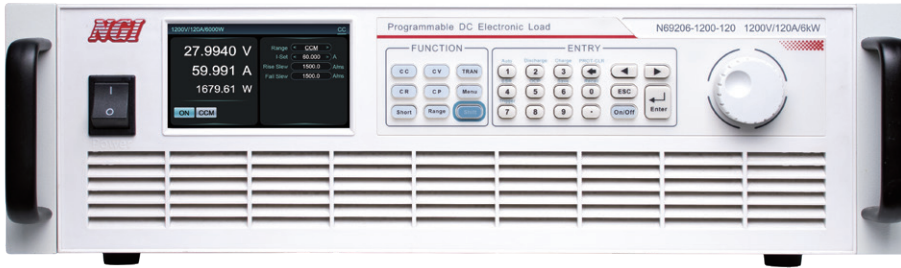


N69200 Series High Performance High Power Programmable DC Electronic Load



Product Introduction

N69200 series is a high performance high power programmable DC electronic load with high reliability, high precision and multi-function. N69200 series has three voltage specifications: 150V/600V/1200V/1600V/2400V. It can be up to 6kW in standard 3U and 19 inch chassis, supporting parallel control and can realize power expansion through master+master and master+slave. N69200 supports three ranges of voltage, current, power and resistance, and provides high-precision measurement, which makes the test range wider of a single unit. N69200 has adjustable CV loop speed, fast current rise and fall speed, 8 operation modes, supports sequence test, dynamic test, discharge test, charge test, OCP/OPP test, short-circuit simulation, equivalent DC internal resistance (DCIR) test (optional), arbitrary waveform load test, etc. It supports local/remote control, with LAN/RS232/CAN interface, USB HOST interface (waveform import), digital input and output interface, analog input and output interface as standard, and optional GPIB interface as optional. N69200 series adopts standard 3U height 19-inch width chassis, based on modular design concept, doubles the power density, and develops various functions, together with the powerful product performance index, it can effectively solve various needs in testing, and it is a trustworthy product for R&D testing and ATE testing system.

Application Fields

- ▶ New energy fields, such as fuel cell stacks and engines, lithium battery packs, supercapacitors, photovoltaic modules, etc.
- ▶ High-power DC power supply, such as industrial power supply, server power supply, communication power supply, etc.
- ▶ Power electronic products, such as UPS power supply, DC-DC converter, on-board charger, etc.
- ▶ Power supply, such as generator set, energy storage system, DC charging pile, etc.
- ▶ DC high-power devices, such as contactors/relays, automotive high-voltage accessories, etc.
- ▶ Electric vehicles, semiconductors, aerospace, etc.

Main Features

- ▶ Standalone input power: 2~60kW, 3U/6kW high power density
- ▶ Voltage range: 0~150V/0~600V/0~1200V/0~1600V/0~2400V
- ▶ Current range: up to 2500A
- ▶ CV, CC, CP, CR three ranges, wide measurement range
- ▶ Voltage measurement accuracy: 0.015%+0.015% F.S.
- ▶ Current measurement accuracy: 0.04%+0.04% F.S.
- ▶ 1.6 times power loading capacity in a short time (<3s)
- ▶ Adjustable CV loop speed, matching different power supplies
- ▶ Voltage/current sampling rate: up to 500kHz
- ▶ Supporting parallel control, and realizing power expansion via master+master, master+slave
- ▶ Operation modes: CC, CV, CP, CR, CV+CC, CR+CC, CV+CR, CP+CC
- ▶ Supporting SEQ test, discharge test, charge test, OCP/OPP test and short-circuit simulation
- ▶ Supporting current monitoring output, external programming input, external trigger input, and 10kHz sine wave programming input
- ▶ 30kHz high-speed dynamic mode, dynamic frequency sweep function
- ▶ Time measurement, rise/fall time measurement accuracy: 10μs
- ▶ Equivalent DC internal resistance (DCIR) test (optional)
- ▶ Arbitrary waveform load test, sine wave up to 20kHz, supporting USB flash drive import
- ▶ Soft on/off function, current oscillation protection function

- ▶ Support optional NP101 series module to achieve 0V with load ^[1]
- ▶ Multiple protection: OCP, OVP, OPP, OTP and reverse connection detection
- ▶ Supporting 100 groups of parameters to be saved when powered off and easy to recall
- ▶ LAN/RS232/CAN as standard interface, GPIB as optional interface
- ▶ Supporting MPPT maximum power point tracking function

Note [1]: Supported by some 150V models only

3U/6kW, ultra-high power density

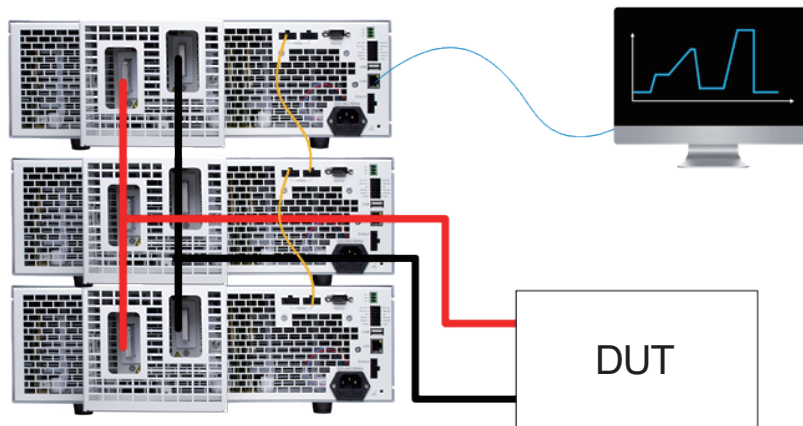
N69200 is designed with high power density. Power of 19" 3U chassis can be up to 6kW. The volume and weight are half of traditional electronic loads. Compared with traditional electronic loads with the same power, N69200 is smaller in size and lighter in weight.



DC Electronic Load

Parallel connection for power extension

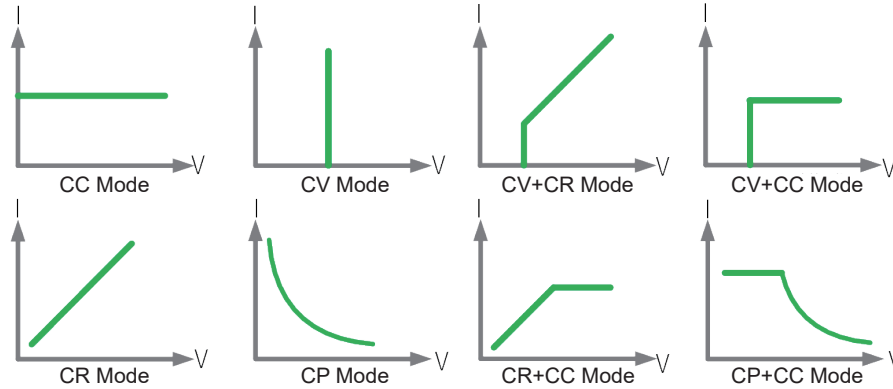
N69200 supports parallel connection. When the load power needs to be increased, models with the same voltage specification can be connected in parallel (master + master, master + slave) to achieve the required current and power. When using N69200, users only need to set current on the master. The slave current will be distributed automatically, which simplifies the operation steps.



▲ Master+Master Parallel Connection Diagram

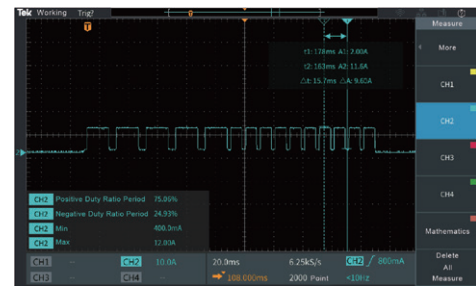
Multiple operating modes for multiple test scenarios

N69200 supports four normal working modes: CC, CV, CP, and CR. In order to cope with the change of load characteristics in the actual test process, N69200 has also been developed with CV+CC, CR+CC, CV+CR, CP+CC four combined working modes. For example, CR+CC is suitable for the startup test of power supply to prevent overcurrent protection when the power supply is turned on. CV+CR can replace the setting application of Von point. CV+CC can simulate the working mode transition process of battery charging. Users can choose different working modes for test according to their actual situation.



High speed dynamic mode, with dynamic frequency sweep

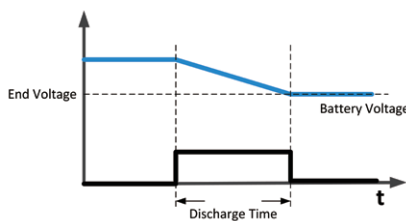
N69200 has a high-speed dynamic mode. The dynamic characteristics of the DC power supply can be tested by simulating the dynamic load behavior of the power supply through the dynamic mode. N69200 provides dynamic frequency sweep and programmable dynamic mode up to 30kHz, including CCD constant current dynamic, CVD constant voltage dynamic, CRD constant resistance dynamic, and CPD constant power dynamic. Programmable dynamic load mode allows setting of high/low range, rise/fall slew rate, pulse width and operation mode. The voltage and current sampling rate of dynamic frequency sweep mode is 500kHz. It supports linearly changing the frequency of the load current. Frequency is up to 30kHz. This mode can measure the peak voltage V_{pk+} , valley voltage V_{pk-} and occurrence frequency points of the DUT during the dynamic frequency load change process.



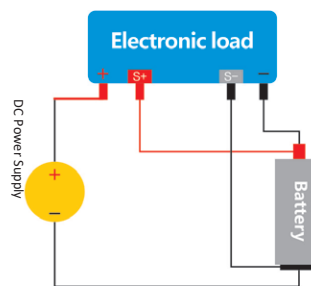
▲ Sweep Mode

Charge/discharge test, built-in battery test mode

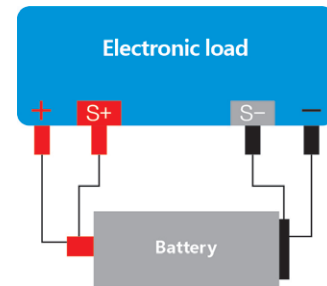
Users can set different conditions on the front panel to meet their test demands. For example, when battery voltage is lower than initial voltage, N69200 internal counter will start counting. The counter will stop working until the battery voltage drops to cut-off voltage.



▲ Discharge Test Graph



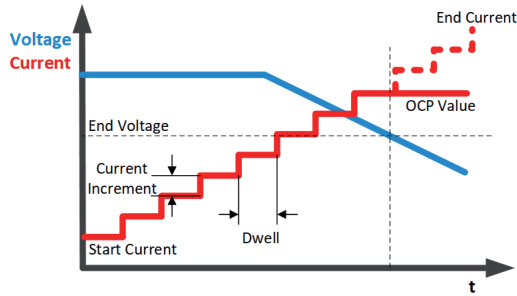
▲ Charge Wiring



▲ Discharge Wiring

OCP (over current protection) test

During OCP test, N69200 will load under CC mode and check whether the DUT voltage is lower than cut-off voltage. If lower, N69200 will record the present loading current as the test result and shut the input to stop the test. If the DUT voltage is higher than cut-off voltage, N69200 will increase the loading current until the DUT voltage is lower than cut-off voltage or it reaches the Max. loading current.



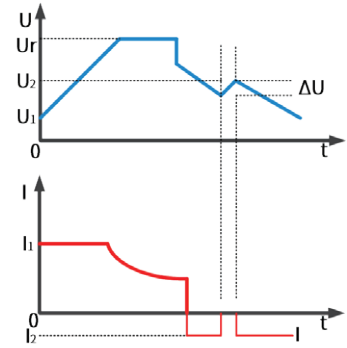
▲ OCP Test Diagram



▲ OCP Test Interface

Equivalent Series Resistance (ESR) test (Optional)

ESR is a principal parameter of battery or supercapacitor. N69200 series offers professional ESR measurement function, which can support multiple measurement standards, and possess the advantages of accurate results and stable repeated results.



▲ ESR Test schematic diagram

Quick Selection

| 150V Model | Specification | Size | 600V Model | Specification | Size |
|-----------------|-----------------|------------|-----------------|-----------------|------------|
| N69202-150-200 | 2kW/150V/200A | 19inch/3U | N69202-600-140 | 2kW/600V/140A | 19inch/3U |
| N69204-150-400 | 4kW/150V/400A | 19inch/3U | N69204-600-280 | 4kW/600V/280A | 19inch/3U |
| N69206-150-600 | 6kW/150V/600A | 19inch/3U | N69206-600-420 | 6kW/600V/420A | 19inch/3U |
| N69212-150-1200 | 12kW/150V/1200A | 19inch/6U | N69212-600-840 | 12kW/600V/840A | 19inch/6U |
| N69218-150-1800 | 18kW/150V/1800A | 19inch/9U | N69218-600-1260 | 18kW/600V/1260A | 19inch/9U |
| N69224-150-2400 | 24kW/150V/2400A | 19inch/12U | N69224-600-1680 | 24kW/600V/1680A | 19inch/12U |
| N69230-150-2500 | 30kW/150V/2500A | 19inch/15U | N69230-600-2100 | 30kW/600V/2100A | 19inch/15U |
| N69236-150-2500 | 36kW/150V/2500A | 19inch/18U | N69236-600-2500 | 36kW/600V/2500A | 19inch/18U |
| N69242-150-2500 | 42kW/150V/2500A | 19inch/21U | N69242-600-2500 | 42kW/600V/2500A | 19inch/21U |
| N69248-150-2500 | 48kW/150V/2500A | 19inch/24U | N69248-600-2500 | 48kW/600V/2500A | 19inch/24U |
| N69254-150-2500 | 54kW/150V/2500A | 19inch/27U | N69254-600-2500 | 54kW/600V/2500A | 19inch/27U |
| N69260-150-2500 | 60kW/150V/2500A | 19inch/30U | N69260-600-2500 | 60kW/600V/2500A | 19inch/30U |

| 1200V Model | Specification | Size | | Specification | Size |
|-----------------|-----------------|------------|------------------|------------------|------------|
| N69202-1200-40 | 2kW/1200V/40A | 19inch/3U | N69230-1200-600 | 30kW/1200V/600A | 19inch/15U |
| N69202-1200-80 | 2kW/1200V/80A | 19inch/3U | N69230-1200-1200 | 30kW/1200V/1200A | 19inch/15U |
| N69204-1200-80 | 4kW/1200V/80A | 19inch/3U | N69236-1200-720 | 36kW/1200V/720A | 19inch/18U |
| N69204-1200-160 | 4kW/1200V/160A | 19inch/3U | N69236-1200-1440 | 36kW/1200V/1440A | 19inch/18U |
| N69206-1200-120 | 6kW/1200V/120A | 19inch/3U | N69242-1200-840 | 42kW/1200V/840A | 19inch/21U |
| N69206-1200-240 | 6kW/1200V/240A | 19inch/3U | N69242-1200-1680 | 42kW/1200V/1680A | 19inch/21U |
| N69212-1200-240 | 12kW/1200V/240A | 19inch/6U | N69248-1200-960 | 48kW/1200V/960A | 19inch/24U |
| N69212-1200-480 | 12kW/1200V/480A | 19inch/6U | N69248-1200-1920 | 48kW/1200V/1920A | 19inch/24U |
| N69218-1200-360 | 18kW/1200V/360A | 19inch/9U | N69254-1200-1080 | 54kW/1200V/1080A | 19inch/27U |
| N69218-1200-720 | 18kW/1200V/720A | 19inch/9U | N69254-1200-2160 | 54kW/1200V/2160A | 19inch/27U |
| N69224-1200-480 | 24kW/1200V/480A | 19inch/12U | N69260-1200-1200 | 60kW/1200V/1200A | 19inch/30U |
| N69224-1200-960 | 24kW/1200V/960A | 19inch/12U | N69260-1200-2400 | 60kW/1200V/2400A | 19inch/30U |

DC Electronic Load

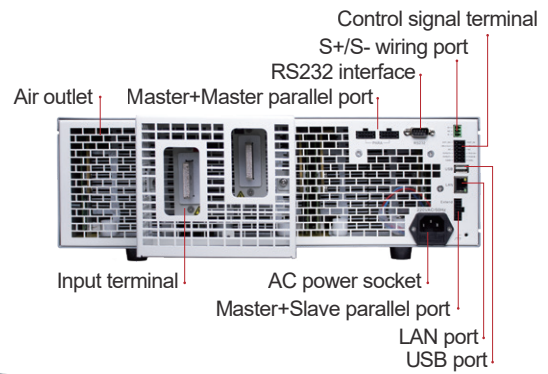
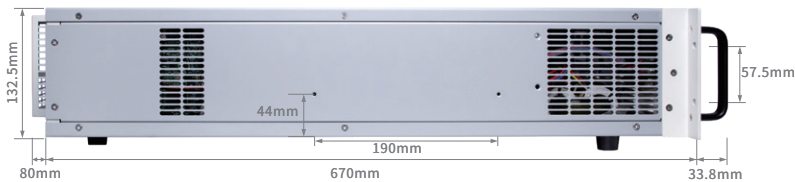
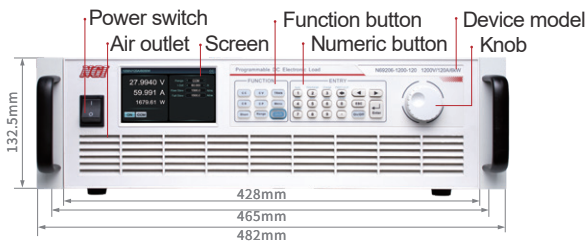
| 1600V Model | Specification | Size | 2400V Model | Specification | Size |
|-----------------|-----------------|------------|-----------------|-----------------|------------|
| N69203-1600-40 | 3kW/1600V/40A | 19inch/3U | N69203-2400-40 | 3kW/2400V/40A | 19inch/3U |
| N69205-1600-60 | 5kW/1600V/60A | 19inch/3U | N69205-2400-60 | 5kW/2400V/60A | 19inch/3U |
| N69210-1600-120 | 10kW/1600V/120A | 19inch/6U | N69210-2400-120 | 10kW/2400V/120A | 19inch/6U |
| N69215-1600-180 | 15kW/1600V/180A | 19inch/9U | N69215-2400-180 | 15kW/2400V/180A | 19inch/9U |
| N69220-1600-240 | 20kW/1600V/240A | 19inch/12U | N69220-2400-240 | 20kW/2400V/240A | 19inch/12U |
| N69225-1600-300 | 25kW/1600V/300A | 19inch/15U | N69225-2400-300 | 25kW/2400V/300A | 19inch/15U |
| N69230-1600-360 | 30kW/1600V/360A | 19inch/18U | N69230-2400-360 | 30kW/2400V/360A | 19inch/18U |
| N69235-1600-420 | 35kW/1600V/420A | 19inch/21U | N69235-2400-420 | 35kW/2400V/420A | 19inch/21U |
| N69240-1600-480 | 40kW/1600V/480A | 19inch/24U | N69240-2400-480 | 40kW/2400V/480A | 19inch/24U |
| N69245-1600-540 | 45kW/1600V/540A | 19inch/27U | N69245-2400-540 | 45kW/2400V/540A | 19inch/27U |
| N69250-1600-600 | 50kW/1600V/600A | 19inch/30U | N69250-2400-600 | 50kW/2400V/600A | 19inch/30U |

0V with Load Selection

| Model | Module | Size | Model | Module | Size |
|----------------|-----------|-----------|-----------------|------------|-----------|
| N69206-150-600 | NP101-600 | 19inch/6U | N69210-150-1000 | NP101-1000 | 19inch/9U |
| N69208-150-800 | NP101-800 | 19inch/9U | N69212-150-1200 | NP101-1200 | 19inch/9U |

*N69200 series supports parallel power expansion, for more power product selection, please contact us

Product Dimension



DC Electronic Load

Technical Data Sheet(1)

| Model | N69202-150-200 | | | N69202-600-140 | | | N69202-1200-40 | | |
|-----------------------------|---|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Voltage | 150V | | | 600V | | | 1200V | | |
| Current | 200A | | | 140A | | | 40A | | |
| Power | 2000W | | | | | | | | |
| Min. Operating Voltage | 2V@200A | | | 14V@140A | | | 30V@40A | | |
| CV Mode | | | | | | | | | |
| Range | 0~15V | 0~75V | 0~150V | 0~60V | 0~300V | 0~600V | 0~120V | 0~600V | 0~1200V |
| Setting Resolution | 1mV | 1mV | 10mV | 1mV | 10mV | 10mV | 10mV | 10mV | 100mV |
| Setting Accuracy (23±5°C) | 0.025%+0.025%F.S. | | | | | | | | |
| Readback Resolution | 0.1mV | 0.1mV | 1mV | 0.1mV | 1mV | 1mV | 1mV | 1mV | 10mV |
| Readback Accuracy(23±5°C) | 0.015%+0.015%F.S. | | | | | | | | |
| CC Mode | | | | | | | | | |
| Range | 0~20A | 0~100A | 0~200A | 0~14A | 0~70A | 0~140A | 0~4A | 0~20A | 0~40A |
| Setting Resolution | 1mA | 10mA | 10mA | 1mA | 1mA | 10mA | 0.1mA | 1mA | 1mA |
| Setting Accuracy (23±5°C) | 0.05%+0.05%F.S. | | | | | | | | |
| Readback Resolution | 0.1mA | 1mA | 1mA | 0.1mA | 0.1mA | 1mA | 0.01mA | 0.1mA | 0.1mA |
| Readback Accuracy(23±5°C) | 0.04%+0.04%F.S. | | | | | | | | |
| CP Mode | | | | | | | | | |
| Range | 200W | 1000W | 2000W | 200W | 1000W | 2000W | 200W | 1000W | 2000W |
| Setting Resolution | 0.01W | 0.1W | 0.1W | 0.01W | 0.1W | 0.1W | 0.01W | 0.1W | 0.1W |
| Setting Accuracy (23±5°C) | 0.2%+0.2%F.S. | | | | | | | | |
| Readback Resolution | 0.001W | 0.01W | 0.01W | 0.001W | 0.01W | 0.01W | 0.001W | 0.01W | 0.01W |
| Readback Accuracy(23±5°C) | 0.1%+0.1%F.S. | | | | | | | | |
| CR Mode | | | | | | | | | |
| Range | 0.1Ω~3750Ω | 0.02Ω~750Ω | 0.01Ω~375Ω | 1Ω~21429Ω | 0.2Ω~4286Ω | 0.1Ω~2143Ω | 8Ω~150000Ω | 2Ω~30000Ω | 1Ω~15000Ω |
| Setting Resolution | 0.1Ω | 0.01Ω | 0.01Ω | 1Ω | 0.1Ω | 0.1Ω | 10Ω | 1Ω | 0.1Ω |
| Setting Accuracy (23±5°C) | (Vin/Rset)*0.05%+0.05%IF.S. | | | | | | | | |
| Slew Rate | | | | | | | | | |
| Current | 0.001~1000A/ms | 0.001~5000A/ms | 0.001~10000A/ms | 0.001~700A/ms | 0.001~3500A/ms | 0.001~7000A/ms | 0.001~300A/ms | 0.001~1500A/ms | 0.001~3000A/ms |
| Power | 0.001~1000A/ms | 0.001~5000A/ms | 0.001~10000A/ms | 0.001~700A/ms | 0.001~3500A/ms | 0.001~7000A/ms | 0.001~300A/ms | 0.001~1500A/ms | 0.001~3000A/ms |
| Resistance | 0.001~1000A/ms | 0.001~5000A/ms | 0.001~10000A/ms | 0.001~700A/ms | 0.001~3500A/ms | 0.001~7000A/ms | 0.001~300A/ms | 0.001~1500A/ms | 0.001~3000A/ms |
| CCD Mode | | | | | | | | | |
| T1&T2 | 0.025~60000ms | | | | | | | | |
| Resolution | 1μs | | | | | | | | |
| Accuracy (23±5°C) | 10μs+100ppm | | | | | | | | |
| Rise/Fall Slew Rate | 0.001~1000A/ms | 0.001~5000A/ms | 0.001~10000A/ms | 0.001~700A/ms | 0.001~3500A/ms | 0.001~7000A/ms | 0.001~300A/ms | 0.001~1500A/ms | 0.001~3000A/ms |
| Min. Rise Time | 30μs | | | | | | | | |
| Others | | | | | | | | | |
| Input Impedance | 1.6MΩ(Typical) | | | | | | | | |
| Protection Function | OVP/OCP/OPP/OTP/RV | | | | | | | | |
| Interface | USB(Waveform import)/LAN/RS232/CAN | | | | | | | | |
| Communication Protocol | Modbus-RTU standard protocol, CANOPEN standard protocol, SCPI standard protocol | | | | | | | | |
| Communication Response Time | ≤5ms | | | | | | | | |
| AC Input | Voltage 220V AC ± 10%, current < 2A, 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 | | | | | | | | |
| Net Weight | Approx. 22kg | | | | | | | | |
| Dimension | 3U, 132.5(H)*482.0(W)with handle*783.8(D)mm | | | | | | | | |

Note 1: For other specifications, please contact NGI.

Note 2: All specifications are subject to change without notice.

Technical Data Sheet(2)

| Model | N69204-150-400 | | | N69204-600-280 | | | N69204-1200-80 | | |
|-----------------------------|---|-----------------|-----------------|----------------|----------------|-----------------|----------------|----------------|----------------|
| Voltage | 150V | | | 600V | | | 1200V | | |
| Current | 400A | | | 280A | | | 80A | | |
| Power | 4000W | | | | | | | | |
| Min. Operating Voltage | 2V@400A | | | 14V@280A | | | 30V@80A | | |
| CV Mode | | | | | | | | | |
| Range | 0~15V | 0~75V | 0~150V | 0~60V | 0~300V | 0~600V | 0~120V | 0~600V | 0~1200V |
| Setting Resolution | 1mV | 1mV | 10mV | 1mV | 10mV | 10mV | 10mV | 10mV | 100mV |
| Setting Accuracy (23±5°C) | 0.025%+0.025%F.S. | | | | | | | | |
| Readback Resolution | 0.1mV | 0.1mV | 1mV | 0.1mV | 1mV | 1mV | 1mV | 1mV | 10mV |
| Readback Accuracy (23±5°C) | 0.015%+0.015%F.S. | | | | | | | | |
| CC Mode | | | | | | | | | |
| Range | 0~40A | 0~200A | 0~400A | 0~28A | 0~140A | 0~280A | 0~8A | 0~40A | 0~80A |
| Setting Resolution | 1mA | 10mA | 10mA | 1mA | 10mA | 10mA | 0.1mA | 1mA | 1mA |
| Setting Accuracy (23±5°C) | 0.05%+0.05%F.S. | | | | | | | | |
| Readback Resolution | 0.1mA | 1mA | 1mA | 0.1mA | 1mA | 1mA | 0.01mA | 0.1mA | 0.1mA |
| Readback Accuracy (23±5°C) | 0.04%+0.04%F.S. | | | | | | | | |
| CP Mode | | | | | | | | | |
| Range | 400W | 2000W | 4000W | 400W | 2000W | 4000W | 400W | 2000W | 4000W |
| Setting Resolution | 0.01W | 0.1W | 0.1W | 0.01W | 0.1W | 0.1W | 0.01W | 0.1W | 0.1W |
| Setting Accuracy (23±5°C) | 0.2%+0.2%F.S. | | | | | | | | |
| Readback Resolution | 0.001W | 0.01W | 0.01W | 0.001W | 0.01W | 0.01W | 0.001W | 0.01W | 0.01W |
| Readback Accuracy (23±5°C) | 0.1%+0.1%F.S. | | | | | | | | |
| CR Mode | | | | | | | | | |
| Range | 0.1Ω~1875Ω | 0.01Ω~375Ω | 0.01Ω~188Ω | 1Ω~10715Ω | 0.1Ω~2143Ω | 0.1Ω~1072Ω | 4Ω~75000Ω | 1Ω~15000Ω | 0.4Ω~7500Ω |
| Setting Resolution | 0.1Ω | 0.01Ω | 0.01Ω | 1Ω | 0.1Ω | 0.1Ω | 1Ω | 1Ω | 0.1Ω |
| Setting Accuracy (23±5°C) | (Vin/Rset)*0.05%+0.05%IF.S. | | | | | | | | |
| Slew Rate | | | | | | | | | |
| Current | 0.001~2000A/ms | 0.001~10000A/ms | 0.001~20000A/ms | 0.001~1400A/ms | 0.001~7000A/ms | 0.001~14000A/ms | 0.001~600A/ms | 0.001~3000A/ms | 0.001~6000A/ms |
| Power | 0.001~2000A/ms | 0.001~10000A/ms | 0.001~20000A/ms | 0.001~1400A/ms | 0.001~7000A/ms | 0.001~14000A/ms | 0.001~600A/ms | 0.001~3000A/ms | 0.001~6000A/ms |
| Resistance | 0.001~2000A/ms | 0.001~10000A/ms | 0.001~20000A/ms | 0.001~1400A/ms | 0.001~7000A/ms | 0.001~14000A/ms | 0.001~600A/ms | 0.001~3000A/ms | 0.001~6000A/ms |
| CCD Mode | | | | | | | | | |
| T1&T2 | 0.025~60000ms | | | | | | | | |
| Resolution | 1μs | | | | | | | | |
| Accuracy (23±5°C) | 10μs+100ppm | | | | | | | | |
| Rise/Fall Slew Rate | 0.001~2000A/ms | 0.001~10000A/ms | 0.001~20000A/ms | 0.001~1400A/ms | 0.001~7000A/ms | 0.001~14000A/ms | 0.001~600A/ms | 0.001~3000A/ms | 0.001~6000A/ms |
| Min. Rise Time | 30μs | | | | | | | | |
| Others | | | | | | | | | |
| Input Impedance | 1.6MΩ(Typical) | | | | | | | | |
| Protection Function | OVP/OCP/OPP/OTP/RV | | | | | | | | |
| Interface | USB(Waveform import)/LAN/RS232/CAN | | | | | | | | |
| Communication Protocol | Modbus-RTU standard protocol, CANOPEN standard protocol, SCPI standard protocol | | | | | | | | |
| Communication Response Time | ≤5ms | | | | | | | | |
| AC Input | Voltage 220V AC ± 10%, current < 2A, 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 | | | | | | | | |
| Net Weight | Approx. 28kg | | | | | | | | |
| Dimension | 3U, 132.5(H)*482.0(W)with handle*783.8(D)mm(with output shield) | | | | | | | | |

Note 1: For other specifications, please contact NGI.

Note 2: All specifications are subject to change without notice.

DC Electronic Load

Technical Data Sheet(3)

| Model | N69206-150-600 | | | N69206-600-420 | | | N69206-1200-120 | | |
|-----------------------------|---|-----------------|-----------------|----------------|-----------------|-----------------|-----------------|----------------|----------------|
| Voltage | 150V | | | 600V | | | 1200V | | |
| Current | 600A | | | 420A | | | 120A | | |
| Power | 6000W | | | | | | | | |
| Min. Operating Voltage | 2V@600A | | | 14V@420A | | | 30V@120A | | |
| CV Mode | | | | | | | | | |
| Range | 0~15V | 0~75V | 0~150V | 0~60V | 0~300V | 0~600V | 0~120V | 0~600V | 0~1200V |
| Setting Resolution | 1mV | 1mV | 10mV | 1mV | 10mV | 10mV | 10mV | 10mV | 100mV |
| Setting Accuracy(23±5°C) | 0.025%+0.025%F.S. | | | | | | | | |
| Readback Resolution | 0.1mV | 0.1mV | 1mV | 0.1mV | 1mV | 1mV | 1mV | 1mV | 10mV |
| Readback Accuracy(23±5°C) | 0.015%+0.015%F.S. | | | | | | | | |
| CC Mode | | | | | | | | | |
| Range | 0~60A | 0~300A | 0~600A | 0~42A | 0~210A | 0~420A | 0~12A | 0~60A | 0~120A |
| Setting Resolution | 1mA | 10mA | 10mA | 1mA | 10mA | 10mA | 1mA | 1mA | 10mA |
| Setting Accuracy(23±5°C) | 0.05%+0.05%F.S. | | | | | | | | |
| Readback Resolution | 0.1mA | 1mA | 1mA | 0.1mA | 1mA | 1mA | 0.1mA | 0.1mA | 1mA |
| Readback Accuracy(23±5°C) | 0.04%+0.04%F.S. | | | | | | | | |
| CP Mode | | | | | | | | | |
| Range | 600W | 3000W | 6000W | 600W | 3000W | 6000W | 600W | 3000W | 6000W |
| Setting Resolution | 0.01W | 0.1W | 0.1W | 0.01W | 0.1W | 0.1W | 0.01W | 0.1W | 0.1W |
| Setting Accuracy(23±5°C) | 0.2%+0.2%F.S. | | | | | | | | |
| Readback Resolution | 0.001W | 0.01W | 0.01W | 0.001W | 0.01W | 0.01W | 0.001W | 0.01W | 0.01W |
| Readback Accuracy(23±5°C) | 0.1%+0.1%F.S. | | | | | | | | |
| CR Mode | | | | | | | | | |
| Range | 0.1Ω~1250Ω | 0.01Ω~250Ω | 0.01Ω~125Ω | 0.4Ω~7143Ω | 0.1Ω~1429Ω | 0.04Ω~715Ω | 3Ω~50000Ω | 1Ω~10000Ω | 0.3Ω~5000Ω |
| Setting Resolution | 0.1Ω | 0.01Ω | 0.01Ω | 0.1Ω | 0.1Ω | 0.01Ω | 1Ω | 1Ω | 0.1Ω |
| Setting Accuracy(23±5°C) | (Vin/Rset)*0.05%+0.05%IF.S. | | | | | | | | |
| Slew Rate | | | | | | | | | |
| Current | 0.001~3000A/ms | 0.001~15000A/ms | 0.001~30000A/ms | 0.001~2100A/ms | 0.001~10500A/ms | 0.001~21000A/ms | 0.001~900A/ms | 0.001~4500A/ms | 0.001~9000A/ms |
| Power | 0.001~3000A/ms | 0.001~15000A/ms | 0.001~30000A/ms | 0.001~2100A/ms | 0.001~10500A/ms | 0.001~21000A/ms | 0.001~900A/ms | 0.001~4500A/ms | 0.001~9000A/ms |
| Resistance | 0.001~3000A/ms | 0.001~15000A/ms | 0.001~30000A/ms | 0.001~2100A/ms | 0.001~10500A/ms | 0.001~21000A/ms | 0.001~900A/ms | 0.001~4500A/ms | 0.001~9000A/ms |
| CCD Mode | | | | | | | | | |
| T1&T2 | 0.025~60000ms | | | | | | | | |
| Resolution | 1μs | | | | | | | | |
| Accuracy(23±5°C) | 10μs+100ppm | | | | | | | | |
| Rise/Fall Slew Rate | 0.001~3000A/ms | 0.001~15000A/ms | 0.001~30000A/ms | 0.001~2100A/ms | 0.001~10500A/ms | 0.001~21000A/ms | 0.001~900A/ms | 0.001~4500A/ms | 0.001~9000A/ms |
| Min. Rise Time | 30μs | | | | | | | | |
| Others | | | | | | | | | |
| Input Impedance | 1.6MΩ(Typical) | | | | | | | | |
| Protection Function | OVP/OCP/OPP/OTP/RV | | | | | | | | |
| Interface | USB(Waveform import)/LAN/RS232/CAN | | | | | | | | |
| Communication Protocol | Modbus-RTU standard protocol, CANOPEN standard protocol, SCPI standard protocol | | | | | | | | |
| Communication Response Time | ≤5ms | | | | | | | | |
| AC Input | Voltage 220V AC ± 10%, current < 2A, 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 | | | | | | | | |
| Net Weight | Approx. 34kg | | | | | | | | |
| Dimension | 3U, 132.5(H)*482.0(W)with handle*783.8(D)mm(with output shield) | | | | | | | | |

Note 1: For other specifications, please contact NGI.

Note 2: All specifications are subject to change without notice.

Technical Data Sheet(4)

| Model | N69202-1200-80 | | | N69204-1200-160 | | | N69206-1200-240 | | |
|-----------------------------|---|----------------|----------------|-----------------|----------------|----------------|-----------------|----------------|----------------|
| Voltage | 1200V | | | | | | | | |
| Current | 80A | | | 160A | | | 240A | | |
| Power | 2000W | | | 4000W | | | 6000W | | |
| Min. Operating Voltage | 25V@80A | | | 25V@160A | | | 25V@240A | | |
| CV Mode | | | | | | | | | |
| Range | 0~120V | 0~600V | 0~1200V | 0~120V | 0~600V | 0~1200V | 0~120V | 0~600V | 0~1200V |
| Setting Resolution | 10mV | 10mV | 100mV | 10mV | 10mV | 100mV | 10mV | 10mV | 100mV |
| Setting Accuracy(23±5°C) | 0.025%+0.025%F.S. | | | | | | | | |
| Readback Resolution | 1mV | 1mV | 10mV | 1mV | 1mV | 10mV | 1mV | 1mV | 10mV |
| Readback Accuracy(23±5°C) | 0.015%+0.015%F.S. | | | | | | | | |
| CC Mode | | | | | | | | | |
| Range | 0~8A | 0~40A | 0~80A | 0~16A | 0~80A | 0~160A | 0~24A | 0~120A | 0~240A |
| Setting Resolution | 0.1mA | 1mA | 1mA | 1mA | 1mA | 10mA | 1mA | 10mA | 10mA |
| Setting Accuracy(23±5°C) | 0.05%+0.05%F.S. | | | | | | | | |
| Readback Resolution | 0.01mA | 0.1mA | 0.1mA | 0.1mA | 0.1mA | 1mA | 0.1mA | 1mA | 1mA |
| Readback Accuracy(23±5°C) | 0.04%+0.04%F.S. | | | | | | | | |
| CP Mode | | | | | | | | | |
| Range | 200W | 1000W | 2000W | 400W | 2000W | 4000W | 600W | 3000W | 6000W |
| Setting Resolution | 0.01W | 0.1W | 0.1W | 0.01W | 0.1W | 0.1W | 0.01W | 0.1W | 0.1W |
| Setting Accuracy(23±5°C) | 0.2%+0.2%F.S. | | | | | | | | |
| Readback Resolution | 0.001W | 0.01W | 0.01W | 0.001W | 0.01W | 0.01W | 0.001W | 0.01W | 0.01W |
| Readback Accuracy(23±5°C) | 0.1%+0.1%F.S. | | | | | | | | |
| CR Mode | | | | | | | | | |
| Range | 4Ω~7500Ω | 0.7Ω~15000Ω | 0.4Ω~7500Ω | 2Ω~37500Ω | 0.4Ω~7500Ω | 0.2Ω~3750Ω | 2Ω~25000Ω | 0.3Ω~5000Ω | 0.2Ω~2500Ω |
| Setting Resolution | 1Ω | 1Ω | 0.1Ω | 1Ω | 0.1Ω | 0.1Ω | 1Ω | 0.1Ω | 0.1Ω |
| Setting Accuracy(23±5°C) | (Vin/Rset)*0.05%+0.05%IF.S. | | | | | | | | |
| Slew Rate | | | | | | | | | |
| Current | 0.001~266.4A/ms | 0.001~1332A/ms | 0.001~2664A/ms | 0.001~532.8A/ms | 0.001~2664A/ms | 0.001~5328A/ms | 0.001~799.2A/ms | 0.001~3996A/ms | 0.001~7992A/ms |
| Power | 0.001~266.4A/ms | 0.001~1332A/ms | 0.001~2664A/ms | 0.001~532.8A/ms | 0.001~2664A/ms | 0.001~5328A/ms | 0.001~799.2A/ms | 0.001~3996A/ms | 0.001~7992A/ms |
| Resistance | 0.001~266.4A/ms | 0.001~1332A/ms | 0.001~2664A/ms | 0.001~532.8A/ms | 0.001~2664A/ms | 0.001~5328A/ms | 0.001~799.2A/ms | 0.001~3996A/ms | 0.001~7992A/ms |
| CCD Mode | | | | | | | | | |
| T1&T2 | 0.025~60000ms | | | | | | | | |
| Resolution | 1μs | | | | | | | | |
| Accuracy(23±5°C) | 10μs+100ppm | | | | | | | | |
| Rise/Fall Slew Rate | 0.001~266.4A/ms | 0.001~1332A/ms | 0.001~2664A/ms | 0.001~532.8A/ms | 0.001~2664A/ms | 0.001~5328A/ms | 0.001~799.2A/ms | 0.001~3996A/ms | 0.001~7992A/ms |
| Min. Rise Time | 30μs | | | | | | | | |
| Others | | | | | | | | | |
| Input Impedance | 1.6MΩ(Typical) | | | | | | | | |
| Protection Function | OVP/OCP/OPP/OTP/RV | | | | | | | | |
| Interface | USB(Waveform import)/LAN/RS232/CAN | | | | | | | | |
| Communication Protocol | Modbus-RTU standard protocol, CANOPEN standard protocol, SCPI standard protocol | | | | | | | | |
| Communication Response Time | ≤5ms | | | | | | | | |
| AC Input | Voltage 220V AC ± 10%, current < 2A, 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 | | | | | | | | |
| Net Weight | Approx. 22kg | | | Approx. 28kg | | | Approx. 34kg | | |
| Dimension | 3U, 132.5(H)*482.0(W)with handle*783.8(D)mm(with output shield) | | | | | | | | |

Note 1: For other specifications, please contact NGI.

Note 2: All specifications are subject to change without notice.

Technical Data Sheet(5)

| Model | N69203-1600-40 | | | N69203-2400-40 | | |
|-----------------------------|---|---------------|----------------|----------------|---------------|----------------|
| Voltage | 1600V | | | 2400V | | |
| Current | 40A | | | | | |
| Power | 6000W | | | | | |
| Min. Operating Voltage | 40V@40A | | | | | |
| CV Mode | | | | | | |
| Range | 0~160V | 0~800V | 0~1600V | 0~240V | 0~1200V | 0~2400V |
| Setting Resolution | 10mV | 10mV | 100mV | 10mV | 100mV | 100mV |
| Setting Accuracy(23±5°C) | 0.025%+0.025%F.S. | | | | | |
| Readback Resolution | 1mV | 1mV | 10mV | 1mV | 10mV | 100mV |
| Readback Accuracy(23±5°C) | 0.015%+0.015%F.S. | | | | | |
| CC Mode | | | | | | |
| Range | 0~4A | 0~20A | 0~40A | 0~4A | 0~20A | 0~40A |
| Setting Resolution | 0.1mA | 1mA | 1mA | 0.1mA | 1mA | 1mA |
| Setting Accuracy(23±5°C) | 0.05%+0.05%F.S. | | | | | |
| Readback Resolution | 0.01mA | 0.1mA | 0.1mA | 0.01mA | 0.1mA | 0.1mA |
| Readback Accuracy(23±5°C) | 0.04%+0.04%F.S. | | | | | |
| CP Mode | | | | | | |
| Range | 300W | 1500W | 3000W | 300W | 1500W | 3000W |
| Setting Resolution | 0.01W | 0.1W | 0.1W | 0.01W | 0.1W | 0.1W |
| Setting Accuracy(23±5°C) | 0.2%+0.2%F.S. | | | | | |
| Readback Resolution | 0.001W | 0.01W | 0.01W | 0.001W | 0.01W | 0.01W |
| Readback Accuracy(23±5°C) | 0.1%+0.1%F.S. | | | | | |
| CR Mode | | | | | | |
| Range | 10Ω~99.9kΩ | 2Ω~40kΩ | 1Ω~20kΩ | 10Ω~99.9kΩ | 2Ω~60kΩ | 1Ω~30kΩ |
| Setting Resolution | 1Ω | | | | | |
| Setting Accuracy(23±5°C) | (Vin/Rset)*0.05%+0.05%IF.S. | | | | | |
| Slew Rate | | | | | | |
| Current | 0.001~130A/ms | 0.001~650A/ms | 0.001~1300A/ms | 0.001~130A/ms | 0.001~650A/ms | 0.001~1300A/ms |
| Power | 0.001~130A/ms | 0.001~650A/ms | 0.001~1300A/ms | 0.001~130A/ms | 0.001~650A/ms | 0.001~1300A/ms |
| Resistance | 0.001~130A/ms | 0.001~650A/ms | 0.001~1300A/ms | 0.001~130A/ms | 0.001~650A/ms | 0.001~1300A/ms |
| CCD Mode | | | | | | |
| T1&T2 | 0.005~60000ms | | | | | |
| Resolution | 1μs | | | | | |
| Accuracy(23±5°C) | 10μs+100ppm | | | | | |
| Rise/Fall Slew Rate | 0.001~130A/ms | 0.001~650A/ms | 0.001~1300A/ms | 0.001~130A/ms | 0.001~650A/ms | 0.001~1300A/ms |
| Min. Rise Time | 30μs | | | | | |
| Others | | | | | | |
| Input Impedance | 1MΩ(Typical) | | | | | |
| Protection Function | OVP/OCP/OPP/OTP/RV | | | | | |
| Interface | USB(Waveform import)/LAN/RS232/CAN | | | | | |
| Communication Protocol | Modbus-RTU standard protocol, CANOPEN standard protocol, SCPI standard protocol | | | | | |
| Communication Response Time | ≤5ms | | | | | |
| AC Input | Voltage 220V AC ± 10%, current < 2A, 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 | | | | | |
| Net Weight | Approx. 22kg | | | | | |
| Dimension | 3U, 132.5(H)*482.0(W)with handle*783.8(D)mm(with output shield) | | | | | |

Note 1: For other specifications, please contact NGI.

Note 2: All specifications are subject to change without notice.

Technical Data Sheet(6)

| Model | N69205-1600-60 | | | N69205-2400-60 | | |
|-----------------------------|---|---------------|----------------|----------------|---------------|----------------|
| Voltage | 1600V | | | 2400V | | |
| Current | 60A | | | | | |
| Power | 5000W | | | | | |
| Min. Operating Voltage | 40V@60A | | | | | |
| CV Mode | | | | | | |
| Range | 0~160V | 0~800V | 0~1600V | 0~240V | 0~1200V | 0~2400V |
| Setting Resolution | 10mV | 10mV | 100mV | 10mV | 100mV | 100mV |
| Setting Accuracy(23±5°C) | 0.025%+0.025%F.S. | | | | | |
| Readback Resolution | 1mV | 1mV | 10mV | 1mV | 10mV | 100mV |
| Readback Accuracy(23±5°C) | 0.015%+0.015%F.S. | | | | | |
| CC Mode | | | | | | |
| Range | 0~6A | 0~30A | 0~60A | 0~6A | 0~30A | 0~60A |
| Setting Resolution | 0.1mA | 1mA | 1mA | 0.1mA | 1mA | 1mA |
| Setting Accuracy(23±5°C) | 0.05%+0.05%F.S. | | | | | |
| Readback Resolution | 0.01mA | 0.1mA | 0.1mA | 0.01mA | 0.1mA | 0.1mA |
| Readback Accuracy(23±5°C) | 0.04%+0.04%F.S. | | | | | |
| CP Mode | | | | | | |
| Range | 500W | 2500W | 5000W | 500W | 2500W | 5000W |
| Setting Resolution | 0.01W | 0.1W | 0.1W | 0.01W | 0.1W | 0.1W |
| Setting Accuracy(23±5°C) | 0.2%+0.2%F.S. | | | | | |
| Readback Resolution | 0.001W | 0.01W | 0.01W | 0.001W | 0.01W | 0.01W |
| Readback Accuracy(23±5°C) | 0.1%+0.1%F.S. | | | | | |
| CR Mode | | | | | | |
| Range | 7Ω~99.9kΩ | 1Ω~20kΩ | 0.7Ω~9.999kΩ | 7Ω~99.9kΩ | 1Ω~20kΩ | 0.7Ω~9.999kΩ |
| Setting Resolution | 1Ω | 1Ω | 0.1Ω | 1Ω | 1Ω | 0.1Ω |
| Setting Accuracy(23±5°C) | (Vin/Rset)*0.05%+0.05%IF.S. | | | | | |
| Slew Rate | | | | | | |
| Current | 0.001~200A/ms | 0.001~800A/ms | 0.001~1800A/ms | 0.001~200A/ms | 0.001~800A/ms | 0.001~1800A/ms |
| Power | 0.001~200A/ms | 0.001~800A/ms | 0.001~1800A/ms | 0.001~200A/ms | 0.001~800A/ms | 0.001~1800A/ms |
| Resistance | 0.001~200A/ms | 0.001~800A/ms | 0.001~1800A/ms | 0.001~200A/ms | 0.001~800A/ms | 0.001~1800A/ms |
| CCD Mode | | | | | | |
| T1&T2 | 0.005~60000ms | | | | | |
| Resolution | 1μs | | | | | |
| Accuracy(23±5°C) | 10μs+100ppm | | | | | |
| Rise/Fall Slew Rate | 0.001~200A/ms | 0.001~800A/ms | 0.001~1800A/ms | 0.001~200A/ms | 0.001~800A/ms | 0.001~1800A/ms |
| Min. Rise Time | 30μs | | | | | |
| Others | | | | | | |
| Input Impedance | 650kΩ(Typical) | | | | | |
| Protection Function | OVP/OCP/OPP/OTP/RV | | | | | |
| Interface | USB(Waveform import)/LAN/RS232/CAN | | | | | |
| Communication Protocol | Modbus-RTU standard protocol, CANOPEN standard protocol, SCPI standard protocol | | | | | |
| Communication Response Time | ≤5ms | | | | | |
| AC Input | Voltage 220V AC ± 10%, current < 2A, 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 | | | | | |
| Net Weight | Approx. 34kg | | | | | |
| Dimension | 3U, 132.5(H)*482.0(W)with handle*783.8(D)mm(with output shield) | | | | | |

Note 1: For other specifications, please contact NGI.

Note 2: All specifications are subject to change without notice.