Voltsmile


# AIO RPC System

# Installation Manual

# Datasheet

## Key Feature

- 3-phase modular design for Victron*, from 9 kVA to 15 kVA, up to 90 kVA
- Up to 30.72kWh per string of 6 battery packs, maximum 320kWh in one system
- RPC battery installation is plug and play, no additional wiring is needed
- Includes the necessary accessories for system running
- EU certificated*, safe and convenient to install

## Technical Specifications

### Battery

| | |
|---|---|
| Voltage | 51.2V |
| Nominal System Capacity | 30.72kWh per string |
| Cell Chemistry | LiFePO4 |
| Charge/Discharge Current | 100Amp |
| Working Temp | 0°C~50°C |
| IP Rating | IP20 |
| Warranty | 10 Years |
| Certifications | IEC62619 / UN38.3 / CE / UKCA |

### System

| | |
|---|---|
| Power range | 9kVA to 15kVA, parallel up to 6 units |
| Nominal AC Grid Voltage | 220V/380V; 3-phase |
| Full System Dimensions | 65*63*190cm |
| Full system Weight | From 467KG to 500KG |
| IP Rating | IP 20 |
| Rated Output Frequency | 50Hz/60Hz; configurable |

### Protection

| | |
|---|---|
| Residual Current Device | Yes |
| DC Switch | Bipolar DC switch(180A/pole, total 360A) |
| Output Over Current | Yes |
| Two way switch | Yes 63A AC |
| AC Switch | Yes 3L1N(32A/pole) |
| Over Circuit Protection | Yes |

*Victron is a registered trademark of Victron Energy B.V.. This material is not affiliated with Victron Energy B.V..
*Batteries and accessories used in the system are individually tested for compliance with European standards.

# 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

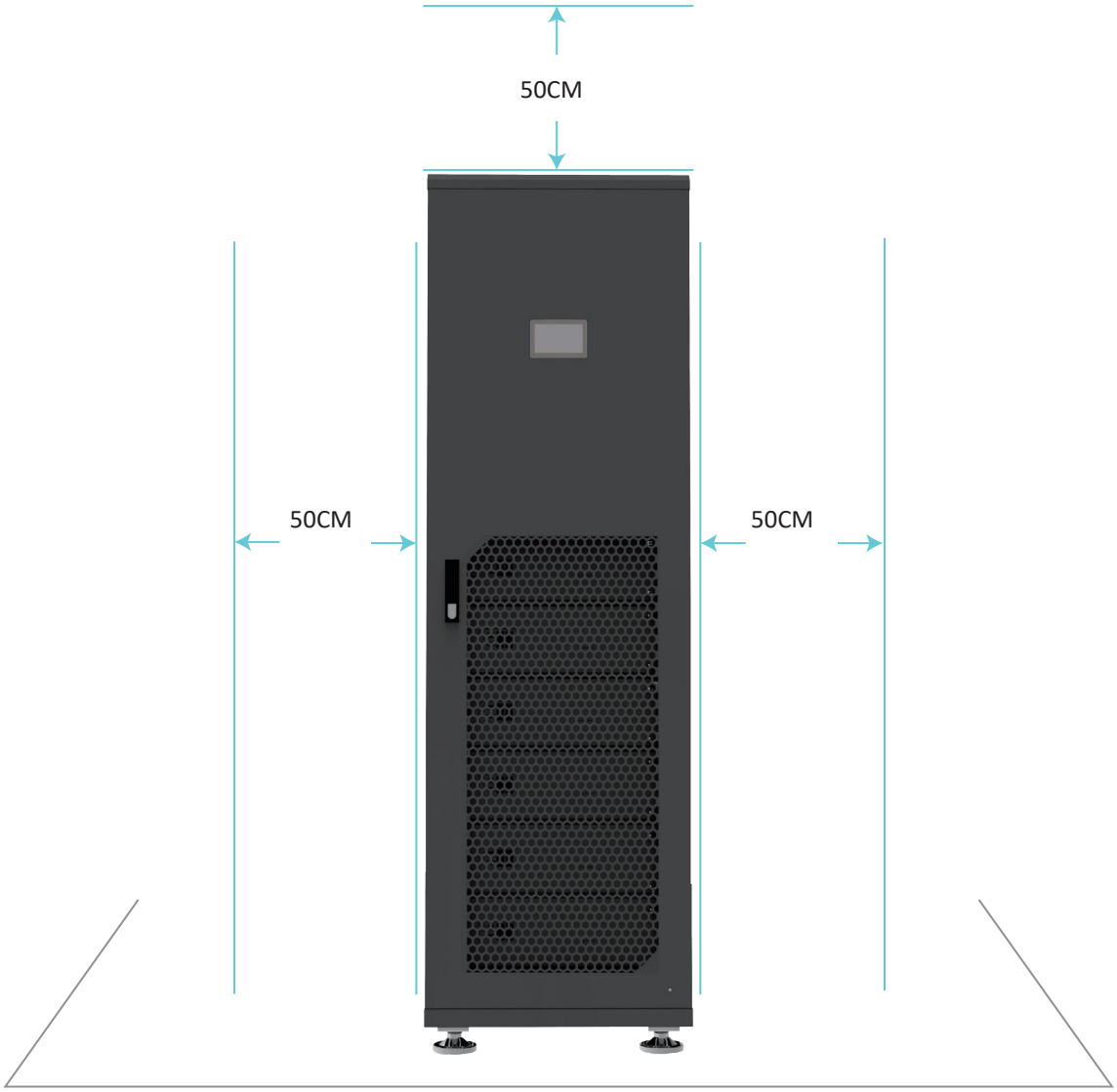
## Installation Environment

- 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.

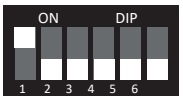
# Precautions

## 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

1. 

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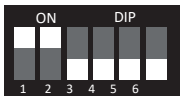
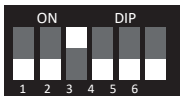
3. 

4. 

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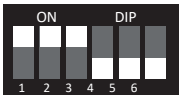
7. 

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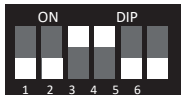
12. 

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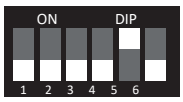
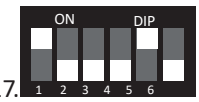
16. 

17. 

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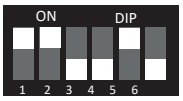
19. 

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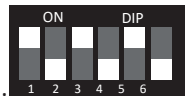
21. 

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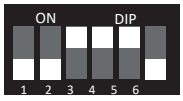
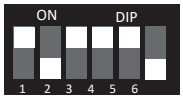
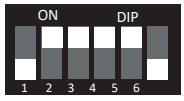
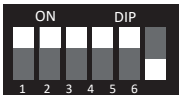
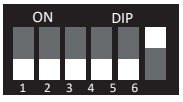
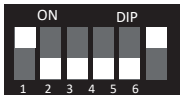
28. 

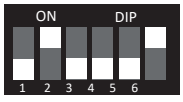
29. 

30. 

31. 

32. 

33. 

34. 

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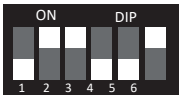
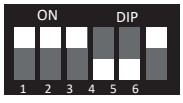
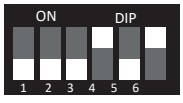
38. 

39. 

40. 

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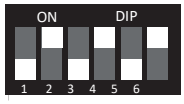
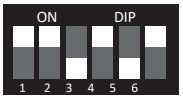
42. 

43. 

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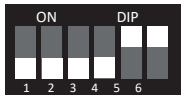
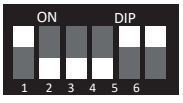
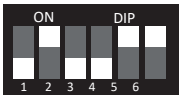
48. 

49. 

50. 

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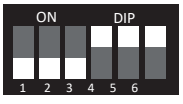
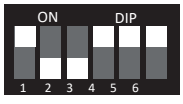
56. 

57. 

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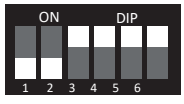
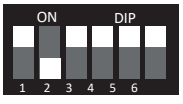
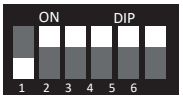
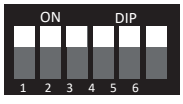
60. 

61. 

62. 

63. 

# Cable Set Packing List

1. 3*Power cable GRID 25cm,
2. 1*AC Grid cable 300cm,
3. 3*Power cable LOAD 25cm,
4. 1*AC LOAD cable 300cm,
5. 3*Battery power cable 30cm,
6. 7*Communication cable 40cm,
7. 1*MPPT power cable 100cm,
8. 1*Communication cable 100cm,
9. 1*Grounding cable 100cm,
10. 1*Cerbo power cable 40cm


1


2


3


4


5


6


7


8


9


10

# Switches on the combiner box

## ① Two Way Switch

1. ‘EPS’: switch to this mode when you need to use the Victron 3-phase system
2. ‘GRID’: switch to this mode when you don’t want to use the Victron 3-phase system, or the Victron 3-phase system fails. After you switch to this mode, the Victron 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

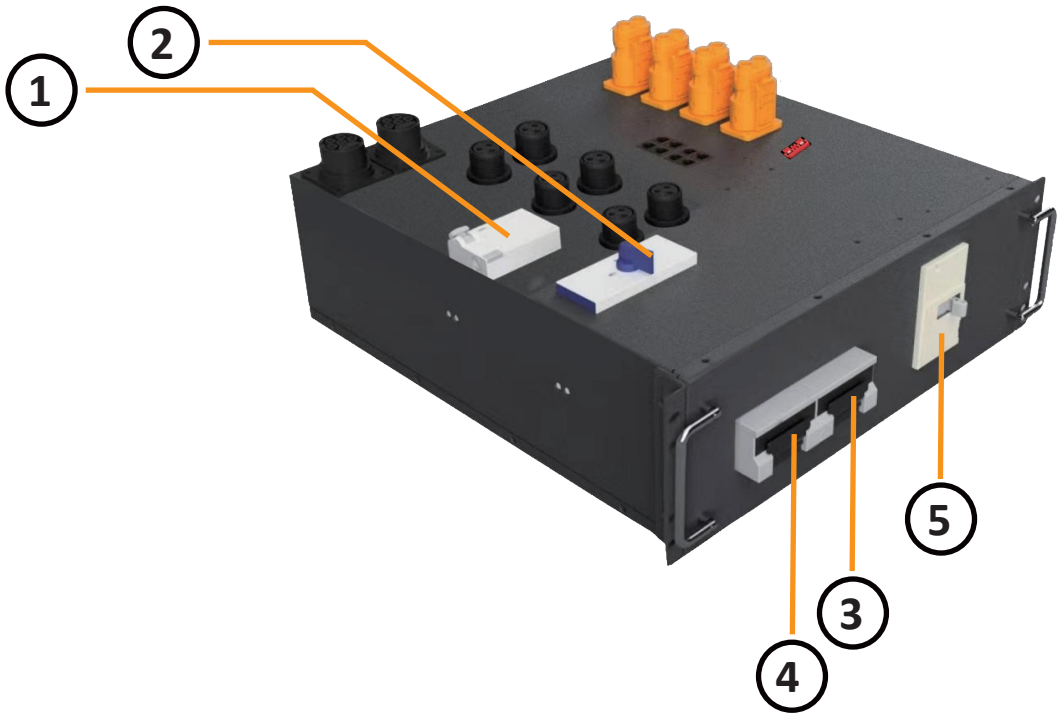
**Control AC load power sources**

## ④ AC GRID Switch

**Control AC grid power sources**

## ⑤ DC Switch

**Control DC power sources**



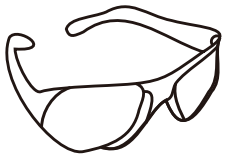
# Pre-installation inspection:

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.

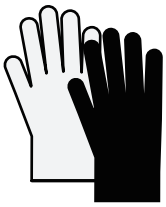
2. Check the personal protective gears and installation tools to make sure they are complete; if not, please replace them.

## Protective Equipment

Safety hat



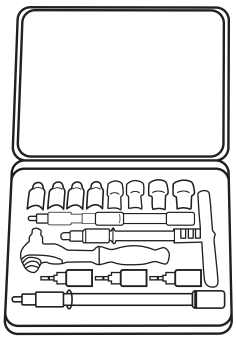
Goggles



Protective gloves

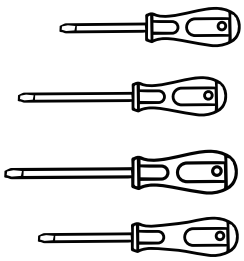
Insulating shoes

## Installation Tool



Insulation sleeve set

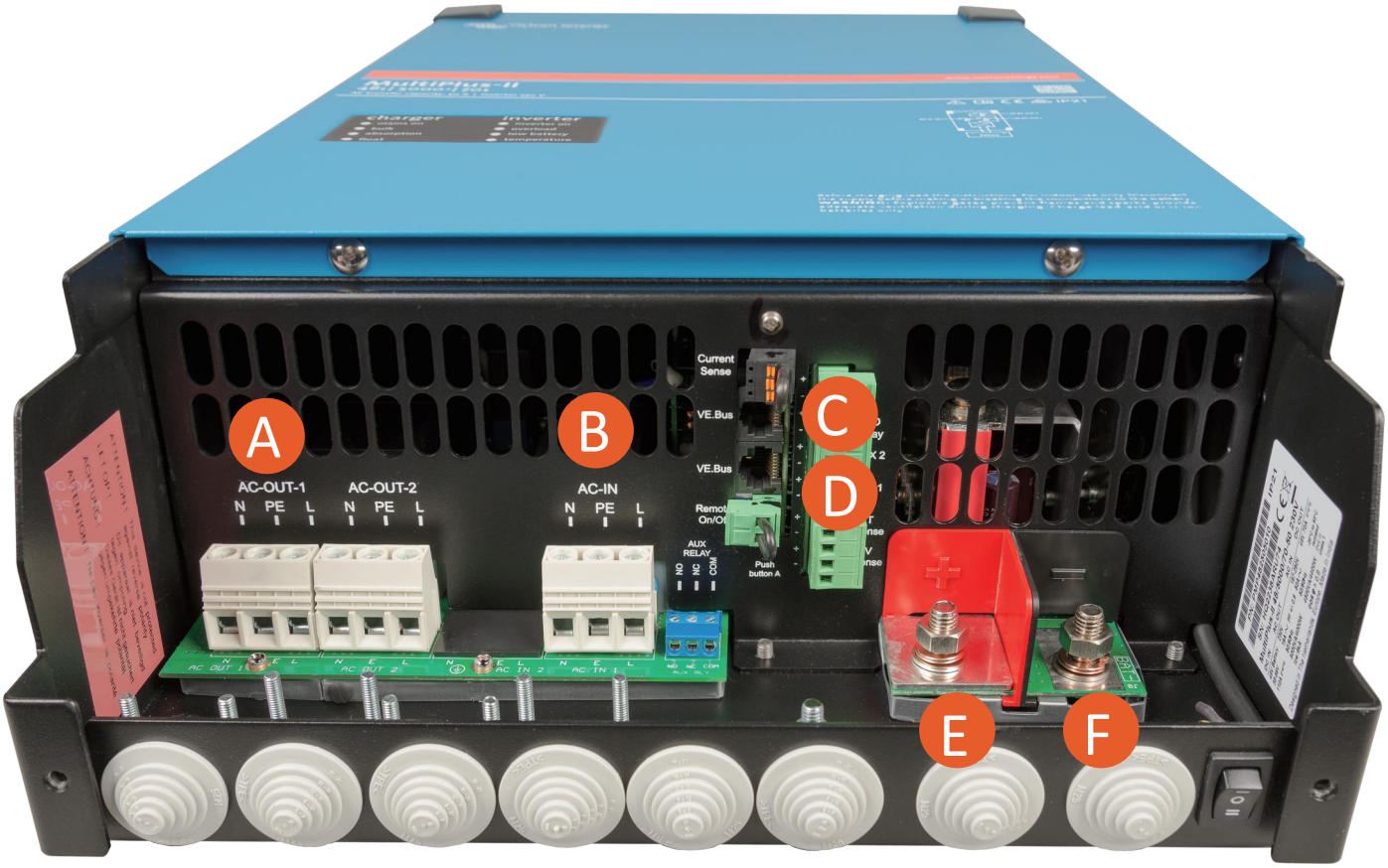
Torque socket wrench



Insulation screwdriver set

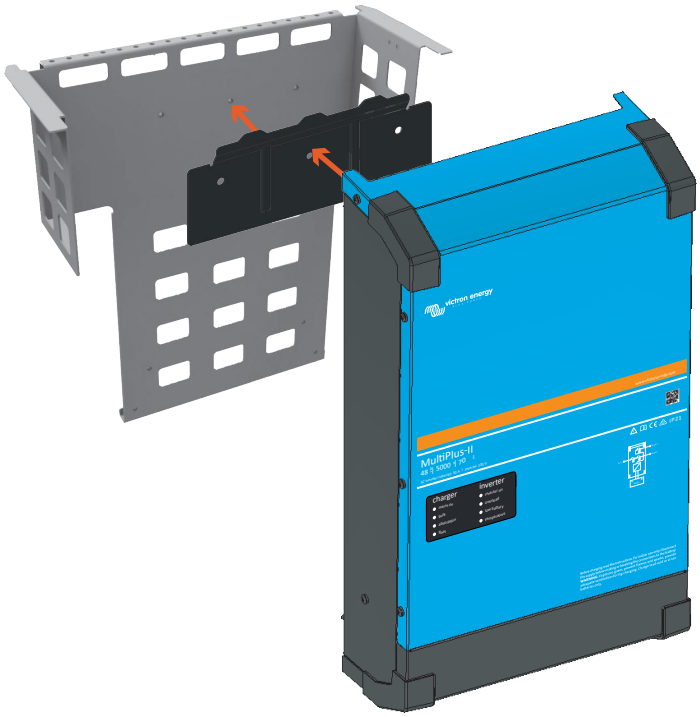
# Installation

- A AC-OUT-1
- B AC-IN
- C VE.Bus
- D VE.Bus
- E Battery +
- F Battery -

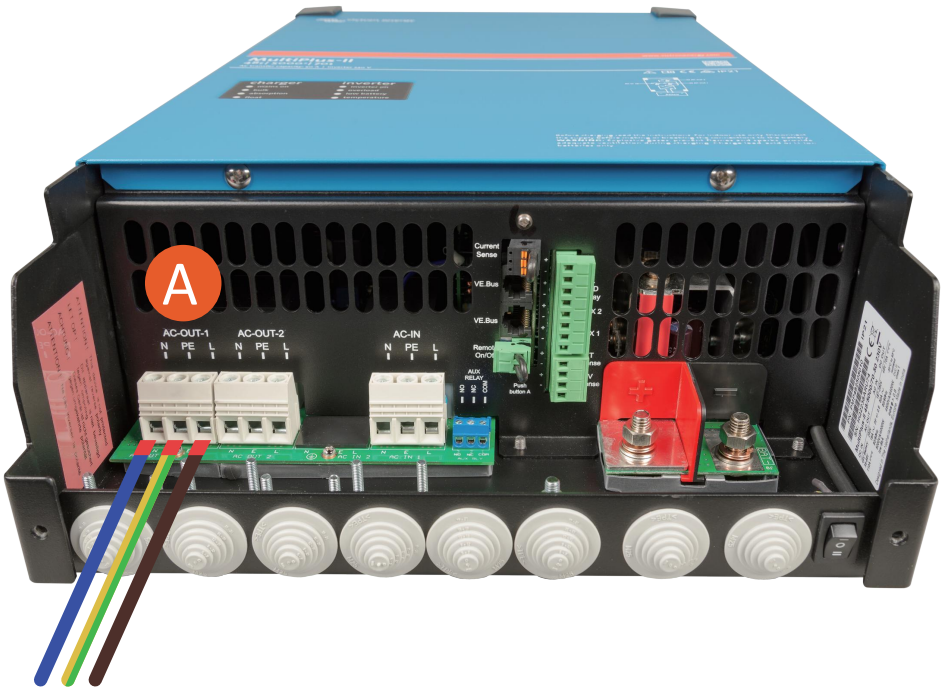


# Installation

**1** Attach the Victron inverter to the bracket and fix with screws

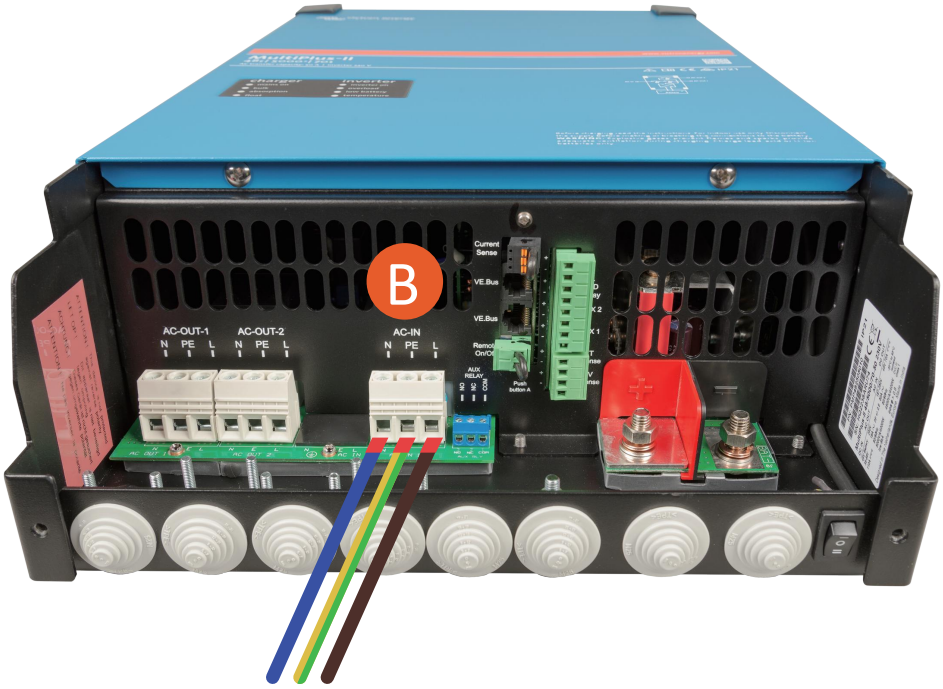



**2** Attach 1pcs (3) 25cm power cable LOAD with ‘LOAD’ sticker to (A) AC-OUT-1 of Victron inverter and fix with screws.



# Installation

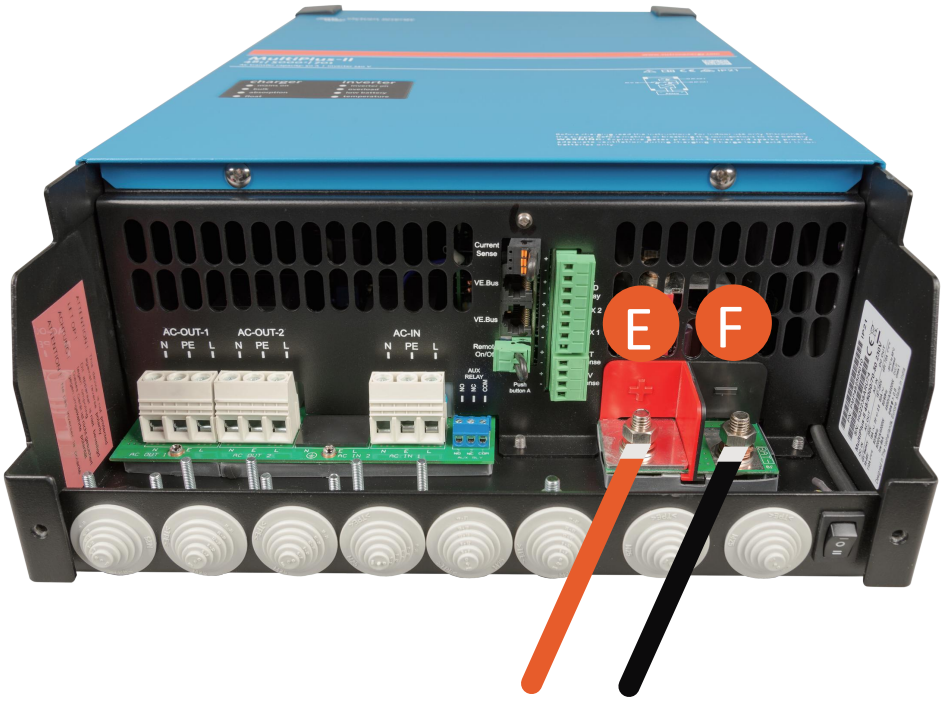
**3** Attach 1pcs (1) 25cm power cable with 'GRID' sticker to **B** AC-IN of Victron inverter and fix with screws.




**4** Attach 2pcs of (7) communication cable to **C** **D** VE.BUS ports of Victron inverter.

# Installation

**5** Attach 1pcs (5) 30cm battery power cable to inverter E F with '+' , '-' and fix screws with an insulating torque wrench at 12Nm.




**6** Put on the bottom cover of Victron inverter and fix with screws.

# Installation

**7** Attach the AC LOAD cable to ‘AC LOAD’ port in the combiner box, attach the AC GRID cable to ‘AC GRID’ port in the combiner box. Make sure the other end of these two cables is well insulated.

**8** Plug the inverter to cabinet.

# Installation

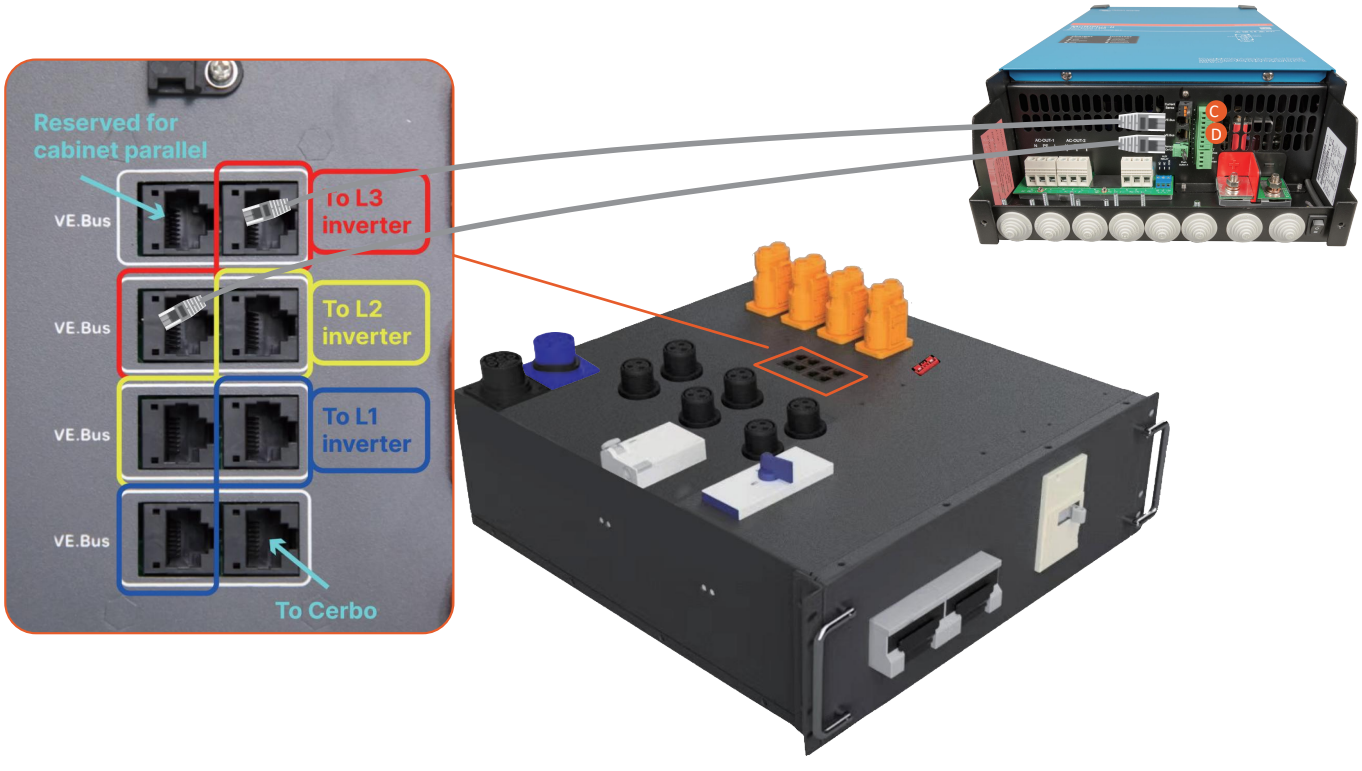
**9** Connect the another side of (3) 25cm power cable with ‘LOAD’ sticker from (A) AC-OUT-1 of inverter to L3 AC out port of the combiner box.


**10** Connect the another side of (1) 25cm power cable with ‘GRID’ sticker from (B) AC-IN of inverter to L3 AC IN port of the combiner box.

# Installation

**11** Connect the another side of 30cm (5) battery power cable from (E) (F) Battery + & - of inverter to L3 battery port of the combiner box.

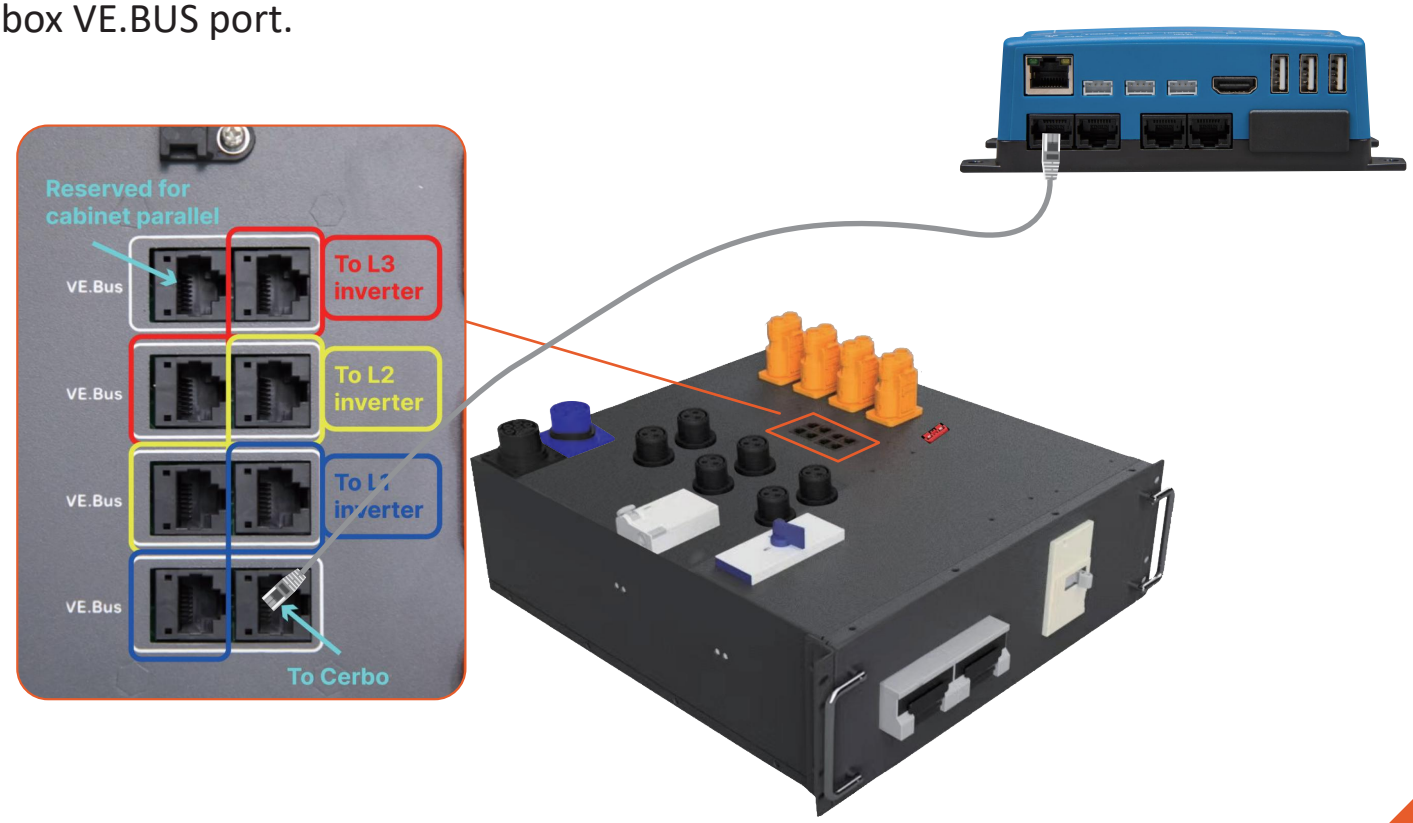

**12** Connect the 2pcs (6) communication cables from (C) (D) VE.BUS of inverter to L3 VE.BUS port of the combiner box, please connect the communication cable according to the following interface definition.



# Installation

**13** Repeat the step 1 to 6 and step 9 to 12 to intall the second and thrid Victron inverter, then plug them to cabinet.

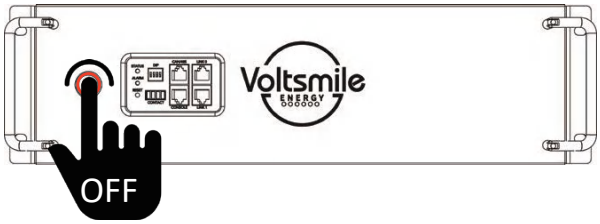
**14** Fix the Victron Cerbo GX to ‘Cerbo’ area of the combiner box with screws, and connect the 1pcs (6) communication cable from Cerbo GX VE.BUS port to combiner box VE.BUS port.



# Installation

**15** Connect the (10) power cable of Cerbo GX from power-in port to ‘Cerbo GX 48V’ port on the combiner box.


**16** Check the battery and make sure batteries are turned off before install. Plug the V10 RPC batteries to the cabinet and fix with screws.



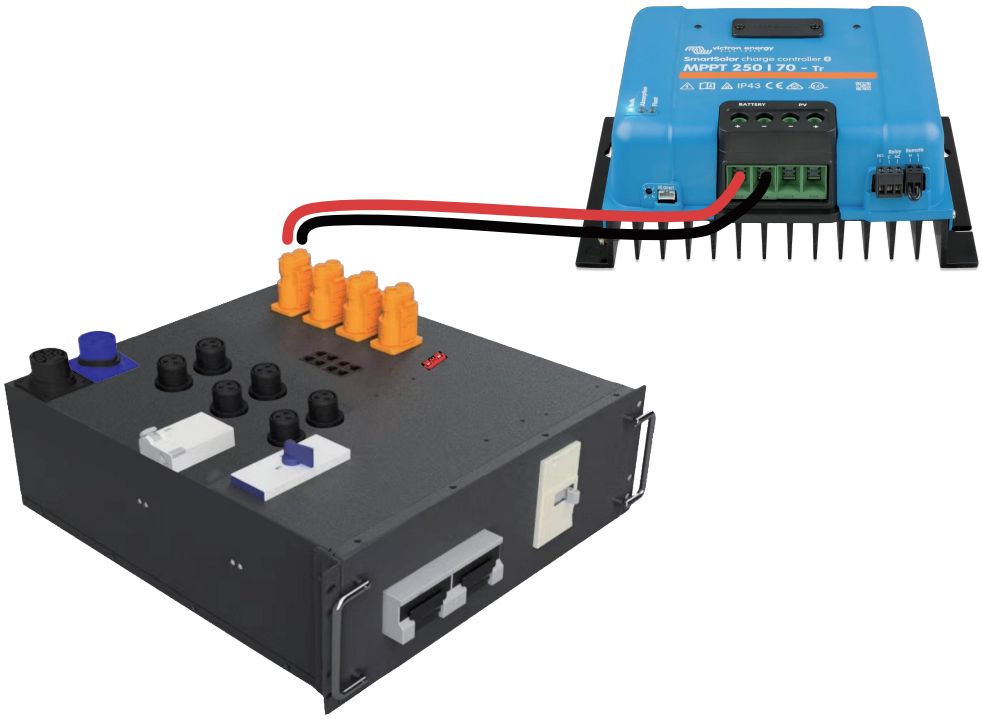

# Installation

**17** Adjust the RPC batteries DIP to right position(DIP 1 is the master battery).

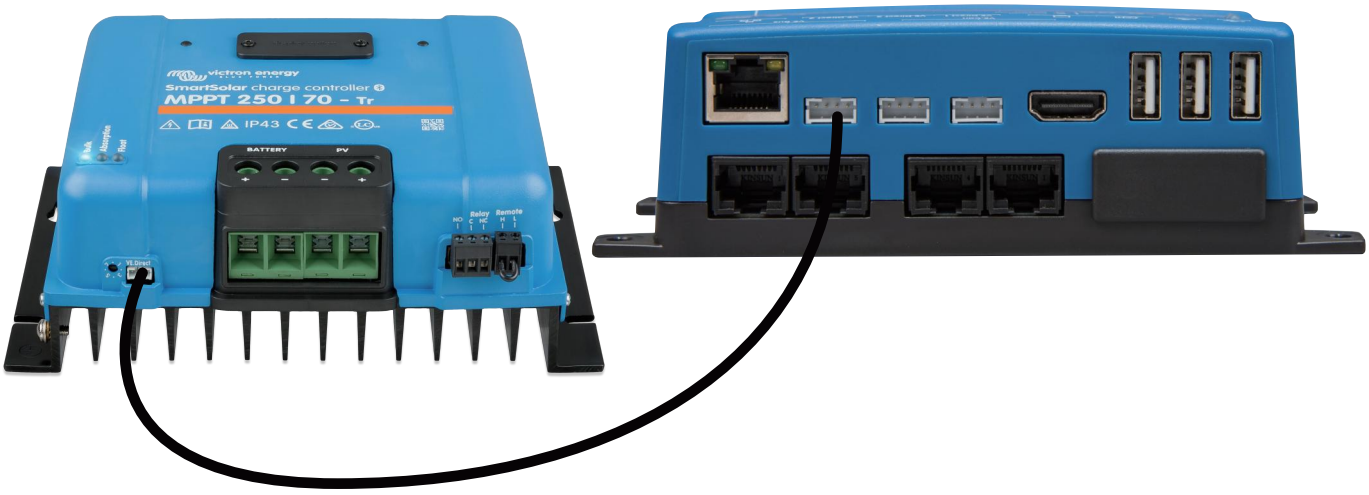

**18** Connect the 1pcs (6) communication cable from VE.CAN port of Victron Cerbo to CAN/485 port of master battery(the DIP '1' battery).

# Installation

**19** Connect the 100cm (7) MPPT power cable from MPPT ‘BATTERY’ port to combiner box MPPT port.



**20** Connect the VE.Direct port between MPPT and Cerbo.



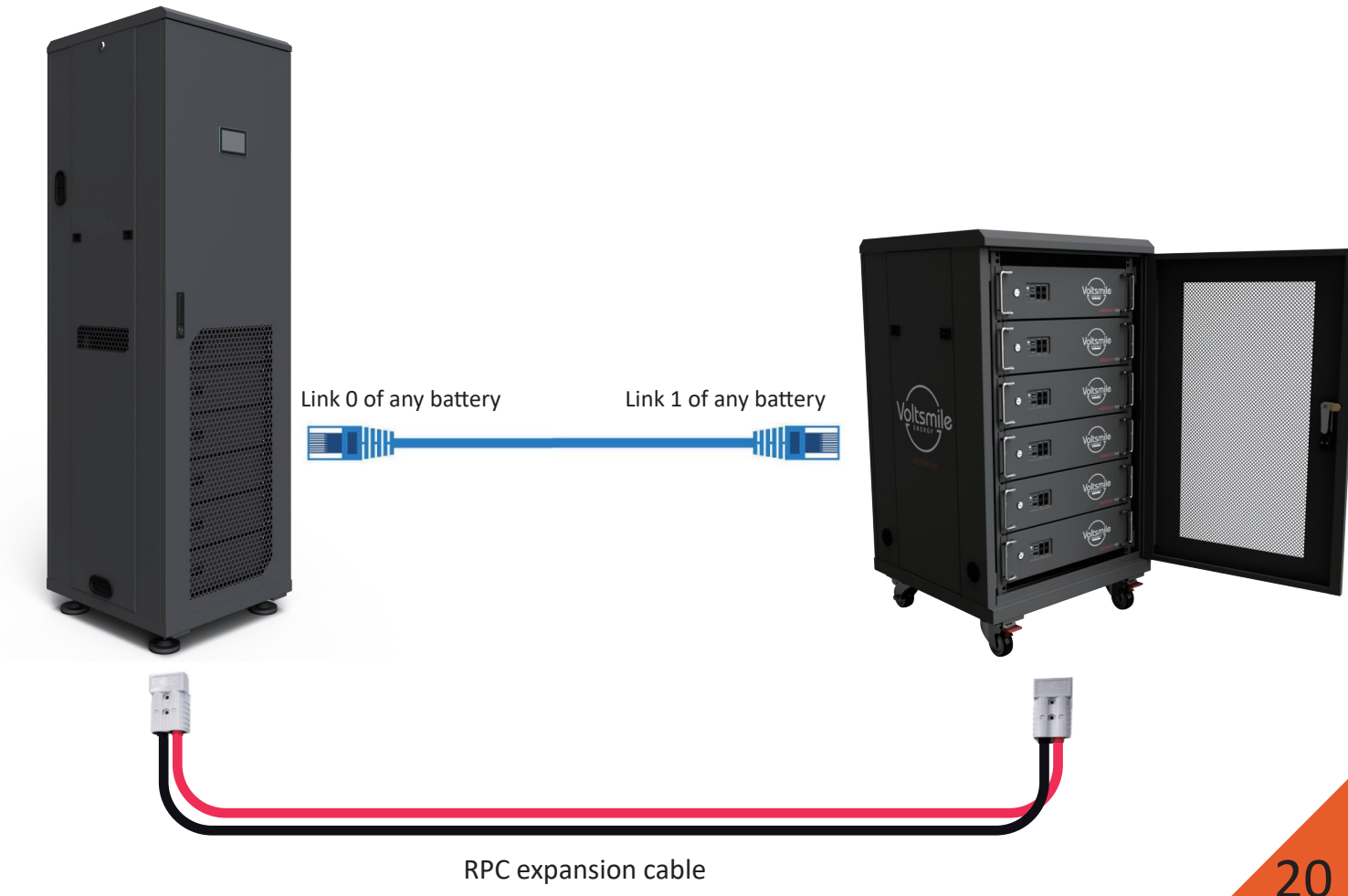
# Installation

**21** Fix the Victron MPPT to the left side of the cabinet with screws. All done.


**You can also scan below QRcode to download our installation guide video**

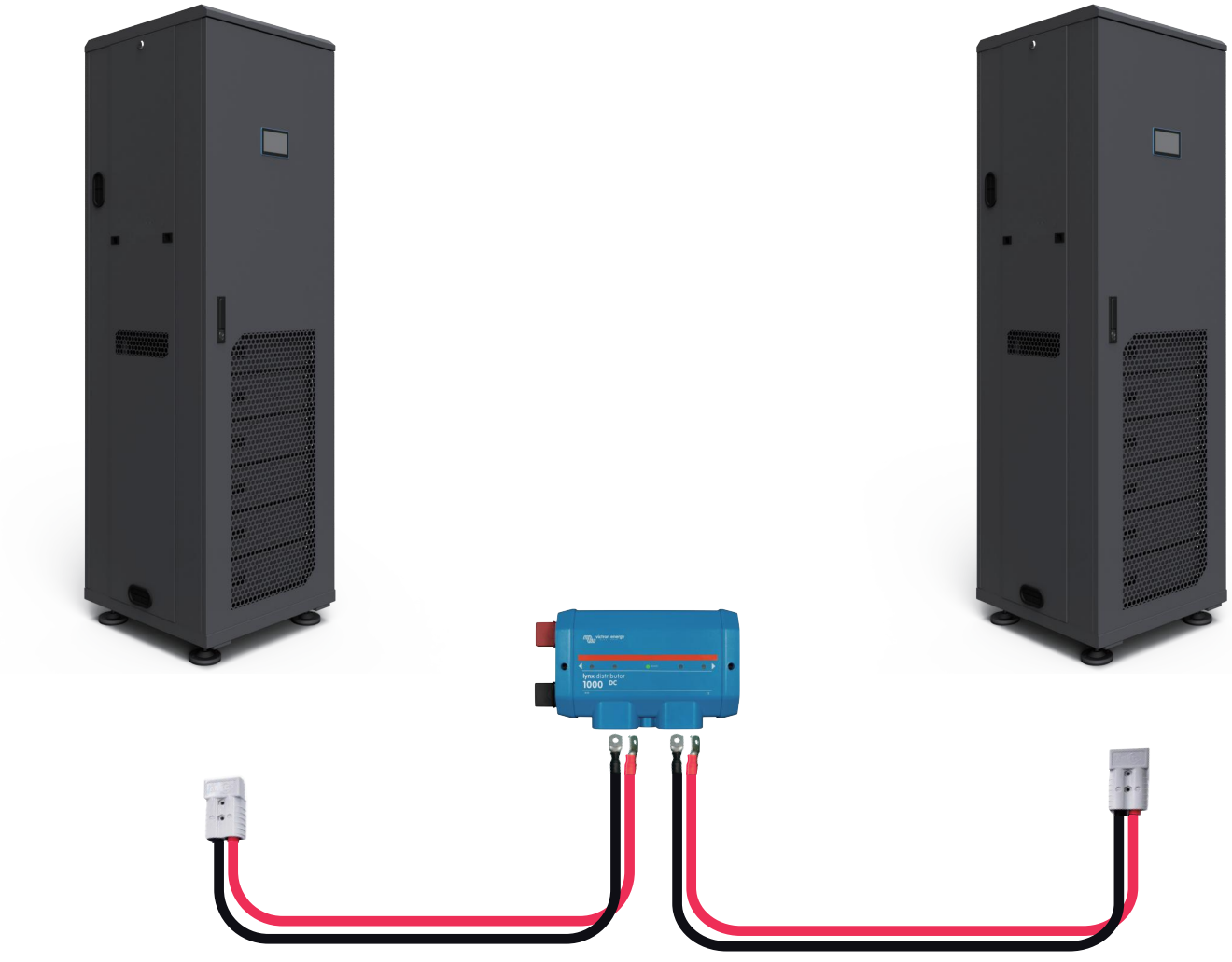
# Expand battery capacity

- Prepare: 1*AIO RPC system, n*RPC batteries, 1*RPC cabinet, 1*RPC expansion cable and 1*communication cable.
- Connect the AIO RPC cabinet and RPC cabinet with RPC expand cable in bottom.
- Switch the DIP of all RPC batteries to right position.
- Connect the Link 0 of any batteries in AIO RPC cabinet to Link 1 of any batteries in RPC cabinet.
- All done.



# Expand system capacity

- Prepare: 2*AIO RPC system, 2*RPC power cable and 1*communication cable.
- Connect two VE.bus port in the combiner box of two AIO RPC cabinet (find the port in page 13 step 12).
- Connect two AIO RPC system to Victron Lynx DC distribution with RPC power cable from the bottom of cabinet.



# DIP in expand system

- Make sure each batteries DIP position are different.
- Maximum you can have 6 AIO RPC cabinets in one system.
- Maximum you can have 63 batteries in one system.
- DIP 1 is the master battery.


1 2 6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