Alphaess
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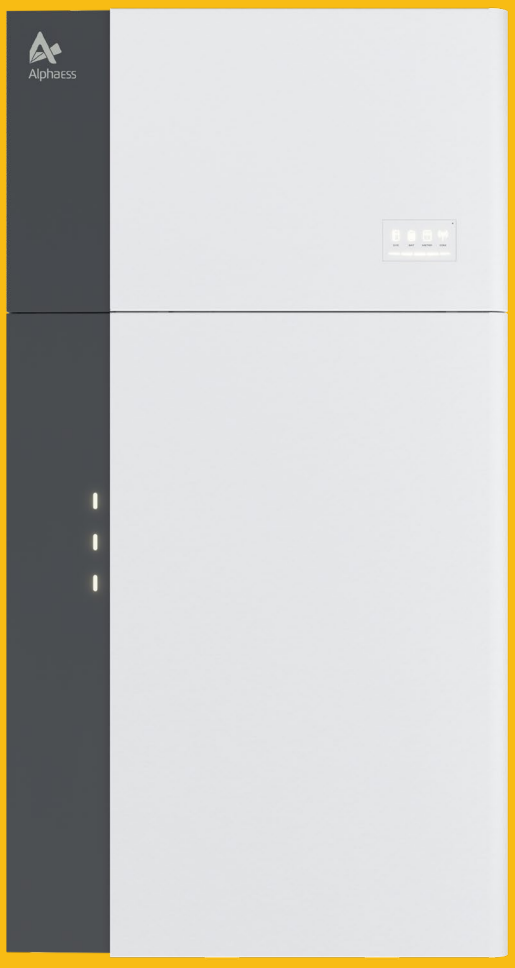
V02

INSTALLATION, OPERATION & MAINTENANCE MANUAL OF SMILE - G3 - S5 / S3.6 / B5



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CONTENT

1. Introduction

1.1. Content and Structure of this Document

This document is valid for the product series of SMILE-G3 single-phase energy storage system which includes inverter SMILE-G3-S5/S3.6/B5-INV and battery SMILE-G3-BAT-10.1P, SMILE-G3-BAT-8.2P and SMILE-G3-BAT-3.8S.

This document describes the mounting, installation, commissioning, configuration, operation, troubleshooting and decommissioning of the energy storage system as well as the operation of the user interface.

Please observe all documentation that accompanies the product. Keep them at a convenient place and available at all times.

Illustrations in this document are reduced to the essential information and may deviate from the real product.

1.2. Target Group

This document is intended for qualified personnel and end users. Only qualified personnel are allowed to perform the operations marked with a warning symbol in this document. Tasks that do not require any specific qualifications will not be marked and can be performed by end users. Qualified personnel must have:

- Knowledge of working principle of inverters.
- Knowledge of how to deal with the dangers and risks associated with installing and using electrical devices, batteries and systems.
- Knowledge of the installation and commissioning of electrical devices and systems.
- Knowledge of the applicable standards and directives.
- Understood and complied with this document, including all safety precautions.
- Understood and complied with the documents of the battery manufacturer, including all safety precautions.

1.3. Levels of Warning Messages

The following levels of warning messages may occur when handling the product.

DANGER DANGER indicates a hazardous situation that will result in death or serious injury if not avoided.
WARNING WARNING indicates a hazardous situation that could result in death or serious injury if not avoided.
CAUTION CAUTION indicates a hazardous situation that could result in minor or moderate injury if not avoided.
NOTICE NOTICE indicates a situation that could result in property damage if not avoided.
INFORMATION provides tips which are valuable for the optimal installation and operation of the product.

1.4. Definition of Abbreviations and Nouns

A

AC	alternating current
APP	application
AUX	auxiliary

B

BAT	battery
BMS	battery management system

D

DC	direct current

E

EMS	energy management system

I

INV	inverter

P

PV	photovoltaic

2. Safety

2.1. Intended Use

The inverter, batteries and electricity meters make up a system for the optimization of self-consumption for a household. The inverter can achieve bidirectional transfer between AC current and DC current. The battery is used for energy storage.

SMILE-G3-S5/S3.6/B5-INV and SMILE-G3-BAT-10.1P are suitable for indoor and outdoor installation.

SMILE-G3-BAT-8.2P and SMIL-G3-BAT-3.8S are only suitable for indoor installation.

The SMILE-G3-S5/S3.6-INV must only be operated with PV arrays of protection class II in accordance with IEC 61730, application class A. The PV modules must be compatible with this product.

PV modules with a high capacity to ground must only be used if their coupling capacity does not exceed 1.0 µF.

All components must operate in a scenario suitable for their operation.

Be sure to use this product in accordance with the information provided in the accompanying documents and local applicable standards and directives. Any other operation may cause personal injury or property damage.

Alterations to the product, e.g. changes or modifications, are only permitted with the express written permission of AlphaESS. Unauthorized alterations will void guarantee and warranty claims. AlphaESS shall not be held liable for any damage caused by such changes.

Any use of the product other than that described in the Intended Use section does not qualify as appropriate.

The enclosed documentation is an integral part of this product. Keep the documentation in a convenient place for future reference and comply with all instructions contained therein.

The type label must remain permanently attached to the product.

2.2. Safety Instructions for Battery

2.2.1. General Safety Precautions

- Overvoltage or wrong wiring can damage the battery and cause deflagration, which can be extremely dangerous.
- All types of the battery breakdown may lead to a leakage of electrolyte or flammable gas.
- Battery is not user-serviceable because there is high voltage in the device.
- Read the label with Warning Symbols and Precautions on the right side of the battery.
- Do not connect any AC conductors or PV conductors directly to the battery which should be only connected to the inverter.
- Do not charge or discharge damaged battery.
- Do not damage the battery in such ways as dropping, deforming, impacting, cutting or penetrating with sharp object. It may cause a leakage of electrolyte or fire.
- Do not expose battery to open flame.

2.2.2. Response to Emergency Situations

The battery is designed to prevent the danger caused by malfunction.

- If the user touches the inner material of the battery cells due to damage to the shell, the following actions are recommended:

1. Inhalation: Leave the contaminated area immediately and seek medical attention.
2. Eye injuries: Rinse eyes with running water for 15 minutes and seek medical attention.
3. Skin injuries: Wash the contacted area with soap thoroughly and seek medical attention.
4. Ingestion: Induce vomiting and seek medical attention.

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

- Fire extinguishing media

1. Respirator is not required during normal operations.
2. Use FM-200 or CO_2 extinguisher for battery fire.
3. Use an ABC fire extinguisher if the fire is not from battery and hasn't spread to it yet.

- Firefighting instructions

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

WARNING

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

- Effective ways to deal with accidents

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

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

3. Do not use submerged battery again and contact the technical service engineer.

2.3. Important Safety Instructions

DANGER

Danger to life due to electric shock when live components or DC cables are touched

The DC cables connected to a battery or a PV module may be live. Touching live DC cables can result in death or serious injury due to electric shock.

- Disconnect the inverter and battery from voltage sources and make sure it cannot be reconnected before working on the device.
- Do not touch non-insulated parts or cables.
- Do not disconnect the DC connectors under load.
- Wear suitable personal protective equipment for all work on the product.
- Observe all safety information of this document.

DANGER

Danger to life due to electric shock when touching live system components in backup mode

Even if the grid circuit breaker and the PV-switch of the inverter are disconnected, parts of the system may still be live when the battery is switched on due to backup mode.

- Prior to performing any work on the inverter, disconnect it from all voltage sources as described in this document.

DANGER

Danger to life due to electric shock when live components or DC cables are touched when working on the battery

The DC cables connected to the battery may be live. Touching live DC cables can result in death or serious injury due to electric shock.

• Prior to performing any work on the battery, disconnect the inverter from all voltage sources as described in this document.

DANGER

Danger to life due to electric shock when live components are touched when the inverter or battery cover is open

High voltages are present in the live parts and cables inside the system during operation. Touching live parts and cables can result in death or lethal injuries due to electric shock.

• Do not open the system.

DANGER

Danger to life due to electric shock when touching live components in case of a ground fault.

When a ground fault occurs, parts of the energy storage system may still be live. Touching live parts and cables can result in death or lethal injuries due to electric shock.

- Disconnect the product from voltage sources and make sure it cannot be reconnected before working on the device.
- Touch the cables of the PV array on the insulation only.
- Do not touch any parts of the substructure or frame of the PV array.
- Do not connect PV strings with ground faults to the inverter.

DANGER

Danger to life due to electric shock from touching an ungrounded PV module or array frame.

Touching ungrounded PV modules or array frames can result in death or lethal injuries due to electric shock.

- Connect and ground the frame of the PV modules, the array frame and the electrically conductive surfaces so that there is continuous conduction.
- Observe the applicable local regulations.

DANGER

Danger to life due to dangerous voltages on the battery.

There is dangerous voltage at the terminal of the battery power cable. Reaching into the terminal of the battery power cable can result in a lethal electric shock.

- Do not open the battery cover.
- Leave the protective caps on the connectors for the batteries power connection until the inverter cables are connected to the battery.
- Disconnect the system from voltage sources and make sure it cannot be reconnected before working on the inverter or the battery.

WARNING

Risk of chemical burns from electrolyte or toxic gases.

During normal operation, no electrolyte would leak from the battery and no toxic gases would form. Despite careful construction, if the battery is damaged or a fault occurs, it is possible that electrolyte may be leaked or toxic gases may form.

- Store the battery in a cool and dry place.
- Do not drop the battery or damage it with sharp objects.
- Only set the battery down on its back or its bottom.
- Do not open the battery.
- Do not install or operate the battery in potentially explosive atmosphere or areas of high humidity.
- If moisture has penetrated the battery (e.g. due to a damaged housing), do not install or operate the battery.
- In case of contact with electrolyte, rinse the affected areas immediately with water and consult a doctor without delay.

WARNING

Danger to life due to burns caused by electric arcs through short-circuit currents.

Short-circuit currents in the battery can cause heat build-up and electric arcs. Heat build-up and electric arcs may result in lethal injuries due to burns.

- Disconnect the battery from all voltages sources prior to performing any work on the battery.
- Observe all safety information of this document.

CAUTION

Risk of burns from the inverter's hot surface.

The surface of the inverter can get very hot during operation. Touching the surface can result in burns.
• Mount the inverter in the correct way so that it cannot be touched inadvertently.
• Do not touch hot surfaces.
• Wait 30 minutes for the surface to cool sufficiently.
• Observe the safety messages on the inverter.
• During operation, don't touch any parts other than the display panel of the inverter.

CAUTION

Risk of injury due to weight of the inverter and battery.

Injuries may be resulted if the product is lifted incorrectly or dropped while being transported or mounted.
• Transport and lift the product carefully. Take the weight of the product into account.
• Wear suitable personal protective equipment for all work on the product.

NOTICE

Damage to the inverter and battery due to electrostatic discharge.

- Touching electronic components can cause damage to or destroy the inverter and battery through electrostatic discharge.
- Ground yourself before touching any component.

NOTICE

Damage due to cleaning agents.

- The use of cleaning agents may cause damage to the product and its components.
- Clean the product and all its components only with a cloth moistened with clear water.

2.4. Symbols Explanation

Symbols on the type label of the inverter:

Symbol	Explanation
	Beware of a danger zone This symbol indicates that the product must be additionally grounded if additional grounding or equipotential bonding is required at the installation site.
	Beware of electrical voltage The product operates at high voltages.
	Beware of hot surface The inverter can get hot during operation.
	Danger to life due to high voltages in the inverter, observe a waiting time of 5 minutes. Prior to performing any work on the inverter, disconnect it from all voltage sources as described in this document.
	WEEE designation Do not dispose of the product together with the household waste but in accordance with the disposal regulations for electronic waste applicable at the installation site.
	Observe the documentation
	CE marking The product complies with the requirements of the applicable EU directives.
	Certified safety The product is TUV-tested and complies with the requirements of the EU Equipment and Product Safety Act.
	RCM (Regulatory Compliance Mark) The product complies with the requirements of the applicable Australian standards.
	UKCA marking The product complies with the regulations of the applicable laws of England, Wales and Scotland.
	RoHS labeling The product complies with the requirements of the applicable EU directives.

Symbols on the type label and warning label of the battery.

Symbol	Explanation

3. Product Introduction and Application Scenarios

	Beware of a danger zone This symbol indicates that the battery must be additionally grounded if additional grounding or equipotential bonding is required at the installation site.
	Risk of chemical burns
	Risk of explosion
	Observe the documentation
	Risk of electrolyte leakage
CE	CE marking The product complies with the requirements of the applicable EU directives.
	Refer to the instruction for operation
	Use eye protection
	Fire, naked light and smoking prohibited
	Install the product out of reach of children
Li-Ion	Do not dispose of the battery together with the household waste but in accordance with the locally applicable disposal regulations for batteries
	Recycling code
UN38.3	Marking for transport of dangerous goods The product passes the certifications of the UN38.3

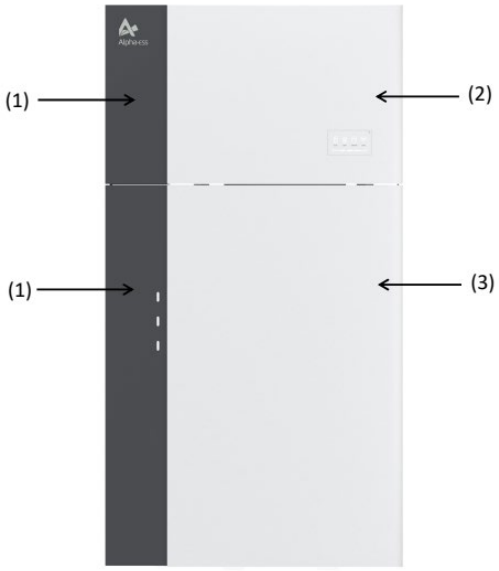
3.1. Nomenclature Introduction

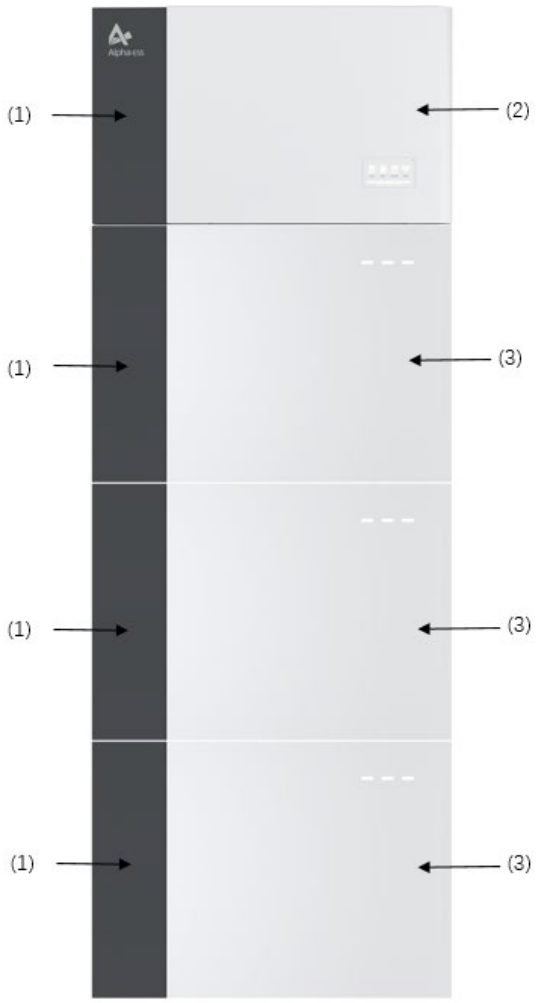
SMILE-G3-S5

Location	Name	Explanation
1	SMILE	Residential system
2	G3	Generation 3
3	S5 S3.6 B5	5kW Single-phase DC-coupled energy storage system 3.6kW Single-phase DC-coupled energy storage system 5kW Single-phase AC-coupled energy storage system

Complete designation	Designation in this document
SMILE-G3-S5-INV, SMILE-G3-S3.6-INV, SMILE-G3-B5-INV	Energy storage inverter
SMILE-G3-BAT-10.1P, SMILE-G3-BAT-8.2P, SMILE-G3-BAT-3.8S	Battery
SMILE-G3-S5, SMILE-G3-S3.6, SMILE-G3-B5	System/Energy storage system

3.2. System Introduction

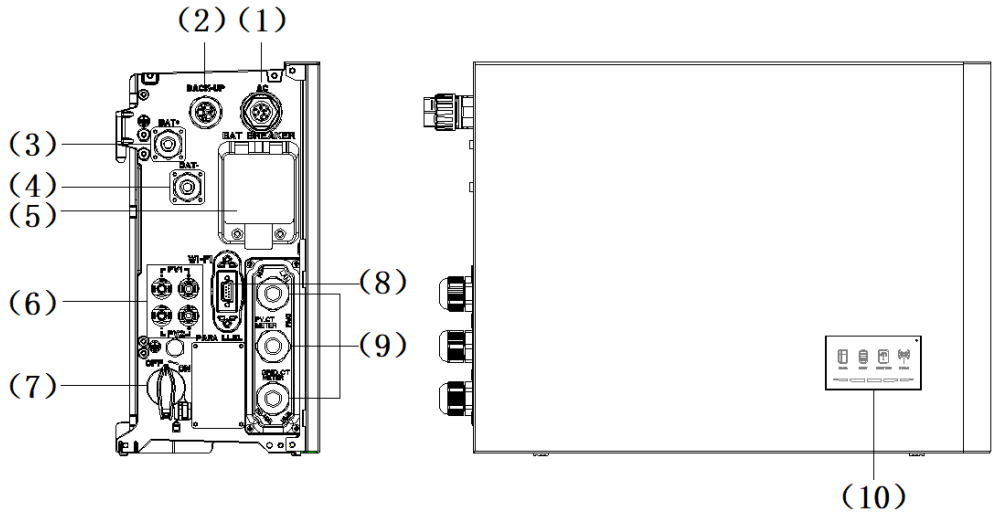




Object	Name	Explanation
1	Cable Cover	Cover for the left wiring area
2	SMILE-G3-S5-INV, SMILE-G3-S3.6-INV, SMILE-G3-B5-INV	Energy storage inverter
3	SMILE-G3-BAT-10.1P SMILE-G3-BAT-8.2P SMILE-G3-BAT-3.8S	Battery

3.3. Product Description

3.3.1. Inverter Electrical Interface Introduction



Position	Designation
1	Grid Connector
2	Backup Connector
3	Battery+ Power Connector
4	Battery- Power Connector
5	Battery Breaker* of the Inverter
6	Positive and Negative PV Connectors, PV1/ PV2 ***
7	PV Switch***
8	Wi-Fi Port
9	Communication Ports (CAN/RS485, BMS, LAN, Meter/Grid-CT, DRM**, PV-CT, AUX)
10	Inverter LED Display

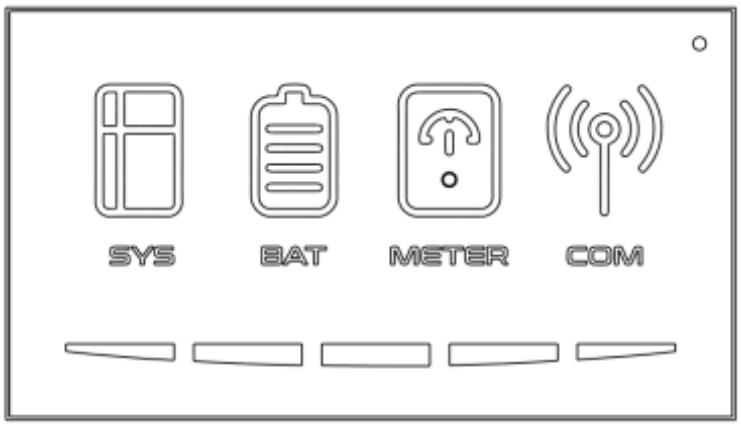
*Battery breaker and PV switch of the inverter are switched off when shipped.

**The DRM is only for regions with AS/NZW 4777.2 safety regulations.

***For product B5, there are no PV switch and PV inputs.

3.3.2. Inverter Display Interface Introduction

LED Display



The upper four LED indicators and one reset button are provided on the display panel. These LED indicators provide information about the operation status of the system.

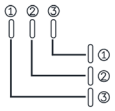
Status	Explanation	Status	Explanation
	White light The system works normally		**White light** The battery works normally
	**Red light** The system is fault		No light The battery is fault
	**White light** Meter communication works normally		**White light** The system has connected to the server
	**No light** Meter lost		**No light** Disconnect to the server

The lower five LED indicators provide information about the SOC operation status of the batteries which have connected in this energy storage system.

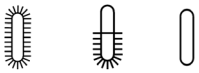
LED Indicator	SOC	Description
LEDs show the SOC of batteries		SOC≤5.2%
		5.2%＜SOC≤9.5%
		9.5%＜SOC≤25.2%
		25.2%＜SOC≤50%
		50%＜SOC≤75.2%
		75.2%≤SOC≤100%

3.3.3. Battery Display Interface Introduction

The three LED indicators on the front cover provide information about the SOC operational status of this battery with lights displaying solid white or flashing.

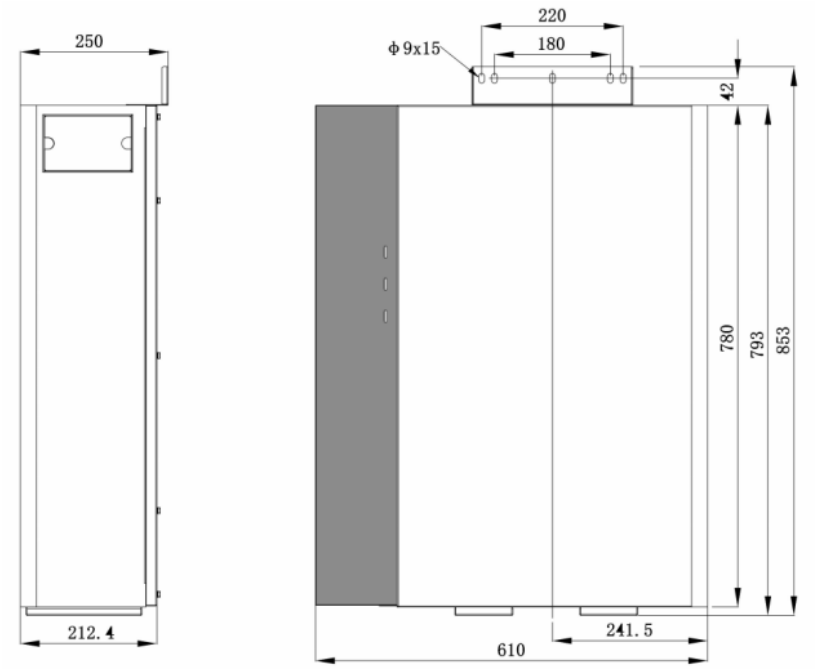


 : White LEDs flash  : White LEDs on  : White LEDs off

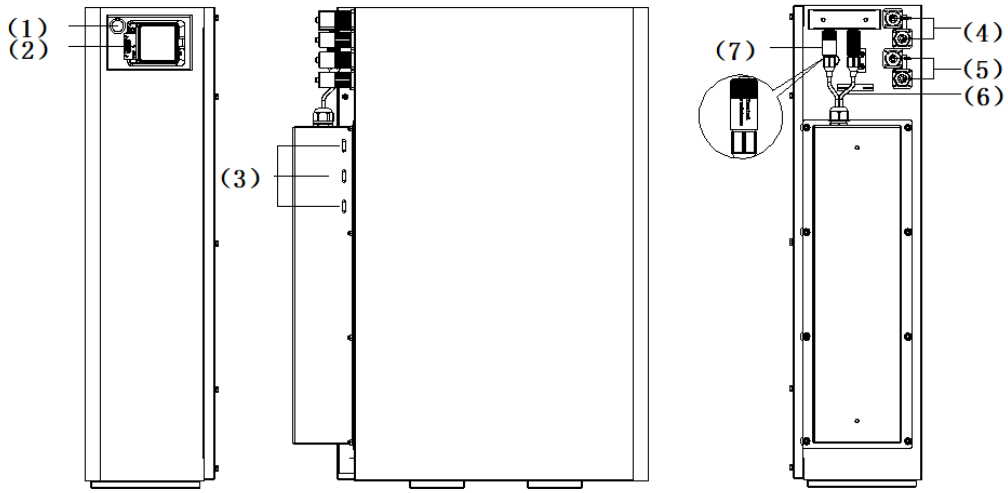
LED Indicator	No.	SOC	Description
LEDs show the SOC status	1		SOC≤10%
	2		10%＜SOC≤30%
	3		30%＜SOC≤50%
	4		50%＜SOC≤60%
	5		60%＜SOC≤90%
	6		90%＜SOC≤100%

3.3.4. Battery Introduction: SMILE-G3-BAT-10.1P

Battery appearance and dimensions



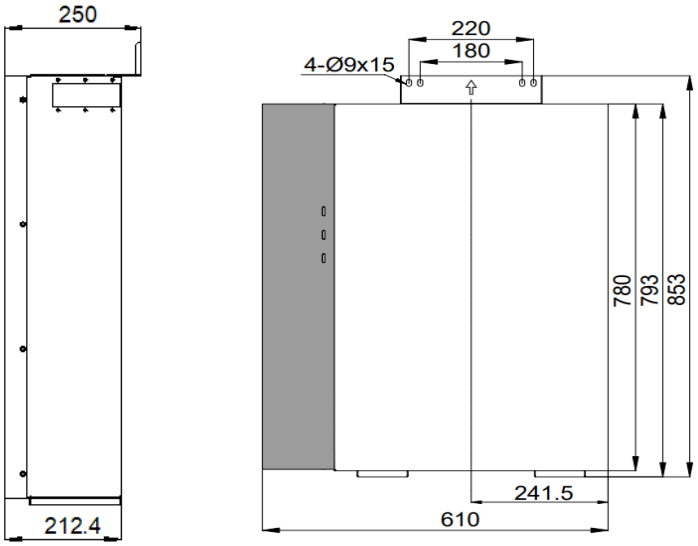
Connection area overview of SMILE-G3-BAT-10.1P



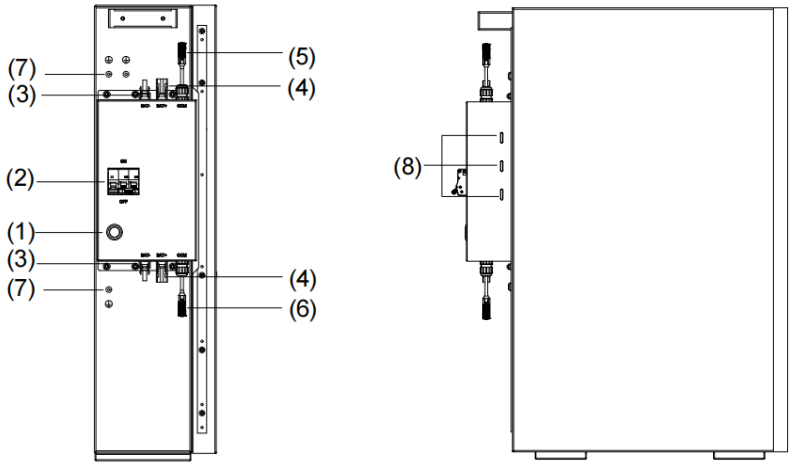
Position	Designation
1	Battery Power Button
2	Battery Breaker
3	Battery LED Display
4	Battery+ Power Connector
5	Battery- Power Connector
6	Grounding
7	BMS COM Ports: BMS COM 1, BMS COM 2 (with terminal resistance)

3.3.5. Battery Introduction: SMILE-G3-BAT-8.2P

Battery appearance and dimensions



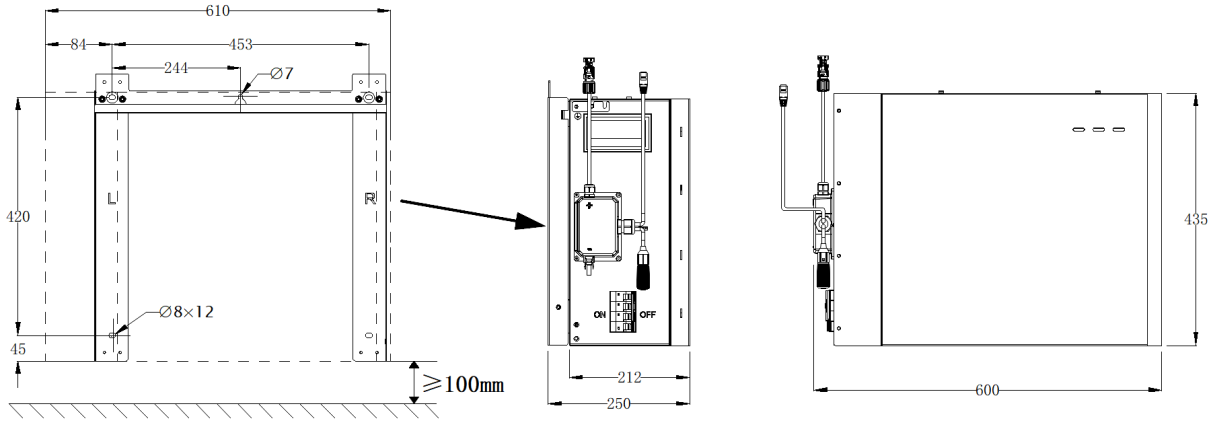
Connection area overview of SMILE-G3-BAT-8.2P



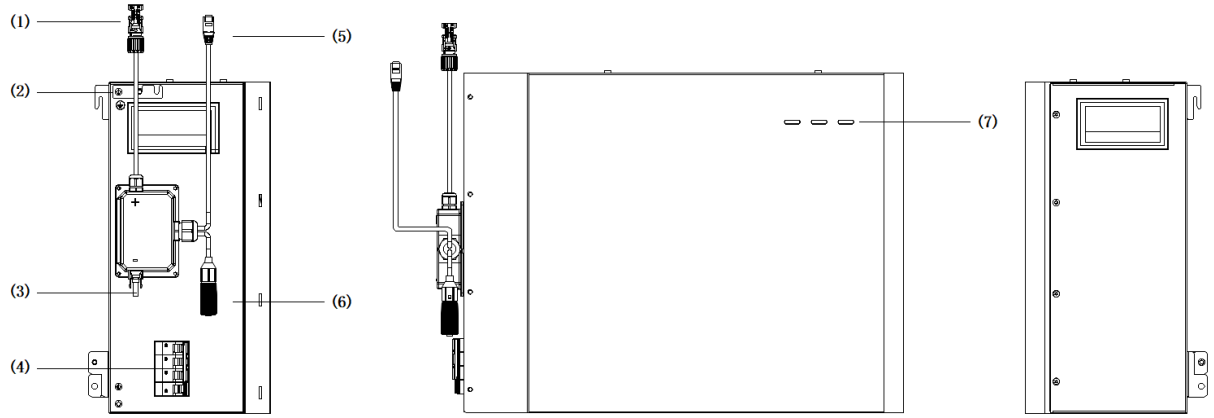
Position	Designation
1	Battery Power Button
2	Battery Breaker
3	Battery- Power Connector
4	Battery+ Power Connector
5	BMS COM1
6	BMS COM 2 (with terminal resistance)
7	Grounding
8	Battery LED Display

3.3.6. Battery Introduction: SMILE-G3-BAT-3.8S

Battery appearance and dimensions



Connection area overview of SMILE-G3-BAT-3.8S

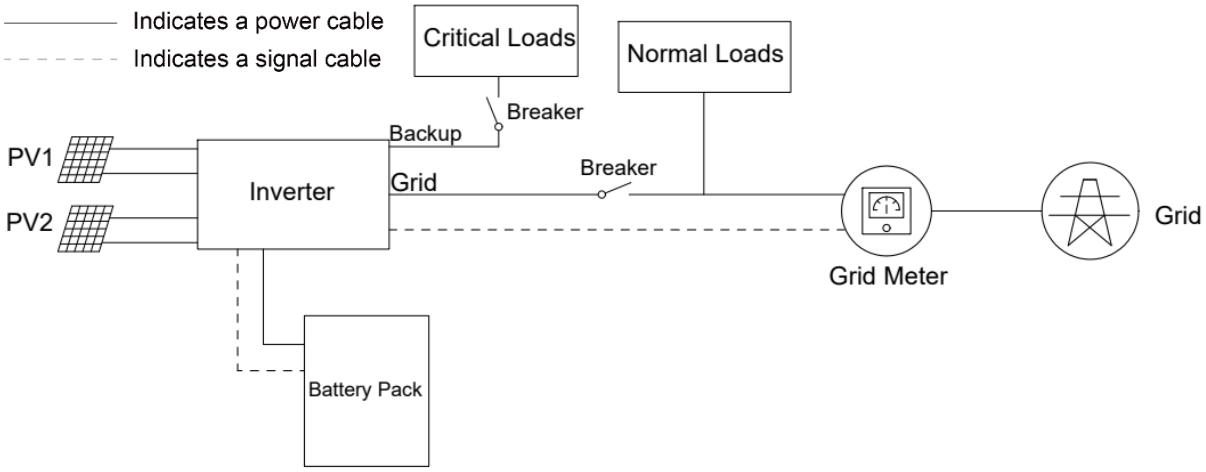


Position	Designation
1	BAT+ Power Connector
2	Grounding
3	BAT- Power Connector
4	Battery Circuit Breaker
5	BMS COM1
6	BMS COM 2 (with terminal resistance)
7	Battery LED Display

3.4. Application Scenarios

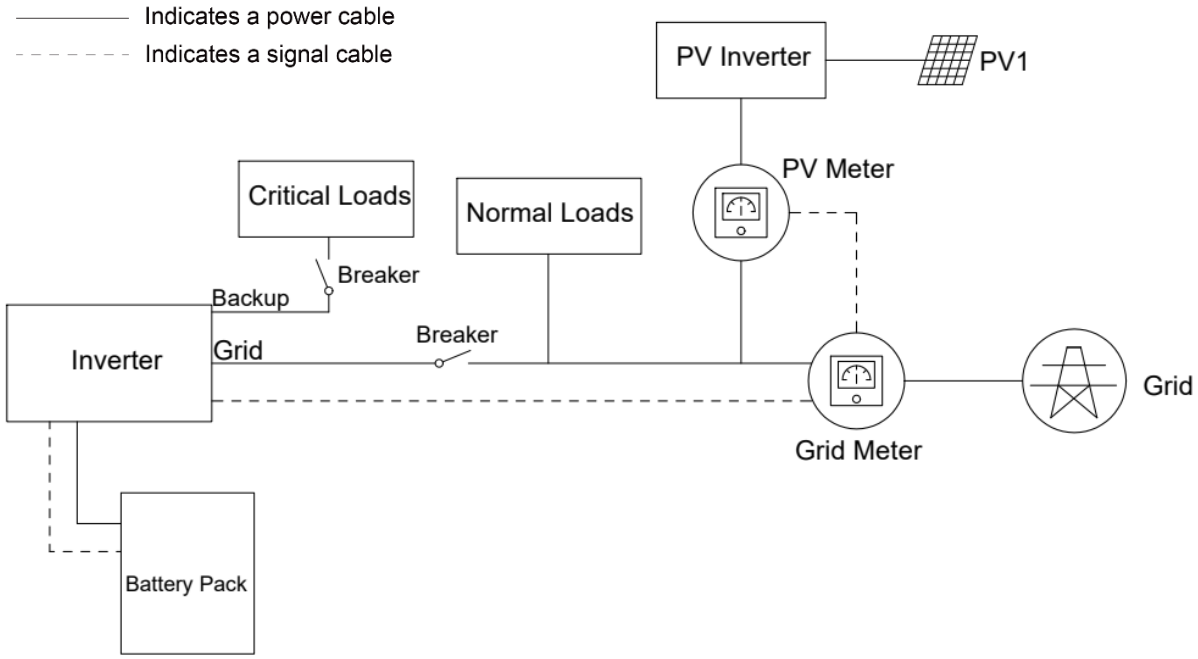
SMILE-G3 system (includes inverter SMILE-G3-S5/S3.6/B5-INV and battery SMILE-G3-BAT-10.1P, SMILE-G3-BAT-8.2P, SMILE-G3-BAT-3.8S) can be applied in DC-coupled systems (mostly new installation), AC-coupled systems (mostly retrofit), Hybrid-coupled systems (mostly retrofit, and increase the PV capacity), and Off-grid (with Generator) systems as the following schemes show:

3.4.1. DC-Coupled Storage System



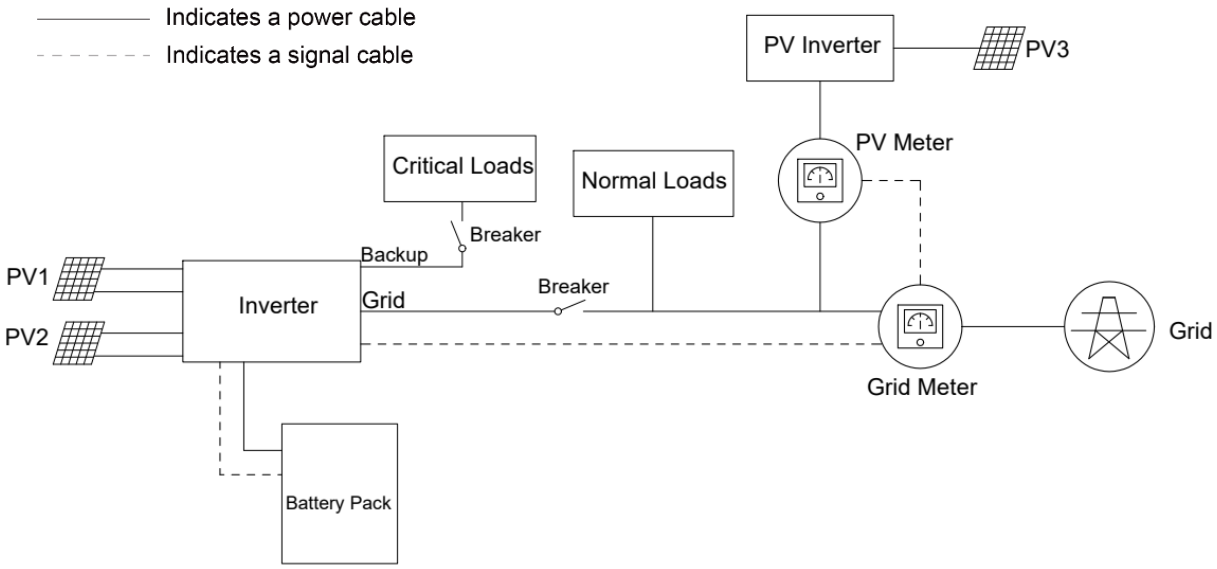
DC-Coupled Storage System – Scheme

3.4.2. AC-Coupled Storage System



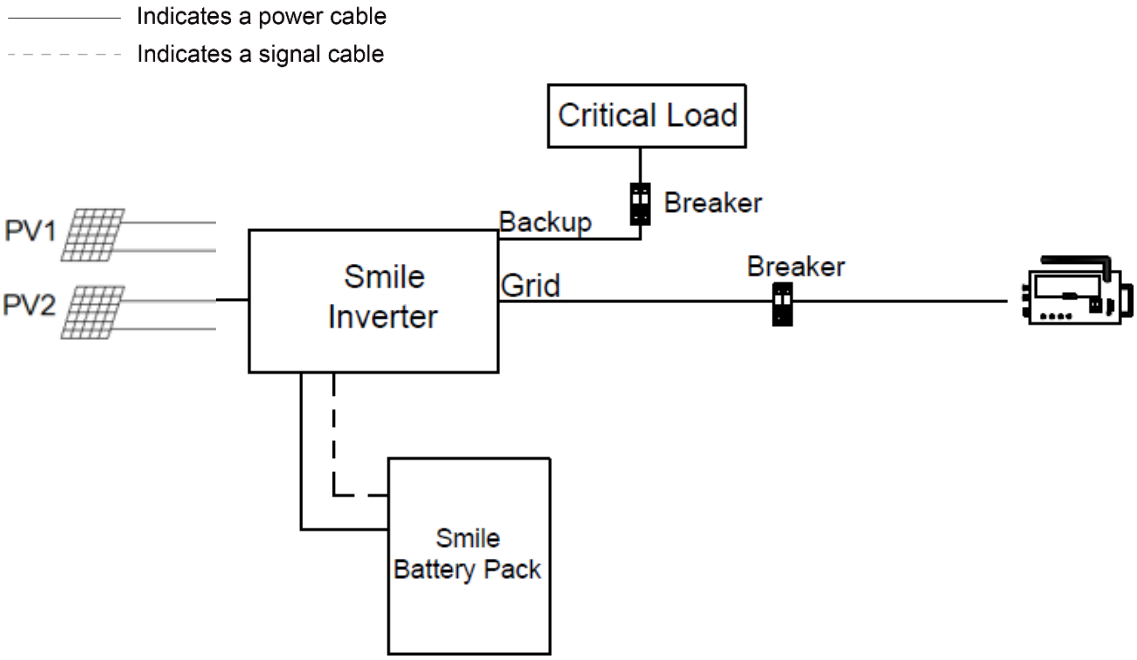
AC-Coupled Storage System – Scheme

3.4.3. Hybrid-Coupled Storage System



Hybrid-Coupled Storage System – Scheme

3.4.4. Off-Grid Storage System



Off-Grid (with Generator) Storage System – Scheme

4. Storage and Transport

4.1. Storage

4.1.1. Inverter Storage

The following requirements should be met if the inverter is not put into use directly:

1. Do not unpack the inverter.
2. Keep the storage temperature at -40~60°C and the humidity at 5%~95% RH.
3. The inverter should be stored in a clean and dry place and be protected from dust and water vapor corrosion.
4. A maximum of six inverters can be stacked. To avoid personal injury or device damage, stack inverters with caution to prevent them from falling over.
5. During the storage period, check the inverter periodically. Replace the packing materials damaged by insects or rodents in a timely manner.
6. If the inverters have been stored for more than two years, it must be checked and tested by professionals before being put into use.

4.1.2. Battery Storage

The following requirements should be met if the battery is not put into use directly:

1. Place batteries according to the signs on the packing case during storage. Do not put batteries upside down or sidelong.
2. Stack battery packing cases by complying with the stacking requirements on the external package.
3. Store the battery out of reach of children and animals.
4. Store the battery where it should be minimal dust and dirt in the area.
5. Handle batteries with caution to avoid damage.
6. The storage environment requirements are as follows:
   a. Ambient temperature: -10~55°C, recommended storage temperature: 15~30°C
   b. Relative humidity: 15%~85%
   c. Place batteries in a dry and clean place with proper ventilation.
   d. Place batteries in a place that is away from corrosive organic solvents and gases.
   e. Keep batteries away from direct sunlight.
   f. Keep batteries at least 2m away from heat sources.
7. The batteries in storage must be disconnected from external devices. The indicators (if any) on the batteries should be off.

8. Batteries should be delivered based on the "first in, first out" rule.
9. The warehouse keeper should collect battery storage information every month and periodically report the battery inventory information to the planning department. The batteries that have been stored for nearly 6 months should be recharged timely.
10. If a lithium battery is stored for a long time, capacity loss may occur. After a lithium battery is stored for 12 months in the recommended storage temperature, the irreversible capacity loss rate is 3%~10%. It is recommended that batteries not be stored for a long period. If the batteries need to be stored for more than 6 months, it is recommended to recharge the batteries to 65~75% of the SOC.

4.2. Transport

During transportation, please follow these guidelines:

1. Priority to use the original packaging for transportation. If the original packaging is not available, put the product inside a suitable cardboard box and seal it properly.
2. Handle with care, choose the corresponding handling method according to the weight, and pay attention to safety;

< 18 kg | 18-32 kg | 32-55 kg | > 55 kg

3. During transportation, please keep the packaging away from dangerous sources and take waterproof measures;
4. Please fix the packaging during transportation to prevent falling or mechanical impact;

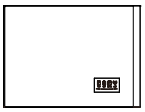
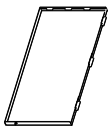
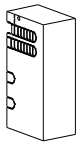
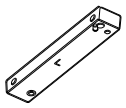
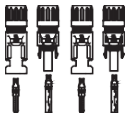
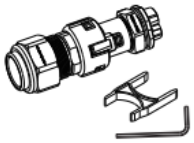
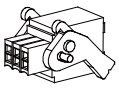
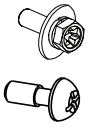
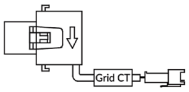
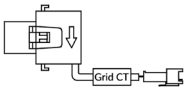
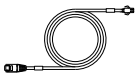
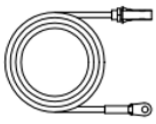
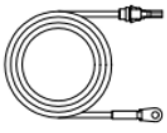
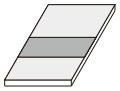
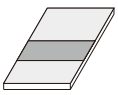
5. Mounting

5.1. Check the Outer Packing

Before unpacking the product, check the outer packing for damage, such as holes and cracks. If any damage is found, do not unpack the product and contact your dealer as soon as possible.

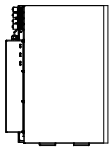
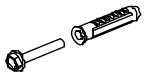
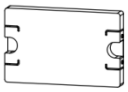
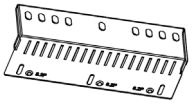
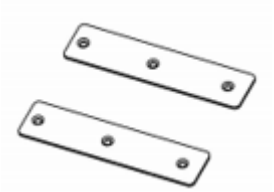
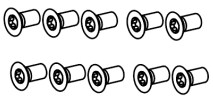
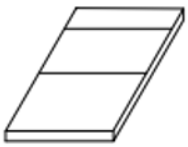
5.2. Scope of Delivery

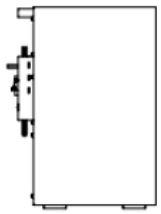
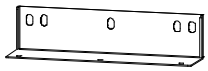
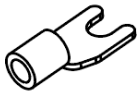
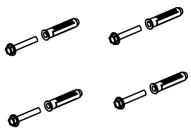
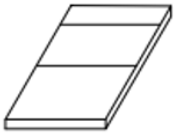
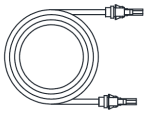
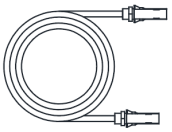
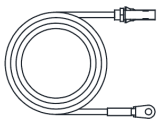
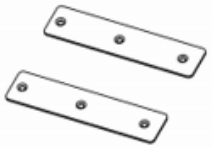
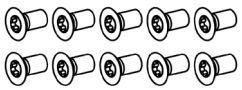
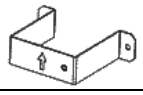
Check the scope of delivery for completeness and any externally visible damage. Contact your distributor if the scope of delivery is incomplete or damaged.

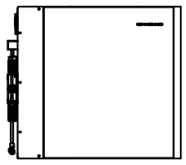
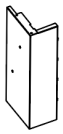
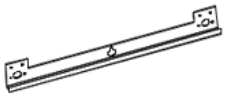
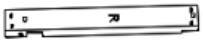
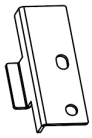
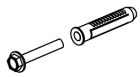
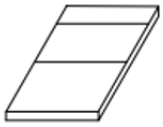
SMILE-G3-INV				
				
SMILE-G3-S5/S3.6/B5-INV (x1)	TOP Cover (x1)	Right Cover (x1)	Cable Cover (x1)	Left Support Foot (x1)
				
Right Support Foot (x1)	PV+ & PV- Connectors (x2)*	Grid Connector (x1)	Backup Connector (x1)	WiFi Module (x1)
				
6 Pin AUX Terminal Block (x1)	Screw M5*12 (x8) Screw M4*10 (x2)	Grid CT (x1)**	PV CT (x1)**	CT Cable (x2)**
				
Series Battery Power- Cable (x1)	Series Battery Power+ Cable (x1)	Grounding Cable (x1)	Quick Installation Guide (x1)	System Wiring Diagram sheets (x1)

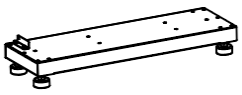
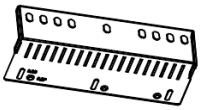
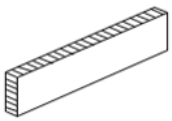
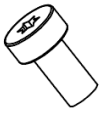
*Only for product SMILE-G3-S3.6/S5-INV;

**Optional

SMILE-G3-BAT-10.1P			
			
Battery (x1)	Wall Anchor ST6*55 (x4)	Spanner (x1)	Ring Terminal (x4)
			
Y Type Terminal (x2)	Battery Cable Cover (x1)	Breaker Cover (x1)	Wall Bracket (x1)
			
Gap Gasket with Inverter (x2)	Expansion Bat+ Power Cable (x1)	Expansion Bat-Power Cable (x1)	Battery Communication Cable (x1)
	 (M5*10)		
Gap Shim with Wall (X1)	Screw M5*10 (x10)	Quick Installation Guide (x1)	

SMILE-G3-BAT-8.2P			
			
Battery (x1)	Wall Bracket (x1)	Y Type Terminal (x2)	Battery Cable Cover (x1)
			
Wall Anchor ST6*55 (x4)	Quick Installation Guide (x1)	Expansion Bat+ Power Cable (x1)	Expansion Bat- Power Cable (x1)
			
Battery Power - Cable (x1)	Battery Communication Cable (x1)	Gap Gasket with Inverter (x2)	Screw M5*10 (x8)
			
Support for Battery Cable Cover (x1)	Screw M5*10 (x2)	Gap Shim with Wall (x1)	

SMILE-G3-BAT-3.8S			
			
Battery (x1)	Battery Cable Cover (x1)	Top Beam of Wall Bracket (x1)	Right Beam of Wall Bracket (x1)
			
Left Beam of Wall Bracket (x1)	Left Holder for Wall Bracket (x1)	Right Holder for Wall Bracket (x1)	Grounding Bar (x1)
			
Wall Anchor ST6*55 (x6)	Support Stud for Battery Cable Cover (x2)	Screw M5*12 (x6)	Flange Nut M4 (x7)
			
Quick Installation Guide (x1)			

Accessory of Base unit			
			
Base Unit (x1)	Wall Bracket (x1)	Position Plate (x1)	Right Connection Plate (x6)
			
Screw M5*12 (x6)	Limit Screw M5*12 (x10)		

5.3. Requirements for Mounting

WARNING

Danger to life due to fire or explosion

Despite careful construction, electrical devices can cause fires.

- Do not mount the energy storage system in areas containing highly flammable materials or gases.
- Do not mount the energy storage system in potentially explosive atmospheres.

5.3.1. Basic Requirements

- SMILE-G3-S5/S3.6/B5-INV and SMILE-G3-BAT-10.1P are suitable for indoor and outdoor installation.

SMILE-G3-BAT-8.2P and SMILE-G3-BAT-3.8S are only suitable for indoor installation.

- Do not install the inverter in a place where people can easily touch it considering the inverter's hot surface during operation.
- Do not mount the system in areas with flammable or explosive materials.
- Do not mount the inverter at a place within children's reach.
- Do not mount the system outdoors in salt areas because it will be corroded there and may cause fire. A salt area refers to the region within 500m from the coast or prone to sea breeze. The regions prone to sea breeze vary depending on weather conditions (such as typhoons and monsoons) or terrains (such as dams and hills).

5.3.2. Mounting Environment Requirements

- The system must be mounted in a well-ventilated environment to ensure good heat dissipation.
- When mounted under direct sunlight, the power of the system may be derated due to additional temperature rise.
- Mount the system in a sheltered place or mount an awning over the system.
- The optimal temperature range for the battery to operate is 15 to 30℃.
- Do not place the system near water sources such as downspouts or sprinklers.
- If the battery is mounted in the garage, then ensure that it is above the height of the vehicle bumper and/or door.

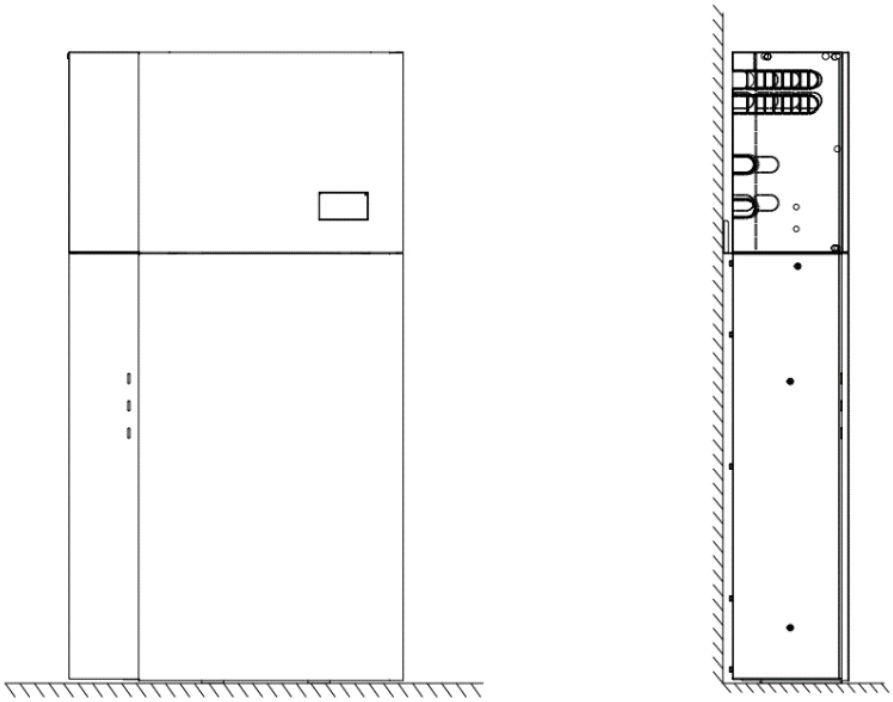
5.3.3. Mounting Structure Requirements

- The mounting structure where the system is mounted must be fireproof.
- Do not mount the system on flammable building materials.
- Ensure that the mounting surface is solid enough to bear the weight load.
- In residential areas, do not mount the system on drywalls or walls made of similar materials which have a weak sound insulation performance because the noise generated by the inverter is noticeable.

5.3.4. Mounting Angle and Stack Requirements

The battery should stand on the ground and be tightened with the wall.
The inverter should stand on the battery top and tightened with the battery.
The installation angle requirement is as follow:

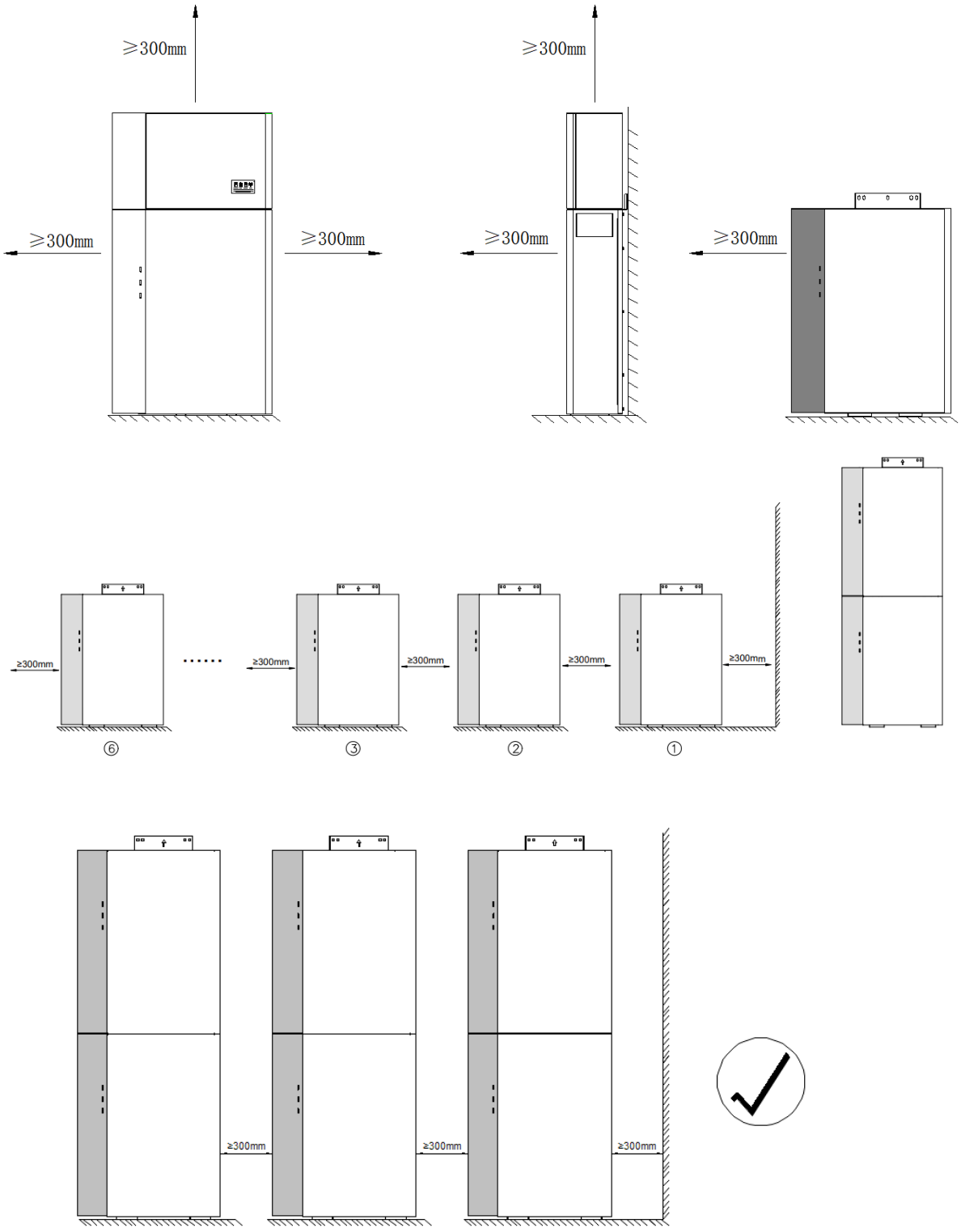
- Do not mount the inverter at forward tilted, side tilted, horizontal, or upside-down positions.



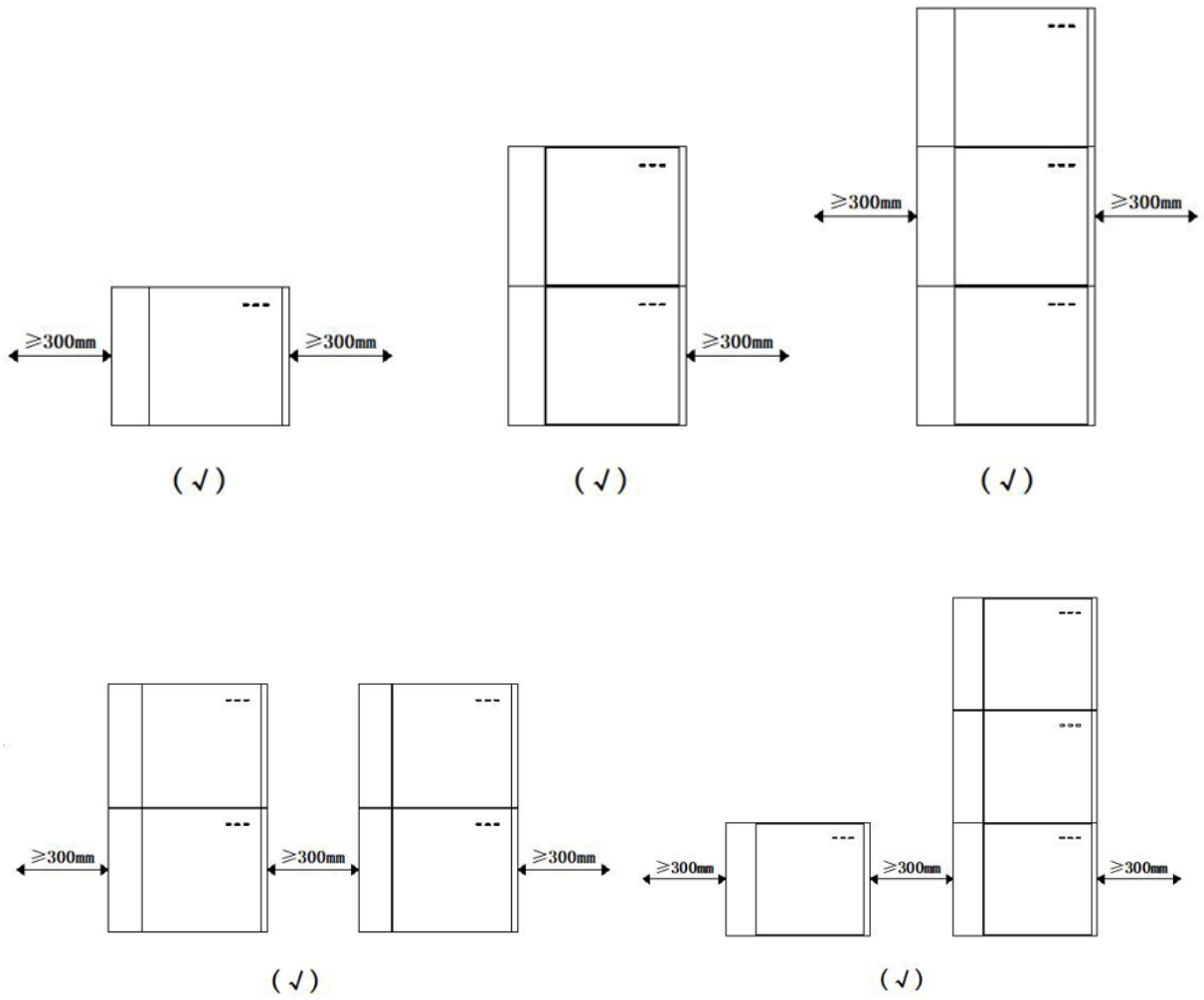
5.3.5. Mounting Space Requirements

- Reserve sufficient clearance around the system to ensure sufficient space for installation, maintenance and heat dissipation.
- The side clearance is a recommendation. Keep the clearance as short as you can if there is no influence on the operation and maintenance.

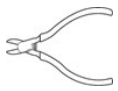
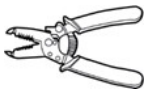
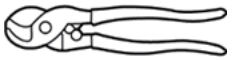
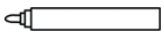
Recommended clearances for SMILE-G3-BAT-10.1P/8.2P



Recommended clearances for SMILE-G3-BAT-3.8S



5.4. Prepare Tools and Instruments

Category	Tools and Instruments		
Installation			
	Hammer drill (with a Φ10mm drill bit)	Torque socket wrench SW10	Multimeter (DC voltage range ≥ 1000V)
			
	Diagonal pliers	Wire stripper	TX20 screwdriver (torque range: 0-5Nm), L=150mms
			
	Rubber mallet	Utility knife	Cable cutter
			
	Crimping tool (model: PV-CZM-22100)	Cord end terminal crimper	Disassembly and Assembly Tool of PV connector
			
	Vacuum cleaner	Heat shrink tubing	Heat gun
			
	Marker	Measuring tape	Bubble or digital level
Personal Protective Equipment			
	Safety gloves	Safety goggles	Anti-dust respirator
			
	Safety shoes		

5.5. Mount the System

5.5.1. Mount the Battery SMILE-G3-BAT-10.1P

a. Take out the battery from the carton, transport it to the installation site with a handcart whose bearing capacity should be greater than 200kg, tied with bandage.

b. Place the battery against the wall, mount the wall bracket to the battery top and then mark drill positions.

c. Remove the wall bracket and cover the top of the battery with a plastic bag, then drill 3 holes on the wall with drill Φ10 and a depth of about 70mm, clean the holes and insert screw anchors into the drill holes.

After removing the plastic bag, assemble the wall bracket on top of the battery (tool: T20 screwdriver, torque: 2.5Nm), secure the wall bracket to the wall using the provided screws by using the SW10 hexagon sleeve.

d. Take out the 2 gap gaskets and tighten them (tool: T20 screwdriver, torque: 2.5Nm) to the top of the bottom battery.

e. Take out another battery from the carton, transport it to the installation site.

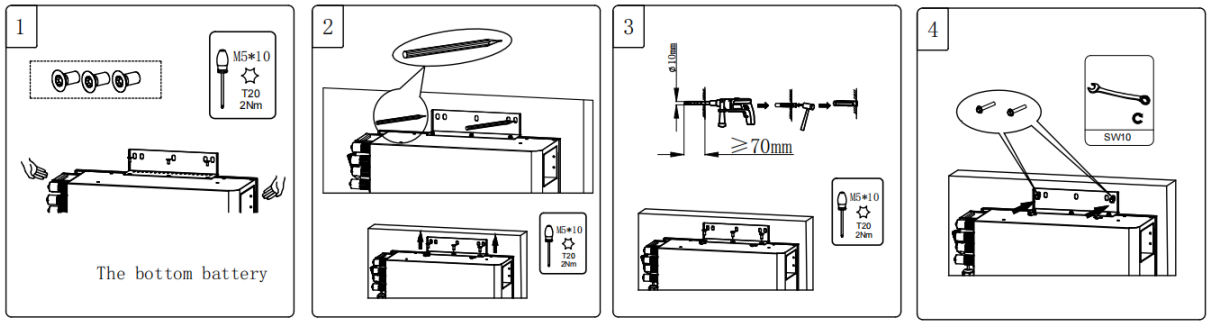
Place a PE bag at the bottom of the battery before laying it down, then remove the 2 feet which have located at the bottom of the battery (tool: TX20 screwdriver).

f. Tighten the wall bracket to the battery top.

g. Hold the side handles, lift the top battery onto the bottom battery, and align the battery's outer contour.

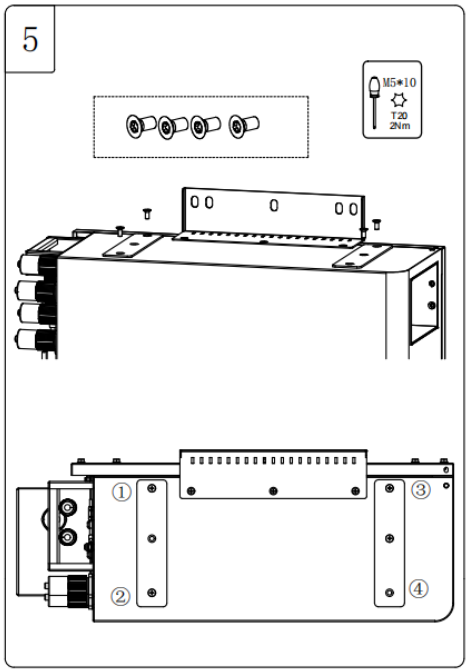
h. Repeat the mounting steps from b to c.

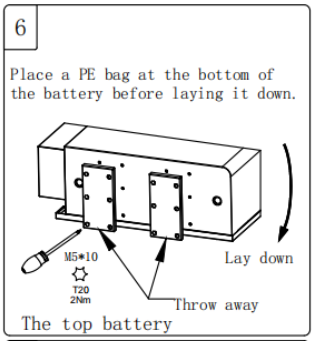
If the two batteries are not aligned perfectly due to uneven wall, please put provided gap shim behind the wall bracket.

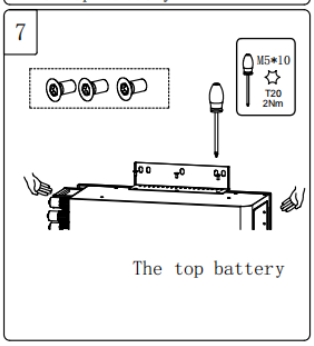


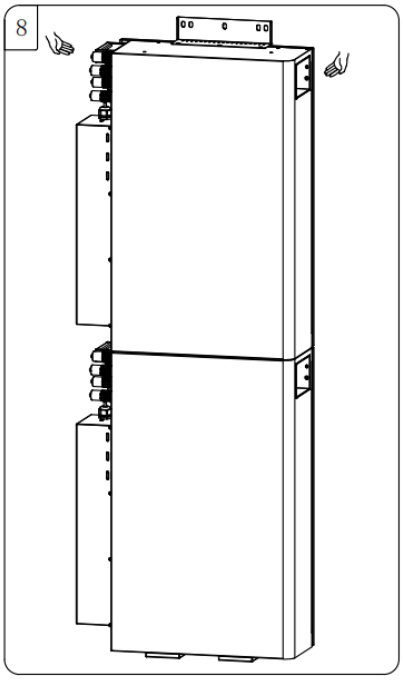
NOTE

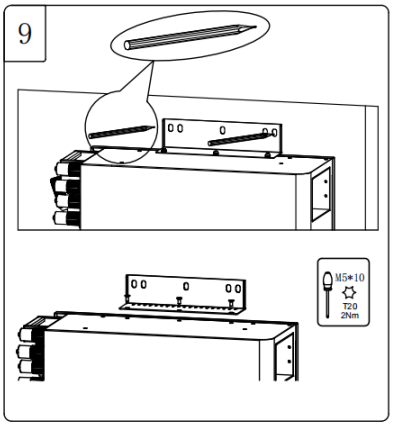
step 5~12 only for batteries stack mounting

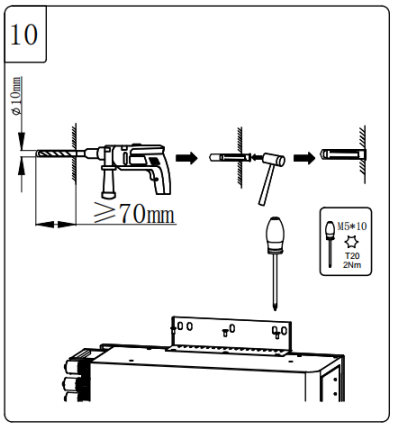


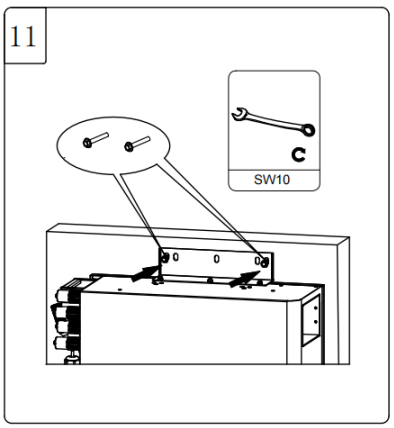


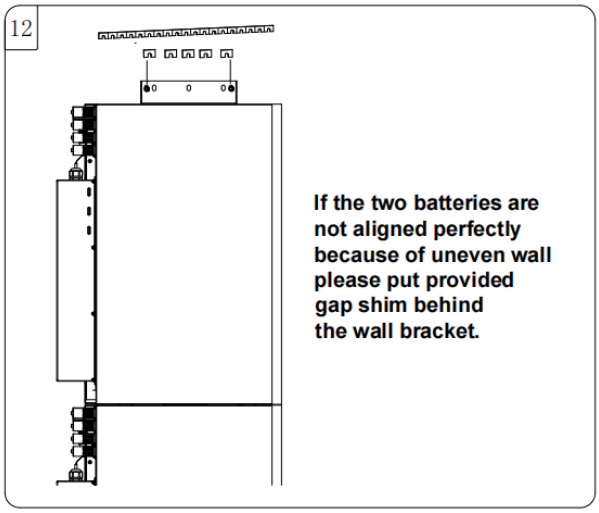












5.5.2. Mount the Battery SMILE-G3-BAT-8.2P

a. Take out the battery from the carton, transport it to the installation site with a handcart whose bearing capacity should be greater than 200kg, tied with bandages.

b. Place the battery against the wall, mount the wall bracket to the battery top and then mark drill positions.

c. Remove the wall bracket and cover the top of the battery with a plastic bag, then drill 3 holes on the wall with drill Φ10 and a depth of about 70mm, clean the holes and insert screw anchors into the drill holes

After removing the plastic bag, assemble the wall bracket on top of the battery (tool: T20 screwdriver, torque: 2.5Nm), secure the wall bracket to the wall using the provided screws by using the SW10 hexagon sleeve.

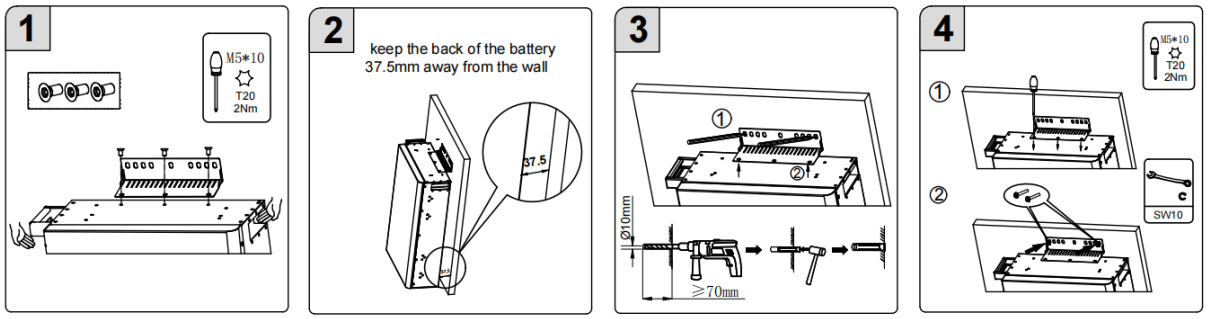
d. Take out the 2 gap gaskets and tighten them (tool: TX20 screwdriver, torque: 2.5Nm) to the top of the bottom battery.

e. Take out 2 cheese head screws M5X10, and tighten them to the designated location.

f. Take out another battery from the carton, transport it to the installation site. Place a PE bag at the bottom of the battery before laying it down, then remove the 2 feet which have located at the bottom of the battery (tool: TX20 screwdriver).

g. Hold the side handles, lift the top battery onto the bottom battery, and align the battery's outer contour.

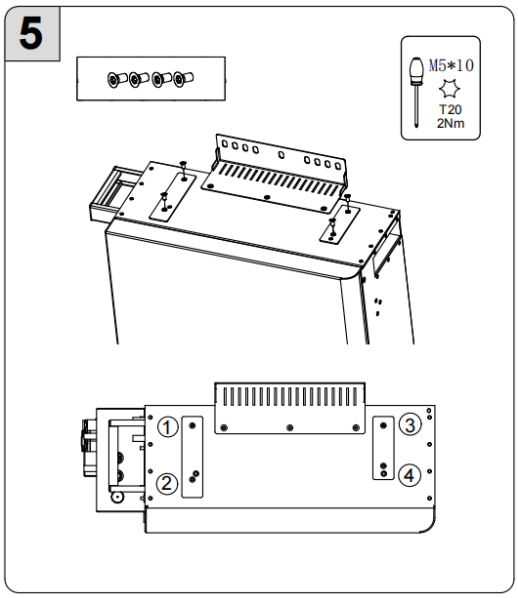
h. Repeat the mounting steps from b to c.



NOTE

step 5~9 only for batteries stack mounting

5



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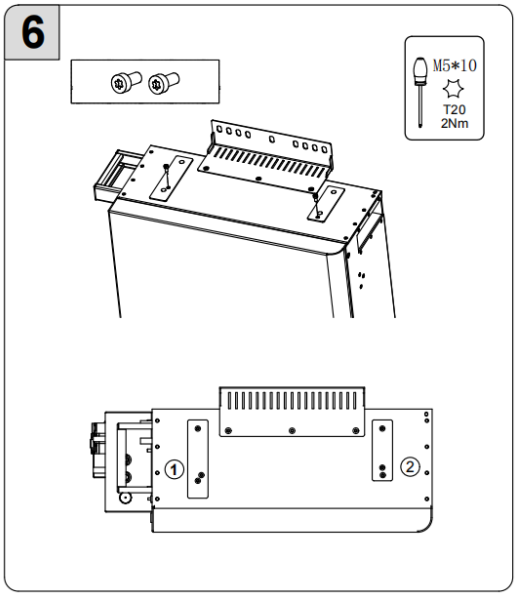

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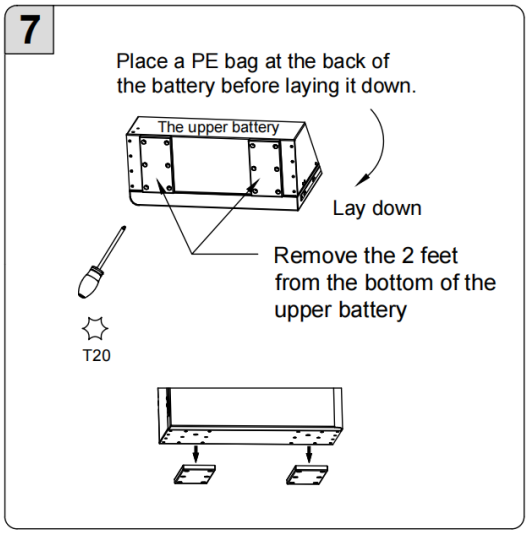

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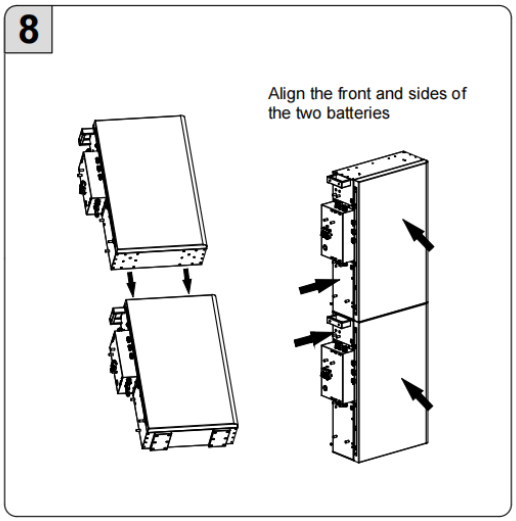

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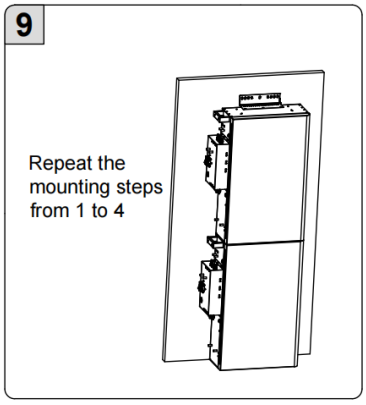

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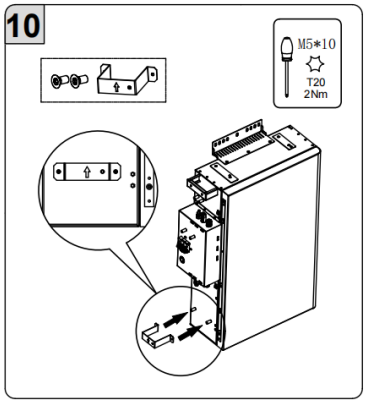

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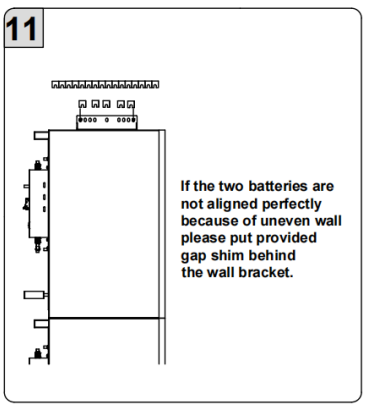


5.5.3. Mount the Battery SMILE-G3-BAT-3.8S

Wall bracket installation for the one battery installation

a. Take out the top beam, left beam and right beam of wall bracket from the package, assemble them with M5 nut (tool: SW8 hexagon sleeve, torque: 2.5Nm).

b. Selecting a suitable height for bottom first wall bracket location. Please reserve enough height if you want to add more batteries later.
Mark the upper middle drill position of the wall bracket, drill the marked hole with drill Φ10. Insert screw anchor into the drill hole, pre-tighten wall bracket horizontally using the provided screw and retain 5~10mm from the screw head to wall.

c. Hang the wall bracket on the screw head, adjust the position of the horizontal direction, then mark the other drill positions and drill the marked holes with drill Φ10.

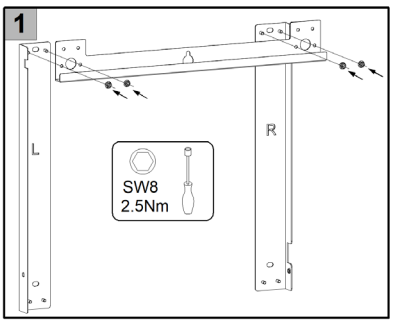
d. Secure the bracket to the wall, tighten the screws with the SW10 hexagon sleeve.

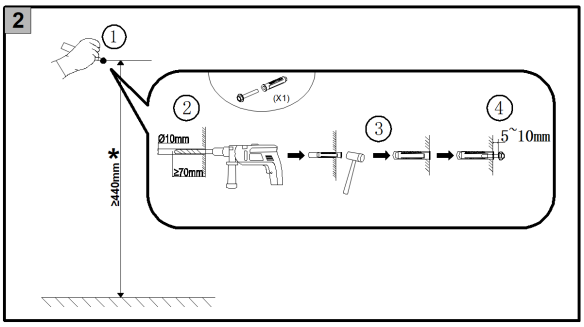
e. Take out the left holder and right holder from the package, and tighten them to the battery housing (tool: T20 screwdriver, torque: 2.5Nm).

f. Horizontally lift the battery by using the handles at two sides, let the top hooks on the back of the battery slide from right to left in the upper beam of the wall bracket

g. Secure the battery to the wall bracket, tighten them with two screws using a Torx screwdriver (TX 20, torque: 2.5Nm).

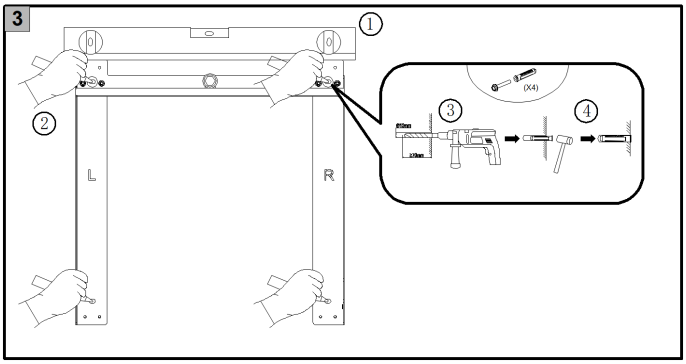
h. Take out the grounding bar from the accessory, use it to connect the lower left corner of the upper battery and the upper left corner of the lower battery (TX 20, torque: 2.5Nm).

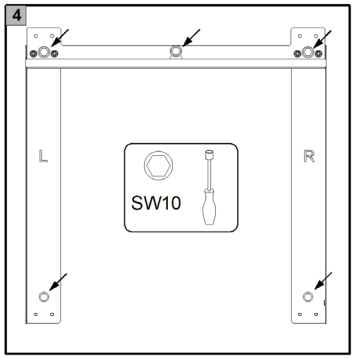


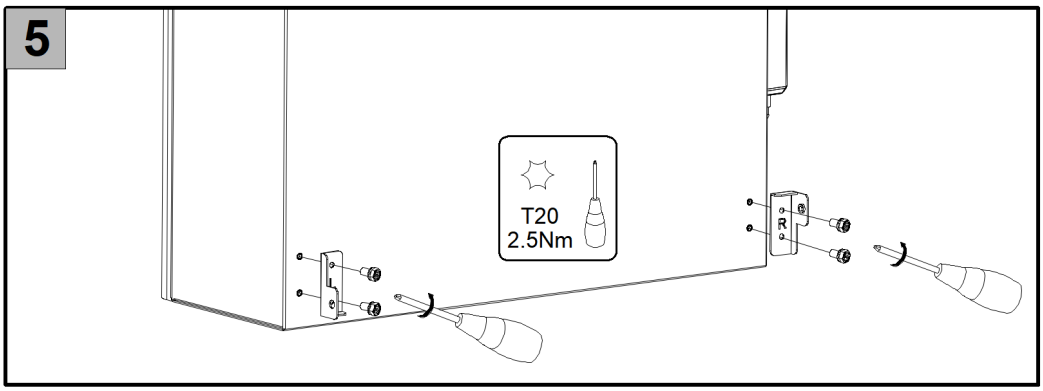


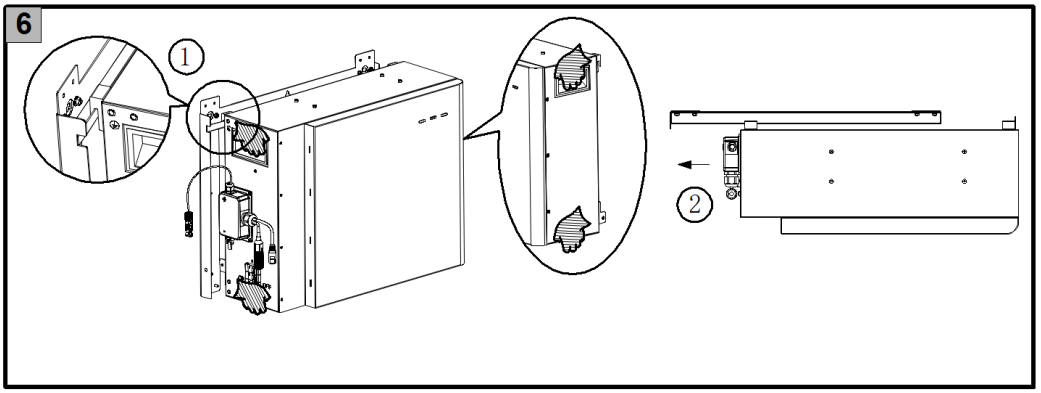
NOTICE

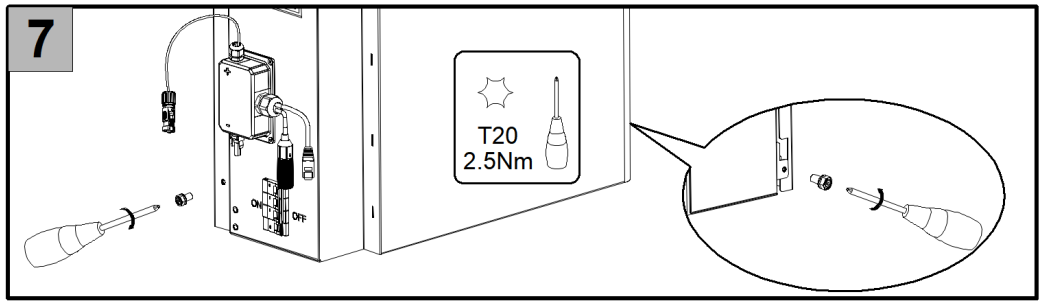
The clearance “440mm” is a ‘recommendation’ only and a minimum of 150~200 mm off the ground is advisable to protect from submergence.

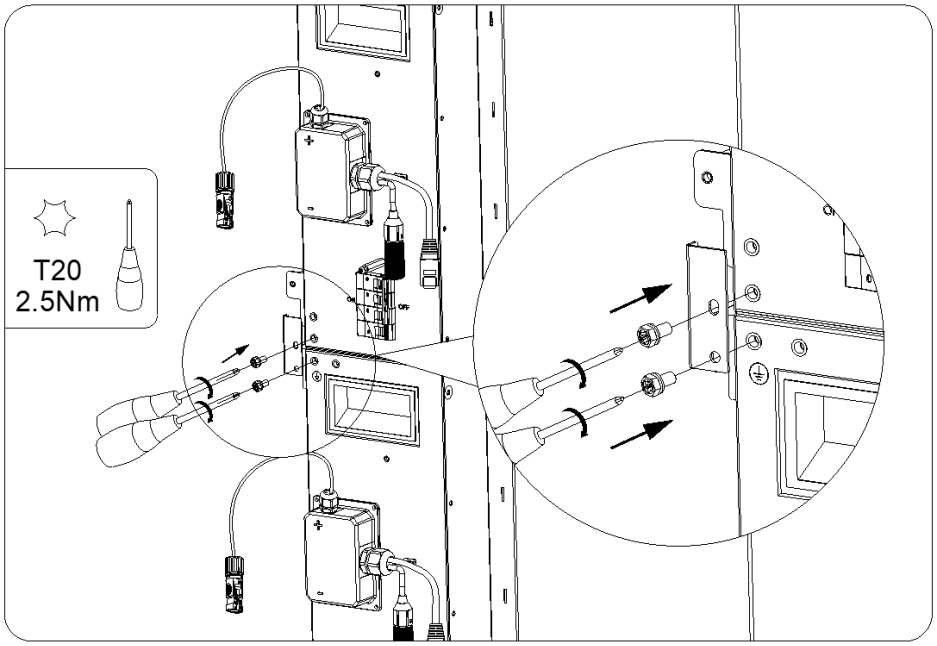





5
T20
2.5Nm


6
1
2


7
T20
2.5Nm


T20
2.5Nm

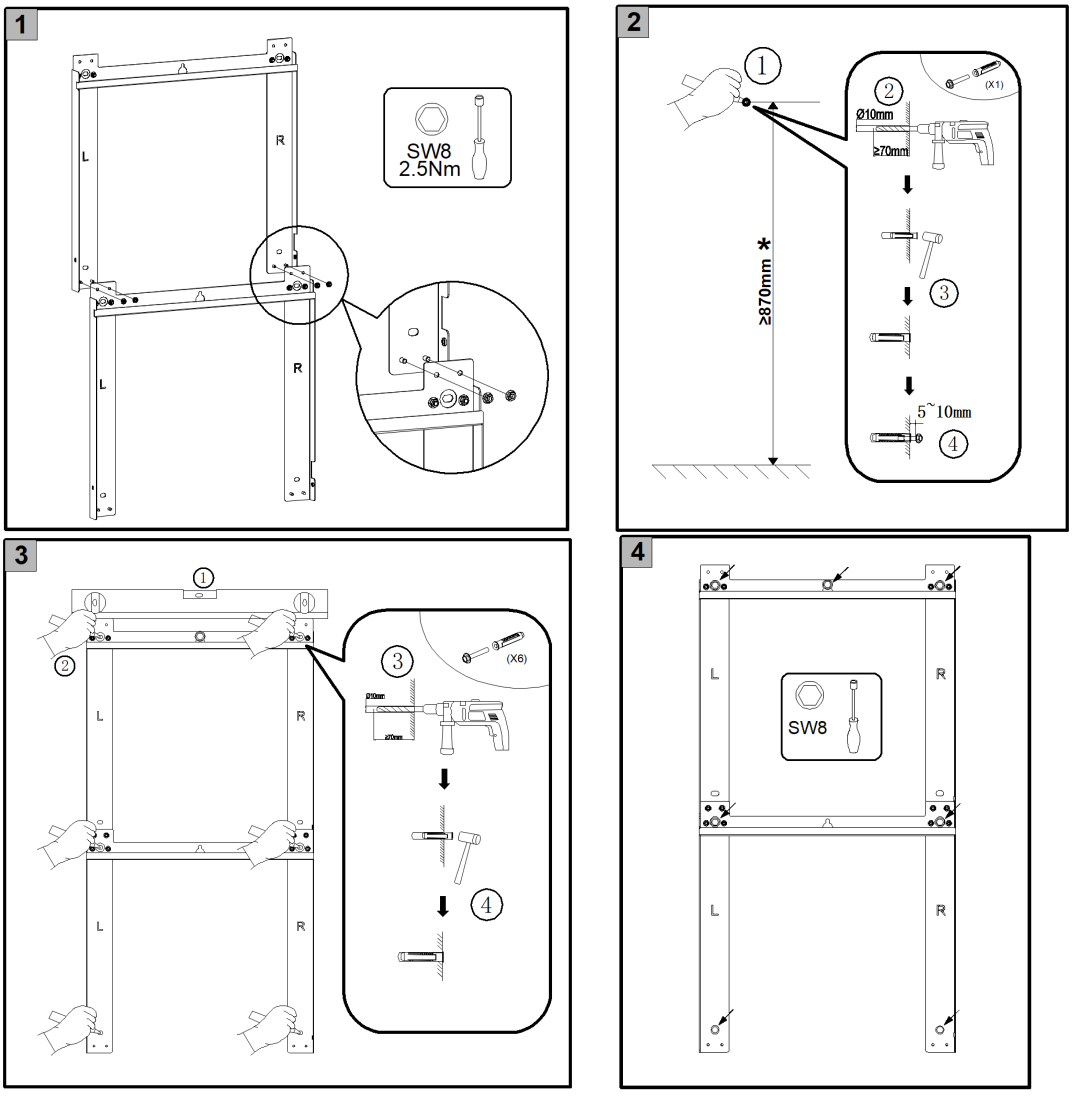
Wall bracket installation for multiple batteries installation

We mount several batteries for the first time, mounting steps as follows.

a. Take out the top beam, left beam and right beam of wall bracket from the package, assemble them with M5 nut (tool: SW8 hexagon sleeve, torque: 2.5Nm).

Align the upper hole of the lower wall bracket with the lower rivet of the upper wall bracket, assemble them with M5 nut (tool: SW8 hexagon sleeve), then the several wall brackets will be combined into a whole.

For others mounting steps, please see chapter 5.4.3. Mounting the Battery SMILE-G3-BAT-3.8S and follow step b to step h.



(*) Depending on quantity of the expansion batteries.

Base installation for several batteries

a. Take out the position plate and place it against the wall, place the base next to position plate. Adjust the feet to level the base.

b. Lift the battery by using the handles at two sides, align the bottom holes of the first battery with the screw heads on the top of the base.

c. Secure the battery to the base, tighten them with one screw using a Torx screwdriver (TX 20, torque: 2.5Nm).

d. Lift the second battery by using the handles at two sides, align the bottom holes of the second battery with the screw heads on the top of the lower battery.

Mount more batteries by repeating this step.

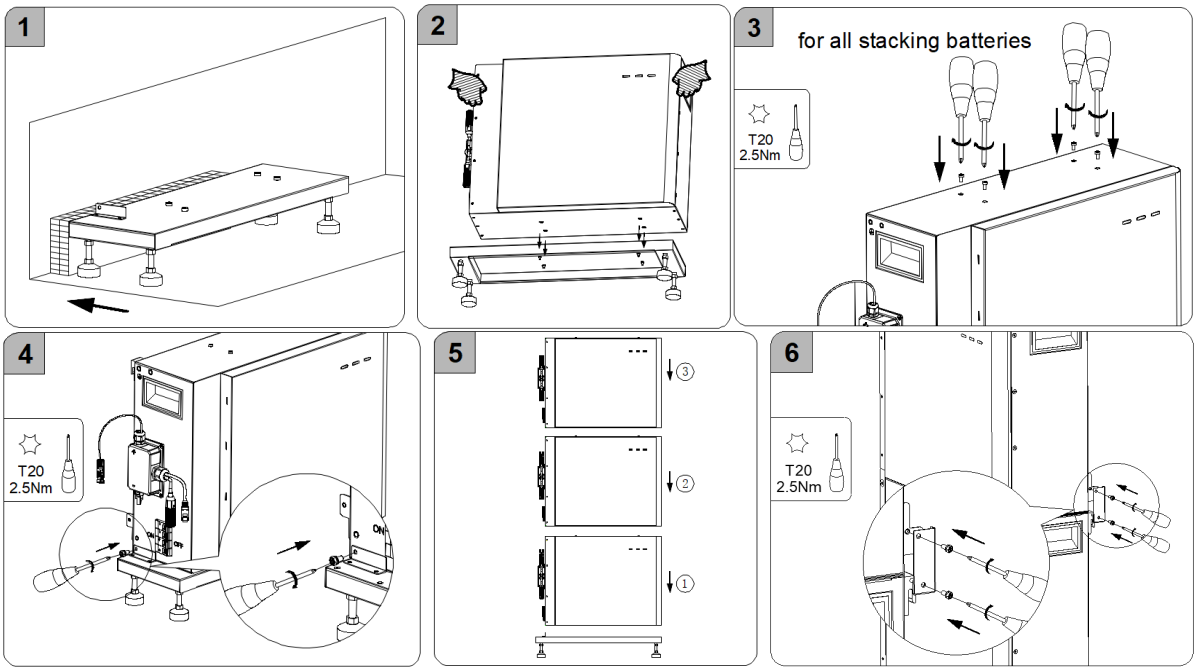
e. Take out the right connection plate from the base accessory, use it to connect the lower right corner of the upper battery and the upper right corner of the lower battery (TX 20, torque: 2.5Nm).

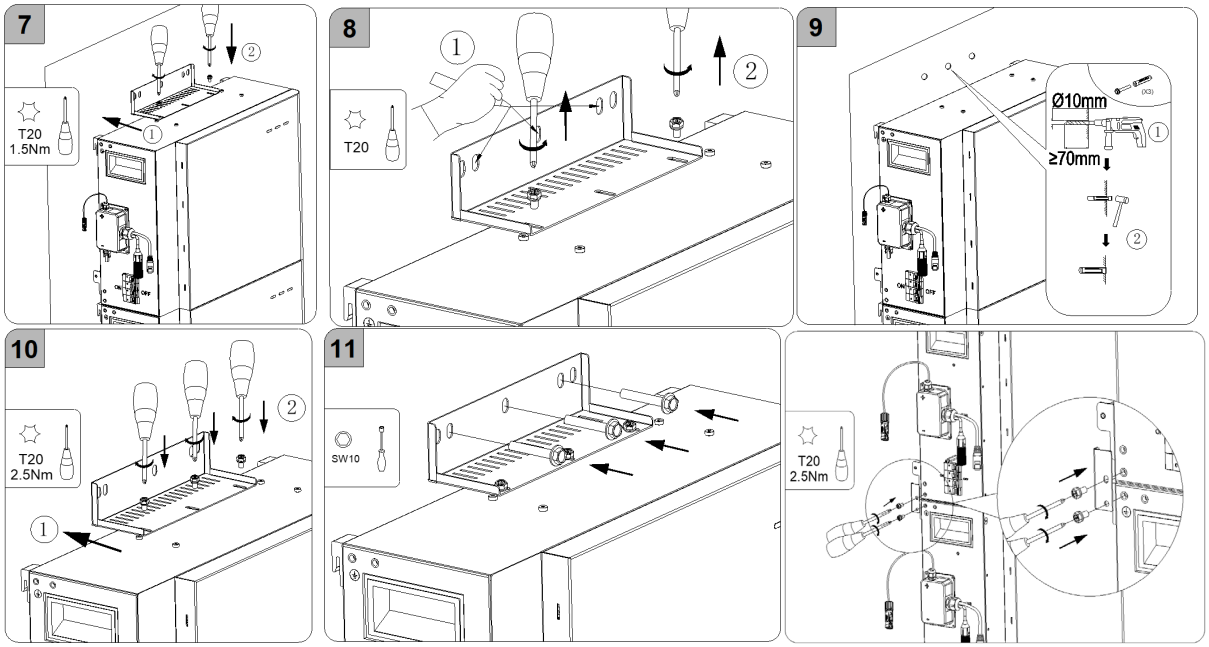
f. Pre-mount the wall bracket to the upper battery top and then mark drill positions.

g. Remove the wall bracket and cover the top of the battery with a plastic bag, then drill 3 holes on the wall with drill Φ10 and a depth of about 70mm, clean the holes and insert screw anchors into the drill holes.

h. After removing the plastic bag, tighten the wall bracket to the top of the battery (tool: T20 screwdriver, torque: 2.5Nm), then secure the wall bracket to the wall using the provided screws and the SW10 hexagon sleeve.

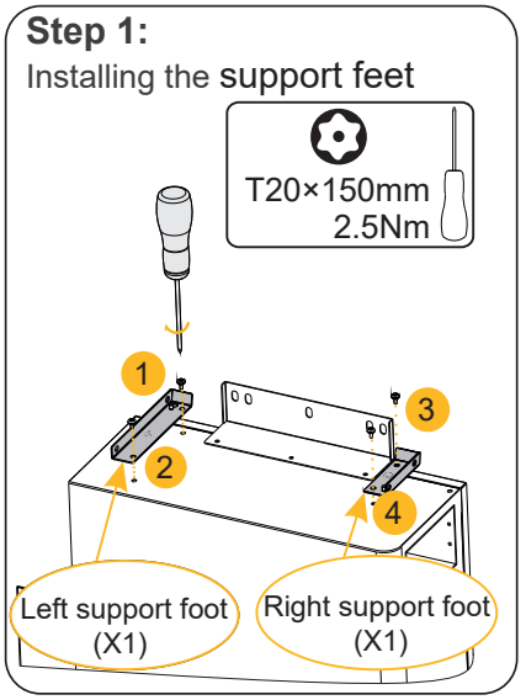
i. Take out the grounding bar from the accessory, and use it to connect the lower left corner of the upper battery and the upper left corner of the lower battery (TX 20, torque: 2.5Nm).



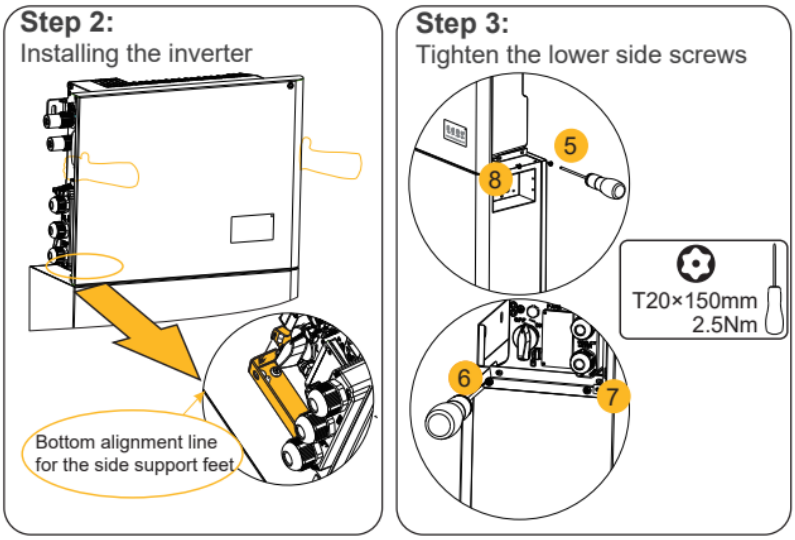


5.5.4. Mount the Inverter

a. Mount the left support foot and right susssssssppport foot onto the top of the upper battery.

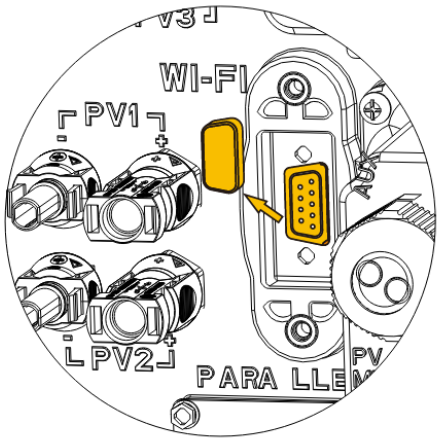


b. Attach the inverter to the side support feet, each side should be tightened with two screws.

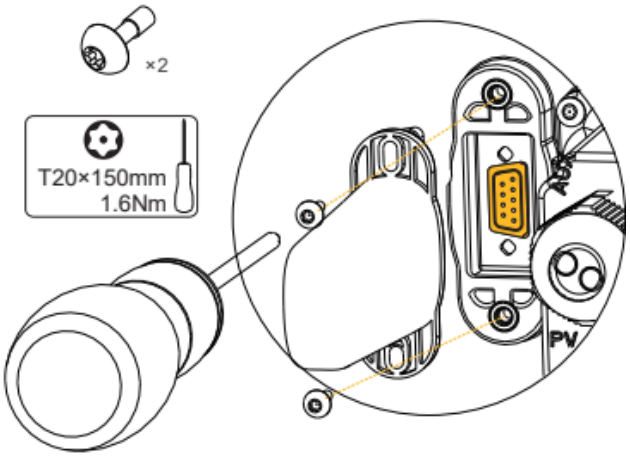


5.5.5. Mount the WiFi Module

a. Remove the protective cover of WiFi port at the left of the inverter.



b. Tighten the WiFi module onto the inverter with screw M4*10 (x2) (Tool: TX20 screwdriver, torque: 1.6Nm).



6. Electrical Connection

Precautions

DANGER

Before connecting cables, ensure that all breakers of the inverter and batteries and all the switches connected to the inverters and batteries are set to OFF. Otherwise, the danger voltage of the energy storage system may result in electric shocks.

WARNING

The energy storage system damage caused by incorrect cable connections is not covered under any warranty.

Only certified electricians are allowed to connect cables.

Operating personnel must wear proper PPE when connecting cables.

CAUTION

The cable colors shown in the electrical connection diagrams provided in this chapter are for reference only.

Select cables in accordance with local cable specifications (green-and-yellow cables are only used for PE).

6.1. Cable Requirements for Connection

No.	Cable	Type	Conductor Cross Section Area Range	Outer Diameter	Source
1	Battery power cable	Standard PV cable in the industry (recommended type: PV1-F)	16mm^2 for SMILE-G3-BAT-10.1P,10mm2 for SMILE -G3-BAT-8.2P/3.8S	N/A	Delivered with the battery
2	Battery communication cable	Standard network cable in the industry (recommended type: Cat5e, UTP, UV-resistant for outdoor use)	0.12~0.2 mm^2 (AWG26~AWG24)	N/A	Delivered with the battery
3※1	Signal cable	Standard network cable in the industry (recommended type: Cat5e, FTP, UV-resistant for outdoor use)	0.12~0.2 mm^2 (AWG26~AWG24)	N/A	Additional accessories
4	PV power cable	Standard PV cable in the industry (recommended type: PV1-F)	4~6 mm^2	5.5~9 mm	Purchased by the installer
5※2	Signal cable	Standard network cable in the industry (recommended type: Cat5e, FTP, UV-resistant for outdoor use)	0.12~0.2 mm^2 (AWG26~AWG24)	4~6 mm	Purchased by the installer
6※3	Signal cable	Multiple-core outdoor shielded twisted pair cable	0.1~1.3 mm^2	4~6 mm	Purchased by the installer
7	AC power cable for backup	Three-core (L, N and PE) outdoor copper cable	4~6 mm^2	10~14mm	Purchased by the installer
8	AC power cable for grid	Three-core (L, N and PE) outdoor copper cable	6~10 mm^2	12~18mm	Purchased by the installer
9	PE cable	Single-core outdoor copper cable	2.5~10 mm^2	N/A	Purchased by the installer

※1 For CT communication connection with inverter.

※2 For CAN/RS485, LAN, Meter, DRM communication connection with inverter.

※3 For AUX communication connection with inverter.

6.2. Grounding Connection

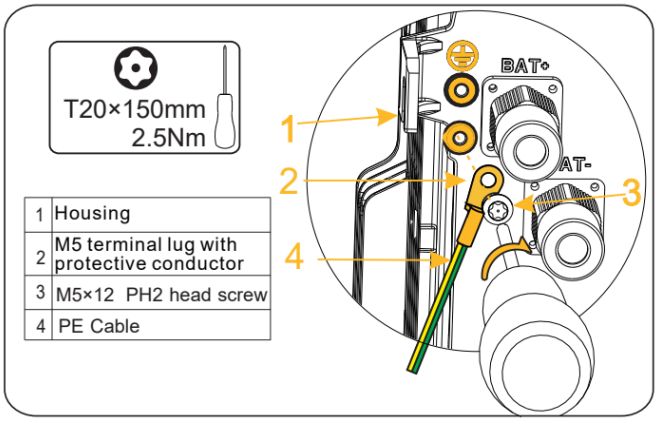
> **CAUTION**
>
> **Electric Shock Hazard**
>
> Before doing electrical connection, please ensure the PV switch & all AC and BAT circuit breakers in the energy storage system are switched OFF and cannot be reactivated.

External grounding points are provided at the left side of the inverter.

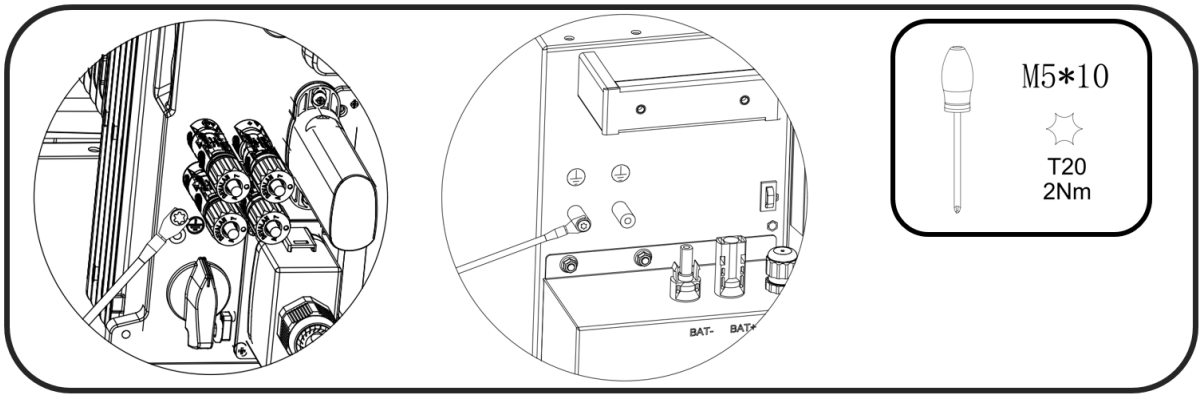
Prepare M5 OT terminals, strip the grounding cable insulation, insert the stripped part of the grounding cable into the ring terminal lug and crimp using a crimping tool.

Connect the OT terminal to grounding point using the TX20 screwdriver with a torque of 2.5Nm.

Additional grounding connection for SMILE-G3-INV.



Grounding connection between inverter SMILE-G3-INV and battery SMILE-G3-BAT series.



6.3. AC Connection

6.3.1. Requirements for the AC Connection

AC cable requirements as follows:

☐ Conductor type: copper wire

☐ External diameter: 12mm to 18mm for grid connector and backup connector

☐ Grid conductor cross-section recommendation: 4-10mm²

Backup conductor cross-section recommendation: 4-10mm²

☐ Insulation stripping length: 10mm

☐ Sheath stripping length: 50mm

CAUTION

Residual-current monitoring unit

The inverter does not require an external residual-current device when operating.

If local regulations require the use of a residual-current device, or Hybrid-coupled storage system with big coupling capacity from the PV array and PV inverter, the following must be observed:

The inverter is compatible with type A residual-current devices with a rated residual current of 100mA or higher. Each inverter in the system must be connected to the utility grid via a separate residual-current device.

DANGER

You must protect each inverter with an individual grid/backup circuit breaker in order to ensure that the inverter can be disconnected safely.

CAUTION

For Australia and New Zealand installation site, the neutral cables of grid side and backup side must be connected together, otherwise backup output function will not work.

6.3.2. Select Suitable AC Circuit Breaker

The general requirements for the selection of circuit breakers are determined by standards and country-specific provisions. The following content generally lists out the applicable influencing factors to consider when selecting a suitable circuit breaker.
Factors influencing the ampacity of the cable: type of cable used, ambient temperature around the cable, type of cable routing, bundling of cables.
Other influences on dimensioning: loop impedance, mutual heating of circuit breakers, ambient temperature at the circuit breaker, selectivity, type of connected device.
If these factors are ignored, it will increase the danger of the circuit breaker tripping under normal operating conditions.

Description	Max. Current	Breaker Type for SMILE-G3-S5/B5-INV
Grid Side	43.5A	50A
Backup Side	21.7A	32A

Description	Max. Current	Breaker Type for SMILE-G3-S3.6-INV
Grid Side	32A	40A
Backup Side	16A	20A

WARNING

Selecting a circuit breaker and copper conductor cross section

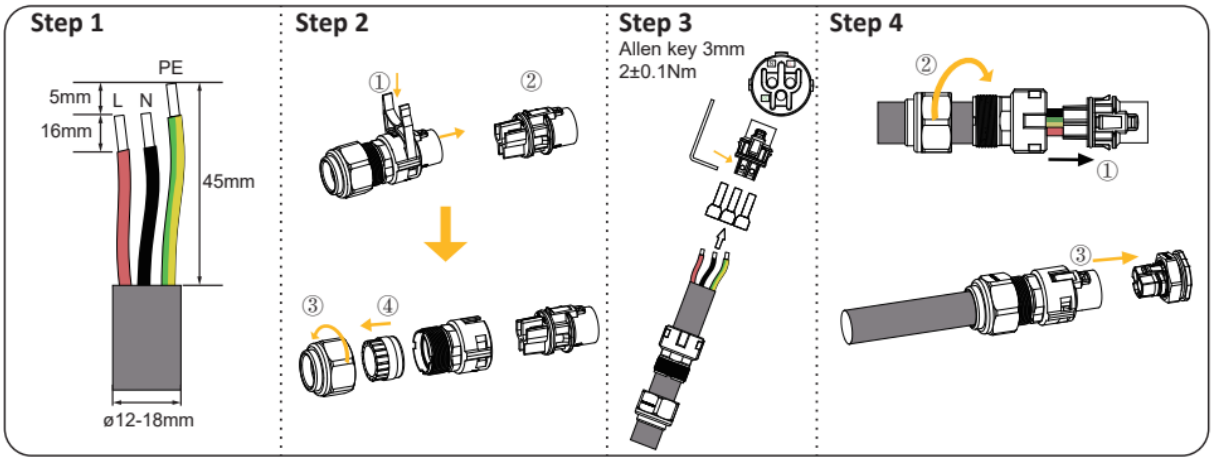
For SMILE-G3-S5/B5-INV, the maximum allowable grid circuit breaker specification is 50A; meanwhile, the copper conductor cross section for grid connection must be 10mm^2. You should use AlphaAPP or AlphaCloud to do the right setting if the grid circuit breaker specification is 32A or 40A, otherwise it would increase the danger of the circuit breaker tripping under normal operating conditions.

6.3.3. Grid and Backup Connection

The steps for connecting the grid connector as follows:

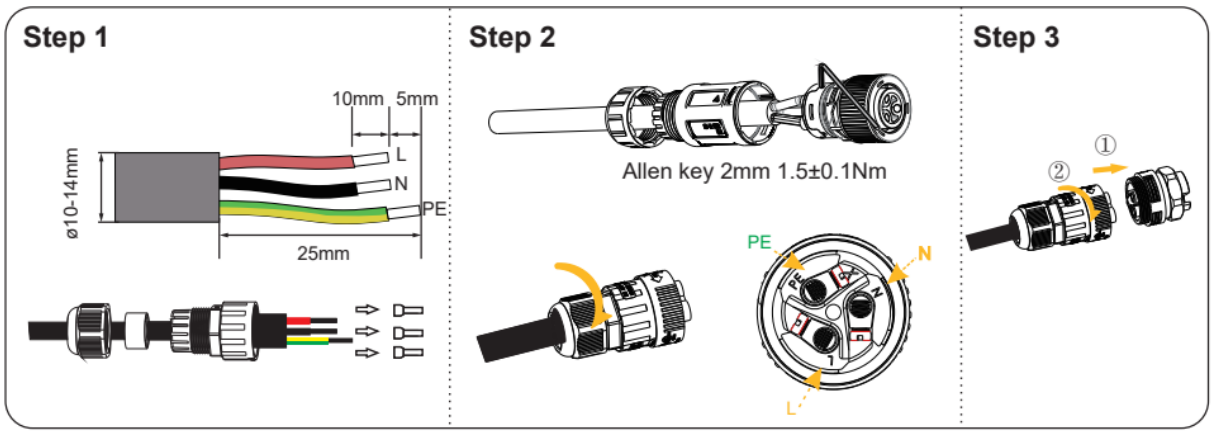
1. Disconnect the circuit breakers and secure them against reconnection.
2. Dismantle the AC cable by 50mm.
3. Shorten L and N by 5mm each, so that the grounding conductor is 5mm longer. This ensures that the grounding conductor is the last to be pulled from the screw terminal in the event of tensile strain.
4. Strip the insulation of L, N and the grounding conductor 10mm.
5. In the case of fine stranded wire L, N and PE are to be fitted with bootlace ferrules.
6. Disassemble the grid connector and connect the conductors to the grid connector.
7. Ensure that all conductors are securely connected to the grid connector using the provided tool (torque: 1.2Nm); assemble the grid connector.
8. Plug the grid connector into the socket for the grid connection.

When doing so, align the grid connector so that the key on the grid socket can be inserted into the keyway on the grid connector bush insert.



The steps for connecting the backup connector are similar as the grid connection, the difference is the last step.

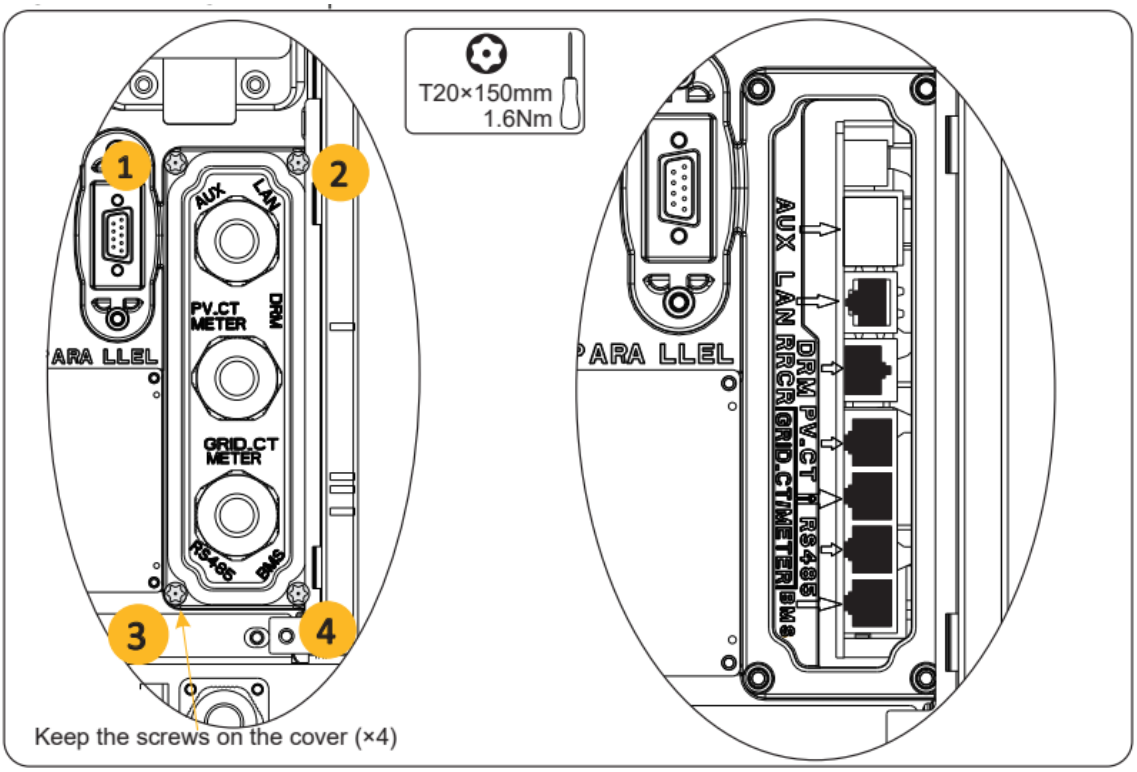
Plug the backup connector into the jack for the backup connection and screw tight. When doing so, align the backup connector so that the key on the inverter backup jack can be inserted into the keyway on the backup connector bush insert.



6.3.4. CT Connection & Meter Connection

Item	Current	Scenarios
CT	100A	CT
DTSU666-3*230V 5(80)A	80A	Three phase meter (without CT)
DTSU666-3*230V 100A/40mA	100A	Three phase meter (with CT)
DTSU666-3*230V 250A/50mA	250A	Three phase meter (with CT)

Loosen the swivel nuts of the cable glands on the COM connection cover of inverter, and unscrew the 4 screws on the corners, then you will see the grid CT, PV CT and meter communication ports.

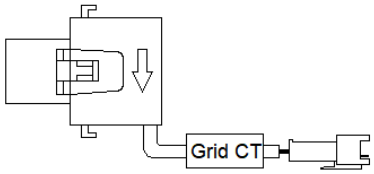


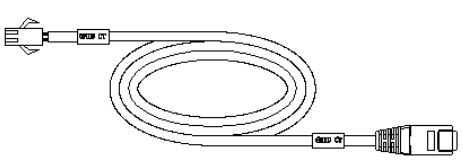
6.3.4.1 CT Connection

The Grid CT & cable and PV CT & cable are additional accessories, which should be purchased by installer.

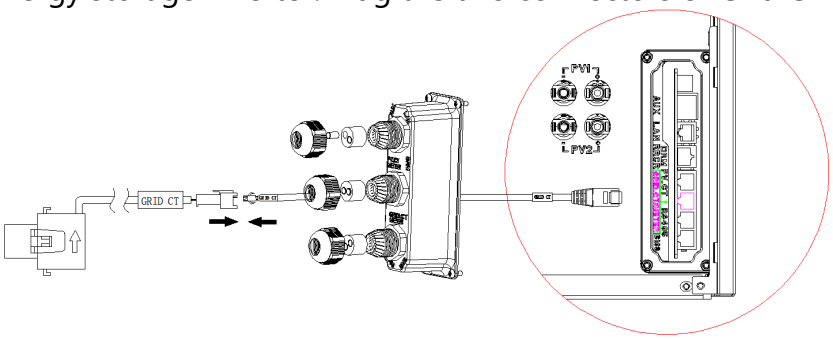
For hybrid-coupled or AC-coupled storage system application, installer needs to use Grid CT & cable and PV CT & cable.

For DC-coupled storage system application, installer needs to use Grid CT & cable.





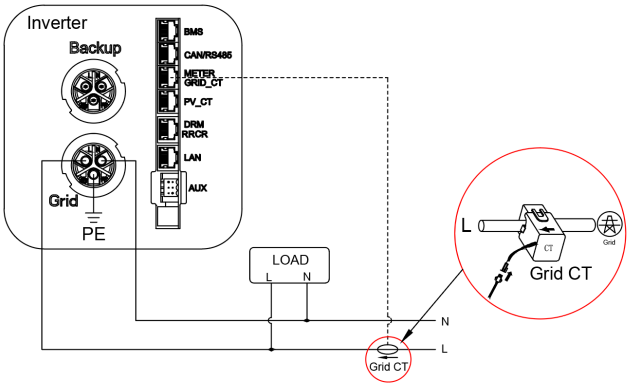
For DC-coupled storage system application
Step 1: Please take out Grid CT & cable from the package.
Step 2: Lead the grid CT cable through the cable gland of the COM connection cover, don't tighten the swivel nut of the cable gland.
Insert the RJ45 plug to the relative RJ45 socket with symbol "Grid CT".
Step 3: Buckle the magnetic buckle of the Grid CT on the house-service live cable.
The arrow on the magnetic buckle of the Grid CT should point to the Grid port of the energy storage inverter. Plug the two connectors of Grid CT and its cable.



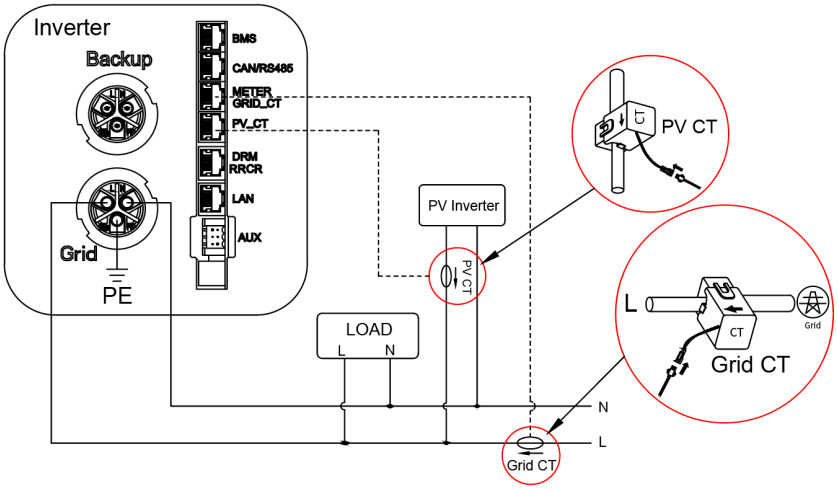
For AC-coupled storage system SMILE-G3-B5-INV application
Step 1: Please take out Grid CT & cable and PV CT & cable from the package.
Step 2: For Grid CT connection, please do it as above steps.
Step 3: For PV CT connection, please do it as follows.
Lead the PV CT cable through the cable gland of the COM connection cover, don't tighten the swivel nut of the cable gland.
Insert the RJ45 plug to the relative RJ45 socket with symbol "PV CT".
Step 4: Buckle the magnetic buckle of the PV CT on the live cable of the installed PV inverter. The arrow on the magnetic buckle of the PV CT should point to the mains grid.
Plug the two connectors of PV CT and its cable.

CAUTION

The CT cable marked Grid CT should be connected to the Grid CT, and the CT cable marked PV CT should be connected to the PV CT.



DC-Coupled Storage System

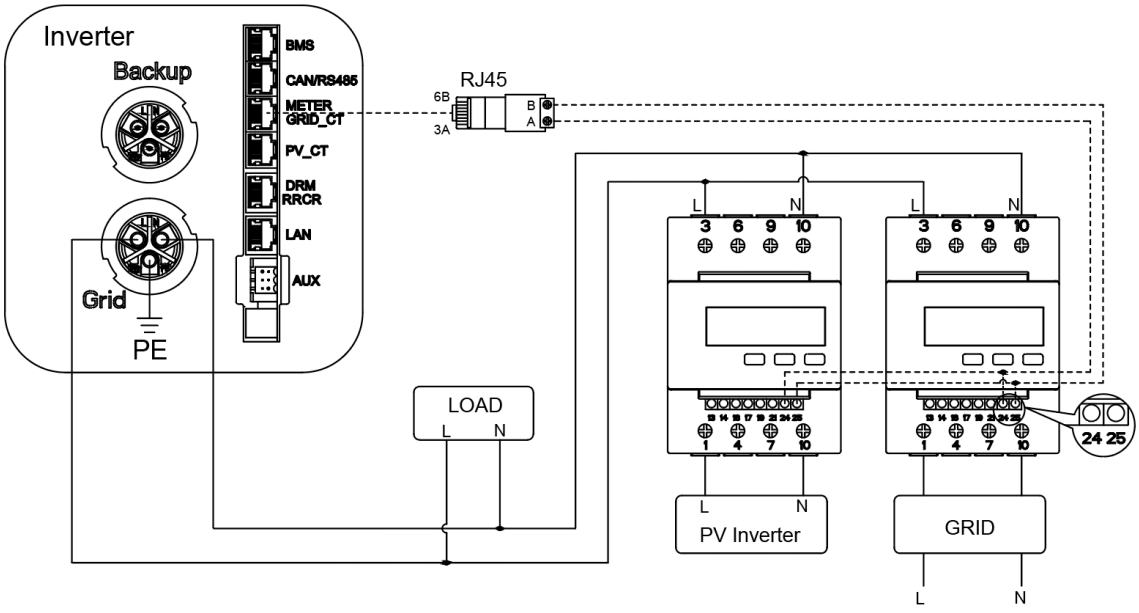


AC-coupled Storage System and Hybrid-coupled Storage System

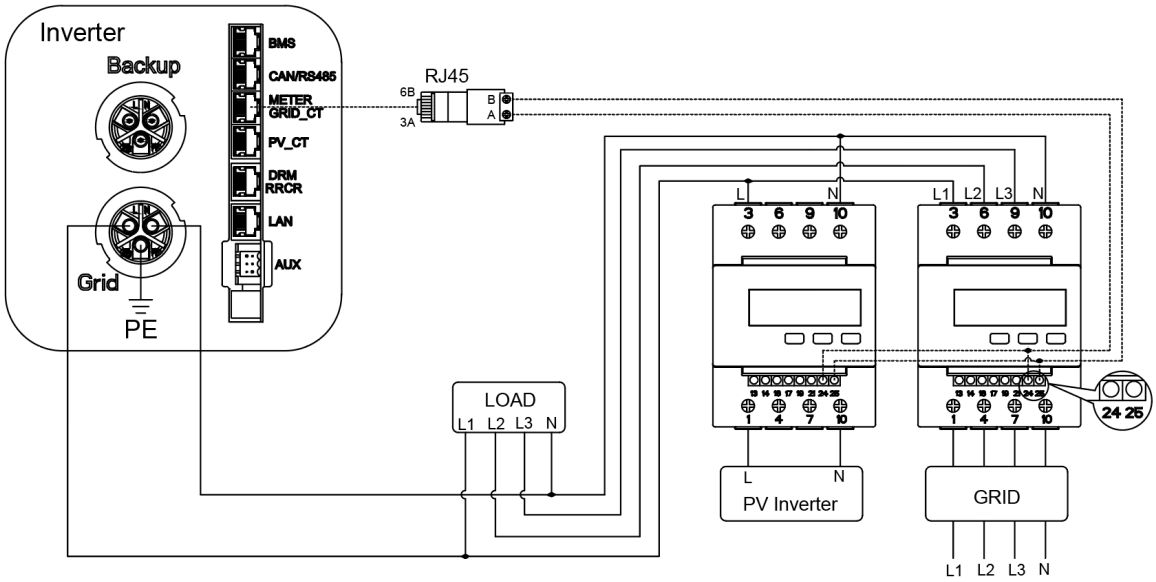
6.3.4.2 Meter Connection

Lead the meter cable through the cable gland of the COM connection cover, don't tighten the swivel nuts of the cable glands.
Insert the RJ45 plug to the METER communication port.

The other steps for meter connection as follows:
1. DSTU666-3*230V 5(80)A: Three-phase meter (without CT) connection

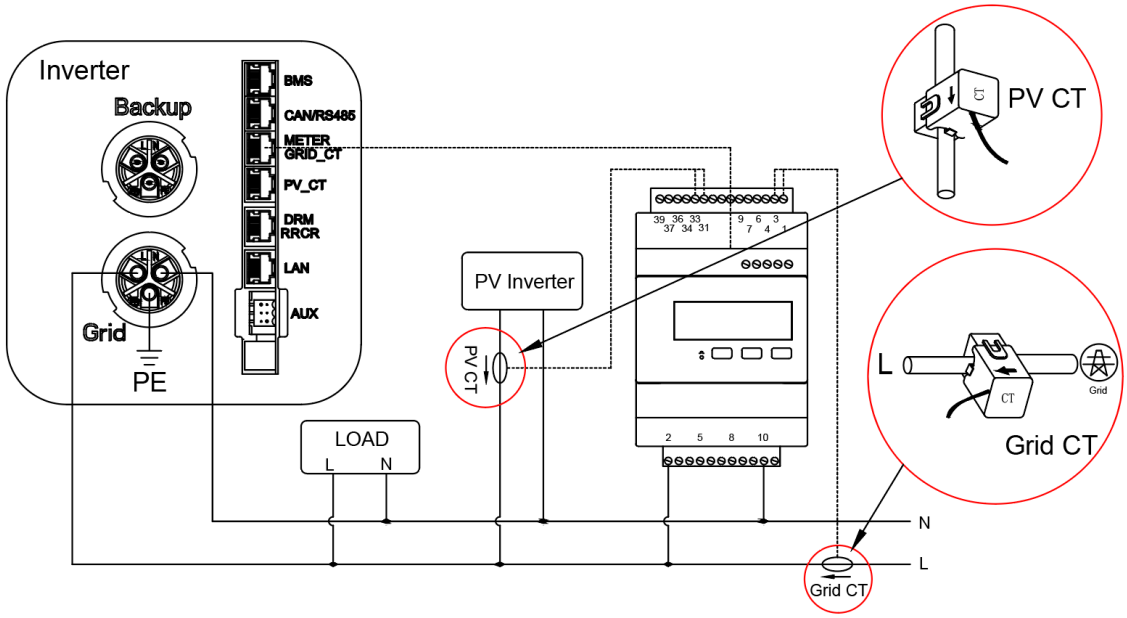


Wiring at single-phase feed in

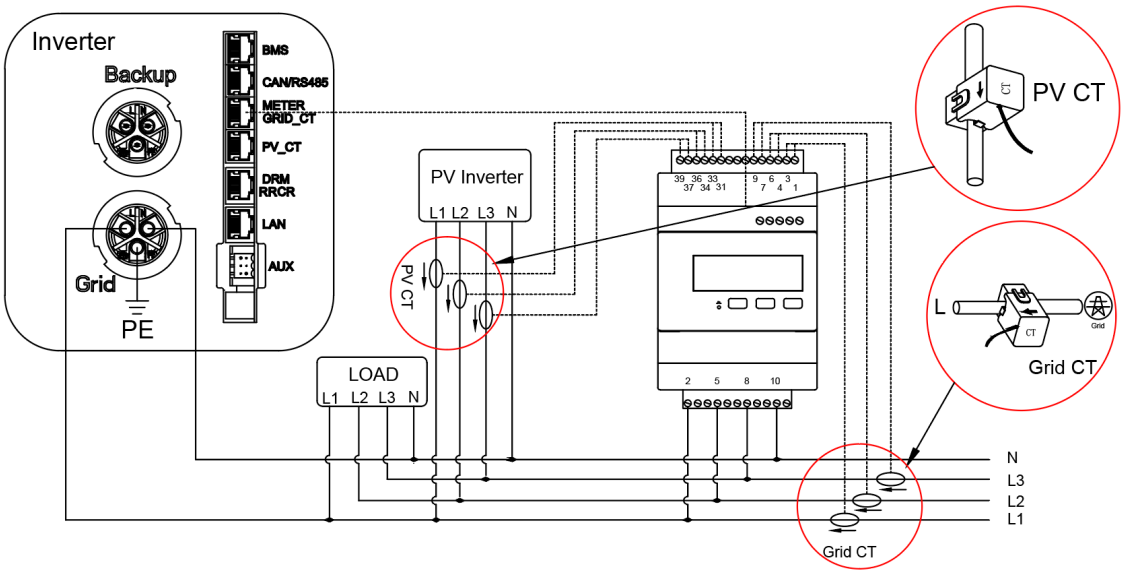


Wiring at three-phase feed in

2. DSTU666-3*230V 100A/40mA, DTSU666-3*230V 250A/50mA: Three-phase meter (with CT) connection



Wiring at single-phase feed in



Wiring at three-phase feed in

Wiring location description of Chint three-phase meter (with CT)

Grid CT	PV CT	GRID
1--------IA (White)	31--------IA (White)	2----------L1
3--------IA (Blue)	33--------IA (Blue)	5----------L2
4--------IB (White)	34--------IB (White)	8----------L3
6--------IB (Blue)	36--------IB (Blue)	10-------- N
7--------IC (White)	37--------IC (White)	
9--------IC (Blue)	39--------IC (Blue)	

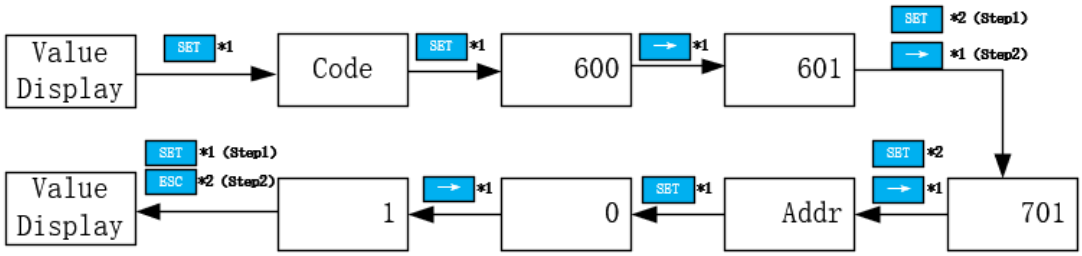
CT Group	Grid -> Load							PV -> Load					
Terminal	1	3	4	6	7	9		31	33	34	36	37	39
CT Phase	IA	IA	IB	IB	IC	IC		IIA	IIA	IIB	IIB	IIC	IIC
Colour	White	Blue	White	Blue	White	Blue		White	Blue	White	Blue	White	Blue

6.3.4.3 Meter Configuration

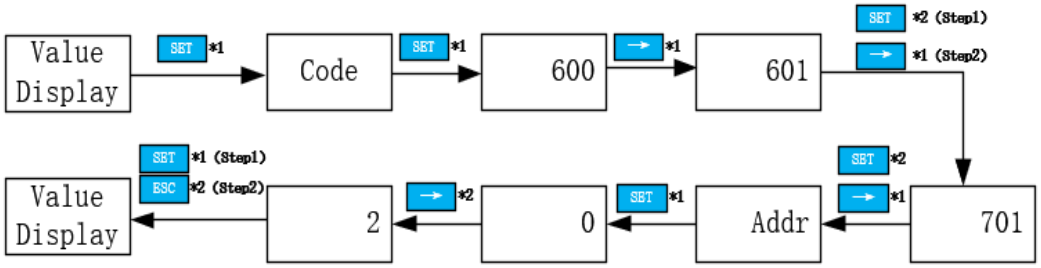
Model	Grid Meter Address	PV Meter Address
DTSU666-3*230V 5(80)A (without CT)	1	2
DTSU666-3*230V 100A/40mA (with CT)	1	N/A
DTSU666-3*230V 250A/50mA (with CT)	1	N/A

1.DTSU666-3*230V 5(80)A: Three-phase meter (without CT)

When the meter is used as Grid meter, please follow the steps below to complete the address setting.

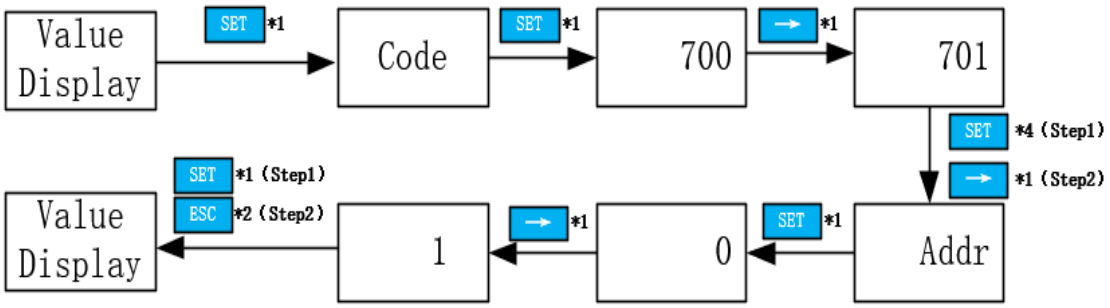


When the meter is used as PV meter, please follow the steps below to complete the address setting.



2.DTSU666-3*230V 100A/40mA, DTSU666-3*230V 250A/50mA: Three-phase meter (with CT)

Please follow the steps below to complete the address setting.



Meter Setting on AlphaCloud

Step 1:

When the system work mode is selected as DC, click the button under the “Grid Meter” to turn the “Meter” icon green.

When the system work mode is selected as AC or Hybrid, click the buttons under the “Grid Meter” and “PV side meter” to turn the “Meter” icon green.

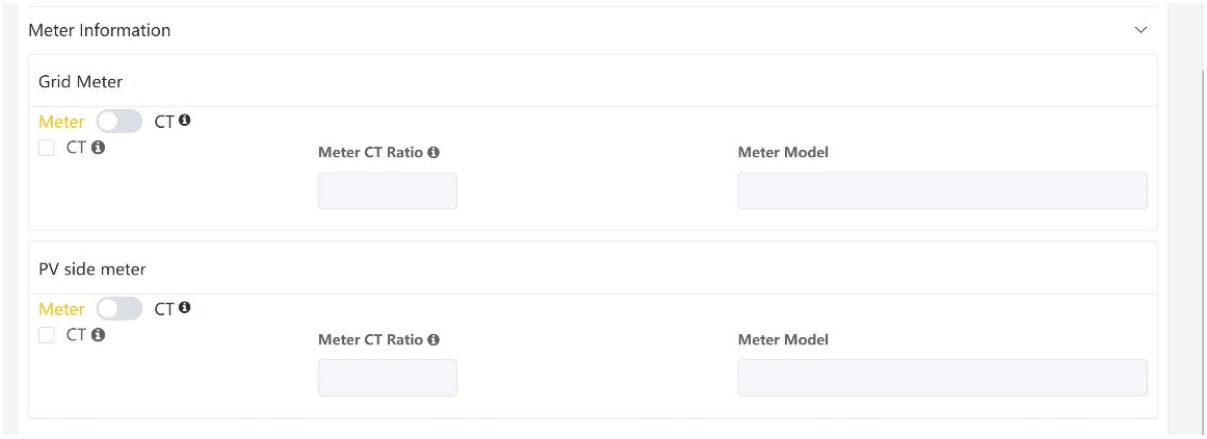
Step 2:

Click "Save" and wait a few minutes to refresh the page.

When the “Meter Model” displays DTSU666 model, the setting is successful.

CAUTION

It is forbidden to tick CT to modify the CT ratio.



Meter Setting on AlphaAPP

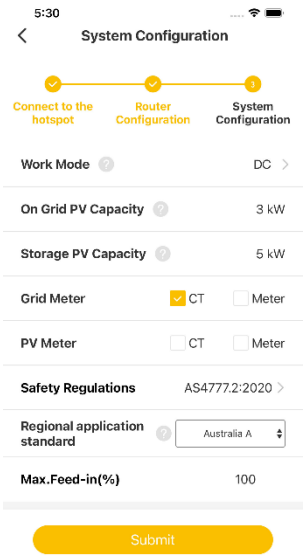
Step 1:

When the system work mode is selected as DC, only tick "Meter" icon on the right of the “Grid Meter”.

When the system work mode is selected as AC or Hybrid, both tick "Meter" icon on the right of the “Grid Meter” and “PV side meter”.

Step 2:

Click "Submit" and enter the “System information” page to check the meter model. When the “Meter Model” displays DTSU666 model, the setting is successful.



CAUTION

It is forbidden to tick CT to modify the CT ratio.

6.4. PV Connection

Please ensure the follows before connecting PV strings to the SMILE-G3-S5/S3.6INV:

Make sure the open voltage of the PV strings will not exceed the max. DC input voltage (580Vdc). Violating this condition will void the warranty.

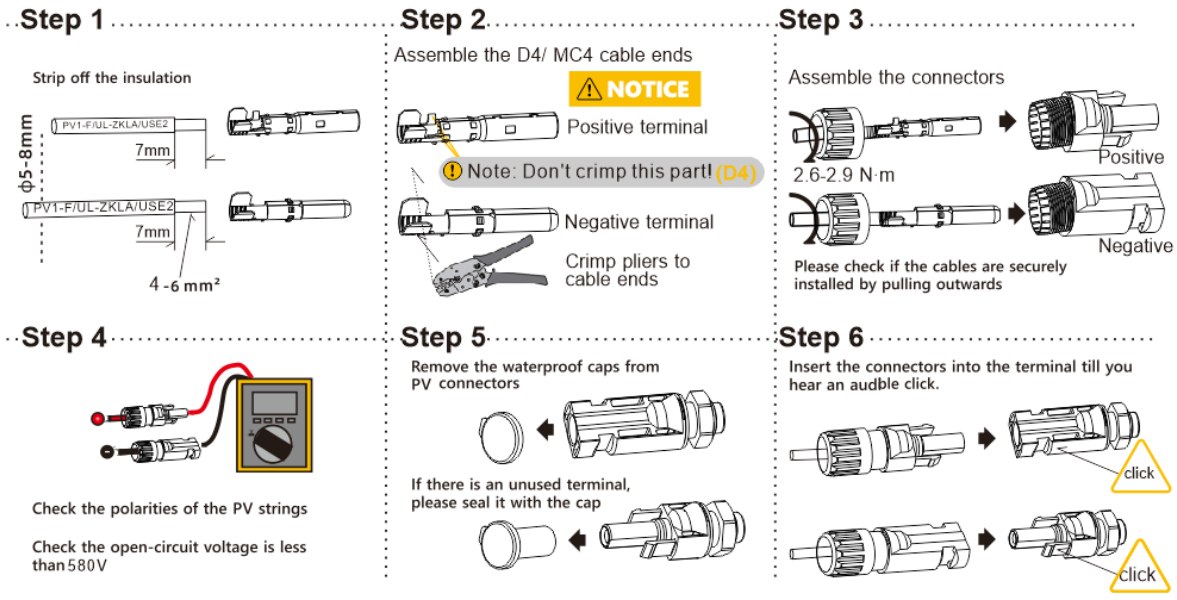
Make sure the polarity of the PV connectors is correct.

Make sure the PV-switch, breakers of battery, AC-BACKUP and AC-Grid are all in their off-states.

- Make sure the PV resistance to ground is higher than 200KOhms.

The inverter uses the Vaconn D4 PV connectors. Please follow the picture below to assemble the PV connectors.

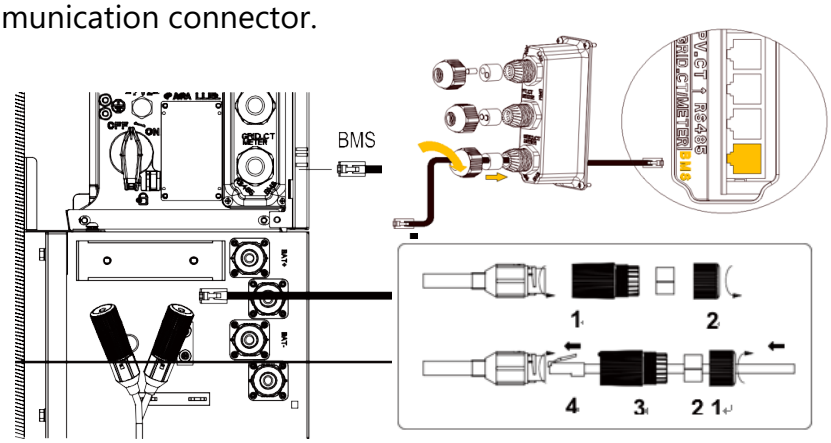
PV conductor cross section requirements: 4~6mm^2



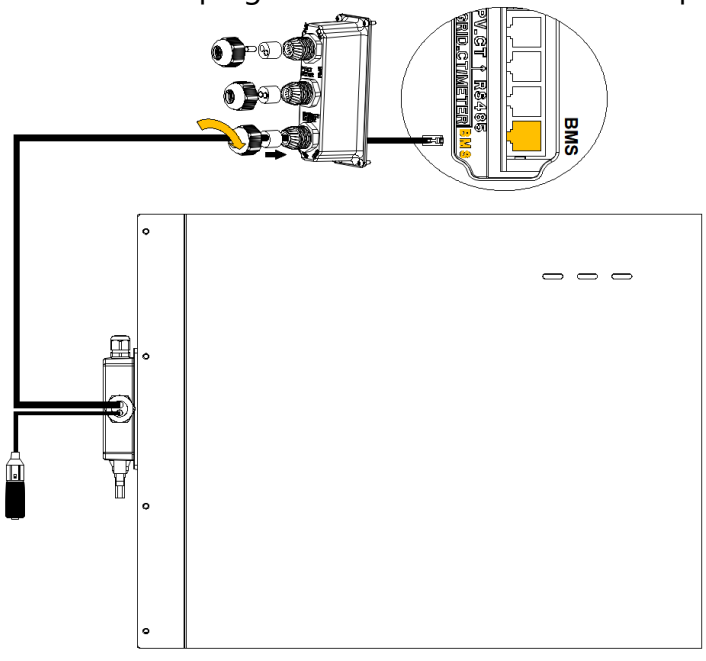
6.5. Electrical Connection between the Inverter and Battery

6.5.1. Electrical Connection between the Inverter and SMILE-G3-Bat series

Communication cable connection between inverter and SMILE-G3-BAT-10.1P/8.2P:
a. Take out the battery communication cable from the battery package.
b. Lead the battery communication cable through the cable gland of the COM connection cover of SMILE-G3-INV, don't tighten the swivel nuts of the cable glands, insert the RJ45 plugs to the BMS communication port.
c. The battery communication ports of SMILE-G3-BAT-10.1P/8.2P are at the left side.
d. Disassemble the battery communication connector components, lead the components through the communication cable, insert the RJ45 plugs and secure the communication connector.



Communication cable connection between the inverter and SMILE-G3-BAT-3.8S:
a. Guide the battery communication cable of the upper battery through the cable gland of the COM connection cover of SMILE-G3-INV, don't tighten the swivel nuts of the cable glands, insert the RJ45 plugs to the BMS communication port of the inverter.



DANGER

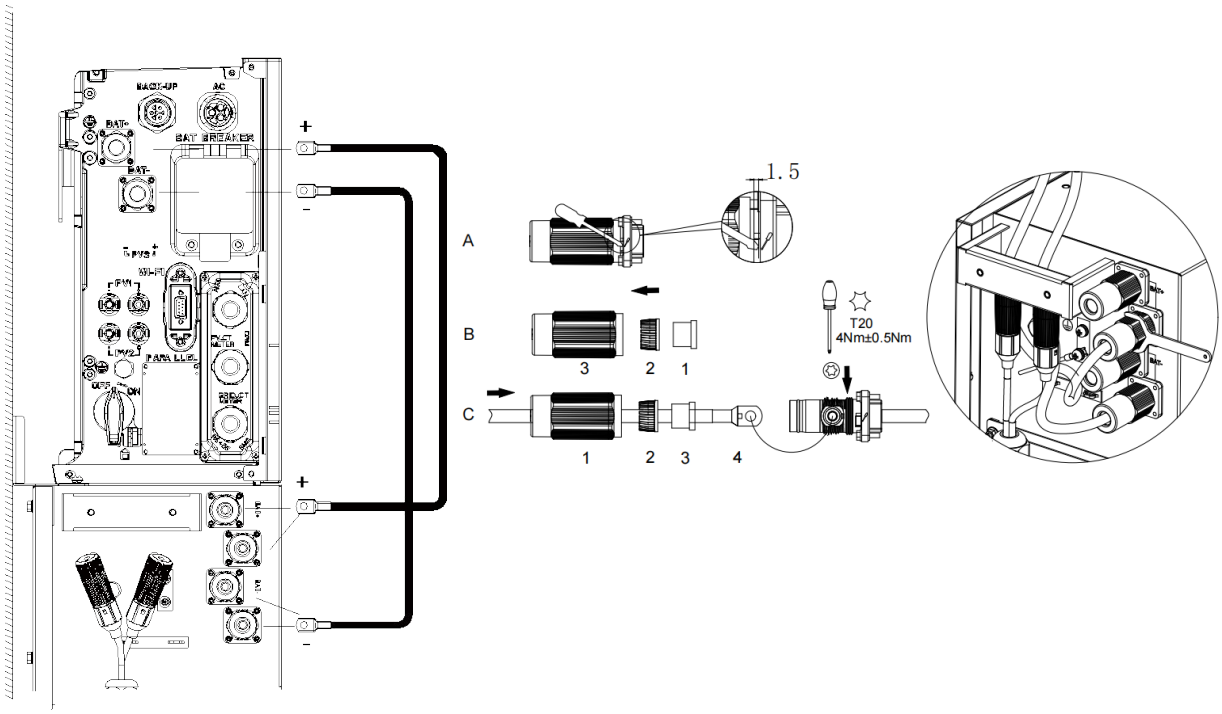
Danger to life due to short-circuit of the battery power cables

Touching the short-circuit connection of the battery can result in death or lethal injuries due to electric shock and massive energy release.

Power cables connection between the Inverter and SMILE-G3-BAT-10.1P:

a. Take out the battery power cables from the battery package.

b. Connect the battery power cables to the SMILE-G3-INV and SMILE-G3-BAT-10.1P.
Please pay attention to the cable polarity, red cable is for battery positive.



For electrical connection between multiple batteries SMILE-G3-BAT-10.1P, please follow as above steps.

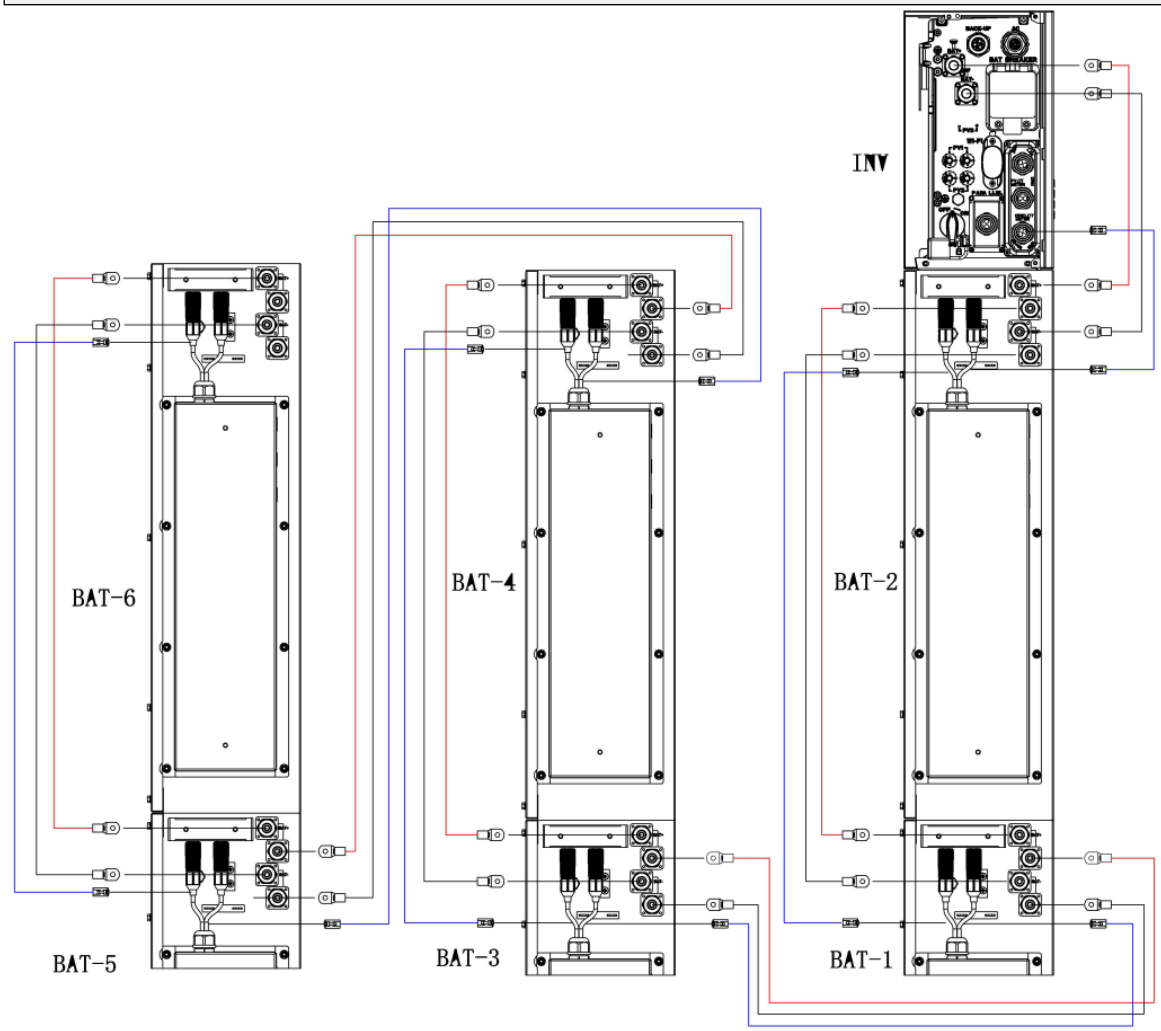
For grounding connection between batteries, please refer to chapter 6.2. Grounding Connecting.

You can install extra batteries up to 6 batteries in a system.

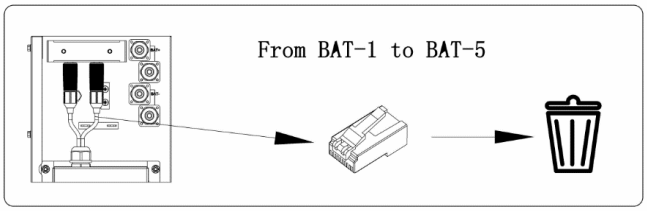
Please install extra batteries by side, also batteries can be stacked up to two batteries per column.

CAUTION

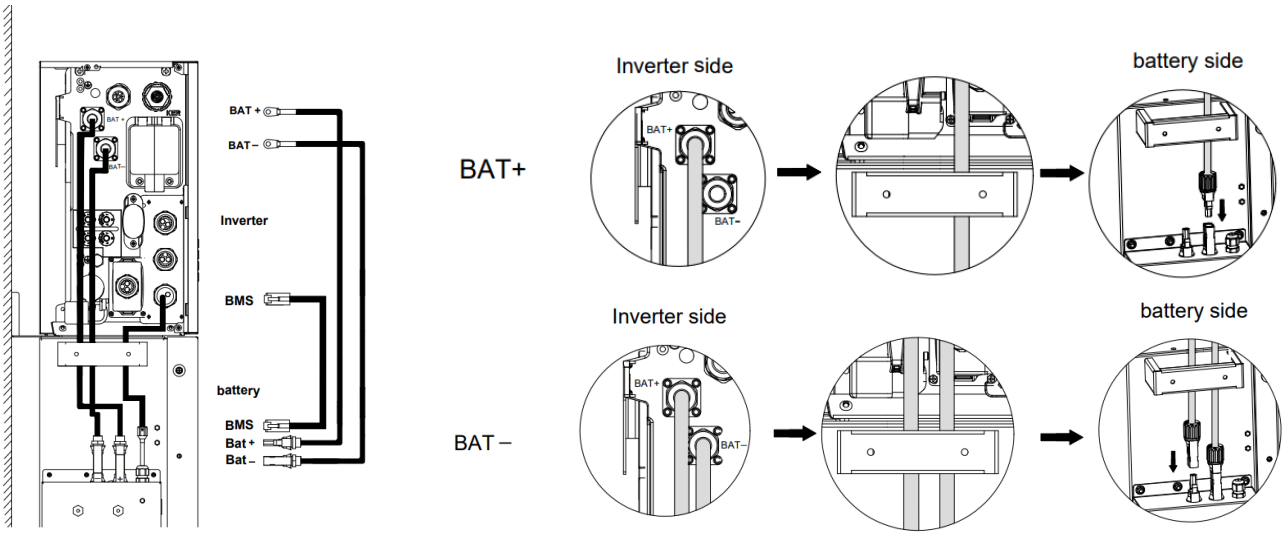
Connect the cables between the batteries SMILE-G3-BAT-10.1P, route them from the rear side of the battery when two batteries are stacked in installation.



Remove the excess terminal resistance



Power cables connection between the Inverter and SMILE-G3-BAT-8.2P:
a. Take out the battery power + cable from the inverter package.
Take out the battery power - cable from the battery package.
b. Remove the protective caps from the battery power connectors.
c. Connect the battery power cables to the SMILE-G3-INV and SMILE-G3-BAT-8.2P.
Please pay attention to the cable polarity, red cable is for battery positive.



For electrical connection between multiple batteries SMILE-G3-BAT-8.2P, please follow as below steps.

a. Take out the expansion battery power cables and communication cable from the battery package.

b. Connect the power cables from battery 2 to battery 1. Connect the BMS communication cables from battery 2 to battery 1.

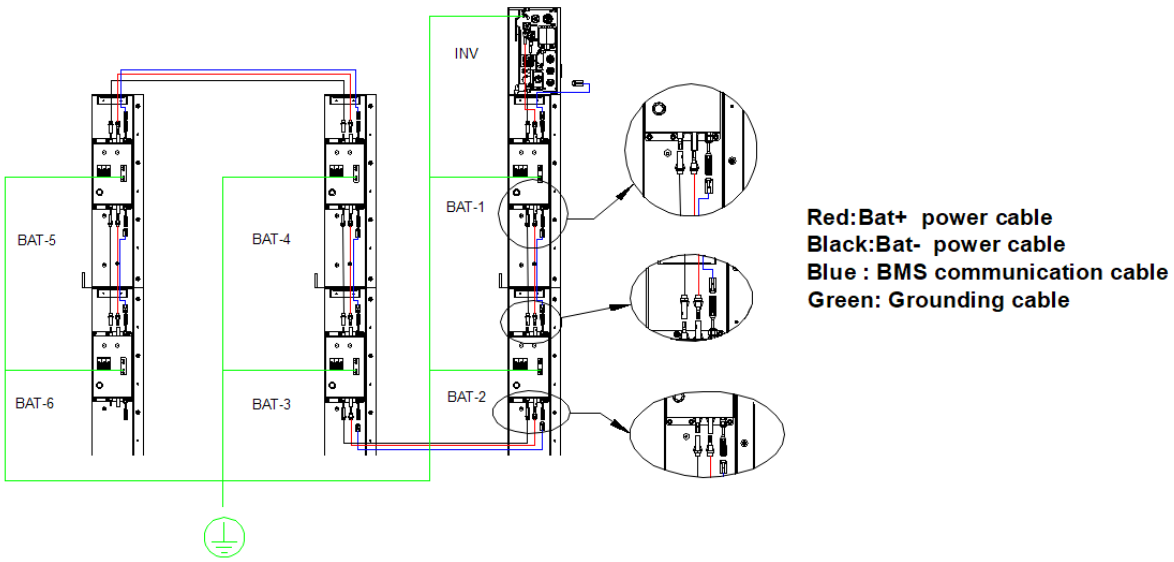
c. For grounding connection between batteries, please refer to chapter 6.2. Connecting Additional Grounding.

CAUTION

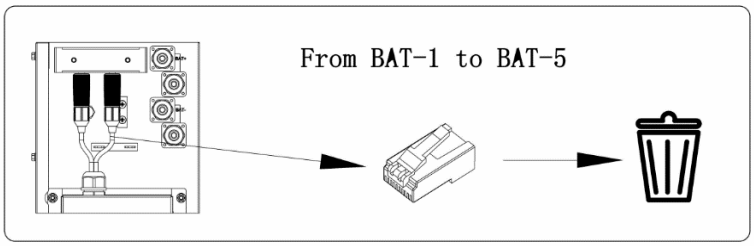
Connect the cables between the batteries SMILE-G3-BAT-8.2P, route them from the rear side of the battery when two batteries are stacked in installation.

You can install extra batteries up to 6 batteries in a system.

Please install extra batteries by side, also batteries can be stacked up to two batteries per column.

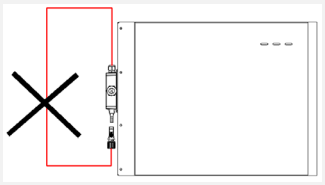


Remove the excess terminal resistance



Power cables connection between the Inverter and SMILE-G3-BAT-3.8S:
a. Take out the battery power cables from the inverter package.
b. Remove the protective caps from the battery power connectors.
c. Connect the battery power cables to the SMILE-G3-INV and SMILE-G3-BAT-3.8S.
Please pay attention to the cable polarity, red cable is for battery positive.

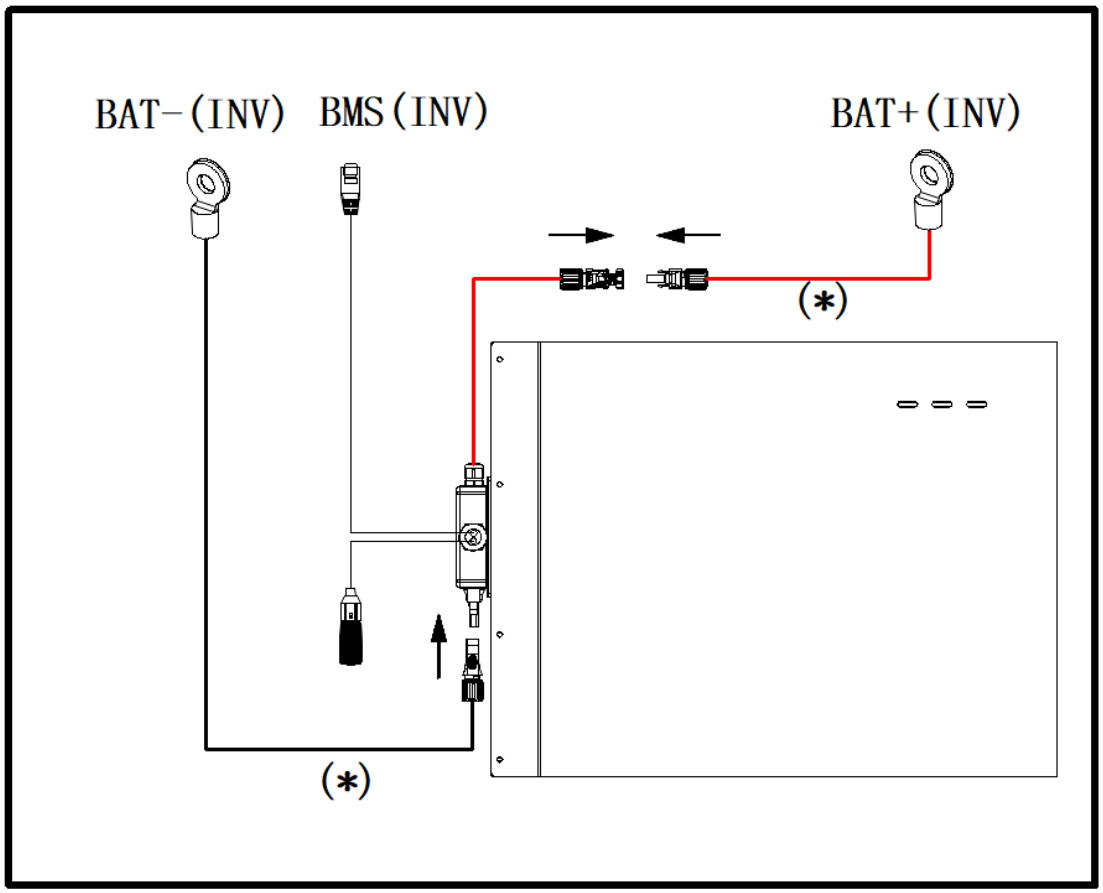
DANGER

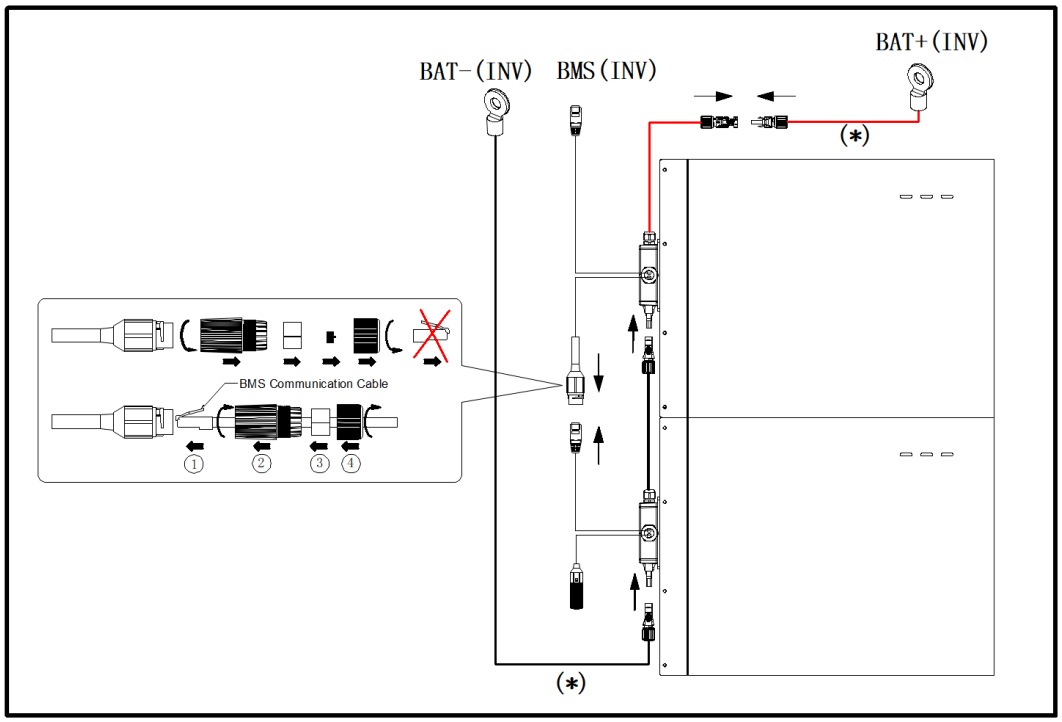


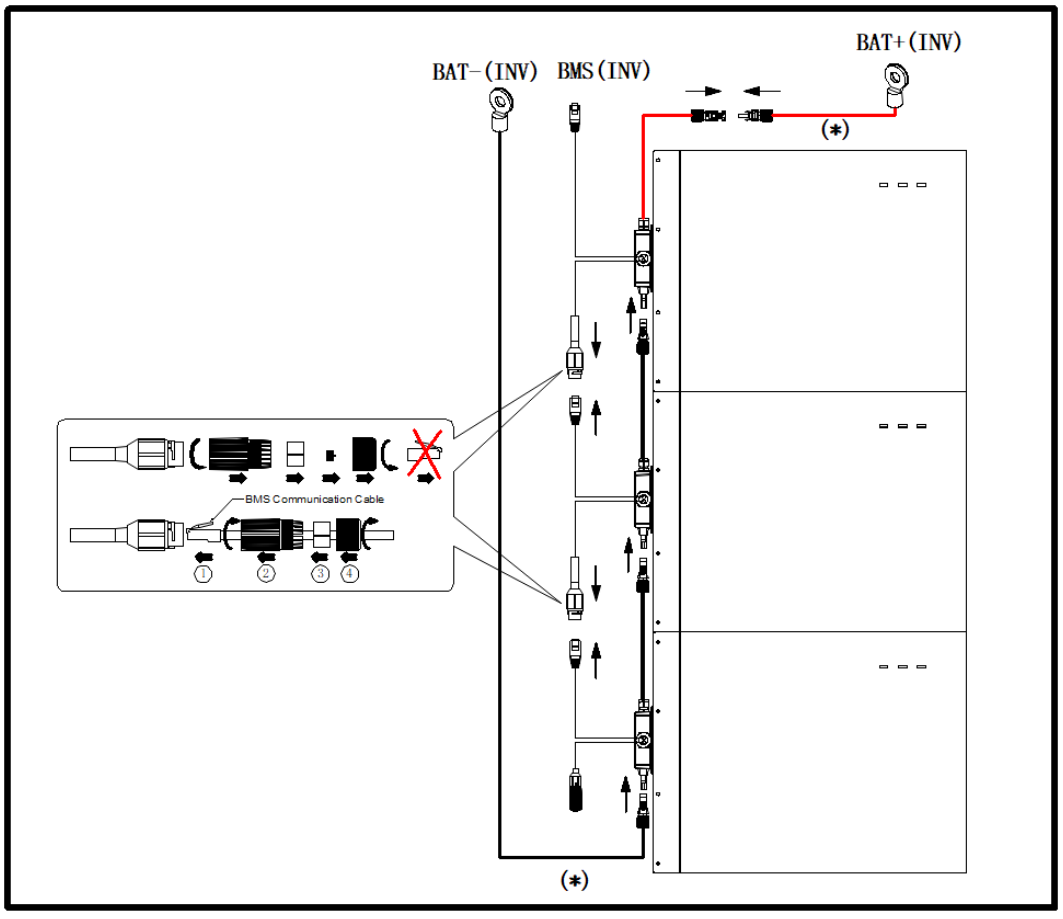
Danger to life due to short-circuiting of the battery

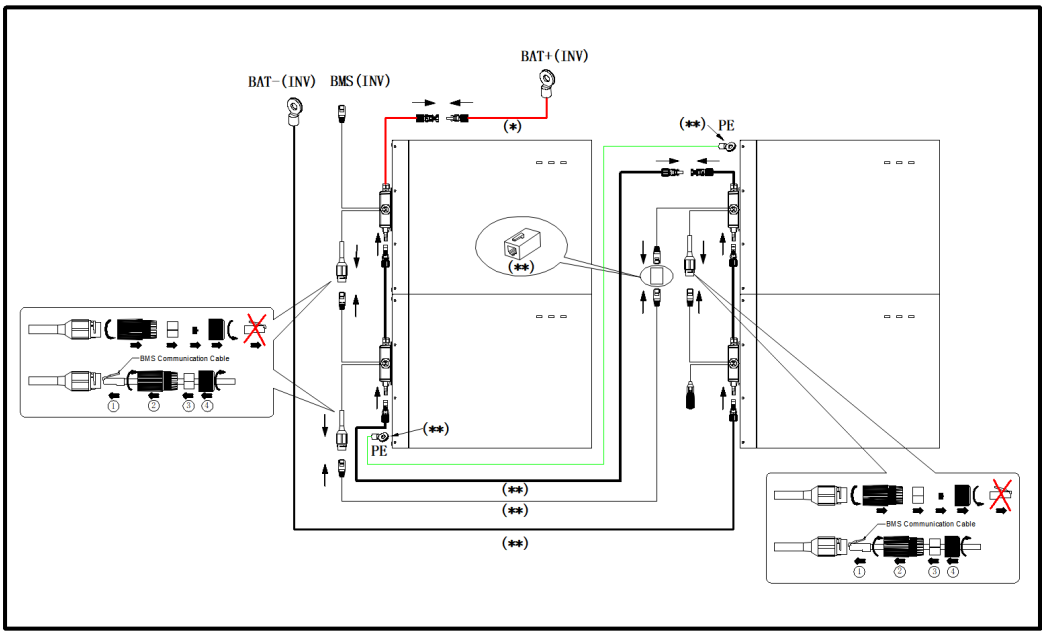
- Switch off the battery breaker which is located on the left lower of the battery.
- The upper connector of the lower battery should be connected to the lower connector of the upper battery, otherwise, the short-circuiting of the battery will occur.

System wiring diagram for SMILE-G3-INV and different number of batteries SMILE-G3-BAT-3.8S as follows:




BAT−(INV)
BMS(INV)
BAT+(INV)
(*)
BMS Communication Cable
①
②
③
④
(*)


BAT−(INV)
BMS(INV)
BAT+(INV)
(*)
BMS Communication Cable
①
②
③
④
(*)



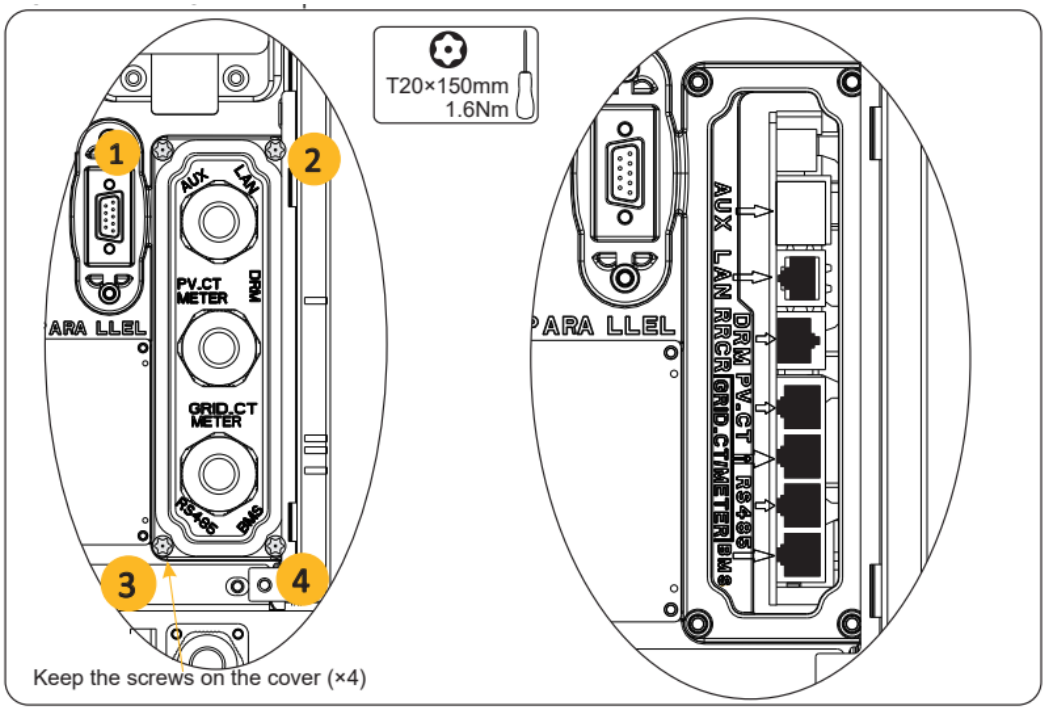
The cables with the (*) underneath are provided by energy storage inverter.

Accessories of cables and communication adapter with the (**) underneath are optional for batteries installation in two columns.

6.5.2. Communication Connection with Inverter

For other communication (AUX, LAN, RRCR, DRM, Meter, RS485) connection, please follow the below steps.

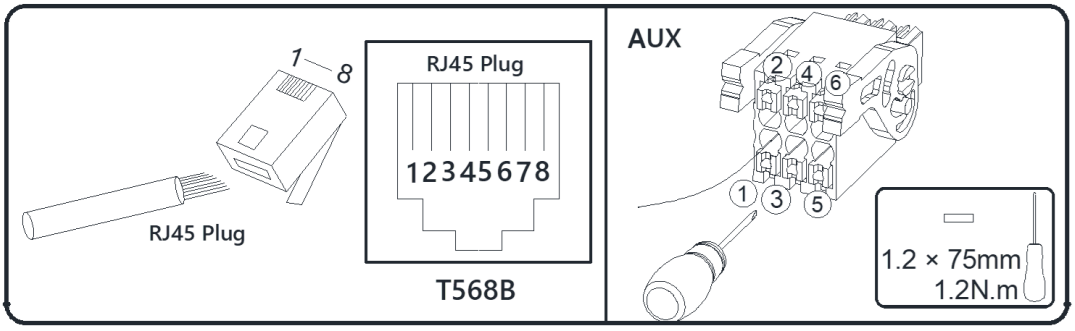
1. Loosen the cable glands on the COM connection cover of the inverter, and then unscrew the 4 screws on the COM connection cover.



2. Lead the communication cables through the cable glands of the COM connection cover, don't tighten the swivel nuts of the cable glands.
Insert the RJ45 plugs to the relative RJ45 sockets.

1) For meter wiring, refer to Chapter 6.3.6 and 6.3.7 for Chint Meter Connection.
2) 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 SMILE-G3-INV.
3) Take out 6 pin terminal block for AUX connection. To do wiring connection, insert a screwdriver (blade width: 1.2mm) into the relative connection position side.
   For AUX position definition, please see the AUX wiring documentation.

3. Place the COM connection cover against the inverter enclosure and tighten the 4 screws, at last secure the swivel nut of the cable glands.



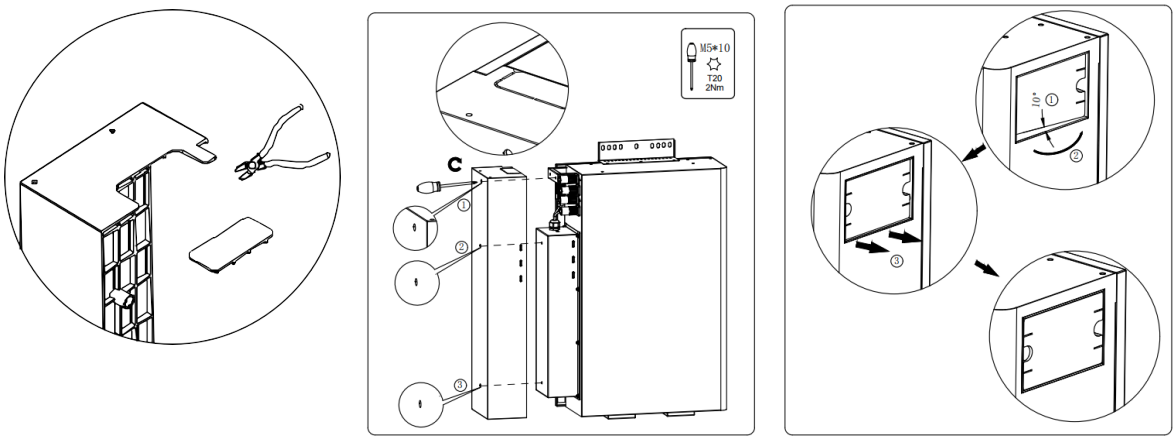
The pin definition of the communication ports:

AUX	1	2	3	4	5	6		
	DO1_NO	DO1_COM	DO1_NC	DI_negative	DI_positive	GND		
DRM RRCR	1	2	3	4	5	6	7	8
	DRED 1/5	DRED 2/6	DRED 3/7	DRED 4/8	REF GEN/0	COM LOAD/0	/	/
PV_CT	1	2	3	4	5	6	7	8
	/	/	RS485_A7	/	/	RS485_B7		/
GRID_CT METER	1	2	3	4	5	6	7	8
	/	/	RS485_A7	/	/	RS485_B7	/	/
RS485	1	2	3	4	5	6	7	8
	/	/	/	RS485_B5	RS485_A5	/	/	/
BMS	1	2	3	4	5	6	7	8
	/	RS485_A4	/	CAN1_H	CAN1_L	/	RS485_B4	/

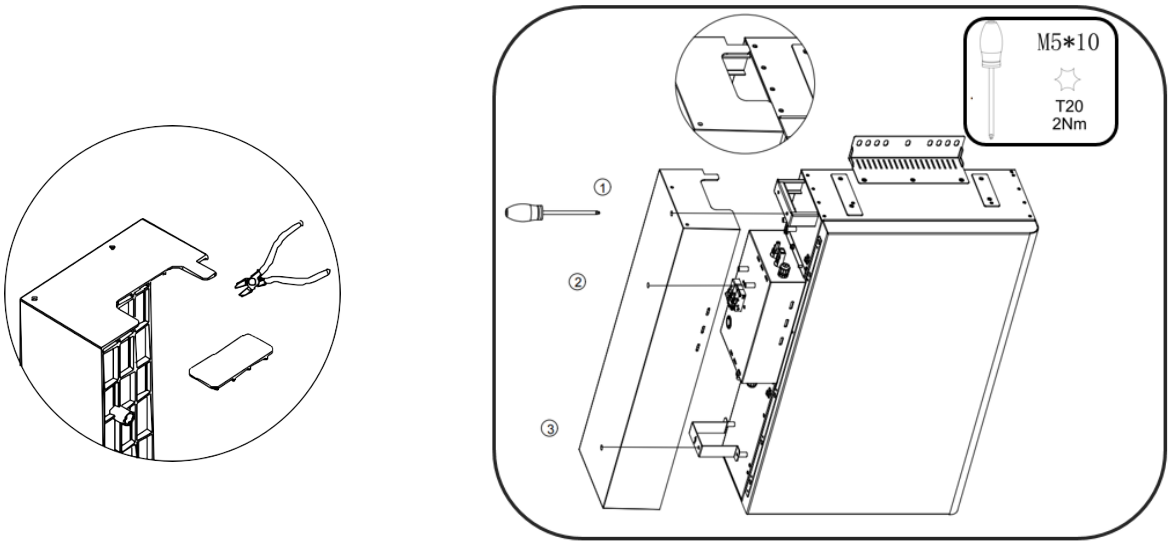
6.6. Mount Covers of the Battery and Inverter

After finishing electrical connection of energy storage system, do the following operations.

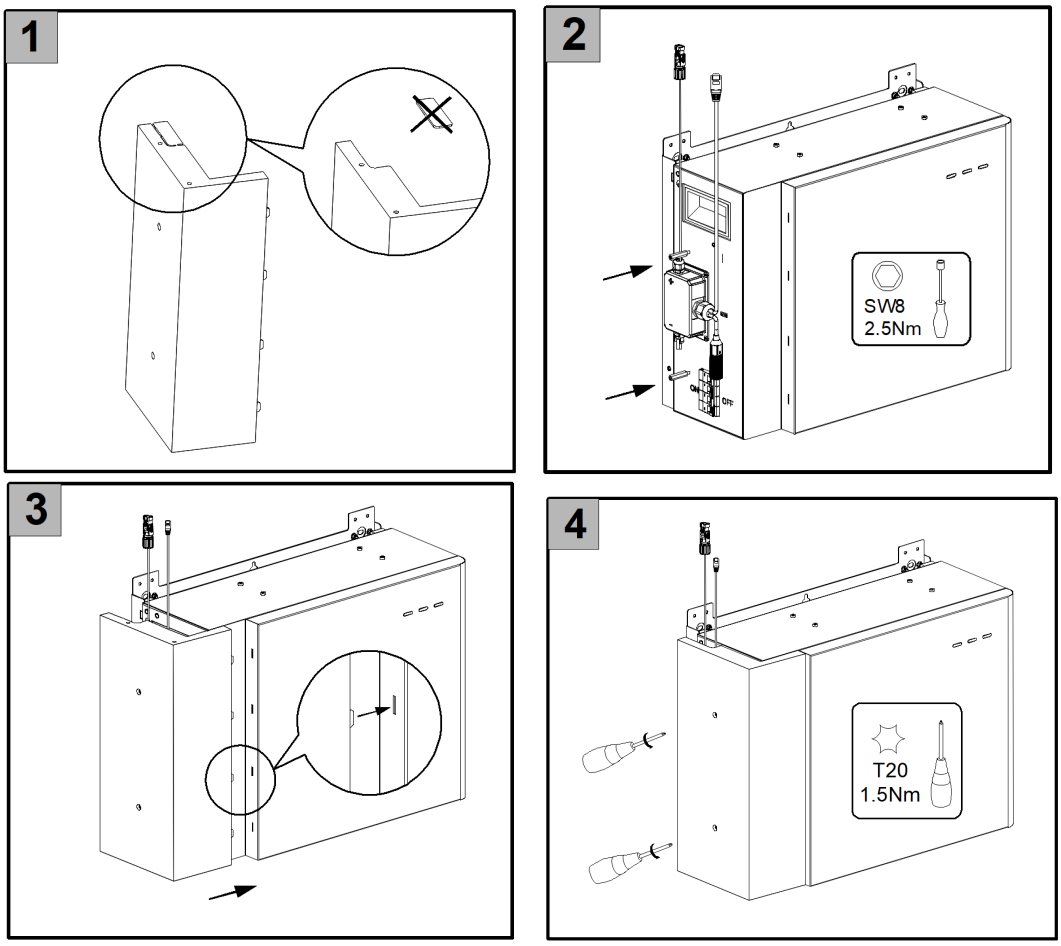
1. Install the left cable cover of the battery SMILE-G3-BAT-10.1P, then install the right breaker cover.



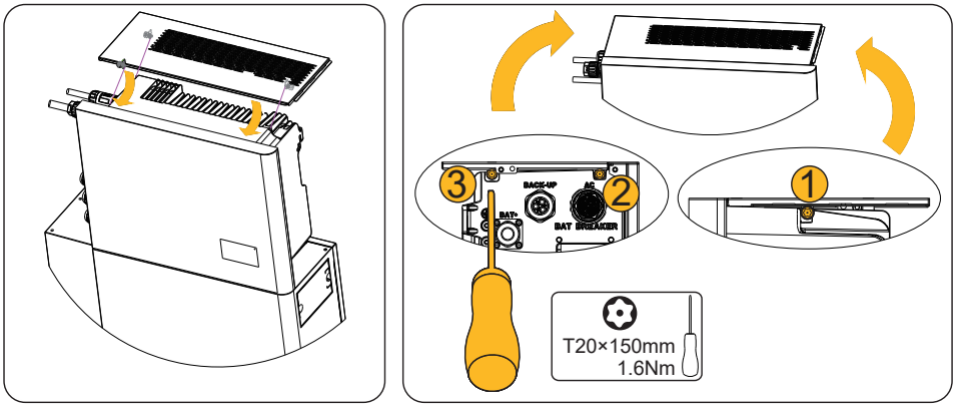
Install the cable cover of the battery SMILE-G3-BAT-8.2P



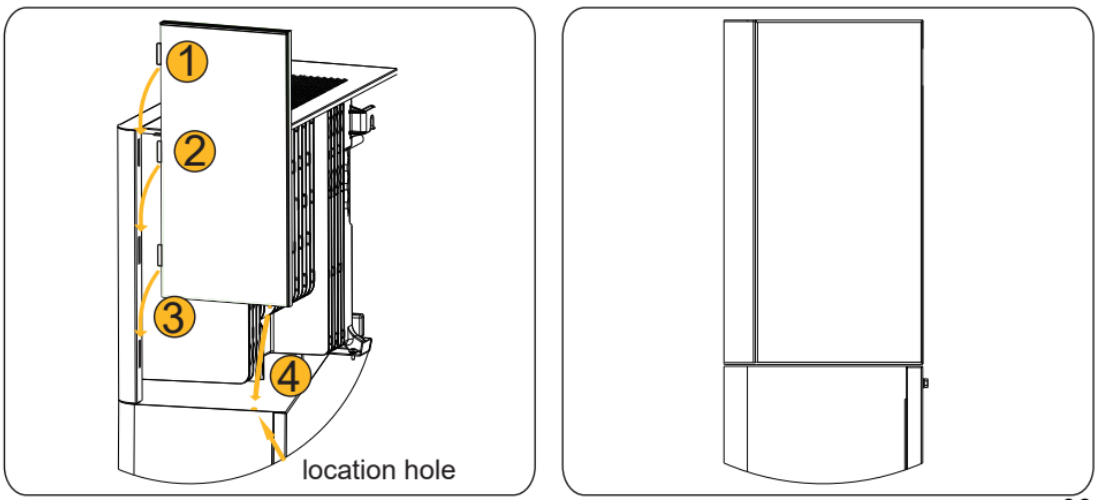
Install the cable cover of the battery SMILE-G3-BAT-3.8S



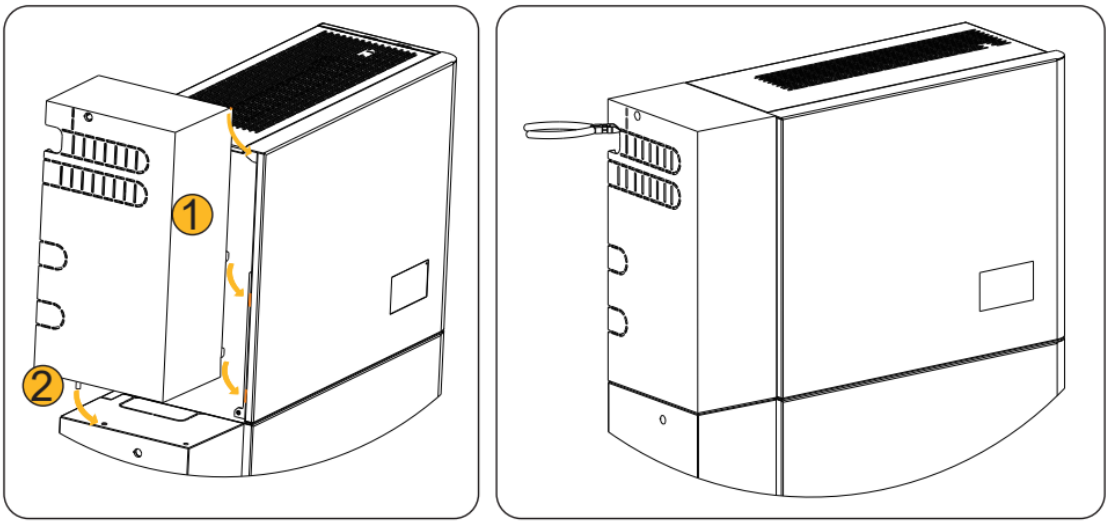
2. Install the top cover and right cover of the inverter

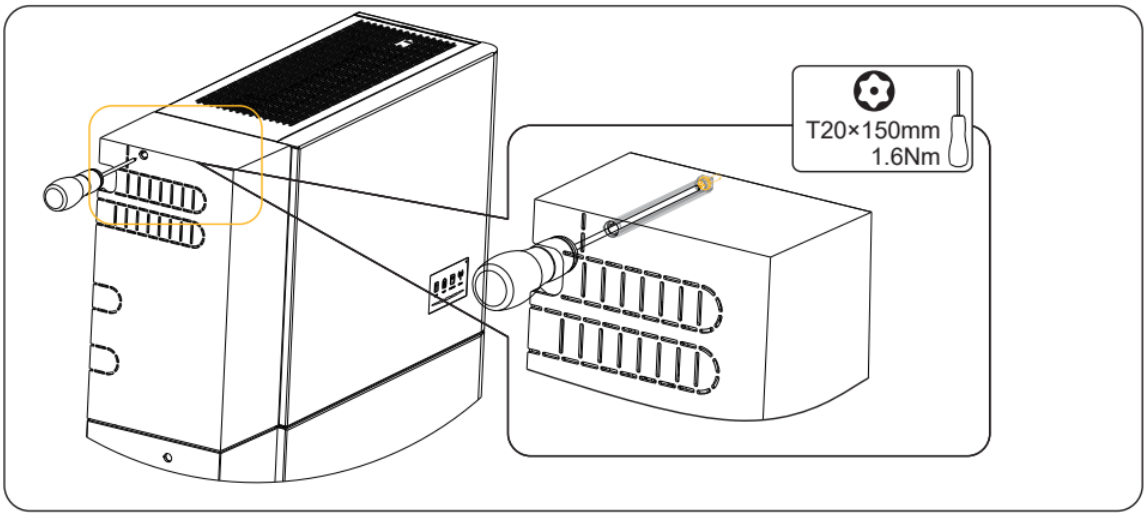


Install the right cover of the inverter



Install the left cable cover of the inverter





7. Installer Account Register and Install New System

7.1. Register on APP

7.1.1. Download and Install APP

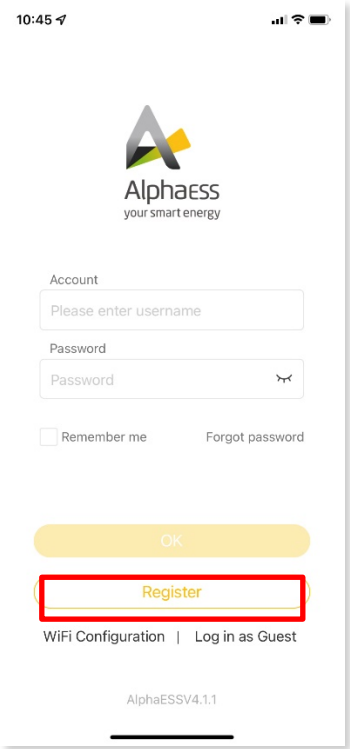
1. Android device users can download the App through major Android application markets such as Google Play.

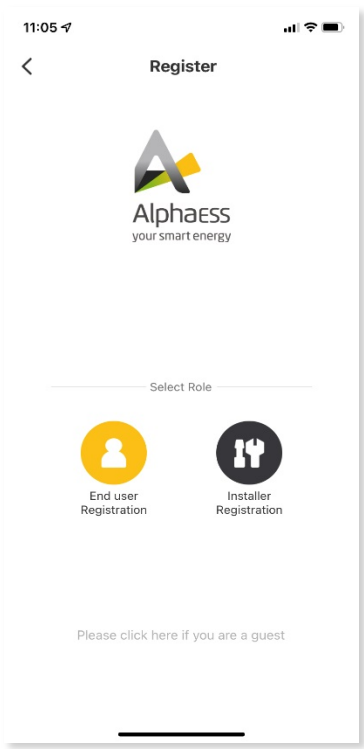
2. IOS device users can search for “AlphaCloud” in App Store and download the App.

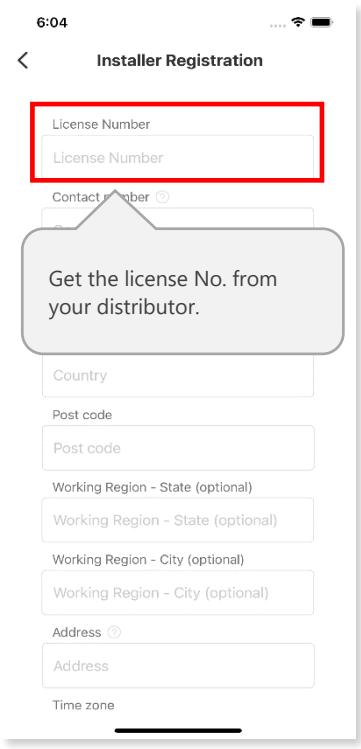
AlphaCloud

7.1.2. Register as Installer Account

If you don’t have an installer account, please register first.

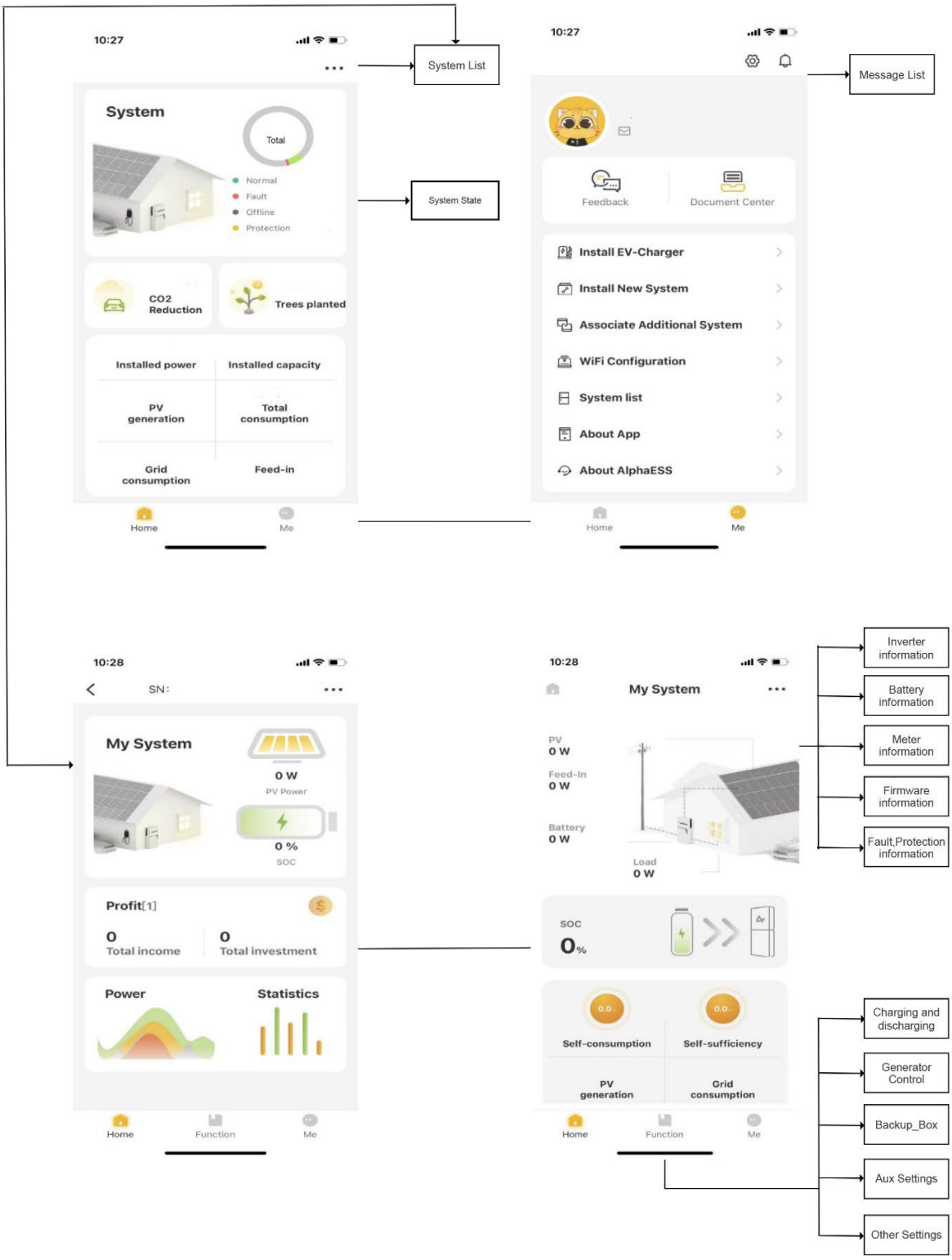




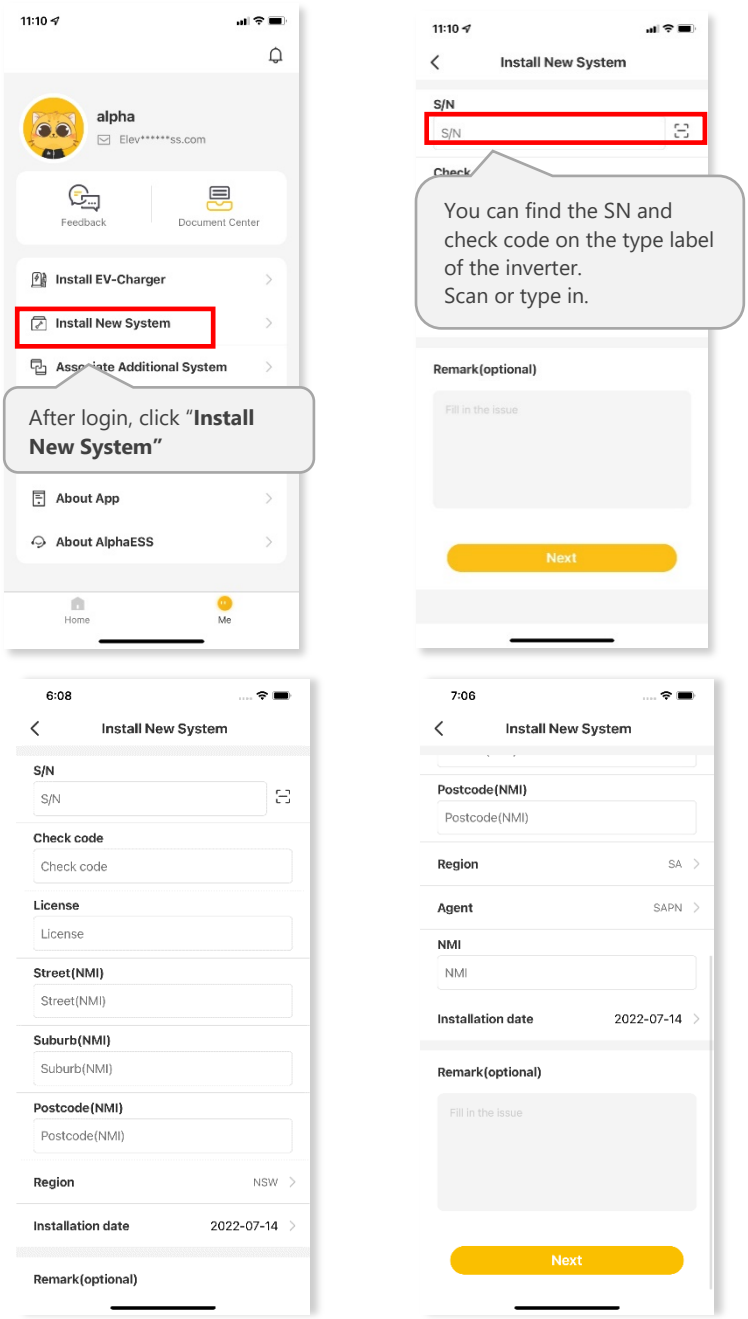


If you already have an installer account, please log in directly.

7.1.3. Overview of Functions for Installer Account



7.1.4. Install New System



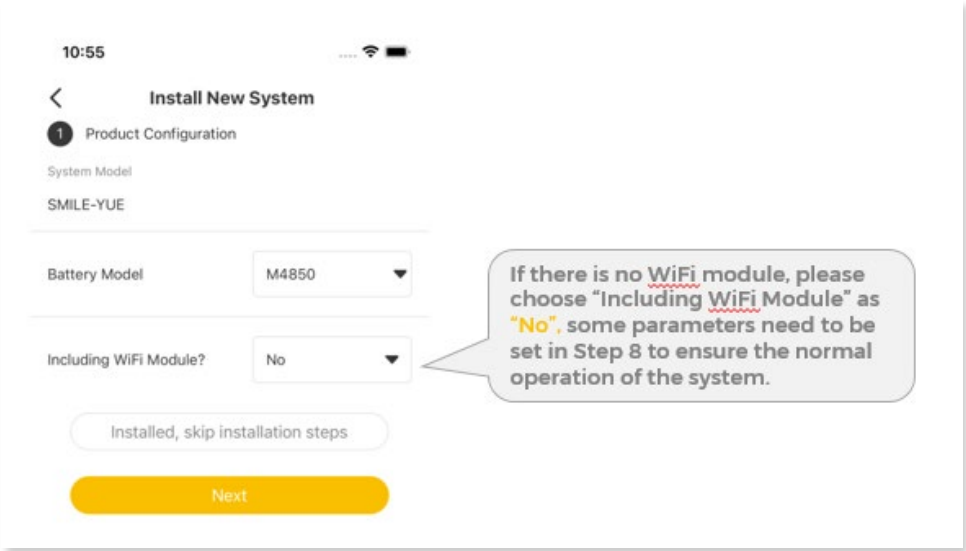
German Installer

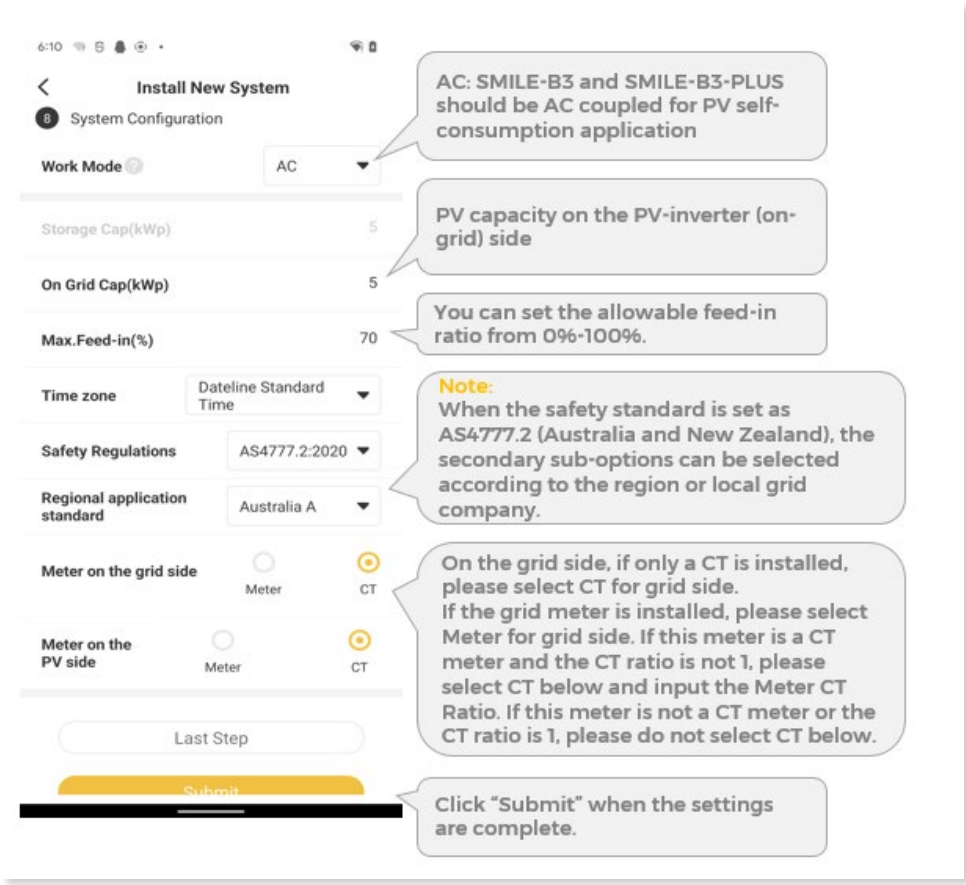
Please enter your installer account and click "Install New System" to bind the system to your account and set the system.

Enter S/N, check code, license, create time, customer full name, contact number, address, and click the save button. If you are an Australian installer, you will need to fill in the Street (NMI), Suburb (NMI) and Postcode (NMI) fields and add a new Region field, which has six fixed options (NSW, QLD, VIC, SA, TAS, WA). If SA is selected for Region, two more fields are added which are Agent and NMI.

Fields that are not marked "optional" need to be filled in.

Click "Next" to go to the installation steps interface.


10:55
Install New System
1 Product Configuration
System Model
SMILE-YUE
Battery Model
M4850
Including WiFi Module?
No
Installed, skip installation steps
Next
If there is no WiFi module, please choose "Including WiFi Module" as "No", some parameters need to be set in Step 8 to ensure the normal operation of the system.


Install New System
8 System Configuration
Work Mode
AC
Storage Cap(kWp)
5
On Grid Cap(kWp)
5
Max.Feed-in(%)
70
Time zone
Dateline Standard Time
Safety Regulations
AS4777.2:2020
Regional application standard
Australia A
Meter on the grid side
Meter
CT
Meter on the PV side
Meter
CT
Last Step
Submit
AC: SMILE-B3 and SMILE-B3-PLUS should be AC coupled for PV self-consumption application
PV capacity on the PV-inverter (on-grid) side
You can set the allowable feed-in ratio from 0%-100%.
Note:
When the safety standard is set as AS4777.2 (Australia and New Zealand), the secondary sub-options can be selected according to the region or local grid company.
On the grid side, if only a CT is installed, please select CT for grid side.
If the grid meter is installed, please select Meter for grid side. If this meter is a CT meter and the CT ratio is not 1, please select CT below and input the Meter CT Ratio. If this meter is not a CT meter or the CT ratio is 1, please do not select CT below.
Click "Submit" when the settings are complete.

NOTICE

The safety standard must be set correctly

If you select a safety standard which is not valid for your country and purpose, it can cause a disturbance in the energy storage system and lead to problems with the grid operator. When selecting the safety standard, you must always observe the locally applicable standards and directives as well as the properties of the PV system (e.g. PV system size, grid-connection point).

- If you are not sure which safety standard is valid for your country or purpose, contact your grid operator for information on which safety standard is to be configured.

If there is a WiFi module, please choose “Including WiFi Module” as “Yes”, the APP will jump to the WiFi configuration page, and please refer to section 9.3.

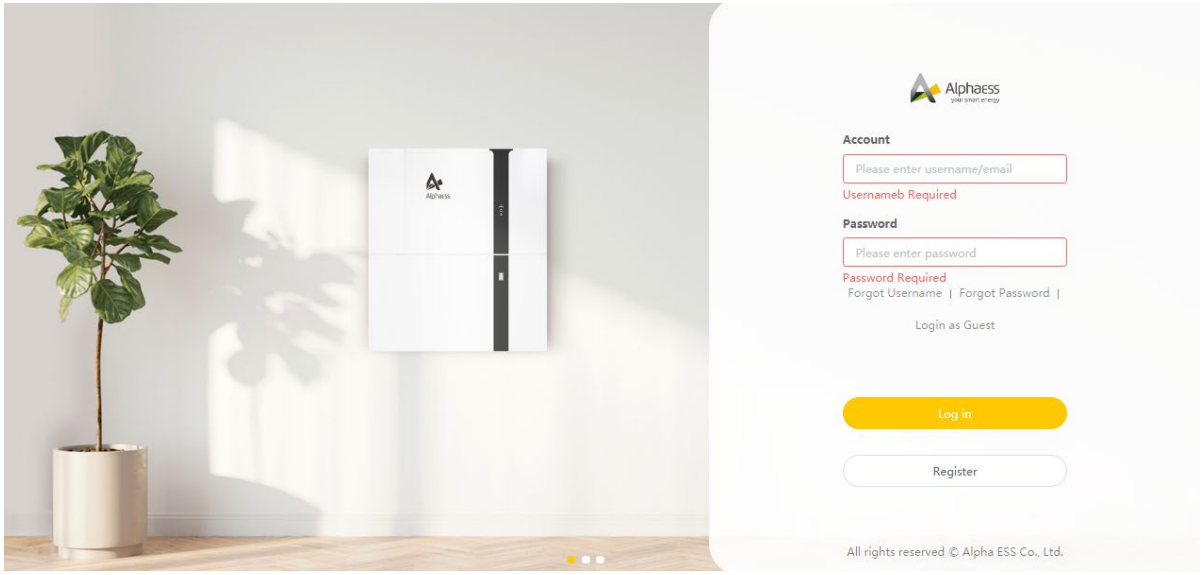
7.2. Regiter on AlphaCloud

7.2.1. Register as Installer Account

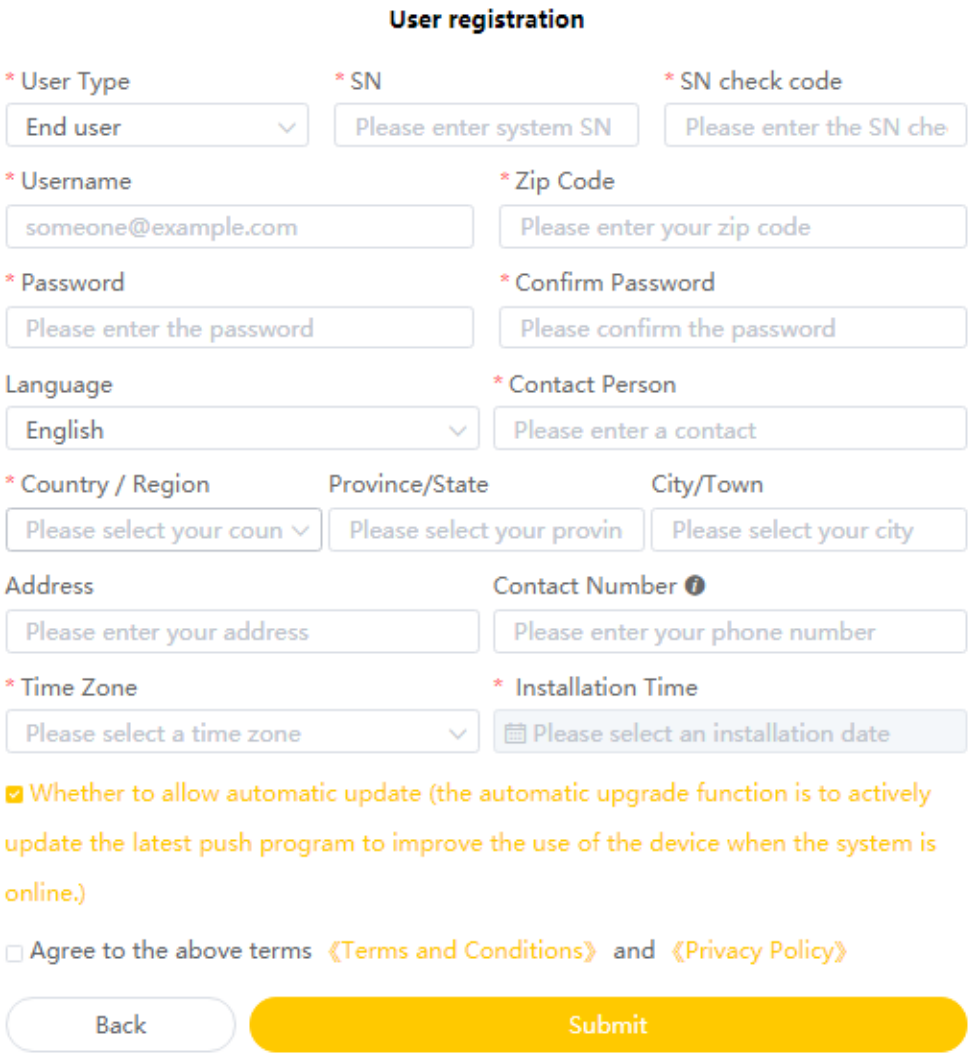
You can create a new account on our webserver for normal monitoring.
In addition, a part of our warranty is based on this connection to our webserver.
The data produced prior to registration can be synchronized to the webserver.

Step 1： Please do the following steps: Open the portal: www.alphaess.com.

Step 2： Please fill in “Username”, “Password” and click “Login” if you have already registered.



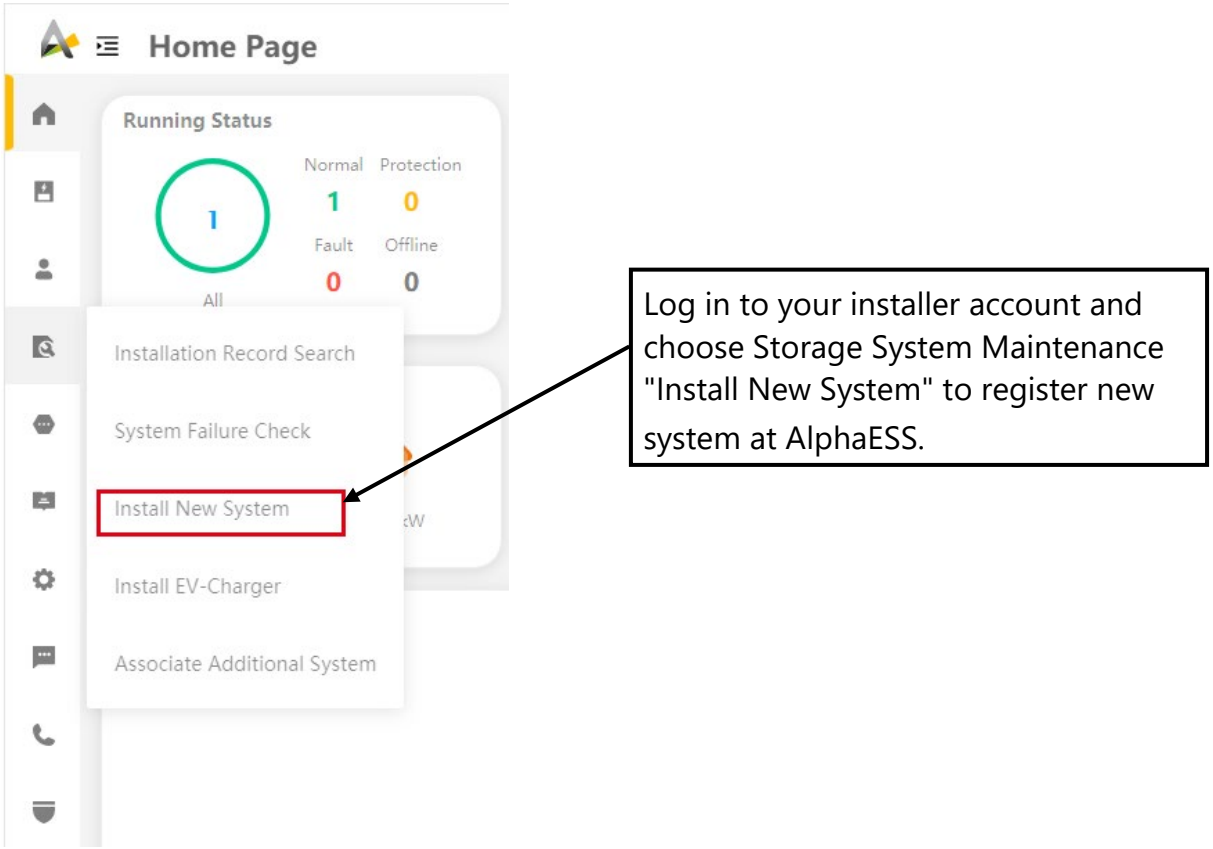
If not, please register by filling in the following web form；

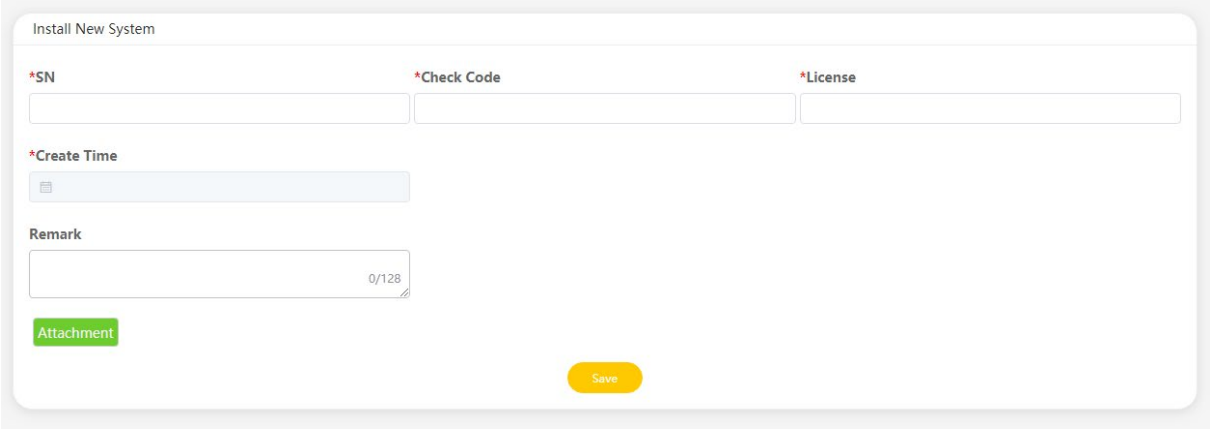


In this form, all fields with a red star are compulsory, and you can select the final users or installation procedures.
***Serial number:** SN (please see the type label of the inverter)
***Username:** 5-15 letters / numbers
***Password:** 5-15 letters / numbers / characters
More details are available in the Online Monitoring Web Sever Installers User Manual, which can be downloaded from AlphaESS homepage.

7.2.2. Install New System

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 AlphaESS.





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

8. Power On and Off the System

8.1. Power on the System

1) Switch on the battery breaker of the batteries.
2) Switch on the battery breaker which is at the upper left of the inverter.
3) Press the battery power button. All power buttons should be pressed within 10 seconds if there are more than one battery.
For battery SMILE-G3-BAT-3.8S, please skip this step.
4) Switch on the AC breaker between the grid port of the inverter and the grid.
5) Switch on the AC breaker between the backup port of the inverter and the loads.
6) Switch on the PV switch at the lower left of the inverter if there is any.
7) Switch on the AC breaker (if there is any) between the PV-inverter and the grid.

8.2. Power off the System

WARNING

After the energy storage system is powered off, the remaining electricity and heat may still cause electric shocks and body burns. Therefore, put on protective gloves and operate the product 5 minutes after the power-off.

1) Switch off the AC breaker between the energy storage inverter and the load.
2) Switch off the PV switch between the PV strings and the energy storage inverter if there is any.
3) Switch off the PV switch at the lower left of the energy storage inverter if there is any.
4) Long press 5s the power button located beside the battery breaker of the battery. For battery SMILE-G3-BAT-3.8S, please skip this step.
5) Switch off the battery breaker of the battery.
6) Switch off the battery breaker which is at the upper left of the inverter.
7) Switch off the AC breaker between the energy storage inverter and the grid.

9. COMMISSIONING

9.1. Check Before Power-On

No.	Check Item	Acceptance Criteria
1	Mounting environment	The mounting space should be proper, and the mounting environment should be clean and tidy, without foreign objects.
2	Battery and inverter mounting	The battery and inverter should be mounted correctly, securely, and reliably.
3	WiFi mounting	The WiFi module should be mounted correctly, securely, and reliably.
4	Cable layout	Cables should be routed properly as required by the customer.
5	Cable tie	Cable ties should be secured evenly and no burr exists.
6	Grounding	The grounding cable should be connected correctly, securely, and reliably.
7	Switch and breakers status	The PV switch (if there is any) and battery breakers and all the breakers connecting to the system should be OFF.
8	Cable connections	The AC cables, PV cables (if there is any), battery power cables, and communication cables should be connected correctly, securely, and reliably.
9	Unused ports	Unused power ports and communication ports should be blocked by watertight caps.

9.2. Action before Commissioning

Power on the System as follows:

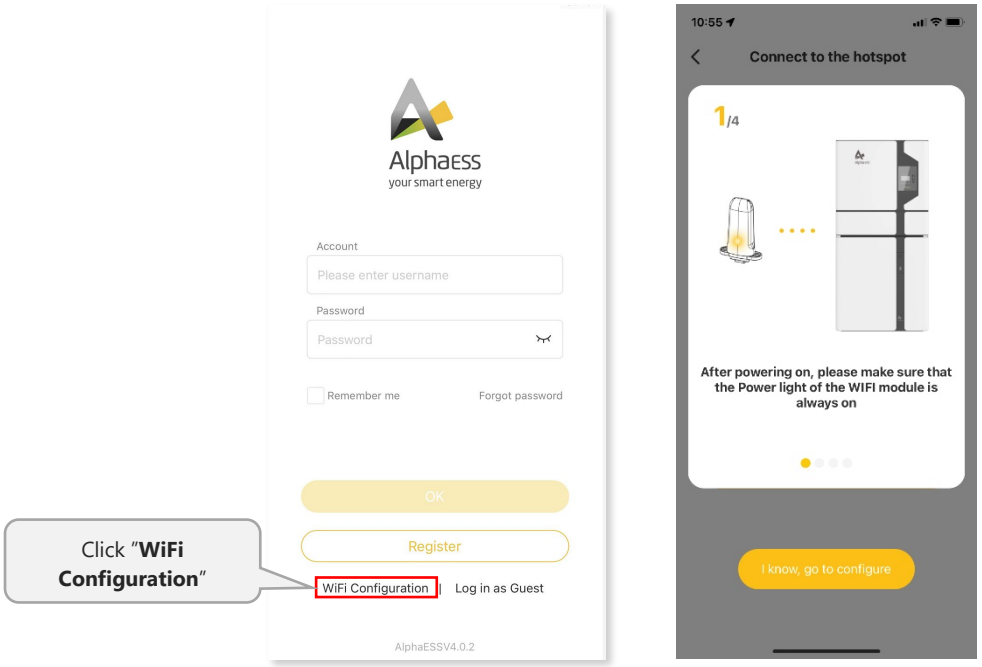
- Check the voltage range and frequency range of the grid and the installation of CT(s) or meter(s).
- Switch on the battery breaker of the battery.
- Switch on the battery breaker located on the energy storage inverter.
- Switch on the external AC breaker between the grid and the energy storage inverter.
- Firstly, don’t press the battery button, don’t switch on the PV switch on the energy storage inverter and don’t switch on the AC breaker on the PV inverter if there is any. For series batteries, please skip this step.

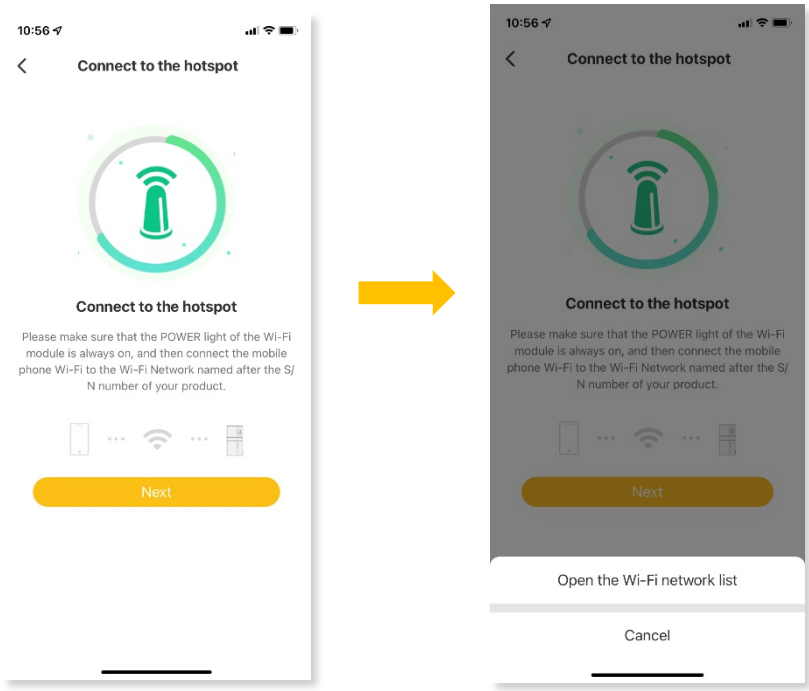
9.3. WiFi Module Configuration and Parameter Settings

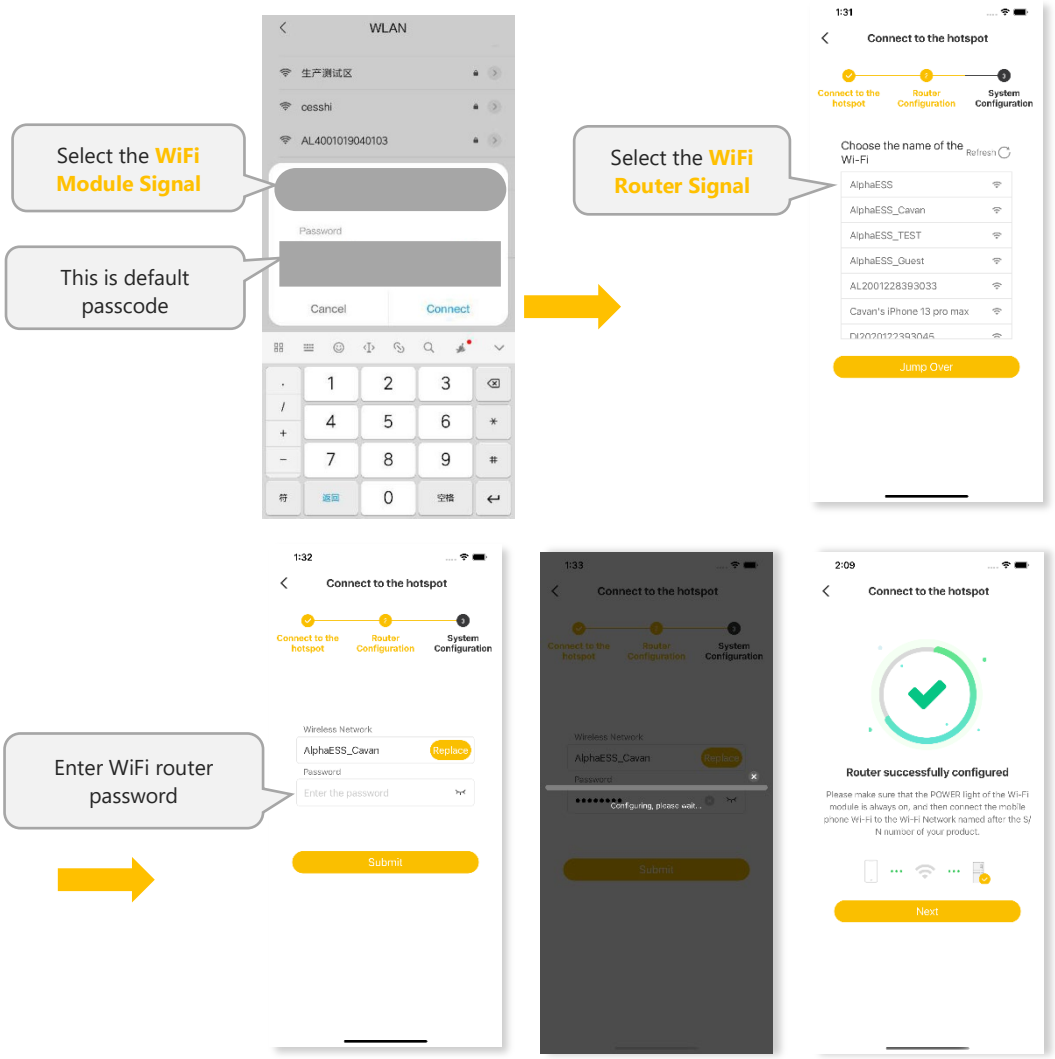
9.3.1. WiFi Configuration

This section is for users who have an energy storage system with a WiFi module.

Configure the network with AlphaApp, set system basic parameters, monitor system operation status and check configuration information.





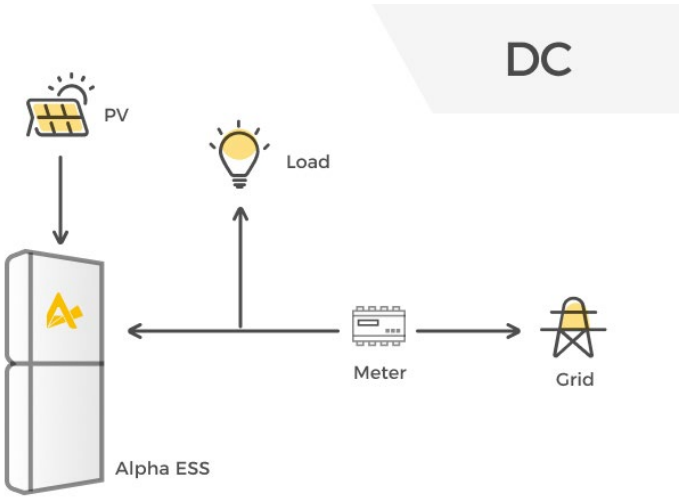


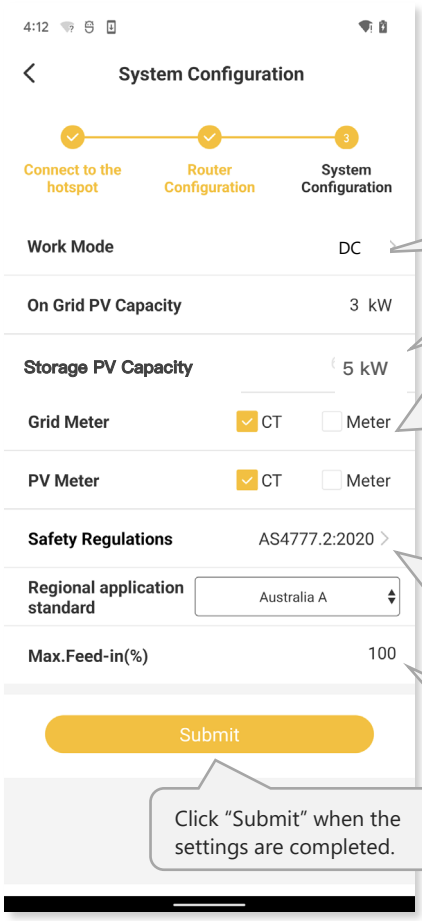
NOTICE

The system will not be able to connect to the internet without WiFi configuration.

9.3.1.1 Basic Parameters Settings

DC Mode





Three mode options: **DC**/AC/Hybrid

Storage PV capacity: PV capacity on the energy storage inverter side

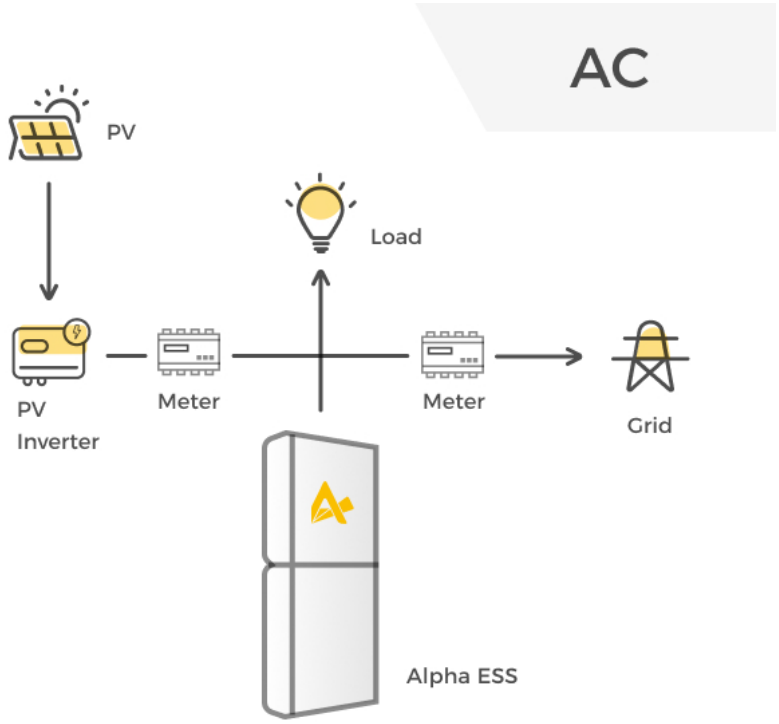
On the grid side, if only a CT is installed, please select CT for grid side.
If the grid meter is installed, please select Meter for grid side. If this meter is a CT meter and the CT ratio is not 1, please select CT below and input the Meter CT Ratio. If this meter is not a CT meter or the CT ratio is 1, please do not select CT below.

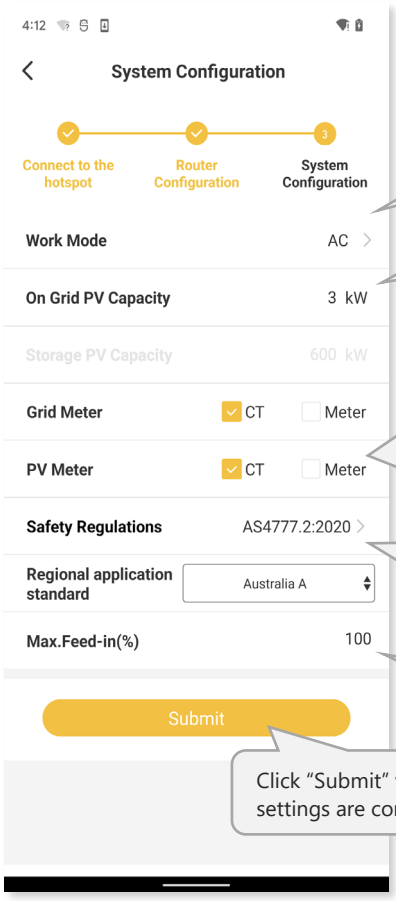
Note: When the safety standard is set as AS4777.2 (Australia and New Zealand), the secondary sub-options can be selected according to the region or local grid company.

You can set the allowable feed-in ratio from 0%-100%.

Click "Submit" when the settings are completed.

AC Mode





Three mode options: DC/**AC**/Hybrid

PV capacity on the PV-inverter (on-grid) side

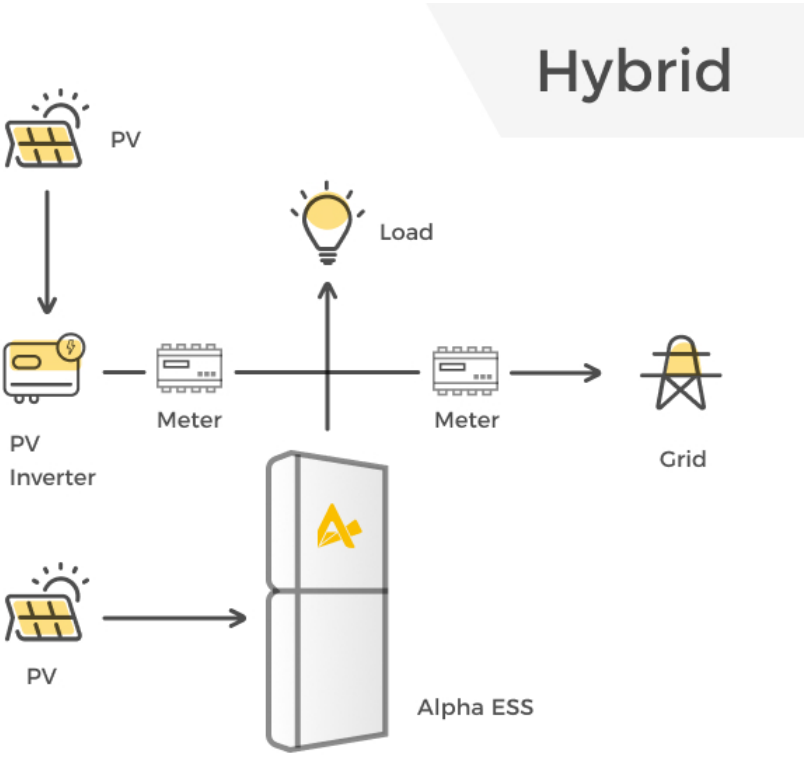
On the grid side, if only a CT is installed, please select CT for grid side.
If the grid meter is installed, please select Meter for grid side. If this meter is a CT meter and the CT ratio is not 1, please select CT below and input the Meter CT Ratio. If this meter is not a CT meter or the CT ratio is 1, please do not select CT below.
Please refer to the above step to set the PV meter.

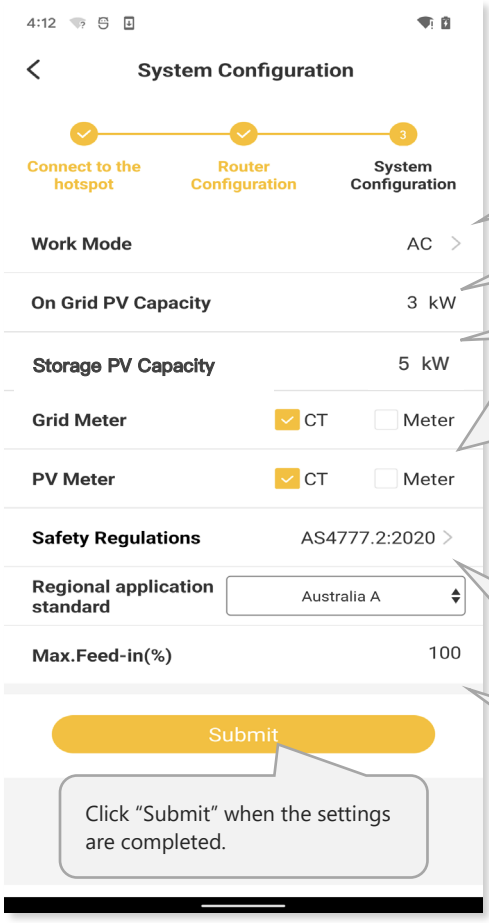
Note: When the safety standard is set as AS4777.2 (Australia and New Zealand), the secondary sub-options can be selected according to the region or local grid company.

You can set the allowable feed-in ratio from 0%-100%.

Click "Submit" when the settings are completed.

Hybrid Mode





Three mode options: DC/AC/**Hybrid**

PV capacity on the PV-inverter (on-grid) side

Storage PV capacity: PV capacity on the energy storage inverter side

On the grid side, if only a CT is installed, please select CT for grid side. If the grid meter is installed, please select Meter for grid side. If this meter is a CT meter and the CT ratio is not 1, please select CT below and input the Meter CT Ratio. If this meter is not a CT meter or the CT ratio is 1, please do not select CT below.
Please refer to the above step to set the PV meter.

Note: When the safety standard is set as AS4777.2 (Australia and New Zealand), the secondary sub-options can be selected according to the region or local grid company.

You can set the allowable feed-in ratio from 0%-100%.

NOTICE

The safety standard must be set correctly

If you select a safety standard which is not valid for your country and purpose, it will cause a disturbance in the energy storage system and lead to problems with the grid operator. When selecting the safety standard, you must always observe the locally applicable standards and directives as well as the properties of the PV system (e.g. PV system size, grid-connection point).

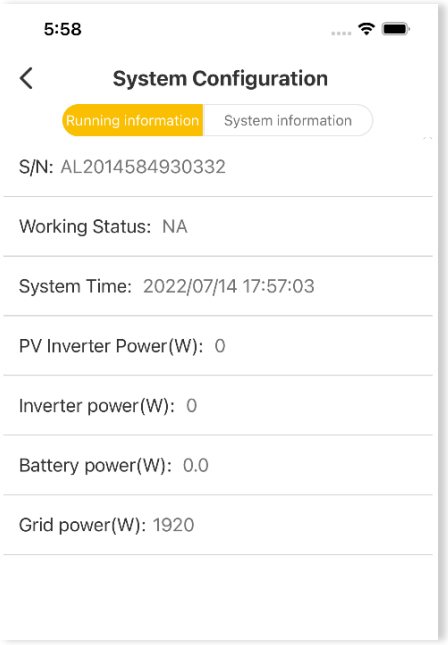
- If you are not sure which safety standard is valid for your country or purpose, please contact your grid operator for information on which safety standard is to be configured.

9.3.2. Direct Commissioning on WiFi Configuration

You can commission the system during the WiFi configuration process directly.

9.3.2.1 Check the Running State without PV and Battery

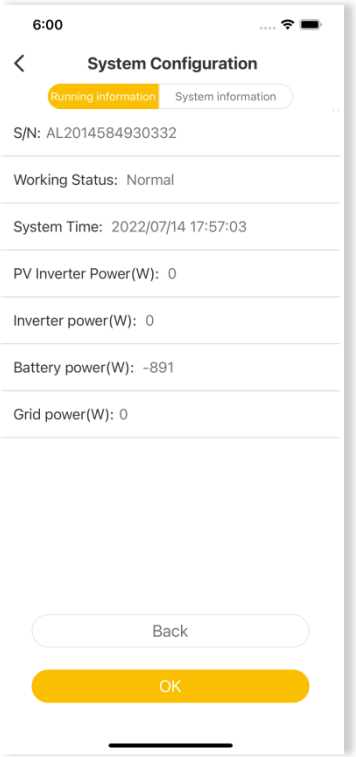
- Keep the PV switch of the energy storage inverter and AC breaker of the PV-inverter off. Don't power on the batteries.
- Turn on some larger loads directly connected to the grid to check the grid status, the inverter LED ("SYS") will be red, don't worry, because the battery is not communicated. The grid power should be positive. Otherwise please check the direction of grid CT or grid meter installation.



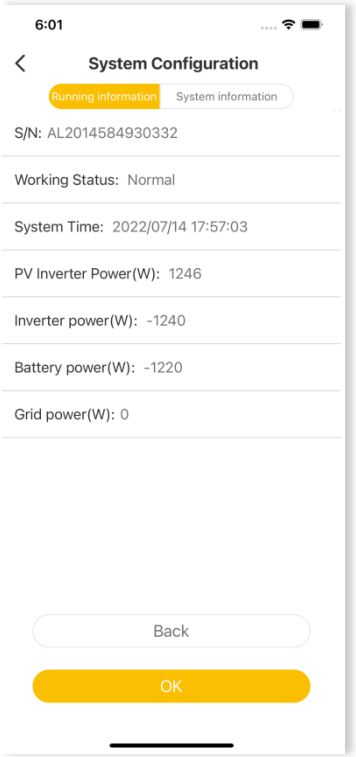
9.3.2.2 Check the Running State of PV and Battery

- Switch off the AC breaker between the grid port of the energy storage inverter and the grid, and switch off the AC breaker between the backup port on the energy storage inverter and the loads.
- Press the battery button, for battery SMILE-G3-BAT-3.8S, please skip this step. If there are more than one battery, press the button of each battery and the interval time of powering on any two batteries should be less than 5s.
- Switch on the AC breaker between the grid port of the energy storage inverter and the grid.
- Switch on the PV switch on the energy storage inverter if there is any and AC breaker on the PV-inverter if there is any.
- Switch off all the loads to see the battery charging status and the inverter LED ("SYS") will be solid White. Battery power value should be negative. If the system is in AC or hybrid mode, the PV inverter power value should be positive.

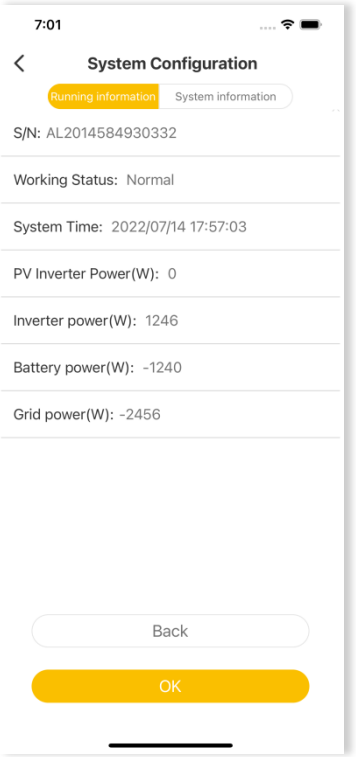
If it is not normal, please check the direction of PV CT or PV meter installed.



DC Mode



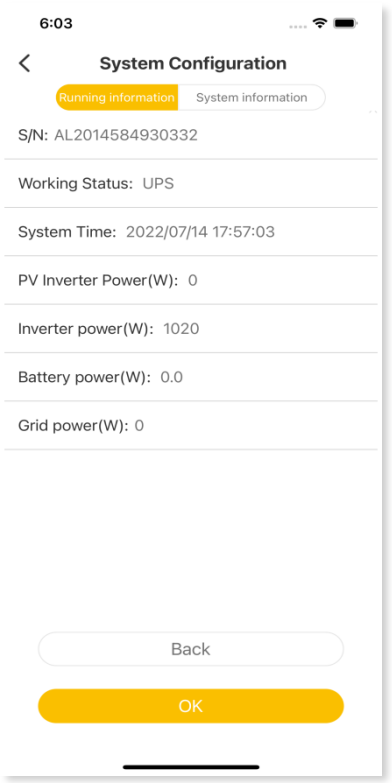
AC Mode



Hybrid Mode

9.3.2.3 Check the UPS State

- Please connect an essential electrical appliance to the socket of backup load. Or switch on an essential electrical appliance already connected to the backup load port of the inverter.
- Switch on the AC breaker of the backup port of the energy storage inverter.
- Switch off the external AC breaker between the grid and the energy storage inverter.
- The inverter will enter the UPS mode at once.
- If the electrical appliance on backup side can work normally, it means that the wiring of the backup has been connected correctly.

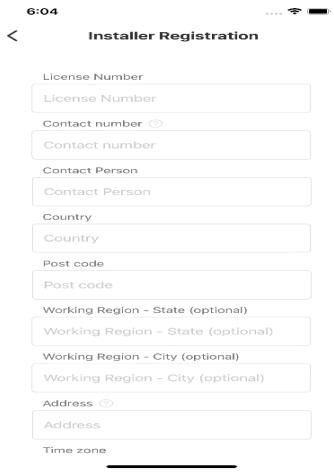


NOTICE

During commissioning, if the LEDs on the display panel of the inverter or the battery show red or yellow, please refer to chapter 10.2. Troubleshooting.

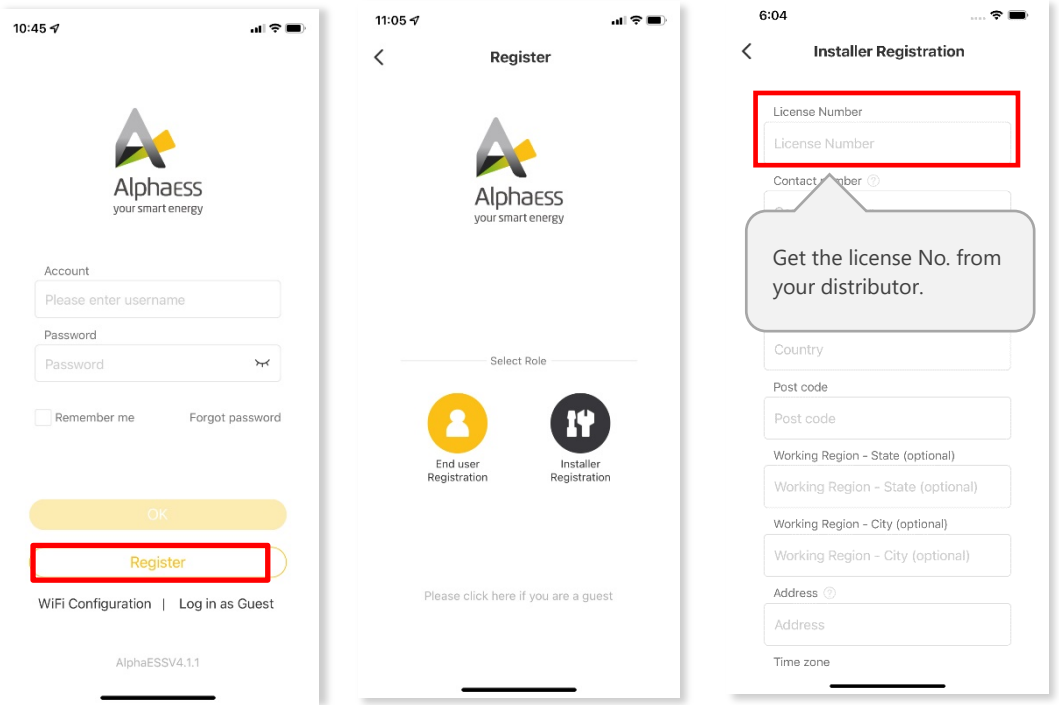
9.4. Install New System and Settings on the APP

9.4.1. Download and Install the APP



9.4.2. Register as an Installer

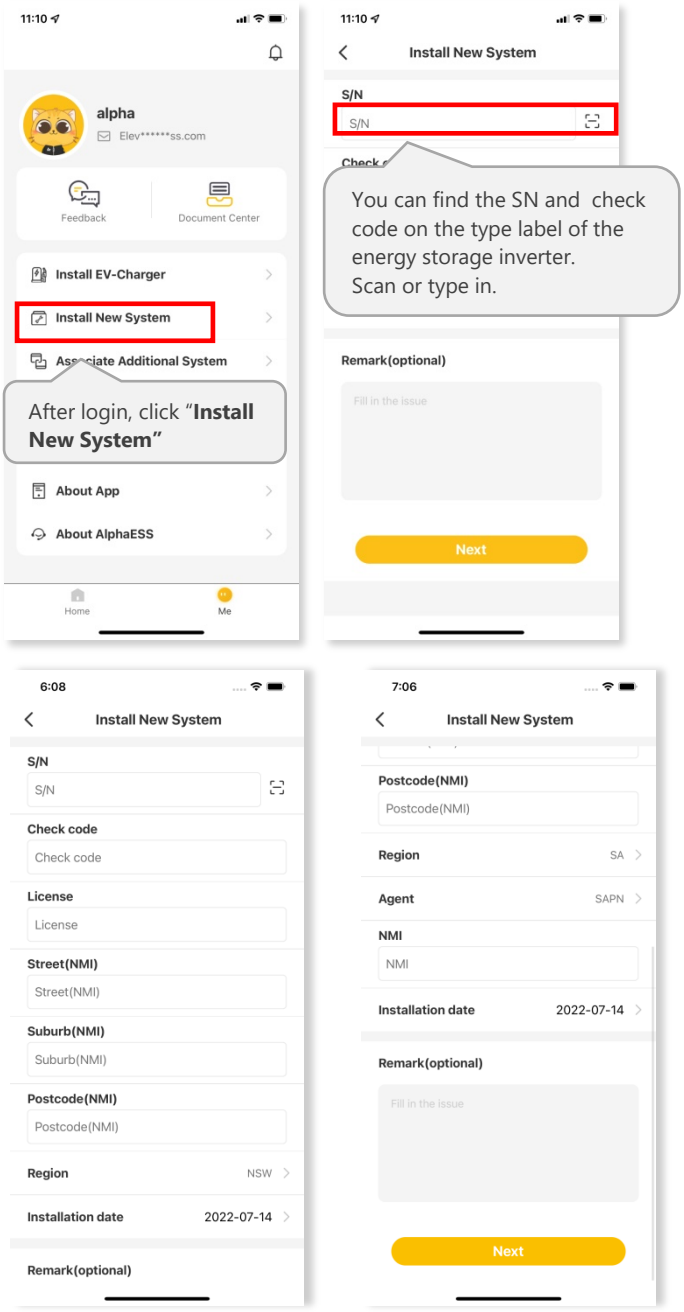
If you don't have an installer account, please register first.



If you already have an installer account, please log in directly.

9.4.3. Install New System

If you have "installed" the new system already or want to install it later, please directly go to the Chapter 9.3 WiFi Module Configuration and Parameter Settings. If not, you can "Install New System" first.



German Installer

Please enter your installer account and click “Install New System” to bind the system to your account and set the system.

Enter S/N, check code, license, create time, customer full name, contact number, address, and click the save button. If you are an Australian installer, you will need to fill in the Street (NMI), Suburb (NMI) and Postcode (NMI) fields and add a new Region field, which has six fixed options (NSW, QLD, VIC, SA, TAS, WA). If SA is selected for Region, two more fields are added which are Agent and NMI.

Fields that are not marked "optional" need to be filled in.

Click "Next" and go to Chapter 9.3 if the WiFi has not been configured.

9.5. Check the Running State On-line

If you have completed commissioning as described in section 9.3.2, please ignore this section.

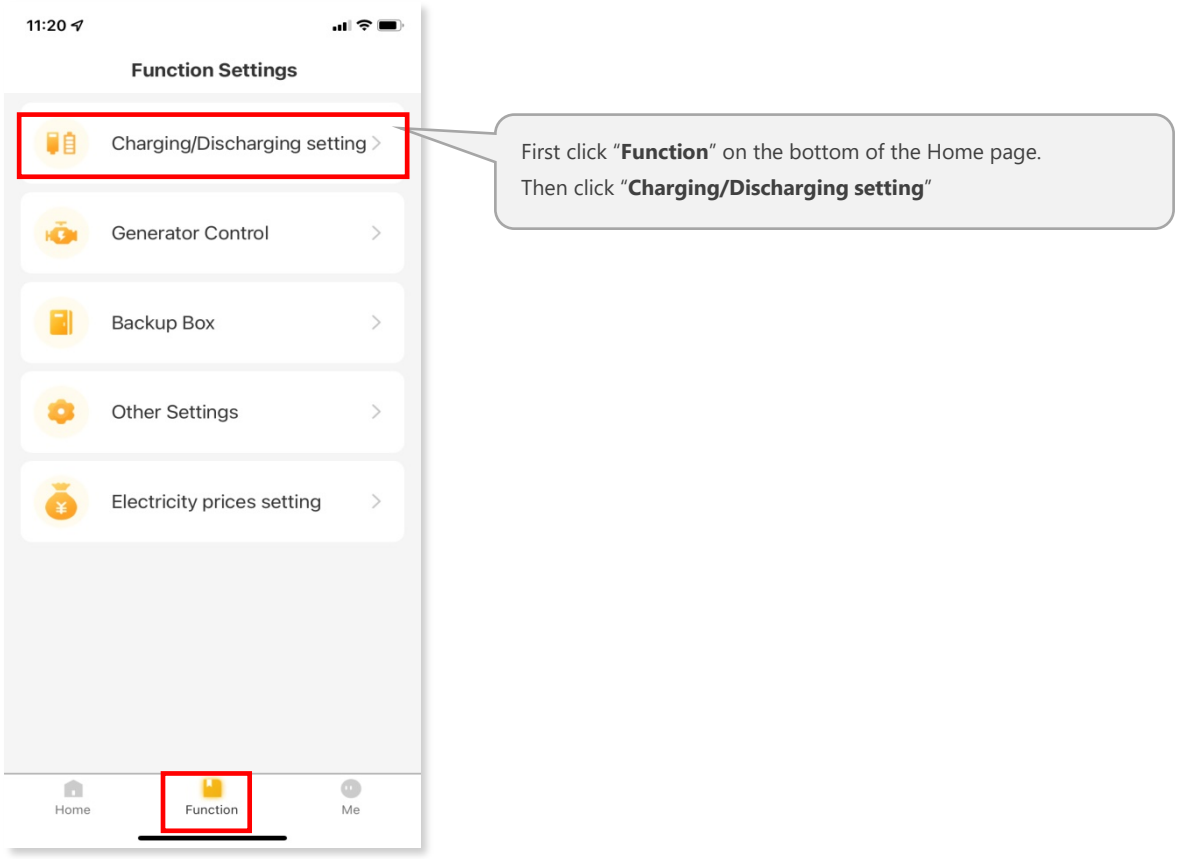
You can also commission the system after WiFi configuration.

Please make sure the PV switch, battery breakers and all the breakers connecting to the system are ON.

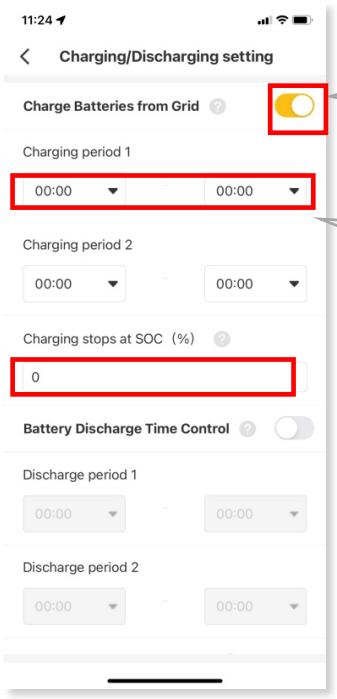
9.5.1. Check the Charge Function

- To make sure the system is installed correctly and operating normally, please set the system to "Charging/Discharging Setting" by following the instructions below.

Step 1



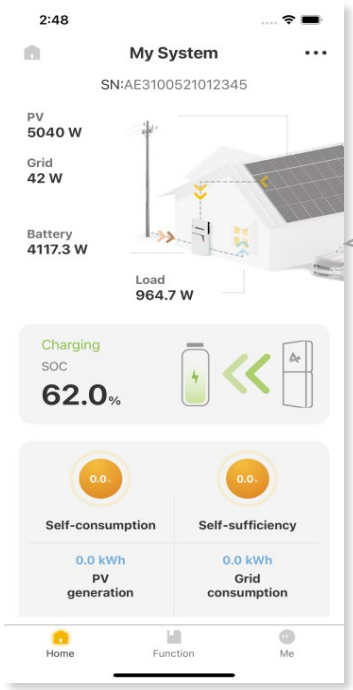
Step 2



Select "**ON**" to Charge Batteries from Grid"

please set the "Charging period 1" for the time and the SOC would be **100** under this operation.

Step 3



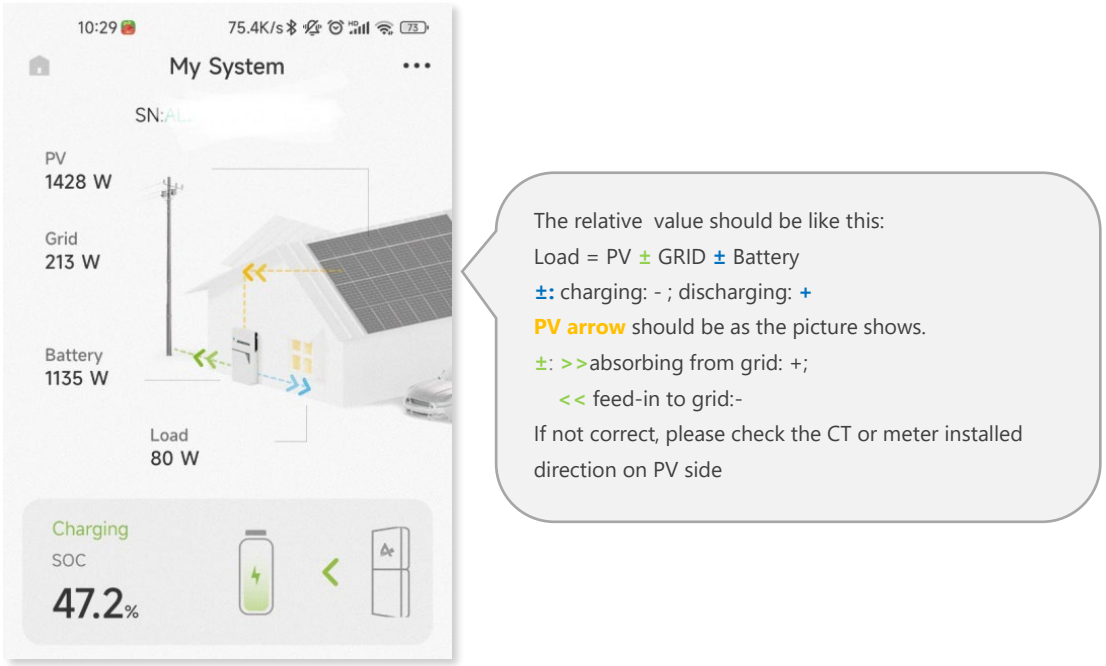
The relative value should be like this: Load = PV ± GRID – Battery. Battery should be in **charging** status. **PV arrow** should be as the picture shows. ±: >>absorbing from grid: +; << feed-in to grid:- If not correct, please check the CT or meter installed direction of both grid side and PV side

- Check the running status of the system in "Step 3".
- If the operation is normal as described in "Step 3", please remember to deactivate the "Charging/Discharging Setting" by clicking "OFF" and save the changes.

9.5.2. Check the PV Generation and Discharge Function

Step 1: Please switch off the PV switch on the energy storage inverter and the AC breaker on the PV inverter if there is any. Switch on some larger loads to see the battery discharging status.

Step 2: Please switch on the PV switch on the energy storage inverter and the AC breaker on the PV inverter if there is any. Check the running status of the system.



9.5.3. Check the UPS State

- Please connect an essential electrical appliance to the socket of backup load. Or switch on an essential electrical appliance already connected to the backup load port of the energy storage inverter.
- Switch on the AC breaker of the backup port of the energy storage inverter.
- Switch off the external AC breaker between the grid and the energy storage inverter.
- The product will enter UPS mode at once.
- If the electrical appliance on the backup side can work normally, it means that the wiring of the backup has been connected correctly.

NOTICE

During commissioning, if the LEDs on the display panel of the inverter or the battery show red or yellow, please refer to chapter 10.2. Troubleshooting.

9.5.3.1 Switch on all of the Breakers

Please don't forget to switch on all of the breakers and switches in the system.

9.6. Instruct the End User to Install the APP

Please make sure that your end user has downloaded the APP and registered the account correctly, and added the system SN.

10. Maintenance and Troubleshooting

10.1. Routine 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 battery until the charge power is 0W) on the battery at regular intervals (such as two weeks).
Disconnect the system from all power sources before cleaning. Clean the housing, cover and display with a soft cloth.
To ensure that the energy storage system can operate properly in the long term, you are advised to perform routine maintenance on it as described in this chapter.

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 with no abnormal sound. 2. All parameters of the product should be correctly set. 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 be not 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. From then on, perform the maintenance once every 6 to 12 months.

CAUTION

Risk of burns due to hot enclosure of the inverter

The enclosure of the inverter can get hot during operation.

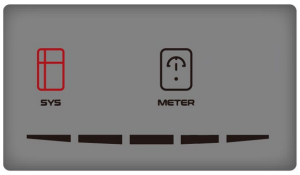
- During operation, do not touch any parts other than the display panel of the inverter.
- Wait approx. 30 minutes before cleaning until the inverter has cooled down.

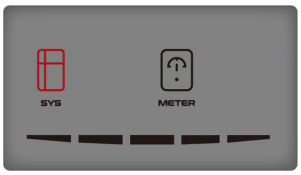
10.2. Troubleshooting

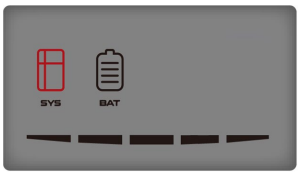
10.2.1. Common Errors

Communication Troubleshooting

LED Indicator	Error Code	LED Display	Description	Troubleshooting
SYS red light is blinking fast	4		Inveter lost	Inverter communication lost 1. Restart the system and check whether the fault has been cleared. 2. Contact tech support to remotely update the inverter program, after that confirm whether the fault continues. 3. If the fault can't be cleared, contact tech support for further check.

SYS red light is on; METER light is blinking fast if Grid meter lost;	5		Grid meter lost	Grid side meter lose 1. Check whether the system configuration parameters of AlphaAPP or AlphaCloud are correct and whether the meter is used on the grid side. 2. Check whether the communication cable of the grid meter is connected correctly (RS485: 3A6B). 3. Check whether the communication configuration parameters of the grid meter are correct (communication address and baud rate). 4. If the fault can't be cleared, contact tech support for further check.

METER light is blinking slow if PV meter lost; METER light is off if all meters lost;	6		PV meter lost	PV inverter side meter lose 1. Check whether the system configuration parameters of AlphaAPP or AlphaCloud are correct and whether the meter is used at the PV inverter side. 2. Check whether the communication cable of the meter of PV inverter side is connected correctly (RS485: 3A6B). 3. Check whether the communication configuration parameters of the meter of PV inverter side are correct (communication address and baud rate). 4. If the fault can't be cleared, contact tech support for further check

SYS red light is on, BAT light is off	7		BMS lost	BMS lost 1. Check whether the BMS communication connection between the battery and the inverter is correct. 2. Check if the battery is switched on. 3. If the fault can't be solved, contact tech support for further check.

Battery Error Troubleshooting

LED Indicator	Error Code	LED Display	Description	Troubleshooting
SYS red light is on; BAT light is blinking during battery is faulty.	60002		Circuit_Breaker_Open	Try to switch on all batteries' breakers. If this action cannot solve the e rror, please call tech support.
	60004		Follower_Battery_ Communication_Lost	Check the communication cables between batteries. If this action cannot solve the error, please call tech support.
	60006		Host_Battery_ Communication_Lost	
	60008		Multi_Host_error	

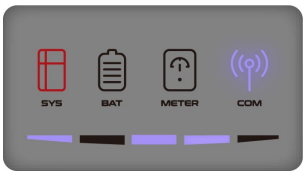
Inverter Error Troubleshooting

LED Indicator	Error Code	LED Display	Description	Troubleshooting
SYS red light is blinking fast.	100000		Grid_OVP	1. Check whether the grid is abnormal. 2. Confirm whether the grid cable connection is normal. 3. Restart inverter and check whether the fault is existing. If it still exists, please call tech support.
	100001		Grid_UVP	1. Check whether the PV input voltage of PV1 and PV2 exceeds 580V. If the PV input over voltage does not exist, restart the inverter to see if the fault still exists. If it still exists, please call tech support.
	100002		Grid_OFP	
	100003		Grid_UFP	
	100005		BUS_OVP1	1 Check whether the PV input voltage of PV1 and PV2 exceeds 580V. If the PV input over-voltage does not exist, restart the inverter to see if the fault still exists. If it still exists, please call tech support.

SYS red light is blinking fast	100007		Insulation_ fault	1. Check whether PV cable connection is reliable. 2. Check whether PV cable is damaged. If it still exists, please call tech support.
	100008		GFCI_fault	1. Restart the inverter and check whether the fault is existing. If it still exists, please call tech support.
	100010		Grid_relay_ fault	
	100011		Over_ Temperature	1. Check whether the environment around inverter is with poor heat dissipation. 2. Confirm whether the inverter installation meets the installation requirements.
	100012		PV_Reverse	1. Check whether the PV terminal of the inverter is reversed. 2. If the PV terminal is right, please call tech support.

SYS red light is blinking fast	100013		BAT_Reverse	1. Check whether the BAT terminal of the inverter is reversed. 2. If the BAT terminal is right, please call tech support.
	100017		MPPT1_OVP	Check the PV1 voltage. If it exceeds 585VDC, reduce the number of PV modules.
	100021		MPPT2_OVP	Check the PV2 voltage. If it exceeds 585V, reduce the number of PV modules.
	100025		BAT_OVP	Check whether the actual battery voltage exceeds the battery charge cut-off voltage by more than 20V.
	100026		BAT_UVP	Check whether the actual battery voltage is lower than the battery discharge cut-off voltage.

SYS red light is blinking fast	100027		Battery_lose	Confirm that the battery communication cable connection is normal and check whether the battery voltage sampling value is less than 75V.
	100042		Output_short_ circuit	1. Use a multimeter to test the impedance of the off-grid output. If it is small, check whether the wiring is correct. 2. Restart the inverter to see if the fault still exists. If it still exists, please call tech support.
	100043		Output_ overload	Check whether the load exceeds the rated power. Restart the inverter to see if the fault still exists. If it still exists, please call tech support.
	100052		Backup_ovp	Restart the inverter to see if the fault still exists. If it still exists, please call tech support.

SYS red light is blinking fast.	100211		Para_CAN	Check the communication cables between inverters. If it still exists, please call tech support.
	100213		Para_SW_Diff	Check the inverter software versions. If they are inconsistent, upgrade the inverter to the same software version.
	100214		Para_Module_ Fault	Check parallel inverter mode settings. Only one host is allowed.
	100216		Para_Multi_ Host	

Accessories Error Troubleshooting

LED Indicator	Error Code	LED Display	Description	Troubleshooting
SYS red light is on, METER light is blinking fast.	39		EV Charger Lost	EV Charger lost 1. Check whether the EV communication connection between the EV charger and the inverter is normal. 2. Check if the battery is switched on If the fault can't be cleared, please contact tech support for further check.

SYS red light is on, METER light is blinking fast.	200000		Relay OTP	1. Unplug the charging connector of the EV charger, then plug it after about 10 minutes, If the fault can't be cleared, please contact tech support for further check.
	200001		Output overload	1. Check whether the load exceeds the rated power. Restart the inverter to see if the fault still exists. If it still exists, please call tech support.
	200010		AC leakage current	1. Unplug the charging connector of the EV charger, then plug it after about 10 minutes, If the fault can't be cleared, please contact tech support for further check.

SYS red light is on, METER light is blinking fast.	200011		Input terminal OTP	1. Unplug the charging connector of the EV charger, then plug it after about 10 minutes. If the fault can't be cleared, please contact tech support for further check.
	200014		Relay abnormal	1. The EV charger has hardware failure, and need to be replaced, please contact tech support.
	200015		Ground fault	1. Check whether the grounding method is correct. If there is no grounding or the grounding method is wrong, please follow the correct grounding method.
	200016		Reverse phase	1. Shut off the leakage current protection switch of power distribution cabinet immediately. 2. Check if the AC input/output cables connection is normal, and if the inverse connection of L/N input cables exists.

NOTICE

1. The four LEDs in the first row are system (SYS), battery (BAT), meter (METER), and communication (COM).

2. The five LEDs in the second row are divided into two functions:
1) SOC operation status of the batteries which have connected in this energy storage system during system normal operation.
2) The corresponding fault code will be displayed. From right to left, the numbers represented by each light are 1, 2, 4, 8, 16 during system abnormal operation.

10.2.2. Battery Protection Description for SMILE-G3-BAT-10.1P/8.2P

The three LED indicators on the left front provide information about the protection status of the battery with lights displaying solid yellow or flashing.

LED Indicator	Error Code	LED Display	Description	Troubleshooting
Yellow LEDs are on or Yellow LEDs are flashing once per second.	1		Temperature difference	Wait for automatic recovery. If the problem hasn't solved yet, please call tech support center.
	3		High temperature	Stop discharging and charging until this display status is eliminated and wait for the temperature to drop.
	4		Low temperature discharge	Stop discharging until this display status is eliminated, and wait for the temperature to rise
	5		Overcurrent charge	Wait for automatic recovery. If the error hasn't be solved, please call tech support.
	6		Overcurrent discharge	
	8		Cell overvoltage	

	9		Cell under voltage	Stop discharging and call tech support immediately.
	11		Low temperature charge	Stop charging until this display status is eliminated and wait for the temperature to rise.

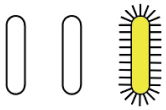
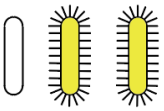
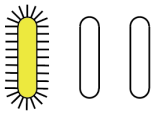
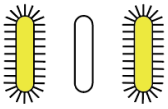
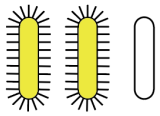
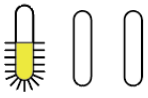
NOTICE

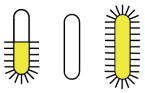
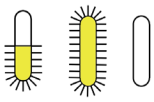
In the case of work mode, if the protection status "Cell under voltage"  appears, please press the power button of the battery 5 times within 10 seconds, the BMS will be forced to turn on the MOSFET of discharge so that the inverter can detect the battery's open voltage and charge the battery.

10.2.3. Battery Protection Description for SMILE-G3-BAT-3.8S

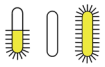
The three LED indicators on the front cover provide information about the protection status of the battery with lights displaying solid yellow or flashing.

 :Yellow LEDs flash  Yellow LEDs on  Yellow LEDs off

LED Indicator	Protection No.	LED Display	Description	Troubleshooting
Yellow LEDs on or Yellow LEDs are flashing once per second.	1		Temperature difference	Wait for automatic recovery. If the problem has not been solved yet, please call tech support.
	2		High temperature	Stop discharging and charging until this display status is eliminated and wait for the temperature to drop.
	3		Low temperature discharge	Stop discharging until this display status is eliminated and wait for the temperature to rise
	4		Overcurrent charge	Wait for automatic recovery. If the problem hasn't been solved yet, please call tech support.
	5		Overcurrent discharge	
	6		Cell overvoltage	

	7		Cell under voltage	Stop discharging and call tech support immediately.
	8		Low temperature charge	Stop charging until this display status is eliminated and wait for the temperature to rise.

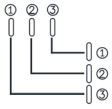
NOTICE

During work mode, if the protection status "Cell under voltage"  appears, please do the following action:

First, switch off the breaker which is located on the left side of the battery, switch on the breaker and wait for 3~5S, switch off the breaker, then switch on the breaker and wait for 3~5s, switch off the breaker, at last switch on the breaker of the battery, the BMS will be forced to turn on the MOSFET of discharge so that the energy storage inverter can detect the battery.

10.2.4. Battery Error Description

The three LED indicators on the front cover provide information about the error status of the battery with lights displaying solid yellow or flashing.



 : Yellow LEDs  : Yellow LEDs on  : Yellow LEDs of

LED Indicator	Error No.	LED Display	Description	Troubleshooting
Yellow LEDs on or Yellow LEDs flash once per second.	1		Hardware error	Wait for automatic recovery. If the problem has not be solved yet, please call tech support.
	2		Hardware error	
	3		Circuit breaker open	Switch on circuit breaker after powering off the battery.
	4		LMU disconnect (Follower)	Reco nnect the BMS communication cable.
	5		SN missing	Please call tech support.

	6		LMU disconnect (Host)	Reconnect the BMS communication cable.
	7		Software version inconsistent	Please call tech support.
	8		Multi Host	Restart all batteries.
	9		MOS over temperature	Power off the battery and power on the battery after 30minutes.
	10		Insulation fault	Restart the battery and if the fault still exists, please call tech support.
	11		Total voltage fault	Restart the battery and if the fault still exists, please call tech support.

11. Uninstallation & Return

11.1. Remove the Product

Procedure

- Step 1: Power off the energy storage system by following the instructions in Chapter 8.2 Powering Off the System.
- Step 2: Disconnect all cables from the system, including communication cables, PV power cables, battery power cables, AC cables, and PE cables.
- Step 3: Remove the WiFi module.
- Step 4: Remove the inverter from the battery top.
- Step 5: Remove the battery wall brackets.
- Remove the batteries.

11.2. Pack the Product

If the original packaging is available, put the product inside it and then seal it using adhesive tape.

If the original packaging is not available, put the product inside a suitable cardboard box and seal it properly.

11.3. Dispose of the Product

- If the product service life expires, dispose of it according to the local disposal rules for electrical equipment and electronic component waste.
- Dispose of the packaging and replaced parts according to the rules at the installation site where the device is installed.
- Do not dispose the product with normal domestic waste.

12. Specifications

12.1. Datasheet of Inverter SMILE-G3 Single Phase Inverter

Item	SMILE-G3-S5-INV	SMILE-G3-S3.6-INV	SMILE-G3-B5-INV
Input DC (PV side)			
Recommended max. PV power	10000 W	7200 W	N/A
Max. PV input voltage	580 V		N/A
Rated voltage	360 V		N/A
Start-up voltage	90 V		N/A
MPPT voltage range	100 ~ 550 V		N/A
Max. input current Per MPPT	15 A / 15 A		N/A
Max. short circuit current per MPPT	18.75 A /18.75 A		N/A
MPPT number	2		N/A
Max. input strings number per MPPT	1		N/A
Battery			
Battery type	LFP ($LiFePO_4$)		
Battery voltage range	80~450 V		
Maximum charge power	5 kW		
Maximum charge/ discharge current	60 A / 60 A		
Communication	CAN		
Output AC (Back-up)			
Rated output power	5 kW	3.68 kW	5 kW
Max. apparent output power	5 VA	3.68 kVA	5 kVA
Back-up switch time	<20ms		
Rated output voltage	L/N/PE, 230 V		

Rated frequency	50/60 Hz		
Rated output current	21.7 A	16 A	21.7 A
THDv (@linear load)	3%		
Input AC (Grid side)			
Rated output voltage	L/N/PE, 230 V		
Rated frequency	50/60 Hz		
Rated input power	10 kW	7.36 kW	10 kW
Max. input current	43.5 A	32 A	43.5 A
Output AC (Grid side)			
Rated output power	5 kW	3.68 kW	5 kW
Max. apparent output power	5 kVA	3.68 kVA	5 kVA
Operation phase	Single phase		
Rated grid voltage	L/N/PE, 230 V		
Grid voltage range	180 ~ 270 V		
Rated grid frequency	50 / 60 Hz		
Rating grid output current	21.7 A	16 A	21.7 A
Power factor	>0.99 (0.8 leading - 0.8 lagging)		
THDi	< 3%		
Protection class	I		
Overvoltage category	III		
Efficiency			
Max. efficiency	>97%		
EU efficiency	>96.2%		
Protection			

Anti-Islanding protection	Integrated
Insulation resistor detection	Integrated
Residual current monitoring unit	Integrated
Output over current protection	Integrated
Output short protection	Integrated
Output overvoltage protection	Integrated
PV reverse polarity protection	Integrated
PV overvoltage protection	Integrated
PV switch	Integrated
Battery breaker	Integrated
General data	
Dimensions (W*H*D)	610*212*366 mm
Weight	19.5kg
Topology	Transformerless
Operation temperature range	-25~+60 °C
Ingress protection	IP65
Display	LED
Noise emission	<30 dB(A) @1m
Cooling concept	Natural convection
Max. operation altitude	3000 m
Grid connection standard	G98/G99, VDE-AR-N 4105, EN 50549-1, VDE 0126, RD 1699, CEI0-21, C10/11, NRS 097-2-1, Tor Erzeuger, MEA, PEA, AS/NZW 4777.2, IEEE1547
Safety/ EMC standard	IEC62040-1, IEC62109-1/-2, AS3100, EN61000-6-2, EN61000-6-3

Features	
PV connection	Vaconn D4 connectors
Grid connection	Vaconn plug in connector
Backup connection	Plug in connector
BAT connection	Screw terminal
Communication	LAN, WiFi (optional)
Warranty	5 years standard

12.2. Datasheet of Battery

12.2.1. Datasheet of battery SMILE-G3-BAT-10.1P

Model	SMILE-G3-BAT-10.1P
Battery type	LFP ($LiFePO_4$)
Weight	90 kg
Dimension (W*D*H)	610 * 210 * 790 mm
Ingress protection	IP65
Energy capacity	10.1 kWh
Usable capacity	9.6 kWh
DoD	95%
Nominal voltage	96 V
Operating voltage range	90 ~ 108 V
Max. Charge /discharge current *	60 A
Operating temperature range	Charge: 0＜T≤50℃ Discharge: -10＜T≤50℃
Monitoring parameters	System voltage, current, cell voltage, cell temperature, PCBA temperature
BMS communication	CAN
System	
Safety	IEC62619/ IEC63056/IEC62040
Warranty	5 years product warranty, 10 years performance warranty
Transportation	UN38.3

* Max. charge/discharge current derating will occur with changes in temperature and SOC.

12.2.2. Datasheet of battery SMILE-G3-BAT-8.2P

Model	SMILE-G3-BAT-8.2P
Battery type	LFP ($LiFePO_4$)
Weight	72 kg
Dimension (W*D*H)	610*212*793 mm
Ingress protection	IP21
Energy capacity	8.2 kWh
Usable capacity	7.8 kWh
DoD	95%
Nominal voltage	256 V
Operating voltage range	240 ~ 288 V
Max. Charge /discharge current *	32 A
Operating temperature range	Charge: 0＜T≤50℃ Discharge: -10＜T≤50℃
Monitoring parameters	System voltage, current, cell voltage, cell temperature, PCBA temperature
BMS communication	CAN
System	
Safety	IEC62619/ IEC63056/IEC62040
Warranty	5 Year product warranty, 10 Year performance warranty
Transportation	UN38.3

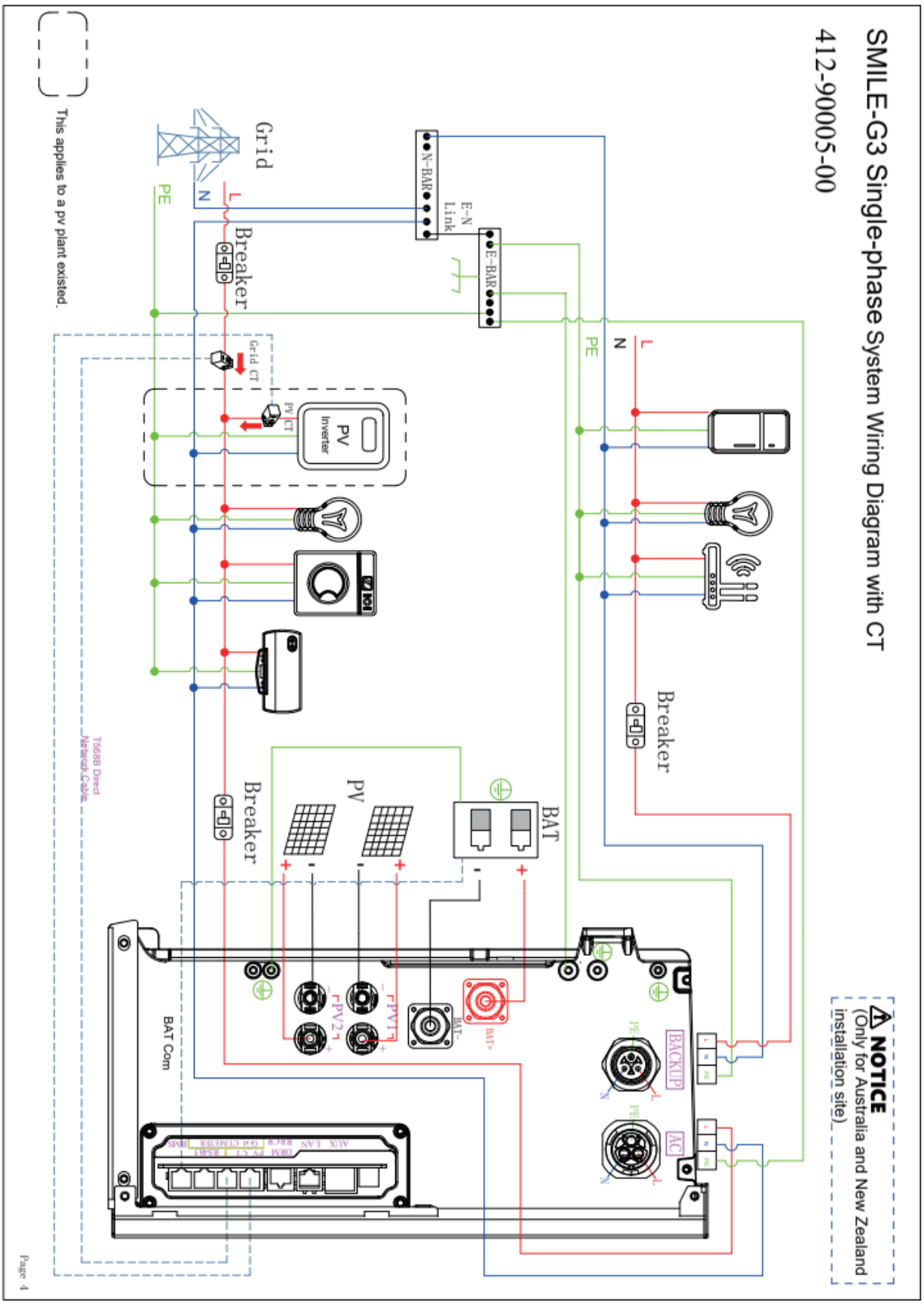
* Max. charge/discharge current derating will occur with changes in temperature and SOC.

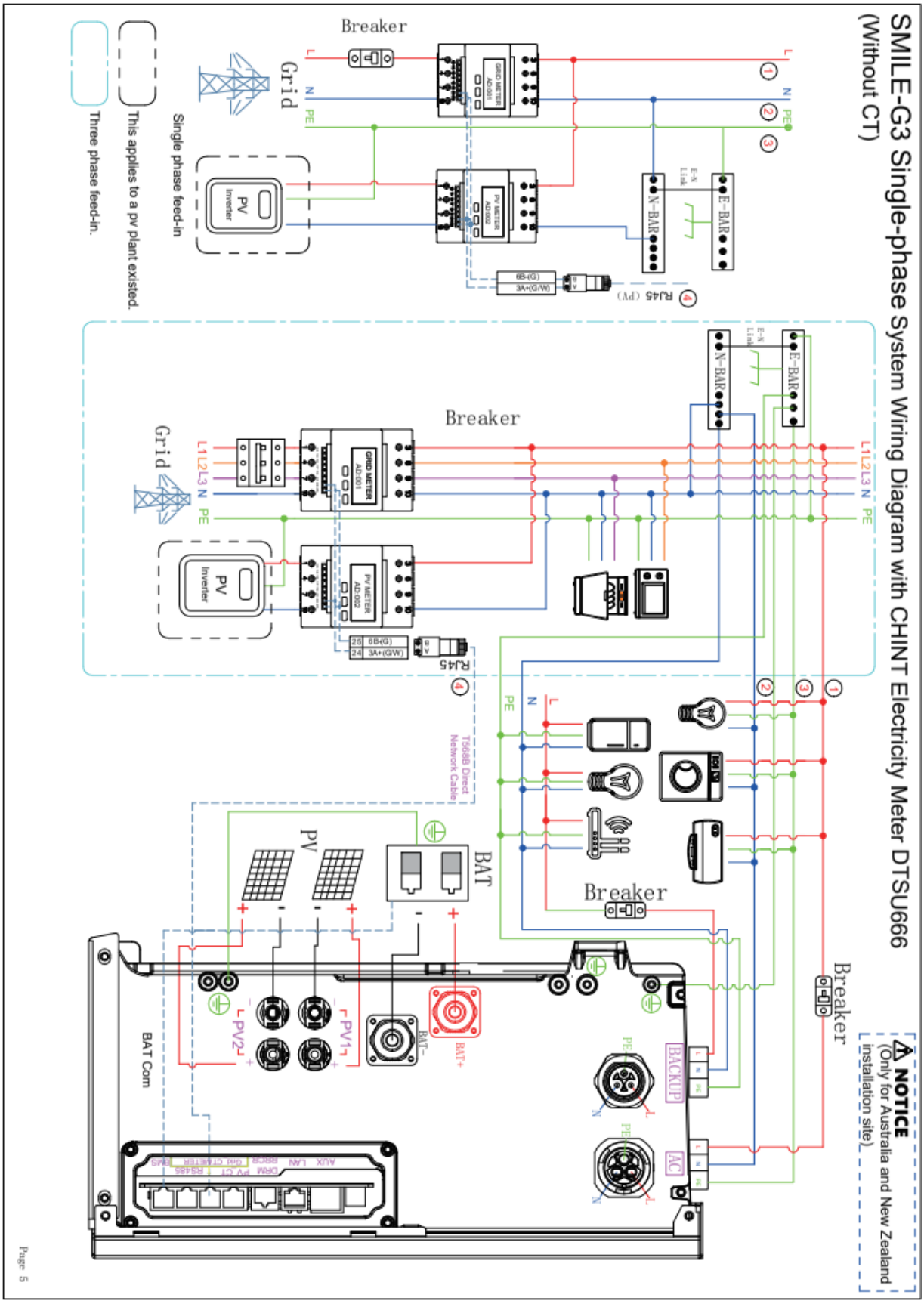
12.2.3. Datasheet of battery SMILE-G3-BAT-3.8S

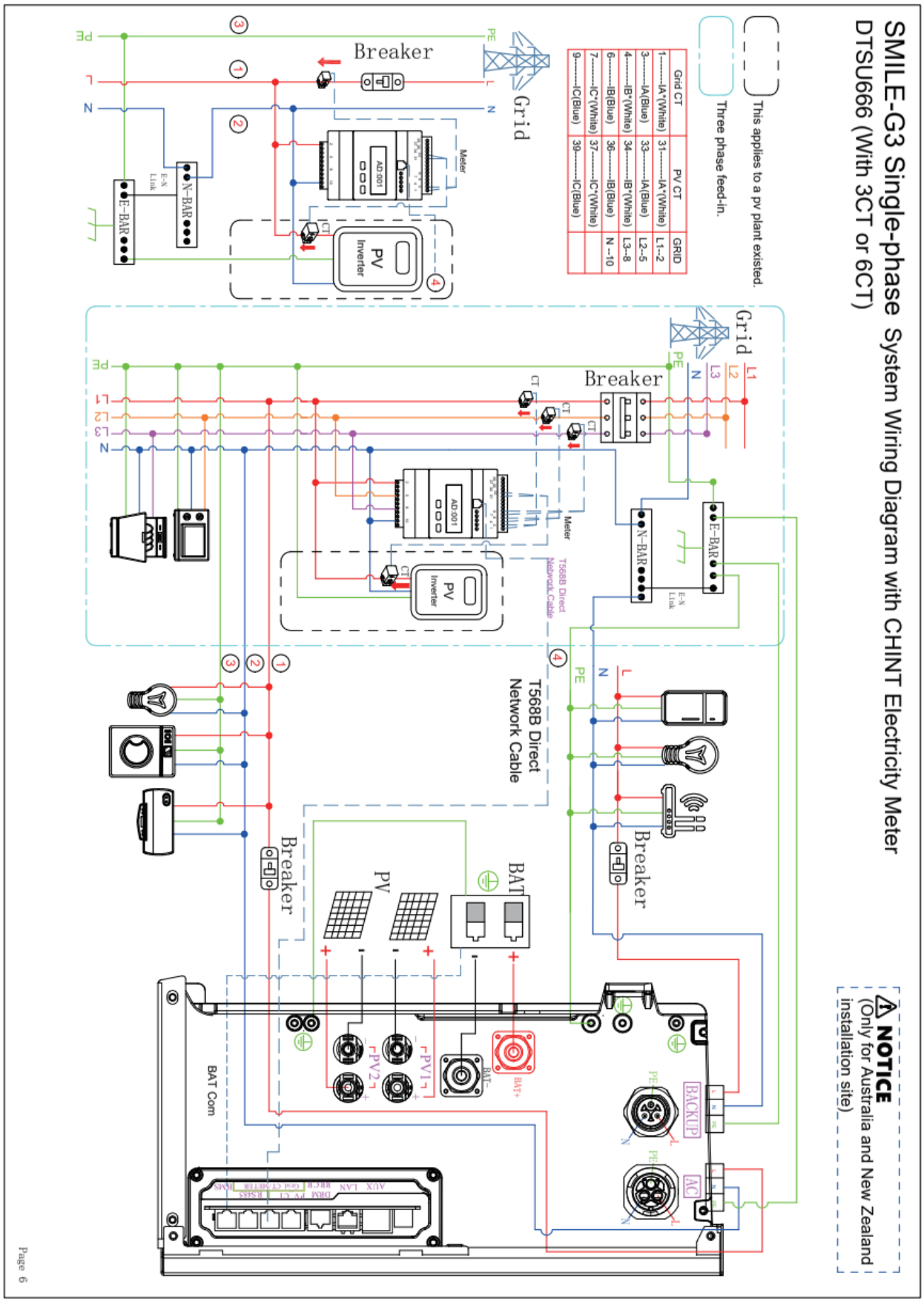
Model	SMILE-G3-BAT-3.8S
Battery type	LFP ($LiFePO_4$)
Weight	38.5 kg
Dimension (W*D*H)	610*212*435 mm
Ingress protection	IP21
Energy capacity	3.84 kWh
Usable capacity	3.65 kWh
DoD	95%
Nominal voltage	96 V
Operating voltage range	90 ~ 108 V
Max. Charge /discharge current *	40 A
Operating temperature range	Charge: 0＜T≤50℃ Discharge: -10＜T≤50℃
Monitoring parameters	System voltage, current, cell voltage, cell temperature, PCBA temperature
BMS communication	CAN
System	
Safety	IEC62619/ IEC63056/IEC62040
Warranty	5 years product warranty, 10 years performance warranty
Transportation	UN38.3

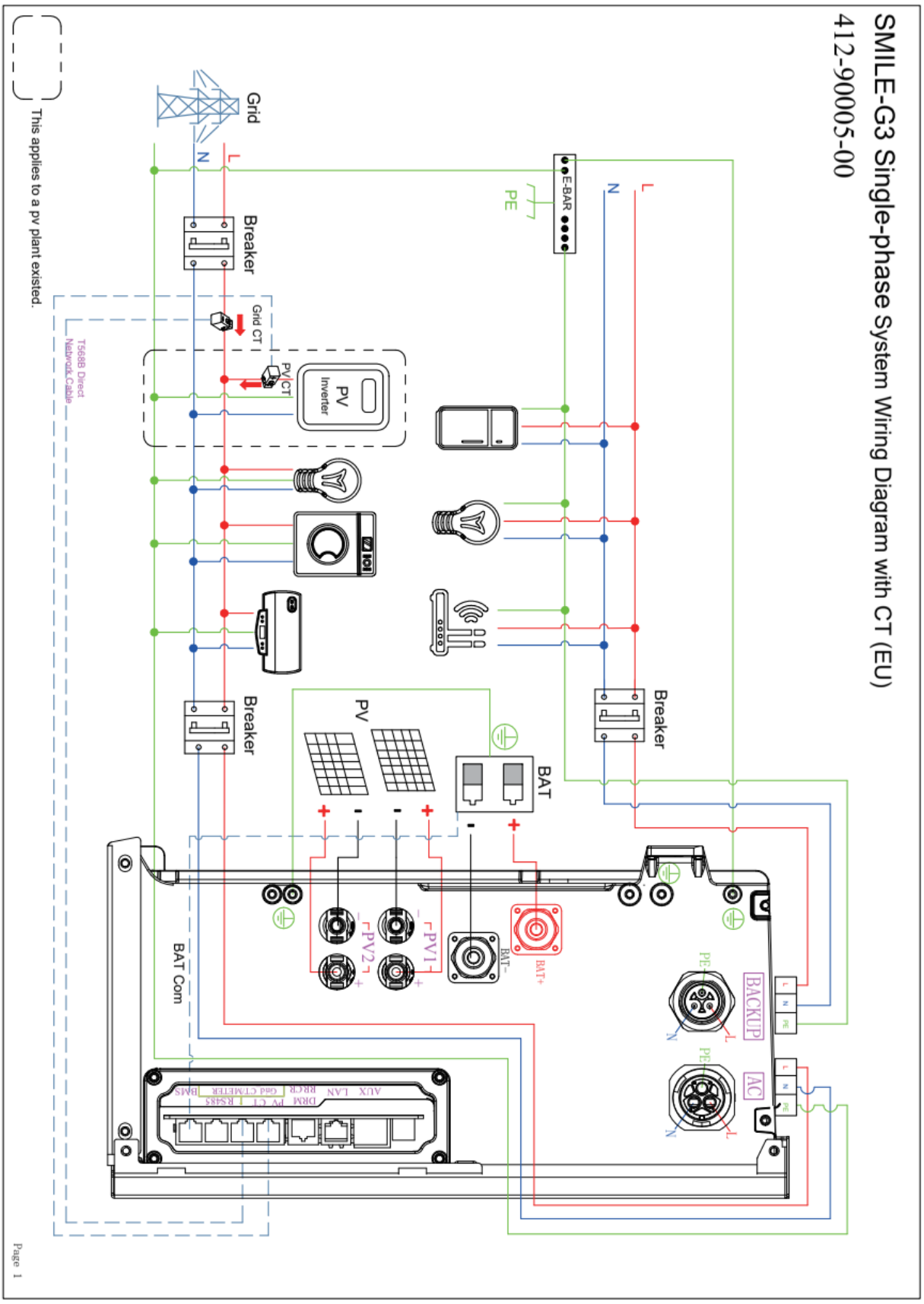
* Max. charge/discharge current derating will occur with changes in temperature and SOC.

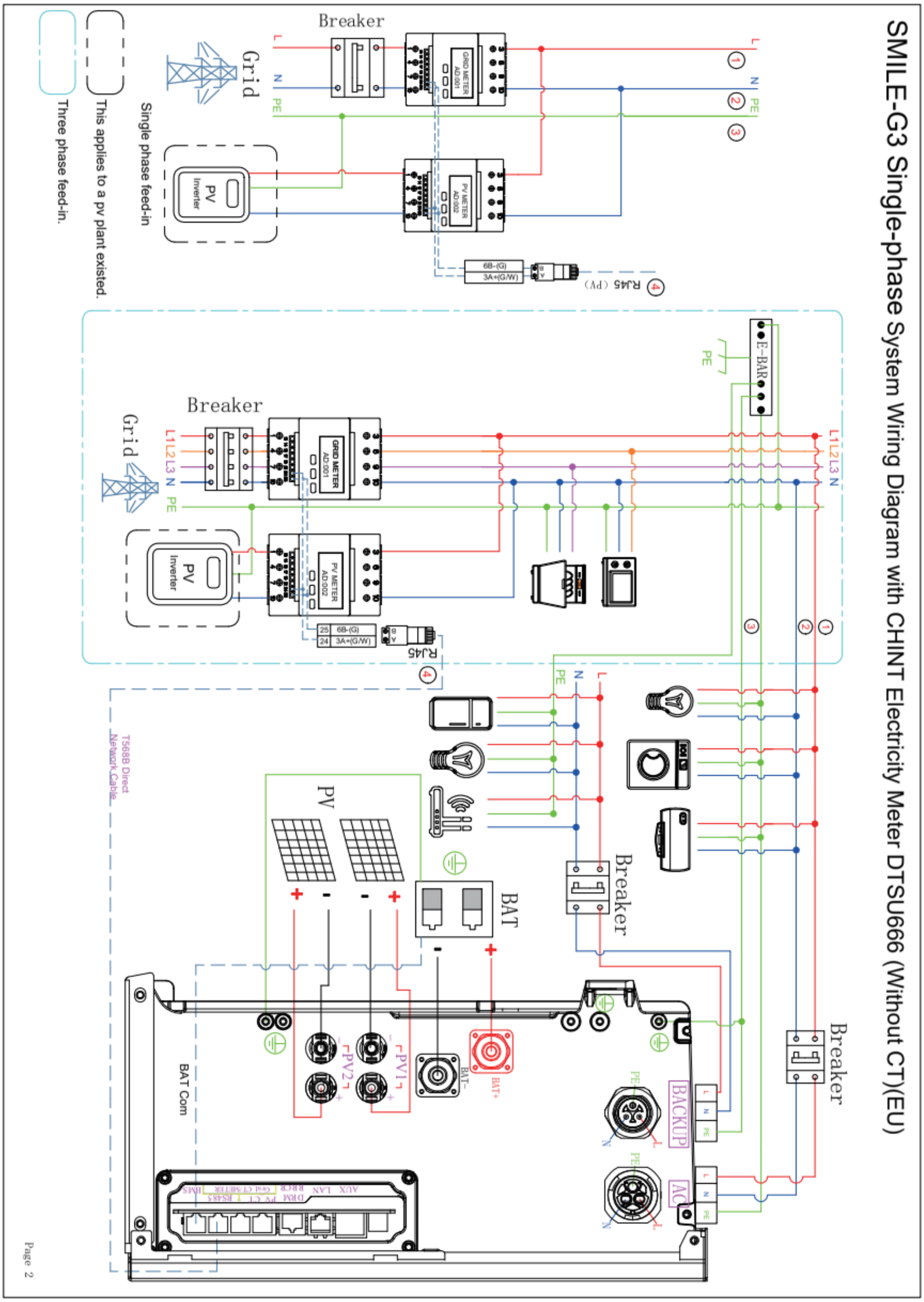
Appendix 1: System Overview

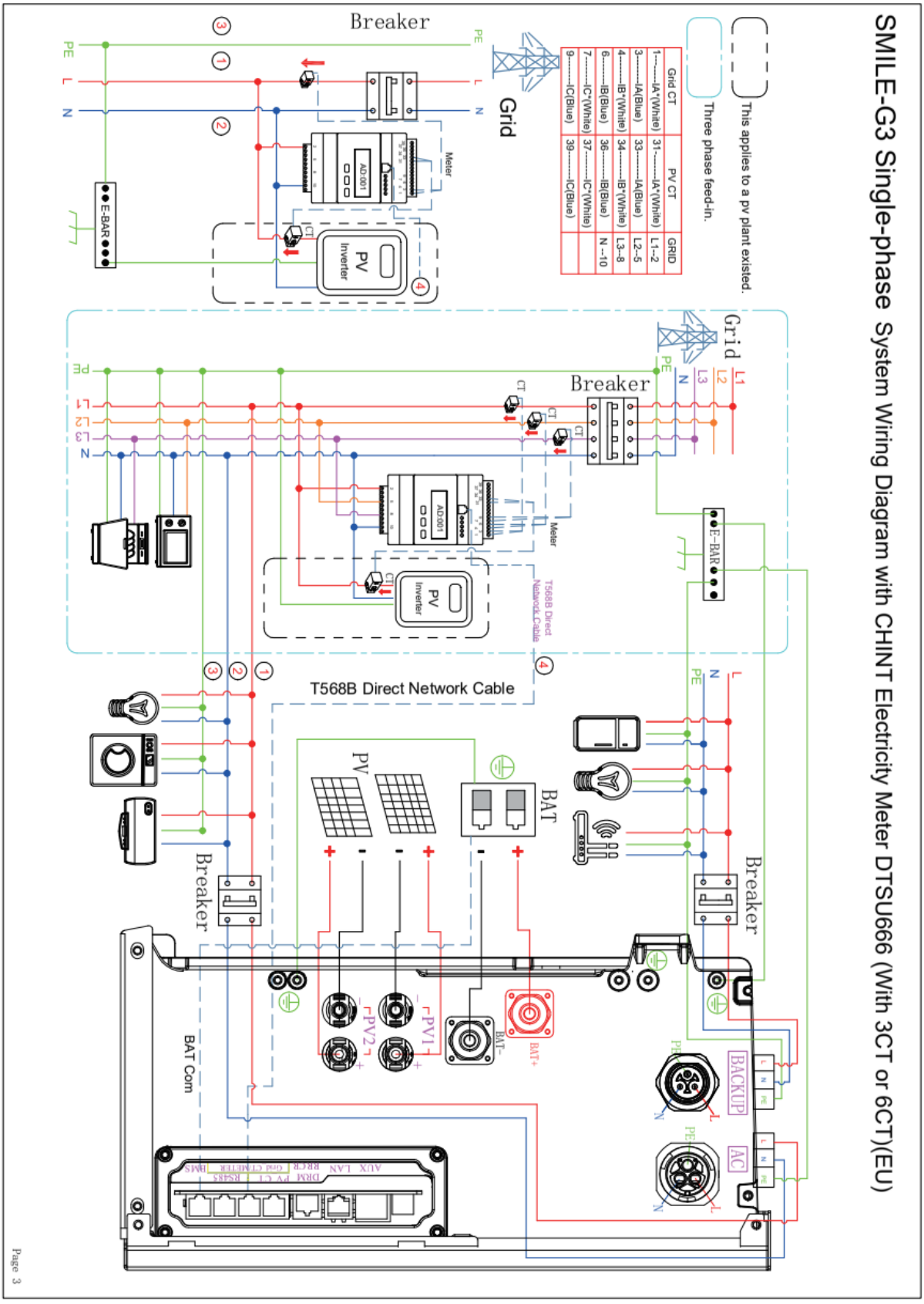


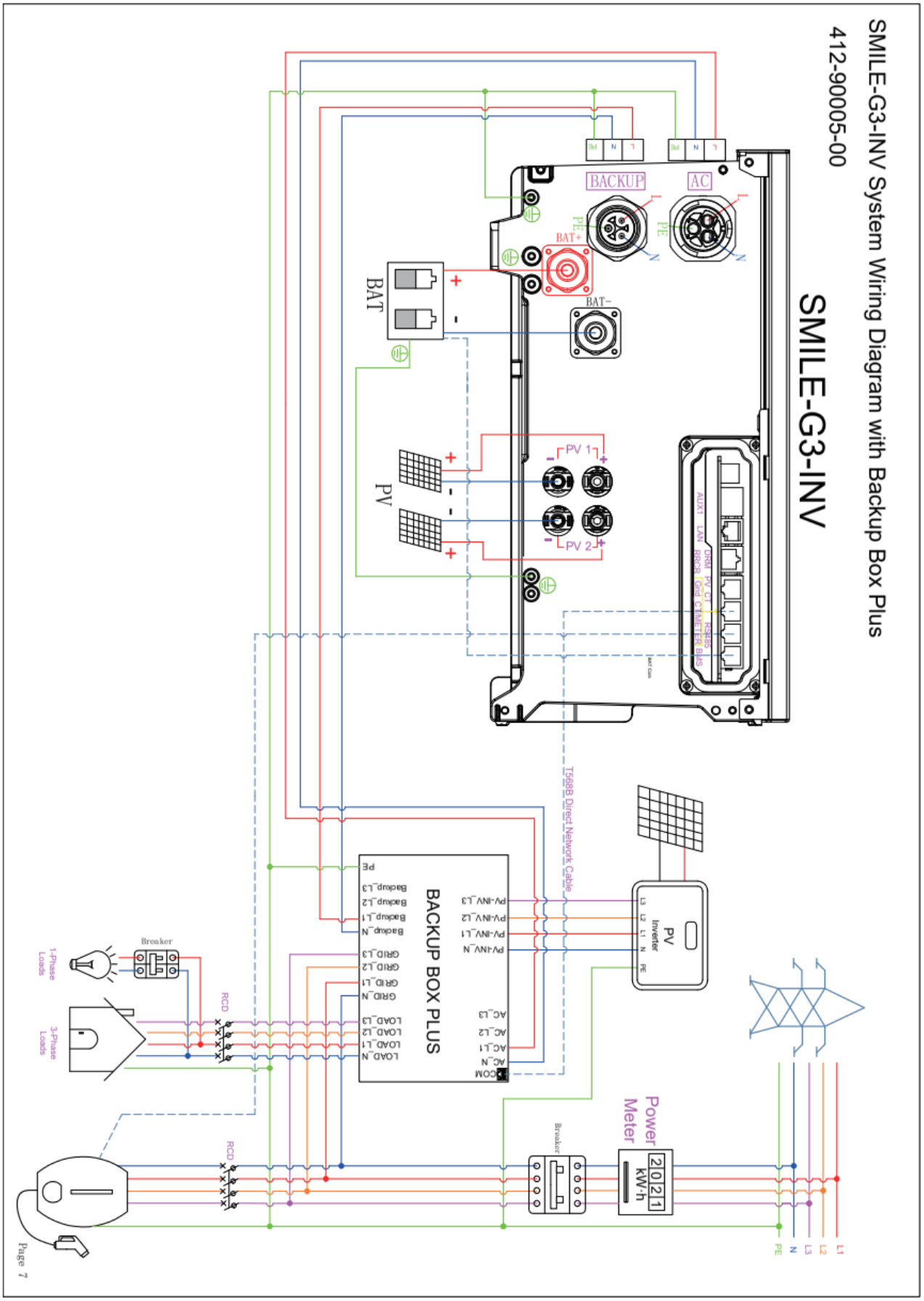

SMILE-G3 Single-phase System Wiring Diagram with CHINT Electricity Meter DTSU666
(Without CT)
Three phase feed-in.
This applies to a pv plant existed.
Single phase feed-in
Grid
Breaker
PV
Inverter
GRID METER AD-001
PV METER AD-002
N-BAR
E-BAR
E-N Link
RJ45 (PV)
L1 L2 L3 N PE
PV
BAT
BAT Com
PV1+
PV1-
PV2+
PV2-
BAT-
BAT+
BACKUP
AC
NOTICE
(Only for Australia and New Zealand installation site)
T568B Direct Network Cable
Page 5

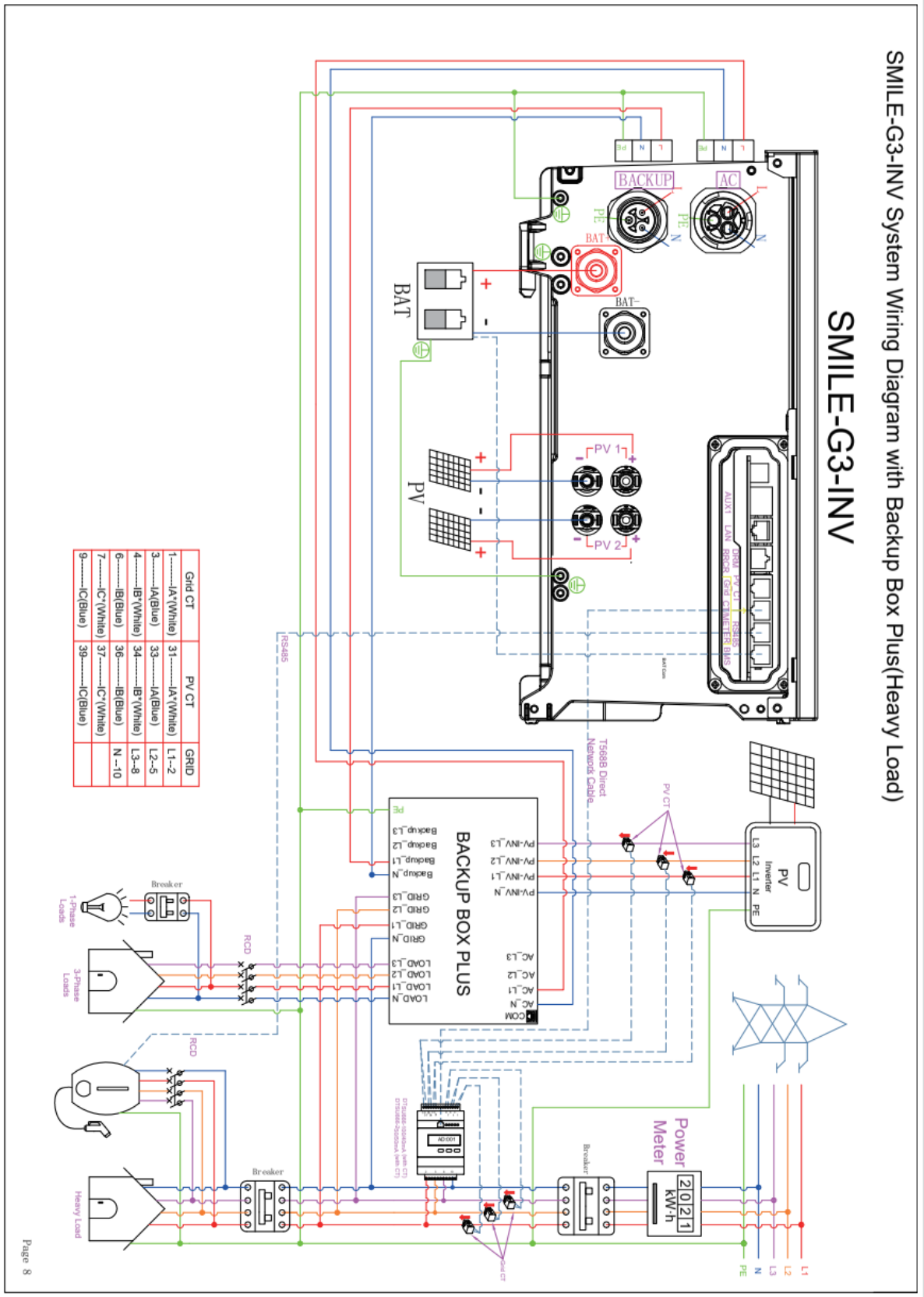

SMILE-G3 Single-phase System Wiring Diagram with CHINT Electricity Meter
DTSU666 (With 3CT or 6CT)
This applies to a pv plant existed.
Three phase feed-in.
Grid CT
PV CT
GRID
1------IA*(White) 31------IA*(White) L1--2
3------IA(Blue) 33------IA(Blue) L2--5
4------IB*(White) 34------IB*(White) L3--8
6------IB(Blue) 36------IB(Blue) N --10
7------IC*(White) 37------IC*(White)
9------IC(Blue) 39------IC(Blue)
Grid
Breaker
Meter
AD-001
PV Inverter
E-BAR
N-BAR
E-N Link
T568B Direct Network Cable
BAT
BAT Com
BACKUP
AC
NOTICE
(Only for Australia and New Zealand installation site)
Page 6

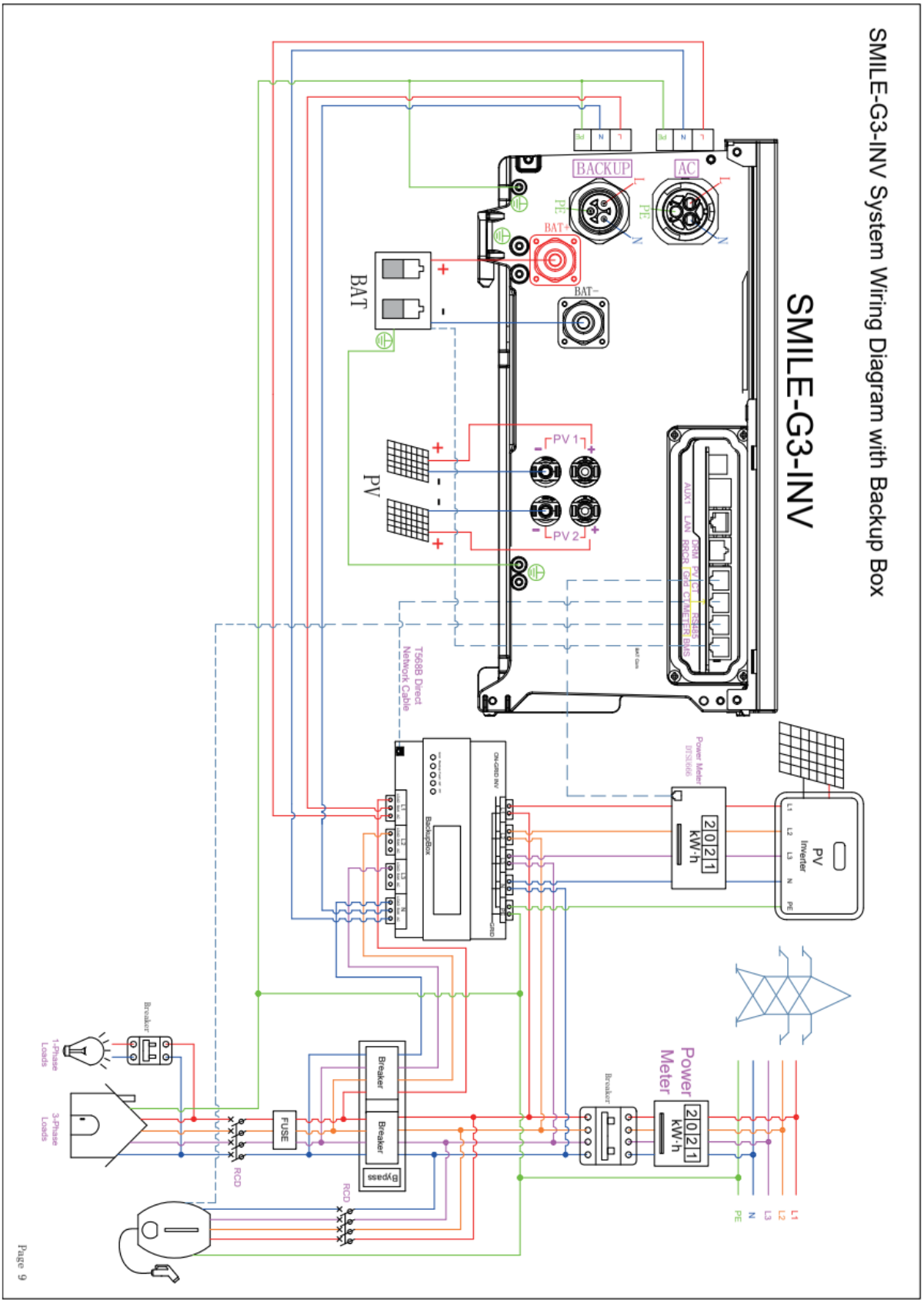

SMILE-G3 Single-phase System Wiring Diagram with CT (EU)
412-90005-00
This applies to a pv plant existed.
Grid
N
L
Breaker
Grid CT
PV CT
PV Inverter
T568B Direct Network Cable
E-BAR
PE
N
L
Breaker
Breaker
PV
BAT
BAT Com
PV2
PV1
BAT-
BAT+
BACKUP
AC
Page 1

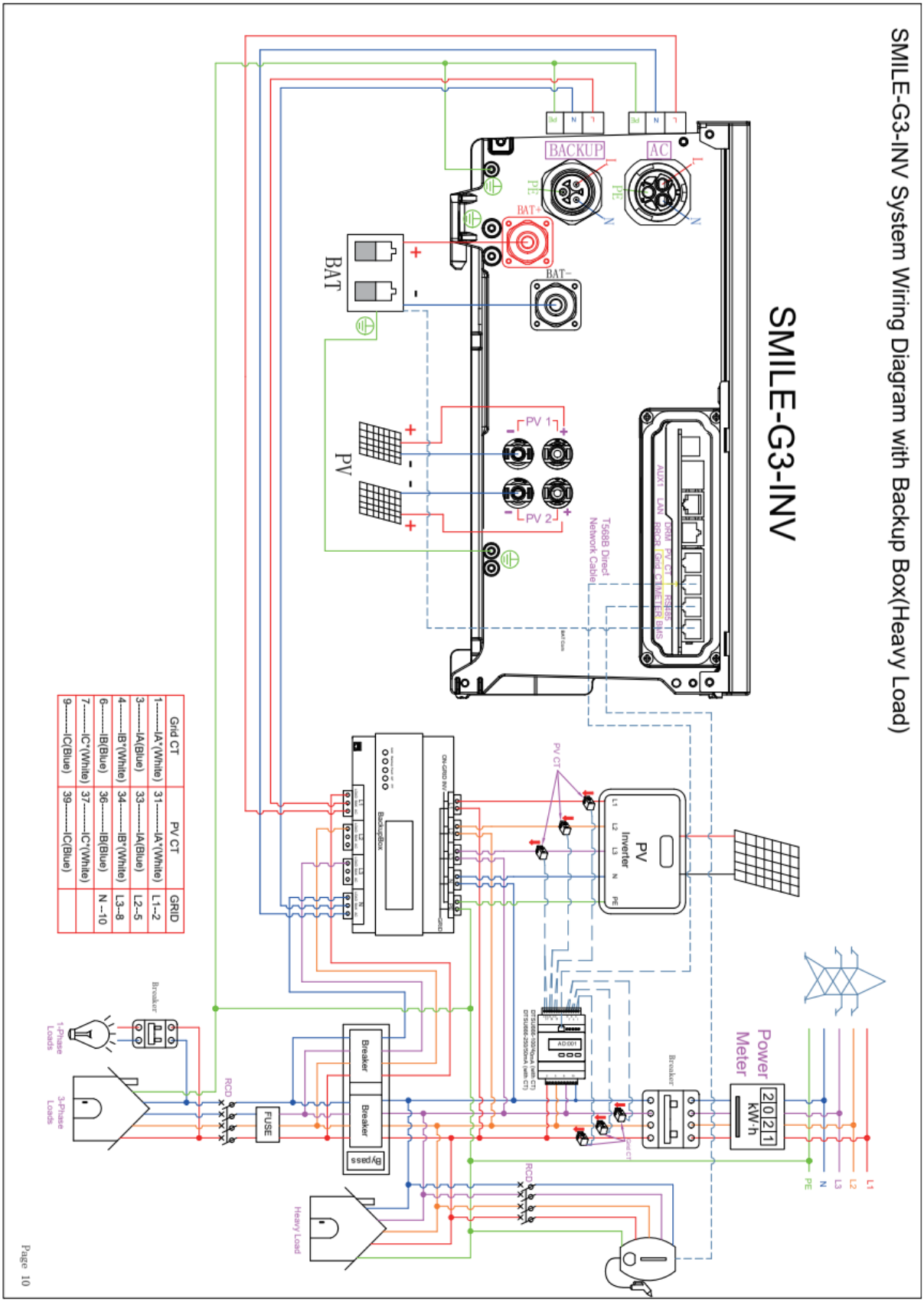

SMILE-G3 Single-phase System Wiring Diagram with CHINT Electricity Meter DTSU666 (Without CT)(EU)
Breaker
Grid
GRID METER AD:001
PV METER AD:002
PV Inverter
Single phase feed-in
This applies to a pv plant existed.
Three phase feed-in.
RJ45 (PV)
6B-(G)
3A+(G/W)
E-BAR
L1 L2 L3 N PE
L N PE
RJ45
PV
BAT
BAT+
BAT-
PV1
PV2
BAT Com
BACKUP
AC
T568B Direct Network Cable
Page 2


SMILE-G3 Single-phase System Wiring Diagram with CHINT Electricity Meter DTSU666 (With 3CT or 6CT)(EU)
This applies to a pv plant existed.
Three phase feed-in.
Grid CT
PV CT
GRID
Breaker
Grid
Meter
AD1001
E-BAR
PV Inverter
T568B Direct Network Cable
PV
BAT
BAT Com
BACKUP
AC
Page 3


SMILE-G3-INV System Wiring Diagram with Backup Box Plus
412-90005-00
SMILE-G3-INV
BACKUP
AC
BAT+
BAT-
BAT
PV
PV 1
PV 2
T568B Direct Network Cable
BACKUP BOX PLUS
PV Inverter
Power Meter
Breaker
RCD
1-Phase Loads
3-Phase Loads
Page 7


SMILE-G3-INV System Wiring Diagram with Backup Box Plus(Heavy Load)
SMILE-G3-INV
BACKUP
AC
BAT
BAT-
PV
PV 1
PV 2
RS485
T568B Direct Network Cable
BACKUP BOX PLUS
PV Inverter
Power Meter
Breaker
RCD
1-Phase Loads
3-Phase Loads
Heavy Load
Grid CT
PV CT
GRID
Page 8


SMILE-G3-INV System Wiring Diagram with Backup Box
SMILE-G3-INV
BACKUP
AC
BAT
PV
PV 1
PV 2
T568B Direct Network Cable
Power Meter
PV Inverter
BackupBox
Breaker
FUSE
Bypass
RCD
1-Phase Loads
3-Phase Loads
L1
L2
L3
N
PE
Page 9


SMILE-G3-INV System Wiring Diagram with Backup Box(Heavy Load)
SMILE-G3-INV
BACKUP
AC
BAT
PV
PV 1
PV 2
T568B Direct Network Cable
PV Inverter
Power Meter
Breaker
FUSE
RCD
1-Phase Loads
3-Phase Loads
Heavy Load
Grid CT
PV CT
GRID
Page 10

Appendix 2: Regional Application Standard

Please check with your local grid company and choose the corresponding 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 standard).

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

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