



FTR7000 Series Regenerative High-Power Programmable DC Electronic Load





Brief Description

The FTR7000 Series Regenerative Programmable DC Electronic Load offers advanced functionality, enabling not only standard constant-current, constant-voltage, and constant-power operation, but also high-efficiency energy regeneration back to the grid (over 90% efficiency), significantly reducing test energy consumption.

It is widely used in high-demand applications such as energy storage systems, EV charging stations, photovoltaic inverters, fuel cell testing, and battery pack discharge/aging tests.

Equipped with standard CAN, RS485, and Ethernet interfaces supporting Modbus/TCP, along with a color touchscreen and multi-language menu, it ensures seamless integration into automated test systems and intuitive local operation.

This makes it a key instrument for intelligent and sustainable power electronics testing platforms.

Features

Standalone Unit range:

Voltage:0~2250V

Current:0~3240A

Power:0~300KW

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%;

Automatic line loss compensation

Have Function of CV,CC,CP,CR

Voltage and current Slope can be set

Battery discharge test function

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;

Comprehensive function of OVP,OCP,OPP,OTP,undervoltage protection,power loss protection and Island protection

High-voltage isolation digital and analog, monitoring and control interface

Standard communication interface LAN and USB

Optional RS485,CAN and GBIP

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,for cases larger than 16U, a wheel

design option is available.

Application

Energy storage, microgrid equipment production and development

Server power supply, UPS, inverter production and development

Solar cell arrays and wind energy power generation applications

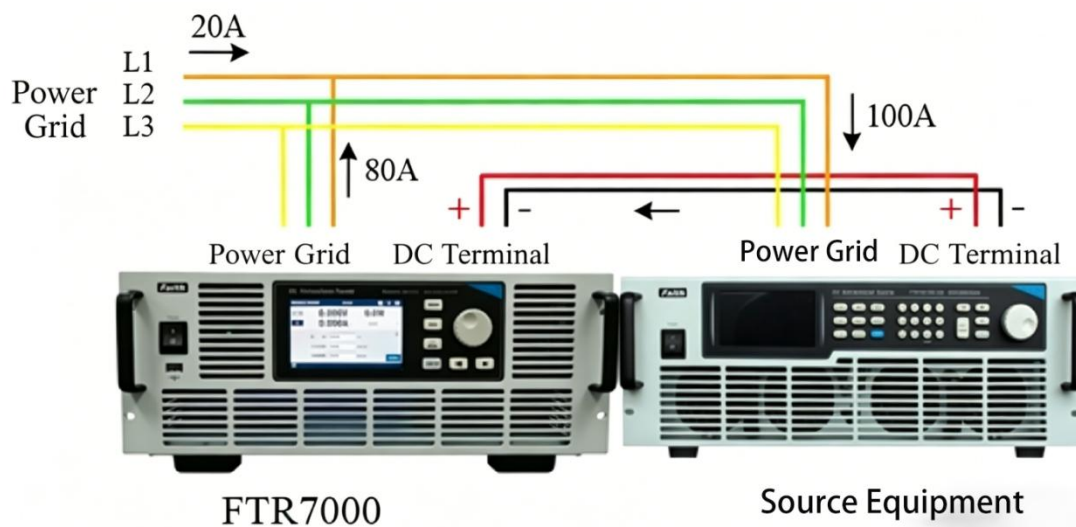
Fuel cells, battery power sources, lead-acid batteries, supercapacitors applications

Aerospace, railway, new energy vehicles, motor driver testing applications

Application of unmanned aircraft, lasers and sensors

Energy Feedback

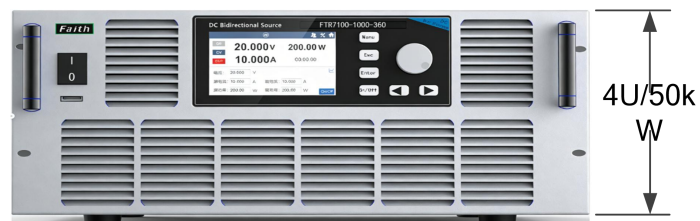
The FTR7000 series can recover the energy output by DC power supply equipment and feed it back to the internal power grid in a pollution-free manner. The recovered electric energy can be directly used by internal electrical equipment, reducing the heat generated by energy consumption and achieving both operational efficiency and energy conservation.





4U / 50kW high power density

The FTR7000 series regenerative high-power programmable DC electronic loads feature a high-power-density design. Compared with conventional dissipative electronic loads, they reduce volume by 80% at the same power rating for enhanced flexibility and convenience.

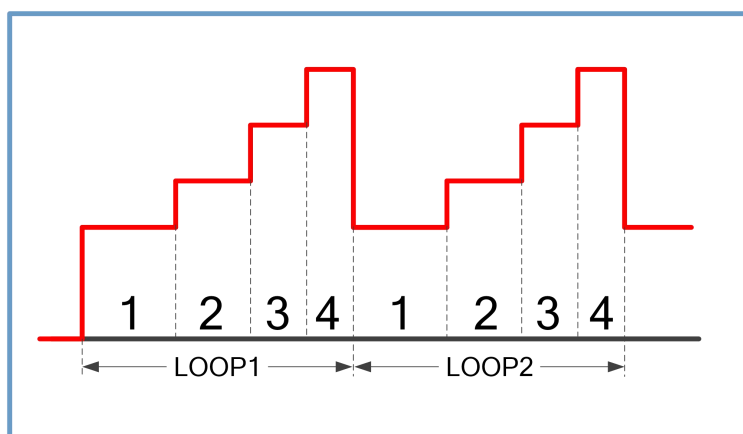


The FTR7000 series offers a full range of operating modes and functions, enabling convenient and efficient operation via a 5-inch touchscreen, keypad and knob. Its simple and intuitive interface directly displays parameter settings and measurements, as well as output waveforms. Supporting Chinese, English and Traditional Chinese, the user-friendly interface meets diverse application requirements.



Sequence and Waveform Functions

The FTR7000 series electronic loads feature sequence test capability, supporting up to 10 test files with 100 steps each. They allow load profile sequencing in CC, CV, CR, CP and other modes, with file linking and other sequence editing functions. The maximum 100-step sequencing offers a per-step time range of 1ms to 99999s.

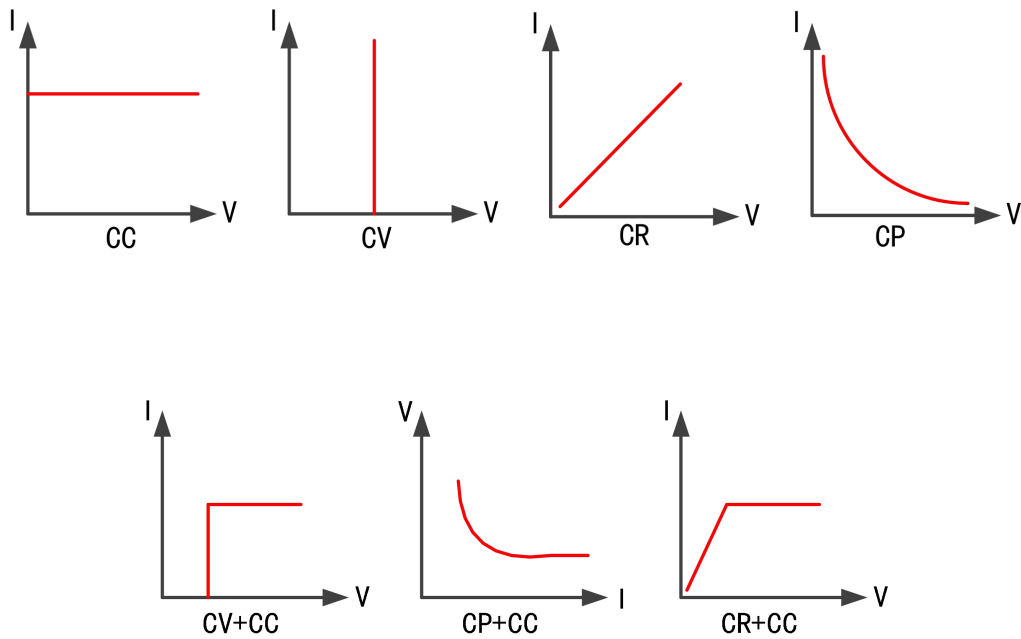


Multiple Operating Modes

The FTR7000 series features four basic operating modes: constant current (CC), constant voltage (CV), constant resistance (CR) and constant power (CP), covering a wide range of test requirements. It also supports composite

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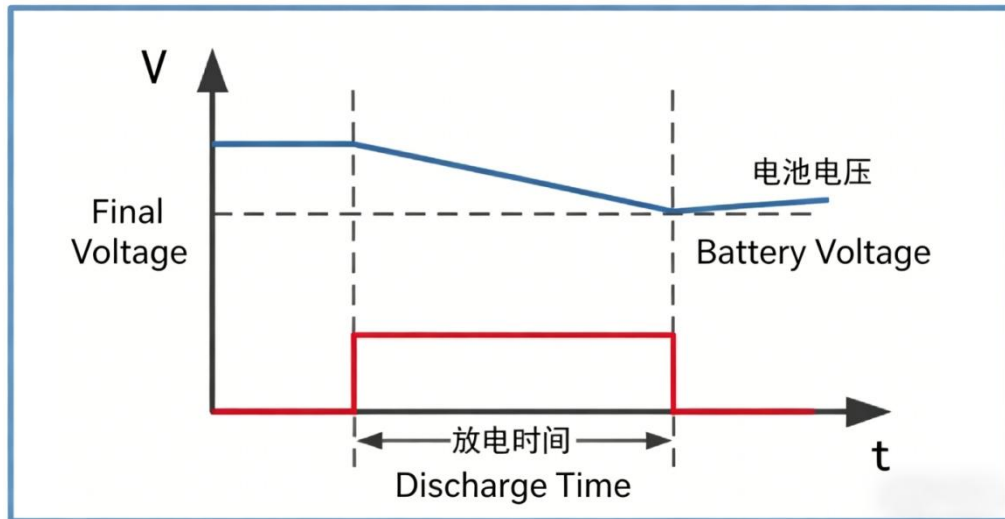
modes including CV+CC, CR+CC and CP+CC. Users can set current limits according to test needs to prevent overcurrent damage to the device under test. The CV+CC mode simulates battery charging characteristics for testing EV chargers, on-board chargers and similar products. The CR+CC mode is used for power supply voltage/current limit simulation and accuracy testing.



Battery Testing

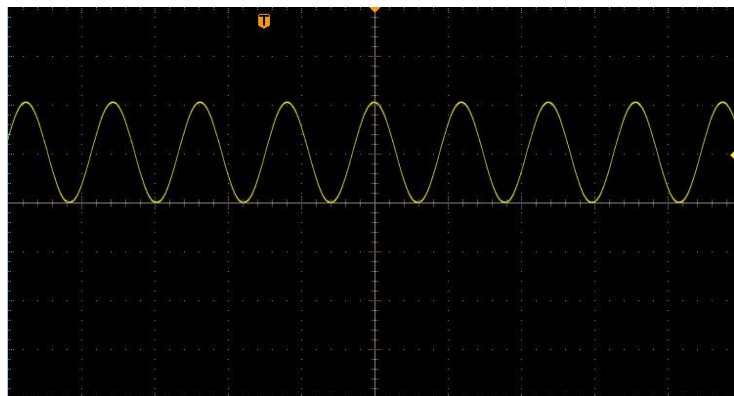
The FTR7000 series electronic load supports battery test functions with three discharge modes: constant current, constant resistance and constant power. Discharge termination conditions can be set freely, including cut-off voltage, cut-off time and cut-off capacity. Discharge stops when any of the three conditions is met. Discharge capacity and time are recorded during the process.

The FTR7000 series measures battery internal resistance and capacity via the DC discharge method (DCR).



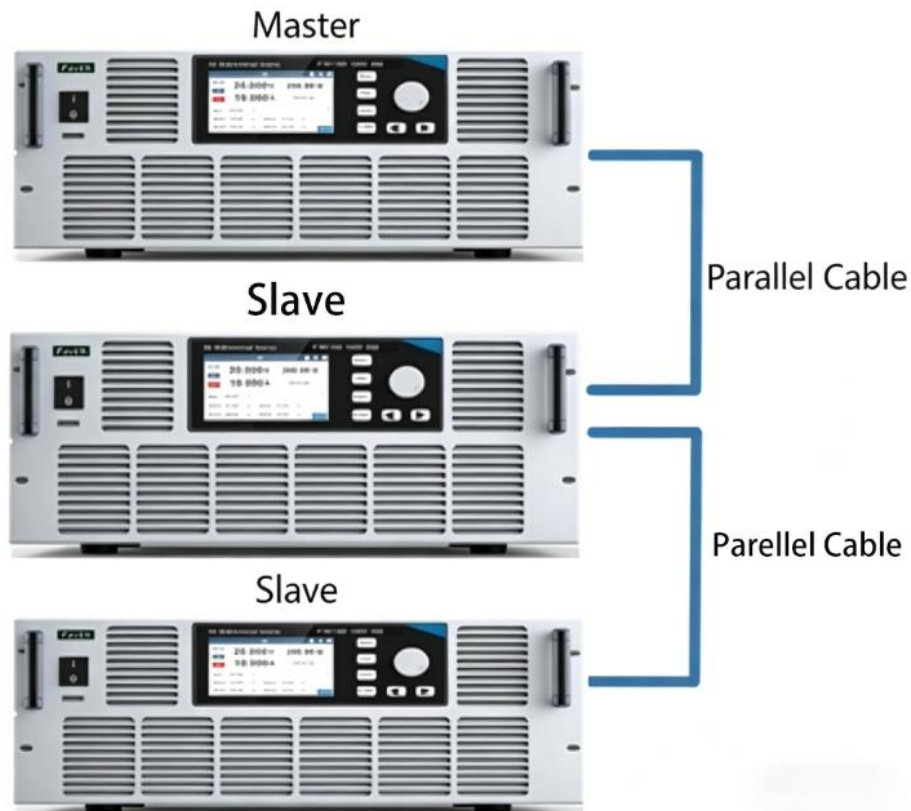
Sine Wave Dynamic Loading

The FTR7000 series supports sine wave current loading, suitable for impedance analysis and testing of fuel cells.



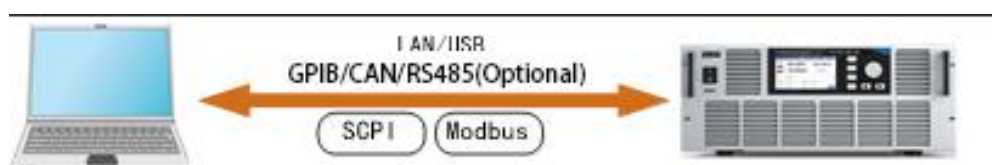
Master-slave dual-computer operation function

The FTR7000 series supports cascading for parallel operation of up to 10 loads, expanding the power range. During cascading, automatic current sharing is realized, and slave units synchronize load parameters from the master unit. Each unit can also operate independently for flexible power configuration.



Multiple Interfaces & Protocols

The FTR7000 series is equipped with various communication interfaces and supports both SCPI and Modbus protocols. Configurable via the menu as required, it enables more flexible system integration.



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	FTR7050-500-360	360A	50kW	4U	800V	FTR7050-800-225	225A	50kW	4U
	FTR7100-500-720	720A	100kW	8U		FTR7100-800-450	450A	100kW	8U
	FTR7150-500-1080	1080A	150kW	16U		FTR7150-800-675	675A	150kW	16U
	FTR7200-500-1440	1440A	200kW	22U		FTR7200-800-900	900A	200kW	22U
	FTR7250-500-1800	1800A	250kW	28U		FTR7250-800-1125	1125A	250kW	28U
	FTR7300-500-2160	2160A	300kW	28U		FTR7300-800-1350	1350A	300kW	28U
Voltage	Model	Current	Power	Size	Voltage	Model	Current	Power	Size
1000V	FTR7100-1000-360	360A	100kW	8U	1500V	FTR7100-1500-225	225A	100kW	8U
	FTR7200-1000-720	720A	200kW	22U		FTR7150-1500-360	360A	150kW	16U
	FTR7300-1000-1080	1080A	300kW	28U		FTR7200-1500-450	450A	200kW	22U
						FTR7300-1500-675	675A	300kW	28U
Voltage	Model	Current	Power	Size	Voltage	Model	Current	Power	Size
2250V	FTR7150-2250-225	225A	150kW	22U	/	/	/	/	/
	FTR7300-2250-450	450A	300kW	28U		/	/	/	/

Optional Parts

Item	Model	Introduction
GPIB Interface	FTR7001B	Choose one among the following: Installation before factory shipment
CAN+485 Interface	FTR7001C	
Composite signal port	FTR7001F	Installation before factory shipment

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

Specifications

General Specification Table:

Model	FTR7050-500-360	FTR7050-800-225			
Voltage	500V	800V			
Current	360A	225A			
Resistance	0.06~463Ω	0.09~1185Ω			
Power	50kW				
Minimum Load Voltage	3.1V@360A	2.5V@225A			
Current Slope(Max)	180A/ms	112.5A/ms			
Model	FTR7100-500-720	FTR7100-800-450	FTR7100-1000-360	FTR7100-1500-225	
Voltage	500V	800V	1000V	1500V	
Current	720A	450A	360A	225A	
Resistance	0.003~231Ω	0.04~593Ω	0.08~926Ω	0.13~2222Ω	
Power	100kW				
Minimum Load Voltage	3.1V@720A	2.5V@450A	6.2V@360A	9.3V@225A	
Current Slope(Max)	360A/ms	225A/ms	180A/ms	112.5A/ms	
Model	FTR7150-500-1080	FTR7150-800-675		FTR7150-1500-360	FTR7150-2250-225
Voltage	500V	800V		1500V	2250V
Current	1080 A	675A		360A	225A
Resistance	0.02~154Ω	0.03~395Ω		0.08~1398Ω	0.13~3333Ω
Power	150kW				
Minimum Load Voltage	3.1V@1080A	2.5V@675A		9.3V@360A	7.5V@225A
Current Slope(Max)	540A/ms	337.5A/ms		180A/ms	112.5A/ms
Model	FTR7200-500-1440	FTR7200-800-900	FTR7200-1000-720	FTR7200-1500-450	
Voltage	500V	800V	1000V	1500V	
Current	1440 A	900A	720A	450A	
Resistance	0.01~116Ω	0.02~296Ω	0.04~463Ω	0.07~1111Ω	
Power	200kW				
Minimum Load Voltage	3.1V@1440A	2.5V@900A	6.2V@720A	9.3V@450A	
Current Slope(Max)	720A/ms	450A/ms	360A/ms	225A/ms	
Model	FTR7250-500-1800	FTR7250-800-1125			
Voltage	500V	800V			
Current	1800 A	1125A			
Resistance	0.01~93Ω	0.02~237Ω			

Power	250kW				
Minimum Load Voltage	3.1V@1800A	2.5V@1125A			
Current Slope(Max)	900A/ms	562.5A/ms			
Model	FTR7300-500-2160	FTR7300-800-1350	FTR7300-1000-1080	FTR7300-1500-675	FTR7300-2250-450
Voltage	500V	800V	1000V	1500V	2250V
Current	2160 A	1350A	1080A	675A	450A
Resistance	0.009~77Ω	0.01~198Ω	0.03~309Ω	0.04~741Ω	0.07~1667Ω
Power	300kW				
Minimum Load Voltage	3.1V@2160A	2.5V@1350A	6.2V@1080A	9.3V@675A	7.5V@450A
Current Slope(Max)	1080A/ms	675A/ms	540A/ms	337.5A/ms	225A/ms
CV Mode①					
Resolution	16bits				
Accuracy	0.05%+0.05%F.S.				
CC Model①					
Resolution	16bits				
Accuracy	0.1%+0.2% F.S.				
CP Mode①					
Resolution	0.001Ω				
Accuracy	Vin/Rset*(1%)+0.5%I.F.S.				
CP mode①					
Resolution	1W				
Accuracy	0.5%F.S.				
External simulation programming①					
Control Voltage	0~5V Corresponds 0~100%F.S.				
Voltage Accuracy	0.5%F.S.				
Curren Accuracy	0.5%F.S.				
Voltage Measurement①					
Resolution	16bits				
Accuracy	0.05%+0.05%F.S.				
Current Measurement①					
Resolution	16bits				
Accuracy	0.1%+0.2% F.S.				
Resistance Measurement①					
Resolution	0.001Ω				
Accuracy	Vin/Rset*(1%)+0.5%I.F.S.				

Power Measurement①	
Resolution	1W
Accuracy	0.5%F.S.
Parallel operation	Support for 10 units of the same model master-slave dual-computer expansion
Protection	Overvoltage, overcurrent, overpower, overtemperature, undervoltage, etc.
Communication Interface	Standard LAN、USB (Optional GPIB、CAN+RS485、RS232)
Communication protocol	SCPI、MODBUS、CAN-Open Protocol
Input Characteristic	
Input Voltage	340VAC~480VAC, Frequency45Hz~63Hz
Power Factor	0.99(Typical value)
Efficiency	>93% (Typical value)
Operation Environment	
Working Temperature	0℃~40℃
Storage Temperature	-20℃~70℃
Using altitude	< 2000m
Heat dissipation mode	Air-cooled, intelligent risk control
Size (WxHxD)	50kW: 482.6mm x 177mm x 863mm, With output protective cover
Weight	50kW≈65kg

50KW Dimension

