

高压直流电源系统 P/N : YZPST-HVDC-720KW

High Voltage DC Power Supply System



HVDC 系列高压直流电源系统，标称电压 240V/336V，系统最大容量 720kW，是专为 IDC 机房 IT 设备开发研制的新型高频开关电源设备，采用高频软开关技术，模块化设计，配有标准 RS232/RS485 通讯接口及网络接口，采用分立式柜体结构，交流/直流配电单独列柜，适用于采取集中供电的中大型 IDC 机房、超算中心、智能工厂、金融等场合。

HVDC series high voltage DC power supply system, nominal voltage 240V/336V, with a maximum system capacity of 720kW, is a new type of high-frequency switching power supply equipment developed specially for IDC server room IT, It is a new type of high-frequency switching power supply equipment developed for IDC server room IT equipment, adopting high-frequency soft-switching technology and modularized design switching technology, modularized design, equipped with standard RS232/RS485

communication interface and network interface, adopts discrete cabinet structure, AC/DC power distribution in separate cabinets, suitable for centralized power supply of medium and large IDC server rooms, supercomputing centers, intelligent factories room, supercomputing center, intelligent factory, financial and other occasions.

主要技术指标：

- 交输入电压 双路供电 $380V \pm 30\%$ （三相四线+地线）。
- 输入频率 $50HZ \pm 5HZ$
- 输出电压 $216V \sim 382V$ 可调输出
- 输出电流 $20A \sim 1200A$ 。（根据系统设计容量）
- 效 率 $\geq 95\%$
- 稳压精度 $\leq 0.5\%$
- 稳流精度 $\leq 1\%$
- 均流精度 $\leq \pm 5\%$
- 纹波系数 $\leq \pm 0.5\%$
- 蓄电池组 1 组 ~ 4 组(根据容量配置)
- 温度范围 工作： $-10^{\circ}C \sim +40^{\circ}C$ ， 存储： $-40^{\circ}C \sim +70^{\circ}C$
- 相对湿度 工作： $\leq 90\%$ ($40^{\circ}C \pm 2^{\circ}C$) 存储： $\leq 95\%$ ($40^{\circ}C \pm 2^{\circ}C$)
- 海拔高度 ≤ 2000 米

Main Technical Indicators：

- Cross Input Voltage Dual supply $380V \pm 30\%$ (3-phase 4-wire + ground).

- Input frequency 50HZ±5HZ
- Output voltage 216V ~ 382V adjustable output
- Output current 20A ~ 1200A. (According to system design capacity)
- Efficiency $\geq 95\%$.
- Voltage stabilization accuracy $\leq 0.5\%$
- Precision of current stabilization $\leq 1\%$
- Precision of current equalization $\leq \pm 5$
- Ripple coefficient $\leq \pm 0.5\%$ Battery set 1 set
- Battery group 1 group ~ 4 groups (according to the capacity configuration)
- Temperature range Working: $-10^{\circ}\text{C} \sim +40^{\circ}\text{C}$, Storage: $-40^{\circ}\text{C} \sim +70$
- Relative humidity Working: $\leq 90\%$ ($40^{\circ}\text{C} \pm 2^{\circ}\text{C}$) Storage: $\leq 95\%$ ($40^{\circ}\text{C} \pm 2^{\circ}\text{C}$)
- Altitude ≤ 2000 meters

HVDC 在通信与数据中心的应用场景

1. 数据中心供电系统

- 数据中心对电力供应的 稳定性 和 能效 要求极高，传统交流供电需多级转换（AC→DC→AC→DC），效率损失高达 15%-20%。

- HVDC 可直接提供直流电（如 380V DC），减少转换环节，提升整体能效（效率可达 95%以上）。

市电+HVDC 直供：市电经整流后直接为 IT 设备供电，搭配蓄电池实现无缝切换。

- HVDC+光伏/储能系统：结合可再生能源和储能，构建低碳供电体系。
- 2. 通信基站供电
 - 通信基站（如 5G 基站）设备多为直流负载（-48V DC），传统方案需将交流市电转换为直流，效率低且设备复杂。
 - HVDC 可直接输出直流电，简化供电链路，降低维护成本。
 - 中国移动、华为等企业试点 240V/336V HVDC 供电系统，替代传统-48V DC 方案，适配 5G 基站高功耗需求。
- 3. 边缘计算与微电网
 - 边缘数据中心或偏远通信站点需独立供电，HVDC 可与光伏、储能结合，构建离网或混合供电系统。

Application Scenarios:

1. Data center power supply system

- Data centers have very high requirements on the stability and energy efficiency of power supply. Traditional AC power supply requires multi-stage conversion (AC→DC→AC→DC), with an efficiency loss of up to 15%-20%.
- HVDC can directly provide DC power (e.g. 380V DC), which reduces the conversion process and improves the overall energy efficiency (the efficiency can be more than 95%).

Utility + HVDC Direct Supply: Utility power is rectified to supply power directly to IT equipment, with batteries for seamless switching.

- HVDC+Photovoltaic/Energy Storage System: Combining renewable energy and energy storage to build a low-carbon power supply system.

2. Communication base station power supply

- Communication base stations (such as 5G base stations) are mostly DC loads (-48V DC), and the traditional program needs to convert AC mains to DC, which is inefficient and complicated.

- HVDC can directly output DC power, simplifying the power supply link and reducing maintenance costs.

- China Mobile, Huawei and other companies are piloting 240V/336V HVDC power supply system to replace the traditional -48V DC program, which is suitable for 5G base stations with high power consumption.

3. Edge computing and microgrid

- Edge data centers or remote communication sites need independent power supply, and HVDC can be combined with photovoltaic and energy storage to build off-grid or hybrid power supply systems.