



Benchtop DC Power Supplies

Stable, precision power, for teaching, design, test, and validation

BUYING GUIDE

Keysight Benchtop DC Power Supplies

One family. Four performance grades. 3 classes.



ESSENTIAL

NB1-class

- 90 W Maximum power
- 5 A Maximum current per output



ADVANCED

NB1, NB2-class

- 30 W to 400 W Maximum power
- 0.4 A to 20 A Maximum current per output



EXPERT

NB1, NB2-class

- 80 W to 800 W Maximum power
- 5 A to 80 A Maximum current per output



PRO

NB6-class

- 32 W Maximum power
- 3 A to 10.5 A Maximum current per output

Introduction

Selecting the right benchtop DC power supply depends on the output power, voltage and current range, and the number of channels your application demands. Keysight offers four performance grades of benchtop DC power supplies — Essential, Advanced, Expert, and Pro. This buying guide compares these grades and their specifications. Whether you're powering basic circuits in a teaching lab or conducting high-precision testing in an R&D lab, each DC power supply tier offers a unique combination of output power, voltage / current range, number of channels, programmability, and noise performance. Use this guide to determine which DC power supply grade matches your application requirements.

Essential

The NB1-class Essential benchtop DC power supply includes the EDU36311A, which is a power supply with three independent output channels, a 7-inch color display, and USB / LAN connectivity. It offers reliable power that is ideal for teaching labs, with reliable regulation and remote control via Keysight BenchVue software.



Advanced

Advanced benchtop DC power supplies come in two classes. The NB1-class includes the E36100 Series, and the NB2-class includes the E36200 Series and E36441A power supplies. For labs requiring more power and precision, Advanced power supplies deliver up to 400 W of power, with low-noise, autoranging features, flexible output combinations, built-in protection, and full automation capabilities for daily testing and validation.



Expert

Expert benchtop DC power supplies come in two classes. The NB1-class includes the E36150 Series, and the NB2-class includes the E36300 Series. When your lab is testing higher power devices up to 800 W, Expert power supplies are your best choice. These supplies also offer enhanced automation features, including LIST mode, data logging, and fast programming.



Pro

The NB6-class Pro benchtop DC power supplies include the B2960 Series. For labs testing mixed-signal or high-sensitivity designs, Pro power supply delivers ultra-low noise power with 6.5-digit precision, fast responses, bipolar 4-quadrant outputs, and a built-in arbitrary waveform generator (AWG).



Step 1. Check the General Specifications

All Keysight power supplies offer exceptional output accuracy and protection features to ensure safe testing. Our benchtop portfolio supports high-speed programming, autoranging capability, and remote sensing, giving you greater flexibility and control over your test environment. Whether you are sourcing power for embedded systems, validating automotive components, or teaching electronics fundamentals, there is a Keysight power supply with the right specifications for your application.

The first step of your bench power supply selection process will be based on power output, voltage, current range, and number of outputs.

The table below summarizes the key specifications by product grade — Essential, Advanced, Expert, and Pro — to help you select the DC Power Supply that is right for your application.

Benchtop DC power supply comparison of specifications

Specifications	Essential	Advanced	Expert	Pro
Class	NB1	NB1, NB2	NB1, NB2	NB6
Maximum power	90 W	30 W to 400 W	80 W to 800 W	32 W
Maximum voltage per output	30 V	6 V to 60 V	25 V to 60 V	210 V
Maximum current per output	5 A	2 A to 20 A	5 A to 80 A	3 A to 10.5 A
Number of outputs	3	1 to 4	1 to 3	1 to 2
4-wire remote sense	No	Yes	Varies	Yes
Arbitrary waveform generation	No	No	Varies	Yes
Up / down programming settling time	80 ms	25 ms to 60 ms	11 ms to 15 ms	100 μ s
	EXPLORE ESSENTIAL	EXPLORE ADVANCED	EXPLORE EXPERT	EXPLORE PRO

Essential

Core Features

- triple-output with independent control
- 7-inch color display for easy visualization
- built-in USB and LAN (LXI Core) connectivity
- independent channel control for versatile use

Key Capabilities

Our Essential 90 W power supply offers a triple-channel design and an intuitive interface that gets engineers up and running quickly. With reliable line / load regulation, protection features, and remote measurement software, engineers can make quality measurements without compromising accuracy or ease of use.

Expert

Core Features

- up to 3 outputs with enhanced sequencing
- LIST mode and arbitrary waveform programming
- ISO-compliant automotive preset libraries
- data logging and automation capabilities

Key Capabilities

Power and debug designs up to 800 W, with programmable output steps, refined timing control, and rich data capture features, especially useful in automotive ECU design.

Step 2. Look at Key Features



Advanced

Core Features

- four outputs with independent control
- up to 2 autoranging outputs with flexible power delivery
- USB, LAN, and optional GPIB connectivity
- high programmability and measurement accuracy
- overvoltage, overcurrent, and overtemperature protection

Key Capabilities

With output power up to 400 W, our Advanced models scale up to meet the needs of your design. Elevated protection, an autoranging design, and the ability to combine output channels ensure high current and power availability across a wide voltage range.

Pro

Core Features

- up to two 6.5-digit precision outputs
- ultra-low noise output with $<10 \mu\text{Vrms}$ ripple
- wide bipolar 4-quadrant output ranges
- built-in arbitrary waveform generator

Key Capabilities

Our 32 W Pro power supply delivers sub-microvolt and sub-nanoamp precision. Its clean power and fast settling time are critical for cutting-edge research like quantum and high-sensitivity analog component testing.

Step 3. Consider Your Use Cases

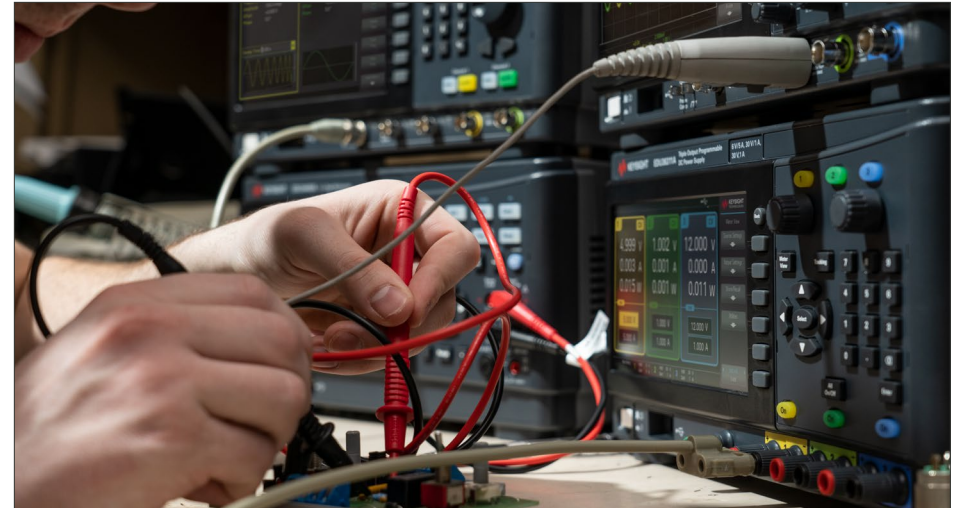
While specifications are important, the power measurements you need to make and the applications you need to test will determine which grade is best for your bench. Here are typical use cases for each grade to help you decide.

Essential: Ideal for teaching labs and basic circuit testing

The Keysight Essential benchtop DC power supply delivers crucial power for basic electronics test and measurement. Its intuitive interface, compact size, and three stable outputs make it ideal for classrooms where usability, functionality, and safety are key. Engineers can independently manage triple outputs to power multiple circuits, while instructors benefit from clear displays and remote control capability.

Common use cases for Essential DC power supplies include:

- > [Generate Transistor Curves with a Power Supply](#)
- > [How to Create Power Supply Output Sequences](#)
- > [Test Complex Scenarios with a Programmable Power Supply](#)
- > [How to Maximize Lab Capabilities with Digital Learning Suite](#)



Advanced: Everyday testing and flexible output combinations

Keysight Advanced benchtop DC power supplies offer higher power across up to four output channels, optimized for engineers performing daily diagnostic and debug testing. With autoranging outputs, integrated protections, combinable channels, programmability, and remote measurement and control, they support a wide variety of devices and test setups. Our Advanced power supplies are ideal for engineers who need performance beyond entry-level models without the complexity of R&D features.

Common use cases for Advanced DC power supplies include:

- > [How to Perform Power Sequencing](#)
- > [How to Speed Up Your Test with an Upgraded Bench Power Supply](#)
- > [How to Enhance DC Power Testing and Analysis](#)
- > [How to Get More Usable Power with an Autoranging Power Supply](#)

Consider Your Use Cases (cont.)

Expert: High-current applications and automated test routines

Keysight Expert benchtop DC power supplies are ideal for engineers working on high-power applications, high-throughput test sequences, and where the flexibility of multiple channels is desired. Our Expert power supplies offer improved programming speed, sequencing, and readback performance. In addition, features like automotive ISO preset libraries and simulation playback simplify and shorten the time to execute complex test sequences.

Common use cases for Expert DC power supplies include:

- > How to Power Up an Electromechanical Device
- > How to Test Automotive ECU Power Performance
- > Accommodating Start-up Peak Power Demands
- > How to Optimize Power Delivery with Autoranging Power Supply

Pro: For high-precision and ultra-low noise applications

Keysight Pro benchtop DC power supplies offer our highest-precision power with the lowest noise of any supply in our benchtop portfolio. Designed for high-end labs testing precision applications, this power supply supports sensitive analog, RF, or mixed-signal circuits that demand tight tolerances and clean power. With high sourcing resolution, ultra-low noise, and high-level waveform generation, our Pro power supplies are ideal for high-sensitivity circuit testing.

Common use cases for Pro DC power supplies include:

- > How to Bias Multiple Quantum Qubits
- > How to Supply DC Bias for Optical Devices
- > How to Characterize ADC and VCO
- > How to Evaluate IV Characteristics of Solar Cells



Explore more **DC power supply** use cases to help you power and test devices with precision.

Step 4. Final Key Considerations

Once you've aligned your use case to the right performance grade, it's important to evaluate what other use cases might drive the features you require in a power supply.

Factors to consider when choosing a power supply:

Output power

The total wattage a power supply can deliver across its outputs.

Choose Essential for teaching or basic lab applications within a 90 W power need, Advanced for power needs up to 400 W, and Expert for up to 800 W power. Our Pro models offer up to 32 W, optimized for the highest precision and fastest response times.

Voltage and current range

The operating envelope for sourcing voltage and current.

Use Essential, Advanced, or Pro for development boards and general electronics with a current requirement of less than 20 A. Choose Expert for high-power or automotive testing that requires up to 80 A of current.

Remote sensing

A technique for compensating for voltage drops across test leads.

Choose the Essential model if remote sensing capabilities are not required. Select the Advanced or Expert for reliable remote sensing up to 800 W. Use the Pro for precise 4-wire sensing with 6.5-digit resolution, <10 μ Vrms noise, and 100 μ s settling time.



Final Key Considerations (cont.)

Programming and response time

Determines how quickly the supply output changes and settles.

Select Essential or Advanced for steady signals. Choose Expert for dynamic or transient load testing, and Pro when extreme speed, ultra-low noise, and precision are required.

Waveform generation

The ability to shape output by specifying programmable patterns or transient events.

Select Essential or Advanced if built-in waveform generation capability is not required. Choose Expert, built for automation, with 100-step LIST mode, delays, and remote control. Select Pro for 512 points AWG, 100 μ s settling, and precision transient simulation.

Noise and ripple

The amount of AC noise (ripple) present on the DC output.

Select Essential or Advanced for non-noise-sensitive applications. Choose Expert for most low-noise analog, RF, or sensor tests. Select Pro for real-world power events in sensitive or high-speed devices.



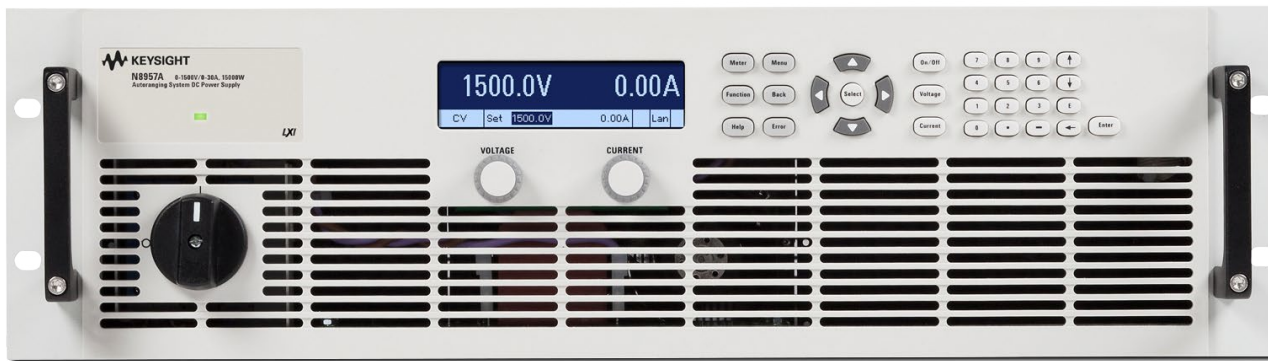
Common mistakes to avoid when selecting a DC power supply

- Selecting a power supply with significantly more wattage than needed, leading to increased costs and degraded measurement resolution at low levels.
- Ignoring output noise results in interference and instability when powering sensitive analog, RF, or low-power digital circuits.
- Overlooking remote sensing results in voltage drops at the load.
- Failing to plan for automation or remote control limits future test flexibility.
- Choosing based on price alone, instead of evaluating long-term precision, reliability, and support.

ATE System Power Supplies

When rack space is limited but performance can't be compromised, Keysight ATE system power supplies deliver high power density, fast command processing, and enhanced programmability — all in a compact form factor. Choose based on your power requirements and application type, from basic test to high-speed, regenerative power delivery.

EXPLORE



Choose from three ATE system power supply options, delivering up to 30 kW and 2000 V — built for speed, precision, and integration.

10

ADVANCED

Maximum power:
750 W to 15 kW

Maximum voltage per output:
8 V to 1500 V

Maximum current per output:
1.3 A to 510 A

Noise and ripple:
80 mVpp to 2400 mVpp

EXPERT

Maximum power:
1500 W to 12 kW

Maximum voltage per output:
20 V to 800 V

Maximum current per output:
85 A to 240 A

Noise and ripple:
9 mVpp to 2400 mVpp



PRO

Maximum power:
1000 W to 30 kW

Maximum voltage per output:
9 V to 2000 V

Maximum current per output:
16.7 A to 800 A

Noise and ripple:
9 mVpp to 3000 mVpp



Need help selecting the right ATE System power supply? Check out the:

Specialty Power Solutions

From emulating real-world battery behavior to testing solar inverters and EV converters, Keysight specialty DC power solutions are tailored for complex, application-specific testing. Each solution combines precision hardware with purpose-built software to accelerate your validation workflows.

EXPLORE

BATTERY EMULATORS

Simulate any battery state and profile to optimize battery life and performance for IoT, mobile, or embedded devices.

- Power: up to 200 W
- Voltage: up to 30 V
- Current: up to 20 A



PHOTOVOLTAIC ARRAY SIMULATORS

Accurately test MPPT inverters with programmable IV curves and high-voltage solar simulation.

- Power: 20 kW to 30 kW
- Voltage: 1500 V to 2000 V
- Current: 30 A to 60 A



HEV / EV POWER CONVERTERS

Bidirectional, regenerative sources for EV battery testing, powertrain emulation, and DC fast charging.

- Power: 20 kW to 300 kW (scalable to 1.5 MW)
- Voltage: 950 V to 1500 V
- Current: 100 A to 900 A



MOBILE COMMUNICATION DC SOURCES

Low-noise sources with fast transient response and measurement for wireless device testing.

- Power: 45 W to 100 W
- Voltage: 15 V to 20 V
- Current: 3 A to 20 A
- Options for digital voltmeter (DVM) and battery emulation

Modular DC Power Supplies

When flexibility is desired, Keysight modular DC power supplies deliver precision sourcing in a compact ATE mainframe format. Tailor your system to battery cell, photovoltaic, or general-purpose test applications.



MODULAR DC POWER SUPPLY FOR GENERAL-PURPOSE TESTING

Offers high-channel density and fast output performance in a 1U or 2U chassis. Tailor your system for automated test environments with over 35 modules, including high-precision, autoranging, high-power, source measure unit, and eLoad modules.

- Maximum power: 1200 W
- Input voltage: 264 V
- Number of module slots: 4



MODULAR DC POWER SUPPLY FOR PHOTOVOLTAIC TESTING

Deliver accurate solar emulation for single- or multi-maximum power point tracking inverter testing. With programmable IV curves, high output power, and fast transients, these modular systems scale in power to support both R&D and production of solar energy systems.

- Maximum power: 10,000 W
- Input voltage: 200 V / 264 V / 400 V
- Number of module slots: 2 or 6



MODULAR DC POWER SUPPLY FOR BATTERY CELL TESTING

Keysight modular supplies for battery cell testing are purpose-built for energy storage validation. The architecture supports high-channel count configurations for testing individual cells, modules, or packs, ideal for EV and energy storage development.

- Maximum power: 875 W
- Input voltage: 208 V / 480 V
- Number of module slots: 32

[EXPLORE](#)

DC Power Supply Software Functionality

All Keysight benchtop DC power supplies are compatible with a suite of **power supply software tools** designed to enhance test productivity, streamline automation, and simplify analysis. These tools enable users to configure power supplies remotely, log data, generate complex waveforms, and integrate into automated test environments.

Choose the right software to match your workflow



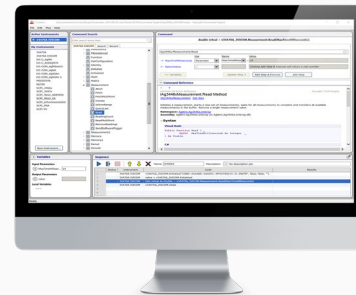
PathWave BenchVue Software

Easily control and automate DC power supplies from your PC. Monitor voltage, current, and power in real time, log data to a spreadsheet, and quickly create output sequences without writing code.



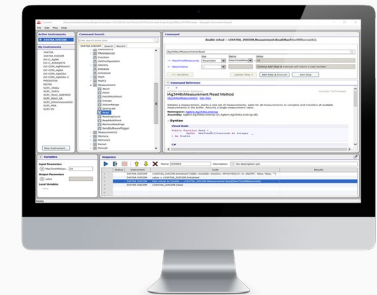
PathWave Advanced Power Control and Analysis

Unlock sophisticated capabilities such as scope view, constant current / constant voltage (CC / CV) analysis, sequencing, battery emulation, and report generation. Compatible with select power supply grades.



Command Expert

Build test sequences and instrument scripts quickly using a drag-and-drop interface, ideal for beginners and skilled users alike.



PathWave Test Automation

For more complex test plans and integration across instruments, this software enables modular test sequencing, decision logic, and test data output.

Why Choose Keysight?

Keysight DC power supplies deliver trusted accuracy, dependable performance, and intelligent built-in tools to simplify your workflow. Here's why engineers choose Keysight:

Proven precision

- Ultra-stable, low-noise output ensures reliable results.
- High-resolution measurements ensure precise and accurate results.

Reliable performance

- Fast settling times and built-in protections enable quick, safe testing.
- Engineered for high-load and dynamic test conditions to ensure stability under demanding tests.

Smarter testing

- Integrated automation, LIST mode, and waveform generation without external instruments.
- Seamless compatibility with Keysight software and systems enables faster setup, automated control, and easier data analysis.

Versatile by design

- Wide output ranges and autoranging capability cover more use cases with fewer instruments.
- One power supply supports multiple test needs — from prototyping to validation.

Feature

Specification

Output stability

Ultra-low noise (<10 μ Vrms) and stable output

Measurement precision

Up to 6.5-digit source resolution for voltage and current

Settling time

Fast 100 μ s settling time (Pro)

Waveform generation

Built-in AWG with up to 512 points (Pro)

Remote sensing

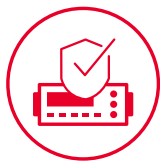
Available on most models for voltage drop compensation

Output power range

Scalable from Essential to Pro models (90 W to 800 W)

Ease of use

Large color displays, intuitive UI, smart software



Calibration

Ensure your test system performs to specification and meets local and global standards.



Repair

Restore equipment to original functionality and specifications with trained technicians.



KeysightCare

Innovate at speed with curated support plans and prioritized response and turnaround times.



Education

Make measurements quickly with eLearning and in-house, instructor-led training.



Keysight Support

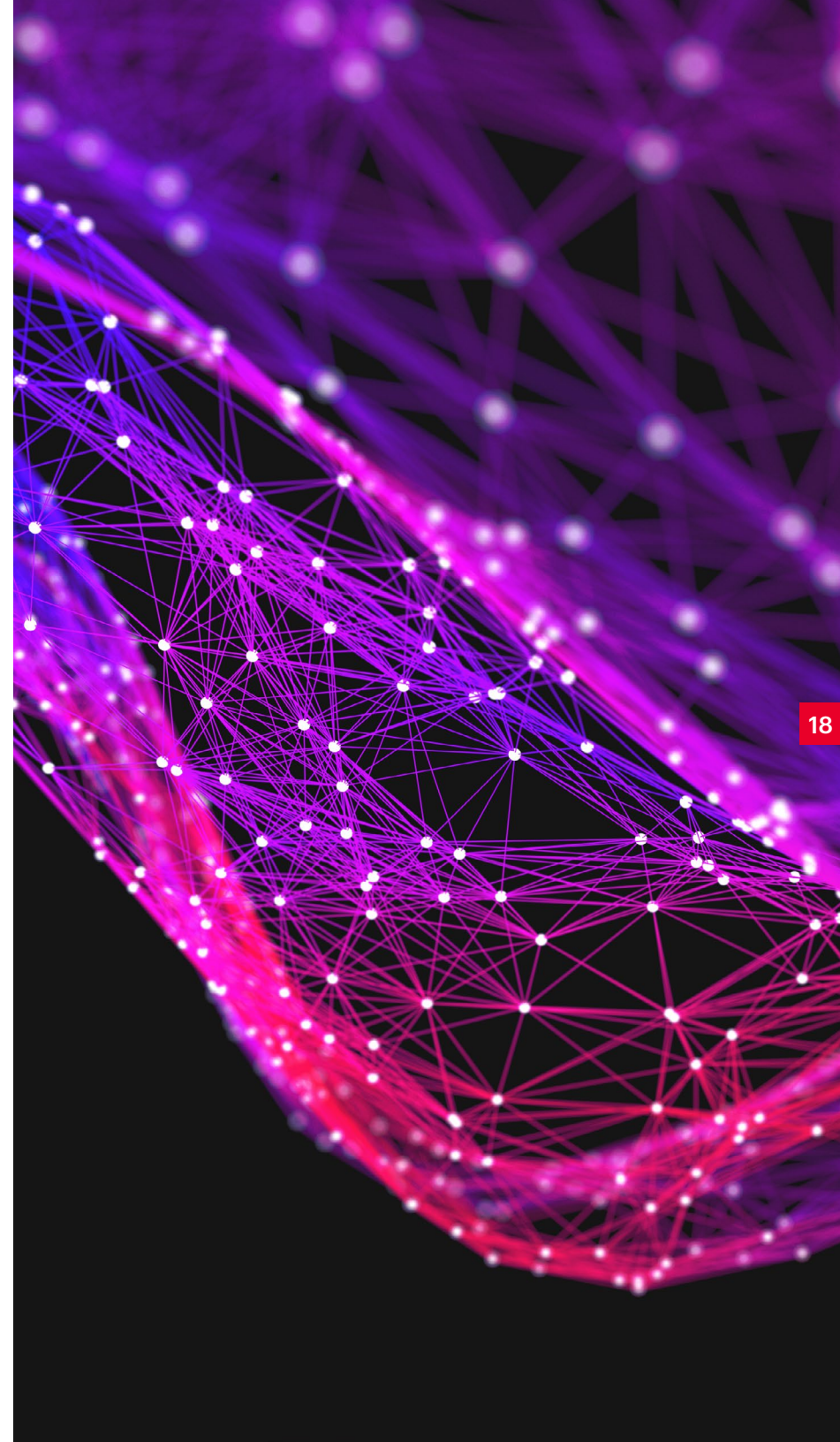
Get 24x7 access to service requests, case management help, and technical articles.

Select the DC Power Supply That Is Right for You

Should you need more information on Keysight DC power supply offerings, visit our extensive **library of resources** to help you choose the best solution for your application.

Here are just a few of the resources available to guide your selection:

- > DC Power Supplies Catalog
- > ATE System Power Supplies Buying Guide
- > The Power Handbook: A Guide for Test and Measurement Power Applications



Once you are ready, visit **Keysight DC power supplies** to select one of our popular configurations or build one to meet your specific application.



Keysight enables innovators to push the boundaries of engineering by quickly solving design, emulation, and test challenges to create the best product experiences. Start your innovation journey at www.keysight.com.

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