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IT8100A Series

Ultra-Dynamic High Power DC E-Load

Your Power Testing Solution

www.itechate.com

IT8100A Series
Ultra-Dynamic High Power DC E-Load

The IT8100A series represents a new generation of graphical programmable electronic loads. An advanced touchscreen and intuitive graphical interface enable fast parameter configuration and easy waveform editing, significantly enhancing usability and efficiency.
Designed for ultra-high power density, the IT8100A delivers up to 7.2 kW in a compact 3U chassis (150 V model) and can scale to 1.8 MW through fiber-optic master-slave paralleling, meeting demanding high-voltage and high-current testing requirements.

Available in 60V, 150 V, 600 V, and 1200 V ranges, with standalone power from 2 kW to 86.4 kW, the series features high-speed current slew rates and versatile operating modes-including dynamic, sequence, and advanced loading functions-ensuring outstanding performance in applications such as AI server power supplies, power modules, fuel cells, EV charging station, Solar Array and power electronics.

It provides a powerful and reliable solution for R&D, validation, and production testing.

Model List

Power	150 V	Power	600 V	1200 V	Size
7.2 kW	IT8107A-150-600	6 kW	IT8106A-600-420	IT8106A-1200-240	3U
10kW	IT8110A-150-800	8 kW	IT8108A-600-560	IT8108A-1200-320	6U
14.4kW	IT8114A-150-1200	12 kW	IT8112A-600-840	IT8112A-1200-480	6U
21.6 kW	IT8121A-150-1800	18 kW	IT8118A-600-1260	IT8118A-1200-720	15U
28.8 kW	IT8128A-150-2400	24 kW	IT8124A-600-1680	IT8124A-1200-960	15U
36 kW	IT8136A-150-3000	30 kW	IT8130A-600-2100	IT8130A-1200-1200	15U
43.2 kW	IT8143A-150-3600	36 kW	IT8136A-600-2520	IT8136A-1200-1440	27U
50.4 kW	IT8150A-150-4200	42 kW	IT8142A-600-2940	IT8142A-1200-1680	27U
57.6 kW	IT8157A-150-4800	48 kW	IT8148A-600-3360	IT8148A-1200-1920	27U
64.8 kW	IT8164A-150-5400	54 kW	IT8154A-600-3780	IT8154A-1200-2160	27U
72 kW	IT8172A-150-6000	60 kW	IT8160A-600-4200	IT8160A-1200-2400	37U
79.2 kW	IT8179A-150-6600	66 kW	IT8166A-600-4620	IT8166A-1200-2640	37U
86.4 kW	IT8186A-150-7200	72 kW	IT8172A-600-5040	IT8172A-1200-2880	37U

*For higher power, please contact ITECH.

60V	IT8102A-60-800	IT8104A-60-1600	IT8106A-60-2400
	60V/800A/2kW	60V/1600A/4kW	60V/2400A/6kW

IT8100A Features

- Touchscreen display with Meter / Scope / Datalog modes
- Voltage range: 60V, 150V, 600V, 1200V
- High power density: 3U 7.2 kW (150V), 3U 6 kW (600V & 1200V)
- 37U cabinet max power: 86.4 kW (150V), 72 kW (600V & 1200V)
- Optical master-slave parallel, up to 1.8 MW (150V) / 1.5 MW (600V & 1200V)
- Three-range V/I design for full precision coverage
- High dynamic current slew rate up to 150 A/μs per unit
- Minimum Operating Voltage: 0.24 V @ 2400 A
- Minimum sampling interval in Scope mode: 2μs
- Standard interfaces: USB / LAN / CAN
- Optional interfaces: GPIB(IT-E176) / RS232&Analog（IT-E177）

IT8100A Function

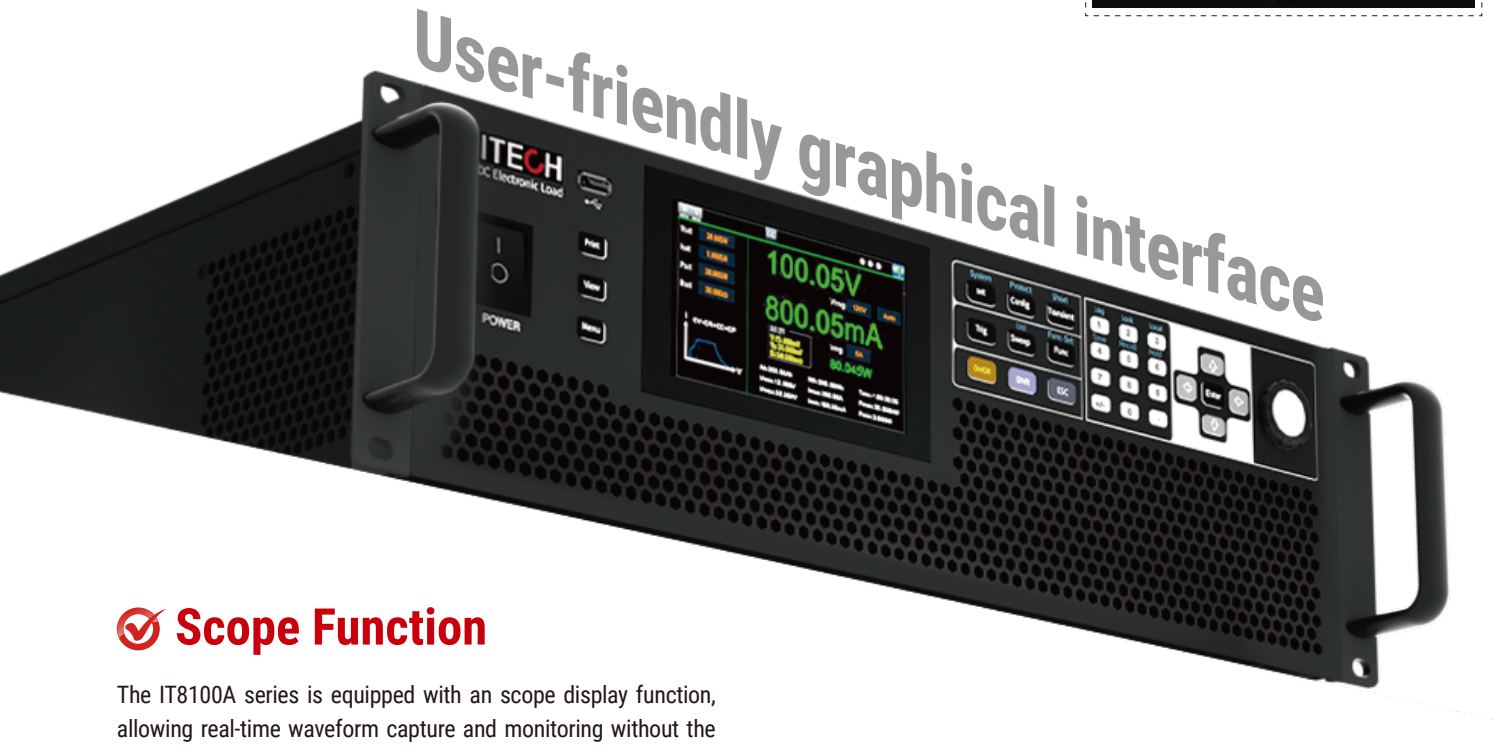
- Basic load modes: CC / CV / CP / CR
- Combined load modes: CC+CR / CR+CV / CC+CV / CP+CV / CC+CR+CV+CP
- Advanced Load Modes： CE/CC sine/CC Pulse/Table mode
- Dynamic load mode with slew rate up to 150 A/μs
- Transient frequency up to 50kHz
- LIST / OCP / OPP / Battery discharge / Short-circuit modes
- User-defined waveform function for simulating complex load profiles
- 1.5× short-time overloading capability (≤60 s, Ta ≤ 25°C)
- 4× transient overloading capability (≤1 ms, Ta ≤ 25°C)
- Built-in Sequence & Sweep modes
- Built-in EIS analysis with direct Bode and Nyquist plot generation
- Built-in 5½-digit DVM terminals

Applications

- EV Charging Pile & BOBC Testing
- Solar Array I-V Testing
- Power Semiconductor Testing
- Fuel Cell & EV Battery Testing
- Power Module Testing
- Power Protection Device Testing
- AI server PSU testing
- Intelligent Manufacturing Testing
- eVTOL & UAV Testing

Graphical Touchscreen

The IT8100A series provides versatile operation and functions, enabling fast and convenient control via the 5-inch touchscreen, keypad, and rotary knob. Parameter settings and measurement results are displayed directly, while the bilingual Chinese-English interface and user-oriented design support diverse testing requirements.



Scope Function

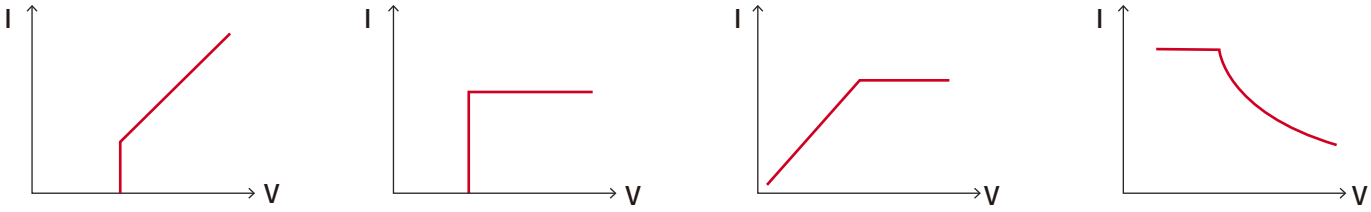
The IT8100A series is equipped with an scope display function, allowing real-time waveform capture and monitoring without the need for an external oscilloscope. Its 2μs high sampling rate ensures accurate voltage and current waveform display. Users can choose to display real-time curves on the screen or hide other curves, showing only the necessary waveforms for observation. The graphical interface features vivid colors, greatly enhancing the user experience.

Data Logging Function

The IT8100A series offers a data logging function to track trends over a period of time. Users can select 1 to 4 observation lines to view the average, minimum, and maximum values for voltage and current. Additionally, various viewing options such as vertical, horizontal, and zoom functions are available to observe data and waveforms at specific moments.

Basic and Combined Load Modes

Basic load modes	Combined load modes
CC/CV/CR/CP/CE/CC Pulse/CC Sine/Table	CC+CR/CC+CV/CP+CV/CR+CV/CR-LED/CC+CV+CR+CP



The IT8100A series offers a variety of basic and combined load modes. Compared to the basic load mode, the combined modes provide solutions for more practical applications. For instance, the CV+CC mode, in contrast to the standard CV mode, allows for CV loading while simultaneously limiting the maximum current, preventing issues like CC overshoot and avoiding the triggering of DUT overcurrent protection. The IT8100A series is widely used for testing various types of DUTs, including UPS, charging piles, DC-DC power modules, AI server power supplies, and more.

Three-range Design for High-precision Measurements

The IT8100A series is equipped with three voltage and current ranges, ensuring high-precision measurements across the entire range from light load to full load current. The measurement accuracy remains consistent, whether used as a single unit or in parallel.

1.8MW | Power up to 1.8 MW

Fiber-optic parallel technology

CE Mode

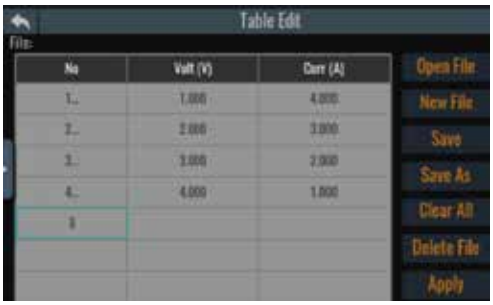
CE mode provides a more realistic simulation of capacitive load startup behavior. In actual applications, when a power supply is connected to a capacitive load, capacitor charging at turn-on generates a high inrush current. Conventional electronic loads typically produce only smooth current transitions and cannot accurately reproduce this startup transient. By contrast, the CE mode of the IT8100A effectively emulates the inrush current of capacitive load startup, delivering test results that are closer to real operating conditions.

CC Pulse

CC Pulse, an exclusive current pulse mode of the IT8100A Series, is engineered for high-current pulse testing scenarios beyond traditional SMUs' capability. It outputs ultra-short, high-frequency current pulses and, with the built-in DVM, precisely measures voltage, current and power at pulse peaks. Supporting 4× pulse power to meet high-current devices' transient surge testing needs, it is ideal for I-V characteristic analysis, pulse performance validation, surge testing and on-state voltage drop measurement of high-current power devices.

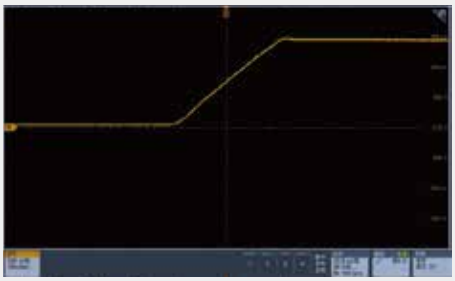
Table Mode

In Table mode, users can define a voltage-current (V-I) table in advance. The electronic load then automatically adjusts the loading current based on the measured input voltage in real time, enabling accurate emulation of the nonlinear conduction characteristics of devices such as diodes. For example, conduction remains minimal in the low-voltage region, while the current rises rapidly once the voltage exceeds a threshold, forming a typical diode exponential I-V curve.

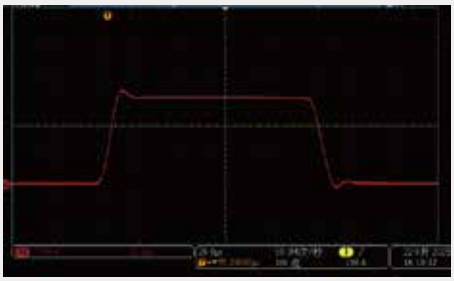


High-speed Dynamic Load

With the rapid development of AI technology, AI server loads change frequently, demanding faster transient response from power systems.This also means that load testing must accurately simulate these high-frequency dynamic load variations. The IT8100A series offers dynamic load capabilities up to 50 kHz, including dynamic current load (CCD) and dynamic resistance load (CRD). The current slew rate can reach up to 150 A/μs per unit, with a minimum response time of 8 μs, meeting the high-speed transient response testing requirements of switching power supplies.



45A/us 50A-1500A



150A/us 10A~1500A

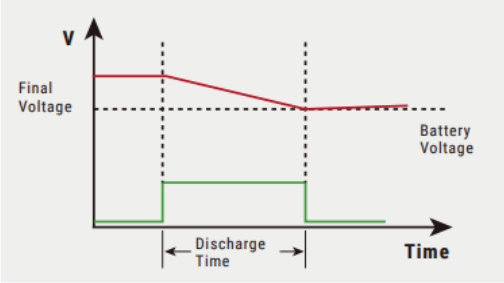
IT8100 scope display

EIS

The IT8100A Series features a built-in EIS (Electrochemical Impedance Spectroscopy) function for evaluating battery resistance characteristics and gaining deeper insight into internal performance. With multi-frequency excitation from 0.01 Hz to 20 kHz, it captures subtle responses and helps identify issues that conventional methods may miss. Results are displayed through built-in Bode and Nyquist plots, making it ideal for performance and lifetime evaluation of fuel cell stacks, active devices, and other electrochemical systems.

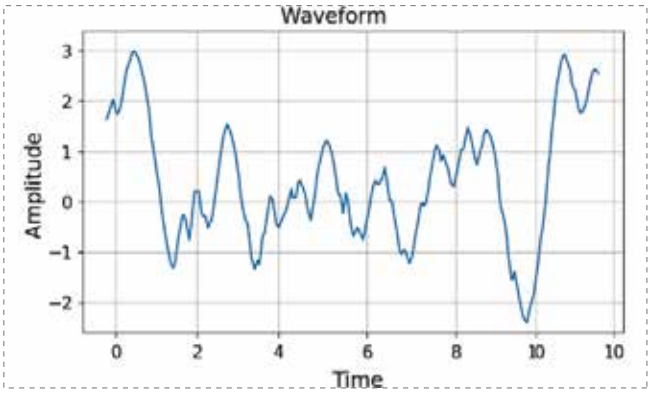
Battery Discharge Mode

The IT8100A series electronic load provides a battery discharge function, supporting constant current, constant resistance, and constant power modes. It can operate under both constant or dynamic loads to meet diverse testing needs. Users can define discharge cutoff conditions, including cutoff voltage, cutoff capacity, and cutoff time, with discharge stopping when any of these conditions are met. During testing, battery voltage, time, and discharged capacity can be displayed in real time.



User-defined Waveforms

The IT8100A series allows users to import captured real-world current waveforms or create custom waveforms through front-panel input. This waveform customization feature reduces the need for waveform generators. The IT8100E series supports up to 1,000,000 waveform points, meeting the requirements for complex custom waveforms.



1.5x Short-time Overload Capability

The IT8100E series electronic load supports up to 1.5× short-time overpower. At ambient temperatures below 25°C, the overpower can be sustained for up to 60 seconds, effectively covering transient peak power demands during testing. This enables system sizing based on typical operating power rather than peak power, meeting the requirements of power modules, battery packs, and other devices under surge and extreme operating conditions.

The front panel displays the allowable overpower limit in real time and dynamically updates it according to the internal thermal conditions, ensuring safe, reliable, and fully observable operation. Leveraging the short-time overpower capability, the system meets high dynamic testing requirements without the need for higher-rated equipment, thereby reducing overall test system cost.

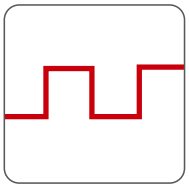
Short-time Load Power, Clearly Visible

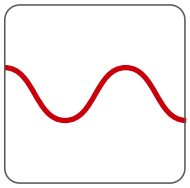
10800.0W

Model:IT8107E-150-600
Rated Power:7.2 kW
1.5 * Rated power: 10.8kW

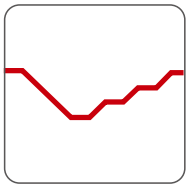
Sequence Function

The IT8100A series sequence output function allows users to combine different waveforms (such as sine, user-defined, step waves, etc.) to create a continuous output sequence. It supports active loading in four modes: CV, CC, CR, and CP, enhancing the flexibility and versatility of testing to meet the needs of various test scenarios.


Pulse


Sine

RAMP


User defined

Sweep Function

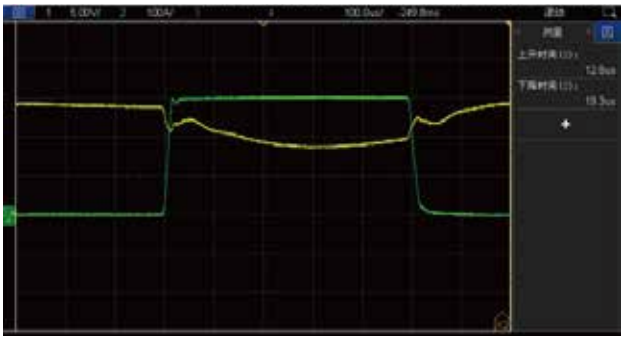
The IT8100A Series features a Sweep function that enables voltage or current sweep testing. Users can customize the test start point, end point, step size and sweep type (linear or logarithmic) to achieve precise evaluation of the DUT's performance at different operating points, making it particularly suitable for IV characteristic curve testing of semiconductor power devices. Meanwhile, the Sweep function supports pulse sweep, which effectively reduces the impact of device self heating during testing and helps users obtain more accurate and stable test results.

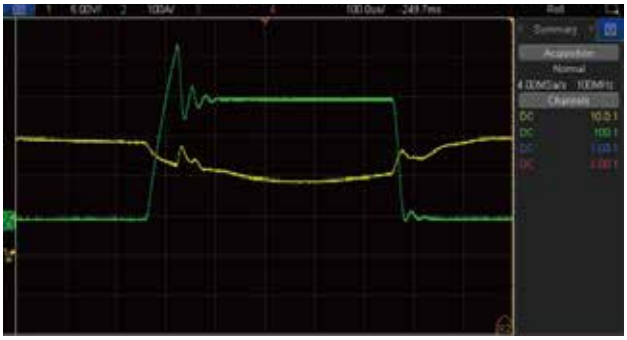
Low Inductance Testing Cables (optional accessories)

Low inductance Cables can reduce inductive effects in high-frequency or rapidly changing current environments, ensuring stability and accuracy in signal transmission.

IT-E31005LIC-OO	100A/0.5m/ ring terminal low inductance red and black test Cables
IT-E31010LIC-OO	100A/1m/ring terminal low inductance red and black test Cables
IT-E31020LIC-OO	100A/2m/ring terminal low inductance red and black test Cables

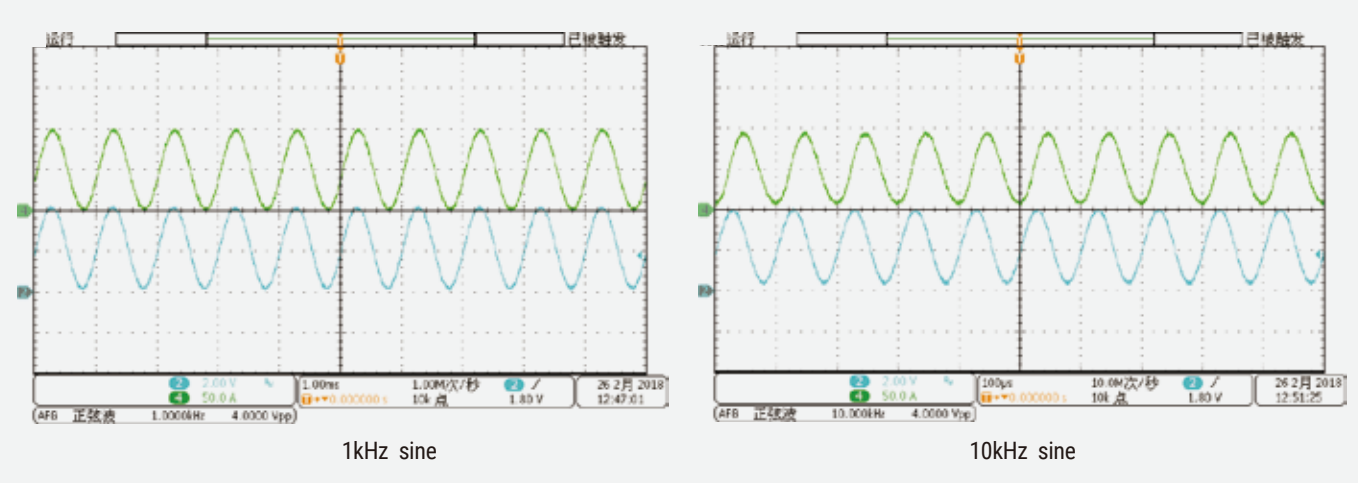
- Reduce electromagnetic interference caused by rapid current changes, ensuring stable voltage and current waveforms.
- Improve signal integrity and reduce potential signal loss or delay during high-frequency current transmission.
- Minimize voltage drop caused by high current, improving power efficiency and enhancing system stability.


Voltage and Current Waveform (with Low Inductance Testing Cable)

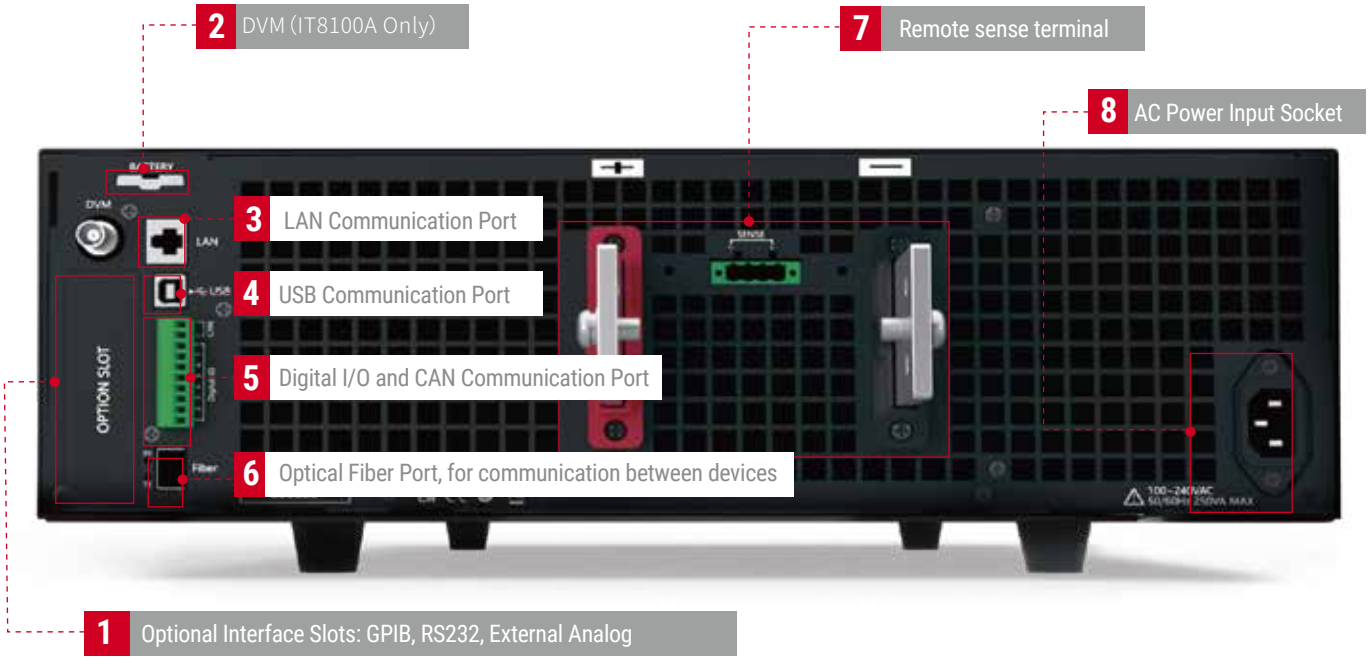

Voltage and Current Waveform (with Standard Testing Cable)

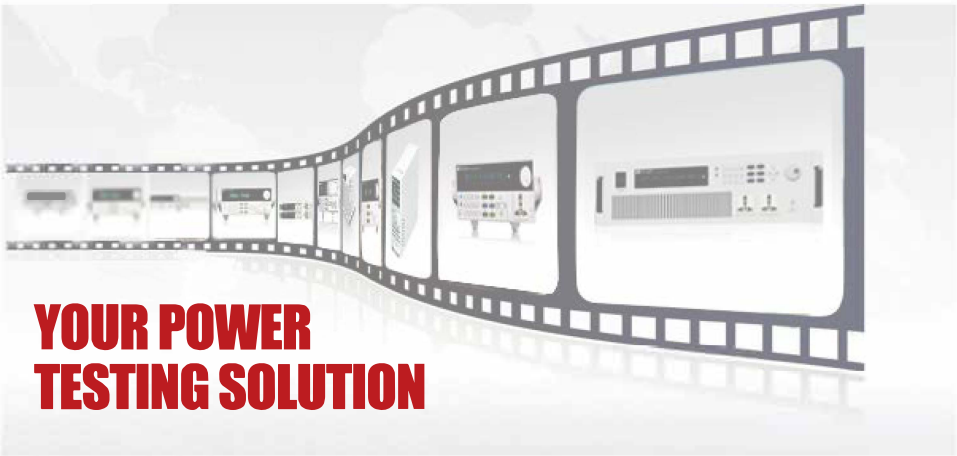
External Analog Function

The IT8100A series electronic load features an analog control interface for industrial applications. It uses a 0-10V signal from a PLC to control the load from 0% to 100% of its full range, offering faster response (20μs) and 1% accuracy compared to real-time control from a host computer. This interface supports unlimited step control. The 0-4.2V sine wave input allows dynamic loading from 0-100A, with high amplitude and phase accuracy for waveforms below 10kHz. It's ideal for testing complex battery waveforms and fuel cell impedance analysis.



Communication Interfaces





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