N83580 Series High-Performance Multi-channel Programmable Battery Simulator

Product Introduction

N83580 is a programmable battery simulator with low power, high accuracy and multi-channel. By adopting dual-quadrant design, the current can be charged and discharged, which can satisfy the needs of BMS test. N83580 standalone supports up to 8 channels, which can offer four-station test and meet the demands of ATE test in consumer electronics. The voltage & current of each channel can be set on application software. It supports power mode, charging mode, battery simulation, Internal resistance simulation, SOC simulation, fault simulation and other test functions.N83580 software is easy to use, which can meet demands of battery simulators in multi-channel, multi-parameter, and complex test environments. N83580 software supports multi-channel batch operation. Data and curve for each channel can be displayed. Meanwhile, data analysis and report function are supported

Application Fields

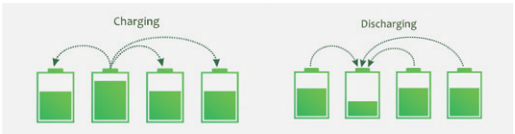
- BMS/CMS test for new energy vehicle, UAV and energy storage
- Battery maintenance device test
- Portable consumer electronics R&D and production, such as mobiles, bluetooth earphones, smartwatch, etc.
- Electric tools manufacturing test, such as electric screw driver

Main Features

- Voltage range: 0~5V/0~6V/0~15V
- Current range: -1~1A/-2~2A/-3~3A/-5~5A
- Voltage accuracy up to 0.01%+1mV
- nA level current measurement
- Voltage ripple noise low to 2mVrms
- Single device up to 8 channels
- 8 high precision DVM measurement, accuracy up to 0.1mV
- 3 groups of battery SOC model
- Support active/passive balanced testing
- Dual LAN port and RS232 CAN interface
- Supports battery simulation, internal resistance simulation, SOC simulation, fault simulation and other functions

Active/passive balancing test

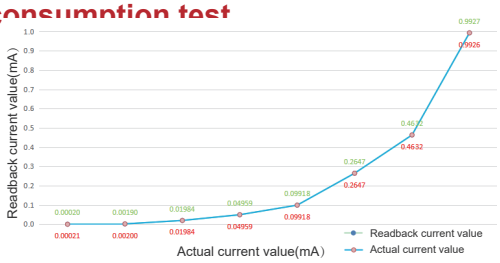
By bidirectional design, current input and output directions of each channel can be respectively controlled. Users can customize the battery charge and discharge model, which fully meets the requirements of BMS active/passive balancing test.



Active Balancing Diagram

Ultra-high accuracy, supporting static power consumption test

N83580 is high accuracy product1, and the current accuracy is up to 100nA. As shown in the figure below, Compared the measured current value of DMM with the read-back current value of N83580, the deviation value is Within 100nA. By supplying power to the product under test, the static power consumption in standby state can be visually tested, and unqualified products can be screened out.



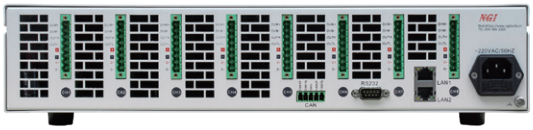
Measured current accuracy

High precision DVM measurement

In addition to the battery simulator function, the N83580 series also provides the basic circuit measurement function. The built-in 8-way high precision DVM digital voltmeter directly measures the TP point voltage in the circuit.N83580 series DVM voltage measurement is equipped with dual range ±5V/±30V, 5-bit half resolution, measuring accuracy up to 0.1mV.

Ultra-high integration, built-in fault simulation

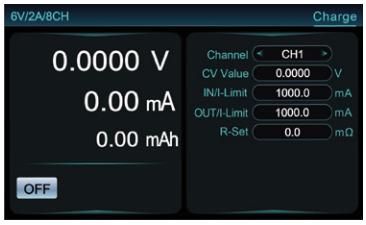
N83580 integrates 8 channels in 19-inch 2U size. Each channel has built-in positive & negative polarity short circuit, open circuit, and reverse polarity. Users can control directly on the front panel or on PC. The application of N83580 can eliminate use of external component for battery fault simulation, which can save cost and space for users.



Suitable for various specifications of BMS chip test

The N83580 series battery simulator supports a variety of battery simulation functions and features, including power mode, charge mode, battery simulation, SOC test, SEQ editing function, and fault simulation. N83580 series built in 3 groups of battery SOC model, support real simulation of battery discharge. N83580 series can achieve a variety of uses, streamline the test equipment, optimize the test process within one device. And N83580 internal circuit can be adapted to various specifications of BMS chip test. It can test standby static power consumption, create any specifications of the battery model, with powerful protection function, and without any battery safety hazards and risks.

▲ Power Mode



▲ Charge Mode

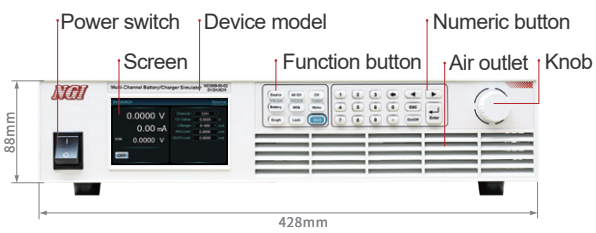
▲ Battery Simulation

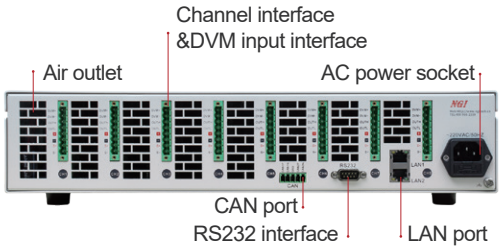
▲ Fault Simulation

▲ SOC Edit

▲ SEQ Edit

Product Dimension





Technical Data Sheet(1)

Model	N83580-06-01	N83580-06-02	N8358-060-03
Current	±1A/CH	±2A/CH	±3A/CH
Voltage	6V/CH	6V/CH	6V/CH
Power	6W/CH	12W/CH	18W/CH
Channels	8CH		
CV Mode			
Range	0~6V		
Setting Resolution	0.1mV		
Setting Accuracy (23±5℃)	0.6mV		
Readback Resolution	0.1mV		
Readback Accuracy（23±5℃）	0.6mV		
Voltage Settling Time	≤10ms		
Load Regulation	0.01%+1mV		
Line Regulation	0.01%+0.1mV		
Temperature Coefficient（0~40℃）	25ppm/℃		
Voltage Ripple (20Hz-20MHz)	≤2mVrms		
Current Measurement			
Range 1			
Range	-1~1A	-2~2A	-3~3A
Resolution	0.1mA		
Accuracy (23±5℃)	1mA	2mA	3mA
Temperature Coefficient（0~40℃）	50ppm/℃		
Range 2			
Range	-100mA~100mA	-200mA~200mA	-300mA~300mA
Resolution	0.01mA		
Accuracy (23±5℃)	100μA	200μA	300μA
Temperature Coefficient（0~40℃）	50ppm/℃		
Range 3			
Range	-1~1mA		
Resolution	0.1μA		
Accuracy (23±5℃)	1μA		
Temperature Coefficient（0~40℃）	50ppm/℃		
Range 4			
Range	-0.1~0.1mA		
Resolution	10nA		
Accuracy (23±5℃)	100nA		
Temperature Coefficient（0~40℃）	50ppm/℃		
Dynamic Characteristics			
Transient Voltage Drop [1]	<200mV		
Transient Recovery Time [2]	<100μs		
DVM Function			
Channels	8CH	Measurement Accuracy	0.1mV@±5V [3]；3mV@±30V
Measurement Range	±5V；±30V	Measurement Frequency	4Hz
Measurement Resolution	10uV@±5V；0.1mV@±30V	Input Impedance	10MΩ
Terminal	Plug-in Terminal	Temperature Coefficient（0~40℃）	30ppm/℃
Others			
Withstand voltage (output relative to earth)	1500VDC	Withstand voltage (channel to channel)	500VDC
Earth Leakage Current	<3.5mA@230VAC	Interface	LAN/RS232/CAN
AC Input	Voltage 100~240V AC, current ≤5A@220V，≤10A@110V, 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. 14.8kg		
Dimension	2U, 88.0(H)*482.0(W)with handle*557.0(D)mm		

Note [1]: Load varies from10% to 90% by full voltage output.
Note [2]: Load varies from 10% to 90% by full voltage output, with voltage recovering within 50mV of previous voltage.
Note [3]: 0.1mV was measured at 23±2℃, with temperature drift coefficient of 10ppm/℃ and time drift coefficient of 5ppm/1000 hours

Technical Data Sheet(2)

Model	N83580-05-05	N83580-15-01	N83580-15-05
Current	±5A/CH	±1A/CH	±5A/CH
Voltage	5V/CH	15V/CH	15V/CH
Power	25W/CH	15W/CH	75W/CH
Channels	8CH		
CV Mode			
Range	0~5V	0~15V	0~15V
Setting Resolution	0.1mV		
Setting Accuracy (23±5℃)	0.6mV	1.5mV	1.5mV
Readback Resolution	0.1mV		
Readback Accuracy (23±5℃)	0.6mV	1.5mV	1.5mV
Voltage Settling Time	≤10ms		
Load Regulation	0.01%+1mV	0.01%+2mV	0.01%+2mV
Line Regulation	0.01%+0.1mV	0.01%+0.2mV	0.01%+0.2mV
Temperature Coefficient (0~40℃)	25ppm/℃		
Voltage Ripple (20Hz-20MHz)	≤2mVrms	≤5mVrms	≤5mVrms
Current Measurement			
Range 1			
Range	-5~5A	-1~1A	-5~5A
Resolution	0.1mA		
Accuracy (23±5℃)	5mA	1mA	5mA
Temperature Coefficient (0~40℃)	50ppm/℃		
Range 2			
Range	-500mA~500mA	-100mA~100mA	-500mA~500mA
Resolution	0.01mA		
Accuracy (23±5℃)	500μA	100μA	500μA
Temperature Coefficient (0~40℃)	50ppm/℃		
Range 3			
Range	-1~1mA		
Resolution	0.1μA		
Accuracy (23±5℃)	1μA		
Temperature Coefficient (0~40℃)	50ppm/℃		
Range 4			
Range	-0.1~0.1mA		
Resolution	10nA		
Accuracy (23±5℃)	100nA		
Temperature Coefficient (0~40℃)	50ppm/℃		
Dynamic Characteristics			
Transient Voltage Drop [1]	<200mV	<400mV	<400mV
Transient Recovery Time [2]	<100μs	<200μs	<200μs
DVM Function			
Channels	8CH	Measurement Accuracy	0.1mV@±5V [3] ; 3mV@±30V
Measurement Range	±5V; ±30V	Measurement Frequency	4Hz
Measurement Resolution	10uV@±5V; 0.1mV@±30V	Input Impedance	10MΩ
Terminal	Plug-in Terminal	Temperature Coefficient (0~40℃)	30ppm/℃
Others			
Withstand voltage (output relative to earth)	1500VDC	Withstand voltage (channel to channel)	500VDC
Earth Leakage Current	<3.5mA@230VAC	Interface	LAN/RS232/CAN
AC Input	Voltage 100~240V AC, current ≤5A@220V, ≤10A@110V, 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. 14.8kg		
Dimension	2U, 88.0(H)*482.0(W)with handle*557.0(D)mm		

Note [1]: Load varies from10% to 90% by full voltage output.
Note [2]: Load varies from 10% to 90% by full voltage output, with voltage recovering within 50mV of previous voltage.
Note [3]: 0.1mV was measured at 23±2℃, with temperature drift coefficient of 10ppm/℃ and time drift coefficient of 5ppm/1000 hours