

Product

IT8500G+ series Programmable DC Electronic Load

U **USB PD2.0** **QC3.0**
Ripple measurement
 Battery discharge test
QC 2.0 **PE+** **QC2.0** **QC3.0** **QC 2.0** **QC3.0**
P **PE+** **QC2.0** **QC3.0** **QC 2.0** **QC3.0**
 Up to 20kHz dynamic mode
PE+ **PE2.0+** **USB PD3.0** **QC3.0** **PE2.0+USB PD3.0**
 ripple measurement **USB PD3.0**



IT8500G+ series Programmable DC Electronic Load

APPLICATIONS

- Battery test
- Lithium battery protection board test
- Power supply test
- Charger test
- Component test
- ATE

Your Power Testing Solution



The IT8500G+ series is a programmable DC electronic load is specifically designed for high-precision ripple testing, with a sampling bandwidth of up to 300kHz. With the built-in ripple test function, it's easy to measure voltage and current ripple of the DUT. IT8500G+ has built in as many as 8 fast charging protocols, meeting the test requirement of fast charging adapters, power banks, fast charging power banks and other products. At the same time, it also has other functions like automatic testing, battery discharge testing, dynamic testing, etc. So it can complete most of the performance testing of switching power supplies, batteries and other product during the development and production stages.

FEATURE

- 7 operating modes: : CC/CV/CR/CW/CR+CC/CV+CC/CR-LED
- Ripple measurement
- Built in 8 fast charging communication protocol, including QC2.0, QC3.0, PE+, PE2.0+, USB PD2.0, USB,PD3.0, FCP, SCP^{*1}
- Dynamic mode up to 20kHz
- Voltage measurement resolution up to 0.1mV / 0.1mA
- OPP/OCP test functions
- Battery discharge mode
- Automatic test functions
- List/dynamic mode
- Current monitoring
- Short circuit / Measure function

^{*1} Only available with IT8511G+ / IT8511A G+

Model	Parameter			Accessories		
	Voltage	Current	Power	Fast charge card IT-E164	USB	LAN
IT8511G+	150V	30A	150W	Optional	Standard	/
IT8511AG+	150V	30A	150W	Standard	Standard	/
IT8512G+	150V	30A	300W	/	Standard	Standard
IT8512BG+	600V	15A	300W	/	Standard	Standard

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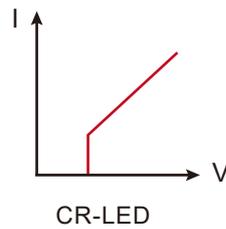
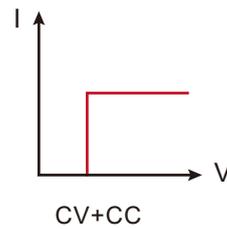
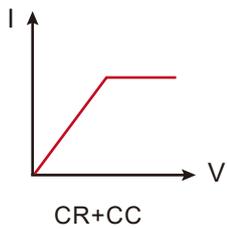
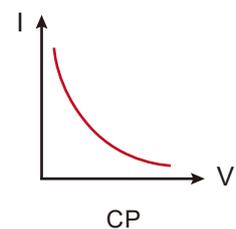
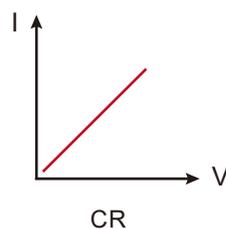
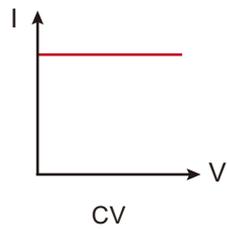
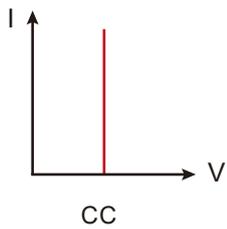
IT8500G+ series Programmable DC Electronic Load

Application



Battery test Lithium battery protection board test Power bank test Charger test Components test ATE

7 working mode



Voltage/current ripple measurement

Ripple is one of the parameters that must be tested for switching power supplies. Excessive ripple may cause interference to the DUT or shorten the life of the DUT. IT8500G+ has a ripple measurement function, and its measurement bandwidth is up to 300kHz, which meets the ripple measurement requirements of switching power supplies or chargers. At the same time, its remote sense function can help to eliminate the impact caused by the voltage drop on the line. No oscilloscope needed, users can just press the 'down' button on the front panel to read the voltage ripple value ($V_{p-p}/V_{p+}/V_{p-}$) and current ripple value ($I_{pp}/I_{p+}/I_{p-}$) of the DUT directly. This greatly simplifies the wiring and operation process.

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IT8500G+ series Programmable DC Electronic Load

Built-in multiple fast charge protocol

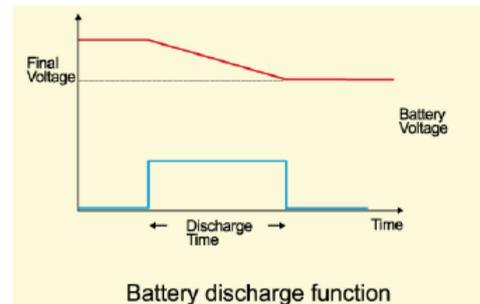
The consumption of battery power is getting faster and faster due to more and more functions generated in mobile phone. Fast charging technology can help to improve user experience under the situation. IT8500G+ has built-in multiple fast charging protocols (QC2.0, QC3.0, PE+, PE2.0+, USB PD2.0, USB PD3.0, F CP, SCP) which can complete the test for adapters with different protocols. Users can quickly choose the charging protocol on the menu. And in automatic test mode, it can realize the performance verification of the fast charging adapter under different charging process, like no-load voltage, short-circuit current, constant voltage and constant current.

* Only available with IT8511G+ / IT8511A G+



Battery discharge test

IT8500G+ can perform battery discharge test in CC mode. After selecting the discharge test mode, set the turn off conditions "off voltage", "off capacity" and "discharge time". When any one of the above conditions is met during the test, the discharge stops and the electronic load automatically switches to the OFF state. During the test, the battery voltage, time and battery discharged capacity can be acquired.



Automatic Test

IT8500G+ supports automatic test editing modes. It can save up to 10 groups of test files. Users can recall these files if needed. The test operation is simple. The keyboard can be completely locked to prevent accidental touch.

OCP

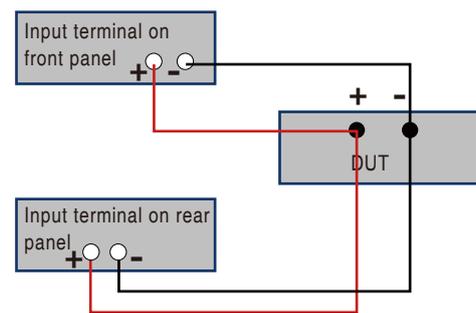
The IT8500G+ has an over-current protection (OCP) test function. In the OCP test mode, when the input voltage reaches V_{on} value, it will delay for a period of time, and then start to work. It will increase by a step value at regular intervals. At the same time, detect and evaluate whether the input voltage of the electronic load is higher than the OCP voltage. If it is, go down and continue to delay increment according to the cut-off current value until it reaches the cut-off current. Judge by voltage value first, and then current value according to the set current value range.

OPP test function

The IT8500G+ has over-power protection (OPP) test function. In the OPP test mode, when the input voltage reaches V_{on} value, it will delay for a period of time, and then start to work. It will increase by a step value at regular intervals. At the same time, detect and evaluate whether the input voltage of the electronic load is higher than the OPP voltage. If it is, go down and continue to delay increment according to the cut-off power value until it reaches the cut-off power. Judge by voltage value first, and then power value according to the set power value range.

Remote measurement

In the CC/CV/CR/CP mode, when the electronic load consumes a large current, a large voltage drop will be generated on the connection line between the DUT and the load terminal. In order to keep the measurement accuracy, the electronic load provides a remote measurement terminal on the rear panel, and the user can use this terminal to measure the output terminal voltage of the DUT.

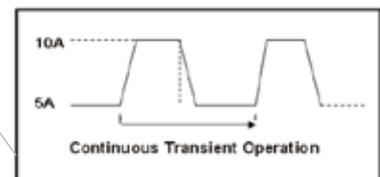


Dynamic mode

Dynamic testing means that the electronic load can be switched between two set parameters according to the set rules. This function is used to test the dynamic characteristics of power supplies.

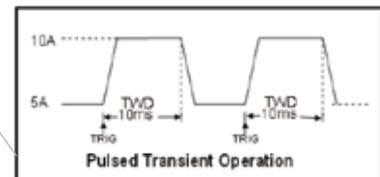
- Continuous transient operation

In the continuous mode, when the dynamic test operation is enabled, it will continuously switch between value A and value B.



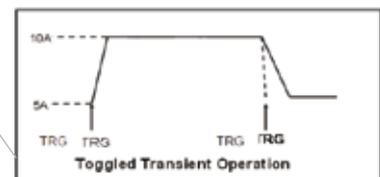
- Pulsed transient operation

In the pulse mode, when the dynamic test operation is enabled, each time a trigger signal is received, it will switch to value B. After maintaining pulse width time B, it will switch back to value A.



- Toggled transient operation

In the toggled transient mode, when the dynamic test operation is enabled, it will switch between value A and value B every time a trigger signal is received.

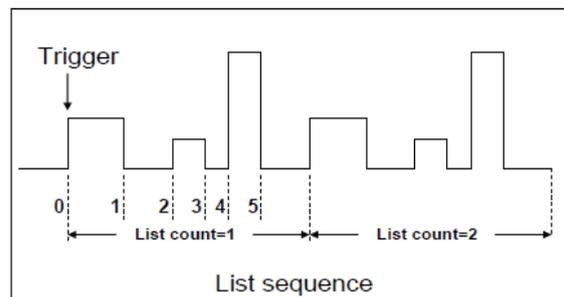


Your Power Testing Solution

IT8500G+ series Programmable DC Electronic Load

LIST

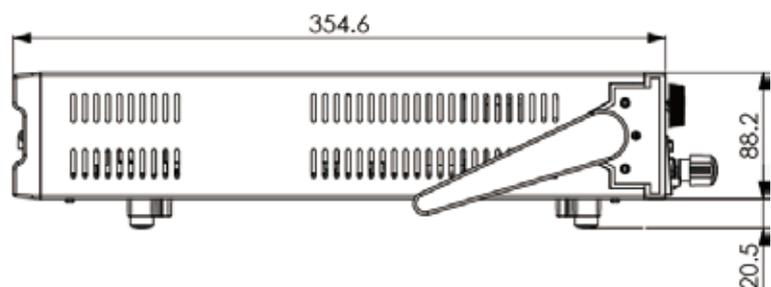
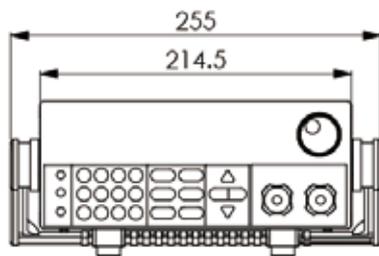
List mode allows users to generate a complex current sequence. Moreover, the mode change can be synchronized with an internal or external signal, to accomplish dynamic and precise test which can save cost for users. Users can edit step value, pulse width and slope sequence and meet a complex test request. A list file includes following parameters: file name step counts (range 2-84), time width of single step (0.00005s-3600s), step value and slope. The edited list file can be recalled easily. The DC load provides 7 nonvolatile registers to save list files setting for recall later. In the list mode, the load starts to run the list file once receiving a trigger signal, continue to run until end of the operation or receiving another trigger.



I Monitor

The current monitoring output terminal uses 0~10V analog output signal to represent the 0~full rated input current of the channel to which the terminal belongs. An external voltmeter or oscilloscope can be connected to display the change of input current.

Dimension



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Specification

Parameter		IT8511G+	
Rated (0°C-40°C)	Input Voltage	0-150V	
	Input Current	0-3A	0-30A
	Input Power	150W	
	Mov	0.12V at 3A	1.2V at 30A
CV mode	Range	0.1-18V	0.1-150V
	Resolution	1mV	10mV
	Accuracy	±(0.05%+0.025%FS)	
CC mode	Range	0-3A	0-30A
	Resolution	0.1mA	1mA
	Accuracy	±(0.05%+0.05%FS)	
CR mode*1	Range	0.05Ω-10Ω	10Ω-7.5KΩ
	Resolution	16bit	
	Accuracy	0.01%+0.08S *2	0.01%+0.0008S
CP mode*3	Range	150W	
	Resolution	10mW	
	Accuracy	0.1%+0.2%FS	
Dynamic mode	Dynamic mode		
	CC mode		
	T1 & T2	20μS-3600S /Res:1 μS	
	Accuracy	2μS±100ppm	
	Up/down slope*4	0.0001-0.2A/μS	0.001-1.5A/μS
Up/down slope*5	≈10μS	≈10μS	
Measuring range			
Voltage Readback	Range	0-18V	0-150V
	Resolution	0.1 mV	1 mV
	Accuracy	±(0.025%+0.025%FS)	
Current Readback	Range	0-3A	0-30A
	Resolution	0.1mA	1mA
	Accuracy	±(0.05%+0.05%FS)	
Power Readback	Range	150W	
	Resolution	10mW	
	Accuracy	±(0.1%+0.2%FS)	
Protected range			
OPP	≈160W		
OCP	≈3.3A	≈33A	
OVP	≈155V		
OTP	≈85°C		
Specifications			
Short circuit	Current (CC)	≈3.3/3A	≈33/30A
	Voltage (CV)	0V	
	Power (CR)	≈40mΩ	≈40mΩ
Input terminal impedance	250kΩ		
Dimension	214.5mm*88.2mm*354.6mm		

*This information is subject to change without notice

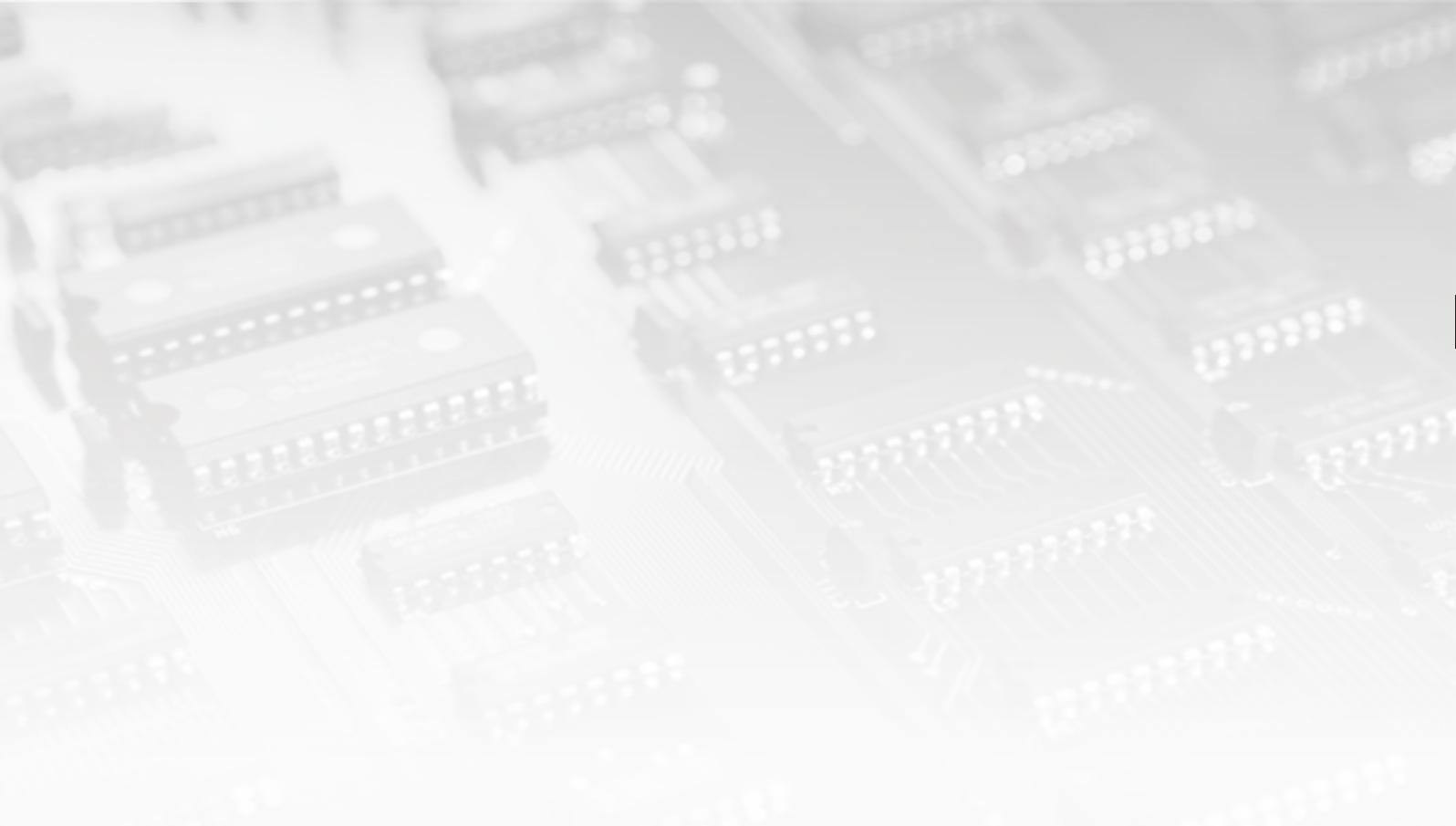
*1 Voltage/current input value is not less than 10% FS (FS is full range)

*2 Range of resistance readback value: $(1/(1/R+(1/R)*0.01%+0.08), 1/(1/R-(1/R)*0.01%-0.08))$

*3 Voltage/current input value is not less than 10%FS

*4 Rise/fall slope: 10%-90% current rise slope from 0 to maximum current

*5 Minimum rise time: 10%-90% current rise time



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This information is subject to change without notice. For more information, please contact ITECH.

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