

# USER GUIDER

**5U LiFePO4 Battery of 51.2V100Ah**

**3.5ULiFePO4 Battery of 51.2V75Ah**

**3ULiFePO4 Battery of 51.2V50Ah**

**For Household Solar Storage System**



## 1. Battery specifications

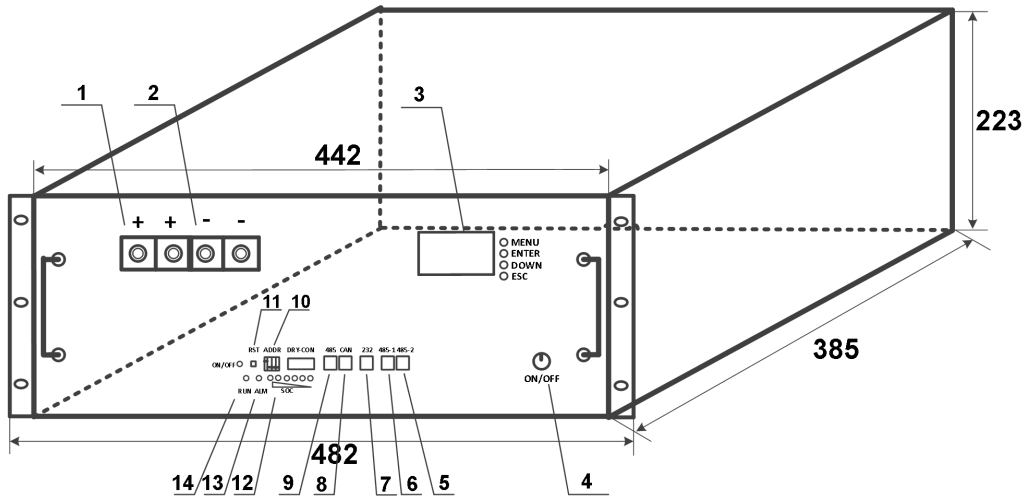
Battery Specifications			
Model No	BAT-51.2V100AH-A3	BAT-51.2V75AH-A3	BAT-51.2V50AH-A3
Nominal Parameters			
Voltage	51.2V	51.2V	51.2V
Capacity	100Ah	75Ah	50Ah
Energy	5.12KWh	3.84KWh	2.56KWh
Dimensions(W*D*H)/mm	442*385*223mm / 5U	442*450*158mm/3.5U	442*385*133/3U
Weight	50kg	38.5kg	35kg
Basic Parameters			
Storage time/temperature	3 months @ 25°C ; 2 months @35°C; 1 month @ 45°C		
Operation temperature	-10°C~60°C @ 60±20% Relative Humidity		
Storage temperature	0°C~45°C @ 60±20% Relative Humidity		
Protection grade	IP21		
Electrical Parameters			
Operation voltage	51.2Vdc		
Max. charging voltage	57 Vdc		
Cut-off discharge voltage	43 Vdc		
Max. charging current	50A	35A	10A
Max. discharging current	100A	75A	50A
Communication type	RS485/CAN		

## 2. Introduction of the battery

### 2.1 Key Features

- ◆ LiFePO4 battery
- ◆ 51.2V100Ah(5.12KWh)/51.2V75AH(3.84KWh)/51.2v50AH\*(2.56KWh)
- ◆ Embedded smart BMS with OVP/UVP/DOCP/COCP/SCP/OTP protection and balance
- ◆ RS485&CAN communication interface
- ◆ 5U case/3.5U case/3U case

## 2.2 Interface Introduction



No.	Name	Silk-screen	Remark
1	Positive	+	M8 screw nut/Red
2	Negative	-	M8 screw nut/Black
3	LCD display		
4	Power button	ON/OFF	Output breaker
5	RS485 parallel port	485-2	Parallel communication port
6	RS485 parallel port	485-1	Parallel communication port
7	RS232 port	RS232	
8	CAN	CAN	Battery and inverter communication port
9	RS485	485	Battery and inverter communication port
10	Dial switch	ADDR	Set the battery address
11	Reset button	RST	Reset the BMS
12	SOC LED	SOC	State of Charge
13	ALM LED	ALM	Operation indicator
14	RUN LED	RUN	Alarm indicator

## 2.3 LED Indicator Guides

### ◆ Status indicator

State	Normal /Warning /Protection	RUN	ALM	SOC						Description
		●	●	●	●	●	●	●		
Shut down	Sleep	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ALL OFF
Standby	Normal	Flash1	OFF	Based on capacity						Standby

	Alarm	Flash1	Flash3							Low voltage	
Charge	Normal	ON	OFF	Based on capacity						High LED flash2	
	Warning	ON	Flash3	(High LED Flash2)							
	Over Charge Protection	ON	OFF	ON	ON	ON	ON	ON	ON	Switch to standby when there is no charging	
	Over temperature /Over current /Fail protection	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	Stop charging
Discharge	Normal	Flash3	OFF	Based on capacity							
	Warning	Flash3	Flash3								
	Over Discharge Protection	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	Stop discharging
	Over temperature /Over current /Short circuit /Fail protection	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	Stop discharging
Fault	/	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	Stop charging or discharging

◆ SOC indicator

Status		Charge						Discharge					
SOC indicator		●L6	●L5	●L4	●L3	●L2	●L1	●L6	●L5	●L4	●L3	●L2	●L1
SOC (%)	0-16.6%	OFF	OFF	OFF	OFF	OFF	Flash2	OFF	OFF	OFF	OFF	OFF	ON
	16.6-33.2%	IFF	OFF	OFF	OFF	Flash2	ON	OFF	OFF	OFF	OFF	ON	ON
	33.2-49.8%	OFF	OFF	OFF	Flash2	ON	ON	OFF	OFF	OFF	ON	ON	ON
	49.8-66.4%	OFF	OFF	Flash2	ON	ON	ON	OFF	OFF	ON	ON	ON	ON
	66.4-83.0%	OFF	Flash2	ON	ON	ON	ON	OFF	ON	ON	ON	ON	ON
	83.0-100%	Flash2	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON
RUN indicator		ON						Flash3					

**Note:** Flash way

Flash way	ON	OFF
Flash1	0.25S	3.75S
Flash2	0.5S	0.5S

Flash3	0.5S	1.5S
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## 2.4 Connectors

Charge/Discharge connectors: to connect the positive pole (+) and negative pole (-) from the battery to the inverter via DC isolator.

RS485/CAN: Active communication portal between battery and inverter.

USB To RS485-1: to get dynamic monitoring data of the battery from upper computer.

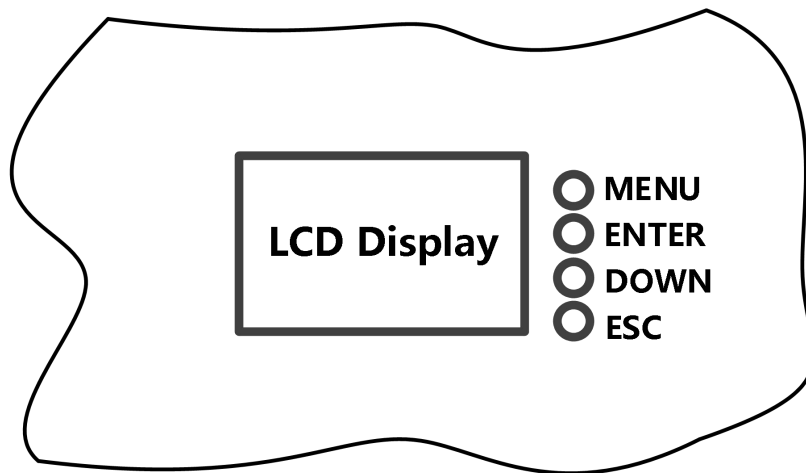
Address: Reserved Address portal for multiple parallel connections.

## 2.5 Wake up button

Battery On: When battery is shut down, press this RST button for 3 seconds. It is activated when the LED lights flicker from RUN light to the lowest capacity indicator.

Battery off: When battery is activated, press this button for 3 seconds. It will be shut down when the LED lights flicker from lowest capacity indicator to RUN light.

## 2.6 LCD Display Introduction

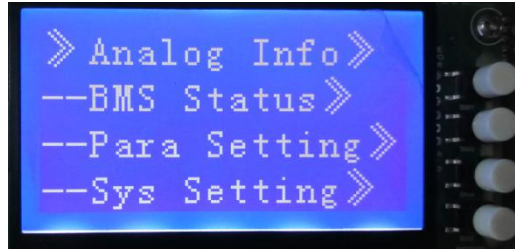


### 2.6.1 Screen Display



## 2.6.2 Function Specifications

### ◆ Menu page



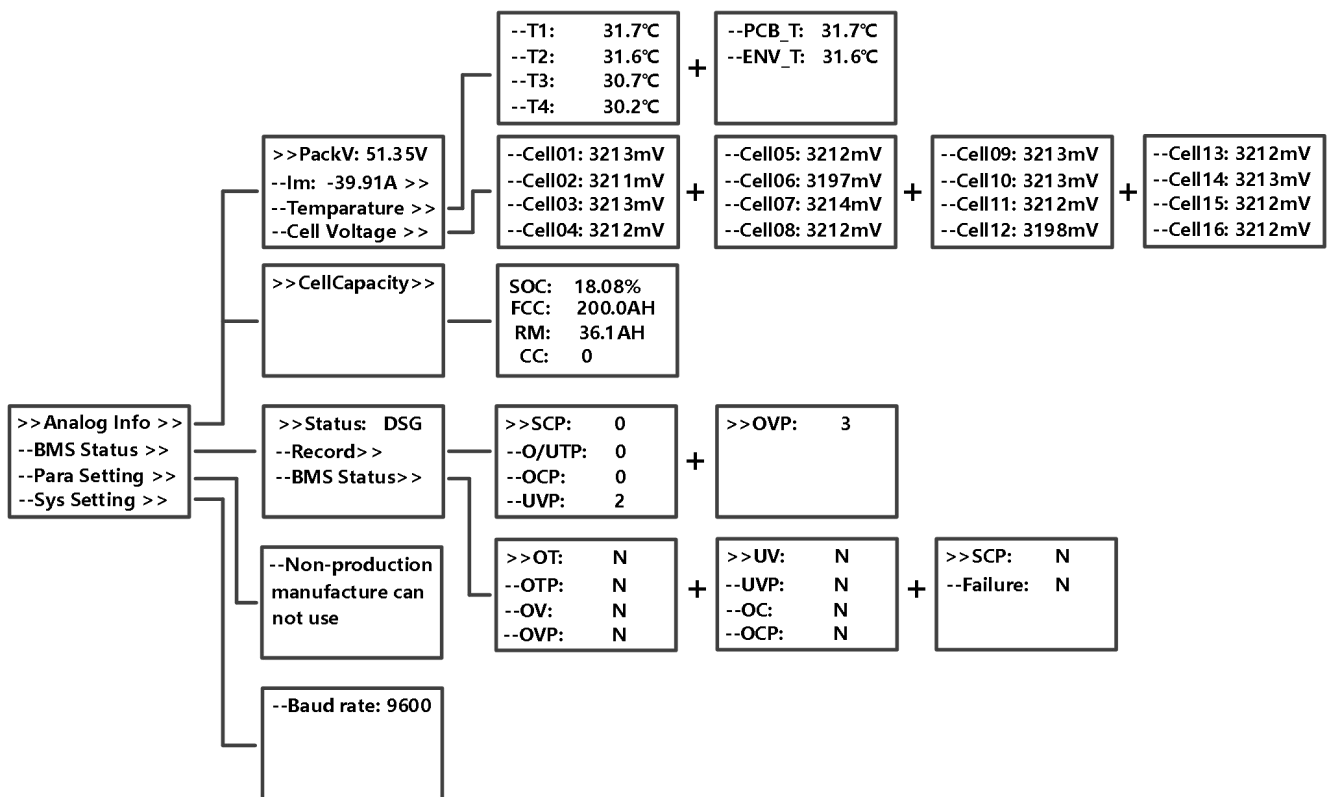
### ◆ Analog Info(PackV/Im/Temperature/Cell Voltage)

### ◆ BMS Status(Status/Record/BMS Status)

### ◆ Para Setting

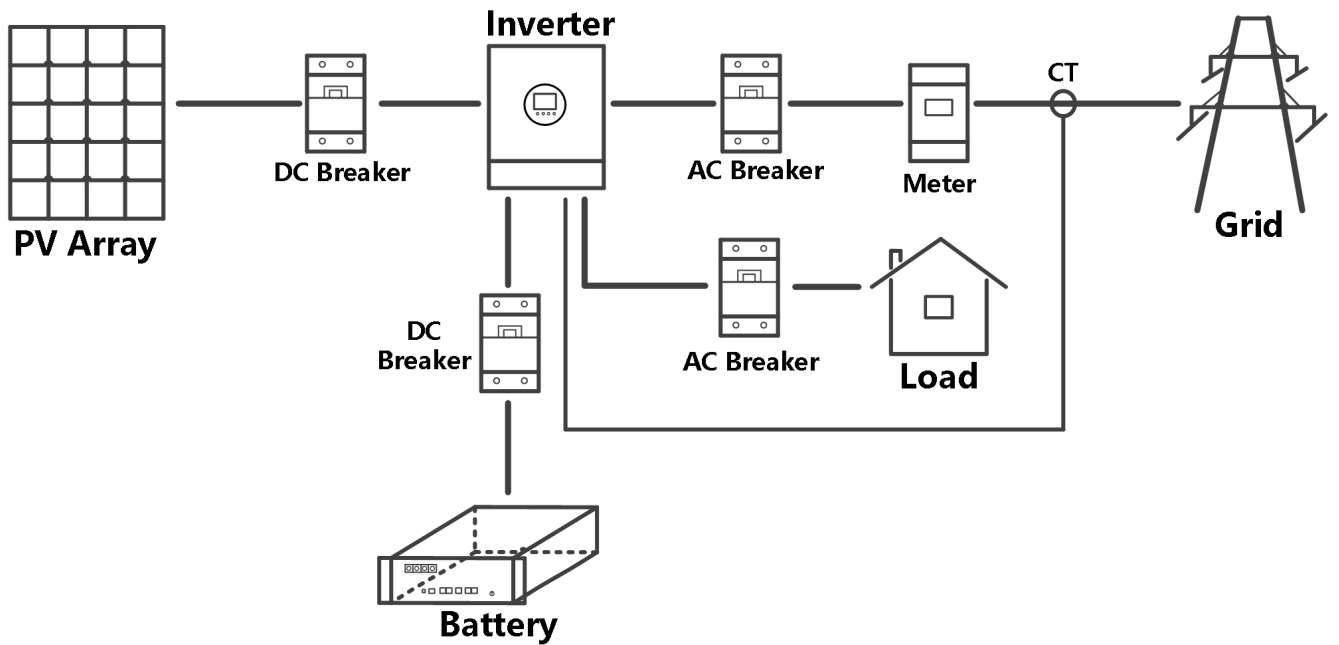
### ◆ Sys Setting

Function diagram is as follows:



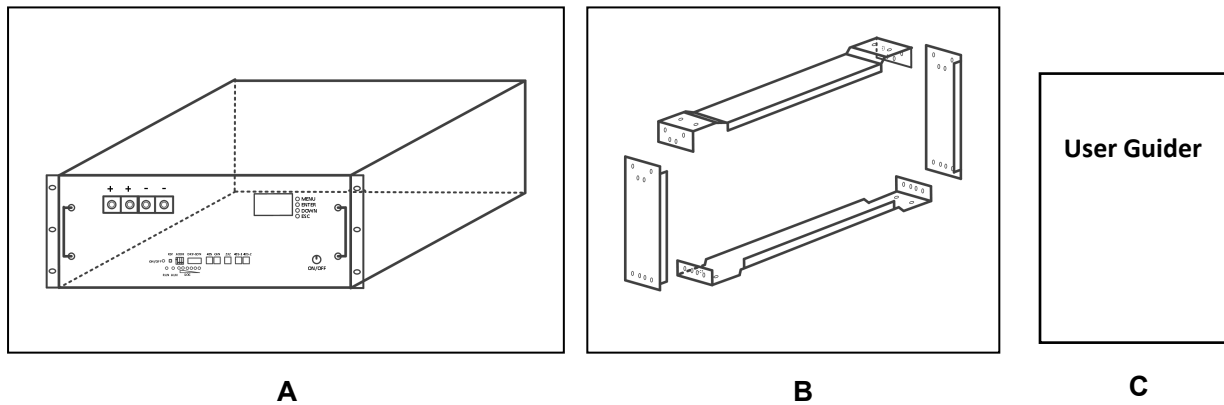
## 3. Safe handling guide

### 3.1 System Diagram



## 4. Installation

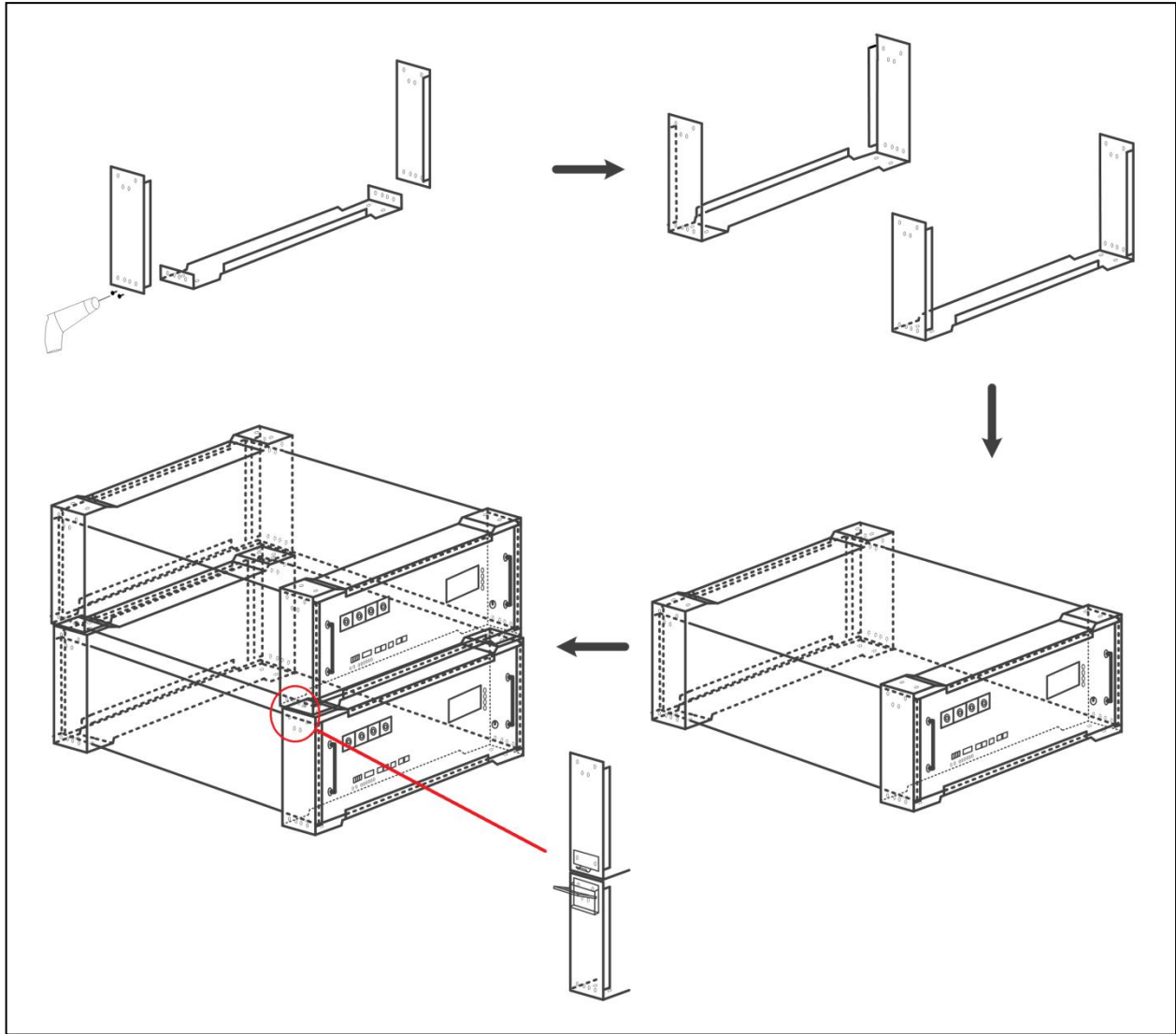
### 4.1 Inventory of items



NO.	Item	Quantity	Specification
A	Battery Pack	1	51.2V100Ah
B	Battery Holder	1	SPCC
E	User Guider	1	This document
	Power Cable (1.0m)	2	6AWG Wire - M8
	Communication Cable	1	Cable with RJ45 connecotor

## 4.2 Installing the Battery Pack

Order of the battery holder installation is as follows.



## 4.3 Parallel use of battery

### ◆ Parallel use of battery (All off grid solar inverters)

Powerwall battery is a smart battery to match all off grid solar inverter (48VDC) types. When the battery needs to be used in parallel, the maximum connection is 15 units, but we recommend 2-8 units according to application.

#### **CAUTION**

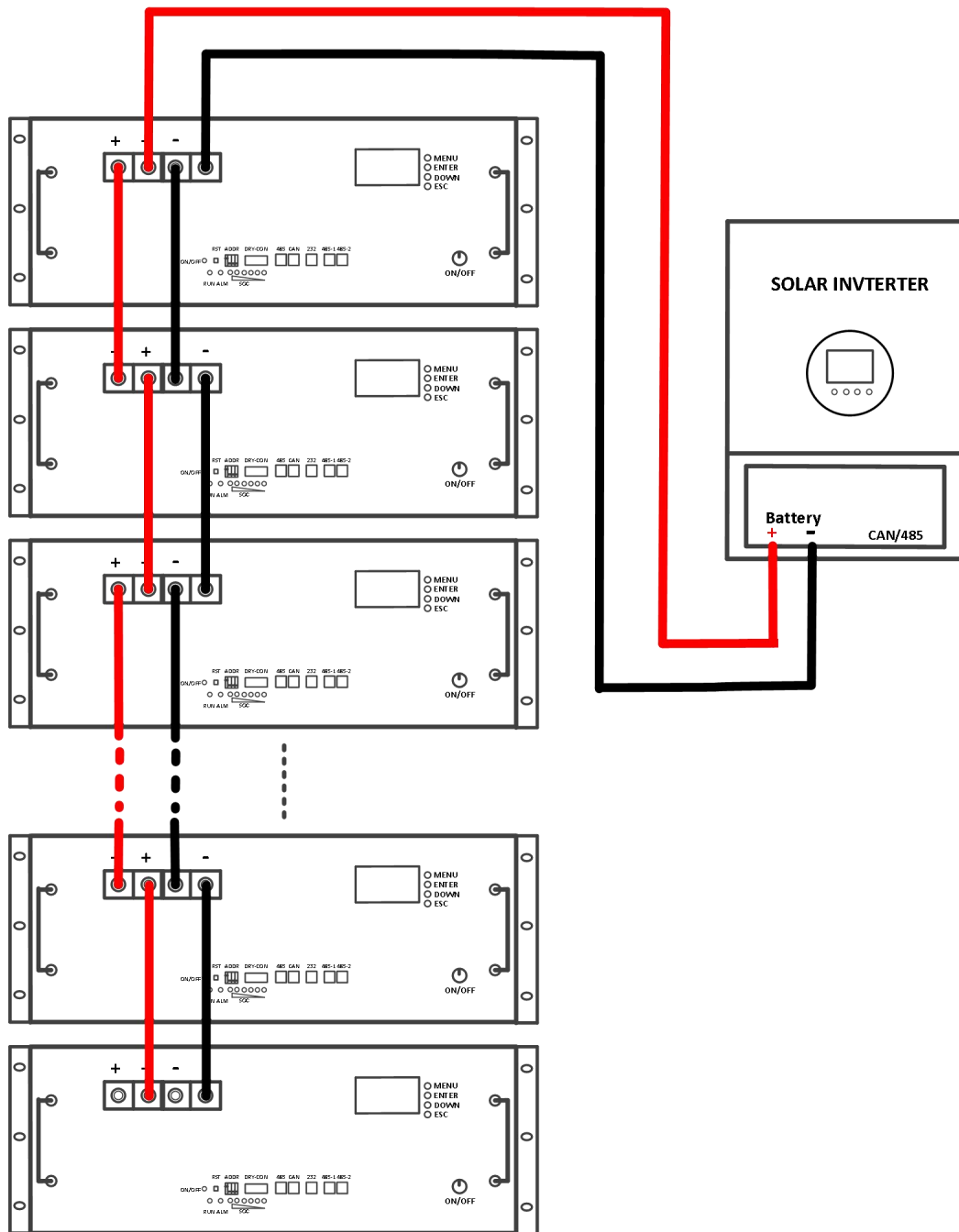
Falling equipment can cause serious or even fatal injury: never mount the inverter on the bracket unless you are sure that the mounting frame is firmly mounted on the wall after thorough checking.

When connecting with off grid 48VDC solar inverters, it does not need to add CAN/RS485 communication cables with inverters, if inverter brand factory does not have CAN/RS485 port, just plug and play use.

**NOTE:** Parallel power cable standard is **1 meter**. This is not standard cable in battery package.

For parallel cable quantity needed, please consult with sales manager for proper use and related quantity.





◆ **Parallel use of battery ( All hybrid on-off grid solar inverters )**

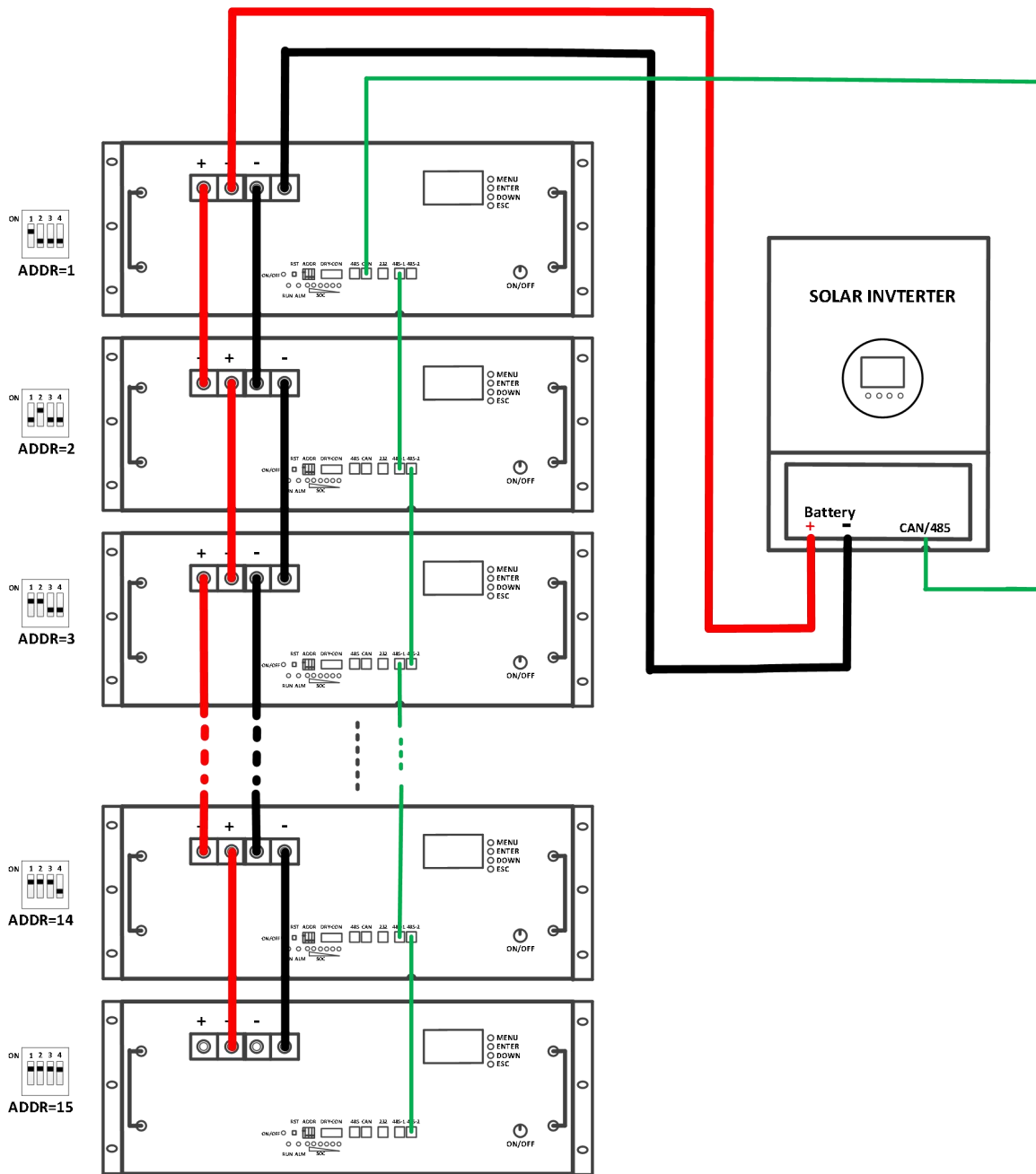
When the battery needs to be used in parallel, the maximum connection is 15 units.

with hybrid solar inverter, but we recommend to use 2-8 units according to application.

The application needs power and communication connections as below, choose suitable parallel power cables and related connectors.

**NOTE:** Parallel power standard is **1 meter**. This is not standard cable in battery package.

For **inverter communication** and parallel cable issue, please consult related factory for proper use and related quantity.



## RS485/CAN Matched Hybrid Inverter brands

### ◆ Battery Address Guideline

The battery address of Dial switch (Dial SW) setting is as follows.

ADDR	1234	Dial SW	ADDR	1234	Dial SW	ADDR	1234	DIP	ADDR	1234	Dial SW
0	0000		4	0010		8	0001		12	0011	
1	1000		5	1010		9	1001		13	1011	
2	0100		6	0110		10	0101		14	0111	
3	1100		7	1110		11	1101		15	1111	

## 5. Warning

It is very important and necessary to read the user guider carefully before installing or using the battery. Failure to follow any of the instructions or warnings in this document can result in electrical shock, serious injury, death, or may damage the battery and the whole system.

- ◆Do not short shirt positive and negative with wire or metal objects.
- ◆If the battery is stored for a prolonged time, it is requirement that they are charged every three to six months, and the SOC should be no less than 60%.
- ◆The battery needs to be recharged within 12 hours, after fully discharging.
- ◆All battery terminals must be disconnected before maintenance.
- ◆Do not expose the battery to flammable or harsh chemicals or vapors.
- ◆Do not paint any part of the battery, include any internal or external components.
- ◆Do not connect battery with PV solar wiring directly.
- ◆Any foreign object is prohibited to be inserted into any part of the battery.
- ◆Any warranty claims are excluded for direct or indirect damage due to items above.

### 5.1 Before Connecting

After unpacking, please check the battery and packing list first, if the battery is damaged or spare parts are missing, Please contact the dealer.

Before installation, be sure to cut off the grid power and make sure the battery is in the turned-off mode; Wiring must be correct, do not mix-connect the positive and negative cables, and ensure no short circuit with the external device;

It is prohibited to connect the battery with AC power directly;

The embedded BMS in the battery is designed for 48VDC, please Do not connect battery in series;

It is prohibited to connect the battery with different type of battery;

Please ensure the electrical parameters of battery system are compatible to inverter;

Keep the battery away from fire or water.

### 5.2 During operation

If the battery system needs to be moved or repaired, the power must be cut off first and the battery is completely shut down;

It is prohibited to connect the battery with different type of battery;

It is prohibited to put the batteries working with faulty or incompatible inverter;

In case of fire, only dry powder fire extinguisher can be used, liquid fire extinguishers are prohibited;

Please do not open, repair or disassemble the battery. We do not undertake any consequences or related responsibility due to violation of safety operation or violating of design, production and equipment safety standards.

## 6. Product warranty

6.1 If you have purchased this product from factory, you should be aware that this warranty is provided in addition to other rights and remedies held by a consumer at law.

6.2 You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

6.3 For the above mentioned products, you receive the factory warranty valid for 3-5 years from the date of delivery from factory. The factory warranty covers any costs for repair or spare parts during the agreed period beginning on the date of delivery of the device, subject to the following conditions.

### 6.4 Factory Warranty Scope

The factory warranty does not cover damages caused by following reasons:

- ◆ Breaking the product seal (the casing opened)
- ◆ Transport damage
- ◆ Incorrect installation or commissioning
- ◆ Failure to observe the user manual, quick installation instructions
- ◆ Incorrect usage or inappropriate operation
- ◆ Insufficient ventilation of the device
- ◆ Failure to observe the applicable safety regulations
- ◆ Force majeure

Neither does it cover cosmetic defects which do not influence the energy production.

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