



Copyright Statement

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.
Contact the nearest hazardous waste disposal station when the products
or components are discarded.

CONTENTS

01 Introduction	01
1.1 System Introduction	01
1.2 Operation Modes	03
1.3 Safety Introduction	
1.4 Safety Datasheet	06
1.5 General Precautions	07
1.6 Parts List	
1.7 System Appearance	11
1.8 Liability Limitation	13
02 Installation	14

2.1 Installation Site and Environment 14
2.2 Installation 16
2.3 External CT Connection27
2.4 DRED Port Connections(optional) 28
2.5 Earth Fault Alarm Connection 29
2.6 Single Line Diagram 29
2.7 Wiring Diagram 31

System Operation

U,	010	 7	u	 																				
h on		 	 	 	 _	 	_	 	 	 	 	_	_											

3.1 Switch on 3.2 Switch off 3.3 Emergency Procedure	33
04 EMS Introduction and Set up	34
 4.1 Function Description	36 40 62 65
05 Australia and New Zealand Grid choose	67

05

6.1 Download APP	70
6.2 Stick Logger Installation	
6.3 Logger Status	71
6.4 Abnormal State Processing	71
6.5 Usage Methods and Notices for Reset Button	73
07 SOLARMAN Smart APP	74
7.1 Registration	
7.2 Create a Plant	
7.3 Add a Logger 7.4 Network Configuration	
	15
08 Alarm Code and Error Code	77
8.1 Alarm Code	
8.2 Error Code	78
09 Fault Diagnosis and Solutions	79
10 Product Specifications	82
11 Douting Maintenance	
11 Routine Maintenance	87
12 Quality Assurance	88

06 Stick Logger Quick Guide

01

Introduction

1.1 System Introduction

HEC-S 3K/5K hybrid inverter is part of HEC-S 3B/5B energy storage solution. HEC-S 3B/5B solution(incl. HEC-S3K/5K inverter and HEC-S B5K/10/15K/20K ESS) 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	Config	guration
Solution	Inverter	ESS
HEC-S 3B5	HEC-S 3K	HEC-S B 5K
HEC-S 3B10	HEC-S 3K	HEC-S B 10K
HEC-S 3B15	HEC-S 3K	HEC-S B 15K
HEC-S 3B20	HEC-S 3K	HEC-S B 20K
HEC-S 5B5	HEC-S 5K	HEC-S B 5K
HEC-S 5B10	HEC-S 5K	HEC-S B 10K
HEC-S 5B15	HEC-S 5K	HEC-S B 15K
HEC-S 5B20	HEC-S 5K	HEC-S B 20K

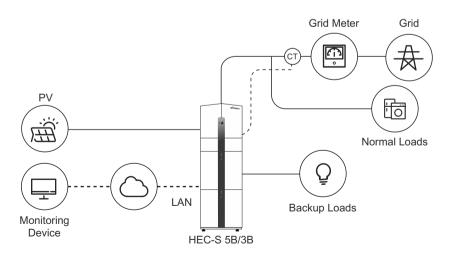


Figure1 DC-coupled Storage System – Scheme

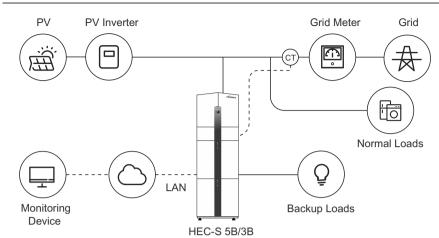


Figure 2 AC-coupled Storage System – Scheme

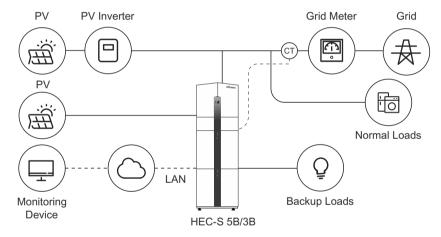
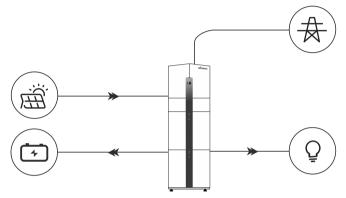


Figure 3 Hybrid-coupled Storage System - Scheme

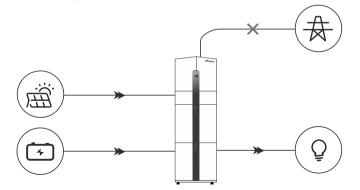
1.2 Operation Modes:

There are three basic modes that end users can choose via inverter screen/APP.

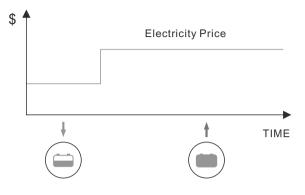
• **SELF CONSUMPTION:** The energy generated by the solar panels will be used in the following order: Feed the home loads; Charge the battery and then, feed into the grid. When the sun is off, the load will be supported by battery to enhance self consumption. If the power supply from the batteries is not sufficient, the grid will support the load demand.



• **BAT PRIORITY:** Under this mode, the battery is only used as a backup power supply when the grid fails and as long as the grid works, the batteries won't be used to power the loads. The battery will get charged with the power generated by the PV system or from the grid.



• **PEAK SHIFT:** This mode is designed for time-use mode customer. The customer is able to set up the charging/discharging time & power via inverter screen or APP.



1.3 Safety Introduction

1.3.1 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.

1.3.2 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.

1.3.3 Protection of Warning Sign

The warning signs contain important information for the system to operate safely, and it is strictly prohibited to tear or damage them. Ensure that the warning signs are always well-functioned and correctly 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!

The HEC-S 5B/3B 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.

1.3.4. 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 switch to prevent accidents caused by false switching.
- Warning signs should be set near operating areas.
- The system must be reinstalled after maintenance or operation.

1.3.5 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.

1.3.6 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.

1.3.7 Operation After Power Failure

The battery system is part of the energy storage 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.

1.4 General Precautions 1.5 Parts List

Danger to life due to high voltages of the PV array 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.
- Do not wipe the system with damp cloth.
- Have the system installed and commissioned by qualified personnel with the appropriate skills only.
- Prior to performing any work on the inverter, disconnect the inverter from all voltage sources as described in this document.

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

◆ Lifting and transporting the inverter must be carried out by no less than 2 people.

1.5 Parts List

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

		HEC-S 5K	K/HEC-S 3K							
		- market								
4×M5*12	2×ST6.3*50	2×D10*50	1×CT Connector	1×CT and com cable	2×AC Collector					
			0	0 0	NGONA Marina Man					
2×MC4	1×Colle	ctor	1×Moun	1×User Manual						

1.6 System Appearance



Figure 4 HEC-S 5B/3B Delivery Scope

Object	Descripition
1	Hybrid Inverter HEC-S 3K/5K
2	EMS Display Screen
3	Cable Box (connected to Inverter)
4	HEC-S B 5K (Battery 1)
5	HEC-S B 5K (Battery 2, if configured)



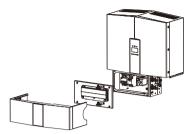


Figure 5 Inverter without Cable Box Covers- Front View

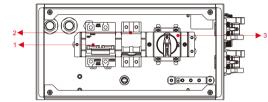
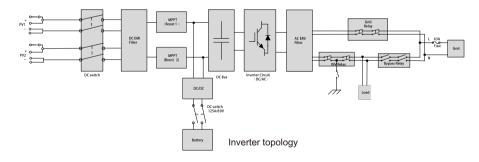


Figure 6 Cable Box Part without Covers - Front View

Object	Descripition
1	Battery circuit breaker
2	Output terminal block (BACK UP)
3	DC isolation switch



NOTE:

In Australia & New Zealand market, the N line will connect outside and inside relay is disabled

24

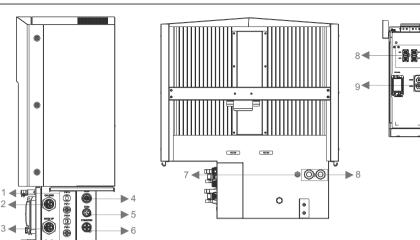


Figure 7 Cable Box Part without Covers

Object	Description	DVC class	Object	Description	DVC class
1	PV1, PV2	DVC C	2	GRID	DVC C
3	BACKUP	DVC C	4	DRM	DVC A
5	COM	DVC A	6	CT/METER	DVC A
7	INV	DVC C	8	BAT+,BAT-	DVC C
9	RJ45	DVC C			

1.7 Liability Limitation

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

- Product modified, design changed or parts replaced without authorization;
- Changes, repair attempts and erasing of series number or seals by non Hiconics 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.

Installation 02

This Manual introduces the basic steps to install and set up .

NOTE:

Please be cautious unpacking the battery, otherwise components could be damaged.

2.1 Installation Site and Environment

2.1.1 General

This HEC-S 5B/3B energy storage system is outdoor version and can be installed in an outdoor location.

When HEC-S 5B/3B systems are installed in a room, HEC-S 5B/3B must not be hampered by the structure of the building, the furnishings and equipment of the room.

The HEC-S 5B/3B 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 locations are not allowed for installation:

- · Habitable rooms;
- · Ceiling cavities or wall cavities;
- Nn 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 with altitude over 2000m;
- Places with an explosive atmosphere;
- Locations with direct sunlight and rain or a large change in the ambient temperature;
- Places with flammable materials or gases or an explosive atmosphere.
- This unit shall only connect to grid as single inverter. Two or more in parallel or three combination as three-phase, are not allowed. The installation of single phase is 5kVA maximum.

2.1.2 Restricted Locations

The HEC-S 5B/3B shall not be installed :

(a) In restricted locations as defined for panels in AS / NZS 3000;

(b) Within 600mm of any heat source, such as hot water unit, gas heater, air conditioning unit or any other appliance.

(c) Within 600mm of any exit;

- (d) Within 600mm of any window or ventilation opening:
- (e) Within 900mm of access to 240Vac connections:
- (f) Within 600mm of side of other device.

A HEC-S 5B/3B 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 HEC-S 5B/3B 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 HEC-S 5B/3B is mounted or on surfaces of a wall or structure in living spaces with a HEC-S 5B/3B 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 HEC-S 5B/3B and the surface of a wall or structure.

If the HEC-S 5B/3B is mounted at a wall or at a distance of 300mm 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 HEC-S 5B/3B; (ii) 500 mm above the HEC-S 5B/3B;

(iii) 600 mm before the HEC-S 5B/3B.

If the distance between the HEC-S 5B/3B and the ceiling or any object above the system is less than 500mm, the ceiling or structural surface above the system must be made of noncombustible material within a radius of 600mm around the system.

The HEC-S 5B/3B must be mounted to ensure the highest point is not more than 2.2m above the ground or the platform.

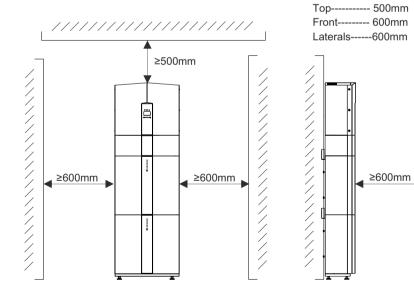


Figure 8 Limited Distance of Installation to Neighboring Objects

2.2 Installation

Step 1 Remove the inverter from the packaging box.Find the base accessory kit, If you buy the base together with inverter, please Keep the base level.The installation distance between the base and the wall shall be 30mm.

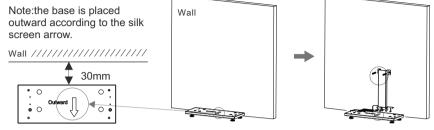


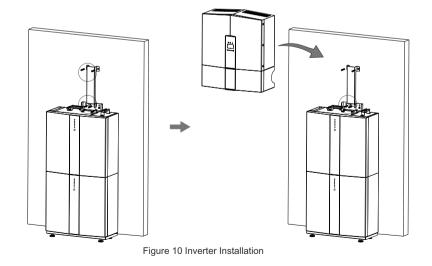
Figure 9 Base installation diagram

2.2.1 Option 1: If use the recommend HEC-S B battery pack

Step 2 Install the HEC-S B device firstly, please check the HEC-S B installation manual.

Step 3 Inverter Installation. Put the inverter on the top of HEC-S B battery pack.

Step 4 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. Please refer the Figure 10 and Figure 11.



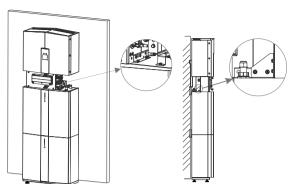


Figure 11 Inverter Installation on the Wall

2.2.2 Option 2: If only use the base

Step 5 Assemble the inverter mounting panel on the base.Position the battery parallel to the wall and use a Φ 8mm drill to drill holes at a depth of about 70mm in the wall for sub sequentfixation of the mounting plates.

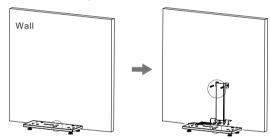


Figure 12 assemble the inverter mounting panel on the base Step 6 Hang the inverter onto the inverter mounting panel as Step 4

2.2.3 Option 3: Only install the inverter without Base and HEC-S B battery

Step 7Install a tripod Angle support on suitable height of the wall, assemble the inverter mounting panel.Then hang the inverter onto the inverter mounting panel as Step 4

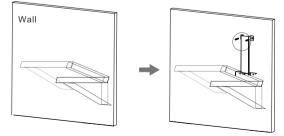


Figure 13 assemble the inverter mounting panel on the tripod angle support

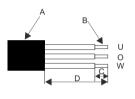
Step 8 Please make AC cables on site.

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

For all AC connections, $4-10mm^2$ 105 XJ cable is required to be used. Please make sure the resistance of cable is lower than 1 ohm. If the wire is longer than 20m, it's recommended to use $10mm^2$ cable.

WARNING:

There are "L" "N" " \doteq " symbols marked inside the connector, the Line wire of grid must be connected to "L" terminal; the Neutral wire of grid must be connected to "N" terminal; the Earth of grid must be connected to " \pm "

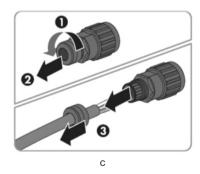


-		i		
Object	Description	Value		
А	External diameter	12mm to 18mm		
В	Copper conductor cross-section	4mm ² to 10mm ²		
С	Stripping length of the insulated conductors	approx.13mm		
D Stripping length of the outer sheath of the AC cable approx.53mm				
The PE conductor must be 10mm longer than the L and N conductors				

b. Insert the conductor into the suitable ferrule acc. to DIN 46228-4 and crimp the contact.



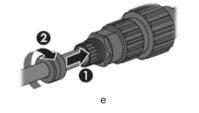
c. Unscrew the swivel nut from the threaded sleeve and thread the swivel nut and threaded sleeve over the AC cable.



d. Insert the crimped conductors L, N and PE into the corresponding terminals and tighten the screw with a hex key wrench screwdriver(size:2.5, 1.2~2.0 N.m). Ensure that all conductors are securely in place in the screw terminals on the bush insert.

d

e. Screw the swivel nut onto the threaded sleeve. This seals the AC connector and provides strain relief for the AC cable. When doing so, hold the bush insert firmly by the locking cap. This ensures that the swivel nut can be screwed firmly onto the threaded sleeve.



f. Assembly the plug shell ,adapter as below picture, Push the adapter and Shell by hand until a "Click" is heard or felt.



g. Plug the AC connector into the jack for the AC connection by hand until a "Click" is heard or felt.

щ Figure 16

(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

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.

(8) Use tool to clamp the AC wiring terminal and wire rod; screw the nut, but do not

Once the terminal is connected to the right site of the inverter, tighten the nut.

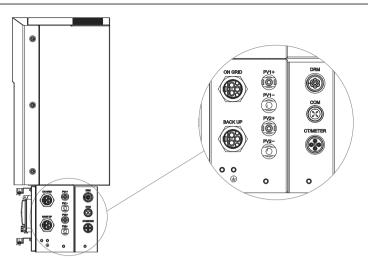
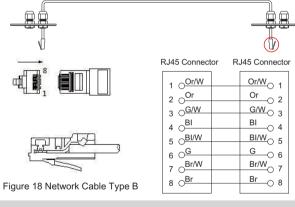


Figure 17 Cable Box Bottom View, Wiring Connectors Step 9 Note: this step only suitable when use HEC-S B 5/10/15/20K batter pack. Take out the communication cable set provided in the accessory parts of one H5/H3-BAT, cut o ffone end and crimp a new RJ45 connector. If there are two batteries, you only need to remake one of battery communication cable on site.

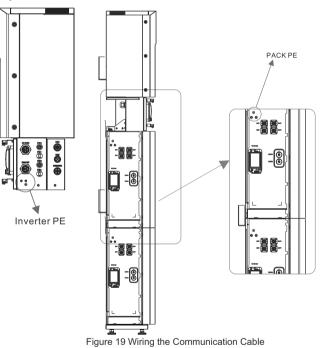




The communication cable is in type B, see Figure 18. Leave the power cables and communication cables hanging on outside. Leave the device aside.

Step10 If use HEC-S B 5/10/15/20K batter pack, 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).

If use other brand battery pack, please send the battery BMS information to inverter manufacture to do communication matching test at frstly, then can connection. Please choose the suitable battery cable, then connect battery pack positive terminal to BAT+ port, connect battery pack negative terminal to BAT- port. Then use the communication cable to connect Battery pack's BMS terminal to COM port of the hybrid inverter.



NOTE:

Only the HEC-S B 5/10/15/20K battery pack can connect with the inverter directly. Other battery pack should do matching test at firstly by inverter manufacture and obtain permission from inverter manufacture, then can connect with the HEC-S 3/5K hybrid inverter

NOTE:

Grounding protection: The inverter grounding protection terminal is permanently connected. the batteries are connected by green rolling yellow wire with wire diameter of 10AWG or above. The grounding wire of the main battery pack needs to be connected to the inverter, and the whole energy storage system needs to be connected to the grounding system.



The PV and AC connection terminals are permanently fixed, and the battery input connection terminals are plug-in connections.

Step11 Connection to hybrid inverter

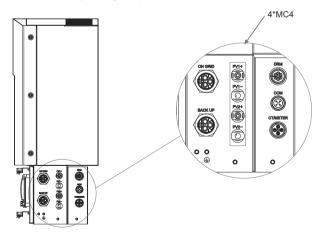
PV connection: The PV modules used to connected to this inverter shall be Class A rating certified according to IEC61730. When selecting proper PV modules, please be sure to consider below parameters:

1) Open circuit Voltage (Voc) of PV modules not exceeds max. PV array open circuit voltage ofinverter.

2) Open circuit Voltage (Voc) of PV modules should be higher than min. start voltage. Connection step:

1) Switch the Grid Supply Main Switch(AC) OFF and the DC isolator OFF.

2) Connect the PV array cable to the PV-MC4 connectors. Connect the PV array positive PV-MC4 connector to the inverter PV+ port, and connect the PV array negative PV-MC4 connects to the inverter corresponding PV-port.



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.

Step12 Close the lid and tighten the screw.

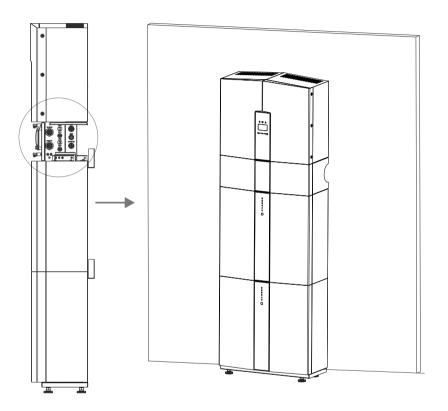


Figure 22

Figure 21 PV Wiring

Step13 Commissioning

After the installation of the hybrid inverter completed, in order to ensure the normal operation of the inverter, it is necessary to check the connected battery, PV and grid input parameters according to the following steps.

a. If you install the HEC-S 5/10/15/20B battery pack, manually press the reset button of the battery pack touch screen for 3-5S, then turn on the battery switch of both the battery pack and the hybrid inverter after the green light of the capacity indicator on the battery pack touch screen is on and there is no red light alarm indication, and check the screen 4.2.4 Battery and 4.2.5 Battery Parameter interfaces after the inverter LCD screen is on for 5-10S, and check whether the temperature, voltage and capacity are normal (the temperature determination is roughly based on the current ambient temperature of the system, the voltage determination is in the range of $50V \pm 3V$, and the capacity determination is 100Ah for a single battery pack, when multiple battery packs are connected in parallel, the capacity is the number of battery packs multiplied by 100Ah).

b. After PV input connected and PV switch of the hybrid inverter closed, check whether the voltage display on the 4.2.1 and 4.2.2 PV input display interface is normal.

c. After connecting to the grid, check whether the voltage display on the 4.2.7 Grid-connected output interface is normal.

NOTE:

The inverter's built-in residual-current monitoring unit (RCMU) removes DC residual current above 6mA, so an external RCD (type A) can be used with the system (\geq 30mA).

NOTE: There is no temperature sensor port integrated in the machine.

! NOTE:

An inverter with storage connections will need to provide a means for temperature compensation of the battery charge voltages. This is particularly important for use with lead acid batteries in warm climates, to avoid damage to battery banks by overcharging in hot weather, and related hazards due to release of hydrogen gas and cell rupture. Most stand-alone inverters control this function via a remote temperature sensor with is attached to the battery bank.

The HEC-S 3K and HEC-S 5K doe not include a connection terminal for a remote battery temperature sensor. If installing HEC-S 3K and HEC-S 5K with lead acid batteries please check with Hiconics Eco-energy technology Co., Ltd for advice regarding charger setting.

NOTE:

Recommended AC circuit breaker rating is 32A.

External load breaking switches are required that conforms with the requirements of AS/NZS 4777.1 and other local standards

It is necessary to disconnect the power line, communication line and communication line between battery pack and inverter to manually sleep all battery packs.

STATEMENT:

The method of anti-islanding protection frequency shift.

NOTE:

The inverter should not be installed in multiple combination.

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.

Pin	Description	Pin	Description
1	CT positive electrode(White)	3	RS485-A
2	CT negative pole(Black)	4	RS485-B
	A &		- (1)

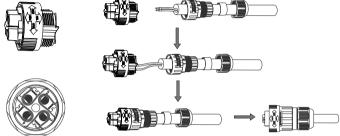
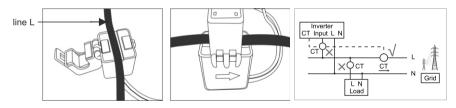


Figure 25

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.

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

Export Limit Control: The function of export limit is to control the amount of power feed-in in the grid by the hybrid inverter. This function is also called as Zero export. Please note: Customer can only use export limit control function by CT or meter.

To set export limite, please use following path:

1.SETUP (PASSWORD : 00000) ->1.SYS SETTING ->3.ZERO EXPORT->2. POWER

Generation Limit control: Through above export limit control can realize limit PV system generation, another method to control the PV system generation power is limiting the hybrid inverter output power, the setting path as follows:

1.SETUP (PASSWORD : 00000) ->4.RUN SETTING ->2. GRID POWER

2.4 DRED Port Connections

DRED means demand response enable device. The AS/NZS 4777.2:2020 required inverter need to support demand response mode(DRM). This function is for inverterthat comply with AS/NZS 4777.2:2020 standard. Inverter is fully comply with all DRM. A 6P terminal is used for DRM connection.

The default state of DRM/RRCR function is disabled. Only when the "DRM enabled" is enabled, the function will be activated according to the specfic grid code(e.g., Australia, Germany or UK)

Pin	DRED	RRCR	Remote Shutdown
1	DRM 1/5	DI_1	
2	DRM 2/6	DI_2	
3	DRM 3/7	DI_3	
4	DRM 4/8	DI_4	REF_1
5	RefGen	Ref_2	DY_IN
6	Com/DRM0		

Please follow below figure to assemble DRM connector.

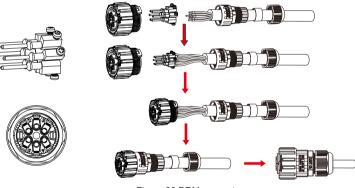
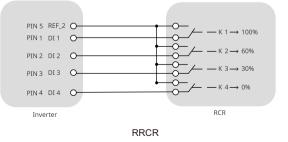


Figure 26 DRM connector

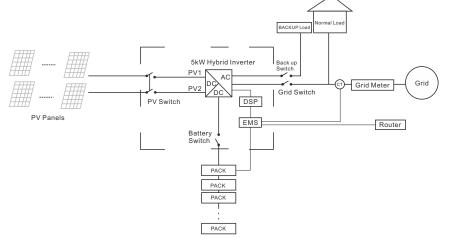


2.5 Earth Fault Alarm Connection

The inverter complies with IEC 62109-2 13.9. The fault indicator LED on the inverter cover will light up and the LCD screen will show an error code of F07 indicating the earthing fault. The inverter should be installed at eye level for convenient maintenance. The product is to be installed in a high traffic area where the fault is likely to be seen.

2.6 Single Line Diagram

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



BACKUP L 5kW Hybrid Inverter Back up Switch AC Grid Meter Grid Grid Switch DSP EMS Router Battery Switch \ PV Meter PACK PACK PV Inverter **PV** Panels PACK PACK

Figure 28 AC-coupled system

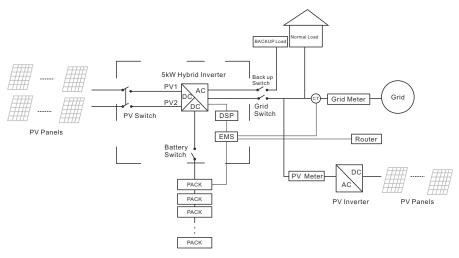
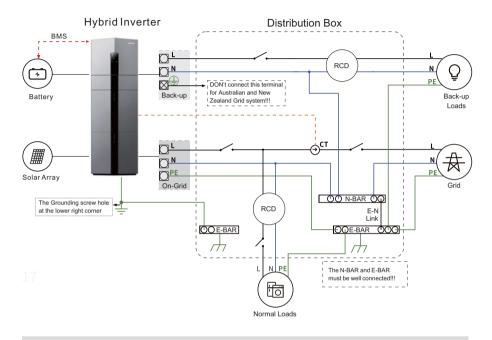


Figure 29 Hybrid-coupled system

Figure 27 DC-coupled system

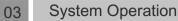
2.7 Wiring Diagram

In accordance with Australian safety regulations, the neutral cables of the on-grid side and the back-up side must be connected together, otherwise the back-up function will not work.



/!\ NOTE:

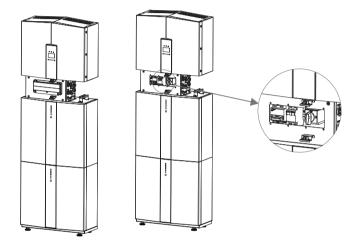
The continuity of the neutral conductor to the load from the electrical installation is not interrupted when the inverter is operating in stand-alone mode, disconnected from the grid and supplies a load via the stand-alone port



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. External control and protection requirements: the PV port needs to be connected to the disconnector, which is externally connected to the photovoltaic panel, and the battery output is connected to the battery through the external circuit breaker (Note: PV disconnector requirements: rated voltage > 600V, rated current > 15a); Requirements for battery circuit breaker: rated DC voltage > 60V, rated current > 100A

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

Step 5: Turn on the battery units connect with the inverter.

3.2 Switch Off

Step 1: Turn off all of the battery units connected with the inverter.

Step 2: Open cable box outer shell and turn off the battery switch in the inverter.

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 HEC-S 5B/3B 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 company can analyse and solve the fault. Any operation of equipment during a fault is strictly forbidden, please contact company as soon as possible.

4.As battery cells contain a little oxygen inside and all cells have got explosion-proof valves, explosion hardly happens.

3.3.2 Fire

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

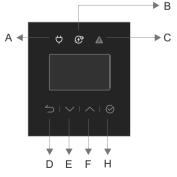


Figure 30 HEC-S 5K/3K EMS Interface

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

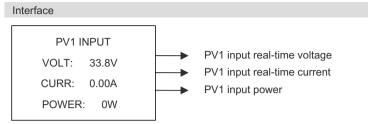
LED Indicator Description

Table 4.1 LED working status indication

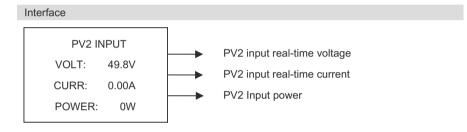
Status	Normal/Alarm	ON/ OFF	RUN	ALM		Power indicator LED					Instructions
	FIOLECLION	٠	•	٠	٠	٠	•	•	•	•	
Shut down	dormancy	off	off	off	off	off	off	off	off	off	All off
Standby	Normal	light	Flash one time	off		According to battery indicator					standby mode
Stanuby	Alarm	light	Flash one time	Flash three times	5						Module low voltage
Charge	Normal	light	light	off							The maximum power LED flashes twice.
	Alarm	light	light	Flash three times	not flash w				and the ALM does not flash when an overcharge alarm occurs		
	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
	Normal	light	Flash three time	s off							
	Alarm	light	Flash three times	Flash three times	According to battery indicator						
	Undervoltage protection	light	off	off	off	off	off	off	off	off	Stop discharging
Discharge	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

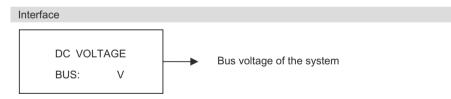
4.2.1 PV1 input display interface



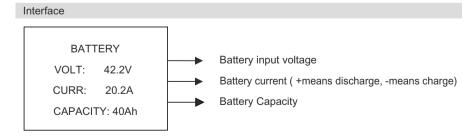
4.2.2 PV2 input display interface



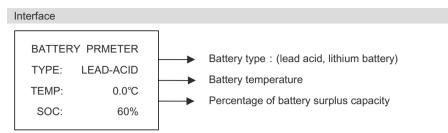
4.2.3 Bus voltage



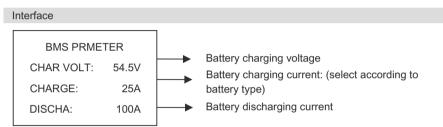
4.2.4 Battery



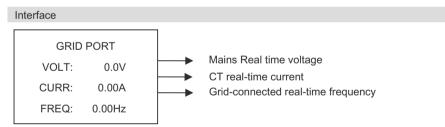
4.2.5 Battery Prmeter



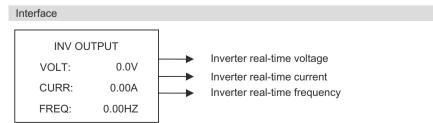
4.2.6 BMS parameters



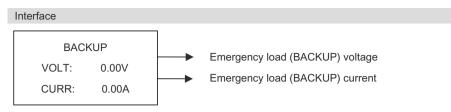
4.2.7 Grid-connected output



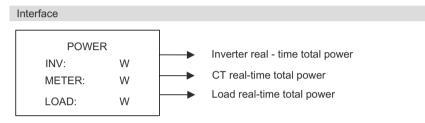
4.2.8 Inverter output



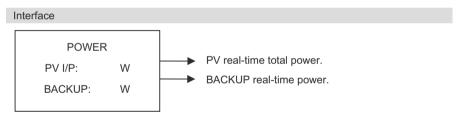
4.2.9 Load



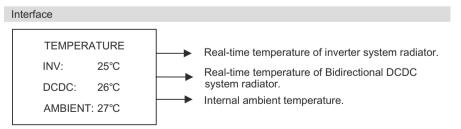
4.2.10 Power



4.2.11 Power



4.2.12 Temperature



4.2.13 Status information

Interface		Description
	STATE ERROR STANDBY	System information: Power-up mode, standby mode, hybrid grid-connection, off-grid operation, mains charging mode, PV charging mode, by pass mode, fault mode, DSP programming, ARM programming. INV: standby mode, off-grid inverter mode, grid-
DCDC:	STANDBY	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, discharging 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 self-consumption, Peak load shifting,and Battery priority.
SYSTEM STATE: PEAKS HIFT GRID STD: China PV I/P ⁻ INDEPN	Grid-connection standards :China,Germany, Australia, Italy, Spain, UK, Hungary, Belgium, Western Australia, Greece, France, Bangkok, Thailand, local and 60Hz.
	PV input mode :independent connection,parallel connection,constant voltage.

Press ESC button to enter user setting.

4.2.16 User setting

Interface	Description
-USER- →1:SETUP 2:INQUIRE 3:STATISTIC	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
-PASSWORD- INPUT: XXXXX	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; 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

14:AUTO TEST

Interface	Description
SETUP →1:SYS SETTING 2:BAT SETTING 3:GRID STD 4:RUN SETTING 5:485 ADDRESS 6:BAUD RATE 7:LANGUAGE 8:BACKLIGHT 9:DATE/TIME 10:CLEAR REC 11:PASSWORD 12:MAINTENANCE 13:FCTRY RESET	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. 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:ZERO EXPORT 4:DRM ENABLE 5:EPS ENABLE 6:REMOTE CTRL 7:START DELAY 8:CEI SPI CTRL 9:GFCICHK ENB 10:DISC MODE 11:DOD ENABLE 12:GENERATOR 13:CT OR METER 14:AC COUPLE 15:CT DIRECTIO 16:RS485 P ctrl	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. There are 16 options in total, including working mode, PV input type, zero export enable, DRM enable , EPS enable, remote controlled enable , start delay. (see from 1 to 16)			

① Working mode

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

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

Interface	Description
CHARGE FROM GRID 1:DISABLE →2:ENABLE	1.DISABLE 2.ENABLE After selecting self consume mode, the setting of charge from grid can be disabled or enabled. If enabled, the charging time setting page will be displayed.

CHARGE TIME
00:00-23:59 MAX SOC:100%

Self-consumption mode disables grid charging:
 Battery pack can only be charged by PV.
 Self-consumption mode enables grid charging: Grid charges battery pack until MAX SOC during set time.

Time setup

Interface		Description
CHA STAR1: CHA REND1: DIS START1: DISC END1:	00:00 00:00 00:00 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: CHA REND2: DIS START2: DISC END2:	00:00 00:00 00:00 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	Setup of PV Input mode.
→1:INDEPENDANT	The factory setting by default is standalone mode.
2:PARALLEL	When parallel input is set to be stand-alone mode,
3:CV	PV power will be imbalanced.

③ZERO EXPORT

Interface	Description
ZERO EXPORT	Back-flow-prevention function.
→1:DISABLE	Default option is disabling.
2:ENABLE	Generation limit control-soft limit/hard limit setting.

④ DRM enable

Interface	Description
DRM ENABLE →1:DISABLE 2:ENABLE	Only applicable in Australia and New Zealand. 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.

6 Remote 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 va different sta

The input value ranges from 20 to 300, which varies with different standards.

⑧ CEI SPI CTRL

Description

-CEI SPI CTRL-	
→1:DISABLE	
2:ENABLE	

CEI SPI CTRL:(1. Disable 2. Enable) When the DRM signal is enabled, this is used as a local signal. When the DRM signal is enabled, when the CEI SPI Ctrl is enabled, the frequency range is 50.2Hz ~ 49.8Hz. When the CEI SPI Ctrl is disabled, the frequency range is 51.5Hz ~ 49.8Hz

③ GFCICHK ENB

Interface	Description
-GFCICHK ENB- 1:DISABLE →2:ENABLE	GFCICHK ENB(1.Disable 2.Enable) PV leakage protection enable

1 DISC MODE

Interface	Description
-DISC MODE- →1:RATED POWER 2:LOAD PRIO	DISC MODE (1.Rated Power, 2. Load Prio) This is only for test.

1 DISCHGDEPTH

Interface	Description
-DISCHGDEPTH- 1:DISABLE →2:ENABLE	Discharge depth enable (1. Disable 2. Enable) : enable discharge depth. When the SOC of the battery is less than the discharge depth set by 1 -, the battery will no longer discharge, and alarm the low capacity of W13 battery. Set the discharge depth in the battery parameter setting.

12 GENERATOR

nterface	
-GENERATOR-	
1:DISABLE →2:ENABLE	

Description

Generator mode enabling (1. Disable 2. Enable) when the generator needs to be connected for AC measurement, the enabling generator mode is prohibited, and the generator mode is prohibited in other times. In the mode of enabling generator, the frequency protection range measured by AC will be relaxed to + -10%, the frequency protection range at 50Hz is 45Hz~55Hz, and that of 60Hz is 54Hz~66Hz.

(13) CT OR METER

Interface	Description
-CT OR METER- 1:CT →2:METER	CT or meter (1.CT 2.meter): the energy storage inverter supports the connection of three-phase ammeter. Replace CT with three-phase ammeter to detect the utility power. When connecting three-phase ammeter, select "ammeter" option, and when connecting CT, select "CT" option

(14) AC COUPLE

Interface

Description

When ESS connects to other inverter by AC side, with other inverter charging PACK , please enable AC couple.

(5) CT DIRECTION

-AC COUPLE-

1.DISABLE

→2.ENABLE

Interface	Description
-CT DIRECTION- →1.POSITIVE 2.NEGATIVE	If the CT connection is reversed, there is no need to change the direction actually but only set the direction on the interface by changing 1.POSITIVE to 2.NEGATIVE or 2.NEGATIVE to 1.POSITIVE ,which is equivalent to changing the direction of the CT wiring . For example, when the battery is being charged and the grid power is positive "+", it means the CT connection is reversed. If the CT direction is 1. POSITIVE on the LCD, set it to 2. NEGATIVE, then the grid power will

become negative "-".

16 RS485 P ctrl

Interface	Description
-RS485 P ctrl- 1.DISANLE →2.ENABLE	 Enable for enabling the function that allows adjusting the active power by RS485 commands. Disable by default.

4.3.2 Battery parameters

Interface	Description
BAT SETTING → 1:BAT TYPE 2:DISC-DEPTH 3:OFF GRID DOD 4:CHG CURR 5:DISC POWER 6:CHG POWER 7:BAT END VOLT 8:BAT WAKE-UP 9:HEATING FLIM 10:BMS DOD 11:MAINTAIN SOC 12:FORCE 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. (see from 1 to 12)

① Battery type

Interface

Interface

ace	Description
BAT TYPE 1:LEAD-ACID →2:LFP	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;

Lead-acid battery parameter

face	Description
LEAD-ACID →1:FLOAT VOLT 2:EQUALT VOLT 3:BAT CAP 4:BAT OVP	This interface is used to select other lead-acid 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
iaabarga danth	over voltage protection .

② Discharge depth

Interfa	ace		
	DISC D	EPTH	
	INPUT:	60	
	UNIT:	%	

Description

Grid connected discharge depth: the maximum allowable discharge depth of the machine with normal grid connection. If the grid connected discharge depth is set to 80%, when the SOC of the battery is lower than or equal to 20% with normal grid connection, the battery will stop discharging. 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 95%.

46

③ OFF GRID DOD

Interface	Description
	Off grid discharge depth: the maximum allowable discharge depth of the machine in off-grid mode in case of grid power failure. The settable range is 0~100%. If the off grid discharge depth is set to 90%, when the SOC of the battery is less than or equal to 10% with grid power failure, the battery will stop discharging. Relationship between off grid discharge depth and grid connected discharge depth. Grid connected discharge depth < off grid discharge depth. Off grid discharge depth - grid connected discharge depth = off grid standby SOC. For example, if the grid connected discharge depth is set to 80%, and the off grid discharge depth is set to 90%, the battery will stop discharging if the SOC is equal to or lower than 20% with normal grid connection. When the grid power is off, the inverter will run in off-grid mode. At this time, 10% SOC of the battery can supply power to important loads.
OFF GRID DOD INPUT: 090 UNIT : %	

④ 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.

⑤ 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;
6 Charge Power	Press ESC button to move cursor forward and return to battery parameters interface.

Interface	Description
CHAR PERCENT	Press UP/DOWN button to increase or decrease the input figure;
INPUT: 020%	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.

⑦BAT END VOLT

Interface	Description
BAT END VOLT INPUT: 43.2 UNIT: V	This function is used to set the discharge cut-off voltage.When select the battery type as LFP , the default value is 43.2 V and the setting range is between 40.0 V to 48.0 V.

® BAT WAKE-UP

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

Bat Wake Time

Interface	Description
WAKE-UP TIME INPUT: 060min HEATING FILM	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;

9

Interface	Description
HEATING FILM →1:AUTOMATIC 2:ON 3:OFF	 This setting is only applicable for battery packs with heating film. 1. "Automatic" means that the system detects the external temperature and opens the heating film as required. 2. "On" means that the heating film will be turned on immediately after selecting "On". 3. "Off" means that the heating film will be turned off

immediately after selecting "Off". It is Automatic by default.

10 BMS DOD

Interface	Description
BMS DOD →1:DISABLE 2:ENABLE	 Disable BMS DOD: It will not close the discharge circuit when BMS discharging to the set SOC. Enable BMS DOD: It will close the discharge circuit when BMS discharge to the set SOC. Note that don not enable BMS DOD unless there's a special reason.
1 MAINTAIN SOC	Teason.
Interface	Description
MAINTAIN SOC 1:DISABLE →2:ENABLE	 Disable: The minimum SOC will not be maintained. Enable: The minimum SOC 2% is maintained. When the battery SOC is less than 2%, the grid charges the battery pack to 5% through the inverter.
¹² FORCE WAKE	
Interface	Description

(12

FORCE WAKE →1.DISABLE 2.ENABLE	 Disable: Do not force to wake up battery packs. Enable: Force to wake up the battery pack immediately if the battery is not connected.

4.3.3 Grid standard

Interface	Description
GRID STD → 1:China 2:Germany 3:Australia 4:Italy 5:Spain 6:U.K. 22:Local 23:60Hz 24:Denmark	Press=JP/DOWN button to move corresponding options. Here are 24 standards for selection, including China, Germany, Australia, Italy, Spain and U.K. Press ENTER button to confirm the selection and enter restart interface ; Press ESC button to cancel the selection and return to ±etting interface.
GRID STD 1.AUS-A → 2.AUS-B	Australia A / B / C setting.

--GRID STD-- \rightarrow 9.New Zealand 10.Greece 11.France

3.AUS-C

stralia A / B / C setting.	

New Zealand setting.

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:OVER VOLT 8:UNDER VOLT 9: OVER FREQ 10:UNDER FREQ 11:REACT RESP 12:VRT_ENABLE 13:POW SI RATE	Press UP/DOWN button to move corresponding options; Press Enter to enter the selected menu; Press ESC button to return to setting interface. 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
	Press UP/DOWN button to move corresponding options:
-REACT MODE-	Press Enter to confirm the input and enter power
→1:POWER FACTOR 2:REACT POWER 3:QU CURVE	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
4:QP CURVE	the parameter setting interface.) Press ESC button to cancel the input and return to operation parameters interface.

Power factor setting

Int	Interface	
	-POWER FACTOR-	
	INPUT: C1.00	
	Value range	
	(L1.00~C1.00)	

Description

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%	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;
Value range (-60%~+60%)	The input value should range between -60% and +60%, which varies with the standard.

② Grid-connected power

Interface	Description
-GRID PERCENT- INPUT: 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
Value range (0~100)	interface; The input value should range between 0 and 100. Export limit control-soft limit/hard limit setting.

③Volt Max

Interface	Description
-VOLT MAX - →1:INV MAX 2:GRID MAX	Enter option 1 to adjust the maximum volt of the INV. Enter option 2 to adjust the maximum volt of the grid.

High INV voltage

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

GRID VOLT MAX

Interface	Description
-GRID MAX- INPUT: 270V	GRID Over Voltage Protection Point Press UP/DOWN to adjust the input figure; Press Enter to confirm the input.

④Volt Min

Interface	Description
-VOLT MIN- →1:VAC-MIN 2:GRID MIN	Enter option 1 to adjust the minimum volt of the INV. Enter option 2 to adjust the minimum volt of the grid.

Low INV voltage

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

Grid Volt Min

Interface	Description
-GRID MIN- INPUT: 170V	GRID Low Press UP/D Press Enter

GRID Low Voltage Protection Point

Press UP/DOWN to adjust the input figure; Press Enter to confirm the input.

⑤Freq Max

Interface	Description
-FREQ MAX-	Enter option 1 to adjust the maximum
→1:INV-MAX	frequency of the INV. Enter option 2 to adjust
2:GRID MAX	the maximum frequency of the grid.

High INV frequency

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

GRID Freq Max

Interface	Description
-GRIDMAX- INPUT: 53.5Hz	GRID Over Frequency Protection Point Press UP/DOWN to adjust the input figure; Press Enter to confirm the input.

6 Freq Min

Interface	Description
	7
-FREQ MIN-	Enter option 1 to adjust the minimum frequency
→1:INV MIN	of the INV. Enter option 2 to adjust the minimum
2:GRID MIN	frequency of the grid.

Low INV frequency

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

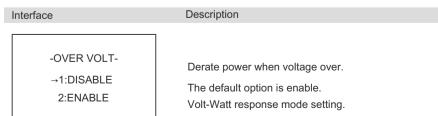
GRID Freq Min

Interface	Description
-GRID MIN- INPUT: 50.5Hz	GRID Low Frequency Protection Point Press UP/DOWN to adjust the input figure; Press Enter to confirm the input.

⑦OVER VOLT

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

OVER VOLT ENABLE



OVER VOLT START

Interface	Description
-OVER START- INPUT: 264V	Press UP/DOWN to adjust the input figure; Press Enter to confirm the input. Volt-Watt response mode setting.

®UNDER VOLT

Interface	Description
	Enter the option 1 to enable or disable the function
-UNDER VOLT-	that the power of inverter derates when voltage is
→1:ENABLE	too low. Enter the option 2 to adjust the exact value of
2:VOLT	the voltage when power start to derate.
	Volt-Watt response mode setting.

UNDER VOLT ENABLE

Interface	Description
-UNDER VOLT-	Enable or disable the function that the power of inverter
→1:DISABLE	derates when voltage is too low.
2:ENABLE	Volt-Watt response mode setting.

UNDER VOLT START

Interface	Description
-UNDER START- INPUT: 200V	Press UP/DOWN to adjust the input figure; Press Enter to confirm the input. Volt-Watt response mode setting.

⑨OVER FREQ

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

OVER FREQ ENABLE

Interface Description -OVER FREQ Derate power when frequency over. →1:DISABLE The default option is enable.

OVER FERQ START

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

10 UNDER FREQ

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

UNDER FREQ ENABLE

Interface	Description
-UNDER FREQ- →1:DISABLE 2:ENABLE	Derate power when frequency is too low. The default option is enable.

UNDER FERQ START

Interface		Descrip
-UNDER FI INPUT:	ERQ START- 50.50Hz	The fu when f adjust

Description 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.

1 REACT RESP

Interface	Description
-REACT RESP- 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.

@ VRT_ENABLE

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

⁽³⁾ POW SI RATE

Interface

Description

-POW SI RATE-INPUT: 250% The input value of power rising rate. Default value is 250%.

4.3.5 485 Address

Interface	Description
-485 ADDRESS-	Press UP/DOWN button to adjust the input figure;
INPUT:1	Press ENTER button to confirm or ESC button to
Value range	cancel the input and return to setup interface;
(1~32)	The input value should range between 1 and 32.

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-	Press UP/DOWN button to move corresponding
→1:中文	options;
2:ENGLISH	Press ENTER button to confirm or ESC button to
3:ITALIA	cancel the selection and return to setup interface;

4.3.8 LCD backlight

Interface	Description
-LIGHT TIME- INPUT: 20 UNIT: SEC	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

DATE/TIMEPress UP/DOWN button to adjust the input figure; Press Enter button to move cursor backward, confirm input and return to setup interface;	Interface	Description
TIME:10:01:12 return to setup interface;	DATE:2020-07-19 TIME:10:01:12	Press Enter button to move cursor backward, confirm input and return to setup interface; Press ESC button to move cursor forward and

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

4.3.12 Maintenance

nterface	Description
→12:MAINTENANCE	Maintainer use only.

4.3.13 Factory default setting

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

4.3.14 AutoTest

Interface	Description
PASSWORD INPUT: XXXXX	The Auto test function works only in the Italy grid standard. After entering the Auto test interface, the system will prompt to input password; The password is"00000".
Interface	Description
Auto test 603 s	The self-test countdown interface. This interface will show up at the beginning of the self-test. The countdown will last for 603 seconds. You can press the ESC Key to exit the self-test.
Interface	Description
TEST LIST 1:VOLT MAX →2:VOLT MIN 3:FREQ MAX 4:FREQ MIN	After the countdown there is a test list interface which is used to select the parameter for Autotest. There are four kinds of test results including Volt Max ,Volt Min ,Freq Max and Freq Min. After entering the submenu items, you can press the UP and Down key to scan the result.

erface	Description	Interface	Description
VACMAX(S1) Set:253.0V 603s Tes:253.0V 603s Cur:230.0V Pass!	 Threshold setting value: The value set by upper computer software. Threshold setting trip time: The trip time set by upper computer software. Threshold auto test value: The value of threshold during coincidence between the threshold and current measured value. 	FACMIN(S1) Set:49.8Hz 100ms Tes:49.8Hz 97ms Cur:49.9Hz Pass!	 Threshold setting value: The value set by upper computer software. Threshold setting trip time: The trip time set by upper computer software. Threshold auto test value: The value of threshold during coincidence between the threshold and
VACMAX(S2) Set:264.0V 190ms Tes:264.0V 188ms Cur:230.0V Pass!	 Threshold auto test trip time: The time from the coincidence between the threshold and current to the trip signal of disconnection switch. Current measured voltage or frequency value: The measurement value of grid voltage or frequency during the coincidence. 	FACMIN(S2) Set:47.5Hz 100ms Tes:47.5Hz 94ms Cur:49.9Hz Pass!	 current measured value. Threshold auto test trip time: The time from the coincidence between the threshold and current to the trip signal of disconnection switch. Current measured voltage or frequency value: The measurement value of grid voltage or
erface	Description		frequency during the coincidence.
	 Threshold setting value: The value set by upper computer software. 	4.4 Inquiry	Description
VACMIN Set:195.0V 1.52s Tes:195.0V 1.50s Cur:230.0V Pass!	 Threshold setting trip time: The trip time set by upper computer software. Threshold auto test value: The value of threshold during coincidence between the threshold and current measured value. Threshold auto test trip time: The time from the coincidence between the threshold and current to the trip signal of disconnection switch. Current measured voltage or frequency value: The measurement value of grid voltage or frequency during the coincidence. 	INQUIRE →1:INV MODULE 2:MODULE SN 3:FIRMWARE 4:REGION 5:RUN SETTING 6:RECORD 7:BMS INFO	Press UP/DOWN button to move corresponding option Press Enter button to jump to the selected menu; Press ESC button to return to user interface; There are four alternative options: machine model, serial number, firmware version and running records (refer to 1 to 7).
erface	Description	 Machine model 	
FACMAX(S1) Set:50.2Hz 100ms Tes:50.2Hz 94ms Cur:49.9Hz Pass!	 Threshold setting value: The value set by upper computer software. Threshold setting trip time: The trip time set by upper computer software. Threshold auto test value: The value of threshold during coincidence between the threshold and 	Interface INVERTER HEC S 3B5	Description This interface displays machine model of the inverter Press ESC button to return to inquiry interface.
FACMAX(S2)	current measured value. Threshold auto test trip time: The time from the 	② Serial number	Description
Set:51.5Hz 100ms Tes:51.5Hz 94ms Cur:49.9Hz Pass!	 The time from the coincidence between the threshold and current to the trip signal of disconnection switch. Current measured voltage or frequency value: The measurement value of grid voltage or 	Interface -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	This interface displays firmware version for ARM
ARM VER:1.0.0	and DSP of the inverter;
DSP VER:1.0.0	Press ESC button to return to inquiry interface.

Description

④ REGION

Interface	;
	REGION

Aus-A

This interface displays the current selection of region. Press ESC button to return to inquiry interface.

⑤RUN SETTING

Interface	Description
RUN SETTING Grid POWER:100% VOLT MAX:270 V INV VOLT MIN:200 V GRID VOLT MIN:170 V INV FREQ HIGH:52 Hz GRID FREQ MAX:53.5 Hz INV FREQ LOW:48 Hz GRID FREQ MIN:50.5 Hz OVER VOLT:264 V UNDER VOLT:200 V OVER FREQ:50.5 Hz UNDER FREQ:49.5 Hz	This interfa protection a Note that th for view. Press ESC

This interface displays the current settings for grid protection and power quality response modes. Note that the parameters here are only available for view. Press ESC button to return to inquiry interface.

6 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.

Description

⑦ BMS INFO

Interfa	ace	
	PACK IN →1:PACk 2:PACK 3:PACK 4:PACK	< 1 2 3 4
	5:PACK	.5
S C H C D V P	ERSION: TATUS: C YCLE CNT: EAT FILM: HAR MOSFE ISC MOSFE VARN CODE ROTECT: AULT CODE	0NLINE 15 0FF ET: 0FF T: 0FF : 12 32

You can query the following information about the five battery packs: BMS program version,Whether the battery pack is online,Number of battery pack cycles,Heating film state, heating film open or closed,Charging MOS tube status: charging MOS off or on,Discharge MOS tube status: discharge MOS off or on,Battery pack BMS alarm code,Battery pack BMS protection code,BMS fault code of the battery pack.

4.5 Statistics

Interface	Description
	Press UP/DOWN button to move corresponding
STAT →1:TIME STAT. 2:CONNE. TIMES 3:PEAK POWER 4:E-TODAY 5:E-MONTH 6:E-TEAR 7:E-TOTAL	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: HOUF	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.

④The day

Interface	Description
E-TODAY PV: 0.0KWH METER: 0.0KWH GRID: 0.0KWH LOAD: 0.0KWH CHARG: 0.0KWH DISCH: 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 METER: 0.0KWH GRID: 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 METER: 0.0KWH GRID: 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;

User Manual

⑦ Gross generation

Interface	Description
E-TOTAL- PV: 0.0KWH METER: 0.0KWH GRID: 0.0KWH LOAD: 0.0KWH CHARG: 0.0KWH DISCH: 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;

4.6 Restart

Interface

Description

```
Please Restart!
```

4.7 Menu tree

		111050000000000000000000000000000000000	CHARGE FROM GRID	CHARGE TIME	
	1. WORK MODE	1. SELF CONSUME	1. DISABLE	00:00-23:59	
			2. ENABLE	MAX SOC: 100%	
		2, PEAK SHIFT	PEAK SHIFT		
			TIME SETTING	CHA STAR1:00:00	CHA STAR2:00:00
				CHAR END1:00:00	CHAR END2:00:00
				DIS STAR1:00:00	DIS STAR2:00:00
				DISC END1:00:00	DISC END2:00:00
			2、CHARGE		
			3. DISCHG		
		3. BAT PRIORITY	2		
		1. INDEPENDANT			
	2. PV INPUT	2. PARALLEL			
	1080303/0228/80043	3. CV			
3		ZERO EXPORT			
		1. ENABLE	ZERO EXPORT		
	3. ZERO EXPORT		1, DISABLE		
			2. ENABLE		
		2. POWER	ZERO EXPORT		
			INPUT: 0010W		
3	Tradical advertised of the	DRM ENABLE	1 1		
	4. DRM ENABLE	1. DISABLE			
5. EPS ENABLE 6. REMOTE CTRL		2. ENABLE			
		EPS ENABLE			
	1. DISABLE				
	500, 2018-551 (2019) Sec. 7.	2. ENABLE			
	COLOR OF MARKEN COLOR	REMOTE CTRL			
	6. REMOTE CTRL	CTRL 1. DISABLE			
		2, ENABLE			
, SYS SETTING		START-UP DELAY			
7. 5	7. START DELAY	INPUT: 30			
	THE REAL PROPERTY OF THE REAL PROPERTY OF	UNIT: SEC			

		CEI SPI CTRL	
8	8. CEI SPI CTRL	1. DISABLE	i
_		2, ENABLE	-
	CARE OF THE OWNER STOLEN	GFCICHK ENB	
	9. GFCICHK ENB	1, DISABLE	
		2. ENABLE	
		DISC MODE	
	10. DISC MODE	1. RATED POWER	
		2, LOAD PRIO	
	N TOTAL CONTRACTOR	DISCHGDEPTH	
	11. DOD ENABLE	1. DISABLE	
-		2. ENABLE	
		GENERATOR	
	12. GENERATOR	1. DISABLE	
		2. ENABLE	
8		CT OR METER	
3	13. CT OR METER	1. CT	
-		2. METER	
		AC COUPLE	-
	14. AC COUPLE	1. DISABLE	
-	And the second second second	2, ENABLE	
2	STREET, BLOOD BERNELS	CT DIRECTION	
3	15, CT DIRECTIO	1. POSITIVE	
-		2. NEGATIVE	-
		ISLAND	
	16, ISLAND	1. DISABLE	i
		2. ENABLE	
	BAT SETTING		
		BAT TYPE	
	1. BAT TYPE	1. LEAD-ACID	
-		2. LFP	
	2. DISC-DEPTH	DISC-DEPTH	
	Z. DISC-DEFIN	INPUT: 090	
		UNIT: %	
2	3. OFF GRID DOD	OFF GRID DOD	
<i>8</i>	5. OFF GRID DOD	INPUT: 090	
- F		UNIT: %	
	4. CHG CURR	CHARGE CURR INPUT: 060	
	The Child Conde	UNIT: A	
	9	DISC PERCENT	
	5. DISC POWER	INPUT: 100%	
-		CHAR PERCENT	
	6、 CHG POWER	INPUT: 100%	
-		BAT END VOLT	
3	7. BAT END VOLT	INPUT: 43.2	
2. BAT SETTING		UNIT: V	
	8. BAT WAKE-UP		
		BAT WAKE-UP 1: ENABLE	WAKE-UP ENB
			1. DISABLE
		a - addresser	2. ENABLE
		2: TIME	WAKE-UP TIME
			INPUT: 060min
		INCOMPANY DATES	

8. BAT WAKE-UP 1. ENABLE 1. DISABLE 2. TIME WAKE-UP TIME 1. DISABLE 2. TIME WAKE-UP TIME INFUT. 060min 9. HAETING FILM 1. AUTOMATIC 2. 0N 3. OFF BMS DOD 10. EMS DOD 1. DISABLE 11. Maintain SOC 1. DISABLE 1. DISABLE 1. DISABLE 12. Force Wake 2. ENABLE Maintain SOC 1. DISABLE 12. Force Wake 1. DISABLE 2. ENABLE 1. DISABLE 3. AUSTRIA 2. GERMANY Australia 1. AUS-A 3. Australia 1. AUS-A 2. CEIO-21 2. CEIO-21 4. Italy 1. CEIO-21 2. CEIO-21 2. CEIO-21 5. Spain 6. U.K. 7. Hungary 3. Belgium 9. New Zealand 10. Greece 11. France 12. Bargkok 13. Thailand 14. S. Africa 13. Thailand 14. S. Africa 14. S. Africa 15. 0549 16. Brazil 17. VDE0126 18. Ireland 19. Ireland 19. Ireland 19. Ireland 20. Foland Chile		1	BAT WAKE-UP	
8. BAT WAXE-UP 1: ENABLE 1. DISABLE 2. TIME UNEUT. OSCMIN 9. HAETING FILM HAETING FILM 9. HAETING FILM 1. AUTOMATIC 10. BMS DOD 1. AUTOMATIC 10. BMS DOD 1. JISABLE 11. Maintain SOC 1. DISABLE 12. Force Wake 1. DISABLE 13. Australia 1. AUS-A 2. GERMANY 2. ENABLE 13. Australia 1. AUS-A 2. GERMANY 2. GENO 14. Italy 1. CEIO-21 2. CEIO-21 ACEA 5. Spain 6. U.K. 7. Hungary 8. Belgium 9. New Zealand 10. Greece 11. France 11. France 11. France 12. Bangkok 11. TAU 13. Totaliand 14. S. Africa 14. S. Africa 11. TONEO 17. VDEO126 12. CHILE-ET 20. Poland Chile <		0		WAKE-UP ENB
OK MAT WAR OF 2. ENABLE 2. TIME UNATE-UP TIME 9. HAETING FILM 1. AUTOMATIC 9. HAETING FILM 1. AUTOMATIC 10. EMS DOD 10. EMS DOD 10. EMS DOD 1. DISABLE 2. ENABLE 2. ENABLE 11. Maintain SOC 1. DISABLE 2. ENABLE Maintain SOC 11. Maintain SOC 1. DISABLE 2. ENABLE 2. ENABLE 2. ENABLE 2. ENABLE 2. ENABLE 2. ENABLE 2. FORCE WARE 1. DISABLE 2. GRID STD 1. AUS-A 3. Australia 1. AUS-A 2. GETO 3. AUS-C 3. Australia 1. AUS-A 3. Australia 2. CEIO-21 2. CEIO-21 ACEA 5. Spain 6. U.K. 7. Hungary 8. Belgium 9. New Zealand 10. Greece 11. France 12. Bangkok 13. Thailand 14. S. Africa 1. CHILE-BT 20. POland 1. CHILE-BT 20. POland 1. CHILE-B			1: ENABLE	
2. TIME WARE-UP TIME INPUT. OGOmin 9. HAETING FILM 1. AUTOMATIC 2. ON 3. OFF BMS DOD 10. EMS DOD 10. EMS DOD 1. DISABLE 2. ENABLE 2. ENABLE 11. Maintain SOC 1. DISABLE 12. Force Wake 1. DISABLE 12. Force Wake 1. DISABLE 2. GRID STD 1. OISABLE 2. GRID STD 1. China 2. Germany Australia 3. Australia 2. AUS-B 3. Australia 2. AUS-B 3. Australia 2. CEIO-21 2. CEIO-21 2. CEIO-21 2. Spain 6. U.K. 7. Hungary 8. Belgium 9. New Zealand 11. France 11. France 11. France 12. Bangkok 13. Thailand 14. S. Africa 15. 50549 16. Srazil 11. 17. VDE0126 13. CHILE-BT 20. Foland Chile 21. Chile 1. CHILE-BT 22. Local Chile-D <td></td> <td>S. BAT WAKE-UP</td> <td>CONSTRUCTION OF</td> <td></td>		S. BAT WAKE-UP	CONSTRUCTION OF	
2: 11MB INPUT: 060min 9. HAETING FILM 1. AUTOMATIC 2. 0M 3. OFF 10. EMS DOD 1. DISABLE 2. 0M 2. OM 11. Maintain SOC 1. DISABLE 12. Force Wake 2. ENABLE 12. Force Wake 1. DISABLE 12. Force Wake 1. DISABLE 12. Force Wake 1. DISABLE 13. Australia 1. AUS-A 2. GRID STD 1. AUS-A 3. Australia 1. AUS-A 3. Australia 1. AUS-A 3. Australia 1. CEIO-21 2. CEIO-21 ACEA 5. Spain 6. U.K. 7. Hungary 8. Belgium 9. New Zealand 10. Greece 11. France 12. Bangkok 13. Thailand 14. S. Africa 14. S. Africa 15. 50549 16. Brazil 17. VDEOI26 18. Ireland 19. Israel 20. Poland 21. Chile 1. CHILE-BT 22. Local 3. CHILE-ID				
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		2 V01 T	OVER VOLT
		24 1001	INPUT: 270V
		UNDER VOLT	1.0
		CONTRACTOR AND A CONTRACTOR OF A	UNDER VOLT
	8. UNDER VOLT	1, ENABLE	
			2. ENABLE
		2. VOLT	
		10000	INPUT: 200V
		OVER FREQ	140
		Contraction of the second	
	9. OVER FREQ	1. ENABLE	
		2. FREQ	
			INPUT: 52Hz

	UNDER FREQ	
1	An a company an and taken as	UNDER FREQ
10. UNDER FREQ	2. FRFO UNDER F	1. DISABLE
IV. UNDER FREQ		2. ENABLE
6		UNDER FREQ
		INPUT: 48H
11. REACT RESP	REACT RESP	12.005.000 - 10.52
II. REACT REOF	INPUT: 10S	
1	VRT ENABLE	
12, VRT ENABLE	1. DISABLE	
2	2. ENABLE	
13. POW SI RATE	POW SI RATE	
IS FOR SI AAID	INPUT: 100%	

	1, INV MODULE	INVERTER	
	IN INV MODULE	HEC-S 5K	
	2. MODULE SN	SN:210212892B8071	
	Z, MODULE SIV	4300007	
		FIRMWARE	
	3、 FIRMWARE	ARM: 1.8.06	
		DSP:1.8.28	
		REC (500)	DETAIL
	4、RECORD	1: W20-1	S COMMUNICATE FAULT
	4 KLCORD	DATE: 2022-09-13	
2、INQUIRE		TIME: 17:20:50	
		PACK INFO	
			VERSION
		1. PACK 1	STATUS: OFFLINE
		IN FROM I	CYCLE: CNT
	5、BMS INFO		HEAT FILM: OFF
		2, PACK 1	
		3、PACK 3	
		4、PACK 4	
		5. PACK 5	

This menu tree allows access but not editing without a password

05 Australia and New Zealand Grid choose

For The Australian Market:

For compliance with AS/NZS 4777.2:2020 please select from Australia A
 Australia B
 Australia C
 New Zealand

Please contact your local grid operator for which option to select

Note: By selecting Australia A, Australia B or Australia C the power quality response mode and grid protection settings will be reset to their default values for Australia RegionA, B, C respectively.

Default volt-watt settings for different regions are shown in the following table:

Region	Default value	Vw1	Vw1-ch	Vw ₂	Vw2-ch
	Voltage	253V	207V	260V	215V
Australia A	Inverter maximum active power output level(P) % of Srated	100%	20%	20%	100%
	Voltage	250V	195V	260V	215V
Australia B	Inverter maximum active power output level(P) % of Srated	100%	0%	20%	100%
	Voltage	253V	207V	260V	215V
Australia C	Inverter maximum active power output level(P) % of Srated	100%	20%	20%	100%
	Voltage	242V	216V	250V	224V
New Zealand	Inverter maximum active power output level(P) % of Srated	100%	20%	20%	100%

Please enter volt-Watt with folloing path: 1.SETUP (PASSWORD : 00000) ->4.RUN SETTING ->7.OVER VOLT & 8.UNDER VOLT

Default volt-var settings for different regions are shown in the following table:

Region	Default value	Vv ₁	Vv ₂	Vv ₃	Vv4
	Voltage	207V	220V	240V	258V
Australia A	Inverter maximum active power output level(P) % of Srated	44%supplying	0%	0%	60%absorbing
	Voltage	205V	220V	235V	255V
Australia B	Inverter maximum active power output level(P) % of Srated	30%supplying	0%	0%	40%supplying
	Voltage	215V	230V	240V	255V
Australia C	Inverter maximum active power output level(P) % of Srated	44%supplying	0%	0%	60%supplying
	Voltage	207V	220V	235V	244V
New Zealand	Inverter maximum active power output level(P) % of Srated	60%supplying	0%	0%	60%supplying

Please enter volt-var with following path:

1.SETUP (PASSWORD : 00000) ->4.RUN SETTING ->1.REACT MODE->3. QU CURVE.

06 Stick Logger Quick Guide

6.1 Download APP

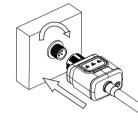
Step 1: Scan the QR Code on the right side and download the APP.



IPhone:Search "SOLARMAN Smart" in Apple Store. Android:Search "SOLARMAN Smart" in Google Play.

6.2 Stick Logger Installation

Step 1: Assemble logger to the inverter communication interface as shown in the diagram.





Warning Please do not hold the logger body to rotate while install or remove the logger.



6.3 Logger Status

6.3.1 Check Indicator light

Lights	Implication	Status Description(All lights are single green lights.)
• NET	Communicate with router	 Light off: Fail to connect to the router. On 1s/off1s(Slow flash): Successful connection to the router. Light keeps on: Successful connection to the server. On 100ms/off100ms(Fast flash): Distributing network fast.
• COM	Communicate with inverter	 Light keeps on: Logger connected to the inverter. Light off: Fail to connect to the inverter. On 1s/off 1s(Slow flash): Communicating with inverter.
READY	Logger running status	 Light off: Running abnormally. On 1s/off 1s (Slow flash): Running normally. On 100ms/off 100ms(Fast flash): Restore factory settings.

The normal operation status of the stick logger, when router connected to the network normally:

- 1. Successful connection status with serve: NET light keeps on after the logger powered on.
- 2. Logger running normally: READY light flashes.

3. Successful connection status with inverter : COM light keeps on.

6.4 Abnormal State Processing

If the data on platform is abnormal when the stick logger is running, please check the table below and according to the status of indicator lights to complete a simple troubleshooting. If it still can not be resol-ved or indicator lights status do not show in the table below, please contact our customer service..(Note: Please using the following table query after power-on for 2mins at least.)

NET	COM	READY	Fault Description	Fault Cause	Solution
NET	COM	READY			
Any state	OFF	Slow flash	Communicate with inverter abnormally	1. Connection betw- een stick logger and inverter lossen. Inverter does not match with stick log- ger's communication rate.	1.Check the connection between stick logger and inverter. Remove the stick logger and install again. 2.Check inverter's communication rate to see if it matches with stick logger's. 3.Long press Reset button for 5s, reboot stick logger.
OFF	ON	Slow flash	Connection between logger and router abnormal	1.Stick logger does not have a network. 2.Antenna abnormal 3.Router WiFi signal strength weak.	 Check if the wireless network configured. Check the antenna, if there is any damage or loose. Enhance router WiFi signal strength. Long press Resetbutton for 10s, reboot stick logger and networking again.

Slow flash	ON	Slow flash	Connection betwe- en logger and router normal, connection between logger and remote server abnormal.	 Router networking abnormal. The server point of logger is modified. Network limitation, server cannot be connected. 	 Check if the router has access to the network. Check the router's setting, if the connection is limited.
OFF	OFF	OFF	Power supply abnormal	 Connection betw- een stick logger and inverter loosen or abnormal. Inverter power in- sufficient. Stick Logger abn- ormal. 	1.Connection between logger and router normal, connection between logger and remote server abnormal.
Fast flash	Any state	Any state	SMARTLINK networking status	Normal	1.Exit automatically after 5mins. 2.Long press Reset button for 5s, reboot stick logger. 3.Long press Reset button for 10s, restore factory settings.
Any state	Any state	Fast flash	Restore factory settings	Normal	1.Exit automatically after 1mins. 2.Long press Reset button for 5s, reboot stick logger. 3.Long press Reset button for 10s, restore factory settings.

6.5 Usage Methods and Notices for Reset Button

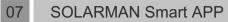
6.5.1 Usage methods and key-press descriptions for reset button



	Key-press	Status Description	Light Status
	Short press 1s	SMARTLINK rapid networking status.	NET light flashes fast for 100ms.
	Long press 5s	Rebooting the stick logger.	All lights are extinguished immediately.
ł	Long press 10s	Resetting the stick logger.	1.All lights are extinguished after 4s. 2.READY light flashes fast for 100ms.

6.5.2 Notice





7.1 Registration

Go to SOLARMAN Smart and register. Click "Register" and create your account here.

- 1	🙆 SOLARMAN Smart			E-mail	
- I	E-mail Phone Number Username				
			E-mail		
	E-mail		Please enter E-mail		
	Password		Verification Code		
	password	~	Please enter verificatio	n code	
			Password		
			Password	~	
	Login		Password length must be granter to	han 0 bits	

7.2 Create a Plant

Click "Add Now" to create your plant. Please fill in plant basic info and other info here.



7.3 Add a Logger

Method 1: Enter logger SN manually.Method 2: Click the icon in the right and scan to enter logger SN You can find logger SN in the external packaging or on the logger body.



7.4 Network Configuration

After the logger is added, please configure the network to ensure normal operation. Go to "Plant Details"-"Device List", find the target SN and click "Networking".

Device Details + Invorter No. of Connections: 2 Logger OH/123341245 Matter Cogger Cogger Cogger Cogger Cogger Cogger Cogger Cogger Connections: Contentendary	10:14 AM			
Logger Date Date Date Date Date Date Date Date	\leftarrow	Device Details	+	
Logger 04123331265 Meter Meneralizations Device Henerking Module Logger (1)	Inverter	No. of Connections: 2		
Module Logger crise	Logger		Normal	
Logger	Motor	Select associated device	Device Networking	
	Module		Office	

Step 1 : Confirm WiFi Info

Please make sure your phone has connected to the right WiFi network. And click "Start".

\leftarrow	SN:2312423	≓
Password		
App_only	Chan	ge network
÷ ******		Spel
5G frequ Please co	ency band is not supported	L.
	ency band is not supported meet to 2.4G frequency ber itart to configure	nd.
		hd.

Notice

5G WiFi is not supported .

Special characters (e.g. , ; "=""`) in router name and password are not supported.

Step 2 : Connect to AP network

Click "Go to connect" and find the right "AP_XXXXX" network (XXXXX refers to logger SN). If the password is required, you can find the password on the logger body. Go back to SOLARMAN smart APP, after connecting to AP network.

wLAN		¢
Android		(÷
ChinaNet		(÷
AP 6226021	79	(1-
u can find enclosure. HYH123		(i-
IGEN-5G		(i-
OTHER NETWO	ORKS	
act-blue		(÷
ChinaNet-ige	en 🔒	(÷
	WLAN WLAN Wr.NETWORK Addroid ChinaNet a password pu can find ind control ind contro ind contro in	WLN WLN W/NETWORKS Android ChineNet AP_922602179 HY1122 KGEN-5G ChineN NETWORKS act-blue

Step 3 : Auto Configuration

Please wait for a while to complete the configuration. Then system will switch to the following page. Click "Done" to check plant data. (Usually, the data will be updated in 10 mins)



If configuration failure occurs, please check the following reason and try it again.

- (1) Make sure WLAN is ON.
- (2) Make sure WiFi is normal.
- (3) Make sure wireless router does not implement the white-black list.
- (4) Remove the special characters in WiFi network.
- (5) Shorten the distance between the phone and device.
- (6) Try to connect to other WiFi.

08

Alarm Code and Error Code

8.1 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 Reverse
W12	Fan Fault
W13	BAT Power Down
W14	BMS Discharge Over Current
W15	BMS Charge Over Current
W16	BMS Over Volt
W17	BMS Over Temp
W18	BMS Discharge Low Temp
W19	BMS Volt Imbalance
W20	BMS Communicate Fault
W21	BMS Under Volt
W22	BMS Chg Temp Low
W23	BMS Severe Over Volt
W24	BMS Severe Over Temp
W25	CT Reverse

8.2 Error Code

Codes	English description	
F00	Soft Time Out	
F01	INV Volt Short	
F02	GFCI Sensor Fault	
F04	Bus Volt Low	
F05	Bus Volt High	
F06	Bus Short Circuit	
F07	PV ISO Under Fault	
F08	PV Input Short Circuit	
F09	Bypass Relay Fault	
F10	INV Curr Over	
F11	INV DC Over	
F12	Ambient Over Temp	
F13	Sink Over Temp	
F14	Grid Relay Fault	
F15	Dischg Curr Over	
F16	Chg Curr Over	
F17	Current Sensor Fault	
F18	INV Abnormal	
F19	EPS Relay Fault	
F20	Alway Over Load	
F32	SCI Fault	

09 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 Out	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 Fault	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 Fault	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 Circuit	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 Fault	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;(3) Contact customer service if error warning continues.
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.
Dischg 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 Fault	F17	(1) Restart the inverter and wait until it functions normally.(2) Contact customer service if error warning continues.

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User Manual

Types	Codes	Solutions
INV Abnormal	F18	(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 Fault	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 frequency are beyond range or unstable.
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;
GFCI 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 remains unremoved.

LN R	LN Reverse W11		(1) Check whether the installation follows the instructions;(2) Contact customer service if error warning continues.
Fan Fault W12		W12	(1) Restart the inverter and wait until it functions normally.(2) Contact customer service if error warning continues.
BMS	Fault	W14~W25	(1) Please contact the distributor.

10 Product Specifications

Model	HEC-S 3K HEC-S 5K	
PV terminal		
Vmax. PV	580Vd.c.	
Rated voltage	400Vd.c.	
MPPT voltage range	80~56	0Vd.c.
MPPT range (full load)	165~520Vd.c.	210~520Vd.c.
MPPT tracker / strings	2	2
Max. continuous PV input current	15Ad	l.c.×2
Isc PV	18Ad	l.c.×2
Max. backfeed current	0A	d.c.
Max. continuous PV input power	4800W 6500W	
Battery terminal		
Battery type	Lithium	batteries
Voltage range	40~60Vd.c.	
Rated voltage	48Vd.c.	
Rated current	urrent 50Ad.c./80Ad.c. 100A	
Maximum charge/discharge current	50Ad.c./80Ad.c.	100Ad.c./100Ad.c.
Maximum charge/discharge power	n charge/discharge power 3000W/4000W 4600W/500	
Grid terminal parameter		
Rated voltage	230Va.c.	

Rated frequency	50H:	Z
Rated input Current	31Aa.c.	
Maximum continuous input current	32Aa.c.	
Maximum continuous input power	7360VA	
Rated output Current	16Aa.c.	22Aa.c.
Maximum continuous output current	16Aa.c.	22Aa.c.
Power factor (Cos phi), adjustable	0.8 leading ~	0.8 lagging
Rated apparent power/ Maximum continuous output power	3680VA/3680W	4999VA/5000W
Max. output fault current	102Ap	beak
Duration for output fault current	3.8r	ns
Grid port inrush current	less than 2	22Apeak
Duration for inrush current	3.2r	ns
Grid port overcurrent protection	40/	Ą
Backup load terminal parameter		
Rated voltage	230V	a.c.
Rated frequency	50H	Ιz
Rated output Current	16Aa.c.	20Aa.c.
Maximum continuous output current	16Aa.c.	20Aa.c.
Rated frequency	50Hz(Fluctuation range±0.2%)	
Rated apparent power/ Rated continuous output power	3680VA/3680W	4600VA/4600W
Maximum output apparent power	4000VA	5000VA
Max. output fault current	99Apeak	
Maximum output overcurrent protection	32A	
Inrush current	3Aa.c.+ duration 3.6ms	
Max. output fault current	25Aa.c.+duration for the output fault current 3.4m	
Power factor (Cos phi), adjustable	0.8 leading ~ 0.8 lagging	
General parameter		
Temperature	-25°C to +60°C, der	ating above 45 °C
Protective class	Clas	s I
Overvoltage category	II(DC side), I	II(AC side)
Ingress protection	IP6	5
Altitude	≤ 200)0m
Dimension (W×H×D)mm	540*61	0*250

User Man	nual
36	
0~95% (No condensation)	
Passive anti-islanding	
PD3	
High Frequency Isolation	
Natural Convection	
LCD/APP	
RS485/CAN2.0/WIFI	
94.0%	
97.6%	
97.0%	
99.5%	
Short Circuit Protection, AC Leakage Fault Protection, Grounding Fault Protection, Anti-islanding Protection, Overload Protection, Surge Protection, DC Polarity Protection	
Non-isolated	
HF	
AS/NZS 4777.2, VDE-AR-N4105, VDE0126-1-1	
IEC/EN 62109-1&2, IEC62040-1	
EN61000-6-1, EN61000-6-2, EN61000-6-3, EN61000-6- 4,EN61000-4-16, EN61000-4-18, EN61000-4-29	

AC230 / 400V

6kV

Industrial power distribution system

32A

AC-22A

Weight (Kg) Relative Humidity Anti-islanding method Pollution degree

Topology Cooling Display

(From Battery)

Protection Function

Isolated method(solar) Isolated method(battery) Certification& Standard

Grid Regulation Safety Regulation

AC breaker

Rated impulse voltage

Isolation applicability

Utilization category or

photovoltaic utilization category

Working current

EMC

(From PV) Euro Efficiency MPPT Efficiency

Communication Interface Max. Conversion Efficiency

Max. Conversion Efficiency

Short time withstand current	20le (415V, power on time is 1s)		
Short circuit withstand current	20In (415V, COS) Φ = 0.9)		
Rated breaking capacity	3ln (415V, COS) Φ = 0.65)		
Inrush current duration			
Grid	5K:67.5A 52us;3.68K:60A 52us		
Backup	5K:73A 104us ; 3.68K:73A 104us		
Max output fault current du	iration		
Grid	5K:RMS 24*1.35A 100ms;3.68K:RMS 18*1.35A 100ms		
Backup	5K:RMS 45A 60ms;3.68K:RMS 35A 60ms		
Max output overcurrent protection			
Grid	5K:67.5A 52us ; 3.68K:60A 52us		
Backup	5K:73A 104us ; 3.68K:73A 104us		

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
W-Australia	180-260	45-52	60
Greece	184-264	49.5-50.5	180
France	184-264	47.5-50.4	60
Bangkok	150-264	49-51	150
Thailand	150-264	48-51	60
S.Africa	184-264	47.0-52.0	60
50549	196-253	47.5-51.5	60
Brazil	196-253	57.5-61.5	60
0126	184-253	47.5-51.5	60
Ireland	184-264	47.5-52.0	180
Local	150-280	45.0-55.0	30
60Hz	184-264	59.5-60.5	60

Table 10.1 Grid specification (single-phase)

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 is loose, any overheat sign.
- Check if ground connection is good.

11.1.1 Operating Environment

(Every six months, the adult with basic electrical knowledge) Carefully observe whether the battery system equipment is in effective 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. The adult with basic electrical knowledge)

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, the professional electrical person)

- 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. After the equipment is 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 antinoise 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 (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.

Quality Assurance

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

Evidence

12

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, company has the right to refuse to honor the quality guarantee.

Conditions

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

Exclusion of Liability

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

User Manual

- The free warranty period for the whole machine/components has expired.
- The device is damaged during transport.
- The device is incorrectly installed, refitted, or used.
- The device operates in harsh environment, as described in this manual.

• The fault or damage is caused by installation, repairs, modification, or disassembly performed by a service provider or personnel not from company or his authorized partner.

• The fault or damage is caused by the use of non-standard or company.

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 company.