ITECH

YOUR POWER TESTING SOLUTION

IT8900G/L

High Speed and High Power DC Electronic Load



Your Power Testing Solution

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High Speed and High Power DC Electronic Load





IT8900G/L series high speed and high power DC electronic load features as fast current rise and fall and low voltage loading capability. It has three voltage ranges: 150V, 600V, 1200V, and the maximum power ranges from 2kW to 54kW for a single unit. it has wide-range design, independent master unit control. It supports master-slave parallel connection, and the maximum power can be extended to 600kW. It has high power density, only 4U height unit can input 6kW. IT8900G/L has up to 8/4 operating modes with dynamic mode, OCP, OPP test, auto test and battery test. It has built-in CAN, LAN, GPIB, USB, RS232 and analog interfaces, etc., and has full protection. The IT8900G/L can be applied to the testing of EV batteries, A/D power supplies, server power supplies, DC charging piles, on-board chargers (OBCs), industrial motors, fuel cells, power electronics, and other power electronics products.

Input power	150 V	600 V	1200 V	Height
2 kW	IT8902G/L-150-200	IT8902G/L-600-140	IT8902G/L-1200-80	4U
4 kW	IT8904G/L-150-400	IT8904G/L-600-280	IT8904G/L-1200-160	4U
6 kW	IT8906G/L-150-600	IT8906G/L-600-420	IT8906G/L-1200-240	4U
8 kW	IT8908G/L-150-800	IT8908G/L-600-560	IT8908G/L-1200-320	8U
12 kW	IT8912G/L-150-1200	IT8912G/L-600-840	IT8912G/L-1200-480	8U
18 kW	IT8918G/L-150-1800	IT8918G/L-600-1260	IT8918G/L-1200-720	15U
24 kW	IT8924G/L-150-2400	IT8924G/L-600-1680	IT8924G/L-1200-960	27U
30 kW	IT8930G/L-150-2400	IT8930G/L-600-2100	IT8930G/L-1200-1200	27U
36 kW	IT8936G/L-150-2400	IT8936G/L-600-2400	IT8936G/L-1200-1440	27U
42 kW	IT8942G/L-150-2400	IT8942G/L-600-2400	IT8942G/L-1200-1680	37U
48 kW	IT8948G/L-150-2400	IT8948G/L-600-2400	IT8948G/L-1200-1920	37U
54 kW	IT8954G/L-150-2400	IT8954G/L-600-2400	IT8954G/L-1200-2160	37U

Features

- Maximum power of single unit: 2-54kW
- Voltage range: 150V, 600V, 1200V
- Current range: 4U module up to 600A, master/slave parallel control, power expansion up to 600kW
- Multiple operating modes: CC, CV, CR, CP, CC+CV, CV+CR, CR+CC, CP+CC *1
- Fast current rise and fall and 30kHz dynamic mode *2
- CV loop speed adjustable to match different power supplies
- Low voltage and high current loading, internal resistance about 0.7mΩ
- 500kHz high speed voltage and current sampling rate
- Time measurement, battery discharge test
- Short circuit simulation, automatic test function
- Soft power on, soft power off to prevent voltage fluctuation during on/off
- Timing control list programming, OCP/OPP test
- I-monitor
- Built-in LAN, USB, RS232, GPIB, CAN, external analog
- Highly accurate voltage and current measurement
- Support OVP, OCP,OPP, OTP, current oscillation protection, current limit, power limit, fan blocking protection, reverse alarm, etc.
- Power failure memory function, memory capacity of 100 groups
- Independent control by master unit , easy to maintain and install

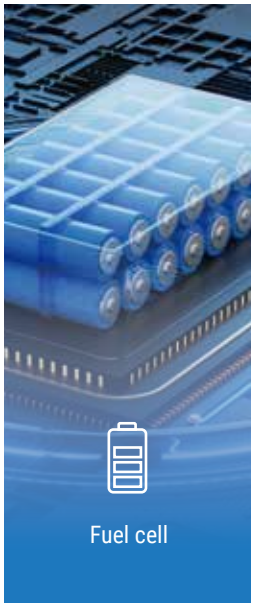
*1 IT8900L only supports CC, CV, CR, CP
*2 30 kHz only for 150V G-Series models

Application

- Testing of server power supplies, high-voltage UPS, and communication power supplies
- Testing of virtual loads for natural energy sources (solar arrays, wind power generation)
- Testing of DC-DC modules, AC-DC modules and other power electronic components
- Discharge testing of fuel cells, power batteries, and lead storage batteries
- Aging test of fuses and relays
- Smart manufacturing, safety testing of industrial motors (e.g., unmanned trucks, robots, etc.)
- Testing of DC charging piles, on board chargers, power electronics, etc.











Your Power Testing Solution

IT8900G/L High Speed and High Power DC Electronic Load

Low voltage loading

The IT8900G/L series has an ultra-low on-resistance and two operating ranges, the 150V model has an internal resistance of about 0.7m Ω, and the lowest single-unit on-load voltage is < 0.1 V for 60 A input at the low range, and 0.75 V for 600 A. It is particularly suitable for testing fuel cells, supercapacitors, solar cells, DC-DC converters, and other low-voltage, high-current electronic devices.



Dynamic mode up to 30kHz

The IT8900G series electronic load (150V models) features dynamic modes up to 30kHz*. The upgraded all-in-one internal structure allows the it to dramatically improve loop response and stability. It can be used for testing the transient response of switching power supplies, as well as testing the instantaneous high-current tolerance of DC-DC converters and batteries.

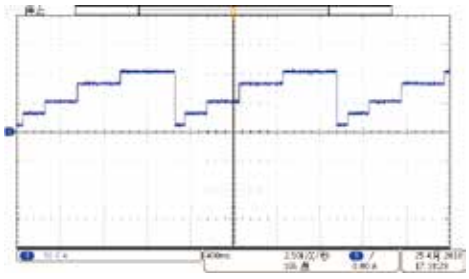
*Dynamic response of IT8900L is 10kHz.



IT8906G-150-600 **20kHz,0.1A-300A loading**

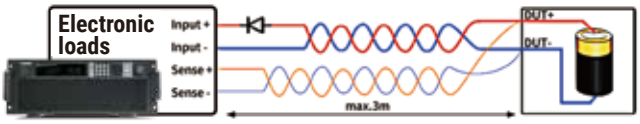
List

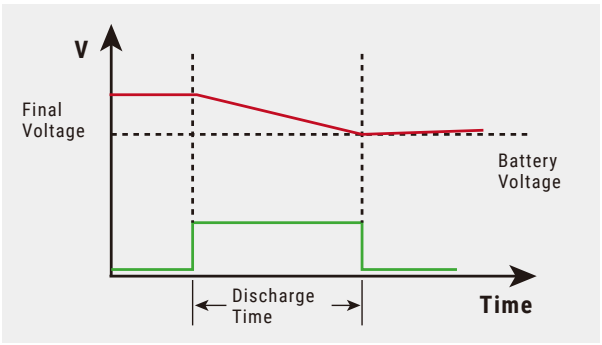
Both dynamic and list modes of the IT8900G/L series electronic loads are available in CC mode. By editing the step pulse width and slope of each step, it can generate a variety of complex sequences to help complete tests with various waveforms. And in CC mode, the IT8900G/L can set the rise and fall speed.



Battery discharge

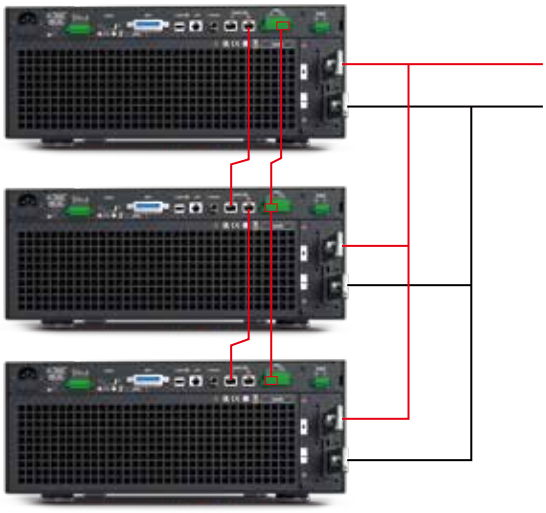
The IT8900G/L series has a battery discharge function, which can perform discharge test in constant current, constant resistance or constant power mode. You can set the discharge cut-off conditions by yourself: cut-off voltage, cut-off capacity and discharge time. If any one of the three conditions is satisfied, the discharge will stop. Battery voltage, time and discharged capacity can be observed during the test.





Master-slave parallel connection, flexible power configuration

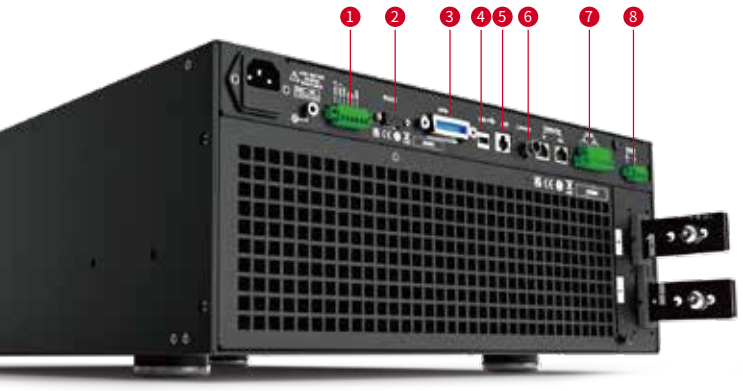
The IT8900G/L series supports the function of master-slave parallel connection and current equalization. Different power and voltage cabinets can be connected in parallel with no loss of functionality, including operation in CV mode. It can reach the power up to 600kW at most after parallel connection. A single cabinet can be operated independently for more flexible power configuration. It adopts analog and digital wiring separately, which makes the parallel performance more stable.



Built-in Communication Interface

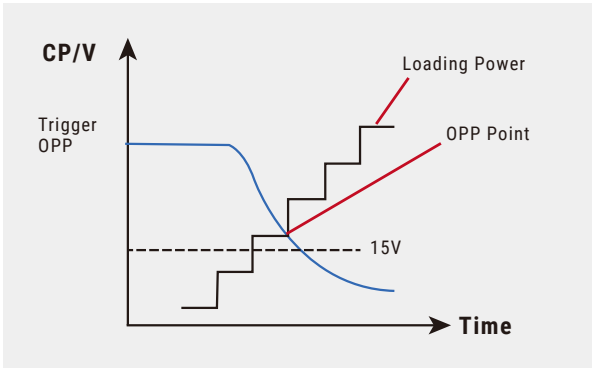
IT8900G/L series electronic load is built-in LAN, USB, RS232, CAN, GPIB, analog interface, supports SCPI protocol. It is suitable for power expansion, computer or PLC remote control, system building and so on.

1. CAN
2. RS232
3. GPIB
4. USB
5. LAN
6. i-monitor
7. Analog interface
8. SENSE



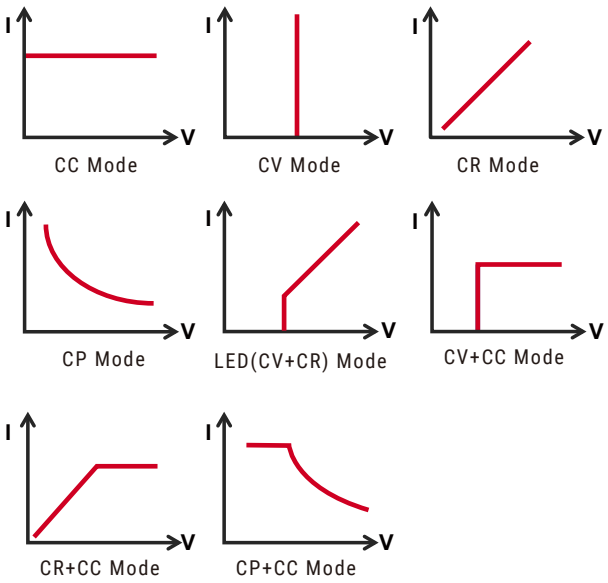
OCP, OPP Tests

OCP and OPP are mainly applied in over-current and over-power point tests of the lithium-battery protection board and power modules. For power supplies, OCP and OPP are designed to guarantee the user's safety and to reduce damage rate. IT8900G/L series can automatically judge the test result according to the set specifications, so the users can save much time in verification of design and production system.



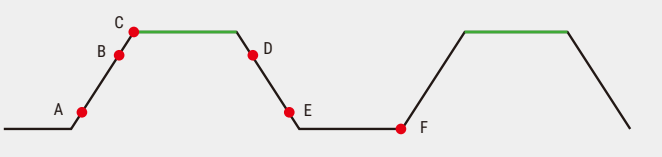
Eight Working Modes

IT8900G/L series provides eight kinds of working modes such as CC, CV, CR, CP, CV+CC, CV+CR, CR+CC, CP+CC, which can adapt to the test requirements of various occasions. Among them, the CP mode is often used to UPS battery test, simulate the current change when the battery voltage is decaying. It can also be used to simulate the characteristics of the inputs of DC-DC converters and inverters. The CV+CC mode can be applied to the load simulation battery and test the charging station or the car charger. When the CV is working, the maximum loading current is limited. CR+CC mode is commonly used in the testing of voltage limiting, current limiting characteristics, constant voltage accuracy, and constant current accuracy of on-board chargers, which prevents over-current protection of on-board chargers.



Measure Function

IT8900G/L series provides the measurement of rising and falling time of voltage and current. The measurement accuracy is up to 10 μs, which is comparable to the high precision oscilloscope. IT8900G/L series can be applied to measure the start-up and shutdown of power modules, holding time, and fuse blowing time. Measurement time is measured by the PC software.



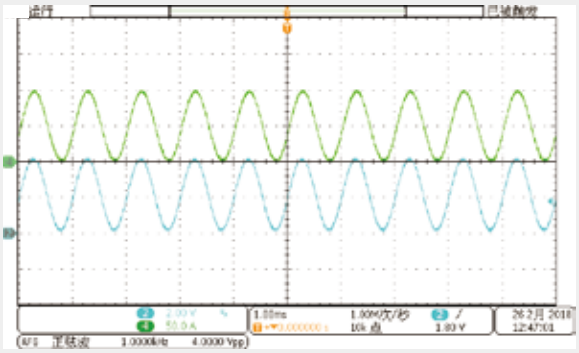
Remarks: from above graph, A and B are arbitrary points of the rising stage, C is one point on the green stage, D and E are arbitrary points of the falling stage.

Your Power Testing Solution

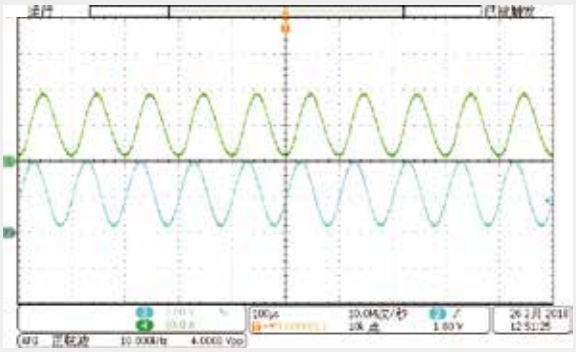
IT8900G/L High Speed and High Power DC Electronic Load

External Analog Control Function

IT8900G/L series electronic load has analog control interface, which can be used for industrial control or expanding load power by paralleling. When IT8900G/L is used for industrial control, using PLC output 0~10V to control the 0~100% full scale change of CC/CV of the load. Compared with the real-time control from PC, the response time is faster and up to 10μs, step time is <10ms, accuracy can reach 1%. At the same time, IT8900G/L also has the advantage that the number of steps is not limited. The right picture shows the 0-4.2V sine wave input analog interface, which controls the dynamic loading of the IT8900G 0-100A. The waveform amplitude and phase reduction below 10 kHz are higher. It can be applied to battery tests of all kinds of complicated waveforms, and can also be used for impedance analysis test of fuel cells.
When used to paralleling load power expansion, the analog interface can be used for parallel differential analog control interface, which is more stable and reliable than the traditional independent LAN interface parallel communication.



1kHz sine wave



10kHz sine wave

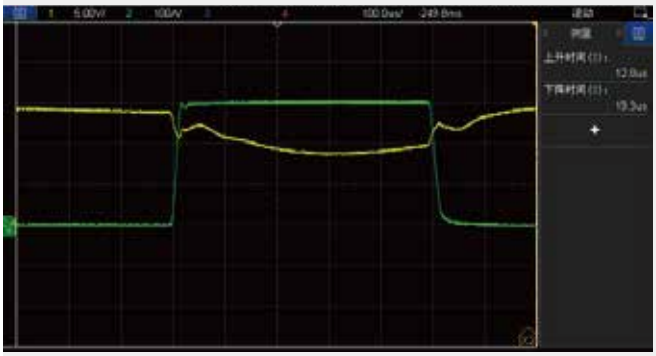
Low Inductance Testing Cables(optional accessories)

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

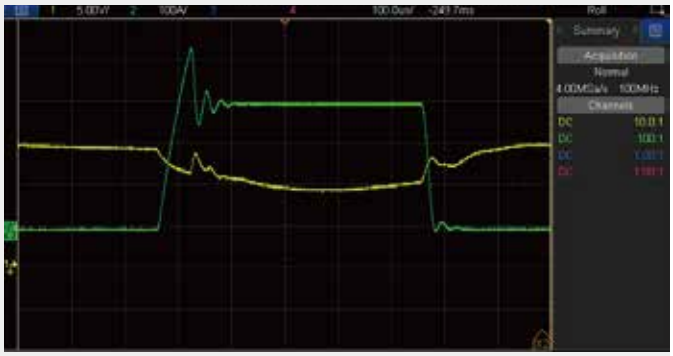
- Reduce the inductive effects and voltage fluctuations caused by rapid current changes.
- Improve signal integrity. Inductance can cause signal distortion or delay in high-frequency transmission.
- Reduce Electromagnetic Interference (EMI).
- Low inductance Cables can effectively reduce inductive voltage drops caused by high current, ensuring efficient power transmission and enhancing system stability and efficiency.



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



Dynamic voltage and current with low inductance test Cables



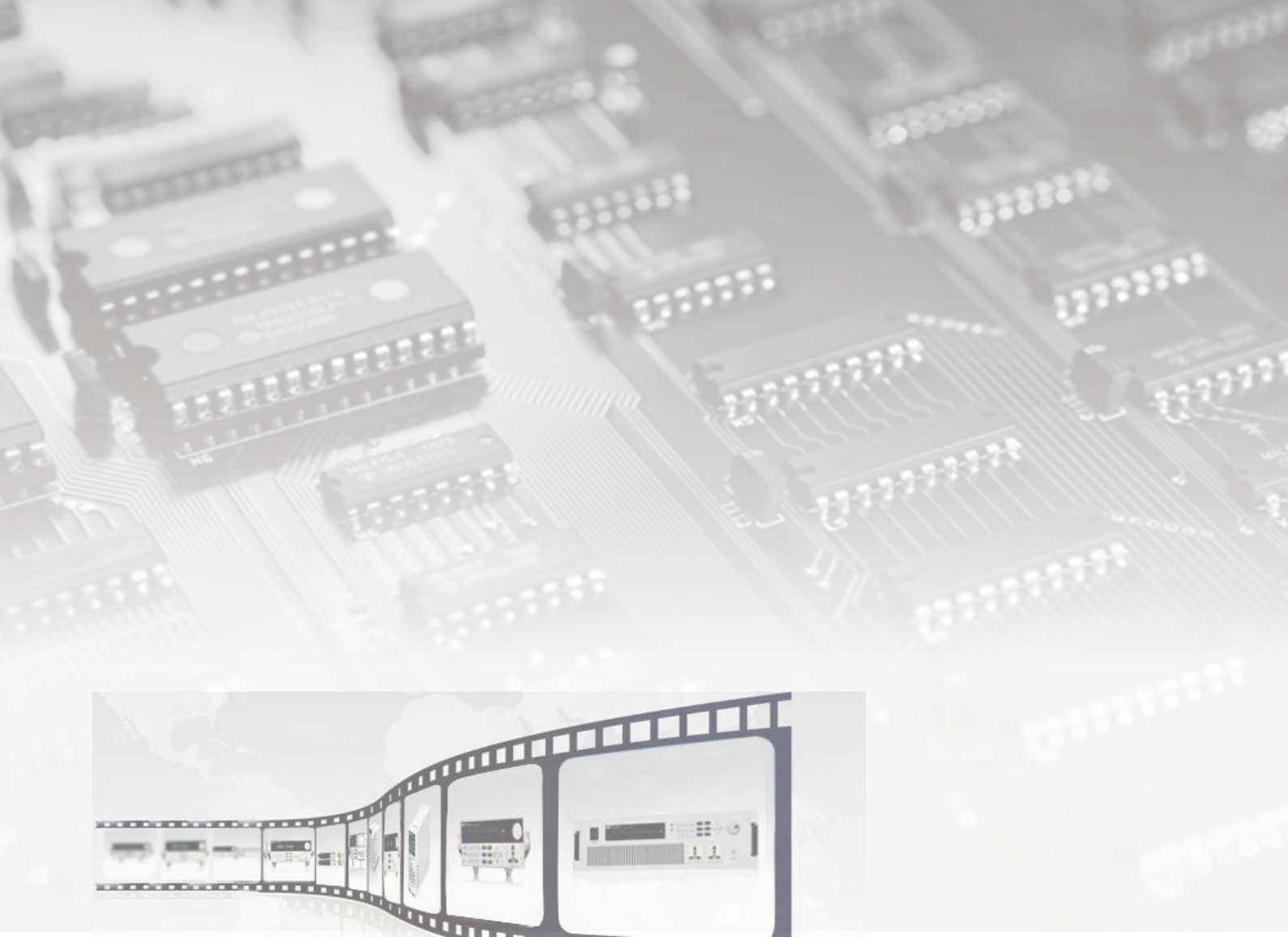
Dynamic voltage and current with standard test Cables

Model		IT8906G-150-600		IT8906G-600-420		IT8906G-1200-240	
Rated (0~40℃)	Voltage	0~150V		0~600V		0~1200V	
	Current	0~60A	0~600A	0~42A	0~420A	0~24A	0~240A
	Power	6kW		6kW		6kW	
	Minimum operating voltage	0.075V/60A	0.75V600A	0.42V/42A	4.2V/420A	1.2V/24A	12V/240A
CV mode	Range	0~18V	0~150V	0~60V	0~600V	0~120V	0~1200V
	Resolution	1mV	10mV	1mV	10mV	10mV	100mV
	Accuracy	±(0.05%+0.05%FS)	±(0.05%+0.05%FS)	±(0.05%+0.05%FS)	±(0.05%+0.05%FS)	±(0.05%+0.05%FS)	±(0.05%+0.05%FS)
CC Mode	Range	0~60A	0~600A	0~42A	0~420A	0~24A	0~240A
	Resolution	1mA	10mA	1mA	10mA	1mA	10mA
	Accuracy	±(0.05%+0.1%FS)	±(0.05%+0.1%FS)	±(0.05%+0.1%FS)	±(0.05%+0.1%FS)	±(0.05%+0.1%FS)	±(0.05%+0.1%FS)
CR Mode	Range	0.0015Ω~150Ω		0.01Ω~1KΩ		0.05Ω~5KΩ	
	Accuracy	Vin/Rset *(0.2%) + 0.2% IF.S.		Vin/Rset *(0.2%) + 0.2% IF.S.		Vin/Rset *(0.2%) + 0.2% IF.S.	
CP Mode	Range	6kW		6kW		6kW	
	Resolution	0.1W		0.1W		0.1W	
	Accuracy*1	0.2%+0.2%FS		0.2%+0.2%FS		0.2%+0.2%FS	
Dynamic Mode							
Dynamic mode*2 CC Mode	T1 & T2	20uS~3600S /Res:1 us/10ms/100ms		20uS~3600S /Res:1 us/10ms/100ms		20uS~3600S /Res:1 us/10ms/100ms	
	Accuracy	5uS±100ppm		5uS±100ppm		5uS±100ppm	
	Rising/falling slope	0.001~3A/uS	0.01~30A/uS	0.001~1.8A/uS	0.01~18A/uS	0.001~1.2A/uS	0.01~12A/uS
	Minimum rising time	≒12uS	≒12uS	≒15uS	≒15uS	≒15uS	≒15uS
Measuring range							
Readback Voltage	Range	0~18V	0~150V	0~60V	0~600V	0~120V	0~1200V
	Resolution	1mV	10mV	10mV	100mV	10mV	100mV
	Accuracy	±(0.025%+0.025%FS)	±(0.025%+0.025%FS)	±(0.025%+0.025%FS)	±(0.025%+0.025%FS)	±(0.025%+0.025%FS)	±(0.025%+0.025%FS)
Readback Current	Range	0~60A	0~600A	0~42A	0~420A	0~24A	0~240A
	Resolution	1mA	10mA	1mA	10mA	1mA	10mA
	Accuracy	±(0.05%+0.1%FS)	±(0.05%+0.1%FS)	±(0.05%+0.1%FS)	±(0.05%+0.1%FS)	±(0.05%+0.1%FS)	±(0.05%+0.1%FS)
Readback Power	Range	6kW		6kW		6kW	
	Resolution	0.1W		0.1W		0.1W	
	Accuracy*1	±(0.2%+0.2%FS)		±(0.2%+0.2%FS)		±(0.2%+0.2%FS)	
Protection range							
OPP		≒6.05kW		≒6.05kW		≒6.05kW	
OCP		≒63A	≒630A	≒44A	≒440A	≒25.2A	≒252A
OVP		≒157V		≒630V		≒1250V	
OTP		≒85℃		≒85℃		≒85℃	
Specification							
Short Circuit	Current(CC)	≒63A	≒630A	≒44A	≒440A	≒25.2A	≒252A
	Voltage(CV)	0V		0V		0V	
	Resistance(CR)	≒1.25mΩ		≒10mΩ		≒50mΩ	
Input terminal impedance		≒800kΩ		≒1MΩ		≒1.6MΩ	
Height		4U		4U		4U	
Weight		40Kg		40Kg		40Kg	
AC input	Voltage	100~240Vac		100~240Vac		100~240Vac	
	Frequency	50/60Hz		50/60Hz		50/60Hz	
	Power	180VA max		180VA max		180VA max	

*1 Power F.S.=Vrange F.S. X Irange F.S.

*2 Loading current value is not less than 4%FS_CCH

*This information is subject to change without notice.



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