

5.4MW-12000A 制氢电源规格书

5.4MW-12000A DC POWER SUPPLY

DATASHEET



广东合耕电源科技有限公司

GuangDong Hygen Power Solutions Technology

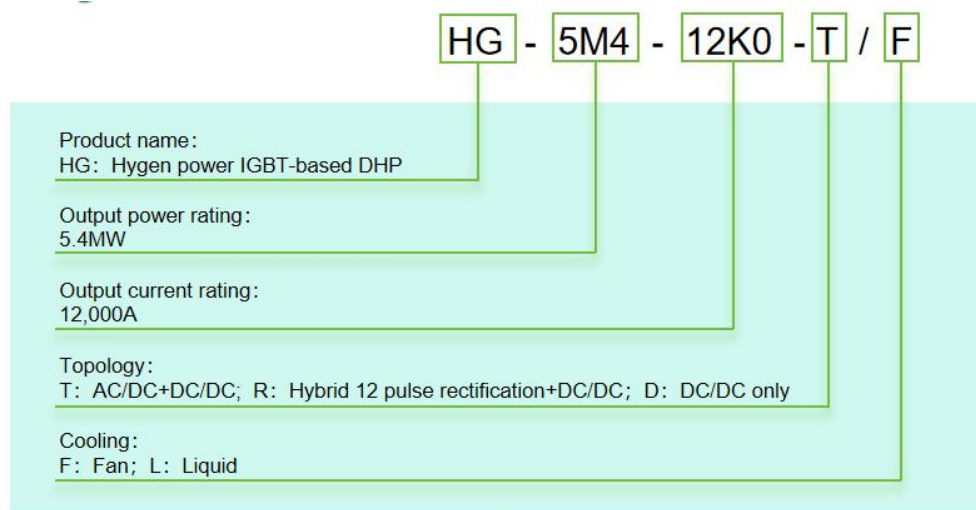
1. 产品介绍 Product introduction

1.1 产品简介 Product introduction

基于 IGBT 的 DHP 采用全控 IGBT 拓扑方案作为主电源，具有模块化冗余设计和良好的并联特性。该系统易于根据电解的要求并行扩展。它具有显著的“三高一低”特点（高效、高可靠性、高功率因数、低谐波），电源设计易于并联、可靠稳定、易于维护，适应性强。

IGBT-based DC power supply for hydrogen production adopts a fully controlled IGBT topology scheme for the main power, with modular redundancy design and good parallel characteristics. The system is easy to expand in parallel according to the requirements of the electrolytic. It has significant "three highs and one low" characteristics (high efficiency, high reliability, high power factor, and low harmonics), and the power supply design is easy to parallel, reliable and stable, easy to maintain, and has good adaptability.

1.2 产品命名规则 Naming rules



1.3 技术特点 Technical characteristics

- 采用大功率模块 IGBT 功率器件和模块化设计

Designed with IGBT power devices and modulars

- 多相交错控制技术，使得更低的纹波率

Multiphase interleaved control technology enables lower ripple rate

- 对电网测量的适应性强，电压和频率适应性广，支持低短路率和弱电电网运行

Strong adaptability to grid measurement, wide voltage and frequency adaptability, supporting low short circuit ratio and weak current grid operation

- 更优秀的动态调整能力，适应负载较大的波动范围，更能应对新能源波动的功率响应

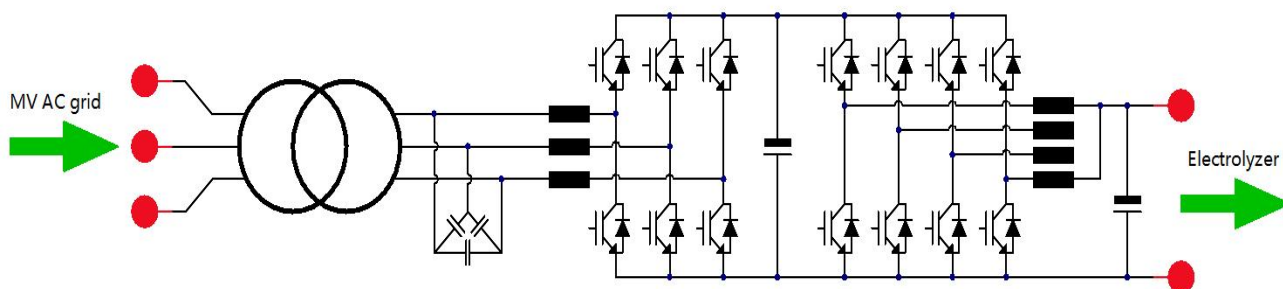
Better dynamic adjustment ability, adapt to a larger fluctuation range of the load. Power response that can better cope with fluctuations in new energy

- 水冷散热系统，通过数字化控制避免出现冷凝

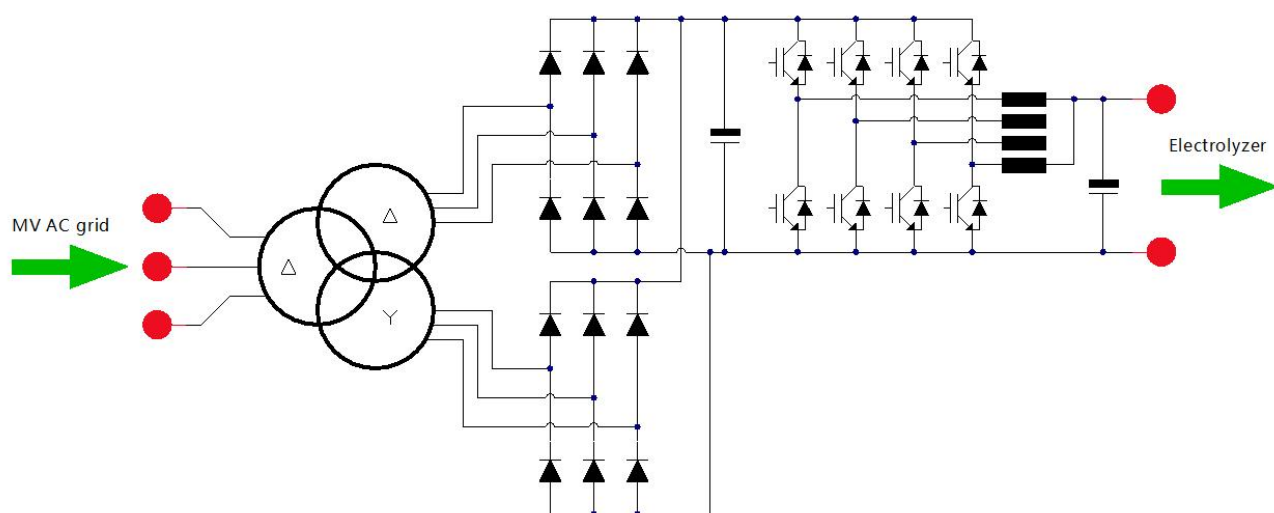
Water cooling system, though digital control to avoid condensation

2. 原理框图 Scheme of the converter

2.1 AC/DC+DC/DC 两级方案原理图 Scheme of AC/DC + DC/DC



2.2 12 脉冲整流+DC/DC 混合方案原理图 Scheme of Hybrid 12 pulse rectification + DC/DC



3. 产品规格 Product Specifications

项目 Items	参数 Value	
拓扑 Topology	AC/DC + DC/DC	12 pulse rectification + DC/DC
型号 Part No.	HG-5M4-12K0-T/L	HG-5M4-12K0-R/L
交流输入侧 AC input side		
额定输入电压 Input voltage rating	500Vac	575Vac
额定工作频率 Working frequency rating	50Hz	
功率因数 PF	≥0.98 (30% load above)	≥0.95 (30% load above)
电网电压偏差范围 Grid voltage deviation range	< ±10%	
电网频率偏差范围 Grid frequency deviation range	< ±10%	
总电流谐波 THDi	≤3%	≤8%
输入方式 Way for input	三相三线 3-phase 3-wire	
直流输出侧 DC output side		
输出电压范围 Output voltage range	200 ... 600Vdc	
输出最大功率 Output Max. Power	5.4MW	
输出最大电流 Output Max. current	12000A	
电流控制精度 Current-controlled precision	≤±1% (Steady state)	
输出电压纹波 Output voltage ripple	≤±2%	
输出电压控制精度 Output voltage-controlled precision	≤±1% (Steady state)	
输出负载响应时间 Output load response time	25% power / s	
AC 辅助源 AC auxiliary power		
额定输入电压 Input voltage rating	380Vac	

额定输入功率 Input power rating	20KVA
保护 Protection	
保护 Protection	过/欠压 Over/under voltage; 过流/功率 Over current/power; 过温 Over temperature; 通信失效 Communication failure; 冷却系统失效 Cooling system failure; 绝缘检测 Insulation testing; 短路 Short circuit; 输出逐周期限流 Output cycle-by-cycle current limiting; 交流输入断路器 AC breaker
系统 System	
电路拓扑架构 Circuit topology architecture	AC-DC + DC-DC
效率 Efficiency	≥ 0.97 (50% load above)
耐压 Galvanic insulation	输入和输出-壳: 2500Vac/3600Vdc; AC In and DC out - Chassis: 2500Vac/3600Vdc;
绝缘电阻 Insulation resistance	输入和输出-壳: $> 5\text{M}\Omega$; AC In and DC out - Chassis: $> 5\text{M}\Omega$;
工作模式 Working method	输出恒流 (默认)、输出恒功率、输出恒压 Constant output current (default), Constant output power, Constant output voltage
输出急停 Output emergency stop	支持 available
标准与法规 Standards and Regulations	GB/T 34120-2023, GB/T 34133-2023, IEC 62477-1: 2022
通信与显示 Communication and display	
通信接口 Interface	Ethernet, RS485
通信协议 Protocol	MODBUS-TCP, MODBUS-RTU
显示 Display	HMI + LED
工作环境与散热 Working environment and cooling	
环境温度 Ambient temperature	-20°C ... 45°C
防护等级	IP54

Ingress protection	
相对湿度 Relative humidity	5 % ~ 95 %
工作海拔 Working altitude	2000m
安装位置 Installation location	室内 Indoor
冷却方式 Cooling method	液冷 Liquid cooling
冷却液温度范围 Liquid temperature range	-20°C ... 35°C
尺寸 Size (W×D×H)	单排摆放 Single row placement: 8.6m x 1.2m x 2.6m 并排摆放 Double row placement: 4m x 2m x 2.6m