

NZ/N series

Ultra-low voltage and high current DC electronic load



Characteristics

- Low-voltage carry capacity can reach $-2.4V@1200A$, $0.2V@5000A$;
- NZ series support $-2.4V$ full current carry load and reverse pole test;
- Support external analog programming control;
- Battery capacity and battery internal resistance test function;
- Four test modes: constant voltage, constant current, constant resistance and constant power;
- Analog short circuit function;
- Supporting switching between far and near end measurement;
- TFT color LCD screen, Chinese and English menu interface, high brightness, wide viewing angle, more comprehensive information display;
- 20kHz transient test function, rising and falling slopes can be set;
- Provide a variety of remote interfaces;
- Sequence test function supports different timing with load capacity test;
- Over-voltage/over-current/over-power/over-temperature/reverse polarity and other all-round intelligent protection functions;
- Equipped with a variety of communication interfaces: RS232, RS485, LAN, USB, CAN (optional);
- Support SCPI and ModBus communication protocol.

Application field

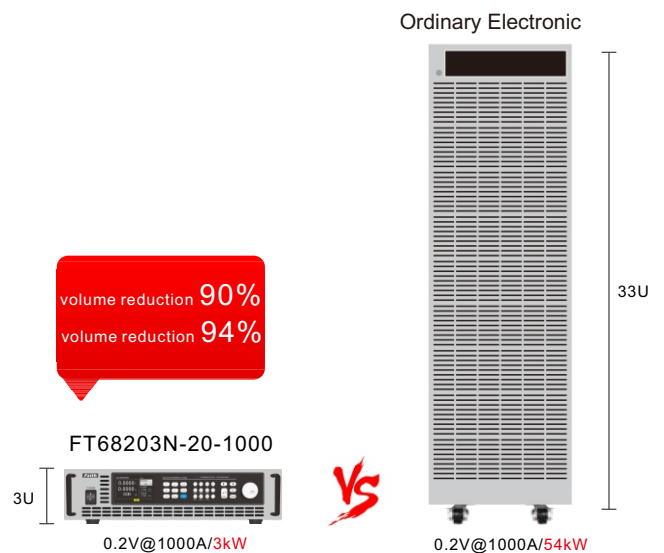
- Fuel cell testing;
- Battery forced discharge testing;
- CPU and power device power supply system testing;
- Other low-voltage high-current test scenarios.

Summary

Ultra-low voltage and high current DC electronic load is a highly reliable and high performance electronic load developed on the basis of FT conventional electronic load for fuel cell testing, CPU power supply testing and other low-voltage and high-current testing scenarios. For different current levels, this product contains two series: NZ, N. Its voltage is 0-20V or 40V, of which the NZ series can be $-2.4V$ full-current load, and the N series is ultra-low voltage full-current load. The maximum load capacity is up to $-2.4V@1200A$ and $0.2V@5000A$, which is an excellent choice for your test with high precision and high cost performance.

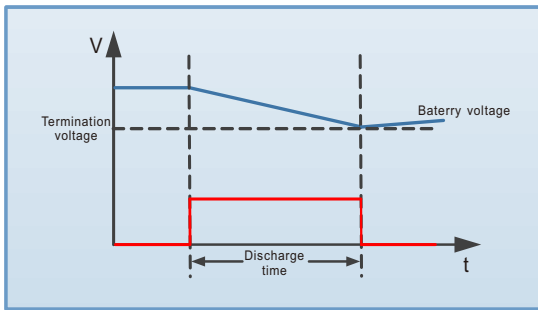
Ultra low voltage full current load

Ultra-low voltage and high current DC electronic load with ultra-low internal resistance, the smallest internal resistance $<0.2m\Omega$. FT68203N-20-1000 can carry 1000A of current at 0.2V input with a power of only 3kW, which is only one-eighteenth of the power of an ordinary electronic load under the same low-voltage loading conditions. The smaller test power can provide larger test current, which can greatly reduce the test cost in fuel cell membrane electrode, monolithic cell and short stack test.



Battery capacity testing

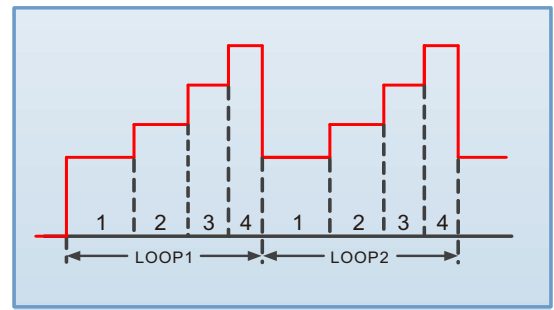
In order to facilitate battery testing, the electronic load provides a battery capacity test function. Battery test includes: battery internal resistance test and battery capacity test. Battery capacity test adopts constant current mode to discharge. During the discharge process, the load automatically records the voltage, current, time, AH and other parameters.



Voltage and current curves during capacity testing

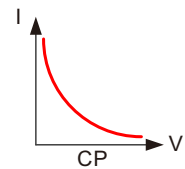
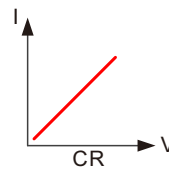
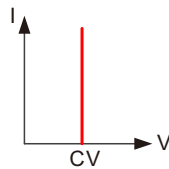
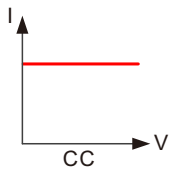
Sequence functions

The electronic load provides sequence test function. Users can edit the test sequence of a load by themselves to simulate various changes of the load input, suitable for all kinds of complex load testing.



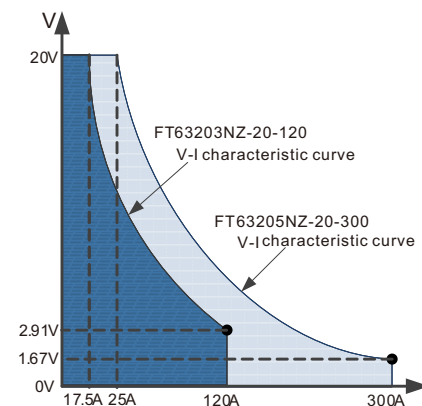
Constant state function

The electronic load has four test modes: constant current, constant voltage, constant resistance and constant power, which can meet a wide range of test requirements. Constant current and constant resistance modes can be used to test whether the output voltage maintains a stable output under different load conditions. For battery chargers and adapters, the Constant Voltage mode varies the output voltage of the charger and adapter to verify that the output current is correct.



-2.4V input full current carry

NZ series can be loaded with full current at 0V input. The low-voltage and high-current load characteristics provide a strong advantage in fuel cell, battery forced discharge, and CPU power supply system testing.



NZ Series Product Characteristic Curve

Ordering information

NZ series related products				
Voltage	Model	Specification	Dimension	Remark
20V	FT682003NZ-20-120	20V/120A/350W (-2.4V@120A)	2U	-2.4V full current with load
	FT682011NZ-20-120	20V/120A/1100W (-2.4V@120A)	2U	
	FT682005NZ-20-300	20V/300A/500W (-2.4V@300A)	2U	
	FT682012NZ-20-300	20V/300A/1.2kW (-2.4V@300A)	4U	
	FT68203NZ-20-300	20V/300A/3kW (-2.4V@300A)	4U	
	FT682024NZ-20-600	20V/600A/2.4kW (-2.4V@600A)	7U	
	FT68206NZ-20-600	20V/600A/6kW (-2.4V@600A)	7U	
	FT682036NZ-20-900	20V/900A/3.6kW (-2.4V@900A)	11U	
	FT68209NZ-20-900	20V/900A/9kW (-2.4V@900A)	11U	
	FT682048NZ-20-1200	20V/1200A/4.8kW (-2.4V@1200A)	14U	
	FT68212NZ-20-1200	20V/1200A/12kW (-2.4V@1200A)	14U	
N series related products				
Voltage	Model	Specification	Dimension	Remark
40V	FT682007N-40-150	40V/150A/700W (0.2V@150A)	3U	0.2V full current with load
	FT682015N-40-300	40V/300A/1.5kW (0.2V@300A)	3U	
	FT682022N-40-450	40V/450A/2.25kW (0.2V@450A)	3U	
	FT68203N-40-600	40V/600A/3kW (0.2@600A)	3U	
	FT682045N-40-900	40V/900A/4.5kW (0.2@900A)	5U	
	FT68206N-40-1200	40V/1200A/6kW (0.2@1200A)	5U	
	FT68209N-40-1800	40V/1800A/9kW (0.2@1800A)	12U	
	FT68212N-40-2400	40V/2400A/12kW (0.2@2400A)	12U	
	FT68215N-40-3000	40V/3000A/15kW (0.2@3000A)	12U	
20V	FT682007N-20-250	20V/250A/700W (0.2V@250A)	3U	
	FT682015N-20-500	20V/500A/1.5kW (0.2V@500A)	3U	
	FT682022N-20-750	20V/750A/2.25kW (0.2V@750A)	3U	
	FT68203N-20-1000	20V/1000A/3kW (0.2@1000A)	3U	
	FT682045N-20-1500	20V/1500A/4.5kW (0.2@1500A)	5U	
	FT68206N-20-2000	20V/2000A/6kW (0.2@2000A)	5U	
	FT68209N-20-3000	20V/3000A/9kW (0.2@3000A)	12U	
	FT68212N-20-4000	20V/4000A/12kW (0.2@4000A)	12U	
	FT68215N-20-5000	20V/5000A/15kW (0.2@5000A)	12U	
Larger specifications can be customized				

Specification parameters-1

Model	FT682024NZ-20-600		FT682036NZ-20-900		FT682048NZ-20-1200	
Voltage*3	20V		20V		20V	
Current	600A		900A		1200A	
Power*2	2400W		3600W		4800W	
Full current minimum operating voltage	-2.4V/600A		-2.4V/900A		-2.4V/1200A	
Constant current						
Range	0~60A	0~600A	0~90A	0~900A	0~120A	0~1200A
Resolution	1mA	10mA	1.5mA	15mA	2mA	20mA
Precision	0.05%+0.05%F.S.		0.05%+0.05%F.S.		0.05%+0.05%F.S.	
Constant voltage						
Range	0~4V	0~20V	0~4V	0~20V	0~4V	0~20V
Resolution	0.08mV	0.4mV	0.08mV	0.4mV	0.08mV	0.4mV
Precision	0.025%+0.05%F.S.	0.025%+0.025%F.S.	0.025%+0.05%F.S.	0.025%+0.025%F.S.	0.025%+0.05%F.S.	0.025%+0.025%F.S.
Constant power						
Range	0~2400W		0~3600W		0~4,800W	
Resolution	40mW		60mW		80mW	
Precision	0.2%+0.2%F.S.		0.2%+0.2%F.S.		0.2%+0.2%F.S.	
Constant resistance						
Range	0.0012~6.7Ω	0.012~33Ω	0.0008~4.4Ω	0.008~22Ω	0.0006~3.3Ω	0.006~16.5Ω
Precision	Vin/Rset* (0.2%) +0.2%IF.S.		Vin/Rset* (0.2%) +0.2%IF.S.		Vin/Rset* (0.2%) +0.2%IF.S.	
Dynamic measurement						
T1&T2	10us~60s		10us~60s		10us~60s	
Precision	1us+20ppm		1us+20ppm		1us+20ppm	
Current slope	0.0001~0.6A/us	0.0001~6A/us	0.0001~0.9A/us	0.0001~9A/us	0.0001~1.2A/us	0.0001~12A/us
Current measurement						
Range	0~60A	0~600A	0~90A	0~900A	0~120A	0~1200A
Resolution	1mA	10mA	1.5mA	15mA	2mA	20mA
Precision	0.05%+0.05%F.S.		0.05%+0.05%F.S.		0.05%+0.05%F.S.	
Voltage measurement						
Range	-0.7V~4V	-3.3V~20V	-0.7V~4V	-3.3V~20V	-0.7V~4V	-3.3V~20V
Resolution	0.08mV	0.4mV	0.08mV	0.4mV	0.08mV	0.4mV
Precision	0.025%+0.025%F.S.		0.025%+0.025%F.S.		0.025%+0.025%F.S.	
Other specification						
AC voltage	220VAC ±10%, 50~60Hz, 3600VA		220VAC ±10%, 50~60Hz, 5400VA		220VAC ±10%, 50~60Hz, 7200VA	
Operating temperature	0~40℃		0~40℃		0~40℃	
Full power operating temperature	0~25℃		0~25℃		0~25℃	
Weight	67kg		90kg		122kg	
Dimension	432mm*385mm*712.2mm		432mm*563mm*715.2mm		432mm*700mm*712.2mm	

Specification parameters-2

Model	FT682007N-40-150		FT68203N-40-600		FT68206N-40-1200	
Voltage*3	40V		40V		40V	
Current	150A		600A		1200A	
Power*2	750W		3, 000W		6, 000W	
Full current minimum operating voltage	0. 2V/150A		0. 2V/600A		0. 2V/1200A	
Constant current						
Range	0-15A	0-150A	0-60A	0-600A	0-120A	0-1200A
Resolution	0. 25mA	2. 5mA	1mA	10mA	2mA	20mA
Precision	0. 05%+0. 1%F. S.	0. 05%+0. 05%F. S.	0. 05%+0. 1%F. S.	0. 05%+0. 05%F. S.	0. 05%+0. 1%F. S.	0. 05%+0. 05%F. S.
Constant voltage						
Range	0-8V	0-40V	0-8V	0-40V	0-8V	0-40V
Resolution	0. 14mV	0. 66mV	0. 14mV	0. 66mV	0. 14mV	0. 66mV
Precision	0. 025%+0. 025%F. S.		0. 025%+0. 025%F. S.		0. 025%+0. 025%F. S.	
Constant power*4						
Range	0 - 750W		0 - 3, 000W		0 - 6, 000W	
Resolution	12. 5mW		50mW		100mW	
Precision	0. 2%+0. 2% F. S.		0. 2%+0. 2% F. S.		0. 2%+0. 2% F. S.	
Constant resistance*4						
Range	0. 01~53Ω	0. 1~266Ω	0. 002~13. 2Ω	0. 02~66Ω	0. 001~6. 7Ω	0. 013~33Ω
Precision	Vin/Rset* (0. 2%) +0. 2%IF. S.		Vin/Rset* (0. 2%) +0. 2%IF. S.		Vin/Rset* (0. 2%) +0. 2%IF. S.	
Dynamic measurement						
T1&T2	10us~60s		10us~60s		10us~60s	
Resolution	2us		2us		2us	
Precision	2us+100ppm		2us+100ppm		2us+100ppm	
Current slope	0.0001~0.15A/us	0. 0001~1. 5A/us	0. 0001~0. 6A/us	0. 0001~6A/us	0. 0001~1. 2A/us	0. 0001~12A/us
Current measurement						
Range	0-15A	0-150A	0-60A	0-600A	0-120A	0-1200A
Resolution	0. 25mA	2. 5mA	1mA	10mA	2mA	20mA
Precision	0. 05%+0. 1%F. S.	0. 05%+0. 05%F. S.	0. 05%+0. 1%F. S.	0. 05%+0. 05%F. S.	0. 05%+0. 1%F. S.	0. 05%+0. 05%F. S.
Voltage measurement						
Range	0-8V	0-40V	0-8V	0-40V	0-8V	0-40V
Resolution	0. 14mV	0. 66mV	0. 14mV	0. 66mV	0. 14mV	0. 66mV
Precision	0. 025%+0. 025%F. S.		0. 025%+0. 025%F. S.		0. 025%+0. 025%F. S.	
Other specification						
AC Voltage	220VAC ±10%, 50~60Hz, 300VA		220VAC ±10%, 50~60Hz, 300VA		220VAC ±10%, 50~60Hz, 480VA	
Operating temperature	0~40℃		0~40℃		0~40℃	
Full power operating temperature	0~25℃		0~25℃		0~25℃	
Weight	28kg		40kg		72kg	
Dimension	432mm(W)*132mm(H)*662.2mm(D)		432mm(W)*132mm(H)*662.2mm(D)		432mm(W)*222mm(H)*662.2mm(D)	

Specification parameters-3

Model	FT682007N-20-250		FT68203N-20-1000		FT68206N-20-2000	
Voltage*3	20V		20V		20V	
Current	250A		1000A		2000A	
Power*2	750W		3, 000W		6, 000W	
Full current minimum operating voltage	0. 2V/250A		0. 2V/1000A		0. 2V/2000A	
Constant current						
Range	0-25A	0-250A	0-100A	0-1000A	0-200A	0-2000A
Resolution	0. 42mA	4. 2mA	1. 6mA	17mA	3. 2mA	33mA
Precision	0. 05%+0. 1%F. S.	0. 05%+0. 05%F. S.	0. 05%+0. 1%F. S.	0. 05%+0. 05%F. S.	0. 05%+0. 1%F. S.	0. 05%+0. 05%F. S.
Constant voltage						
Range	0-4V	0-20V	0-4V	0-20V	0-4V	0-20V
Resolution	0. 07mV	0. 33mV	0. 07mV	0. 33mV	0. 07mV	0. 33mV
Precision	0. 025%+0. 025%F. S.		0. 025%+0. 025%F. S.		0. 025%+0. 025%F. S.	
Constant power*4						
Range	0 - 750W		0 - 3, 000W		0 - 6, 000W	
Resolution	12. 5mW		50mW		100mW	
Precision	0. 2%+0. 2% F. S.		0. 2%+0. 2% F. S.		0. 2%+0. 2% F. S.	
Constant resistance*4						
Range	0. 003~16Ω	0. 03~80Ω	0. 0008~4Ω	0. 008~20Ω	0. 0004~2Ω	0. 004~10Ω
Precision	Vin/Rset* (0. 2%) +0. 2%IF. S.		Vin/Rset* (0. 2%) +0. 2%IF. S.		Vin/Rset* (0. 2%) +0. 2%IF. S.	
Dynamic measurement						
T1&T2	10us~60s		10us~60s		10us~60s	
Precision	2us+100ppm		2us+100ppm		2us+100ppm	
Current slope	0.0001~0.25A/us	0. 0001~2. 5A/us	0. 0001~1A/us	0. 0001~10A/us	0. 0001~2A/us	0. 0001~20A/us
Current measurement						
Range	0-25A	0-250A	0-100A	0-1000A	0-200A	0-2000A
Resolution	0. 42mA	4. 2mA	1. 6mA	17mA	3. 2mA	33mA
Precision	0. 05%+0. 1%F. S.	0. 05%+0. 05%F. S.	0. 05%+0. 1%F. S.	0. 05%+0. 05%F. S.	0. 05%+0. 1%F. S.	0. 05%+0. 05%F. S.
Voltage measurement						
Range	0-4V	0-20V	0-4V	0-20V	0-4V	0-20V
Resolution	0. 07mV	0. 33mV	0. 07mV	0. 33mV	0. 07mV	0. 33mV
Precision	0. 025%+0. 025%F. S.		0. 025%+0. 025%F. S.		0. 025%+0. 025%F. S.	
Other specification						
AC Voltage	220VAC ±10%, 50~60Hz, 300VA		220VAC ±10%, 50~60Hz, 300VA		220VAC ±10%, 50~60Hz, 480VA	
Operating temperature	0~40℃		0~40℃		0~40℃	
Full power operating temperature	0~25℃		0~25℃		0~25℃	
Weight	28kg		40kg		72kg	
Dimension	432mm(W)*132mm(H)*662.2mm(D)		432mm(W)*132mm(H)*662.2mm(D)		432mm(W)*222mm(H)*662.2mm(D)	