Stackable All-in-One Energy Storage System

SUN-(7-12)K-SG06LP1-EU-TM3

User Manual



Contents

1. Safety Precautions 02-03
2. Product Instruction 03-08
   2.1 Prodcut Features
   2.2 Appearance and Dimensions
   2.3 Interface and port introduction
   2.4 Function port definition
   2.5 Basic System Architecture
   2.6 Maintenance of the System
3. Installation 09-15
   3.1 Installation Precaution
   3.2 Installation Tools
   3.3 Packing List
   3.4 Installation Procedure
4. Electrical Connection 16-48
   4.1 Wiring Preparation
   4.2 Cable Connection
   4.3 Post-Wiring Operations
   4.4 Wiring System for Inverter
   4.5 Typical application diagram of diesel generator
   4.6 Parallel into a Single-Phase System
   4.7 Parallel into a Three-Phase System
5. Monitoring platform 49-56
   5.1 Introduction of logger module
   5.2 Methods to use platform
   5.3 How to connect the inverter to the router via web
   5.4 USER MANUAL for Deye Cloud APP
   5.5 USE APP to Configure WiFi
6. OPERATION 57
   4.1 Power ON/OFF
   4.2 Operation and Display Panel
7.LCD Display Icons 58-80
   7.1 Main Screen
   7.2 Detail pages
   7.3 Curve Page-Solar & Load & Grid
   7.4 System Setup Menu
   7.5 Basic Setup Menu
   7.6 Battery Setup Menu
   7.7 System Work Mode Setup Menu
   7.8 Grid Setup Menu
   7.9 Smart Devices
   7.10 Generator Port Use Setup Menu
   7.11 Advanced Function Setup Menu
   7.12 Device Info Setup Menu
8. Mode 81-82
9. Troubleshooting and Maintenance 83-91
10. Datasheet 92-94
11. Transportation and storage 94-95
12. Disposal Instructions 95
13. RJ45 Port Pin Definitions 96-97
14. Current Transformer (CT) Dimensions and Cable Length 98
15. EU Declaration of Conformity 99

	Model
ESS	SUN-(7-12)K-SG06LP1-EU-TM3
Battery System	AI-W16/AI-W16-H

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.

Security Declaration

For detailed information regarding the product's network security vulnerability response procedures and the disclosure of related vulnerabilities, please refer to the Deye Security Center at https://sec.deyecloud.com.

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 service@deye.com.cn. You can download Deye's official user manual directly from " https://www.deyeinverter.com/download/product-manual/?tag=272 "

1. Safety Introductions

Labels description

Label	Description
	Caution, risk of electric shock symbol indicates important safety instructions, which if not correctly followed, could result in electric shock.
	There are non-specific potential risks here, and operators need to pay attention to the corresponding important safety operation instructions.
	Surface high temperature, Please do not touch the inverter case.
	The AC and DC circuits must be disconnected separately, and maintenance personnel must wait for 5 minutes before starting work after completely cutting off the power.
	CE mark of conformity
	Please read the instructions carefully before use.
	Symbol for the marking of electrical and electronics devices according to Directive 2002/96/EC. Indicates that the device, accessories and the packaging must not be disposed as unsorted municipal waste and must be collected separately at the end of the usage. Please follow Local Ordinances or Regulations for disposal or contact an authorized representative of the manufacturer for information concerning the decommissioning of equipment.

· 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.
· Please do not disassemble the inverter by yourself. If maintenance is required, please contact qualified professionals. If repairs are needed, please take it to a professional after-sales service center.
· Before performing cleaning and maintenance on the inverter, please disconnect all AC and DC side circuits to prevent electric shock.
· Caution: Only qualified personnel can install this system.
· Battery needs to be recharged within 48 hours after fully discharged.
· Never charge a frozen battery.
· To ensure the system operates at optimal performance, select appropriate cables in accordance with the specifications recommended in this manual and local regulations during installation, which is critical for the safe and normal operation of the system.
· During the entire installation process, do not place metal tools, screws and other conductive objects randomly on or around the battery. Keep full control of the metal tools in your hands during operation to avoid accidental contact with the battery positive terminal which may cause short circuit or arcing risks.
· 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 system should be connected to a permanent grounded wiring system. Be sure to comply with local requirements and regulation to install this system.
· Never cause AC output and DC input short circuited. Do not connect to the mains when DC input short circuits.

Radio Interference Statement

The equipment may radiate radio frequency energy. If the instructions are not followed during installation and use of the equipment, it may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation situation. If this equipment causes harmful interference to radio or television reception, the following measures can be taken to resolve the problem:

✔ Relocate the receiving antenna away from the equipment.
✔ Seek assistance from the distributor or an experienced radio/TV technician.

Changes or modifications not expressly approved by the party responsible for compliance may void the user's authority to operate the equipment.

2. Product Introductions

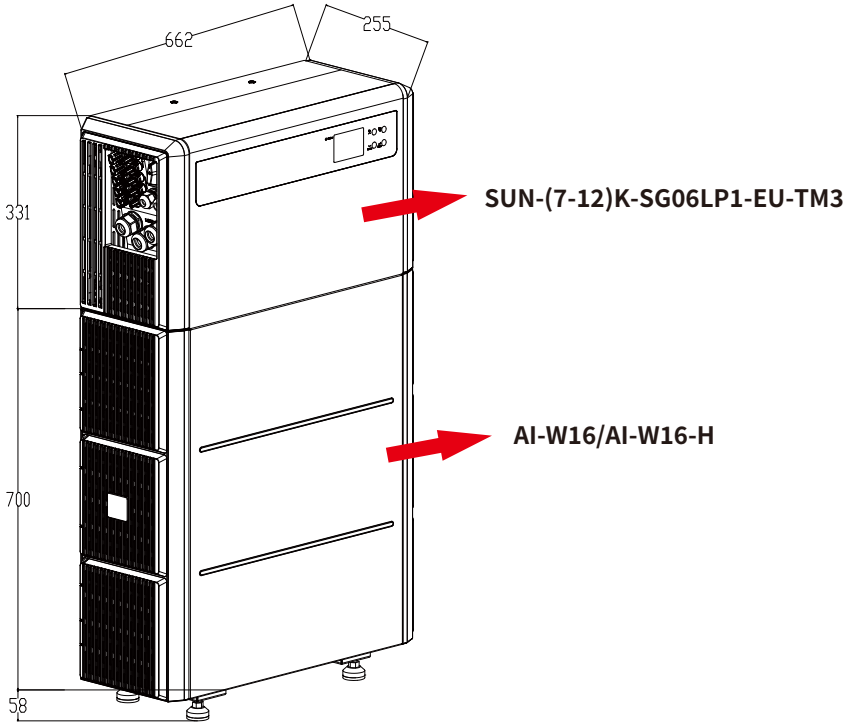
This is an All-in-One energy storage system that incorporates 3/3.6/4/5/6 kW single-phase hybrid inverter modules and energy storage batteries. Featuring a modular stacking design, it is easy to install and expand, with a battery capacity ranging from 16 kWh to 96 kWh (each individual battery pack has a capacity of 16 kWh). It uses lithium iron phosphate cells for high safety and reliability.
The integrated inverter module is a multi-functional unit that combines the functions of a bidirectional AC/DC inverter-rectifier module, a solar charger and a battery charger. It supports grid-tied, off-grid and seamless grid-tied/off-grid switching modes, providing users with uninterrupted power supply. Equipped with a large-size LCD display, physical buttons and status indicators, it offers a user-friendly interface for convenient local system configuration and operation status monitoring. It also comes with a data logger interface, enabling remote monitoring via the APP or web platform.

Energy storage system (ESS) Model	Quantity of battery configured
SUN-7K-SG06LP1-EU-TM3	2
	3
	4
	5
	6
SUN-7.5K-SG06LP1-EU-TM3	2
	3
	4
	5
	6
SUN-8K-SG06LP1-EU-TM3	2
	3
	4
	5
	6
SUN-10K-SG06LP1-EU-TM3	2
	3
	4
	5
	6
SUN-12K-SG06LP1-EU-TM3	2
	3
	4
	5
	6

2.1 Product Features

- Self-consumption and Feed-in Tariff Mode.
- Auto Grid Reconnection Function.
- Power Supply Priority Configuration Function for PV, Battery and Grid.
- Support grid-tied mode, off-grid mode, and seamless bidirectional transition between grid-tied and off-grid states.
- Charging current and voltage can be configured through local LCD or cloud platform.
- Configure the priority of battery charging from the grid, PV and generator via the local LCD or cloud platform.
- Compatible with main power and generator power.
- Overload/over temperature/short circuit protection.
- Smart battery charger design for optimized battery performance
- With anti-backflow function to prevent excess power from being fed into the grid.
- Built-in Wi-Fi/4G module supports remote monitoring via cloud APP/web, with built-in MPP trackers.
- Smart three-stage charging strategy with customizable settings can optimize battery performance.
- Time of use function.
- Smart Load Function.
- Smart Devices function(optional)

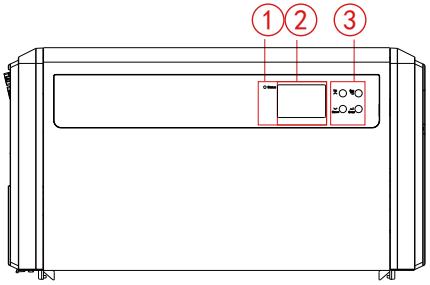
2.2 Appearance and Dimensions



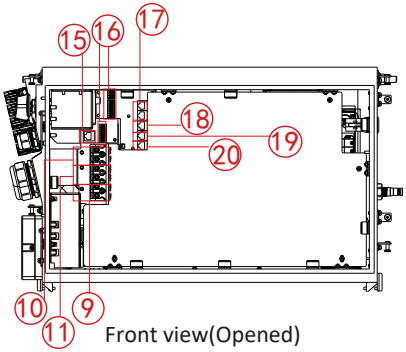
The preceding figure takes one AI-W16 battery as an example to show the appearance.

2.3 Interface and port introduction

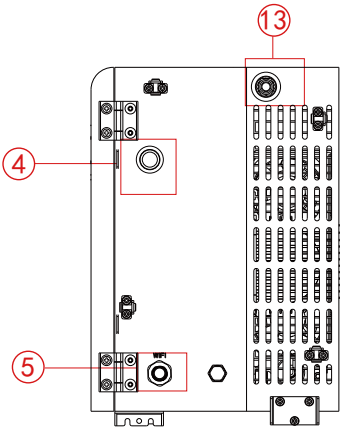
2.3.1 Inverter module



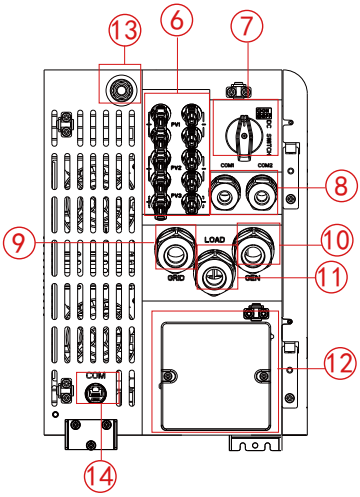
Front View



Front view(Opened)



Right View



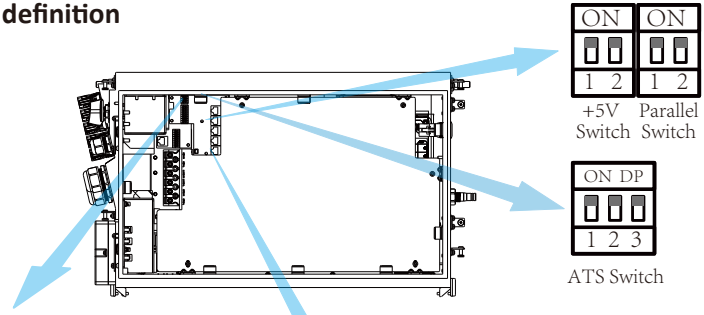
Left View

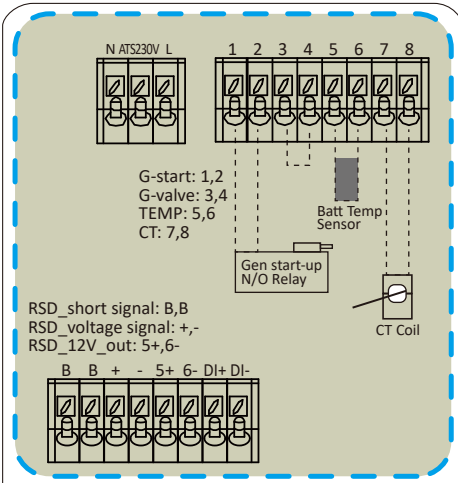
1: Indicator
2: LCD display
3: Function buttons
4: Power button
5: Wi-Fi antenna
6: PV input interface
7: DC Switch
8: Comm cable inlet
9: Grid cable inlet
10: Generator cable inlet
11: Load cable inlet
12: Battery port
13: Handle mounting bolts
14: BMS Comm port
15: DRM port
16: Function port
17: Parallel port
18: Modbus Port
19: BMS 485/CAN Port
20: Meter Port

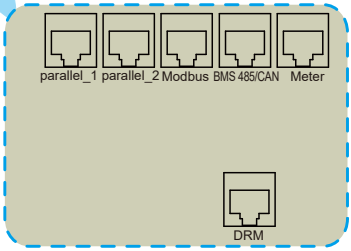
2.3.2 Battery module

For the introduction of the functional interfaces of the battery module, please refer to the quick guide of the battery.

2.4 Function port definition

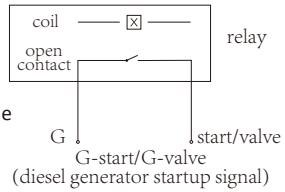






Modbus: Reserved.
BMS 485/CAN: For battery communication.
Meter: For energy meter communication.
Parallel 1: Parallel communication port 1 (CAN interface).
Parallel 2: Parallel communication port 2 (CAN interface).
DRM: It is used to accept the external input signal(Digital input).

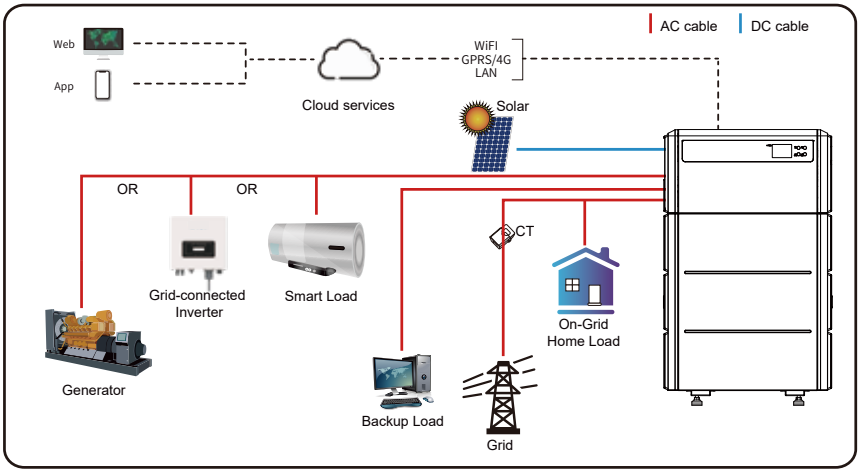
G-start/G-valve(1,2/3,4): Dry contact signal for startup the diesel generator remotely. G-S is a normally open dry contact, and G-V is a normally closed dry contact. They can be selected according to the remote control signal requirements on the generator side.
TEMP(5,6): Reserved.
CT(7,8): To connect current transformer for "Zero export to CT" mode.
ATS 230V: The AC output voltage signal for external control. For details, please refer to Section 7.11.
ATS Switch: This DIP Switch (2 pin) is used to turn on/off the output voltage of ATS port. When both of them are in "ON" position, then the ATS port will be avaliable. When both of them are in "OFF" position, then the ATS port will be unavaliable.



RSD_short signal/RSD_voltage signal(B,B/+,-):Signal input interface for rapidly shutting down this inverter in emergency situations. B,B for short-circuit signal , +,- for voltage signal(12Vdc).
RSD_12V_out(5+,6-): When the inverter is running normally, this port can output a DC 12V auxiliary power supply for supplying power to external devices(like RSD).
DI+,DI-: According to "Article 14a of the German Energy Industry Act (EnWG)" (2024) , the digital interface DI of the hybrid inverter can receive an external control signal to limit the power drawn from the grid to less than 4.2kW. When the signal disappears, the inverter can return to its previous operating state.
Parallel DIP switch:In a parallel system, it is necessary to turn on the Parallel DIP Switch of all (at least half or more) hybrid inverters.
+5V Switch: For turning ON/OFF the 5V DC output of pin 3 of the meter port.

2.5 Basic System Architecture

The system diagram below illustrates the typical application scenarios based on this All-in-one Energy Storage System.
It may also includes following devices to have a Complete running system.
-Generator or power grid, or both
-PV array
Consult with your system integrator for other possible system architectures depending on your requirements.
This system can supply power for various electrical appliances in household or office scenarios, including motor-type appliances such as refrigerators and air conditioners.



2.6 Maintenance of the System

This system features low operation and maintenance thresholds. Its core maintenance requirement is to perform dust cleaning on the cooling fans and air ducts every 6 months to prevent accumulated dust from impairing the heat dissipation performance. If the equipment is deployed in a high-dust environment, the cleaning frequency shall be reasonably increased.
In daily operation and maintenance, it is also necessary to simultaneously check the fault code status of the inverter and the battery, and confirm that the communication link between the inverter and the lithium battery is operating normally.
The product shall be moved indoors or to a dry environment for maintenance.

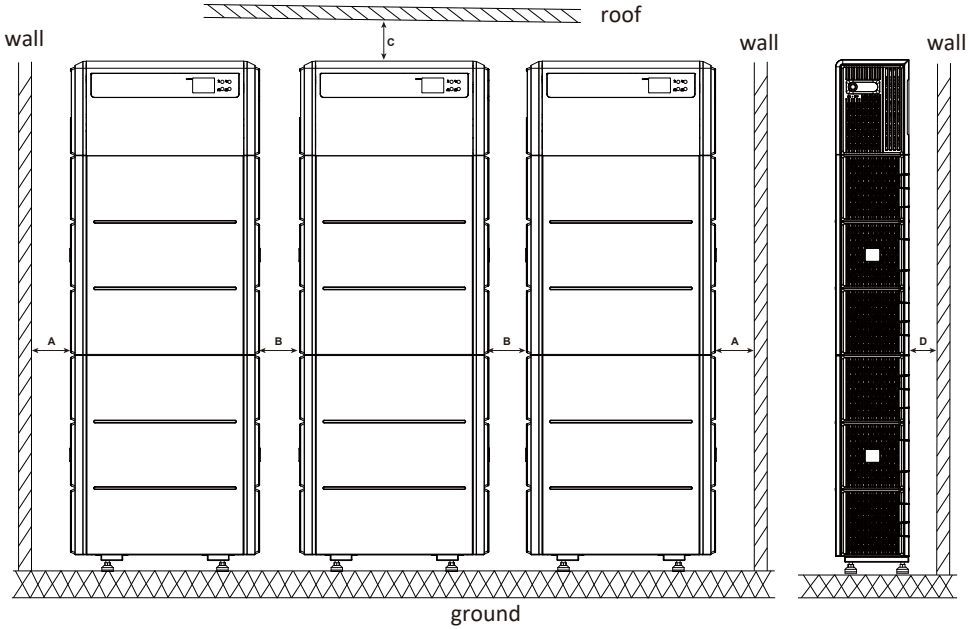
3. Installation

3.1 Installation Precaution

The equipment supports both indoor and outdoor installation. Installation must comply with the instructions in this section and local laws and regulations.Please make sure the installation site meets below conditions:
-Not in areas where highly flammable materials are stored.
-Not in potential explosive areas.
-Do not direct cold air at the equipment to avoid condensation.
-Not near the television Antenna or antenna cable.
-Not higher than altitude of about 3000 meters above sea level.
-Do not install in an environment with humidity > 95%.
-Do not install in areas within 500 meters from the coastline.
-Please AVOID direct sunlight, rain exposure, snow laying up during installation and operation.
Tips:To ensure optimal performance of the device, it is suggested that the installation distance between the device and surrounding obstacles be planned with reference to the diagram below. If the installation site is well-ventilated, the optimal solution may be deployed based on actual conditions.

Recommended Clearance

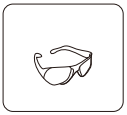
During product installation, the following clearance requirements shall be met between the product and surrounding buildings and objects:

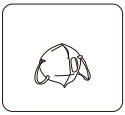


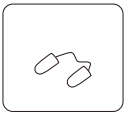
Item	Distance(mm)
A	⩾220
B	470
C	⩾500
D	0-35

3.2 Installations Tools

Installation tools can refer to the following recommended ones. Also, use other auxiliary tools on site.

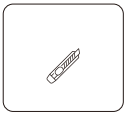

Protective goggles

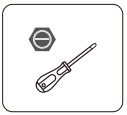

Anti-dust mask


Earplugs

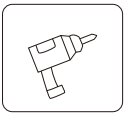

Work gloves

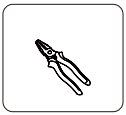

Work shoes


Utlity Knife

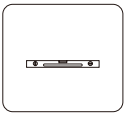

Slotted screwdriver


Cross screwdriver


Percussion drill


Pliers

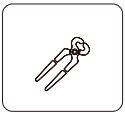

Marker


Level

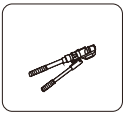

Rubber hammer

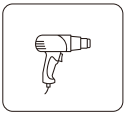

socket wrenches set


Anti-static wrist strap

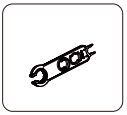

Wire cutter


Wire stripper


Hydraulic pliers


Heat gun

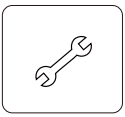

Crimping tool4-6mm²


Solar connector wrench


Multimeter ⩾1100 Vdc


RJ45 crimping plier

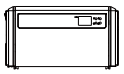
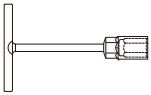
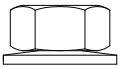
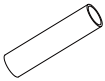
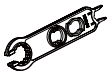
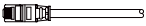
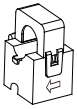
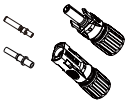
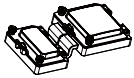

Cleaner


Spanner

3.3 Packing List

Open the packaging box of the inverter and battery modules, check whether all components are fully supplied against the packing lists included with the inverter and the battery packaging box,and make sure nothing is damaged in the package before installation. For any problem, contact your supplier.

Inverter package

 Hybrid inverter x1	 T-type socket wrench x1	 M10 Flange Nut x2	 Handle inverter x4	 Stainless steel mounting screws M4x12 x8
 *Parallel communication cable x1	 Solar Photovoltaic Connector Special Spanner x1	 DRM connector (optional) x1	 Sensor Clamp x1	 User manual x1
 DC+/DC- Plug connectors including metal terminal xN*	 Power connector with protective cover (Battery to Inverter)x1	 Communication cable with BMS x1	 Left decorative panel x1	 Right decorative panel x1

N*： For 7~10k inverter module: 4 sets, For 12K inverter module: 5 sets.

*Parallel communication cable： The parallel CAN communication speed requirement is 500K bps. If no repeater is used, it is recommended that the communication cable length not exceed 5 meters.

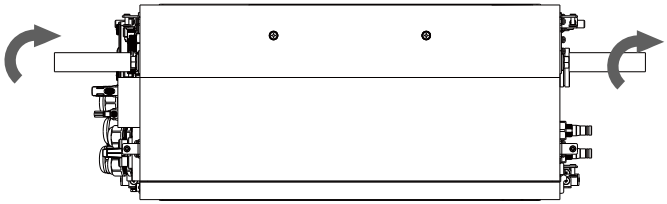
Battery module packaging box

For the content of the battery accessory kit, please refer to the corresponding chapters of the battery quick guide and battery users manual. Scan the QR code below to enter the "Download Center", and enter "AI-W16" in the keywords dialog box to find the download link for the user manual of the A-W16 battery module in the search results, or click directly“ https://dey-eess.com/downloads/### ”Repeat the above steps to obtain the download link for the battery user manual.

3.4 Installation Procedure

3.4.1Unpacking the Product

Open the inverter module packing box and take out the four handles (four in total) from the inverter accessory kit. Fix the handles onto the handle mounting bolts on the left and right sides of the inverter module respectively (refer to Section 2.3 for the positions).
1-2 individuals should hold the handles fixed on both sides of the inverter module and carefully remove it from the cardboard box. If it needs to be temporarily placed on the ground, please cushion the bottom of the inverter module with soft materials such as pearl foam to prevent damage.
Similarly, before installing the battery module, please remove it from the cardboard box in a similar manner.



Note: After using the handles, please keep them properly along with the user manual, as it will still be needed in subsequent installation steps and during the later operation and maintenance stages.



CAUTION:

Improper handling may cause personal injury!

• Arrange an appropriate number of personnel to carry the inverter according to its weight, and installation personnel should wear protective equipment such as anti-impact shoes and gloves.

• Placing the inverter and battery module directly on a hard ground may cause damage to their metal enclosure. Protective materials such as sponge pad or foam cushion should be placed underneath the inverter.

• The inverter and battery modules are heavy. Please use sufficient personnel or appropriate tools for handling.

• Grip the handles on the inverter and battery modules instead of the terminals to move them, so as not to damage the terminals.

• The inverter and energy storage battery modules are of heavy weight. During handling operations, strictly prevent the equipment from slipping and falling to avoid personal crush injury.

• It is strictly forbidden to move the equipment by dragging, so as to prevent damage to the equipment shell and wiring parts.

3.4.2 Battery Installation Procedures

For detailed installation steps of the battery modules, please refer to the Quick Guide included in the battery module packaging box and the user manual which can be downloaded through the QR code inside the Quick Guide.

Note:

• Before installation, be sure to turn the manual switch of the components of the product to the OFF position, live operation is strictly prohibited.

• This product is heavy. If a forklift is used for handling and installation, ensure cooperative operation by multiple personnel to prevent tipping or falling.

• A single array allows a maximum stack of 2 battery packs.

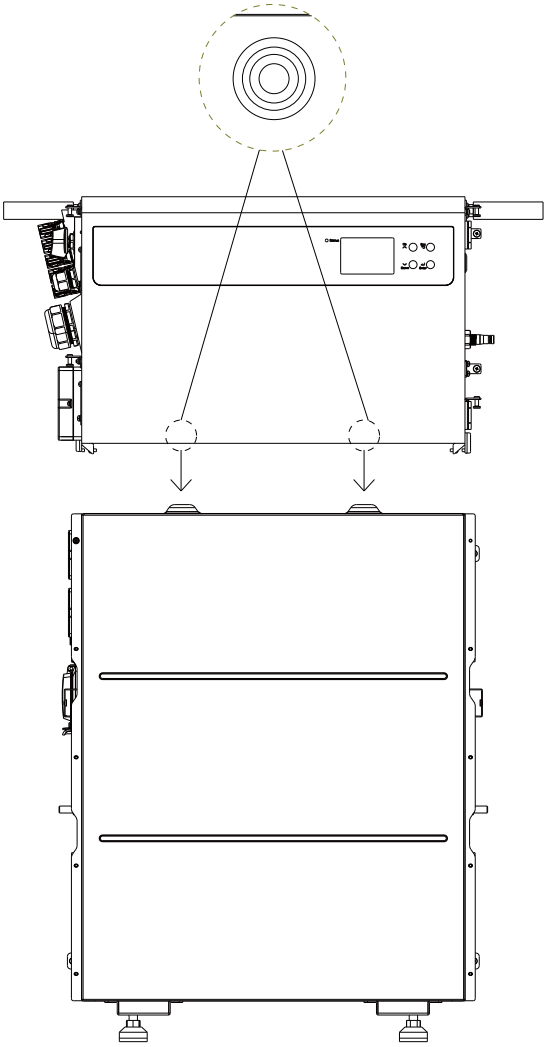
• All screws and expansion bolts must be tightened to ensure firm connection.

• When drilling holes, pay attention to prevent dust from entering the battery, which may affect the battery performance and function. Installer shall avoid the wires and pipes inside the wall when they drill the hole on the wall.

• After drilling, never forget to clean up the floor.

3.4.3 Inverter Installation Procedures

Pre-Installation Notes
Before stacking the inverter on the battery:
• Ensure the battery unit has been securely mounted



Pic 3-1

• Carefully inspect the positioning boss on top of the battery and the positioning recess on the underside of the inverter. Make sure both surfaces are clean, free of debris, and undamaged.

Step1:Lift the inverter above the already fixed battery.

Step2: Align the positioning groove at the bottom of the inverter with the positioning protrusion at the top of the battery, and slowly lower the inverter vertically downwards.

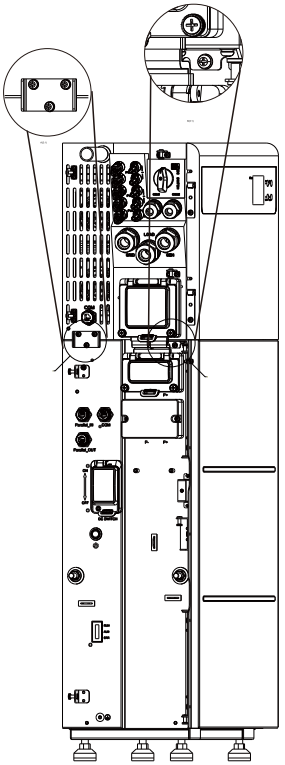
Caution: If the inverter is not properly seated in place, do not forcefully push it from the side or press it down from the top, so as to avoid damaging the positioning components.

Step3: Inspection and Confirmation.

After placing the inverter, perform visual and manual checks to verify that it is lying flat on the battery without any visible gap between it and the battery module. Ensure that the positioning bosses of the battery are fully inserted into the grooves of the inverter.

Step 4: Tighten

Insert the provided screws (M4x12, 2 on each side, total of 4) into the screw holes used to secure the inverter and battery. Tighten the screws with the recommended torque(1.5 N·m) to firmly secure the inverter module to the battery.



Pic 3-2

4. Electrical Connection

Safety Precautions



WARNING

• Only qualified electrical professionals may install and operate the product.
• The product can only be used in situations equipped with overvoltage protection devices.
• Do not place the equipment on a flammable surface.
• Do not perform electrical connections during sandstorms or when the relative humidity of the surrounding environment is greater than 95%.
• Do not contact live parts directly without protection
• Before installation, ensure that there is no voltage on the AC side and DC side.
• Only allow connection of “+” to “+” and “-” to “-”.
• When connecting battery pack to inverters or connecting several battery stacks in parallel, please use the cables provided in the unpacking list. If other cables must be used under special circumstances, ensure they comply with relevant standards.
• Before connecting cables, check that the polarity of all input cables is correct. Do not pull wires and cables forcibly during electrical installation; otherwise, the insulation performance may be affected. Ensure all cables have sufficient bending space and take necessary auxiliary measures to reduce cable stress.
• After each connection is complete, carefully check whether the connection is correct and secure.

4.1 Wiring Preparation

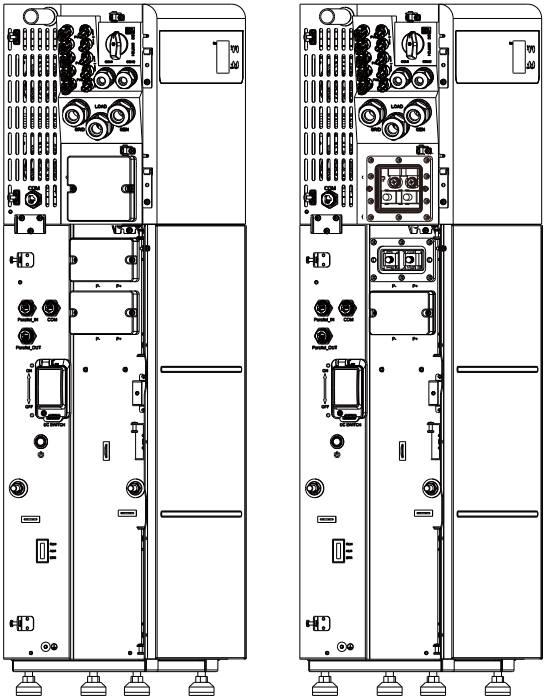
4.1.1 Cable Preparation

If there are multiple stacks and parallel bases need to be used for battery parallel wiring, please refer to the battery Quick Guide and user manual to reassemble the connector assembly first.

Scan the QR code below to enter the "Download Center", then enter "Al-W16" in the keywords dialog box to find the download link for the user manual of the Al-W16 battery module in the search results, or click directly" https://deyeess.com/downloads/### "Repeat the above steps to obtain the download link for the battery module user manual.

4.1.2 Remove dust covers

1.Unscrew the fastening screws on the dust covers of the battery power terminal area on the inverter and battery module, and remove the dust covers, when there is only one stack, the bottom power terminal is not used and the dust cover on it needs to be retained, as shown in picture below.

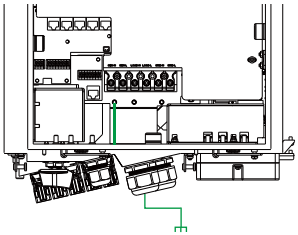


4.2 Cable Connection

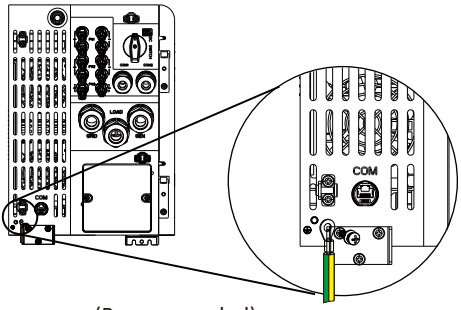
4.2.1 Earth connection

4.2.1.1 Earth connection of the Inverter module

The PE wires(if have) of AC cables must be connected to the Earth plate inside the junction box of the inverter, and the ground hole on the shell of the inverter is also recommended to be connected with the external groud plate.



(Mandatory)



(Recommended)

Earth connection (Copper wires)

Model	*Wire Size*	*Cable(mm²)*	*Torque value(max)*
7/7.5/8/10/12kW	4AWG	16	1.2 N·m

Earth connection (Copper wires) (Bypass)

Model	*Wire Size*	*Cable(mm²)*	*Torque value(max)*
7/7.5/8/10/12kW	4AWG	16	1.2 N·m

Note: The specification of the protective earth conductor is based on the specification of the phase conductor. Since there are 2 sets of standards for the recommended phase conductor specifications according to different installation methods, the specifications of the protective earth conductor are also recommended separately in accordance with these 2 sets of standards.

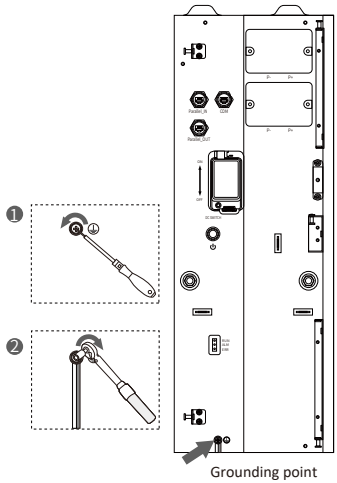
Warning:

Inverter has built-in leakage current detection circuit, The type A RCD can be connected to the inverter for protection according to the local laws and regulations. For the RCD installed directly between the inverter Grid port and the household load, its operating current shall be no less than 300mA. RCDs installed at other positions can adopt specifications with higher sensitivity, otherwise inverter may not work properly.

4.2.1.2 Earth connection of battery pack

WARNING:

• The bottom battery pack of each stack must be reliably grounded.



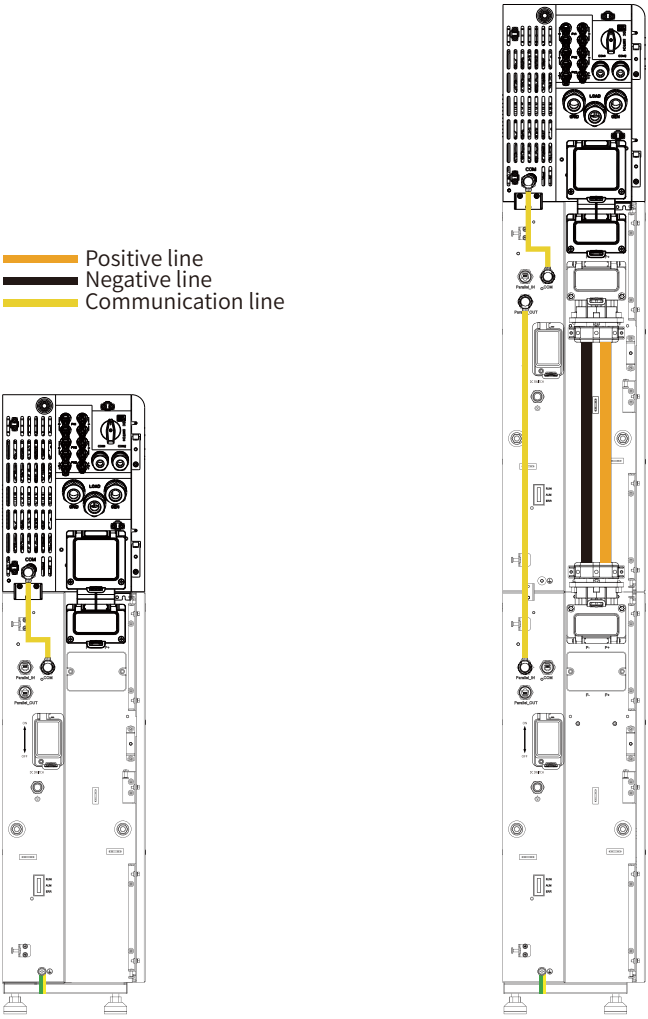
Grounding point

Use a cross screwdriver to remove the M4x12 grounding screw at the base grounding point. After installing the yellow green grounding cable, use a torque wrench to re tighten the M4x12 grounding screw to the grounding point, and reliably connect the other end of the grounding cable to the grounding bar (usually inside the distribution box).
Recommended torque for M4x12 bolts: 1.5 N·m

4.2.2 Battery Cable Connection

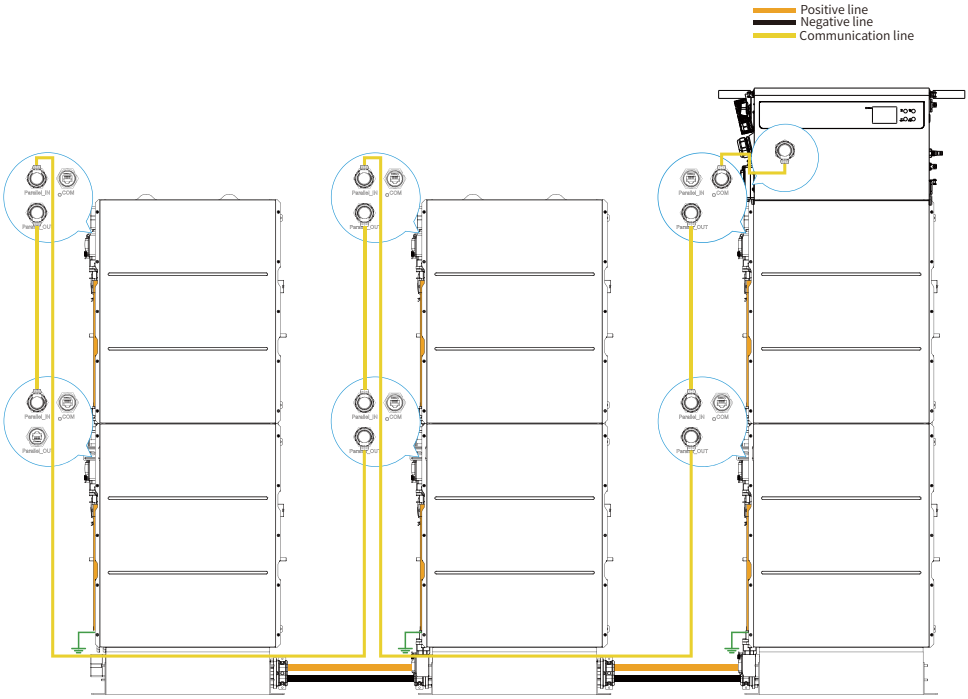
Battery wiring Post-Completion Overview:

Single-stack wiring

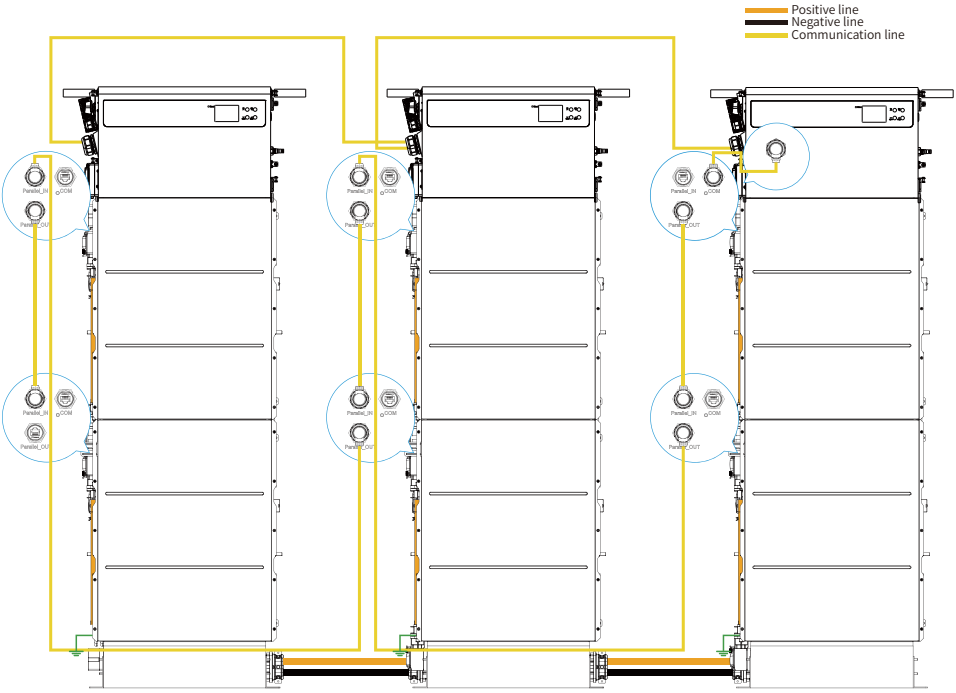


Multi- stack wiring

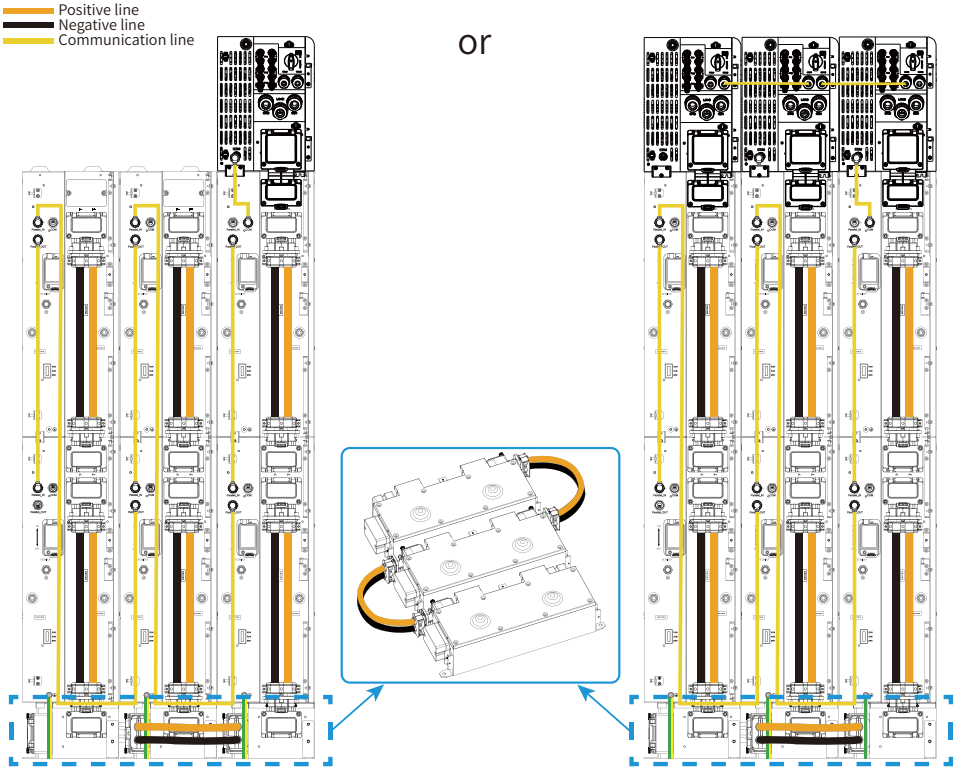
Mode 1:



or

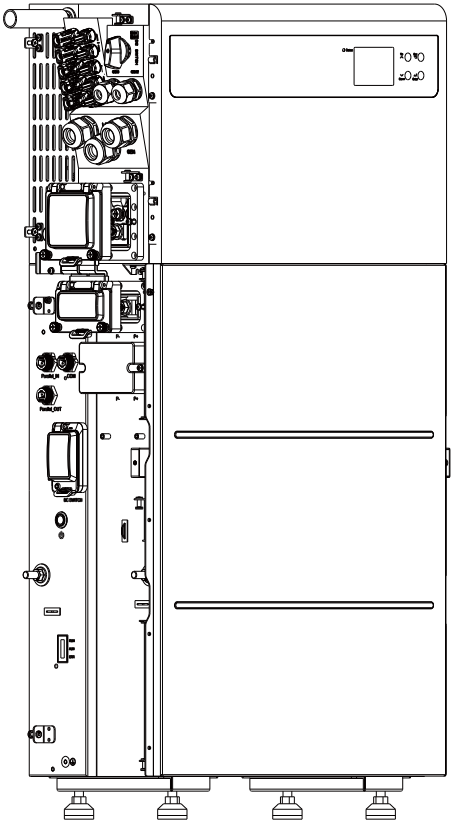

Positive line
Negative line
Communication line

Mode 2:

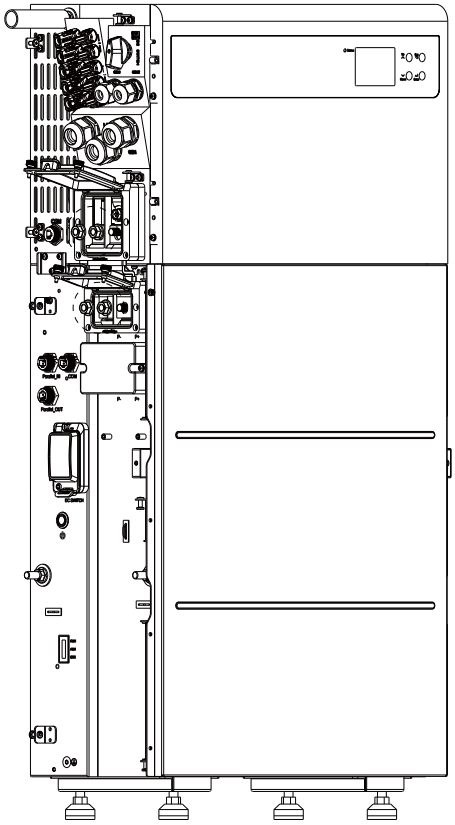


4.2.2.1 Power Cable

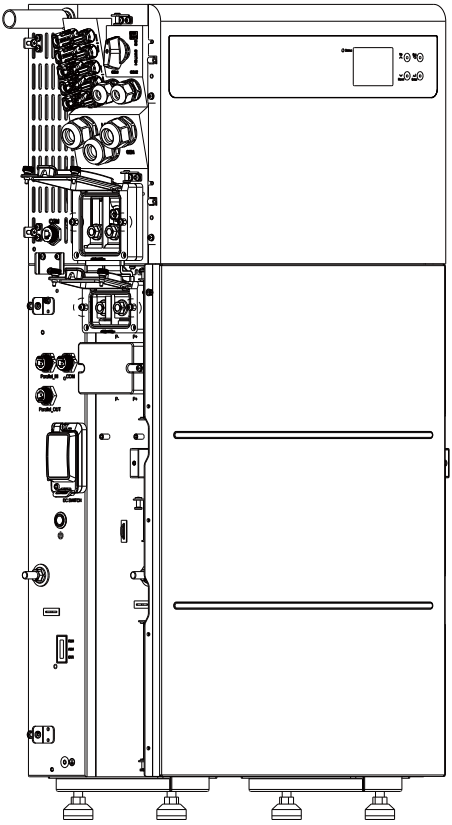
Step 1: Take out the copper bar with protective cover from the accessory package, align the holes on the copper bar with the bolts used to fix the copper bar on the inverter and battery module, and push inward to fit the copper bar onto the wiring terminals of the inverter module and battery module.



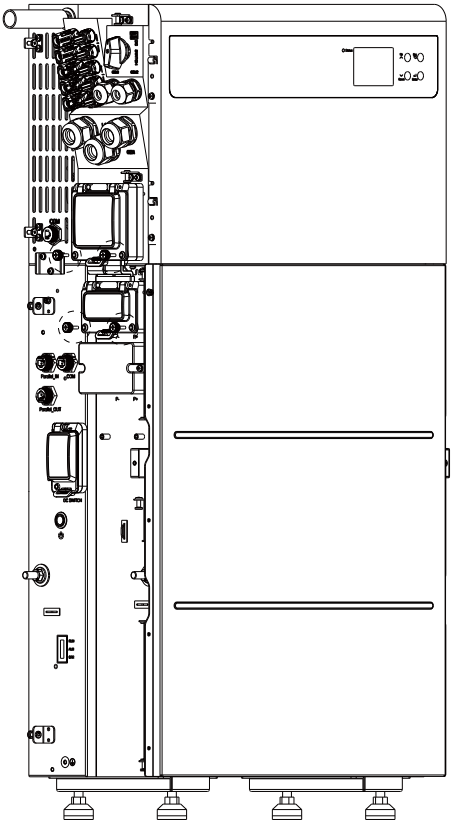
Step 2: As shown in the figure below, unscrew the 4 screws on the upper and lower protective covers, open the protective covers, and then use the 4 M10 nuts in the accessory kit to lock the copper bar onto the terminal block. Recommended torque: 24.5 N·m .



Step 3: Take out 4 M4x12 screws from the accessory kit and tighten them to the 4 positions circled in the figure below. Recommended torque: 1.5 N·m .



Step 4: Put on the protective cover, then tighten the 4 M4 screws built on the outer side of the cover. Recommended torque: 1.5 N·m.
Note: The screws need to be tightened with tools. Failure to tighten them will result in non-compliance with the IP66 protection level requirements.

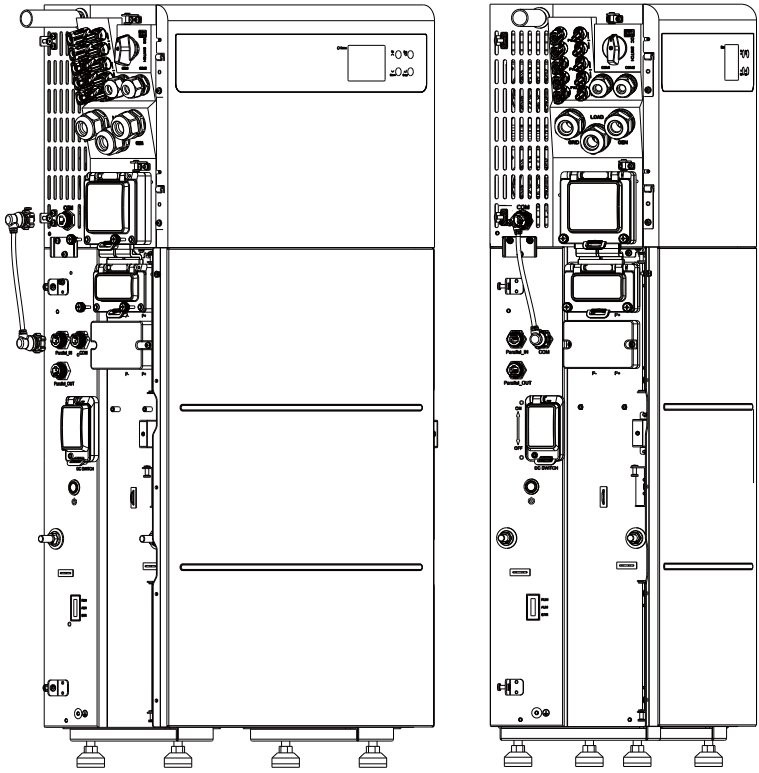


Step 5: Use the modified Battery-Battery power cable kit specified in Section 4.1.1 "Cable Preparation" to complete the installation of parallel power cables between battery packs. The installation methods and procedures are similar to the previous step. Pay attention to matching the polarity of the power cable with the polarity of the wiring terminals, and do not reverse them.

4.2.2.2 Communication Cable

Wiring method of the communication cable with waterproof end cap is as follows:
1. Insert the RJ45 crystal connector at one end of the communication cable into the corresponding communication port.
2. Use the built-in waterproof cap on the communication cable to cover the communication port, and tighten the waterproof cap clockwise to the end.

The wiring steps for battery-related communication cables are as follows:
1. Using the above method, connect the communication cable between the inverter and the battery bank master unit (included in the inverter package, standard length: 236mm). Use communication port number 14 on the inverter side (refer to sectio 2.3), and use communication port labeled COM on the battery pack master unit.
2. Using the above method, connect the parallel communication cable between the two battery packs (optional, included in the battery pack package, standard length: 755mm). Master unit: Parallel_OUT connects to the next slave unit's Parallel_IN in daisy chain. Slave unit: Parallel_IN connects to the preceding unit's Parallel_OUT; Parallel_OUT may connect to the next unit or be left unconnected.



4.2.2.3 Multi-System Connection

The parallel system adopts a centralized battery architecture. All battery packs in the parallel system shall be connected in parallel to form a unified battery bank, then the BMS of the master battery pack will communicate with the master inverter. A single inverter module can be connected to 1 to 6 battery packs, and the maximum number of parallel inverter modules is 3 units. Therefore, the maximum capacity of the parallel system consists of 3 inverter modules plus 18 battery packs in total. The parallel system needs to be assembled into multiple stacks, each stack can accommodate a maximum of 2 battery packs plus 1 inverter module. All stacks are connected in parallel via the optional parallel base, which supports two installation modes: Side-by-Side and Front-to-Rear. For detailed wiring procedures and wiring diagrams, please refer to the Quick Guide and User manual of the AI-W battery.

Scan the QR code below to enter the "Download Center", then enter "AI-W16" in the keywords dialog box to find the download link for the user manual of the AI-W16 battery module in the search results, or click directly" https://deyeess.com/downloads/### "Repeat the above steps to obtain the download link for the battery module user manual.

4.2.3 Grid connection and backup load connection

· Before connecting to the grid, a separate AC breaker must be installed between the inverter and the grid, and also between the backup load and the inverter. The AC circuit breaker on the grid side of the hybrid inverter provides bidirectional isolation between the grid and the inverter, which can prevent the bidirectional propagation of fault currents and facilitate safe operation and maintenance. The AC switch on the load side can independently cut off the fault load circuit to prevent local overload and short circuit from damaging the inverter and other loads.

· Please refer to the recommended specifications in sections 4.5-4.7 for the specifications of the AC breaker and comply with local regulations, all final installed AC breakers must comply with the certification requirements of IEC 60947-2 and IEC 61439-8 .

· There are three terminal blocks with "Grid" "Load"and "GEN" markings. Do not mix them up.



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 connection. Please refer to the two tables below to select cable specifications based on the installation scenario. If local regulations have other requirements for cables, please choose cable specifications according to local regulations.
The factors that affect cable selection include maximum operating current, cable type, wiring mode, ambient temperature, and maximum expected line loss.

The following two tables: The first table provides recommendations based on 2 times the rated output current (the inverter supplies the rated power load while charging the battery at the rated power), and the second table provides recommendations based on the bypass current (Max. continuous AC passthrough current).

Backup load (Copper wires)

Model	*Wire Size*	*Cable(mm²)*	*Torque value(max)*
7/7.5/8/10/12kW	4AWG	16	1.2 N·m

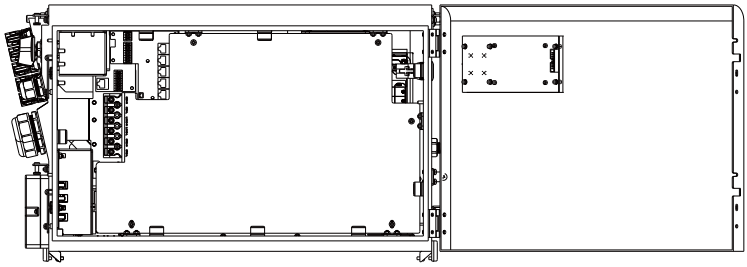
Crid (Copper wires) (Bypass)

Model	*Wire Size*	*Cable(mm²)*	*Torque value(max)*
7/7.5/8/10/12kW	4AWG	16	1.2 N·m

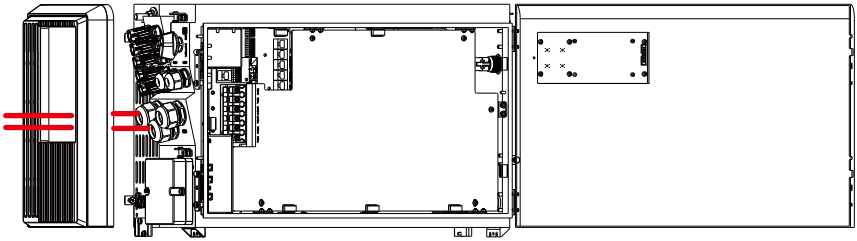
Chart 3-3 Recommended Size for AC wires

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

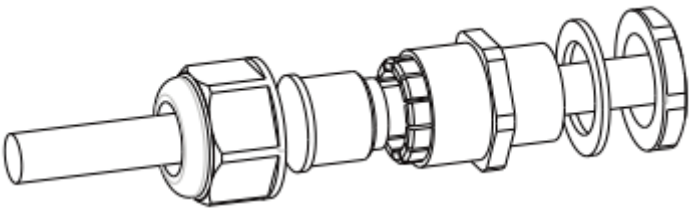
1. Before making Grid, load and Gen port connection, be sure to turn off AC breakers and disconnectors first.
2. Use a Phillips screwdriver to unscrew the 2 M4 screws that secure the front cover latch, pull out the latch that fastens the cover, then open the front cover outwards.



3. Pass all cables that need to be routed into the inverter junction box through the openings on the Left decorative panel in the accessory kit, as shown in Pic.3-3-1. Unscrew the required sealing gland, use scissors or similar tools to cut an opening on the rubber membrane at the inlet of the sealing gland that matches the outer diameter of the cable, then route the corresponding cable through the sealing gland(as shown in Pic.3-3-2) according to the purpose marked next to it, and feed the cable into the interior of the inverter.

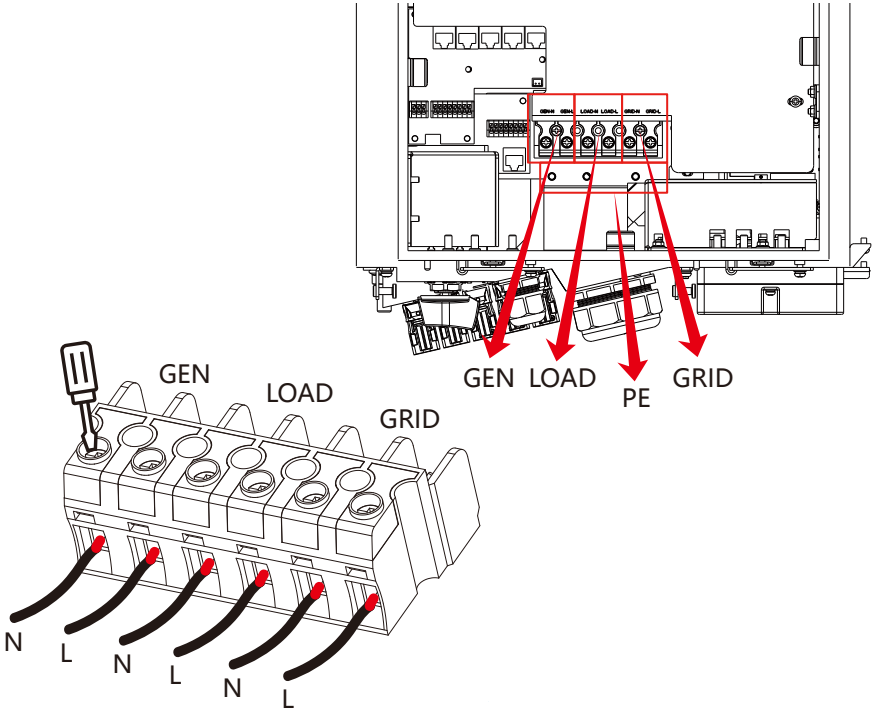


Pic 3-3-1



Pic 3-3-2

4. Remove insulation sleeve 10mm length, unscrew the bolts. Thread the wires through the magnetic ring firstly, then insert these wires into the terminals according to polarities indicated on the terminal block. Tighten the terminal screws and make sure the wires are completely and safely connected.



Pic 3-3-3



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

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, may cause damage to such appliances.To prevent this kind of damage, please check with 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 may still causes internal damage to the air conditioner

4.2.4 PV Connection

The PV modules used to connected to this inverter shall be Class A rating certified according to lEC 61730.
Before connecting the photovoltaic strings to inverter, please install an independent DC circuit breaker between the inverter and the photovoltaic string. The use of appropriate cables for connecting photovoltaic strings is crucial for the safe and efficient operation of the system. To reduce the risk of personal injury and property damage, please use cables that are not lower than the recommended specifications below.

Model	*Wire Size*	*Cable(mm^2)*
7/7.5/8/10/12kW	12AWG	2.5

Chart 3-4 Cable size



Photovoltaic strings generate lethal high voltage when exposed to sunlight. Please comply with all safety instructions listed in the relevant documents pertaining to photovoltaic strings.



To avoid inverter failure, do not connect any photovoltaic modules that may leak electricity to the inverter. For example, PV+and PV - grounding of solar panels can cause excessive leakage current in inverters. Therefore, when using photovoltaic modules, only the frame can be grounded, and the positive and negative poles are not allowed to be grounded.
Please install surge protection devices between the inverter and the photovoltaic array, otherwise lightning strikes may cause damage to the inverter.
Before connecting the photovoltaic array to the inverter, ensure its good insulation to the ground.
Before connecting the photovoltaic connectors to the corresponding terminals on the inverter, confirm that the polarity of the photovoltaic string is correct.

During the installation and operation of the inverter, always ensure that neither the positive nor the negative pole of the photovoltaic string is short-circuited to the ground. Otherwise, AC or DC short circuit may occur, resulting in equipment damage. Such damage is not covered under the warranty.
If the DC connector is loosely connected, arcing or contactor overheating may occur, and the resulting losses are not covered under the warranty.
If the DC input cables are connected with reversed polarity, or the positive and negative terminals of different MPPTs are simultaneously short-circuited to the ground while the DC switch is in the "ON" state, do not operate immediately, otherwise the inverter may be damaged. Switch the DC switch to the "OFF" position, and make sure the current in the PV string is below 0.5A before you can remove the DC connector and adjust the polarity of the PV string.
Only use the DC connectors supplied with the product for DC cable connections. Using incompatible DC connectors may lead to serious consequences, and the resulting damage is not covered under the warranty.
Do not connect one PV string to multiple inverters. Otherwise, the inverters may be damaged.

4.2.4.1 PV Module Selection:

NOTICE
Mixing different brands or models of photovoltaic modules in the same MPPT circuit, or placing photovoltaic modules with different orientations or inclinations in the same string, may not damage the inverter, but it can lead to poor system performance!
The following requirements regarding photovoltaic string connection must be met. Otherwise, it may cause irreversible damage to the inverter and is not covered by the warranty.

When selecting proper PV modules, please be sure to consider below parameters:
1) Open circuit Voltage (Voc) of PV strings not exceeds Max.PV Input Voltage clarified in inverter's datasheet, and the Voc of PV strings should not less than the Start-up Voltage of inverter.
2) Short circuit current (Isc) of PV modules should not exceed Max.Input Short-Circuit Current clarified in inverter's datasheet.
3)It is recommended to use PV modules whose Maximum Power Current (Imp) does not exceed the inverter's Max. Operating PV Input Current. Modules with a larger Imp can also be used, but this will cause waste, and the actual output power of the module will not able to reach its peak power(Wp).

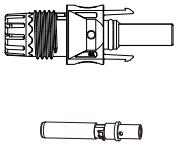
Inverter Model	SUN-7K-SG06LP1-EU-TM3	SUN-7.5K-SG06LP1-EU-TM3	SUN-8K-SG06LP1-EU-TM3	SUN-10K-SG06LP1-EU-TM3	SUN-12K-SG06LP1-EU-TM3
PV Input Voltage Range(V)	125-500				
Rated PV Input Voltage(V)	370				
MPPT Voltage Range(V)	150-425				
No. of MPP Trackers	3				
No. of Strings per MPP Tracker	2+1+1				2+2+1

Chart 3-5

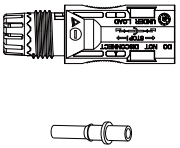
4.2.4.2 PV string wiring

1. Switch the Grid Supply Main Switch(AC)OFF.
2. Switch the DC Isolator OFF.
3. Follow the steps below to assemble PV input connector to the inverter.

Note:
This inverter complies with IEC 62109-2 clause 13.9 for earth fault alarm monitoring. If an Earth Fault Alarm occurs,the inverter will disconnect from the grid and will report an error F04 on its LCD. At the same time, the buzzer will sound. If the inverter is equipped with a data logger which has been properly configured, the alarm information will be uploaded to the cloud server, and this alarm can be monitored through the website or the mobile APP.

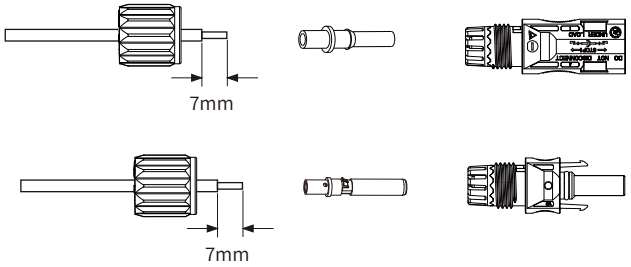


Pic 4.1 DC+ male connector



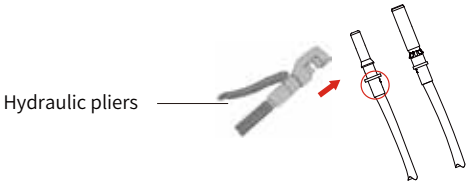
Pic 4.2 DC- female connector

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 Pic 4.3) and pass the positive and negative PV cables through the cap nut of the DC connector.



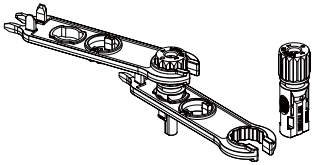
Pic 4.3 Disassemble the connector cap nut

b) According to the polarity of the DC cable, use hydraulic pliers to crimp the metal pins inside the DC connector onto the conductors at the end of the DC cable, as shown in picture 4.4.



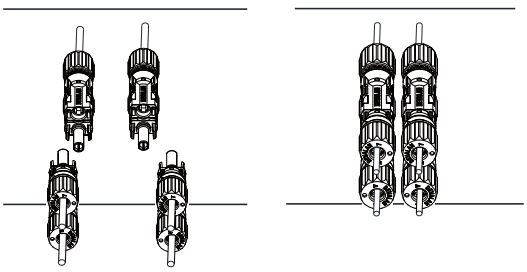
Pic 4.4 Crimp the contact pin to the wire

c) Insert the crimped metal pin into the insulator part of the DC connector until it snaps into place. Gently pull the cable backward to ensure firm connection. Tighten the cap nut and the insulator part with the Connector Special Spanner inside the accessory kit.



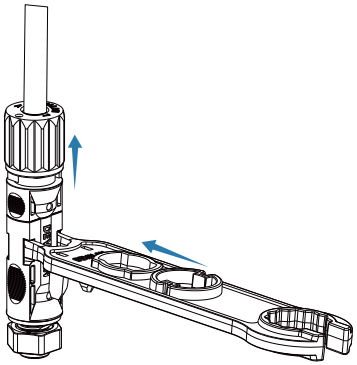
Pic 4.5 connector with cap nut screwed on

d) Finally insert the DC connector into the positive and negative input of the inverter, as shown in picture 4.6.



Pic 4.6 DC input connection

During installation and maintenance, if it is necessary to disconnect the installed PV strings from the inverter, first turn off the DC breaker between the PV strings and the inverter, as well as the DC switch on the inverter, to ensure that the DC connector is free of voltage. Then use the Solar Photovoltaic Connector Special Spanner from the inverter accessory kit to separate the male and female ends of the DC connector in the manner shown in the figure below.



Warning:

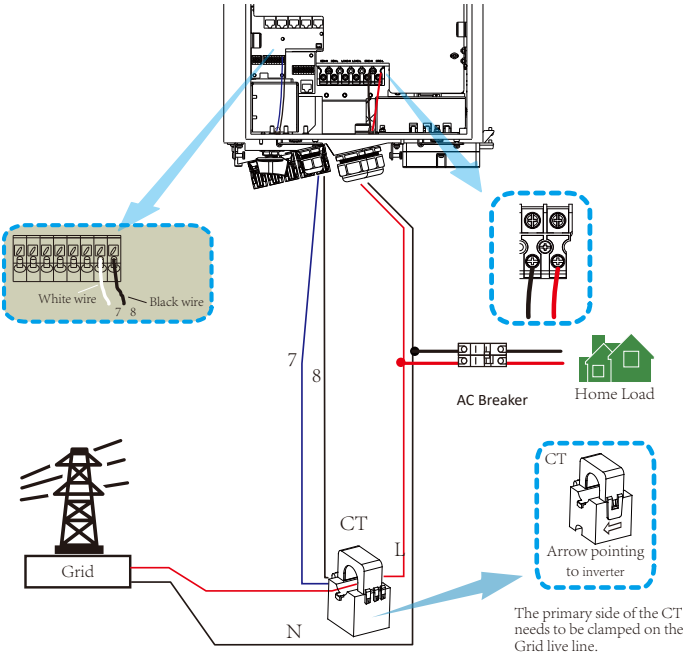
Photovoltaic strings will generate high voltage under sunlight, which can pose a threat to personal safety. Therefore, before connecting or disassembling DC connectors, opaque materials should be used to cover the photovoltaic panel, and the DC switch should be placed in the "OFF" state.

4.2.5 Meter or CT installation

There are three selectable installation methods to measure the power consumption or to ensure zero power export to grid: Only with CT, smart meter without CT, smart meter with CT. The default installation method is to only use the CT (100A/50mA) that come with the packaging box. When the the wire length of the CT needs to exceed 10 meters, it is recommended to use a smart meter instead of the CT. In addition, in a parallel system, if the current to bemeasured is greater than 100 A, the default CT also need to be replaced with smart meters or larger CT. Pease contact the Deye support team to confirm which specification of CT or smart meter to use.

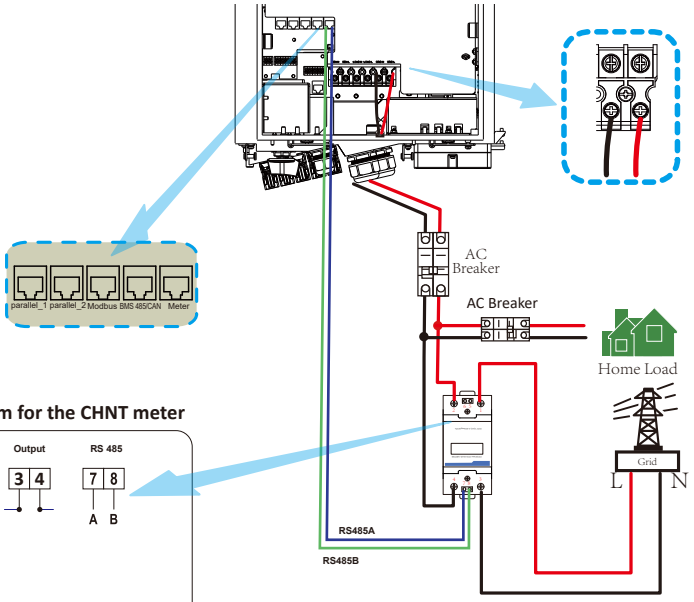
Notice: Suggest purchasing smart meters through official channels. For meters purchased from third-party channels, even with identical specifications and models, communication mismatch issues may still occur. The inverter supplier reserves the right not to provide technical support services for after-sales problems caused by such issues.

4.2.5.1 CT Connection

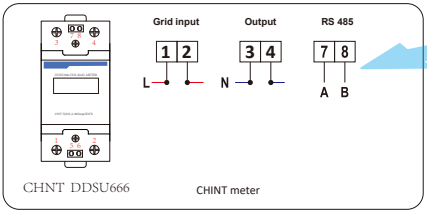


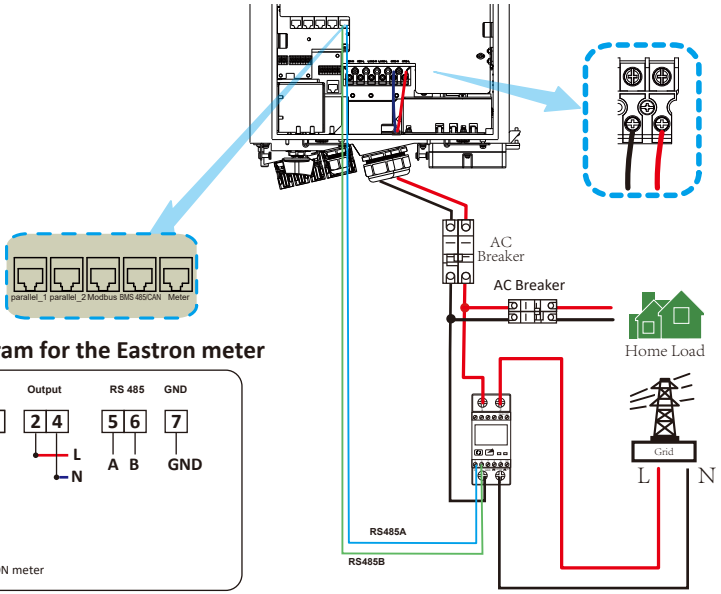
***Note: Turn off the DC switch, adjust the settings to disable battery discharge, and turn on some loads to ensure that each phase draws power from the grid. If the sampling data of the external CT on the LCD screen or cloud platform shows a negative value, you need to adjust the orientation of the CT, or perform CT reverse setting via the LCD or cloud platform.**

4.2.5.2 Connection of meter without CT



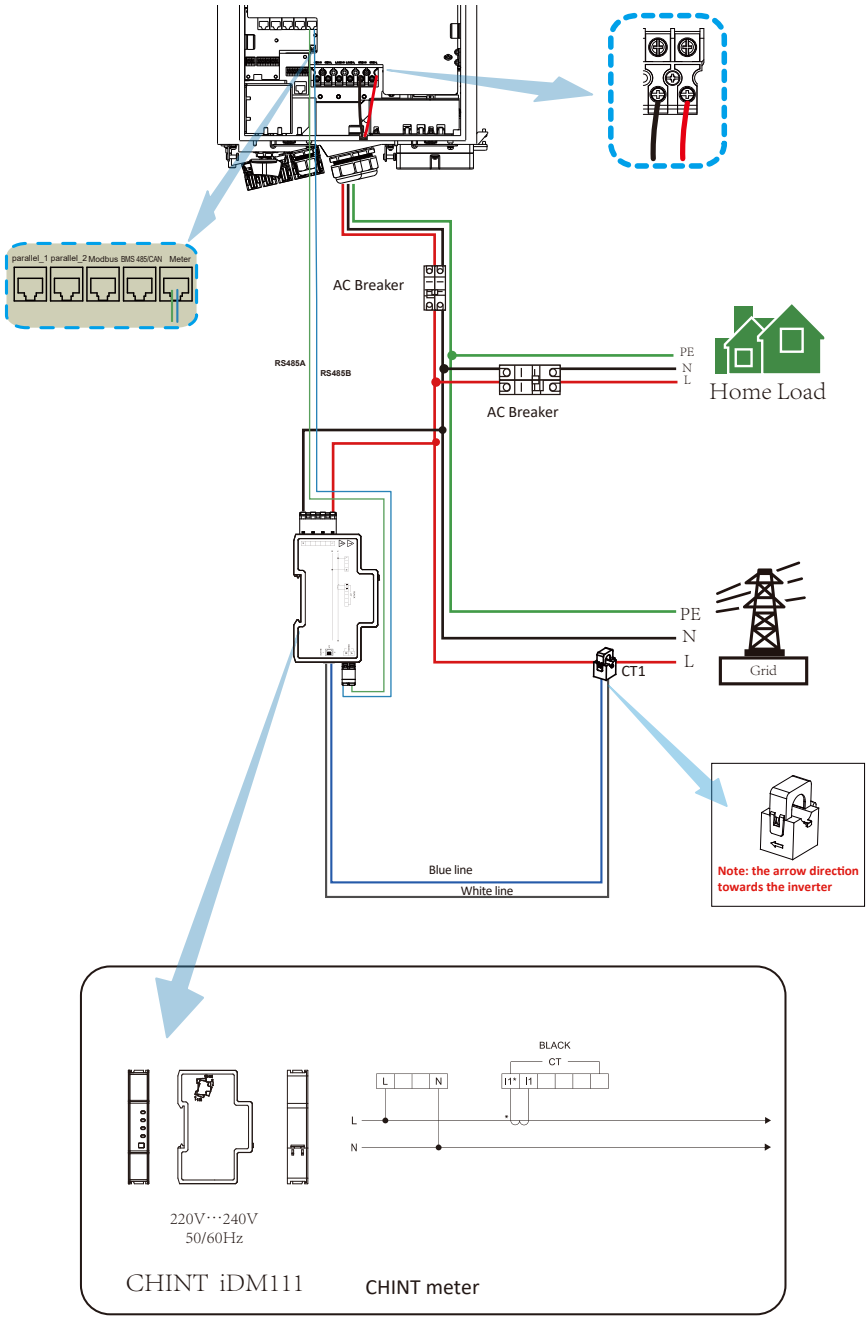
System connection diagram for the CHNT meter

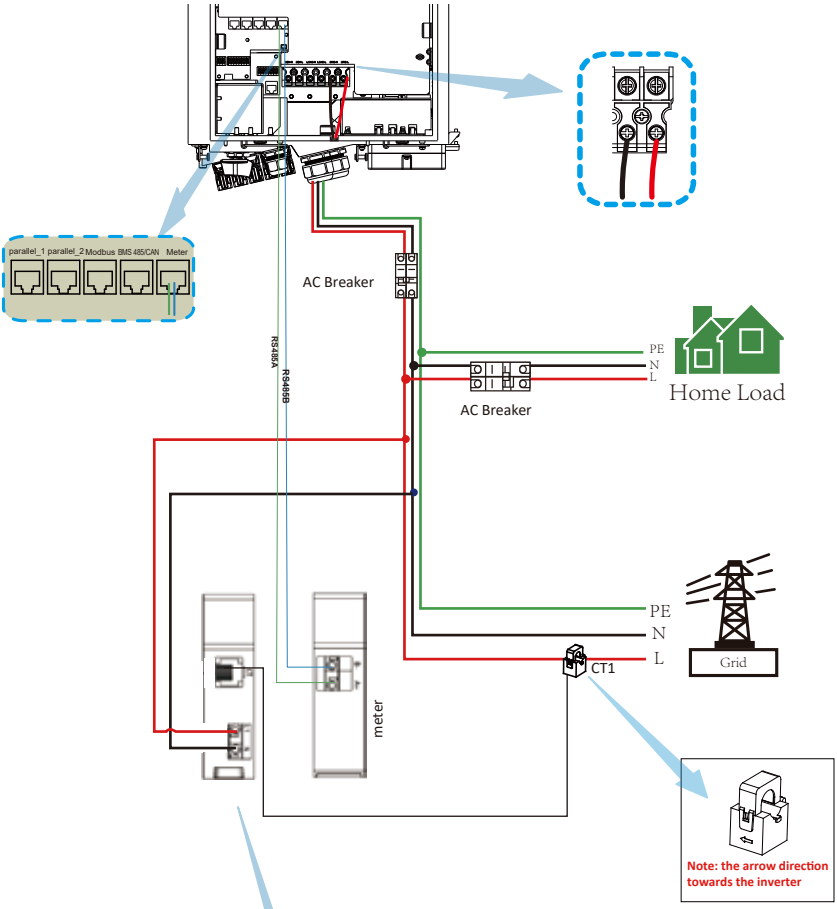


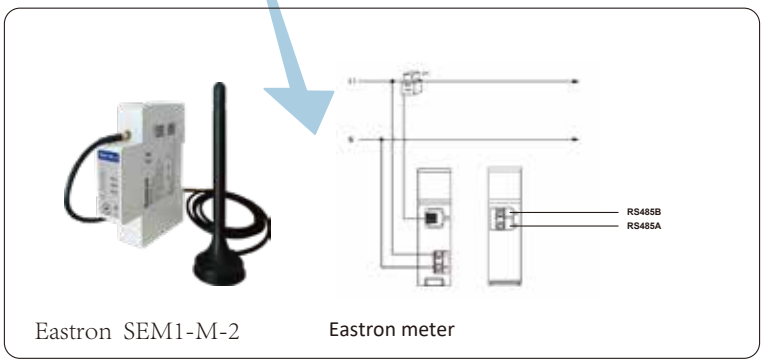


System connection diagram for the Eastron meter

4.2.5.3 Connection of meter with CT



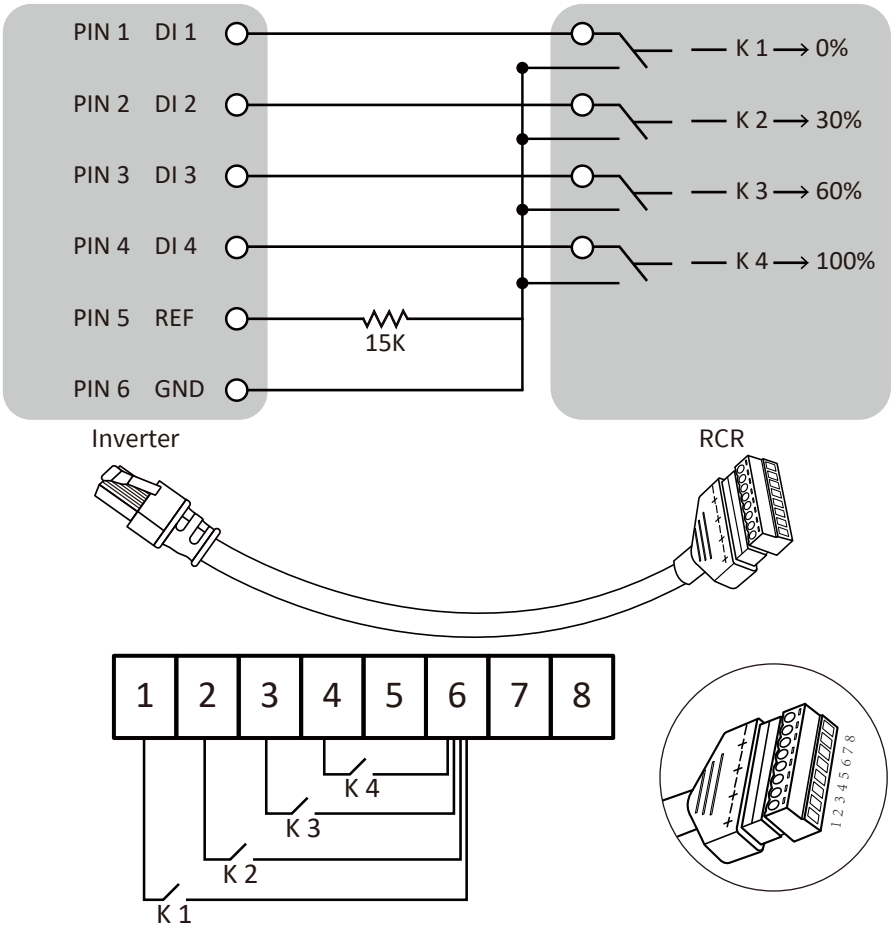

parallel_1 parallel_2 Modbus BMS 485/CAN Meter
AC Breaker
RS485A
RS485B
PE
N
L
Home Load
AC Breaker
PE
N
L
Grid
CT1
meter
Note: the arrow direction towards the inverter


RS485B
RS485A
Eastron SEM1-M-2
Eastron meter

4.2.6 DRM connection

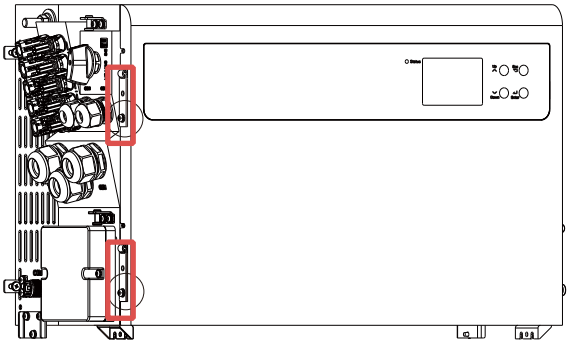
"DE": Ripple Control Receiver (RCR)
In Germany, the grid company uses the Ripple Control Receiver to convert the grid dispatching signal and send it as a dry contact signal.The inverter can control power output according to the local preset instructions as shown below.

RCR

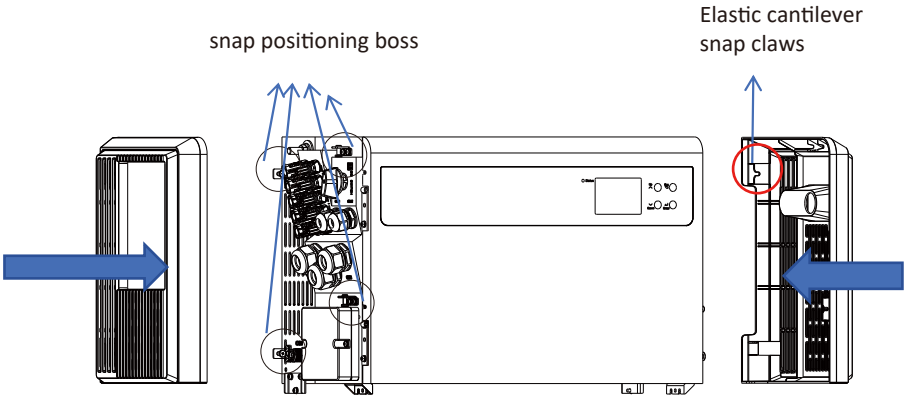


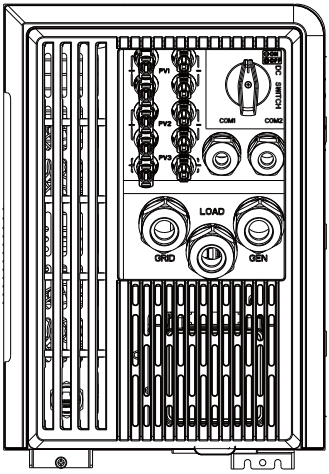
4.3 Post-Wiring Operations

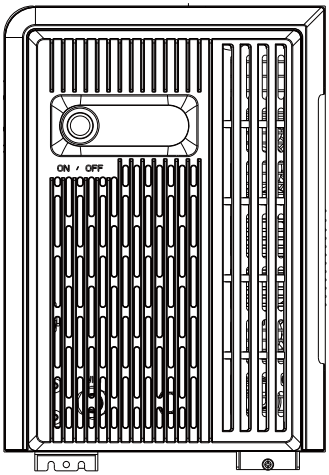
Step 1: After completing the wiring, close the front cover and press it firmly into place (this operation is recommended to be completed by multiple people working together). Then push the latch pin of the buckle into the slot, use a Phillips screwdriver and the previously removed M4 screws to fasten the buckle, with a recommended torque of 1.5 N·m.



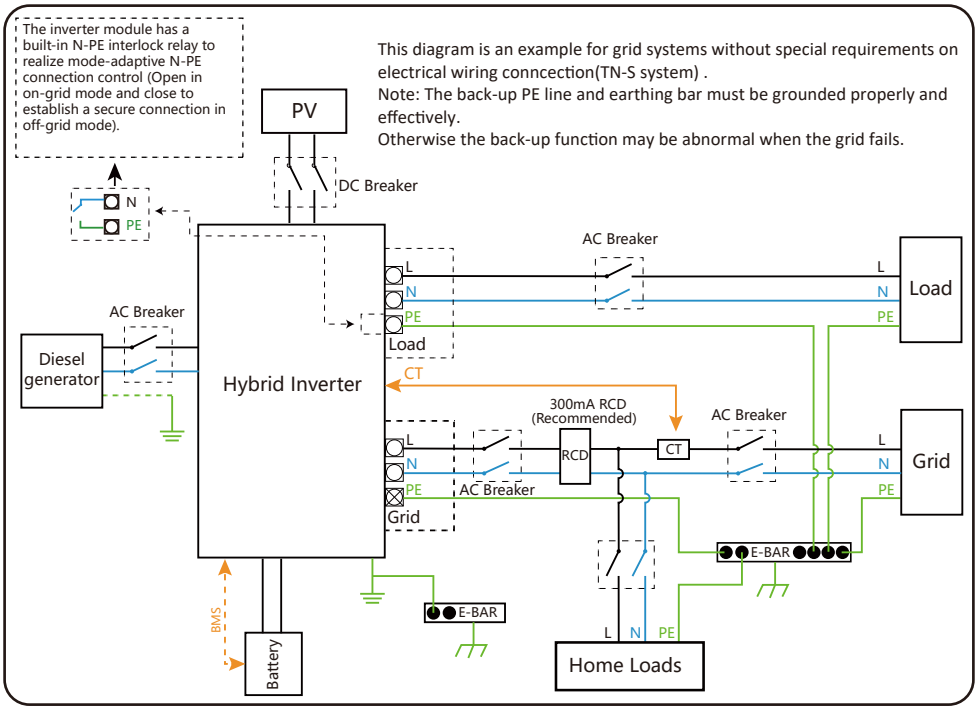
Step 2: Align the 4 elastic cantilever snap claws on the inner side of the Left decorative panel with the 4 cylindrical snap positioning bosses on the inverter module housing, push the Left decorative panel inward until all 4 snap positioning bosses are fully engaged into the 4 elastic cantilever snap claws, to complete the installation of the Left decorative panel. Follow the same operation procedure to fix the Right decorative panel to the right side of the inverter module.

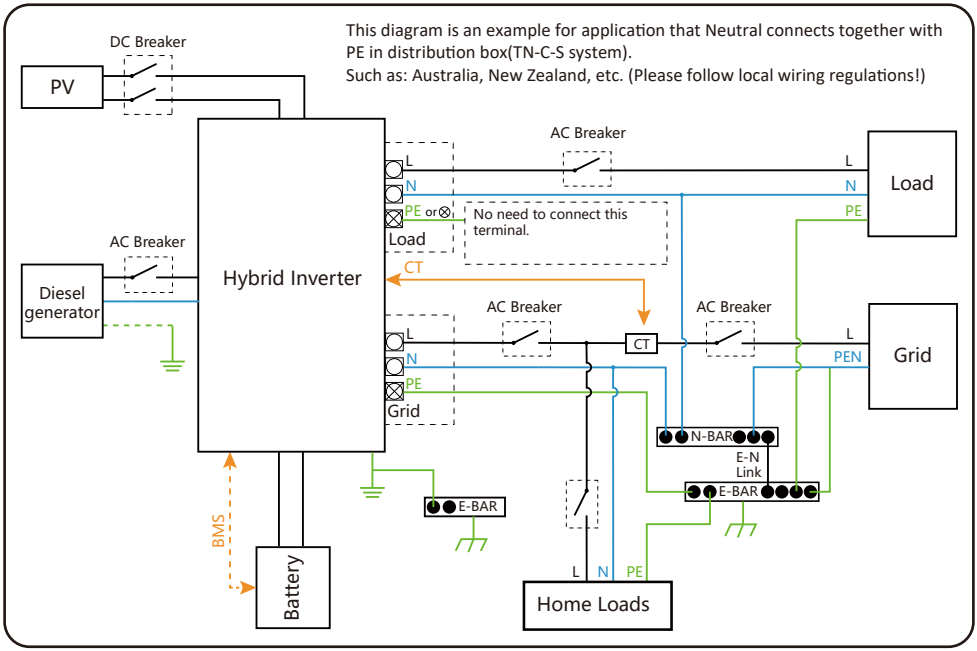

snap positioning boss
Elastic cantilever
snap claws


PV1
PV2
PV3
DC SWITCH
COM1
COM2
LOAD
GRID
GEN

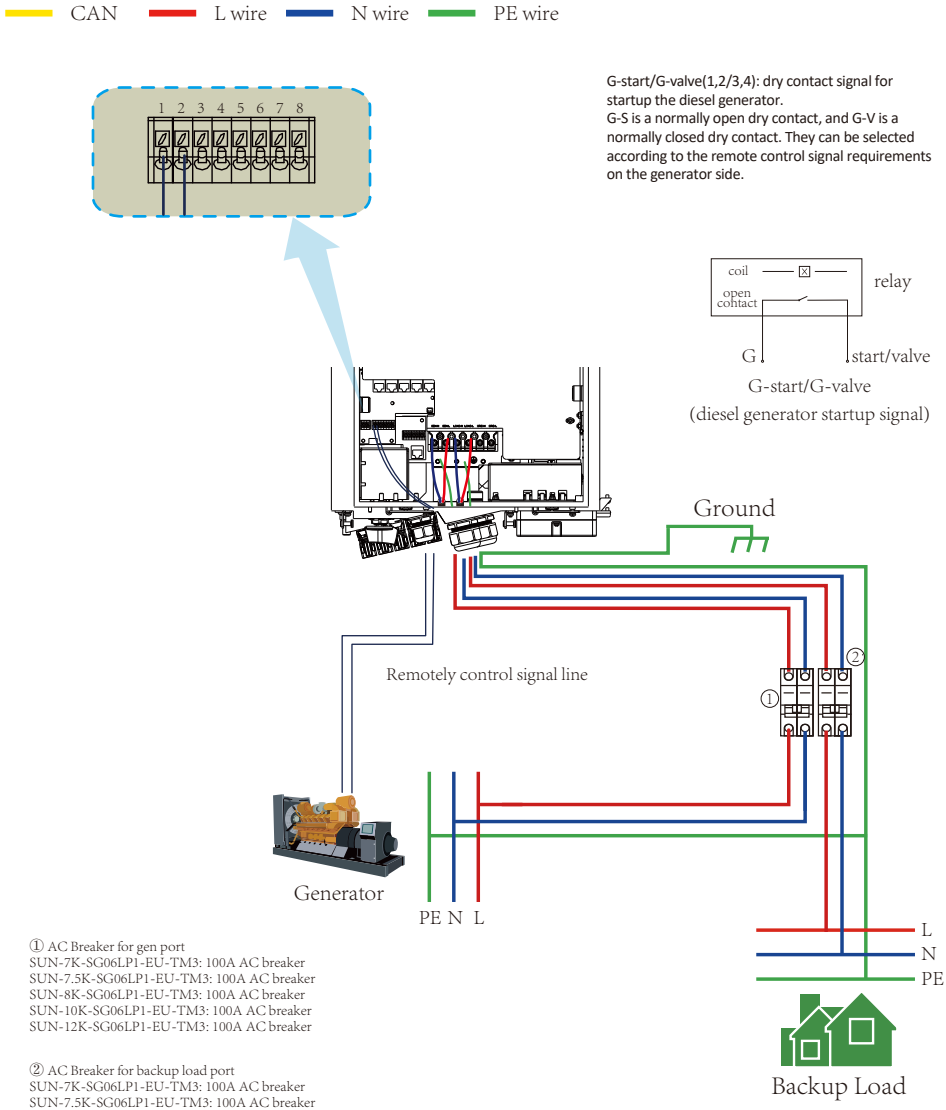

ON / OFF

4.4 Wiring System for Inverter





4.5 Typical application diagram of diesel generator



① AC Breaker for gen port
SUN-7K-SG06LP1-EU-TM3: 100A AC breaker
SUN-7.5K-SG06LP1-EU-TM3: 100A AC breaker
SUN-8K-SG06LP1-EU-TM3: 100A AC breaker
SUN-10K-SG06LP1-EU-TM3: 100A AC breaker
SUN-12K-SG06LP1-EU-TM3: 100A AC breaker

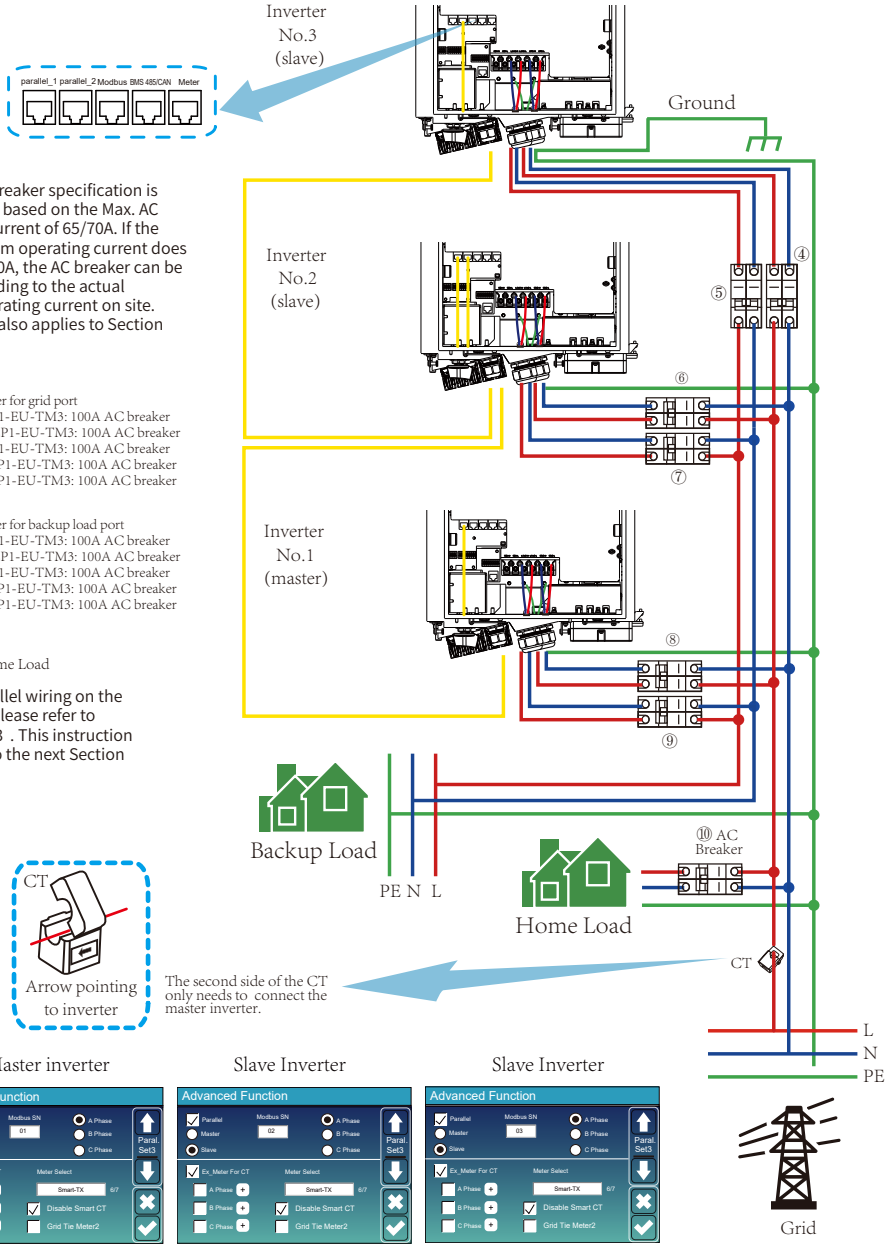
② AC Breaker for backup load port
SUN-7K-SG06LP1-EU-TM3: 100A AC breaker
SUN-7.5K-SG06LP1-EU-TM3: 100A AC breaker
SUN-8K-SG06LP1-EU-TM3: 100A AC breaker
SUN-10K-SG06LP1-EU-TM3: 100A AC breaker
SUN-12K-SG06LP1-EU-TM3: 100A AC breaker

Note: The AC breaker specification is recommended based on the Max. AC passthrough current of 65/70A. If the actual maximum operating current does not reach 65/70A, the AC breaker can be selected according to the actual maximum operating current on site.

4.6 Parallel into a Single-Phase System

Note: For the parallel system, please choose the "Zero export to CT " mode.

CAN L wire N wire PE wire



Note: The AC breaker specification is recommended based on the Max. AC passthrough current of 65/70A. If the actual maximum operating current does not reach 65/70A, the AC breaker can be selected according to the actual maximum operating current on site. This provision also applies to Section 4.7 .

④⑥⑧ AC Breaker for grid port
SUN-7K-SG06LP1-EU-TM3: 100A AC breaker
SUN-7.5K-SG06LP1-EU-TM3: 100A AC breaker
SUN-8K-SG06LP1-EU-TM3: 100A AC breaker
SUN-10K-SG06LP1-EU-TM3: 100A AC breaker
SUN-12K-SG06LP1-EU-TM3: 100A AC breaker

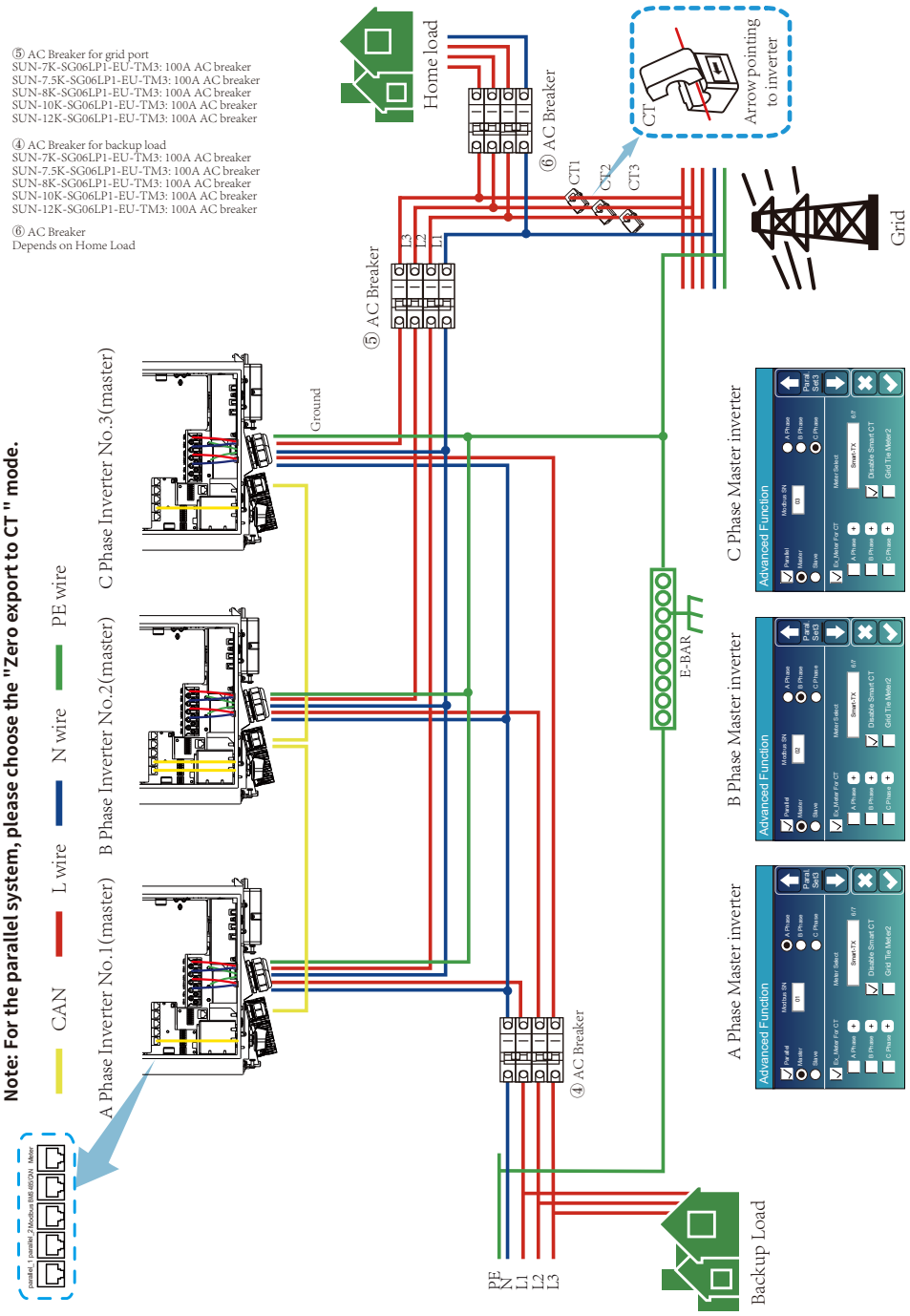
⑤⑦⑨ AC Breaker for backup load port
SUN-7K-SG06LP1-EU-TM3: 100A AC breaker
SUN-7.5K-SG06LP1-EU-TM3: 100A AC breaker
SUN-8K-SG06LP1-EU-TM3: 100A AC breaker
SUN-10K-SG06LP1-EU-TM3: 100A AC breaker
SUN-12K-SG06LP1-EU-TM3: 100A AC breaker

⑩ AC Breaker
Depends on Home Load

Note: For parallel wiring on the battery side, please refer to Section 4.2.2.3 . This instruction also applies to the next Section 4.7 .

Master inverter Slave Inverter Slave Inverter

4.7 Parallel into a Three-Phase System

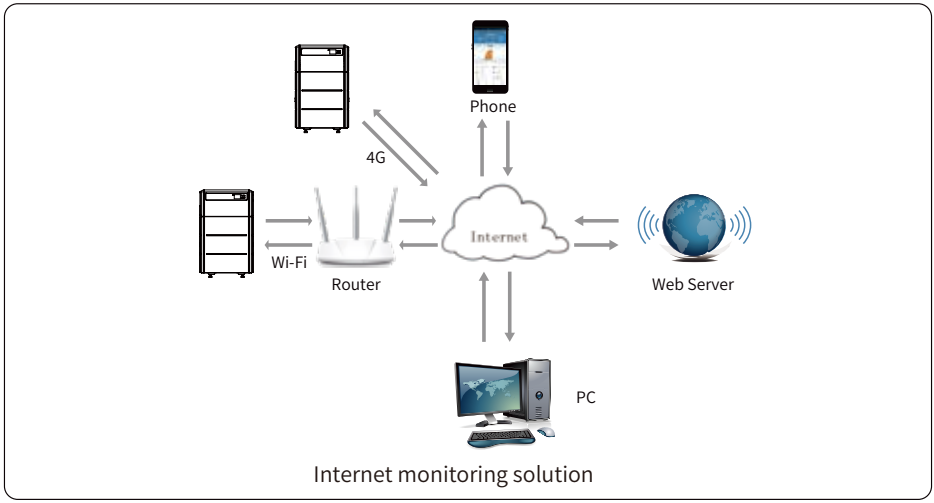


5 Monitoring platform

5.1 Introduction of logger module

The inverter is equipped with a built-in data logger module that supports 4G or Wi-Fi communication(optional), so it has remote monitoring function.
Specification of wireless module:
Wi-Fi Frequency range: 2.412GHz-2.472GHz
Bluetooth Frequency range: 2.402GHz-2.480GHz
Module maximum transmitting power: Wi-Fi 18.07dBm, BT 8.63dBm
Antenna:External Antenna

Specification of 4G module
Frequency range: FDD-LTE:B1, B3, B5, B8 TDD-LTE:B34, B38, B39, B40, B41
Module maximum transmitting power: LTE: +23dBm ±2dBm
Antenna: External Antenna
Antenna Gain: Low Band ⩾-8.8dBi High Band ⩾-19. 3dBi



Internet monitoring solution

5.2 Methods to use platform

If you choose the built-in Wi Fi module for this inverter, you need to refer to section 5.3 and 5.5 for network configuration. If you choose the built-in 4G module, you can ignore the Wi-Fi network configuration related content.

Web monitoring address: https://deyecloud.com

For mobile devices monitoring system, scan the QR code below to download the APP.

Also you can find it by searching “deye cloud” in App store or Google Play store.

The second QR code is WiFi configuration guide of data logger ,you can follow the manual to add logger to your local network.

The third QR code is Deye cloud user manual ,you can follow the manual to monitor your system.

To download Deye cloud ; WiFi configuration guide; User manual of Deye cloud;

5.3 How to connect the inverter to the router via web

1. Turn on the wireless network of your PC or smartphone.

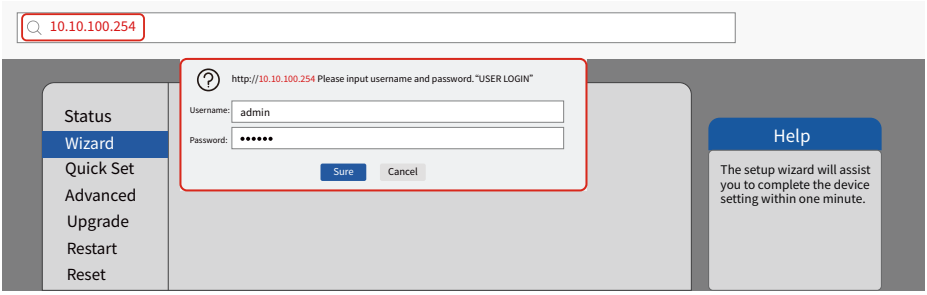
2. Connect your smartphone or PC to the wireless AP network of the inverter.
If there’ s a lable that includes PWD：XXXXXXXX on the inverter casing then the password of AP network is the “XXXXXXXX”: for example, the default password of AP network is “5c4db4d8” of the inverter SN:2302202012.



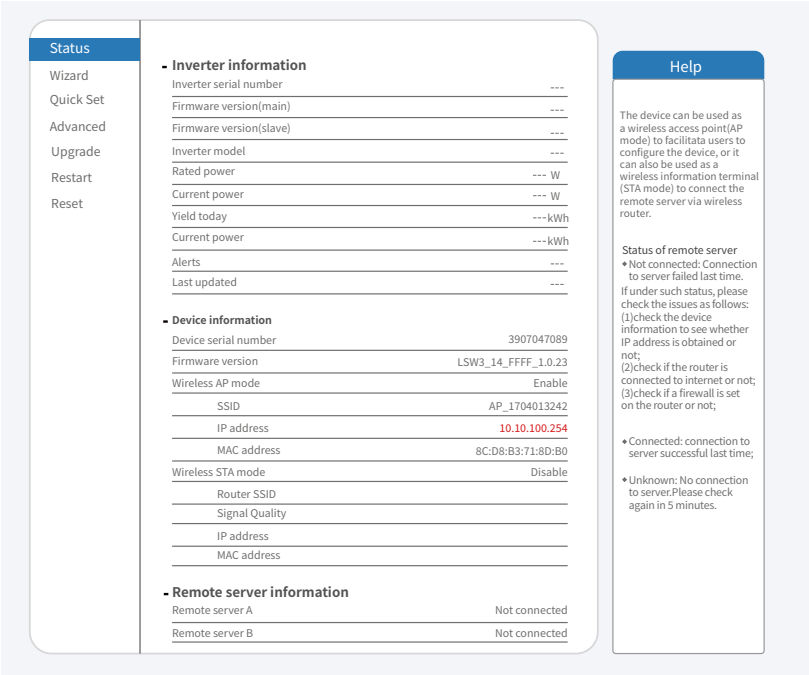
Inverter SN: 2302202012 Built-in datalogger :3907047089

In addition, the password for the wireless AP network of the inverter can be reset. If you forget the updated password, please contact the Deye service team.

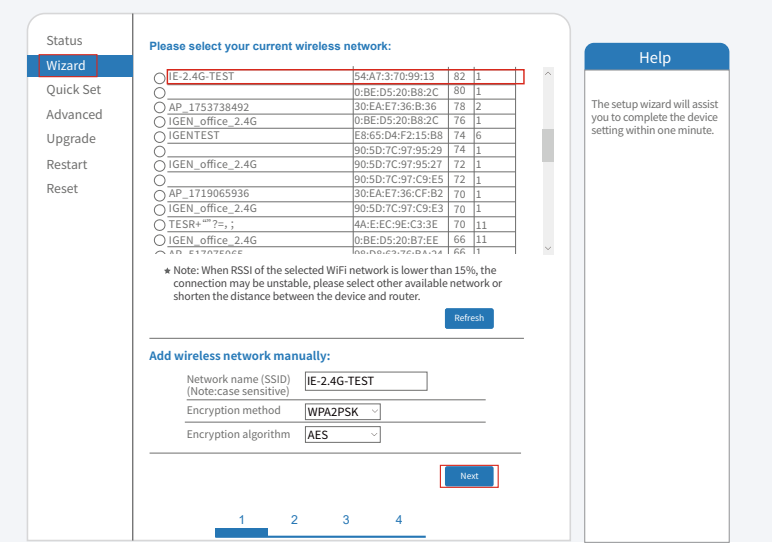
3. Open the browser on your smartphone or PC and enter 10.10.100.254 in the URL address bar, then enter the default username and password "admin" to enter the localhost of the inverter wireless AP network.



4. Browser jumps to “Status” page, the basic information is listed there.



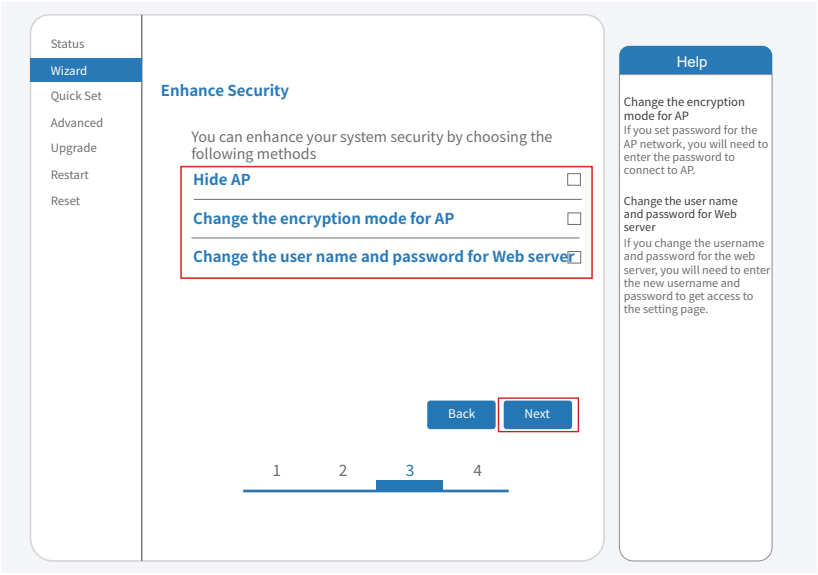
5. Turn to "Wizard" page, click "Refresh" icon to search the usable wireless network, then select the target 2.4G wireless network and click "Next" icon.



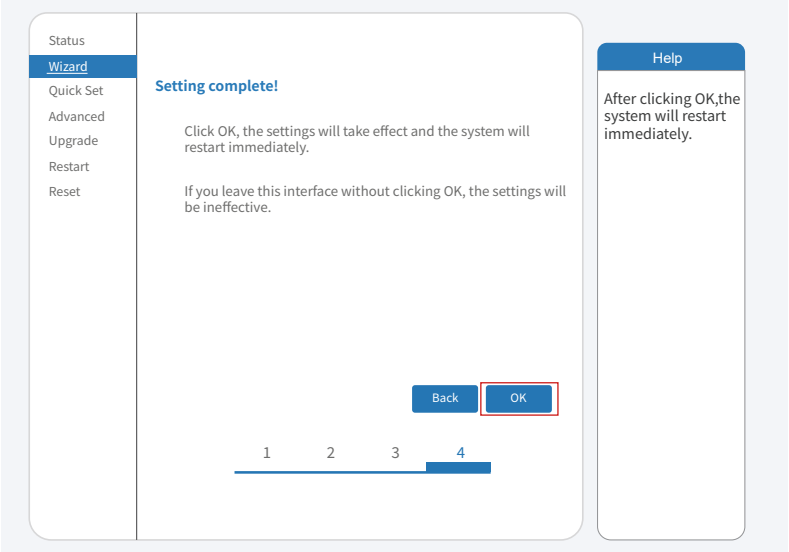
6. Enter the password of the target wireless nework of you router and click "Next" icon.



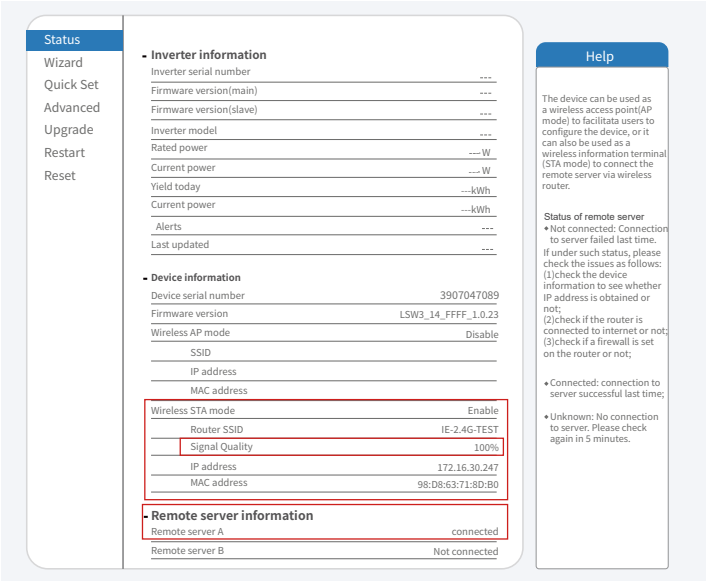
7. Users can enable any options below to enhance the security of the wireless AP network of the inverter and then click "Next" icon.



8. If the setup is successful, the following page will pop up and click "OK" icon to reboot the inverter.



9. Connect your smartphone or PC to the wireless AP network of inverter again after rebooting, then log in to 10.10.100.254 by Browser, and check the system info of "Status" page. After the network setting is done, the remote server A or B should be "connected".



10. When "Connected" is displayed, it indicates that the inverter has been successfully connected to the Solarman cloud platform. Generally speaking, inverters will be online within 10-15 minutes after the first successful configuration.

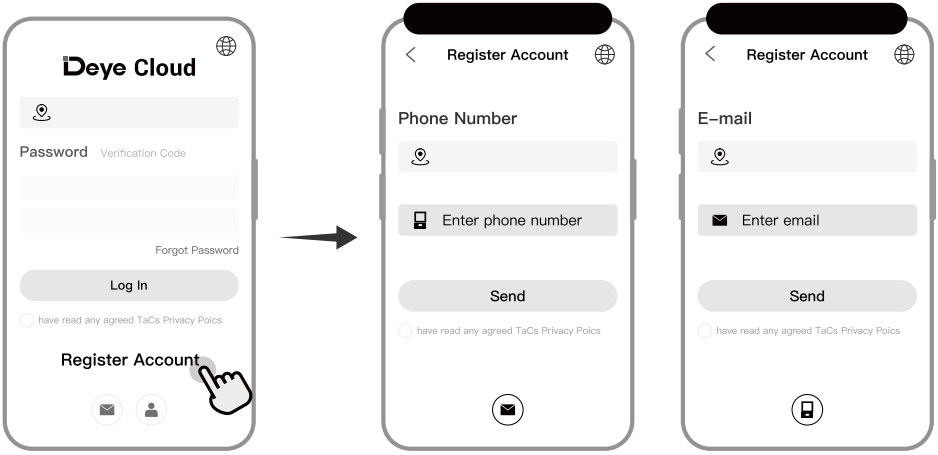
5.4 USER MANUAL for Deye Cloud APP

Please make sure Bluetooth and WiFi are ON and the router can connect to the internet normally.

1 Registration

Go to Deye Cloud App and register.

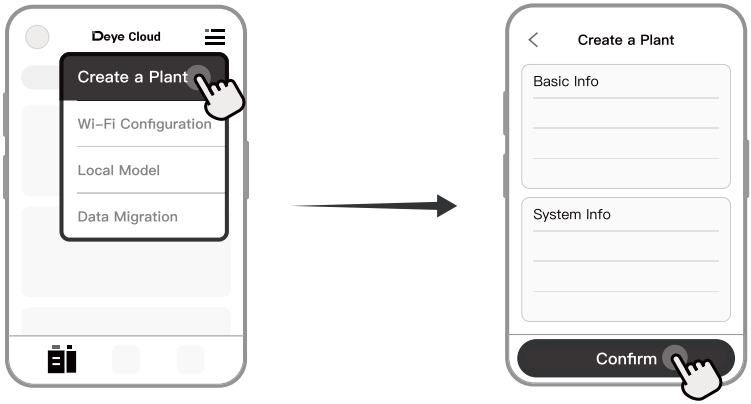
Click "**Register Account**" and create your account here.



2 Create a Plant

1. Click "**Create a Plant**" to create your plant.

2. Please fill in plant info here.

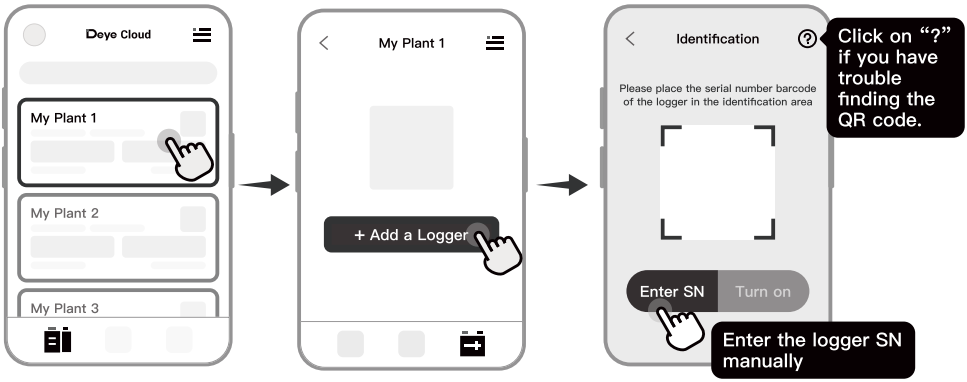


3 Add a Logger

1. Choose a Plant.

2. Go to “Device” page and Click on “Add a Logger”.

3. Scan QR code of the logger, which can be found on the logger body.



5.5 USE APP to Configure WiFi

1. Click “Wi-Fi Configuration” to set the network.(Please make sure Bluetooth and WiFi are ON.)
2.Please wait for a few minutes. Then select “Data Logger SN” and connect 2.4G WiFi.



6. OPERATION

6.1 Power ON/OFF

Inspection Before Startup
Check the following items before starting the inverter:
.All equipment has been reliably installed.
.The ground cable is properly and reliably connected.
.The AC cable is properly and reliably connected.
.The DC cable is properly and reliably connected.
.The communication cable is properly and reliably connected.
.The unused terminals are sealed.
Power on
1. First close the DC Breaker on the left side of the battery module, then press the ON/OFF button on the left side of the battery module. Wait for the battery to complete a 30~60 seconds self-check, confirm that the LED Indicator on the left side of the battery module is in normal status (green flashing). For parallel systems, perform this operation on all battery modules.
2. Press the ON/OFF power button on the left side of the hybrid inverter module to complete the connection of the power supply link between the inverter and the battery.
3. Close the DC Breaker (if any) between the hybrid inverter and the PV strings, then rotate the DC Switch on the left side of the hybrid inverter module to connect the PV strings.
4. First close the AC circuit breaker on the inverter side, then close the grid input switch and the local load output switch in sequence. Wait for the inverter to automatically complete the startup self-check, and the startup process of the entire system is completed.
Observe the LED indicator to ensure that the inverter operates normally.

6.2 Operation and Display Panel

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

LED Indicator	*Messages*
Red led solid light	Malfunction
Blue led solid light	Inverter operating normal
No light emission	Not powered on or warning

Chart 4-1 LED indicator

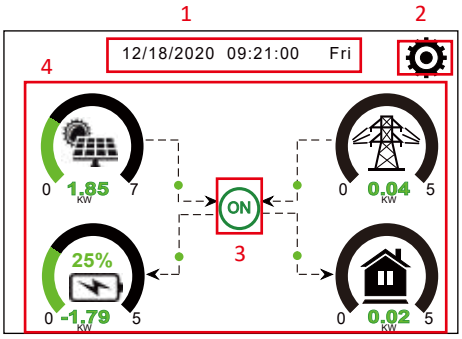
Function Key	*Description*
Esc	To exit setting mode
Up	To go to previous selection
Down	To go to next selection
Enter	To confirm the selection

Chart 4-2 Function Buttons

7. Local monitoring via LCD

7.1 Main Screen

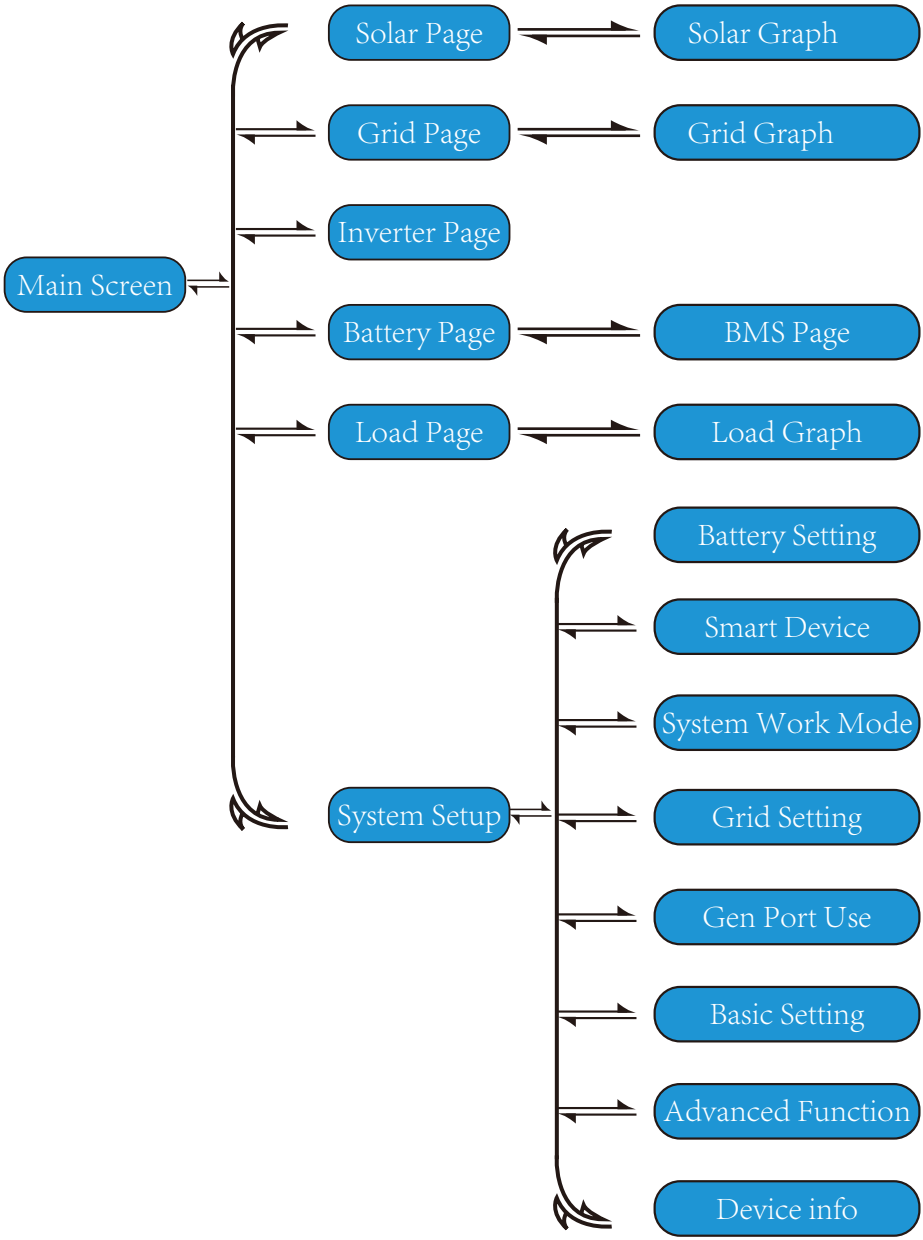
The LCD is touchscreen, below screen shows the overall information of the inverter.



No.	Name	Description
1	Date&Time	Shows system date and time.
2	Settings	Enter into the system setup screen which including Basic Setup, Battery Setup, Grid Setup, System Work Mode, Generator port use, Advanced function, Device info and Smart Devices.
3, 4	Power Flow Chart	①Displays Solar, Grid, Load and Battery. ②Arrows indicate the direction of energy flow. ③ The panel color shifts from green to red as power rises to high level, showing system info ④The icon(ON) in the center indicates work normal ;if it turn into ''comm./FXX",it means some errors ,and the error message will be displayed under the icon(More detail error information and solutions can be found in Chapter 9.)

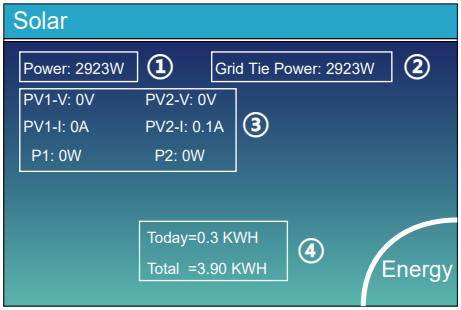
Note:
Under normal conditions, the PV power and load power are always positive values or zero.
A negative grid power value indicates selling electricity to the grid, while a positive value indicates purchasing electricity from the grid.
A negative battery power value indicates charging, while a positive value indicates discharging.

7.1.1 LCD operation flow chart



7.2 Detail pages

Click the corresponding icons on the main screen of LCD display, you can enter the detail pages of "Solar","Inverter","Load","Grid" and "Batt".



This is Solar Panel detail page.

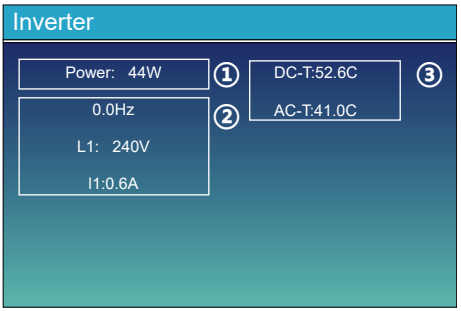
① Solar Panel Generation.

② **Grid Tie Power:** when there's one or more string inverter AC coupled at the grid or load side of hybrid inverter and there's a meter installed for the string inverter, then the hybrid inverter LCD will show the string inverter output power on its PV icon. Please make sure the meter can communicate with the hybrid inverter successfully.

③ Voltage, Current, Power for each MPPT.

④ Daily and total PV production.

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

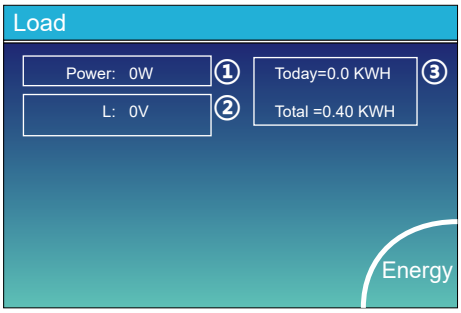


This is Inverter detail page.

① Output power of inverter module.

② 0.0Hz: frequency after DC/AC.
Voltage, Current, Power for each Phase.

③ *DC-T: mean DC-DC temperature,
AC-T: mean Heat-sink temperature.
*Note: this part info is not avaiable for some LCD FW.



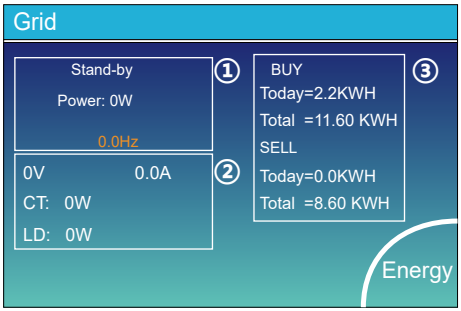
This is Load detail page.

① Power consumption of load.

② The output voltage on Load port.

③ Daily and total Load consumption .

When you check "Selling First" or "Zero export to Load" on system work mode page, the power data on this page includes only backup load which connect on the Load port of hybrid inverter.
When you check "Zero export to CT"on system work mode page, the power data on this page includes both backup load and home load.



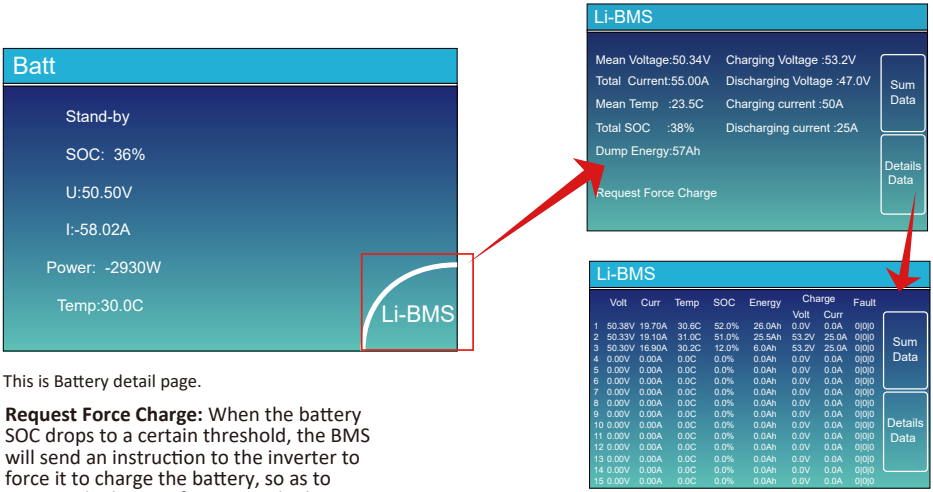
This is Grid detail page.

① Status, Power, Frequency.

② L: Voltage and current on Grid port.
CT: Power calculated from external CT/meter sampled data.
LD: Power calculated from built-in sampling circuit sampled data.

③ BUY: Energy from Grid to Inverter,
SELL: Energy from Inverter to grid.

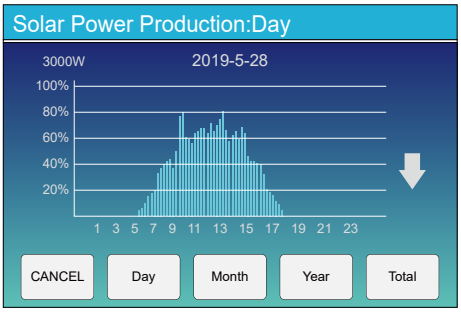
Press the "Energy " button will enter into the power curve page.

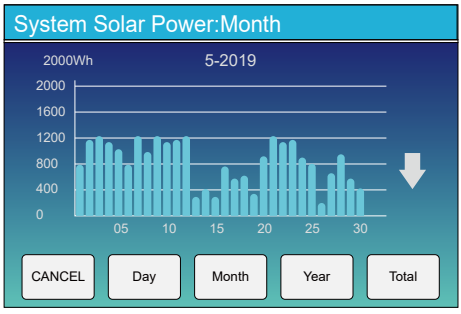


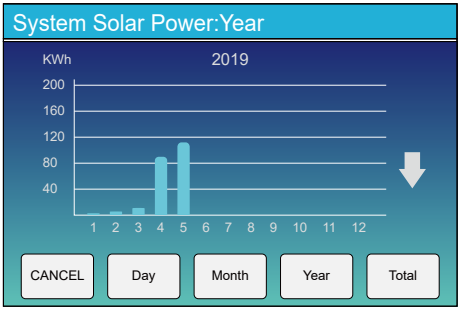
This is Battery detail page.

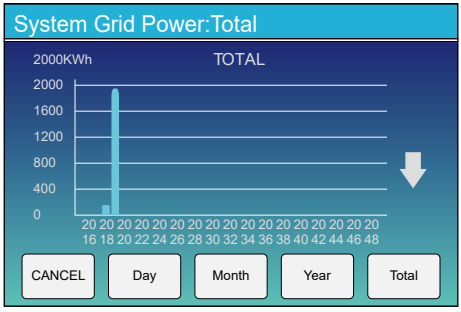
Request Force Charge: When the battery SOC drops to a certain threshold, the BMS will send an instruction to the inverter to force it to charge the battery, so as to prevent the battery from over-discharging.

7.3 Curve Page-Solar & Load & Grid



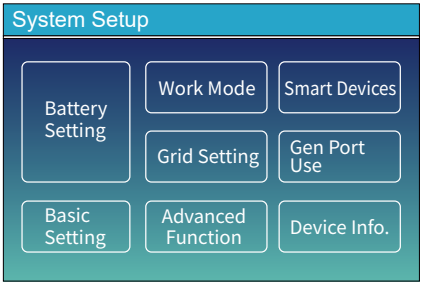






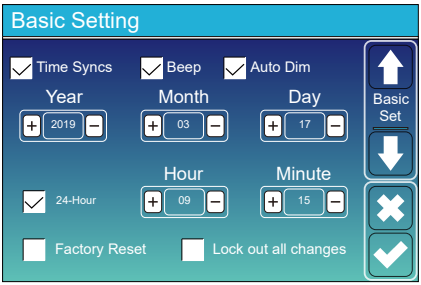
Solar power curve for daily, monthly, yearly and total can be roughly checked on the LCD, for more accuracy power generation, pls check on the monitoring system. Click the up and down arrow to check power curve of different period. The curve page of load and grid can also be queried using a similar method.

7.4 System Setup Menu

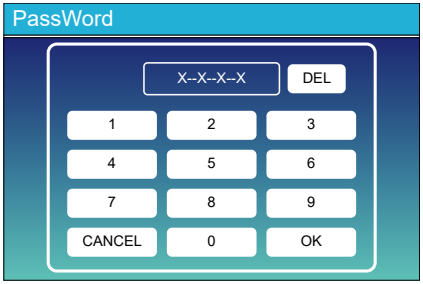


This is System Setup page.

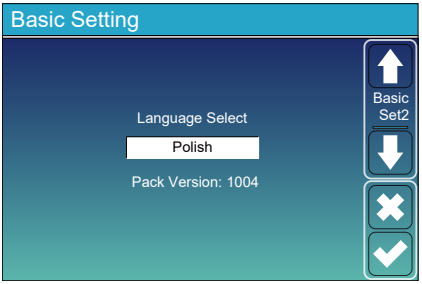
7.5 Basic Setup Menu



Time Syncs: synchronize cloud platform time. Enable the inverter to automatically
Beep: Used to turn on or off the beep sound in inverter's alarm status.
Auto Dim: Used to automatically adjust the brightness of the LCD display screen.
Factory Reset: Reset all parameters of the inverter.
Lock out all changes: Lock programmable parameters to prevent them from being changed.



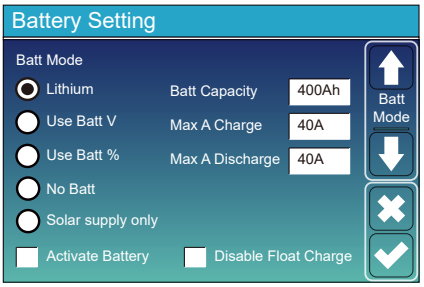
System selfchek: After ticking this item,
it needs input the password, please confirm the specific password information with the supplier's technical support team.



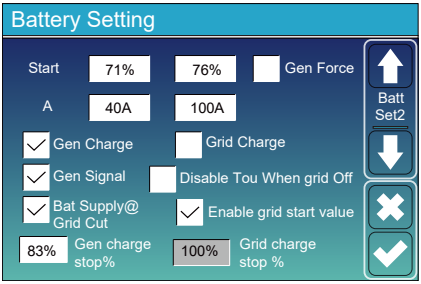
1. Click the down arrow on the left side of the "Basic Set1" page to enter the "Basic Set2" page;
2. On the "Basic Set2" page, you can set the display language of the LCD screen as needed. Click the "UP" and "DOWN" buttons below the LCD screen to switch language options. The current available options are: English, German, Polish, Hungarian, Spanish, Czech, Ukrainian.
3. After switching to the desired language, click on the check mark icon in the bottom right corner of the page to save the settings.

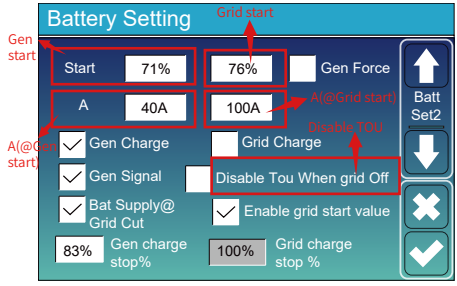
Note: If the current LCD screen does not have a Basic Set2 page, or if the language option on the Basic Set2 page does not include the language you need to set, please contact the after-sales support team to update the HMI firmware and language firmware package of the inverter. After the update is completed, follow the above steps to complete the setup.

7.6 Battery Setup Menu



Click "Battery Setting" to enter this page.
Lithium: When using AI-W16 and other batteries from the 'Approved Battery List' that can communicate with the inverter, check this option.
Note: When using the All-in-One solution consisting of the inverter module and AI-W16 battery module, the battery shall not be managed by setting to the "Use Batt V" and "Use Batt %" modes (except for short-term test scenarios for troubleshooting under the guidance of professional after-sales personnel). Otherwise, the damage to the battery cycle life will not be covered by the product warranty.
Battery capacity: When using AI-W16, no need to set. When using lead acid battery or unmatched lithium battery and set the "Batt Mode" as "Use Batt%", inverter need to use this battery capacity value to calibrate battery SOC， set as the actual battery capacity used.
Use Batt V: Use Battery Voltage for all the settings (V).
Use Batt %: Use Battery SOC for all the settings (%).
Max. A charge/discharge: The upper limit of battery charging and discharging current can be set according to the nominal value in the product datasheet, or set to a smaller value based on on-site requirements.
For AGM and Flooded, we recommend setting the max A charge/discharge current as no more than battery capacity x 20%.
. For Lithium, we recommend battery capacity(Ah) x 50% = Charge/Discharge amps.
. For Gel, follow manufacturer' s instructions.
No Batt: During the fault diagnosis process, the battery can be isolated and this mode can be activated for inverter operation status testing.
Solar supply only: When this function is enabled, the inverter will real-time match the PV input power with the load demand (which should not exceed the inverter's rated power). If the PV power is insufficient to support the load, the inverter will trigger fault F56 and stop inverting output. Once the lighting conditions improve and the PV power recovers to a level that can meet the load demand, the inverter will automatically resume inverting output without manual intervention.
Active battery: This feature will help recover a battery that is over discharged by slowly charging from the solar array or grid.
Disable Float Charge: Cancel the float charging phase to prevent the battery from overcharging.





This is Battery Setup page.
Gen Start: In the two scenarios where the generator is connected to the GEN port of the hybrid inverter or to the Grid port of the hybrid inverter and "GEN connect to Grid input" is enabled, the remaining associated parameters should be set according to the two schemes listed in Table 7.6-2, after the battery SOC drops below the set value of Gen start, the inverter will control the G-S dry contact to close and remotely start the generator.
A(@Gen Start): The maximum battery charging current limit by the inverter when only using AC power from generator to charge the battery.
Gen charge stop%: Referring to Table 7.6-4, this parameter is the stop-charging SOC for charging the battery using a generator in various scenarios. After the battery SOC rises above the set value of Gen charge stop, the inverter will simultaneously disconnect the G-S dry contact and the main relays of its GEN/Grid port(It depends on which port the generator is connected to). This set value is constrained to be no less than the "Gen Start" set value + 5%.
Gen Charge: Whether to allow generator power to charge the battery, and it can determine whether Gen start and A(@Gen start) are configurable. When 'Time of Use' is enabled, its associated parameter Gen charge(@TOU) can be controlled separately for different time periods.
Gen Signal: Whether to use the G-Start dry contact to remotely control the start and stop of the generator.
Grid Start: When the Grid port of the inverter is connected to the utility grid, or even connected to a Generator but the 'GEN connect to Grid input' function is not enabled, after the battery SOC drops below this set value , the inverter will start drawing power from the grid port to charge the battery. Other related parameters need to be set according to the scenarios listed in Table 7.6-1.

A(@Grid Start): After Grid start takes effect, it refers to the upper limit of the charging current when the battery is charged only by the AC power input from the Grid port.
Grid Charge: Whether to allow AC power input from the Grid port to charge the battery, and it can determine whether Grid start and A(@Grid start) are configurable . When the TOU is enabled, its associated parameter Grid Charge (@ TOU) can be set separately for different time periods.

Disable TOU When grid Off: After ticked, when the hybrid inverter switches from On-grid to Off-grid mode, even if TOU is enabled, the cut-off charging control logic of the generator will be executed according to the control logic in the scenario where TOU is not enabled.
Enable grid start value: In on-grid mode, Whether to use "Grid start" as the start-charging SOC threshold for the grid to charge the battery. Please refer to table 7.6-1 for detail scenario information.
Batt Supply@Grid Cut: As shown in Table 7.6-3, under the scenario of on-grid operation with TOU disabled, this parameter determines whether the inverter stops drawing power from the grid to charge the battery by disconnecting its grid-side main relays, when the battery SOC rises to the set value of Grid charge stop (the stop-charging SOC in this scenario).
Grid charge stop%: When the hybrid inverter operates in on-grid mode (including the scenario where the generator is connected to the grid port but Gen connect to Grid port is not enabled) and TOU is disabled, the setting value of Grid charge stop is the stop-charging SOC for the grid-to-battery charging process, as shown in Table 7.6-3. After the battery SOC rises to the setting value of Grid stop charge, the inverter will take different actions according to the configuration of Batt supply@Grid cut.

Table 7.6-1

<table>
<tr><th></th><th>TOU
(Time of Use)</th><th>Grid Charge
(@Battery
setting)</th><th>Grid Charge(@TOU)
In current time
period</th><th>Enable grid
start value</th><th>Start-charging
SOC</th></tr>
<tr><td rowspan="2">"On-Grid mode
(Utility grid connect to Grid port)
+
(Generator connect to Grid port
without enable ""GEN connect to
Grid input"") "</td><td>Enable</td><td>Enable</td><td>Enable</td><td rowspan="2">Enable</td><td rowspan="2">Grid start</td></tr>
<tr><td>Disable</td><td>Enable</td><td>\</td></tr>
<tr><td rowspan="2">"On-Grid mode
(Utility grid connect to Grid port)
+
(Generator connect to Grid port
without enable ""GEN connect to
Grid input"") "</td><td>Enable</td><td>Enable</td><td>Enable</td><td rowspan="2">Disable</td><td>Batt%(@TOU)</td></tr>
<tr><td>Disable</td><td>Enable</td><td>\</td><td>100%</td></tr>
</table>

Table 7.6-2

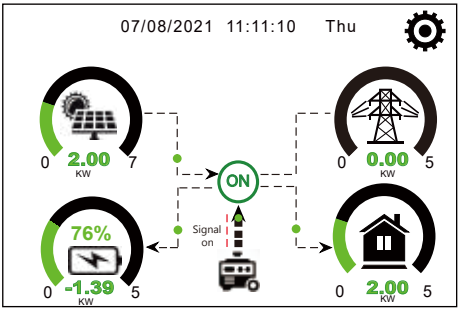
<table>
<tr><th></th><th>Start-charging
SOC</th><th>TOU
(Time of Use)</th><th>Gen
Charge(@Battery
setting)+
Gen Signal</th><th>Gen
Charge(@TOU)
In current time
period</th><th>Action
(Actual
SOC<Start-charging
SOC)</th></tr>
<tr><td rowspan="2">GEN port Use
(Generator Input)
+
GEN port Use
(GEN connect to Grid input)</td><td rowspan="2">Gen start</td><td>Enable</td><td>Enable</td><td>Enable</td><td rowspan="2">After the battery SOC drops below the set value of Gen start, the inverter will control the G-S dry contact to close and remotely start the generator.</td></tr>
<tr><td>Disable</td><td>Enable</td><td>\</td></tr>
</table>

Table 7.6-3

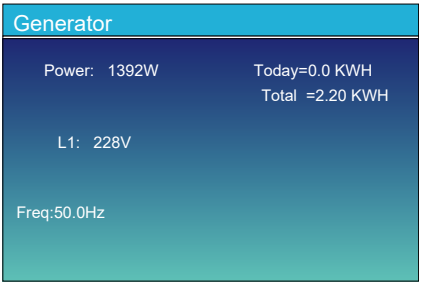
	TOU(Time of Use)	Stop-charging SOC (Not less than Grid start)	Batt supply @Grid cut	The action of the inverter after the battery SOC rises and reaches the stop-charging SOC
On-grid mode	Disable	Grid charge stop	Disable	When the battery SOC rises to be equal to the set value of grid charge stop, the inverter will just stop charging battery with grid power.
			Enable	When the battery SOC rises to be equal to the set value of grid charge stop, the inverter will disconnect the main relays at its grid port.
	Enable	Batt%(@TOU)	Invalid	When the battery SOC rises to be equal to Batt%(@TOU), the power for the grid to charge the battery will drop to a relatively low value. After the battery SOC exceeds Batt%(@TOU),the inverter will stop using grid power to charge the battery,the main relays at its grid port will remain engaged.

Table 7.6-4

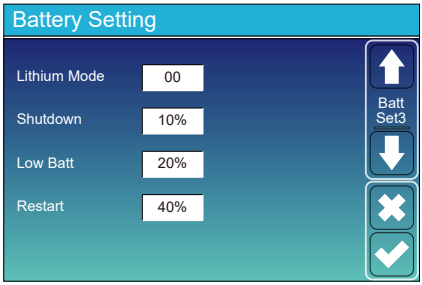
Gen port Use	TOU(Time of Use)	Disable TOU when Grid off	Batt%(@TOU)< Gen%(@TOU)	Batt%(@TOU)< Gen charge stop	Stop-charging SOC (Not less than Gen start)
Generator Input (generator connect to GEN port)	Disable	Invalid	Batt%(@TOU)& Gen%(@TOU) Invalid		Gen charge stop
	Enable	Enable	Batt%(@TOU)& Gen%(@TOU) Invalid		Gen charge stop
		Disable	Batt%(@TOU) is Invalid(Due to Generator at GEN pot)	Gen charge stop is Invalid(Due to TOU is enabled)	Gen%(@TOU)
GEN connect to Grid input	Disable	Invalid	Batt%(@TOU)& Gen%(@TOU) Invalid		Gen charge stop
	Enable	Enable	Batt%(@TOU)& Gen%(@TOU) Invalid		Gen charge stop
		Disable	No	Gen charge stop is Invalid(Due to TOU is enabled)	Gen%(@TOU)
			Yes		Batt%(@TOU)



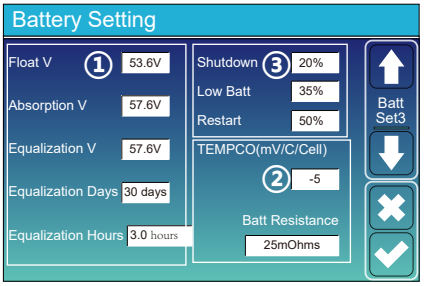
After the conditions for starting the generator are met, the inverter will close the G-S dry contact. Meanwhile, a generator icon will appear on the main page of the LCD screen, and displaying "Signal On" to indicate that the Gen signal is currently in an active state.



Click the generator icon on the main screen, you can enter the 'Generator' detail page. The information contained on this page is as follows:
(1) How much power is using from generator;
(2) How much energy has used from generator in today or in total;
(3)The output phase voltage of generator.
(4)The output frequency of generator.



When the “Lithium” mode is selected, the content on the "Batt Set 3" page is shown in the figure on the left.
Lithium Mode: This is the BMS communication protocol code which can be confirmed on the "Approved Battery list" based on the battery model you are using.
Shutdown: Be valid in Off-grid mode, battery can discharge to this SOC, then the DC/AC inverter module of this inverter will be shut down and the solar power can only be used to charge the battery.
Low Batt: Be valid in On-grid mode, when the 'Grid charge' has been checked and the set target battery SOC on 'Time of Use' page isn't less than the "Low Batt" value, the battery SOC will remain not less than the value of "Low Batt" .
Restart: Be valid in Off-grid mode, after the DC/AC inverter module of this inverter is shut down, the PV power can only be used to charge the battery. After the battery SOC has resumed to this "Restart" value, the DC/AC inverter module will restart to output AC power.



When the "Use Batt V" or "Use Batt %" mode is selected, the content on the "Batt Set 3" page is shown as the figure on the left.

Zone ①is three stage charging strategy for charging battery in "Batt V" or "Batt %" mode.

For professional use only. If you are not familiar with these settings, please keep the default values.

Float V: After the battery is fully charged, the inverter will continuously charge the battery with a constant low voltage slightly higher than the battery terminal voltage, to compensate for the battery's self-discharge, maintain its full state, avoid overcharging, and extend the battery life.

Absorption V: During the constant-current and constant-voltage charging phases of the battery, the battery port of inverter will output this voltage to charge the battery.

At the final stage of constant-voltage charging, the charging current will gradually decrease, until the battery is fully charged.

Equalization V: A specific constant voltage slightly higher than the absorption voltage output by the inverter during the lead-acid battery maintenance charging phase. It is used to eliminate the voltage difference between individual cells in the series battery pack, decompose vulcanization crystals on the plates, make the capacity of all individual cells consistent, prevent the lagging cells from dragging down the life of the whole pack.

Equalization Days: The time interval between two automatic equalization charging triggers of the inverter.

Equalization Hours: The duration of a single equalization charging procedure. ①

Shutdown : Be valid in Off-grid mode, when battery SOC/voltage drop to this value, then the DC/AC inverter module of this inverter will be shut down and the solar power can only be used to charge the battery.

Low Batt : Be valid in On-grid mode, when the "Grid charge" has been checked and the set target battery SOC/voltage on "Time of Use" page isn't less than the "Low Batt" value, the battery SOC/voltage will remain above the value of "Low Batt" .

Restart : Be valid in Off-grid mode, after the DC/AC inverter module of this inverter is shut down, the PV power can only be used to charge the battery. When the battery SOC has returned to this "Restart" value, the DC/AC inverter module will restart to output AC power. ③

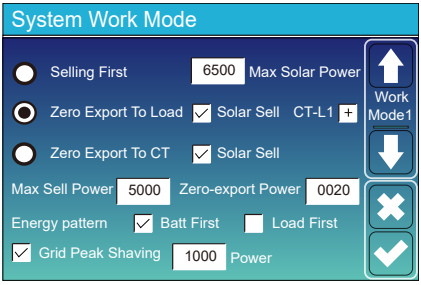
TEMPCO: The temperature coefficient of a lead-acid battery, using to describe the reverse variation of charging voltage with temperature. Taking 25℃ as the reference, its typical value is -3~-5mV/℃ /Cell. It reduces the charging voltage at high temperature to prevent overcharge, and increases the voltage at low temperature to compensate capacity, avoiding battery thermal runaway or undercharging.

Batt Resistance: The standard internal resistance value of the lead-acid battery, so that the inverter can accurately identify the battery status through the changes of charging current and voltage, dynamically adjust the charging strategy, avoid overcharging or undercharging, and adapt to lead-acid batteries with different aging degrees. ②

Recommended battery settings

Battery Type	*Absorption Stage*	*Float Stage*	*Equalization Voltage (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		

7.7 System Work Mode Setup Menu

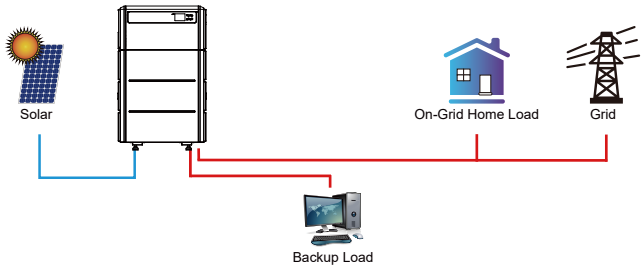


Work Mode

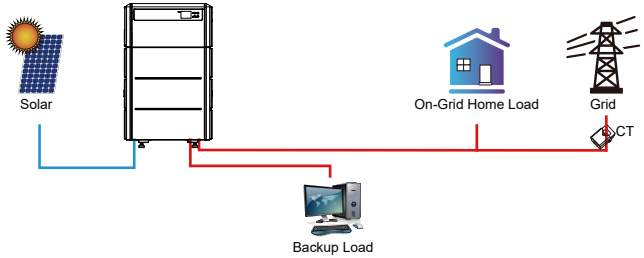
Selling First: This Mode allows hybrid inverter to sell back any excess power produced by the solar panels to the grid. If time of use is active, the battery energy also can be sold into grid.
The PV energy will be used to power the load and charge the battery, then the excess PV energy will flow to grid.
Power source priority for the load is as follows:
1. Solar Panels.
2. Batteries（when the actual battery SOC is higher than the target SOC).
3. Grid.

CT-L1: Manually adjust the sign of CT sampling data: "+" means keeping the original value unchanged, "-" means inverting the sampling data (equivalent to adjusting the orientation of the CT clamp after the CT is installed reversely).

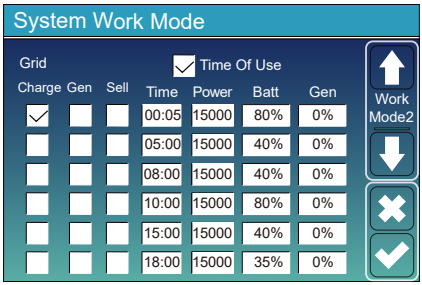
Zero Export To Load: Hybrid inverter will only provide power to the backup load connected. The hybrid inverter will neither provide power to the home load nor sell power to grid, if the "solar sell" behind is not enabled.
The built-in CT will detect current flowing back to the grid, if there is, the inverter will reduce the generate power to only power the backup loads, smart loads and charge the battery.

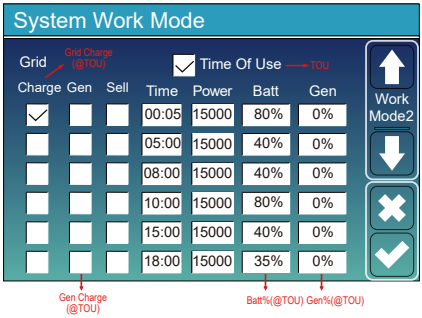


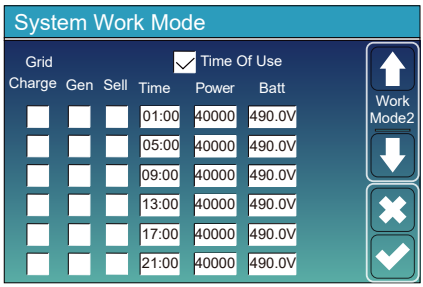
Zero Export To CT: Hybrid inverter will not only provide power to the backup load connected but also give power to the home load connected. If PV power and battery power is insufficient, it will take grid energy as supplement. The hybrid inverter will not sell power to grid, if the "solar sell" behind is not enabled. In this mode, a external CT or smart meter must be installed. As to the installation method of the CT or smart meter, please refer to the chapter 4.2.5 of this manual. The external CT or smart meter will detect the current flowing back to the grid, if there is, the inverter will reduce generate power to prevent selling power to grid.



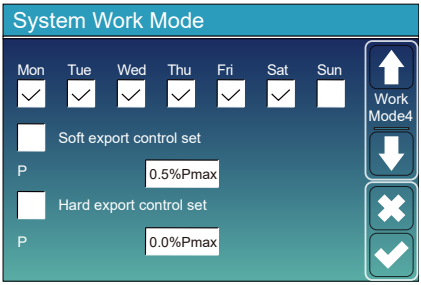
Solar Sell: “Solar sell” is for Zero export to load or Zero export to CT: when this item is active, the PV energy will first power the loads or charge the battery, then the surplus PV energy can be sold back to grid.
Max. sell power: Maximum power allowed to flow to grid.
Zero-export Power: When the inverter reaches the zero-export balance point, it is allowed to draw small-power electricity from the grid or feed small-power electricity to the grid according to this set value.
Energy Pattern: Priority of PV power usage. When "Grid charge" is enabled, the default energy pattern is "Load First", this setting will be invalid.
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 make supplement for battery and load simultaneously.
Max Solar Power: The maximum DC input power allowed.
Grid Peak-shaving: When it is active, grid power will be limited within the set value. If the grid peak-shaving power plus PV power plus battery power cannot meet the power consumption of the load, the grid peak-shaving will be invalid, and the power taken from the grid can exceed this set value.







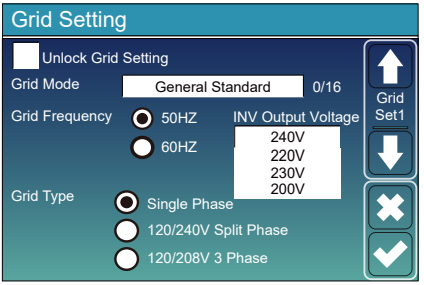
Time of use: it is used to program when to use grid or generator to charge the battery, and when to discharge the battery to power the load. Only when 'Use Timer' is checked can the parameters below be set.
Grid Charge: It allows AC power to be drawn from the Grid port side for battery charging.
Gen (Gen Charge): It allows AC power to be drawn from the Gen port side for battery charging.
Sell: When enabled, during the current time period, the work mode will be"Selling first", which means the excess photovoltaic power and battery discharging power can be sold to the grid.
Time: The start time of the current period and the end time of the previous period.
Power: The maximum allowable discharge power of the battery is only valid under the "Selling first" mode.
Batt%(@TOU): In the on-grid mode with TOU enabled, this parameter serves as the stop-charging SOC for the grid to charge the battery. In the off-grid operation scenario where the generator is connected to the Grid port and TOU is enabled, after setting according to the specific combinations listed in Table 5.6-4, Batt%(@TOU) will act as the stop-charging SOC for the generator to charge the battery. When the battery SOC rises to the set value of Batt%(@TOU), the grid or the generator will stop charging the battery.
Note: 1. Only when the hybrid inverter operates in selling first mode and the 'Time of Use' has been enabled, the battery power can be sold to the grid.
2. For more flexible and controllable use of batteries, it is recommended to enable the 'Time of Use' function. When the inverter is operating in on-grid mode and 'Time of Use' is not enabled, the inverter can charge normally, but only discharge to provide the inverter's self-consumption power, will not discharge to power the loads.
3. Only the 6th time period is allowed to cross midnight.
Assuming that at the end of the previous time period, the actual battery SOC/voltage reaches or approaches the target value of the previous timeperiod.
For example
During 00:05-05:00,
if battery SOC is lower than 80%, it will use grid to charge the battery until battery SOC reaches 80%.
During 05:00-08:00,
if battery SOC is higher than 40%, hybrid inverter will discharge the battery until the SOC reaches 40%. At the same time, if battery SOC is lower than 40%, then grid will charge the battery SOC to 40%.
During 08:00-10:00,
if battery SOC is higher than 40%, hybrid inverter will discharge the battery until the SOC reaches 40%.
During 10:00-15:00,
If battery SOC is lower than 80%, hybrid inverter will charge the battery until the SOC reaches 80%. If the PV power is sufficient, the battery can be charged to 100%.
During 15:00-18:00,
when battery SOC is higher than 40%, hybrid inverter will dischargethe battery until the SOC reaches 40%.
During 18:00-00:05,
when battery SOC is higher than 35%, hybrid inverter will dischargethe battery until the SOC reaches 35%.
Gen%(@TOU): In the scenario where the generator is connected to the GEN/Grid port of the hybrid inverter and TOU is enabled, after completing certain specific settings in accordance with Table 5.6-4, Gen%(@TOU) will serve as the stop-charging SOC for the generator to charge the battery. When the battery SOC rises to the value equal to GEN% - 1%, the inverter will disconnect both the G-S dry contact and the main relays at its GEN/Grid port simultaneously.
When 'Batt Mode' is set to 'Use Batt V', the TOU page will be as shown in the left figure, and for all-in-one systems, the settings on this page are generally not used (except for fault diagnosis).



It allows users to choose which day to execute the setting of “Time of Use”. For example, under the setting shown in the left figure, Sunday will not execute the strategy of "Time of use" setting.
Soft Export Control Set: When this parameter is enabled, the inverter operating mode will automatically switch to "Zero export to CT" mode. This parameter is automatically enabled whenever either "Zero export to load" or "Zero export to CT" mode is activated. The setting value of this parameter shares the same register with "Zero export power," and the values are automatically kept synchronized.
Hardware Export Control Set: When the export power exceeds the configured Hardware Export Control Set threshold, the inverter will disconnect the grid relay, trigger warning W13, and stop working. The inverter will then automatically switch to off-grid operation.After approximately 2 minutes, the inverter will reconnect the grid relay and re-evaluate the export power. If the export power has returned within the configured hardware export limit, the inverter will resume normal on-grid operation.

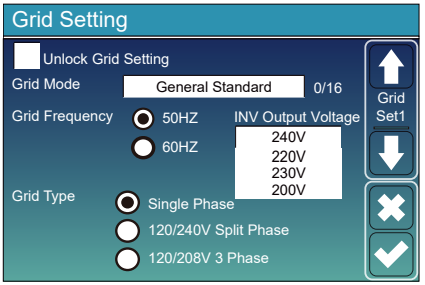
7.8 Grid Setup Menu

7.8.1 Grid Standard Selection

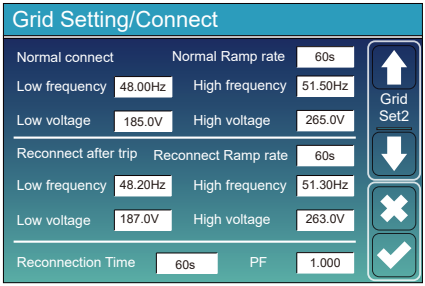


Unlock Grid Setting: before changing the grid parameters, please enable this with password. Then it is allowed to change the grid parameters.

Grid Mode: General Standard、UL1741 & IEEE1547、CPUC RULE21、SRD-UL-1741、CEI 0-21、EN50549_CZ、Australia_A、Australia_B、Australia_C、NewZealand、VDE4105、OVE_Directive_R25、EN50549_CZ_PPDS_L16A、NRS097、G98/G99、G98/G99_NI、ESB Networks(Ireland). Please follow the local grid code and then choose the corresponding grid standard.



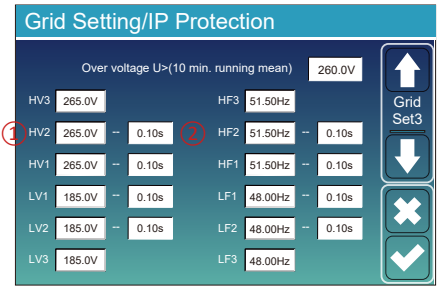
Grid Frequency: In scenarios where grid connected operation is required, set according to the rated frequency of the power grid; In pure off grid scenarios, it can be set according to the rated frequency of the load.
INV Output Voltage: Refers to the supported public utility grid voltage standards for the hybrid inverter during on-grid operation, as well as the rated output voltage supported during off-grid operation.
Note: The HMI firmware is shared by multiple inverter models. Due to hardware version differences, some options may be invalid on the current hardware. You can conduct tests in off-grid mode to verify the validity of the current setting items.
Grid Type: Select the utility grid type to match the electrical distribution system at the installation site. For this system with single phase inverter module, only "Single Phase" option is available, other options are reserved.



Normal connect: The allowed grid voltage/frequency range when the inverter first time connect to the grid.
Normal Ramp rate: It is the startup power ramp.

Reconnect after trip: The allowed grid voltage /frequency range for the inverter connects the grid after the inverter trip from the grid.
Reconnect Ramp rate:It is the reconnection power ramp.

Reconnection time: The waiting time period for the inverter connects the grid again
PF: Power factor which is used to adjust inverter reactive power

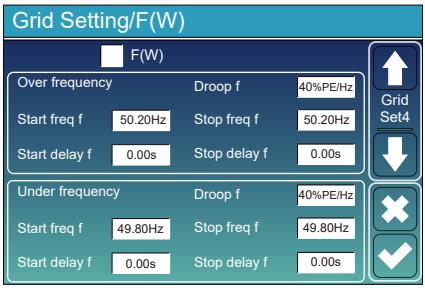


HV1: Level 1 overvoltage protection point;
① **HV2:** Level 2 overvoltage protection point; ② 0.10s—Trip time.
HV3: Level 3 overvoltage protection point.

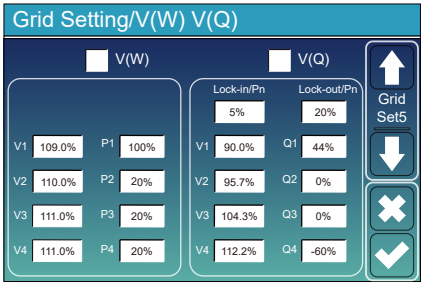
LV1: Level 1 undervoltage protection point;
LV2: Level 2 undervoltage protection point;
LV3: Level 3 undervoltage protection point.

HF1: Level 1 over frequency protection point;
HF2: Level 2 over frequency protection point;
HF3: Level 3 over frequency protection point.

LF1: Level 1 under frequency protection point;
LF2: Level 2 under frequency protection point;
LF3: Level 3 under frequency protection point.



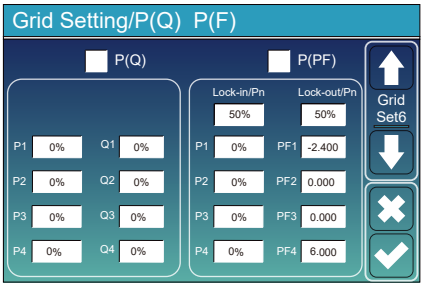
FW: this series inverter is able to adjust inverter output power according to grid frequency.
Droop f: percentage of nominal power per Hz
For example, "Start freq f＞50.2Hz, Stop freq f＜50.2, Droop f=40%PE/Hz" when the grid frequency reaches 50.2Hz, the inverter will decrease its active power at Droop f of 40%. And then when grid system frequency is less than 50.2Hz, the inverter will stop decreasing output power.
For the detailed setup values, please follow the local grid code.



V(W): It is used to adjust the inverter active power according to the set grid voltage.
V(Q): It is used to adjust the inverter reactive power according to the set grid voltage.
This function is used to adjust inverter output power (active power and reactive power) when grid voltage changes.

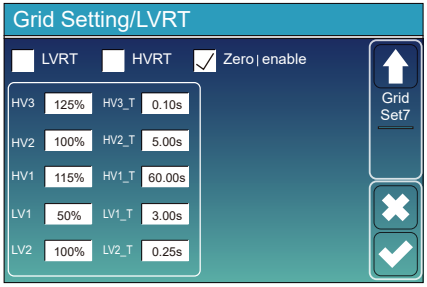
Lock-in/Pn 5%: When the inverter active power is less than 5% rated power, the VQ mode will not take effect.
Lock-out/Pn 20%: If the inverter active power is increasing from 5% to 20% rated power, the VQ mode will take effect again.

For example: V2=110%, P2=20%. When the grid voltage reaches the 110% times of rated grid voltage, inverter output power will reduce its active output power to 20% rated power.
For example: V1=90%, Q1=44%. When the grid voltage reaches the 90% times of rated grid voltage, inverter output power will output 44% reactive output power.
For the detailed setup values, please follow the local grid code.

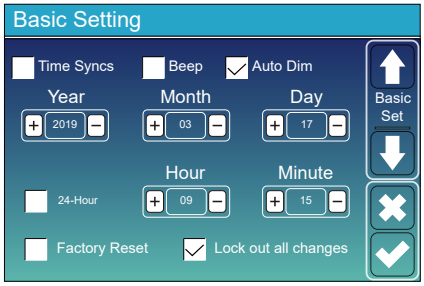


P(Q): It is used to adjust the inverter reactive power according to the set active power.
P(PF): It is used to adjust the inverter PF according to the set active power.
For the detailed setup values, please follow the local grid code.

Lock-in/Pn 50%: When the inverter output active power is less then 50% rated power, it won't enter the P(PF) mode.
Lock-out/Pn 50%: When the inverter output active power is higher then 50% rated power, it will enter the P(PF) mode.
Note : only when the grid voltage is equal to or higher than 1.05times of rated grid voltage, then the P(PF) mode will take effect.



LVRT: After ticked, the inverter will stay continuously connected to the grid and maintain stable operation for a specified short period when the grid voltage sags temporarily due to faults.
HVRT: After ticked, the inverter will stay continuously connected to the grid and maintain stable operation for a specified short period when the grid voltage rises temporarily due to faults.
Zero|enable: This function enables the inverter module of this system to maintain continuous, stable grid-tied operation during instantaneous grid current dips or transient zero-current faults
HV3/2/1: 3/2/1 level overvoltage point.
HV3/2/1_T: 3/2/1 level overvoltage point holding time.
LV2/1: 2/1 level undervoltage point.
LV2/1_T: 2/1 level undervoltage point holding time.

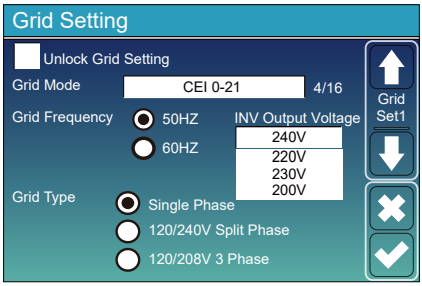


After setting grid parameters, please check the "Lock out all changes" option and enter the password to lock these settings. For detailed password information, please contact your distributor or Deye for confirmation.

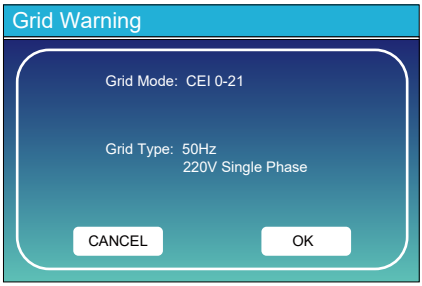
7.8.2 Grid Parameter Check

After steps above, customers can see firmware version on Device Info page（refer to section 7.12）and Grid parameters on Grid Setting page

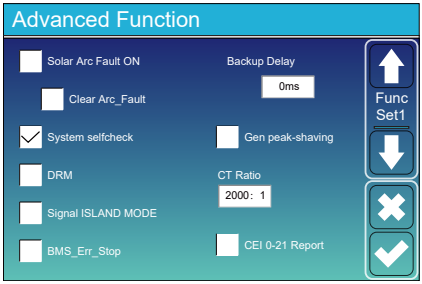
7.8.3 The method of CEI 0-21 Standard Self-Check



Firstly, choose "CEI 0-21" for Grid Mode, select "50Hz" for Grid Frequency, and "Single Phase" for Grid Type.



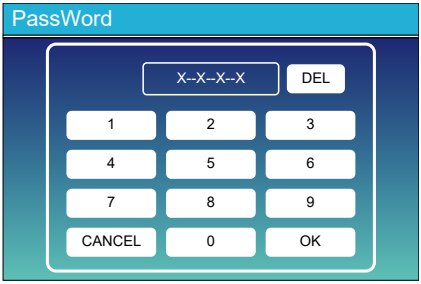
Click "OK" to confirm.



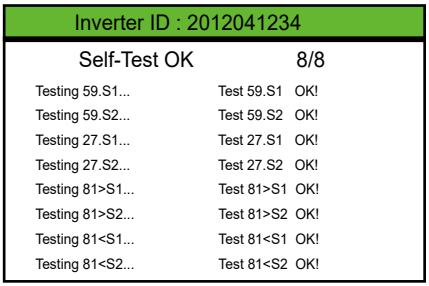
Secondly, tick "System selfcheck" on Advanced Function page.
then you need to input the password.
and the default password is 1234.

Note: please don't tick "CEI 0-21 Report ".

This "System selfcheck" program is valid only after choosing grid type as "CEI 0-21".

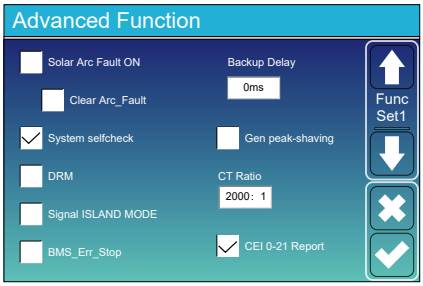


The default password is 1234
After input the password and then tick "OK"`

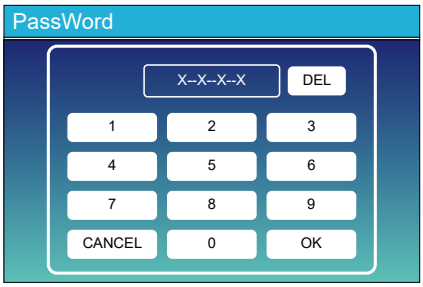


During the self-test process, the indicator will be steady on.

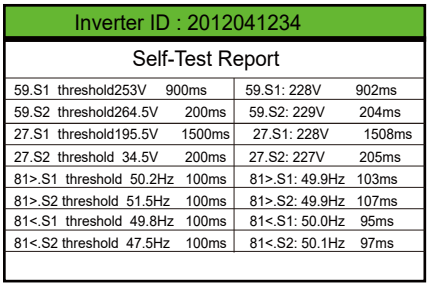
When all the test items shows OK, which means the self-test is completed successfully.



then press “esc” button to quit from this page.
Tick “system selfcheck”on the Advanced function menu and tick “CEI 0-21 Report”.



System selfchek: After ticking this item, it needs input the password.
The default password is 1234.
After input the password and then tick "OK"`



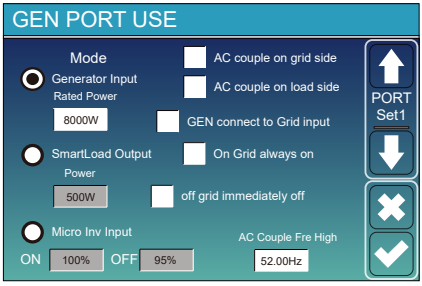
This page will shows the test result of "CEI 0-21 self-check".

7.9 Smart Devices

For the installation and commissioning procedures of Smart Devices, please refer to the following instruction document: https://hqcdn.hqsmartcloud.com/deyeinverter/2026/04/27/Commissioning Steps of The Smart Devices.pdf

Notice: If this function item is not available on your inverter LCD screen, please contact the technical support team to upgrade the firmware.

7.10 Generator Port Use Setup Menu

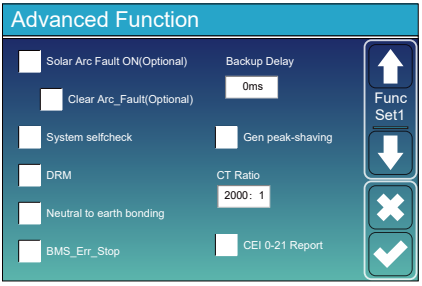


Generator Input: Use the GEN port as a generator input port.
Rated power: The expected maximum output power from generator if Gen peak-shaving is enabled.
GEN connect to grid input: connect the generator on the inverter's grid port side .
Smart Load Output: Use the GEN port as an AC output port, and the load connected to this port can be controlled on/off by the hybrid inverter.
Power: One of the prerequisites for the hybrid inverter to close its GEN port main relay is that the PV input power shall not be lower than this set value (the other condition is that the battery SOC rises to the ON set value).

OFF(@SmartLoad Output): When the SOC/voltage of the battery drops to this set value, the inverter will disconnect the main relays of its GEN port and stop supplying power to the smart load.
ON(@SmartLoad Output): When the SOC/voltage of the battery rises to this set value, the inverter will close the main relays of its GEN port and start supplying power to the smart load.
On Grid always on: When "on Grid always on" is checked, the smart load port will always keep switching on if hybrid inverter is operating in on-grid mode.
Off grid immediately off: When the inverter switches from on-grid mode to off-grid mode, it will immediately disconnect the main relay of its GEN port.
Micro Inv Input: Use the GEN port as an AC couple input port, which can be connected with micro-inverter or other Grid-Tied inverter.
ON(@Micro Inv Input): In the scenario of AC couple on GEN port, after the battery SOC drops to the ON set value, the hybrid inverter will close its main relay at the GEN port, connect to the grid-tied inverter and provide voltage support for it. This function is invalid in the scenarios of AC couple on Load port and AC couple on Grid port.
OFF(@Micro Inv Input): In the scenario of AC couple on GEN port + off-grid mode,after the battery SOC rises to the OFF set value, the hybrid inverter will open its main relay at the GEN port,trip the on-grid inverter.
In the scenario of AC couple on Load port + operating in off-grid mode, after the battery SOC rises to the OFF set value, the hybrid inverter will rise the AC output frequency to the set value of "AC Couple Frz High",so as to reduce the output power of on-grid inverter or even trip the on-grid inverter(depend on the overfrequency settings at on-grid inverter side).
AC couple Frz High: In the scenario of AC couple on Load port + operating in off-grid mode, after the battery SOC rises to the OFF set value, the hybrid inverter will rise the AC output frequency to this set value. In other scenerios,it's invalid.
AC couple on load side: Connect the AC coupled single or multiple grid-tied inverters to the load port side of the hybrid inverter. The grid -tied inverter can generate power normally during power outages, and the total rated power of the grid-tied inverters should not exceed the rated power of the hybrid inverter. Further more, a second meter should be added for the on-grid inverters, please refer to section 7.11 to conduct the corresponding wiring and settings.
AC couple on grid side: Connect the AC coupled single or multiple grid-tied inverters to the Grid port side of the hybrid inverter. The total rated power of the grid -tied inverters can be higher than the rated power of the hybrid inverter. Further more, a second meter should be added for the on-grid inverters, please refer to section 7.11 to conduct the corresponding wiring and settings.

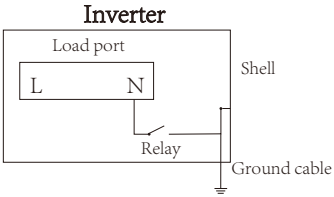
	ON		OFF	
	ON-GRID mode	OFF-GRID mode	ON-GRID mode	OFF-GRID mode
AC couple on GEN port)	Invalid. When grid voltage is present, the GEN port main relay will pull in directly, regardless of the battery SOC/voltage.	Valid. When the battery SOC/voltage drops to the ON set value, the hybrid inverter will pull in its GEN port main relays, allowing the On-grid inverter to connect and generate power normally.	Invalid. After the battery is fully charged, the excess power generated by the grid connected inverter can be sold to the grid without causing overcharging of the battery.	Valid. When the battery SOC/voltage rises to the OFF set value, the hybrid inverter will open its GEN port main relays, and the on-grid inverter will enter off-grid mode and stop power generation.
AC couple on Grid port	Invalid	The hybrid inverter operates in islanding mode and the on-grid inverter does not work	Invalid	The hybrid inverter operates in islanding mode and the on-grid inverter does not work
AC couple on Load port	Invalid. The Load port of the hybrid inverter maintains continuous voltage output. After the grid-tied inverter pulls in its main relay and connects to the system, it can generate power normally.		Invalid. The output frequency of the hybrid inverter must remain synchronized with the grid, and frequency shift is not achievable.	Valid. When the battery SOC/voltage rises to the OFF set value,the hybrid inverter will raise the frequency of the AC output side to the set value of AC couple Frz high, making the on-grid inverter trip due to over-frequency (the over-frequency protection threshold of the on-grid inverter needs to be set accordingly).

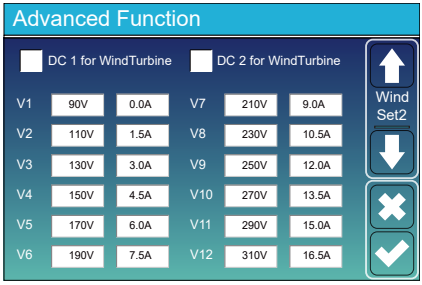
7.11 Advanced Function Setup Menu

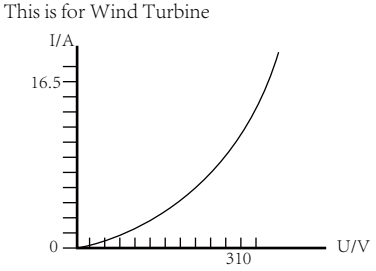


Solar Arc Fault ON(Optional): This feature is optional. After enabling this function, the inverter will detect whether there is a arcing fault on the PV side. If arcing occurs, the inverter will report a fault and stop outputting power.
Clear Arc_Fault(Optional): After the arc fault on the PV side is eliminated, enabling this function can eliminate the arc fault alarm of the inverter and restore normal operation of the inverter.
System selfcheck: Make the inverter re-execute the power-on self-test procedure. This operation is required during the process of generating CEI 0-21 report.
Gen Peak-shaving: Limit the maximum output power of the generator to the set rated power on "GEN PORT USE" page, the rest of power consumption will be provided by PV and battery to ensure that the generator will not overload.
DRM: Demand response mode, receive external commands for scheduling active power and reactive power.
CT Ratio: When an external current transformer (CT) is directly used for current sampling at the grid connection point, this parameter shall be set according to the transformation ratio of the actually applied external CT. Range: 100:1-10000:1, adjustment step:100.
Backup Delay: When the grid cuts off, the inverter will output power after this set time.
For example, backup delay: 1000ms. the inverter will give output power after 1000ms when the grid cuts off.
Note: for some old FW version, the function is not available.
BMS_Err_Stop: When it is active, if the battery BMS failed to communicate with inverter, the inverter will stop working and report fault.
Neutral to earth bonding: When the "Neutral to Earth Bonding" function is enabled, and the inverter operates in off-grid mode, the internal relay between neutral (load port N) and protective earth (PE) will close, bonding the neutral line to the inverter ground.

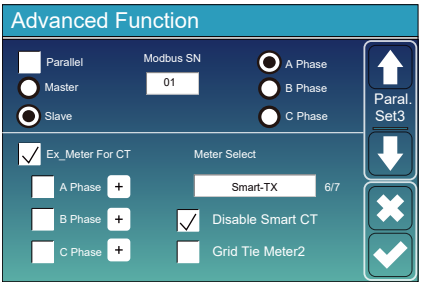
Note: If this function is enabled, the inverter shell must be reliably grounded. Failure to do so may result in an electric shock hazard upon contact with the inverter shell.





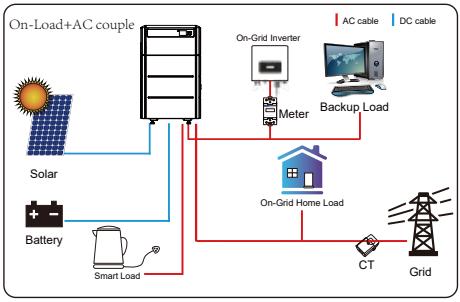


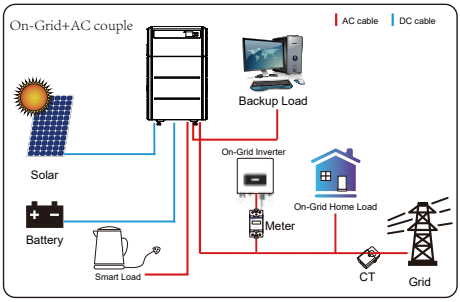
DC 1 for Wind Turbine:
Connect the wind turbine to the MPPT 1 of hybridinverter.
DC 2 for Wind Turbine:
Connect the wind turbine to the MPPT 2 of hybridinverter.
V1-V12: Use 12 points to fit the output U/I curve of the wind turbine controller. Voltage Range: 50-480V, Current Range: 0.1-36A.

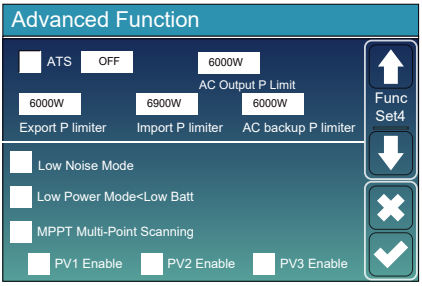


Parallel: Enable this function when several same model hybrid inverters are connecting in parallel.
Master: Select any hybrid inverter in the parallel system as the master inverter, and the master inverter needs to manage the working mode of the parallel system.
Slave: Set the other inverters managed by the master inverter as slave inverter.
Modbus SN: The Modbus address of each inverter, every inverter should have different address.
A/B/C Phase: When forming a 3-phase system in parallel, it is necessary to set which phase of the three-phase system this inverter belongs to.

Ex_Meter For CT: Tick this function when using "Zero export to CT" mode and use external smart meter to replace the CT.
A/B/C Phase(@Ex_Meter For CT): When this inverter is installed in three phase grid and measured by three phase smart meter,tick corresponding phase which this hybrid inverter is connected. For example, when the hybrid inverter connects to A phase of grid, please tick A Phase here.
Meter Select: Select the corresponding meter type according to the meter installed on site.
Disable Smart CT: When selecting the Smart TX function without a wireless CT, enable this function to suppress the W04 alarm.
Grid Tie Meter2: Tick this function when there're one or several on-grid inverters AC coupled on the grid or load port side of the hybrid inverter and one more meter installed for the on-grid inverters. Then the hybrid inverter LCD will show output power of the on-grid inverter on Solar detail page. To make sure that meter can communicate with the hybrid inverter successfully, please set its modbus address as "02". The installation position is shown in the following figures. Please refer to the user manual of meter for the wiring method.



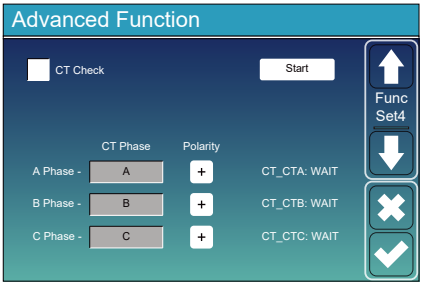


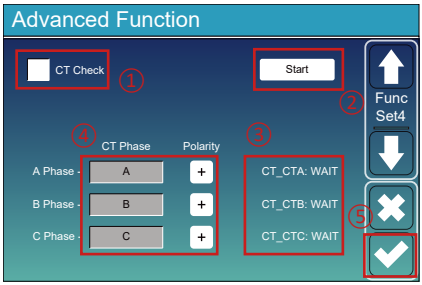


ATS: When unchecked, there is no voltage output in grid-tie mode, and the output voltage is the rated phase voltage in off-grid mode; After checking and setting to ON, there is no voltage output, and setting to OFF will output the rated phase voltage.
Export P limiter: Limit the power fed into the grid, performing the same function as "max sell power," and sharing a common register with "max sell power" (modifying one via the LCD automatically updates the other).
Import P limiter: It is used to limit the maximum active power absorbed by the inverter from the grid side, preventing the system from drawing power from the grid beyond this set value. The correlation with Grid peak shaving is shown in the following table:

Disable Grid peak shaving (Denoted G)	Load power>Import P limiter(Denoted I)	Power drawn from the grid will not exceed load power,batteries that need charging cannot draw power from the grid.
	Load power<I	Grid power consumption will not exceed the Import P limiter, and after supplying the load and self-consumption, any remaining power can be used to charge the battery.
Enable Grid peak shaving	G>I>Load power	Power drawn from the grid will not exceed "Import P limiter" set value.
	I>G>Load power	Power drawn from the grid will not exceed "Grid peak shaving" set value.
	G<load power<I	If the battery discharge power is sufficient, the power drawn from the grid will not exceed "Grid peak shaving" set value(Grid peak shaving takes effect).
	I<G<load power	
	G<I<load power	
	I<load power<G	Power drawn from the grid will not exceed load power,batteries that need charging cannot draw power from the grid(Import P limiter takes effect).

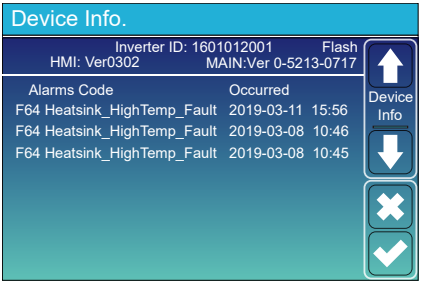
AC Output P limit: Limit the output power of the DC/AC inverter module when the inverter operates in on-grid mode.
AC Backup P limit: Limit the output power in Load port when inverter operates in off-grid mode. If backup load power exceed this set value, the inverter will alarm F34, after a 2-minute interval, the load port relay will automatically reclose and the system will re-evaluate. If the UPS load still exceeds the limit within 20 seconds, the F34 alarm will trigger again.
Low Noise Mode: Increase the switching frequency of power components(Like MOSFET and IGBT) to reduce high-frequency noise caused by resonance and other factors.
Low Power Mode<Low Batt: After being checked, when the hybrid inverter operates in the on-grid mode and the battery SOC drops to the set value of "Low Batt", the self-consumption power of the hybrid inverter will be drawn from the AC side, so as to reduce the power consumption of the battery and prevent the battery from over-discharging.
MPPT Multi-Point Scanning: After being enabled, the built-in MPPT module of the inverter will perform an I-V curve scan of the PV strings every half an hour, re-locate the maximum power point of the PV strings, and eliminate MPPT failure issues caused by shading and other problems.
PV1 Enable: Whether to enable P1+ & P1- to perform open-circuit detection on the PV strings connected to MPPT1.
PV2 Enable: Whether to enable P2+ & P2- to perform open-circuit detection on the PV strings connected to MPPT2.
PV3 Enable: Whether to enable P3+ & P3- to perform open-circuit detection on the PV strings connected to MPPT3.
Note:
1. The hardware interfaces corresponding to PV1/2/3 enable are optional, and can not be added after delivery. Please confirm whether they are needed before placing an order.
2. For inverter modules with only one MPPT, PV2&PV3 Enable will be invalid; For inverter modules with only 2 MPPT channels, PV3 Enable will be invalid.
3. This feature requires additional wiring support, recommended cable specifications: 0.25/0.5mm ².





CT check: Whether to enable CT self-test function. Performing CT self-test requires the inverter to operate in on-grid mode and the load power to be stable.
Start: After selecting CT check, click this button to start the CT self-test program.
Operation steps:
Step 1: Tick the CT check.
Step 2: Click the "Start" button.
Step 3: Check the checking result in Zone 3.
Step 4: Adjust the CT phase and polarity in region 4 to ensure that the CT phase and polarity settings in region 4 are consistent with the self-test results in region 3.
Step 5: Click the "√" icon in the bottom right corner to save the adjustment.
Note: This feature is still undergoing internal testing and will be released soon.

7.12 Device Info Setup Menu



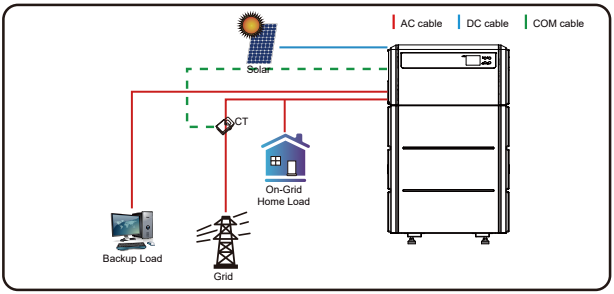
This page show Inverter ID, Inverter version and alarm codes.

HMI: LCD version

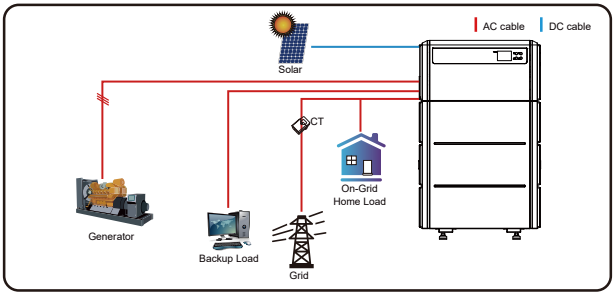
MAIN: Control board FW version

8. Mode

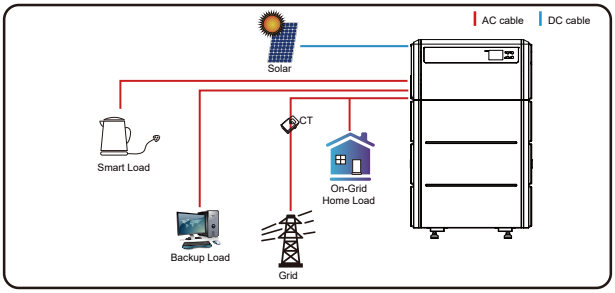
Mode I:Basic



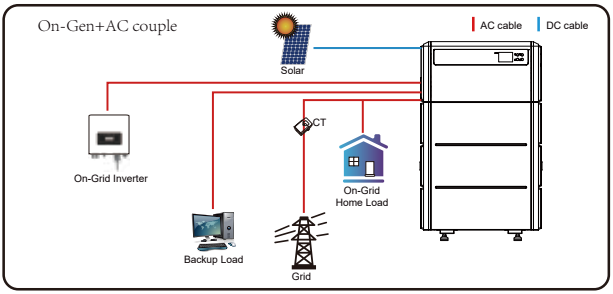
Mode II: With Generator

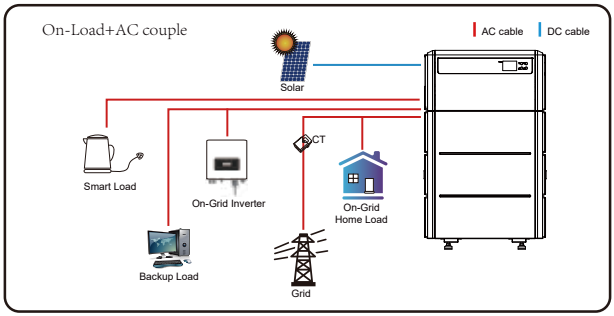


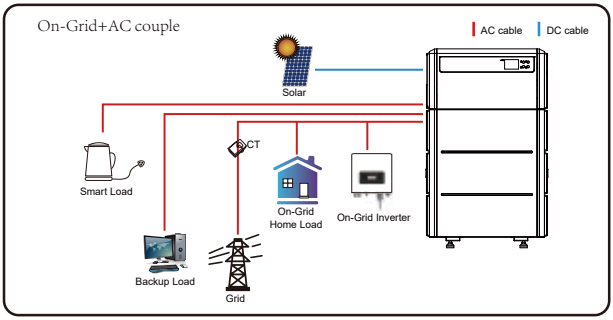
Mode III: With Smart-Load



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.

9. Troubleshooting and Maintenance

9.1.1Troubleshooting

Once the inverter fails, the fault code can be displayed on the LCD screen and monitor platform, The fault codes and troubleshooting methods of inverter are listed in the table below. The device you purchase may only contain some of the fault information, and when the inverter fails, you can check the corresponding information and how to check from this table.
If you encounter a fault during use and cannot resolve it by following the instructions in the user manual, please contact your local dealer or service center promptly. please have the following information ready: inverter serial number, distributor or service center name, grid connection date, a detailed problem description and your contact information.



CAUTION

Restart the inverter only after removing the fault that impairs safety performance. To avoid the risk of electric shock or the destroy of inverter, do not perform any other operations beyond those described in this manual. Otherwise, the losses caused is not covered by the warranty.

*it is strictly prohibited to open the product if there is an odor or smoke or if the product appearance is abnormal. If there is no odor, smoke, or obvious abnormal appearance, repair or restart the inverter according to the alarm corrective measures.

Error code	*Description*	*Solutions*
W01	Reserved	
W02	FAN_IN_Warn	1. Check the operating status of the fan. 2. If the fan is running abnormally, open the cover of the inverter to check the connection of the fan.
W03	Grid phase wrong	1. Check the phase sequence connection of the grid. 2.Exchange the sequence of L cables on the grid side in a parallel system; try to restart the grid. 3.Seek help from us, if can not go back to normal state.
W04	Meter_offline_warn	1. Meter communication failure . 2. Check whether the meter has successful communication and whether the wiring is normal.
F01	DC Inversed Failure	1. Check the PV and battery input polarity. 2. Seek help from us, if can not go back to normal state.
F02	DC_Insulation_Failure	1.Check whether the PV is grounded, secondly, check whether the impedance of the PV to the ground is norma. 2. Seek help from us, if can not go back to normal state.
F03	GFDI_Failure	1. check whether the PV is grounded, secondly, check whether the impedance of the PV to the ground is normal, whether the leakage current, 2. Seek help from us, if can not go back to normal state.
F04	GFDI_Ground_Failure	1. check whether the PV is grounded. 2. Seek help from us, if can not go back to normal state.
F05	EEPROM_Read_Failure	1. restart the inverter 3 times and restore the factory settings. 2. Seek help from us, if can not go back to normal state.
F06	EEPROM_Write_Failure	1. restart the inverter 3 times and restore the factory settings. 2. Seek help from us, if can not go back to normal state.

Error code	Description	Solutions
F07	DC/DC_Softstart_Fault	1. The BUS voltage can t be built from PV or battery. 2. Restart the inverter, If the fault still exists, please contact us for help.
F08	GFDI_Relay_Failure	1. When inverter is in Split phase(120/240Vac) or three-phase system (120/208Vac) system, the backup load port N line needs to connect ground. 2. If the fault still exists, please contact us for help.
F09	IGBT_Failure	1. restart the inverter 3 times and restore the factory settings. 2. Seek help from us, if can not go back to normal state.
F10	AuxPowerBoard_Failure	1. first check whether the inverter switch is open. 2. restart the inverter 3 times and restore the factory settings. 3. Seek help from us, if can not go back to normal state.
F11	AC_MainContactor_Failure	1. restart the inverter 3 times and restore the factory settings. 2. Seek help from us, if can not go back to normal state.
F12	AC_SlaveContactor_Failure	1. restart the inverter 3 times and restore the factory settings. 2. Seek help from us, if can not go back to normal state.
F13	Grid_Mode_changed	1. When the grid type and frequency changed it will report F13. 2. When the battery mode was changed to “No battery” mode, it will report F13. 3. For some old FW version, it will report F13 when the system work mode changed. 4. Generally, it will disappear automatically when shows F13. 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. 6. Seek help from us, if can not go back to normal state.
F14	DC_OverCurr_Fault	1.Check battery voltage is too low. 2. restart the inverter 3 times and restore the factory settings. 3. Seek help from us, if can not go back to normal state.
F15	SW_AC_OverCurr_Fault	AC side over current fault 1. Please check whether the backup load power and common,load power are within the range. 2. Restart and check whether it is in normal. 3. Seek help from us, if can not go back to normal state.
F16	GFCI_Failure	Leakage current fault 1. Check the PV side cable ground connection. 2. Restart the system 2-3 times. 3. if the fault still existing, please contact us for help.
F17	Active_Battery_Hold	1.The fault will be rectified when the Master is successfully activated and the battery voltage exceeds 52V. 2. Seek help from us, if can not go back to normal state.
F18	HW_Ac_OverCurr_Fault	AC side over current fault 1. Please check whether the backup load power and common load power are within the range. 2. Restart and check whether it is in normal. 3. Seek help from us, if can not go back to normal state.

Error code	Description	Solutions
F19	Tz_Integ_Fault	1. restart the inverter 3 times and restore the factory settings. 2. Seek help from us, if can not go back to normal state.
F20	Tz_Dc_OverCurr_Fault	DC side over current fault 1. Check PV module connect and battery connect. 2. When in the off-grid mode, the inverter startup with big power load, it may report F20. Please reduce the load power connected. 3. Turn off the DC switch and AC switch and then wait one minute,then turn on the DC/AC switch again. 4. Seek help from us, if can not go back to normal state.
F21	Tz_GFDI_OC_Fault	BUS over current 1. Check the PV input current and battery current setting. 2. Restart the system 2~3 times.
F22	Tz_EmergStop_Fault	Please contact your installer for help
F23	Tz_GFCI_OC_Fault	Leakage current fault 1. Check PV side cable ground connection. 2. Restart the system 2~3 times. 3. If the fault still exists, please contact us for help
F24	DC_Insulation_Fault	PV isolation resistance is too low 1. Check the connection of PV panels and inverter is firmly and correctly. 2. Check whether the PE cable of inverter is connected to ground. 3. Seek help from us, if can not go back to normal state.
F25	AC_Active_Batt_Fault	1. restart the inverter 3 times and restore the factory settings. 2. Seek help from us, if can not go back to normal state.
F26	BusUnbalance_Fault	1. Please wait for a while and check whether it is normal. 2. When the hybrid in split phase mode, and the load of L1 and load of L2 is big different, it will report the F26. 3. Restart the system 2~3 times. 4. Seek help from us, if can not go back to normal state.
F27	DC_Insulation_Fault	1. restart the inverter 3 times and restore the factory settings. 2. Seek help from us, if can not go back to normal state.
F28	DCIOver_ M1_Fault	1.The fault will be rectified when the Master is successfully activated and the battery voltage exceeds 52V. 2. Seek help from us, if can not go back to normal state.
F29	Parallel_CANBus_Fault	1. When in parallel mode, check the parallel communication cable connection and hybrid inverter communication address setting; 2. During the parallel system startup period, inverters will report F29. 3. when all inverters are in ON status, it will disappear automatically; 4. If the fault still exists, please contact us for help

Error code	Description	Solutions
F30	AC_MainContactor_Fault	1. restart the inverter 3 times and restore the factory settings. 2. Seek help from us, if can not go back to normal state.
F31	Soft_Start_Failed	1. Check whether the grid orientation is correct, restart the inverter 3 times and restore the factory settings. 2. Seek help from us, if can not go back to normal state.
F32	DCIOver_ M2_Fault	1. restart the inverter 3 times and restore the factory settings. 2. Seek help from us, if can not go back to normal state.
F33	AC_OverCurr_Fault	1. check whether the grid current is too large. 2. restart the inverter 3 times and restore the factory settings. 3. Seek help from us, if can not go back to normal state.
F34	AC_Overload_Fault	1. Check the backup load connected, make sure it is in allowed power range. 2. If the fault still exists, please contact us for help.
F35	AC_NoUtility_Fault	No Utility 1. Please confirm grid is lost or not. 2. Check the grid connection is good or not. 3. Check the switch between inverter and grid is on or not. 4. Seek help from us, if can not go back to normal state.
F36	AC_GridPhaseSeque_Fault	1. check the Grid Phase. 2. If the fault still exists, please contact us for help.
F37	DCLLC_Soft_Over_Cur	1. restart the inverter 3 times and restore the factory settings. 2. Seek help from us, if can not go back to normal state.
F38	AC_Curr_ Unbalance_Fault	1. restart the inverter 3 times and restore the factory settings. 2. Seek help from us, if can not go back to normal state.
F39	DCLLC_Over_Current	1. restart the inverter 3 times and restore the factory settings 2. Seek help from us, if can not go back to normal state.
F40	Batt_Over_Current	1. restart the inverter 3 times and restore the factory settings 2. Seek help from us, if can not go back to normal state.
F41	Parallel_System_Stop	1. Check the hybrid inverter working status. If there's 1 pcs hybrid inverter is in OFF status, the other hybrid inverters may report F41 fault in parallel system. 2. If the fault still exists, please contact us for help.
F42	AC_WU_UnderVolt_Faul	Grid voltage fault 1. Check the AC voltage is in the range of standard voltage in specification. 2. Check whether grid AC cables are firmly and correctly connected. 3. Seek help from us, if can not go back to normal state.
F43	AC_VW_OverVolt_Fault	Grid voltage out of range 1. Check the voltage is in the range of specification or not. 2. Check whether AC cables are firmly and correctly connected. 3. Seek help from us, if can not go back to normal state.

Error code	Description	Solutions
F44	AC_VW_UnderVolt_Fault	Grid voltage out of range 1. Check the voltage is in the range of specification or not. 2. Check whether AC cables are firmly and correctly connected. 3. Seek help from us, if can not go back to normal state.
F45	AC_UV_OverVolt_Fault	Grid voltage out of range 1. Check the voltage is in the range of specification or not. 2. Check whether AC cables are firmly and correctly connected. 3. Seek help from us, if can not go back to normal state.
F46	Backup_Battery_Fault	1. restart the inverter 3 times and restore the factory settings. 2. Seek help from us, if can not go back to normal state.
F47	AC_OverFreq_Fault	Grid frequency out of range 1. Check the frequency is in the range of specification or not. 2. Check whether AC cables are firmly and correctly connected. 3. Seek help from us, if can not go back to normal state.
F48	AC_UnderFreq_Fault	Grid frequency out of range 1. Check the frequency is in the range of specification or not. 2. Check whether AC cables are firmly and correctly connected. 3. Seek help from us, if can not go back to normal state.
F49	Backup_Battery_Fault	1. restart the inverter 3 times and restore the factory setting. 2. Seek help from us, if can not go back to normal state.
F50	AC_V_GridCurr_DcHigh_Fault	1. restart the inverter 3 times and restore the factory settings. 2. Seek help from us, if can not go back to normal state.
F51	AC_W_GridCurr_DcHigh_Fault	1. Check whether the battery temperature is too high. 2. Seek help from us, if can not go back to normal state.
F52	AC_A_InductCurr_DcHigh_Fault	1. restart the inverter 3 times and restore the factory settings. 2. Seek help from us, if can not go back to normal state.
F53	AC_B_InductCurr_DcHigh_Fault	1. restart the inverter 3 times and restore the factory settings. 2. Seek help from us, if can not go back to normal state.
F54	AC_C_InductCurr_DcHigh_Fault	1. restart the inverter 3 times and restore the factory settings. 2.Seek help from us, if can not go back to normal state.
F55	DC_VoltHigh_Fault	BUS voltage is too high 1. Check whether ba ery voltage is too high. 2. Check the PV input voltage, make sure it is within the allowed range. 3. Seek help from us, if can not go back to normal state.
F56	DC_VoltLow_Fault	Battery voltage low 1. Check whether battery voltage is too low. 2. If the battery voltage is too low, using PV or grid to charge the battery. 3. Seek help from us, if can not go back to normal state.
F57	AC_BackFeed_Fault	1. Restart the inverter 3 times and restore the factory settings. 2. Seek help from us, if can not go back to normal state.

Error code	Description	Solutions
F58	BMS_Communication_Fault	1. It tells the communication between hybrid inverter and battery BMS disconnected when"BMS_Err-Stop" is active. 2. if don’ t want to see this happen, you can disable "BMS_Err-Stop" item on the LCD. 3. If the fault still exists, please contact us for help.
F59	AC_V_GridCurr_High_Fault	1. Check whether the inverter current is too high, restart the inverter, restore the factory settings. 2. Seek help from us, if can not go back to normal state.
F60	Gen_Volt_or_Fre_Fault	1. Check whether the voltage and frequency of the generator are normal, and then restart. 2. Seek help from us, if can not go back to normal state.
F61	Button_Manual_OFF	1. Firstly check whether the inverter switch is ON, restart the inverter, and restore the factory settings. 2. Seek help from us, if can not go back to normal state.
F62	DRMs_Stop	1. Check the DRM funcation is active or not. 2. Seek help from us, if can not go back to normal state.
F63	Arc_Fault	1. ARC fault detection is only for US market. 2. Check PV module cable connection and clear the fault. 3. Seek help from us, if can not go back to normal state.
F64	Heatsink_HighTemp_Fault	Heat sink temperature is too high 1. Check whether the work environment temperature is too high. 2. Turn off the inverter for 10mins and restart. 3. Seek help from us, if can not go back to normal state.

Chart 9-1 Fault information

Batty Upper Computer Fault Display.

Fault Type	*Phenomenon*	*Possible Causes*	*Solutions*
Information collection fails	The cell voltage sampling circuit is faulty.The cell temperature sampling circuit is faulty.	The welding point for cell voltage sampling is loose or disconnected.The voltage sampling terminal is disconnected. The cell temperature sensor has failed.	Replace the collection line.
Electrochemical cell error	The voltage of the cell is low or unbalanced.	Due to large self discharge, the cell over discharges to below 2.0V after long term storage. The cell is damaged by external factors, and short circuits, pinpricks, or crushing occur.	Replace the battery.
Over-voltage protection fails	The cell voltage is greater than 3.65 V in charging state.The battery voltage is greater than 58.4 V.	The busbar input voltage exceeds the normal value. Cells are not consistent. The capacity of some cells deteriorates too fast or the internal resistance of some cells is too high.	If the battery cannot be recovered due to protection against abnormality contact local engineers to rectify the fault.
Under voltage protection fails	The battery voltage is less than 44.8V.The minimum cell voltage is less than 2.8V.	The mains power failure has lasted for a long time. Cells are not consistent. The capacity of some cells deteriorates too fast or the internal resistance of some cells is too high.	Same as above.
Charge or dis charge high temperature protection fails	The maximum cell temperature is greater than 60 ℃.	The battery ambient temperature is too high.There are abnormal heat sources around.	Same as above.
Charge low temperature protection fails	The minimum cell temperature is less than 0 ℃.	The battery ambient temperature is too low.	Same as above.
Discharge low temperature protection fails	The minimum cell temperature is less than -20 ℃.	The battery ambient temperature is too low.	Same as above.

If the product is damaged due to manufacturing defects or material issues (non-humancauses), customers need to return the products under the guidance of the company, and the company will provide repair or parts replacement. 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.

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.

Batty Maintenance Schedule

Maintenance Item	Frequency	Description
Environment & Safety	6 months	Ensure no flammable or explosive materials around the product.
		Ambient temperature and humidity within operating ranges.
	12 months	Check heat dissipation modules and vents; clean with a vacuum cleaner if necessary.
	24 months	Ensure air inlets and outlets are not blocked.
Appearance & Structure	1 day	Check that status indicators are in normal condition.
		Ensure no foreign objects wrap or cover the product exterior.
	3 months	Visual inspection of the product: no obvious paint peeling or rust, no dust at vents, no vermin, fasteners secured, parameter settings normal.
	12 months	Check screws for no loss or rust.
		Warning labels and marks legible and intact; replace if stained or damaged.
	24 months	No oxidation or rust.
		No damage or deformation.
Electrical & Connections	6 months	Cables: securely connected, undamaged, no water ingress, intact insulation tape at terminals, proper routing.
	12 months	Check and retighten electrical connections to specified torque.
		Check grounding and equipotential bonding; grounding resistance $\leqslant 0.4\ \Omega$.
	24 months	Verify correct wiring.
Battery Pack	3 months	good appearance, proper ambient temperature/humidity, normal operating voltage and current.
	6 months	no rust or foreign objects, fan operates properly, BMS free of alarms.
Protection & Safety Devices	3 months	Verify normal function of equipment switches.
System Operation	1 day	Log in to the management platform (WEB/EMS/APP, etc.) to check system alarms.
	12 months	Check battery module SoC, SoH, voltage, and temperature via monitoring software.
		Perform one system shutdown and restart.
	24 months	Check for abnormal noise during equipment operation.

10. Datasheet

Model	SUN-7K-SG06LP1-EU-TM3	SUN-7.5K-SG06LP1-EU-TM3	SUN-8K-SG06LP1-EU-TM3	SUN-10K-SG06LP1-EU-TM3	SUN-12K-SG06LP1-EU-TM3
Battery Input Data					
Battery Type	LiFePO 4				
Battery Voltage Range(V)	41.6-58.4				
Battery Module Voltage(V)	51.2				
Max. Charging Current(A)	175	185	185	220	250
Max. Discharging Current(A)	175	185	185	220	250
Number of Battery Input	1				
PV String Input Data					
Max. PV access power(W)	14000	15000	16000	20000	24000
Max. PV Input Power(W)	11200	12000	12800	16000	19200
Max. PV Input Voltage(V)	500				
Start-up Voltage(V)	125				
PV Input Voltage Range(V)	125-500				
MPPT Voltage Range(V)	150-425				
Full Load MPPT Voltage Range(V)	200-425			250-425	
Rated PV Input Voltage(V)	370				
Max. Operating PV Input Current(A)	36+18+18				36+36+18
Max. Input Short-Circuit Current(A)	54+27+27				54+54+27
No. of MPP Trackers/No. of Strings MPP Tracker	3/2+1+1				3/2+2+1
Max. Inverter Backfeed Current to The Array	0				
AC Input/Output Data					
Rated AC Input/Output Active Power(W)	7000	7500	8000	10000	12000
Max. AC Input/Output Apparent Power(VA)	7700	8250	8800	11000	13200
Peak Power (off-grid)(W)	2 times of rated power, 10s				
Rated AC Input/Output Current(A)	31.9/30.5	34.1/32.7	36.4/34.8	45.5/43.5	54.6/52.2
Max. AC Input/Output Current(A)	35.0/33.5	37.5/35.9	40/38.3	50/47.9	60/57.4
Max. Continuous AC Passthrough (grid to load)(A)	65				70
Max. Output Fault Current(A)	70	76	80	100	120
Max. Output Overcurrent Protection(A)	140				
Rated Input/Output Voltage/Range(V)	220V/230V 0.85Un-1.1Un				
Grid Connection Form	L+N+PE				
Rated Input/Output Grid Frequency/Range	50Hz/45Hz-55Hz 60Hz/55Hz-65Hz				
Power Factor Adjustment Range	0.8 leading-0.8 lagging				
Total Current Harmonic Distortion THDi	<3% (of nominal power)				
DC Injection Current	<0.5%In				
AC Output (Off-grid)					
AC Output Voltage [Va.c.]	L/N/PE 220/230				
AC Output Frequency [Hz]	50/60				
Max. Continuous Apparent Output Power [VA]	7700	8250	8800	11000	13200
Max. Continuous AC Output Current [Aa.c.]	35.0/33.5	37.5/35.9	40/38.3	50/47.9	60/57.4
Overvoltage Category (OVC)	III				
GEN Port					
Rated output Voltage [Va.c.]	L/N/PE 220/230				
Rated output Frequency [Hz]	50/60				
Max. output current [Aa.c.]	55				

Model	SUN-7K-SG06LP1-AU-TM3	SUN-7.5K-SG06LP1-AU-TM3	SUN-8K-SG06LP1-AU-TM3	SUN-10K-SG06LP1-AU-TM3	SUN-12K-SG06LP1-AU-TM3
Efficiency					
Max. Efficiency	97.60%				
Euro Efficiency	96.50%				
MPPT Efficiency	>99%				
Equipment Protection					
DC reverse polarity protection	Yes				
AC Output Overcurrent Protection	Yes				
AC Output Overvoltage Protection	Yes				
AC Output Short Circuit Protection	Yes				
Thermal Protection	Yes				
Insulation Impedance detection	Yes				
DC Component Monitoring	Yes				
Arc fault circuit interrupter (AFCI)	Optional				
Anti-islanding protection	Yes				
DC Switch	Yes				
Residual Current Detection	Yes				
Surge Protection Level	TYPE II(DC), TYPE II(AC)				
Interface					
Display	LCD+LED				
Communication Interface	RS485, CAN				
Monitor Mode	GPRS/WIFI/Bluetooth/4G/LAN(optional)/LoRa				
General Data					
Max. Operating Frequency(Hz)	200M				
Operating Temperature Range	Charge: 1～55℃ / Discharge: -20～55℃, ＞45℃ Derating				
Permissible Ambient Humidity	0-100%				
Permissible Altitude	3000m				
Noise	＜55dB				
Ingress Protection(IP) Rating	IP 66				
Inverter Topology	Non-Isolated（solar）, Isolated（battery）				
Over Voltage Category	OVC II(DC), OVC III(AC)				
Cabinet size(W*H*D) [mm]	662W×354H×255D (Excluding connectors and brackets)				
Weight(kg)	28			28.3	
Warranty	5 Years / Up to 10 Years* *Warranty period varies by installation country. Refer to the Warranty Policy for details				
Type of Cooling	Intelligent air cooling				
Grid Regulation	IEC 61727,IEC 62116,CEI 0-21,EN 50549, NRS 097,RD 140, UNE 217002,OVE-Richtlinie R25,G99,VDE-AR-N 4105, AS 4777.2				
Safety EMC/Standard	IEC 62477, IEC 62619, SA TS 5398, IEC 62040, IEC62109-1/-2, EN61000-6-1,EN61000-6-2,EN61000-6-3,EN61000-6-4				

Model		AI-W16	AI-W16-H
Main Parameter			
Battery Chemistry		$LiFePO_4$	
Built-in Circuit Breaker		250A, 80Vdc	
Rated Capacity (Ah) [1]		314	
Nominal Voltage (V)		51.2	
Operating Voltage(V)		41.6-58.4	
Nominal Energy (kWh) [1]		16	
Usable Energy (kWh)[1]		14.4	
Charge Current (A) [2]	Max. Continuous	160	
	Peak	192	
Discharge Current (A) [2]	Max. Continuous	220	
	Peak	264	
Other Parameter			
Recommend Depth of Discharge		90% DoD	
Dimension (mm, W/H/D)		662 x 715 x 255 (Without base)	
Weight (kg)		120kg	
Display		LED(working, protecting, alarming)	
IP Rating of Enclosure		IP66	
Operating Temperature		Charge: 1~55°C, Discharge: -20~55°C	Charge: -20~55°C (Heating On), Discharge: -20~55°C
Storage Temperature		0-35°C	
Relative Humidity		95% (non-condensing)	
Cycle Life		⩾8000(25°C±2°C ,70%EOL)	
Max. Energy RTE (DC) [1]		95%	
Installation		Floor-Mounted，Stack-Mounted	
Communication		CAN2.0	
Certification		UN38.3, CE, CB, UL9540A	
Energy Throughput [3]		50 MWh	
Warranty Period [3]		10 years	

[1] Test conditions : 25°C+2°C, at beginning of life, 0.2C charge & 0.2C discharge, 90% DOD.
[2] The current is affected by temperature and SOC.
[3] Conditions apply, refer to Deye Warranty Letter.

11. Transportation and storage

11.1 For the inverter module

If the inverter is not installed immediately, please store it properly.

- Store the inverter in the original package.
- The storage temperature shall not exceed - 40 ° C to+70 ° C.
- The relative humidity of the air is between 5% and 95%, and there is no condensation.
- If stored, the number of layers will never Must exceed the limits specified outside the hull packing.
- The packaging must be placed vertically.

If the inverter has been stored for more than half a year, qualified personnel shall carefully check and test it before use.

During transportation, care must be taken to avoid collisions. After unpacking, if immediate installation is not possible, the original packaging box can be sealed with tape. If the original packaging box is lost, a properly sized and sufficiently sturdy alternative carton can be used.

11.2 For the battery module

For the transportation and storage requirements of battery modules, please refer to the corresponding chapters in its manual. Scan the QR code below to enter the "Download Center", then enter "AI-W16" in the Key words dialog box, and you can find the download link for the user manual of the AI-W16 battery module in the search results, or click directly“ https://dey-eess.com/downloads/### ”Repeat the above steps to obtain the download link for the battery user manual.

12.Disposal Instructions

12.1 Disposal of the inverter module

Do not dispose of inverter together with household waste. Please accordance with the disposal regulations for electronic waste which apply at the installation site at that time. Ensure that the old unit and, where applicable, any accessories are disposed of in a proper manner.

12.2 Disposal of the battery module

① Please follow all applicable regulations for waste battery disposal.
② Stop using the battery immediately if it is damaged.
③ Before disposal, contact your installer or sales partner for proper guidance.
④ Make sure the battery is not exposed to moisture or direct sunlight.

ATTENTION:

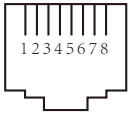
* Do not throw batteries or rechargeable batteries into household waste! You are legally required to return used batteries and rechargeable batteries to designated collection points.
* Waste batteries may contain harmful substances that can damage the environment or harm your health if not handled or stored properly.
* Batteries also contain iron, lithium, and other valuable raw materials that can be recycled.

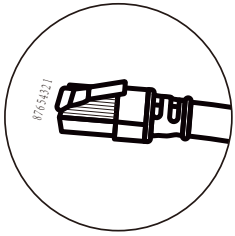
13. RJ45 Port Pin Definitions

13.1.Definition of RJ45 Port Pin for RS485.

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

BMS 485/CAN Port



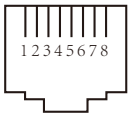


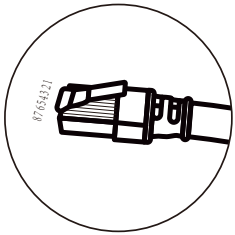
13.2.Definition of RJ45 Port Pin for Meter.

This port is used to communicate with energy meter.

No.	Meter Pin
1	METER-485-B
2	METER-485-A
3	A+5V
4	METER-485-B
5	METER-485-A
6	AGND
7	METER-485-A
8	METER-485-B

Meter port



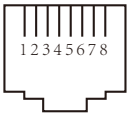


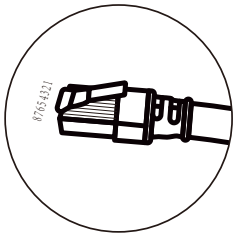
13.3.Definition of RJ45 Port Pin for Modbus port.

Definition of RJ45 Port Pin of "Modbus port" for remotely monitoring.

No.	Modbus Pin
1	SUNSPE-485_B
2	SUNSPE-485_A
3	GND_SUNSPE-485
4	
5	
6	GND_SUNSPE-485
7	SUNSPE-485_A
8	SUNSPE-485_B

Modbus Port



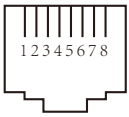


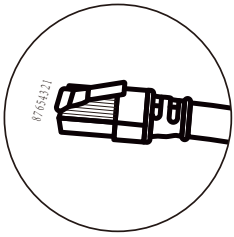
13.4.Definition of RJ45 Port Pin for DRM.

DRM: Only inverters with DRM function selected have this port.
It is used to accept the external control command.

No.	DRM Pin
1	DRM1/5
2	DRM2/6
3	DRM3/7
4	DRM4/8
5	REF-GEN/0
6	GND
7	NetDRM_7
8	NetDRM_7

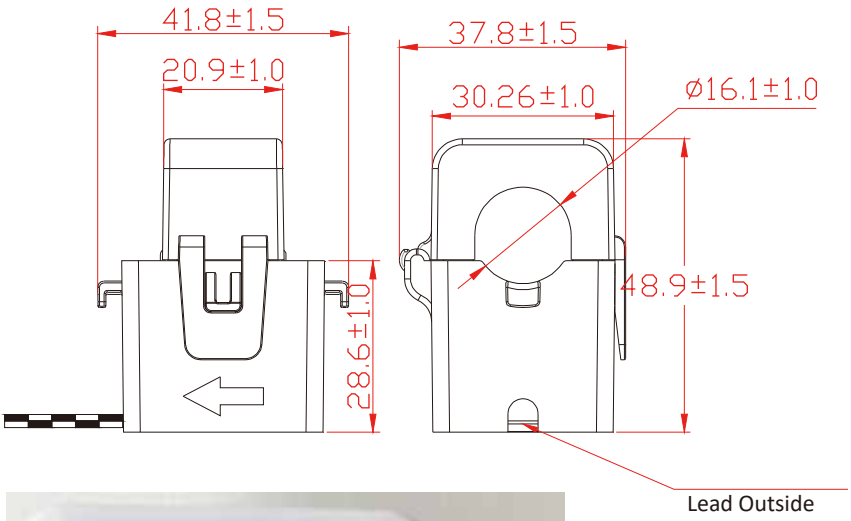
DRM port





14. Current Transformer (CT) Dimensions and Cable Length

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





15. EU Declaration of Conformity

within the scope of the EU directives
- Radio Equipment Directive (RED) 2014/53/EU.
- Restriction of the use of certain Hazardous Substances (RoHS) Directive 2011/65/EU and 2015/863/EU

CE

NINGBO DEYE INVERTER TECHNOLOGY CO., LTD. confirms herewith that the products described in this document are in compliance with the fundamental requirements and other relevant provisions of the above mentioned directives. The entire EU Declaration of Conformity and certificate can be found at “https://www.deyeinverter.com/download/Declaration_of_Conformity/?tag=48” or downloaded by scanning the QR code below.

V.1.0.0 2026-09-21

NINGBO DEYE INVERTER TECHNOLOGY CO., LTD.
Add.: No.26 South YongJiang Road, Daqi, Beilun, NingBo, China.
Tel.: +86 (0) 574 8622 8957
Fax.: +86 (0) 574 8622 8852
E-mail: service@deye.com.cn
Web.: www.deyeinverter.com