Shenzhen Litu New Energy Technology Co.,Ltd

User Manual

For On / Off Hybrid Solar Storage System

YP5KWH UNIT (15S 48V-4.8Kwh /16S 51.2V-5.12Kwh)

YP7KWH UNIT (15S 48V-7.2Kwh / 16S 51.2V-7.68Kwh)

YP10KWH UNIT (15S 48V-9.6Kwh / 16S 51.2V-10.24Kwh)

YP15KWH UNIT (51.2V 300AH – 15Kwh)

YP20KWH UNIT (51.2V 400AH – 20Kwh)

Contents

1.Safety Precautions

- It is very important and necessary to read the user manual 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.
- 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 80%.
- The battery needs to be recharged within 12 hours, after fully discharging.
- Do not expose cable outside.
- All battery terminals must be disconnected before maintenance.
- Do not use cleaning solvents to clean the battery.
- 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.

1.1.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.

1.2.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.

2.Battery Specifications

Battery Specifications			
Model No	**YP PW-5KW**	**YP PW-7KW**	**YP PW-10KW**
Nominal Parameters			
Voltage	48 V	48 V	48 V
Capacity	100Ah	150Ah	200Ah
Energy	4.8 KwH	7.2 KwH	9.6 KwH
Dimensions (L x W x H)	740*530*200mm	740*530*200mm	740*530*200mm
Weight	58.5kg	75.0 kg	96.5kg
Basic Parameters			
Life time(25°C)	20 years		
Life cycles(80% DOD, 25°C)	6000 Cycles		
Storage time / temperature	5 months @ 25°C; 3 months @ 35°C; 1 month @ 45°C		
Operation temperature	-20°C to 60°C @60+/-25% Relative Humidity		
Storage temperature	0°C to 45°C @60+/-25% Relative Humidity		
Lithium Battery Standard	UL1642(Cell) , IEC62619,UN38.3, MSDS ,CE-EMC		
Enclosure protection rating	IP21		
Electrical Parameters			
Operation voltage	48 Vdc	48 Vdc	48 Vdc
Max. charging voltage	54 Vdc	54 Vdc	54 Vdc
Cut-off Discharge Voltage	42 Vdc	42 Vdc	42 Vdc
Max. charging and discharging current	100A(4800W)	120A(5760W)	120A(5760W)
PHOTO			

Battery Specifications			
Model No	**YP PW5KW**	**YP PW-7KW**	**YP PW-10KW**
Nominal Parameters			
Voltage	51.2V	51.2V	51.2V
Capacity	100Ah	150Ah	200Ah
Energy	5.12KwH	7.68KwH	10.24KwH
Dimensions (L x W x H)	740*530*200mm	740*530*200mm	740*530*200mm
Weight	60.50kg	78.0 kg	105.5kg
Basic Parameters			
Life time(25°C)	20 years		
Life cycles (80% DOD, 25°C)	6000 Cycles		
Storage time / temperature	5 months @ 25°C; 3 months @ 35°C; 1 month @ 45°C		
Operation temperature	-20°C to 60°C @60+/-25% Relative Humidity		
Storage temperature	0°C to 45°C @60+/-25% Relative Humidity		
Lithium Battery Standard	UL1642(Cell), IEC62619, UN38.3, MSDS, CE-EMC		
Enclosure protection rating	IP21		
Electrical Parameters			
Operation voltage	51.2 Vdc	51.2 Vdc	51.2 Vdc
Max. charging voltage	58 Vdc	58 Vdc	58 Vdc
Cut-off Discharge Voltage	46 Vdc	46 V dc	46 Vdc
Max. charging and discharging current	100A(5120W)	120A(5760W)	120A(5760W)
PHOTO			

Battery Specifications			
Model No	**YP4850-2.4KWH**	**YP 51300-15KWH**	**YP51400-20KWH**
Nominal Parameters			
Voltage	48V	51.2V	51.2V
Capacity	50Ah	300Ah	400Ah
Energy	2.4KwH	15.36KwH	20.48KwH
Dimensions (L x W x H)	535 x 442 x 190 mm	920 x 220 x 730 mm	920 x 220 x 730 mm
Weight	30kg	150 kg	250 kg
Basic Parameters			
Life time(25°C)	20 years		
Life cycles(80% DOD, 25°C)	6000 Cycles		
Storage time / temperature	5 months @ 25°C; 3 months @ 35°C; 1 month @ 45°C		
Operation temperature	-20°C to 60°C @60+/-25% Relative Humidity		
Storage temperature	0°C to 45°C @60+/-25% Relative Humidity		
Lithium Battery Standard	UL1642(Cell), IEC62619,UN38.3, MSDS ,CE-EMC		
Enclosure protection rating	IP21		
Electrical Parameters			
Operation voltage	48 Vdc	51.2 Vdc	51.2 Vdc
Max. charging voltage	54 Vdc	58 Vdc	58 Vdc
Cut-off Discharge Voltage	40 Vdc	46 V dc	46 Vdc
Max. charging and discharging current	50A	200A	200A
PHOTO			

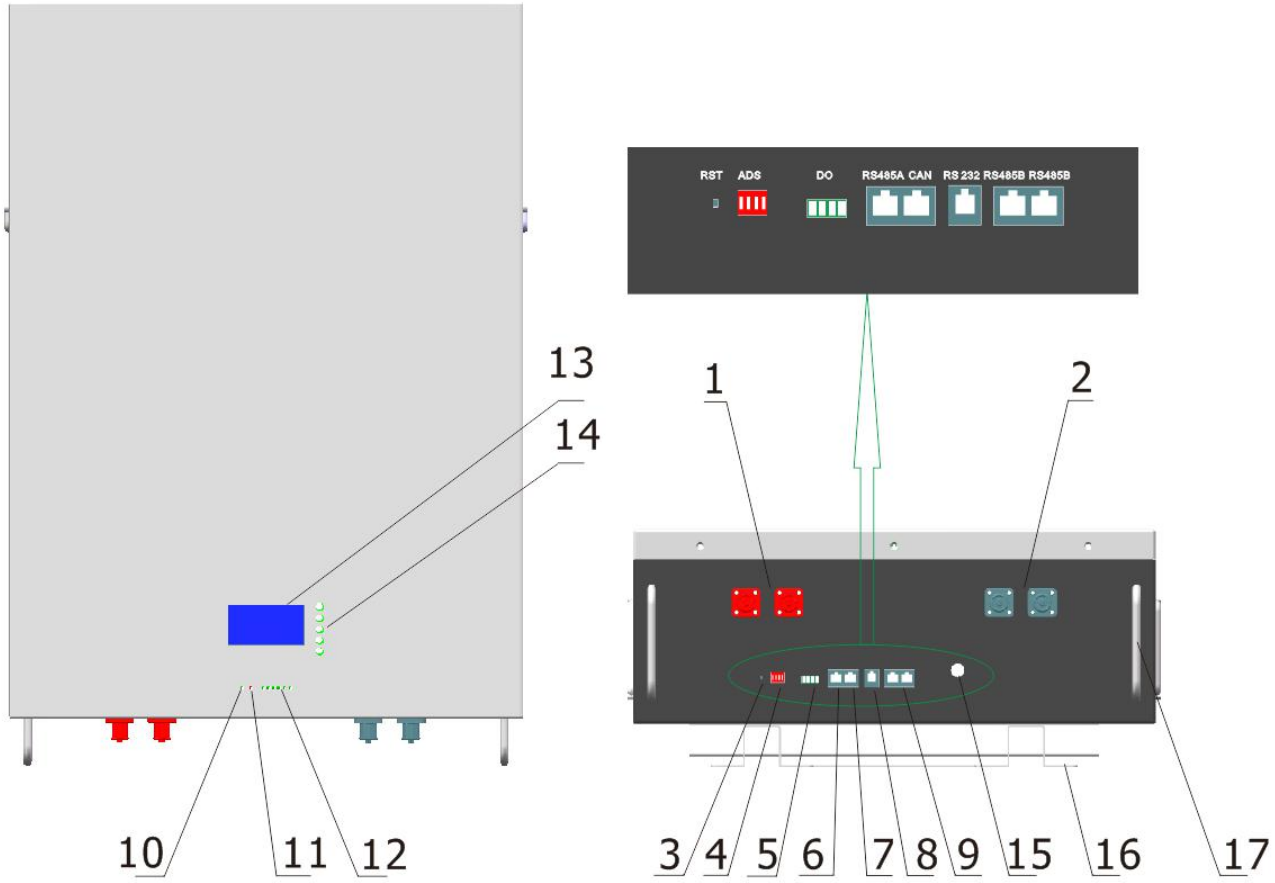
3.Introduction to the battery

3.1.Key Features

- ●LiFePO4 composition – provides exceptional safety and longevity
- ●High safety and reliability
- ●6,000cycles / 20 year service life
- ●Consistent performance over wide temperature range
- ●Wall-mounted, convenient installation
- ●Integrated state-of-the-art BMS to manage and monitor battery information including voltage, current and temperature as well as balance cell charging/discharging rates
- ● 5-10 years warranty

3.2.Interface Introduction

- ●This section details the interface functions of front and back panel.
- ●Front interface:



●No.	●Description	●Silk-screen	●Remark
●1	●UES0600	●P+ P+	●Output terminal
●2	●UES0600	●P- P-	●Output terminal
●3	●port Reset button	●RST	●For reset the batter
●4	●Dial switch	●ADS	●Set the address

●5	●Do	●	●
●6	●CANbus Port	●CANbus	●CANbus and inverter connection port
●7	●RS485A Port	●RS485	●RS485 and inverter connection port
●8	●RS232 Port	●RS232	●RS232 communication port
●9	●RS485B port	●RS485	●RS485 parallel
●10	●LED	●RUN	●Operation indicator
●11	●LED	●ALM	●Alarm indicator
●12	●LED	●CAPACITY	●Capacity indicator
●13	●LCD	●	●
●14	●LCD Key	●	●
●15	● switch	●	●
●16	●Bracket	●	●
●17	●Handle	●	●

3.3.SOC Indicator & Status Indicator Guides

●Chart 1: Battery Status

Status	Normal/ Warning/ Protection	RUN	ALM	Capacity（SOC） LED						Description
		●	●	●	●	●	●	●	●	
Shut Down	Shut down	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	All OFF
Standby	Normal	Flash	OFF	Based on capacity						Standby
	Warning	Flash	Flash							
Charge	Normal	ON	OFF	Based on capacity						ALM light does not flash when overcharge alarm
	Warning	ON	Flash							
	Over Charge Protection	ON	OFF	ON	ON	ON	ON	ON	ON	Switch to standby when there is no charging
	Temperature, Current, Failure protection	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	Stop charging
Discharge	Normal	Flash	OFF	Based on capacity						
	Warning	Flash	Flash							
	Over discharge protection	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	Stop discharging

	Temperature, Over current, Short circuit, Reverse connection, Failure protection	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	Stop discharging
Fault	/	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	Stop charging or discharging

●Chart 2: Battery Capacity

Status		Charging						Discharging					
Capacity LED Indicator		L6	L5	L4	L3	L2	L1	L6	L5	L4	L3	L2	L1
Capacity	0～16.6%	OFF	OFF	OFF	OFF	OFF	Flash	OFF	OFF	OFF	OFF	OFF	ON
	16.6～33.2%	OFF	OFF	OFF	OFF	Flash	ON	OFF	OFF	OFF	OFF	Flash	ON
	33.2～49.8%	OFF	OFF	OFF	Flash	ON	ON	OFF	OFF	OFF	Flash	ON	ON
	49.8～66.4%	OFF	OFF	Flash	ON	ON	ON	OFF	OFF	Flash	ON	ON	ON
	66.4～83.0%	OFF	Flash	ON	ON	ON	ON	OFF	Flash	ON	ON	ON	ON
	83.0～100%	Flash	ON	ON	ON	ON	ON	Flash	ON	ON	ON	ON	ON
RUN Status		NO						Flash					

3.4.Connectors

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

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

USB To RS232: to get dynamic monitoring data of the battery from upper computer.

Address: Reserved Address portal for multiple parallel connections.

3.5.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.

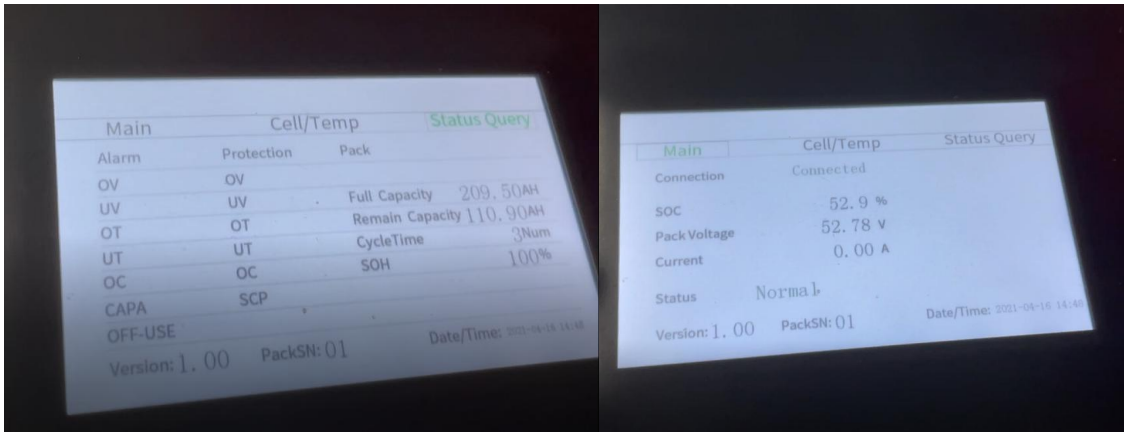
●Battery off: When battery is activated, press this button for 3 seconds. It will be shut down when the LED lights flicker from lowest capacity indicator to RUN light.

● Different LCD version can be applied as per request --- Normal press LCD or finger touch LCD.

3.6.Display function instruction (Press Key LCD Type / Finger Touch LCD)

3.6.1.Reference of real figure / Press Key LCD Type

3.6.2. Reference of real figure / Finger Touch LCD



● Interface introduction

●Main menu page

●Electricity/dormancy activated, will show the welcome screen, press the MENU button to enter the main menu page.

●Battery parameters collection page

When the cursor“》”is point to “Battery Parameters Acquisition”，press ENTER key will enter into the page of “Battery Parameters Acquisition”

●Battery status page

When the cursor “》”is point to “Battery Status”，press ENTER key will enter into the page of “Battery Status”

●Key description

1) SW1----NEMU，SW2----ENTER，SW3----UP，SW4----DOWN， SW5----ESC.

2) Each item is “》”or“--”as a beginning，among them“》”shows the current cursor position，press UP or DOWN key can move the cursor position；with“》”end of the project，the content of the said project has not shown, press ENTER key can enter the corresponding page.

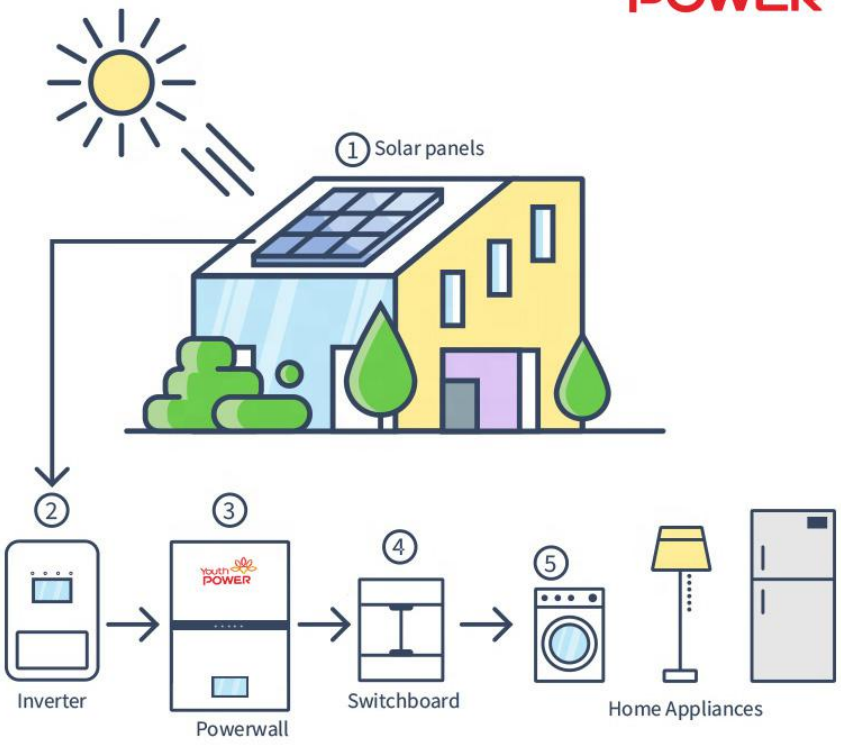
3) Press ESC key can be returned at the next higher level directory；In any position， press

MENU key can return to the main menu page.
4) In a dormant state, press any key, can activate the screen.

- Dormancy/shutdown
  Under normal operation condition, with no keystrokes 1 minutes later, system will enter a state of dormancy/shutdown.
  Shutdown/dormancy state，press any key，screen can be activated.

4.Safe handling guide

4.1.System Diagram



4.2.Tools

The following tools are required to install the battery pack:

- Wire cutter
- Crimping Modular Plier
- Screw Driver

NOTE

- Use properly insulated tools to prevent accidental electric shock or short circuits.

- If insulated tools are not available, cover the entire exposed metal surfaces of the available tools, except their tips, with electrical tape.

4.3.Safety Gear

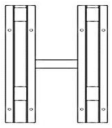
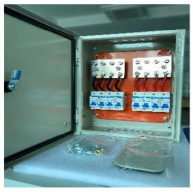
It is recommended to wear the following safety gear when dealing with the battery pack:

- Insulated gloves
- Safety goggles
- Safety shoes

5.Installation

5.1.Inventory of items

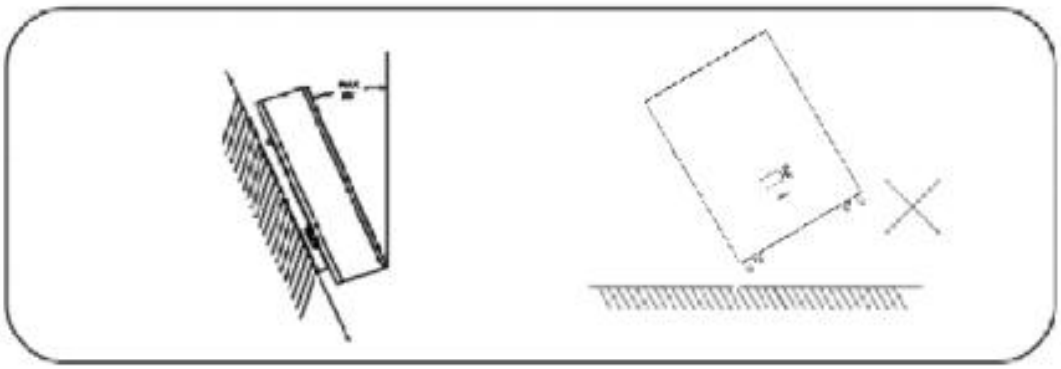
Thoroughly inspect the packaging upon receipt of goods. If there is any item missing or if there is any damage to the external packaging or to the unit itself upon unpacking, please contact us immediately.

Photo	Item	Quantity	Specification
	Battery Pack	1 PC	As per order
	Mountin frame	1 PC	Metal
	Mounting frame screw	12 Pcs	M8*60mm
 	Power Cable	1 pc each for negative and positive	Length : 2m, 35M2 Wire connector - 160A, waterproof battery connector & M8 connector
	Canbus / RS485 com cable	1 PC	Length : 2 M, battery & inverter communication
	Parrallel Com. Cable	1 set	Length : 1m, Battery parralel connection
	Manual	1 set	This document
 Option	**Battery parrallel combiner box set 4 in 2 out**	1 set	**Support 4pcs battery 400A charge & discharge, including power cables with screws.**

5.2.Installation Location

Make sure that the installation location meets the following conditions:

- The installation site must be suitable for the size and weight of the battery.
- Must be installed on a firm surface to sustain the weight of battery.
- The area is water proof.
- There are no flammable or explosive materials in proximity
- The ambient temperature is within the range from 0°C to 45°C.
- The temperature and humidity is maintained at a constant level.
- There is minimal dust and dirt in the area.
- Installation must be vertical or tilted backwards by maximum 15° - avoid forward or sideway stilt.



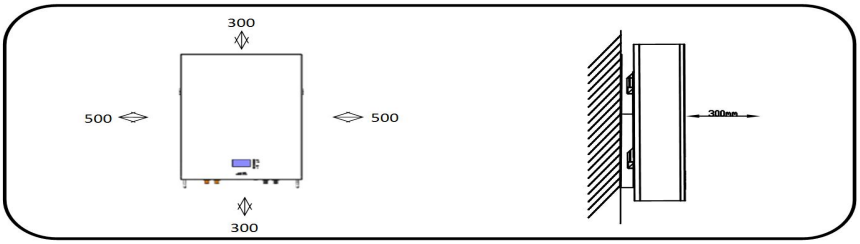
CAUTION

If the ambient temperature is outside the operating range, the battery pack stops operating to protect itself. The optimal temperature range for the battery pack to operate is 0°C to 45°C. Frequent exposure to harsh temperatures may deteriorate the performance and life of the battery pack.

5.2.1.Minimum clearances

Observe the minimum clearances to walls, other batteries or objects as shown in the diagram and picture below in order to guarantee sufficient heat dissipation

Direction	Minimum clearance (mm)
Above	300
Below	300
Sides	500
Front	300



5.3.Installing the Battery Pack

5.3.1.Mounting to a wall

> WARNING
> In order to avoid electrical shock or other injury, inspect existing electronic or plumbing installations before drilling holes.
> The battery is heavy, please handle with care to avoid damage to the product or injury to the installer.

1.Choose suitable firm wall with thickness greater than 80mm.

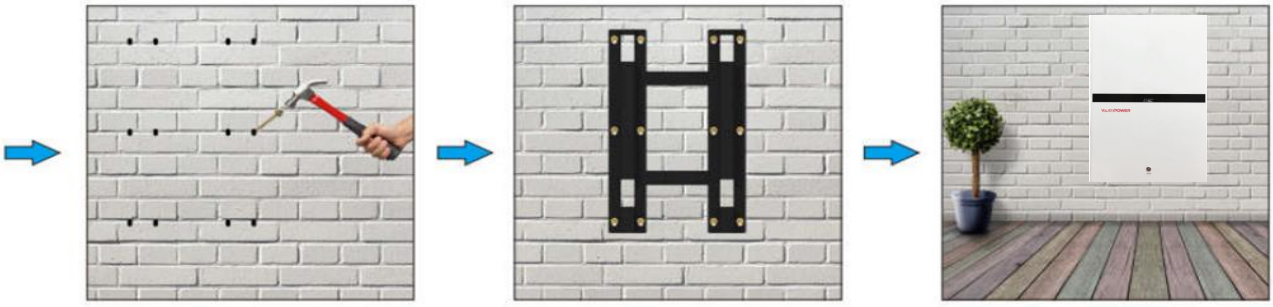
2.Use the mounting frame as a template, mark the hole position.

3.Drill 8 holes according to the hole position, it is ø10 with depth 60mm.

4.Hammer the M8 screws to the above holes, and screw the nut. Note: Do not position screws flush to the wall - leave 10 to 20 mm exposed.

5.Fix the mounting frame to the 8 screws.

6.Raise the battery a little higher than the mounting frame whilst maintaining the balance of the battery. Hang the battery on the frame through the match hooks.



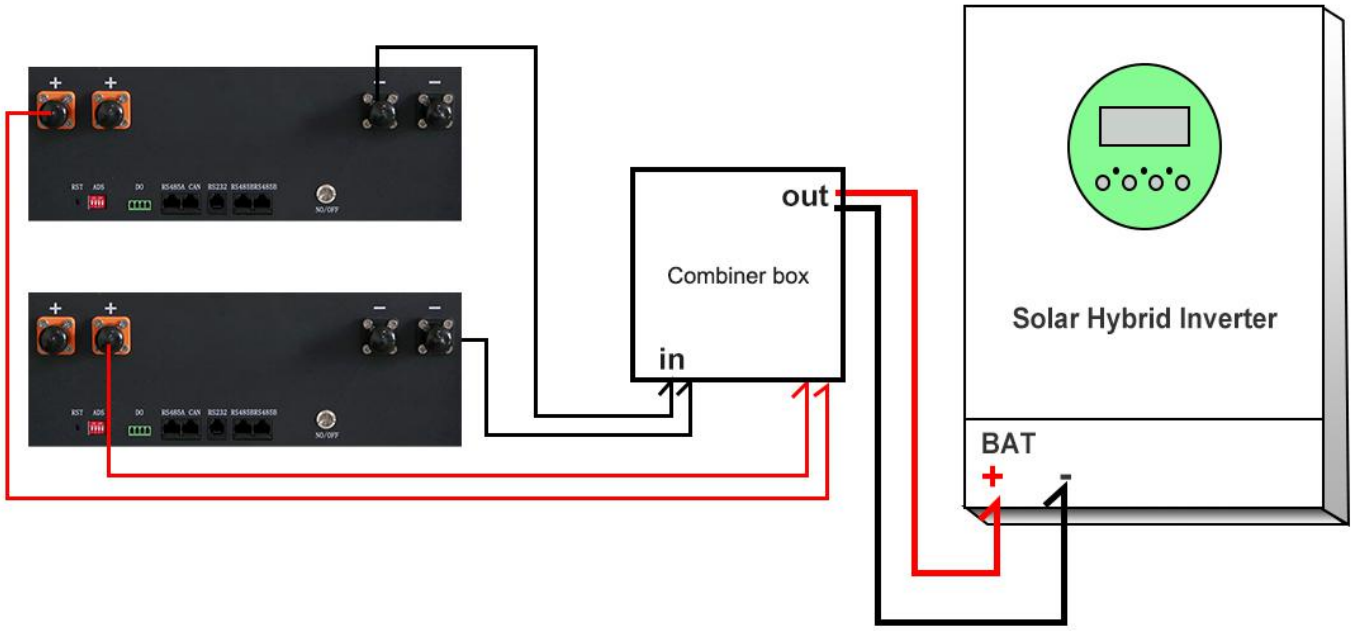
> WARNING
> Falling equipment can cause serious or even fatal injury: never mount the inverter on the bracket unless you are sure that the mounting frame is firmly mounted on the wall after thorough checking.

5.4.Parallel use of battery for 5-10KWH battery

5.4.1.Parallel use of battery (All off grid solar inverters)

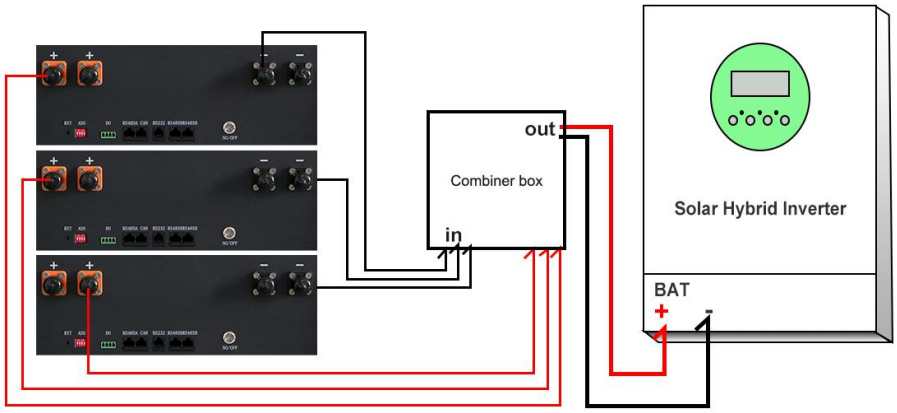
YOUTH POWER wall battery is a smart battery to match all off grid solar inverter (48VDC) types. When the battery needs to be used in parallel, the maximum connection is **15 units**, but we recommend 2-4 units according to application. When connecting with off grid 48VDC solar inverters, **it does not need to add Canbus/RS485 communication cables with inverters**, if inverter brand factory does not have Canbus/RS485 port, **just plug and play use as lead acid type**

Two PCS Parallel Connection Diagram

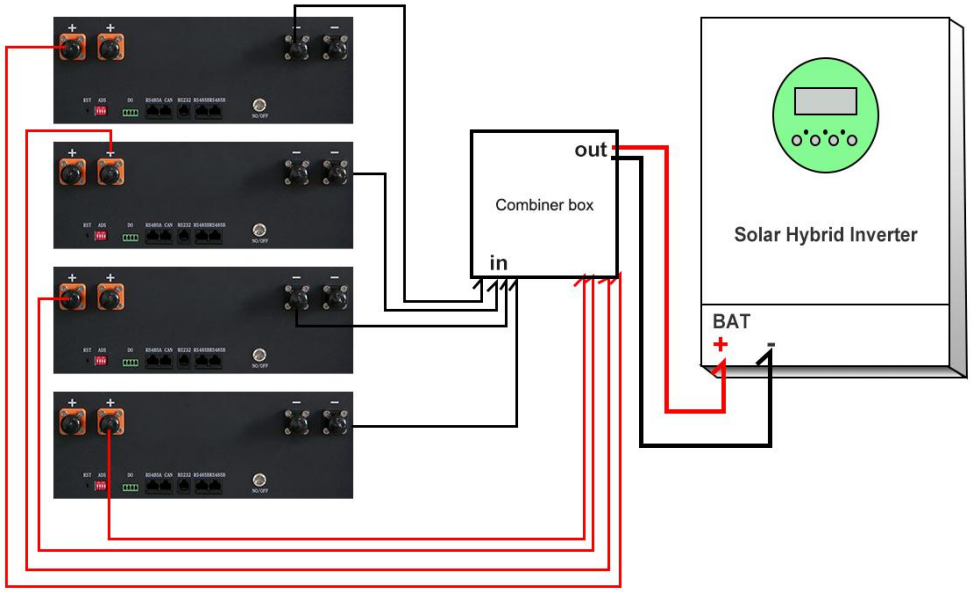


Remarks: If just connect 2 batteries, or we can also connect without the combiner box. Just working with 2 positive and 2 negative cable connectors with the inverter ports directly.

Three PCS Parallel Connection Diagram



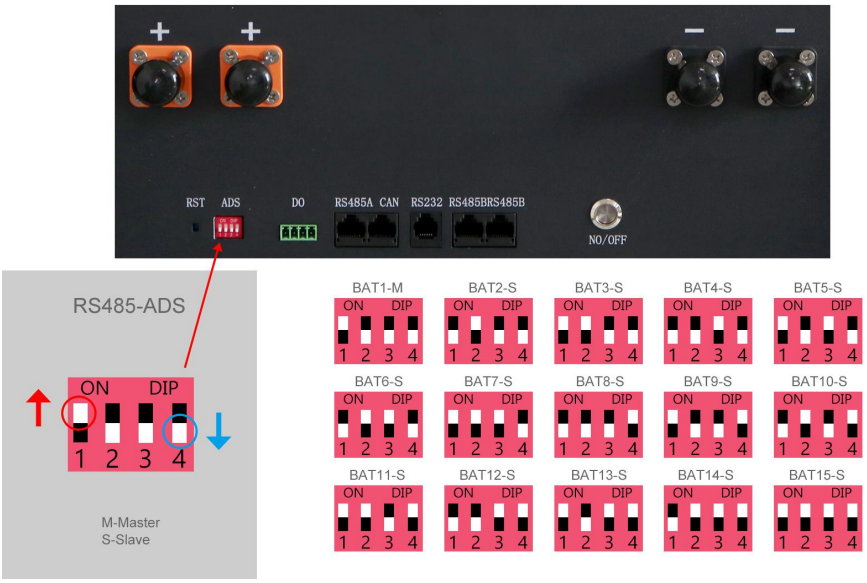
Four PCS Parallel Connection Diagram



5.4.2. Connection Diagram and ADS guide Line

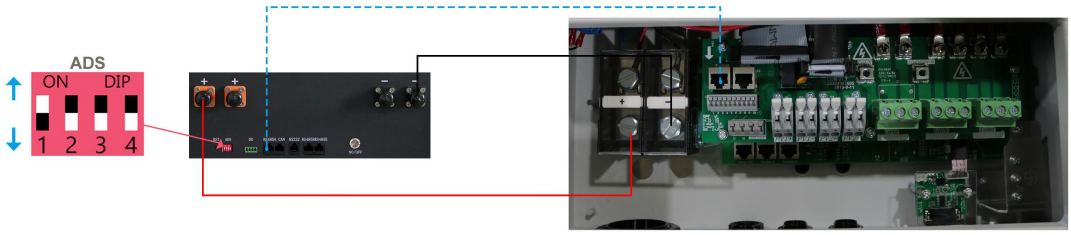
If you start to connect hybrid inverter, make sure you should consult with YOUTH POWER sales manager before connection.

RS485 Version –Max 15 pcs



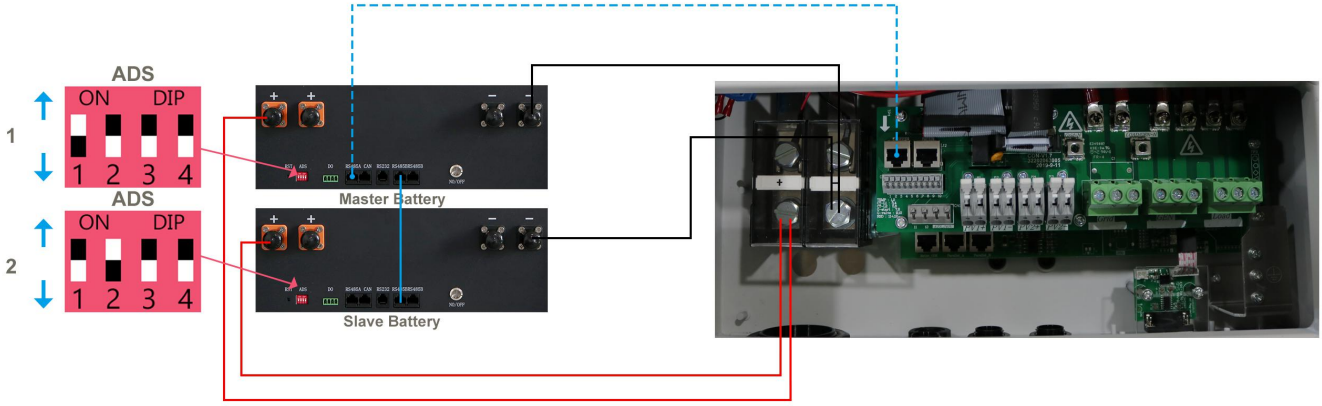
One pc connect diagram

One PCS Parallel Connection Diagram



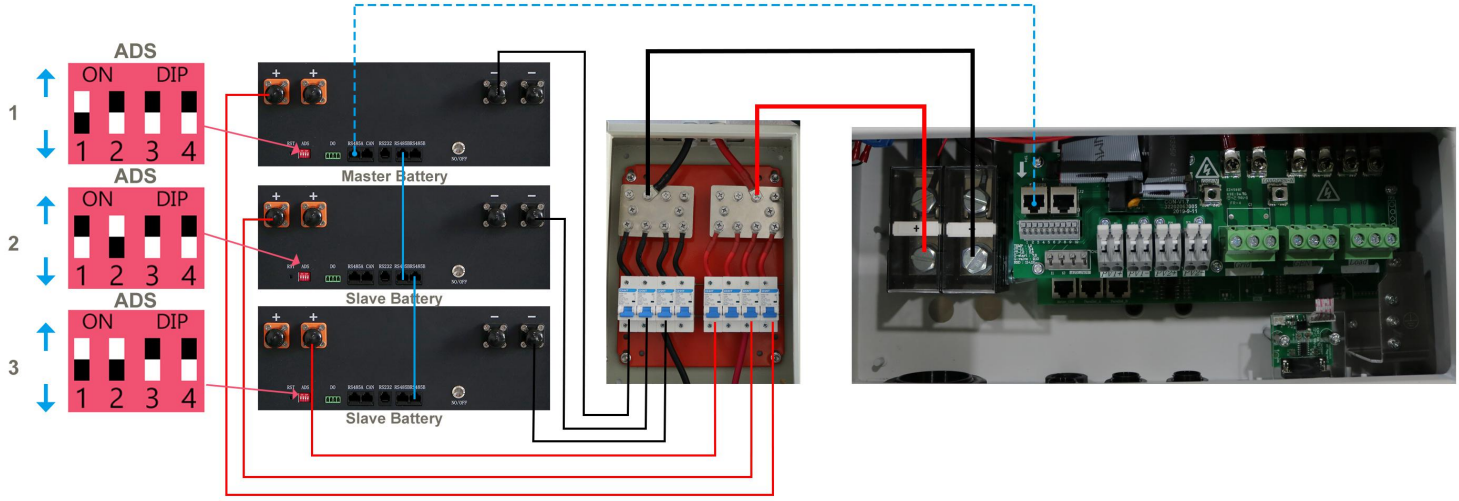
RS485 Connection

Two PCS Parallel Connection Diagram



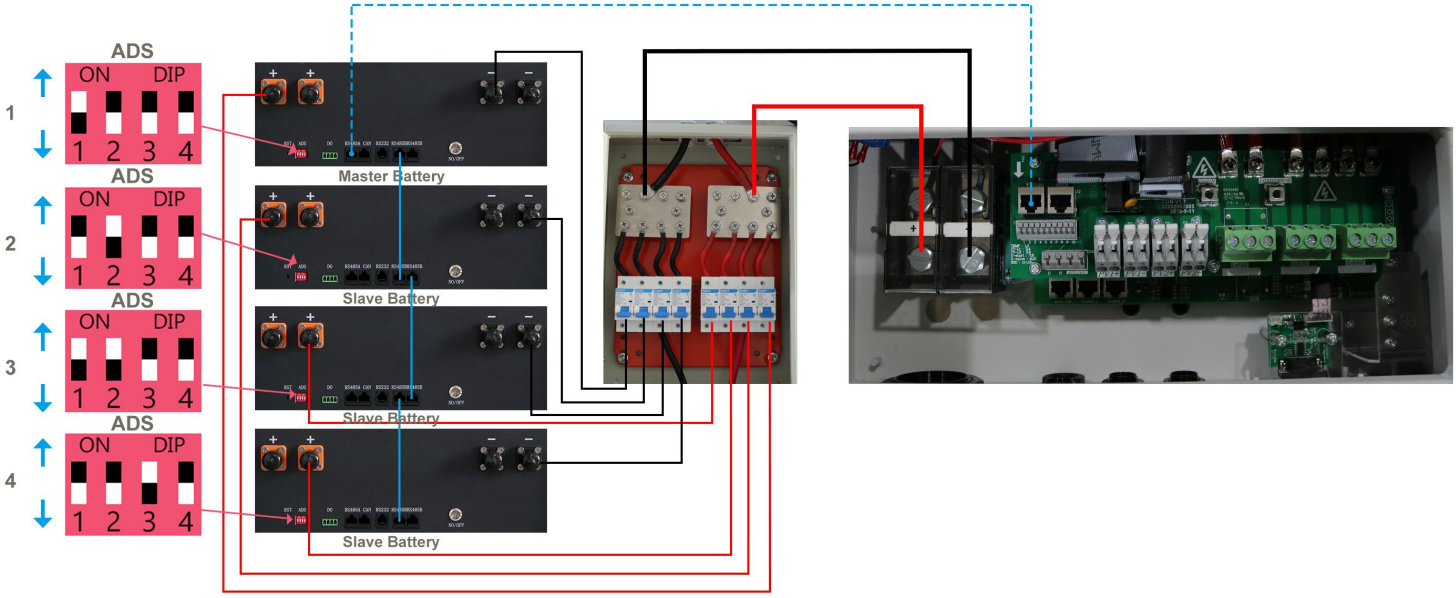
RS485 Connection

Three PCS Parallel Connection Diagram



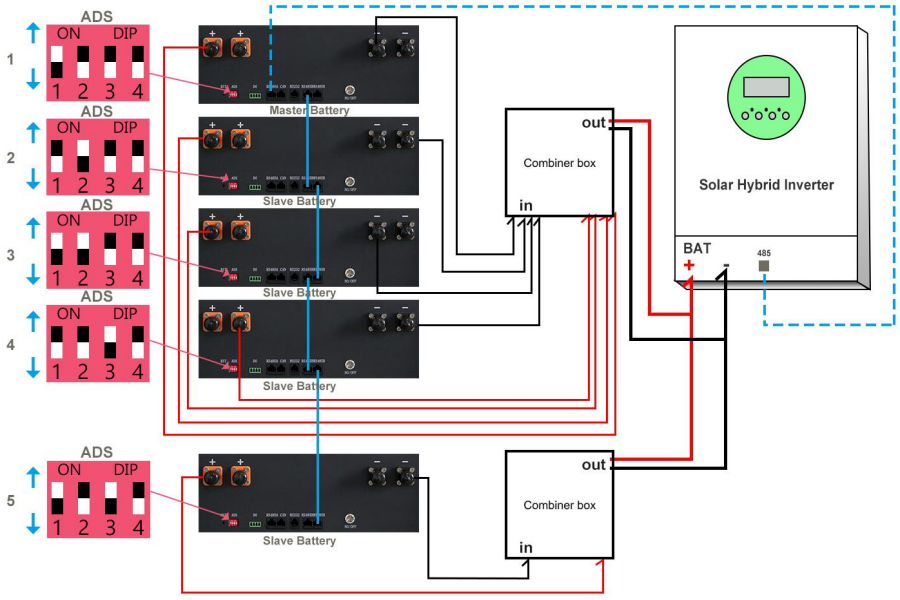
RS485 Connection

Four PCS Parallel Connection Diagram



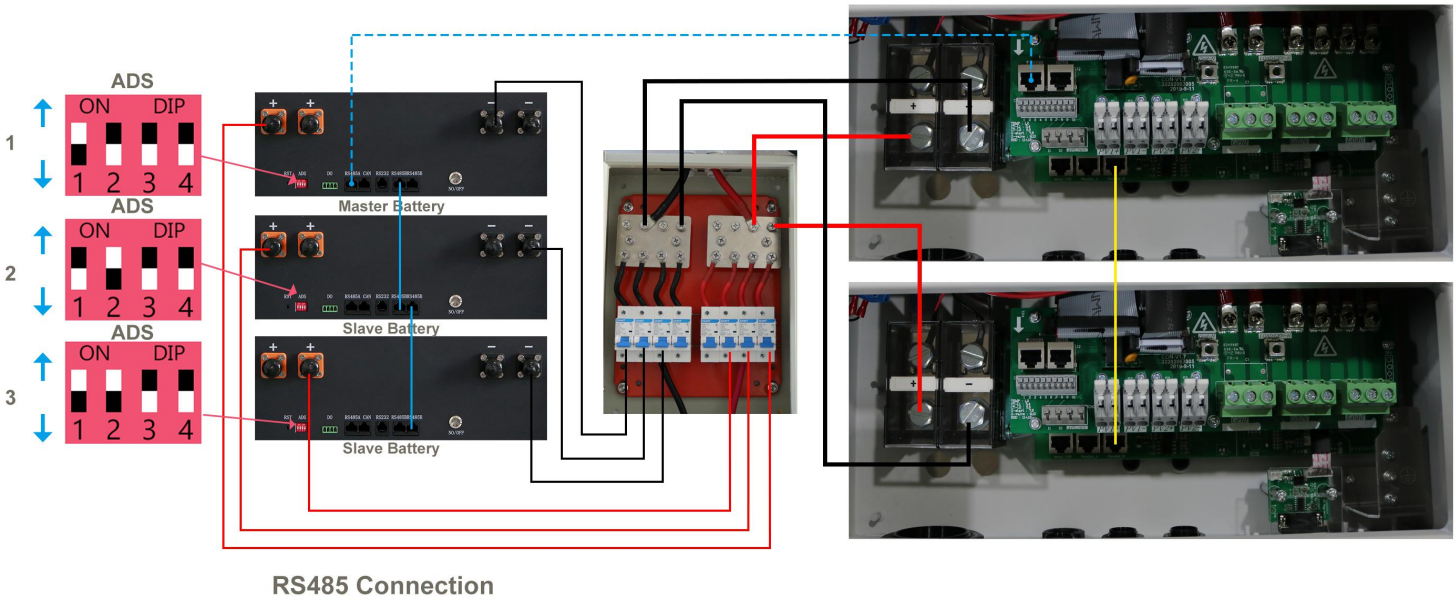
RS485 Connection

Five PCS Parallel Connection Diagram



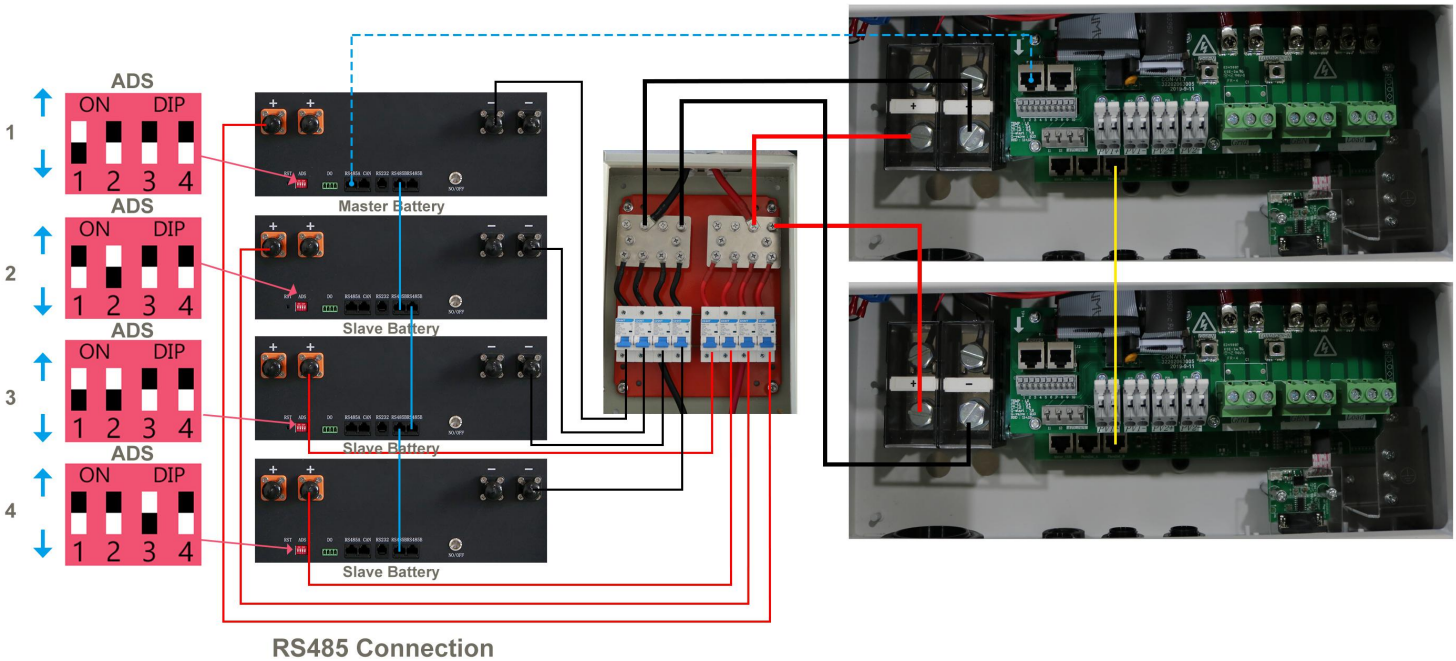
RS485 Connection

Three PCS Parallel Connection Diagram



RS485 Connection

Four PCS Parallel Connection Diagram



RS485 Connection

5.4.3 ADS guide Line for 15-20KWH battery

If you start to connect YouthPower 15-20kwh solar battery with hybrid inverter, make sure you should consult with YouthPower sales manager before connection. If the hybrid inverter is not from Youthpower factory brand, please specify related hybrid on-off grid inverter brand with YouthPower sales managers.

How to dial for master and slave battery units for 15-20KWH YouthPower Battery

5.4.4 How to set YouthPower Lifepo4 Battery Using as Lead Acid Type Inverters

Parameter setting for YouthPower batteries

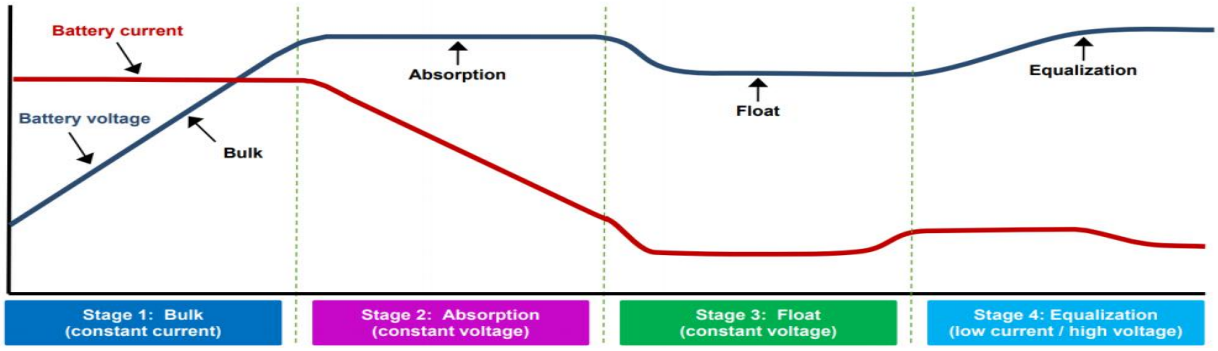
Example for 12.8V lithium battery as lead acid

Stage 1: **Constant current mode**
Battery is charged at constant current until the battery voltage reaches 14.4V

Stage 2: **Absorption mode**
Battery voltage is maintained at 14.6V until the charging current has decreased to C/20 (C is the battery's amp-hour rating)

Stage 3: **Float mode**
Battery voltage is reduced and regulated to 13.5V to maintain a full charge

Stage 4: **Equalization mode**
Battery voltage is increased to 15.6V and the charging current is limited to ½ amp



Inverter Setting for Standard 15S 48V Lithium Battery

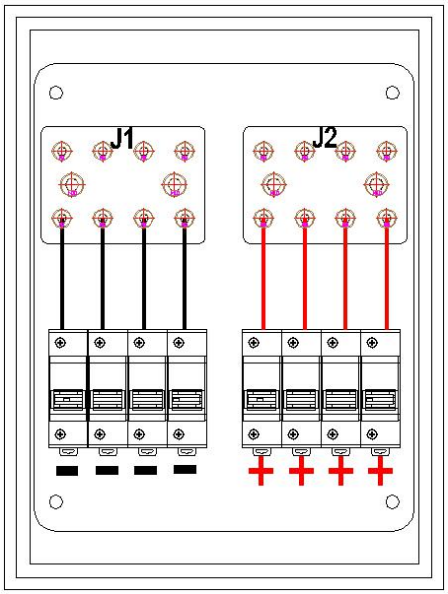
Inverter	80% DOD, 6000 cycles	90-100% DOD, 4000 cycles
Constant current mode charge voltage	51.8	52.5
Absorb Voltage	51.8	52.5
Float Voltage	51.8	52.5
Equalization Voltage	53.2	53.2
Fully charge Voltage	53.2	53.2
AC Input Mode	Grid Tired / Offgrid / Hybrid Type	
Cut Off Voltage	45.0	45.0
BMS Protection Voltage	42.0	42.0

Inverter Setting for Standard 16S 51.2V Lithium Battery

Inverter	80% DOD, 6000 cycles	90-100% DOD, 4000 cycles
Constant current mode charge voltage	55.2	56.0
Absorb Voltage	55.2	56.0
Float Voltage	55.2	56.0
Equalization Voltage	56.8	56.8
Fully charge Voltage	56.8	56.8
AC Input Mode	Grid Tired / Offgrid / Hybrid Type	
Cut Off Voltage	48.0	48.0
BMS Protection Voltage	45.0	45.0

5.4.5 Combiner Box and Connection

Let's take 4 batteries for example, use an additional junction box (not included in the standard pack) to combine the power flow of both batteries:



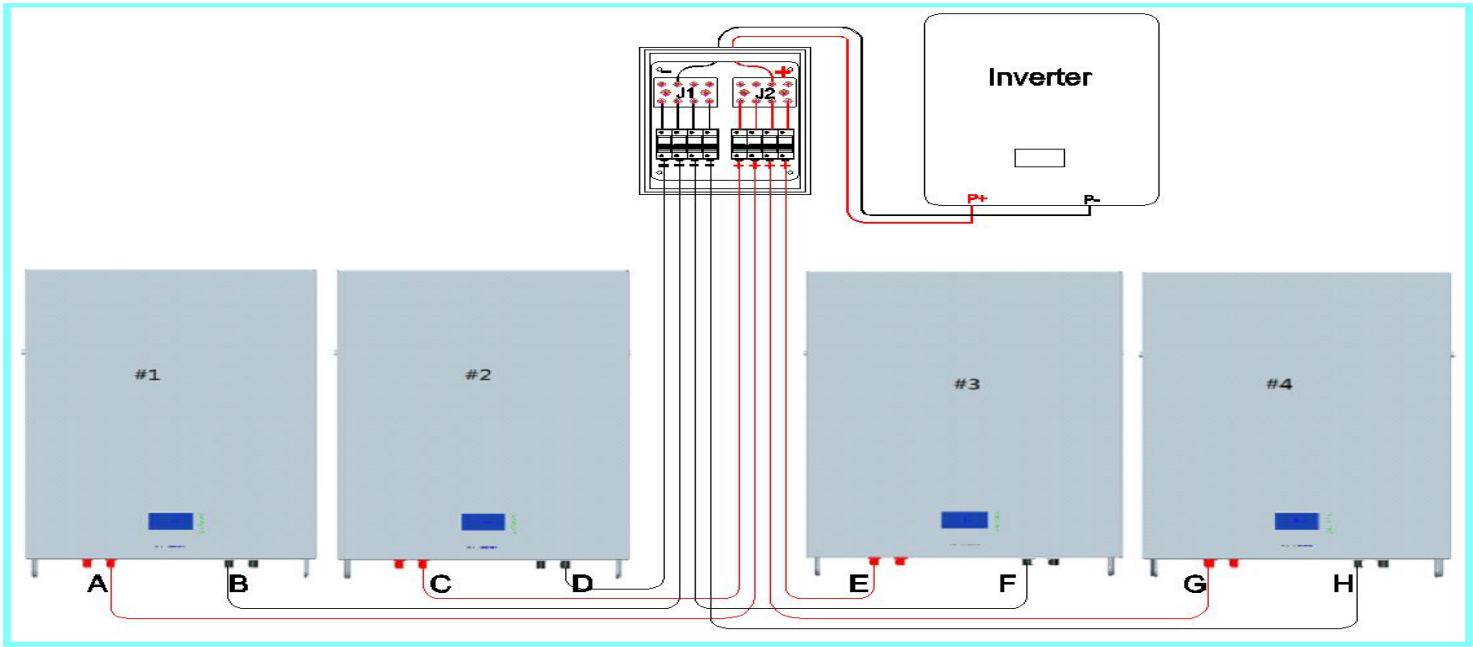
(Combiner Box Photo)

Connect J1 with inverter's negative pole

Connect J2 with inverter's positive pole

Add suitable isolators when necessary

Please refer to the photo to connect the positive output line of the battery terminal and the negative output line of the battery terminal.



Warranty Term & Card

1. Product Warranty

1.1. 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.

1.2. 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.

1.3. For the above-mentioned products, you receive the factory warranty valid for 5-10 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.

1.4. Factory Warranty Scope

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

--Breaking the product seal (opening the casing)
--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.

1.5. Warranty conditions

If the battery becomes defective during the agreed factory warranty period and, unless this should be impossible or disproportionate, one of the following options will be selected at the discretion of factory:
--Battery repair or
--Battery repair at on-site, or
--Exchange for a replacement device of equivalent value with regard to model and age.
In the latter case, the remainder of the warranty entitlement will be transferred to the replacement device and your entitlement will be documented at factory.
Excessiveness in the meaning above exists in particular if the cost the measures for factor will be unreasonable.
--In view of the value that the device would have without the defect
--Taking in account of the significance of the defect, and
--After consideration of alternative work around possibilities at factory customers could revert to without significant inconvenience.

Thank you very much to choose YouthPower Solar Storage Batteries. Please fill the required information in and send this page to factory when you need to apply warranty service support

Warranty Card

User Information

Company / User Name:

Address:

Telephone:

Email:

Project installation location:

Product Information

Battery Model:

Serial No :

(**Close to the battery BMS**) **– Import for service**

Invoice Number :

Purchase Date :

Dealer :

Commission date :

Fault/Error Description:

Shenzhen Litu New Energy Technology Co.,Ltd

24 Hrs On-line: 0086 18185770301

Inquiry Email : sales@youth-power.net

After Sale Service : info@youthpowergy.com

Website: www.youth-power.net