

Quick Installation Guide

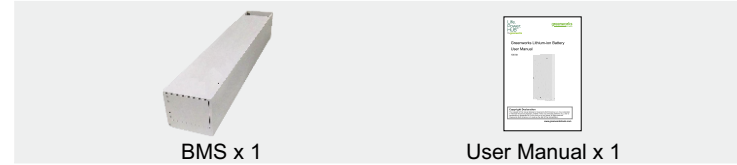
Greenworks Lithium-ion Battery
100 Ah

I

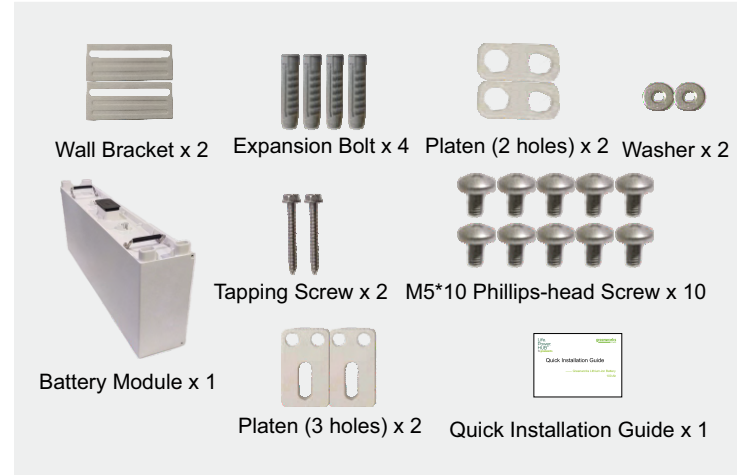
Packing List

Note: The Quick Installation Guide briefly describes required installation steps. If you have any question, please refer to the User Manual delivered with the BMS for details.

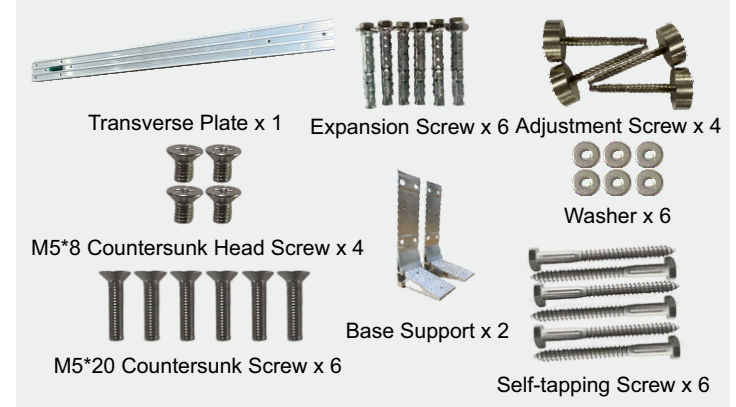
BMS (GWU-BAT-BMS):



One Battery Module (GWU-BAT-5.0H×1):



All Accessories Required for Two Installation Modes



Base for BAT50-G2 Battery:



II

Installation Prerequisites

Ensure that the installation location meets the following conditions:

- The building is designed to withstand earthquakes
- The location is far from the sea to avoid salt water and humidity, over 3280.84 ft/1000 m
- The floor is flat and level
- There are no flammable or explosive materials, at a minimum of 2.95 ft/0.9 m
- The ambience is shady and cool, away from heat and direct sunlight
- The temperature and humidity remain at a constant level
- There is minimal dust and dirt in area
- There are no corrosive gases present, including ammonia and acid vapor
- Where charging and discharging, the ambient temperature ranges from 32°F/0°C to 113°F/45°C

In practice, the requirements of battery installation may be different due to environment and locations. In that case, follow up the exact requirements of the local laws and standards.

Note!

The Greenworks battery module is rated at IP65 and thus can be installed outdoors as well as indoors. However, if installed outdoors, the battery pack shall not be exposed to direct sunlight and moisture.

Note!

If the ambient temperature exceeds the operating range, the battery pack will stop running to protect itself. The optimal temperature range for operation is 14°F/-10°C to 122°F/50°C. Frequent exposure to harsh temperatures may deteriorate its performance and lifetime.

Note!

For the first installation, the interval among manufacture dates of battery modules shall not exceed 3 months.

III

Overview (Floor Mounting)

Scheme A

BMS	2 * Wall Bracket
Battery	2 * Expansion Bolt
Battery	2 * Tapping Screw
Battery	2 * Washer
Base	14 * M5*10 Screw
	2 * Platen (3 holes)
	4 * Platen (2 holes)

Distance from the equipment:
To left side: ≥11.81 in./300 mm
To right side: ≥11.81 in./300 mm

Scheme B

BMS	4 * Wall Bracket
Battery	4 * Expansion Bolt
Battery	4 * Tapping Screw
Battery	4 * Washer
Battery	20 * M5*10 Screw
Base	4 * Platen (3 holes)
	4 * Platen (2 holes)

Distance from the equipment:
To left side: ≥11.81 in./300 mm
To right side: ≥11.81 in./300 mm

Scheme C

BMS	4 * Wall Bracket
Battery	4 * Expansion Bolt
Battery	4 * Tapping Screw
Battery	4 * Washer
Battery	24 * M5*10 Screw
Base	4 * Platen (3 holes)
	6 * Platen (2 holes)

Distance from the equipment:
To left side: ≥11.81 in./300 mm
To right side: ≥11.81 in./300 mm

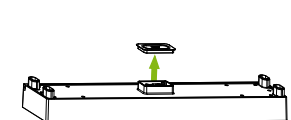
IV

Steps (Floor Mounting)

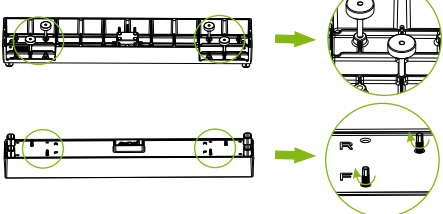
Please reserve enough distance from the equipment to the ceiling/ground for capacity expansion. Take Scheme C as an example.

Step 1: Place Base.

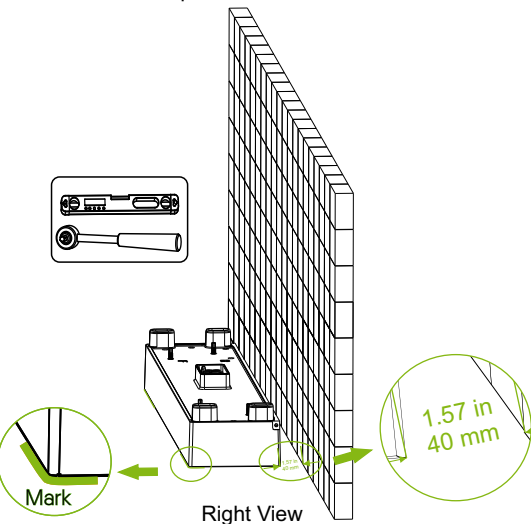
(1) Remove the dust cover.



(2) Insert M8*85 screws from the bottom of Base, to ensure that the Base is even.



Step 2: Locate the Base 1.57 in./40 mm away from the wall, accurately mark the location of the Base on both sides with a pen.



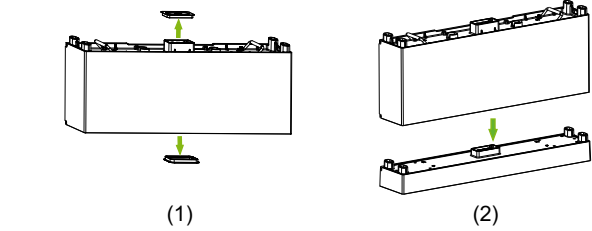
Note!

(a) Use a spirit level to measure the sides of the Base to ensure they are even.
(b) If not, please adjust the Adjustment Screws by a torque wrench being to ensure that the Base is even.

Step 3: Place Battery Module on the Base.

(1) Remove the top and bottom dust covers.

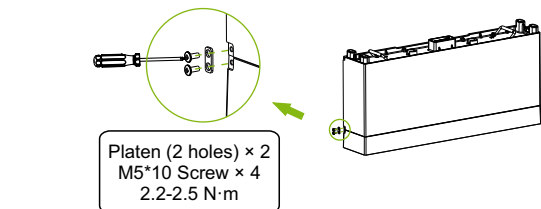
(2) Place the Battery Module on the Base.



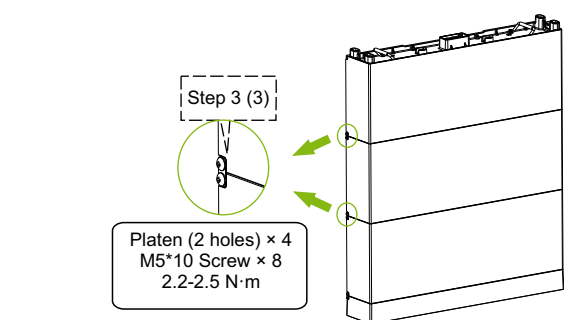
Note!

If the Base is shifted after placing a Battery Module, move it to its original location according to the mark previously drawn.

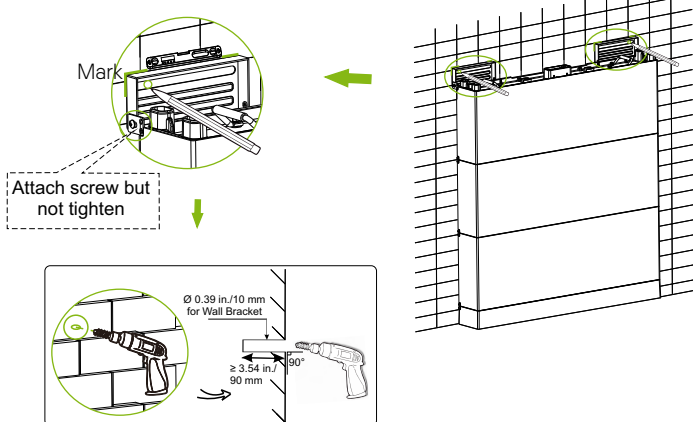
(3) Fix the Platen (2 holes) using M5 * 10 Phillips-head screw, and secure M5*10 screws at both sides (Torque: 2.2-2.5 N·m).



Step 4: Place two Battery Modules in turn, and secure both left and right sides using M5*10 countersunk screws (Tighten torque: 2.2-2.5 N·m). Refer to the Step 3 (3). Please secure Platen and M5*10 screws immediately after placing a Battery Module.



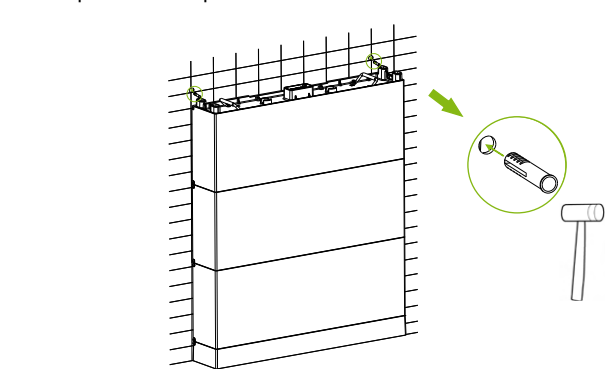
Step 5:
(1) Attach M5 * 10 screw to Wall Bracket but be sure not to tighten;
(2) Place Wall Bracket to the wall, align its holes to the holes on the Battery, and use a spirit level to ensure it's even;
(3) Accurately mark the location of the Wall Bracket on both sides;
(4) Draw circles according to the actual stub spacing;
(5) Remove the Wall Bracket, and then drill the two holes (at least 3.54 in./90 mm) by a Drill (Ø 0.39 in./10 mm).



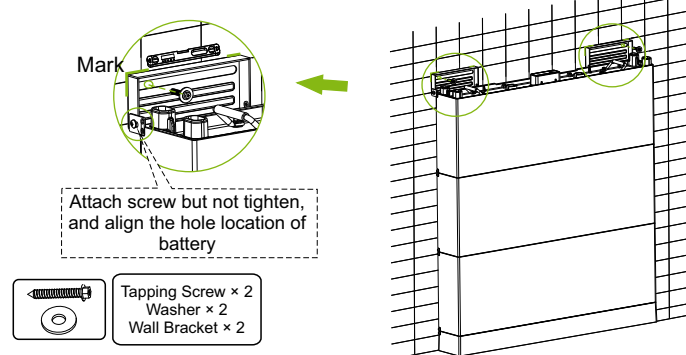
Note!

Electric drill dust collector is recommended.

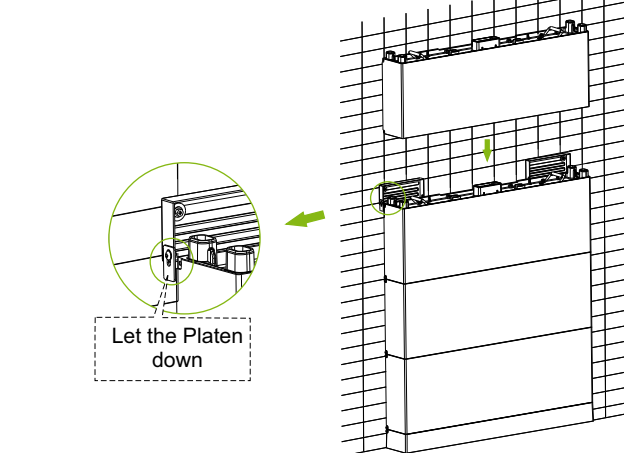
Step 6: Place Expansion Bolts.



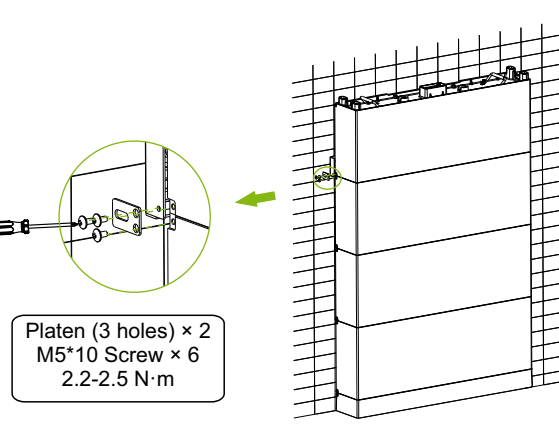
Step 7: Place the Wall Bracket on the wall where the mark is drawn previously, and secure it using Tapping Screws and Washers.



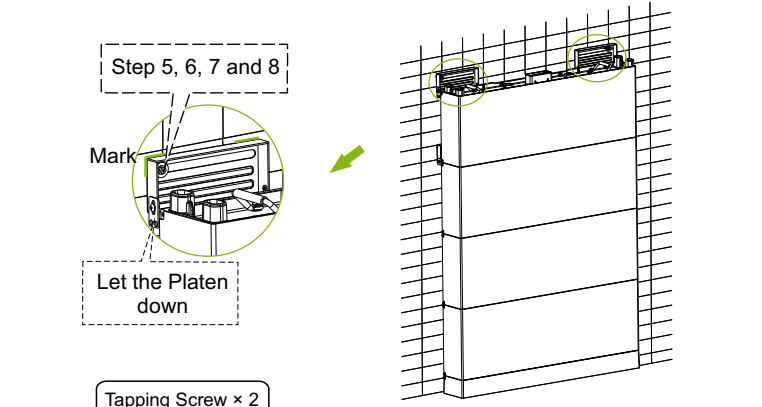
Step 8: Place the fourth battery module.



Step 9: Fix the Platen (3 holes), and tighten M5*10 screws on both sides (Torque: 2.2-2.5 N·m).



Step 10:
(1) Attach M5 * 10 screw to Wall Bracket but be sure not to tighten;
(2) Place such Wall Bracket to the wall, align its holes to the holes on the Battery Module, and use a spirit level to ensure it's even;
(3) Accurately mark the location of the Wall Bracket on both sides with a pen;
(4) Draw circles according to the actual stub spacing;
(5) Remove the Wall Bracket, and drill two holes (at least 3.54 in./90 mm) by a Drill (Ø 0.39 in./10 mm);
(6) Place Expansion Bolts;
(7) Secure Wall Brackets. Refer to the Steps 5, 6, 7 and 8.



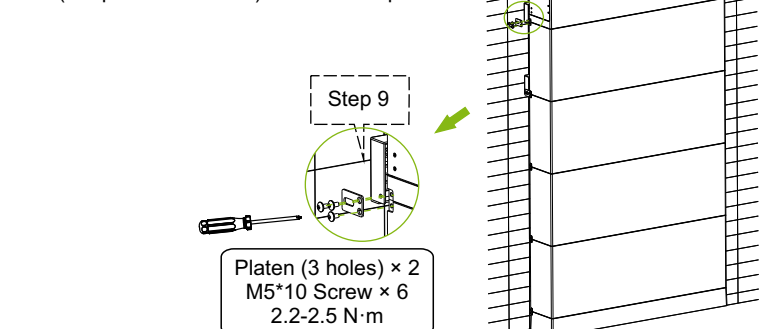
Note!

Electric drill dust collector is recommended.

Step 11: Place BMS on the Battery Module.
(1) Remove the bottom dust cover.



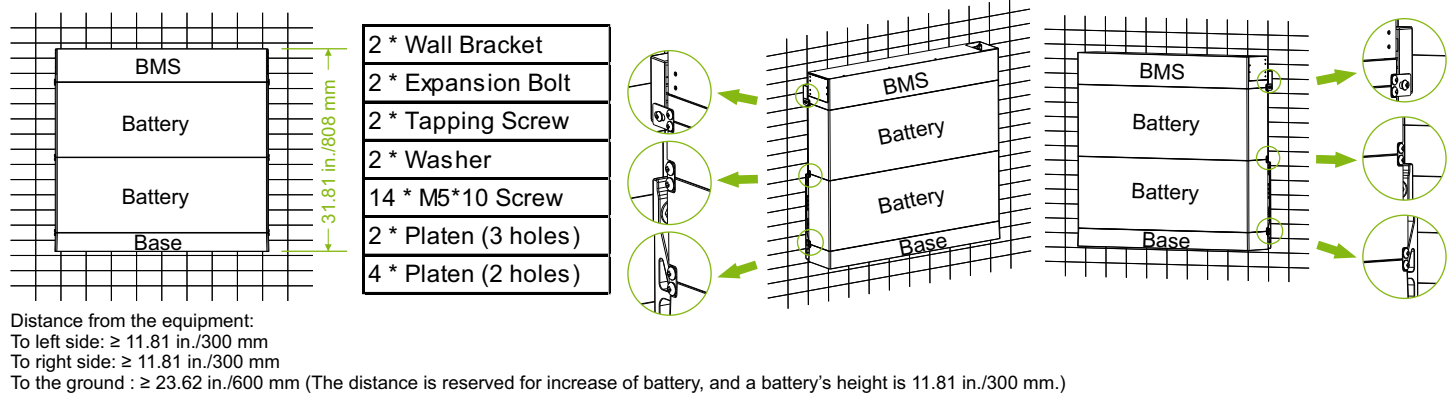
(2) Place BMS, fix the Platen (3 holes) on both sides, and then tighten M5*10 screws (Torque: 2.2-2.5 N·m). Refer to Step 9.



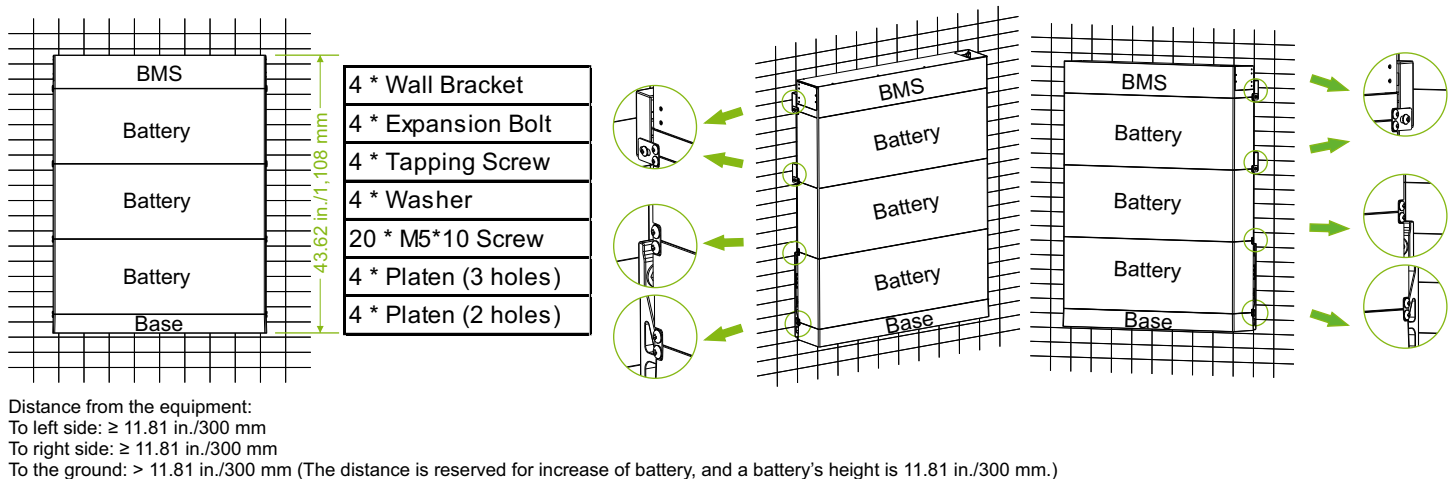
Note!

The holes on BMS is for secure inverter. For details, please refer to GWU-GreenE User Manual.

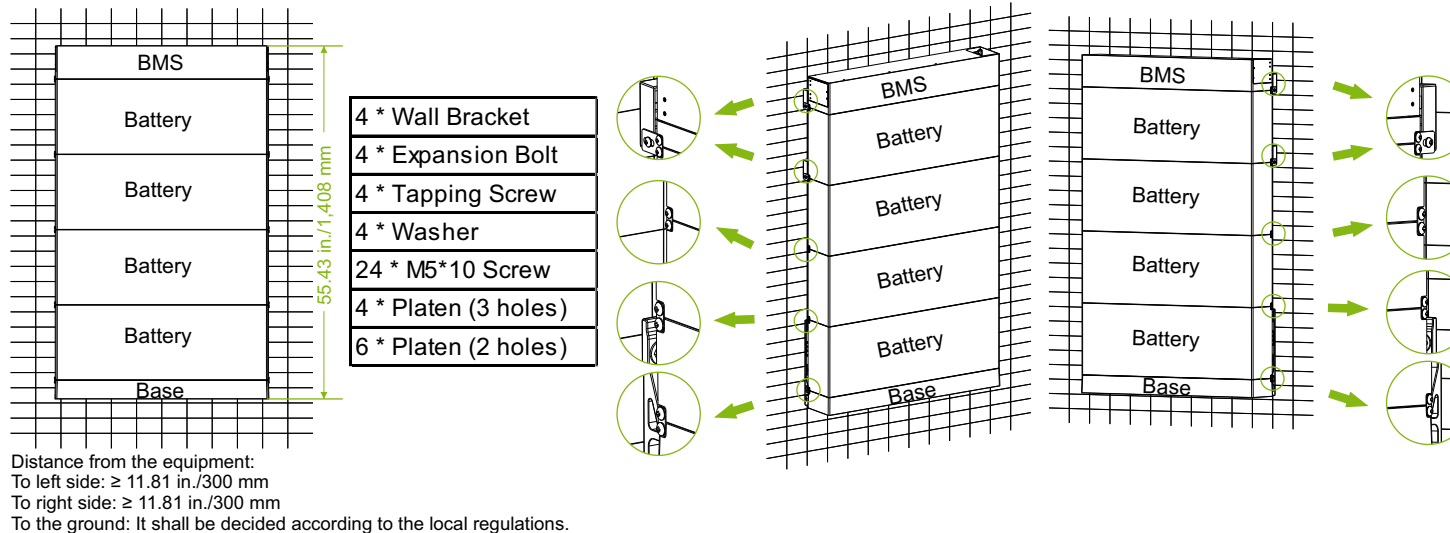
Scheme A



Scheme B

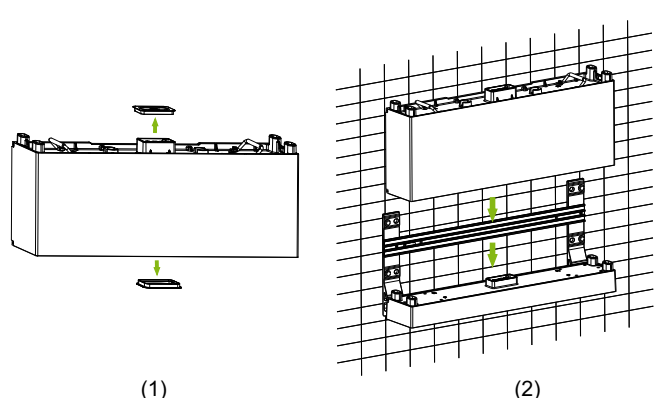


Scheme C

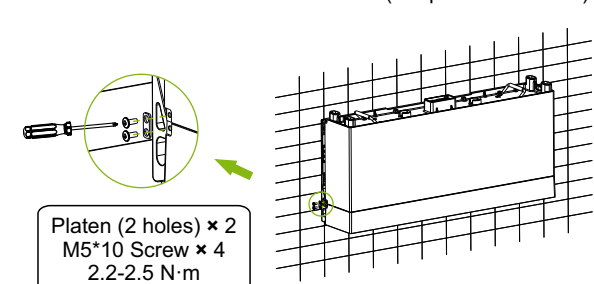


Step 5: Place Battery Module on the Base.

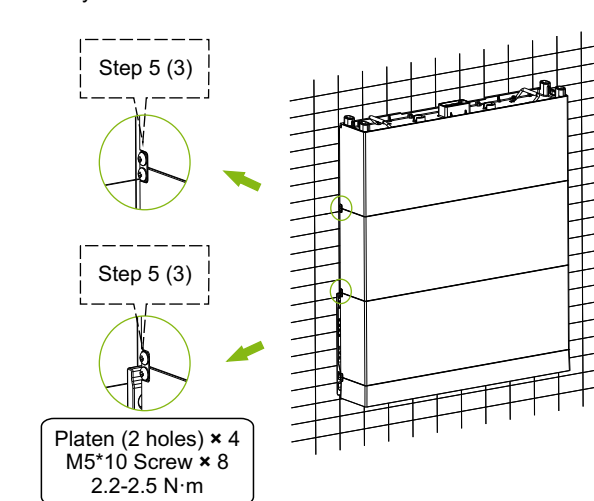
- (1) Remove the top and bottom dust covers.
- (2) Place the Battery Module on the Base.



- (3) Fix the Platen (2 holes) using M5 * 10 Phillips-head screw, and secure M5*10 screws at both sides (Torque: 2.2-2.5 N·m).

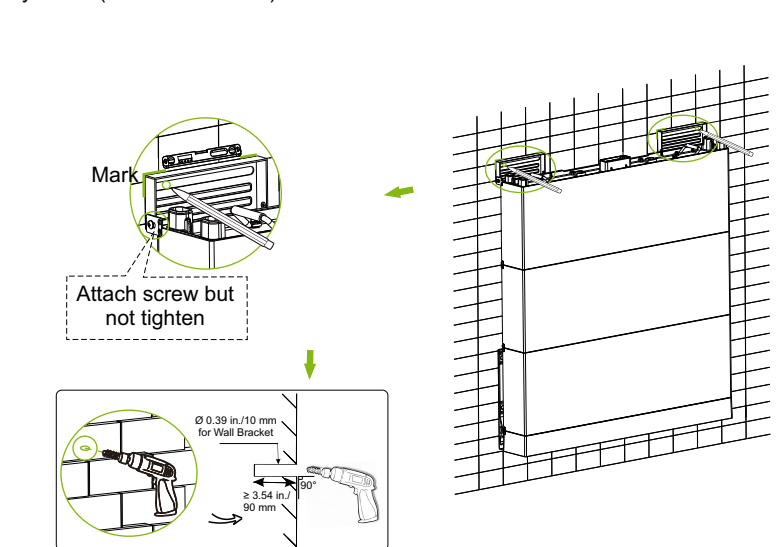


Step 6: Place two Battery Modules in turn, and secure both left and right sides with screws (4 × M5*20 countersunk screw) (Tighten torque: 2.2-2.5 N·m). Refer to the Step 5 (3). Please secure Platen and M5*10 screws immediately after placing a Battery Module.



Step 7:

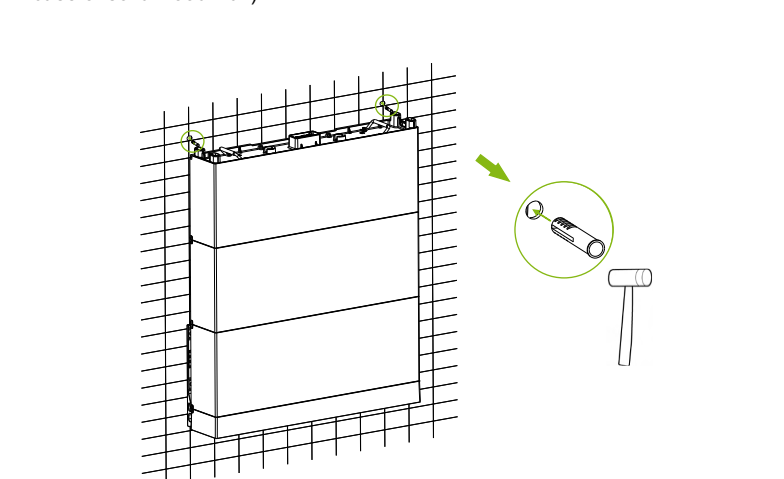
- (1) Attach the M5 * 10 screw to Wall Bracket but be sure not to tighten;
- (2) Place such Wall Bracket to the wall, align its holes to the holes on the Battery Module, and use a spirit level to ensure it's even;
- (3) Accurately mark the location of the Wall Bracket on both sides with a pen;
- (4) Draw circles according to the actual stub spacing;
- (5) Remove the Wall Bracket, and then drill the two holes (at least 3.54 in./90 mm) by a Drill ($\varnothing 0.39$ in./10 mm).



Note!

Electric drill dust collector is recommended.

Step 8: Place Expansion Bolts into the two holes (the Expansion Bolt is not required in case of solid wood wall).

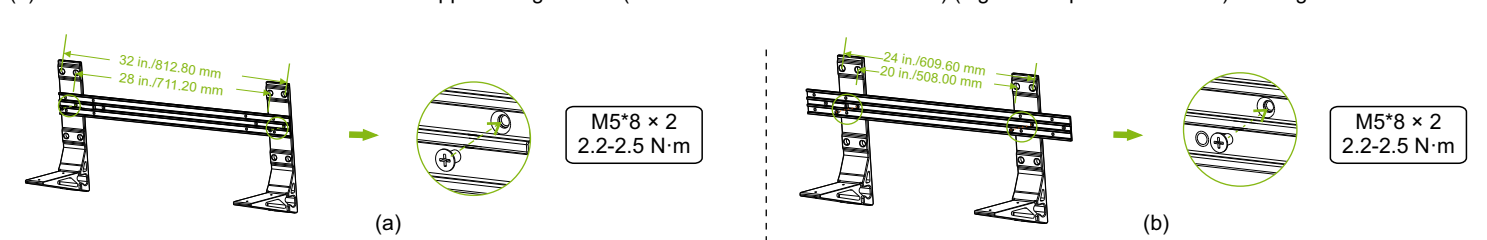


Please reserve enough distance from the equipment to the ceiling/ground for capacity expansion. Take Scheme C as an example.

Step 1: There are two ways to install Transverse Plate to Base Support due to 4 kinds of Stub Spacing, with details as follows: (a) 28 in./711.20 mm or 32 in./812.80 mm; (b) 20 in./508.00 mm or 24 in./609.60 mm.

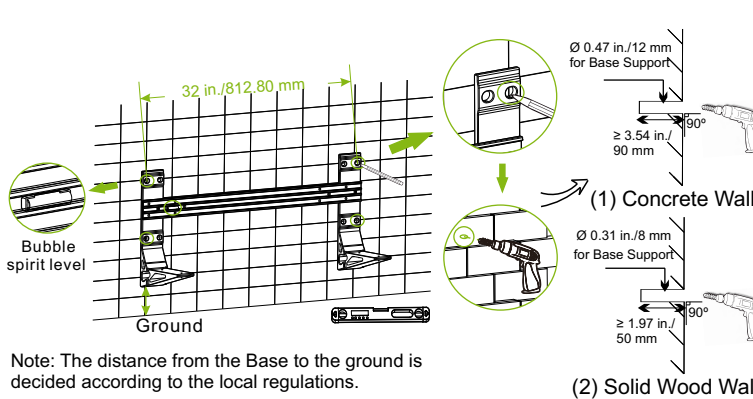
(1) Insert Transverse Plate to Base Support;

(2) Secure the Transverse Plate and Base Support using screws (2×M5*8 countersunk head screw) (Tighten torque: 2.2-2.5 N·m). See figure below.



Step 2:

- (1) Place the assembled Transverse Plate and Base Support on the wall, look the cylindrical plastic bubble spirit level on the Transverse Plate. If the bubble isn't in the center, slightly bow it to the horizontal.
- (2) Then determine the position of holes.
- (3) Mark it with a pen.
- (4) Remove it and drill the four holes (at least 3.54 in./90 mm) by Drill ($\varnothing 0.47$ in./12 mm for concrete wall, or $\varnothing 0.31$ in./8 mm solid wood wall).

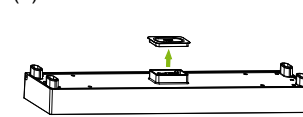


Note: The distance from the Base to the ground is decided according to the local regulations.

Note: The bubble spirit level on the Transverse Plate can be used as an auxiliary tool, additionally, please prepare a spirit level to measure whether the Plate is even or not.

Step 4: Place the base.

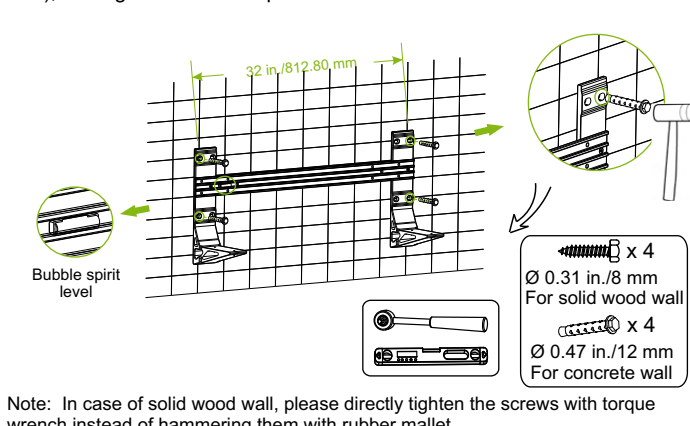
- (1) Remove the dust cover.



- (2) Place Base on the Base Support and secure both left and right sides with screws (4 × M5*20 countersunk screw) (Tighten torque: 2.2-2.5 N·m).

Step 3:

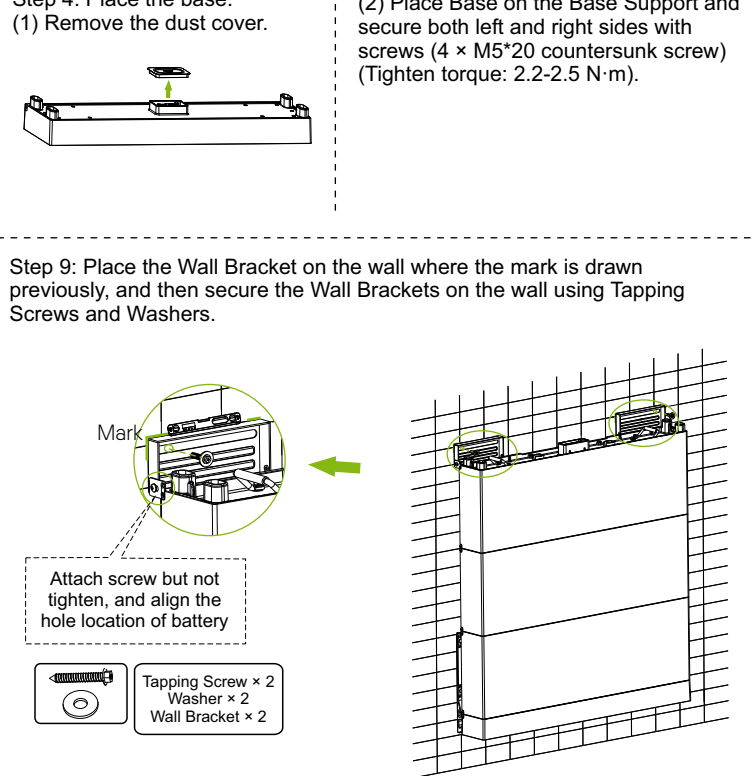
- (1) Place the assembled Transverse Plate and Base Support to the wall (or solid wood stub);
- (2) Attach the Expansion Screw to the holes but be sure not to tighten;
- (3) Check whether the bubble spirit level is horizontal;
- (4) Hammer Expansion Screws with a rubber mallet (except solid wood wall), and tighten it with torque wrench.



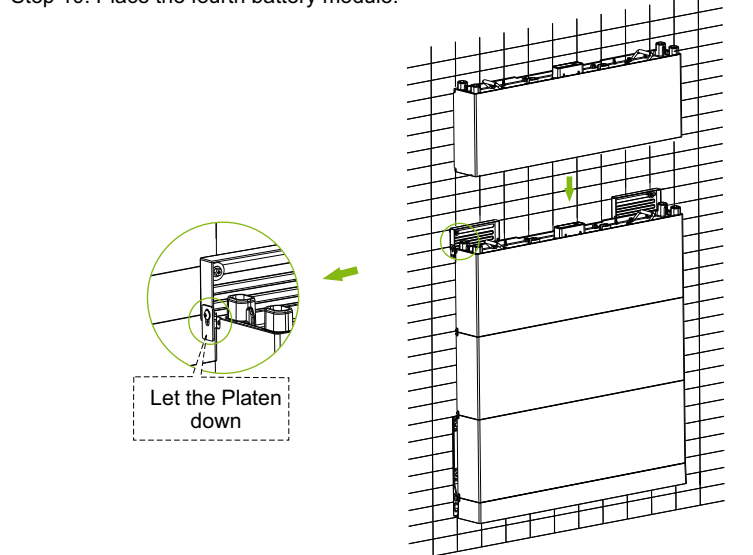
Note: In case of solid wood wall, please directly tighten the screws with torque wrench instead of hammering them with rubber mallet.

Note: The bubble spirit level on the Transverse Plate can be used as an auxiliary tool, additionally, please prepare a spirit level to measure whether the Plate is even or not.

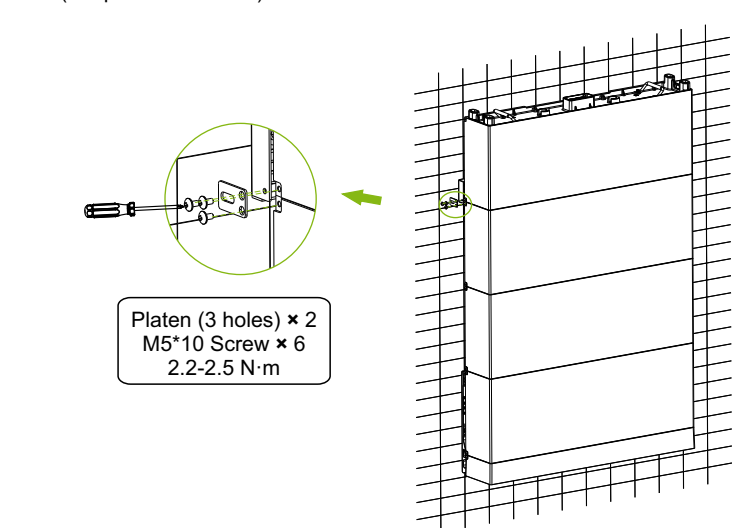
Step 9: Place the Wall Bracket on the wall where the mark is drawn previously, and then secure the Wall Brackets on the wall using Tapping Screws and Washers.



Step 10: Place the fourth battery module.

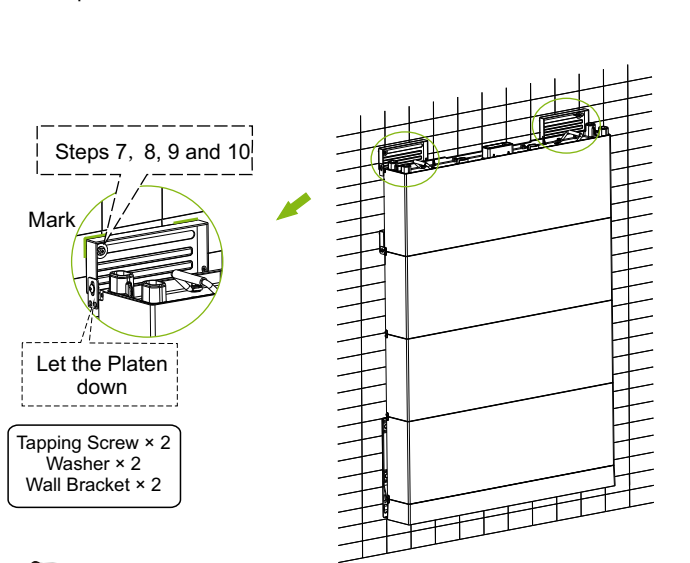


Step 11: Fix the Platen (3 holes), and secure M5*10 screws on both sides (Torque: 2.2-2.5 N·m).



Step 12:

- (1) Attach the M5 * 10 screw to Wall Bracket but be sure not to tighten;
- (2) Place such Wall Bracket to the wall, align its holes to the holes on the Battery Module, and use a spirit level to ensure it's even;
- (3) Accurately mark the location of the Wall Bracket on both sides with a pen;
- (4) Draw circles according to the actual stub spacing;
- (5) Remove the Wall Bracket, and then drill the two holes (at least 3.54 in./90 mm) by a Drill ($\varnothing 0.39$ in./10 mm);
- (6) Place Expansion Bolts;
- (7) Secure Wall Brackets using Tapping Screws and Washers. Refer to the Steps 7, 8, 9 and 10.

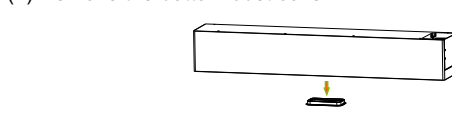


Note!

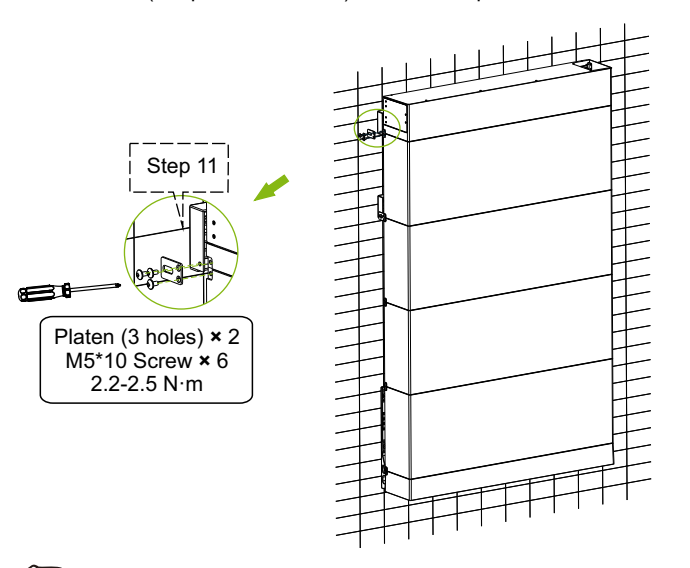
Electric drill dust collector is recommended.

Step 13: Place BMS on the Battery Module.

- (1) Remove the bottom dust cover.



- (2) Place BMS, fix the Platen (3 holes) on both sides, and then tighten M5*10 screws (Torque: 2.2-2.5 N·m). Refer to Step 11.



Note!

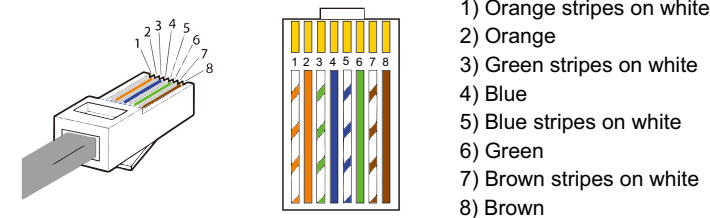
The holes on BMS is for secure inverter. For details, please refer to GWU-GreenE User Manual.

Making a BMS communication cable

To ensure normal operation of BMS and inverter, a BMS communication cable is required to be made before wiring. The specific definition of the communication cable is shown as follows:

Sequence	1	2	3	4	5	6	7	8
BMS	/	GND	/	BMS_H	BMS_L	/	A1	B1

The wire order of the communication cable is as follows:

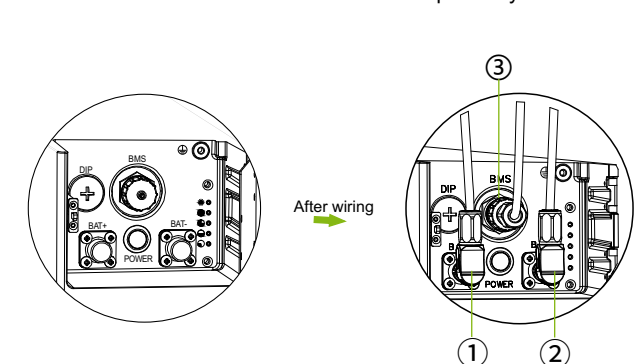


Note!

The BMS communication cable shall have a shield layer.

Before wiring,

1. Unscrew the cap at BMS clockwise;
2. Unscrew the screws at BAT+ and BAT- respectively.



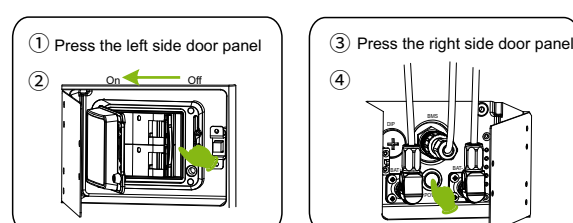
- ① Insert the orange power line into the orange socket
- ② Insert the black power line into the black socket
- ③ Screw the communication line into the communication socket

Note!

Don't violently remove cables when they are locked.

Steps for commissioning are shown as follows:

- ① Press the left side door panel
- ② Open the air switch's guard and toggle switch, to ensure that the inverter does charge to the battery
- ③ Press the right side door panel
- ④ Press the button for 1 to 2 sec, and then the system starts



Black Start: Press the POWER button and hold it for 20 sec; release the button after the four SOC indicators flash blue alternately. But, we do not recommend the use of Black Start as it may cause the port to be charged, resulting in an electric shock.

If the batteries have not been used for more than 9 months, these batteries must be charged to at least SOC 50 % each time. For the first installation, the interval among manufacture dates of battery modules shall not exceed 3 months. If a battery is replaced or added for capacity expansion, each battery's SOC should be consistent. The max. SOC difference should be between $\pm 5\%$. If users want to increase their battery system capacity, please ensure that the SOC of the existing system capacity is about 40%. The manufacture date of the new battery shall not exceed 6 months; in case of exceeding 6 months, please charge the new battery to around 40%.

The equipment can support capacity expansion.

There are two circumstances in case the user wants to increase a battery module:

1. For floor mounting, remove the inverter before increase of battery module;
2. For wall mounting, if the distance from the equipment to the ground is enough, do not remove the inverter; otherwise, the inverter shall be removed.