User Manual

PV Solar Inverter

BIN-S-I-6KW

Version: 1.0

Table Of Contents

1. About this Manual

1.1 Validity

This manual is valid for the following devices: BIN-S-I-6KW

1.2 Scope

This manual describes the assembly, installation, operation and troubleshooting of this unit. Please read this manual carefully before installations and operations. **Contents may be periodically updated or revised due to product development. The information in this manual is subject to change without notice.**

1.3 Target Group

This document is intended for qualified persons and end users. Qualified persons must have the following skills:

1. Knowledge of how an inverter works and is operated
2. Training in how to deal with the dangers and risks associated with installing and using electrical devices and installations
3. Training in the installation and commissioning of electrical devices and installations
4. Knowledge of the applicable standards and directives
5. Knowledge of and compliance with this document and all safety information
6. Knowledge of the applicable local standards and directives

1.4 Safety Instructions

1.41 Labels description

Label	Description
	**The DC input terminals of the inverter must not be grounded.**
	**Surface high temperature, Please do not touch the inverter case.**
	**Caution, risk of electric shock symbol indicates important safety instructions, which if not correctly followed, could result in electric shock.**
	**Please read the instructions carefully before use.**
	**This product shall not be disposed of with household waste. They should be segregated and brought to an appropriate collection point to enable recycling and avoid potential impacts on the environment and human health.**
	**CE mark of conformity**
	**The AC and DC circuits must be disconnected separately, and the maintenance personnel must wait for ﷺ minutes before they are completely powered off before they can start working.**
	**Rohs mark of conformity**

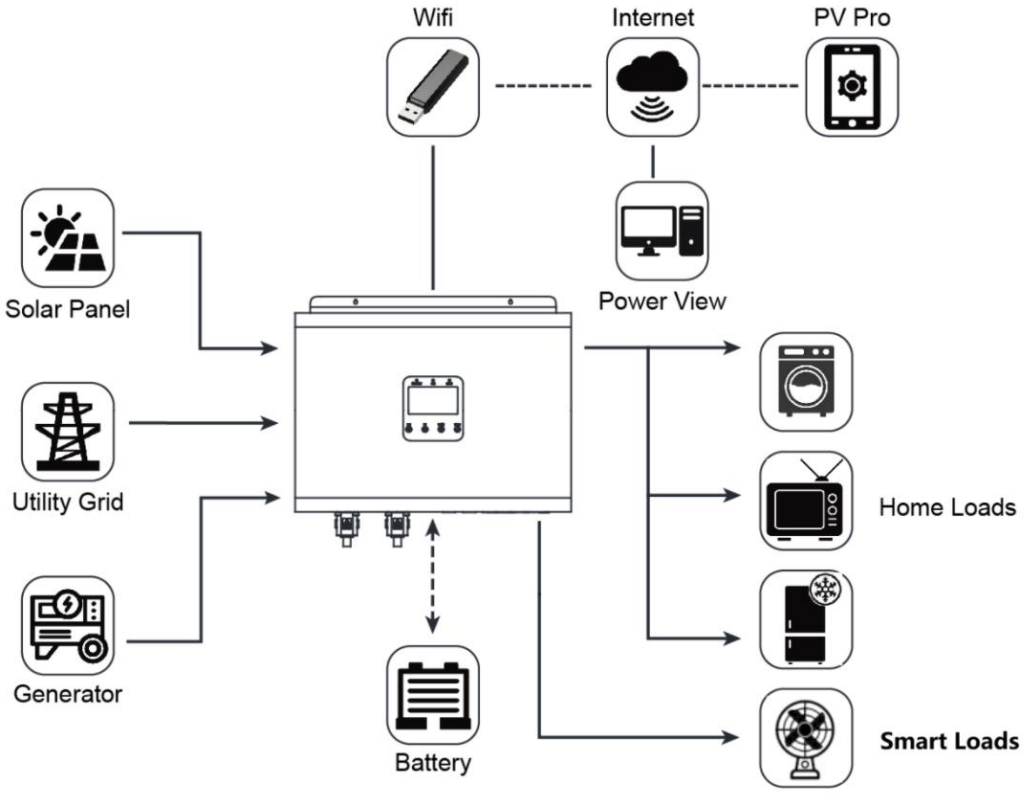
1.42 Notice For Use

WARNING: This chapter contains important safety and operating instructions. Read and keep this manual for future reference.

1. All operations and connections need to be carried out by qualified persons.
2. Before using the unit, read all instructions and cautionary marking on the unit, the batteries and all appropriate sections of this manual. The company has the right not to quality assurance, if not according to the instructions of this manual for installation and cause equipment damage.
3. All the electrical installation must comply with the local electrical safety standards.
4. When install PV modules in the daytime, installer should cover the PV modules by opaque materials, otherwise it will be dangerous as high terminal voltage of modules in the sunshine.
5. **CAUTION-**To reduce risk of injury, charge only deep-cycle lead-acid type rechargeable batteries and lithium batteries. Other types of batteries may burst, causing personal injury and damage.
6. Be very cautious when working with metal tools on or around batteries. A potential risk exists to drop a tool to spark or short circuit batteries or other electrical parts and could cause an explosion.
7. **NEVER** charge a frozen battery.
8. Do not disassemble the unit. Take it to a qualified service center when service or repair is required. Incorrect re-assembly may result in a risk of electric shock or fire.
9. To reduce risk of electric shock, disconnect all wirings before attempting any maintenance or cleaning. Turning off the unit will not reduce this risk.
10. For optimum operation of this inverter, please follow required spec to select appropriate cable size. It's very important to correctly operate this inverter.
11. Please strictly follow installation procedure when you want to disconnect AC or DC terminals. Please refer to INSTALLATION section of this manual for the details.
12. GROUNDING INSTRUCTIONS -This inverter should be connected to a permanent grounded wiring system. Be sure to comply with local requirements and regulation to install this inverter.
13. **NEVER** cause AC output and DC input short circuited. Do NOT connect to the mains when DC input short circuits.
14. Make sure the inverter is completely assembled, before the operation.
15. **WARNING:** Because this inverter is non-isolated, only three types of PV modules are acceptable: single crystalline, poly crystalline with class A-rated and CIGS modules. To avoid any malfunction, do not connect any PV modules with possible current leakage to the inverter. For example, grounded PV modules will cause current leakage to the inverter. When using CIGS modules, please be sure NO grounding.
16. **CAUTION:** It's required to use PV junction box with surge protection. Otherwise, it will cause damage on inverter when lightning occurs on PV modules.

2. Introduction

2.1 Basic System Architecture



Hybrid Power System

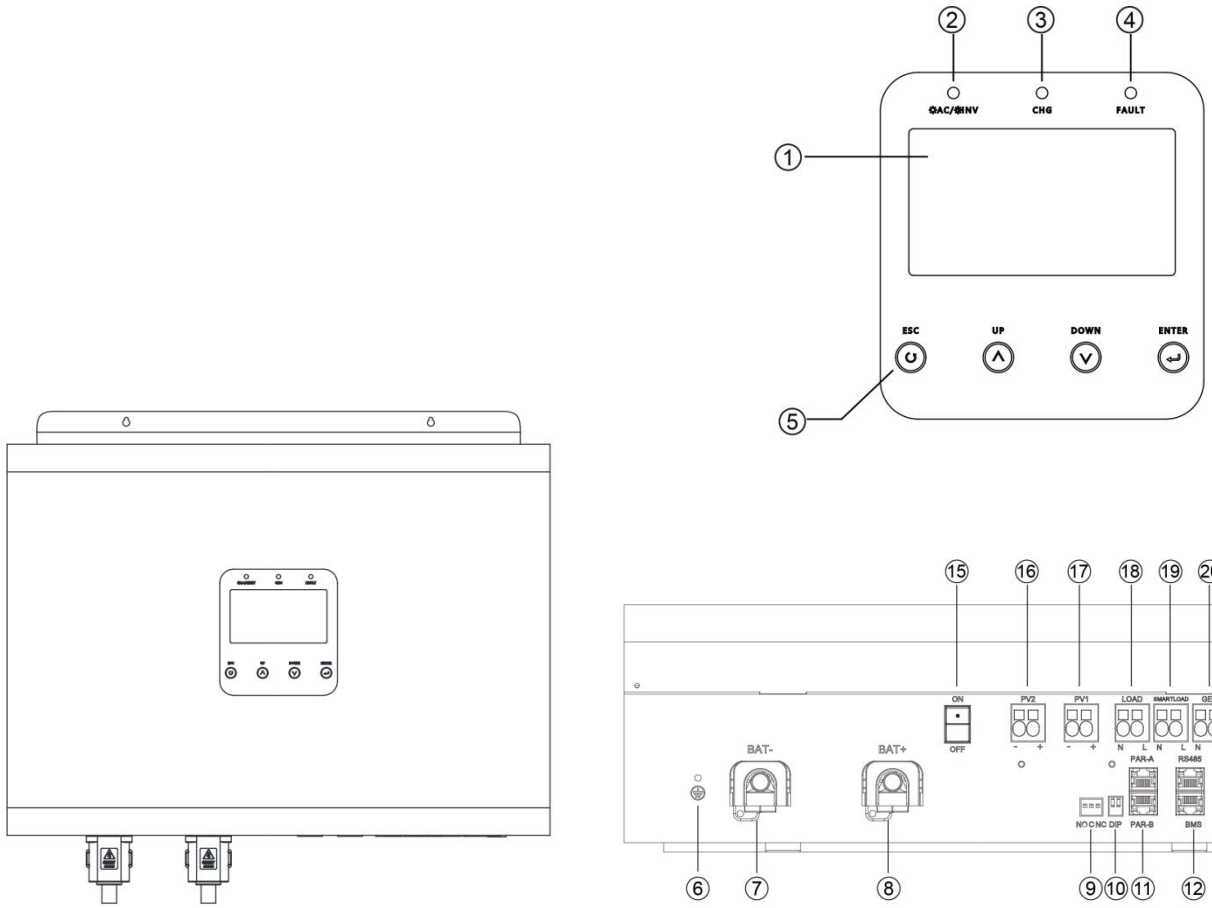
This is a multifunctional PV Hybrid inverter, integrated with a MPPT solar charge controller, a high frequency pure sine wave inverter and a UPS function module in one machine, which is perfect for off grid backup power and self-consumption applications. This inverter can work with or without batteries.

The whole system also need other devices to achieve complete running such as PV modules, generator, or utility grid. Please consult with your system integrator for other possible system architectures depending on your requirements. The WiFi module is a plug-and-play monitoring device to be installed on the inverter. With this device, users can monitor the status of the PV system from the mobile phone or from the website anytime anywhere.

2.2 Features

1. Rated power 6KW, power factor 1
2. Integrated with 2 MPPT solar charge controllers, MPPT ranges 60V~450V, 500Vdc
3. Built-in anti-dusk kit
4. Compatible to utility mains or generator power
5. With separated smartload output interface, configurable output usage timer and prioritization
6. Solar and utility grid can power loads at the same time
7. With CAN/RS485 for BMS communication
8. With the ability to work without battery
9. Parallel operation up to 9 unit (only with battery connected)
10. WiFi remote monitoring (optional)

2.3 Product Overview



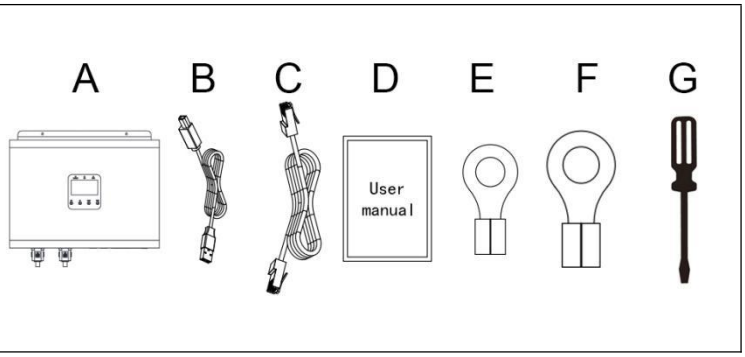
1. LCD display	2. Status indicator
3. Charging indicator	4. Fault indicator
5. Function buttons	6. GND
7. Battery input -	8. Battery input +
9. Dry contact	10. DIP
11. Parallel communication ports	12. RS485 communication port (for expansion) BMS communication port(support CAN/RS485 protocol)
13. USB-B communication port	14. USB-A communication port（ WiFi）
15. Power on/off switch	16. PV2 input
17. PV1 input	18. Load
19. SmartLoad	20. Generator input
21. Grid input	

3. Installation

3.1 Unpacking and Inspection

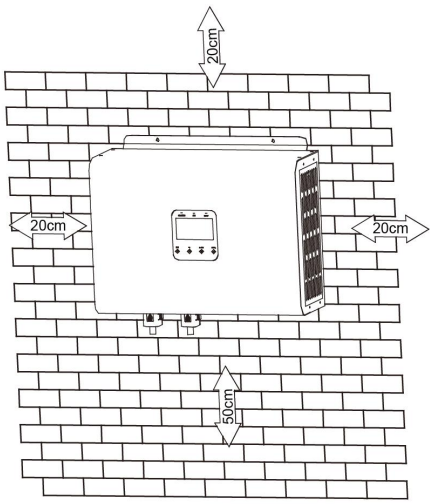
Before installation, please inspect the unit. Be sure that nothing inside the package is damaged. You should have received the following items in the package:

Part List		
Item	Item Name	Qty
A	The unit	1
B	Communication cable	1
C	Parallel communication cable	1
D	User manual	1
E	R-type terminal	1
F	O-type terminal	2
G	Flat screwdriver	1



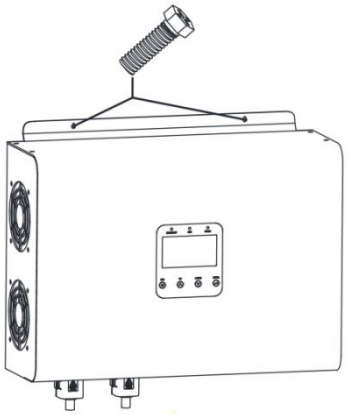
3.2 Mounting the Unit

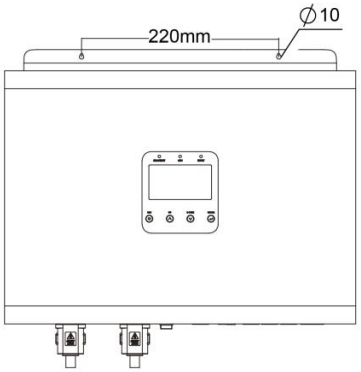
SUITABLE FOR MOUNTING ON CONCRETE OR OTHER NON-COMBUSTIBLE SURFACE ONLY.



Consider the following points before selecting where to install:

1. Do not mount the inverter on flammable construction materials.
2. Mount on a solid surface
3. Install this inverter at eye level in order to allow the LCD display to be read at all times.
4. The ambient temperature should be between 0°C and 55°C to ensure optimal operation.
5. The recommended installation position is to be adhered to the wall vertically.
6. Be sure to keep other objects and surfaces as shown in the right diagram to guarantee sufficient heat dissipation and to have enough space for removing wires.





Install the unit by screwing two screws. It's recommended to use M4 or M5 screws.

If the energy storage is installed in areas with salt damage, it will be corroded and may cause fire. Therefore, do not install it outdoors in areas with salt damage. The areas with salt damage are defined as the areas which are not 500m away from shore or will be affected by sea breezes. The areas affected by the sea breezes vary depending on meteorological conditions (e.g. typhoons, monsoons) or topographical conditions (dams, hills).

3.3 Battery Connection

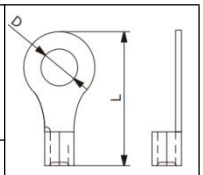
3.31 Lead-acid Battery Connection

User can choose proper capacity lead acid battery with a nominal voltage at 48V. Also, you need to choose battery type as "AGM(default) or FLD"

CAUTION: For safety operation and regulation compliance, it's requested to install a separate DC over-current protector or disconnect device between battery and inverter. It may not be requested to have a disconnect device in some applications, however, it's still requested to have over-current protection installed. Please refer to typical amperage in below table as required fuse or breaker size.

WARNING! All wiring must be performed by a qualified person.
WARNING! It's very important for system safety and efficient operation to use appropriate cable for battery connection. To reduce risk of injury, please use the proper recommended cable and terminal size as below.

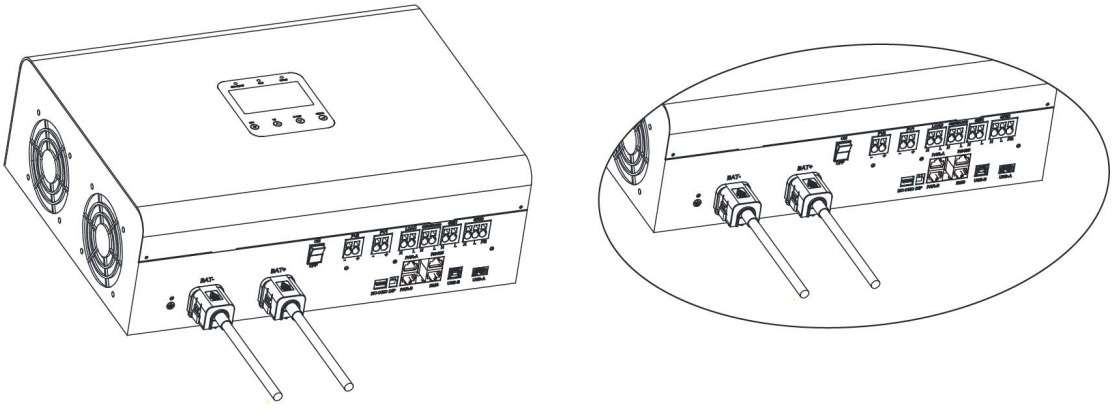
Recommended battery cable and terminal size:

Model	Typical Amperage	Battery capacity	Wire Size	Ring Terminal			Torque value	
				Cable mm²	Dimensions D (mm)	L (mm)		
BIN-S-I-6KW	1 * 2 AWG	＞200AH	1 * 2 AWG	33	6.4	39.2	2-3Nm	

Note: For lead-acid battery, the recommended charge current is 0.2C(C→battery capacity)

Please follow below steps to implement battery connection:

1. Assemble battery ring terminal based on recommended battery cable and terminal size.
2. Connect all battery packs as units requires. It's suggested to connect at least 200Ah capacity battery for BIN-S-I-6KW.
3. First，pass the battery cable through the protective shell，and then insert the ring terminal of battery cable flatly into battery connector of inverter and make sure the bolts are tightened with torque of 2-3Nm. Make sure polarity at both the battery and the inverter/charge is correctly connected and ring terminals are tightly screwed to the battery terminals. Last, insert the protective shell.



⚠	**CAUTION!!** Do not place anything between the flat part of the inverter terminal and the ring terminal. Otherwise, overheating may occur. **CAUTION!!** Do not apply anti-oxidant substance on the terminals before terminals are connected tightly. **CAUTION!!** Before making the final DC connection or closing DC breaker, be sure positive (+) must be connected to positive (+) and negative (-) must be connected to negative (-). Reverse polarity connection on battery will damage the inverter.

3.32 Lithium Battery Connection

If choosing lithium battery for BIN-S-I-6KW, you are allowed to use the lithium battery only which we have configured. There are two types connectors on the lithium battery, communication port of BMS and power cable. Please follow below steps to implement lithium battery connection:

1. Assemble battery ring terminal based on recommended battery cable and terminal size (same as Lead acid, see section Lead-acid Battery Connection for details) .

2. First，pass the battery cable through the protective shell，and then insert the ring terminal of battery cable flatly into battery connector of inverter and make sure the bolts are tightened with torque of 2-3Nm. Make sure polarity at both the battery and the inverter/charge is correctly connected and ring terminals are tightly screwed to the battery terminals. Last, insert the protective shell.

3. Connect the end of RJ45 of battery to BMS communication port of inverter.

4. The other end of RJ45 insert to battery communication port.

Note: If choosing lithium battery, make sure to connect the BMS communication cable between the battery and the inverter. You need to choose battery type as "lithium battery".

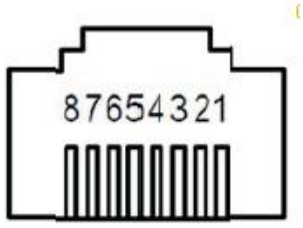
3.33 Lithium battery communication and setting

In order to communicate with battery BMS, you should set the battery type to "LI" in Program b06, and then set the protocol type. There are several protocols in the inverter. Please get instruction from supplier to choose which protocol to match the BMS.

1. Connect the end of RJ45 of battery to BMS communication port of inverter

Make sure the lithium battery BMS port connects to the inverter is Pin to Pin, the inverter BMS port pin and RS485 port pin assignment shown as below:

Pin number	BMS port	RS485 port (for expansion)
1	RS485B	RS485B
2	RS485A	RS485A
3	--	--
4	CANH	--
5	CANL	--
6	--	--
7	--	--
8	--	--

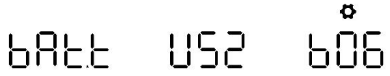


3.34 LCD setting

To connect battery BMS, need to set the battery type as "LI" in Program b06.

After set "LI" in Program b06, it need to choose communication protocol at the same time. You can choose RS485 communication protocol which is from L01 to L50, and you can also choose CAN communication protocol which is from L51 to L99.

b06	Battery type	AGM (default) bAtt AGM b06
		Flooded bAtt FLd b06
		Lithium (only suitable when communicated with BMS) L51 bAtt LI b06

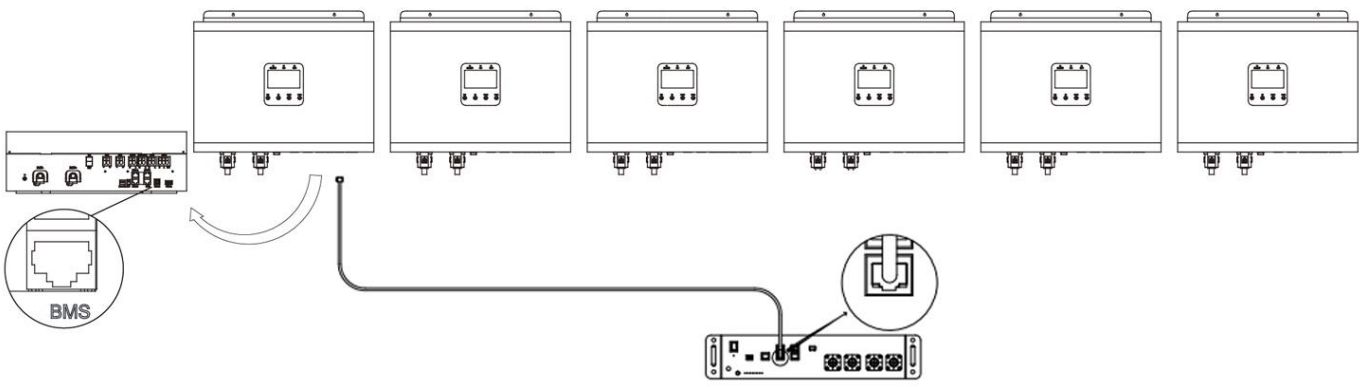
		User-Defined  If "User-Defined" is selected, battery charge voltage and low DC cut-off voltage can be set up in program 19, 20 and 21.
		User-Defined 2（suitable when lithium battery without BMS communication）  If "User-Defined 2" is selected, battery charge voltage and low DC cut-off voltage can be set up in program 19, 20 and 21. It is recommended to set to the same voltage in program 19 and 20(full charging voltage point of lithium battery). The inverter will stop charging when the battery voltage reaches this setting.

Note: When the battery type set to Li, the setting option b09, b10, b13 will change to display percent.
Note: When the battery type set as "LI", the Maximum charge current can't be modified by the user. When the communication fail, the inverter will cut off output.

b09	Setting SOC point back to utility source when selecting "SBU" priority" or "SOL" in program b01	 Default 50%, 6%~95% Settable
b10	Setting SOC point back to battery mode when selecting "SBU" priority" or "SOL" in program b01	 Default 95%, 10%~100% Settable
b13	Low DC cut-off SOC If "LI" is selected in program b06, this program can be set up	 Default 20%, 5%~50% Settable

3.35 Communicating with battery BMS in parallel system

If need to use communicate with BMS in a parallel system, you should make sure to connect the BMS communication cable between the battery and one inverter of the parallel system. It's recommended to connect to the master inverter of the parallel system.



3.4 AC Input/Output Connection

CAUTION!! Before connecting to AC input power source, please install a **separate** AC breaker between inverter and AC input power source. This will ensure the inverter can be securely disconnected during maintenance and fully protected from over current of AC input. The recommended spec of AC breaker is 50A for BIN-S-I-6KW.

CAUTION!! There are four terminal blocks with "GRID", "GEN", "SMARTLOAD" and "LOAD" markings. Please do NOT mis-connect input and output connectors.

WARNING! All wiring must be performed by a qualified personnel.

WARNING! It's very important for system safety and efficient operation to use appropriate cable for AC input connection and GEN connection. To reduce risk of injury, please use the proper recommended cable size as below.

Suggested cable requirement for AC wires

Model	Terminal blocks	Cable mm²	Cable mm²
BIN-S-I-6KW	GRID/ GEN	1 * 8 AWG	8.37
	SMARTLOAD/ LOAD/ PE	1 * 10 AWG	5.26

Please follow below steps to implement AC input/output connection:

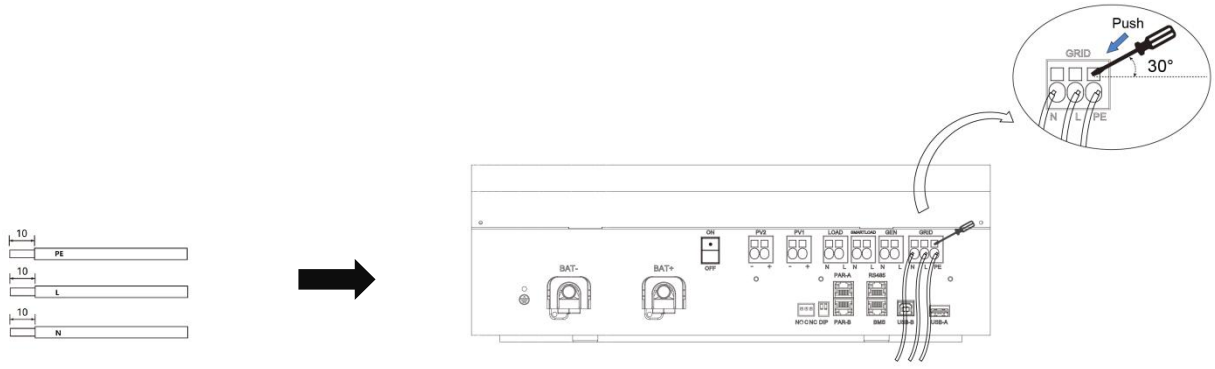
1. Before making AC input/ output connection, be sure to open DC protector or disconnector first.
2. Remove insulation sleeve 10mm for seven conductors. And shorten phase L and neutral conductor N 3 mm.
3. Use the flat screwdriver to press terminal block first, it's recommend to keep a 30° inclination angle to insert the screwdriver.
4. Insert AC input wires according to polarities indicated on terminal block, then pull out the screwdriver.Be sure to connect PE protective conductor ⏚ first.

⚠	**WARNING:** Be sure that AC power source is disconnected before attempting to hardwire it to the unit.

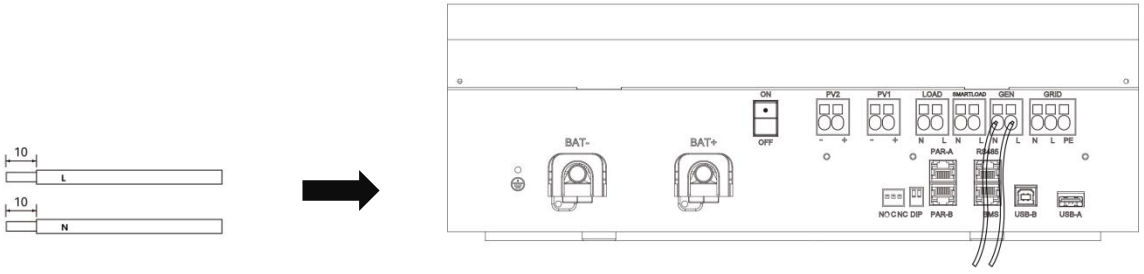
PE→Ground (yellow-green)

L→LINE (brown or black)

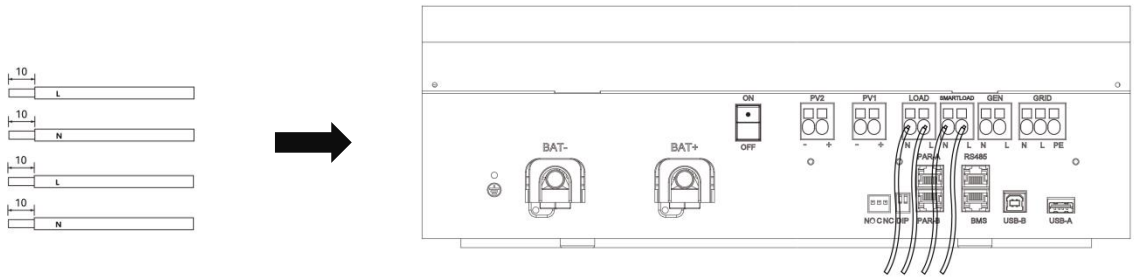
N→Neutral (blue)



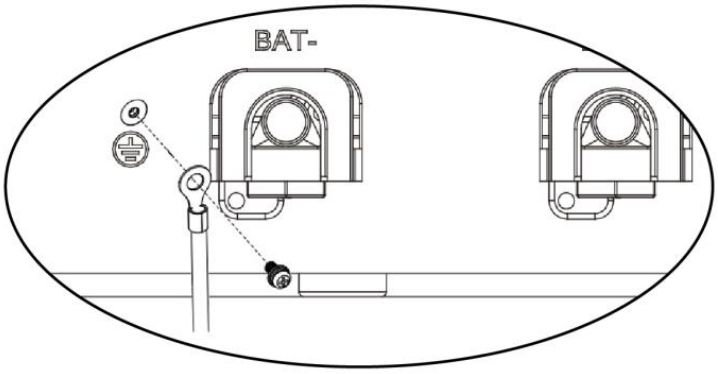
5. Then,insert GEN wires according to polarities indicated on terminal block.
   L→LINE (brown or black)
   N→Neutral (blue)



6. Last, insert AC output wires according to polarities indicated on terminal block.
   L→LINE (brown or black)
   N→Neutral (blue)



7. Make sure the inverter metal housing is grounded.
   →**Ground (yellow-green)**



8. Make sure the wires are securely connected.

CAUTION: Important

Be sure to connect AC wires with correct polarity. If L and N wires are connected reversely, it may cause utility short-circuited when these inverters are worked in parallel operation.

CAUTION: Appliances such as air conditioner are required at least 2~3 minutes to restart because it's required to have enough time to balance refrigerant gas inside of circuits. If a power shortage occurs and recovers in a short time, it will cause damage to your connected appliances. To prevent this kind of damage, please check with manufacturer of air conditioner that if it's equipped with time-delay function before installation. Otherwise, this PV Hybrid inverter will trig overload fault and cut off output to protect your appliance but sometimes it still causes internal damage to the air conditioner.

3.5 PV Connection

CAUTION: Before connecting to PV modules, please install a **separately** DC circuit breaker between inverter and PV modules.

WARNING! All wiring must be performed by a qualified personnel.
WARNING! It' very important for system safety and efficient operation to use appropriate cable for PV module connection. To reduce risk of injury, please use the proper recommended cable size as below.

Model	Wire Size	Cable mm²
BIN-S-I-6KW	1 * 12 AWG	3.33

PV Module Selection:

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 of inverter.
2. Open circuit Voltage (Voc) of PV modules should be higher than start-up voltage.

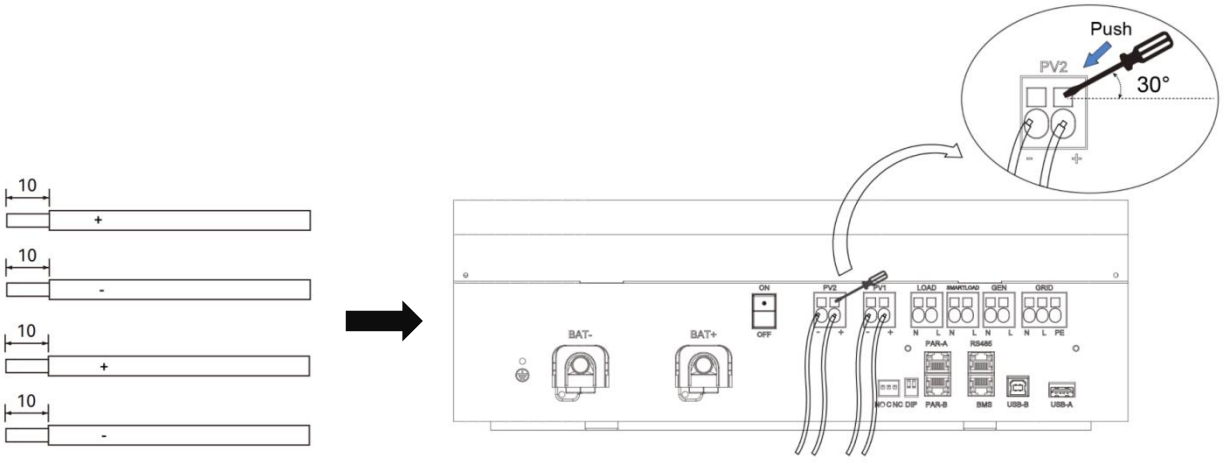
INVERTER MODEL	BIN-S-I-6KW
Max. PV Array Open Circuit Voltage	500Vdc
Start-up Voltage	100Vdc
PV Array MPPT Voltage Range	60Vdc~450Vdc
No. of MPP Trackers	2
No. of Strings MPP Tracker	1+1

Please follow below steps to implement PV module connection:

1. Remove insulation sleeve 10 mm for positive and negative conductors.

2. Use the flat screwdriver to press terminal block first, it's recommend to keep a 30° inclination angle to insert the screwdriver.

3. Insert PV panel positive and negative cables into the terminals, then pull out the screwdriver.



4. Make sure the wires are securely connected.

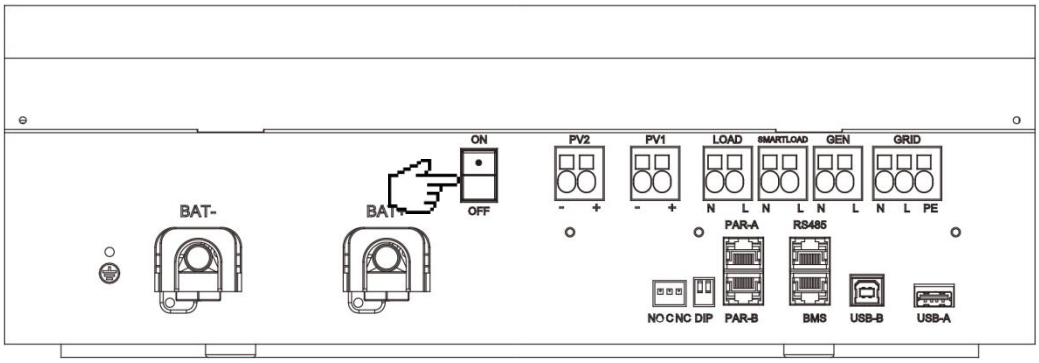
3.6 Dry Contact Signal

There is one dry contact(3A/250VAC) available on the rear panel. It could be used to deliver signal to external device when battery voltage reaches warning level.

Unit Status	Condition			Dry contact port: 	
				NC & C	NO & C
Power Off	Unit is off and no output is powered			Close	Open
Power On	Output is powered from Utility			Close	Open
	Output is powered from Battery or Solar	Program b01 set as UTI	Battery voltage (SOC)< Low DC warning voltage(SOC)	Open	Close
			Battery voltage(SOC) > Setting value in Program b10 or battery charging reaches floating stage	Close	Open
		Program b01 is set as SBU or SOL	Battery voltage (SOC)< Setting value in Program b09	Open	Close
			Battery voltage (SOC)> Setting value in Program b10 or battery charging reaches floating stage	Close	Open

4. Operation

4.1 Power ON/OFF

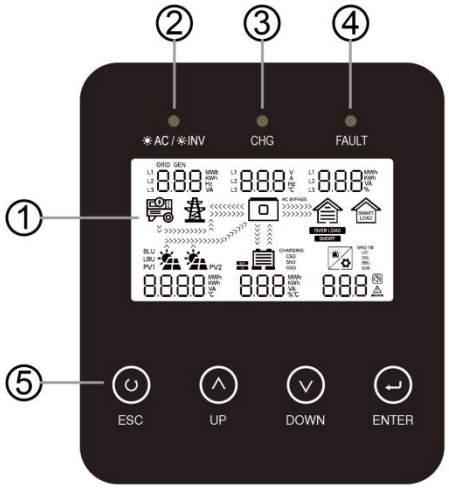


Once the unit has been properly installed and the batteries are connected well, simply press On/Off switch (located on the bottom of the case) to turn on the unit.

4.2 Operation and Display Panel

The operation and display panel, shown in below chart, is on the front panel of the inverter. It includes three indicators, four function keys and a LCD display, indicating the operating status and input/output power information.

1. LCD display
2. Status indicator
3. Charging indicator
4. Fault indicator
5. Function buttons



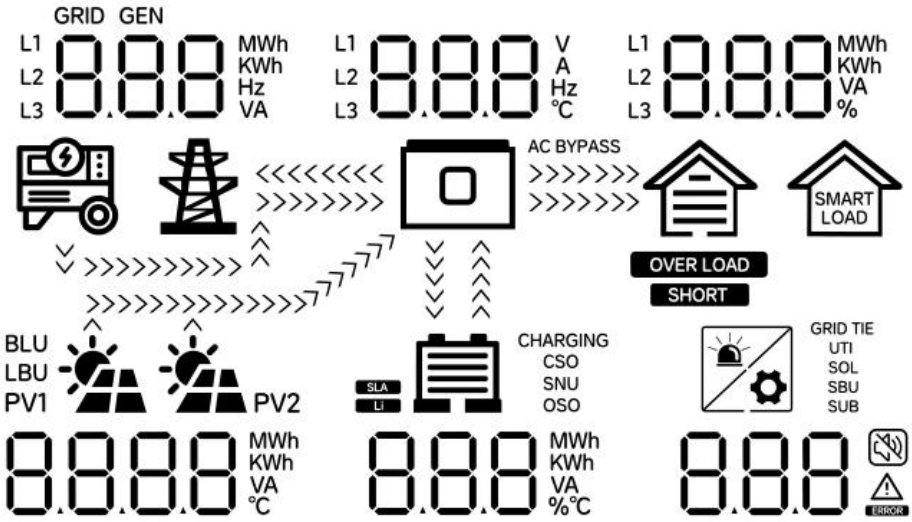
4.21 LED Indicator

LED Indicator			Messages
☀AC / ☀INV	Green	Solid On	Output is powered by utility in Line mode.
		Flashing	Output is powered by battery or PV in battery mode.
☀CHG	Green	Solid On	Battery is fully charged.
		Flashing	Battery is charging.
⚠ FAULT	Red	Solid On	Fault occurs in the inverter.
		Flashing	Warning condition occurs in the inverter.

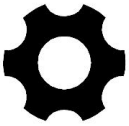
4.22 Function Buttons

Button	Description
ESC	To exit setting mode
UP	To go to previous selection
DOWN	To go to next selection
ENTER	To confirm the selection in setting mode or enter setting mode

4.3 LCD Display Icons



Icon	Description
AC Input Information	
	AC input icon
	Indicate AC input power/ Feed-In Grid power, AC input voltage, AC input frequency, AC input current/ Feed-In Grid current, Total energy feed to grid, etc
AC BYPASS	Indicate AC power loads in bypass
PV Input Information	
	Left：PV1 input icon Right：PV2 input icon
	Indicate PV power, PV voltage, PV current, etc
Output Information	
	Inverter icon
	Indicate output voltage, output current, output frequency, inverter temperature
Load Information	
	Load icon
	Indicate power of load, power percentage of load
OVER LOAD	Indicate overload happened
SHORT	Indicate short circuit happened
Battery Information	
	Indicate battery level by 0-24%, 25-49%, 50-74% and 75-100% in battery mode and charging status in line mode.

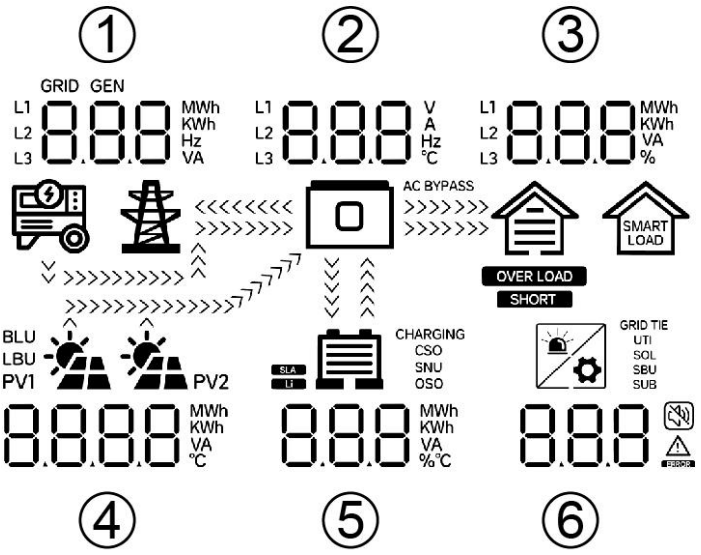
	Indicate battery voltage, battery percentage, battery current
SLA	Indicate SLA battery
Li	Indicate lithium battery
CHARGING CSO SNU OSO	Indicate charging source priority: solar first, solar and utility, or only solar
Other Information	
UTI SOL SBU SUB	Indicate output source priority: solar first, utility first, SBU mode or SUB mode
	Indicate warning code or fault code
	Indicate a warning or a fault is happening
	Indicate it's during setting values
	Indicate the alarm is disabled

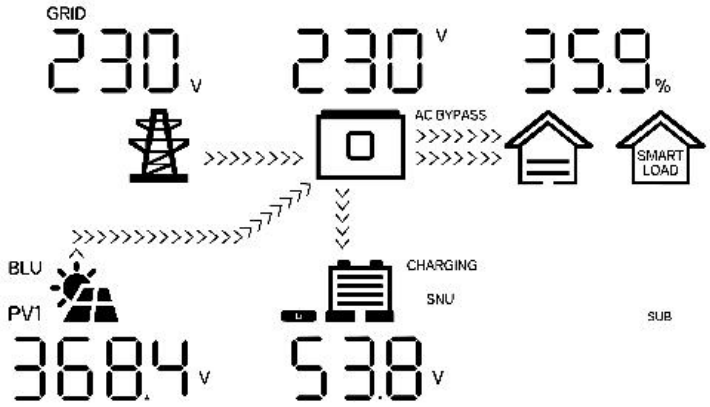
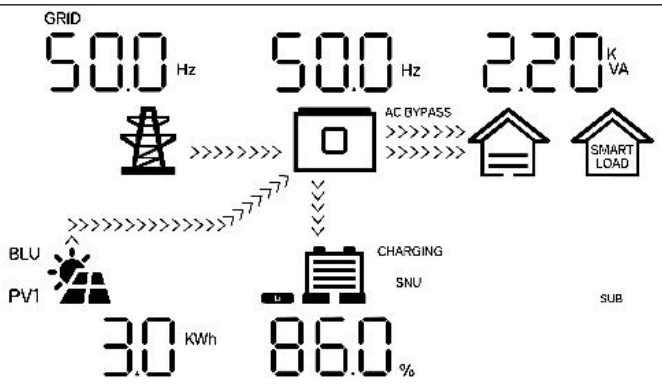
In AC mode, battery icon will present Battery Charging Status		
Status	Battery voltage	LCD Display
Constant Current mode / Constant Voltage mode	<2V/cell	4 bars will flash in turns.
	2 ~ 2.083V/cell	Bottom bar will be on and the other three bars will flash in turns.
	2.083 ~ 2.167V/cell	Bottom two bars will be on and the other two bars will flash in turns.
	> 2.167 V/cell	Bottom three bars will be on and the top bar will flash.
Floating mode. Batteries are fully charged.		4 bars will be on.

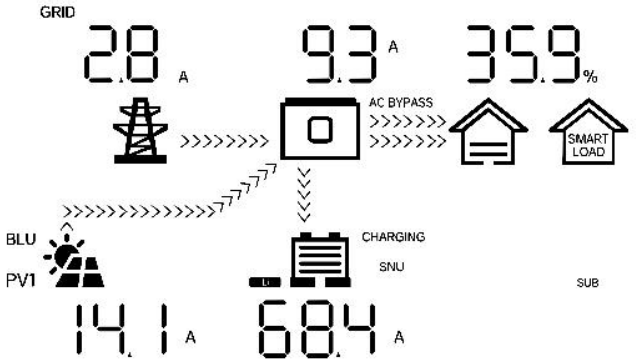
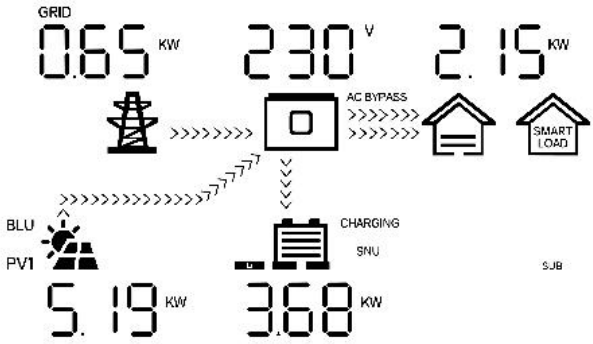
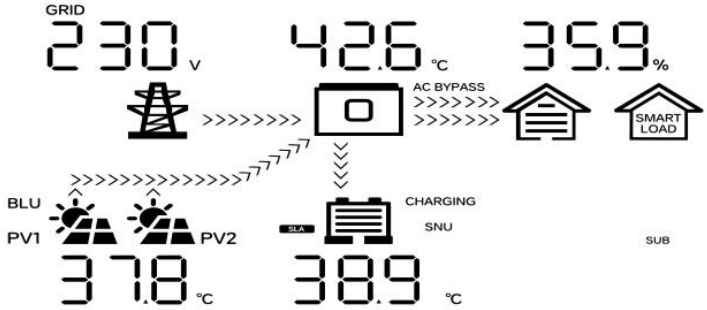
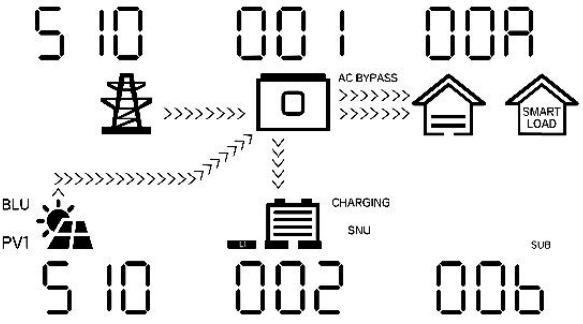
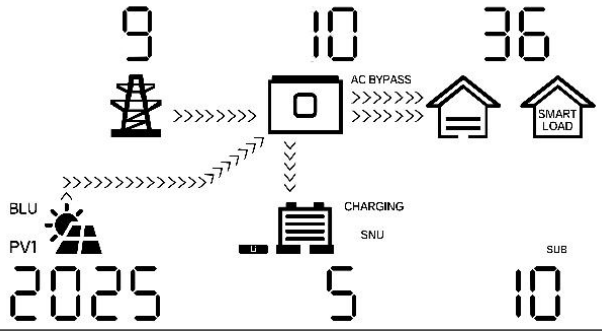
In battery mode, battery icon will present Battery Capacity		
Load Percentage	Battery Voltage	LCD Display
Load >50%	< 1.717V/cell	
	1.717V/cell ~ 1.8V/cell	
	1.8 ~ 1.883V/cell	
	> 1.883 V/cell	
50%> Load > 20%	< 1.817V/cell	
	1.817V/cell ~ 1.9V/cell	
	1.9 ~ 1.983V/cell	
	> 1.983	
Load < 20%	< 1.867V/cell	
	1.867V/cell ~ 1.95V/cell	
	1.95 ~ 2.033V/cell	
	> 2.033	

4.4 Display Information

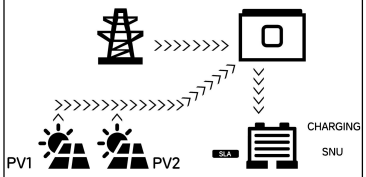
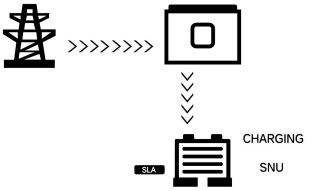
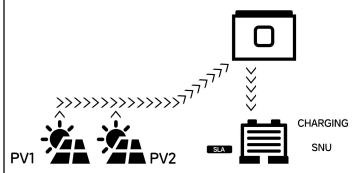
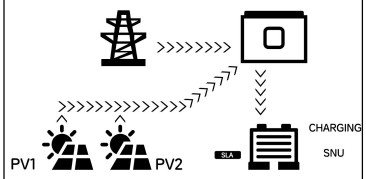
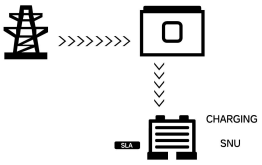
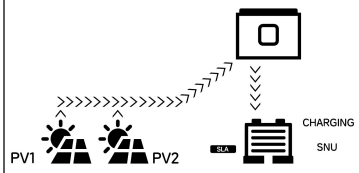
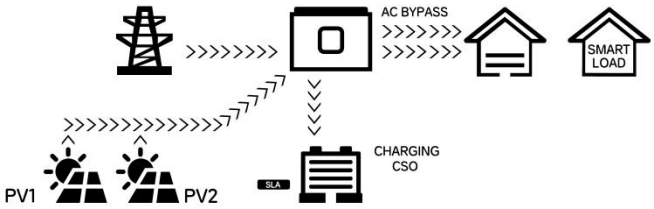
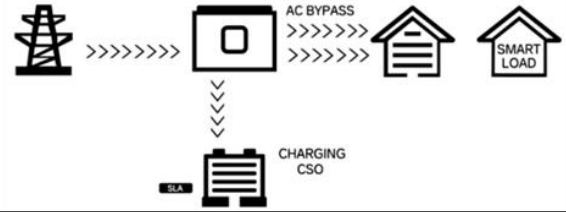
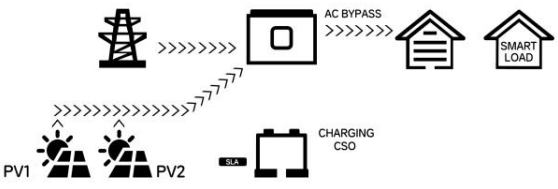
The LCD display information will be switched in turns by pressing "UP" or "DOWN" key. The selectable information is switched as below order: voltage, frequency, current, power, firmware version.

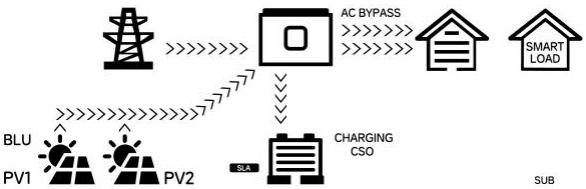
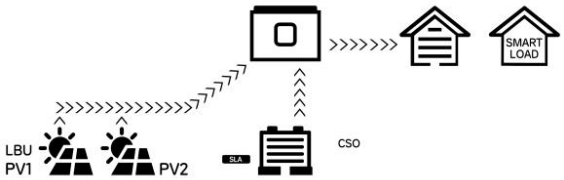
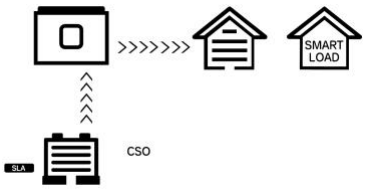


Setting Information	LCD display
①AC Input voltage ② Output voltage ③ Load percentage ④ PV input voltage ⑤ Battery voltage ⑥ Warning or Fault code (Default Display Screen)	
① AC Input frequency ② Output frequency ③ Load power ④ PV energy sum ⑤ Battery percentage ⑥ Warning or Fault code	

① AC Input current ② Output current ③ Load percentage ④ PV input current ⑤ Battery charging current ⑥ Warning or Fault code	
① AC input power ② Inverter Voltage ③ Load power ④ PV input power in Watts ⑤ Battery percentage ⑥ Warning or Fault code	
① AC input Voltage ② Inverter temperature ③ Load Percent ④ PV temperature ⑤ Battery temperature ⑥ Warning or Fault code	
Firmware version (CPU1: 510-001-00A; CPU2:510-002-00b)	
Time (09:10:36, May 10, 2025)	

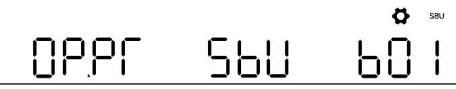
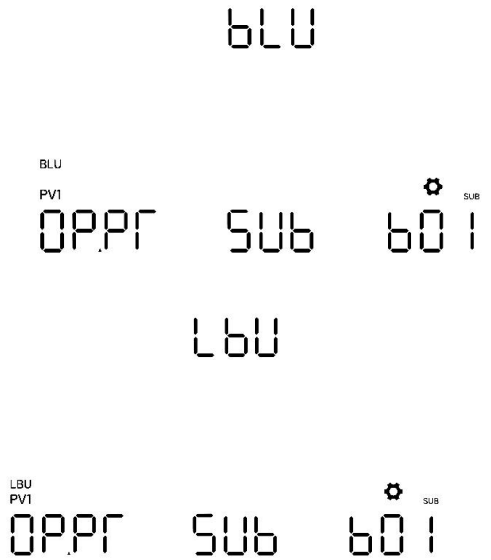
4.5 Operating Mode Description

<table>
<tr><th>Operation mode</th><th>Description</th><th colspan="2">LCD display</th></tr>
<tr><td rowspan="2">Standby mode / Power saving mode
Note: *Standby mode: The inverter is not turned on yet but at this time, the inverter can charge battery without AC output.
*Power saving mode: If enabled, the output of inverter will be off when connected load is pretty low or not detected.</td><td rowspan="2">No output is supplied by the unit but it still can charge batteries.</td><td>Charging by utility and PV energy.
 
</td><td>Charging by utility
 
</td></tr>
<tr><td>Charging by PV energy
 
</td><td>No charging
 
</td></tr>
<tr><td rowspan="2">Fault mode
Note:
*Fault mode: Errors are caused by inside circuit error or external reasons such as over temperature, output short circuited and so on.</td><td rowspan="2">PV energy and utility can charge batteries.</td><td>Charging by utility and PV energy
 
</td><td>Charging by utility
 
</td></tr>
<tr><td>Charging by PV energy
 
</td><td>No charging
 
</td></tr>
<tr><td>Line Mode</td><td>The unit will provide output power from the mains. It can also charge the battery at line mode.</td><td colspan="2">Charging by PV energy
 
</td></tr>
<tr><td></td><td></td><td colspan="2">Charging by utility
 
</td></tr>
<tr><td></td><td></td><td colspan="2">No battery connected
 
</td></tr>
</table>

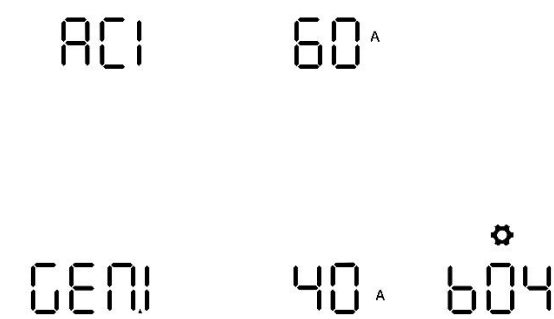
<table>
<tr><td></td><td></td><td>PV energy charges battery, PV energy provides power to the load and feeds remaining energy to the grid.
 
</td></tr>
<tr><td rowspan="2">Battery Mode</td><td rowspan="2">The unit will provide output power from battery and PV power.</td><td>Power from battery and PV energy
 
</td></tr>
<tr><td>Power from battery only
 
</td></tr>
</table>

4.6 LCD Setting

After pressing and holding ENTER button for 3 seconds, the unit will enter setting mode. Press "UP" or "DOWN" button to select setting programs. Then press "ENTER" button to confirm the selection or ESC button to exit.

Program	Description	Setting Option	
b01	Output source priority: To configure load power source priority	Solar first	
		Solar energy provides power to the loads as first priority. If solar energy is not sufficient to power all connected loads, battery energy will supply power the loads at the same time. Utility provides power to the loads only when any one condition happens: - Solar energy is not available - Battery voltage drops to either low-level warning voltage or the setting point in program b09.	
		Utility first (default)	
		Utility will provide power to the loads as first priority. Solar and battery energy will provide power to the loads only when utility power is not available.	
		SBU priority	
		Solar energy provides power to the loads as first priority. If solar energy is not sufficient to power all connected loads, battery will supply power to the loads at the same time. Utility provides power to the loads only when battery voltage drops to either low-level warning voltage or the setting point in program b09.	
		SUB priority	
		Solar energy provides power to the loads as first priority. If solar energy is not sufficient to power all connected loads, solar and utility will power loads at the same time. Battery provides power to the loads only when solar energy is not sufficient and there is no utility.	

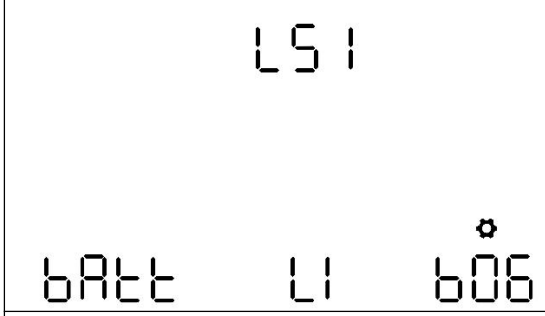
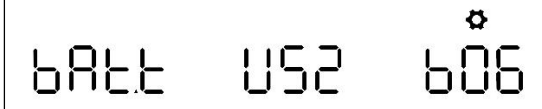
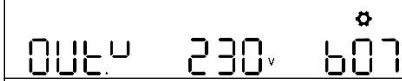
<table>
<tr><td rowspan="5">b02</td><td rowspan="5">Charger source priority:
To configure charger source priority</td><td colspan="2">If this inverter is working in Line, Standby or Fault mode, charger source can be programmed as below:</td></tr>
<tr><td>Solar first
 
</td><td>Solar energy will charge battery as first priority.
Utility will charge battery only when solar energy is not available.</td></tr>
<tr><td>Solar and Utility
 
</td><td>Solar energy and utility will both charge battery.</td></tr>
<tr><td>Only Solar
 
</td><td>Solar energy will be the only charger
source no matter utility is available or not.</td></tr>
<tr><td colspan="2">If this inverter is working in Battery mode or Power saving mode, only solar energy can charge battery. Solar energy will charge battery if it's available and sufficient.</td></tr>
<tr><td>b03</td><td>Maximum charging current: set total charging current for solar and utility chargers. (Max. charging current = utility charging current + solar charging current)</td><td colspan="2"> 

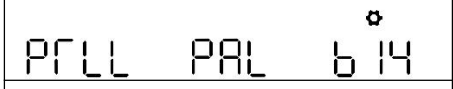
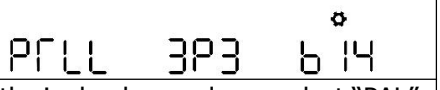
Default 60A, 0A~100A Settable
(If LI is selected in Program b06, this program can’t be set up)</td></tr>
<tr><td>b04</td><td>Maximum utility/GEN charging current</td><td colspan="2"> 

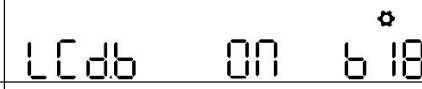
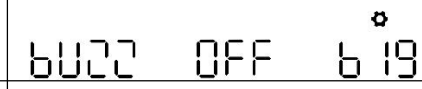
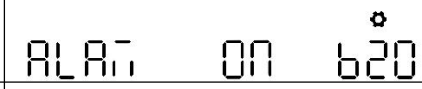
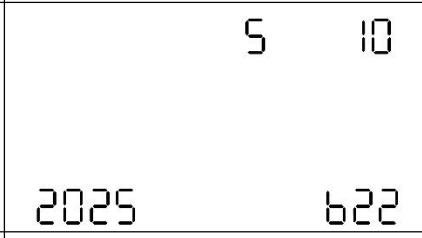
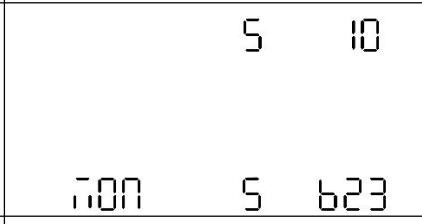
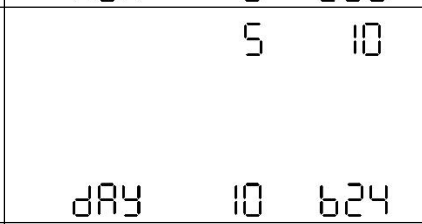
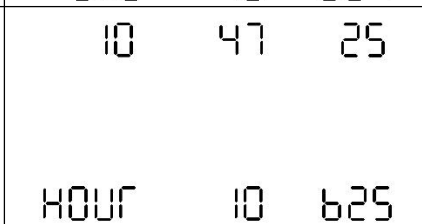
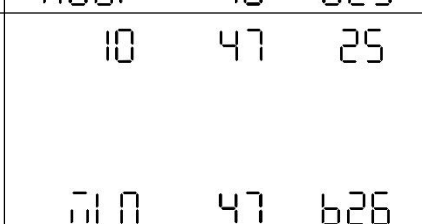
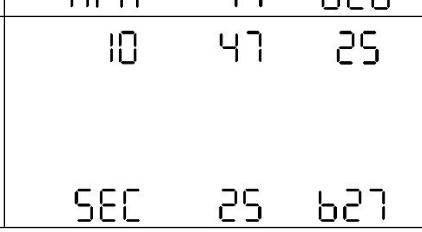
Default 30A, 0A~80A Settable
Note: If setting value in Program b03 is smaller than that in Program b04, the inverter will apply charging current from Program b03 for utility charger</td></tr>
<tr><td rowspan="2">b05</td><td rowspan="2">AC input voltage range</td><td colspan="2">Appliance (default)
 

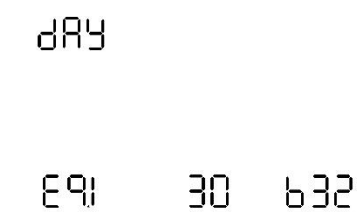
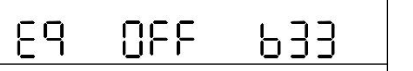
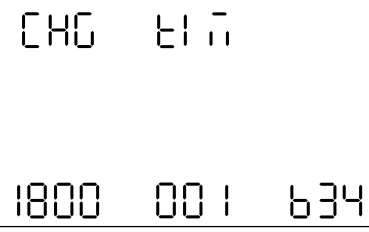
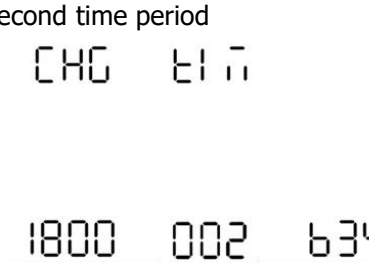
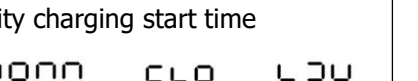
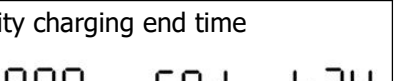
If selected, acceptable AC input voltage range will be within 90~280VAC</td></tr>
<tr><td colspan="2">UPS
 

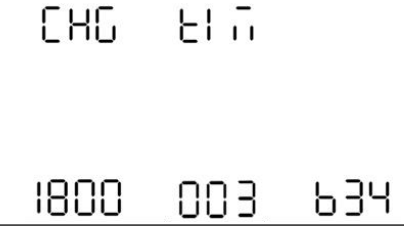
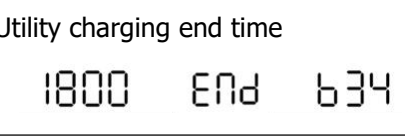
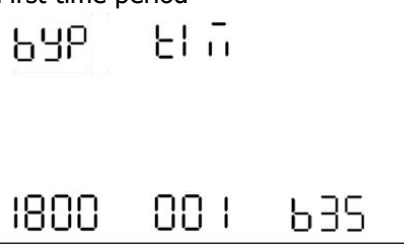
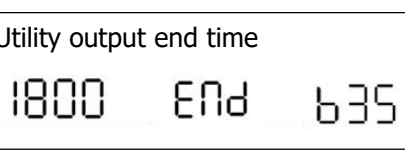
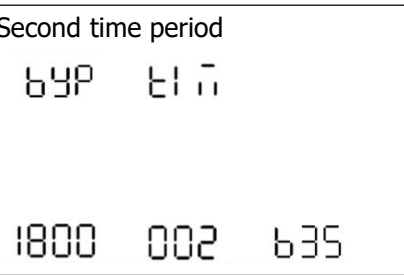
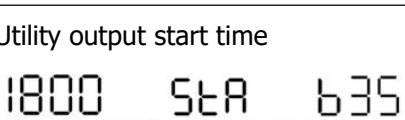
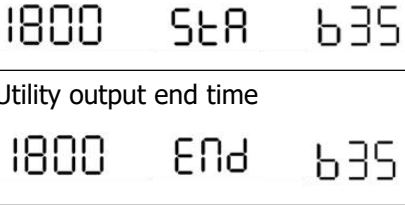
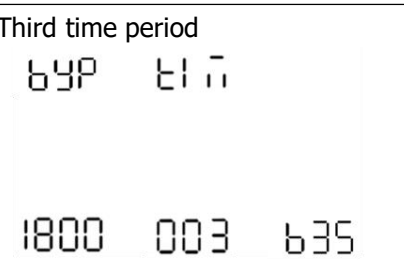
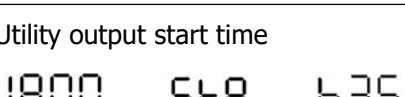
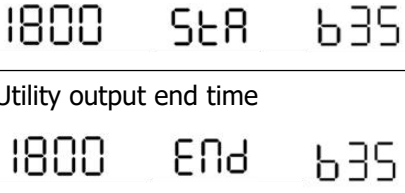
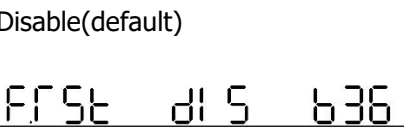
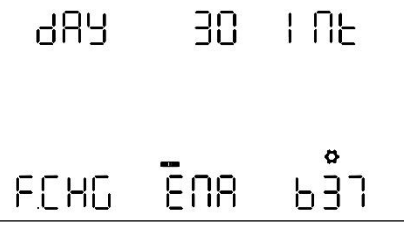
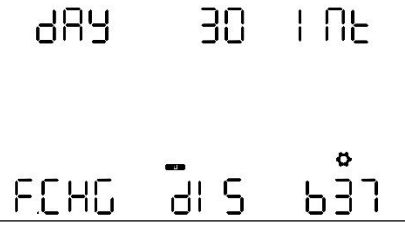
If selected, acceptable AC input voltage range will be within 170~280VAC</td></tr>
</table>

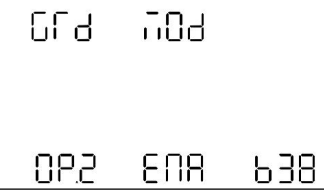
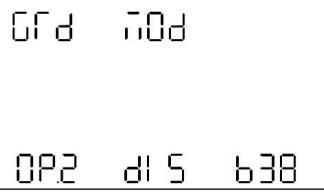
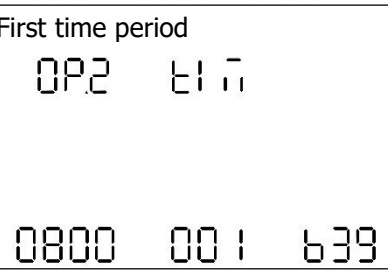
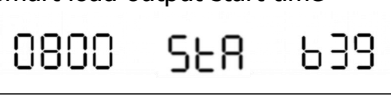
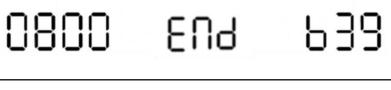
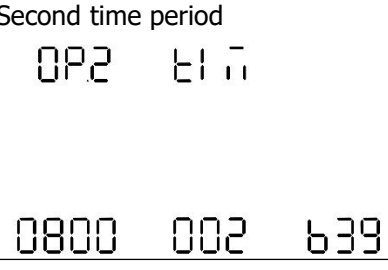
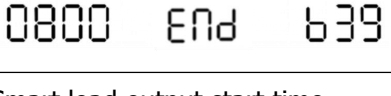
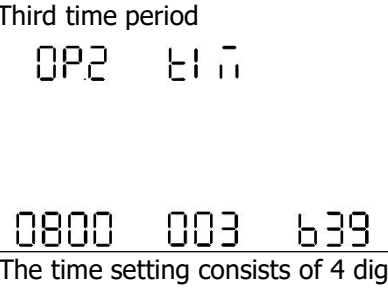
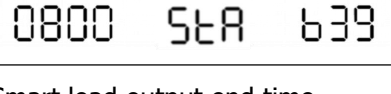
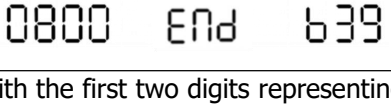
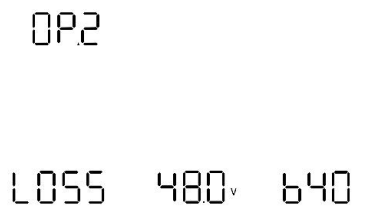
<table>
<tr><td rowspan="5">b06</td><td rowspan="5">Battery type</td><td>AGM (default)
  </td></tr>
<tr><td>Flooded
  </td></tr>
<tr><td>Lithium (only suitable when communicated with BMS)
  </td></tr>
<tr><td>User-Defined
 
If “User-Defined” is selected, battery charge voltage and low DC cut-off voltage can be set up in program b11, b12 and b13.</td></tr>
<tr><td>User-Defined 2（suitable when lithium battery without BMS communication）
 
If “User-Defined 2” is selected, battery charge voltage and low DC cut-off voltage can be set up in program b11, b12 and b13. It is recommended to set to the same voltage in program b11 and b12(full charging voltage point of lithium battery). The inverter will stop charging when the battery voltage reaches this setting.</td></tr>
<tr><td rowspan="2">b07</td><td rowspan="2">Output voltage
*This setting is only available when the inverter is in standby mode (Switch off)</td><td>230V (default)
  </td><td>220V
  </td></tr>
<tr><td>240V
  </td><td>208V
  </td></tr>
<tr><td>b08</td><td>Output frequency
*This setting is only available when the inverter is in standby mode (Switch off)</td><td>50Hz (default)
  </td><td>60Hz
  </td></tr>
<tr><td>b09</td><td>Setting voltage point back to utility source when selecting “SBU priority” or “Solar first” in program b01</td><td colspan="2"> 
Default 46.0V, 44.0V~51.2V Settable</td></tr>
<tr><td>b10</td><td>Setting voltage point back to battery mode when selecting “SBU priority” or “Solar first” in program b01</td><td colspan="2"> 
Default 54.0V, 48.0V~58.0V Settable</td></tr>
</table>

b11	C.V. charging voltage. If self-defined is selected In program b06, this program can be set up	 Default 56.4V, 48.0V~58.4V Settable	
b12	Floating charging voltage. If self-defined is selected in program b06, this program can be set up	 Default 54.0V, 48.0V~58.4V Settable	
b13	Low DC cut-off voltage. If self-defined is selected in program b06, this program can be set up Low DC cut-off voltage will be fixed to setting value no matter what percentage of load is connected	 Default 42.0V, 40.0V~48.0V Settable When reach Low DC cut-off voltage: 1) If battery power is only power source available, inverter will shut down. 2) If PV energy and battery power are available, inverter will charge battery without AC output. 3) If PV energy, battery power and utility are all available, inverter will transfer to line mode and provide output power to loads, and charge the battery at the same time.	
b14	AC output mode *This setting is only available when the inverter is in standby mode (Switch off) **Note:** Parallel operation can only work when battery connected	Parallel:  	L1 Phase: 
		L2 Phase:  	L3 Phase: 
		When the units are used in parallel with single phase, please select "PAL" in program b14. It requires 3 inverters to support three-phase equipment, 1 inverter in each phase. Please select "3P1" in program b14 for the inverters connected to L1 phase, "3P2" in program b14 for the inverters connected to L2 phase and "3P3" in program b14 for the inverters connected to L3 phase.	
b15	Power saving mode enable/disable	Saving mode disable (default)  If disabled, no matter connected load is low or high, the on/off status of inverter output will not be effected.	
		Saving mode enable  If enabled, the output of inverter will be off when connected load is pretty low or not detected.	
b16	Auto restart when overload occurs	Restart disable (default)  	Restart enable 

b17	Auto restart when over temperature occurs	Restart disable (default) 	Restart enable 
b18	Backlight control	Backlight on (default) 	Backlight off 
b19	Alarm control	Alarm on (default) 	Alarm off 
b20	Beeps while primary source is interrupted	Alarm on (default) 	Alarm off 
b21	Overload bypass: When enabled, the unit will transfer to line mode if overload occurs in battery mode	Bypass disable (default) 	Bypass enable 
b22	Real time setting---Year		Default 2018, range 2018~2099
b23	Real time setting---Month		Default 01, range 01~12
b24	Real time setting---Date		Default 01, range 01~31
b25	Real time setting---Hour		Default 00, range 00~23
b26	Real time setting---Minute		Default 00, range 00~59
b27	Real time setting---Second		Default 00, range 00~59

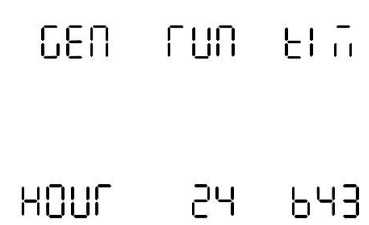
<table>
<tr><td rowspan="2">b28</td><td rowspan="2">Battery equalization</td><td>Battery equalization enable
  </td><td>Battery equalization disable(default)
  </td></tr>
<tr><td colspan="2">If “Flooded” or “User-Defined” is selected in program b06, this program can be set up.</td></tr>
<tr><td>b29</td><td>Battery equalization voltage</td><td colspan="2"> 
Default 58.4V, 48.0V~58.4V Settable</td></tr>
<tr><td>b30</td><td>Battery equalized time</td><td>  </td><td>Default 60min, 5min~900min Settable</td></tr>
<tr><td>b31</td><td>Battery equalized timeout</td><td>  </td><td>Default 120min, 5min~900min Settable</td></tr>
<tr><td>b32</td><td>Equalization interval</td><td>  </td><td>Default 30days, 1 days~90 days Settable</td></tr>
<tr><td rowspan="2">b33</td><td rowspan="2">Equalization activated immediately</td><td>Equalization activated immediately on
  </td><td>Equalization activated immediately off(default)
  </td></tr>
<tr><td colspan="2">If equalization function is enabled in program b28, this program can be setup. If “On” is selected in this program, it’s to activate battery equalization immediately and LCD main page will shows “  ”. If “Off” is selected, it will cancel equalization function until next activated equalization time arrives based on program b32 setting. At this time, “” will not be shown in LCD main page.</td></tr>
<tr><td rowspan="4">b34</td><td rowspan="4">Utility charging time
* Note: When time period 1 is set to "Sta0000-End0000", it means that the utility can charge all time periods</td><td rowspan="2">First time period
  </td><td>Utility charging start time
  </td></tr>
<tr><td>Utility charging end time
  </td></tr>
<tr><td rowspan="2">Second time period
  </td><td>Utility charging start time
  </td></tr>
<tr><td>Utility charging end time
  </td></tr>
</table>

<table>
<tr><td></td><td></td><td>Third time period
  </td><td>Utility charging start time
 
Utility charging end time
  </td></tr>
<tr><td></td><td></td><td colspan="2">The time allows utility to charge the battery.
The time setting consists of 4 digits, with the first two digits representing hours and the last two digits representing minutes. For example, Sta2300-End2059 represents the time allows utility to charge the battery from 23:00 to 20:59 the next day.</td></tr>
<tr><td>b35</td><td>Utility output time
* Note: When time period 1 is set to "Sta0000-End0000", it means that the utility can output all time periods</td><td>First time period
  </td><td>Utility output start time
 
Utility output end time
  </td></tr>
<tr><td></td><td></td><td>Second time period
  </td><td>Utility output start time
 
Utility output end time
  </td></tr>
<tr><td></td><td></td><td>Third time period
  </td><td>Utility output start time
 
Utility output end time
  </td></tr>
<tr><td></td><td></td><td colspan="2">The time allows utility to power the load.
The time setting consists of 4 digits, with the first two digits representing hours and the last two digits representing minutes. For example, Sta2300-End2059 represents the time allows utility to power the load is from 23:00 to 20:59 the next day.</td></tr>
<tr><td>b36</td><td>Fault restart enable</td><td>Enable
  </td><td>The inverter can automatically restart after reporting a fault.</td></tr>
<tr><td></td><td></td><td>Disable(default)
  </td><td>The inverter cannot automatically restart after reporting a fault.</td></tr>
<tr><td>b37</td><td>Li battery full charge interval setting</td><td>  </td><td>  </td></tr>
<tr><td></td><td></td><td colspan="2">If program b06 is set to Li and set to enable, it means that the lithium battery is periodically forced to charge to SOC of 100%. Disable indicates that the function is not enable</td></tr>
</table>

<table>
<tr><td>b38</td><td>The power grid mode allows the smart load output to remain on</td><td colspan="2">Enable
 
</td><td>Disable(default)
 
</td></tr>
<tr><td rowspan="7">b39</td><td rowspan="7">Setting of the smart load output time period
* Note: When time period 1 is set to "Sta0000-End0000", it means that the smart load can output all time periods</td><td rowspan="2">First time period
 
</td><td>Smart load output start time
 
</td></tr>
<tr><td>Smart load output end time
 
</td></tr>
<tr><td rowspan="2">Second time period
 
</td><td>Smart load output start time
 
</td></tr>
<tr><td>Smart load output end time
 
</td></tr>
<tr><td rowspan="2">Third time period
 
</td><td>Smart load output start time
 
</td></tr>
<tr><td>Smart load output end time
 
</td></tr>
<tr><td colspan="2">The time setting consists of 4 digits, with the first two digits representing hours and the last two digits representing minutes. For example, Sta2300-End2059 represents the smart load output time range from 23:00 to 20:59 the next day.</td></tr>
<tr><td>b40</td><td>The cut-off battery voltage point/SOC setting for the smart load output</td><td colspan="2"> 

Default 48.0V, 44.0V~54.0V Settable
Lithium battery mode：Default 60%, 20%~95% Settable</td></tr>
<tr><td>b41</td><td>Recovery battery voltage point/SOC setting for the smart load output</td><td colspan="2"> 

Default 53.0V, 48.0V~58.0V Settable
Lithium battery mode：Default 90%, 20%~100% Settable</td></tr>
<tr><td rowspan="2">b42</td><td rowspan="2">Setting the smart load output to be turned on immediately</td><td>On (Turned on the smart load immediately)
 
</td><td></td></tr>
<tr><td>Off (default)
 
</td><td></td></tr>
</table>

b43	Generator run time		Default 00, range 00~24 The time allows Generator to work. Use 2 digits to represent the time period, setting range from 00 to 24 (eg: 02 represents the time allows Generator to run for two hours. **Note:** 00 represents that the generator can run continuously.
b44	BMS Communication Loss	Enable (default) 	If BMS Communication Loss, The inverter 02 and 06 warning Icon flashing, but enable to work for original status.
		Disable 	If BMS Communication Loss, The inverter 02 and 06 warning Icon flashing and disable to work. (Cut off the output and can't charge)
b45	Address setting (for expansion)	 Default 1, 1~255 Settable	

5. Battery Equalization

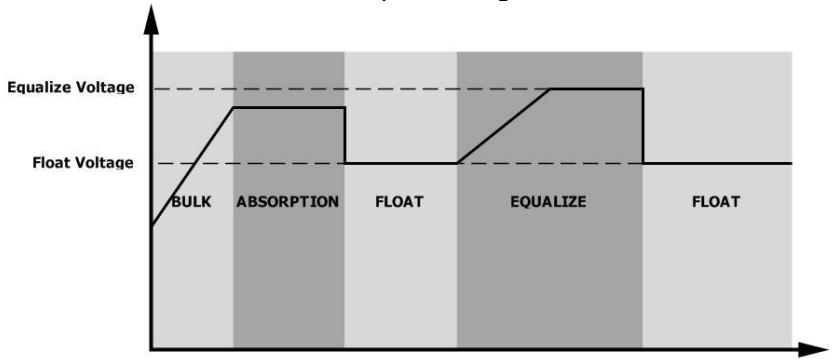
Equalization function is added into charge controller. It reverses the buildup of negative chemical effects like stratification, a condition where acid concentration is greater at the bottom of the battery than at the top. Equalization also helps to remove sulfate crystals that might have built up on the plates. If left unchecked, this condition, called sulfation, will reduce the overall capacity of the battery. Therefore, it's recommended to equalize battery periodically.

- **How to Apply Equalization Function**

You must enable battery equalization function in monitoring LCD setting program b28 first. Then, you may apply this function in device by either one of following methods:
1. Setting equalization interval in program b32.
2. Active equalization immediately in program b33.

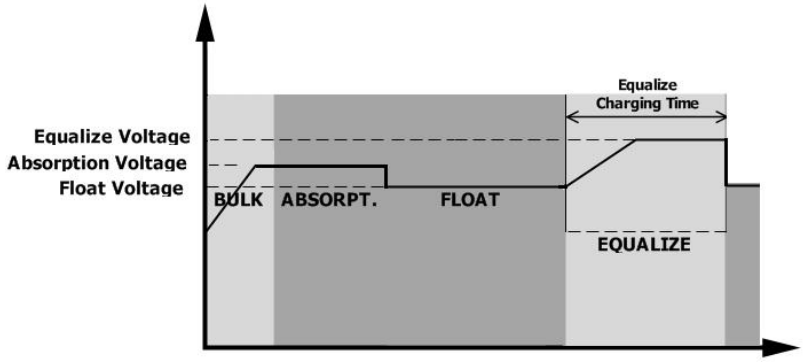
- **When to Equalize**

In float stage, when the setting equalization interval (battery equalization cycle) is arrived, or equalization is active immediately, the controller will start to enter Equalize stage.

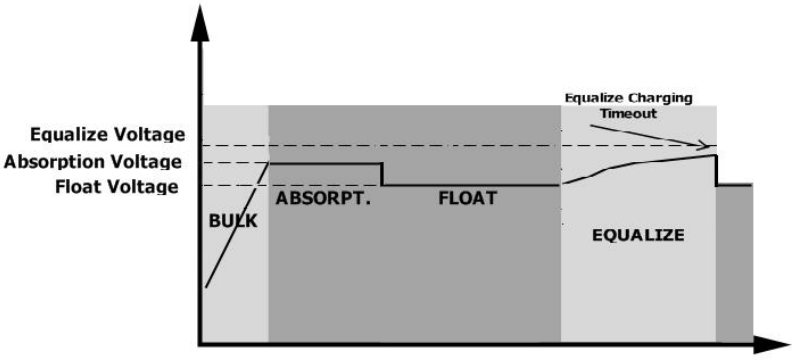


- **Equalize charging time and timeout**

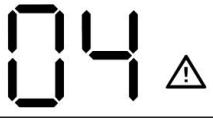
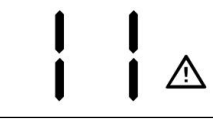
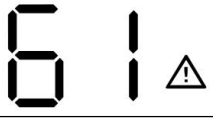
In Equalize stage, the controller will supply power to charge battery as much as possible until battery voltage raises to battery equalization voltage. Then, constant-voltage regulation is applied to maintain battery voltage at the battery equalization voltage. The battery will remain in the Equalize stage until setting battery equalized time is arrived.



However, in Equalize stage, when battery equalized time is expired and battery voltage doesn't rise to battery equalization voltage point, the charge controller will extend the battery equalized time until battery voltage achieves battery equalization voltage. If battery voltage is still lower than battery equalization voltage when battery equalized timeout setting is over, the charge controller will stop equalization and return to float stage.



6. Warning Indicator

Warning Code	Warning Event	Audible Alarm	Icon flashing
01	Battery is over-charged	Beep once every second	
02	Low battery	Beep once every second	
04	LLC over current	Beep once every second	
05	Battery disconnect	No beep	
06	BMS communication error	Beep once every second	
10	Fan is locked when inverter is on	Beep 3 times every second	
11	Over temperature	Beep once every second	
22	BUS over current	Beep once every second	
23	BUS low voltage	Beep once every second	
32	Overload	Beep once every 0.5 second	
33	Output power de-rating	Beep twice every 3 seconds	
40	Solar charger stops due to overload	Beep once every second	
41	PV power insufficient	Beep once every second	
60	Parallel input utility grid different	Beep once every second	
61	Parallel input phase error	Beep once every second	

62	Parallel output phase loss	Beep once every second	
63	Parallel forbidden without battery	Beep once every second	
64	The parallel version is different	Beep once every second	
65	Parallel inverters' capacity different	Beep once every second	
66	Inconsistent switches	Beep once every second	
68	Host loss	Beep once every second	

7. Fault Reference Code

Fault Code	Fault Event	Icon on
01	Battery voltage is too high	
03	Battery input over current	
11	Over temperature	
12	Internal communication error	

20	Bus voltage is too high	
21	Bus soft start failed	
24	Bus voltage is too low	
30	Output short circuited	
31	Output voltage is too high	
32	Overload time out	
34	Output voltage is too low	
35	Over DC voltage in AC output	
42	PV voltage is too high	
50	Over current or surge	
51	Inverter soft start failed	
52	Negative power fault	
67	CAN fault	

8. Parallel Installation Guide

8.1 Introduction

This inverter can be used in parallel with two different operation modes.

1. Parallel operation in single phase with up to 9 units.
2. Maximum 9 units work together to support 3-phase equipment. Seven units support one phase maximum.

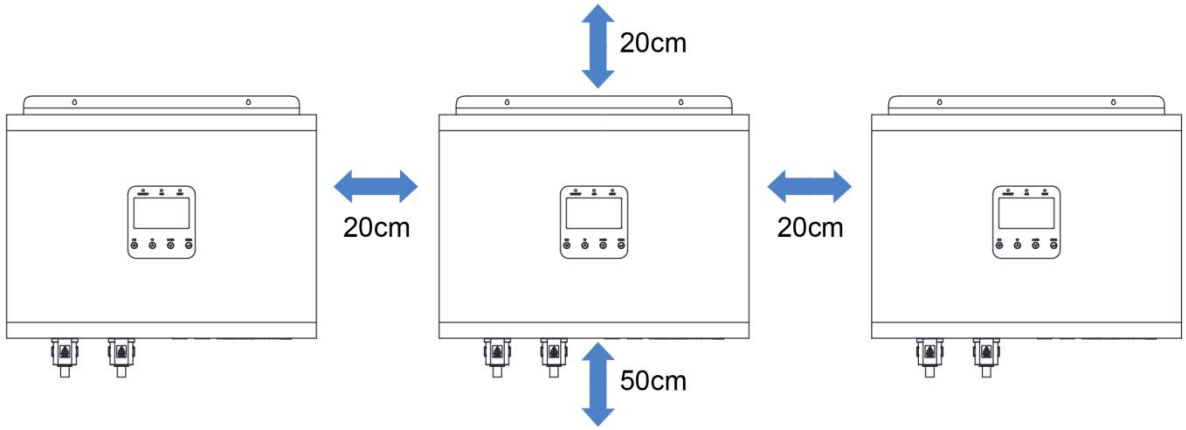
8.2 Package Contents

In parallel kit, you will find the following items in the package:

Parallel communication cable

8.3 Mounting the Unit

When installing multiple units, please follow below chart.

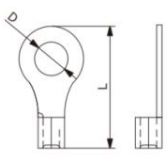


Note: For proper air circulation to dissipate heat, allow a clearance of approx. 20cm to the side and above approx. 50 cm below the unit. Be sure to install each unit in the same level.

8.4 Wiring Connection

The cable size of each inverter is shown as below

Recommended battery cable and terminal size for each inverter:

Model	Typical Amperage	Wire Size	Ring Terminal			Torque value	
			Cable mm²	Dimensions			
				D (mm)	L (mm)		
BIN-S-I-6KW	1 * 2 AWG	1 * 2 AWG	33	6.4	39.2	2-3Nm	

WARNING: Be sure the length of all battery cables is the same. Otherwise, there will be voltage difference between inverter and battery to cause parallel inverters not working.

You need to connect the cables of each inverter together. Take the battery cables for example: You need to use a connector or bus-bar as a joint to connect the battery cables together, and then connect to the battery terminal. The cable size used from joint to battery should be X times cable size in the tables above. "X" indicates the number of inverters connected in parallel.

Regarding AC input and output, please also follow the same principle.

Recommended AC input and output cable size for each inverter:

Model	Terminal blocks	Cable mm²	Cable mm²
BIN-S-I-6KW	GRID/ GEN	1 * 8 AWG	8.37
	SMARTLOAD/ LOAD/ PE	1 * 10 AWG	5.26

CAUTION!! Please install the breaker at the battery and AC input side. This will ensure the inverter can be securely disconnected during maintenance and fully protected from over current of battery or AC input.

Recommended breaker specification of battery for each inverter:

Model	1 unit*
BIN-S-I-6KW	200A / 60VDC

*If you want to use only one breaker at the battery side for the whole system, the rating of the breaker should be X times current of 1 unit. "X" indicates the number of inverters connected in parallel.

Recommended breaker specification of AC input with single phase:

Model	2 units	3 units	4 units	5 units	6 units
BIN-S-I-6KW	100A/230VAC	150A/230VAC	200A/230VAC	250A/230VAC	300A/230VAC

Note1: You can use 50A breaker for BIN-S-I-6KW for only 1 unit, and each inverter has a breaker at its AC input.

Note2: Regarding three phase system, you can use 4 poles breaker, the rating is up to the current of the phase which has the maximum units. Or you can follow the suggestion of note 1.

Recommended battery capacity

Inverter parallel numbers	2	3	4	5	6	7	8	9
Battery Capacity	400AH	600AH	800AH	1000AH	1200AH	1400AH	1600AH	1800AH

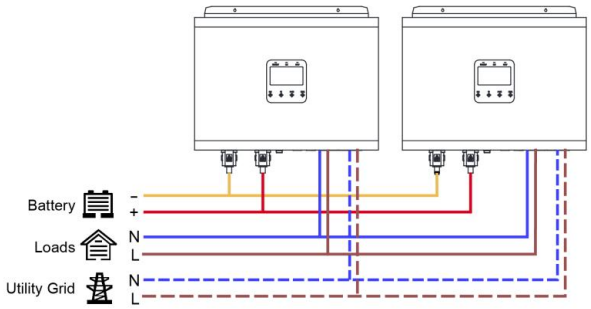
WARNING! Be sure that all inverters will share the same battery bank. Otherwise, the inverters will transfer to fault mode.

8.5 Parallel Operation in Single Phase

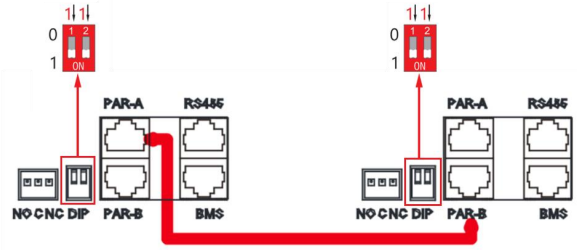
WARNING! All inverters must be connected to the same batteries and ensure each group of cables from the inverters to the batteries in the same length.

Two inverters in parallel:

Power Connection



Communication Connection

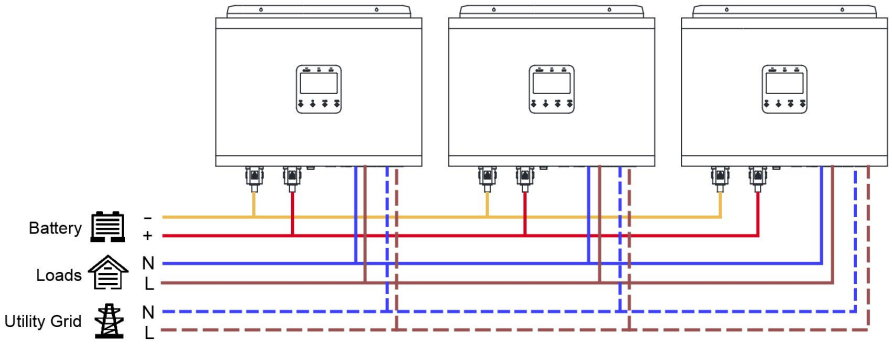


WARNING! Make sure that PAR-A of one inverter is connected to the PAR-B of another inverter. No matter single or three-phase parallel.

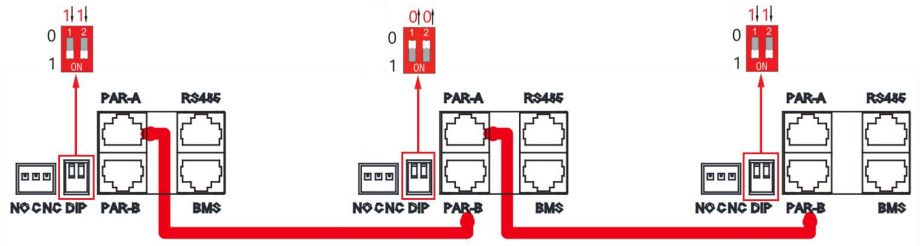
NOTE: Please put the CAN communication DIP to on status for the first and the end inverter.

Three inverters in parallel:

Power Connection

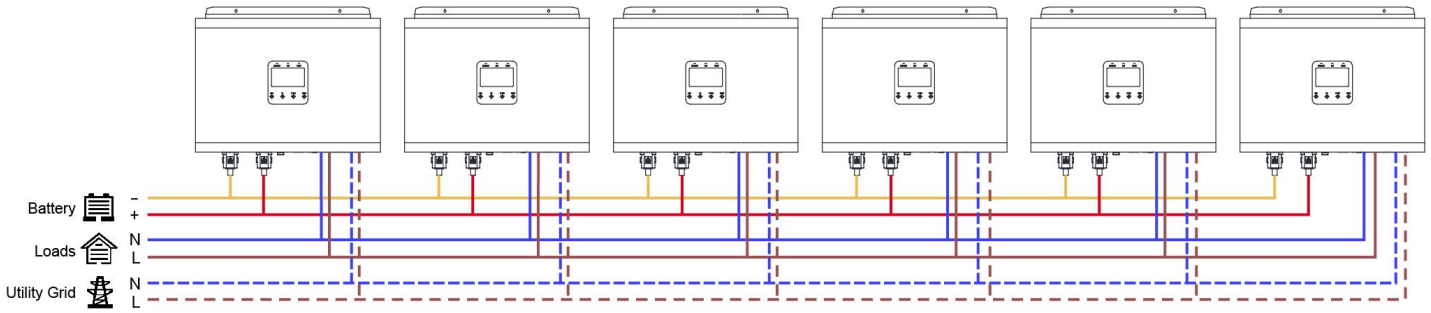


Communication Connection

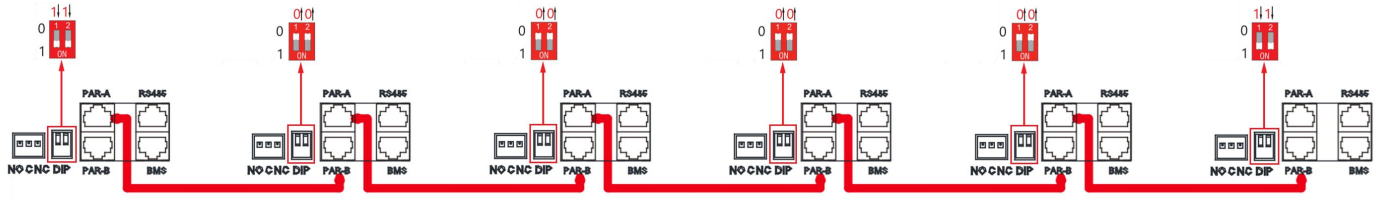


Six inverters in parallel:

Power Connection

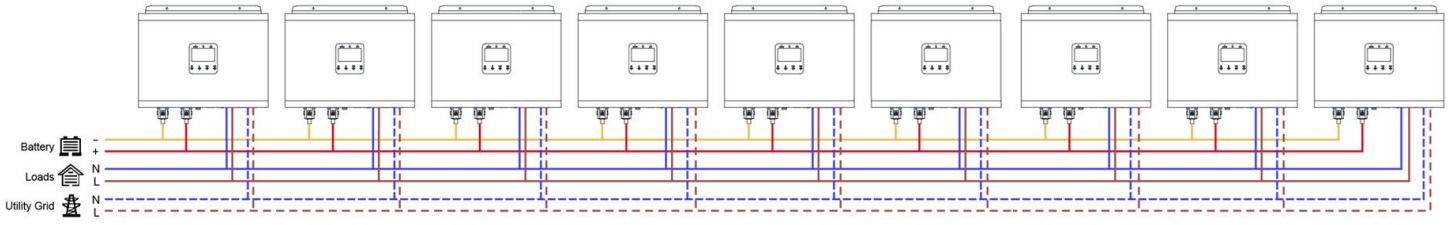


Communication Connection

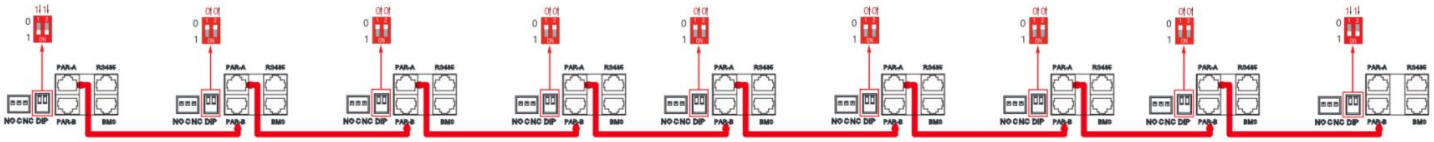


Nine inverters in parallel:

Power Connection



Communication Connection

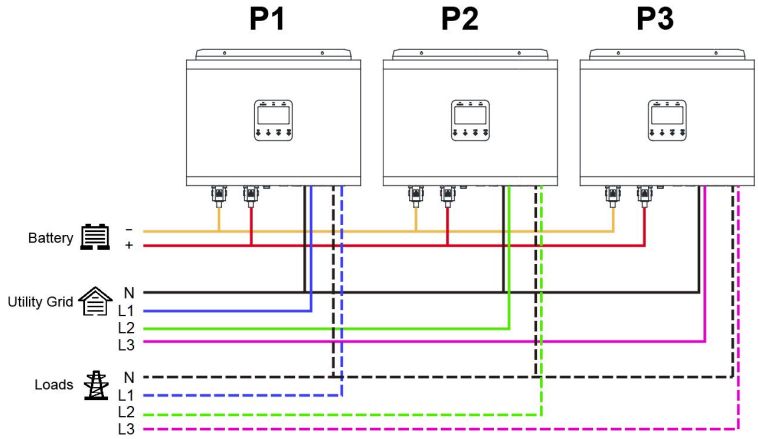


8.6 Parallel Operation in Three Phase

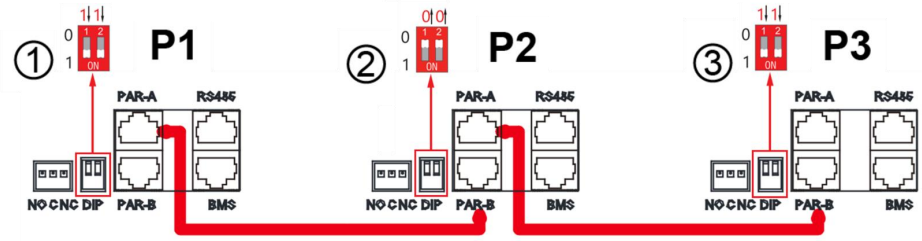
WARNING! All inverters must be connected to the same batteries and ensure each group of cables from the inverters to the batteries in the same length.

One inverter in each phase:

Power Connection

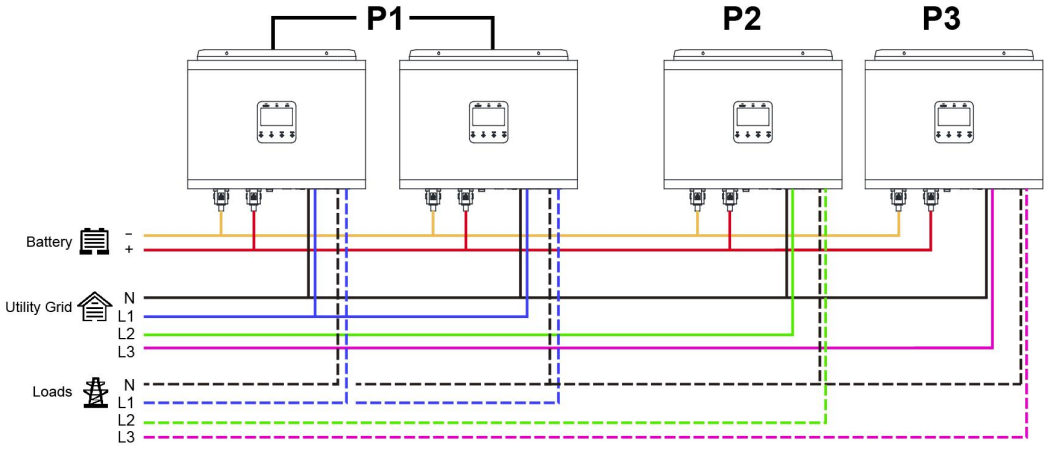


Communication Connection

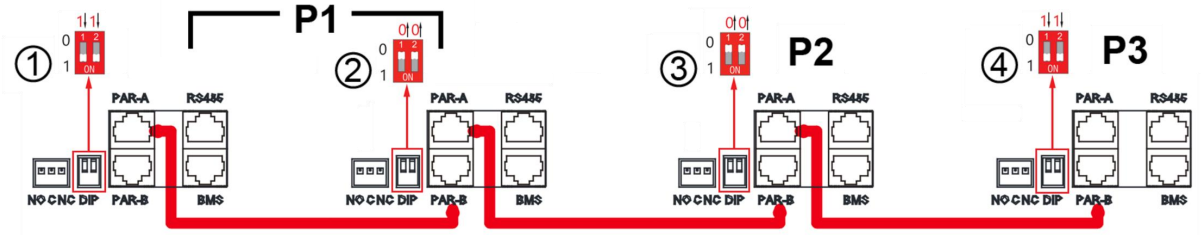


Two inverters in one phase and only one inverter for the remaining phases:

Power Connection

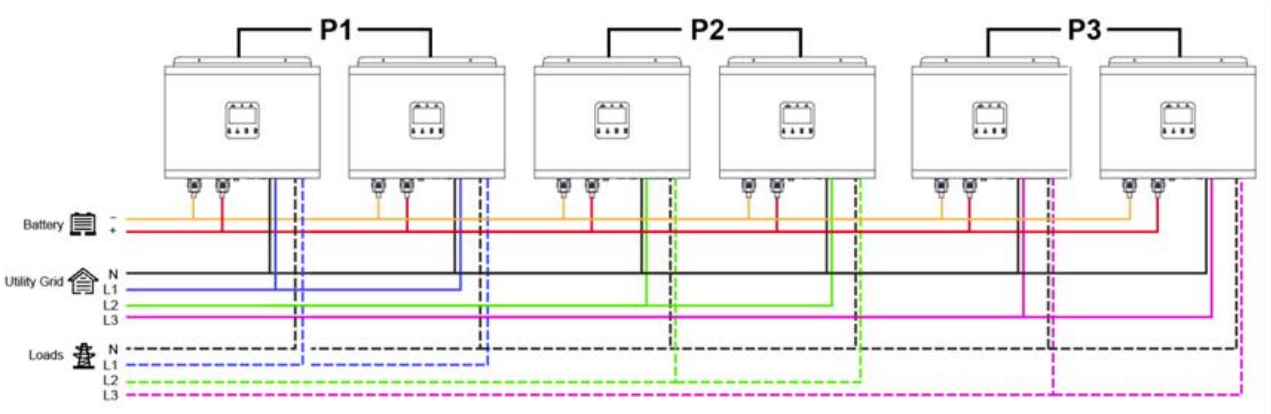


Communication Connection

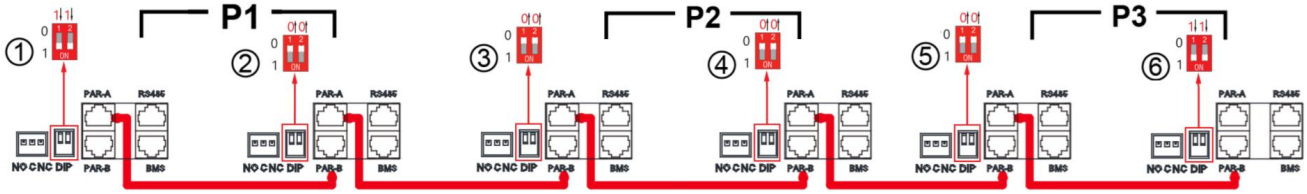


Two inverters in each phase:

Power Connection

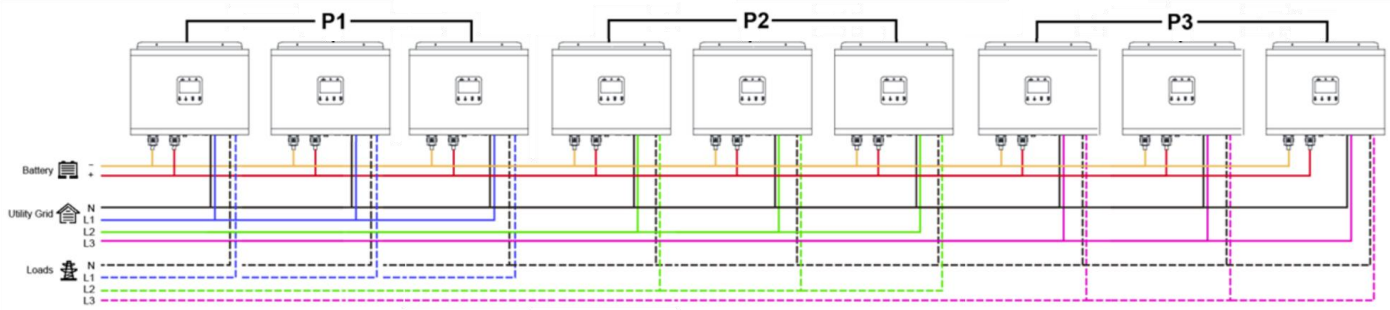


Communication Connection

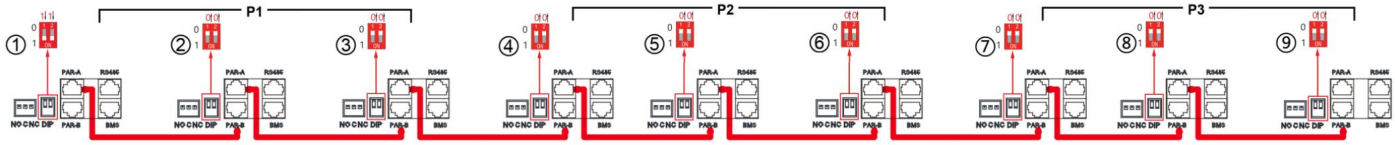


Three inverters in each phase:

Power Connection



Communication Connection



8.7 PV Connection

Please refer to user manual of single unit for PV Connection on Page 11.

CAUTION: Each inverter should connect to PV modules separate.

8.8 LCD Setting and Display

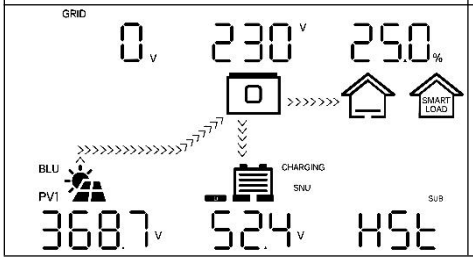
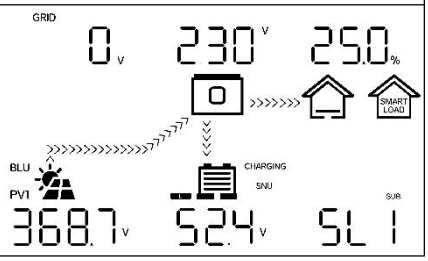
Refer to Program b14 on Page 24

8.81 Parallel in Single Phase

Step 1: Check the following requirements before commissioning:

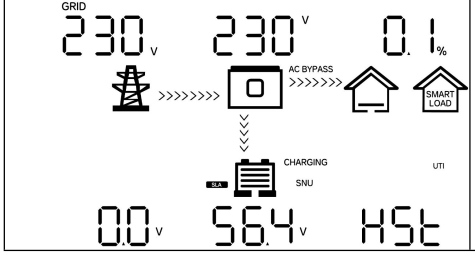
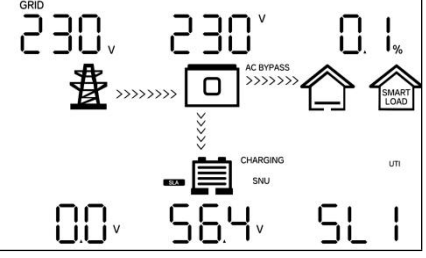
- Correct wire connection
- Ensure all breakers in Line wires of load side are open and each Neutral wires of each unit are connected together.

Step 2: Turn on each unit and set "PAL" in LCD setting program b14 of each unit. And then shut down all units.
Note: It's necessary to turn off switch when setting LCD program. Otherwise, the setting can not be programmed.
Step 3: Turn on each unit.

LCD display in Master unit	LCD display in Slave unit
	

Note: Master and slave units are randomly defined.

Step 4: Switch on all AC breakers of Line wires in AC input. It's better to have all inverters connect to utility at the same time. If not, it will display warning 60.

LCD display in Master unit	LCD display in Slave unit
	

Step 5: If there is no more fault alarm, the parallel system is completely installed.
Step 6: Please switch on all breakers of Line wires in load side. This system will start to provide power to the load.

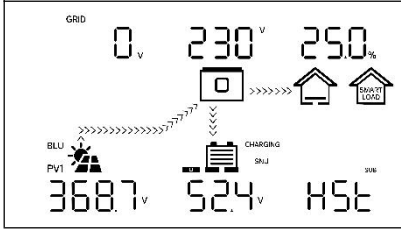
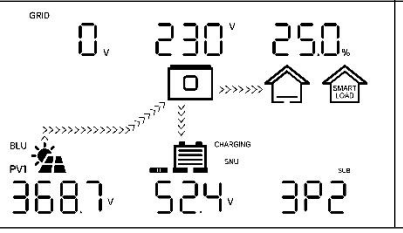
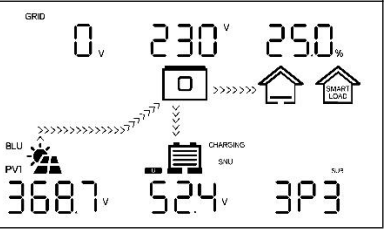
8.82 Parallel in Three Phase

Step 1: Check the following requirements before commissioning:

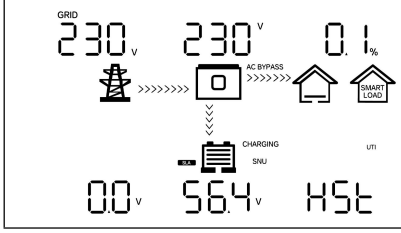
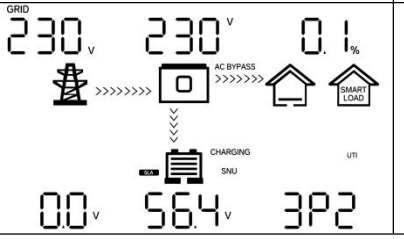
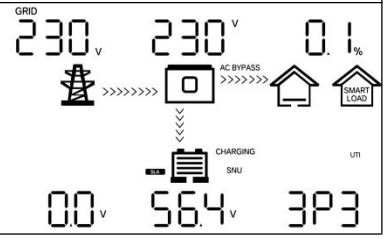
- Correct wire connection
- Ensure all breakers in Line wires of load side are open and each Neutral wires of each unit are connected together.

Step 2: Turn on all units and configure LCD program b14 as P1, P2 and P3 sequentially. Then shut down all units.
Note: It's necessary to turn off switch when setting LCD program. Otherwise, the setting can not be programmed.

Step 3: Turn on all units sequentially. Please turn on HOST inverter first, then turn on the rest one by one.

LCD display in L1-phase unit	LCD display in L2-phase unit	LCD display in L3-phase unit
		

Step 4: Switch on all AC breakers of Line wires in AC input. If AC connection is detected and three phases are matched with unit setting, they will work normally. Otherwise, they will display warning 60/61 and will not work in the line mode.

LCD display in L1-phase unit	LCD display in L2-phase unit	LCD display in L3-phase unit
		

Step 5: If there is no more fault alarm, the system to support 3-phase equipment is completely installed.
Step 6: Please switch on all breakers of Line wires in load side. This system will start to provide power to the load.

Note 1: If there's only one inverter in L1-phase, the LCD will show as "HST". If there is more than one inverter in L1-phase, the LCD of the HOST inverter will show as "HST", the rest of L1-phase inverters will show as "3P1".
Note 2: To avoid overload occurring, before turning on breakers in load side, it's better to have whole system in operation first.
Note 3: Transfer time for this operation exists. Power interruption may happen to critical devices, which cannot bear transfer time.

9. Specifications

Table 1 Line Mode Specifications

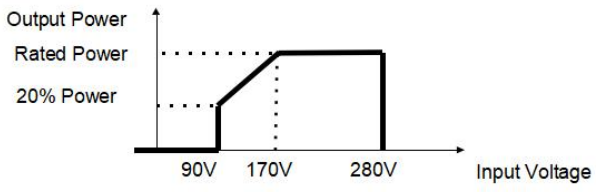
INVERTER MODEL	**BIN-S-I-6KW**
Input Voltage Waveform	Sinusoidal (utility or generator)
Nominal Input Voltage	230Vac
Low Loss Voltage	170Vac±7V (UPS); 90Vac±7V (Appliances)
Low Loss Return Voltage	180Vac±7V (UPS); 100Vac±7V (Appliances)
High Loss Voltage	280Vac±7V
High Loss Return Voltage	270Vac±7V
Max AC Input Voltage	300Vac
Max. AC Input current	40A
Overload Protection	10S, @ > 45Aac or 10kW Grid or GEN input 1min, @ > 40A or 9kW Grid or GEN input
Nominal Input Frequency	50Hz / 60Hz (Auto detection)
Low Loss Frequency	40±1Hz
Low Loss Return Frequency	42±1Hz
High Loss Frequency	65±1Hz
High Loss Return Frequency	63±1Hz
Efficiency (Line Mode)	>95% (Rated R load, battery full charged)
Max. AC Charging Current	80Amp
Transfer Time	10ms typical, 20ms Max@ Single <30ms @ Parallel
Output power de-rating: When AC input voltage drops to 170V, the output power will be de-rated.	

Table 2 Inverter Mode Specifications

INVERTER MODEL	**BIN-S-I-6KW**
Rated Output Power	6KVA/6KW
Output Voltage Waveform	Pure Sine Wave
Output Voltage Regulation	230Vac±5%
Output Frequency	60Hz or 50Hz
Nominal Output Current	27A
Overload Protection	5s@≥150% load; 10s@110%~150% load
Surge Capacity	2* rated power for 5 seconds
Nominal DC Input Voltage	48Vdc
Operating Range	40Vdc-60Vdc
Cold Start Voltage(Lead-Acid Mode)	46.0Vdc
Cold Start SOC(Li Mode)	Default 30%, Low DC Cut-off SOC +10%
Low DC Warning Voltage (Lead-Acid Mode)	44.0Vdc @ load < 20% 42.8Vdc @ 20% ≤ load < 50% 40.4Vdc @ load ≥ 50%
Low DC Warning Return Voltage (Lead-Acid Mode)	46.0Vdc @ load < 20% 44.8Vdc @ 20% ≤ load < 50% 42.4Vdc @ load ≥ 50%
Low DC Cut-off Voltage (Lead-Acid Mode)	42.0Vdc @ load < 20% 40.8Vdc @ 20% ≤ load < 50% 38.4Vdc @ load ≥ 50%
Low DC Cut-off Voltage (Li Mode)	42.0Vdc
Low DC Warning SOC (Li Mode)	Low DC Cut-off SOC +5%
Low DC Warning Return SOC (Li Mode)	Low DC Cut-off SOC +10%
Low DC Cut-off SOC(Li Mode)	Default 20%, 5%~50% settable
High DC Recovery Voltage	56.4Vdc(C.V. charging voltage)
High DC Cut-off Voltage	60Vdc
No Load Power Consumption	<60W

Table 3 Charge Mode Specifications

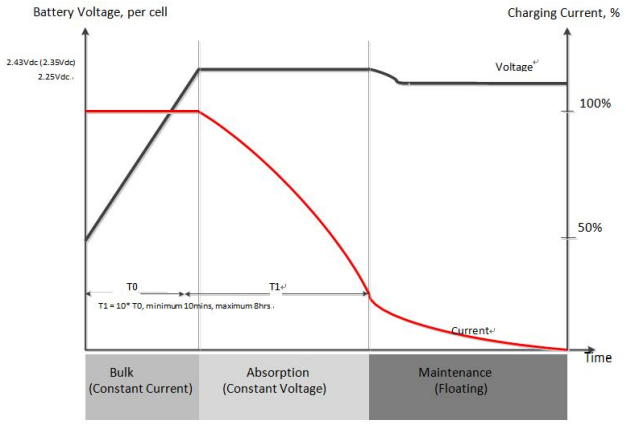
Utility Charging Mode		
INVERTER MODEL		**BIN-S-I-6KW**
Charging Algorithm		3-Step
Max. AC Charging Current		80Amp(@$V_{I/P}$=230Vac)
Bulk Charging Voltage	**Flooded Battery**	58.4Vdc
	AGM / Gel Battery	56.4Vdc
Floating Charging Voltage		54Vdc
Charging Curve		
MPPT Solar Charging Mode		
Max. PV Array Power		4000W+4000W
Max. PV Input Current		16A+16A
Start-up Voltage		100Vdc±10Vdc
PV Array MPPT Voltage Range		60Vdc~450Vdc
Max. PV Array Open Circuit Voltage		500Vdc
Max. Inverter Back Feed Current To The Array		0A
Max. PV Charging Current		100A
Max. Charging Current (AC Charger Plus Solar Charger)		100A

Table 4 General Specifications

INVERTER MODEL	**BIN-S-I-6KW**
Safety Certification	CE
Operating Temperature Range	-10℃ to 50℃
Storage temperature	-15℃~ 60℃
Humidity	5% to 95% Relative Humidity (Non-condensing)
Altitude	<2000m
Dimension(D*W*H), mm	387*282*114
Net Weight, kg	9.1

10. Trouble Shooting

Problem	LCD/LED/Buzzer	Explanation	What to do
Unit shuts down Automatically during startup process.	LCD/LEDs and buzzer will be active for 3 seconds and then complete off.	The battery voltage is too low . (<1.91V/Cell)	1. Re-charge battery 2. Replace battery
No response after power on.	No indication.	1.The battery voltage is far too low. (<1.4V/Cell) 2.Battery polarity is connected reversed	1. Check if batteries and the wiring are connected well 2. Re-charge battery 3. Replace battery
Mains exist but the unit works in battery mode.	Input voltage is 0 on the LCD and green LED is flashing.	Input protector is tripped	Check if AC breaker is tripped and AC wiring is connected well
	Green LED is flashing.	Insufficient quality of AC power (Shore or Generator)	1.Check if AC wires are too thin and/or too long. 2.Check if generator (if applied) is working well or if input voltage range setting is correct (UPS→Appliance)
	Green LED is flashing.	Set "Battery First" or "Solar First" as the priority of output source	Change output source priority to Utility first
When it's turned on, internal relay is switching on and off repeatedly.	LCD display and LEDs are flashing	Battery is disconnected	Check if battery wires are connected well
Buzzer beeps continuously and red LED is on. (Fault code) Buzzer beeps once every second, and red LED is flashing. (Warning code)	Fault code 01	Battery is over-charged	Restart the unit, if the error happens again, please return to repair center
		The battery voltage is too high	Check if spec and quantity of batteries are meet requirements
	Fault code 03	Battery input over current	Restart the unit, if the error happens again, please return to repair center
	Fault code 11	Internal temperature of component is over 100°C	1. Check whether the air flow of the unit is blocked or whether the ambient temperature is too high 2. Check whether the thermistor plug is loose
	Fault code 12	Internal communication error	Restart the unit, if the error happens again, please return to repair center
	Fault code 20	Bus voltage is too high	1. If you connect to a lithium battery without communication, check whether the voltage points of the program 19 and 21 are too high for the lithium battery 2. Restart the unit, if the error happens again, please return to repair center
	Fault code 21/ 51	Internal components failed	Restart the unit, if the error happens again, please return to repair center.

	Fault code 24	Bus voltage is too low	Restart the unit, if the error happens again, please return to repair center.
	Fault code 31	Output voltage is too high	
	Fault code 34	Output voltage is too low	
	Fault code 50	Over current or surge	
	Fault code 30	Output short circuited	Check if wiring is connected well and remove abnormal load.
	Fault code 32	The inverter is overload 110% and time is up	Reduce the connected load by switching off some equipment.
	Fault code 52	Negative power fault	1. Check whether the AC output connected to the grid input. 2. Check whether Program 8 settings are the same for all parallel inverters 3. Check whether the current sharing cables are connected well in the same parallel phases. 4. Check whether all neutral wires of all parallel units are connected together. 5. If problem still exists, contact repair center.
	Fault code 67	CAN fault	1. If you connect to a lithium battery without communication, check whether the voltage points of the program 19 and 21 are too high for the lithium battery. 2. If the battery is connected well, restart the unit. If the error happens again, please return to repair center.
	Warning code 68	Host loss	
	Warning code 60	The input status is different in parallel system.	Check if AC input wires of all inverters are connected well.
	Warning code 61	Input phase is not correct.	Change the input phase S and T wiring.
	Warning code 62	The output phase not correct in parallel.	1.Make sure the parallel setting are the same system(single or parallel; 3P1,3P2,3P3). 2.Make sure all phases inverters are power on.

Note: To restart the inverter, all power sources need to be disconnected. After the LCD screen light is off, only use the battery to boot.