An intuitive user interface tested over time
- LAN/LXI Core and USB (standard), and GPIB (optional plug-in card)
- Built-in remote sensing

## 6800C Series Performance AC Power Sources/Analyzers (Link)

### The complete AC power test solution.

- Models up to 1750 VA are available to meet your performance AC source requirements
- Extensive built-in power measurement capabilities
- LAN, USB and GPIB
- Integrated transient waveform generation and harmonic capabilities to simulate and analyze your AC environment

| | Model | RMS power | RMS voltage | RMS current | Output frequency | Peak current | DC power | DC voltage |
|---|---|---|---|---|---|---|---|---|
| Performance | AC6801B | 500 VA | 310 V | 5 A | 500 Hz | 7.5 A | 400 W | 380 V |
| | AC6802B | 1000 VA | 310 V | 10 A | 500 Hz | 15 A | 800 W | 380 V |
| | AC6803B | 2000 VA | 310 V | 20 A | 500 Hz | 30 A | 1600 W | 380 V |
| | AC6804B | 4000 VA | 310 V | 40 A | 500 Hz | 60 A | 3200 W | 380 V |
| | 6811C | 375 VA | 300 V | 3.25 A | 1 kHz | 40 A | 285 W | 425 V |
| | 6812C | 750 VA | 300 V | 6.5 A | 1 kHz | 40 A | 575 W | 425 V |
| | 6813C | 1750 VA | 300 V | 13 A | 1 kHz | 80 A | 1350 W | 425 V |

BenchVue software enabled

# New AC6900 Series Three-Phase AC Power Solution (Link)

## A Complete Three-Phase AC Power Solution

Keysight's AC6900 Series AC power sources provide a complete AC and DC power solution by combining the capabilities of a multimeter, harmonic analyzer, and power analyzer in one instrument. You can easily produce DC power, either alone or as a DC offset to an AC waveform, in a compact form factor.

- AC, DC, or AC plus DC mode
- maximum AC voltage at 320 Vrms
- frequency up to 5 kHz
- single-phase, single-phase three-wire, or three-phase four-wire connections
- power line disturbance tests
- harmonic analysis
- built-in waveform generation
- USB, LAN (LXI Core), and optional GPIB connectivity

BenchVue software enabled

NEW AC6900 Series

| | Model | RMS power VA | AC voltage (L/H) V | RMS current/ Ph A | Maximum frequency Hz | Max DC current A | DC voltage V |
|---|---|---|---|---|---|---|---|
| Performance | AC6903H | 3000 | 160 / 320 | 10 / 5 | 5000 | 30 / 15 | ± 226 / ± 452 |
| | AC6903L | 3000 | 160 / 320 | 10 / 5 | 550 | 30 / 15 | ± 226 / ± 452 |
| | AC6906H | 6000 | 160 / 320 | 20 / 10 | 5000 | 60 / 30 | ± 226 / ± 452 |
| | AC6906L | 6000 | 160 / 320 | 20 / 10 | 550 | 60 / 30 | ± 226 / ± 452 |
| | AC6912H | 12000 | 160 / 320 | 40 / 20 | 5000 | 120 / 60 | ± 226 / ± 452 |
| | AC6912L | 12000 | 160 / 320 | 40 / 20 | 550 | 120 / 60 | ± 226 / ± 452 |
| | AC6918H | 18000 | 160 / 320 | 60 / 30 | 5000 | 180 / 90 | ± 226 / ± 452 |
| | AC6918L | 18000 | 160 / 320 | 60 / 30 | 550 | 180 / 90 | ± 226 / ± 452 |

# RP7900 Series Regenerative Power System (Link)

The RP7900 Series regenerative power system reduces the cost of test with highly integrated capabilities. The regenerative function enables the energy consumed to be put back onto the grid cleanly.

- Operate in a two-quadrant mode as a power source and regenerative electronic load.
- Up to 2000 V, up to ± 800 A, up to 30 kW per instrument.
- Fast output speed and sub-millisecond command processing time.
- Create up to 600 kW power or loading through easy parallel connection.
- Regeneration returns 90% of power to the grid, reducing cooling costs.
- RP7970 & RP7980 Series offer photovoltaic simulation capability.
- Connectivity includes LAN (LXI Core), USB, and GPIB.
- Compact 3U-high size


RP7952A Regenerative Power System

| | Model | Power (W) | Maximum V (V) | Maximum I (A) | Number of outputs | Number of ranges | Ripple and noise mVp-p | Programming accuracy % + mV | Transient response (ms) | AC input voltage (VAC) | Size [1] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Performance | RP7951A | 5000 | 500 | ± 20 | 1 | - | 500 | 0.03 + 60 | ≤ 0.5 | 200/208 | Full RU w x 3 RU h |
| | RP7952A | 10000 | 500 | ± 40 | | | 500 | 0.03 + 60 | | | |
| | RP7953A | 10000 | 950 | ± 20 | | | 1000 | 0.03 + 120 | | | |
| | RP7961A | 5000 | 500 | ± 20 | 1 | - | 500 | 0.03 + 60 | ≤ 0.5 | 400/480 | Full RU w x 3 RU h |
| | RP7962A | 10000 | 500 | ± 40 | | | 500 | 0.03 + 60 | | | |
| | RP7963A | 10000 | 950 | ± 20 | | | 1000 | 0.03 + 120 | | | |
| | RP7931A | 5000 | 20 | ± 400 | 1 | 1 | 30 | 0.02 + 2 | ≤ 0.3 | 200/208 | Full RU w x 3 RU h |
| | RP7932A | 5000 | 80 | ± 125 | | | 80 | 0.02 + 8 | | | |
| | RP7933A | 10000 | 20 | ± 800 | | | 30 | 0.02 + 2 | | | |
| | RP7935A | 10000 | 80 | ± 250 | | | 80 | 0.02 + 8 | | | |
| | RP7936A | 10000 | 160 | ± 125 | | | 200 | 0.02 + 16 | | | |
| | RP7941A | 5000 | 20 | ± 400 | 1 | 1 | 30 | 0.02 + 2 | ≤ 0.3 | 400/480 | Full RU w x 3 RU h |
| | RP7942A | 5000 | 80 | ± 125 | | | 80 | 0.02 + 8 | | | |
| | RP7943A | 10000 | 20 | ± 800 | | | 30 | 0.02 + 2 | | | |
| | RP7945A | 10000 | 80 | ± 250 | | | 80 | 0.02 + 8 | | | |
| | RP7946A | 10000 | 160 | ± 125 | | | 200 | 0.02 + 16 | | | |
| | RP7972A | 20000 | 1000 | ±60 | 1 | 1 | 1500 | 0.04% + 75 | ≤ 0.3 | 400/480 | ATE / 3U |
| | RP7973A | 20000 | 2000 | ±30 | | | 3000 | 0.04% + 150 | | | |
| | RP7982A | 30000 | 1000 | ± 90 | | | 1500 | 0.03% + 75 | | | |
| | RP7983A | 30000 | 2000 | ± 30 | | | 3000 | 0.03% + 150 | | | |

1. RU refers to rack unit of a standard 19" EIA equipment rack. The width is either ½ or full.The height is in number of rack units which are 1.75" (44.4 mm) each. For example: a 3 RU h has a height of 5.25" (133.3 mm).

# N6780 Series Source Measure Units (SMUs) (Link)

## Deliver exceptional battery life

The N6781A and N6785A are 2-quadrant SMUs for battery drain analysis. They offer advance features to accurately capture the power consumption of portable, battery-powered devices from 20 to 80 W. Whether the DUT is a mobile phone, “phablet,” tablet, or pacemaker, the N6781A and N6785A’s seamless measurement ranging, programmable output resistance, and auxiliary DVM helps you deliver exceptional battery life.

The N6782A and N6786A are 2-quadrant SMUs for function test of a device from 20 to 80 W. It has the ability to modulate its output up to 100 kHz along with the capability to source and sink current.

The N6784A is a 4-quadrant SMU that provides precise sourcing and measurement for general purpose applications.

The N6780 source measure units (SMUs) are modules for the N6705C DC power analyzer mainframe for R&D, and the N6700 low-profile mainframes for ATE.

- Seamless, dynamic measurements down to nA and µV (N6781A/82 and N6785A/86 only)
- Glitch-free operation—change sourcing ranges or measurement ranges without any glitches
- Excellent transient response for stable output voltage with dynamic loads
- 2 or 4-quadrant operation: use as a DC power supply or electronic load
- Fast modulation of DC output to create arbitrary waveforms up to 100 kHz
- Computer control via GPIB, USB, and LAN (LXI Core)

BenchVue software enabled

N6705C

N6781A
N6782A

N6785A

| N6705C DC power analyzer | |
|---|---|
| | **Flexible/reconfigurable** |
| Available slots | Mainframe accepts up to 4 DC power modules |
| Power | 600 W total DC module output power |
| Instrument control | GPIB, USB, LAN (LXI Class C Compliant) |

**N6780 SMU modules**

| Specialty | Model | Power (W) | Max voltage (V) | Max current (A) | Ripple and noise (mVp-p) | Programming accuracy % + µV | Transient response (µs) |
|---|---|---|---|---|---|---|---|
| | N6781A | 20 | 20 | ± 3 | 12 | 0.025 + 1800 | ≤ 35 |
| | N6782A | 20 | 20 | ± 3 | 12 | 0.025 + 1800 | ≤ 35 |
| | N6784A | 20 | ± 20 | ± 3 | 12 | 0.025 + 1800 | ≤ 35 |
| | N6785A | 80 | 20 | ± 8 | 15 | 0.025 + 1800 | ≤ 35 |
| | N6786A | 80 | 20 | ± 8 | 15 | 0.025 + 1800 | ≤ 35 |

## 14585A control and analysis software

The software for the DC power analyzer compliments the front panel of the N6705 mainframe, offering advanced functionality and PC control. It is a flexible R&D tool for any application. When used to control an N6781A or N6785A SMU, it can be used for advanced battery drain analysis applications.

- Control and analyze data from up to four N6705 DC power analyzer and any installed modules at once
- Easily create complex waveforms to stimulate or load down a DUT by inputting a formula, choosing from built-in, or importing waveform data.
- Data log (gapless) measurements directly to a PC
- Perform statistical analysis of power consumption

# B2900 Series Precision Source / Measure Units (SMU) (Link)

The Keysight B2900 Series of Precision Source/Measure Units are compact and cost-effective bench-top Source/Measure Units (SMUs). The SMU combines the capabilities of a current source, a voltage source, a current meter and a voltage meter along with the capability to switch easily between these various functions into a single instrument. It offers:

- Test capability up to 210 V and 3 A (DC) or 10.5 A (pulsed) with a single instrument
- Best-in-class 6.5 digit source and measurement resolution down to 10 fA and 100 nV
- 10 µs digitizing capability
- Innovative GUI facilitate fast bench-top test, debug and characterization
- Ultrafast throughput for lower cost-of-test
- Four software control options

These capabilities are ideal for a wide variety of IV (current versus voltage) measurement tasks that require both high resolution and accuracy. The innovative graphical user interface with four viewing modes (single view, dual view, graph view and roll view) improves usability and productivity of bench-top tests, debug and characterization dramatically. The Keysight B2900 series of SMU is also well-suited for production with the fast measurement speed.


BenchVue software enabled

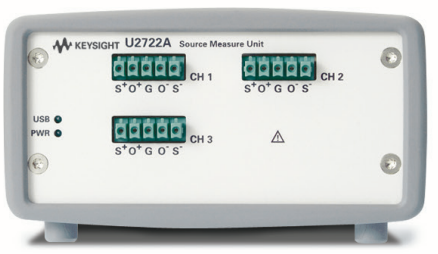
| | | | | B2901A | B2901BL | B2902A | B2910BL | B2911A | B2912A |
|---|---|---|---|---|---|---|---|---|---|
| Specialty | Number of channels | | | 1 | 1 | 2 | 1 | 1 | 2 |
| | Max output | Voltage | | ± 210 V | ±21 V | ± 210 V | ±210 V | ± 210 V | ± 210 V |
| | | Current | DC | ± 3.03 A | ±1.5 A | ± 3.03 A | ±1.5 A | ± 3.03 A | ± 3.03 A |
| | | | Pulsed | ± 10.5 A | N/A | ± 10.5 A | N/A | ± 10.5 A | ± 10.5 A |
| | | Power | | 31.8 W | 31.8 W | 31.8 W | 31.8 W | 31.8 W | 31.8 W |
| | Source | Max digits | Digits | 5 ½ | 5 ½ | 5 ½ | 5 ½ | 6 ½ | 6 ½ |
| | | Min resolution | Voltage | 1 µV | 1 µV | 1 µV | 1 µV | 100 nV | 100 nV |
| | | | Current | 1 pA | 10 pA | 1 pA | 100 fA | 10 fA | 10 fA |
| | Measurement | Max digits | Digits | 6 ½ | 5 1/2 | 6 ½ | 5 1/2 | 6 ½ | 6 ½ |
| | | Max resolution | Voltage | 100 nV | 100 nV | 100 nV | 100 nV | 100 nV | 100 nV |
| | | | Current | 100 fA | 1 pA | 100 fA | 10 fA | 10 fA | 10 fA |
| | Min programmable interval for List sweep/AWG waveform | | | 20 µs | | 20 µs | | 10 µs | 10 µs |
| | Min trigger interval for digitizing (Max sample rate) | | | 20 µs (50,000 pts/s) | 200 µs (5,000 pts/s) | 20 µs (50,000 pts/s) | 50 µs (20,000 pts/s) | 10 µs (100,000 pts/s) | 10 µs (100,000 pts/s) |

# U2720 USB Modular Source Measure Units (Link)

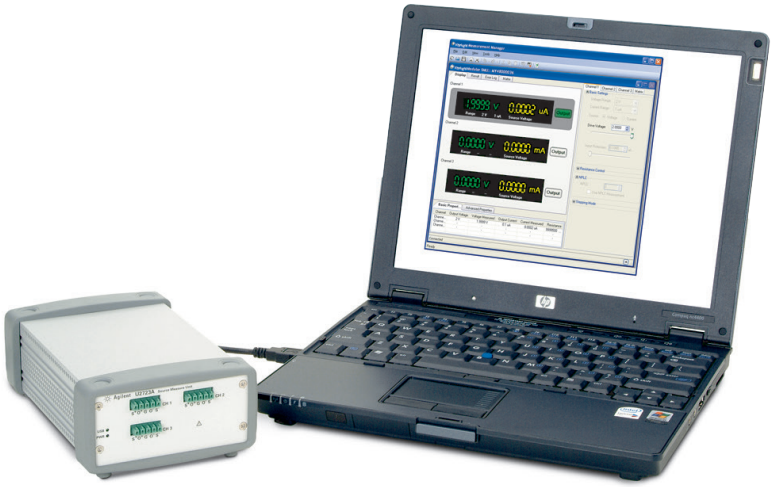
## Source and measure DC voltage/current reliably

The Keysight USB modular source measure unit (SMU) allows you to perform sweeps and make measurements using a single device. The SMU offers voltage and current programming/readback with high accuracy measurement capabilities. You can configure each of the three channels separately or in a matrix—in series or parallel—for increased power. It comes bundled with Keysight Measurement Manager (AMM) software that includes a command logger function to help you convert SCPI commands into snippets of VEE, V, C+ and C# code.

- Three-channel, four-quadrant operation (± 20 V, ± 120 mA)
- High measurement sensitivity of 100 pA with 16-bit resolution
- 0.1% basic accuracy
- Low current measurement capability down to nA levels
- Embedded test script able to support three channels with coherent source and measurement capabilities (for U2723A)
- IV Curve support in the Keysight BenchVue USB Modular SMU software application (for U2723A)
- Faster rise/fall time (for U2723A)
- Hi-Speed USB 2.0 (480 Mbps)




U2722A



| Model | U2722A/23A |
|---|---|
| Number of outputs | 3 |
| **Output ratings (at 0 to 50 °C)** | |
| Voltage | –20 to 20 V per channel |
| Current | –120 to 120 mA per channel |

| | Model | | U2722A/23A | |
|---|---|---|---|---|
| | | Range | Accuracy [1] | Resolution |
| Specialty | Voltage programming/ readback | ± 2 V | 0.075% + 1.5 mV | 0.1 mV |
| | | ± 20 V | 0.05% + 10 mV | 1 mV |
| | Current programming/ readback | ± 1 µA | 0.085% + 0.85 nA | 100 pA |
| | | ± 10 µA | 0.085% + 8.5 nA | 1 nA |
| | | ± 100 µA | 0.075% + 75 nA | 10 nA |
| | | ± 1 mA | 0.075% + 750 nA | 100 nA |
| | | ± 10 mA | 0.075% + 7.5 µA | 1 µA |
| | | ± 120 mA | 0.1% + 100 µA | 20 µA |

| | Model | | U2722A | U2723A |
|---|---|---|---|---|
| | Rise/fall time (ms) [1] | Range | Accuracy [1] | Accuracy [1] |
| Specialty | For resistive measurement [2] | ± 1 µA | 170.0 | 15.0 |
| | | ± 10 µA | 18.0 | 5.0 |
| | | ± 100 µA | 6.0 | 1.0 |
| | | ± 1 mA | 1.0 | 1.0 |
| | | ± 10 mA | 1.0 | 1.0 |
| | | ± 120 mA | 1.0 | 1.0 |

1. Drive 50% of 1 V or 10 V output with a resistive load. Rise time is from 10 to 90% of program voltage change at maximum current. Fall time is from 90 to 10% of program voltage change at maximum current.
2. Measurements obtained are per default bandwidth setting.

# E5260A/E5270B Precision IV Analyzer/Source Monitor Unit Mainframe Series (Link)

Keysight Precision IV Analyzer Series (E5262A, E5263A, E5260A and E5270B) is the complete solution for currentvoltage characterization. It supports multiple SMUs (Source/Monitor Units) for voltage/current sourcing and voltage/current measurement with the best in the class current measurement performance. It's modular architecture allows you to configure or upgrade SMU modules for available eight slots (E5260A/E5270B)

The EasyEXPERT group+ GUI based characterization software is furnished and available on your PC. It supports efficient and repeatable device characterization in the entire characterization process from measurement setup and execution to analysis and data management either by interactive manual operation or automation across a wafer in conjunction with a semiautomatic wafer prober. EasyEXPERT group+ makes it easy to perform currentvoltage characterization immediately with the ready-touse measurements (application tests) furnished, and allows you the option of storing test condition and measurement data automatically after each measurement in a unique built-in database (workspace), ensuring that valuable information is not lost and that measurements can be repeated at a later date.

Powerful integration of SMU's versatile measurement capabilities and GUI based characterization software makes it the best solution for characterization and evaluation of devices, materials, semiconductors, active/passive components, or virtually any other type of electronic device with uncompromised measurement reliability and efficiency.

The Precision IV Analyzer Series is also available as a system component SMU for a rack and stuck test system. It provides the scalability and the highest measurement accuracy in the class for current-voltage measurement. It can be controlled remotely by the FLEX command set supporting the powerful measurement capabilities.

8 slot mainframe SMU configurable model (E5260A/E5270B)

Two SMU pre-fixed configuration model (E5262A/E5263A)

| | | Precision IV analyzer series | | | |
|---|---|---|---|---|---|
| | | **E5262A** | **E5263A** | **E5260A** | **E5270B** |
| MPSMU | Max. output | 100 V/200 mA | 100 V/200 mA | 100 V/200 mA | 100 V/100 mA |
| (Medium Power SMU) | Min. resolution | 5 pA/100 µV | 5 pA/100 µV | 5 pA/100 µV | 10 fA/0.5 µV |
| HPSMU | Max. output | NA | 200 V/1 A | 200 V/1 A | 200 V/1 A |
| (High Power SMU) | Min. resolution | NA | 5 pA/100 µV | 5 pA/100 µV | 10 fA/2 µV |
| HRSMU | Max. output | NA | NA | NA | 100 V/100 mA |
| (High Resolution SMU) | Min. resolution | NA | NA | NA | 1 fA/0.5 µV |
| ASU (1) | Max. output | NA | NA | NA | 100 V/100 mA |
| (Atto-sense Switch Unit) | Min. resolution | NA | NA | NA | 0.1 fA/0.5 µV |

1. One ASU requires one HRSMU module to connect it.

# B1500A Semiconductor Device Analyzer (Link)

Keysight B1500A Semiconductor Device Analyzer of Precision Current-Voltage Analyzer Series is an all in one analyzer supporting IV, CV, pulse/dynamic IV and more, which is designed for all-round characterization from basic to cutting-edge applications. It provides a wide range of measurement capabilities to cover the electrical characterization and evaluation of devices, materials, semiconductors, active/passive components, or virtually any other type of electronic device with uncompromised measurement reliability and efficiency.

In addition, the B1500A's modular architecture with ten available slots allows you to add or upgrade measurement modules if your measurement needs change over time.

Keysight EasyEXPERT group+ GUI based characterization software is available either on the B1500A's embedded Windows 10 platform with 15-inch touch screen or on your PC to accelerate the characterization tasks. It supports efficient and repeatable device characterization in the entire characterization process from measurement setup and execution to analysis and data management either interactive manual operation or automation across a wafer in conjunction with a semiautomatic wafer prober. EasyEXPERT group+ makes it easy to perform complex device characterization immediately with hundreds of ready-to-use measurements (application tests) furnished, and allows you the option of storing test condition and measurement data automatically after each measurement in a unique built-in database (workspace), ensuring that valuable information is not lost and that measurements can be repeated at a later date. Keysight B1500A provides the complete solution for device characterization with these versatile capabilities.

B1500A

**Specialty**

| Test coverage | Supported module | Key specifications | Key features |
|---|---|---|---|
| For DC and pulsed IV measurement | B1510A High Power Source/ Measure Unit (HPSMU) | – Up to 200 V/1 A<br>– Min 10 fA/2 µV resolution | – Min 100 µs Sampling (time domain) measurement<br>– Min 500 µs pulse width with 100 µs resolution<br>– Quasi-static capacitance voltage (QSCV) measurement with leakage current compensation<br>– 4 quadrant operation<br>– Kelvin (4-wire) connection<br>– Spot, sweep and other capabilities |
| | B1511B Medium Power Source/Measure Unit (MPSMU) | – Up to 100 V/0.1 A<br>– Min 10 fA/0.5 µV resolution<br>– Optional ASU for 0.1 fA and IV/ CV switching | |
| | B1517A High Resolution Source/Measure Unit (HRSMU) | – Up to 100 V/0.1 A<br>– Min 1 fA/0.5 µV resolution<br>– Optional ASU for 0.1 fA and IV/ CV switching | |
| | B1514A 50 µs Pulse Medium Current Source/Measure Unit (MCSMU) | – Up to 30 V/1 A (0.1 A DC) | – Min 50 µs pulse width with 2 µs resolution<br>– Oscilloscope view for precision pulsed measurement |
| For capacitance measurement | B1520A Multi-Frequency Capacitance Measurement Unit (MFCMU) | – 1 kHz to 5 MHz frequency range<br>– 25 V built-in DC bias and 100 V DC bias with SMU and SCUU | – AC impedance measurement (C-V, C-f, C-t)<br>– Easy, fast and accurate IV and CV measurements with automated switching via SCUU |
| For ultra-fast pulsed and transient IV measurement | B1530A Waveform Generator/ Fast Measurement Unit (WGFMU) | – 10 ns programmable resolution for waveform generation<br>– 200 MSa/s simultaneous high-speed measurement<br>– 10 V peak-to-peak output | – No load line effects; accurate pulsed IV measurement using SMU-based technology<br>– Enabled for advanced applications, such as NBTI/PBTI, RTN, etc. |
| For pulse generation | B1525A High Voltage Semiconductor Pulse Generator Unit (HV-SPGU) | – Up to ± 40 V high voltage output | – Two-level and three-level pulsing and arbitrary waveform generation capability on each channel<br>– Ideal for non-volatile memory testing |
| For ultra-fast pulsed high-k/SOI evaluation | B1542A 10 ns pulsed IV parametric test solution | – Min 10 ns gate pulse width with 2 ns rise and fall times<br>– 1 µs current measurement resolution | – Accurate Id-Vd and Id-Vg measurement<br>– Easy switching between DC and pulsed measurements |

# B1505A Power Device Analyzer/Curve Tracer (Link)

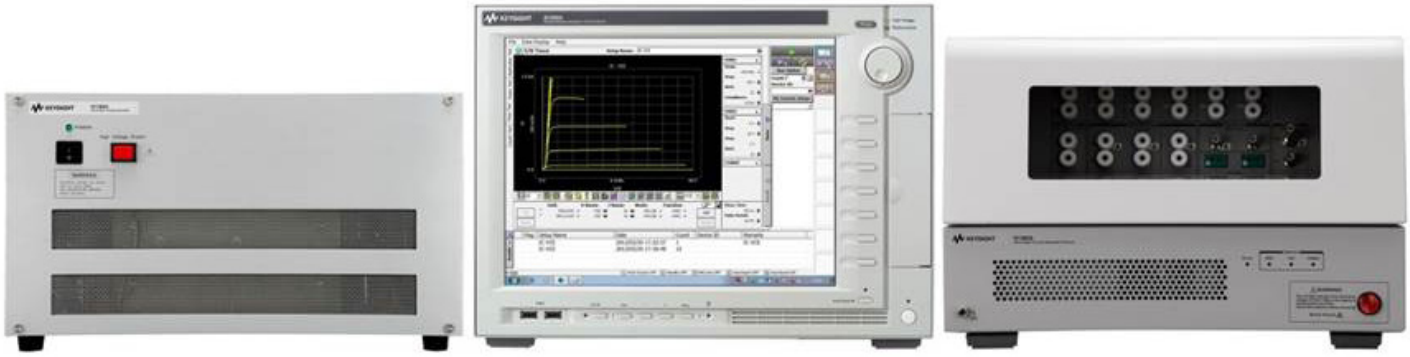
The B1505A Power Device Analyzer/Curve Tracer is a single box solution for power device evaluation. Its broad measurement range from sub-pA to 10 kV/1500 A enables precise µΩ on-resistance measurements. Additionally, its 10 µs fast pulse capability enables complete power device characterization. This allows evaluation of new power devices such as IGBT and wide band-gap materials such as silicon carbide (SiC) and gallium nitride (GaN).

- Very wide current, voltage operating range up to 1500 A,10 kV
- Supporting package and on-wafer device
- Accurate sub-picoamp level current measurement and µΩ on-resistance measurement
- 10 µs high power narrow pulse measurement
- Three-terminal capacitance (Ciss, Coss, Crss) measurement at up to 3000 V DC bias voltages and independent terminal capacitance (Cgs, Cgd, Cds) measurement
- Gate charge (Qg) measurement for NcH MOSFET and IGBT
- GaN current collapse measurement
- Automated thermal test from –50 °C to +250 °C
- Upgradable and scalable hardware architecture
- Oscilloscope View for current and voltage pulse verification
- EasyEXPERT group+ software simplifies data management and data analysis

| B1505A modules | Description | Key specification | Max number |
|---|---|---|---|
| B1510A | High power SMU | 200 V, 1 A (DC) | 4 |
| | | 10 fA resolution | |
| B1511B | Medium power SMU | 100 V, 100 mA (DC) | 10 |
| | | 10 fA resolution | |
| B1512A | High current SMU | 20 V, 20 A (pulsed) | 2 |
| | | 30 V, 1 A (DC) | |
| B1513C | High voltage SMU | 3000 V, 8 mA (pulse and DC) | 5 |
| B1514A | Medium current SMU | 30 V, 1 A (pulsed) | 5 |
| | | 30 V, 100 mA (DC) | |
| B1520A | Multi-frequency CMU | 1 kHz to 5 MHz, ± 25 V (internal bias) | 1 |

| External modules | Description | Key specification |
|---|---|---|
| N1265A | Ultra high current expander/Fixture | ± 1500 A/60 V (pulsed) |
| N1266A | HVSMU current expander | ± 1500 V/2.5 A (pulsed) |
| | | ± 2200 V/1.1 A (pulsed) |
| N1267A | High voltage/high current fast switch | ± 3000 V, ± 20 A (pulsed) |
| | | Minimum transition (OFF to ON): 20 µs |
| N1268A | Ultra high voltage unit | 10 kV/10 mA (DC) |
| | | 10 kV/20 mA (pulsed) |

| Accessories | Description |
|---|---|
| N1258A | Module selector |
| N1259A | Test fixture |
| N1260A | High voltage bias-T |
| N1271A | Thermal test enclosure |
| N1272A | Device capacitance selector |
| N1273A | Capacitance test fixture |
| N1274A | On-wafer gate charge measurement adapter for 20 A/3 kV |
| N1275A | On-wafer gate charge measurement adapter for N1265A |



# B1506A Power Device Analyzer for Circuit Design (Link)

The B1506A Power Device Analyzer for Circuit Design is a complete solution that can help power electronic circuit designers maximize the value of their power electronics products by enabling them to select the correct power devices. It can evaluate all relevant device parameters under a wide range of operating conditions, including IV parameters such as breakdown voltage and on-resistance, as well as three terminal FET capacitances, gate charge and power loss.

The prices of the IV packages (H20, H50, H70) are comparable to those of conventional curve tracers, and with the B1506A you get additional advanced features. You can also upgrade any of the B1506A IV packages (H20, H50, H70) to either increase the current range or add CV/Qg measurement capability (options H21, H51, H71).

- Wide current and voltage operating range up to 1500 A, 3000 V
- 10 µs high power narrow pulse measurement
- Automated thermal test from –50 °C to +250 °C
- Three-terminal capacitance (Ciss, Coss, Crss) measurement at up to 3000 V DC bias voltages and independent terminal capacitance (Cgs, Cgd, Cds) measurement
- Gate charge (Qg) measurement for NcH MOS and IGBT
- Power loss calculation
- Menu driven easy-to-use user interface (Easy Test Navigator – ETN)
- Quick and automatic device datasheet generation
- Oscilloscope view for current and voltage pulse verification
- Cost effective IV package (H20, H50, H70)

| Category | Parameters |
|---|---|
| Threshold voltage | V(th), Vge(th) |
| Transfer characteristics | Id-Vgs, Ic-Vge, gfs |
| On resistance | Rds-on, Vce(sat) |
| Gate leakage current | Igss, Iges |
| Output leakage current | Idss, Ices |
| Output characteristics | Id-Vds, Ic-Vce |
| Breakdown voltage | BVds, BVces |
| Gate charge (for NcH MOS and IGBT) [1] | Qg, Qg(th), Qgs, Qgd, Qsw, Qsync, Qoss |
| Device capacitance [1] | Ciss, Coss, Crss, Cgs, Cgd, Cies, Coes, Cres |
| Power loss calculation [1] | Driving loss, Switching loss, Conduction loss |

1. Only available on B1506A-H21/H51/H71.

| Model number | Option | Description |
|---|---|---|
| B1506A | | Power Device Analyzer for Circuit Design |
| | H20 | Opt H20 - 20 A/3 kV/Thermal Fixture Package |
| | H50 | Opt H50 - 500 A/3 kV/Thermal Fixture Package |
| | H70 | Opt H70 - 1500 A/3 kV/Thermal Fixture Package |
| | H21 | Opt H21 - 20 A/3 kV/C-V/Gate Charge/Thermal Fixture Package |
| | H51 | Opt H51 - 500 A/3 kV/C-V/Gate Charge/Thermal Fixture Package |
| | H71 | Opt H71 - 1500 A/3 kV/C-V/Gate Charge/Thermal Fixture Package |
| | T01 | Thermal Test Enclosure (Thermostream Compatible) |

# N6783A Application-Specific Modules (Link)

The Keysight N6783A-BAT Battery Charge/Discharge Module is a basic, 2-quadrant module designed to be used by battery-powered (mobile) device designers. The N6783A-BAT's 2-quadrant operation allows it to act as a power supply to charge the battery or as an electronic load to discharge the battery. When used in the N6705C DC Power Analyzer mainframe along with the 14585A Control and Analysis software, short-and long-term measurements for battery validation are made easy.

The Keysight N6783A-MFG Mobile Communications DC Power Module offers advanced features specifically for testing battery-powered (mobile) devices in manufacturing. The N6783A-MFG offers fast, accurate measurements and excellent voltage transient response to address the unique challenges associated with testing mobile wireless devices.

The N6783A-BAT and N6783A-MFG modules can be used with the N6700 low-profile mainframes for ATE and with the N6705C DC power analyzer mainframe for R&D.

- Optimized for basic battery charge/ discharge application (N6783A-BAT)
- Optimized for mobile device manufacturing test (N6783A-MFG)
- Fast transient response ensures stable power supply output voltage
- Digitizing measurement system for flexible, accurate current measurements
- USB, LAN (LXI Core), and GPIB interfaces

BenchVue software enabled


N6700C

**N6783 application-specific modules**

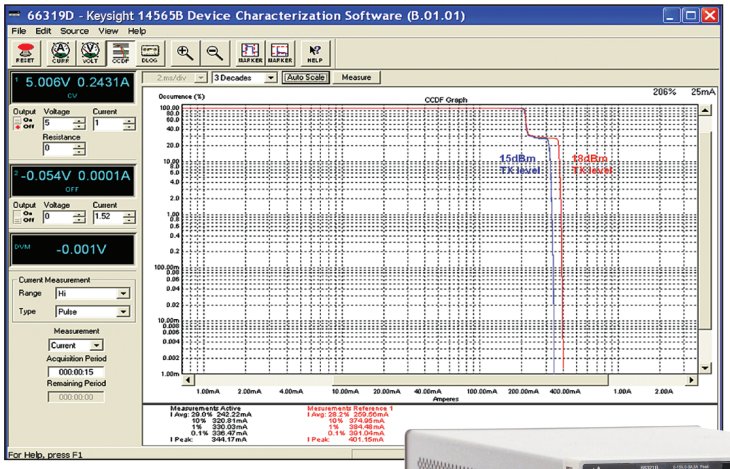
| Specialty | Model | Power (W) | Max voltage (V) | Max current (A) | Ripple and noise (mVp-p) | Programming accuracy % + µV | Transient response (µs) |
|---|---|---|---|---|---|---|---|
| | N6783A-BAT | 24 | 8 | +3 to –2 A | 8 | 0.1 + 10000 | ≤ 45 |
| | N6783A-MFG | 18 | 6 | +3 to –2 A | 8 | 0.1 + 10000 | ≤ 45 |

N6705C

# 66300 Mobile Communications DC Sources (Link)

66300 mobile communications power supplies are designed and optimized to help you test mobile wireless devices. They provide the DC sourcing, current sinking, and measurement capabilities to address the unique challenges of simulating batteries and battery packs and measuring the current drawn by your device under test.

- Fast DC power source to replace and simulate the battery during testing
- Fast voltage transient response ensures maximum test-system throughput by minimizing device shutdowns
- Dynamic measurement system enables accurate current measurement from µA to A
- When the 66319B/D and 66321B/D are coupled with the 14565B Software, it gives you a powerful analysis tool to optimize your device designs for long battery life




14565B

66321B
66319B

## Keysight 14565B device characterization software

- Graphical user software—no programming required
- 3 modes of operation: waveform capture, data logging, CCDF statistical analysis
- Visualization and analysis tools to help you identify anomalies and characterize and quantify battery drain to optimize your design
- Automation capability allows you to control the 14565B from other programs to automate and synchronize DUT activity with current drain measurements

| Specialty | Model | Power (W) | Maximum V (V) | Maximum I (A) | Number of outputs | Number of ranges | Ripple and noise mVp-p | Programming accuracy % + mV | Transient response (µs) | Size [1] |
|---|---|---|---|---|---|---|---|---|---|---|
| | 66309B/D | 45 | 15 | 3 (5 A peak) | 2 | 1 | 6 | 0.05 + 10 | < 35 | ½ RU w x 2 RU h |
| | 66311B | 45 | 15 | 3 (5 A peak) | 1 | 1 | 6 | 0.05 + 10 | < 35 | |
| | 66319B/D | 45 | 15 | 3 (5 A peak) | 2 | 1 | 6 | 0.05 + 10 | < 20 | |
| | 66321B/D | 45 | 15 | 3 (5 A peak) | 1 | 1 | 6 | 0.05 + 10 | < 20 | |
| | 66332A | 100 | 20 | 5 | 2 | 1 | 3 | 0.05 + 10 | < 100 | |

1. RU refers to rack unit of a standard 19" EIA equipment rack. The width is either ½ or full. The height is in number of rack units which are 1.75" (44.4 mm) each. For example: a 3 RU h has a height of 5.25" (133.3 mm).

# NEW PV8900 Series Photovoltaic Array Simulator (Link)

## Maximize the performance of your inverter

Keysight's photovoltaic (PV) simulator includes the hardware and software to test a single maximum power point tracking (MPPT) inverter accurately. Test PV voltages up to 2000 V and 60 A with a single supply. DG9000 Series software licenses are available to test string inverter with 4-, 8-, or 12-MPPT channels. Most string inverter solutions test one MPPT channel at a time – leading to test inaccuracies. Keysight's DG9000 advanced PV inverter software can test up to 12 MPPT channels simultaneously.

- Output up to 2000 V and 30 kW in a 3U package
- Test up to 600 kW channels with parallel units
- Select built-in curves or create a custom table using up to 1024 points
- DG9000 Series software simplifies single and multi-MPPT inverter tests
- Use as a standard 30 kW autoranging supply for DC sourcing
- Connectivity includes LAN (LXI Core), USB, and GPIB


| Characteristic | | PV8921A / PV8922A | PV8931A / PV8932A |
|---|---|---|---|
| AC input ratings | Phase and range | 3 phase; 380 – 480 VAC ±10% | |
| | Frequency | 50 / 60 Hz | |
| | Input VA | 23 kVA | 34 kVA |
| | Connections | L1, L2, L3, N, PE | |
| | Power factor[6] | 0.99 | |
| Output terminal isolation | No output terminal may be more than ±2000 VDC from any other terminal or chassis ground. | | |
| Typical weight | | 82 lbs. (37.3 kg) | 126 lbs. (57.2 kg) |

| Specification | | PV8921A | PV8922A | PV8931A | PV8932A |
|---|---|---|---|---|---|
| DC output ratings | Voltage | 1500 V | 2000 V | 1500 V | 2000 V |
| | Current | 30 A | 30 A | 60 A | 30 A |
| | Power | 20 kW | 20 kW | 30 kW | 30 kW |
| Output voltage ripple and noise | CV p-p[1] | 3 V | 3 V | 2.25 V | 3 V |
| | CV rms[2] | 400 mV | 400 mV | 300 mV | 400 mV |
| Load regulation | Voltage[3] | 100 mV | 100 mV | 75 mV | 100 mV |
| | Current | 4 mA | 4 mA | 8 mA | 4 mA |
| Programming & measurement accuracy[4] | Voltage | 0.04%+150mV | 0.04%+150mV | 0.03%+100mV | 0.03%+150mV |
| | Current | 0.03%+3mA | 0.03%+3mA | 0.03%+6mA | 0.03%+3mA |
| Transient response[5] | | | | | |
| Recovery time | | 300 µs | 300 µs | 300 µs | 300 µs |
| Settling band | | 15 V | 20 V | 15 V | 20 V |

1. From 20 Hz to 20 MHz (-3dB bandwidth) with resistive load, terminals ungrounded, or either terminal grounded
2. From 20 Hz to 10 MHz (-3dB bandwidth) with resistive load, terminals ungrounded, or either terminal grounded
3. Also applies when remote sensing with a ≤1 V drop per load lead
4. Percent of value + offset; at 25°C ±5°C after a 30 minutewarm-up; measurement NPLC=1; valid for 1 year
5. Time to recover to within the settling band following a step change from 40% to 90% and 90% to 40% of full load at Comp 0, with a 40 µs current rise and fall time
6. At nominal input and rated power

# E4360 Modular Solar Array Simulation (Link)

The modular solar array simulator (SAS) is a DC power source that simulates the output characteristics of a solar array. The SAS is primarily a current source with very low output capacitance. It is capable of simulating the I-V curve of different arrays under different environmental conditions (temperature, age, etc.). You can set the I-V curve from the front panel or program it over GPIB, LAN (LXI Core) or USB.

- Accurate simulation of any type of solar array
- Small size: up to 2 outputs in 2U of rack space
- High output power—up to 600 W per output
- Fast I-V curve changes to simulate eclipse or spin
- 14360A System Control Tools software included to simplify control of multiple solar array simulators in a system
- Custom turn-key system or individual instruments available

E4360A
SAS mainframe

E4360A modules

**E4360 modular solar array simulator mainframes**

| Specialty | Model | Power, W | Modules | Max # of modules | Physical size [1] |
|---|---|---|---|---|---|
| | E4360A | 1200 | Choose from E4361A and E4362A | 2 | Full RU w x 2 RU h |
| | E4367A | 1200 | Pre-configured with 2x E4361A | 2 | Full RU w x 1 RU h |
| | E4368A | 1200 | Pre-configured with 2x E4362A | 2 | Full RU w x 1 RU h |

1. RU refers to rack unit of a standard 19" EIA equipment rack. The width is either ½ or full. The height is in number of rack units which are 1.75" (44.4 mm) each. For example: a 3 RU h has a height of 5.25" (133.3 mm).

**E4360 modules**

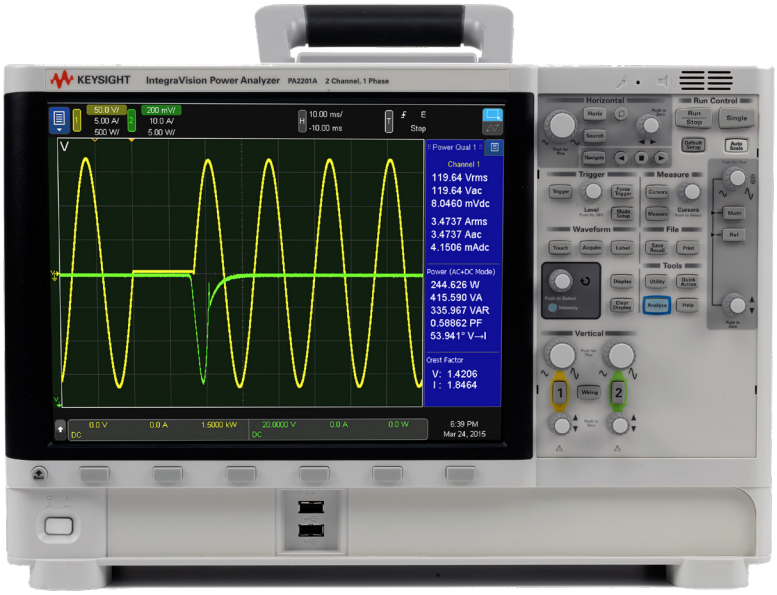
| Specialty | Model | Power, W | Max Voc | Max Isc | Number of outputs | Ripple and noise mVp-p | Programming accuracy % + mV |
|---|---|---|---|---|---|---|---|
| | E4361A | 510 | 65 | 8.5 | 1 | 125 | 0.075 + 10 |
| | E4362A | 600 | 130 | 5 | 1 | 195 | 0.075 + 20 |

# PA2201A (Link) and PA2203A (Link) IntegraVision Power Analyzers

## PA2201A 2-channel

## PA2203A 4-channel

The Keysight IntegraVision power analyzer is an intuitive combination of accurate power measurements and touch-driven oscilloscope visualization. Within a single instrument, it delivers the dynamic views you need to see, measure and prove the performance of your design.




## Make all of your critical power measurements with one instrument

- Achieve power analyzer accuracies and scope-like waveform visualization with reduced setup time
- Address multiple test scenarios with the flexibility of wide-ranging, isolated inputs
- Visualize transients, in-rush currents and state changes with a high-speed digitizer that captures voltage, current and power in real-time
- Analyze voltage, current and power in the time and frequency domains
- Explore your design and gain new insights through the 12.1"/310 mm high-resolution display with touch interface
- Save space on your bench with minimum-depth form factor

BenchVue software enabled

| Function | Description |
|---|---|
| Basic power accuracy (50/60 Hz) | 0.05% of reading + 0.05% of range |
| Power channels (voltage and current) | PA2201A: 2 channels |
| | PA2203A: 4 channels |
| Voltage measurement bandwidth (–3 dB) | 2.5 MHz (–3 dB) |
| Current measurement bandwidth (2 A or 50 A Input) | 100 kHz (–3 dB) |
| Current measurement Bandwidth (External Input) | 2.5 MHz (–3 dB) |
| Maximum voltage | 1000 Vrms (2000 V peak) |
| Maximum current | Direct input: 2 Arms (6 A peak) or 50 Arms (100 A peak) |
| | External transducer: 10 Vrms (30 V peak) |
| Record size | Maximum 1.5 M points on each waveform simultaneously |
| Digitizing speed | Maximum 5 M samples/second at 16 bits on each waveform simultaneously |
| Display size and type | 12.1-inch capacitive multi-touch/gesture enabled display |

# CX3300A Series Device Current Waveform Analyzers (Link)

## Measure dynamic current and voltage with confidence

The Keysight CX3300A series is an all-in-one measurement and analysis solution to solve your power rail, power delivery network, and power integrity challenges. The CX3300A series integrates an oscilloscope's bandwidth and sampling rate, a DMM's sensitivity, and data logger's extended duration measurement recording with waveform analytics to reveal accurate current and voltage waveforms.

- Wide bandwidth at 200 MHz
- High-resolution/high-speed sampling at 14-bit (1 GSa/s)/ 16-bit(75 MSa/s)
- Low noise and a wide dynamic range with high sensitivity from sub-nA and sub-µV
- Long-duration measurement capabilities up to 100 hours maximum
- Waveform analytics, current profiler and more efficient analysis functions on mainframe and PC


| | | CX3322A | CX3324A |
|---|---|---|---|
| Number of analog channels | | 2 | 4 |
| Number of digital channels | | N/A | 8 with CX1152A |
| Maximum analog bandwidth[1] | | 50 MHz, 100 MHz, or 200 MHz | |
| Maximum memory depth[1] | | 4 Mpts, 16 Mpts, 64 Mpts, or 256 Mpts | |
| Measurement mode | Scope mode | Default | |
| | Data logger mode | Option[2] | |

1. Maximum bandwidth and memory depth are selectable at ordering, upgradable by license.
2. Data logger mode is optional, upgradable by license

# DC Power Supply Discontinuance and Replacement Products (Link)

Keysight power products have been available for more than 50 years, and DC power supplies have been changing the way engineers prove their design, understand the issues and ensure product quality. Our power products are continually upgraded and ready for your application – and we are now offering optimal replacement choices in voltage, current, capability and performance.

| 6060 Series | **Move to the N3300 DC Electronic Load Mainframe and Modules** |
|---|---|
| | If you have a **6060B** or **6063B**, your replacement product is the **N3301A** with **N3303/4A** |

| 6030 Series | **Move to the N8700 basic performance, N6900/7900 series advanced capabilities or N6700 multiple output capabilities** |
|---|---|
| | If you have any 6030/1/2/3/4/5/8A models, your replacement product is:<br>– **6030A** – recommended substitute products are **N8761A**, **N8921A**, **N8941A**, **N6977A**, **N7977A**<br>– **6031A** – recommended substitut e products are **N8920A**, **N8940A**, **N8734A**, **N8756A**, **N6971A**, **N7971A**<br>– **6032A** – recommended substitute products are **N8737A**, **N6972A**, **N6973A**, **N7972A**, **N7973A**<br>– **6033A** – recommended substitute products are **N5744A**, **N6700C** w/1 x **N6753A**<br>– **6035A** – recommended substitute product is **N8742A**<br>– **6038A** – recommended substitute products are **N5747A**, **N6700C** w/1 x **N6754A** |

| 6620 Series | **Move to the N6700 series offers a multiple output capability with range of performance with modern I/O – LAN, USB, GPIB** |
|---|---|
| | If you have any 6621/2/3/4/5/6/7/8/9A models, your replacement product is:<br>– **6621A** - recommended substitute products are **N6700C** w/2 x **N6752A**<br>– **6622A** - recommended substitute products are **N6700C** w/2 x **N6752A**<br>– **6623A** - recommended substitute products are **N6700C** w/2 x **N6751A** and **N6752A**<br>– **6624A** - recommended substitute products are **N6700C** w/4 x **N6751A**<br>– **6625A** - recommended substitute products are **N6700C** w/1 x **N6761A** and 1 x **N6762A**<br>– **6626A** - recommended substitute products are **N6700C** w/2 x **N6761A** and 2 x **N6762A**<br>– **6627A** - recommended substitute products are **N6700C** w/4 x **N6751A**<br>– **6628A** - recommended substitute products are **N6700C** w/2 x **N6762A**<br>– **6629A** - recommended substitute products are **N6700C** w/4 x **N6762A** |

# DC Power Supply Discontinuance and Replacement Products (Continued)

| 66000 Series | Move to the N6700 series offers a multiple output capability with range of performance with modern I/O – LAN, USB, GPIB |
|---|---|
| | If you have any 66101A/102A/103A/104A/105A/106A models, your replacement product is:<br>– **66101A** - recommended substitute products are **N6700C** w/N6753A, N6754A, N6763A or N6764A<br>– **66102A** - recommended substitute products are **N6700C** w/N6753A, N6754A, N6763A, N6764A, N6773A or N6774A<br>– **66103A** - recommended substitute products are **N6700C** w/N6754A, N6764A, N6774A or N6775A<br>– **66104A** - recommended substitute products are **N6700C** w/N6754A, N6764A or N6775A<br>– **66105A** - recommended substitute products are **N6700C** w/N6777A<br>– **66106A** - recommended substitute products are **N6700C** w/2 x N6776A in series |

| 6600 Series (661X, 663X, 664X, 665X) | Move to the N6700 series offers a multiple output capability with range of performance with modern I/O – LAN, USB, GPIB |
|---|---|
| | If you have any 661X/2X/3X/4X/5X models, your replacement product is:<br>– **6611C** - recommended substitute products are **N6700C** w/**N6732B**, **N6751A**<br>– **6612C** - recommended substitute products are **N6700C** w/**N6733B**, **N6751A**<br>– **6613C** - recommended substitute products are **N6700C** w/**N6735B**, **N6751A**<br>– **6614C** - recommended substitute products are **N6700C** w/**N6776A**<br>– **6631B** - recommended substitute products are **N6700C** w/**N6742B** or **N6752A**<br>– **6632B** - recommended substitute products are **N6700C** w/N6743B or **N6752A**<br>– **6633B** - recommended substitute products are **N6700C** w/**N6752A**<br>– **6634B** - recommended substitute products are **N6700C** w/**N6776A**<br>– **6641A** - recommended substitute products are **N6700C** w/**N6754A** or **N6764A**<br>– **6642A** - recommended substitute products are **N6700C** w/**N6753A**, **N6754A**, **N6763A**, **N6764A**, **N6773A** or **N6774A**<br>– **6643A** - recommended substitute products are **N6700C** w/**N6754A**, **N6764A**, **N6774A** or **N6775A**<br>– **6644A** - recommended substitute products are **N6700C** w/**N6754A**, **N6764A** or **N6775A**<br>– **6645A** - recommended substitute products are **N6700C** w/**N6777A**<br>– **6651A** - recommended substitute products are **N6700C** w/**N6755A** or **N6765A**<br>– **6652A** - recommended substitute products are **N6700C** w/**N6755A** or **N6765A**<br>– **6653A** - recommended substitute products are **N6700C** w/**N6756A** or **N6766A** (500 W only)<br>– **6654A** - recommended substitute products are **N6700C** w/**N6756A** or **N6766A** (500 W only)<br>– **6655A** - recommended substitute products are **N6700C** w/2 x **N6777A** in parallel |

# DC Power Supply Discontinuance and Replacement Products (Continued)

| | |
|---|---|
| **6600 Series (667X, 668X, 669X)** | **Move to: N8700 Series offering basic performance at lower cost with modern I/O - LAN, USB, GPIB; or the N6900/7900 Series offers advanced capabilities and higher performance; or the N8900 Series offers high power and basic performance with modern I/O – LAN, USB and GPIB** |
| | If you have any 667X/8X/9X or E4356A models, your replacement product is:<br>– **6671A** - recommended substitute products are **N8731A**, **N8732A**, **N8733A**, **N8925A**, **N8945A**, **N6970A** or **N7970A**<br>– **6672A** - recommended substitute products are **N8734A**, **N8920A**, **N8940A**, **N6971A** or **N7971A**<br>– **6673A** - recommended substitute products are **N8736A**, **N8920A**, **N8940A**, **N6972A** or **N7972A**<br>– **6674A** - recommended substitute products are **N8737A**, **N8920A**, **N8940A**, **N6973A** or **N7973A**<br>– **6675A** - recommended substitute products are **N8740A**, **N8921A**, **N8941A**, **N6976A** or **N7976A**<br>– **6680A** - recommended substitute products are 2 x **N8931A** or 2 x **N8951A** in parallel<br>– **6681A** - recommended substitute products are 2 x **N8925A** or 2 x **N8945A** in parallel<br>– **6682A** - recommended substitute products are **N8754A**, **N8925A** or **N8945A**<br>– **6683A** - recommended substitute products are **N8755A**, **N8920A** or **N8940A**<br>– **6684A** - recommended substitute products are **N8756A**, **N8920A** or **N8940A**<br>– **6690A** - recommended substitute products are **N8931A** or **N8951A**<br>– **6691A** - recommended substitute products are **N8925A** or **N8945A**<br>– **6692A** - recommended substitute products are **N8920A** or **N8940A**<br>– **E4356A** - recommended substitute products are **N6974A** or **N7974A** |

| | |
|---|---|
| **6800B Series** | **Move to the 6800C series of performance AC sources that provides a complete AC test solution at power levels up to 1750 VA with additional I/O – USB and LAN** |
| | If you have any 6811B, 6812B or 6813B models, your replacement product is:<br>– **6811B** - recommended substitute product is **6811C**<br>– **6812B** - recommended substitute product is **6812C**<br>– **6813B** - recommended substitute product is **6813C** |

| | |
|---|---|
| **AC6800A Series** | **Move to the AC6800B series of basic AC sources that meet your basic AC power needs with stable, reliable power levels up to 4000 VA** |
| | If you have any AC6801A, AC6802A, AC6803A or AC6804A models, your replacement product is:<br>– **AC6801A** - recommended substitute product is **AC6801B**<br>– **AC6802A** - recommended substitute product is **AC6802B**<br>– **AC6803A** - recommended substitute product is **AC6803B**<br>– **AC6804A** - recommended substitute product is **AC6804B** |

| | |
|---|---|
| **E36100A Series** | **Move to the E36100B series of DC power supply that has improved ripple noise performance and is rackmount-able** |
| | If you have any E36102A, E36103A, E36104A, E36105A or E36106A models, your replacement product is<br>– **E36102A** - recommended substitute product is **E36102B**<br>– **E36103A** - recommended substitute product is **E36103B**<br>– **E36104A** - recommended substitute product is **E36104B**<br>– **E36105A** - recommended substitute product is **E36105B**<br>– **E36106A** - recommended substitute product is **E36106B** |

For more product information, visit www.keysight.com/find/PowerDiscontinuance.

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