

USER MANUAL

HYD 3000~6000-EP



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Notice

This manual contains important safety instructions that must be followed during installation and maintenance of the equipment.

Save these instructions!

This manual must be considered as an integral part of the equipment. The manual must always accompany the equipment, even when it is transferred to another user or field.

Copyright Declaration


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Document Updates

V5. 02023-10-31

Preface

	<ul style="list-style-type: none">• If you have any question or problem when you read the following information, please contact Shenzhen SOFARSOLAR Co. , Ltd.
Note	

Outline

Please read the product manual carefully before installation,operation or maintenance. This manual contains important safety instructions and installation instructions that must be followed during installation and maintenance of the equipment.

Scope

This product manual describes the installation, electrical connections, commissioning,maintenance and troubleshooting of HYD 3000/3680/4000/4600/5000/5500/6000-EP inverters:

HYD 3000-EP HYD 3680-EP HYD 4000-EP

HYD 4600-EP HYD 5000-EP HYD 5500-EP HYD 6000-EP






Keep this manual where it will be accessible at all times.

Target Group

This manual is intended for qualified electrical technical personnel who are responsible for inverter installation and commissioning in the PV power system and PV plant operator.

Symbols Used

This manual provides safety operation information and uses the symbol in order to ensure personal and property security and property security and use inverter efficiently when operating the inverter. You must understand these emphasized information to avoid the personal injury and property loss. Please read the following symbols used in this manual carefully.

	<ul style="list-style-type: none"> • Danger indicates a hazardous situation which, if not avoided, will result in death or serious injury.
Danger	
	<ul style="list-style-type: none"> • Warning indicates a hazardous situation which, if not avoided, could result in death or serious injury.
Warning	
	<ul style="list-style-type: none"> • Caution indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
Caution	
	<ul style="list-style-type: none"> • Attention indicates potential risks which, if not avoided, may lead to equipment fault or property damage.
Attention	
	<ul style="list-style-type: none"> • Note provides tips that are valuable for the optimal operation of the product.
Note	

1. Basic safety information

1.1. Safety instructions

Read and understand the instructions of this manual, and be familiar with relevant safety symbols in this chapter, then start to install and troubleshoot the equipment.

According to the national and state requirements, before connecting to the electrical grid, you must get permission from the local electrical grid operation can only be performed by qualified electrical engineer.

Please contact the nearest authorized service center if any maintenance or repair is needed. Contact your distributor for the information of the nearest authorized service center. Do NOT repair it by yourself, it may cause injury or property damage.

Before installing and maintaining the equipment, you should turn the DC switch OFF to cut off the high voltage DC of the PV array. You can also turn the switch in the PV combiner box OFF to cut off the high voltage DC. When the battery needs to be installed, please confirm the positive and negative terminals of the battery and turn OFF the battery. Otherwise, serious injury may be caused.

Qualified persons

The customer must make sure the operator has the necessary skill and training to do his/her job. Staff in charge of using and maintaining the equipment must be skilled, aware and mature for the described tasks and must have the reliability to correctly interpret what is described in

the manual. For safety reasons only a qualified electrician, who has received training and / or has demonstrated skills and knowledge in construction and in operation of this unit, can install this inverter. Shenzhen SOFARSOLAR Co., Ltd. does not take any responsibility for the property destruction and personal injury because of any incorrect use.

Installation requirements

Please install inverter according to the following section. Fix the inverter on an appropriate object with enough load bearing capacity (such as walls, PV racks etc.), and ensure that inverter is vertical placed. Choose a place suitable for installing electrical devices. And assure there is enough fire exit space, convenient for maintenance. Maintain proper ventilation to ensure enough air cycle to cool the inverter.

Transport requirements

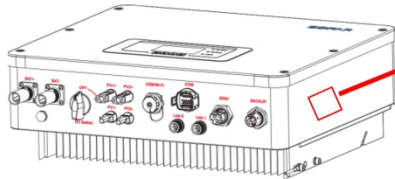
If you find packing problems that may cause the damage of the inverter, or find any visible damage, please immediately notice the responsible transportation company. You can ask solar equipment installation contractor or Shenzhen SOFARSOLAR Co. Ltd. for help if necessary.

Transport of the equipment, especially by road, must be carried out with suitable ways and means for protecting the components (in particular, the electronic components) from violent shocks, humidity, vibration, etc.

Labels on the equipment



The labels must NOT be hidden with objects and extraneous parts (rags, boxes, equipment, etc.); they must be cleaned regularly and kept visible at all times.



SOFAR	
Hybrid Inverter	
Model No:	HYD 6000-EP
Max DC Input Voltage	600V
Operating MPPT Voltage Range	90V-580V
MAX.PV Isc	2x18A
Battery Type	Lead-acid/Lithium-ion
Battery Voltage Range	42-58V
Max. Charging Current	100A
Max. Discharging Current	100A
Max. Charging&Discharging Power	5000VA
Nominal Grid Voltage	230Vac
Nominal Output Voltage	230Vac
Max. Output Current	28.7A
Z _s source	1.05 + j0.32 ohm
Nominal Grid Frequency	50/60Hz
Power Factor	1(adjustable+/-0.8)
Nominal Output Power	6000W
Backup Rated Current	26.1A
Backup Rated Apparent Power	5000VA
Ingress Protection	IP65
Operating Temperature Range	-30~+60°C
Protective Class	Class I
Manufacturer: Shenzhen SOFAR SOLAR Co., Ltd. Address: 401, Building 4, AnTongDa Industrial Park, District 68, XingDong Community, XinAn Street, BaoAn District, Shenzhen, China SAA183423 VDE0120-1-1, VDE-AR-N4105 GB 19834.3, AS4777 IEC 615-712-1	



Note

- The picture is only for reference, please make the object as the standard.

Electric connection

Please comply with all the current electrical regulations about accident prevention in dealing with the solar inverter.





Danger



Before the electrical connection, make sure to use opaque material to cover the PV modules or to disconnect PV array DC switch. Exposure to the sun, PV array will produce a dangerous voltage!





- All installation accomplished only by professional electrical engineer!
- Must be trained;

Warning	<ul style="list-style-type: none"> • Completely read the manual operation and understand relevant matter.
	<ul style="list-style-type: none"> • Get permission from the local electrical grid operator, complete all electrical connections by professional electrical engineer, then connect inverter to electrical grid.
Attention	
	<ul style="list-style-type: none"> • It's forbidden to remove the tamper evident label, or open the inverter. Otherwise Sofar will not provide warranty or maintenance!
Note	

Operation


	<ul style="list-style-type: none"> • Touching the electrical grid or the terminal of the equipment may lead to electrocution or fire! • Don't touch the terminal or conductor connected to the electrical grid. • Pay attention to any instructions or safety documents related to grid connection.
Danger	
	<ul style="list-style-type: none"> • Some internal components will be very hot when inverter is working. Please wear protective gloves!
Attention	

Maintenance and repair




	<ul style="list-style-type: none"> • Before any repair work, turn OFF the AC circuit breaker between the inverter and electrical grid first, then turn OFF the DC switch. • After turning OFF the AC circuit breaker and DC switch, wait for 5 minutes at least before carrying out any maintenance or repair work.
Danger	
	<ul style="list-style-type: none"> • Inverter should work again after removing any faults.If you need any repair work, please contact with the local authorized service center. • Can't open the internal components of inverter without authorized.Shenzhen SOFARSOLAR Co. , Ltd.Does not take any responsibility for the losses from that.
Attention	

EMC / noise level of inverter

Electromagnetic compatibility (EMC) refers to that one electrical equipment functions in a given electromagnetic environment without any trouble or error, and impose no unacceptable effect upon the environment.Therefore, EMC represents the quality characters of an electrical equipment. The inherent noise-immune character: immunity to internal electrical noise. External noise immunity: immunity to electromagnetic noise of external system. Noise emission level: influence of electromagnetic emission upon environment.









	<ul style="list-style-type: none"> • Electromagnetic radiation from inverter may be harmful to health! • Please do not continue to stay around the inverter in less than 20 cm when inverter is working.
Danger	




1.2. Symbols and signs

	<ul style="list-style-type: none"> • Caution of burn injuries due to hot enclosure! • You can only touch the screen and pressing key of the inverter while it's working.
Caution	
	<ul style="list-style-type: none"> • PV array should be grounded in accordance to the requirements of the local electrical grid operator! • We suggest that all PV module frames and inverter are reliably grounded to protect the PV system and personnel security.
Attention	
	<ul style="list-style-type: none"> • Ensure input DC voltage < Max.DC voltage . Over voltage may cause permanent damage to inverter or other losses, which will not be included in warranty!
Warning	

Signs on the inverter

There are some symbols which are related to security on the inverter. Please read and understand the content of the symbols, and then start the installation.

	<ul style="list-style-type: none"> • This symbol indicates a hazardous situation which could result in injuries, if not avoided.
	<ul style="list-style-type: none"> • There is a residual voltage in the inverter! Before opening the equipment, operator should wait for five minutes to ensure the capacitor is discharged completely.
	<ul style="list-style-type: none"> • Caution, risk of electric shock.
	<ul style="list-style-type: none"> • Caution hot surface.
	<ul style="list-style-type: none"> • Comply with the Conformite Europeenne (CE) certification.
	<ul style="list-style-type: none"> • Grounding point.
	<ul style="list-style-type: none"> • Please read this manual before install HYD 3000/3680/4000/4600/5000/5500/6000-EP.
	<ul style="list-style-type: none"> • This indicates the degree of protection of the equipment according to IEC standard 70-1 (EN 60529 June 1997).

	<ul style="list-style-type: none">• Positive pole and negative pole of the input voltage (DC).
	<ul style="list-style-type: none">• This side up, HYD 3000/3680/4000/4600/5000/5500/6000-EP inverter must always be transported, handled and stored in such a way that the arrows always point upwards.
	<ul style="list-style-type: none">• RCM (Regulatory Compliance Mark)• The product complies with the requirements of the applicable Australian standards.

2. Product characteristics

2.1. Product information

HYD 3000/3680/4000/4600/5000/5500/6000-EP inverter is a single-phase photovoltaic energy storage inverter integrating grid-connected photovoltaic inverter and battery energy storage.

The HYD 3000/3680/4000/4600/5000/5500/6000-EP inverter has a variety of built-in operating modes to suit the diverse user needs.

The HYD 3000/3680/4000/4600/5000/5500/6000-EP inverter can provide a complete solution in the period of rising energy costs such as oil and coal, the energy subsidy of photovoltaic grid-connected system keeps falling. In the period of continuous power supply and emergency power supply demand in mountainous areas or base stations without power grid.

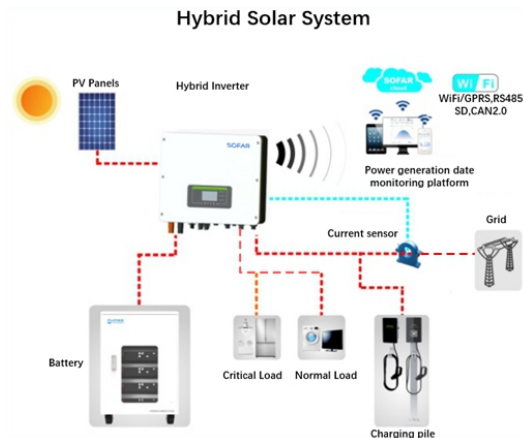


Fig.2-1 HYD 3000/3680/4000/4600/5000/5500/6000-EP inverter system diagram

2.2. Size description

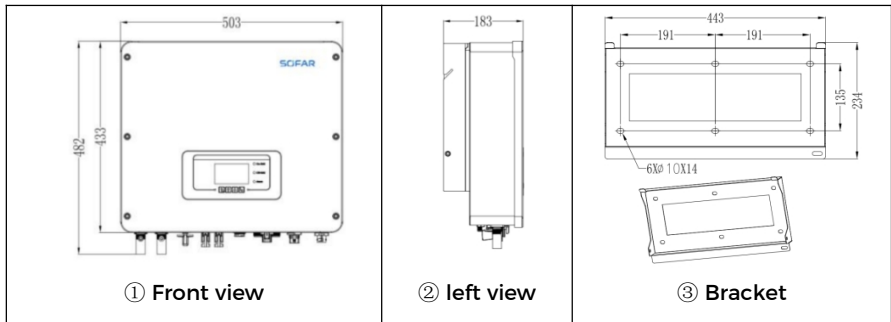


Fig.2-2 Size chart

2.3. Function characteristics

The HYD 3000/3680/4000/4600/5000/5500/6000-EP energy storage inverters allow up to 10% overloading to maximize power output, and the Uninterruptible Power Supply (UPS) mode can support inductive loads such as air conditioners or refrigerators with an automatic switchover time of less than 10 milliseconds.

- (1) Dual MPP trackers with 1.5* DC overload.
- (2) Flexible switching between grid-tied mode and energy storage mode.
- (3) Max.battery charge and discharge efficiency 94.6%.
- (4) 1 strings of battery input with maximum 100A charge and discharge current.
- (5) Wide battery voltage range(90-580V).
- (6) AC Multi-parallel function, more flexible system solution.

(7) Smart monitoring, RS485/WiFi/Bluetooth/GPRS(Optional)

2.4. Electrical block diagram

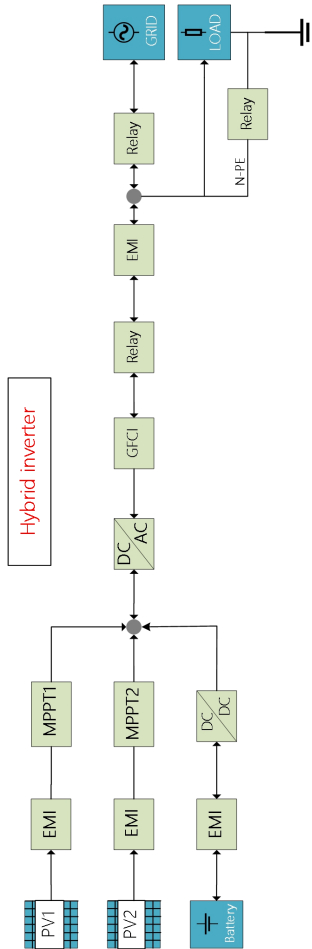





Fig.2-3 Electrical block diagram

3. Installation

Installation notes

	<ul style="list-style-type: none"> • Do NOT install the HYD 3000/3680/4000/4600/5000 /5500/6000-EP on flammable material. • Do NOT install the HYD 3000/3680/4000/4600/5000 /5500/6000-EP in an area used to store Flammable or explosive material.
Danger	
	<ul style="list-style-type: none"> • The enclosure and heat sink are very hot while the inverter is working, therefore do NOT install the HYD 3000/3680/4000/4600/5000/5500/6000-EP in places where you might touch them inadvertently.
Caution	
	<ul style="list-style-type: none"> • Consider the weight of HYD 3000/3680/4000/4600/5000/5500/6000-EP when transporting and moving the inverters. • Choose an appropriate mounting position and surface. • Assign at least two persons to install the inverter.
Attention	

3.1. Checking Before Installation


Checking Outer Packing Materials

Packing materials and components may be damaged during transportation. Therefore, check the outer packing materials before installing the inverter. Check the outer packing materials for damage,

such as holes and cracks.If any damage is found, do not unpack the HYD 3000/3680/4000/4600/5000/5500/6000-EP and contact the dealer as soon as possible.You are advised to remove the packing materials within 24 hours before installing the HYD 3000/3680/4000/4600/5000 /5500/6000 -EP inverter.


Checking Deliverables

After unpacking the inverter, check whether deliverables are intact and complete.If any damage is found or any component is missing, contact the dealer.

	<ul style="list-style-type: none">• Please see the packing list for Components and mechanical parts that should be delivered.
Note	

3.2. Product Overview

HYD 3000/3680/4000/4600/5000/5500/6000-EP inverter is 100% strictly inspected before package and delivery.It is forbidden to put the HYD 3000/3680/4000/4600/5000/5500/6000-EP inverter upside down during delivery.

	<ul style="list-style-type: none">• Please check the product package and fittings carefully before installation.
Caution	

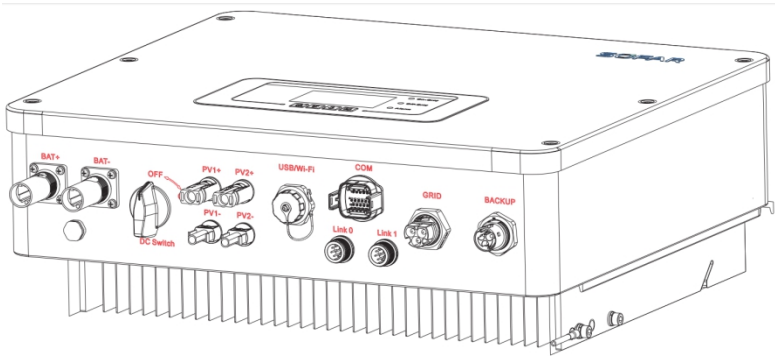


Fig. 3-2 HYD 3000/3680/4000/4600/5000/5500/6000-EP inverter overview




Table 3-2 HYD 3000/3680/4000/4600/5000/5500/6000-EP inverter overview

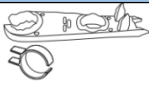
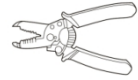

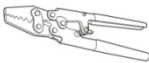
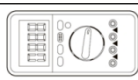


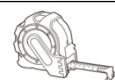
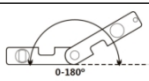



1	Battery input terminals	6	Link Port 1
2	DC switch	7	COM
3	PV input terminals	8	Grid connection port
4	USB/WiFi	9	Load connection port
5	Link Port 0	10	LCD

3.3. Tools

Prepare tools required for installation and electrical connections.

Table 3-3 Tools required for installation and electrical connections.

NO.	Tool	Model	Function
1		Hammer drill Recommend drill dia. 6mm	Used to drill holes on the wall.
2		Screwdriver	Wiring
3		Cross screwdriver	Remove and install AC terminal screws

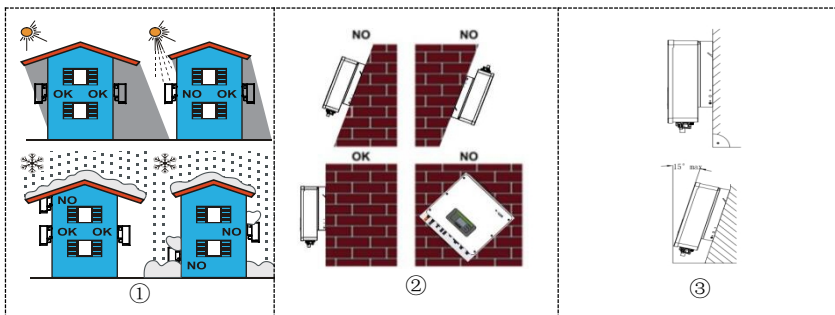
NO.	Tool	Model	Function
4		Removal tool	Remove PV terminal
5		Wire stripper	Strip wire
6		4mm Allen Wrench	Turn the screw to connect rear panel with inverter.
7		Crimping tool	Used to crimp power cables
8		Multi-meter	Used to check grounding
9		With an open end of larger than or greater than 32 mm	Used to tighten expansion bolts
10		Marker	Used to mark signs
11		Measuring tape	Used to measure distances
12		Level	Used to ensure that the rear panel is properly installed
13		ESD gloves	Operators wear
14		Safety goggles	Operators wear
15		Anti-dust respirator	Operators wear

3.4. Installation Environment

- a. Choose a dry, clean, and tidy place, convenient for installation.
- b. Ambient temperature range: $-25^{\circ}\text{C} \sim 60^{\circ}\text{C}$.
- c. Relative humidity: 0 ~ 100% (non-condensed).
- d. HYD 3000/3680/4000/4600/5000/5500/6000-EP inverter shall be installed in a well-ventilated place.
- e. No flammable or explosive materials close to HYD 3000/3680/4000/4600/5000/5500/6000-EP inverter.
- f. The AC overvoltage category of HYD 3000/3680/4000/4600/5000/5500/6000-EP inverter is category III.
- g. Maximum altitude: 4000m.

3.5. Determining the Installation Position

Determine an appropriate position for installing the HYD 3000/3680 /4000/4600/5000/5500/6000-EP inverter. Comply with the following requirements when determining the installation position.



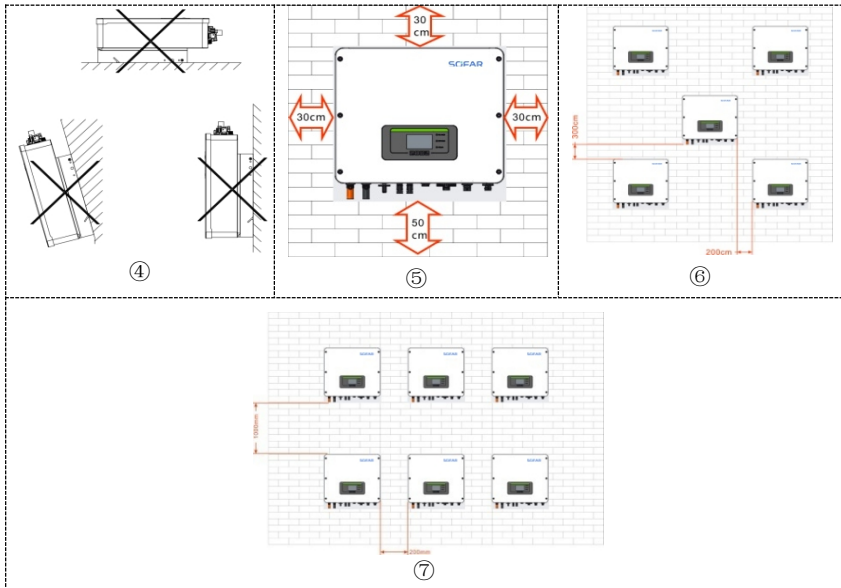


Fig.3-3 Installation Position of HY 3000/3680/4000/4600/5000/5500/6000-EP inverter

3.6. Unpacking the inverter

Step 1 Open the packaging, insert hands into the slots on both sides of the inverter and hold the handles, as shown in Fig. 3-4.

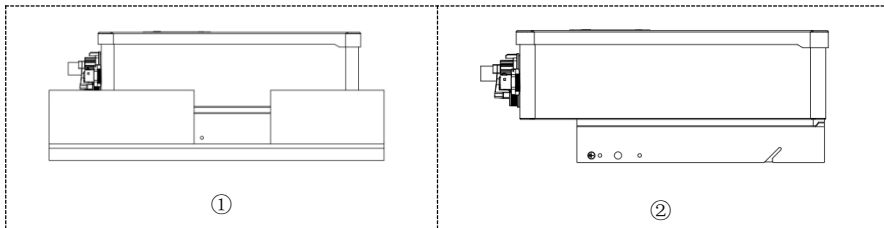



Fig.3-4 Moving the inverter

Step 2 Lift the inverter from the packing case and move it to the

installation position.

	<p>To prevent device damage and personal injury, keep balance when moving the inverter because the inverter is heavy.</p> <p>Do not put the inverter with its wiring terminals contacting the floor because the power ports and signal ports are not designed to support the weight of the inverter. Place the inverter horizontally.</p>
Attention	<p>When placing the inverter on the floor, put foam or paper under the inverter to protect its shell.</p>

3.7. Installation of the inverter

Step 1 Determine the positions for drilling holes, ensure the hole positions are level, then mark the hole positions using a marker pen, use the hammer drill to drill holes on the wall (Aperture $\Phi 10$ mm). When drilling, keep the impact drill perpendicular to the wall and drill slightly deeper than the length of the expansion pipe. After drilling, please check whether the hole position is suitable with the back plate. If the error is too large, please reposition the hole, as shown in Figure 3-5①.

Step 2 Slowly hammer the expansion screw into the drilled hole, as shown in Figure 3-5②.

Step 3 Position the back plate well, place the shrapnel and flat pad, and fix the back plate with hexagon nut, as shown in Figure 3-5③.

Step 4 Hang the inverter on the back plate and lock the inverter and the back plate with M6 hex screw, as shown in Figure 3-5④.

Step 5 You can secure the inverter to the rear panel and protect it from stealing by installing an anti-theft lock (this action is optional), as shown

in Figure 3-5⑤.

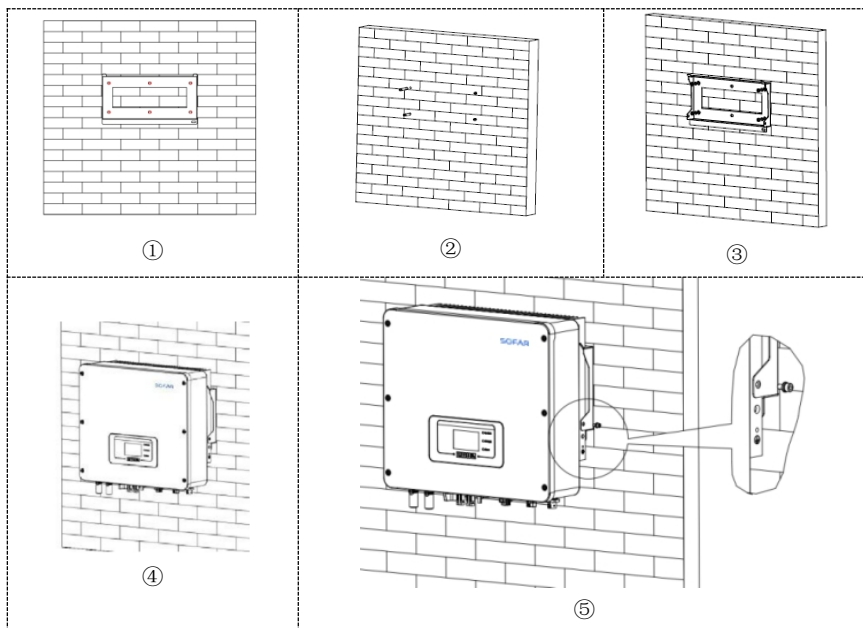





Fig.3-5 Installing HYD 3000/3680/4000/4600/5000/5500/6000-EP

4. Electrical Connections

Before performing electrical connections, ensure that the DC switch is OFF. Since the stored electrical charge remains in a capacitor after the DC switch is turned OFF. So it's necessary to wait for at least 5 minutes for the capacitor to be electrically discharged.

HYD 3000/3680/4000/4600/5000/5500/6000-EP inverter is intended to be used in PV system with battery storage. If not used as intended, the protection provided by the equipment may be impaired.

	<ul style="list-style-type: none"> • Installation and maintenance of inverter, must be operated by professional electrical engineer. • Wear rubber gloves and protective clothing (protective glasses and boots) when working on high voltage/high current systems such as inverter and battery systems.
Attention	
	<ul style="list-style-type: none"> • PV modules generate electric energy when exposed to sunlight and can create an electrical shock hazard. Therefore, before connecting DC input power cable, cover PV modules using opaque cloth.
Danger	
	<ul style="list-style-type: none"> • For HYD 3000/3680/4000/4600/5000/5500/6000-EP, open-circuit voltage(Voc) of module arrays connected in series must be $\leq 580V$.
Note	

The connected PV modules must have an IEC 61730 Class A rating.

Table 4-1 Relevant current parameters of each model

Model	IscPV(absolute maximum)	Maximum output over current protection
HYD 3000-EP	18A/18A	15A

HYD 3680-EP		16A
HYD 4000-EP		20A
HYD 4600-EP		20. 9A
HYD 5000-EP		21. 7A
HYD 5500-EP		25A
HYD 6000-EP		27. 3A


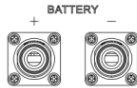
	<ul style="list-style-type: none"> The DVC is the voltage of a circuit which occurs continuously between any two live part in the worst-case rated operating condition when used as intended.
Note	

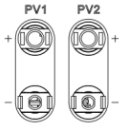


Table 4-2 The decisive voltage class(DVC)

Interface	DVC
PV input port	DVCC
Grid connection port	DVCC
Battery inputport	DVCC
Load connection port	DVCC
USB/WiFi interface	DVCA
COM interface	DVCA
Link Port 0 & Link Port 1	DVCA

4.1. Wire instructions


Table 4-3 Cable description

Component	Description	Recommend ed cable type	Recommended cable specifications
	<p>+: Connect the positive electrode of lithium battery</p> <p> -: Connect the negative electrode of lithium battery</p>	<p>Outdoor multi-core copper cable</p>	<p>Conductor cross-sectional area:22mm² ~ 26mm²</p>

	<p>+: Connect the positive electrode of photovoltaic cell</p>		<p>Industry common outdoor photovoltaic cable</p>	<p>Conductor cross-sectional area:4mm² ~ 6mm²</p>		
<p> -: Connect the negative electrode of photovoltaic cell</p>						
<p>AC LOAD</p> 	<p>Load</p>	<p>L</p>	<p>Outdoor multi-core copper cable</p>	<p>Conductor cross-sectional area:6mm² ~ 10mm²</p>		
		<p>N</p>				
		<p>PE</p>				
<p>AC GRID</p> 	<p>AC</p>	<p>L</p>	<p>Outdoor multi-core copper cable</p>	<p>Conductor cross-sectional area:10mm² ~ 16mm²</p>		
		<p>N</p>				
		<p>PE</p>				

4.2. Connecting PGND Cables

Connect the inverter to the grounding electrode using protection ground (PGND) cables for grounding purpose.

	<ul style="list-style-type: none"> • The inverter is transformer-less, requires the positive pole and negative pole of the PV array are NOT grounded. Otherwise it will cause inverter failure. In the PV power system, all non current carrying metal parts (such as: PV module frame, PV rack, combiner box enclosure, inverter enclosure) should be connected to earth. • The protective grounding of the chassis shell cannot replace the PGND cable of the AC LOAD Port. Ensure that the two PGND cables are reliably connected. • When multiple inverters are deployed, ensure that the
<p>Attention</p>	

	protecton ground points of all inverters are equipotential connected.
--	---

The PGND cables are prepared ($\geq 4\text{mm}^2$ outdoor power cables are recommended for grounding purposes), the color of cable should be yellow-green.

Procedure:

Step 1 Remove the insulation layer with an appropriate length using a wire stripper, as shown in Fig. 4-1 ①.

Step 2 Insert the exposed core wires into the OT terminal and crimp them by using a crimping tool, as shown in Fig. 4-1 ②.

Step 3 Install the crimped OT terminal, flat washer using M5 screw, and tighten the screw to a torque of $3\text{N}\cdot\text{m}$ using an Allen wrench, as shown in Fig. 4-1 ③.

Note 1: L3 is the length between the insulation layer of the ground cable and the crimped part. L4 is the distance between the crimped part and core wires protruding from the crimped part.

Note 2: The cavity formed after crimping the conductor crimp strip should wrap the core wires completely. The core wires shall contact the terminal closely.

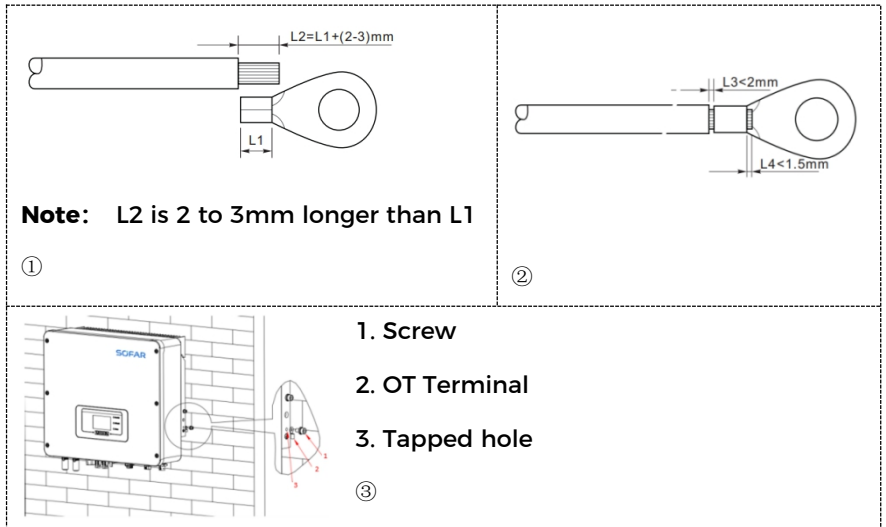


Fig. 4-1 Connecting PGND cable

4.3. PV Connection

Procedure:

Step 1 Select the appropriate cable type and specifications according to the table4-3. Remove cable glands from the positive and negative connectors. (It is recommended that the positive and negative be distinguished by different colors).

Step 2 Remove the insulation layer with an appropriate length from the positive and negative power cables by using a wire stripper as show in Fig. 4-2①.

Step 3 Insert the stripped positive and negative power cables into the positive and negative metal terminals respectively and crimp them using a clamping too.l Ensure that the cables are crimped until they


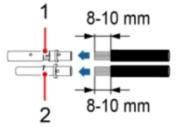
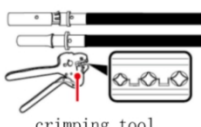
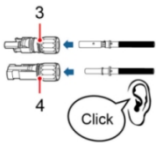
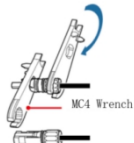
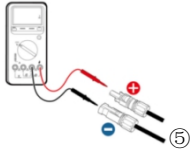
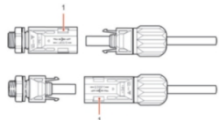
cannot be pulled out by force less than 400 N, as shown in Fig. 4-2②.

Step 4 Insert crimped power cables into corresponding housings until you hear a "click" sound. The power cables snap into place, as shown in Fig. 4-2③.

Step 5 Reinstall cable glands on positive and negative connectors and rotate them against the insulation covers, as shown in Fig. 4-2④.

Step 6 Insert the positive and negative connectors into corresponding PV terminals of the inverter until you hear a "click" sound, as shown in Fig. 4-2⑥.

To remove the positive and negative connectors from the inverter, insert a removal wrench into the bayonet and press the wrench with an appropriate strength, as shown in Fig. 4-2⑦.

 <p style="background-color: red; color: white; padding: 5px; text-align: center;">Danger</p>	<ul style="list-style-type: none"> • Before removing the positive and negative connectors, ensure that the DC SWITCH is OFF. 	
 <p>1: Positive metal contact 2: Negative metal contact ①</p>	 <p>②</p>	 <p>3: Positive connector 4: Negative connector ③</p>
 <p>④</p>	 <p>⑤</p>	 <p>⑥</p>

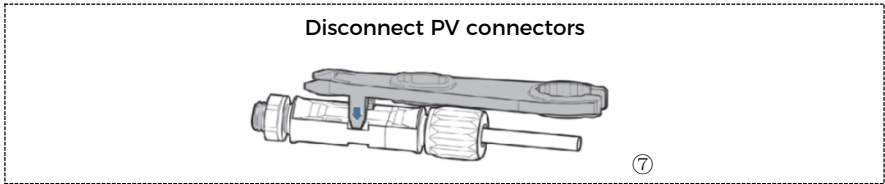


Fig. 4-2 Connect PV

4.4. Battery Connection

Procedure:

Step 1 Select proper battery cable types and specifications based on Table 4-3. Remove cable glands from the positive and negative connectors.

Step 2 Remove the insulation layer of the positive and negative battery cables using a cable disconnecter, as shown in the figure. The recommended length is 8-10mm, Insert the stripped positive and negative power cables into the positive and negative metal terminals respectively and crimp them using a clamping tool, as shown in Fig. 4-3(a)②.

Step 3 Insert the cable input terminal into the cable, insert the bent power cable into the battery wiring port on the inverter, and ensure that the power cable is fixed in place, as shown in Fig. 4-3(a)③.

Step 4 Use a screwdriver to secure the cable, as shown in Fig. 4-3④.

Step 5 Align the input terminal with the battery port on the inverter and tighten it, as shown in Fig. 4-3⑤⑥.

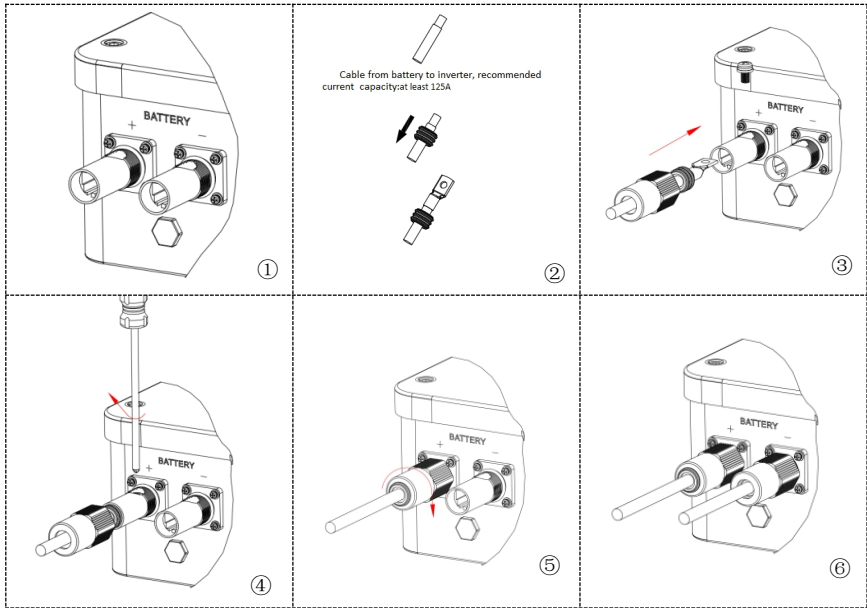


Fig.4-3 Install battery connection

4.5. Load connection

Procedure:

Step 1 Select appropriate cables according to Table4-3, Remove the insulation layer of the load output cable using a wire stripper according to the Fig. 4-4①shown below: A:15~25mmB:6~8mm.

Step 2 Disassemble the load connector according to the Fig. 4-4② shown below: insert the load output cable (with its insulation layer stripped according to step 1) through the waterproof locking cable gland.

Step 3 Connect load output cable as per the following requirements,as

shown in the Fig. 4-4③:

Connect the yellow-green wire to the hole labeled "PE", fasten the wire using an Cross screwdriver;

Connect the brown wire to the hole labeled "L", fasten the wire using an Cross screwdriver;

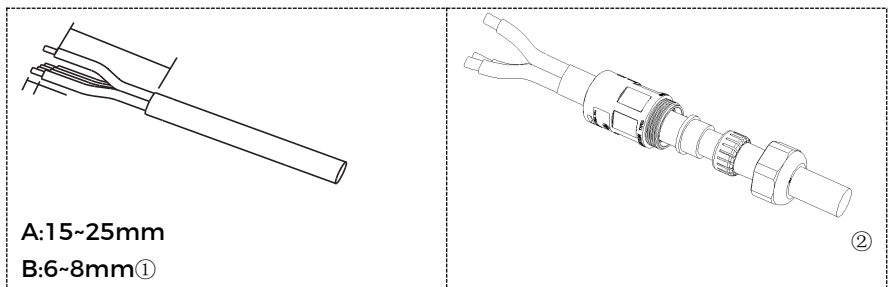
Connect the blue wire to the hole labeled "N", fasten the wire using an Cross screwdriver.

Step 4 Insert the load connector and hear "click", then tighten the waterproof nut at the instantaneous value, as shown in the Fig. 4-4④ below, to ensure that the cable is firmly connected.

Step 5 Connect the connected load connector to the load connector of the inverter. Turn the ac connector knob to lock until you hear a "click" and the clasp is in place, as shown in the Fig. 4-4⑤⑥.

Removing the load connector

Hold the button to unlock and rotate the knob counterclockwise to the unlock position, then pull out the load connector, the following Fig. 4-4⑦, Make sure the grid is disconnected before removing the load connector .



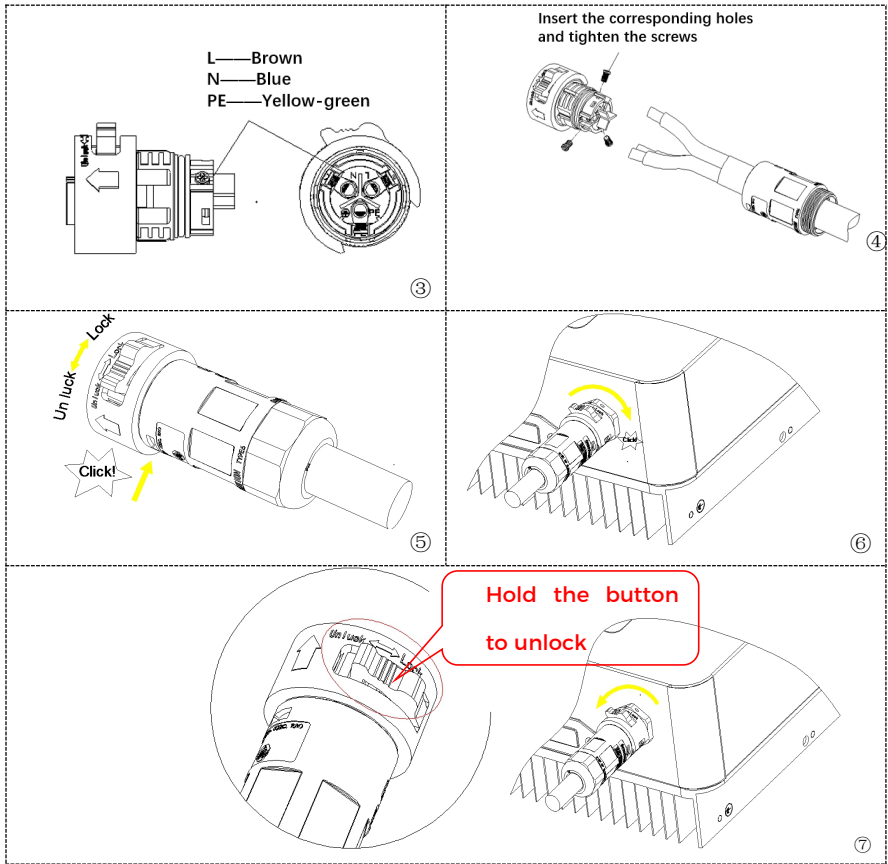


Fig. 4-4 Load connection

4.6. Grid connection

The inverter is equipped with an integrated residual current monitoring unit. When the inverter detects that the residual current exceeds 300mA, the connection to the power grid will be quickly disconnected.

If the external ac switch has leakage protection function, its rated

leakage action current is required to be $\geq 300\text{mA}$.

Procedure:

Step 1 Select the appropriate cable type and specifications according to the table 4-3. Refer to Fig. 4-5① for processing wire.

Step 2 Pass the wire through the terminal, as shown in Fig. 4-5②.

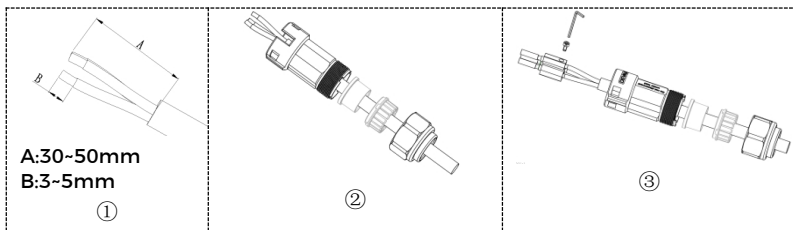
Step 3 According to the mark, lock the wire into the keyhole on the terminal and tighten it with the hexagon socket wrench, as shown in Fig. 4-5③.

Step 4 Push the terminal forward until the sound of "click" is heard, as shown in Fig. 4-5④⑤⑥.

Step 5 Connect the connected grid terminal to the inverter grid port, and push the terminal forward until the sound of "click" is heard, and the terminal connection is completed, as shown in Fig. 4-5⑦⑧.

If you need to remove the terminals from the machine, use the tool to press on the direction indicated by the big arrow and pull the terminals out.

Need to dismantle the end connection, to use the tool, as shown in figure attending ⑩⑪.



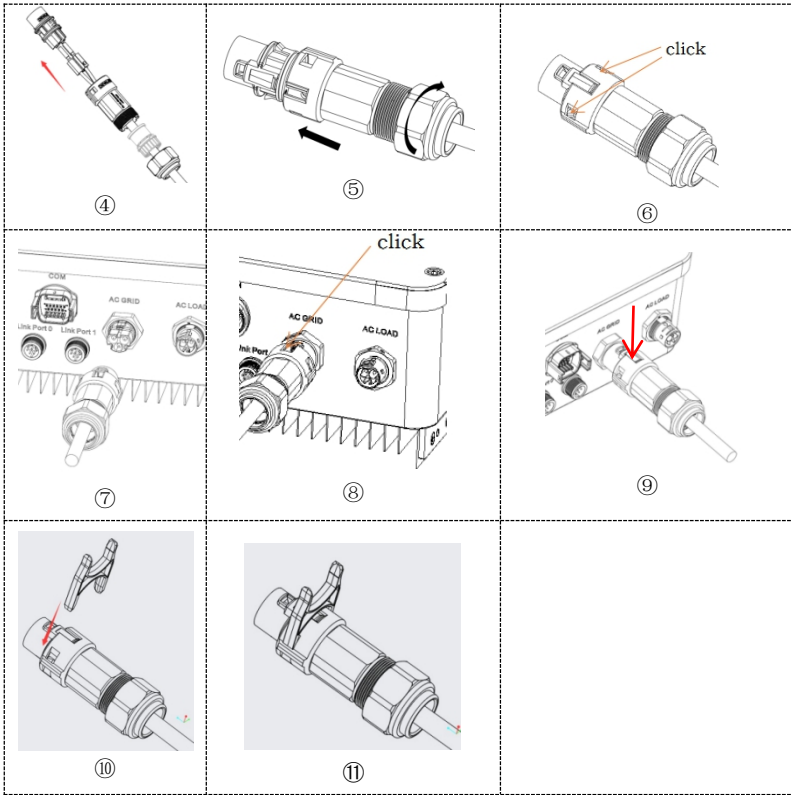


Fig. 4-5 Grid connection

4.7. System electrical topology

SOFAR has already integrated RCMU (residual current monitoring unit) inside inverter. If an external RCD is required, a type-A RCD with rated residual current of 100mA or higher is suggested.

EP series household energy storage system is mainly composed of PV modules, battery modules, inverters, load modules, grid modules,

generator modules, and smart meters /CT.

The inverters AC GRID and AC LOAD are wired with different N and PE wires depending on the regulatory requirements in different regions.

System 1: N and PE lines are wired separately in the distribution box

The wiring method in Figure 4.6 is applicable to areas without special requirements for distribution system wiring.

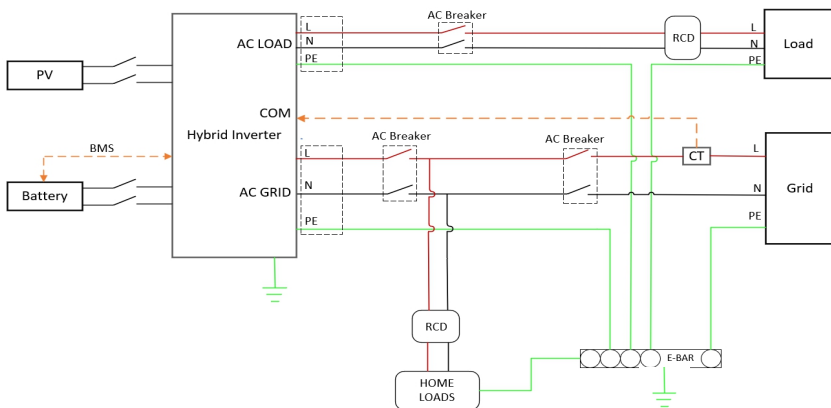


Fig. 4-6 System Electrical Topology (Internal relay controls N-PE shorting)

- a. Ensure that the AC LOAD PE line and AC GRID PE line must be connected to the PE-BAR in the distribution box, as shown in the diagram. Otherwise the inverter may be abnormal in off-grid mode.
- b. Check whether NeutralPointGrounding is enabled, if not, enable it manually.

2. Advanced Settings

OK

Input 0001
11. NeutralPointGrounding

11. NeutralPointGrounding

OK

Enable
Disable

System 2: N and PE lines are connected together in the distribution box

The wiring method in Figure 4-7 is applicable to areas where N and PE are connected together in the distribution box, such as Australia, South Africa, New Zealand, etc.

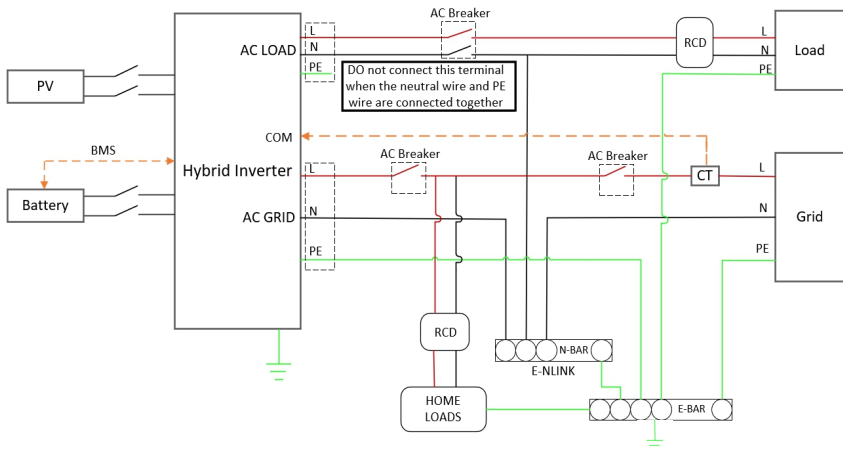





Fig. 4-7 System Electrical Topology
(N and PE wires are connected together)

	<p>Install Residual current device (RCD) in front of the load</p> <ul style="list-style-type: none"> • RCD is necessary for critical load, but optional for normal load. • In off-grid mode, the Entry master switch is unprotected and load leakage could lead to shock danger. • The Entry master switch installed in the house must have earth leakage protection and its rated earth leakage action current > number of inverters * 100mA.
<p>Danger</p>	
	<p>Ensure that the output is grounded</p> <ul style="list-style-type: none"> • In system 1, the PE line of the inverter's GRID port and BAKEUP port must be grounded through the PE-Bar, otherwise there may be a risk of leakage.
	<ul style="list-style-type: none"> • In system 2, NeutralPointGrounding is disabled by default. No manual setup required.
<p>Note</p>	

4.8. External communication interface

4.8.1 USB/WIFI communication interface

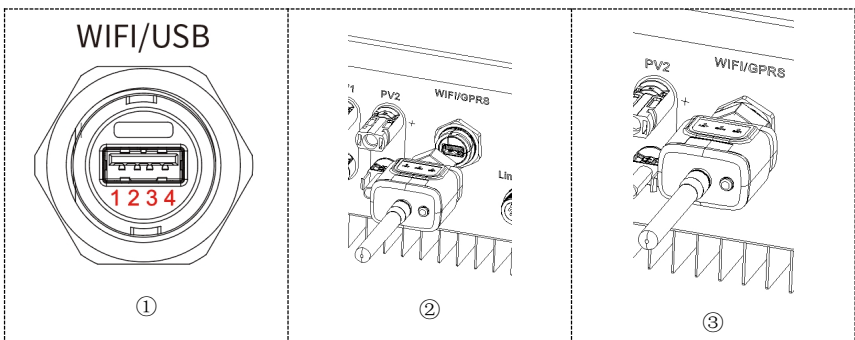


Fig. 4-8 USB/WIFI communication interface

Table 4-4 Interface description

PIN	Definition	Function	Note
1	GND. S	USB power -	The USB power supply is 5V/1A; Cannot be used for external device charging
2	DP	USB data +	
3	DM	USB data -	
4	VBUS	USB power +	

Refer to the Fig. 4-9 and Fig. 4-10 shown below.



Fig.4-9

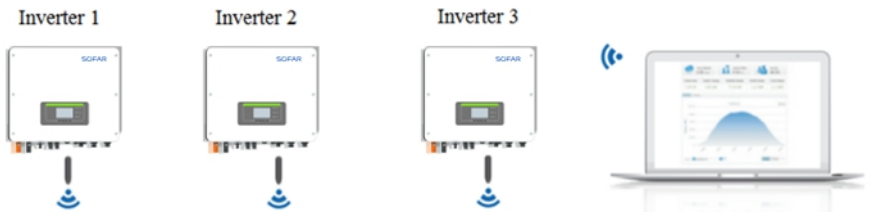


Fig.4-10

The operation information (generated energy, alert, operation status) of the inverter can be transferred to PC or uploaded to the server via WiFi/GPRS. Users can choose to use web or APP for monitoring and viewing according to their needs. They need to register an account and bind the device with the WiFi/GPRS SN number. The SN number of the

WiFi/GPRS shall be affixed to the package box and the WiFi/GPRS.

Register your system at the website home. solarmanpv.com. For this, enter the serial number found on the stick logger.

Installers use the portal at pro.solarmanpv.com.

To download the app, search for “SOLARMAN” in the Apple or Google Play store, or use the following QR codes:

SOLARMAN Smart (for end customers):



• **SOLARMAN Business** (for installers):

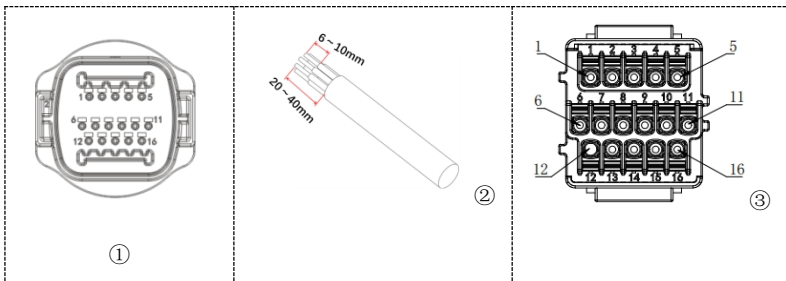


4. 8. 2 COM-Multifunction communication interface

Table 4-5 Interface description

PIN	Definition	Function	Note
1	CANH	CAN high data	Communication with lithium battery BMS, the
2	CANL	CAN low data	

3	485-2TX+	RS485 differential signal +	inverter CAN be adaptive to lithium battery BMS to provide CAN communication and RS485 communication
4	485-2TX-	RS485 differential signal -	
5	485-1TX+	RS485 differential signal +	Wired monitoring or inverter cascade monitoring
6	485-1TX-	RS485 differential signal -	
7	GND-S	(DRMS) logic interfaces are applicable to the following safety standards: Australia (AS4777), European General (50549), Germany (4105)	Logic interface connections
8	DRMS1/5		
9	DRMS2/6		
10	DRMS3/7		
11	DRMS4/8		
12	DRMS0		
13	CT-	The current sensor outputs a negative electrode	Connect current sensor of power grid
14	CT+	The current sensor outputs a positive electrode	
15	RS485-B	RS485 differential signal -	Meter communication
16	RS485-A	RS485 differential signal +	



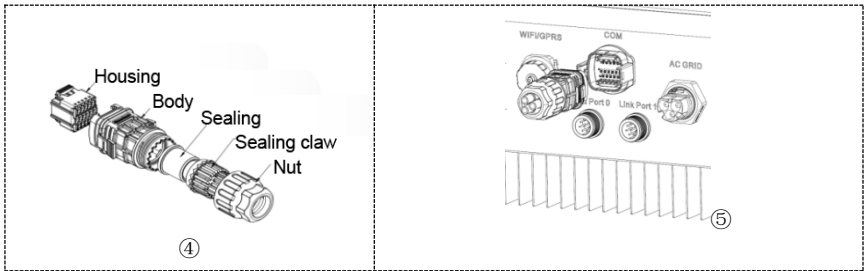


Fig. 4-11 COM interface

1. RS485 (Wired monitoring or inverter cascade monitoring)

Refer to the figure 4-12 shown below, connect the RS485+ and RS485- of the inverter to the TX+ and TX- of the RS485→USB adapter, and connect the USB port of the adapter to the computer. (NOTE: The length of the RS485 communication cable should be less than 1000 m.)

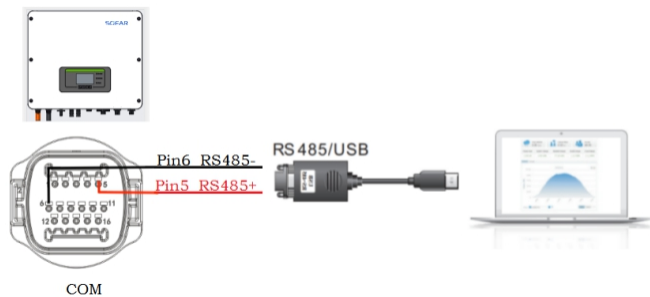


Fig. 4-12

RS485 wires are connected in parallel between inverters, (NOTE: When multiple inverters are connected via RS485 wires, set communication address to differentiate the inverters, please refer to this manual<6. 3. 1System setting→8. Communication Add>).

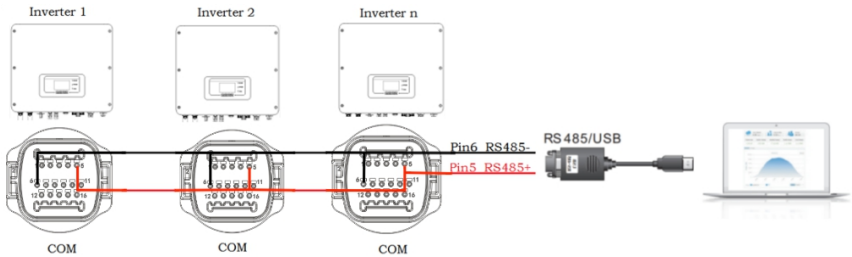


Fig. 4-13 RS485 connection(cascade of monitoring between inverters)

2. Logic interface

The logic interface pin definitions and circuit connections are as follows:
 Logic interface pin are defined according to different standard requirements

(a)Logic interface for AS/NZS 4777. 2:2015, also known as inverter demand response modes (DRMs).

The inverter will detect and initiate a response to all supported demand response commands within 2s.The inverter will continue to respond while the mode remains asserted.

Table 4-6 Function description of the DRMs terminal

Pin NO.	Function
8	DRM1/5
9	DRM2/6
10	DRM3/7
11	DRM4/8
12	DRM0
7	GND-S

(b)Logic interface for VDE-AR-N 4105:2018-11, is in order to control and/or limit the inverter’s output power.

The inverter can be connected to a RRCR (Radio Ripple Control Receiver) in order to dynamically limit the output power of all the inverters in the installation.

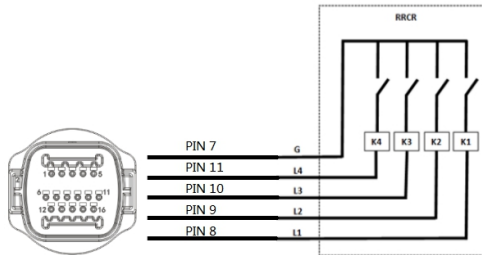


Fig. 4-14 Inverter – RRCR Connection

Table 4-7 Function description of the terminal

Pin NO.	Pin name	Description	Connected to (RRCR)
8	L1	Relay contact 1 input	K1 - Relay 1 output
9	L2	Relay contact 2 input	K2 - Relay 2 output
10	L3	Relay contact 3 input	K3 - Relay 3 output
11	L4	Relay contact 4 input	K4 - Relay 4 output
7	G	GND	Relays common node

Table 4-8 The inverter is preconfigured to the following RRCR power levels,

close is 1, open is 0

L1	L2	L3	L4	Active Power	Cos(ϕ)
1	0	0	0	0%	1
0	1	0	0	30%	1
0	0	1	0	60%	1
0	0	0	1	100%	1

(c)Logic interface for EN50549-1:2019, is in order to cease active power output within 5s following an instruction being received at the input

interface.

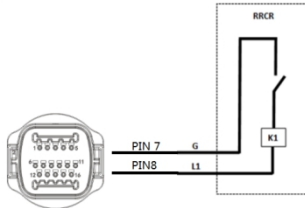


Fig. 4-15 Inverter - RRCR Connection

Table 4-9 Function description of the terminal

Pin NO.	Pin name	Description	Connected to (RRCR)
8	L1	Relay contact 1 input	K1 - Relay 1 output
7	G	GND	K1 - Relay 1 output

Table 4-10 The inverter is preconfigured to the following RRCR power levels,

close is 1, open is 0

L1	Active Power	Power drop rate	Cos(ϕ)
1	0%	< 5 seconds	1
0	100%	/	1

3. Meter/CT

PIN15 and PIN16 are used for meter communication, the electricity meter is shown in the fig. 4-16①, PIN15 and PIN16 correspond to 7,8 respectively on the electricity meter, as shown in Fig. 4-16③.

The connection mode is shown in Fig. 4-16②. The 1/2 and 3/4 on the electricity meter are connected to voltage signals L and N respectively. And the current needs to be connected through the current transformer, 5,6 correspond to the current transformer.

NOTE: The direction of the current transformer is shown in Fig. 4-16④.

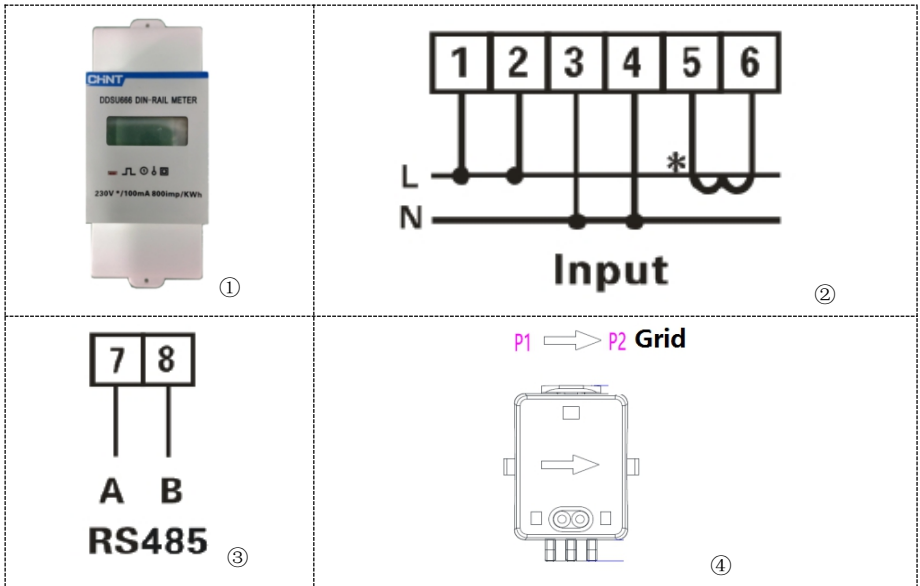


Fig. 4-16 Meter

If you need to use the CT alone, attach the CT to PIN13 and PIN14.

There are two ways to get grid current information :

Table 4-11 Plan A:CT; Plan B: Meter +CT

Plan A: CT	Plan B: Meter +CT
CT (3000:1) 120A/40mA	Meter: DDSU666 DIN-RAIL METER
Pin13--Pin14	230*/100mA CT

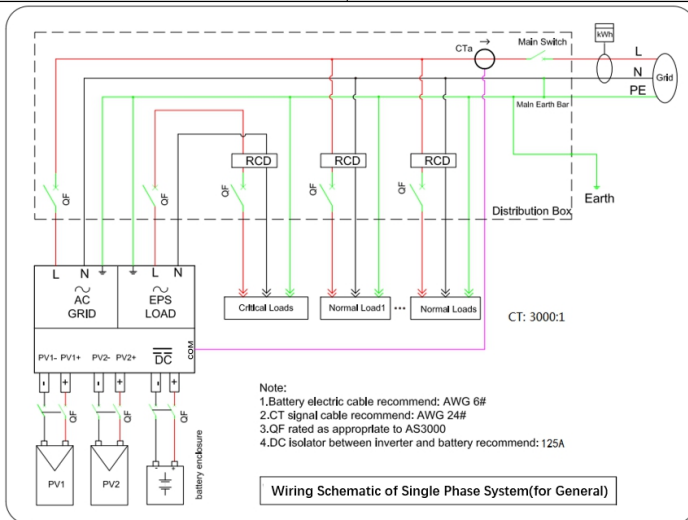
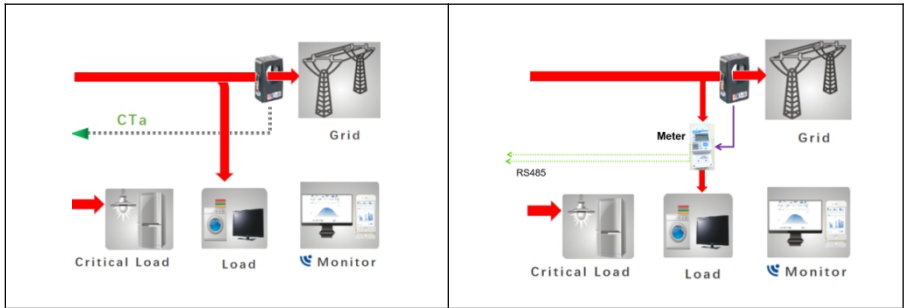


Fig.4-17 Electrical connections (Plan A:CT)

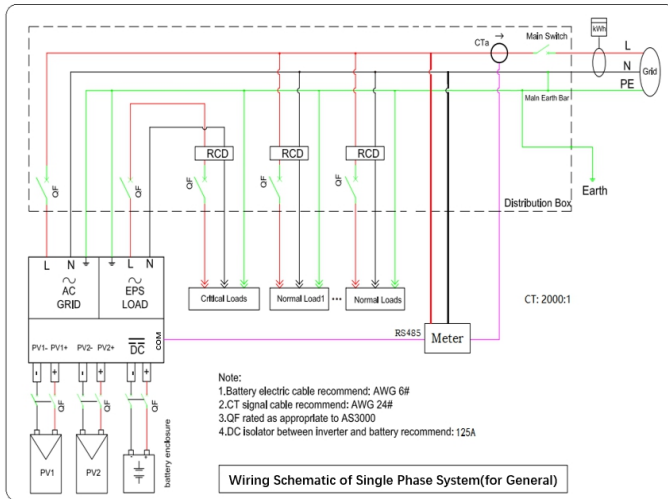


Fig.4-18 Electrical connections (Plan B: Meter +CT)

4. Feed-in limit function

The feed-in limit function can be used to limit the power fed back into the grid. In order to achieve this function, power measurement devices must be installed according to the system.

Single-phase limit: The power output of the inverter to the power grid does not exceed the set power limit value.

	<ul style="list-style-type: none"> For the Single-phase limit Setting, the current sensor must be properly connected to the L line on the meter. The meter wiring is shown in Figure 4-14. In addition, refer to 6. 3. 2(2) for feed-in limit Settings. If communication with the smart meter is interrupted, the inverter limits its output power to the set power limit value.
Note	

4. 8. 3 Link 0&1-Cascade communication interface

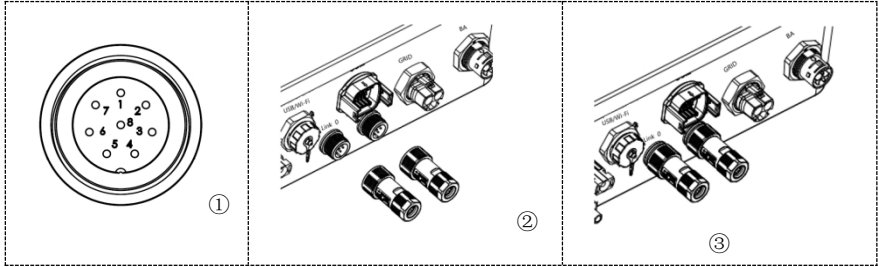


Fig. 4-19 Link Port

When using the parallel system, the inverter settings and notes please refer to this manual<6. 3. 2 Advanced setting→6. Parallel setting>.

Note(AC LOAD is also parallel for parallel machines):

1. The first and last inverters need to be connected with 8Pin connection terminals.
2. The cable length of the AC LOAD terminal connected from the LOAD terminal to each machine shall be consistent with the specification of the cable length, so as to ensure that the loop impedance is consistent and the current of the LOAD current diverted to each machine is nearly equal.
3. When the total power of AC Load is greater than 110% of the rated power of the machine(For example, one inverter AC LOAD has a maximum allowable power of 5. 5kVA and six parallel machines AC LOAD has a maximum allowable power of 33kVA), the Load should not be connected to AC Load and should be connected to AC Grid.
4. When inverters in parallel, All AC gird should be Shared a total air

switch; All AC LOAD should be Shared another total air switch .

5. In parallel mode, each inverter must ground with the PGND cable. (refer to 4.2)

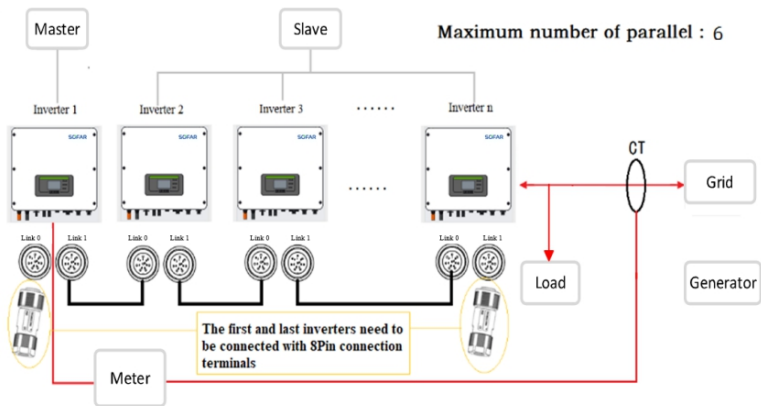


Fig. 4-20 parallel system

5. Buttons and indicator lights

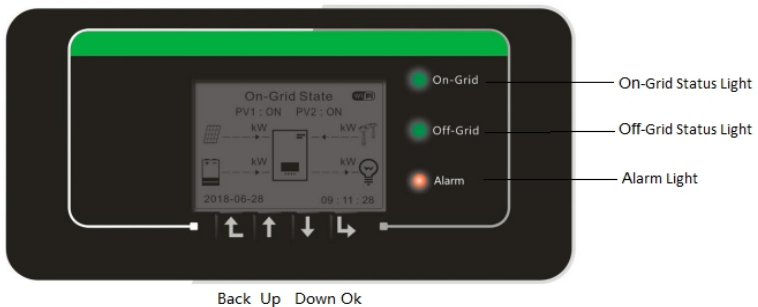


Fig. 5-1 Buttons and alarm lights

5.1. Buttons

- ✧ press “Back” to the previous screen or enter the main interface.
- ✧ press “Up” to the upper menu option or value plus 1.
- ✧ press “Down” to the lower menu option or value minus 1.
- ✧ Press “OK” to select the current menu option or switch to the next digit.

5.2. Alarm lights and status

Table. 5-1 Alarm lights and status

Status	On Grid Green light	Off-Grid Green light	Alarm Red light
On-grid	ON		
Standby (On-Grid)	Flashing		
Off-Grid		ON	
Standby (Off-Grid)		Flashing	
Alarm			ON

6. Operation

6.1. Double Check

Please double check the following before operation.

1. Inverter is firmly fastened to the mounting bracket on the wall.
2. PV+/PV- wires are firmly connected, polarity and voltage are correct.
3. BAT+/BAT- wires are firmly connected, polarity and voltage are correct.
4. DC isolator is correctly connected between battery & inverter, DC isolator: OFF.
5. GRID / LOAD cables are firmly / correctly connected.
6. AC circuit breaker is correctly connected between inverter GRID port & GRID, circuit breaker: OFF.
7. AC circuit breaker is correctly connected between inverter LOAD port & critical load, circuit breaker: OFF.
8. For lithium battery, please ensure that the communication cable has been correctly connected.

6.2. First Time Setup (IMPORTANT!)

IMPORTANT: Please follow the following procedure to switch ON inverter.

1. Make sure there's no power generation in inverter's phase.
2. Turn ON DC switch.

3. Switch ON the battery.Turn ON DC isolator between battery & inverter.
4. Turn ON AC circuit breaker between the inverter GRID port & GRID.
5. Turn ON AC circuit breaker between the inverter LOAD port & critical load.
6. Inverter should start to operate now.

You need to set the following parameters before inverter starts to operate.

Table 6- 1 Set the parameters

Parameter	Note
1. OSD Language Option	The default English.
2. System time setting and confirmation	If you are connected to the host computer such as collector or mobile phone APP, the time should have been calibrated to the local time.
*3. Safety parameter import	Refer to the country code table below and select country and code.
4. Setting Input Mode	You can select the PV input mode as required.
*5. Set battery parameters	Default values can be displayed according to the input channel configuration.
6. Setup is complete	

*4. Set battery parameters (Take the default input channel configuration as an example). Start with battery 1 and work your way up to battery n.

Battery Type	Type of band communication protocol	Lead acid or no protocol type
--------------	-------------------------------------	-------------------------------

1. Battery Address	1. Battery Capacity
2. Battery Charge Current Limit	2. Battery Nominal Voltage
3. Battery Discharge Current Limit	3. Battery Cell Type
4. Battery DOD(EOD)	4. Battery Charge Current Limit
	5. Battery Discharge Current Limit
	6. Battery DOD(EOD)

Table 6-2 Default values for other Settings

Item	The default state
Energy Storage Mode	Self-use mode
EPS Mode	Disable
Feed-in Limit	Disable
IV Curve Scan	Disable
Logic interface	Disable

6.3. Menu

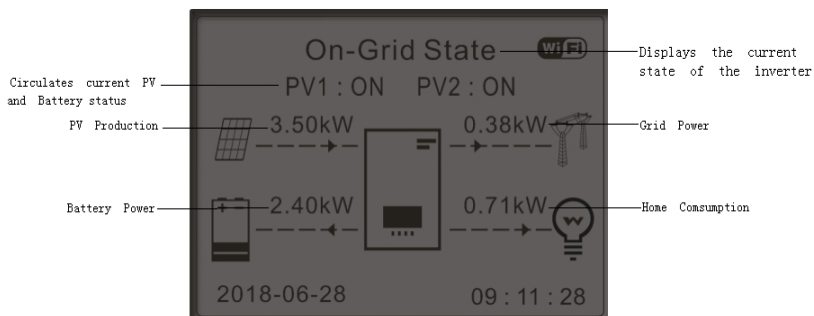
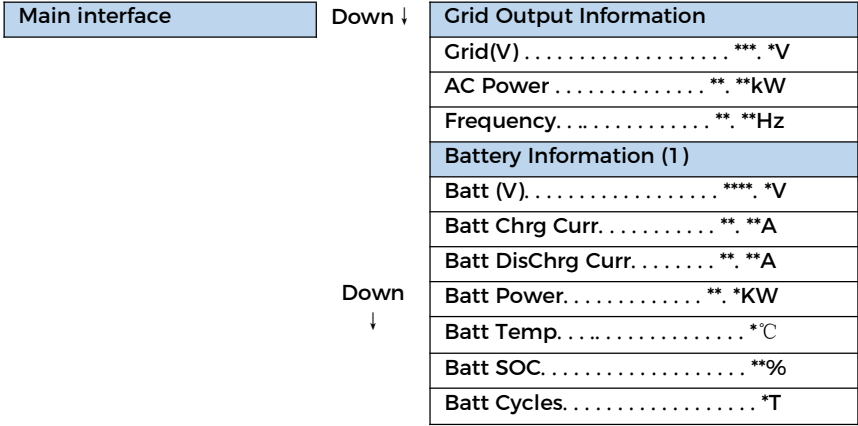
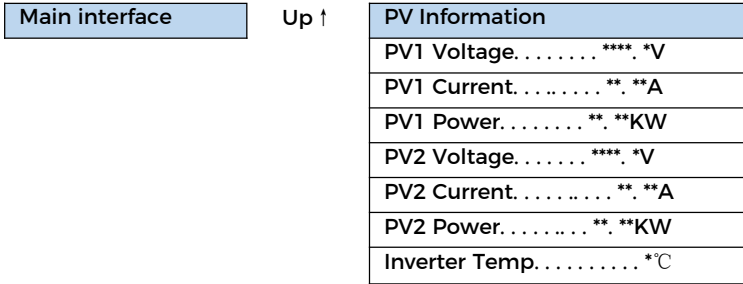


Fig 6-1.Main interface

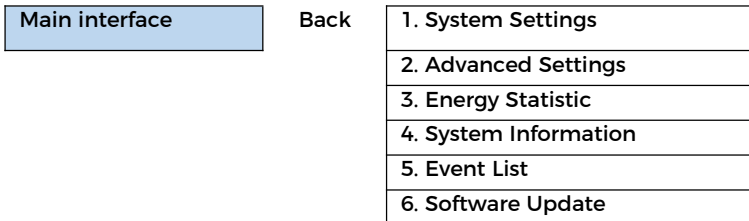
In the main interface, press “Down” button to enter grid/battery parameters page.



In the main interface, press “UP” button to enter PV parameters page.



In the main interface, press “back” button to enter main menu. The main menu has the following six options.



6. 3. 1 System setting



2. Time
3. Safety Param.
4. Energy Storage Mode
5. Auto Test(Only for Italy)
6. PV Input Mode
7. EPS Mode
8. Communication Addr.

1. Language Settings

Used to set the menu display language.

1. Language Settings	OK	1. 中文	OK
		2. English	
		3. Italiano	
		

2. Time


Set the system time for the inverter.

2. Time	OK	Time
		2020-05-13 17:07:00

3. Safety Param

User can modify the Safety Param of the machine through the usb flash disk, and the user needs to copy the parameter information that needs to be modified into the usb flash disk card in advance.

3. Safety Param	OK	1. Select safety regulations	OK
		2. Select USB file	OK

	<ul style="list-style-type: none"> To enable this feature, please contact the Sofar technical support .
Note	

4. Energy Storage Mode

4. Energy Storage Mode

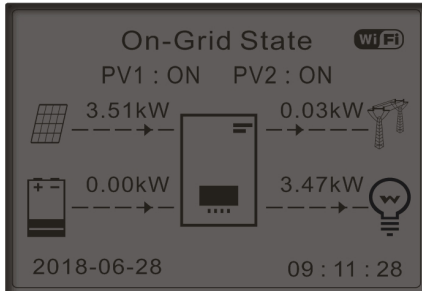
OK

1. Self-use Mode
2. Time-of-use Mode
3. Timing Mode
4. Passive Mode
5. Peak shaving mode

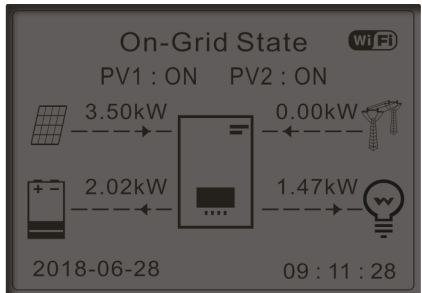
Self-use Mode

In Self-use mode, inverter will automatically charge & discharge the battery.

1) If PV generation = LOAD consumption ($\Delta P < 100W$) inverter won't charge or discharge the battery.

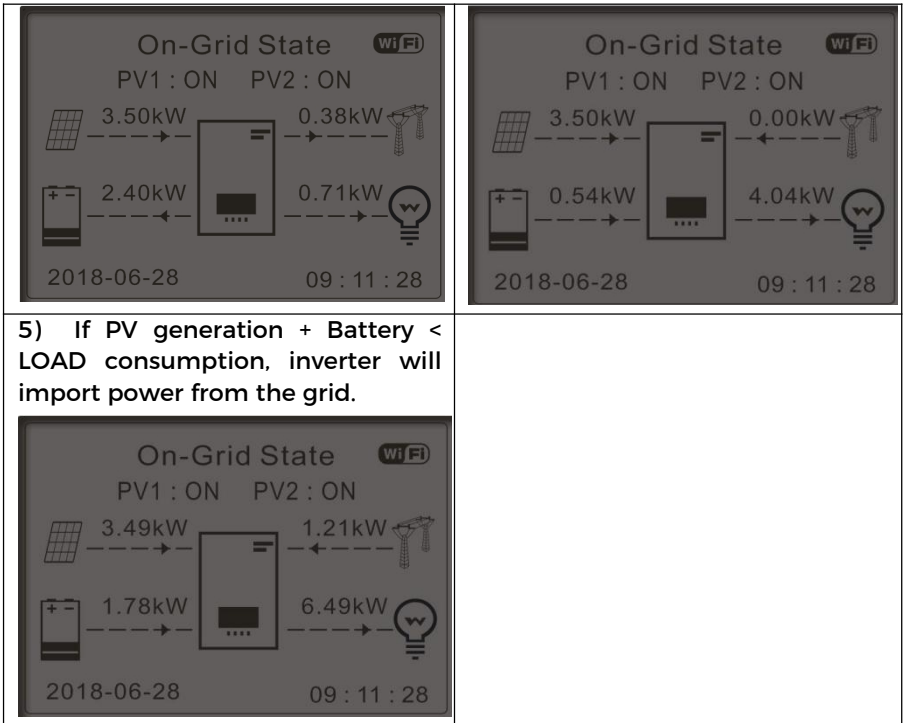


2) If PV generation > LOAD consumption, the surplus power will be stored in the battery.



3) If the battery is full(or already at Max Charge Power), excess power will be exported to the grid.

4) If PV generation < LOAD consumption, it will discharge the battery to supply power to load.



Time-of-use Mode

If electricity is more expensive in high demand time (peak rate) & electricity is much cheaper in low demand time (off-peak rate).

You can select an off-peak period to charge your battery. Outside the off-peak charge period, inverter is working in Auto Mode.

If your family normally go to work/school on weekdays & stay at home on weekends, which means the home electricity consumption is much higher on weekends. Thus, you need to store some cheap electricity on weekends only. This is possible using our Time-of-use mode.

In summer, if your PV system can produce more electricity than your home electricity consumption. Then you don't need to set an off-peak charge period to charge your battery in summer at all. You can select an effective date (normally winter) for Time-of-use mode in this case. Outside the effective date, inverter is working in Auto Mode.

You can set multiple Time-of-use rules to meet your more complex requirement. Right now we support 4 rules maximum (rule 0/1/2/3).

2. Time-of-use Mode	OK	Set Time-of-use Mode			
		Rules.0:	Enabled/Disabled		
		From	To	SOC	Charge
		02h00m	-04h00m	070%	01000W
		Effective date			
		Dec.22	-	Mar.21	
	Weekday	select			
	Mon. Tue.Wed.Thu.				
	Fri. Sat.Sun.				

Set Timing Mode

Changing the value of a rule can set multiple timing rules.

3. Timing Mode	OK	Timing Mode		
		Rules. 0:	Enabled/Disabled	
		Charge Start	22 h 00 m	
		Charge End	05 h 00 m	
		Charge Power	02000 W	
		DisCharge Start	14 h 00m	
		DisCharge End	16 h 00m	
		DisCharge Power	02500 W	

Passive Mode

For more detailed information, please ask representative of SOFAR to

get a copy of passive mode communication protocol.

4. Passive Mode	OK	Success
-----------------	----	---------

Peak shaving mode

5. Peak shaving mode	OK	Peak Shaving Mode
		Priority Buy Power 0100W

5. Auto Test (ONLY for Italian Market)

5. Auto Test	OK	1. Autotest Fast
		2. Autotest STD

Autotest Fast

1. Autotest Fast	OK	Start Autotest	Press "Ok" to start
		Testing 59. S1...	
		↓	Wait
		Test 59. S1 OK!	
		↓	Wait
		Testing 59. S2...	
		↓	Wait
		Test 59. S2 OK!	
		↓	Wait
		Testing 27. S1...	
		↓	Wait
		Test 27. S1 OK!	
		↓	Wait
		Testing 27. S2...	
		↓	Wait
		Test 27. S2 OK!	
		↓	Wait
		Testing 81>S1...	
		↓	Wait

Test 81>S1 OK!	
↓	Wait
Testing 81>S2...	
↓	Wait
Test 81>S2 OK!	
↓	Wait
Testing 81<S1. . .	
↓	Wait
Test 81<S1 OK!	
↓	Wait
Testing 81<S2. . .	
↓	Wait
Test 81<S2 OK!	
↓	Press "Ok"
Auto Test OK!	
↓	Press "Down"
59. S1 threshold 253V 900ms	
↓	Press "Down"
59. S1: 228V 902ms	
↓	Press "Down"
59. S2 threshold 264. 5V 200ms	
↓	Press "Down"
59. S2: 229V 204ms	
↓	Press "Down"
27. S1 threshold 195. 5V 1500ms	
↓	Press "Down"
27. S1: 228V 1508ms	
↓	Press "Down"

27. S2 threshold 34. 5V 200ms	
↓	Press "Down"
27. S2: 227V 205ms	
↓	Press "Down"
81>. S1 threshold 50. 5Hz 100ms	
↓	Press "Down"
81>. S1 49. 9Hz 103ms	
↓	Press "Down"
81>. S2 threshold 51. 5Hz 100ms	
↓	Press "Down"
81>. S2 49. 9Hz 107ms	
↓	Press "Down"
81<. S1 threshold 49. 5Hz 100ms	
↓	Press "Down"
81<. S1 50. 0Hz 105ms	
↓	Press "Down"
81<. S2 threshold 47. 5Hz 100ms	
↓	Press "Down"
81<. S2 50. 1Hz 107ms	

Autotest STD

2. Autotest STD

Press OK to start

The test procedure is same as Autotest Fast, but it's much more time consuming.

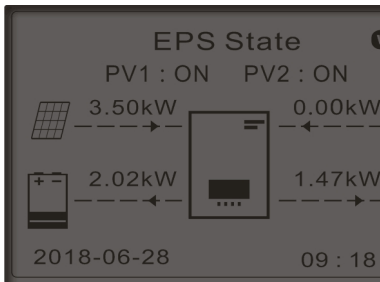
6. PV Input Mode

6. PV Input Mode	OK	Parallel	OK	Success
		Independent		OK

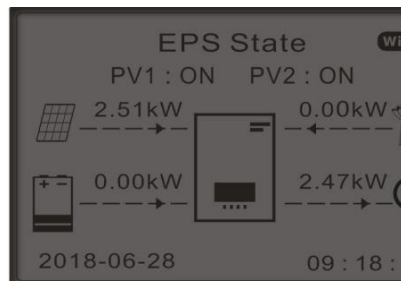
7. EPS Mode

7. EPS Mode	OK	1. EPS Mode Control	OK	1. Enable	OK
				2. Disable	OK

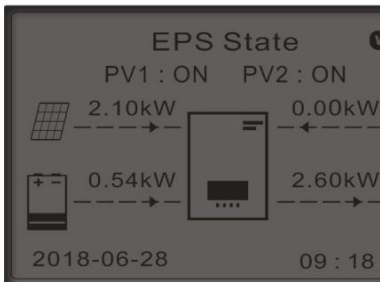
1) If PV generation > LOAD consumption ($\Delta P > 100W$), inverter will charge battery.



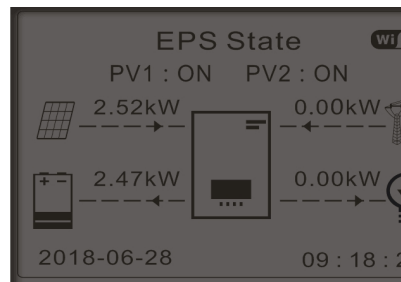
2) If PV generation = LOAD consumption, inverter won't charge or discharge battery.



3) If PV generation < LOAD consumption ($\Delta P > 100W$), inverter will discharge battery.



4) If PV generation is normal, but LOAD consumption=0, the surplus power will be stored in the battery.



8. Communication Addr

8. Communication Addr	OK	1. Communication Addr
-----------------------	----	-----------------------

2. Baud Rate

6.3.2 Advanced setting

2. Advanced Settings

Input0001

1. Battery Parameter
2. Feed-in Limitation
3. IV Curve Scan
4. Logic Interface
5. Factory Reset
6. Parallel settings
7. Reset Bluetooth
8. CT Calibration
9. Battery Active
10. Set PCC Meter
11. NeutralPointGrounding

1. Battery Parameter

1. Battery Parameter

OK

1. Battery Type
2. PYLON-AH (Only for PYLON)
3. Max Charge (A)
4. Max Discharge (A)
5. Discharge Depth
6. Save

Depth of Discharge

For example: if Discharge Depth = 50% & EPS Discharge Depth = 80%.

While grid is connected: Inverter won't discharge the battery when its SOC is less than 50%.

In case of blackout: Inverter will work in EPS mode (if EPS mode is enabled) & keep discharging the battery till battery SOC is less than

20%.

5. Discharge Depth	OK	Discharge Depth 80%
		Discharge Depth
		EPS 80%
		EPS Safety Buffer 20%

2. Set Feed-in Limit

The user can enable “Feed-in Limit” to limit the max export power to grid. Reflux Power set is desired max export power to grid. Refer to 4. 7. 2 for connection of the system when using Feed-in Limit function.

2. Set Feed-in Limit	OK	1. Feed-in Limit	OK	Enable
		2. Feed-in Power	OK	Disable
		3. Hard Limit Control	OK	***KW
				Enable
				Disable

3. IV Curve Scan

The user can enable “IV Curve Scan” (MPPT scan) to make inverter to find the global max power point periodically to deliver max power from a partially shaded PV array.

The user can input scan period or make inverter to perform a scan right away.

3. IV Curve Scan	OK	1. Scan Control	OK	Enable
		2. Scan Period	OK	Disable
		3. Force Scan	OK	***min(s)

4. Logic Interface

Enable or disable logical interfaces. Please refer to this manual 4. 7. 2,

inverter logic interface connection for details.

4. Logic Interface	OK	Enable	OK
		Disable	OK

5. Factory Reset

5. Factory Reset	OK	1. Clear Energy Data	OK
		2. Clear Events	OK
		3. Factory Reset	

Clean the inverter of the total power generation.

1. Clear Energy Data	OK	Please confirm!	Cancel	OK
			Clear	OK

Clean up the historical events recorded in the inverter.

2. Clear Events	OK	Please confirm!	Cancel	OK
			Clear	OK

Restore factory settings to the inverter.

3. Factory Reset	OK	Are you sure?	OK
------------------	----	---------------	----

6. Parallel setting

Please refer to <4. 7. 3 Link Port 0&1-Cascade communication interface> for the connection method of the parallel system.

6. Parallel Settings	OK	1. Parallel Control	
		2.Parallel Primary-Replica	
		3. Parallel Address	
		4. Save	

(1) Parallel Control: Enable or disable parallel functions.Both the master and the slave must enable this function.

(2) Parallel Primary-Replica: Set up the Primary and Replica. Select one inverter as the Primary and set the others to Replica.

(3) Parallel Address: Set the parallel address. Each inverter needs to set a parallel address, and the parallel address in a parallel system cannot be repeated. (NOTE:The parallel address is different from the communication address used for monitoring.)

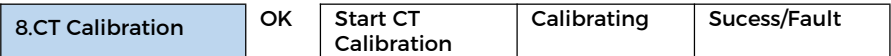
(4) Save: Save after the setup is complete.

7. Reset Bluetooth



8. CT Calibration

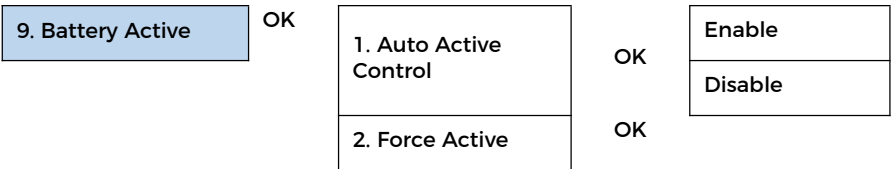
To calibrate the direction and phase of the CT, the battery should be charged or discharged when using this function.



Check if the battery is charging or discharging when calibration fails.

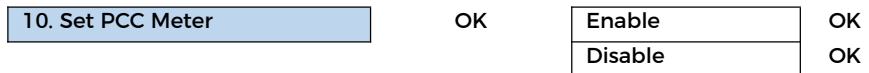
9. Battery Active

The user can enable “Battery Active” to make the battery active.



10. Set PCC Meter

The user can enable “Set PCC Meter” to enable the meter to be switched on and off.



The following situations may occur after PCC is enabled or disabled:

- (1) Set "Enable".If the PCC is not connected, "ID105" will appear;
- (2) Set "Enable", connect PCC.If the communication is not properly set, an "ID105" fault will occur.Therefore, the user needs to set the communication protocol of the PCC to n. 1 or n. 2, and the communication address to 1.
- (3) Set "Disable", connect PCC, no fault report.If CT is connected, the PPC power is the power calculated by the CT sampling current.If CT is not connected, the PCC power is the power output by the inverter to the grid.

11. NeutralPointGrounding

You can set the neutral point grounding function based on the installation requirements of your country.

11. NeutralPointGrounding	OK	Enable	OK
		Disable	OK

6.3.3 Energy Statistic

3. Energy Statistic	OK																						
	Down ↓	<table border="1"> <thead> <tr> <th colspan="2">Today</th> </tr> </thead> <tbody> <tr> <td>PV</td> <td>***KWH</td> </tr> <tr> <td>Load</td> <td>***KWH</td> </tr> <tr> <td>Export</td> <td>***KWH</td> </tr> <tr> <td>Import</td> <td>***KWH</td> </tr> <tr> <td>Charge.....</td> <td>***KWH</td> </tr> <tr> <td>Discharge.....</td> <td>***KWH</td> </tr> <tr> <th colspan="2">Month</th> </tr> <tr> <td>PV</td> <td>***KWH</td> </tr> <tr> <td>Load</td> <td>***KWH</td> </tr> <tr> <td>Export</td> <td>***KWH</td> </tr> </tbody> </table>	Today		PV	***KWH	Load	***KWH	Export	***KWH	Import	***KWH	Charge.....	***KWH	Discharge.....	***KWH	Month		PV	***KWH	Load	***KWH	Export
Today																							
PV	***KWH																						
Load	***KWH																						
Export	***KWH																						
Import	***KWH																						
Charge.....	***KWH																						
Discharge.....	***KWH																						
Month																							
PV	***KWH																						
Load	***KWH																						
Export	***KWH																						

	Import. **KWH
	Charge. **KWH
	Discharge. **KWH
Down ↓	Year
	PV **KWH
	Load **KWH
	Export **KWH
	Import. **KWH
	Charge. **KWH
	Discharge. **KWH
Down ↓	Lifetime
	PV **KWH
	Load **KWH
	Export **KWH
	Import. **KWH
	Charge. **KWH
	Discharge. **KWH

6. 3. 4 System information

4. System information

OK	1. Inverter Info
	2. Battery Info
	3. Safety Param.
	4. debug info

1. Inverter Info

OK	Inverter Info (1)
	Product SN
	Hardware Version
	Power Level
	Safety Firmware Version
Down	Inverter Info (2)
	Software Version
	Country
	Country Code Version
Down	Inverter Info (3)

	PV Input Mode
	Energy Storage Mode
	RS485 Address
	EPS Mode
Down	Inverter Info (4)
	IV Curve Scan
	Logic Interface
Down	Inverter Info (5)
	Power Factor
	Feed-in Limit
	Insulation resistance

2. Battery Info

OK	Bat1 Information(1)
	Battery Type
	Battery Capacity
	Discharge Depth
Down	Bat1 Information(2)
	Max Charge (A)
	Max Charge (V)
	Max Discharge (A)
	Min Discharge (V)

3. Safety Param.

OK	Safety Param. (1)
	OVP 1
	OVP 2
	UVP 1
	UVP 2
Down	Safety Param.(2)
	OFP 1
	OFP 2
	UFP 1
	UFP 2
Down	Safety Param.(3)
	OVP 10mins

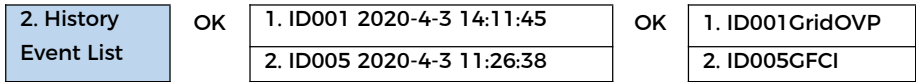
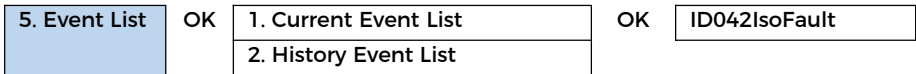
4. debug info

OK	debug info
----	------------

Dsp1 version
Stat1
Stat2
Stat3

6.3.5 Event List

Event List is used to display the real-time event records, including the total number of events and each specific ID No.and happening time.User can enter Event List interface through main interface to check details of real-time event records, Event will be listed by the happening time, and recent events will be listed in the front.



6.3.6 Software Update

HYD 3000/3680/4000/4600/5000/5500/6000-EP inverters offer software upgrade via usb flash drive to maximize inverter performance and avoid inverter operation error caused by software bugs.

Upgrade file folder name is firmware HYD-EP.The three upgrade file names are HYD-EP_ARM. bin, HYD-EP_DSPM. bin, HYD-EP_DSPTS. bin.

Step 1 Insert the usb flash drive into the compute.

Step 2 SOFAR will send the Software code to the user who needs to update.After user receive the file,please decompressing file and cover the original file in usb flash drive.

Step 3 Insert the usb flash drive into the USB/Wifi interface.

Step 4 Then turn on DC switch.

Step 5

6. Software Update	OK	Input password	OK Input 0715
			Start Update
			Updating DSP1
			Updating DSP2
			Updating ARM

Step 6 If the following errors occur, please upgrade again. If this continues many times, contact technical support for help.

USB Fault	MDSP File Error	SDSP File Error
ARM File Error	Update DSP1 Fail	Update DSP2 Fail
Update ARM Fail		

Step 7 After the update is completed,turn off the DC breaker, wait for the LCD screen extinguish, then restore the WiFi connection and then turn on the DC breaker and AC breaker again,the inverter will enters the running state.User can check the current software version in System Information>>InverterInfo>>Input 0715>> SoftVersion.

7. Troubleshooting

This section contains information and procedures for solving possible problems with the inverter.

- This section help users to identify the inverter fault. Please read the following procedures carefully:
 - ✧ Check the warning, fault messages or fault codes shown on the inverter screen, record all the fault information.
 - ✧ If there is no fault information shown on the screen, check whether the following requirements are met:
 - Is the inverter mounted in a clean, dry place with good ventilation?
 - Is the DC switch turned ON?
 - Are the cables adequately sized and short enough?
 - Are the input and output connections and wiring in good condition?
 - Are the configuration settings correct for the particular installation?
 - Are the display panel and the communication cables properly connected and undamaged?
- Follow the steps below to view recorded problems: Press "Back" to enter the main menu in the normal interface. In the interface screen select "Event List", then press "OK" to enter events.
- Earth Fault Alarm

This inverter complies with IEC 62109-2 clause 13. 9 for earth fault alarm monitoring.

If an Earth Fault Alarm occurs, the fault will be displayed on the LCD

screen, the red light will be on, and the fault can be found in the history of the fault. For the machine installed with WiFi/GPRS, the alarm information can be seen on the corresponding monitoring website, and can also be received by the APP on the mobile phone.

➤ EventList information

Table 7-1 Eventlist

Code	Name	Description	Solution
ID001	GridOVP	The grid voltage is too high	<p>If the alarm occurs occasionally, the possible cause is that the electric grid is abnormal occasionally. Inverter will automatically return to normal operating status when the electric grid's back to normal.</p> <p>If the alarm occurs frequently, check whether the grid voltage/frequency is within the acceptable range. If yes, please check the AC circuit breaker and AC wiring of the inverter.</p> <p>If the grid voltage/frequency is NOT within the acceptable range and AC wiring is correct, but the alarm occurs repeatedly, contact technical support to change the grid over-voltage, under-voltage, over-frequency, under-frequency protection points after obtaining approval from the local electrical grid</p>
ID002	GridUVP	The grid voltage is too low	
ID003	GridOFP	The grid frequency is too high	
ID004	GridUFP	The grid frequency is too low	

			operator.
ID005	GFCI	Charge Leakage Fault	<p>Internal faults of inverter, switch OFF inverter, wait for 5 minutes, then switch ON inverter. Check whether the problem is solved. If no, please contact technical support.</p>
ID006	OVRT fault	OVRT function is faulty	
ID007	LVRT fault	LVRT function is faulty	
ID008	IslandFault	Island protection error	
ID009	GridOVPIinstant1	Transient overvoltage of grid voltage 1	
ID010	GridOVPIinstant2	Transient overvoltage of grid voltage 2	
ID011	VGridLineFault	Power grid line voltage error	
ID012	InvOVP	Inverter voltage overvoltage	
ID017	HwADFaultIGrid	Power grid current sampling error	
ID018	HwADFaultDCI	Wrong sampling of dc component of grid current	
ID019	HwADFaultVGrid(DC)	Power grid voltage sampling error (DC)	
ID020	HwADFaultVGrid(AC)	Power grid voltage sampling error (AC)	
ID021	GFCIDeviceFault(DC)	Leakage current sampling error (DC)	
ID022	GFCIDeviceFault(AC)	Leakage current sampling error (AC)	

ID023	HwADFaultDCV	Error in dc component sampling of load voltage	
ID024	HwADFaultIdc	Dc input current sampling error	
ID029	ConsistentFault_GFCI	Leakage current consistency error	
ID030	ConsistentFault_Vgrid	Grid voltage consistency error	
ID033	SpiCommFault(DC)	SPI communication error (DC)	
ID034	SpiCommFault(AC)	SPI communication error (AC)	
ID035	SChip_Fault	Chip error (DC)	
ID036	MChip_Fault	Chip error (AC)	
ID037	HwAuxPowerFault	Auxiliary power error	
ID041	RelayFail	Relay detection failure	
ID042	IsoFault	Low insulation impedance	Check the insulation resistance between the photovoltaic array and ground (ground), if there is a short circuit, the fault should be repaired in time.
ID043	PEConnectFault	Ground fault	Check ac output PE wire for grounding.
ID044	PvConfigError	Error setting input mode	Check the PV input mode (parallel/independent mode) Settings for the inverter.If not, change the PV input mode.

ID045	CTDisconnect	CT error	Check whether the CT wiring is correct.
ID048	FanFault	FanFault	Please check whether the fan 1 of inverter is running normally.
ID049	TempFault_Bat	Battery temperature protection	<p>Make sure the inverter is installed where there is no direct sunlight. Please ensure that the inverter is installed in a cool/well ventilated place. Ensure the inverter is installed vertically and the ambient temperature is below the inverter temperature limit.</p>
ID050	TempFault_HeatSink1	Radiator 1 temperature protection	
ID051	TempFault_HeatSink2	Radiator 2 temperature protection	
ID052	TempFault_HeatSink3	Radiator 3 temperature protection	
ID053	TempFault_HeatSink4	Radiator 4 temperature protection	
ID054	TempFault_HeatSink5	Radiator 5 temperature protection	
ID055	TempFault_HeatSink6	Radiator 6 temperature protection	
ID057	TempFault_Env1	Ambient temperature 1 protection	
ID058	TempFault_Env2	Ambient temperature 2 protection	
ID059	TempFault_Inv1	Module 1 temperature protection	
ID060	TempFault_Inv2	Module 2 temperature protection	

ID061	TempFault_Inv3	Module 3 temperature protection	
ID065	VbusRmsUnbalance	Unbalanced bus voltage RMS	Internal faults of inverter, switch OFF inverter, wait for 5 minutes, then switch ON inverter. Check whether the problem is solved. If no, please contact technical support.
ID066	VbusInstantUnbalance	The transient value of bus voltage is unbalanced	
ID067	BusUVP	Busbar undervoltage during grid-connection	
ID068	BusZVP	Bus voltage low	
ID069	PVOVP	PV over-voltage	Check whether the PV series voltage (Voc) is higher than the maximum input voltage of the inverter. If so, adjust the number of PV modules in series and reduce the PV series voltage to fit the input voltage range of the inverter. After correction, the inverter will automatically return to its normal state.
ID070	BatOVP	Battery over-voltage	Check whether the battery overvoltage setting is inconsistent with the battery specification.
ID071	LLCBusOVP	LLC BUS overvoltage protection	Internal faults of inverter, switch OFF inverter, wait for 5 minutes, then switch ON inverter. Check whether the problem is solved.
ID072	SwBusRmsOVP	Inverter bus voltage RMS software	

		overvoltage	If no, please contact technical support.
ID073	SwBusInstantOVP	Inverter bus voltage instantaneous value software overvoltage	
ID081	SwBatOCP	Battery overcurrent software protection	
ID082	DciOCP	Dci overcurrent protection	
ID083	SwOCPIstant	Output instantaneous current protection	
ID084	SwBuckBoostOCP	BuckBoost software flow	
ID085	SwAcRmsOCP	Output effective value current protection	
ID086	SwPvOCPIstant	PV overcurrent software protection	
ID087	IpvUnbalance	PV flows in uneven parallel	
ID088	IacUnbalance	Unbalanced output current	
ID097	HwLLCBusOVP	LLC bus hardware overvoltage	
ID098	HwBusOVP	Inverter bus hardware overvoltage	
ID099	HwBuckBoostOCP	BuckBoost hardware overflows	
ID100	HwBatOCP	Battery hardware overflows	

ID102	HwpVOCP	PV hardware overflows	
ID103	HwACOCP	Ac output hardware overflows	
ID110	Overload1	Overload protection 1	Please check whether the inverter is operating under overload.
ID111	Overload2	Overload protection 2	
ID112	Overload3	Overload protection 3	
ID113	OverTempDerating	Internal temperature is too high.	Make sure the inverter is installed where there is no direct sunlight. Please ensure that the inverter is installed in a cool/well ventilated place. Ensure the inverter is installed vertically and the ambient temperature is below the inverter temperature limit.
ID114	FreqDerating	AC frequency is too high	Please make sure the grid frequency and voltage is within the acceptable range.
ID115	FreqLoading	AC frequency is too low	
ID116	VoltDerating	AC voltage is too high	
ID117	VoltLoading	AC voltage is too low	
ID124	BatLowVoltageAlarm	Battery low voltage protection	Please check whether the battery voltage of the inverter is too low.
ID125	BatLowVoltageShut	Battery low voltage shutdown	
ID129	unrecoverHwAcOCP	Output hardware overcurrent permanent failure	Internal faults of inverter, switch OFF inverter, wait for 5 minutes, then switch

ID130	unrecoverBusOVP	Permanent Bus overvoltage failure	ON inverter.Check whether the problem is solved. If no, please contact technical support.
ID131	unrecoverHwBusOVP	Permanent Bus hardware overvoltage failure	
ID132	unrecoverIpvUnbalance	PV uneven flow permanent failure	
ID133	unrecoverEPSBatOCP	Permanent battery overcurrent failure in EPS mode	
ID134	unrecoverAcOCPIstant	Output transient overcurrent permanent failure	
ID135	unrecoverIacUnbalance	Permanent failure of unbalanced output current	
ID137	unrecoverPvConfigError	Input mode setting error permanent failure	Check the PV input mode (parallel/independent mode) Settings for the inverter.If not, change the PV input mode.
ID138	unrecoverPVOCPInstant	Input overcurrent permanent fault	
ID139	unrecoverHwPVOCP	Input hardware overcurrent permanent failure	Internal faults of inverter, switch OFF inverter, wait for 5 minutes, then switch ON inverter.Check whether the problem is solved. If no, please contact technical support.
ID140	unrecoverRelayFail	Permanent relay failure	
ID141	unrecoverVbusUnbalance	Bus voltage unbalanced permanent failure	
ID145	USBFault	USB fault	Check the USB port of the inverter
ID146	WifiFault	Wifi fault	Check the Wifi port of the inverter
ID147	BluetoothFault	Bluetooth fault	Check the bluetooth connection of the inverter

ID148	RTCFault	RTC clock failure	Internal faults of inverter, switch OFF inverter, wait for 5 minutes, then switch ON inverter. Check whether the problem is solved. If no, please contact technical support.
ID149	CommEEPROMFault	Communication board EEPROM error	
ID150	FlashFault	Communication board FLASH error	
ID153	SciCommLose(DC)	SCI communication error (DC)	
ID154	SciCommLose(AC)	SCI communication error (AC)	
ID155	SciCommLose(Fuse)	SCI communication error (Fuse)	
ID156	SoftVerError	Inconsistent software versions	Contact for technical support and software upgrades.
ID157	BMSCommunication Fault	Communication failure of lithium battery	Make sure your battery is compatible with the inverter. CAN communication is recommended. Check the communication line or port of the battery and inverter for faults.
ID161	ForceShutdown	Force shutdown	The inverter is performed a forced shutdown
ID162	RemoteShutdown	Remote shutdown	The inverter is performed a remote shutdown.
ID163	Drms0Shutdown	Drms0 shutdown	The inverter is performed with a Drms0 shutdown.
ID165	RemoteDerating	Remote derating	The inverter is performed for remote load reduction.
ID166	LogicInterfaceDerating	Logic interface derating	The inverter is loaded by the execution logic interface.

ID167	AlarmAntiRefluxing	Feed-in Limitation derating	The inverter is implemented to prevent countercurrent load drop.
ID177	BMS OVP	BMS over-voltage alarm	Internal failure of lithium battery, close inverter and lithium battery, and wait 5 minutes to open inverter and lithium battery. Check that the problem is resolved. If not, please contact technical support.
ID178	BMS UVP	BMS under-voltage alarm	
ID179	BMS OTP	BMS high temperature warning	
ID180	BMS UTP	BMS low temperature alarm	
ID181	BMS OCP	Warning of overload in charge and discharge of BMS	
ID182	BMS Short	BMS short circuit alarm	

Maintenance

Inverters generally do not need any daily or routine maintenance. Heat sink should not be blocked by dust, dirt or any other items. Before the cleaning, make sure that the DC SWITCH is turned OFF and the circuit breaker between inverter and electrical grid is turned OFF. Wait at least for 5 minutes before the Cleaning.

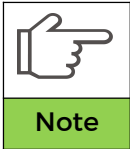
✧ Inverter cleaning

Please clean the inverter with an air blower, a dry & soft cloth or a soft bristle brush. Do NOT clean the inverter with water, corrosive chemicals, detergent, etc.

✧ Heat sink cleaning

For the long-term proper operation of inverters, ensure there is enough space around the heat sink for ventilation, check the heat sink for blockage (dust, snow, etc.) and clean them if they exist. Please clean the heat sink with an air blower, a dry & soft cloth or a soft bristle brush. Do NOT clean the heat sink with water, corrosive chemicals, detergent, etc.

8. DataSheet



- The following parameters may change without notice , please refer to the user manual and DataSheet on our website.

Battery Parameters

Data-sheet	HYD 3000-EP	HYD 3680-EP	HYD 4000-EP	HYD 4600-EP	HYD 5000-EP	HYD 5500-EP	HYD 6000-EP
Battery Type	Lithium-ion& Lead-acid						
Number of Battery Input Channels	1						
Battery voltage range	42-58Vd. c.						
Max charging power	3750W	4000W	4250W	5000W	5000W	5000W	5000W
Max.Discharging Power	3750W	4000W	4250W	5000W	5000W	5000W	5000W
Maximum charging current	75A	80A	85A	100A	100A	100A	100A
Maximum discharging current	75A	80A	85A	100A	100A	100A	100A

BMS Communication	CAN/RS485
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PV String Input Data

Data-sheet	HYD 3000-EP	HYD 3680-EP	HYD 4000-EP	HYD 4600-EP	HYD 5000-EP	HYD 5500-EP	HYD 6000-EP
Recommended Max.PV input power(Wp)	4500Wp	5400Wp	6000Wp	6900Wp	7500Wp	7500Wp	9000Wp
Max.input voltage	600Vd. c.						
Rated input voltage	360Vd. c.						
Start-up voltage	100Vd. c.						
MPPT voltage range[1]	90-550Vd. c.						
Number of MPPT	2						
Max.Number of Input Strings per MPPT	1/1						
Max.Input Current[2]	13/13A						
Max.Isc[3]	18/18A						

AC Input(Grid)

Data-sheet	HYD 3000-EP	HYD 3680-EP	HYD 4000-EP	HYD 4600-EP	HYD 5000-EP	HYD 5500-EP	HYD 6000-EP
Rated Input Voltage	L+N+PE,220/230/240 Va. c.						
Rated Input Frequency	50/60 Hz						
Max.Input Current	30.7/ 29.3/ 28.1 A	34.9/ 33.4/ 32.0 A	37.5/ 35.9/ 34.4 A	43.6/ 41.7/ 40.0 A	45.5/ 43.5/ 41.7 A	45.5/ 43.5/ 41.7 A	45.5/ 43.5/ 41.7 A

AC Output Data (Grid)

Data-sheet	HYD 3000-EP	HYD 3680-EP	HYD 4000-EP	HYD 4600-EP	HYD 5000-EP	HYD 5500-EP	HYD 6000-EP
Rated Output Power	3000W	3680W	4000W	4600W	5000W	5000W	6000W
Rated Output Current	13.6/ 13.0/ 12.5A	16.7/ 16.0/ 15.3A	18.2/ 17.4/ 16.7A	20.9/ 20.0/ 19.2A	22.7/ 21.7/ 20.8A	22.7/ 21.7/ 20.8A	27.3/ 26.1/ 25.0A
Max.Apparent Power	3300V A	3680V A	4400V A	4600V A	5000V A	5500V A	6000VA
Max.Output Current	15.0/ 14.3/ 13.8A	16.7/ 16.0/ 15.3A	20.0/ 19.1/ 18.3A	20.9/ 20.0/ 19.2A	22.7/ 21.7/ 20.8A	25.0/ 23.9/ 22.9A	27.3/ 26.1/ 25.0A
Rated Output Voltage	L+N+PE, 220/230/240 Va. c.						
Rated Output Frequency	50/60Hz						
Power Factor Range	0.8 lagging-0.8 leading						
THDi	<3%						

AC Output Data (Backup)

Data-sheet	HYD 3000-EP	HYD 3680-EP	HYD 4000-EP	HYD 4600-EP	HYD 5000-EP	HYD 5500-EP	HYD 6000-EP
Rated Output Power	3000W	3680W	4000W	4600W	5000W	5000W	5000W
Rated Output Current	13.6/ 13.0/ 12.5A	16.7/ 16.0/ 15.3A	18.2/ 17.4/ 16.7A	20.9/ 20.0/ 19.2A	22.7/ 21.7/ 20.8A	22.7/ 21.7/ 20.8A	22.7/ 21.7/ 20.8A
Rated Apparent Power	3000VA	3680V A	4000V A	4600V A	5000V A	5000V A	5000VA
Max.appar ent power	3000VA	3680V A	4000V A	4600V A	5000V A	5000V A	5000VA
Max.output current	13.6/ 13.0/ 12.5A	16.7/ 16.0/ 15.3A	18.2/ 17.4/ 16.7A	20.9/ 20.0/ 19.2A	22.7/ 21.7/ 20.8A	22.7/ 21.7/ 20.8A	22.7/ 21.7/ 20.8A
Peak Output Apparent Power	4500VA 30s	4800V A,30s	5100V A,30s	6000V A,30s	6000V A,30s	6000V A,30s	6000VA, 30s
Rated Output Voltage	L+N+PE,220/230/240 Va. c.						
Rated Output Frequency	50/60 Hz						

THDv (@Liner load)	<3%
Switch time	10ms(default)

Efficiency And Protection

Data-sheet	HYD 3000-EP	HYD 3680-EP	HYD 4000-EP	HYD 4600-EP	HYD 5000-EP	HYD 5500-EP	HYD 6000-EP
Max.MPP T Efficiency	99.9%						
European Efficiency	97.2%	97.2%	97.2%	97.3%	97.3%	97.3%	97.5%
Max.Efficiency	97.6%	97.6%	97.6%	97.8%	97.8%	97.8%	98.0%
Max.Efficiency of Charging/ Discharging	94.6%						
DC Switch	Yes						
PV Reverse Connection Protection	Yes						
Output Short Circuit Protection	Yes						
Output Overcurrent Protection	Yes						

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Output Overvoltage Protection	Yes
Insulation Impedance Detection	Yes
Residual Current Detection	Yes
Anti-island Protection	Yes
Surge Protection	PV:Type III, AC:Type III

General Data

Datasheet	HYD 3000-EP	HYD 3680-EP	HYD 4000-EP	HYD 4600-EP	HYD 5000-EP	HYD 5500-EP	HYD 6000-EP
Dimensions (W*H*D)	482*503*183 mm						
Weight	21.5kg						
Inverter Topology	Isolation (for battery)						
Protective Class	Class I						
Standby Self-consumption	<10W						
Operating Temperature Range	-30°C to +60°C (derating above +45°C)						

Relative Humidity Range	5%-95%
Max.Operating Altitude	4000m (derating above 2000m)
Cooling Mode	Natural
IP Rating	IP65
Overvoltage Category	AC III, DC II
Installation Method	Wall Mounted
Display	LCD & APP
Communication	CAN/RS485/WiFi,Optional:4G/LAN
<p>[1] MPPT voltage range may change, please refer to the label on the body.</p> <p>[2] PV Max. Input Current may change, please refer to the label on the body.</p> <p>[3] PV Max. Isc may change, please refer to the label on the body.</p>	

9. Quality Assurance

Standard warranty period

The standard warranty period of inverter is 60 months (5 years).There are two calculation methods for the warranty period:

1. Purchase invoice provided by the customer: the first flight provides a standard warranty period of 60 months (5 years) from the invoice date;
2. The customer fails to provide the invoice: from the production date (according to the SN number of the machine), Our company provides a warranty period of 63 months (5. 25 years).
3. In case of any special warranty agreement, the purchase agreement shall prevail.

Extended warranty period

Within 12 months of the purchase of the inverter (based on the purchase invoice) or within 24 months of the production of the inverter(SN number of machine, based on the first date of arrival),Customers can apply to buy extended warranty products from the company's sales team by providing the product serial number, Our company may refuse to do not conform to the time limit extended warranty purchase application.Customers can buy an extended warranty of 5, 10, 15 years.

If the customer wants to apply for the extended warranty service, please contact the sales team of our company.to purchase the products that are beyond the purchase period of extended warranty but have not yet

passed the standard quality warranty period. Customers shall bear different extended premium.

During the extended warranty period, pv components GPRS, WIFI and lightning protection devices are not included in the extended warranty period. If they fail during the extended warranty period, customers need to purchase and replace them from our company.

Once the extended warranty service is purchased, our company will issue the extended warranty card to the customer to confirm the extended warranty period.

Invalid warranty clause

Equipment failure caused by the following reasons is not covered by the warranty:

- (1) The "warranty card" has not been sent to the distributor or our company;
- (2) Without the consent of our company to change equipment or replace parts;
- (3) Use unqualified materials to support our company's products, resulting in product failure;
- (4) Technicians of non-company modify or attempt to repair and erase the product serial number or silk screen;
- (5) Incorrect installation, debugging and use methods;
- (6) Failure to comply with safety regulations (certification standards, etc.);
- (7) Damage caused by improper storage by dealers or end users;

- (8) Transportation damage (including scratches caused by internal packaging during transportation).Please claim directly from the transportation company or insurance company as soon as possible and obtain damage identification such as container/package unloading;
- (9) Failure to follow the product user manual, installation manual and maintenance guidelines;
- (10) Improper use or misuse of the device;
- (11) Poor ventilation of the device;
- (12) The product maintenance process does not follow relevant standards;
- (13) Failure or damage caused by natural disasters or other force majeure (such as earthquake, lightning strike,aware fire, etc.)

Statement

If you have purchased this product in Australia,you should be aware that this warranty is provided in addition to other rights and remedies held by a consumer at law.

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law.You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage.You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

Version 5.0



ENERGY TO POWER YOUR LIFE

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