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Chapter 1 Introduction

This document mainly describes the product information, installation and wiring, configuration, debugging, troubleshooting and maintenance methods of the inverter. Before installing and using the product, please read this document carefully to understand the safety information, functions and characteristics of the product. This document is subject to update from time to time. Please visit our official website or contact relevant personnel for the latest version and more product information.

1.1 Applicable product

This document is applicable to the following models:

EAHI-3000-SL

EAHI-3600-SL

EAHI-5000-SL

EAHI-6000-SL

1.2 Applicable personnel

This document is only applicable to the professionals who know local regulations and standards and electrical systems well, and have specialized knowledge related to this product after being trained professionally.

1.3 Definition of symbols

DANGER
“DANGER” indicates a high potential danger which may cause death or sever injury if not avoided.
WARNING
“WARNING” indicates a moderate potential danger which may cause death or sever injury if not avoided.
CAUTION
“CAUTION” indicates a low potential danger which may cause mild or moderate injury if not avoided.
NOTE
“NOTE” indicates emphasis on and supplement to the contents, or the optimized use skill or know-how of the product, which will help you to solve a problem or save time.

1.4 Revision history

V1.0, first release

Chapter 2 Safety Precautions

Make sure to always follow the safety precautions specified herein during operation of the inverter.

NOTE
The inverter has been designed and tested in strict accordance with safety regulations. However, for any electrical equipment, the relevant safety instructions should be followed before any operation on the inverter as any improper operation may lead to serious injury or property damage.

2.1 General safety

NOTE
• This document is subject to update from time to time due to product version upgrading or other reasons. Unless otherwise specified, the contents of this document cannot replace the safety instructions provided in the product label or user manual. All descriptions provided herein are intended as use guidance only. • Read this document carefully to understand the products and precautions before installing the inverter. • All operations of the inverter must be conducted by professional and qualified technicians who are familiar with the relevant local standards and safety regulations at the place where the invert is installed. • When the inverter is operated, it is necessary to use insulating tools and wear personal protective equipment to ensure personal safety. Wear anti-static gloves, anti-static bracelet and anti-static clothing, etc. when touching electronic devices, to protect the inverter against static. • Any equipment damage or personnel injury caused by failure to install, use or configure the inverter as required by this document is not the equipment manufacturer's responsibility. Contact the supplier for this document.

2.2 Safety of photovoltaic module

DANGER
Please connect the DC cable of the inverter by using DC wiring terminal supplied with the product. Using other DC wiring terminals may lead to serious consequences, and the equipment damage caused therefore is not the equipment manufacturer's responsibility.

WARNING

- Make sure to properly earth the component frame and the support system.
- After the DC cable is connected, make sure that the cable is tightly connected without looseness.
- Measure the positive and negative poles of DC cable by a multimeter to ensure that the positive and negative poles are connected correctly and without reverse connection, and the voltage is within the allowable range.
- Do not connect the same PV string to multiple inverters in series; otherwise the inverter may be damaged.
- The photovoltaic module used with the inverter must comply with Class A standard of IEC61730.

2.3 Safety of inverter

WARNING

- Make sure that the voltage and frequency of the grid connection point meet the grid connection specifications of the inverter.
- It is recommended to provide the protection device such as circuit breaker or fuse on AC side of the inverter, and the specification of the protection device should be greater than 1.25 times the rated AC output current of the inverter.
- The protective earth conductor of the inverter must be connected firmly. When multiple inverters are used, make sure that equipotential connection is made for all protection ground points on the inverter housing.
- If the photovoltaic system is not equipped with a battery, it is not recommended to use the BACK-UP function. The power consumption risk of the system caused thereon is excluded in the warranty of the equipment manufacturer.

DANGER

- After installation of the inverter, labels and warning signs on the box must be clearly visible, and shall not be covered, changed and damaged.
- The signs on the inverter box are as follows:

	There is high temperature on the surface of the inverter, and it is forbidden to touch the inverter when it is running, otherwise it is possible to cause burns		Delayed discharge. After the inverter is powered down, please wait for 5 minutes till the inverter is fully discharged
	Please read the user manual carefully before operating the inverter		Potential danger may be caused during the operation of the inverter, and protection measures should be taken
	The inverter should not be treated as domestic waste, please dispose the inverter according to local laws and regulations, or send it back to the equipment manufacturer		Connection point of protective earth conductor
	CE Marking		RCM Marking

2.4 Battery safety

CAUTION
• The battery used with the inverter shall be approved by the inverter manufacturer, and the list of approved batteries is available from the official website. • Before installing the inverter, please carefully read the user manual of the battery to understand the product and precautions, and strictly follow the operation requirements provided in the user manual of the battery. • If the battery has been completely discharged, charge the battery in strict accordance with the user manual of the battery. • The battery current may be affected by some factors, such as temperature, humidity and weather conditions, etc., which may cause battery current limit and affect carrying capacity. • If the battery does not work, please contact the after-sales service center as soon as possible. Otherwise, the battery may be permanently damaged. • Measure the positive and negative poles of DC cable by a multi-meter to ensure that the positive and negative poles are connected correctly, and the voltage is within the allowable range. • Do not connect a single battery pack to more than one inverter; otherwise the inverter may be damaged.

2.5 Personnel requirements

NOTE
• Installers and maintainers must receive strict training to understand the safety instructions, and correct operation method. • The inverters or their components are only installed, operated, maintained and replaced by the qualified professional or trained professional.

2.6 EU compliance statement

The inverters with wireless communication functions salable in European market meet the following directives:

- Radio Equipment Directive 2014/53/EU (RED)
- Restrictions of Hazardous Substances Directive 2011/65/EU and (EU) 2015/863 (RoHS)
- Waste Electrical and Electronic Equipment 2012/19/EU
- Registration, Evaluation, Authorization and Restriction of Chemicals (EC) No 1907/2006 (REACH)

The inverters without wireless communication functions salable in European market meet the following directives:

- Electromagnetic compatibility Directive 2014/30/EU (EMC)
- Electrical Apparatus Low Voltage Directive 2014/35/EU (LVD)
- Restrictions of Hazardous Substances Directive 2011/65/EU and (EU) 2015/863 (RoHS)
- Waste Electrical and Electronic Equipment 2012/19/EU
- Registration, Evaluation, Authorization and Restriction of Chemicals (EC) No 1907/2006

Please contact the suppliers for more EU compliance statements (REACH).

Chapter 3 Product Description

3.1 Product description

EAHI-3000~6000-SL inverter is used to control and optimize the energy flow in the photovoltaic system through an integrated energy management system. With the inverter, the power energy generated in the photovoltaic system can be supplied for the load, stored in the battery, and outputted to the grid. The inverter integrates with power supply, battery and Internet for connection with grid, photovoltaic panels and the Internet of things to supply the power for families, small supermarkets, farms and other places.

Product features:

- Graphic LCD and key design, user-friendly interface
- One-key remote control and OTA upgrade function accessible to digital power station maintenance
- 24-hour intelligent energy management to understand the status of photovoltaic power station in real time
- Charging and discharging time and power settable flexibly for peak load shifting
- Uninterruptible power supply, switchable within 20ms
- Continuous off-grid power supply capacity up to 6KW
- High charging and discharging efficiency to improve the economic benefits of system
- Intelligent BMS function to improve battery reliability
- Compatible with lead-acid and lithium batteries, which can match economic solutions of different markets
- High frequency isolation technology used to provide higher system safety and long service life

3.2 Application scenarios

WARNING

- The photovoltaic system is not suitable for connection with the devices requiring stable power supply, such as life-sustaining medical devices. Make sure that no personal injury is caused in case of system failure.
- If the photovoltaic system is not equipped with a battery, it is not recommended to use the BACK-UP function. The power consumption risk of the system caused therefore is excluded from the warranty of the equipment manufacturer.
- The battery current may be affected by some factors, such as temperature, humidity, weather conditions, etc., which may cause battery current limit and affect carrying capacity.
- If overload protection is triggered on the inverter for single time, the inverter can be restarted automatically; if overload protection is repeated, the restarting time of the inverter will be prolonged. If it is required to restart the inverter as soon as possible, the inverter may be restarted immediately by App.
- If, during grid failure, load capacity is more than the rated power of the inverter, the off-grid function of the inverter will be disenabled automatically; when the inverter is restarted, close large load to ensure that the load power is less than the rated power of the inverter.
- The inverter has overload capacity and EPS function at the BACK-UP output port (switching time <20ms), and may supply the power for normal use in ordinary domestic load in case of grid failure. To ensure EPS switchover and power supply stability of the load, do not use the loads requiring high starting current as much as possible, such as high-power water pumps. The supported load sizes are as follows:

  Inductive load and capacitive load are provided with the total power ≤1/3 * rated output power of the inverter.Total power of inductive load and capacitive load ≤ 1 x rated output power of inverter

3.2.1 System connection method

Connection method 1:

General system connection method: Used in new photovoltaic and energy storage scenarios.

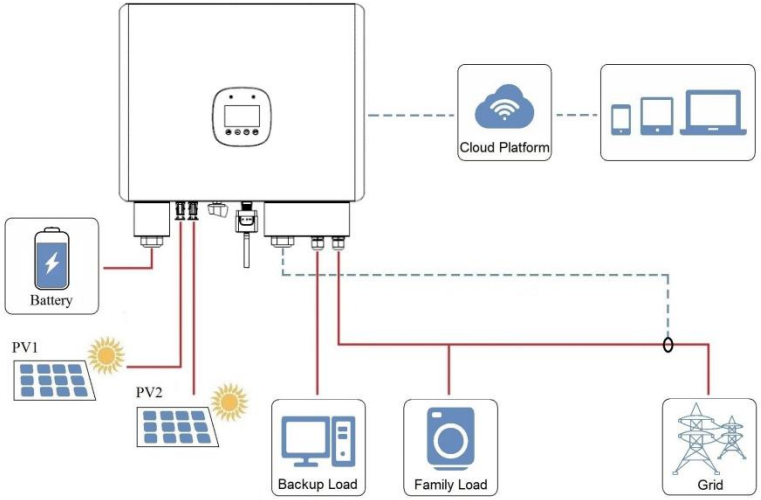


Fig. 3.2.1.1 CT(Standard configuration)

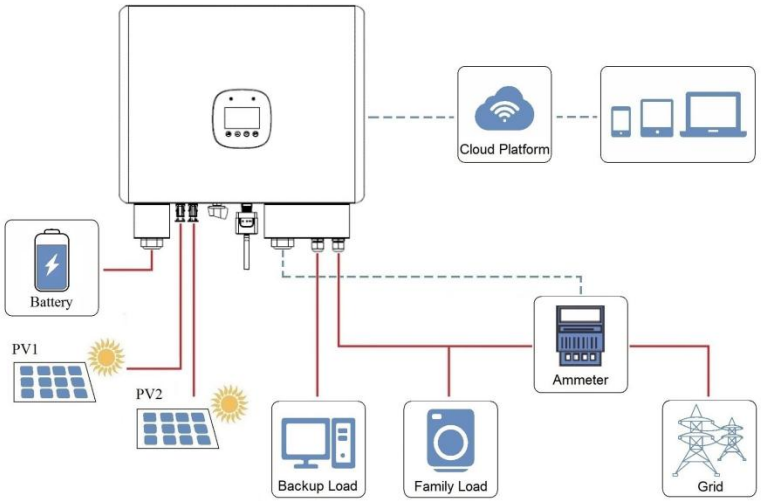


Fig. 3.2.1.2 Ammeter(optional)

Connection method 2:

Generator connection: When it is required to install a generator, connect the generator output to the grid input port on the the inverter. See 3.3 “Generator Mode” for the specific operation mode.

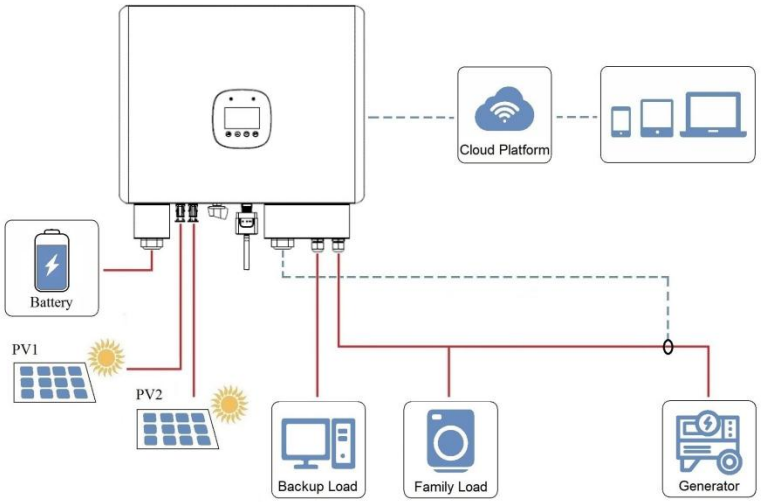


Fig. 3.2.1.3 CT(Standard configuration)

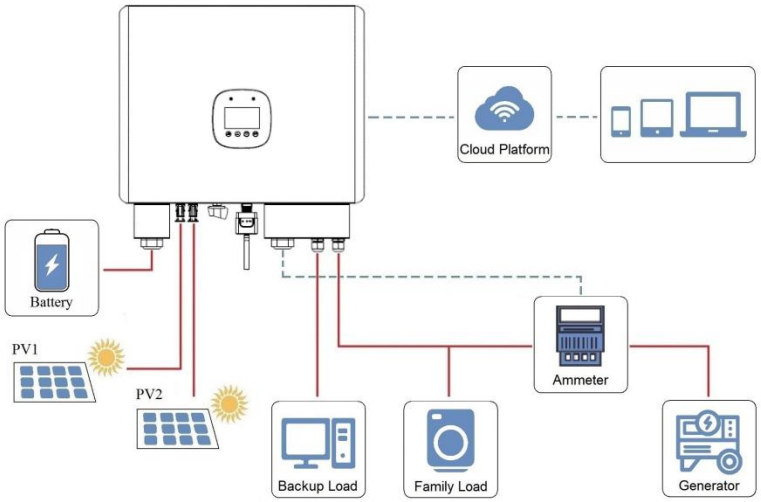


Fig. 3.2.1.4 Ammeter(optional)

Connection method 3:

AC coupling: When a PV inverter has been installed, connect CT to the CT port in the COM port on the local panel to collect the output current of the grid-tied inverter. For the wiring details, see 6.5.2 Installation and connection of kilowatt-hour meter.

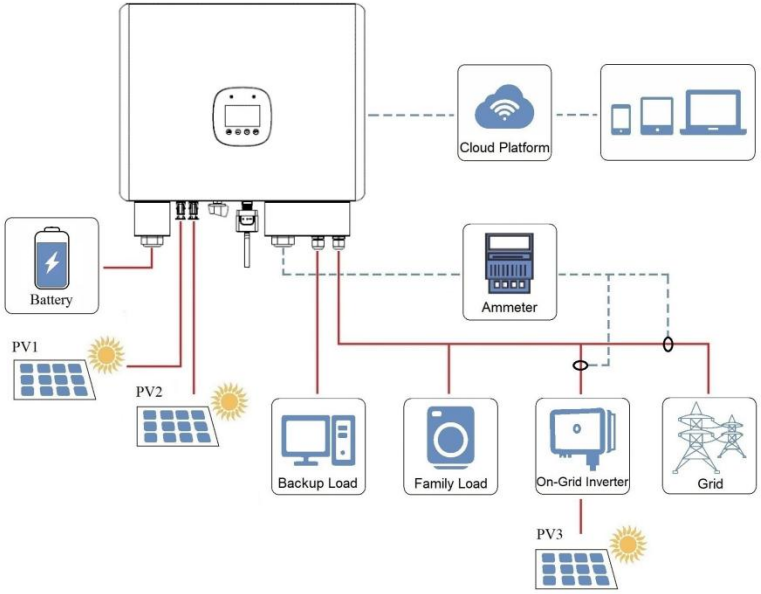


Fig. 3.2.1.5 AC coupling ammeter(optional)

3.3 Operating modes

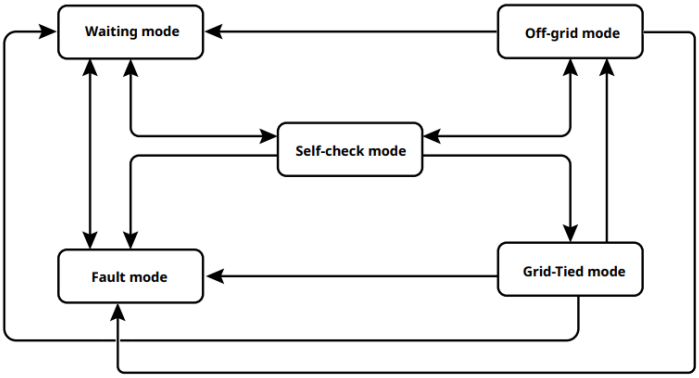
Name		Operation logic
Counter-current protection mode		After connection with the grid, PV does not supply the power to the grid in all operating modes;
Grid-Tied mode	Battery-first mode	(1) PV gives priority to supply the power for the backup load, followed by charging the battery, and supplies excess energy to the domestic loads and the grid; (2) If the power from the PV is less than the power of the backup load, the battery supplies the power for the backup load and the PV does not supply the power to the grid. (3) The battery is not charged by the grid.

	Household load priority mode	(1) PV gives priority to supply the power for the backup load and the domestic load, followed by charging the battery, and supplies excess energy to the domestic loads and the grid; (2) If the power from the PV is less than the power of the backup load and the domestic load, the battery supplies the power for the backup load and the domestic load, and the PV does not supply the power to the grid. (3) The battery is not charged by the grid.
Grid-Tied mode	Grid-first mode	(1) PV gives priority to supply the power for the backup load, followed by supplying the power for the domestic load and the grid , and charge the batter by excess energy ; (2) If the power from the PV is less than the power of the backup load, the battery supplies the power for the backup load and the PV does not supply the power to the grid. (3) The battery is not charged by the grid.
	Full power feed mode	(1) PV gives priority to supply the power for the backup load, followed by supplying the power for the domestic load and the grid, and charge the batter by excess energy ; (2) If the power from the PV is less than the maximum output power of the inverter, the battery supplies the power to make up the difference, so that the inverter outputs maximum power. (3) The battery is not charged by the grid.
	Emergency backup mode	(1) PV gives priority to charge the battery, followed by supplying the power for the backup load and supplies excess energy to the domestic loads and the grid; (2) If the power from the PV is not enough to the backup load, the grid supplies the power required for the backup load and the domestic load. (3) If the power from the PV is unavailable or extremely low, the grid charges the battery and supplies the power for the backup load and the domestic load;

	AC charging-post backup mode	(1) PV gives priority to charge the battery, followed by supplying the power for the load and supplies excess energy to the grid; (2) If the power from the PV is not enough to the load, the grid supplies the power required for the backup load and the domestic load. (3) If the power from the PV is unavailable or extremely low, the grid supplies the power for the backup load and the domestic load, but does not charge the battery.
	PV mode	The battery can be charged but not discharged (1) PV energy gives priority to the backup load and household load power supply, followed by battery charging, excess energy to the grid; (2) The PV energy is less than the backup load plus the household load, and the power grid supplements the backup load and the insufficient part of the household load; (3) The grid does not charge the battery.
	Forced off-grid mode	During the normal operation of the gird, force to operate in the off-grid mode
Off--grid mode (no grid)		(1) PV gives priority to supply the power for the backup load, followed by charging the battery. (2) If the power from the PV is unavailable or extremely low, PV and the battery supply the power for the load.
Intelligent micro-grid mode	Generator mode (No grid)	The generator can be started only in case of no mains or mains fault. (1) Enable the mode of charging the battery by generator: When the voltage and SOC of the battery are less than the set values, the generator will be started to charge the battery and also supply the power to the load; When the voltage and SOC of the battery are higher than the set values, the generator will be powered off, and then the battery will supply the power to the load. (2) Disable the mode of charging the battery by generator: When the voltage and SOC of the battery are less than the

		set value, the generator will be started to supply the power to the load, but not to charge the battery; When the voltage and SOC of the battery are higher than set value, the generator will be powered off, and then the battery will supply the power to the load. Note: The generator is connected to the grid interface of the inverter.
	AC coupling mode	The AC coupling function is enabled: When the external PV inverter is connected: (1) When external PV inverter energy is sufficient: • The energy of the external PV inverter gives priority to the load power supply, followed by the battery charging, and the excess energy is fed to the grid; (2) When external PV inverter energy is insufficient: • The energy of the external PV inverter gives priority to the load power supply, and the battery discharge supplements the insufficient load but does not feed the grid; • When external PV inverter energy and battery energy less than the load, the grid supplements the insufficient part of the load; (3) When the external PV inverter is disconnected, the machine runs in Household load mode. Note: This mode needs to be used with AC coupling meter.

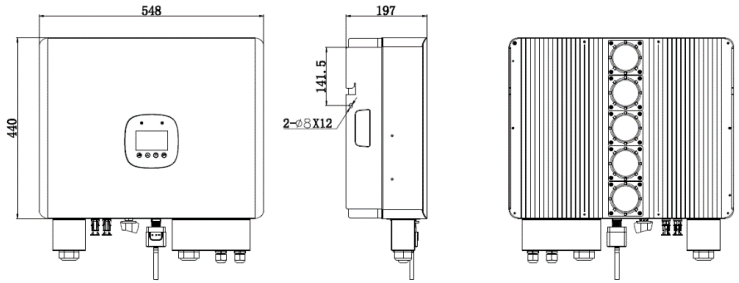
3.4 Operation status of inverter

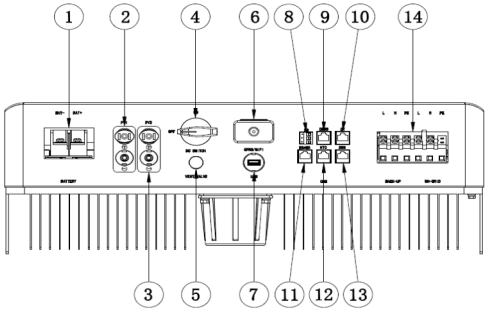


No.	Status	Description
1	Waiting mode Self-check mode	Waiting period after the inverter is turned • If the condition is met, the inverter enters the self-check mode. • In case of a fault, the inverter enters the fault mode.
2	Self-check mode	Continuous self-check, initialization and so on before the inverter is started • If the condition is met, the inverter enters and starts to operate in the grid-tied mode. • If the grid is not detected, the inverter enters and stars to operate in the off-grid mode; if it has no off-grid function, the inverter enters the waiting mode. • In case of failure in the self-check, the inverter enters the fault mode.
3	Grid-tied mode	Grid-tied operation of inverter • If the grid is not detected, the inverter enters the off-grid mode. • If a fault is detected, the inverter enters the fault mode. • If the grid fails to meet the grid-tied requirements and the off-grid output function is not activated, the inverter enters the waiting mode.
4	Off-grid mode	In case of grid fault, the inverter enters the off-grid mode, and continuously supplies the power for the load by BACK-UP port. • If a fault is detected, the inverter enters the fault mode. • If the grid fails to meet the grid-tied requirements and the off-grid output function is not activated, the inverter enters the waiting mode. • If the grid meets the grid-tied requirement and the off-grid output function is activated, the inverter enters the self-check mode.
5	Fault mode	If a fault is detected, the inverter enters the fault mode. After the fault is removed, it enters the waiting mode.

3.5 External dimensions

3.5.1 Appearance description

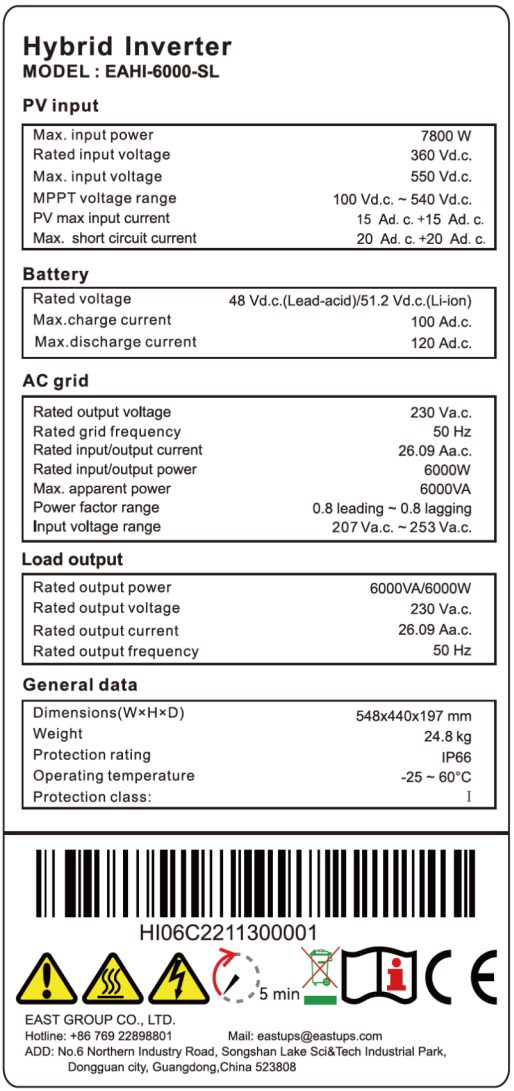




No	Identification	Purpose
1	Battery terminal	Connect the battery
2	Positive PV terminal	Connect the PV positive electrode
3	Negative PV terminal	Connect the PV negative electrode
4	PV input switch	Connect/ disconnect the PV switch
5	Vent valve	Discharge the growing air from housing
6	GPRS/WIFI	The inverter uploads the data/ connects with the upper computer by GPRS/WIFI
7	USB	USB upgrade interface
8	Dry contact input	Connect the user's dry contact circuit
9	Safety communication	Reserved according to Australia safety regulation
10	CT or kilo-watt-hour meter signal input	CT or kilo-watt-hour meter signal input provided externally on the inverter
11	RS485	RS485 communication with the upper computer
12	NTC temperature sampling	Reserved
13	BMS communication	Battery communication input
14	AC wiring terminal	Load and grid input

3.5.2 Nameplate description

A user may identify the inverter by the nameplate provided on the side of the inverter. The nameplate indicates inverter information, such as model, important parameters, certification marks and place of production, etc., and must not be damaged or covered.



Hybrid Inverter
MODEL : EAHI-6000-SL

PV input

Max. input power	7800 W
Rated input voltage	360 Vd.c.
Max. input voltage	550 Vd.c.
MPPT voltage range	100 Vd.c. ~ 540 Vd.c.
PV max input current	15 Ad. c. +15 Ad. c.
Max. short circuit current	20 Ad. c. +20 Ad. c.

Battery

Rated voltage	48 Vd.c.(Lead-acid)/51.2 Vd.c.(Li-ion)
Max.charge current	100 Ad.c.
Max.discharge current	120 Ad.c.

AC grid

Rated output voltage	230 Va.c.
Rated grid frequency	50 Hz
Rated input/output current	26.09 Aa.c.
Rated input/output power	6000W
Max. apparent power	6000VA
Power factor range	0.8 leading ~ 0.8 lagging
Input voltage range	207 Va.c. ~ 253 Va.c.

Load output

Rated output power	6000VA/6000W
Rated output voltage	230 Va.c.
Rated output current	26.09 Aa.c.
Rated output frequency	50 Hz

General data

Dimensions(W×H×D)	548x440x197 mm
Weight	24.8 kg
Protection rating	IP66
Operating temperature	-25 ~ 60°C
Protection class:	I

HI06C2211300001

5 min

EAST GROUP CO., LTD.
Hotline: +86 769 22898801 Mail: eastups@eastups.com
ADD: No.6 Northern Industry Road, Songshan Lake Sci&Tech Industrial Park,
Dongguan city, Guangdong,China 523808

Fig. 3.5.2 Nameplate information (subject to change without further notice and actual nameplate)

Chapter 4 Inverter Storage and Inspection

WARNING
If the inverter is not immediately used, please store the inverter as following: 1. Make sure that the external packing is not opened. 2. Make sure that the storage environment is clean and at suitable temperature (-25-60℃, non-condensing) 3. Make sure that the inverter is placed according to the stacking height and direction provided in the label attached on the packing. 4. Make sure that the inverter will not topple over during storage. 5. If the inverter is stored for long period, the inverter should be checked by the professional before use.

4.1 Arrival inspection

Upon reception, please inspect the following carefully.

1. Check the external packing for damage, deformation, hole, crack, and other signs showing inverter damage. If yes, do not open the packing, and contact the distributor.
2. Check the inverter model. If incorrect, do not open the packing, and contact the distributor.
3. Check the type, quantity and appearance of the inverter and its components and accessories. If damaged, contact the distributor.

4.2 Packing list

No	Name	Specification	Quantity	Picture
1	Inverter	Inverter	1	
2	Expansion pipes and bolts	M6*50mm, installed on wall	3	
3	Combination screw	Used to install the waterproof cover	10	
4	PV+ connector	VP-D4B-CHSM4 terminal male housing Including metal terminal	2	
5	PV- connector	VP-D4B-CHSF4 terminal male housing Including metal terminal	2	
6	Current transformer	CT, CTF16T-1k-50	1	

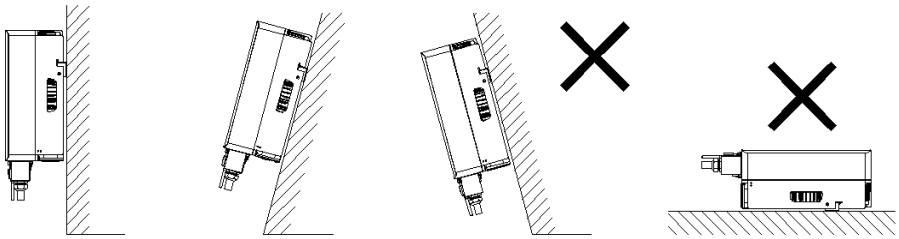
7	Intelligent kilo-watt-hour meter	DDS3366D/DDS3366D-J（Distribution randomly）,English, neutral （optional, alternative with CT）	1	
8	kilowatt-hour meter rail	Used to fix the kilowatt-hour meter (optional, supporting accessories for kilowatt-hour meter)	1	
9	Communication cable	Single naked cope with RJ45 registered jack on one end, and two pins (pin 4, pin 5), 3m long, used to connect Inverter supply with the kilo-watt-hour meter (optional, supporting accessories for kilowatt-hour meter)	1	
10	Earth conductor screws	Cross outer hexagon double pad screws M6*12mm	1	
11	Earth conductor end soldering lug	RNB5.5-6,48A,Φ=6.5mm,5.6×23mm	1	
12	EPS Grid wiring terminal	Tube type pre-insulated end E6012(10AWG-6mm2) red	6	
13	Copper battery wiring terminal	Copper tube terminal,SC25-6	2	
14	User manual	Inverter English, neutral	1	
15	WiFi data collector	LSW-5A7153，5-12Vdc	1	
16	Mounting plate	Housing accessory used to installed wall-mounted inverter	1	
17	Mounting plate bolt	Cross outer hexagon double pad screws, M6×20	2	
18	Waterproof cover for battery	Housing accessory	1	
19	Waterproof cover for communication and AC	Housing accessory	1	

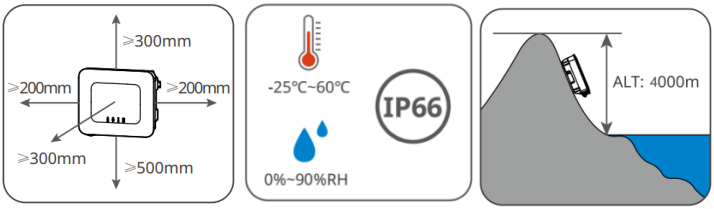
Chapter 5 Installation

5.1 Preparation before installation

Installation environment requirements

- The ambient temperature should be between -25℃ and +60℃, and the relative humidity should be between 0% and 90% (no condensation).
- The inverter can be installed indoors or outdoors dry and well ventilated environment without excessive dust, but not in direct sunlight or near heating equipment.
- The inverter may generate noise (25dB or less) during operation. Please install the inverter far away from the rest area.
- The inverter should be installed on firm bearing surface, and installation location and method must fit with the weight and dimension of the inverter.
- The inverter should be installed vertically or at not more than 15° backward tilt, and must not be installed at frontward tilt, or diagonally and horizontally.
- During installation of the inverter, the display panel should be aligned with line of sight to facilitate the operation.
- The wiring terminals should be protected by the waterproof cover and tightened.
- The inverter should be installed at less than 4000m altitude.
- The inverter should be installed away from high-intensity magnetic field to avoid electromagnetic interference. If there is a radio station or less than 30MHz wireless telecom equipment nearby the installation site, the inverter should be installed as following:
  ① Add a ferrite core with multi-turn winding or low pass EMI filter for the DC input cable or AC output cable of the inverter.
  ② The inverter should be more than 30m from the wireless electromagnetic interference equipment.





Requirements for installation tools

Type	Tools and Descriptions
installation	Electric drill with M6 bit; Spirit level; Marker; Ruler Hammer; Screwdriver (Phillips screwdriver PH1, Allen screwdriver M2); Diagonal pliers; Stripping pliers Utility knife; Crimping pliers; Network cable crimping pliers; Open-end wrench S=7mm
safety	Safety gloves; Dust mask; Goggles

5.2 Inverter installation

5.2.1 Inverter handling

NOTE
• Transport, handling, installation and other operations of the inverter should meet the national and local laws and regulations and relevant standards of the installation location. • Before installation, move the inverter to the installation location, avoid personnel injury or inverter damage and pay attention to the following during handling: 1. Allocate the personnel according to the weight of the inverter to avoid the injury caused by more inverter weight than the carrying capacity of the personnel. 2. Please wear safety gloves to avoid injury. 3. Ensure that the inverter is balanced to avoid falling during handling.

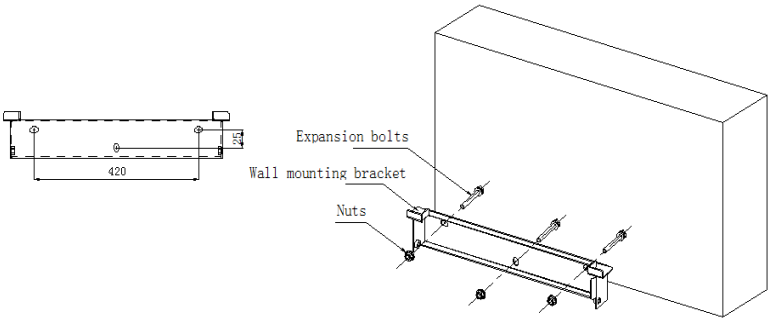
5.2.2 Inverter installation

NOTE
• During drilling, drill the hole away from the pipe and cables installed in the wall to avoid danger. • During drilling, wear safety goggles and a dust mask to prevent the dust from entering the respiratory tract or the eyes. • Make sure to firmly install the inverter to avoid personnel injury caused by falling.

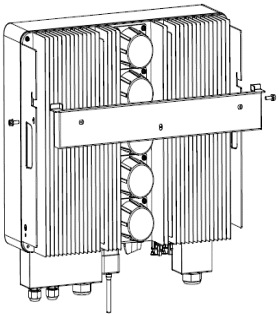
Installation procedure:

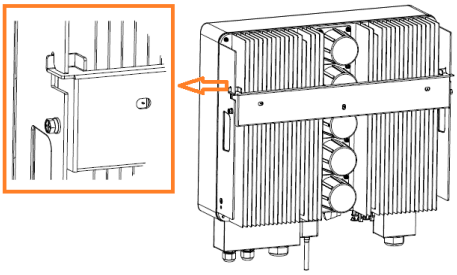
① Identify the hole location on the wall according to the hole on the mounting plate.

② Drill the mounting hole at the identified location by an electric drill according to the specified of the expansion bolt, fix the mounting plate on the wall by the expansion bolts, and tighten the nut by at least 30Nm torque. Recommend M6×50 expansion bolts.



③ Vertically install the inverter on the mounting plate by its hanging support, and fix the mounting plate and the hanging support by M5 bolts respectively on the left and right sides of the mounting plate.

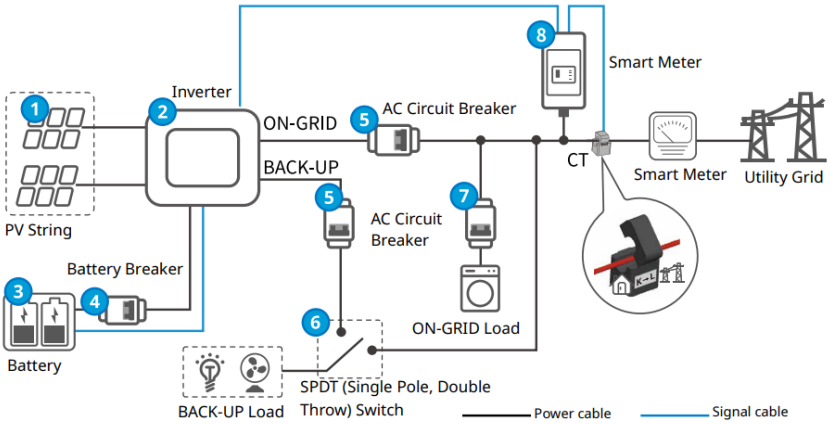




Chapter 6 Electrical Connection

NOTE

1. Before installation and use of the inverter, a conductor with lug (4-6 mm^2) must be used for special protective earthing.
2. Load capacity of BACK-UP output end of inverter is as follows:
   (1) Inductive load (such as air conditioning, washing machine, motor, etc.): 6KVA maximum total power of inductive load.
   (2) Capacitive load (such as computer, switching power supply, etc.): 6KVA maximum total power of capacitive load.
3. It is required for the above load capacity to connect the system with the grid or provide the battery with enough capacity. If the power is supplied only by PV, largest single off-grid load is generally less than 2KW.



No.	Component	Description
1	PV string	The PV string consists of PV component string
2	Inverter	Support EAHI-3000~6000-SL series inverter
3	Battery	Select the battery according to the list of inverter and applicable batteries
4	Battery Breaker	The user is recommended to buy 2P DC switch as following: • EAHI-3000-SL: rated current ≥100A, rated voltage ≥60V. • EAHI-3600-SL: rated current ≥100A, rated voltage ≥60V. • EAHI-5000-SL: rated current ≥125A, rated voltage ≥60V. • EAHI-6000-SL: rated current ≥150A, rated voltage ≥60V.

5	AC circuit breaker	• For same model, the circuit breaker of the BACK-UP load should have same specification with the circuit breaker of ON-GRID load. The user is recommended to buy the AC switch.
6	Single-pole double-throw switch	• Ensure that BACK-UP port load continuously operates during stop of the inverter for maintenance. It is recommended to install the single-pole double-throw switch • Specification of AC circuit breaker and single-pole double-throw switch: • EAHI-3000-SL: rated current ≥20A, rated voltage ≥230V • EAHI-3600-SL: rated current ≥25A, rated voltage ≥230V • EAHI-5000-SL: rated current ≥30A, rated voltage ≥230V • EAHI-6000-SL: rated current ≥35A, rated voltage ≥230V
7	AC circuit breaker	Determine the specification according to actual load
8	Smart Meter	Supplied with the inverter, or purchased from the inverter manufacturer, Yada DDS3366D/DDS3366D-J is recommended

Recommended cable

NOTE

When the external cable is selected, consideration should be given to cable current, system overload capacity and ambient temperature. See the following table for the recommended cable. The engineer should select the cable according to local relevant standard and the following table. The cable is 2-10m long generally. Over-long cable may cause deviation of the voltage from its rated value. The cable section area may be increased accordingly.

Category	Model	Conductor section area
Grid/ AC Input (L, N, PE)	EAHI-3000-SL	3-4mm^2
	EAHI-3600-SL	3-4mm^2
	EAHI-5000-SL	5-6 mm^2
	EAHI-6000-SL	5-6 mm^2
BACK-UP/Load Output (L, N, PE)	EAHI-3000-SL	3-4mm^2
	EAHI-3600-SL	3-4mm^2
	EAHI-5000-SL	5-6 mm^2
	EAHI-6000-SL	5-6 mm^2
PV1/PV2/PV Input (+, -)	EAHI-3000-SL	3-4mm^2
	EAHI-3600-SL	3-4mm^2
	EAHI-5000-SL	3-4mm^2
	EAHI-6000-SL	3-4mm^2

BAT (+, -)	EAHI-3000-SL	10-15 mm^2
	EAHI-3600-SL	10-15 mm^2
	EAHI-5000-SL	25-35 mm^2
	EAHI-6000-SL	25-35 mm^2

Table 6.2 Recommended cable

6.1 Connection of battery end

DANGER

- The batteries used with the inverters must be approved by the inverter manufacturer. The list of approved battery can be obtained from our official website.
- A battery short circuit may cause personal injury. The transient high current caused by short circuit causes release of a large amount of energy, which may cause a fire.
- Before connection of the battery cable, make sure that the power supply has been disconnected from the inverter and the battery, and the front and rear switches have been disconnected.
- The positive and negative electrodes of the battery output must be correctly connected with the inverter, otherwise the transient high current caused by short circuit causes release of a large amount of energy, which may cause a fire.
- During the operation of the inverter, do not connect or disconnect the battery cable. Improper operation may cause the electric shock.
- Do not connect a single battery with multiple inverters, otherwise it is possible to damage the inverters.
- Do not connect the load between the inverter and the battery.
- During connection of the battery cable, use an insulating tool to prevent accidental electric shock or battery short circuit.
- Make sure that the open-circuit voltage of the battery is within the allowable range of the inverter.
- Install one DC switch between the inverter and the battery.

NOTE

1. Install a DC circuit breaker between the inverter and the battery before connecting the lead-acid battery. If lithium batteries are used, turn them off first.
2. Before the battery is connected with the inverter for first time, check the battery for the battery type acceptable to the inverter and its charging voltage, charging current, end-off voltage and other important parameters, which affect the battery life.

Procedure：

1. Check that battery polarity and voltage are normal and that the battery voltage is within the allowable range specified in the inverter specifications (42V-58V).
2. The battery terminals are included in the package. Strip off 5mm insulation layer of the battery cable and route it through the waterproof cover and waterproof terminal as shown in Fig. 6.1.1:

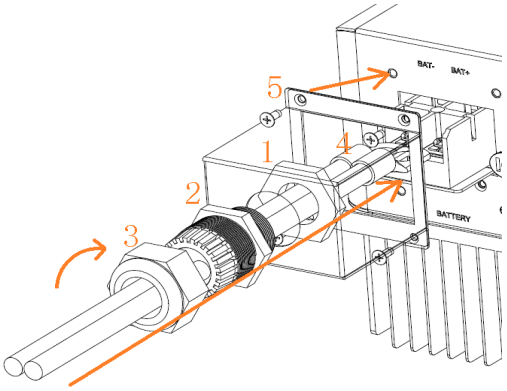


Fig. 6.1.1

3. Fix the waterproof terminal on the waterproof cover. In Fig.6.1.1, route 2 through the waterproof cover, screw with 1, and reinstall the waterproof cap 3 onto 2.
4. Connect the battery cable section from which the insulation layer is stripped with the battery terminal (accessory), as shown in Fig. 6.1.2, route the cable through the cable inlet at the terminal tail, and bind up the terminal tail by an insulated rubber tape or a thermoplastics pipe after tightening. During installation, properly complete insulation treatment, otherwise it is possible to cause the battery short circuit.

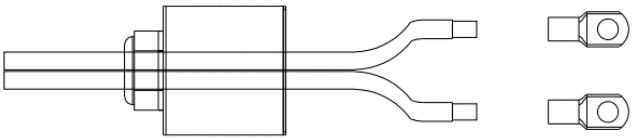


Fig. 6.1.2

5. Fix the battery terminals 4 shown in Fig. 6.1.2 onto the battery terminal on the housing by the screws (provided with the housing). Note that positive and negative electrodes are not reversed. Fix the waterproof cover 5 shown in Fig. 6.1.1 to the housing, and tighten the waterproof cover 3 shown in Fig. 6.1.1 to prevent water and dust.

6.2 PV end connection

DANGER
•Do not connect a single PV string with multiple inverters, otherwise it is possible to damage the inverters. • Before connection of the PV string with the inverter, confirm the following information, otherwise, it may cause permanent damage to the inverter. In serious situation, it may cause fire resulting in personnel injury and property loss. 1. Make that the maximum short-circuit current and maximum input voltage of each MPPT are within the allowable range of the inverter. 2. Make sure that that the positive electrode of the PV string is connected to the PV+ of the inverter, and the negative electrode of the PV string is connected to the PV- of the inverter.

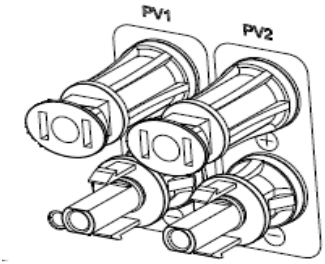
Procedure

① Disconnect all circuit breakers.

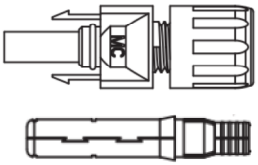
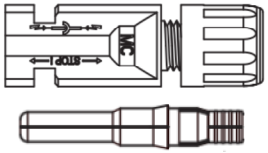
② Check the positive and negative polarity of the photovoltaic array. Make sure that the maximum operating voltage of EAHI-6000-SL inverter does not exceed 540V (the number of components must be determined based on the local minimum temperature, and the maximum open-circuit voltage of the components must not exceed the maximum allowable operating voltage of the inverter, 540V).

③ Identify the polarity of the PV input end of the inverter.

Polarity of PV input end of inverter:

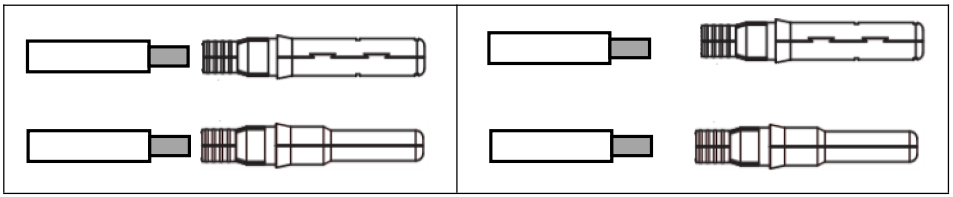


Input end polarity of external input cable

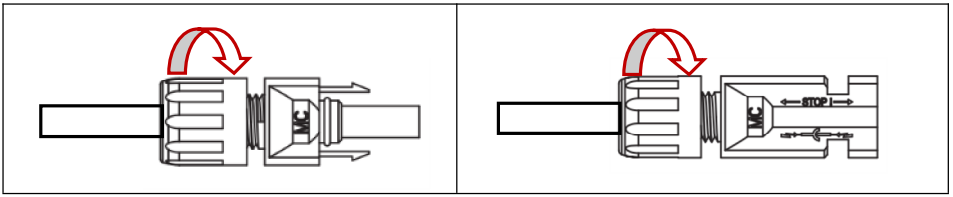
Positive (+) input terminal and terminal housing	Negative (-) input terminal and terminal housing
	

Wiring of DC side

① Strip off 8mm insulation layer of the DC cable to expose the copper conductor. Insert the copper conductor into the metal core of the connector and tighten it with the press pliers (as shown below).



② Remove the terminal cover and route the cable through the terminal cover. Insert the die into the wiring slot until you hear the sound of connection in place. Tighten the terminal cover (as shown in the following figure).



③ Check the cable connection polarity of the photovoltaic array with a voltmeter with more than 1000V DC voltage measurement range to make sure that the operating voltage does not exceed the specification.

④ Disconnect the circuit breaker on the DC side, and separately connect the photovoltaic input cable to the inverter.

6.3 AC end connection

WARNING
• Before connecting to the grid, an AC circuit breaker should be installed between the inverter and the grid and the BACK-UP. • The AC cable matches the L, N, and PE ports on the AC terminal during wiring. If the cable is incorrectly connected, the inverter may be damaged. • Make sure that the wire core is fully connected to the terminal hole without exposure. • Make sure that the cables are securely connected; otherwise, the inverter may be damaged due to the over-temperature of the wiring terminals. • The inverter is integrated with a residual current monitoring unit (RCMU). When the inverter detects greater leakage current than the allowed value, the inverter will quickly disconnect from the grid. • The ON-GRID and BACK-UP AC ports of the inverter have built-in relays. When the inverter is in off-grid mode, the built-in ON-GRID relay is in the disconnected state; When the inverter is in grid-tied mode, the built-in ON-GRID relay is in closed state. • After the inverter is powered on, there is current at the BACK-UP AC port. If it is required to maintain the BACK-UP load, power off the inverter; otherwise, electric shocks may be caused.

6.3.1 Grid end connection

Procedure:

① Make sure that the AC circuit breaker has been disconnected.

② According to the wire diameter in Table 6.2, select the L (red/brown), N (black/blue) and PE (yellow-green) cables with appropriate wire diameter, strip off 5 mm insulation layer and route the cables through the waterproof cover and waterproof terminal as shown in Fig. 6.3.1.1:

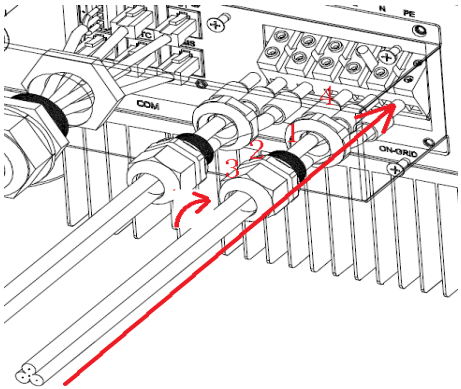


Fig. 6.3.1.1

③ Fix the waterproof terminal on the waterproof cover. In Fig.6.3.1.1, route 2 through the waterproof cover and tighten 1.

④ Connect the cable section from which the insulation layer is stripped to the terminal (freely provided), as shown in Fig. 6.3.1.2, and press it tightly.

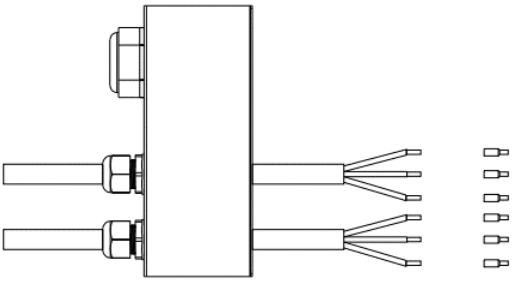


Fig. 6.3.1.2

⑤ Fix the terminals in Fig. 6.3.1.2 to the EPS terminal on the housing in Fig. 5.4.1 by the screws (freely provided) (three AC terminals at right side), and L, N, PE correspond to L, N, PE on the housing.

6.3.2 Load end connection

Procedure:

① According to the wire diameter in Table 6.2, select the L (red/brown), N (black/blue) and PE (yellow-green) cables with appropriate wire diameter, strip off 5 mm insulation layer and route the cables through the waterproof cover and waterproof terminal as shown in Fig. 6.3.2.1.

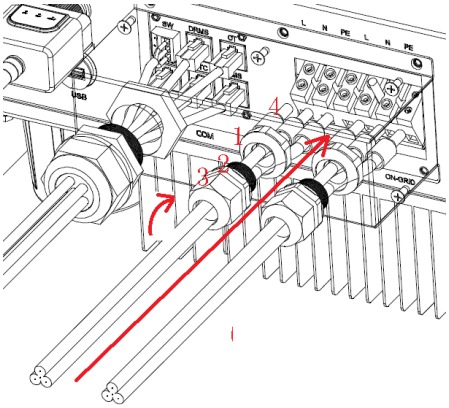


Fig. 6.3.2.1

② Fix the waterproof terminal on the waterproof cover. In Fig. 6.3.2.1, route 2 through the waterproof cover and tighten 1.

③ Connect the cable section from which the insulation layer is stripped to the terminal (freely provided), as shown in Fig. 6.3.2.2, and press it tightly.

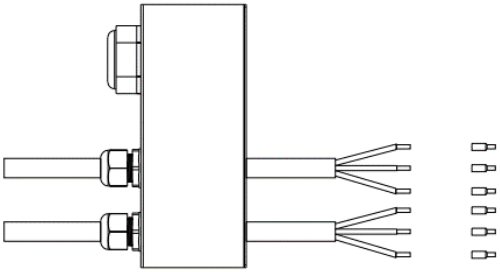


Fig. 6.3.2.2

④ Fix the terminals in Fig. 6.3.2.2 to the EPS terminal on the housing in Fig. 6.3.2.1 by the screws (freely provided) (three AC terminals at left side), and L, N, PE correspond to L, N, PE on the housing.

6.4 Communication end connection

The inverter is equipped with USB, RS485 and BMS interfaces, as well as a WIFI/GPRS remote monitoring communication interface to facilitate data uploading to the cloud for data monitoring.

6.4.1 GPRS/WIFI remote monitoring module

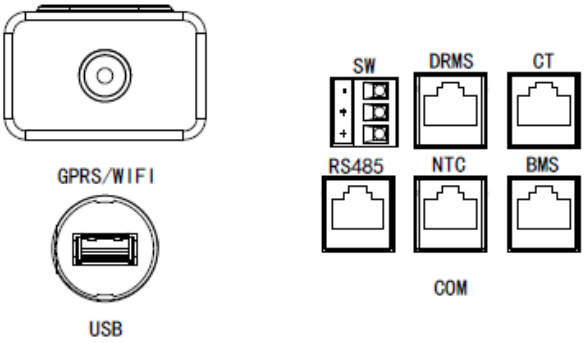


Fig. 6.4.1

At the same time, to use this port, just insert the GPRS/WIFI module (optional) into this port and tighten the fastening nut. (See WIFI manual for details)

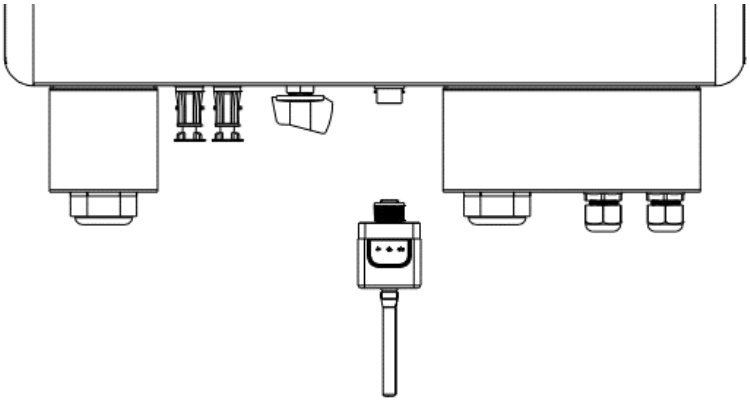
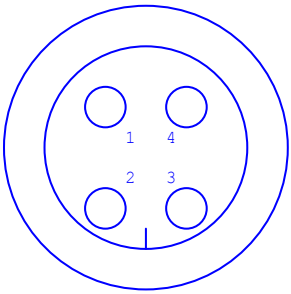


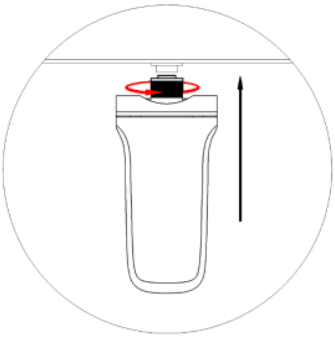
Fig. 6.4.2

6.4.2 Module interface definition



Pin	Description	Network name	Type	Explain
1	Power supply	VCC	POWER	External power supply
2	Electrically	GND	GND	GND
3	Data communication	A	I/O	RS485_Aline
4	Data communication	B	I/O	RS485_Bline

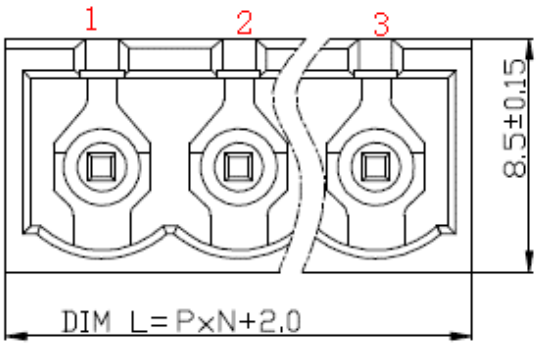
To use this port, just insert the GPRS/WIFI module (optional) along the connector guide slot and tighten the fastening cap counterclockwise.



After the collector is installed, please download the APP for registration and binding (see WiFi manual for details).

6.4.3 SW

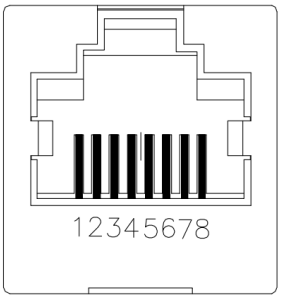
Connection of user's dry contact



Pin	1	2	3
Definition	NC	C	NO

6.4.4 DRMS

use of safety regulation (only for Australia users)



Pin	1	2	3	4	5	6	7	8
Definition	DRM1/5	DRM2/6	DRM3/7	DRM4/8	DRM_REF (R)	DRM_COM (C)	NC	NC

The inverter provides a terminal block for connecting to a demand response enabling device (DRED). The DRED asserts demand response modes (DRMS). The inverter detects and initiates a response to all supported demand response commands within 2s.The following table lists the DRMS supported by the inverter.

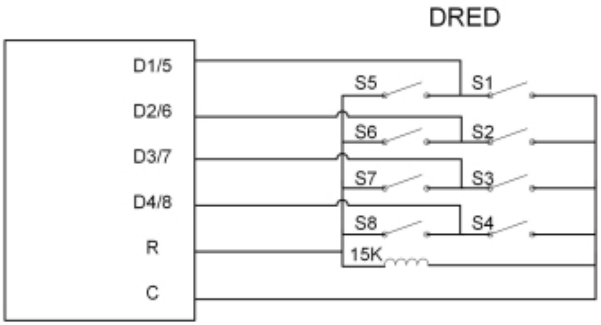
Mode	Explanation
DRM0	The inverter is in the state of “Turn off”.
DRM1	The import power from the grid is 0.
DRM2	The import power from the grid is no more than 50 % of the rated power.
DRM3	The import power from the grid is no more than 75 % of the rated power.
DRM4	The import power from the grid is 100 % of the rated power, but subject to the constraints from other active DRMS.
DRM5	The feed-in power to the grid is 0.
DRM6	The feed-in power to the grid is no more than 50 % of the rated power.
DRM7	The feed-in power to the grid is no more than 75 % of the rated power.
DRM8	The feed-in power to the grid is 100 % of the rated power, but subject to the constraints from other active DRMS.

The DRED may assert more than one DRM at a time. The following shows the priority order in response to multiple DRMS.

Multiple Modes	Priority Order
DRM1…DRM4	DRM1 > DRM2 > DRM3 > DRM4
DRM5…DRM8	DRM5 > DRM6 > DRM7 > DRM8

DRM Connection: DRM and Ripple Control support only one function at the same time.

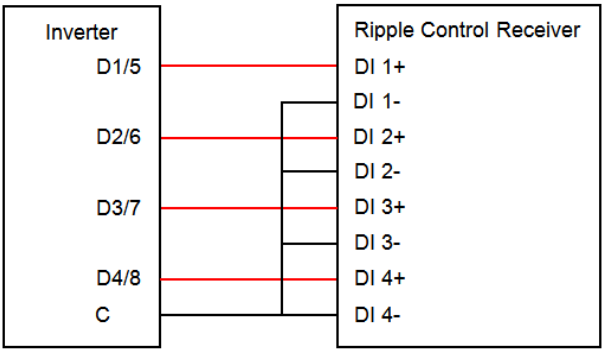
In Australia and New Zealand, the inverter supports the demand response modes as specified in the standard AS/NZS 4777.The following figure shows the wiring between the inverter



Mode	Asserted by Shorting Terminals on Inverter	Switch Operation on External DRED
DRM0	R & C	Close S1 and S5
DRM1	D1/5&C	Close S1
DRM2	D2/6&C	Close S2
DRM3	D3/7&C	Close S3
DRM4	D4/8&C	Close S4
DRM5	D1/5&R	Close S5

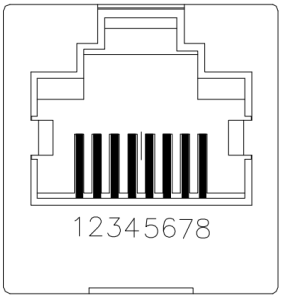
DRM6	D2/6&R	Close S6
DRM7	D3/7&R	Close S7
DRM8	D4/8&R	Close S8

Ripple Control: In Germany, the grid company uses the Ripple Control Receiver to convert the grid dispatching signal and send it as a dry contact signal. Wiring of the ripple control receiver dry contact cables is shown in the figure below.



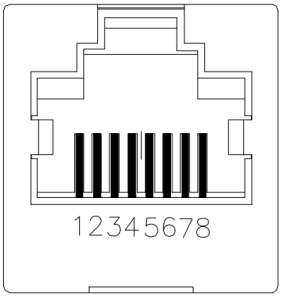
Boot/Shutdown: Tap Boot/Shutdown to send the boot/shutdown instruction to the inverter. For Australia and New Zealand, when the DRM state is DRM0, the "Boot" option will be prohibited.
Date Setting/Time Setting: The correct system time is very important. Wrong system time will directly affect the data logging and power generation value. The clock is in 24-hour format.
Software Version: Version information of the current firmware.

6.4.5 RS485: Used to connect to the upper computer. (Baud rate is set to 9600 in the communication setting column on the screen.). Connect the RS485 cable A and cable B to pin 5 and pin 4 of the RJ45 registered jack respectively, and the registered jack to the RS485 port on the housing.



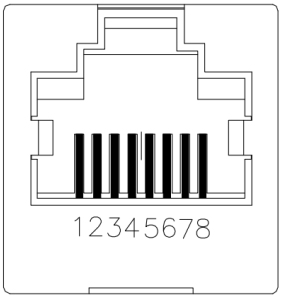
Pin	1	2	3	4	5	6	7	8
Definition	RS3_485-	RS3_485-	RS3_485-	RS3_485-	RS3_485+	RS3_485+	RS3_485+	RS3_485+

6.4.6 NTC: lead-acid battery temperature sampling (reserved port)



Pin	1	2	3	4	5	6	7	8
Definition	GND-S	GND-S	GND-S	GND-S	NTC_BAT	NTC_BAT	NTC_BAT	NTC_BAT

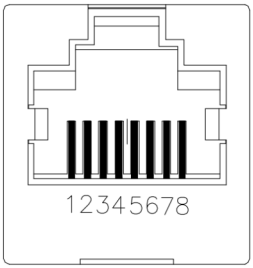
6.4.7 CT: communication port for external CT and kilo-watt-hour (connect CT white wire to pin 6 (or 7, 8) of the RJ45 registered jack, CT black wire to the pin 1 (or 2, 3)), (connect the communication + of the kilo-watt-hour mete to the pin 5 of the RJ45, communication - to the pin 4 of the RJ45).



Pin	1	2	3	4	5	6	7	8
Definition	EXT-CT_N	EXT-CT_N	EXT-CT_N	CT_RS485-	CT_RS485+	EXT-CT_P	EXT-CT_P	EXT-CT_P

6.4.6 BMS

Lithium battery communication port (connect CANH+, CANL-, and GND-S of the registered jack of the lithium battery communication port to CANH+, CANL-, and GND-S of the crystal interface on the housing. The default communication mode for BMS is RS485. Connect A of RS485 for battery communication to the pin 5 of the RJ45 and B of RS485 to the pin 4 of the RJ45 at the inverter end.



Pin	1	2	3	4	5	6	7	8
Definition	CANL-	CANH+	NC	CANL-	CANH+	NC	GND-S	Reserved

Procedure

① Select the appropriate communication cable and pass it through the waterproof cover and waterproof terminal, as shown in 6.4

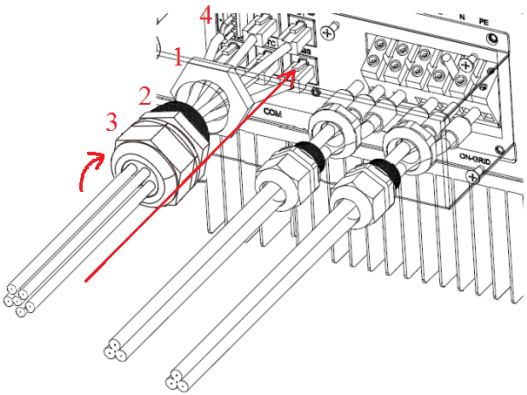


Fig. 6.4

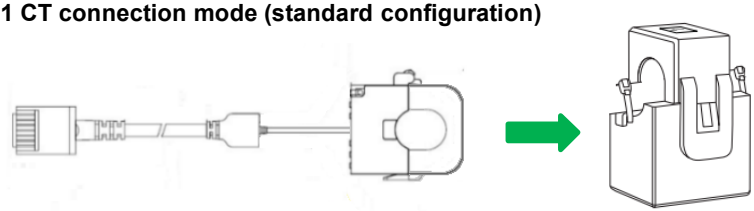
② Fix the waterproof terminal on the waterproof cover. In Fig. 6.3.2.1, route 2 through the waterproof cover and tighten 1.

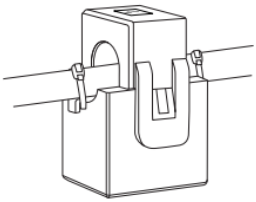
③ Insert the RJ45 connector into the corresponding COM port.

6.5 Connection of CT/kilowatt-hour meter

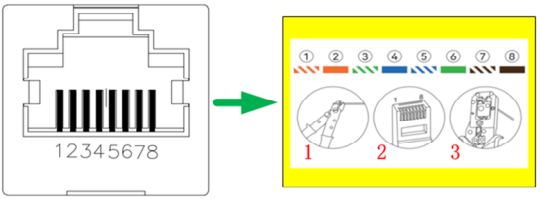
Tools: screwdriver (small cross), network cable, network cable pliers, stripping pliers, tape measure

6.5.1 CT connection mode (standard configuration)





Pass the current wire through the current transformer and fix it with a cable tie.



CT/METER

Connect the registered jack in the CT to the CT/METER port on the side of the housing

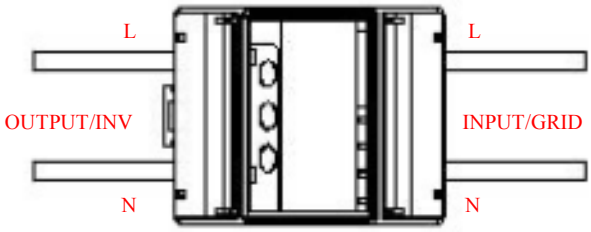
Description of CT/METER pins

Pin	1	2	3	4	5	6	7	8
Definition	EXT-CT_N	EXT-CT_N	EXT-CT_N	CT_RS485-	CT_RS485+	EXT-CT_P	EXT-CT_P	EXT-CT_P

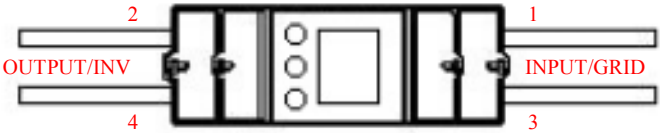
NOTE

Please note that the CT orientation must be correct, otherwise the system will not work properly.

6.5.2 Installation and connection of kilowatt-hour meter(optional)



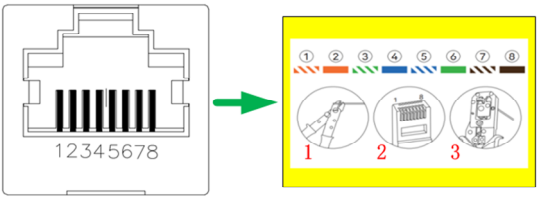
DDS3366D



DDS3366D-J

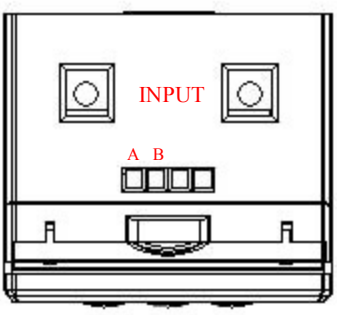
Connect the L and N cable of the power grid circuit breaker side to the "INPUT"/" LN "port of the DDS3366D meter or to the port 1 (phase line input) and the port 3 (neutral line input) of the DDS3366D-1 meter. (After confirming all the operation above, it is available to switch on the power grid circuit breaker to power up the electricity meter and configure the meter refer to 6.5.3 Electricity Meter Configuration. After the meter is configured, disconnect the circuit

breaker on the power grid side, continue other further operation.) Double check whether the L/N cable of the network cable is securely connected.

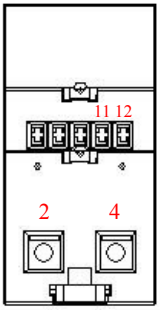


CT/METER

As shown in the picture, use a cable stripper to strip off the network cable, pass the network cable through the components as shown in the figure, fit and press the network cable into the RJ45 connector according to the cable color order of 1 to 8. For the other end of the network cable, strip off the insulation layer of line 5 (blue and white) and line 4 (blue) by10 mm. Connect line 4 (blue and white) to the RS485B/12 port of the meter, and line 5 (blue and white) to the RS485A/11 port of the meter.



DDS3366D



DDS3366D-J

6.5.3 Electricity Meter Configuration

DDS3366D	DDS3366D-J
Press “SET” on the electricity meter to enter the setting interface. Ensure the parameters are set correctly. Enter the parameter setting interface, Press “▲” and “▼” to adjust parameters and “set” to save these parameters. After setting all parameters, press “set” to enter the setting interface.	Press "SET" button on the electric meter to enter the setting interface to adjust the parameter, press "▲""▼"button on the electricity meter to adjust and switch; Press "SET" again to confirm. Switch to "rEtUrn "and press "SET" to return to main interface.

Password Interface	
Press “SET” to enter the password input interface. Press “▲” to adjust the value and “▼” to change the digit. Set the PSD password to 3366. Press “SET” to enter the “HA” setting interface.	Press the "SET "button to enter the password setting interface. Press "A "to adjust the number size, and press "V" to switch. Number, set the PSD password to 3366. Press SET to enter the parameter setting interface.
HIGHNO.6：HA210510 LOWNO.6：LA 300002	Modbus-RTU address setting：002
Press "▲" to adjust the number size, press "▼" to switch the number, and set HA to 210510 . Press “SET” to save the Settings and the “LA” Settings screen is displayed. Press "▲" to adjust the number size, press "▼" to switch the number, set LA to 300002. Press “SET” to save the Settings and the Baud Rate setting interface is displayed.	Press "▲、▼" in the parameter interface to switch to"n.Adr". Press "SET" to enter the Modbus-RTU address setting. Press "▲" to adjust the number size, press "▼" to switch the number, and set the communication address to "002". Press "SET" to return to the parameter setting interface.
Communication baud rate and check bit Settings: 9600 n	
Press "▲" to adjust the numbers and letters. Press "▼" to switch positions, set the baud rate to 9600, and the check bit to n. Press "SET" to save the Settings and the "PT" setting interface is displayed.	Press "▲, ▼" in the parameter interface to switch to "bAUd" Press "SET" to enter the baud rate and parity bit Settings. Press "▲, ▼" to switch, set the baud rate and check bit to "9600 n". Press "SET" to return to the parameter setting interface.
Voltage ratio setting：000001	
Press “▲” to adjust the value and “▼” to change the digit. Set it to PT 000001. Press “SET” to enter the “CT” setting interface.	Press "▲, ▼" in the parameter interface to switch to"PT". Press "SET" to enter the voltage ratio setting. Press "▲" to adjust the number size, press "▼" to switch the number, and set the voltage

	ratio to "000001". Press "SET" to return to the parameter setting interface.
Current ratio setting：000001	
Press “▲” to adjust the value and “▼” to change the digit. Set it to CT 000001. Press “SET” to save the settings.	Press "▲, ▼" in the parameter interface to switch to"CT". Press "SET" to enter the current ratio setting. Press "▲" to adjust the number size, press "▼" to switch the number, and set the current ratio to "000001". Press "SET" to return to the parameter setting interface. Press ▲ and ▼ on the parameter screen to switch to "rEtUrn" and press" SET "to return to the main interface.

NOTE

When the meter is disconnected from the power supply and stops working for more than one month, you need to confirm the meter parameters again.

In the process of use, you can view the current voltage, current frequency, and other grid information on the grid side of the system through the meter. When viewing, press the "▲" and "▼" buttons of the meter, you can switch the display interface of the meter. For details about the display interface, see the meter instruction manual.

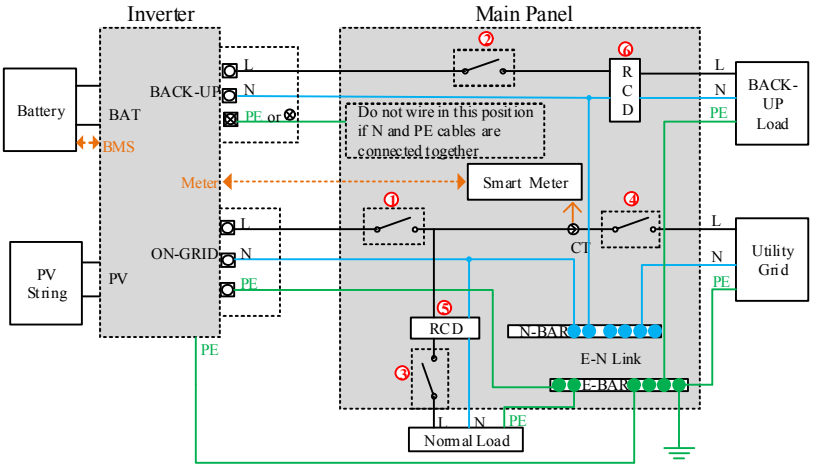
6.6 Circuit Diagram

NOTE

- N and PE wiring via ON-GRID and BACK-UP ports of the inverter are different based on the regulation requirements of different regions. Refer to the specific requirements of local regulations.
- There are built-in relays inside of the inverter’s ON-GRID and BACK-UP AC ports. When the inverter is in the off-gird mode, the built-in ON-GRID relay is open; while when the inverter is in grid-tied mode, it is closed.
- When the inverter is powered on, the BACK-UP AC port is charged. Power off the inverter first if maintenance is required for the loads connected with BACK-UP ports. Otherwise, it may cause electric shock.

6.5.1 N and PE cables are connected together in the Main Panel for wiring.

For Australia, New Zealand and South Africa, the neutral cable of ON-GRID side and BACK-UP side must be connected together. Otherwise BACK-UP function will not work.



NO	Description
①	≤63A/230V/400V AC breaker
②	32A/230V/400V AC breaker
③	Depends on loads
④	Depends on household loads and inverter capacity
⑤⑥	30mA RCD (Comply with local regulation)

Note1: If the battery is integrated with a readily accessible internal DC breaker, no additional DC breaker is required.

Note2: The recommended values in the table are for reference only. The actual values must comply with local standard and actual conditions.

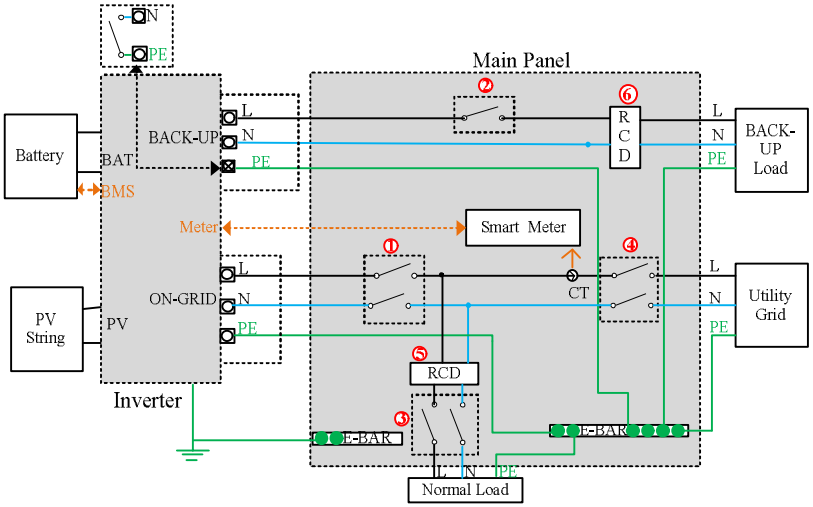
Note 3: The rated current of breaker ①is suggested to lower than that of breaker ④.

Note 4: If the rated current of on-site power cables are lower than those recommended above, the breakers specification should be considered to match the power cables in first priority.

Note 5: The AC port takes power from the grid and is set according to the grid circuit breaker.

6.5.2 N and PE cables in the Main Panel shall be wired separately.

For other countries, the following diagram is an example for grid systems without special requirement on wiring connection.



NO	Description
①	≤63A/230V/400V AC breaker
②	32A/230V/400V AC breaker
③	Depends on loads
④	Depends on household loads and inverter capacity
⑤	300mA RCD (Recommended)
⑥	30mA RCD (Recommended)

Note 1: If the battery is integrated with a readily accessible internal DC breaker, no additional DC breaker is required.

Note 2: The recommended values in the table are for reference only. The actual values must comply with local standard and actual conditions.

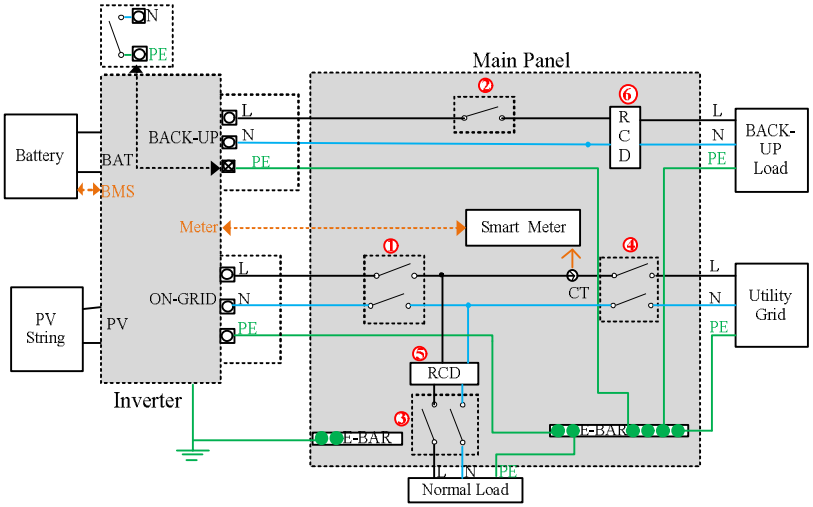
Note 3: The rated current of breaker ① is suggested to lower than that of breaker ④.

Note 4: If the rated current of on-site power cables are lower than those recommended above, the breakers specification should be considered to match the power cables in first priority.

Note 5: The AC port takes power from the grid and is set according to the grid circuit breaker.

6.5.3 For TT system

In the TT system, the following diagram is an example for grid systems without special requirement on wiring connection.



NO	Description
①	≤63A/230V/400V AC breaker
②	32A/230V/400V AC breaker
③	Depends on loads
④	Depends on household loads and inverter capacity
⑤	300mA RCD (Recommended)
⑥	30mA RCD (Recommended)

Note 1: If the battery is integrated with a readily accessible internal DC breaker, no additional DC breaker is required.

Note 2: The recommended values in the table are for reference only. The actual values must comply with local standard and actual conditions.

Note 3: The rated current of breaker ① is suggested to lower than that of breaker ④.

Note 4: If the rated current of on-site power cables are lower than those recommended above, the breakers specification should be considered to match the power cables in first priority.

Note 5: The AC port takes power from the grid and is set according to the grid circuit breaker.

WARNING

AC circuit breakers should be installed on the output side of the inverter and the grid side to ensure safe disconnection from the grid.

- Determine whether an AC circuit breaker with greater over current capacity is required based on actual conditions.
- Do not connect any local load between the inverter and the AC circuit breaker.
- Multiple inverters cannot share one AC circuit breaker.

Residual Current Monitoring Device

With an integrated universal current-sensitive residual current monitoring unit included, the inverter will disconnect immediately from the mains power once a fault current with a value exceeding the limit is detected.

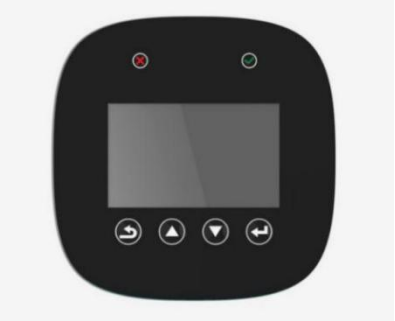
However if an external residual current device (RCD) (type A is recommended) is mandatory. The switch must be triggered at a residual current of 300mA (recommended). RCD of other specifications can also be used according to local standard.

Chapter 7 Commissioning

Before normal use, make sure that the switches of the battery and the grid are off, and only turn on the switch of the PV or the grid. After powering-on, the inverter may be turned off manually by “ON/OFF on the Menu. Default grid frequency, battery type, and charging and discharging parameters can be viewed by System Setting > Advanced Setting. After performing necessary settings, power off the inverter and switch on the switch of the grid and the battery. After this, the inverter can operate automatically.

7.1 Control panel

The display panel is operated by 4 keys.



7.2 Key description

Icon	Name	Function
	Lower	Press for 0.5s to select lower menu or digits
	Upper	Press for 0.5s to select upper menu or digits
	Return	Press it for return
	Ok	Press it to confirm the operation

7.3 Failure indication and reminder

When the inverter fails or gives an alarm, the user is reminded by the buzzer and the LED indicator.

7.3.1 LED indicator

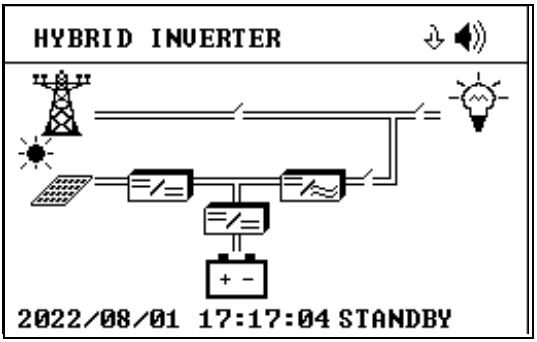
LED indicator	Status	Description
Failure indicator (red)	Normally on	Major failure History shows related failure, and the inverter stops.
	Flickering	Warning: History shows related failure, and the inverter operates still.
Operation indicator (green)	Normally on	Normal operation: The inverter operates normally.
	Flickering	Program upgrading: The inverter stops till completion of upgrading and normal ARM communication

7.3.2 Buzzer

Status	Description
Long buzz	Major failure History shows related failure, and the inverter stops. Abnormal communication between DSP and ARM: History shows related failure, and the inverter stops.
No buzz	No failure: The inverter operates normally. Warning: History shows related failure, and the inverter operates normally.

7.4 Structure of LCD menu

The following screen is displayed on the LCD screen



This is the default screen. When the system is started successfully or no operation is performed, the LCD automatically switches to this screen.

Press the key "↑, ↓" to select the icons , , and , press the OK key to open "grid, battery, load and inverter, and PV" for view of relevant information.

Press the OK key to access the menu in the default screen (If there is no check box on the default screen, press the OK key to access the menu, and if there in the check box, press the Quit key and the OK key to access the menu).

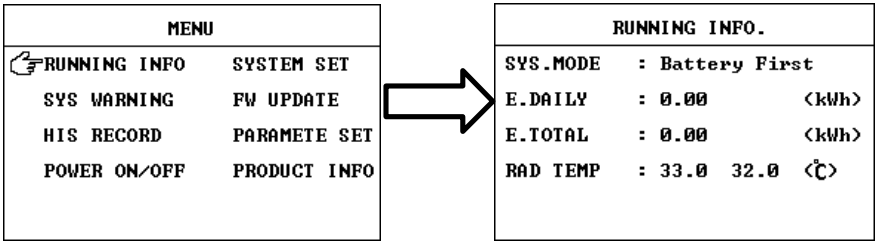
GRID INFO.	BATTERY INFO.	LOAD INFO. P1/2
VOLTAGE (V) : 0.3	VOLTAGE(V) : 0.1	VOLTAGE (V) : 4.2
FREQUENCY(Hz): 0.00	CURRENT(A) : 0.0	CURRENT (A) : 0.0
ACTIVE (W) : 0	POWER (W) : 0	APPARENT (VA) : 0
APPARENT (VA): 0	STATUS : NONE	ACTIVE (W) : 0
STATUS : N/A	SOC (%) : 42	PERCENT (%) : 0

INV INFO. P2/2	PV INFO.	MENU
VOLTAGE (V) : 1.9	BUS VOLT(V) : 1.4	☞RUNNING INFO SYSTEM SET
CURRENT (A) : 0.0	PV VOLT(V) : 1.6 1.4	SYS WARNING FW UPDATE
FREQUENCY(Hz) : 0.00	CURRENT (A) : 0.0 0.0	HIS RECORD PARAMETE SET
ACTIVE (W) : 0	POWER (W) : 0 0	IPOWER ON/OFF PRODUCT INFO
STATUS : N/A		

7.5 Menu query

NOTE
• Grid power refers to the input and output power of the inverter grid port. Load power refers to the power of backup load EPS.

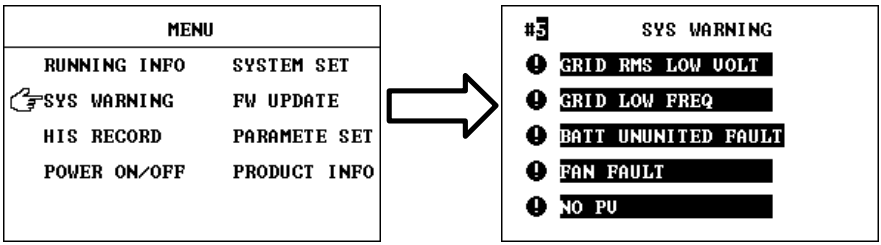
On the standby screen, press OK to access the menu. The following table shows the content in the Operation Information in the Menu.



Display	Description
Grid power (W)	Grid input power: “+” shows supply of the power to the grid, and “-” shows reception of power and energy from the grid
Load power (W)	Current load power of system
Daily generating capacity of PV (KWH)	Daily generating capacity of PV
Total generating capacity of PV (KWH)	Total generating capacity of PV
Radiator temperature (℃)	Radiator temperature

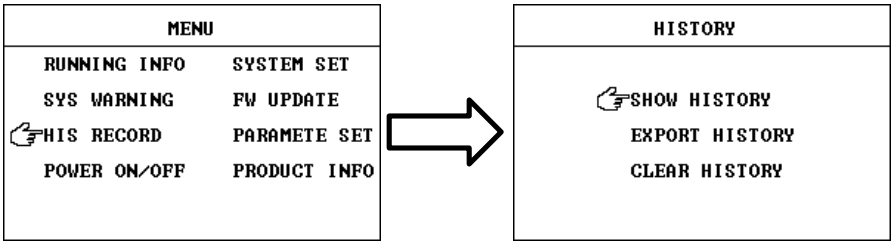
7.6 System warning

Select the System Warning in the Menu to perform operations.



7.7 History record

Select the History Record in the Menu to perform operations.

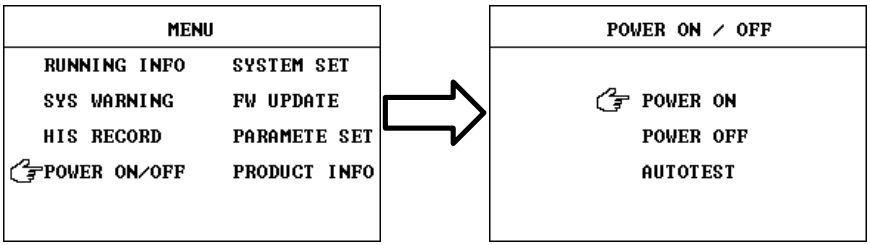


7.8 Power ON/OFF

NOTE

- Under normal conditions, without manual shutdown of the system, the system shutdown system automatically turns on and off the system based on PV, battery, and grid status.

Select the Power On/Off in the Menu to turn on/ off the inverter.

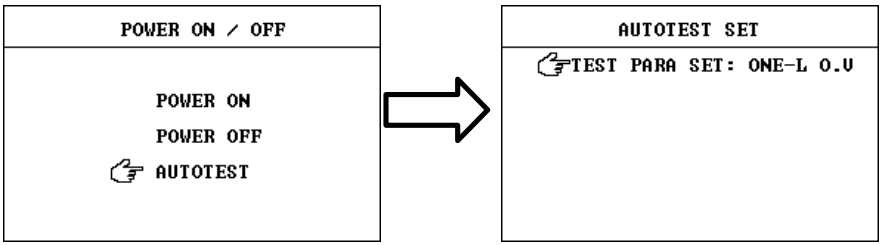


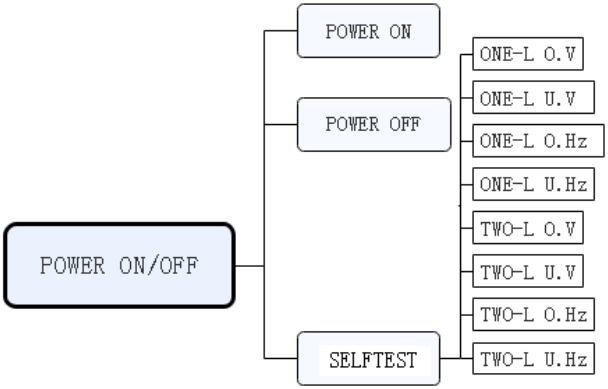
7.8.1 Self-check

NOTE

- The self-check function is available only when the inverter is connected to the grid and turned on.
- It is normal that the corresponding fault will occur automatically after self-check. After the self-check and failure recovery, the inverter will start up automatically.
- Do not perform other operations during the self-check.
- The version in some countries may not have the self-check function.

Enter the user password (default password: 000000) in "Self-Check", "Power On/Off", "Menu" to access the self-check menu.





After accessing the self-check menu, press "OK" to start the selection. Press "↑, ↓" to select self-check items. Eight self-check items can be selected: "primary over voltage", "primary under-voltage", "primary over-frequency", "primary under-frequency", "secondary over voltage", "secondary under-voltage", "secondary over-frequency", and "secondary under-frequency".

After confirming the start, during the test, the threshold (default) of the selected parameter changes to the rating with a slope ratio ≤0.05Hz /s or 0.05Vn /s until the threshold is consistent with the current measured value, after which the SPI sends a trip signal to the circuit breaker according to the trip time setting of the test parameter. After each test item is tested, a test report is generated to indicate the following information:

- Set threshold: trip threshold set in SPI;
- Threshold setting trip time: trip time set in SPI;
- Threshold test value: threshold upon triggering corresponding protection;
- Threshold test trip time: the period from the time when the current value is more than (or equal to) the threshold to grip trip;

- Current measured voltage or frequency value: current and actual grid voltage or frequency upon sending trip signal.

  If the automatic test is successful, the inverter is automatically disconnected from the grid.

  Meet the following tolerance:

  Voltage threshold ≤1%

  Frequency threshold ±20mHz

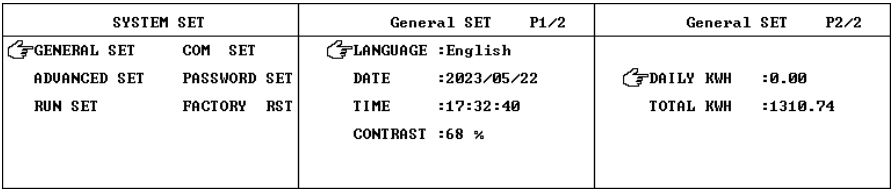
  Trip time ≤3%±20ms

7.9 System setting

Enter the user password (default password: 000000) on the Menu to access the System Setting.

7.9.1 General setting

By System Setting > General Setting, the user can switch between English and Chinese, set date and time, and calibrate contrast, daily generating capacity and total generating capacity.



7.9.2 Advanced setting

WARNING

- After the advanced setting is completed, the inverter must be powered off and restarted. Otherwise, the inverter will not operate according to the new settings.
- Improper settings may violate local electrical regulations, cause faults of the inverter and external devices, and affect the battery life. If adjustment is required, the adjustment must be authorized by a qualified technician, or contact the local distributor.

After the initial installation, enter the user password (default password: 000000) by Menu>

System Setting to access the Advanced Setting and set the following necessary items.

SYSTEM SET		
GENERAL SET	COM SET	
ADVANCED SET	PASSWORD SET	
RUN SET	FACTORY RST	

ADVANCED SET P1/4		
RUN MODE SET	: GRID-TIED	
AC TYPE SET	: UPS	
PV CONNECT	: INDEPEND	
RATED VOLT	: 208	V
RATED FREQ	: 50	Hz

ADVANCED SET P2/4		
BATT TYPE SET: LEAD		
BATT CHG CURR: 050		A
DISCHG CUR	: 110	A
EQUAL VOLT	: 55.2	V
FLOAT VOLT	: 53.0	V

ADVANCED SET P3/4		
BATT EOD	: 41.1	V
BATT DOD	: 45.2	V
ON-GRID SOC	: 42	%
OFF-GRID SOC	: 42	%
METER-CT	: CT	

ADVANCED SET P4/4	
POWER FACTOR	:+1.00

Item	Note
Grid-tied mode setting	Settable primary operation mode Grid-tied power supply: the system supplies the power to the grid (default) if the grid is connected. Counter current protection: the system does not supply the power to the grid in the counter current protection mode. If the CT or the digital kilo-watt-hour meter is used, the inverter may supply the power to the domestic load connected with the grid terminal, but does not supply the power to the grid by bypassing the CT or the digital kilo-watt-hour meter
System mode setting	UPS: provide reliable and stable output, uninterrupted power supply, short switching time (0 to 20ms). EPS: Continuously supply the power for the load in case of the power supply failure of the load. Provide large surge current, good dynamic output characteristics, strong overload resistance; switching time (0 to 4s).
PV connection setting	Independent: The ports PV1 and PV2 are connected to different solar panels respectively (default). Parallel: PV1 and PV2 are connected to the same solar panel.
Rated voltage	Default output voltage of EPS port without grid, settable to 208V/220V/230V/240V (default to 230V).
Rated frequency	Default output frequency of EPS port without grid, settable to 50Hz/60Hz (default to 50Hz)

Battery parameters	Battery typesetting: Lithium battery (default) or lead-acid battery. The default lithium battery parameters are as follows (Adjust them based on the actual battery) : Rated voltage: 51.2V. Charging current: 100A Default (Setting range: 0-100A). Floating charging voltage: 53.5V Default (Setting range: 46-55V). Equalizing charging voltage: 56.4V Default (Setting range: 48-57.6V). DOD voltage: 46V Default (Setting range: 40-55V). EOD voltage: 44V Default (Setting range: 40-55V). Battery grid-connected SOC Lower limit: 15% Default (Setting range: 15-80%). Battery off-grid SOC Lower limit: 5% Default (Setting range: 0-15%).
	Lead-acid battery parameters are as follows (Adjust according to the actual battery) : Rated voltage: 48V. Charging current: 100A Default (Setting range: 0-100A). Floating charging voltage: 53.5V Default (Setting range: 46-55V). Equalizing charging voltage: 56.4V Default (Setting range: 48-57.6V). DOD voltage: 46V Default (Setting range: 40-55V). EOD voltage: 44V Default (Setting range: 40-55V).
Kilo-watt-hour meter-CT	NULL: CT or kilo-watt-hour meter not used CT: connect and use the external CT. Kilo-watt-hour meter: connect and use the digital kilo-watt-hour meter (default).
Power factor	Power factor: the cosine of the phase difference between current and voltage in an AC circuit.

7.9.3 Timing setting

Set the timing function such as Regular Date and Special Date by Menu> System Setting > Timing Setting.

By the Regular Date, orderly set the operation mode of a month (quarter), week or time period (see the detailed description of operation mode in Chapter 3 for the operation logic of the operation modes).

SYSTEM SET		RUN SET	SETTING BY DATE
GENERAL SET	COM SET		
ADVANCED SET	PASSWORD SET	☞ SETTING BY DATE	☞ NORMAL DATE
☞RUN SET	FACTORY RST	SETTING BY TIME	SPECIAL DATE

MONTHS SET	WEEK SET	TIME SET
MONS1: ☞Jan - Dec	WEEK: ☞Mon - Sun	TIME: ☞00:00 - 23:59
MONS2:	ELSE	ELSE
MONS3:		
MONS4:		

MODE SET
CURR MODE:
☞Battery First

By Setting based on Time, set the operation mode of each hour according to 24 hours a day.

TIME SETTING P1/5
☞ 0h: House Load First
1h: House Load First
2h: House Load First
3h: House Load First
4h: House Load First

By the Special Date, set the operation mode of minutes.

SETTING BY DATE	SPECIAL DATES	TIME SET
	DATE1: ☞ 2000/01/01	
NORMAL DATE	DATE2:	TIME: ☞00:00 - 23:59
☞ SPECIAL DATE	DATE3:	ELSE
	DATE4:	
	DATE5:	

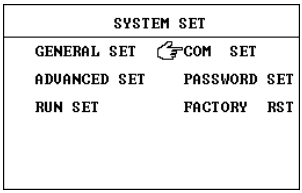
MODE SET
CURR MODE:
☞Battery First

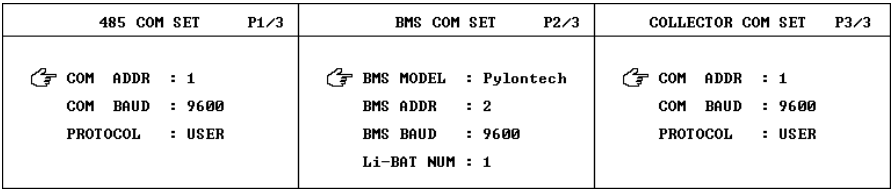
7.9.4 Communication setting

NOTE
•Incorrect settings may cause abnormal external communication and monitoring. This communication function must be set up and used by qualified technicians. The default baud rate of EAHI-3000 to 6000-SL is 9600.

Set the communication address ， protocol type， collector communication setup and baud rate by Menu> System Settings > Communication Setting.

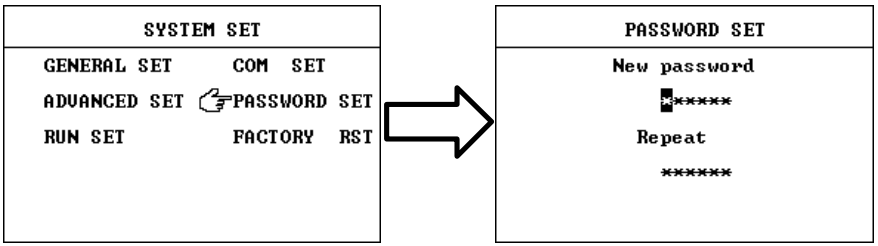
If the lithium battery is used, also set the BMS communication protocol, address, and baud rate.





7.9.5 Password setting

Set and change the password by Menu> System Settings > Password Setting.

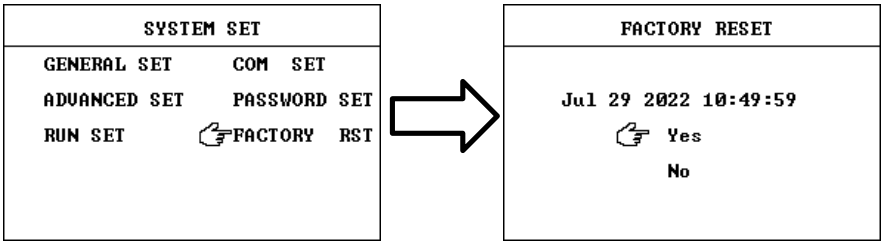


7.9.6 Restore factory setting

WARNING
•After the factory settings are restored, the inverter must be powered off and restarted. Otherwise, an exception may occur. •Do not perform this operation unless necessary. If necessary, contact technical personnel.

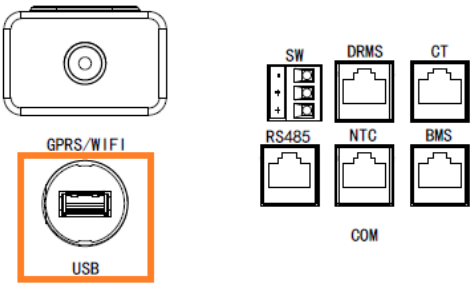
Enter the password to restore the factory setting by Menu> System Settings > Restore Factory Setting.

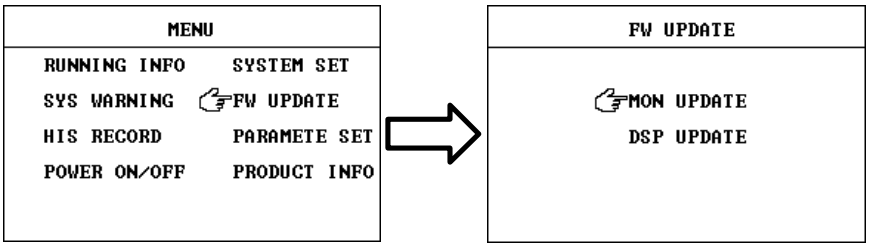
This interface is used for the customer to restore the factory settings. After the factory settings are restored, all parameters are restored to their default factory settings, except for current date and time. However, operation information, alarm records and system logs are not cleared and modified.



7.10 Firmware upgrade

Update the software version of the inverter by Menu> Firmware Upgrade. The firmware upgrade port (USB) on the inverter surface is shown as follows





MON UPDATE	DSP UPDATE
CURREN VER V8	CURREN VER V801
UPDATE VER V1108	UPDATE VER V620
FILE SIZE 212256	FILE SIZE 196608
UPDATE NOW ☞YES NO	UPDATE NOW ☞YES NO

Save the corresponding upgrade package to a specific path on the USB flash drive, as following:

Monitor: EAHI3-6K\Update\MCU_EAHI3-6K.img

Master control: EAHI3-6K\Update\DSP_EAHI3-6K.img

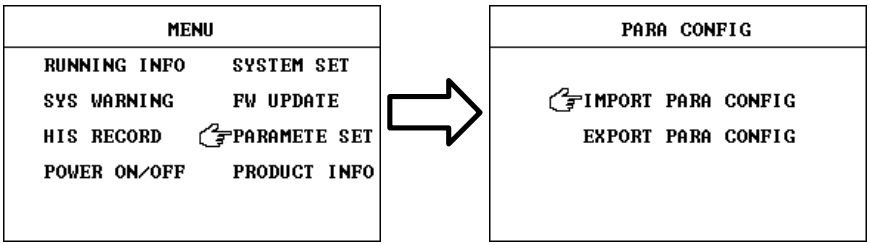
The DSP-prefixed upgrade package is for the master control and the MCU-prefixed for the monitor.

Before the upgrade, click "Off" on the screen to perform the upgrade. Insert the USB flash drive and operate the screen to perform the upgrade.

Note: This function needs to be authorized by the relevant technical personnel or agents.

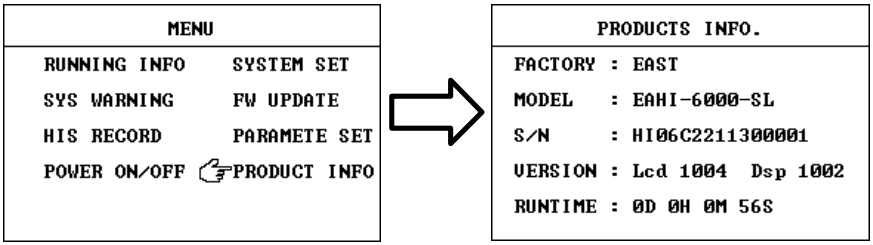
7.11 Parameter configuration

Configure the parameters by Menu> Parameter Configuration



7.12 Product information

View the relevant product information by Menu> Product Information.



Chapter 8 Use of APP for EAHI-3000~6000-SL

8.1 Download and Installation of APP

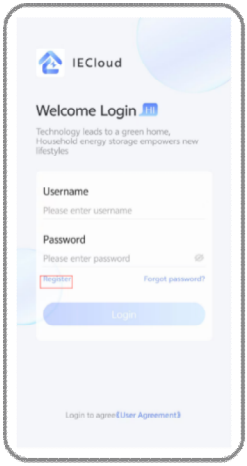
Scan the following QR code with your mobile:

Android

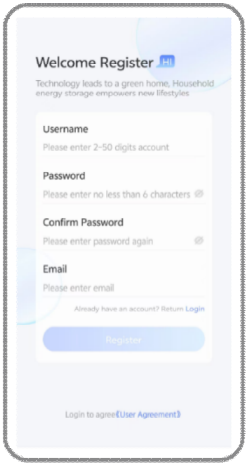
IOS

8.2 APP Registration and powering on inverter

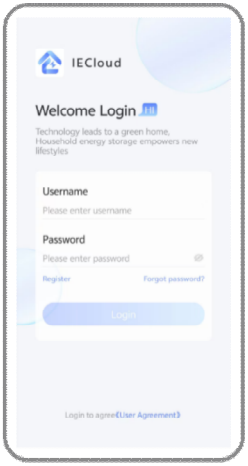
If the above items meet the requirements, power on the inverter for the first time according to the following procedure.



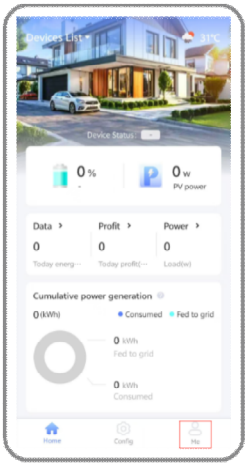
❶ Click on "Register"



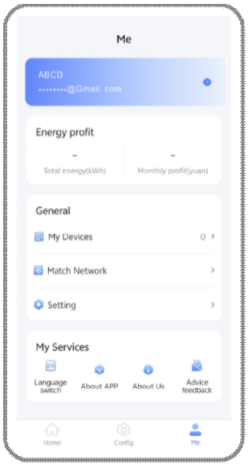
❷ Fill in registration information



❸ Click on "Login"

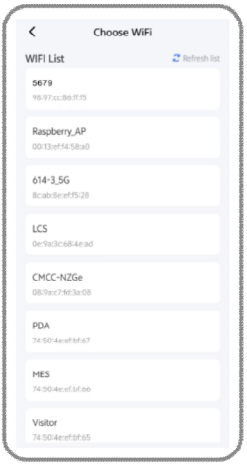


❹ Click on 'Me' in the bottom right corner

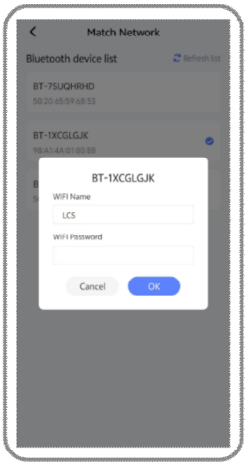


❺ Click on "Match Network"

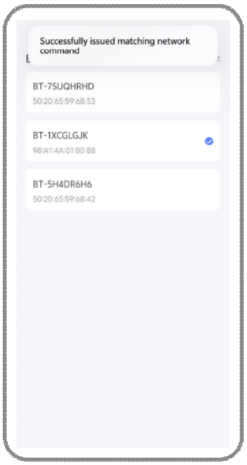
❻ Choose the correct Bluetooth device



❼ Choose the WIFI that can be used

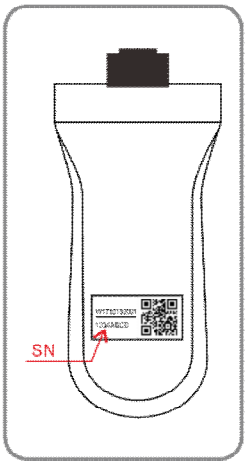


❽ Enter WIFI password

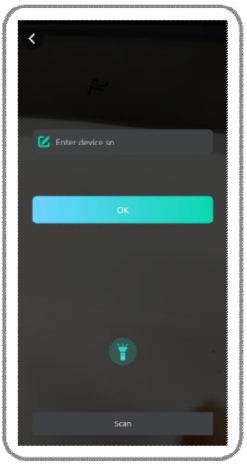


❾ Confirm successful distribution network

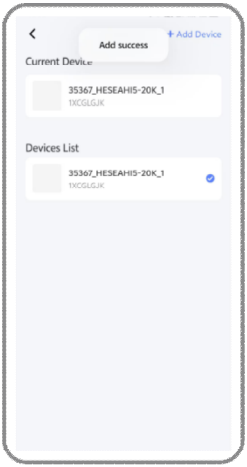
❿ Return to “Me” and add device



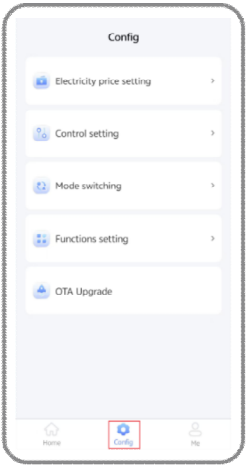
⓫ Confirm SN code



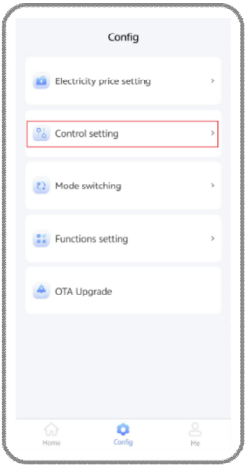
⓬ Scan/enter the SN code on the WIFI stick



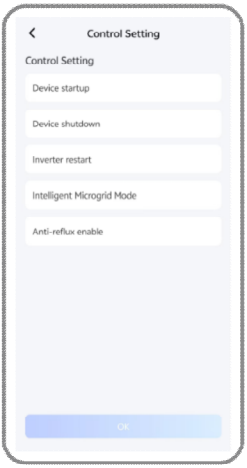
⓭ Complete binding



⓮ Click 'Config' after returning



⓯ Click on "Control Setting"



⓰ Click on "Device startup"

Chapter 9 System Maintenance

NOTE
• Make sure that the inverter has been powered off before the maintenance. • During operation on the inverter, use the personal protective device.

9.1 Daily maintenance of inverter

Content	Method	Frequency
System cleanness	Check the heat sink and air inlet/outlet for foreign bodies and dust.	Once/half a year ~once/ year
DC switch	Turn the DC switch on and off for 10 consecutive times to ensure that the functions of the DC switch are normal.	Once/ year
Electrical connection	Turn the DC switch on and off for 10 consecutive times to ensure that the functions of the DC switch are normal.	Once/half a year ~once/ year
Air-tightness	Check whether the sealing of the cable inlet meets the requirements. If the gap is too large or is not sealed, plug it again.	Once/ year
Grounding reliability	Check whether the ground cable is properly connected with the ground.	Once/half a year ~once/ year

9.2 Maintenance of inverter unused for long term

If the inverter has been not used for more than 7 days, turn off the AC input, PV input, and battery input switches.

If the inverter has not been used for more than 3 months, turn on the AC input switch (or PV switch) and the battery switch to start the system to recharge the battery once.

9.3 Powering off inverter

DANGER
• Before the maintenance of the inverter, power it off. The hot-line work on the inverter may cause inverter damage or electric shock. • After the inverter is powered off, it takes a certain period of time for the internal components to discharge. Wait until the inverter is fully discharged according to the time requirements on the label.

Step 1: Send a shutdown instruction through mobile APP or cloud platform or host computer.

Step 2: Disconnect the ON-GRID AC circuit breaker of the inverter.

Step 3: Disconnect the BACK-UP AC circuit breaker of the inverter.

Step 4: Disconnect the energy storage circuit breaker between the inverter and the battery.

Step 5: Turn off the DC switch of the inverter.

9.4 Battery maintenance

WARNING
• Battery maintenance should be performed or supervised by personnel with knowledge of batteries and necessary precautions are taken. • The battery may cause the danger of electric shock and high short-circuit current. • The battery may explode if thrown into a fire. • Do not open or destroy the battery. The electrolyte is harmful to skin and eyes and may be toxic.

9.5 Battery safety

1. During installing or replacing the battery, remove metal objects such as watches and rings from your hands in order to avoid the burns resulting from short circuit.
2. Wear safety goggles and gloves.
3. Keep the work place away from open flame, hydrogen, smoke.
4. Check whether the polarity of two battery ends is grounded. If yes, remove the grounding.

Environmental factors affect the battery life. The stored energy of the battery decreases with the rise in ambient temperature. Frequent short discharge may shorten the battery's life. The battery maintenance is very important. Checks the battery every month:

- The battery should be kept clean and terminals and connectors should be cleaned promptly.
- Regularly check the cable for cleanness and fastness
- Do not use the batteries with different types and capacities. Please use same type of the batteries.

9.6 Battery storage and charging

Battery storage requirements:

1. During storage, correctly place the battery in accordance with the mark on the packaging box, do not put upside down or tilt the battery.

2. If required, stack the battery packing boxes according to the stacking requirements on the outer packaging.

3. Handle the battery with care to avoid damage.

4. Storage environment requirements:

Ambient temperature: -10℃~55℃, recommended storage temperature: 20℃~30℃; relative humidity: 5%RH-80%RH

Dry, ventilated and clean.

Avoid contacting with corrosive organic solvents, gases and other substances.

Avoid exposing to direct sunlight

Maintain less than 2m away from heat sources

5. Warehouse manager should monthly check and record battery storage, regularly inform the battery inventory to the planning manager, and timely arrange the charging of the battery with storage time close to 15 months (-10℃ -25℃), 9 months (25℃ -35℃) or 6 months (35℃ -55℃).

6. When the battery is ex-warehoused, the first-in-first-out principle should be followed.

7. After the battery production test is completed, charge the battery to at least 50% SOC before storage.

Judgment of storage exceeding time limit

In principle, it is not recommended to store the battery for a long time, and the battery should be used timely. The stored batteries should be treated according to the following requirements.

Charging period of lithium battery

Storage temperature	Actual storage	Charging	Note
-10℃<T≤55℃	T <-10℃	Not	During the period of supplementing electrical energy: No need for handling, use as soon as possible.
	-10℃<T≤25℃	15 months	
	25℃<T≤35℃	9 months	
	35℃<T≤55℃	6 months	
	T>55℃	Not	

Inspection before battery charging

1. Inspect the battery appearance before the battery is charged, charge the qualified batteries only, and scrap the unqualified batteries.
2. In case of the following conditions, the battery will be considered to be unqualified:
    - Battery deformation
    - Battery case damage
    - Electrolyte leakage

Description of battery charging scenario:

EAHI-6000-SL can provide 6kW power to charge the battery and supports simultaneous charging of 6 battery packs.

Chapter 10 Troubleshooting

10.1 History record

View the history by Menu> History Record

MENU		HISTORY	P965/971 HISTORY
RUNNING INFO	SYSTEM SET		1929 2022-08-01 17:10:40:000
SYS WARNING	FW UPDATE	☞SHOW HISTORY	GRID FASTCHK ABNORMAL Clear
☞HIS RECORD	PARAMETE SET	EXPORT HISTORY	1930 2022-08-01 17:10:40:000
POWER ON/OFF	PRODUCT INFO	CLEAR HISTORY	FAN FAULT Occur

P959/965: P959 is the current page number, 965 refers to the total number of pages in the history;

1917 refers to item 1917 history, and 2022/08/01 refers to the occurrence date of the event. 11:57:38 refers to the exact occurrence time of the event.

10.2 Clean history

Clear the history by System Settings > Clear History after entering the advanced password, and press the Return key to return to the system settings screen.

HISTORY		
SHOW HISTORY	Enter the password	CLEAR HISTORY?
EXPORT HISTORY	******	Yes
☞CLEAR HISTORY		☞ No

10.3 Fault list

The user can troubleshoot faults and take corresponding measures according to the fault information of the inverter.

Fault information	Possible cause	Action
GRID Over VOLT 1	Grid failure	1. Check the grid voltage or frequency. If the grid voltage or frequency exceeds the allowable range of the inverter protection parameters, start the inverter again after the power grid becomes normal.
GRID Over VOLT 2		
GRID Low VOLT 1		
GRID Low VOLT 2		
GRID Over FREQ 1	Grid failure	2. If the grid voltage or frequency is within the

GRID Over FREQ 2 GRID Low FREQ 1 GRID Low FREQ 2		allowable range, please contact the distributor or after-sales service center.
Failure in rapid grid inspection	Failure in inverter soft-starting due to sudden change of external condition	1. Wait until the inverter recovers. 2. Check the grid voltage or frequency. If the grid voltage or frequency exceeds the allowable range of the inverter protection parameters, start the inverter again after the power grid becomes normal. 3. If the grid voltage or frequency is within the allowable range, please contact the distributor or after-sales service center.
Islanding fault	After grid AC failure, the inverter detects the islanding by active mode.	1. Check whether the AC circuit breaker of the grid trips and the connection wires are firmly connected; 2. Check whether the grid is available; 3. If all conditions are correct and the failure persists, please contact the distributor or after-sales service center.
Zero ground voltage fault	1. PE terminal on AC terminal block and secondary protection ground terminal on inverter bottom are not reliably connected. 2. High voltage to earth of L and N wires of inverter	1. Check whether the inverter has a reliable ground cable. 2. If there is an access wire and the failure persists, please contact the distributor or after-sales service center.
OUT RMS Over VOLT OUT RMS Low VOLT OUT RMS Over CURR OUT Over FREQ OUT Low FREQ INV FAST Over CURR INV RMS Over VOLT INV RMS Low VOLT	Protection resulting from abnormal instance output of inverter after sudden change or short current on grid	1. Check whether the external load and the grid exceed the range specified in the inverter specifications. After failure recovery, the inverter automatically recovers to normal operation. 2. If the alarm is repeated, please contact the distributor or after-sales service center.

INV Inductor CURR Limit	The output voltage of the inverter is out of the range of protection value.	1. Check whether the external load exceeds the range specified in the inverter specifications. After failure recovery, the inverter automatically returns to the normal operation status. 2. If the alarm is repeated, please contact the distributor or after-sales service center.
INV Inductor Over CURR		
INV VOLT DC Component Over	The DC current component of the grid current exceeds the allowable range.	1. Wait until the inverter recovers. 2. Check the grid voltage or frequency. If the grid voltage or frequency exceeds the allowable range of the inverter protection parameters, report the grid company. 3. If the grid voltage or frequency is within the allowable range, please contact the distributor or after-sales service center.
INV CURR DC Component Over		
INV Self-Test Fail	Inverter bridge damaged or too high grid harmonics and no grid-tied condition	1. Wait until the inverter recovers. 2. If the failure persists, please contact the distributor or after-sales service center.
Phase Lock Fail		
INV Over TEMP	The inverter temperature is higher than the allowable upper limit of the inverter	1. Check whether the temperature of the radiator displayed on the LCD screen is too high. If the temperature is too high, wait for a period of time to recover. 2. Check whether the inverter is at well-ventilated location. 3. Check whether the inverter is in the direct sunlight, if yes, please do appropriate shading; 4. If there are no such problems, and the failure persists, please contact the distributor or after-sales service center.
INV 105%Over Load	Output overload protection Output overload protection	1. Check the output load and reduce the load power. 2. If there are no such problems, and the failure persists, please contact the distributor or after-sales service center.
INV 125% Over Load		
INV 150% Over Load		
INV 200% Over Load		
BUS FAST Over VOLT	The instantaneous voltage of the bus is	1. After reduction of the bus voltage, wait until the inverter recovers.

BUS Over VOLT	higher than the allowable upper limit of the inverter.	2. If the failure is repeated, please contact the distributor or after-sales service center.
BUS Hardware Over VOLT	The hardware detects that the instantaneous voltage value of the bus is higher than the allowable upper limit of the inverter.	1. Check whether the PV input voltage exceeds the allowable range of inverter protection parameters. 2. After reduction of the bus voltage, restart the inverter 3. If the failure is repeated, please contact the distributor or after-sales service center.
BUS Low VOLT	The average bus voltage is lower than the allowable lower limit of the inverter.	1. Wait until the inverter recovers. 2. If the failure is repeated, please contact the distributor or after-sales service center.
BUS Fast Low VOLT		
BUS Short Fault	A sudden change in external conditions causes damage to internal components	Please contact the distributor or after-sales service center.
GRID Relay Fault	The relay cannot be closed and disconnected properly.	1. Restart the inverter; 2. If the failure is repeated, please contact the distributor or after-sales service center.
INV Relay Fault		
LOAD Relay Fault		
MCU SCI Communication Fault	No monitoring data was received.	1. Restart the inverter; 2. If the failure is repeated, please contact the distributor or after-sales service center.
BYPASS 105% Over Load	Output overload protection during off-grid to grid-tied Output overload protection during off-grid to grid-tied	1. Check the output load and reduce the load power. 2. If the failure is repeated, contact the distributor or after-sales service center.
BYPASS 125% Over Load		
BYPASS 150% Over Load		
BYPASS 200% Over Load		
PV1 Over VOLT	The PV1 or PV2	1. Check whether the PV input end is normal; 2. Check whether the PV input configuration exceeds the allowable range of inverter

PV2 Over VOLT	voltage is higher than the bus voltage.	protection parameters. 3. If there are no such problems, and the failure persists, please contact the distributor or after-sales service center.
PV1 FAST Over CURR	The average instantaneous input current of PV1 or PV2 is higher than the set upper limit.	1. Check whether the PV input end is normal; 2. Check whether the PV input configuration exceeds the allowable range of inverter protection parameters. 3. If there are no such problems, and the failure persists, please contact the distributor or after-sales service center.
PV2 FAST Over CURR		
PV1 Over CURR	The average input current of PV1 or PV2 is higher than the upper limit.	1. Check whether the PV input end is normal; 2. Check whether the PV input configuration exceeds the allowable range of inverter protection parameters. 3. If there are no such problems, and the failure persists after restarting the inverter, please contact the distributor or after-sales service center.
PV2 Over CURR		
INSU.TO GROUND IMPE	Short circuit of PV string to protective earth, long humid installation environment of PV string	1. Check whether the inverter is grounded reliably. 2. Check whether the positive and negative electrodes of the PV panel are short connected with the ground wire; 3. Wait until the inverter recovers. 4. If the failure persists, please contact the distributor or after-sales service center.
Buck-Boost FAST Over CURR	Sudden change of external conditions leads to internal circuit protection in the inverter	1. After failure recovery, the inverter automatically recovers to normal operation. 2. If the alarm is repeated, please contact the distributor or after-sales service center.
Middle BUS FAST Over VOLT		
Middle Bus Over VOLT		
Middle Bus Low VOLT	Sudden change of external conditions leads to internal circuit protection in the inverter	1. After failure recovery, the inverter automatically recovers to normal operation. 2. If the alarm is repeated, please contact the distributor or after-sales service center.

BATT Over VOLT	Abnormal battery voltage	1. Check whether the battery is correctly connected to the inverter, and whether the battery voltage is normal. 2. The battery input cable is too small; 3. Restart the inverter. If the failure persists, please contact the distributor or after-sales service center.
Buck-Boost Over CURR	Buck-Boost current exceeds the set value.	1. Check the output load and reduce the load power; 2. If the failure persists, please contact the distributor or after-sales service center.
BATT DOD	1. Abnormal battery voltage; 2. Battery fully discharged	1. Check whether the battery is correctly connected to the inverter, and whether the battery voltage is normal. 2. The battery input cable is too small; 3. Restart the inverter. If the failure persists, please contact the distributor or after-sales service center.
CHG VOLT Low	Abnormal battery voltage	1. Check whether the battery is correctly connected to the inverter, and whether the battery voltage is normal. 2. Restart the inverter. If the failure persists, please contact the distributor or after-sales service center.
LLC Over CURR STOP	The current exceeds the set value	1. Check the output load and reduce the load power; 2. Check whether the battery terminal is properly connected. 3. If the failure persists, please contact the distributor or after-sales service center.
BATT Disconnected	1. The battery is incorrectly connected. 2. The battery fuse is blown.	1. Check whether the battery cable is securely connected and the battery voltage is normal. 2. If the failure persists, please contact the distributor or after-sales service center.
BATT Over TEMP		
FAN Fault	Fan failure	1. Check whether the fan operates properly. Power off and restart the inverter; 2. If the failure persists, please contact the distributor or after-sales service center.

Chapter 11 Technical Data

Product family: EAHI-3000~6000-SL				
Model	EAHI-3000-SL	EAHI-3600-SL	EAHI-5000-SL	EAHI-6000-SL
PV input parameter				
Maximum input power	4680W		6500W	7800W
Maximum input voltage	550Vdc			
Rated input voltage	360Vdc			
Starting voltage	100Vdc			
Minimum operating voltage	150Vdc			
MPPT operating voltage	100~540Vdc			
PV maximum input current	15A	15A	15A / 15A	15A / 15A
PV maximum short circuit current	20A	24A	20A / 20A	20A / 20A
Quantity of independent MPPT	1	1	2	2
Input string of each MPPT	1		1+1	
Battery input parameter				
Battery type	Lead-acid or lithium battery			
Battery voltage range	40.8~57.6Vdc			
Maximum charging current	66A	75A	100A	100A
Maximum discharge current	66A	75A	100A	120A
Charging curve	3 Stages / Equalization			
Lithium battery charging strategy	BMS self-adaption			
AC input parameters (grid side)				
Grid type	Single phase			
Input voltage range	184~276Vac			
Input frequency range	50±5Hz / 60±5Hz			
Maximum input current	21.8A	26.2A	36.5A	40A

AC output parameters (grid side)				
Rated output power	3000W	3600W	5000W	6000W
Maximum apparent output power	3000VA	3600VA	5000VA	6000VA
Grid system mode	1/N/PE			
Rated output voltage	220Vac / 230Vac			
Rated output frequency	50Hz / 60Hz			
Rated output current	13.6A / 13.0A	16.4A / 15.7A	22.7A / 21.8A	27.3A / 26.1A
Maximum output current	13.6A	16.4A	22.7A	27.3A
Power factor	>0.99 (0.8 lead ~ 0.8 lag)			
Total current harmonics	≤3% (rated power)			
AC output parameters (Back-up side)				
Rated output power	3000W	3600W	5000W	6000W
Maximum apparent output power	3000VA	3600VA	5000VA	6000VA
Grid system mode	1/N/PE			
Rated output voltage	230Vac (208/220/240Vac settable)			
Rated output frequency	50Hz / 60Hz			
Rated output current @230V	13.0A	15.7A	21.8A	26.1A
Maximum output current	14.4A	17.3A	24.0A	28.8A
Voltage harmonic	≤3% (linear load)			
Switching time	≤20ms			
Efficiency				
Maximum efficiency	97.8%			
MPPT efficiency	99.9%			
Protection				
Comprehensive	Grid over-voltage protection, grid over-frequency protection, grid overload protection, over-temperature protection, anti-islanding protection, insulation resistance detection, residual current monitoring unit, output over-current protection, output short-circuit protection, surge protection			
Output over-voltage protection	DC Type II/AC Type III			

General parameters		
Package-free dimension(W*H*D)	548 x 440 x 197 mm	
Package size (W*H*D)	702x637x288mm	
Net weight	21.4kg	24.8kg
Gross weight	26.6kg	30.5kg
Topology	High frequency isolation (for batteries)	
IP degree	IP66	
Operating temperature	-25~60℃ (derated at >45℃)	
Cooling mode	Natural cooling	
Maximum altitude	4000m	
Noise	≤25dB	
Installation mode	Wall-mounted	
Parallel function	Support	
Standard		
Safety regulation	IEC/EN 62109-1/-2, AS62109	
EMC	EN 61000-6-1/-2/-3/-4	
Grid-tied	CEI 0-21, DIN VDE V 0124-100:2020, VDE-AR-N 4105:2018, AS4777.2, NRS097-2-1, G99/1-9 type A, EN50549-1	

Chapter 12 EAHI-3000~6000-SL packaging and disposal

12.1 EAHI-3000~6000-SL packaging

- When the equipment packaging permits, the inverter can be packed in the original material packaging;
- If the original packaging is not available, you can also pack the product by the packaging that conforms to the product packaging requirement and can pack the entire product by a easy carrying method.

12.2 EAHI-3000~6000-SL disposal

Dispose of e-waste, including the inverters or other accessories, according to local regulations.

Chapter 13 Appendixes

Explanation of term

Name	Description
ANTI-TIED	The inverter is not allowed to supply the power to the grid
GRID-TIED	The inverter is allowed to supply the power to the grid, as opposed to ANTI-TIED
AC CHA.	The inverter is allowed to receive the power from the grid for charging the battery. See Chapter 7 for details
TIMER.SWITCH	The inverter may be set to operate in different operation modes in different time periods. See Section 7.9.3 for details.
SOC	State of charge, also called remaining capacity, refers to the ratio of current available carrying capacity to the carrying capacity in full charging status, expressed in percentage, ranging from 1% to 100%.
BMS	Battery manager system
EOD	In the photovoltaic energy storage products of this series, the end of discharge (EOD) refers to the voltage or SOC used for prohibit battery discharging. When the battery voltage is less than this value, or SOC is less than the lower limit, the inverter will give a “battery under-voltage” alarm and prohibit battery discharging.
DOD	Depth of charge (DOD) refers to one method for the energy storage inverter to reflect the depth of battery discharge. Another method is SOC.
Equalized charging	Refers to the constant current charging stage, in which the charging voltage will gradually increase until it reaches the equalized charging voltage value.
Equalized charging voltage	Refers to the target voltage value achieved by constant current charging, which can be set within the specified range.
Floating charge	Refers to the constant voltage charging phase, in which the charging current gradually decreases to maintain the battery voltage at the set floating charging voltage value.
Floating charge voltage	Constant voltage charge voltage, which can be set within a specified range
Domestic load	Refers to the load that is connected between the "AC input" port of the inverter and the CT/kilo-watt-hour meter accessory, the power of which is not restricted by the inverter .
Backup load	Refers to the load connected to the "load output" port of the inverter. The power of the load is limited by the carrying capacity of the inverter when it operates in off-grid mode.
BACK-UP	Silk screen may be "load output" or "EPS"; here, they have the same meaning, and refer to the "off-grid load" port.