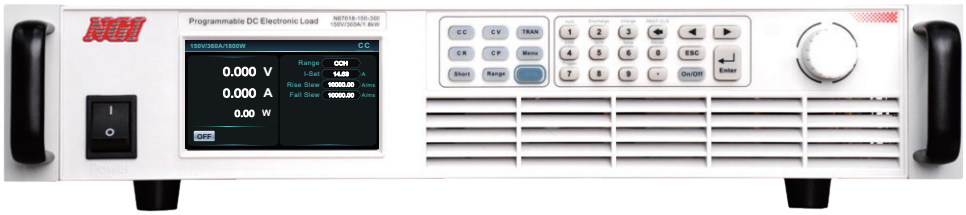
N67000 Series High Speed Programmable DC Electronic Load



Product Introduction

N67000 series is an high speed programmable DC electronic load with high reliability, high precision and multi-function. N67000 series has three specifications: 600W/1200W/1800W. It can be up to 1.8kW in standard 2U and 19 inch chassis, supporting parallel control and can realize power expansion through master+slave. N67000 supports three ranges of voltage, current, power and resistance, and provides high-precision measurement, which makes the test range wider of a single unit.

N67000 series features rich functionality and powerful performance. It has a single-unit loading speed as high as 60A/μs, and when paralleled, the slope exceeds 100A/μs. With 8 operation modes, N67000 supports sequence test, dynamic test, discharge test, charge test, OCP/OPP test, short-circuit simulation, equivalent DC internal resistance (DCIR) test (optional), AC impedance test, arbitrary waveform load test, etc. It supports local/remote control, with LAN/RS232/CAN interface, USB HOST interface (waveform import), digital input and output interface, analog input and output interface as standard, and optional GPIB interface as optional. All these make the N67000 series suitable for various testing scenarios such as sensors, AI chips, high-speed switch-mode power supplies, server power supplies, and scientific research experiments.

Application Fields

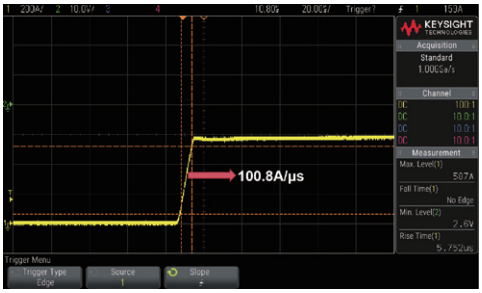
- Testing of server power supply, UPS, communication power supply
- Testing of sensors, AI chips
- Discharge testing of fuel cells, power batteries, lead storage batteries
- Testing of power electronic components
- Aging test of fuses and relays

Main Features

- Standalone power range: 600W/1200W/1800W
- Current range: 0~120A/0~240A/0~360A
- CV, CC, CP, CR three ranges, wide measurement range
- Supporting SEQ test, discharge test, charge test, OCP/OPP test and short-circuit simulation
- 8 operation modes: CC, CV, CP, CR, CV+CC, CR+CC, CV+CR, CP+CC
- Programmable protection, OCP, OCP, OPP, OTP and reverse connection detection
- Time measurement, rise/fall time measurement accuracy: 1μs
- Supporting 100 groups of parameters to be saved when powered off and easy to recall
- Supporting MPPT maximum power point tracking function
- Equivalent DC internal resistance (DCIR) test (optional)
- LAN/RS232/CAN as standard interface, GPIB as optional interface
- Voltage measurement accuracy: 0.05%+0.05%F.S.
- Current measurement accuracy: 0.1%+0.1%F.S.

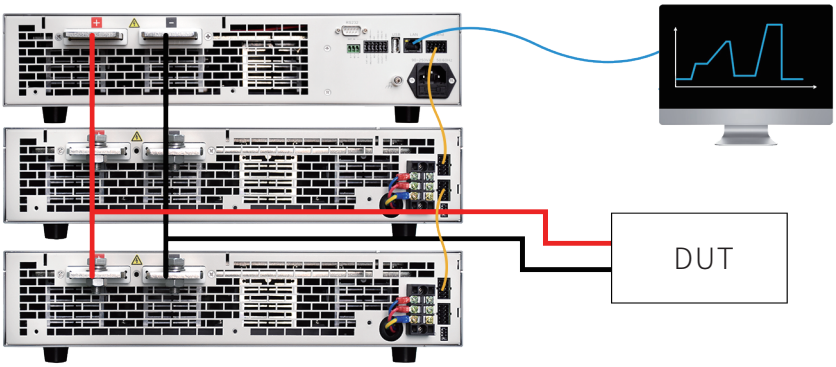
Ultra high speed response with μs-level loading capability

With a current loading speed of up to 60A/μs for a single unit and a slope of over 100A/μs for multiple units in parallel, N67000 meets the needs of testing scenarios such as sensors, AI chips, and high-speed switching power supplies.In power supply testing, when the power supply needs to quickly adjust its output to meet load changes, the rapid response capability ensures the accuracy of test results. In testing systems, N67000 series can more accurately simulate load changes under actual working conditions, thereby providing a more realistic testing environment.



Parallel connection for power extension

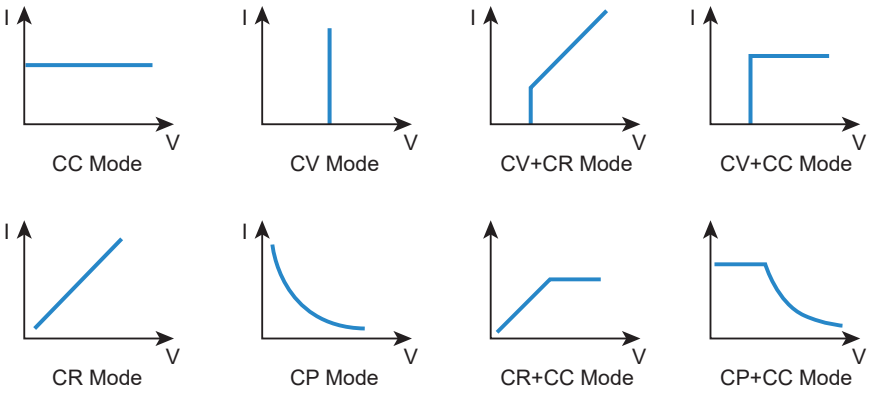
N67000 supports parallel connection by master+slave and active currentsharing. When the load power needs to be increased, models with the same voltage specification can be connected in parallel (master + slave) to achieve the required current and power. When using N67000, users only needs to set current on the master. The slave current will be distributed automatically, which simplifies the operation steps.



▲ Master+Slave Parallel Connection Diagram

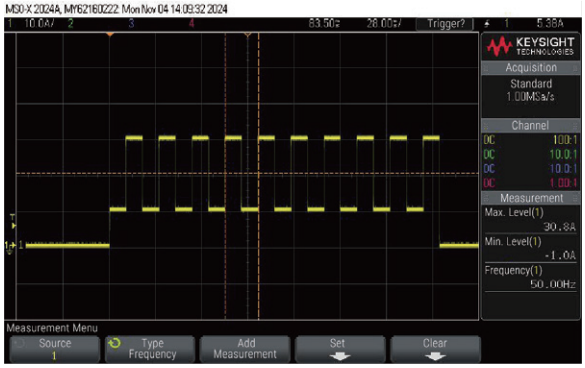
Multiple operating modes for multiple test scenarios

N67000 supports four normal working modes: CC, CV, CP, and CR. In order to cope with the change of load characteristics in the actual test process, N67000 has also been developed with CV+CC, CR+CC, CV+CR, CP+CC four combined working modes. For example, CR+CC is suitable for the startup test of power supply to prevent overcurrent protection when the power supply is turned on. CV+CR can replace the setting application of Von point. CV+CC can simulate the working mode transition process of battery charging. Users can choose different working modes for test according to their actual situation.



High speed dynamic mode, with dynamic frequency sweep

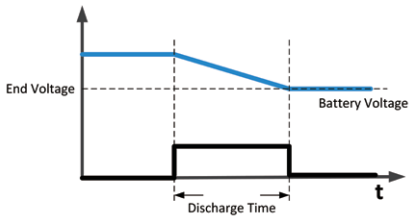
N67000 has a high-speed dynamic mode. The dynamic characteristics of the DC power supply can be tested by simulating the dynamic load behavior of the power supply through the dynamic mode. N67000 provides dynamic frequency sweep and programmable dynamic mode, including CCD constant current dynamic, CVD constant voltage dynamic, CRD constant resistance dynamic, and CPD constant power dynamic. Programmable dynamic load mode allows setting of high/low range, rise/fall slew rate etc.



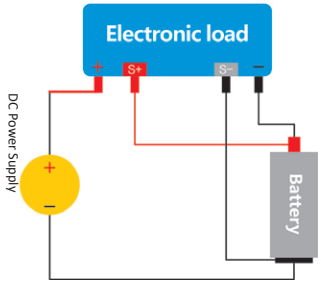
▲ Dynamic current waveform

Charge/discharge test

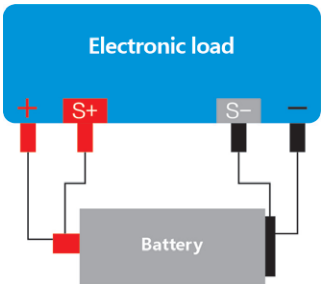
Users can set different conditions on the front panel to meet their test demands. For example, when battery voltage is lower than initial voltage, N67000 internal counter will start counting. The counter will stop working until the battery voltage drops to cut-off voltage.



▲ Discharge Test Graph



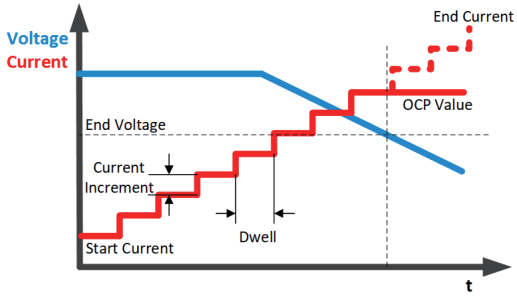
▲ Charge Wiring



▲ Discharge Wiring

OCP (over current protection) test

During OCP test, N67000 will load under CC mode and check whether the DUT voltage is lower than cut-off voltage. If lower, N67000 will record the present loading current as the test result and shut the input to stop the test. If the DUT voltage is higher than cut-off voltage, N67000 will increase the loading current until the DUT voltage is lower than cut-off voltage or it reaches the Max. loading current.



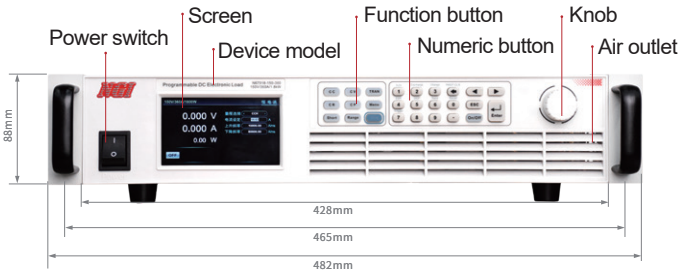
▲ OCP Test Diagram

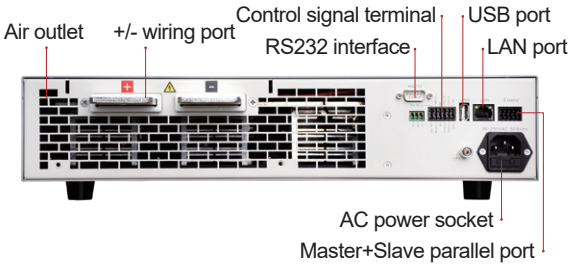
Quick Selection

Model	Specification	Size
N67006-150-120	150V/120A/600W	19inch/2U
N67012-150-240	150V/240A/1.2kW	19inch/2U
N67018-150-360	150V/360A/1.8kW	19inch/2U
N67042-150-840	150V/840A/4.2kW	19inch/4U
N67066-150-1320	150V/1320A/6.6kW	19inch/6U
N67090-150-1800	150V/1800A/9kW	19inch/8U

Model	Specification	Size
N67114-150-2280	150V/2280A/11.4kW	19inch/10U
N67138-150-2760	150V/2760A/13.8W	19inch/12U
N67162-150-3240	150V/3240A/16.2kW	19inch/14U
N67186-150-3720	150V/3720A/18.6kW	19inch/16U
N67210-150-4200	150V/4200A/21kW	19inch/18U
N67234-150-4680	150V/4680A/23.4kW	19inch/20U

Product Dimension





Technical Data Sheet

Model	N67006-150-120			N67012-150-240			N67018-150-360		
Voltage	150V								
Current	120A			240A			360A		
Power	600W			1200W			1800W		
Min. Operating Voltage	0.7V								
CV Mode									
Range	0~15V	0~75V	0~150V	0~15V	0~75V	0~150V	0~15V	0~75V	0~150V
Setting Resolution	1mV	1mV	10mV	1mV	1mV	10mV	1mV	1mV	10mV
Setting Accuracy (23±5℃)	0.05%+0.05%F.S.								
Readback Resolution	0.1mV	1mV	1mV	0.1mV	1mV	1mV	1mV	1mV	10mV
Readback Accuracy (23±5℃)	0.05%+0.05%F.S.								
CC Mode									
Range	0~1.2A	0~12A	0~120A	0~2.4A	0~24A	0~240A	0~3.6A	0~36A	0~360A
Setting Resolution	0.1mA	1mA	10mA	0.1mA	1mA	10mA	0.1mA	1mA	10mA
Setting Accuracy (23±5℃)	0.1%+1%F.S.	0.1%+0.1%F.S.		0.1%+1%F.S.	0.1%+0.1%F.S.		0.1%+1%F.S.	0.1%+0.1%F.S.	
Readback Resolution	10μA	0.1mA	1mA	10μA	0.1mA	1mA	10μA	0.1mA	1mA
Readback Accuracy (23±5℃)	0.1%+1%F.S.	0.1%+0.1%F.S.		0.1%+1%F.S.	0.1%+0.1%F.S.		0.1%+1%F.S.	0.1%+0.1%F.S.	
CP Mode									
Range	0~6W	0~60W	0~600W	0~12W	0~120W	0~1200W	0~18W	0~180W	0~1800W
Setting Resolution	0.0001W	0.001W	0.01W	0.001W	0.01W	0.1W	0.001W	0.01W	0.1W
Setting Accuracy (23±5℃)	0.2%+0.2%F.S.								
Readback Resolution	0.00001W	0.0001W	0.01W	0.0001W	0.001W	0.01W	0.0001W	0.001W	0.01W
Readback Accuracy (23±5℃)	0.1%+0.1%F.S.								
CR Mode									
Range	1Ω~62.5kΩ	0.1Ω~6.25kΩ	0.01Ω~625Ω	1Ω~31.25kΩ	0.1Ω~3.125kΩ	0.01Ω~312.5Ω	1Ω~20.83kΩ	0.1Ω~2.083kΩ	0.01Ω~208.3Ω
Setting Resolution	1Ω	0.1Ω	0.01Ω	1Ω	0.1Ω	0.01Ω	1Ω	0.1Ω	0.01Ω
Setting Accuracy (23±5℃)	(Vin/Rset)*0.1%+0.1%IF.S.								
Slew Rate									
Current	0.001~0.2A/μs	0.001~2A/μs	0.001~20A/μs	0.001~0.4A/μs	0.001~4A/μs	0.001~40A/μs	0.001~0.6A/μs	0.001~6A/μs	0.001~60A/μs
Power	0.001~0.2A/μs	0.001~2A/μs	0.001~20A/μs	0.001~0.4A/μs	0.001~4A/μs	0.001~40A/μs	0.001~0.6A/μs	0.001~6A/μs	0.001~60A/μs
Resistance	0.001~0.2A/μs	0.001~2A/μs	0.001~20A/μs	0.001~0.4A/μs	0.001~4A/μs	0.001~40A/μs	0.001~0.6A/μs	0.001~6A/μs	0.001~60A/μs
CCD Mode									
T1&T2	0.005~60000ms								
Resolution	1μs								
Accuracy (23±5℃)	10μs+100ppm								
Rise/Fall Slew Rate	0.001~0.2A/μs	0.001~2A/μs	0.001~20A/μs	0.001~0.4A/μs	0.001~4A/μs	0.001~40A/μs	0.001~0.6A/μs	0.001~6A/μs	0.001~60A/μs
Min. Rise Time	6μs								
Others									
Input Impedance	0.21MΩ(Typical)								
Protection Function	OVP/OCP/OPP/OTP/RV								
Interface	USB(Waveform import)/LAN/RS232/CAN								
Communication Protocol	Modbus-RTU standard protocol, CANOPEN standard protocol, SCPI standard protocol								
Communication Response Time	≤5ms								
AC Input	AC 100V~240V, current ＜ 0.5A, frequency 47Hz~63Hz								
Temperature	Operating temperature: 0℃~40℃, storage temperature: -20℃~60℃								
Operating Environment	Altitude <2000m, relative humidity: 5%~90%RH(non-condensing), atmospheric pressure: 80~110kPa								
Net Weight	Approx. 13.7kg			Approx. 15.7kg			Approx. 17.7kg		
Dimension	88.0(H)*482.0(W)with handle*664.5(D)mm								

Note 1: For other specifications, please contact NGI.
Note 2: All specifications are subject to change without notice.