

Jinko Solar

JKS-B51100-GI



User Manual

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Statement of Law

This product complies with the design requirements of environmental protection and personal safety. The storage, use and disposal of the products shall be carried out in accordance with the product manual, relevant contract or relevant laws and regulations.

Please note that the products, services or features you purchase are subject to the commercial contracts and terms of Jinko Solar Co., Ltd. All or part of the products, services or features described in this document may not be within the scope of your purchase or use. Unless otherwise agreed in the contract, Jinko makes no representations or warranties, express or implied, with respect to the contents of this document.

Due to product version upgrades or other reasons, the content of this document will be updated from time to time. Unless otherwise agreed, this document is for use only as a guide, and all statements, information and recommendations in this document do not constitute any express or implied warranty.

Revision History

The modification log accumulates the description of each document update. The latest version of the documentation contains updates from all previous documentation versions.

Revision	Date	Reason for revision
1.0	2022.08.31	Initial Release
2.5	2023.09.18	Rewording
2.6	2024.02.15	Rewording

Symbol

The following symbols may appear in this document, and the meanings they represent are as follows.



Danger

- Only qualified person should wire the battery pack.



Warning

- Do not unplug the connector while the system is running!
- De-energize from all power sources and verify that there is no voltage.



Caution

- Risk of battery system failure or life cycle reduction.

Safety Handling of Lithium Batteries Guide

DANGER

Before installation or operation you must read the <User manual> carefully.

CAUTION

During Installation & When in Use.

During Installation

- Please check product and packing list after unpacking. And if product is damaged or lack of parts, please contact with the local retailer;
- Before installation, be sure to cut off the grid power and make sure the battery is in the turned-off mode;
- Do not mistake the positive and negative cables and ensure there are no short circuit connection to the external device;
- It is prohibited to connect the battery to AC power directly;
- The battery system must be well grounded;

- Please ensure the electrical parameters of the battery system are compatible with related equipment;
- Keep the battery away from water and fire.

When in Use

- If the battery system needs to be moved or repaired, the power must be cut off and ensure the battery is completely shut down;
- It is forbidden to connect the battery with different types of batteries;
- It is prohibited to put the batteries working with a faulty or incompatible inverter;
- It is prohibited to disassemble the battery;
- In case of fire, only a dry powder fire extinguisher can be used and liquid fire extinguishers are prohibited;
- Please do not open, repair or disassemble the battery except by staff from Jinko or authorized by Jinko. We are not responsible for any consequences or liability arising from violations of safety operation or equipment safety standards.

⚠ CAUTION

During Installation & When in Use.

- Please read the user manual carefully (in the accessories);
- If the battery is stored for a long time, it is required to charge them every six months, and the SOC should be no less than 40%;
- Battery needs to be recharged within 12 hours, after fully discharged;
- Do not expose cable outside;
- All the battery terminals must be disconnected for maintenance;
- Please contact the supplier within 24 hours if there is something abnormal.

1 Introduction

1.1 Brief Introduction

This product is a low-voltage battery energy storage system based on lithium iron phosphate (LFP) battery, and is one of the new energy storage products developed and produced by Jinko Solar Co., Ltd. The rated design capacity is 5.12 kWh. It can be used to support reliable power supply of various devices and systems, and is especially suitable for application scenarios with home power supply systems, limited installation space, limited load bearing, and long cycle life. This product adopts ingress protection class of IP65 that enables it to be installed both outdoor and indoor. This product also adopts automatic addressing function and adopts quick plug-in terminals for plug-and-play installation.

1.2 Product Properties

- This pack is non-toxic, non-polluting, environmentally friendly and has inner fireproof function;
- Anode material is made from LiFePO₄ with safety performance and long cycle life;
- The battery management system (BMS) is included to protect the battery;
- The system can automatically manage charge and discharge state and balance current and voltage of each cell;
- This pack has protection failure detection and secondary protection functions;
- This pack has cell voltage, overall voltage detection, overcharge, over discharge alarm and protection functions;
- The other functions are SOC estimation function, automatic charging and discharging calibration function, etc.;

1.3 Product Identity Definition

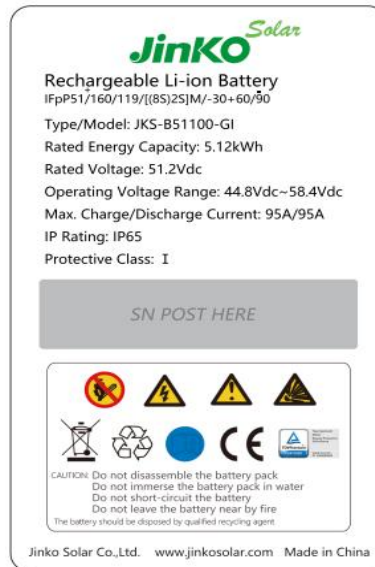


Figure 1-1 Battery energy storage system nameplate

	Ban fireworks
	The battery voltage is higher than the safe voltage, and direct contact may cause electric shock.
	Caution
	Beware of explosions
	Equipment cannot be discarded with other household waste and must be sent to the appropriate institution for recycling.
	After the battery life is terminated, the battery can continue to be used after it recycled by the professional recycling organization and do not discard it at will.
	Please read the manual carefully before using.
	This battery product meets European directive requirements.
	This battery product passed the TUV certification test.

2 Product Specification

2.1 System Appearance and Performance Parameter

Model Type	JKS-B51100-GI
Physical Properties	
Battery Type	LFP (LiFePO4)
Weight	58 kg±0.5 kg
Dimension (width×height×depth)	660*410*210 mm
The thickness of Housing	5 mm
Enclosure Rating	IP65
Warranty Period	10 years
Electrical parameters	
Rated Energy	5.12 kWh
Available Energy	4.60 kWh
Battery Capacity	100 Ah
Maximum Depth of Discharge	90 %
Rated Voltage	51.20 V
Maximum Short Circuit Current (fuse)	200 A
Operating Voltage Range	44.8 V ~ 58.4 V
Internal Resistance	≤20 mΩ
Cycle Life	6000, 90% DOD, 70% EOL, 25 deg
Working Parameters	
Rated Charge and Discharge Current	95 A/95 A
Maximum Charge and Discharge Current	95 A/95 A
Rated DC Power	5 kW
Operating Temperature	-30 ~ 55°C
Storage Temperature	-10 ~ 45 °C
Humidity	0~90 %
Extended Parameters	
Recommended Max. Parallel Number	4
Capacity	100Ah
Own Power Consumption	<5 W
Data Communication	CAN/RS485
Balance Current	30~50 mA

Monitoring Parameters	System voltage, current, battery voltage, battery temperature, PCBA measurement
Compensate	Line Loss Compensation
Others	
Installation Method	Floor-standing/Wall-mounted
Certification standards	IEC 62619, IEC 63056, IEC 62477, IEC 60730, IEC 61000, IEC 62040, VDE 2105, UN 38.3, CEC listing

Table 2-1 The Parameters of Product



Figure 2-1 Product Appearance

2.2 External Interface Description

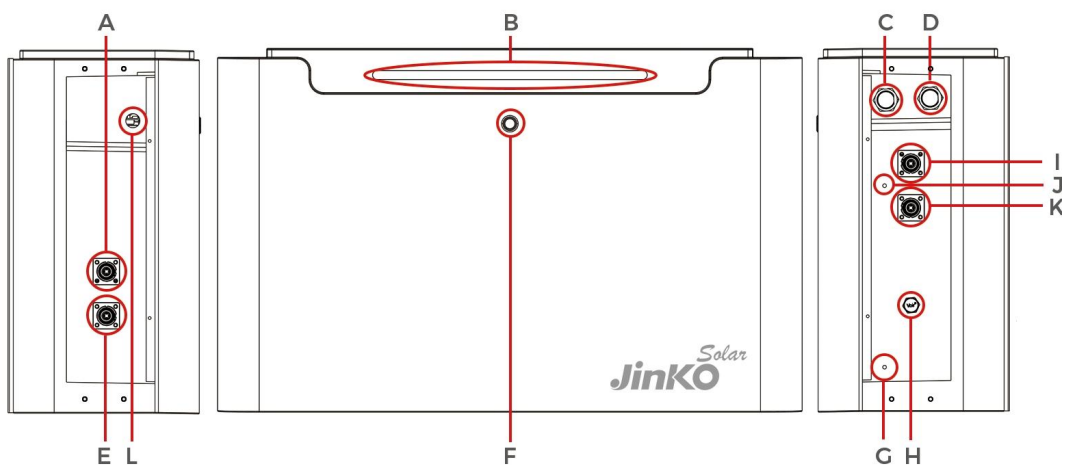


Figure 2-2 Product External Interface

Table 2-2 Interface Definition

Interface	Category	Description
A	Battery +	Positive terminal
B	Indicator Light	Run, alarm & SOC
C	Communication port 1	8 pin 8 cell RJ45 with CAN communication
D	Communication port 2	8 pin 8 cell RJ45 with CAN communication
E	Battery +	Positive terminal
F	SOC button	Self-resetting button, click to show SOC
G	GND	Downward ground terminal
H	Pressure relief valve	Air tightness test hole/pressure relief port
I	Battery -	Negative terminal
J	GND	Upward ground terminal
K	Battery -	Negative terminal
L	Switch	Power button

2.3 Communication Portal Definition

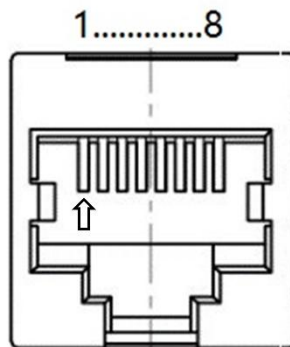


Figure 2-3 RJ45 interface

Table 2-3 The Table of Interface Pin Definition

RJ45 pin	RS485-Using 8 Pin 8 Cell Vertical Socket Definition	Description
1	RS485-B	
2	RS485-A	
3	CAN0-GND	
4	CAN0-H	
5	CAN0-L	
6	Rev.	
7	Rev.	
8	Rev.	

2.4 Indicator Light Description

The indicator light control is integrated inside the BMS, which can easily indicate the status of the system.

Table 2-4 The Table of LED Working Status Indication

System Status	Abnormal Event	RUN	ALM	Description
		●	●	
Shutdown	Hibernate	Lights off	Lights off	All lights off
Standby	Normal	Flashing 1	Lights off	Standby mode
	Alarm	Flashing 1	Flashing 3	Reference Notes
Charging	Normal	Lights on	Lights off	/
	Alarm	Lights on	Flashing 3	Reference Notes
	Single overvoltage protection, overall overvoltage protection	Lights on	Lights off	/
	Overcurrent protection	Flashing 1	Lights off	/
Discharging	Normal	Flashing 3	Lights off	/
	Alert	Flashing 3	Flashing 3	Reference Notes
	Undervoltage protection	Lights off	Flashing 3	Stop discharge
	Overcurrent protection	Lights off	Lights on	Stop discharge
Temperature	Protection	Lights off	Lights on	Stop charging includes three types of temperature protection for battery cell / MOS / environment
Invalid	Battery failure, NTC failure	Lights off	Lights on	Stop charge/discharge
	Reverse connection, short circuit protection			
	Voltage sensor failure			
	Current sensor failure			
	Charge and discharge MOS failure			

NOTES

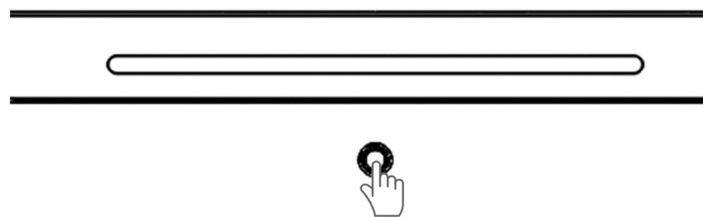
Alarm means low SOC, low voltage, high voltage, low temperature, high temperature, environment temperature low, environment temperature high, MOSFET high temperature.

Further demonstration on "flashing"

Flashing state	Time of "On"	Time of "Off"	Frequency
Flashing 1	0.25S	3.75S	
Flashing 2	0.5S	0.5S	
Flashing 3	0.5S	1.5S	

SOC indicator with LED light:

After pressing the SOC button for three seconds, the battery will show current state of charge (SOC). The SOC display information is shown in the following picture.



SOC	SOC indicator
<10%	
10%~25%	
25 %-50 %	
50 %-75 %	
75 %-100%	

NOTE

Battery performance is monitored via the inverter monitoring application.

2.5 Sleep and Wake Up Function Description

1) Battery wake up

The system will exit low power consumption mode and enter normal operation mode when any of the following conditions are met:

- The charger is connected and the output voltage of the charger is greater than 48V.
- The power switch is operated to restart the battery.

2) Battery sleep

The system will enter low power consumption mode, during which the battery system will neither charge nor discharge, when any of the following conditions are met:

- The individual or overall over-discharge protection has not been released within 3 minutes.
- The minimum cell voltage is lower than the sleep voltage, and the duration reaches the sleep delay time (At the same time, no communication and no current are satisfied).
- Standby time exceeds 1 hour (configurable) (no communication, no charge and discharge, no charger access).
- Forced shutdown through the host computer software.

NOTE

If you intend to make sure the battery enter low power consumption mode, please make sure there is not external voltage and no external communication portal connected with the battery input terminal, otherwise the battery will not enter low power consumption mode.

3 Installation and Configuration

3.1 Installation Requirements

3.1.1 Working Temperature



Operating temperature range of this product: -30°C ~ 55°C; optimum temperature: 18°C ~ 30°C;

Note: Exceeding the operating temperature range will cause over/low temperature alarm or protection of the battery system, which may reduce cycle life.

3.1.2 Heating System



This product has a heating function which is automatically controlled by the battery.

Note: Exceeding the operating temperature range will cause battery system to trigger over/under temperature alarm or protection modes, which could potentially reduce the battery life cycle.

3.1.3 Fire-extinguisher System



For safety, the room must be equipped with a fire extinguishing system. The fire protection system needs to be inspected regularly to ensure it is in proper working condition. For safe installation, please refer to use and maintenance requirements and follow local fire protection equipment guidelines.

3.1.4 Grounding System



Before installing the battery, make sure that the grounding point of the battery system is stable and reliable. If the battery system is installed in a separate equipment compartment (such as a container), verify that the grounding inside the compartment is stable and reliable

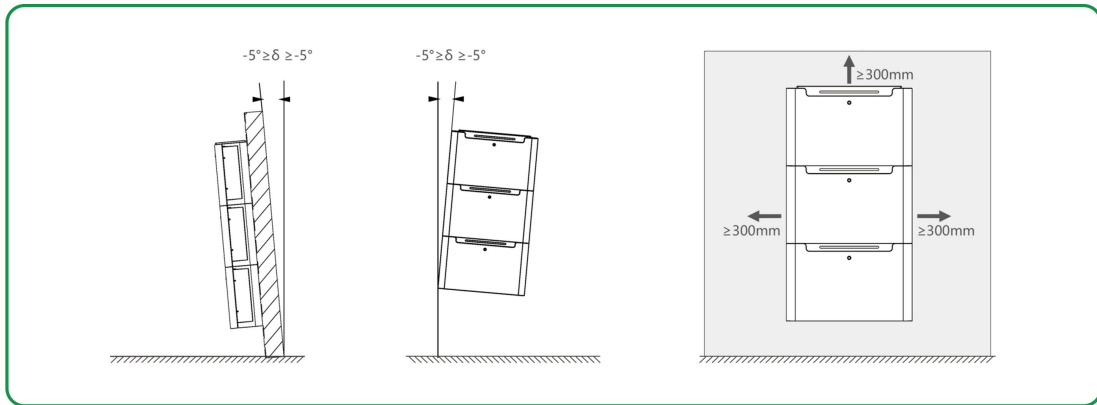
3.1.5 Working environment

This product can operate indoors or under outdoor eaves that are not exposed to direct sunlight or heavy rain. Build a sun and rain shade to avoid direct exposure to sunlight and rainfall.

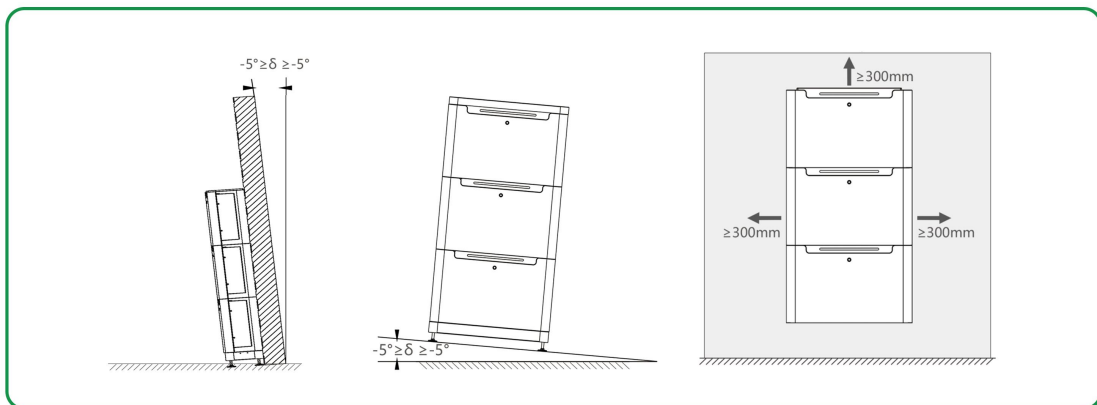


It should be noted that, for both wall-mounted and floor-standing installation, the environment should have walls 90 degrees vertical to the ground. Only minor inclination within 5 degrees is accepted. For floor-standing installation, the battery base should be completely parallel to the ground, otherwise inclination within only 5 degrees is required. Please leave at least 30 cm of clearance around the battery system.

Wall-Mounted installation location requirements:



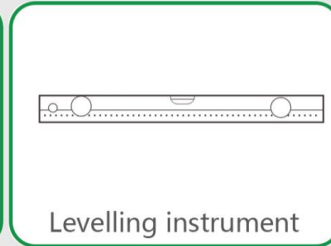
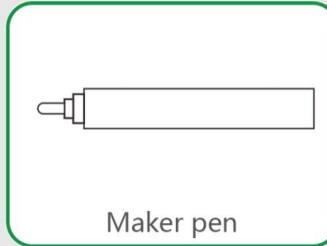
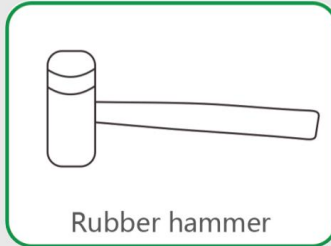
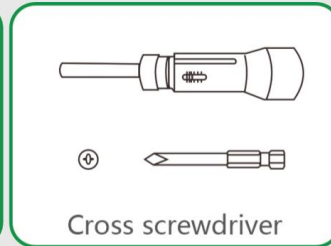
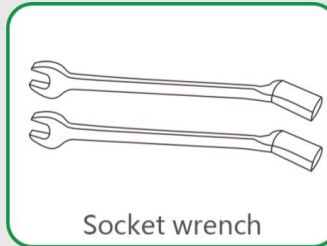
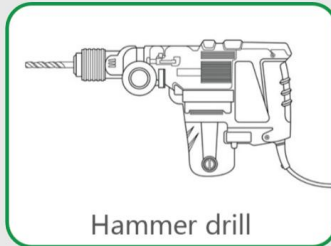
Floor-standing installation location requirements:



3.2 Tools

The tools in the following table could be needed during the installation.

· Installation tools:



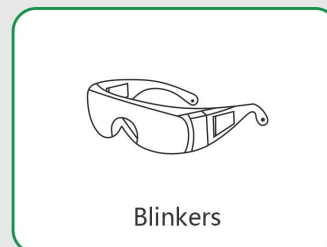
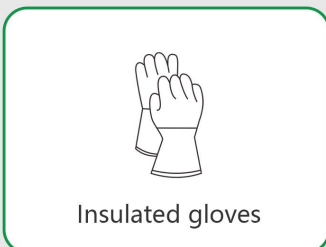
⚠ CAUTION

Use properly insulated tools to prevent accidental electric shock or short circuit while installing. If insulated tools are not available, cover all exposed metal surfaces with electrical tape or other insulating material.

3.3 Safety Gear

It is recommended to wear the following safety gear when installing the battery system.

· Safety gears:

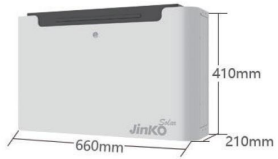
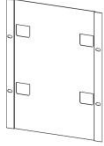
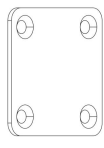








3.4 Unpacking Inspection

- After the equipment arrives at the installation site, it should be loaded and unloaded according to regulations to avoid long-term sunlight exposure.

- Before unpacking, the total number of packages should be indicated according to the shipping note attached to each package, and the boxes should be checked for integrity.
- During the unpacking process, handle carefully to protect the surface coating of the item.
- The technical documentation should be read carefully before opening the package and the installer. Checklist to ensure items are complete and in good condition according to configuration sheet and packing list. If the inner packing is damaged, it should be checked in detail and recorded.

3.4.1 Battery packing list:

Name	Feature	Number	Example
Battery pack	JKS-B51100-GI	1	
Structural accessory	Wall-mounted bracket	1	
	Battery metal connectors	1	
Screw	M4*10 countersunk screw (battery metal connectors)	8+2	
	M6*60 expansion screw (wall-mounted bracket)	4	
Cabling	Positive battery parallel power cable	1	
	Negative battery parallel power cable	1	
	Communication cable between battery (CAN protocol)	1	
	GND cable between battery	1	

Documentation	User manual/Quick installation manual	1	
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3.4.2 Accessory packing list:

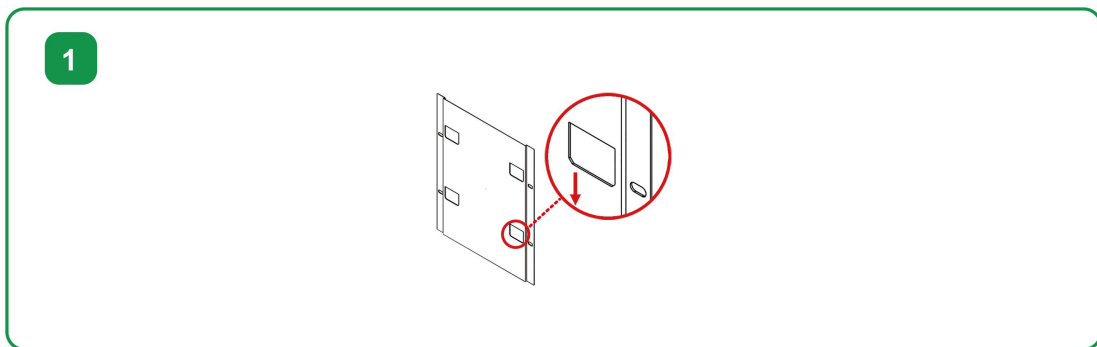
Name	Feature	Number	Example
Floor-standing installation component	Battery lid	1	
	Battery base	1	
Screw	M6*60 expansion screw (anti-tipping bracket)	2	
	M4*10 countersunk screws (battery lid)	4	
	M6*16 combination screws (anti-tipping bracket)	2	
Structural accessory	Anti-tipping bracket	2	
Cabling	Positive power cable between battery and inverter (red)	1	
	Negative power cable between battery and inverter (black)	1	
	GND cable between battery and inverter	1	
	Communication cable between battery and inverter (CAN protocol)	1	

NOTE

If only wall-mounted installation for this product is needed, the accessory packing list can exclude accessories required for floor-standing installation including battery lid, battery base, screws (M6*60 expansion screws, M4*10 countersunk screws, M6*16 combination screws), and anti-tipping brackets.

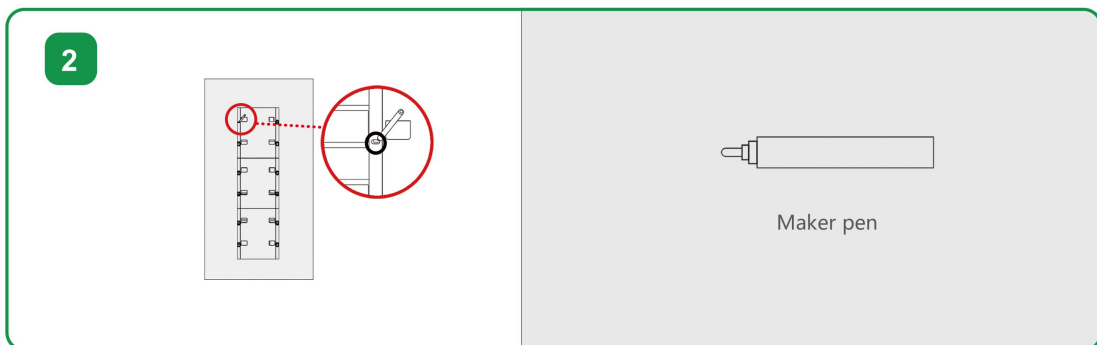
3.5 Wall-mounted installation procedure

3.5.1 Wall-mounted bracket positioning



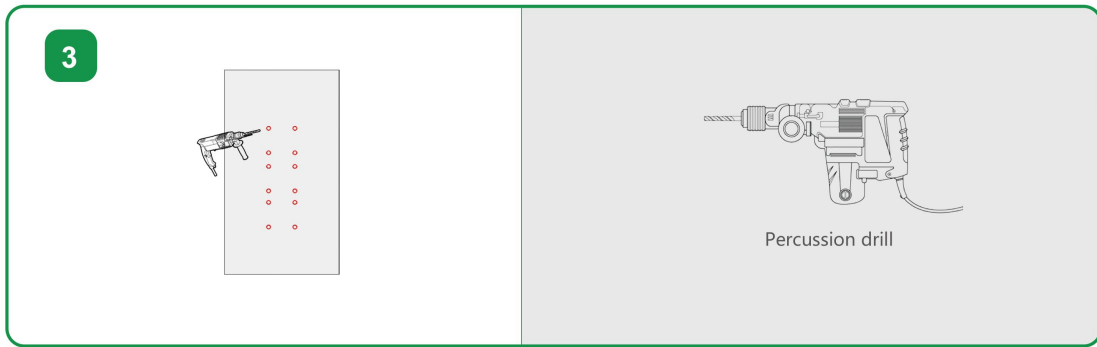
Before mounting the battery pack to the wall, please verify the battery wall-mounted bracket positioning. Place the bracket as indicated by the red arrow in the above picture.

3.5.2 Inspect drilling position



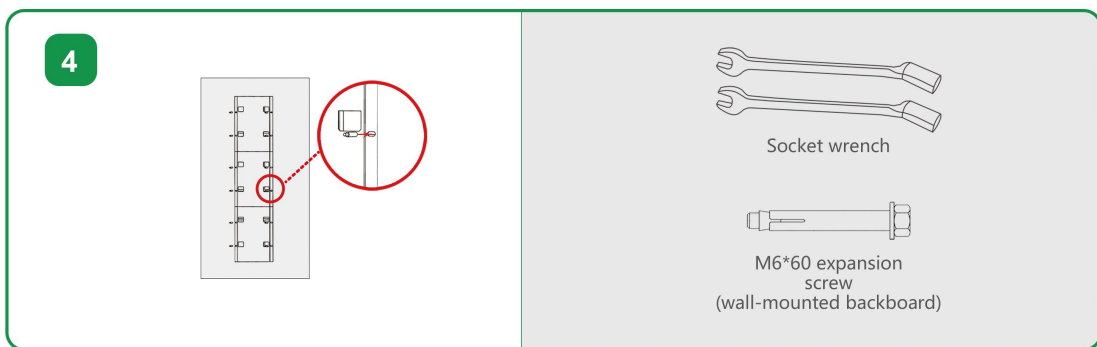
Place the wall-mounted bracket vertically on the wall. Use a marker to indicate the positions where holes for expansion screws are to be drilled.

3.5.3 Drill



Use a percussion drill to drill holes on the wall according to the marked position.

3.5.4 Install the expansion screws

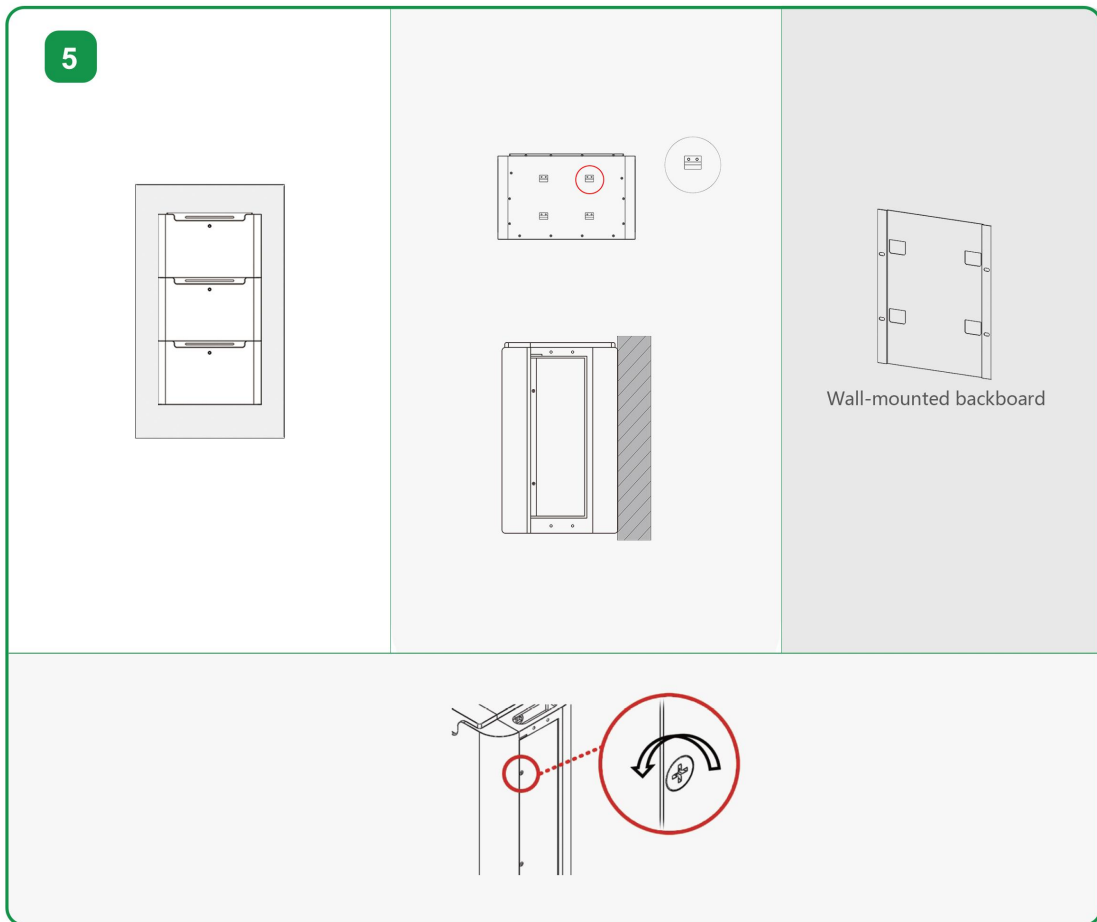


Position the wall-mounted brackets on the wall and secure them with the M6*60 screws in the battery pack package by a socket wrench.

NOTE

Please make sure there exists no overlapping between any of the wall-mounted brackets.

3.5.5 Hang battery packs on the wall

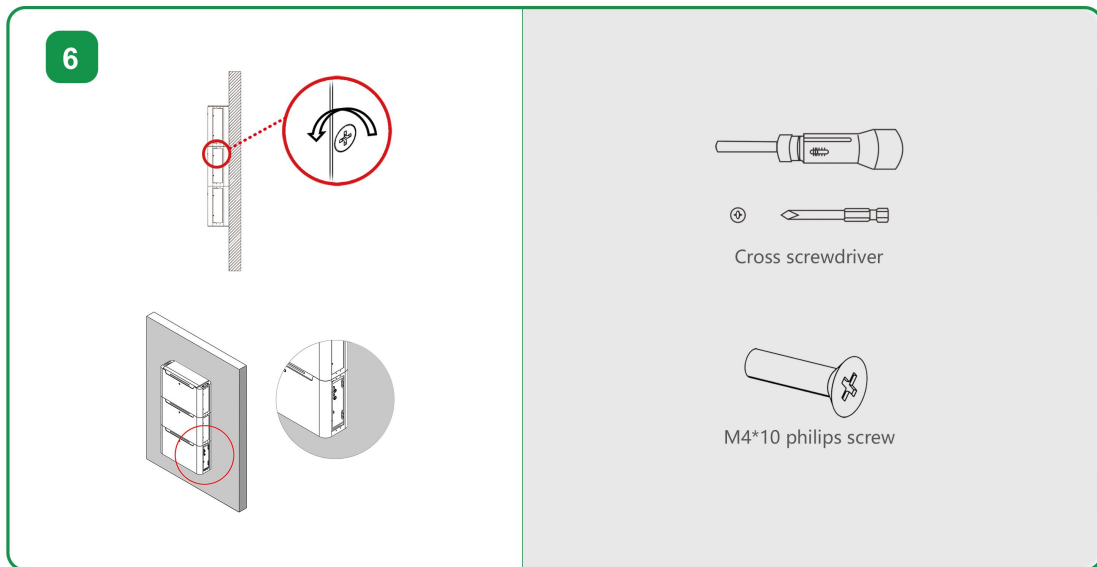


Hang the battery packs individually on the wall-mounted bracket. Please make sure the 4 wall-hangers on each battery pack correctly align with the four openings on each wall-mounted bracket.

NOTE

If you find it difficult to lift up the battery, it is recommended to open the side panels of the battery pack on both side. This allows your hands to better grip the handles on the battery top sides. For side panel opening, please refer to 3.5.6.

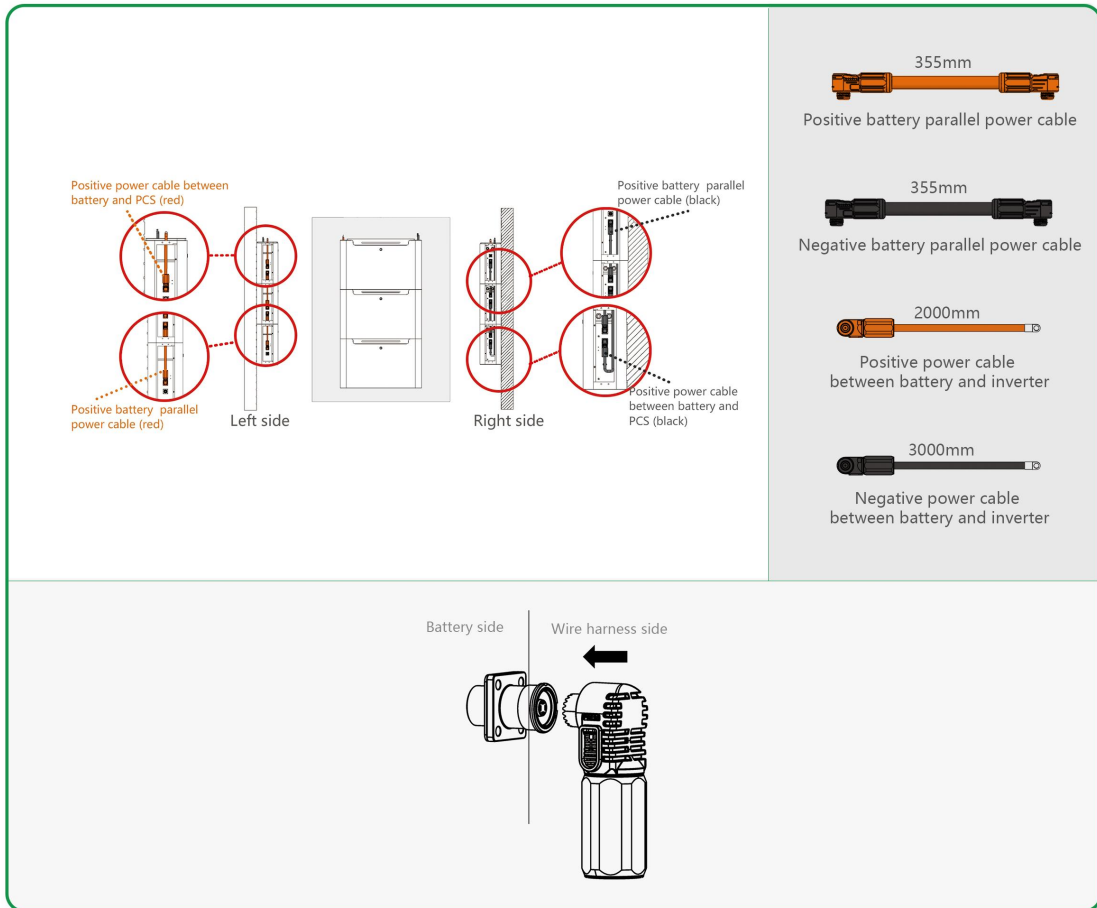
3.5.6 Remove battery side panel



Now unscrew and open the side panels with a M4 screwdriver to allow for the later between-battery and battery-inverter wiring.

NOTE

Please retain the M4*10 philips screws removed from the battery side panel for later reinstallation when putting it back.



3.5.7 Connect battery power cables

Each battery pack contains a set of positive (red) and negative (black) terminal for both upper and lower wiring respectively. For the overall wiring, please refer to the wiring diagram in 3.7.

Between-battery parallel power cable connection. In this system, the batteries stand in a cluster stacked on one another in parallel connection. On both side of each battery pack, there exist two portols for power cable connection, distinguished by colour. For one battery pack, the upper portols, both positive and negative, serve to make parallel connection with the upper unit, whereas the lower for lower unit.

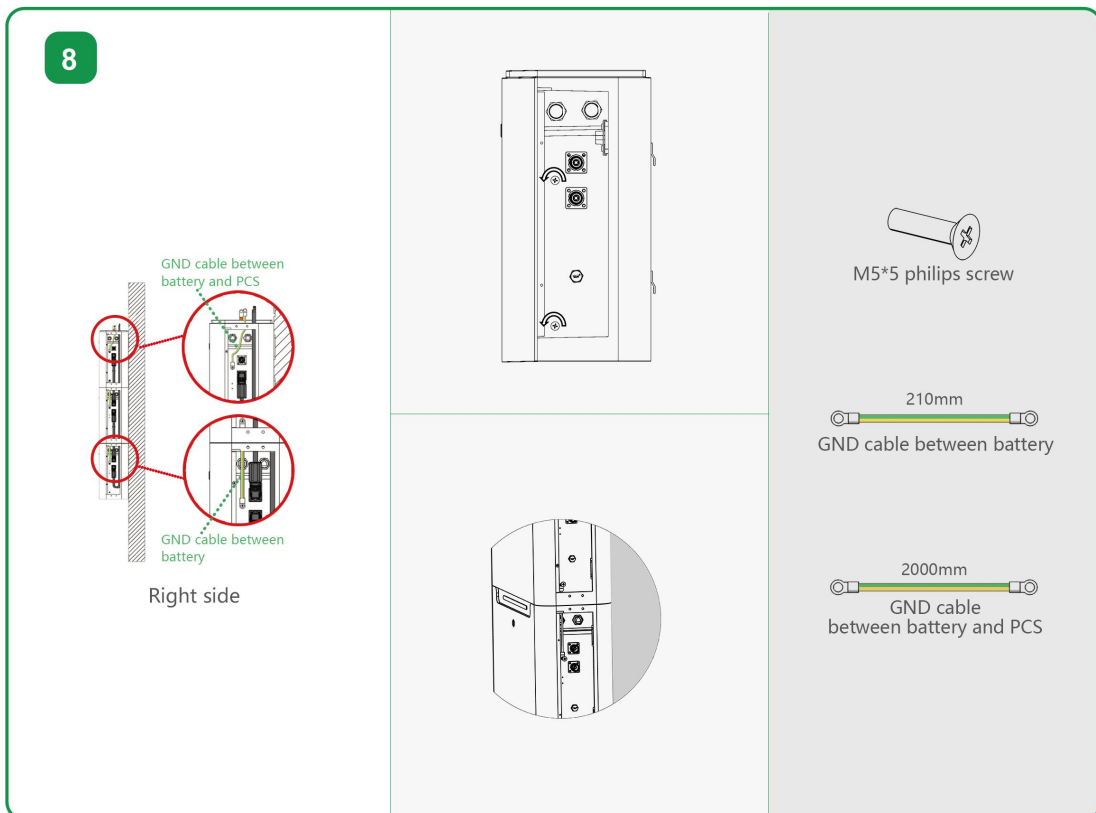
Battery-inverter power cable connection. The battery-inverter power cable connection should be done at the left side of the battery cluster on the topmost battery pack, whereas the negative at the right side on the bottommost battery pack. The positive connection is extended from the upper portal, whearas the negative from the lower portal.

Wiring terminal connection. Please also note that the plugs and sockets have foolproofing features. Align the notch on the plug with the gap on the socket before inserting the plug into the socket.

NOTE

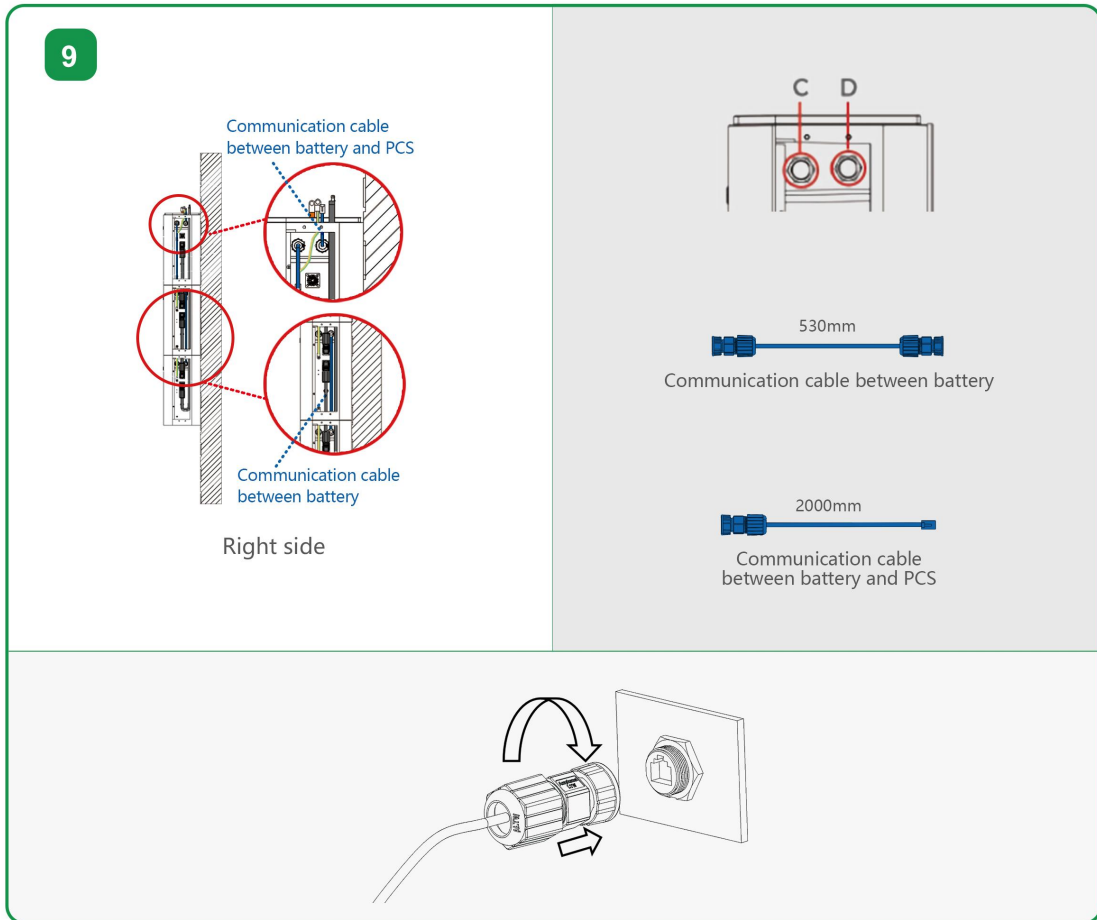
For correct cable connection of JKS-B51100-GI, please make sure that the batteries are in parallel connection. In this case, the positive cable connections shall all be on the battery left side, whereas the negative all on the battery right side.

3.5.8 Connect GND cable



Loosen the M5*5 philips screw on the battery pack before installing the between-battery and battery-inverter GND cables. Please check out the wiring diagram in 3.7 for reference.

3.5.9 Connect communication cable

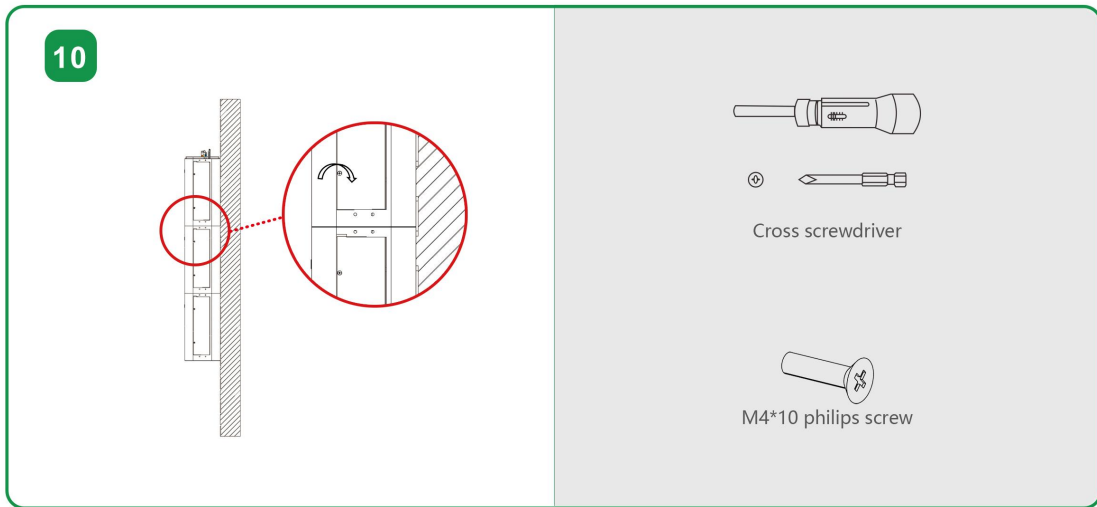


Connect the between-battery and battery-inverter communication cable. Please check out the wiring diagram in 3.7 for reference.

NOTE

In each battery pack there are two communication portals that share the same communication protocol. In this case, each portal can be used for both between-battery communication and battery-inverter communication.

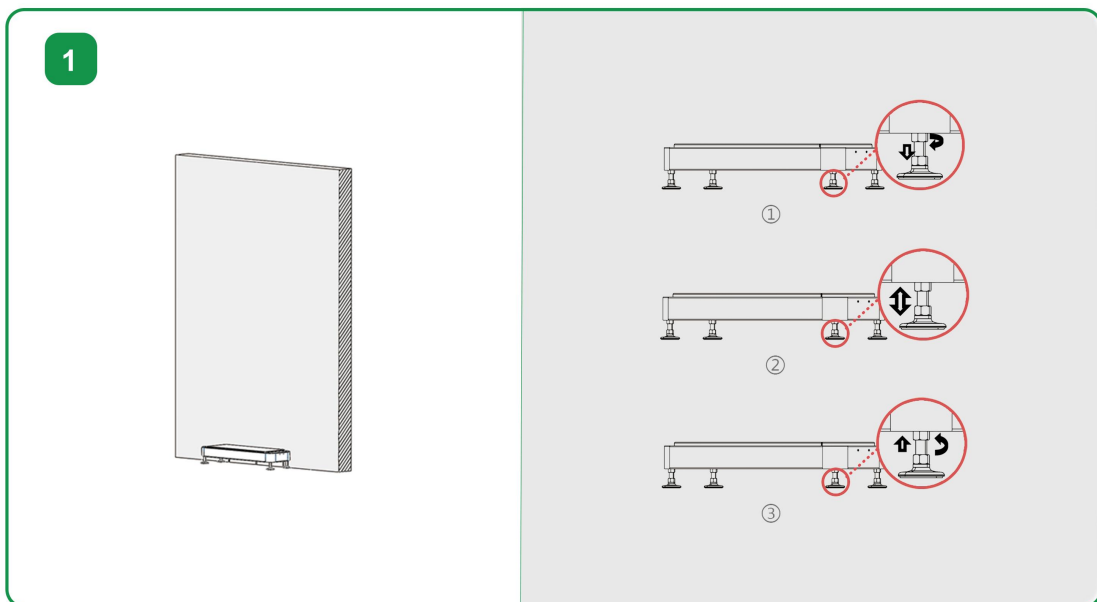
3.5.10 Close and lock the battery side panel



After all the wirings are completed, close all the battery side panels and secure them with M4*10 philips screw taken from the battery packs previously.

3.6 Floor-standing installation

3.6.1 Place the battery base

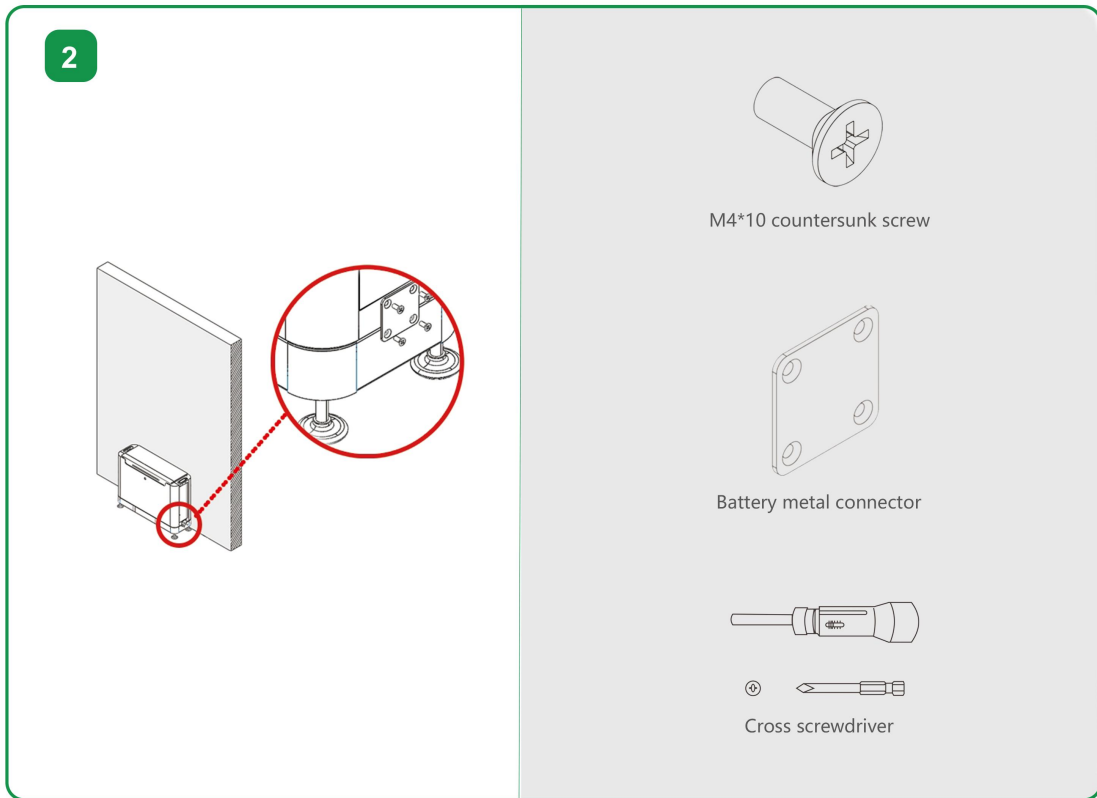


Choose an installation location that meets the environmental requirements in Section 3.1. Place the base against the wall on the floor. Adjust the height of the four battery supporting legs to level the battery base in parallel to the ground.

NOTE

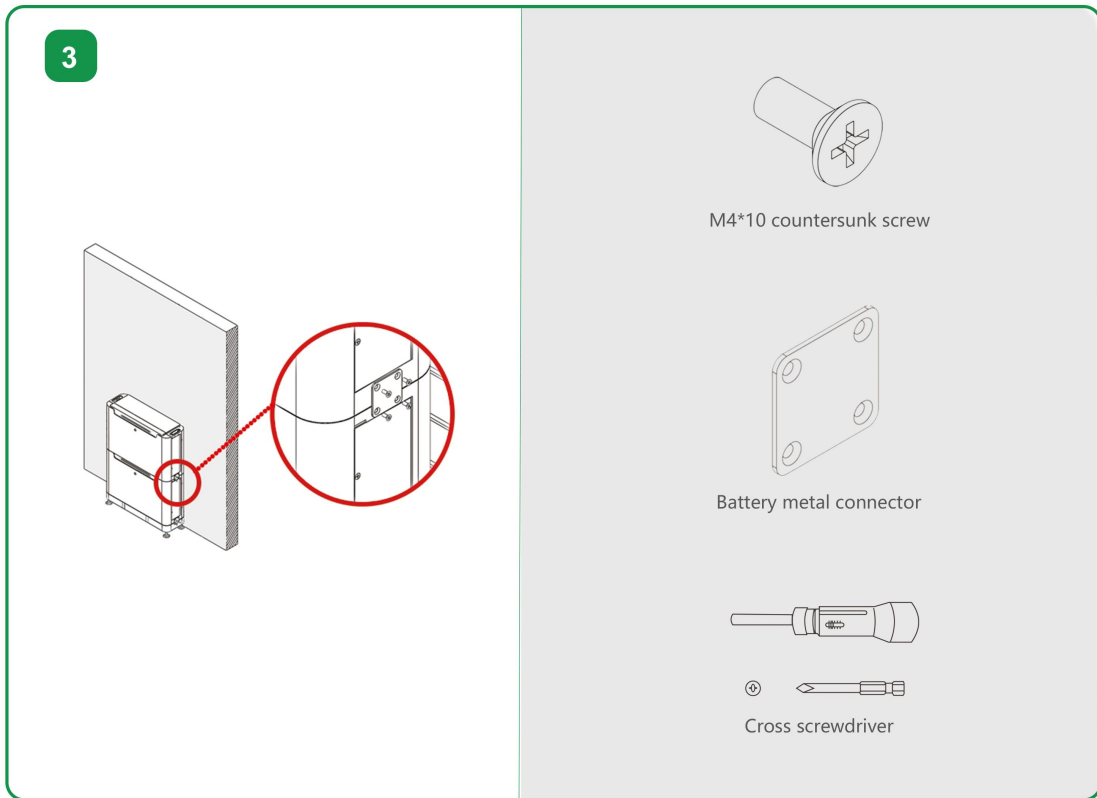
In adjusting the supporting legs, unscrew the flange nut clockwise, rotate the supporting legs to adjust the height, and tighten them.

3.6.2 Install the first battery pack



Place the first battery pack on the battery base, and then fasten the battery pack with the battery base with the battery metal connectors and M4*10 countersunk screws.

3.6.3 Stack multiple battery packs

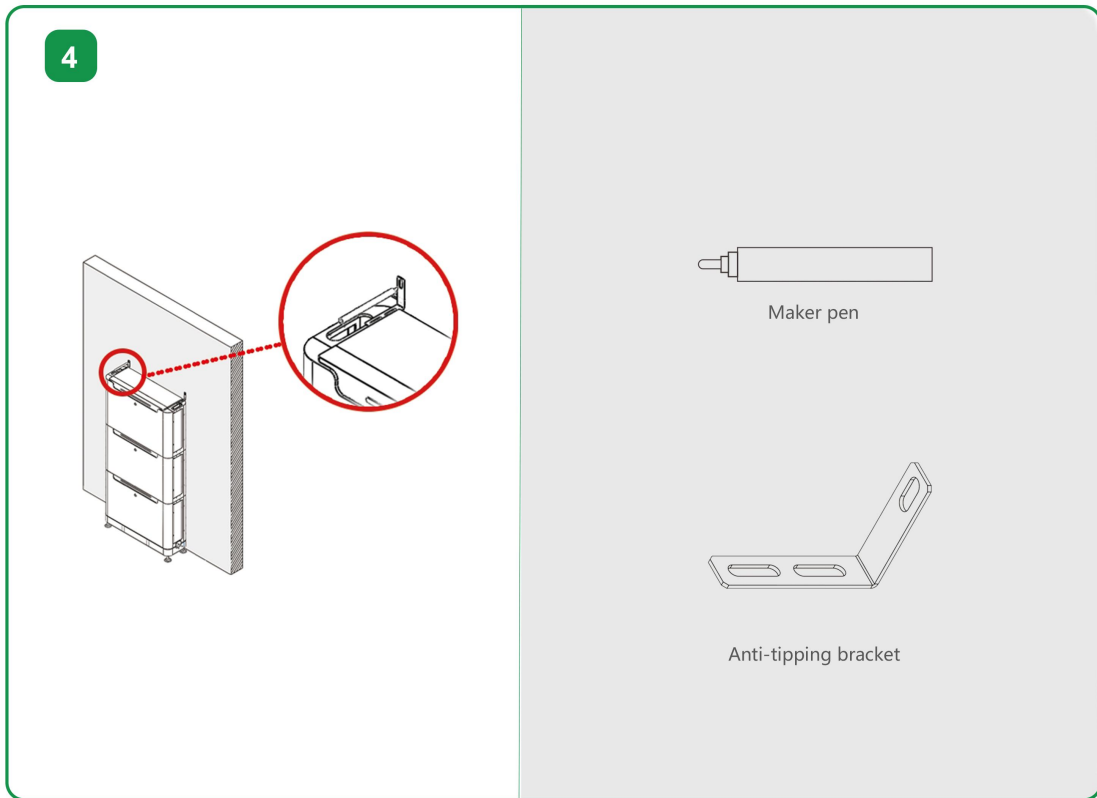


Stack the second battery pack on the first one, and connect them with the battery metal connectors and M4*10 countersunk screws. For multiple battery packs in same cluster, repeat this step.

NOTE

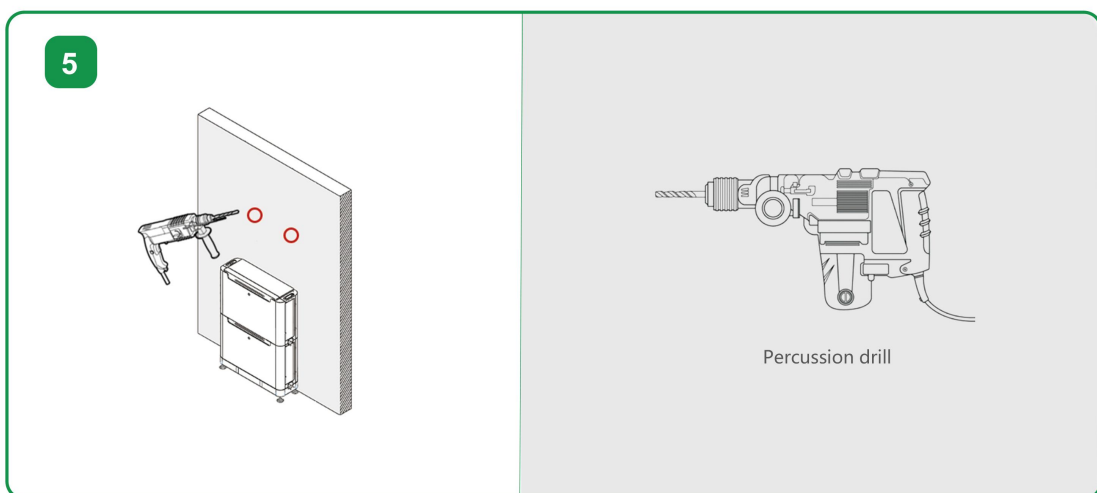
A single cluster of JKS-B51100-G1 can only support 4 battery packs at most.

3.6.4 Locate the anti-tipping brackets



In order to secure the battery cluster to the wall, you need to install anti-tipping brackets between the topmost battery pack and the wall. Locate the place for drilling on the wall with the brackets in the right place as shown in the picture.

3.6.5 Drilling

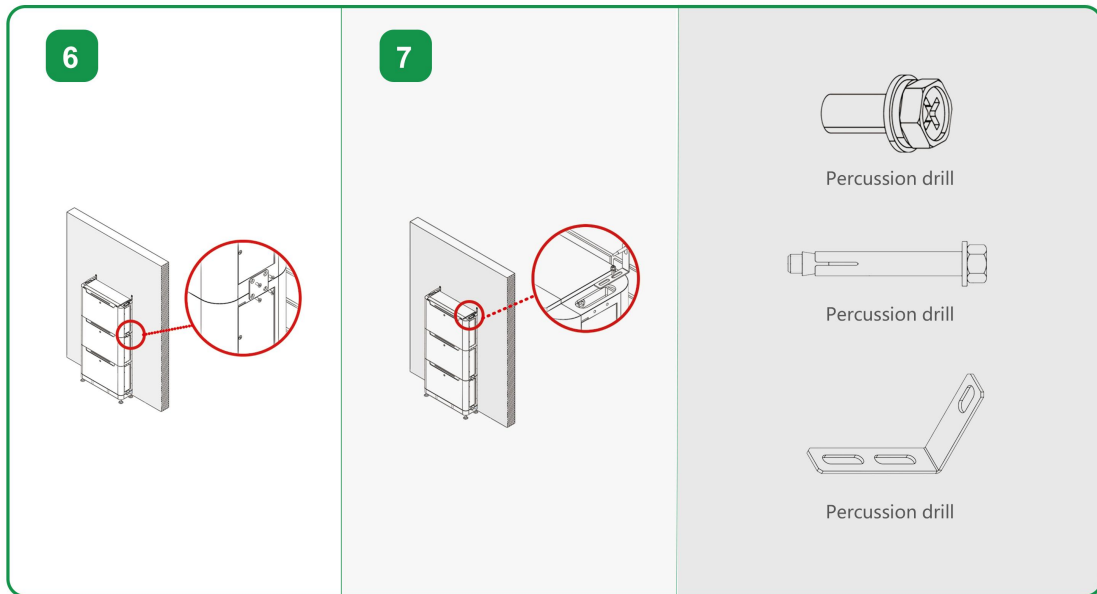


Drill holes on the wall according to the marked place with a percussion drill.

NOTE

Please remove the topmost battery pack from the battery cluster for safe drilling.

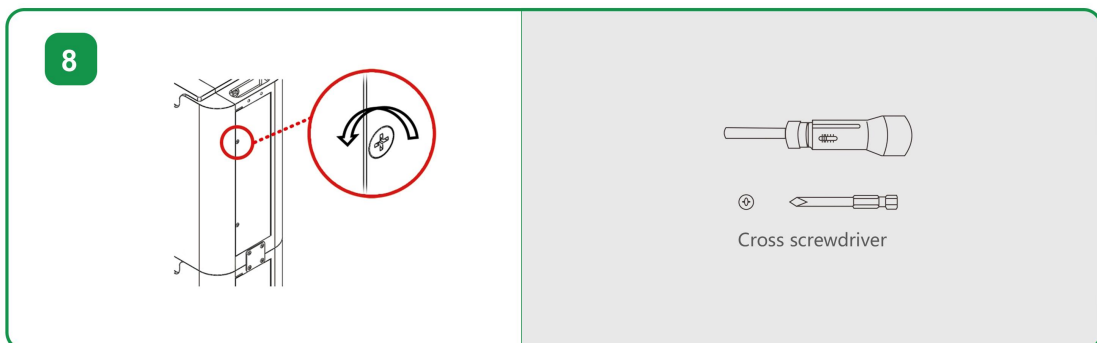
3.6.6 Secure the anti-tipping brackets



Put back the removed battery pack, repeating step 3.6.3.

Secure the anti-tipping bracket with the top surface of the battery packs using the M6*16 philips screws. Then secure the other side of the brackets to the wall by inserting the M6*60 expansion screws.

3.6.7 Open the battery side panels

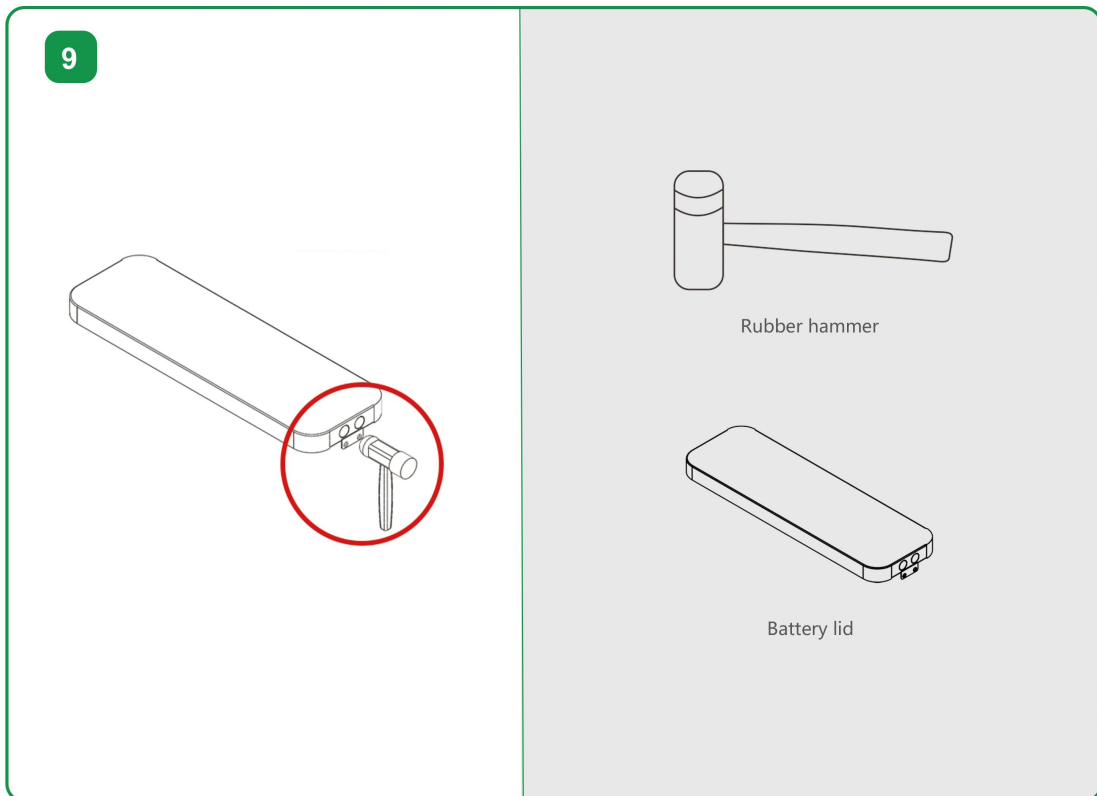


Now unscrew and open the side panels with a M4 screwdriver to allow for the later between-battery and battery-inverter wiring.

NOTE

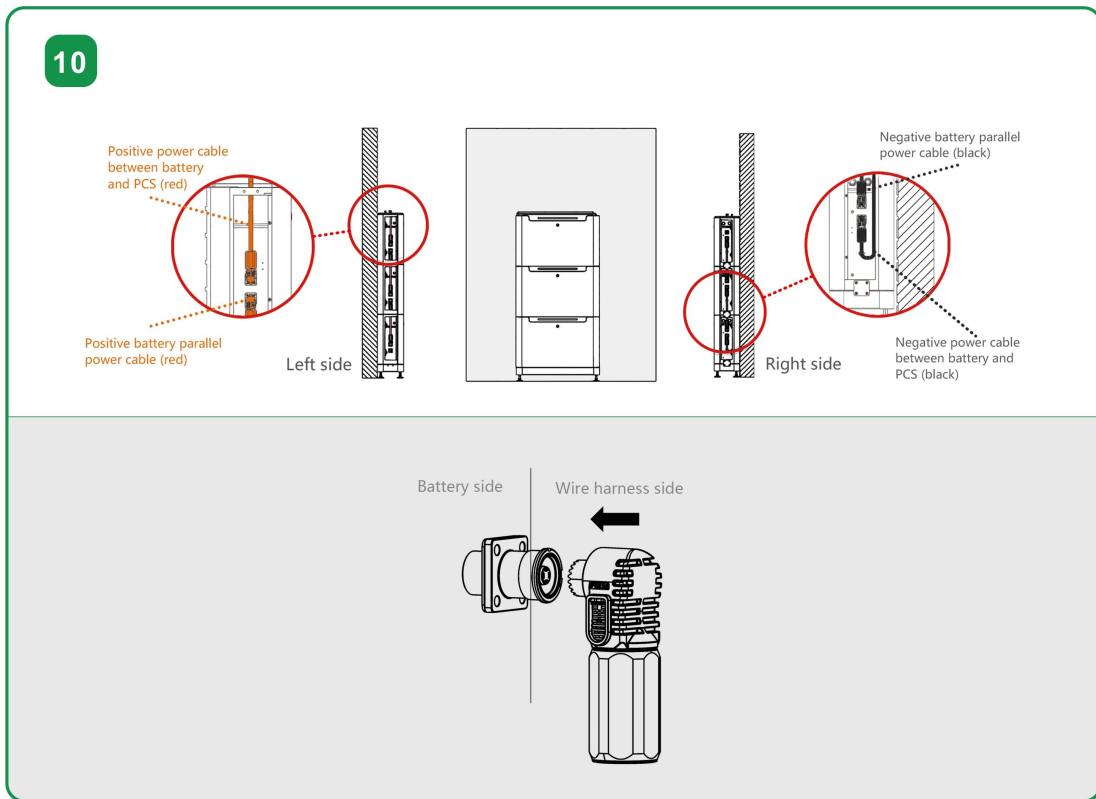
Please retain the M4*10 philips screws removed from the battery side panel for later reinstallation when putting it back.

3.6.8 Create knockdown hole on the battery lid



Please create a knockdown hole on the battery lid using a rubber hammer as shown in the picture for later battery-inverter wiring.

3.6.9 Connect between-battery and battery-inverter power cables



Each battery pack possesses a set of positive (red) and negative (black) terminal for both upper and lower wiring respectively. For the overall wiring, please refer to the wiring diagram in 3.7.

Between-battery parallel power cable connection. In this system, the batteries stand in a cluster stacked on one another in parallel connection. On both side of each battery pack, there exist two portols for power cable connection, distinguished by colour. For one battery pack, the upper portols, both positive and negative, serve to make parallel connection with the upper unit, whereas the lower for lower unit.

Battery-inverter power cable connection. The battery-inverter power cable connection should be done at the left side of the battery cluster on the topmost battery pack, whereas the negative at the right side on the bottommost battery pack. The positive connection is extended from the upper portal, whearas the negative from the lower portal.

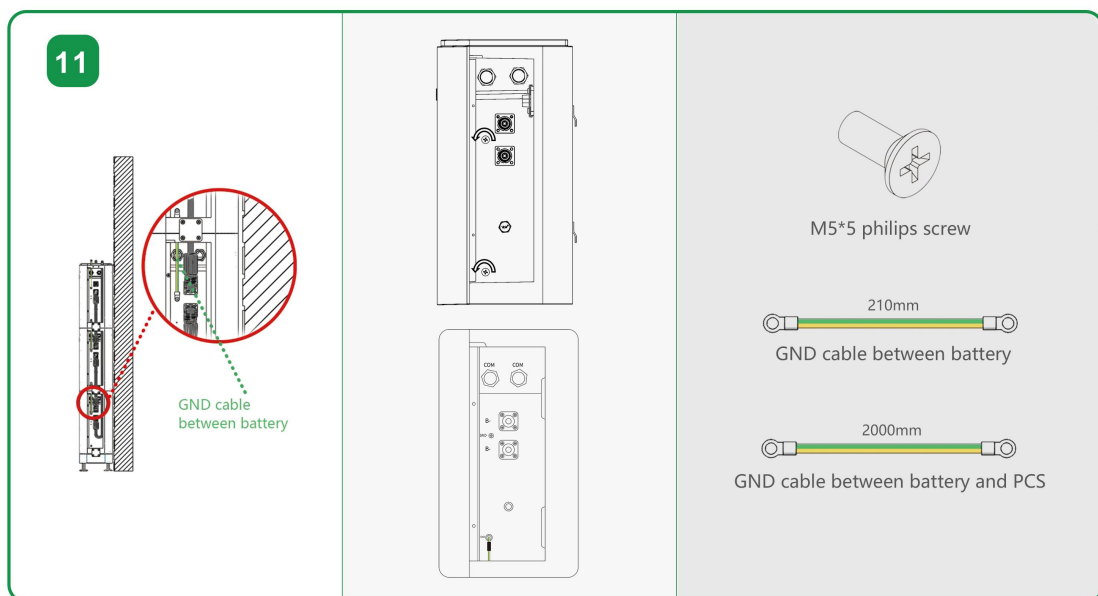
Wiring terminal connection. Please also note that the plugs and sockets have foolproofing features. Align the notch on the plug with the gap on the socket before

inserting the plug into the socket.

NOTE

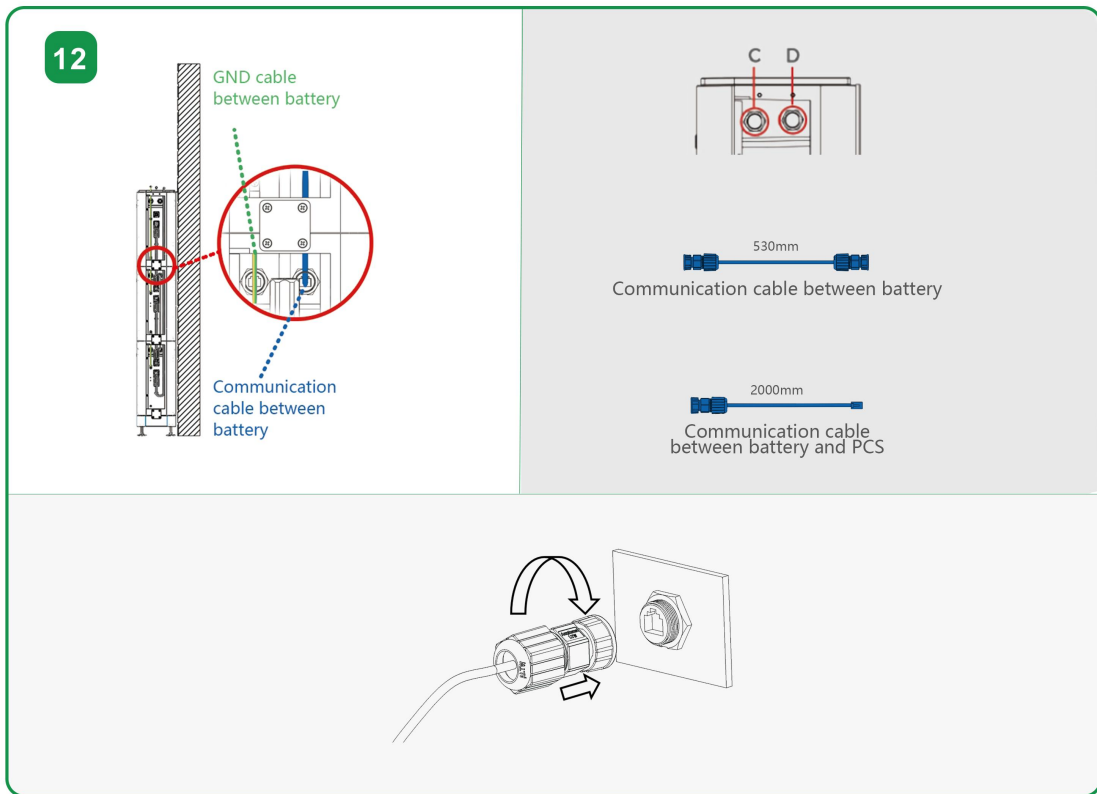
For correct cable connection of JKS-B51100-GI, please make sure that the batteries are in parallel connection. In this case, the positive cable connections shall all be on the battery left side, whereas the negative all on the battery right side.

3.6.10 GND cable wiring



Loosen the M5*5 philips screw on the battery pack before installing the between-battery and battery-inverter GND cables. Please check out the wiring diagram in 3.7 for reference.

3.6.11 Connect communication cable

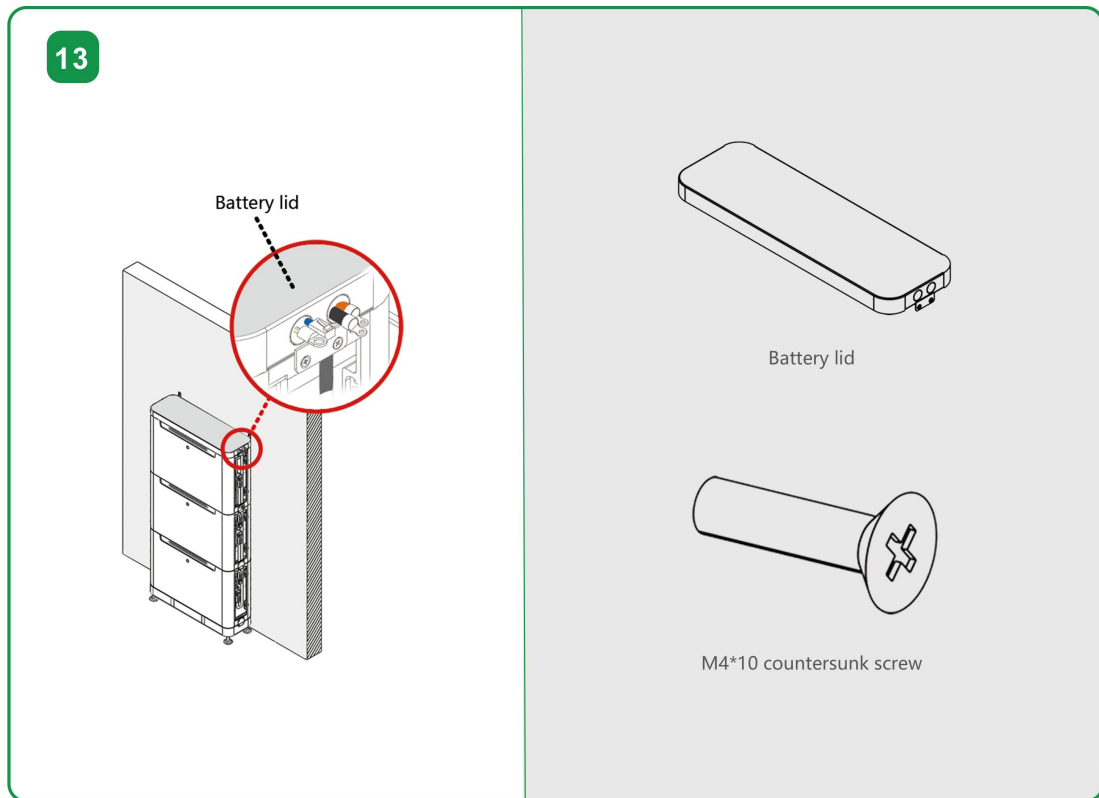


Connect the between-battery and battery-inverter communication cable. Please check out the wiring diagram in 3.7 for reference.

NOTE

In each battery pack there are two communication portals that share the same communication protocol. In this case, each portal can be used for both between-battery communication and battery-inverter communication.

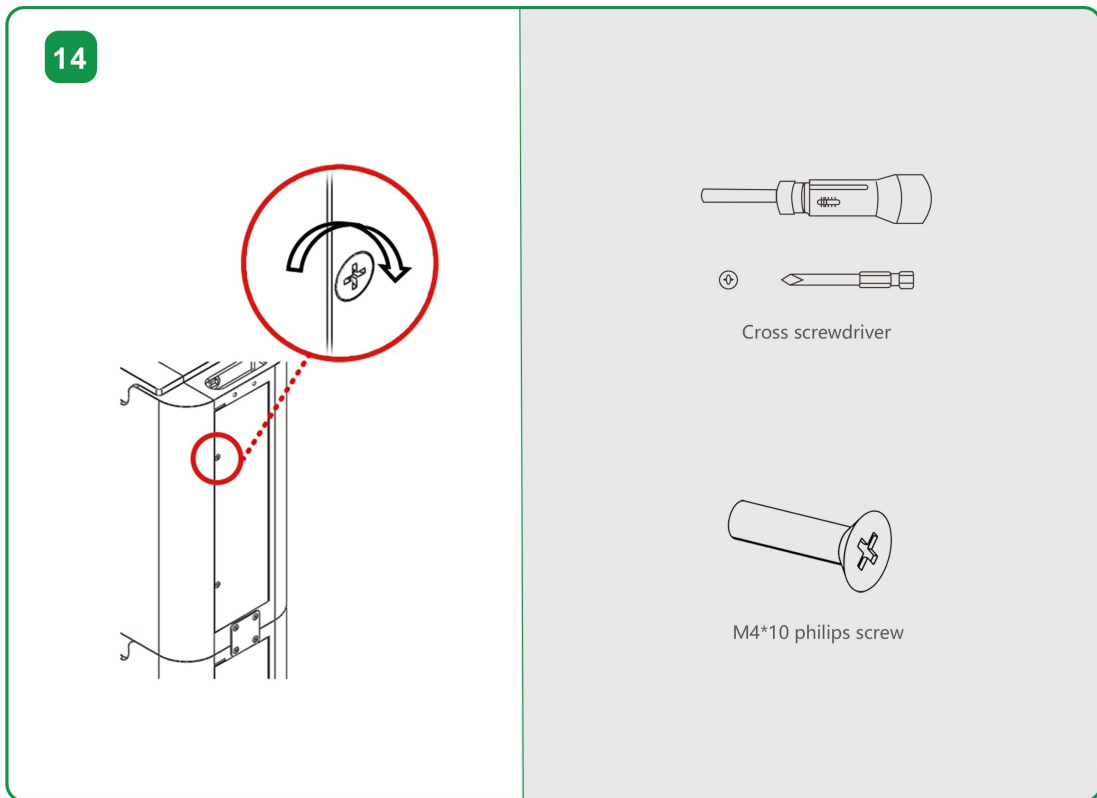
3.6.12 Battery lid connection



Lead out the cables. Having finished cable connection from the battery side, lead out the positive and negative battery-inverter power cable, battery-inverter communication cable, battery-inverter GND cable through the knowout holse created in step 3.6.8.

Secure the battery lid. Use the M4*10 countersunk screws to secure the battey lid onto the topsurface of the battery cluster.

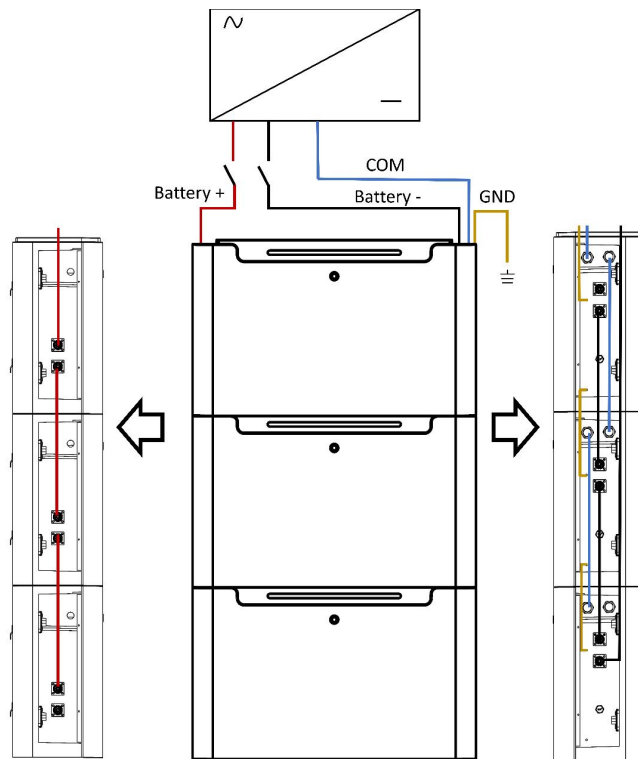
3.6.13 Close and secure the side door panels



After all the wirings are completed, close all the battery side panels and secure them with the M4*10 philips screw taken from the battery packs previously.

3.7 Battery system wiring diagram

Taking three pack stacking as an example, the following figure is a schematic diagram of cable connection.



3.8 Start up and Shutdown procedure

- 1) Verify that the installation is intact and that the air breaker is in a disconnected state.
- 2) Press the switch on the side of the battery to turn on the battery system.
- 3) Turn on the inverter and close the air breaker.
- 4) To turn off the battery system, disconnect the air breaker open firstly, and then turn off the charger/inverter and the battery separately.
- 5) Paralleled batteries are connected by DC cables, then connect upper one battery to DC breaker by DC cables, then connect DC breaker to inverter by DC cables.

4 Maintenance

4.1 Trouble Shooting

NOTE

This product should only be operated by professionals or authorized personnel.

All cable connections must be checked before checking for faults. Whether the switch is correct, and the battery system can wake up normally.

Table 4-1 Troubleshooting Worksheet

Failure situation	Cause of issue	Solution
Power button not responding	The start wire is damaged or has poor contact	Please contact the supplier or manufacturer.
Short discharge time	Low battery SOC	Connect the inverter for charging until fully charge the battery.
Short discharge time/charge and discharge failure	Battery overload	Check the load status and exclude non-critical loads.
	Battery aging leads to capacity loss	Please contact the factory to replace the battery pack and its parts.
	Internal failure	Please contact the manufacturer.
Charge and discharge failure/pack communication exception	Temperature of pack is too high	Stop charging and discharging. Let the battery pack be static at room temperature for more than 3 hours.
	The communication line is damaged or has poor contact	Check whether the battery pack communication is normal.
No response light after power on	Total voltage too low	Check the output voltage.
	Damaged indicator light	Please contact the supplier or manufacturer.
Battery cannot fully charged	Charging voltage is too low	Adjust the charging voltage to 58.4 V, or connect the inverter to perform charging.
Battery overvoltage	Battery DC voltage is too high	Stop charging and put it on hold for more than 30 minutes. If it does not recover, please contact the supplier or manufacturer.
Battery undervoltage (EOD)	The battery DC voltage is lower than the lower limit	Charge the battery
Pack temperature sensor failure	Temperature sensor failure	Please contact the supplier or manufacturer.
Temperature of pack is too high	There is a heat source around, causing the ambient temperature to be	Keep away from heat sources and reduce ambient temperature. If it

too high	still cannot be recovered after cooling down, please contact the supplier.
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NOTE

If the fault still persists, please contact the manufacturer as soon as possible.

NOTE

Do not disassemble this product by yourself!

When you need to report a fault, please record and communicate the following information:

- a) Product model;**
- b) Serial number;**
- c) Date of failure, complete description of the problem (including LED display, working status before failure, etc.).**

4.2 Replacements of Battery

NOTE

- Maintenance of the battery should only be performed by professional authorized personnel.**
- The battery system needs to be shut down first when performing some maintenance items.**

4.2.1 Voltage Check:

【Regular maintenance】 Check the battery system voltage through the host computer. Check if the system voltage is normal. For example: Check whether the voltage of a single cell is out of the rated range.

4.2.2 Battery check

【Regular maintenance】 Check the SOC of the battery system through the host computer. Check whether the SOC of the battery pack is normal.

4.2.3 Consistency Check

【Regular Maintenance】 If it is not fully charged for a long time, the battery system will become unbalanced. Solution: Balance maintenance (full charge) every 3 months.

5 Storage Recommendations

- The battery module should be placed in a dry, clean and well-ventilated environment at -10~45 °C(Temperature) and 5%~85%(Humidity). The battery should be charged to 50~55% before long-term storage.
- It is recommended to activate the battery system (charge and discharge) every 3 months, and the longest storage time without charge and discharge does not exceed 6 months.
- When the battery is stored, it should be placed correctly according to the box identification, not upside down or sideways.
- When the battery box is stacked, it should meet the stacking requirements on the outer packaging.
- When the battery is handled, it is required to be gently handled, and it is strictly forbidden to damage the battery.

WARNING

If the battery is stored for extended periods of time without following the above instructions, the cycling life of the battery will be relatively significantly reduced.

6 Shipment

Battery modules will be pre-charged to 50 % before shipment or as per customer request. The remaining capacity of the battery cell is determined by the storage time and condition after leaving the factory.

- The battery module meets the UN 38.3 certification standard.
- In particular, special rules for the carriage of goods on the road and the current dangerous goods law, specifically ADR (European Convention on the International Carriage of Dangerous Goods by Road), as amended, must be observed.

