

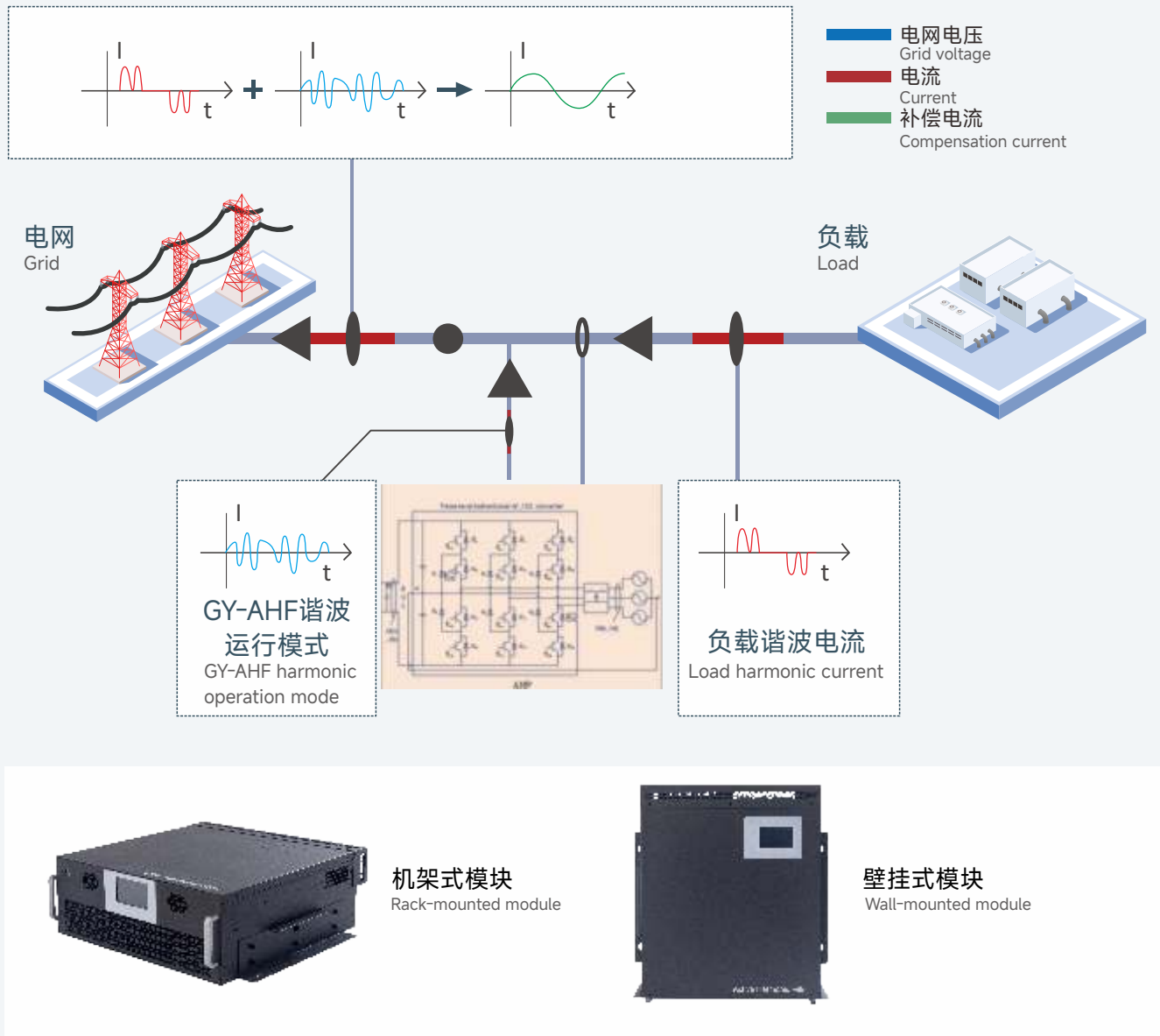
硅化碳型有源电力滤波装置

SiC-based Active Harmonic Filter

GY-AHF-SiC

碳化硅有源电力滤波装置（GY-AHF-SiC）以碳化硅功率器件为核心，将电压源变流器通过滤波器并联在电网上，其工作原理是实时检测负载电流，基于指定次谐波电流检测算法将谐波电流逐次分离，按照设定的滤波百分比生成控制信号，驱动IGBT输出与负载谐波电流幅值相同相位相反的补偿电流，实现谐波补偿功能。同时，装置峰值效率达98.5%以上，单柜可容纳8台模块，最大容量可达1200A，安装维护方便。

Silicon Carbide Active Power Filter (GY-AHF-SiC)
Using silicon carbide (SiC) power devices as the core, the GY-AHF-SiC connects a voltage source converter (VSC) to the power grid via a filter in parallel. Its working principle is to detect the load current in real time, separate the harmonic currents sequentially based on a specific-order harmonic current detection algorithm, and generate control signals according to the set filtering percentage. These signals drive the IGBT to output a compensation current that has the same amplitude as but opposite phase to the load harmonic current, thereby achieving harmonic compensation. In addition, the device achieves a peak efficiency of over 98.5%. A single cabinet can accommodate up to 8 modules, with a maximum capacity of 1200 A, offering easy installation and maintenance.



性能特点 Performance characteristics

- 1) DSP+CPLD全数字控制核心，三电平拓扑技术、先进的谐波检测算法和PWM控制策略。

2) 降低模块损耗，提升模块效率，峰值效率达98.5%以上。

3) 高功率密度模块化设计，单柜可容纳8台模块，最大容量可达1200A，安装维护方便。

4) 通过更高开关频率控制算法，减小输出波纹电流，提升动态响应速度。

5) 利用SiC功率器件的更高耐压能力，同时简化热设计和电磁兼容设计，提升产品的可靠性。

6) 不平衡补偿能力：补偿后不平衡度≤5%。

7) 电流谐波补偿能力：补偿率≥95%；2~50次，单次补偿率可调。

8) 中性线零序电流滤波能力为相线三倍。

9) 可设定100%限流输出，保证设备长期稳定运行。

10) 支持谐波补偿、谐波补偿+三相不平衡补偿模式可选。
- 1.DSP+CPLD full-digital control core, three-level topology technology, advanced harmonic detection algorithm and PWM control strategy.

2.Reduced module losses, improved module efficiency, peak efficiency up to 98.5% or higher.

3.High power density modular design; a single cabinet can accommodate 8 modules with a maximum capacity of 1200A, easy installation and maintenance.

4.Higher switching frequency control algorithm reduces output ripple current and improves dynamic response speed.

5.Utilizes the higher voltage withstand capability of SiC power devices while simplifying thermal design and electromagnetic compatibility (EMC) design, enhancing product reliability.

6.Unbalance compensation capability: unbalance degree after compensation ≤5%.

7.Current harmonic compensation capability: compensation rate ≥95%; 2nd to 50th harmonics, individual compensation rate adjustable.

8.Neutral line zero-sequence current filtering capacity is three times that of the phase line.

9.Supports 100% current-limiting output to ensure long-term stable operation of the equipment.

10.Supports selectable compensation modes: harmonic compensation only, or harmonic compensation + three-phase unbalance compensation.

技术参数 Technical parameters

机型 Model	220V	380V
海拔高度 Altitude	<2000m,2000米以上按照GB/T3859.2降额使用 <2000 m; above 2000 m, derate according to GB/T 3859.2	
环境温度 Ambient temperature	-10~+50℃(40℃以上降容不超过30%) -10 to +50 °C (above 40 °C, capacity derating ≤30%)	
相对湿度 Relative humidity	≤90%，月最低温度25℃表面无凝露 ≤90% relative humidity, no condensation on the surface at a monthly minimum temperature of 25 °C	
污秽等级 Pollution degree	III级以下 Pollution degree ≤ Class III	
工作电压 Operating voltage	AC220V (-20%~+20%)	380V (-20%~+20%)
工作频率 Operating frequency	50Hz/60Hz (45Hz~63Hz)	
额定补偿容量 Rated compensation capacity	100A、150A	
电网结构 Grid configuration	三相三线，三相四线 Three-phase three-wire, three-phase four-wire	
并联台数 Number of parallel units	不限 unlimited	
整机效率 Overall efficiency	≥97%	
开关频率 Switching frequency	30kHz	
功能选择 Function selection	谐波补偿、谐波补偿+三相不平衡补偿 Harmonic compensation, harmonic compensation + three-phase unbalance compensation	
电流谐波补偿能力 Current harmonic compensation capability	电流谐波补偿≥95% Reactive power compensation ≥95%	
电流谐波补偿范围 Current harmonic compensation range	2~50次，单次补偿率可调 2nd to 50th harmonics, adjustable individual compensation rate	
不平衡补偿能力 Unbalance compensation capability	补偿后不平衡度≤5% Unbalance degree after compensation ≤5%	
全响应时间 Full response time	< 40ms	
噪音 Noise level	≤65dB	
通讯方式 Communication method	2路RS485通信接口（支持Wi-Fi） 2 RS485 communication ports (Wi-Fi supported)	
保护功能 Protection functions	过载、软/硬件过流、电网过欠压、电网电压不平衡、电源故障、过温、频率异常、短路保护、谐振保护等 Overload, software/hardware overcurrent, grid overvoltage/undervoltage, grid voltage unbalance, power supply failure, overtemperature, frequency anomaly, short circuit protection, resonance protection, etc.	
过载能力 Overload capability	额定1.2倍过载60秒 Rated 1.2 times overload for 60 seconds	
安装方式 Installation method	机架/壁挂 Rack / wall-mounted	
进线方式 Cable entry	后进线(机架式)、上进线(壁挂式) Rear cable entry (rack-mount), top cable entry (wall-mounted)	
防护等级 Protection rating	IP20(IP54可定制) IP20 (IP54 customizable)	
中性线滤波能力 Neutral line filtering capacity	中性线滤波能力为相滤波能力的3倍 Neutral line filtering capacity is 3 times that of phase filtering capacity	
冷却方式 Cooling method	强制风冷 Forced air cooling	
电磁兼容 Electromagnetic compatibility	EMC电磁兼容RE、CE项目满足Class A测试标准 EMC (Electromagnetic Compatibility) – Radiated Emission (RE) and Conducted Emission (CE) meet Class A test standard	