



JKS-B19237-CS
JKS-B28837-CS
JKS-B38437-CS
JKS-B48037-CS
JKS-B57637-CS



User MANUAL

Content

Statement of Law.....	1
Safety handling of lithium batteries Guide.....	2
1 Introduction	4
1.1 Brief Introduction	4
1.2 Product Properties.....	4
1.3 Product identity definition	4
2 Product Specification	6
2.1 System Performance Parameter	6
2.2 Battery Module	7
2.3 Battery Controller.....	10
3 Installation and Configuration	13
3.1 Environmental Requirement	13
3.2 Installation clearance requirements	13
3.3 Installation location precautions	14
3.4 Tools	14
3.5 Safety Gear	15
3.6 Unpacking inspection.....	15
3.7 Equipment installation.....	17
4 Battery Expansion.....	22
4.1 Direct Battery expansion	23
4.2 Battery Expansion with DC Charger	23
4.3 Battery Expansion without DC Charger	25
5 Maintenance	28
5.1 Trouble Shooting:	28
5.1 Replacement of main component	29
5.2 Battery Maintenance	30
6 Storage Recommendations.....	31
7 Shipment.....	31
8 Contact information.....	31

Statement of Law

- They copyright of this document belongs to JinkoSolar Co., Ltd.
- No part of this documentation maybe excerpted, reproduced, translated, annotated or duplicated in any form or by any means without the prior written authorization of JinkoSolarCo., Ltd. All Rights Reserved.
- 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.
- Customer can check when the product or technology is updated and related information on the website of JinkoSolar Co., Ltd. Web URL: <http://www.jinkosolar.com> and <https://jinkosolar.eu/> for European countries.
- Please note that the product can be modified without prior notification.
- Any damage resulting from non-compliance with the information contained in this manual will void the warranty.
- The total discharge of the battery is not recommended. In the event that this happens, it must be recharged within the next 12 hours.
- For battery expansion module, please read carefully the corresponding section at this manual. Note that all modules must have the same SOC level and similar to the one of the original tower, either all devices charged before the expansion up to 100% SOC or both must have a SOC level of around 50%.
- In case you aim to connect two battery towers in parallel, consult Jinko in advance. Connecting two battery towers in parallel without previously consulting Jinko will cause the void of the warranty.
- In case that the storage time of the battery exceeds six months, the charge of the system is necessary to avoid permanent damage.

Safety handling of lithium batteries Guide



This is a high voltage DC system, and it must be operated only by a qualified person. Please, read carefully the Operation Menu and User manual before installation.

Symbol



Danger
(High level of risk)

Battery strings will produce high voltage DC power and can cause a lethal voltage and electric shock.



Warning
(Medium level of risk)

Risk of battery system damage or personal injury when not following safety hints:

- DO NOT pull out the connectors while the system is under operation.
- Make sure the system is completely de-energize from all power sources and verify that there is no voltage.



Caution
(Low level of risk)

Risk of battery system failure or life cycle reduction.

Before Connecting

- Check the product and packing list first after unpacking. If product is damaged or has missing parts, please contact with your local distributor or Jinko.
- Before installation, cut off the grid power and make sure the battery is in the turned-off mode and there is no voltage on it.
- To avoid any short circuit connection do not confuse the positive and negative wires, making sure that they do not come into contact with each other or with other wires or devices with charge.
- DO NOT connect the battery to DC power directly without a proper DC breaker.
- The battery system must be properly grounded with a resistance lower than 1Ω .
- Please ensure the electrical parameters of battery system are compatible to related equipment to be used for its installation.
- Keep the battery away from water and fire.

In Using

- If the battery system needs to be moved or repaired, the power must be cut off and the battery must be completely shut down.
- It is forbidden to connect Jinko's battery with different types of batteries.
- It is forbidden to connect and operate the batteries with faulty or incompatible inverters.

- It is forbidden to disassemble the battery (Warranty tab cannot be removed or damaged).
- In case of fire, use only dry power fire extinguisher. Liquid fire extinguisher
- are forbidden.
- It is forbidden to open, repair or disassemble the battery except for JinkoSolar experts or experts expressly 3 authorized by Jinko to do so. JinKO is not responsible for any consequences or liability arising from the violation of operational or equipment safety regulations.

**Warning:**

- Please read the user manual carefully before installing or operating the system.
- If the battery is stored for a long time, it must be charged every six months to avoid possible damage on the system. Check section 5. *Storage Recommendation for further information*.
- In case the battery is fully discharged and to avoid serious damage of the cells, it must be recharged within the next 12 hours.
- Do not expose wires and cables outside.
- For maintenance, all the battery terminals must be disconnected and the whole system must be turned off.
- Please contact the supplier within 24 hours if there is something abnormal.
- Direct or indirect damage resulting from not following the information contained in this user manual will void the warranty.
- For the expanding the battery capacity, please check in advance the SOC of the expansion modules and the original tower and ensure you follow the procedure described at section 4. *Battery Expansion*

1 Introduction

1.1 Brief Introduction

JKS-BXXX37-CS is a high voltage lithium iron phosphate battery system, develop and produced by JinkoSolar. The system offers a versatile storage capacity and an excellent performance combined with a long cycle life, that makes it especially suitable for applications scenes of high power and large energy demand, limited installation space with restricted load-bearing capacity.

1.2 Product Properties

- The whole module is non-toxic, non-polluting and environmentally friendly.
- The anode is made from LiFePO4 with an extremely safety performance and long cycle life.
- The Battery management system (BMS) has protection functions including over-discharge, over-charge, over-current and high/low temperature to prevent the system from a permanent damage.
- The system can automatically manage charge and discharge state with balance current and voltage of each cell.
- The storage is characterized by its flexible configuration: multiple battery modules can be easily connected in serial for expanding voltage and capacity;
- The battery has a self-cooling mode that quickly reduces the noise of the entire system;
- Less self-consumption, standing up to 6 months without being charged; no memory effect and excellent charge and discharge performance and cycle life;
- Working temperature range is from 0 to 50°C.
- Small size and reduced weight, which allows a comfortable installation and maintenance of the modules.

1.3 Product identity definition

Figure 1-1 Battery Energy Storage System nameplate

					
Type	JKS-B19237-CS	JKS-B28837-CS	JKS-B38437-CS	JKS-B48037-CS	JKS-B57637-CS
Nominal Energy	7.1kWh	10.66kWh	14.21kWh	17.76kWh	21.31kWh
Voltage Range	168-219V	252-328V	336-438V	420-547V	504-657V
Nominal Voltage	192V	288V	384V	480V	576V
Nominal Capacity	37Ah	37Ah	37Ah	37Ah	37Ah
Max. Charging Current	37A	37A	37A	37A	37A
Max. Discharging Current	37A	37A	37A	37A	37A
Ambient Temperature	0-50°C	0-50°C	0-50°C	0-50°C	0-50°C
IP Grade	IP54	IP54	IP54	IP54	IP54
Protective Class	I	I	I	I	I
SN POST HERE         					
Jinko Solar Co.,Ltd.		www.jinkosolar.com		Made in China	



Risk of electric shock. Battery voltage is higher than safety voltage.



Be aware of the potential hazards when handling the product and act according to safety.



Read the user manual before installing, setting or operating the system.



The discarded battery or equipment must be recycled by professional personnel or institutes. Never dispose of the battery in waste containers.



Once the battery has reached the end of its useful life, it can continue to be used after it has been recycled by the professional recycling Organization.



This battery product meets European directive requirements.



This battery product passed the TUV certification test.



Keep away from fire.



Do not place near open flame or do not incinerate it.

Figure 1-2 Battery module label



2 Product Specification

2.1 System Performance Parameter

Table 2-1 The parameter of JKS-BXXX37-CS system

System List	JKS-B57637-CS	JKS-B48037-CS	JKS-B38437-CS	JKS-B28837-CS	JKS-B19237-CS
Module Type	LFP	LFP	LFP	LFP	LFP
Total Storing Energy [kWh]	21.31	17.76	14.21	10.66	7.10
Usable Capacity [kWh]	21.31	17.76	14.21	10.66	7.10
Recommend Depth of Discharge	80%	80%	80%	80%	80%
Max Depth of Discharge	100%	100%	100%	100%	100%
Module configuration	6 Series	5 Series	4 Series	3 Series	2 Series
Voltage Range[Vdc]	504~657	420~547	336~438	252~328	168~219
Battery System Voltage (Vdc)	576	480	384	288	192
Battery System Capacity (Ah)	37	37	37	37	37
Battery System Charge Voltage (Vdc)	657	547.5	438	328.5	219
Battery System Charge Current [A] (Normal)	18.5	18.5	18.5	18.5	18.5
Battery System Charge Current [A] (Max)	37	37	37	37	37
Battery System Discharge lower-Voltage (Vdc)	504	420	336	252	168
Battery System Discharge Current [A] (Normal)	18.5	18.5	18.5	18.5	18.5
Battery System Discharge Current [A] (Max)	37	37	37	37	37
Battery System Max. Charge& Discharge Current [A] (when used in communication with the inverter)	22.5	22.5	22.5	22.5	22.5
Discharge condition	-10℃~50℃	-10℃~50℃	-10℃~50℃	-10℃~50℃	-10℃~50℃
Charge condition	0℃~50℃	0℃~50℃	0℃~50℃	0℃~50℃	0℃~50℃
Max. Discharge Power [kW]	21.31	17.76	14.21	10.66	7.1
Max. Charge& Discharge Power [kW] (when used in communication with the inverter)	12.78	10.65	8.52	6.39	4.26
Short Circuit Current [kA]	1.5	1.5	1.5	1.5	1.5
Enclosure Protection (IP)	IP54	IP54	IP54	IP54	IP54
Size [mm]	1500 *504*380	1300 *504*380	1100 *504*380	900*504*380	700*504*380

System List	JKS-B57637-CS	JKS-B48037-CS	JKS-B38437-CS	JKS-B28837-CS	JKS-B19237-CS
Weight [kg]	269	228	187	146	105
Battery Module Name	JKS-B9637-CS	JKS-B9637-CS	JKS-B9637-CS	JKS-B9637-CS	JKS-B9637-CS
Battery Module Quantity(pcs)	6	5	4	3	2

JKS-B38437-CS



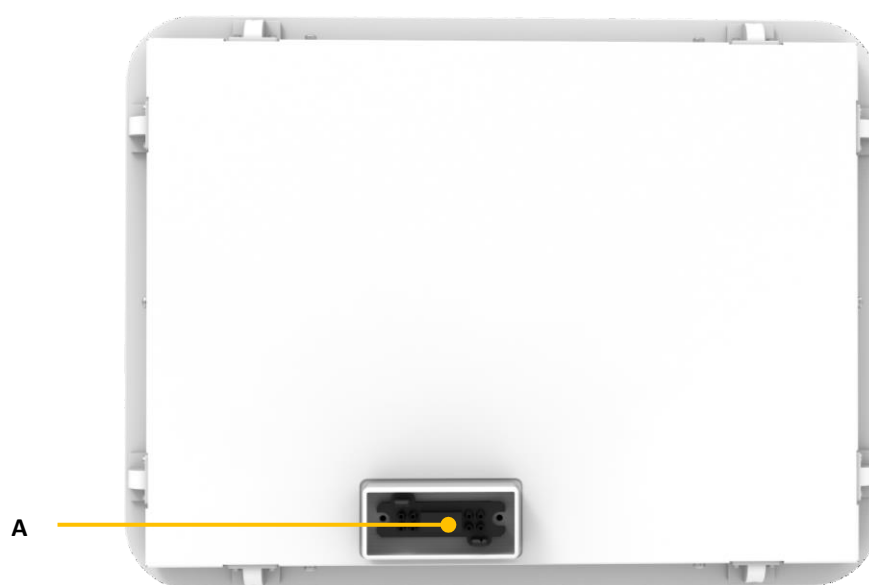
2.2 Battery Module



Table 2-2 Product parameters

Module Name	JKS-B9637-CS
Cell Technology	Li-ion(LFP)
Battery Module Capacity (kWh)	3.552
Battery Module Voltage (Vdc)	96
Battery Module Capacity (Ah)	37
Battery Module Cell Quantity (pcs)	30
Battery Cell Capacity (Wh)	118.4
Battery Cell Voltage (Vdc)	3.2
Battery Cell Capacity (Ah)	37
Battery Module Cell Quantity in Series (pcs)	30
Battery Module Charge Voltage (Vdc)	105~108
Battery Module Charge Current (Standard) [A]	7.4
Battery Module Charge Current (Normal) [A]	18.5
Battery Module Charge Current (Max.) [A]	37
Battery Module Discharge lower-Voltage (Vdc)	84
Battery System Discharge Current (Standard) [A]	7.4
Battery Module Charge Current (Normal) [A]	18.5
Battery Module Charge Current (Max.) [A]	37
Dimension (W*D*H, mm)	504*380*240
Communication mode	CAN
Pollution Degree (PD)	II
Ambient Temperature(°C)	0~50
IP Grade	IP54
Weight(kg)	41

JKS-B9637-CS top interface



JKS-B9637-CS bottom interface

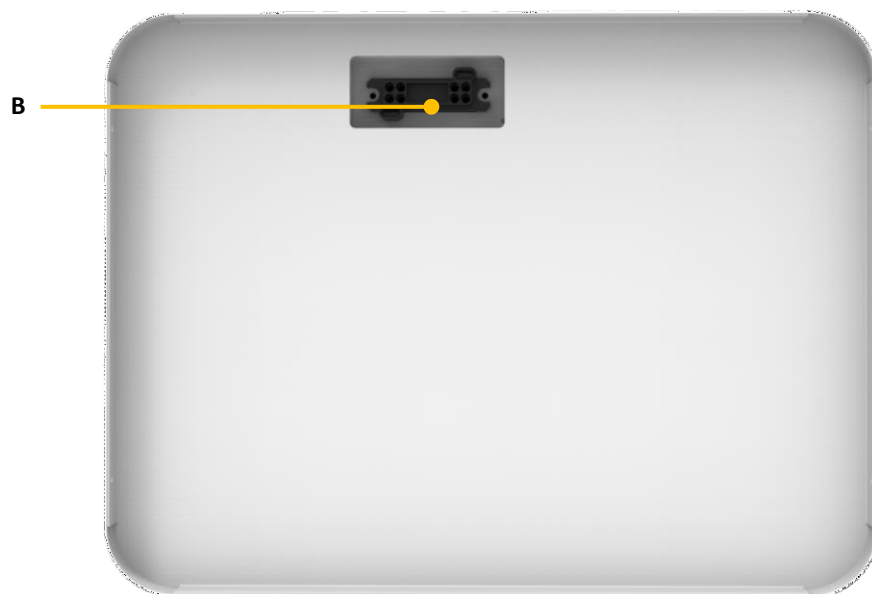
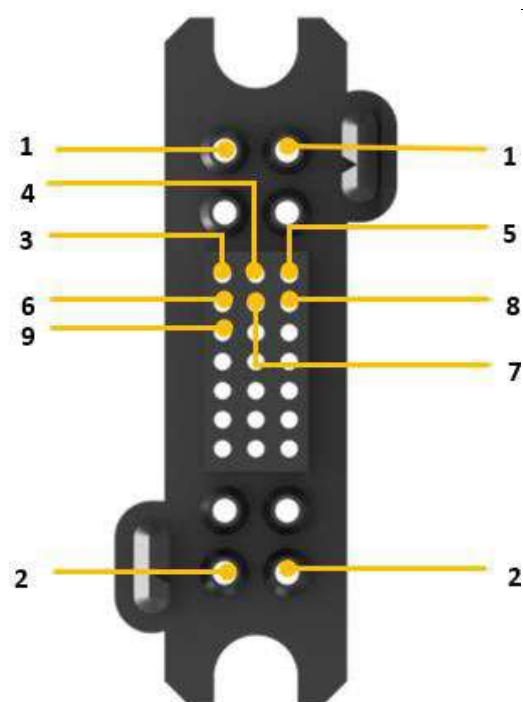
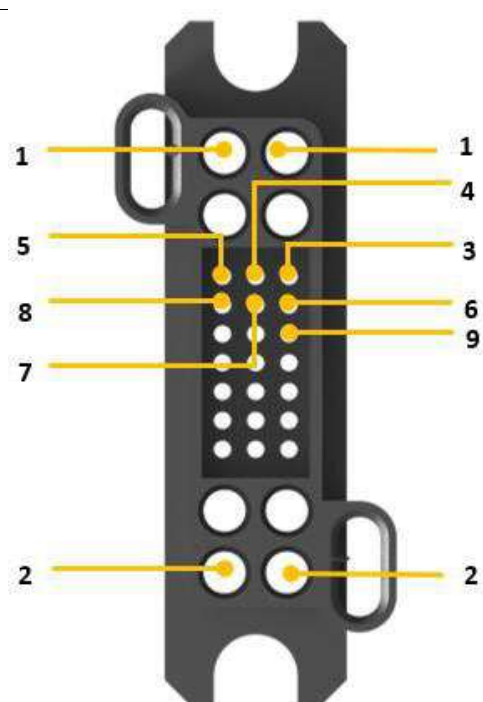


Table 2-3 Interface Definition

Item	Name	Definition
A	Composite connector-Plug	Battery module output and communication interface
B	Composite connector-Socket	Battery module output and communication interface



Composite connector-Plug



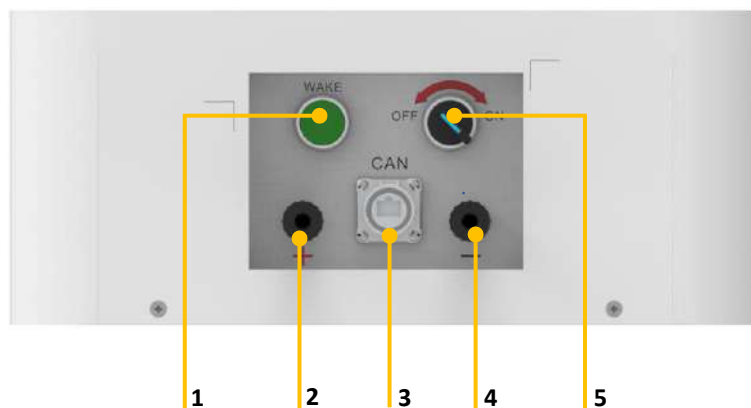
Composite connector-Socket

Table 2-4 Port Definition

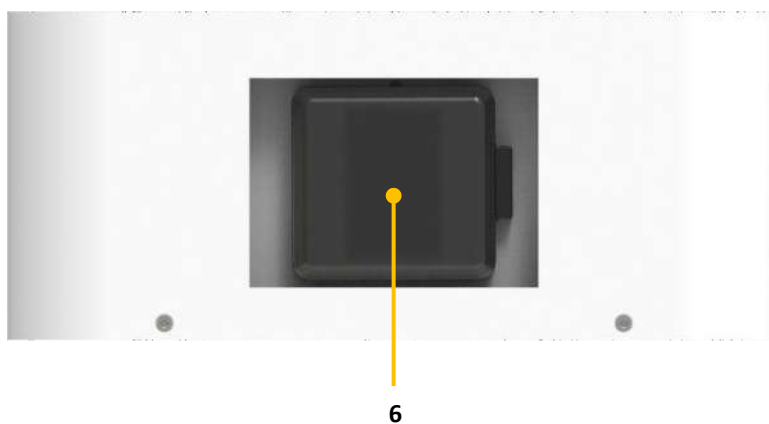
N°	Composite connector-plug	Composite connector-socket
1	Module negative output	Module negative output
2	Module positive output	Module negative output
3	SWAKE	SWAKE
4	SCANSG	SCANSG
5	SCANL	SCANL
6	SCANH	SCANH
7	24V-	24V-
8	24V+	24V+
9	SCANIN	SCANOUT

2.3 Battery Controller

BMS right interface



BMS left interface



BMS bottom interface

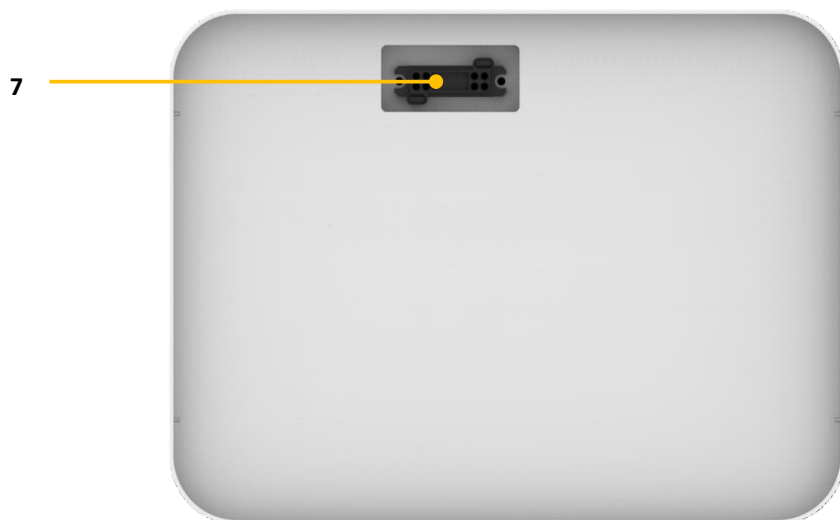
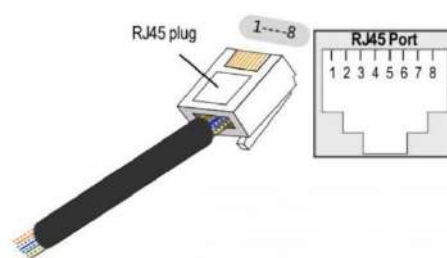


Table 2-5 Interface Definition

Item	Name	Definition
1	Power Wake Button	Allows you to reset the battery after pressing and holding for 8~10s.
2	External Positivesocket	Connection of the battery with the positive terminal of the inverter.
3	EXT-CAN CommunicationPort	RJ45 communication port between the battery system and inverter.
4	External Negative socket	Connection of the battery with the negative terminal of the inverter.
5	Power On switch	Allows to power the BMS system.
6	DC Breaker	Master switch of the battery system and short circuit protection. It must be switched on before switching the Power On (5) and Power Wake (1) switches.
7	Composite connector-Socket	Battery module output and communication interface.

Definition of “EXT-CAN” port pin



PIN	Color	Definition
PIN1	Orange/White	Reserved
PIN2	Orange	XGND
PIN3	Green/White	Reserved
PIN4	Blue	CANH
PIN5	Blue/White	CANL
PIN6	Green	NC
PIN7	Brown/White	Reserved
PIN8	Brown	NC

3 Installation and Configuration

3.1 Environmental Requirement

3.1.1 Cleanliness



The battery system has high voltage connectors. The environment conditions will affect the isolation performance of the system so, before installation and commissioning of the system, please remove any dust or iron scurfs in the area of the installation to keep a clean environment.

The system must be installed in an environment with certain anti-dust conditions and dust and humidity should be checked and controlled periodically during the system operation.

3.1.2 Temperature

JKS-BXXX37-CS system working temperature range goes from 0°C to 50°C, while the optimum temperature range is from 18°C to 30°C.



Working out of the working temperature range will trigger system alarms or protections which may lead to a reduction of the battery life cycle.

3.1.2.1 Cooling System

To keep the battery system in the appropriate temperature range and allow a proper operation of the system when the room temperatures are exceeding the maximum optimum temperature, the installation a cooling system for the battery is recommended.

3.1.2.2 Heating System

When working under low temperatures below 0°C, the system may suffer shut downs for self-protection. To avoid this, please always keep the temperature over 0°C using a heating pump or installing the system in a place where the temperature range is ensured to be over 0°C.

3.1.3 Fire-extinguisher System



The room where the system is installed must be equipped with fire-extinguisher system for safety purpose. The fire system needs to be regularly checked to be in normal condition. Refer to the using and maintenance requirements of the fire-extinguisher systems and follow local fire equipment guidance.

3.1.4 Grounding System



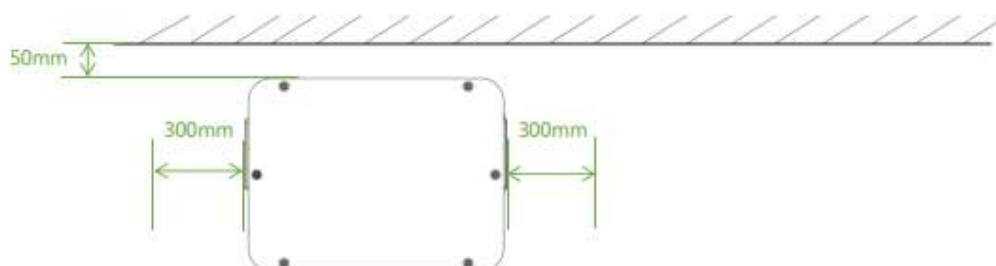
Make sure the grounding point for battery system is stable and reliable before the battery installation. If the battery system is installed in an independent equipment cabin (e.g. container), ensure that the grounding of the cabin is stable and reliable. In any case ,the resistance of the grounding system must be $\leq 100m\Omega$

3.2 Installation clearance requirements



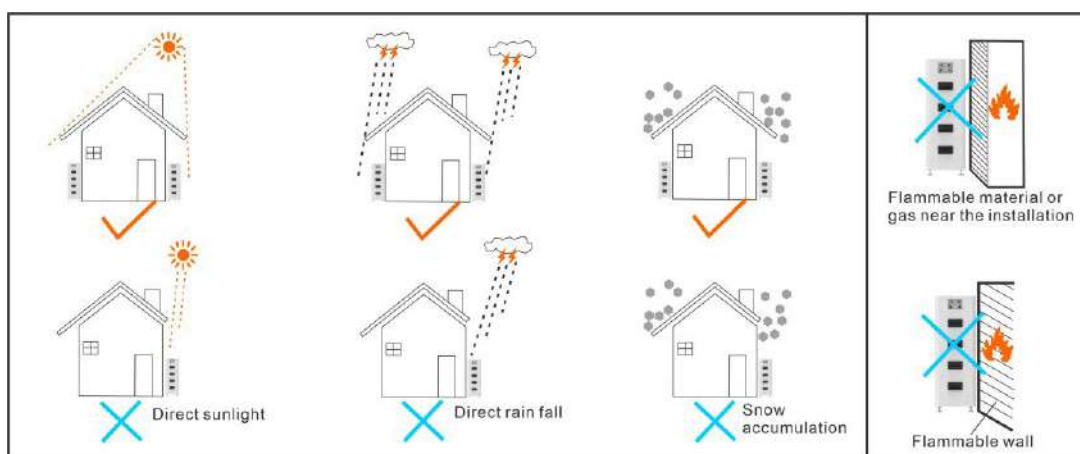
To ease maintenance and allow a proper ventilation and heat dissipation at the battery, please, install it with a minimum safe clearance from the surrounding equipment following the clearance diagram below.

Figure 3-1 Minimum Clearance Diagram



3.3 Installation location precautions

Please, to avoid any damage of the system which would void the warranty, do not install the battery system under direct rain, snow or sun light exposure, following the precautions described below:



3.4 Tools



Use properly insulated tools to prevent accidental electric shock or short circuits. If insulated tools are not available, cover the entire exposed metal surfaces, except the tip, with insulated alternatives like electrical tape and make sure you use proper isolating gloves while handling tools.

The following tools are required to install the battery pack:



Power Cable Clamp



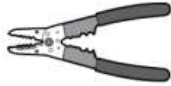
Pen



Phillips Screwdriver Bit



Flat-Head Screwdriver



Wire Stripper



Crimping Pliers



Wrench



Tape Measure



Hair Dryer



Cylinder Screwdriver



Torque Wrench



Drill

3.5 Safety Gear

It is recommended to wear the following safety gear when installing and maintaining the battery system:



Insulated Gloves



Safety Goggles



Safety Shoes

3.6 Unpacking inspection

- When receiving the equipment, please load and unload it according to the safety rules and regulations. Prevent the package and the system from being directly exposed under sunlight. Battery must not be installed in direct sunlight (refer to Section 3.3)
- Before unpacking, check that there are no missing items according the shipping list attached to each package. Check the condition of the received goods to ensure that there are not damaged packages. Contact our technical support in case of missing or faulty packages before installing the system.
- In the process of unpacking, handle with care and protect the surface coating of the object.
- After opening the package, the installation personnel should carefully read the user manual, verify the packaging list, according to the configuration table below and ensure goods are complete and intact. If the internal packing is damaged it should be examined and recorded in detail. Provide this report with the corresponding evidences to your distributor or Jinko's technical support.

Table 3-1 Number of packages for each battery model

Model	Number of JKS-B9637-CS	Number of BMS&Base
JKS-B19237-CS	2	1
JKS-B28837-CS	3	1
JKS-B38437-CS	4	1
JKS-B48037-CS	5	1
JKS-B57637-CS	6	1

Table 3-2 Packing list for JKS-B9637-CS

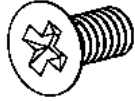
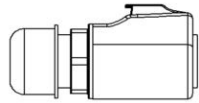
Item	Specification	Quantity	Figure
Battery Module JKS-B9637-CS	96V/37Ah 504*380*240mm	1 PCS	
Cross recessed countersunk head screw	M4*10	4 PCS	

Table 3-2 Packing list for BMS&Base box

Item	Specification	Quantity	Figure
BMS	504*380*156.5mm	1 PCS	
Base	504*380*186mm	1 PCS	
Communication cable to inverter	Standard, Black /L2000mm /RJ45plug at both sides	1 PCS	
Communication connector to BMS	RJ45 Waterproof connector	1 PCS	
Cross recessed countersunk head screw	M4*10	4 PCS	

M6 3 sets of combined screws	M6*14	1 PCS	
Ground terminal	OT 4-6	2 PCS	
User manual	~30Page	1 PCS	
Power cable connector	To positive pole of battery	1 PCS	
Power cable connector	To negative pole of battery	1PCS	
Power cable	Positive red wire 6mm ² (2m)	1 PCS	
Power cable	Negative black wire 6mm ² (2m)	1PCS	

3.7 Equipment installation

 **When the DC breaker is tripped off because of over current or short circuit, wait for 30 min before turning it on again to avoid personal damages or damages on the breaker.**

 **Ensure Power On Switch is turned on before waking up the battery. Otherwise it will affect to the system automatic checking process and cause danger of damage at the system.**

 **DO NOT turn off the "Power On Switch" during normal running condition, only in emergency case it could be turned off directly. Otherwise will cause this battery string current surge by another battery strings.**

3.7.1 Installation preparation

1. Check that the installation environment meets all technical conditions described at this manual in sections 3.1.1 to 3.1.6.
2. Prepare the equipment and tools for installation.
3. Confirm that the DC breaker is in the OFF state to ensure that it is power at the system.

3.7.2 Mechanical installation

Step 1 Place the base

- Separate the BMS from the base by untightening the screws between them.
- Choose an appropriate place to set the base and adjust the base legs until it is balanced (horizontal).
- Place the base at a minimum distance of 30 cm from the wall.



Step 2 Battery module installation



Single battery module is 41kg. It's necessary to arrange more than 1 person to install battery module if without lifting equipment, more than 2 persons when install battery module in higher position.

- Install all the JKS-B9637-CS modules on the base from bottom to up, referring to the following figure depending on the battery model.



- Fix each module by tightening the four screws at its right and left side.



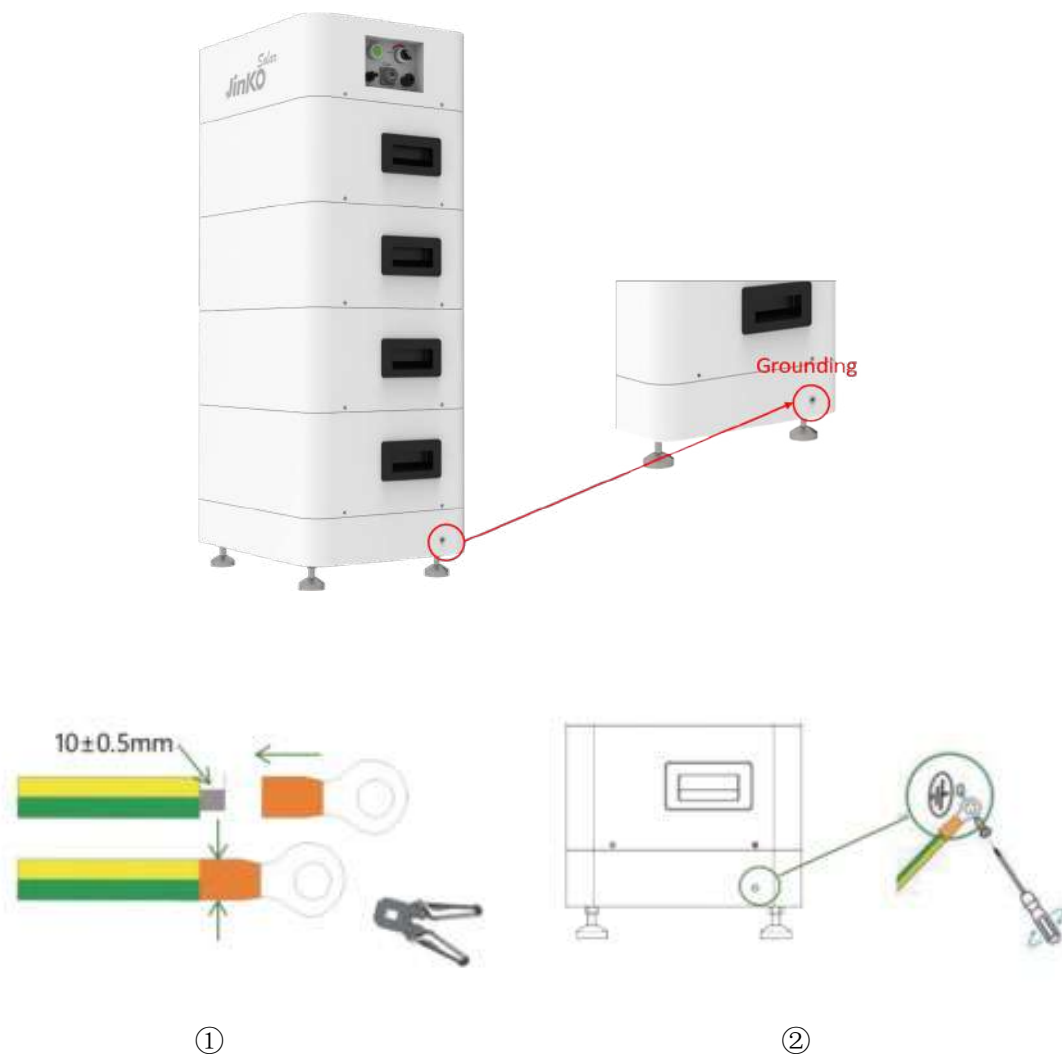
3.7.3 Electrical installation

Step 1 Fix the modules

- After the JKS-B9637-CS module is stacked one of the top of the other, and fixed by two screws on the left and right sides the battery modules will be also electrically connected between each other.
- Add the Battery Management System or High Voltage Box (BMS) at the top of the stacked modules and tighten its screws to make the electrical and mechanical connections.

Step 2 Grounding

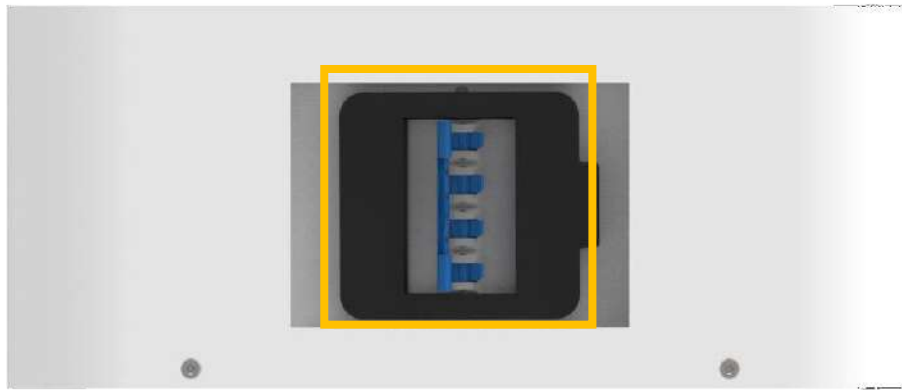
- There is a special docking point at the bottom of the battery base for grounding. Connect the grounding port of the battery to the ground using a grounding cable with the corresponding grounding terminal connected as described below.



3.7.4 Battery system self-test and turn on

Step 1 Switching the breakers

- Switch the BMS DC BREAKER to the "ON" state

**Step 2 Switch on the “POWER ON” switch.**

- This switch is generally ON when the system is at ON state and it cannot be turned off during normal operation of the system.

**Step 3 Wake the system**

- Press the “POWER WAKE” button for about 8~10s and the system will automatically start.

**Step 4 Checking measurements**

- Use a multimeter to measure the output voltage on the positive and negative ports of the BMS.
- Check that the measured output voltage conform to the voltage range in the table “Table 2-1 Parameter of JKS-BXXX37-CS system”. Otherwise, an installation error may have occur or the system may be faulty. Please consult JinkO’s technical service in case the measurements do not match with the expected ones.



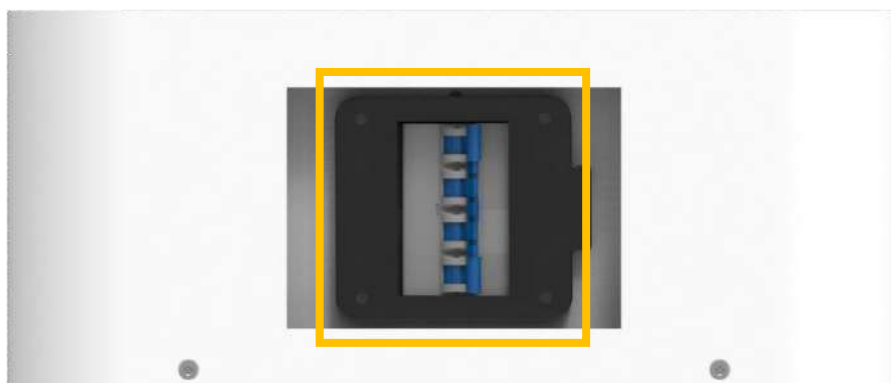
The voltage of the battery is too high, please pay attention to do self-protection during the measurement.

3.7.5 Shut down the system

- Switch off the "POWER ON" switch.



- Switch the BMS "DC BREAKER" to the "OFF" state.



3.7.6 Connecting inverter



A external DC Breaker that operates both positive and negative conductors simultaneously between the BMS and inverter installed on the power wires is needed. After waking up the BMS and ensuring it is pre-charged, it can be turned on.



Please confirm that the battery system is in the off state before connecting it. It maybe cause electric shock to personnel and damage to the inverter when connecting the battery directly without power off.

- Connect the positive and negative battery connectors with the positive and negative power wires together. At both ends must have connectors, so please, connect the connector provided within the battery package at one of the bottoms and the connectors to the inverter (provided by the inverter) to the opposite one, paying special attention to match with the polarities.
- In case that 2m power cable is not long enough, please find another power cable of the same specification to connect the battery to the inverter, taking into consideration that the length cannot be longer than 3m.



Battery connector provided at the packing list.



Positive connector (x1)
Negative connector (x1)
Tail sleeve (x2)
Standard red positive wire, 2m length (x1)
Standard black negative wire, 2m length (x1)

For connecting the connector to the end of the wires, please follow the steps below:



① First, install the tail sleeve on the red and black wires by stripping around 9mm of the wire tip.

② Insert the cable core into the internal lock and push it until the bottom of it. The depth of the core wire head should exceed the locking position to prevent the wire from being unable to be locked.

- Connect External Power Cable to the inverter and the battery through its reserved terminals, paying special attention to the polarities of the terminals.



Connect to inverter DC+

Connect to inverter DC-

- Connect the EXT-CAN communication cable to both, the inverter and the battery through the RJ45 CAN ports of each device.



Double check the connection of all the power cables and communication cable. Make voltage of the Inverter is in the same level with the battery system.

1. Switch on the inverter, to make sure all the power equipment can work normally.
2. Start the battery system following the steps described at 3.5.4 section.

4 Battery Expansion



When the system has been in operation for over six months, it is advisable to refrain from introducing new batteries for expansion purposes. If you intend to expand the battery capacity, we kindly request you to proactively consult with Jinko. It is important to note that the expansion process is considerably time-consuming, and any expenses incurred due to the extended duration of the expansion solution will not be covered by Jinko.



The original battery tower and the expansion modules to be connected must always be at a similar SOC level for avoiding any damage and decrease of their storage capacity.

4.1 Direct Battery Expansion

When the new JKS-B9637-CS modules have been delivered by the distributor at 100% SOC (state of charge), they can be easily and quickly expanded following the steps below:

Step 1: Initial Preparation

- Ensure all safety preparations for a safe operation, including personal protective equipment.
- Verify that the existing battery tower is charged at 100% SOC by checking that the charging current is 0A
- In case the original battery tower is not fully charged, please, keep charging it either from PV or Grid.
- Once the battery charging current is 0A, please, disconnect completely the battery tower from the power system and confirm that it is completely isolated from the power.

Step 2: Add the new battery module to the system

- Disconnect the battery BMS and separate it from the modules at the tower by unscrewing the four screws at the right and left side of the BMS.
- Place the new expansion module at 100% SOC at the top of the modules of the original tower and tight its four screws.
- Connect the BMS by staking it on the top of the new module and fix it to the modules by tighten the screws at both of its sides.

Step 3: Finalizing Expansion

- Perform a final assessment of the entire battery system's performance, including the new module and the original batteries.
- Verify that all components are functioning correctly, and that the system stability is maintained.

Step 4: Documentation and Reporting

- Create a detailed report of the expansion process, including integration steps, system performance evaluations, and any adjustments made.
- Store the documentation for future reference and warranty purposes.

4.2 Battery Expansion with DC Charger

In the usual case that the new expansion modules have been delivered by the distributor at around 50% SOC, which is the standard level of charge for shipping, They can be installed directly to the original tower but some additional steps must be followed to perform a successful expansion of the battery capacity. Below it is described the expansion process using a DC charger:

Step 1: Initial Preparation

- Ensure all safety preparations for a safe operation, including personal protective equipment.
- Check that the new expansion module is not damaged and, if it is possible, measure its SOC. Also check the SOC level of the original tower (this can be consulted at the inverter screen).

Step 2: Charge the original battery tower to SOC 100%

- In case the original tower SOC is lower than 100%, adjust the SOC of the original battery system to reach the 100%. This can be achieved by using the inverter to charge the tower using the energy coming from the PV or the grid. For this, the inverter must be set to charge the battery tower first.

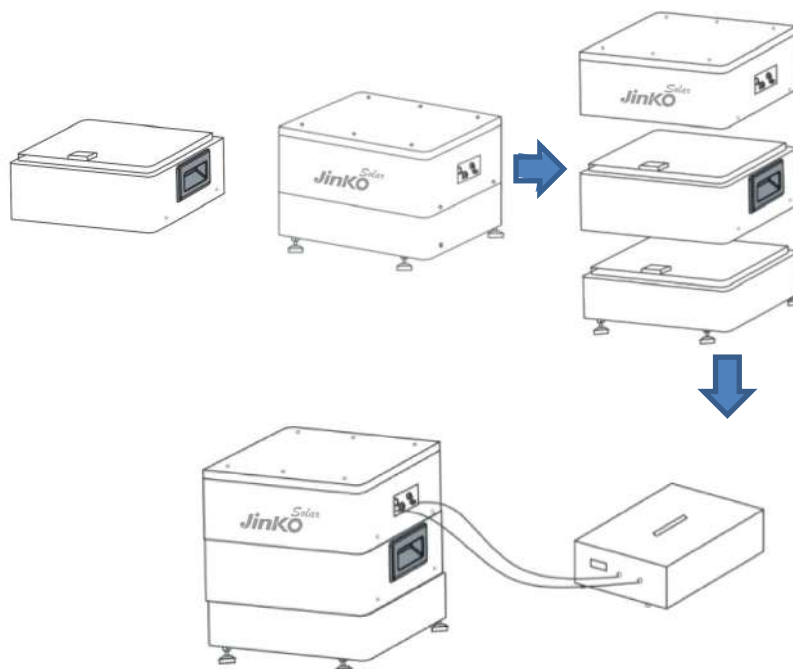


The delivered expansion modules will have an initial SOC 50% and they need to be charged up to SOC 100% for a successful connection to the original tower.

Step 3: Charge the new battery module to 100% with a DC charger

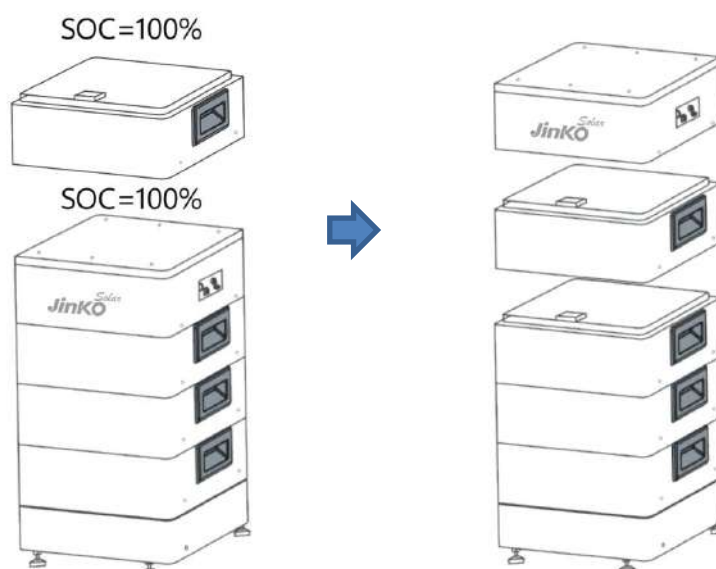
- Dismantle completely the original battery tower and separate the battery BMS and the base from the original modules.

- Place the new JKS-B9637-CS module between the battery BMS and the base and check that all the connection while stacking them have been successfully done.
- Use the DC charger with a charging voltage of 110V to charge the battery module through the BMS positive and negative ports. Continue charging the battery module until the BMS automatically terminates the charging process.



Step 4: Add the new battery module to the system

- Disconnect the charged new module from the BMS after removing the DC charger and separate the BMS.
- Reassemble the battery tower by adding all the JKS-B9637-CS modules to the new expansion module already placed at the base and fix all of them by tightening the screws.
- Connect the battery BMS on the top of the modules, tight its crews and connect it with the power wires and the communication cable to the inverter.



Step 5: Finalizing Expansion

- Perform a final assessment of the entire battery system's performance, including the new module and the original batteries.
- Verify that all components are functioning correctly, and that the system stability is maintained.

Step 6: Documentation and Reporting

- Create a detailed report of the expansion process, including integration steps, system performance evaluations, and any adjustments made.
- Store the documentation for future reference and warranty purposes.

4.3 Battery Expansion without DC Charger

In the case that the delivered module for the expansion is charged around 50% SOC and you don't have any DC charger available for using as explained at the section 4.2, please, follow the procedure below to charge the expansion module with the inverter an :

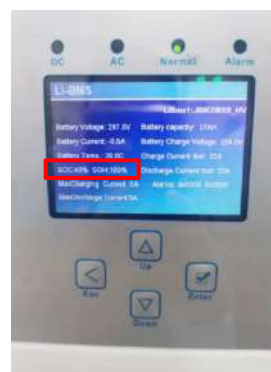
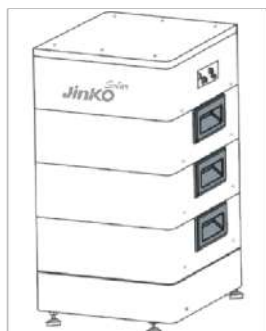
Step 1 Initial Preparation

- Ensure all safety preparations for a safe operation, including personal protective equipment.
- Measure the SOC of the new expansion module to be added to the tower and check the SOC level of the original tower (this can be consulted at the inverter screen).

Step 2: Preparing for Expansion

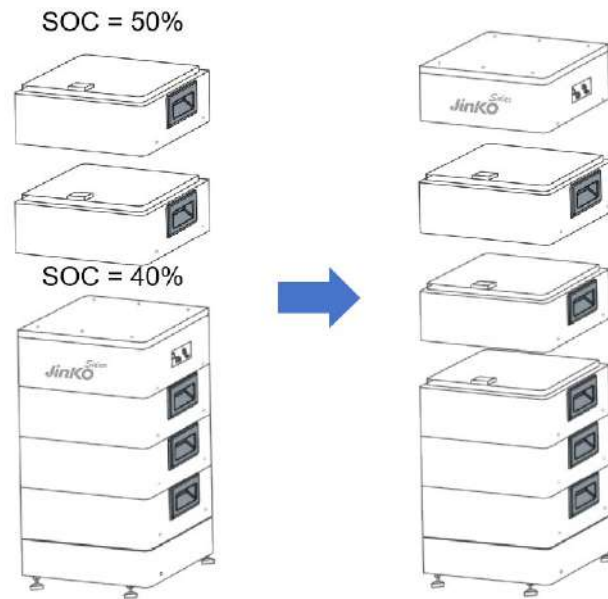
- In case that the original tower is charged above 40% SOC, please, discharge it up to 40% SOC. On the contrary, in case its state of charge is below 40%, charge it using the settings of the inverter until it reaches that level of SOC.

Discharge the SOC to 40%



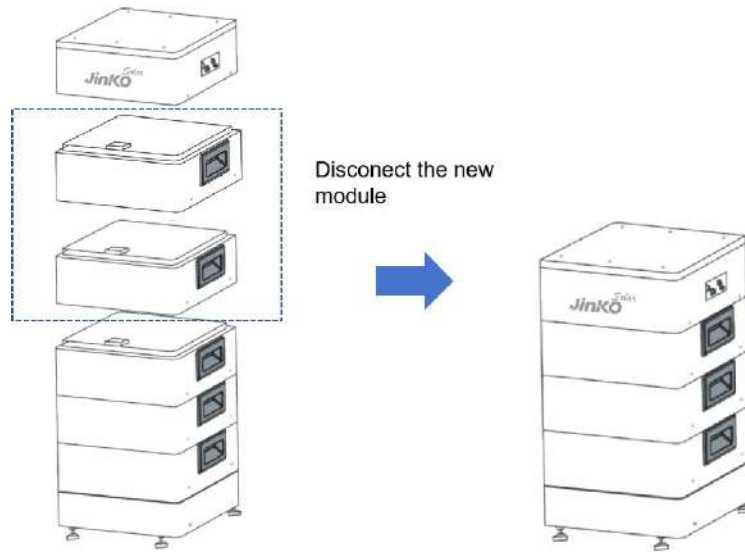
Step 3: Integrating the New Battery Module

- Add the new battery modules into the existing battery tower by previously removing the battery BMS.
- Charge the set of the original battery plus the expansion modules until the charge current limit reaches 0A (the SOC will reach a value near 100%). In cases of insufficient photovoltaic (PV) power generation, enable grid charging to the batteries in the inverter setting.



Step 4: Remove the new battery modules and keep charging the original batteries to SOC 100%

- Carefully disconnect and remove the new battery module from the integrated system.
- Restart the charging process for the original battery tower until the charge current limit reaches 0A (the SOC will reach a value near 100%). This step is needed to ensure that the original battery has not suffered any self-discharge and to confirm that the SOC level is the desired one.



Step 5: Reintroducing the New Battery Module

- Reconnect the already charged new battery module (which is at 100% SOC) to the original battery system.
- Ensure that the new module is securely integrated into the original system by tightening the 4 screws at the sides of the module.



Step 6: Finalizing Expansion

- Restore the original settings of the inverter to set them as it was before the charging process.
- Perform a final assessment of the entire battery system's performance, including the new module and the original batteries, verifying that all components are functioning correctly.



Step 7: Documentation and Reporting

- Create a detailed report of the expansion process, including integration steps, system performance evaluations, and any adjustments made.
- Store the documentation for future reference and warranty purposes.

5 Maintenance

5.1 Trouble Shooting:



The JKS-BXXX37-CS battery system is a high voltage DC system. It can only be operated by professional and authorized person only.



Before checking the following error solution list, check that all cable connection and switches are under this user manual guidance. If no, make appropriate adjustments and check if the battery system can be woken up normally.

N°	Problem	Possible Reason	Solution
1	The battery has no voltage output, and "POWER ON"/ "POWER WAKE" Light is off.	The DC breaker of the BMS wasn't turned on.	Turn on the DC breaker of BMS.
2		The "POWER ON" switch of the BMS box was not switched on.	Switch on the "POWER ON" button.
3		Battery is in sleep state.	Long press the "POWER WAKE" button for about 5s.
4		Battery gets into over-discharged protection.	Charge the battery to relieve the protection state.
5	The battery has no voltage output, but "POWER ON"/"POWER WAKE" are on.	Battery pack undervoltage or module communication failure	Check the voltage of the battery pack and check if the communication interface between the battery modules is connected properly and it is not damaged.
6	When the battery is connected to the inverter, the DC breaker trips automatically.	The circuit between the battery and the inverter has a short circuit point.	Check whether there is a short circuit in the circuit between the battery and the inverter. Check if there is any fault at the inverter.
7	Communication failure between battery and inverter.	A wrong battery model type is selected on the inverter setting.	Select correct battery model type on the inverter.

5.2 Replacement of main components

5.2.1 Replacement of Battery Controller (BMS)

1. Turn off the whole battery system following the shut-down process described at section 3.7.5. and ensure the Negative and Positive terminals have no power using a multimeter. Disconnect the DC breaker between the battery system and the inverter.
2. Remove the four screws on the BMS and remove it from the battery tower.



3. Replace the old BMS with a new one and fix it to the tower by tighten the four screws.
4. Turn the system on following the steps described at section 3.7.4 and check that the system is working normally.

5.2.2 Replacement of a Battery Module



In case you want to replace a faulty JKS-B9637-CS module with a new one, this is only possible when the original system has been under operation for less than 6 months. In case that the tower has been working for a period of time between 6 months and a year please, consult Jinko before proceeding the replacement. For systems operating for more than 1 year, replacement will not be possible.

1. Turn the whole battery system off as well as the DC breaker between the battery and the inverter and ensure that there is no power at the system to work under safety conditions.
2. Carefully disassemble the battery BMS by removing the wires, cables and screws. Remove it from the modules and set aside.
3. Disassemble as much modules as needed until reaching the module that aims to be replaced.
4. Remove the damaged module and assemble all the system again, including the modules and the BMS following the steps described at this manual.
5. Check the SOC of the original battery and follow the steps described at 4. Battery expansion section for adding the new battery module to the system.
6. Turn the system on following the steps described at section 3.7.4 and check that the system is working normally.

5.3 Battery Maintenance



The maintenance of battery only can be done by professional and authorized person. Turn completely off the battery system before and ensure that there is no power at it before doing any maintenance.

5.3.1 Voltage Inspection:

1. Check if the voltage of battery system (for example, single cell's voltage) is within the normal range. This can be checked through the software or the inverter screen.
2. Check the SOC of battery system through the monitoring software by checking the string voltage or SOC. In case the voltage is out of the normal range, check if all wires and connectors are in good conditions and in case something is damaged please, exchange the faulty parts.

5.3.2 Wires Inspection:

Visually inspect all the wires of battery system and its connection. Check the wires have been broken, aged, got loose or not and in case of finding some fault, please, replace them.

5.3.3 Balancing:

The battery system will become unbalanced if it has not been charged fully for a long time. To solve this problem, perform a balancing maintenance every 3 month by fully charging the battery.

Generally, for doing a successful balancing maintenance, the monitoring software, the battery and the inverter must have a communication.

5.3.4 Output Relay Inspection:

Under low load condition (low current), turn the output relay OFF and ON until hearing "click", which means the relay can turn on and off normally. In case the sound can't be heard and the battery is not working properly, please contact Jinko.

6 Storage Recommendations

- For long-term storage periods exceeding 3 months, the battery modules must be stored in a non-corrosive gas and well-ventilated atmosphere and within a temperature range of 5 to 45°C and relative humidity lower than 65%.
- The battery modules must be charged to 50~55% SOC before storage for ensuring its life.
- It is recommended to active the battery system (discharge and charge) every 3 months to keep a good battery health. The longest duration of storage without charge and discharge cannot exceed 6 months.



The cycle life of the battery will have relative heavily reduction if not following the above instructions to store the battery for a long term.

7 Shipment

In standard basis, the battery modules will be delivered pre-charged to 50% SOC. This precharging level can be adapted according to customer requirement before shipment in case JinKO is noticed in advance. The remaining capacity of battery cell is determined by the storage time and condition after shipment.

- The battery modules meet the UN38.3 certificate 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 when shipping modules.

8 Contact

If you have any technical problems concerning our products, please contact JinKO aftersales service at:

HQ Email: G_ESS.Service@jinkosolar.com

EU Hotline: +49 40 2 853 851 820

Email: ESS.EU@jinkosolar.com

AU Email: BESS_AU@jinkosolar.com

You can also check the website at <https://jinkosolar.eu/> for the European country or <https://www.jinkosolar.com/site/consulting> for other regions.

For effectively attending your requests and claims, we ask you to provide us the following information when first contacting us:

- *System model and serial numbers (for BMS and expansion modules)*
- *Explanation of the abnormal behavior or fault, including the error code and settled mode of the system (for example, Zero export to CT)*
- *Evidences (videos, pictures...)*
- *Inverter type and serial number to which the storage system is connected.*
- *Installation date and location.*



Jinko Solar Co., Ltd.
Address: No.1, Yingbin Road Shangrao Economic
Development Zone, Jiangxi Province 334100, China.
Website: www.jinkosolar.com