



LEDVANCE USER MANUAL

Battery Energy Storage System

LES-LV-5K-L-G01

LES-LV-SYS



CONTENTS

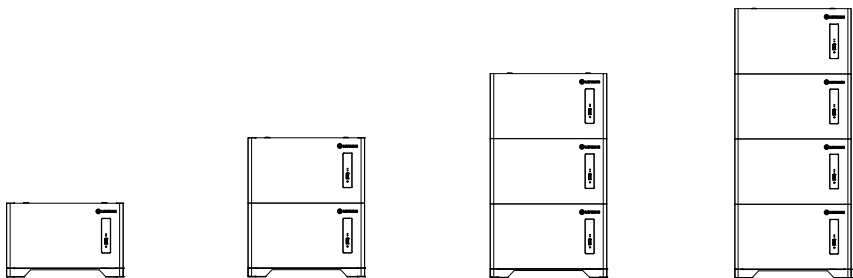
IMPORTANT INFORMATION IN THE MANUAL	1
Scope	1
Description of LES-LV-5K-L-G01	1
Meaning of Symbols	2
General Safety Information	4
Disclaimer	4
Proper Use	5
SAFETY	6
Safety Rules	6
Safety Information	6
SCOPE OF DELIVERY	7
LES-LV-SYS Packge	7
LES-LV-5K-L-G01 Battery Package	8
BATTERY SYSTEM INTRODUCTION	9
Operation Interface	10
Number of Battery Modules Supported by LES-LV-5K-L-G01	11
INSTALLATION	12
Installation Circumstances Requirement	12
Tools & Installation	13
System Installation Steps	13
Definition of Interface	16
Batteries in Parallel	17
COMMISSIONING	18
Operation	18
Working Status Indication	18
Capacity Indication	19
LED Flash Instructions	19
SAFETY DESIGN	20
Electrical Schematic Diagram	20
MAINTENANCE AND STORAGE	21
Maintenance	21
Storage	21
INVERTER AND BATTERY PROTOCOL SELECTION	25
DISPOSAL	26

IMPORTANT INFORMATION IN THE MANUAL

Scope

This installation and operation manual applies to the stackable battery energy storage system. Please carefully read this manual guide installation, preliminary debugging, and maintenance of LES-LV-5K-L-G01 installation, preliminary debugging, and maintenance must be carried out by qualified and authorized engineer. Please keep this installation and operation manual and other applicable documents near the battery energy storage system, so that all engineer involved in installation or maintenance can access this installation and operation manual at any time.

Description of LES-LV-5K-L-G01




MODULE	LES-LV-5K-L -G01 5 kWh	LES-LV-5K-L -G01 10 kWh	LES-LV-5K-L -G01 15kWh	LES-LV-5K-L -G01 20 kWh
Battery Module Number	1	2	3	4
Nominal Voltage (V)	51.2			
Operating Voltage (V)	40 - 58.4			
Nominal Capacity (Ah)	100	200	300	400
Nominal Energy (kWh)	5.12	10.24	15.36	20.48
Available Energy (kWh)	4.608	9.216	13.824	18.432
Recommended Discharge Current (A)	50	100	200	200
Max. Discharge Current (A)	50	100	200	200
Max. Charge Current (A)	100	200	200	200
Depth Discharge (%)	90%			
Discharge Temperature (°C)	-20 ~ 58			
Charge Temperature (°C)	-10 ~ 53			
Battery Storage Temperature (°C)	0~35 ≤ six months			
Cycle Life	25 ±2 , 0.5C/0.5C, 90%DOD ,EOL70% ≥ 4000 cycles			
Warranty	Standard 10 years			

MAINTENANCE AND STORAGE

MODULE	LES-LV-5K-L -G01 5 kWh	LES-LV-5K-L -G01 10 kWh	LES-LV-5K-L -G01 15 kWh	LES-LV-5K-L -G01 20 kWh
Terminal	ES07			
Communication	CAN 2.0/RS485			
SOC Display	4 LEDs (25% , 50% , 75% , 100%)			
Install	Floor mount			
Dimension W*D*H (mm)	680*152*430	680*152*810	680*152*1190	680*152*1570
Weight (kg)	48	93.5	139	184.5
Humidity	5% ~ 95% RH			
Altitude (m)	≤ 2000			
IP Rating of Enclosure	IP65			
Certificates	IEC 62619 / EMC / UN38.3 / CE			
Extensibility	Up to 15 systems can be used in parallel			


Meaning of Symbols

This manual contains the following types of warnings:




DANGER!

It may cause an electric shock.
Even when the equipment is disconnected from the grid, the voltage-free state will have a time lag.




DANGER!

If the instructions are not observed, death or severe injury may occur.



WARNING!

If the instructions are not observed, a loss may occur.



ATTENTION!

This symbol represents information on the device use.

IMPORTANT INFORMATION IN THE MANUAL

The following types of warning, prohibition, and mandatory symbols are important.



ATTENTION! THE RISK OF CHEMICAL BURNS

If the battery is damaged or fails, it may lead to electrolyte leakage, which in turn causes the formation of a small amount of hydrofluoric acid, among other effects. Contact with these liquids can cause chemical burns.

- Do not subject the battery module to severe impact.
- Do not open, disassemble or mechanically change the battery module.
- In case of contact with an electrolyte, wash the affected area with clean water immediately and seek medical advice promptly.



ATTENTION! THE RISK OF EXPLOSION

Incorrect operation or fire may cause the lithium-ion battery unit to ignite or explode, leading to serious injury.

- Do not install or operate the battery module in explosive or high-humidity areas.
- Store the battery module in a dry place within the temperature range specified in the datasheet.
- Do not open, drill through or drop the battery cell or module.
- Do not expose the battery cell or module to high temperatures.
- Do not throw the battery cell or module into the fire.
- If there is a fire from the battery, please use the CO2 extinguisher. If there is a fire near the battery, please use a dry powder extinguisher.
- Do not use defective or damaged battery modules.



CAUTION! HOT SURFACE

- If a malfunction occurs, the parts will become very hot, and touching them may cause serious injury.
- If the energy storage system is defective, please shut it down immediately.
- If the fault or defect becomes obvious, special care should be taken when handling the equipment.



NO OPEN FIRE!

- It is prohibited to handle open flames and ignition sources near the energy storage system.



Do not insert any objects into the opening in the housing of the energy storage system!

- No objects, such as screwdrivers, may be inserted through openings in the casing of the storage system.

MAINTENANCE AND STORAGE



WEAR SAFETY GOGGLES!

Wear safety goggles when working on the equipment.



FOLLOW THE MANUAL!

When working and operating the equipment, the installation and operation manual provisions must be observed.

General Safety Information



DANGER! Failure to comply with the safety information can lead to life-threatening situations.

1. Improper use can cause death. Operators of LES-LV-5K-L-G01 must read this manual and observe all safety information.
2. Operators of LES-LV-5K-L-G01 must comply with the specifications in this manual.
3. This manual cannot describe all conceivable situations. For this reason, applicable standards and relevant occupational health and safety regulations are always given priority.
4. In addition, the installation may involve residual hazards in the following circumstances:
 - Incorrect installation.
 - The installation is carried out by personnel who did not receive relevant training or guidance.
 - Failure to observe the warnings and safety information in this manual.

Disclaimer

LEDVANCE POWER shall not be liable for personal injury, property loss, product damage and subsequent losses under the following circumstances.

- Failure to comply with the provisions of this manual.
- Incorrect use of this product.
- Unauthorized or unqualified personnel repair the product, disassemble the rack and perform other operations.
- Use of unapproved spare parts.
- Unauthorized modifications or technical changes to the product.

IMPORTANT INFORMATION IN THE MANUAL

Proper Use

- The battery energy storage system can only be installed and operated under the eaves or indoors. The working environment temperature range of LES-LV-5K-L-G01 is -20 °C ~ 58 °C, and the maximum humidity is 95%.
 - The battery module shall not be exposed to the sun or placed directly beside the heat source.
 - The battery module shall not be exposed to a corrosive environment.
- When installing the battery energy storage system, ensure that it stands on a sufficiently dry and flat surface with sufficient bearing capacity. Without the manufacturer's written approval, the installation site's altitude shall not be higher than 2000 meters. The rated output power of the battery will decrease with the altitude. In areas where flooding may occur, care must be taken to ensure that the battery module is installed at a suitable height to prevent contact with water.
- The battery energy storage system must be installed in a fire proof room. This room must have no fire source and must be equipped with an independent fire alarm device, which complies with local applicable regulations and standards. Similar fire-proof requirements apply to other openings in the room (such as windows).

Compliance with the specifications in this manual is also part of proper use.

Requirements for Installation Personnel

All work shall comply with local applicable regulations and standards.

The installation of LES-LV-5K-L-G01 can only be completed by electricians with all following qualifications:

- Trained in dealing with hazards and risks associated with the installation and operation of electrical equipment, systems, and batteries.
- Trained on installation and debugging of electrical equipment.
- Understanding and complying with the technical connection conditions, standards, guidelines, regulations, and laws applicable.
- Knowledge of handling lithium-ion batteries (transportation, storage, disposal, hazard source).
- Understanding and complying with this document and other applicable documents.

SAFETY

Safety Rules

To avoid property damage and personal injury, the following rules shall be followed when working on the hazardous live parts of the battery energy storage system:

- It is available for use.
- Ensure that it will not restart.
- Make sure there is no voltage.
- Grounding protection and short circuit protection.
- Cover or shield adjacent live parts.

Safety Information

Part damage or short circuit may cause electric shock and death. A short circuit can be caused by connecting battery terminals, resulting in current flow. This type of short circuit shall be avoided under any circumstances. For this reason, follow these instructions:

- Use insulated tools and gloves.
- Do not put any tools or metal parts on the battery module or high-voltage control box.
- When operating the battery, be sure to remove watches, rings, and other metal objects.
- Do not install or operate this system in explosive or high-humidity areas.
- When working on the energy storage system, first turn off the charging controller, then the battery, and ensure that they are not turned on again.

Improper use of the battery energy storage system can lead to death. The use of the battery energy storage system beyond its intended use is not allowed, because it may cause great danger.

Improper handling of the battery energy storage system can cause life-threatening risks, serious injury or even death.

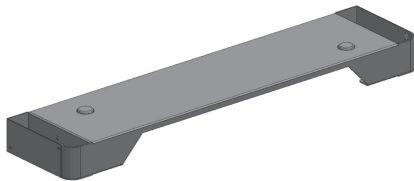


Warning! Improper use can cause damage to the battery cell.

- Do not expose the battery module to rain or soak it in liquid.
- Do not expose the battery module to a corrosive environment (such as ammonia and salt).
- The battery energy storage system shall be debugged no later than six months after delivery.

SCOPE OF DELIVERY

LES-LV-SYS Package



LES-LV-5K-L-G01 base × 1



2M "DC-" black external power cable
(2 AWG/100 A , 1 AWG/200 A)



2M black external
communication cable (RJ45 - M19)



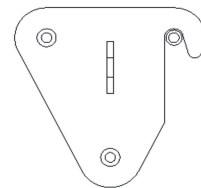
Wall fixing plate × 2



Screw M4 × 4



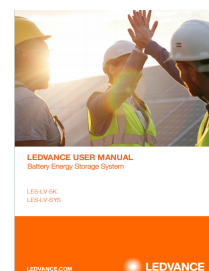
2M yellow-green
grounding cable (8 AWG)



Box fixing plate × 2



2M "DC+" orange external power
cable (2 AWG/100 A, 1 AWG/200 A)



User manual

SCOPE OF DELIVERY

LES-LV-5K-L-G01 Battery Package



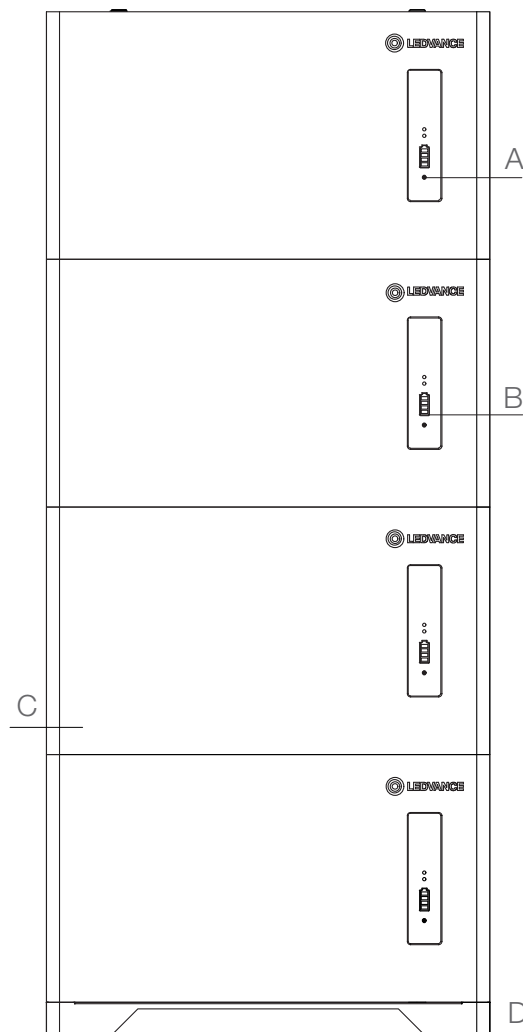
LES-LV-5K-L-G01× 1

LES-LV-SYS Package	
1	LES-LV-5K-L-G01 Base × 1
2	2 M black external communication cable (RJ45 - M19)
3	2 M yellow-green grounding cable (8 AWG)
4	2 M "DC+" orange external power cable (2 AWG/100 A, 1 AWG/200 A)
5	2 M "DC-" black external power cable (2 AWG/100 A, 1 AWG/200 A)
6	Wall fixing plate × 2 (used to fix products on walls)
7	Screw M4 × 4
8	Box fixing plate × 2
9	User manual
LES-LV-5K-L-G01 Storage Battery Package	
LES-LV-5K-L-G01× 1	

BATTERY SYSTEM INTRODUCTION

The Battery System LES-LV-5K-L-G01 is used as a connected battery for the intermediate storage of excess PV energy in an inverter system.

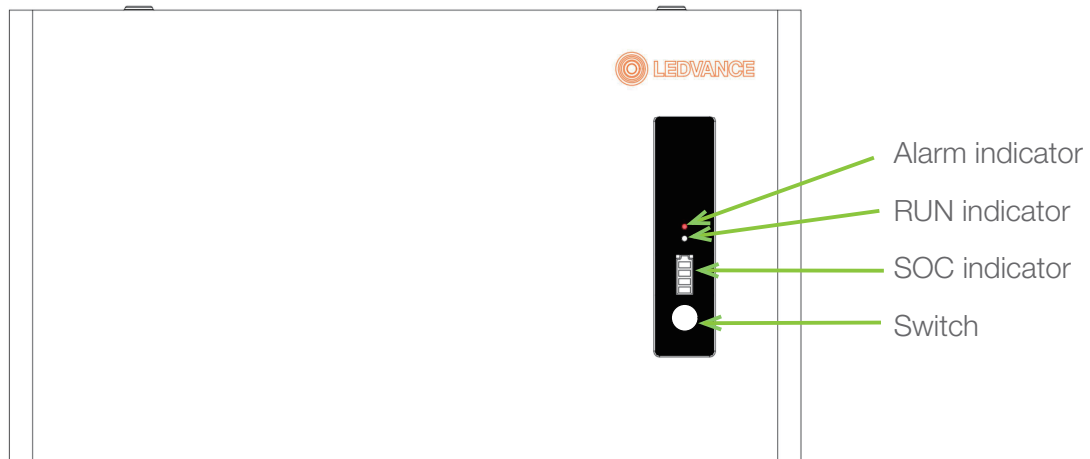
A	Switch
B	LED
C	Battery module
D	Battery base



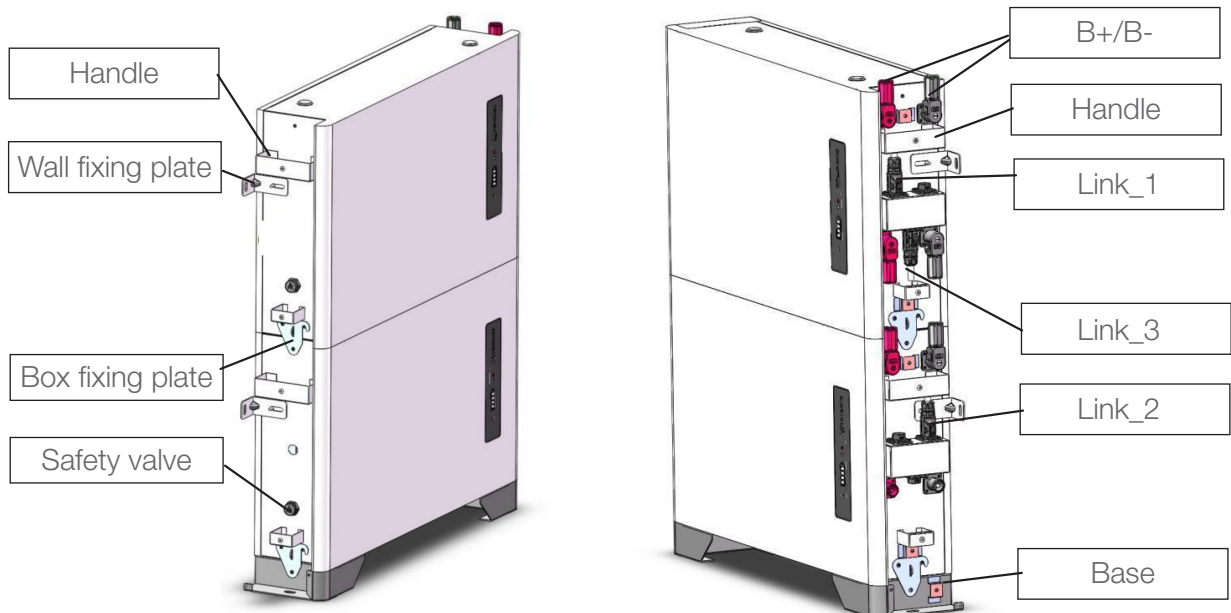
BATTERY SYSTEM INTRODUCTION

Operation Interface

1. Switch and display interface

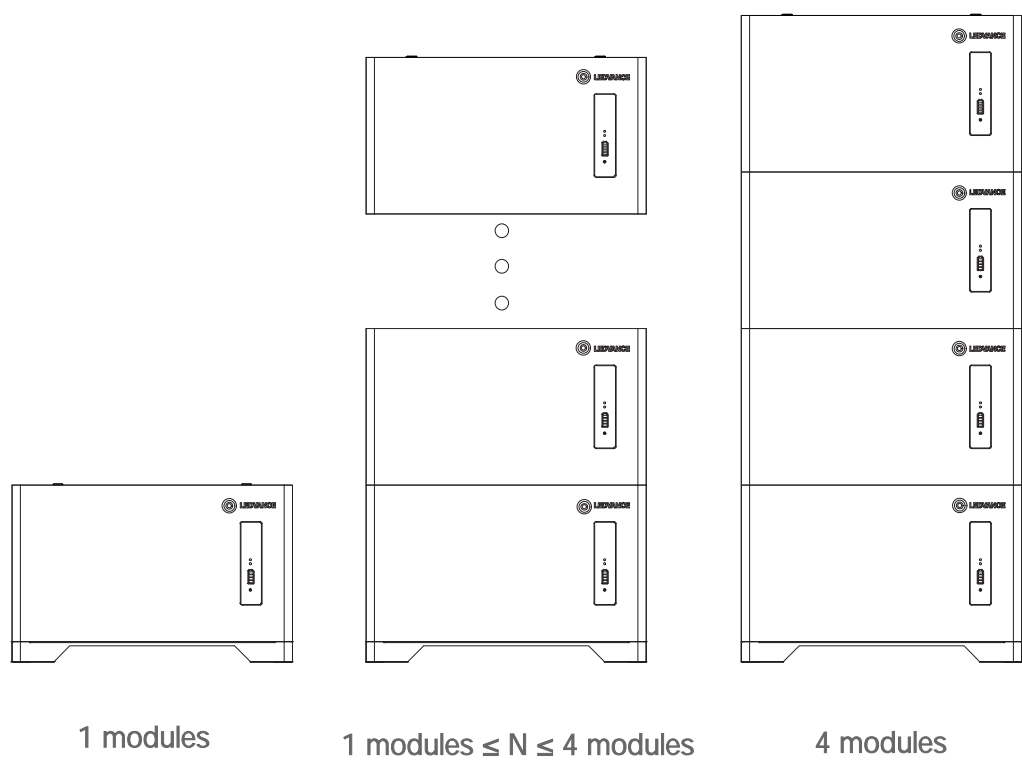


2. Installation interface



BATTERY SYSTEM INTRODUCTION

Number of Battery Modules Supported by LES-LV-5K-L-G01

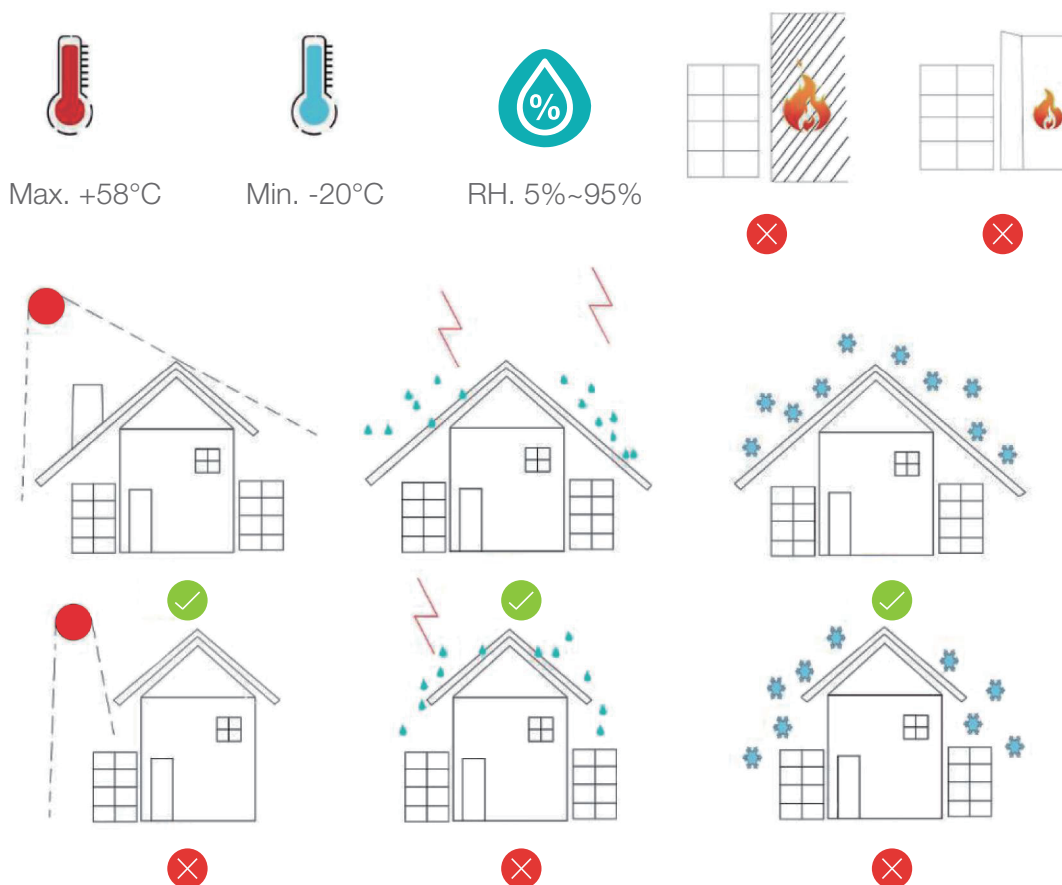


Note: Minimum one battery modules are required and maximum fifteen modules in one parallel, A single cluster can be stacked up to 4.

INSTALLATION

Installation Circumstances Requirement

- Installed on the surface with enough dryness, horizontal and flat, and has sufficient carrying capacity (for example, concrete or masonry).
- The altitude of the installation location must not be higher than 2000 meters. (The output power of the battery will decrease with the height of the altitude.)
- If in the flood area, you must pay attention to ensure that the battery is installed in an appropriate altitude to prevent contact with water.
- Ensure there is no fire source, and it must be equipped with an independent fire alarm device.
- Cannot be exposed to corrosive environments.
- The working temperature range should be -20°C to 58°C .
- The maximum environment humidity is 95%.
- Can't be exposed to the sun or beside the heat source directly.
- The installation site must be away from the children and the old.
- The installation position must be compatible with the weight and size of the battery.



INSTALLATION

Tools:

- When installing the battery system, wear the following safety equipment.



Gloves



Goggles



Safety shoes

- To install the battery system, you need the following tools



Socket head wrench



External hexagonal wrench



Electric drill

Attention!

- Because the DC cable or connector on the battery system may cause electric shock or life threatening, do not contact the end of the non-insulating cable.
- If the battery module incorrectly lifts or falls in the process of transportation or installation, it may cause the risk of injury due to the weight of the battery module.
- Carefully transport and lift the battery module. Consider the weight of the battery module.
- For those who work for the battery system, please wear qualified personal protection equipment.

Note: Before the battery is installed, please switch off the switch.

Note: Wear gloves, goggles and safety shoes before installation.

Installation Steps



CAUTION!

- Before installation, please make sure to wear the safety shoes to prevent foot injury.
- The weight of a battery module is over 30 kg. Please use the movable tools with two workers to complete stacking work.
- Do not use the movable handle tool to carry the battery module when the distance is ≥ 10 m.
- Before using the transport tools, check whether they are reliable.
- The installation humidity ranges from 5% to 95%

INSTALLATION

System Installation Steps

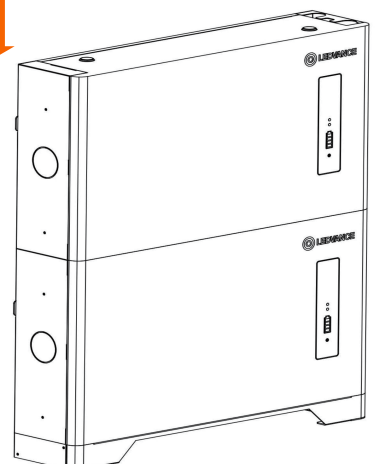
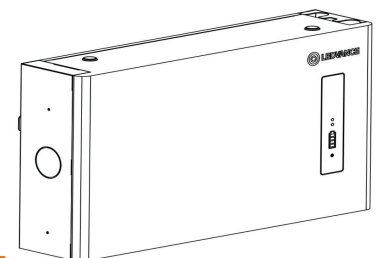
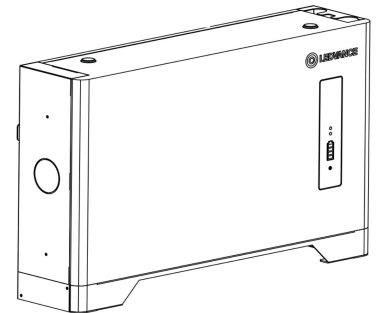
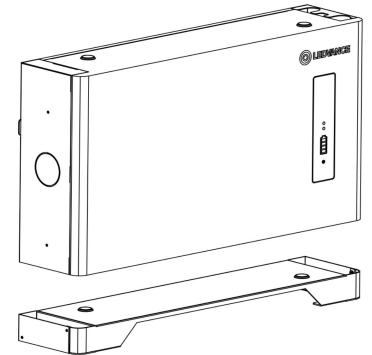
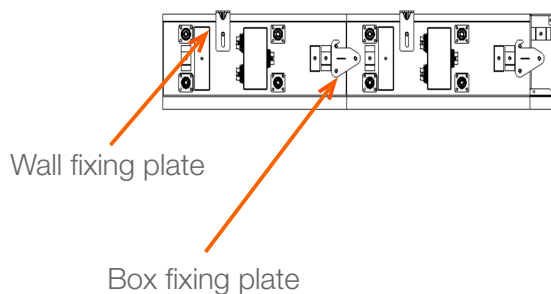
- Take out the base and battery module. Place the base on hard floor, lift the battery module on top of the base using a movable handle tool.

CAUTION!



After the battery module is connected to the base, the battery module plug-in port is electriferous. Take good insulation protection, pay attention to high voltage dangers and shot circuit dangers!

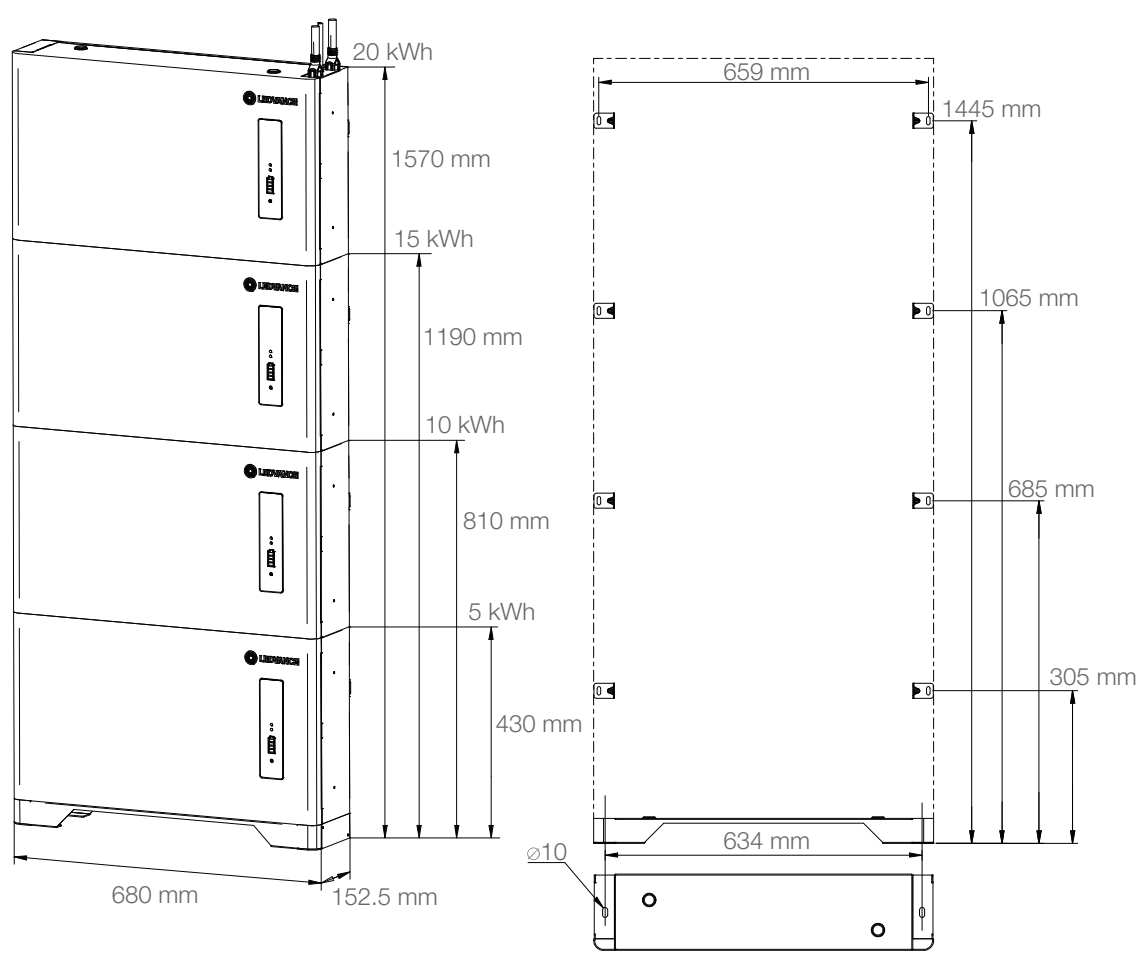
- Stack the corresponding connection ports at the bottom of the battery module. The number of stackable battery modules for a single battery system ranges from 2 to 4.
- Attach the upper and lower stacked batteries with M4 * 8 screws, and then mount the battery on the wall.



INSTALLATION

Selection of Installation Sites

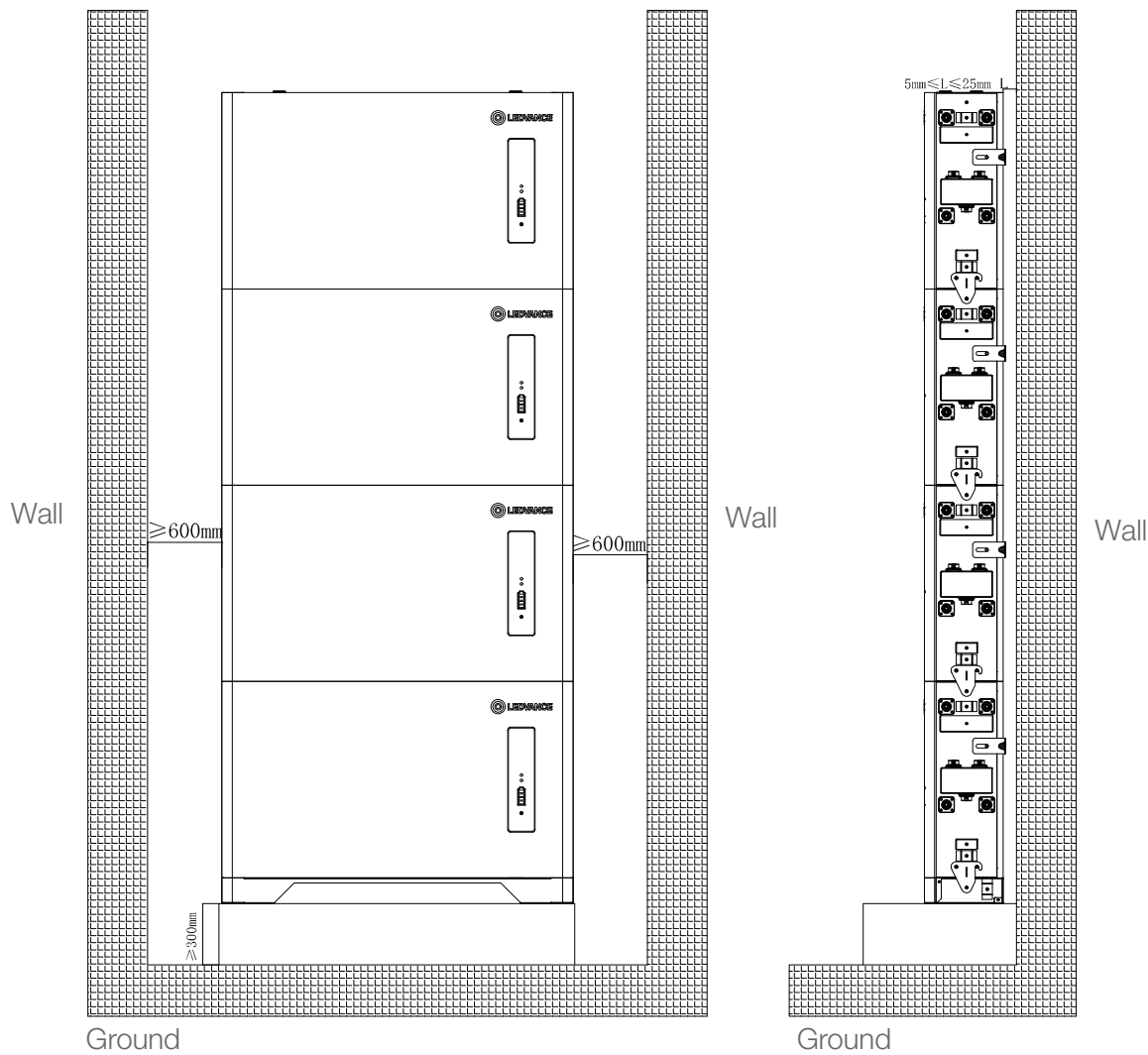
The installation location is recommended to meet the size requirements of the figure below:



INSTALLATION

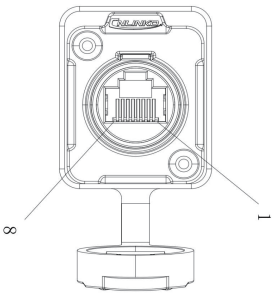
Selection of Installation Sites

The installation location is recommended to meet the size requirements of the figure below:



Definition of Interface

Link_1		Link_2		Link_3
RS232-GND	1	RS485B	1	RS485B
RS232-GND	2	RS485A	2	RS485A
RS232-TX	3	UP_IN	3	DN_OP+
CAN_H	4	GND	4	GND
CAN_L	5		5	
RS232-RX	6		6	
RS485A1	7		7	
RS485B1	8		8	



INSTALLATION

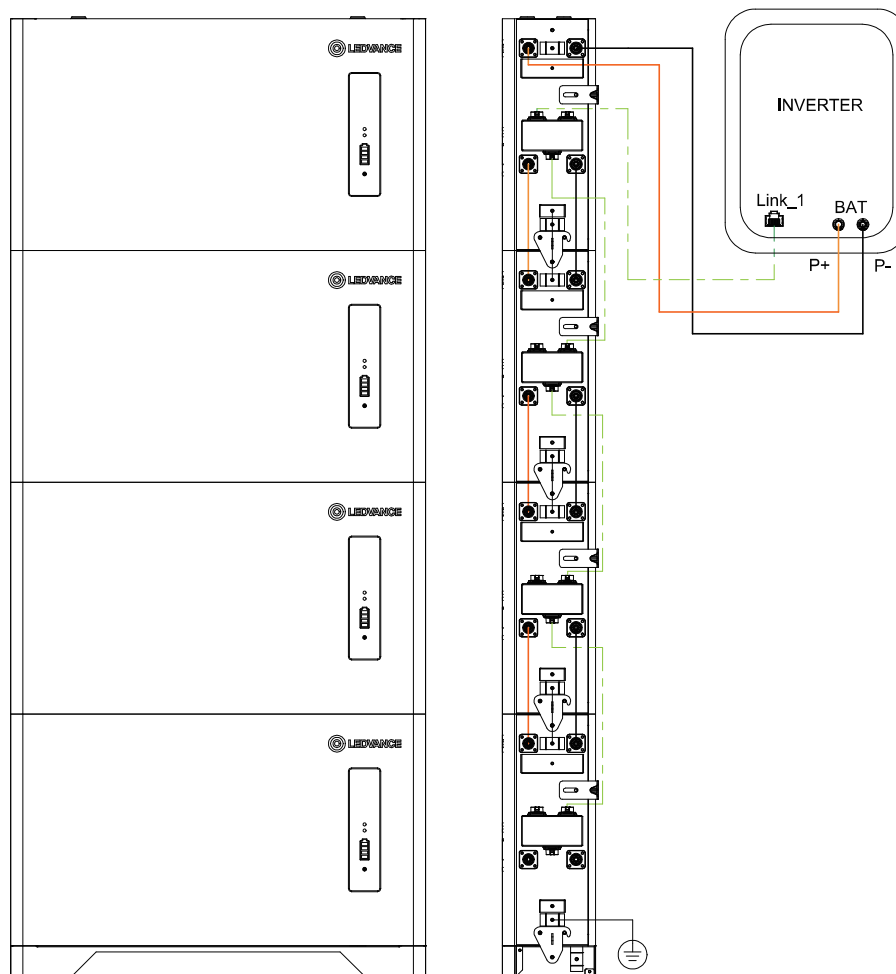
Batteries in Parallel



CAUTION!

- The length of the power cables between the combiner box and the inverter.
- If the combiner box is not used, the parallel connection device should meet the following requirements.
 - a) No less than IP 55 for the outdoor use.
 - b) Maximum operating voltage, 60 V DC.
 - c) Maximum output current, 100 A DC.
- The total power cable length between each battery cluster and the inverter should be less than 10 meters.

Single Battery System



COMMISSIONING

Battery Run

Requirements:

- The battery and the inverter must be properly installed and fixed.
- All cables must be correctly connected.

Recommended charge instructions:

- Charge the battery at constant current 50 A until voltage reaches 58.4 V, then charge at constant voltage 58.4 V till charge current is 5 A.







Steps:

- When the battery is shut down, press the button (3 ~ 6 s) to release, and the battery is active and power on, the LED indicator from "RUN" for 0.5 seconds to indicate the power on, after the RUN indicator is often on, the power indicator LED according to the current power indication.
- When the battery is in the boot state, press the button (3 ~ 6 s) to release, close the battery output, stop discharging, stop the LED indicator light and turn off from the lowest power light for 0.5 seconds.
- The battery is in the state of parallel machine startup. After the main, main and negative total loop is connected with the communication line, the battery is startup in turn, in order to open the slave machine from the bottom to the top, and finally the host engine. The battery pack connected to the inverter is the host by default.
- When the battery is in the state of parallel shutdown, first close the host connected to the inverter, and then turn off, the order is from top to bottom.

If it is failed to switch on the battery system.

CONTACT OUR LOCAL AFTER-SALE SERVICE WITHIN 48 HOURS.

The Led Working Status Indication

Status	Normal / Alarm / Protection	Run	Alm	Power Instruction LED				Instruction
								
Shut down	Dormancy	Light goes out	Light goes out	Light goes out	Light goes out	Light goes out	Light goes out	All lights go out
Standby	Normal	Light flashing state 1	Light goes out	According to the electricity instruction				Stand by
	Alarm	The lights are always on	3 Light flashing state 3					Module low pressure
Charge	Normal	The lights are always on	Light goes out	According to the electricity instruction				
	Alarm	The lights are always on	3 Light flashing state 3					
	Overcharge protection	The lights are always on	Light goes out	The lights are always on	The lights are always on	The lights are always on	The lights are always on	Stop charging
	Temperature, overcurrent, and failure	Light goes out	The lights are always on	Light goes out	Light goes out	Light goes out	Light goes out	
Discharge	protection Normal	Light flashing state 3	Light goes out	According to the electricity instruction				
	Alarm	Light flashing state 3	Light flashing state 3					
	Under voltage protection	Light goes out	Light goes out	Light goes out	Light goes out	Light goes out	Light goes out	Stop discharge
	Temperature, over current, shortcircuit, reverse connection, failure protection	Light goes out	The lights are always on	Light goes out	Light goes out	Light goes out	Light goes out	Stop discharge

COMMISSIONING

Capacity Indication

Status		Charge				Discharge			
Capacity indicator light		L4	L3	L2	L1	L4	L3	L2	L1
Quantity of electricity (%)	0%~25%	Light goes out	Light goes out	Light goes out	Light flashing state2	Light goes out	Light goes out	Light goes out	The lights are always on
	25%~50%	Light goes out	Light goes out	Light flashing state2	The lights are always on	Light goes out	Light goes out	The lights are always on	The lights are always on
	50%~75%	Light goes out	2 Light flashing state 2	The lights are always on	The lights are always on	Light goes out	The lights are always on	The lights are always on	The lights are always on
	75%~100%	Light flashing state2	The lights are always on	The lights are always on	The lights are always on	The lights are always on	The lights are always on	The lights are always on	The lights are always on
Run the indicator light		The lights are always on				Light flashing state3			

Explain:

Because energy storage battery module system before the installed is separate, when multiple modules stack use, because there are certain differences between module voltage, after the first installed SOC deviation phenomenon, need to connect after the installed inverter charging calibration, generally after the battery fully charged, BMS will learn the SOC calibration.

It is recommended to fully charge the battery once a month for SOC calibration.

Battery Forced Charging Function:

When the battery establishes normal communication and charge and discharge connection, the battery is in the discharge state. When the discharge SOC is less than 14%, the battery forced charging function is triggered until 30% is the end of strong charging, and switch to the normal working state.

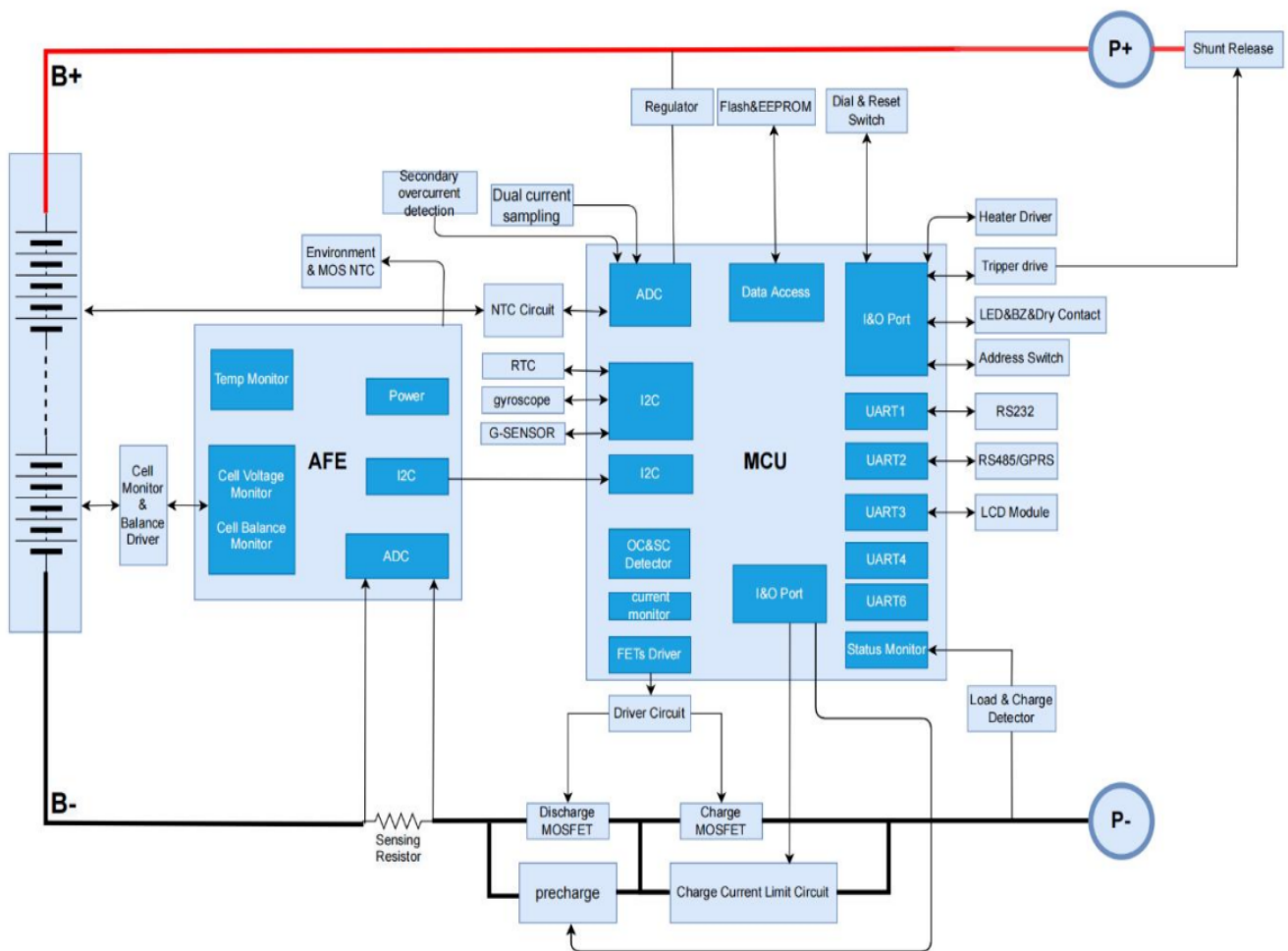
Led Flash Instructions

Flash Mode	Light Time	Turn off Light Time
Light flashing state1	0.25 s	3.75 s
Light flashing state2	0.5 s	0.5 s
Light flashing state3	0.5 s	1.5 s

SAFETY DESIGN

- The battery system cannot be turned on if the battery is incomplete or is not installed properly.
- The system will automatically shut down if the battery does not communicate with the inverter for 24 hours.
- The system will automatically shut down if the battery or inverter installation error.
- The battery voltage is too low and the low voltage alarm is triggered, after the operation for 30 seconds, the system will automatically turn off into hibernation and maintain the low power consumption state; Low power mode can be withdrawn into normal operation mode when any one of the following conditions is met:
 - 1) Access to the charger, and the output voltage of the charger shall be greater than 48 V.
 - 2) Press the button (3 ~ 6 s) and release the button.

Electrical Schematic Diagram



MAINTENANCE AND STORAGE

Cleaning

We recommend to clean the battery system regularly. If the battery housing is dirty, use a soft dry brush or dust collector to remove the dust. Do not use solvents, abrasives, or corrosive liquids to clean the housing.

During the maintenance of system cleaning, electrical connection, grounding reliability maintenance, etc, Perform the system down operation.

Scope of Examination	Check the Method	Mainten an Cecycle
System runningstate	<ul style="list-style-type: none">— Observe whether the appearance of the energy storage is damaged or deformed.— Listen to whether there is any abnormal sound in the energy storage during the operation.— When the energy storage is running, check whether the energy storage parameters are set correctly.	Once every six months
Electrical connection	<ul style="list-style-type: none">— Check whether the cable connection is falling off and is loose.— Check whether the cable is damaged, focus on checking the cable, and the metal surface contact skin for traces of cuts.— Check whether the unused DC input terminal, energy storage terminal, COM interface and waterproof cover are in a locked state.	After the first half year, then, every half year to a year
Ground reliability	<ul style="list-style-type: none">— Check whether the grounding cable is reliably grounded.	Half a year after the first test, and once every six months to once a year after that

STOP

Warning!

After the system power down, the chassis still has residual power and heat, which may cause electric shock or burn. Therefore, after the system is powered on for 5 minutes, wear protective gloves to operate the energy storage. Ensure that the energy storage can be maintained only when all the energy storage indicators are off.

MAINTENANCE AND STORAGE

Storage

Storage environment

- The storage environment shall meet the requirements of the local regulations and standards.
- Store in a clean, dry and ventilated place, and prevent the erosion of dust and water vapor. Never hibat rain or ground area water erosion.
- The battery is stored indoors, without direct sunlight or rain, dry and ventilated, the surrounding environment is clean, there is no large number Infrared and other radiation radiation, no organic solvent or corrosion gas, no metal conductive dust, far away from the heat source and combustion source.
- If the battery fails (carbonization, leakage, expansion, water, etc.) , it must be timely transferred to the dangerous goods warehouse for separate storage Store, not less than 3m away from the surrounding combustible materials, and scrap it as soon as possible.
- When battery storage, it should be correctly placed according to the packing box mark. It is strictly prohibited to place back, side, tilt and stack time Close the stacking requirements on the outer package.
- When battery storage, please store separately to avoid mixing with other equipment and avoid battery stacking too high. On-site storage When putting more batteries, it is recommended to have fire fighting facilities that meet the requirements, such as fire sand and fire extinguishers.

ATTENTION

- During the battery storage, it must be disconnected from the external connection. If the battery panel has an indicator light, the indicator light should be extinguished form.
- During the storage period, relevant certificates that meet the product storage requirements, such as temperature and humidity log data, and storage rings Photos and inspection reports, etc.
- When shipping batteries, the first-in, first-out principle should be followed.
- The storage time should be calculated from the latest charging time on the battery packaging, and the latest one should be updated after charging Secondary charging time.
- If the battery energy storage system will not be used for a long time, please refer to the followingtable to save the power. After charging, turn off all switches on the battery energy storage systemto ensure the lowest system power consumption.

Storage Environment Temperature	Humidity of Storage Environment	Storage Time	SOC
Below -10°C	/	Not allowed	/
-10-25°C	5%-80%	≤ 12 months	SOC≥50%
25-35°C	5%-80%	≤ 6 months	SOC≥50%
35-50°C	5%-80%	≤ 3 months	SOC≥50%
Above 50°C	/	Not allowed	/

Note: To ensure the battery service life, keep the storage temperature of the battery module between 0°C and 35°C.

MAINTENANCE AND STORAGE

Overtime storage

- After the battery production test is completed, at least 50% SOC should be added before storage.
- When shipping the stored batteries, the first-in-first-out principle should be followed.
- Battery is recommended to be used in time. For long-term batteries, please conduct regular power supplement treatment, otherwise it may lead to electricity Pool damage.
- The warehouse manager shall make statistics on the battery storage situation every month, and regularly report the battery inventory situation to the planning link, for Storage time is close to 12 months ($-10^{\circ}\text{C} \sim 25^{\circ}\text{C}$), 9 months ($25^{\circ}\text{C} \sim 35^{\circ}\text{C}$), or 6 months ($35^{\circ}\text{C} \sim 50^{\circ}\text{C}$) battery, timely arrangement supplementary power.

Requirements Temperature Storage	Actualstorage Temperature	Supplemental Electrical Cycle	Remarks
$-10^{\circ}\text{C} < T \leq 50^{\circ}\text{C}$	$T \leq -10^{\circ}\text{C}$	notallow	Supplement within the power cycle: no need to be treated, use as soon as possible Time to reach supplementary power: supplementary power treatment
	$-10^{\circ}\text{C} < T \leq 25^{\circ}\text{C}$	12Months	
	$25^{\circ}\text{C} < T \leq 35^{\circ}\text{C}$	6 months	
	$35^{\circ}\text{C} < T \leq 50^{\circ}\text{C}$	3 months	
	$50^{\circ}\text{C} < T$	notallow	

Excessive time storage judgment condition

In principle, it is not recommended to store batteries for a long time. Long-time deep discharge will cause battery damage, and it should be used in time. For overdue storage, professionals should be checked and tested before being put into use. The stored batteries should be processed according to the following requirements.

- The battery is deformed, damaged, leaked, and directly scrapped without considering the storage time.
- Storage time Take the latest charging time on the battery package as the starting point for the battery After the supplementary power, refresh the latest charging time and next charging time (next charging time = Latest charging time + recharge cycle).
- The maximum allowable period and times of storage and supplementary power is 3 years or 3 times, exceeding the maximum allowable period and times of the recommended battery announce invalidated check in paper.
- There will be capacity loss in the long-term storage of lithium battery, and the longer the long-term storage time, the greater the capacity loss will be. If the customer Conduct discharge test and acceptance according to the specification, for batteries with storage capacity less than 100% rated capacity, exist The risk of failing the test.
- When the battery SOC is recommended to be supplemented to 50%, and there will be capacity loss in long-term storage. After the lithium battery is stored at the recommended storage temperature for 12 months, the general irreversible capacity loss is 3%~10%.

MAINTENANCE AND STORAGE

Pre-battery recharge test

- The battery should be inspected for the appearance before the battery replenishment, and the qualified battery can be supplemented in the next step Electrical treatment, unqualified battery scrap treatment.
- If the battery has the circumstances listed below, it will be judged to fail the appearance inspection.
 - Battery deformation
 - The battery case is damaged
 - Battery leakage

Battery low power replenishment requirements

After the battery is down, there is static power consumption of the internal module of the battery, so the low power state of the battery should be avoided. Storage, you need to fill the battery in time, otherwise the battery may be damaged due to overdischarge and the battery mode needs to be replaced block.

Scenarios that may trigger low power storage, including but not limited to:

- The DC switch (Disconnecting switch) on the power control module is not turned on.
- Battery power line or signal line is not connected.
- After the energy storage discharge, it cannot enter the charging state due to system failure.
- The system does not correctly add or configure the energy storage, so that the battery cannot enter the charging state.
- No PV input and the power grid drops the power for a long time, so that the battery cannot enter the charging state.

Regardless of the low-power storage scenario, it must follow the maximum interval allowed by the SOC when the battery is fully powered down. Line to fill electricity. If the battery is not replenished after the maximum interval, the battery may be damaged due to overdischarge.

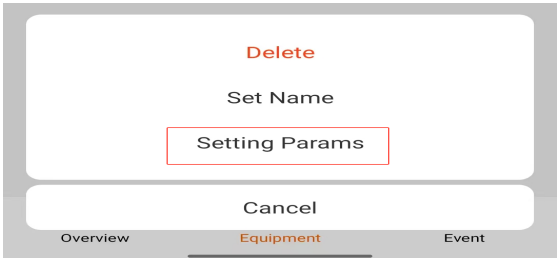
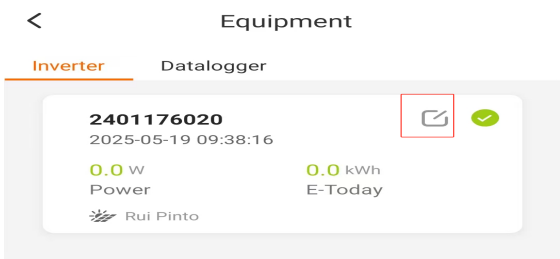
SOC When Down before Storage	Maximumre Charge Interval Time
SOC \geq 5%	15 Days
0 \leq SOC <5%	7 Days

Explain

- When the battery SOC is reduced to 0%, it should be replenished within 7 days. Permanent battery due to customer reasons Fault, the company does not provide the corresponding warranty service.
- When the battery SOC is low by the battery due to its own loss or long-term storage, in order to prevent the battery from being damaged due to overdischarge Bad, the system will force the battery to power.

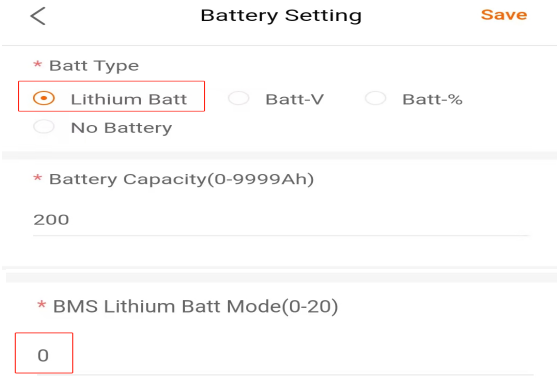
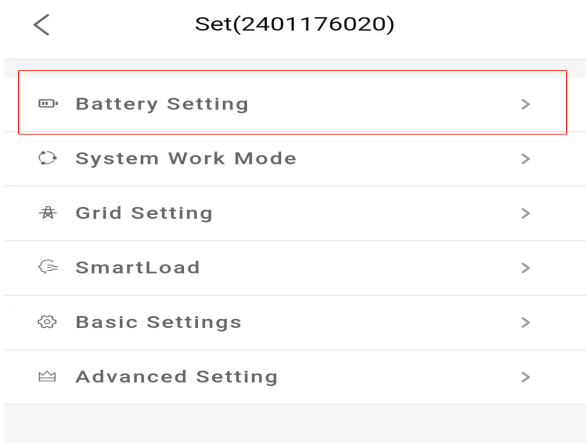
INVERTER AND BATTERY PROTOCOL SELECTION

Inverter and battery protocol selection



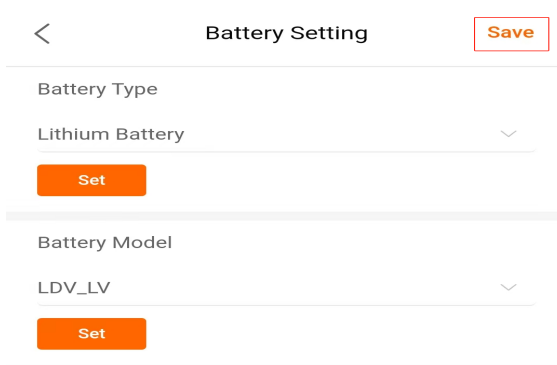
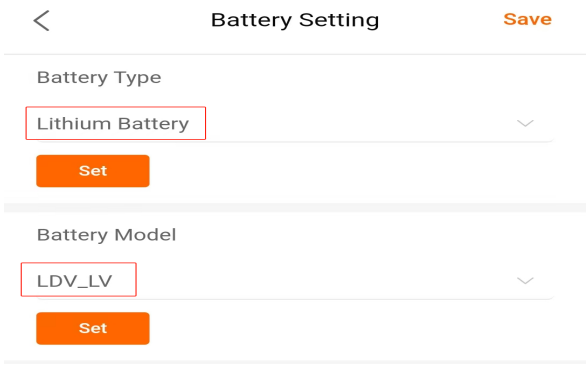
1. After the inverter WiFi is connected, on the equipment interface, click the edit icon in the red box

2. Click Setting Params



3. Click Battery Setting

4. If the inverter battery setting interface is the same as this interface, select according to this content: Batt Type Selection Lithium Batt, BMS Lithium Batt Mode(0-20) Selection 0



5. If the inverter battery setting interface is the same as this interface, select according to this content: Batt Type Selection Lithium Battery, Battery Model Selection LDV_LV

6. After selecting the protocol, click Save

DISPOSAL

For details related to the disposal of battery modules, please contact us.

Observe applicable regulations on waste battery disposal. Immediately stop the use of damaged batteries. Please contact your installer or sales partner before disposal. Ensure that the battery is not exposed to moisture or direct sunlight.



Attention:

- Do not dispose of batteries and rechargeable batteries as domestic waste! You are legally obliged to return used batteries and rechargeable batteries.
- Waste batteries may contain pollutants that can damage the environment or your health if improperly stored or handled.
- Batteries also contain iron, lithium and other important raw materials, which can be recycled.
- Regulations vary for different countries. Dispose of the battery in accordance with local regulation.

Do not dispose of batteries as household waste!



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