



# AIO RPC System



# Installation Manual

### AIO System Specification

Cabinet Size	600mm*630mm*2010mm
Weight(include 6 batteries and inverter)	440kg
IP Rating	IP20
Operating Temperature	-20~60°C
Altitude	<4000m
Cooling	4 Fans on the top of cabinet
Communication with BMS	CAN/RS485

### Battery Specification

Capacity	5.12kWh per battery, max 6 batteries
Nominal Voltage	51.2V
Voltage Range	43.2V-57.6V
Max. Charge/Discharge Current	100A per module(Limited by the inverter power, the system max charge/discharge current is 240A)
Life Cycles	6000+

### PV String Specification

PV Max. DC Input Power	15.6kW
PV Input Voltage	550V (160V~800V)
PV Start-up Voltage	160V
MPPT Range	200V-650V
PV Input Current	26A+13A

### AC Output/Input Specification

Rated AC Input/Output Active Power	12kVA
Rated AC Input/Output Current	18.2/17.4A
Rated Grid Voltage	380/400Vac (Three phase)
Rated Grid Voltage Range	-20%~15%
Rated Input/Output Grid Frequency/Range	50Hz(47Hz~52Hz) or 60Hz(57Hz~62Hz)
Total Current Harmonic Distortion THDi	<3% (of nominal power)
Power Factor Adjustment Range	0.8 leading to 0.8 lagging

# Precautions

The AIO RPC systems offer many benefits, such as improved efficiency and reduced emissions. It is essential to take certain precautions to ensure safety. Here are some general precautions for using AIO RPC system:

1. Trained or experienced electrical personnel are required to operate the equipment.
2. Operators should be familiar with national and local laws, regulations, and standards, and the compositions and operating principles of relevant systems.
3. Always follow Voltsmile's instructions and guidelines for using and maintaining the system. Failure to do so may result in damage to the equipment that is not covered by the warranty.
4. Please consult with the owner for expansion requirements. If any, please reserve necessary expansion space and cable length during installation.
5. Wear appropriate personal protective equipment, such as insulated gloves and safety glasses, when working with high-voltage battery systems.
6. Ensure that the battery system is installed correctly and grounded and that all electrical connections are secure.
7. Do not attempt to disassemble or modify the battery system, as this can result in electric shock or other serious injuries.
8. If the battery system is damaged or shows signs of malfunction, such as leaking or swelling, stop using it immediately and seek professional assistance.
9. Avoid exposing the battery system to extreme temperatures or environmental conditions that could cause damage or degradation.
- 10 Always turn off the power supply before connecting or disconnecting the battery system, and never touch the electrical contacts with bare hands or metal tools.

These precautions ensure that battery systems are used safely and effectively in various applications.

# Precautions

## CAUTION!



THIS SYSTEM CONTAINS  
**LITHIUM-ION BATTERY**



### WARNING:

Installation and maintenance should only be carried out by trained professionals. We do not undertake any consequences or related responsibility because of violation of safety operation or violation of design, production and equipment safety standards.



### CAUTION:

1. It is required to charge the battery at least once every six months. For this charge, maintenance ensures the SOC is higher than 90%.
2. The connection of the power connector, grounding point, power cable and screw are suggested to be checked yearly. Ensure there is no loose, broken, or corrosion at the connection point. Check the installation environment, such as dust, water, insect and more.
3. If the battery is stored for a long time, it must charge every six months, and the SOC should be higher than 90%.



In case a battery (normal condition or damaged) needs disposal or needs recycling, it shall follow the local recycling regulation (i.e. Regulation (EC) Number 1013/2006 among European Union) to process and use the best available measures to achieve relevant recycling efficiency.

# Precautions

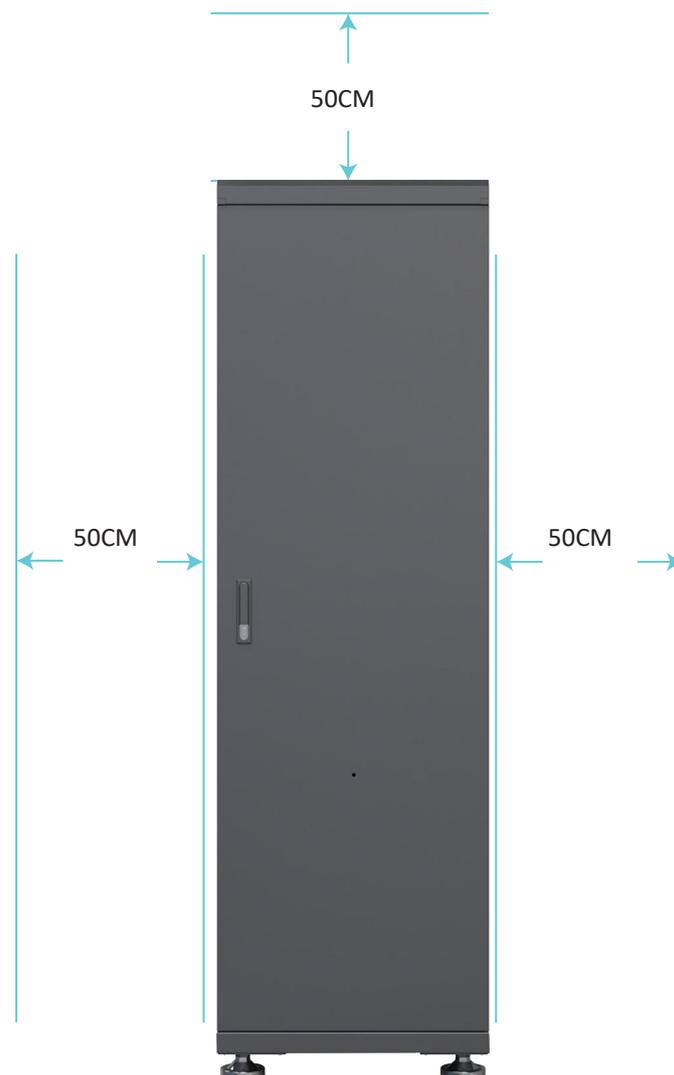
## Installation Environment

- Do not install the equipment in a smoky, flammable, or explosive environment.
- Avoid exposing the equipment to direct sunlight, rain, standing water, snow, or dust. It is suggested to install the equipment in a sheltered place. Take preventive measures in operating areas prone to natural disasters such as floods, mudslides, earthquakes, and typhoons.
- Do not install the equipment in an environment with strong electromagnetic interference.
- The temperature and humidity of the installation environment should meet equipment requirements.
- The equipment should be installed in an area that is at least 500m away from corrosion sources that may result in salt damage or acid damage. Corrosion sources include but are not limited to seaside, thermal power plants, chemical plants, smelters, coal plants, rubber plants, and electroplating plants.

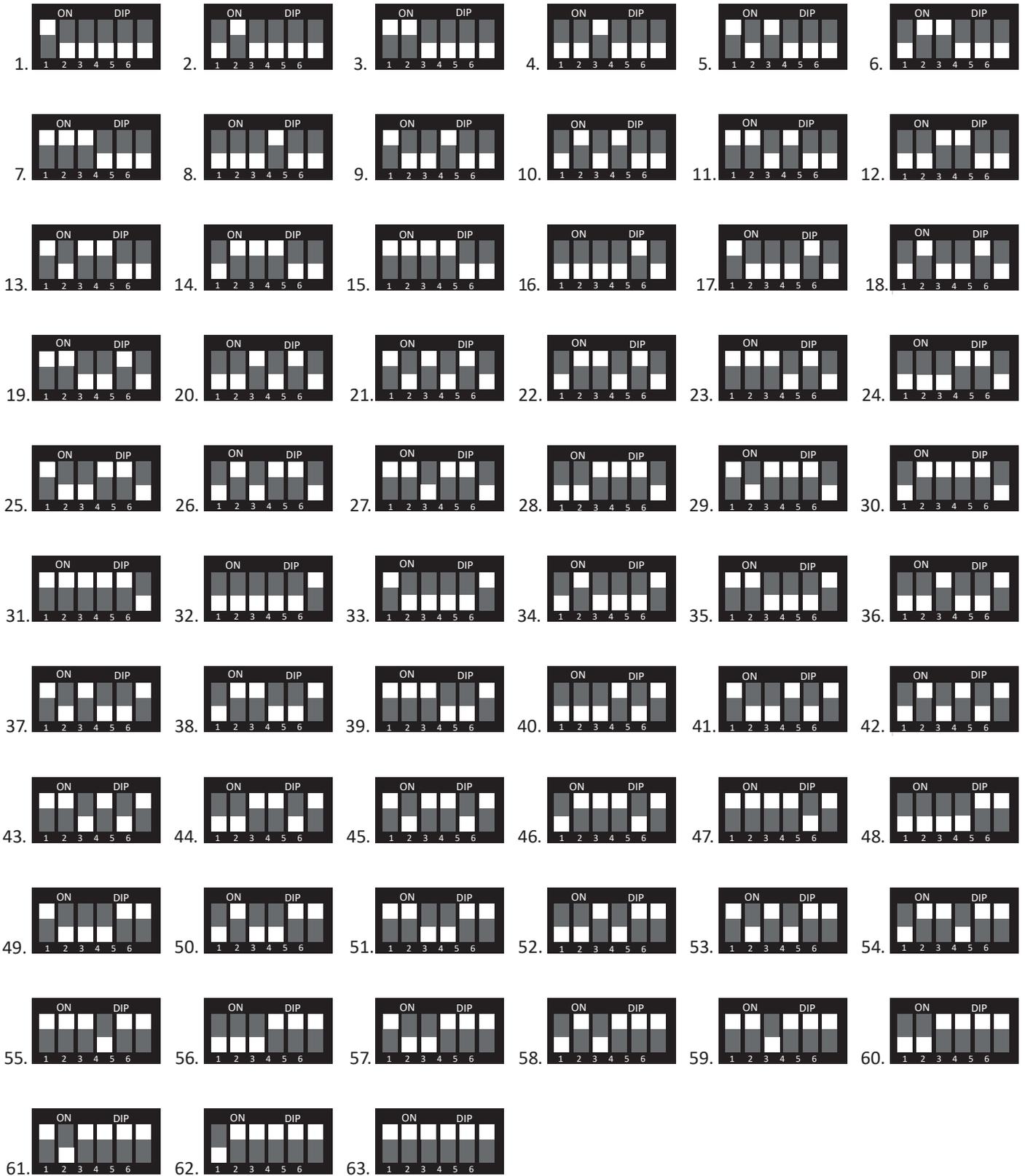
# Precautions

## Installation Location

- Do not tilt the equipment or place it upside down. Ensure that the equipment is horizontally installed.
- Do not install the equipment in areas easily accessible to children.
- Do not install the equipment in a place with fire hazards or is prone to moisturizing.
- The equipment produces sound when it is operating. Please install the equipment in a place with appropriate distance at which there is no impact to daily work and life.
- Do not install the equipment in a sealed, poorly ventilated location without fire protection measures and inaccessible for firefighters.
- The equipment is hot when it is operating, please ensure good indoor ventilation.
- Do not install the equipment in mobile scenarios such as recreational vehicles, cruise ships, and trains.
- It is recommended to install the equipment in a location where you can easily access, install, operate, and maintain it, and view the indicator status.
- Do not place the equipment in the vehicle passage when installed in a garage to avoid collisions.
- The cabinet is equipped with cooling fans on the top. Please do not place any objects on the top of the cabinet that could obstruct the system's heat dissipation.



# RPC Battery DIP Position



# Cable Set Packing List

- ① 1\*AC-grid-to-inverter cable
- ② 1\*AC-back-up-load-to-inverter cable
- ③ 1\*AC-grid cable
- ④ 1\*AC-load cable
- ⑤ 2\*Battery power cable
- ⑥ 1\*Battery-to-inverter communication cable
- ⑦ 1\*Grounding cable



①

②



③



④



⑤



⑥



⑦

# Switches on the combiner box

## ① Two Way Switch

1. 'EPS': switch to this mode when you need to use the Deye 3-phase system
2. 'GRID': switch to this mode when you don't want to use the Deye 3-phase system, or the Deye 3-phase system fails. After you switch to this mode, the Deye 3-phase system will be blocked, the power will be supplied from grid to keep the load working properly.

## ② Residual Current Device

This is a safety device that switches off electricity automatically if there is a fault.

## ③ AC LOAD Switch

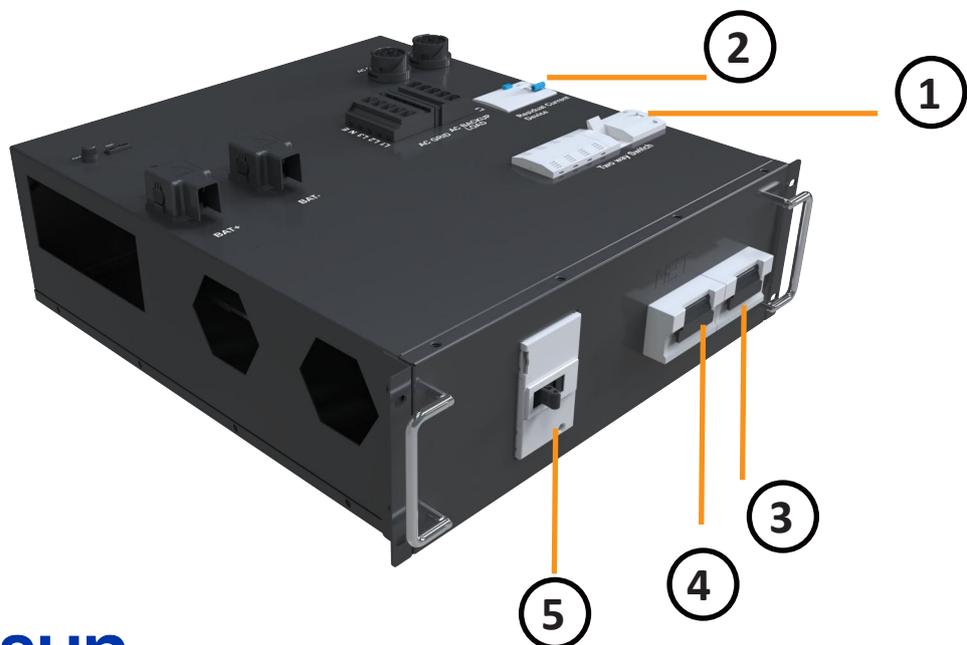
Control AC load power sources

## ④ AC GRID Switch

Control AC grid power sources

## ⑤ DC Switch

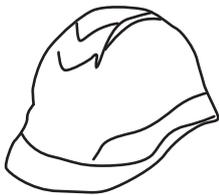
Control DC power sources



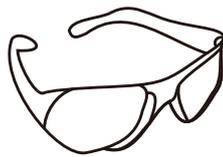
# Pre-installation inspection:

1. According to the packing list, check whether the components in the box are complete and whether the appearance is intact; if there is any abnormality, please contact your sales agent in time.
2. Check the personal protective gears and installation tools to make sure they are complete; if not, please replace them.

## Protective Equipment



Safety hat



Goggles

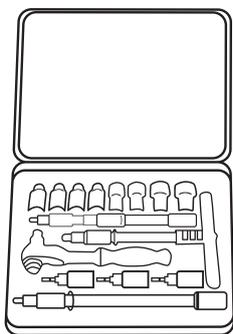


Protective gloves

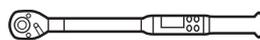


Insulating shoes

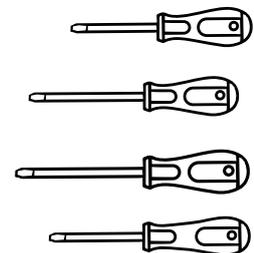
## Installation Tool



Insulation sleeve set



Torque socket wrench



Insulation screwdriver set

# Installation

**A** AC-LOAD

**B** AC-GRID

**C** Battery +

**D** Battery -



# Installation

Before installation, please check and ensure that the batteries, combiner box, and inverter are all in the turn-off state.

- 1 Unscrew the screws on both sides of the cabinet top baffle and remove the baffle.

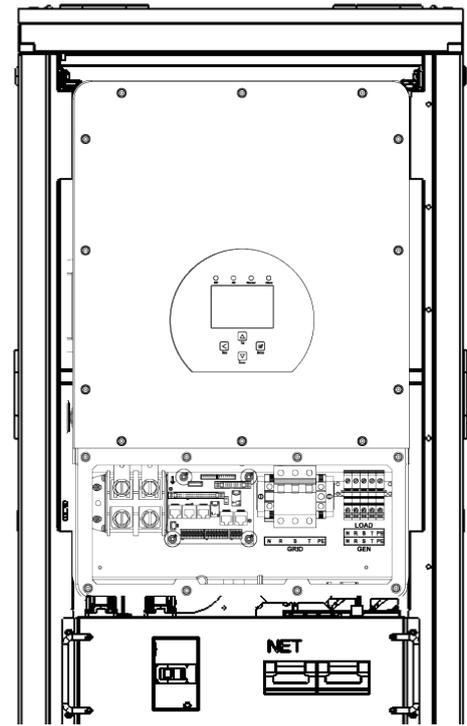


- 2 Push the Deye inverter into the bracket embedded in the cabinet (front facing outward) and secure it with screws, put the baffle back and fix with screws.

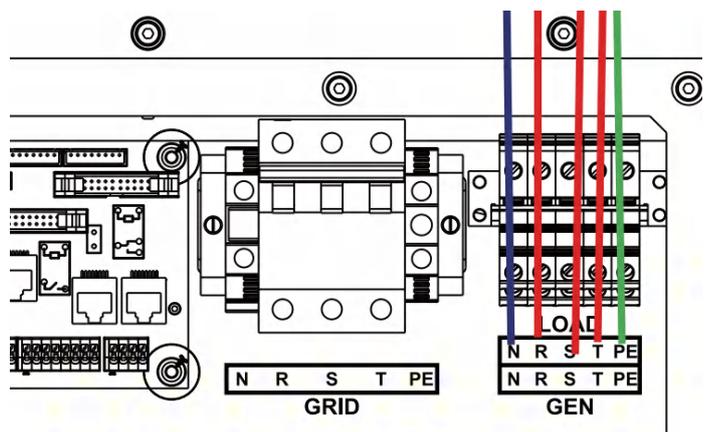


# Installation

- 3 Unscrew the screws of the inverter cover, remove the cover, and prepare for wiring.

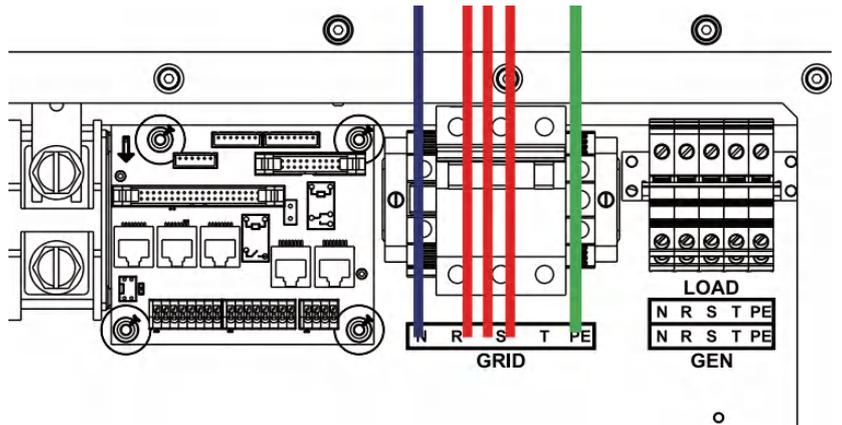


- 4 Use ② AC-back-up-load-to-inverter cable to connect the A port of the inverter. Attach ② AC-back-up-load-to-inverter cable to connect the "BACKUP LOAD" port on the combiner box.



# Installation

- 5 Use ① AC-grid-to-inverter cable to connect the **B** port of the inverter  
Attach ① AC-grid-to-inverter cable to connect the “GRID” port on the combiner box

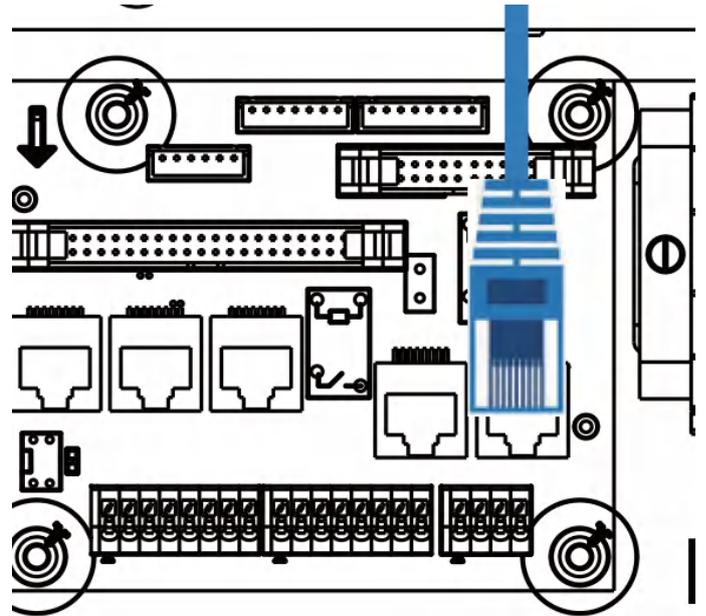


- 6 Use ⑤ to connect the **C** & **D** ports of the inverter to the “BAT+” & “BAT-” port on the combiner box.



# Installation

- 7 Attach ⑥ to the "BMS" port of the inverter for connecting the master battery later.



- 8 Use ③ to connect "GRID" port on the combiner box, make sure the other end of the cable is well insulated.



# Installation

- 9 Use ④ to connect "BACKUP LOAD" port on the combiner box, make sure the other end of the cable is well insulated.

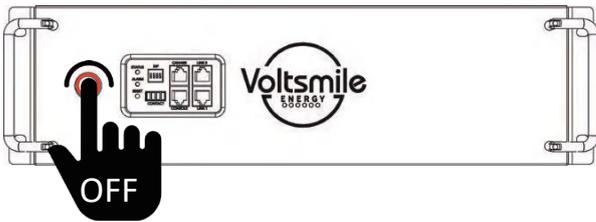


- 10 Close the cover and tighten the screws.



# Installation

- 11 Check the battery and make sure batteries are turned off before installation, plug the V10 RPC batteries into the cabinet and fix with screws.

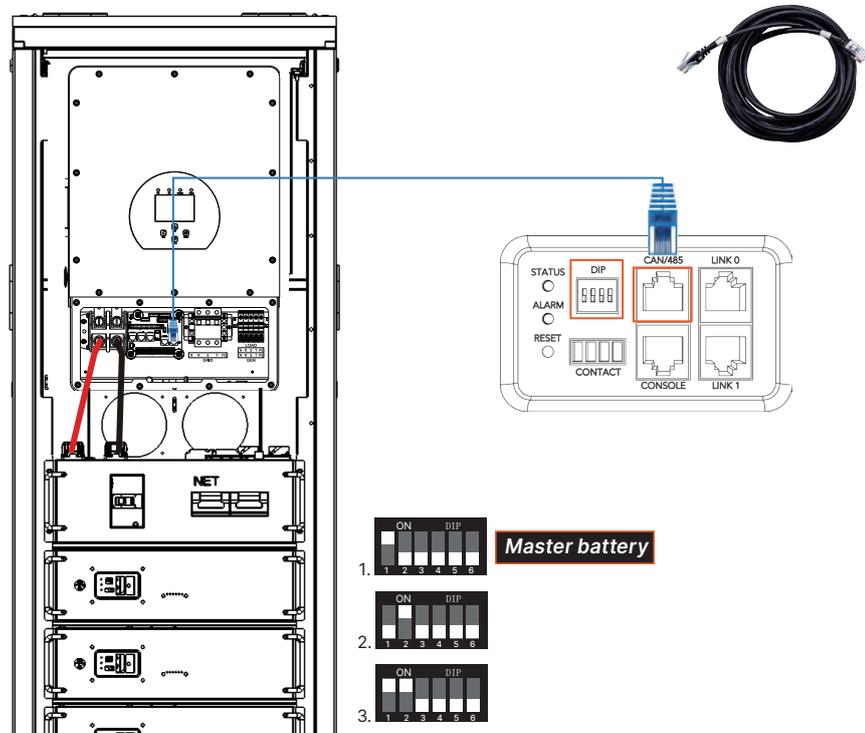


- 12 Adjust the RPC batteries' DIP to right position (DIP 1 is the master battery).



# Installation

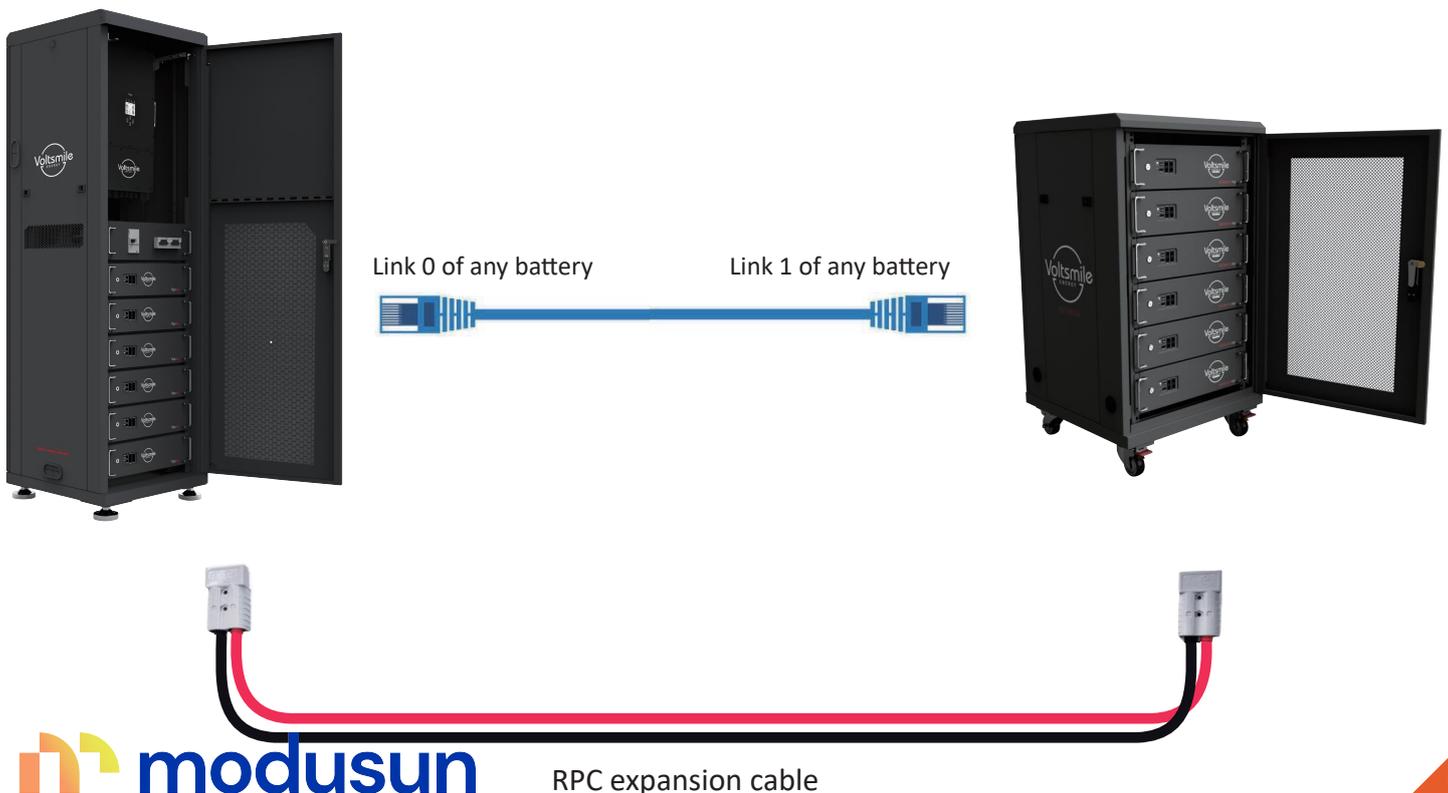
- 13** Use ⑥ to connect the "CAN/RS485" of the master battery(DIP 1 is the master battery).



- 14** Connect the grounding cable in a proper place, turn on all the batteries, the switch of combiner box, and the inverter, then refer to the inverter manual to set up the inverter according to the power usage scenario requirements.

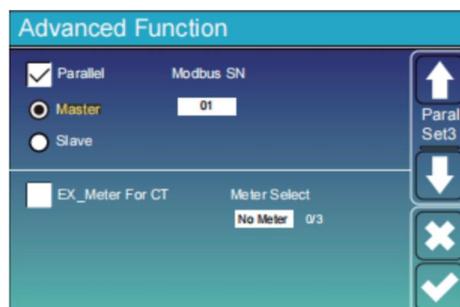
# Expand battery capacity

- Prepare: 1\*AIO RPC system, n\*RPC batteries, 1\*RPC cabinet, 1\*RPC expansion cable and 1\*communication cable (CAN/RS485 interface).
- Make sure the AIO RPC system and RPC cabinet are power off.
- Connect the AIO RPC system and RPC cabinet with RPC expand cable in bottom.
- Switch the DIP of all RPC batteries to right position(refer to page 5).
- Connect the "Link 0" of any batteries in AIO RPC system to "Link 1" of any batteries in RPC cabinet.
- Turn on the system, all done.



# Expand system capacity

- Prepare: 2\*AIO RPC systems, 1\*RPC expansion cable, 1\* communication cable (CAN interface) and 1\* communication cable (CAN/RS485 interface).
- Make sure the AIO RPC systems are power off.
- Connect two AIO RPC systems with RPC power cable from the bottom of each cabinet.
- Switch the DIP of all RPC batteries to right position, only remain one master battery(refer to page 5).
- Connect the "Link 0" of any batteries in AIO RPC system to "Link 1" of any batteries in the other AIO RPC system.
- Connect the "Parallel A" port of one inverter to "Parallel B" of the other inverter.
- Turn on the system, set one inverter as the master inverter.



"Parallel A" port of inverter 1      "Parallel B" port of inverter 2



Link 0 of any battery      Link 1 of any battery



# DIP in expand system

- Make sure each batteries DIP position are different.
- Maximum you can have 10 AIO RPC cabinets in one system.
- Maximum you can have 63 batteries in one system.
- DIP 1 is the master battery.

