

User Manual



8KW ESS8K100 / 200 ENERGY STORAGE SYSTEM

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ABOUT THIS MANUAL

Purpose

This manual describes the assembly, installation, operation and troubleshooting of this unit. Please read this manual carefully before installations and operations. Keep this manual for future reference.

Scope

This manual provides safety and installation guidelines as well as information on tools and wiring.

SAFETY INSTRUCTIONS

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

1. Before using the unit, read all instructions and cautionary markings on the unit, the batteries and all appropriate sections of this manual.
2. **CAUTION** --To reduce risk of injury, charge only deep-cycle lead acid type rechargeable batteries. Other types of batteries may burst, causing personal injury and damage.
3. 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.
4. To reduce risk of electric shock, disconnect all wirings before attempting any maintenance or cleaning. Turning off the unit will not reduce this risk.
5. **CAUTION** – Only qualified personnel can install this device with battery.
6. **NEVER** charge a frozen battery.
7. For optimum operation of this inverter/charger, please follow required spec to select appropriate cable size. It's very important to correctly operate this inverter/charger.
8. 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.
9. 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.
10. Fuses are provided as over-current protection for the battery supply.
11. **GROUNDING INSTRUCTIONS** -This inverter/charger should be connected to a permanent grounded wiring system. Be sure to comply with local requirements and regulation to install this inverter.
12. **NEVER** cause AC output and DC input short circuited. Do NOT connect to the mains when DC input short circuits.
13. **Warning!!** Only qualified service persons are able to service this device. If errors still persist after following troubleshooting table, please send this inverter/charger back to local dealer or service center for maintenance.
14. **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.
15. **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.

INTRODUCTION

This energy storage system can provide power to connected loads by utilizing PV power, utility power and battery power and store surplus energy generated from PV solar modules for use when needed. When the sun has set, energy demand is high, or there is a black-out, you can use the energy stored in this system to meet your energy needs at no extra cost. In addition, this energy storage system helps you pursue the goal of energy self-consumption and ultimately energy-independence.

Features

- Pure sine wave inverter
- Customizable status LED ring with RGB lights
- Touchable button with 5" colored LCD
- Built-in Wi-Fi for mobile monitoring (APP is required)
- Supports USB On-the-Go function
- Built-in anti-dusk kit
- Reserved communication ports for BMS (RS485, CAN-BUS, RS232)
- Configurable input voltage ranges for home appliances and personal computers via LCD control panel
- Configurable output usage timer and prioritization
- Configurable charger source priority via LCD control panel
- Configurable battery charging current based on applications via LCD control panel
- Compatible to utility mains or generator power

Basic System Architecture

The following illustration shows basic application for this unit. It also required the following devices to have a complete running system:

- Generator or Utility mains.
- PV modules

Consult with your system integrator for other possible system architectures depending on your requirements.

This inverter can power various appliances in home or office environment, including motor-type appliances such as tube light, fan, refrigerator and air conditioners.

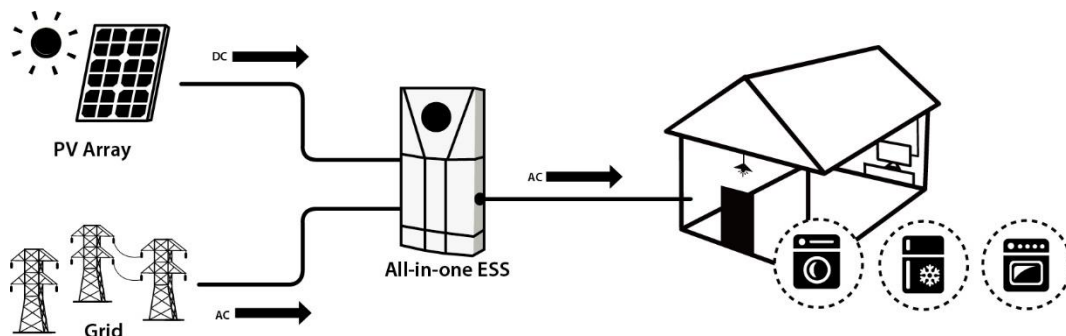
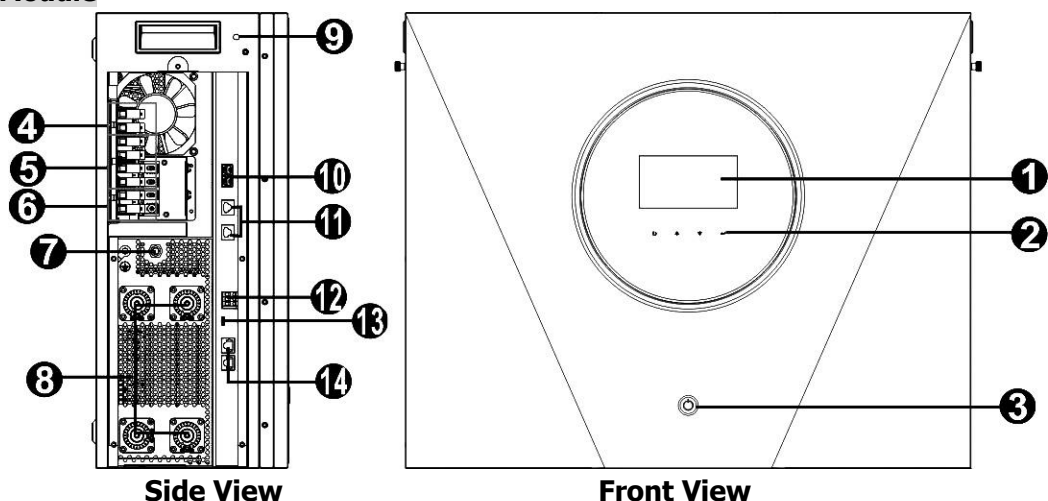


Figure 1 Energy storage system overview

Product Overview

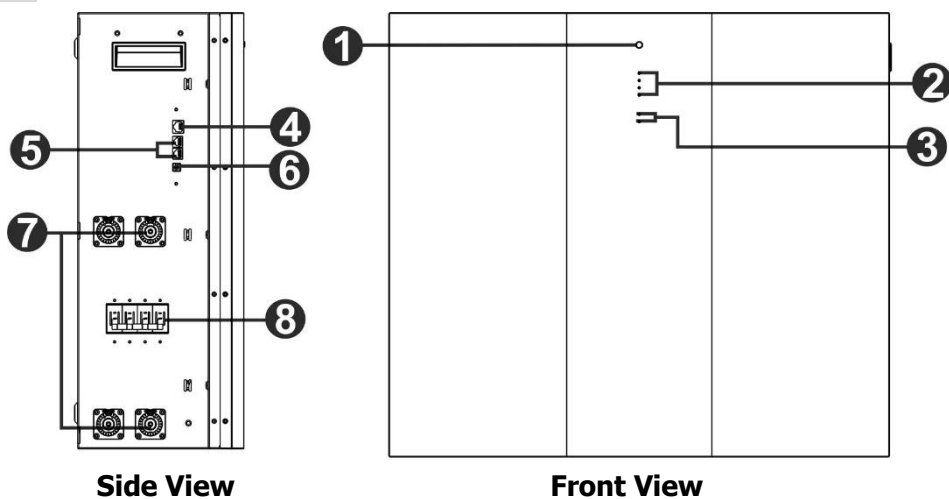
Inverter Module



NOTE: For parallel installation and operation, please check *Appendix I*.

- | | |
|-------------------------------|---------------------------------|
| 1. LCD display | 8. Battery connectors |
| 2. Touchable function buttons | 9. WiFi antenna |
| 3. Power on/off button | 10. Current sharing port |
| 4. PV terminals | 11. Parallel communication port |
| 5. AC output | 12. Dry contact |
| 6. AC input | 13. USB port |
| 7. AC breaker | 14. BMS com. port |

Battery Module



- | | |
|--------------------------------|-----------------------|
| 1. Power on/off button | 5. Extension port |
| 2. Battery capacity indicators | 6. ID switch |
| 3. Battery status indicators | 7. Battery connectors |
| 4. RS485 port (BMS com. port) | 8. DC breaker |

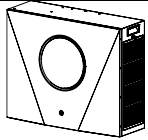
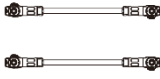




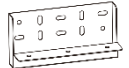






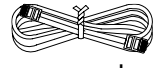
INSTALLATION

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 inside of package:

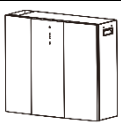
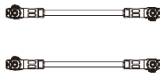
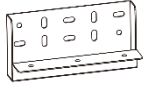
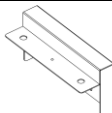





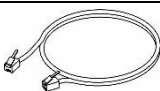
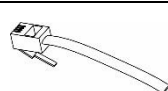

Inverter Package

You should receive the following items inside of package:

| | | | | | |
|--|---|--|---|--|--|
|  Inverter module |  Battery cable #B1-I |  Software CD |  Manual |  WiFi antenna |  BMS cable |
|  Mounting brackets |  x 3 Flat-head screws |  x 4 Mounting screws |  x 4 Nylon-Plug |  Bracket cover |  x 8 Round-head screws |
|  Parallel cable |  Share current cable | | | | |

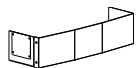

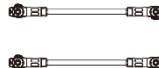

Battery Module Package

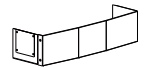
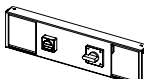

You should receive the following items inside of package:

| | | | |
|--|--|---|--|
|  Battery module |  Battery cable #B-B |  Top-bracket |  Bottom-bracket |
|  x 2 L-shape plate |  x 4 Round-head screws |  x 7 Flat-head screws |  x 8 Mounting screws |
|  x 8 Nylon-Plug |  RJ11 cable |  RJ11 signal cable |  x 2 Ball screws |

Optional Accessory

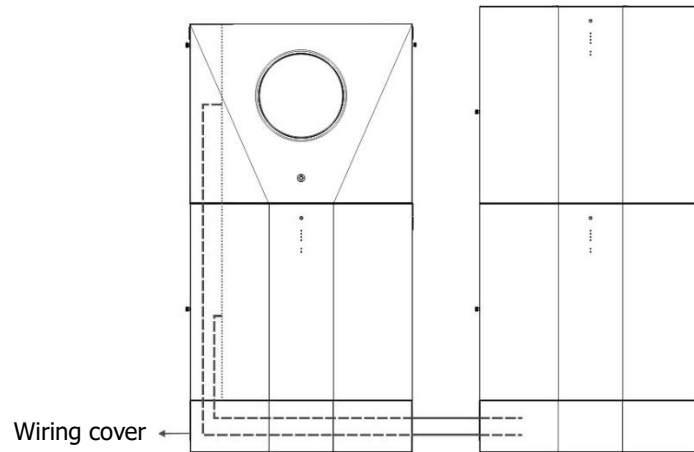
There are some optional accessories for purchase separately.

| | | | |
|---|---|--|--|
|  Wiring cover |  x 4 Thumb screws x 4 |  Battery cable #B2-I |  Battery cable #B2-B |
|---|---|--|--|

| | | |
|---|---|---|
| Switch kit | | |
|  Wiring cover |  Assembled switch set |  x 6 Thumb screws x 6 |

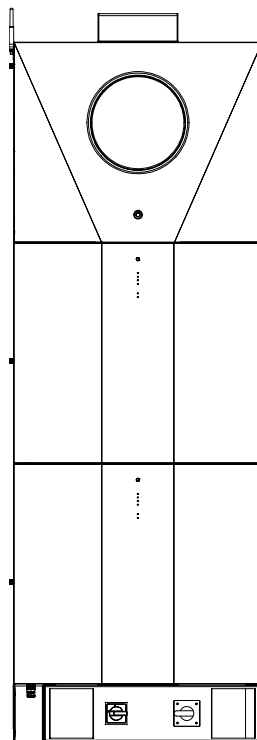
Wiring cover (optional)

There is a separate part called “wiring cover”. If connecting parallel battery modules, you may purchase “wiring cover” separately to cover all cables on the bottom.



DC and Maintenance bypass switches (optional)

You may purchase DC and maintenance bypass switches separately. It's installed on the bottom of the unit.



Mounting the Unit

Selecting Mounting Location

Consider the following points to install the energy storage system:

- Do not mount the unit on flammable construction materials.
- Mount on a solid surface
- This unit might make noises during operation which may be perceived as a nuisance in a living area.
- Install this unit at eye level in order to allow the readability of LCD display at all times.
- For proper air circulation to dissipate heat and further maintenance, allow a clearance of approx. 75 cm to the sides of the unit.
- To avoid battery falling, be sure to leave around 80~100cm distance between battery modules installed in parallel.
- Dusty conditions on the unit may impair the performance of this inverter.
- The ambient temperature should be between 0°C and 40°C and relative humidity should be between 5% and 85% to ensure optimal operation.
- The recommended installation is vertical adherence.
- For proper operation of this unit, please use appropriate cables for grid connection.
- The pollution degree of the energy storage system is PD2. Select an appropriate mounting location. Install the inverter and battery modules in a protected area that is dry, free of excessive dust and with adequate air flow. Do NOT operate it in the place where the temperature and humidity is beyond the specific limits. (Please check the specs for the limitations.)
- The inverter should be installed in the position where the disconnection means is easily accessible.
- This unit is designed with IP20 protection for indoor applications only.
- Regularly clean the fan filter.

Mounting the Unit

WARNING!! Remember that this inverter is heavy so please be careful when removing it from the package.

Installation to the wall should be fixed with proper screws. After that, the device should be bolted on securely.

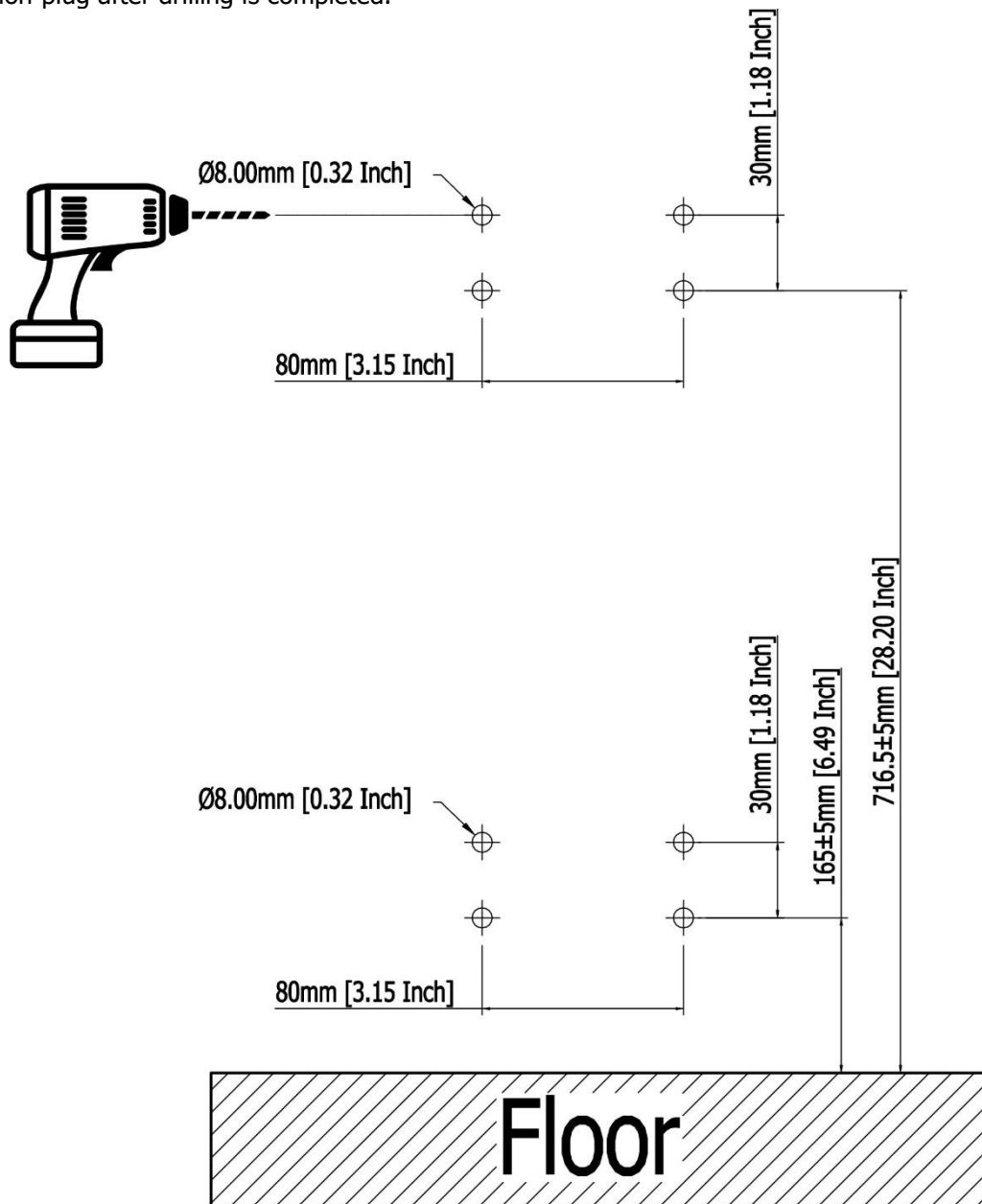
The unit can only operate in a CLOSED ELECTRICAL OPERATING AREA. Only service personnel can enter this area.

WARNING!! FIRE HAZARD.

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

This energy storage system should be installed battery modules first on the bottom and then inverter module on the top.

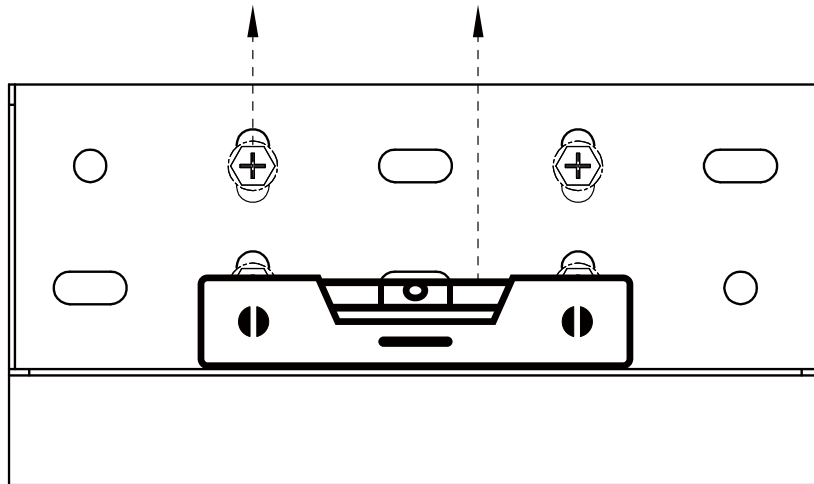
Step 1: Use Ø10mm drill to drill holes at a depth of 50mm. The distance between holes is as follows. Insert the nylon-plug after drilling is completed.



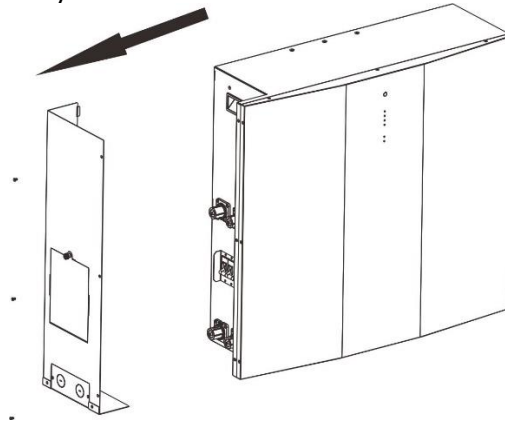
Step 2: It's required to use bubble level to adjust the bottom-bracket to center first. Then, mount the bracket to the wall.

Mounting Screws:

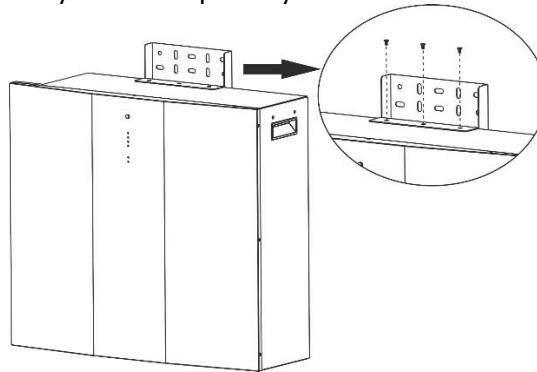
M6x40L- 4Pcs Bubble level



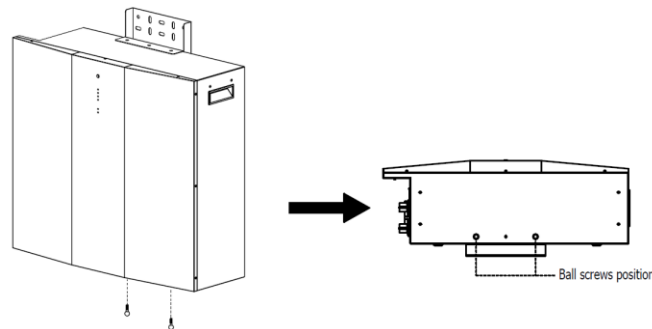
Step 3: Remove side cover of battery module first.



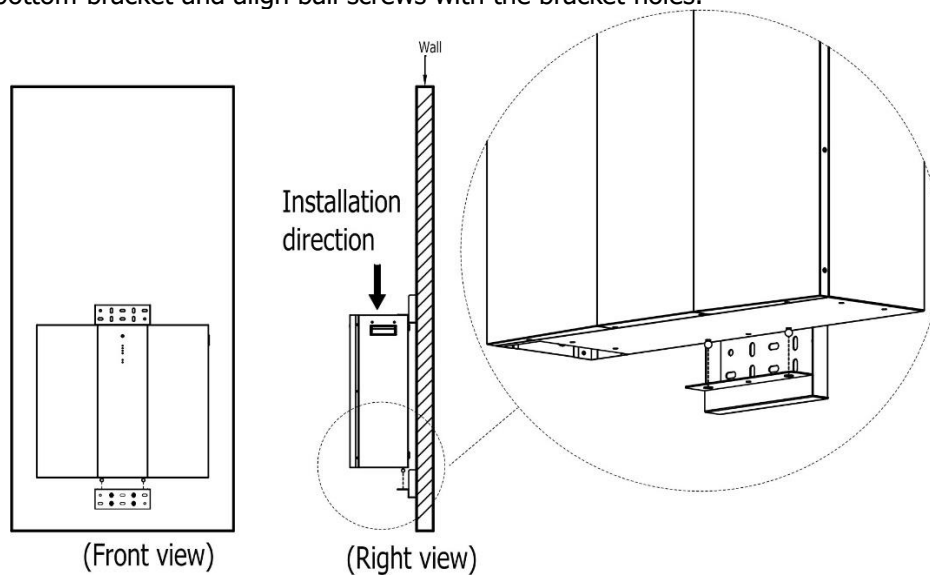
Step 4: Fix top-bracket of the battery module separately with three flat-head screws as shown in the chart.



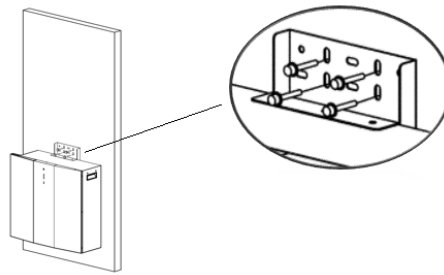
Step 5: Fix ball-screws on the bottom of battery module as shown in below chart.



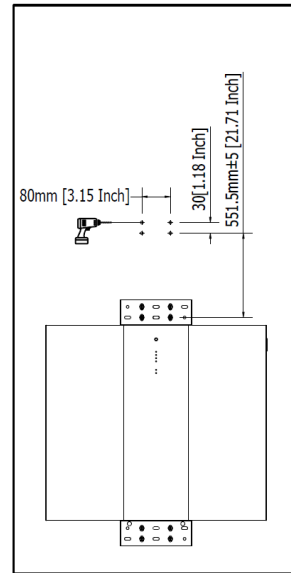
Step 6: Take bottom-bracket and align ball screws with the bracket holes.



Step 7: Mount the top-bracket with four screws on the wall.

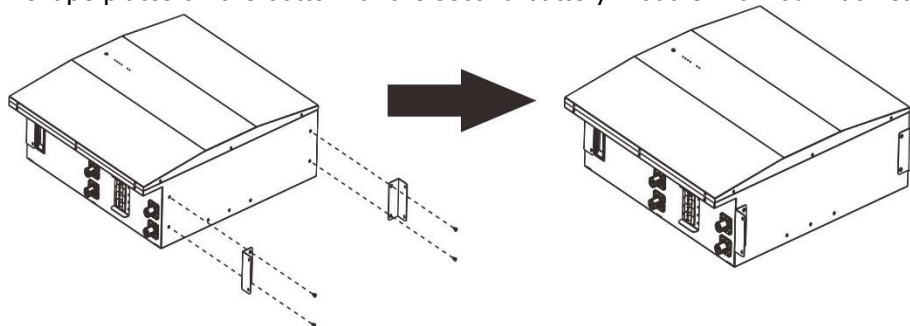


Step 8: Use $\varnothing 10\text{mm}$ drill to drill holes at a depth of 50mm. The distance between holes is as follows. Install the nylon-plug after drilling is completed.

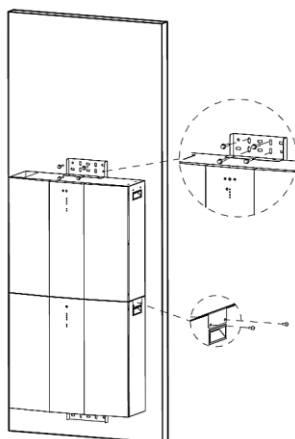


(Front view)

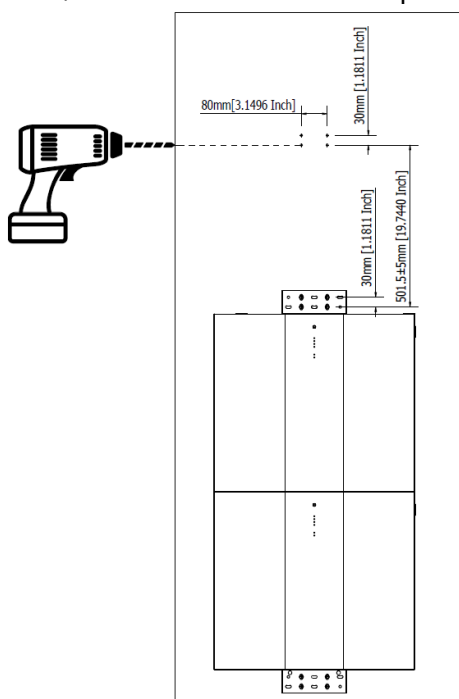
Step 9: Fix two L-shape plates on the bottom of the second battery module with four flat-head screws.



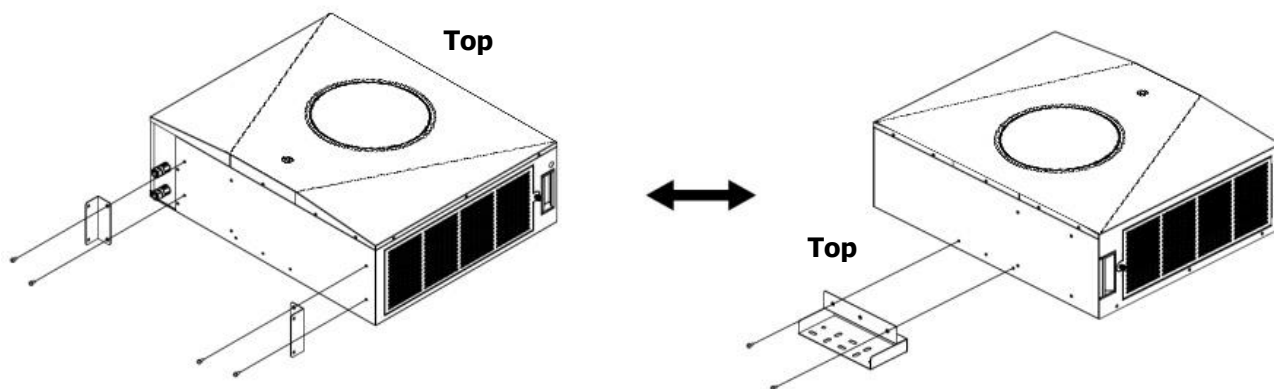
Step 10: Put the second battery module on the top of first battery module and fix two L-shape plates to the first battery module with four round-head screws. Then, fix the second battery module to the wall with four mounting screws.



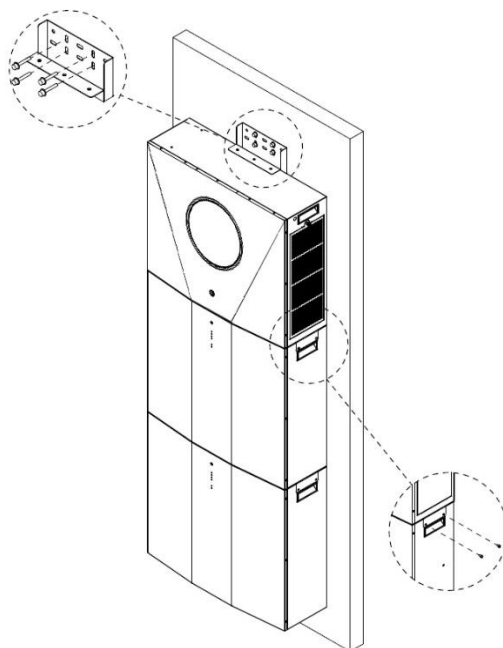
Step 11: Use Ø10mm to drill holes at a depth of 50mm at the wall and insert nylon-plugs inside of each hole.



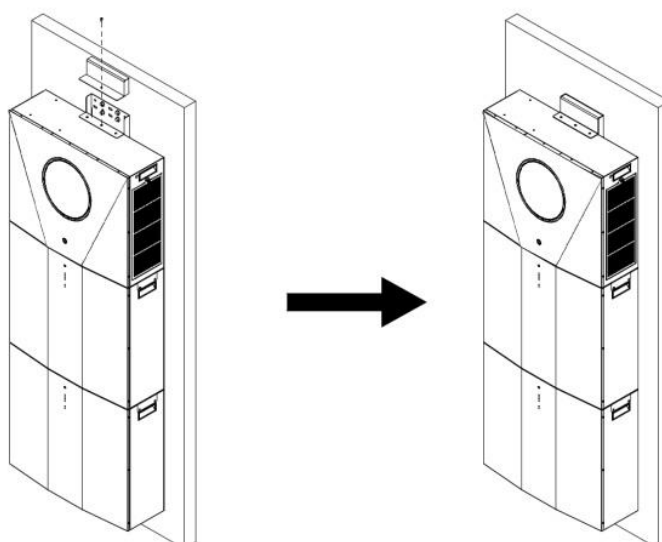
Step 12: Fix two L-shape plates on the bottom of the inverter module with four flat-head screws and also fix mounting bracket on the top of the inverter with two flat-head screws.



Step 13: Put the inverter module on the top of second battery module. Fix mounting bracket with four mounting screws to the wall. Then, fix two L-shape plates to the second battery module with four round-head screws.

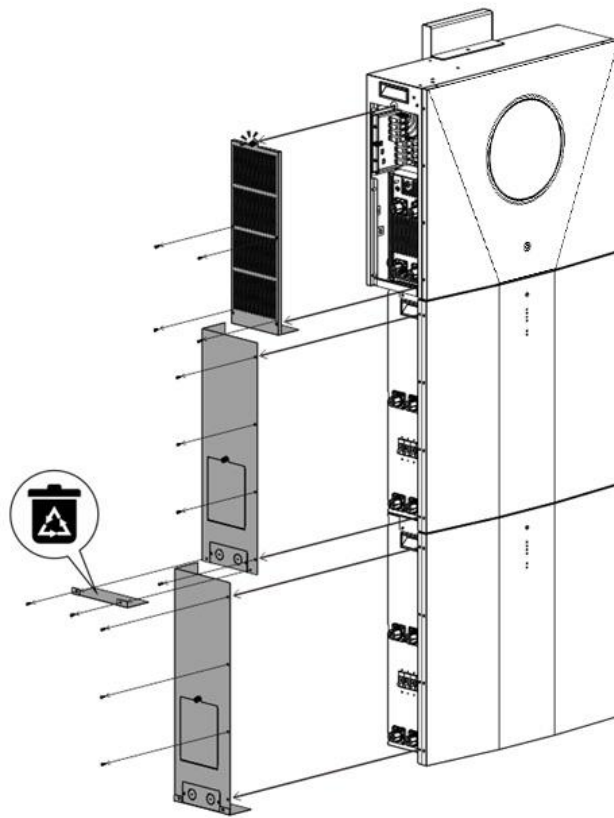


Step 14: Fix bracket cover to the mounting bracket with flat-head screws.



Preparation

Before connecting all wires, be sure to take off wiring cover by removing four screws and one thumb screw. Refer to below chart for the details.



Battery Connection

CAUTION: Before connecting to battery modules, please **disconnect** the DC breaker between inverter and batteries.

Single battery connection

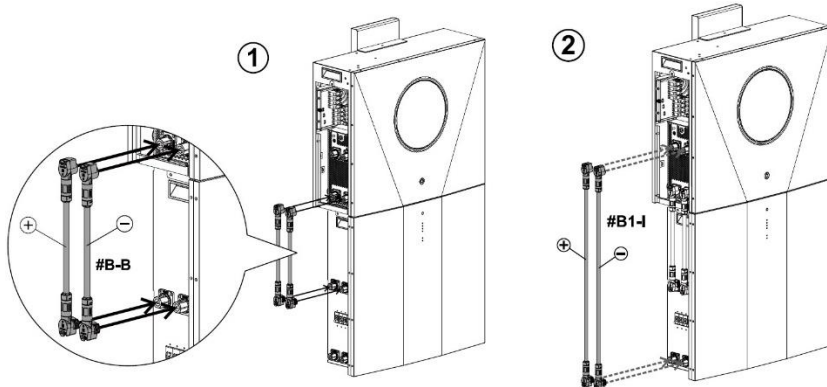
Step 1: Use supplied two battery cables #B-B (supplied in battery module package). Use another two battery cables #B1-I (supplied in inverter package). Follow the polarity of battery printed near the battery terminal! Simply plug battery cable to battery terminals on inverter module and battery module as shown in the chart.

ORANGE cable to the positive terminal (+)

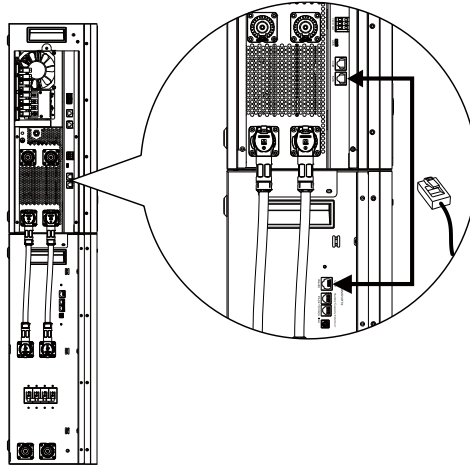
BLACK cable to the negative terminal (-)

WARNING! Wrong connections may damage the unit permanently.

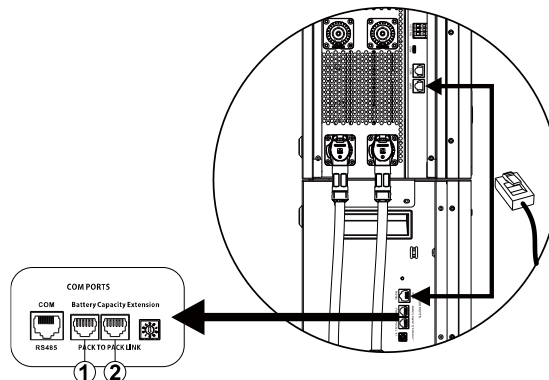
Step 2: Make sure the wires are securely connected.



Step 3: Insert the supplied RJ45 cable (from inverter module package) into the BMS port on the inverter module. The other end connects to RS485 port on the first battery module.



Step 4: Insert the supplied RJ11 signal cable (from battery module package) into one of the extension port (① or ②) on the battery module.



Multiple battery connection

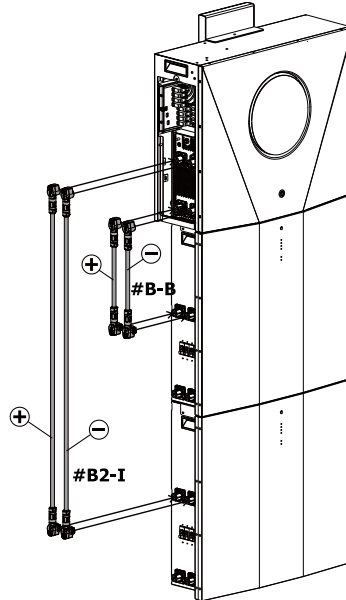
If there are more battery modules to connect, please follow below steps to connect batteries.

Step 1: Use supplied battery cable #B-B (inside of battery module package) to connect the first battery module and purchase another battery cable #B2-I to connect second battery module as shown below chart.

Follow the polarity of battery printed near the battery terminal!

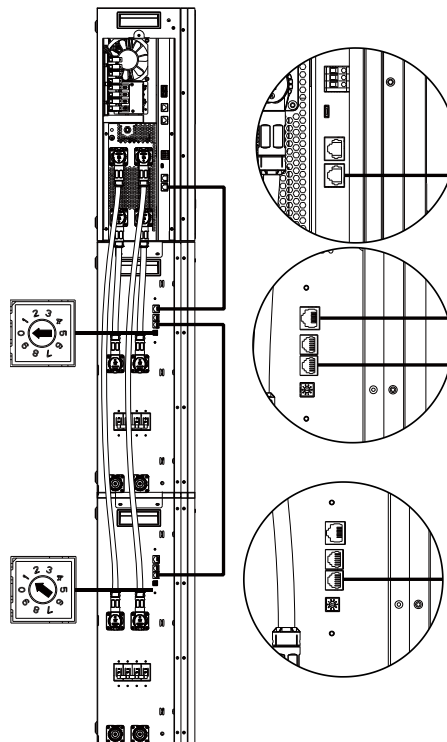
ORANGE cable to the positive terminal (+)

BLACK cable to the negative terminal (-)

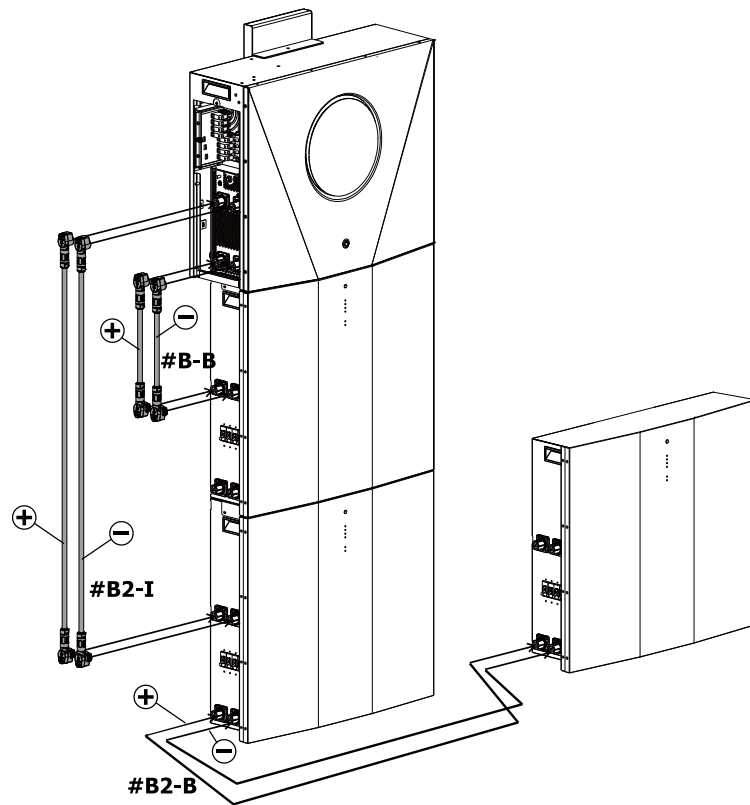


Step 2: Insert the supplied RJ11 cable (from battery module package) into the extension port on the first battery module. The other end connects to extension port on the second battery module. Refer below chart for the details.

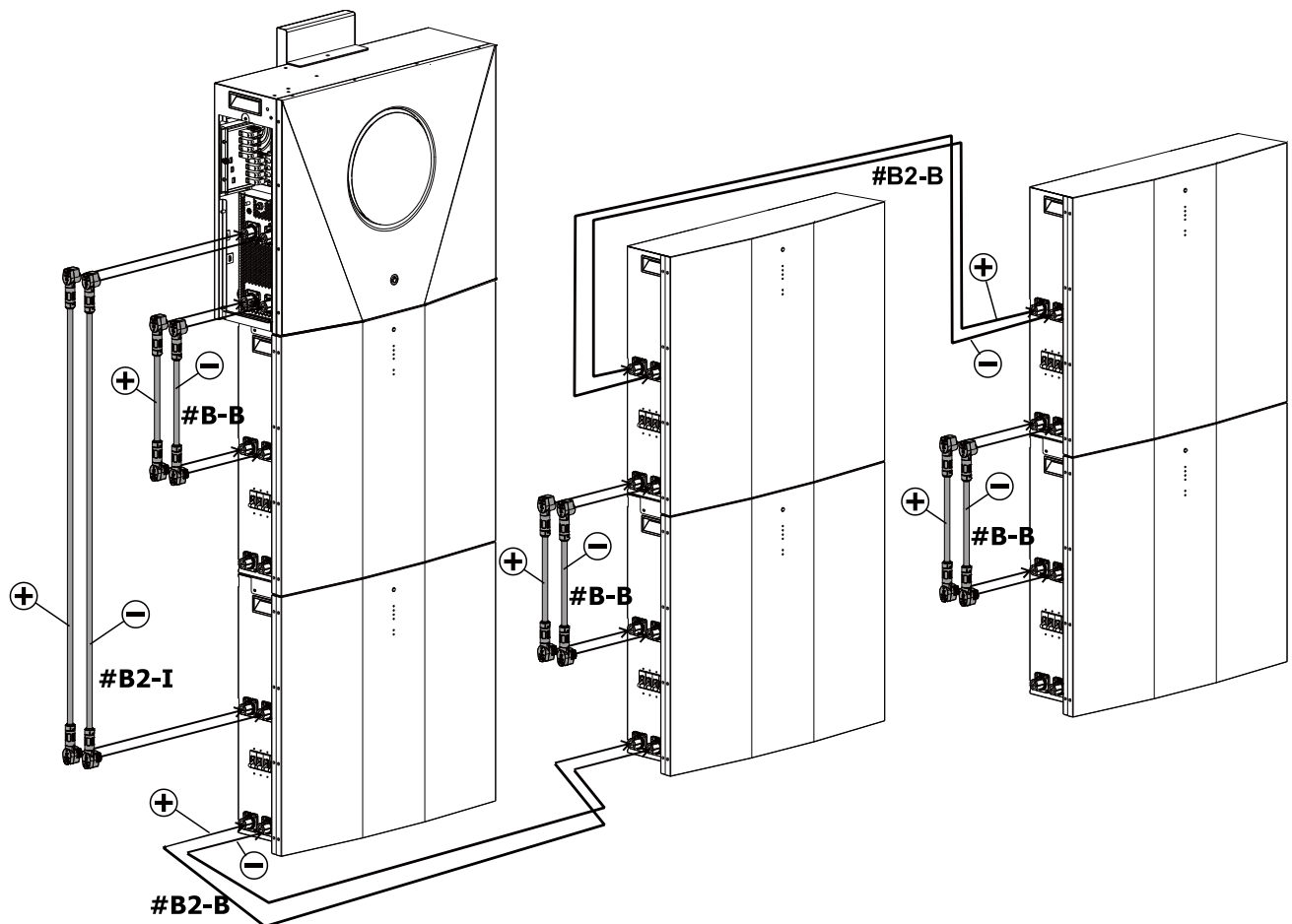
Step 3: After all wiring installation is complete, set up ID for each battery module. The ID code for each battery module MUST be unique. Not the same number for 2 battery modules in parallel system. Refer below chart for the details.



If there is more battery module installed in parallel, please follow below to connect battery module in parallel.



If more and more battery modules are connected in parallel, please follow below chart for battery cable wiring.



CAUTION: To avoid battery falling, be sure to leave around 75cm distance between battery modules installed in parallel.

AC Input/Output Connection

CAUTION: Before connecting to AC input power source, please install a **separate** AC circuit breaker between inverter module 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.

CAUTION!! There are two terminal blocks with "IN" and "OUT" markings. Please do NOT mis-connect input and output connectors.

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

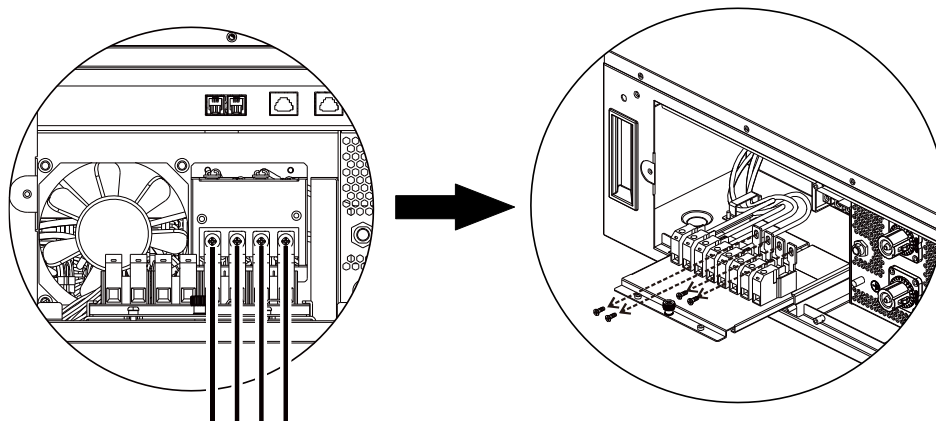
WARNING! For safety and efficiency, it's very important to use appropriate cables for AC input and output connection. To reduce risk of injury, please use the proper cable size recommended below.

Suggested cable requirement for AC wire:

| Gauge | Torque Value |
|-------|--------------|
| 8 AWG | 1.4~ 1.6Nm |

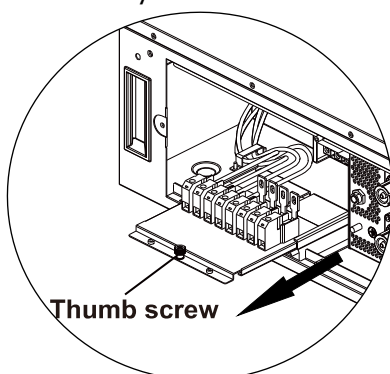
Please follow below steps to implement AC input/output connection:

Step 1: Before making AC input/output connection, be sure to unscrew all bus terminals.



Unscrew all bus terminals

Step 2: Pull out the terminal tray and take off thumb screw.



Thumb screw

Step 3: Remove insulation sleeve 10 mm from four conductors and shorten phase L and neutral conductor N for 3 mm. Refer to chart 1.

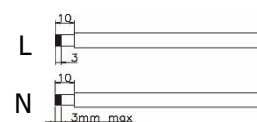
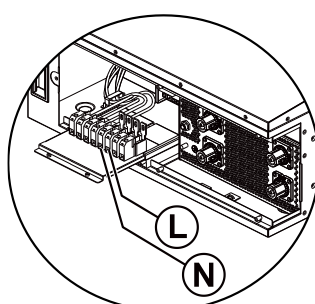


Chart 1

Step 4: Insert AC output wires according to polarities indicated on terminal block and tighten the terminal screws.

L→LINE (brown or black)

N→Neutral (blue)



**WARNING:**

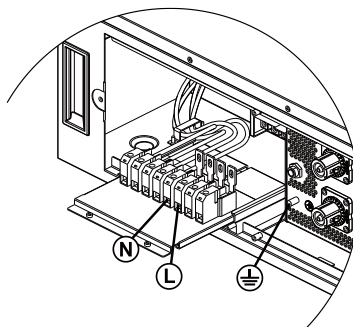
Be sure that AC power source is disconnected before attempting to hardwire it to the unit.

Step 5: Insert AC input wires according to polarities indicated on terminal block and tighten terminal screws. Be sure to connect PE protective conductor (\perp) first.

L→**LINE (brown or black)**

\perp →**Ground (yellow-green)**

N→**Neutral (blue)**



Step 6: Make sure the wires are securely connected. The reference tightening torque is 5N.m.

Step 7: After wires are all connected well, screw back thumb screw and push back the terminal tray to original position.

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 requires 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 manufacturer of air conditioner if it's equipped with time-delay function before installation. Otherwise, this inverter/charger will be trigger overload fault and cut off output to protect your appliance but sometimes it still causes internal damage to the air conditioner.

PV Connection

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

WARNING! It's 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 shown below.

| Wire Size | Cable (mm ²) | Torque value (max) |
|-----------|--------------------------|----------------------|
| 1 x 12AWG | 4 | 1.2 Nm |

WARNING: Because this inverter is non-isolated, only two types of PV modules are accepted, single crystalline, poly crystalline with class A-rated and CIGS modules. To avoid any malfunctions, 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 connection.

CAUTION: It's requested to use PV junction box with surge protection. Otherwise, it will cause damage on inverter when lightning occurs on PV modules.

PV Module Selection:

When selecting proper PV modules, please be sure to consider the following parameters:

1. Open circuit Voltage (Voc) of PV modules not to exceeds maximum PV array open circuit voltage of the inverter.
2. Open circuit Voltage (Voc) of PV modules should be higher than the start-up voltage.

| | |
|---|----------------|
| Max. PV Array Power | 8000W |
| Max. PV Array Open Circuit Voltage | 500Vdc |
| PV Array MPPT Voltage Range | 90Vdc~450Vdc |
| Start-up Voltage | 80Vdc +/- 5Vdc |

Recommended solar panel configuration:

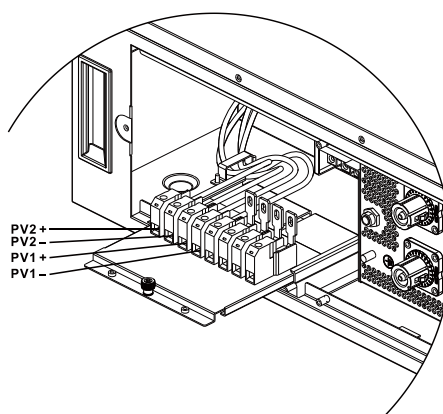
| Recommended Solar panel configuration: | | | | |
|--|--|---------------------------|----------------|-------------------|
| Solar Panel Spec. (reference) | SOLAR INPUT 1 | SOLAR INPUT 2 | Q'ty of panels | Total Input Power |
| | Min in series: 4pcs, per input Max. in series: 12pcs, per input | | | |
| - 250Wp - Vmp: 30.7Vdc - Imp: 8.3A - Voc: 37.7Vdc - Isc: 8.4A - Cells: 60 | 4pcs in series | x | 4pcs | 1000W |
| | x | 4pcs in series | 4pcs | 1000W |
| | 12pcs in series | x | 12pcs | 3000W |
| | x | 12pcs in series | 12pcs | 3000W |
| | 6pcs in series | 6pcs in series | 12pcs | 3000W |
| | 6pcs in series, 2 strings | x | 12pcs | 3000W |
| | x | 6pcs in series, 2 strings | 12pcs | 3000W |
| | 8pcs in series, 2 strings | x | 16pcs | 4000W |
| | x | 8pcs in series, 2 strings | 16pcs | 4000W |
| | 9pcs in series, 1 string | 9pcs in series, 1 string | 18pcs | 4500W |
| | 10pcs in series, 1 string | 10pcs in series, 1 string | 20pcs | 5000W |
| | 12pcs in series, 1 string | 12pcs in series, 1 string | 24pcs | 6000W |
| | 6pcs in series, 2 strings | 6pcs in series, 2 strings | 24pcs | 6000W |
| | 7pcs in series, 2 strings | 7pcs in series, 2 strings | 28pcs | 7000W |
| | 8pcs in series, 2 strings | 8pcs in series, 2 strings | 32pcs | 8000W |

PV Module Wire Connection

Please take the following to implement PV module connection:

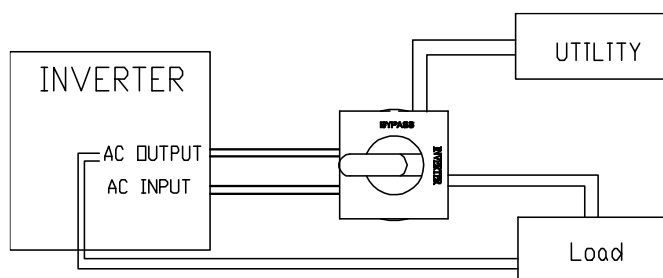
1. Remove insulation sleeve for about 7 mm on your positive and negative wires.
2. We recommend using bootlace ferrules on the wires for optimal performance.
3. Check polarities of wire connections from PV modules to PV input screw terminals. Connect your wires as illustrated below.

Recommended tool: 4mm blade screwdriver

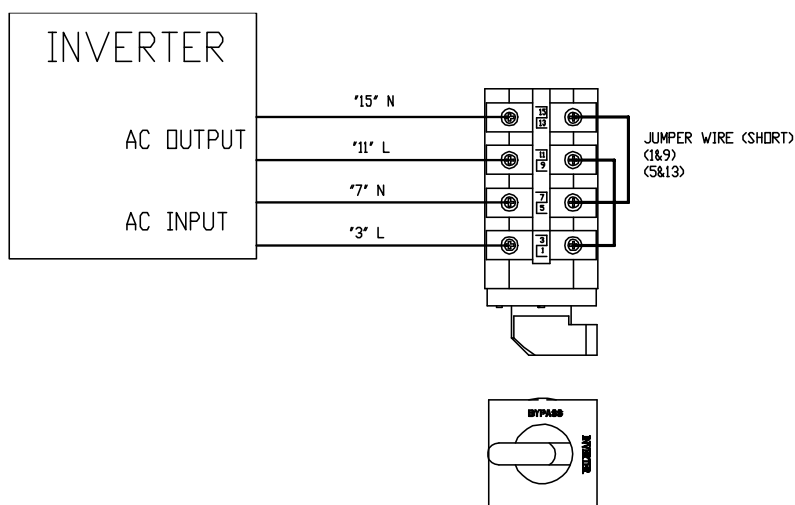


MBS Wiring

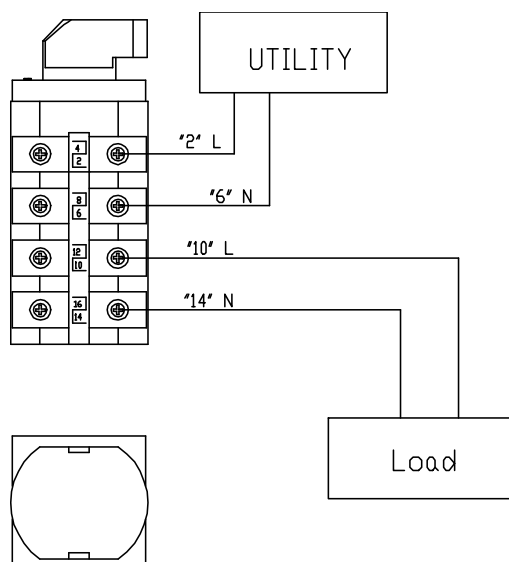
If switch kit is purchased separately, MBS switch should be connected to inverter, utility and loads as below diagram.



When connecting to inverter unit, be sure to use two jumper wires to connect 5 and 13, and 9 and 1 (marks on the terminals) separately first. Then, follow below wiring chart to connect to inverter unit.

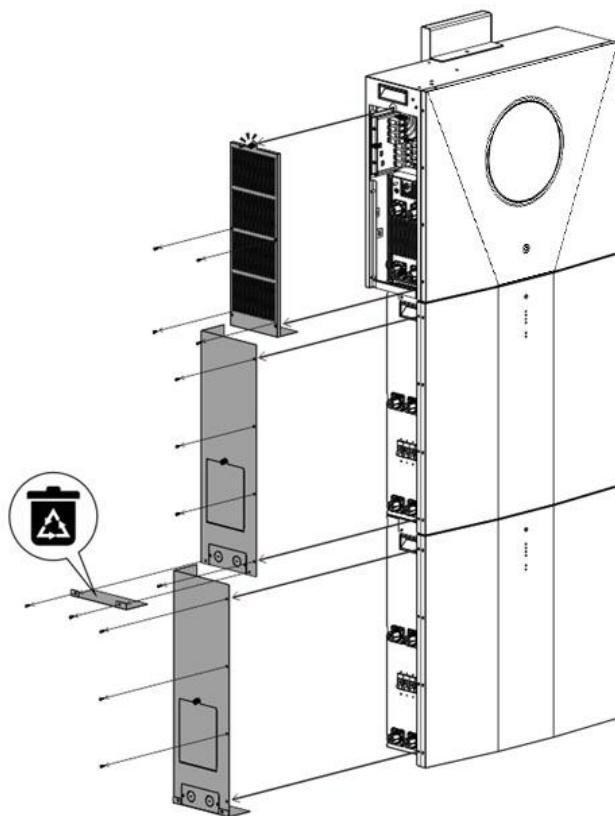


When connecting to utility and loads, there are terminals in the other side of MBS switch. Please follow below wiring chart to connect to utility and loads.



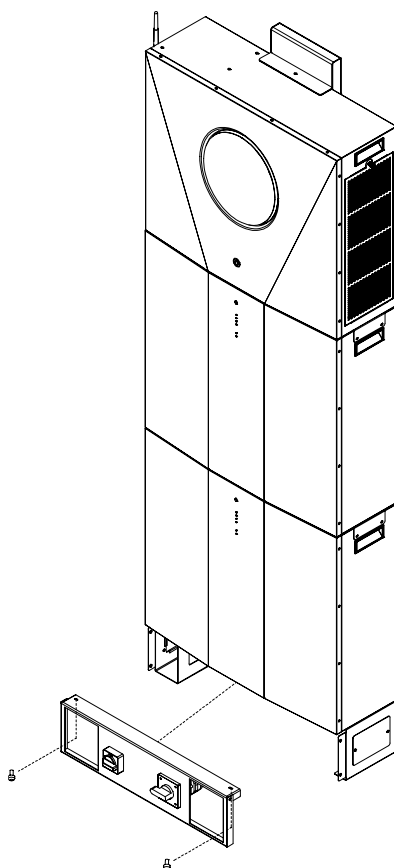
Final Assembly

After connecting all wirings, put side covers back to original positions by fixing screws as shown below.



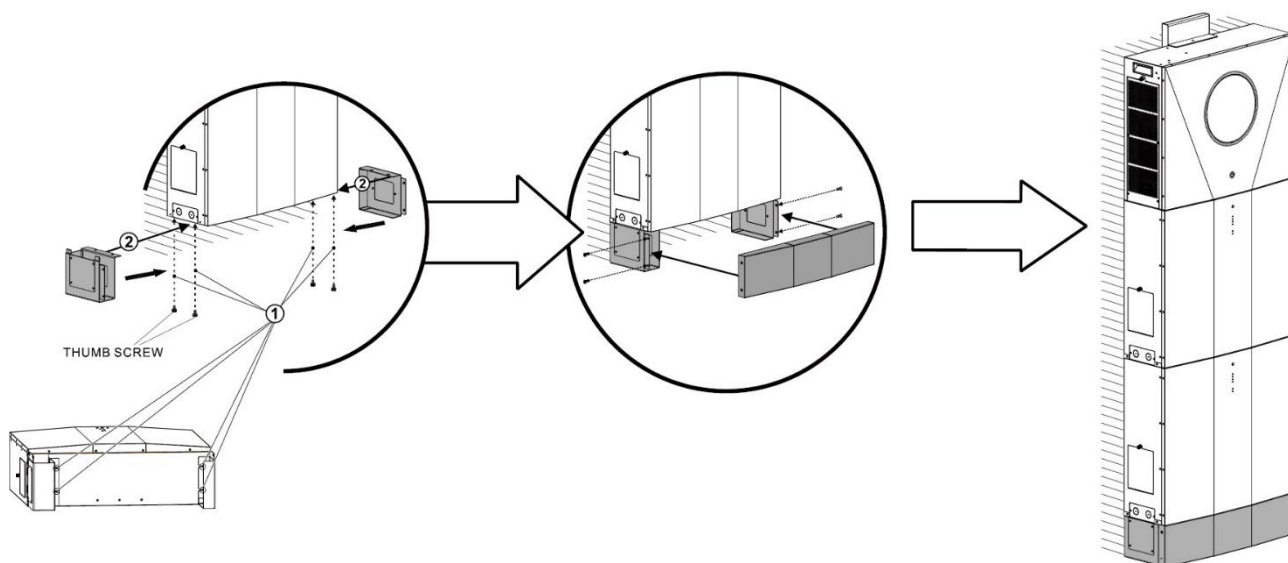
Switch Kit Installation

If switch kit is purchased separately, assemble DC switch and maintenance bypass switch on breaker cover first. Then, screw assembled breaker cover under the bottom of the battery module with 2 thumb screws.



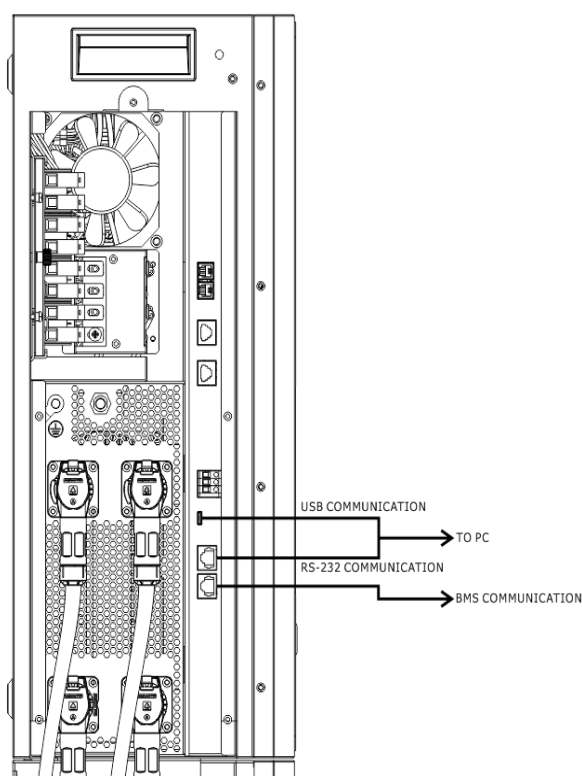
Wiring Cover Installation

If wiring cover is purchased separately, be sure to screw four thumb screws under the bottom of the battery module first. Then, push the two fixing feet from two sides of the battery module until they are locked with thumb screws. At last, install the cover to fixing feet with four screws as shown below chart.



Communication Connection

Follow below chart to connect all communication wiring.



Serial Connection

Please use the supplied serial cable to connect between the inverter and your PC. Install the monitoring software from the bundled CD and follow the on-screen instructions to complete your installation. For detailed software operation, refer to the software user manual on the bundled CD.

Wi-Fi Connection

This unit is equipped with a Wi-Fi transmitter. Wi-Fi transmitter can enable wireless communication between off-grid inverters and monitoring platform. Users can access and control the monitored inverter with downloaded APP. You may find "WatchPower" app from the Apple® Store or "WatchPower Wi-Fi" in Google® Play Store. All data loggers and parameters are saved in iCloud. For quick installation and operation, please check Appendix III.

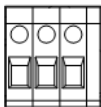


BMS Communication Connection

Please refer to Appendix II - BMS Communication Installation for details.

Dry Contact Signal

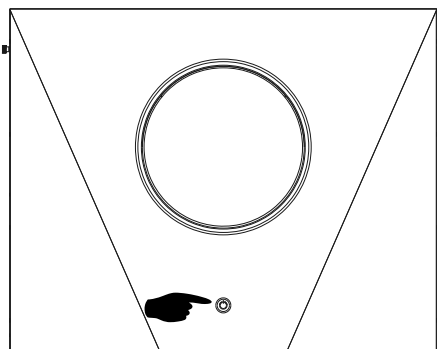
There is one dry contact (3A/250VAC) available on the rear panel. It could be used to deliver signal to external device when battery voltage reaches warning level.

| Unit Status | Condition | | |  Dry contact port: NC C NO | |
|-------------|---|--|---|--|--------|
| | | | | NC & C | NO & C |
| Power Off | Unit is off and no output is powered. | | | Close | Open |
| Power On | Output is powered from Battery power or Solar energy. | Program 01 set as USB (utility first) or SUB (solar first) | Battery SOC < Low DC warning SOC | Open | Close |
| | | | Battery SOC > Setting value in Program 13 | Close | Open |
| | | Program 01 is set as SBU (SBU priority) | Battery SOC < Setting value in Program 12 | Open | Close |
| | | | Battery SOC > Setting value in Program 13 | Close | Open |

OPERATION

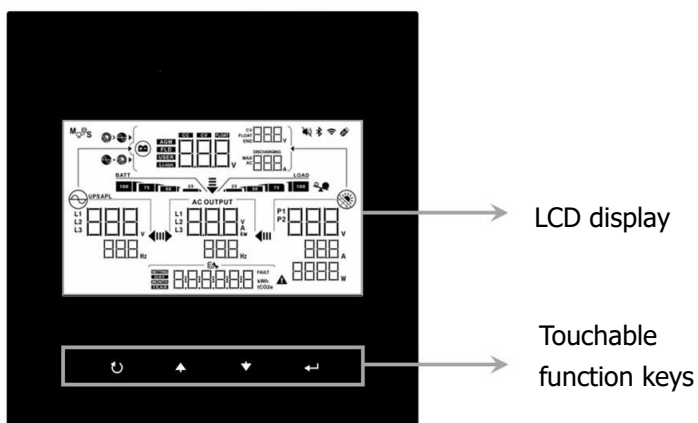
Power ON/OFF

Once the unit has been properly installed and the batteries are connected well, simply press power switch to turn on the unit.



Operation and Display Panel

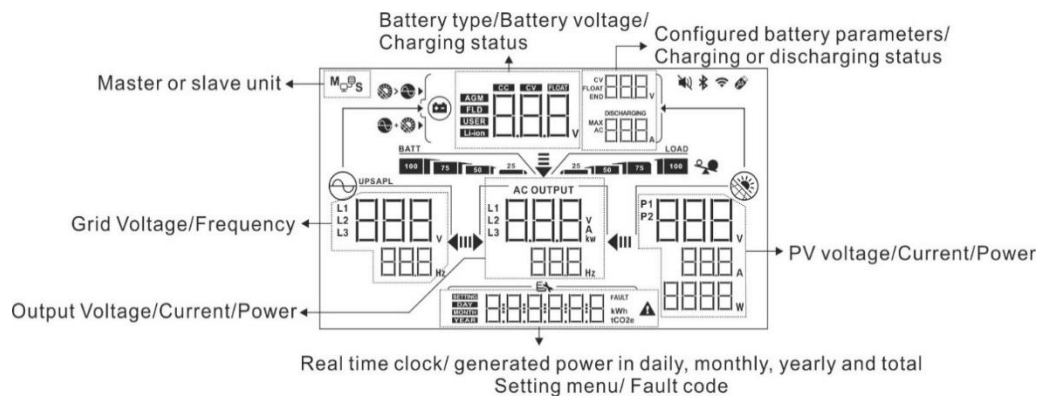
The operation and the LCD module, shown in the chart below, includes four touchable function keys and a LCD display to indicate the operating status and input/output power information.



Touchable function key

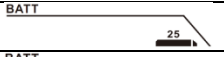



| Function keys | | Description |
|---------------|-------------------------|--|
| | ESC | Exit the setting |
| | Access USB setting mode | To enter USB setting mode |
| | Up | To last selection |
| | Down | To next selection |
| | Enter | To confirm/enter the selection in setting mode |

LCD Display Icons





| Icon | Function description | | |
|--|---|---|----------------------------|
| Input Source Information | | | |
| | Indicates the AC input voltage and frequency. | | |
| | Indicates the PV voltage, current and power. | | |
| | Indicates the battery types, battery voltage, charging stage, configured battery parameters, charging or discharging current. | | |
| Charging stage | | | |
| Icon | Charging stage | Icon | Charging stage |
| | CC mode | | FLOATING mode |
| | CV mode | | Full charged (Charger OFF) |
| Configuration Program and Fault Information | | | |
| | Indicates the setting programs. | | |
| | Indicates the warning and fault codes. Warning: flashing with warning symbol. Fault: lighting with fault character. | | |
| Output Information | | | |
| | Indicates the output voltage, load in VA, load in Watt and output frequency. | | |
| Battery Information | | | |
| | Indicates battery level by 0-24%, 25-49%, 50-74% and 75-100% in battery mode and charging status in line mode. | | |
| When battery is charging, it will present battery charging status. | | | |
| Status | Battery capacity | LCD Display | |
| C.C. mode C.V. mode | 25% | 4 bars will flash in turns. | |
| | 50% | The right bar will be on and the other three bars will flash in turns. | |
| | 75% | The right two bars will be on and the other two bars will flash in turns. | |
| | 100% | The right three bars will be on and the left bar will flash. | |
| Floating mode. Batteries are fully charged. | | 4 bars will be on. | |




In battery mode, it will present battery capacity.

| Icon | Battery capacity | Icon | Battery capacity |
|---|------------------|---|------------------|
|  | 25% |  | 75% |
|  | 50% |  | 100% |




Load Information

| | |
|---|--|
|  | Indicates overload. |
|  | Indicates the load level by 0-24%, 25-49%, 50-74% and 75-100%. |

Charger Source Priority Setting Display

| | |
|---|--|
|  | Indicates setting program 16 "Charger source priority" is selected as "Solar first". |
|  | Indicates setting program 16 "Charger source priority" is selected as "Solar and Utility". |
|  | Indicates setting program 16 "Charger source priority" is selected as "Solar only". |








Output source priority setting display

| | |
|---|---|
|  | Indicates setting program 01 "Output source priority" is selected as "Utility first". |
|  | Indicates setting program 01 "Output source priority" is selected as "Solar first". |
|  | Indicates setting program 01 "Output source priority" is selected as "SBU". |

AC Input Voltage Range Setting Display

| | |
|-----|--|
| UPS | Indicates setting program 03 is selected as "UPS". The acceptable AC input voltage range will be within 170-280VAC |
| APL | Indicates setting program 03 is selected as "APL". The acceptable AC input voltage range will be within 90-280VAC |

Operation Status Information

| | |
|---|--|
|  | Indicates unit connects to the mains. |
|  | Indicates unit connects to the PV panel. |
|  | Indicates battery type. |
|  | Indicates parallel operation is working. |
|  | Indicates unit alarm is disabled. |
|  | Indicates Wi-Fi transmission is working. |
|  | Indicates USB disk is connected. |

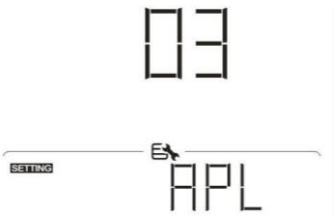
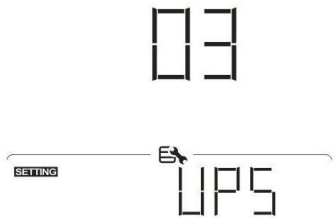
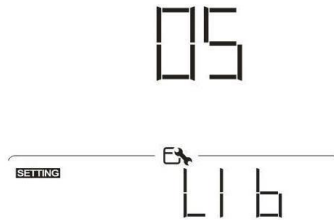
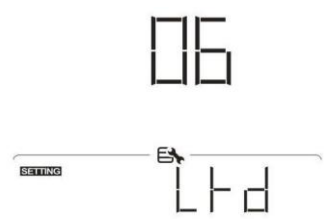
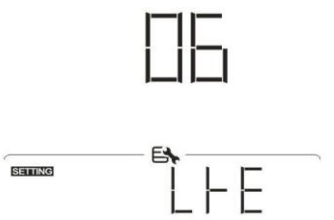
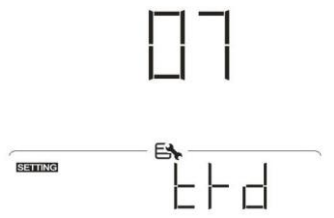
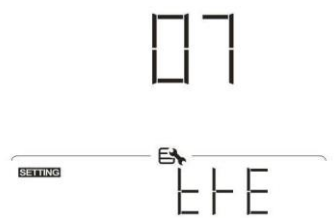
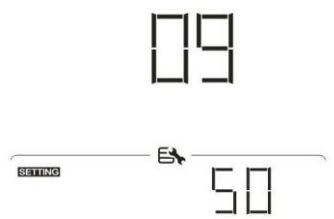
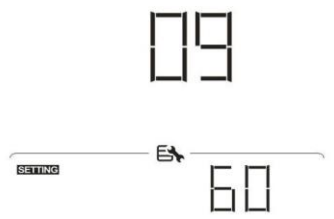
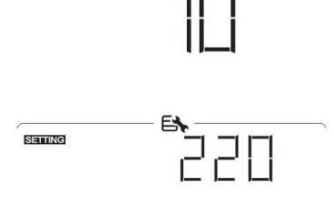
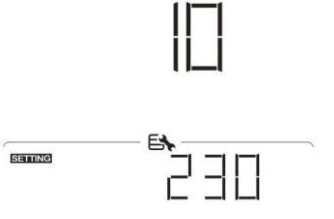
LCD Setting

General Setting

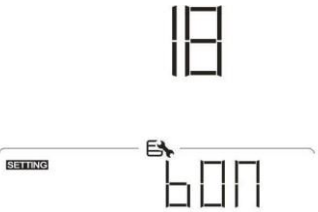
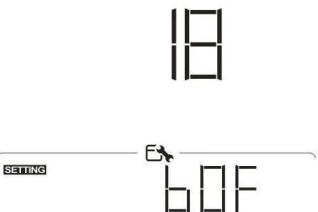
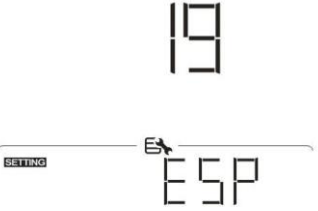

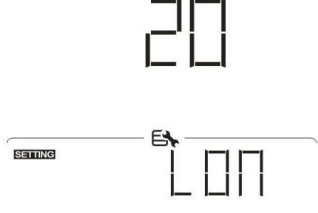
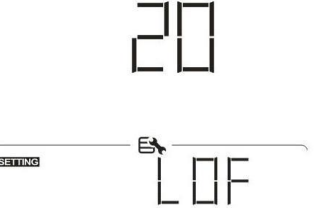
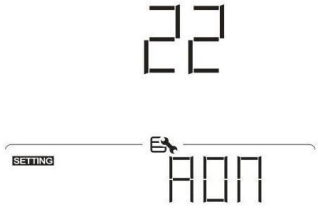

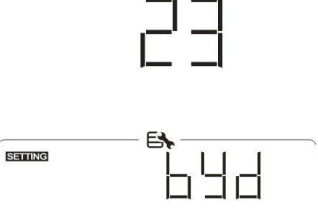
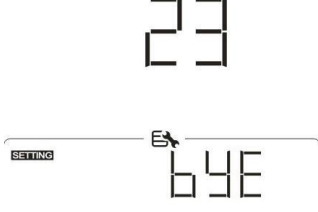
After pressing and holding "←" button for 3 seconds, the unit will enter the Setup Mode. Press "▲" or "▼" button to select setting programs. Press "←" button to confirm you selection or "⏏/↺" button to exit.

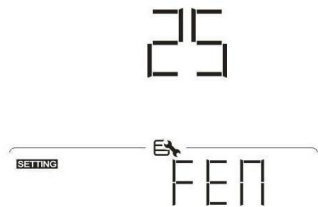
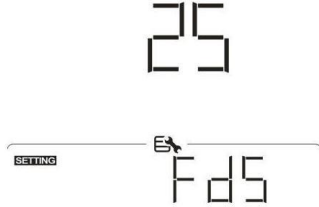


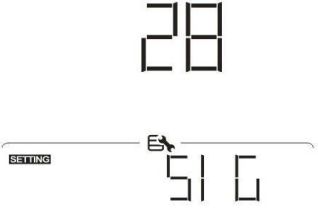

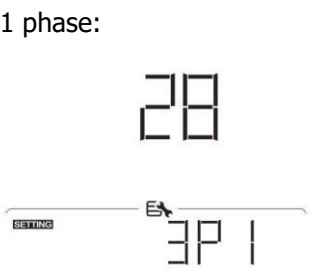
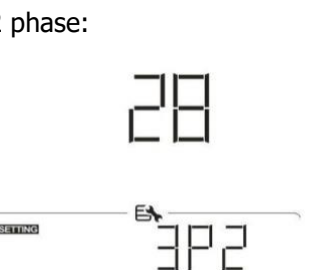
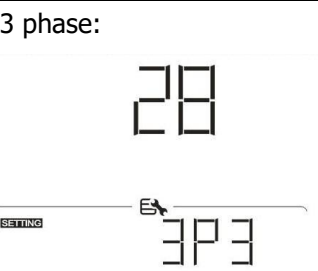
Setting Programs:

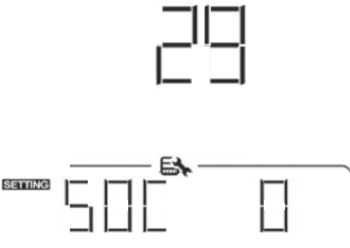
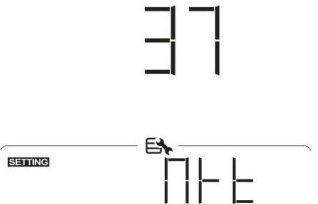


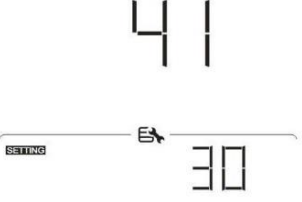



| Program | Description | Selectable option | |
|---------|---|-------------------------|---|
| 00 | Exit setting mode | Escape | |
| 01 | Output source priority: To configure load power source priority | Utility first (default) | Utility will provide power to the loads as first priority. Solar and battery energy will provide power to the loads only when utility power is not available. |
| | | Solar first | Solar energy provides power to the loads as first priority. If solar energy is not sufficient to power all connected loads, Utility energy will supply power to the loads at the same time. |
| | | SBU priority | 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 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 12. |
| 02 | Maximum charging current: To configure total charging current for solar and utility chargers. (Max. charging current = utility charging current + solar charging current) | 30A (default) | Determined by battery pack and cannot be adjusted |

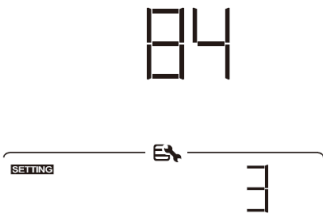
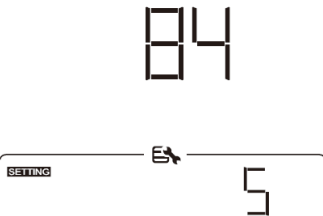
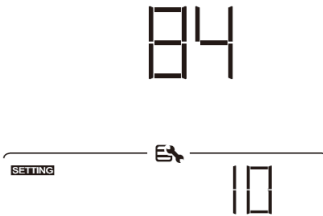
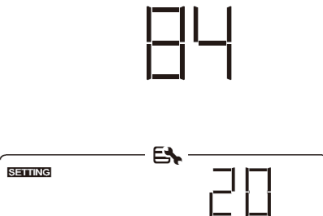
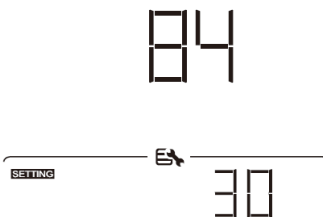
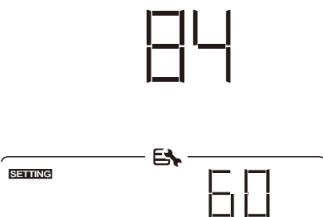


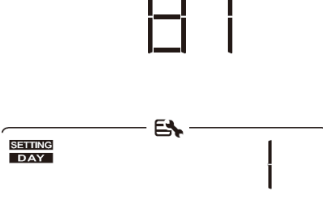
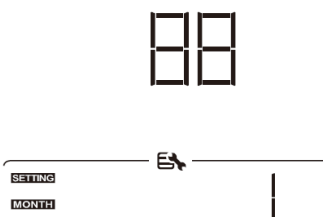
| | | | |
|----|-----------------------------------|---|---|
| 03 | AC input voltage range | Appliances (default)  | If selected, acceptable AC input voltage range will be within 90-280VAC |
| | | UPS  | If selected, acceptable AC input voltage range will be within 170-280VAC |
| 05 | Battery type | LIB-protocol compatible battery  | This program cannot be revised. |
| 06 | Auto restart when overload occurs | Restart disable (default)  | Restart enable  |
| | | Restart disable (default)  | Restart enable  |
| 09 | Output frequency | 50Hz (default)  | 60Hz  |
| | | 220V  | 230V (default)  |
| 10 | Output voltage | | |

| | | | |
|----|---|--|--|
| | | 240V 10 SETTING 240 | |
| 11 | Maximum utility charging current Note: If setting value in program 02 is smaller than that in program in 11, the inverter will apply charging current from program 02 for utility charger. | 30A (default) 11 SETTING 30 | Setting range is from 2A, then 10A to 120A. Increment of each click is 10A. |
| 12 | Setting SOC point back to utility source when selecting "SBU" (SBU priority) in program 01. | SOC 10% (default) 12 SETTING SOC 10 | Adjustable range is 5% to 95%. Increment of each click is 1%. |
| 13 | Setting SOC point back to battery mode when selecting "SBU" (SBU priority) in program 01. | SOC 30% (default) 13 SETTING SOC 30 | Setting range is 10% to 100%. Increment of each click is 1%. |
| 16 | Charger source priority: To configure charger source priority | If this inverter/charger is working in Line, Standby or Fault mode, charger source can be programmed as below: | |
| | | Solar first 16 SETTING 150 | Solar energy will charge battery as first priority. Utility will charge battery only when solar energy is not available. |
| | | Solar and Utility (default) 16 SETTING SNU | Solar energy and utility will charge battery at the same time. |
| | | Only Solar 16 SETTING 050 | Solar energy will be the only charger source no matter utility is available or not. |

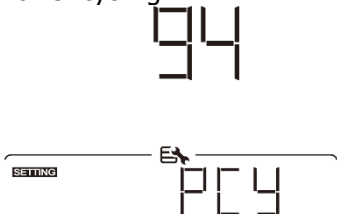
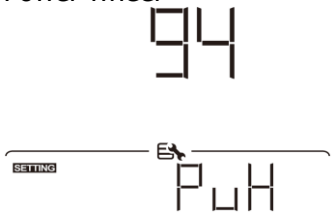
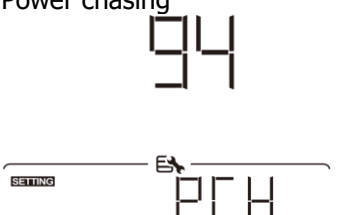
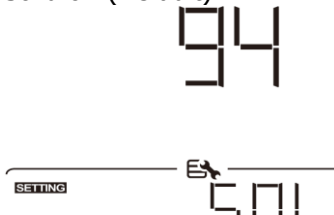
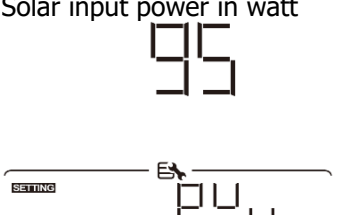
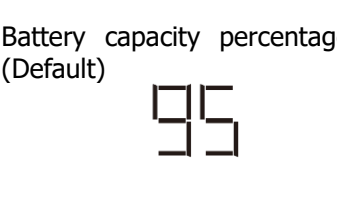
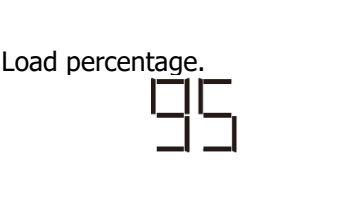
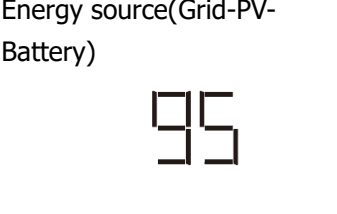
| | | | |
|----|---|--|---|
| 18 | Alarm control | Alarm on (default)  | Alarm off  |
| 19 | Auto return to default display screen | Return to default display screen (default)  | If selected, no matter how users switch display screen, it will automatically return to default display screen after no button is pressed for 1 minute. |
| | | Stay at latest screen  | If selected, the display screen will stay at latest screen user finally switches. |
| 20 | Backlight control | Backlight on (default)  | Backlight off  |
| 22 | Beeps while primary source is interrupted | Alarm on (default)  | Alarm off  |
| 23 | Overload bypass: When enabled, the unit will transfer to line mode if overload occurs in battery mode. | Bypass disable (default)  | Bypass enable  |












| | | | |
|----|--|--|--|
| 25 | Record Fault code | Record enable (default)  | Record disable  |
| 26 | Bulk charging voltage (C.V voltage) | 56V (default)  | Determined by battery pack and cannot be adjusted |
| 27 | Floating charging voltage | 56V (default)  | Determined by battery pack and cannot be adjusted |
| 28 | AC output mode *This setting is only available when the inverter is in standby mode (Switch off). | Single: This inverter is used in single phase application.  | Parallel: This inverter is operated in parallel system.  |
| | | When the inverter is operated in 3-phase application, set up inverter to be operated in specific phase. | |
| | | L1 phase:  | L2 phase:  |
| | | L3 phase:  | |

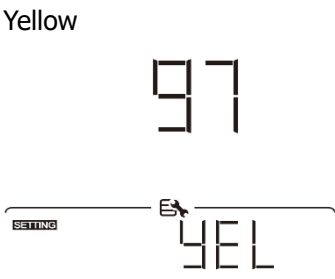
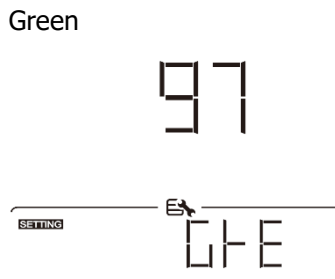
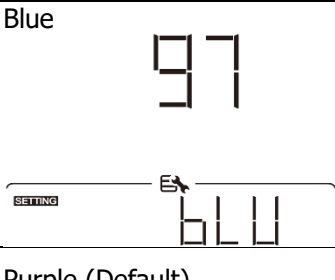
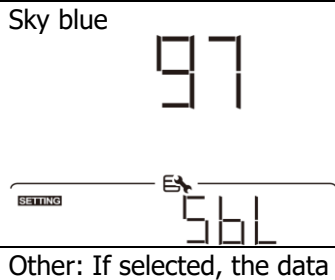
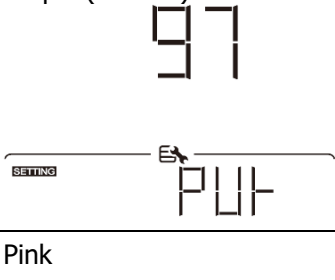
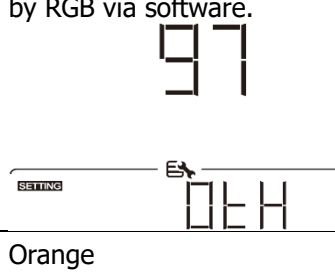
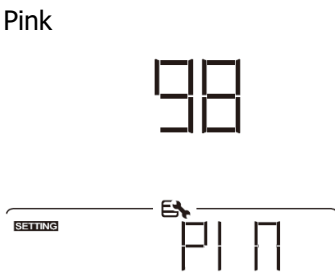
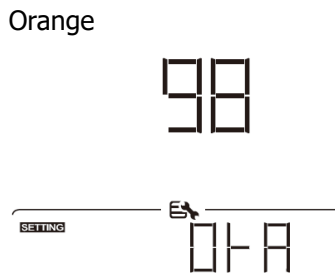
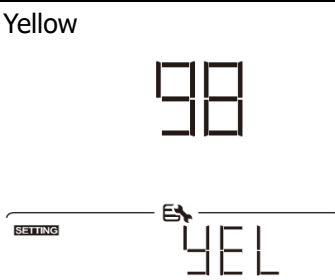
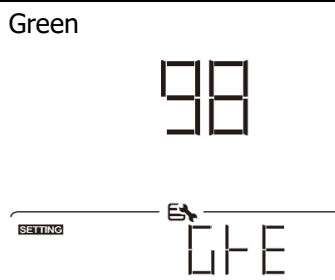
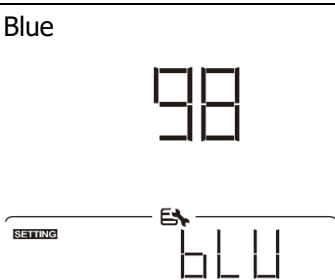
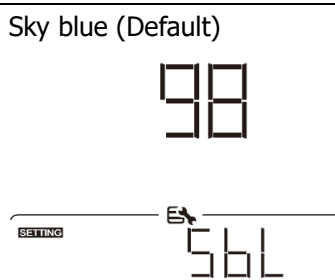
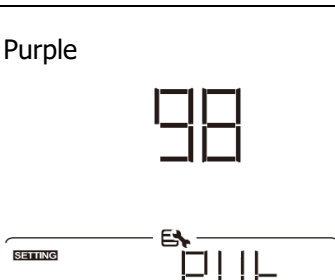
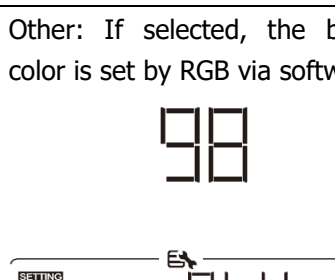
| | | | |
|----|--|--|---|
| 29 | <p>Low DC cut-off capacity:</p> <ul style="list-style-type: none"> ● If battery power is only power source available, inverter will shut down. ● If PV energy and battery power are available, inverter will charge battery without AC output. <p>If PV energy, battery power and utility are all available, inverter will transfer to line mode</p> | <p>SOC 0% (default)</p>  | <p>Setting range is from 0% to 90%. Increment of each click is 1%.</p> |
| 37 | Reset all stored data for PV generated power and output load energy | <p>Not reset(Default)</p>  | <p>Reset</p>  |
| 41 | Maximum battery discharging current | <p>Disable (Default)</p>  | <p>If selected, battery discharge protection is disabled.</p> |
| | | <p>30A</p>  | <p>The setting range is from 30 A to 180 A. Increment of each click is 10A. If discharging current is higher than setting value, battery will stop discharging. At this time, if the utility is available, the inverter will operate in bypass mode. If no utility is available, the inverter will shut down output after 5-minute operation in battery mode.</p> |
| | | <p>180A</p>  | |
| 83 | Erase all data log | <p>Not reset (Default)</p>  | <p>Reset</p>  |

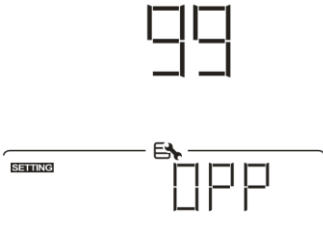
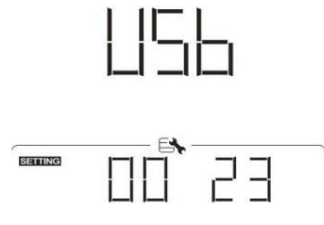
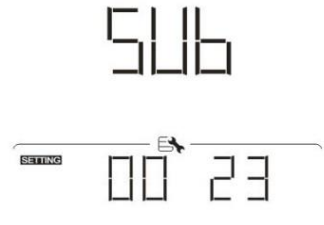

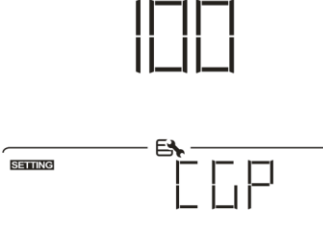
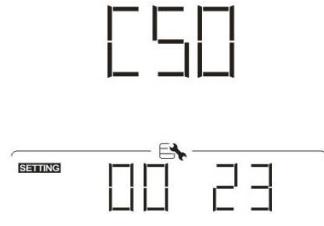

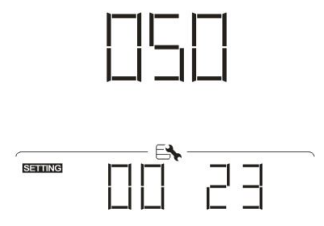
| | | | |
|----|--|---|---|
| 84 | Data log recorded interval *The maximum data log number is 1200. If it's over 1200, it will re-write the first log. | 3 minutes  | 5 minutes  |
| | | 10 minutes (default)  | 20 minutes  |
| | | 30 minutes  | 60 minutes  |
| 85 | Time setting – Minute |  | For minute setting, the range is from 0 to 59. |
| 86 | Time setting – Hour |  | For hour setting, the range is from 0 to 23. |
| 87 | Time setting– Day |  | For day setting, the range is from 1 to 31. |
| 88 | Time setting– Month |  | For month setting, the range is from 1 to 12. |

| | | | |
|----|--|---|--|
| 89 | Time setting – Year | <div>89</div> <div> <div>SETTING</div> <div>YEAR</div> <div>20</div> </div> | For year setting, the range is from 17 to 99. |
| 91 | On/Off control for RGB LED *It's required to enable this setting to activate RGB LED lighting function. | <div>Enabled (default)</div> <div>91</div> <div> <div>SETTING</div> <div>LEN</div> </div> | <div>Disable</div> <div>91</div> <div> <div>SETTING</div> <div>LD5</div> </div> |
| 92 | Brightness of RGB LED | <div>Low</div> <div>92</div> <div> <div>SETTING</div> <div>LO</div> </div> | <div>Normal (default)</div> <div>92</div> <div> <div>SETTING</div> <div>NOT</div> </div> |
| | | <div>High</div> <div>92</div> <div> <div>SETTING</div> <div>HI</div> </div> | |
| 93 | Lighting speed of RGB LED | <div>Low</div> <div>93</div> <div> <div>SETTING</div> <div>LO</div> </div> | <div>Normal (default)</div> <div>93</div> <div> <div>SETTING</div> <div>NOT</div> </div> |
| | | <div>High</div> <div>93</div> <div> <div>SETTING</div> <div>HI</div> </div> | |

| | | | |
|----|---|---|---|
| 94 | RGB LED effects | Power cycling  | Power wheel  |
| | | Power chasing  | Solid on (Default)  |
| 95 | Data Presentation of data color *Energy source (Grid-PV-Battery) and battery charge/discharge status only available when RGB LED effects is set to Solid on. | Solar input power in watt  | LED lighting portion will be changed by the percentage of solar input power and nominal PV power. If "Solid on" is selected in #94, LED ring will light up with background color setting in #96. If "Power wheel" is selected in #94, LED ring will light up in 4 levels. If "cycling" or "chasing" is selected in #94, LED ring will light up in 12 levels. |
| | | Battery capacity percentage (Default)  | LED lighting portion will be changed by battery capacity percentage. If "Solid on" is selected in #94, LED ring will light up with background color setting in #96. If "Power wheel" is selected in #94, LED ring will light up in 4 levels. If "cycling" or "chasing" is selected in #94, LED ring will light up in 12 levels. |
| | | Load percentage.  | LED lighting portion will be changed by load percentage. If "Solid on" is selected in #94, LED ring will light up with background color setting in #96. If "Power wheel" is selected in #94, LED ring will light up in 4 levels. If "cycling" or "chasing" is selected in #94, LED ring will light up in 12 levels. |
| | | Energy source(Grid-PV-Battery)  | If selected, the LED color will be background color setting in #96 in AC mode. If PV power is active, the LED color will be data color setting in #97. If the remaining status occur, the LED color will be set in #98. |


| | | | |
|----|---|--|--|
| 95 | Data Presentation of data color *Energy source (Grid-PV-Battery) and battery charge/discharge status only available when RGB LED effects is set to Solid on. | Battery charge/discharge status 95 SETTING  | If selected, the LED color will be background color setting in #96 in battery charging status. The LED color will be data color setting in #97 in battery discharging status. |
| 96 | Background color of RGB LED | Pink 96 SETTING  | Orange 96 SETTING  |
| | | Yellow 96 SETTING  | Green 96 SETTING  |
| | | Blue 96 SETTING  | Sky blue (Default) 96 SETTING  |
| | | Purple 96 SETTING  | Other: If selected, the background color is set by RGB via software. 96 SETTING  |
| 97 | Data Color for RGB LED | Pink 97 SETTING  | Orange 97 SETTING  |

| | | | |
|----|--|---|--|
| 97 | Data Color for RGB LED | Yellow  | Green  |
| | | Blue  | Sky blue  |
| | | Purple (Default)  | Other: If selected, the data color is set by RGB via software.  |
| | | | |
| 98 | Background color of RGB LED *Only available when data Presentation of data color is set to Energy source (Grid-PV-Battery). | Pink  | Orange  |
| | | Yellow  | Green  |
| | | Blue  | Sky blue (Default)  |
| | | Purple  | Other: If selected, the background color is set by RGB via software.  |
| | | | |
| | | | |






| | | | |
|-----|--|--|---|
| 99 | <p>Timer Setting for Output Source Priority</p>  | <p>Once access this program, it will show "OPP" in LCD. Press "←" button to select timer setting for output source priority. There are three timers to set up. Press "▲" or "▼" button to select specific timer option. Then, press "←" to confirm timer option. Press "▲" or "▼" button to adjust starting time first and the setting range is from 00 to 23. Increment of each click is one hour. Press "←" to confirm starting time setting. Next, the cursor will jump to right column to set up end time. Once end time is set completely, press "←" to confirm all setting.</p> | |
| | | <p>Utility first timer</p>  | <p>Solar first timer</p>  |
| | | <p>SBU priority timer</p>  | |
| 100 | <p>Timer Setting for Charger Source Priority</p>  | <p>Once access this program, it will show "CGP" in LCD. Press "←" button to select timer setting for charger source priority. There are three timers to set up. Press "▲" or "▼" button to select specific timer option. Then, press "←" to confirm timer option. Press "▲" or "▼" button to adjust starting time first and the setting range is from 00 to 23. Increment of each click is one hour. Press "←" to confirm starting time setting. Next, the cursor will jump to right column to set up end time. Once end time is set completely, press "←" to confirm all setting.</p> | |
| | | <p>Solar first</p>  | <p>Solar and utility</p>  |
| | | <p>Only solar</p>  | |

USB Function Setting

There are three USB function setting such as firmware upgrade, data log export and internal parameter re-write from the USB disk. Please follow below procedure to execute selected USB function setting.

| Procedure | LCD Screen |
|--|---|
| Step 1: Insert an OTG USB disk into the USB port (⑪). |  |
| Step 2: Press "↻" button to enter USB function setting. | |

Step 3: Please select setting program by following the procedure.

| Program# | Operation Procedure | LCD Screen |
|------------------------------|--|---|
| Upgrade firmware | After entering USB function setting, press "←" button to enter "upgrade firmware" function. This function is to upgrade inverter firmware. If firmware upgrade is needed, please check with your dealer or installer for detail instructions. |  |
| Re-write internal parameters | After entering USB function setting, press "▼" button to switch to "Re-write internal parameters" function. This function is to over-write all parameter settings (TEXT file) with settings in the USB disk from a previous setup or to duplicate inverter settings. Please check with your dealer or installer for detail instructions. |  |
| Export data log | After entering USB function setting, press "▼" button twice to switch to "export data log" function and it will show "LOG" in the LCD. Press "←" button to confirm the selection for export data log. |  |
| | If the selected function is ready, LCD will display "fdy". Press "←" button to confirm the selection again. |  |
| | <ul style="list-style-type: none"> Press "▲" button to select "Yes" to export data log. "YES" will disappear after this action is complete. Then, press "↻" button to return to main screen. Or press "▼" button to select "No" to return to main screen. |  |

If no button is pressed for 1 minute, it will automatically return to main screen.

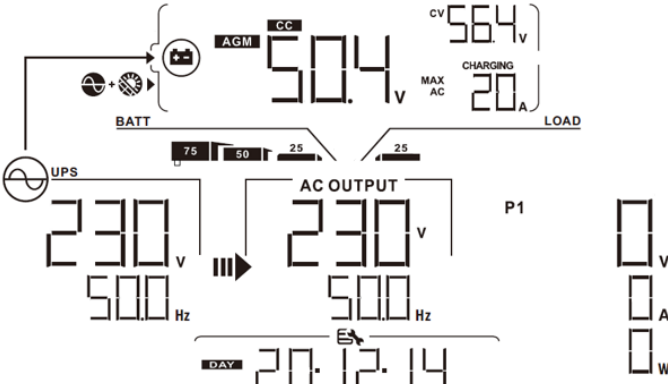
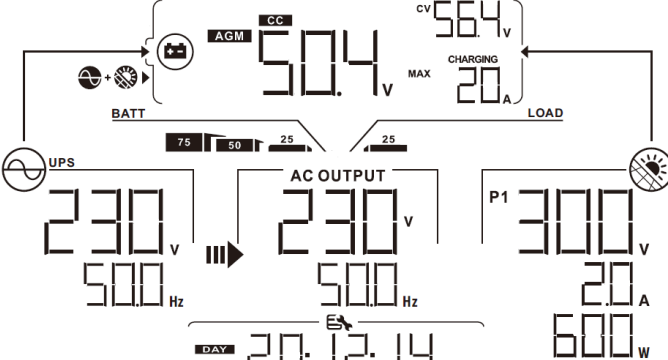
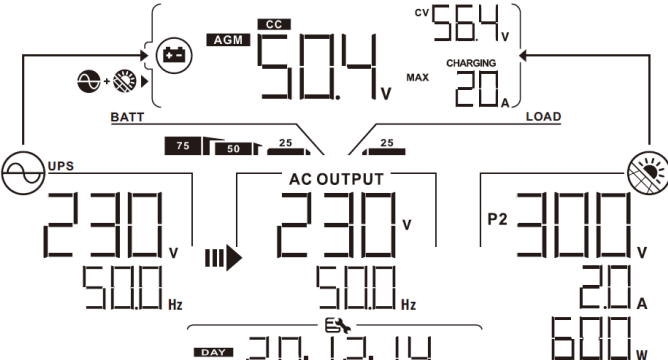
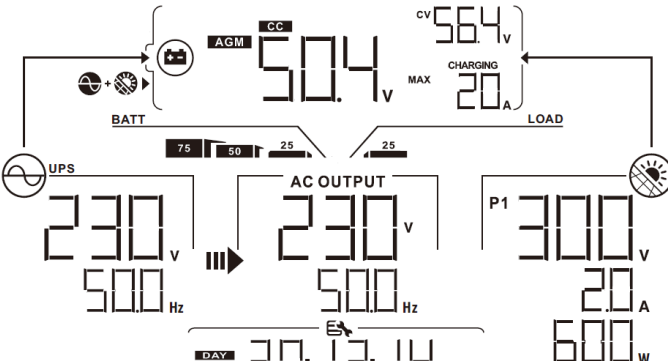
Error message:

| Error Code | Messages |
|------------|---|
| U01 | No USB disk is detected. |
| U02 | USB disk is protected from copy. |
| U03 | Document inside the USB disk with wrong format. |

If any error occurs, error code will only show 3 seconds. After 3 seconds, it will automatically return to display screen.

LCD Display

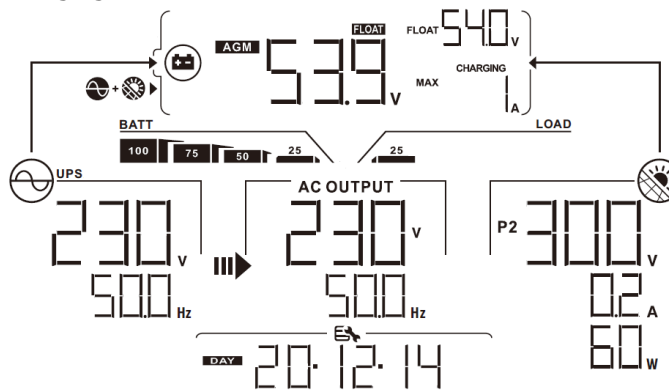
The LCD display information will be switched in turn by pressing the "▲" or "▼" button. The selectable information is switched as the following table in order.

| Selectable information | LCD display |
|---|--|
| Utility voltage/ Utility frequency | <p>Input Voltage=230V, Input frequency=50Hz</p>  |
| Default Display Screen | <p>PV1 voltage=300V, PV1 current=2.0A, PV1 power=600W</p>  |
| | <p>PV2 voltage=300V, PV2 current=2.0A, PV2 power=600W</p>  |
| Battery voltage, charging stage/ Configured battery parameters/ Charging or discharging current | <p>Battery voltage=50.4V, Bulk charging voltage=56.4V, Charging current=20A</p>  |

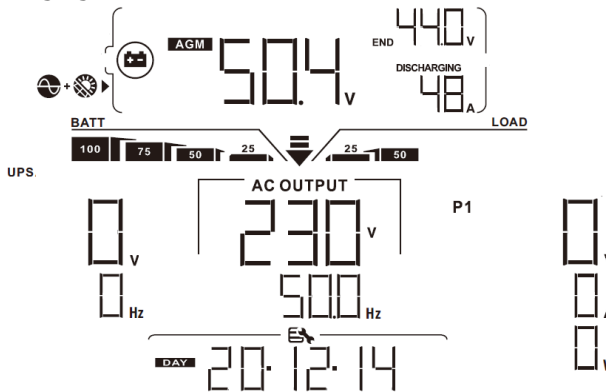
Default
Display
Screen

Battery voltage, charging stage/
Configured battery parameters/
Charging or discharging current

Battery voltage=53.9V, Floating charging voltage=54.0V,
Charging current=1A



Battery voltage=50.4V, Low DC cut-off voltage=44.0V,
Discharging current=48A

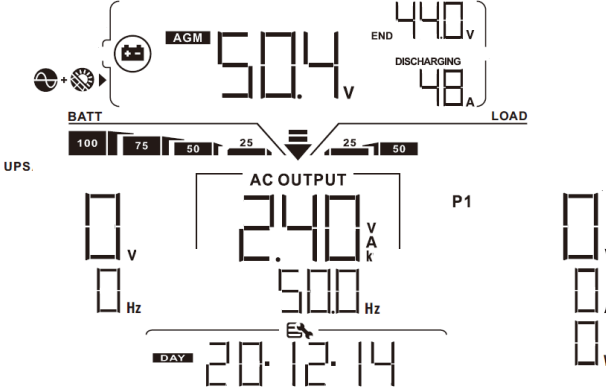


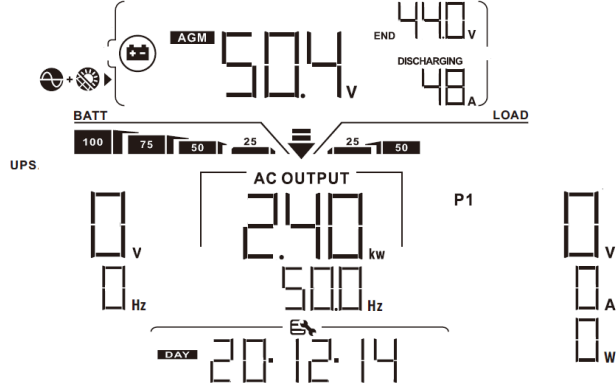
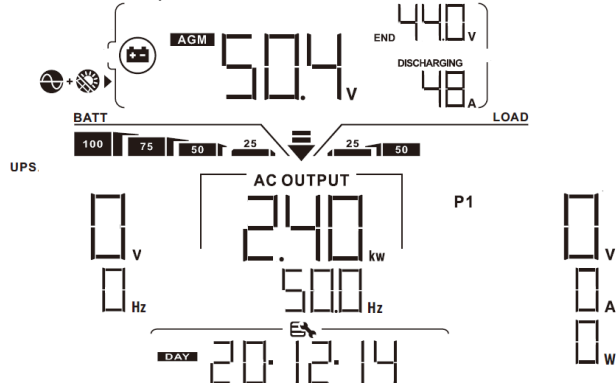
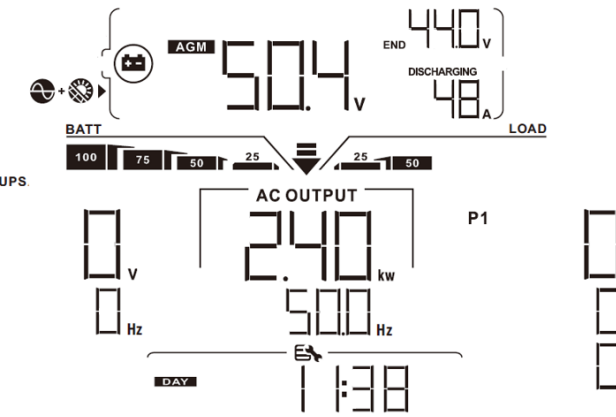
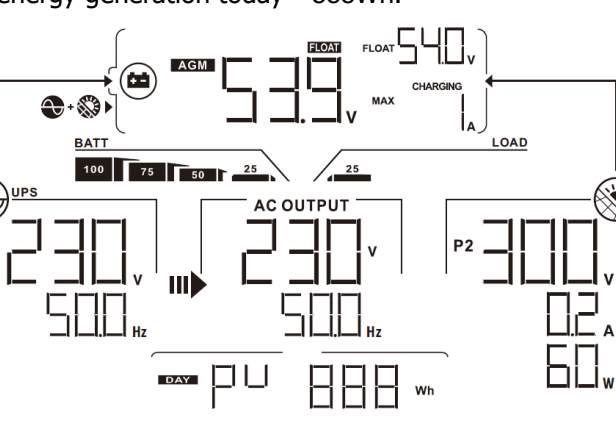
Output voltage, load in VA, load in
Watt switch every 5 second/
Output frequency

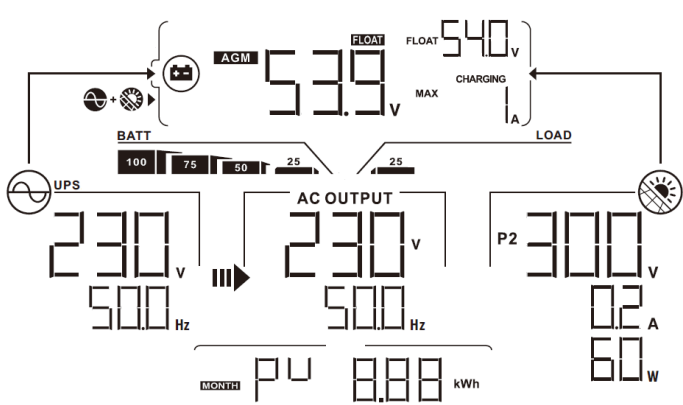
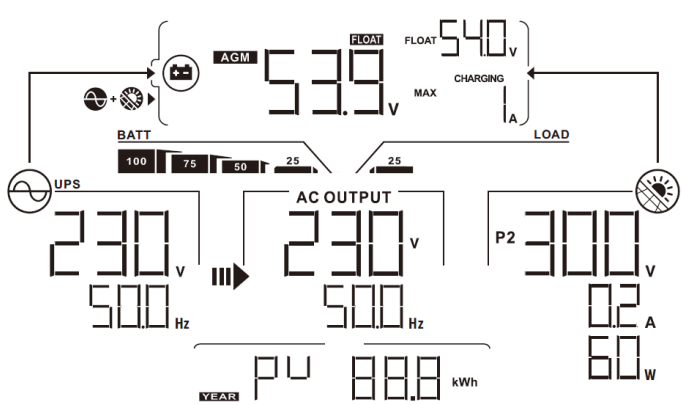
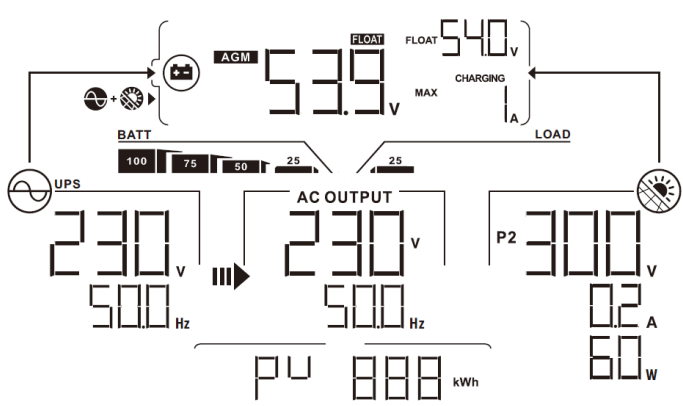
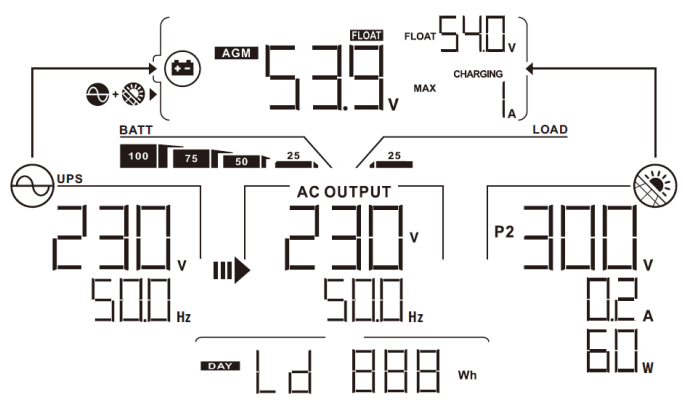
Output voltage=230V, Output frequency=50Hz

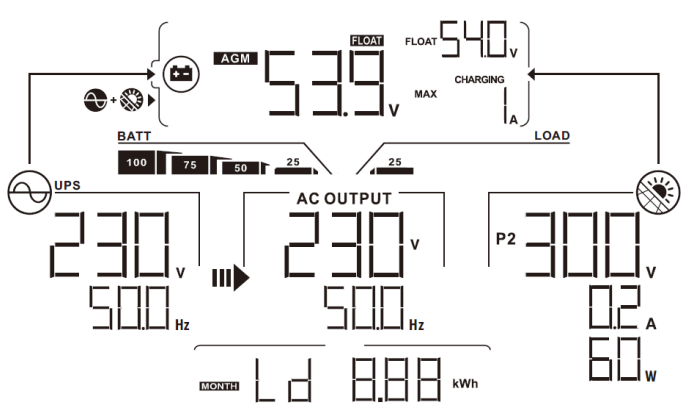
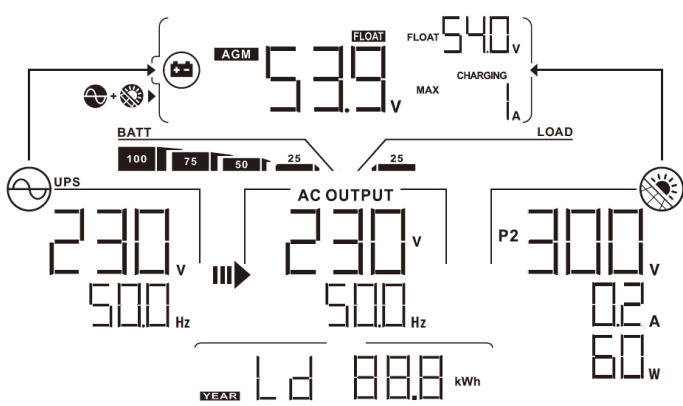
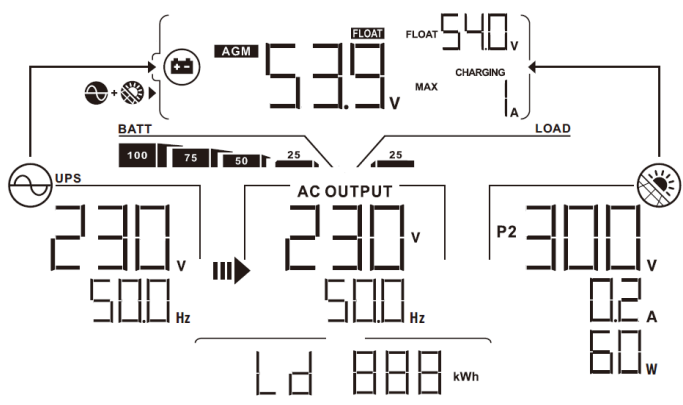



Load in VA=2.4kVA, Output frequency=50Hz



| | | |
|----------------------------|---|---|
| Default Display Screen | Output voltage, load in VA, load in Watt switch every 5 second/ Output frequency | <p>Load in Watt=2.4kW, Output frequency=50Hz</p>  |
| Real date. | Real date. | <p>Real date Dec 14, 2020.</p>  |
| Real time. | Real time. | <p>Real time 11:38.</p>  |
| PV energy generation today | PV energy generation today | <p>PV energy generation today =888Wh.</p>  |

| | |
|--|---|
| <p>PV energy generation this month</p> | <p>PV energy generation this month =8.88kWh.</p>  |
| <p>PV energy generation this year</p> | <p>PV energy generation this year =88.8kWh.</p>  |
| <p>Total PV energy generation</p> | <p>Total PV energy generation =888kWh.</p>  |
| <p>Load output energy today</p> | <p>Load output energy today =888Wh.</p>  |

| | |
|--------------------------------------|---|
| <p>Load output energy this month</p> | <p>Load output energy this month =8.88kWh.</p>  |
| <p>Load output energy this year</p> | <p>Load output energy this year =88.8kWh.</p>  |
| <p>Total load output energy</p> | <p>Total load output energy =888kWh.</p>  |
| <p>Main CPU version checking.</p> | <p>Main CPU version 00050.72.</p>  |

Secondary CPU version checking.

Secondary CPU version 00022.01.



Wi-Fi version checking

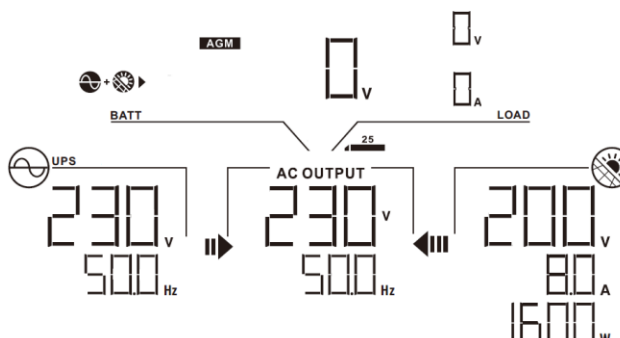
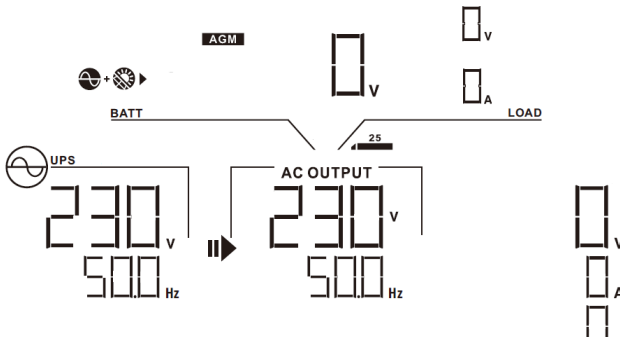
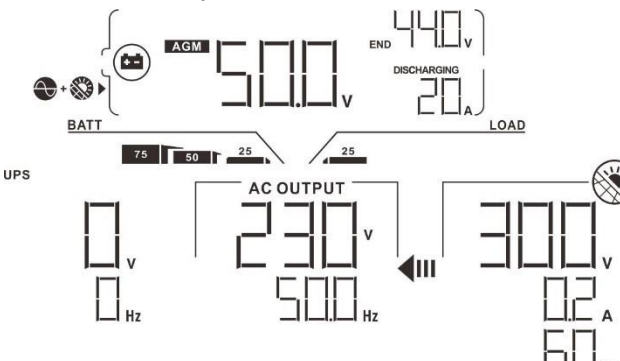
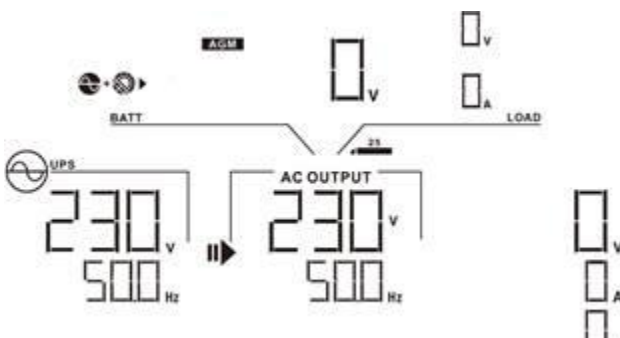
Wi-Fi version 00088.88.



Operating Mode Description

| Operation mode | Description | LCD display |
|---|--|--|
| Standby mode Note: *Standby mode: The inverter is not turned on yet but at this time, the inverter can charge battery without AC output. | No output is supplied by the unit but it still can charge batteries. | Charging by utility and PV energy. |
| | | Charging by utility. |
| | | Charging by PV energy. |
| | | No charging. |
| 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. | No charging at all no matter if grid or PV power is available. | Grid and PV power are available. |

| Operation mode | Description | LCD display |
|--|---|---|
| <p>Fault mode</p> <p>Note:</p> <p>*Fault mode: Errors are caused by inside circuit error or external reasons such as over temperature, output short circuited and so on.</p> | <p>No charging at all no matter if grid or PV power is available.</p> | <p>Grid is available.</p> |
| | | <p>PV power is available.</p> |
| | | <p>No charging.</p> |
| <p>Line Mode</p> | <p>The unit will provide output power from the mains. It will also charge the battery at line mode.</p> | <p>Charging by utility and PV energy.</p> |
| | | <p>Charging by utility.</p> |












| Operation mode | Description | LCD display |
|----------------|--|---|
| Line Mode | The unit will provide output power from the mains. It will also charge the battery at line mode. | <p>If "SUB" (solar first) is selected as output source priority and solar energy is not sufficient to provide the load, solar energy and the utility will provide the loads and charge the battery at the same time.</p>  |
| | | <p>If either "SUB" (solar first) or "SBU" is selected as output source priority and battery is not connected, solar energy and the utility will provide the loads.</p>  |
| | | <p>Power from utility</p>  |
| Battery Mode | The unit will provide output power from battery and/or PV power. | <p>Power from battery and PV energy.</p>  |

| Operation mode | Description | LCD display |
|----------------|--|---|
| Battery Mode | The unit will provide output power from battery and/or PV power. | <p>PV energy will supply power to the loads and charge battery at the same time. No utility is available.</p> |
| | | <p>Power from battery only.</p> |
| | | <p>Power from PV energy only.</p> |

Faults Reference Code

| Fault Code | Fault Event | Icon on |
|------------|-------------------------------------|---------|
| 01 | Fan is locked when inverter is off. | F01 |
| 02 | Over temperature | F02 |
| 03 | Battery voltage is too high | F03 |
| 04 | Battery voltage is too low | F04 |
| 05 | Output short circuited. | F05 |
| 06 | Output voltage is too high. | F06 |
| 07 | Overload time out | F07 |
| 08 | Bus voltage is too high | F08 |
| 09 | Bus soft start failed | F09 |
| 10 | PV over current | F10 |
| 11 | PV over voltage | F11 |
| 12 | DCDC over current | F12 |
| 13 | Battery discharge over current | F13 |
| 51 | Over current | F51 |
| 52 | Bus voltage is too low | F52 |
| 53 | Inverter soft start failed | F53 |
| 55 | Over DC voltage in AC output | F55 |
| 57 | Current sensor failed | F57 |
| 58 | Output voltage is too low | F58 |

Warning Indicator

| Warning Code | Warning Event | Audible Alarm | Icon flashing |
|--------------|--|-------------------------------|---|
| 01 | Fan is locked when inverter is on. | Beep three times every second | 01  |
| 02 | Over temperature | None | 02  |
| 03 | Battery is over-charged | Beep once every second | 03  |
| 04 | Low battery | Beep once every second | 04  |
| 07 | Overload | Beep once every 0.5 second | 07   |
| 10 | Output power derating | Beep twice every 3 seconds | 10  |
| 15 | PV energy is low. | Beep twice every 3 seconds | 15  |
| 16 | High AC input (>280VAC) during BUS soft start | None | 16  |
| 32 | Communication failure between inverter and display panel | None | 32  |
| E9 | Battery equalization | None | E9  |

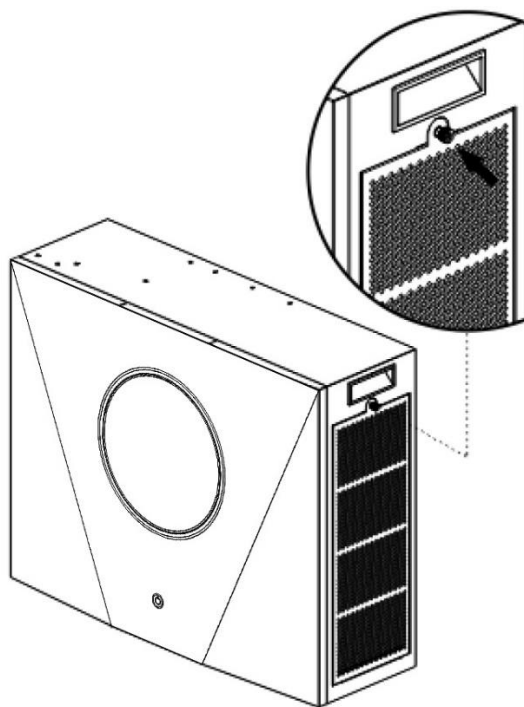
CLEARANCE AND MAINTENANCE FOR ANTI-DUST KIT

Overview

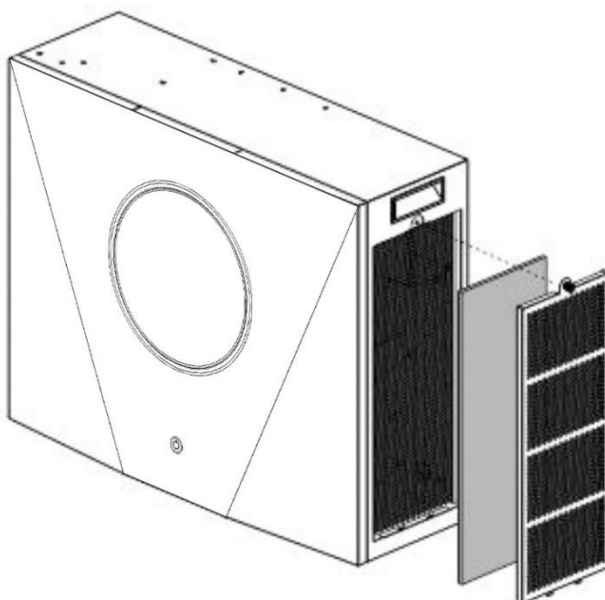
Every inverter is already installed with anti-dusk kit from factory. This kit keeps dusk from your inverter and increases product reliability in harsh environment.

Clearance and Maintenance

Step 1: Please remove the side cover of the inverter.



Step 2: Then, dustproof case can be removed and take out air filter foam as shown in below chart.



Step 3: Clean air filter foam and dustproof case. After clearance, re-assemble the dust-kit back to the inverter.

NOTICE: The anti-dust kit should be cleaned from dust every one month.

SPECIFICATIONS

Table 1 Line Mode Specifications

| Inverter Power Rating | 8KW |
|---|---|
| Input Voltage Waveform | Sinusoidal (utility or generator) |
| Nominal Input Voltage | 230Vac |
| Low Loss Voltage | 170Vac \pm 7V (UPS) 90Vac \pm 7V (Appliances) |
| Low Loss Return Voltage | 180Vac \pm 7V (UPS); 100Vac \pm 7V (Appliances) |
| High Loss Voltage | 280Vac \pm 7V |
| High Loss Return Voltage | 270Vac \pm 7V |
| Max AC Input Voltage | 300Vac |
| Max AC Input Current | 60A |
| Nominal Input Frequency | 50Hz / 60Hz (Auto detection) |
| Low Loss Frequency | 40 \pm 1Hz |
| Low Loss Return Frequency | 42 \pm 1Hz |
| High Loss Frequency | 65 \pm 1Hz |
| High Loss Return Frequency | 63 \pm 1Hz |
| Output Short Circuit Protection | Line mode: Circuit Breaker Battery mode: Electronic Circuits |
| Efficiency (Line Mode) | >95% (Rated R load, battery full charged) |
| Transfer Time | 10ms typical (UPS); 20ms typical (Appliances) |
| Output power de-rating: When AC input voltage under 170V the output power will be de-rated. | <p>8K model</p> |

Table 2 Inverter Mode Specifications

| Utility Inverter Mode | |
|----------------------------------|---|
| Rated Output Power | 8000W |
| Output Voltage Waveform | Pure Sine Wave |
| Output Voltage Regulation | 230Vac±5% |
| Output Frequency | 60Hz or 50Hz |
| Peak Efficiency | 93% |
| Overload Protection | 100ms@≥205% load; 5s@≥150% load; 10s@110%~150% load |
| Surge Capacity | 2* rated power for 5 seconds |
| Low DC Warning capacity | Setting of Program 29 + 10% |
| Low DC Cut-off level | Setting of Program 29 |
| High DC Recovery Voltage | 52.5Vdc (ESS LIO-I-4810), 56Vdc (ESS LIO-II-4810) |
| High DC Cut-off Voltage | 54Vdc (ESS LIO-I-4810); 57.5Vdc (ESS LIO-II-4810) |
| DC Voltage Accuracy | +/-0.3V@ no load |
| THDV | <5% for linear load, <10% for non-linear load @ nominal voltage |
| DC Offset | ≅ 100mV |
| No Load Power Consumption | <75W |

Table 3 Charge Mode Specifications

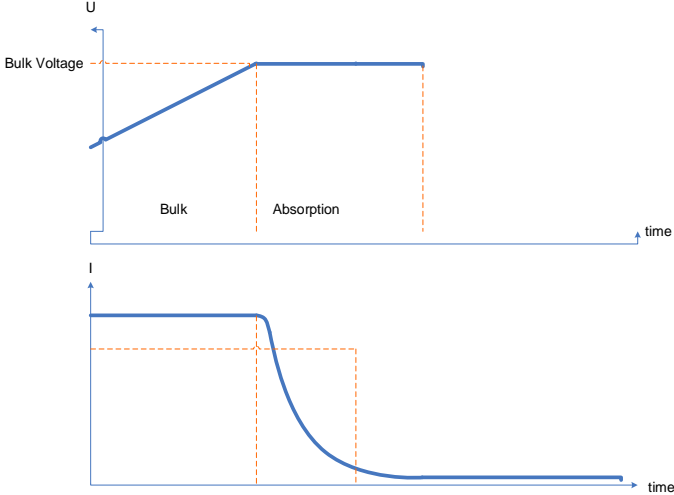
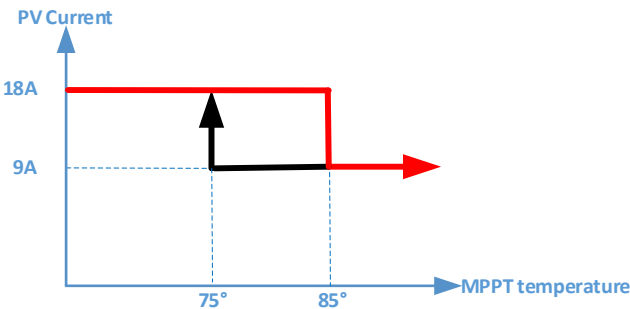
| Utility Charging Mode | |
|--|--|
| Charging Current (UPS) @ Nominal Input Voltage | 30A (@ $V_{I/P}=230V_{ac}$) |
| Bulk Charging Voltage | 52.5Vdc (ESS LIO-I-4810); 56.0Vdc (ESS LIO-II-4810) |
| Floating Charging Voltage | 52.5Vdc (ESS LIO-I-4810); 56.0Vdc (ESS LIO-II-4810) |
| Overcharge Protection | 54.0Vdc (ESS LIO-I-4810); 57.5Vdc (ESS LIO-II-4810) |
| Charging Algorithm | 3-Step |
| Charging Curve |  |
| Solar Input | |
| Rated Power | 8000W |
| Max. PV Array Open Circuit Voltage | 500Vdc |
| PV Array MPPT Voltage Range | 90Vdc~450Vdc |
| Max. Input Current | 18A x 2 |
| Start-up Voltage | 80V +/- 5Vdc |
| Power Limitation |  |

Table 4 General Specifications

| | |
|------------------------------------|--|
| Safety Compliance | CE |
| Operating Temperature Range | -10°C to 50°C |
| Storage temperature | -15°C~ 60°C |
| Humidity | 5% to 95% Relative Humidity (Non-condensing) |
| Dimension (D*W*H), mm | 214 x 621 x 500 |
| Net Weight, kg | 25 |

Table 5 Parallel Specifications

| | |
|--|-----------------|
| Max parallel numbers | 3 |
| Circulation Current under No Load Condition | Max 2A |
| Power Unbalance Ratio | <5% @ 100% Load |
| Parallel communication | CAN |
| Transfer time in parallel mode | Max 50ms |
| Parallel Kit | YES |

Note: Parallel feature will be disabled when only PV power is available.

Table 6 Battery Module Specifications

| | |
|----------------------------------|-----------------|
| Nominal Voltage | 48VDC |
| Typical Capacity | 100 Ah |
| Max Discharging Current | 150A |
| Protection | BMS, breaker |
| Dimension, D X W X H (mm) | 214 x 621 x 550 |
| Net Weight (kgs) | 55 |

TROUBLE SHOOTING

| Problem | LCD/LED/Buzzer | Explanation / Possible cause | 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 displayed as 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 "Solar First" as the priority of output source. | Change output source priority to Utility first. |
| When the unit is turned on, internal relay is switched 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 07 | Overload error. The inverter is overload 110% and time is up. | Reduce the connected load by switching off some equipment. |
| | Fault code 05 | Output short circuited. | Check if wiring is connected well and remove abnormal load. |
| | | Temperature of internal converter component is over 120°C. (Only available for 1-3KVA models.) | Check whether the air flow of the unit is blocked or whether the ambient temperature is too high. |
| | Fault code 02 | Internal temperature of inverter component is over 100°C. | |
| | Fault code 03 | Battery is over-charged. | Return to repair center. |
| | | The battery voltage is too high. | Check if spec and quantity of batteries are meet requirements. |
| | Fault code 01 | Fan fault | Replace the fan. |
| | Fault code 06/58 | Output abnormal (Inverter voltage below than 190Vac or is higher than 260Vac) | 1. Reduce the connected load. 2. Return to repair center |
| | Fault code 08/09/53/57 | Internal components failed. | Return to repair center. |
| | Fault code 51 | Over current or surge. | Restart the unit, if the error happens again, please return to repair center. |
| | Fault code 52 | Bus voltage is too low. | |
| | Fault code 55 | Output voltage is unbalanced. | |

Appendix I: Parallel function

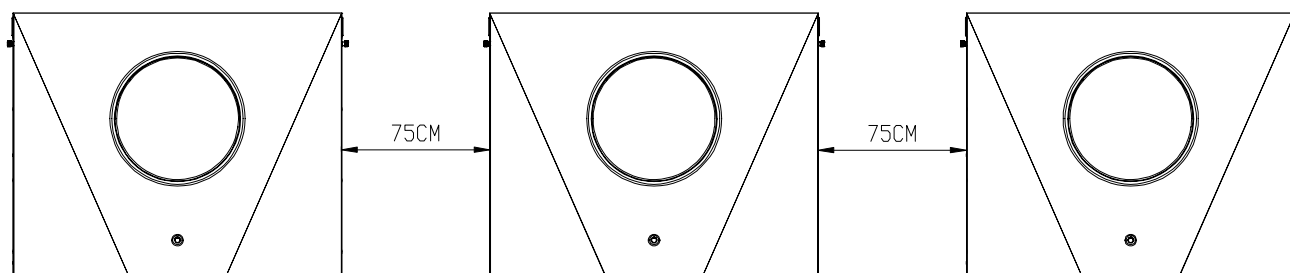
1. Introduction

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

1. Parallel operation in single phase is with up to 3 units. The supported maximum output power is 24KW/24KVA.
2. Three units work together (each unit on one phase) to support three-phase equipment.

2. Mounting the Unit

When installing multiple units, please follow below chart.



NOTE: For proper air circulation to dissipate heat, allow a clearance of approx. 75 cm to the side.

3. Wiring Connection

WARNING: It's REQUIRED to connect battery for parallel operation.

The cable size of each inverter is shown as below:

Recommended battery cable and terminal size for each inverter:

| Wire Size | Cable mm ² | Ring Terminal | | Torque value |
|-----------|-----------------------|---------------|--------|--------------|
| | | Dimensions | | |
| | | D (mm) | L (mm) | |
| 1*2/0AWG | 67.4 | 8.4 | 47 | 5 Nm |

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.

Recommended AC input and output cable size for each inverter:

| AWG no. | Torque |
|---------|-------------|
| 8 AWG | 1.4~ 1.6 Nm |

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.

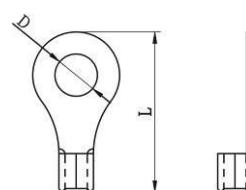
CAUTION!! Please install the breaker at the battery and AC input side. This will ensure the inverter can be securely disconnected during maintenance and fully protected from over current of battery or AC input.

Recommended breaker specification of battery for each inverter:

| |
|------------|
| 1 unit* |
| 250A/70VDC |

*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.

Ring terminal:



Recommended breaker specification of AC input with single phase:

| | |
|-------------|-------------|
| 2 units | 3 units |
| 120A/230VAC | 180A/230VAC |

Note 1: Also, you can use 60A breaker with only 1 unit and install one breaker at its AC input in each inverter.

Note 2: Regarding three-phase system, you can use 4-pole breaker directly and the rating of the breaker should be compatible with the phase current limitation from the phase with maximum units.

Recommended battery capacity

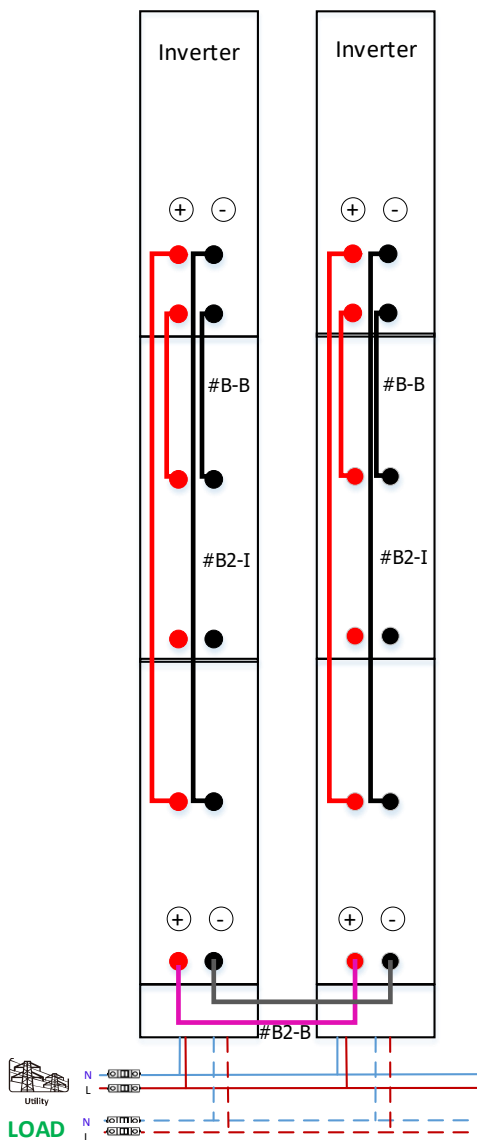
| | | |
|---------------------------|-------|-------|
| Inverter parallel numbers | 2 | 3 |
| Battery Capacity | 200AH | 400AH |

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

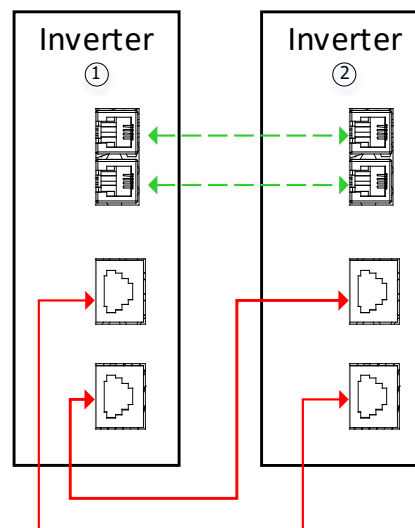
4-1. Parallel Operation in Single phase

Two inverters in parallel:

Power Connection

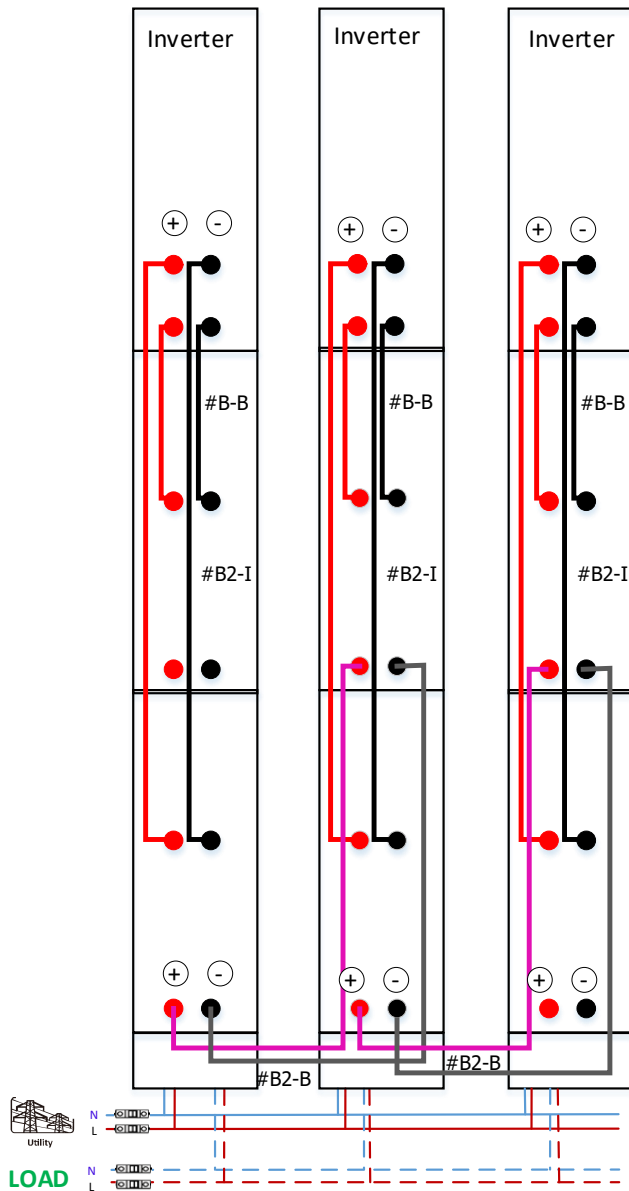


Communication Connection

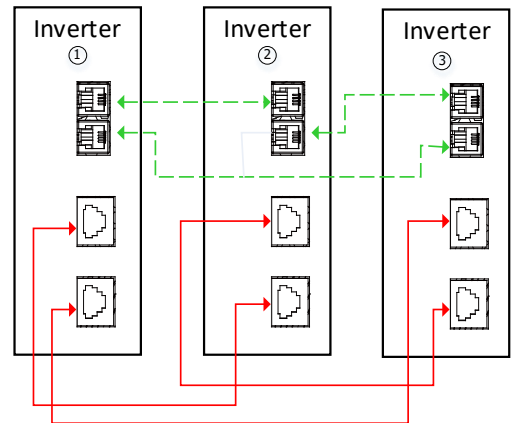


Three inverters in parallel:

Power Connection

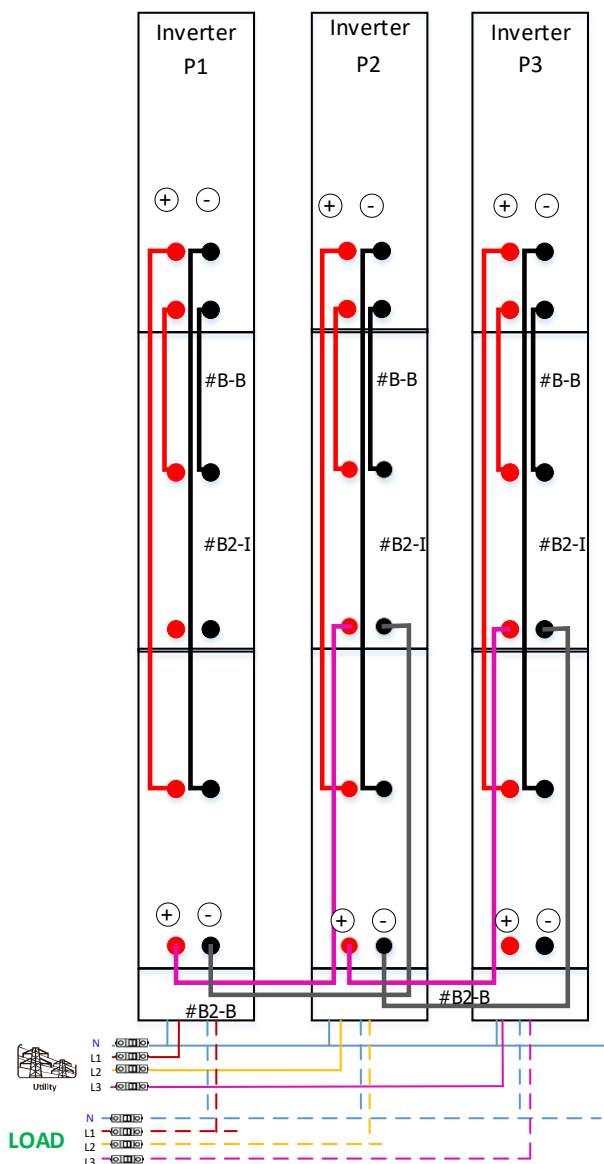


Communication Connection

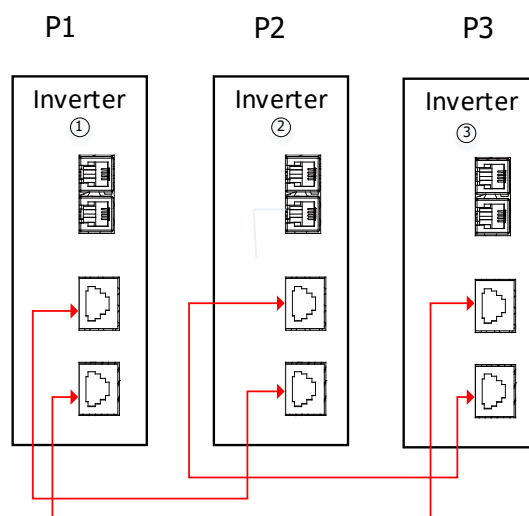


4-2. Support 3-phase equipment

Power Connection



Communication Connection



WARNING: Do not connect the current sharing cable between the inverters which are in different phases. Otherwise, it may damage the inverters.

5. PV Connection

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

CAUTION: Each inverter should connect to PV modules separately.

6. LCD Setting and Display

Setting Program:

| Program | Description | Selectable option | |
|---------|---|-------------------|---|
| 28 | AC output mode *This setting is able to set up only when the inverter is in standby mode. Be sure that on/off switch is in "OFF" status. | Single | When the unit is operated alone, please select "SIG" in program 28. |
| | | Parallel | When the units are used in parallel for single phase application, please select "PAL" in program 28. Please refer to 5-1 for detailed information. |
| | | L1 phase: | When the units are operated in 3-phase application, please choose "3PX" to define each inverter. It's required to have at least one inverter in each phase for three-phase application. Please refers to 5-2 for detailed information. Please select "3P1" in program 28 for the inverter connected to L1 phase, "3P2" in program 28 for the inverter connected to L2 phase and "3P3" in program 28 for the inverter connected to L3 phase. |
| | | L2 phase: | |
| | | L3 phase: | |
| | | | Be sure to connect share current cable to units which are on the same phase. Do NOT connect share current cable between units on different phases. |

Fault code display:

| Fault Code | Fault Event | Icon on |
|------------|---|---------|
| 60 | Power feedback protection | F60 |
| 71 | Firmware version inconsistent | F71 |
| 72 | Current sharing fault | F72 |
| 80 | CAN fault | F80 |
| 81 | Host loss | F81 |
| 82 | Synchronization loss | F82 |
| 83 | Battery voltage detected different | F83 |
| 84 | AC input voltage and frequency detected different | F84 |
| 85 | AC output current unbalance | F85 |
| 86 | AC output mode setting is different | F86 |

Code Reference:

| Code | Description | Icon on |
|------|-----------------------------------|---------|
| NE | Unidentified unit master or slave | NE |
| HS | Master unit | HS |
| SL | Slave unit | SL |

7. Commissioning**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 28 of each unit. And then shut down all units.

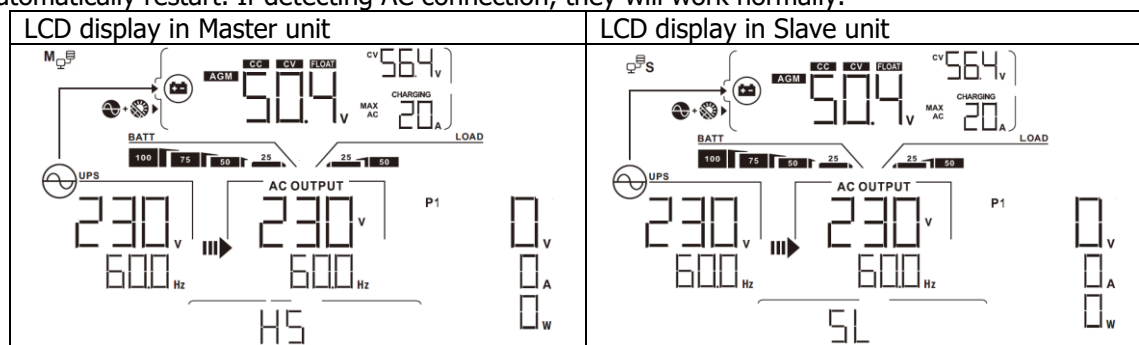
NOET: It's necessary to turn off switch when setting LCD program. Otherwise, the setting cannot be programmed.

Step 3: Turn on each unit.

| LCD display in Master unit | LCD display in Slave unit |
|---|--|
| <p>The LCD display of the Master unit shows the following information: At the top, a battery status icon and 'AGM' label. The main display shows '50.4' with 'V' and 'END' indicators. Below this, a 'DISCHARGING' label and '60 A' are shown. A battery level bar is visible. The 'UPS' section shows a battery icon and 'BATT' label. The 'AC OUTPUT' section shows '230 V', '600 Hz', and 'P1'. The bottom of the display shows 'HS' (Master unit code) and 'W' (Wattage).</p> | <p>The LCD display of the Slave unit shows the same status indicators and numerical values as the Master unit, but the bottom of the display shows 'SL' (Slave unit code) instead of 'HS'.</p> |

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 fault 82 in following-order inverters. However, these inverters will automatically restart. If detecting AC connection, they will work normally.



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.

Support three-phase equipment

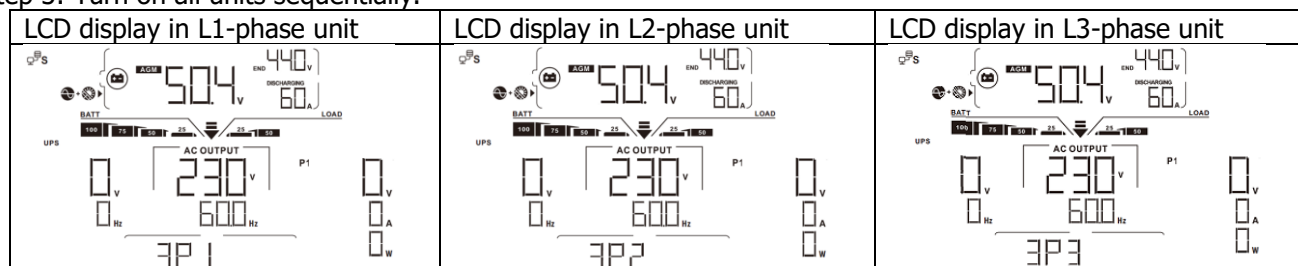
Step 1: Check the following requirements before commissioning:

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

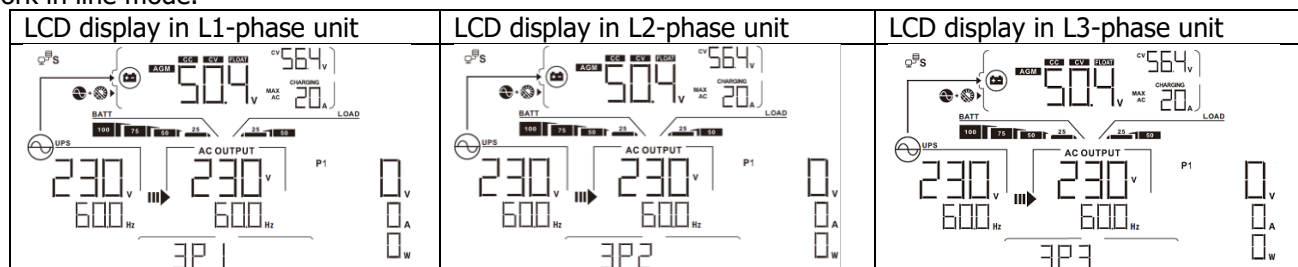
Step 2: Turn on all units and configure LCD program 28 as P1, P2 and P3 sequentially. And then shut down all units.

NOET: It's necessary to turn off switch when setting LCD program. Otherwise, the setting cannot be programmed.

Step 3: Turn on all units sequentially.



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, the AC icon will flash and they will not work in line mode.



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: To avoid overload occurring, before turning on breakers in load side, it's better to have whole system in operation first.

Note 2: Transfer time for this operation exists. Power interruption may happen to critical devices, which cannot bear transfer time.

8. Trouble shooting

| Situation | | | Solution |
|------------|--|-------|---|
| Fault Code | Fault Description | Event | |
| 60 | Current feedback into the inverter is detected. | | <ol style="list-style-type: none"> 1. Restart the inverter. 2. Check if L/N cables are not connected reversely in all inverters. 3. For parallel system in single phase, make sure the sharing are connected in all inverters. For supporting three-phase system, make sure the sharing cables are connected in the inverters in the same phase, and disconnected in the inverters in different phases. 4. If the problem remains, please contact your installer. |
| 71 | The firmware version of each inverter is not the same. | | <ol style="list-style-type: none"> 1. Update all inverter firmware to the same version. 2. Check the version of each inverter via LCD setting and make sure the CPU versions are same. If not, please contact your instraller to provide the firmware to update. 3. After updating, if the problem still remains, please contact your installer. |
| 72 | The output current of each inverter is different. | | <ol style="list-style-type: none"> 1. Check if sharing cables are connected well and restart the inverter. 2. If the problem remains, please contact your installer. |
| 80 | CAN data loss | | <ol style="list-style-type: none"> 1. Check if communication cables are connected well and restart the inverter. 2. If the problem remains, please contact your installer. |
| 81 | Host data loss | | |
| 82 | Synchronization data loss | | |
| 83 | The battery voltage of each inverter is not the same. | | <ol style="list-style-type: none"> 1. Make sure all inverters share same groups of batteries together. 2. Remove all loads and disconnect AC input and PV input. Then, check battery voltage of all inverters. If the values from all inverters are close, please check if all battery cables are the same length and same material type. Otherwise, please contact your installer to provide SOP to calibrate battery voltage of each inverter. 3. If the problem still remains, please contact your installer. |
| 84 | AC input voltage and frequency are detected different. | | <ol style="list-style-type: none"> 1. Check the utility wiring connction and restart the inverter. 2. Make sure utility starts up at same time. If there are breakers installed between utility and inverters, please be sure all breakers can be turned on AC input at same time. 3. If the problem remains, please contact your installer. |
| 85 | AC output current unbalance | | <ol style="list-style-type: none"> 1. Restart the inverter. 2. Remove some excessive loads and re-check load information from LCD of inverters. If the values are different, please check if AC input and output cables are in the same length and material type. 3. If the problem remains, please contact your installer. |
| 86 | AC output mode setting is different. | | <ol style="list-style-type: none"> 1. Switch off the inverter and check LCD setting #28. 2. For parallel system in single phase, make sure no 3P1, 3P2 or 3P3 is set on #28. For upporting three-phase system, make sure no "PAL" is set on #28. 3. If the problem remains, please contact your installer. |

Appendix II: BMS Communication Installation

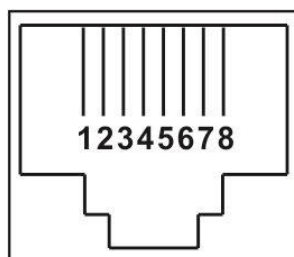
1. Introduction

This BMS communication cable delivers information and signal between lithium battery and the inverter. These information are listed below:

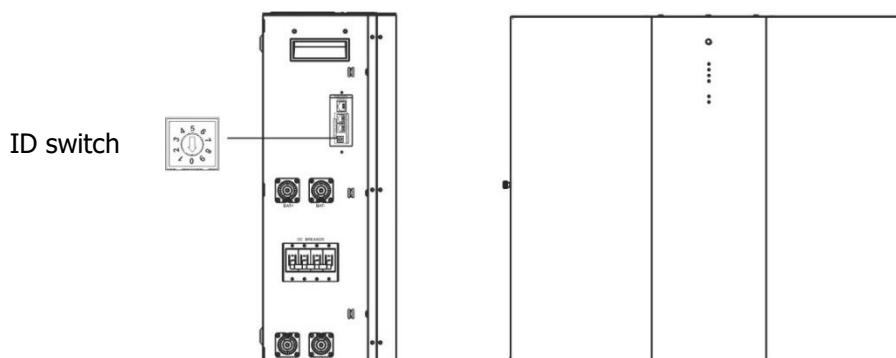
- Re-configure charging voltage, charging current and battery discharge cut-off voltage according to the lithium battery parameters.
- Have the inverter start or stop charging according to the status of lithium battery.

2. Pin Assignment for BMS Communication Port

| | Definition |
|-------|------------|
| PIN 1 | RS232TX |
| PIN 2 | RS232RX |
| PIN 3 | RS485B |
| PIN 4 | NC |
| PIN 5 | RS485A |
| PIN 6 | CANH |
| PIN 7 | CANL |
| PIN 8 | GND |



3. Lithium Battery Communication Configuration

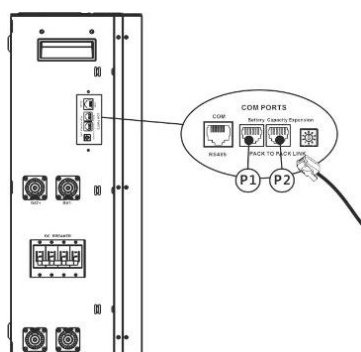


ID Switch indicates the unique ID code for each battery module. It's required to assign a unique ID to each battery module for normal operation. We can set up the ID code for each battery module by rotating the PIN number on the ID switch. From number 0 to 9, the number can be random; no particular order. Maximum 10 battery modules can be operated in parallel.

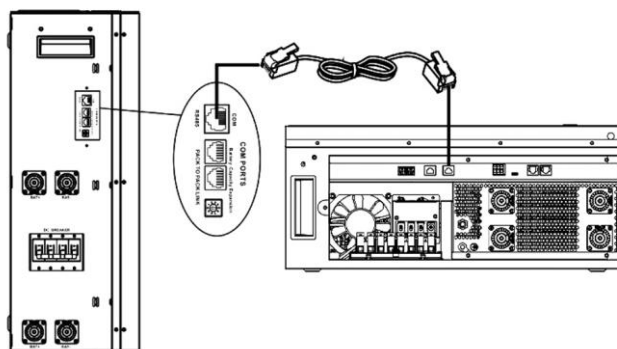
4. Installation and Operation

After ID no. is assigned for each battery module, please set up LCD panel in inverter and install the wiring connection as following steps.

Step 1: Use supplied RJ11 signal cable to connect into the extension port (P1 or P2).



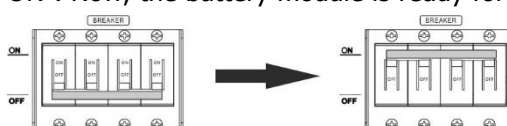
Step 2: Use supplied BMS cable (from battery module package) to connect inverter and Lithium battery.



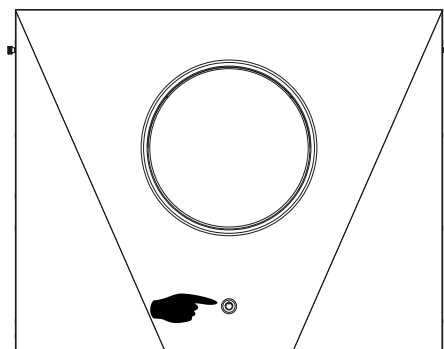
Note for parallel system:


1. Only support common battery installation.

Step 3: Turn the breaker switch "ON". Now, the battery module is ready for DC output.



Step 4: Press Power on/off button on battery module for 5 secs, the battery module will start up.




If communication between the inverter and battery is successful, the battery icon  on LCD display will flash. Generally speaking, it will take longer than 1 minute to establish communication.

Active Function

This function is to activate lithium battery automatically while commissioning. After battery wiring and commissioning is successfully, if battery is not detected, the inverter will automatically activate battery if the inverter is powered on.







5. LCD Display Information

Press "▲" or "▼" button to switch LCD display information. It will show battery pack and battery group number before "Main CPU version checking" as shown below.

| Selectable information | LCD display |
|--|---|
| Battery pack numbers & Battery group numbers | <p>Battery pack numbers = 3, battery group numbers = 1</p>  |

6. Code Reference

Related information code will be displayed on LCD screen. Please check inverter LCD screen for the operation.

| Code | Description |
|--|---|
| 60  | If battery status is not allowed to charge and discharge after the communication between the inverter and battery is successful, it will show code 60 to stop charging and discharging battery. |
| 61  | <p>Communication lost (only available when the battery type is not setting as "AGM", "Flooded" or "User-Defined".)</p> <ul style="list-style-type: none"> After battery is connected, communication signal is not detected for 3 minutes, buzzer will beep. After 10 minutes, inverter will stop charging and discharging to lithium battery. Communication lost occurs after the inverter and battery is connected successfully, buzzer beeps immediately. |
| 62  | Internal communication failure of batteries. |
| 69  | If battery status is not allowed to charge after the communication between the inverter and battery is successful, it will show code 69 to stop charging battery. |
| 70  | If battery status must to be charged after the communication between the inverter and battery is successful, it will show code 70 to charge battery. |
| 71  | If battery status is not allowed to discharge after the communication between the inverter and battery is successful, it will show code 71 to stop discharging battery. |

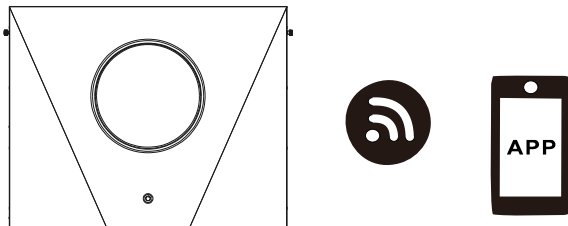
Appendix III: The Wi-Fi Operation Guide in Remote Panel

1. Introduction

Wi-Fi module can enable wireless communication between off-grid inverters and monitoring platform. Users have complete and remote monitoring and controlling experience for inverters when combining Wi-Fi module with WatchPower APP, available for both iOS and Android based device. All data loggers and parameters are saved in iCloud.

The major functions of this APP:

- Delivers device status during normal operation.
- Allows to configure device setting after installation.
- Notifies users when a warning or alarm occurs.
- Allows users to query inverter history data.



2. WatchPower App

2-1. Download and install APP

Operating system requirement for your smart phone:

🍏 iOS system supports iOS 9.0 and above

🤖 Android system supports Android 5.0 and above

Please scan the following QR code with your smart phone and download WatchPower App.



Android
system





iOS system

Or you may find "WatchPower" app from the Apple® Store or "WatchPower Wi-Fi" in Google® Play Store.



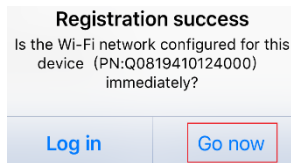
2-2. Initial Setup

Step 1: Registration at first time

After the installation, please tap the shortcut icon  to access this APP on your mobile screen. In the screen, tap "Register" to access "User Registration" page. Fill in all required information and scan the Wi-Fi module PN by tapping  icon. Or you can simply enter PN directly. Then, tap "Register" button.

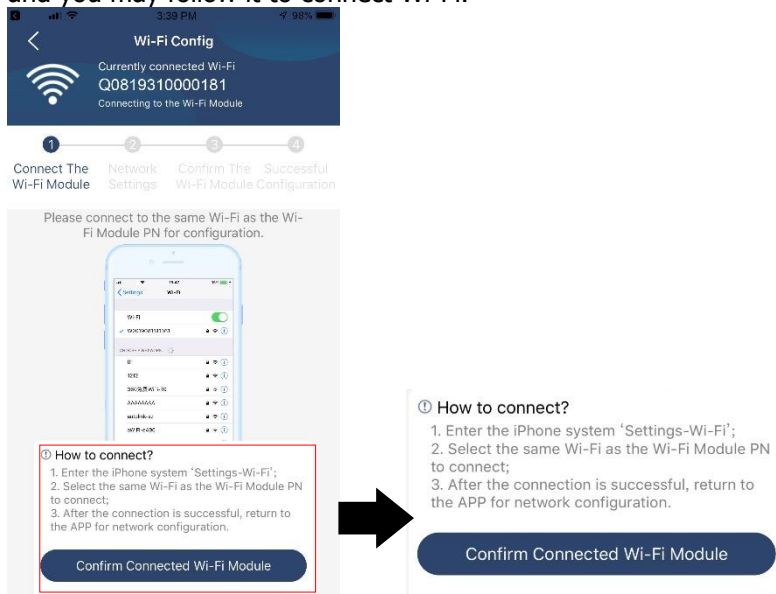


Then, a "Registration success" window will pop up. Tap "Go now" to continue setting local Wi-Fi network connection.

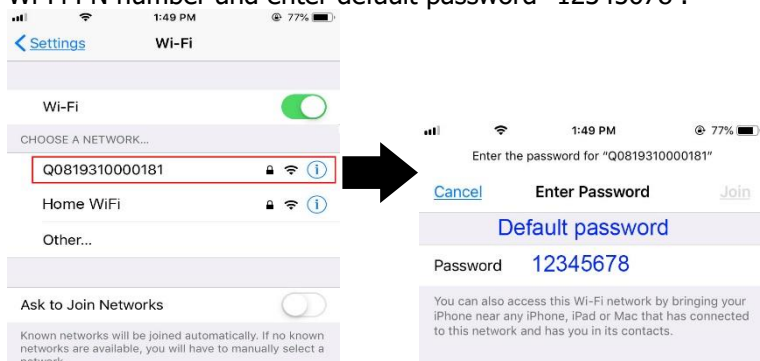


Step 2: Local Wi-Fi Module Configuration

Now, you are in "Wi-Fi Config" page. There are detailed setup procedure listed in "How to connect?" section and you may follow it to connect Wi-Fi.




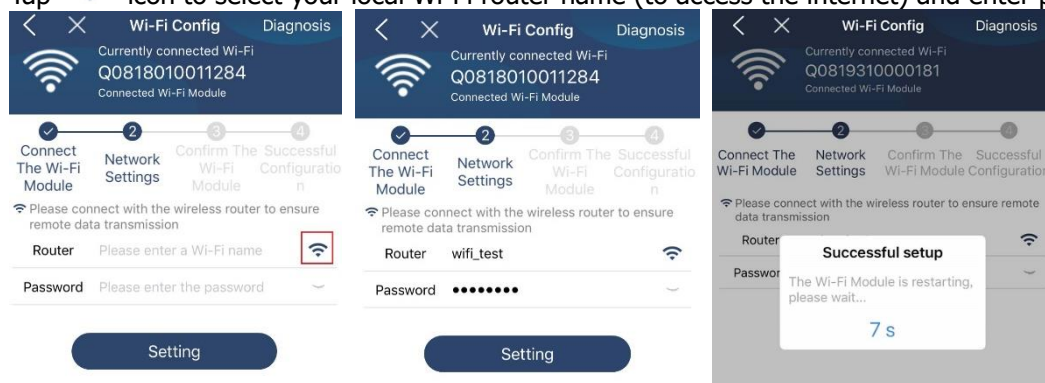
Enter the "Settings→Wi-Fi" and select connected Wi-Fi name. The connected Wi-Fi name is the same to your Wi-Fi PN number and enter default password "12345678".



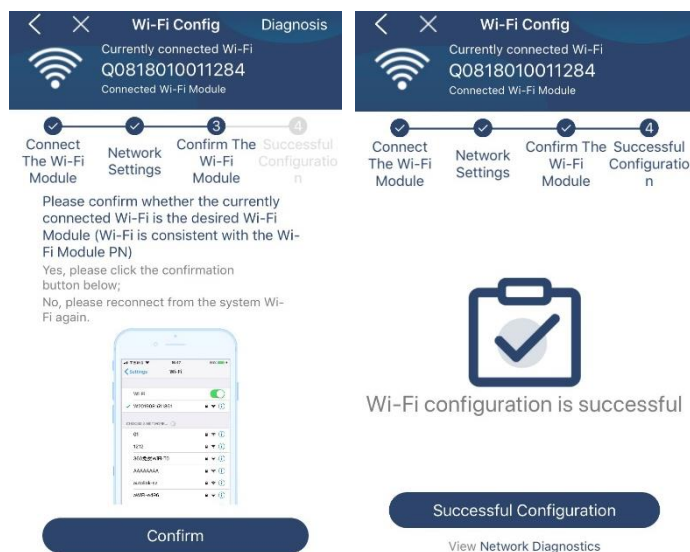
Then, return to WatchPower APP and tap "Confirm Connected Wi-Fi Module" button when Wi-Fi module is connected successfully.

Step 3: Wi-Fi Network settings

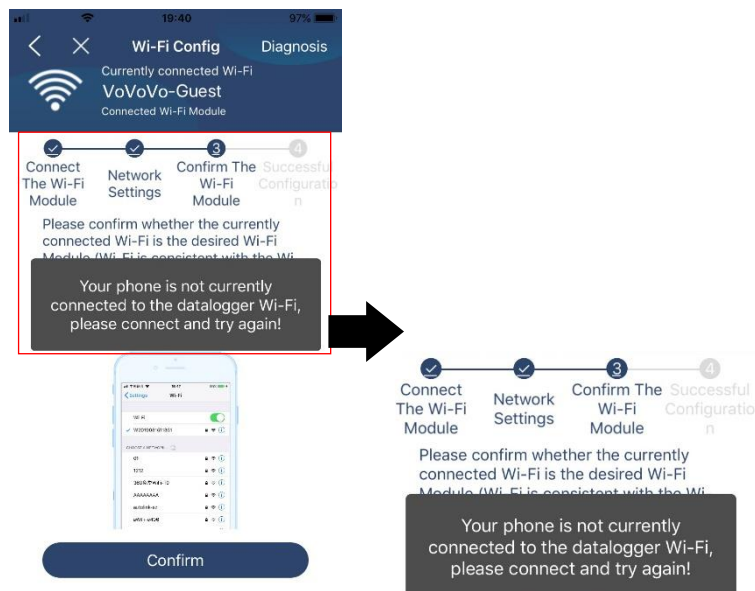
Tap  icon to select your local Wi-Fi router name (to access the internet) and enter password.



Step 4: Tap "Confirm" to complete the Wi-Fi configuration between the Wi-Fi module and the Internet.

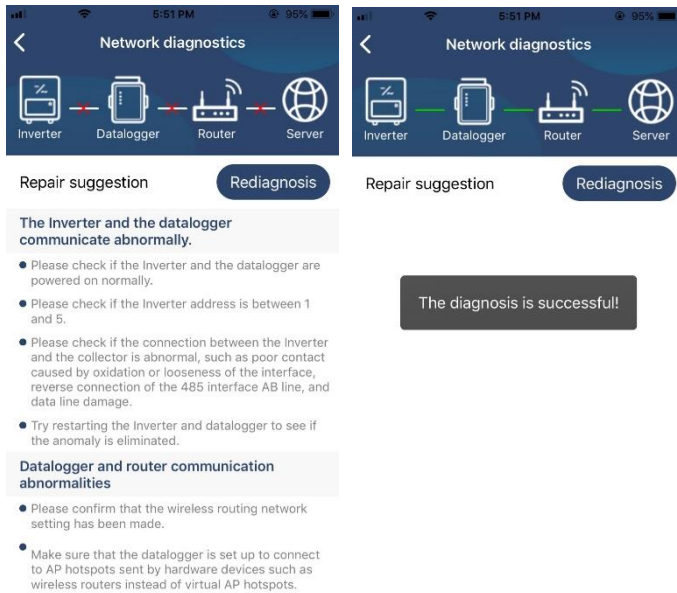


If the connection fails, please repeat Step 2 and 3.



Diagnose Function

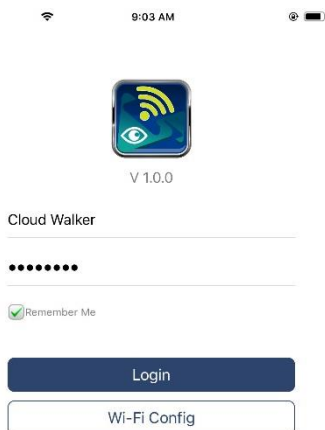
If the module is not monitoring properly, please tap "Diagnosis" on the top right corner of the screen for further details. It will show repair suggestion. Please follow it to fix the problem. Then, repeat the steps in the chapter 4.2 to re-set network setting. After all setting, tap "Rediagnosis" to re-connect again.



2-3. Login and APP Main Function

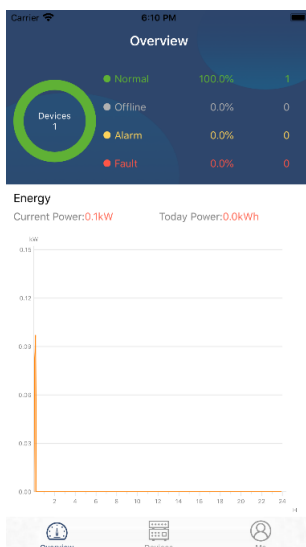
After finishing the registration and local Wi-Fi configuration, enter registered name and password to login.

Note: Tick "Remember Me" for your login convenience afterwards.



Overview

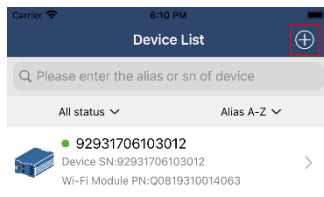
After login is successfully, you can access "Overview" page to have overview of your monitoring devices, including overall operation situation and Energy information for Current power and Today power as below diagram.



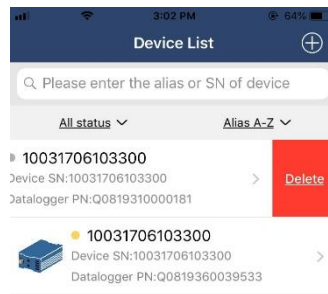
Devices


Tap the  icon (located on the bottom) to enter Device List page. You can review all devices here by adding or deleting Wi-Fi Module in this page.

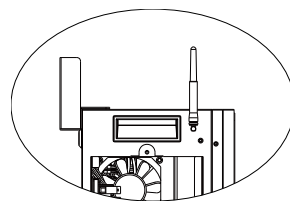
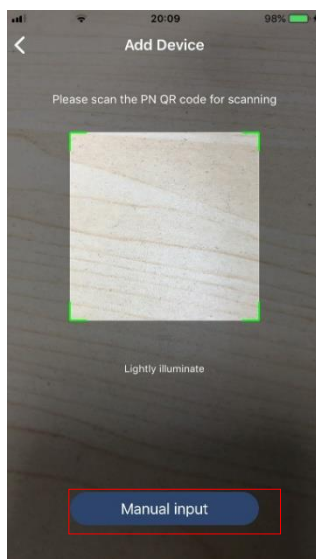
Add device



Delete device



Tap  icon on the top right corner and manually enter part number to add device. Or you may simply scan QR code label. No matter it's part number or QR code, the label is pasted nearby wireless antenna. After entering part number, tap "Confirm" to add this device in the Device list.



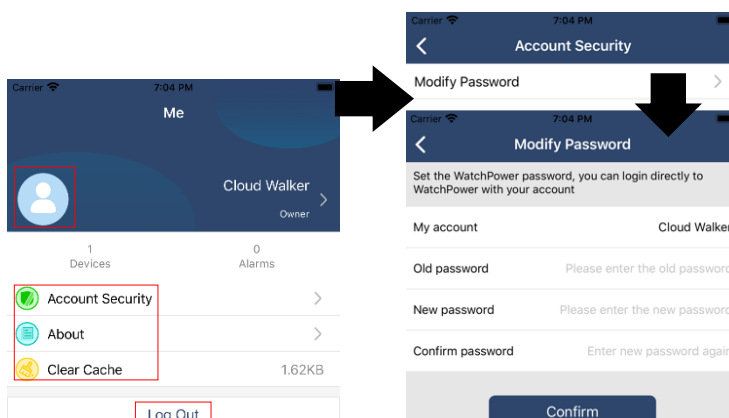
Part number or QR code label is pasted nearby wireless antenna.



For more information about Device List, please refer to the section 2.4.

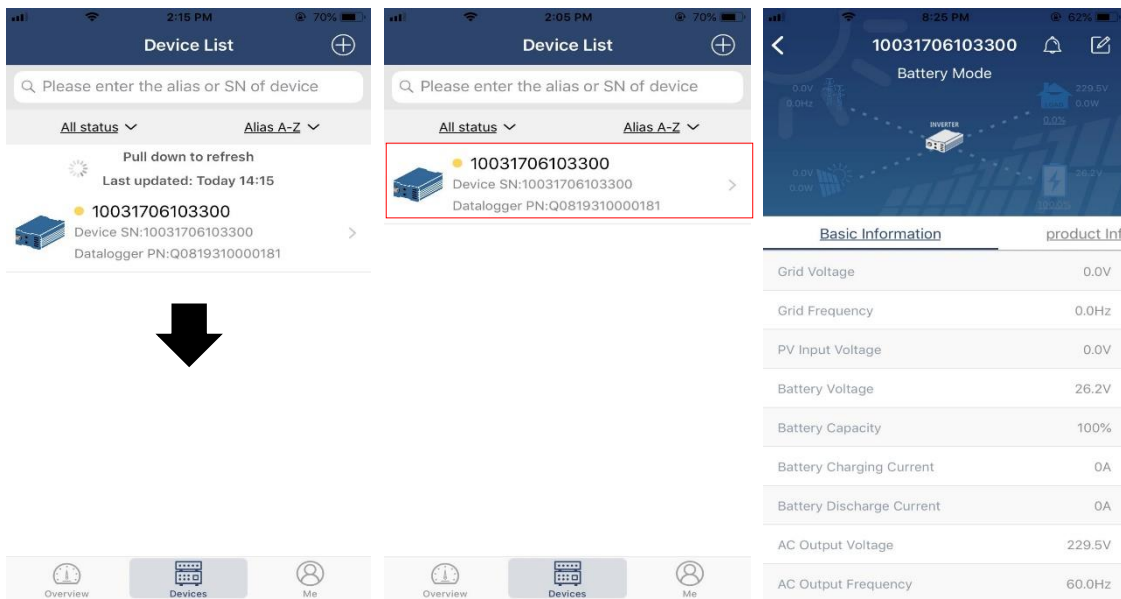
ME

In ME page, users can modify "My information", including 【User's Photo】 , 【Account security】 , 【Modify password】 , 【Clear cache】 ,and 【Log-out】 , shown as below diagrams.



2-4. Device List

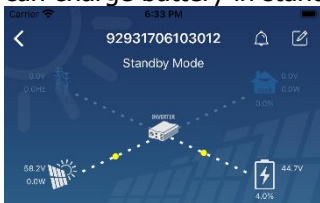
In Device List page, you can pull down to refresh the device information and then tap any device you want to check up for its real-time status and related information as well as to change parameter settings. Please refer to the parameter setting list.



Device Mode

On the top of screen, there is a dynamic power flow chart to show live operation. It contains five icons to present PV power, inverter, load, utility and battery. Based on your inverter model status, there will be **【Standby Mode】**, **【Line Mode】**, **【Battery Mode】**.

【Standby Mode】 Inverter will not power the load until “ON” switch is pressed. Qualified utility or PV source can charge battery in standby mode.





【Line Mode】 Inverter will power the load from the utility with or without PV charging. Qualified utility or PV source can charge battery.

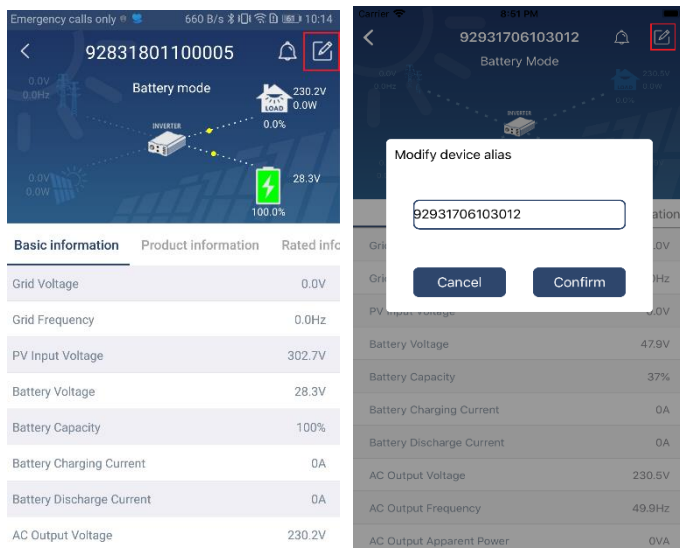


【Battery Mode】 Inverter will power the load from the batter with or without PV charging. Only PV source can charge battery.



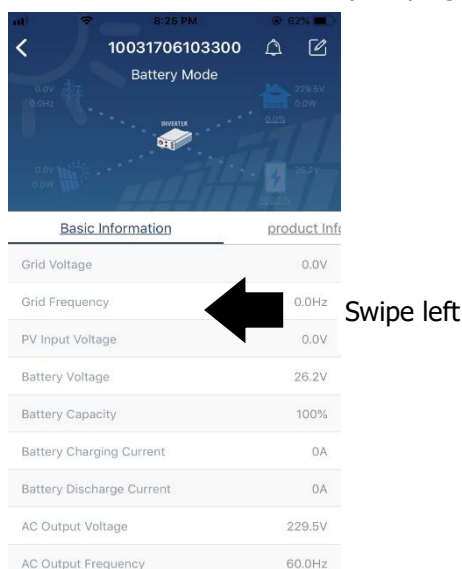
Device Alarm and Name Modification

In this page, tap the  icon on the top right corner to enter the device alarm page. Then, you can review alarm history and detailed information. Tap the  icon on the top right corner, a blank input box will pop out. Then, you can edit the name for your device and tap “Confirm” to complete name modification.



Device Information Data

Users can check up **【Basic Information】** , **【Product Information】** , **【Rated information】** , **【History】** , and **【Wi-Fi Module Information】** by swiping left.



【Basic Information】 displays basic information of the inverter, including AC voltage, AC frequency, PV input voltage, Battery voltage, Battery capacity, Charging current, Output voltage, Output frequency, Output apparent power, Output active power and Load percent. Please slide up to see more basic information.

【Production Information】 displays Model type (Inverter type), Main CPU version, Bluetooth CPU version and secondary CPU version.

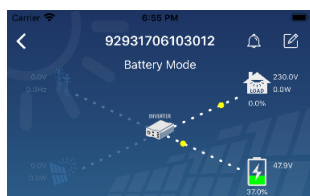
【Rated Information】 displays information of Nominal AC voltage, Nominal AC current, Rated battery voltage, Nominal output voltage, Nominal output frequency, Nominal output current, Nominal output apparent power and Nominal output active power. Please slide up to see more rated information.

【History】 displays the record of unit information and setting timely.

【Wi-Fi Module Information】 displays of Wi-Fi Module PN, status and firmware version.

Parameter Setting

This page is to activate some features and set up parameters for inverters. Please be noted that the listing in "Parameter Setting" page in below diagram may differ from the models of monitored inverter. Here will briefly highlight some of it, **【Output Setting】** , **【Battery Parameter Setting】** , **【Enable/ Disable items】** , **【Restore to the defaults】** to illustrate.



| | | |
|---|----------------------------|-----------|
| y | Parameter Setting | Wi-Fi Mod |
| | Output Setting | > |
| | Battery Parameter Setting | > |
| | Enable/Disable Items | > |
| | Restore to the defaults | > |
| | Time zone setting | > |
| | Wi-Fi Module configuration | > |

There are three ways to modify setting and they vary according to each parameter.

- Listing options to change values by tapping one of it.
- Activate/Shut down functions by clicking "Enable" or "Disable" button.
- Changing values by clicking arrows or entering the numbers directly in the column.

Each function setting is saved by clicking "Set" button.

Please refer to below parameter setting list for an overall description and be noted that the available parameters may vary depending on different models. Please always see the original product manual for detailed setting instructions.

Parameter setting list:

| Item | | Description |
|---------------------------|---------------------------|---|
| Output setting | Output source priority | To configure load power source priority. |
| | AC input range | When selecting "UPS", it's allowed to connect personal computer. Please check product manual for details. |
| | | When selecting "Appliance", it's allowed to connect home appliances. |
| | Output voltage | To set output voltage. |
| | Output frequency | To set output frequency. |
| Battery parameter setting | Battery type: | To set connected battery type. |
| | Battery cut-off SOC | To set the battery stop discharging SOC. Please see product manual for the recommended SOC range based on connected battery type. |
| | Back to grid SOC | When "SBU" or "SOL" is set as output source priority and battery voltage is lower than this setting SOC, unit will transfer to line mode and the grid will provide power to load. |
| | Back to discharge SOC | When "SBU" or "SOL" is set as output source priority and battery voltage is higher than this setting SOC, battery will be allowed to discharge. |
| | Charger source priority: | To configure charger source priority. |
| | Max. charging current | It's to set up battery charging parameters. The selectable values in different inverter model may vary. Please see product manual for the details. |
| | Max. AC charging current: | |
| | Float charging voltage | |
| | Bulk charging voltage | It's to set up battery charging parameters. The selectable values in different inverter model may vary. Please see product manual for the details. |

| | | |
|--------------------------|--|--|
| | Battery equalization | Enable or disable battery equalization function. |
| | Real-time Activate Battery Equalization | It's real-time action to activate battery equalization. |
| | Equalized Time Out | To set up the duration time for battery equalization. |
| | Equalized Time | To set up the extended time to continue battery equalization. |
| | Equalization Period | To set up the frequency for battery equalization. |
| | Equalization Voltage | To set up the battery equalization voltage. |
| Enable/Disable Functions | LCD Auto-return to Main screen | If enable, LCD screen will return to its main screen after one minute automatically. |
| | Fault Code Record | If enabled, fault code will be recorded in the inverter when any fault happens. |
| | Backlight | If disabled, LCD backlight will be off when panel button is not operated for 1 minute. |
| | Bypass Function | If enabled, unit will transfer to line mode when overload happened in battery mode. |
| | Beeps while primary source interrupt | If enabled, buzzer will alarm when primary source is abnormal. |
| | Over Temperature Auto Restart | If disabled, the unit won't be restarted after over-temperature fault is solved. |
| | Overload Auto Restart | If disabled, the unit won't be restarted after overload occurs. |
| | Buzzer | If disabled, buzzer won't be on when alarm/fault occurred. |
| RGB LED Setting | Enable/disable | Turn on or off RGB LEDs |
| | Brightness | Adjust the lighting brightness |
| | Speed | Adjust the lighting speed |
| | Effects | Change the light effects |
| | Color Selection | Adjust color by setting RGB value |
| Restore to the default | This function is to restore all settings back to default settings. | |