

**GROWATT**

## Quick Installation Manual

### APX 86~200H-S1



## Environment requirements



Max. +50°C



Min. -10°C



RH+5%~+95%

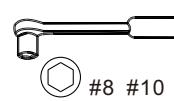
## Installation tools



Cross-head screwdriver (PH2)



Allen key #5



Socket wrench #8 #10



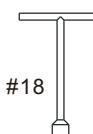
Electric screwdriver (PH2, crosshead)



Marker



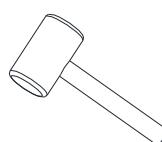
Measuring tape



T type socket wrench #18



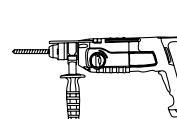
Knife



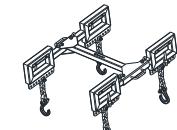
Hammer



Multimeter



Electric drill



Auxiliary tool



Forklift

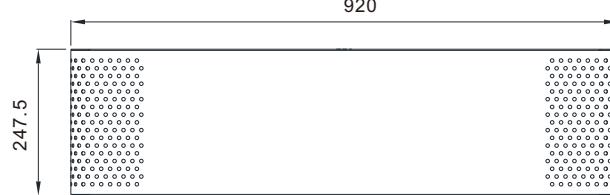
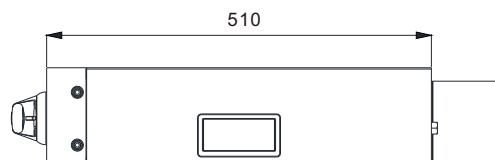
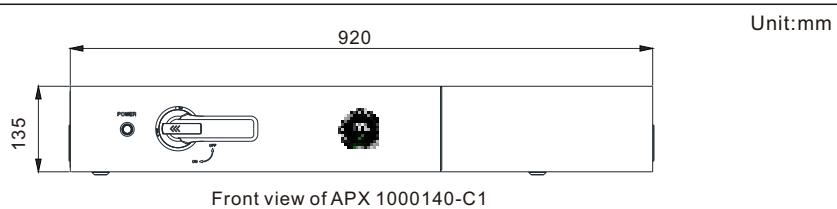


Lifting platform



Crane

## System size

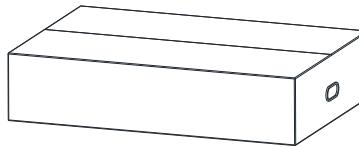


### Note:

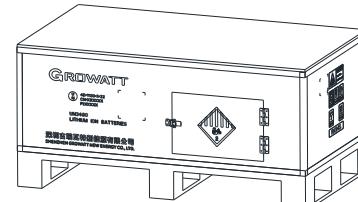
1. APX 1000140-C1 is the Control Module (CM for short) of the high-voltage battery system.
2. APX 14.3P-B1 is the Battery Module (BM for short) of the high-voltage battery system.

## 1. Checking before installation

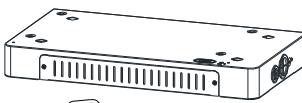
### 1-1 Checking the scope of delivery



APX 1000140-C1(entire unit)

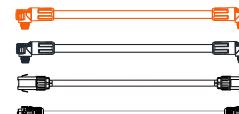


APX 14.3P-B1(entire unit)



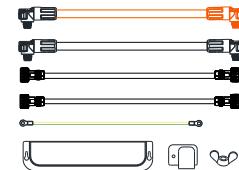
APX 14.3P-B1 Base & the connecting piece and the M6 screw to secure the base

C



Cable set connecting the hybrid inverter with the CM

D



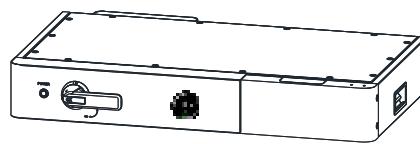
Cable set connecting two columns of batteries

E

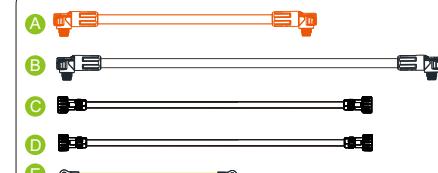
Hybrid inverter model	Battery System Capacity	Configuration
WIT 28-55kW	86.01kWh	A+B*6+C+D
	100.35kWh	A+B*7+C+D
	114.68kWh	A+B*8+C*2+D+E
WIT 50-100kW	129.02kWh	A+B*9+C*2+D+E
	143.36kWh	A+B*10+C*2+D+E
	157.69kWh	A+B*11+C*2+D+E
	172.3kWh	A+B*12+C*2+D+E
	186.36kWh	A+B*13+C*2+D+E
	200.70kWh	A+B*14+C*2+D+E

### 1-2 Checking the package of APX 100140-C1

Please check if the contents are complete and intact.



APX 1000140-C1



Cables connecting the CM with the BM

- A Positive power cable \*1
- B Negative power cable \*1
- C Communication cable 1 \*1
- D Communication cable 2 \*1
- E Grounding cable \*1



Operation manual



Quick installation guide



Warranty Card

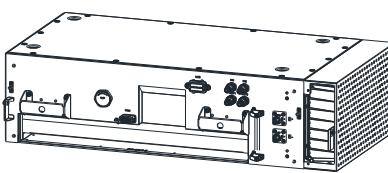
- A Operation Manual \*1
- B Quick installation guide \*1
- C Warranty Card \*1



- A Short circuit cap \*1
- B Communication port dustproof cover \*1
- C Connecting piece 1 \*1
- D Connecting piece 2 \*2
- E M6\*16 screw \*5
- F M5\*12 screw \*2

### 1-3 Checking the package of APX 14.3P-B1

Please check if the contents are complete and intact



APX 14.3P-B1



Cables connecting two battery modules

A Power cable connecting to BMs \*1

B Communication cable 1 connecting to BMs \*1

C Communication cable 2 connecting to BMs \*1

D Grounding cable between BMs/ Grounding cable between BM and Base



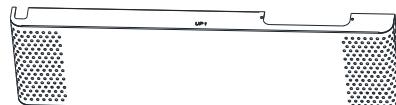
Warranty card \*1



A Anti-tipping piece\*4

B M6\*16 screw\*8

C M5\*12 screw\*2

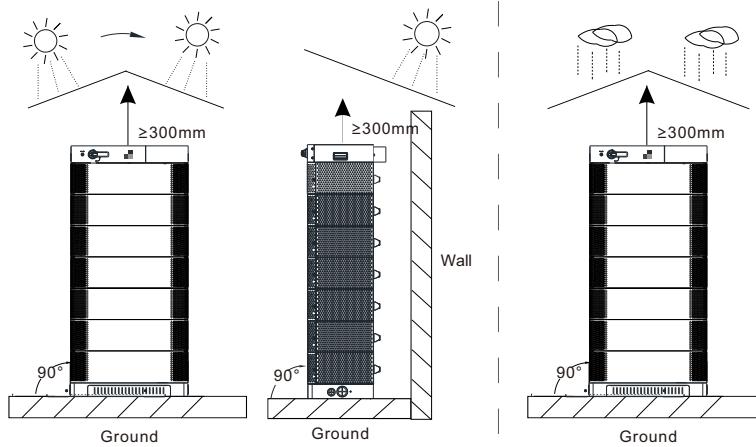


Front Cover of the BM

## 2. Installation

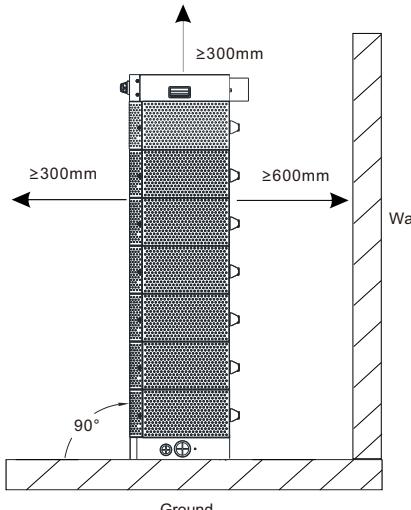
### 2-1 Installation environment requirements

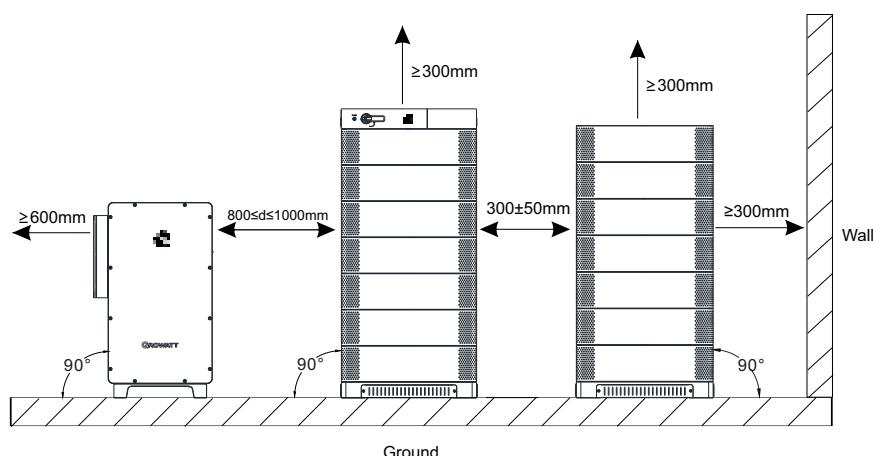
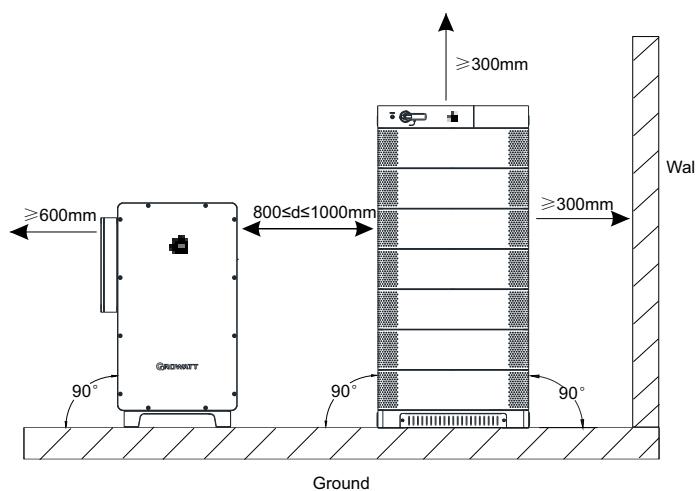
➤ When installing the battery system outdoors, it is recommended to install a sun shelter over the system to avoid exposure to direct sunlight; otherwise, the battery system might fail to charge or discharge normally, or it might even damage the system.



### 2-2 Clearance and angle requirements

➤ The battery system can be installed in doors or outdoors. The angle and clearance requirements are shown below.



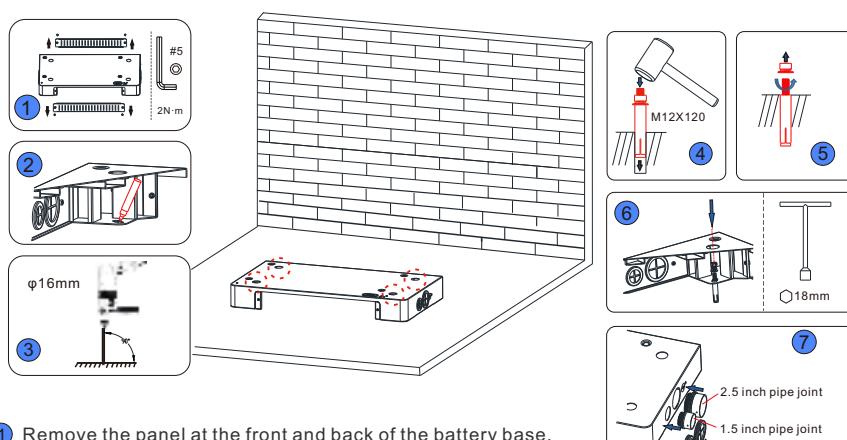


#### Note:

1. The system should be installed with the help of at least 2 grown-up males.
2. It is recommended to use a forklift during the installation.
3. A maximum of 7 battery modules can be stacked in one column. If more than 7 of them are to be configured, please install them in two columns.

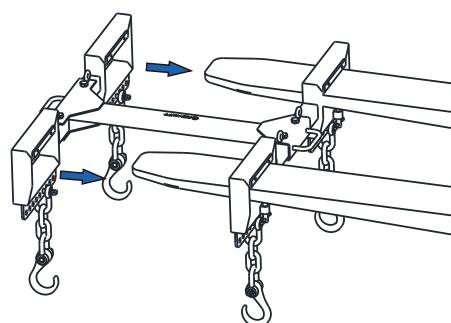
## 2-3 Installation Procedure

### 1 Step 1: Install the battery base.

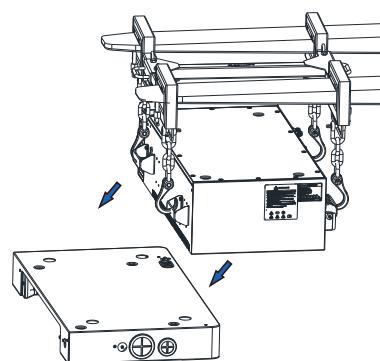


- ① Remove the panel at the front and back of the battery base.
- ② Mark the hole positions using a marker.
- ③ Drill holes at the marked positions to a depth of 95 mm.
- ④ Knock the expansion screws into the holes (M12×120).
- ⑤ Remove the flat washer, the spring washer and the nut.
- ⑥ Place the base on the selected position, then install the flat washer, the spring washer and the nut. Tighten the nut to secure the base.
- ⑦ When installing in two columns, you need to remove the rubber sealing plugs on the side of the base and install the conduit fittings with appropriate specifications. Determine the length of the conduit according to the distance between two columns and install the conduit.

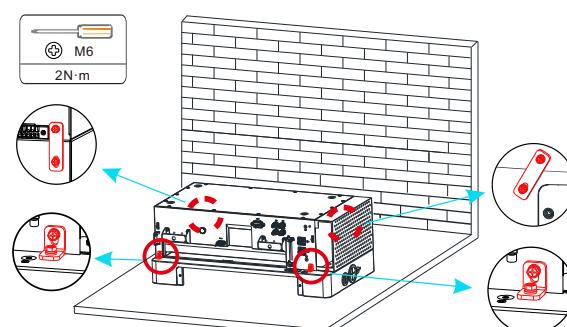
2 **Step 2:** Move the auxiliary tool onto the fork of the forklift.



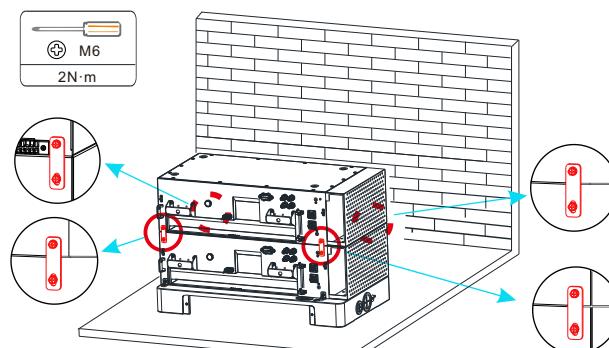
3 **Step 3:** Place the battery module onto the base, ensure the locating pins of the BM align with the locating points of the base.



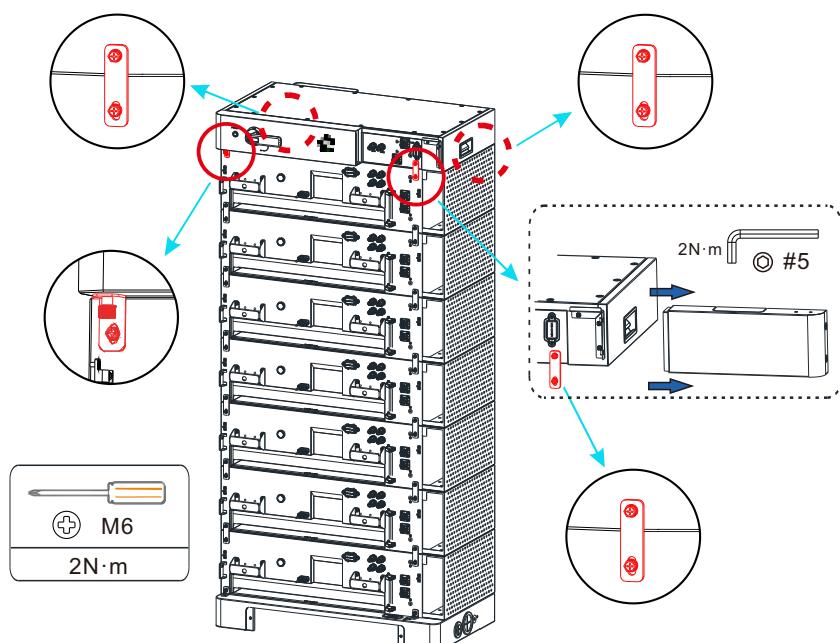
4 **Step 4:** Install the 4 anti-tip connecting pieces between the BM and the base to avoid tip-overs during the installation.



5 **Step 5:** Connect the 4 anti-tip connecting pieces between the two BMs. It is not recommended to install the anti-tip pieces after stacking all the BMs as it might cause an accident due to the falling BM.



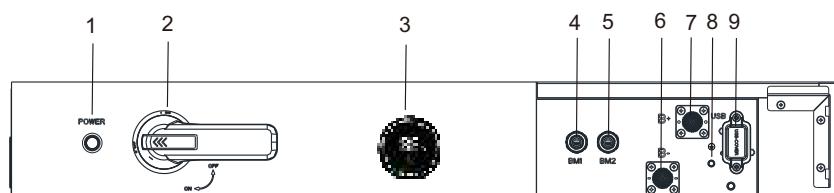
**6** **Step 6:** Connect the 4 anti-tip connecting pieces between the BM and the CM. Therefore, it is necessary to install the anti-tip components properly.



**Note:** Remove the front cover of the CM before installing the connecting pieces.

## 4. Cable Connection

### 4-1 Front&rear view of APX 100140-C1

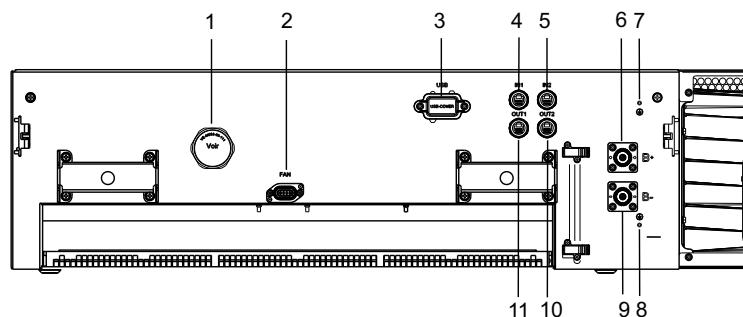


Number	Name	Description
1	POWER	Power button
2	Switch	DC switch
3	LED	Battery operation indicator
4	BM1	BM & CM communication terminal 1
5	BM2	BM & CM communication terminal 2
6	BAT-	BAT negative terminal
7	BAT+	BAT positive terminal
8		PE terminal
9	USB	USB terminal cover plate



Number	Name	Description
1	Ventilation valve	Exhaust air and keep water out
2	PCS+	CM positive terminal connected to the PCS positive terminal
3	PCS-	CM negative terminal connected to the PCS negative terminal
4	SEM	Communication terminal connected to the ShineMaster
5	AC INPUT	AC INPUT terminal
6	PCS	Communication terminal connected to the hybrid inverter

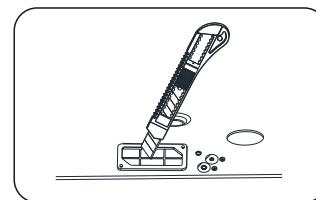
#### 4-2 Front view of APX 14.3P-B1



Number	Name	Description
1	Explosion-proof valve	Exhaust air and keep water out
2	FAN	Fan power supply terminal
3	USB	USB terminal cover plate
4	IN1	Communication input 1, connected to OUT1 on the previous BM, or BM1 on the CM (for the first BM)
5	IN2	Communication input 2, connected to OUT2 on the previous BM, or BM2 on the CM (for the first BM)
6	B+	BAT positive terminal
7		PE terminal 1
8		PE terminal 2
9	B-	BAT negative terminal
10	OUT2	Communication output 2, connected to IN2 on the next BM, or covered with the short-circuit connector cap (for the last BM)
11	OUT1	Communication output 1, connected to IN1 on the next BM, or covered with the dust-proof cover (for the last BM)

#### 4-3 System wiring and installing the covers

**Step 1:** Cut the rubber sealing plug on the base with a knife before connecting cables.



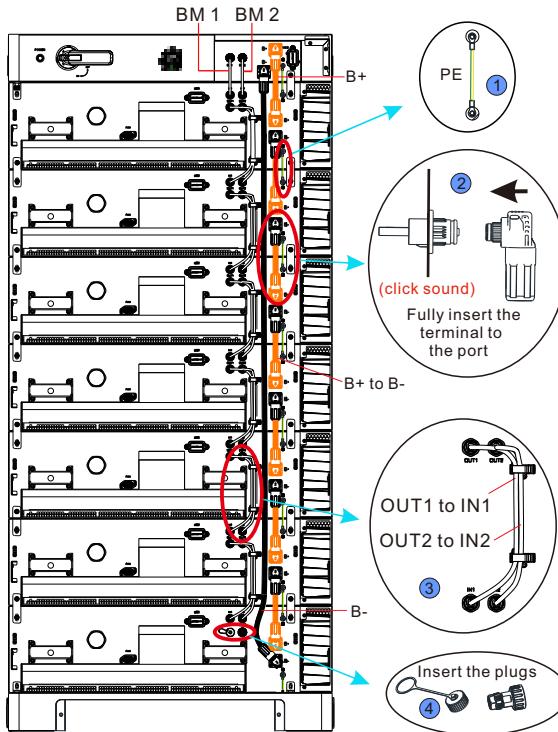
##### NOTE:

- If less than seven battery modules are installed, you can skip this step.
- Prior to connecting cables, please cut the rubber sealing plug on the base using a knife.

3. Alternatively, you can cut the rubber sealing plugs on the sides of the base or remove them, which is not recommended as it might compromise the sealing performance of the system. If the use of a conduit is required, please remove the plugs and install the conduit fittings. The conduit and fittings should be separately purchased.

4. You are advised to route all the cables through the holes before connecting them.

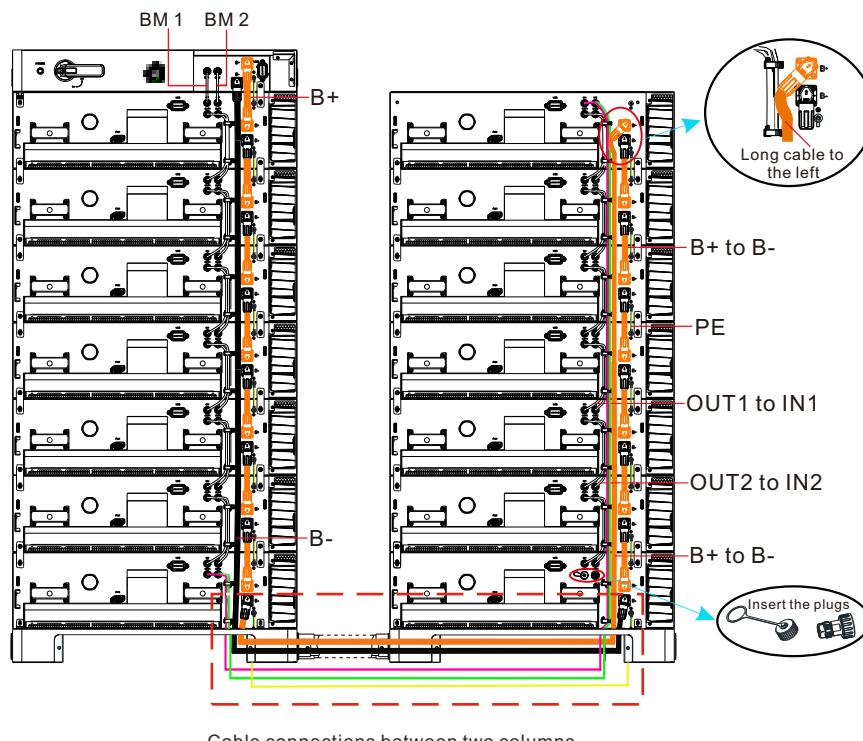
**Step 2: Connect external cables of the battery system.**

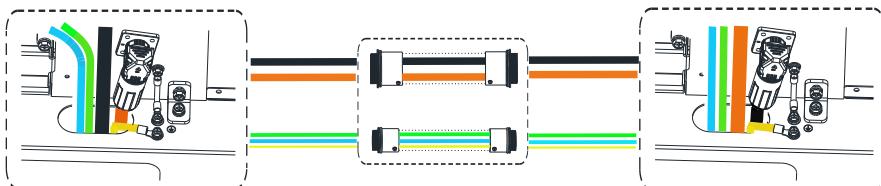


- ① Install the grounding cable first. (The grounding cable MUST BE connected first; otherwise it might interfere the installation of the power cables).
- ② Insert the power cable connector into the corresponding terminal until you hear a click sound.
- ③ Install communication cables. Connect OUT1 to IN1 on the next BM and OUT2 to IN2 on the next BM.
- ④ For the last battery, cover the OUT1 with the dust-proof cover and the OUT2 with the short-circuit connector cap.

**NOTE:**

1. Verify that the voltage at the battery output terminal is 0V using a multimeter to avoid connecting cables with power on.
2. Connect cables following the sequence demonstrated in the figure. The communication cables are installed lastly. Avoid mistakenly powering on the machine during installation.
3. Once the power cables are installed, you can pull the cables slightly to ensure that they are securely connected.



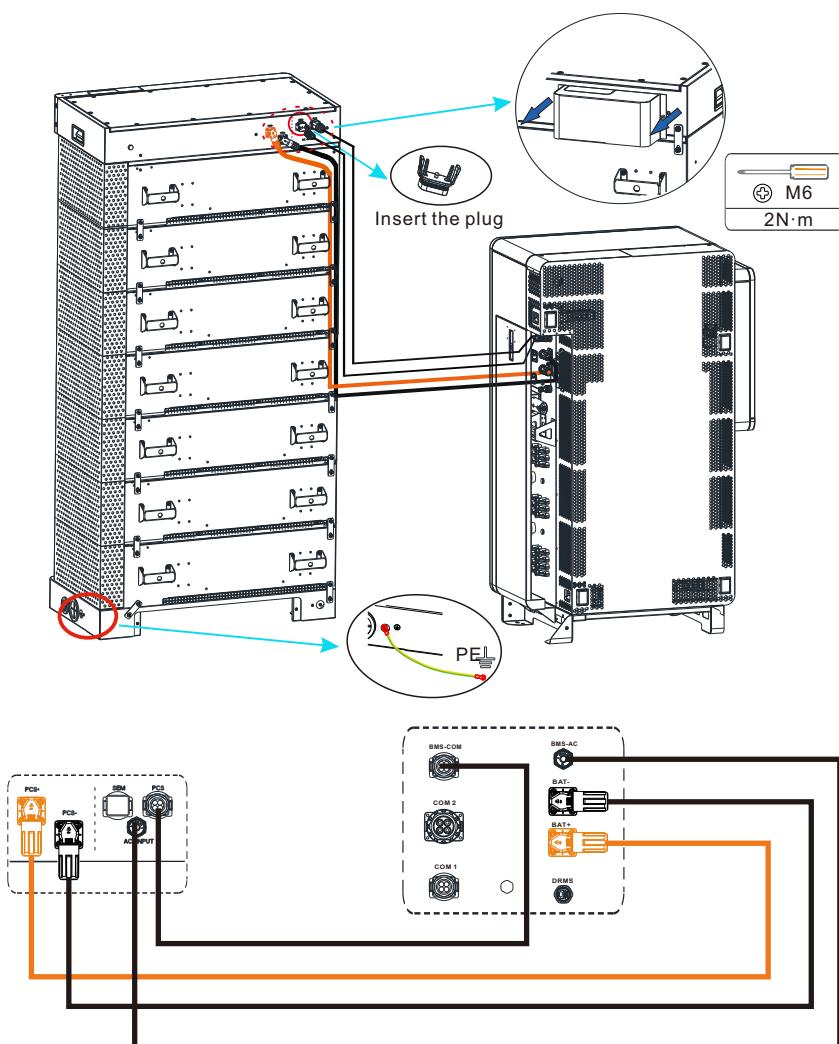


Bottom view of the cable connections between two columns

**NOTE:**

1. When connecting the power cables and communication cables between the two columns, make sure to pass the wires through the two wire holes on the base before connecting them to the other column. (The length of the wires for connection between two columns is designed based on the situation where a maximum of 7 battery modules are installed in the second row. If the wires are too long for the actual use, please place the excess part into the middle of the base through the cable routing hole.)
2. Connect the power cables and the communication cables from the bottom BM in the column with the CM to the top BM of the other column. Ensure that the dust-proof cover and the short circuit connector cap are in place on the OUT1 and OUT2 terminals of the BM farthest from the CM.
3. Connect the B- terminal of the BM farthest from the CM to the B- terminal of CM.
4. The cable color is for demonstration purpose only. The actual cable color prevails.

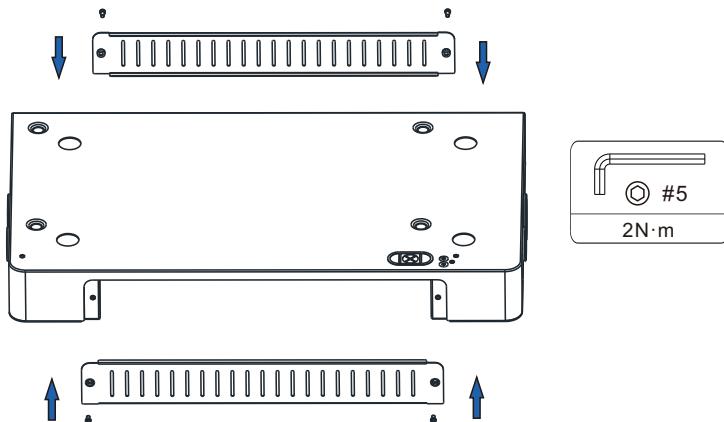
**Step 3: Connect external cables between the CM and the hybrid inverter.**



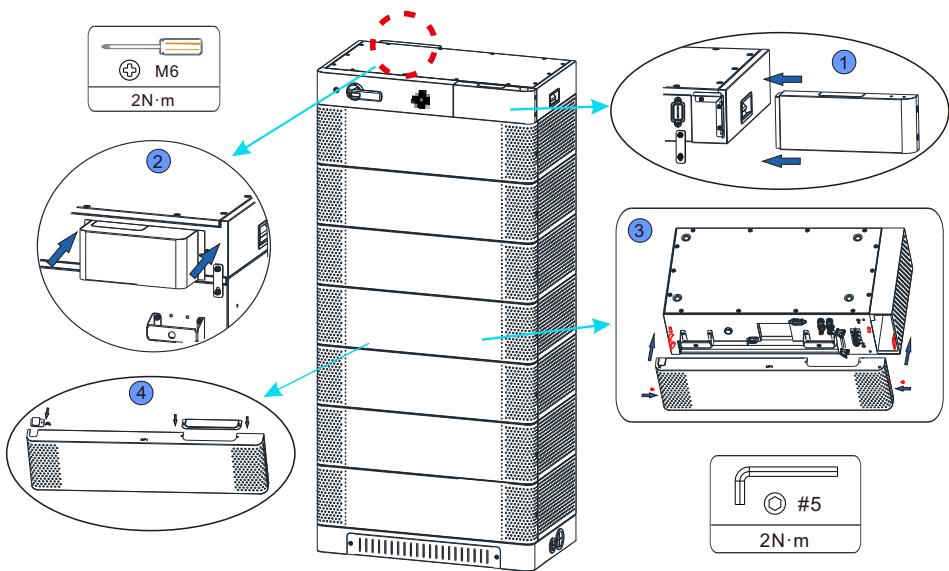
**NOTE:**

1. Remove the back cover of the CM.
2. Connect the power cables from the PCS to the PCS+ and PCS- terminals on the CM. Ensure the correct polarity when connecting cables.
3. Connect the PCS communication port on the CM to the BMS communication port on the PCS.
4. Install the dust-proof cover onto the SEM port of the CM.
5. Connect the grounding cable from the ground point on the base to the ground. The grounding cable MUST BE properly connected; otherwise, it may cause system damage or electric shocks. The ring terminals to be crimped with the grounding cable can be found in the cable package.

**Step 4:** Reinstall the front and back panels of the base.



**Step 5:** Install the covers for the whole system.

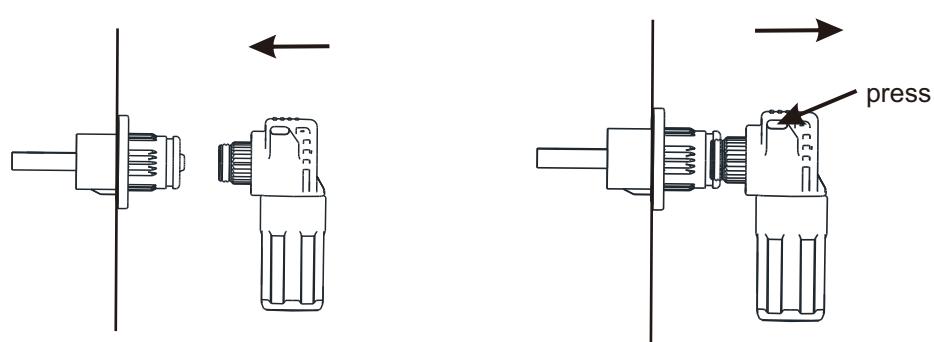


- ① Slide the front cover onto the CM from the side and fasten the screws.
- ② Install the back cover of the CM.
- ③ Install the front cover of the BM and tighten the screws on both sides.

**NOTE:**

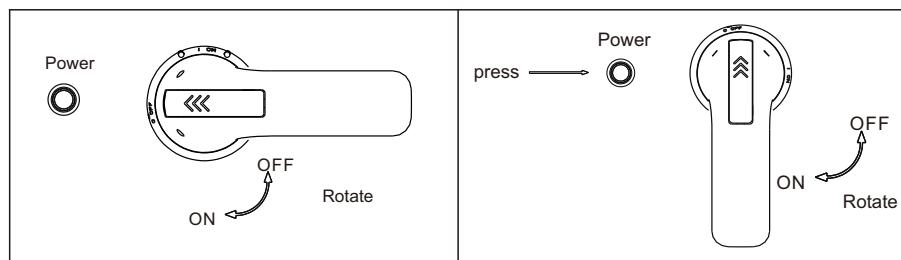
- ④ If the battery system is configured in two columns, prior to installing the front cover of the top BM in the second column, you need to install the two sealing plates as shown in the figure marked with ④.

## 5. Terminal Connection



## 6. Powering on/off the Battery System

### 6-1 Powering on the Battery System

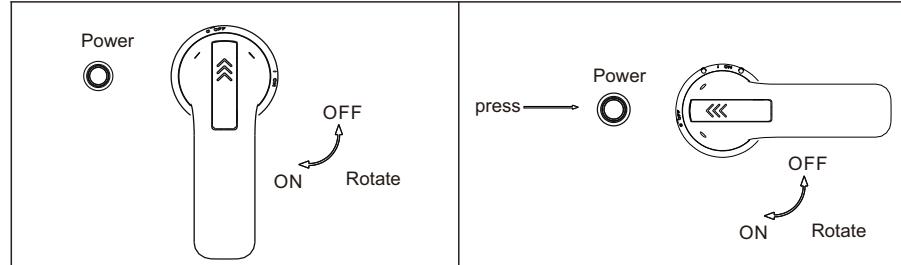


Before turning on the battery, please check if all cables are properly connected. Turn the DC switch on the Control Module to the "ON" position, then press the power button for 1 to 2 seconds. The battery system will be powered on in about 2 seconds when you hear the sound of the fan in operation.

Turn the DC switch to ON, and then press the "Power" button (1s<t<2s)

No.	Procedure	Acceptance criteria
1	Connect the battery and the hybrid inverter	Make sure the wiring harnesses are securely connected
2	Set the DC switch to the ON position	Ensure that the DC switch is set to the ON position
3	Press the POWER button for 1 to 2 seconds. Observe the LED indication on the front panel	1. If the LED display of the control module lights up in 10 seconds, the system is successfully powered on. 2. If the LED indicator turns red, a fault might have occurred. Please shut down the system and rectify the issue before restarting it.

### 6-2 Powering off the Battery System



Serial	Procedure	Acceptance criteria
1	Press the POWER button for 10 to 15 seconds.	Press the "POWER" button for 10-15 seconds.
2	Set the DC switch to OFF	The DC switch is set to the "OFF" position.

## 7. Service and contact

### Shenzhen Growatt New Energy Co., Ltd.

4-13/F, Building A, Sino-German (Europe) Industrial Park,  
Hangcheng Ave, Bao'an District, Shenzhen, China

+86 755 2747 1942

service@ginverter.com

W:www.ginverter.com



Download  
Manual



Growatt New Energy