

# Battery Simulator Selection Guide

# **Application Principle**

The application principle of battery simulator is to replace the batteries in the R&D, production and test stage of electronic products, simulate the output state of real batteries or the charge & discharge characteristics of real batteries. It offers source output, charge & discharge simulation, SOC test, internal resistance simulation, fault simulation, etc. It can achieve high-accuracy voltage and current measurement and quickly verify the response of DUT under different battery conditions.



# **Application Fields**

R&D and manufacturing test for BMS, electric tools, consumer electronics, and other battery-powered products.

• Fault simulation     • Static power consumption test	BMS	• Cell simulation • Active/passive balancing test	EV	Fuel cell CVM		BMS chips	ţ,	CMS
		Fault simulation     Static power consumption test	Li-ion l energ	ion battery ergy storage		UPS energy storage		9

Battery-	<ul><li>Cell simulation</li><li>Charging source</li></ul>	B	Bluetooth headset		Smartwatch		Cellphone	5	E-cigare	tte
products	Static power consumption test	F	Power		Intelligent	-	Electric		Smart	
	Voltage monitoring	<u> </u>	bank	-2	lock		tool	יייי	robot	

# Overview







## N83624 Series High-accuracy Multi-channel Battery Simulator



#### **Product Introduction**

N83624 is a programmable battery simulator with low-power, multi-channel and high-accuracy, suitable for BMS/CMS test. It can also be used as a multi-channel high accuracy DC power supply. It is highly integrated, single device with up to 24 channels. Each channel is isolated, available for multi-channel series connection. N83624 is equipped with high-definition color LCD screen, available for local operation. Users can also set the voltage & current for each channel on application software, which is easy to use and can meet the needs of multi-channel and multi-data. The software can also provide graphs, data analysis and report function.

## **Application Fields**

- BMS/CMS test for new energy vehicle, UAV and energy storage
- Portable consumer Electronics R&D and production, such as mobiles, bluetooth earphones, smartwatch, etc.
- Calibration of voltage acquisition device, such as fuel cell voltage monitor

#### **Main Features**

Voltage range: 0-6V/0-15V

- Current range: 0-1A/0-3A/0-5A
- Single device with up to 24 channels, each channel isolated, series connection available
- Fast communication response , within 10ms for all channels programming response
- Fast dynamic response, voltage rise time less than 20µs(For 6V specification)
- Remote sense for high accuracy
- Professional application software, with data analysis and report
- High-definition color LCD screen, available for local operation
- Standard 19-inch 3U, available for rack installation
- LAN port and RS232 interface; dual LAN ports, convenient for cascade application
- µA level current measurement

#### **Ultra-high accuracy**

N83624 current resolution is as low as 0.1µA. Ultra-high accuracy, ultra-low ripple and noise index make N83624 an ideal choice for battery simulation application. The ultra-high accuracy of N83624 output and measurement can be directly used in product calibration and test, eliminating the use of external high-accuracy measuring instruments and saving cost for users.

Scoree Storee	Multi-Channel Battery/Charger Simulator N83624-06-01 6V/1A/6W/24CH
6.0000 V 0.0010 mA 0.0000 W Cm: m	

AN83624 Load Mode



# Ultra-high integration

N83624 integrates up to 24 channels that can be connected in series mode in 19-inch 3U size, providing a compact solution for ATE test systems in BMS, CMS and similar large-scale high-density production sites.

ELECTRONIC SOLUTION PROVIDER FOR INTELLIGENT MANUFACTURING



🔺 24 Channels in 3U

## Battery simulation suitable for BMS chips test of various specifications

N83624 series battery simulators have multiple functions and features, supporting Source, All CH, Charge, SOC Test, SEQ, Graph, etc.

One device can achieve multiple uses, streamline test equipment and optimize test procedures. N83624's internal circuit is optimized for different chips, which can be adapted to test BMS chips of various specifications.



#### Fast dynamic response

N83624 series has fast dynamic response capability. The response time of load varying from 10% to 90% and voltage recovering within 50mV of previous voltage is less than 100µs (For 6V specification), which can ensure the rising waveform of voltage or current is high-speed and without overshoot, and provide stable power for the DUT. This feature can meet the demand for product test with strict power requirements.









▲ N83624 Full-load Fall Time (21.5µs)

## LAN port and RS232 interface, easy for cascade application

N83624 series supports LAN port and RS232 interface. LAN port is designed with dual ports, which can be used for remote control and also for cascade application.

![](_page_3_Picture_8.jpeg)

# **Product Dimension**

![](_page_3_Figure_10.jpeg)

![](_page_3_Figure_11.jpeg)

![](_page_3_Picture_12.jpeg)

![](_page_4_Picture_1.jpeg)

# **Technical Data Sheet**

	Model	N83624-06-01 N83624-06-03 N83624-06-05 N83624-15-01												
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Temperature Coefficient (0-40 C)       30ppm/°C         Long-term Stability       Use the stability       Use the stability       Use the stability         Setting Value       0~1A       0~1mA       0~3A       0~1mA       0~5A       0~1mA       0~1mA       0~1mA         Setting Resolution       0.1mA       0.1µA       0.1µA <t< td=""><td>Readback Accuracy (23±5 C)</td><td colspan="9">1mA+2d 1µA+2d 3mA+2d 1µA+2d 5mA+2d 1µA+2d 1mA+2d 1µA+2</td></t<>	Readback Accuracy (23±5 C)	1mA+2d 1µA+2d 3mA+2d 1µA+2d 5mA+2d 1µA+2d 1mA+2d 1µA+2												
Long-term StabilityCurrent Protection LimitSetting Value $0 \sim 1A$ $0 \sim 1mA$ $0 \sim 3A$ $0 \sim 1mA$ $0 \sim 5A$ $0 \sim 1mA$ $0 \sim 1A$ $0 \sim 1mA$ Setting Resolution $0.1mA$ $0.1\muA$ $0.1\muA$ $0.1\muA$ $0.1\muA$ $0.1\muA$ $0.1\muA$ $0.1\muA$ $0.1\muA$ $0.1\muA$ Setting Resolution $0.1mA$ $0.1\muA$ $0.1\muA$ $0.1\muA$ $0.1\muA$ $0.1\muA$ $0.1\muA$ Setting Accuracy (23±5°C) $1mA+2d$ $1\muA+2d$ $3mA+2d$ $1\muA+2d$ $5mA+2d$ $1\muA+2d$ $1mA+2d$ Imperature Coefficient (0-40°C) $0.2mV$ $3mA+2d$ $1\muA+2d$ $1mA+2d$ $1\muA+2d$ Long-term Stability $UCTC$ $UCTC$ $UCTC$ $UCTC$ Long-term Stability $UCTC$ $UCTC$ $UCTC$ $UCTC$ Solation (Output to ground) $UCTC$ $UCTC$ $UCTC$ Isolation (Inter-channel) $UCTC$ $UCTC$ $UCTC$ Communication Response Time $All$ channels <10ms	Temperature Coefficient ( 0~40℃ )	30ppm/℃												
Current Protection LimitSetting Value $0 \sim 1A$ $0 \sim 1mA$ $0 \sim 3A$ $0 \sim 1mA$ $0 \sim 5A$ $0 \sim 1mA$ $0 \sim 1nA$ $0 \sim 1mA$ Setting Resolution $0.1mA$ $0.1\muA$ $0.1\muA$ $0.1\muA$ $0.1\muA$ $0.1\muA$ $0.1\muA$ $0.1\muA$ Setting Accuracy (23±5°) $1mA+2d$ $1\muA+2d$ $3mA+2d$ $1\muA+2d$ $5mA+2d$ $1\muA+2d$ $1mA+2d$ Setting Accuracy (23±5°) $1mA+2d$ $1\muA+2d$ $3mA+2d$ $1\muA+2d$ $5mA+2d$ $1\muA+2d$ $1mA+2d$ Importance Coefficient $\cdots$ $30ppm/°C$ $1\muA+2d$ $1mA+2d$ $1\muA+2d$ Long-term Stability $\cdots$ $100ppm/1000h$ $0.4mV$ Indextree Coefficient (Output to ground) $0.2mV$ $0.4mV$ Isolation (Output to ground) $1000VDC$ $0.4mV$ Isolation (Inter-channel) $500VDC$ $0.4mV$ Communication Response TimeAll channels <10ms	Long-term Stability	100ppm/1000h												
Setting Value $0~1A$ $0~1mA$ $0~3A$ $0~1mA$ $0~5A$ $0~1mA$ $0~1A$ $0~1mA$ Setting Resolution $0.1mA$ $0.1\muA$ $0.1\muA$ $0.1\muA$ $0.1\muA$ $0.1\muA$ $0.1\muA$ $0.1\muA$ $0.1\muA$ $0.1\muA$ Setting Accuracy (23±5°C) $1mA+2d$ $1\muA+2d$ $3mA+2d$ $1\muA+2d$ $5mA+2d$ $1\muA+2d$ $1mA+2d$ $1\muA+2d$ Temperature Coefficient (0-4°C°) $UA+2d$ $1\muA+2d$ $3mA+2d$ $1\muA+2d$ $5mA+2d$ $1\muA+2d$ $1mA+2d$ Long-term Stability $UA+2d$ $UA+2d$ $UA+2d$ $UA+2d$ $UA+2d$ $UA+2d$ Load Regulation $0.2mV$ $0.2mV$ $0.4mV$ solation (Output to ground) $UO0VDC$ $UA+2d$ $UA+2d$ Isolation (Inter-channel) $UA+2d$ $UA+2d$ $UA+2d$ Communication Response Time $All$ channels <10ms	Current Protection Limit													
Setting Resolution0.1mA0.1 $\mu$ A0.1mA0.1 $\mu$ A0.1mA0.1 $\mu$ A0.1mA0.1 $\mu$ ASetting Accuracy (23±5°C)1mA+2d1 $\mu$ A+2d3mA+2d1 $\mu$ A+2d5mA+2d1 $\mu$ A+2d1mA+2d1 $\mu$ A+2dTemperature Coefficient 0-40°C)30ppm/°C30ppm/°C100ppm/1000h100ppm/1000hLoad Regulation0.2mV0.4mVSolation (Output to ground)Solation (Inter-channel)0.2mV0.4mVSolation (Inter-channel)Communication Response TimeLAN/RS232All channels ≤10msInterfaceLAN/RS232AC InputSingle phase, 220V AC±10%, current <5A, frequency 47Hz~63Hz	Setting Value	0~1A	0~1mA	0~3A	0~1mA	0~5A	0~1mA	0~1A	0~1mA					
Setting Accuracy $(23\pm5^{\circ})$ 1mA+2d1µA+2d3mA+2d1µA+2d5mA+2d1µA+2d1mA+2d1µA+2dTemperature Coefficient $(0-40^{\circ})^{\circ}$ $30ppm/^{\circ}C$ $30ppm/^{\circ}C$ $30ppm/^{\circ}C$ $100ppm/1000h$ Long-term Stability $100ppm/1000h$ $0.2mV$ $0.4mV$ Isolation (Output to ground) $0.2mV$ $0.4mV$ Isolation (Inter-channel) $500VDC$ $500VDC$ Communication Response TimeAll channels ≤10msInterfaceLAN/RS232AC InputSingle phase, 220V AC±10%, current <5A, frequency 47Hz~63Hz	Setting Resolution	0.1mA 0.1µA 0.1mA 0.1µA 0.1mA 0.1µA					0.1mA	0.1µA						
Temperature Coefficient       30ppm/℃         Long-term Stability       100ppm/1000h         Others       Others         Load Regulation       0.2mV       0.4mV         Isolation (Output to ground)       1000VDC       Isolation (Inter-channel)         Solation (Inter-channel)       500VDC       Communication Response Time         All channels ≤10ms       Interface       LAN/RS232         AC Input       Single phase, 220V AC±10%, current <5A, frequency 47Hz~63Hz	Setting Accuracy(23±5℃)	1mA+2d 1µA+2d 3mA+2d 1µA+2d 5mA+2d 1µA+2d 1mA+2d 1µA+2d												
Long-term Stability       100ppm/1000h         Others       Others         Load Regulation       0.2mV       0.4mV         Isolation (Output to ground)       1000VDC       1000VDC         Isolation (Inter-channel)       500VDC       0.4mV         Communication Response Time       All channels ≤10ms       1000VDC         Interface       LAN/RS232       AC Input       Single phase, 220V AC±10%, current <5A, frequency 47Hz~63Hz	Temperature Coefficient ( 0~40℃ )	30ppm/℃												
Others         Load Regulation       0.2mV       0.4mV         Isolation (Output to ground)       1000VDC       1000VDC         Isolation (Inter-channel)       500VDC       500VDC         Communication Response Time       All channels ≤10ms       Interface         Interface       LAN/RS232       AC Input       Single phase, 220V AC±10%, current <5A, frequency 47Hz~63Hz	Long-term Stability	100ppm/1000h Others												
Load Regulation       0.4mv         Isolation (Output to ground)       1000VDC         Isolation (Inter-channel)       500VDC         Communication Response Time       All channels ≤10ms         Interface       LAN/RS232         AC Input       Single phase, 220V AC±10%, current <5A, frequency 47Hz~63Hz	Lood Dogulation	Others 0.4mV												
Isolation (lotter-channel)       5000VDC         Communication Response Time       All channels ≤10ms         Interface       LAN/RS232         AC Input       Single phase, 220V AC±10%, current <5A, frequency 47Hz~63Hz		1000VDC												
Communication Response Time       All channels ≤10ms         Interface       LAN/RS232         AC Input       Single phase, 220V AC±10%, current <5A, frequency 47Hz~63Hz	Isolation (Inter-channel)	500VDC												
Interface       LAN/RS232         AC Input       Single phase, 220V AC±10%, current <5A, frequency 47Hz~63Hz		All channels ≤10ms												
AC Input       Single phase, 220V AC±10%, current <5A, frequency 47Hz~63Hz         Temperature       Operating temperature: 0°C~40°C, storage temperature: -20°C~60°C         Operating Environment       Altitude <2000m, relative humidity: 5%~90%RH(non-condensing), atmospheric pressure: 80~110kPa		All Grannes 3 Toms												
Temperature       Operating temperature: 0°C~40°C, storage temperature: -20°C~60°C         Operating Environment       Altitude <2000m, relative humidity: 5%~90%RH(non-condensing), atmospheric pressure: 80~110kPa		ANV/R5232 ADDUL Single phase, 220V AC+10% current <5A frequency 47Hz~63Hz						7						
Operating Environment Altitude <2000m, relative humidity: 5%~90%RH(non-condensing), atmospheric pressure: 80~110kPa	Temperature	Operating temperature: $0^{\circ}$ ~40°C storage temperature: $-20^{\circ}$ ~60°C												
Not Woight Annoy 17kg	Operating Environment	Altitude <2000m relative humidity: 5%~00%RH(non condensing), atmospheric pressure: 90-410kPa												
	Net Weight													
Dimension         311 132 5(H)*//82 0(W).with handle*550 0/D.mm	Dimension	Αμμισχ. 1/ Kg												

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: For other specifications, please contact NGI.

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Note 4: All specifications are subject to change without notice.

![](_page_4_Picture_7.jpeg)