



ZHONGNENG TECHNOLOGY

Residential Energy Storage Battery System User Manual

Product Name: Residential Energy Storage Box User Manual

Product Model: LBB051100A

Date : 04/11/2019

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1. Safety Rules

1.1 Symbol and Terms

1) Product Label

	
Product Name	Rechargeable Li-ion battery system
	IFpP/35/174/202[(8S)2S]M/-20+50/95
Product Model	LBB051100A
Nominal Voltage	51.2Vd.c.
Rated Capacity	100Ah
Operating Voltage Range	44.8-57.6Vd.c.
Rated Energy	5.12kWh
Available SOC Range	10%~100%
Rated Charging Current:	50Ad.c.
Maximum Charging	50A d.c.
Continuous Current:	
Rated Discharge Current:	50A d.c.
Maximum Discharge	70A d.c.
Continuous Current:	
Operation Temperature Range	0~55°C(charge),-20~55°C(discharge)
Protection Class	I
IP Class	IP65
Output Short-circuit Current	1.444KA (1.12ms)
Manufacturer	ZHONGNENG TECHNOLOGY (HANGZHOU) CO., LTD
Date of Production	2019-08-25
   	

2) Warning label

CAUTION

- Do not disassemble the battery pack.
- Do not immerse the battery pack in water.
- Do not short-circuit the battery.
- Do not leave the battery near by fire.









Emergency Situations

* If leaking, fire, wet or damaged, switch off the breaker and go away from the battery.

* Do not touch any leaking liquid. Do not apply water to leaking liquid. Sand or a Dry Powder extinguisher can be used.



Explanation of the symbols as follows:

	Caution, danger of electric shock
	Ignoring the safety warnings or improper operation may result in minor injuries or minor or moderate damage to the equipment and property.
	Do not short the battery
	Do not disconnect or disassemble by non-professionals
	Don not use water to extinguish fire
	Do not place near flammable materials
	Do not place near open flames
	Please Read the product manual before starting installation and use
	Install the product out of reach of children.
	Recyclable
	Do not dispose of the product with household wastes.



1.2 Safety Instructions

For safety reasons, installers are responsible for familiarizing themselves with the contents of this document and all warnings before performing installation.

- 1) During the operation and maintenance of this product, please wear appropriate personal protective equipment (PPE) in accordance with the operating regulations of high voltage DC power supply and take good personal protection. If you need to handle the battery directly, please wear insulated rubber gloves.
- 2) During transportation, do not pierce or bump the power system product, or expose it to open flames or incineration. In case of fire, do not rinse with water. Use dry powder fire extinguisher to extinguish any fire.
- 3) To avoid injury, burns, or electric shock, keep children away from the product.
- 4) Before touching the battery or power system, remove personal items containing metal (such as watches and rings).
- 5) To prevent the build-up of static electricity, service personnel should touch large grounded metal parts before operating the battery.
- 6) When climbing during maintenance, pay attention to safety to prevent people from falling or batteries from falling.
- 7) When connecting high-voltage power cords, use insulated tools and suitable insulating materials.
- 8) Never place tools or metal parts on top of the battery.
- 9) During the assembly process, please be careful not to touch the positive and negative terminals of the battery system with your hands or other metal objects at the same time to avoid electric shock or short circuit.
- 10) Do not step on or sit on the power system.
- 11) Do not reverse the positive and negative poles of the power system, otherwise it will cause reverse charging, which will cause the battery to leak, heat and rupture.
- 12) Do not open or modify the battery in any way. Any electrolyte flowing out of the battery may damage the skin and eyes. If electrolyte exposure occurs, please wash it with plenty of water repeatedly and seek medical attention.
- 13) It is strictly forbidden to modify the power supply system without authorization. In order to prevent danger, a protection system is installed in the power supply system. If the protection system is damaged, the charging may not be controlled, or the charging and discharging current may exceed safety limits, resulting in battery leakage, heat generation and damage to the battery.



- 14) Power system products should be stored in a dry and ventilated environment, with a temperature not higher than 50 °C, relative humidity less than 80%, and away from flammable and explosive materials.
- 15) It is strictly forbidden to cover any part of the power supply system during charging and discharging; otherwise, the heat generated will accumulate, the battery performance will decrease, and liquid leakage may occur.
- 16) It is recommended to charge at the optimal ambient temperature of 10 to 30 °C, discharge at the optimal ambient temperature of 5 to 35 °C, and store at the optimal ambient temperature of 0 to 30°C.
- 17) Avoid overcharging the power supply for a long time, otherwise the battery will leak.
- 18) When a power system product reaches its end-of-life or is discarded, it should be disposed of in accordance with national or local regulations and must not be discarded at will.
- 19) If the product develops a fault or displays abnormal behavior, immediately disconnect the power by following the shutdown procedure and contact the supplier for repair.
- 20) During installation of the battery, the utility grid and solar input must be disconnected from the Battery system wiring. Wiring must be carried out by qualified personnel.



Caveat

- Only suitably qualified professionals can perform this assembly and installation of this System!
- Do not disconnect, disassemble or repair any part of this System unless you are suitably qualified. Services must be undertaken by qualified personnel only.
- Observe all warnings and cautions! Ignoring the safety warnings can result in serious personal injury or death!
- If the power system is charging and discharging, if there is an unusual smell or sound, stop charging immediately and contact the supplier!
- Store the product out of reach of children and animals.
- Do not store this product in a place exposed to direct sunlight.

1.3 Response to Emergency Situations

1.3.1 Battery Leakage

If the battery system electrolyte leaks, avoid contact with the leaked liquid or gas. If the user is exposed to the leaked material, immediately deal with it as described below:

Inhalation: Evacuate contaminated area and seek medical attention immediately.

Contact with eyes: Flush eyes with running water for 15 minutes and seek medical attention immediately.



Contact with skin: Wash affected area thoroughly with soap and water and seek medical attention immediately.

Ingestion: Induce vomiting and seek medical attention immediately.

1.3.2 Fire



Warning

- Do not extinguish any battery fire with water!
- Use only dry powder fire extinguishers; In the case of a fire nearby, move the battery system to a safe area before the battery system catches fire.
- There may be a possible explosion when batteries are heated above 150°C.
- When the battery system is burning, it leaks poisonous gases, Do not approach.
- If fire occurs when charging batteries, if it is safe to do so, disconnect the battery system circuit breaker to shut off the power to charge.
- If the battery system is not on fire yet, extinguish the fire before the battery system catches fire.
- If the battery system is on fire, do not try to extinguish but evacuate people immediately.

1.3.3 Wet Batteries

If the battery system is wet or immersed in water, please do not approach it and contact ZHONGNENG Technology or an Authorized Reseller in the Territory

1.3.4 Damaged Battery

Damaged batteries may leak electrolyte or produce flammable gas.

Damaged batteries are dangerous and must be handled with care. They can no longer be used and may cause harm to people or property.

If the battery system might be damaged, please pack it back in the original box and return it to ZHONGNENG Technology or an Authorized Reseller in the Territory

2. User Manual

Thank you very much for purchasing the LBB051100A energy storage power system product. Please read this manual carefully before using this product.

3. Product Description

3.1 Product Overview

ZNTECH LBB051100A energy storage power system products, which use lithium iron phosphate batteries is a high-power, pollution-free, maintenance-free green battery with high specific power, long life, small internal resistance and high current charging and discharging efficiency. The built-in module type battery



core uses laser welding technology, and the modules are connected by soft copper plates, and the connection is reliable. The signal output is connected to the Battery Management System (BMS) by a Flexible printed circuit (FPC).

The power system has solid structural design and good heat dissipation performance; the battery production process is advanced, and the quality is safe and reliable. The power system is a single-connection system, which consists of 8 100Ah batteries connected in series to a 25V100Ah LBM025100A single module, and then two modules in series to form a 1P16S LBB051100A system. Lithium-ion batteries include positive and negative plates, separators, electrolytes, battery containers, and safety valves.

Note: The following single cells refer to 100Ah lithium ion batteries.

3.2 Principles

ZNTECH LBB051100A energy storage power supply system provides two outputs and a switch for controlling the main control board. The power supply system provides standard CAN and RS485 communication interfaces to monitor each battery cell and the entire power system.

The principle design of the power system is shown in the following figure:

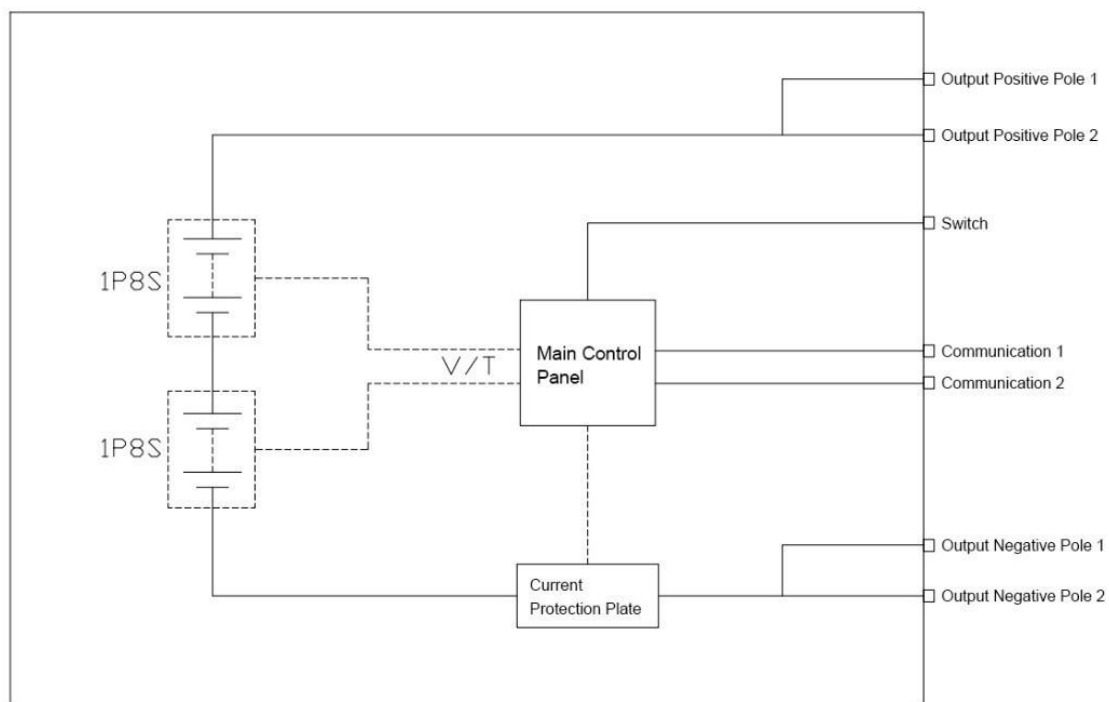


Figure 1 System diagram of battery system

4. Product Specifications

4.1 Technical Parameters

This system is a single battery system, that is, 16 batteries (1p8s modules, 1 and 2 strings) are connected in series to form an LBB051100A battery system, The appearance is shown in Figure 1.

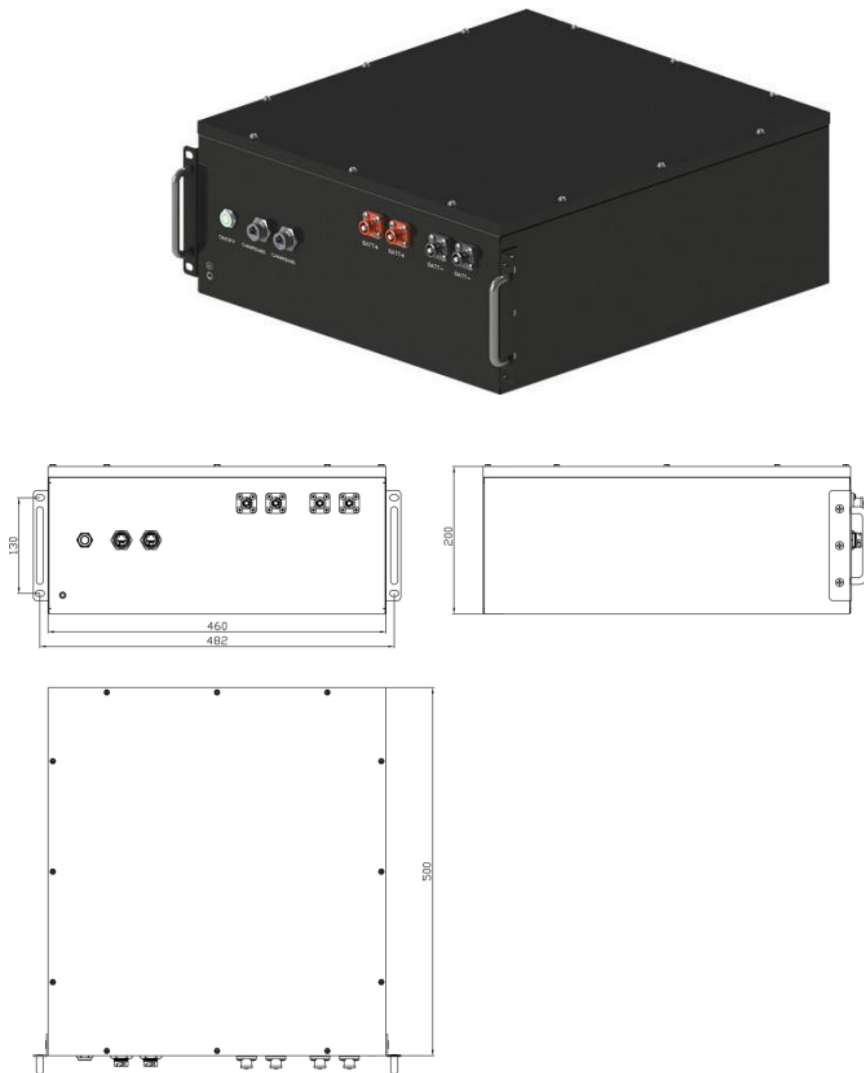


Figure 2 Outline of the battery system



Table 1 Electrical parameters of battery system

Technical Parameters:	
Type of Battery:	Lithium Iron Phosphate (LFP)
Rated Voltage:	51.2Vd.c. (25°C±2°C)
Rated Capacity:	100Ah
Usable capacity:	≥90Ah
Rated Energy:	5.12kWh
Composition Method:	1P16S
Operating Voltage Range:	44.8~57.6Vd.c.
Standard Charging Current:	50Ad.c.
Maximum Charging Continuous Current:	50Ad.c.
Standard Discharge Current:	50Ad.c.
Maximum Discharge Continuous Current:	70Ad.c.
Maximum Discharge Pulse Current:	100Ad.c. (30s, 25°C±2°C, SOC≥40%)
Operation Temperature Range	0~55°C(charge), -20~55°C(discharge)
Working Relative Humidity:	20%~80%
Protection Class	I
Output Short-circuit Current	1.444KA (1.12ms)
IP Class	IP65
Attitude	<2000m
Cell Self-discharge Rate:	≤5% (25°C, 50%SOC)
Factory State of Charge:	30%
Insulation Resistance Factory Test:	>100MΩ
Group Pressure Difference:	≤20mV
Battery Internal Resistance:	0.34±0.05mΩ (new battery state (30~40% SOC, 1KHZ, single cell)
Weight:	About 53kg
Dimensions (width x height x depth):	460mm*500mm*200mm
Installation location	Indoor only in a cabinet

4.2 System Specification

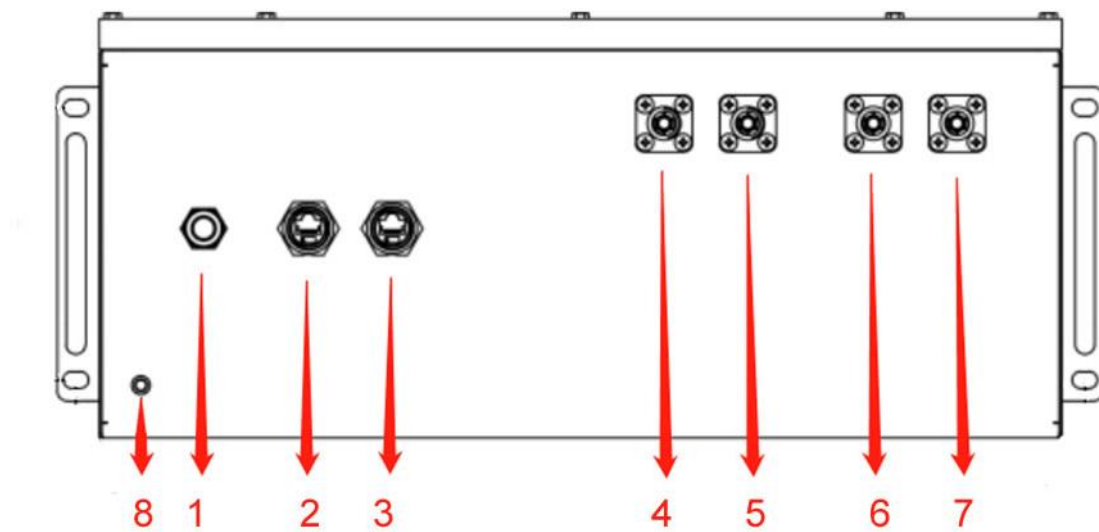


Figure 3 Panel equipment specifications and options

Serial Number	Connector Name	Model	Remark
1	Power Switch Button	YL19-C	YANLUN 19mm 2-color light switch, 3V
2	Communication Socket	RCP-5SPFFH-TCU7001	Amphenol, rj45(CAN)
3	Communication Socket	RCP-5SPFFH-TCU7001	Amphenol, rj45(CAN,485)
4	Positive Socket	C10-730187-010	Amphenol, red, 25mm2
5	Positive Socket	C10-730187-010	Amphenol, red, 25mm2
6	Negative Socket	C10-730187-110	Amphenol, black, 25mm2
7	Negative Socket	C10-730187-110	Amphenol, black, 25mm2
8	Earthing Terminal	M6	

Table 2 Panel equipment model table

The definition of RJ45 pin is as follows

serial Number	Pin Definition	Colour	Remark
1	ISO_GND	Orange and White	
2	N/A	Orange	
3	N/A	Green and White	



4	CAN-H	Blue	External Can Communication
5	CAN-L	Blue and White	External Can Communication
6	RX/TX	Green	RX-Jack2, TX-Jack3
7	RS485_A	Brown and White	Debug Port
8	RS485_B	Brown	Debug Port

Table 3 Jack 2 and 3 pin definition

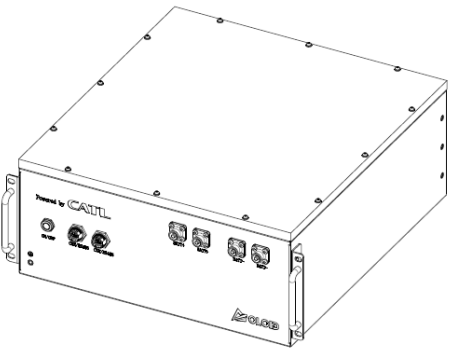
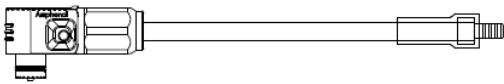
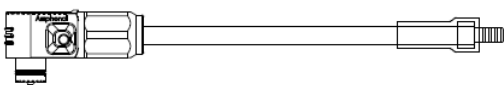

5. Installation

5.1 Items in the Box

The battery system has been tested and checked strictly, but it still may be damaged during transporting, so, please check it carefully.

- Inspect the battery's appearance, if any shipping damage is found, report it to the carrier and your local dealer immediately.
- Check if the types of the accessories are complete and correct. If there is any discrepancy, take notes and contact the distributor immediately.

The delivery list of the whole battery system is shown in the following table.

Serial Number	Name	Example	Number
1	Battery system		1
2	Battery power cable (positive)		1
3	Battery power cable (negative)		1
4	RJ45 communication cable		1


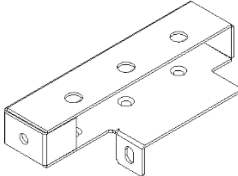
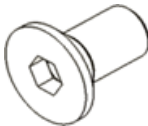
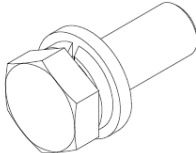
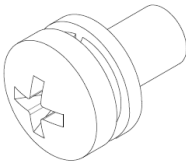
5	Grounding cable		1
6	Angle iron		4
7	countersunk screw M6		15
8	Hexagon combination screw M6		15
9	Pan head combination screw M6		15
10	Documents	/	1

Table 4 Packing list

5.2 Installation Precautions

- When installing the battery system, you must follow the connection method and sequence in the battery installation instructions, and you must firmly fix the wiring. It is strictly forbidden to short circuit the positive and negative terminals of the battery, and touch the two terminals of the battery or the bare wire terminals of the same battery at the same time as this may cause battery damage or personal injury.
- Please follow the wiring diagram of the battery system. When wiring, to avoid damaging the battery or causing personal injury, please do not squeeze the wire or damage the surface of the wire.



Note

- This document only describes the indoor fixed installation mode. This product is not suited for

outdoor installation..

5.3 Clearance

The following is a schematic diagram of the safe distance between the cabinet and the surrounding objects according to the relevant standards.

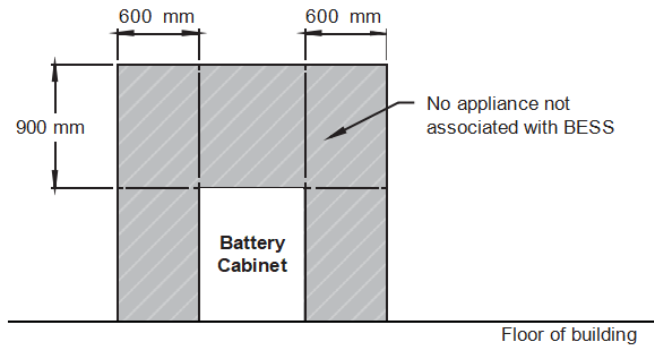


Figure 4 Diagram of Battery Cabinet Clearance

5.4 Tools and Safety Gear

The following tools are required to install the battery system



Wire cutter



Crimping Modular Plier



Screw Driver



Note

- Use properly insulated tools to prevent accidental electric shock or short circuits.
- If insulated tools are not available, cover the entire exposed metal surfaces of the available tools, except their tips, with electrical tape.

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



Insulated Gloves



Safety Goggles



Safety Shoes

Before installing a power system, make sure that the power system is completely isolated from all electrical



connections. Always follow the instructions in the manual when moving and placing the power system. Improper handling of the device may result in injuries to persons or damage to the product.

5.5 Installation Steps

5.5.1 Cabinet fixing example

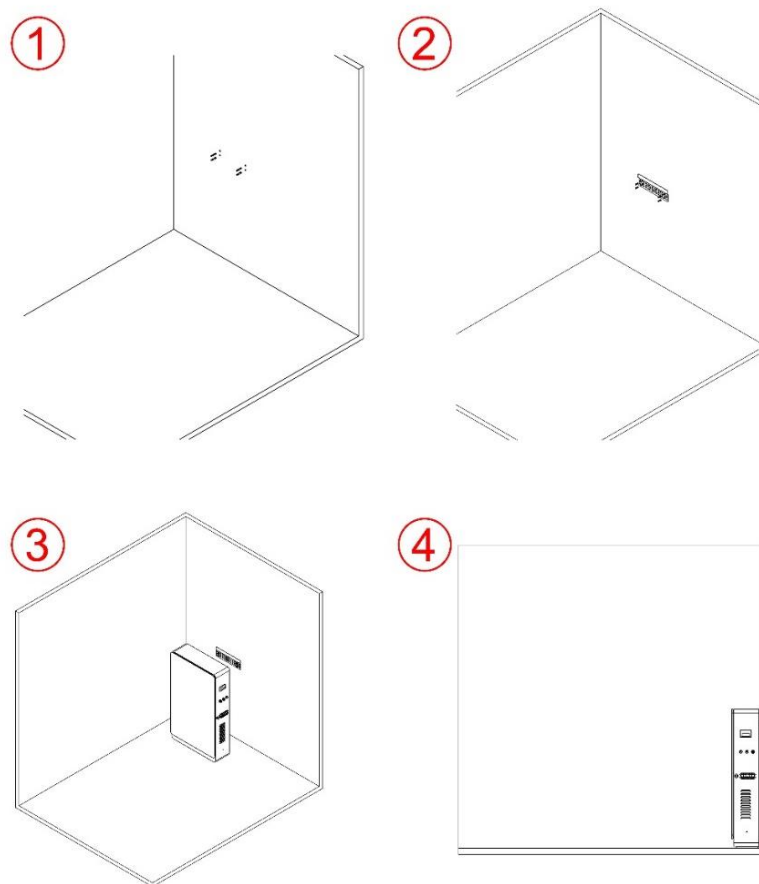


Figure 5 Cabinet fixed installation example

Steps:

- As shown in Figure 1 above, use 4 M6 * 50 expansion screws to fix the mounting plate on the wall.
- As shown in Figure 2 above, use the M6 nut to tighten the screw to fix the mounting plate on the wall.
- As shown in Figure 3 above, attach the rear of the cabinet to the mounting bracket on the wall.
- As shown in Figure 4 above, the cabinet is supported by the mounting plate fixed on the wall.



Note



- The cabinet, mounting plate and screws are not provided by ZNTECH. If you need to provide them, please contact ZNTECH or an Authorized Reseller in the Territory

5.5.2 Installing Angle Bracket

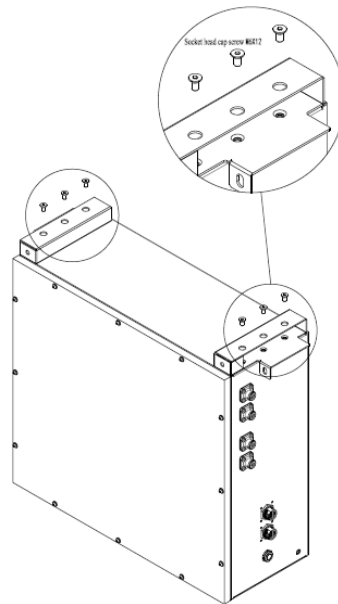


Figure 6 Lock the left and right corner

Steps:

- As shown in Figure 6, place the battery system vertically, put the prepared angle iron on both sides to align the holes and fix it with six M6 x 12mm countersunk screws.



Note

- The steps for installing angle brackets on one battery system or two are the same.



5.5.3 Installing single battery system into a cabinet

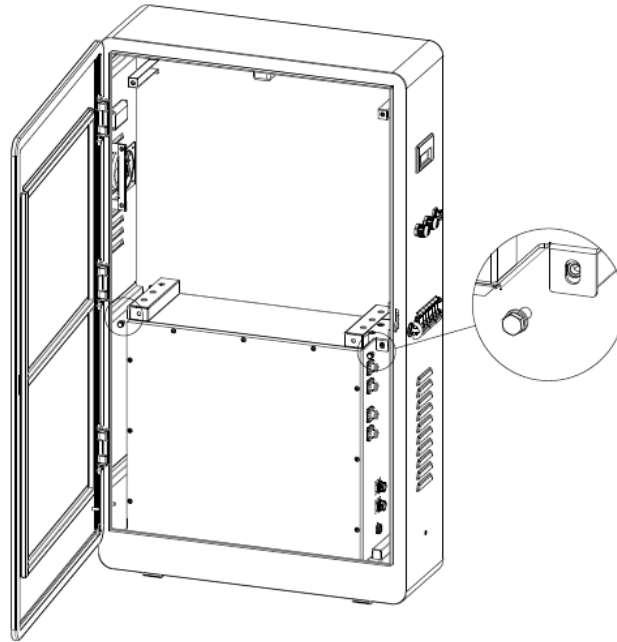


Figure 7 Example of installation diagram of single battery system into a cabinet

Steps:

- As shown in Figure 7, put the battery system into the cabinet, and fix it with six M6 x 12mm external hexagon combination screws. The cabinet should have suitably aligned holes to facilitate fastening.

5.6 Wiring

- 1) The wiring schematic diagram of battery system are as follows

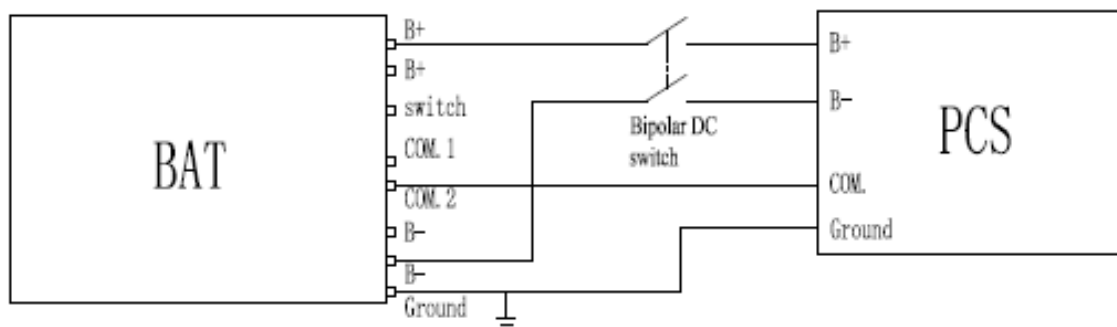


Figure 8 Wiring schematic diagram of single battery system

2) The wiring reference diagram of the battery system is as follows.

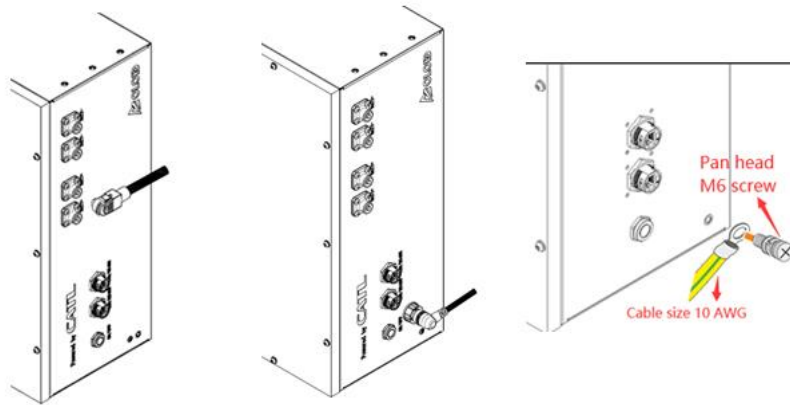


Figure 9 Installation diagram of single battery system



Warning

- The cross-sectional area of the Earth conductor shall not be less than 6 mm² according to relevant regulations.
- Only qualified and licensed electricians can connect the system to the household electricity supply/circuits.

5.6.1 Example wiring diagram of single battery system into a cabinet

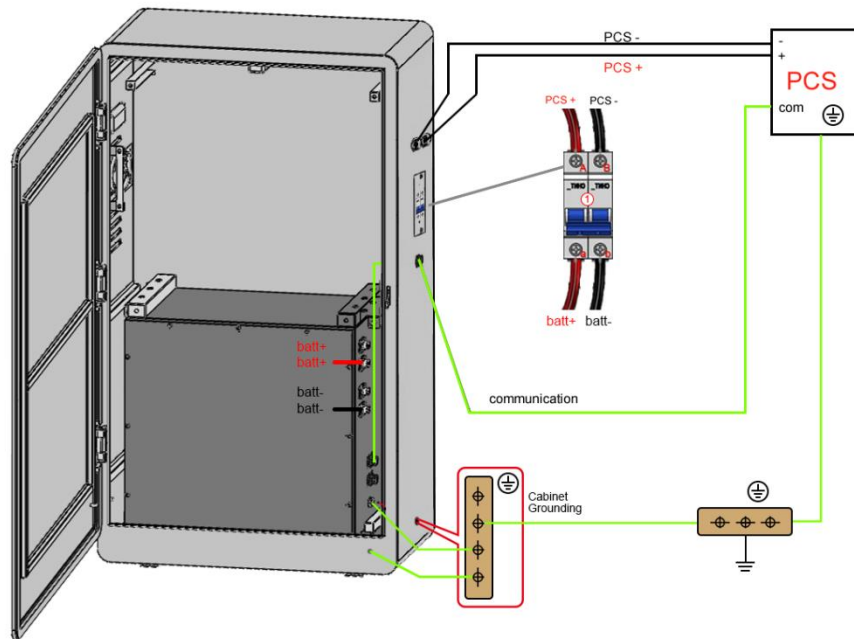


Figure 10 Cabinet wiring diagram.

Steps:

- 1) First, insert the positive plug of the Positive Battery Cable into the corresponding socket on the Battery Module, then connect the other end to the battery side of the D.C. isolating switch a. Connect the negative plug of the Negative Battery Cable into the negative socket on the Battery and then connect the other end to the D.C. isolating switch b.
- 2) Take out the communication cable, install it as shown in Figure 10, connect it to the communication port on the right side of the cabinet, and then use RJ45 to connect it to the PCS (inverter) communication port.
- 3) Use the M6 x 6mm pan head screw to fix one end of the ground wire of the pressed terminal at the grounding screw, and the other end is connected to the grounding copper bar such as figure 11.
- 4) The ground wire of PCS or combiner box, etc. is connected to the external grounding copper bar.



Note

- Before wiring, the switch on the cabinet shall be in the off state.
- Before the positive wire and negative wire are connected to the system, any exposed conductor part needs to be wrapped with insulating tape to prevent short circuit.
- The D.C. Isolating switch and external copper bar are not shipped with the battery system. If necessary, contact ZNTECH or an Authorized Reseller in the Territory
- This unit is not suitable for outdoor installation. An Outdoor Cabinet is not offered by



ZNTECH. If necessary, contact ZNTECH or an Authorized Reseller in the Territory

- The number of parallel battery systems affects the current. The following is a list of parameter descriptions about the selection of circuit breakers (for reference only).
- If a battery or batteries are mounted inside a cabinet, the cabinet should be suitably identified and marked to include information such as (but not limited to) battery identification, capacity, IP rating and any and all requirements of any relevant Standards.

5.7 Use of D.C. isolating Switch

Each battery system is connected to a D.C. isolating switch with the appropriate voltage and current to ensure that the system is secure. The recommended D.C. isolating switch is Nader DC80V, 63A DC D.C. isolating switch. The reference figure is as follows:



Figure11 Schematic diagram of D.C. isolating switch

The system current changes after different Numbers of packs are connected in parallel, and the current is generally larger than one single pack. The selection of switches connected to PCS should be based on the maximum battery current decided by the PCS or the actual working current. If the D.C. switch is not suitable, then a circuit breaker can be considered.



Note

- The D.C. isolating switch shall be selected by the customer. If necessary, contact ZNTECH or an Authorized Reseller in the Territory
- During the transportation and storage of the battery, the switch shall be disconnected to protect the battery and make it safe.

6. Instructions for Use

6.1 Precautions before Use

- 1) Inspection, maintenance, service and connection of the power system must be performed by qualified personnel or qualified trainers.
- 2) During the assembly process of the power supply system, please be careful not to touch the



positive and negative electrodes of the power system at the same time with your hand or other metal objects to avoid electric shock or short circuit.

- 3) The power supply system should be securely fixed, and the power supply system should be prevented from working in the reverse state.
- 4) The system product layout must take into account that the power system is easy to remove and easy to wire.
- 5) The positive and negative output terminals of the power system are marked with positive and negative, respectively, and should be distinguished when connecting.
- 6) The location of the high-voltage A.C. power cord should be safe and appropriately insulated/protected, and the connection should be reliably secure.
- 7) The connector is securely in place and the wiring should be safe.
- 8) After the installation is correct, press the on/off button switch on the Battery. After a few seconds, it should flash green, indicating that the system is normal. During normal operation, the green light is always on.
- 9) The power system needs to check the insulation resistance before each use to prevent battery leakage.
- 10) When the power system is shipped from the factory, its State of Charge (SOC) is 40%.



Note: Do not dispose of the batteries in the battery system yourself during maintenance.

- All products must be subjected to "routine inspections" before first use and before reassembling the power system for the first time.
- When performing maintenance operations on the battery system and power management system, in order to ensure safely disconnect all power to the System. If the System must be powered in order to perform maintenance or testing operations, it must be operated in accordance with relevant insulation requirements to avoid electric shock.
- If you have any questions, please contact the supplier directly.

6.2 Power on the System



Note: Make sure that the cables connected to the power system are properly routed, protected and secured, and that there are no foreign objects around the machine before turning on the battery system/system.

Start-up steps:

- Click the power system switch button.
- The button indicator lights for 2 seconds, and then the green light flashes every 2 seconds, indicating that the power is on.



- If the button indicator light stays on all the time and lights up red after turning on the power, it means that the System is not working properly. Turn off the power immediately and contact the company's technician or dealer.
- The system working indicators are as follows:

Switch LED status	Description
The red light is on for 4 seconds, and the green light flashes twice	Starting up
The green light blinks for 0.25 seconds every 4 seconds	Stand-by
The green light blinks for 0.5 seconds every second	Charging
The Green light normally on	Discharging
The red light blinks for 0.5 seconds every second The green light continues to operate in the same manner as immediately prior to the alarm	System protection
The red light blinks for 0.5 seconds every 2 seconds The green light continues to operate in the same manner as immediately prior to the alarm	Other alarm

Table 5 Table of work lights

- Use a multimeter to measure the system D.C. voltage at the output of the power system. If the voltage is within the normal range (42.6v to 57.6v), the power system is already in normal working condition.

6.3 Power off the System



Note: Before disconnecting the cable from the power system, be sure to turn off the power system. Shutdown steps:

- Click the power system switch button.
- The green indicator should no longer blink
- Use a multi-meter to measure the D.C. system voltage at the output of the power system. If the voltage is about 24v, it means that the power system is in shutdown mode.
- In this case, disconnect the power system from other devices.

7. Maintenance

7.1 Troubleshooting



Warning:

- LBB051100A is a low voltage DC system and should only be operated by qualified and authorized personnel.



- Before checking for faults, all cable connections must be checked for consistency with wiring diagram 10.

7.2 Replace the Battery system

1. Open the cabinet.
2. Turn off the inverter power supply and battery switch, including D.C. Isolating switch.
3. Disconnect the AC power supply connected to the inverter.
4. Unplug the power cable and disconnect the battery from the inverter.
5. Unplug the communication cable.
6. Loosen the angle bracket to fix the battery and move the battery system to another open and safe place.
7. Lay the battery flat and loosen the screws that secure the two battery systems.
8. Put the problem battery system into the packing box
9. Contact ZNTECH or an Authorized Reseller in the Territory.



Note

- Pay attention to electrical protection for unplugged communications and cables – use temporary terminal blocks or insulating tape to insulate all wire ends as they are disconnected. Ensure wires do not touch each other or any conductive surfaces in order to avoid short-circuits.

7.3 Battery Maintenance



Warning:

- Battery maintenance must be performed by qualified and authorized personnel.
- Some maintenance items must be shut down at the beginning.
- Make sure the system voltage level is the same after powering on the system.

Voltage check

Regular maintenance: Check the voltage of the battery system through the monitoring system. Check the system for abnormal voltages. For example: the voltage of a single battery is abnormally high or low.

SOC check

Regular maintenance: Check the SOC of the battery system through the monitoring system and check whether the SOC of the battery cabinet is normal.

Check the cables

Regular maintenance: visually inspect all cables of the battery system. Check whether the cables are broken, aged, and/or loose.



Equilibrium

Regular maintenance: If the battery is not charged for a long time, the battery string will be unbalanced.

Solution: Do balance maintenance (charge to full) every 3 months, and the communication between the system and external devices is automatically completed under normal circumstances.

History check

Regular maintenance: Analyze if there are any accidents (alarms and protections) in the history and analyze their causes.

8. Unpacking, Shipping and Storage

8.1 Unpacking Inspection

Although the product has been thoroughly tested and strictly inspected before leaving the factory, it may still be damaged during transportation, so please carry out a detailed inspection before signing the product.

- Check the packaging for damage at the time of receipt.
- Check that the goods are complete and check according to the order on the packing list.
- After unpacking, check that the internal parts are intact.

If you find any damage, please contact the shipping company or company directly. Please provide a photo of the damage and we will provide the fastest and best service.

Do not discard the original packaging of the power supply system. If the power supply system is not used for a long time, it is best to keep it in the original packaging.

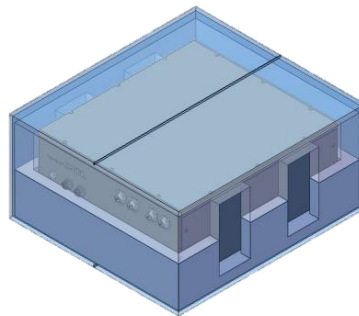


Figure 12 Packaging

8.2 Transport Requirements

- During transportation, the power system must be placed vertically to prevent the power system from being subjected to strong vibration, shock and heavy pressure during transportation.

8.3 Storage Requirements

If the power supply system is not immediately put into operation, the Battery system needs to be stored under specific environmental conditions. The company is not responsible for the rust of the machine or other internal equipment failure caused by the storage power supply system.



Requirements in the user manual.

- When storing the power system, the power should be stored at 40% charge.
- Power system products should be stored in a dry and ventilated environment with a temperature of not higher than 50 ° C and a relative humidity of less than 80% .At the same time, it should be kept away from flammable and explosive materials, avoid dust and metal powder, and avoid acid or other corrosive gas.
- Power system products should be stored in a place protected from rain, humidity and sunlight.
- During storage, regular inspections are required and, if any insect or rodent presence is found, the packaging materials must be replaced in a timely manner.
- Do not tilt the box upside down.
- The storage time of the inverter is more than half a year. Before it is put into use, it needs to be thoroughly inspected and tested by professionals.

8.4 Disclaimer



Note

If the contents or terms specified in this manual have been added, deleted or modified from the original, without the consent of the manufacturer or supplier, then the manufacturer/supplier shall not bear any related liabilities arising from such changes.

Guarantee

When the product is installed and used in accordance with the manual, ZHONGNENG Technology provides a warranty to the user. Defects caused by the following items are not covered by the warranty.

- Operation or maintenance that does not comply with this manual.
- Incorrect transport, storage, installation, operation, maintenance or other improper operation.
- If the manufacturer's serial number is damaged.
- Incorrect use of the inverter.
- Any modification, alteration or repair by unauthorized persons.
- No maintenance or inspections have been carried out as required for storage over 3 months.
- Including but not limited to abnormal physical or electrical stress, power failure surges, surge currents, abnormal temperature conditions, natural disasters, lightning, floods, fires, riots, strikes, etc.
- Vibration and noise will affect the performance and function of the product.

9. Product Warranty

ZNTECH warrants that the Product will be free of defects caused by improper or defective materials. This



warranty commences for the period of five years from the earlier of:

- (1) The date of installation of the Product.
- (2) Six months after the date the product was manufactured.

This warranty does not include any accessories and tool kit items provided with the Product.

ZNTECH will repair or replace the Product if the product is defective and returned during the Warranty Period.

ZNTECH offers another five years of performance guarantee after the 5-year warranty expires. You can have ZNTECH repair the Product at a cost.

9.1 Warranty Conditions

The warranties in respect of the Product only apply if the Product:

- (1) Is purchased from ZNTECH or an Authorized Reseller in the Territory;
- (2) Has the official ZNTECH serial number;
- (3) Is installed in the Territory;
- (4) Is installed, operated and maintained in accordance with the Product Manual; and
- (5) Be used on a daily cycle basis and only for energy storage system.
- (6) Falls within the Warranted Period

Any Product failure, fault or warning information must be reported in the form of Warranty Claim stated in Clause 10 to ZNTECH or ZNTECH authorized service partner within 2 weeks of appearance.

The warranty will be void if the defect in or failure of the product's performance is attributable to your misuse, abuse, accident or non-observance of the Product.

9.2 Warranty Claim

If a Product fails within the Warranty Period, the end-user must stop using the Product or the system in which the Product is installed, as the case may be, by isolating the Product from any energy source, making a claim as soon as possible and following all instructions provided by us, or our representative or agents.

To make a Warranty claim under this voluntary warranty, the end-user must contact us at:

Address: NO.245, BINKANG RD., CHANGHE ST., BINJIANG DISTRICT, HANGZHOU, ZHEJIANG/
NO.799, YAOCHENG AVENUE, CMC, TAIZHOU, JIANGSU

Post Code: 310000

Telephone: 0086-523-82713786

Fax: 0086-523-86226716

Email: csm@znnewtech.com