



Installation, Operation & Maintenance Manual

Energy Storage System (ESS)

Storion-SMILE5



V1.79

IMPRINT

Germany

Alpha ESS Europe GmbH

Tel.: +49 (0)6103 459 160-1

E-mail: europe@alpha-ess.de

Web: www.alpha-ess.de

Add: Paul-Ehrlich-Straße 1a

63225 Langen

China

Alpha ESS Co., Ltd.

Tel.: +86 (0)513 806 868 91

E-mail: info@alpha-ess.com

Web: www.alpha-ess.com

Add: JiuHua Road 888, High-Tech Industrial Development Zone

226300 Nantong City, Jiangsu Province

Australia

Alpha ESS Australia Pty. Ltd.

Tel.: +61 1300 968 933

E-mail: australia@alpha-ess.com

Web: www.alpha-ess.com.au

Add: Suite 1, Level 1, 530 Botany Road, Alexandria, NSW, 2015

Italy

Alpha ESS Italy S.r.l.

Tel.: +39 (0)599 239 50

E-mail: info@alpha-ess.it

Web: <https://it.alpha-ess.com/>

Add: Via Loda,17-41013 Castelfranco Emilia(MO)

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Copyright Statement

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Version Information

Version	Date	Content
V1.6	20180202	Some notes are added. Update RJ45 connecting diagram.
V1.7	20180306	Because of firmware update, some figures should be modified. Because of pre-wired Cables in CB, some figures and steps should be modified.
V1.72	20180514	Package parts list is modified. Power definition is modified. ADL3000 3-phase connection is added.
V1.74	20180922	Add daily maintenance content, installation environment requirements and parameters in DS. Modify EMS display indication.
V1.76	20181105	Add outdoor and indoor two versions.
V1.77	20181211	Cancel the off-grid application; reduce the two wirings in the inverter; increase the ACR meter connection; modify the color of the inverter display light; add a new version of the cover drawing;
V1.78	20181212	Modify the LCD display content;
V1.79	20190730	One machine replacement;

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1. Introduction

1.1 System Introduction

AlphaESS Storion-SMILE5 (incl. SMILE5-BAT and SMILE-INV) can be applied in DC-coupled systems (mostly new installation), AC-coupled systems (mostly retrofit) and Hybrid-coupled systems (mostly retrofit, and PV capacity-increase), as the following scheme:

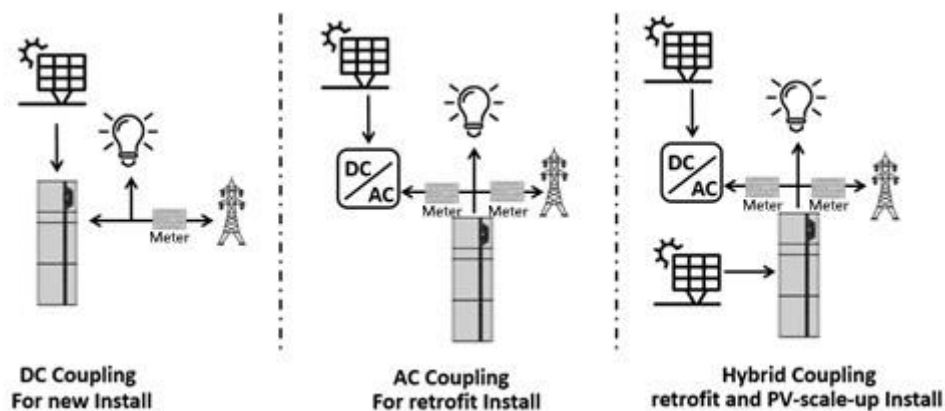


Figure 1 DC- and AC-/ Hybrid-coupled Storage System - Scheme

CAUTION:

For the AC-/ Hybrid-coupled system, unlike DC, two power meters are to be mounted.

Smile5 cannot be used in pure off-grid systems!

1.2 Safety Introduction

1.2.1 Manual keeping

This manual contains important information about operating the system. Before operating, please read it very carefully.

The system should be operated in strict accordance with the description in the manual, in case that it causes damages or loss to equipment, personnel and property.

This manual should be kept carefully for maintenance and reparation.

1.2.2 Operator Requirements

The operators should get a professional qualification, or trained.

The operators should be familiar with the whole storage system, including compositions and working principles of the system.

The operators should be familiar with the Product Instruction.

While maintaining, the maintainer is not allowed to operate any equipment until all the equipment has been turned off and fully discharged.

1.2.3 Protection of Warning Sign

The warning sign contains important information for the system to operate safely, and it is strictly prohibited to be torn or damaged. Ensure that the warning sign is always clear. The signs should be replaced immediately when damaged.

	It indicates a hazardous situation which, if not avoided, could result in death or serious injury!
	Danger of high voltage and electric shock!
	Storion-SMILE5 will be touchable or operable after minimum 5 minutes of being turned off or totally disconnected, in case of any electrical shock or injury.
	Danger of hot surface!
	Refer to the operating instructions.

1.2.4 Setting of Warning Sign for Safety

While instructing, maintaining and repairing, in case of preventing unrelated personnel nearby to cause incorrect operation or accident, the opinions below should be followed:

- Obvious signs should be set at front switch and rear-level switch in case of accidents caused by false switching.
- Warning signs or tapes should be set near operating areas.
- The system must be reinstalled after maintenance or operation.

1.2.5 Measuring Equipment

For ensuring the electrical parameters to match requirements, related measuring equipment are required when the system is being connected or tested.

Ensure that the connection and use matches specification in case of electric arc or shock.

1.2.6 Moisture Protection

It is very likely that moisture may cause damages to the system.

Repair or maintaining activities in wet weather should be avoided or limited.

1.2.7 Operation After Power Failure

The battery system belongs to energy storage system, and it keeps fatal high voltage even the DC side is disconnected. Therefore, touching the output of the battery is strictly prohibited.

The Inverter maintains fatal voltage even both the DC or AC side are disconnected, so it must be tested by multimeter for safety before operation.

1.2.8 Battery Safety Datasheet

1.2.2.1 Hazard Information

Classification of the hazardous chemical

Exempt from classification according to Australian WHS regulations.

Other hazards

This product is a Lithium Iron Phosphate Battery with certified compliance under the UN Recommendations on Transport of Dangerous Goods, Manual of Tests and Criteria, Part III, sub-section 38.3. For the battery cell, chemical materials are stored in a hermetically sealed metal case, designed to withstand temperatures and pressures encountered during normal use. As a result, during normal use, there is no physical danger of ignition or explosion and chemical danger of hazardous materials' leakage. However, if exposed to a fire, added mechanical shocks, decomposed, added electric stress by misuse, the gas release vent will be operated. The battery cell case will be breached at the extreme. Hazardous materials may be released. Moreover, if heated strongly by the surrounding fire, acid or harmful fume may be emitted.

1.2.2.2 Safety Datasheet

The detailed information please refer to the provided battery safety datasheet.

1.3 General Precautions



DANGER

Danger to life due to high voltages of the PV array, battery and electric shock.

When exposed to sunlight, the PV array generates dangerous DC voltage which will be present in the DC conductors and the live components of the inverter. Touching the DC conductors or the live components can lead to lethal electric shocks. If you disconnect the DC connectors from the system under load, an electric arc may occur leading to electric shock and burns.

- Do not touch uninsulated cable ends.
- Do not touch the DC conductors.

- Do not open the inverter and battery.
- Do not wipe the system with damp cloth.
- Have the system installed and commissioned by qualified people with the appropriate skills only.
- Prior to performing any work on the inverter or the battery pack, disconnect the inverter from all voltage sources as described in this document.

**WARNING****Risk of chemical burns from electrolyte or toxic gases.**

During standard operation, no electrolyte shall leak from the battery pack and no toxic gases shall form. Despite careful construction, if the Battery Pack is damaged or a fault occurs, it is possible that electrolyte may be leaked or toxic gases formed.

- Do not install the system in any environment of temperature below -10°C or over 50°C and in which humidity is over 85%.
- Do not touch the system with wet hands.
- Do not put any heavy objects on top of the system.
- Do not damage the system with sharp objects.
- Do not install or operate the system in potentially explosive atmospheres or areas of high humidity.
- Do not mount the inverter and the battery pack in areas containing highly flammable materials or gases.
- If moisture has penetrated the system (e.g. due to a damaged enclosure), do not install or operate the system.
- Do not move the system when it is already connected with battery modules.
- Secure the system to prevent tipping with restraining straps in your vehicle.
- The transportation of AlphaESS Storion-SMILE5 must be made by the manufacturer or an instructed personal. These instructions shall be recorded and repeated.
- A certified ABC fire extinguisher with minimum capacity of 2kg must be carried along when transporting.
- It is totally prohibited to smoke in the vehicle as well as close to the vehicle when loading and unloading.
- For the exchange of a battery module, please request for new hazardous goods packaging if needed, pack it and let it be picked up by the suppliers.
- In case of contact with electrolyte, rinse the affected areas immediately with water and consult a doctor without delay.


CAUTION:
Risk of injury through lifting or dropping the system.

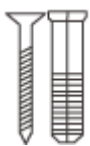
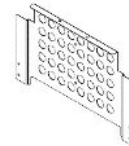
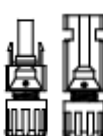
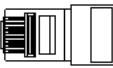
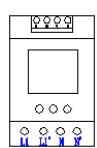
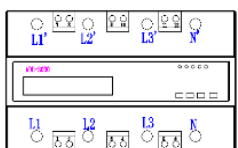
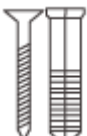
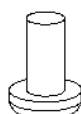
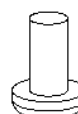
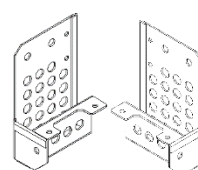
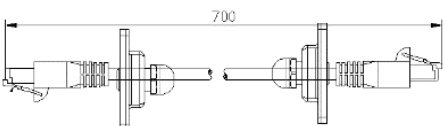
The inverter and battery are heavy. There is risk of injury if the inverter or battery is lifted incorrectly or dropped during transport or when attaching to or removing from the wall.

- Lifting and transporting the inverter and battery must be carried out by more than 2 people.

1.4 Parts List

Check the following parts list to ensure it is complete.

AlphaESS delivers a total system separately on site to client, this consists of:

SMILE5-INV					
					
8x M8*60	2x M4	4x M6	1x Mounting Panel	1x Mounting Bracket	10x M6 Gasket
					
2x MC4	8x RJ45 Connectors	1x Meter (1x SM 60A or 1x ADL 3000)		1x Installation Manual	1x User Manual
SMILE5-BAT					
					
6x M8*60	6x M5*10	6x M4*10	2x Mounting Panel		
					
6x M6 Gasket	2x Power Cable (1 black, 1 red)	1x User Manual	Battery Communication Cable		

1.5 System Appearance

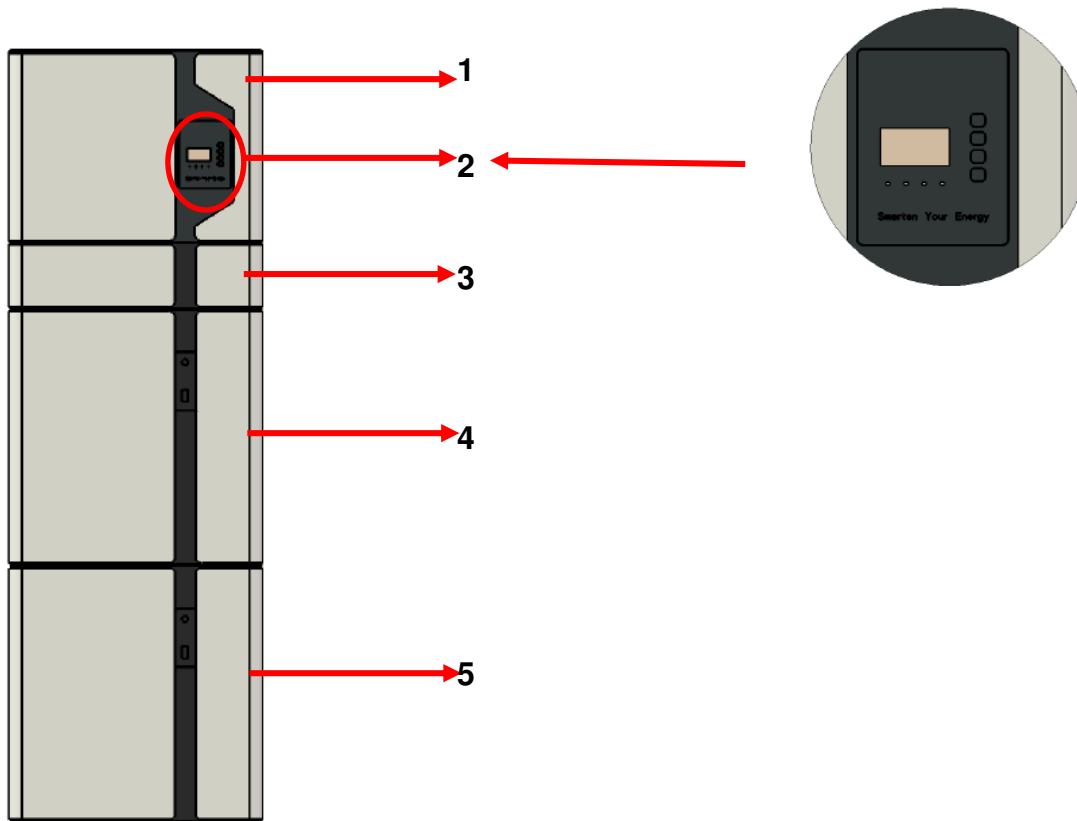
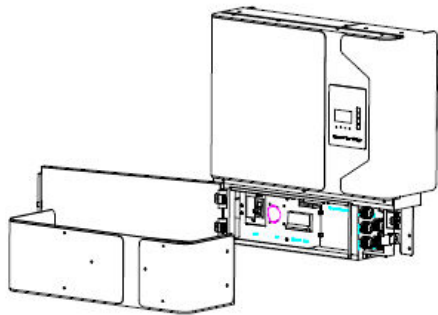


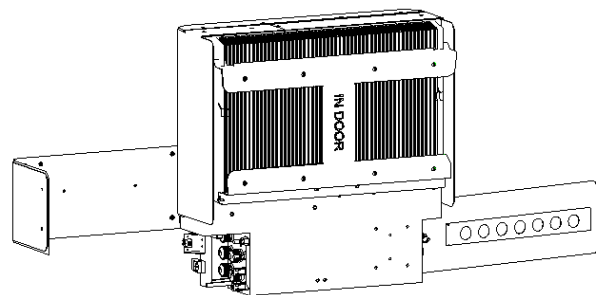
Figure 2 Storion-SMILE5 Delivery Scope

Object	Description
1	Hybrid Inverter with Cable Box
2	Display Screen
3	Cable Box Part of Inverter
4	SMILE5-BAT (Battery 1)
5	SMILE5-BAT (Battery 2)

Cable Box Part



**Figure 3 Inverter without Cable Box Covers–
Front View**



**Figure 4 Inverter without CableBox Covers - Rear
View**

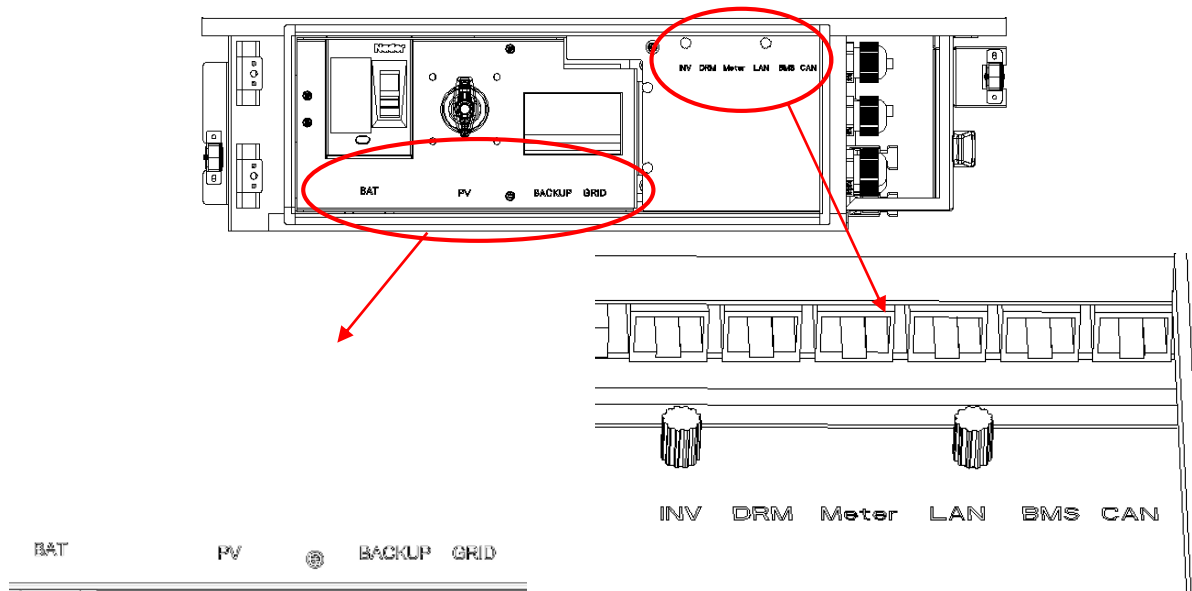
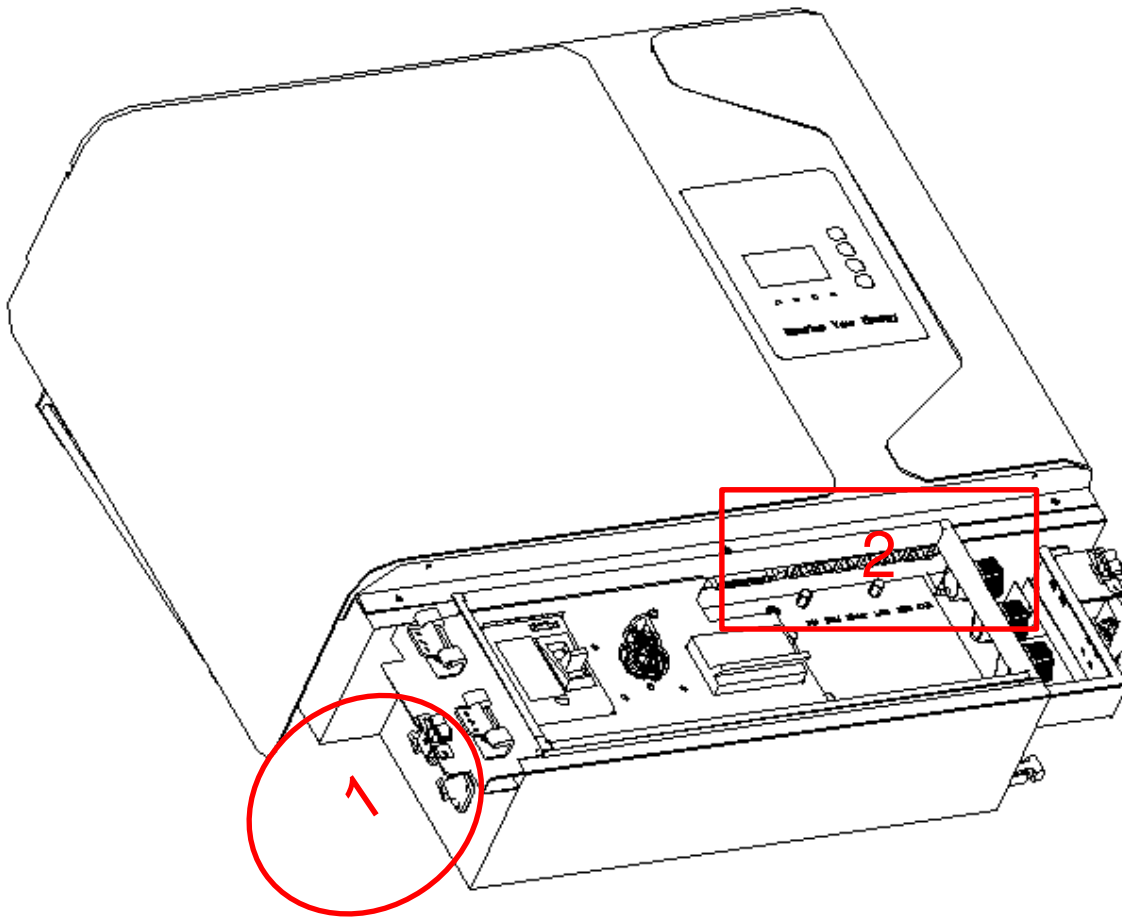
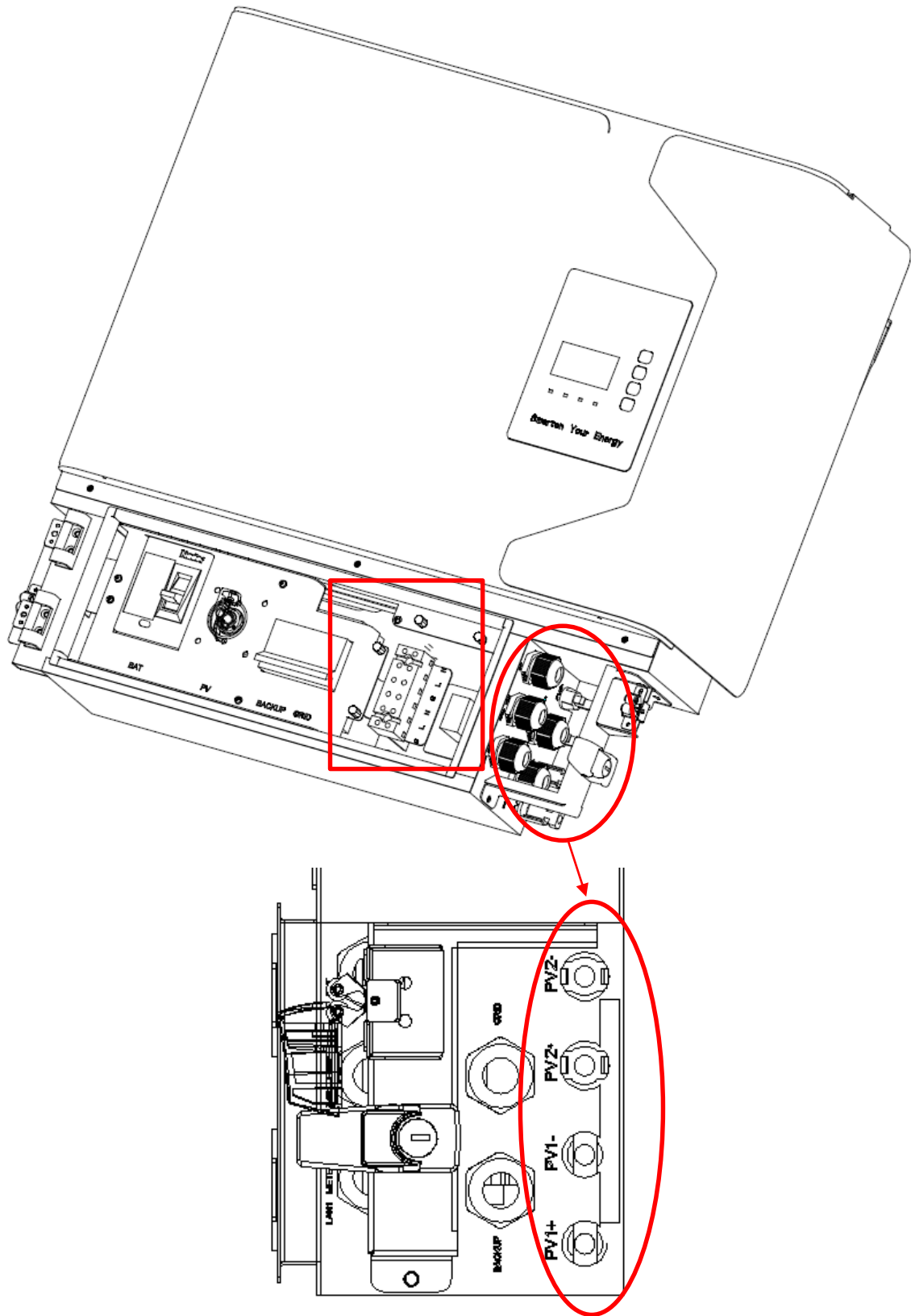


Figure 5 Cable Box Part without Covers – Front View

Item	Description	Item	Description
BAT	Battery Switch	PV	PV Switch
GRID	GRID Switch	Back up	Backup Switch

**Figure 6 Cable Box Part without Covers - Rear View**

Object	Description	Item	Description
METER(2)	RS485 Connection for Meter	INV(2)	Inverter communication port
LAN1(2)	Ethernet Connection	DRM(2)	Debug port
BMS(2)	Battery communication port	BAT(1)	Battery out line



Object	Description	Item	Description
Grid/Backup	Grid/Backup Out line		
PV	PV Out line		

1.6 Liability Limitation

Any product damage or property loss caused by the following conditions AlphaESS does not assume any direct or indirect liability.

- Product modified, design changed or parts replaced without AlphaESS authorization;
- Changes, or attempted repairs and erasing of series number or seals by non AlphaESS technician;
- System design and installation are not in compliance with standards and regulations;
- Failure to comply with the local safety regulations (VDE for DE, SAA for AU);
- Transport damage (including painting scratch caused by rubbing inside packaging during shipping). A claim should be made directly to shipping or insurance company in this case as soon as the container/packaging is unloaded and such damage is identified;
- Failure to follow any/all of the user manual, the installation guide and the maintenance regulations;
- Improper use or misuse of the device;
- Insufficient ventilation of the device;
- The maintenance procedures relating to the product have not been followed to an acceptable standard;
- Force majeure (violent or stormy weather, lightning, overvoltage, fire etc.);
- Damages caused by any external factors.

2. Installation

This Manual introduces the basic steps how to install and set up AlphaESS Storion-SMILE5.

SMILE5-BAT is a sealed component with no access to battery terminals or cell components within module.

SMILE5-BAT contains a Bi-pole DC isolator, which conforms to IEC 60947. It has been operated in all live conductors

NOTE: please pay attention for unpacking the battery, the worst case is that some components could be damaged.

2.1 Installation Site and Environment

2.1.1 General

The SMILE5-BAT has two versions, one is indoor, and another is outdoor. This SMILE5 energy storage system (indoor version) can only be installed in an indoor location. This SMILE5 energy storage system (outdoor version) can be installed in an outdoor or an indoor location.

Where SMILE5 systems are installed within a room, shall be located so that access to SMILE5 is not obstructed by the structure of the building, fixtures and fittings within the room.

SMILE5 adopts natural ventilation. The location should be clean, dry and adequately ventilated. The room's entry doors and panels shall open in the direction of egress and allow unobstructed access to the SMILE5 for installation and maintenance purposes.

The following location are **not allowed** for installation:

- habitable rooms;
- in ceiling spaces;
- wall cavities;
- on roofs not specifically deemed suitable;
- areas of access/egress;
- under stairways;
- under access walkways;
- sites where the freezing point is reached, like garages, carports or other places;
- sites with humidity and condensation over 85%;
- sites which are salty and where humid air can penetrate;
- earthquake areas –additional security measures are required here;
- sites that are higher than 3000 meters above the sea level;
- sites with explosive atmosphere;
- sites with direct sunlight;
- sites with extreme change of ambient temperature;

- wet rooms;
- sites with highly flammable materials or gases; or
- sites with a potentially explosive atmosphere;

2.1.2 Restricted Locations

The SMILE5 shall **not be** installed —

- (a) in restricted locations, as defined for switchboards in AS/NZS 3000;
- (b) within 600 mm of any hot source, such as water unit, gas heater, air conditioning unit or any other appliance.
- (c) within 600 mm of any exit;
- (d) within 600 mm of any window or ventilation opening;
- (e) within 900 mm of access to 240 Vac connections; and
- (f) within 600 mm of side of other equipment.

A SMILE5 installed in any corridor, hallway, lobby or the like leading to a fire exit shall ensure sufficient clearance from the SMILE5 for safe egress and no less than 1 m.

A SMILE5 is considered a source of ignition and therefore shall not be installed within hazardous area for gas cylinders containing heavier than air gasses and gas relief vent terminal as defined in AS/NZS 3000.

2.1.3 Barrier to habitable rooms

To protect against the spread of fire to habitable rooms, where the SMILE5 is mounted on, placed against a surface of a wall or structure that has a habitable room on the other side, the wall or structure shall be a suitably non-combustible barrier. If the mounting surface itself is not made of a suitably non-combustible material, a non-combustible barrier may be placed between the SMILE5 and the surface of a wall or structure.

Where the SMILE5 is located on or within 300mm of the wall or structure separating it from the habitable room, the barrier shall extend —

- (i) 600 mm beyond the vertical sides of the SMILE5;
- (ii) 1200 mm above the SMILE5; and
- (iii) to the extent of the bottom of the SMILE5.

Please refer to Figure 7.

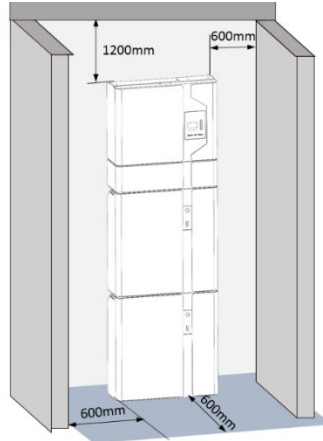


Figure 7 Limit Distance of Installation to Neighboring Objects

Where the top of the SMILE5 is within 1200 mm of the ceiling or structure above the SMILE5, the ceiling or structure surface shall be suitably non-combustible for an area of 600 mm past the extremities of the SMILE5.

SMILE5 shall be mounted with the highest point no greater than 2.2 m above the floor or platform.

2.2 Installation

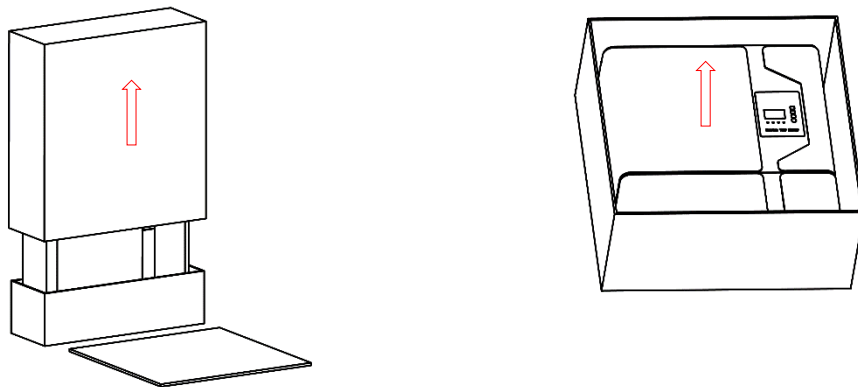


Figure 8 Unpacking the inverter and battery

Step 1: Remove the battery and inverter from the packaging box.

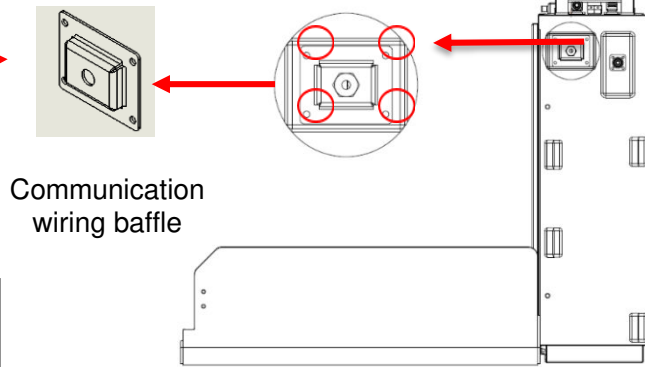
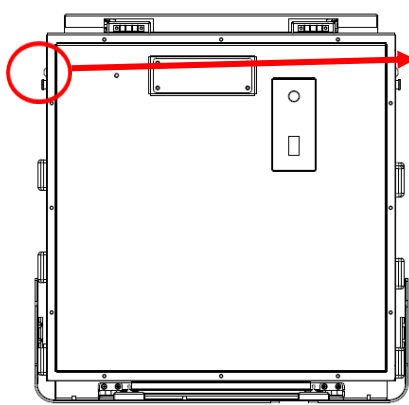


Figure 9 Battery with Lid off - Front View

Figure 10 Battery with Lid off – Side View

Step 2: Open battery housing case and remove communication wiring baffle at the left side.

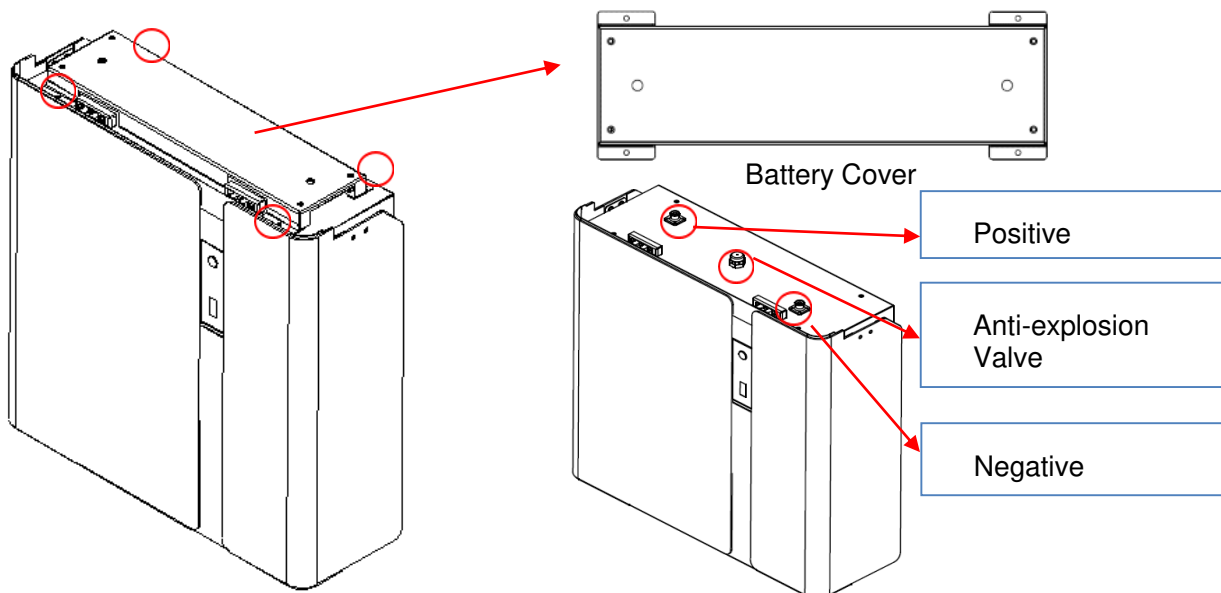
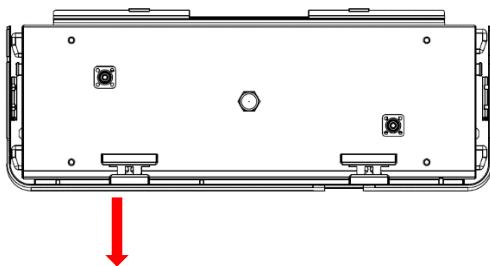


Figure 11 Disassembly Diagram of Battery Top Cover

Step 3: Remove the top cover of the battery.



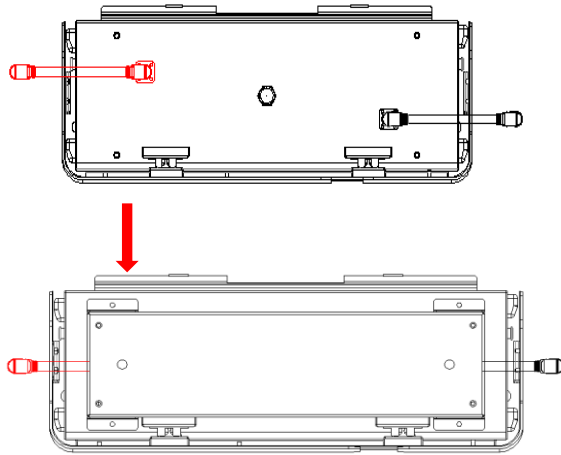


Figure 12 Battery power cable installation diagram

Step 4: Close the battery front cover and connect the power cable at the top.

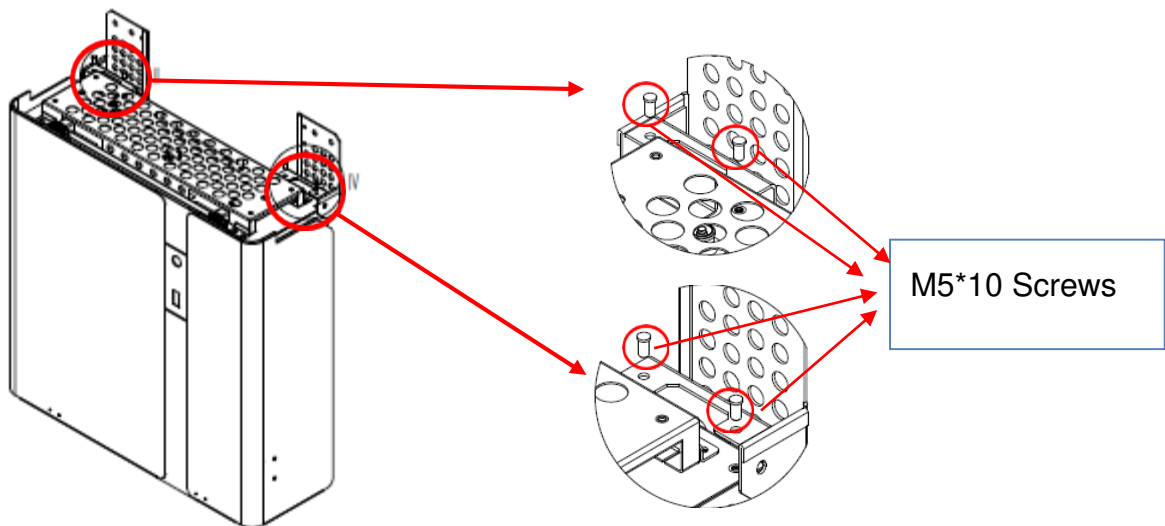


Figure 13 Assemble Battery Mounting Panel

Step 5: Assemble the battery mounting panel on the battery.

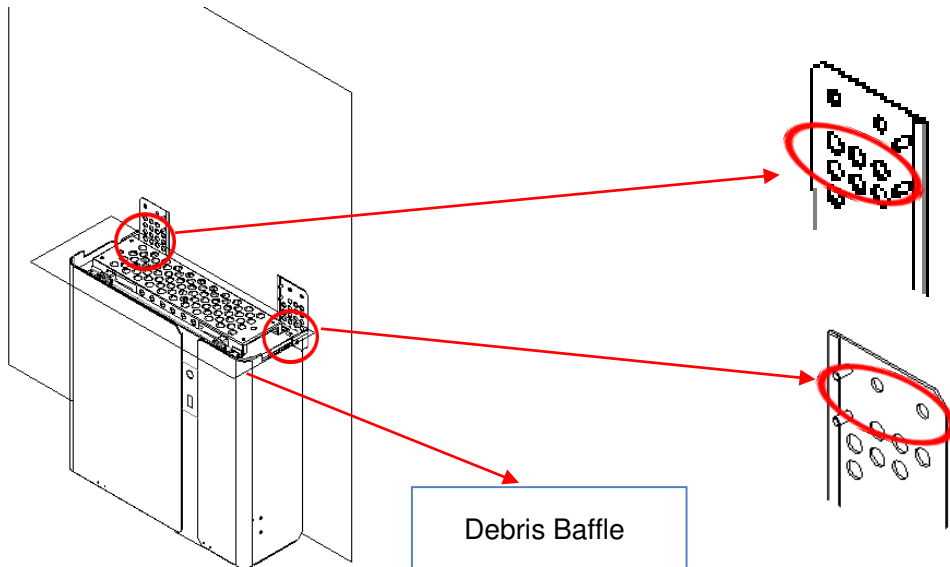


Figure 14 Battery Installation - Drill Holes

Step 6: Keep the battery against the wall, drill holes on the wall with an impact drill.

NOTE: please make sure a layer of protection must be placed over the battery while drilling, it could be paper, wood board or packaging bubble, as Figure 14 shows).

The ground upon which the battery will be placed on must be less than 3 degree to the horizontal level.

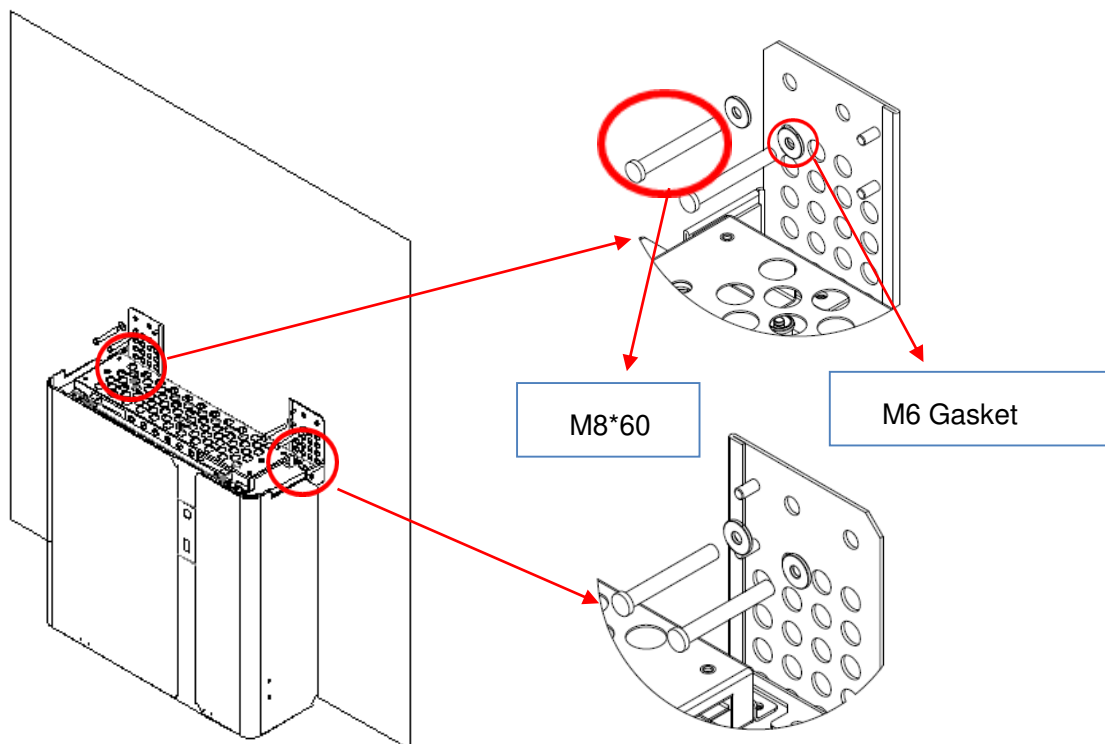


Figure 15 Battery Installation – Mounting on the Wall

Step 7: Remove the debris baffle and secure the battery to the wall with screws.

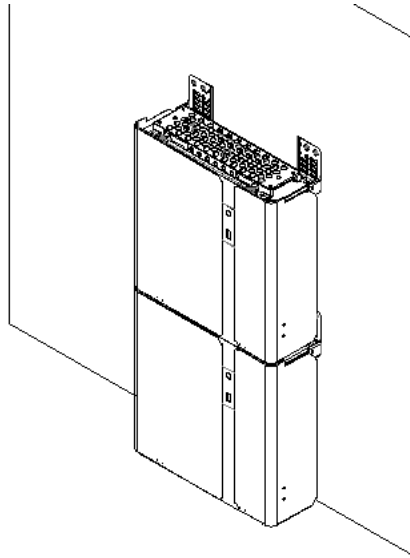


Figure 16 Battery Installation – Second Battery Installation

Step 8: Follow Step6 and Step7 to install the second battery.

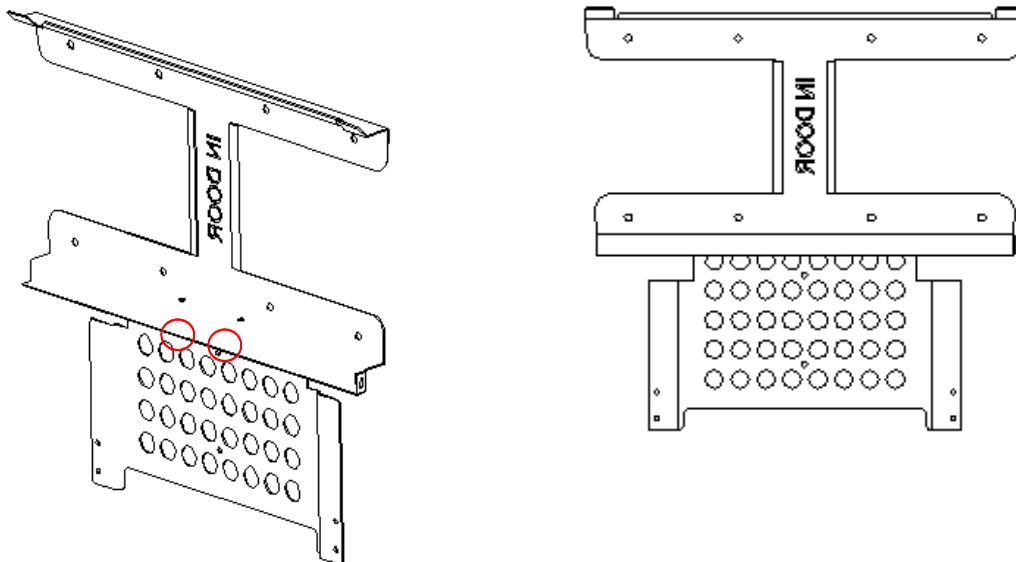


Figure 17 Inverter Mounting Panel Installation

Step 9: Install the inverter mounting panel and mounting bracket with M4 nuts as shown above.

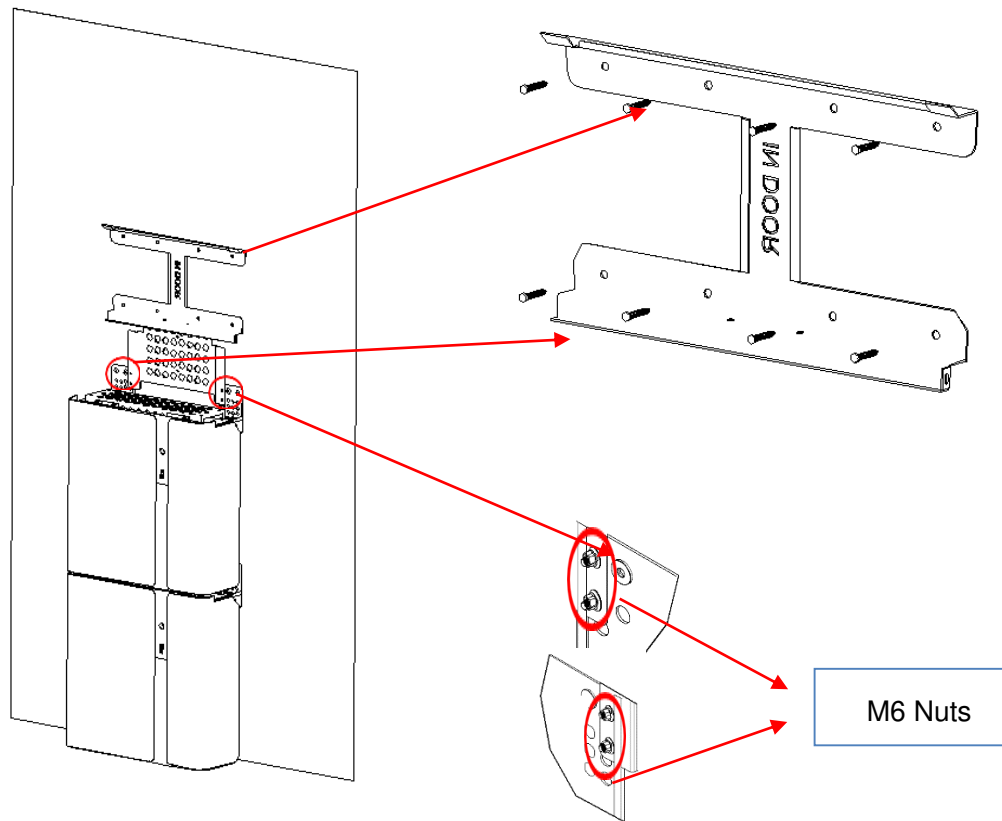
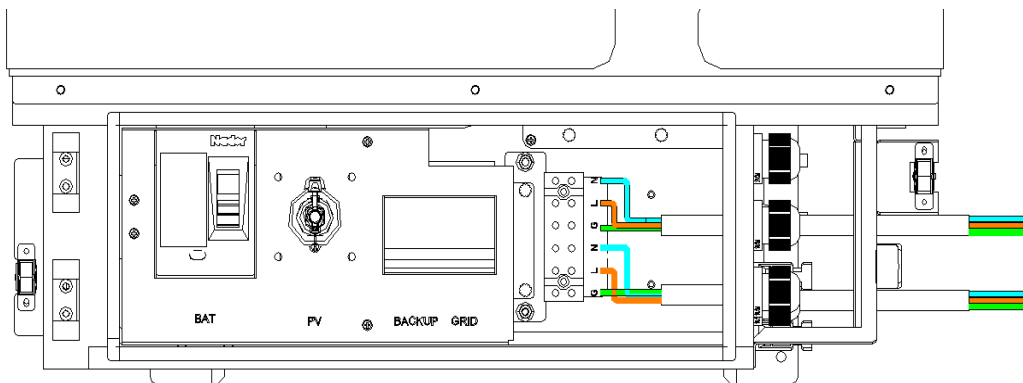


Figure 18 Inverter Installation - Inverter Mounting Panel

Step 10: Drill holes on the wall with impact drill first then install and position inverter mounting panel. Battery installation is now completed.



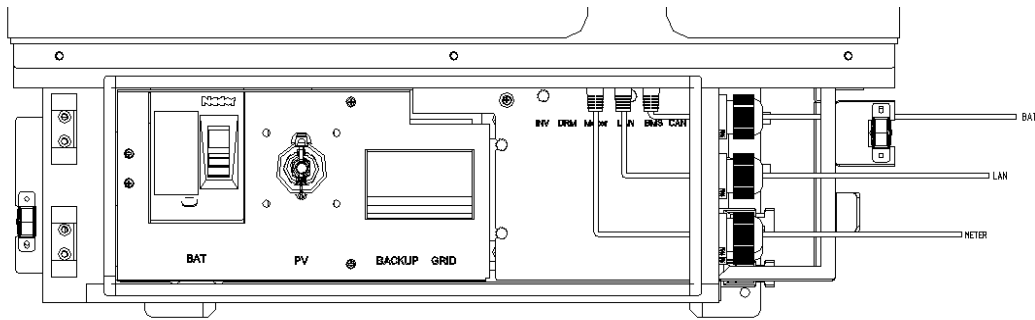


Figure 19 Cable Box with pre-wired Cables, Section View.

Step 11: Step 11: Open the cable box, open the decorative cover, connect the backup/grid according to the illustration, then install the decorative panel and connect the cable according to the illustration.

NOTE: The communication cables outside are not equipped with RJ45 connectors. The current of the breaker that connects the inverter must be more than 25A.

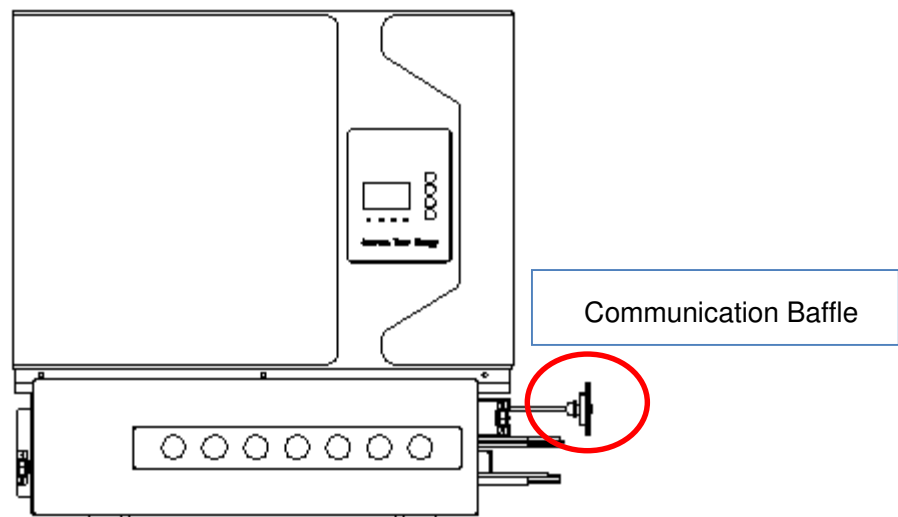


Figure 20 Inverter with pre-wired Cables

Step 12: Connect the communication line of the battery part according to the diagram. The following figure shows the corresponding line sequence.

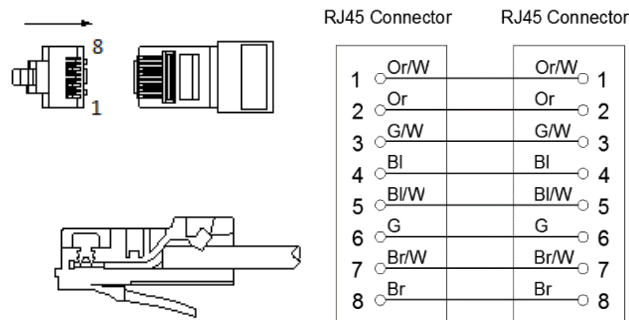


Figure 21 Network Cable Type B

NOTE: The communication cable is in type B, see Figure 21. Leave the power cables and communication cables hang on the outside. Leave the device aside.

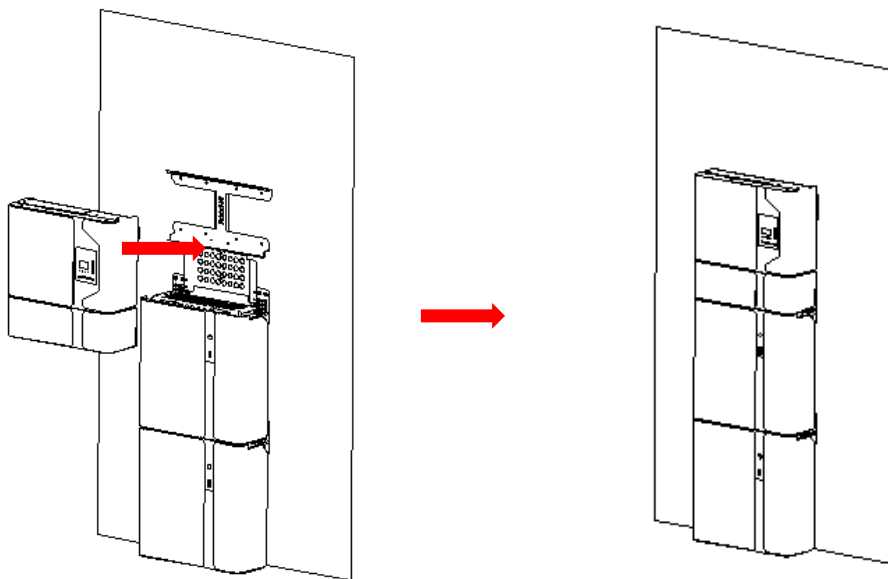


Figure 22 Inverter Installation on the Wall

Step 13: Hang the inverter onto the mounting panels, adjust the entire system and ensure that the battery and the inverter have been securely hung onto the panels and brackets.

i NOTE: Pay attention to the placing direction of the power and communication cables.

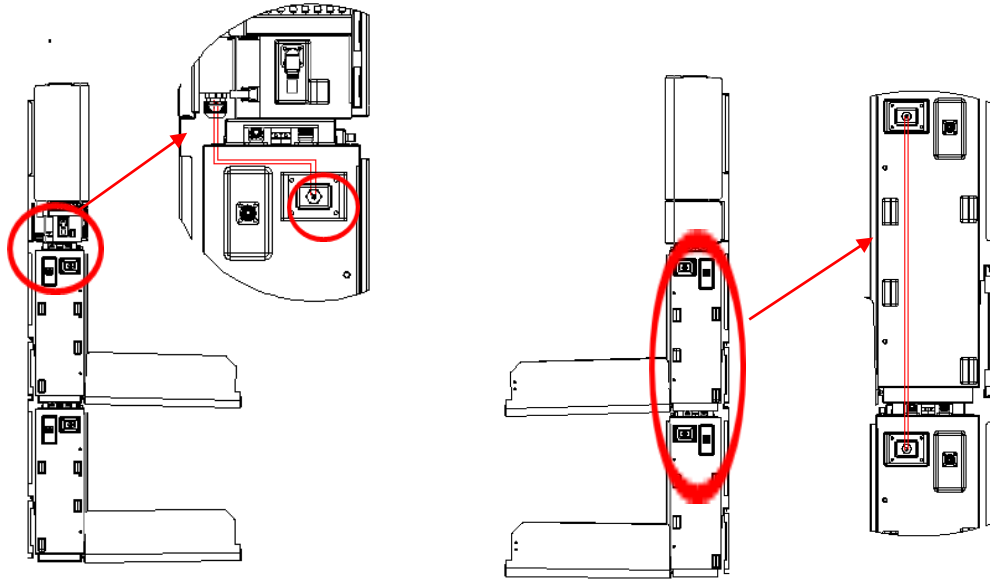


Figure 22 Wiring the Communication Cable

Step 14: Connect the communication cable from cable box from **Step 12** to the battery. Use the communication cable from parts list to connect the two batteries at the side. After all above connections done then lock all communication baffles. (If you want to add more the batteries, the new batteries have to be connected first)

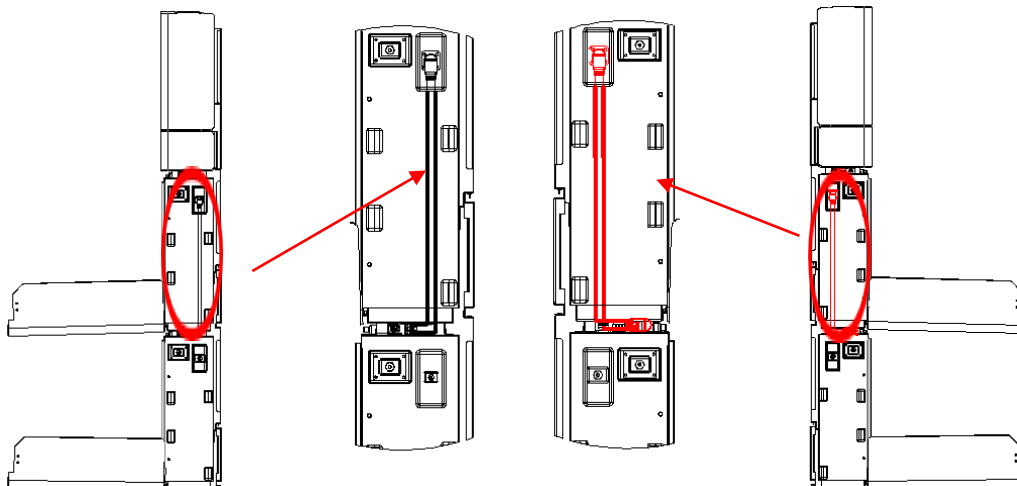


Figure 23 Wiring the Battery Power Cable

Step 15: Connect the batteries from Step 4 to the terminals. Make sure that red connects to red and black connects to black.

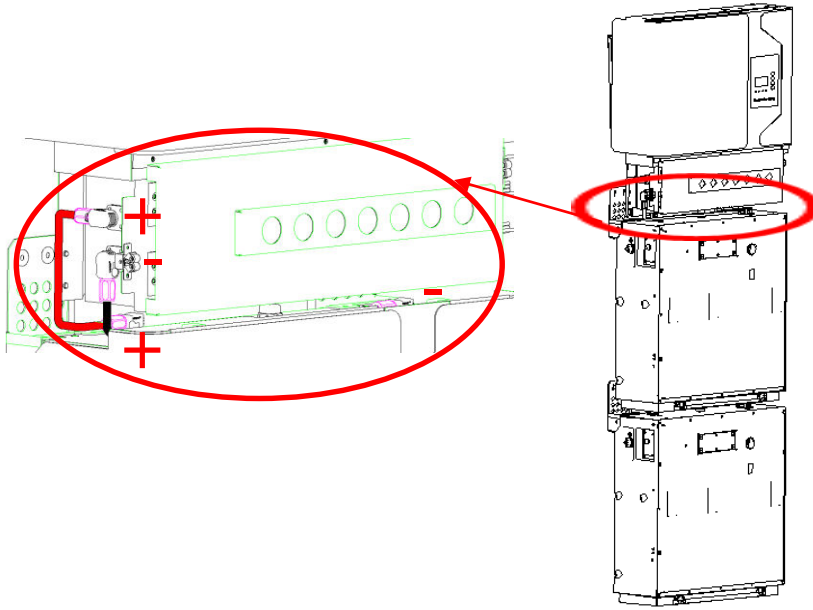


Figure 24 Wiring the Power Cable of the Cable Box

Step 16: Connect the power cable from Step 4 to the terminals of cable box. Make sure that red connects to red and black connects to black.

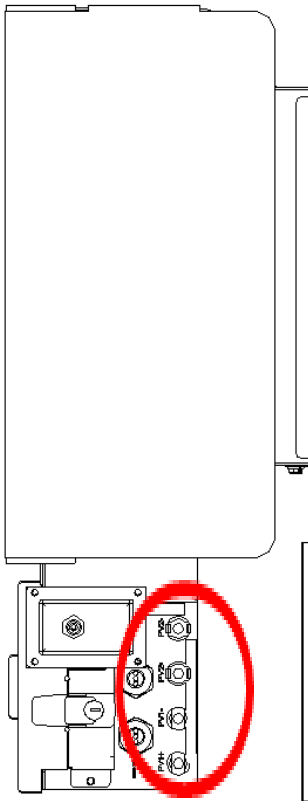


Figure 25 PV Wiring

Step 17: Close the battery covers and connect the PV MC4 connectors as shown in the diagram (both sides). At the same time connect all the AC, meter communication cable, ethernet communication cable and then close the cable box cover. The installation is now complete.

NOTE: the RCD unit must be installed. A 100mA RCD device is recommended.

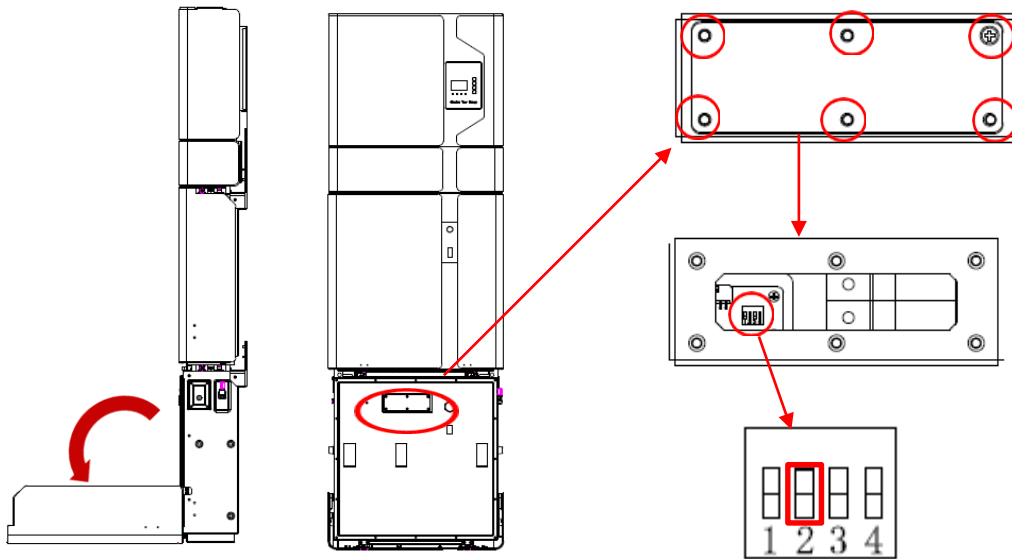


Figure 26 DIP Operation

Step 18: Open battery housing case and remove DIP baffle, set the DIP switch 2 to “on” mode at the bottom of the module. Then close the DIP baffle and battery housing case.

NOTE: only the farthest battery from inverter need to set DIP.

If you want to add more batteries, please install the extra ones by the side as shown below.

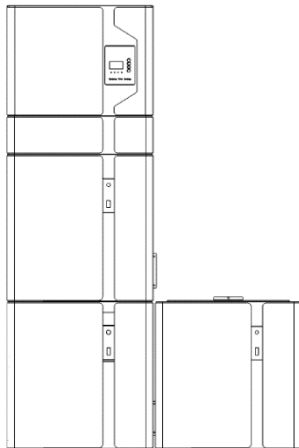


Figure 27 Increase the Battery Modules

NOTE: when adding on battery modules, please install only by side. You can add up to 6 extra batteries with each two in a string.

2.3 Power Meter

The power meter should be installed and connected in the distribution box. There are three kinds of power meters, ADL-3000, SM 60A or backup box can be chosen.

- **ADL-3000:** three-/ single-phase meter (with or without CT)
- **SM60A:** single-phase meter
- **Backup Box:** three-/ single-phase meter (Contain off-grid switching and load management)
- **ACR10R:** Three-phase CT electric meter

2.3.1 Meter ADL-3000 (If Applicable)

ADL-3000 single-phase connect (without CT, without meter plug), if applicable:

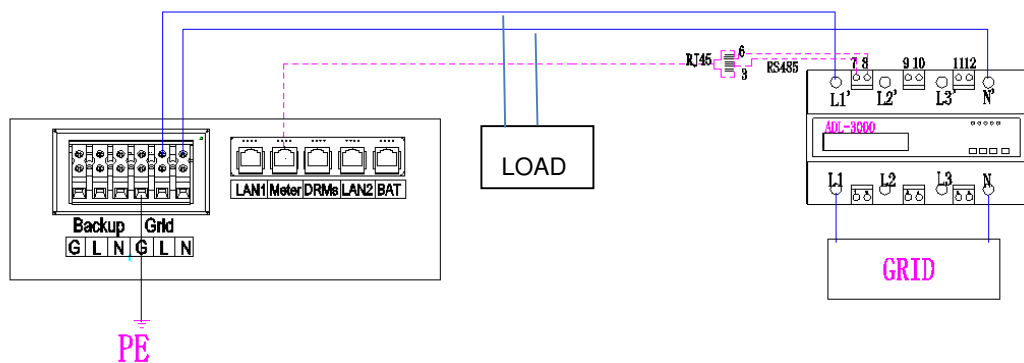


Figure 28 ADL-3000 single-phase Connect (with CT, without Meter Plug)

NOTE: Meter 7, 8 connect the RJ45 3, 6, then RJ45 connect the cable box/super cable box.

ADL-3000 single-phase connect (without CT, with meter plug), if applicable:

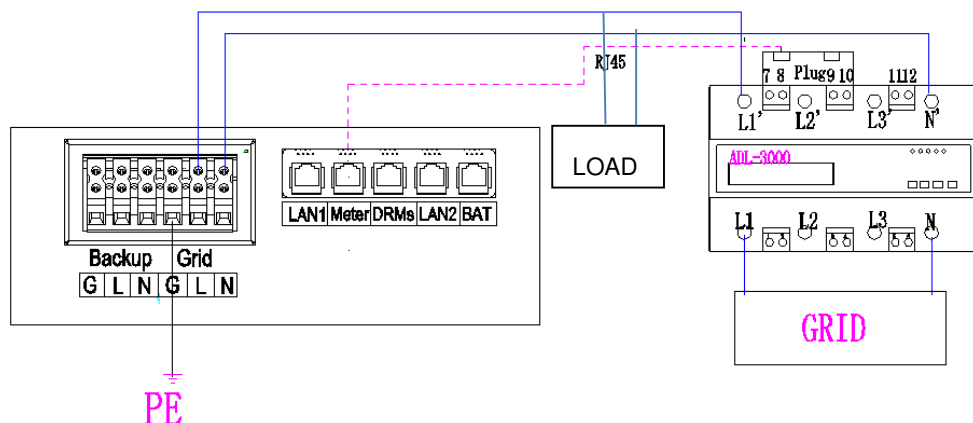


Figure 29 ADL-3000 single-phase Connect (without CT, with Meter plug)

ADL-3000 single-phase connect (with CT, without meter plug), if applicable:

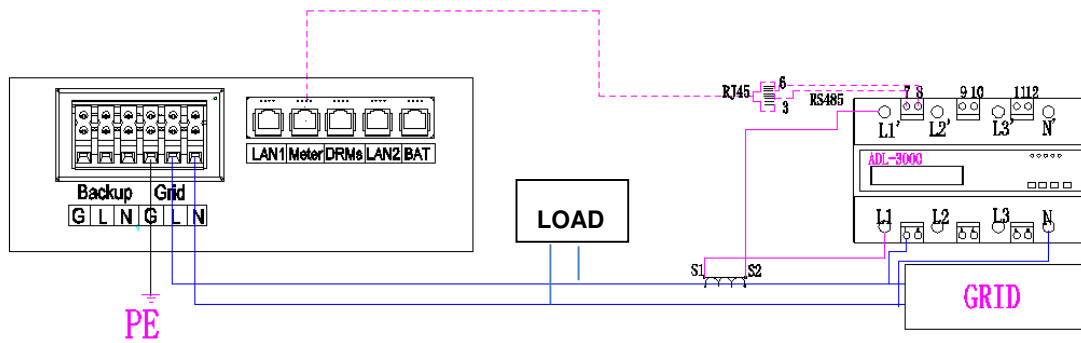


Figure 30 ADL-3000 single-phase Connect (with CT, without Meter plug)

NOTE: Meter 7, 8 connect the RJ45 3, 6, then RJ45 connect the cable box/super cable box.

ADL-3000 single-phase connect (with CT, meter plug), if applicable:

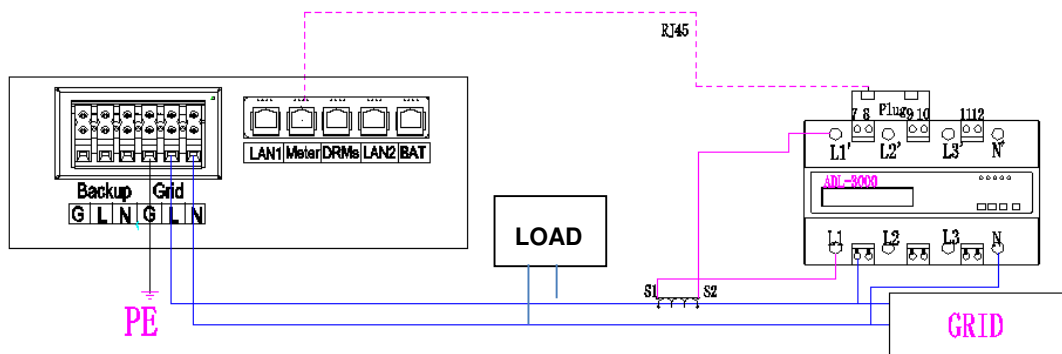


Figure 31 ADL-3000 single-phase Connect (with CT, with Meter plug)

ADL-3000 three-phase connect (without CT, without meter plug), if applicable:

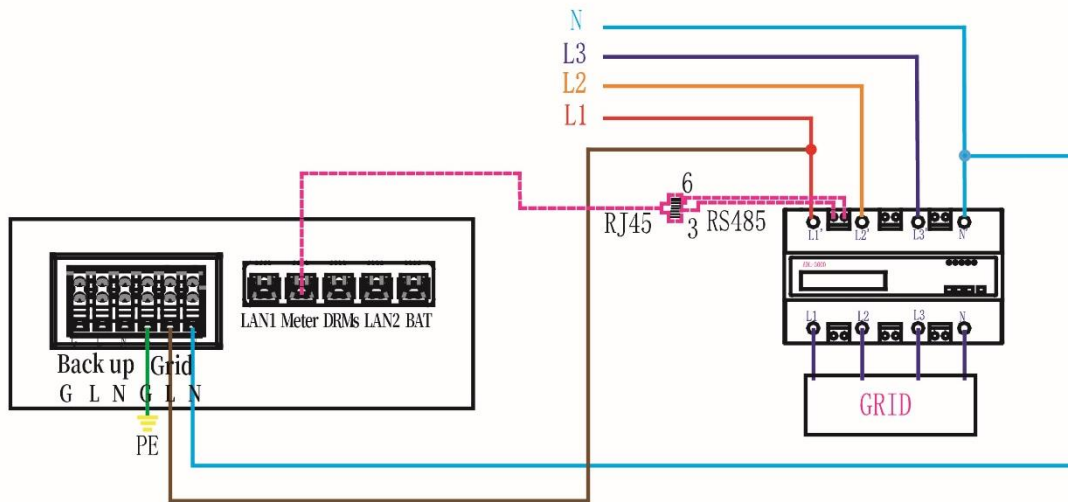


Figure 32 ADL-3000 three-phase Connect (without CT, without Meter plug)

NOTE: Meter 7, 8 connect the RJ45 3, 6, then RJ45 connect the cable box/super cable box.

ADL-3000 three-phase connect (without CT, with meter plug), if applicable:

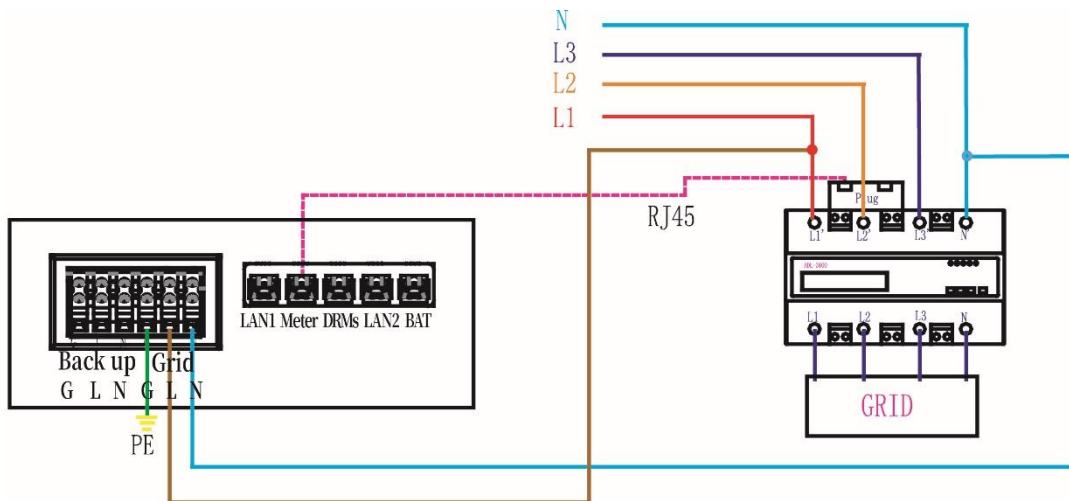


Figure 33 ADL-3000 three-phase Connect (without CT, with Meter plug)

ADL-3000 three-phase connect (with CT, without meter plug), if applicable:

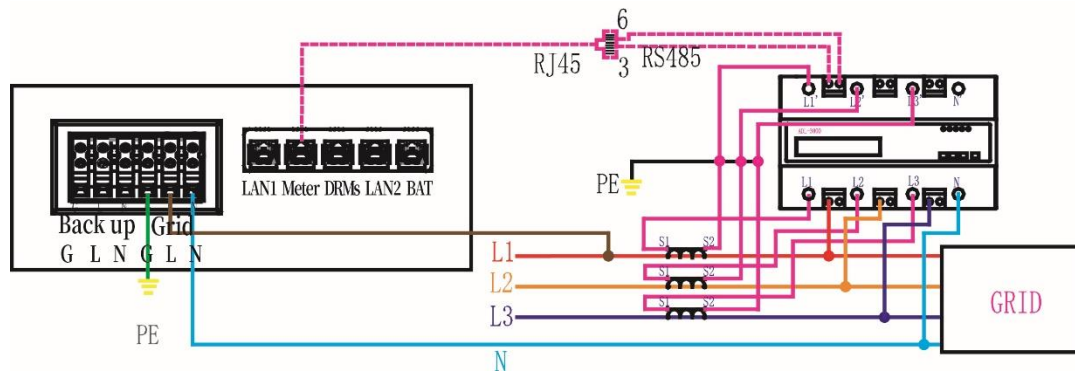


Figure 34 ADL-3000 three-phase Connect (with CT, without Meter plug)

NOTE: Meter 7, 8 connect the RJ45 3, 6, then RJ45 connect the cable box/super cable box.

ADL-3000 three-phase connect (with CT, with meter plug), if applicable:

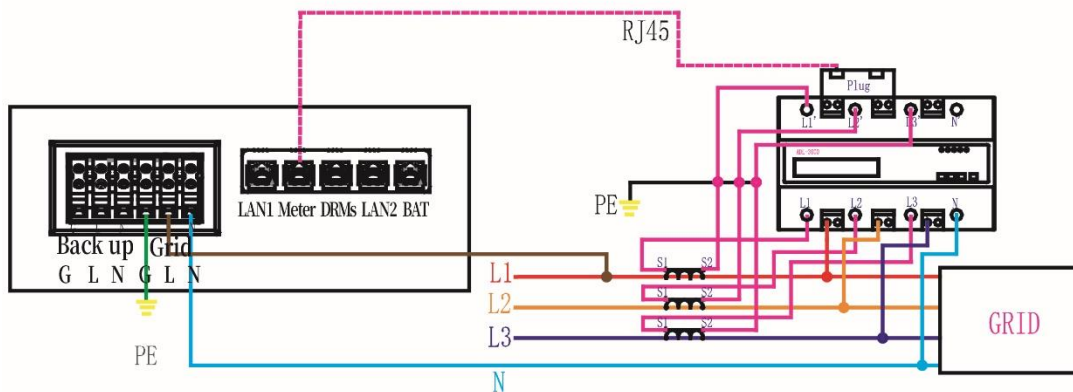


Figure 35 ADL-3000 three-phase Connect (with CT, with Meter plug)

NOTE: CT connect, connect S1 to L1, S2 to L1'.

For AC-/ Hybrid-system, there are two meter needed:

Option 1: with Meter Plug

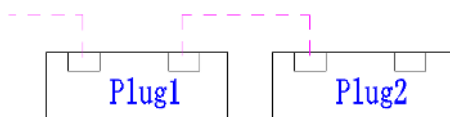


Figure 36 Two Meter Connect, with Meter Plug

Option 2: without Meter Plug

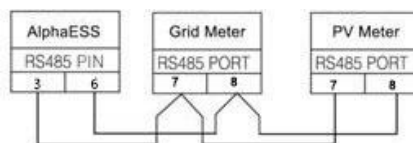


Figure 37 Two Meter Connect, without Meter Plug

2.3.2 Meter SM60A (If Applicable)

SM60A connect (with meter plug), if applicable:

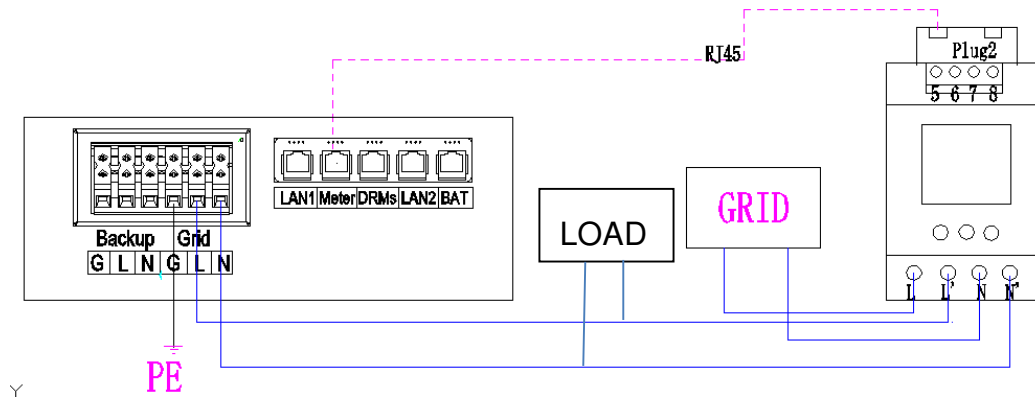


Figure 38 SM60A connect (with meter plug)

SM60A connect (without meter plug), if applicable:

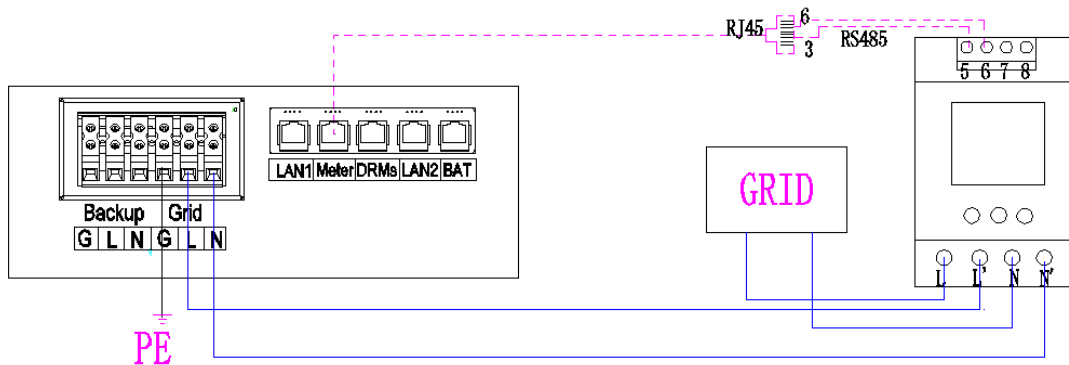


Figure 39 SM60A connect (without meter plug)

NOTE: Meter 5, 6 connect the RJ45 3, 6, then RJ45 connect the cable box/super cable box.

For AC/Hybrid system, there are two meter needed:

Option 1: with Meter Plug

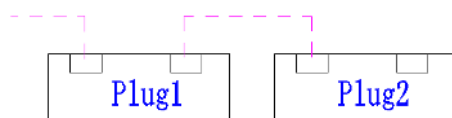


Figure 40 Two Meter Connect, with Meter Plug

Option 2: without Meter Plug

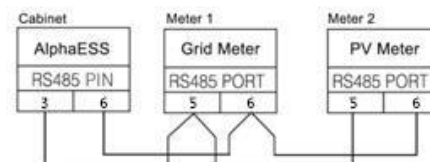


Figure 41 Two Meter Connect, without Meter Plug

2.3.3 Backup Box (If Applicable)

Backup Box Connect to SMILE5 (single-phase grid in house):

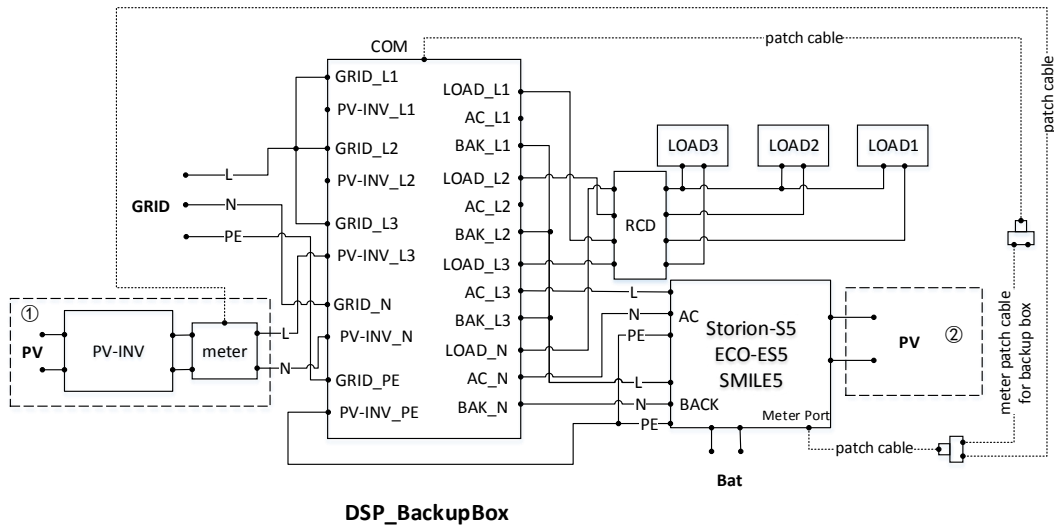


Figure 42 Backup Box Connect to SMILE5 (single phase grid in house)

2.3.4 ACR Meter connection (if applicable)

2.3.4.1 ACR Electric meter three-phase connection to Smile5

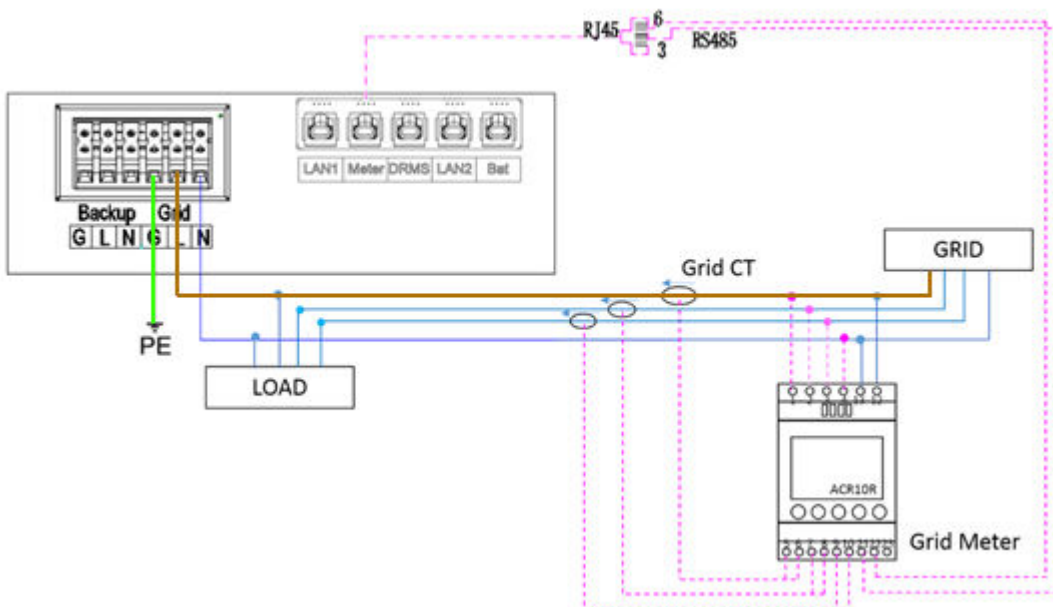
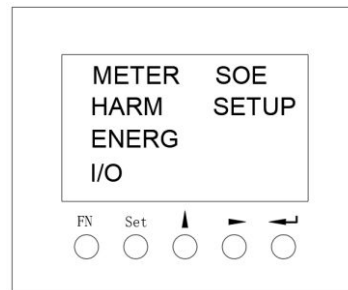
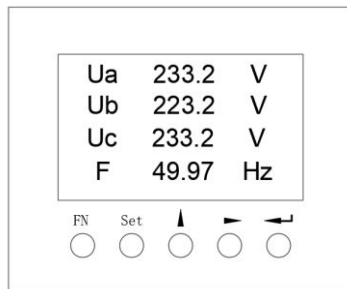


Figure 44 ACR meter three-phase connection (if applicable)

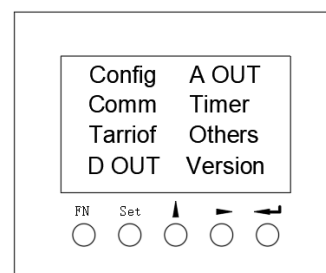
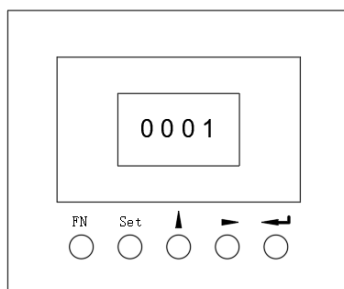
2.3.4.3 ACR Meter setting

Step 1: This is the initial interface of the meter, click the "Set" button;
 Step 2: Click the "SETUP" button;

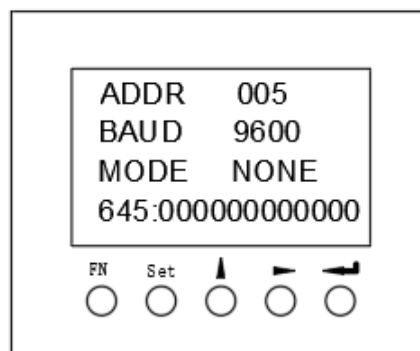


Step 3: In the password input interface, enter the password code "0001", confirm entering the setting interface;

Step 4: In the setting interface, select the "Comm" option to 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, the address is set to "005". When it is used as the grid-connected electromechanical meter, the address is set to "006". The baud rate is set to 9600;

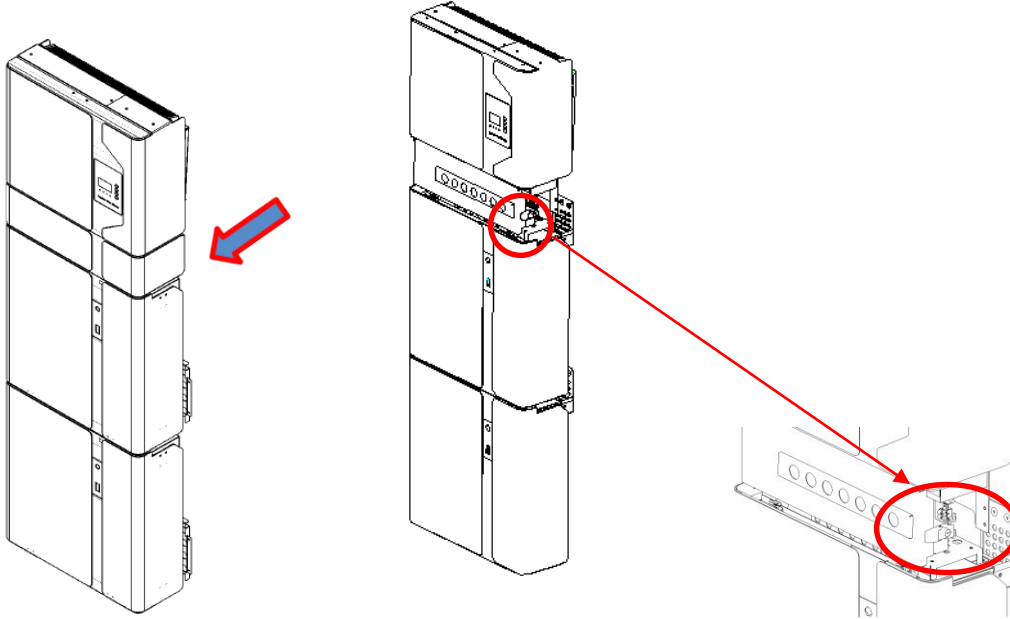


Step 6: After the meter is set, you need to activate the CT ratio on the display;

3. System Operation

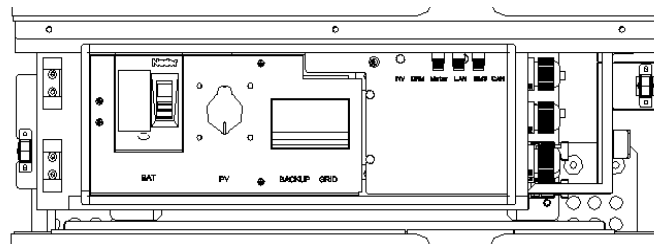
3.1 Switch on

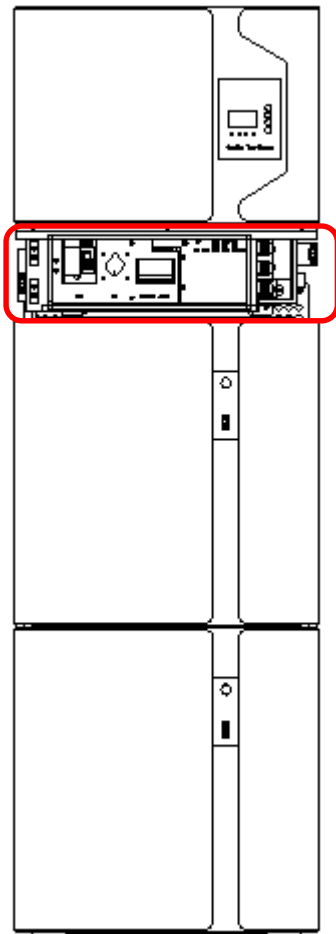
System shall be turned on in the correct sequence to avoid any damage.



Step 1: Open cable box outer shell.

Step 2: Unlock then open Cable box inner cover. Cable box locker can be opened without tools.





Step 3: Turn on the PV switch on the cable box.

Step 4: Turn on the GR switch.

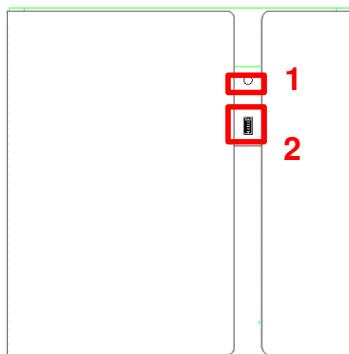
Step 5: If backup load is applied, connect it to Backup ports and turn on the Backup switch; if not, then keep the Backup switch off.

NOTE: the Backup switch is only used when a backup load is applied.

Step 6: Turn on the Battery switch.

Step 7: Press button 1 on all the batteries, and the indicator light 2 will be on.

Step 8: Close the inner cover and outer shell of Cable box.



3.2 Switch off

Step 1: Open Cable box following the steps in 4.1 Step 1, 2.

Step 2: Press button 1 on all the batteries, till the lights off.

Step 3: Turn off the Battery switch.

Step 4: Turn off the GRID switch.

Step 5: If backup load is applied, turn off the Backup switch.

Step 6: Turn off the PV switch on the cable box.

Step 7: Close the inner cover and outer shell of Cable box.

More information can be found in SMILE5-BAT user manual.

4. EMS Introduction and Set up

4.1 Function Description

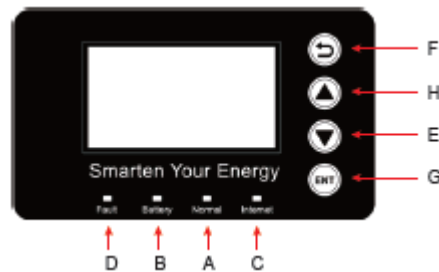


Figure 43 SMILE5 EMS Interface

Object	Name	Description
A	Indicator LED	Green: The inverter is in normal state.
B		Green: The battery is in charging or discharging.
C		Green: The inverter is in communication.
D		Red: The inverter is in fault.
E	Button Function	Down Button: Move cursor to downside or decrease value.
F		Return Button: Escape from current interface or function.
G		ENT Button: Confirm the selection.
H		Up button: Move cursor to upside or increase value.
I	LCD Screen	Display the information of the inverter in this LCD screen.

4.2 Introduction

This part is suitable for EMS firmware-version 1.01.97 and above.

4.2.1 Main

Power	0W
Total	00.0kWh
Battery	%
Normal	

Figure 46 Main Interface

Main displays the inverter working status and information, including:

- Power: Total PV power
- Total: Total power generation.
- Battery: Current remaining battery power (SOC).
- Normal: Current working state of the equipment, including Standby.

>>>> MENU <<<<<
>Status
History
Setting

Figure 44 Main Menu

In the Main interface, press ENT key to enter the Menu main interface.

Through the up and down key, select the sub-menu, press the ENT key to enter the select sub-menu, press Return key to return to the previous layer.

4.2.2 Status

>>>> Status <<<<
>Grid
Solar
Battery

Figure 45 Status Menu

Status menu contains five sub-menus: Solar, Battery, Grid, UPS and Comm display the relevant information about the current physical or communication interface respectively.

>>>>>	Grid	<<<<<
> U		230.2V
I		2.0A
F		49.99Hz

Figure 46 Grid Interface

Grid interface displays the real-time information on the city electric side:

voltage U, current I, frequency F, P_{Inv} , $P_{MeterAC}$, $P_{MeterDC}$.

>>>>>	Solar	<<<<<
> U1	360.0V	
I1	1.0A	
P1	360W	

Figure 50 Solar Interface

Solar interface displays the real-time information of PV side: voltage U1, current I1, power P1, voltage U2, current I2 and power P2.

>>>	Battery	<<<
> U	48.0V	
I	10.0A	
P	480W	

Figure 51 Battery Interface

Battery interface displays the real-time information of battery side: voltage U, current I, power P, residual capacity of Battery (SOC), the internal environmental temperature Temp

>>>>>	UPS	<<<<<
> U	230.2V	
I	2.0A	
P	460W	

Figure 52 UPS Interface

UPS interface displays the real-time information in this mode: voltage U, current I, power P, frequency F

>>>>>	Comm	<<<<<
> BMS	Yes	
Net	Yes	
MeterGrid	Yes	

Figure 53 Communication Interface

Communication interface displays the real-time communication situation of BMS, Net, MeterGrid and MeterDC.

4.2.3 History

>>>>	History	<<<
> Grid Consump		
INV Gen.		
BAT Gen.		

Figure 54 History Menu

History menu contains seven sub-menus: Grid Consumption, INV Gen., BAT Gen., PV Gen., Grid Charge, PV Charge, Error Logs

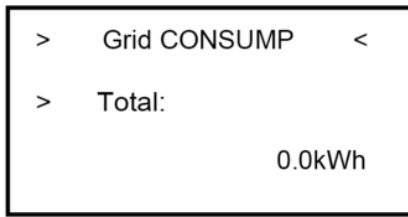


Figure 55 Grid Consumption Interface

Grid Consumption interface displays today's or total load consumption from grid

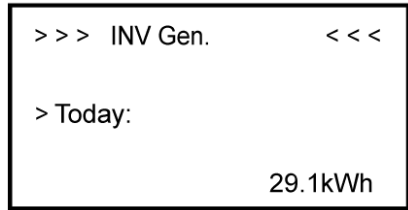


Figure 56 INV Gen. Interface

INV Gen. interface displays today's or total electricity quantity generated from SMILE5-INV.

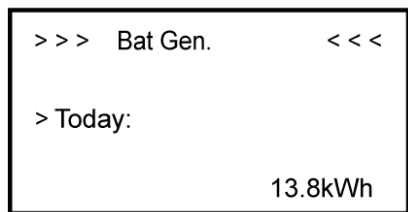


Figure 57 Bat Gen. Interface

Bat Gen. interface displays today's or total electricity quantity discharged from the battery.

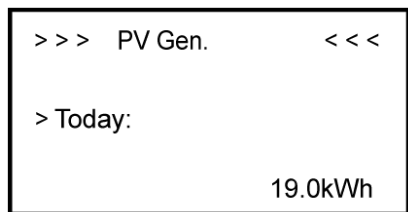


Figure 58 PV Gen. Interface

PV Gen. interface displays today's or total electricity quantity generated from the PV-panels.

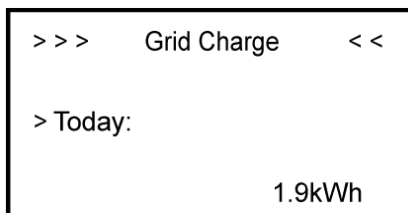


Figure 59 Grid Charge. Interface

Grid Charge interface displays today's or total electricity quantity battery charging from the grid.

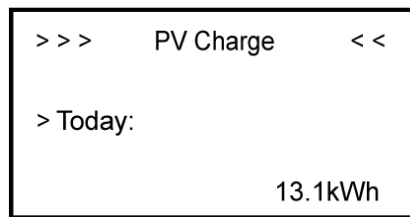


Figure 60 PV Charge. Interface

PV Charge interface displays today's or total electricity quantity battery charging from the PV-panels.

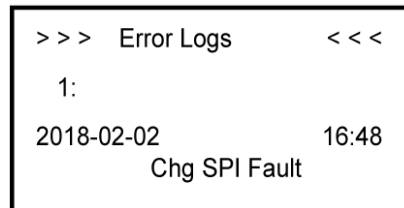


Figure 61 Error Logs Interface

Error Logs interface displays 10 pieces of the latest fault records of device, including the name of the fault and time of error

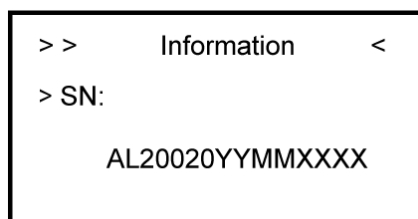


Figure 62 Date&Time Setting Interface

Make sure all the following number is correct.

4.2.4 Setting

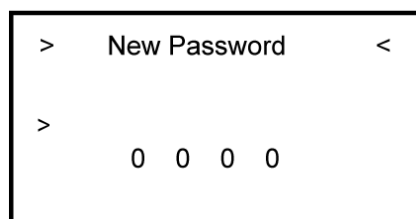


Figure 63 Password Interface

Step 1: Click setting and enter the password.

The installation's password is four digits password: 1111, after four-digits password is correctly input, you can enter into the main Setting interface (administrator permissions).

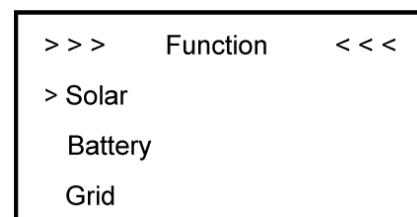
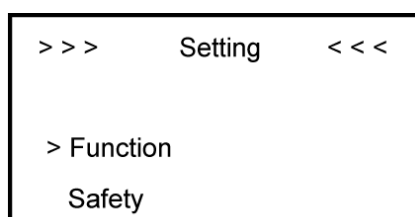


Figure 64 Setting Menu

Step 2: Click Function to enter function setting.

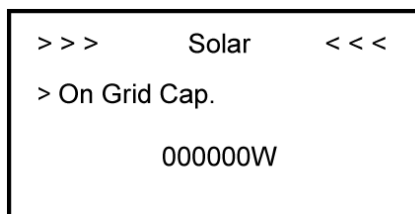


Figure 66 Solar Setting Interface

Figure 65 Function Interface

Step 3: Click Solar to set the Solar relevant information.

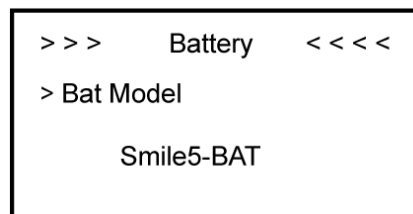


Figure 67 Battery Model Interface

Step 4: Set on-grid capacity, storage capacity and number of PV strings (MPPT number).

Step 5: Click the Battery Function and check battery type SMILE5-BAT.

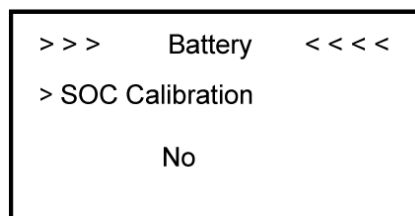


Figure 68 SOC Calibration Interface

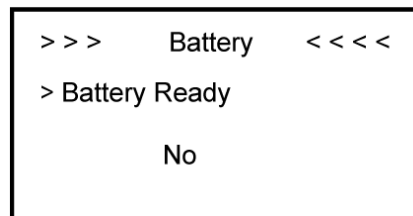


Figure 69 Battery Ready Interface

Step 6: Check SOC Calibration function set No.

Step 7: Check the Battery Ready function set No. If you only use the inverter without battery, please set it Yes.

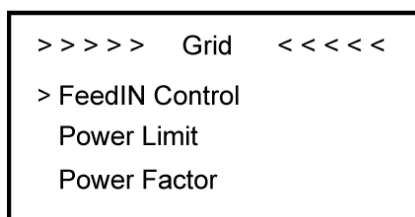


Figure 70 Grid Setting Interface

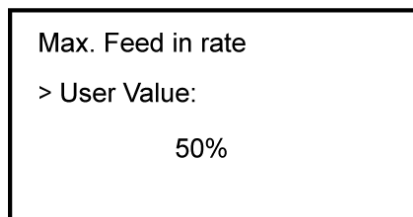


Figure 71 Max. Feed in rate Setting Interface

Step 8: Click the Grid Function to set up relevant parameters about the grid

Step 9: Set the Max. Feed in rate value.

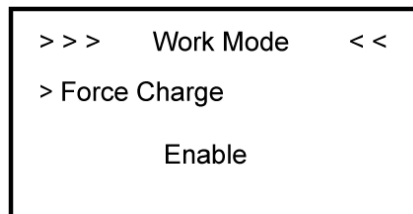
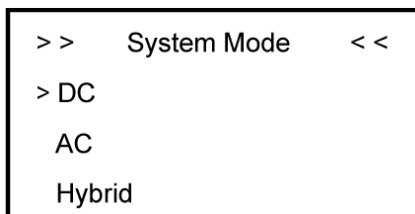


Figure 72 System Mode Setting Interface

Step 10: Click Function-System Mode to set system mode: DC, AC, Hybrid.

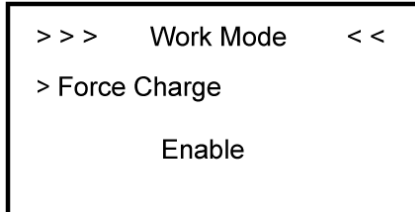


Figure 74 Force Charge Setting Interface

Step 12: If you want to use force charge, sett Enable here.

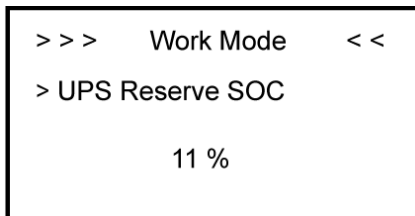


Figure 76 UPS Reserve SOC Setting Interface

Step 14: Set the UPS Reserve SOC, it means how much battery energy to keep for UPS function.

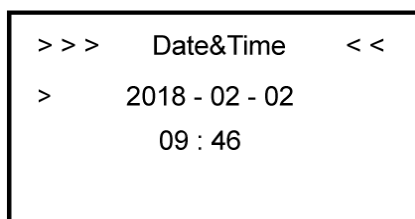


Figure 78 Date&Time Setting Interface

Step 16: Click System in the setting menu. Click Date &Time and set up the date and time.

Figure 73 Work Mode Setting Interface

Step 11: Click the mode then set up work mode.(self-use or force time charge)

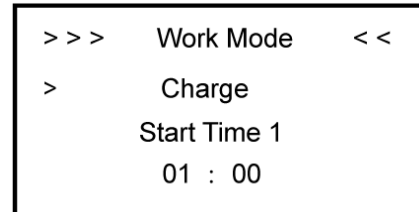


Figure 75 Force Charge Time Setting Interface

Step 13: Set the charge and discharge time.



Figure 77 Safety Setting Interface

Step 15: Click Safety in the setting menu. Set safety standard.

AS4777 for Australia, ARN4105 for Germany, CEI0_21 for Italy, G83_2 for Great Britain

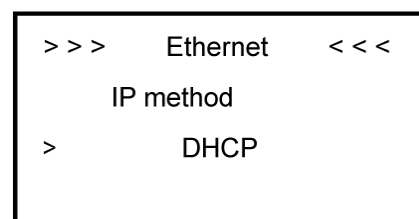


Figure 79 Ethernet interface

Step17: Click Ethernet to set the IP address. DHCP mode means that setup IP address is set up automatically.

If you want to set up the IP address manually, please choose manual mode.

NOTE: It is needed to set the following 3 parameters for manual mode:

IP Address: IP address;

Subnet Mask: Subnet mask;

Default Gateway: Default gateway;

Automatic display one parameter:

MAC Address: display MAC Address.

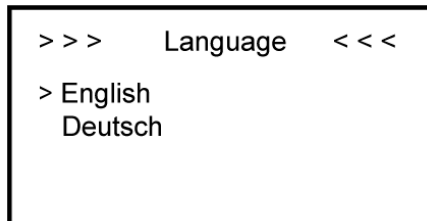


Figure 80 Date&Time Setting Interface

Step 18: Click Language to set language

5. Online Monitoring

5.1 Register

You have to 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 before the registration would not be retained on the webserver.

So please use the following steps:

Open the portal: www.alphaess.com.

Please fill in “Username”, “Password” and click “Login”, if you have registered.

If not, please register following these steps

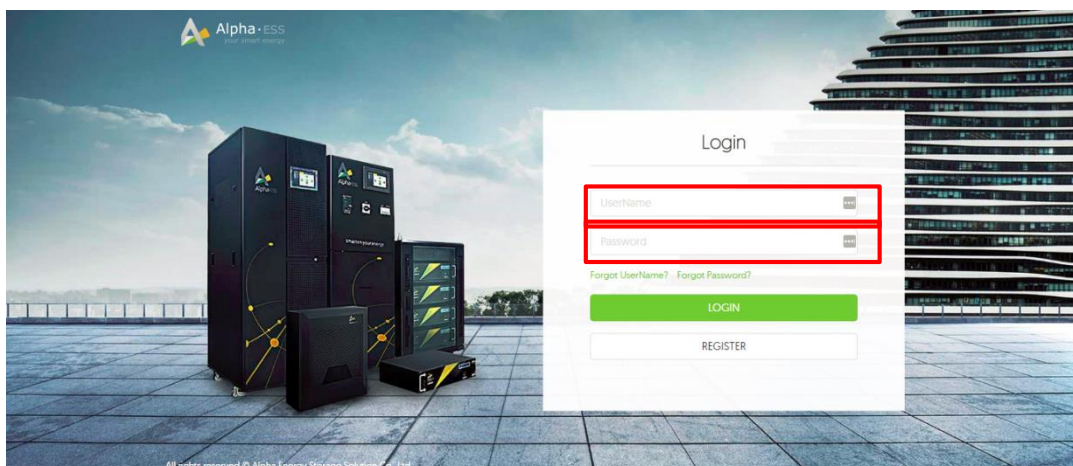


Figure 81 Monitoring Login Interface

Register

User Type

End user

S/N

Username

Password

Confirm Password

Country

Province/State

City

Address

Zip Code

Language

English

Contacts

Contact Number

E-mail

Time zone

[UTC-12:00] International Date Line West

☒ Compulsorily upgrade?
 ☐ Read and accept<<Terms and Conditions>>

SIGN UP NOW

Back

In this form, all blanks marked with an asterisk must be filled out, you can choose End user or installer.

More detailed information can be obtained in Online Monitoring Webserver installation Manual.

Figure 82 Register Interface

5.2 Registering License

Install new system

S/N

Check Code

License No.

Installation Date

Client Full Name

Contact Number

Contact address

Remark

Attachment

选择文件 未选择任何文件

SAVE

Figure 83 System Registering Interface

Input **S/N**, **Check Code**, **License No.**, **Date**, **Name**, and **Contact No.** to complete the registering process.

6. Annex

6.1 Datasheet – AlphaESS Storion-SMILE5

System	
Model	Storion-SMILE5
Battery	SMILE5-BAT
Installed Capacity	5.7 / 11.5 / 17.2 / ... / 34.4 kWh (90% DoD Recommended)
Usable Capacity	5.5 / 11.0 / 16.5 / / 33.0 kWh *
Cycle Life	10000*
Product Warranty	5 Years
Performance Warranty	10 Years
Phase	Single Phase
Display	LCD
Communication	Ethernet
Operating Temperature Range	-10 °C ~ 50 °C**, 0 °C ~ 40 °C (0.5C)
Humidity	15% - 85%
Protection Level	IP21 / IP65
Dimensions (W x D x H)	600 x 250x 1815 mm
Weight	188kg
Inverter Model	SMILE5-INV
Nominal Output Power	4600 W
Grid Output Voltage Range	180 - 270 Vac
Grid Frequency	50/60 Hz
Max. Input PV Power	6600 W
Max. Input PV Voltage	580 Vdc
Max. Input PV Current	2 x 12A
Short-circuit Current	2 x 15A
Backup	UPS
Grid Regulation	VDE-AR-N 4105, VDE 0126-1-1, AS 4777.2, CEI 0-21, G59/3
Safety	IEC 62109-1&-2, IEC 62477-1, IEC 62040.1.1, IEC 62116, IEC62619
EMC	EN 61000-6-1, EN 61000-6-2, EN 1000-6-3, EN 61000-6-4
External enclosure's Material	SPCC
Material Thickness (mm)	1.0

Battery Short-circuit Current	200A
Battery Type	LFP (LiFePO4)
Battery Cell Number	32 (2P16S)

* Under specific test conditions.

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

7. Routine Maintenance

7.1 Maintenance Plan

- Check if wire connection loose.
- Check if cables aged/damaged.
- Check if cable insulating ribbon drop.
- Check if cable terminal screw loose, any overheat sign.
- Check if ground connection is well.

7.1.1 Operating Environment

(Every half year)

Carefully observe whether the battery system equipment is ineffective or damaged;
When the system is running, listen to any part of the system for abnormal noise;
Check whether the voltage, temperature and other parameters of the battery and other equipment parameters are normal during system operation;

7.1.2 Equipment Cleaning

(Every six months to one year, depending on the site environment and dust content, etc.)

Ensure that the ground is clean and tidy, keep the maintenance access route unblocked, and ensure that the warning and guiding signs are clear and intact.

Monitor the temperature of the battery module and clean the battery module if necessary.

7.1.3 Cable, Terminal and Equipment Inspection

(Every six months to one year)

- Check if the cable connection is loose.
- Check whether the cable is aging or damaged.
- Check whether the cable tie of the cable has fallen off.

- Check if the cable terminal screws are loose and the terminal position has any signs of overheating.
- Check whether the management system of the system equipment, monitoring system and other related equipment are invalid or damaged.
- Check that the grounding of the equipment is good and the grounding resistance is less than 10 ohms.

7.2 Notes

After the equipment are out of operation, the following notes should be paid attention to while maintaining:

- Related safety standards and specifications should be followed in operation and maintenance.
- Disconnect all the electrical connections so that the equipment would not be powered on.
- Wait at least 5 minutes after disconnection in case that the residual voltage of capacitors down to safe voltage. Use a multimeter to ensure the equipment is completely uncharged.
- The equipment should be repaired by professional staff and it is strictly forbidden for maintenance staff to open equipment on their own.
- Appropriate protective measures should be taken while maintaining, such as insulated gloves, shoes, and anti-noise ear plugs.
- Life is priceless. Make sure no one would get hurt first.
- The batteries need to be charged to 30%~50%SOC rate when the whole system is static (that is, the batteries have not been charged for two weeks or longer) for a long time, in case of over discharge.

Please contact us in time if there are any conditions that could not be explained in the manual.