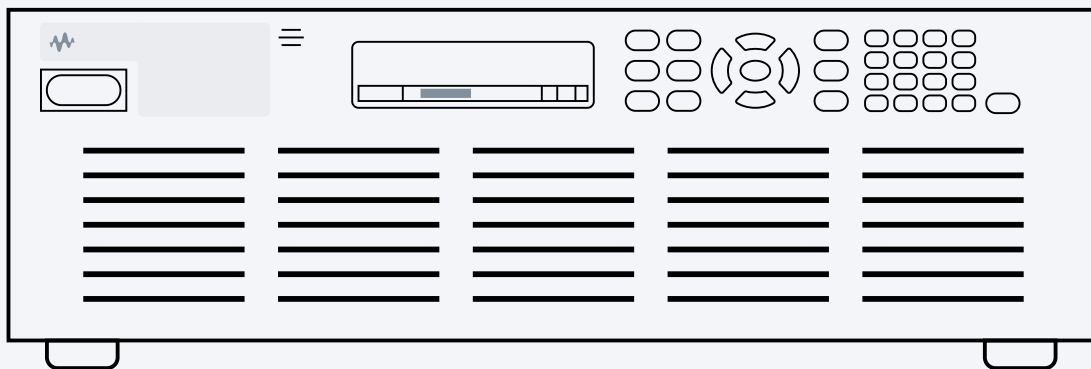
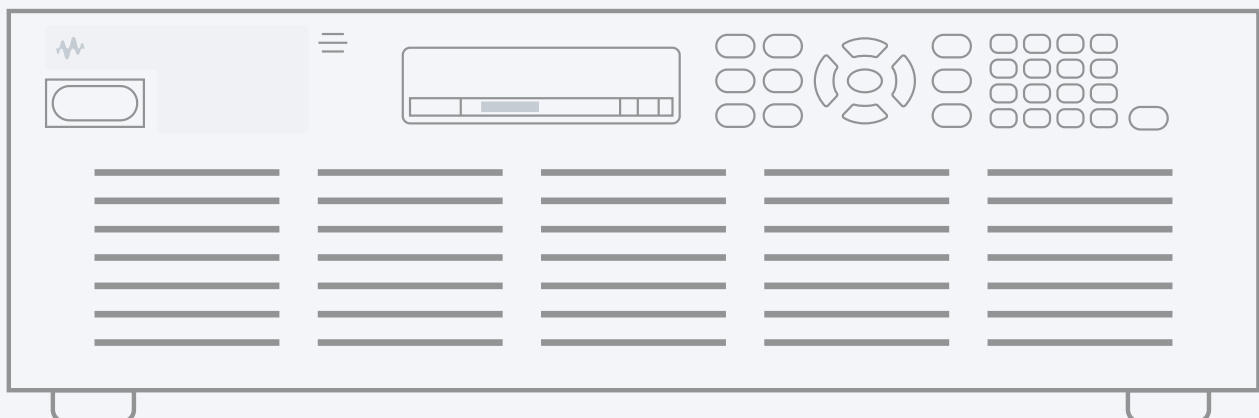


[◀ How to Simulate a DC Rectifier in a Data Center](#)

How to Simulate a DC Rectifier in a Data Center

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Simulating a DC Rectifier Without Compromise

Testing data center power infrastructure requires accurately simulating the high-voltage DC bus typically produced by an AC-to-DC rectifier (260–400 Vdc). Simulating a DC rectifier involves input and load testing using DC power supplies and programmable electronic loads to evaluate server power supplies and downstream systems under real-world conditions. These tools replicate the rectifier's dynamic behavior, enabling verification of system response to startup conditions, load transients, and fault events such as overvoltage, undervoltage, and overcurrent.

To assess energy efficiency and resilience, regenerative supplies source and sink power while returning unused energy to the grid. Rack-level configurations provide scalable, high-density rectifier bus emulation, supporting a single power supply unit (PSU) and full-system validation. Integrated software further automates test sequences, programs transient profiles, and monitors stability, ensuring datacenter equipment meets efficiency, reliability, and compliance requirements under varying operating conditions.

DC Rectifier Simulation Solution

Simulating a direct current rectifier in a data center requires realistic source and load conditions, automation, and precision. The Keysight high-power, high-density power supply accurately emulates the dynamic behavior of rectifiers under sudden load changes, ensuring realistic conditions for server power supply validation. The Keysight regenerative electronic load applies constant current, constant resistance, constant power, and constant voltage profiles, executes rapid load changes, and supports long-duration



cycling while returning energy to the grid. The Keysight automated power software suite enables start-up, efficiency, transient, and protection testing, including fault scenarios. Together, these tools provide an automated, repeatable, and energy-efficient rectifier simulation solution.

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Image coming soon

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Additional resources for simulating a DC rectifier in a data center

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Related Use Cases

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Stage 4: System Validation

How to Validate Server Power Supply Units

Learn how to test a server PSU using a regenerative DC power supply, regenerative electronic load, and automation software for accurate and



Stage 6: Operations

How to Improve Network Monitoring Response Time

Being more responsive, even proactive in investigating or preventing outages takes a highly automated monitoring infrastructure. Learn how



Stage 4: System Validation

How to Load Test with App Scalability Testing

Load testing is required to ensure site reliability. Learn how to measure and optimize users' digital experience at scale with

repeatable performance testing.


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automated visibility workflows will speed traffic delivery to the right tools for analysis

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application scalability testing.

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