CONTAINER ENERGY STORAGE SYSTEM

250KW/860KWH



Hovedkontor

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SYSTEM CONFIGURATION







System Block Diagram







System Configuration

ltem	Quantity		Description	Comments
PV	BSM565M10-72HPH	480	12 pieces/string; A total of 40 strings; A total of 268.8kWp	
Battery 860.16KWH (688.12KWH available at 80% DOD) Backup	BAT-Conbiner box 1000V-1500A	1	For combination of multiple battery racks	
	BLUESUN-51.2V 280AH moudle	60	Battery With BMU module 51.2V 280AH Capacity 14.3kWh	
	BIUESUN-HV-Controller1000V 300A	4	High Voltage Controller Box	
PV-Combiner Box	8 Inputs 1 Output	5	For combination of multiple PV module strings	
PBD250		1	250kW solar charge controller	
PCS250		1	250kW battery inverter	
Bypass 250		1	Switch between on-grid and off-grid	
EnerLog		1	Monitoring datalogger	
20FT Container		1	For outdoor installation, IP54,including lighting, fire-resitance system, battery rack,air conditioner	





Working Mode **On-grid mode**

. Zero export

1.When zero export, the redundant PV power cannot flow to the grid.

2.When no zero export, the redundant PV power can flow to the grid.



1. When PV power is greater than load consumption, PV power will be first used to supply load, the excess part will be charged to battery.



Load first (Zero export function is optional)

2. When PV power is lower than load consumption, battery will discharge to offset the shortage part. If battery voltage approaches the under voltage value, battery will stop discharging, the load will be supplied by PV and grid. In the mean time, the grid will charge battery in triple current to protect battery.

III. Battery first (zero-export is optional)

1. When PV power is greater than max battery charging power, PV is used to charge battery ,the excess PV power will be used to supply load.

2. When PV power is smaller than charging power, the battery will be charged simultaneously by PV and grid at maximum charging power. The load will be supplied by grid.

3.If HPS doesn't discharge after 1 week of battery-first mode, it will dis power to maintain the chemical charge battery at a rate of 20% of rated activity of battery.

IV. Economy mode (zero-export is optional)

1. During off-peak period, the working mode is same as battery-first mode.

2. During shoulder period:

- a). Battery doesn't discharge, grid won't charge battery.
- b). If PV power is greater than load consumption, PV is first used to supply load, the excess PV power will charge battery.
- c). If PV power is lower than load demand, load will be supplied by both PV and grid. PV won't charge battery.

3. During peak duration:

- a). Grid won't charge battery.
- b). When PV power is greater than load consumption, PV is first used to supply load, the excess part will be used to charge battery.
- c). When PV power is lower than load consumption.
 - 1). PV and battery will supply load at the same time.
 - 2). If battery voltage approaches the under voltage limit, It will stop discharging. Load will be supplied by grid and PV. Grid doesn't charge battery in this period.







V. Peak shaving (zero-export is optional)

1. When the PV power is greater than the load and charging power, no electricity is taken from the grid.

2. When (PV power + upper limit power of the grid) is greater than (load power + charging power), the upper limit power of the grid is below the upper limit power and the PV simultaneously supplies the load and charges the battery.

3. When (PV power + upper limit power of the grid) is greater than the load power, the upper limit power of the grid is below the upper limit power of the grid and the PV is given priority to the load, and the remaining battery is charged.

grid.





4. When (PV power + upper limit power of the grid) is less than the load power, PV and battery supply the load at the same time below the upper limit power of the

Off-grid mode

1. When PV power is greater than load consumption, PV is used to supply load and charge battery.

2. When PV power is less than load consumption, battery will discharge until reaching the under voltage threshold, then

a). In default setting the inverting part(bidirectional DCAC) will stop working, all the PV power will be used to charge battery.

b). If generator is connected, HPS will start generator using its relay output, generator will supply load and charge battery.

Optional function

I. Generator connection (dry contact control)

In off grid mode: When battery voltage is approaching under voltage threshold, HPS will start generator to supply load and charging battery. HPS will stop supplying power, only using generator power to charge battery. If generator is started

1. When PV power is greater than charging power, PV power will be limited to max battery charging power.

2. When PV power is less than max charging power, generator can be used to charge battery according to customer's requirement.

3. When battery is full, HPS will stop the generator and go back to off-grid mode.

4.When there is no grid, generator can connect to HPS's grid terminal. If grid and generator need to connect to HPS simultaneously, an ATS will be needed for the connection.



SYSTEM PART INTRODUCTION



LIFEPO4 Battery



BSM48280H

14.336

51.2

280

Battery Module Capacity (KWH)

Battery Module Name

Battery Module Voltage (Vdc)

Battery Module Capacity (Ah)





Basic Parameters	BSMH-768-280AH
Battery System Charge Voltage (Vdc)	840
Battery System Charge Current (Normal)	280
Battery System Charge Current (Max)	340
Battery System Discharge lower-Voltage (Vdc)	672
Battery System Discharge Current (Standard)	280
Battery System Discharge Current (Normal)	340
Design Life	10 years+
Cycle Life	>6000

PBD 250KW



Basic Parameters	PBD 250KW	Basic Parameters	PBD 250KW
INPUT (PV)		Class of protection	IP20
Recommended photovoltaic power	250kw	Noise	<65dB(A)@1m
MPPT voltage range	350V-850V	Environment temperature	-25°C+55°C
Full load MPPT voltage range	480V-850V	Cooling model	Forced air cooling
Maximum input current	575A(115A*5)	Humidness	0%-95% no condensation
PPT quantity	5	Highest altitude	6000m(Derating over 3000m)
OUTPUT (BATTERY AND PCS)		Dimensions (width/height/thickness)	850/1900/700mm
Output voltage	600V-900V	Weight	600kg
Battery type	Lead-acid or Lithium battery	Topological structure	No transformer
Maximum charging power	250kW	Standby power consumption	<100W
Maximum charging current	416A	COMMUNICATION	
Maximum charging efficiency	99%	Reveal	Touch screen
BASIC INFORMATION		Communication interface	RS485/CAN





PCS 250KW



Specification parameter	PCS 250KW	Specification parameter	PCS 250KW
Ac (on-grid)		Voltage accuracy	±1%
Apparent power	275KVA	Voltage ripple	<3%
Rated power	250KW	Current ripple	<2%
Rated voltage	400V	Rated voltage	600VDC
Rated current	361A	Voltage range	500V-820V
Voltage range	310V-450V	Rated current	417A
Rated frequency	Rated frequency	Basic information	
Frequency range	45-55/55-65Hz	Maximum efficiency	97.30%
THDI	<3%	Class of protection	IP20
Power factor	0.8 precocious-0.8hysteretic	Noise	<65dB(A)@1m
Ac system	3/PE	Environment temperature	-25° C+55°C
Ac (off-grid)		Cooling model	Forced air cooling
Apparent power	275KVA	Humidness	0%-95% no condensation
Rated power	250KW	Highest altitude	6000m(Derating over 3000m)
Rated voltage	400V	Dimensions (width/height/thickness)	1600/2080/850mm
Rated current	361A	Weight	1465kg
THDU	≤2%linearity	Built-in transformer	equipped
Rated frequency	50/60Hz	Switch time between on-grid	Manual (default) Automatic (optional)≤10ms
Overload capacity	110%-10min 120%-1min	and off-grid	
Dc (battery)		Size	1600/2080/850mm
Rated power	250KW	Reveal	Touch screen
Current accuracy	±1%	Communication interface	RS485/CAN

Bluesun **20ft Container**

1.Features of BMS

Battery status monitoring

- Events record and storage function
- Operation control
- Insulation detection
- Dynamic balancing management
- Protection alarms
- Communication

BMU:

Battery Management Unit **BECU:**

Battery Electric Controller Unit **BSMU:**

Batter System Management Unit

2.Features of PCS

- · Wide-range of DC input voltage
- 10% additional power for continuous operation at ambient temperature up to 40°C
- Short conversion time offull power from charge to discharge
- · Indoor or outdoor installation
- · Low voltage ride through
- Reactive power adjustable, max.reactive power up to 500kVar
- · Active power derating
- Film capacitor design

3.Fire Protection system

- Automatic fire detecting
- alarm device
- · Fault alarm for fire detecting and alarming system
- The accumulator is placed in fire alarming controller.When the main power is off, the accumulator will supply the power to the automatic fire alarming system
- The monitoring function for the open circuit and short circuit in detecting circuit
- The monitoring function for the open circuit and short circuit in alarming circuit

BUESUN MOBICOM

· Manual/automaticfire alarming · Control room and local fire

4. Air Condition System

- Power-off memory And Reboot
- Remote fault identification and alarm, and report the fault through RS485
- Use the fuzzy intelligence control for remote communication
- Have the cooling, heating, constant temperature and dehumidifying mode
- · Heating control
- Temperature control
- Operation without failure continuous more than 2500 hours,Long life,good working performance in harsh environment

System **Monitoring Unit**

- Local webserver for easy configuration
- Supports export control with meters
- Up to 32 inverters connection
- Multi-function and high performance











• Data logger for overall system monitoring, collect operation data from different units via ModbusRS485 and communicate with Bluesun server via internet.

CASE



1MW+1.7MWH Thailand

1piece 40ft container of 1MWPC 1piece 20ft container of 1.7MWH lithium battery









150KW+600KWH South Africa

300KW+300KWH South Africa

150KW+350KWH Myanmar





Project Show













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