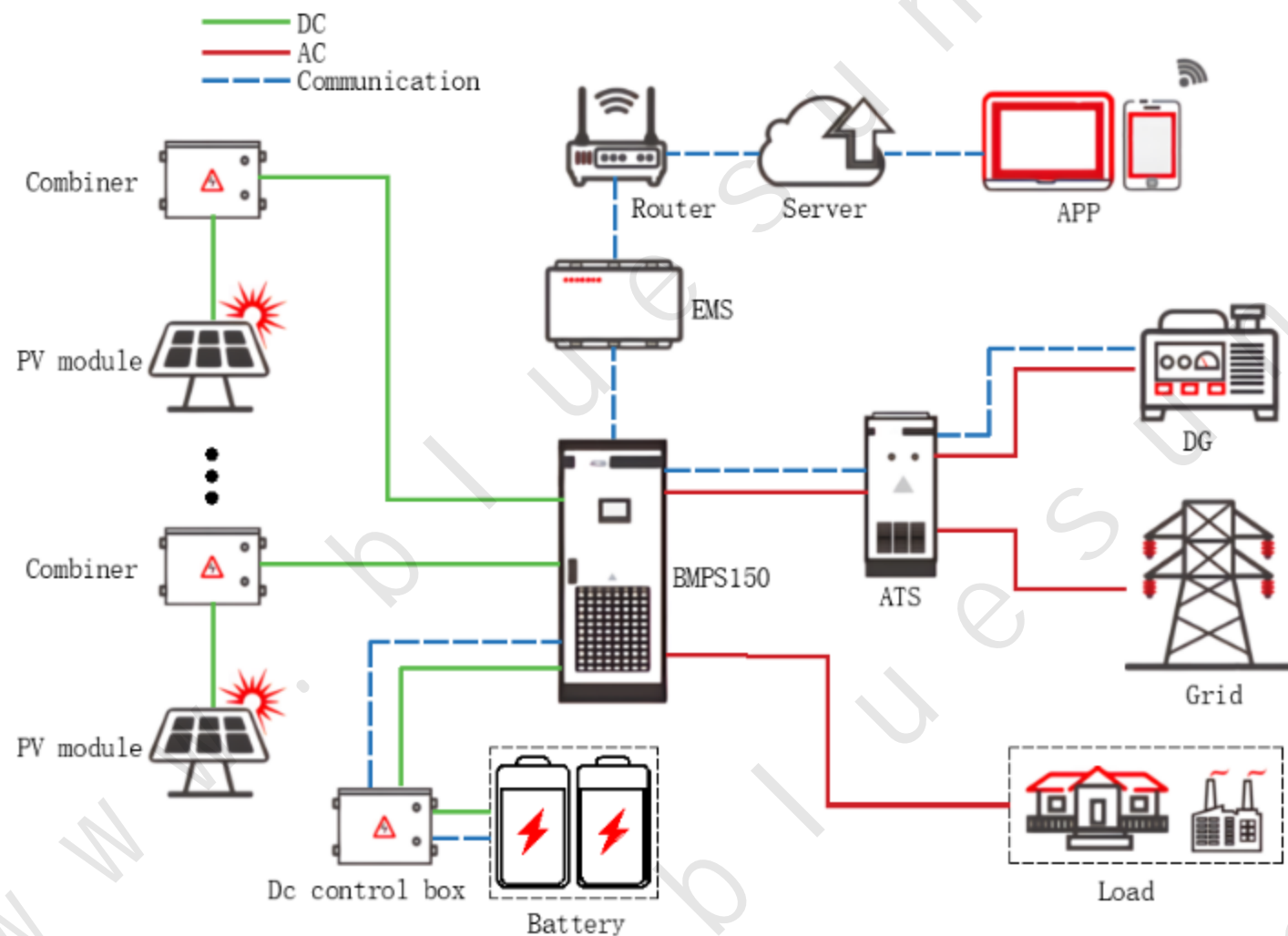


Energy Storage System Solution



System Description



- **PV: 161.84kWp**
- **Inverter: 150kW**
- **Battery: 315.4kWh**
- **Rate voltage: 380/400V**
- **ATS-150 (Optional)**
- **10-ft Container (Optional)**
- **EMS (Optional)**

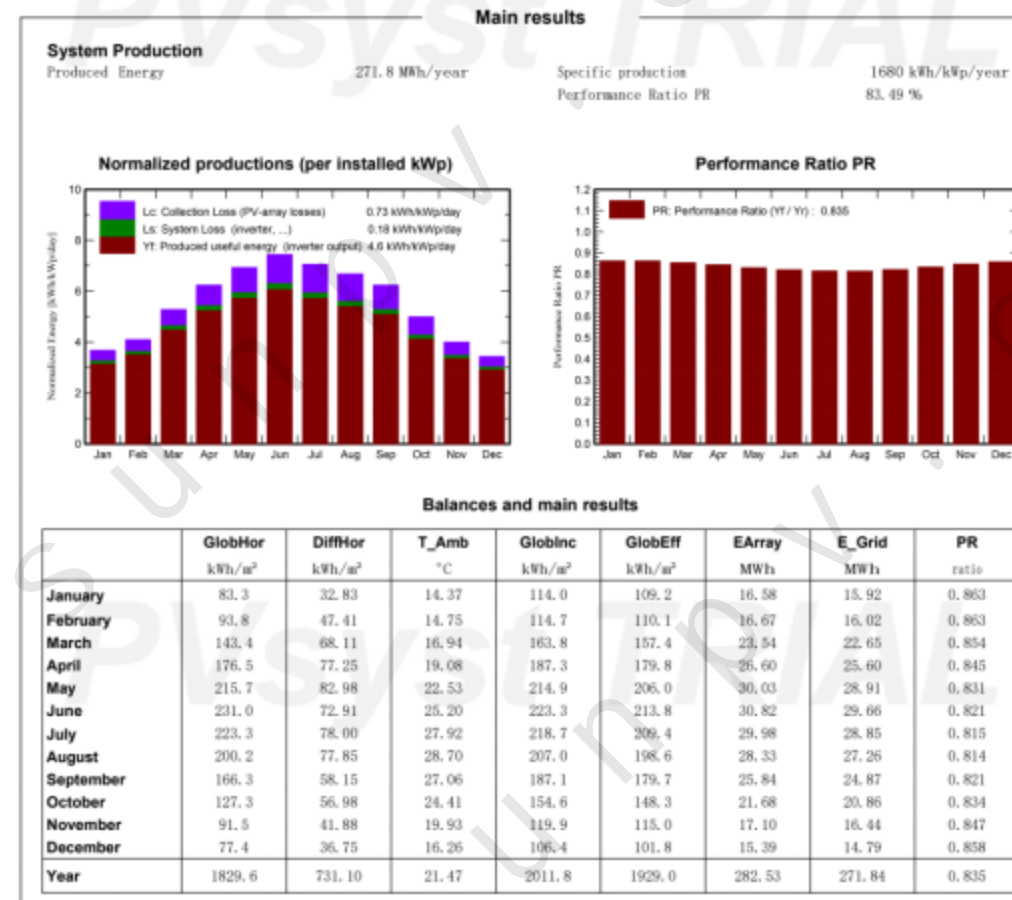
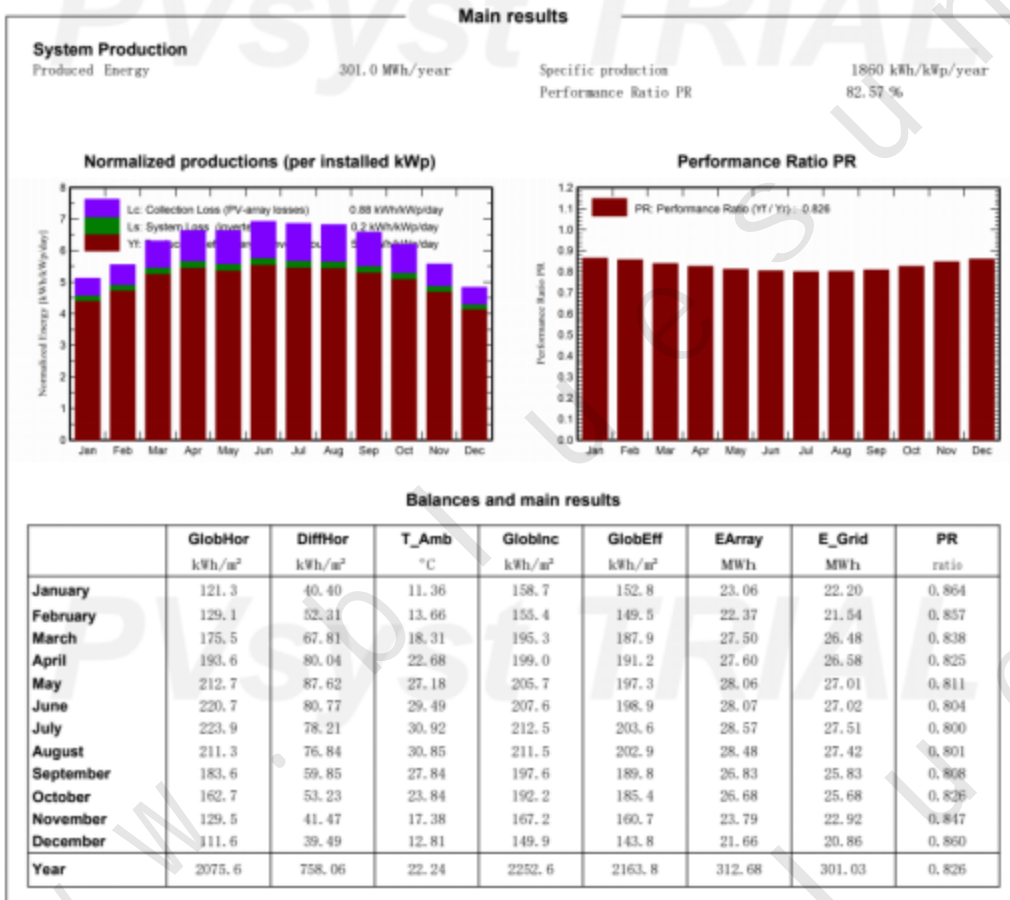
System Configuration

Item	Product Model	Quantity	Description	Comments
PV	BSM560M10-72HPH	289	17 pieces/string; A total of 17 strings; A total of 161.84kWp	BLUESUN
Battery 315.4kWh	BLUESUN High Voltage Box	1	High Voltage Box	BLUESUN
	BLUESUN Battery Rack	1	Battery rack	BLUESUN
	BLUESUN Battery 51.2V 280AH	11	Battery module 51.2V, 280AH Capacity 14.336kWh; 11 string 2 cluster	BLUESUN
	Dc control box	1	Busbar, external power cable, BMS display	BLUESUN
PV Combiner Box	6 Inputs 1 Output	3	For combination of multiple PV module strings	BLUESUN
Inverter	BMPS150	1	150kW hybrid inverter	BLUESUN
PV Cable	PV1-F 1*4mm2	1700	1*4mm2	BLUESUN
MC4 Connector	MC4	68	1000v 30A	BLUESUN
Mounting System		1	For 161.84KWp	BLUESUN
EMS (optional)	BR3000	1	Monitoring datalogger	BLUESUN
ATS (optional)	ATS-150	1	Connecting power grid and firewood should be selected	BLUESUN
Container(optional)	10-ft container	1	Including air conditioning, fire protection system	BLUESUN

What can our ESS storage system bring?

- DC/AC ratio is **1.08**, maximize the utilization of system equipment
- The system can generate **271.8MWh** of electricity per year(Location:Beirut)
- In the event of a power outage, the lithium battery and inverter can support maximum loads of **150KW**.
- The battery can support important loads for **3h-4h**.
- **Outdoor cabinets or containers**、**ATS**、**EMS** and **more batteries(0.5C)** are optional.
- Provide **pre-sale technical solutions**, **installation guidance** and **24h after-sales service**

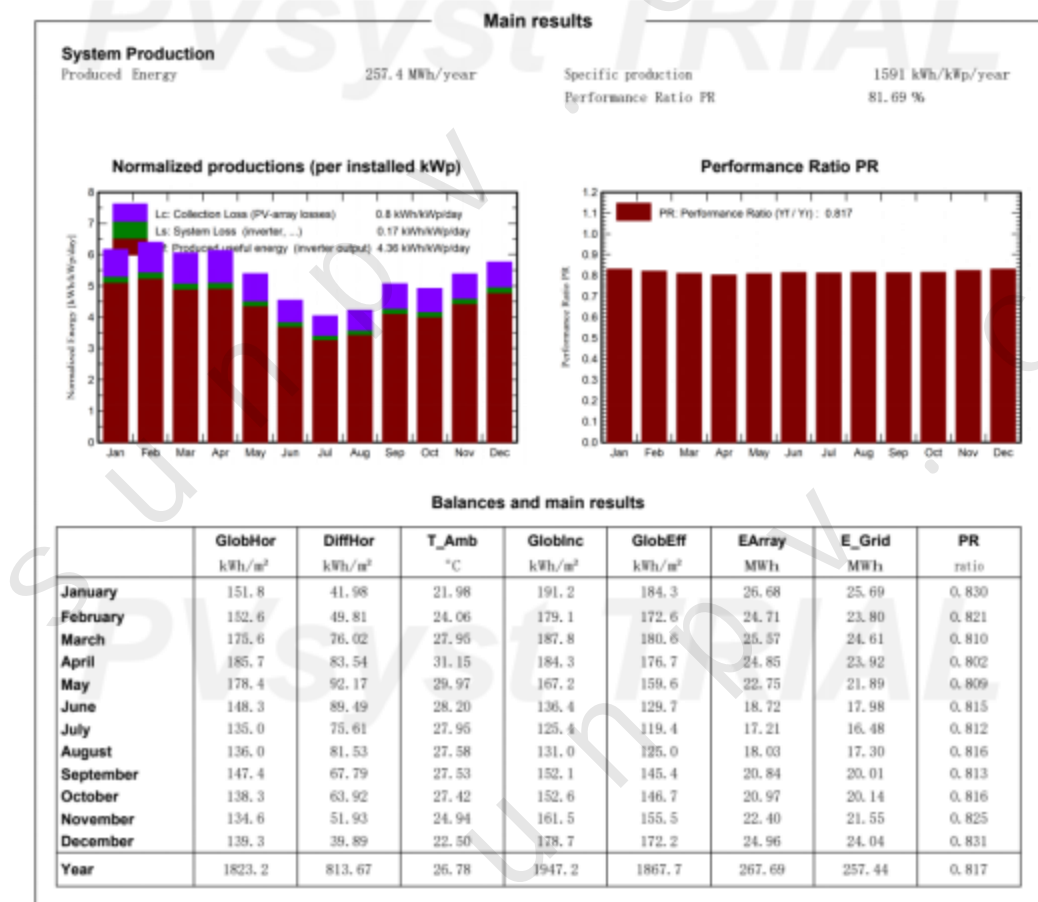
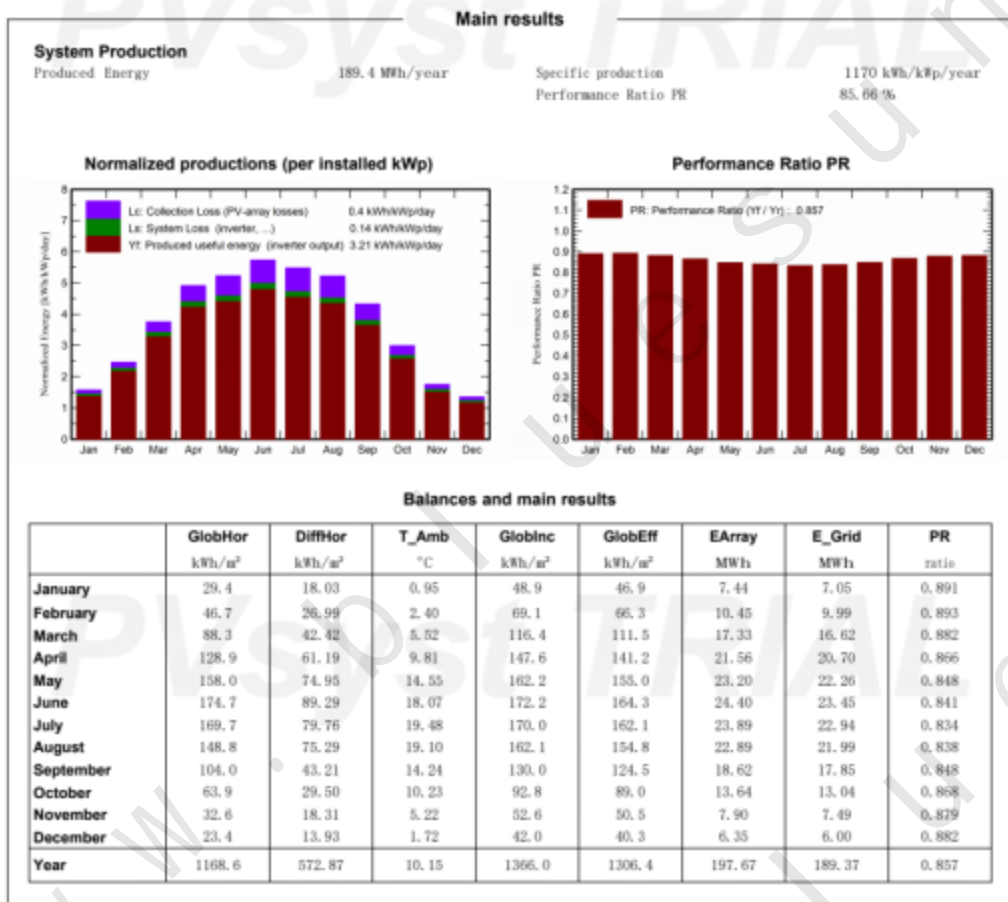
Core Competitiveness



- ◆ Locantion: Johannesburg/South Africa
- ◆ Produced Energy: **301.0 MWh /year**

- ◆ Locantion: Beirut/Lebanon
- ◆ Produced Energy: **271.8 MWh /year**

Core Competitiveness



- ◆ Locantion: Stuttgart-Ost/Germany
- ◆ Produced Energy: **189.4 MWh /year**

- ◆ Locantion: Naypyidaw/Myanmar
- ◆ Produced Energy: **257.4 MWh /year**

Working Modes

The system has three Working Modes:

Self consume

Photovoltaic gives priority to power the user load, and excess solar energy charges the batteries. When the battery is fully charged, the excess power can flow to the grid or photovoltaic limited power operation.

Battery first

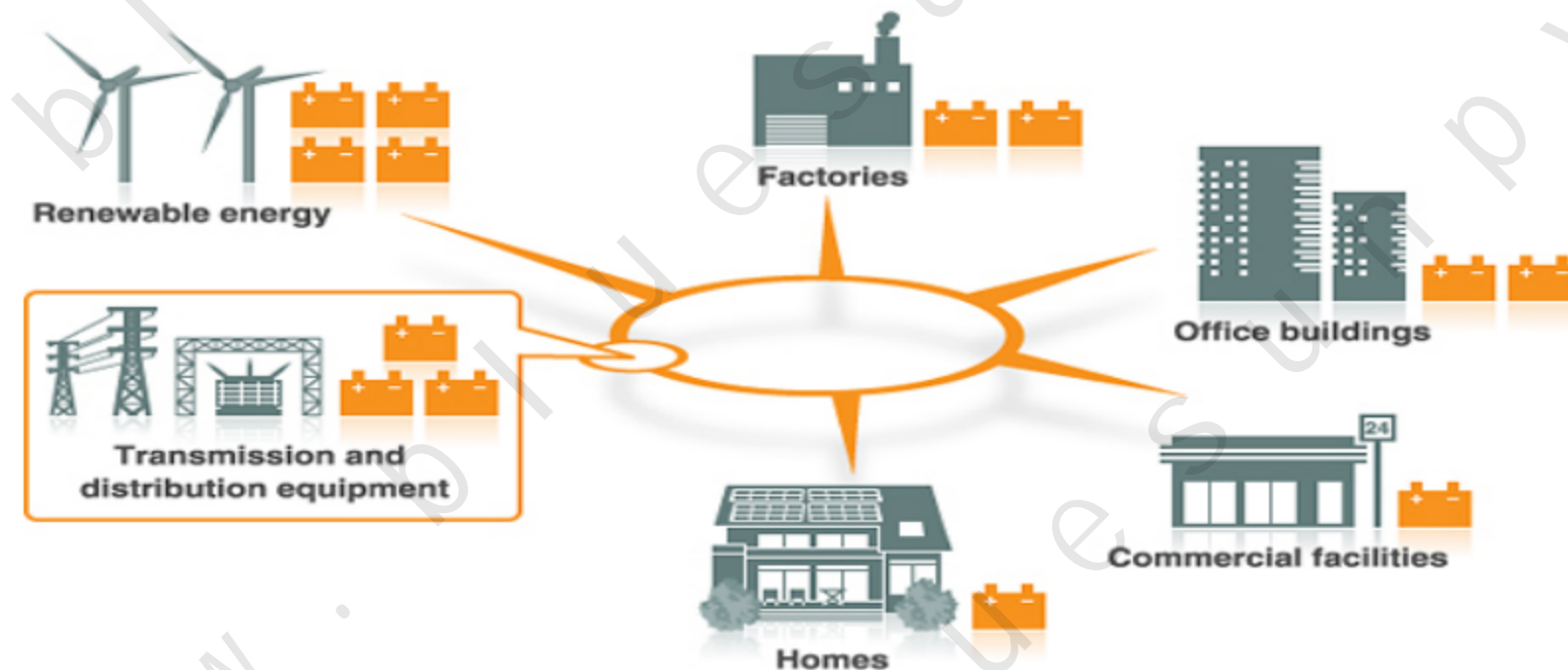
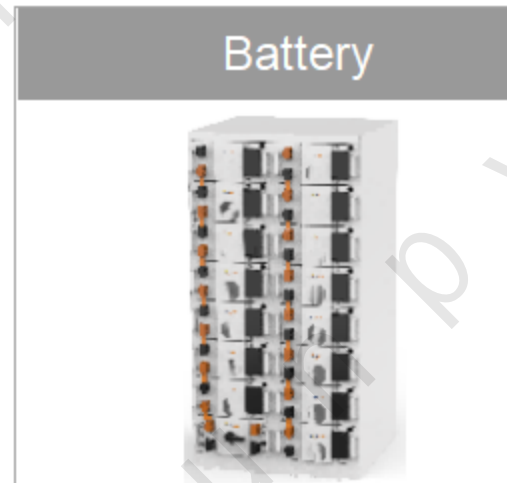
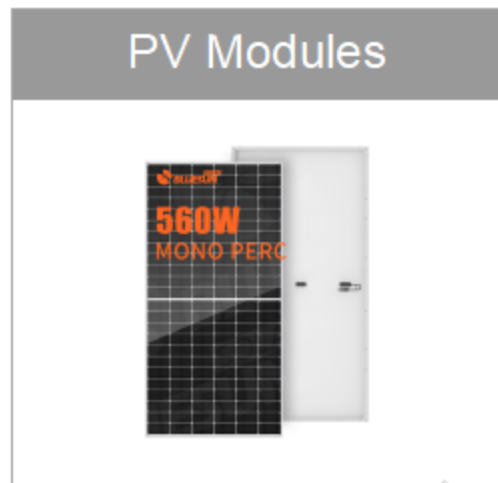
Photovoltaic gives priority to charging batteries, and the excess power will supply the user load. When the PV power is insufficient to supply the load, the grid will supplement it. The batteries are fully used as backup power.

Mixed modes

The time period of mixed mode (also known as "economic mode") is divided into peak period, normal period and valley period. The working mode of each time period can be set through the electricity price of different time periods to achieve the most economical effect.

➤ **Self-use modes is the most popular choice.**

Main Component Overview





PV Modules

- ◆ **High module conversion efficiency**

MBB Half Cell Technology, Module efficiency up to 21.68%

- ◆ **Extended wind and snow load tests**

Module certified to withstand extreme wind (2400 Pa) and snow loads (5400 Pa)

- ◆ **Withstanding harsh environment**

Reliable quality leads to a better sustainability even in harsh environment

like desert, farm and coastline

- ◆ **PID Resistance**

Excellent Anti-PID performance guarantee via optimized mass-production process and materials control

- ◆ **Excellent weak light performance**

More power output in weak light condition, such as cloudy, morning and sunset

PV Combiner Box



PV Combiner Box

- ◆ Lightning protection
- ◆ Optional string monitoring function
- ◆ IP 65 environment compatibility
- ◆ Flexible design, 4~16 input optional
- ◆ Input fuse for over current protection

PV combiner box is an accessory for multiple PV string connection, it is with smart controller inbuilt for monitoring, along with comprehensive protections including fuse and SPD.



Hybrid Inverter

- **Full capacity range**

150kW(Rated power)/165kW(Max power)

- **Max.PV input power**

General configuration: 180kWp /3 mppt

Optional configuration: 240kWp /4 mppt

- **Modular design**

DC/DC and DC/AC modules are designed independently for easy maintenance and replacement

- **Expandable**

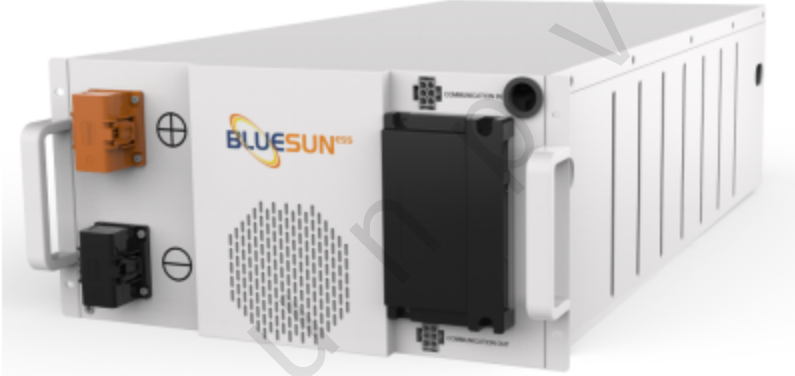
Maximum of 4 inverters can be operated in parallel to form MW level system

- **Touch screen**

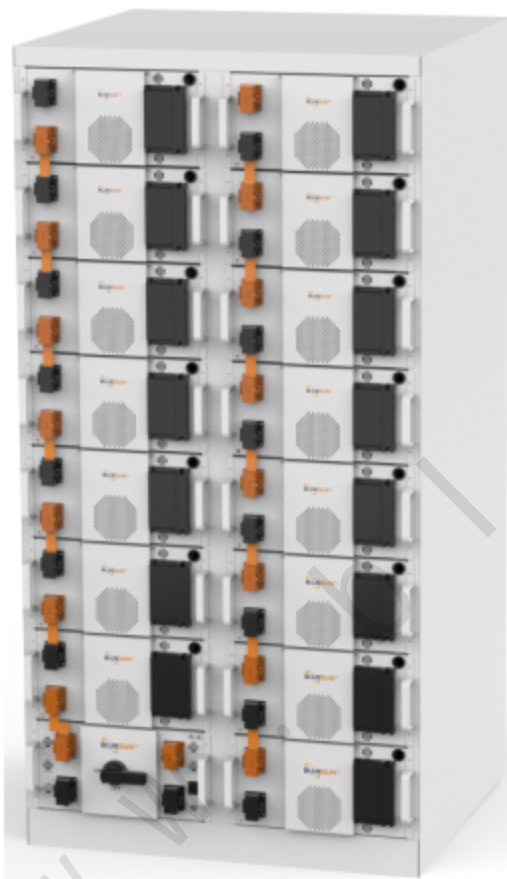
Convenient for parameter setting and viewing

Battery Module

Modules are formed by configuring 16 of LFP cells in series connection. Modules connected with a battery management system (BMU) to form a rack-mountable module assembly. Multiple module assemblies are then combined into a rack. Each rack contains rack-level BMS.

ITEM	UNIT	SPECIFICATION	RENDERING
Configuration	-	1P16S	
KeyComponent	-	16cells,module BMU	
Dimension(W×D×H)	mm	874*440*235	
Weight	kg	120	
NominalCapacity	Ah	280	
NominalEnergy	kWh	14.336	
NominalVoltage	Vdc	51.2	
OperatingVoltage	Vdc	44.8-57.6	
MaximumPower	kW	14(1C)	
StorageTemperature	°C	-20~50	
Depth of Discharge	%	90	

Battery Rack



ITEM	UNIT	SPECIFICATION
Configuration	-	1P160S
NumberofModules	EA	11
KeyComponent	-	15modules,1BSPU
SwitchgearPosition	-	bottom
Weight	kg	1440
NominalCapacity	Ah	280
NominalEnergy	kWh	143.3
NominalVoltage	V	563.2
OperatingVoltage	V	492.8-633.6
MaximumPower	A	280
StorageTemperature	°C	-30~55
StorageHumidity	%	≤95
Degree of Protection		IP21

■ Safe and reliable

Self-designed BMS

■ Easy installation and maintenance

Standard rack and module, front maintenance

■ High power density

LFP battery, $\geq 160\text{Wh/kg}$

■ Flexible customization

For different application and installation

■ Racks

2 Racks, 315.4kWh

■ Optional:

Larger capacity battery packs can be used as required.

Dc control box



- **Safe and reliable**

No additional power is needed, battery power is used

- **protect**







The equipment takes full account of the electrical characteristics, heat dissipation performance, safety performance and operable maintenance of each component. It has the characteristics of compact structure, flexible configuration, safety and reliability.

- **automatic inspection of data**

Supports digital signal input detection, detection of switch status signals, and other support for battery cluster terminal voltage detection, terminal current detection, and battery cluster insulation status detection

Free Attachment



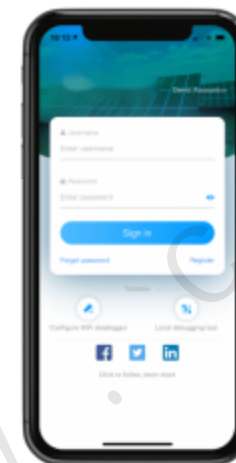
Copper Medal in series		N-1	
Negative wire/battery side	25CM	1	
Positive wire/battery side	2M	1	
Negative wire/power side	2M	1	
Positive wire/power side	2M	1	
Communication wire		N	

- Can box, convenient
- Facilitate operation and upgrade firmware.

- Included are all battery connection cables
- The customer does not need to connect cables

EMS (Optional)

- Local webserver for easy configuration
- Supports export control with meters
- Multi-function and high performance



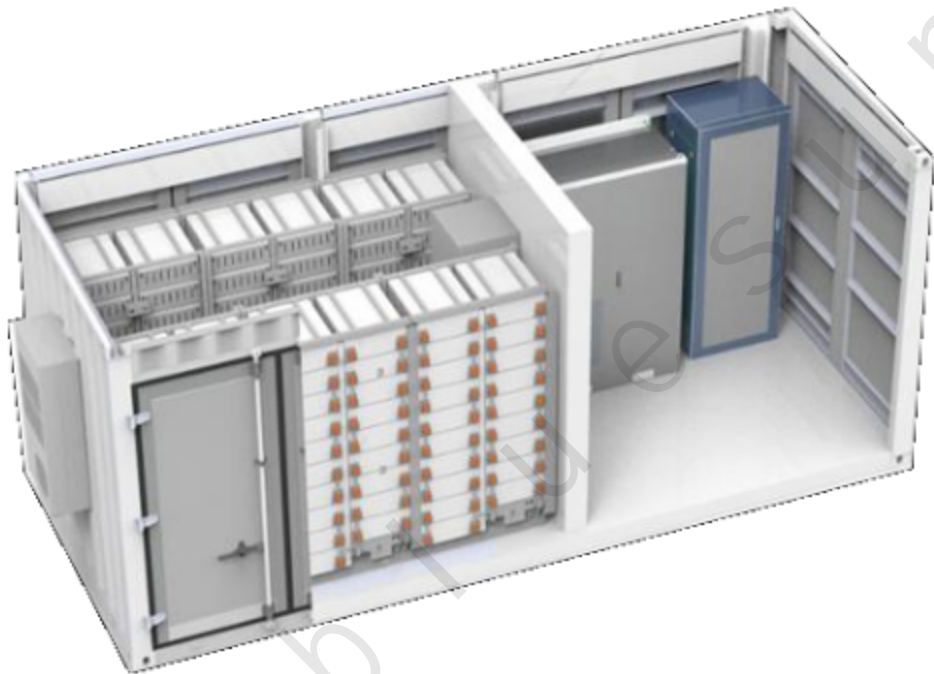
- Data logger for overall system monitoring, collect operation data from different units via Modbus RS485 and communicate with server via internet.

ATS-100 (Optional)



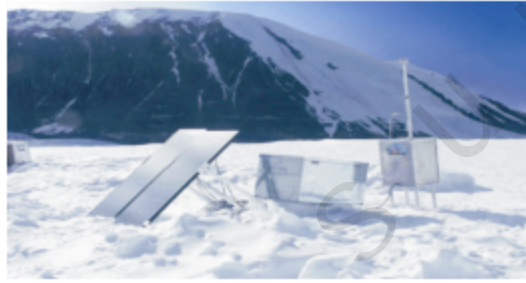
- This device is optional when connecting to the power grid and firewood.
- ATS can realize the automatic switch between power grid and firewood distribution.
- The ATS device communicates with the inverter to achieve more accurate control.

ESS Container (Optional)



- Lightning
- Temperature Control function
- Fire suppression
- Monitoring System
- Flexible design, 10/20/40FT Container optional

ESS Solution Reference



ESS Solution Reference



- ◆ **Configuration:** 250KWp+250KW+400KWH Energy Storage System
- ◆ **Installation site:** Lebanon
- ◆ **Installation time:** July 2022

ESS Solution Reference



- ◆ **Configuration:** 500Wp+500KW+1200kWh Energy Storage System
- ◆ **Installation site:** Germany Industrial and commercial
- ◆ **Installation time:** Oct 2022

ESS Solution Reference



- ◆ **Configuration:** 23.5KWp+30KW+40.96KWh Energy Storage System
- ◆ **Installation site:** Lebanon
- ◆ **Installation time:** July 2022

ESS Solution Reference



- ◆ **Configuration:** 108KWp+100KW+216KWH Energy Storage System
- ◆ **Installation site:** Germany
- ◆ **Installation time:** March 2021

Bluesun, Your Best PV Supplier !

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