

N8130 Series Supercapacitor Capacitance & DCIR Tester



Product Introduction

N8130 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. N8130 supports the test standards of six-step method, IEC62391 and QC/T741.

N8130 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: 0-50mA/500mA/2A/10A
- ▶ Voltage range: 0-6V
- ▶ 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

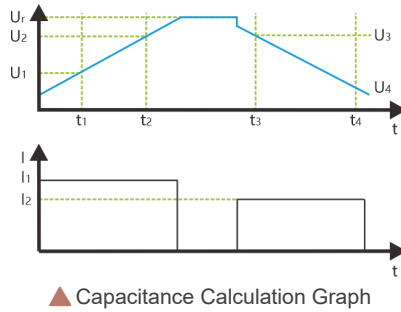
N8130 can measure the charging capacitance and discharging capacitance of supercapacitor. The test method is as follows: charge or discharge the measured supercapacitor under CC mode, record the time and voltage during the charging or discharging process, and calculate the capacitance by calculating 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.

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

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

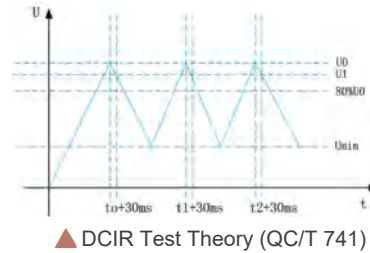
U_r	Rated voltage
U_1	Start voltage for charging capacitance
U_2	End voltage for charging capacitance
U_3	Start voltage for discharging capacitance
U_4	End voltage for discharging capacitance
I_1	Charging current
I_2	Discharging current



DCIR test

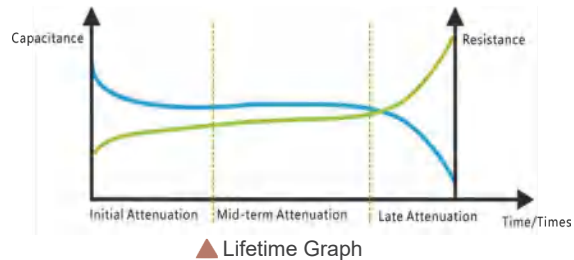
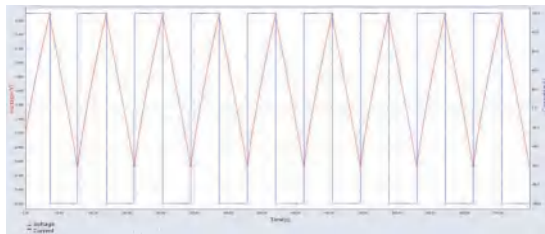
N8130 supports a variety of DCIR test methods: multi-pulse, single-pulse, charge-to-discharge, six-step test and IEC test, which can meet the test needs of most users. NGI core technology ensures that highly accurate results are obtained in various test methods.

$$QC/T\ 741\ DCIR\ calculation: DCIR = \frac{(U_r - U_1) + (U_r - U_2) + (U_r - U_3)}{3 * I}$$



Life test

N8130 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.



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. N8130 series adopts the four-wire system sense and directly acquires the voltage at supercapacitor output terminals to avoid voltage loss and ensure the measurement accuracy.

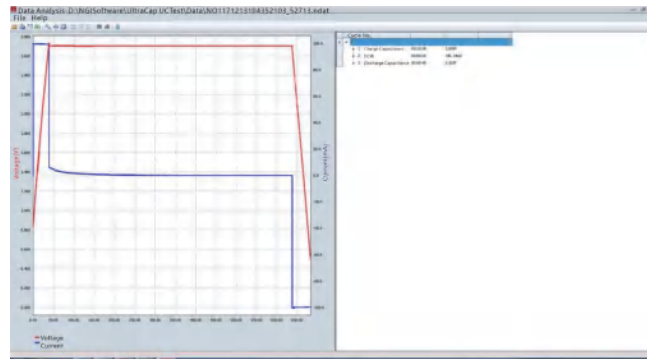
Test fixture

Considering the test application scenarios of different scales, NGI provides two types of test fixture: Kelvin clamp and 12-channel special fixture. Both test fixtures support four-wire connection.



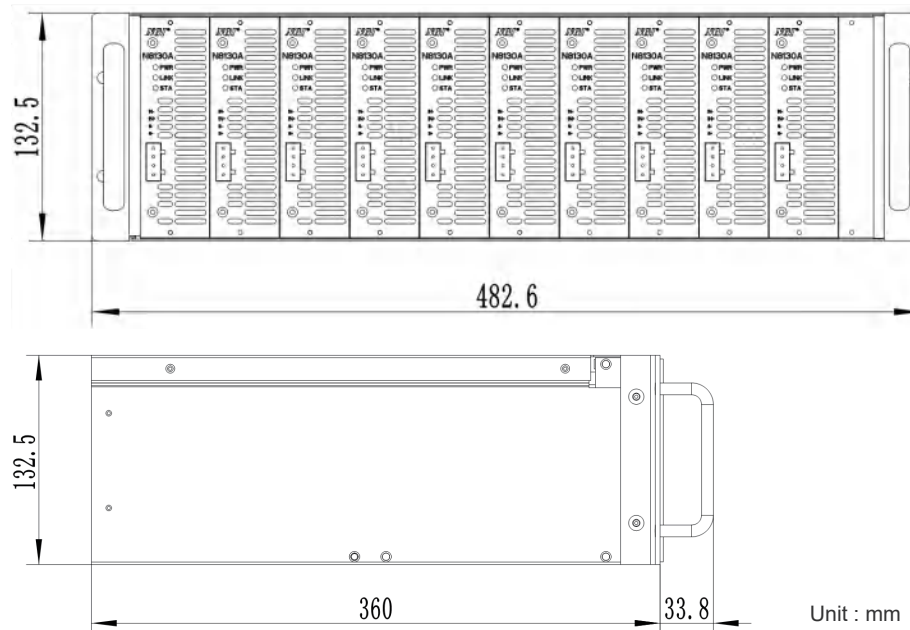
Application software

- N8130 software adopts a platform design, which allows users to customize the test process according to their requirements.
- 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.
- N8130 is designed with power limit circuit and has fast response, which can prevent N8130 from being damaged due to over power.
- N8130 adopts shielding technology, which has wide adaptability to harsh test environment, and improves the anti-interference ability.



▲ Application Software Interface

Product Dimension



Unit : mm

Technical Data Sheet

Model	N8130A-06005	N8130A-060A5	N8130A-06020	N8130A-06100
Current	50mA	500mA	2A	10A
Voltage	6V	6V	6V	6V
Power	0.3W	3W	12W	60W
Channels	10CH	10CH	10CH	10CH
CC Mode				
Range	0-50mA	0-500mA	0-2A	0-10A
Setting Resolution	0.8 μ A	8 μ A	34 μ A	167 μ A
Setting Accuracy	0.05%+0.05%F.S.			
CV Mode				
Range	6V			
Setting Resolution	0.1mV			
Setting Accuracy	0.05%+0.05%F.S.			
Internal Resistance Measurement				
Range 0				
Output Range	0-100mV			
Resolution	50 μ V			
Accuracy	0.1%+0.1%F.S.			
Range 1				
Output Range	0-50mV			
Resolution	25 μ V			
Accuracy	0.1%+0.1%F.S.			
Range 2				
Output Range	0-30mV			
Resolution	15 μ V			
Accuracy	0.1%+0.1%F.S.			
Range 3				
Output Range	0-15mV			
Resolution	7.5 μ V			
Accuracy	0.1%+0.1%F.S.			
Current Measurement				
Range	0-50mA	0-500mA	0-2A	0-10A
Readback Resolution	24bits			
Readback Accuracy	0.05%+0.05%F.S.			
Voltage Measurement				
Range	0-6V			
Readback Resolution	24bits			
Readback Accuracy	0.02%+0.02%F.S.			
Others				
Operating Temperature	-10 $^{\circ}$ C-40 $^{\circ}$ C	Relative Humidity		5%-90%
Atmospheric Pressure	80-100kPa			
AC Input	220V AC \pm 10%, frequency 47Hz-63Hz(Please refer to the nameplate.)			
Dimension	3U, 132.5(H)*482.6(W)*360(D)mm			
Net Weight	Approx. 13.5kg			

For other specifications, please contact NGI.