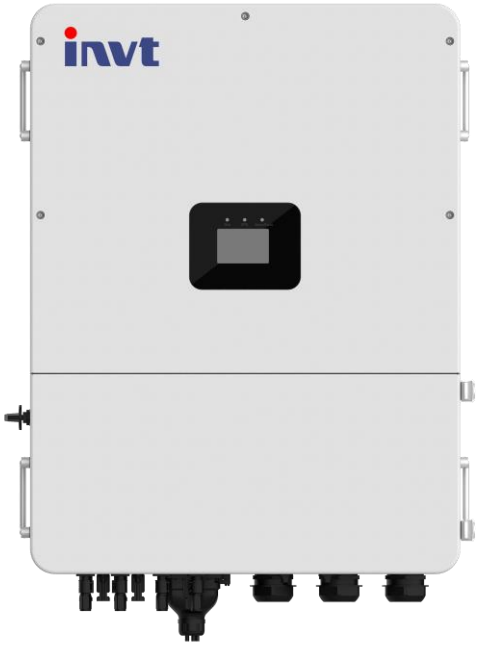
Product Manual

Three-phase energy storage inverter

XD30-60KTR



深圳市英威腾光伏科技有限公司

INVT Solar Technology (Shenzhen) Co., Ltd

Table of contents

Chapter I Introduction 1
Chapter 2 Safety precautions 2
2.1 Safety signs 2
2.2 Precautions for use 2
Chapter 3 Product Introduction 4
3.1 Applicable personnel 4
3.2 Product description 4
3.3 Safety instruction 5
3.4 Basic system diagram 6
3.5 Product features 7
3.6 Hand-held device 7
Chapter 4 Installation 8
4.1 Unpacking confirmation 8
4.2 Preparation prior to installation 9
4.3 Space requirements 11
4.4 Dimensions of wall-mounted board installation 13
Figure 4.5 Machine size and weight 13
4.6 Wall installation 14
4.7 Installation of inverter 15
Chapter 5 Electrical connections 17
5.1 Overview of electrical connections 17
5.2 PV connection wire 20
5.3 BAT connection wire 20
5.4 AC connection wire 21
5.5 Communication wiring 22
5.6 Electric meter connection 24
5.7 Generator dry contact connection 25
5.8 Earth wire connection 26
5.9 Parallel connection 27
Chapter 6. Commissioning of equipment 29
6.1. Equipment operation 29
6.2 Equipment shutdown 29
Chapter 7 Parameter settings 30
7.1 Menu information 30
7.2 Settings information page 34
Chapter 8. System commissioning 39
8.1 Screen and key 39
8.2. Working mode 41
8.3 Set inverter parameters via Solarman APP application 43
Chapter 9. System maintenance 44
9.1 Periodic maintenance of inverter 44
9.2 Inverter power off 44
9.3 Remove inverter 45
9.4 Scrap inverter 45

Chapter 10 Trouble shooting 46
Chapter 11 Specification parameters 52

Chapter I Introduction

This manual mainly introduces the product information, installation, operation and maintenance of energy storage inverter.

Please read this manual carefully prior to the installation and use of the product to understand the safety information of the product and be familiar with the functions and features of the product. The contents of this manual may be subject to update from time to time due to changes in product development. Please visit the official website for latest version information and more about the product.

Chapter 2 Safety precautions

Improper use may lead to electric shock danger or burns. This manual contains important instructions that should be observed during installation and maintenance. Please read this manual carefully before use and proper keep it for future reference.

2.1 Safety signs

The following is a list of safety signs used in this manual to prompt potential safety risks and important safety information:

	Warning: indicates an important safety instruction which, if not used improperly, could result in personal injury or even death.
	Electric shock hazard: Please note that the electric shock hazard sign is an important safety instruction which, if not observed, could result in electric shock.
	Safety tip: Indicates an important safety instruction which, if not observed could result in personnel injury or even death.
	High heat hazard: indicate an important safety instruction which, if not strictly observed, could result in burns.
	Warning: When disconnecting the input and output of the inverter for maintenance, please wait at least 5 minutes until the inverter discharges the remaining batteries.

2.2 Precautions for use

XD30-60KTR series energy storage inverters are designed and tested according to relevant safety regulations. The personal safety of users can be ensured. However, improper operation of electrical equipment may cause electric shock or other injuries. Please operate the device according to the following requirements:

1. All wiring, installation, debugging and other work should be conducted by relevant professionals.

2. Be sure to read this manual before operation, and the company shall not be responsible for any failure or loss caused by improper operation.

3. Before installation and maintenance, you must ensure that all connections on the AC side, DC side and battery side are disconnected, and then wait for at least 5 minutes before operation to avoid electric shock.

4. When the inverter is running, the cabinet is hot. Therefore it is forbidden to touch to avoid burns.

5. All electrical installations must comply with the local electrical standards, and the inverter should be connected to the power grid by professionals after obtaining the permit of the local power supply department.

6. During installation, insulating tools and personal protective equipment should be used to ensure personal safety. When contacting with electronic devices, it is required to wear electrostatic gloves, electrostatic bracelets, antistatic clothing, etc. to protect the inverter from electrostatic damage.

7. Please install it out of the reach of children.

8. Do not insert or remove AC and DC terminals when the inverter is in normal operation.

9. The DC input voltage of inverter shall not exceed the maximum DC input voltage allowed by the inverter.

10. Proper selection of batteries matched with the system and correctly set the battery type. In case the batteries are not matched with the energy storage inverter, system operation will be failed.

11. If the batteries have been completely discharged, please charge and maintain the batteries in strict accordance with the corresponding user manual.

12. If the system needs maintenance, please contact our local authorized operation and maintenance service personnel or our professional after-sales personnel.

13. The hybrid energy storage system should not be connected to the grid before obtaining permission.

14. If solar photovoltaic panels are installed in the daytime with good light, please make sure to turn off the PV switch before operation; otherwise, there will be a serious risk of electric shock.

15. Do not connect the same PV string to multiple inverters, otherwise the inverters may be damaged.

16. The emergency load port is not suitable for connecting equipment that depends on continuous and stable power supply, such as life-sustaining medical equipment.

Chapter 3 Product Introduction

3.1 Applicable personnel

XD30-60KTR series hybrid energy storage inverter is only applicable for installation by those professionals who understand local laws and regulations, standards and electrical systems, have received professional training and are familiar with the relevant knowledge of this product.

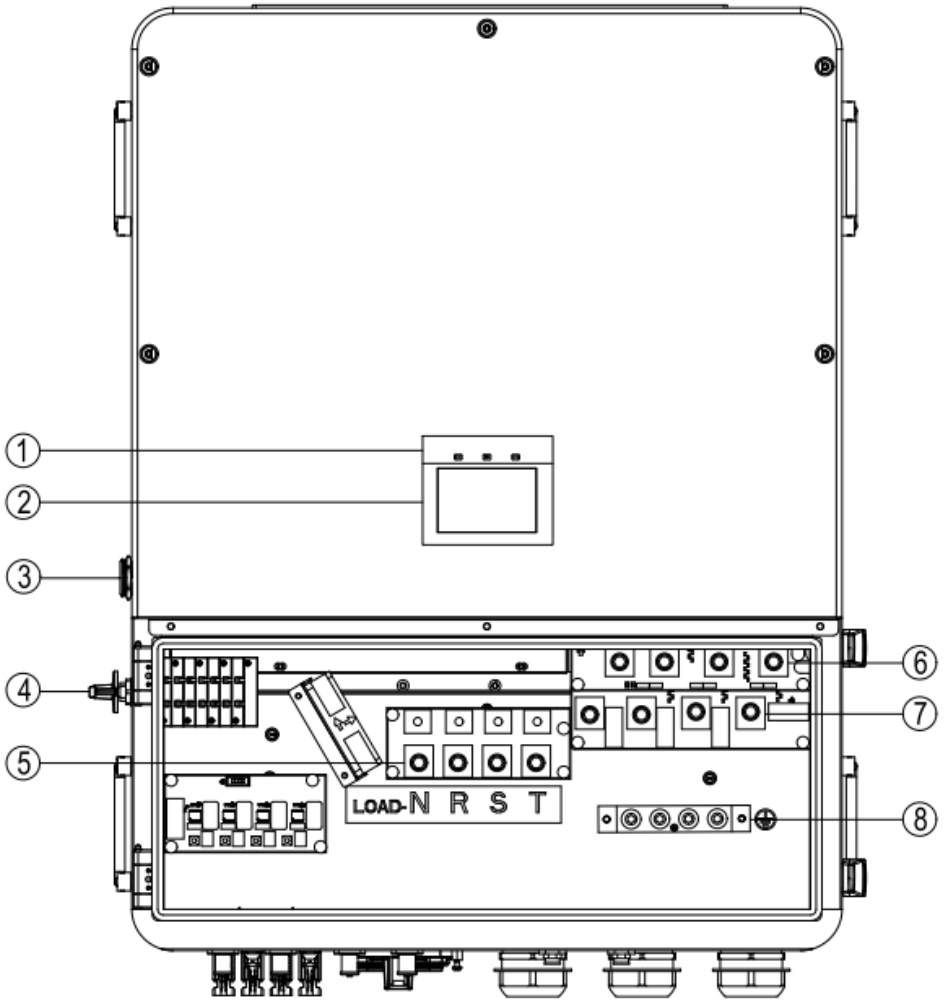
It is strongly recommended that the installation personnel read this manual carefully. By reading this manual, you can get guidelines on product installation, troubleshooting, communication networking, etc.

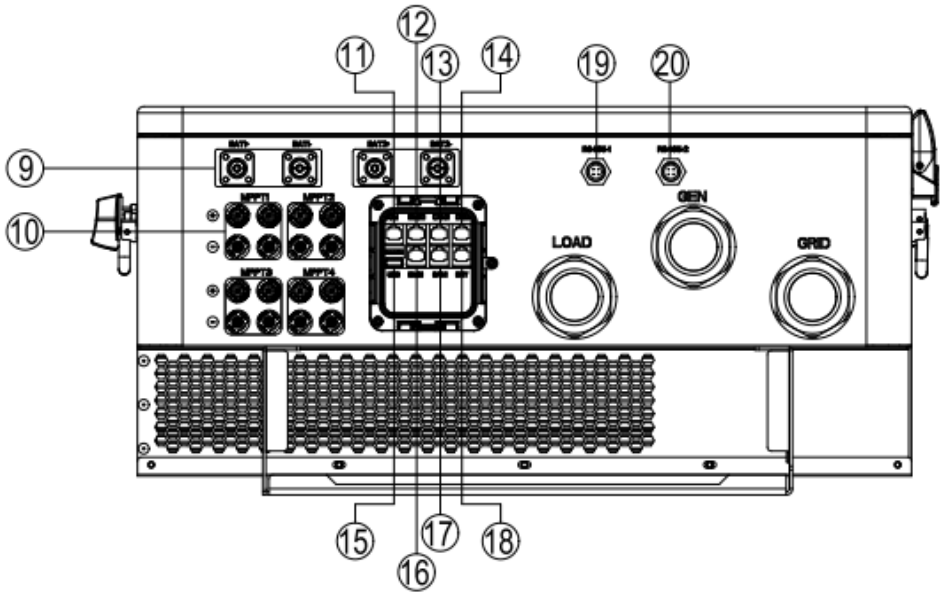
3.2 Product description

XD30-60KTR series models are used to store the energy which is generated in photovoltaic system or from public power grid in batteries, and the energy can also be exported to power grid; in the case of power failure, the energy storage inverter can be used as a backup power supply to provide energy for the load.

This document is applicable to the following hybrid energy storage inverter models:
XD30KTR\XD40KTR\XD50KTR\XD60KTR.

Overview:





S/N	Paraphrase	S/N	Paraphrase
1	LED indicator	2	LCD display
3	Battery soft start button	4	PV switch
5	EPS connection port	6	Diesel generator port
7	Grid connected port	8	PE grounding point
9	Lithium battery input port	10	PV input port
11	COM（ARM parallel port）	12	BMS2 (second cluster of lithium battery communication)
13	CAN2 (Parallel communication)	14	RJ45 interface of DRM (Australia)
15	USB (software update)	16	BMS1 (first cluster of lithium battery communication)
17	CAN1 (Parallel communication)	18	DRY (Generator dry contacts)
19	RS485-1 (WiFi/GPRS communication)	20	RS485-2 (electric meter RS485 communication)

3.3 Safety instruction

1. Be sure to read this manual before operation, and the company shall not be responsible for any failure or loss caused by improper operation.

2. Proper selection of batteries matched with the system and correctly set the battery type. In case the batteries are not matched with the energy storage inverter, system operation will be failed.

3. If the batteries have been completely discharged, please charge and maintain the batteries in strict accordance with the corresponding user manual.

4. All wiring, installation, debugging and other work should be conducted by relevant professionals.

5. During installation, insulating tools and personal protective equipment should be used to ensure personal safety. When contacting with electronic devices, it is required to wear electrostatic gloves, electrostatic bracelets, antistatic clothing, etc. to protect the inverter from electrostatic damage.

6. All electrical connections are subject to the safety regulations of the local grid company.

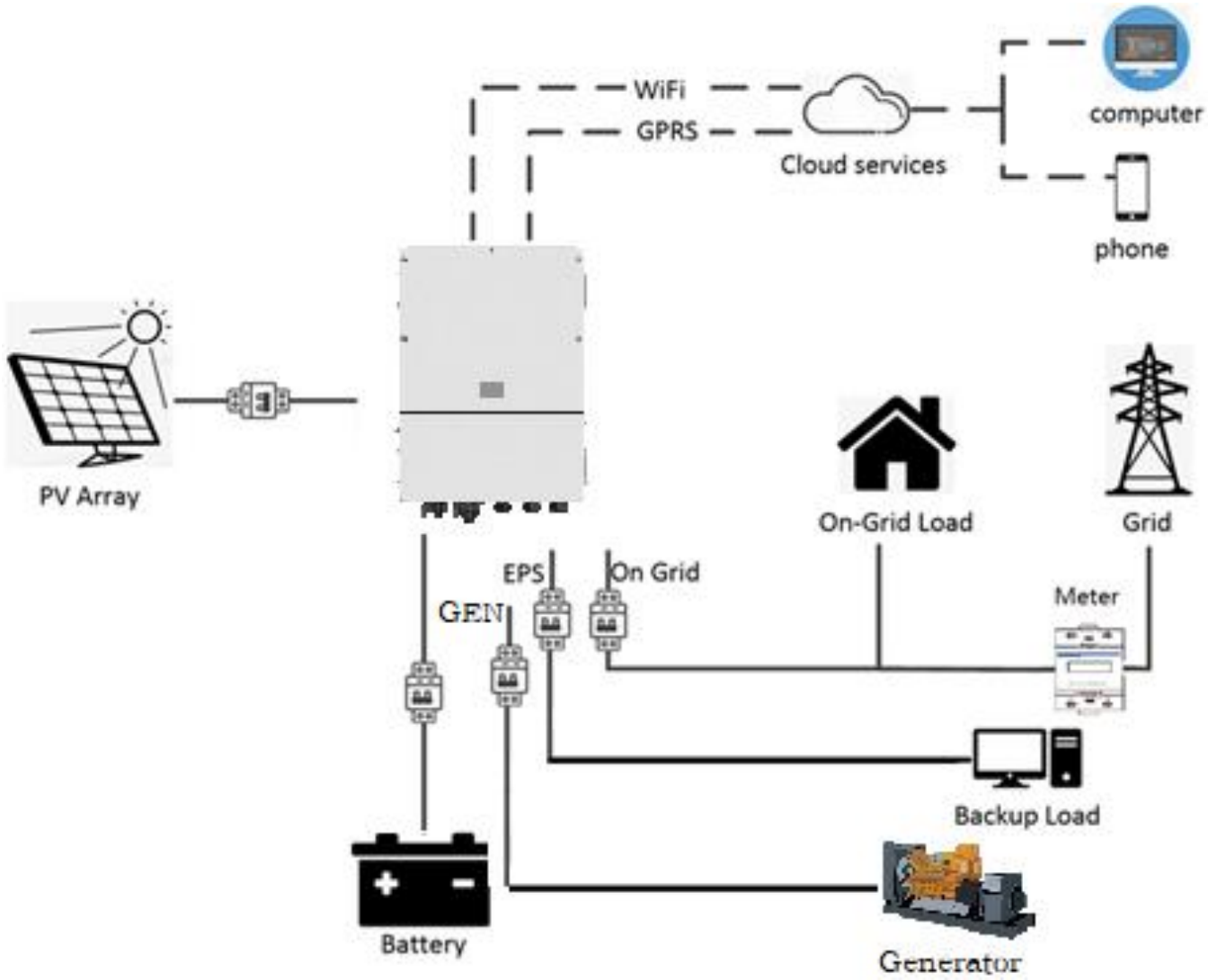
7. If the system needs maintenance, please contact our local authorized operation and maintenance service personnel or our professional after-sales personnel.

8. The hybrid energy storage system should not be connected to the grid before obtaining permission.

9. If solar photovoltaic panels are installed in the daytime with good light, please make sure to turn off the PV switch before operation; otherwise, there will be a serious risk of electric shock.

10. Do not connect the same PV string to multiple inverters, otherwise the inverters may be damaged.

3.4 Basic system diagram



Shown in the above figure, a complete XD30-60KTR series hybrid energy storage system is composed of solar photovoltaic panels, energy storage inverters, energy storage batteries, power grids, diesel generators, etc.

Note: The energy storage battery is one of the necessary equipment in the energy storage system. Therefore, it is required to keep the installation environment well ventilated, with necessary measures taken to control the ambient temperature so as to prevent the explosion danger caused by the excessive battery temperature.

Battery features

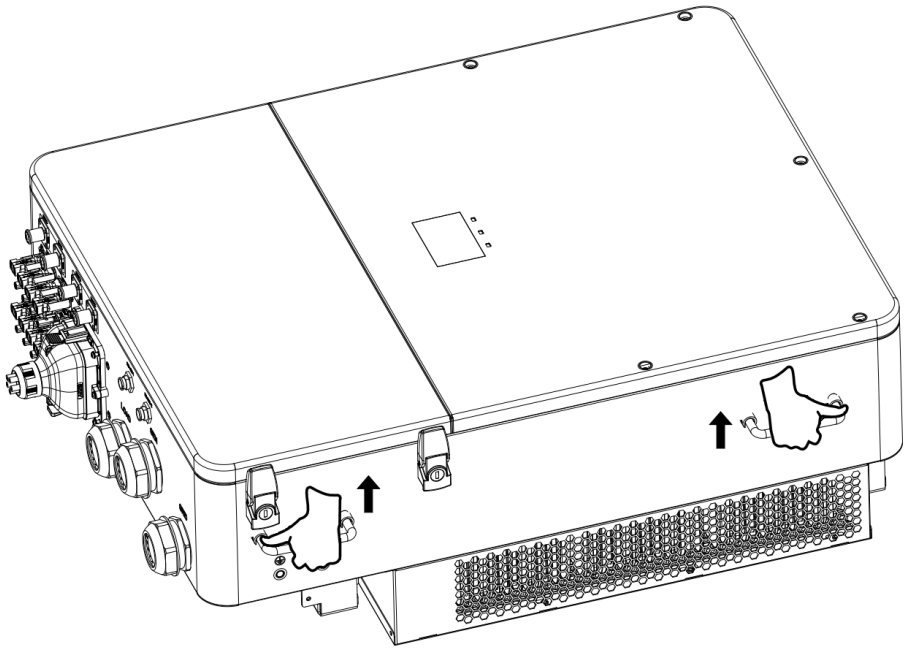
Protection grade: ≥IP65 Pollution degree: PD2 Indoor temperature: 0-40□ Humidity: 5%-85%.

3.5 Product features

1. Intelligent management system, multiple working modes, to meet customers' requirements.
2. Through the LCD screen, the inverter information such as grid-connected priority and battery type can be set.
3. Four channels MPPT, supporting 20A battery panel input, flexible for configuration of modules.
4. Dual-channel battery access, each channel supporting the charging and discharging capability of 100A batteries.
5. Ultra-wide battery voltage range of 300-800V, good battery adaptability.
6. In off-grid mode, 100% unbalanced load can be supported, together with air conditioning and motor load.
7. Integrated design, with standby power supply and peak shaving and valley filling functions.
8. With battery safety management system, the battery BMS can be upgraded remotely.
9. Support backflow protection function.
10. Have functions of over-temperature/over-current/short-circuit protection function to ensure the safe, stable and reliable operation of the system.
11. Provide diversified humanized communication module options, such as RS485, GPRS, WiFi, etc., applicable for computer, mobile phone or internet monitoring and remote operation, etc.
12. Support parallel system function, with the maximum number of parallel sets can be up to 3.
13. UPS switch function between modes (< 10ms).
14. Support intelligent DC arc detection (AFCI) function, intelligent turn-off, higher security.
15. Support diesel engine access and remote control.
16. The maximum conversion efficiency is up to 98.6%.
17. IP66 protection grade, light weight, small size, convenient installation.

3.6 Hand-held device

Two persons stand on both sides of the machine, holding the handle with their both hands to lift the machine.



Chapter 4 Installation

4.1 Unpacking confirmation

The inverter has been completely tested and strictly inspected for before leaving the factory, but there still may be damage during transportation. Prior to unpacking, carefully check whether the order is consistent with the product information on the nameplate of the packaging box and whether the product packaging is in good condition. If any damage is detected, please contact the transportation company or the supplier directly, and provide photo of the damage part, so as to receive the fastest and best service.

When the inverter is idle, please put it in the original package box with moisture and dust-proof treatment.

Take the inverter out of the box after unpacking, please check the following items:

(1) Confirm that the inverter host is complete and free from damage;

(2) Confirm that there is product manual, interface accessories and installation accessories in the packing box;

(3) Confirm that there is no damage or shortage of the items to be delivered in the packing box;

(4) Check whether the order is consistent with the product information on the nameplate of the inverter host;

(5) The standard delivery list is as follows.

The standard deliverables of the energy storage inverter

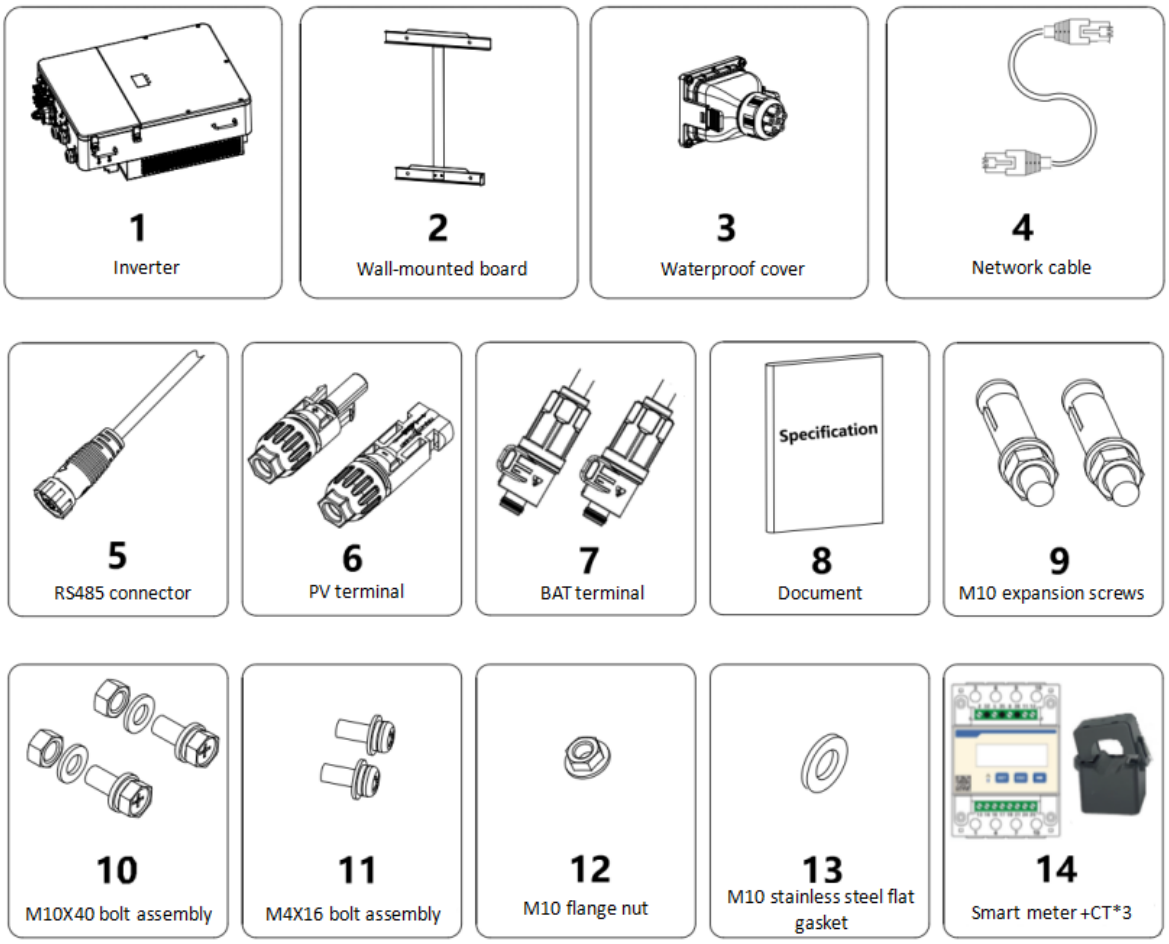


Figure 4.1 Deliverables of energy storage inverter XD30~60KTR

Table 4: 1 The list of deliverables of the energy storage inverter

S/N	Name		Quantity
1	Inverter		1
2	Wall-mounted board		1
3	Waterproof junction box		1
4	Network cable	Battery CAN communication line	2
		Inverter parallel machine communication line	1
5	RS485 communication cable		1
6	PV wiring terminal (pair)		6/8
7	BAT terminal (pair)		2
8	Document (set)	Certificate of Qualification	1
		Quality assurance card	1
		Factory inspection report	1
		Quick Installation Guide	1
9	M10*90 expansion bolt		4
10	M10X40 bolt assembly		4
11	M4X16 bolt assembly		1
12	M10 flange nut		4
13	M10 stainless steel flat gasket		4
14	Smart electricity meter + three-phase CT kit		1
15	optional	GPRS	1
16		WIFI	1

Please check the above items carefully. If you have any questions, please contact the supplier in time.

4.2 Preparation prior to installation

4.2.1 Installation tools

Table 4- 2 List of installation tools

S/N	Installation tools	Note
1	Marking pen	Mark the mounting holes
2	Electric drill	Drill holes into bracket or wall
3	Hammer	Strike expansion bolt
4	Adjustable spanner	Fix the mounting bracket
5	Screwdriver	Secure inverter and locking junction box
6	T-type inner hexagon wrench (8mm)	Used for AC connection wire
7	Megger	Measure insulation properties and ground

S/N	Installation tools	Note
		impedance
8	Multimeter	Detect lines and measure AC and DC voltages
9	Electric soldering iron	Weld communication cable
10	Wire crimper	Crimp DC terminal
11	Hydraulic clamp	Crimp AC terminal ring terminal

4.2.2 Installation environment

(1) The inverter can be installed in indoor or outdoor environment.

(2) During the operation of the inverter, the temperature of the inverter cabinet and radiator is relatively high, so please do not install the inverter in an easy-to-touch position.

(3) Do not install inverter in an area where inflammable and explosive materials are stored.

(4) The inverter should be installed in a well-ventilated environment to ensure good heat dissipation.

(5) It is recommended to stall in a sheltered installation site or build a sunshade.



Figure 4.2 Sunshade

(6) The installation environment temperature is-25□ ~ 60□;

(7) The installation location should be far away from electronic equipment having strong electromagnetic interference;

(8) The installation position should be a fixed and steady object surface, such as wall surface, metal bracket, etc.

(9) The installation position should ensure that the inverter is reliably grounded, and the grounding metal conductor material is consistent with the reserved grounding metal material of the inverter.

(10) Please avoid direct sunlight, rain and snow during installation and operation.

4.3 Space requirements

(1) The installation height should be in such a way to ensure that the line of sight is on the same horizontal plane as the LCD display, so as to facilitate the inspection of the inverter status;

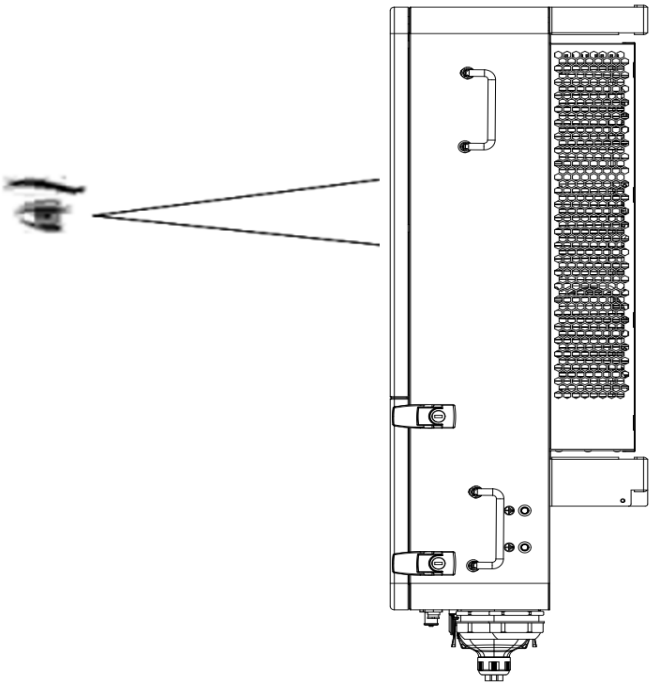


Figure 4.3 Space with optimum installation height

(2) There should be enough space reserved around the installation position to facilitate the disassembly of the inverter and air convection, as shown in Figure 4.4.

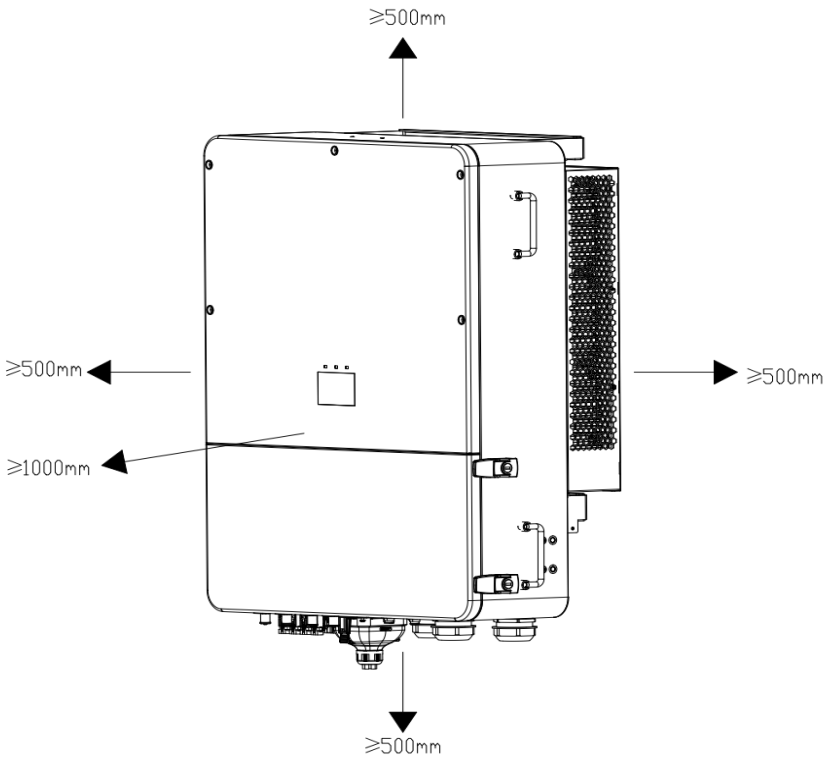


Figure 4.4 Installation spacing of inverter

(3) When installing multiple inverters, it is necessary to reserve a certain distance (left and right) between inverters,

as shown in Figure 4.5, and at the same time, sufficient space should be reserved from the top and bottom of inverters to ensure good heat dissipation.

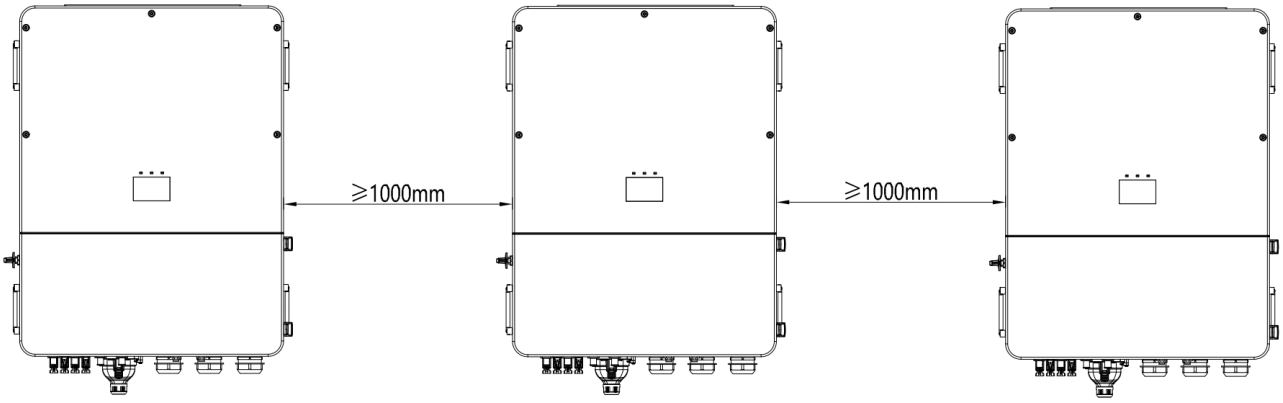


Figure 4.5 Dimension requirements for side-by-side installation

(4) The installation surface should be perpendicular to the horizontal line, as shown in Figure 4.6. Please install the inverter vertically or tilt back ≤ 15° to facilitate the heat dissipation of the machine. Do not install the inverter tilt forward, horizontally, upside down, tilt backward too much or sideways.

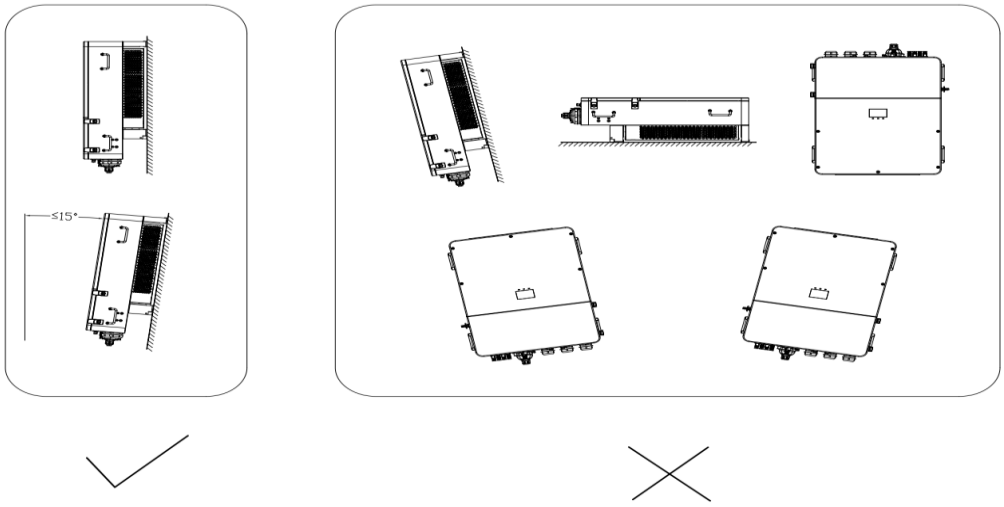


Figure 4.6 Location of inverter installation

4.4 Dimensions of wall-mounted board installation

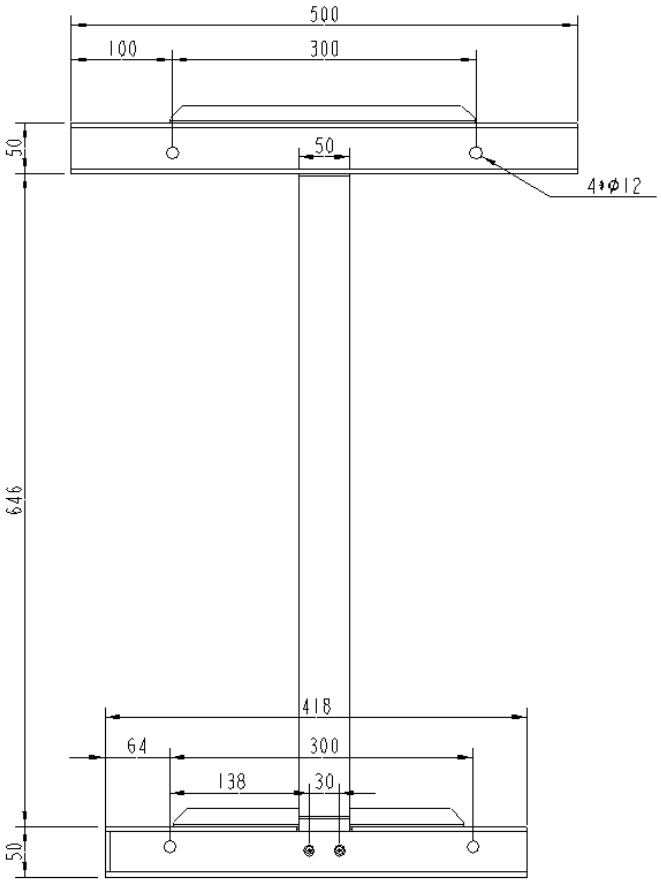


Figure 4.7 Dimensions of wall-mounted board installation

4.5 Machine size and weight

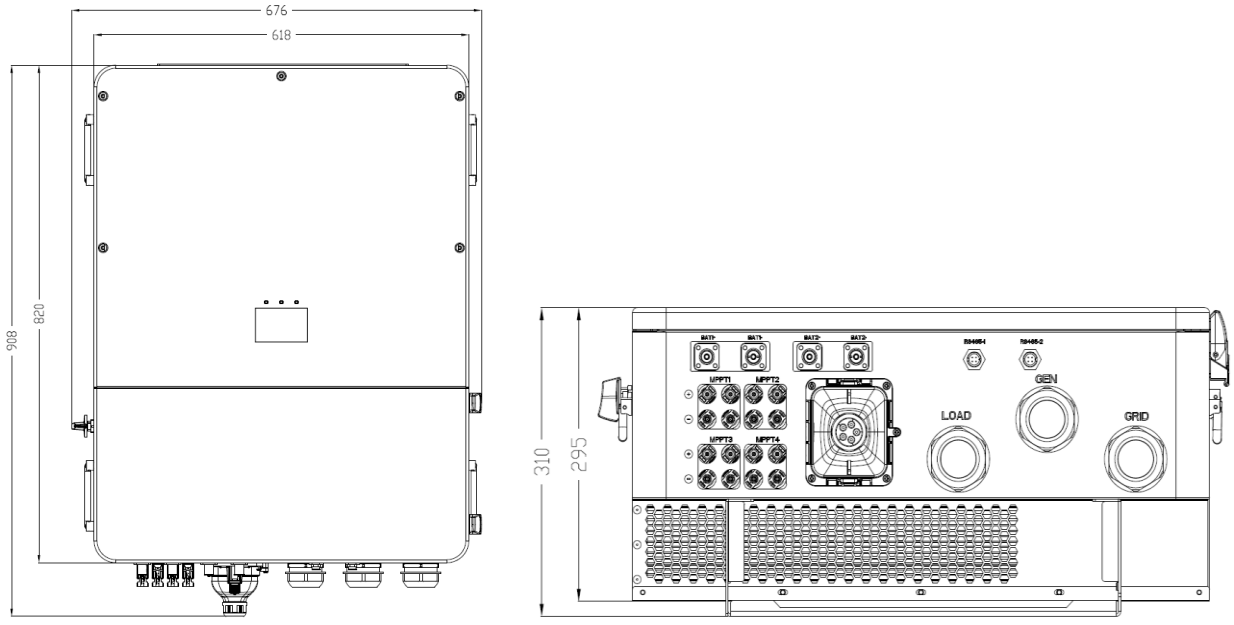


Figure 4.8 Overall dimensions of inverter

Dimensions and net weight of energy storage inverter

Model	Height (H) (mm)	Width (W) (mm)	Depth (D) (mm)	Net weight (kg)
XD30-60KTR	820	618	295	92

Package size and gross weight

Model	Height (H) (mm)	Width (W) (mm)	Depth (D) (mm)	Weight (kg)
XD30-60KTR	1200	830	454	110

4.6 Wall installation

Step 1: Install the hanging wall; the wall thickness should be greater than or equal to 60 mm, place the wall-mounted board at the wall installation point, adjust the angle with a spirit level, and mark it with a marking pen.

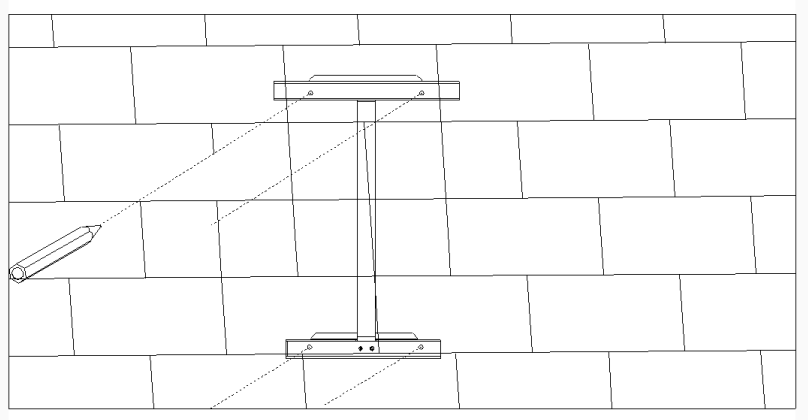


Figure 4.9 Installation of wall brackets

Step 2: Drill holes with an impact drill and install expansion bolts. The hole diameter is φ 8; the hole depth is not less than 55mm, and the expansion bolts are M10×90 stainless steel type.

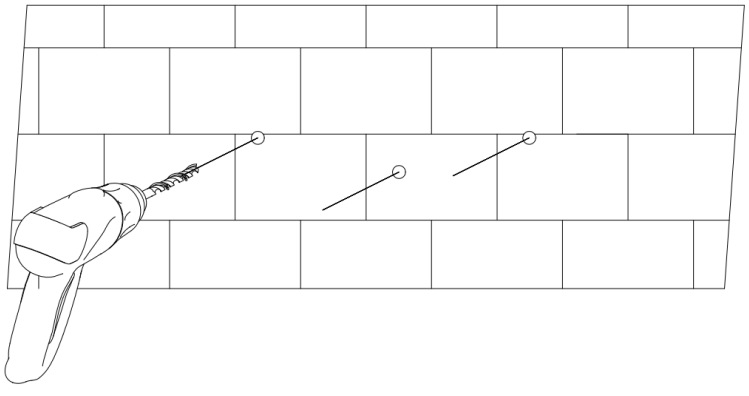


Figure 4.10 Installation of expansion bolts

Step 3: Fix wall-mounted board. Clean the hole position, drive the expansion bolt into the hole with a rubber hammer, tighten the nut to fix the tail of the bolt with a wrench, then remove the nut, spring gasket and flat gasket, and then fix the wall-mounted board on the wall and lock it on the wall with a tightening torque of 5 Nm.

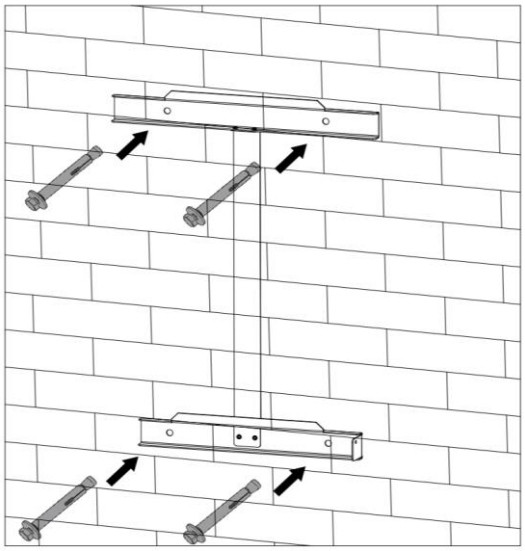


Figure 4.11: Fix wall-mounted board

4.7 Installation of inverter

Step 1: Take the inverter out of the box.

Step 2: If the installation position is high, it is necessary to lift the inverter to the wall-mounted board, lift the inverter 500mm off the ground by using lifting equipment and then pause, and check the fastening of the lifting ring and rope. After confirming that the connection is secured, lift the inverter to the destination.

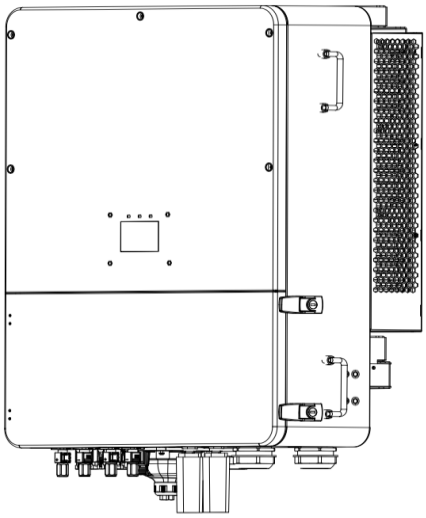


Figure 4.12 Take out of inverter

Step 3: Snap the inverter's bayonet into the wall-mounted board, and then clamp the machine down to ensure that the groove of radiator of machine is well matched with the wall-mounted board.

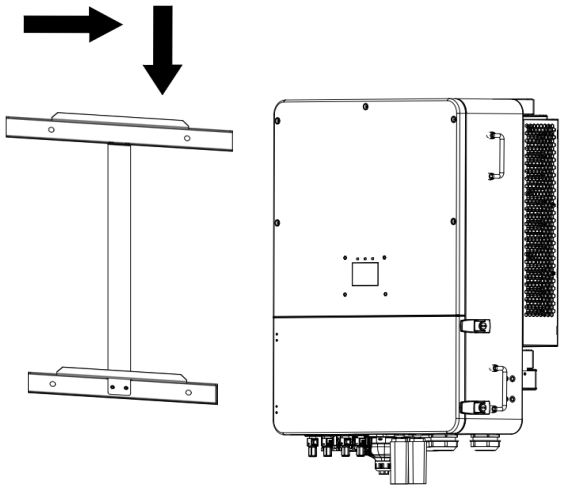


Fig. 4.12 The inverter is fixed to the wall-mounted board.

Step 4: Fix the inverter by fastening the holes on the left and right sides of the radiator and the wall hanger with M4×16 screws, and the tightening torque is 2 Nm.

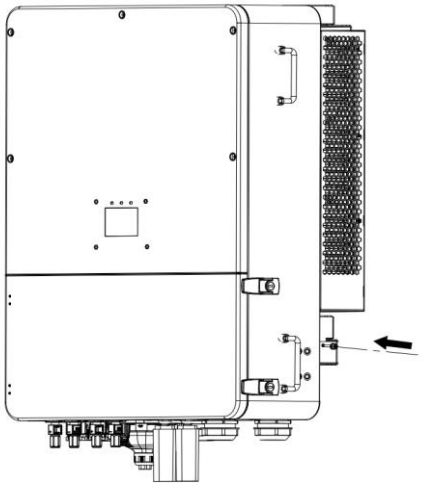


Fig. 4.13 The inverter is fixed to the wall-mounted board.

Chapter 5 Electrical connections

5.1 Overview of electrical connections

The supported form of grid;

Note: The voltage of neutral (N) -to- ground (GND) is less than 10V.

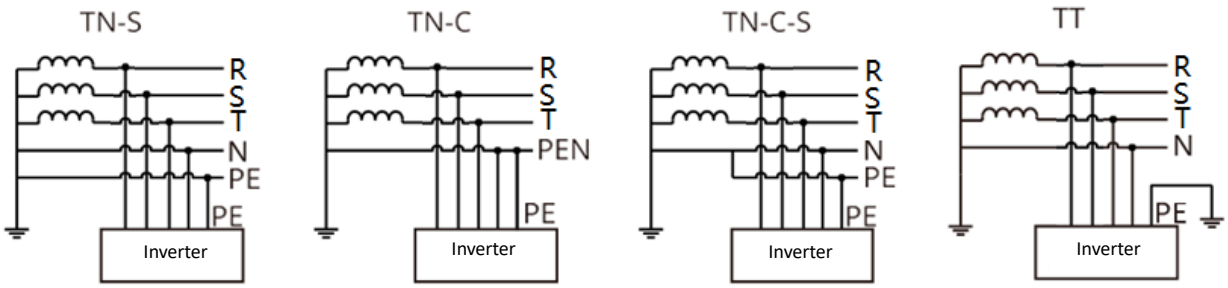


Figure 5.1 Types of Network connections

Note
➢ According to the regulatory requirements of different regions, the Natural (N) wire and PE wire connection modes of inverter GRID and EPS ports are different, which shall be subject to the local regulatory requirements. ➢ Inverter GRID and EPS AC ports have built-in relays. When the inverter is in off-GRID mode, the built-in GRID relay is in off-grid state; when the inverter is in grid-connected working mode, the built-in GRID relay is closed. ➢ When the inverter is powered on, the EPS AC port is charged. If it is required to maintain the EPS load, please turn off the inverter, otherwise electric shock may be caused.

Note
Australia, New Zealand, South Africa and other regions are applicable for the following connection methods:

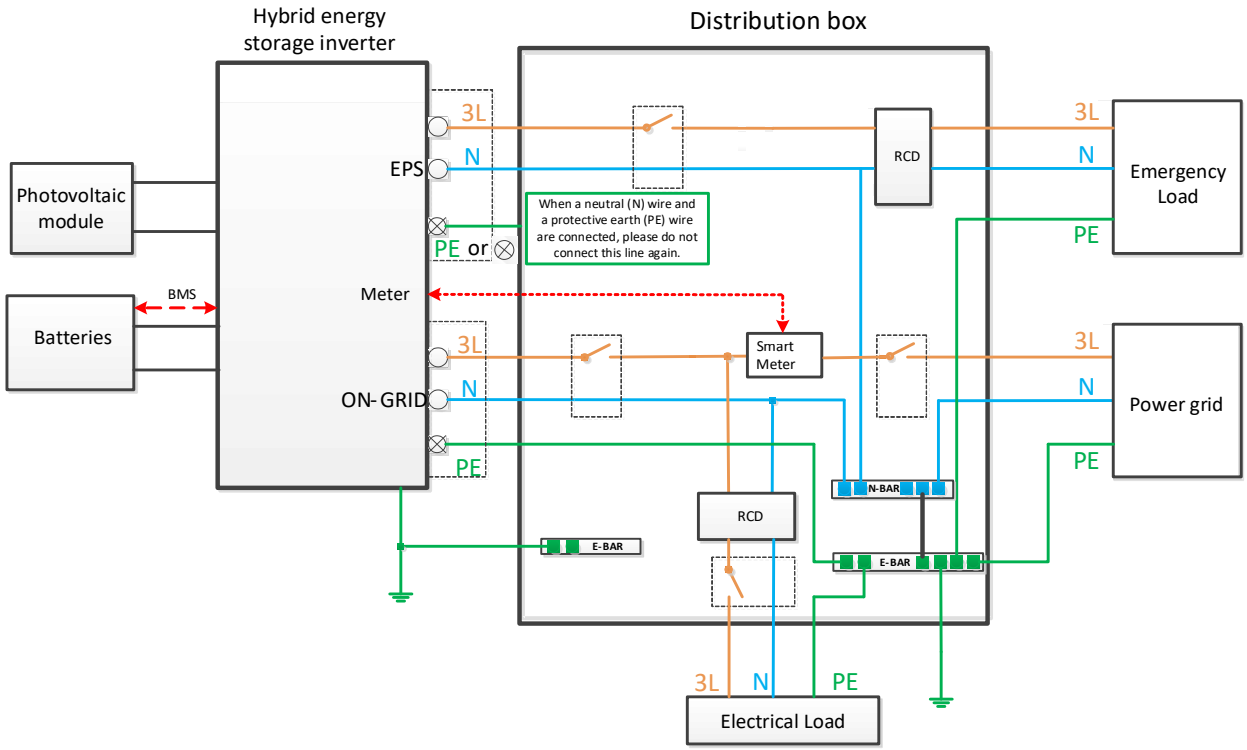


Figure 5.2 Connection mode of grid in Australia, New Zealand and South Africa

Note
➢ Please ensure that the protective grounding wire of BACK-UP is connected correctly and firmly, otherwise the BACK-UP function may be abnormal when the power grid fails. ➢ Australia, New Zealand, South Africa and other regions are applicable for the following connection wire methods:

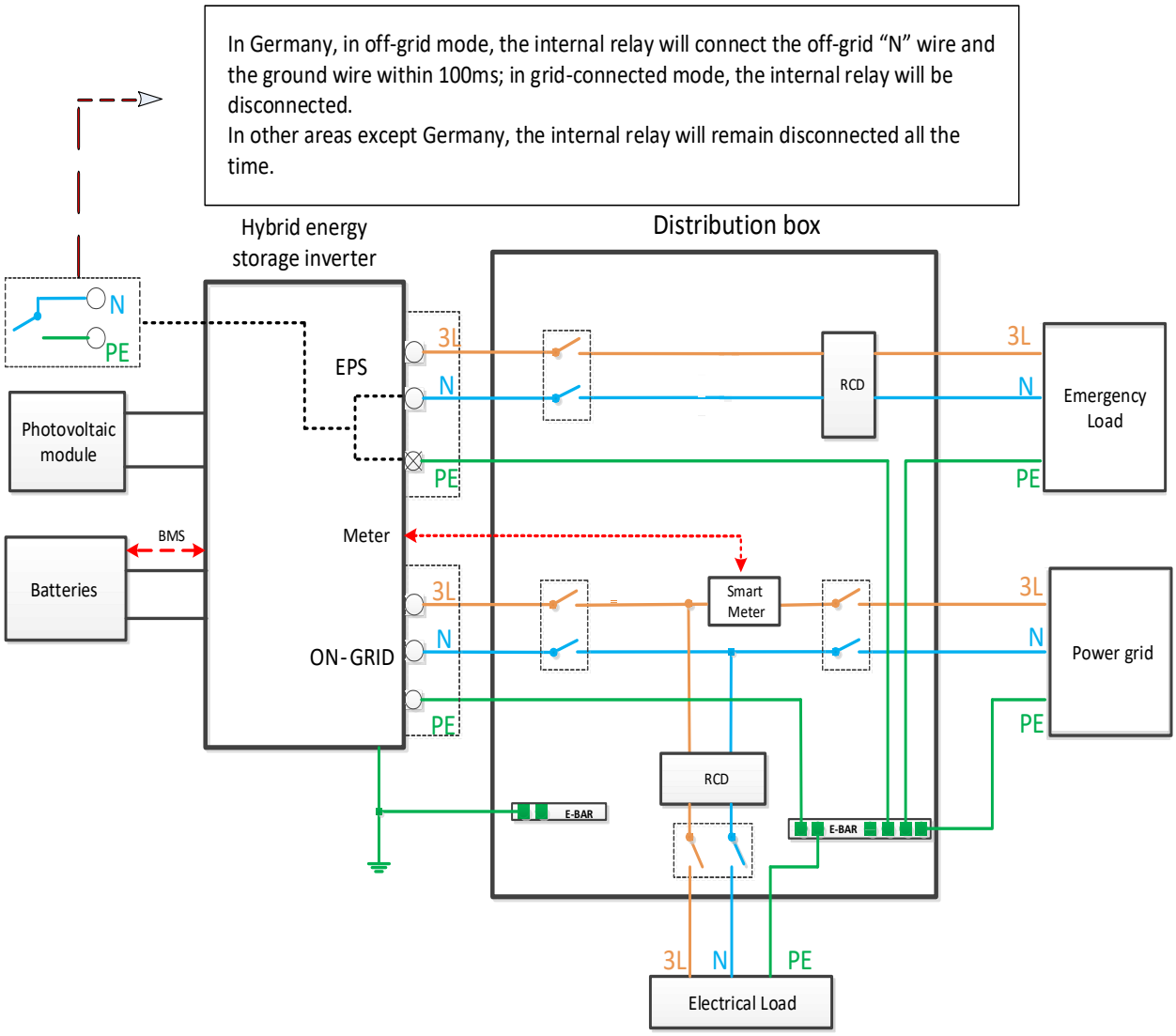


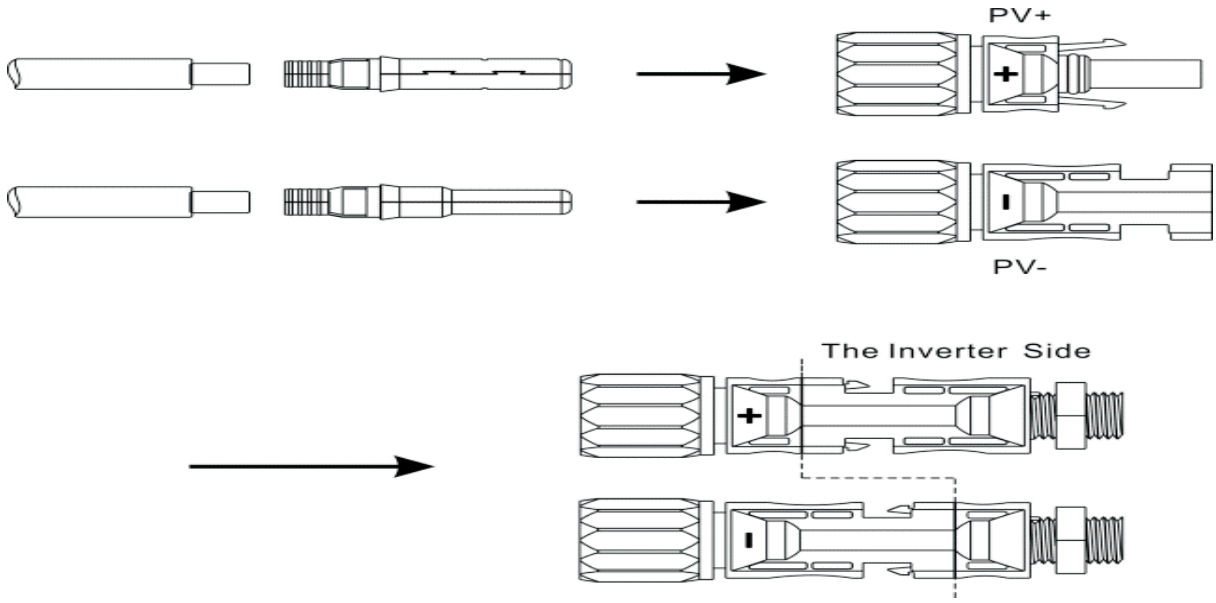
Figure 5.3 Connection mode of grid in Australia, New Zealand and South Africa

5.2 PV connection wire

The DC input side of energy storage series uses MC4 connector. The specific connection steps are as follows:

1. Turn off the DC switch;

2. Connect the anode and cathode of the module to PV+/PV- on the energy storage inverter respectively. Please ensure that the input voltage and current are within the allowable range:



Type	Cross section (mm2)	
	Range	Recommended value
30K/40K/50K/60K	4-6（10-8AWG）	4（10AWG）

- Maximum PV input voltage: 1100V (voltage change at the minimum temperature must be considered)
- Maximum PV input current: 20A

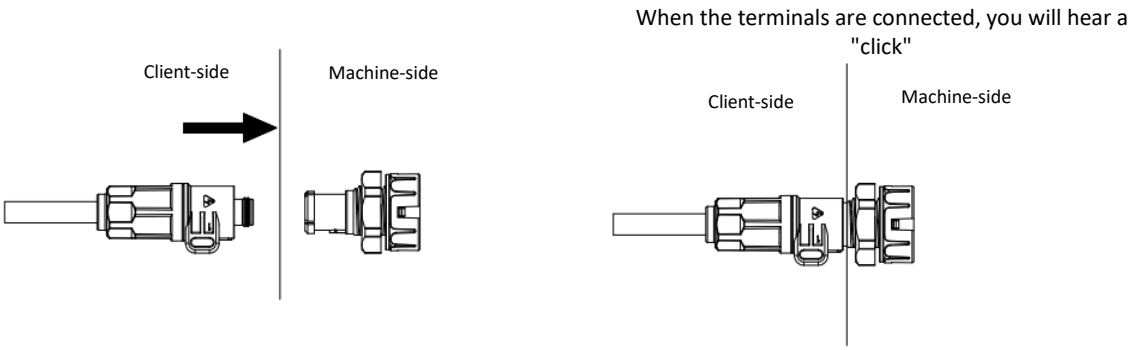
Note: It is recommended that you choose a special photovoltaic cable with a wire diameter ≥ ≥5.3mm²(10AWG).

5.3 BAT connection wire

The steps to install the battery power cable are as follows:

1. Crimp the battery cable to the corresponding O-terminal (the original package comes with the connecting cable);

2. Connect the positive pole of the battery to the positive pole of the machine battery terminal and the negative pole to the negative pole of the machine battery terminal.



Type	Cross section (mm2)	
	Range	Recommended value
30K/40K	(4-3AWG)	(4AWG)
50K/60K	(3-2AWG)	(3AWG)

1. A DC switch is required to be equipped between the battery and the inverter.

2. Maximum input voltage of battery: 800 V;

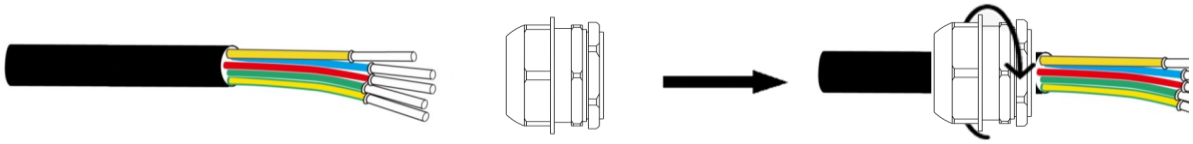
3. Maximum charging and discharging current of the battery: 100A;

Note: The power line length between the battery and the energy storage inverter is ≤2.5m, and the line diameter is ≥25mm2(4AWG).

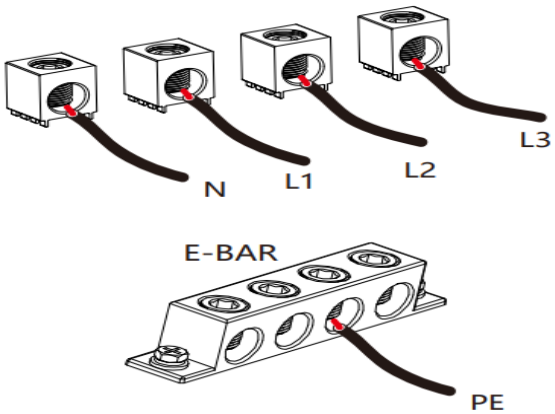
5.4 AC connection wire

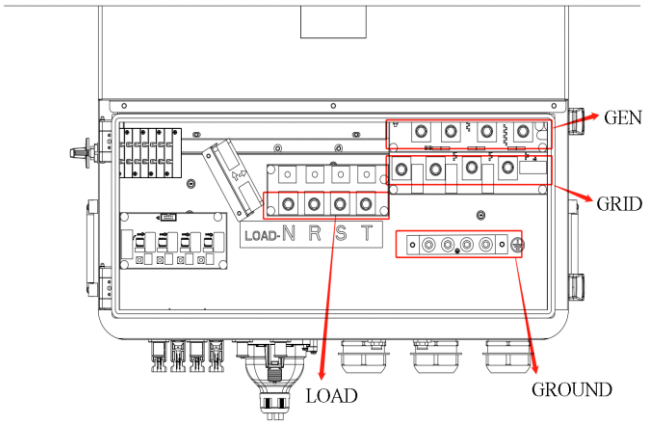
The AC output is located at the lower right of the energy storage inverter; its left terminal is an off-grid load port , and its right terminal is a grid-connected and diesel generator port. (For detailed locations, please see product introduction chapter)

1. Step 1: Unscrew the AC connection terminal, and remove the AC connection terminal by using the fitting tool, as shown in the following figure:



2. Step 2: Unscrew the AC connection terminal, and remove the AC connection terminal by using the fitting tool, as shown in the following figure:





3. Step 3: Unscrew the AC connection terminal, and remove the AC connection terminal by using the fitting tool, as shown in the following figure:

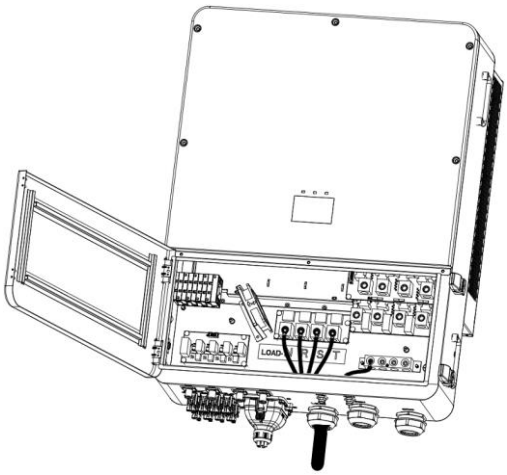


Figure 5-4 Connection of Power Grid, Load and Generator (Copper Wire)

Type	Wire specification	Cable (mm2)	Torque (max.)
30K/40K	5-4AWG	17-21	12.4NM
50K/60K	3-2AWG	27-34	16.9NM

Note: 1. If you only use the grid-connected function, please connect the grid to the inverter GRID interface;

2. The grid-connected and off-grid ports cannot be directly connected together, otherwise the inverter will be damaged;

3. Remove the insulating sleeve with length of20mm , insert the cable terminal according to the polarity indicated above, and make sure the connection is firm;

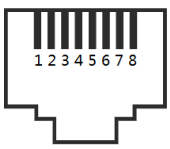
5.5 Communication wiring

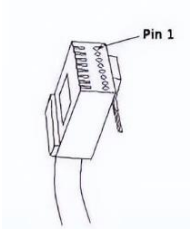
5.5.1 lithium battery connection

When using lithium batteries, it is required to connect the BMS management system of the lithium batteries. The steps for connecting the lithium battery port are as follows:

1. Unscrew the rubber nut on the waterproof cover of the energy storage inverter;
2. The cable is sequentially passed through the rubber nut, sealing ring, threaded sleeve and waterproof cover;
3. Connect the RJ45 terminal head of the LAN cable to the BMS1/BMS2 port on the energy storage inverter;
4. Lock the waterproof cover with screws;
5. Tighten the rubber nut to the waterproof cover.

RJ45 interface definition of energy storage battery clusters 1 and 2 corresponding to BMS1 and BMS2:

	BMS1	BMS2	
Pin 1	BAT1_TEMP	BAT2_TEMP	
Pin 2	GND	GND	
Pin 3	Empty	Empty	
Pin 4	BAT1.CAN-H	BAT2.CAN-H	
Pin 5	BAT1.CAN-L	BAT2.CAN-L	
Pin 6	Empty	Empty	
Pin 7	GND	GND	

Pin 8	WAKE-UP	WAKE-UP	

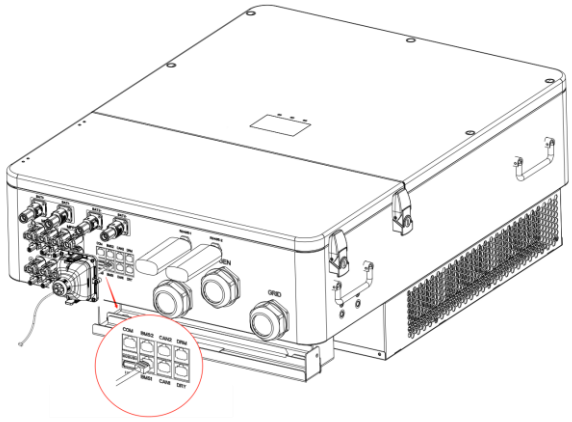


Figure 5-5 Communication connection between inverter and battery PACK

Note: If a lead-acid battery or a lithium battery without BMS communication is used, you can directly jump to 5.5.2 without connecting the BMS communication cable.

The Pin 4, Pin 5, Pin 7, Pin 8 pins of the BMS port are used for the lithium battery communication connection.

5.5.2 Lead-acid battery temperature sensor connections

When a lead-acid battery is used, you need to connect a temperature sensor to monitor the surface temperature of the battery. The following are the temperature sensor connection steps:

(1) Unscrew the rubber nut on the waterproof cover of the energy storage inverter;

(2) The NTC wire is sequentially passed through the rubber nut, sealing ring, threaded sleeve and waterproof cover;

(3) Connect the RJ45 terminal head of the NTC cable to the DRY IO/NTC port on the energy storage inverter;

(4) Lock the waterproof cover with screws;

(5) Tighten the rubber nut to the waterproof cover.

Interface definitions:

	BMS1	BMS2
Pin 1	BAT1_TEMP	BAT2_TEMP
Pin 2	GND	GND
Pin 3	Empty	Empty
Pin 4	BAT1.CAN-H	BAT2.CAN-H

Pin 5	BAT1.CAN-L	BAT2.CAN-L
Pin 6	Empty	Empty
Pin 7	GND	GND
Pin 8	WAKE-UP	WAKE-UP

Note: The sensor probe is used to monitor the ambient temperature of lead-acid battery, and its length should be less than 1.5m. If you choose a lithium battery, there is no need to install a temperature sensor.

BMS port for Pin 1, Pin 2 for temperature sensor connection in lead-acid batteries.

5.6 Electric meter connection

The electric meter can also be used to monitor the energy use of household users.The connecting steps of the communication line of the electric meter are as follows:

The meter is connected to the RS485-2 terminal with waterproof function by inserting and then tightening it, as shown in the following picture:

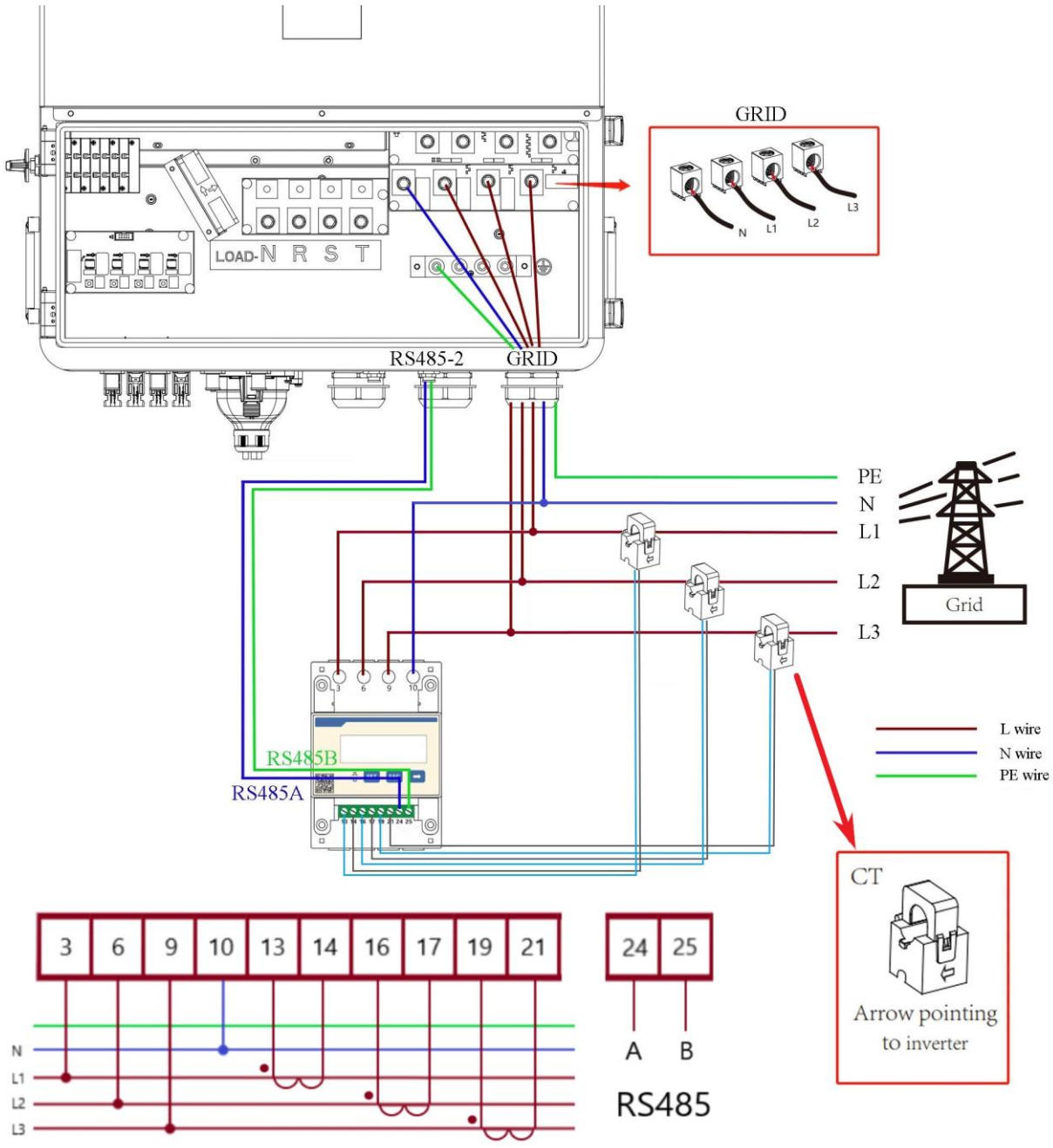


Figure 5.6 Smart electric meter connection

5.7 Generator dry contact connection

A separate generator interface is equipped on the inverter. When using generator, it is required to connect the dry contact of the generator. The connection steps of the dry contact of the generator are as follows:

1. The generator is set to automatic mode;
2. The dry contact of the generator is connected to the 2th pin and 3th pin of the inverter DRY IO;
3. DRY IO interface definition:

	Generator	
Pin 1	NO OUT	

Pin 2	COM	
Pin 3	NC OUT	
Pin 4	Empty	
Pin 5	CONTACT2	
Pin 6	+12V	
Pin 7	CONTACT1	
Pin 8	+12V	

5.7 Generator dry contact connection

5.8 Earth wire connection

The energy storage inverter must be grounded reliably. It is recommended that the diameter of the ground cable is greater than 10mm². The grounding point is shown as below:

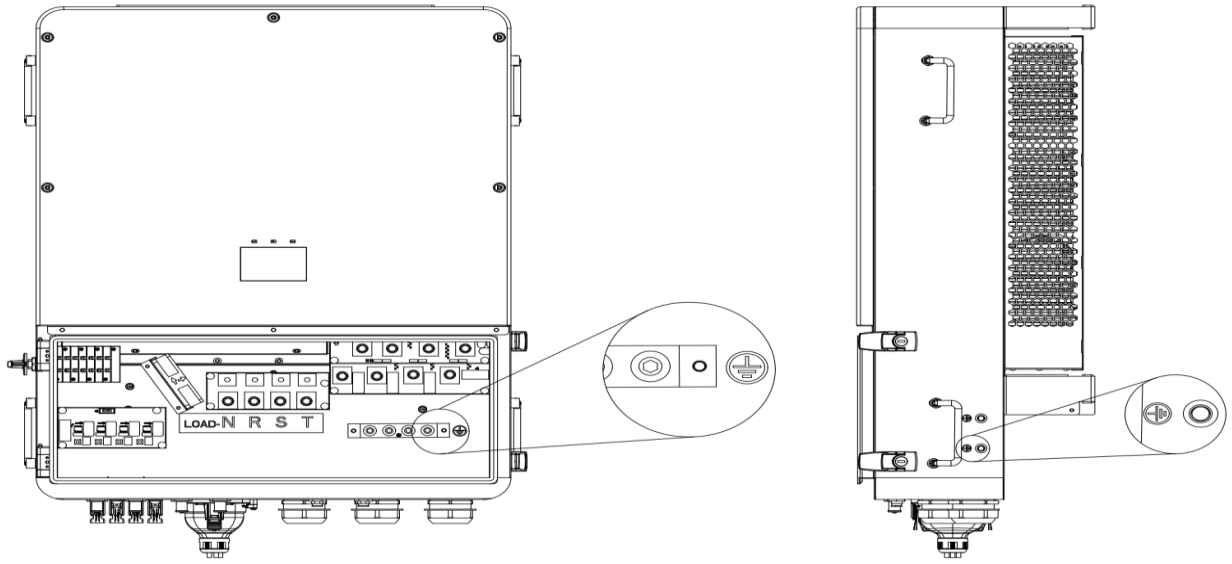


Figure 5.8 Wire connection

5.9 Parallel connection

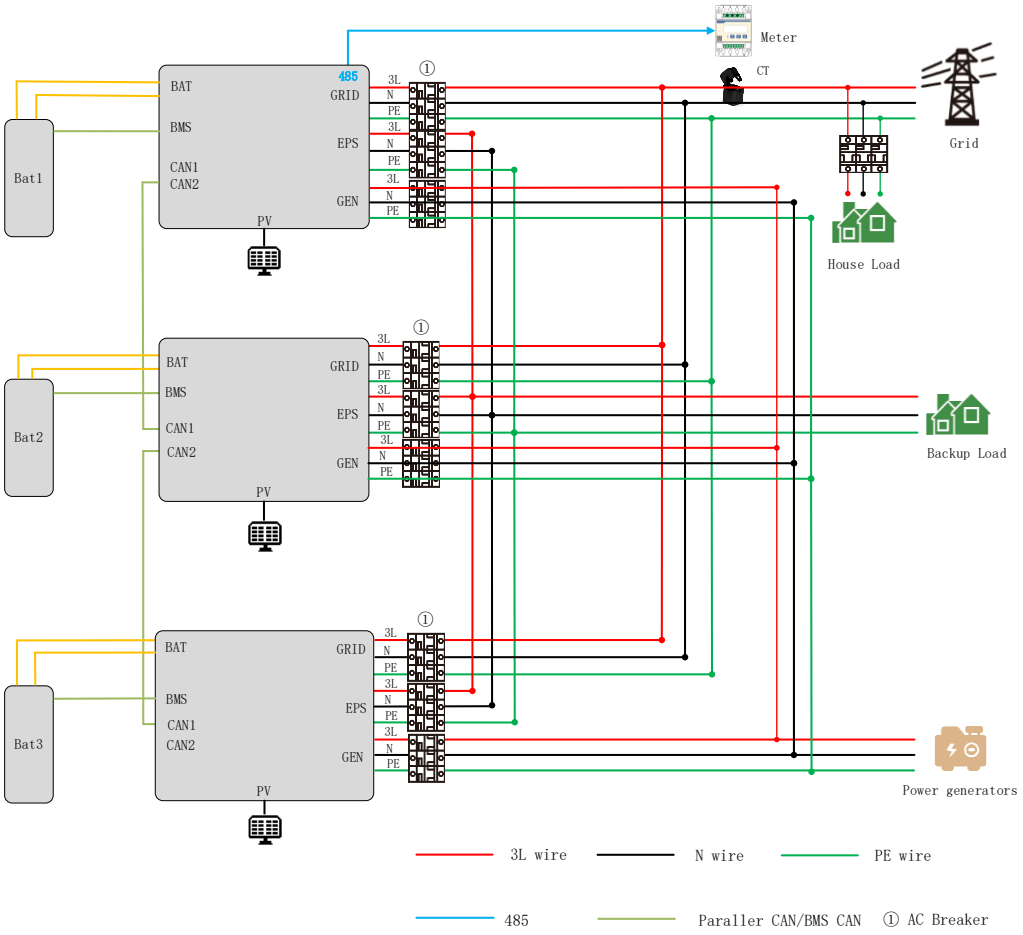
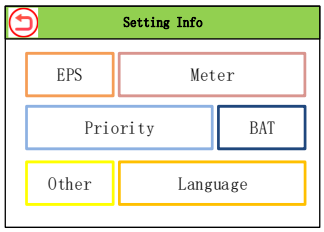
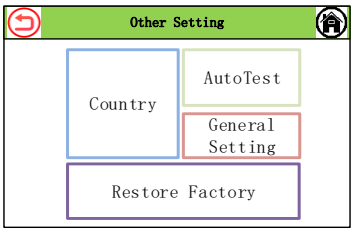
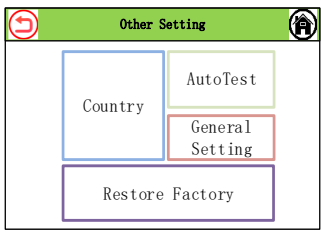
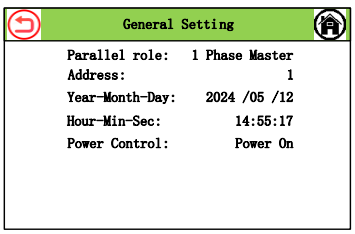
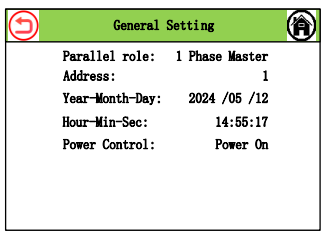
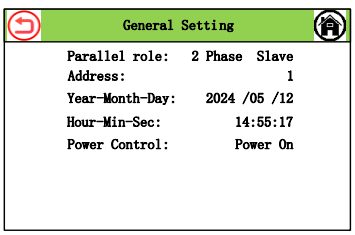
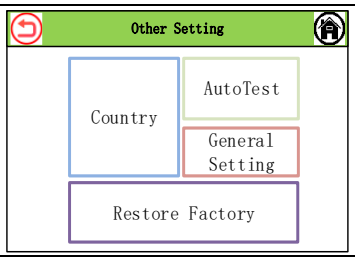


Figure 5.9 Parallel connections

Master/slave settings:

	Click “Other”	
	Click “General Setting”	
	Click “I Phase Master”	

	Click Return icon	

Chapter 6. Commissioning of equipment

6.1. Equipment operation

Step 1: Close the inverter GRID side AC circuit breaker.
Step 2: Close the BAT HP box side DC circuit breaker.
Step 3: Press the BAT soft Start button of the inverter.
Step 4: Close the inverter EPS side AC circuit breaker.
Step 5: Close the inverter PV switch.
Note: When PV, power grid and battery are all normal, the system will work in "grid-connected mode".
At this time, the green LED light is always on, and the screen of the energy storage machine shows "State: On Grid".

6.2 Equipment shutdown

When the inverter stops working, all energy sources must be disconnected, and then the energy storage will automatically enter the shutdown mode.
Step 1: Disconnect the inverter PV switch.
Step 2: Close the BAT HP box side DC circuit breaker.
Step 3: Disconnect the inverter GRID side AC circuit breaker.
At this time, the LED light and LCD screen are off.

Note: When all the above operations are completed, it is required to wait at least 5 minutes before proceeding with other operations.

Chapter 7 Parameter settings

On the LCD screen, you can view the current status, energy flow diagram, operation information and fault information of the system, or language settings, charging and discharging priority and system time. By default, the main screen shows the energy flow chart.

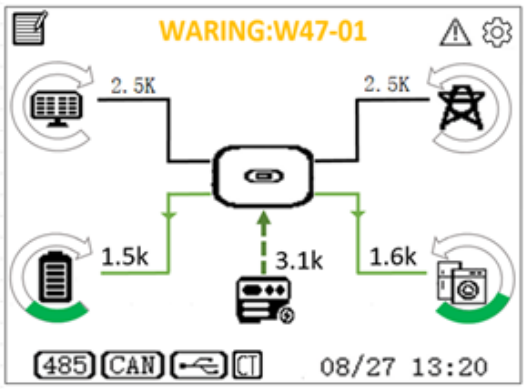


Figure 7.1 LCD display

The following are the possible states of the inverter:

1. Initialization: In standby mode, if no fault is detected, the inverter will enter waiting state.

2. Wait: the inverter enters the self-test. If no fault is detected, the system will enter waiting mode or normal operating mode.

3. Grid connection: The inverter works in the grid connection state.

4. Fault: In case of fault, the inverter will stop working and enter the protection mode.

5. Burn: The inverter is currently being upgraded.

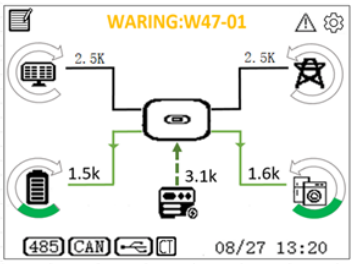
6. Off-grid: The inverter works in off-grid mode.

7. Bypass: The inverter operates in bypass mode.

7.1 Menu information

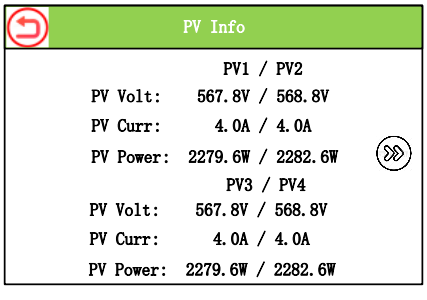
7.1.1 Photovoltaic input information

On the home screen, click different icons to go to different information pages.



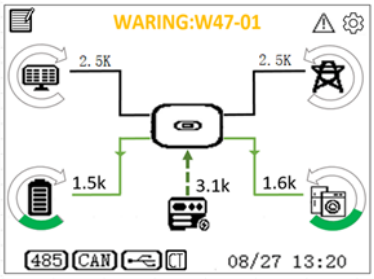
Click the photovoltaic icon to go to the photovoltaic information page

Click the “back” icon to exit the photovoltaic information page



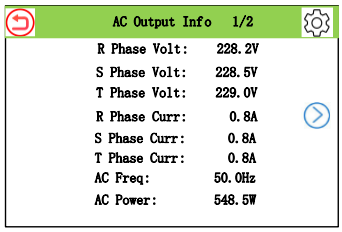
7.1.2 Exchange output information

Here, you can check the AC voltage, frequency and current, as well as the power of the meter.

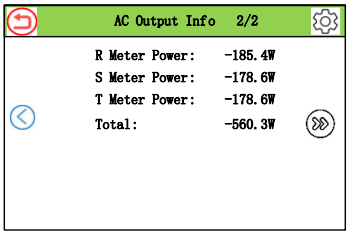


Click the AC icon to go to the AC output information page

Click the “back” icon to exit the AC output information page

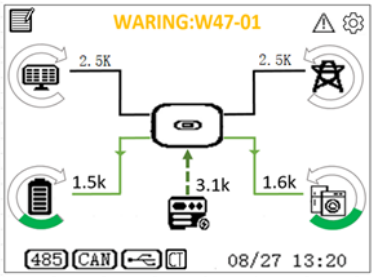


Click the “next” icon



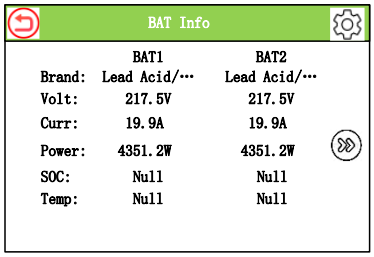
7.1.3 Battery information

Here, you can check the type, voltage, current, capacity, SOC and temperature of batteries.



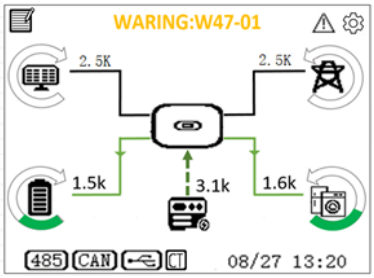
Click the “battery” icon to go to the battery information page

Click the “back” icon to exit the battery information page



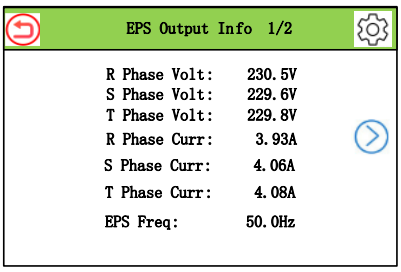
7.1.4 Exchange output information

Here, you can check the EPS voltage, frequency, current, and load power.

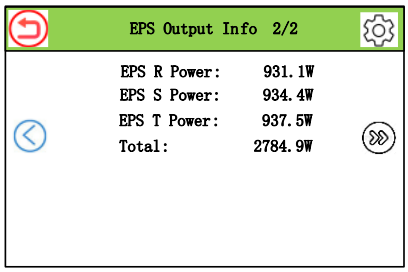


Click the “load” icon to go to the EPS output information page

Click the “back” icon to exit the EPS output information page

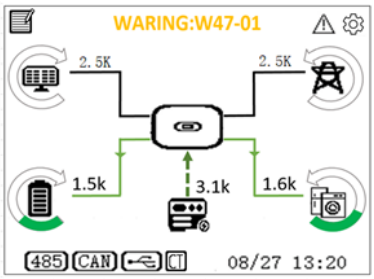
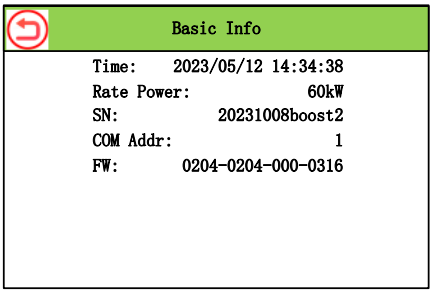


Click the “next” icon

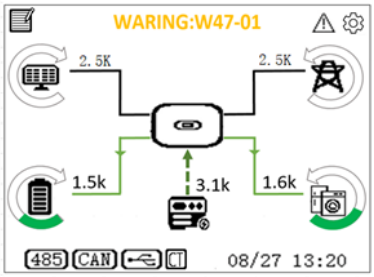
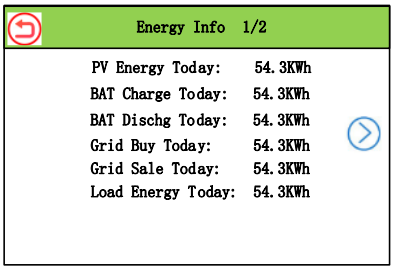
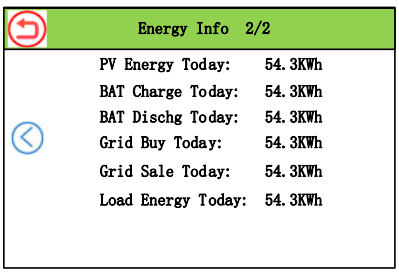
7.1.5 Basic information

Here, you can view the date and time, rated power, serial number, mailing address and firmware version.

	Click the “inverter” icon to go to the basic information page Click the “back” icon to exit the basic information page	

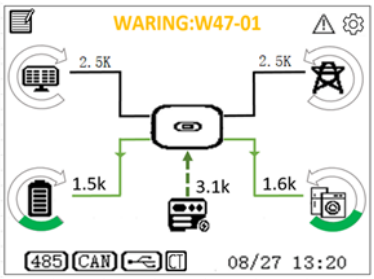
7.1.6 Energy information

Here, you can view the daily and total power generation of inverter, daily battery charge/discharge capacity, total battery charge/discharge capacity, daily electricity sales and total electricity sales of power grid, and daily and total electricity consumption of load.

	Click the notebook to go to the energy information page. Click the “back” icon to exit the energy information page.	 Click the “next” icon 

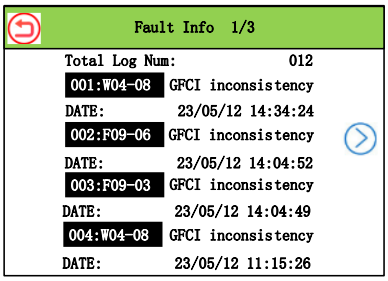
7.1.7 Fault information

Here, you can view the total number of faults/warnings, as well as the main code and subcode of each fault/warning, and the date and time of occurrence.



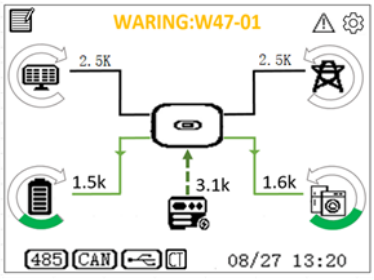
Click the exclamation mark to go to the fault information page

Click the “back” icon to exit the fault information page



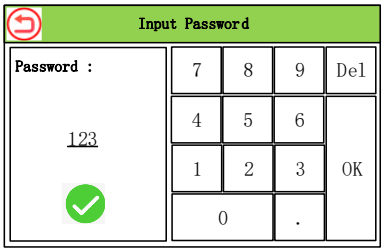
7.1.8 Settings information

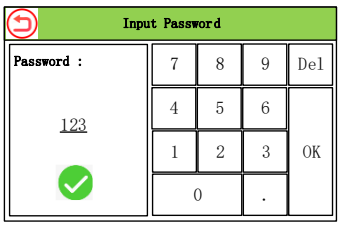
Enter the password to access the settings page. On the menu page, select settings page. The enter password page will be displayed. After setting the password 123, the settings information page will be displayed.



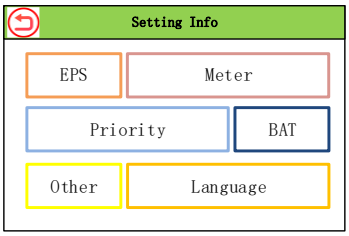
Click the “settings” icon to go to the password entry page

Click the “back” icon to exit the password entry page



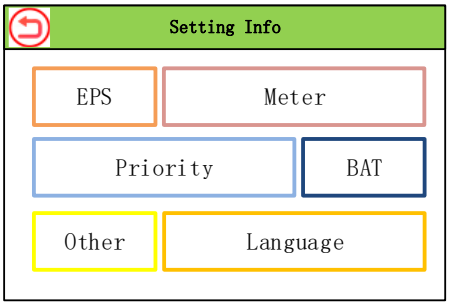


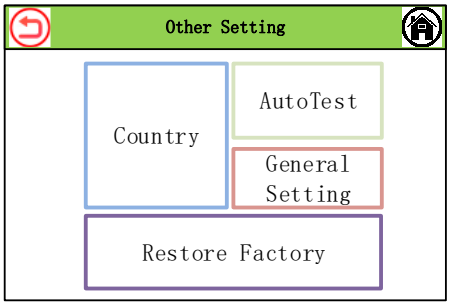
Enter the password 123 to go to the settings information page



7.2 Settings information page

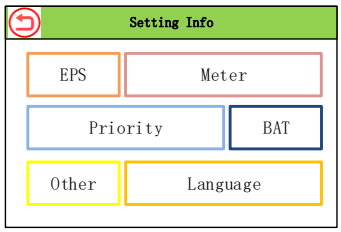
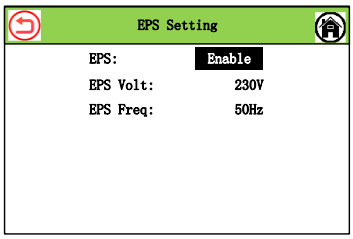
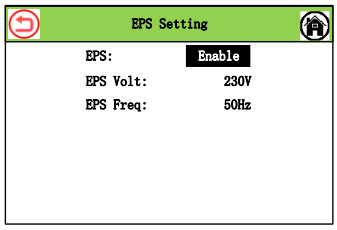
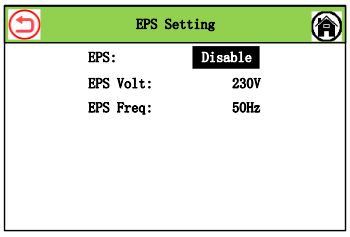
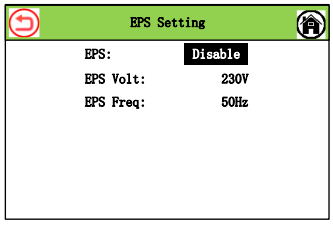
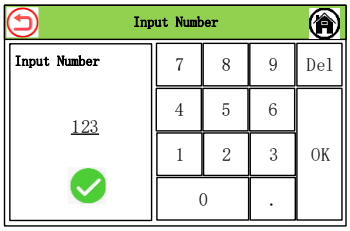
In the settings information page, you can set parameters such as date and time, COM address, language, country and priority. The settings information page is shown below.





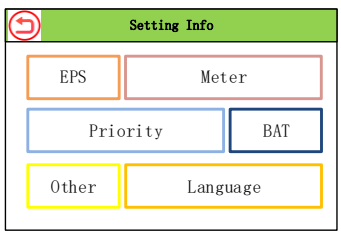
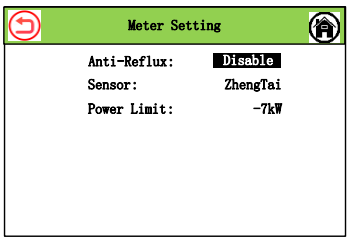
7.2.1 EPS off-grid settings

Enable off-grid mode and set EPS voltage and frequency according to the following steps.

	Click the EPS icon to enter the EPS settings page	
	Click the “enabled” icon to change to disabled	
	Click a parameter to enter a setting number.	

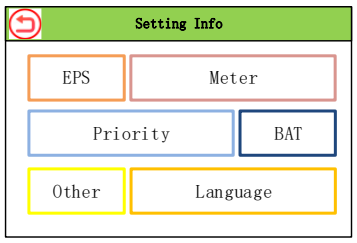
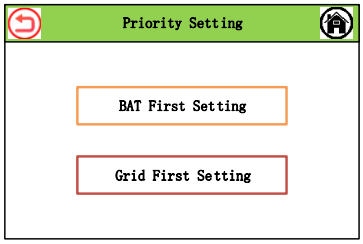
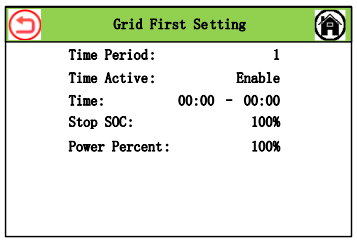
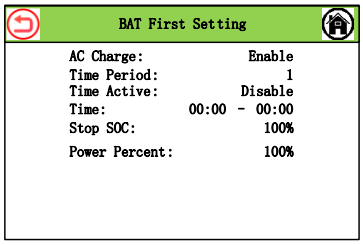
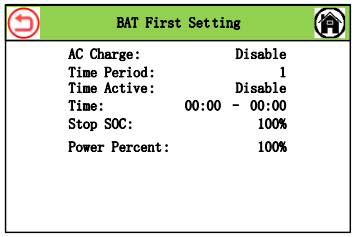
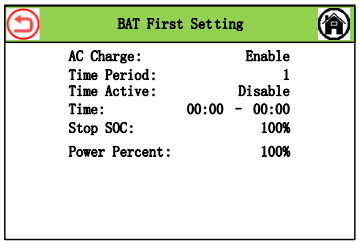
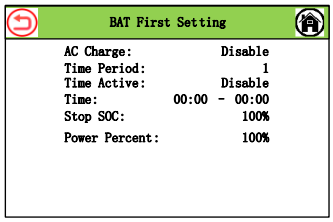
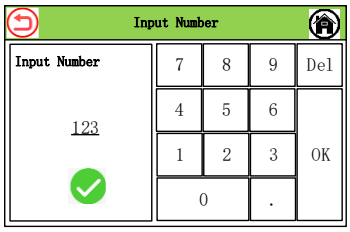
7.2.2 Electric meter settings

On the electric meter settings page, you can enable backflow prevention, select CT or meter manufacturer, and set power limit.

	Click the electric meter icon to go to the electric meter settings page.	

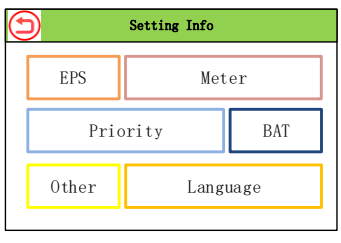
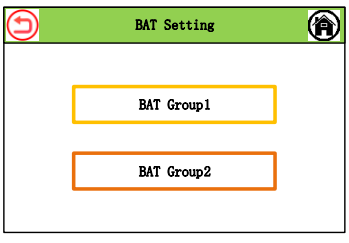
7.2.3 Priority settings

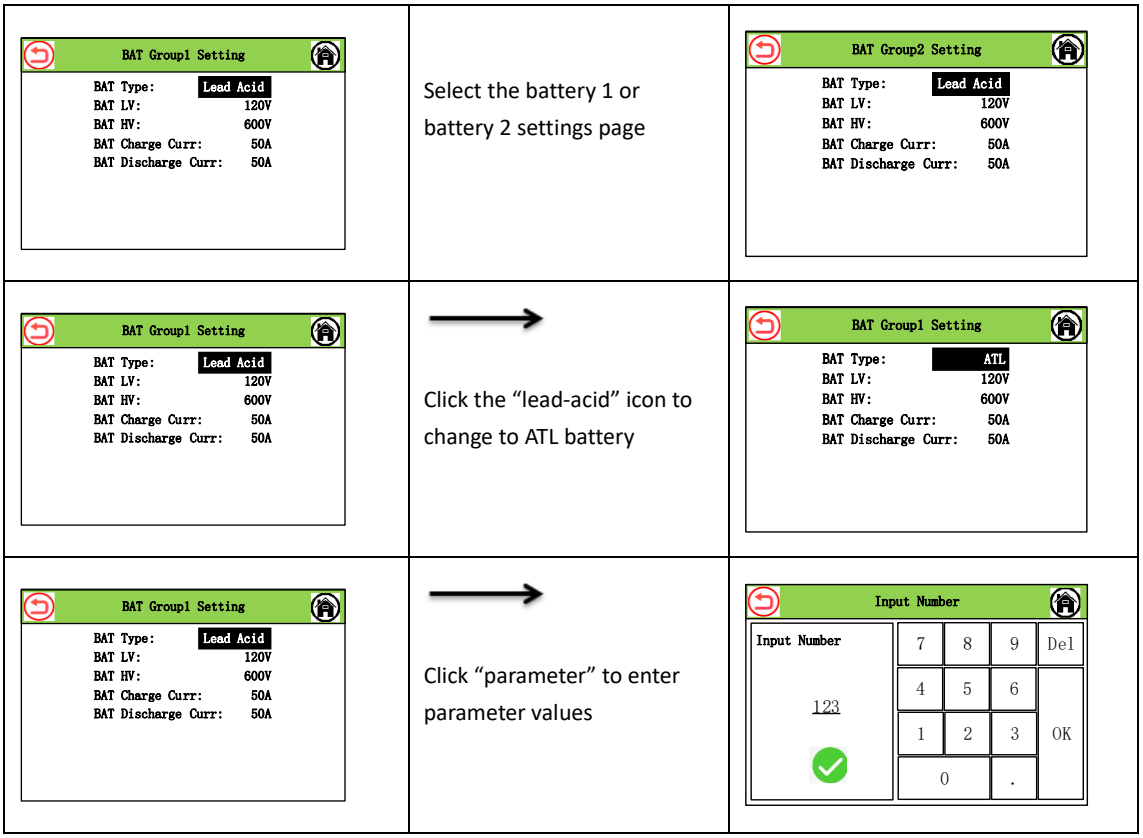
Priority settings include battery priority mode and power grid priority mode; and load priority is set beyond the time interval during which battery priority and grid priority is set.

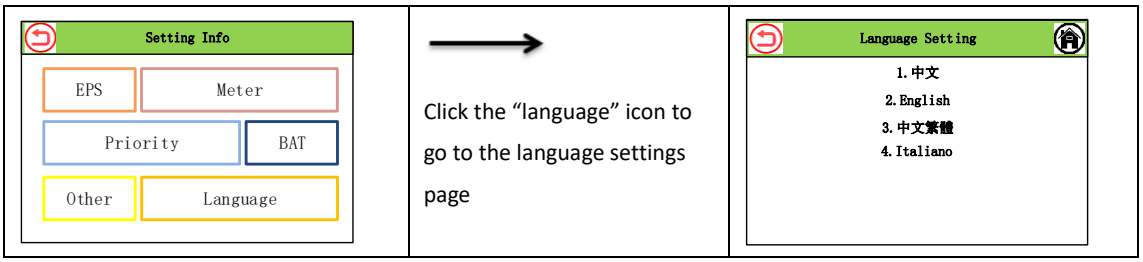
<table>
<tr>
<td>
</td>
<td>Click the “priority” icon to go to the priority settings page</td>
<td>
</td>
</tr>
<tr>
<td>
</td>
<td>Select grid priority or battery priority page</td>
<td>
</td>
</tr>
<tr>
<td>
</td>
<td>Click the “disabled” icon to change to enabled</td>
<td>
</td>
</tr>
<tr>
<td>
</td>
<td>Click “parameter” to enter parameter values</td>
<td>
</td>
</tr>
</table>

7.2.4 Battery settings

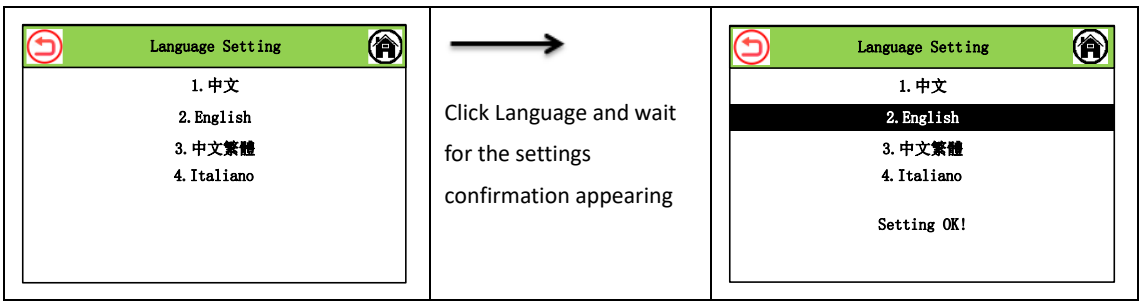
The battery parameters displayed on the settings information page depend on the battery manufacturer. For lead-acid batteries, battery parameters will include charging voltage (CV), charging current (CC) and low voltage (LV). For lithium batteries, battery parameters will include maximum charging current, maximum discharging current, depth of discharge (DOD) and battery wake-up function. You can set the lead-acid battery parameters by the following steps.

<table>
<tr>
<td>
</td>
<td>Click the “BAT” icon to go to the battery settings page</td>
<td>
</td>
</tr>
</table>

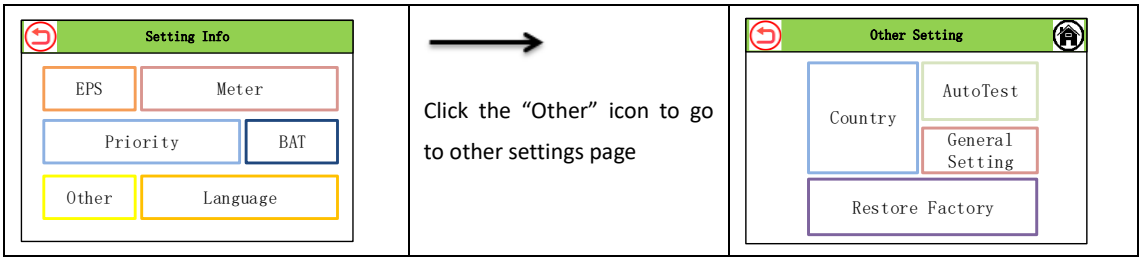


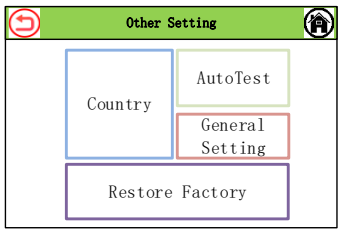
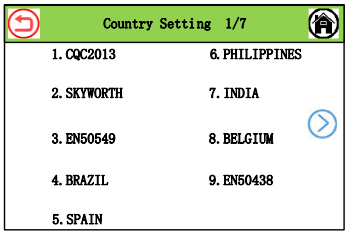
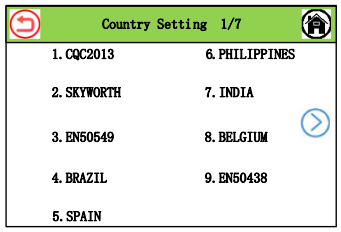
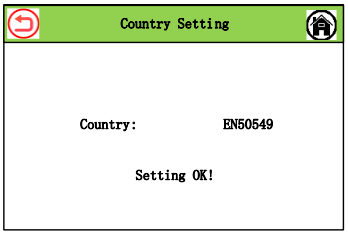


7.2.5 Language settings



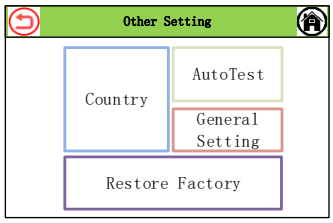
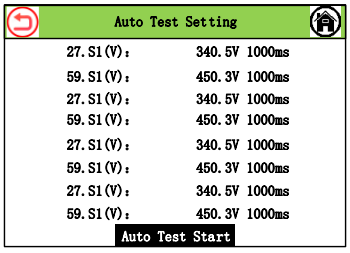
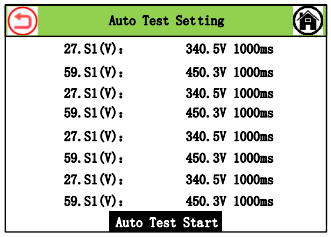
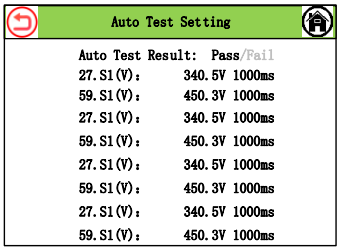
7.2.6 Country settings



<table>
<tr>
<td>
</td>
<td>Click the “country” icon to go to the country safety regulation settings page</td>
<td>
</td>
</tr>
<tr>
<td>
</td>
<td>Click “safety regulations” to enter the settings page and wait for settings confirmation appearing</td>
<td>
</td>
</tr>
</table>

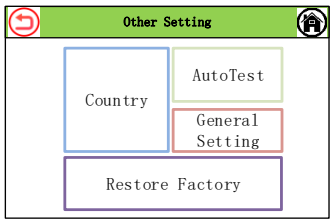
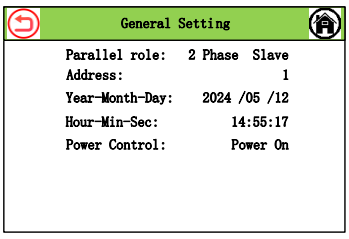
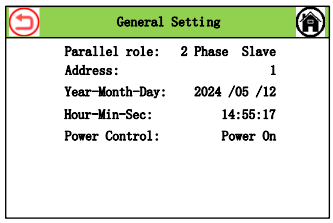
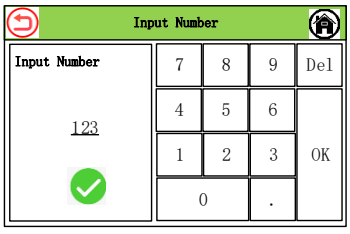
7.2.7 Automatic test settings

The automatic test function is only available when Italy is selected on the country/region Settings page. If you select any other country/region, the automatic test settings page will display "No supported!"

<table>
<tr>
<td>
</td>
<td>Click the “automatic test” icon to go to the automatic test settings page</td>
<td>
</td>
</tr>
<tr>
<td>
</td>
<td>Click the “automatic test start” icon to wait for the automatic test results</td>
<td>
</td>
</tr>
</table>

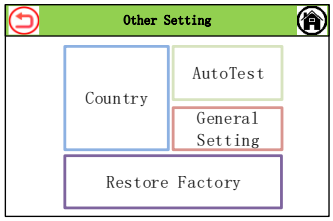
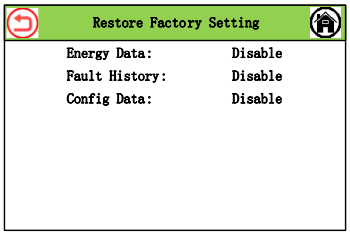
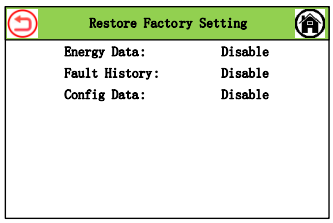
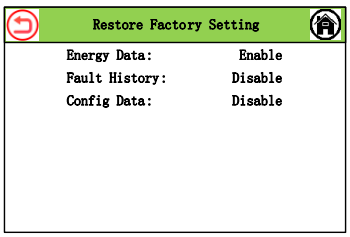
7.2.8 General settings

On the general settings page, you can set parameters such as master/slave role, COM address, date and time, and power on/off. The settings information page is shown below.

<table>
<tr>
<td>
</td>
<td>Click the “general settings” icon to go to the general settings page</td>
<td>
</td>
</tr>
<tr>
<td>
</td>
<td>Click “parameter” to enter parameter values</td>
<td>
</td>
</tr>
</table>

7.2.9 Restoring factory settings

This feature enables restoring calibration data and configuration parameters to default settings, as well as clearing energy data and historical fault data. Restore factory settings as follows:

<table>
<tr>
<td>
</td>
<td>Click the “restore factory settings” icon to go to the settings page</td>
<td>
</td>
</tr>
<tr>
<td>
</td>
<td>Click the “disabled” icon to change to enabled</td>
<td>
</td>
</tr>
</table>

Chapter 8. System commissioning

8.1 Screen and key

8.1.1 LCD display

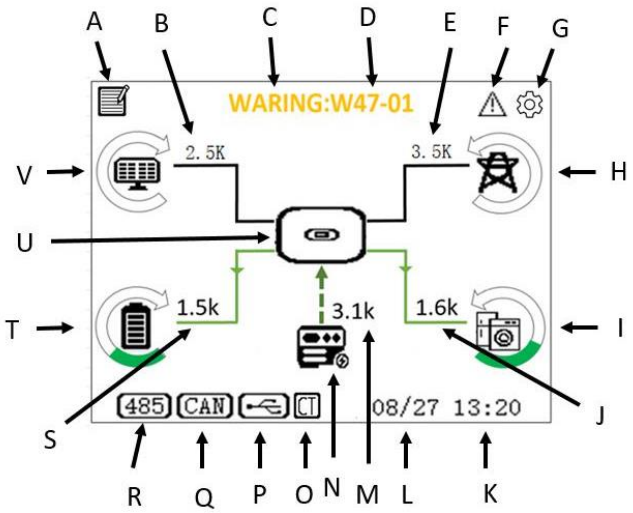


Figure 8.1 LCD display

Table . 8-1

S/N	Description
A	Energy statistics
B	PV power
C	Fault warning
D	Fault code
E	Grid power
F	Fault record
G	Parameter settings
H	Power grid
I	Load
J	Load power
K	Time
L	Date
M	Diesel generator power
N	Diesel generator
O	Electric meter communications
P	USB communications
Q	CAN communications

R	RS485 communications
S	Battery power
T	Battery indication (20% x 5 steps)
U	Energy storage inverter
V	Photovoltaic input

8.1. 2 LED indicator

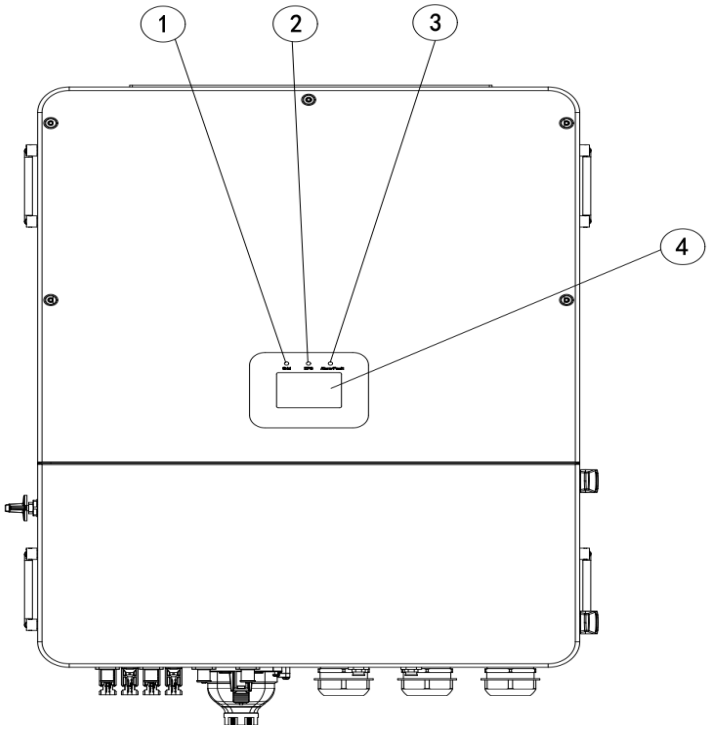


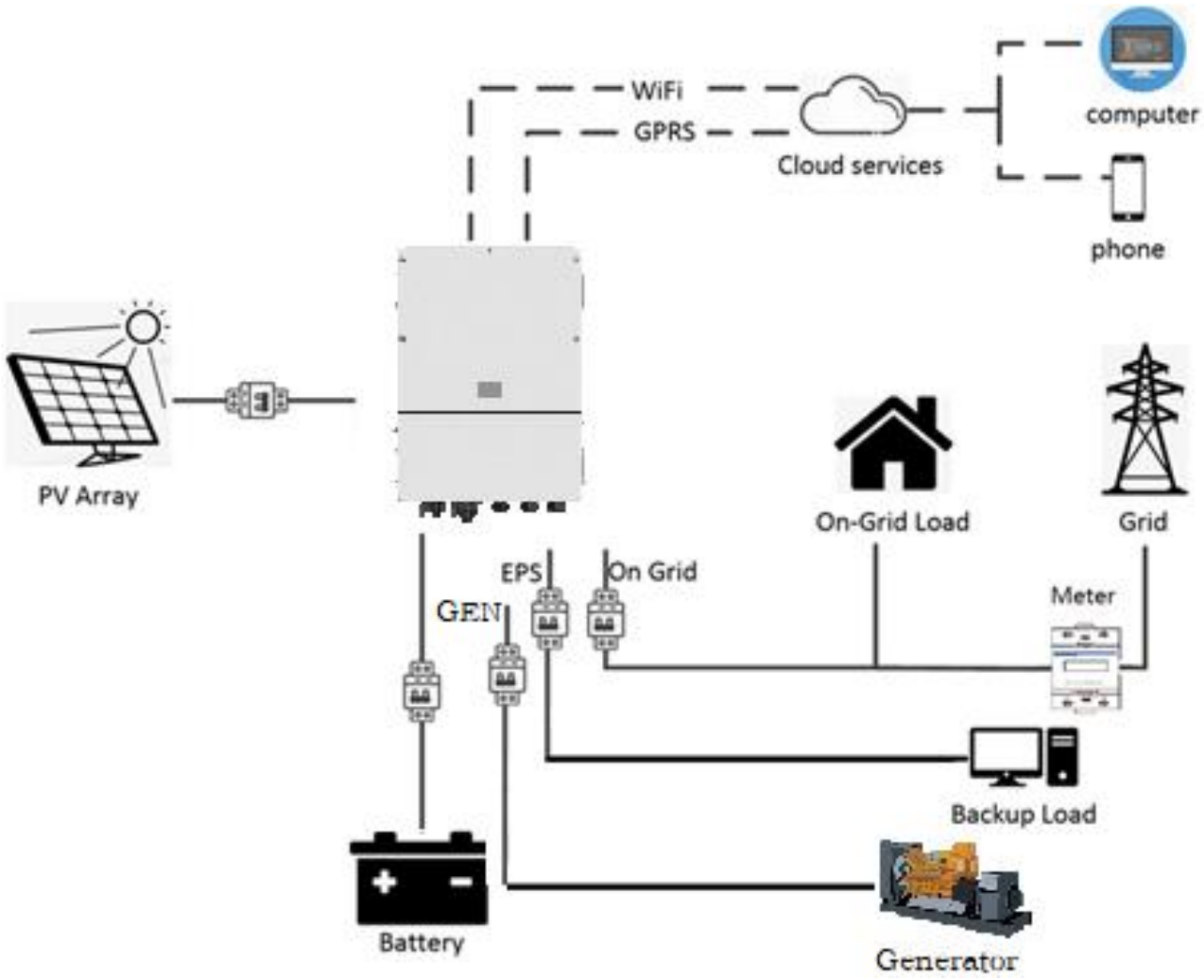
Figure 8.2 LED display

Table . 8-2

S/N	Description
1	The green light keeps on: in the grid-connected state.
	The green light flashes: during the power-on self-test.
	Green and yellow LED lights flash: during programming.
2	The yellow light keeps on: in off-grid state.
3	The red light keeps on: it is in a fault state.
4	LED screen

8.2. Working mode

8.2.1. Basic working mode



The basic working modes include: grid-connected mode, off-grid state and generator mode.

Grid connected mode

When the energy storage inverter operates in the grid-connected state, you can choose the priority mode as required. In terms of the LCD screen, you can only set one time interval for each priority mode; in terms of application, you can set up to 3 time intervals for each priority mode.

(1) Load Priority: This is the default priority mode. When the system operates in this mode, the power generated by photovoltaics is given priority to the load. When the power generated by photovoltaics is insufficient to meet the load requirements, the batteries will start supplying power. When the electricity generated by photovoltaics is sufficient for use by load, the excess power will be stored in the batteries. If no battery is connected or the battery quantifies are full, the excess power will be sent to the grid (if anti-backflow protection is not enabled).

(2) Battery priority: When the system operates in this mode, the batteries will be preferentially charged. To charge the batteries by using alternating current (AC) power , it is required to enable AC charging function and set time intervals and battery state of charge (SoC). If AC power is not enabled for charging, the energy storage inverter will only use photovoltaic power to charge the batteries. You can also set the discharge power (the max discharge percentage of the battery). In battery priority mode, the actual discharge rate of the battery will not exceed the set capacity percentage of the battery.

(3) Grid priority: When the system operates in this mode, the power generated by photovoltaic energy will be preferentially fed to the grid. Users can export energy to the power grid during peak hours. You need to set the time interval and battery state of charge (SOC). You can also set the discharge power (the maximum discharge percentage of the batteries). In grid priority mode, the actual discharge rate of the battery will not exceed the set capacity percentage of the battery.

Off-grid mode

In case of the power grid outage, the system will automatically enter the off-grid state.

In this mode, the system will output voltage through EPS port and the power generated by the batteries and solar photovoltaic panel will be supplied to load. Please note that the load power of EPS port should not exceed the maximum output power of inverter.

Note:

(1) In grid priority mode or battery priority mode, you can only set one time interval on the LCD screen. If you need to set more time intervals, please use the Solarman APP application.

(2) To charge the batteries with AC power, you need to enter the login password and then enable the AC charging function.

Generator mode

When the light is not strong or it is in the night or the power grid is out of power at night, the batteries will output off-grid to provide energy for important loads.

When the SOC value of the batteries is lower than the set value, the generator will start to work at the time, giving priority to providing energy to important loads, and excess electricity generated by the generator will be stored in the batteries.

When the power grid returns to normal and the inverter detects the power grid voltage, the inverter will disconnect the generator dry contact signal and the generator relay. Next, it is as the same as the basic working mode, so the details will not be repeated here.

8.2.2 Fault state

With an intelligent control system, whichXD30-60KTR energy storage inverter can continuously monitor and adjust the state of the system. In case of system failure or equipment failure, the failure information will be displayed on the LCD screen, and the relevant LED will be on.

Note:

A) See Section 8.1 for more fault information.

B) Some fault information is intended to remind you of possible internal faults of the inverter.

8.2.3 Firmware upgrade

Do not turn off the power during the firmware upgrade. After the firmware upgrade ends, the system will automatically enter the operating mode.

8.2.4 Self-test state

Before activating the operating mode, the system will enter the power-on self-test (POST) state. If no fault is detected, the system will enter operating mode or fault state.

8.2.5 Standby state

When no fault is detected and certain operating conditions are not met, the system will enter the standby state.

8.2.6 Shutdown state

If you want to stop the operation of the energy storage inverter, please disconnect all energy sources to enter

automatic shutdown state.

The following are the shutdown steps:

(1) Set the power off via the LCD screen.

(2) Turn off the PV switch.

(3) Turn off the BAT switch.

(4) Disconnect the power grid.

(5) After the above steps are completed, the LED lights and LCD screens will all be off.

Note: At the end of the above steps, please wait at least 5 minutes before proceeding with other operations.

8.3 Set inverter parameters via Solarman APP application.

Solarman App is a mobile phone application software that can communicate with energy storage inverter via WiFi module or GPRS module. The following functions are commonly used:

1. View the operation data, software version and alarm information of the energy storage inverter.

2. Set the power grid parameters and communication parameters, etc. of the energy storage inverter.

3. Equipment maintenance.

4. Firmware upgrade.

For more information, please refer to the Solarman APP User Manual, which is available in the official website https://www.invt.com/.

Note: In order to ensure the normal operation of the inverter, please set the parameters of the energy storage inverter by using Solarman App first.

Chapter 9. System maintenance

The products undergo a series of rigorous tests before leaving the factory. In order to ensure and prolong the service life of the inverter, in addition to operating the inverter in strict accordance with the requirements specified in this manual, it is also necessary to carry out necessary daily maintenance and overhaul of the inverter.

Make sure that the inverter is powered off.
Wear personal protective equipment when operating the inverter.

9.1 Periodic maintenance of inverter

Inspection content	Inspection Method	Maintenance period
Save inverter operation data	The monitoring software is used to read the data of inverter in real time, and back up the data recorded by monitoring software regularly. Save the operation data, parameters and logs of the inverter recorded in the monitoring software to a file. Check the monitoring software and view the parameter settings of the inverter through the handheld keyboard.	Once quarterly
Inverter Operational state	Observe whether the inverter is firmly installed, damaged or deformed. Listen for abnormal sound when the inverter is running. When the system is connected to the grid, check all variables. Check whether the inverter shell temperature is normal, and use thermal imager to monitor the system heat.	Once every six months
Inverter cleaning	Check the humidity and dust around the inverter. If it affects the heat dissipation of the machine, please stop the machine and turn off the power. After the machine cools, use a soft brush or dry cloth to clean it.	Once every six months
DC switch	Turn the DC switch on and off for 10 times to ensure the normal function of the DC switch.	Once yearly
Electrical connections	Check whether the system cable connection and the inverter terminal are loose. Check whether the cable is damaged, especially whether the coat in contact with the metal surface has cut marks.	Once every six months
Sealing	Check whether the sealing of the equipment inlet hole meets the requirements. If the gap is too large or not blocked, it needs to be re-blocked.	Once yearly
Safety function	Check the inverter LCD and the shutdown function of the system. Simulate shutdown and check shutdown signal communication. Check the warning label and replace it in time if necessary.	Once yearly

9.2 Inverter power off

Hazard

•When operating and maintaining the inverter, please switch off the power of the inverter. Operating the live equipment may damage the inverter or cause electric shock.

•After the inverter is powered off, it will take some time for the internal components to discharge. Please wait until the equipment is completely discharged according to the time in the label.

Step 1: Disconnect the inverter GRID side AC circuit breaker.

Step 2: Disconnect the inverter generator side AC circuit breaker.

Step 3: Disconnect the BAT side DC circuit breaker.

Step 4: Disconnect the inverter PV switch.

9.3 Remove inverter

Step 1: Disconnect all electrical connections of the inverter, including DC cables, AC cables, communication cables, communication modules, and PGND cables.

Step 2: Remove the inverter from the back hanging board.

Step 3: Remove the back hanging board.

Step 4: Keep the inverter properly. If the subsequent inverter needs to be put into use, ensure that the storage conditions meet the requirements.

9.4 Scrap inverter

In case the inverter could no longer be used and needs to be scrapped, please dispose it according to the electrical waste disposal requirements of the country/region where the inverter is located. The inverter cannot be treated as domestic waste.

Chapter 10 Trouble shooting

Fault code and fault handling

 **Warning**	For non-professionals, please contact the supplier for handling. Please take protective measures before inspection. Live operation is strictly prohibited!

This chapter introduces fault warning and codes, which are used to quickly find inverter faults.

Please troubleshoot the machine according to the following methods. If the troubleshooting methods can't help you, please contact the after-sales services.

When contacting the after-sales services, please collect the following information to solve the problem quickly.

- Inverter model:_____;
- Inverter serial number:_____;
- Inverter system version number -- Version 1:_____;

  -Rev 2:_____;

  -MCU software version:_____;
- Fault code:_____;
- Equipment Installation environment _____;
- Fault brief description:_____.

Table 10-1 Inverter fault codes

S/N	Fault type	Fault code	Fault information	Countermeasures
1	PV voltage fault	01-01	PV voltage low	Please check whether the photovoltaic panel connection is normal, whether the panel is damaged or the surface is covered with dust, wheter there is obstruction.
		01-02	PV voltage high	Please check whether the photovoltaic panel is connected normally; and whether the panel voltage specification is higher than the working voltage range of the inverter.
		01-03	PV panel short circuit	Check whether the photovoltaic panel is short-circuited.
2	BUS voltage error	03-01	BUS voltage low	This situation often occurs in the early morning, please check the cleanliness of the photovoltaic panel surface.
		03-02	BUS voltage high	Please check whether the photovoltaic panel is connected normally; and whether the panel voltage specification is higher than the working voltage range of the inverter.
		03-04	Hardware bus overvoltage	Please restart the inverter. If the fault cannot be eliminated, please contact the distributor.
3	Overcurrent fault	05-01	Inverter hardware overcurrent	Please restart the inverter. If the fault cannot be eliminated, please contact the dealer.
		05-02	Inverter software overcurrent	
		05-03	BOOST hardware overcurrent	
		05-04	BOOST software overcurrent	
		05-05	The secondary source hardware TZ faulty	
		05-06	Bus hardware TZ overvoltage	
		05-07	Hardware TZ faulty of LLC side	
		05-08	Buck-Boost software overcurrent	
4	Abnormal temperature fault	06-01	Abnormal temperature of inverter	Check the inverter temperature. If the temperature is too high, cool it down before use.
		06-02	BOOST abnormal	
		06-03	Radiator abnormal	
		06-04	Environment abnormal	
		06-05	Buck-Boost temperature abnormal	
		06-06	NTC open circuit	

S/N	Fault type	Fault code	Fault information	Countermeasures
5	Insulation detection fault	07-01	Insulation detection fault	Please check whether the inverter and photovoltaic panel are reliably grounded. Please turn off the power for 5 minutes and then turn it on again. If the fault cannot be cleared, please contact the distributor.
6	Drive fault	08-01	Drive fault	Please restart the inverter. If the fault cannot be eliminated, please contact the distributor.
7	Communication fault	09-01	Communication failure when master DSP receives data from ARM	Please restart the inverter. If the fault cannot be eliminated, please contact the distributor.
		09-02	Communication failure when ARM receives data from master DSP	
		09-03	communication failure when slave DSP receives data from ARM	
		09-04	Communication failure when ARM receives data from slave DSP	
		09-05	Master-slave chip communication fault-master chip fault	Please restart the inverter. If the fault cannot be eliminated, please contact the distributor.
		09-06	Master-slave chip communication fault-slave chip fault	Please restart the inverter. If the fault cannot be eliminated, please contact the distributor.
		09-07	Communication failure between DSP and AFCI	Please restart the inverter. If the fault cannot be eliminated, please contact the distributor.
8	Leakage current fault	10-01	High static leakage current	1. If it occurs occasionally, it may be caused by external line accidental abnormality, and the inverter will resume normal operation after restarting. 2. If it occurs frequently or cannot be restored for a long time, please check whether the grounding of photovoltaic series is reliable.
		10-02	30mA mutation failure	
		10-03	60mA mutation failure	
		10-04	150mA mutation failure	
9	Relay fault	11-01	Relay open circuit	Please restart the inverter. If the fault cannot be eliminated, please contact the distributor.
		11-02	Relay short circuit	
10	Internal fan fault	12-01	Internal fan fault	Please restart the inverter. If the fault cannot be eliminated, please contact the distributor.
11	DCI fault	14-01	DCI fault of R phase	Please check whether the inverter and photovoltaic panel are reliably grounded. Please turn off the power for 5 minutes and then turn it on again. If the fault cannot be cleared, please contact the

S/N	Fault type	Fault code	Fault information	Countermeasures
				distributor.
12	Consistency fault	19-01	AC voltage detection inconsistency	Please restart the inverter. If the fault cannot be eliminated, please contact the distributor.
		19-02	BUS voltage detection inconsistency	
		19-03	ISO voltage detection inconsistency	
		19-04	PV voltage detection inconsistency	
		19-05	GFCI inconsistency	
		19-06	The Bus voltage sampling abnormal	
		19-07	The PV current sampling abnormal	
13	Mains voltage fault	31-01	Mains undervoltage fault level 1	1. If it happens by accident, it is indicated that an instantaneous abnormality occurs on the power grid, and the inverter will resume normal operation after the power grid returns to normal; 2. If this fault is frequently reported, please check whether the power grid is abnormal.
		31-02	Mains overvoltage fault level 1	
		31-03	No Mains voltage	Check whether the mains is normal.
		31-04	Mains undervoltage fault level 2	1. If it happens by accident, it is indicated that an instantaneous abnormality occurs on the power grid, and the inverter will resume normal operation after the power grid returns to normal; 2. If this fault is frequently reported, please check whether the power grid is abnormal.
		31-05	Mains overvoltage fault level 2	
		31-06	Mains start undervoltage	
		31-07	Mains start overvoltage	
		31-08	Interrupt transient overvoltage	
		31-09	Island overvoltage	
		31-10	Grid voltage oscillation	
14	Mains frequency fault	33-01	Mains underfrequency fault level 1	1. If it happens by accident, it is indicated that an instantaneous abnormality occurs on the power grid, and the inverter will resume normal operation after the power grid returns to normal; 2. If this fault is frequently reported, please check whether the power grid is abnormal.
		33-02	Mains overfrequency fault level 1	
		33-03	Mains underfrequency fault level 2	
		33-04	Mains overfrequency fault level 2	
		33-05	Mains start underfrequency	
		33-06	Mains start overfrequency	
15	Remote shutdown	37-01	Remote shutdown command	Check whether the inverter is powered off manually.

S/N	Fault type	Fault code	Fault information	Countermeasures
16	AFCI fault	38-01	String 1 faulty	Shut down the inverter, turn off the input/output switch, and restart the inverter five minutes later. If the fault persists, contact the distributor.
		38-02	String 2 faulty	
17	AFCI self-test fault	39-01	String 1 self-test faulty	Shut down the inverter, turn off the input/output switch, and restart the inverter five minutes later. If the fault persists, contact the distributor.
		39-02	String 2 self-test faulty	
18	AutoTest fault	41-01	utomatic test failure	Shut down the inverter, turn off the input/output switch, and restart the inverter five minutes later. If the fault persists, contact the distributor.
19	N-PE fault	42-01	N-PE voltage abnormality fault	Please check whether the AC side wiring of the inverter is correct and reliable.
20	Leakage current self-test fault	43-01	The leakage current sensor fault	Shut down the inverter, turn off the input/output switch, and restart the inverter five minutes later. If the fault persists, contact the distributor.
21	String Test faulty	44-01	String faulty	Shut down the inverter, turn off the input/output switch, and restart the inverter five minutes later. If the fault persists, contact the distributor.
22	Auxiliary power failure	45-01	Auxiliary power down	Shut down the inverter, turn off the input/output switch, and restart the inverter five minutes later. If the fault persists, contact the distributor.
23	EPS short circuit fault	46-01	EPS short circuit fault	Check whether the EPS port output is correctly connected.

Table 10-2 Inverter warning codes

S/N	Fault type	Fault code	Fault information	Display information
1	Fan speed low	01-07	Internal fan 1	Shut down the inverter, turn off the input/output switch, and restart the inverter five minutes later. If the fault persists, contact the distributor.
2	Anti-current meter communication	04-01	Check whether the electric meter is connected properly and the power supply is normal.	Check whether the electric meter connection wire is normal and whether the power supply is normal.
		04-08	Abnormal electric meter communication warning	Check whether the electric meter connection wire is normal and whether the power supply is normal.
		04-16	Abnormal CT connection warning	Check whether the CT connection is normal.
3	The power grid out of range warning	05-00	The voltage out of range warning	1. If it happens by accident, it is indicated that an instantaneous abnormality occurs on the power grid, and the inverter will resume normal operation after the power grid returns to normal; 2. If this fault is frequently reported, please check whether the power grid is abnormal.
4	PV short circuit warning	06-01	PV1 short circuit warning	Check whether the photovoltaic input is abnormal and whether the line is short-circuited.
		06-02	PV2 short circuit warning	
5	Overload warning	07-01	EPS overload warning	Reduce the load power at the EPS end.
6	Battery full	46-01	Battery full	Battery has been full
7	Battery under voltage	47-01	Batteries need charging	Charge the battery.
		47-02	Batteries can only need charging	Please check the mode settings and charge the batteries.

Chapter 11 Specification parameters

XD30-60KTR				
Model	XD30KTR	XD40KTR	XD50KTR	XD60KTR
Photovoltaic parameters				
Max. input power	45000Wp	60000Wp	75000Wp	90000Wp
Maximum input voltage	1100V			
Enable input voltage	200V			
Rated input voltage	620V			
MPPT voltage range	180-1000V			
MPPT Quantity	3	4		
Number of DC input strings	6	8		
Max. input current	3*40A	4*40A		
Max. input short circuit current	3*60A	4*60A		
Battery parameter				
Battery type	Lithium battery			
Battery voltage range	300-800V			
MMax. charge and discharge power	33kW	44kW	55kW	66kW
MMax. charge and discharge current	100A			
Number of battery input ports	2			
Communication mode	CAN/RS485			
AC parameters (grid side)				
Rated output power	30kW	40kW	50W	60kW
Max. output apparent power	33kVA	44kVA	55kVA	66kVA
Max. output current	50A	66.7A	83.4A	100A
Max. input power	45kW	60kW	75kW	90kW
Max. input current	68.1A	91A	113.7A	136.4A
Rated voltage	3/N/PE,220V/380Vac or 230V/400V			
Rated rrequency	50/60Hz			
Total harmonic distortion of current (@ rated power)	<3%			
Power factor	Lead 0.8~ lag 0.8			
AC parameters (off-grid side)				
Rated output power	30kW	40kW	50W	60kW
Max. output apparent power	1.5 times/10s			
Rated output current	45.4A	60.7A	75.8A	91A
UPS switching time	<10ms			

Rated output voltage	3/N/PE,220V/380Vac or 230V/400V			
Rated AC frequency	50/60Hz			
Max. continuous bypass input current	150A			
Total harmonic distortion of current(@linear load)	<2%			
AC parameters (generator side)				
Max. input power	30kW	40kW	50kW	60kW
Max. input current	45.5A	60.7A	75.8A	91A
Rated output voltage	3/N/PE,220V/380Vac or 230V/400V			
Rated AC frequency	50/60Hz			
Efficiency				
Max. efficiency	98.40%			
Efficiency in Europe	97.50%			
PV Max. charging efficiency	98.50%			
Battery charging and discharging efficiency	97.50%			
Protection				
DC switch	Optional			
AC short circuit protection	Available			
AC output overcurrent protection	Available			
Islanding protection	Available			
DC reverse protection	Available			
AFCI protection	Optional			
Lightning protection	AC/DC:Type II			
Routine parameter				
Operating temperature range	-30 ~ +60□			
Night depletion	<15w			
Topology	Non-transformer			
Level of protection	IP66			
Relative humidity	0~95%			
Communication	RS485/4G/WIFI			
Max. working altitude	4000m			
Noise	<55dB			
Cooling mode	Intelligent air cooling			
Display	LCD/LED			
Size	820*618*295mm			
Net weight	92kg			



Service hotline:+86 400 700 9997 Email:solar-service@invt.com.cn Website:www.invt-solar.com

INVT Solar Technology (Shenzhen) Co., Ltd.

Floor 2, Building B, INVT Science and Technology Building, Songbai Road, Matian Street, Guangming District, Shenzhen

While the product is being improved, the information may be changed without prior notice. All rights reserved. Counterfeits will be prosecuted.

202408(V1.1)