FTB7000 series

Wide range high power bidirectional programmable DC power supply

Characteristic

- Unit range:
  Voltage: 0 ~ 2250V,
  Current: 0 ~ ±2880A ,
  Power: 0 ~ ±300kW;
- Main-slave parallel expansion power up to 3MW;
- Voltage accuracy: 0.05%+0.05%F.S.;
- Current accuracy: 0.1%+0.2%F.S.;
- Power factor 0.99, the overall efficiency is higher than 93%;
- Feedback load function, feedback efficiency up to 95%;
- Two-way energy transfer, seamless cross-quadrant switching;
- Automatic line loss compensation;
- With constant voltage, constant current, constant power, constant resistance function;
- CV/CC priority mode;
- Voltage/current slope can be set;
- With voltage output slow up, slow down function;
- With charge, discharge function;
- With sequence and waveform functions, can achieve such as automotive electronic test voltage waveform, user-defined and other
- complex voltage, current waveform;
- With battery simulator function (optional);
- Standard feature rich "Faithtech power product demonstration platform" software, with basic solar photovoltaic cell simulation function;
- Optional feature-rich "Faithtech Solar PV Matrix Simulation Software" (optional);
- Over voltage, over current, over power, over temperature, under voltage, power off and other comprehensive protection functions;
- High voltage isolation digital, analog, monitoring, control interface;
- Equipped with a variety of communication interfaces: LAN, USB, optional RS485, CAN or GPIB;
- Communication protocol support SCPI, MODBUS, CAN-OPEN (optional) protocol;
- Provide communication programming manual, SDK development kit and demonstration host computer;
- TFT color LCD screen, Chinese, English and Chinese menu interface;
- Intelligent fan control;
- 4U/50kW high power density, standard 19-inch rack design.

Summary

FTB7000 series products are a wide range of high power bidirectional programmable DC power supply with both DC power supply and feedback load function. It can not only realize the function of Source, but also feed the absorbed energy back to the power grid as a feedback load to realize the bidirectional flow of energy.

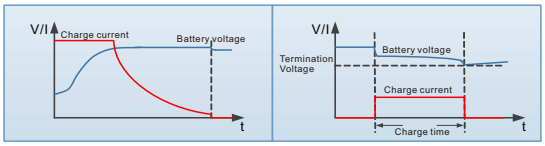
FTB7000 series adopts full digital control, high operation precision, fast response, wide output adjustment range, programmable output function, can realize the source and load dual quadrant seamless switching, at the same time with rich test functions and simple human-computer interaction interface, in automotive electronics, energy storage, fuel cell and other high-power test scenarios have a wide range of applications.

Characteristic

- Energy testing:
  Energy Storage converters (PCS),
  Microgrid equipment production,
  Inverter production, development,
  Solar arrays, wind power generation applications;
- Automotive production testing:
  Automotive motors,
  Automotive electronics,
  Two-way DC/DC converter;
- Other tests:
  Power semiconductor components,
  development server power supply, UPS,
  Avionics equipment,
  Consumer electronics products.

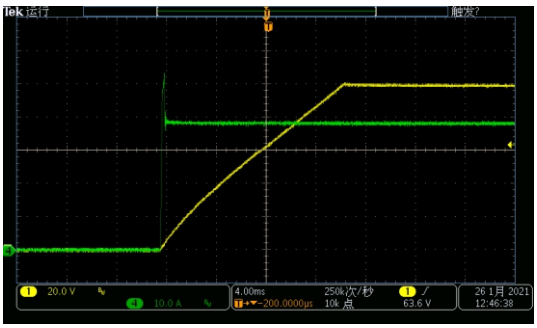
Battery charge/discharge test

Due to its unique bidirectional design, FTB7000 series has charge/discharge test function, which is suitable for various kinds of batteries and energy storage equipment charge/discharge test.

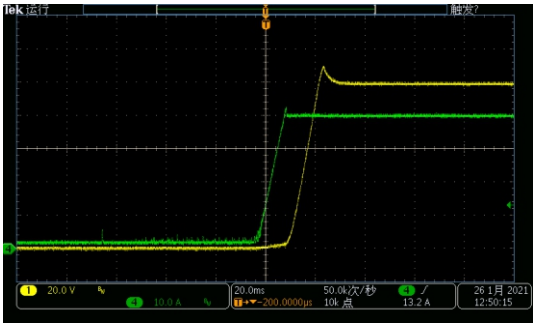


CV and CC are preferred

When the power output is connected to the inductive or capacitive load, the output current or voltage will overshoot to a certain extent, which will trigger the protection of the device under test, or even damage the device under test. FTB7000 series with CV, CC output priority function to effectively inhibit the output overshoot and the impact.



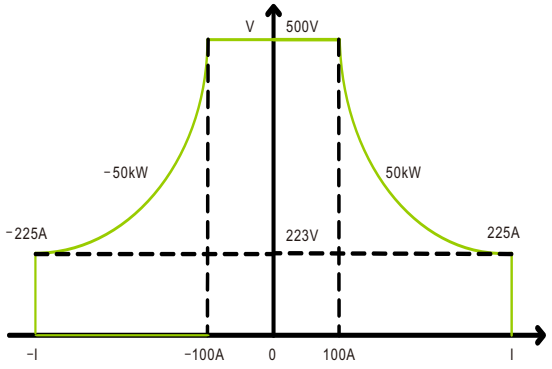
CV priority
(high speed build voltage, current overshoot)



CC priority
(high speed build current, voltage overshoot)

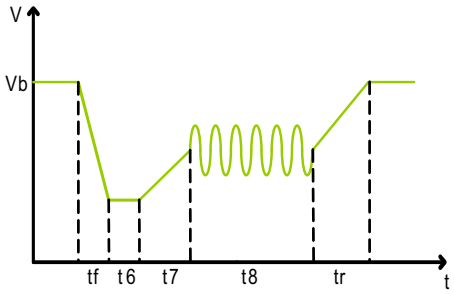
Double quadrant, wide range

FTB7000 series products have dual quadrant working characteristics, can be used as DC power output energy, and can be used as feedback load to absorb energy. At the same time, FTB9000 has a wide working range, with more than 3 times the wide range of output range, one power supply can cover more applications, saving costs for users.



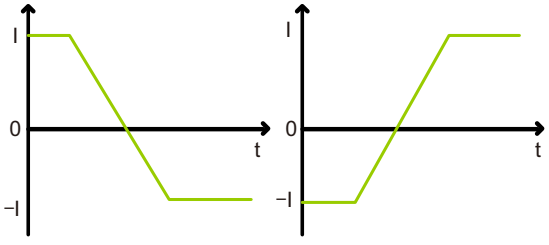
Sequence and waveform function

FTB7000 provides users with sequence editing functions for power supply interruptions, instantaneous drops, and other voltage and current changes. A total of 10 sequence files, each file 100 steps, support cycle, link to facilitate the realization of complex waveform output.



Seamless switching of two-way current

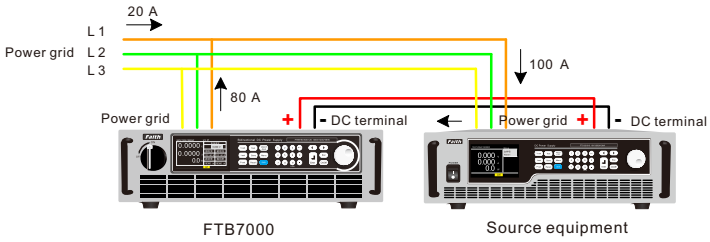
When the conventional DC power supply and load switch between positive and negative current, a short step will be generated at 0A, resulting in discontinuous current commutation. FTB7000 not only has the dual-quadrant working ability, but also has the high-speed current switching ability, which can realize the seamless connection of positive and negative current switching, effectively avoid voltage or current overshooting, and is widely used in the test of motor, battery pack, BMS and energy storage system.

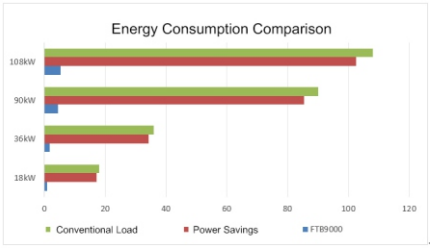


Power Switching Load　　Load Switching Power

Feedback load function

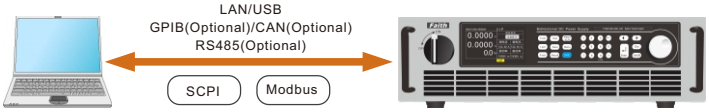
FTB7000 series products have the feedback load function, which can return the energy of the equipment under test to the factory Intranet for direct use, rather than dissipate it as heat. Its energy feedback conversion efficiency is as high as 95%, which can not only greatly reduce the cost of electricity for users, but also avoid the use of air conditioning and other refrigeration systems and reduce noise.

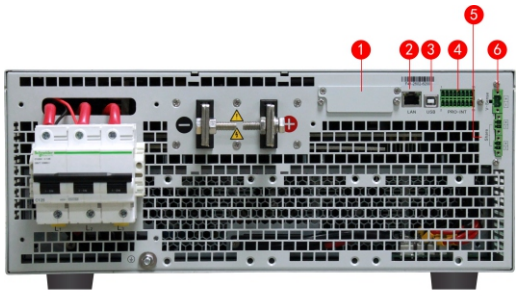




Multi-interface and Multi-protocol

The FTB7000 series is equipped with a variety of communication interfaces, and supports both SCPI and Modbus communication protocols. Users can configure in the menu according to their needs, which makes the system integration more flexible.





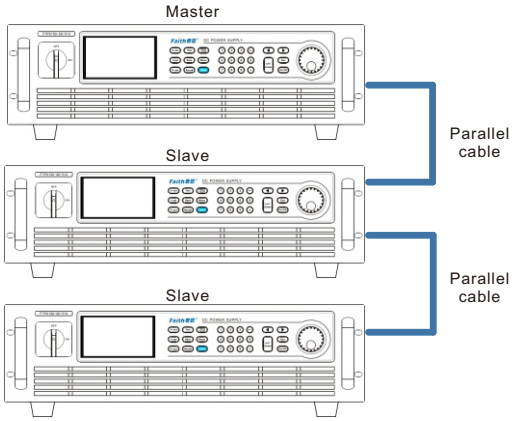
1.Optional RS232&Analog card or GPIB interface 2.Standard LAN interface
3.Standard USB interface 4.Standard digital I/O port
5.Cascade interface 6.Remote compensation interface

Faithtech Solar PV Matrix Simulation Software (optional)

Faithtech Solar PV Matrix simulation software is a photovoltaic test software supporting Faithtech power supply series. It adopts simple and intuitive graphical interface to present users with intuitive and friendly man-machine interface. Users can easily use the software to output, measure and display the maximum power tracking status and numerical records of photovoltaic inverters in real time. The software built-in EN50530, Sandia and other 5 kinds of regulatory test procedures, can simulate the solar panel under different parameters of the series parallel test, as well as cloud cover and other tests; It is convenient for users to test the static and dynamic MPPT efficiency of photovoltaic inverters.

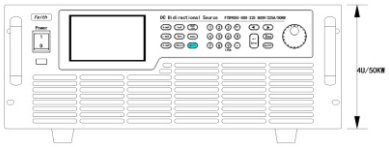
Master/slave parallel function

FTB7000 series power supplies support the parallel operation of 10 power supplies of the same model, so that users can achieve greater power expansion. When the parallel operation, the host automatically displays the parameters, and the slave automatically copies the set parameters of the host to achieve automatic current sharing.



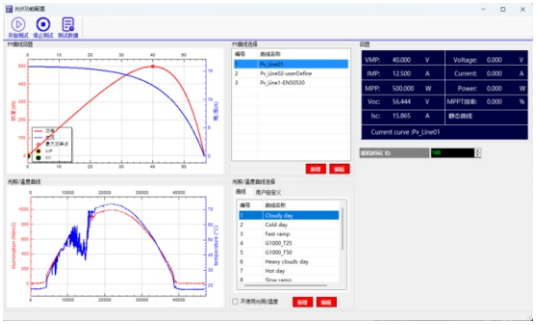
4U/50kW high power density

The FTB7000 series provides a high power density of 3U/18kW, with accurate output, fast response and low ripple noise. The wide range of voltage 500V ~ 2250V and current 225A ~ 2880A is suitable for every test and verification link from design to production process.



Photovoltaic array simulation function

FTB7000 series comes standard with feature-rich "Faith Power Demonstration Platform" with basic PV function for testing PV inverters. With the host computer demonstration platform, more test functions can be realized, such as dynamic MPPT, typical weather data, custom light/temperature change curve and so on. For more complex PV test functions, you can choose the Fiesta Solar PV Matrix simulation software.



Computer graphical operation software

A host computer software platform with the function of virtual instrument can be provided, which can remotely and real-time set test data, read test data, generate images, export reports, print reports, etc., and realize multi-functional test synchronously, so as to facilitate test use.

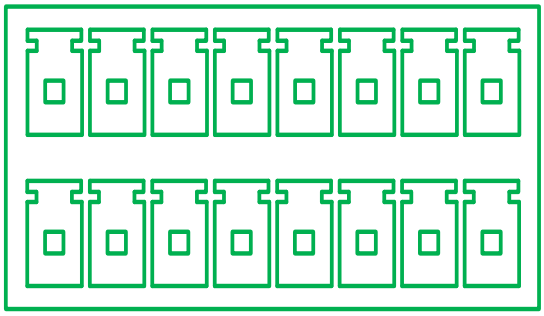
Battery simulation function (optional)

The FTB7000 has a unique current bipolar design, which can simulate the charge and discharge characteristics of the battery for various tests. Under the battery simulation function, users can edit battery files. The battery file mainly describes the characteristic curves of the battery capacity, open circuit voltage and internal resistance of the battery. After the battery simulation function is turned on, it will absorb current (charge) or output current (discharge) according to the external load, and adjust the output voltage to make the output voltage conform to the characteristic curve specified in the file.

Composite signal port (optional)

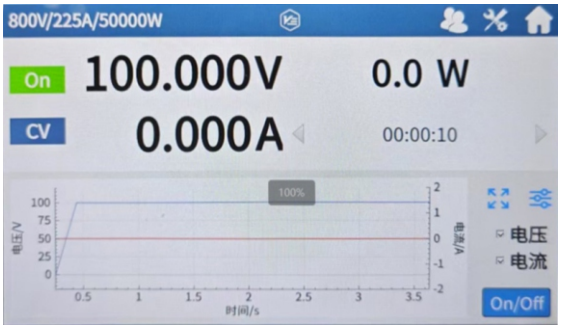
FTB7000 series optional composite signal port, which has the following functions:

- READY power supply working status indicator;
- Output mode indication;
- Compound external control;
- Voltage and current output monitoring;
- Voltage, current, power programming control;
- Master, slave communication, etc.

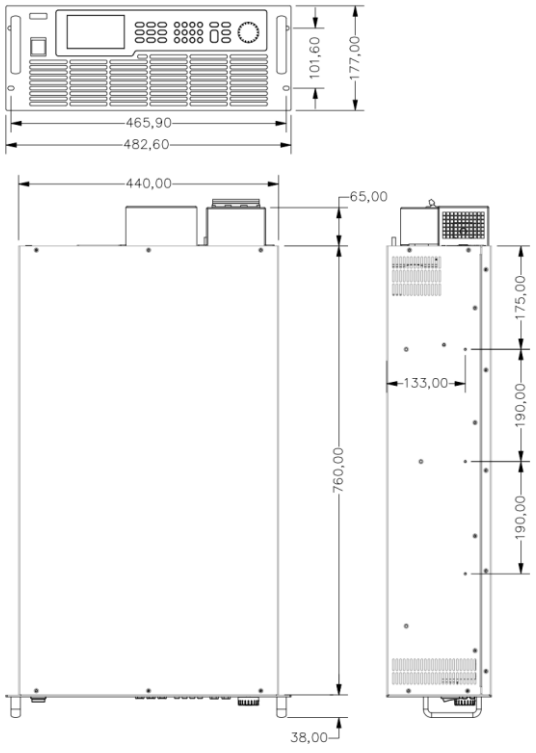


Graphical touch screen design

FTB7000 series offers a wide range of operation methods and functions, allowing users to perform convenient and efficient operations through a 5-inch touch screen, keyboard and knobs. The simple and intuitive interface directly displays the settings and measurements of various parameters, and provides waveform display and other functions. It has both Chinese and English (traditional) language interfaces, and the user-friendly settings can meet various usage needs of users.



Dimension drawing



Dimensions for 50kW model

Ordering information

* Higher power specifications are not listed.

Voltage	Model	Current	Power	Size	Voltage	Model	Current	Power	Size
500V	FTB7050-500-360	360A	50kW	4U	800V	FTB7050-800-225	225A	50kW	4U
	FTB7100-500-720	720A	100kW	8U		FTB7100-800-450	450A	100kW	8U
	FTB7150-500-1080	1080A	150kW	22U		FTB7150-800-675	675A	150kW	22U
	FTB7200-500-1440	1440A	200kW	22U		FTB7200-800-900	900A	200kW	22U
	FTB7250-500-1800	1800A	250kW	28U		FTB7250-800-1125	1125A	250kW	28U
	FTB7300-500-2160	2160A	300kW	28U		FTB7300-800-1350	1350A	300kW	28U
Voltage	Model	Current	Power	Size	Voltage	Model	Current	Power	Size
1000V	FTB7100-1000-360	360A	100kW	8U	1500V	FTB7100-1500-225	225A	100kW	8U
	FTB7200-1000-720	700A	200kW	22U		FTB7200-1500-450	450A	200kW	22U
	FTB7300-1000-1080	1080A	300kW	28U		FTB7300-1500-675	675A	300kW	28U
Voltage	Model	Current	Power	Size	Voltage	Model	Current	Power	Size
2250V	FTB7150-2250-225	225A	150kW	22U	/	/	/	/	/
	FTB7300-2250-450	450A	300kW	28U		/	/	/	/

Optional information

Name	Model or Specification	Introduction
GPIB interface	FTB7001B	One of three options, installation before factory shipment
CAN + 485 interface	FTB7001C	
RS232 interface	FTB7001R	
Composite signal port	FTB7001F	Installation before factory shipment
Faith Solar Photovoltaic Matrix Simulation Software V1.0	FT-SAS	
Fatih Battery Simulation and Simulation Software V1.0	FT-BSS	

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

General specification parameters

Item	Parameter
AC input	Three-phase input, 342~460VAC, full load; 304~342VAC, derating to 80%, Frequency: 45Hz~65Hz
Power factor	0.99(typical value)
Efficiency	>93%(typical value)
Output voltage	0 to rated value(maximum rated value 2250V, menu setting, digital or encoded knob input)
Output current	0 to rated value(maximum rated value 2280A, menu setting, digital or encoded knob input)
Output power	0 to rated value(maximum rated value 300kW, menu setting, digital or encoded knob input)
Voltage measurement accuracy	0.05% + 0.05% F.S.
Accuracy of current measurement	0.1% + 0.2% F.S.
Voltage and current monitoring	Voltage/current monitoring output voltage: DC 0 to 5V
Display interface	5-inch TFT color liquid crystal touch display, supports simplified Chinese, traditional Chinese and English display
Operation interface	Function keys, numeric keys and knobs
Transient response	10% to 90% dynamic load change, the time required for the equipment voltage to recover to the rated value within an accuracy range of 0.75% is less than 2ms
Parallel operation	Support for 10 units of the same model master-slave dual-computer expansion
Protection	Overvoltage, overcurrent, overpower, overtemperature, undervoltage, etc.
Communication interface	LAN, USB serial port (optional GPIB, CAN + RS485, RS232)
Communication protocol	SCPI, MODBUS, CAN-Open protocol
Operating temperature	0℃ to 40 ℃
Storage temperature	-20 ℃ to 70 ℃
Use altitude	<2000m
Heat dissipation mode	Air-cooled, intelligent risk control

Electrical specification table

Parameter		Technical specification				
Voltage level		500V	800V	1000V	1500V	2250V
Model		FTB7050-500-360	FTB7050-800-225	~	~	~
Power		-50~50kW	-50~50kW	~	~	~
Electric current		-360~360A	-225~225A	~	~	~
Resistor		0.06~463Ω	0.09~1185Ω	~	~	~
Model		FTB7100-500-720	FTB7100-800-450	FTB7100-1000-360	FTB7100-1500-225	~
Power		-100~100kW	-100~100kW	-100~100kW	-100~100kW	~
Electric current		-720~720A	-450~450A	-360~360A	-225~225A	~
Resistance		0.03~231Ω	0.04~593Ω	0.08~926Ω	0.13~2222Ω	~
Model		FTB7150-500-1080	FTB7150-800-675	~	FTB7150-1500-360	FTB7150-2250-225
Power		-150~150kW	-150~150kW	~	-150~150kW	-150~150kW
Electric current		-1080~1080A	-675~675A	~	-360~360A	-3225~225A
Resistance		0.02~154Ω	0.03~395Ω	~	0.08~1398Ω	0.13~3333Ω
Model		FTB7200-500-1440	FTB7200-800-900	FTB7200-1000-720	FTB7200-1500-450	~
Power		-200~200kW	-200~200kW	-200~200kW	-200~200kW	~
Electric current		-1440~1440 A	-900~900 A	-720~720A	-450~450A	~
Resistance		0.01~116Ω	0.02~296Ω	0.04~463Ω	0.07~1111Ω	~
Model		FTB7250-500-1800	FTB7250-800-1125	~	~	~
Power		-250~250kW	-250~250kW	~	~	~
Electric current		-1800~1800 A	-1125~1125 A	~	~	~
Resistance		0.01~93Ω	0.02~237Ω	~	~	~
Model		FTB7300-500-2160	FTB7300-800-1350	FTB7300-1000-108(	FTB7300-1500-675	FTB7300-2250-450
Power		-300~300kW	-300~300kW	-300~300kW	-300~300kW	-300~300kW
Electric current		-2160~2160 A	-1350~1350 A	-1080~1080A	-675~675A	-450~450A
Resistance		0.009~77Ω	0.01~198Ω	0.03~309Ω	0.04~741Ω	0.07~1667Ω
Voltage parameter						
Programming accuracy		0.05%+0.05%F.S.				
Measurement accuracy		0.05%+0.05%F.S.				
Programming/measurement resolution		8.3mV	13.3mV	16.6mV	25mV	37.5mV
Linear adjustment rate		0.05%F.S.				
Load adjustment rate		0.05%F.S.				
Rise slope		20000V/s				
Fall time	No-Load	< 10s				
	Full-Load	≤30ms				
Noise & Ripple	Peak-to-peak value (Vpp)	1000mV	1200 mV	1600 mV	2400 mV	3600 mV
	RMS(Vrms)	200 mV	200 mV	500 mV	400 mV	400 mV
Current parameter						
Programming accuracy		0.1%+0.2% F.S.				
Measurement accuracy		0.1%+0.2% F.S.				
Programming/measurement resolution		16Bit	16Bit	16Bit	16Bit	16Bit
Linear adjustment rate		0.1%F.S.				
Load adjustment rate		0.2%F.S.				
Power parameter						
Programming accuracy		0.5%F.S.				
Measurement accuracy		0.5%F.S.				
Programming/measurement resolution		1W				
Resistance parameter						
Programming accuracy		Vin/Rset*(1%)+0.5%I.F.S.				
Measurement accuracy		Vin/Rset*(1%)+0.5%I.F.S.				
Programming/measurement resolution		0.001Ω				
Others						
Size(W*H*D)		50kW: 482.6mm x 177mm x 863mm, with output protective cover				
Weight		50kW≈65kg				