

FT6800 series

Ultra-high power electronic load

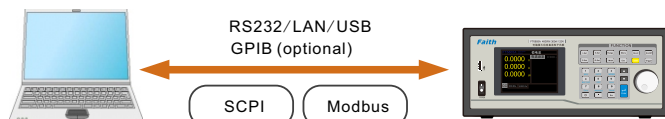


Characteristics

- Single power: 2.6kW ~ 52kW, can be expanded to 300kW through master/slave cascade;
- 0.05% accuracy, 0.1mA/0.1mV resolution, 20kHz dynamic frequency control;
- Quick call, OCP/OVP test, automatic test function, easy to operate and flexible;
- External simulation programming function, which can realize complex carrier shape simulation;
- One-click testing of power battery and supercapacitor test functions;
- Comprehensive protection function: over voltage, over current, over temperature, current limit, power limit, input reverse connection, etc;
- TFT color LCD display, English and Chinese menu interface;
- Provide a variety of remote communication interfaces: RS232, LAN, USB, GPIB (optional);
- SCPI and ModBus-RTU protocols are available;
- Chinese simplified, traditional, English three kinds of operation interface and software interface.

Multi-interface and multi-protocol

The FT6800 series is equipped with multiple communication interfaces and supports both SCPI and Modbus communication protocols. Users can configure the system on the menu according to their needs, which makes the system integration more flexible.



Summary

FT6800 series high power programmable DC electronic load, based on high reliability, high stability of the design of multi-function, large capacity electronic load products. The loop control unit has high bandwidth, strong anti-oscillation ability, and can adapt to all kinds of power supplies to the greatest extent; The power module fast fusing protection design ensures the continuous working ability of the whole machine to the greatest extent.

FT6800 series product line is rich, voltage 40V, 120V, 500V, 800V, 1000V, 1200V multiple grades, single power range from 2.6kW to 52kW, a single current up to 2400A. Wider working range, extremely fast dynamic frequency, can effectively meet most of the test needs.

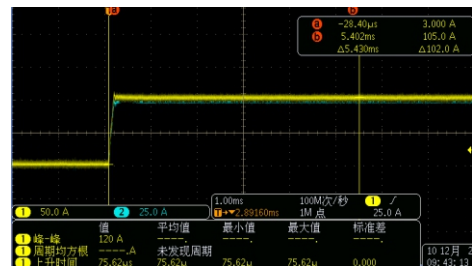
FT6800 series interface using color LCD display, with good resolution. With the full number keyboard, the operation is very simple. It is equipped with LAN, RS232, USB, GPIB (optional) and other communication interfaces and analog interfaces, which supports both SCPI and ModBus communication protocols, providing great convenience for system integration applications.

Application field

- Power battery, lead-acid battery, fuel cell discharge test;
- BMS and battery protection device testing;
- DC charging pile, charging module, vehicle charger, A/D power converter and other power electronic power device testing;
- Test high-power switching power supply, UPS power supply, communication power supply, server power supply;
- Virtual load testing of solar arrays and industrial motors.

Cascad

The FT6800 series supports the master-slave cascading function to realize the parallel use of multiple loads of the same model, and the maximum power can be extended to 300kW. In cascaded mode, users only need to control the hosts. Each slave automatically replicates the load parameters of the hosts to achieve independent flow balancing. The cascaded system can achieve all the functions of a single machine, including on-load in CV mode.



When two master-slave cascades are loaded, the current waveforms coincide completely

Battery test

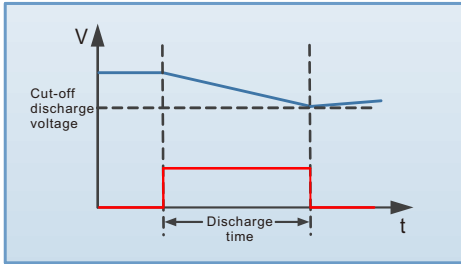
The internal resistance and capacity of battery are important indexes for evaluating battery parameters. To facilitate testing, the FT6800 series load provides battery testing functions, including battery internal resistance testing and battery capacity testing.

Battery internal resistance test

The FT6800 series load is tested by direct current discharge (DCR).

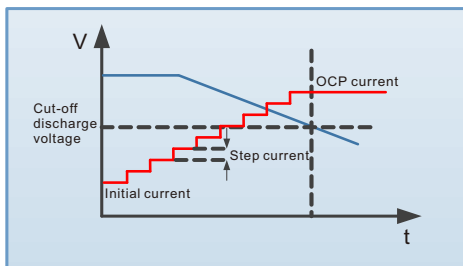
Battery capacity test

This function uses constant current discharge. During the discharge process, the discharge quantity, discharge capacity and discharge time are recorded.



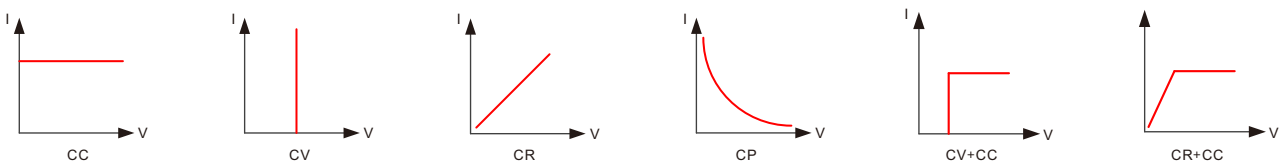
OCP test

The FT6800 series load itself provides OCP testing, which is mainly used to test the BMS, the overcurrent and overpower point of the power module. During OCP testing, the overcurrent protection point of the tested object will be automatically found and recorded in IMAX, PMAX. Combined with the high and low limit values of the test parameters, it can automatically determine whether the test results exceed the set specifications, saving time for product design verification and production line system testing.



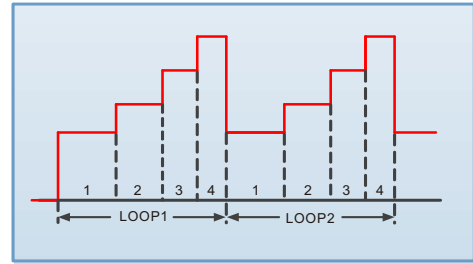
Multiple operating modes

FT6800 series has four basic operating modes of constant current, constant voltage, constant resistance and constant power, which can meet a wide range of test needs. At the same time, it also has the function of CV+CC, CR+CC composite operation mode. Users can set the current limit value according to their own test requirements to avoid overcurrent damage to the test product during the test process. Among them, CV+CC mode can be applied to simulate battery charging characteristics, test charging piles and similar products¹ such as vehicle chargers. CR+CC mode simulates power supply voltage current limitation and accuracy testing.



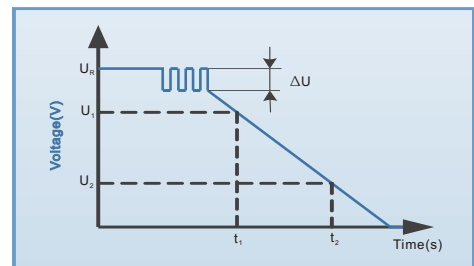
Sequence function

The FT6800 series of electronic loads provides serial testing capabilities. Users can edit the test sequence of a load to simulate various changes at the load input. Four modes of CC, CV, CP and CR were tested in sequence. The electronic load can store up to 20 sequence files, each file can perform up to 50 steps, and the maximum time of a single step can be set to 0.1ms ~ 90000s, which is suitable for various time-load tests. At the same time, the user can also set the number of cycles of the sequence and the switching mode.



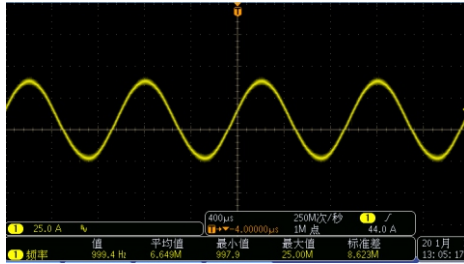
Supercapacitor test

The internal resistance and capacity of ultracapacitors are important indicators for evaluating capacitance parameters. In order to facilitate ultracapacitor testing, FT6800 series loads provide ultracapacitor testing functions. This function can test the internal resistance and capacity of the supercapacitor at the same time. The discharge current, discharge termination point and capacity calculation start and end point of the supercapacitor can be set to test.

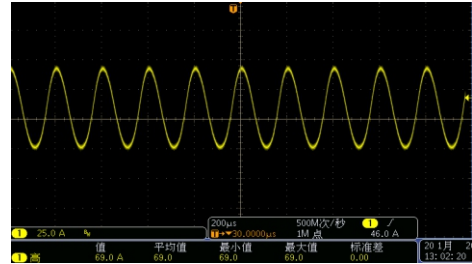


External simulation programming

The FT6800 series has external analog programming capabilities. Other devices can continuously control the load via an external voltage signal (DC or AC). The external voltage signal of 0 ~ 10V corresponds to 0 ~ 100% full scale on-load current. This function can also be used for various complex band carrier shape tests.



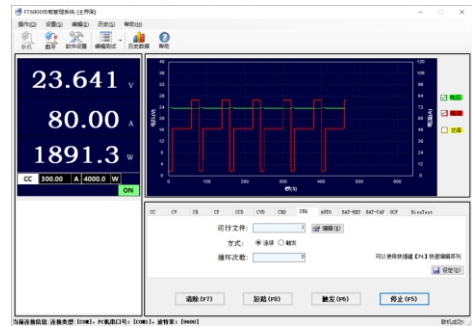
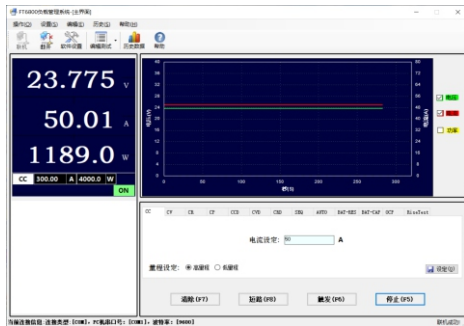
1kHz sine wave



5kHz sine wave

Computer graphical operation software

The FT6800 system provides a functional software with virtual instrument function, which can export test data, generate images, and print reports. The software displays images and data in real time, which is more intuitive and convenient for comparison.



Ordering information

Model	Specification	Model	Specification	Model	Specification
FT6803A	2.6kW/300A/120V	FT6812A	8kW/160A/800V	FT68016C	16kW/320A/800V
FT6804A	2.6kW/100A/500V	FT6813A	8kW/160A/1000V	FT68016D	16kW/320A/1kV
FT6805A	4kW/300A/120V	FT6814A	12kW/600A/120V	FT68016E	16kW/240A/1.2kV
FT6806A	4kW/100A/500V	FT6815A	12kW/300A/500V	FT68020A	20kW/900A/120V
FT6807A	5.2kW/600A/120V	FT6817A	12kW/240A/800V	FT68020B	20kW/500A/500V
FT6808A	5.2kW/200A/500V	FT6818A	12kW/240A/1kV	FT68020C	20kW/400A/800V
FT6809A	5.2kW/60A/800V	FT6819A	12kW/180A/1.2kV	FT68020D	20kW/400A/1kV
FT6810A	8kW/600A/120V	FT68016A	16kW/900A/120V	FT68020E	20kW/300A/1.2kV
FT6811A	8kW/200A/500V	FT68016B	16kW/400A/500V		

Optional information

Name	Specification	Instruction
GPIO adapter card	Suffix G	

* Optional test cables and other optional parts, the relevant specifications and models are detailed in the "Optional Accessories" section of this manual.

Specification parameters-1

FT6800 series has many models, only some of them are listed for reference.

Model	FT6803A		FT6804A		FT6805A		FT6806A	
Voltage	120V		500V		120V		500V	
Current	300A		100A		300A		100A	
Power	2600W		2600W		4000W		4000W	
Full current minimum operating voltage	2V/300A		4.5V/100A		2V/300A		4.5V/100A	
Constant current								
Range	0-30A	0-300A	0-10A	0-100A	0-30A	0-300A	0-10A	0-100A
Resolution	0.5mA	5mA	0.2mA	2mA	0.6mA	6mA	0.2mA	2mA
Precision	0.1%+0.15%F.S.	0.05%+0.1%F.S.	0.1%+0.15%F.S.	0.05%+0.1%F.S.	0.1%+0.15%F.S.	0.05%+0.1%F.S.	0.1%+0.15%F.S.	0.05%+0.1%F.S.
Constant voltage								
Range	0-12V	0-120V	0-50V	0-500V	0-12V	0-120V	0-50V	0-500V
Resolution	0.2mV	2mV	1mV	10mV	0.2mV	2mV	1mV	10mV
Precision	0.05%+0.05% S.							
Constant power								
Range	0-2600W		0-2600W		0-4000W		0-4000W	
Resolution	50mW		50mW		70mW		70mW	
Precision	0.5%+1%F. S.		0.5%+1%F. S.		0.2%+0.3%F. S.		0.2%+0.3%F. S.	
Constant resistance								
Range	0.004-40Ω	0.08-640Ω	0.05-500Ω	1-8000Ω	0.004-40Ω	0.08-640Ω	0.05-500Ω	1-8000Ω
Precision	0.01%+0.075S	0.01%+0.005S	0.01%+0.0062S	0.01%+0.0004S	0.01%+0.083S	0.01%+0.0052S	0.01%+0.025S	0.01%+420uS
Resolution	16bits							
Slope								
Current slope range	5-300A/ms	300-15000A/ms	1-100A/ms	100-5000A/ms	5-300A/ms	300-15000A/ms	1-100A/ms	100-5000A/ms
Voltage slope range	1.0-50V/ms	50-500V/ms	4.0-200V/ms	200-2000V/ms	1.0-50V/ms	50-500V/ms	4.0-200V/ms	200-2000V/ms
Power slope range	5-300A/ms	300-15000A/ms	1-100A/ms	100-5000A/ms	5-300A/ms	300-15000A/ms	1-100A/ms	100-5000A/ms
Resistance slope range	5-300A/ms	300-15000A/ms	1-100A/ms	100-5000A/ms	5-300A/ms	300-15000A/ms	1-100A/ms	100-5000A/ms
Precision	(1±35%) * Set value							
Voltage measurement								
Range	0-12V	0-120V	0-50V	0-500V	0-12V	0-120V	0-50V	0-500V
Precision	0.025%+0.025%F.S.							
Current measurement								
Range	0-30A	0-300A	0-10A	0-100A	0-30A	0-300A	0-10A	0-100A
Precision	0.1%+0.15%F.S.	0.05%+0.1%F.S.	0.1%+0.15%F.S.	0.05%+0.1%F.S.	0.1%+0.15%F.S.	0.05%+0.1%F.S.	0.1%+0.15%F.S.	0.05%+0.1%F.S.
Power measurement								
Range	0-2600W		0-2600W		0-4000W		0-4000W	
Precision	0.2%+0.3%F. S							
Transient measurement								
T1&T2	0.025-60ms	1-60000ms	0.025-60ms	1-60000ms	0.025-60ms	1-60000ms	0.025-60ms	1-60000ms
Resolution	1us	1ms	1us	1ms	1us	1ms	1us	1ms
Precision	1us+100ppm	1ms+100ppm	1us+100ppm	1ms+100ppm	1us+100ppm	1ms+100ppm	1us+100ppm	1ms+100ppm
Dimension	440(W)×200(H)×630(D)							
Temperature specification	Protection temperature 85℃, operating temperature 0 ~ 40℃, full power operating temperature 0 ~ 25℃.							

Specification parameters-2

FT6800 series has many models, only some of them are listed for reference.

Model	FT6807A		FT6808A		FT6810A		FT6811A	
Voltage	120V		500V		120V		500V	
Current	600A		200A		600A		200A	
Power	5200W		5200W		8000W		8000W	
Full current minimum operating voltage	2. 5V/600A		4. 5V/200A		2. 5V/600A		4. 5V/200A	
Constant current								
Range	0-60A	0-600A	0-20A	0-200A	0-60A	0-600A	0-20A	0-200A
Resolution	1mA	10mA	0. 4mA	4mA	1mA	10mA	0. 4mA	4mA
Precision	0. 1%+0. 15%F. S.	0. 1%+0. 1%F. S.	0. 1%+0. 15%F. S.	0. 1%+0. 1%F. S.	0. 1%+0. 15%F. S.	0. 1%+0. 1%F. S.	0.1%+0.15%F.S.	0.1%+0.1%F.S.
Constant voltage								
Range	0-12V	0-120V	0-50V	0-500V	0-12V	0-120V	0-50V	0-500V
Resolution	0. 2mV	2mV	1mV	10mV	0. 2mV	2mV	1mV	10mV
Precision	0. 05%+0. 05%F. S.							
Constant power								
Range	0-5200W		0-5200W		0-8000W		0-8000W	
Resolution	90mW		90mW		140mW		140mW	
Precision	0. 2%+0. 3%F. S.							
Constant resistance								
Range	0. 002~20Ω	0. 04~320Ω	0. 025~250Ω	0. 5~4000Ω	0. 002~20Ω	0. 04~320Ω	0. 025~250Ω	0. 5~4000Ω
Precision	0. 01%+0. 15S	0. 01%+0. 01S	0. 01%+0. 12S	0. 01%+830uS	0. 01%+0. 15S	0. 01%+0. 01S	0. 01%+0. 012S	0. 01%+830uS
Resolution	16bits							
Slope								
Current slope range	10-600A/ms	600-30000A/ms	3. 2-160A/ms	160-8000A/ms	10-600A/ms	600-30000A/ms	4-200A/ms	200-10000A/ms
Voltage slope range	1. 0-50V/ms	50-500V/ms	4. 0-200V/ms	200-2000V/ms	1-50V/ms	50-500V/ms	4-200V/ms	200-2000V/ms
Power slope range	10-600A/ms	600-30000A/ms	3. 2-160A/ms	160-8000A/ms	10-600A/ms	600-30000A/ms	4-200A/ms	200-10000A/ms
Resistance slope range	10-600A/ms	600-30000A/ms	3. 2-160A/ms	160-8000A/ms	10-600A/ms	600-30000A/ms	4-200A/ms	200-10000A/ms
Precision	(1±35%) * Set value							
Voltage measurement								
Range	0-12V	0-120V	0-50V	0-500V	0-12V	0-120V	0-50V	0-500V
Precision	0. 025%+0. 025%F. S.							
Current measurement								
Range	0-60A	0-600A	0-20A	0-200A	0-60A	0-600A	0-20A	0-300A
Precision	0.1%+0.15%F.S.	0.1%+0.1%F.S.	0.1%+0.15%F.S.	0.1%+0.1%F.S.	0.1%+0.15%F.S.	0.1%+0.1%F.S.	0.1%+0.15%F.S.	0.1%+0.1%F.S.
Power measurement								
Range	0-5200W		0-5200W		0-8000W		0-8000W	
Precision	0. 2%+0. 3%F. S							
Transient measurement								
T1&T2	0. 025-60ms	1-60000ms	0. 025-60ms	1-60000ms	0. 025-60ms	1-60000ms	0. 025-60ms	1-60000ms
Resolution	1us	1ms	1us	1ms	1us	1ms	1us	1ms
Precision	1us+100ppm	1ms+100ppm	1us+100ppm	1ms+100ppm	1us+100ppm	1ms+100ppm	1us+100ppm	1ms+100ppm
Dimension	440 (W) ×420 (H) ×630 (D)							
Temperature specification	Protection temperature 85℃, operating temperature 0 ~ 40℃, full power operating temperature 0 ~ 25℃.							

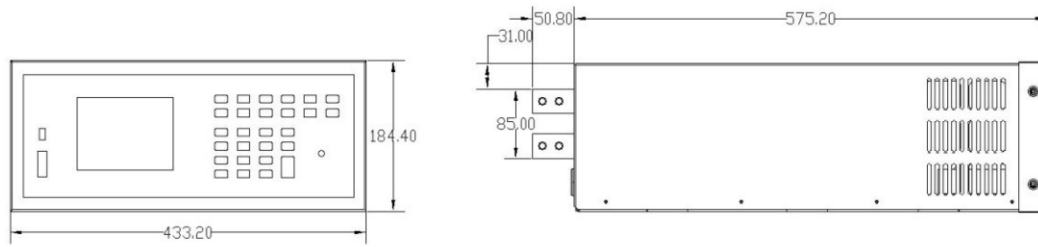
* All specifications are subject to change without notice.

1. Meet the rated specifications in the ambient temperature range of 25±5.

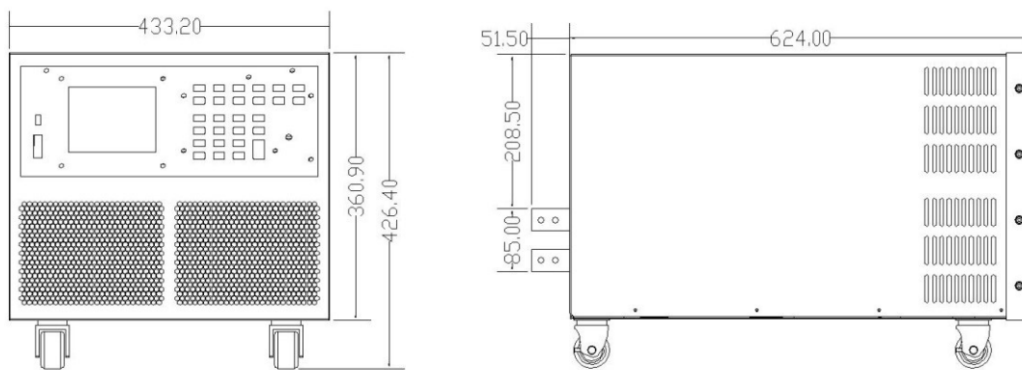
2. If the operating voltage exceeds 1.05 times the rated voltage, permanent damage may be caused to the device.

Dimension drawing

2.6kW~4kW Model Dimension Drawing



5.2kW~8kW Model Dimension Drawing



12kW Model Dimension Drawing

