

FTB7000 Series Wide-range high-power
bidirectional programmable DC power supply



|Sketch

FTB7000 series is a wide-range, high-power bidirectional programmable DC power supply that integrates both DC power supply and regenerative load functions. It can not only perform the Source function but also act as a regenerative load to feed the absorbed energy back to the grid, enabling bidirectional energy flow.

FTB7000 series adopts full digital control, featuring high operational accuracy, fast response speed, wide output adjustment range, and programmable output capabilities. It can seamlessly switch between source and load quadrants and offers a rich set of testing functions along with a simple human-machine interface. It is widely applied in high-power testing scenarios such as automotive electronics, energy storage, and fuel cells.

|Application Areas

Energy testing:	Energy storage converter (PCS) Microgrid equipment manufacturing Inverter production and development Solar cell arrays, wind power generation applications
Automobile production testing:	Automobile motor Automotive electronics Bidirectional DC/DC Converter
Other tests:	Power semiconductor components Development of server power supplies, UPS Avionics equipment Consumer electronic products

|Characteristics

- Standalone unit range:
- Voltage: 0 - 2250V
- Current: 0 - $\pm 2880\text{A}$
- Power: 0 - $\pm 300\text{kW}$;
- Master-slave dual-unit expansion power can reach 3MW;
- Voltage accuracy: 0.05% + 0.05% F.S.;

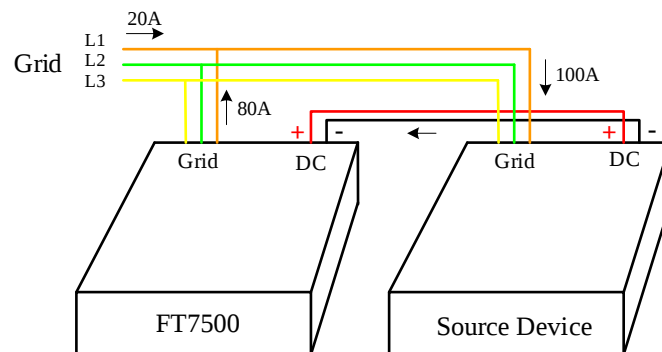
- Current accuracy: 0.1% + 0.2% F.S.;
- Power factor: 0.99, overall efficiency higher than 93%;
- Feedback load function, feedback efficiency up to 95%;
- Bidirectional energy transfer, seamless switch across quadrants;
- Automatic line loss compensation;
- Capable of constant voltage, constant current, constant power, and constant resistance functions;
- CV/CC priority mode;
- Voltage/current slope can be set;
- Capable of voltage output ramp-up and ramp-down functions;
- Capable of charging and discharging functions;
- Capable of sequence and waveform functions, which can realize complex voltage and current waveforms such as automotive electronic test voltage waveforms and user-defined waveforms;
- Battery simulator function (optional);
- Standard equipped with "Feishu Power Supply Product Demonstration Platform" software with basic solar photovoltaic cell simulation function;
- Optional equipped with "Feishatek Solar Photovoltaic Matrix Simulation Software" (optional);
- Comprehensive protection functions for overvoltage, overcurrent, overpower, overtemperature, undervoltage, power failure, etc.;
- High-voltage isolation digital, analog, monitoring, control interfaces;
- Equipped with various communication interfaces: LAN, USB;
- Optional RS485, CAN or GPIB;
- Communication protocols support SCPI, MODBUS, CAN-OPEN (optional) protocols;
- Provide communication programming manual, SDK development package and demonstration upper computer;
- 5-inch LCD touch screen, Chinese, English, and simplified Chinese menu interface;
- Intelligent fan control;
- 4U/50kW high power density, standard 19-inch rack-mounted design.

[|Regenerative Load mode](#)

FTB7000 series products feature a Regenerative load function, which enables the

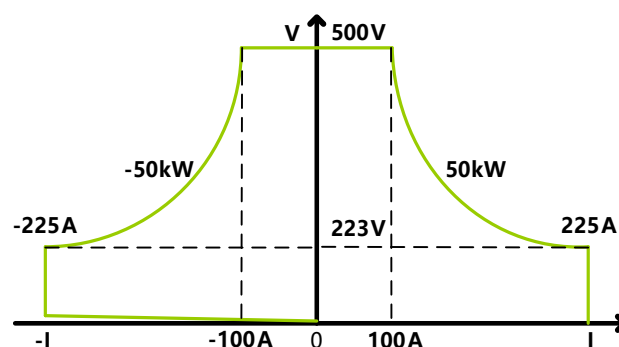
energy of the tested equipment to be fed back into the factory network for direct utilization instead of being dissipated as heat. The energy conversion efficiency of this system is as high as 93%. This not only significantly reduces the electricity cost for users but also avoids the use of air conditioners and other cooling systems, thereby reducing noise.

Furthermore, when operating as a Regenerativeload, it has four basic working modes: constant current, constant voltage, constant power, and constant resistance, which can meet a wide range of testing requirements.



Dual quadrant, wide range

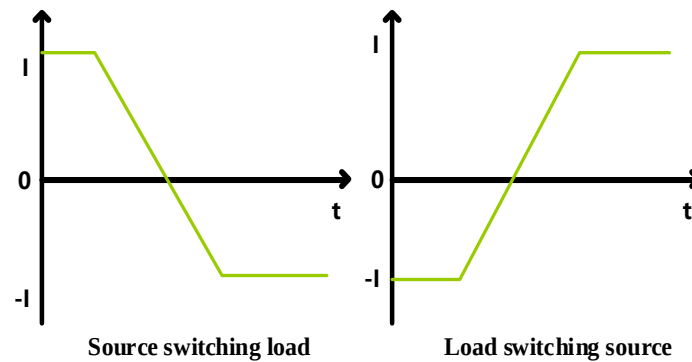
FTB7000 series products feature dual quadrant operation characteristics, enabling them to function as both DC power supply for energy output and as a feedback load for energy absorption. Additionally, the FTB7000 has a wide operating range, with an output range that is over three times wider. One power supply can cover more applications, thereby saving costs for users.



Bidirectional current seamless switching

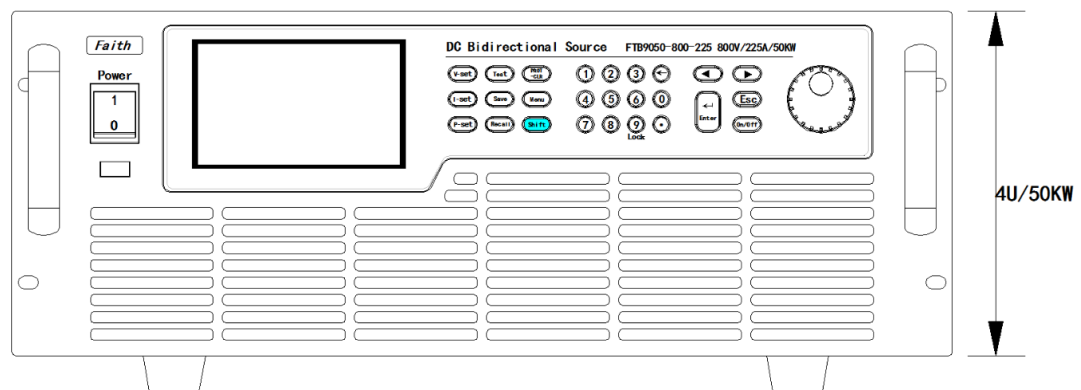
FTB7000 automatic source loading function enables rapid and seamless automatic

switching. During the positive and negative current switching of conventional DC power supplies and loads, a brief step will occur at 0A, resulting in discontinuous current reversal. The FTB7000 not only has dual-quadrant working capability but also has high-speed current switching capability, which can achieve seamless connection during positive and negative current switching, effectively avoiding voltage or current overshoot. It is widely used in the testing of motors, battery packs, BMS, and energy storage systems.



|3U/18kW high power density

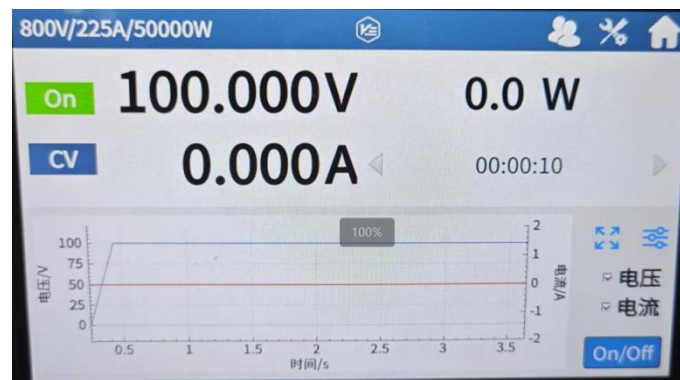
FTB7000 series offers a high power density of 4U/50kW, featuring precise output, rapid response, and low ripple noise. With a voltage range of 500V to 2250V and a current range of 225A to 2880A, it is suitable for every testing and verification stage from design to product production process.



|Graphical touch screen design

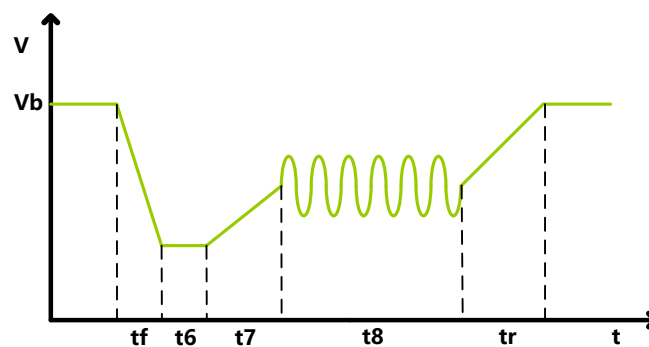
FTB7000 series offers a wide range of operation methods and functions, allowing

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.



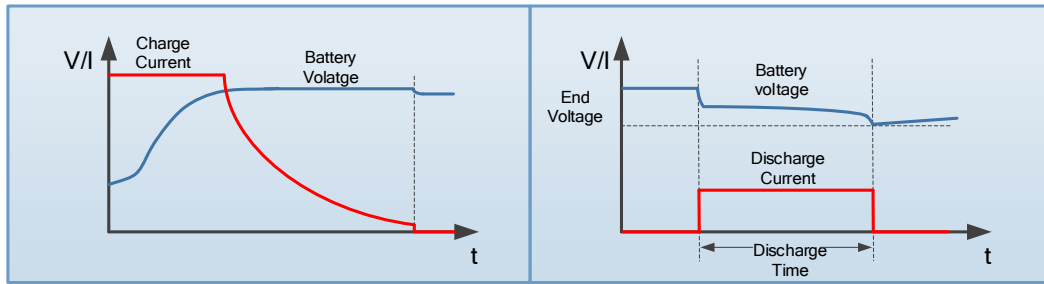
|Sequence and waveform functions

FTB7000 provides users with a sequence editing function that can handle power outages, sudden drops in voltage, and simulate other voltage and current changes. There are a total of 10 sequence files, each consisting of 100 steps. It supports looping and linking, making it convenient for generating complex waveforms.



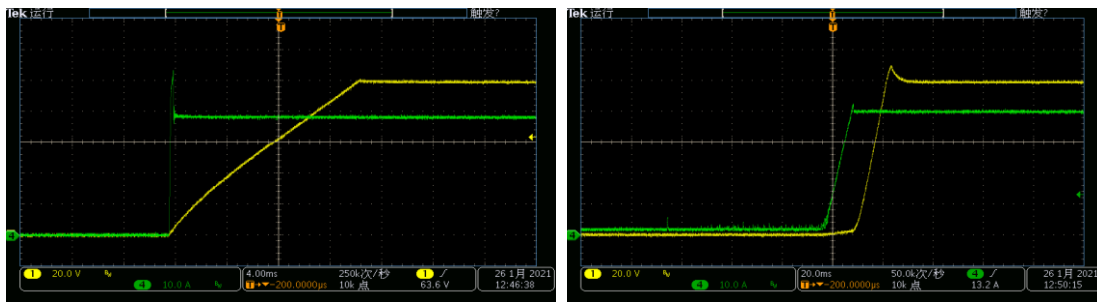
|Battery charging/discharging test

FTB7000 series features a unique bidirectional design and includes charging/discharging testing capabilities. It is suitable for conducting charging/discharging tests on various batteries and energy storage devices.



|CC/CV Priority

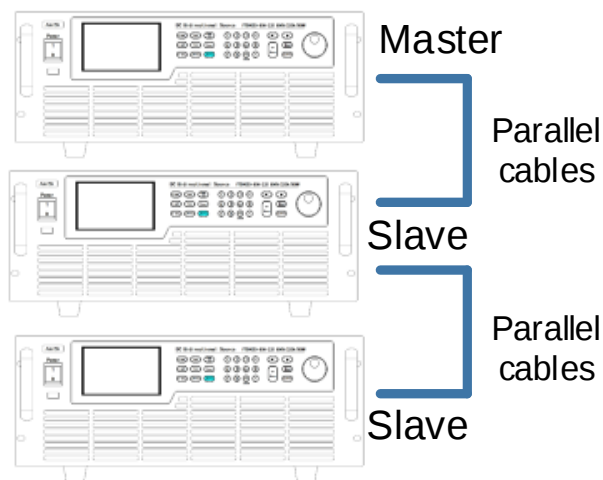
When the power output is connected to inductive or capacitive loads, it will cause a certain degree of overshoot in the output current or voltage. In mild cases, it will trigger the protection of the tested equipment; in severe cases, it will directly lead to the damage of the tested equipment. The FTB7000 series has the CV and CC output priority function, which effectively suppresses the output overshoot and its associated effects.



CV priority (rapid voltage establishment, current overshoot) CC priority (high-speed current establishment, voltage overshoot))

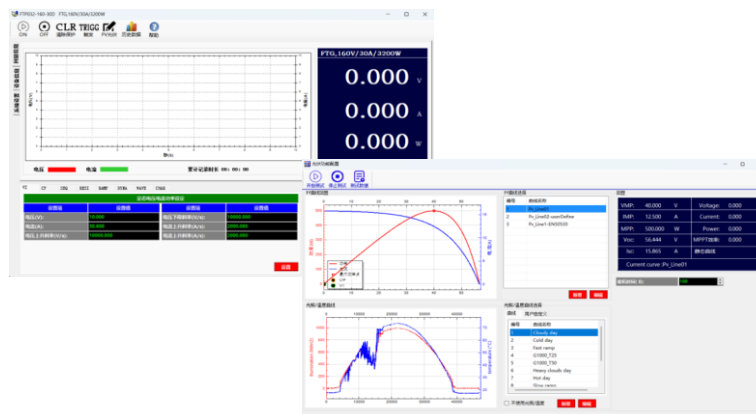
|Master-slave dual-computer operation function

FTB7000 series power supply offers a master-slave dual-computer mode, supporting the operation of 10 power supplies of the same model in parallel, enabling users to achieve greater power expansion. During the parallel operation, the master automatically merges and displays the parameters, and the slave automatically copies the settings of the master to achieve automatic current sharing.



|Photovoltaic cell array simulation function

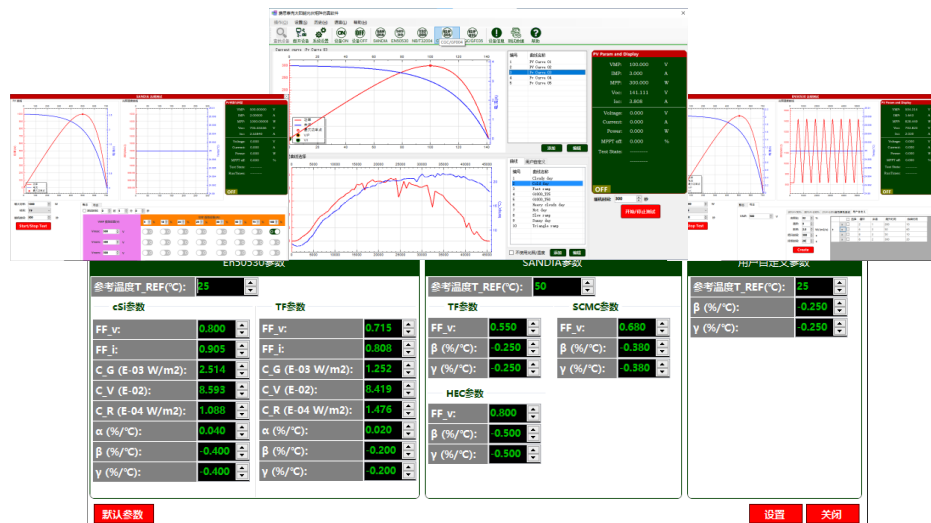
FTB7000 series comes with a fully functional "Fees Power Demonstration Platform" that includes basic PV functions and can test photovoltaic inverters. When combined with the host computer demonstration platform, it can achieve more testing functions, such as dynamic MPPT, typical weather data, custom light/temperature change curves, etc. For more complex photovoltaic testing functions, the FeesTek Solar Photovoltaic Matrix Simulation Software can be selected as an option.



|Solar Photovoltaic Matrix Simulation Software (optional)

Faithtech Solar Photovoltaic Matrix Simulation Software is a photovoltaic testing software to the Faithtech power supply series. It features a simple and intuitive graphical interface, presenting users with an intuitive and friendly human-machine interface. Users can easily use the software to output, measure, and display the maximum power tracking status and values of the photovoltaic inverter in real time. The software includes 5 types of regulatory testing programs such as EN50530 and

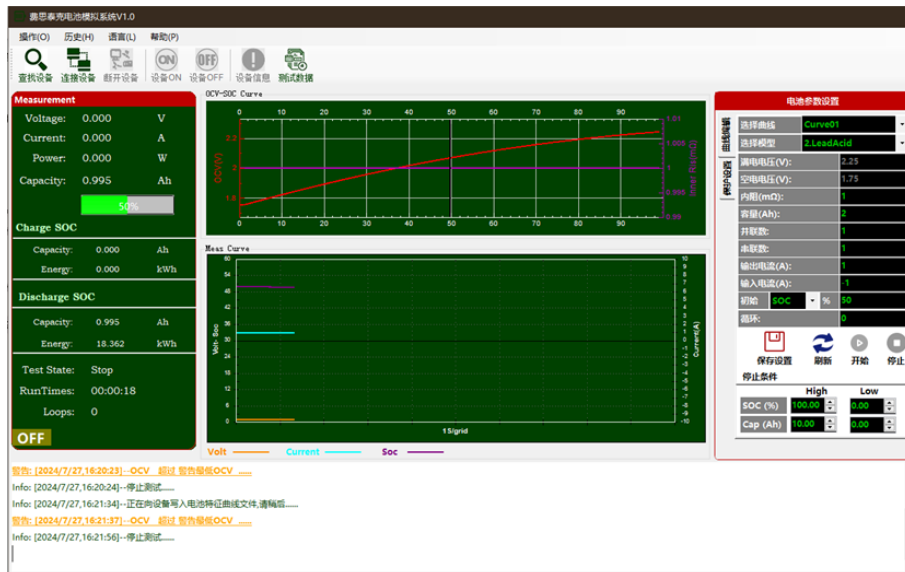
Sandia, which can simulate the series and parallel testing of solar panels under different parameters, as well as tests such as cloud shading; it is convenient for users to test the static and dynamic MPPT efficiency of the photovoltaic inverter.



Battery simulation function (optional)

Faithtech Battery Simulator simulation software is the simulation software to the FTB7000 series bidirectional DC source products. It enables convenient configuration of battery simulation parameters, precise collection of real-time test data, and clear display of dynamic waveforms.

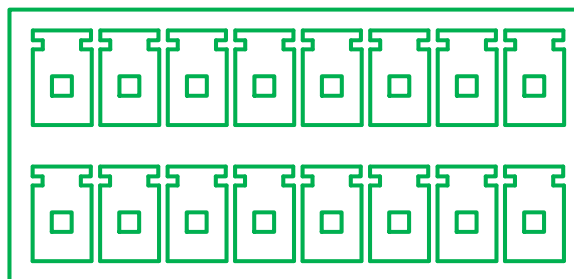
The software provides a wide range of battery curves and model options. Users can quickly select the appropriate model based on the type of the tested battery and adjust various parameters to match the actual battery characteristics. Its intuitive graphical interface and operation window design allow users to easily switch between different functional modules, set parameters, collect data, and view waveforms. In addition, this software can save the test data and related log records during the device operation, making it convenient for users to replay historical data and view operation logs.



Composite Signal Port (Option)

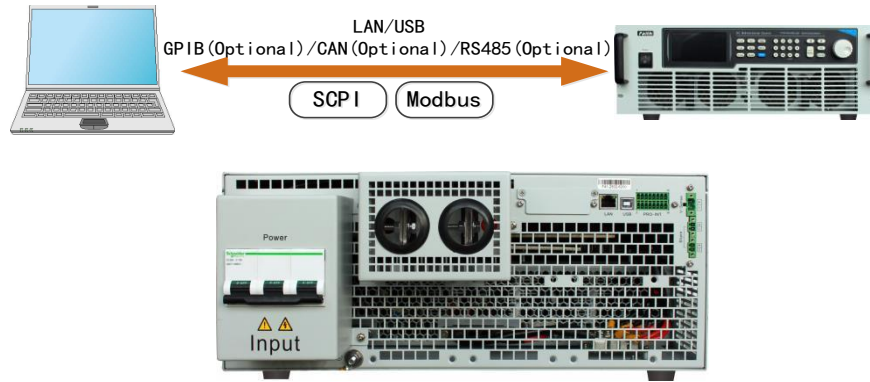
FTB7000 series can be equipped with a composite signal port, which has the following functions:

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



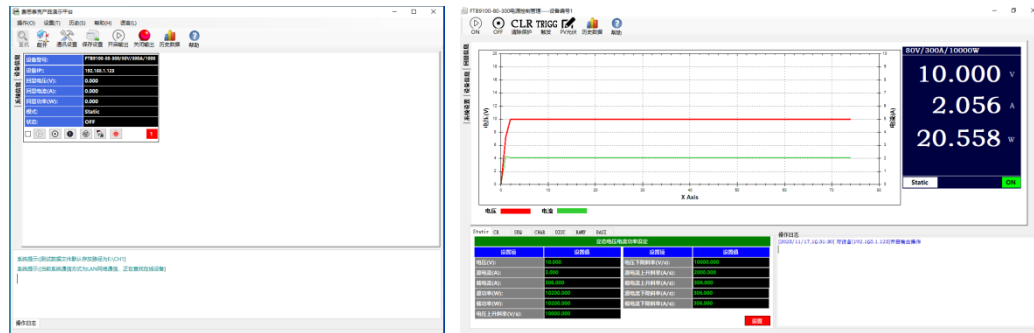
Multiple interfaces and multiple protocols

FT79000 series is equipped with multiple communication interfaces and supports both SCPI and Modbus communication protocols. Users can configure it according to their needs through the menu, which makes system integration more flexible.



Computer graphical operation software

A software platform for the upper computer with virtual instrument functions can be provided. Through a PC, it can remotely and real-time set test data, read test data, generate images, export reports, and print reports, etc. This enables the simultaneous realization of multiple functions for testing, making it convenient for testing use.



|Order information: More models are not listed one by one.

*The larger power specifications are not listed one by one.

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

Name	Model or specification	Introduction
GPIO interface	FTB7001B	Choose one among the following: Installation before factory shipment
CAN + 485 interface	FTB7001C	
RS232 interface	FTB7001R	
Composite signal port	FTB7001F	Choose one among the following: Installation before factory shipment
Fatih Solar Photovoltaic Matrix Simulation Software V1.0	FT-SAS	
Fatih Battery Simulation and Simulation Software V1.0	FT-BSS	

*Optional test cables and other accessories are available. For detailed specifications and models, please refer to the "Optional Accessories" section of this manual.

Specification

General Specification Table:

Item	Parameter
Ac input	Three-phase input, 340VAC to 480VAC, frequency 47Hz to 63Hz
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°C to 40°C
Storage temperature	-20°C to 70°C
Use altitude	<2000m
Heat dissipation mode	Air-cooled, intelligent risk control

Electrical Specification Sheet:

Specification Sheet - 1-1					
Parameter	Technical specification				
Voltage level	500V	800V	1000V	1500V	2250V
Model number	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 number	FTB7100-500 -720	FTB7100-800 -450	FTB7100-100 0-360	FTB7100-150 0-225	~
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 number	FTB7150-500 -1080	FTB7150-800 -675	~	FTB7150-150 0-360	FTB7150-225 0-225
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 number	FTB7200-500 -1440	FTB7200-800 -900	FTB7200-100 0-720	FTB7200-150 0-450	~
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 number	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 number	FTB7300-500 -2160	FTB7300-800 -1350	FTB7300-100 0-1080	FTB7300-150 0-675	FTB7300-225 0-450
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	(Vpp)	1000mV	1200 mV	1600 mV	2400 mV	3600 mV
	(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	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	$V_{in}/R_{set}*(1\%)+0.5\%I.F.S.$					
Measurement accuracy	$V_{in}/R_{set}*(1\%)+0.5\%I.F.S.$					
Programming/measurement resolution	0.001Ω					
Others						
Size (W*H*D)	50kW: 482.6mm x 177mm x 863mm , With output protective cover					
Weight	50kW≈65kg					

Dimension

50kW Dimension

