
V1.1-20231203

# GRP5.12-WLV Operation Manual

## CONTENTS


| | | |
|---|---|---|
| 1 Technical Data | | 1-2 |
| 2 Product Overview | | 3 |
| 2.1 | Brief Introduction | 3 |
| 2.2 | Interface Introduction | 4 |
| 2.2.1 | Switch ON/OFF | 4-5 |
| 2.2.2 | LED Indicator Definition | 5-6 |
| 2.2.3 | CAN / RS485 Port | 6 |
| 2.2.4 | RS232 Port | 6 |
| 3 Installation Guide | | 7 |
| 3.1 | Checking Before Installation | 7 |
| 3.1.1 | Checking Outer Packing Materials | 7 |
| 3.1.2 | Checking Deliverables | 7-8 |
| 3.2 | Tools | 9 |
| 3.3 | Installation requirements | 9 |
| 3.3.1 | Installation environment requirements | 9 |
| 3.3.2 | Installation carrier requirements | 9 |
| 3.4 | Installation Instructions | 10 |
| 3.4.1 | Dimensions | 10 |
| 3.4.2 | Installation Procedure | 11-14 |
| 4 Maintenance | | 15 |
| 4.1 | Recharge Requirements During Normal Storage | 15 |
| 4.2 | Recharge Requirements When Over Discharged | 16 |

# 01

# TECHNICAL DATA

**NOTE**

Operating current derating according to cell voltage and battery temperature.

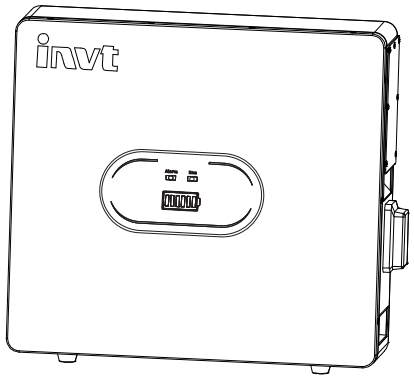

| Performance | |
|---|---|
| Nominal Voltage | 51.2 Vdc |
| Nominal Capacity | 100Ah |
| Battery Energy | 5120 Wh |
| Charge Voltage | 56.16Vdc |
| Discharge Voltage | 44.8 Vdc |
| Nominal Charge / Discharge Current | 50A |
| Nominal Charge / Discharge Power | 2560W |
| Max Charge / Discharge Current | 100A |
| Max Charge / Discharge Power | 5120W |
| Short Circuit Current | 350A/3mS |
| **Communication** | |
| Display | SOC status indicator, LED indicator |
| Communication | RS232、RS485、CAN |
| **General Specification** | |
| Dimension( W×D×Hmm ) | 520×470×141.5mm |
| Weight (Kg) | 47.2kg |
| Installation | Floor stand or Wall mounted |
| Charging Temperature Range | 0℃ ~ 55℃ |
| Discharge Temperature Range | -20℃ ~ 60℃ |
| Operating / Storage / humidity | ≤95%RH |
| Max Operating Altitude | ≤2000m |
| IP Rating | IP65 |
| Cell Technology | $LiFePO_4$, Lithium Iron Phosphate |
| Cycle life | 6000 Cycles @ 80% DOD / 25℃ / 0.5C，60% EOL |
| Scalability | Max 15 batteries in parallel |
| **Standard Compliance** | |
| Certification | CB,IEC62619; GPSD EN62619; CE-EMC, EN61000-6-1/2/3/4,UN38.3;MSDS;RoHS |

1. Test conditions: 100% depth of discharge (DoD), 0.2C rate charge & discharge at 25℃.
2. Charge/discharge derating occurs when the operating temperature from -10℃ to 5℃.& 45℃ to55℃.
3. Condition apply. Refer to GRP5.12-WLV Warranty Letter.

# 02

# PRODUCT OVERVIEW

## 2.1 Brief Introduction



PRODUCT OVERVIEW

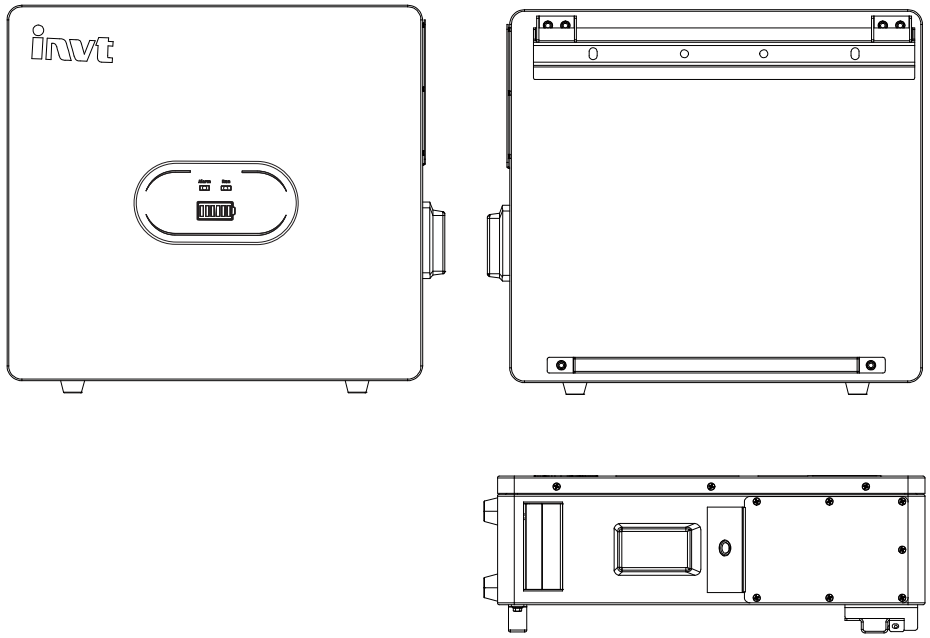
GRP5.12-WLV is a lithium battery with an operating voltage range between 45.6~56.16V. It is designed for residential energy storage applications and works together with a 48v battery hybrid inverter. **GRP5.12-WLV is not suitable for supporting life-sustaining medical devices.**

GRP5.12-WLV has built-in BMS (Battery Management System), which can manage and monitor cells information including voltage, current and temperature. Besides that, 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 GRP5.12-WLV can be connected in parallel to expand capacity and power,15 GRP5.12-WLV can be connected in parallel at most.



## 2.2 Interface Introduction



### 2.2.1 Switch ON/OFF

1. Switch ON

Turn on a single GRP5.12-WLV, turn on the air switch, then press the circular weak current switch (more than 3 seconds) on / off button, the LED flashes and the battery works normally. L1 to L6 display the battery SOC,L7/L8 to indicate the battery status.

For multiple GRP5.12-WLV in parallel, switch ON circular weak current switch on all batteries, long press (more than 3 seconds) ON/OFF button of MASTER battery, LED will flash. battery system will automatically encode and assign ID to each slave battery, then battery system will operate normally.

2. Switch OFF

Press the Circular weak current switch of the master pack for more than 3 seconds and then release the button. When all slave pack are closed, the master pack will be closed (sleep mode). For a single **GRP5.12-WLV**, turn off the Circular weak current switch. For multiple **GRP5.12-WLV** in parallel, turn off the Circular weak current switch on the main battery first. Then turn off the Circular weak current switch on all subordinate batteries

## 2.2.2 LED Indicator Definition

Note:

flash 1 - 0.25s light / 3.75s off

flash 2 - 0.5s light / 0.5s off

flash 3 - 0.5s light / 1.5s off

LED Indicators Instructions

| | | RUN | ALM | Battery Level Indicator | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Status | | L8 | L7 | L6 | L5 | L4 | L3 | L2 | L1 | Descriptions |
| | | | | | | | | | | |
| Shut down | | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | All OFF |
| Standby | | Flash 1 | OFF | According to the battery level | | | | | | Indicates Standby |
| 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 |
| Discharg | Normal | Flash 3 | OFF | According to the battery level | | | | | | |
| | UVP | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | Stop charging |
| | Protection | OFF | Light | OFF | OFF | OFF | OFF | OFF | OFF | Stop discharging |
| Fault | | OFF | Light | OFF | OFF | OFF | OFF | OFF | OFF | Stop charging and Discharging |

Charging Battery Level Indicators Instructions

| Status | | Charging | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Battery Level Indicator | | L8 | L7 | L6 | L5 | L4 | L3 | L2 | L1 |
| | | | | | | | | | |
| Battery Level % ( ) | 0～17% | Light | OFF | OFF | OFF | OFF | OFF | OFF | Flash 2 |
| | 18～33% | | | OFF | OFF | OFF | OFF | Flash 2 | Light |
| | 34～50% | | | OFF | OFF | OFF | Flash 2 | Light | Light |
| | 51～66% | | | OFF | OFF | Flash 2 | Light | Light | Light |
| | 67～83% | | | OFF | Flash 2 | Light | Light | Light | Light |
| | 84～100% | | | Flash 2 | Light | Light | Light | Light | Light |
| | Full Charged | | | Light | Light | Light | Light | Light | Light |

Discharging Battery Level Indicators Instructions

| Status | | Discharge | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Battery Level Indicator | | L8 | L7 | L6 | L5 | L4 | L3 | L2 | L1 |
| | | | | | | | | | |
| Battery Level (%) | 0～17% | Flash 3 | OFF | OFF | OFF | OFF | OFF | OFF | Light |
| | 18～33% | | | OFF | OFF | OFF | OFF | Light | Light |
| | 34～50% | | | OFF | OFF | OFF | Light | Light | Light |
| | 51～66% | | | OFF | OFF | Light | Light | Light | Light |
| | 67～83% | | | OFF | Light | Light | Light | Light | Light |
| | 84～100% | | | Light | Light | Light | Light | Light | Light |

## 2.2.3 CAN / RS485 Port

CAN / RS485 Communication Terminal (RJ45 port), connect to inverter, follow CAN / RS485 protocol.

| PIN | Definition |
|---|---|
| Pin 1、Pin 8 | RS485-B ( to PCS, reserved ) |
| Pin 2、Pin 7 | RS485-A ( to PCS, reserved ) |
| Pin 3 | NC |
| Pin 4 | CANH ( to PCS ) |
| Pin 5 | CANL ( to PCS ) |
| Pin 6 | GND |

## 2.2.4 RS232 Port

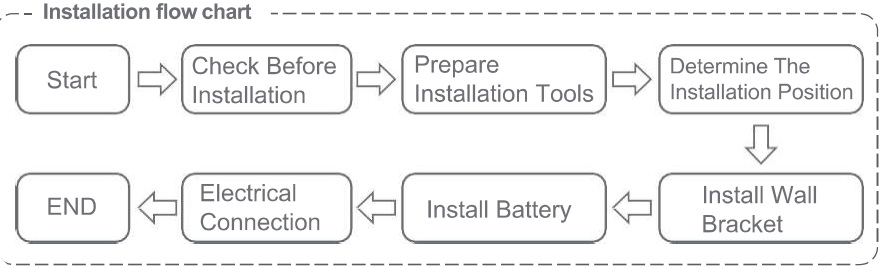
RS232 Communication Terminal (RJ45 port) follow RS232 protocol, for manufacturer or professional engineer to debug or service.

| PIN | Definition |
|---|---|
| Pin 1、Pin 8 | GND |
| Pin 2、Pin 7 | RS232_TX |
| Pin 3、Pin 6 | RS232_RX |
| Pin 4、Pin 5 | NC |

# 03

# INSTALLATION GUIDE

**Installation flow chart**




## 3.1 Checking Before Installation

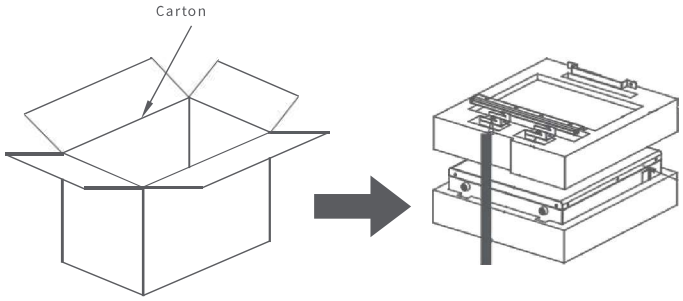
### 3.1.1 Checking Outer Packing Materials

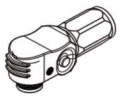
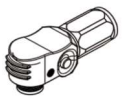
Packing materials and components may be damaged during transportation. Therefore, check the outer packing materials before installing the battery. Checking the surface of packing materials for damage, such as holes and cracks. If any damage is found, do not unpack the battery and contact the dealer as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

### 3.1.2 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 of accessories | Quantit | Uses |
|---|---|---|---|
| 1 |  | 1 | Battery box |
| 2 |  | 1 | Wall mounting bracket |
| 3 |  | 2 | Hanging bracket |
| 4 |  | 1 | Bottom support bracket |
| 5 |  | 1 | Parallel terminals |
| 6 |  | 1 | Parallel terminals |
| 7 |  | 1 | Power Line |
| 8 |  | 1 | Connet cable |

| No. | Pictures of accessories | Quantit | Uses |
|---|---|---|---|
| 9 |  | 4 | Lock Wall Pendant |
| 10 |  | 10 | Ground screw |
| 11 |  | 4 | RJ45 Crystal head |
| 12 |  | 2 | Communication network cable |
| 13 |  | 2 | Desiccant |
| 14 |  | 1 | User manual |
| 15 |  | 1 | Outgoing Inspection Report |

## 3.2 Tools

| Tools | | | |
|---|---|---|---|
| Installation | Knife  | Measuring tape  | Socket wrench （10/16mm）  |
| | Rubber mallet  | Cross Screwdriver  | Hammer drill（10mm）  |
| Protection | ESD gloves  | Safety goggles  | Anti-dust respirator  |
| | Safety shoes  | | |

## 3.3 Installation requirements

### 3.3.1 Installation environment requirements

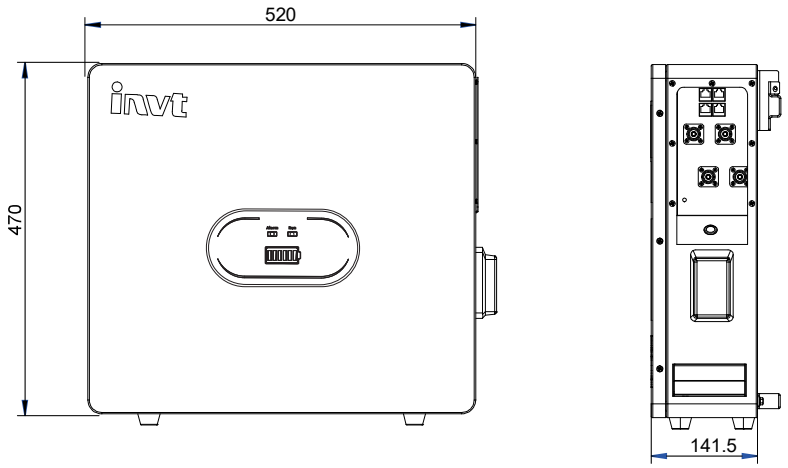
- Install the battery in the indoor environment.
- Place battery in secure location away from children and animals.
- Do not place the battery near any heat sources and avoid sparks.
- Do not expose the battery to moisture or liquids.
- Do not expose the battery to direct sunlight.

### 3.3.2 Installation carrier requirements

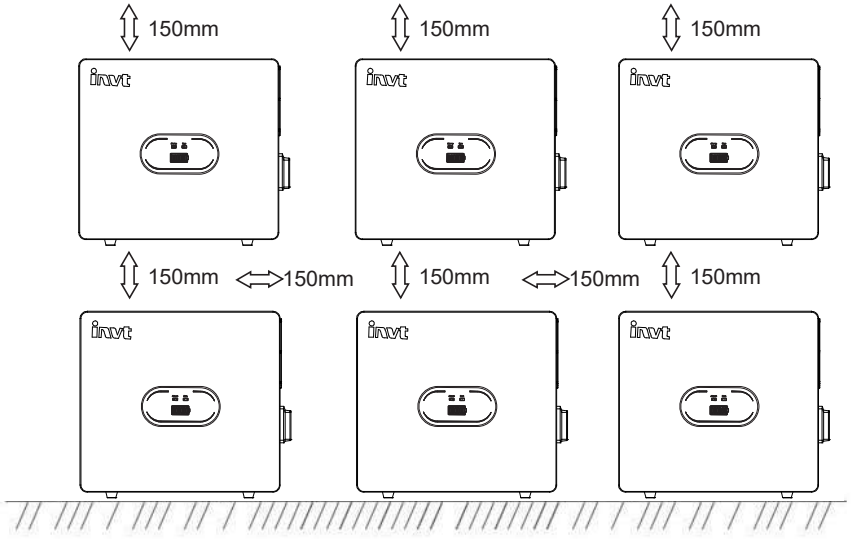
- Only mount battery on fire resistant building. Do not install batteries on flammable buildings.
- Battery is quite heavy, make sure the wall/ground can meet the load bearing requirements.

## 3.4 Installation Instructions

### 3.4.1 Dimensions



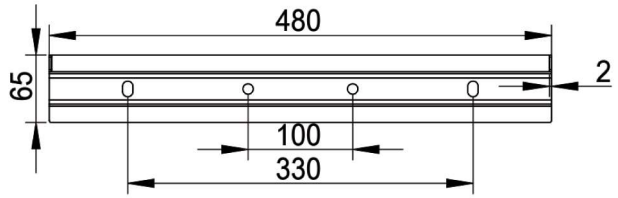

Minimum mounting distance between battery pack and equipment:



### 3.4.2 Installation Procedure

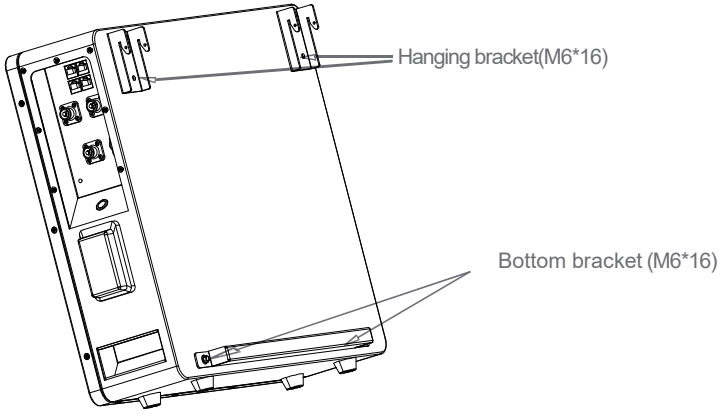
**STEP 1**

Drill the hole with an 10mm drill bit as follows and fix the wall bracket to the wall.



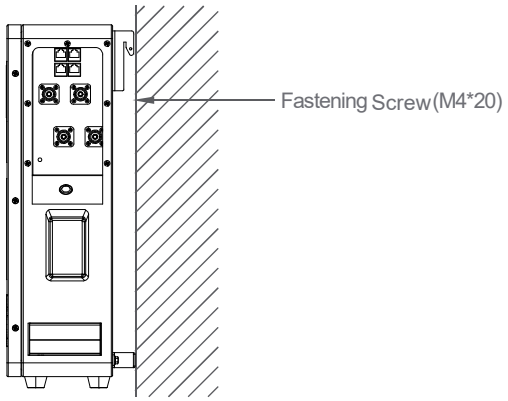

**STEP 2**

Install the hanging bracket.



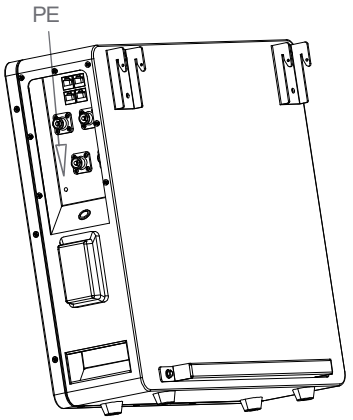

**STEP 3**

Hang GRP5.12-WLV on the wall bracket and tighten it.



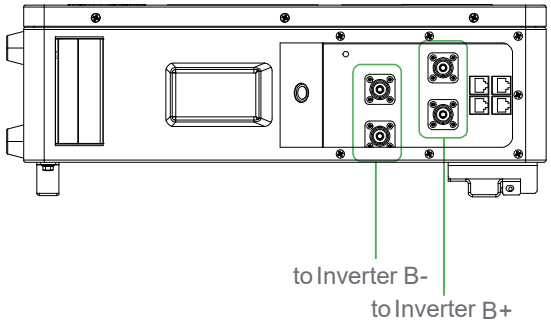

**STEP 4**

Connect to ground.



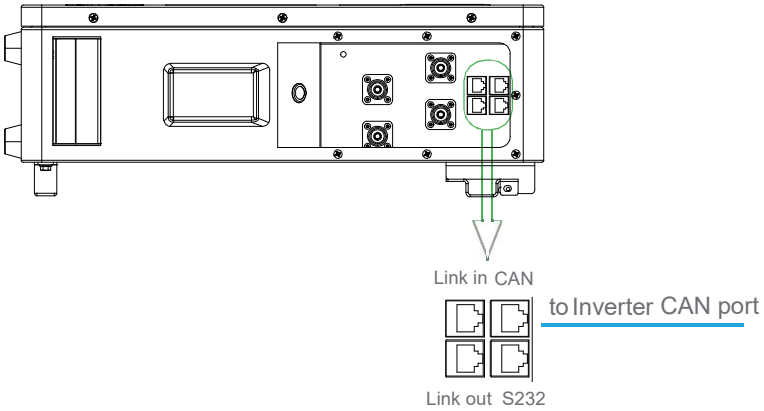
## STEP 5

Connect power cable.



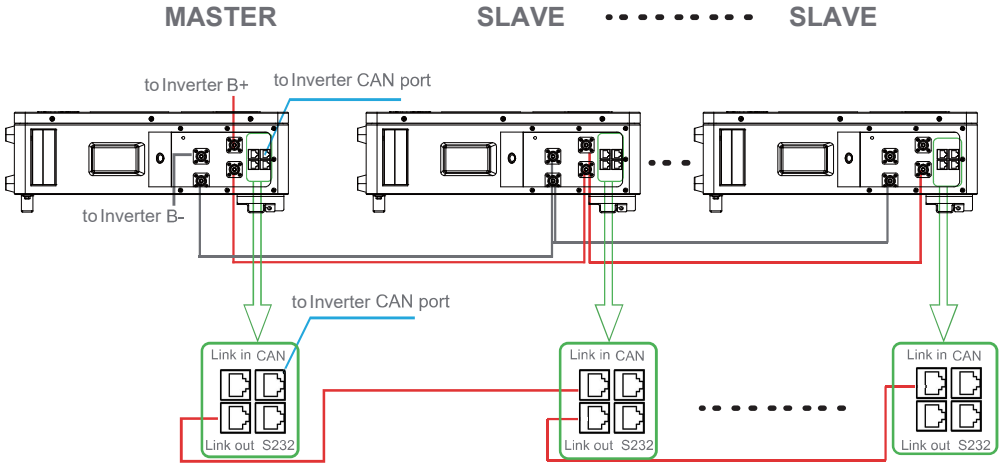

## STEP 6

Connect communication cable.




## STEP 7

When multiple batteries are connected in parallel, follow the following wiring mode.



# 04

# MAINTENANCE

## 4.1 Recharge Requirements During Normal Storage

Battery should be stored in an environment with temperature range between -10°C ~+45°C, and maintained regularly according to following table with 0.5C (25A) current till 40% SOC after long storage time.

**Recharge Conditions When In Storage**

| Storage Environment Temperature | Relative Humidity of Storage Environment | Storage Time | SOC |
|---|---|---|---|
| Below -10℃ | / | prohibit | / |
| -10~25℃ | 5%~70% | ≤12 months | 30%≤SOC≤60% |
| 25~35℃ | 5%~70% | ≤6 months | 30%≤SOC≤60% |
| 35~45℃ | 5%~70% | ≤3 months | 30%≤SOC≤60% |
| Above 45℃ | / | prohibit | / |

## 4.2 Recharge Requirements When Over Discharged

Over discharged (90% DOD) battery should be recharged according to following table, otherwise over discharged battery will be damaged.

**Recharge conditions when battery is over discharged**

| Storage Environment Temperature | Storage Time | Note |
|---|---|---|
| -10~25℃ | ≤15 days | Battery Pack disconnected from to Inverter |
| 25~35℃ | ≤7 days | |
| 35~45℃ | <12 hours | Battery Pack connected to Inverter |