How to Validate Server Power Supply Units

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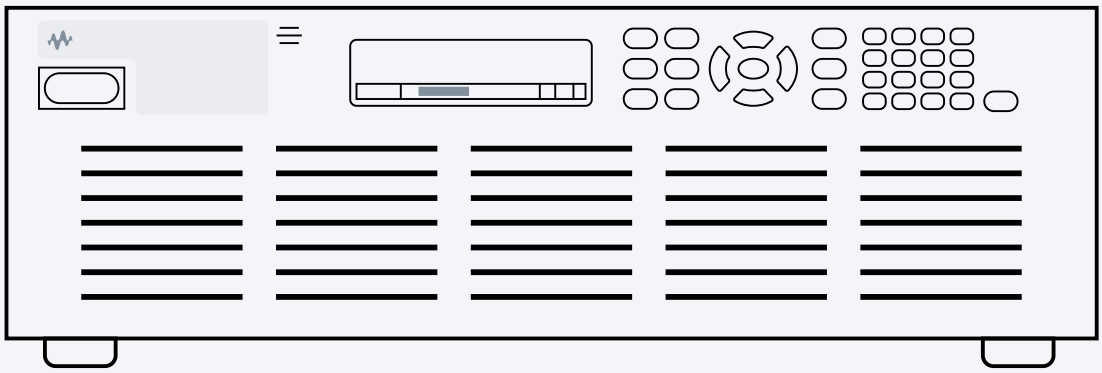
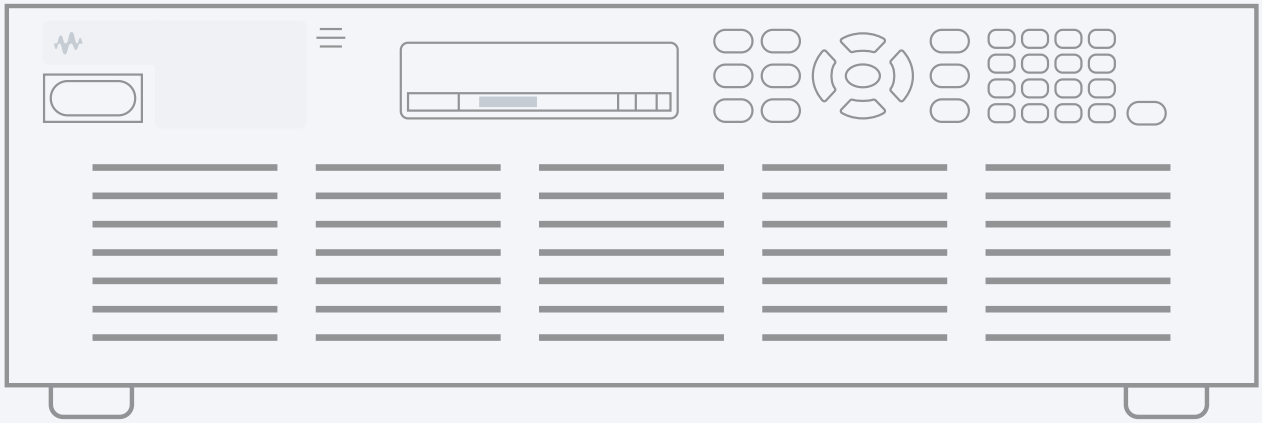


+ Regenerative ATE System Power Supply



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Validating Server Power Supply Units for Data Center Reliability

Validating a server power supply unit (PSU) requires simulating realistic operating conditions and verifying its ability to provide stable DC power under varying system loads. Evaluating performance factors such as voltage stability, current handling, efficiency, and protection to ensure uninterrupted server operation requires a regenerative DC power supply and regenerative electronic load. These provide different load conditions, including steady-state, peak demand, and transient events, that are replicated to assess the PSU's response.

To validate fault protection and durability, the PSU is stressed under overvoltage, overcurrent, and short-circuit conditions. The regenerative electronic load returns unused energy to the grid, improving energy efficiency and reducing thermal stress during testing. Automated power software enables automated test sequences, extended cycling, and efficiency mapping across load ranges, while logging key parameters and generating repeatable results and reports. This ensures the PSU consistently meets the reliability and performance demands of data center operations.

Server PSU Validation Solution

Validating server power supplies requires realistic load conditions, automated test sequences, and precise measurements. The Keysight regenerative electronic load applies constant current, resistance, power, and voltage profiles, executes fast load steps, and performs long-duration cycling while returning energy to the grid. The regenerative DC power supply emulates power buses, injects burnout and ride-through

events, and sinks reverse current. As the central control, the automated power suite enables start-up, efficiency, transient, and protection testing with LIST and arbitrary profiles, while automated reporting accelerates regression, delivering a compact, efficient, and fully automated validation solution. Together, these capabilities provide a compact, energy-efficient, and fully automated solution that ensures server PSUs meet the demanding reliability and performance standards of modern data centers.

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Factsheet

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How to Simulate a DC Rectifier in a Data Center

Stage 6: Operations

How to Improve Network Monitoring Response Time

Stage 4: System Validation

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Learn how to simulate and validate DC rectifier performance with a high-power DC power supply, regenerative electronic load, and automation software.

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