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V12

INSTALLATION & OPERATION MANUAL
ENERGY STORAGE SYSTEM (ESS)

Storion-SMILE-B3

@AlphaEnergyStorageSystem @AlphaESS @alpha_ess @AlphaESS www.alphaess.com

Alpha ESS Co., Ltd.
+86 513 8060 6891
info@alpha-ess.com
www.alphaess.com
JiuHua Road 888, Nantong High-Tech Industrial Development Zone, Nantong City, China, 226300

Alpha ESS Suzhou Co., Ltd.
+86 512 6828 7609
info@alpha-ess.com
www.alphaess.com
Building 10-A, Canal Town Industrial Park, 99 Taihu E Rd, Wuzhong District, Suzhou 215000

Alpha ESS Europe GmbH
+49 610 3459 1601
europe@alpha-ess.de
www.alpha-ess.de
Paul-Ehrlich-Straße 1a, D-63225 Langen,Hessen

Alpha ESS Australia Pty. Ltd.
+61 402 500 520
Australia@alpha-ess.com
www.alphaess.com
Adelaide: 19 Heath St, Lonsdale SA 5160
Sydney: 8/15-21 Gibbes Street, Chatswood, NSW 2067

Alpha ESS Italy S.r.l.
+39 339 462 4288
info@alpha-ess.it
Via Don Minzoni, 17, Calenzano Firenze 50041

Alpha ESS Korea Co., Ltd
+82 64 721 2004
info@alpha-ess.com
2F, 19-4, Nohyeong 11-gil, Jeju-si, Jeju-do, Republic of Korea

Alpha ESS UK Ltd.
+44 145 354 5222
info@alpha-ess.com
Drake House, Long Street, Dursley, gl11 4hh

Alpha ESS International Pte. Ltd.
+65 6513 1125 / +65 6513 1126
Singapore@alpha-ess.com
2 Corporation Road #01-06A Corporation Place Singapore 618494

Alpha ESS USA, Inc.
+1 408 368 7828
usa@alpha-ess.com
Unit 5 2180 S Ivanhoe St, Denver, CO 80222

CONTENTS

01 INTRODUCTION

1.1 System Introduct on

Storion-SMILE-B3 is an AC coupled all-in-one battery energy storage system (BESS). It can help to achieve the optimal usage of renewable energy. Storion-SMILE-B3 can control the bi-directional flow of electric power, work under auto/manual & time-of-use (TOU) modes, charge/discharge the battery as per customer' s setting. Under the auto mode, Storion-SMILE-B3 will store surplus renewable energy onto the battery and discharge battery to supply power to local loads when renewable energy is not enough. Storion-SMILE-B3 is equipped with 3 buttons, friendly human machine interaction system. More importantly Storion-SMILE-B3 is stable, safe, and reliable. The standard schematic is shown in Figure 1.1:

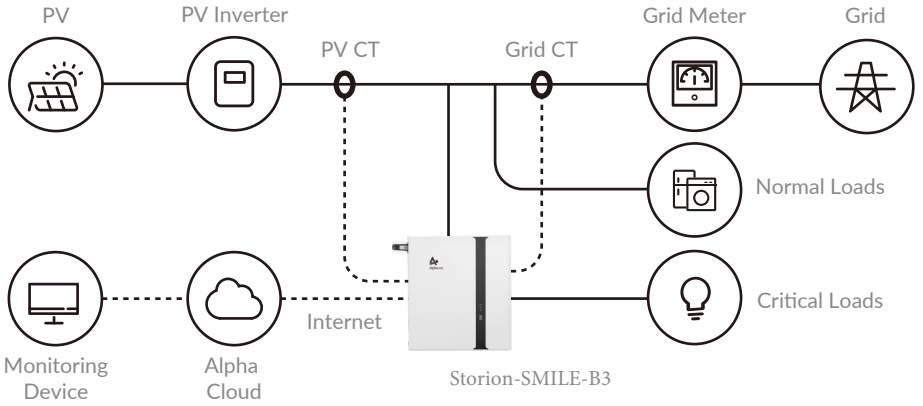


Figure 1.1 Storion-SMILE-B3 System with PV

NOTE: For the AC coupled system with PV, if only install the Grid CT, the system cannot display the power generated by PV inverter, electric energy production etc.

If there is no PV, the schematic is as below:

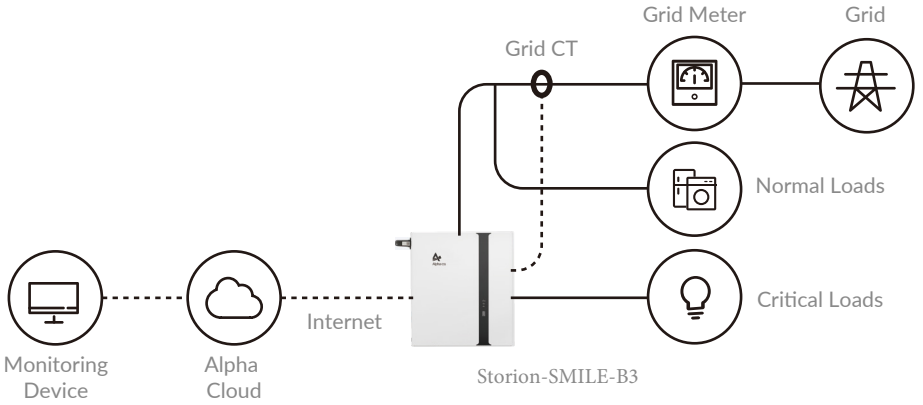


Figure 1.2 Storion-SMILE-B3 System without PV

1.2 General Precautions

DANGER

Danger to life due to high voltages of battery and electric shock.

- Do not touch uninsulated cable termination.
- Do not touch the DC wires.
- Do not open the inverter and battery.
- Do not use wet cloth to wipe the system.
- Do not dispose of batteries in fire. The batteries may explode!
- Only qualified personnel with the corresponding skills can install and debug the system. Before performing any work on the inverter or battery pack, please disconnect the inverter from all voltage sources as described in this document.

WARNING

Risks of chemical burn electrolyte or toxic gases.
During standard operation, electrolyte won't leak from the battery pack as well as form of toxic gases. However, when the battery pack is damaged or broken down, electrolyte may leak or form toxic gases.

- Do not install the system in temperature or humidity exceeding the permitted range.
- Please do not use wet hands to touch the system.
- Do not place heavy objects on the top of the system.
- Do not damage the system using sharp objects.
- Do not install or operate the system in the inflammable and explosive environment or high humidity environment.
- Do not install explosive gas and the battery pack in the area that containing highly flammable substance or gas.
- If the moisture penetrates the system (e.g. due to casing damage), please do not install or operate the system.
- When the system has connected the extended battery module, please do not move the system.
- Use strapping if necessary during transportation to prevent tipping.
- Storion-SMILE-B3 transport must be conducted by the manufacturer or professionals, these operations should be recorded and used.
- Certified ABC extinguishers with minimum capacity 2 kg must be carried during transportation.
- No smoking during unloading of vehicles and close to them.
- If you want to replace the battery module, please pack new dangerous packaging according to needs, pack them and let the supplier receive them.
- If contacting with the electrolyte, please wash affected area with water immediately, and consult a doctor immediately.

Risk of injury by hoisting or falling system

Inverters and batteries are heavy and can cause personal injury if the inverter or battery is improperly lifted or dropped during transport or when attached or removed from walls. Lifting and transporting Storion-SMILE-B3 is conducted by more than 1 person.

02 INSTALLATION

2.1 Parts List

Check the following parts list for completeness.
AlphaESS provides a complete set of system for on-site customers, including:

Table 1 Parts List of B3

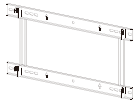
SMILE5-B3			
			
2 x M4*12 screw	4 x Expansion screw	1 x Installing support	8 x White plug
			
2 x CT (100A, 3000:1) (1 x CT for DE version)	1 x Battery user manual	1x Installation manual	1 x WiFi module (optional / Standard for AU version)
			
2x Gum-elastic ring	2x M25 Pipe joint (AU version)	1x 10m Net cable (AU version)	

Table 2 Parts List of Battery Expansion Accessory Package

SMILE-B3 Battery Expansion Accessories (Optional, Standard for DE Version)		
		
2 x Screw M5*10	1 x Positive power line 1 x Negative power line	1 x Battery communication cable

2.2 System Appearance

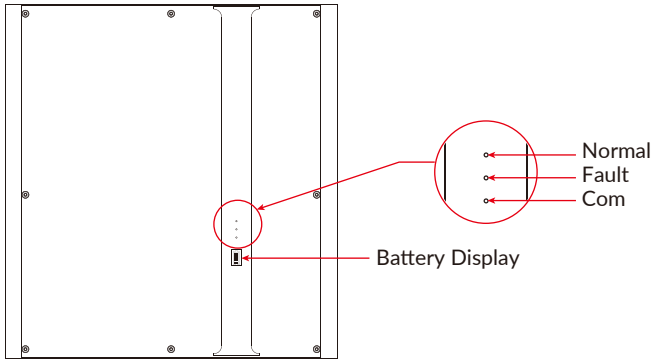


Figure 2.1 Storion-SMILE-B3 Exterior View

Table 3 Storion-SMILE-B3 System LED Display

LED	Status	Description
Normal		Normally on: Normal system operation
		Single flicker: system standby or self-inspection
		Off: out-of-order
Fault		Off: fault-free
		Normally on: out-of-order
		Normally on: Normal network connection
Com		Flicker: connecting to the server
		Off: un-connected network
		Flicker: find available wifi, red light flickers once a second (have found wifi module, but have not configured router)
		Normally on: connect to router (router configuration is done, but have not connected to server)

Table 4 SMILE-B3 Battery LED Display

	SOC Status	Description
SOC Instruction		SOC<5%
		5%=<SOC<25%
		25%=<SOC<50%
		50%=<SOC<75%
		75%=<SOC<95%
		SOC>95%
LED Outer Ring Light Flicker Status		Standby: green light flickers for 1s Work: green light flickers for 10s

Table 5 Storion-SMILE-B3 WIFI (Yilian) Display

LED	Status	Description
Red		Normally on: normally communicate with EMS
		Off: not connected to EMS
Green		Flickers once in 30s : not connected to router
		Flickers 3 times in 30s: not connected to server
		Normally on: normal communication with server
		Normally on after flickering: sending data to server

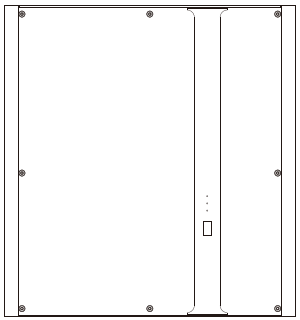


Figure 2.2 Storion-SMILE-B3 Front View

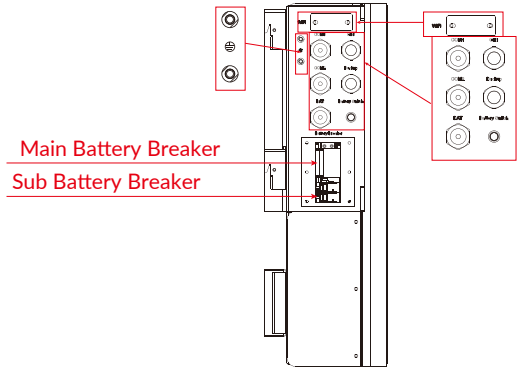


Figure 2.3 Storion-SMILE-B3 Left View

1） Grid and Backup: If It is necessary to use a bellows on the M25 single-hole water-proof joint, M25 Pipe joint and Gum-elastic ring in the accessories can be used to replace the compression head and clamping ring of this waterproof joint.(Only for AU)

2） COM1 and COM2 both use M32 waterproof joint, which can respectively pass two network cables and a CT harness.

3）BAT: M32 double-hole waterproof joint. Both positive and negative power cables can be installed from here if expansion is needed.

4）Battery Switch: Start the batteries.

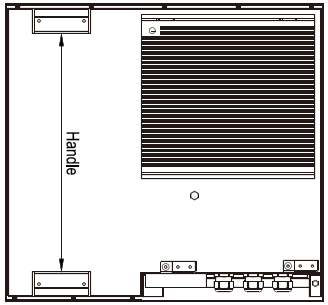


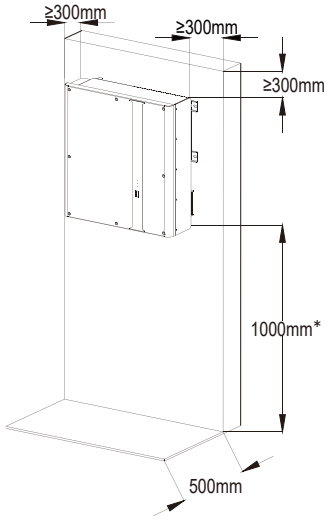
Figure 2.4 Storion-SMILE-B3 Rear View

2.3 Limitation of Liability

AlphaESS shall not be liable directly or indirectly for any product damage or property loss caused by any of the following conditions.
The product has been modified, the design modification or the change of parts without the authorization of AlphaESS;
Non-AlphaESS technicians change, repair and serial number removing;
System design and installation fail to meet the standards and other relevant requirements;
Fail to observe local safety regulations;
Transportation damage (including paint scratches caused by friction in packaging during transportation). Once the container/package is unloaded and the damage is confirmed, claims shall be put forward directly to the transport or insurance company;
Fail to comply with any/all user manuals, installation guide and maintenance rules;
Misfeasance or misuse of equipment;
Insufficient equipment ventilation;
Product maintenance procedures do not follow acceptable standards;
Force majeure (violent or stormy weather, thunder and lightning, overvoltage, fire, etc.);
Any damage caused by external factors

2.4 System Installation

This manual introduces the basic steps how to install and set up Storion-SMILE-B3.
Observe the specified minimum distance of adjacent objects;
Minimum distance guarantee;
Sufficient heat dissipation;
The upper cover of the energy storage system has enough space to open;
Sufficient room for maintenance.



The clearance below is a 'recommendation' only and a minimum of 150 ~ 200 mm off the ground was advisable to protect from submergence.

The side clearance is a recommendation. Keep the clearance as short as you can if there is no influence to the operation and maintenance.

* Depending on quantity of the expansion batteries

Figure 2.5 Limit the Distance to an Adjacent Object

2.4.1 Installation Site and Environment

The following sites are not allowed installation:

a. Wall cavities;
b. On roofs not specifically deemed suitable;
c. Areas of access/egress;
d. Under stairways;
e. Under access walkways;
f. Sites where the freezing point is reached, like garages, carports or other places;
g. Sites with humidity and condensation above 85%.
h. Places with plenty of salt.
i. Flooded areas.
j. Earthquake areas-additional security measures are needed here.
k. Places with altitude higher than 2,000 meters.
l. Place with explosive gases.
m. Place with direct sunlight.
n. Place with the ambient temperature extremely variable.
o. Places with highly flammable materials or gases.
p. Wet rooms
q. Places with potentially explosive gases.
r. Wall load bearing must exceed 180kg
s. Multiple phase combinations
t. The product is to be installed in a high traffic area where the fault is likely to be seen.

NOTE:

a ~ e rules are set according to AS/NZS5139. If you install the system in Australia or New Zealand, these rules must be followed. If the installing place is not in Australia or New Zealand, and there are no such rules in local regulations, you do not need to follow them.

2.4.2 Installation Tools

The following tools are required to install the equipment.


Wire Cutter


Cable Clamp


Screw Driver Set


T20 double offset ring spanner


Percussion Drilling

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.

2.4.2.1 Safety Gear

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


Insulated gloves


Safety goggles


Safety shoes

2.4.3 Storion-SMILE-B3 Installation

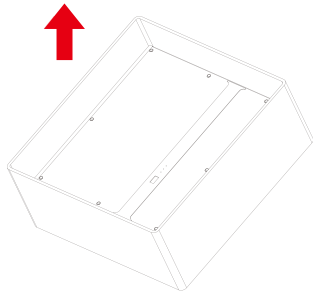


Figure 2.6 Remove Storion-SMILE-B3 Packaging

Step 1 Take out Storion-SMILE-B3 from the packaging box, as shown in Figure 2.6

NOTE: Please check whether the parts quantity is consistent with the parts list after taking out the equipment.

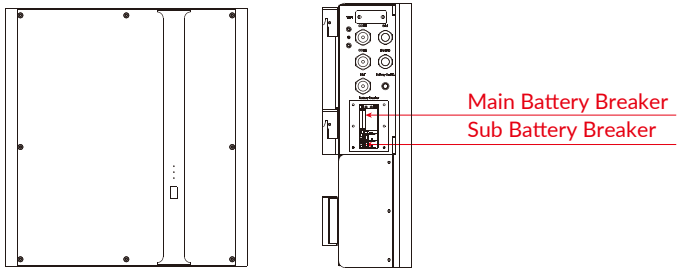


Figure 2.7 Remove SMILE-B3 Upper Cover Plate

Step 2 Use the T20 double offset ring spanner to unscrew the screws, as shown in Figure 2.7

NOTE: Please ensure that the main switch and branch switch on the side are turned off before removing the upper cover plate to avoid short circuit.

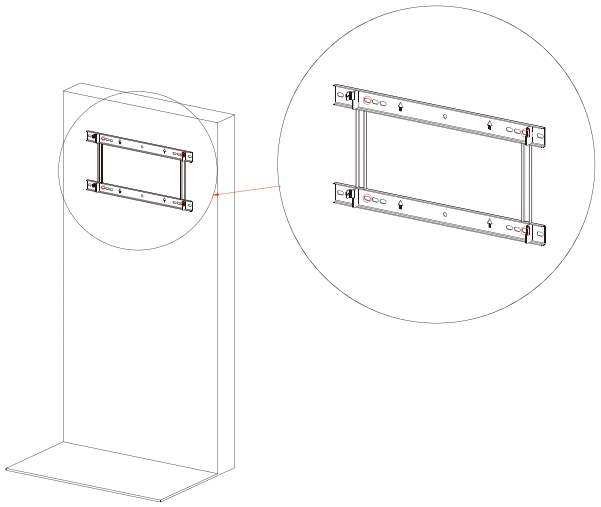


Figure 2.8 Stand Positioning

Step 3 Place the wall bracket on the wall where the system will be installed. And use a marker to locate the bracket as shown in Figure 2.8.

> **NOTE:** The hole position can be adjusted according to the site condition, but it should be fixed at each of the four corners. And please use leveling instrument to confirm that the hang-ing bracket is installed on a horizontal line to ensure that the equipment will not deflect.

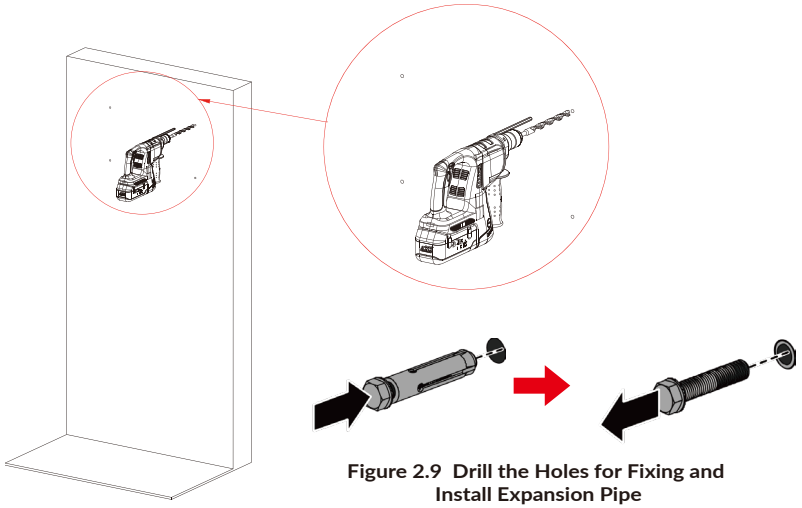


Figure 2.9 Drill the Holes for Fixing and Install Expansion Pipe

Step 4 Drill holes at the position using a percussion drill (M12 drill, depth of hole: 70mm). After drilling, put the 4 expansion bolts into the hole and take out the expansion screws as shown in Figure 2.9.

Step 5 Use a SW13 sleeve or other tools for M8 flange to lock the expansion screws and fix the wall bracket, as shown in Figure 2.10.

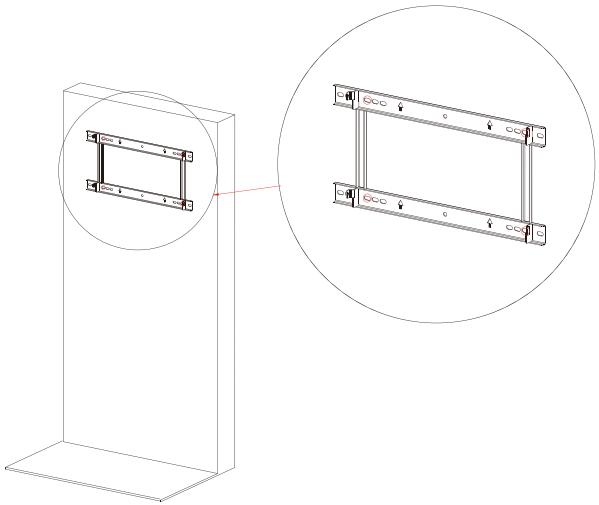


Figure 2.10 Fix the Wall Bracket

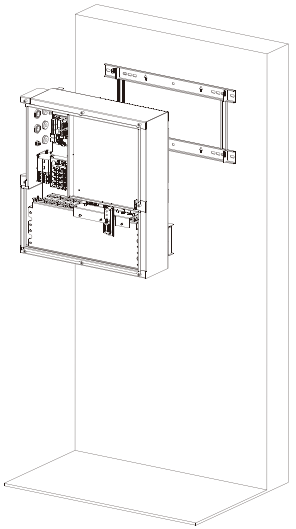


Figure 2.11 Install Storion-SMILE-B3

Step 6 Install Storion-SMILE-B3 on the wall bracket, as shown in Figure 2.11.

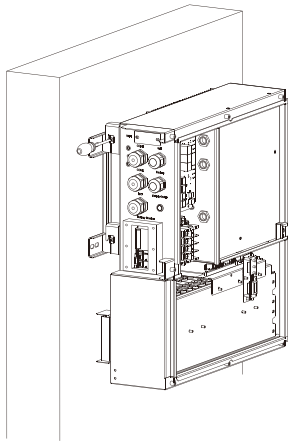


Figure 2.12 Fix Storion-SMILE-B3 to the Wall Bracket

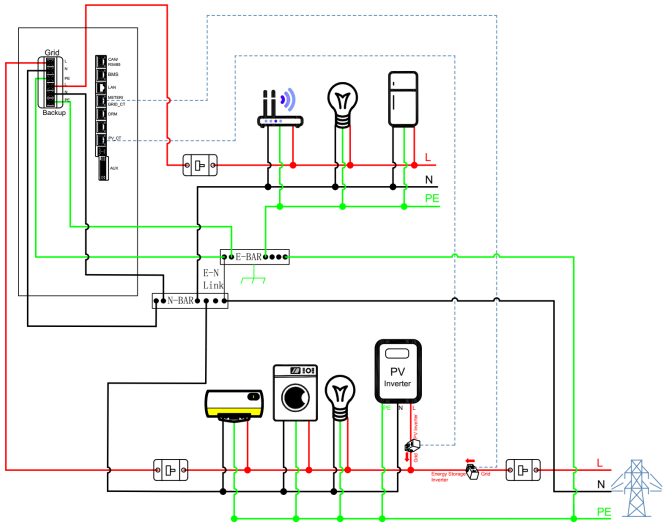
Step 7 Use a T20 screwdriver and M4*12 screws in the package to fix Storion-SMILE-B3 to the wall bracket, as shown in Figure 2.12.

Step 8 Conditions for the AC Connection

AC breakers must be installed on the AC side of the Storion-SMILE-B3 to ensure that the system can be safely disconnected from the power grid and the load.
The maximum AC current of Storion-SMILE-B3 can be found in the following table.
We recommend the following AC circuit breaker for AC connection.

Description	Max. Current	Breaker Type	Recommende Cable Cross Section
Grid Side	26A	32A	4-6 mm^2
Backup Side	13A	25A	2.5-4 mm^2

NOTE: In all cases, Normal Loads and Essential Loads must be appropriately protected by earth fault protection devices (e.g. 30 mA Type A or Type B RCDs, RCBOs) in accordance with appropriate Standards.



Step 9 Connect Grid and Backup wire harness, as shown in Figure 2.13.

NOTE: In some places like AU and NZ, the corrugated pipes will be needed. Please remove the original gum-elastic rings and the connectors of Backup and Grid port waterproof contact and then replace them with the M25 pipe joints and the gum-elastic rings in parts list.
The suggested torque for the waterproof contact is 3.75 N.m±10%.

NOTE: After the wiring harness is installed, the waterproof connector must be tightened with a torque of 3.75 Nm±10%.

NOTE: In Australia and New Zealand, the neutral of backup and grid circuit should be externally connected on the neutral bar.

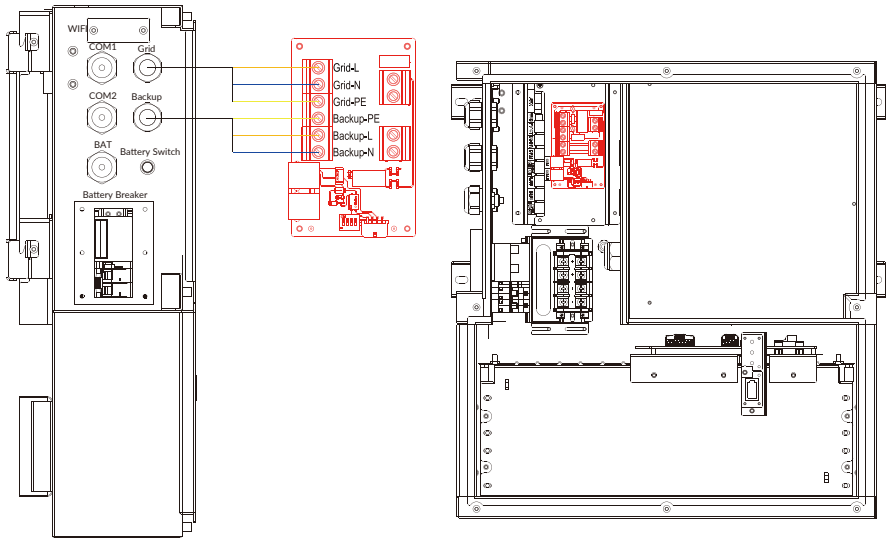


Figure 2.13 Backup and Grid Wire Harness Wiring

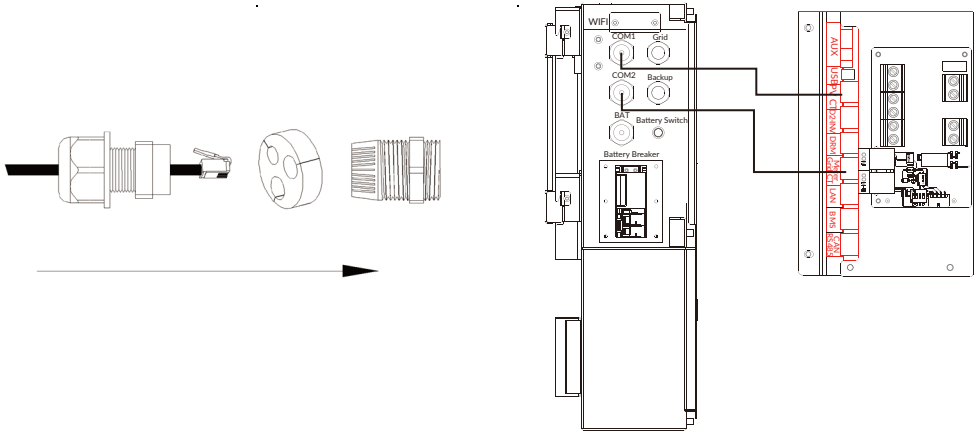


Figure 2.14 CT Wire Harness Wiring

Step 10 Installing CT as shown in Figure 2.14.

NOTE: After the wiring harness is installed, the waterproof connector must be tightened with a torque of 5 Nm±10%.

NOTE: CT communication wires can be connected directly through the gum-elastic ring of the M32 waterproof contact, no need to make the on-site network line.

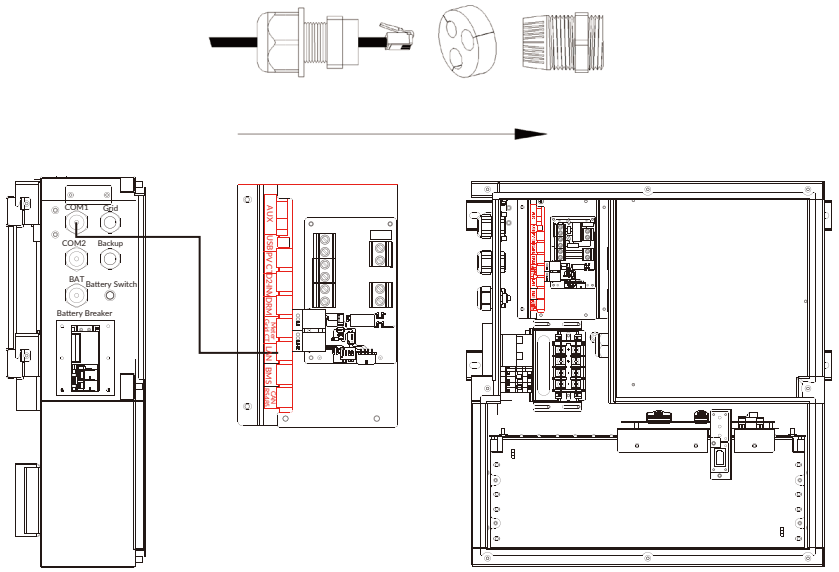


Figure 2.15 Ethernet Communication Cable Wiring

Step 11 Install ethernet communication cable, as shown in Figure 2.15. It won't be needed if the WiFi module will be used.

NOTE: After the wiring harness is installed, the waterproof connector must be tightened with a torque of 5 Nm±10%.

NOTE: The ethernet communication cable can be connected wiring directly through the gum-elastic ring of the M32 waterproof contact, no need to make the on-site network cable. The maximum outer diameter of the network cable does not exceed 14mm.

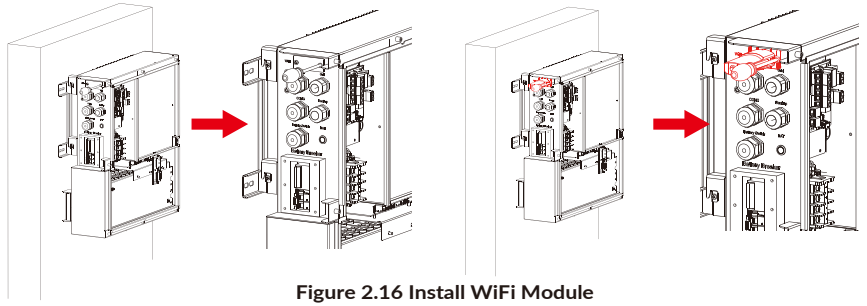


Figure 2.16 Install WiFi Module

NOTE: If DRM support is specified, the system may only be used in conjunction with a Demand Response Enabling Device (DRED). This ensures that the system implements the commands from the grid operator for active power limitation at all times. The system and the Demand Response Enabling Device (DRED) must be connected in the same network.
Only DRM0 is available for Storion-SMILE-B3.

Step 12 Install WiFi module, as shown in Figure 2.16.

NOTE: Please tighten the screws here with the torque of 2 N.m±10% to avoid problems such as poor signal.

NOTE: If using WiFi module, open the cover plate of the side WiFi module, insert the WiFi module into the terminal port and then fix it with screws by using T20 double offset ring spanner, as shown in Figure 2.16. The suggested torque is 1.6 N.m±10%
If you will install external M4856-P for expansion, please go to section 2.4.4 directly.

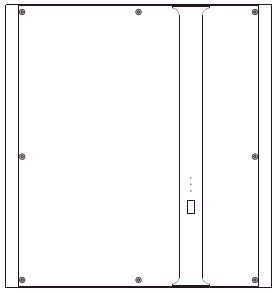


Figure 2.17 Re-cover the Upper Cover Plate

Step 13 The wiring is completed, please re-cover the B3 upper cover plate and use the T20 double offset ring spanner to tightly lock the upper cover screw. The suggested torque is 2.8 N.m±10%. Then install the white plug, as shown in Figure 2.17.

2.4.4 Battery Expansion

If you are not installing external M4856-P battery for expansion, please neglect this section.

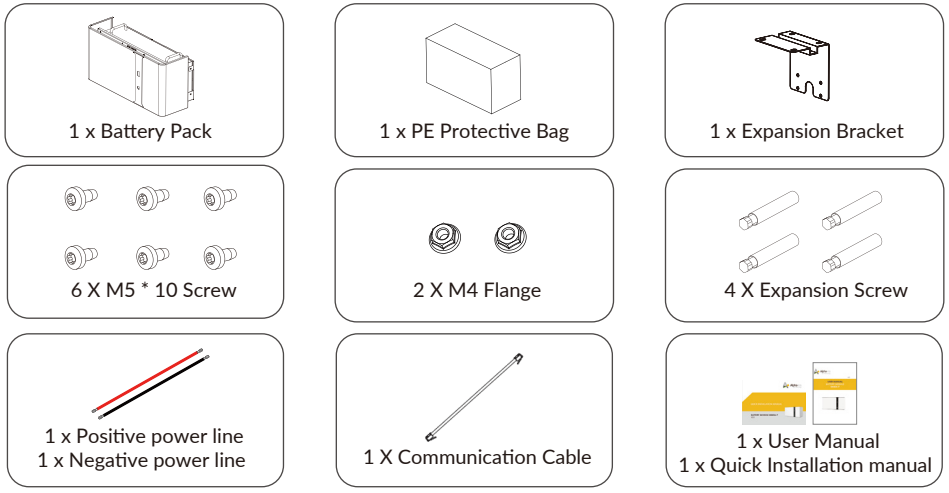


Figure 2.18 Parts List of M4856-P Accessory Package

Step 1 Take out the M4856-P(indoor) from the carton; confirm whether the accessories are complete， as shown in Figure 2.18

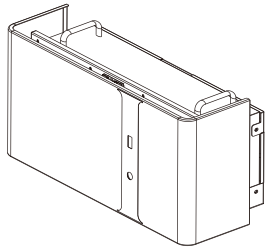


Figure 2.19 Remove the Decoration of M4856-P

Step 2 Pull down the buckles on the top and bottom of the battery and take out the decoration, as shown in Figure 2.19

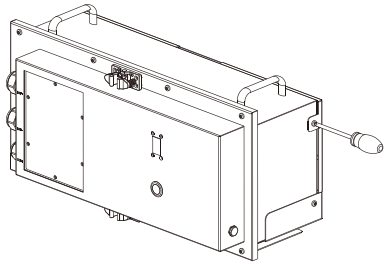


Figure 2.20 Remove the Wall Bracket of M4856-P

Step 3 Use T20 screwdriver to remove the 4 screws fixing the box and the wall bracket, as shown in Figure 2.20

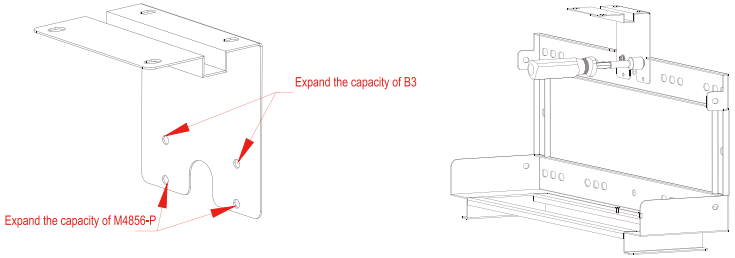


Figure 2.21 Install M4856-P Expansion Bracket

Step 4 Use SW7 sleeve or other tools for the M4 flange and M4 flange nuts to connect the M4856-P wall bracket to the expansion bracket, as shown in Figure 2.21.

NOTE: The connection points between the wall bracket and the expansion bracket must be the two holes above (the holes for B3 expansion).

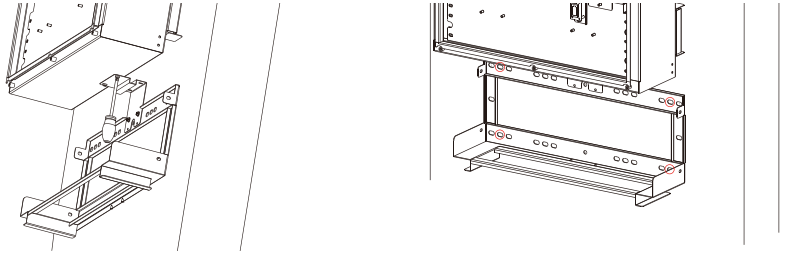


Figure 2.22 Install the Positioning Bracket

Step 5 After installing the expansion bracket, match the wall bracket with Storion-SMILE-B3, use M5*10 screws to lock and fix, then locate and and trace.

NOTE: If the positioner is not removed, SMILE-B3 can not be removed separately in the future.

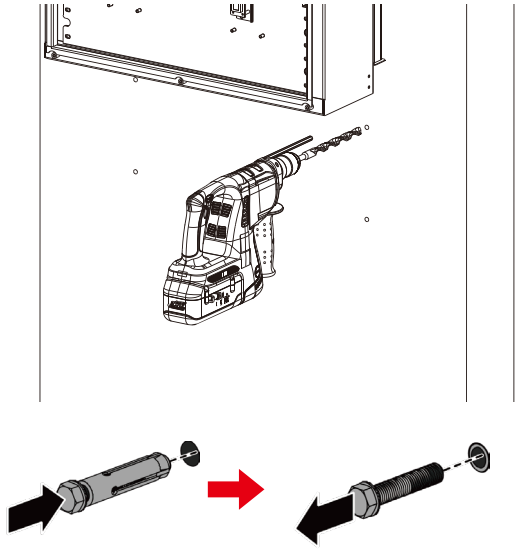


Figure 2.23 Holes for Fixing Bracket

Step 6 Drill holes at the position using a percussion drill (M12 drill, depth of holes: 70mm). After drilling, put 4 expansion bolts into the hole and take out the expansion screws as shown in Figure 2.23

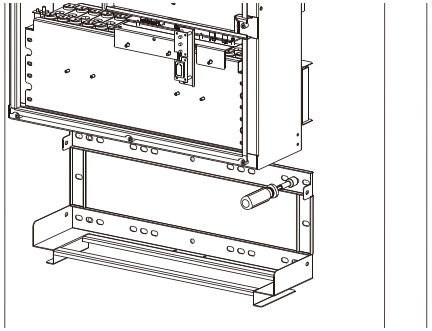


Figure 2.24 Fix the Wall Bracket

Step 7 Use a SW13 sleeve or other tools suitable for M8 flanges to lock the expansion screws, and fix the wall bracket on the wall.

NOTE: 1. Please use the leveling instrument to confirm the hanging bracket installed on a horizontal line to ensure the equipment not to be deflected.
2. If the positioner is not removed, Storion-SMILE-B3 can not be removed separately.

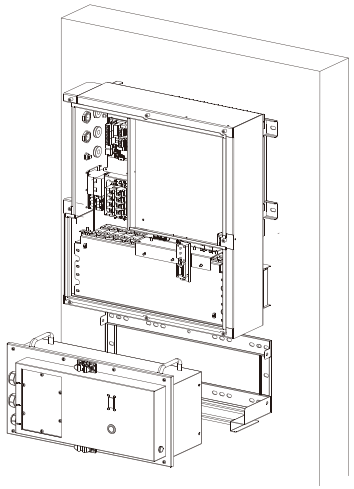


Figure 2.25 Install the Battery

Step 8 Push the M4856-P into the wall bracket.

NOTE: Please make sure someone else is holding the battery after it has been push into the wall bracket to prevent the battery from falling until Step 9 is completed.

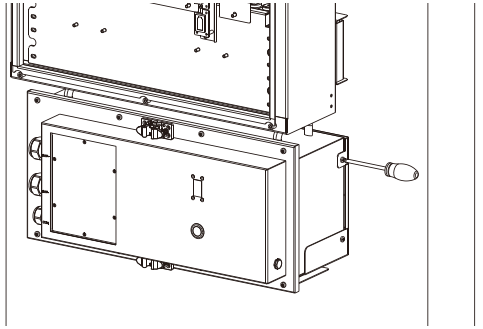


Figure 2.26 Fix the Battery to the Wall Bracket

Step 9 Use T20 screwdriver and T20 M5*10 screws to lock the battery to the wall bracket. The torque is 2.8 Nm±10%。

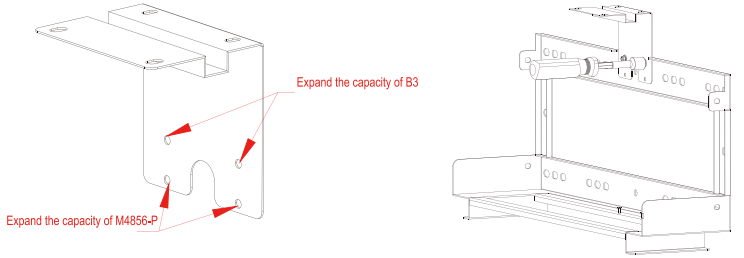


Figure 2.27 Fix the Wall Bracket and the Expansion Bracket

Step 10 If you want to install more battery modules, please take out the wall bracket and expansion bracket and fix them referring to Step 1- Step 3.

NOTE: The expansion point of the wall bracket and expansion bracket must be the two holes below (the holes for M4856-P expansion).

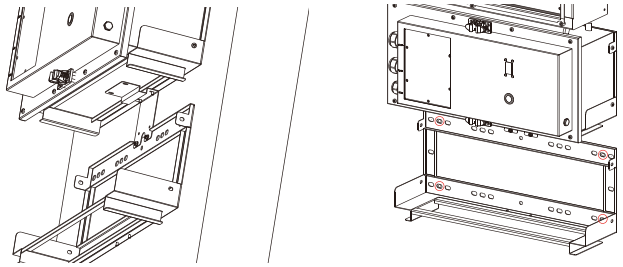


Figure 2.28 Positioning Between Wall Brackets

Step 11 Match the wall bracket with the wall bracket of the previous M4856-P.

NOTE: It is not required to to fix the expansion bracket to the previous wall bracket, just place them together for positioning; and then remove the expansion bracket after tracing points.

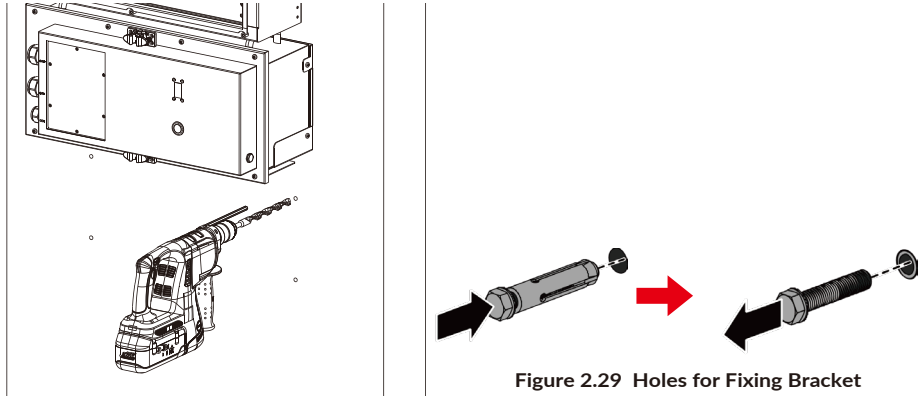


Figure 2.29 Holes for Fixing Bracket

Step 12 Drill holes at the position using a percussion drill (M12 drill, depth of holes: 70mm). After drilling, put 4 expansion bolts into the hole and take out the expansion screws as shown in Figure 2.29

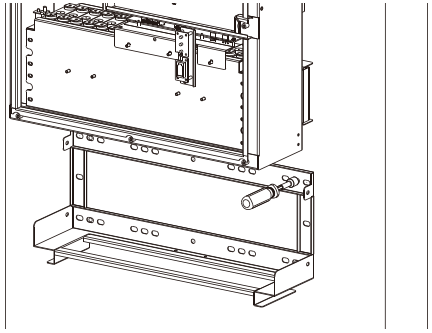


Figure 2.30 Fix the Wall Bracket

Step 13 Use a SW13 sleeve or other tools suitable for M8 flanges to lock the expansion screws, and fix the wall bracket on the wall.

NOTE: 1. Please use leveling instrument to confirm that the hanging bracket is installed on a horizontal line to ensure that the equipment will not deflect.
2. If the positioner is not removed, M4856-P can be not removed separately in the future.

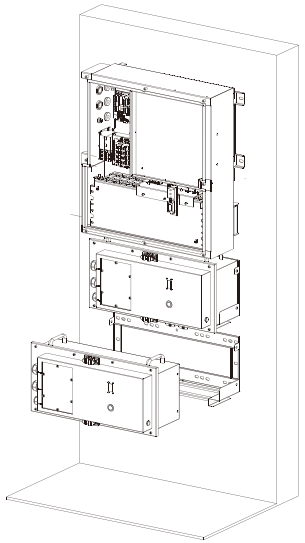


Figure 2.31 Install the Battery

Step 14 Push the M4856-P into the wall bracket.

NOTE: Please let someone support the battery after pushing in to prevent the battery from falling until Step 15 is completed.

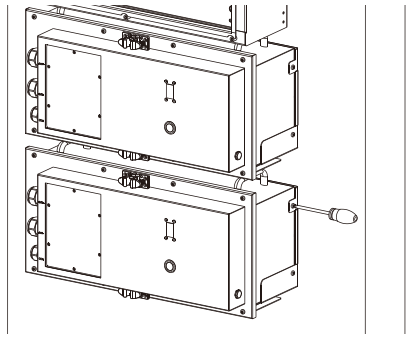


Figure 2.32 Lock the Battery to the Wall Bracket

Step 15 Use T20 screwdriver and T20 M5*10 screws to lock the battery to the wall bracket. The torque is 2.8 Nm±10%

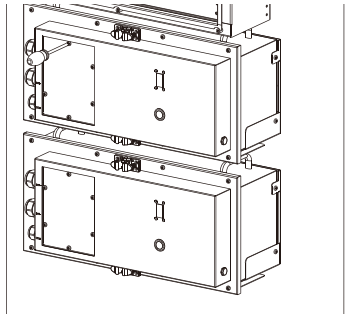


Figure2.33 Remove the Maintenance Cover of M4856-P

Step 16 Remove the maintenance cover (Figure 2.33)

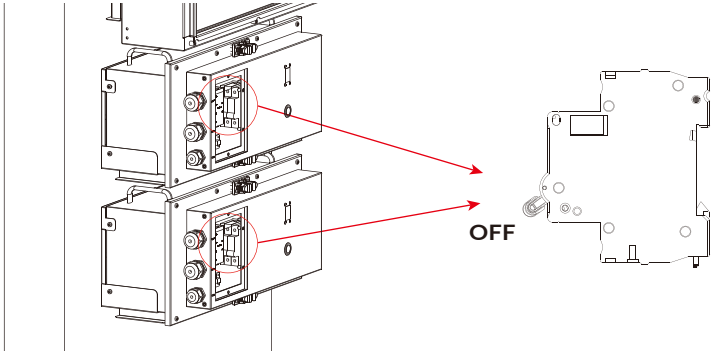


Figure 2.34 Confirm Circuit Breaker Status

Step 17 Confirm that the status of circuit breaker is OFF. Please turn it off it if it is ON. The status of the Figure 2.34 above is turned off viewed from the front.

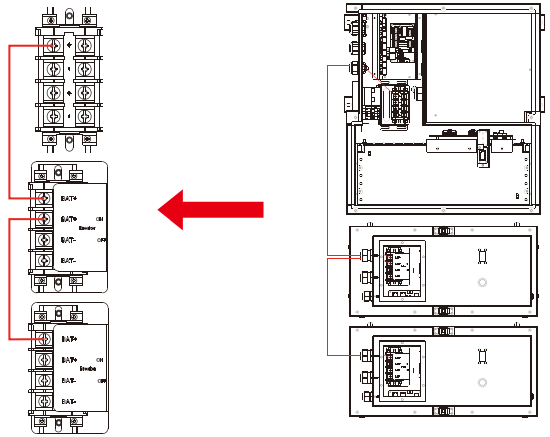


Figure 2.35 Connect the Positive Power Line

Step 18 Connect positive power line for expansion (Figure 2.35).

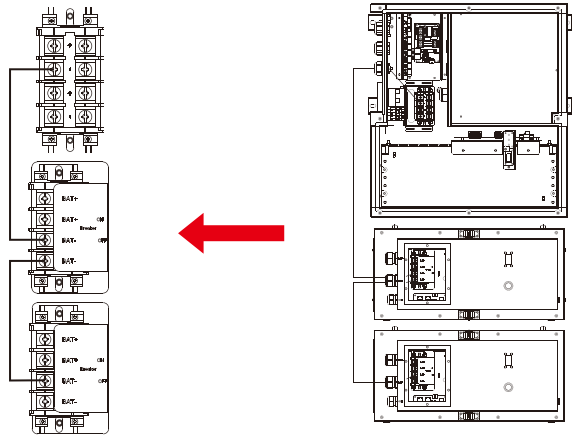


Figure 2.36 Connect the Negative Power Line

Step 19 Connect negative power line for expansion (Figure 2.36).

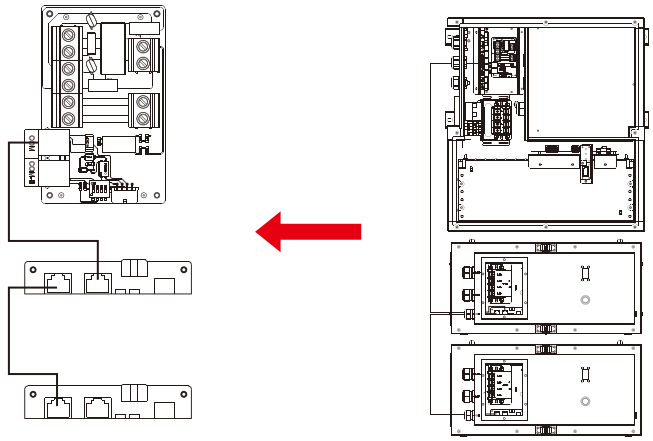


Figure 2.37 Connect the Battery Communication Line

Step 20 Connect the battery communication line.

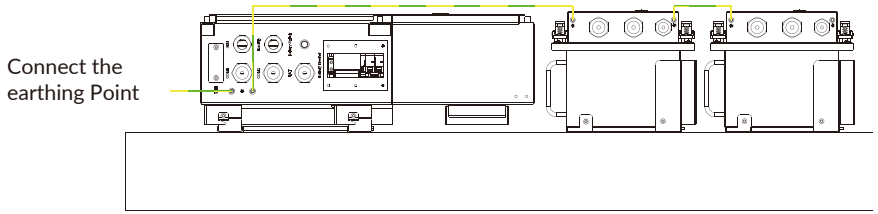


Figure 2.38 Connect the Grounding Harness

NOTE:Regarding the situation of earth fault, please refer to Appendix 2.

Step 21 Connect the grounding harness

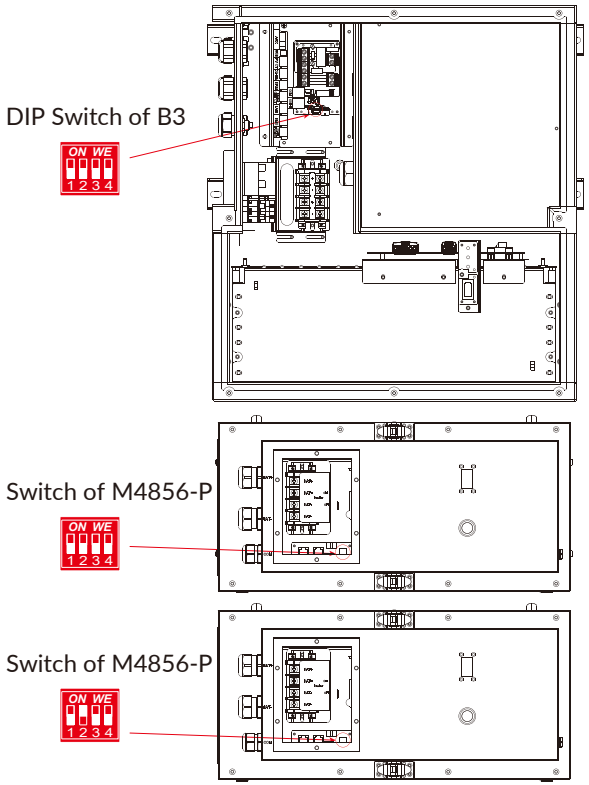


Figure 2.39 Set DIP Switch

Step 22 Set DIP Switch

> **NOTE:** If there is only one M4856-P to be connected, switch off the DIP2 in Storion-SMILE-B3 and switch on the DIP2 in M4856-P.

If there are more than two batteries to be connected, please refer to DIP switch configuration table as below:

Battery Position.	DIP 1	DIP 2	DIP 3	DIP 4	DIP Switch
Non-bottom battery (incl. B3-bat)	OFF	OFF	OFF	OFF	
Bottom battery	OFF	ON	OFF	OFF	

Bottom battery is the battery farthest from the inverter.

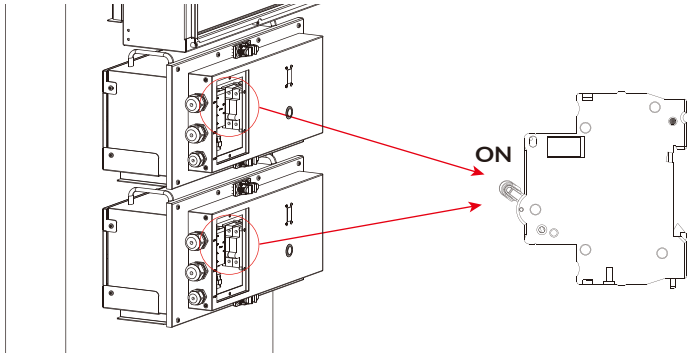


Figure 2.40 Turn on the Circuit Breaker

Step 23 Turn on the circuit breaker. The status of the figure 2.40 above is connected viewed from the front.

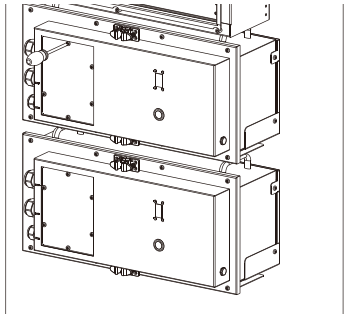


Figure 2.41 Install the Maintenance Cover

Step 24 Install the maintenance cove with the torque being 2.8 N.m±10%.

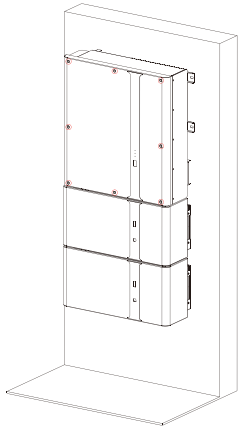


Figure 2.42 Install Decoration

Step 25 Install the B3 upper cover and decoration of M4856-P, insert the white rubber plugs into the fixing hole of the B3 upper cover, and the installation is complete.

2.4.5 Electricity Meter Wiring

The power meter should be installed and connected in the distribution box. There are several types of power meters, available for CT, ADL-3000 or ACR10R.

CT: 100A, 1:3000

ADL-3000: Three-phase electricity meter (with or without CT)

ACR10R: Three-phase CT electricity meter (with CT)

Table 6 CT Meter Ratio and Accuracy Table

Model	CT ratio	Accuracy
ADL3000-N/CT & 300A/5A CT	60	0.6 kWh
ADL3000-N/CT & 400A/5A CT	80	0.8 kWh
ADL3000-N/CT & 400A/1A CT	400	4.0 kWh
ACR10R-100A CT	100	1.0 kWh
ACR10R-120A CT	120	1.2 kWh

2.4.5.1 CT

The CTs connection is as shown in Figure 2.43.:

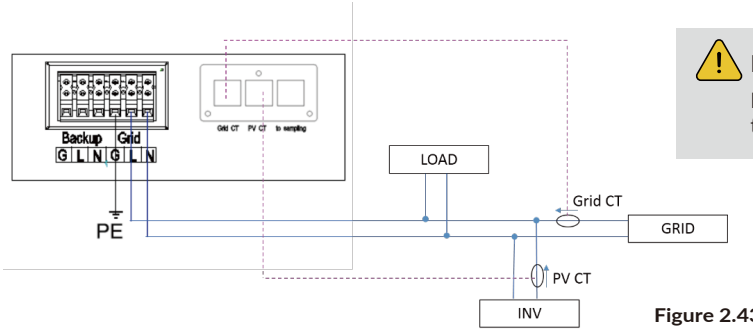
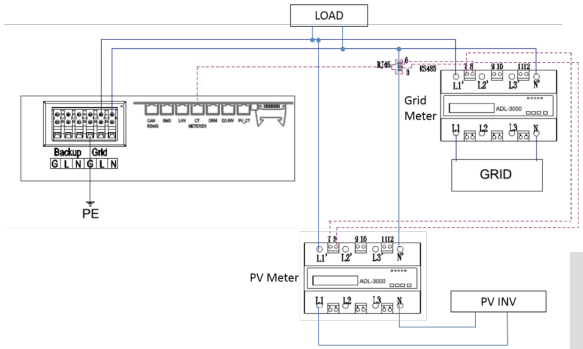


Figure 2.43 CT Connection

NOTE:
Please pay attention to the CT directions.

2.4.5.2 Electricity Meter ADL-3000 (if optional)

ADL-3000 connection (without CT, without Meterplug):



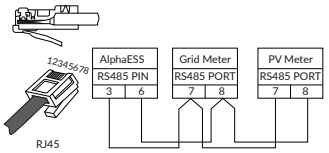


Figure 2.44 ADL-3000 Connection (without CT, without Meterplug)

NOTE:
Terminal 7, 8 connecting RJ-45 PIN 3, 6.

ADL-3000 Connection (with CT and Meterplug):

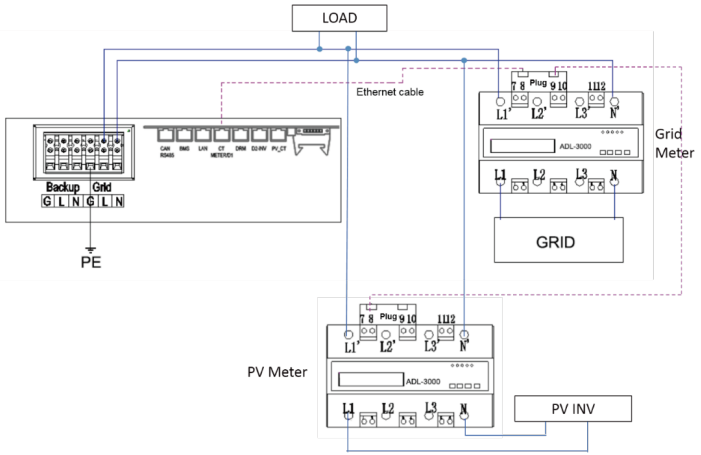
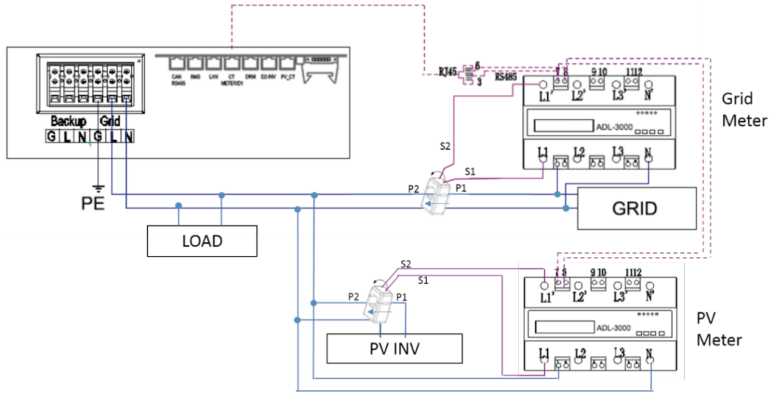


Figure 2.45 ADL-3000 Connection (without CT, with Meterplug)

ADL-3000 connection (with CT, without Meterplug)



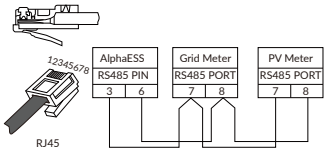


Figure 2.46 ADL-3000 Connection (with CT, without Meterplug)

ADL-3000 Connection (with CT and Meterplug):

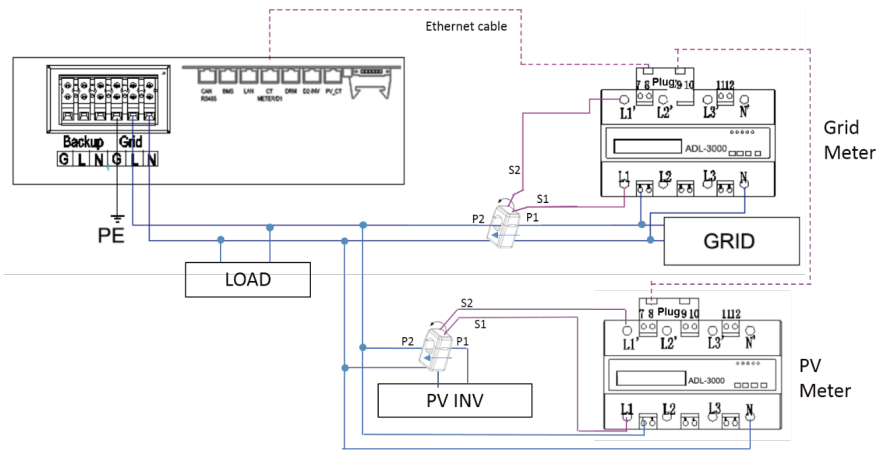


Figure 2.47 ADL-3000 Connection (with CT and Meterplug)

NOTE: In AC system the both two meters' addresses should be set, please refer to 2.4.5.5.1.

2.4.5.3 Electricity meter ACR10R (if optional)

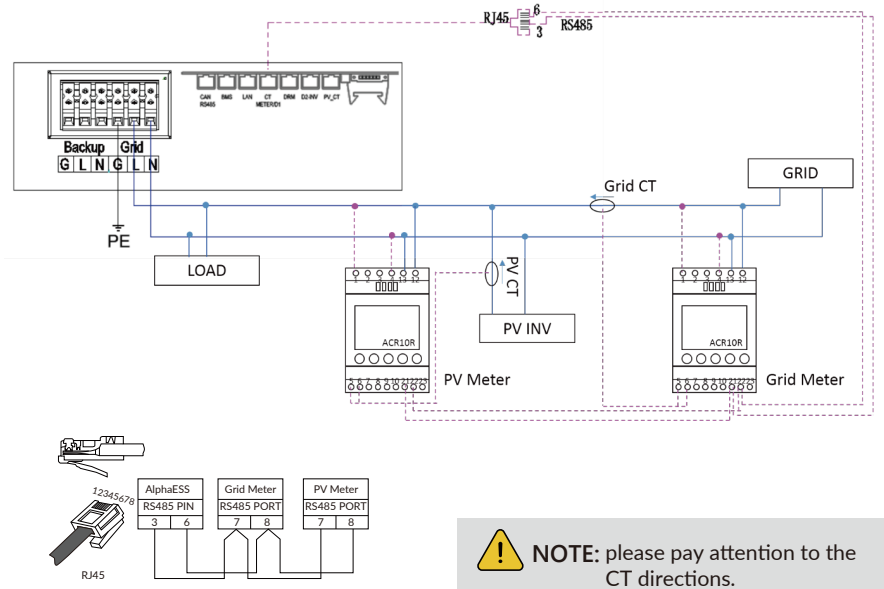


Figure 2.48 ACR10R Connection

NOTE: please pay attention to the CT directions.

In AC system the both two meter addresses should be set, please refer to 2.4.5.5.2.

2.4.5.4 Mixed Installation of CT and Meter

A CT and a three-phase meter (ADL3000, ALD3000 with CT, ACR10R with CT) can be installed in the same system, the CT and the meter shall be installed according to the corresponding position, otherwise the system will run abnormally.

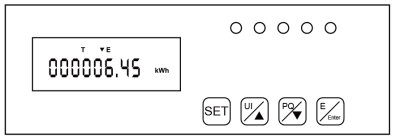
The initial setup is CT connection. If a meter is connected, after connecting, a relevant configuration work shall be carried out by the installer on AlphaCloud, please refer to 5.1.2.

NOTE: This function is released in Storion-SMILE-B3 EMS firmware version V1.00.33 or above. In AC system and the mixed installation of CT and meter situation, the meter address should be also set in the meter, please refer to 2.4.5.5.1 (ADL3000) and 2.4.5.5.2 (ACR10R).

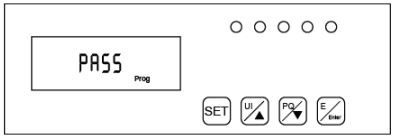
2.4.5.5 Meter setting

2.4.5.5.1 ADL3000

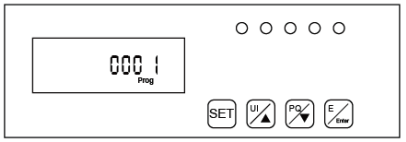
Step 1 The initial interface of the meter (normal working interface) is as shown below:



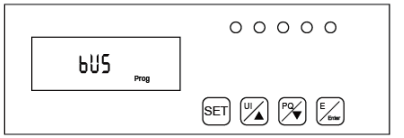
Step 2 Click the “SET” button to enter the password interface:



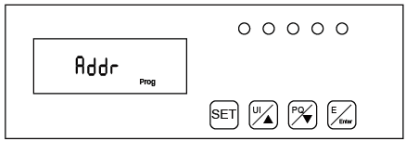
Step 3 Click the "Enter" button to enter the following interface, and press the up and down arrow keys to enter the password 0001;



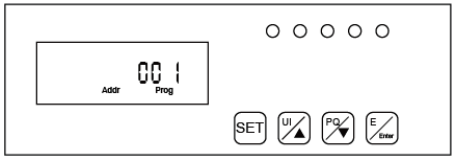
Step 4 Click the "Enter" button and the password input is completed.



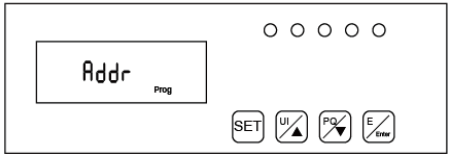
Step 5 Click the “Enter” button again to enter the address interface:



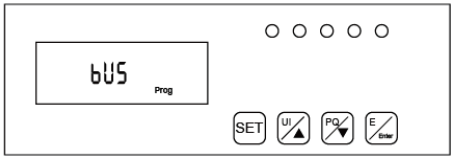
Step 6 Click the “Enter” button to enter the following interface, press the up and down arrow keys to set the meter address, the Grid meter (DC, AC and Hybrid system) address is set to 001, and the PV meter (AC and Hybrid system) address is set to 002.



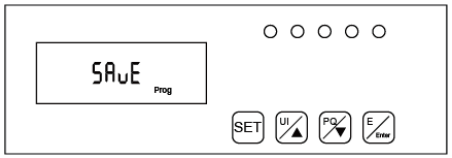
Step 7 Click the “SET” button to enter the following interface:



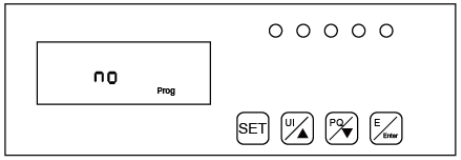
Step 8 Click the “SET” button to enter the following interface:



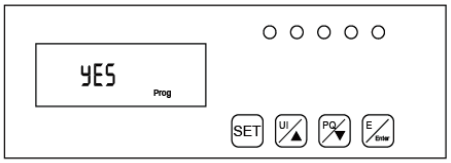
Step 9 Click the “SET” button again to enter the save interface:



Step 10 Click the “Enter” button to enter the following interface, press the up and down arrow keys, and set “no” to “YES” to save the configuration.

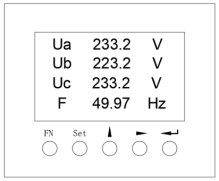


Step 11 Click the "Enter" button and the setting ends.

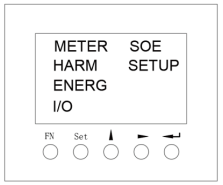


2.4.5.5.2 ACR10R

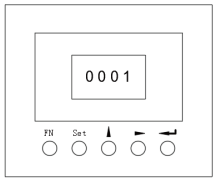
Step 1 This is the initial interface of the meter, click the "Set" button;



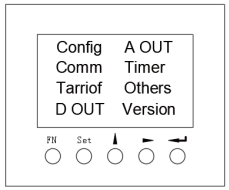
Step 2 Click the "SETUP" button;



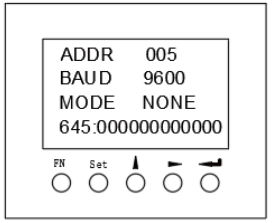
Step 3 On the password input interface, the code is "0001", confirm entering the setting interface;



Step 4 In the setting interface, select "Comm" option, enter the communication setting interface



Step 5 Set the communication address and communication baud rate in the communication setting interface. When the meter is used as the Grid meter (DC, AC/Hybrid system), the address is set to “005”. When it is used as the PV meter (AC/Hybrid system), the address is set to “006”. The baud rate is set to 9600;



03 OPERATION

Please double check the following before operation.

1. Storion-SMILE-B3 is firmly fastened to the mounting bracket on the wall;
2. The polarity of battery wires is correct, battery wires are firmly connected;
3. 80A battery switch: OFF;
4. If PV is applied, the PV-INV switch: OFF
5. GRID / LOAD cables are firmly and correctly connected;
6. External grid AC switch is correctly connected between Storion-SMILE-B3 GRID port & GRID, AC circuit breaker: OFF;
7. If backup load is applied, external backup AC switch is correctly connected to SMILE-B3 Load port, AC circuit breaker: OFF;
8. AC contactor is correctly connected;
9. Please ensure that the communication cable has been correctly connected;

3.1 Switch On

System shall be turned on in the correct sequence to avoid any damage.
Step 1: Turn on the 80A&63A battery switch of B3 system;
Step 2: Press the button on the battery until the battery LED lights;
Step 3: Turn on the external grid AC breaker;
Step 4: If PV is applied, turn on the PV-INV switch;
Step 5: If backup load is applied, turn on the external backup AC breaker; if not, keep it off.

3.2 Switch Off

Step 1: If backup load is applied, turn off the external backup AC breaker;
Step 2: Press the button on the battery until the battery LED off;
Step 3: Turn off the main battery switch of B3 system;
Step 4: Turn off the external grid AC breaker.

3.3 Emergency Procedure

When the Storion-SMILE-B3 Battery energy storage system appears to be running abnormally, you can turn off the grid connected main switch directly feeding the BESS and turn off all load switches within the BESS, turn off the battery switch at the same time. To prevent a potentially fatal personal injury, if you want to repair or open the machine after the power is switched off please measure the voltage at the input terminals with a suitably calibrated voltage tester.

Before working on this equipment, please confirm that there is no grid electric supply to the BESS!

The upper cover plate cannot be opened until the DC-link capacitance inside the battery modules discharges completely about 15 minutes later.

3.3.1 Emergency Handling Plan

1. Disconnect the AC breaker.
2. Check the control power supply. If it is OK, return the power supply to find out the reason.
3. Please record every detail related to the fault, so AlphaESS can analyse and solve the fault. Any operation of equipment during a fault is strictly forbidden, please contact Alpha as soon as possible.
4. As battery cell contains little Oxygen inside and all cells have got explosion-proof valve, explosion hardly happens.
5. When the indicator light on the battery shows a red fault, check the fault type through the communication protocol, and contact our after-sales service personnel for advice.

3.3.2 Hazards

If the battery pack leaks electrolyte, avoid contact with the leaking liquid or gas. If one is exposed to the leaked substance, immediately perform the actions described below:

Inhalation: Evacuate the contaminated area, and seek medical attention.

Eye contact: Rinse eyes with running water for 5 minutes, and seek medical attention.

Contact with skin: Wash the affected area thoroughly with soap and water, and seek medical attention.

Ingestion: Induce vomiting, and seek medical attention.

3.3.3 Fire

If a fire breaks out in the place where the battery pack is installed, perform the following countermeasures:

Fire extinguishing media

Respirator is not required during normal operations.

Use Novel 1230, FM-200 or dioxide extinguisher for battery fire.

Use an ABC fire extinguisher, if the fire is not from battery and not spread to it yet.

Fire fighting instructions

1. If fire occurs when charging batteries, if it is safe to do so, disconnect the battery pack circuit breaker to shut off the power to charge.
2. If the battery pack is not on fire yet, extinguish the fire before the battery pack catches fire.
3. If the battery pack is on fire, do not try to extinguish but evacuate people immediately.

> ⚠ There may be a possible explosion when batteries are heated above 150°C. When the battery pack is burning, it leaks poisonous gases. Do not approach.

Effective ways to deal with accidents

On land: Place damaged battery into a segregated place and call local fire department or service engineer.

In water: Stay out of the water and don't touch anything if any part of the battery, inverter, or wiring is submerged.

Do not use submerged battery again and contact the service engineer

04 WIFI MODULE CONFIGURATION

Please install the WiFi module. Download and install the APP by scanning the QR code (Figure 4.1), and directly connect to Storion-SMILE-B3 by WiFi module.

Figure 4.1 AlphaESS-APP

Step 1 Open Alpha ESS APP, click the "Wi-Fi configuration" button and enter the WiFi configuration interface as shown in Figure 4.2

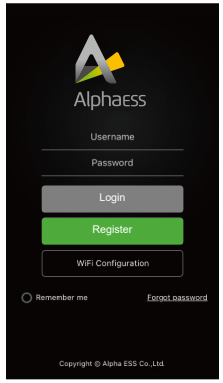


Figure 4.2 Network Setting

Step 2 After that please check whether your mobile phone has connected to the system hotpot, as shown in Figure 4.3.

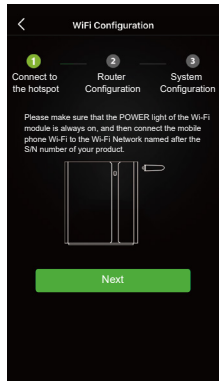


Figure 4.3 Hardware Connection

Step 3 If your mobile phone hasn't connected to the system hotpot, please open the Wi-Fi network list. Please find the hotpot named after the product SN in WLAN list and connect to it. If the WiFi module is Yilian as shown in Figure 4.6, please enter the password 12345678, otherwise please connect directly. After successful setting, please go back to APP and click "Next"

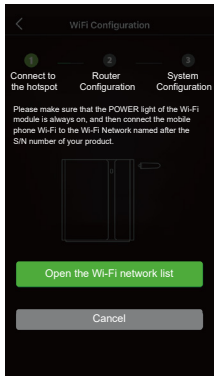


Figure 4.4 Open WiFi network list

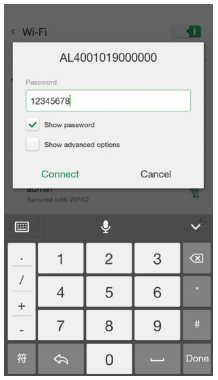


Figure 4.5 WLAN Password

Figure 4.6 Yilian WiFi module

Step 4 Enter the WiFi account and password and then save it, the configuration is successful, click "next", as shown in Figure 4.7 and Figure 4.8.

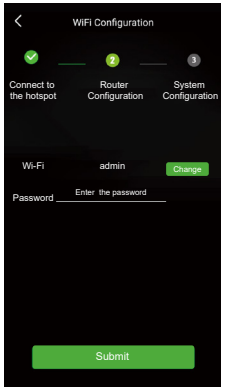


Figure 4.7 WiFi Setting

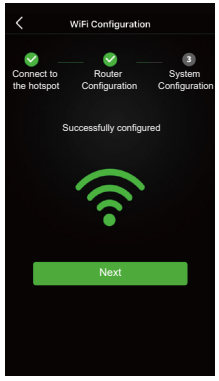


Figure 4.8 Configuration Success

Step 5 Set basic parameters, including PV capacity on the grid side, the type of meters, safety regulations and regional application standard. Click "Submit" when the settings are complete, as shown in Figure 4.9

After finishing the WIFI setting. All the stauts can be found via the main page. On the main page, tap "your device" to view the information for the system. The firmware version can be checked in the "Firmware information", and the safety regulations, the power quality modes and setpoints can be viewed through the "inverter information", as shown in Figure 4.10. Once the safety regulation is chosen during the WIFI setting, only the Alpha service engineer can change the safety regulation and the setpoints for the power quality response modes. Please contact Alpha ESS to change settings when necessary.

⚠ When the safety regulation is set as AS4777.2, the secondary sub-options can be selected according to the region or local grid company (Please refer to Appendix 4).

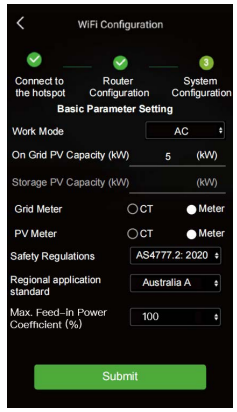


Figure 4.9 Basic Parameter Setting

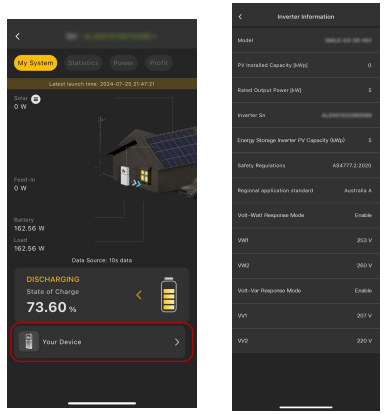
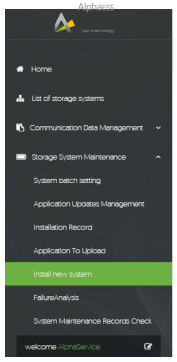


Figure 4.10 Equipment Details

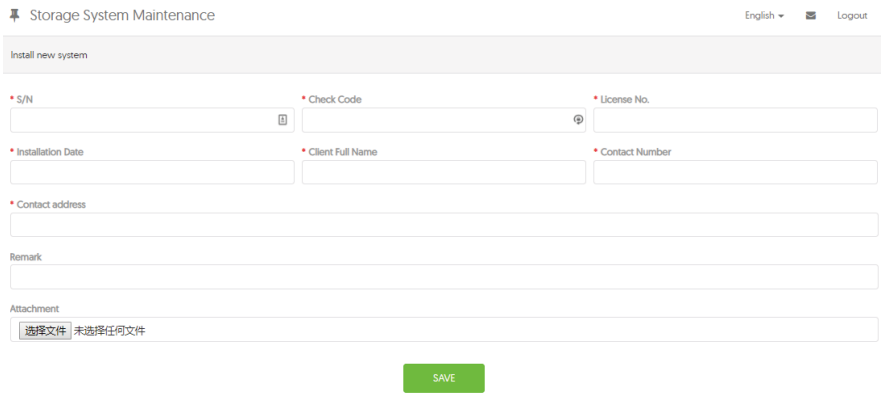
⚠ Specifically, if you are an installer who wants set the soft export limit you can set the allowable feed-in ratio from 0-100 %, the output to the grid will be reduced based on the inverter maximum output power multiplied by the ratio. To switch to the hard export limit and keep the same value, please contact Alpha ESS.
To set up the generation limit(for both hard and soft limit), go to your device after the configuration and choose "other information", where you can set the number of the apparent power for generation limit.

05 SYSTEM REGISTRATION

Installers who haven't yet registered need to click "Register" to visit the registration page. Please refer to "AlphaCloud Online Monitoring Webserver Installers User Manual", which you can get from AlphaESS sales and get license number from relevant sales from Alpha ESS



Log in to your installer account and choose Storage System Maintenance> "Install new system" to register new system at Alpha ESS.



Enter the system S/N, check code, license, installation date, client name, contact number, contact address, and click the save button. The red * in front of it is required. Click the Browse button to select the attachment you want to add.

5.1 System Setup in Monitoring

The system settings of the Storion-SMILE-B3 must be carried in the installer monitoring. To do this, follow the steps below:

Step 1: Please login in the installer account, click the list of storage systems and enter the SN.

5.1.1 Basic Information

Step 2: After selecting the correct system, enter System Setup interface. Enter in the "Basic Information" and input below information:

- Address,
- Zip code,
- Contact name,
- E-Mail address,
- Currencies and
- Telephone number.

NOTE: Do not forget to click "Save" button!

5.1.2 Meter Information

The initial setup is CT connection. If you use CTs, please ignore this section. Otherwise please find the "Meter Information" interface in the "System setup" menu.

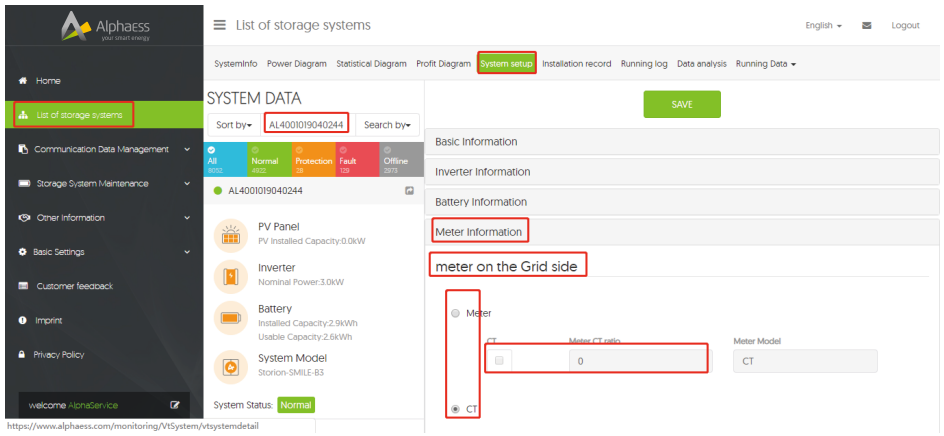


Figure 5.1 Interface of Meter Information on Server

Step 3: Please select the meter information sub-menu and set the meter configuration. Choose the meter type used and, if necessary, the CT ratio for the grid meter and PV meter individually.

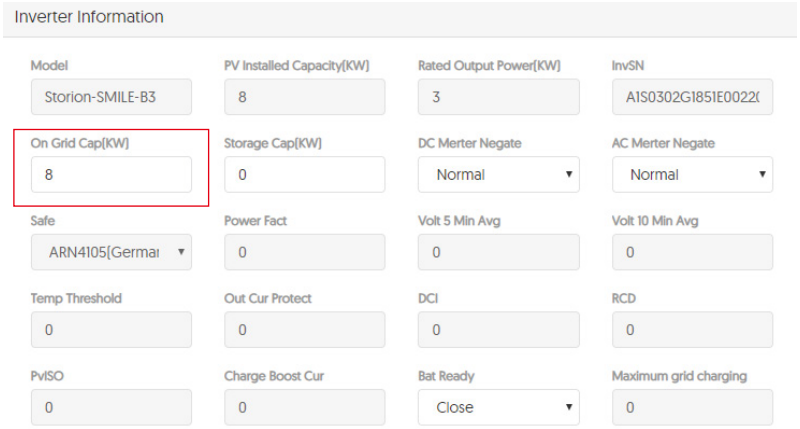
After that you must specify whether you have installed a CT or an electricity meter (ADL3000 or ACR10R) and in the case of electricity meters, please further select with or without CT were connected.

1. If a CT is installed, select directly the point "CT"
2. If a meter is installed, select the item "meter"

a) If a CT meter is installed, select in addition to the second point "CT" and set the CT ratio.

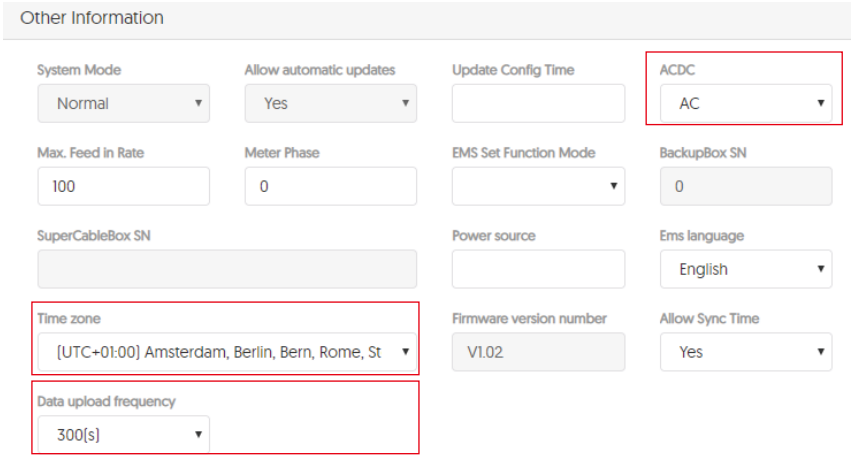
5.1.3 Inverter Information

Step 4: If PV modules are installed, please set the installed PV power, such as 8 kWp in "On Grid Cap (kW)" of "Inverter Information" interface



5.1.4 Other Information

Step 5: Finally, select the "Other Information" submenu and set the following parameter:
- ACDC mode: it should be AC mode
- Time zone
- Data upload frequency: Storion-SMILE-B3 has second level data, you can choose it as 10s data if you wish.



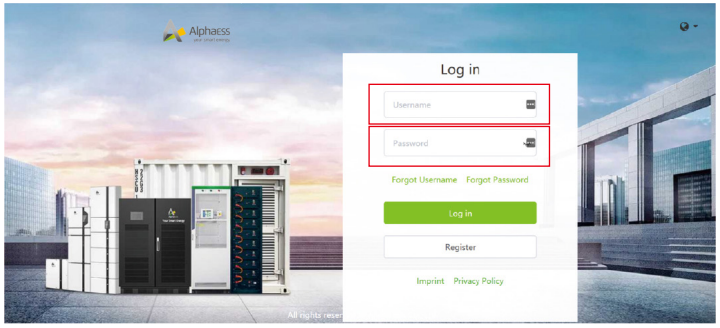
06 On-line Monitoring

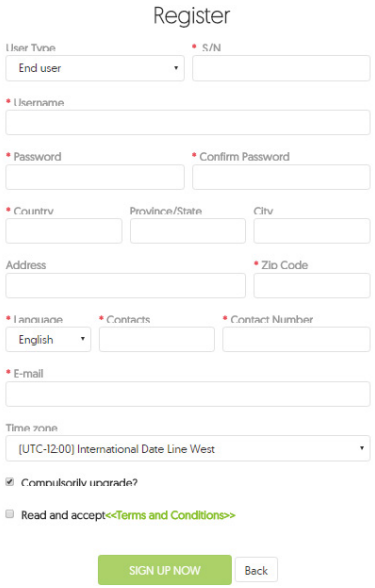
6.1 Account Registration

You can create a new account on our webserver for the normal monitoring. In addition, a part of our warranty is based on this connection to our webserver.
The data produced prior to registration can be synchronized to the webserver.
Please use the following steps:

Step 1: Open the portal: www.alphaess.com.

Step 2: Please fill in “Username”, “Password” and click “Login” if you have already registered.
If not, please register by filling in the following web form.





In this form, all fields with a red star are compulsory, and you can select the finally users or installation procedures.

*__Serial number:__ EMS serial number (please see the nameplate of the inverter)

*__Username:__ 5-15 letters / numbers

__NOTE:__ User name cannot be changed anymore after creation.

*__Password:__ 5-15 letters / numbers / characters

More details are available in the *Online Monitoring Web Server Installers User Manual*, which can be downloaded from AlphaESS homepage.

Figure 6.2 Account Registration Interface

07 Maintenance

7.1 Maintenance

Normally, the energy storage system needs no maintenance or calibration.
However, in order to maintain the accuracy of the SOC, it is recommended to perform a full charge calibration for SOC (charge the battery until the charge power is 0W) on the battery at regular intervals (such as two weeks).
Before cleaning, ensure that the system is disconnected from all power sources. Clean the housing, cover and display panel with a soft cloth.
To ensure that the energy storage system can operate properly in the long term, it is advised to perform routine maintenance as described in this chapter.

7.2 Maintenance Checklist

Check Item	Acceptance Criteria	Maintenance Interval
Product cleanliness	The enclosure of the inverter should be free from obstacles or dust.	Once every 6 to 12 months
Product visible damage	The product should be not damaged or deformed.	Once every 6 months
Product running status	1. The product should operate without any abnormal sound. 2. All parameters of the product should be set correctly. Perform this check when the product is running.	Once every 6 months
Electrical connections	1. Cables should be securely connected. 2. Cables should be intact, and in particular, the cable jackets touching the metallic surface should not be scratched. 3. Unused cable glands should be blocked by rubber sealing which are secured by pressure caps.	Perform the first maintenance 6 months after the initial commissioning. Thereafter, perform the maintenance once every 6 to 12 months.

CAUTION

Risk of burns due to hot enclosure of the inverter

- Do not touch any parts other than the display panel during operation.
- Wait approximately 30 minutes for the inverter to cool down before cleaning.

08 Appendix 1: Nomenclature of Model

Complete designation	Designation in this document
Storion-SMILE-B3	
Storion-SMILE-B3	3kW AC coupled system with 2.6 kWh battery
Storion-SMILE-B3 II	3kW AC coupled system with 5.4 kWh battery
Storion-SMILE-B3 III	3kW AC coupled system with 8.1 kWh battery
Storion-SMILE-B3 IV	3kW AC coupled system with 10.8 kWh battery
Storion-SMILE-B3 V	3kW AC coupled system with 13.4 kWh battery
Storion-SMILE-B3 VI	3kW AC coupled system with 16.1 kWh battery

In this manual, the Storion-SMILE-B3 will represent all the model number of the energy storage system becasue they share the same topologic.

09 Appendix 2: Earth Fault

If the system occurs an earth fault, the user will receive a mail like this to remind them check the grounding status.

Dear User,

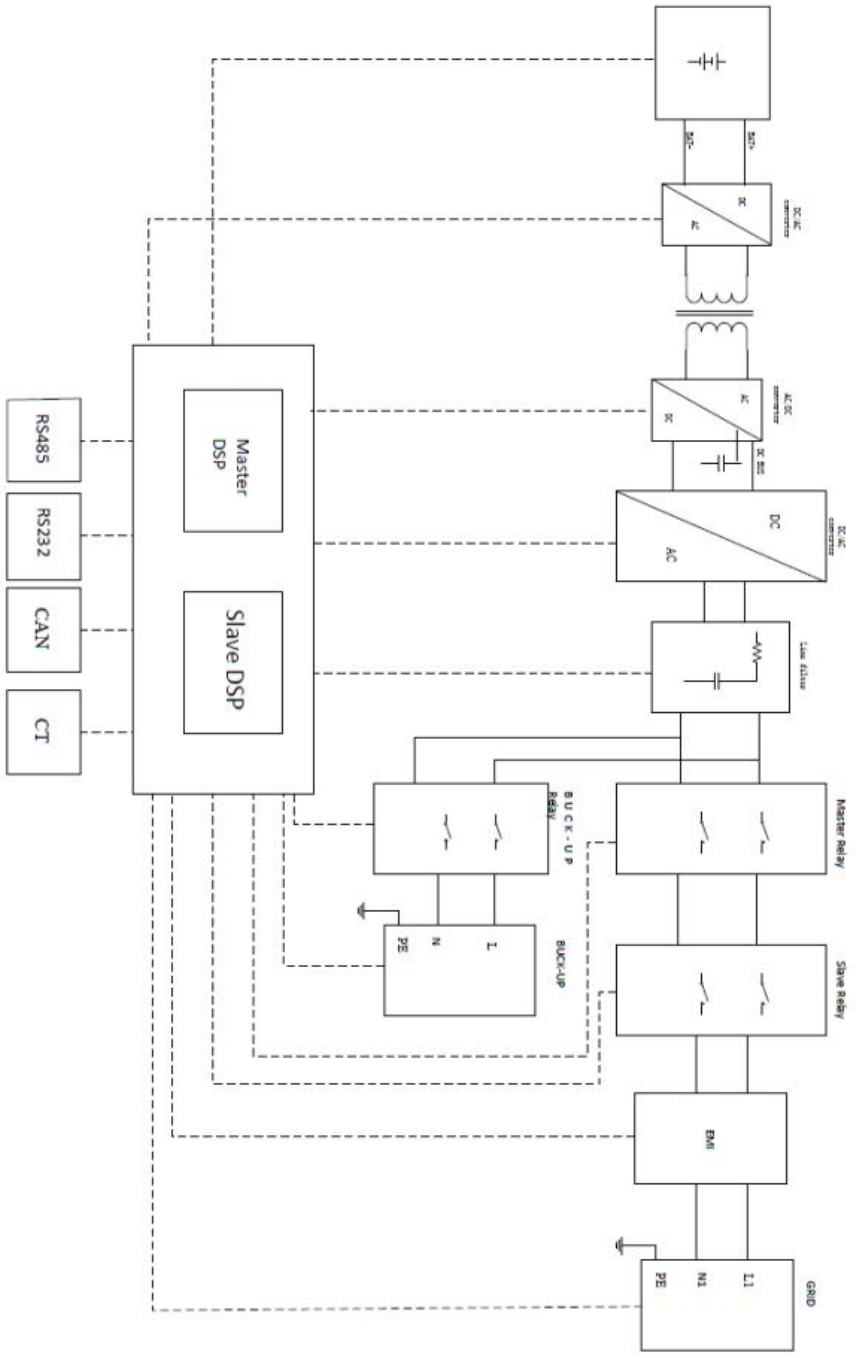
Your system has an earth fault, the details are as follows:

SN	Status	Error Code	Update Time
AL7001000000001	Earth Fault	EMS:18	8/5/2024 4:31:27 PM

Please contact your installer company to correct these faults.
This email is automatically sent by the system, please do not reply directly.

Sincerely,
Alpha ESS Co., Ltd.

10 Appendix 3: Block Diagram



11 Appendix 4: Regional Application Standard

Please check with your local grid company and choose the correspond Regional Application Standard, the power quality modes Volt-VAR and Volt-Watt will be running automatically. (Only for regions with AS/NZW 4777.2 safety regulations).

Regional application Standard	Electric Company
Australia A	N/A
Australia B	N/A
Australia C	N/A
New Zealand	N/A
Vector	New Zealand Vector

12 Appendix 5: Technical Data

STORION-SMILE-B3

Model	STORION-SMILE-B3
System Specification	
Max. AC Input/Output Power	3000 W
IP Protection	IP65
Dimension (W x D x H)	610 x 236 x 650 mm
Weight	45 kg
Operating Temperature Range	-10 °C ~ 50 °C*
Max. operation altitude	3000 m
Battery Chemistry	LFP (LiFePO4)
Warranty	5 Year Product Warranty, 10 Year Battery Performance Warranty**
Environmental Category	Outdoor
Pollution degree	PD2(Internal), PD3(Outside)
Inverter Technical Specification	
Rated Output Power	3000 VA
Backup Output Power	3000 VA
Max. AC Input Current	13 A
Rated Output Current	13 A
Nominal AC Input Voltage	230 V
Battery Voltage Range	40 ~ 58 V
Max. Charging/Discharging Current	60 A
Max. Charging/Discharging Power	3000 W
Max. Charging/Discharging Power	3000 W
Efficiency （DC to AC）	92.6 %
Nominal AC Output Voltage	230 V
Grid Voltage Range	180 ~ 270 V
Rated Frequency	50 / 60 Hz
Backup	UPS
Grid Regulation	AS 4777.2, VDE-AR-N 4105, G98-1, G100, TOR D4, CEI 0-21
Safety	IEC 62040-1, IEC 62477-1
Protection class	Class I
Over voltage category	DC II, AC III
Active anti-islanding method	AFD
Battery Technical Specification	
Module Capacity	2.7 kWh (The capacity drops to 2.6 kWh, if only one built-in battery.)
Module Nominal Voltage	51.2 V
Max. Short-circuit Current	200 A
Cycle Life	10 000 ***
Max. Charging/Discharging Current	56 A (1C)
External Battery Expansion	1 ~ 5 M4856-P in parallel
BESS Model	Storion-SMILE-B3 II(5.4kWh): Storion-SMILE-B3+M4856-Px1 (610 x 236 x 955 mm; 84 kg) Storion-SMILE-B3 III(8.1kWh): Storion-SMILE-B3+M4856-Px2 (610 x 236 x 1260 mm; 123 kg) Storion-SMILE-B3 IV(10.8kWh): Storion-SMILE-B3+M4856-Px3 (610 x 236 x 1565 mm; 162 kg) Storion-SMILE-B3 V(13.4kWh): Storion-SMILE-B3+M4856-Px4 (610 x 236 x 1870 mm; 201 kg) Storion-SMILE-B3 VI(16.1kWh): Storion-SMILE-B3+M4856-Px5 (610 x 236 x 2175 mm; 240 kg)
Certification	UN38.3, IEC 62619 (Cell), IEC 62619 (Pack)

* When the temperature is below 0 °C or above 40 °C, the performance will be limited.

** The precondition of the valid Performance Warranty shall be that: The ambient temperature during the operation of the Products shall not fall below - 10 °C or exceed 50 °C, and the Throughput Energy per kWh Usable Capacity is less than 3.12MWh.

*** Under specific test conditions