N35100 Series Bidirectional Programmable DC Power Supply

Product Introduction

The N35100 series is a bidirectional programmable DC power supply with dual quadrant, integrating bidirectional power supply and regenerative load to supply and absorb current, so as to save the power consumption and reduce the space heat dissipation, which can greatly reduce the test cost. N35100 series provides high precision measurement and multiple testing functions, can also be configured with photovoltaic simulation, battery simulation and other software to help users realize accurate and efficient testing in multiple scenarios.

Application Fields

- Energy storage applications, such as outdoor energy storage, UPS etc.
- Motor drive test applications, such as inverters, drives, motor controllers, etc.
- Battery-driven equipment, such as electric tools, electric vehicles, drones, etc.
- New energy vehicle field, such as vehicle inverters, circulation pumps, automotive electronics, etc.
- Low and medium power motors, DC-DC modules, etc.

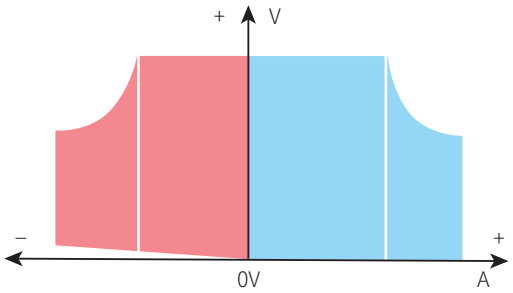
Main Features

- Power Range: 2.5kW/5kW/7.5kW
- Voltage: 80V; Current: ±55AA/±110A/±170A
- Small size and high power density, integrating 2500W in 1U height and half 19-inch width chassis
- Two quadrants seamless switching, the current between the DUT and the grid flow bidirectional
- Battery simulation, SEQ test, Charge/Discharge test supportable
- CC, CV, CR and CP mode
- Supporting PV matrix I-V curve simulation function (optional)
- CC/CV priority
- Adjustable voltage and current slew rate
- 3.2-inch HD color screen to display information
- LAN/RS232/RS485/CAN as standard
- Modbus-RTU/CAN open/SCPI standard protocol supportable

Seamless switch between source and load to regenerate energy

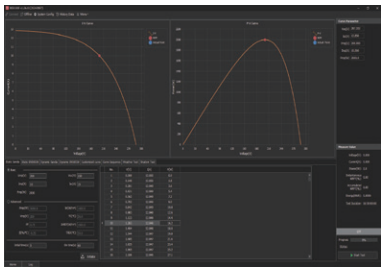
With the integration of power supply and regenerative load, N35100 series bidirectional power supply can be converted continuously seamlessly between the output and absorbed current, effectively avoiding voltage or current overshoot.

Under load mode, N35100 series can not only provide external power, but also absorb power, and return electric energy to the grid cleanly, the regenerative efficiency up to 90%. It is widely used in lithium battery, UPS, BOBC and other equipment testing.

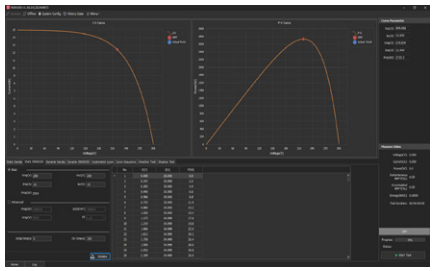


PV Cell Simulation (Optional)

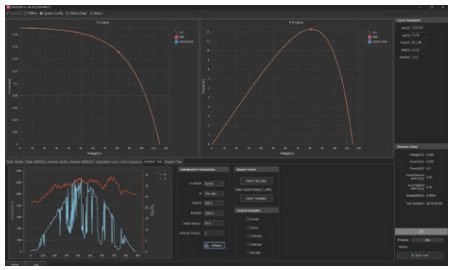
With the characteristics of accurate measurement, high stability, fast response speed, N35100 series DC power supply with NS91000 can accurately simulate the I-V, P-V curve of the solar cell matrix. After setting Vmp, Pmp and other parameters, it can generate reports in compliance with regulations, which is used to test the static and dynamic maximum power tracking efficiency of PV inverters, and also can provide support for system simulation and core equipment testing of microgrids, distributed photovoltaic and other power systems.



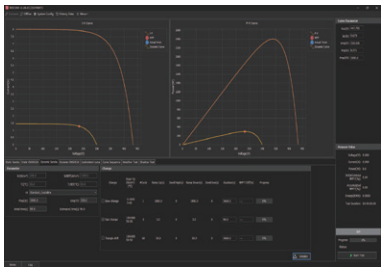
▲ Static Sandia



▲ Static EN50530

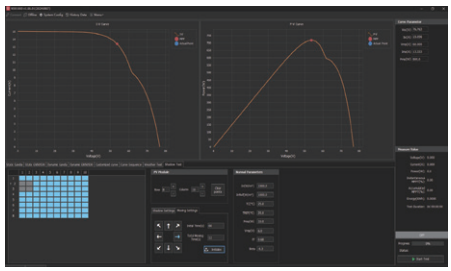


▲ Weather Test



▲ Dynamic Sandia

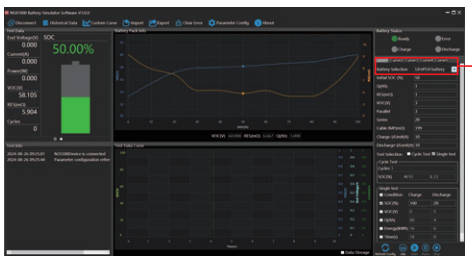
▲ Dynamic EN50530



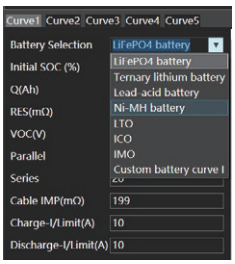
▲ Shadow Test

Battery Simulation

N35100 series with NS81000 battery simulator software to meet the user's needs for different types of battery simulation, and improve the test efficiency. NS81000 has 7 standard battery model libraries, users only need to select the corresponding battery type, configure the basic capacity and protection parameters, the software can quickly generate the corresponding type of battery characteristic curve; And there are 2 types of custom battery characteristic curve, engineers can be based on the actual measurement of the battery curve data, import the data into the software and carry out simulation.



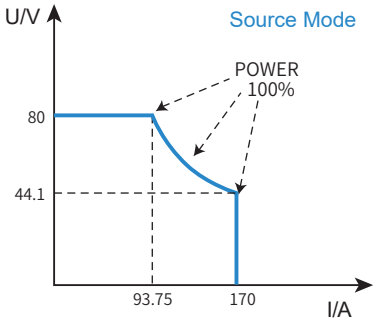
▲ Master Computer Interface



▲ Battery Type

Wide range output, One can be as multiple

N35100 series bidirectional DC power supply adopts a wide range design. A single power supply can output a wider range of voltage and current under the rated output power, satisfying engineers' test application scenarios for products of various voltage/current levels, and greatly reducing purchase cost and space occupancy in laboratory or automated test systems. The output power of the N35125-80-170 is 7500W. Maximum output voltage and output current reach 80V and 170A respectively, and a power supply can cover more applications for saving cost.

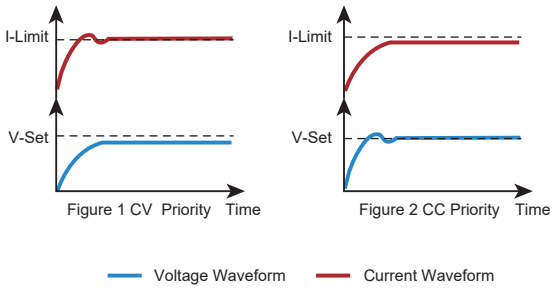


CC&CV priority function

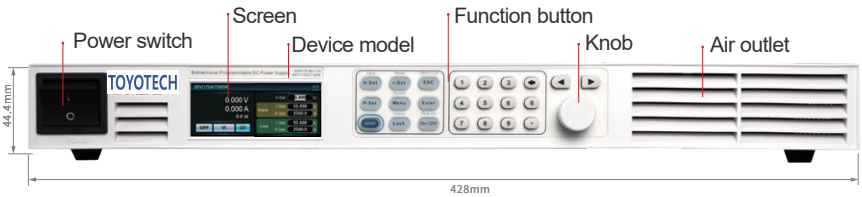
N35100 series has the function of setting voltage-control priority or current-control loop priority, it can adopt the optimal working mode for testing according to the characteristics of DUT, so as to better protect DUT.

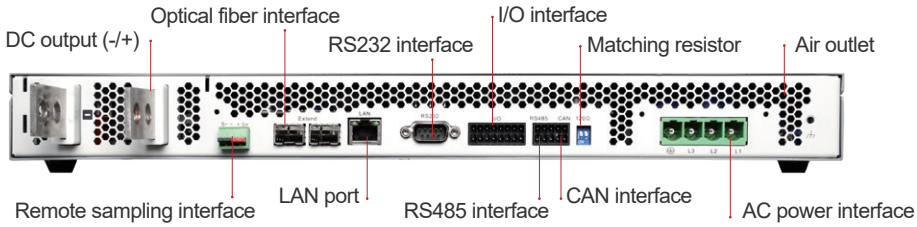
As shown in Figure 1, when it needs to reduce voltage overshoot during testing, such as powering a DC-DC power module, the voltage priority mode should be used to obtain a fast and smooth rising voltage.

As shown in Figure 2, when it needs to reduce current overshoot during testing or the component to be measured is low impedance such as in the battery charging scenario, the current priority mode should be used to obtain a fast and smooth rising current.



Product Dimension





Technical Data Sheet

Model	N35125-80-55	N35150-80-110	N35175-80-170
Voltage	0~80V		
Current	-55A~55A	-110A~+110A	-170A~+170A
Power	-2500W~+2500W	-5000W~+5000W	-7500W~+7500W
Minimum Operating Voltage	1V@55A	1.2V@110A	1.5V@170A
CV Mode			
Range	0~80V		
Setting Resolution	1mV		
Setting Accuracy(23±5°C)	0.02%+0.02%F.S.		
Readback Resolution	1mV		
Readback Accuracy(23±5°C)	0.02%+0.02%F.S.		
CC Mode			
Range	-55A~55A	-110A~+110A	-170A~+170A
Setting Resolution	1mA	10mA	
Setting Accuracy(23±5°C)	0.1%+0.1%F.S.		
Readback Resolution	1mA	10mA	
Readback Accuracy(23±5°C)	0.1%+0.1%F.S.		
CP Mode			
Range	-2500W~+2500W	-5000W~+5000W	-7500W~+7500W
Setting Resolution	0.1W		
Setting Accuracy(23±5°C)	0.5%+0.5%F.S.		
Readback Resolution	0.1W		
Readback Accuracy(23±5°C)	0.5%+0.5%F.S.		
CR Mode			
Range	0.01~800Ω		
Setting Resolution	10mΩ		
Setting Accuracy(23±5°C)	(Vin/Rset)*0.1%+0.1%IF.S.		
Series Internal Resistance Settings			
Range	0~2.5Ω	0~1.2Ω	0~0.85Ω
Setting Resolution	10mΩ		
Setting Accuracy(23±5°C)	≤1%F.S.		
Dynamic Characteristics			
Voltage Rise Time (no load 10%~90%)	≤10ms		
Voltage Rise Time (full load 10%~90%)	≤30ms		
Voltage Fall Time (no load 10%~90%)	≤30ms		
Voltage Fall Time (full load 10%~90%)	≤15ms		
Transient Response Time	≤1ms(10%~90% load variation)		
Line Regulation			
Voltage	≤0.01%+0.01%F.S.	Current	≤0.03%+0.03%F.S.
Load Regulation			
Voltage	≤0.01%+0.01%F.S.	Current	≤0.05%+0.05%F.S.
Temperature Coefficient			
Voltage	≤30PPM/°C	Current	≤50PPM/°C
Ripple Noise（20Hz~20MHz）			
Ripple(P-P)	≤200mV	Ripple(rms)	≤80mV
Others			
Efficiency	93%		
Power Factor	0.99		
Current Harmonic	≤5%		
Protection	OVP/OCP/OPP/UVP/UCP		
Interface	LAN/RS232/RS485/CAN		
Communication Response Time	5ms		
Isolation(Output to Ground)	500V DC		
AC Input	220V AC±10%, frequency 47Hz~63Hz, current≤16A	380V AC±10%, frequency 47Hz~63Hz, current≤10A	380V AC±10%,frequency 47Hz~63Hz, current≤16A
Temperature	Operating temperature: 0°C~40°C; Storage temperature:-10°C~70°C		
Operating Environment	Altitude <2000m; relative humidity: 5%~90%RH(non-condensing); atmospheric pressure: 80~110kPa		
Dimension	44.4mm(H)*214.0mm(W)*540.0(D)(with shield)	44.0mm(H)*428.0mm(W)*711.2(D)(with shield)	
Net Weight	Approx. 5.1kg	Approx. 13kg	Approx. 14kg