

# FTP9000 series

Wide range high power programmable DC power supply



## Brief description

FTP9000 series wide range of high power programmable DC power supply voltage range from 80V to 2250V, single current up to 6120A, single maximum power of 180kW.

FTP9000 series features high power density, high power factor, high efficiency and wide output range. Wide current range output and automatic constant power support, can greatly increase the application coverage. Humanized graphic window interface, support a variety of languages, to the user to bring intuitive operating experience.

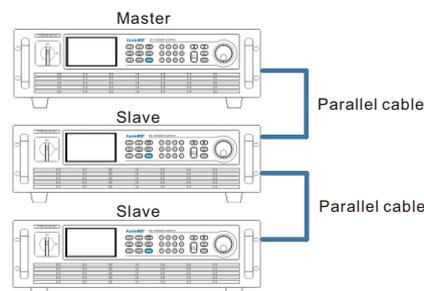
FTP9000 series has LAN/RS485/CAN/GPIB/USB(serial port) interface, which supports both SCPI protocol and standard ModBus-RTU protocol, and then with built-in isolated data/mode control interface, which brings great application diversity and convenience for system integration applications.

## Application filed

- Multi-specification flexible application of power electronics laboratory;
- Fuel cell, power battery, lead battery, ultracapacitor testing;
- Simulation of power supply environment of vehicle, airborne and shipboard electronic equipment;
- DC charger, charging pile design and test system integration;
- Design and test of server power supply, UPS and inverter;
- Design and test in solar energy, wind energy, energy storage;
- Uav, laser, sensor field power supply and design test.

## Master and slave parallel function

FTP9000 series power supplies support the parallel operation of 10 power supplies of the same model, so that users can achieve greater power expansion. In parallel operation, the slave automatically copies the set parameters of the host to achieve automatic current sharing.

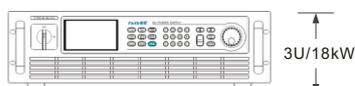


## Features

- Unit range:
  - Voltage: 0 ~ 2250V,
  - Current: 0 ~ 6120A,
  - Power: 5 ~ 180kW;
- Master and slave parallel up to 10 sets, extended power up to 1800kW;
- Voltage accuracy: 0.02%+0.02%F.S.; Current accuracy: 0.1%+0.1%F.S.
- Voltage and current sampling rate 500kHz, resolution 16Bits;
- Constant voltage, constant current and automatic constant power mode;
- The overall efficiency is higher than 93%;
- PFC control function, power factor 0.99;
- High power density, 3U/18kW;
- Automatic line loss compensation;
- Voltage, current priority function;
- Voltage, current slope can be set;
- Voltage output slow up, slow down function;
- Sequence function up to 100 steps, sequence file support link;
- High voltage isolated, digital/analog composite signal monitoring control port (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);
- Communication interface standard LAN, USB(serial port), optional RS485, CAN or GPIB;
- Communication protocol support SCPI and ModBus;
- Provide communication programming manual, SDK development kit and demonstration PC software;
- TFT color LCD screen, English and Chinese menu interface;
- Over voltage, over current, over power, over temperature, under voltage, reverse connection and other all-round protection functions.

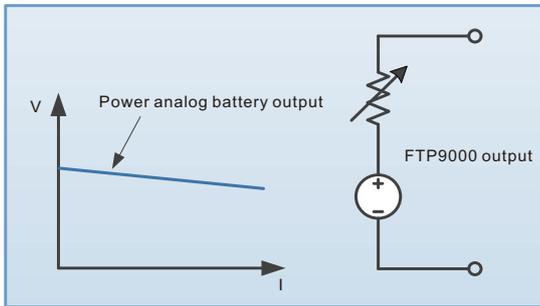
## 3U/18kW high power densit

The FTP9000 series provides a high power density of 3U/18kW, with accurate output, fast response and low ripple noise. The wide range of voltage 80V ~ 2250V and current 510A ~ 20A is suitable for every test and verification link from design to production process.



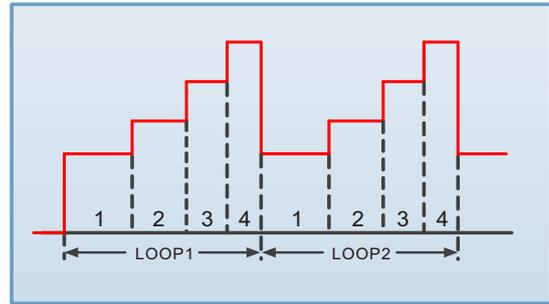
## Battery internal resistance simulation function

FTP9000 series power supply with battery internal resistance analog output function, when the output current of the power supply increases, the output voltage can be adjusted according to the user's pre-set internal resistance value.



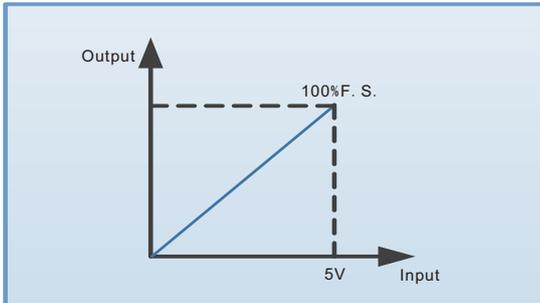
## Serial function

FTP9000 provides users with sequence editing functions for power outages, instantaneous drops, and other voltage and current changes. FTP9000 provides 10 sequence files, each file 100 steps, support cycle, link to facilitate the realization of complex waveform output.



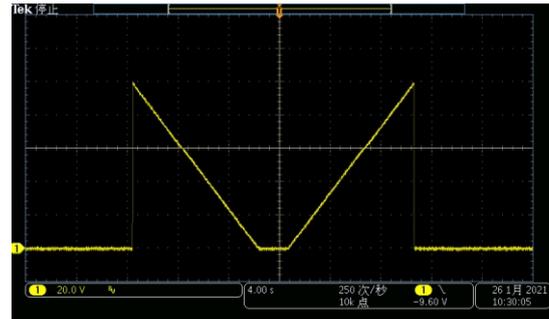
## Analog programming function

The output rated voltage, rated current and rated power of the power supply are controlled by external 0~5V DC voltage signal. The analog programming function controls the rate of 1000 points per second.



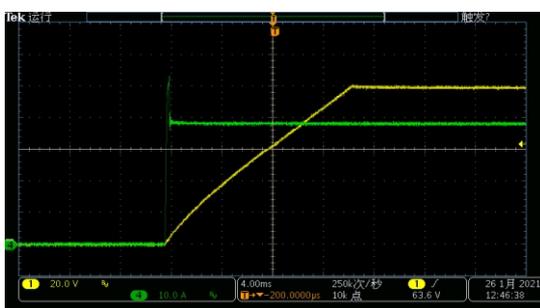
## Voltage slow rise and slow fall function

FTP9000 series power supply is designed for the user output voltage slow rise, slow down function. Simple and easy to use, can achieve voltage slope control.

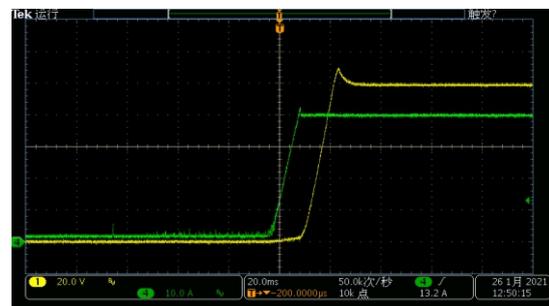


## CV, CC preferred

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. FTP9000 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)

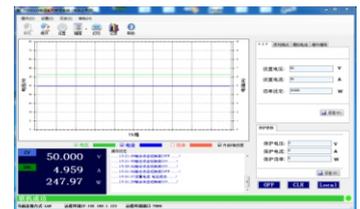
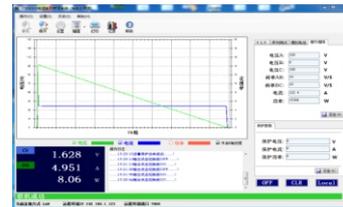
## Photovoltaic array simulation function

FTP9000 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.



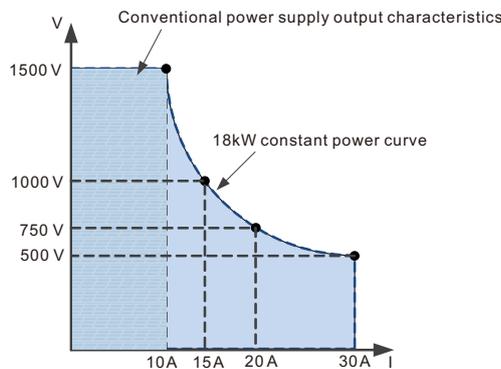
## Computer graphical operation software

FTP9000 series provides a host computer software with virtual instrument function, which can read test data in real time, generate images, export reports, print reports, etc., which is convenient for customers to use.



## Automatic constant power, wide range output

FTP9000 series power supply has more than 3 times the wide output range, one power supply can cover more applications, saving costs for users.



FTP9000 series provides wider operation in constant power range

## Multi-interface and Multi-protocol

The FTP9000 series is equipped with multiple communication interfaces, and supports SCPI and Modbus. The user can configure in the menu according to the needs, which makes the system integration more flexible.



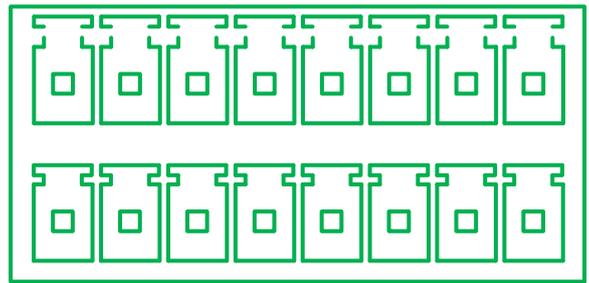
## Equipped with dissipator to speed up braking (optional)

Inductive load such as motor will reverse power supply to power supply when it decelerates or stops quickly, resulting in overvoltage or damage of power supply. In order to release this part of energy and prevent damage to the power supply, FTP9000 series can be matched with the corresponding dissipator in parallel. The power of the dissipator is recommended to exceed 20% of the power of the corresponding power supply. To extend the power, multiple power dissipators are supported in parallel. When testing, the power supply and the dissipator are in parallel, which can effectively prevent the motor from decelerating overvoltage, reduce the deceleration distance, and improve the dynamic performance.

## Composite signal port (optional)

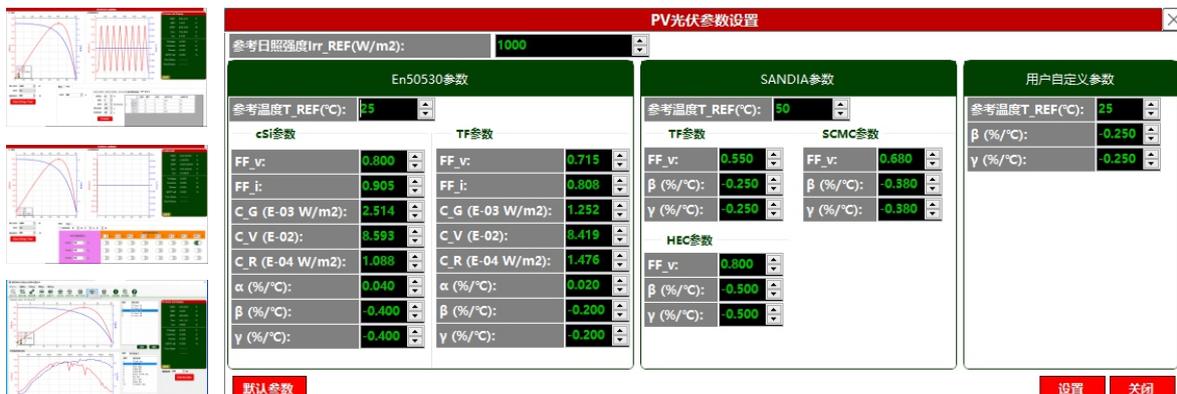
FTP9000 series optional composite signal port, which has the following functions:

- 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.



## 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.



The screenshot displays the 'PV光伏参数设置' (PV Parameter Setting) window. It features several sections for parameter configuration:

- 参考日照强度Irr\_REF(W/m2):** 1000
- En50530参数:**
  - 参考温度T\_REF(°C): 25
  - cSi参数:** FF\_v: 0.800, FF\_i: 0.905, C\_G (E-03 W/m2): 2.514, C\_V (E-02): 3.593, C\_R (E-04 W/m2): 1.088, α (%/°C): 0.040, β (%/°C): -0.400, γ (%/°C): -0.400
  - TF参数:** FF\_v: 0.715, FF\_i: 0.808, C\_G (E-03 W/m2): 1.282, C\_V (E-02): 8.419, C\_R (E-04 W/m2): 1.476, α (%/°C): 0.020, β (%/°C): -0.200, γ (%/°C): -0.200
- SANDIA参数:**
  - 参考温度T\_REF(°C): 50
  - TF参数:** FF\_v: 0.550, β (%/°C): -0.250, γ (%/°C): -0.250
  - SCMC参数:** FF\_v: 0.600, β (%/°C): -0.380, γ (%/°C): -0.380
  - HEC参数:** FF\_v: 0.600, β (%/°C): -0.500, γ (%/°C): -0.500
- 用户自定义参数:**
  - 参考温度T\_REF(°C): 25
  - β (%/°C): -0.250
  - γ (%/°C): -0.250

Buttons for '默认参数' (Default Parameters), '设置' (Settings), and '关闭' (Close) are visible at the bottom.

## Ordering information

Voltage	Model	Current	Power	Voltage	Model	Current	Power
80V	FTP9050-80-170	170A	5kW	300V	FTP9060-300-75	75A	6kW
	FTP9100-80-340	340A	10kW		FTP9120-300-150	150A	12kW
	FTP9150-80-510	510A	15kW		FTP9180-300-225	225A	18kW
	FTP9300-80-1020	1020A	30kW		FTP9360-300-450	450A	36kW
	FTP9450-80-1530	1530A	45kW		FTP9540-300-675	675A	54kW
	FTP9600-80-2040	2040A	60kW		FTP9720-300-900	900A	72kW
	FTP9750-80-2550	2550A	75kW		FTP9900-300-1125	1125A	90kW
	FTP9900-80-3060	3060A	90kW		FTP91080-300-1350	1350A	108kW
Voltage	Model	Current	Power	Voltage	Model	Current	Power
500V	FTP9060-500-40	40A	6kW	800V	FTP9060-800-25	25A	6kW
	FTP9120-500-80	80A	12kW		FTP9120-800-50	50A	12kW
	FTP9180-500-120	120A	18kW		FTP9180-800-75	75A	18kW
	FTP9360-500-240	240A	36kW		FTP9360-800-150	150A	36kW
	FTP9540-500-360	360A	54kW		FTP9540-800-225	225A	54kW
	FTP9720-500-480	480A	72kW		FTP9720-800-300	300A	72kW
	FTP9900-500-600	600A	90kW		FTP9900-800-375	375A	90kW
	FTP9150-500-90	90A	15kW		FTP9150-800-75	75A	15kW
	FTP9300-500-180	180A	30kW		FTP9300-800-150	150A	30kW
	FTP9450-500-270	270A	45kW		FTP9450-800-225	225A	45kW
	FTP9600-500-360	360A	60kW		FTP9600-800-300	300A	60kW
	Voltage	Model	Current		Power	Voltage	Model
1000V	FTP9120-1000-40	40A	12kW	1000V	FTP9180-1000-75	75A	18kW
	FTP9240-1000-80	80A	24kW		FTP9360-1000-150	150A	36kW
	FTP9360-1000-120	120A	36kW		FTP9540-1000-225	225A	54kW
	FTP9480-1000-160	160A	48kW		FTP9720-1000-300	300A	72kW
Voltage	Model	Current	Power	Voltage	Model	Current	Power
1500V	FTP9120-1500-25	25A	12kW	2250V	FTP9180-2250-25	25A	18kW
	FTP9240-1500-50	50A	24kW		FTP9360-2250-50	50A	36kW
	FTP9180-1500-40	40A	18kW		FTP9540-2250-75	75A	54kW
	FTP9360-1500-80	80A	36kW		FTP9720-2250-100	100A	72kW
	FTP9540-1500-120	120A	54kW		FTP9900-2250-125	125A	90kW
	FTP9720-1500-160	160A	72kW		-	-	-
	FTP9900-1500-200	200A	90kW		-	-	-

## Optional information

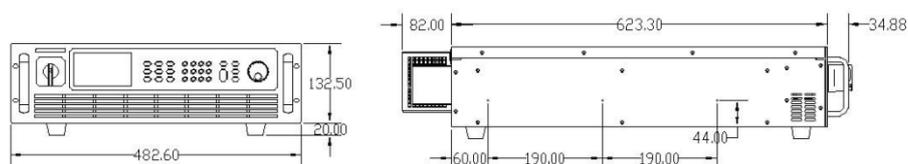
Name	Model or specification	Note
GPIB interface	FTP9001B	One of three options, factory-installed
CAN+485 interface	FTP9001C	
Composite signal port	FTP9001R	
RS232 interface	FTP9001F	Factory-installed
Faithtech Solar PV Matrix Simulation Software V1.0	Suffix FT-SAS	
Anti-backup device*	Suffix D	Applied to prevent current back-up in battery-type loads

\*The backflow prevention device is built-in for 5kW, 6kW, 10kW and 12kW models, and external for the rest of the models.

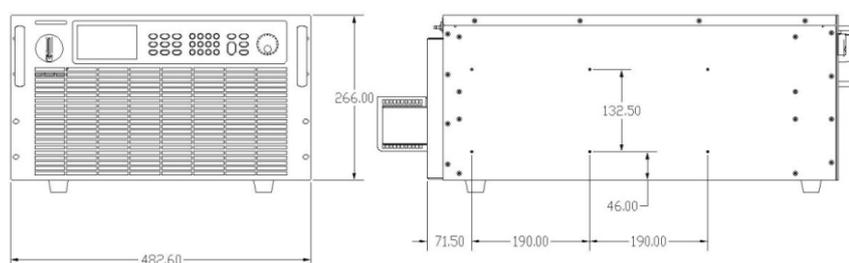
\*Optional parts such as test cables are available. For specifications and models, please refer to the "Optional Accessories" section of this manual.

## Dimension

Dimensions for 5kW ~ 18kW models



Dimensions for 20kW ~ 36kW models



## General specification table

<b>Voltage rise slope</b>	
Maximum slope	6000V/s
<b>Voltage drop time</b>	
No load	<2s
Full load	≤30ms
Transient response	10% ~ 90% dynamic load, the time required for voltage recovery to 0.75% of rated value within the accuracy range is less than 2ms.
Paralleling	Supports 10 masters and slaves of the same model with capacity expansion.
Protection	Over-voltage, over-current, over-power, over-temperature, under-voltage, etc.
Communication interface	LAN、USB serial port (Optional GPIB、CAN+RS485、RS232)
Communication protocol	SCPI、MODBUS、CAN-Open protocols
<b>Input characteristics</b>	
Input voltage	340VAC~460VAC, Frequency: 47Hz~63Hz
Power factor	0.99 (typical values)
Efficiency	>93% (typical values)
<b>Operating environment</b>	
Operating temperature	0°C~40°C
Storage temperature	-20°C~70°C
Altitude of use	<2000m
Heat dissipation method	Air-cooled, intelligent air control

## Specification table

Models	FTP9050-80-170	FTP9060-300-75	FTP9060-500-40	FTP9060-800-25	-	-
Voltage	0~80V	0~300V	0~500V	0~800V	-	-
Current	0~170A	0~75A	0~40A	0~25A	-	-
Power	0~5kW	0~6kW				
Models	FTP9100-80-340	FTP9120-300-150	FTP9120-500-80	FTP9120-800-50	FTP9120-1000-40	-
Voltage	0~80V	0~300V	0~500V	0~800V	0~1000V	-
Current	0~340A	0~150A	0~80A	0~50A	0~40A	-
Power	0~10kW	0~12kW				
Models	FTP9150-80-510	FTP9180-300-225	FTP9180-500-120	FTP9180-800-75	FTP9180-1000-75	FTP9180-2250-25
Voltage	0~80V	0~300V	0~500V	0~800V	0~1000V	0~2250V
Current	0~510A	0~225A	0~120A	0~75A	0~75A	0~25A
Power	0~15kW	0~18kW				
Models	FTP9300-80-1020	FTP9240-300-300	FTP9240-500-160	FTP9240-800-100	FTP9240-1000-80	-
Voltage	0~80V	0~300V	0~500V	0~800V	0~1000V	-
Current	0~1020A	0~300A	0~160A	0~100A	0~80A	-
Power	0~30kW	0~24kW				
Models	FTP9450-80-1530	FTP9360-300-450	FTP9360-500-240	FTP9360-800-150	FTP9360-1000-150	FTP9360-2250-50
Voltage	0~80V	0~300V	0~500V	0~800V	0~1000V	0~2250V
Current	0~1530A	0~450A	0~240A	0~150A	0~150A	0~50A
Power	0~45kW	0~36kW				
Models	FTP9600-80-2040	FTP9720-300-900	FTP9720-500-480	FTP9720-800-300	FTP9720-1000-300	FTP9720-2250-100
Voltage	0~80V	0~300V	0~500V	0~800V	0~1000V	0~2250V
Current	0~2040A	0~900A	0~480A	0~300A	0~300A	0~100A
Power	0~60kW	0~72kW				
Models	FTP9750-80-2550	FTP9900-300-1125	FTP9900-500-600	FTP9900-800-375	FTP9900-1000-375	FTP9900-2250-125
Voltage	0~80V	0~300V	0~500V	0~800V	0~1000V	0~2250V
Current	0~2550A	0~1125A	0~600A	0~375A	0~375A	0~125A
Power	0~75kW	0~90kW				
Models	FTP9900-80-3060	FTP91080-300-1350	FTP91080-500-720	FTP91080-800-450	FTP91080-1000-200	FTP91080-2250-150
Voltage	0~80V	0~300V	0~500V	0~800V	0~1000V	0~2250V
Current	0~3060A	0~1350A	0~720A	0~450A	0~450A	0~150A
Power	0~90kW	0~108kW				
<b>Voltage programming</b> ①						
Resolution	16bits					
Precision	0.02%+0.02%F.S.					
<b>Current programming</b> ①						
Resolution	16bits					
Precision	0.1%+0.1%F.S.					
<b>Power programming</b> ①						
Precision	1%F.S.					
<b>External analog programming</b> ②						
Control voltage	0~5V corresponds to 0~100%F.S.					
Voltage precision	0.5%F.S.					
Current precision	0.5%F.S.					
<b>Linear adjustment rate</b> ②						
Voltage	0.02%F.S.					
Current	0.05%F.S.					
Power	0.05%F.S.					
<b>Load adjustment rate</b> ③						
Voltage	0.05%F.S.					
Current	0.15%F.S.					
Power	0.75%F.S.					
<b>Voltage measurement</b> ④						
Resolution	16bits					
Precision	0.02%+0.02%F.S.					
<b>Current measurement</b> ④						
Resolution	16Bits					
Precision	0.1%+0.1%F.S.					
<b>Power measurement</b> ④						
Precision	1%F.S.					
<b>Output noise &amp; ripple</b> ④						
Voltage ripple p-p	320mV	300mV	450 mV	800 mV	2000mV	3600mV
Voltage Ripple rms	25mV	40mV	70 mV	200mV	350mV	400mV
Dimensions (WxHxD)	5kW~18kW: 482.6mm x 132.5mm x 707.0mm, including output guards					
Weight	24kW~36kW: 482.6mm x 266mm x 743.0mm, including protective cover, without casters					
	6kW≈17kg, 12kW≈24kg, 18kW≈30kg, 36kW≈65kg					