



ITECH Test Solution -Data Center



**YOUR POWER TESTING
SOLUTION**

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Artificial Intelligence Drives Data Center Industry

Data centers are currently in a period of rapid development and technological change. New AI applications are reshaping the entire world, bringing convenience to society and new opportunities and challenges to the development of data centers as well. The explosive growth of intelligent arithmetic puts new demands on data centers for strong arithmetic and high performance. At the same time, the increasing requirements for energy efficiency, reliability and sustainability are driving the continuous upgrading and optimization of data center infrastructure.

The main trends in data centers include the following:

- **High-performance computing**

From large training clusters to small edge inference servers, Artificial Intelligence (AI) is a growing percentage of data center workloads. Data centers need to provide more compute power with the addition of GPUs and dedicated AI gas pedals to meet the demands of AI model training for highly concurrent big data stream computing.

- **Modularity and Flexibility**

The infrastructure of data center has complex composition, and its construction speed and delivery quality directly affect whether the customer's business can be online quickly and run safely and stably. Modularization and prefabricated deployment can improve the scalability and ease of maintenance of the data center.

- **Optimize energy management**

Data center energy consumption is a large percentage of operating costs. As AI server power consumption continues to rise, the power per cabinet has increased from 6-8 kW to 30-100 kW. This means low energy consumption, high efficiency, high density server cabinets and data center power supply and distribution systems will need to upgrade.

- **High Performance Computing**

Environmental regulations and corporate social responsibility are driving increased use of renewable resources in data centers.

In data centers, as power consumption and bus currents increase by multiples, there is a growing demand for high voltage and high current testing and high power module electrical performance testing. ITECH follows the industry trend and is committed to providing comprehensive and efficient solutions for all aspects of data centers. It includes testing of server power supplies, AC/DC power converters, servers, high-current circuit breakers, optical modules, etc., helping to ensure the operational efficiency and reliability of each link.

Energy consumption by edge data centers will exceed 3K TWh per year in 20 years



By 2040, ~80% total data center energy consumption will from edge data centers

The equivalent energy consumption of ~275 million households



Powershelf AC-DC Testing Solution

Application Electrical Performance Testing and Dynamic Load Response Characterization of Server Power Supplies

Recommend product IT7800E series programmable AC/DC power supply, IT8100E Series Ultra-Dynamic High Power DC Load

Application: simulating significant voltage fluctuations at the power input—for example, switching from the main power supply to a backup battery—can cause a momentary voltage drop.



AC input



DC output

DUT: a DC power supply-50Vpsu

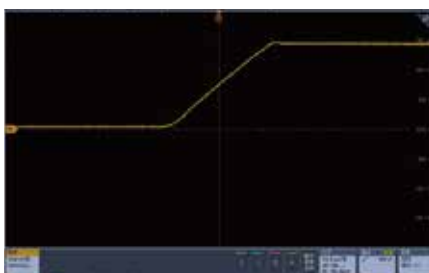
- Present PSU: 5.5kW,50Vout, 277Vac, single phase
- Future PSU: 8~12kW,50Vout, 277Vac, single phase

Application: AI chips are placing increasingly higher demands on the dynamic response speed of power supplies, with larger instantaneous load variations. Therefore, in addition to general server testing, future server products are likely to require even faster dynamic response to load changes.

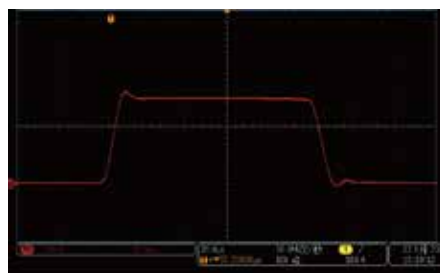


AC Input Power Supply: IT7800 series high speed power supply

IT8100E Series Ultra-Dynamic High Power DC Load
(Up to 150A/us slew rate)



45A/us 50A-1500A



150A/us 10A~1500A



Standard with Scope mode



IT7800E built-in IEC regulatory



IT7800E built-in Scope function, monitoring DUT waveform in real-time

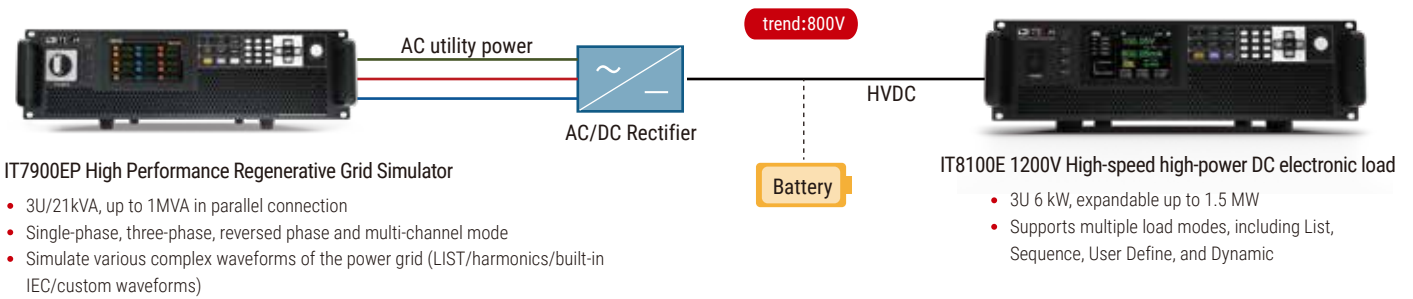


IT7800E built-in various waveforms, output in single/three phase

800V HVDC Power Shelf Test

Application High Voltage Power Shelf Electrical Performance Test

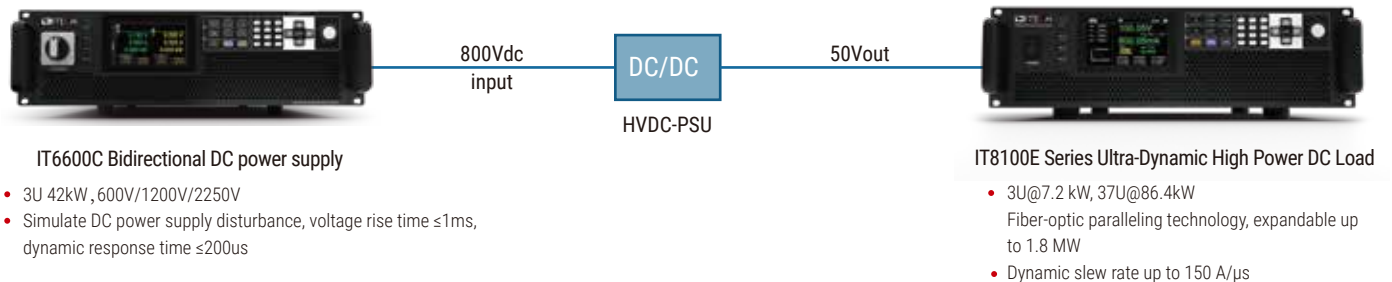
Recommend product IT7900EP series grid simulator, IT8100E 1200V High-speed high-power DC electronic load



800V HVDC DC-DC PSU Test

Application HVDC-PSU power module electrical performance & output load characteristics test

Recommend product IT6600C Bidirectional DC power supply, IT8100E Series Ultra-Dynamic High Power DC Load



IT6600C can be used as a bidirectional DC source, battery simulator, and battery tester...



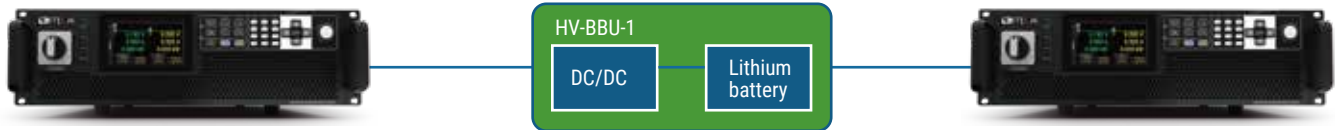
Redundant function

It allows you to observe the status of each cabinet or a single unit after multiple units are connected in parallel. When a unit fails, it will be automatically identified and then exit the test. The system will make adjustments within the total capacity to ensure stable output.

BBU Bidirectional DC-DC Converter Test

Application BBU bidirectional DC-DC power module electrical performance test

Recommend product IT6600C Bidirectional DC power supply



IT6600C Bidirectional DC power supply

- 3U 42kW, 600V/1200V/2250V
- Rise time $\leq 1\text{ms}$, dynamic response $\leq 200\mu\text{s}$
- Source load 2 in 1 to save cost
- Adopt fiber optic parallel technology, the power can be expanded to 10MW

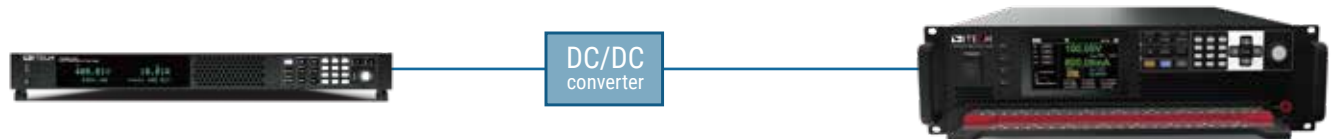
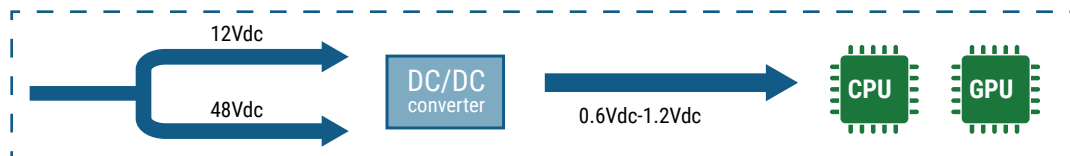
IT6600C Bidirectional DC power supply

- 42kW/3U, dual-channel design, independent control
- Built-in battery emulator mode
- Power regenerative efficiency up to 95%

CPU/GPU Ultra-Low-Voltage High-Current Power Supply Testing

Application On-Board Power Supply Output Characterization Test

Recommend product IT-M3900D Series Programmable DC Power Supply
IT8106E-60-2400 Ultra-Low-Voltage High-Current DC Electronic Load



IT-M3900D High-Power Programmable DC Power Supply

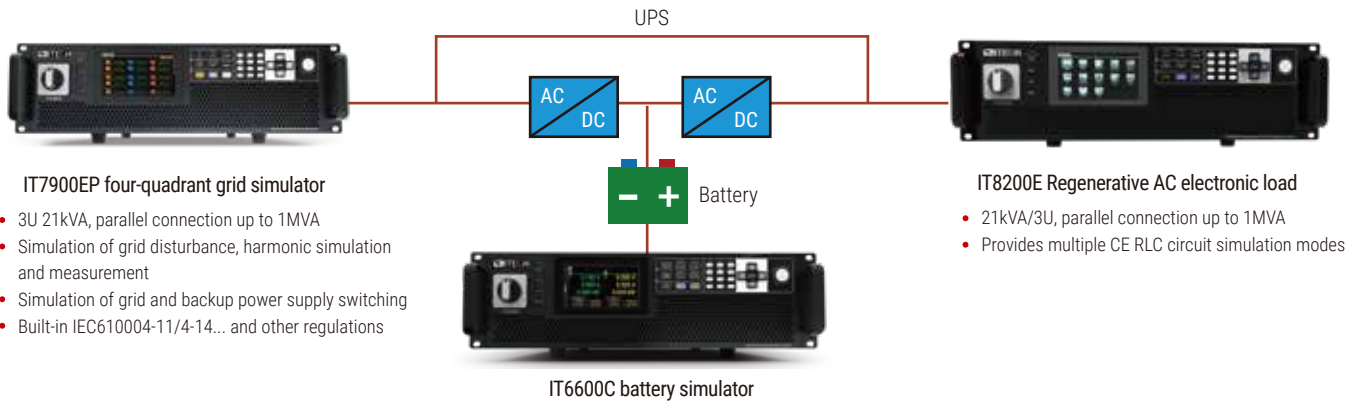
- Voltage ranges: 10V/32V/80V/300V/500V/800V/1500V
- High power density design: 1U@6kW, 2U@12kW
- CC/CV priority function, with master-slave parallel operation
- LIST function for simulating power supply disturbances

IT8106E-60-2400 Ultra-Low-Voltage High-Current DC Electronic Load

- Ratings: 60V/2400A/6kW
- Minimum operating voltage: 0.24V@2400A
- Dynamic slew rate up to 75A/ μs

UPS Test

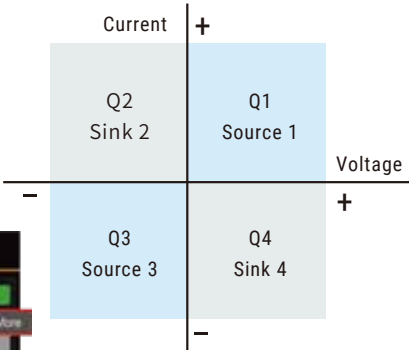
Application UPS electrical performance test



IT7900EP Regenerative grid simulator fully simulates grid disturbances, efficient and convenient

Four-quadrant power supply

It can support bidirectional power input and output up to 100% rated power within the operating frequency range of 16-150Hz, and can also support functions such as capacitive and inductive reactive power injection.



Simulates grid disturbance

It supports single-phase/three-phase output. Three-phase can use different waveforms (even including DC components) to simulate/test the real power supply environment; List, custom and other functions can be used to simulate grid interference.



IT8200 regenerative AC electronic load, providing 14 circuit topology simulations

AC/DC load conditions emulation	
DC load mode	AC load mode
Constant Voltage (CV)	Constant Current (CC)
Constant Current (CC)	Constant Resistance (CR)
Constant Resistance (CR)	Constant Power (CP)
Constant Power (CP)	Constant apparent power (CS)
CC+CV	CC+CR
CR+CV	CE RLC
CP+CV	
CC+CR	
CP+CV+CR+CC	



**14
circuit
topologies**

BBU backup lithium battery cycle life test

Application

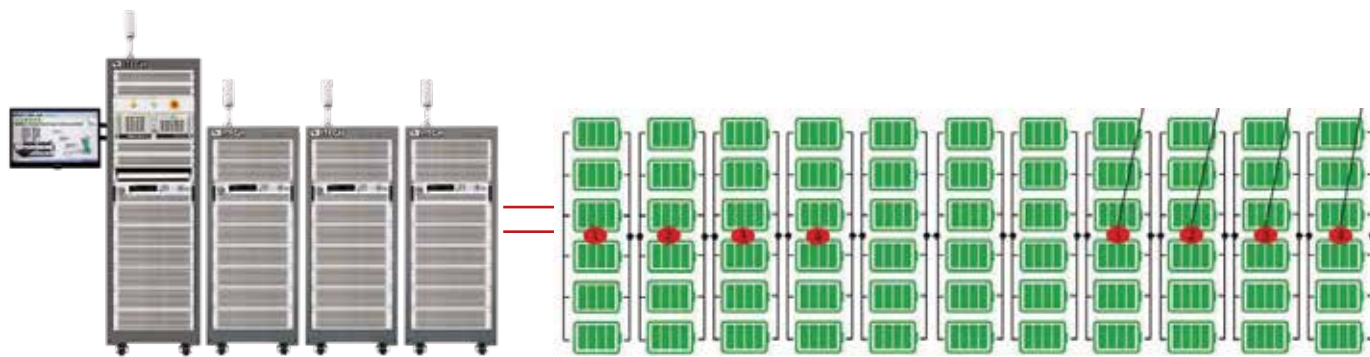
Backup battery cycle life test

Recommend product

ITS5300 Battery test system

Test items

Battery cycle life, attenuation rate, working condition simulation, charge and discharge time



ITS5300 Battery test system

DUT: Backup battery

Circuit Breaker Testing for High Voltage DC Distribution Cabinets

Application

High current DC circuit breaker testing

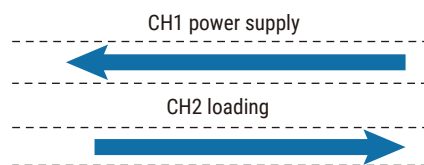
IT6600C Bidirectional

DC power supply with redundant design

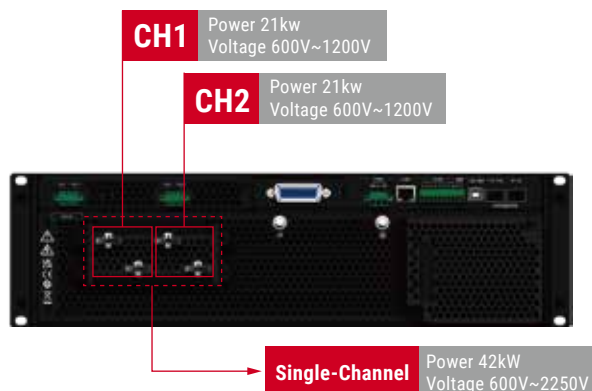
Recommend product

IT6600C Bidirectional DC power supply (high voltage, high current)

IT-M3900C Bidirectional DC power supply (high current up to 10kA)



IT6600C Advantages



IT6600C 420kW

VS

Other power supplies 420kW



SST Solid-State Transformer Testing

Application SST Module Electrical Performance Testing

Recommend product IT7900P High-Voltage Grid Simulator, IT8100E Series High-Speed High-Power DC Electronic Load

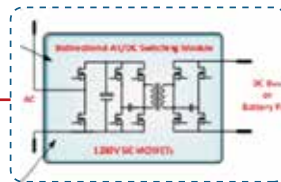
Grid Simulator

IT7900 Regenerative Grid Simulator

- Three voltage options available: 350V L-N, 700 V L-N and 1050 V L-N
- Delivers better performance than conventional step-up-transformer-based solutions
- Up to 210 kVA in a 37U cabinet
- Expandable up to 1 MVA+ through paralleling



SST Modules (AC-DC, DC-DC)



Bidirectional DC Source

IT6600C-1600V Series

- 3U 42 kW
- Dual-channel design, supports series or parallel operation
- Fiber-optic paralleling, expandable up to 10 MW+



ITECH AI Topology diagram of data center solution

