中腾微网 SINOSOAR

Sino Soar Hybrid (Shenzhen) Technology Co., Ltd.

www.vgridpower.cn

SP30HBG2 ,SP25HBG2, SP30HBPS ,SP25HBPS Series

Hybrid Inverters Product Brochure

Version: V1.0

1. Product Introduction

This is an efficient and highly reliable energy storage inverter developed mainly for small and medium-sized energy storage microgrids . It supports photovoltaic access, contains an on-grid and off-grid switching device, supports multiple parallel operations, supports hybrid operation of diesel engines, and supports on-grid and off-grid fast switching. It is suitable for a variety of scenarios such as small industrial and commercial, small island microgrids, farms, villas, battery cascade utilization, etc., to meet the needs of different users.

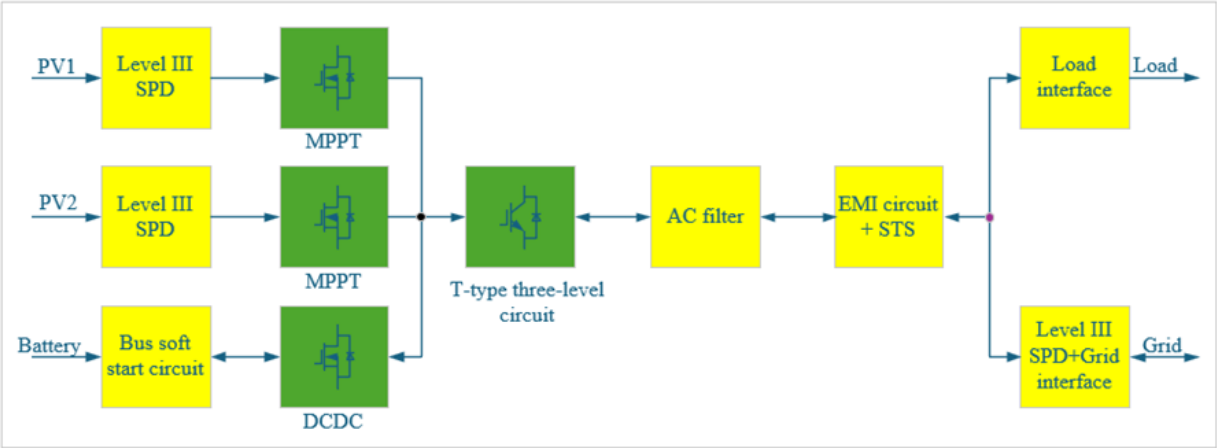


Figure 1 *Major Topology*

2. Features

2.1. High efficiency and high reliability

- **Low power consumption:** standby power consumption is ⩽15 W , no-load operation loss is less than 160W ;
- **High efficiency:** the highest conversion efficiency is 97.8% ;
- **High protection:** The core control part has an IP5X protection level and can work stably in harsh environments such as sand and dust, high salt fog, etc.
- **Air duct isolation design :** The isolated air duct design improves the safety and reliability of the product;
- **High overload capacity:** With 150% instantaneous overload capacity, it enhances the adaptability and durability of the system;
- **Seamless switching function:** supports seamless switching on and off the grid, ensuring the continuity and stability of power supply.

2.2. Functions

- **Diesel-engine hybrid mode:** supports diesel-engine hybrid operation, provides a flexible energy combination mode, and improves energy utilization efficiency;
- **Three-phase independent grid-connected control technology:** realizes three-phase independent control, optimizes power distribution, and improves system flexibility and efficiency;
- **Seamless switching:** seamless switching between on-grid and off-grid (less than 10 ms);
- **Grid adaptability:** complete high and low voltage ride-through function, island protection, black start and other functions;
- **Parallel function:** The AC side supports 15 units in parallel and grid-connected operation or off-grid operation, and the DC side also supports multiple units in parallel;
- **Flexible application scenarios:** Suitable for various scenarios such as small-scale industry and commerce, small island microgrids, farms, villas, etc., to meet the specific needs of different users.

2.3. Convenience

- **Communication and monitoring:** Support multiple communication protocols and mainstream BMS protocols to facilitate remote monitoring and management;
- **High maintainability:** front wiring and front maintenance;
- **Fault protection:** Complete fault protection and fault recording functions;
- **Efficient energy management:** Built-in EMS (Energy Management System) supports parallel connection, improves the intelligence level of energy management, self-generation and self-use, economic mode, grid connection priority, etc.;
- **Wide voltage range:** Suitable for voltage input of various battery configurations, strong adaptability, and can meet energy needs of different capacity requirements. Better battery adaptability, higher cost performance, as low as 200V , such as 30kW /20-70kWh (100AH) , 30k W / (60-215) kWh (280AH) .

3. Product Models

- SP30HBG2
- SP25HBG2
- SP30HBPS
- SP25HBPS

4. Product Appearance and Size

4.1. Product Appearance

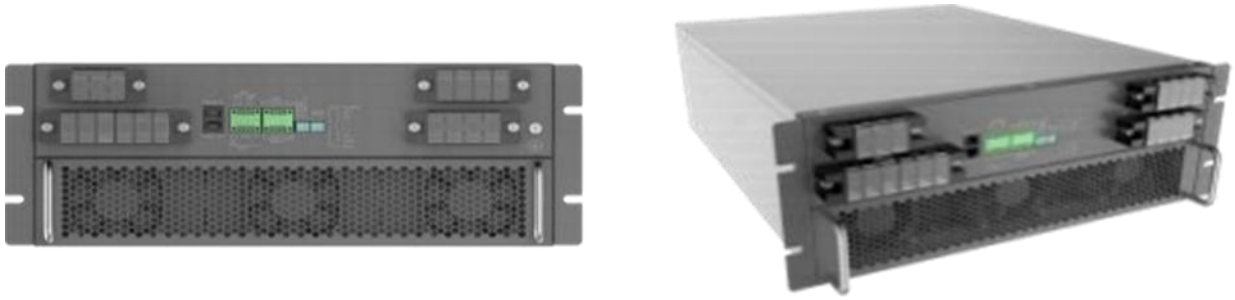


Figure 2 *Product Appearance*

4.2. Product Dimensions

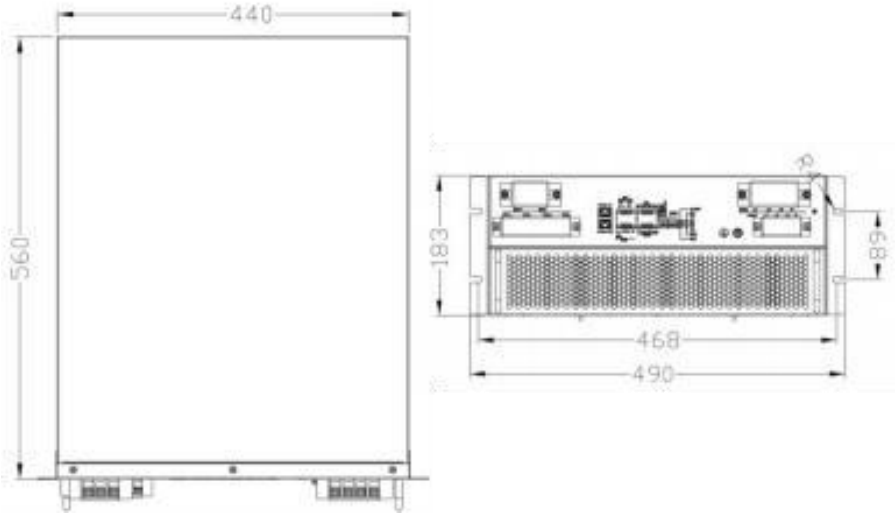


Figure 3 *Product Dimensions*

4.3. Heat dissipation requirements and installation clearance

The cooling method of the module is intelligent fan speed control air cooling. The front panel is the air intake and the rear panel is the air outlet. The rated air intake of the module is 500 CFM (14.1 m^3/min). When installed in an integrated system, the air intake of the cabinet should be directly facing the air intake of the module's front panel, and the distance between the module's air intake and the cabinet body should be greater than 110mm. Corresponding air ducts and air outlets should also be added on the cabinet. The air duct should be directly facing the module's air outlet and the cabinet's air outlet, and the distance between the module's air outlet and the cabinet body should be greater than 110mm, so as to directly send the hot air outside the cabinet and avoid the hot air from flowing back inside the cabinet.

5. Specifications

5.1. Naming Convention

This document is applicable to the model description of SP**HB** series converters

Serial Number	Item	Description
1	Company Name	SP: Sino Soar
2	AC rated power	30: AC rated output power 30kW 25: AC rated output power 25 kW
3	DC voltage level	H: DC input voltage is within 200~1000V
4	Assembly method	B: Subframe
5	Module Classification	G2: Hybrid Energy Storage Converter PS: Energy Storage Converter DC: Direct current converter PV: DC MPPT IV: Inverter

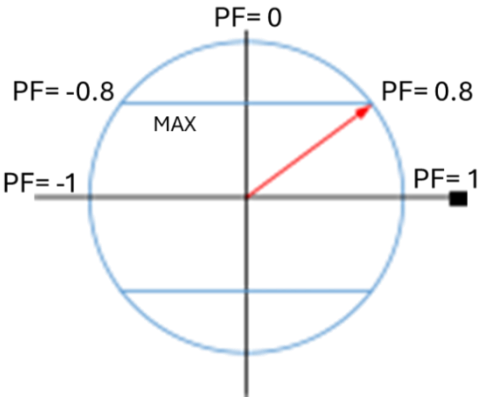
5.2. Technical Specifications

Parameter	SP30HBG2	SP25HBG2	SP30HBPS	SP25HBPS
Battery Parameters				
Maximum battery voltage	850V			
Type of supporting current	Lithium iron phosphate batteries, lithium-ion batteries, lead-acid batteries, etc.			
Minimum battery voltage	200V			
Rated battery voltage range	320V-820V			
Maximum battery current	100A	80A	100A	80A
Overvoltage level	Level II			
PV Parameters				
Maximum Power	19.2kW+19.2kW	15kW+15kW	N/A	
Maximum PV voltage	850V		N/A	
PV starting voltage	250V		N/A	
MPPT voltage range	200~800V		N/A	
Overvoltage level	Level II		N/A	

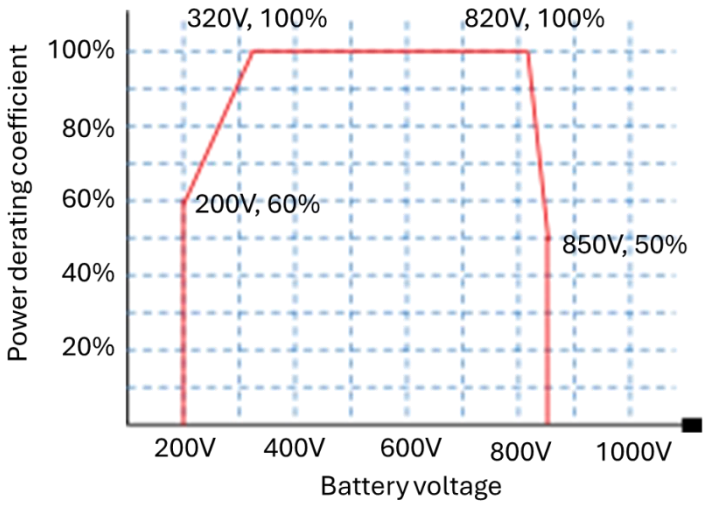
Parameter	SP30HBG2	SP25HBG2	SP30HBPS	SP25HBPS
Maximum feedback current	0A		N/A	
Maximum PV current	32A+32A	25A+25A	N/A	
Maximum PV short-circuit current	35A+35A	35A+35A	N/A	
PV array configuration	String-type， floating		N/A	
AC side (grid-connected)				
Rated Power	30kVA	25kVA	30kVA	25kVA
Rated current	43.5A	36.2A	43.5A	36.2A
Rated grid voltage	400V/230V			
Grid voltage range	-20% ~ 15%			
Starting surge current	8.5A			
Grid frequency range	50Hz (47Hz~52Hz) or 60Hz (57Hz~62Hz)			
Current harmonics	<5 % (greater than 30% load)			
Power Factor	-0.8 ~ 0.8 (see the figure below)			
Overvoltage level	Level III			
Protection level	Level I			
AC side (off-grid)				
Rated output power	30kVA	25kVA	30kVA	25kVA
Maximum output power	33kVA	27.5kVA	33kVA	27.5kVA
Rated output current	43.5A	36.2A	43.5A	36.2A
Maximum output current	48A	40A	48A	40A
Rated voltage	400V/230V			
Output voltage harmonics	<3% (resistive load)			
Imbalance	100%			
Output frequency	50/60Hz			
Maximum fault current	472/20ms			
AC maximum protection current	48A	39.8A	48A	39.8A
Output overload (current) Ie ：Rated output current	Ie*1.1<I load ≤Ie*1.25 100s Ie*1.25<I load ≤Ie*1.4 300ms Ie*1.4<I load ≤Ie*1.5 100ms Ie*1.5<I load 30ms			
System Parameters				
Communication port	EMS: RS485 Battery: CAN or RS485			
DIDO	DI: 2 channels; DO: 2 channels			
Maximum efficiency	97. 8%			
Installation	Insert frame			

Parameter	SP30HBG2	SP25HBG2	SP30HBPS	SP25HBPS
Loss	Standby <10W , no-load power < 160W			
Weight	35kg			
Dimensions	W*L*H: 440*560*183mm			
Protection	IP20			
Temperature range	-25 ~ 60℃ (use at a derating when the temperature is above 45℃)			
Humidity range	5-95%			
Cooling method	Intelligent forced air cooling			
Pollution degree	Level II			
Altitude	4000 m (derating is used above 2000m)			
Certification	CE, IEC62019 , IEC62477 , IEC61000 , EN50549			
Grid support	LVRT , HVRT , VSG			
Country of Manufacturer	China			

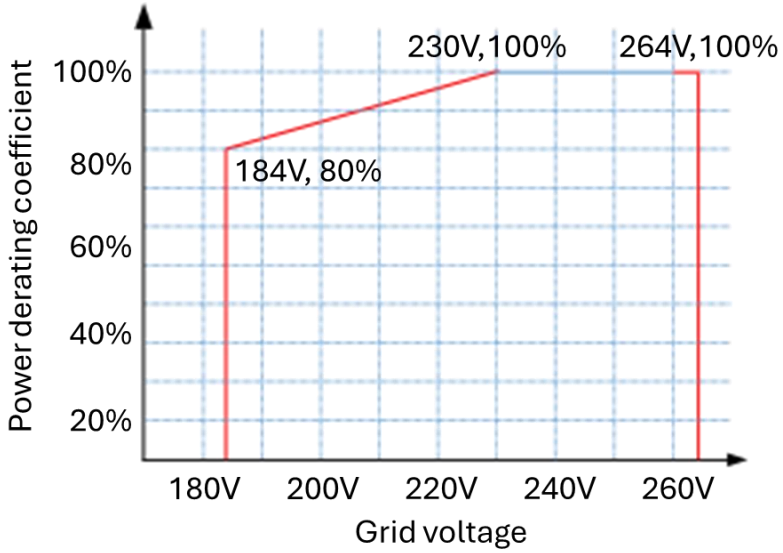
5.3. Active and Reactive Power Curves



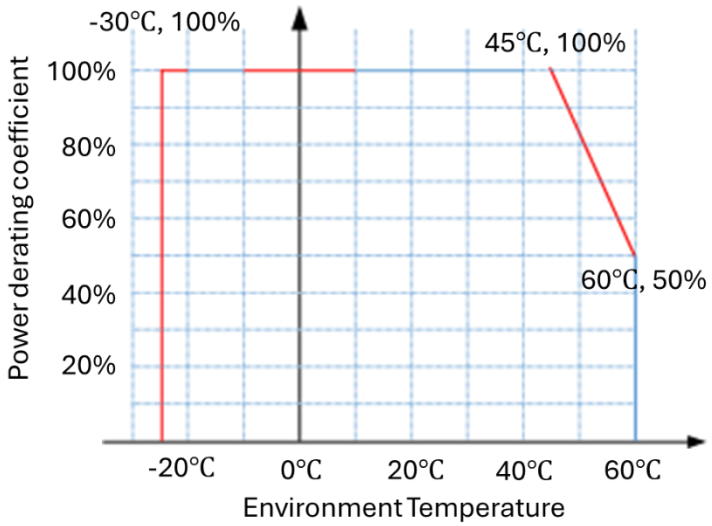
5.4. Power Derating Curve (Battery Voltage)



5.5. Power Derating Curve (Grid Voltage)



5.6. Temperature Derating Curve



5.7. Safety Protection

- Air duct isolation, salt spray protection, and control chamber sealing;
- Humidity range 5%-95%;
- Anti-interference 2KV to ground, Class III lightning protection, during PCS application, the AC side needs to add Class II lightning protection or the distribution unit;

- Operation vibration test and transportation test with packaging materials.

5.8. Warranty Information

The warranty period starts from the date of inverter installation or activation. The customer shall complete the installation and activation within 1 month after receipt of the goods; if the installation or activation is overdue, the warranty period will commence from the 31st day after the date of receipt. The total warranty period is 5 years.

6. EMS Dispatch Function (Optional)

6.1. Usage

Applicable to areas with high electricity prices and low orno FIT subsidies.

The excess photovoltaic power generation is stored in the battery. When the photovoltaic power generation is insufficient or there is no photovoltaic power generation at night, the battery is discharged to supply electricity to the load, thereby improving the self-generation and self-use rate of the photovoltaic system and the household energy self-sufficiency rate, and saving electricity bills.

For example:

(1) When the PV is in sufficient sunlight, the PV output power is 35kW, the load consumes 10kW, and the battery charges 25kW.

(2) When PV light becomes weak, PV output power is 10 kW, the load consumes 20kW, and the battery discharges 10kW to the load.

6.2. Economic model :

Applicable to scenarios with large price differences between peak and valley electricity consumption.

This mode manually sets the charging and discharging time periods. For example, the night time period with low electricity prices is set as the charging time period. The system charges the energy storage at the maximum charging power during this time period. It is necessary to enable the "grid charging" function in the "energy storage control" and set the high electricity price period as the discharging time period. The battery can only be discharged during the discharging time period, saving electricity costs.

6.3. Priority Internet Access:

Applicable to the grid-connected scenario of full-price grid-connected mode.

Photovoltaic power generation is maximized to the grid. When photovoltaic power generation exceeds the maximum output capacity of the inverter during the day, energy is stored by charging the battery; when photovoltaic power generation is less than the maximum output capacity of the inverter, the battery is discharged to ensure that the inverter outputs maximum energy to the grid.