

High-Power Data Center Test Solution

New Power Designs for Energy-Intensive Data Centers

Next-generation data centers will span 500,000 to 1.5 million square feet (46.5k-139k square meters) and consume 100 MW to more than 500 MW of power. Power system designers are moving to 800 VDC hyperscale power delivery architectures to meet this demand. These designs improve efficiency and reduce copper demand.

The 800 VDC architecture delivers up to 1 MW to individual server racks. For large hyperscale facilities, this translates directly into lower operating costs and reduced infrastructure complexity.

Testing 800 V DC Sidecar power converters brings two key challenges:

1. Dynamic load replication

AI CPUs and GPUs generate rapid, large current transients as they switch states. Valid test conditions require electronic loads with very high slew rates; otherwise, converter transient response and stability can't be realistically verified.

2. Efficient long-duration testing

Full-load and burn-in tests run for extended periods. Conventional loads dissipate power as heat, making high-power (hundreds of kW to MW) tests costly and demanding in terms of energy and HVAC, often limiting test feasibility.



**Validate your 800 VDC hyperscale power delivery system
with the EA-ELR 21000 Dynamic Test System**



EA-ELR 21000 Dynamic Test System

High-Speed Regenerative Electronic Load System

Superior Performance

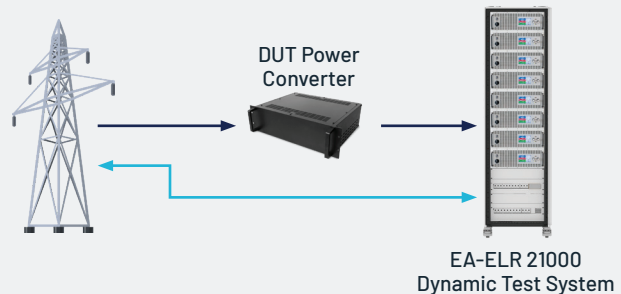
- Current slew rates of more than 12 A/ μ s at 240 kW for transient load testing of power converters
- Regenerative operation returns power to the grid at up to 95% efficiency, dramatically reducing utility costs for long-duration performance and burn-in testing
- High power density: up to 240 kW per rack in only 0.6 m² of floor space, with eight 30 kW loads in a single 42U rack
- Scalability to 1.92 MW: up to 8 racks and 64 loads operate as a single synchronized system
- 125% short-term overpower capability at 800 V to test peak CPU and GPU power demands
- Integrated function generator supports sine, triangle, rectangle, and trapezoid waveforms, plus freely programmable arbitrary waveforms for flexible test sequencing
- 0 – 1000 VDC, 0 – 640 A operating envelope for each load

Specification and price change privileges are reserved.



Superior Safety Architecture

- 2-channel emergency stop system for immediate rack shutdown, with automatic activation when the rear door opens during operation
- Overvoltage, overcurrent, overpower, and overtemperature protection in each load
- Master-Auxiliary-Bus enables one load to control all loads in the system, eliminating the need to program each load individually
- Share-Bus ensures each load carries an equal share of current, preventing any individual load from becoming overloaded



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