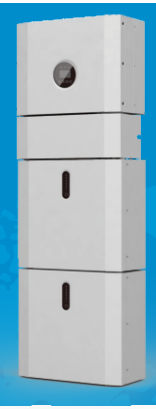
KSTAR



INSTALLATION, OPERATION &
MAINTENANCE MANUAL

KSTAR BluE-H5/H3

ENERGY STORAGE SYSTEM

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This manual is under the copyright of Shenzhen Kstar Science and Technology Co., Ltd, with all rights reserved. Please keep the manual properly and operate in strict accordance with all safety and operating instructions in this manual. Please do not operate the system before reading through the manual.

KSTAR

Stock code:002518

CONTENTS

01 Introduction

1.1 System Introduction

Kstar BluE-H5 (incl.BluE-Pack 10.2 and BluE-S 5000D)/BluE-H3 (incl. BluE-Pack 5.1 and BluE-S 3680D) can be applied in DC-coupled systems (mostly new installation), AC-coupled systems (mostly retrofit) and Hybrid-coupled systems (mostly retrofit, and PV capacity-increase), as the following schemes show:

Solution	Configuration	
	Inverter	ESS
BluE H3	BluE-S 3680D	BluE-Pack5.1
BluE H3 Plus	BluE-S 3680D	BluE-Pack10.2
BluE H5	BluE-S 5000D	BluE-Pack10.2
BluE H5 Plus	BluE-S 5000D	BluE-Pack20.4

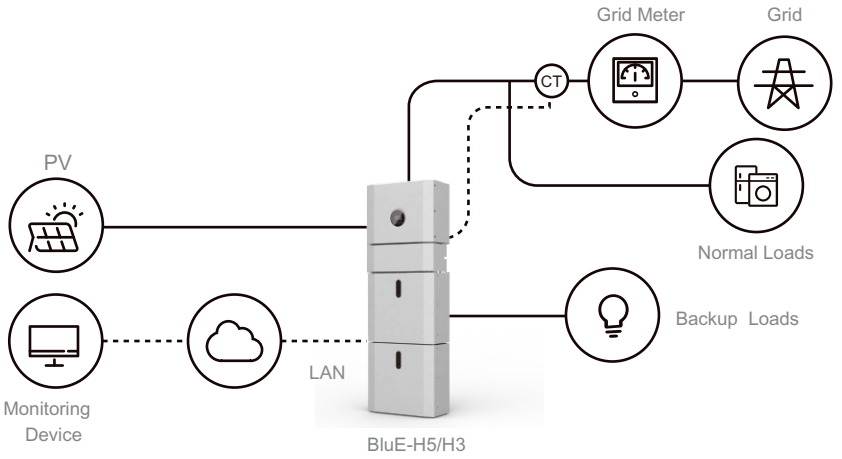


Figure1 DC-coupled Storage System – Scheme

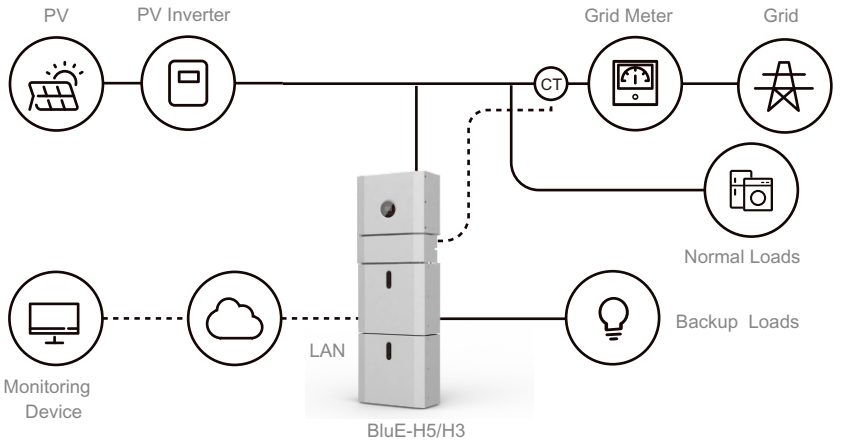


Figure 2 AC-coupled Storage System – Scheme

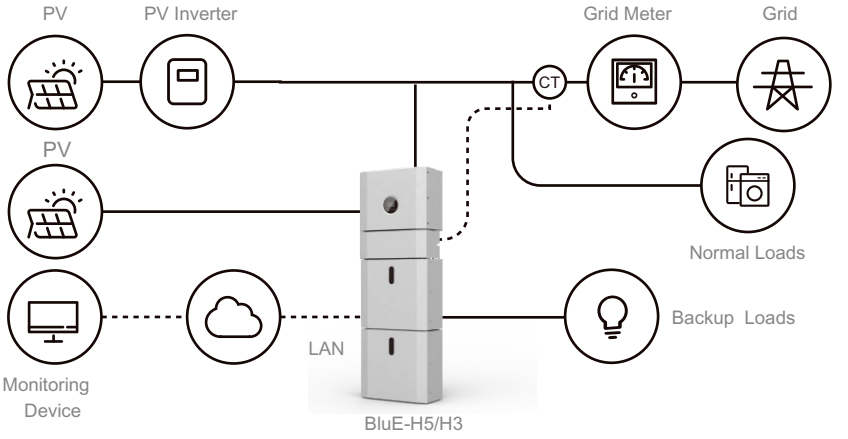
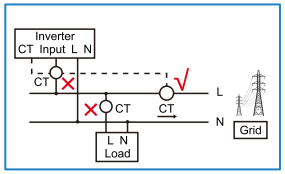


Figure 3 Hybrid-coupled Storage System – Scheme



CAUTION:

If CT test pass but inverter still can't achieve export power (power is notcontrollable or always 0 power output). Please check installation location of the CT.

1.2 Safety Introduction

1.2.1 Manual Keeping

This manual contains important information about operating the system. Before operating, please read it very carefully.
The system should be operated in strict accordance with the instructions in the manual, otherwise it can cause damages or loss to equipment, personnel and property.
This manual should be kept carefully for maintenance and reparation.

1.2.2 Operator Requirements

The operators should get a professional qualification, or be trained.
The operators should be familiar with the whole storage system, including compositions and working principles of the system.
The operators should be familiar with the Product Instruction.
While maintaining, the maintainer is not allowed to operate any equipment until all the equipment has been turned off and fully discharged.

1.2.3 Protection of Warning Sign

The warning signs contain important information for the system to operate safely, and it is strictly prohibited to torn or damage them. Ensure that the warning signs are always well-functioned and correct placed. The signs must be replaced immediately when damaged.

	This sign indicates a hazardous situation which, if not avoided, could result in death or serious injury!
	This sign shows danger of high voltage and electric shock!
	The Storion BluE-H5/H3 must not be touched or put into service until 5 minutes after it has been switched off or disconnected to prevent an electric shock or injury.
	This sign shows danger of hot surface!
	Refer to the operating instructions.

1.2.4 Setting of Warning Sign for Safety

During instruction, maintenance and repair, follow the instructions below to prevent non-specialist personnel from causing misuse or accident:

- Obvious signs should be placed at front switch and rear-level switch to prevent accidents caused by false switching.
- Warning signs or tapes should be set near operating areas.
- The system must be reinstalled after maintenance or operation.

1.2.5 Measuring Equipment

To ensure the electrical parameters to match requirements, related measuring equipment are required when the system is being connected or tested.
Ensure that the connection and use matched specification to prevent electric arcs or shocks.

1.2.6 Moisture Protection

It is very likely that moisture may cause damages to the system. Repair or maintaining activities in wet weather should be avoided or limited.

1.2.7 Operation After Power Failure

The battery system is part of the energy storage system system which stores life-threatening high voltage even when the DC side is switched off. Touching the battery outlets is strictly prohibited. The inverter can keep a life-threatening voltage even after disconnecting it from the DC and / or AC side. Therefore, for safety reasons, it must be tested with a properly calibrated voltage tester before an installer works on the equipment..

1.3 Battery Safety Datasheet

1.3.1 Hazard Information

Classification of the hazardous chemical

Exempt from classification according to Australian WHS regulations.

Other hazards

This product is a Lithium Iron Phosphate Battery with certified compliance under the UN Recommendations on Transport of Dangerous Goods, Manual of Tests and Criteria, Part III, subsection 38.3. For the battery cell, chemical materials are stored in a hermetically sealed metal case, designed to withstand temperatures and pressures encountered during normal use. As a result, during normal use, there is no physical danger of ignition or explosion and chemical danger of hazardous materials' leakage. However, if the product is exposed to a fire, added mechanical shocks, decomposed, added electric stress by misuse, the gas release vent will be operated. The battery cell case will be breached at the extreme. Hazardous materials may be released. Moreover, if heated strongly by the surrounding fire, acrid or harmful fume may be emitted.

1.3.2 Safety Datasheet

For detailed information please refer to the provided battery safety datasheet.

1.4 General Precautions

DANGER

Danger to life due to high voltages of the PV array, battery and electric shock. When exposed to sunlight, the PV array generates dangerous DC voltage which will be present in the DC conductors and the live components of the inverter. Touching the DC conductors or the live components can lead to lethal electric shocks. If you disconnect the DC connectors from the system under load, an electric arc may occur leading to electric shock and burns.

- Do not touch uninsulated cable ends.
- Do not touch the DC conductors.
- Do not open the inverter and battery.
- Do not wipe the system with damp cloth.
- Have the system installed and commissioned by qualified people with the appropriate skills only.
- Prior to performing any work on the inverter or the battery pack, disconnect the inverter from all voltage sources as described in this document.

WARNING

Risk of chemical burns from electrolyte or toxic gases. During standard operation, no electrolyte shall leak from the battery pack and no toxic gases shall form. Despite careful construction, if the Battery Pack is damaged or a fault occurs, it is possible that electrolyte may be leaked or toxic gases formed.

- Do not install the system in any environment of temperature below -10°C or over 50°C and in which humidity is over 90%.
- Do not touch the system with wet hands.
- Do not put any heavy objects on top of the system.
- Do not damage the system with sharp objects.
- Do not install or operate the system in potentially explosive atmospheres or areas of high humidity.
- Do not mount the inverter and the battery pack in areas containing highly flammable materials or gases.
- If moisture has penetrated the system (e.g. due to a damaged enclosure), do not install or operate the system.
- Do not move the system when it is already connected with battery modules. Secure the system to prevent tipping with restraining straps in your vehicle.

- The transportation of Kstar BluE-H5/H3 must be made by the manufacturer or an instructed personal. These instructions shall be recorded and repeated.
- A certified ABC fire extinguisher with minimum capacity of 2kg must be carried along when transporting.
- It is totally prohibited to smoke in the vehicle as well as close to the vehicle when loading and unloading.
- For the exchange of a battery module, please request for new hazardous goods packaging if needed, pack it and let it be picked up by the suppliers.
- In case of contact with electrolyte, rinse the affected areas immediately with water and consult a doctor without delay.

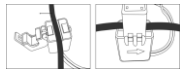
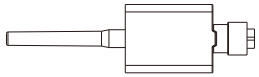
CAUTION:

Risk of injury through lifting or dropping the system. The inverter and battery are heavy. There is risk of injury if the inverter or battery is lifted incorrectly or dropped during transport or when attaching to or removing from the wall.

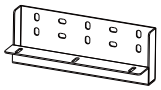
- Lifting and transporting the inverter and battery must be carried out by more than 2 people.

1.5 Parts List

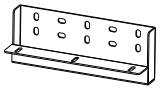
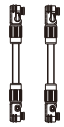
Check the following parts list to ensure it is complete.
Kstar delivers a total system separately on site to client, this consists of:

BluE-S 5000D/BluE-S 3680D			
			
8x φ8*60	1x Mounting Panel	1xCT and com cable	8x φ8*60
			
2x MC4	1x Collector		1x User Manual

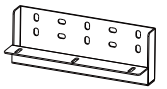
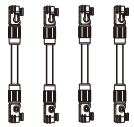
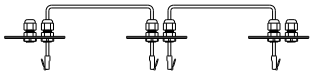
BluE-Pack5.1

		
4xφ8*60	3x M5*10	4x M6 Gasket
		
1x Mounting Panel	1x User Manual	

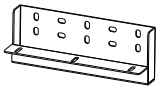
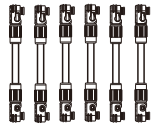
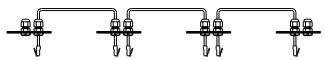
BluE-Pack10.2 (includ two piece BluE-Pack5.1)

			
8xφ8*60	6x M5*10	2x Mounting Panel	
			
8x M6 Gasket	2x Power Cable (1 black, 1 red)	1x User Manual	1x Battery Communication Cable

BluE-Pack15.3 (includ three piece BluE-Pack5.1)

			
12xφ8*60	9x M5*10	3x Mounting Panel	
			
12x M6 Gasket	4x Power Cable (2 black, 2 red)	1x User Manual	2x Battery Communication Cable

BluE-Pack20.4 (includ four piece BluE-Pack5.1)

			
16xφ8*60	12x M5*10	4x Mounting Panel	
			
16x M6 Gasket	6x Power Cable (3 black, 3 red)	1x User Manual	3x Battery Communication Cable

1.6 System Appearance

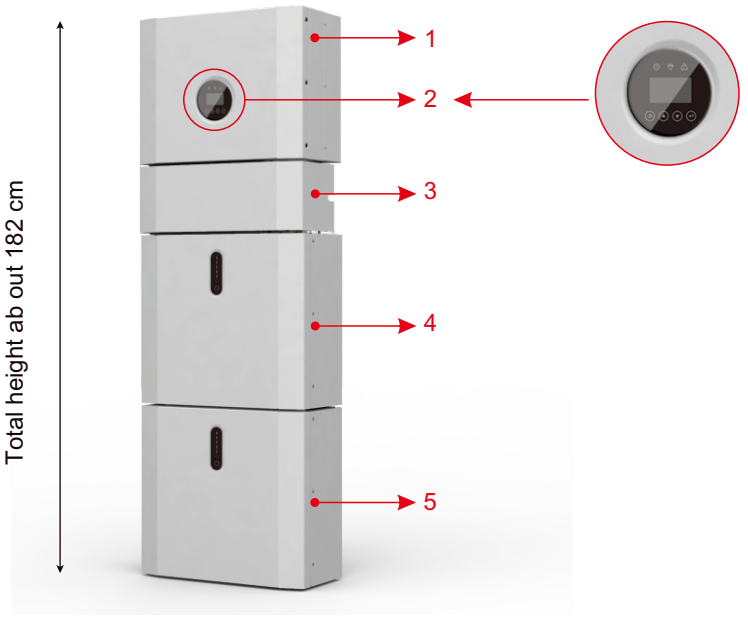


Figure 4 BluE-H5/H3 Delivery Scope

Object	Description
1	Hybrid Inverter BluE-S 5000D/3680D
2	EMS Display Screen
3	Cable Box (connected to Inverter)
4	BluE-Pack5.1 (Battery 1)
5	BluE-Pack5.1 (Battery 2, if configured)

1.6.1 Cable Box Part

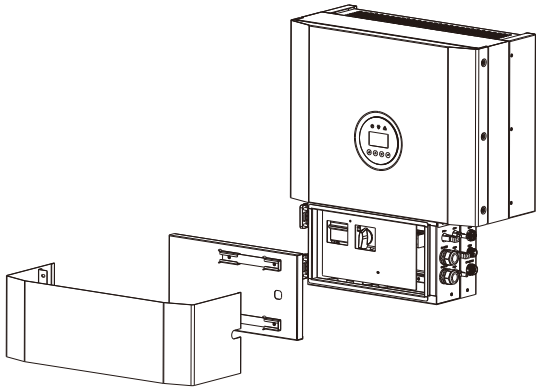


Figure 5 Inverter without Cable Box Covers– Front View

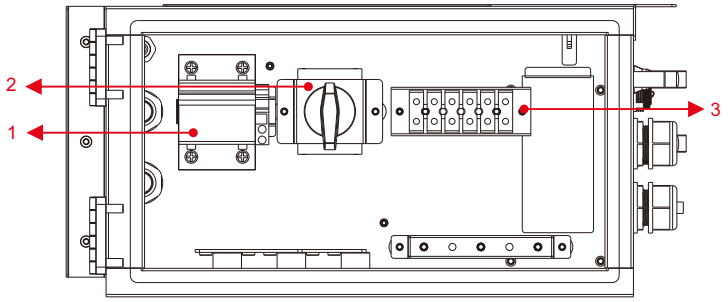


Figure 6 Cable Box Part without Covers – Front View

Object	Description
1	Battery switch
2	DC isolation switch
3	Output terminal block (BACK UP/ON GRID)

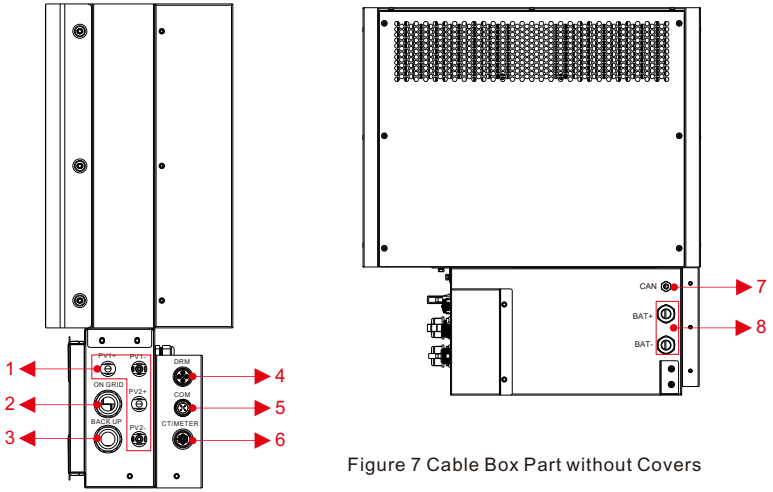


Figure 7 Cable Box Part without Covers

Object	Description	Object	Description
1	PV1, PV2	2	GRID
3	BACKUP	4	DRM
5	COM	6	CT/METER
7	CAN	8	BAT+,BAT-

1.7 Liability Limitation

Any product damage or property loss caused by the following conditions, Kstar does not assume any direct or indirect liability.

- Product modified, design changed or parts replaced without Kstar authorization;
- Changes, repair attempts and erasing of series number or seals by non Kstar technician;
- System design and installation are not in compliance with standards and regulations;
- Fail to comply with the local safety regulations (VDE for DE, SAA for AU);
- Transport damage (including painting scratch caused by rubbing inside packaging during shipping). A claim should be made directly to shipping or insurance company in this case as soon as the container/packaging is unloaded and such damage is identified;
- Fail to follow any/all of the user manual, the installation guide and the maintenance regulations;
- Improper use or misuse of the device;
- Insufficient ventilation of the device;
- The maintenance procedures relating to the product have not been followed to an acceptable standard;
- Force majeure (violent or stormy weather, lightning, overvoltage, fire etc.);
- Damages caused by any external factors.

02 Installation

This Manual introduces the basic steps to install and set up Kstar BluE-H5/H3.

> ⚠ NOTE:
>
> Please be cautious unpacking the battery, otherwise components could be damaged.

2.1 Installation Site and Environment

2.1.1 General

This BluE-H5/H3 energy storage system is outdoor version and can be installed in an outdoor or an indoor location.
When BluE-H5/H3 systems are installed in a room, BluE-H5/H3 must not be hampered by the structure of the building, the furnishings and equipment of the room.
The Storion BluE-H5/H3 is naturally ventilated. The location should therefore be clean, dry and adequately ventilated. The mounting location must allow free access to the unit for installation and maintenance purposes, and the system panels must not be blocked.
The following location are not allowed for installation:

- habitable rooms;
- ceiling cavities or wall cavities;
- on roofs that are not specifically considered suitable;
- access / exit areas or under stairs / access walkways;
- where the freezing point can be reached, such as garages, carports or other places as well as wet rooms (environmental category 2);
- locations with humidity and condensation over 90%;
- places where salty and humid air can penetrate;
- seismic areas - additional security measures are required;
- sites higher than 3000 meters above sea level;
- places with an explosive atmosphere;
- locations with direct sunlight or a large change in the ambient temperature;
- places with flammable materials or gases or an explosive atmosphere.

2.1.2 Restricted Locations

The BluE-H5/H3 shall not be installed —
(a) in restricted locations as defined for panels in AS / NZS 3000;
(b) within 600 mm of any heat source, such as hot water unit, gas heater, air conditioning unit or any other appliance.
(c) within 600 mm of any exit;
(d) within 600 mm of any window or ventilation opening;
(e) within 900 mm of access to 240 Vac connections; and
(f) within 600 mm of side of other device.

A BluE-H5/H3 installed in any corridor, hallway, lobby or the like and leading to an emergency exit shall ensure sufficient clearance for safe egress of at least 1 meter.
The BluE-H5/H3 must also not be installed in potentially explosive atmospheres for gas cylinders that are heavier than air gases and have a vent clamp in accordance with AS / NZS 3000.

2.1.3 Barrier to Habitable Rooms

To protect against the spread of fire in living spaces where the BluE-H5/H3 is mounted or on surfaces of a wall or structure in living spaces with a BluE-H5/H3 on the other side, the wall or structure shall have a suitable non-combustible barrier. If the mounting surface itself is not made of a suitable non-combustible material, a non-combustible barrier can be placed between the BluE-H5/H3 and the surface of a wall or structure.
If the BluE-H5/H3 is mounted at a wall or at a distance of 300 mm from the wall or the structure separating it from the habitable space, the distances to other structures or objects must be increased. The following distances must remain free :

(i) 600 mm beside the BluE-H5/H3;
(ii) 500 mm above the BluE-H5/H3;
(iii) 600 mm before the BluE-H5/H3.

If the distance between the BluE-H5/H3 and the ceiling or any object above the system is less than 500 mm, the ceiling or structural surface above the system must be made of noncombustible material within a radius of 600 mm around the system.
The BluE-H5/H3 must be mounted to ensure the highest point is not more than 2.2 m above the ground or the platform.

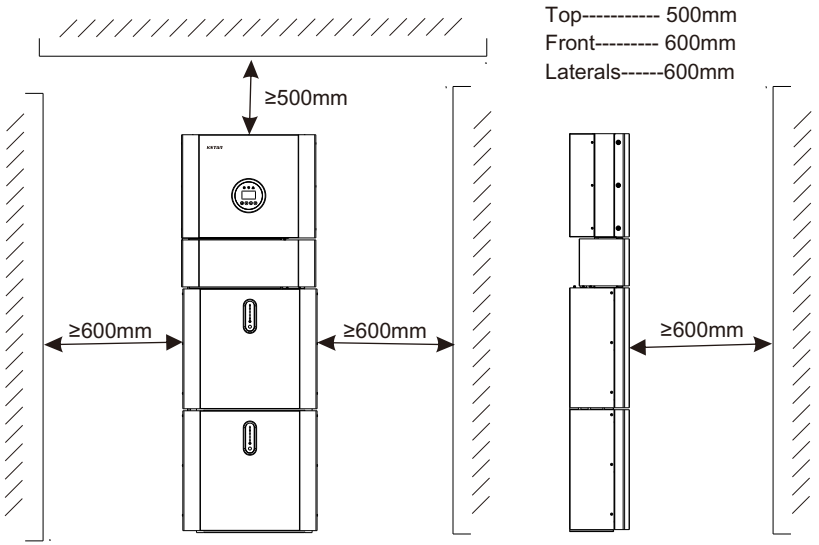


Figure 8 Limit Distance of Installation to Neighboring Objects

2.2 Installation

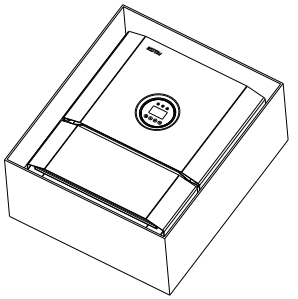


Figure 9 Unpacking the inverter and battery

Step 1 Remove the battery and inverter from the packaging box.

2.2.1 Battery Installation

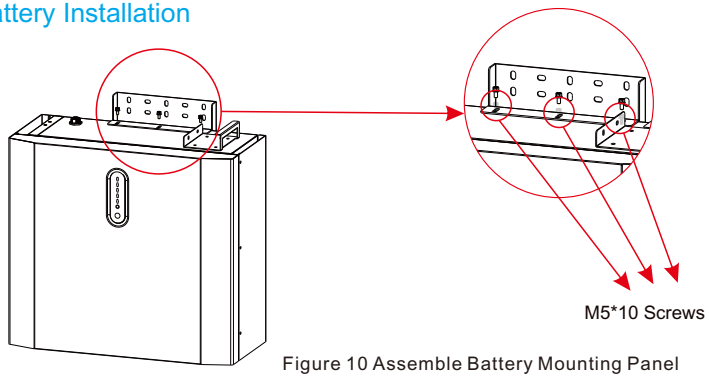


Figure 10 Assemble Battery Mounting Panel

Step 2 Assemble the battery mounting panel on the battery.

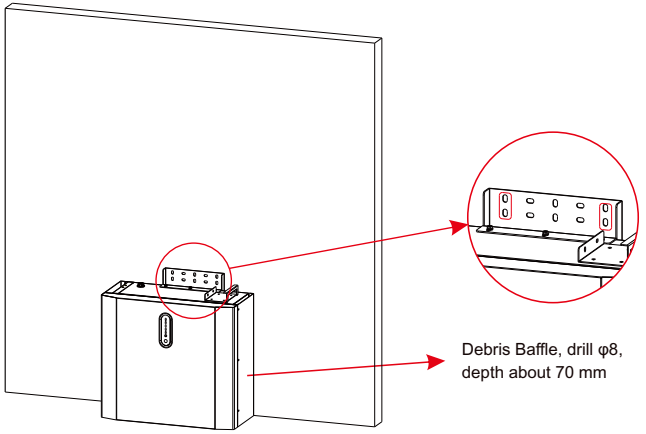


Figure 11 Battery Installation - Drill Holes

Step 3 Position the battery parallel to the wall and use a Φ8mm drill to drill holes at a depth of about 70mm in the wall for subsequent fixation of the mounting plates.

> ⚠ NOTE:
>
> The typeAC RCD must be installed on the backup port of the system. In additon, the installation of inverter must fulfill AS/NZS 3000,AS/NZS 4777.1 and AS/NZS 5033.

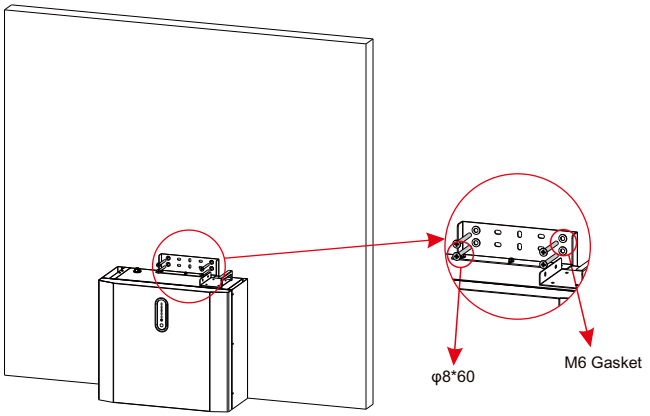


Figure 12 Battery Installation – Mounting on the Wall

Step 4 Remove the debris baffle and secure the battery to the wall with screws and gaskets.

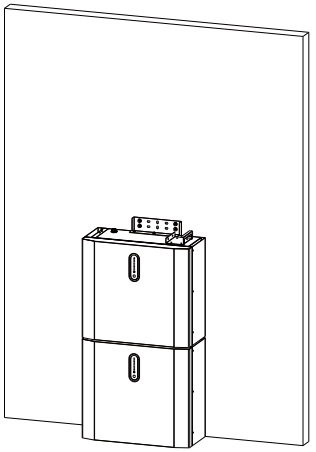


Figure 13 Battery Installation – Second Battery Installation

Step 5 To assemble the second (and all other) battery, repeat steps 6 and 7, respectively.

2.2.2 Inverter Installation

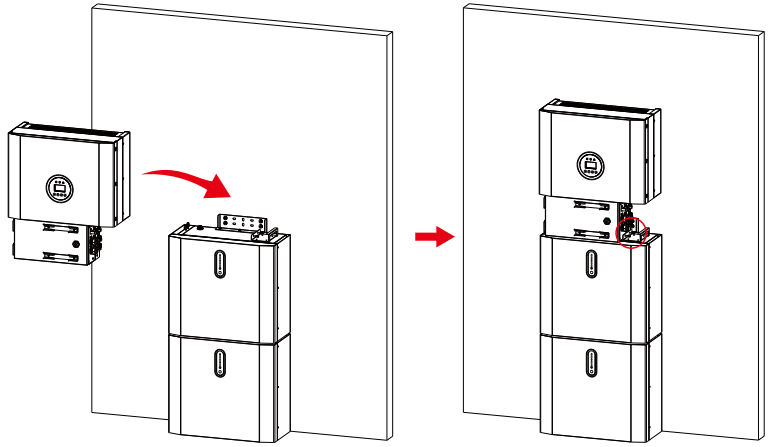


Figure 14 Inverter Installation

Step 6 Inverter Installation.

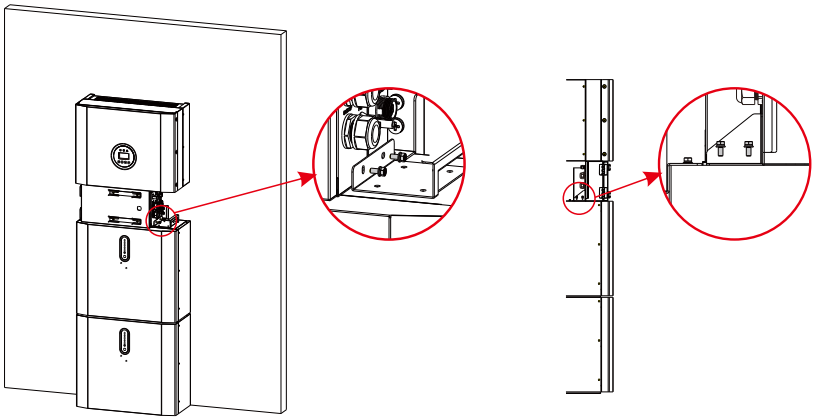


Figure 15 Inverter Installation on the Wall

Step 7 Hang the inverter onto the mounting panels, adjust the entire system and ensure that the battery and the inverter have been securely hung onto the panels and brackets.

Step 8 Please make AC cables on site.

Step 8-1 Please follow the AC cable requirements below.

Install the AC connection following the below steps：

(1)Measure the voltage and frequency of the connection access point, and make sure it is inconformity with the specification of grid connection.

(2)The PE line (ground wire) of the inverter must be reliably earthed so as to ensure the impedance between the neutral line and ground wire is less than 10 Ω.

(3)Disconnect the AC circuit breaker between the inverter and the power grid.

(4)Loosen the nut.

(5)Disassemble the single-aperture sealing ring.

(6)Pass the cable successively through the nut, single-aperture sealing ring, AC protective cover and AC wiring terminal (as shown in Figure 16)

(7)Wire stripping requirements (as shown in Figure 17)

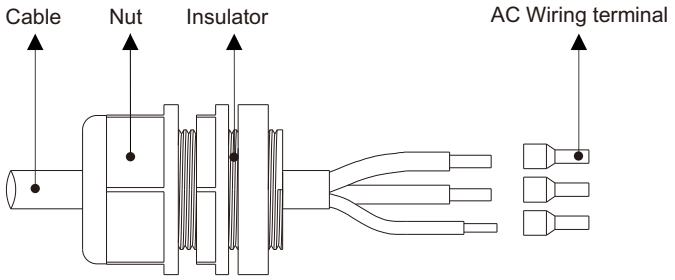


Figure 16

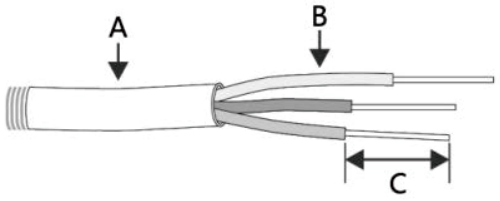


Figure 17

No.	Description	Value
A	Outer diameter of wiring	11~12mm
B	Cross-sectional area of conductor materials	6mm²
C	Length of uninsulated wire	10mm

(8) Use tool to clamp the AC wiring terminal and wire rod; screw the nut, but do not tighten it. Make sure that the cable is free to pass through the waterproof components. Once the terminal is connected to the right site of the inverter, tighten the nut.

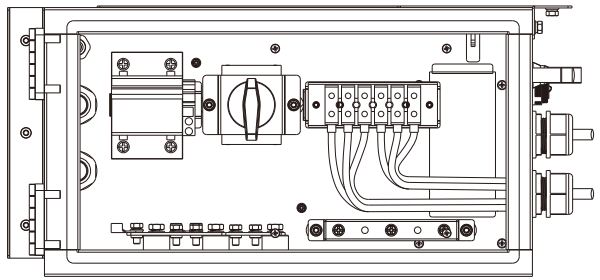


Figure 18

(9) Connect the AC wiring terminal to the corresponding hole site of the inverter and lock it with a screw driver or electric screw driver (suggestion: stem diameters and torsion of screwdriver or electric screwdriver should be 4mm and 8~12kg-f.cm respectively)

(10) Tighten the nut.

(11) Circuit breaker parameters are recommended:

Back-up 32A/400Vac 6KA
On-grid 40A/400Vac 6KA

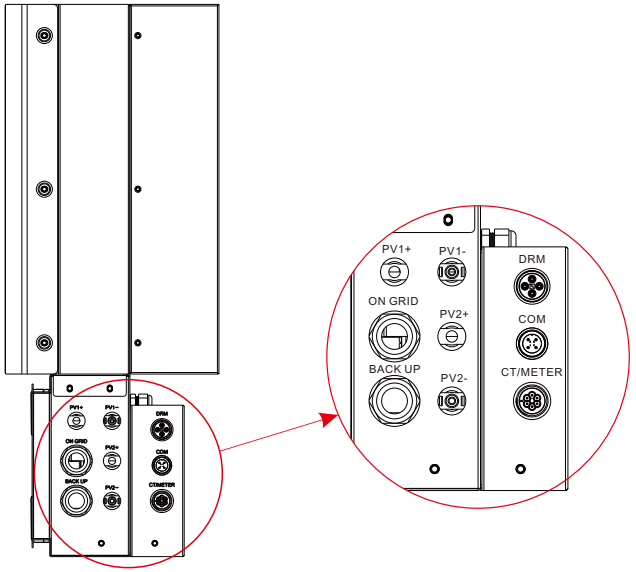


Figure 19 Cable Box Bottom View, Wiring Connectors

Step 8-2 Connect the Backup and Grid cables in advance according to the connector mode, and connect them to the Backup and Grid board connectors in turn.

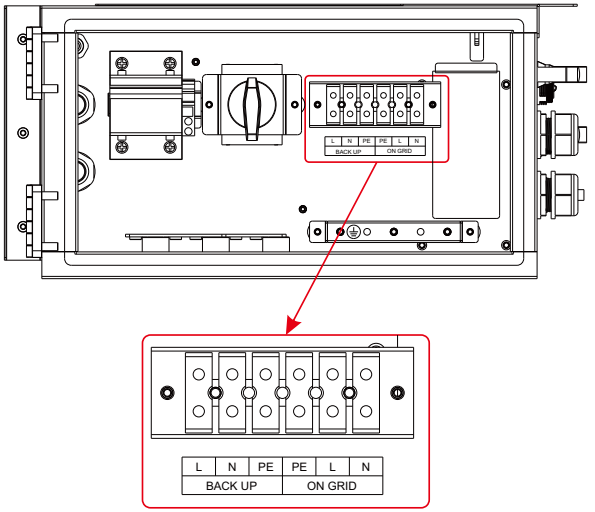


Figure 20 Communication interface of the inverter

Step 9 Take out the communication cable set provided in the accessory parts of one BluE-H5/H3-BAT, cut off one end and crimp a new RJ45 connector. If there are two batteries, you only need to remake one of battery communication cable on site.

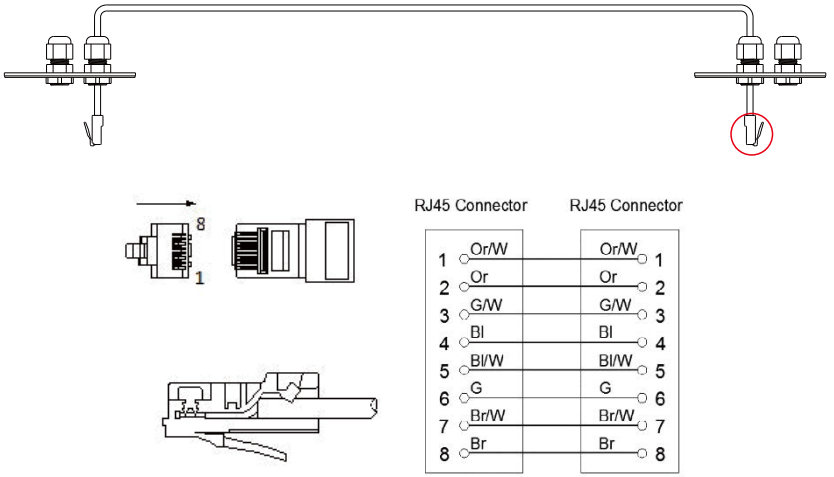


Figure 21 Network Cable Type B

NOTE:

The communication cable is in type B, see Figure 17. Leave the power cables and communication cables hanging on outside. Leave the device aside.

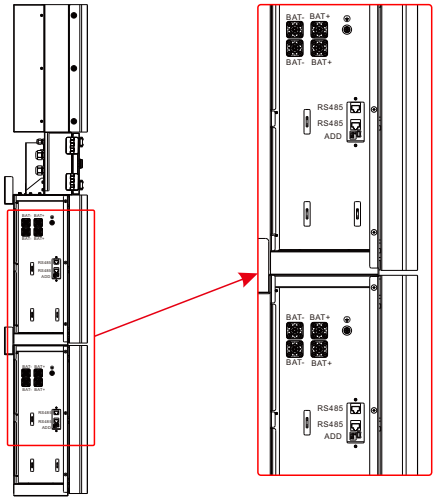
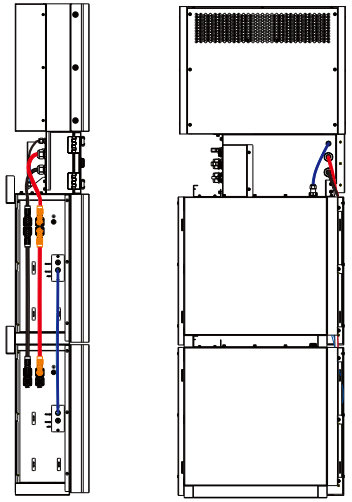


Figure 22 Wiring the Communication Cable

Step10 Connect the BAT communication cable of the cable box from Step 13 to the topmost battery at the right side. Then use the communication cable supplied with the batteries to connect the batteries to each other via the respective connectors on the left side. After you have connected all the modules together, close all covers (if you want to connect further battery modules, you must mount them before closing).

Figure 23 Wiring the Battry Power Cable



Step11 Connect the power cables of the bottom battery from Step 4 to the side terminals of the top battery. Make sure that red connects to red and black connects to black.

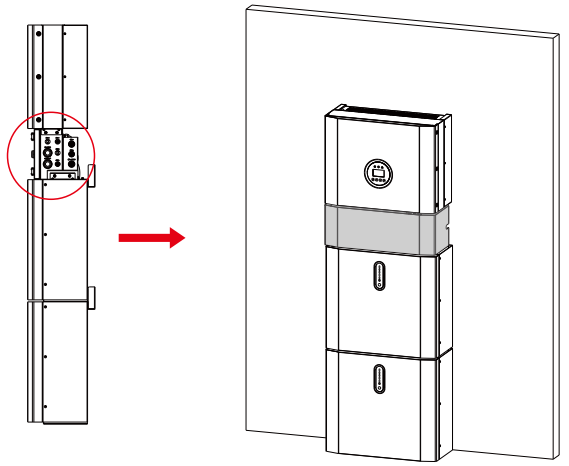


Figure 24

Step12 Close the lid and tighten the screw.

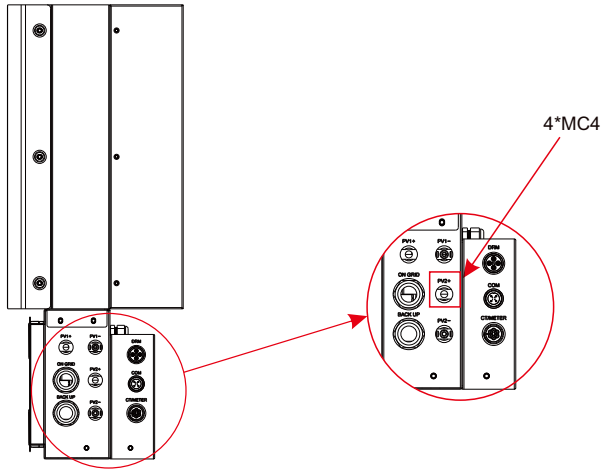


Figure 25 PV Wiring

Step13 Close the battery covers and connect the PV-MC4 connectors to the system (connection on both sides). Also, connect all AC cables, the meter communications cable METER, and the Ethernet cable LAN. Then close the cable box cover.
The installation is now complete.

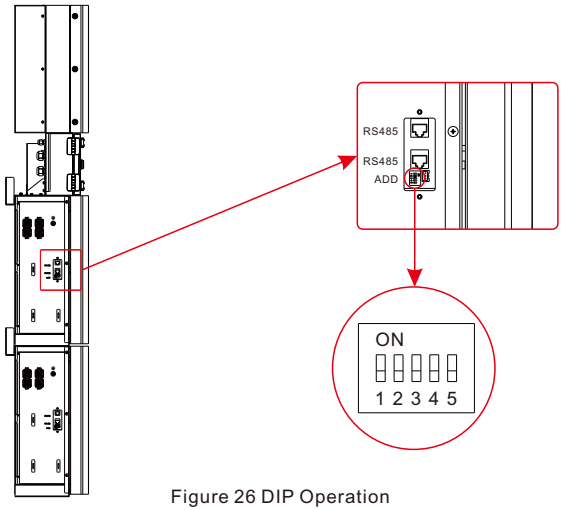


Figure 26 DIP Operation

Step14 Open the front cover of the last battery and remove the DIP cover. Now set the DIP switch 2 to "on" mode and close the cover again.

DIP switch setting

When PACKs are used in parallel, the address can be distinguished by setting the address on the BMS DIP switch. It is necessary to avoid setting the address to the same. For the definition of the BMS DIP switch, refer to the following table.

Note: The address of the battery pack connected to the inverter is 1, and the others are dialed in the order of 2-15.

address	DIP switch position			
	#1	#2	#3	#4
1	ON	OFF	OFF	OFF
2	OFF	ON	OFF	OFF
3	ON	ON	OFF	OFF
4	OFF	OFF	ON	OFF
5	ON	OFF	ON	OFF
6	OFF	ON	ON	OFF
7	ON	ON	ON	OFF
8	OFF	OFF	OFF	ON
9	ON	OFF	OFF	ON
10	OFF	ON	OFF	ON
11	ON	ON	OFF	ON
12	OFF	OFF	ON	ON
13	ON	OFF	ON	ON
14	OFF	ON	ON	ON
15	ON	ON	ON	ON

NOTE:

The DIP setting is only changed on the last battery.

If you connect more than 2 battery modules to the system, please only install the additional batteries 3-4 on the side of the system. You can connect up to 4 batteries, 2 each mounted on top of each other, to the BluE-H5/H3.
To do this, carry out the individual installation steps as for the first two batteries, including the DIP setting on the last module.

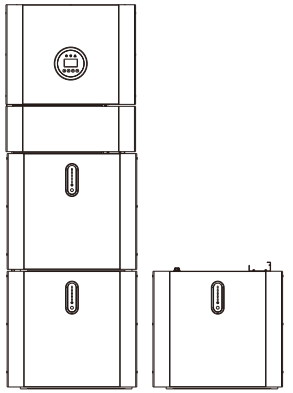


Figure 27 Increase the Battery Modules

NOTE:

Recommended AC circuit breaker rating is 32A.

NOTE:

Installer in Australia or New Zealand must install external cuicult breaker or switch for PV, backup and grid side.

NOTE:

In Australia and New Zealand, the neutral of backup and grid circuit should be externally connected on the neutral bar.

2.3 External CT connection

The electricity meter should be mounted and connected at the grid transition point (feed-in point) so that it can measure the grid reference and feed-in power.
1. Loosen the nut, and untangle the single-aperture sealing ring.

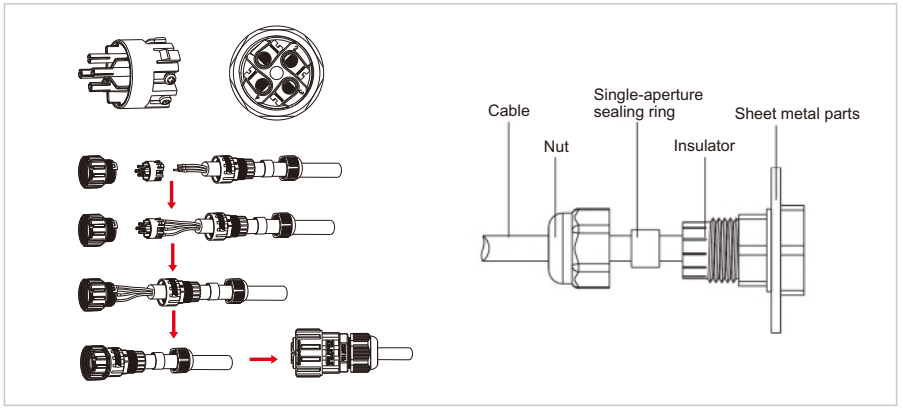
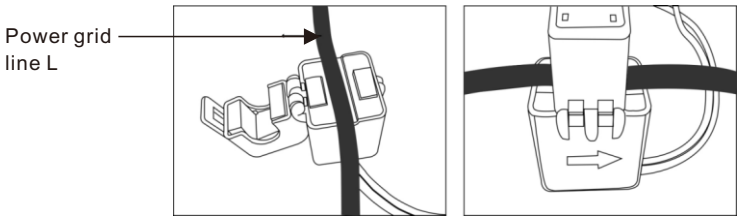


Figure 28

2. Install the waterproof component and screw on the waterproof sheath nut

3. Open the external CT wiring port, the arrow points to the direction of the power grid, put the wire into the external CT card slot, and buckle the buckle.



NOTE: External CT should be placed near the power grid.

2.3.1 Single Line Diagram

The single line diagrams of DC-, AC- and Hybrid-coupled sysyem are as below:

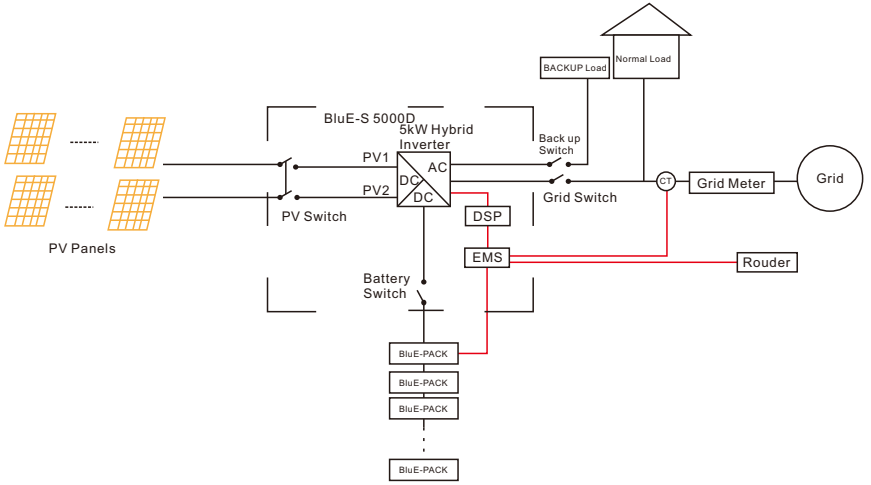


Figure 29 DC-coupled system

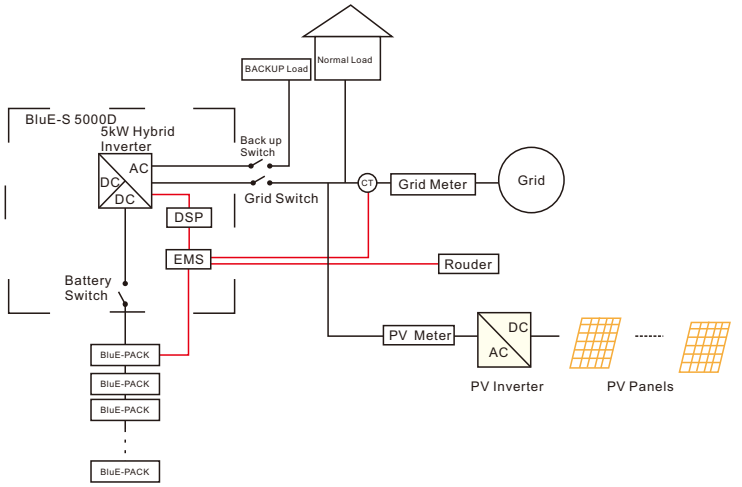


Figure 30 AC-coupled system

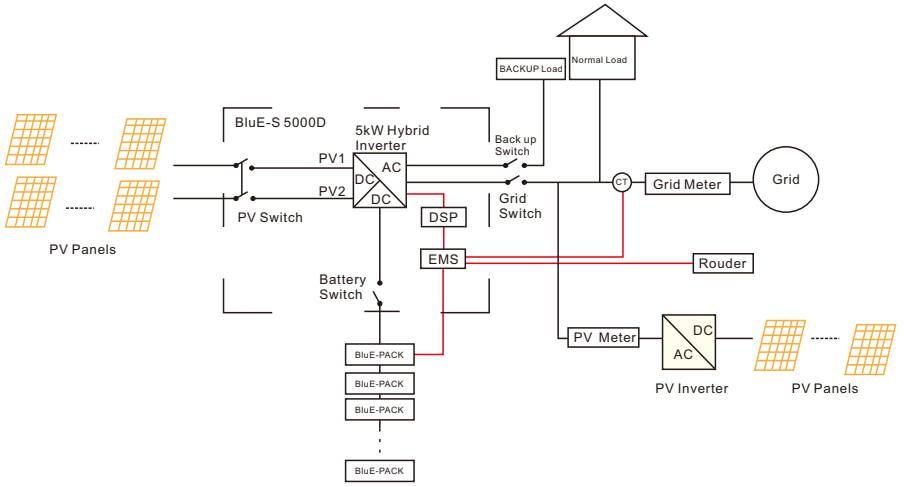


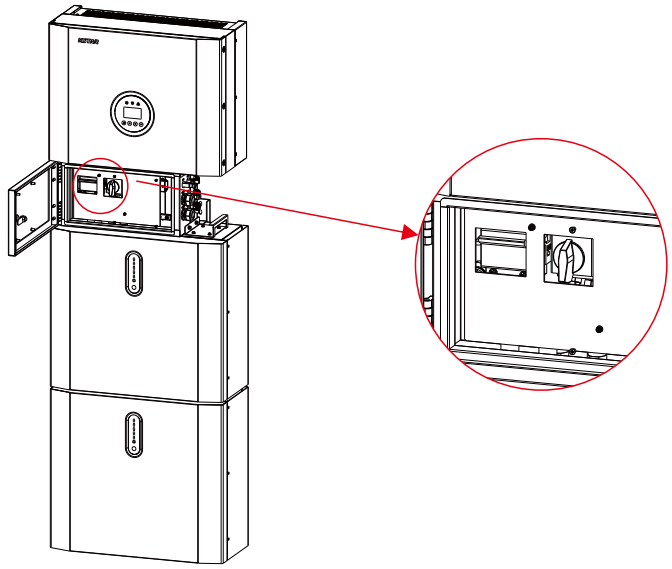
Figure 31 Hybrid-coupled system

03 System Operation

3.1 Switch On

When turning on the system, it is very important to follow the steps below to prevent damage to the system.

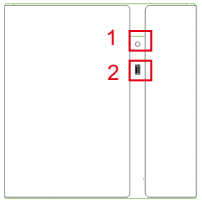
WARNING: Please check the installation again before turning on the system.



Step 1: Turn on the external PV switch

Step 2: Turn on the external grid switch.

Step 3: If backup load is applied, turn on the external Backup switch.



NOTE:

the Backup switch is only used when a backup load is applied.

Step 4: Open the outer shell of the cable box. Open the battery switch cover and turn on the battery switch on the cable box.

Step 5: Press power button on all the batteries until the indicator lights turn on.

Step 6: Close the battery switch cover and the outer shell of the cable box.

3.2 Switch Off

Step 1: Press the power button on all the batteries, till the lights turn off.

Step 2: Open cable box outer shell, open the battery switch cover and turn off the battery switch.

Step 3: Turn off the external grid switch.

Step 4: If backup load is applied, turn off the external backup switch.

Step 5: Turn off the external PV switch on the cable box.

Step 6: Close the battery switch cover and the outer shell of cable box.

3.3 Emergency Procedure

When the BluE-H5/H3 energy storage system appears to be running abnormally, you can turn off the grid-connected main switch that directly feeding the BESS, and turn off all load switches within the BESS, turn off the battery switch at the same time. To prevent a potentially fatal personal injury, if you want to repair or open the machine after the power is switched off, please measure the voltage at the input terminals with a suitably calibrated voltage tester.
Before working on this equipment, please confirm that there is no grid electric supply to the BESS!
The upper cover plate cannot be opened until the DC-link capacitance inside the battery modules discharges completely about 15 minutes later.

3.3.1 Emergency Handling Plan

1.Disconnect the AC breaker.
2.Check the control power supply. If it is OK, return the power supply to find out the reason.
3.Please record every detail related to the fault, so Kstar can analyse and solve the fault. Any operation of equipment during a fault is strictly forbidden, please contact Kstar as soon as possible.
4.As battery cells contains a little Oxygen inside and all cells have got explosion-proof valves, explosion hardly happens.
5.When the indicator light on the battery shows a red fault, check the fault type through the communication protocol, and contact our after-sales service personnel for advice.

3.3.2 Hazards

If the battery pack leaks electrolyte, avoid contact with the leaking liquid or gas. If one is exposed to the leaked substance, immediately perform the actions described below:
Inhalation: Evacuate the contaminated area, and seek medical attention.
Eye contact: Rinse eyes with running water for 5 minutes, and seek medical attention.
Contact with skin: Wash the affected area thoroughly with soap and water, and seek medical attention.
Ingestion: Induce vomiting and seek medical attention.

3.3.3 Fire

If a fire breaks out in the place where the battery pack is installed, perform the following countermeasures:

Fire extinguishing media
During normal operation, no respirator is required. Burning batteries can not be extinguished with a regular fire extinguisher, this requires special fire extinguishers such as the Novec 1230, the FM-200 or a dioxin extinguisher. If the fire is not from a battery, normal ABC fire extinguishers can be used for extinguishing.

Fire -fighting instructions
1. If fire occurs when charging batteries, if it is safe to do so, disconnect the battery pack circuit breaker to shut off the power to charge.
2. If the battery pack is not on fire yet, extinguish the fire before the battery pack catches fire.
3. If the battery pack is on fire, do not try to extinguish but evacuate people immediately.

⚠ There may be a possible explosion when batteries are heated above 150°C.
When the battery pack is burning, it leaks poisonous gases. Do not approach.

Effective ways to deal with accidents
Battery in dry environment: Place damaged battery into a segregated place and call local fire department or service engineer.
Battery in wet environment: Stay out of the water and don' t touch anything if any part of the battery, inverter, or wiring is submerged.
Do not use a submerged battery again and contact the service engineer.

04 Ems Introduction And Set Up

4.1 Function Description

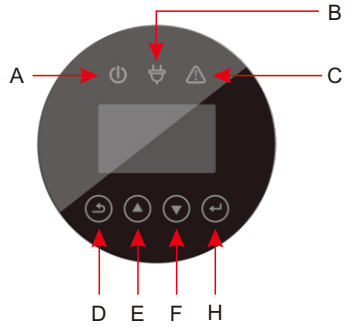


Figure 32 BluE-H5/H3 EMS Interface

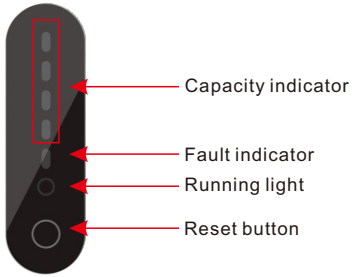


Figure 33 BluE-PACK Interface

Object	Name	Description
A	Indicator LED	Grid connection
B		Off-grid
C		Red: The inverter is in fault.
D	Button Function	Return Button: Escape from current interface or function.
E		Up button: Move cursor to upside or increase value.
F		Down Button: Move cursor to downside or decrease value.
H		ENT Button: Confirm the selection.

LED indicator description

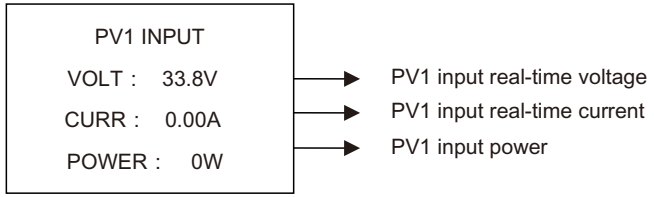
Figure 33 LED working status indication

status	Normal/Alarm /Protection	ON/ OFF	RUN	ALM	Power indicator LED						Instructions
		●	●	●	●	●	●	●	●	●	
Shut down	dormancy	off	off	off	off	off	off	off	off	off	ALL OFF
Standby	Normal	light	Flash one time	off	According to battery indicator						standby mode
	Alarm	light	Flash one time	Flash three times							Module low voltage
charge	Normal	light	light	off	According to battery indicator (Power indicator highest LED flashes two)						The maximum power LED flashes twice, and the ALM does not flash when an overcharge alarm occurs
	Alarm	light	light	Flash three times							
	Overcharge protection	light	light	off	light	light	light	light	light	light	If there is no mains electricity, the indicator light turns to standby
	Temperature, overcurrent, failure, protection	light	off	light	off	off	off	off	off	off	Stop charging
Discharge	Normal	light	Flash three times	off	According to battery indicator						
	Alarm	light	Flash three times	Flash three times							
	Undervoltage protection	light	off	off	off	off	off	off	off	off	Stop discharging
	Temperature, overcurrent, short circuit, reverse connection, failure protection	light	off	light	off	off	off	off	off	off	Stop discharging
Failure		off	off	light	off	off	off	off	off	off	Stop charging and discharging

4.2. Display and Setting

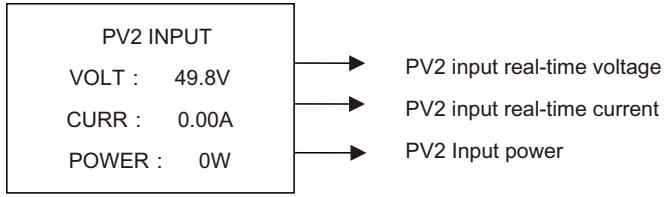
4.2.1 PV1 input display interface

Interface



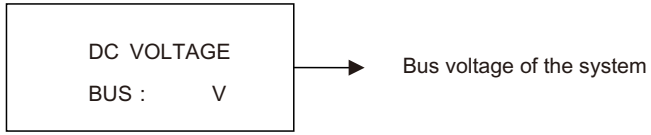
4.2.2 PV2 input display interface

Interface



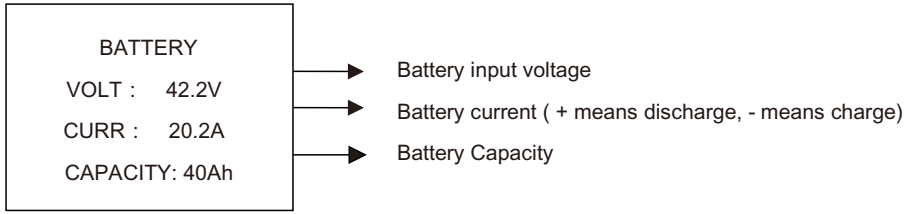
4.2.3 Bus voltage

Interface



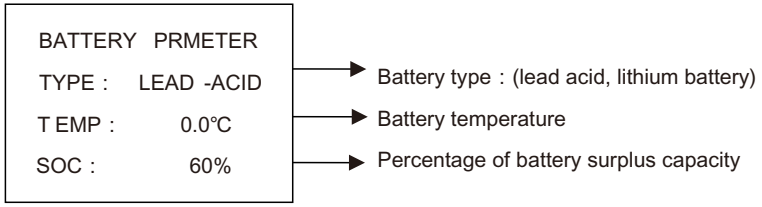
4.2.4 Battery

Interface



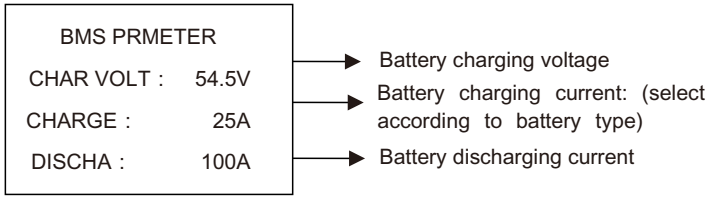
4.2.5 BMS parameters

Interface



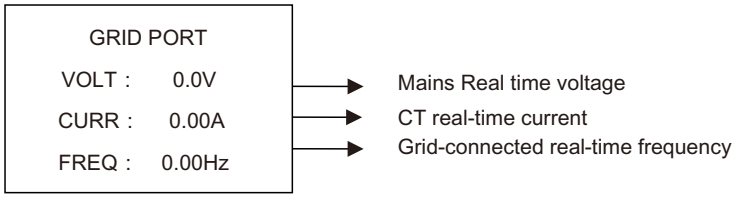
4.2.6 BMS parameters

Interface



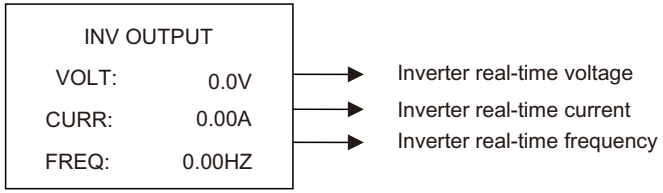
4.2.7 Grid-connected output

Interface



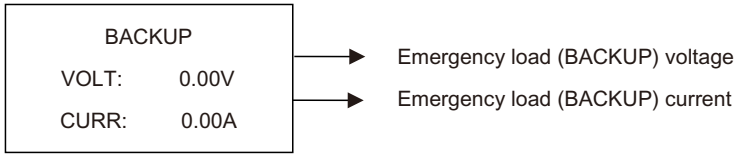
4.2.8 Inverter output

Interface



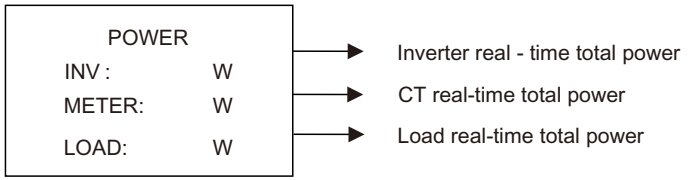
4.2.9 Load

Interface



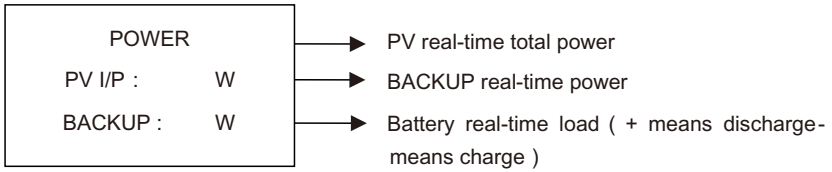
4.2.10 Power

Interface



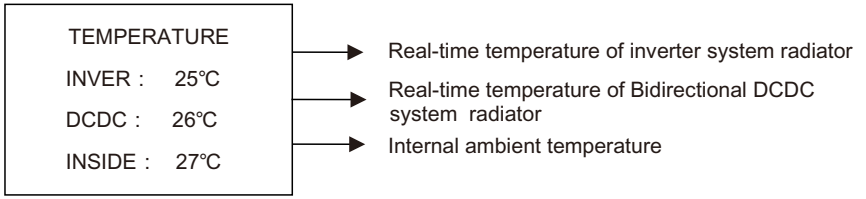
4.2.11 Power

Interface



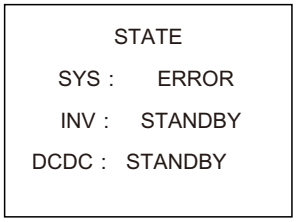
4.2.12 Temperature

Interface



4.2.13 Status information

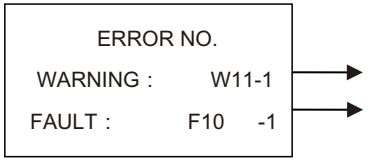
Interface	Description



System information: Power-up mode, standby mode, hybrid grid-connection, off-grid operation, mains charging mode, PV charging mode, bypass mode, fault mode, DSP programming, ARM programming.
INV: standby mode, off-grid inverter mode, grid-connected mode, and transition of grid-connection to off-grid, transition of off-grid to grid mode.
DCDC: standby mode, soft start mode, charging mode.

4.2.14 Error information

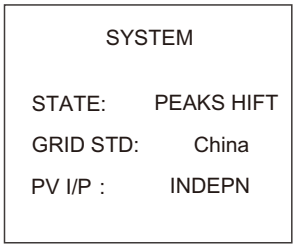
Interface



Alarm code (see Chapter 9)
Error code (see Chapter 9)

4.2.15 System setting

Interface	Description

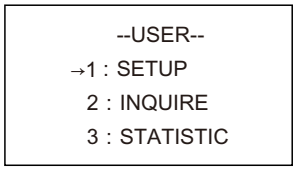


Status mode: Self-generation and self-consumption，Peak load shifting，and Battery priority
Grid-connection standards: China, Germany, Australia, Italy, Spain, UK, Hungary, Belgium, Western Australia, Greece, France, Bangkok, Thailand, local and 60 HZ.
PV input mode:independent connection， parallel connection，constant voltage.

Press ESC button to enter user setting

4.2.16 User setting

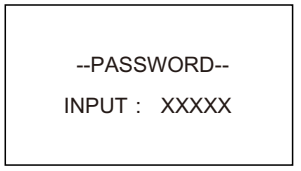
Interface	Description



Press ESC on the Main Display Interface to enter the user interface
See chapter 8.2 for more setting details

Enter the password before setting up the user

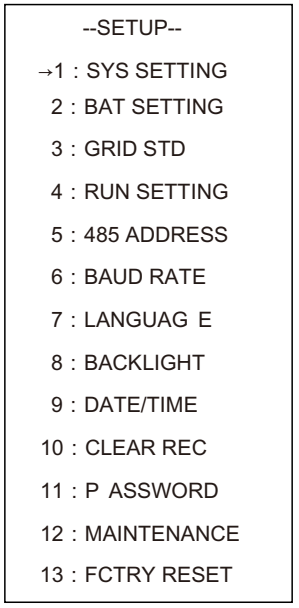
Interface	Description



After entering the setup interface, the system will prompt to input password;
The default password is“000000”, which can be altered in Password setting menu (refer to7.4.7);
Press UP/DOWN button to increase or decrease the figure that is input;
Press ENTER button to move the cursor backwards or confirm the setting;
Press ESC button to move the cursor forward.

4.3 Setting

Interface	Description



This interface is used for various information inquiry options.
Press UP/DOWN button to move the corresponding options.
Press ENTER to enter the selected menu.
Press ESC button to return to the user interface.
(refer to 8.1.16)
There are 13 options in total, including system mode, battery parameters, grid standard, operation parameters, 485 address, 485 baud rate, language display, LCD backlight, date/time, clear history, password setting and maintenance, and factory setting.

4.3.1 System setting

Interface	Description
--SYS SETTING-- →1: WORK MODE 2: PV INPUT 3: RCur ENABLE 4: DRM ENABLE 5: EPS ENABLE 6: REMOTE CTRL 7: START DELAY	This interface is used to access system information. Press UP/DOWN button to move corresponding options. Press ENTER to enter the selected menu. Press ESC button to return to the setting interface. (refer to 8.3.1) There are 7 options in total, including working mode, PV input type, anti-reflux enable, DRM enable , EPS enable, remote controlled enable , boot delay time. (see from 1 to7)

1.Working mode

Interface	Description
--WORKE MODE -- 1:SELF COMSUME → 2:PEAK SHIFT 3: BAT PRIORITY	This interface is used to opt for the working mode. After selecting the three modes, the restart interface will be entered. Press ESC button to return to setting interface. (refer to 8.2.1)

After completing the setup of peak load shifting mode, the time for charging and discharging also needs to be set.

Time setup

Interface	Description
CHA STAR1: 00 : 00 CHA REND1: 00 : 00 DIS START1: 00 : 00 DISC END1: 00 : 00	This interface is used to set the time-1 of peak load shifting Press UP/DOWN button to change the value. Press ENTER to confirm. Press ESC button to return.
CHA STAR2: 00 : 00 CHA REND2: 00 : 00 DIS START2: 00 : 00 DISC END2: 00 : 00	This interface is used to set the time-2 of peak load shifting Press UP/DOWN button to change the value. Press ENTER to confirm. Press ESC button to return.

② Input mode

Interface	Description
--INPUT MODE— →1 : INDEPENDANT 2 : PARALLEL 3 : CV	Setup of PV Input mode. The factory setting by default is standalone mode. When parallel input is set to be stand-alone mode, PV power will be imbalanced.

③Anti-Reflux enable

Interface	Description
-- RCur ENABLE -- →1: DISABLE 2: ENABLE	Back-flow-prevention function. Default option is disabling.

④DRM enable

Interface	Description
--DRM ENABLE-- →1: DISABLE 2: ENABLE	It is enabled when BACKUP load needs power. Default option is disabling.

⑤ Backup enable

Interface	Description
--EPS ENABLE-- →1: DISABLE 2: ENABLE	It is enabled when BACKUP load needs power. Default option is Enabling.

⑥Remote Control enable

Interface	Description
--REMOTE CTRL-- →1: DISABLE 2: ENABLE	The power switch of the machine can be realized through remote control. Default option is disabling.

⑦ START-UP delay

Interface	Description
START-UP DELAY INPUT: 30 UNIT: SEC	The input value ranges from 20 to 300, which varies with different standards.

4.3.2 Battery parameters

Interface	Description
--BAT SETTING-- → 1:BAT TYPE 2:DISC-DEPTH 3:CHARGE-CURR 4:DISC POWER 5:CHAR POWER 6:BAT-WAKE	This interface is used to select battery parameters. Press UP/DOWN button to move corresponding options; Press ENTER button to enter the selected menu; Press ESC button to return to setting interface (refer to 8.3.1). (see from① to⑥)

① Battery type

Interface	Description
--BAT TYPE-- 1: LEAD -ACID →2: OTHER-LEP 3: BYD -LEP 4: CITIC- LEP 5: PYLON -LEP 6: BluE –LEP 7: KSTAR-LEP	This interface is used to select battery type. Press UP/DOWN button to move corresponding options; Press ENTER button to enter the selected menu; Select the LEAD-ACID enter button to enter the LEAD-ACID interface; Select the OTHER_Li enter button to enter the OTHER_Li interface; Select the other selections enter button to enter the restart interface.

Other Li battery parameter

Interface	Description
--OTHER LI BAT-- →1:CHARG-VOLT 2:BAT END VOLT 3:BAT OVP	This interface is used to select other Li battery parameter. Press UP/DOWN button to move corresponding options; Press ENTER button to enter the selected menu; Options include battery charge voltage, battery discharge end voltage and battery over voltage protect.(see from④to⑥)

Lead-acid battery parameter

Interface	Description
--LEAD-ACID -- →1:CHARG-VOLT 2:EQUAL VOLT 3:BAT CAP 4:BAT END VOLT 5:BAT OVP	This interface is used to select other Li battery parameter. Press UP/DOWN button to move corresponding options; Press ENTER button to enter the selected menu; Options include battery charge voltage, battery capacity battery discharge end voltage, battery over voltage protect .(see from④to⑦)

② Discharge depth

Interface	Description
--DISC DEPTH-- INPUT : 60 UNIT : %	Press UP/DOWN to increase or decrease the input figure; Press Enter to move cursor backward, confirm input and return to battery parameters interface; Press ESC to move cursor forward and return to battery parameters interface; The value ranges between 10% and 100%.

③ Charge current

Interface	Description
--CHARGE CURR-- INPUT : 25 UNIT : A	Press UP/DOWN button to increase or decrease the input figure; Press Enter to move cursor backward, confirm input and return to battery parameters interface; Press ESC button to move cursor forward and return to battery parameters interface.

④ Discharge Power

Interface	Description
--DISC PERCENT-- INPUT 080%	Press UP/DOWN button to increase or decrease the input figure; Press Enter button to move cursor backward, confirm input and return to battery parameters interface; Press ESC button to move cursor forward and return to battery parameters interface.

⑤ Charge Power

Interface	Description
--CHAR PERCENT-- INPUT : 020%	Press UP/DOWN button to increase or decrease the input figure; Press Enter to move cursor backward, confirm input and return to battery parameters interface; Press ESC button to move cursor forward and return to battery parameters interface.

⑥Bat Wake

Interface	Description
-- Bat Wake -- →1.ENABLE 2.TIME	Enter the option 1 to enable or disable the function. Enter the option 2 to adjust the value of the time.

Battery wake up enable

Interface	Description
--BAT WAKE-UP-- →1: DISABLE 2: ENABLE	Battery wake -up enable setting. The default option is disabling.

Bat Wake Time

Interface	Description
-- Bat Wake Time-- INPUT : 060min	Press UP/DOWN button to increase or decrease the input figure; Press Enter button to move cursor backward, confirm input and return to battery parameters interface;

4.3.3 Grid standard

Interface	Description
--GRID STD-- → 1 : China 2 : Germany 3 : Australia 4 : Italy … 13 : Thailand 14 : Local 15 : 60Hz	Press UP/DOWN button to move corresponding options. Here are eleven countries for selection, including China, Germany, Australia, Italy, Spain and U.K.(detail refers to table 11.1); Press ENTER button to confirm the selection and enter restart interface (refer to 4.5); Press ESC button to cancel the selection and return to setting interface (refer to 4.3).

4.3.4 Operation parameters

Interface	Description
--RUN SETTING-- → 1 : REACT POWER 2 : GRID POWER 3 : Volt Max 5 : Volt Min 6 : Freq Max 7 : Freq M in 8 : VoltUnder 9 : FreqOver 10 : FreqUnder 11 : PTSetTime 12 : VRT_Enable 13 : Power_SInc	Press UP/DOWN button to move corresponding options; Press Enter to enter the selected menu; Press ESC button to return to setting interface (refer to 8.2). Options include reactive compensation mode, grid power, discharge/charge power, low/high grid power, low/high grid voltage, low/high grid frequency, VoltOverStart and FreqOverStart (see from①to⑨)

① Reactive mode

Interface	Description
-REACT MODE- →1 : POWER FACTOR 2 : REACT POWER 3 : QU WAVE 4 : QP WAVE	Press UP/DOWN button to move corresponding options; Press Enter to confirm the input and enter power factor setting interface; (select 2, press Enter to confirm input and enter reactive power interface; Select 3, 4, the corresponding mode will be selected and return to the parameter setting interface.) Press ESC button to cancel the input and return to operation parameters interface.

Power factor setting

Interface	Description
-POWER FACTOR- INPUT: C1.00 Value range (L1.00~C1.00)	Press UP/DOWN to increase or decrease the input figure; Press ENTER button to confirm or ESC button to cancel the input and return to working interface; The input value should range between L0.80 and L0.99 or C0.8 and C1.00.

Reactive Power

Interface	Description
-REACT POWER- INPUT: +60% Value range (-60%~+60%)	Press UP/DOWN button to adjust the input figure; Press ENTER button to confirm or ESC button to cancel the input and return to working interface; The input value should range between -60% and +60%, which varies with the standard.

② Grid-connected power

Interface	Description
-GRID PERCENT- INPUT : 100% Value range (0~100)	Press UP/DOWN button to adjust the input figure; Press ENTER button to confirm or ESC button to cancel the input and return to operation parameters interface; The input value should range between 0 and 100.

③Volt Max

Interface	Description
-Volt Max - →1 : Vac-Max 2 : LoadVoltMax	Enter option 1 to adjust the max imum volt of the grid. Enter option 2 to adjust the maximum volt of the load.

High grid voltage

Interface	Description
-GRID VOLT HIGH- INPUT : UNIT : V Value range (240~280V)	**Grid Over Voltage Protection Point** Press UP/DOWN to adjust the input figure; Press Enter to confirm the input and enter restart interface (refer to 8.4); Press ESC to cancel the input and return to operation parameters interface; The value should range between 240V and 280V, which varies with different standards.

Load Volt Max

Interface	Description
-LoadVoltMax- INPUT: 270V	Press UP/DOWN to adjust the input figure; Press Enter to confirm the input.

④Volt Min

Interface	Description
-Volt Min - →1 : Vac-Min 2 : LoadVoltMin	Enter option 1 to adjust the minimum volt of the grid. Enter option 2 to adjust the minimum volt of the load.

Low grid voltage

Interface	Description
-GRID VOLT LOW- INPUT : UNIT : V Value range (150~200V)	**Grid Low Voltage Protection Point** Press UP/DOWN button to adjust the input figure; Press Enter to confirm the input and enter restart interface (refer to 8.4); Press ESC button to cancel the input and return to operation parameters interface; The value should range between 150V and 220V, which varies with different standards.

Load Volt Min

Interface	Description
-LoadVoltMin- INPUT: 170V	Press UP/DOWN to adjust the input figure; Press Enter to confirm the input.

⑤Freq Max

Interface	Description
-FreqMax - →1：Fac-Max 2：LoadFreqMax	Enter option 1 to adjust the maximum frequency of the grid. Enter option 2 to adjust the maximum frequency of the load.

High grid frequency

Interface	Description
--GRID FREQ HIGH-- INPUT: 52.0 UNIT : Hz Value range (50.5~55)	**Grid Over Frequency Protection Point** Press UP/DOWN to adjust the input number; Press ENTER to confirm the input and enter restart interface; Press ESC to cancel the input and return to operational parameters interface(refer to 8.4); The value ranges between 50.5 and 55, which varies with different standards.

Load Freq Max

Interface	Description
-LoadFreqMax- INPUT: 53.5Hz	Press UP/DOWN to adjust the input figure; Press Enter to confirm the input.

⑥Freq Min

Interface	Description
-Freq Min- →1：Fac-Min 2：Load Freq Min	Enter option 1 to adjust the minimum frequency of the grid. Enter option 2 to adjust the minimum frequency of the load.

Low grid frequency

Interface	Description
--GRID FREQ LOW-- INPUT : UNIT : Hz Value range (45~49.8)	**Grid Low Frequency Protection Point** Press UP/DOWN to adjust the input figure; Press Enter to confirm the input and enter restart interface (refer to 4.4); Press ESC to cancel the input and return to operation parameters interface; The value ranges between 45 and 49.8, which varies with different standards.

Load Freq Min

Interface	Description
-Load Freq Min- INPUT: 50.5Hz	Press UP/DOWN to adjust the input figure; Press Enter to confirm the input.

⑦VW_Set

Interface	Description
-VW_Set - →1：ENABLE 2：VOLT	Enter the option 1 to enable or disable the function that the power of inverter derates when voltage is too high. Enter the option 2 to adjust the exact value of the voltage when power start to derate.

VW ENABLE

Interface	Description
-VW ENABLE- →1：DISABLE 2：ENABLE	Derate power when Voltage over. The default option is enable.

Volt Over Start

Interface	Description
-VoltOverStart- INPUT: 264V	Press UP/DOWN to adjust the input figure; Press Enter to confirm the input.

⑧VU_Set

Interface	Description
-VU_Set - →1 : ENABLE 2 : V OLT	Enter the option 1 to enable or disable the function that the power of inverter derates when voltage is too low. Enter the option 2 to adjust the exact value of the voltage when power start to derate.

VU ENABLE

Interface	Description
-VU ENABLE- →1 : DISABLE 2 : ENABLE	Enable or disable the function that the power of inverter derates when voltage is too low.

Volt Under Start

Interface	Description
-VoltUnderStart- INPUT: 200V	Press UP/DOWN to adjust the input figure; Press Enter to confirm the input.

⑨Freq Over

Interface	Description
-FW_Set - →1 : ENABLE 2 : FREQ	Enter the option 1 to enable or disable the function that the power of inverter derates when frequency is too high. Enter the option 2 to adjust the exact value of the frequency when power start to derate.

FW ENABLE

Interface	Description
-FW ENABLE- →1 : DISABLE 2 : ENABLE	Derate power when Frequency over. The default option is enable.

Freq Over Start

Interface	Description
-FreqOverStart- INPUT: 50.50Hz	Press UP/DOWN to adjust the input figure; Press Enter to confirm the input.

⑩Freq Under

Interface	Description
-FU_Set - →1 : ENABLE 2 : FREQ	Enter the option 1 to enable or disable the function that the power of inverter derates when frequency is too low. Enter the option 2 to adjust the exact value of the frequency when power start to derate.

Fun ENABLE

Interface	Description
-Fun ENABLE- →1 : DISABLE 2 : E NABLE	Derate power when Frequency is too low. The default option is enable.

Freq UnderStart

Interface	Description
-FreqUnderStart- INPUT: 50.50Hz	The function that the power of inverter derates when frequency is too low. Press UP/DOWN to adjust the exact value of the frequency when power start to derate.

⑪ PT setting time PT setting time

Interface	Description
-- PTSettingTime -- INPUT: 10s Value Range (6s ~ 60s)	The input value of Reactive response time. The value ranges from 6s to 60s and default value is 10s

⑫ VRT_Enable

Interface	Description
-VRT_Enable- →1 : DISABLE 2 : ENABLE	Enable or disable the High/Low voltage ride through capability.

⑬ Power_SInc

Interface	Description
--POWER_SInc -- INPUT: 250%	The input value of power rising rate. Default value is 250%.

4.3.5 485 Address

Interface	Description
--485 ADDRESS-- INPUT : 1 Value range (1~64)	Press UP/DOWN button to adjust the input figure; Press ENTER button to confirm or ESC button to cancel the input and return to setup interface; The input value should range between 1 and 64.

4.3.6 485 Baud rate

Interface	Description
--SELECT-- 1 : 2400 bps 2 : 4800 bps →3 : 9600 bps	Press UP/DOWN button to move corresponding options; Press ENTER button to confirm or ESC button to cancel the selection and return to setup interface; There are three alternative options: 2400/4800/9600.

4.3.7 Language

Interface	Description
--LANGUAGE-- →1 : CHINESE 2 : ENGLISH	Press UP/DOWN button to move corresponding options; Press ENTER button to confirm or ESC button to cancel the selection and return to setup interface;

4.3.8 LCD backlight

Interface	Description
--LIGHT TIME-- INPUT : 20 UNIT : S (seconds) Value range (20~120)	Press UP/DOWN button to adjust the input figure; Press ENTER button to confirm or ESC button to cancel the input and return to setup interface; The input value should range between 20 and 120.

4.3.9 Date/time

Interface	Description
--DATE/TIME-- DATE : 2018-09-19 TIME : 10 : 01 : 12 WEEK : Monday	Press UP/DOWN button to adjust the input figure; Press Enter button to move cursor backward, confirm input and return to setup interface; Press ESC button to move cursor forward and return to setup interface; The input value should range between 2000 and 2099.

4.3.10 Clear history

Interface	Description
--DEL REC -- →1 : CANCEL 2 : CONFIRM	Clear all the previous history in Inquiry/Record menu. Press UP/DOWN button to move corresponding options; Press ENTER button to confirm or ESC button to cancel the selection and return to setup interface;

4.3.11 Password Setting

Interface	Description
--PASSWORD-- OLD : XXXXX EW : XXX XX CONFIRM : XXXXX	This interface will be used to change password for entry into the setup interface; Press UP/DOWN to adjust the input figure; Press Enter to move cursor backward, confirm input and return to setup interface; Press ESC to move cursor forward and return to setup interface;

4.3.12 Maintenance

Interface	Description
→12:MAINTENANCE	Maintainer use only.

4.3.13 Factory default setting

Interface	Description
-FACTORY RESET- →1 : CANCEL 2 : CONFIRM	Press UP/DOWN button to move corresponding options; Press Enter to enter the selected item.

4.4 Inquiry

Interface	Description
--INQUIRE-- →1: INV MODULE 2 : MODULE SN 3 : F IRMWARE 4 : RECORD	Press UP/DOWN button to move corresponding options; Press Enter button to jump to the selected menu; Press ESC button to return to user interface (refer to 8.1.16); There are four alternative options: machine model , serial number , firmware version and running records (refer to 1to4).

① Machine model

Interface	Description
--INVERTER-- KSE-5K-048	This interface displays machine model of the inverter; Press ESC button to return to inquiry interface.

② Serial number

Interface	Description
--Serial Number-- SN : 123456789532625	This interface displays serial number of the inverter; Press ESC button to return to inquiry interface.

③ Firmware Version

Interface	Description
--FIRMWARE-- ARM VER : 1.0.0 DSP VER : 1.0.0	This interface displays firmware version for ARM and DSP of the inverter; Press ESC button to return to inquiry interface.

④ Running records

Interface	Description
--REC (170)-- 1:F10-1 DATE: 2018 - 12-01 TIME: 00 : 01 : 02	SN of the fault: Fault warning codes (500 at utmost)(the latest fault or alarm marked as No.1) Time of the fault: Press UP/DOWN button to view the record; Press ENTER button to enter the description interface for corresponding records; Press ESC button to return to Inquiry interface.

4.5 Statistics

Interface	Description
--STAT-- →1 : TIME STAT. 2 : CONNE. TIMES 3 : PEAK POWER 4 : E -TODAY 5 : E -MONTH 6 : E -TEAR 7 : E -TOTAL	This interface is used to select statistics items; Press UP/DOWN button to move corresponding options; Press Enter to enter the selected menu; Press ESC button to return to user interface; There are eight alternative options in total: time accounting，grid-connection frequency/ peak power/ power generation for the day / power generation for the month/ power generation for the year/gross power generation (refer to 1 to8).

① Time accounting

Interface	Description
--Time-- RUN : 5 GRID : 0 UNIT : HOUR	Operation length of inverter (hours) Grid-connection length (hours) Press ESC button to return to statistics interface.

② Grid-connection frequency

Interface	Description
-- CONNE.TIMES -- TIMES : 0	This interface displays grid-connection frequency of the inverter ; Press ESC button to return to statistics interface.

③ Peak power

Interface	Description
--PEAK POWER-- HISTORY : 5000 TODAY: 0 UNIT : W	This interface displays power peak in history and for the day. Press ESC button to return to statistics interface.

④ The day

Interface	Description
--E-TODAY-- PV : 0.0KWH SELL: 0.0KWH BUY : 0.0KWH LOAD : 0.0KWH	This interface displays power generation for the day (KWH) ; PV power generation; Electric energy selling to grid; Electric energy buying from grid; Power consumption of load;

⑤The month

Interface	Description
--E-MONTH-- PV : 0.0KWH SELL: 0.0KWH BUY : 0.0KWH LOAD : 0.0KWH	This interface displays power generation for the month (KWH) ; PV power generation; Electric energy selling to grid; Electric energy buying from grid; Power consumption of load;

⑥The year

Interface	Description
--E-YEAR-- PV : 0.0KWH SELL: 0.0KWH BUY : 0.0KWH LOAD : 0.0KWH	This interface displays power generation for the year (KWH) ; PV power generation; Electric energy selling to grid; Electric energy buying from grid; Power consumption of load;

⑦ Gross generation

Interface	Description
--E-TOTAL- PV : 0.0KWH SELL: 0.0KWH BUY : 0.0KWH LOAD : 0.0KWH	This interface displays gross power generation; PV power generation; Electric energy selling to grid; Electric energy buying from grid; Power consumption of load;

4.5 Restart

Interface	Description
Please Restart!	Prompt: Restart the machine for work-related settings to take effect. It will return to the corresponding working interface within 2 seconds.

05 Wireless Router Connection

5.1 Download APP

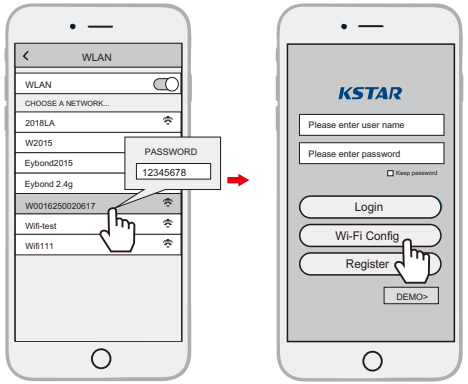
Step 1: Scan the QR Code on the right side and download the APP.

iOS Android

5.2 Connect Wi-Fi Datalogger

Step 1: Select the same number of Wi-Fi PlugII PN to connect on your phone WLAN. (Initial Password:12345678)

Step 2: Open the APP, tap the Wi-Fi Config button to enter this page.

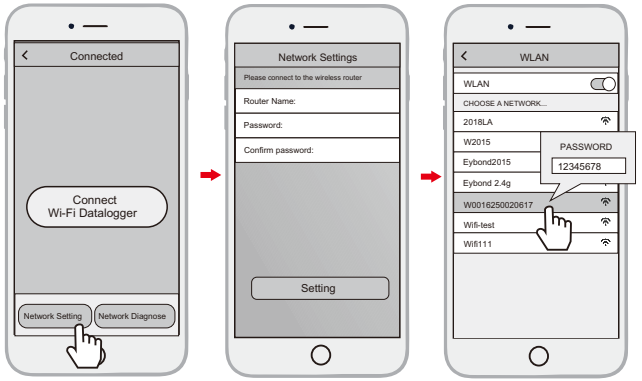


5.3 Network Setting

Step 1: Then tap the Network Setting button.

Step 2: According to the prompts, type in the information to finish the network setting.

Step 3: After the Wi-Fi PlugII is restarted,reconnect the Wi-Fi which connected by step 5.1.

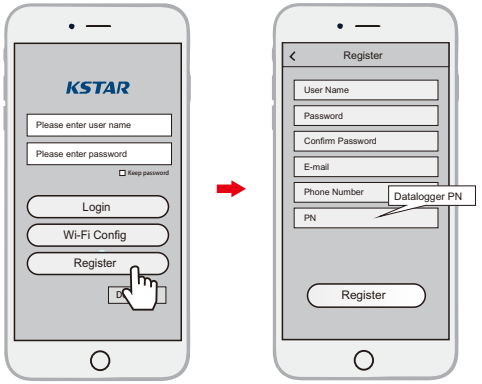


06 Create Account And Add Datalogger

6.1 Create Account

Step 1: Open the APP, tap the Register button to enter this page.

Step 2: According to the prompts, type in the information to create an account.

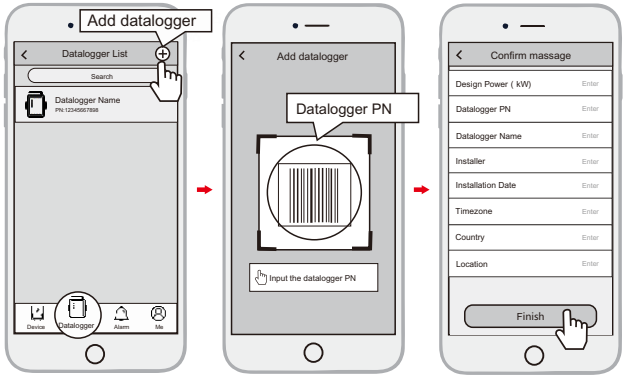


6.2 Add Datalogger

Step 1: Login the account and click the Datalogger button. Tap the “ + ”button on the top-right corner of the Datalogger page.

Step 2: Scan the PN on the Wi-Fi PlugII,or input it manually.

Step 3: According to the prompts, type in the information to finish add datalogger.



07 Alarm code and error code

7.1 Alarm code

Codes	English description
W00	Grid Volt Low
W01	Grid Volt High
W02	Grid Frequency Low
W03	Grid Frequency High
W04	Solar Loss
W05	Bat Loss
W06	Bat Under Volt
W07	Bat Volt Low
W08	Bat Volt High
W09	Over Load
W10	GFCI Over
W11	LN Fault
W12	Fan Fault
W13	---
W14	Bms DisChg Over
W15	Bms Chg Over
W16	Bms Volt Over
W17	Bms Temp Over
W18	Bms Temp Low
W19	Bms Volt Imbalance
W20	Bms Communicate Fault

7.2 Error code

Codes	English description
F00	Soft Time Out
F01	INV Volt Short
F02	GFCI Sensor Fail
F03	----
F04	Bus Volt Low
F05	Bus Volt High
F06	Bus Short Fail
F07	PV ISO Under Fail
F08	PV Input Short
F09	Op Relay Fail
F10	INV Curr Over
F11	INV DC Over
F12	Ambient Over Temp
F13	Sink Over Temp
F14	Grid Relay Fail
F15	DisChg Curr Over
F16	Chg Curr Over
F17	Current Sensor Fail
F18	INV Abnormal
F19	EPS Relay Fail
F32	SCI Fail

08 Fault diagnosis and solutions

The inverter is easy to maintain. When you encounter the following problems, please refer to the Solutions below, and contact the local distributor if the problem remains unsolved. The following table lists some of the basic problems that may occur during the actual operation as well as their corresponding basic solutions.

Fault diagnosis table

Types	Codes	Solutions
Soft Time 0ut	F00	(1) Restart the inverter and wait until it functions normally; (2) Contact customer service if error warning continues.
INV Volt Short	F01	(1) Cut off all the power and shut down all the machines; disconnect the load and plug in to restart machines, then check whether the load is short circuited if the fault has been eliminated; (2) Contact customer service if fault remains unremoved.
GFCI Sensor Fail	F02	(1) Cut off all the power, Restart the inverter and wait until it functions normally. (2) Contact customer service if error warning continues.
BUS Volt Low	F04 F05	(1) Check the input mode setting is correct. (2) Restart the inverter and wait until it functions normally; (3) Contact customer service if error warning continues.
Bus Volt Short	F06	(1) Restart the inverter and wait until it functions normally. (2) Contact customer service if error warning continues.
PV ISO Under Fail	F07	(1) Check for good ground connection.; (2) Check if the earth resistance of PV+ and PV- is greater than 2MΩ; (3) If it is smaller than 2MΩ, check PV string for ground fault or poor ground insulation; if it is greater than 2MΩ, please contact the local inverter customer service once fault is not removed.

Types	Codes	Solutions
PV Input Short	F08	(1) Check the input mode setting is correct. (2) Disconnect the PV input, restart the inverter and wait until it functions normally. (3) Contact customer service if error warning continues.
Relay Fail	F09 F14 F19	(1) Disconnect the PV input, restart the inverter and wait until it functions normally. (2) Contact customer service if error warning continues.
INV Current Over	F10	(1) Wait five minutes for the inverter to automatically restart; (2) Check whether the load is in compliance with the specification;
INV DC Over	F11	(1) Restart the inverter and wait until it functions normally. (2) Contact customer service if error warning continues.
NTC/Sink Temp Over	F12 F13	(1) Restart the inverter, restart the machine after a few minutes of cooling, and observe whether the machine can return to normal. (2) Check if the ambient temperature is outside the normal operating temperature range of the machine. (3) Contact customer service if error warning continues.
ischg Curr Over	F15	(1) Wait one minute for the inverter to restart; (2) Check whether the load is in compliance with the specification; (3) Contact customer service if error warning continues.
CHG Current Over	F16	(1) Check if battery wiring port is short circuited; (2) Check if charging current is in compliance with presetting; (3) Contact customer service if error warning continues.
Current Sensor Fail	F17	(1) Restart the inverter and wait until it functions normally. (2) Contact customer service if error warning continues.

Types	Codes	Solutions
INV Abnormal	W18	(1) Please contact the distributor.
Communication Fault	F32	(1) Restart the inverter and wait until it functions normally. (2) Contact customer service if error warning continues.
Grid Fail	W00 W01 W02 W03	1) Check if the local voltage and frequency is in compliance with the machine specification; (2) If voltage and frequency are within the accepted range, then wait 2 minutes for the inverter to function normally; but if no recovery or fault repeats, please contact the local inverter customer service; (3) Contact the local power company if voltage and
Solar Loss	W04	(1) PV is not connected; (2) Check grid connection; (3) Check PV availability.
Bat Loss	W05	(1) Battery is not connected; (2) Check if battery wiring port is short circuited; (3) Contact customer service if error warning continues.
Bat Volt Low	W06 W07	(1) Check the battery availability; (2) Contact customer service if error warning continues.
Bat Volt High	W08	(1) Check if the battery is in line with the presetting; (2) If so, power off and restart; (3) Contact customer service if error warning continues.
Over Load Warning	W09	(1) Wait one minute for the inverter to restart; (2) Check whether the load is in compliance with the specification;
CFCI Over	W10	(1) Check PV string for direct or indirect grounding phenomenon; (2) Check peripherals of machine for current leakage; (3) Contact the local inverter customer service if fault

LN Fault	W11	(1) Check whether the installation follows the instructions; (2) Contact customer service if error warning continues.
Fan Fault	W12	(1) Restart the inverter and wait until it functions normally. (2) Contact customer service if error warning continues.
BMS Fault	W14~W20	(1) Please contact the distributor.

09 Machine Parameters

Battery Specifications	BluE-Pack-5.1	BluE-Pack-10.2
Electrical		
Energy Capacity	5.12kWh	10.24kWh
Battery type	LFP (LiFePO4)	
Depth of Discharge (DoD)	90%	
Rated voltage	51.2V	
Operating Voltage Range	44.8~57.6V	
Internal Resistance	≤ 20 mΩ	
Number of cycles	10000cycles	
Operation		
Max. Charging Current	50A (0.5C)	100 A (0.5C)
Max. Discharging Current	80 A (0.8C)	100 A (0.5C)
Operating temperature range	0℃~+50℃(Charging)/-10℃~+50℃(DisCharging)	
Storage temperature range	-30℃~+60℃	
Humidity	0% ~ 90%	
BMS		
Modules Connection	max. 4 batteries in parallel	
Power Consumption	<2 W	
Monitoring Parameters	System voltage, current, cell voltage, cell temperature, PCBA temperature measurement	
Communication	CAN and RS-485 compatible	
Ventilation type	Passive and Active Cooling	

Physical		
Weight (Kg)	48	95
Dimension (W×H×D)mm	540*490*240	540*940*240
IP Protection	IP65	
Warranty	5 Year Product Warranty, 10 Year Performance Warranty	
Certificate		
Safety(Cell)	IEC 62619、UL 1973、UN 38.3	

MODEL	BluE-S-3680D	BluE-S-5000D
Inverter General		
Max. PV Input power	4800W	6500W
Max. PV Input voltage	580V	
MPPT Range	120V ~550V	
Rated Input voltage	400V	
MPPT Range for full load	184~550V	230~550V
Number of MPPT	2	
Max. PV input current	13A*2	
Isc PV	16A*2	
AC Output(ON-Grid)		
Rated AC output power	230Vac	
Output voltage range	150V ~280V	
Output frequency range	50 / 60Hz(±5Hz), (adjustable)	
Rated Input Current	31A	
Max. Current from Utility Grid	32A	
Max. Apparent Power from Utility Grid	7360VA	
Max. Power Output to Utility Grid	3680W	4999W
Max. Current Output to Utility Grid	16A	21.7A
AC Output Connection	L+N+PE, Transformerless	

Power factor (cosΦ)	(0.8 leading ~ 0.8 lagging), (adjustable)	
THDi	<3%	
Power grid disconnection	Bipolar miniature circuit breaker (40A/pole)	
AC Output(Back-up)		
Rated Output Voltage	230 (Fluctuation range±2%)	
Rated Output Frequency	50/60Hz (Fluctuation range±0.2%)	
Rated output Current	13A	20A
Rated Output Power	3000W	4600W
Max. Output Apparent Power	3300VA	5000VA
THDv	<2% (Linear load)	
Automatic Switch Time	<20ms	
OverLoad	6900VA 10sec	
Off-line AC disconnection	Bipolar miniature circuit breaker (25A/pole)	
Battery Input		
Rated Battery Voltage	51.2V	
Battery Voltage Range	40~60V	
Max. Discharging Current	80A	100A
Max. Charging Current	50A	100A
Battery Switch	Bipolar DC Switch (125A/Pole)	
Inverter General		
Dimension (W×H×D)mm	540*640*240	
Weight (Kg)	30	
Ambient Temperature Range [°C]	-20℃~+60℃ (Rated Power@45℃)	
Relative Humidity	0~95% (No condensation)	
Protection Degree	IP65	
Topology	High Frequency Isolation	
Cooling	Natural Convection	

Noise Emission [dB]	<25
Display	LCD/APP
Communication Interface	RS485/CAN2.0/WIFI
Altitude	≤2000m
Overvoltage Category	II(DC side), III(AC side)
Max. Conversion Efficiency (From Battery)	94.0%
Max. Conversion Efficiency (From PV)	97.6%
Euro Efficiency	97.0%
MPPT Efficiency	99.5%
Protection Function	Short Circuit Protection, AC Leakage Fault Protection, Grounding Fault Protection, Anti-islanding Protection, Overload Protection、Surge Protection 、DC Polarity Protection
Certification& Standard	
Grid Regulation	AS/NZS 4777.2, VDE-AR-N4105, VDE0126-1-1
Safety Regulation	IEC/EN 62109-1&2, IEC62040-1
EMC	EN61000-6-1, EN61000-6-2, EN61000-6-3, EN61000-6-4,EN61000-4-16, EN61000-4-18, EN61000-4-29

Table 11.1 Grid specification (single-phase)

Grid Specification	Output Voltage Range (Vac)	Output Frequency Range (Hz)	Boot wait time(S)
China	187 - 252	48 - 50.5	30
Germany	184 - 264	47.5 - 51.5	60
Australia	180 - 260	47 - 52	60
Italy	184 - 276	49.7 - 50.3	60
Spain	196 - 253	48 - 50.5	180
U.K.	184 - 264	47 - 52	180
Hungary	196 - 253	49 - 51	300
Belgium	184 - 264	47.5 - 51.5	60
AUS-W	180 - 260	45 - 52	60
Greece	184 - 264	49.5 - 50.5	180
France	184 - 264	47.5 - 50.4	60
Metro	150 - 264	49 - 51	150
Thailand	150 - 264	48 - 51	60
Local	150 - 280	45 - 55	30
60Hz	184 - 264	59.5 - 60.5	60

10 Routine Maintenance

11.1 Maintenance Plan

- Check if wire connections are loose.
- Check if cables are aged/damaged.
- Check if cable insulating ribbon drops.
- Check if cable terminal screw loose, any overheat sign.
- Check if ground connection is well.

11.1.1 Operating Environment

(Every six months)
Carefully observe whether the battery system equipment is ineffective or damaged;
When the system is running, listen to any part of the system for abnormal noise;
Check whether the voltage, temperature and other parameters of the battery and other equipment parameters are normal during system operation;

11.1.2 Equipment Cleaning

(Every six months to one year, depending on the site environment and dust content, etc.)
Ensure that the ground is clean and tidy, keep the maintenance access route unblocked, and ensure that the warning and guiding signs are clear and intact.
Monitor the temperature of the battery module and clean the battery module if necessary.

11.1.3 Cable, Terminal and Equipment Inspection

(Every six months to one year)

- Check if the cable connections are loose.
- Check whether the cables are aged / damaged.
- Check whether the cable tie of the cable has fallen off.
- Check if the cable terminal screws are loose and the terminal position has any signs of overheating.
- Check whether the management system of the system equipment, monitoring system and other related equipment are invalid or damaged.
- Check that the grounding of the equipment is good and the grounding resistance is less than 10 ohms.

11.2 Notes

After the equipment are out of operation, please pay attention to following notes while maintaining :

- Related safety standards and specifications should be followed in operation and maintenance.
- Disconnect all the electrical connections so that the equipment would not be powered on.
- Wait at least 5 minutes after disconnection, so that the residual voltage of the capacitors drops to a safe voltage. Use a multimeter to make sure that the equipment is completely discharged.
- The equipment should be repaired by professional staff only and it is strictly forbidden for maintenance staff to open equipment modules on their own.
- Appropriate protective measures should be taken while maintaining, such as insulated gloves, shoes, and anti-noise ear plugs.
- Life is priceless. Make sure no one would get hurt first.
- In case of a deep discharge, the battery must be charged to a SOC rate of 30% to 50% if the entire system is static (ie the battery has not been charged for two weeks or more).

Please contact us in time if there are any conditions that could not be explained in the manual.

11 Quality Assurance

When product faults occur during the warranty period, KSTAR or his partner will provide free service or replace the product with a new one.

Evidence

During the warranty period, the customer shall provide the product purchase invoice and date. In addition, the trademark on the product shall be undamaged and legible. Otherwise, KSTAR has the right to refuse to honor the quality guarantee.

Conditions

- After replacement, unqualifiied products shall be processed by KSTAR.
- The customer shall give KSTAR or his partner a reasonable period to repair the faulty device.

Exclusion of Liability

In the following circumstances, KSTAR has the right to refuse to honor the quality guarantee:

- The free warranty period for the whole machine/components has expired.
- The device is damaged during transport.
- The device is incorrectly installed, refifitted, or used.
- The device operates in harsh environment, as described in this manual.
- The fault or damage is caused by installation, repairs, modifification, or disassembly performed by a service provider or personnel not from KSTAR or his authorized partner .
- The fault or damage is caused by the use of non-standard or non-KSTAR.

components or software.

- The installation and use range are beyond stipulations of relevant international standards.
- The damage is caused by unexpected natural factors.

For faulty products in any of above cases, if the customer requests maintenance, paid maintenance service may be provided based on the judgment of KSTAR.

12 Contact Information

18 overseas branch offices

☎ PV inverter industry Pre-sales：(86)0755-89741234 Ext 8151

☎ PV inverter industry After-sales：(86)0755-89741234 Ext 8729

✉ Global overseas service mailbox：overseas_service@kstar.com.cn