

# INSTRUCTION MANUAL

## Hybrid Inverter



MODEL : SUN-5K-SGO4LP3-EU  
SKU : 11743

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## About This Manual

The manual mainly describes the product information, guidelines for installation, operation and maintenance. The manual cannot include complete information about the photovoltaic (PV) system.

## How to Use This Manual

Read the manual and other related documents before performing any operation on the inverter. Documents must be stored carefully and be available at all times.

**Contents may be periodically updated or revised due to product development. The information in this manual is subject to change without notice.** The latest manual can be acquired via [support@v-tac.eu](mailto:support@v-tac.eu)

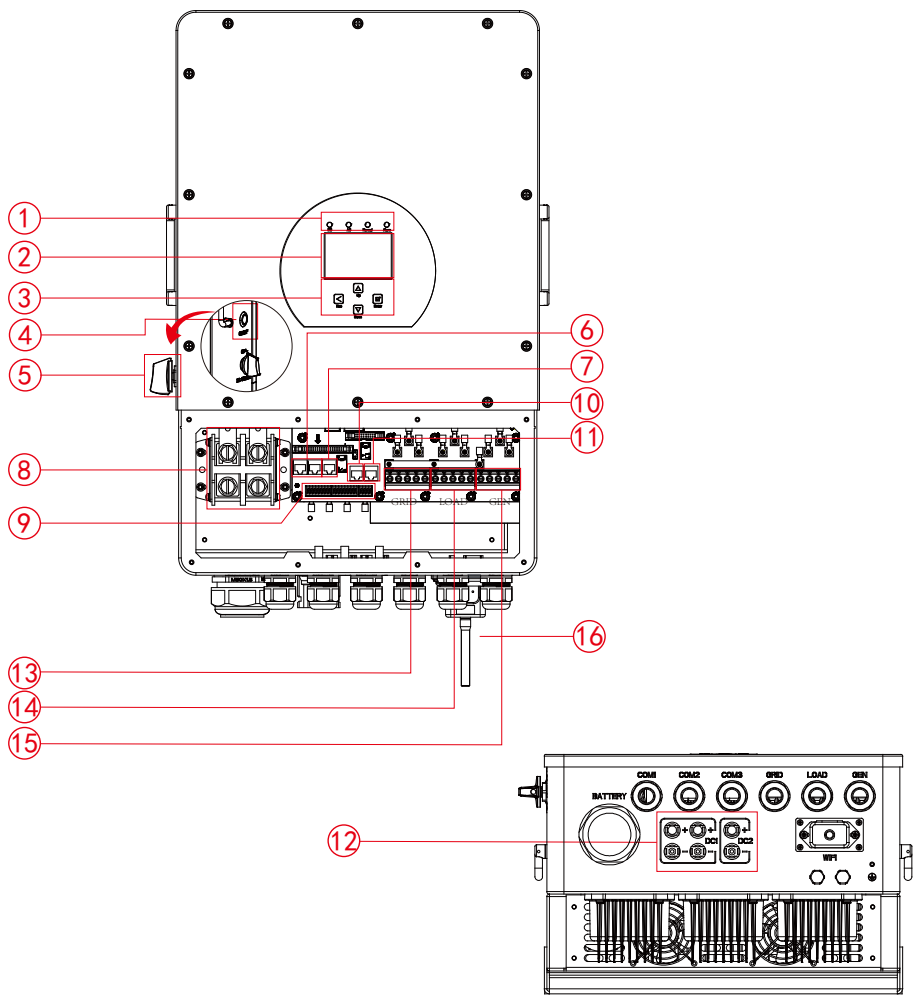
## 1. Safety Introductions

- This chapter contains important safety and operating instructions. Read and keep this manual for future reference.
- Before using the inverter, please read the instructions and warning signs of the battery and corresponding sections in the instruction manual.
- Do not disassemble the inverter. If you need maintenance or repair, take it to a professional service center.
- Improper reassembly may result in electric shock or fire.
- To reduce risk of electric shock, disconnect all wires before attempting any maintenance or cleaning. Turning off the unit will not reduce this risk.
- Caution: Only qualified personnel can install this device with battery.
- Never charge a frozen battery.
- For optimum operation of this inverter, please follow required specification to select appropriate cable size. It is very important to correctly operate this inverter.
- Be very cautious when working with metal tools on or around batteries. Dropping a tool may cause a spark or short circuit in batteries or other electrical parts, even cause an explosion.
- 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.
- Grounding instructions - this inverter should be connected to a permanent grounded wiring system. Be sure to comply with local requirements and regulation to install this inverter.
- Never cause AC output and DC input short circuited. Do not connect to the mains when DC input short circuits.

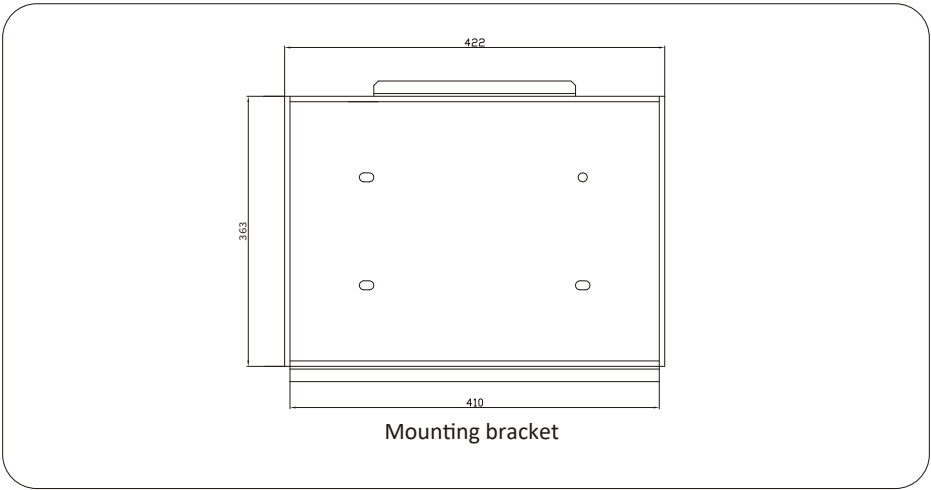
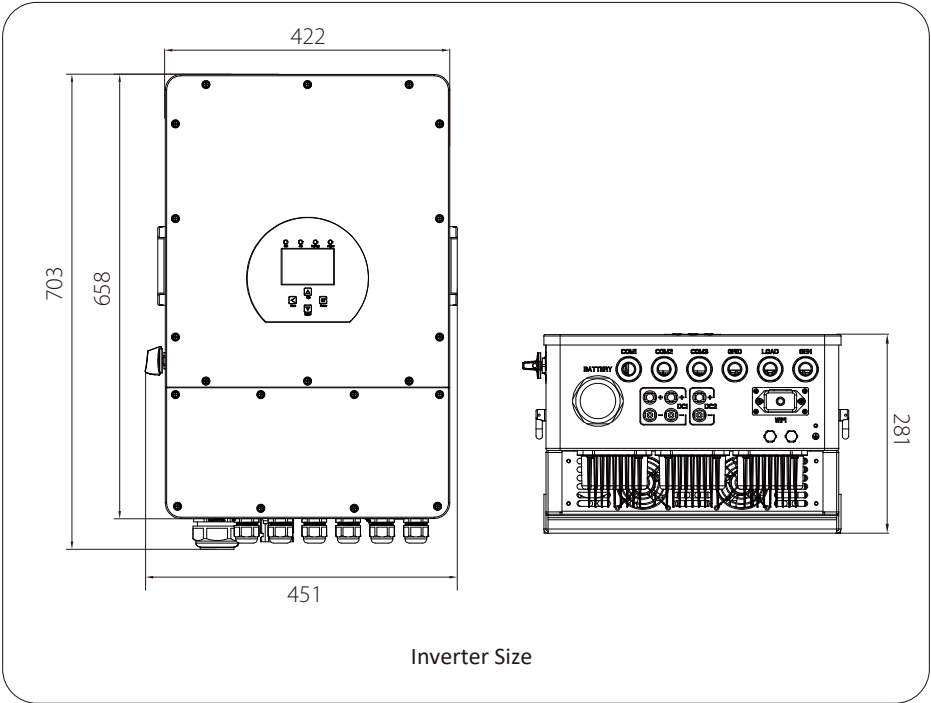
## 2. Product Introduction

This is a multifunctional inverter, combining functions of inverter, solar charger and battery charger to offer uninterruptible power support with portable size. Its comprehensive LCD display offers user configurable and easy accessible button operation such as battery charging, AC/solar charging, and acceptable input voltage based on different applications.

## 2.1 Product Overview



## 2.2 Product Size



## 2.3 Product Features

- 230V/400V Three phase Pure sine wave inverter.
- Self-consumption and feed-in to the grid.
- Auto restart while AC is recovering.
- Programmable supply priority for battery or grid.
- Programmable multiple operation modes: On grid, off grid and UPS.
- Configurable battery charging current/voltage based on applications by LCD setting.
- Configurable AC/Solar/Generator Charger priority by LCD setting.
- Compatible with mains voltage or generator power.
- Overload/over temperature/short circuit protection.
- Smart battery charger design for optimized battery performance
- With limit function, prevent excess power overflow to the grid.
- Supporting WIFI monitoring and build-in 2 strings for 1 MPP tracker, 1 string for 1 MPP tracker.
- Smart settable three stages MPPT charging for optimized battery performance.
- Time of use function.
- Smart Load Function.

## 2.4 Basic System Architecture

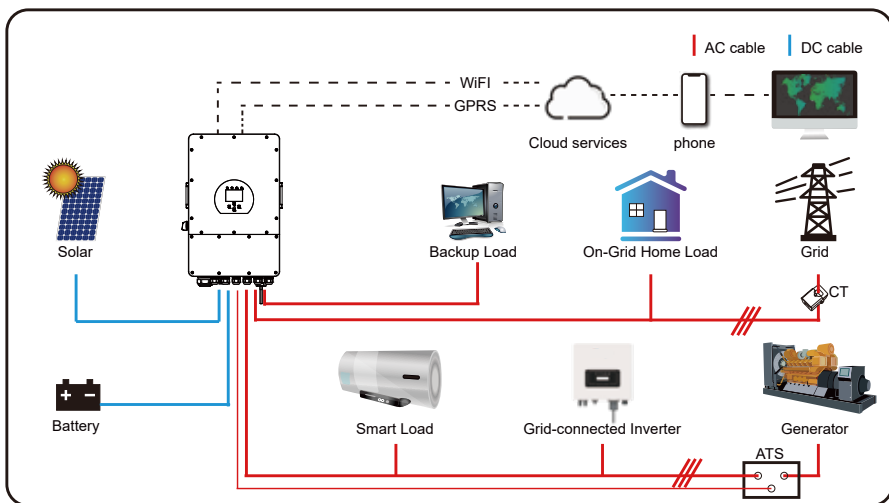
The following illustration shows basic application of this inverter.

It also includes following devices to have a Complete running system.

- Generator or Utility
- PV modules

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

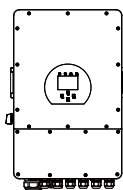
This inverter can power all kinds of appliances in home or office environment, including motor type appliances such as refrigerator and air conditioner.



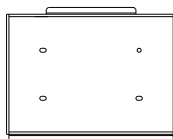
## 3. Installation

### 3.1 Parts List

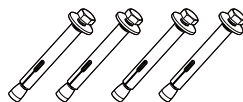
Check the equipment before installation. Please make sure nothing is damaged in the package. You should have received the items in the following package:



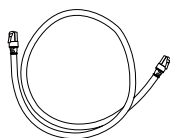
Hybrid inverter  
x1



Wall mounting bracket x1



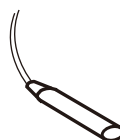
Stainless steel anti-collision  
bolt M8×80  
x4



Parallel communication  
cable x1



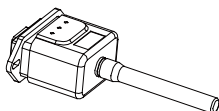
L-type Hexagon wrench  
x1



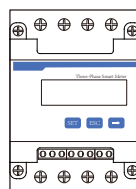
Battery temperature sensor  
x1



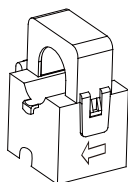
User manual x1



Wi-Fi-Plug (optional) x1



Meter(optional)  
x 1



Sensor Clamp  
x 3

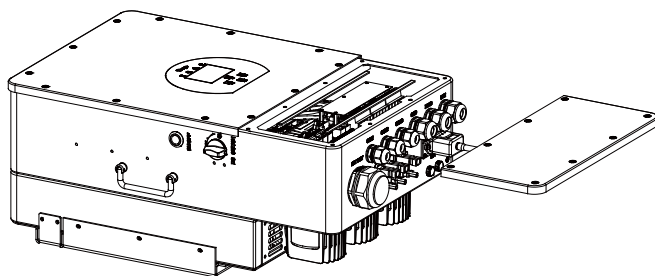
## 3.2 Mounting instructions

### Installation Precaution

This Hybrid inverter is designed for outdoor use(IP65), Please make sure the installation site meets below conditions:

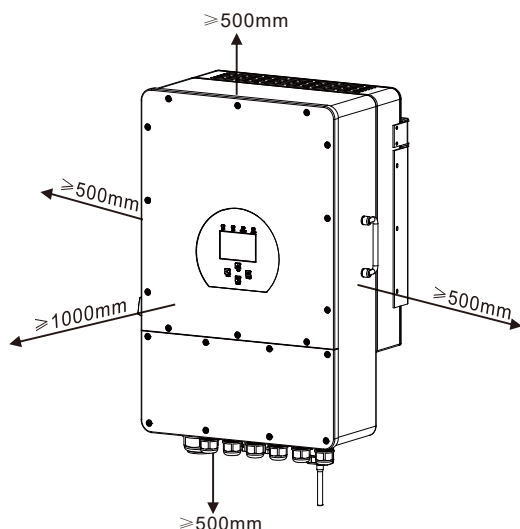
- Not in direct sunlight
- Not in areas where highly flammable materials are stored.
- Not in potential explosive areas.
- Not in the cool air directly.
- Not near the television Antenna or antenna cable.
- Not higher than altitude of about 2000 meters above sea level.
- Not in environment of precipitation or humidity(>95%)

Please AVOID direct sunlight, rain exposure, snow laying up during installation and operation. Before connecting all wires, please take off the metal cover by removing screws as shown below:



### Considering the following points before selecting where to install:

- Please select a vertical wall with load-bearing capacity for installation, suitable for installation on concrete or other non-flammable surfaces, installation is shown below.
- Install this inverter at eye level in order to allow the LCD display to be read at all times.
- The ambient temperature should be between  $-25^{\circ}\text{C}$ ~ $60^{\circ}\text{C}$  to ensure optimal operation.
- Be sure to keep other objects and surfaces as shown in the diagram to guarantee sufficient heat dissipation and have enough space for removing wires.

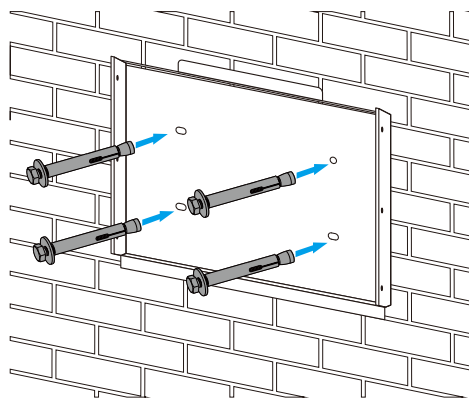


For proper air circulation to dissipate heat, allow a clearance of approx. 50cm to the side and approx. 50cm above and below the unit. And 100cm to the front.

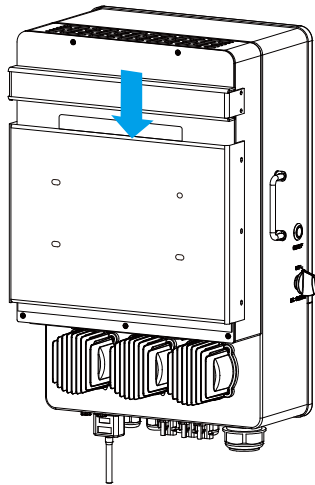
## Mounting the inverter

Remember that this inverter is heavy! Please be careful when lifting out from the package. Choose the recommend drill head(as shown in below pic) to drill 4 holes on the wall, 52-60mm deep.

1. Use a proper hammer to fit the expansion bolt into the holes.
2. Carry the inverter and holding it, make sure the hanger aim at the expansion bolt,fix the inverter on the wall.
3. Fasten the screw head of the expansion bolt to finish the mounting.



Inverter hanging plate installation



### 3.3 Battery connection

For safe operation and compliance, a separate DC over-current protector or disconnect device is required between the battery and the inverter. In some applications, switching devices may not be required but over-current protectors are still required. Refer to the typical amperage in the table below for the required fuse or circuit breaker size.

| <i>Model</i> | <i>Wire Size</i> | <i>Cable(mm<sup>2</sup> )</i> | <i>Torque value(max)</i> |
|--------------|------------------|-------------------------------|--------------------------|
| 5Kw          | 2AWG             | 35                            | 24.5Nm                   |
| 6Kw          | 1AWG             | 40                            | 24.5Nm                   |
| 8Kw          | 1AWG             | 40                            | 24.5Nm                   |
| 10Kw         | 1/0AWG           | 60                            | 24.5Nm                   |
| 12Kw         | 1/0AWG           | 60                            | 24.5Nm                   |

Chart 3-2 Cable size



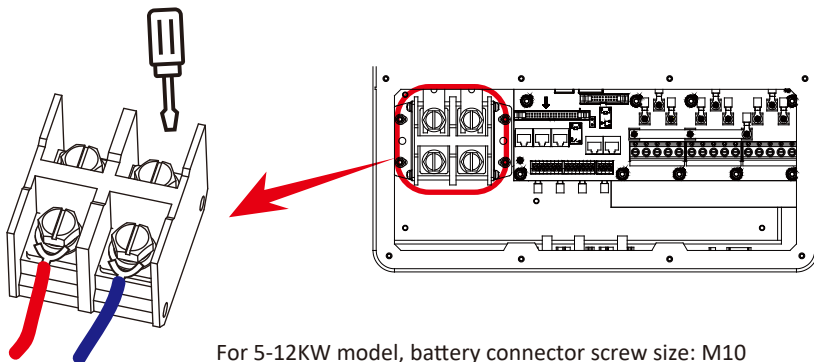
All wiring must be performed by a professional person.



Connecting the battery with a suitable cable is important for safe and efficient operation of the system. To reduce the risk of injury, refer to Chart 3-2 for recommended cables.

Please follow below steps to implement battery connection:

1. Please choose a suitable battery cable with correct connector which can well fit into the battery terminals.
2. Use a suitable screwdriver to unscrew the bolts and fit the battery connectors in, then fasten the bolt by the screwdriver, make sure the bolts are tightened with torque of 24.5 N.M in clockwise direction.
3. Make sure polarity at both the battery and inverter is correctly connected.



For 5-12KW model, battery connector screw size: M10

3. In case of children touch or insects go into the inverter, Please make sure the inverter connector is fasten to waterproof position by twist it clockwise.

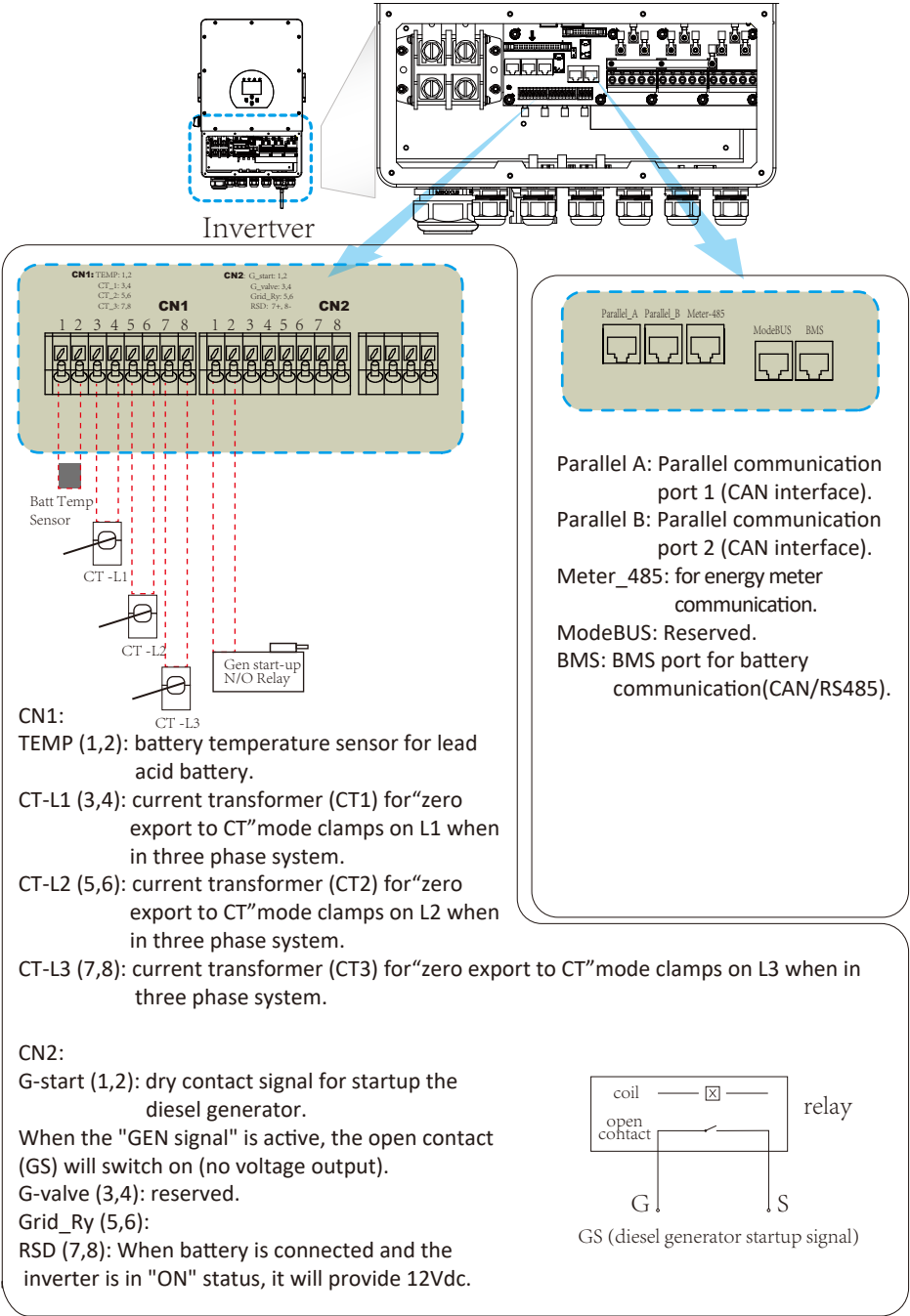


Installation must be performed with care.

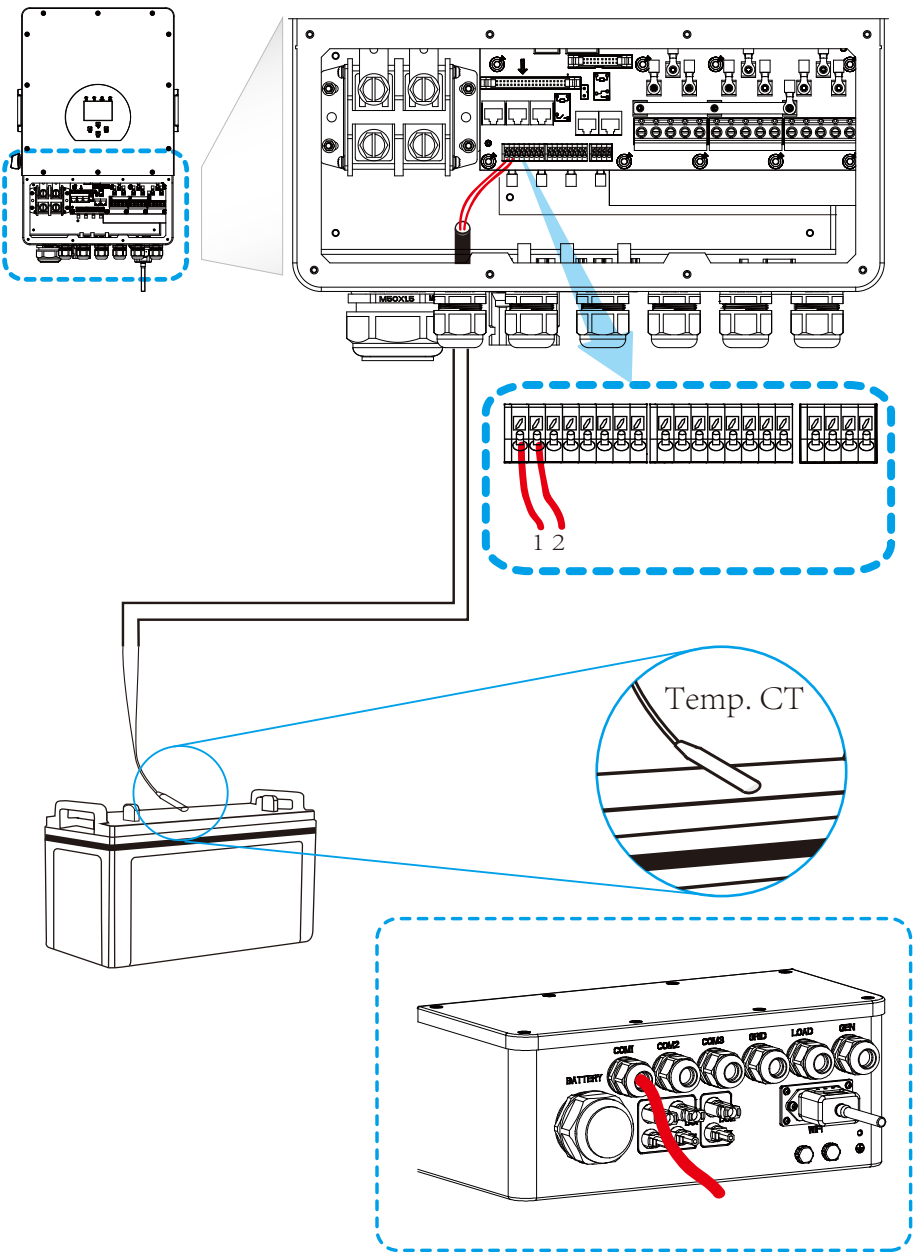


Before making the final DC connection or closing DC breaker/disconnect, be sure positive(+) must be connect to positive(+) and negative(-) must be connected to negative(-). Reverse polarity connection on battery will damage the inverter.

### 3.3.2 Function port definition



3.3.3 Temperature sensor connection for lead-acid battery



### 3.4 Grid connection and backup load connection

- Before connecting to grid, please install a separate AC breaker between inverter and grid. Also, it is recommended that installs an AC breaker between backup load and inverter. This will ensure the inverter can be securely disconnected during maintenance and fully protected from over current. The recommended of AC breaker for the load port is 20A for 8kw, 32A for 10kw and 32A for 12KW. The recommended of AC breaker for the grid port is 63A for 8kw, 63A for 10kw and 63A for 12KW.
- There are three terminal blocks with "Grid" "Load" and "GEN" markings. Please do not misconnect input and output connectors.



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

backup load connection

| Model         | Wire Size | Cable(mm <sup>2</sup> ) | Torque value(max) |
|---------------|-----------|-------------------------|-------------------|
| 5/6/8/10/12KW | 10AWG     | 4                       | 1.2Nm             |

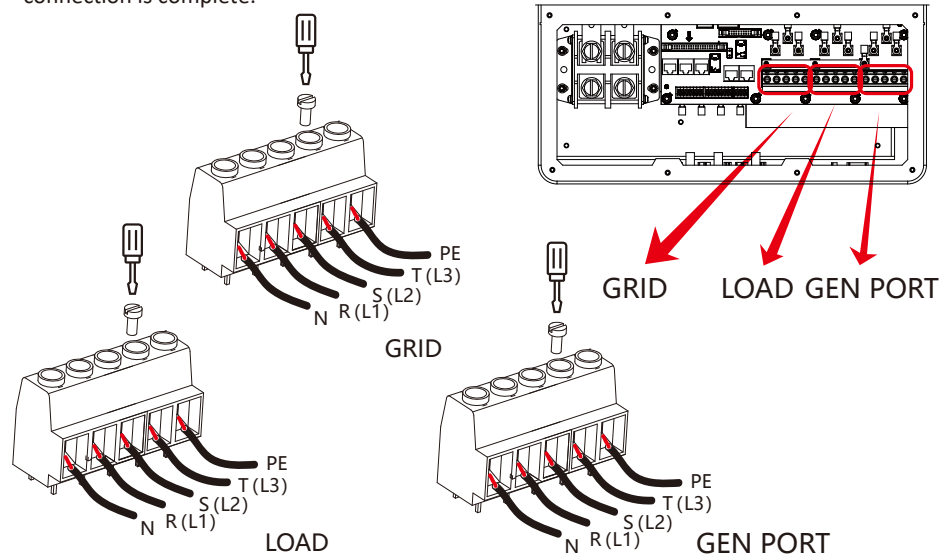
Grid connection

| Model         | Wire Size | Cable(mm <sup>2</sup> ) | Torque value(max) |
|---------------|-----------|-------------------------|-------------------|
| 5/6/8/10/12KW | 10AWG     | 6                       | 1.2Nm             |

Chart 3-3 Recommended Size for AC wires

**Please follow below steps to implement Grid, load and Gen port connection:**

1. Before making Grid, load and Gen port connection, be sure to turn off AC breaker or disconnecter first.
2. Remove insulation sleeve 10mm length, unscrew the bolts, insert the wires according to polarities indicated on the terminal block and tighten the terminal screws. Make sure the connection is complete.





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

3. Then, insert AC output wires according to polarities indicated on the terminal block and tighten terminal. Be sure to connect corresponding N wires and PE wires to related terminals as well.
4. Make sure the wires are securely connected.
5. Appliances such as air conditioner are required at least 2-3 minutes to restart because it is required to have enough time to balance refrigerant gas inside of circuit. If a power shortage occurs and recovers in short time, it will cause damage to your connected appliances. To prevent this kind of damage, please check manufacturer of air conditioner if it is equipped with time-delay function before installation. Otherwise, this inverter will trigger overload fault and cut off output to protect your appliance but sometimes it still causes internal damage to the air conditioner

### 3.5 PV Connection

Before connecting to PV modules, please install a separately DC circuit breaker between inverter and PV modules. It is very important for system safety and efficient operation to use appropriate cable for PV module connection. To reduce risk of injury, please use the proper recommended cable size as below.

| <i>Model</i>  | <i>Wire Size</i> | <i>Cable(mm<sup>2</sup>)</i> |
|---------------|------------------|------------------------------|
| 5/6/8/10/12KW | 12AWG            | 4                            |

Chart 3-4 Cable size



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 PV modules, please be sure NO grounding.



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

### 3.5.1 PV Module Selection:

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

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

| Inverter Model                 | 5KW              | 6KW | 8KW | 10KW | 12KW |
|--------------------------------|------------------|-----|-----|------|------|
| PV Input Voltage               | 550V (160V~800V) |     |     |      |      |
| PV Array MPPT Voltage Range    | 200V-650V        |     |     |      |      |
| No. of MPP Trackers            | 2                |     |     |      |      |
| No. of Strings per MPP Tracker | 1+1              | 1+1 | 1+1 | 2+1  | 2+1  |

Chart 3-5

### 3.5.2 PV Module Wire Connection:

- 1. Switch the Grid Supply Main Switch(AC)OFF.
- 2. Switch the DC Isolator OFF.
- 3. Assemble PV input connector to the inverter.



**Safety Hint:**  
Please don't connect PV array positive or negative pole to the ground, it could cause serious damages to the inverter.



**Safety Hint:**  
Before connection, please make sure the polarity of the output voltage of PV array matches the "DC+" and "DC-" symbols.



**Safety Hint:**  
Before connecting inverter, please make sure the PV array open circuit voltage is within the 1000V of the inverter.



Pic 5.1 DC+ male connector (MC4)



Pic 5.2 DC- female connector (MC4)



**Safety Hint:**

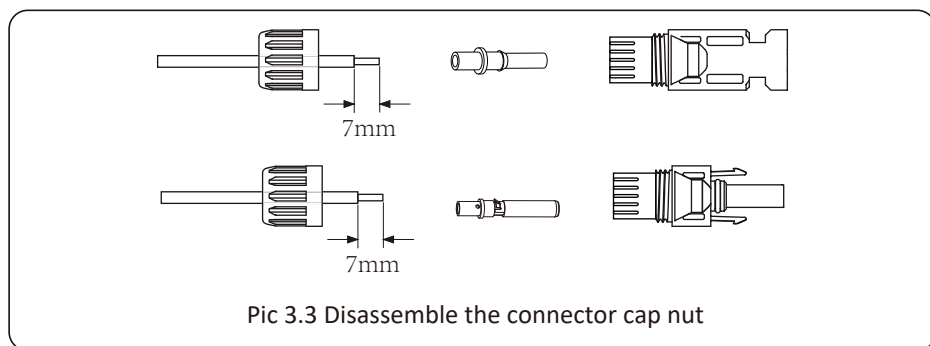
Please use approved DC cable for PV system.

| Cable type                                  | Cross section (mm <sup>2</sup> ) |                   |
|---|----------------------------------|-------------------|
|   | Range                            | Recommended value |
| Industry generic PV cable<br>(model: PV1-F) | 4.0~6.0<br>(12~10AWG)            | 4.0(12AWG)        |

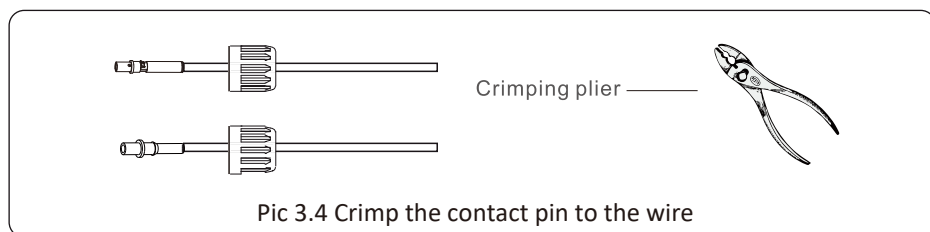
Chart 3-6

The steps to assemble the DC connectors are listed as follows:

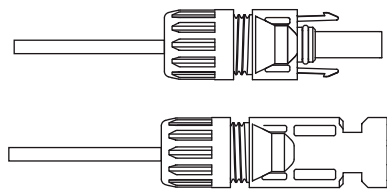
a) Strip off the DC wire about 7mm, disassemble the connector cap nut (see picture 5.3).



b) Crimping metal terminals with crimping pliers as shown in picture 5.4.

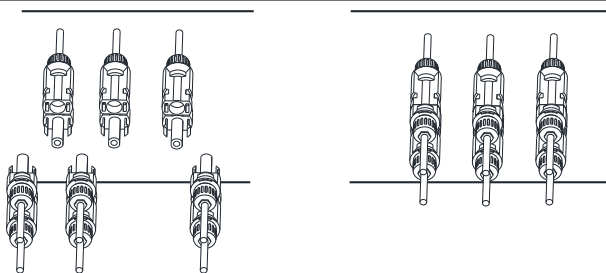


c) Insert the contact pin to the top part of the connector and screw up the cap nut to the top part of the connector. (as shown in picture 5.5).



Pic 3.5 connector with cap nut screwed on

d) Finally insert the DC connector into the positive and negative input of the inverter, shown as picture 5.6



Pic 3.6 DC input connection



**Warning:**

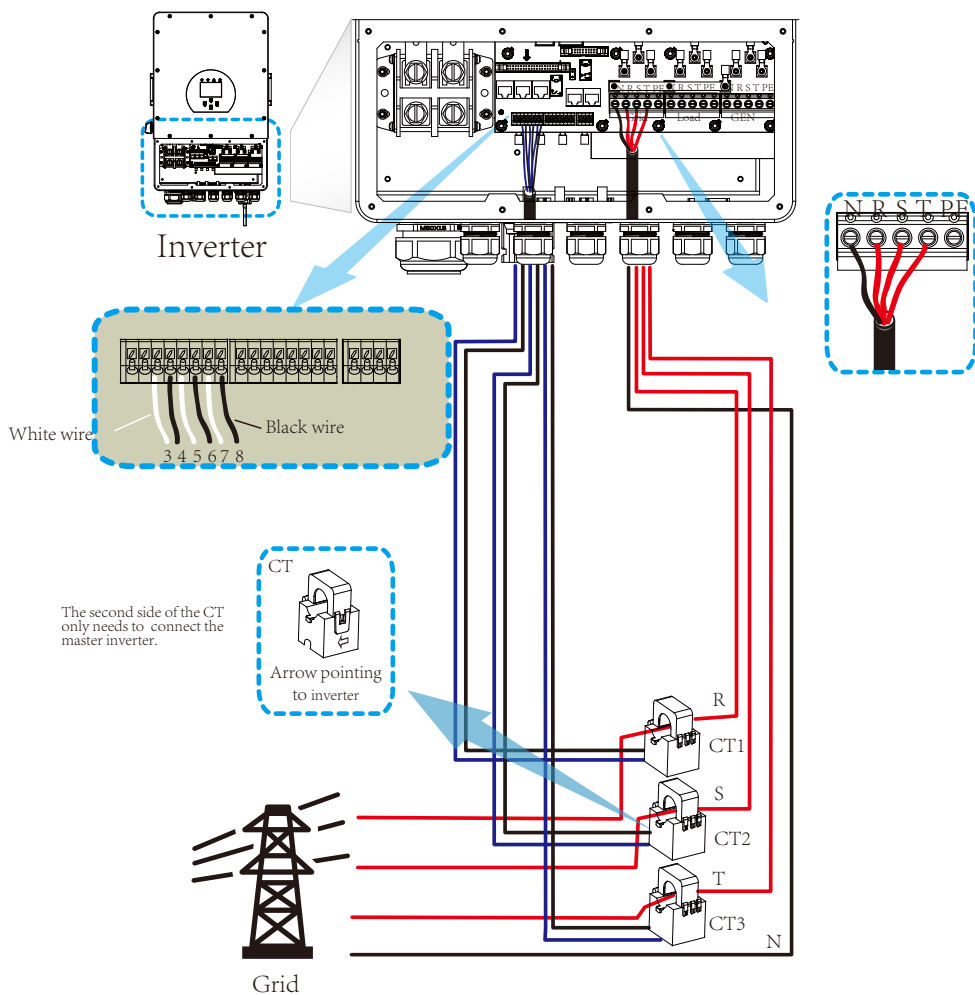
Sunlight shines on the panel will generate voltage, high voltage in series may cause danger to life. Therefore, before connecting the DC input line, the solar panel needs to be blocked by the opaque material and the DC switch should be 'OFF', otherwise, the high voltage of the inverter may lead to life-threatening conditions.



**Warning:**

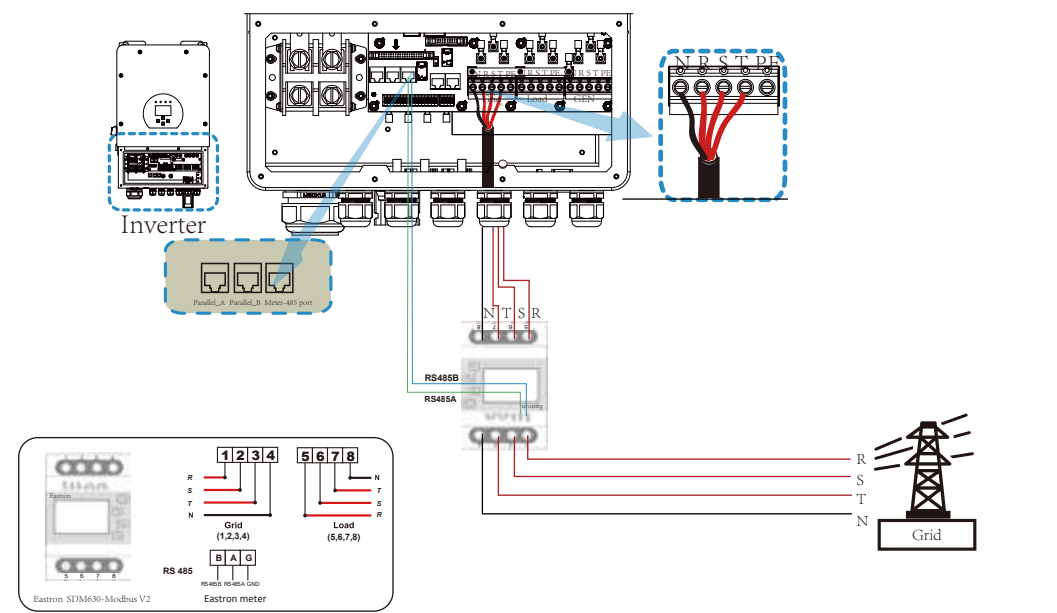
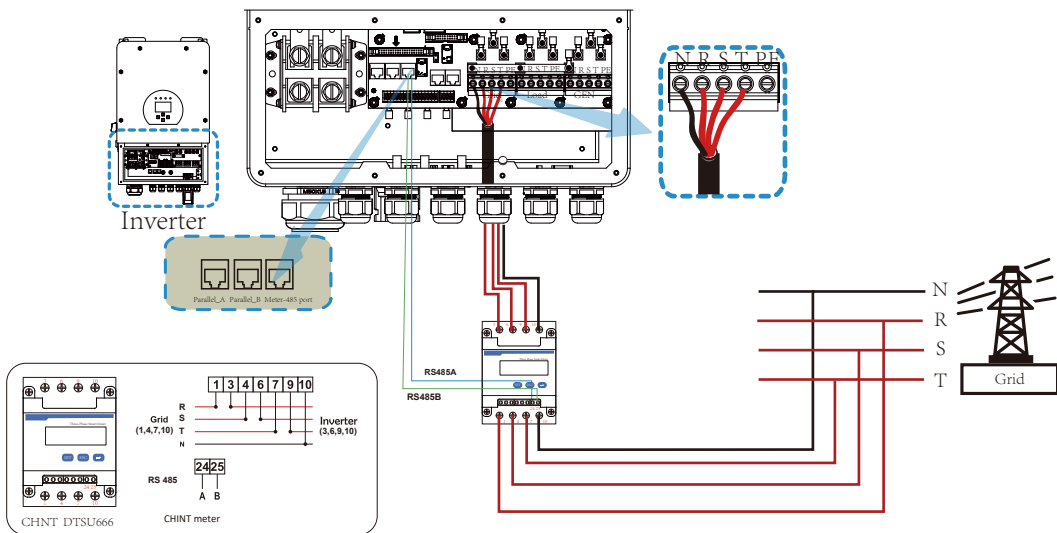
Use the DC power connector of the accessories. Do not interconnect the connectors of different manufacturers.

### 3.6 CT Connection



**\*Note: when the reading of the load power on the LCD is not correct, please reverse the CT arrow.**

### 3.6.1 Meter Connection



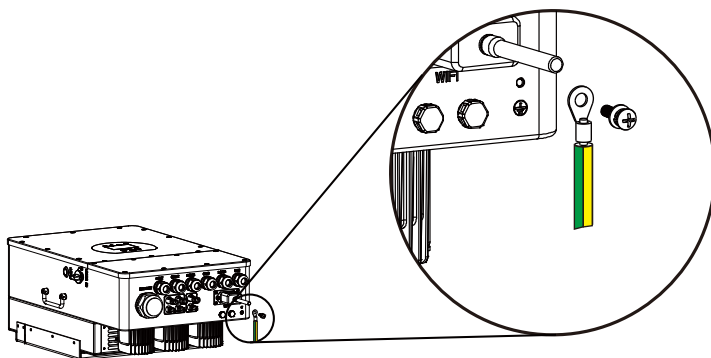


**Note:**

When the inverter is in the off-grid state, the N line needs to be connected to the earth.

### 3.7 Earth Connection(mandatory)

Ground cable shall be connected to ground plate on grid side this prevents electric shock. if the original protective conductor fails.



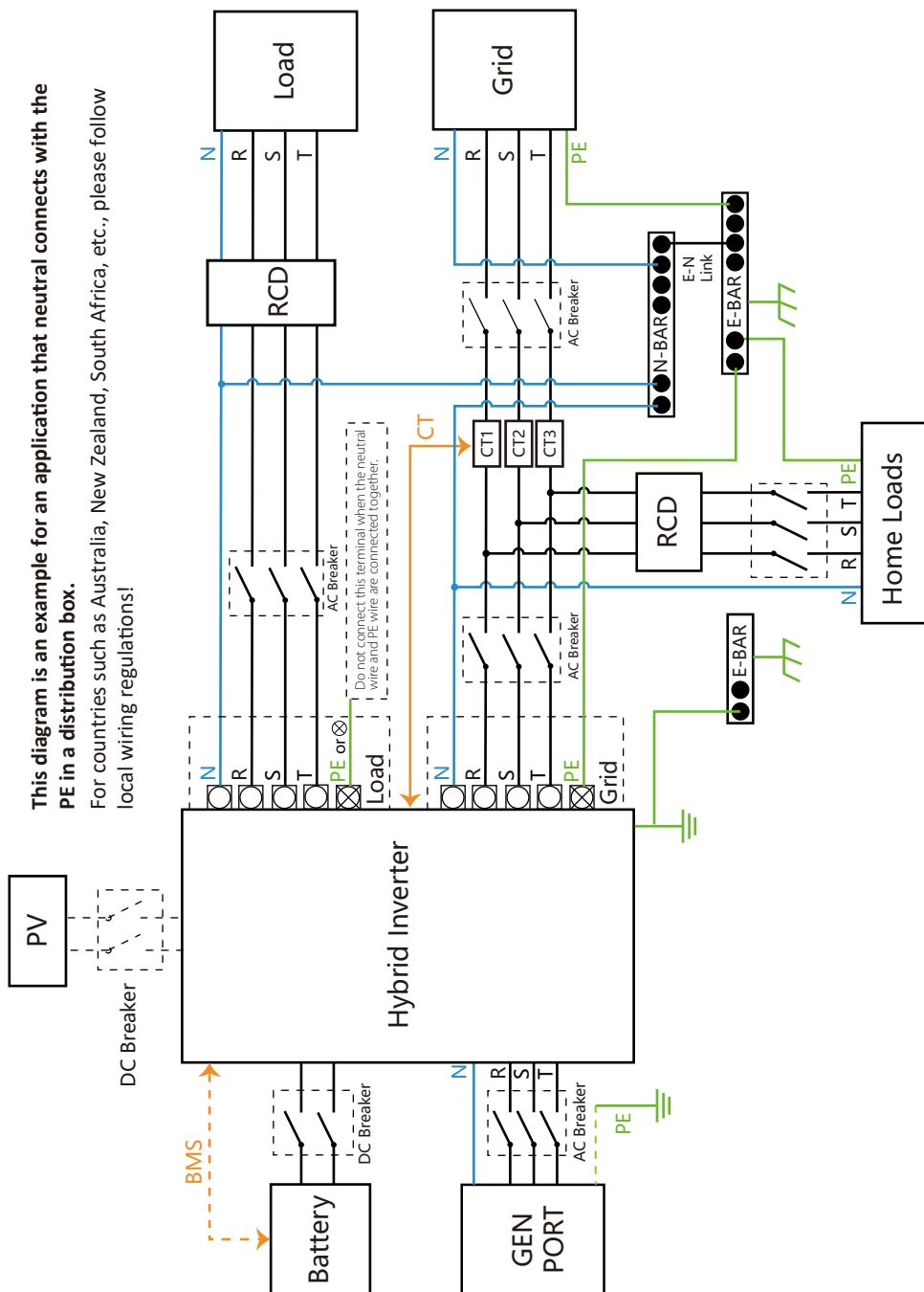
### 3.8 WIFI Connection

For the configuration of Wi-Fi Plug, please refer to illustrations of the Wi-Fi Plug.

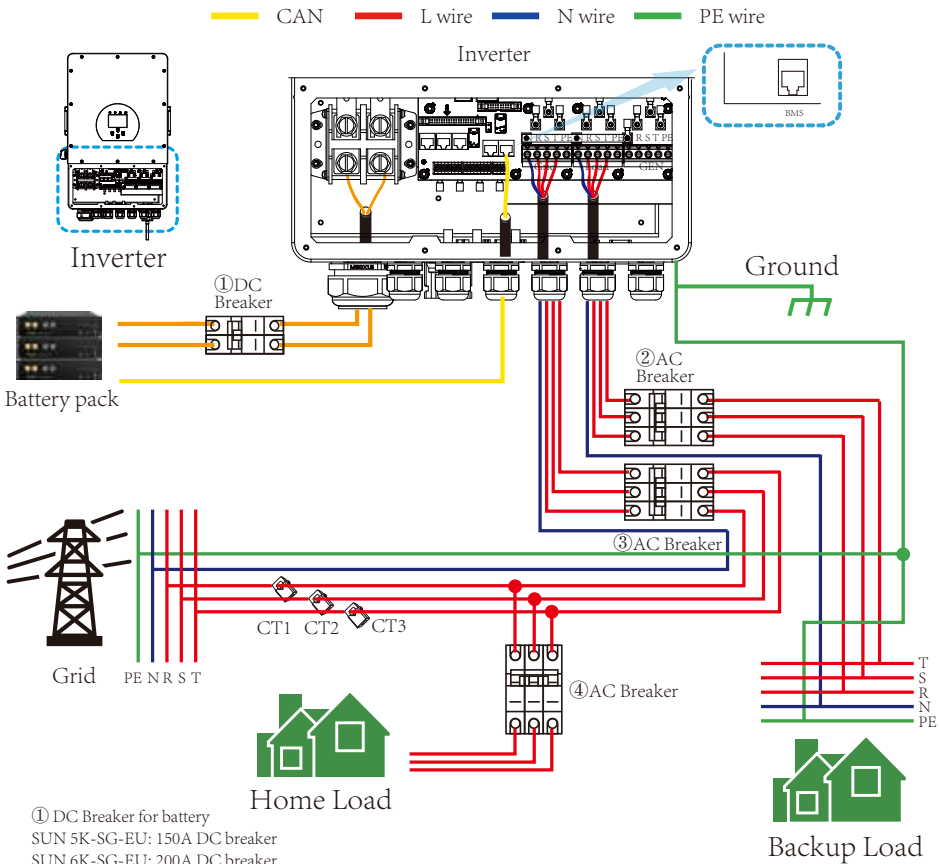
### 3.9 Wiring System for Inverter

This diagram is an example for an application that neutral connects with the PE in a distribution box.

For countries such as Australia, New Zealand, South Africa, etc., please follow local wiring regulations!



### 3.10 Wiring diagram



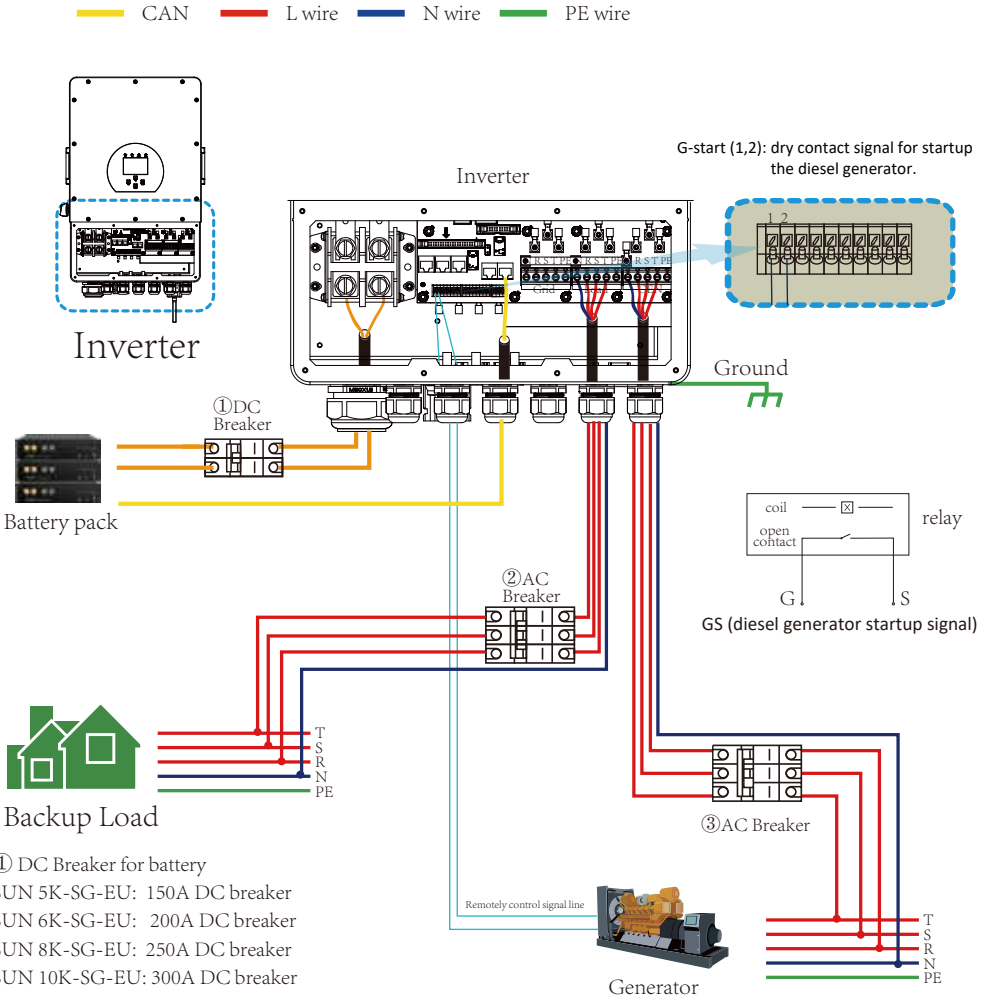
① DC Breaker for battery  
SUN 5K-SG-EU: 150A DC breaker  
SUN 6K-SG-EU: 200A DC breaker  
SUN 8K-SG-EU: 250A DC breaker  
SUN 10K-SG-EU: 300A DC breaker  
SUN 12K-SG-EU: 300A DC breaker

② AC Breaker for backup load  
SUN 5K-SG-EU: 16A AC breaker  
SUN 6K-SG-EU: 16A AC breaker  
SUN 8K-SG-EU: 20A AC breaker  
SUN 10K-SG-EU: 32A AC breaker  
SUN 12K-SG-EU: 32A AC breaker

③ AC Breaker for grid  
SUN 5K-SG-EU: 63A AC breaker  
SUN 6K-SG-EU: 63A AC breaker  
SUN 8K-SG-EU: 63A AC breaker  
SUN 10K-SG-EU: 63A AC breaker  
SUN 12K-SG-EU: 63A AC breaker

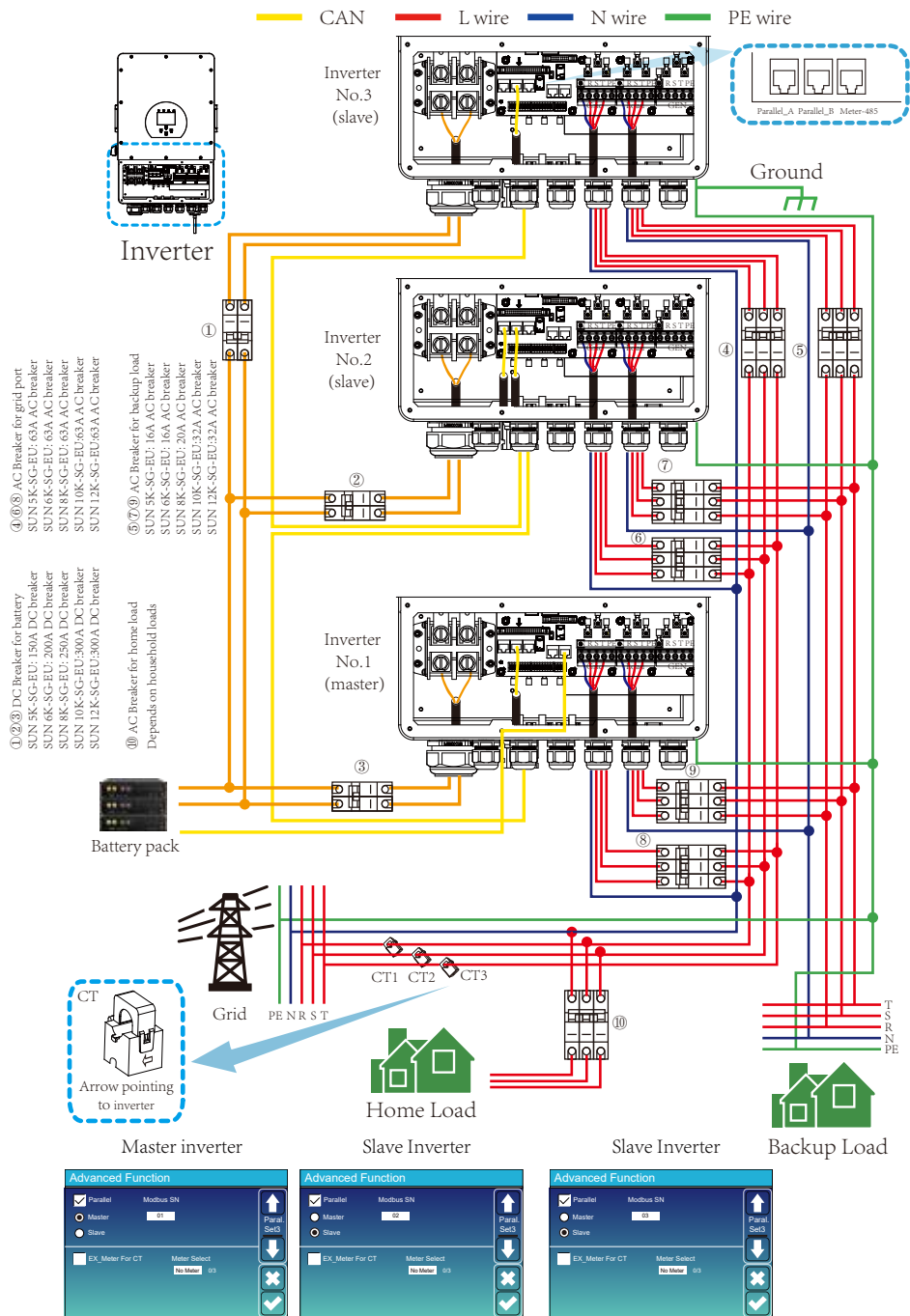
④ AC Breaker for home load  
Depends on household loads

### 3.11 Typical application diagram of diesel generator



- ① DC Breaker for battery  
SUN 5K-SG-EU: 150A DC breaker  
SUN 6K-SG-EU: 200A DC breaker  
SUN 8K-SG-EU: 250A DC breaker  
SUN 10K-SG-EU: 300A DC breaker  
SUN 12K-SG-EU: 300A DC breaker
- ② AC Breaker for backup load  
SUN 5K-SG-EU: 16A AC breaker  
SUN 6K-SG-EU: 16A AC breaker  
SUN 8K-SG-EU: 20A AC breaker  
SUN 10K-SG-EU: 32A AC breaker  
SUN 12K-SG-EU: 32A AC breaker
- ③ AC Breaker for Generator port  
SUN 5K-SG-EU: 63A AC breaker  
SUN 6K-SG-EU: 63A AC breaker  
SUN 8K-SG-EU: 63A AC breaker  
SUN 10K-SG-EU: 63A AC breaker  
SUN 12K-SG-EU: 63A AC breaker

3.12 phase parallel connection diagram(Under development)



## 4. OPERATION

### 4.1 Power ON/OFF

Once the unit has been properly installed and the batteries are connected well, simply press On/Off button(located on the left side of the case) to turn on the unit. When system without battery connected, but connect with either PV or grid, and ON/OFF button is switched off, LCD will still light up(Display will show OFF), In this condition, when switch on ON/OFF button and select NO battery,system can still working.

### 4.2 Operation and Display Panel

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

| <i>LED Indicator</i> |                       | <i>Messages</i>           |
|----------------------|-----------------------|---------------------------|
| DC                   | Green led solid light | PV Connection normal      |
| AC                   | Green led solid light | Grid Connection normal    |
| Normal               | Green led solid light | Inverter operating normal |
| Alarm                | Red led solid light   | Malfunction or warning    |

Chart 4-1 LED indicators

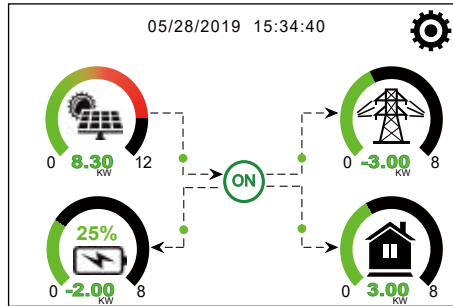
| <i>Function Key</i> | <i>Description</i>          |
|---------------------|-----------------------------|
| Esc                 | To exit setting mode        |
| Up                  | To go to previous selection |
| Down                | To go to next selection     |
| Enter               | To confirm the selection    |

Chart 4-2 Function Buttons

## 5. LCD Display Icons

### 5.1 Main Screen

The LCD is touchscreen, below screen shows the overall information of the inverter.



1.The icon in the center of the home screen indicates that the system is Normal operation. If it turns into "comm./F01~F64" , it means the inverter has communication errors or other errors, the error message will display under this icon(F01-F64 errors, detail error info can be viewed in the System Alarms menu).

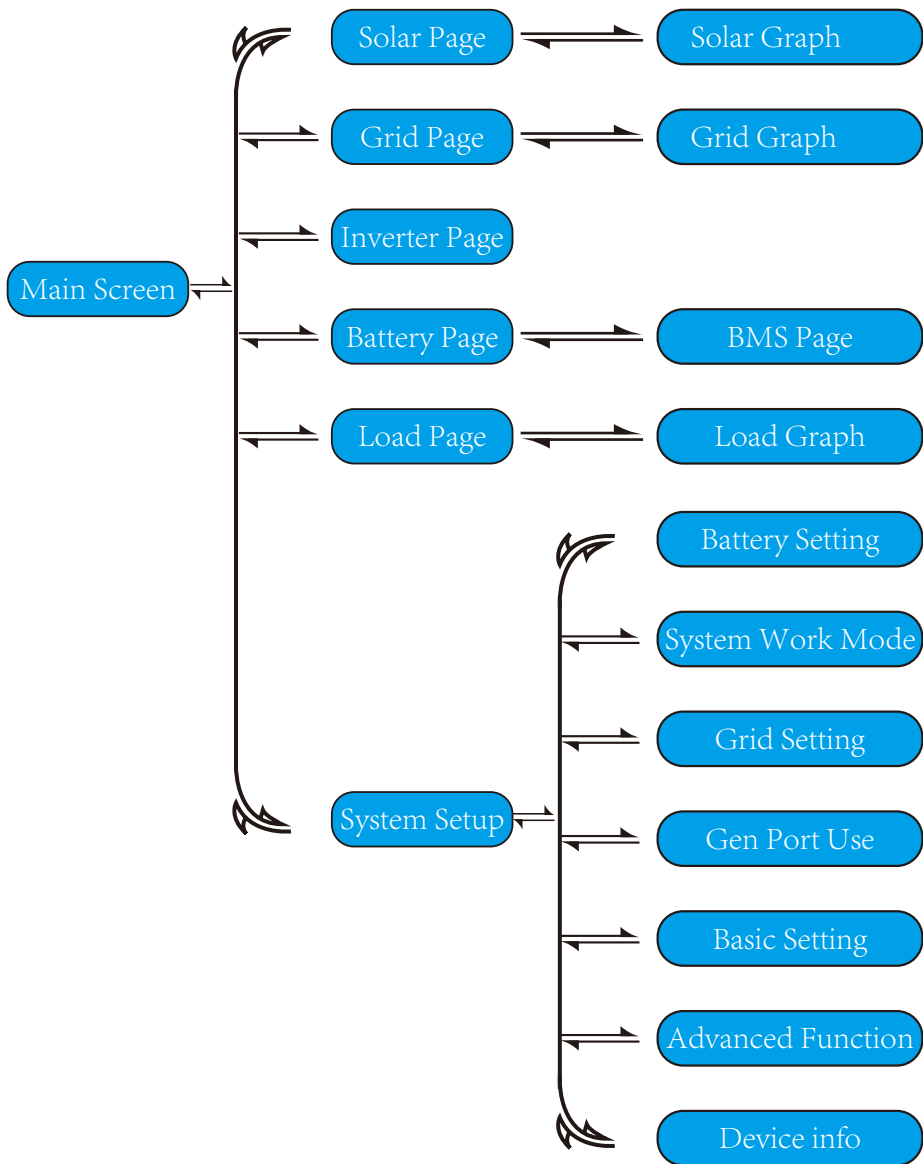
2.At the top of the screen is the time.

3.System Setup Icon, Press this set button,you can enter into the system setup screen which including Basic Setup, Battery Setup, Grid Setup, System Work Mode, Generator port use, Advanced function and Li-Batt info.

4.The main screen showing the info including Solar, Grid, Load and Battery. Its also displaying the energy flow direction by arrow. When the power is approximate to high level, the color on the panels will changing from green to red so system info showing vividly on the main screen.

- PV power and Load power always keep positive.
- Grid power negative means sell to grid, positive means get from grid.
- Battery power negative means charge, positive means discharge.

5.1.1 LCD operation flow chart



5.2 Solar Power Curve

Solar

Power: 1560W

①

Today=8.0 KWH

③

Total =12.00 KWH

PV1-V: 286V

PV2-V: 45V

PV1-I: 5.5A

PV2-I: 0.0A

PV1-P: 1559W

PV2-P: 1W

②

Energy

This is Solar Panel detail page.

① Solar Panel Generation.

② Voltage, Current, Power for each MPPT.

③ Solar Panel energy for Day and Total.

Press the “Energy “button will enter into the power curve page.

1166w

1244w

-81w

①

222v 0.8w

222v 0.1A

229v 5.0w

230v 0.1A

229v 0.9w

223v 0.1A

HM: LD: INV\_P:

-10W 28W -30W

5W 1192W -26W

0W 24W -25W

AC\_T: 38.8C

Load

SOC:99%

-21w

BAT\_V:53.65V

BAT\_I: -0.41A

BAT\_T: 27.0C

Battery

Grid

Inverter

DC\_P1: 0W

DC\_P2: 0W

DC\_V1: 0V

DC\_V2: 0V

DC\_I1: 0.0A

DC\_I2: 0.0A

PV1

PV2

This is Inverter detail page.

① Inverter Generation.

Voltage, Current, Power for each Phase.

AC-T: mean Heat-sink temperature.

Load

Power: 55W

①

Today=0.5 KWH

③

Total =1.60 KWH

L1: 220V

P1: 19W

L2: 220V

P2: 18W

L3: 220V

P3: 18W

②

Energy

This is Back-up Load detail page.

① Back-up Power.

② Voltage, Power for each Phase.

③ Back-up consumption for Day and Total.

Press the “Energy “ button will enter into the power curve page.

Grid

Stand by

0W

0.0Hz

①

BUY

Today=2.2KWH

Total =11.60 KWH

SELL

Today=0.0KWH

Total =8.60 KWH

③

CT1: 0W

LD1: 0W

CT2: 0W

LD2: 0W

CT3: 0W

LD3: 0W

L1: 0V

L2: 0V

L3: 0V

②

Energy

This is Grid detail page.

① Status, Power, Frequency.

② L: Voltage for each Phase

CT: Power detected by the external current sensors

LD: Power detected using internal sensors on AC grid in/out breaker

③ BUY: Energy from Grid to Inverter,

SELL: Energy from Inverter to grid.

Press the “Energy “ button will enter into the power curve page.

Li-BMS

Mean Voltage:50.34V    Charging Voltage :53.2V  
Total Current:55.00A    Discharging Voltage :47.0V  
Mean Temp :23.5C    Charging current :50A  
Total SOC :38%    Discharging current :25A  
Dump Energy:57Ah

Sum Data

Details Data

Li-BMS

|    | Volt   | Curr   | Temp  | SOC   | Energy | Charge Volt | Charge Curr | Fault |
|----|--------|--------|-------|-------|--------|-------------|-------------|-------|
| 1  | 50.38V | 19.70A | 30.6C | 52.0% | 25.0Ah | 0.0V        | 0.0A        | 0100  |
| 2  | 50.33V | 18.10A | 31.0C | 51.0% | 25.5Ah | 53.2V       | 25.0A       | 0100  |
| 3  | 50.30V | 16.90A | 30.2C | 12.0% | 6.0Ah  | 53.2V       | 25.0A       | 0100  |
| 4  | 0.00V  | 0.00A  | 0.0C  | 0.0%  | 0.0Ah  | 0.0V        | 0.0A        | 0100  |
| 5  | 0.00V  | 0.00A  | 0.0C  | 0.0%  | 0.0Ah  | 0.0V        | 0.0A        | 0100  |
| 6  | 0.00V  | 0.00A  | 0.0C  | 0.0%  | 0.0Ah  | 0.0V        | 0.0A        | 0100  |
| 7  | 0.00V  | 0.00A  | 0.0C  | 0.0%  | 0.0Ah  | 0.0V        | 0.0A        | 0100  |
| 8  | 0.00V  | 0.00A  | 0.0C  | 0.0%  | 0.0Ah  | 0.0V        | 0.0A        | 0100  |
| 9  | 0.00V  | 0.00A  | 0.0C  | 0.0%  | 0.0Ah  | 0.0V        | 0.0A        | 0100  |
| 10 | 0.00V  | 0.00A  | 0.0C  | 0.0%  | 0.0Ah  | 0.0V        | 0.0A        | 0100  |
| 11 | 0.00V  | 0.00A  | 0.0C  | 0.0%  | 0.0Ah  | 0.0V        | 0.0A        | 0100  |
| 12 | 0.00V  | 0.00A  | 0.0C  | 0.0%  | 0.0Ah  | 0.0V        | 0.0A        | 0100  |
| 13 | 0.00V  | 0.00A  | 0.0C  | 0.0%  | 0.0Ah  | 0.0V        | 0.0A        | 0100  |
| 14 | 0.00V  | 0.00A  | 0.0C  | 0.0%  | 0.0Ah  | 0.0V        | 0.0A        | 0100  |
| 15 | 0.00V  | 0.00A  | 0.0C  | 0.0%  | 0.0Ah  | 0.0V        | 0.0A        | 0100  |

Sum Data

Details Data

Batt

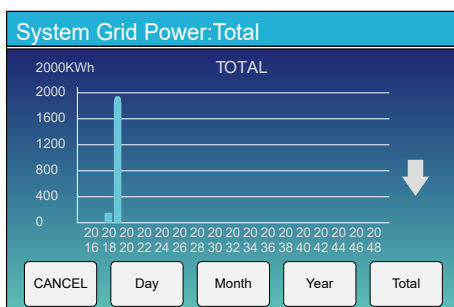
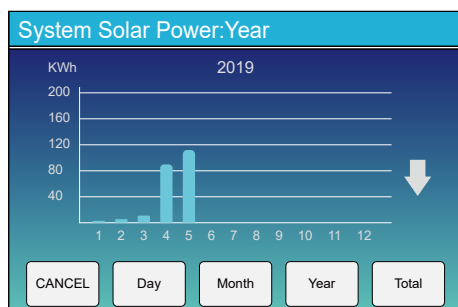
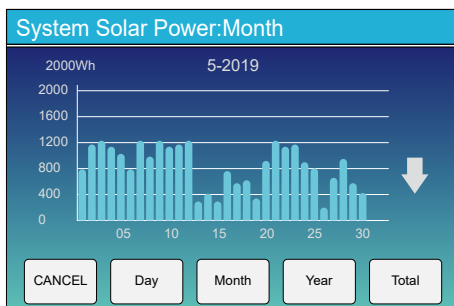
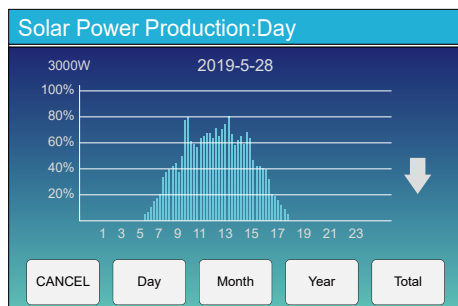
Discharge  
  
U:49.58V  
I:2.04A  
Power: 101W  
Temp:25.0C

Energy

This is Battery detail page.

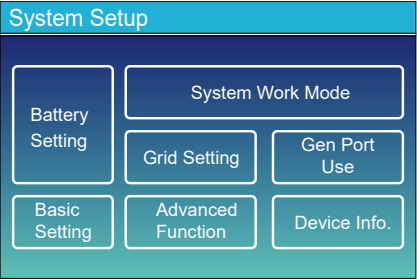
if you use Lithium Battery, you can enter BMS page.

## 5.3 Curve Page-Solar & Load & Grid



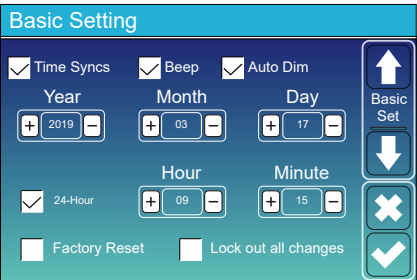
Solar power curve for daily, monthly, yearly and total can be roughly checked on the LCD, for more accuracy power generation, pls check on the monitoring system. Click the up and down arrow to check power curve of different period.

## 5.4 System Setup Menu

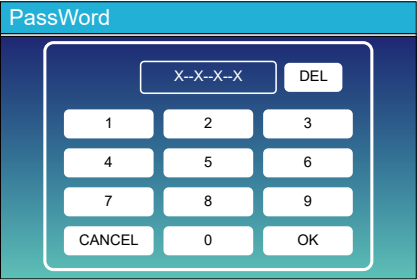


This is System Setup page.

## 5.5 Basic Setup Menu



**Factory Reset:** Reset all parameters of the inverter.  
**Lock out all changes:** Enable this menu for setting parameters that require locking and cannot be set up. Before performing a successful factory reset and locking the systems, to keep all changes you need to type in a password to enable the setting.  
The password for factory settings is 9999 and for lock out is 7777.



**Factory Reset PassWork:** 9999  
**Lock out all changes PassWork:** 7777

## 5.6 Battery Setup Menu

Battery Setting

Batt Mode

☒ Lithium

☐ Use Batt V

☐ Use Batt %

☐ No Batt

Batt Capacity

Max A Charge

Max A Discharge

☐ Activate Battery

400Ah

40A

40A

Batt Mode

↑

↓

✕

✓

**Battery capacity:** it tells Deye hybrid inverter to know your battery bank size.

**Use Batt V:** Use Battery Voltage for all the settings (V).

**Use Batt %:** Use Battery SOC for all the settings (%).

**Max. A charge/discharge:** Max battery charge/discharge current(0-115A for 5KW model, 0-90A for 3.6KW model). For AGM and Flooded, we recommend Ah battery size x 20%= Charge/Discharge amps.

. For Lithium, we recommend Ah battery size x 50% = Charge/Discharge amps.

. For Gel, follow manufacturer' s instructions.

**No Batt:** tick this item if no battery is connected to the system.

**Active battery:** This feature will help recover a battery that is over discharged by slowly charging from the solar array or grid.

Battery Setting

Start

30%

30%

②

A

①

40A

40A

☐ Gen Charge

☐ Grid Charge

☐ Gen Signal

☐ Grid Signal

Gen Max Run Time

0.0 hours

③

Gen Down Time

0.5 hours

Batt Set2

↑

↓

✕

✓

**This is Battery Setup page.** ① ③

**Start =30%:** Percent S.O.C at 30% system will AutoStart a connected generator to charge the battery bank.

**A = 40A:** Charge rate of 40A from the attached generator in Amps.

**Gen Charge:** uses the gen input of the system to charge battery bank from an attached generator.

**Gen Signal:** Normally open relay that closes when the Gen Start signal state is active.

**Gen Max Run Time:** It indicates the longest time Generator can run in one day, when time is up, the Generator will be turned off. 24H means that it does not shut down all the time.

**Gen Down Time:** It indicates the delay time of the Generator to shut down after it has reached the running time.

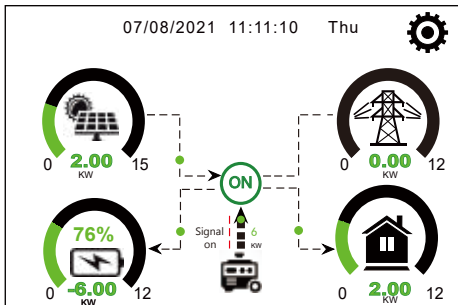
**This is Grid Charge, you need select.** ②

**Start =30%:** No use, Just for customization.

**A = 40A:** It indicates the Current that the Grid charges the Battery.

**Grid Charge:** It indicates that the grid charges the battery.

**Grid Signal:** Disable.



This page tells the PV and diesel generator power the load and battery.

### Generator

|              |                               |
|--------------|-------------------------------|
| Power: 6000W | Today=10 KWH<br>Total =10 KWH |
| V_L1: 230V   | P_L1: 2KW                     |
| V_L2: 230V   | P_L2: 2KW                     |
| V_L3: 230V   | P_L3: 2KW                     |

This page tells generator output voltage, frequency, power. And, how much energy is used from generator.

### Battery Setting

|              |     |
|--------------|-----|
| Lithium Mode | 00  |
| Shutdown     | 10% |
| Low Batt     | 20% |
| Restart      | 40% |

Batt Set3

**Lithium Mode:** This is BMS protocol. Please reference the document (Approved Battery).

**Shutdown 10%:** It indicates the inverter will shutdown if the SOC below this value.

**Low Batt 20%:** It indicates the inverter will alarm if the SOC below this value.

**Restart 40%:** Battery voltage at 40% AC output will resume.

### Battery Setting

|                    |           |                   |         |
|--------------------|-----------|-------------------|---------|
| Float V ①          | 53.6V     | Shutdown ③        | 20%     |
| Absorption V       | 57.6V     | Low Batt          | 35%     |
| Equalization V     | 57.6V     | Restart           | 50%     |
| Equalization Days  | 90 days   | TEMPCO(mV/C/Cell) | ② -5    |
| Equalization Hours | 3.0 hours | Batt Resistance   | 25mOhms |

Batt Set3

**There are 3 stages of charging the Battery .** ①

This is for professional installers, you can keep it if you do not know. ②

**Shutdown 20%:** The inverter will shutdown if the SOC below this value.

**Low Batt 35%:** The inverter will alarm if the SOC below this value. ③

**Restart 50%:** Battery SOC at 50% AC output will resume.

## Recommended battery settings

| Battery Type | Absorption Stage                  | Float Stage   | Torque value<br>(every 30 days 3hr ) |
|--------------|-----------------------------------|---------------|--------------------------------------|
| AGM (or PCC) | 14.2v (57.6v)                     | 13.4v (53.6v) | 14.2v(57.6v)                         |
| Gel          | 14.1v (56.4v)                     | 13.5v (54.0v) |                                      |
| Wet          | 14.7v (59.0v)                     | 13.7v (55.0v) | 14.7v(59.0v)                         |
| Lithium      | Follow its BMS voltage parameters |               |                                      |

## 5.7 System Work Mode Setup Menu

### System Work Mode

☒ Selling First
 

Max Solar Power

☒ Zero Export To Load
 

☒ Solar Sell

☒ Zero Export To CT
 

☒ Solar Sell

Max Sell Power

Zero-export Power

Energy pattern ☒ BattFirst ☐ LoadFirst

☒ Grid Peak Shaving
 

Power

↑  
Work Mode 1

↓

✕

✓

### Work Mode

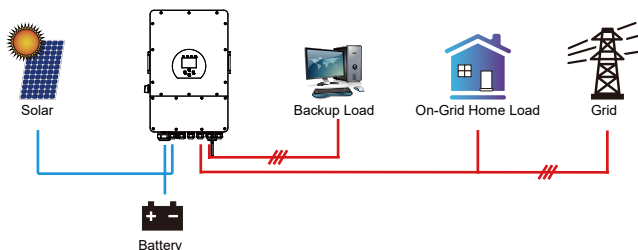
**Selling First:** This Mode allows hybrid inverter to sell back any excess power produced by the solar panels to the grid. If time of use is active, the battery energy also can be sold into grid.

The PV energy will be used to power the load and charge the battery and then excess energy will flow to grid.

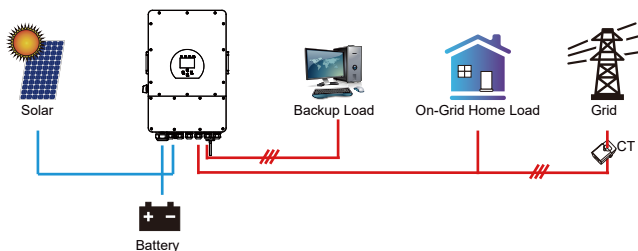
Power source priority for the load is as follows:

1. Solar Panels.
2. Grid.
3. Batteries (until programable % discharge is reached).

**Zero Export To Load:** Hybrid inverter will only provide power to the backup load connected. The hybrid inverter will neither provide power to the home load nor sell power to grid. The built-in CT will detect power flowing back to the grid and will reduce the power of the inverter only to supply the local load and charge the battery.



**Zero Export To CT:** Hybrid inverter will not only provide power to the backup load connected but also give power to the home load connected. If PV power and battery power is insufficient, it will take grid energy as supplement. The hybrid inverter will not sell power to grid. In this mode, a CT is needed. The installation method of the CT please refer to chapter 3.6 CT Connection. The external CT will detect power flowing back to the grid and will reduce the power of the inverter only to supply the local load, charge battery and home load.



**Solar Sell:** "Solar sell" is for Zero export to load or Zero export to CT: when this item is active, the surplus energy can be sold back to grid. When it is active, PV Power source priority usage is as follows: load consumption and charge battery and feed into grid.

**Max. sell power:** Allowed the maximum output power to flow to grid.

**Zero-export Power:** for zero-export mode, it tells the grid output power. Recommend to set it as 20-100W to ensure the hybrid inverter won't feed power to grid.

**Energy Pattern:** PV Power source priority.

**Batt First:** PV power is firstly used to charge the battery and then used to power the load. If PV power is insufficient, grid will make supplement for battery and load simultaneously.

**Load First:** PV power is firstly used to power the load and then used to charge the battery. If PV power is insufficient, Grid will provide power to load.

**Max Solar Power:** allowed the maximum DC input power.

**Grid Peak-shaving:** when it is active, grid output power will be limited within the set value. If the load power exceeds the allowed value, it will take PV energy and battery as supplement. If still can't meet the load requirement, grid power will increase to meet the load needs.

| System Work Mode                    |                          |             |       |       |       |
|-------------------------------------|--------------------------|-------------|-------|-------|-------|
| Grid Charge                         | Gen                      | Time Of Use |       | Power | Batt  |
|                                     |                          | Time        |       |       |       |
| <input type="checkbox"/>            | <input type="checkbox"/> | 01:00       | 5:00  | 12000 | 49.0V |
| <input type="checkbox"/>            | <input type="checkbox"/> | 05:00       | 9:00  | 12000 | 50.2V |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 09:00       | 13:00 | 12000 | 50.9V |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 13:00       | 17:00 | 12000 | 51.4V |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 17:00       | 21:00 | 12000 | 47.1V |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 21:00       | 01:00 | 12000 | 49.0V |

↑ Work Mode2

↓

✕

✓

**Time of use:** it is used to program when to use grid or generator to charge the battery, and when to discharge the battery to power the load. Only tick "Time Of Use" then the follow items (Grid, charge, time, power etc.) will take effect.

**Note:** when in selling first mode and click time of use, the battery power can be sold into grid.

**Grid charge:** utilize grid to charge the battery in a time period.

**Gen charge:** utilize diesel generator to charge the battery in a time period.

**Time:** real time, range of 01:00-24:00.

**Power:** Max. discharge power of battery allowed.

**Batt(V or SOC %):** battery SOC % or voltage at when the action is to happen.

| System Work Mode                    |                          |             |       |       |      |
|-------------------------------------|--------------------------|-------------|-------|-------|------|
| Grid Charge                         | Gen                      | Time Of Use |       | Power | Batt |
|                                     |                          | Time        |       |       |      |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 01:00       | 5:00  | 12000 | 80%  |
| <input type="checkbox"/>            | <input type="checkbox"/> | 05:00       | 8:00  | 12000 | 40%  |
| <input type="checkbox"/>            | <input type="checkbox"/> | 08:00       | 10:00 | 12000 | 40%  |
| <input type="checkbox"/>            | <input type="checkbox"/> | 10:00       | 15:00 | 12000 | 80%  |
| <input type="checkbox"/>            | <input type="checkbox"/> | 15:00       | 18:00 | 12000 | 40%  |
| <input type="checkbox"/>            | <input type="checkbox"/> | 18:00       | 01:00 | 12000 | 35%  |

↑ Work Mode2

↓

✕

✓

**For example:**

During 01:00-05:00, when battery SOC is lower than 80%, it will use grid to charge the battery until battery SOC reaches 80%.

During 05:00-08:00 and 08:00-10:00, when battery SOC is higher than 40%, hybrid inverter will discharge the battery until the SOC reaches 40%.

During 10:00-15:00, when battery SOC is higher than 80%, hybrid inverter will discharge the battery until the SOC reaches 80%.

During 15:00-18:00, when battery SOC is higher than 40%, hybrid inverter will discharge the battery until the SOC reaches 40%.

During 18:00-01:00, when battery SOC is higher than 35%, hybrid inverter will discharge the battery until the SOC reaches 35%.

## 5.8 Grid Setup Menu

Grid Setting

Grid Mode

☒ General Standard

☐ UL1741 & IEEE1547

☐ CPUC RULE21

☐ SRD-UL-1741

Grid Level

220V-3P

230V-3P

240V-3P

133V-3P

120V-3P

Phase Type

☐ 0/120/240

☒ 0/240/120

Grid Set1

Grid Set2

Grid Set3

Grid Set4

Please select the correct Grid Mode in your local area. If you are not sure, please choose General Standard.

Please select the correct Grid Type in your local area, otherwise the machine will not work or be damaged.

Phase type: When the inverter LCD shows "W03" which means the grid phase is error, please try to use "0/120/240".

Grid Setting

Grid Frequency

☒ 50HZ

☐ 60HZ

Reconnection Time

60S

PF

1.000

Grid HZ High

53.0Hz

Grid Vol High

265.0V

Grid HZ Low

49.0Hz

Grid Vol Low

185.0V

Grid Set2

Grid Set3

Grid Set4

Grid Set5

### UL1741&IEEE1547, CPUC RULE21, SRD-UL-1741

No need to set the function of this interface.

#### General Standard

Please select the correct Grid Frequency in your local area.

You can hold this in default value.

Grid Setting

☐ Q(V)

☐ FW

☐ VW

V1:0.0V

Q1:0.00

Fstart:0.00Hz

Vstart:0.0V

V2:0.0V

Q2:0.00

Fstop:0.00Hz

Vstop:0.0V

V3:0.0V

Q3:0.00

Normal Ramp rate

0.0%/s

V4:0.0V

Q4:0.00

Soft Start Ramp rate

0.0%/s

Grid Set3

Grid Set4

Grid Set5

Grid Set6

For California only.

Grid Setting

☐ L/HVRT

☐ L/HFRT

HV2:0.0V

0.16S

HV1:0.0V

0.16S

HF2:0.00HZ

0.16S

LV1:0.0V

0.16S

HF1:0.00HZ

0.16S

LV2:0.0V

0.16S

LF1:0.00HZ

0.16S

LV3:0.0V

0.16S

LF2:0.00HZ

0.16S

Grid Set4

Grid Set5

Grid Set6

Grid Set7

For California only.

## 5.9 Generator Port Use Setup Menu

GEN PORT USE

Mode

☒ Generator Input

☐ GEN connect to Grid input

Rated Power

8000W

☐ SmartLoad Output

☐ On Grid always on

AC Couple Fre High

55.00Hz

☐ Micro Inv Input

☐ MI export to Grid cutoff

OFF 51.0V

ON 54.0V

PORT Set1

⬆

⬇

✖

✔

**Generator input rated power:** allowed Max. power from diesel generator.

**GEN connect to grid input:** connect the diesel generator to the grid input port.

**Smart Load Output:** This mode utilizes the Gen input connection as an output which only receives power when the battery SOC and PV power is above a user programmable threshold.

**e.g. ON: 100%, OFF=95%:** When the PV power exceeds 500W, and battery bank SOC reaches 100%, Smart Load Port will switch on automatically and power the load connected. When the battery bank SOC < 95% , the Smart Load Port will switch off automatically.

### Smart Load OFF Batt

- Battery SOC at which the Smart load will switch off.

### Smart Load ON Batt

- Battery SOC at which the Smart load will switch on. simultaneously and then the Smart load will switch on.

**On Grid always on:** When click "on Grid always on" the smart load will switch on when the grid is present.

**Micro Inv Input:** To use the Generator input port as a micro-inverter on grid inverter input (AC coupled), this feature will also work with "Grid-Tied" inverters.

\* Micro Inv Input OFF: when the battery SOC exceeds setting value, Microinverter or grid-tied inverter will shut down.

\* Micro Inv Input ON: when the battery SOC is lower than setting value, Microinverter or grid-tied inverter will start to work.

**AC Couple Fre High:** If choosing "Micro Inv input", as the battery SOC reaches gradually setting value (OFF), During the process, the microinverter output power will decrease linear. When the battery SOC equals to the setting value (OFF), the system frequency will become the setting value (AC couple Fre high) and the Microinverter will stop working.

**MI export to grid cutoff:** Stop exporting power produced by the microinverter to the grid.

\* Note: Micro Inv Input OFF and On is valid for some certain FW version only.

## 5.10 Advanced Function Setup Menu

Advanced Function

☐ Solar Arc Fault ON

Backup Delay

0S

☐ Clear Arc\_Fault

☐ System selfcheck

☐ Gen peak-shaving

☐ DRM

CT Ratio

2000: 1

☐ Signal ISLAND MODE

☐ BMS\_Err\_Stop

↑

Func Set1

↓

✕

✓

**Solar Arc Fault ON:** This is only for US.

**System selfcheck:** Disable. this is only for factory.

**Gen Peak-shaving:** Enable When the power of the generator exceeds the rated value of it, the inverter will provide the redundant part to ensure that the generator will not overload.

**DRM:** For AS4777 standard

**Backup Delay:** Reserved

**BMS\_Err\_Stop:** When it is active, if the battery BMS failed to communicate with inverter, the inverter will stop working and report fault.

**Signal island mode:** Reserved.

Advanced Function

☐ Parallel

Modbus SN

00

☒ Master

☒ Slave

☐ EX\_Meter For CT

Meter Select

No Meter 0/3

CHNT

Easton

↑

Paral. Set3

↓

✕

✓

**Ex\_Meter For CT:** when using zero-export to CT mode, the hybrid inverter can select EX\_Meter For CT function and use the different meters.e.g.CHNT and Easton.

# 5.11 Device Info Setup Menu

Device Info.

SUN-12K    Inverter ID: 2102199870    Flash

HMI: Ver 1001-8010    MAIN: Ver2002-1046-1707

Alarms Code

F13 Grid\_Mode\_changed

F23 Tz\_GFCl\_OC\_Fault

F13 Grid\_Mode\_changed

F56 DC\_VoltLow\_Fault

Occurred

2021-06-11 13:17

2021-06-11 08:23

2021-06-11 08:21

2021-06-10 13:05

↑

↓

✕

✓

Device Info

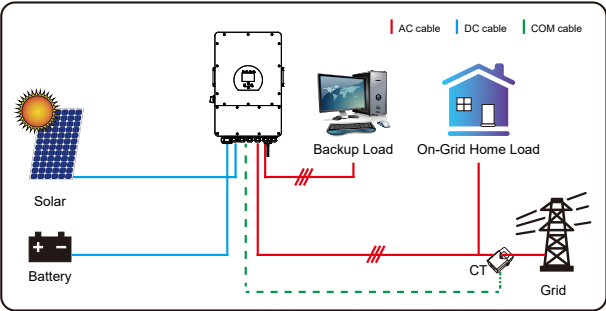
This page show Inverter ID, Inverter version and alarm codes.

**HMI:** LCD version

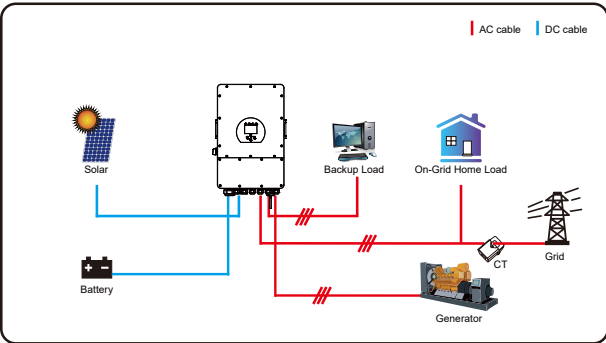
**MAIN:** Control board FW version

# 6. Mode

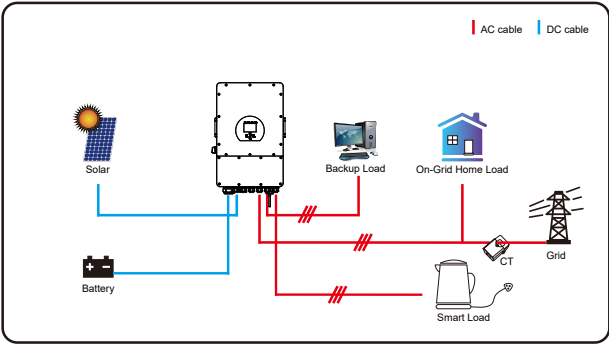
## Mode I:Basic



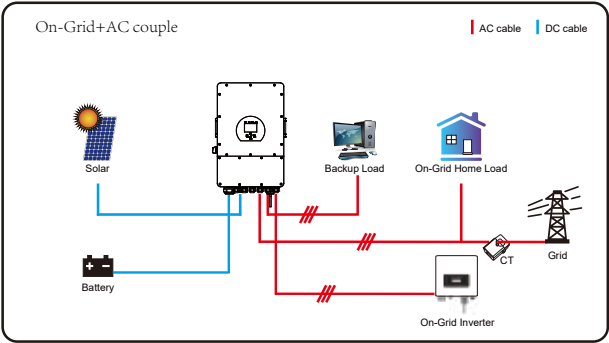
## Mode II: With Generator



### Mode III: With Smart-Load



### Mode IV: AC Couple



The 1st priority power of the system is always the PV power, then 2nd and 3rd priority power will be the battery bank or grid according to the settings. The last power backup will be the Generator if it is available.

## 7. Limitation of Liability

In addition to the product warranty described above, the state and local laws and regulations provide financial compensation for the product's power connection (including violation of implied terms and warranties). The company hereby declares that the terms and conditions of the product and the policy cannot and can only legally exclude all liability within a limited scope.

| <b>Error code</b> | <b>Description</b>                    | <b>Solutions</b>  |
|-------------------|---------------------------------------|---|
| F01               | DC input polarity reverse fault       | 1, Check the PV input polarity<br>2, Seek help from us, if can not go back to normal state.   |
| F07               | DC_START_Failure                      | 1, The BUS voltage can't be built from PV or battery.<br>2, Restart the inverter, If the fault still exists, please contact us for help   |
| F13               | working mode change                   | 1. When the grid type and frequency changed it will report F13;<br>2. When the battery mode was changed to "No battery" mode, it will report F13;<br>3. For some old FW version, it will report F13 when the system work mode changed;<br>4. Generally, it will disappear automatically when shows F13;<br>5. If still same, and turn off the DC switch and AC switch and wait for one minute and then turn on the DC/AC switch;<br>6. Seek help from us, if can not go back to normal state. |
| F15               | AC over current fault of software     | AC side over current fault<br>1. Please check whether the backup load power and common load power are within the range;<br>2. Restart and check whether it is in normal;<br>3. Seek help from us, if can not go back to normal state.   |
| F16               | AC leakage current fault              | Leakage current fault<br>1, Check the PV side cable ground connection<br>2, Restart the system 2-3 times<br>3, if the fault still existing, please contact us for help.   |
| F18               | AC over current fault of hardware     | AC side over current fault<br>1. Please check whether the backup load power and commonload power are within the range;<br>2. Restart and check whether it is in normal;<br>3. Seek help from us, if cannot go back to normal state.   |
| F20               | DC over current fault of the hardware | DC side over current fault<br>1. Check PV module connect and battery connect;<br>2. When in the off-grid mode, the inverter startup with big power load, it may report F20. Please reduce the load power connected;<br>3. Turn off the DC switch and AC switch and then wait one minute, then turn on the DC/AC switch again;<br>4. Seek help from us, if can not go back to normal state.  |

| <b>Error code</b> | <b>Description</b>                           | <b>Solutions</b>  |
|-------------------|--|---|
| F21               | Tz_HV_Overcurr_fault                         | BUS over current.<br>1. Check the PV input current and battery current setting<br>2. Restart the system 2~3 times.<br>3. If the fault still exists, please contact us for help.   |
| F22               | Tz_EmergStop_Fault                           | Remotely shutdown<br>1, it tells the inverter is remotely controlled.   |
| F23               | Tz_GFCI_OC_current is transient over current | Leakage current fault<br>1. Check PV side cable ground connection.<br>2. Restart the system 2~3 times.<br>3. If the fault still exists, please contact us for help.   |
| F24               | DC insulation failure                        | PV isolation resistance is too low<br>1. Check the connection of PV panels and inverter is firmly and correctly;<br>2. Check whether the PE cable of inverter is connected to ground;<br>3. Seek help from us, if can not go back to normal state.  |
| F26               | The DC busbar is unbalanced                  | 1. Please wait for a while and check whether it is normal;<br>2. When the load power of 3 phases is big different, it will report the F26.<br>3. When there's DC leakage current, it will report F26<br>4. Restart the system 2~3 times.<br>5. Seek help from us, if can not go back to normal state.   |
| F48               | AC lower frequency                           | Grid frequency out of range<br>1. Check the frequency is in the range of specification or not;<br>2. Check whether AC cables are firmly and correctly connected;<br>3. Seek help from us, if can not go back to normal state.   |
| F29               | Parallel CAN Bus fault                       | 1. When in parallel mode, check the parallel communication cable connection and hybrid inverter communication address setting;<br>2. During the parallel system startup period, inverters will report F29. But when all inverters are in ON status, it will disappear automatically;<br>3. If the fault still exists, please contact us for help. |
| F34               | AC Overcurrent fault                         | 1, Check the backup load connected, make sure it is in allowed power range<br>2, If the fault still exists, please contact us for help  |
| F41               | Parallel system stop                         | 1, Check the hybrid inverter work status. If there's 1pcs hybrid inverter shutdown, all hybrid inverters will report F41 fault.<br>2, If the fault still exists, please contact us for help   |
| F42               | AC line low voltage                          | Grid voltage fault<br>1. Check the AC voltage is in the range of standard voltage inspecification;<br>2. Check whether grid AC cables are firmly and correctly connected;<br>3. Seek help from us, if can not go back to normal state.  |

| <b>Error code</b> | <b>Description</b>                 | <b>Solutions</b>  |
|-------------------|------------------------------------|---|
| F46               | backup battery fault               | 1, Please check each battery status, such as voltage/ SOC and parameters etc., and make sure all the parameters are same.<br>2, If the fault still exists, please contact us for help   |
| F47               | AC over frequency                  | Grid frequency out of range<br>1. Check the frequency is in the range of specification or not;<br>2. Check whether AC cables are firmly and correctly connected;<br>3. Seek help from us, if can not go back to normal state.   |
| F48               | AC lower frequency                 | Grid frequency out of range<br>1. Check the frequency is in the range of specification or not;<br>2. Check whether AC cables are firmly and correctly connected;<br>3. Seek help from us, if can not go back to normal state.   |
| F55               | DC busbar voltage is too high      | BUS voltage is too high<br>1. Check whether battery voltage is too high;<br>2. check the PV input voltage, make sure it is within the allowed range;<br>3. Seek help from us, if can not go back to normal state.   |
| F56               | DC busbar voltage is too low       | Battery voltage low<br>1. Check whether battery voltage is too low;<br>2. If the battery voltage is too low, using PV or grid to charge the battery;<br>3. Seek help from us, if can not go back to normal state.   |
| F58               | BMS communication fault            | 1, it tells the communication between hybrid inverter and battery BMS disconnected when “BMS_Err-Stop” is active”<br>2, if don't want to see this happen, you can disable “BMS_Err-Stop” item on the LCD.<br>3, If the fault still exists, please contact us for help |
| F62               | DRMs0_stop                         | 1, the DRM function is for Australia market only.<br>2, Check the DRM function is active or not<br>3, Seek help from us, if can not go back to normal state after restart the system  |
| F34               | AC Overcurrent fault               | 1, Check the backup load connected, make sure it is in allowed power range<br>2, If the fault still exists, please contact us for help  |
| F63               | ARC fault                          | 1. ARC fault detection is only for US market;<br>2. Check PV module cable connection and clear the fault;<br>3. Seek help from us, if can not go back to normal state   |
| F64               | Heat sink high temperature failure | Heat sink temperature is too high<br>1. Check whether the work environment temperature is too high;<br>2. Turn off the inverter for 10mins and restart;<br>3. Seek help from us, if can not go back to normal state.  |

Chart 7-1 Fault information

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Under the guidance of our company, customers return our products so that our company can provide service of maintenance or replacement of products of the same value. Customers need to pay the necessary freight and other related costs. Any replacement or repair of the product will cover the remaining warranty period of the product. If any part of the product or product is replaced by the company itself during the warranty period, all rights and interests of the replacement product or component belong to the company.

Factory warranty does not include damage due to the following reasons:

- Damage during transportation of equipment ;
- Damage caused by incorrect installation or commissioning ;
- Damage caused by failure to comply with operation instructions, installation instructions or maintenance instructions ;
- Damage caused by attempts to modify, alter or repair products ;
- Damage caused by incorrect use or operation ;
- Damage caused by insufficient ventilation of equipment ;
- Damage caused by failure to comply with applicable safety standards or regulations ;
- Damage caused by natural disasters or force majeure (e.g. floods, lightning, overvoltage, storms, fires, etc.)

In addition, normal wear or any other failure will not affect the basic operation of the product. Any external scratches, stains or natural mechanical wear does not represent a defect in the product.

## 8. Datasheet

| Model                                       | SUN-5K-SG04LP3                    | SUN-6K-SG04LP3 | SUN-8K-SG04LP3 | SUN-10K-SG04LP3 | SUN-12K-SG04LP3 |
|---|-----------------------------------|----------------|----------------|-----------------|-----------------|
| Battery Input Data                          |                                   |                |                |                 |                 |
| Battery Type                                | Lead-acid or Li-Ion               |                |                |                 |                 |
| Battery Voltage Range(V)                    | 40-60V                            |                |                |                 |                 |
| Max. Charging Current(A)                    | 120A                              | 150A           | 190A           | 210A            | 240A            |
| Max. Discharging Current(A)                 | 120A                              | 150A           | 190A           | 210A            | 240A            |
| Charging Curve                              | 3 Stages / Equalization           |                |                |                 |                 |
| External Temperature Sensor                 | yes                               |                |                |                 |                 |
| Charging Strategy for Li-Ion Battery        | Self-adaption to BMS              |                |                |                 |                 |
| PV String Input Data                        |                                   |                |                |                 |                 |
| Max. DC Input Power(W)                      | 6500W                             | 7800W          | 10400W         | 13000W          | 15600W          |
| PV Input Voltage(V)                         | 550V (160V~800V)                  |                |                |                 |                 |
| MPPT Range(V)                               | 200V-650V                         |                |                |                 |                 |
| Start-up Voltage(V)                         | 160V                              |                |                |                 |                 |
| PV Input Current(A)                         | 13A+13A                           | 13A+13A        | 13A+13A        | 26A+13A         | 26A+13A         |
| Max.PV ISC(A)                               | 17A+17A                           | 17A+17A        | 17A+17A        | 34A+17A         | 34A+17A         |
| No. of MPPT Trackers                        | 2                                 |                |                |                 |                 |
| No. of Strings Per MPPT Tracker             | 1+1                               | 1+1            | 1+1            | 2+1             | 2+1             |
| AC Output Data                              |                                   |                |                |                 |                 |
| Rated AC Output and UPS Power(W)            | 5000                              | 6000           | 8000           | 10000           | 12000           |
| Max. AC Output Power(W)                     | 5500                              | 6600           | 8800           | 11000           | 13200           |
| Peak Power(off grid)                        | 2 times of rated power, 10 S      |                |                |                 |                 |
| AC Output Rated Current(A)                  | 7.6/7.3A                          | 9.1/8.7A       | 12.1/11.6A     | 15.2/14.5A      | 18.2/17.4A      |
| Max. AC Current(A)                          | 11.4/10.9A                        | 13.6/13A       | 18.2/17.4A     | 22.7/21.7A      | 27.3/26.1A      |
| Max. Continuous AC Passthrough(A)           | 50A                               |                |                |                 |                 |
| Output Frequency and Voltage                | 50/60Hz; 380/400Vac (Three phase) |                |                |                 |                 |
| Grid Type                                   | Three Phase                       |                |                |                 |                 |
| Current Harmonic Distortion                 | THD<3% (Linear load<1.5%)         |                |                |                 |                 |
| Efficiency                                  |                                   |                |                |                 |                 |
| Max. Efficiency                             | 97.60%                            |                |                |                 |                 |
| Euro Efficiency                             | 97.00%                            |                |                |                 |                 |
| MPPT Efficiency                             | >99%                              |                |                |                 |                 |
| Protection                                  |                                   |                |                |                 |                 |
| PV Arc Fault Detection                      | Integrated                        |                |                |                 |                 |
| PV Input Lightning Protection               | Integrated                        |                |                |                 |                 |
| Anti-islanding Protection                   | Integrated                        |                |                |                 |                 |
| PV String Input Reverse Polarity Protection | Integrated                        |                |                |                 |                 |
| Insulation Resistor Detection               | Integrated                        |                |                |                 |                 |
| Residual Current Monitoring Unit            | Integrated                        |                |                |                 |                 |
| Output Over Current Protection              | Integrated                        |                |                |                 |                 |
| Output Shorted Protection                   | Integrated                        |                |                |                 |                 |
| Output Over Voltage Protection              | DC Type II / AC Type II           |                |                |                 |                 |

**Certifications and Standards**

|                       |  |
|-----------------------|--|
| Grid Regulation       | EN50549, AS4777.2, VDE0126, IEC61727, VDEN4105, G99, NBT32004, CEIO-21, NRS097, NBR16149/16150, RD1699 |
| EMC/Safety Regulation | IEC62109-1/-2, EN61000-6-1, EN61000-6-2, EN61000-6-3, EN61000-6-4                                      |

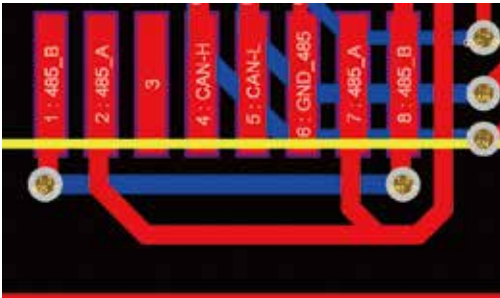
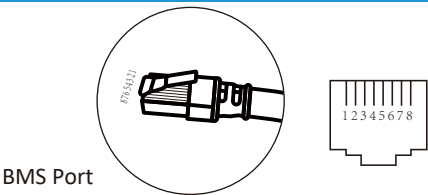
**General Data**

|                                   |                             |
|-----------------------------------|-----------------------------|
| Operating Temperature Range( °C ) | -45~60 °C , >45 °C Derating |
| Cooling                           | Smart cooling               |
| Noise(dB)                         | ≤45 dB(A)                   |
| Communication with BMS            | RS485; CAN                  |
| Weight(kg)                        | 33.6                        |
| Size(mm)                          | 422W×702H×281D              |
| Protection Degree                 | IP65                        |
| Installation Style                | Wall-mounted                |
| Warranty                          | 5 years                     |

# 9. Appendix I

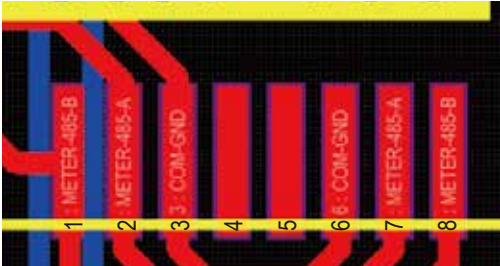
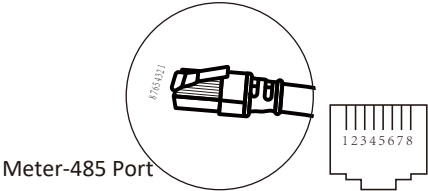
## Definition of RJ45 Port Pin for BMS

| No. | RS485 Pin |
|-----|-----------|
| 1   | 485_B     |
| 2   | 485_A     |
| 3   | --        |
| 4   | CAN-H     |
| 5   | CAN-L     |
| 6   | GND_485   |
| 7   | 485_A     |
| 8   | 485_B     |



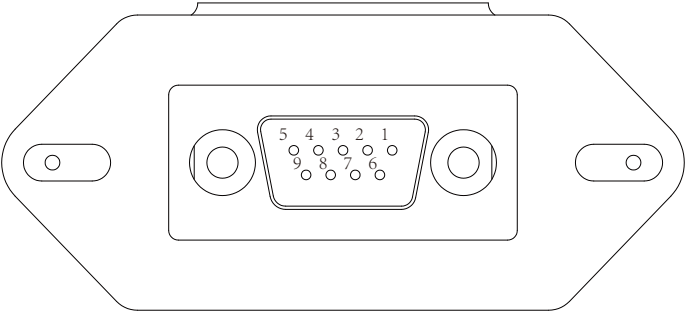
## Definition of RJ45 Port Pin for Meter-485

| No. | Meter-485 Pin |
|-----|---------------|
| 1   | METER-485_B   |
| 2   | METER-485_A   |
| 3   | COM-GND       |
| 4   | --            |
| 5   | --            |
| 6   | COM-GND       |
| 7   | METER-485_A   |
| 8   | METER-485_B   |



RS232

| No. | WIFI/RS232 |
|-----|------------|
| 1   | D-GND      |
| 2   |            |
| 3   |            |
| 4   |            |
| 5   | TX         |
| 6   | RX         |
| 7   | 12Vdc      |
| 8   |            |
| 9   |            |

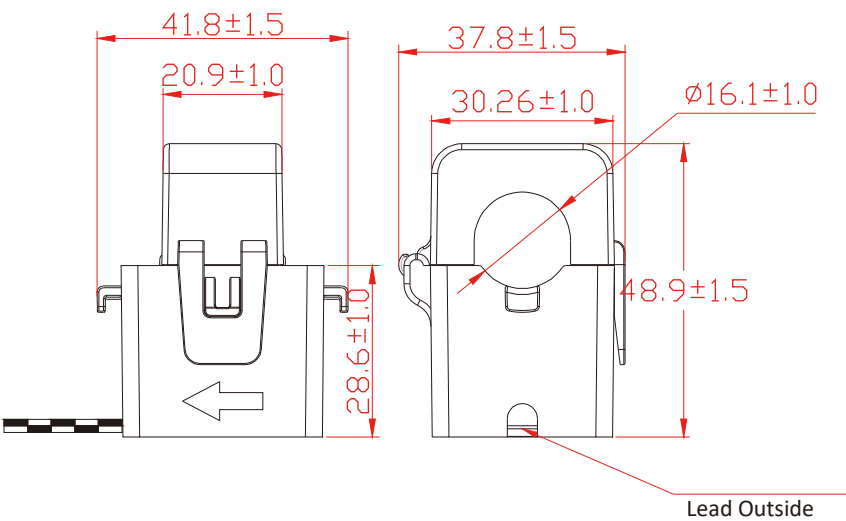


WIFI/RS232

This RS232 port is used to connect the wifi datalogger

# 10. Appendix II

- 1. Split Core Current Transformer (CT) dimension: (mm)
- 2. Secondary output cable length is 4m.



In case of any query/issue with the product  
For More products range  
inquiry please contact our distributor or nearest  
dealers.

V-TAC EUROPE LTD.  
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bul.L.Karavelov 9B  
[support@v-tac.eu](mailto:support@v-tac.eu)