SOFAR

# USER MANUAL

## SF-16KWH-L1


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English

# CONTENT

# 1 About this manual

This manual introduces SF-16KWH-L1 LFP Battery Product from SOFAR.

- Carefully read this manual before use!
- Treat this manual as an integral component of the device.
- Keep this manual in close proximity to the device, including when it is
- handed over to another user or moved to a different location.

This manual contains important safety information on installation, operation and maintenance of the device.

- Read and observe all given safety information.

The products, services or features you purchased shall be subject to the company's commercial contracts and terms. All or part of the products and services described in this document may not within the scope of your purchase. Unless additional terms and conditions in your contract, the company does not make any statement or guarantee on the contents of this document.

- Target Group

This document is intended for professional electrical engineers who are responsible for battery installation and commissioning, including technical support engineers, system engineers, electrical engineers and end user.

## 1.1 Copyright declaration

## 1.2 Presentation of warnings

This manual contains information on safe operation and uses symbols to ensure the safety of persons and property as well as the efficient operation of the SF-16KWH-L1.

- Read through the following symbol explanations carefully in order to prevent injury or property damage.

### 1.2.1 Warn symbol

| | |
|---|---|
|  | The general danger symbol warns of the risk of serious injury when used with the signal words CAUTION, WARNING and DANGER. |

### 1.2.2 Signal words

| | |
|---|---|
| **DANGER** | Indicates a hazardous situation which, if not avoided, will result in death or serious injury. |
| **WARNING** | Indicates a hazardous situation which, if not avoided, could result in death or serious injury. |
| **CAUTION** | Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury. |
| **NOTICE** | Indicates a danger that will result in damage to or destruction of the inverter. |

### 1.2.3 Sectional warnings

Sectional warnings refer to a complete section and are structured as follows:

**⚠ WARNING**

**Type and source of danger**

**Consequences of non-observance**

- Avoiding the danger

### 1.2.4 Embedded warnings

Embedded warnings are part of an action sequence and are placed right before the dangerous step.

**WARNING** Combination of type/source of danger, consequences for non-observance and avoiding the danger.

## 1.3 Presentation of action instructions

This table shows the sequence of Action steps:

| Symbol | Function |
|---|---|
| ✓ | This describes an action requirement |
| 1.<br>2.<br>3. | This is the sequence of action steps that must be followed step by step |
| ▸ | This is a single action step |
| ↳ | This describes the result of the action |

## 1.4 Note

Notes are presented in a grey bar.

- Provides tips essential to the optimal operation of the product.

# 2 Safety

This section contains safety information that must be observed at all times when working on or with batteries. To prevent personal injury or property damage and to ensure long-term operation of the batteries, read this section carefully and observe all safety information at all times.

**⚠ WARNING**

**Environmental requirement**

- The battery is IP20 rated and should only be installed indoors
- Do not expose the battery to temperature above 50℃
- Do not place the battery near any heat sources
- Do not expose the battery to moisture or liquids
- Do not expose the battery to corrosive gases or liquids
- Do not expose the battery to direct sunlight for extended periods of time
- Do not allow the battery power terminals to touch conductive objects such as wires
- Place battery in secure location away from children and animals

**⚠ WARNING**

**Operation precautions**

- Do not disassemble the battery
- Do not touch the battery pack with wet hands
- Do not crush, drop or puncture the battery
- Do not reverse the polarity or connect in series
- Do not short circuit the terminals, remove all items that could product a short circuit before installation and handling
- Always dispose of the product according to local safety regulations
- Store and recharge battery in a manner in accordance with this user manual

- Ensure reliable grounding
- Disconnect battery from power/load and then power off battery before installation and maintenance
- When storing or handing, do not stack up batteries when outside

**⚠ WARNING**

**Protective package**

- Packaged batteries should not be stacked more than specified number stipulated on the package
- Continued operation of a damaged battery can result in dangerous situation that may cause severe injury due to electrical shock

# 3 Technical Items

| No. | Terms | Comment |
|---|---|---|
| 1 | Discharge | Battery output power for load |
| 2 | Charge | To put electricity into battery by charger |
| 3 | Full charge | Battery had been full charged, SOC is 100%. |
| 4 | Standby | Ready for charging or discharging |
| 5 | Shutdown | Power off |
| 6 | SOC | State of Charge (Useable capacity) |
| 7 | Battery voltage | The voltage between B+/B- |
| 8 | Cell voltage | Single cell voltage |
| 9 | Pack voltage | The voltage between P+/P- |
| 10 | Alarm | Indicate that the battery is in abnormal status |
| 11 | Protect | Battery stops charging or discharging and is recoverable |
| 12 | Fault | Battery or BMS is broken, need to be replaced |
| 13 | Over discharged | Battery is lack of electricity, and needs to be recharged in time |

# 4 Product Overview

## 4.1 Brief Introduction


**Product overview**

SOFAR SF-16KWH-L1 is a battery system with an operating voltage range between 44.8~57.6V. It is utilized in household energy storage applications and works together with a low-voltage PCS to realize the goal of energy storage for the home.

SOFAR SF-16KWH-L1 has built-in BMS (battery management system), which can manage and monitor cells information including voltage, current and temperature. What's more, BMS can balance cells charging to extend cycle life. BMS has protection functions including over-discharge, over-charge, over-current and high/low temperature; the system can automatically manage charge state, discharge state and balance state.

Multiple batteries can connect in parallel to expand capacity and power for larger capacity and longer power supporting duration requirements, SOFAR SF-16KWH-L1 support up to 16 parallel operations.

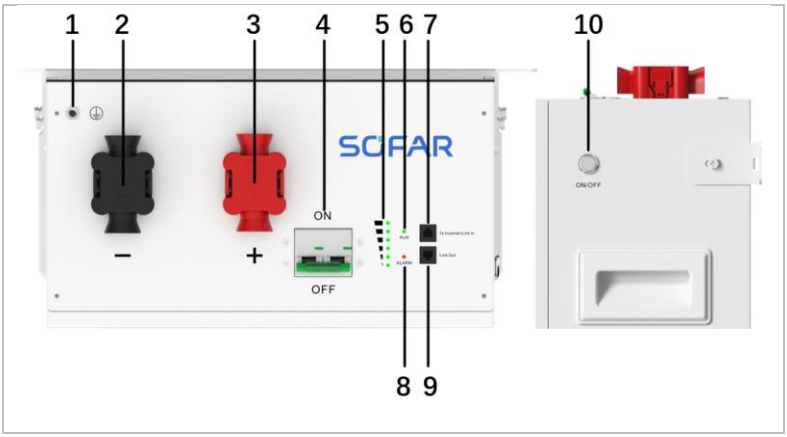
## 4.2 Product Nameplate

The type labels were attached on the product, which contain the product identification information. For safe usage, the user must be well-informed of the contents in the type labels.

The type labels include:


- The picture is for reference only, please refer to the actual product.

## 4.3 Interface Introduction




| No. | Items | No. | Items |
|---|---|---|---|
| 1 | Grounding | 6 | Running indicator |
| 2 | P- | 7 | Communication input (Battery/Inverter) |
| 3 | P+ | 8 | Alarm indicator |
| 4 | Miniature circuit breaker | 9 | Communication output (Battery) |
| 5 | SOC Indicators | 10 | ON/OFF switch |

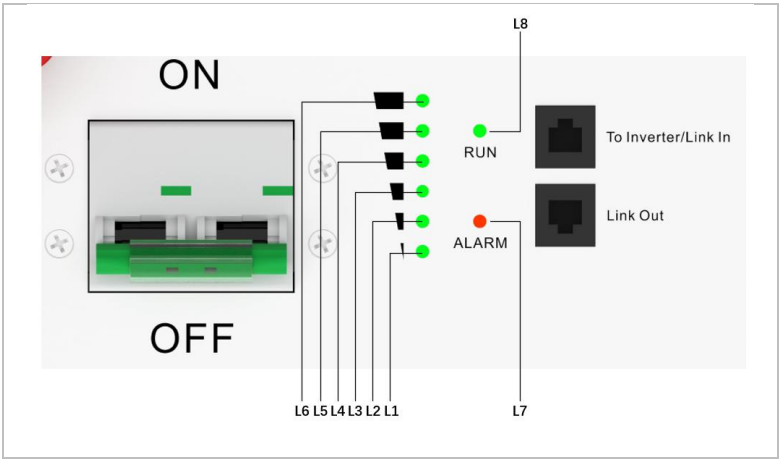
### 4.3.1 Start Button

1. Before powering on, first turn on the miniature circuit breaker, then press the ON/OFF switch. The battery will be powered on. The SOC indicator light, alarm indicator and running indicator will flash sequentially from L1 to L8. After the self-check is completed, the SOC indicator will display the current battery charge level, the alarm indicator will go out, and the running indicator will flash according to the corresponding status.
2. In parallel system, connect the parallel communication wiring according to section 4. 3. 1. When the battery system is turned on for the first time, all batteries need to be turned on separately. After all batteries enter the

standby state, wait for 30 seconds and the batteries will complete the automatic addressing.

3. Press and hold the ON/OFF switch of the master battery until the alarm indicator comes on, then release it. The indicator lights will turn off from L8 to L1 in sequence, and the battery module will shut down.

### 4.3.2 LED Indicator Definition




- L1 to L6: Green, show the battery level, each light indicates 16.6% SOC.
- L7: Red, show battery running status, long bright if equipment failure or protected.
- L8: Green, show battery running status, long bright or flash if equipment is normal.

Table 4-1 LED indicator instructions

| Status | | RUN | ALM | Battery level indicator | | | | | | Descriptions |
|---|---|---|---|---|---|---|---|---|---|---|
| | | L8 | L7 | L6 | L5 | L4 | L3 | L2 | L1 | |
| | | | | | | | | | | |
| Shutdown | | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | All OFF |
| Standby | Normal | Flash 1 | OFF | According to the battery level | | | | | | Indicates Standby |
| | Alarm | Flash 1 | Flash 3 | | | | | | | |
| Charging | Normal | Light | OFF | According to the battery level | | | | | | The highest capacity indicator LED flashes (flash 2), others lighting |
| | Full Charged | Light | OFF | Light | Light | Light | Light | Light | Light | Turn to standby status when charger off |
| | Protection | OFF | Light | OFF | OFF | OFF | OFF | OFF | OFF | Stop charging |
| Discharging | Normal | Flash 3 | OFF | According to the battery level | | | | | | |
| | UVP | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | Stop discharging |
| | Protection | OFF | Light | OFF | OFF | OFF | OFF | OFF | OFF | Stop discharging |
| Fault | | OFF | Light | OFF | OFF | OFF | OFF | OFF | OFF | Stop charging and discharging |

Table 4-2 Charging battery level indicators instructions

| Status | | RUN | Charging | | | | | |
|---|---|---|---|---|---|---|---|---|
| Battery level indicators | | L8 | L6 | L5 | L4 | L3 | L2 | L1 |
| | | | | | | | | |
| Battery level (%) | 0%≤SOC<16.6% | Light | OFF | OFF | OFF | OFF | OFF | Flash 2 |
| | 16.6%≤SOC<33.2% | | OFF | OFF | OFF | OFF | Flash 2 | Light |
| | 33.2%≤SOC<49.8% | | OFF | OFF | OFF | Flash 2 | Light | Light |
| | 49.8%≤SOC<66.4% | | OFF | OFF | Flash 2 | Light | Light | Light |
| | 66.4%≤SOC＜83.0% | | OFF | Flash 2 | Light | Light | Light | Light |
| | 83.0%≤SOC＜100% | | Flash 2 | Light | Light | Light | Light | Light |
| | SOC=100% | | Light | Light | Light | Light | Light | Light |

Table 4-3 Discharging Battery Level Indicators Instructions

| Status | | RUN | Discharging | | | | | |
|---|---|---|---|---|---|---|---|---|
| Battery level indicators | | L8 | L6 | L5 | L4 | L3 | L2 | L1 |
| Battery level (%) | 0%≤SOC<16.6% | Flash 3 | OFF | OFF | OFF | OFF | OFF | Light |
| | 16.6%≤SOC<33.2% | | OFF | OFF | OFF | OFF | Light | Light |
| | 33.2%≤SOC<49.8% | | OFF | OFF | OFF | Light | Light | Light |
| | 49.8%≤SOC<66.4% | | OFF | OFF | Light | Light | Light | Light |
| | 66.4%≤SOC＜83.0% | | OFF | Light | Light | Light | Light | Light |
| | 83.0%≤SOC＜100% | | Light | Light | Light | Light | Light | Light |

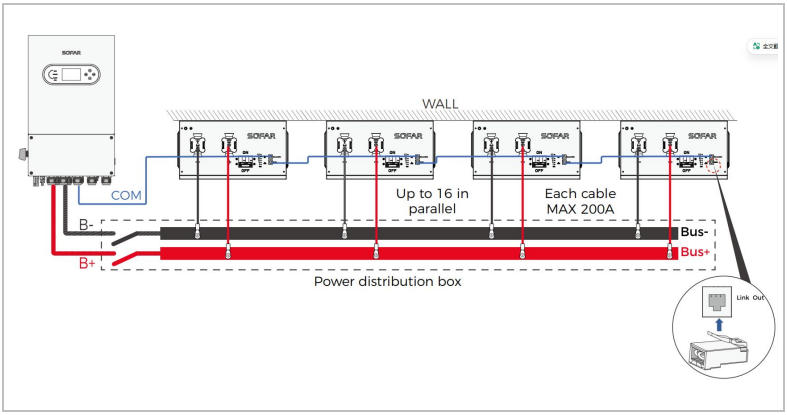
**The flashing instructions**

- Flash 1 - light on 0. 25s / off 3. 75 seconds
- Flash 2 - light on 0. 5s / off 0. 5 seconds
- Flash 3 - light on 0. 5s / off 1. 0 seconds

## 4.4 Interface Introduction

### 4.4.1 Wiring instructions

Suggest Wiring Diagram:



- The power lines for battery P+ and P- are recommended to use power cables with a min. 35 mm² or 2AWG (1000V, 200A). The length of the wires is determined according to actual requirements. Or buy the corresponding cable options.
- Before assembling Power cable, label the cable polarities correctly to ensure correct cable connections.
- The power cable installation and connected must training skilled of professional personal.

1. **Power cable wiring instructions**

**Power cable terminals:** Each terminal has two outlet ports, one at the front and one at the back.

**Single module: *P+*/*P-*** terminal has two outlet ports, you can use either one for wiring. When two wires need to be connected to the same terminal, they should be pulled out respectively from the front and rear outlet ports.

- Single module can directly connect P+ and P- to the B+ and B- of the inverter.

**Parallel system:** Multiple batteries can connect in parallel to expand capacity and power for larger capacity and longer power supporting duration requirements.

- In the battery parallel system, should be connect the P+ and P- power lines of the battery to the Bus+ and Bus- of the distribution box respectively, and be sure that the overload capacity of the distribution box is much higher than the maximum nominal current value during the load operation.

2. **Parallel communication cable wiring instructions**

***To Inverter/Link In*** and ***Link Out*** communication terminal (RJ45 port) is integrated with the signal for automatic coding function, it's can automatic identification the parallel connected slave batteries by internal control software of master battery.

- The connection order of Port In and Port Out should not be wrong, otherwise it will lead to the automatic coding failed.

It is required that the ***To Inverter/Link In*** of the master PACK should be connected to the PCS, and the parallel communication wire is connected to the ***To Inverter/Link In*** of the first slave PACK from the ***Link Out*** of the master PACK. Then the ***Link Out*** of the first slave PACK is connected to the ***To Inverter /Link In*** of the second slave PACK. The ***Link Out*** of the second slave PACK is then connected to the ***To Inverter/Link In*** of the third slave PACK, and so on. The parallel system supports up to 16 parallel operations, and ***Link Out*** of the last slave PACK needs to be connected to a RJ45 terminal resistor (missing the terminal resistor may cause battery communication failure).

3. **PCS communication cable wiring instructions**

The ***To Inverter/Link In*** communication port of the Master pack is connected to PCS.

4. **Grounding wiring instructions**

The ground wire of the battery system needs to be connected reliably. Connect the grounding of the parallel system first, and then ground it nearby through the connection point of one of the battery packs.

### 4.4.2 Link Port and Automatic Coding Function

***To Inverter/Link In*** and ***Link Out*** Communication follow CAN and RS485 protocol. CAN is used for communication between the master PACK and the inverter, while RS485 is used for communication among multiple parallel batteries.

After confirming the wiring is correct (refer to section 4. 4. l), must first turn on the miniature circuit breaker of each battery and then press the ON/OFF switch of the master pack to supply power to the battery.

After normal startup, the parallel battery system will automatically code and assign ID to each parallel PACK, and then the parallel system will run normally (refer to section 4. 2. 1).

### 4.4.3 Link Port

Communication Terminal (RJ45 port) follow CAN and RS485 protocol, connect to the corresponding communication port.

BMS controls the charging current/charging voltage or discharge current/discharge cut-off voltage of the PCS through CAN communication according to the battery voltage and battery temperature. BMS can also upload the battery's protection information to the inverter.

- Through the SOFAR PCS, skilled peoples can set the fully charged time period.

**To Inverter/Link In**

| PIN | Definition |
|---|---|
| Pin 1 | RS485_A1(to upper computer) |
| Pin 2 | RS485_B1(to upper computer) |
| Pin 3 | RS485_A2（to battery） |
| Pin 4 | CAN_H (to PCS) |
| Pin 5 | CAN_L (to PCS) |
| Pin 6 | RS485_B2(to battery) |
| Pin 7 | ISO_VSS |
| Pin 8 | ADDR_IN |

**Link Out**

| PIN | Definition |
|---|---|
| Pin 1 | NC |
| Pin 2 | NC |
| Pin 3 | RS485_A2(to battery) |
| Pin 4 | NC |
| Pin 5 | NC |
| Pin 6 | RS485_B2(to battery) |
| Pin 7 | ISO_VSS |
| Pin 8 | ADDR_OUT |

# 5 Installation Guide

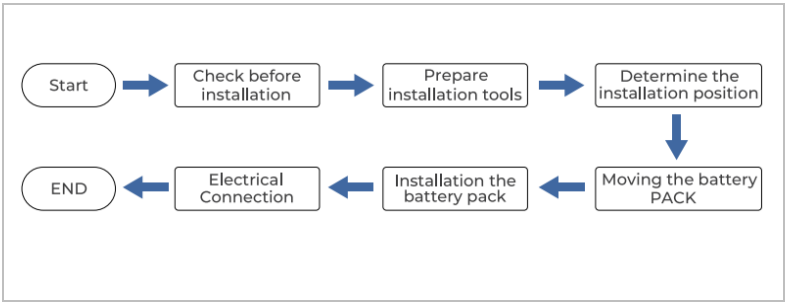



Figure 5-1 Installation flow chart

## 5.1 Checking Before Installation

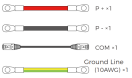
### 5.1.1 Checking Outer Packing Materials

Packing materials and components may be damaged during transportation. Therefore, check the outer packing materials before installing the battery. Checking the surface of packing materials for damage, such as holes and cracks. If any damage is found, do not unpack the battery and contact the dealer as soon as possible. You are advised to remove the packing materials within 24 hours before installing the battery.

### 5.1.2 Checking Deliverables

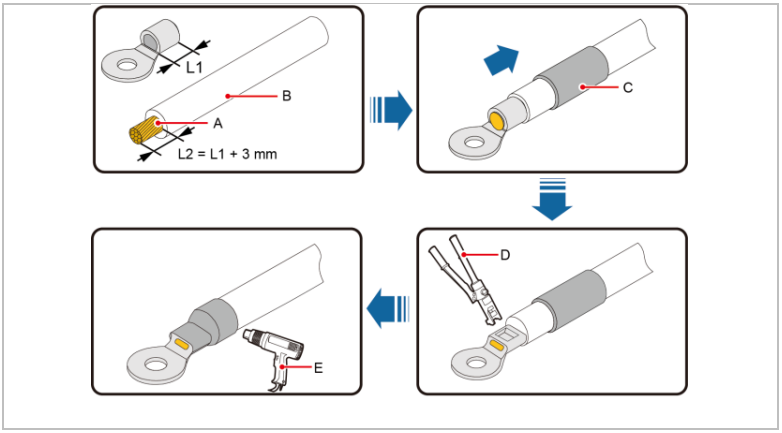
After unpacking the battery, check whether deliverables are intact and complete. If any damage is found or any component is missed, contact the dealer.

The below table shows the components and mechanical parts that should be delivered.

| NO. | Pictures | Quantity | Description |
|---|---|---|---|
| 1 |  | 1 pcs | Battery |
| 2 |  | 2 pcs | Wall bracket |
| 3 |  | 2 pcs | M6*14 |
| 4 |  | 2 pcs | M10*90 |
| 5 |  | 4 pcs | Casters |
| 6 |  | 1 pcs | Terminal resistance |
| 7 |  | 2 pcs | Heat shrink tube |
| 8 |  | 1 pcs | Output cables (2AWG/1500mm) |
| 9 |  | 1 pcs | Quick installation guide |
| 10 |  | 1 pcs | Test report |
| 11 |  | 1 pcs | Packing list |

- The entire battery comes with a standard set of output power cords. Customers can purchase or customize the output power cords locally at the distributor or importer according to their actual installation requirements.
- We recommend that you use the standard accessories provided by SOFAR, or customize accessories of the same specifications. You can also purchase them from SOFAR or its suppliers.

Power cable terminal making instructions:




| | | | |
|---|---|---|---|
| A | Core wire | B | Insulation layer |
| C | Heat shrink tubing | D | Hydraulic pliers |
| E | Heat gun | | |

## 5.2 Tools

| No. | Tool | Model | Function |
|---|---|---|---|
| 01 |  | Knife | Installation |
| 02 |  | Hammer drill Recommended drill diameter ⩾13 mm | Used to drill holes in the wall. |
| 03 |  | Socket wrench(10/17mm) | Installation |
| 04 |  | Wrench(50mm) | Installation |
| 05 |  | Rubber mallet | Installation |
| 06 |  | Cross screwdriver | Wiring |
| 07 |  | Inclinometer | Installation |
| 08 |  | Measuring tape | Used to measure distances |
| 09 |  | Diagonal pliers | Installation |
| 10 |  | Marker | Used for marking |
| 11 |  | ESD gloves | for the installer |
| 12 |  | Safety goggles | for the installer |
| 13 |  | Anti-dust respirator | for the installer |
| 14 |  | Safety shoes | For the installer |

## 5.3 Installation requirements

### 5.3.1 Installation environment Requirements

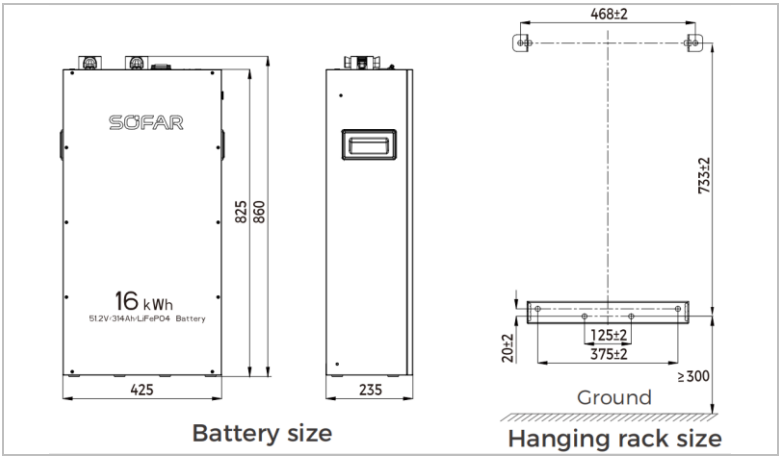
- Install the battery in the indoor environment.
- Place battery in secure location away from children and animals.
- Do not place the battery near any heat sources and avoid sparks.
- Do not expose the battery to liquids.
- Do not expose the battery to direct sunlight.

### 5.3.2 Installation carrier requirements

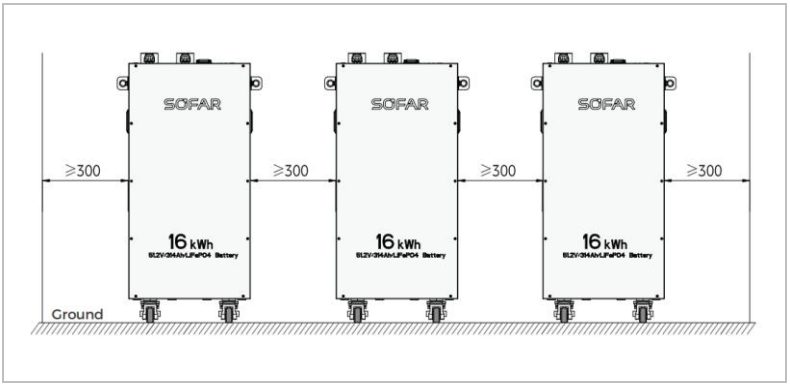
- The mounting carrier shall have fire resistance. Do not install batteries on flammable buildings.
- The mounting carrier surface shall meet the load bearing requirements.

## 5.4 Installation instructions

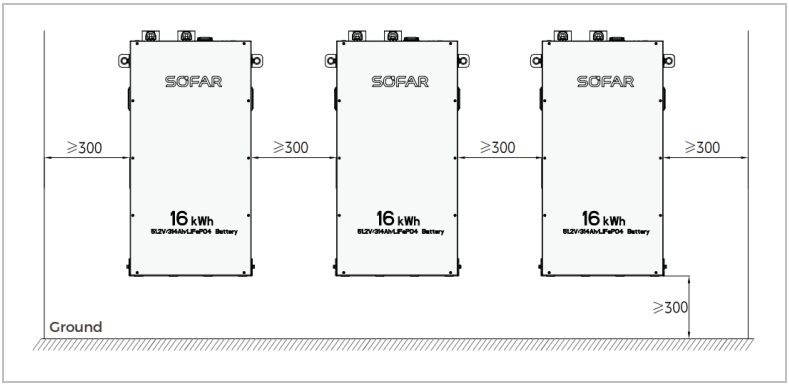
### 5.4.1 Dimensions




Minimum installation distance between batteries during floor installation:




Minimum installation distance between batteries during wall installation:

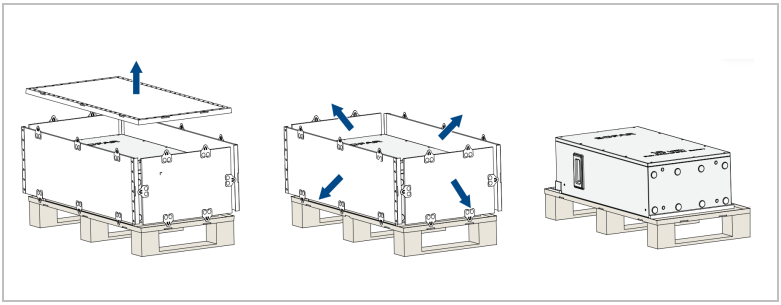



### 5.4.2 Installation Step

- **FLOOR MOUNTED WITH CASTERS STEPS**

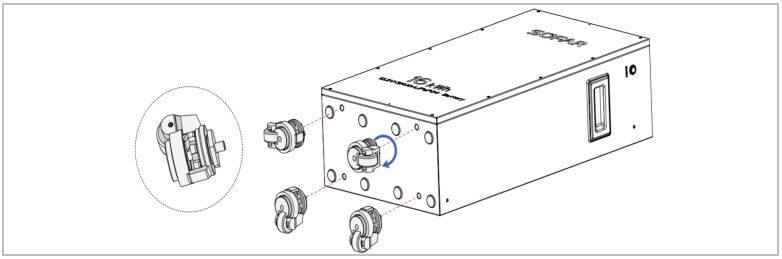
**Step 1**

After opening the upper cover of the wooden box, remove the wooden boards around the battery.



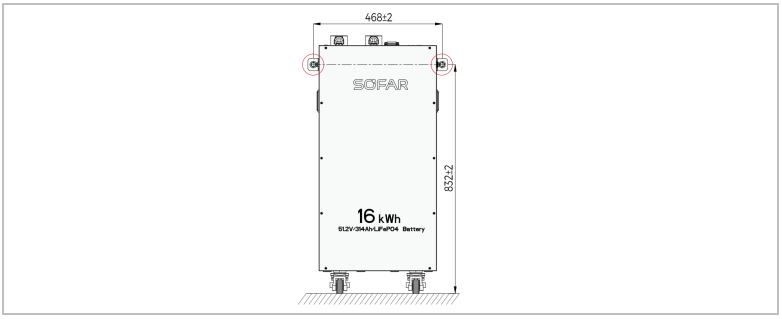
**Step 2**

1. Take out four casters from the accessory box in the wooden box.
2. Align the screws of the casters with the installation threaded holes at the bottom of the battery and rotate them to tighten.
3. Use a wrench(50mm) to tighten the wheels and transport the battery vertically.



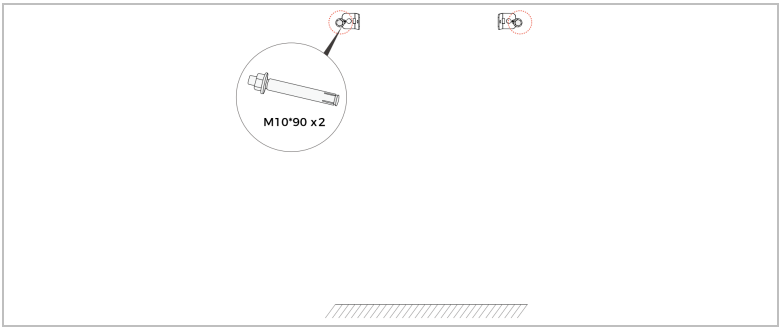
**Step 3**

Drill the two holes with a drill bit (Φ13) at the positions shown in the figure, each hole being 90mm deep.



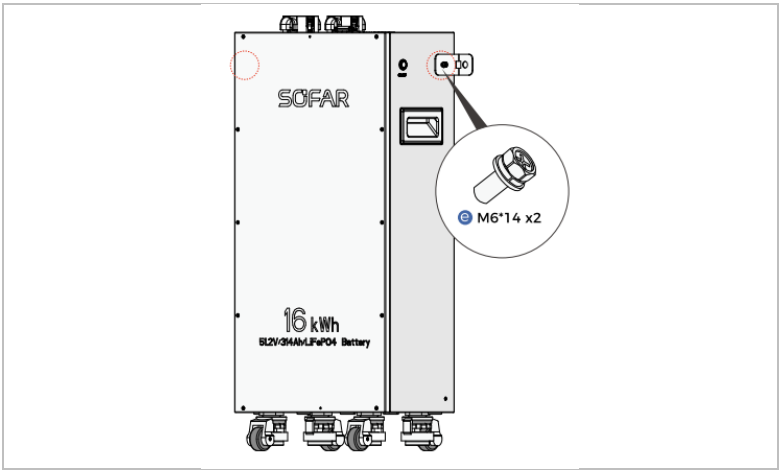

**Step 4**

Install two wall brackets on the wall using M10*90 expansion screws, electric screwdriver torque 30 N·m.



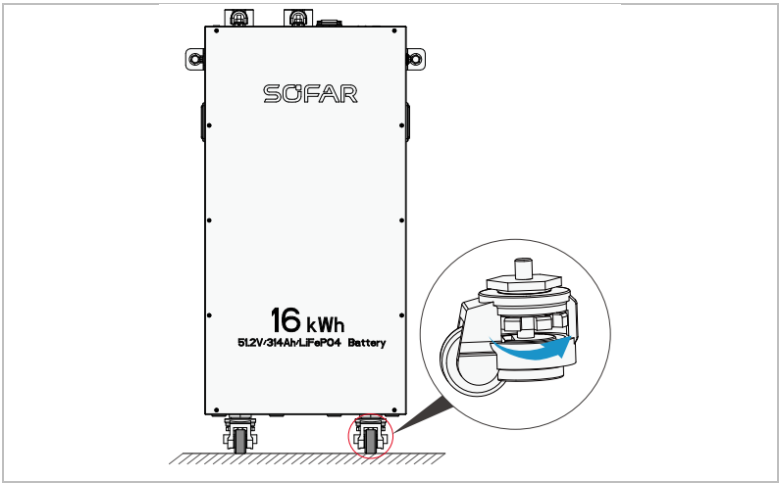
**Step 5**

Install After moving the battery to the corresponding position, use two M6*14 screws to fix the battery on the wall brackets, electric screwdriver torque 6 N·m.




**Step 6**

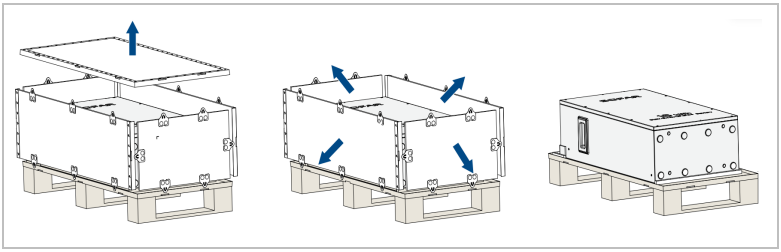
After the battery is fixed, rotate the red nut on the casters to extend the support frame of the casters and fix the battery on the ground without moving.



- **WALL MOUNTED METHOD STEPS(Optional)**
  - If using this installation method, please contact the supplier to purchase the accessories.

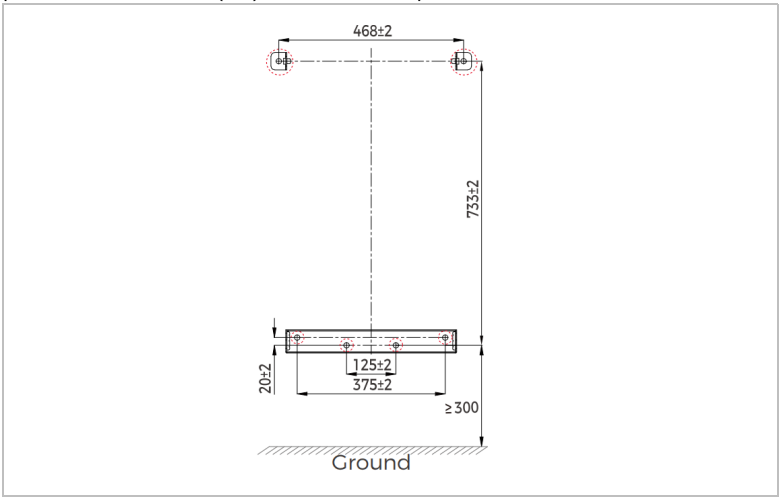
**Step 1**

After opening the upper cover of the wooden box, remove the wooden boards around the battery.



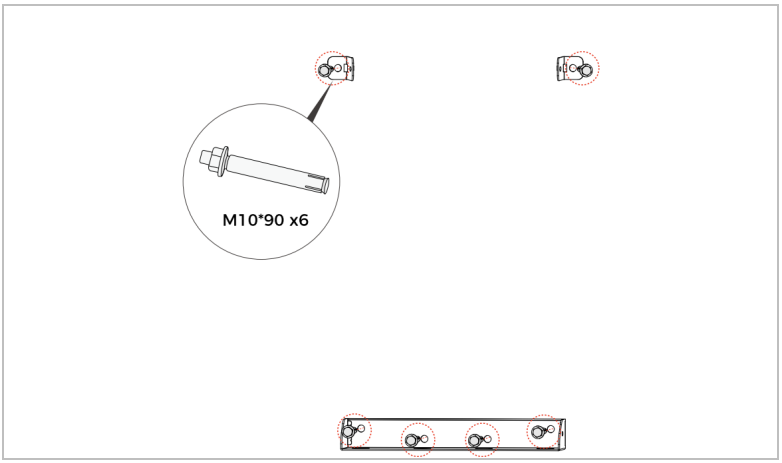
**Step 2**

After taking the battery out of the wooden box，drill six holes as shown in the picture with a drill bit(⌀13), each with a depth of 90mm..



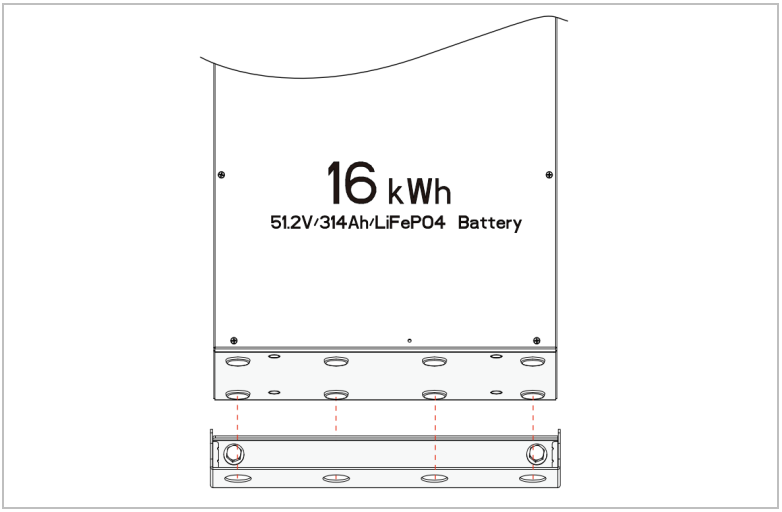
**Step 3**

Fix the wall hanging rack and wall bracket with M10*90 expansion screws, electric screwdriver torque 30 N·m.



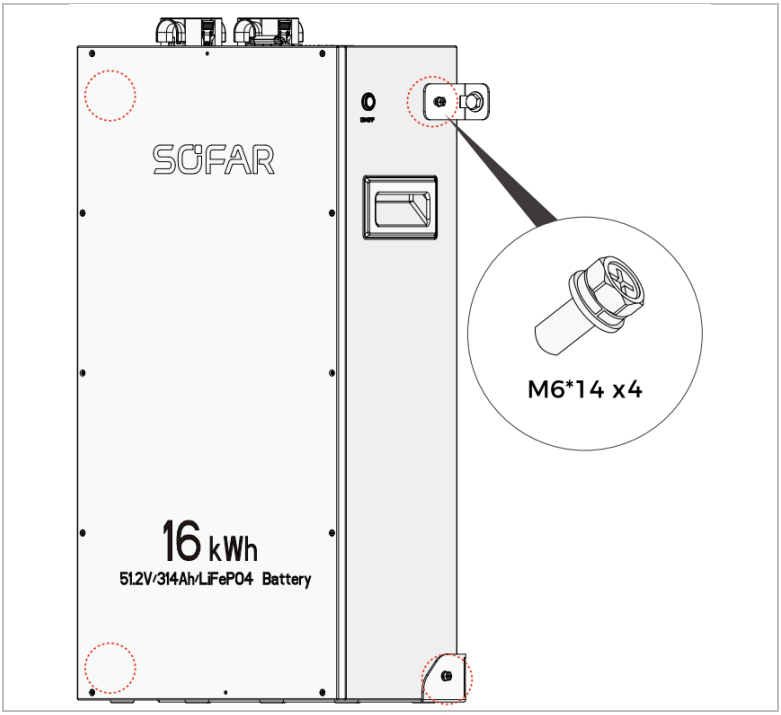

**Step 4**

Lift the battery onto the hanging rack and align the four positioning columns at the bottom of the battery with the four holes of the hanging rack.



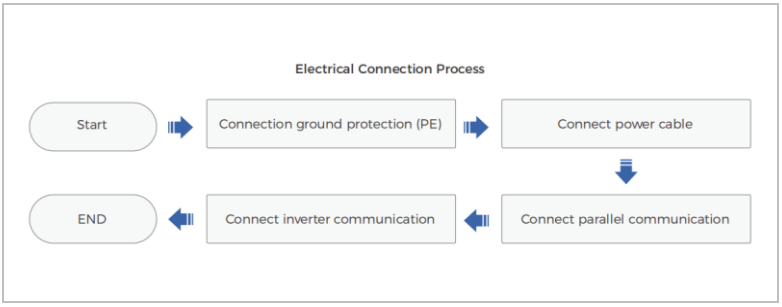
**Step 5**

Use four M6*14 screws to secure the battery to the wall bracket and the hanging rack, electric screwdriver torque 6 N·m.

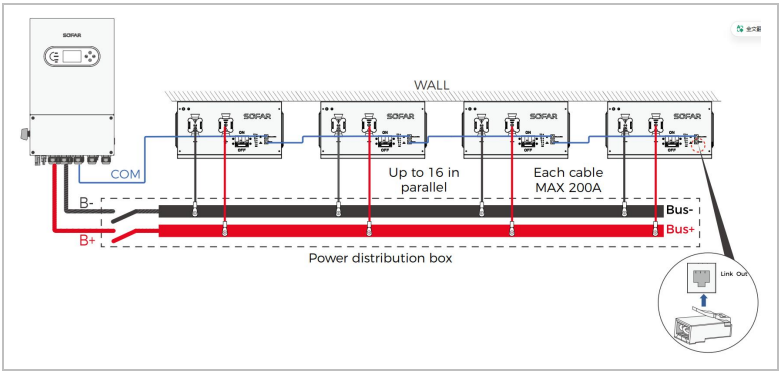


## 5.5 Electrical Connection

### 5.5.1 Electrical Connection Process




### 5.5.2 System Wiring Diagram




1. Connect all battery Ground lines to the PE with M6*14 screws;
2. Connect the **P+** and **P-** power lines of the battery to the Bus+ and Bus- of the distribution box respectively, and be sure that the overload capacity of the distribution box is much higher than the maximum nominal current value during the load operation.
3. The communication cable of the PCS is connected to "***To inverter/Link In***" of the master battery, "***Link Out***" of the master battery is connected to "***To inverter/Link In***" of the slave battery 1, and so on;

4. The "***Link Out***" of the last slave battery needs to be connected to a RJ45 terminating resistor.

- Battery supports up to 16 parallel.
- After confirming the wiring is correct, must first turn on the miniature circuit breaker of each battery and then press the ON/OFF switch of the master pack to supply power to the battery.

### 5.5.3 Connect inverter communication

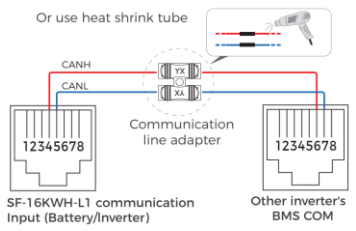
If the SF-16KWH-L1 battery is used in conjunction with other inverters, the communication lines must be modified according to the pin definitions of the communication port.

If the inverter communicates with the battery via the CAN protocol, need to refer to the pin definitions and correctly use communication line adapter or heat shrink tube to connect CANH and CANL pins of the master battery and the inverter.

**Attention: Other wires need to be cut, especially PIN 7 and PIN 8.**

For example:

| SF-16KWH-L1 Communication Input | |
|---|---|
| PIN | Definition |
| PIN 1 | RS485_A1(to PCS) |
| PIN 2 | RS485_B1(to PCS) |
| PIN 3 | RS485_A2(to BAT) |
| PIN 4 | CAN_H (to PCS) |
| PIN 5 | CAN_L (to PCS) |
| PIN 6 | RS485_B2(to BAT) |
| PIN 7 | ISO_VSS |
| PIN 8 | ADDR_IN |

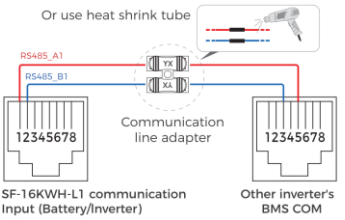



| Other inverter BMS COM | |
|---|---|
| PIN | Definition |
| PIN 1 | RS232TX |
| PIN 2 | RS232RX |
| PIN 3 | RS485B |
| PIN 4 | NC |
| PIN 5 | RS485A |
| PIN 6 | CANH |
| PIN 7 | CANL |
| PIN 8 | GND |

If the inverter communicates with the battery via the RS485 protocol, need to refer to the pin definitions and correctly use communication line adapter or heat shrink tube to connect RS485_A and RS485_B pins of the master battery and the inverter.

For example:

| SF-16KWH-L1 Communication Input | |
|---|---|
| PIN | Definition |
| PIN 1 | RS485_A1(to PCS) |
| PIN 2 | RS485_B1(to PCS) |
| PIN 3 | RS485_A2(to BAT) |
| PIN 4 | CAN_H (to PCS) |
| PIN 5 | CAN_L (to PCS) |
| PIN 6 | RS485_B2(to BAT) |
| PIN 7 | ISO_VSS |
| PIN 8 | ADDR_IN |




| Other inverter BMS COM | |
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| PIN 1 | RS232TX |
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| PIN 3 | RS485B |
| PIN 4 | NC |
| PIN 5 | RS485A |
| PIN 6 | CANH |
| PIN 7 | CANL |
| PIN 8 | GND |

- It's recommended to use the method of applying heat shrink tube, if a hot air gun is available.

- Avoid connecting CAN and 485 simultaneously, prioritize connecting CAN.

# 6 Cleaning and Maintenance

## 6.1 Cleaning

**⚠ CAUTION**

**Please power off the system before cleaning.**

- It is recommended that the SOFAR SF-16KWH-L1 should be cleaned periodically. If the enclosure is dirty, please use a soft, dry brush or a dust collector to remove the dust. Liquids such as solvents, abrasives or corrosive liquids should not be used to clean the enclosure.

## 6.2 Maintenance

### 6.2.1 Recharge Requirements During Normal Storage

The storage temperature should not be more than 45℃ and less than 10℃. The batteries must be periodically charged before the time limit specified in the table below. The batteries should be used in time.

**Recharge conditions when in storage**

| **Ambient Temperature (℃)** | **T≤-10** | -10<T≤+45 | **T>45** |
|---|---|---|---|
| **Maximum Storage Time (Months)** | **Prohibited** | 24 | **Prohibited** |

### 6.2.2 Recharge Requirements When Over Discharged

Please recharge the over discharged (90%DOD) batteries in a timeframe that is in accordance to the following table, otherwise the over discharged battery modules will be damaged.

**Recharge conditions when battery is over discharged**

| Storage Environment Temperature | Storage Time | Note |
|---|---|---|
| -10~25℃ | ≤15 days | Battery Pack disconnect to PCS |
| 25~45℃ | ≤7 days | |
| -10~45℃ | < 12 hours | Battery Pack connect to PCS |

### 6.2.3 Replacement or Expand capacity

The maintenance of batteries requires a person with professional skills.

1. Before replacement or expand capacity, please cut off the whole system, include PCS and Battery system; at the same time, PCS is disconnected from the power grid;
2. After PCS is confirmed to be disconnected from the power grid, turn off the battery power supply and disconnect the connection line between the battery and PCS.
3. Remove or install new battery refer to section 5. 4, and then restart refer to section 4. 2. 1.

### 6.2.4 Emergency

Please cut off the power supply and turn off the battery in an emergency.

1. **Wet Batteries**

If the battery pack is wet or submerged in water, do not let people access it, and then contact SOFAR or an authorized dealer for technical support.

2. **Fire**

NO WATER! Only dry powder fire extinguisher can be used; if possible, move the battery pack to a safe area before it catches fire.

3. **Leaking Batteries**

If the battery pack leaks electrolyte, avoid contact with the leaking liquid or gas. If someone is exposed to the leaked substance, immediately perform the actions described below.

Inhalation: Evacuate the contaminated area, and seek medical attention.

Contact with eyes: Rinse eyes with flowing water for 15 minutes, and seek medical attention.

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

Ingestion: Induce vomiting, and seek medical attention.

4. **Damaged Batteries**

Damaged batteries are dangerous and must be handled with the utmost care. They are not fit for use and may pose a danger to people or property. If the battery pack seems to be damaged, pack it in its original container, and then return it to SOFAR or an authorized dealer.

# 7 Datasheet

| Model | SF-16KWH-L1 |
|---|---|
| **System Parameters** | |
| Battery type | LFP |
| Total energy | 16KWh |
| Usable energy | 14.4KWh |
| Rated voltage | 51. 2V |
| Operating voltage range | 44. 8V~57. 6V |
| Rated charging/discharging power | 7.5KW |
| Rated charging/discharging current | 150A |
| Max. charging/discharging current | 150A/200A |
| Max. Parallel Quantity | 16pcs |
| **General Parameters** | |
| Communication | CAN/RS485 |
| Dimension(W*H*D) | 425*860*235mm |
| Dimension with casters(W*H*D) | 425*935*235mm |
| Weight | 115kg |
| Protection rating | IP20 |
| Cooling | Natural |
| Operating temperature | Charge: 0°C ~ +55°C /<br>Discharge: -20°C ~ +60°C |
| Humidity | 5%~95% |
| Installation | Wall Mounted/ Floor Mounted |
| Max. operating altitude | 4000 m |
| **Standard** | |
| UN38. 3, IEC62619, IEC62040-1, SAA etc | |

- Operating current derating according to cell voltage and battery temperature.

ENERGY TO POWER YOUR LIFE

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