



上海稳压器厂  
SHANGHAI  
VOLTAGE REGULATOR PLANT

# Stabilized Power supply Expert 稳定电源专家



**CFP系列智能变频电源**  
CFP series intelligent variable frequency power supply



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## CFP系列智能变频电源

CFP series intelligent variable frequency power supply



## 产品概述

### Product Overview

CFP系列智能变频电源是上海稳压器厂研发生产的新一代绿色电源，可以模拟世界各国的电源环境，为进口设备国内使用测试、国内设备出口测试提供电源，满足不同频率或不同额定电压等级设备的供电需求。如进口、出口设备的50HZ或60HZ供电电源检测;航空/军事单位的机场地面设施、船舶、航天、军事研究所等特殊测试电源。CFP系列智能变频电源具有频率稳定度高、稳压精度高、响应速度快、抗冲击性好、三相电压自动平衡等很多优点。

CFP series intelligent variable frequency power supply is a new generation of green power supply developed and produced by Shanghai Voltage Stabilizer Factory. It can simulate the power supply environment of countries around the world, provide power supply for domestic use test of imported equipment and export test of domestic equipment, and meet the power supply needs of equipment with different frequencies or different rated voltage levels. Such as 50HZ or 60HZ power supply detection of imported and exported equipment; special test power supply for airport ground facilities, ships, aerospace, military research institutes, etc. of aviation/military units. CFP series intelligent variable frequency power supply has many advantages such as high frequency stability, high voltage stabilization accuracy, fast response speed, good impact resistance, automatic three-phase voltage balance, etc.

CFP系列变频(岸电)电源(又称电子静止式岸电电源)，是在我公司常规智能变频电源基础上专门针对船舶制造及修理厂、岸边码头等高温、高湿、高腐蚀性、大负荷冲击等恶劣使用环境而特别设计制造的大功率变频电源设备。PCB主板采用涂层固化处理，并加装正弦滤波器，输出隔离变压器采用二次真空浸渍绝缘漆处理(绝缘等级可达H级)，防护能力更强。

CFP series variable frequency (shore power) power supply (also known as electronic static shore power supply) is a high-power variable frequency power supply equipment specially designed and manufactured based on our company's conventional intelligent variable frequency power supply for shipbuilding and repair plants, shore docks and other harsh environments such as high temperature, high humidity, high corrosion, and high load impact. The PCB motherboard adopts coating curing treatment and is equipped with a sine filter. The output isolation transformer adopts secondary vacuum impregnation insulation varnish treatment (insulation grade can reach H grade), which has stronger protection ability.

CFP系列变频(岸电)电源广泛应用于船舶制造及修理厂、远洋钻井平台、岸边码头等需要由50HZ工业用电变为60Hz高质量稳频稳压电源，对船舶用电设备进行供电的场合。是传统供电方式——三相380V/50Hz电动机(同步或异步)带动440V/60Hz发电机供电的全面替代产品。

CFP series variable frequency (shore power) power supply is widely used in shipbuilding and repair factories, offshore drilling platforms, shore docks and other occasions where 50HZ industrial electricity needs to be converted into 60Hz high-quality stable frequency and voltage power supply to power ship electrical equipment. It is a comprehensive replacement product for the traditional power supply mode – three phase 380V/50Hz motor (synchronous or asynchronous) driving 440V/60Hz generator power supply.

CFP系列变频(岸电)电源主要由单片机智能控制板、驱动板、IGBT(绝缘栅双极型晶体管)、隔离变压器、浪涌吸收电路、输入输出电路等部件组成。

The CFP series variable frequency (shore power) power supply is mainly composed of single chip intelligent control board, drive board, IGBT (insulated gate bipolar transistor), isolation transformer, surge absorption circuit, input and output circuit and other components.

## 产品特点

### Product Characteristics

耐冲击能力强：输出可以瞬时承受负载冲击电流的2~3倍(常规产品按2倍设置)

抗干扰能力强：EMI滤波输入，避免高频杂音反灌(为可选项)，变压器隔离输出，抗干扰能力强，三相独立，可忍受三相不平衡负载

稳频精度高：频率稳定度达到+0.01HZ，进口IGBT功率模块，原装驱动匹配，逆变全桥平衡、稳定

频率范围广：输入允许频率40~73HZ，输出频率50Hz、60Hz固定、40~73Hz可调

稳压精度高：稳压精度能达到±0.5%(常规产品±1%)

反应时间快：100%加载或减载，输出反应时间<2ms

电压范围宽：输入电压+20%(可定制更宽范围)，输出电压0~520V可调

输出波形佳：DSP数字控制，SPWM正弦波脉宽调制纯正弦波输出，输出波形失真小。

Strong impact resistance: the output can withstand 2~3 times the load impact current instantaneously (conventional products are set at 2 times)

Strong anti-interference ability: EMI filter input to avoid high-frequency noise backflow (optional), transformer isolation output, strong anti-interference ability, three-phase independence, can tolerate three-phase unbalanced load

High frequency stabilization accuracy: frequency stability reaches +0.01HZ, imported IGBT power module, original drive matching, inverter full-bridge balanced and stable.

Wide frequency range: input allowable frequency 40~73HZ, output frequency 50Hz, 60Hz fixed, 40~73Hz adjustable

High voltage stabilization accuracy: voltage stabilization accuracy can reach ±0.5% (conventional products ±1%)

Fast response time: 100% loading or unloading, output response time <2ms

Wide voltage range: input voltage +20% (customizable wider range), output voltage 0~520V adjustable

Excellent output waveform: DSP digital control, SPWM sine wave pulse width modulation pure sine wave output, output waveform distortion is small.

## 使用场合

### Use occasions

变频稳频电源：

- 1)出口设备模拟60HZ电源环境测试。
- 2)给原装进口60HZ设备在国内使用提供60HZ电源。
- 3)军工、高科技特殊产品特殊电源频率测试(30~600HZ)。
- 4)小水电、局部电网等频率不稳定场合做稳频、稳压电源。
- 5)其它特殊的变频、稳频环境下使用。

- 1) Test the 60HZ power supply environment of export equipment.
- 2) Provide 60HZ power supply for imported 60HZ equipment for domestic use.
- 3) Test the special power supply frequency of military and high-tech special products (30~600HZ)
- 4) Use it as a frequency-stabilized and voltage-stabilized power supply in small hydropower, local power grid and other frequency-unstable occasions.
- 5) Use it in other special frequency conversion and frequency stabilization environments.

高精度快速稳压电源、滤波净化电源：

High-precision fast voltage-stabilized power supply, filter-purified power supply:

- 1) 高精度快速稳压电源:稳压精度、响应时间、稳定时间同AVC/DVR媲美,可直接做高精度快速稳压电源使用(即AVC),  
High-precision fast voltage-stabilized power supply: The voltage-stabilization accuracy, response time, and stabilization time are comparable to AVC/DVR, and can be directly used as a high-precision fast voltage-stabilized power supply (i.e. AVC),
- 2) 滤波净化电源:可在严重谐波供电条件下使用(允许电压谐波总量THD高达20%);  
Filter-purified power supply: can be used under severe harmonic power supply conditions (the total voltage harmonic THD is allowed to be up to 20%);  
可给严重谐波负载供电(允许负载电流谐波总量THD高达50%)。  
Can supply power to severe harmonic loads (the total load current harmonic THD is allowed to be up to 50%).

调压稳压变频稳频电源(代替传统调压器)：

Voltage-regulated,voltage stabilization, variable-frequency, and frequency stabilization power supply (replacing traditional voltage regulators):

输出三相线电压0~520V可调,单相0~300V可调(并且可定制更高电压)，因此具有典型调压器特性、可直接代替精密调压器(常规分辨率1%)

Output three-phase line voltage 0~520V adjustable, single-phase 0~300V adjustable (and higher voltages can be customized), so it has typical voltage regulator characteristics and can directly replace precision voltage regulators (conventional resolution 1%)

精密可调可稳测试电源

Precision adjustable and stable test power supply

可定做0.5%等级或更高等级产品。

Products of 0.5% grade or higher can be customized.

静止式岸电电源： Static shore power supply:

专门针对船舶制造及修理厂、岸边码头等高温、高湿、高腐蚀性、大负荷冲击等恶劣使用环境而特别设计制造的大功率变频电源设备。PCB主板采用涂层固化处理，并加装正弦滤波器，输出隔离变压器采用二次真空浸渍绝缘漆处理(绝缘等级可达H级)，防护能力更强。

High-power variable frequency power supply equipment specially designed and manufactured for harsh use environments such as high temperature, high humidity, high corrosion, and high load impact in shipbuilding and repair factories, shore docks, etc. The PCB motherboard is coated and cured, and a sine filter is installed. The output isolation transformer is treated with secondary vacuum impregnation insulation paint (insulation level can reach H level), which has stronger protection capabilities.

常规户内产品正常使用条件为(户外产品、户外岸电电源等需定制):

Normal use conditions for conventional indoor products are (outdoor products, outdoor shore power supplies, etc. need to be customized):

- 1)环境温度：-15℃~40℃； Ambient temperature: -15℃~40℃；
- 2)海拔高度：不超过1000米； Altitude: not more than 1000 meters；

注：当海拔超过1000米时，电源的负载能力将随海拔高度的升高而降低。修正方法按GB3859.2附录B的规定；

Note: When the altitude exceeds 1000 meters, the load capacity of the power supply will decrease with the increase of altitude. Correction method is in accordance with the provisions of Appendix B of GB3859.2 ;

- 3)相对湿度：≤90%； Relative humidity: ≤90%；

- 4)安装场所应无严重影响稳压电源绝缘强度的气体、蒸汽、化学沉积、灰尘、污垢及其他爆炸性和侵蚀性介质；

The installation site should be free of gas, steam, chemical deposition, dust, dirt and other explosive and corrosive media that seriously affect the insulation strength of the voltage stabilizer ;

- 5)安装场所应无严重振动或颠簸； The installation site should be free of severe vibration or bumps；

- 6)凡不符合上述规定的特殊使用条件，应由使用单位和我厂协商确定。

Any special use conditions that do not meet the above provisions should be determined by the user and our factory.

技术参数

Technical Spec.

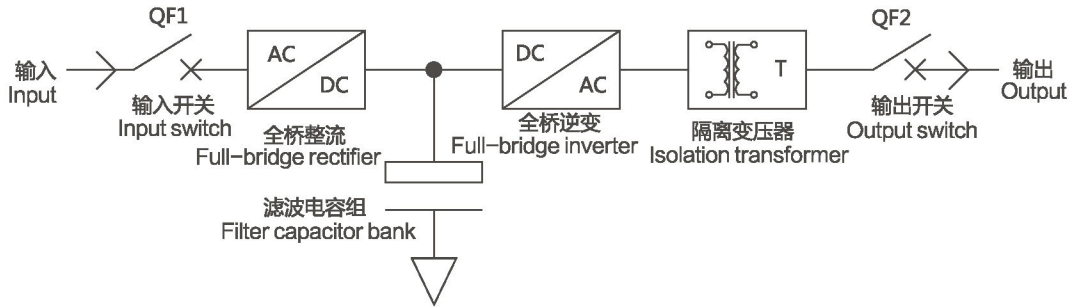
输入 Input	电压范围 Voltage range	三相380V ± 15%(单相220V ± 15%)或其它指定电压 Three-phase 380V ± 15% (single-phase 220V ± 15%) or other specified voltage
	频率 Frequency	40HZ-73HZ或其它指定频率 40HZ-73HZ or other specified frequency
输出 Output	调制方式 Modulation mode	IGBT/SPWM正弦波脉宽调制方式 IGBT/SPWM sine wave pulse width modulation
	输出电压 Output voltage	三相0-520V可调, 单相0-300V可调(可定制更高电压) Three-phase 0-520V adjustable, single-phase 0-300V adjustable (higher voltage can be customized)
	输出电压稳定度(平均值) Output voltage stability (average value)	± 1%(可定制更高精度)    ± 1%(higher accuracy can be customized)
	反应时间 Response time	2ms(针对输入电压)稳定时间10ms    2ms (for input voltage) stabilization time 10ms
	电压波形失真度 THD Voltage waveform distortion	<2%(空载或线性负载)    <2% (no load or linear load)
	输出频率 Output frequency	42HZ-73HZ可调, 50/60/400HZ固定(可选100HZ/200HZ, 可定做5-1000HZ) 42HZ-73HZ adjustable, 50/60/400HZ fixed (optional 100HZ/200HZ, customizable 5-1000HZ)
	频率稳定度 Frequency stability	<0.1%
	相位偏移 Phase shift	负载三相平衡或空载时 ≤ ± 1° :100%三相不平衡: ≤ ± 4° Load three-phase balanced or no-load ≤ ± 1° : 100% three-phase unbalance: ≤ ± 4°
显示诊断 保护系统 Display diagnostic protection system	三相不平衡度 Three-phase imbalance	三相电压自动平衡    Three-phase voltage automatic balance
	电参数显示 Electrical parameter display	线电压(L-L)、三相电压(L-N), 三相电流, 频率, 功率 Line voltage (L-L), three-phase voltage (L-N), three-phase current, frequency, power
	电参数显示解析度 Electrical parameter display resolution	电压解析度0.1V;电流解析度0.1A;功率解析度0.1KW Voltage resolution 0.1V; current resolution 0.1A; power resolution 0.1KW
	故障诊断及显示 Fault diagnosis and display	过载短路故障、IGBT模块故障、熔丝故障、温度过高故障 Overload short circuit fault, IGBT module fault, fuse fault, overtemperature fault
	保护 Protection	输入无熔丝开关, 输出无熔丝开关, 电子电路快速侦测过电流,过电压, 过载, 过高温, 短路并自动跳脱保护及告警 Input without fuse switch, output without fuse switch, electronic circuit quickly detects over-current, over-voltage, overload, over-temperature, short circuit and automatically trips protection and alarm
	显示介质 Display medium	LCD液晶显示(128*64)或触摸屏显示可选择    LCD display (128*64) or touch screen display optional
	过载能力 Overload capacity	160%/20秒    160%/20 seconds
	使用环境 Usage environment	环境温度-10~45℃, 相对湿度0~90% Ambient temperature -10~45℃, relative humidity 0~90%
	绝缘电阻 Insulation resistance	DC500V 20 MΩ 以上(不含控制及显示) DC500V 20 MΩ or more (excluding control and display)
	耐压 Withstand voltage	工频AC2000V/10mA 无泄漏(不含控制及显示) Power frequency AC2000V/10mA no leakage (excluding control and display)

工作原理

Working principle

CFP系变频电源主电路采用AC-DC-AC的工作原理设计, 主要包括整流器、直流滤波电容组、逆变器、输出电抗器、隔离变压器及交流滤波电容组等组成部分。如下图所示。

The main circuit of the CFP series variable frequency power supply is designed based on the working principle of AC-DC-AC, and mainly includes rectifier, DC filter capacitor group, inverter, output reactor, isolation transformer and AC filter capacitor group, as shown in the figure below.



第一级AC-DC为整流部分:输入的交流电压经限流电阻缓冲处理, 再经全桥整流模块转换为直流电压。

The first stage AC-DC is the rectification part: the input AC voltage is buffered by the current limiting resistor and then converted into DC voltage by the full-bridge rectifier module.

第二级DC-AC为逆变部分:采用大功率绝缘栅双极晶体管(IGBT)作为其逆变元件, 利用先进的正弦波调制技术(SPWM)将调制波(基准正弦波电压源)与载波(基准三角波电压源)比较。当载波与调制波相交时, 由该交点确定逆变器开关管IGBT开关动作时刻及开关通断状态, 获得系列宽度不等的正负矩形脉冲电压波形(SPWM波形)。该脉冲序列的特点是等幅不等宽, 其宽度按正弦规律变化, 在正弦波半个周期内, 正负脉冲的面积总和与正弦波的面积相等。输出的脉宽调制波经LC滤波电路滤波后, 得到纯正的正弦波交流电压。同时输出配备隔离变压器, 提高了整机的稳定性。

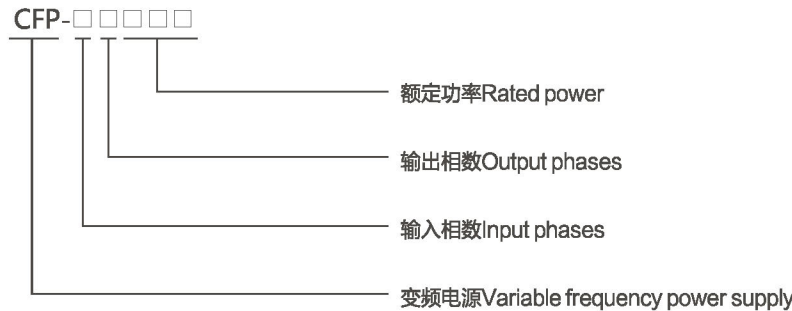
The second stage DC-AC is the inverter part: a high-power insulated gate bipolar transistor (IGBT) is used as its inverter element, and the modulation wave (reference sine wave voltage source) is compared with the carrier (reference triangle wave voltage source) using advanced sinusoidal wave modulation technology (SPWM). When the carrier intersects with the modulation wave, the switching action and the on-off state of the inverter switch tube IGBT are determined by the intersection, and a series of positive and negative rectangular pulse voltage waveforms (SPWM waveforms) with different widths are obtained. The characteristics of this pulse sequence are equal amplitude and unequal width, and its width changes according to the sine law. In half a cycle of the sine wave, the sum of the areas of the positive and negative pulses is equal to the area of the sine wave. The output pulse width modulation wave is filtered by the LC filter circuit to obtain a pure sinusoidal AC voltage. At the same time, the output is equipped with an isolation transformer to improve the stability of the whole machine.

型号定义

Model Definition

CFP系列智能变频电源型号标识如下

The CFP series intelligent variable frequency power supply model identification is as follows



例: CFP-33030 三进三出30KVA变频电源

Example: CFP-33030 Three-phase input and output 30KVA variable frequency power supply

CFP-13015 单进三出15KVA变频电源

CFP-13015 single-input Three-output 15KVA variable frequency power supply

选型一览  
Selection list

三相变频稳频稳压电源规格表

Three-phase variable frequency and voltage&frequency stabilized power supply specification table

型号规格 Model	额定容量 Rated Capacity(KVA)	额定输出电流 Rated Output Current(A)		机柜外形尺寸(mm) 宽X厚X高 Cabinet Dimensions (mm)(WxDxH)	参考重量 Reference Weight(kg)
		高压档 High Voltage	低压档 Low Voltage		
CFP13003 CFP33003	3	4.5	9	350x650x630 (带轮子, 可锁定With lockable wheels)	60
CFP13006 CFP33006	6	9	18		65
CFP13010 CFP33010	10	15	30		150
CFP13015 CFP33015	15	23	46	460x650x1200 (带轮子, 可锁定With lockable wheels)	210
CFP13020 CFP33020	20	30	60		260
CFP33030	30	45	90		310
CFP33045	45	68	136	780x650x1350	365
CFP33060	60	91	182		398
CFP33075	75	114	228	950x700x1500	512
CFP33090	90	137	274		550
CFP33120	120	183	366		566
CFP33150	150	228	456	1200x750x1800	875
CFP33200	200	304	608		980
CFP33250	250	380	760	1400x1000x2100	1300
CFP33300	300	456	912		1450
CFP33400	400	608	1216	1200x750x1800 两柜 Two cabinets	2100
CFP33500	500	760	1520	1400x1000x2100两柜 Two cabinets	3300
CFP33600	600	912	1824		3900
CFP33800	800	1216	2432	1400x1000x2100三柜 Three cabinets	4800
CFP331000	1000	1520	3040		5700

注: 尺寸、重量仅供参考;因机型不同或不同的订单可能会有差异, 请以实际订单为准。  
Note: Dimensions and weights are for reference only; they may vary due to different models or different orders, so please refer to the actual order.

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		高压档 High Voltage	低压档 Low Voltage		
CFP11003	3	13	26	350x650x630 (带轮子With wheels)	55
CFP11005	5	21	42		68
CFP11010 CFP31010	10	42	84		90
CFP11015 CFP31015	15	63	126	460x650x1200 (带轮子可锁定With lockable wheels)	119
CFP11020 CFP31020	20	84	168		180
CFP11030 CFP31030	30	126	252		225
CFP11045 CFP31045	45	189	378	780x650x1350	300
CFP31060	60	252	504		420
CFP31075	75	315	630		530
CFP31090	90	378	756	950x700x1500	548
CFP31120	120	504	1008		610
CFP31150	150	630	1260		690
CFP31200	200	840	1680	1400x1000x2100	980
CFP31300	300	1350	2700		1200

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