



User Manual

BRE-I-5K14K



OLIPOWER ENERGY & AUTOMATION TECHNOLOGY

About This Document

Purpose

This document describes the BRE-I-5K14K in terms of its installation, electrical connections, commissioning, maintenance, and troubleshooting. Before installing and operating the BRE-I-5K14K, ensure that you are familiar with the features, functions, and safety precautions.

Intended Audience

This document is intended for:

- Installers
- Users

Symbol Conventions

The symbols that may be found in this document are defined as follows.

Symbol	Description
 DANGER	Indicates an imminently hazardous situation which, if not avoided, will result in severe injury or death.
 DANGER	Indicates a potentially hazardous situation which, if not avoided, could result in severe injury or death.
 DANGER	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.
 NOTICE	Indicates a potentially hazardous situation which, if not avoided, could result in equipment damage, data loss, performance deterioration, or unanticipated results. NOTICE is used to address practices not related to personal injury.

Symbol	Description
 NOTE	Calls attention to important information, best practices, and tips. NOTE is used to address information not related to personal injury, equipment damage, or environmental deterioration.

Change History

Changes between document issues are cumulative. The latest document issue contains all updates made in previous issues.

Issue 01 (2019-07-17)

This issue is used for the first office application (FOA).

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1 Safety Precautions

General Safety



NOTICE

- Before performing operations, read through this manual and follow all the precautions to prevent accidents. The "DANGER," "WARNING," "CAUTION," and "NOTICE" marks in this document do not represent all the safety instructions. They are only supplements to the safety instructions.
- Only certified electricians are allowed to install, connect cables for, commission, maintain, and troubleshoot OLiPower products, and they must understand necessary safety precautions to avoid hazards.

When operating OLiPower equipment, in addition to following the general precautions in this document, follow the specific safety instructions given by OLiPower. OLiPower will not be liable for any consequence caused by violating the safety operation regulations and design, production, and usage standards.

Disclaimer

OLiPower shall not be liable for any consequence caused by any of the following events:

- Transportation damage
- The storage conditions do not meet the requirements specified in this document.
- Incorrect storage, installation, or use
- Installation or use by unqualified personnel
- Failure to obey the operation instructions and safety precautions in this document
- Operation in extreme environments which is not covered in this document
- Operation beyond specified ranges.
- Unauthorized modifications to the product or software code or removal of the product
- Device damage due to force majeure (such as lightning, earthquake, fire, and storm)
- The warranty expires, and the warranty service is not extended.
- Installation or use in environments which are not specified in related international standards

Personnel Requirements

Only certified electricians are allowed to install, connect cables for, commission, maintain, troubleshoot, and replace the BRE-I-5K14K.

- Operation personnel should receive professional training.
- Operation personnel should read through this document and follow all the precautions.
- Operation personnel should be familiar with the safety specifications of the electrical system.
- Operation personnel should understand the composition and working principles of the grid-tied PV system and local regulations.
- Operation personnel must wear proper personal protective equipment (PPE).

Protect Labels

- Do not scrawl or damage any labels on the BRE-I-5K14K enclosure because they contain important information about the safe operation.
- Do not scrawl or damage the nameplate on the BRE-I-5K14K enclosure because it contains important product information.

Installation

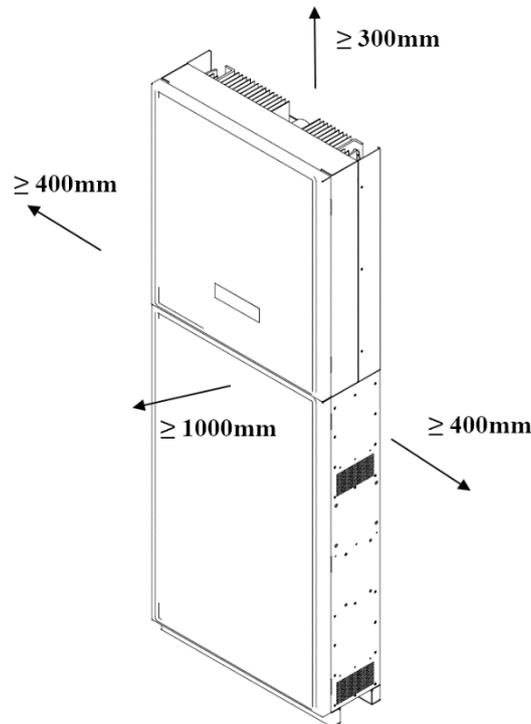


DANGER

Never operate the BRE-I-5K14K under power during installation.

- Ensure that the BRE-I-5K14K is not connected to a power supply or powered on before finishing the installation.
- To allow proper heat dissipation and installation, maintain appropriate clearances between the BRE-I-5K14K and other objects, as shown in Figure 1-1. If you have any questions about the clearances, consult local technical support engineers.

Figure 1-1 Installation space



- Ensure that the BRE-I-5K14K is installed in a well-ventilated environment.
- Ensure that the BRE-I-5K14K heat sinks are free from blockage.
- Do not open the front panel of the BRE-I-5K14K.
- Do not remove the terminals and ports at the bottom of the BRE-I-5K14K.

Electrical Connections



DANGER

Before connecting cables, ensure that the BRE-I-5K14K is secured in position and not damaged in any way. Otherwise, electric shocks or fires may occur.

- Ensure that all electrical connections comply with local electrical standards.
- Obtain approval from the local utility company before using the BRE-I-5K14K to generate electricity in grid-tied mode.
- Ensure that the cables used in a grid-tied PV system are properly connected and insulated and meet all specification requirements.

Operation



DANGER

High voltage may cause an electric shock, which results in serious injury, death, or severe property damage from the BRE-I-5K14K in operation. Strictly comply with the safety precautions in this document and associated documents when operating the BRE-I-5K14K.

- When the BRE-I-5K14K is powered on for the first time, only certified electricians can perform a quick setting. Incorrect settings may affect the normal BRE-I-5K14K operation and cause the BRE-I-5K14K to conflict with the country certification.
- When the BRE-I-5K14K is operating, do not disconnect under load.
- Do not touch an energized BRE-I-5K14K because the heat sink has a high temperature.
- Follow local laws and regulations when operating the equipment.

Maintenance and Replacement



DANGER

High voltage may cause an electric shock, which results in serious injury, death, or severe property damage from the BRE-I-5K14K in operation. Before maintenance, power off the BRE-I-5K14K. Strictly comply with the safety precautions in this document and associated documents to operate the BRE-I-5K14K.

- Maintain the BRE-I-5K14K with sufficient knowledge of this document, proper tools, and testing equipment.
- Before performing maintenance tasks, power off the BRE-I-5K14K and wait at least 5 minutes.
- Temporary warning signs or fences must be placed to prevent unauthorized people from entering the site.
- If the BRE-I-5K14K is faulty, contact your supplier.
- The BRE-I-5K14K can be powered on only after all faults are rectified. Failing to do so may escalate faults or damage the device.
- Observe ESD precautions and wear ESD gloves during maintenance.

2 Product Overview

2.1. Product Introduction

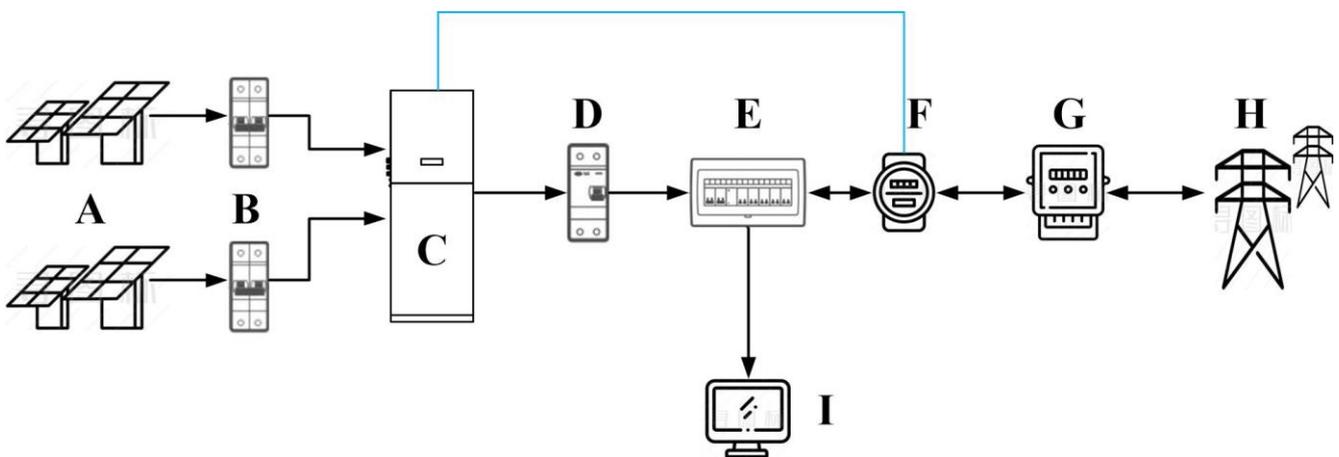
Function

BRE-I-5K14K is a single-phase grid-connected PV string inverter and energy storage system. It can store the DC power generated by the PV string into the battery, or convert the DC power generated by the PV string or the stored energy of the battery into AC power. Power is input to the grid.

Networking Application

The BRE-I-5K14K applies to a residential rooftop grid-tied system. Typically, a grid-tied system consists of the PV string, grid-tied inverter, AC switch, and power distribution unit.

Figure 2-2 Network diagram



NOTE

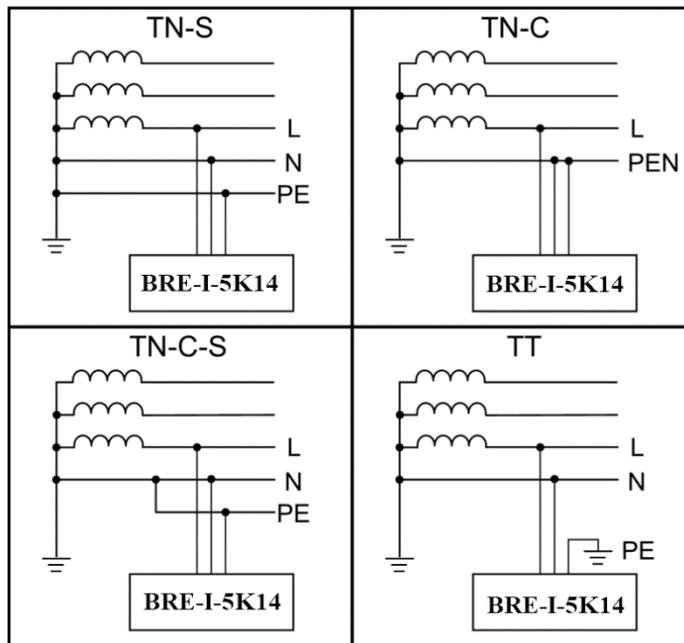
— Indicates a power cable, → indicates the power flow direction, and — indicates a signal cable.

- | | | |
|-----------------------------|--|----------------------|
| (A) PV string | (B) DC switch | (C) BRE-I-5K-14K |
| (D) AC switch | (E) Residential power distribution board | (F) Energy meter |
| (G) Residential power meter | (H) Power grid | (I) Residential load |

Supported Power Grid

Power grid types supported by the BRE-I-5K14K include TN-S, TN-C, TN-C-S, and TT. In a TT power grid, the N-PE voltage should be lower than 30 V.

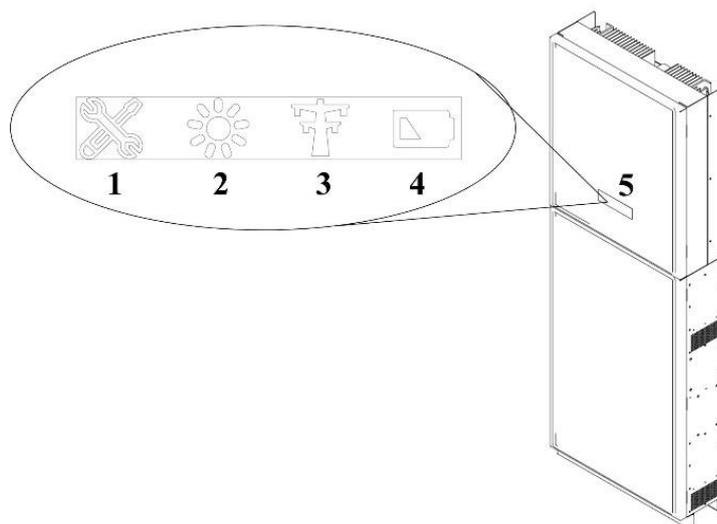
Figure 2-3 Power grid types



2.2.Appearance

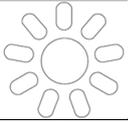
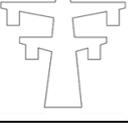
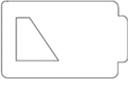
Front View

Figure 2-4 Front view



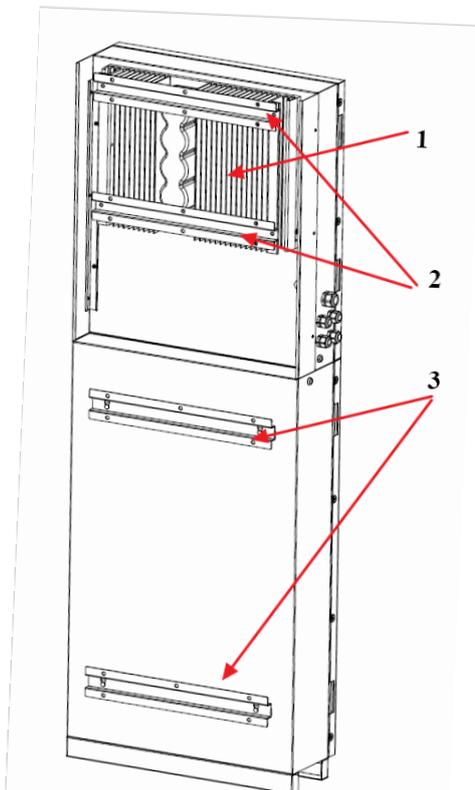
- (1) LED 1 (2) LED 2 (3) LED 3 (4) LED4 (5) Front panel

Table 2-1 LED description

Type	Name	Status	Meaning
	Maintenance indicator	Steady red	BESS failure or maintenance required
	Solar indicator	Steady orange	Solar equipment working
	Grid indicator	Steady green	Export energy to the grid
		Steady orange	Import energy from the grid
		Off	Grid off
	Battery indicator	Steady green	Battery charging
		Steady orange	Battery discharging
		Blinking green	Wake up
		Off	Others

Rear View

Figure 2-5 Rearview



- (1) Main control box mounting bracket (2) Battery box mounting bracket
(3) Heatsink

Dimensions

Figure 2-7 Dimensions of the enclosure

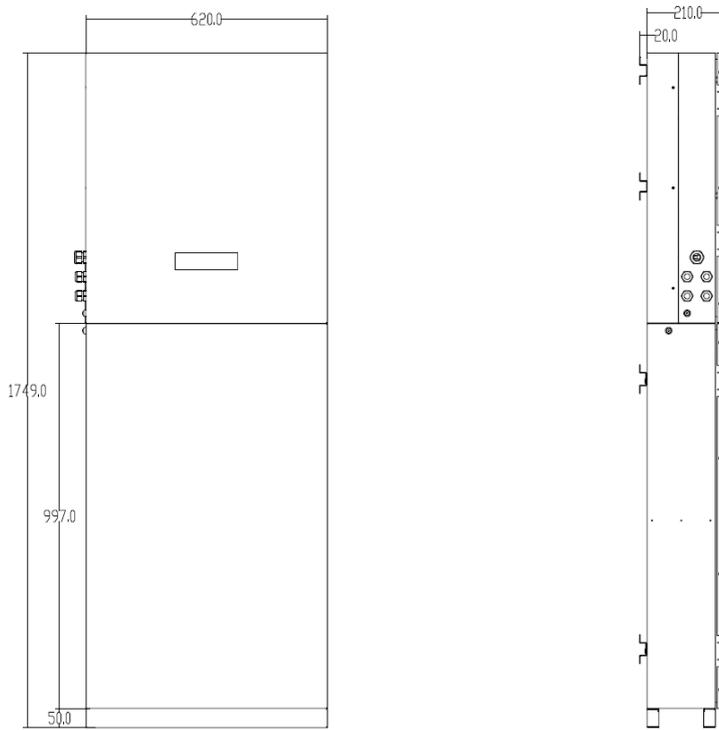


Figure 2-8 Dimensions of the main control box mounting bracket

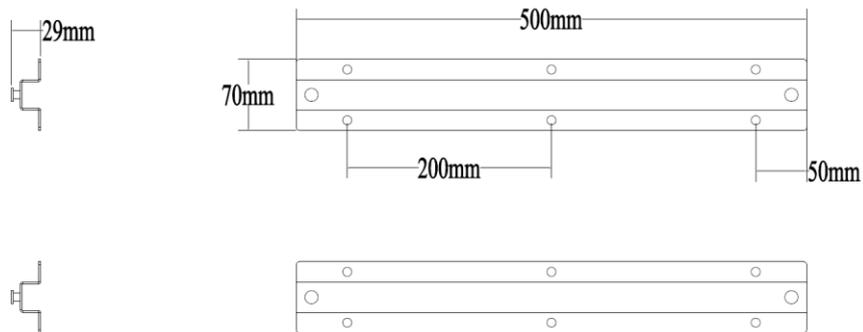
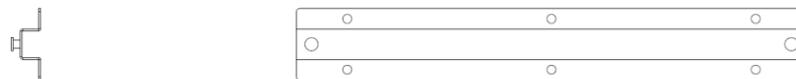
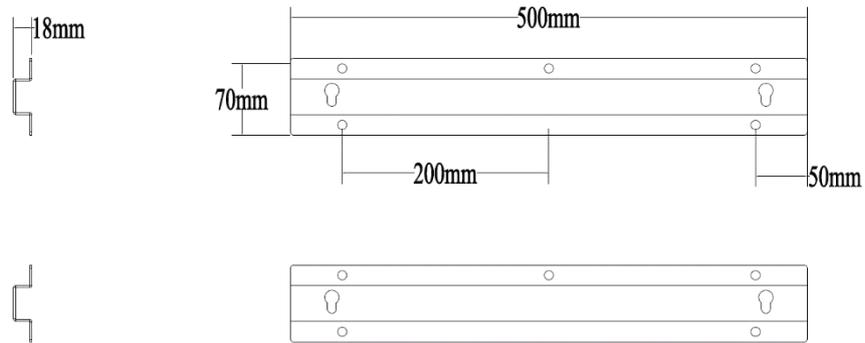


Figure 2-9 Dimensions of the battery box mounting bracket





2.3.Label Description

Symbols

Table 2-3 Label description

Symbol	Name	Meaning
	Burn warning	Do not touch a running BRE-I-5K14K because the cover is hot when the BRE-I-5K14K is running.
	Delay discharge	High voltage exists after the BRE-I-5K14K is power on. Only qualified and trained electrical technicians are allowed to perform operations on the BRE-I-5K14K. Residual voltage exists after the BRE-I-5K14K is powered off. It takes 5 minutes for the BRE-I-5K14K to discharge to the safe voltage.

Symbol	Name	Meaning
	Refer to documentation	Reminds operators to refer to the documents shipped with the BRE-I-5K14K.
	Grounding	Indicates the position for connecting the protective earthing (PE) cable.
 Do not disconnect under load! 禁止带负荷断开连接!	Operation warning	Do not remove the connector or antenna when the BRE-I-5K14K is running.
 SN: xxxxxxxxxxxxxxxxxxxxxx	BRE-I-5K14K serial number (SN) label	Indicates the serial number of BRE-I-5K14K.



NOTE

The labels are for reference only.

3 Storage

The following requirements should be met when the BRE-I-5K14K needs to be stored before installation:

- Do not unpack the BRE-I-5K14K.
- Keep the storage temperature at -40°C to $+70^{\circ}\text{C}$ and the humidity at 5%–95% RH.
- The BRE-I-5K14K should be stored in a clean and dry place and be protected from dust and water vapor corrosion.
- A maximum of 2 BRE-I-5K14Ks can be stacked. To avoid personal injury or device damage, stack BRE-I-5K14Ks with caution to prevent them from falling over.
- Regular inspection is required during the storage. Replace the packing materials when necessary.
- After long-term storage, inspection and testing conducted by qualified persons are necessary before the BRE-I-5K14K is put into use.

4 System Installation

4.1. Checking Before Installation

Outer Packing Materials

Before unpacking the BRE-I-5K14K, check the outer packing materials for damage, such as holes and cracks, and check the BRE-I-5K14K model. If any damage is found or the BRE-I-5K14K model is not what you requested, do not unpack the package and contact your supplier as soon as possible.



NOTICE

It is advised to remove the packing materials within 24 hours before installing the BRE-I-5K14K.

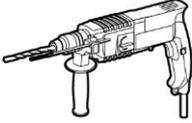
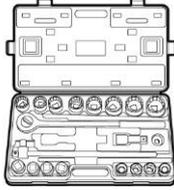
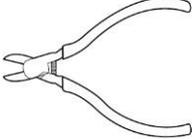
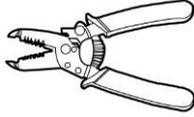
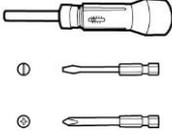
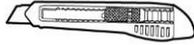
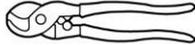
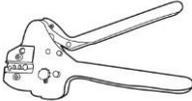
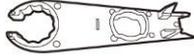
Package Contents

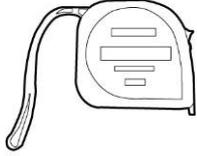
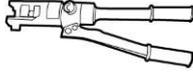
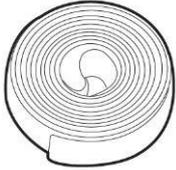
After unpacking the BRE-I-5K14K, check if the contents are intact and complete. If any damage is found or any component is missing, contact your supplier.



For details about the number of contents, see the *Packing List* in the packing case.

4.2. Tools and Instruments

Category	Tools and Instruments		
Installation	 Hammer drill (with a $\Phi 10$ mm drill bit)	 Torque socket wrench (open end: 13 mm, applicable for M8 bolts; torque range: 0–15 N•m)	 Torque wrench (open end: 13 mm; torque range: 0–1.5 N•m)
	 Diagonal pliers	 Wire stripper	 Torque screwdriver (head: M4 or M6; torque range: 0–5 N•m)
	 Rubber mallet	 Utility knife	 Cable cutter
	 Crimping tool (model: H4TC0001; manufacturer: Amphenol)	 Open-end wrench (model: H4TW0001; manufacturer: Amphenol)	 Cable tie
	 Vacuum cleaner	 Multimeter (DC voltage measurement range ≥ 600 V DC)	 Marker

Category	Tools and Instruments		
	 Measuring tape	 Bubble or digital level	 Hydraulic pliers
	 Heat shrink tubing	 Heat gun	N/A
PPE	 Safety gloves	 Safety goggles	 Anti-dust respirator
	 Safety shoes	N/A	N/A

4.3. Determining the Installation Position

Basic Requirements

- The BRE-I-5K14K is protected under IP54 and can be installed indoors or outdoors.
- Do not install the BRE-I-5K14K in a place where a person can easily come into contact with its enclosure and heatsink, because these parts are scorching during operation.
- Do not install the BRE-I-5K14K in areas with flammable or explosive materials.
- Do not install the BRE-I-5K14K at a place within children's reach.
- The BRE-I-5K14K will be corroded in salt areas, and the salt corrosion may cause a fire. Do not install the BRE-I-5K14K outdoors in salt areas. A salt area refers to the region within 500 meters from the coast or prone to the sea breeze. The region prone to sea breeze varies depending on weather conditions (such as typhoons and monsoons) or terrains (such as dams and hills).

Installation Environment Requirements

- The BRE-I-5K14K must be installed in a well-ventilated environment to ensure good heat dissipation.
- When installed under direct sunlight, performance de-rate may be initiated due to the additional temperature rise.
- Install the BRE-I-5K14K in a sheltered place or install an awning over the BRE-I-5K14K.

Mounting Structure Requirements

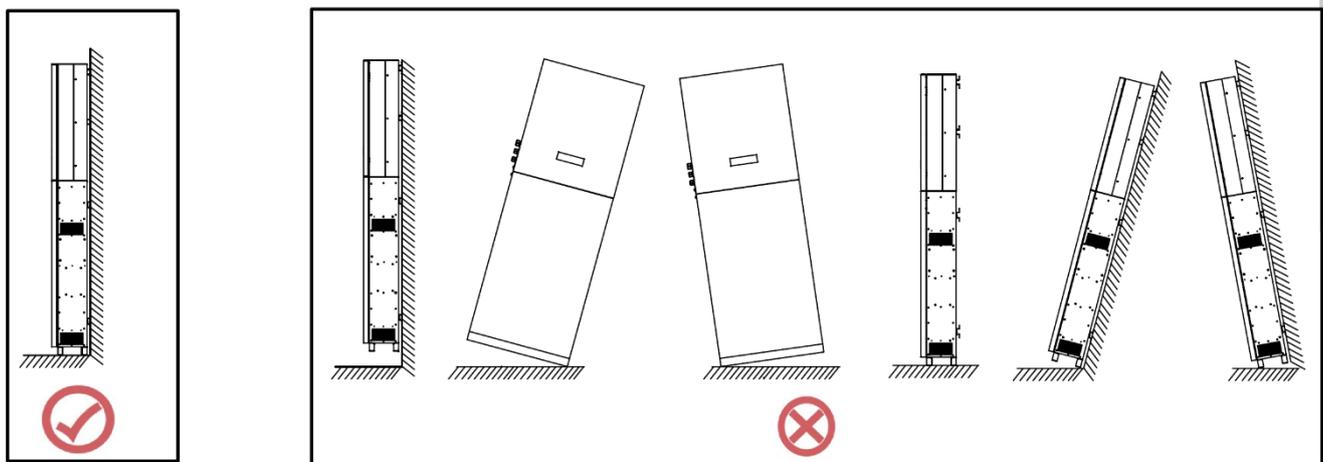
- The mounting structure where the BRE-I-5K14K is installed must be fireproof.
- Do not install the BRE-I-5K14K on flammable building materials.
- Ensure that the installation surface is solid enough to bear the weight load.
- In residential areas, do not install the BRE-I-5K14K on drywalls or walls made of similar materials which have a weak sound insulation performance because the noise generated by the BRE-I-5K14K is noticeable.

Installation Angle Requirements

The BRE-I-5K14K only can be wall-mounted. The installation angle requirements are as follows:

- Install the BRE-I-5K14K vertically.
- Do not install the BRE-I-5K14K at forward-tilted, back tilted, side tilted, horizontal, or upside-down positions.

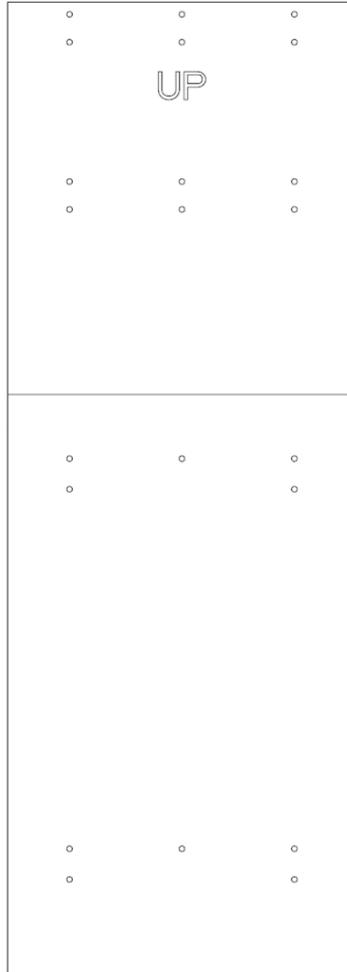
Figure 4-1 Installation angle



4.4. Installing the Mounting Bracket

Four mounting brackets are to be installed through the hole positioning provided with the product.

Figure 4-2 Hole positioning plate

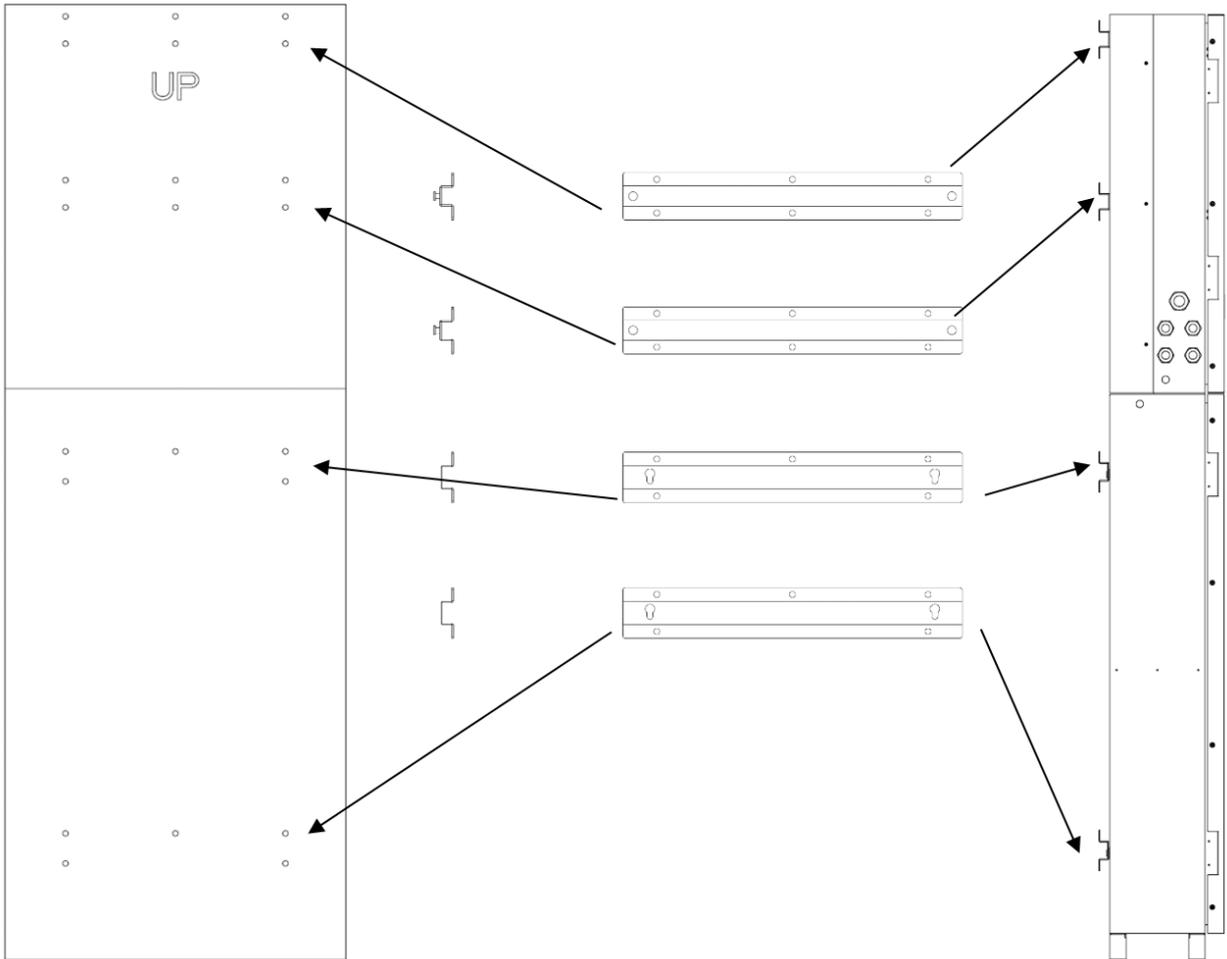


4.5. Wall-Mounted Installation

Procedure

Step 1: Use the hole positioning plate to confirm the position of the hole. Use a bubble or digital level to adjust the positions of the mounting holes and mark the positions with a marker.

Figure 4-3 Determining hole positions

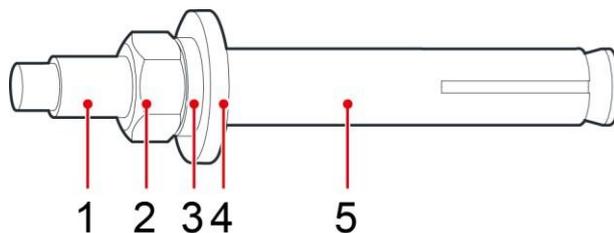


Step 2: Install expansion bolts.**DANGER**

Avoid drilling holes in the utility pipes and/or cables attached to the back of the wall.

**NOTE**

If the length or number of M8x80 expansion bolts supplied with the BRE-I-5K14K is not enough, prepare M8 stainless steel expansion anchor bolts.

Figure 4-4 Expansion bolt composition

IS05W00018

(1) Bolt

(2) Nut

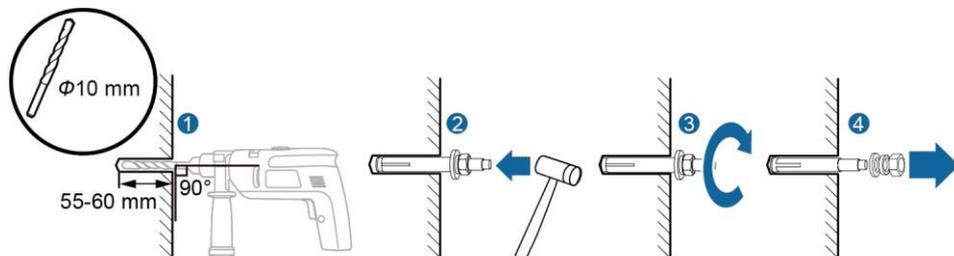
(3) Spring washer

(4) Flat washer

(5) Expansion sleeve

**NOTICE**

- To prevent dust inhalation or contact with eyes, wear safety goggles and an anti-dust respirator when drilling holes.
- Clean up any dust in and around the holes using a vacuum cleaner and measure the distance between holes. If the holes are inaccurately positioned, drill a new set of the holes.
- Level the head of the expansion sleeve with the concrete wall after removing the bolt, spring washer, and flat washer. Otherwise, the mounting bracket will not be securely installed on the concrete wall.

Figure 4-5 Installing an expansion bolt

IS05H00021

Step 3: Secure the mounting bracket.**----End**

4.6. Installing the BRE-I-5K14K

Procedure

The BRE-I-5K14K consists of a two-part structure, the main control box, and the battery box. The battery box must be installed before installing the battery box.



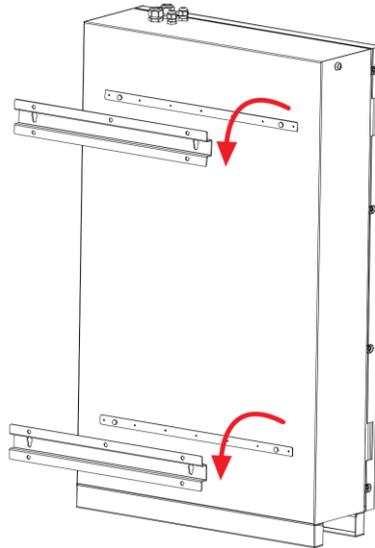
DANGER

- To prevent device damage and personal injury, keep balance when moving the BRE-I-5K14K.
 - Do not use the wiring terminals and ports at the bottom to support any weight of the BRE-I-5K14K.
 - When you need to temporarily place the BRE-I-5K14K on the ground, use foam, paper, or other protective material to prevent damage to its cover.
-

4.5.1 Battery Box installation

Step 1: Make sure the battery box is firmly fixed to the wall.

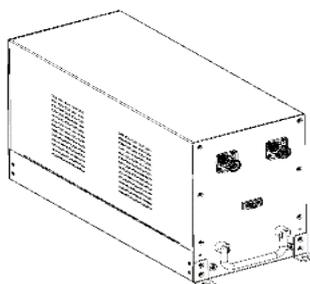
Figure 4-6 Mounting battery box



Step 2: Open the front panel.

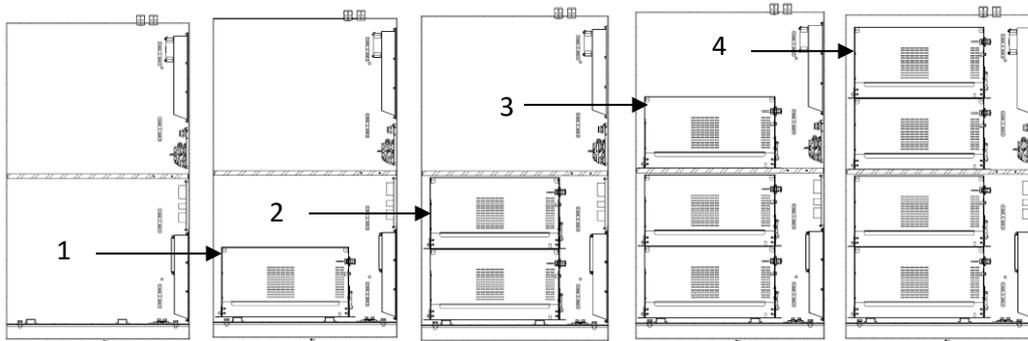
Step 3: Check the battery packs that will be installed in the battery box, and make sure that each battery pack is intact and has a number from 1 to 4;

Figure 4-7 Battery Pack



Step 4: Place the battery pack in the battery compartment by number 1~4.

Figure 4-8 Install the battery pack

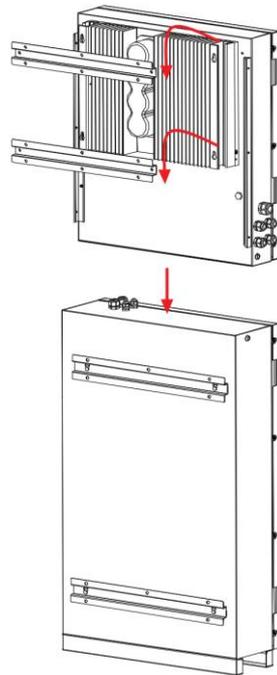


- (1) Install 1# battery pack
- (2) Install 2# battery pack
- (3) Install 3# battery pack
- (4) Install 4# battery pack

4.5.2 Main control installation

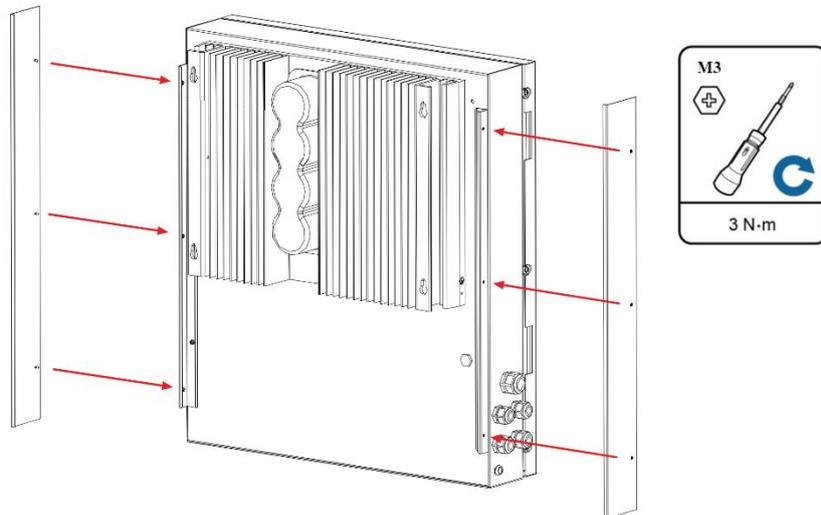
Step 1: Make sure the main control box is firmly fixed to the wall.

Figure 4-9 Mounting main control box



Step 2: After confirming that the main control box is fixed, fix the side panels.

Figure 4-10 Mounting side panels



5 Electrical Connections

Precautions



DANGER

Before connecting cables, ensure that the DC switch on the BRE-I-5K14K and all the switches connecting to the BRE-I-5K14K are OFF. Otherwise, the high voltage of the BRE-I-5K14K may result in electric shocks.



DANGER

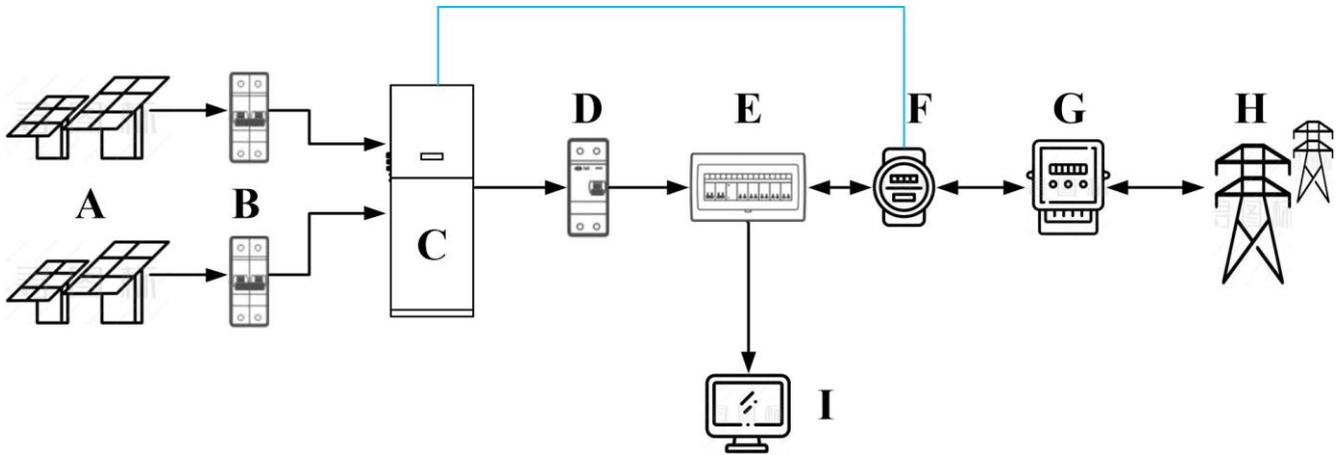
- The equipment damage caused by incorrect cable connections is beyond the warranty scope.
 - Only certified electricians are allowed to connect cables.
 - Operation personnel must wear proper PPE all the time when connecting cables.
-

NOTE

The cable colors shown in the electrical connection diagrams provided in this chapter are for reference only. To select cables following local cable specifications (The green-and-yellow cable is only used for PE).

5.1 Preparing Cables

Figure 5-1 Network diagram (optional in dashed boxes)

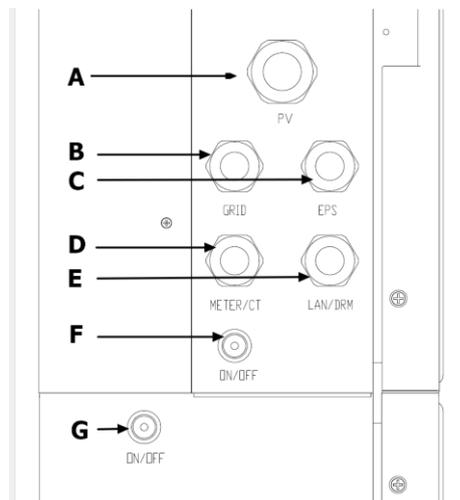


NOTE

— indicates a power cable, → indicates the power flow direction, and — indicates a signal cable.

- | | | |
|-----------------------------|--|----------------------|
| (A) PV string | (B) DC switch | (C) BRE-I-5K-14K |
| (D) AC switch | (E) Residential power distribution board | (F) Energy meter |
| (G) Residential power meter | (H) Power grid | (I) Residential load |

Figure 5-2 BRE-I-5K14K cable connections



- | | | |
|---------------------------|--------------------------------|----------------------------|
| (A) PV connector | (B) Grid input/output | (C) EPS output |
| (D) Energy meter port | (E) COM port and dry contactor | (F) Inverter ON/OFF button |
| (G) Battery ON/OFF button | | |

Table 5-1 Component description

No.	Component	Description	Source
1	PV string	A PV string is composed of the PV modules connected in series and works with an optimizer. The BRE-I-5K14K supports the input from two PV strings.	Prepared by the customer
2	DC switch	Recommended: a DC circuit breaker with a rated voltage greater than or equal to 1000 V DC and a rated current of 20 A	Prepared by the customer
3	AC switch	Recommended: an AC circuit breaker with a rated voltage greater than or equal to 250 V AC and a rated current of 25 A	Prepared by the customer
4	Energy meter	The energy meters that can connect to the BRE-I-5K14K are CHINT-DDSU666, CCS-WNC-3Y-400-MB, Gavazzi-EM340DINAV23XS1X, and Gavazzi-EM111DINAV81XS1X.	Prepared by the customer



NOTICE

- If the external AC switch can perform earth leakage protection, the rated leakage action current should be greater than or equal to 100 mA.
- The BRE-I-5K14K doesn't include an integrated residual current device (RCD). If an external residual current device (RCD) is used, a device of type A should be used, with a tripping current of 100 mA or higher.
- If multiple BRE-I-5K14Ks connect to the general RCD through their respective external AC switches, the rated leakage action current of the general RCD should be greater than or equal to the number of BRE-I-5K14Ks multiplied by 100 mA.
- A knife switch cannot be used as an AC switch.

Table 5-2 Cable description

No.	Cable	Type	Conductor Cross-sectional Area Range	Outer Diameter	Source
1	DC input power cable	Standard PV cable in the industry (recommended model: PV1-F)	6 mm ²	4.5–7.8 mm	Prepared by the customer
3	Signal cable	Four-core outdoor shielded twisted pair	1 mm ²	4–11 mm	Prepared by the customer
4	AC output power cable	Not using the PE equipotential point at the AC output port: two-core (L and N) outdoor copper cable Using the PE equipotential point at the AC output port: three-core (L, N, and PE) outdoor copper cable	6 mm ²	10–21 mm	Prepared by the customer
5	PE cable	Single-core outdoor copper cable with an M6 OT terminal	10 mm ²	N/A	Prepared by the customer

5.2 Installing Battery Box Cable



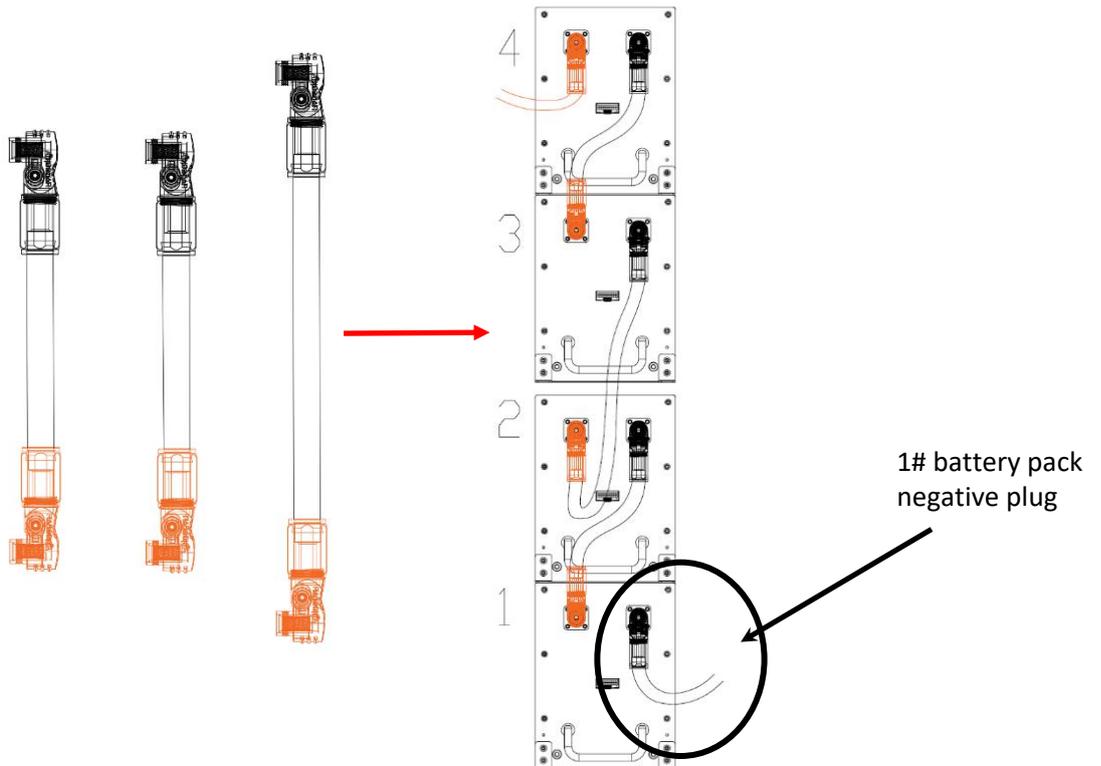
DANGER

- Do not connect the negative plug (black) of the 1# battery pack until the battery box is connected to the inverter.

Procedure

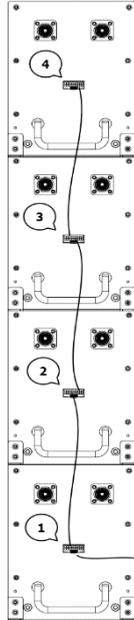
Step 1: Please insert the DC cable into the battery pack according to the left side of the figure. Pay attention to the color of the plugs. The number on the cable head corresponds to the battery pack with different numbers.

Figure 5-3 DC cable installation



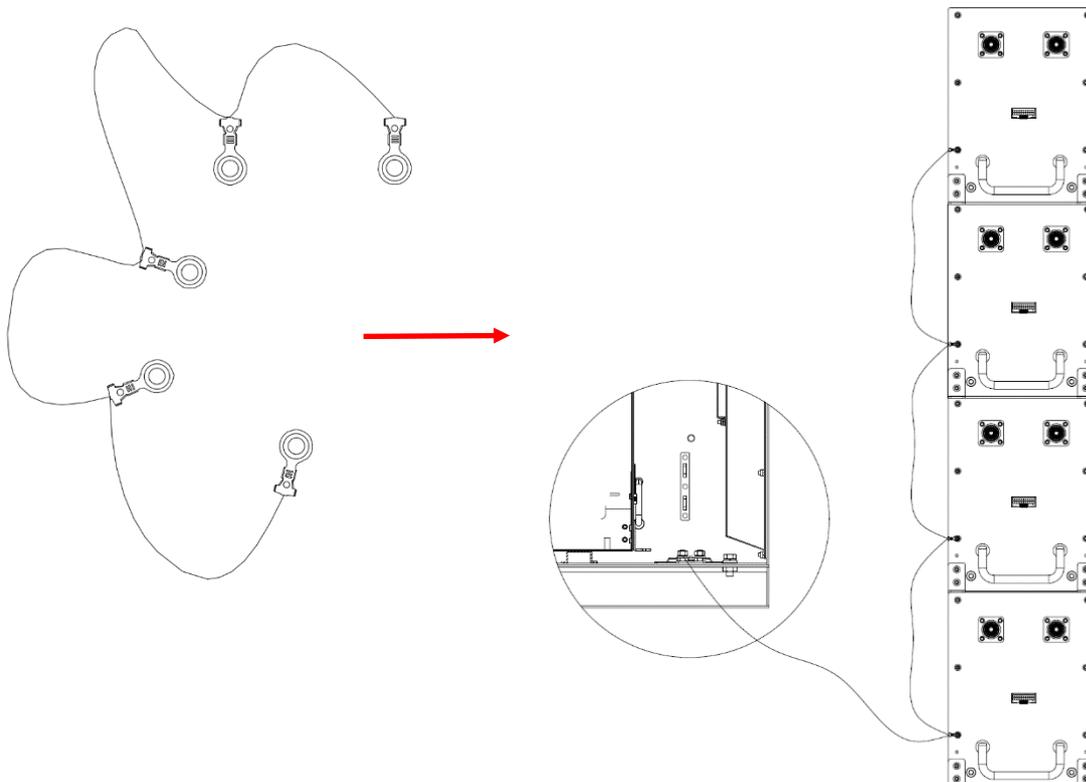
Step 2: Insert the communication connector into the communication interface of the four battery packs by number.

Figure 5-5 Communication cable installation



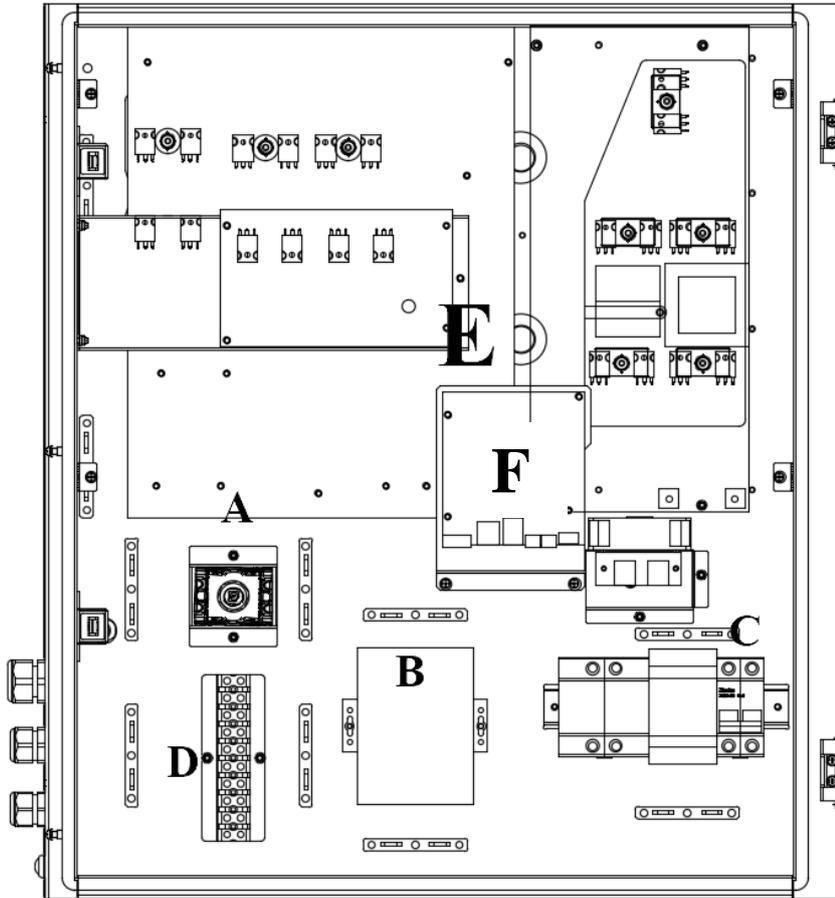
Step 3: Please connect the PE cable, as shown (Figure 5-6), to ensure that all battery packs are well-grounded.

Figure 5-6 PE cable installation



5.3 Installing the main control box

Figure 5-7 Main control box equipment layout



(A) DC switch

(B) 4G model

(C) Battery switch

(D) AC & PV terminal

(E) Inverter model

(F) Inverter COM
board

5.3.1 Installing the DC Input Power Cable

Prerequisites



DANGER

- Before connecting the DC input power cable, ensure that the DC voltage is within the safe range (lower than 60 V DC) and that the DC switch on the BRE-I-5K14K is OFF. Failing to do so may result in electric shocks.
 - When the BRE-I-5K14K operates, it is not allowed to work on the DC circuit, such as connecting or disconnecting a PV string or a PV module in a PV string. Failing to do so may cause electric shocks.
 - If no PV string connects to the DC input terminals, do not remove the watertight cap from the DC input terminals. Otherwise, the BRE-I-5K14K will not comply with its Ingress Protection Rating.
-



DANGER

Ensure that the following conditions are met. Otherwise, the BRE-I-5K14K will be damaged or even become a fire hazard.

- The open-circuit voltage of each PV string is always lower than or equal to 600 VDC.
 - The positive and negative terminals of a PV string connect to corresponding positive and negative DC input terminals of the BRE-I-5K14K.
 - If the polarity of the DC input power cable is reversed and the DC switch is ON, do not turn off the DC switch immediately or unplug positive and negative connectors. Wait until the solar irradiance declines at night and the PV string current reduces to below 0.5 A, and then turn off the DC switch and remove the positive and negative connectors. Correct the string polarity before reconnecting the string to the BRE-I-5K14K.
-



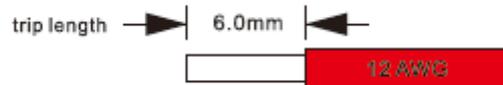
NOTICE

- Since the output of the PV string connected to the BRE-I-5K14K cannot be grounded, ensure that the PV module output is well insulated to the ground.
 - During the installation of PV strings and BRE-I-5K14K, the positive or negative terminals of PV strings may be grounded if power cables are not correctly installed or routed. In this case, an AC or DC short circuit may occur and damage the BRE-I-5K14K. This damage is not covered under any warranty or service agreement.
-

Procedure

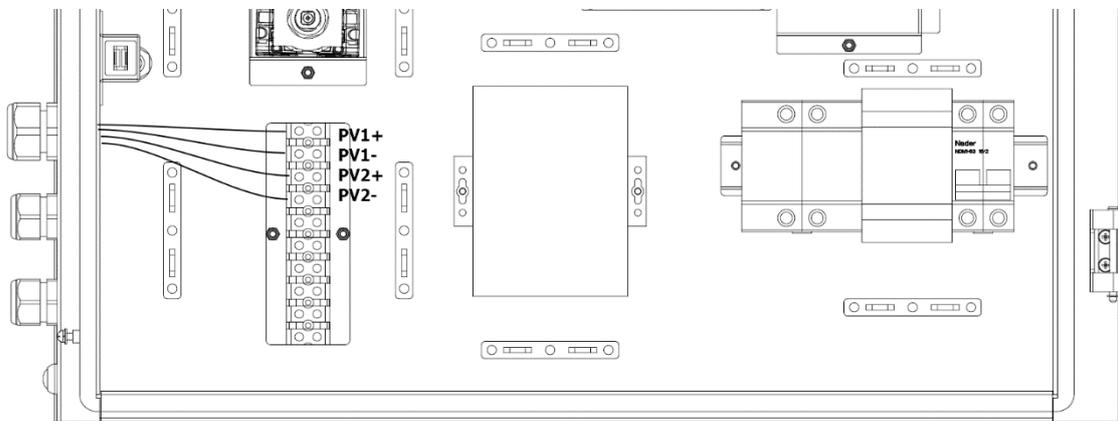
- Disconnect the PV switch.
- Choose 12 AWG wire to connect the PV module.
- Strip 6mm of insulation from the Wire end.

Figure 5-8 Stripped length



- Connect the cable through the waterproof connector and connect the terminal in the main control box.

Figure 5-8 PV cable installation



5.3.2 Installing the AC Input/output Power Cable (Grid)

Prerequisites



Do not connect any load between the BRE-I-5K14K and the AC switch.

Procedure

- Check the grid voltage and compare it with the permissible voltage range. (see technical data).
- Disconnect the circuit-breaker from all the phases and secure against re-connection.
- Strip the wires:
Strip all the wires to 52.5mm and the PE wire to 55mm.

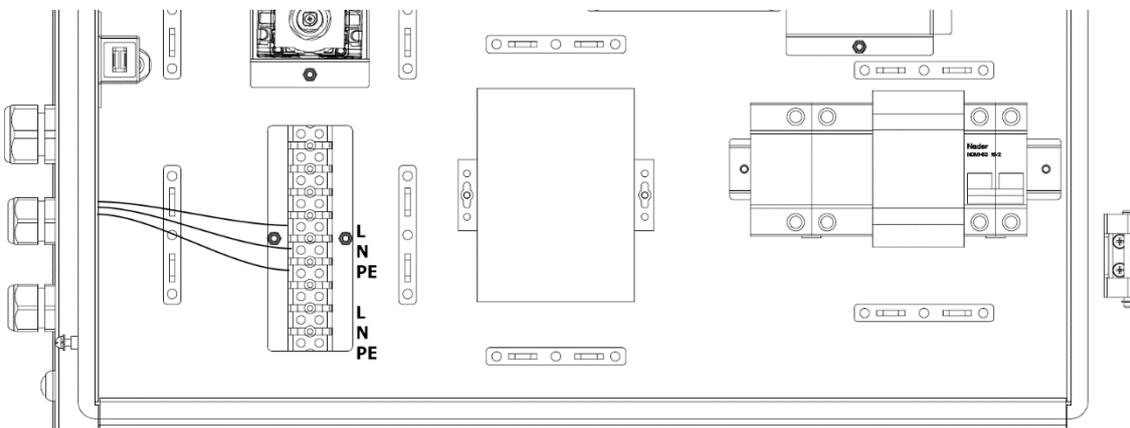
Figure 5-9 Stripped length



Use the crimping pliers to strip 12mm of insulation from all wire ends as below.

- Connect AC cables into the "GRID" connectors.

Figure 5-10 AC cable installation



5.3.3 Installing the EPS Cable

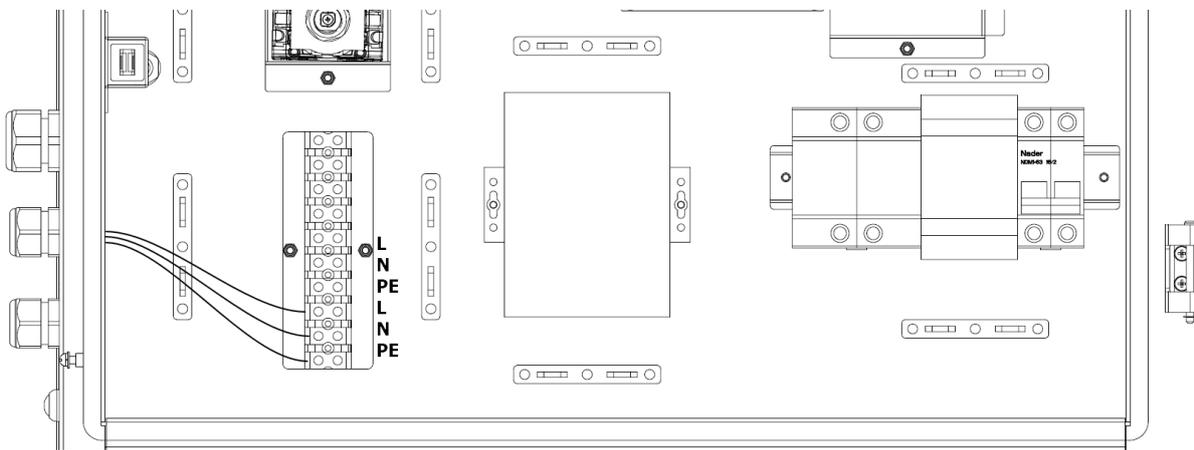
Context

The system has on and off-grid function. It will have output through the grid output when the grid is on and output through the EPS output when the grid is off.

Connection Steps:

Insert the stripped end of each three wires (L, N, and PE) , tight them.

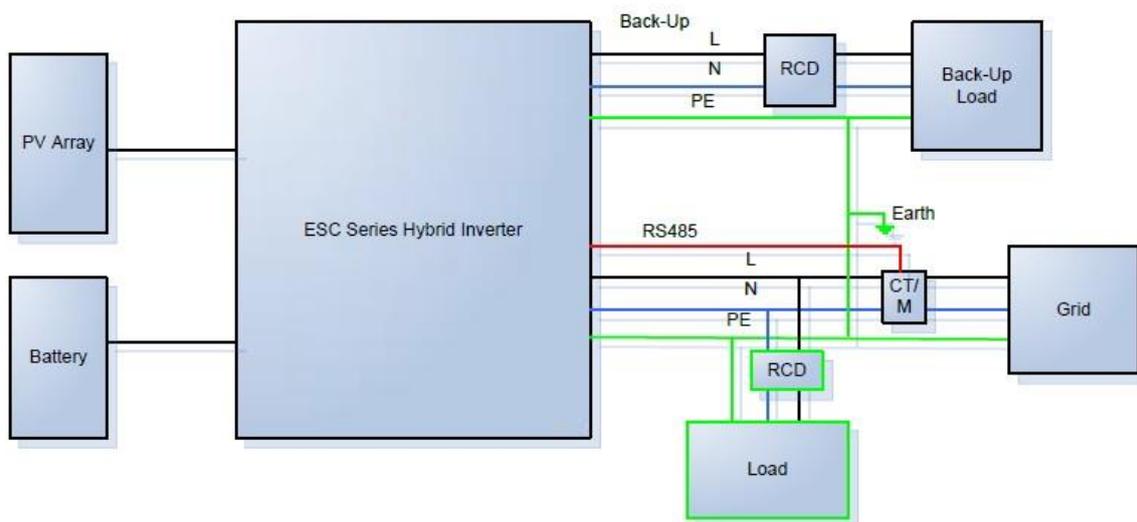
Figure 5-11 EPS cable installation



EPS wiring diagram

The below diagram is for reference based on different local wiring rules. Please follow the local regulations for the external wiring to choose suitable wiring mode.

Figure 5-12 Reference diagram



5.3.4 Installing the PE Cable

Context



DANGER

Do not connect the neutral wire to the enclosure as a PE cable. Otherwise, electric shocks will be caused.

Procedure

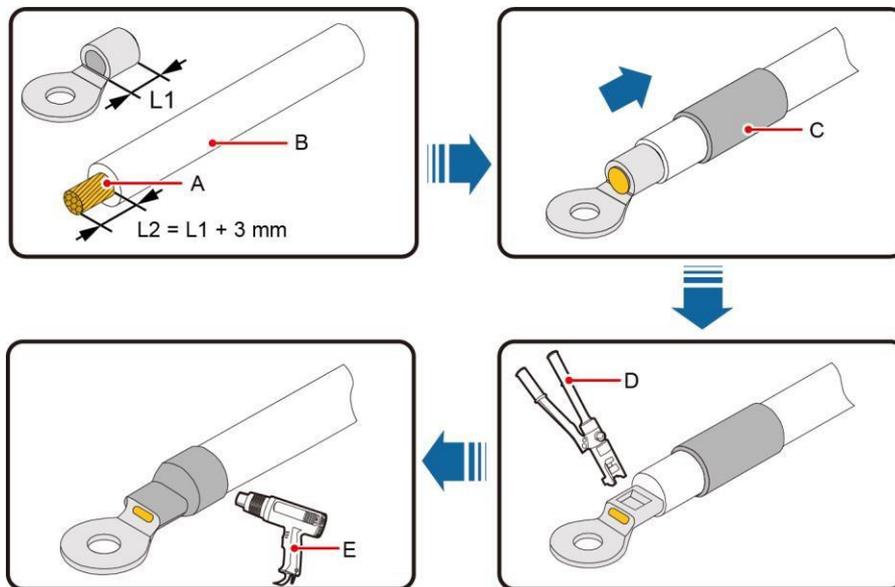
Step 1 Crimp the OT terminal.



NOTICE

- Pay attention not to damage the core wire when stripping a cable.
- The cavity formed after the conductor crimp strip of the OT terminal is crimped must wrap the core wires completely. The core wires must closely contact the OT terminal.
- Wrap the wire crimping area with heat shrink tubing or PVC insulation tape. The following figure uses heat shrink tubing as an example.
- When using the heat gun, protect devices from being scorched.

Figure 5-13 Crimping an OT terminal



(A) Core wire

(B) Insulation layer

(C) Heat-shrink tubing

(D) Hydraulic pliers

(E) Heat gun

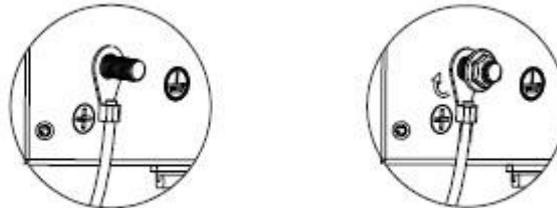
Step 2 Connect the PE cable.



NOTICE

Ensure that the PE cable is connected securely.

Figure 5-14 Connecting a PE cable

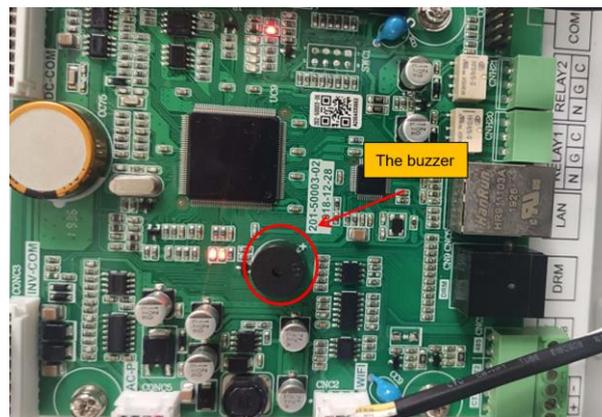


NOTE

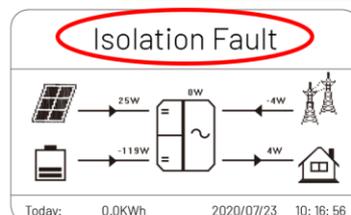
- The PE point at the AC output port is used only as a PE equipotential point and cannot substitute for the PE point on the enclosure.
- To enhance the corrosion resistance of a ground terminal, apply silica gel or paint around the terminal after connecting the ground cable.
- Earth fault Alarm

This system complies with IEC 62109-2 clause 13.9 for earth fault alarm monitoring. It will give an alarm once the earth impedance of the PV arrays is less than 30kΩ.

If an Earth Fault Alarm occurs, the fault code <Isolation fault> will be displayed on the system screen / the red fault LED indicator will light up and flash. At the same time, the buzzer in the system will alarm.



The fault info shown on screen when an Earth Fault Alarm occurs



----End

5.4 Install the cable between the main control box and the battery box

Context

Before the official use, the battery box has DC cables and communication cables need to be connected to the main control box.



DANGER

- Do not connect the negative plug (black) of the 1# battery pack until the battery box is connected to the inverter.
-

Procedure

Step 1 Installing the Com cable (Can cable)

- The communication cable is pre-installed in the battery box to find the cable to be connected to the RJ45 connector.
 - Insert one RJ45 side of the cable into BMS port in the control box.
-



DANGER

- Make sure you select the correct specification cables for installation.
 - Otherwise the power will make the cable hot or burnt; it could result in death or serious injury
-

Step 2 Installing the Com cable (Can cable)

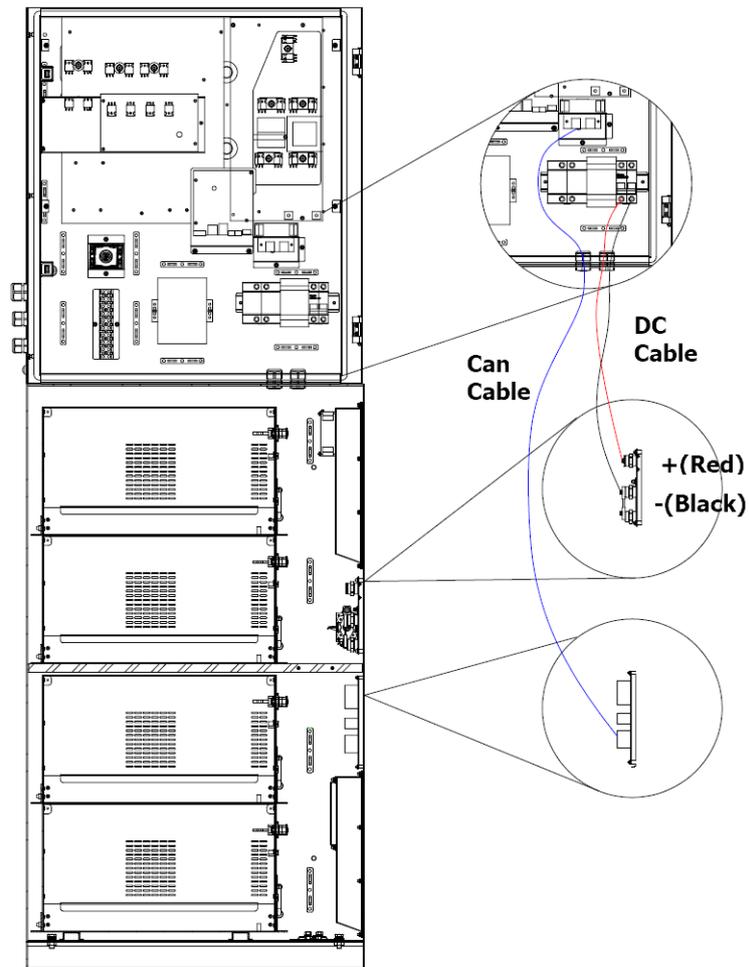
- Connect one side of the battery connect wire to the **Figure 5-15** Position shown.
 - Connect the positive side of the battery connect wire to the positive side of the battery.
 - the negative side of the battery connect wire to the negative side of the battery.
 - Make sure the positive and negative side of battery are connected.
-



NOTICE

- Ensure that the exposed core wire is totally inserted into the cable hole.
 - Ensure that the signal cables are connected securely.
 - Ensure that the cable is not twisted.
 - If a connector needs to connect to only one signal cable, block the unused cable hole on the seal using a cap and tighten the cable gland.
 - If a connector needs to connect to two signal cables, ensure that the cables have the same outer diameter.
-

Figure 5-15 Installing the Com cable



5.5 DRM port and connections

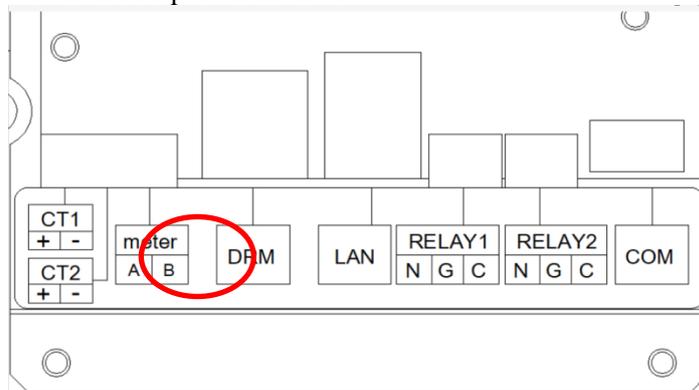
Prerequisites



NOTICE

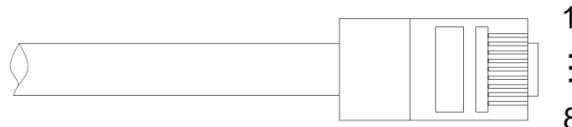
The DRM port locates inside the Inverter Com board, as shown in **Figure 5-7**.

Below is the DRM port on inverter:



Context

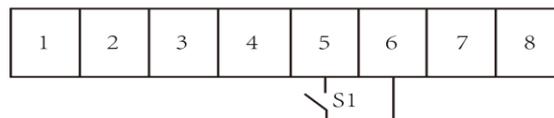
The DRM port will be connected with an 8-pin Ethernet cable, the PIN definitions and the circuit connection are as below.



Pin	1	2	3	4	5	6	7	8
Function	AD1	AD2	AD3	AD4	+3.3V	AD0	N/C	N/C

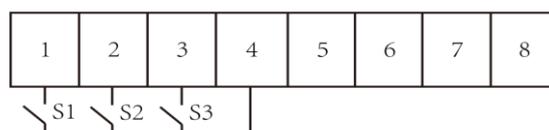
DRM/Remote off

The inverter will shut off if the PIN 5 and PIN 6 of DRM port are connected.



Remote control for reactive power regulation

The signal provided by the circuit controls the reactive power regulation.



6 System Commissioning

6.1 Checking Before Power-On

Table 6-1 Installation checklist

No.	Check Item	Acceptance Criteria
1	BRE-I-5K14K installation	The BRE-I-5K14K is installed correctly, securely, and reliably.
3	Cable layout	Cables are correctly routed as required by the customer.
4	Cable tie	Cable ties are secured evenly, and no burr exists.
5	Grounding	The ground cable is connected correctly, securely, and reliably.
6	DC switch	The DC switch and all the switches connecting to the BRE-I-5K14K are OFF.
7	Cable connections	The AC output power cable, DC input power cable, battery cable, and signal cable are connected correctly, securely, and reliably.
8	Unused terminals and ports	Watertight caps lock unused terminals and ports.
9	Installation environment	The installation space is proper, and the installation environment is clean and tidy, without a foreign matter.

6.2 Powering on the System

Prerequisites

Before turning on the AC switch between the BRE-I-5K14K and the power grid, check that the AC voltage on the power grid side of the AC switch is within the specified range.



NOTICE

- If the DC is on and the AC is off, the BRE-I-5K14K reports a Grid Failure alarm. The BRE-I-5K14K can only operate after the fault is rectified.
 - The BRE-I-5K14K will automatic recover when it detects the grid recovered. When the AC is off, the BRE-I-5K14K will shut off from the grid and provide power to EPS load automatically.
 - If the AC is on and the battery is off, the BRE-I-5K14K reports a **Battery Abnormal** alarm.
 - If the BRE-I-5K14K is connected to the battery, after turning on the AC switch: If the DC switch is turned on within 1 minute, the BRE-I-5K14K will run properly in grid-tied mode. If the DC switch is not turned on within 1 minute, the BRE-I-5K14K will enter the nighttime grid-tied mode. Then, after the DC switch is turned on, the BRE-I-5K14K will shut down and then restart to run in grid-tied mode.
-

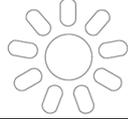
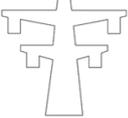
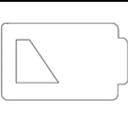
First start

- Step 1** Confirm that the battery switch (Figure 5-7) is off.
- Step 2** Connect 1#battery pack negative plug (Figure 5-3).
- Step 3** Confirm that the Battery ON/OFF button LED (Figure 5-2) is on.
- Step 4** Turn on the battery switch (Figure 5-7) .
- Step 5** Start procedure.

Procedure

- Step 1** Turn on the AC switch between the BRE-I-5K14K and the power grid.
- Step 2** Turn on the DC switch for PV (Figure 5-7 A).
- Step 3** Turn on the DC switch between the PV string and the BRE-I-5K14K if there is any.
- Step 4** Turn on the DC switch at the bottom of the BRE-I-5K14K.
- Step 5** Observe the LEDs to check the BRE-I-5K14K operating status.

Table 6-2 LED description

Type	Name	Status	Meaning
	Maintenance indicator	Steady red	BHSS failure or maintenance required
	Solar indicator	Steady orange	Solar equipment work
	Grid indicator	Steady green	Feed energy to the grid
		Steady orange	absorb energy from the grid
		Off	Grid off
	Battery indicator	Steady green	Battery charging
		Steady orange	battery discharging
		Blinking green	Wake up
		off	Others

----End

6.3 Powering Off the System

Context



DANGER

- After the BRE-I-5K14K powers off, the remaining electricity and heat may still cause electric shocks and body burns. Therefore, put on protective gloves and begin servicing the BRE-I-5K14K 5 minutes after the power-off.
 - If the BRE-I-5K14K is connected to the battery, ensure that a shutdown command is sent from the app. Power off the system after the BRE-I-5K14K has shut down. If no shutdown command is sent from the app, the BRE-I-5K14K will shut down after the power grid is powered off. Then, the BRE-I-5K14K will wait for 1 minute and restart (not grid-tied) to charge the battery, which poses the risk of turning off the DC switch with power.
-

Procedure

- Step 1** Press the battery ON/OFF button (Figure 5-2) for 5 seconds to turn off the battery;
- Step 2** Turn off the AC switch between the BRE-I-5K14K and the power grid.
- Step 3** Turn off the DC switch at the bottom of the BRE-I-5K14K.
- Step 4** Turn off the DC switch between the PV string and the BRE-I-5K14K if there is any.
- Step 5** If a battery connects to the battery port, turn off the battery switch.

----End

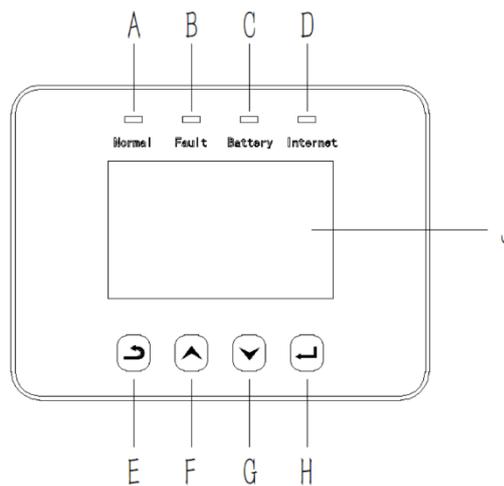
6.4 Operation Method

Context



NOTICE

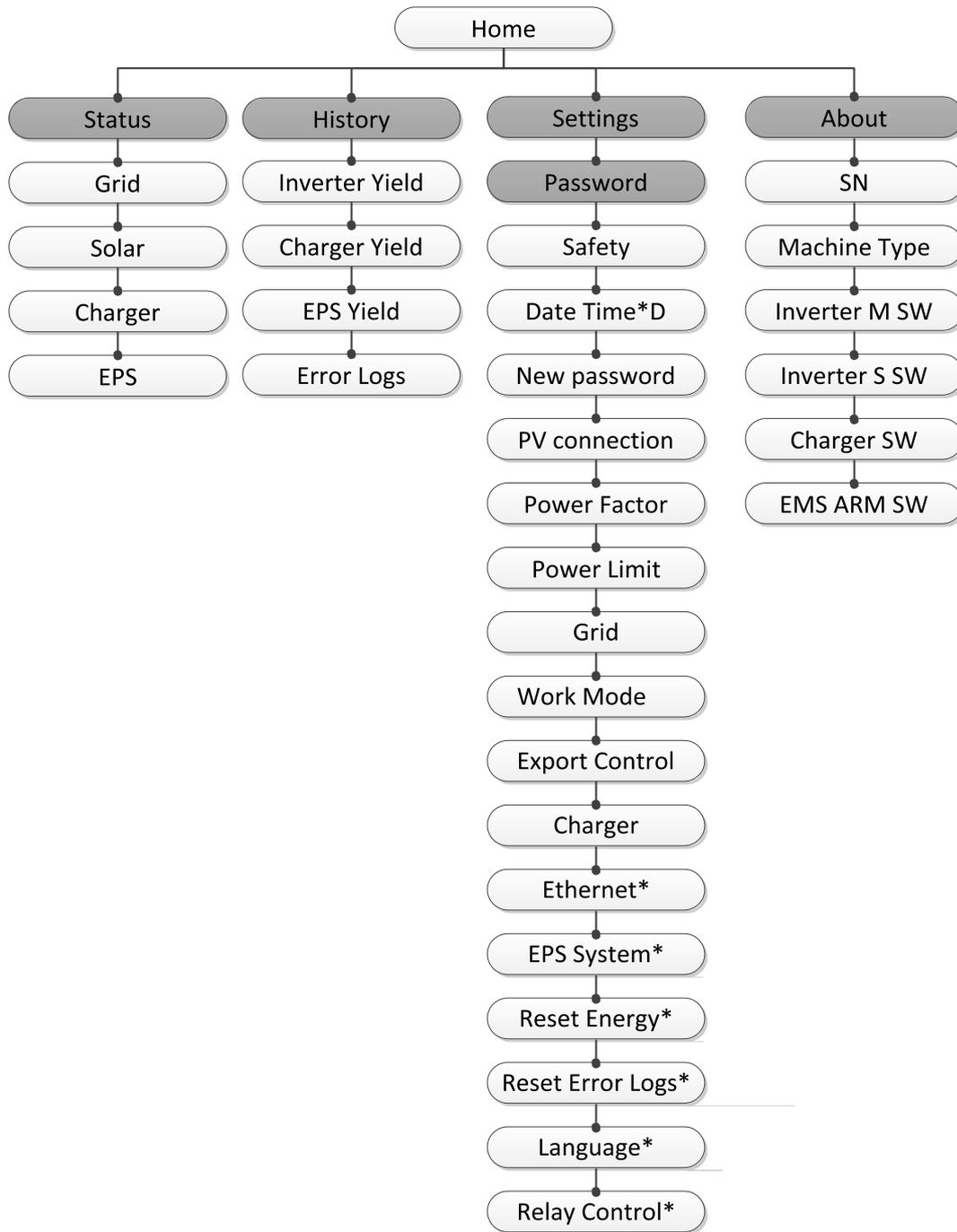
- The machine will be set up when installed to the house by a qualified installer with a handheld debugging tool (a handheld control panel). Non-professionals are not allowed to use.



- Control Panel**

Object	Name	Description
A	Indicator LED	Green: Normal working Status.
B		Red: Error
C		Blue: Battery charging or discharging
D		Yellow: Communication status.
E	Function Button	ESC button: Leave from current interface or function.
F		Up button: Move cursor to upside or increase value.
G		Down button: Move cursor to downside or decrease value.
H		OK button: Confirm the selection.
J	LCD Screen	Display the information of the inverter.

- **LCD Function**



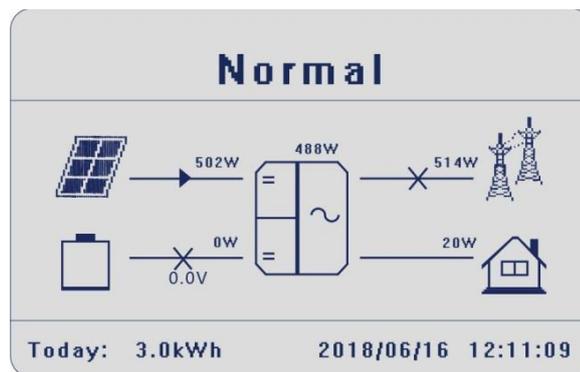
Note: * Can be set by end user. Others can only be set by the technician or installer with the installer password.

- **LCD Operation**

(A) LCD Digital Display

The main interface is the default interface. The inverter will automatically jump to this interface when the system starts up successfully or not operated for a while.

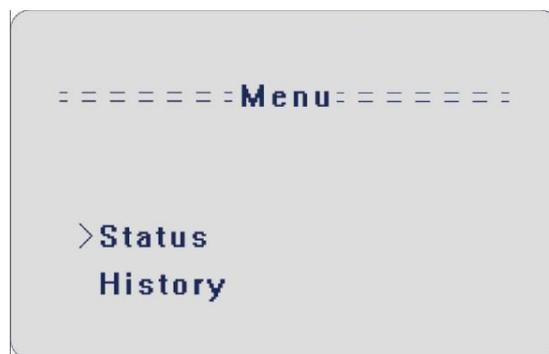
The information of the interface is as below. "Today" means the power generated within the day. "Normal" shows the status of the inverter.



(B) Menu Interface

The main interface is a transfer interface for the user to get into the other interface to finish the setting or get the information.

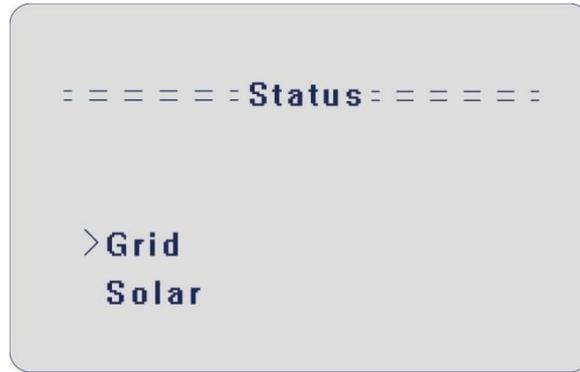
- Users can get into this interface by pressing the "OK" button when the LCD displays the main interface.
- User can select the interface by moving the cursor with the function button and press "OK" to confirm.



- **Status**

The status function contains four aspects of the inverter, grid, solar, battery, and EPS.

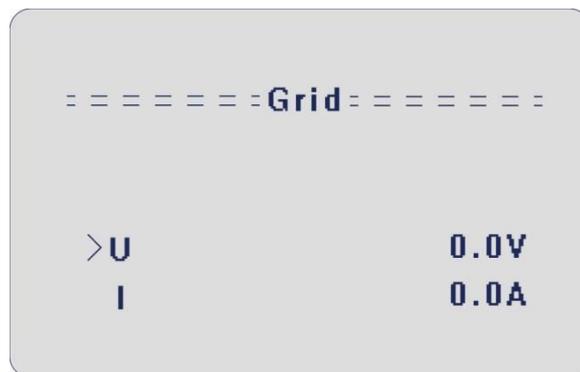
Press up and down to select and press "OK" to confirm the selection, press "ESC" to return to the Menu.



A) Grid

This status shows the real-time grid condition such as voltage, current, output power, and the local consumed power. Pout measures the output of the inverter, Pgrid measures the export to or import from the grid. A positive value means the energy feed into the grid. A negative value means the energy used from the grid.

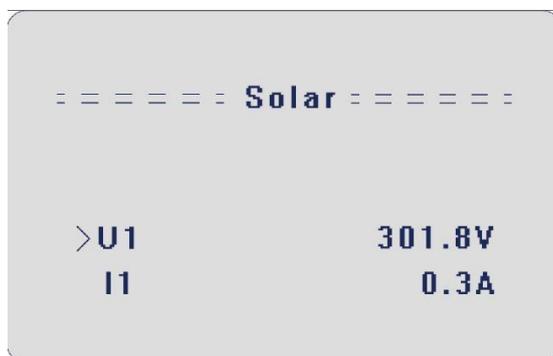
Press the up and down button to review the parameter. Press "ESC" to return to status.



B) Solar

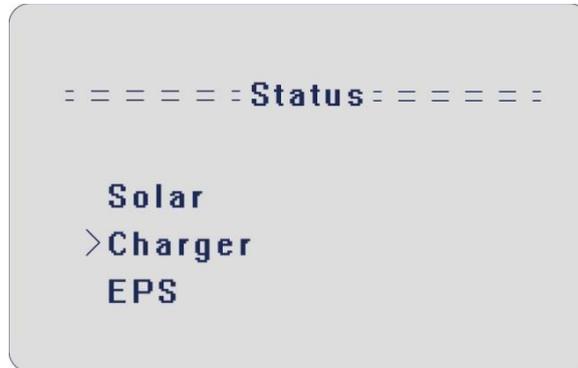
This status shows the real time PV condition of the system. The input voltage, current and power situation of each PV input.

Press up and down button to review the parameter. Press "ESC" to return to status.



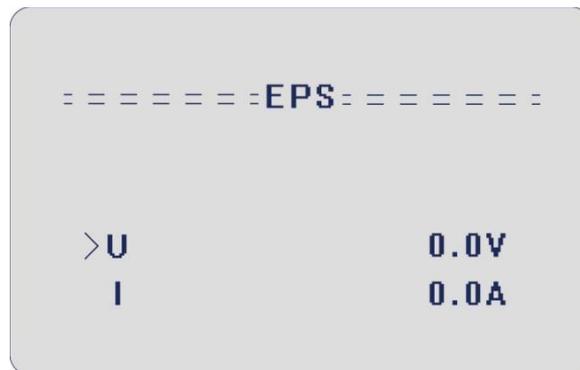
C) **Charger**

This status shows the charger situation of the system, including the battery voltage, charge, or discharge current, charge or discharge power, battery capacity, and battery temperature. "+" means in charging and "-" means in discharging. Press the up and down button to review the parameter. Press "ESC" to return to status.



D) **EPS**

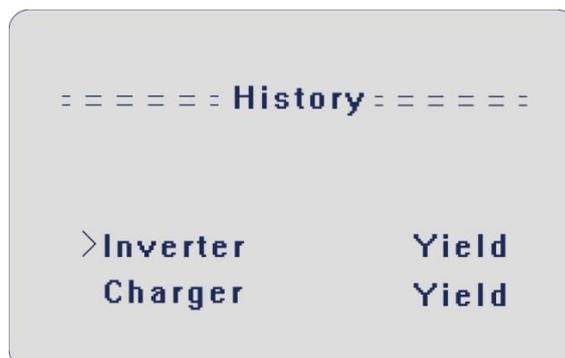
EPS will only have data when the inverter is working in EPS mode. It will show the real-time data of the EPS output, like voltage, current, power, frequency. Press the up and down button to review the parameter. Press "ESC" to return to status.



- **History**

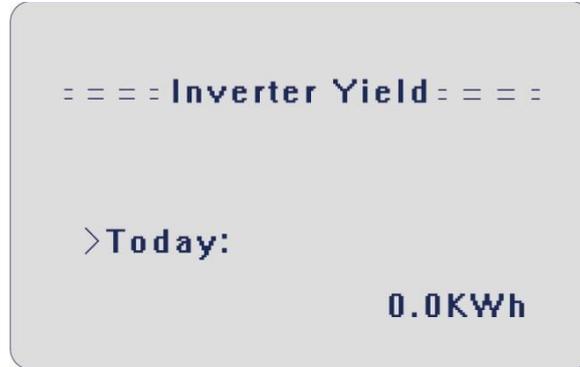
The history function contains three aspects of the information: inverter yield, charger yield, and error log.

Press up and down to select, and press "OK" to confirm the selection, press "ESC" to return to the Menu.



A) Inverter Yield

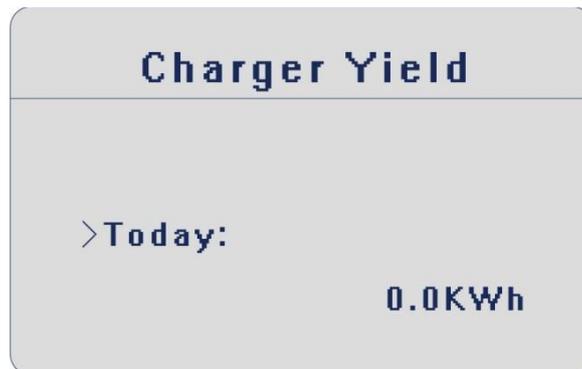
The inverter yield function contains the energy generated by today, yesterday, this month, last month, and total. Press the up and down button to review the parameter. Press "ESC" to return to History.



B) Charger Yield

The charger Yield function contains the energy generated from the battery by today, yesterday, this month, last month, and total.

Press the up and down button to review the parameter. Press "ESC" to return to History.



C) Error Logs

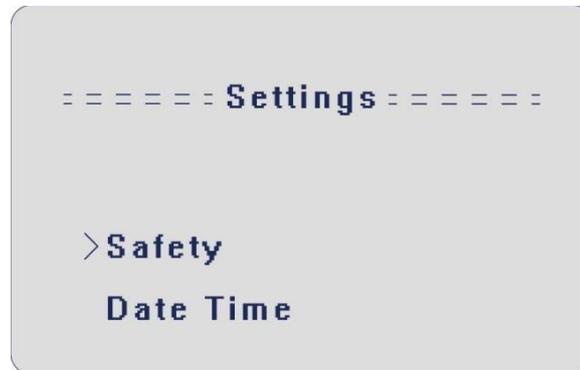
The Error logs contain the error information that happened, which can record for three items. Press the up and down button to review the parameter. Press "ESC" to return to History.



- **Settings**

Setting function is used to set the inverter for time, connection, battery, Ethernet, Grid, etc.

Since the function will change the inverter's parameter, the end-user with the user password as "0000" has limited authority to change the settings. An installer password is required to change most professional settings.



A) Password

The default password is "0000" for the end-user, allowing the user to review the current setting and some easy settings. If professional change is needed, please contact the distributor or factory for the installer password.

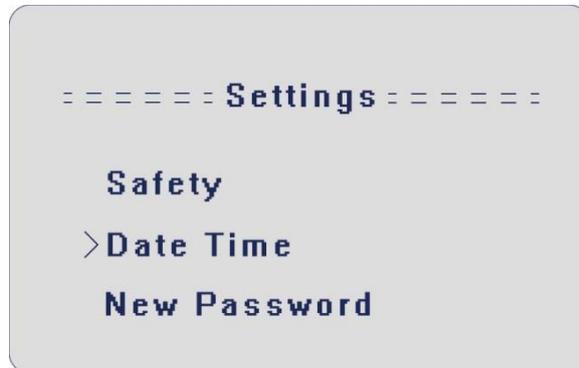
B) Safety (Country Grid Code)

In this function menu, the user can select a corresponding safety standard according to the country using this product. There are 19 standards prebuilt in the system for selection. The complementary relationship between specific safety regulations and countries can be found in the following table.

No.	National/Regional Grid Code	Description
1	AS4777	It's for Australia
2	ARN4105	It's for Germany
3	VDE0126	It's for Germany
4	G99	It's for United Kingdom
5	MEA	It's for Thailand
6	PEA	It's for Thailand
7	France_VFR2014	It's for France
8	VDE0126_Gr_Co	It's for Greece
9	G98	It's for United Kingdom
10	IEC61727	It's for Vietnam, India, Sri Lanka and other Southeast Asian countries
11	UTE_C15_712	It's for France
12	VDE0126_Gr_Is	It's for Greek islands
13	NRS097_2_1	It's for South Africa
14	CEI021	It's for Italy
15	CEB	N/A
16	EN50438_DK	It's for Denmark
17	EN50438_NL	It's for Netherlands
18	OVE/ONORME8001	It's for Austria
19	C10/11	It's for Belgium
20	ZNS4777	It's for New Zealand

C) Date time

This interface is for the user to set the system date and time. Increase or decrease the date or time by pressing the up or down button. Press "OK" to confirm and alternate to the next part. After the date or time is selected correctly, press "OK" to enter the date and time.



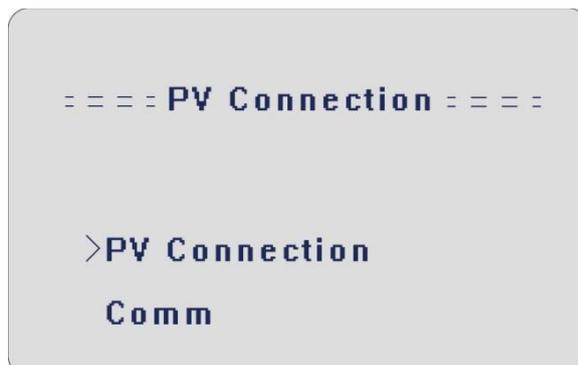
D) New Password

Users can set the new password here. We need to increase or decrease the word by pressing the up or down button, Press "OK" to confirm and alternate to the next word. After all the words are confirmed, press "OK" to reset the password.



E) PV Connection

This function can set the mode of PV input. There are two modes for choice; Command Multi. The "Comm" mode means single MPP tracking, 2 MPPT working together; "Multi" means multi-MPP tracking, 2 MPPT work independently. Press the up or down button to select and press "OK" to confirm.



F) Power Factor (For specific country if required by the local grid.)

There are five modes for selecting: Off, Under-Excited, Over-Excited, Curve, Q(u). All parameters are shown below.

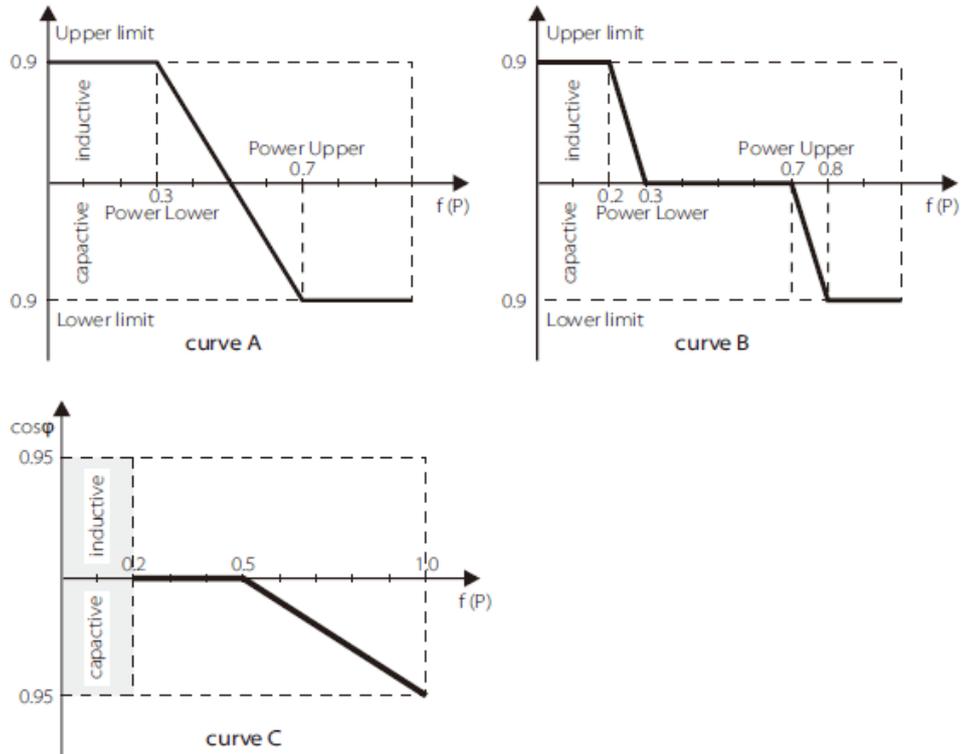
Mode	Comment
Off	-
Under-Excited	PF value
Over-Excited	PF value
Curve	Upper limit
	Lower limit
	Power Upper
	Power Lower
	PFLockInPoint (CEI 0-21 only)
	PFLockOutPoint (CEI 0-21 only)
Q(u)	QuVupRate (EN50438_NL / EN50438_DK / E8001 only)
	QuVlowRate (EN50438_NL / EN50438_DK / E8001 only)

Reactive power control, Reactive standard curve $\cos\phi=f(P)$

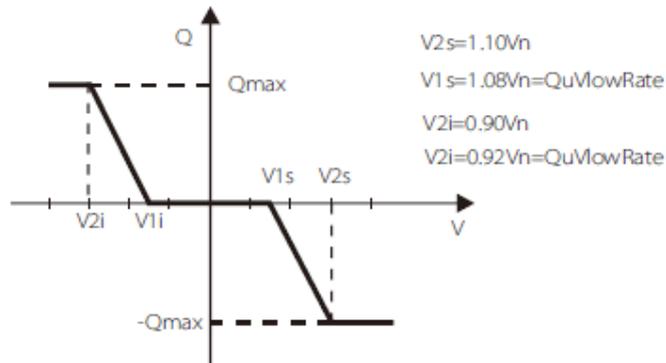
For VDE ARN 4105, curve $\cos \phi = f(P)$ should refer to curve A. default values of the setting are shown in curve A.

For E 8001, curve $\cos \phi = f(P)$ should refer to curve B. The default values of the setting are shown in curve B.

For CEI 0-21, default value of PFLockInPoint is 1.05, when $V_{ac} > 1.05V_n$, and $P_{ac} > 0.2 P_n$, curve $\cos \phi = f(P)$ should refer to curve C. Default value of PFLockOutPoint is 0.98, when $V_{ac} < 0.98 V_n$, $\cos \phi = f(P)$ will exit curve C.

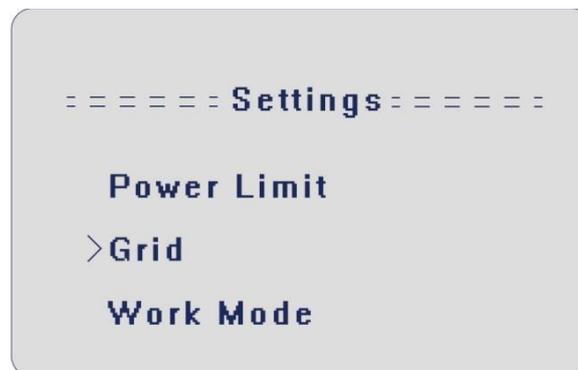


Reactive power control, Reactive standard curve $Q = f(V)$



G) Power limit

Users can set the output power limitation of the inverter here. The setting value is from 0.00-1.00.



H) Grid

Usually, end-users do not need to set the grid parameters. All default values have been set before leaving the factory according to safety rules.

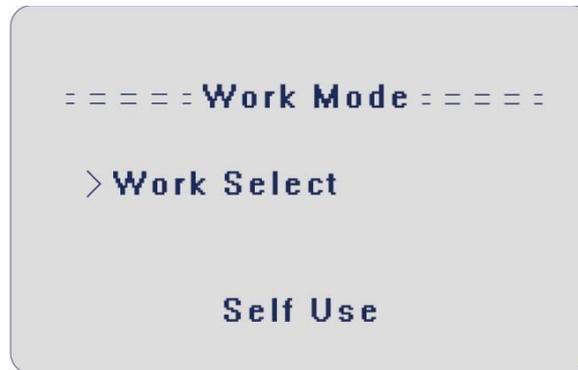
If need to reset, any changes should occur according to the requirement of the local grid. All parameters are shown below.

Parameter	Comment
Normally	
Vac upper	Voltage high protect
Vac lower	Voltage low protect
Vac upper slow	Voltage high slow protect
Vac lower slow	Voltage low slow protect
Fac upper	Frequency high protect
Fac lower	Frequency low protect
Fac upper slow	Frequency high slow protect
Fac lower slow	Frequency low slow protect
Vac 10m avg	10 min voltage high protect
Apply to Italy(CEI0-21) only.	
Tuvs_Fast	Overvoltage protect fast time
Tovp_Fast	Undervoltage protect fast time
Tufp_Fast	Overfrequency protect fast time
Tofp_Fast	Underfrequency protect fast time
Tuvs_Slow	Overvoltage protect slow time
Tovp_Slow	Undervoltage protect slow time
Tufp_Slow	Overfrequency protect slow time
Tofp_Slow	Underfrequency protect slow time
FreDrpDlyTime	Frequency droop delay time
Apply to EN50438_NL / EN50438_DK / CE8001.	
FreqSetPoint	Frequency set point
FreqDropRate	Frequency droop rate

l) Work mode

The default work mode of the inverter is Self-Use mode. Users can set the work mode as Self Use or Force Time Use here, as described in 3.1.

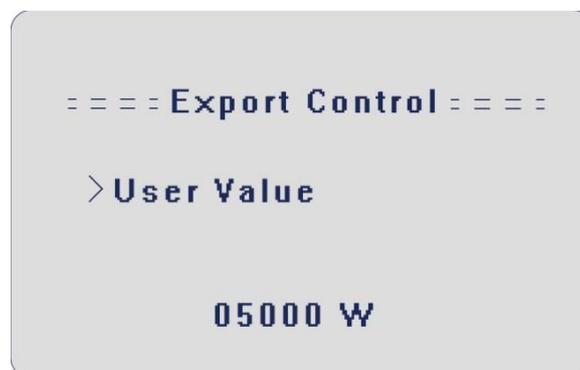
For Force Time Use, users can set 2 periods of the start and end time of charge or discharge. Also, users can select if charging from the grid for each charging period.



Parameter	Comment
Charger start time1	The start time of the first charger period.
Charger end time1	The end time of the first charger period.
Charger start time2	The start time of the second charger period.
Charger end time2	The end time of the second charger period.
Discharger start time1	The start time of the first discharger period.
Discharger end time1	The end time of the first discharger period.
Discharger start time2	The start time of the second discharger period.
Discharger end time2	The end time of the second discharger period.

J) Export control

With this function, the inverter can control the energy exported to the grid. There are user value and factory value. The factory value is a default that cannot be changed by the user. The user value set by the installer must be less than the factory value. Press the up and down button to select and press "OK" to confirm.

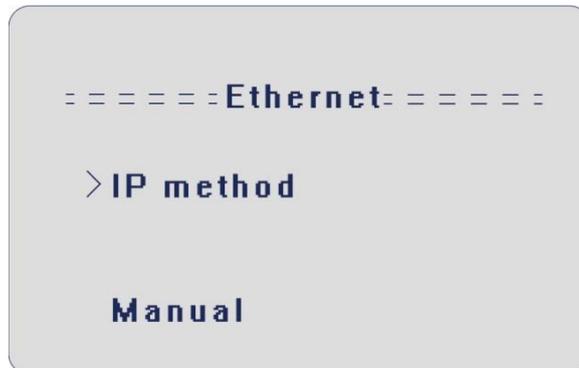


K) Charger

Here the user can set the parameters of Charger: charge and discharge parameters.

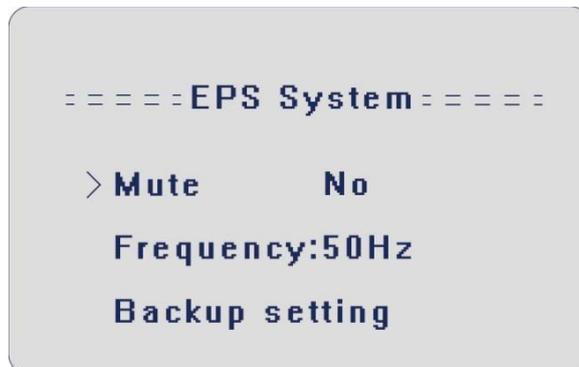
L) Ethernet

Users can set the information about Ethernet here, such as IP address, subnet mask number, and default gateway number. Press the up or down button to select and press "OK" to confirm.



M) EPS system

The ESC-Hybrid inverter can work in the EPS mode. The installer can set the EPS parameters here. "Mute "means you can set the warning of the system which has entered EPS mode. "No "means there will be a buzzing, and it is the default value. "Yes "means you choose to shut down the warning function. Besides, if the buzzing is sharp, it means EPS output takes overloads. "Frequency "here can be set at 50Hz or 60Hz based on correlative loads. "Backup setting "here can be set "Battery backup discharge Volt." The end-user can only set the "Mute" and "Frequency" here.



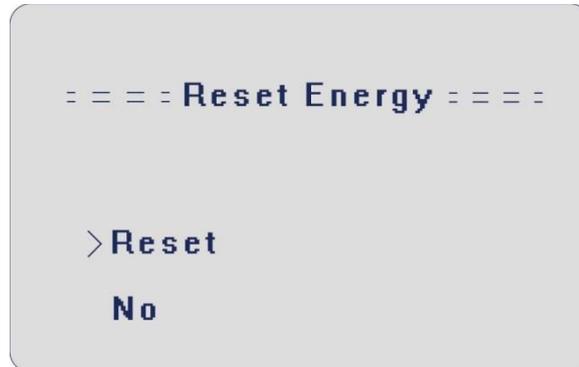
NOTICE

- When you want to use the EPS function, the setting of the discharge cut voltage needs to be higher than the Battery backup discharge Volt.
- The battery backup discharge Volt is the min Voltage of the battery.

-
1. In online mode, the discharge cut voltage is 47V. In EPS mode, the battery backup discharge voltage is 46V.
 2. You can adjust the discharge cut voltage and the battery backup discharge Voltage or increase Min capacity to change the Capacity for EPS usage if you have a frequent power cut.

N) Reset energy

Users can reset the energy record here. Press the up or down button to select and press "OK" to confirm.



O) Reset error logs

Users can reset the error log here. Press the up or down button to select and press "OK" to confirm.

P) Language

Users can choose the language "English" or "Deutsch" here. Press the up or down button to select and press "OK" to confirm.

Q) Self-Test (applies to CEI 0-21 only)

Users can test the running status of the inverter by choosing "Start Test." It will turn back to the home page automatically and shows "Self-Testing..." 60 seconds later, it will display "success," which means the self-test completed successfully. Then it will turn back to the "Test Report" page as below automatically and shows specific parameters.

Note: This section can only be displayed and set when choosing "CEI0-21" in the "Safety" setting.

Parameter	Comment
OvpValue	The value of over voltage protection.
OvpTime	The time of over voltage protection.
UvpValue	The value of under voltage protection.
UvpTime	The time of under voltage protection.
OfpValue	The value of over frequency protection.
OfpTime	The time of over frequency protection.
UfpValue	The value of under frequency protection.
UfpTime	The time of under frequency protection.
Ovp_AVG	The average value of over voltage protection in 10 min.
Tovp_AVG	The average time of over voltage protection in 10 min.
OfpVal2	The value of over frequency protection in restrictive mode.
OfpTime2	The time of over frequency protection in restrictive mode.
UfpVal2	The value of under frequency protection in restrictive mode.
UfpTime2	The time of under frequency protection in restrictive mode.

R) Relay Control

Relay Control is an optional function that can control designated load intelligently by consuming the surplus energy when feed-in power reaches a specific value.

For specific operations, please refer to the "Load remote control installation guide."

- **About**

This interface shows the information of the inverter, such as serial numbers and software versions.



6.5 Power Quality Response Modes

Prerequisites



NOTICE

- The BRE-I-5K-14K system supports the following Power Quality Response Modes:
 - Volt response modes
 - Volt response modes
 - Fixed power factor or reactive power mode
 - Power response mode
 - Power rate limit

Procedure

When using the above mode, you need to select Australian safety regulations first, and choose Australian safety regulations as follows:

1. Enter the main menu and select "Setting".

Menu
History
>Settings
About

2. Enter password: 1919.

New Password
>Enter to set
0 0 0 0

3. Set "Safety" to "AS4777".

Settings
>Safety
Date Time

Safety		
Country		
>	AS4777	<

----End

Context

- **Volt response modes**

Enter the main menu-"Setting"-"Volt Response".

Settings		
Reset Mgr EE		
>	Volt Response	
Freq Response		

Volt Response		
>	Q(u)	
P(u)		

If you want to test Q(U)- reactive power response, set it to Enable.

Q(u)		
>	Q(u)	
Enable		

If you want to test P(U)-active response, set it to Enable.

P(u)		
>	Pgen Limit	
Enable		

- **Fixed power factor or reactive power mode**

- **"Over excited" and "Under excited" modes.**

Enter "Setting", set the mode to "Over excited"-inductive and "Under excited"-capacitive, set the PF value, the default value of the set PF value is 1.

Settings
PV connection
>Power Factor
Power Limit

Power Factor
>Mode Select
Over Excited

Power Factor
>Mode Select
Under Excited

Power Factor
>PF Value
1.00

- **Set reactive power off**

Selecting the "Off" mode is to turn off the reactive power.

Power Factor
Mode Select
> Off <

➤ **Set Q(P)**

Enter into "Setting"->"Power Factor", Select mode "Q(P)".

Power Factor
>Mode Select
Q(P)

Set Upper limit and Lower limit, the setting value range is 0.8-1.

Power Factor
>Upper Limit
1.00

Power Factor
>Lower Limit
0.90

Set Power upper and Power lower, the value range is 0-1.

Power Factor
>Power Upper
1.00

Power Factor
>Power Lower
0.50

➤ **Q(Const)-fixed Q value, fixed reactive power mode**

Enter into "Setting"-"Power Factor", select "Q(Const), Set Q (Const), the setting value range is 0-0.5.

Power Factor

>Mode Select

Q(Const)

Power Factor

>Q Value

0.00

- **Power response mode**

Enter "Setting"-"Power factor"-"Q(P)" to perform this function.

The following are the default values under Australian safety regulations:

	volts		
Reference	Aus. default value	NZ default value	Range
V ₁	207	207	Not applicable
V ₂	220	220	216 to 230
V ₃	250	244	235 to 255
V ₄	265	255	244 to 265

Power Factor

>Mode Select

Q(P)

Set Upper limit and Lower limit, the setting value range is 0.8-1.

Power Factor
>Upper Limit
1.00

Power Factor
>Lower Limit
0.90

Set Power upper and Power lower, the value range is 0-1.

Power Factor
>Power Upper
1.00

Power Factor
>Power Lower
0.50

- **Power rate limit**

Enter "Setting"-"Prate Limit" to test this function. The default setting time in Australia is 360 seconds.

Settings
Freq Response
>Prate Limit
Meter

Prate Limit
>Prate Limit
Enable

Prate Limit
>Tn To Wgra -
0360s

Prate Limit
>Tn To Wgra +
0360s

6.6 Remote monitoring



NOTICE

- BRE-I-5K14K can realize remote monitoring through 4G / Wi-Fi / Ethernet
 - BRE-I-5K14K can access the third party remote monitoring platform. Please see the attachment "Wi-Fi User Manual V2.0" for how to connect.
 - BRE-I-5K14K can also access the third part VPP platform.
-

7

Handling the BRE-I-5K14K

7.1 Removing the BRE-I-5K14K

Procedure

Step 1 Power off the system by following the instructions in 6.3 Powering Off the System.

Step 2 Disconnect all cables from the BRE-I-5K14K, including signal cables, DC input power cables, battery cables, AC output power cables, and PE cables.

Step 3 Remove all battery packs in the battery box.

Step 4 Remove the wiring of the battery box and the main control box.

Step 5 Remove the main control box from the mounting bracket.

Step 6 Remove the battery box from the mounting bracket.

Step 7 Remove the mounting bracket.

----End

7.2 Packing the BRE-I-5K14K

If the original packaging is available, put the BRE-I-5K14K inside it and then seal it using adhesive tape.

If the original packaging is not available, put the BRE-I-5K14K inside a suitable cardboard box and seal it properly.

7.3 Disposing of the BRE-I-5K14K

If the BRE-I-5K14K service life expires, dispose of it according to the local disposal rules for electrical equipment and electronic component waste.

8

Technical Specifications

8.1 DC Input

Model	BRE-I-5K14K
Max. DC Input Power	5000W
Max. DC Input Voltage	580V
MPPT Voltage Range	100-550V
MPPT Range for Full Load	210-500V
Start-up Voltage/Initial Feeding Voltage	75V/110V
Max. Input Current	12A/12A
Max. Short Current	15A/15A
Number of MPPT	2
Max. Inverter Back Feed current	0
Number of DC Connection Sets per MPPT	1

8.2 AC output

Model	BRE-I-5K14K
AC Output Data (On-grid)	
Nominal Power Output	5000W
Max. Apparent Power Output	5000VA
Max.AC Current Output	21.7A
Max. output fault current	43.4A
Max. output overcurrent protection	27.1A
Nominal Output Voltage/Range	230V/180-270V
Nominal Output Frequency/Range	50HZ/60HZ
Output Power Factor	0.8leading ~0.8lagging
Output THDi (@Nominal Output)	<3%
AC Output Data (Off-Grid)	
Max. Output Apparent Power	2500VA
Nominal Output Voltage	230V
Nominal Output Frequency	50/60Hz
Max. Output Current	10A
Output THDi (@Linear Load)	<3%
Automatic Switch Time	<5 S
Peak Output Apparent Power	3500W

8.3 Battery

Model	BRE-B-14K
Battery type	LFP
Nominal Battery Voltage	48V
Battery Voltage Range	40-60V
Max. Charging Current	50A
Max. Discharging Current	50A
Discharge depth (%)	90%
Communication Port	CAN
Charging curve	3-stage adaptive with maintenance
Battery temperature sensor	Yes

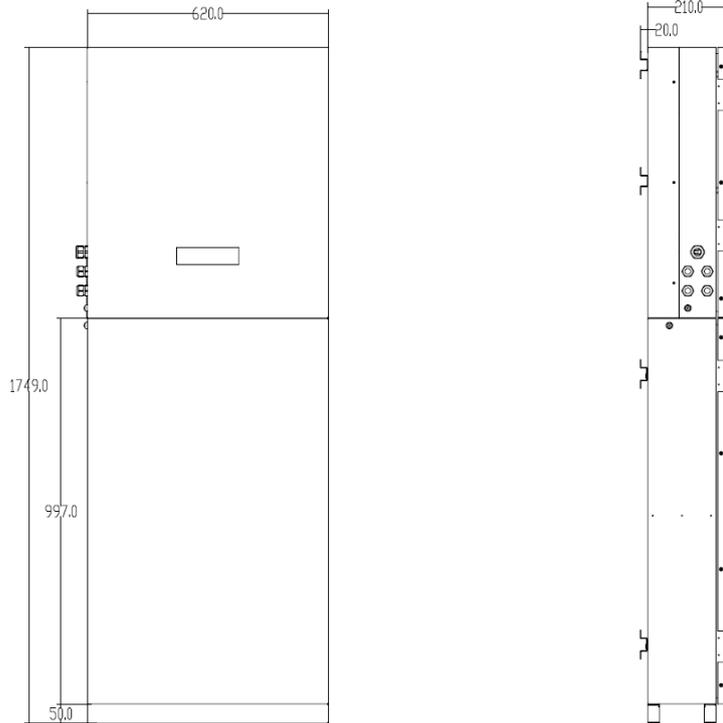
8.4 Efficiency

Model	BRE-I-5K14K
Max. Efficiency	97.60%
European Efficiency	97%
MPPT Efficiency	99.90%

8.5 General Data

Model	BRE-I-5K14K
Size (Width*Height*Depth)	620*1750*210mm
Weight	150kg
Mounting	Wall Hangings
Operating Temperature Range	-25 °C ~ 45 °C
Operation Altitude	2000m
Protection Degree	IP54
Cooling	Natural Convection
Noise (dB)	<35dB(A)
User Interface	LED
Communication Port	Ethernet (standard, TCP/IP); RS485/4G (Optional, Modbus)
Inverter Topology	Transformers
Active anti-islanding method	Yes
Protective Class	I
Overvoltage category	III(Main), II(PV)
Warranty	7000 cycles or 10 years

8.6 Dimension





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