# N5800 Series Supercapacitor Capacitance & DCIR Tester

## Product Introduction

N5800 series is specially developed by NGI for the R&D and production of supercapacitors and batteries. The sampling rate is up to 1ms, and the charging and discharging process can be seamlessly switched, which can fully meet the test requirements of high accuracy for electrical parameters such as charging capacitance, discharging capacitance, charging DCIR, discharging DCIR, energy conversion efficiency, cycle life, etc. N5800 supports the test standards of six-step method, IEC62391 and QC/T741.

N5800 PC application software supports customization. Users can customize the test files according to the test procedure. The test results can be stored in database and exported in the formats of Excel and JPG.



## Application Fields

- R&D, production and quality inspection of supercapacitor
- Supercapacitor material research
- Other related fields of supercapacitor

## Main Features

- Current range: 0-50A/100A/200A/300A/400A/500A
- Voltage range: 0-5V
- Parameters test: CC charge, CC discharge, CV charge, cycle life, charging capacitance, discharging capacitance, DCIR, etc.
- Sampling rate up to 1ms
- Seamless transition between charging and discharging
- Multifunctional application software, supporting production sorting
- LED indicator light to display the channel status
- Data storage and analysis
- LAN interface

## Capacitance test

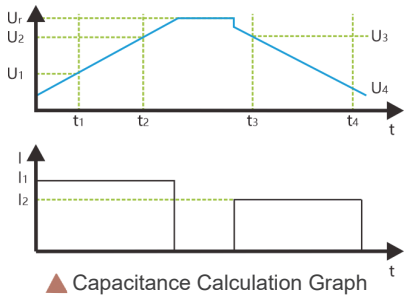
N5800 can measure the charging capacitance and discharging capacitance of supercapacitor. The test method is as follows: charge or discharge the measured supercapacitor under CC mode, record the time and voltage during the charging or discharging process, and calculate the capacitance by calculating the slew rate of the voltage and time during the process.

Users can choose voltage and time for calculation according to various measurement standards, such as IEC.

Charging capacitance calculation: $C=\frac{I_1*(t_2-t_1)}{U_2-U_1}$

Discharging capacitance calculation: $C=\frac{I_2*(t_4-t_3)}{U_3-U_4}$

| | |
|---|---|
| $U_r$ | Rated voltage |
| $U_1$ | Start voltage for charging capacitance |
| $U_2$ | End voltage for charging capacitance |
| $U_3$ | Start voltage for discharging capacitance |
| $U_4$ | End voltage for discharging capacitance |
| $I_1$ | Charging current |
| $I_2$ | Discharging current |

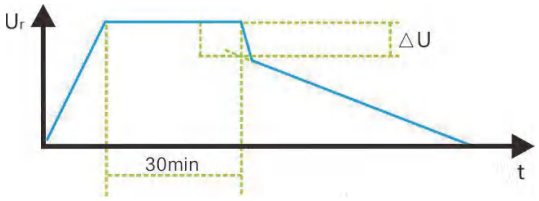



Capacitance Calculation Graph

## DCIR test

N5800 supports a variety of DCIR test methods: multi-pulse, single-pulse, charge-to-discharge, six-step test and IEC test, which can meet the test needs of most users. NGI core technology ensures that highly accurate results are obtained in various test methods.

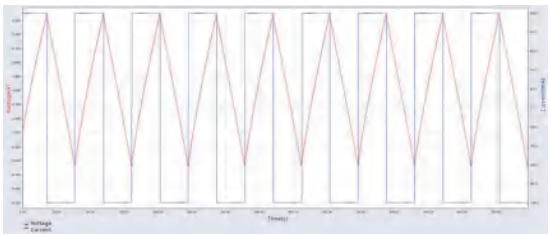
IEC DCIR calculation: $DCIR=\frac{\triangle U}{I}$



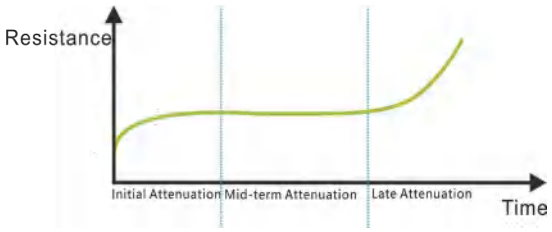

▲DCIR Test Theory (IEC Method)

## Life test

N5800 can measure the physical parameters of the supercapacitor during the repeated charging and discharging process and extract its attenuation curves. By analyzing the parameters and curves, users can obtain the expected life of supercapacitor in different application environments, charging and discharging cycles, and performance index at different stages. Life test results can be used to improve the materials, craft, storage and many other links.



▲Charge-discharge Cycle Diagram




▲Internal Resistance-Time Graph

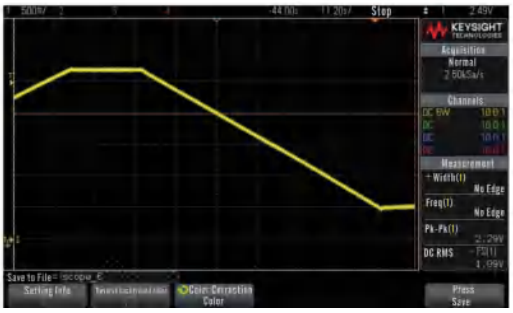
## Four-wire sense

During the supercapacitor test, a large current will be outputted, which will cause a voltage drop in the leads and affect the measurement accuracy. N5800 series adopts the four-wire sense system and directly acquires the voltage at DUT output terminals to avoid voltage loss and ensure the measurement accuracy.

## Fast response during charge-to-discharge

N5800 is designed with precision circuit to ensure fast and accurate charging and discharging transition. During the charging process, there is no overcharge during CC charging converting to CV charging, which can protect the DUT from being damaged.

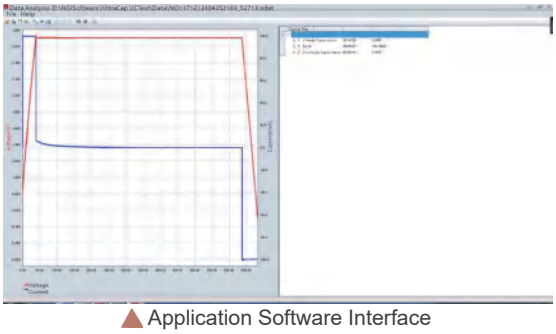
N5800 has the features of seamless transition from CV charging to CC charging and up to 1ms sampling rate, which can meet the test requirements of QC/T 741, six-step method, and charge-to-discharge method for DCIR.




▲CC to CV/CV to CC Transition Waveform

## Application software

- N5800 software adopts a platform design, which allows the users to customize the test process according to their requirements.
- N5800 is designed with power limit circuit and has fast response, which can prevent N5800 from being damaged due to over power.
- N5800 adopts shielding technology, which has wide adaptability to harsh test environment, and improves the anti-interference ability.



▲Application Software Interface

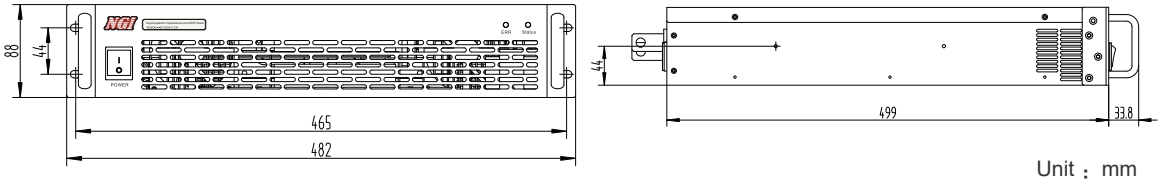
- Office-like interface, independent display of each channel, supporting voltage and current waveform generation, and result display in tabular form make this professional software multifunctional and easy-to-use.

## Technical Data Sheet

| Model | N5800A-05051 | N5800A-05101 | N5800A-05201 | N5800A-05301 | N5800A-05401 | N5800A-05501 |
|---|---|---|---|---|---|---|
| Current | 50A | 100A | 200A | 300A | 400A | 500A |
| Voltage | 5V | | | | | |
| Power | 250W | 500W | 1000W | 1500W | 2000W | 2500W |
| Channels | 1 | | | | | |
| | CC Mode | | | | | |
| Range | 0-50A | 0-100A | 0-200A | 0-300A | 0-400A | 0-500A |
| Setting Resolution | 1mA | 2mA | 4mA | 6mA | 8mA | 10mA |
| Setting Accuracy | 0.05%+0.05%F.S. | | | | | |
| | CV Mode | | | | | |
| Range | 5V | | | | | |
| Setting Resolution | 0.08mV | | | | | |
| Setting Accuracy | 0.05%+0.05%F.S. | | | | | |
| | Internal Resistance Measurement | | | | | |
| | Range 0 | | | | | |
| Output Range | 0-100mV | | | | | |
| Resolution | 50μV | | | | | |
| Accuracy | 0.1%+0.1%F.S. | | | | | |
| | Range 1 | | | | | |
| Output Range | 0-50mV | | | | | |
| Resolution | 25μV | | | | | |
| Accuracy | 0.1%+0.1%F.S. | | | | | |
| | Range 2 | | | | | |
| Output Range | 0-30mV | | | | | |
| Resolution | 15μV | | | | | |
| Accuracy | 0.1%+0.1%F.S. | | | | | |
| | Range 3 | | | | | |
| Output Range | 0-15mV | | | | | |
| Resolution | 7.5μV | | | | | |
| Accuracy | 0.1%+0.1%F.S. | | | | | |
| | Current Measurement | | | | | |
| Range | 0-50A | 0-100A | 0-200A | 0-300A | 0-400A | 0-500A |
| Readback Resolution | 24bits | | | | | |
| Readback Accuracy | 0.05%+0.05%F.S. | | | | | |
| | Voltage Measurement | | | | | |
| Range | 0-5V | | | | | |
| Readback Resolution | 24bits | | | | | |
| Readback Accuracy | 0.02%+0.02%F.S. | | | | | |
| | Others | | | | | |
| Operating Temperature | -10℃-40℃ | | | | | |
| Relative Humidity | 5%-90% | | | | | |
| AC Input | 220V AC±10%, frequency 47Hz-63Hz(Please refer to the nameplate.) | | | | | |
| Atmospheric Pressure | 5%-90% | | | | | |
| Net Weight | Approx.13kg | Approx.25kg | Approx.50kg | Approx.75kg | Approx.100kg | Approx.125kg |
| Dimension | 2U, 88(H)*482(W)*499(D)mm | | 4U | 6U | 8U | 10U |

For other specifications, please contact NGI.

## Product Dimension




Unit： mm