

# INSTALLATION, OPERATION & MAINTENANCE MANUAL OF SMILE - G3 - S8 / S5 / S3.6 / B5





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**CONTENT**

**DISCLAIMER ..... 1**

**COPYRIGHT STATEMENT..... 2**

**CONTENT ..... 3**

**1. Introduction ..... 7**

**1.1. Content and Structure of this Document ..... 7**

**1.2. Target Group ..... 7**

**1.3. Levels of Warning Messages ..... 8**

**1.4. Definition of Abbreviations and Nouns ..... 9**

**2. Safety ..... 10**

**2.1. Intended Use ..... 10**

**2.2. Safety Instructions for Battery ..... 11**

        2.2.1. General Safety Precautions ..... 11

        2.2.2. Response to Emergency Situations ..... 11

**2.3. Important Safety Instructions ..... 12**

**2.4. Symbols Explanation ..... 16**

**3. Product Introduction and Application Scenarios ..... 19**

**3.1. Nomenclature Introduction ..... 19**

**3.2. System Introduction ..... 20**

**3.3. Product Description ..... 21**

        3.3.1. Inverter Electrical Interface Introduction ..... 21

        3.3.2. Inverter Display Interface Introduction ..... 22

        3.3.3. Battery Display Interface Introduction ..... 32

        3.3.4. Battery Introduction: SMILE-G3-BAT-10.1P ..... 33

        3.3.5. Battery Introduction: SMILE-G3-BAT-8.2P ..... 34

        3.3.6. Battery Introduction: SMILE-G3-BAT-3.8S ..... 35

        3.3.7. Battery Introduction SMILE-G3-BAT-4.0S ..... 36

<b>3.4. Application Scenarios .....</b>	<b>37</b>
3.4.1. DC-Coupled Storage System .....	37
3.4.2. AC-Coupled Storage System.....	37
3.4.3. Hybrid-Coupled Storage System.....	38
3.4.4. Off-Grid Storage System .....	38
<b>4. Storage and Transport .....</b>	<b>39</b>
<b>4.1. Storage .....</b>	<b>39</b>
4.1.1. Inverter Storage.....	39
4.1.2. Battery Storage.....	39
<b>4.2. Transport.....</b>	<b>40</b>
<b>5. Mounting .....</b>	<b>41</b>
<b>5.1. Check the Outer Packing .....</b>	<b>41</b>
<b>5.2. Scope of Delivery .....</b>	<b>41</b>
<b>5.3. Requirements for Mounting.....</b>	<b>46</b>
5.3.1. Basic Requirements .....	46
5.3.2. Mounting Environment Requirements.....	46
5.3.3. Mounting Structure Requirements.....	47
5.3.4. Mounting Angle and Stack Requirements .....	47
5.3.5. Mounting Space Requirements .....	48
<b>5.4. Prepare Tools and Instruments.....</b>	<b>50</b>
<b>5.5. Mount the Product .....</b>	<b>51</b>
5.5.1. Mount the Parallel Battery SMILE-G3-BAT-8.2P .....	51
5.5.2. Mount the Parallel Battery SMILE-G3-BAT-10.1P .....	53
5.5.3. Mount the Series Batteries .....	55
5.5.4. Mount the Inverter .....	63
5.5.5. Mount the Wi-Fi Module .....	63
<b>6. Electrical Connection.....</b>	<b>64</b>
<b>6.1. Cable Requirements for Connection.....</b>	<b>65</b>
<b>6.2. Grounding Connection.....</b>	<b>66</b>
<b>6.3. AC Connection .....</b>	<b>67</b>

6.3.1. Requirements for the AC Connection .....	67
6.3.2. Select Suitable AC Circuit Breaker .....	68
6.3.3. Grid and Backup Connection .....	69
6.3.4. CT Connection & Meter Connection.....	71
<b>6.4. PV Connection .....</b>	<b>77</b>
<b>6.5. Electrical Connection between the Inverter and Battery .....</b>	<b>79</b>
6.5.1. Electrical Connection between the Inverter and SMILE-G3 Batteries .....	79
6.5.2. Communication Connection with Inverter .....	86
<b>6.6. Mount Covers of the Battery and Inverter .....</b>	<b>88</b>
<b>7. Installer Account Register and Install New System.....</b>	<b>91</b>
<b>7.1. Register on APP .....</b>	<b>91</b>
7.1.1. Download and Install APP .....	91
7.1.2. Register as Installer Account.....	91
7.1.3. Overview of Functions for Installer Account.....	92
7.1.4. Install New System.....	93
<b>7.2. Register on AlphaCloud .....</b>	<b>95</b>
7.2.1. Register as Installer Account.....	95
7.2.2. Install New System .....	97
<b>8. Power On and Off the System.....</b>	<b>98</b>
<b>8.1. Power on the System.....</b>	<b>98</b>
<b>8.2. Power off the System.....</b>	<b>98</b>
<b>9. Commissioning.....</b>	<b>99</b>
<b>9.1. Check Before Power-On .....</b>	<b>99</b>
<b>9.2. Action before Commissioning.....</b>	<b>99</b>
<b>9.3. WiFi Module Configuration and Parameter Settings.....</b>	<b>100</b>
9.3.1. WiFi Configuration .....	100
9.3.2. Direct Commissioning on WiFi Configuration.....	105
<b>9.4. Install New System and Settings on the APP .....</b>	<b>108</b>
9.4.1. Download and Install the APP.....	108
9.4.2. Register as an Installer .....	108

9.4.3. Install New System.....	108
<b>9.5. Check the Running State On-line .....</b>	<b>110</b>
9.5.1. Check the Charge Function.....	110
9.5.2. Check the PV Generation and Discharge Function.....	112
9.5.3. Check the UPS State .....	113
<b>9.6. Instruct the End User to Install the APP .....</b>	<b>113</b>
<b>10. Maintenance and Troubleshooting .....</b>	<b>114</b>
<b>10.1. Routine Maintenance.....</b>	<b>114</b>
<b>10.2. Troubleshooting.....</b>	<b>115</b>
10.2.1. Common Errors .....	115
10.2.2. Battery Protection Description for Parallel batteries .....	123
10.2.3. Battery Protection Description for Series Batteries .....	124
10.2.4. Battery Error Description .....	125
<b>11. Uninstallation &amp; Return .....</b>	<b>126</b>
<b>11.1. Remove the Product.....</b>	<b>126</b>
<b>11.2. Pack the Product.....</b>	<b>126</b>
<b>11.3. Dispose of the Product .....</b>	<b>126</b>
<b>12. Specifications .....</b>	<b>127</b>
<b>12.1. Datasheet of Inverter SMILE-G3 Single Phase Inverter.....</b>	<b>127</b>
<b>12.2. Datasheet of Battery .....</b>	<b>130</b>
12.2.1. Datasheet of battery SMILE-G3-BAT-8.2P .....	130
12.2.2. Datasheet of battery SMILE-G3-BAT-10.1P.....	131
12.2.3. Datasheet of battery SMILE-G3-BAT-3.8S .....	132
12.2.4. Datasheet of battery SMILE-G3-BAT-4.0S .....	133
<b>Appendix 1: System Overview .....</b>	<b>134</b>
<b>Appendix 2: Regional Application Standard .....</b>	<b>140</b>

## 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-S8/S5/S3.6/B5-INV and battery SMILE-G3-BAT-8.2P/10.1P, and SMILE-G3-BAT-3.8S/4.0S.

This document describes the mounting, installation, commissioning, configuration, operation, troubleshooting and decommissioning of the product as well as the operation of the product 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-S8/S5/S3.6/B5-INV, SMILE-G3-BAT-10.1P and SMILE-G3-BAT-4.0S are suitable for indoor and outdoor installation.

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

The SMILE-G3-S8/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  $\mu\text{F}$ .

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 the 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<sub>2</sub> 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 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 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 cover.

**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 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. Touching 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 could 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. High voltages that can cause lethal electric shocks are present in the live components of the inverter. 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 documentations Observe all documentations supplied with the product.
	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.

Symbols on the type label and warning label of the battery

Symbol	Explanation
	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.
	Beware of electrical voltage The product operates at high voltages.
	Corrosive substances warning The product contains corrosive substances that can cause severe injury if they come into direct contact with the skin.
	Potentially explosive substances warning Improper handling or fire can cause the product to ignite or explode.
	Warning of hazards from batteries This symbol indicates the danger of handling batteries.
	Observe the documentations Observe all documentations supplied with the product.
	Refer to the instruction for operation Observe all documentations supplied with the product.
	Use eye protection Wear eye protection for all work on the device.
	No open flame Handling an open flame and sources of ignition is forbidden in the immediate vicinity of the product.
	Access is prohibited for all children Children must be kept at a safe distance from the product.
	Do not short circuit Touching the short-circuit connection of the battery results in death or lethal injuries due to electric shock and massive energy release.
	WEEE designation Do not dispose of the battery together with the household waste but in accordance with the locally applicable disposal regulations for batteries.
	CE marking The product complies with the requirements of the applicable EU directives.
	RCM (Regulatory Compliance Mark) The product complies with the requirements of the applicable Australian standards.



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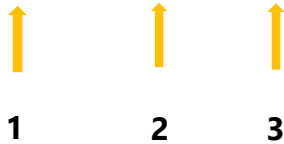
<b>UK CA</b>	UKCA marking The product complies with the regulations of the applicable laws of England, Wales and Scotland.
<b>UN38.3</b>	Marking for transport of dangerous goods The product passes the certifications of the UN38.3.



### 3. Product Introduction and Application Scenarios

#### 3.1. Nomenclature Introduction

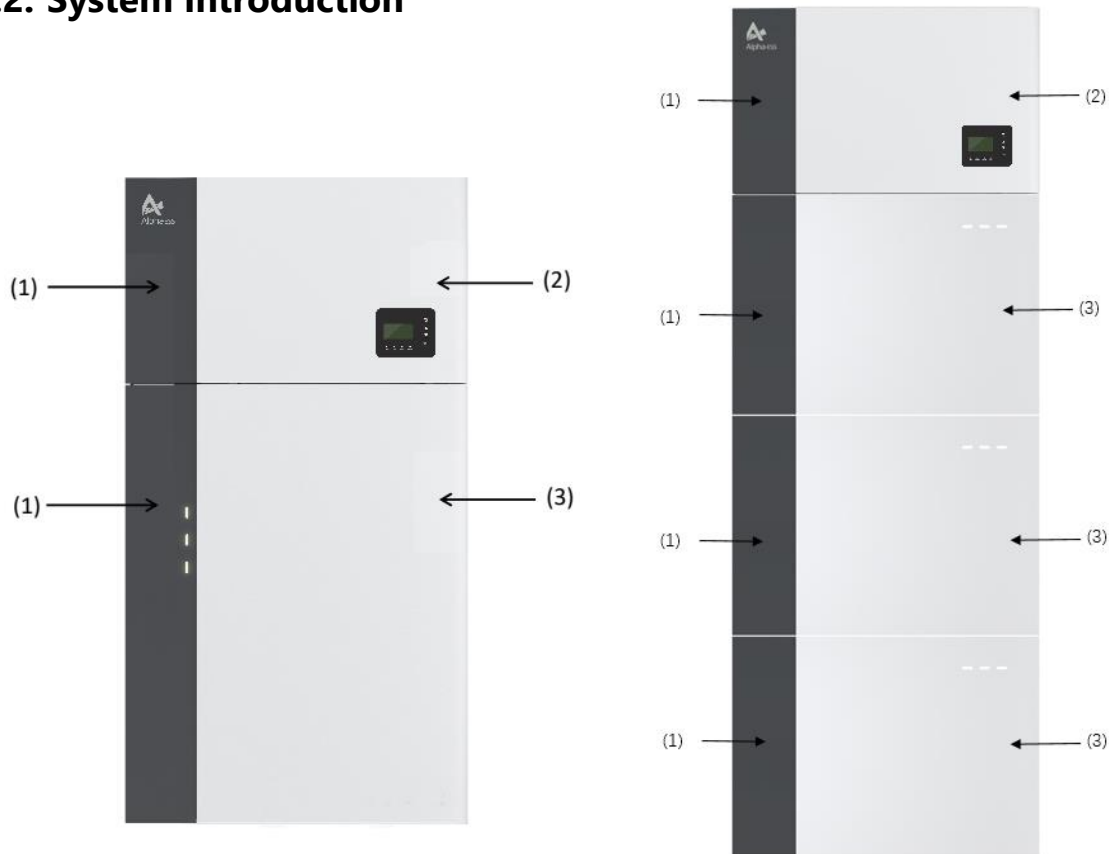
## SMILE-G3-S5



Location	Name	Explanation
1	SMILE	Residential system
2	G3	Generation 3
3	S8 S5 S3.6 B5	8kW single phase DC-coupled energy storage system 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-S8 SMILE-G3-S5 SMILE-G3-S3.6 SMILE-G3-B5	System/Energy storage system
SMILE-G3-S8-INV, SMILE-G3-S5-INV, SMILE-G3-S3.6-INV, SMILE-G3-B5-INV	Energy storage inverter
SMILE-G3-BAT-8.2P SMILE-G3-BAT-10.1P	Parallel batteries
SMILE-G3-BAT-3.8S SMILE-G3-BAT-4.0S	Series batteries

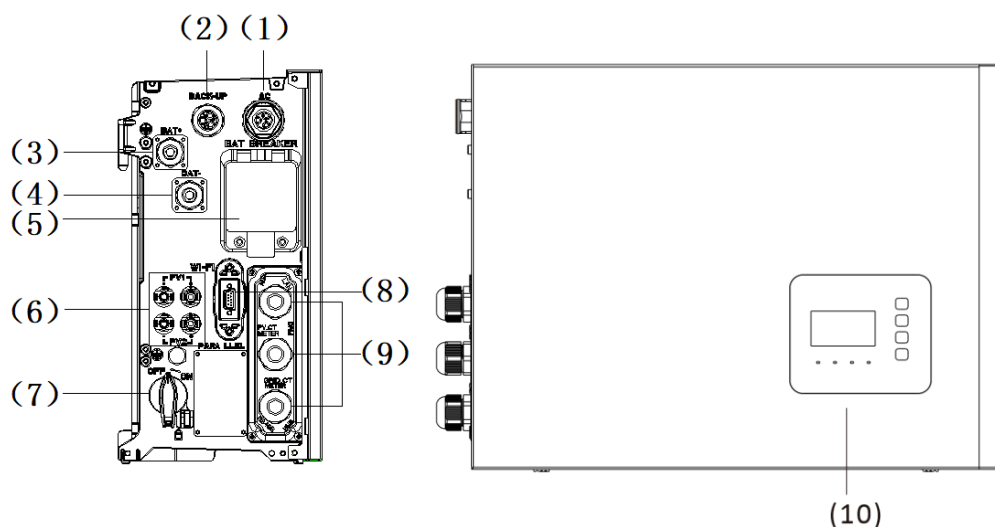
### 3.2. System Introduction



Object	Name	Explanation
1	Cable Cover	Cover for the left wiring area
2	SMILE-G3-S8-INV SMILE-G3-S5-INV SMILE-G3-S3.6-INV SMILE-G3-B5-INV	Energy storage inverter
3	SMILE-G3-BAT-8.2P SMILE-G3-BAT-10.1P SMILE-G3-BAT-3.8S SMILE-G3-BAT-4.0S	Battery

### 3.3. Product Description

#### 3.3.1. Inverter Electrical Interface Introduction

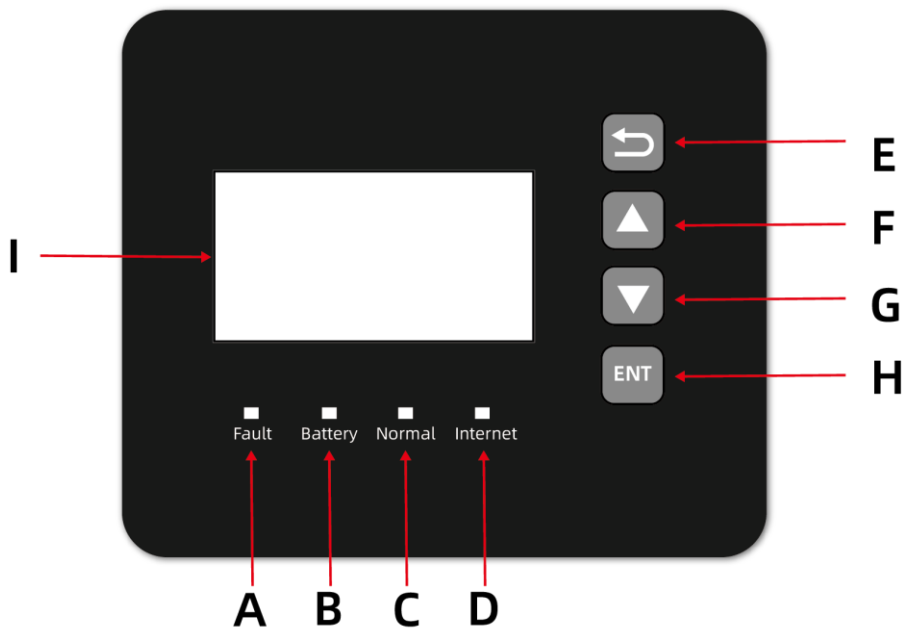


Position	Designation
1	Grid Connector
2	Backup Connector
3	Battery+ Power Connector
4	Battery- Power Connector
5	Battery Breaker* of the Inverter
6	Positive and Negative PV Connectors, PV1/PV2 *
7	PV Switch*
8	Wi-Fi Port
9	Communication Ports (BMS, RS485, PV-CT, Meter&Grid-CT, DRM**&RRCR, LAN, AUX)
10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

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

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

### 3.3.2. Inverter Display Interface Introduction



Object	Name	Description
A	Indicator LED	<b>Red:</b> The inverter is in fault.
B		<b>Green:</b> The battery is in charging or discharging.
C		<b>Green:</b> The inverter is in normal state.
D		<b>Green:</b> The system has connected to the server.
E	Button Function	Return Button: Escape from the current interface or function.
F		Up Button: Move cursor to upside or increase value.
G		Down Button: Move cursor to downside or decrease value.
H		ENT Button: Confirm the selection.
I	LCD	Display the information of the energy storage system

### 3.3.2.1 Main Interface of the Inverter LCD

Power	0W
Total	00.0kWh
Battery	%
Normal	

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

Display the inverter working status and information, including:

1. Power: Current PV power
2. Total: Total power generation.
3. Battery: Current remaining battery power (SOC).
4. Normal: Current working state of the system, including standby.

In the Main interface, press ENT key to enter the menu's main interface.

Use the Up and Down key to select a sub-menu, press the ENT key to enter the selected sub-menu, press Return key to return to the previous layer.

### 3.3.2.2 Display Content of Sub-Menu Status Item

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

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

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

Grid interface displays the real-time information on the mains grid side: voltage U, current I, frequency F, P<sub>Inv</sub>, P<sub>Meter AC</sub>, P<sub>Meter DC</sub>.

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

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

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

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

```

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

```

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

```

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

```

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

### 3.3.2.3 Display Content of Sub-Menu History Item

```

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

```

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

```

>  Grid CONSUMP  <
>  Total:
                        0.0kWh

```

Grid Consumption interface displays total load consumption from mains grid.

```

>>>  INV Gen.  <<<<
> Total:
                        29.1kWh

```

INV Gen. interface displays total energy generated from this inverter.

```

>>>  Bat Gen.  <<<<
> Total:
                        13.8kWh

```

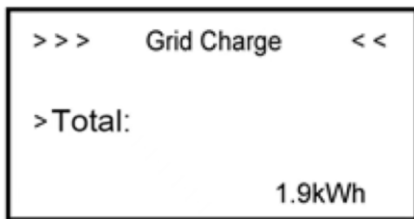
Bat Gen. interface displays total energy discharged from the battery.

```

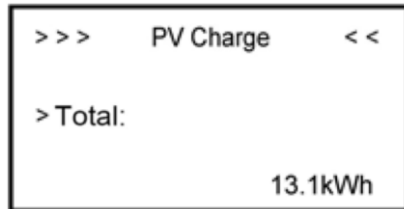
>>>  PV Gen.  <<<<
> Total:
                        19.0kWh

```

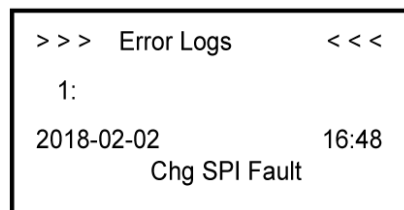
PV Gen. interface displays total energy generated from the PV-panels.



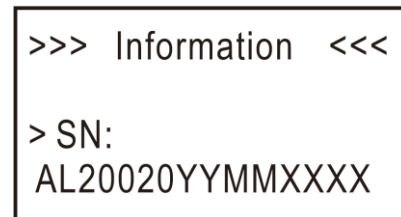
Grid Charge interface displays total battery energy charging from the grid.



PV Charge interface displays total battery energy charging from the PV-panels.

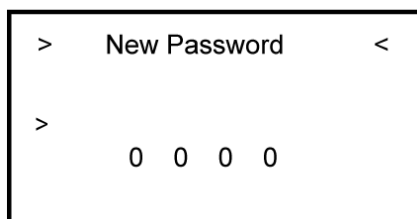


Error Logs interface displays the 10 latest fault records of this system, including the name and time of the error.



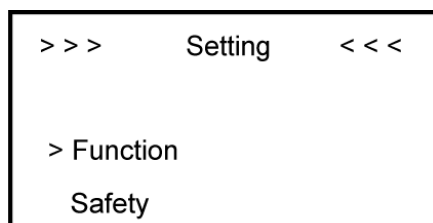
Make sure all numbers in the information menu are correct.

### 3.3.2.4 Display Content of General Setting Item



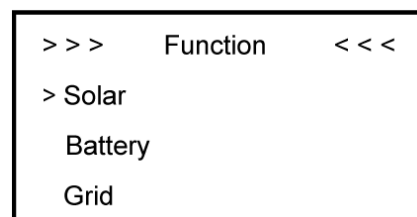
#### Step 1

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



#### Step 2

Click Function to enter the function setting.



#### Step 3

Click Solar to set the Solar relevant information.

```

>>> Solar <<<<
> On Grid Cap.
000000W

```

**Step 4**

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

```

>>>>Battery<<<<
> SOC Calibration
No

```

**Step 6**

Check the SOC Calibration Function set to No.

```

>>>>>Grid<<<<<<
> FeedIN Control
Voltage Limit
Frequency Limit

```

**Step 8**

Grid menu contains seven sub-menus: FeedIN Control, Voltage Limit, Frequency Limit, Protect Thold, Protect Enable, Power Limit, Power Factor. Click the Grid Function to set relevant parameters of the grid.

```

>>>Vol Limit<<
>OVP Trip
275.0 V

```

**Step 10**

Set the OVP Trip value .Change the Grid arguments.

```

>>> Battery <<<<<
> Bat Model
SMILE-G3-BAT-4.0S

```

**Step 5**

Click the Battery Function and check battery type.

```

>>>> Battery<<<<<
> Battery Ready
No

```

**Step 7**

Check the Battery Ready Function set to No. If you only use this inverter without battery, please set it to Yes.

```

Max. Feed in rate
> User Value:
50%

```

**Step 9**

Set the Max. Feed in rate value.

```

>>>Vol Limit<<
>UVP Trip
150.0 V

```

**Step 11**

Set the UVP Trip value .Change the Grid arguments.



```
>>> Vol Limit <<
>VAC 10Avg

258.0 V
```

**Step 12**

Set the OVP10min Trip value .Change the Grid arguments.

```
>>> Vol Limit <<
>OVP Trip Time

00045ms
```

**Step 13**

Set the OVP Trip Time value .Change the Grid arguments.

```
>>> Vol Limit <<
> UVP Trip Time

00045ms
```

**Step 14**

Set the UVP Trip Time value .Change the Grid arguments.

```
>>> Vol Limit <<
>VAC 10Avg Time

00001ms
```

**Step 15**

Set the OVP10min Trip time value .Change the Grid arguments.

```
>>> Vol Limit <<
>OVP Restr

272.0 V
```

**Step 16**

Set the OVP restore value .Change the Grid arguments.

```
>>> Vol Limit <<
>UVP Restr

153.0 V
```

**Step 17**

Set the UVP restore value .Change the Grid arguments.

```
>> Freq Limit <<
>OFP Trip

54.50 Hz
```

**Step 18**

Set the UFP Trip value .Change the Grid arguments.

```
>> Freq Limit <<
>UFP Trip

45.50 Hz
```

**Step 19**

Set the UFP Trip Time value .Change the Grid arguments.

```
>> Freq Limit <<
>OFP Trip Time

00900ms
```

**Step 20**

Set the OFP Trip Time value .Change the Grid arguments.

```
>> Freq Limit <<
>UFP Trip Time

00900ms
```

**Step 21**

Set the UFP Trip Time value .Change the Grid arguments.

```
>> Freq Limit <<
>OFP Restr

54.00Hz
```

**Step 22**

Set the OFP restore value .Change the Grid arguments.

```
>>> Pro Para <<
>Grid connect DT

00120s
```

**Step 24**

Set the first connect grid waiting Time .

```
>>> Pro Para <<
>GFCI 30mA

00025mA
```

**Step 26**

Set the GFCI 30mA threshold to detect the GFCI, within a reasonable range.

```
>>> Pro Para <<
>GFCI 150mA

00055mA
```

**Step 28**

Set the GFCI 150mA threshold to detect the GFCI ,within a reasonable range.

```
>>> Pro Enable <<
>Over Freq EN

NO
```

**Step 30**

Set whether the over frequency detection is enabled, “YES” is enable, “NO” is disenable.

```
>> Freq Limit <<
>UFP Restr

46.00Hz
```

**Step 23**

Set the UFP restore value .Change the Grid arguments.

```
>>> Pro Para <<
>Reconnect Time

00120s
```

**Step 25**

Set the reconnect grid waiting Time .

```
>>> Pro Para <<
>GFCI 60mA

00025mA
```

**Step 27**

Set the GFCI 60mA threshold to detect the GFCI ,within a reasonable range.

```
>>> Pro Para <<
>GFCI 300mA

00110mA
```

**Step 29**

Set the GFCI 300mA threshold to detect the GFCI ,within a reasonable range.

```
>>> Pro Enable <<
>Under Freq EN

NO
```

**Step 31**

Set whether the under frequency detection is enabled, “YES” is enable, “NO” is disenable.

```
>>>Pro Enable <<
>GFCI Detect

YES
```

### Step 32

Set whether the GFCI detection is enabled, "YES" is enable, "NO" is disenable.

```
>>>Pro Enable <<
>N-PE Short EN

YES
```

### Step 34

Set whether the N-PE short circuit detection is enabled, "YES" is enable, "NO" is disenable.

```
>>>Pro Enable <<
>N-Line Detect

NO
```

### Step 33

Set whether the N-Line detection is enabled, "YES" is enable, "NO" is disenable.

```
>> System Mode <<
> DC
AC
Hybrid
```

### Step 35

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

```
>>> Work Mode <<
> Force Charge

Enable
```

### Step 36

Click the mode then set work mode: self-use or force time charge.

```
>>> Work Mode <<
> Charge
Start Time 1
01 :00
```

### tep 38

Set the charge and discharge time.

```
>>> Work Mode <<
> Force Charge

Enable
```

### Step 37

If you want to use Force Charge, set to Enable here.

```
>>> Work Mode <<
> UPS Reserve SOC
11 %
```

### Step 39

Set the UPS Reserve SOC, it means how much battery energy to reserve for UPS function.

```
>>>> Safety <<<<
> Country

AS4777
```

### Step 40

Click Safety in the setting menu. Set safety standard to AS4777 for Australia, ARN4105 for Germany, CEIO\_21 for Italy, NRS097\_2\_1 for South Africa, RD1699 for Spain.

```
>>> CT Meter <<<
> Enable          OFF
Ratio             1
```

**Step 41**

If you use CT meter, please set CT meter to Enable and the relevant ratio.

```
>> UPS System <<
> Mute           YES
Frequency:      50Hz
```

**Step 42**

If you use UPS function, please set the Mute to YES in UPS System interface and the relevant Frequency.

```
>> Date&Time <<
> 2018 - 02 - 02
    09 : 46
```

**Step 43**

Click System in the setting menu. Click Date & Time and set the date and time.

```
>>> Ethernet <<<
IP method

> DHCP
```

**Step 44**

Click Ethernet to set the IP address.

DHCP mode means that the IP address is set up automatically.

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

**Information**

The following 3 parameters need to be set for manual mode:

IP Address: IP address;

Subnet Mask: Subnet mask;

Default Gateway: Default gateway;

Automatic display one parameter: MAC Address.

```
>>> Language <<<
> English
    Deutsch
```

**Step 45**

Click Language to set language.

```
>> Information <
> SN:
    AL20020YYMMXXXX
```

**Step 46**

Make sure all the following number is correct.

### 3.3.2.5 Display Content of Additional Function Setting

If you use Backup box, please set as below:

```
>> Backupbox <<
> Enable
   No
```

**Step 1**

Click Enable to set to Yes.

```
>> Backupbox <<
> L1    1 SOC    10
   L1    2 SOC    10
   L1    3 SOC    10
```

**Step 2**

Set the priority of the load, L1>L2>L3.

If external device will dispatch the system, please set as following steps:

```
>>> Function <<<
> Parallel
   ModBus
```

**Step 1**

Please go to the function menu, choose "ModBus" and press enter.

```
>>> ModBus <<<
> Enable      OFF
   Mode       Slave
```

**Step 2**

Please set ModBus Enable to ON.

### 3.3.2.6 Overload Reminder

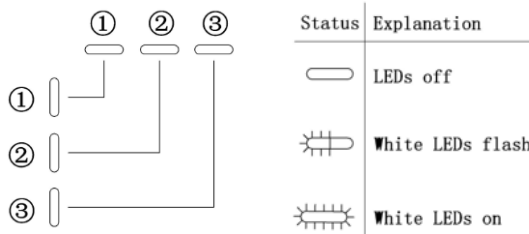
When overloaded, the display will show "over load" and scroll to prompt the customer to reduce some electrical appliances like this 'please turn off some electrical appliances'.

```
>>> Main <<<

please turn off some
electrical appliances
```

### 3.3.3. Battery Display Interface Introduction

During normal operation of battery, three LED indicators on the front cover provide information about the SOC of the battery with white lights on and off or flashing (0.5S on, 1.5S 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%

#### State Display

The LEDs indicate the operating state of the product.

Standby: all white LEDs are flashing (0.5s on and 0.5s off).

Normal: white LEDs are glowing or flashing (0.5s on and 1.5s off).

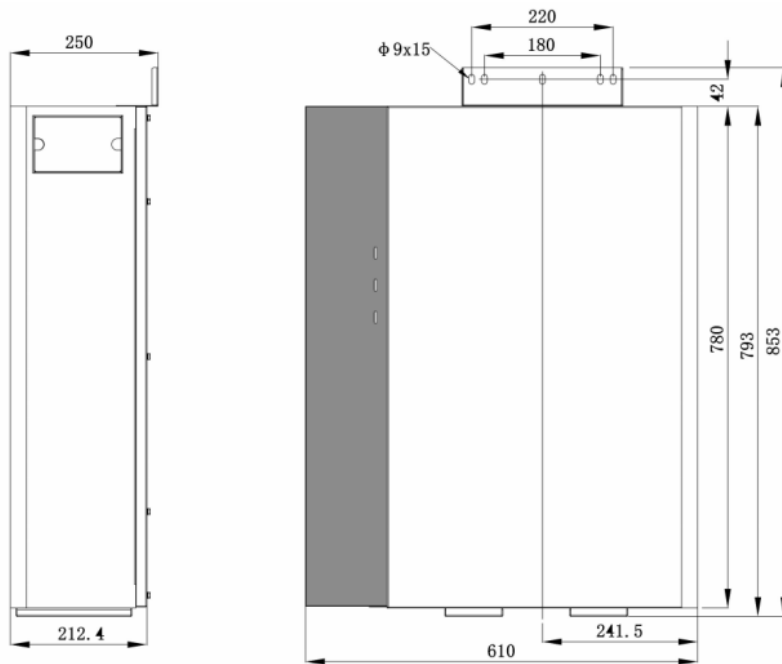
Protection: yellow LEDs are glowing or flashing (0.5s on and 0.5s off).

Error: yellow LEDs are glowing or flashing (0.5s on and 0.5s off).

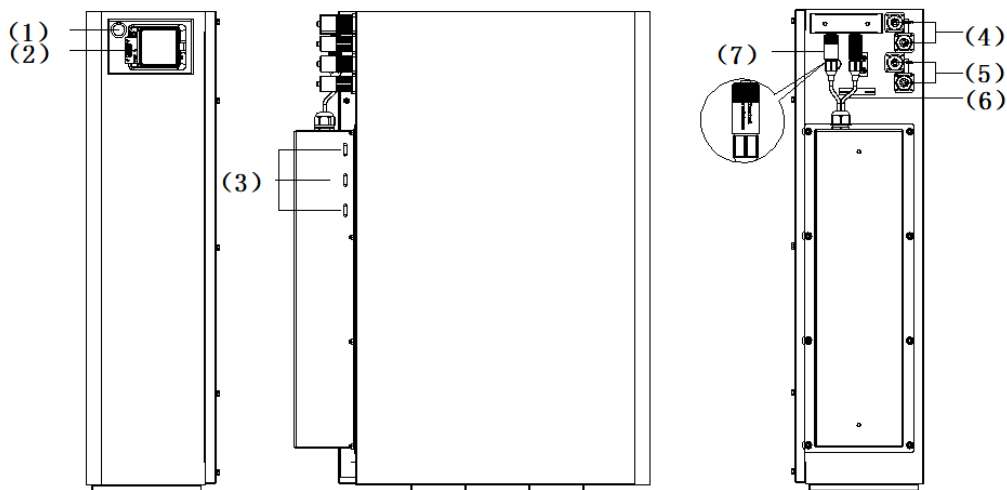
Shutdown: all LEDs are off.

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

Battery appearance and dimensions



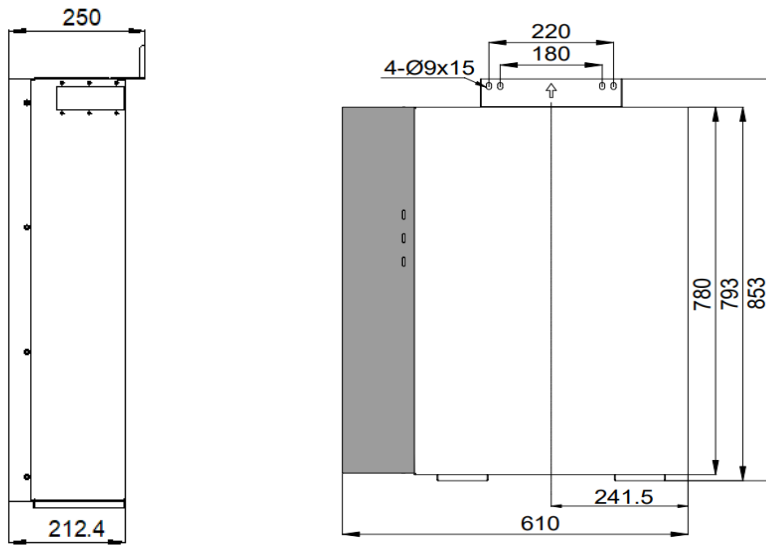
Connection area overview



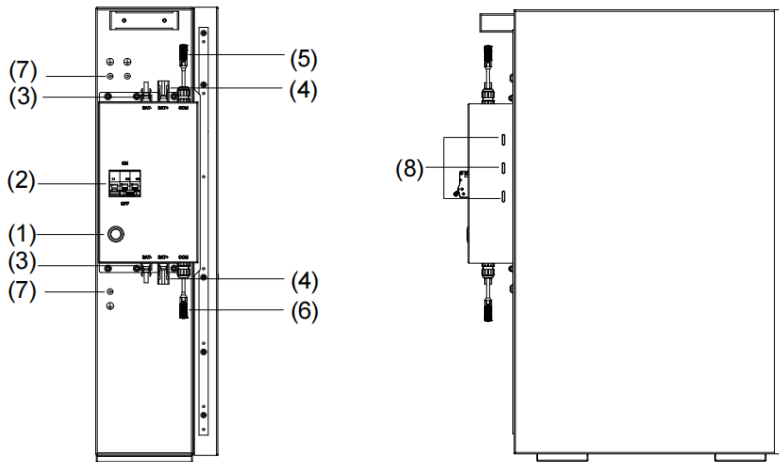
Position	Designation
1	Battery Power Button
2	Battery Breaker
3	Battery LED Display
4	Battery+ Power Connector
5	Battery- Power Connector
6	Grounding Point
7	BMS COM Ports: BMS COM1, BMS COM2 (with Terminal Resistor)

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

Battery appearance and dimensions



Connection area overview

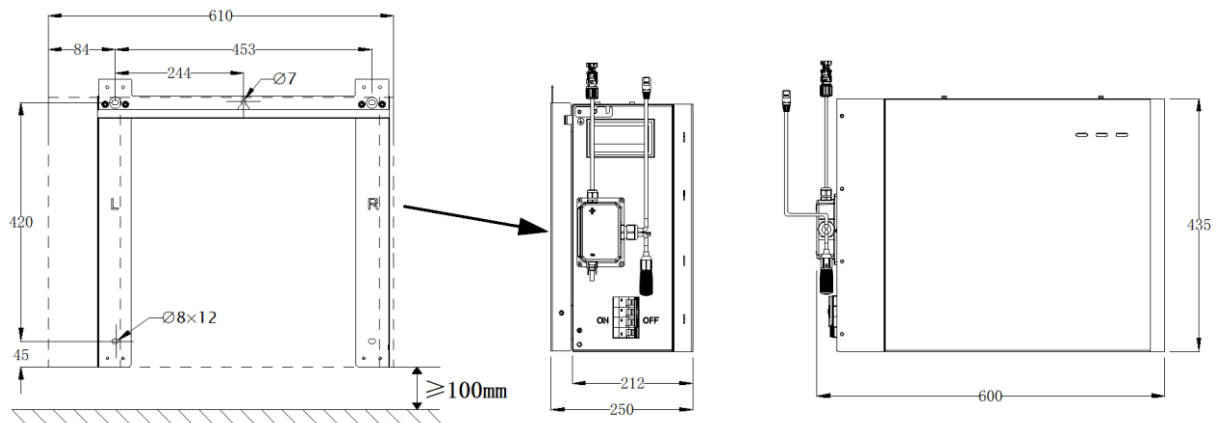


Position	Designation
1	Battery Power Button
2	Battery Breaker
3	Battery- Power Connector
4	Battery+ Power Connector
5	BMS COM1
6	BMS COM2 (with Terminal Resistor)
7	Grounding Point
8	Battery LED Display

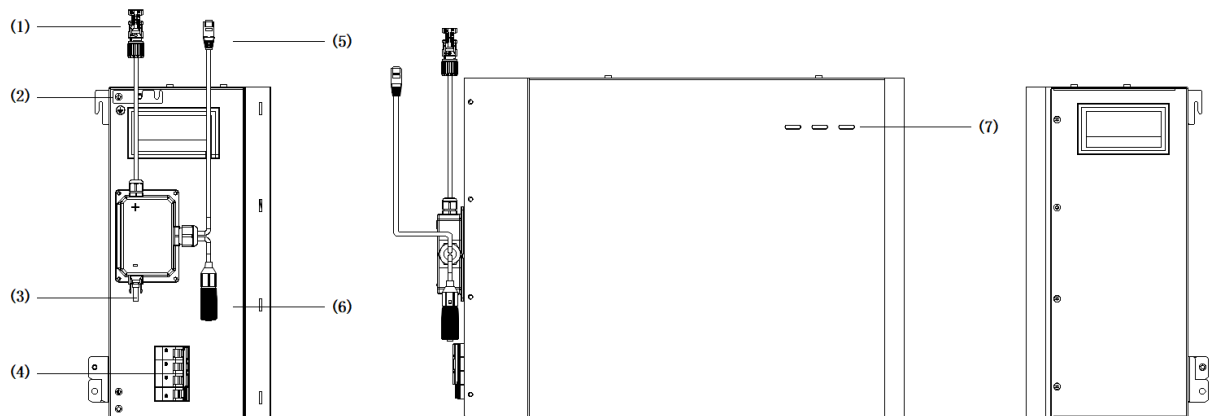


### 3.3.6. Battery Introduction: SMILE-G3-BAT-3.8S

Battery appearance and dimensions



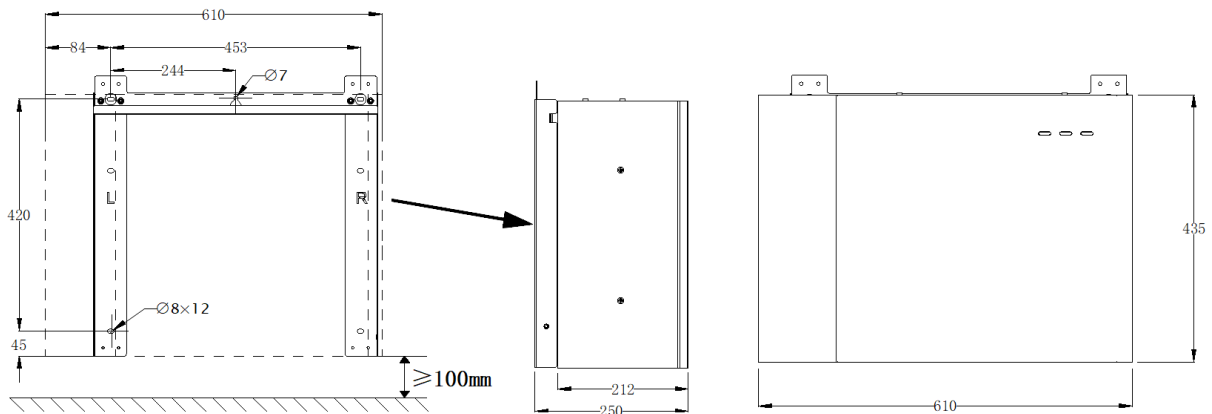
Connection area overview



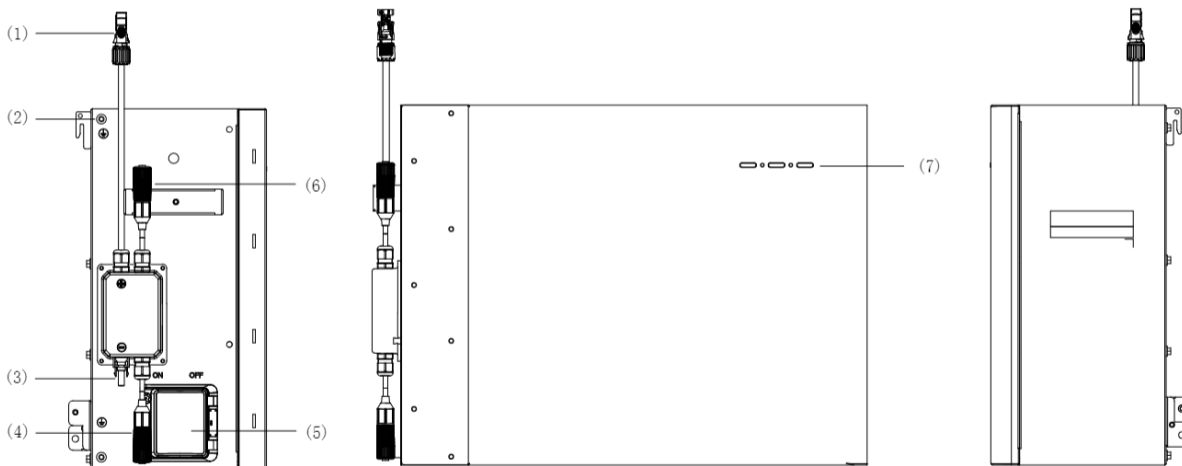
Position	Designation
1	BAT+ Power Connector
2	Grounding Point
3	BAT- Power Connector
4	Battery Circuit Breaker
5	BMS COM1
6	BMS COM2 (with Terminal Resistor)
7	Battery LED Display

### 3.3.7. Battery Introduction SMILE-G3-BAT-4.0S

Battery appearance and dimensions



Connection area overview

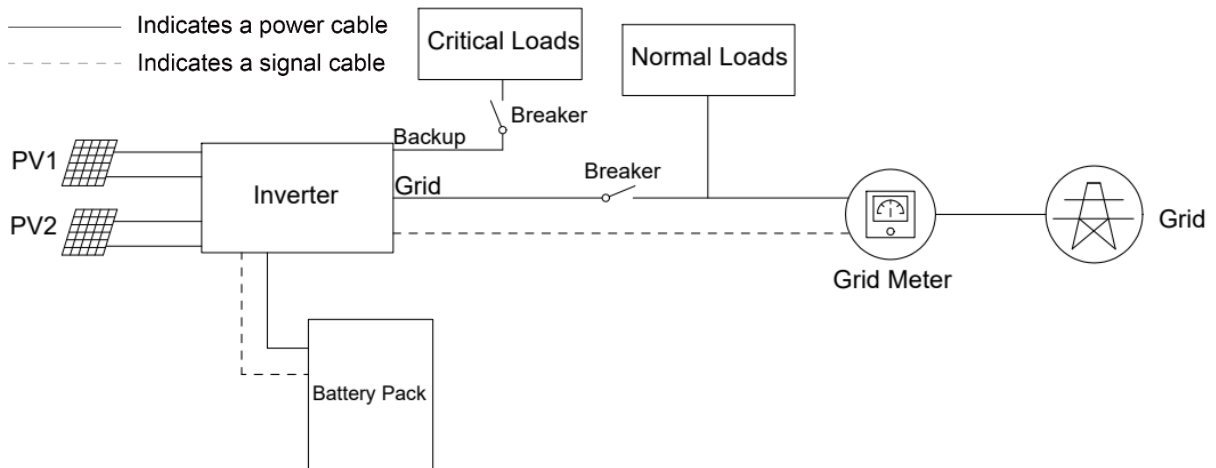


Position	Designation
1	BAT+ Power Connector
2	Grounding Point
3	BAT- Power Connector
4	BMS COM2 (with Terminal Resistor)
5	Battery Circuit Breaker
6	BMS COM1
7	Battery LED Display

### 3.4. Application Scenarios

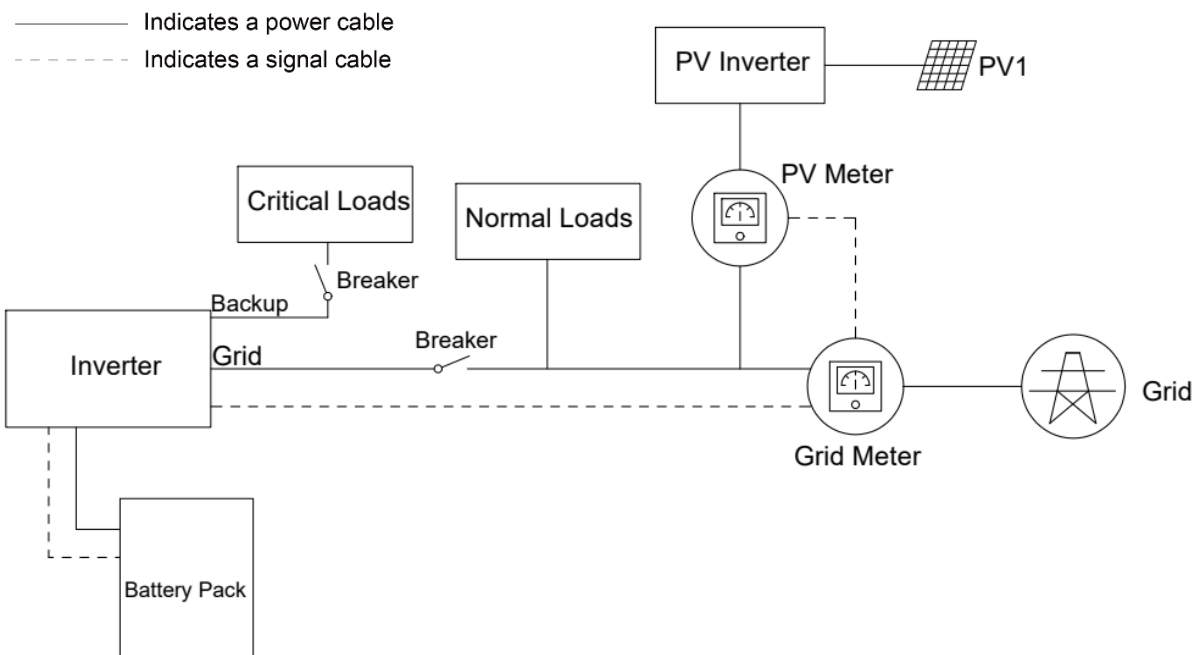
SMILE-G3 single-phase energy storage system (includes inverter SMILE-G3-S8/S5/S3.6/B5-INV, battery SMILE-G3-BAT-8.2P/10.1P and SMILE-G3-BAT-3.8S/4.0S can be applied in DC-coupled systems (mostly new installation), AC-coupled systems (mostly retrofit), Hybrid-coupled systems (mostly retrofit, and increase 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

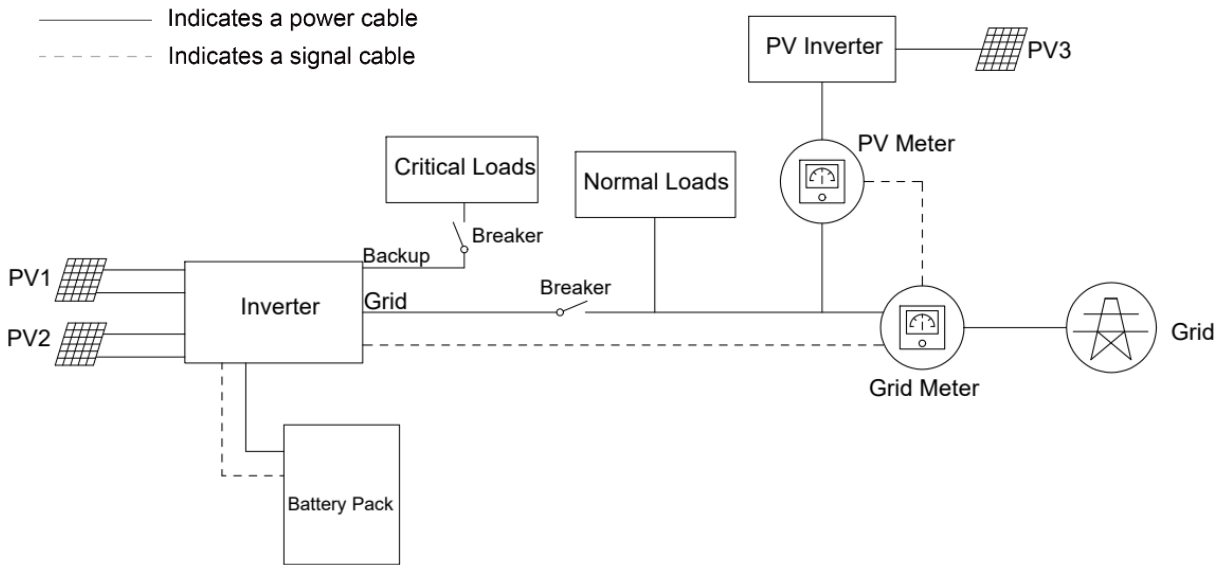
#### 3.4.2. AC-Coupled Storage System



AC-Coupled Storage System – Scheme

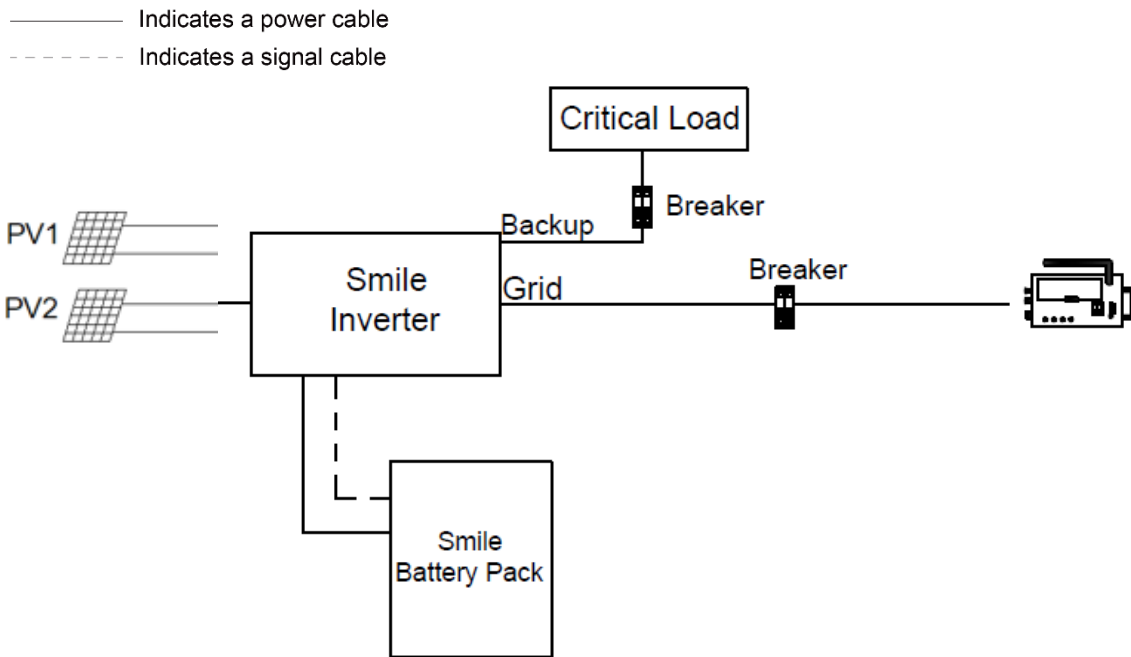


### 3.4.3. Hybrid-Coupled Storage System



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  $-40\sim 60^{\circ}\text{C}$  and the humidity at  $5\%\sim 95\%$  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:

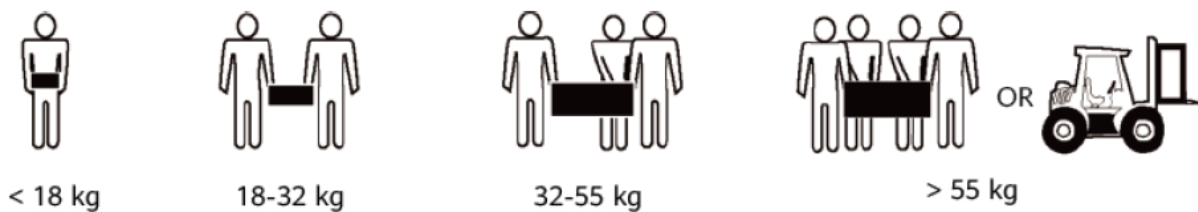
1. Place batteries according to the signs on the packing case during storage. Do not put batteries upside down or sidelong.
2. Stack battery packing cases by complying with the stacking requirements on the external package.
3. Store the battery out of reach of children and animals.
4. Store the battery 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:  $-10\sim 55^{\circ}\text{C}$ , recommended storage temperature:  $15\sim 30^{\circ}\text{C}$
  - b. Relative humidity:  $15\%\sim 85\%$
  - 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 lithium-ion batteries are stored for a long time, capacity loss may occur. After lithium-ion batteries are 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;



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;

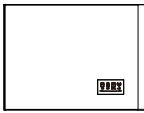


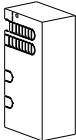
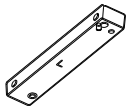
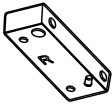
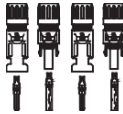
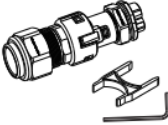
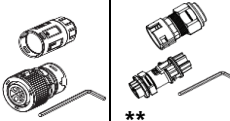
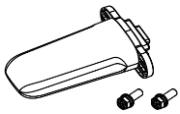
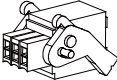
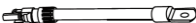
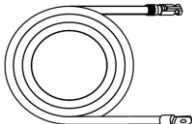
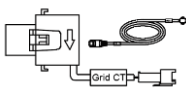
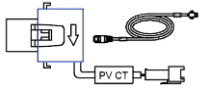


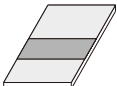
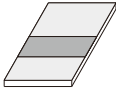
## 5. Mounting

### 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.





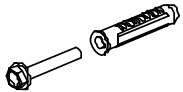
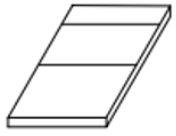
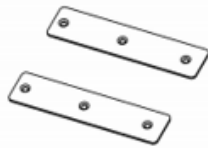
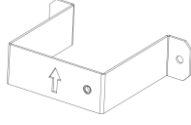
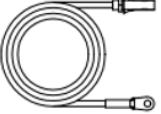
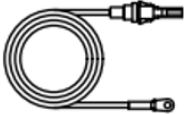
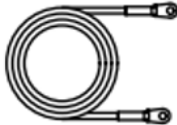






SMILE-G3 Single Phase Inverter				
				
Inverter (X1)	TOP Cover (X1)	Right Cover (X1)	Cable Cover (X1)	Left Support Foot (X1)
				
Right Support Foot (X1)	PV+ & PV- Connectors (X2)*	Grid Connector (X1)	Backup Connector (X1)	Wi-Fi Module (X1)
				
6 Pin AUX Terminal Block (X1)	Series Battery Main Positive Power Cable (x1)***	Series Battery Main Negative Power Cable (x1)***	Grid CT (X1)	PV CT**** (X1)
				
Grounding Cable (X1)	Screw M5*12 (X9)	Quick Installation Guide (X1)	System Wiring Diagram sheets (X1)	

\* Only for product SMILE-G3-S8/S5/S3.6-INV

\*\* Backup connector for SMILE-G3-S8-INV

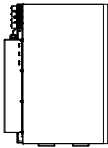
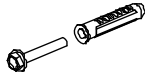
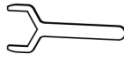




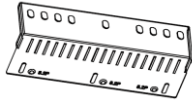







\*\*\* Optional, suitable for SMILE-G3-BAT-3.8S/4.0S



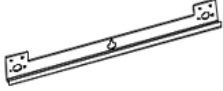
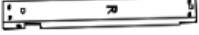




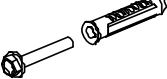



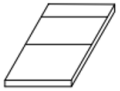
\*\*\*\* Not include in SMILE-G3-S8-INV


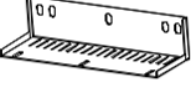
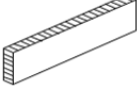


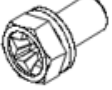

<b>SMILE-G3-BAT-8.2P</b>			
			
Battery (X1)	Wall Bracket (X1)	M5 Y Type Terminal (X2)	Battery Cable Cover (X1)
			
Wall Anchor ST6*55 (X4)	Quick Installation Guide (X1)	Gap Gasket with In- verter (X2)	Support for Battery Cable Cover (X1)
			
Battery Power – Cable* (X1)	Battery Power+ Cable* (X1)	Bat+ Power Cable (X1)	Bat- Power Cable (X1)
			
Battery Communication Cable (X1)	Back Support Stud for Battery (X1)	Screw M5*10 (X2)	Screw M5*10 (X8)
			
Wall Gap Shim (X1)			



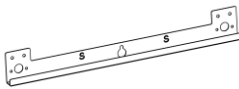
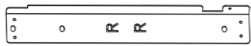
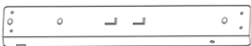
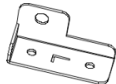

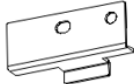
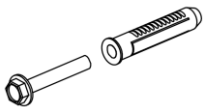
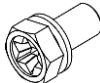

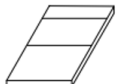
\* For connecting with SMILE-G3 three phase inverter

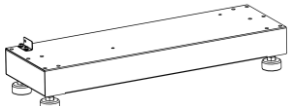
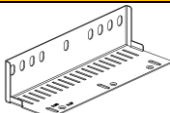
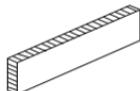

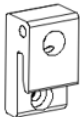
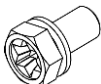




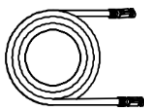
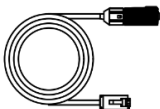
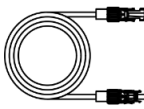
<b>SMILE-G3-BAT-10.1P</b>			
			
Battery (X1)	Wall Anchor ST6*55 (X4)	Spanner (X1)	M6 Ring Terminal (X4)
			
M5 Y Type Terminal (X2)	Battery Cable Cover (X1)	Breaker Cover (X1)	Wall Bracket (X1)
			
Gap Gasket with Inverter (X2)	Bat+ Power Cable (X1)	Bat- Power Cable (X1)	Battery Communication Cable (X1)
			
Gap Shim with Wall (X1)	Screw M5*10 (X10)	Quick Installation Guide (X1)	

<b>SMILE-G3-BAT-3.8S</b>			
			
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 Bat- tery Cable Cover (X2)	Screw M5*12 (X6)	Flange Nut M4 (X7)
			
Quick Installation Guide (X1)			

<b>Accessories for Base Unit of SMILE-G3-BAT-3.8S</b>			
			
Base Unit (X1)	Wall Bracket (X1)	Position Plate (X1)	Right Connection Plate (X4)
			
Right Connection Block for Base Unit (X4)	Screw M5*12 (X15)	Limit Screw M5*12 (X10)	

<b>SMILE-G3-BAT-4.0S</b>			
			
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)	Screw M5*12 (X6)	Flange Nut M4 (X7)	Quick Installation Guide (X1)

<b>Accessories for Base Unit of SMILE-G3-BAT-4.0S</b>			
			
Base Unit (X1)	Wall Bracket (X1)	Position Plate (X1)	Right Connection Plate (X6)
			
Right Connection Block for Base Unit (X4)	Screw M5*12 (X15)	Limit block (X12)	Screw M5*10 (X15)

<b>Accessory Cables for Distanced Horizontal Battery Expansion of SMILE-G3-BAT-3.8S/4.0S</b>		
		
Series Battery Main Negative Power Cable (X1)	Communication Cable Between Series Batteries (X1)	Power Cable Between Two Column Series Batteries (X1)



## 5.3. Requirements for Mounting

### DANGER

#### **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-S8/S5/S3.6/B5-INV, SMILE-G3-BAT-10.1P and SMILE-G3-BAT-4.0S 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 product.
- The optimal temperature range for the battery to operate is 15 to 30°C.
- 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.

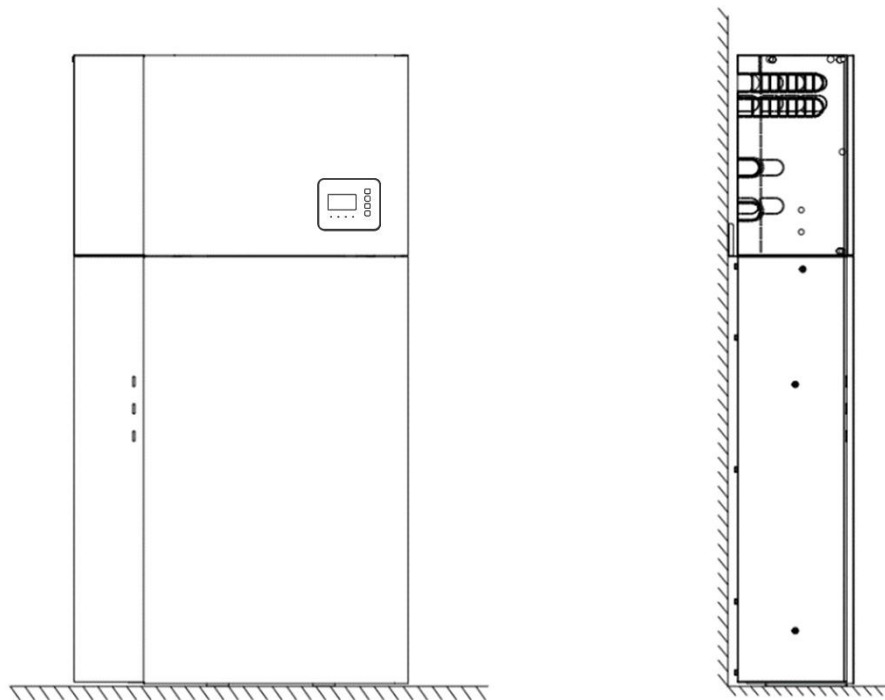
### 5.3.3. Mounting Structure Requirements

- 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

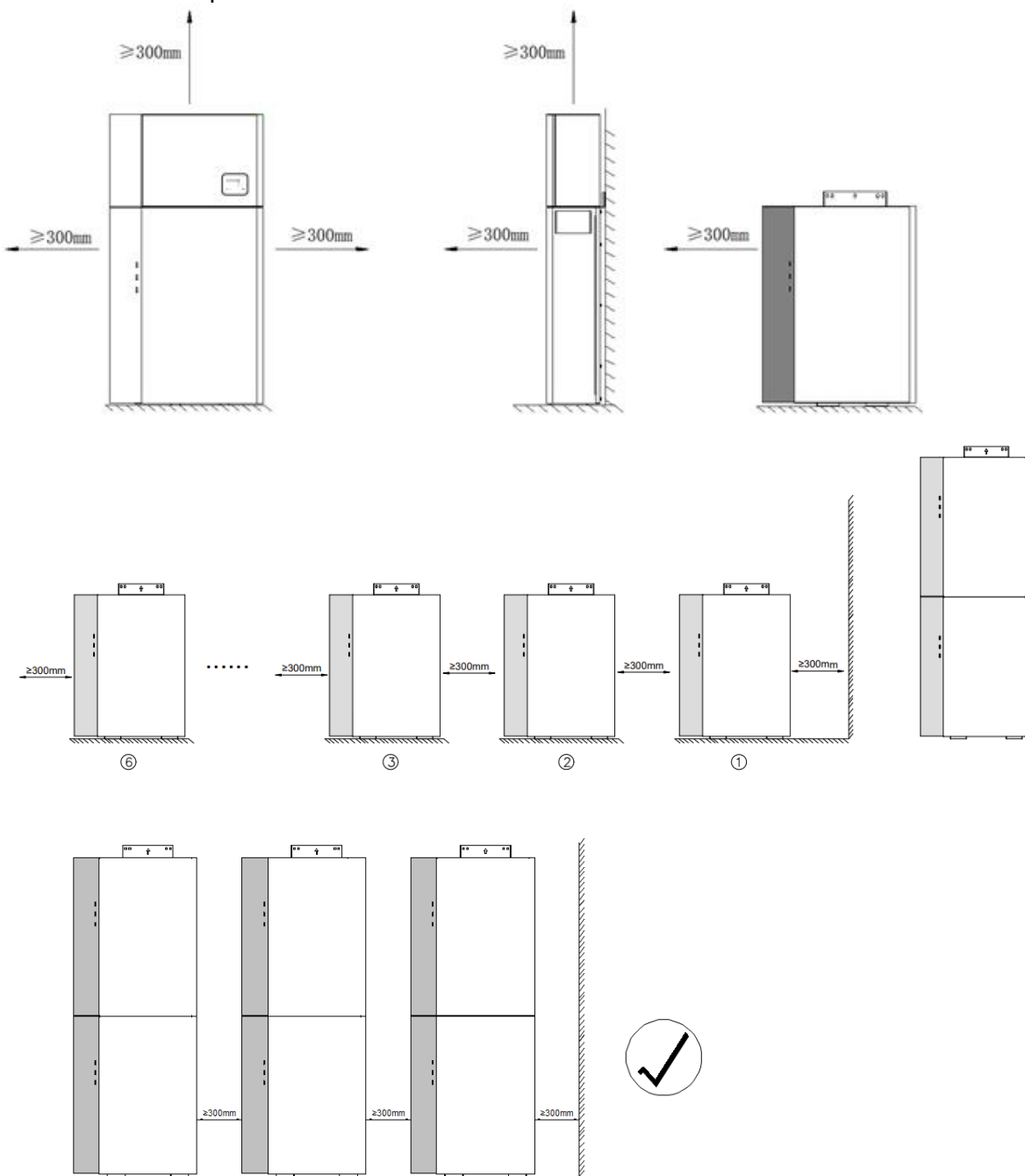
Reserve sufficient space around the energy storage system to ensure sufficient space for installation, maintenance and heat dissipation.

**For Australia, according to ASNZ5139-2019-4.2.2.2, the non-combustible material needs to be placed between the wall and the battery unit and must extend 600mm to the left and right of the battery and 900mm above it.**

#### NOTICE

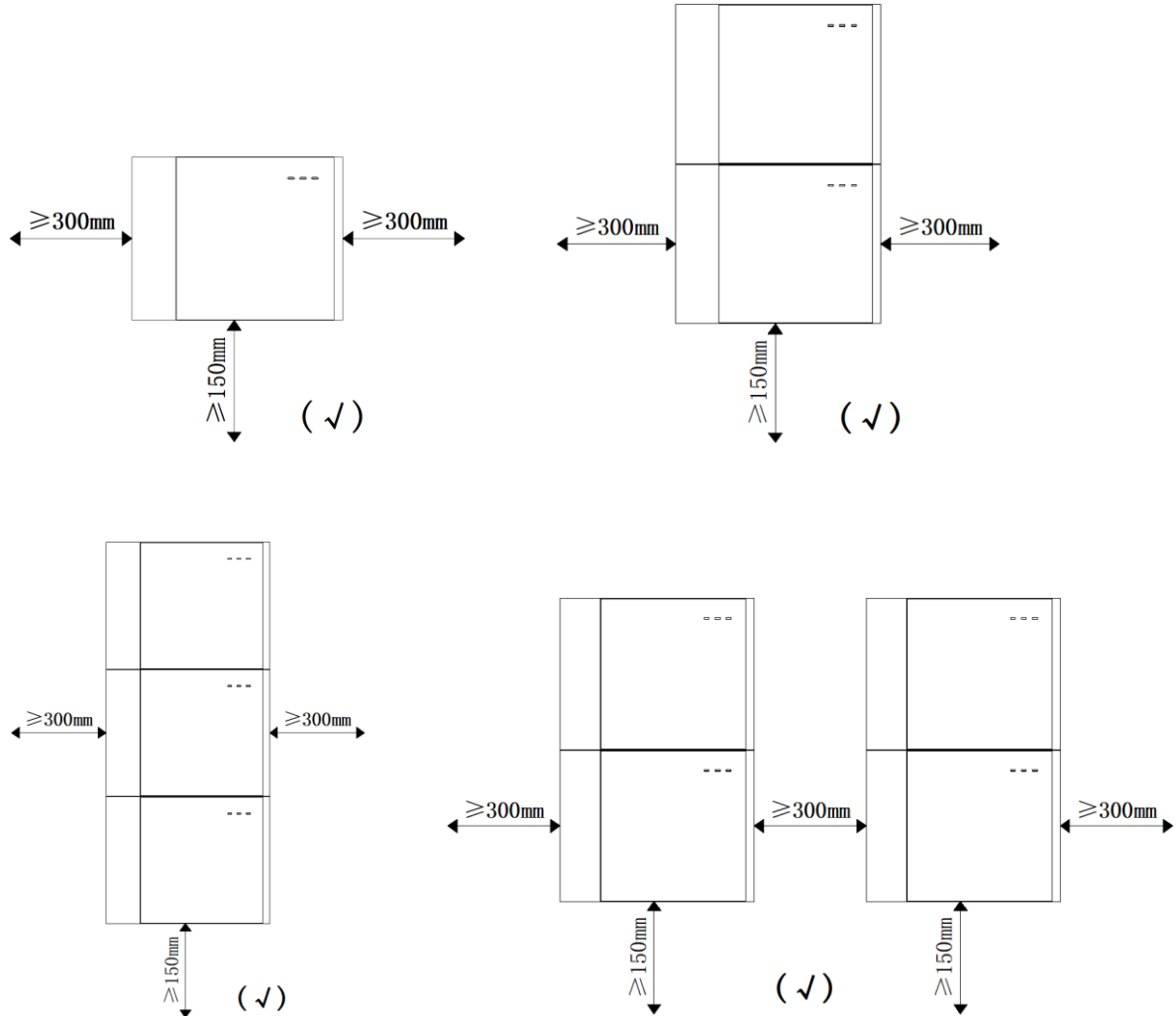
The space between the left and right batteries is the recommended distance, which can be adjusted according to the End-users requirements.

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





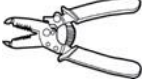



















### Recommended space for series batteries

Recommend a minimum of 150mm off the ground was advisable to protect from submergence, so the series batteries should be mounted on base unit or by wall bracket.



## 5.4. Prepare Tools and Instruments

Category	Tools and Instruments		
Installation			
	Hammer drill (with a $\Phi 10\text{mm}$ drill bit)	Torque socket wrench SW10	Multimeter (DC voltage range $\geq 1000\text{V}$ )
			
	Diagonal pliers	Wire stripper	TX20 screwdriver (torque range: 0-5Nm), L=150mm
			
	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 Product

### 5.5.1. Mount the Parallel Battery SMILE-G3-BAT-8.2P

Mounting steps for battery SMILE-G3-BAT-8.2P as follows:

- a. Take out the battery from the carton, transport it to the installation site with a handcart which bearing capacity should be greater than 200kg, tied with bandage.
- b. Secure the provided back support stud to the right lower corner of the battery back (tool: SW10 hexagon sleeve, torque: 3.5Nm).

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

- c. Remove the wall bracket and cover the top of the battery with plastic bag, then drill 3 holes on the wall with drill  $\Phi 10$  and a depth of about 70mm, clean the holes and insert screw anchors into the drilling 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.

If you want to mount more batteries and prefer to mount them side by side, please repeat the mounting steps from a to c, then jump to step i.

- d. If you prefer batteries stack mounting, take out the two gap gaskets and tighten them (tool: T20 screwdriver, torque: 2.5Nm) to the top of the bottom battery.

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

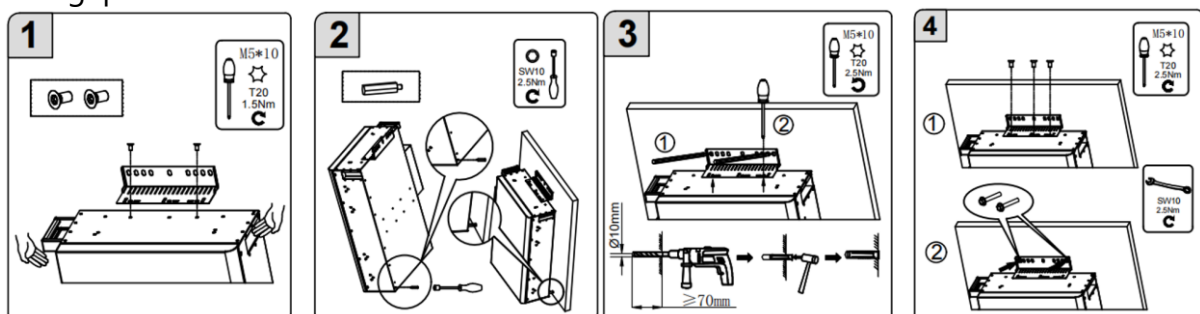
- f. Take out another battery from the carton, transport it to the installation site. Place a PE bag at the bottom of the battery before laying it down, then remove the 2 feet which have located at the bottom of the battery (tool: T20 screwdriver).

- g. Hold the side handles, lift the top battery onto the bottom battery, and align the outer contour of the batteries.

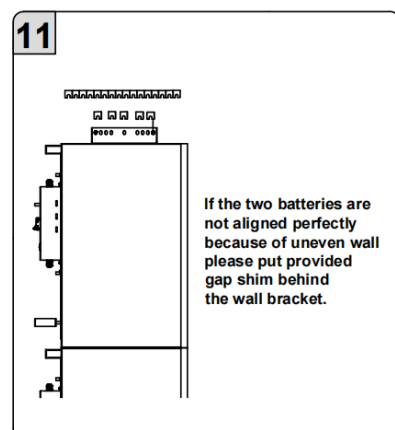
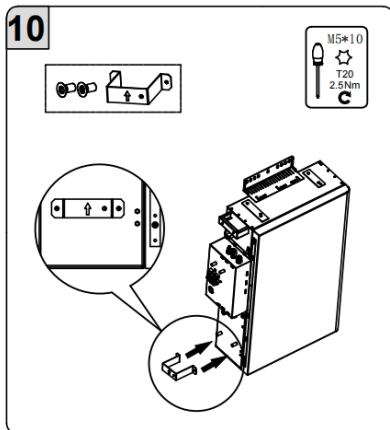
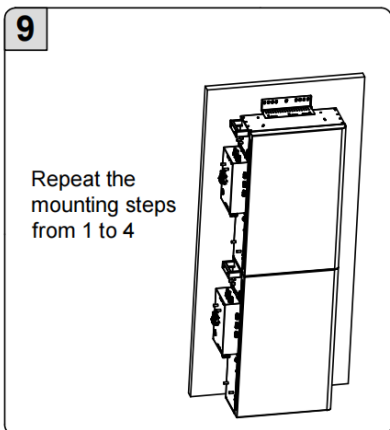
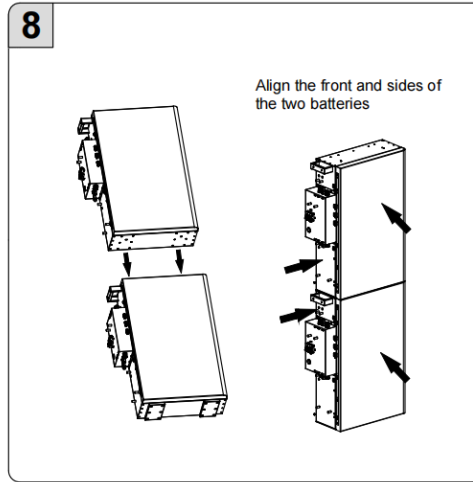
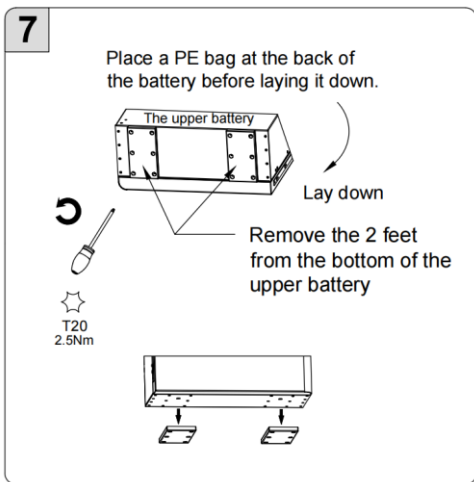
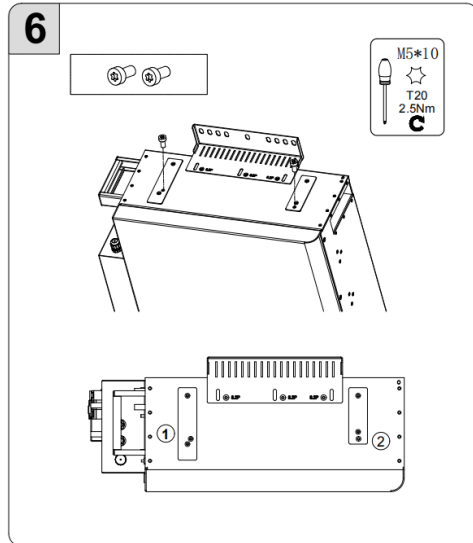
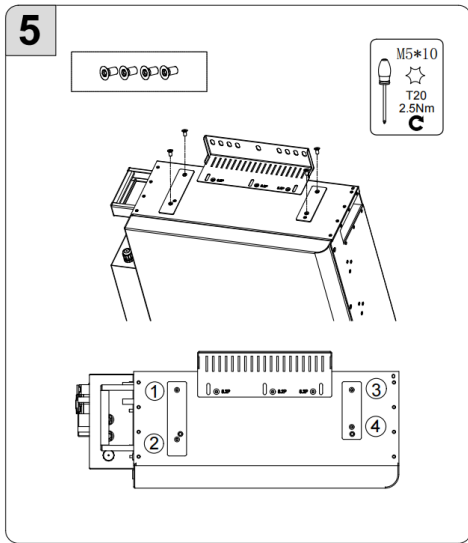
- h. Repeat the mounting steps from b to c.

- i. Take out the support for battery cable cover from the battery package, and tighten it to the lower left of the battery housing with countersunk head screws M5X10 (tool: T20 screwdriver, torque: 2.5Nm).

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



**Note: step 5-9 only for batteries stack mounting**



### 5.5.2. Mount the Parallel Battery SMILE-G3-BAT-10.1P

Mounting steps for battery SMILE-G3-BAT-10.1P as follows:

- a. Take out the battery from the carton, transport it to the installation site with a handcart which 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  $\Phi 10$  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.

If you want to mount more batteries and prefer to mount them side by side, please repeat the mounting steps from a to c, then skip the following steps.

- d. If you prefer batteries stack mounting, take out the two 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.

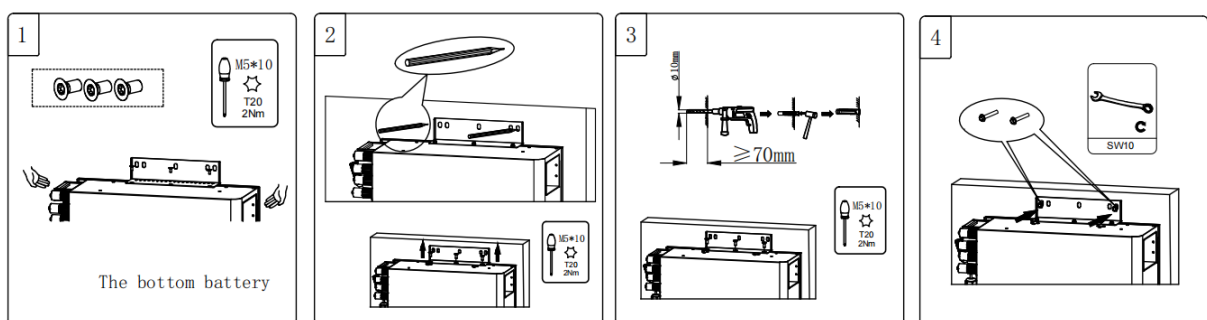
Place a PE bag at the bottom of the battery before laying it down, then remove the 2 feet which have located at the bottom of the battery (tool: T20 screwdriver).

- f. Tighten the wall bracket to the battery top.

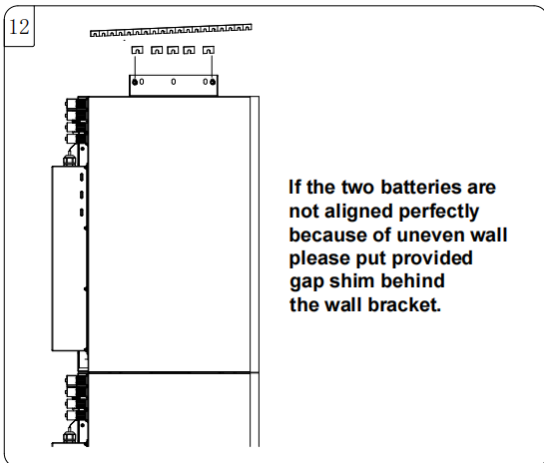
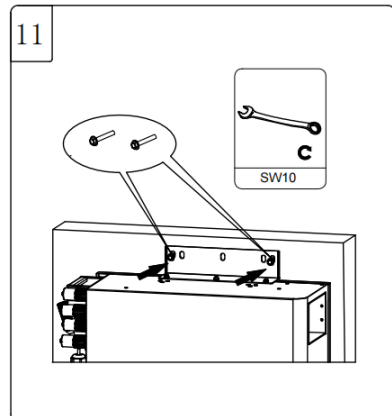
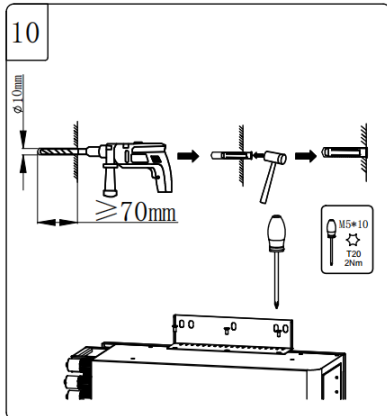
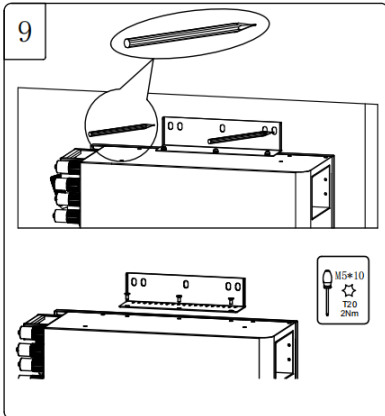
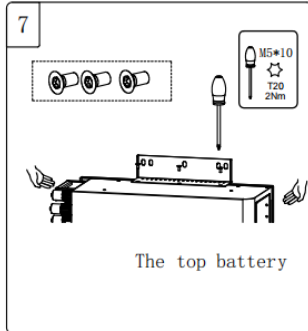
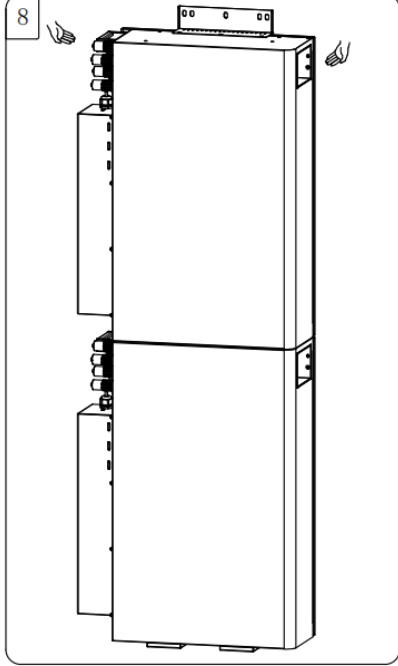
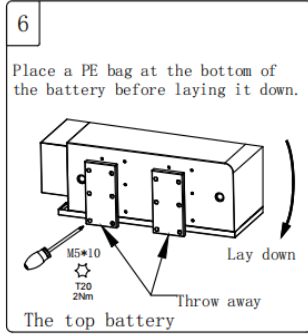
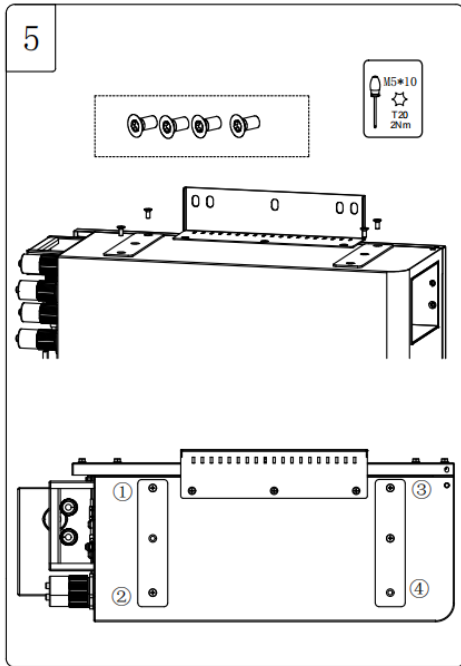
- g. Hold the side handles, lift the top battery onto the bottom battery, and align the battery's outer contour.

- h. Repeat the mounting steps from b to c.

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



**Note: step 5~11 only for batteries stack mounting**



### 5.5.3. Mount the Series Batteries

#### 5.5.3.1 Wall Bracket Installation for one battery Installation

When mounting one battery for the first time, mounting steps as follows.

a. Take out the top beam, left beam and right beam of wall bracket from the battery 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 drilling position of the wall bracket, drill the marked hole with drill  $\Phi 10$ . Insert screw anchor into the 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, mark the other drilling positions and drill the marked holes with drill  $\Phi 10$ .

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

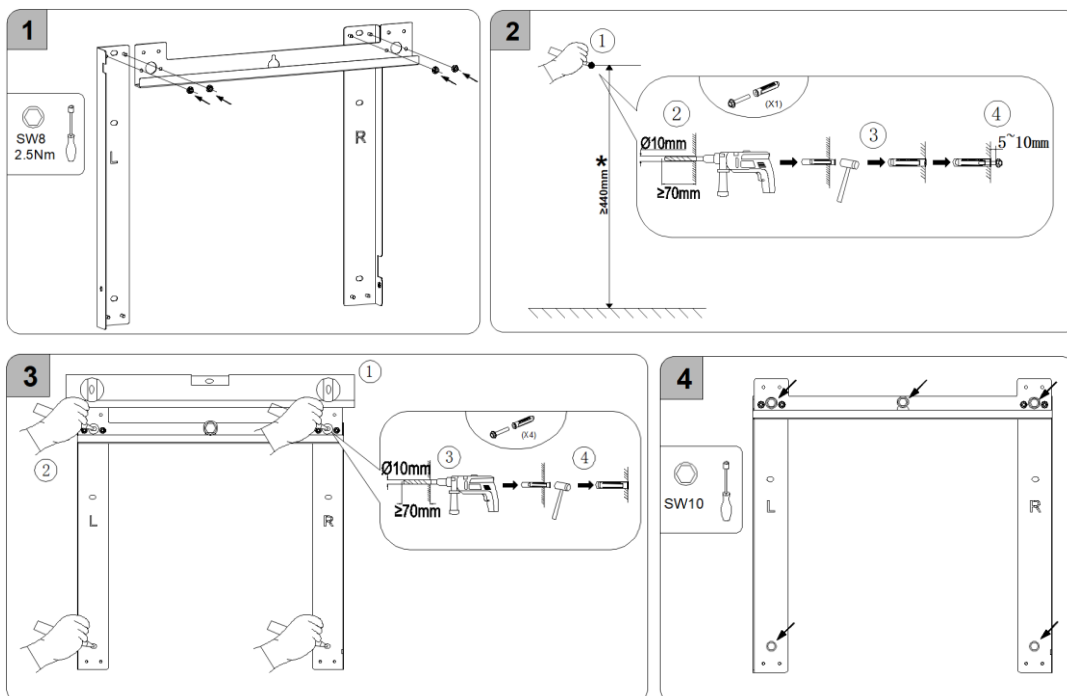
e. Take out the left holder and right holder from the package, and tighten them to the battery housing (tool: T20 screwdriver, torque: 2.5Nm).

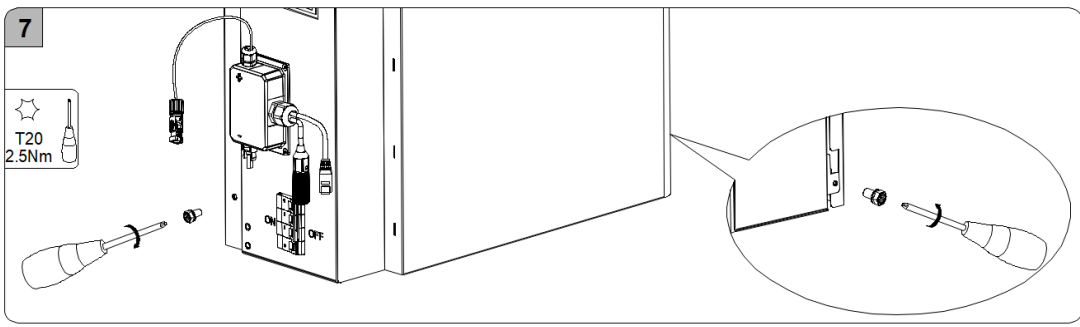
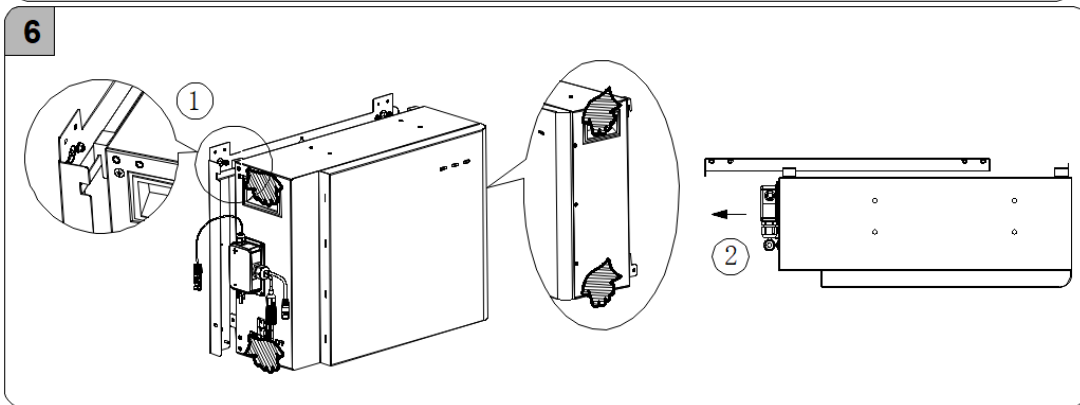
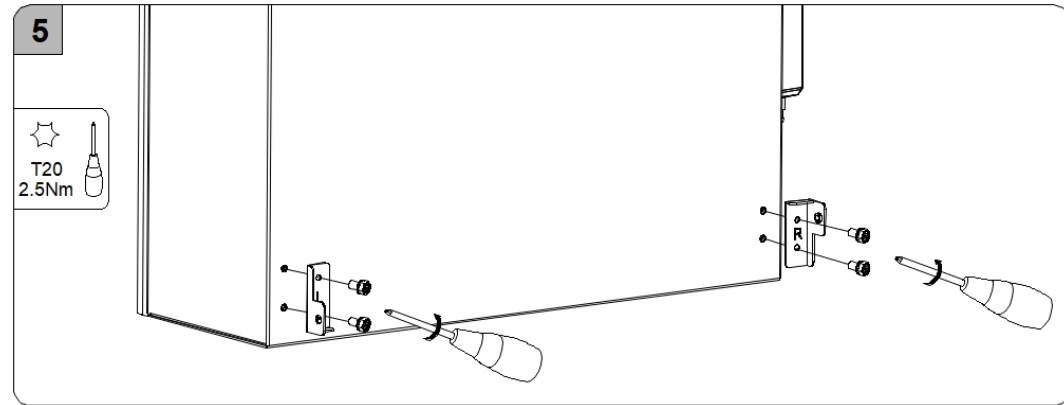
f. Horizontally lift the battery by using the handles at two sides, let the top hooks on the back of the battery slide from right to left in the upper beam of the wall bracket.

g. Secure the battery to the wall bracket, tighten them with two screws using a Torx screwdriver (tool: T20 screwdriver, torque: 2.5Nm).

#### NOTICE

The clearance "440mm" is a "recommendation" only and a minimum of 150~200mm off the ground was advisable to protect from submergence.

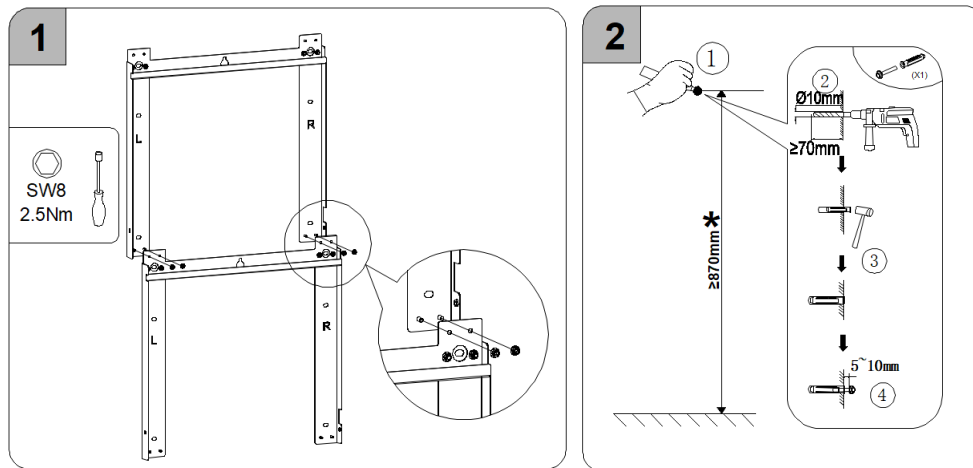




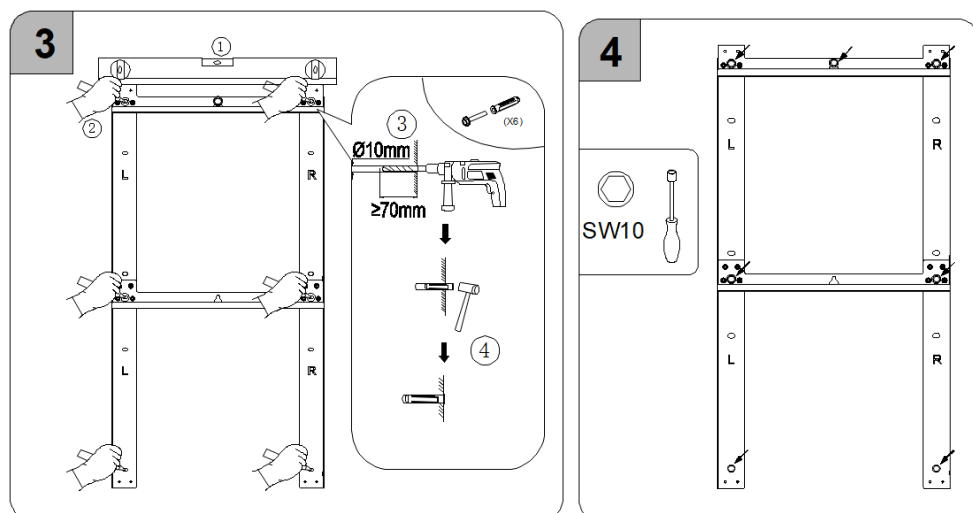
### 5.5.3.2 Wall Bracket Installation for Multiple Batteries Installation

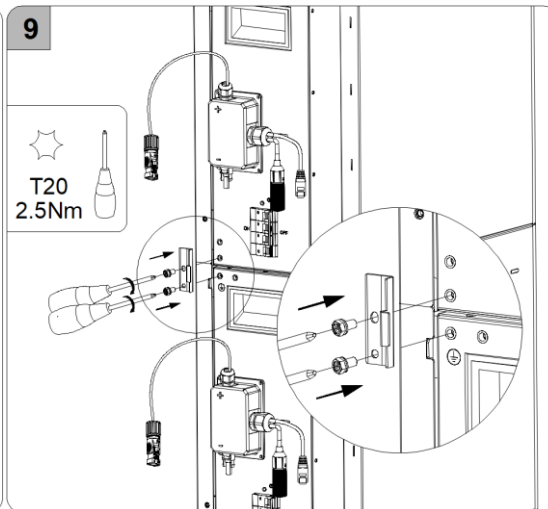
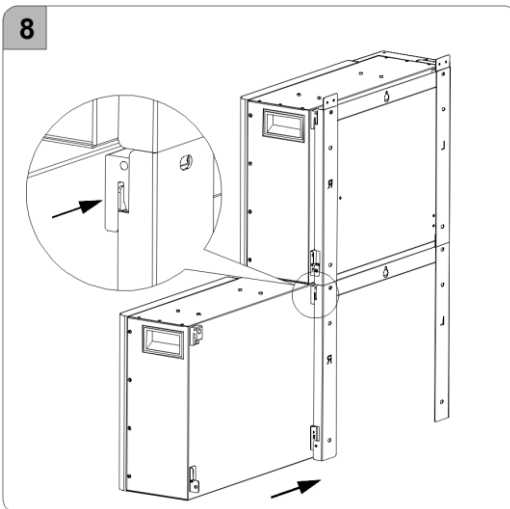
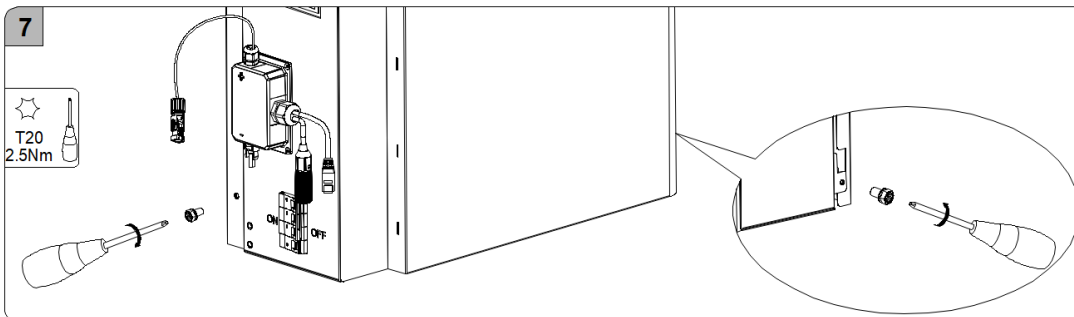
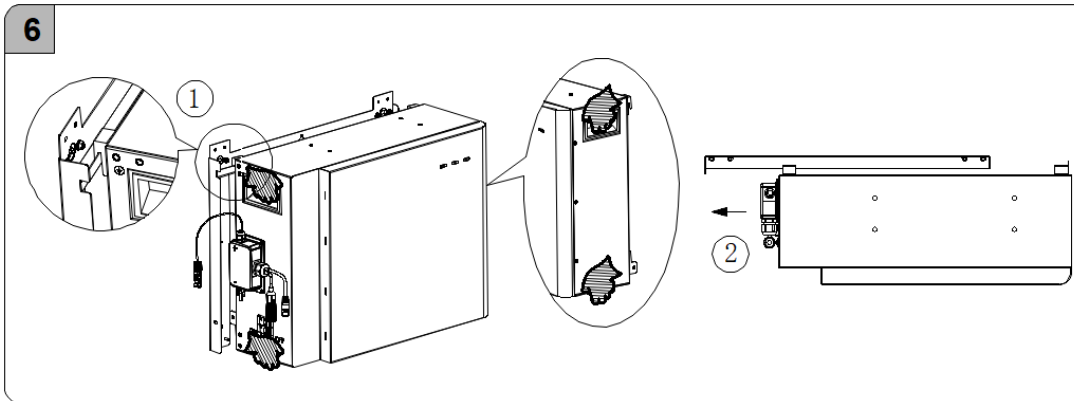
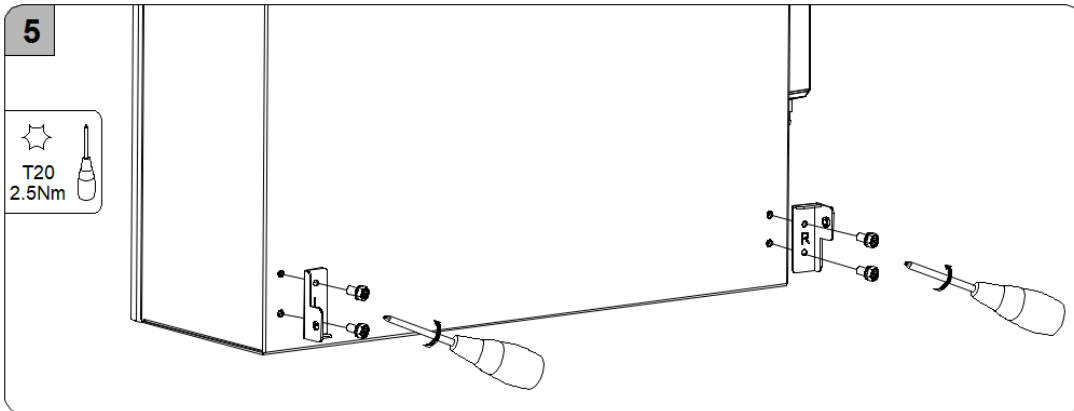
When mounting multiple batteries with wall brackets for the first time, mounting steps as follows.

- a. Take out the top beam, left beam and right beam of wall bracket from the battery package, assemble them with M5 nut (tool: SW8 hexagon sleeve, torque: 2.5Nm). Align the upper holes of the lower wall bracket with the lower rivets of the upper wall bracket, assemble them with M5 nut (tool: SW8 hexagon sleeve), then these wall brackets will be combined into a whole.
- b. For other mounting steps, please see chapter 5.5.3.1 Wall Bracket Installation for one battery Installation and follow step b to step g.
- c. Take out the groundig 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 (tool: T20 screwdriver, torque: 2.5Nm).



\* Depends on the series batteries quantity.



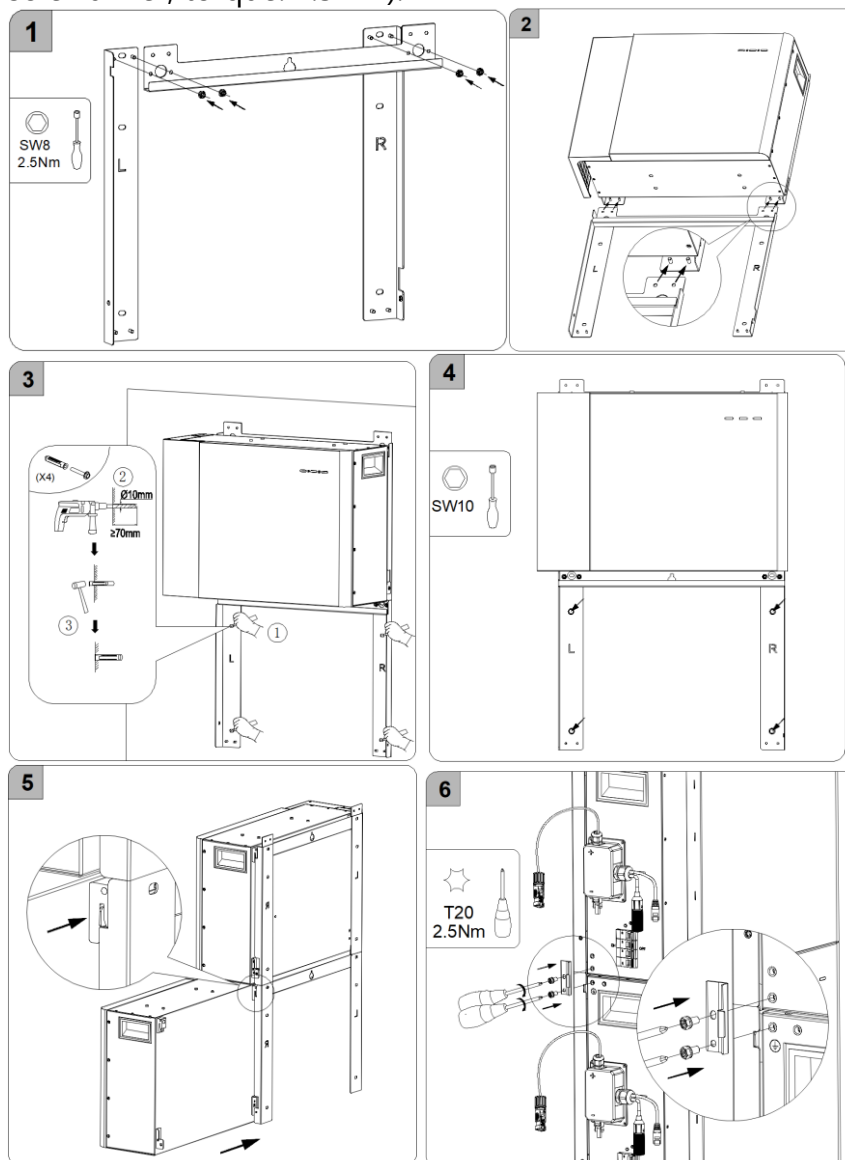




### 5.5.3.3 Wall Bracket Installation for Batteries Expansion Installation

More batteries installation (from bottom to top), suitable for secondary battery installation scenario. Expansion batteries should be mounted below existing wall mounted batteries, mounting steps as follows.

- a. Take out the top beam, left beam and right beam of wall bracket from the battery package, assemble them with M5 nut (tool: SW8 hexagon sleeve, torque: 2.5Nm). Align the upper holes of the lower wall bracket with the lower rivets of the upper wall bracket, mark the drilling position of the newly wall bracket.
- b. Remove the newly assembled wall bracket, drill the marked hole with drill  $\Phi 10$ . Insert screw anchors into the drilling holes, tighten the screws with the SW10 hexagon sleeve to secure the wall bracket to the wall.
- c. For other mounting steps, please see chapter 5.5.3.1 Wall Bracket Installation for one battery Installation and follow step b to step g.
- d. Take out the groundig 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 (tool: T20 screwdriver, torque: 2.5Nm).



### 5.5.3.4 Base Installation for Several Series Batteries Installation

When mounting multiple series batteries with base installation for the first time, mounting steps as follows.

a. Take out the base unit and tighten two limit screws M5×12 to the relative location of the base unit's top (tool: T20 screwdriver, torque: 2.5Nm).

Take out the right connection block for base unit from the package, and tighten it to the right side of the base unit back.

Take out the position plate and place it against the wall.

Adjust the feet to level the base unit. Place the base unit against position plate.

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 unit. Take out 2 cheese head screws M5X10, and tighten them to battery top's designated location for later position limit.

c. Secure the battery to the base unit, tighten with one screw from the lower left of the battery and tighten with two screws from the lower right of the battery using a Torx screwdriver (tool: T20 screwdriver, 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.

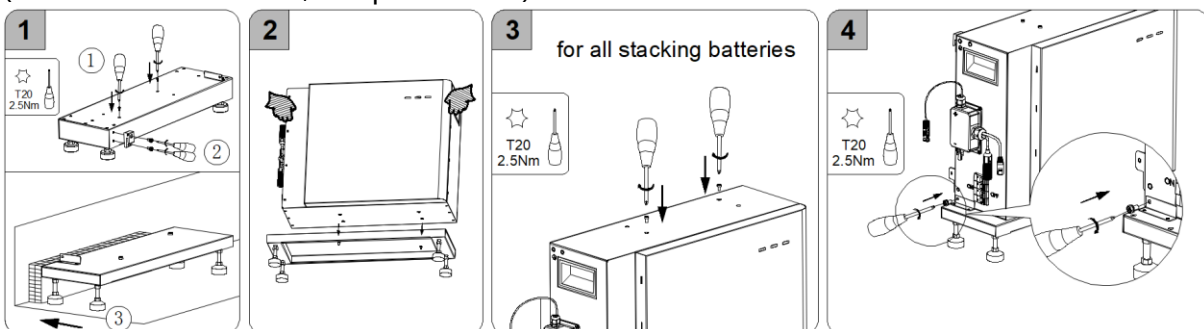
e. Take out the right connection plates from the base unit accessory, use them to connect the lower right corner of the upper battery and the upper right corner of the lower battery (tool: T20 screwdriver, torque: 2.5Nm).

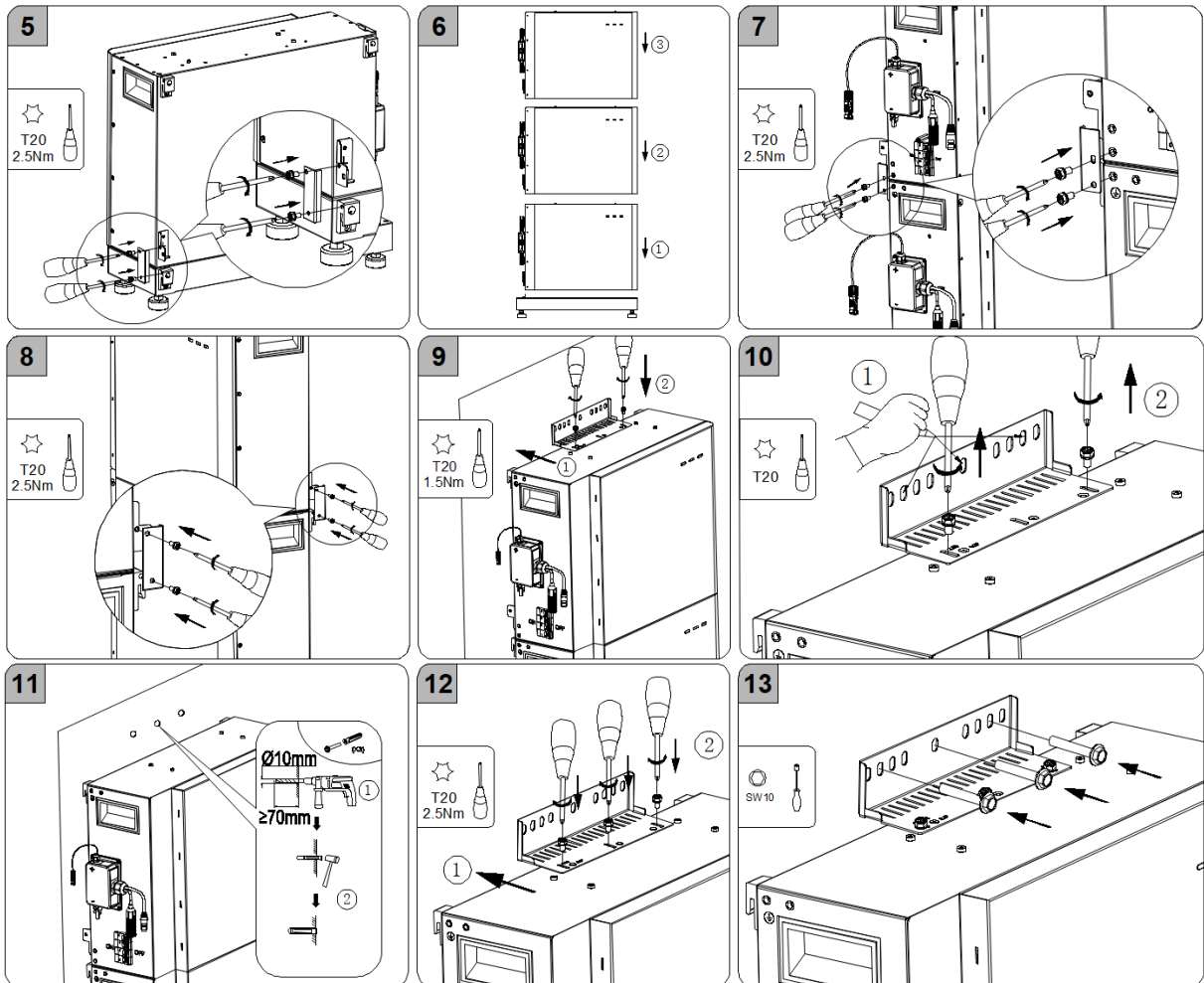
f. Pre-mount the wall bracket to the upper battery top and then mark drill positions.

g. Remove the wall bracket and cover the top of the battery with plastic bag, then drill 3 holes on the wall with drill  $\Phi 10$  and a depth of about 70mm, clean the holes and insert screw anchors into the drilling 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 by using the SW10 hexagon sleeve.

i. Take out the groundig bars from the battery accessory, use them to connect the lower left corner of the upper battery and the upper left corner of the lower battery (tool: T20 screwdriver, torque: 2.5Nm).

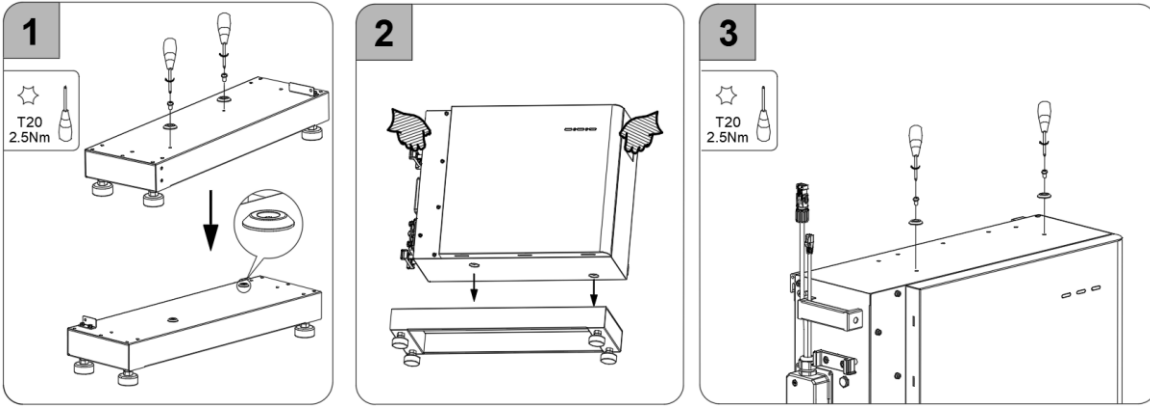




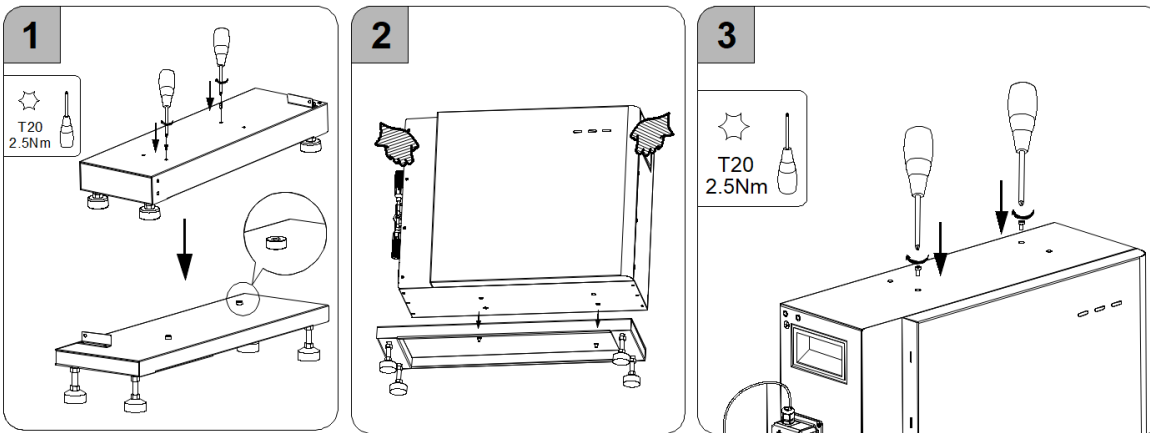
1 to 4 batteries are suitable for the SMILE-G3 single phase energy storage inverter.

For batteries base installation, there was a tiny difference about stacking positioning materials between these series batteries.

For SMILE-G3-BAT-3.6S/4.0S, installers need to mount the limit blocks to the top of the base unit and the batteries for stacking positioning of upper battery.



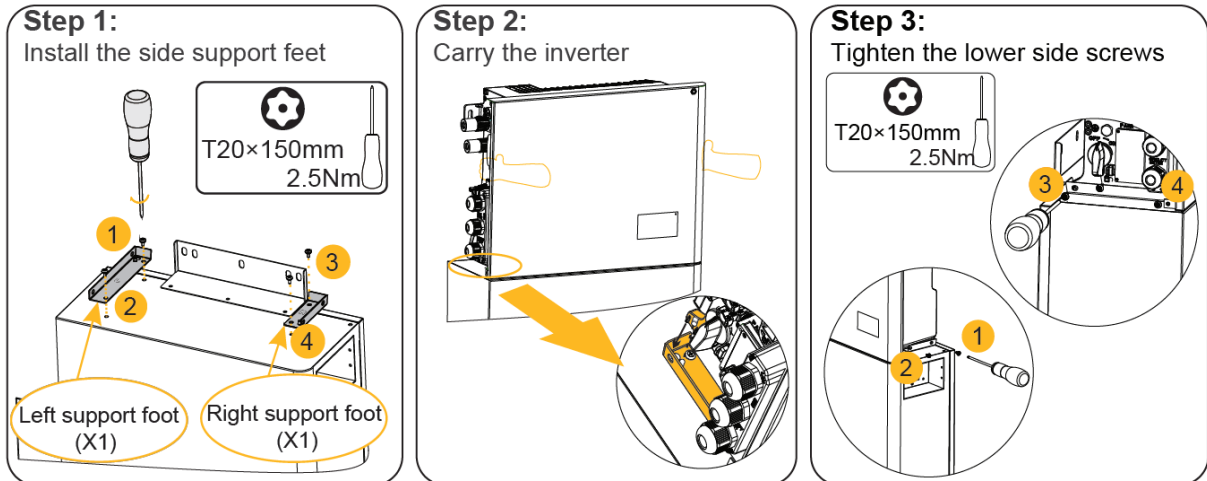
For SMILE-G3-BAT-3.8S, installers need to mount two limit screws M5×12 to the top of the base unit and the batteries for stacking positioning of upper battery.



### 5.5.4. Mount the Inverter

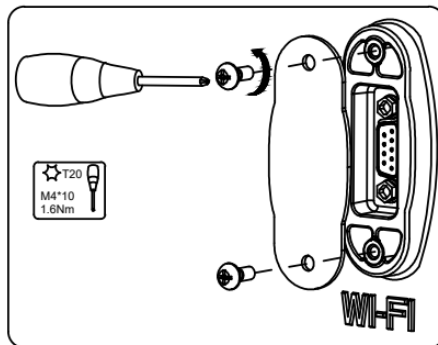
Operating steps for mounting the inverter as follows:

- a. Mount the left support foot and right support foot onto the top of the upper battery with provided four screws M5\*12 (tool: T20 screwdriver, torque: 2.5Nm).
- b. Attach the inverter to the side support feet, each side should be tightened with two screws M5\*12 (tool: T20 screwdriver, torque: 2.5Nm).

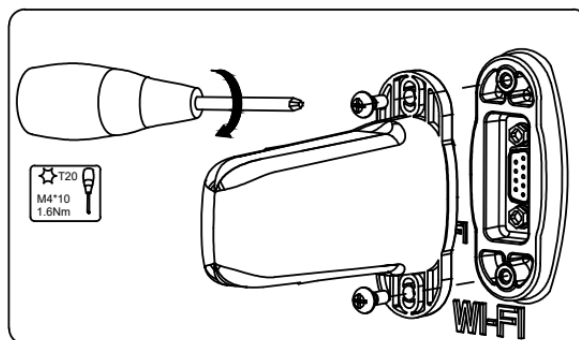


### 5.5.5. Mount the Wi-Fi Module

- a. Remove the protective cover of Wi-Fi port at the left of the inverter.



- b. Tighten the Wi-Fi module onto the inverter with provided two screws M4\*12 (tool: T20 screwdriver, torque: 1.6Nm).





## 6. Electrical Connection

### Precautions

 **DANGER**

**Danger to life due to electric shock**

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 operate electrical connection.  
Operating personnel must wear proper PPE when connecting cables.

 **NOTICE**

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)	16 mm <sup>2</sup> for SMILE-G3-BAT-10.1P, 10 mm <sup>2</sup> for SMILE-G3-BAT-8.2P, 10 mm <sup>2</sup> for SMILE-G3-BAT-3.6S/3.8S/4.0S	N/A	Delivered with the battery  Delivered with the battery  Delivered with the inverter
2	Battery communication cable	Standard network cable in the industry (recommended type: Cat5e, UTP, UV-resistant for outdoor use)	0.12~0.2 mm <sup>2</sup> (AWG26~AWG24)	N/A	Delivered with the battery
3*	Signal cable	Standard network cable in the industry (recommended type: Cat5e, UTP, UV-resistant for outdoor use)	0.12~0.2 mm <sup>2</sup> (AWG26~AWG24)	N/A	Additional accessories
4	PV power cable	Standard PV cable in the industry (recommended type: PV1-F)	4~6 mm <sup>2</sup>	5.5~9mm	Purchased by the installer
5**	Signal cable	Standard network cable in the industry (recommended type: Cat5e, UTP, UV-resistant for outdoor use)	0.12~0.2 mm <sup>2</sup> (AWG26~AWG24)	4~6mm	Purchased by the installer
6***	Signal cable	Two-core outdoor shielded twisted pair copper cable	0.5~1.5 mm <sup>2</sup>	4~6mm	Purchased by the installer
7****	Signal cable	Six-core outdoor shielded twisted pair copper cable	0.5~1.3 mm <sup>2</sup>	4~6mm	Purchased by the installer
8	AC power cable for backup	Three-core (L, N and PE) outdoor copper cable	4~6 mm <sup>2</sup>	10~14mm	Purchased by the installer
9	AC power cable for grid	Three-core (L, N and PE) outdoor copper cable	4~10 mm <sup>2</sup>	12~18mm	Purchased by the installer
10	PE cable	Single-core outdoor copper cable	2.5~10 mm <sup>2</sup>	N/A	Purchased by the installer

\* For CT communication connection with SMILE-G3 single phase inverter.

\*\* For CAN/RS485, LAN, Meter (with CT), DRM communication connection with inverter.

\*\*\* For three-phase meter (without CT) communication connection with inverter.

\*\*\*\* For AUX communication connection with inverter.

## 6.2. Grounding Connection

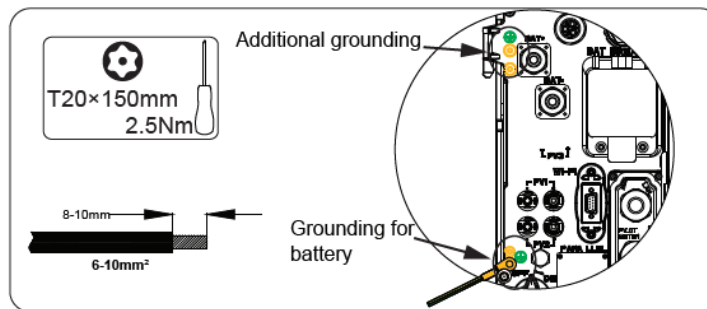
### CAUTION

#### Electric Shock Hazard

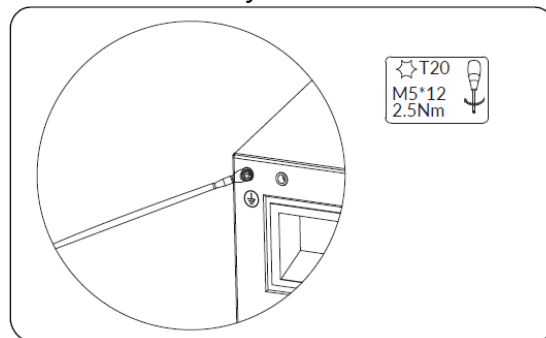
Before doing electrical connection, please ensure the PV switch & all AC and BAT circuit breakers in the energy storage system are switched OFF and cannot be reactivated.

External grounding points are provided at the left top and bottom of the inverter. Take out M5 OT terminals, strip the grounding cable insulation, insert the stripped part of grounding cable into the ring terminal lug and crimp using a crimping tool. Connect the OT terminal to grounding point using the torque 2.5Nm with T20 screwdriver.

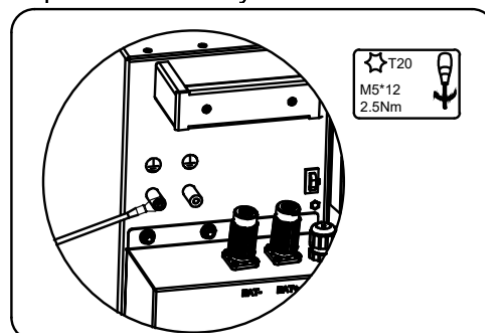
Grounding connection for SMILE-G3 single phase inverter



Grounding connection with series battery



Grounding connection with parallel battery





## 6.3. AC Connection

### 6.3.1. Requirements for the AC Connection

Grid cable requirements as follows:

- Conductor type: copper wire
- External diameter: 12mm to 18mm for grid connector
- Grid conductor cross-section recommendation: 4-10mm<sup>2</sup>
- Insulation stripping length: 16mm
- Sheath stripping length: 45mm

Backup cable requirements as follows:

- Conductor type: copper wire
- External diameter: 10mm to 14mm for backup connector
- Backup conductor cross-section recommendation: 4-6mm<sup>2</sup>
- Insulation stripping length: 10mm
- Sheath stripping length: 33mm

#### 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 normally.

### 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.

AC connection recommendation for SMILE-G3-S3.6-INV

Description	Max. Current	Breaker Type	Recommend cable cross section
Grid Side	32A	40A	6-10mm <sup>2</sup>
Backup Side	16A	25A	4-6mm <sup>2</sup>

AC connection recommendation for SMILE-G3-S5/B5-INV

Description	Max. Current	Breaker Type	Recommend cable cross section
Grid Side	43.5A	50A	10mm <sup>2</sup>
Backup Side	21.7A	32A	4-6mm <sup>2</sup>

AC connection recommendation for SMILE-G3-S8-INV

Description	Max. Current	Breaker Type	Recommend cable cross section
Grid Side	50A	63A	10mm <sup>2</sup>
Backup Side	50A	63A	10mm <sup>2</sup>

#### WARNING

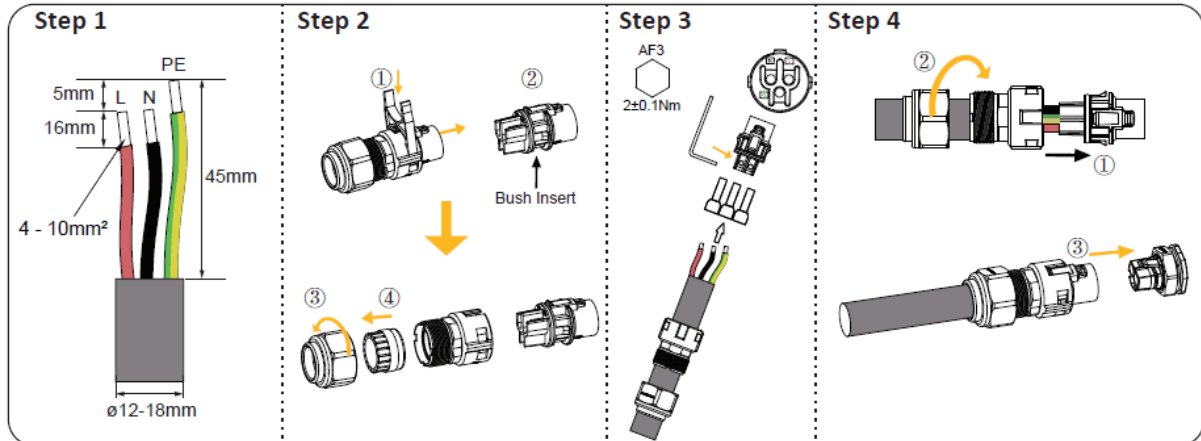
#### Selecting suitable circuit breaker and copper conductor cross section

For SMILE-G3-S5/B5-INV, the maximum allowable grid circuit breaker specification is 50A at the same time the copper conductor cross section for grid connection must be 10mm<sup>2</sup>. If the rated current of the AC circuit breaker selected is less than the maximum current of the inverter, please set its allowable maximum current through the Alpha APP or Alpha Cloud, otherwise it increases 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 PV switch, grid, backup and battery circuit breaker and secure against reconnection.
  2. Dismantle the AC cable by 45mm.
  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 16mm.
  5. In the case of fine stranded wire L, N and PE are to be fitted with bootlace ferrules.
  6. Unscrew the swivel nut from the threaded sleeve and thread the swivel nut and threaded sleeve over the AC cable.
  7. Insert the three conductors into the screw terminals on the bush insert and tighten the screws using the torque 2.0 Nm with provided tool. Ensure that all conductors are securely in place in the screw terminals on the bush insert
  8. Insert the threaded sleeve into the bush insert and hear the "click" sound. Screw the swivel nut onto the threaded sleeve.
  9. 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.

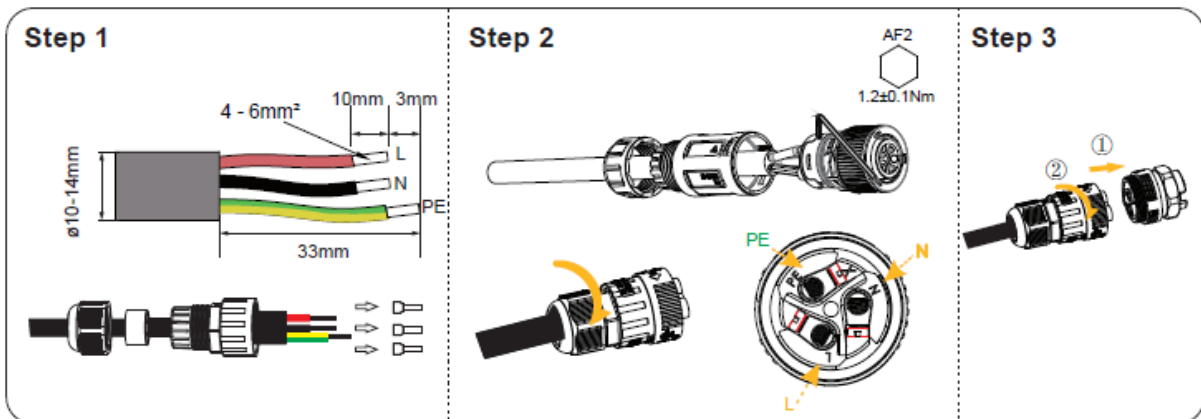


The above wiring steps are also suitable for backup connection of SMILE-G3-S8-INV.

There is color difference between the grid connector and backup connector. Bush insert of backup connector of the SMILE-G3-S8-INV is blue. Bush insert of AC connector of the SMILE-G3-S8-INV is black.

The steps for connecting the backup connector as follows:

1. Disconnect the PV switch, grid, backup and battery circuit breaker and secure against reconnection.
2. Dismantle the AC cable by 33mm.
3. Shorten L and N by 3mm each, so that the grounding conductor is 3mm 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. Unscrew the swivel nut from the threaded sleeve and thread the swivel nut and threaded sleeve over the AC cable.
7. Insert the three conductors into the screw terminals on the bush insert and tighten the screws using the torque 1.2 Nm with provided tool. Ensure that all conductors are securely in place in the screw terminals on the bush insert
8. Insert the threaded sleeve into the bush insert and hear the "click" sound. Screw the swivel nut onto the threaded sleeve.
9. 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.

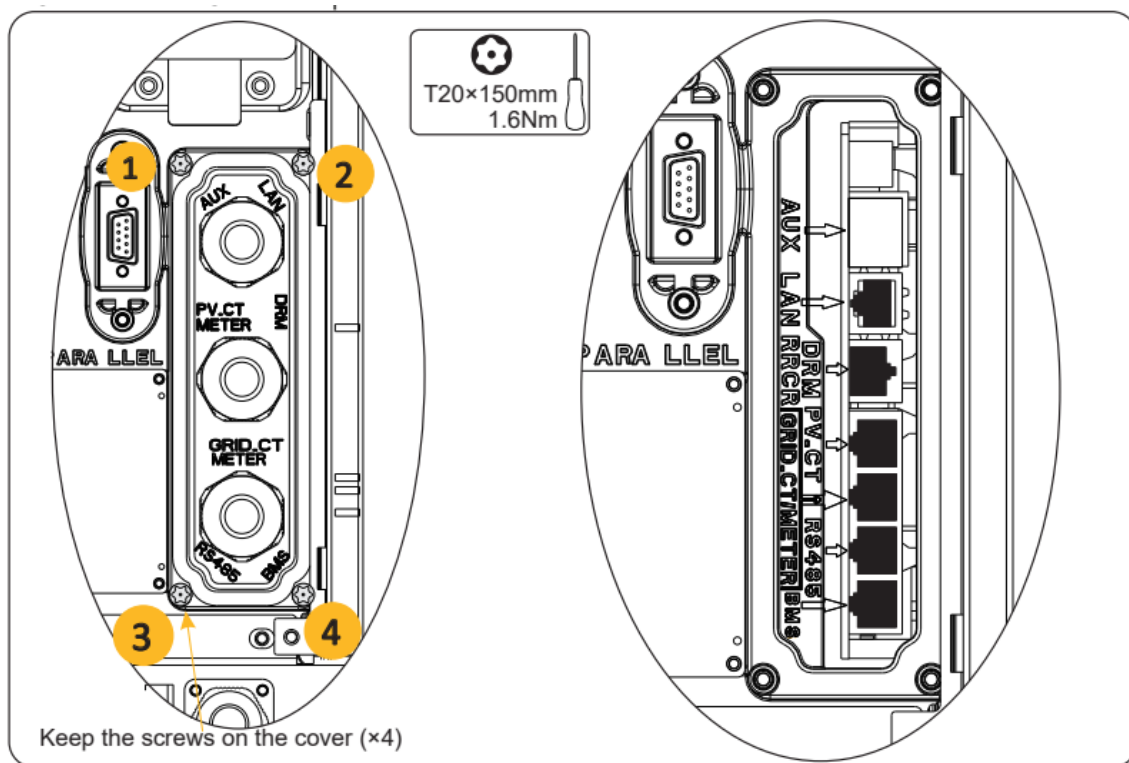


The above wiring steps are only suitable for backup connection of SMILE-G3-S5/S3.6/B5-INV.

### 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.

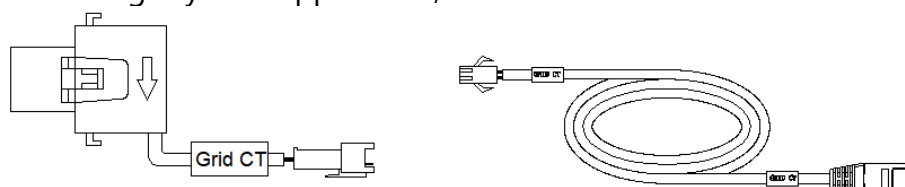


#### 6.3.4.1 CT Connection

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.



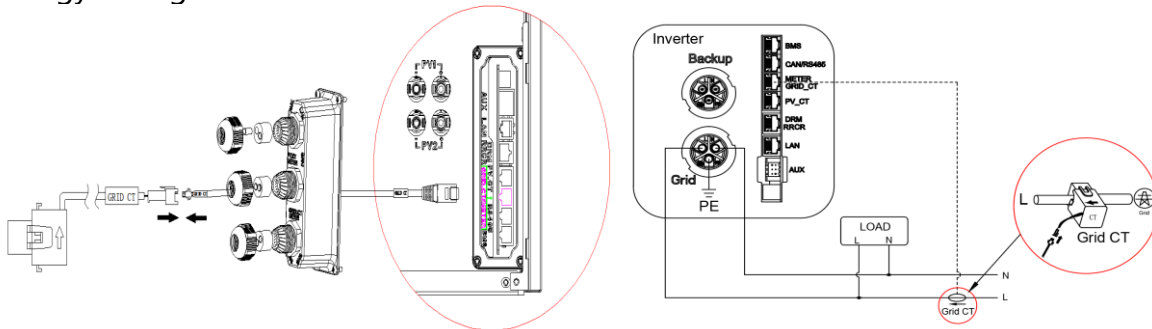
For DC-coupled storage system application

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. Connect the cable connectors of Grid CT to its cable.



DC-Coupled Storage System

For hybrid-coupled and AC-coupled storage system 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.

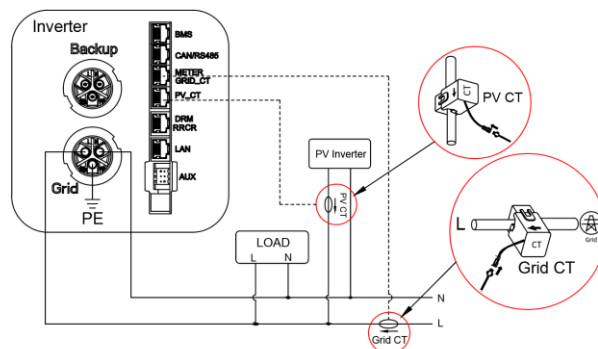
Lead the PV CT cable through the cable gland of the COM connection cover, don't tighten the swivel nut of the cable gland.

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 PV CT should point to the mains grid. Connect the cable connectors of PV CT to 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.



AC-coupled Storage System and Hybrid-coupled Storage System

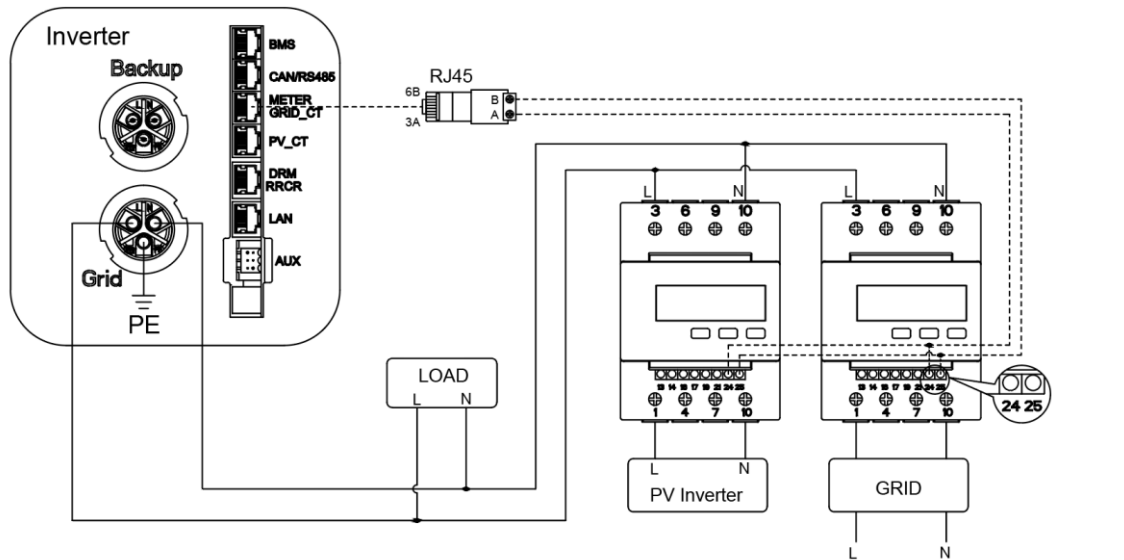
### 6.3.4.2 Meter Connection

Lead the meter cable through the cable gland of the COM connection cover, don't tighten the swivel nuts of the cable glands.

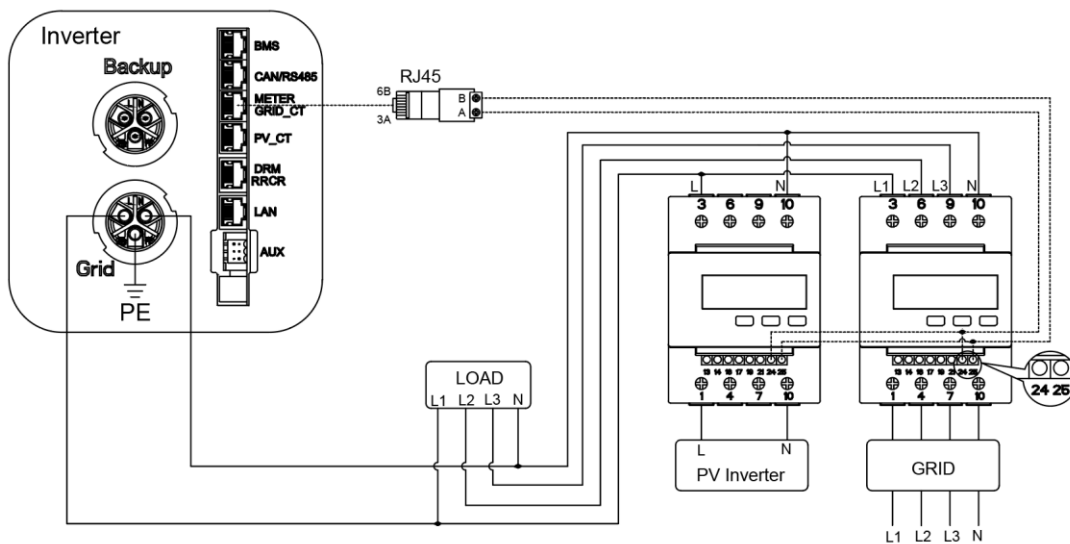
Insert the RJ45 plug to the METER communication port.

The other steps for meter connection as follows:

1. DSTU666-3\*230V 5(80)A: Three-phase meter (without CT) connection



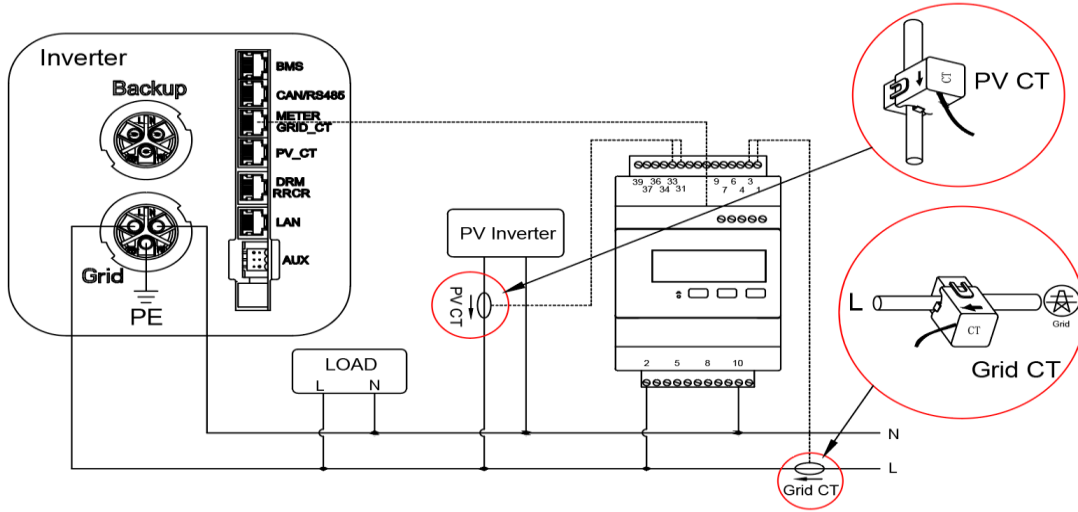
Wiring at single-phase feed in



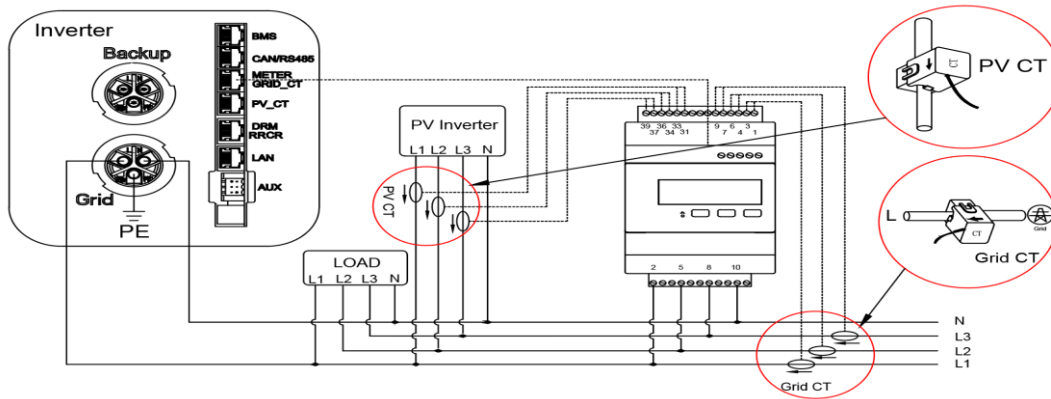
Wiring at three-phase feed in

Meter communication cable requirements: two-core outdoor shielded twisted pair copper cable (flexible), conductor cross-section  $0.5 \sim 1.5 \text{mm}^2$ , wires terminal should be fitted with bootlace ferrules.

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

Meter communication cable requirements: standard network cable in the industry (recommended type: Cat5e, FTP, UV-resistant for outdoor use).

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							
CT Phase	IA*	IA	IB*	IB	IC*	IC			IA*	IA	IB*	IB	IC*	IC
Terminal	1	3	4	6	7	9	X	X	31	33	34	36	37	39
Colour	White	Blue	White	Blue	White	Blue			White	Blue	White	Blue	White	Blue

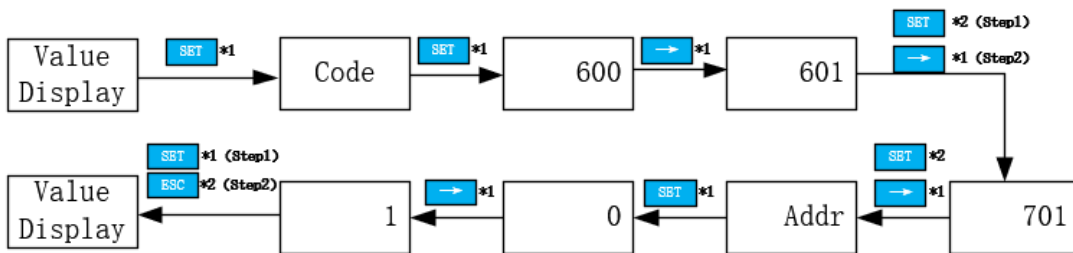


### 6.3.4.3 Meter Configuration

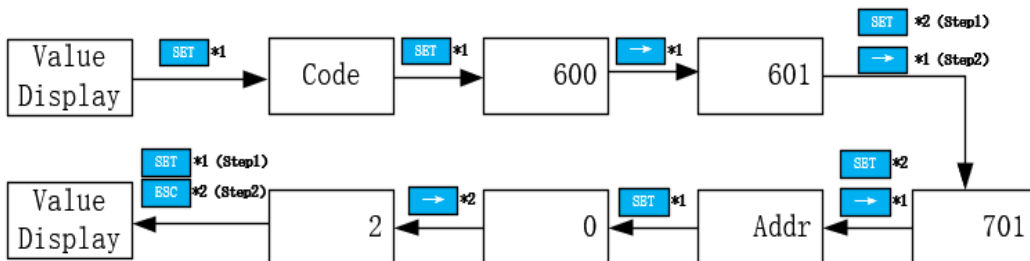
Model	Grid Meter Address	PV Meter Address
DTSU666-3*230V 5(80)A (without CT)	1	2
DTSU666-3*230V 100A/40mA (with CT)	1	N/A
DTSU666-3*230V 250A/50mA (with CT)	1	N/A

#### 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.

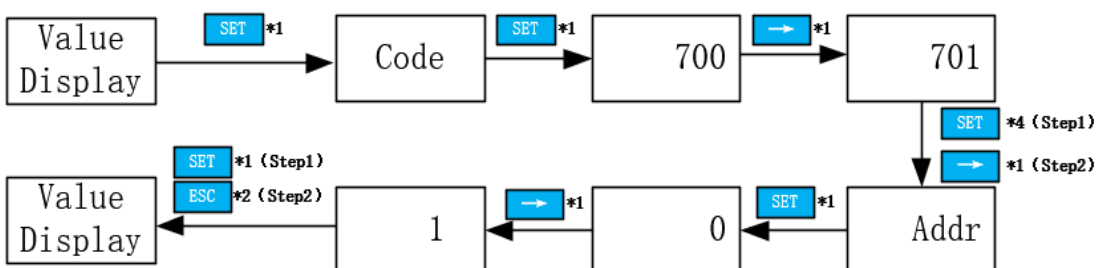


When the meter is used as PV meter, please follow the steps below to complete the address setting.



#### 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 orange.

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 orange.

### 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

 **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 results 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.

 **NOTICE**

**Destruction of the inverter due to overvoltage**

If the open-circuit voltage of the PV modules exceeds the maximum input voltage of the inverter, the inverter can be destroyed due to overvoltage.

- If the open-circuit voltage of the PV modules exceeds the maximum input voltage of the inverter, do not connect any strings to the inverter and check the design of the PV system.

 **NOTICE**

**Damage to the product due to ground fault on DC side during operation**

Due to the transformerless topology of the inverter, the occurrence of ground faults on DC side during operation can lead to irreparable damage. Damages to the inverter due to a faulty or damaged DC installation are not covered by warranty.

The inverter is equipped with a protective device that checks whether a ground fault is present during the starting sequence. The inverter is not protected during operation.

- Ensure that the DC installation is carried out correctly and no ground fault occurs during operation.

 **NOTICE**

**Damage to the inverter due to sand, dust and moisture ingress if the PV inputs are not closed**

The inverter is only properly sealed when all unused PV inputs are closed with sealing plugs. Sand, dust and moisture penetration can damage the inverter and impair its functionality.

- Seal all unused PV inputs using sealing plugs.

Please ensure the follows before connecting PV strings to the inverter:

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.

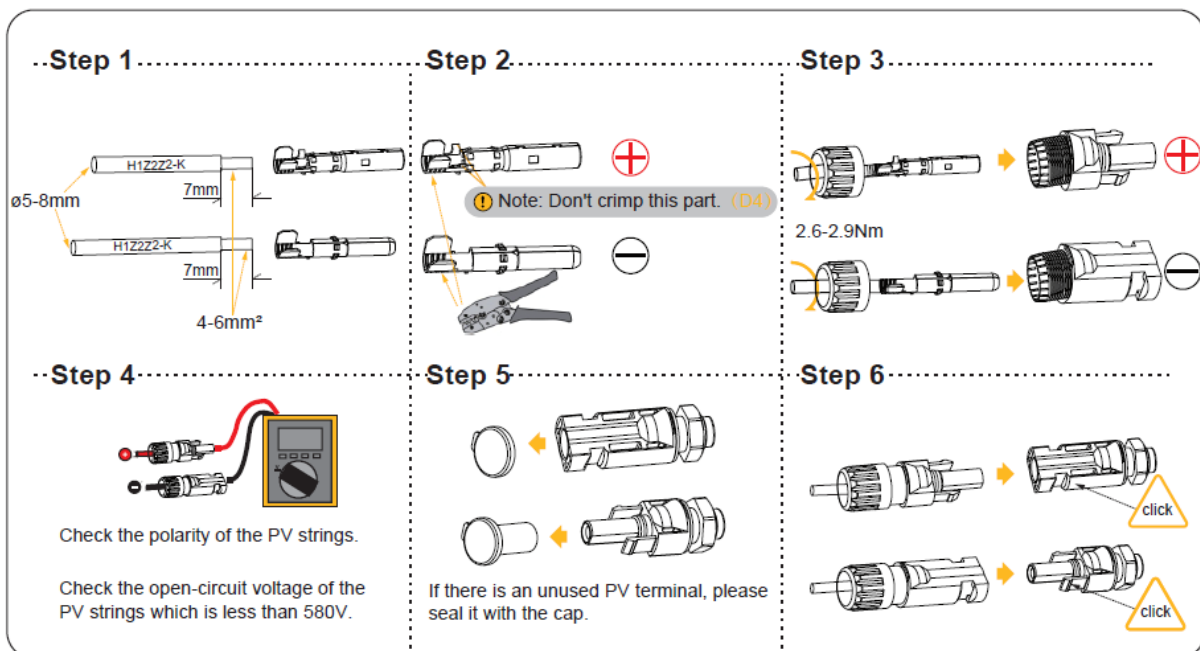
Make sure the polarity of the PV connectors is correct.

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<sup>2</sup>

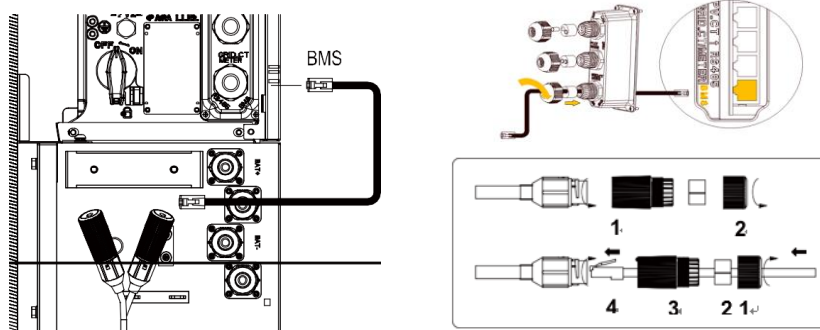


## 6.5. Electrical Connection between the Inverter and Battery

### 6.5.1. Electrical Connection between the Inverter and SMILE-G3 Batteries

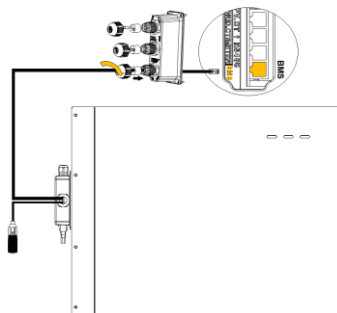
Communication cable connection between inverter and parallel batteries SMILE-G3-BAT-8.2P/10.1P:

- 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 single phase inverter, insert the RJ45 plugs to the BMS communication port at this time don't tighten the swivel nuts of the cable glands.
- c. The battery communication ports of SMILE-G3-BAT-8.2P/10.1P are at the left side. Disassemble the battery communication connector components, lead the components through the communication cable, insert the RJ45 plug and secure the communication connector.



Communication cable connection between the inverter and series batteries:

- a. Guide the battery communication cable of the upper battery through the cable gland of the COM connection cover of SMILE-G3 single phase inverter, insert the RJ45 plug to the BMS communication port at this time don't tighten the swivel nuts of the cable glands.



#### **! DANGER**

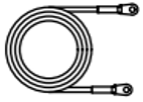
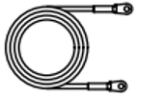

#### **Danger to life due to short-circuit of the battery power cables**

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

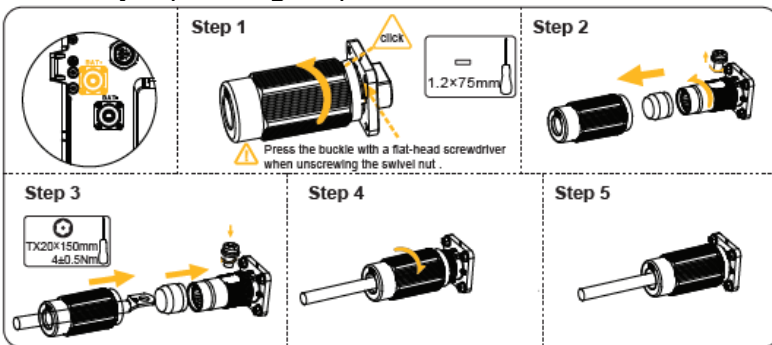
- Switch off the battery breaker of the battery.
- Please connect both ends of one battery power cable completely before connecting the next power cable to avoid short-circuiting of the positive and negative battery power cables.

Power cables connection between inverter and parallel battery SMILE-G3-BAT-8.2P/10.1P:

- a. Take out the battery power cables from the battery package.  
Please pay attention to the cable type.

No.	Picture	Description
1		Red power cable: connect BAT positive of parallel battery and the BAT positive of inverter, connect BAT positive terminals of parallel batteries.
2		Black power cable: connect BAT negative of parallel battery and the BAT negative of inverter, connect BAT negative terminals of parallel batteries.
3		The battery communication cable: connect the BMS communication ports of the inverter and parallel battery, connect the BMS communication ports of the parallel batteries.

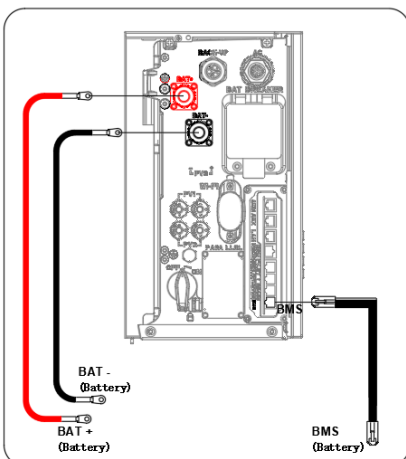
- b. Connect the battery power cables to the SMILE-G3 single phase inverter and parallel battery, operating steps as follows:



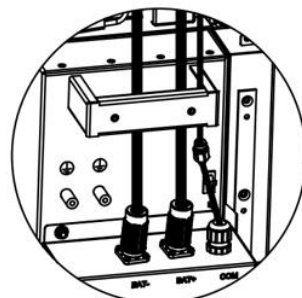
**NOTICE**

Connect the cables between the multiple parallel batteries, route them from the rear side of the battery when two batteries stacking installation.

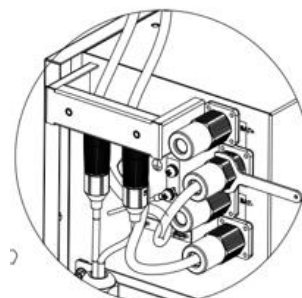
Electrical connection diagram between SMILE-G3 single phase inverter and the first parallel battery:



Inverter side



SMILE-G3-BAT-8.2P



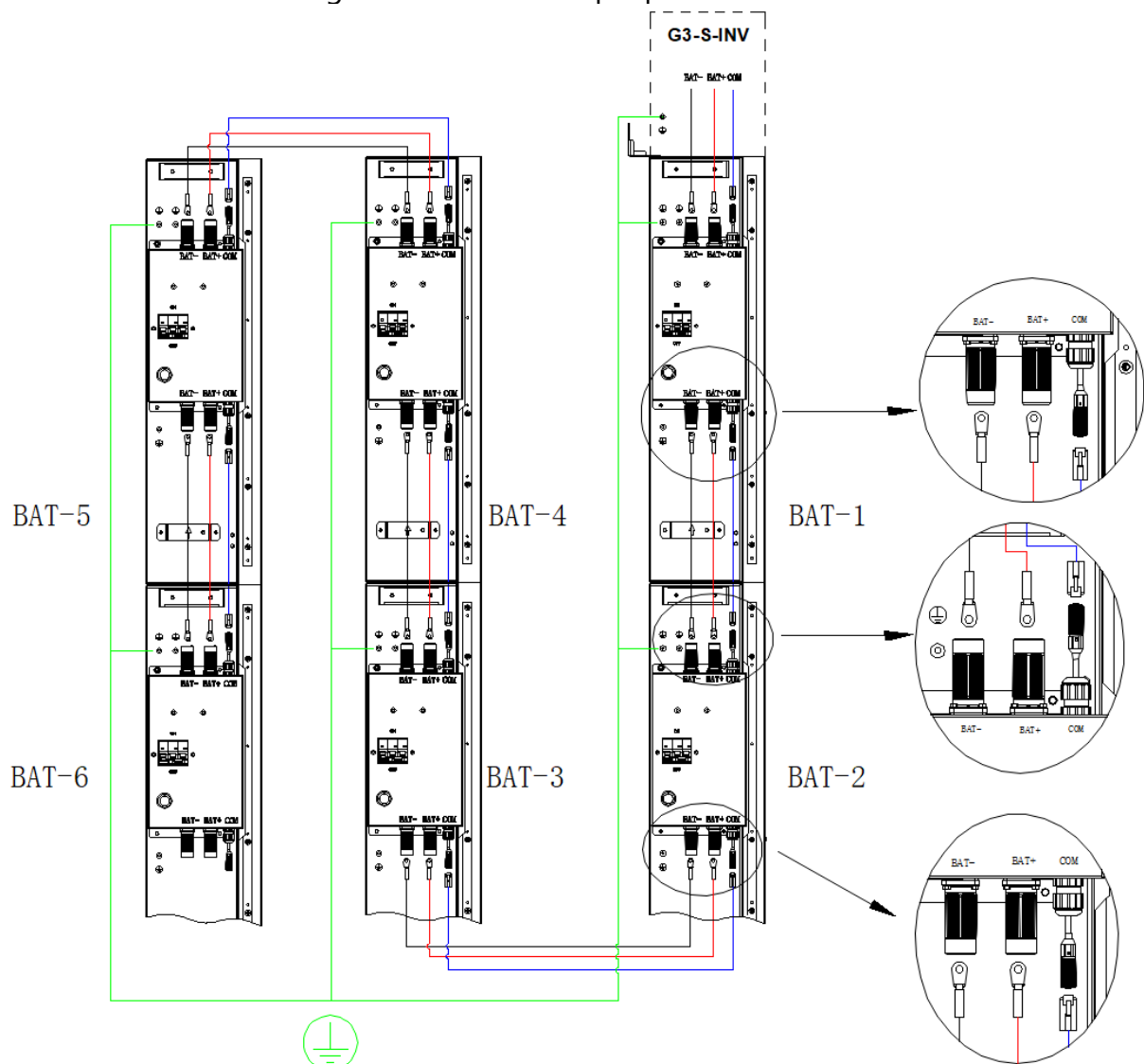
SMILE-G3-BAT-10.1P

For electrical connection between multiple parallel batteries SMILE-G3-BAT-8.2P/10.1P, please follow as below steps.

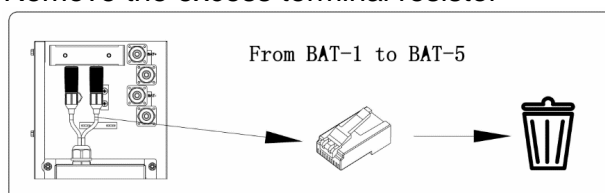
- a. Take out battery power cables and communication cable from battery package.
- b. Connect the power cables from battery 2 to battery 1.  
Connect the BMS communication cables from battery 2 to battery 1.  
When installing more batteries, repeat this electrical connection step.
- c. For grounding 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.

Electrical connection diagram between multiple parallel batteries SMILE-G3-BAT-8.2P:

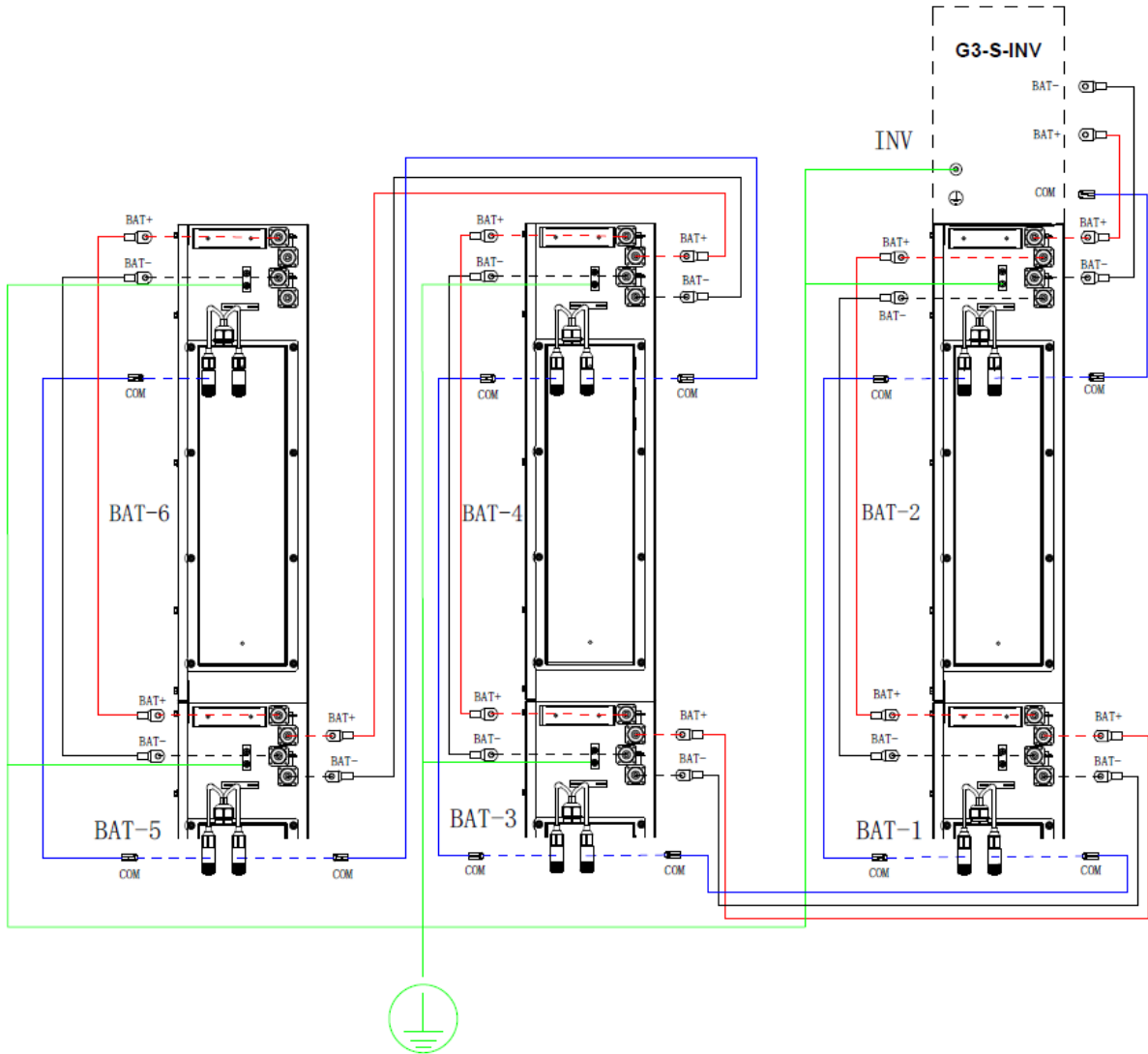


Remove the excess terminal resistor

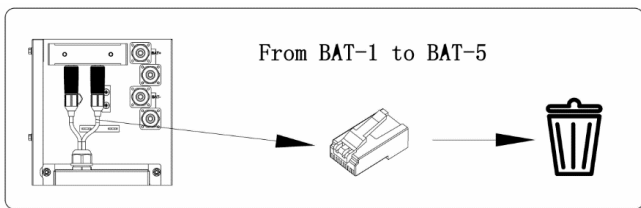




Electrical connection diagram between multiple parallel batteries SMILE-G3-BAT-10.1P:




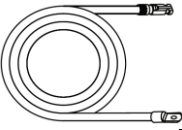
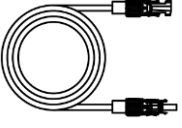
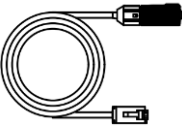
Remove the excess terminal resistor





Power cables connection between the inverter and series batteries:

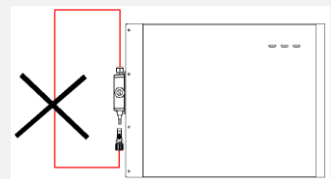
a. Take out the power cables of series batteries from the inverter package.

No.	Picture	Description
1		The shortest power cable, connect BAT main positive of series battery and the BAT positive of inverter
2		The longest power cable, connect BAT main negative of series battery and the BAT negative of inverter
3		The medium length power cable, connect BAT negative of the bottom battery of first column series battery and BAT positive of the top battery of second column series battery
4		The battery communication cable, connect the lower communication connector of the bottom battery of first column series battery and the upper communication connector of the top battery of second column series battery

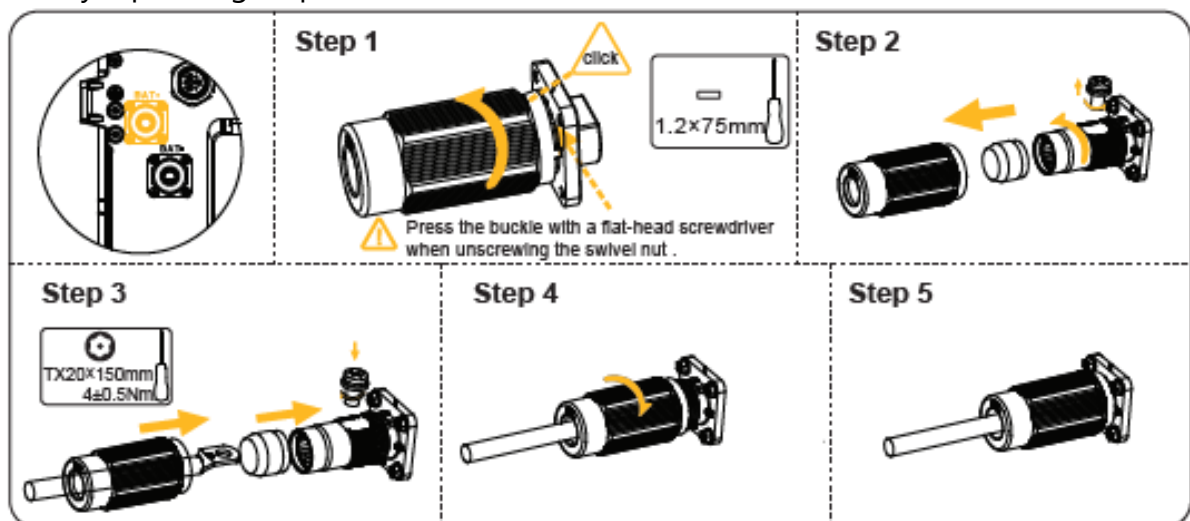


Danger to life due to short-circuiting of the battery

- 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.

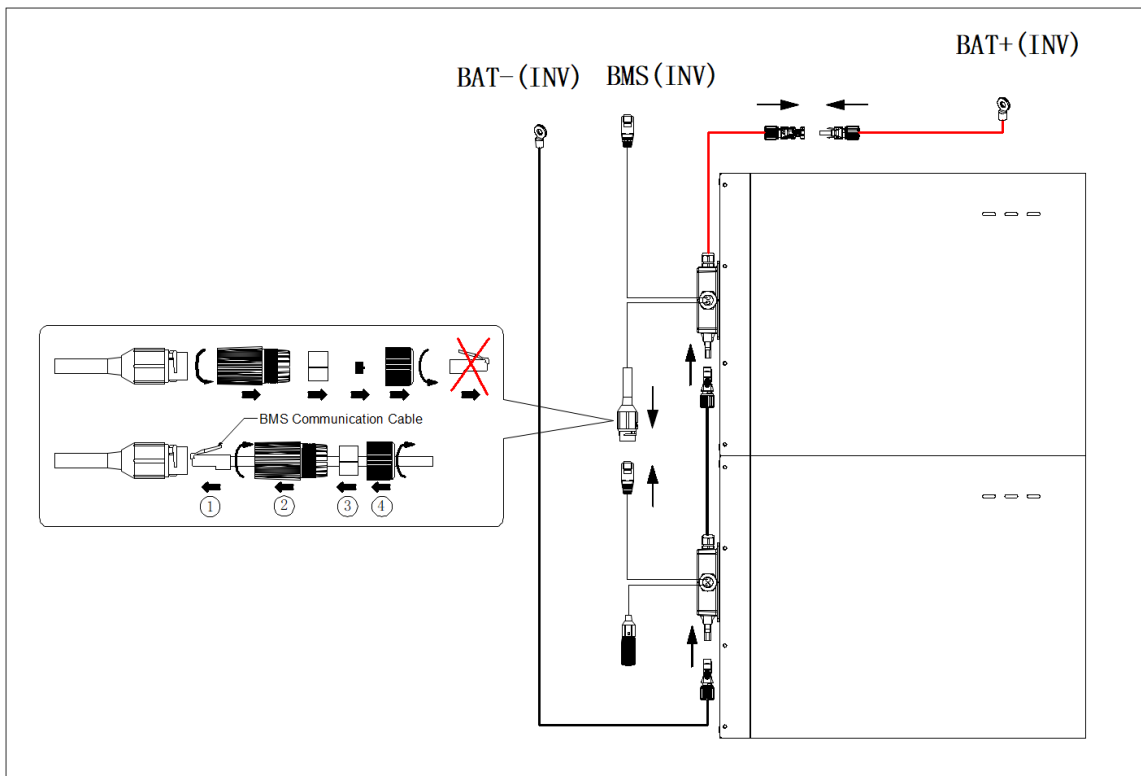
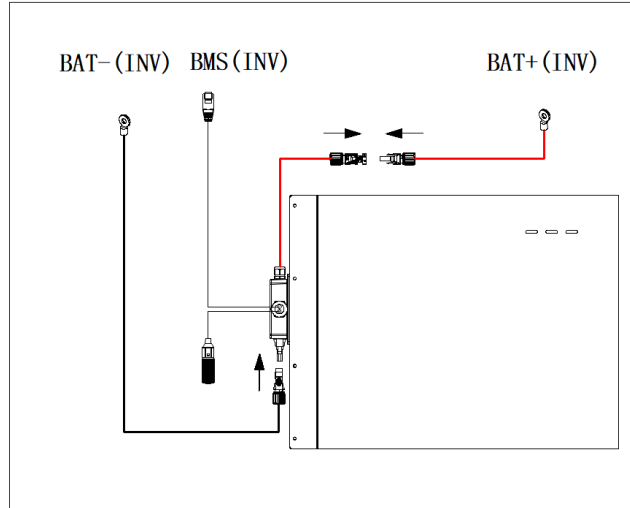
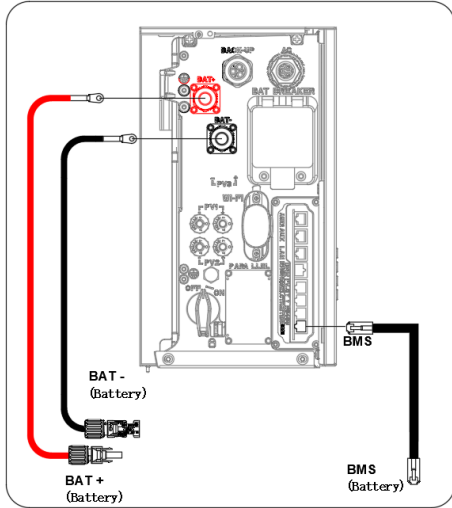


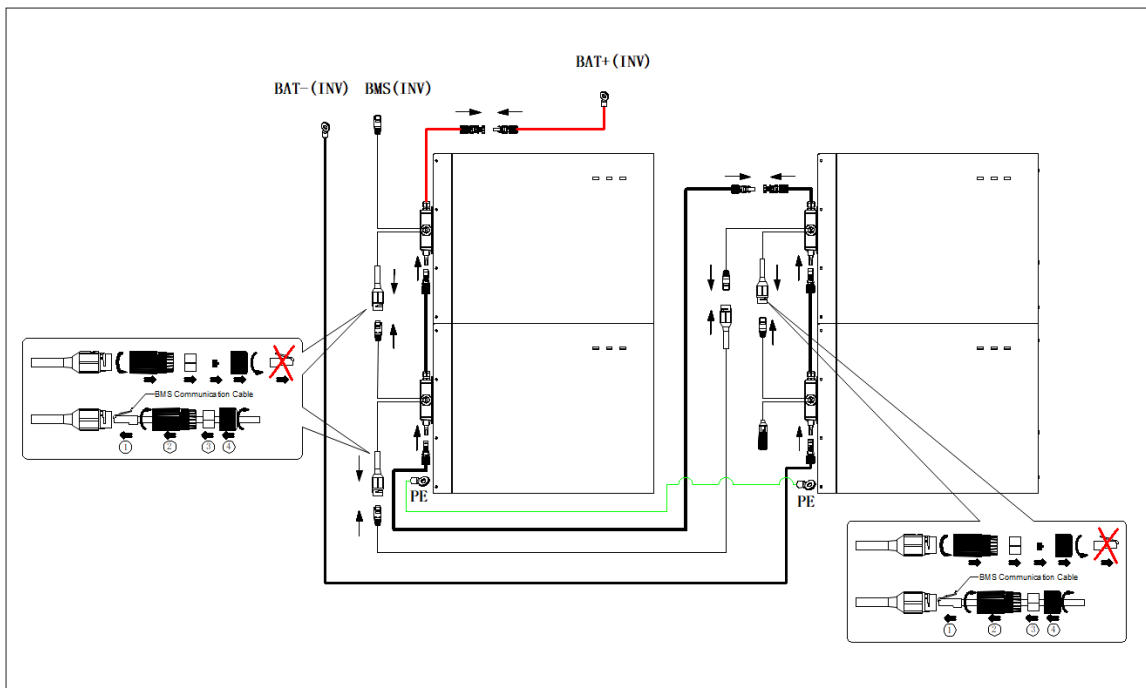
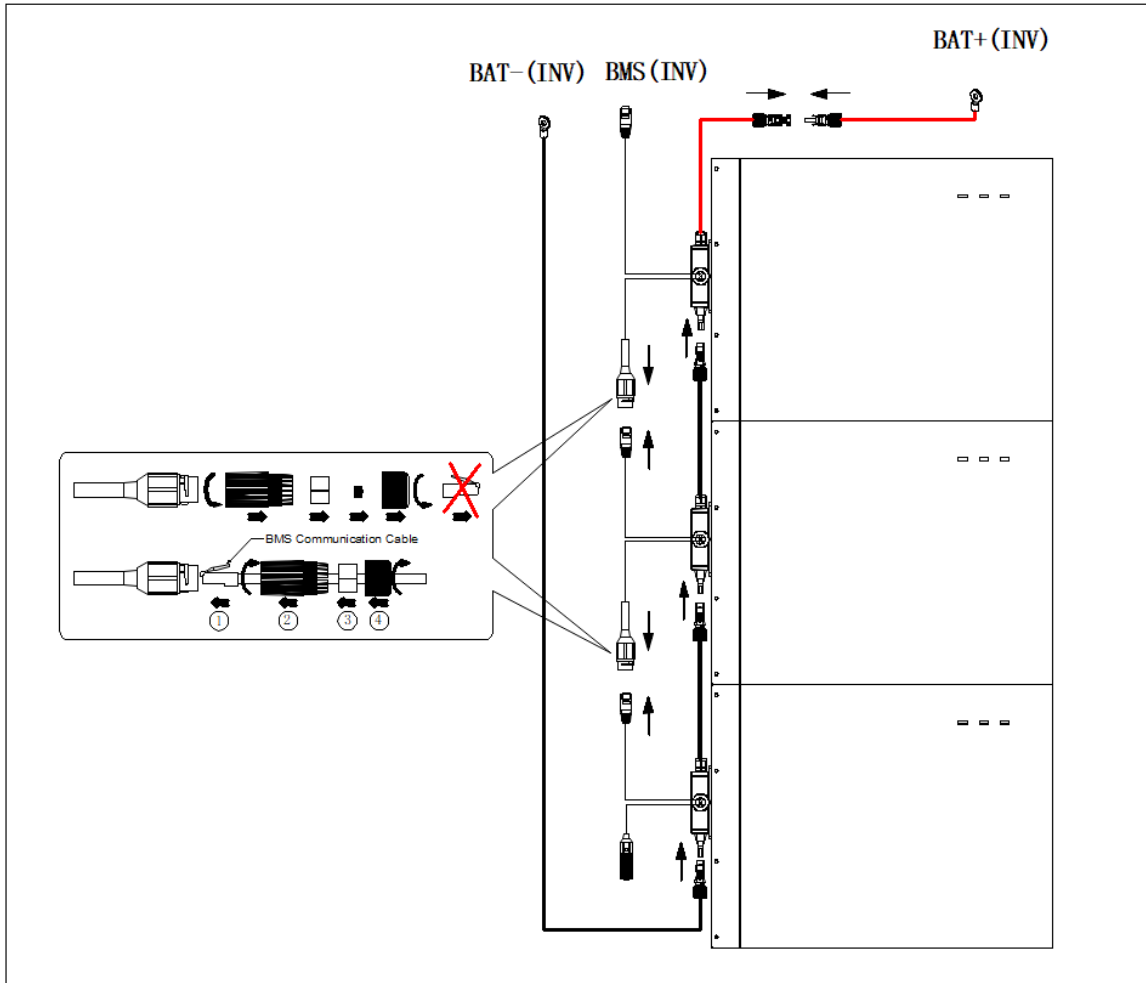
b. Connect the battery power cables to the SMILE-G3 single phase inverter and series battery, operating steps as follows:



You can install extra batteries up to 4 series batteries in a system.

Electrical connection diagram for SMILE-G3 single phase inverter and different number of series batteries as follows:



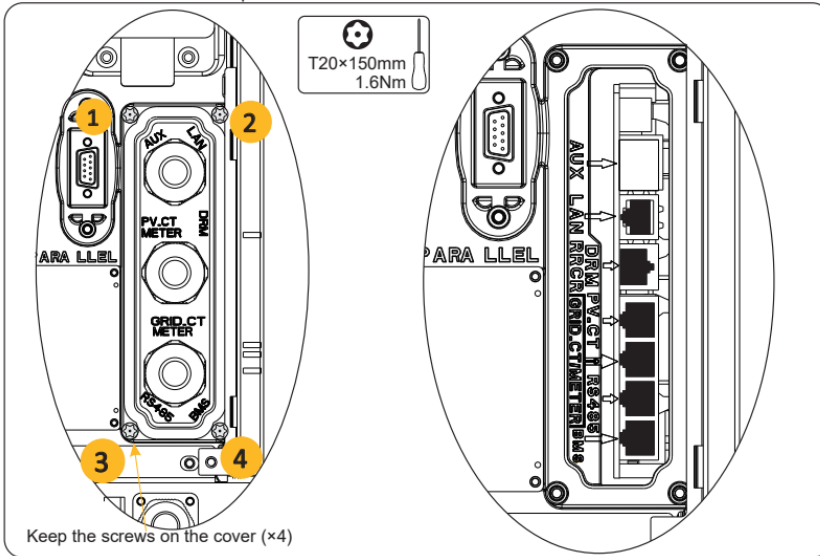


Accessory cables for distanced horizontal series batteries expansion should be purchased additionally.

### 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.

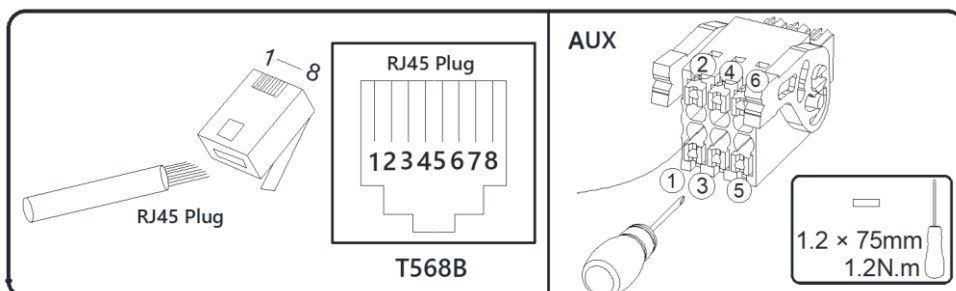
Insert the RJ45 plugs to the relative RJ45 sockets.

- 1) For meter wiring, refer to Chapter 6.3.4.2 for 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 single phase inverter.

- 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.

When an emergent situation occurs, such as fire, the end user can manually press the EPO (Emergency Power Off) button to shutdown the inverter and switch off the battery (except for the PV array). End users or installer should prepare the external EPO.



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

The pin definition of the communication ports:

ITIM \ No.	1	2	3	4	5	6	7	8
BMS	NC	RS485_A4	NC	CAN1_H	CAN1_L	NC	RS485_B4	NC
RS485	12V	NC	GND	RS485_B5	RS485_A5	NC	NC	NC
GRID_CT/METER	GRID_CT-	GRID_CT+	RS485_A7	NC	NC	RS485_B7	NC	NC
PV_CT	PV_CT-	PV_CT+	RS485_A7	NC	NC	RS485_B7	NC	NC
RRCR	K1	K2	K3	K4	3.3V			
DRM	DRED1/5	DRED2/6	DRED3/7	DRED4/8	REFGEN/0	COMLOAD/0		
AUX	DO1_NO	DO1_COM	DO1_NC	DI_NEGATIVE	DI_POSITIVE	GND		

## 6.6. Mount Covers of the Battery and Inverter

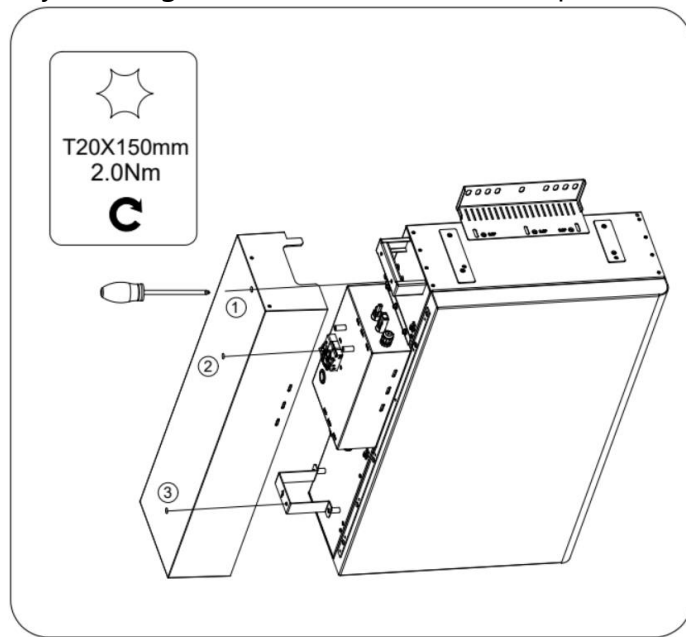
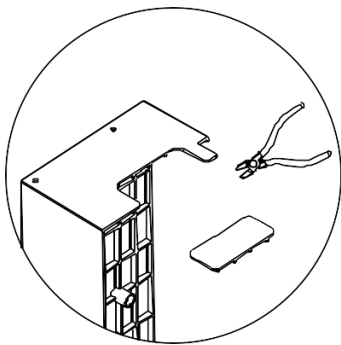
After finishing electrical connection of energy storage system, do the following operations.

### 1. Mount the cable cover of battery

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

a. Cut a cable hole based on the cabling routing, and route the cables through the cable hole.

b. Secure the cable cover to the battery housing (tool: T20 screwdriver, torque: 2.0Nm).

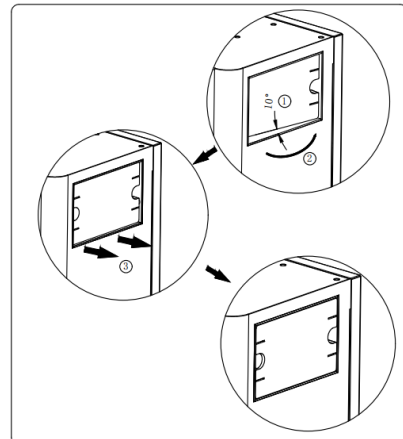
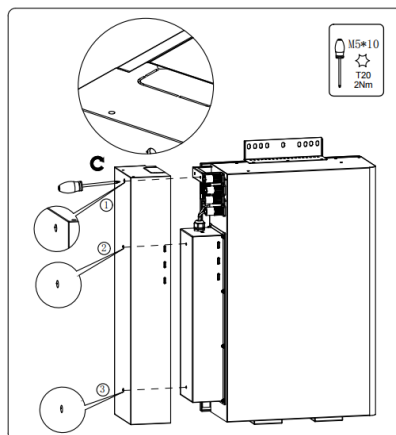
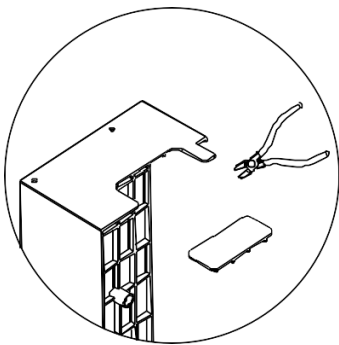


Mount the left cable cover of the battery SMILE-G3-BAT-10.1P, then install the right breaker cover, detailed steps as follows:

a. Cut a cable hole based on the cabling routing, and route the cables through the cable hole.

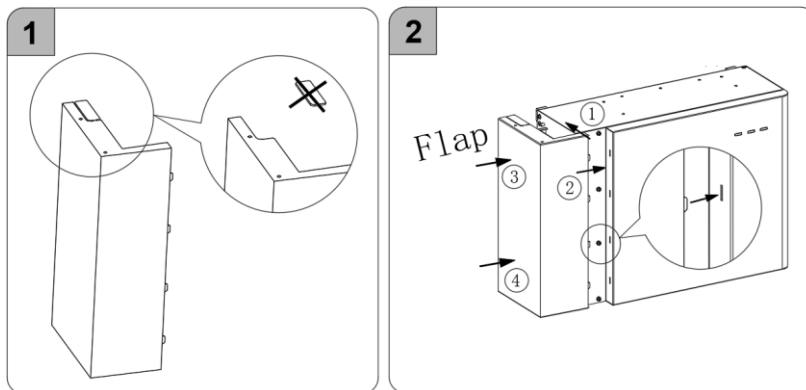
b. Secure the cable cover to the battery housing (tool: T20 screwdriver, torque: 2.0Nm).

c. Slantly place the breaker cover into the rectangular hole and flatten it with housing surface.



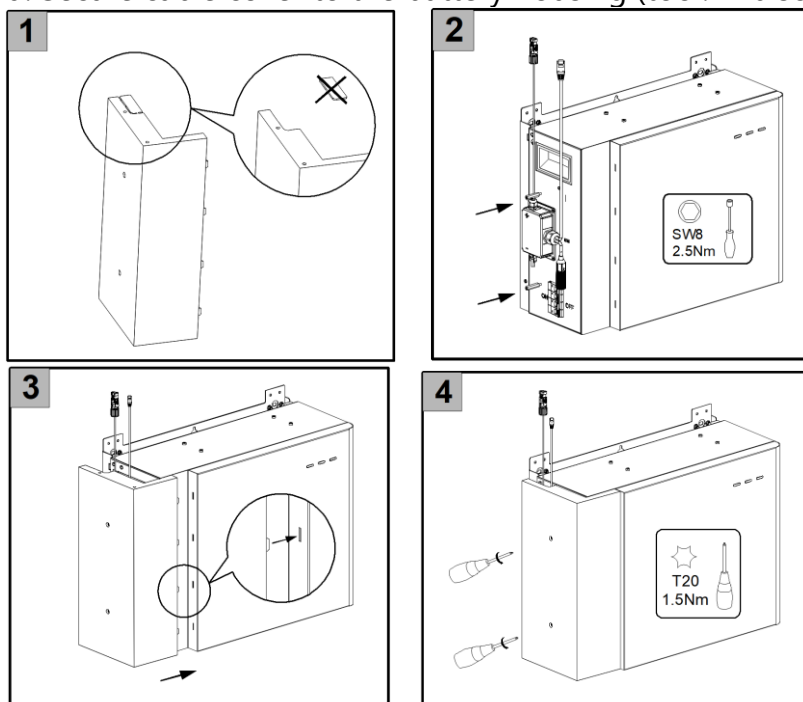
Mount the cable cover of the battery SMILE-G3-BAT-3.6S/4.0S

- a. Cut a cable hole based on the cabling mode, and route external cables through the cable hole.
- b. Align the top surfaces of the cable cover and battery housing.
- c. Align the four small protrusions on the right side of the cable cover with the slots on the left side of the battery's front cover.
- d. Flap the upper left corner of the cable cover till there is about 1mm gap between the top surfaces of the cable cover and the battery housing, then flap the lower left corner of the cable cover.



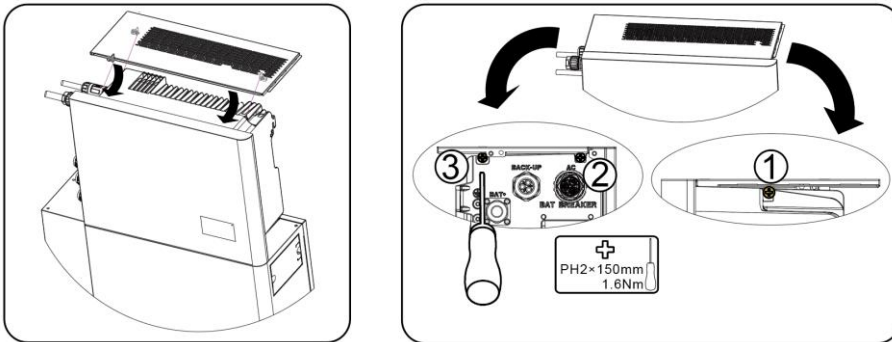
Mount the cable cover of the battery SMILE-G3-BAT-3.8S

- a. Cut a cable hole based on the cabling routing, and route external cables through the cable hole.
- b. Tighten the two support studs for battery cable cover to the battery housing (tool: SW8 hexagon sleeve, torque: 2.5Nm).
- c. Align the four small protrusions on the right side of the cable cover with the slots on the left side of the battery's front cover, push the cable cover towards the right.
- d. Secure cable cover to the battery housing (tool: T20 screwdriver, torque: 1.5Nm).

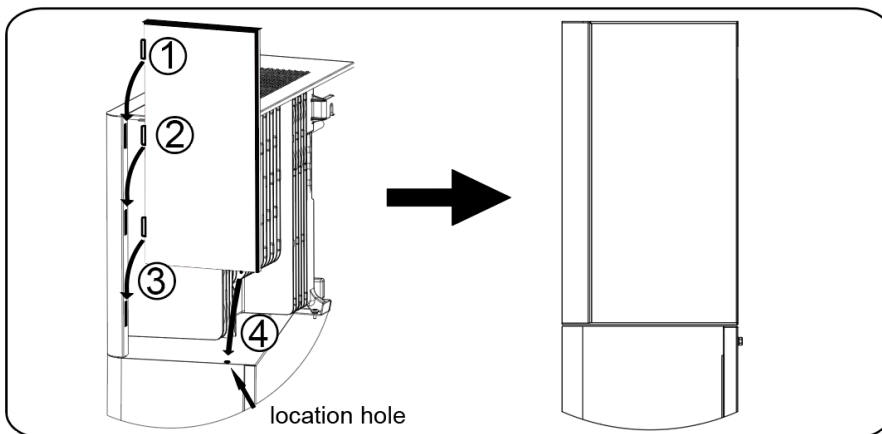


## 2. Mount the top covers of the inverter

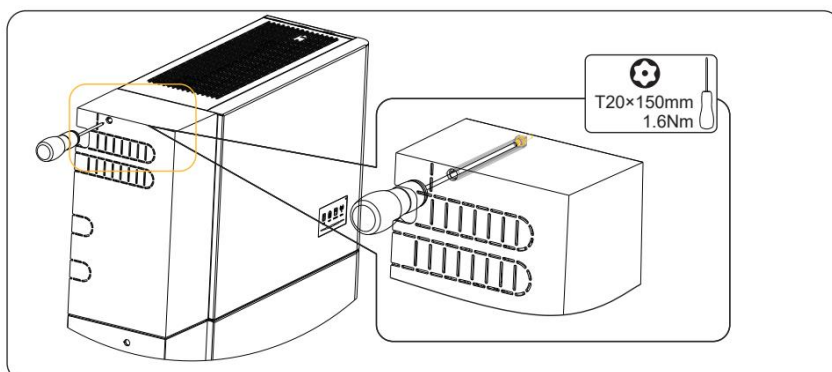
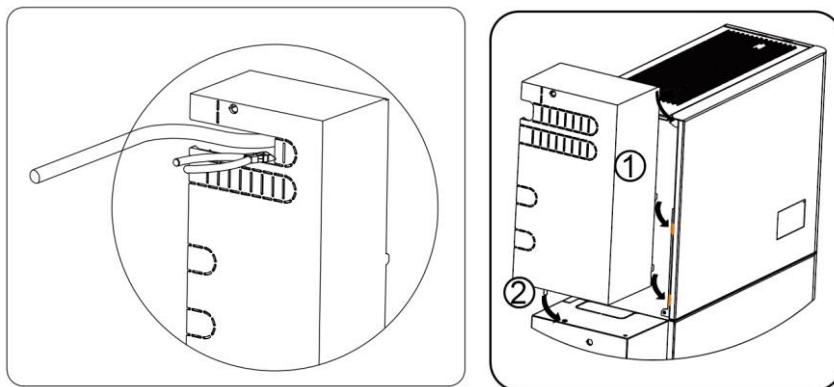
Install the top cover and right cover of the inverter



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

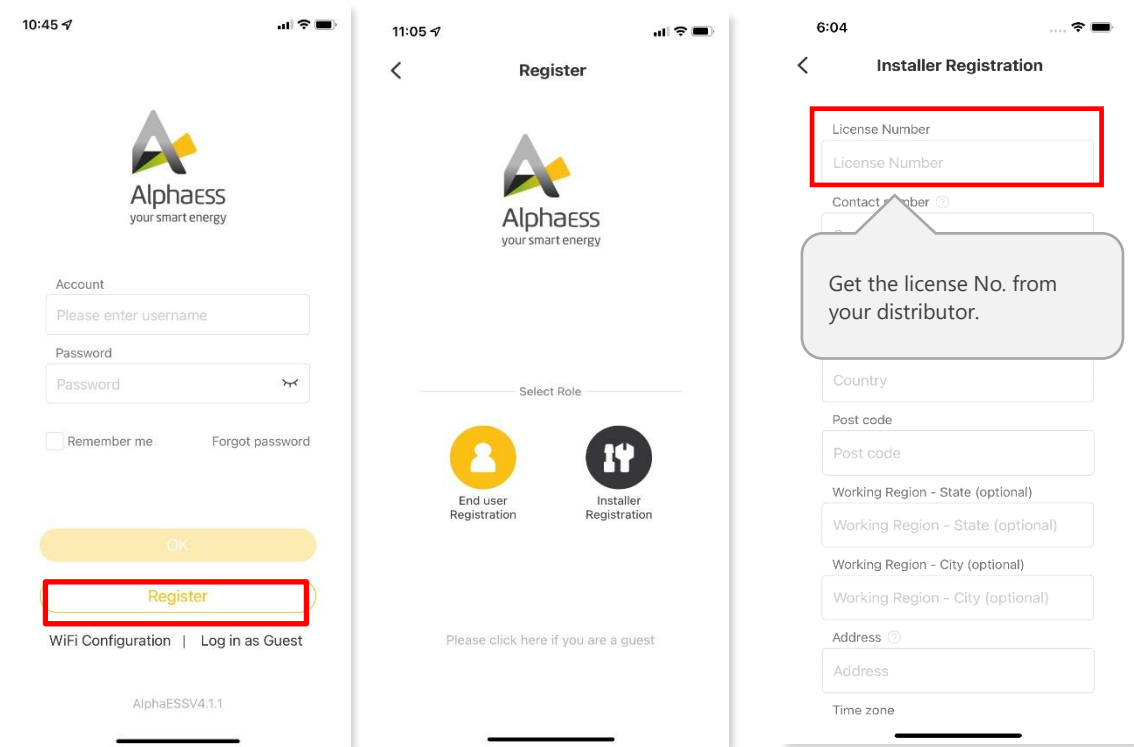
1. Android device users can download the App through major Android application markets such as Google Play.
2. IOS device users can search for "AlphaCloud" in App Store and download the App.



AlphaCloud

#### 7.1.2. Register as Installer Account

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

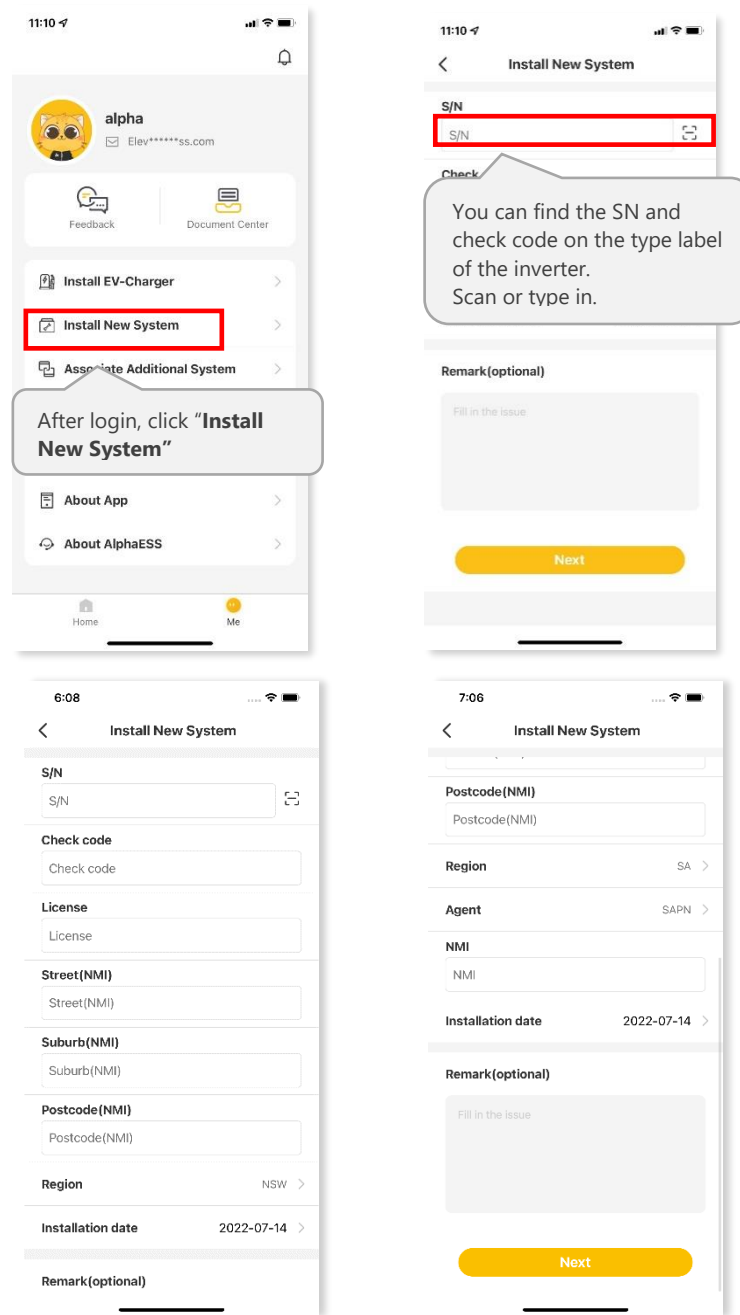


If you already have an installer account, please log in directly.

### 7.1.3. Overview of Functions for Installer Account



### 7.1.4. Install New System



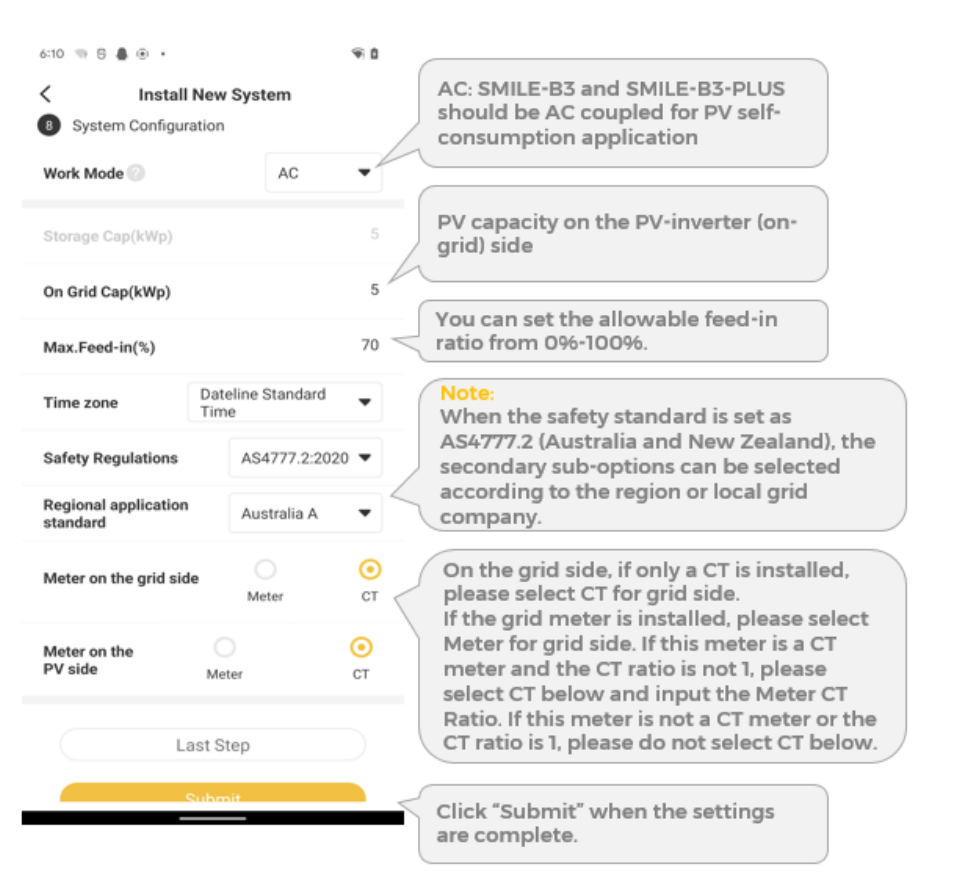
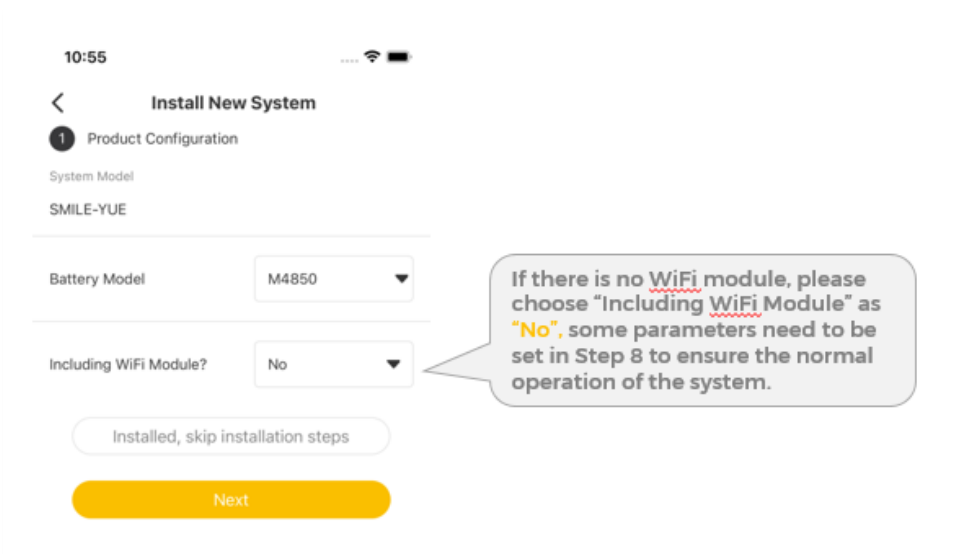
#### Australian Installer

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.



**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.

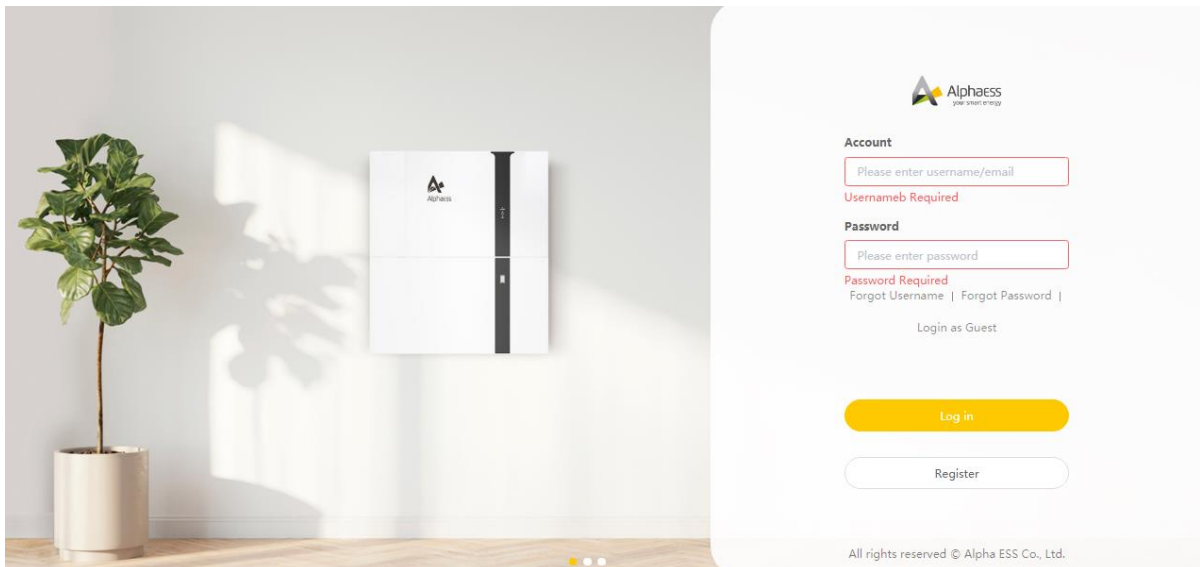
**7.2. Register on AlphaCloud**

**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](http://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;

### User registration

<p>* User Type</p> <input type="text" value="End user"/>	<p>* SN</p> <input type="text" value="Please enter system SN"/>	<p>* SN check code</p> <input type="text" value="Please enter the SN che"/>
<p>* Username</p> <input type="text" value="someone@example.com"/>	<p>* Zip Code</p> <input type="text" value="Please enter your zip code"/>	
<p>* Password</p> <input type="text" value="Please enter the password"/>	<p>* Confirm Password</p> <input type="text" value="Please confirm the password"/>	
<p>Language</p> <input type="text" value="English"/>	<p>* Contact Person</p> <input type="text" value="Please enter a contact"/>	
<p>* Country / Region</p> <input type="text" value="Please select your coun"/>	<p>Province/State</p> <input type="text" value="Please select your provin"/>	<p>City/Town</p> <input type="text" value="Please select your city"/>
<p>Address</p> <input type="text" value="Please enter your address"/>	<p>Contact Number ⓘ</p> <input type="text" value="Please enter your phone number"/>	
<p>* Time Zone</p> <input type="text" value="Please select a time zone"/>	<p>* Installation Time</p> <input type="text" value="Please select an installation date"/>	

Whether to allow automatic update (the automatic upgrade function is to actively update the latest push program to improve the use of the device when the system is online.)

Agree to the above terms [《Terms and Conditions》](#) and [《Privacy Policy》](#)

Back
Submit

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)

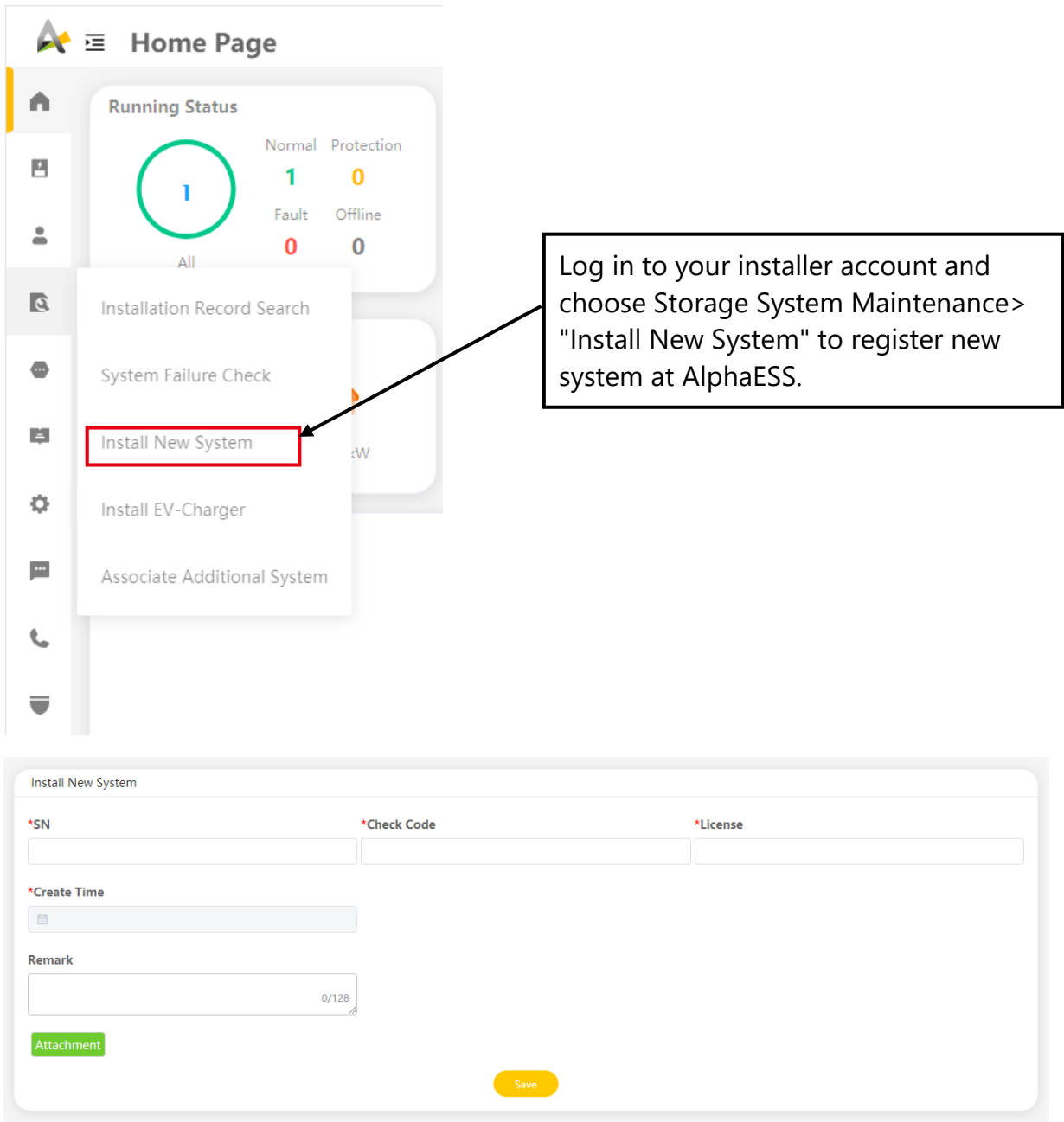
\***Username:** 5-15 letters / numbers

\***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 which is at the upper left of the inverter.
- 2) Switch on the battery breaker of the batteries.
- 3) Shortly press the power buttons of all parallel batteries. For more than one parallel battery installed, please press all power buttons within 10 seconds. (For series batteries, 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.
- 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.

#### Procedure

- 1) Switch off the AC breaker between the energy storage inverter and the loads.
- 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 buttons located beside the battery breaker of all parallel batteries. (For series batteries, please skip this step.)
- 5) Switch off the battery breaker of the batteries.
- 6) Switch off the battery breaker which is at the 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 energy storage 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

Powering on the System:

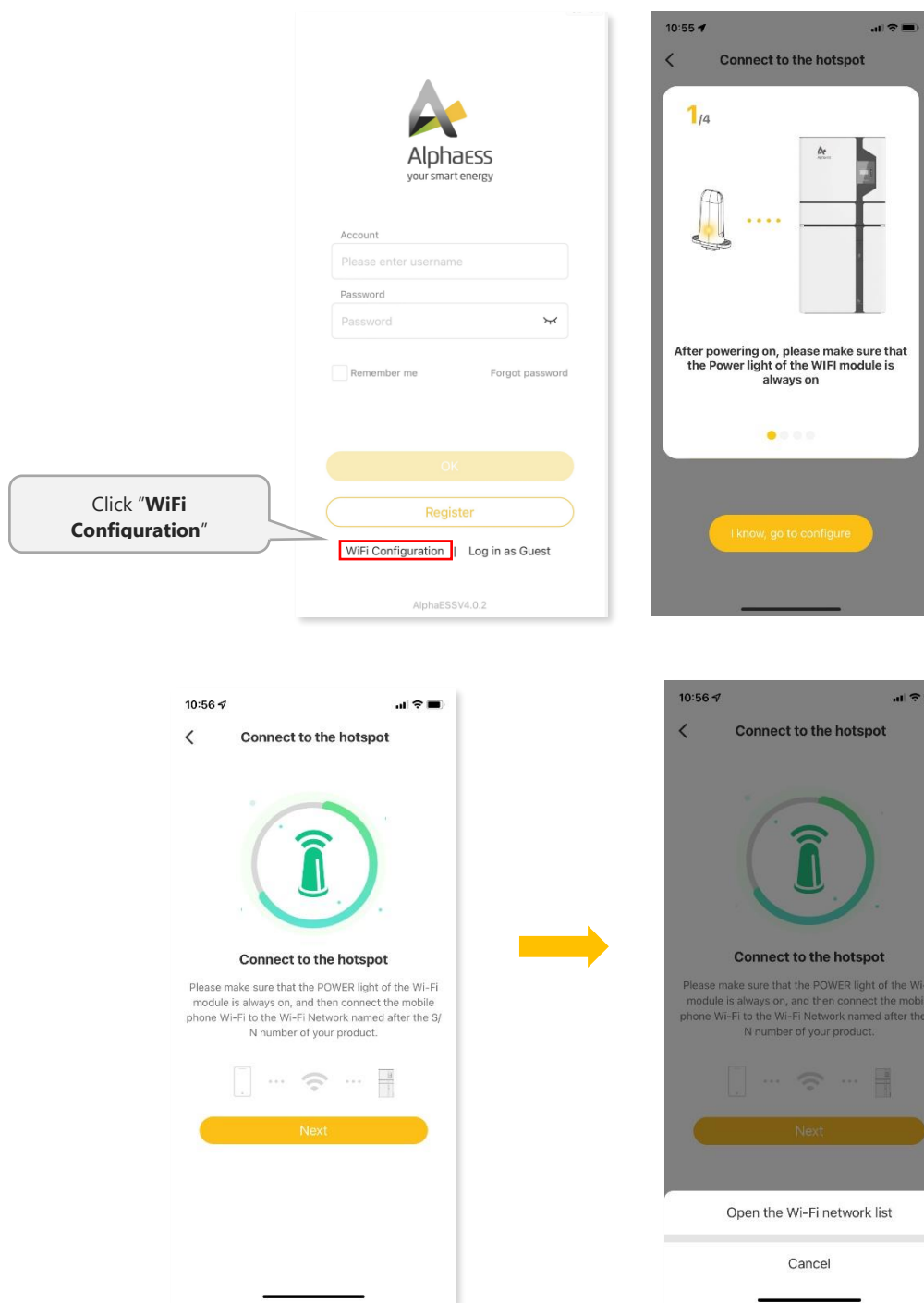
- Check the voltage range and frequency range of the grid and the installation of CT(s) or meter(s).
- Switch on the battery breaker which is at the left of the inverter.
- Switch on the battery breakers of all batteries.
- Switch on the external AC breaker between the grid and the energy storage inverter.
- Firstly, don't press the battery button (For series batteries, please skip this step.), 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.

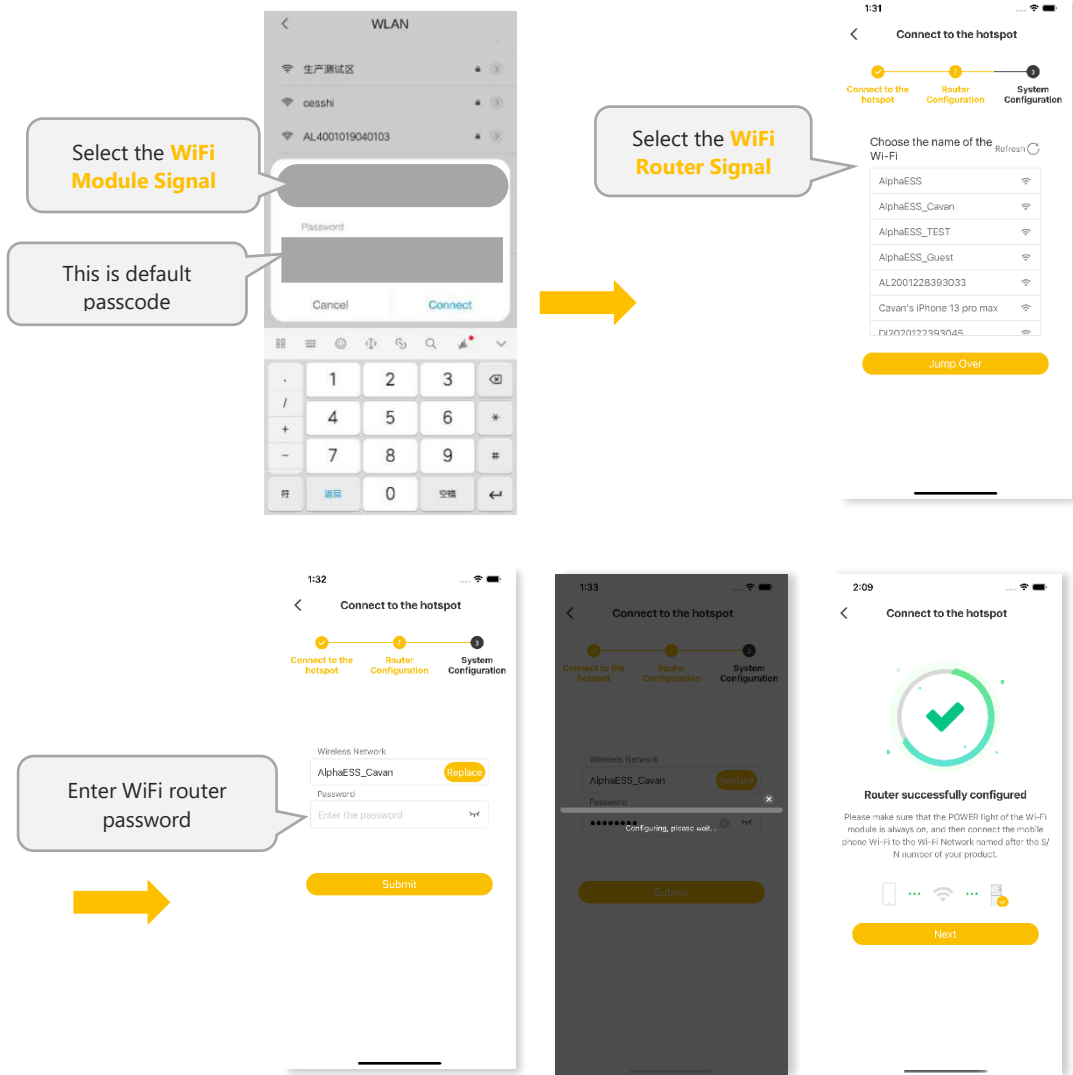
## 9.3. WiFi Module Configuration and Parameter Settings

### 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.





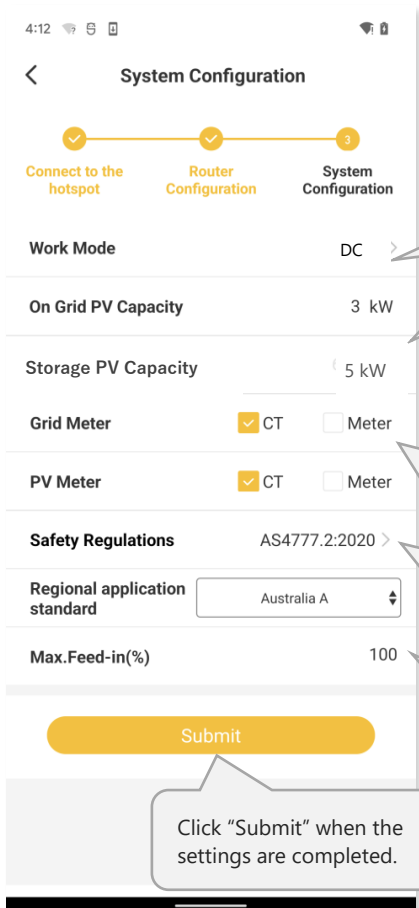
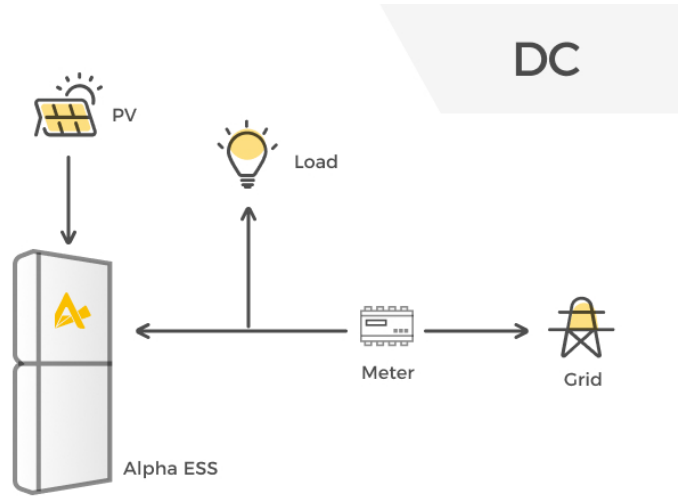
**NOTICE**

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



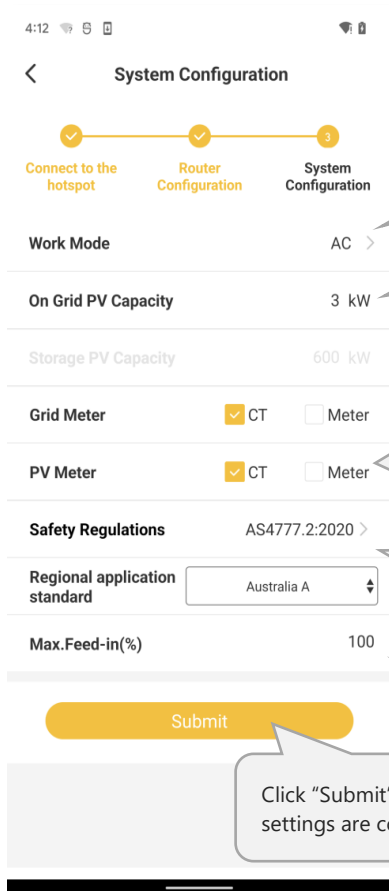
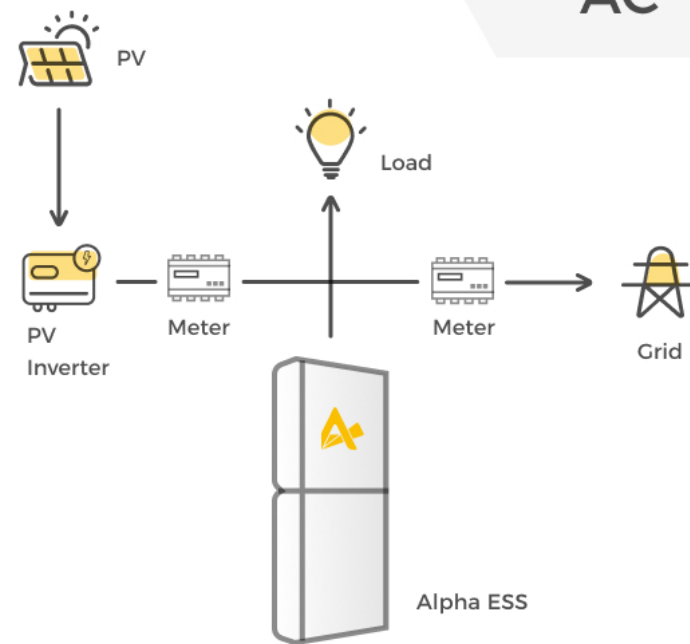
### 9.3.1.1 Basic Parameters Settings

#### 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%.

### 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.

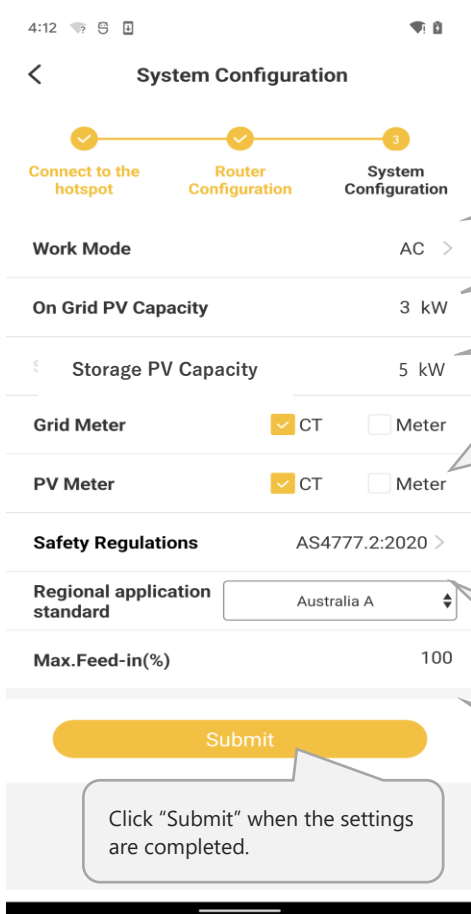
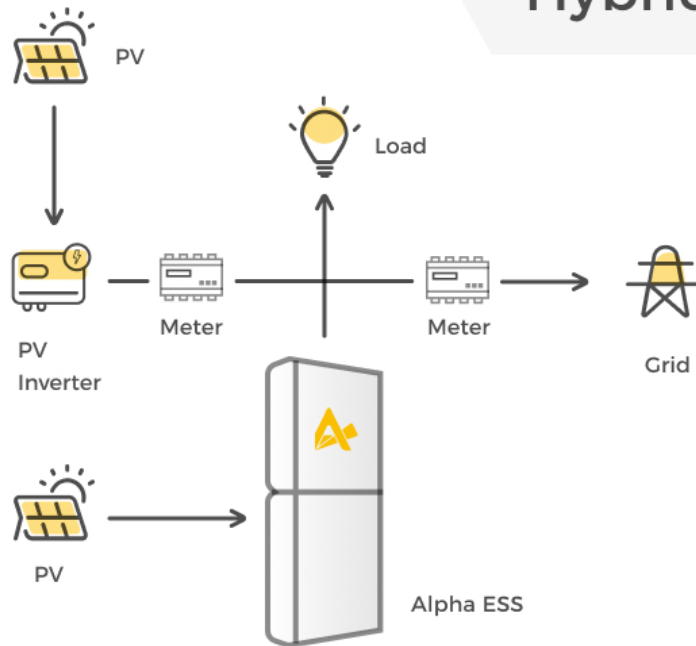
**Note:** When the safety standard is set as AS4777.2 (Australia and New Zealand), the secondary sub-options can be selected according to the region or local grid company.

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

Click "Submit" when the settings are completed.

### Hybrid Mode

# Hybrid



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%.

Click "Submit" when the settings are completed.



**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).

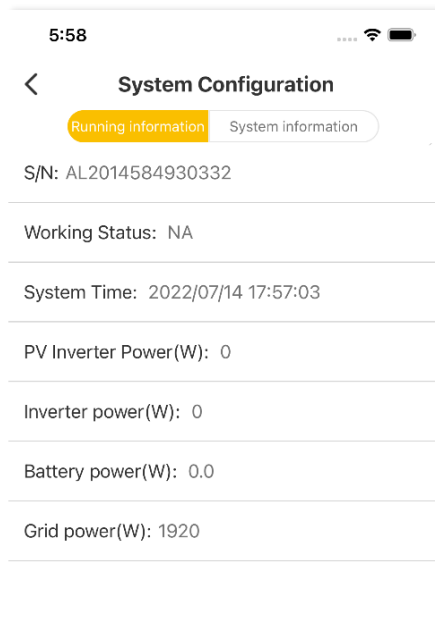
- If you are not sure which safety standard is valid for your country or purpose, please contact your grid operator for information on which safety standard is to be configured.

**9.3.2. Direct Commissioning on WiFi Configuration**

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

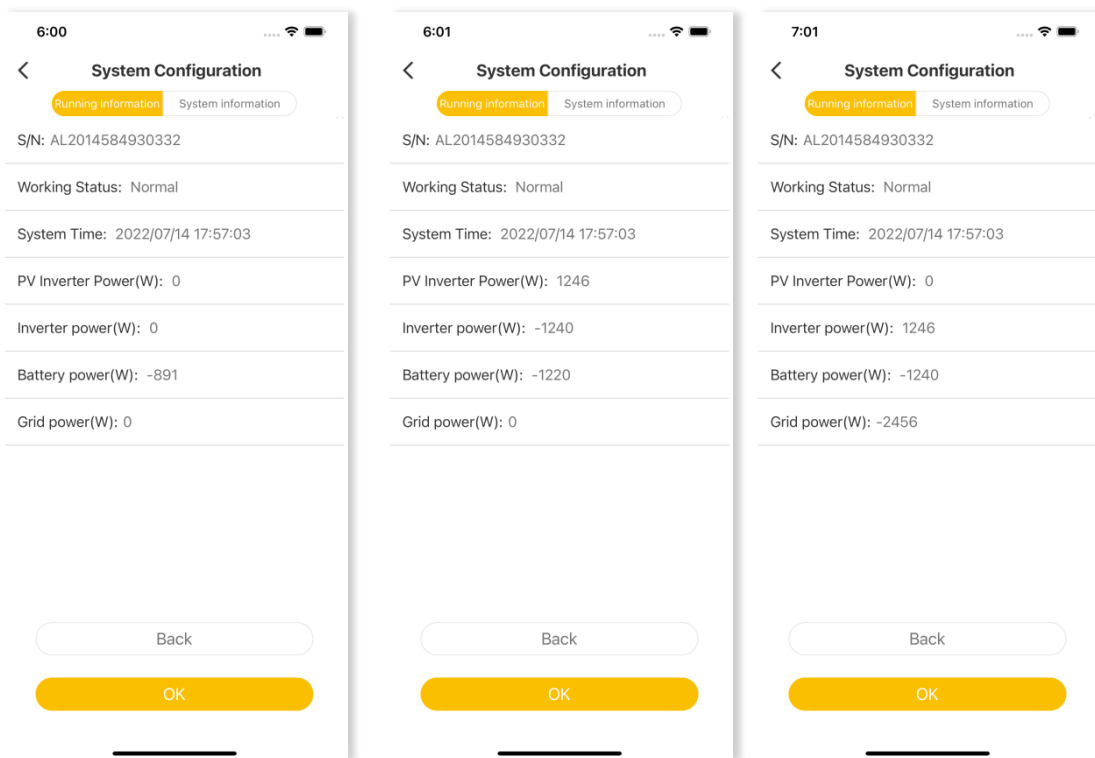
**9.3.2.1 Check the Running State without PV and Battery**

- 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 "Fault" 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.
- Shortly press the battery button, 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. For series battery, please skip this step.
- 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 "Normal" will be solid Green. 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

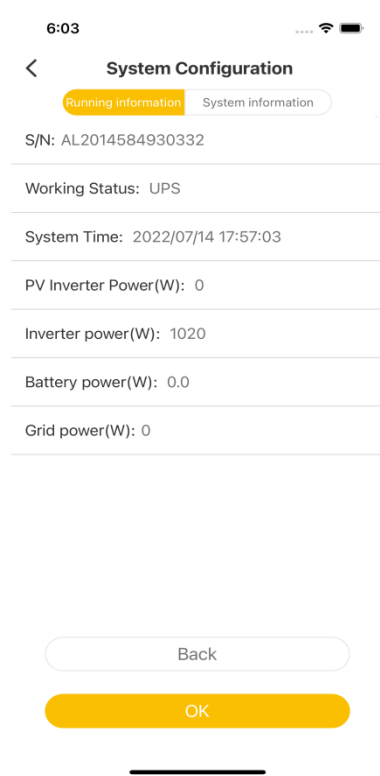
AC Mode

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 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**

If the system is running abnormally during commissioning, please review the error record on the display and refer to chapter 10.2 Troubleshooting.



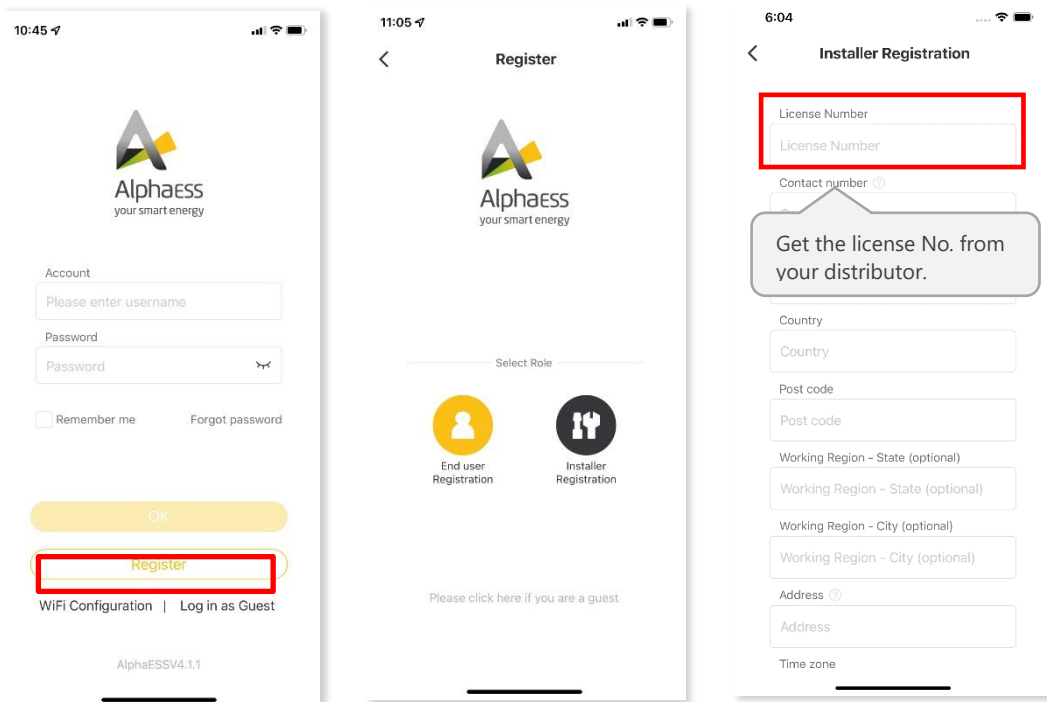
## 9.4. Install New System and Settings on the APP

### 9.4.1. Download and Install the APP



### 9.4.2. Register as an Installer

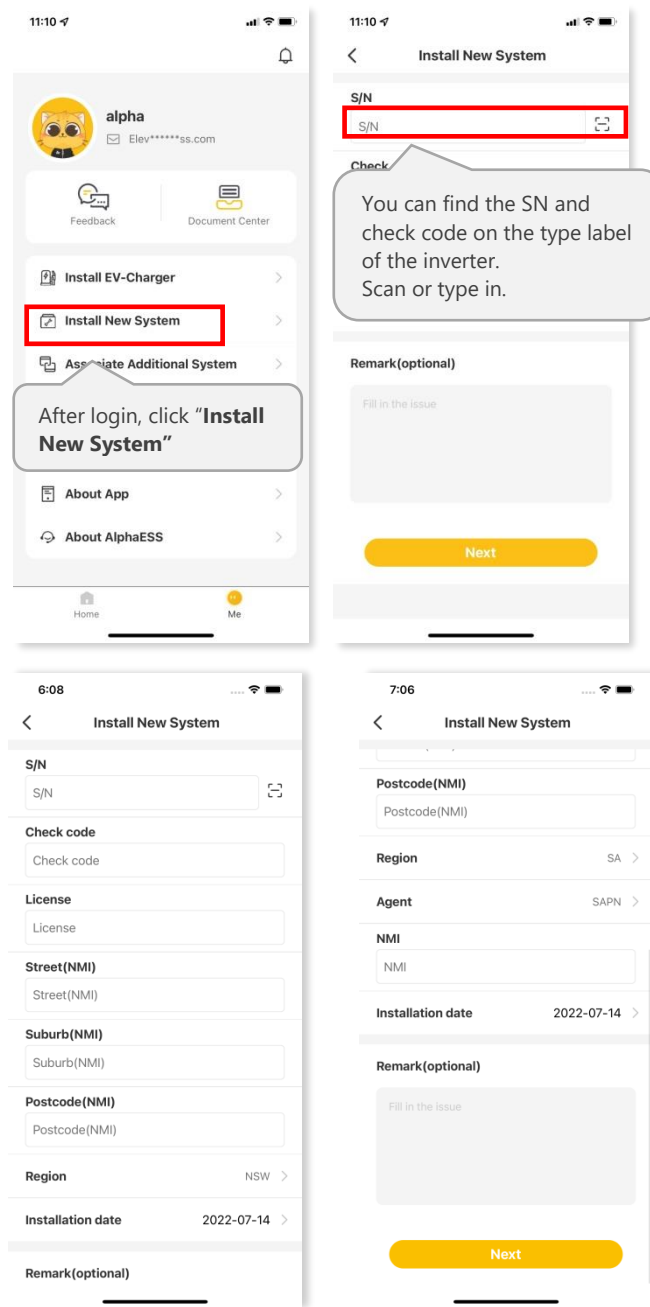
If you don't have an installer account, please register first.



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.



Australian 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 chapter 9.3.2, please ignore this section.

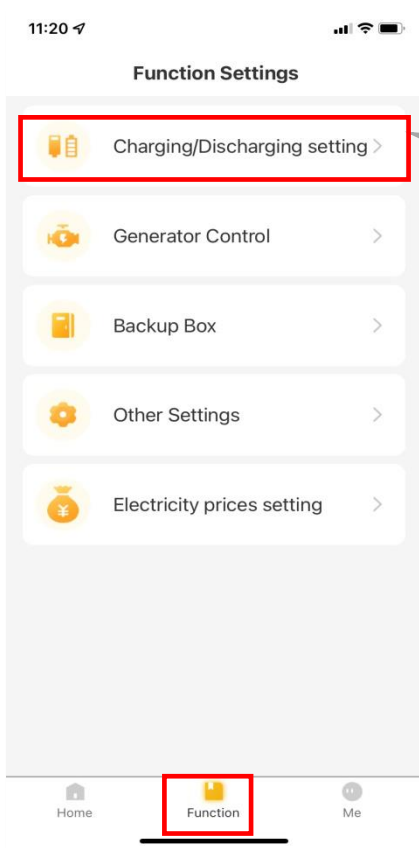
You can also commission the system after WiFi configuration.

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

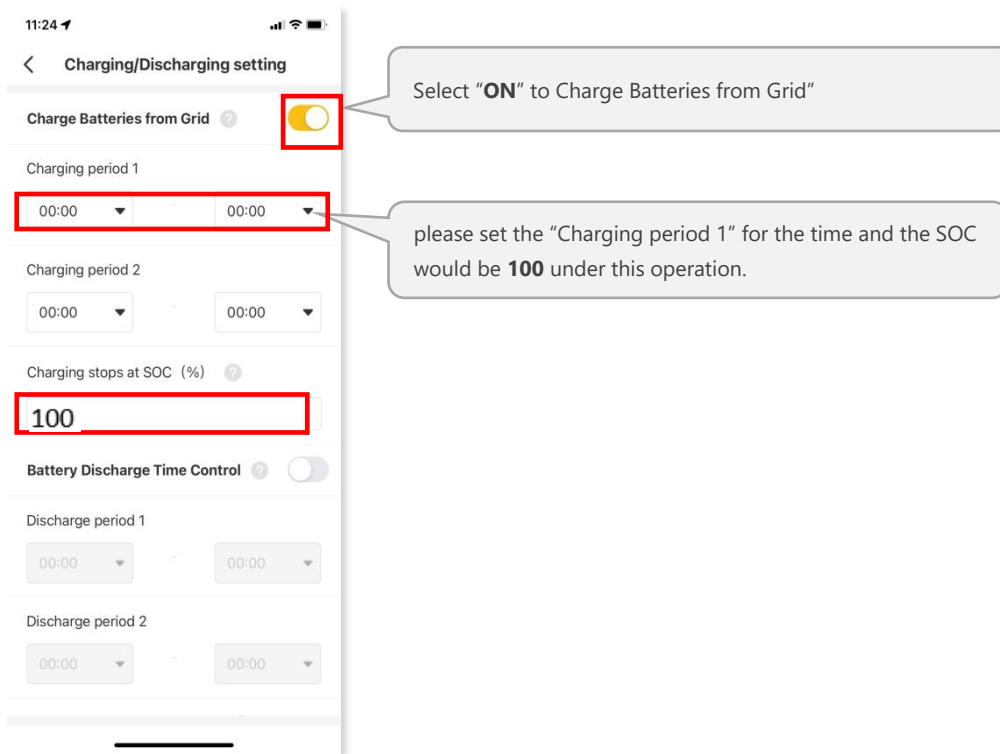
- To make sure the system is installed correctly and operating normally, please set the system to "Charging/Discharging Setting" by following the instructions below.

#### Step 1

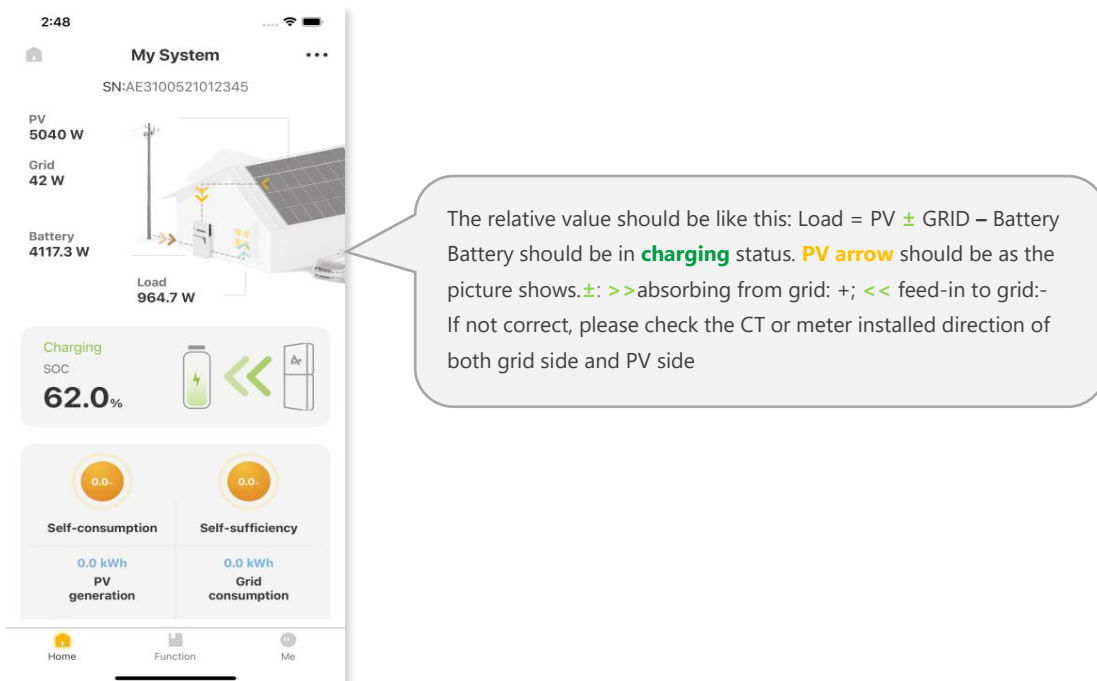


First click "**Function**" on the bottom of the Home page.  
Then click "**Charging/Discharging setting**"

### Step 2



### Step 3



- 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.



The relative value should be like this:  
Load = GRID + Battery

**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.



The relative value should be like this:  
Load = PV ± GRID ± Battery  
±: charging: - ; discharging: +  
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 on PV side

### 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 backup side can work normally, it means that the wiring of the backup has been connected correctly.

 **NOTICE**

If the system is running abnormally during commissioning, please review the error record on the display and 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	<ol style="list-style-type: none"> <li>1. The product should operate with no abnormal sound.</li> <li>2. All parameters of the product should be correctly set. Perform this check when the product is running.</li> </ol>	Once every 6 months
Electrical connections	<ol style="list-style-type: none"> <li>1. Cables should be securely connected.</li> <li>2. Cables should be intact, and in particular, the cable jackets touching the metallic surface should be not scratched.</li> <li>3. Unused cable glands should be blocked by rubber sealing which are secured by pressure caps.</li> </ol>	Perform the first maintenance 6 months after the initial commissioning. From then on, perform the maintenance once every 6 to 12 months.

#### NOTICE

##### Risk of burns due to hot enclosure of the inverter

The enclosure of the inverter can get hot during operation.

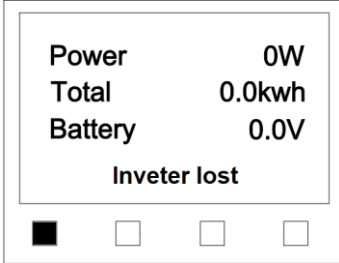
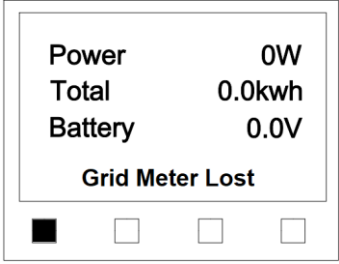
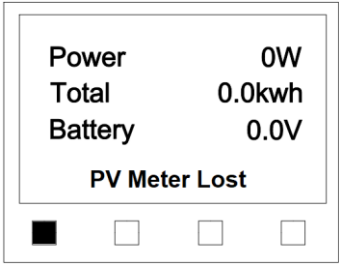
- During operation, do not touch any parts other than the display panel of the inverter.
- Wait approx. 30 minutes before cleaning until the inverter has cooled down.



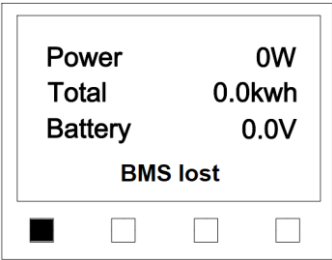
## 10.2. Troubleshooting

### 10.2.1. Common Errors

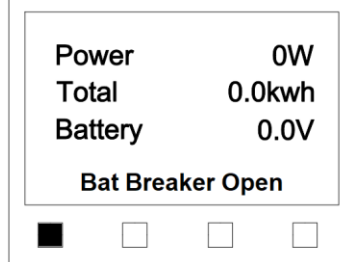
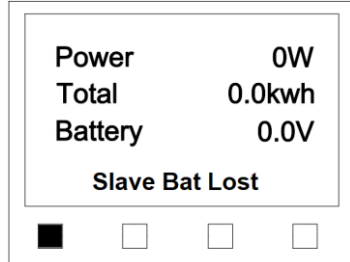
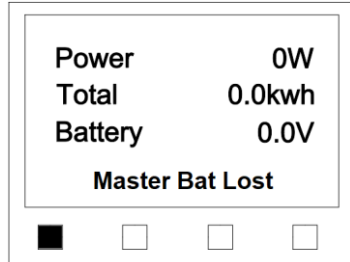
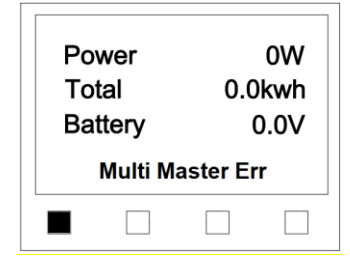
#### Communication Troubleshooting

Error Code	Display	Description	Troubleshooting
4		Inverter lost	<p>Inverter communication lost</p> <ol style="list-style-type: none"> <li>1. Restart the system and check whether the fault has been solved.</li> <li>2. Contact tech support to remotely update the inverter program, after that confirm whether the fault continues.</li> <li>3. If the fault can't be solved, please call service for further check.</li> </ol>
5		Grid meter lost	<p>Grid side meter lost</p> <ol style="list-style-type: none"> <li>1. Check whether the system configuration parameters of AlphaAPP or AlphaCloud are correct and whether the meter is used on the grid side.</li> <li>2. Check whether the communication cable of the grid meter is connected correctly (RS485: 3A6B).</li> <li>3. Check whether the communication configuration parameters of the grid meter are correct (communication address and baud rate).</li> <li>4. If the fault can't be solved, please call service for further check.</li> </ol>
6		PV meter lost	<p>PV inverter side meter lost</p> <ol style="list-style-type: none"> <li>1. Check whether the system configuration parameters of AlphaAPP or AlphaCloud are correct and whether the meter is used at the PV inverter side.</li> <li>2. Check whether the communication configuration parameters of the meter of PV inverter side is correct (RS485: 3A6B).</li> <li>3. Check whether the communication configuration parameters of the meter of PV inverter side are correct (communication address and baud rate).</li> <li>4. If the fault can't be solved, please call service for further check.</li> </ol>

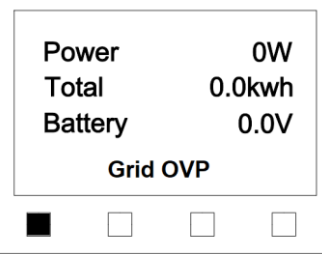
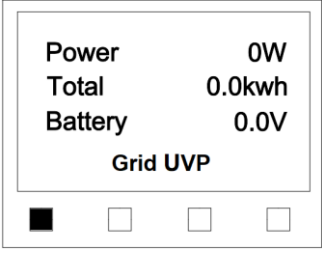
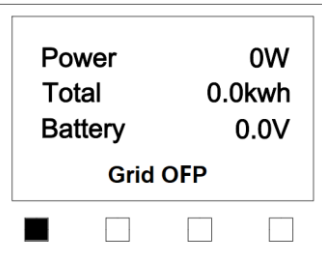
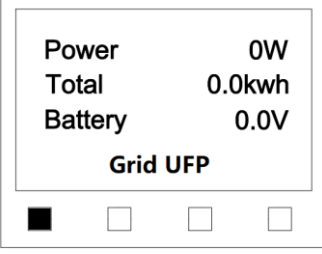
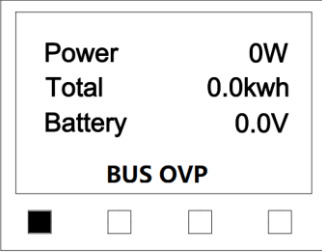


7		BMS lost	<p>BMS lost</p> <ol style="list-style-type: none"> <li>1. Check whether the BMS communication connection between the battery and the inverter is correct.</li> <li>2. Check if the battery is switched on.</li> <li>3. If the fault can't be solved, please call service for further check.</li> </ol>
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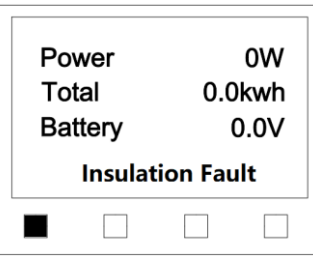
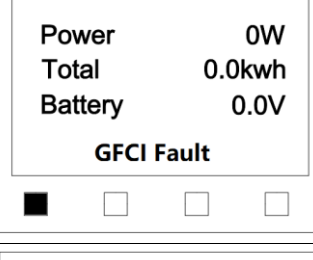
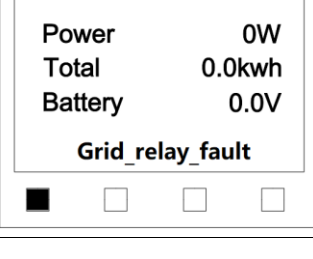
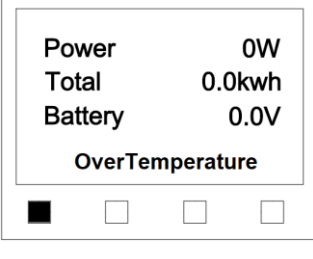
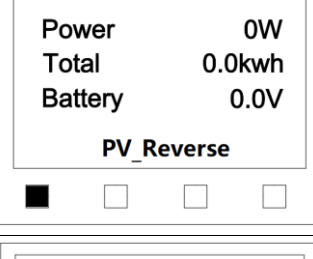
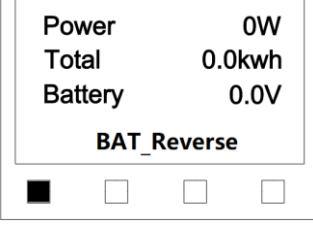
Battery Error Troubleshooting

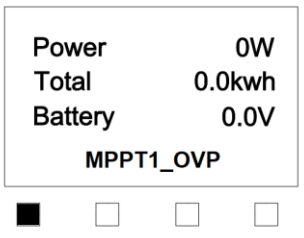
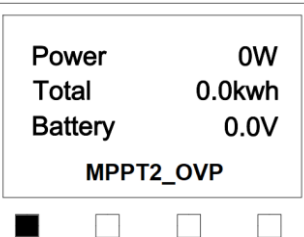
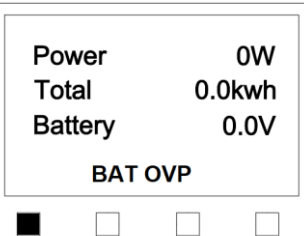
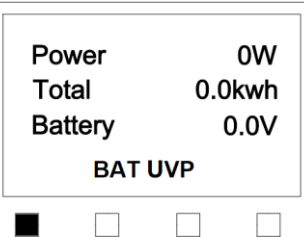
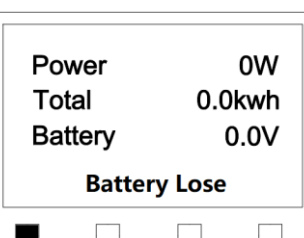
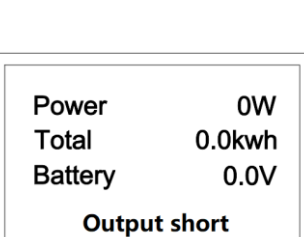
Error Code	Display	Description	Troubleshooting
60002		Circuit_Breaker_Open	<p>Try to switch on all batteries' breakers.</p> <p>If the action cannot solve the error, please call service.</p>
60004		Follower_Battery_Communication_Lost	
60006		Host_Battery_Communication_Lost	<p>Check the communication cables between batteries.</p> <p>If this action cannot solve the error, please call service.</p>
60008		Multi_Host_error	

Inverter Error Troubleshooting

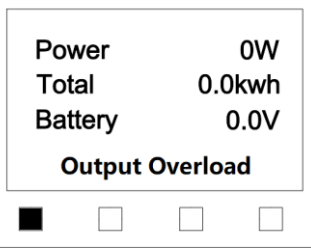
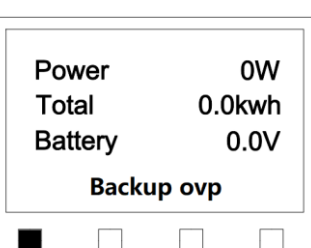
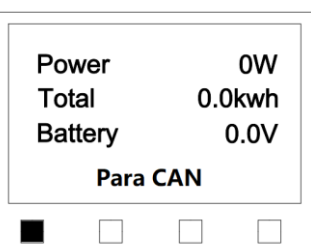
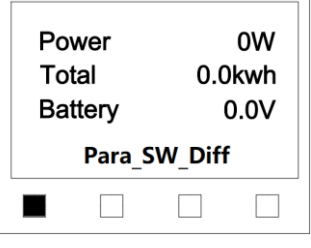
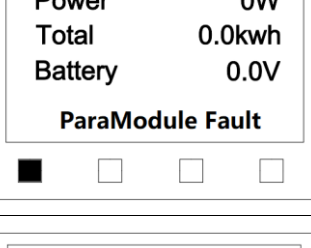
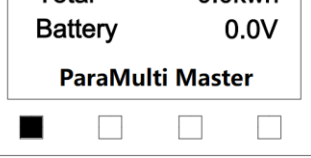
Error Code	Display	Description	Troubleshooting
100000		Grid_OVP	<ol style="list-style-type: none"> <li>1. Check whether the grid is abnormal.</li> <li>2. Confirm whether the grid cable connection is correct.</li> <li>3. Reset the art inverter and check whether the fault still exists. If yes, please call service.</li> </ol>
100001		Grid_UVP	
100002		Grid_OFP	<ol style="list-style-type: none"> <li>1. Check whether the PV input voltage of PV1 and PV2 exceeds 580V.</li> </ol>
100003		Grid_UFP	<p>If the PV input over voltage doesn't exist, restart the inverter to see if the fault still exists.</p> <p>If yes, please call service.</p>
100005		BUS_OVP1	



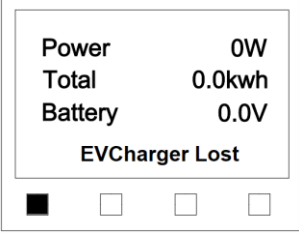
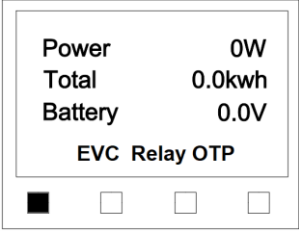
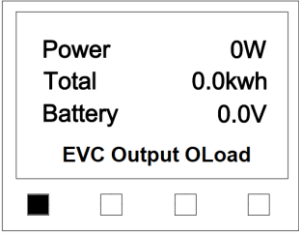
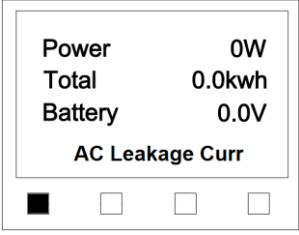
<p>100007</p>	 <p>Power 0W Total 0.0kwh Battery 0.0V <b>Insulation Fault</b></p> <p>■ □ □ □</p>	<p>Insulation_ fault</p>	<p>1. Check whether the PV cable connection is correct. 2. Check whether the PV cable is damaged. If the fault still exists, please call service.</p>
<p>100008</p>	 <p>Power 0W Total 0.0kwh Battery 0.0V <b>GFCI Fault</b></p> <p>■ □ □ □</p>	<p>GFCI_fault</p>	<p>1. Restart the inverter and check whether the fault is existing.</p>
<p>100010</p>	 <p>Power 0W Total 0.0kwh Battery 0.0V <b>Grid_relay_fault</b></p> <p>■ □ □ □</p>	<p>Grid_relay_ fault</p>	<p>If the fault still exists, please call service.</p>
<p>100011</p>	 <p>Power 0W Total 0.0kwh Battery 0.0V <b>OverTemperature</b></p> <p>■ □ □ □</p>	<p>Over_ Temperature</p>	<p>1. Check whether the environment around inverter is with poor heat dissipation. 2. Confirm whether the inverter installation meets the installation requirements.</p>
<p>100012</p>	 <p>Power 0W Total 0.0kwh Battery 0.0V <b>PV_Reverse</b></p> <p>■ □ □ □</p>	<p>PV_Reverse</p>	<p>1.Check whether the PV connectors of the inverter are reversed. 2.If the PV cables' installation is right, please call service.</p>
<p>100013</p>	 <p>Power 0W Total 0.0kwh Battery 0.0V <b>BAT_Reverse</b></p> <p>■ □ □ □</p>	<p>BAT_Reverse</p>	<p>1.Check whether the BAT cables of the inverter are reversed. 2.If the BAT cables' installation is correct, please call service.</p>

100017		MPPT1_OVP	<p>Check the PV1 voltage. If it exceeds 585VDC, reduce the number of PV modules.</p>
100021		MPPT2_OVP	<p>Check the PV2 voltage. If it exceeds 585V, reduce the number of PV modules.</p>
100025		BAT_OVP	<p>Check whether the actual battery voltage exceeds the battery charge cut-off voltage by more than 20V.</p>
100026		BAT_UVP	<p>Check whether the actual battery voltage is lower than the battery discharge cut-off voltage.</p>
100027		Battery_lose	<p>Confirm that the battery communication cable connection is correct and check whether the battery voltage sampling value is less than 75V.</p>
100042		Output_short_circuit	<ol style="list-style-type: none"> <li>1. Use a multimeter to test the impedance of the off grid output. If it is small, check whether the wiring is correct.</li> <li>2. Restart the inverter to see if the fault still exists. If it still exists, please call service.</li> </ol>

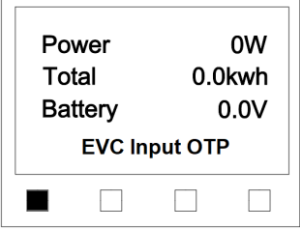
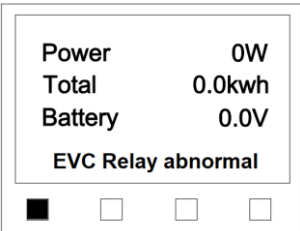
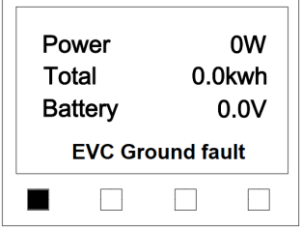
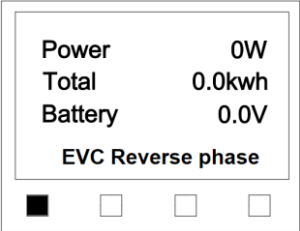


100043		Output_ overload	<p>1. Check whether the load exceeds the rated power.</p> <p>2. Restart the inverter to see if the fault still exists. If it still exists, please call service.</p>
100052		Backup_ovp	<p>Restart the inverter to see if the fault still exists.</p> <p>If it still exists, please call service.</p>
100211		Para_CAN	<p>Check the communication cables between inverters.</p> <p>If the fault still exists, please call service.</p>
100213		Para_SW_Diff	<p>Check the inverter software versions. If they are inconsistent, upgrade the inverter to the same software version.</p>
100214		Para_Module_ Fault	<p>Check parallel inverter mode settings.</p>
100216		Para_Multi_ Host	<p>Only one host is allowed.</p>

Accessories Error Troubleshooting

Error Code	Display	Description	Troubleshooting
39		EVChargerLost	<p>EV Charger lost</p> <p>1. Check whether the EV communication connection between the EV charger and the inverter is correct.</p> <p>If the fault can't be solved, please call service for further check.</p>
200000		Relay OTP	<p>1. Unplug the charging connector of the EV charger, then plug it after about 10 minutes.</p> <p>If the fault can't be solved, please call service for further check.</p>
200001		Output overload	<p>1. Check whether the load exceeds the rated power.</p> <p>Restart the inverter to see if the fault still exists.</p> <p>If the fault still exists, please call service.</p>
200010		AC leakage current	<p>1. Unplug the charging connector of the EV charger, then plug it after about 10 minutes.</p> <p>If the fault can't be solved, please call service for further check.</p>

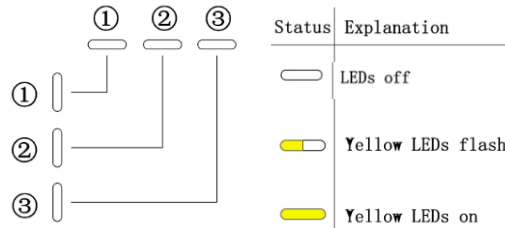


200011	 <p>Power 0W Total 0.0kwh Battery 0.0V EVC Input OTP</p> <p>■ □ □ □</p>	Input terminal OTP	<p>1. Unplug the charging connector of the EV charger, then plug it after about 10 minutes.</p> <p>If the fault can't be solved, please call service for further check.</p>
200014	 <p>Power 0W Total 0.0kwh Battery 0.0V EVC Relay abnormal</p> <p>■ □ □ □</p>	Relay abnormal	<p>1. The EV charger has hardware failure, and need to be replaced, please call service.</p>
200015	 <p>Power 0W Total 0.0kwh Battery 0.0V EVC Ground fault</p> <p>■ □ □ □</p>	Ground fault	<p>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.</p>
200016	 <p>Power 0W Total 0.0kwh Battery 0.0V EVC Reverse phase</p> <p>■ □ □ □</p>	Reverse phase	<p>1. Shut off the leakage current protection switch of the power distribution cabinet immediately.</p> <p>2. Check if the AC input/output cables connection is correct, and whether the inverse connection of L/N input cables exists.</p>



### 10.2.2. Battery Protection Description for Parallel batteries

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	LED Display	Description	Troubleshooting
Yellow LEDs are on or yellow LEDs are flashing once per second.		High temperature	Stop discharging and charging until this display status is eliminated and wait for the temperature to drop.
		Low temperature discharge	Stop discharging until this display status is eliminated and wait for the temperature to rise
		Overcurrent charge	Wait for automatic recovery. If the error hasn't be solved, please call service.
		Overcurrent discharge	Wait for automatic recovery. If the error hasn't be solved, please call service.
		Cell under voltage	Stop discharging and call service immediately.
		Low temperature charge	Stop charging until this display status is eliminated and wait for the temperature to rise.


NOTICE

During working 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 Series Batteries

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 flashing

 : Yellow LEDs on

 : Yellow LEDs off

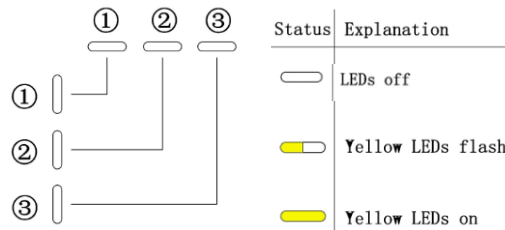
LED Indicator	LED Display	Description	Troubleshooting
Yellow LEDs are on or yellow LEDs are flashing once per second.		Temperature difference	Wait for automatic recovery. If the problem is not been solved yet, please call service.
		High temperature	Stop discharging and charging until this display status is eliminated and wait for the temperature to drop.
		Low temperature discharge	Stop discharging until this display status is eliminated and wait for the temperature to rise
		Overcurrent charge	Wait for automatic recovery. If the problem hasn't be solved yet, please call service.
		Overcurrent discharge	
		Cell overvoltage	
		Cell under voltage	Stop discharging and call the service immediately.
		Low temperature charge	Stop charging until this display status is eliminated and wait for the temperature to rise.

 **NOTICE**

During working mode, if the protection status "Cell under voltage"  appears, please do the following action:  
 first switch off the breaker which is located at 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.



LED Indicator	LED Display	Description	Troubleshooting
Yellow LEDs are on or yellow LEDs are flashing once per second.		Hardware error	Wait for automatic recovery. If the problem is not be solved yet, please call service.
		Hardware error	
		Circuit breaker open	Switch on circuit breaker after powering off the battery.
		LMU disconnect (slave)	Reconnect the BMS communication cable.
		SN missing	Please call service.
		LMU disconnect (master)	Reconnect the BMS communication cable.
		Software version inconsistent	Please call service.
		Multi-Host	Restart all batteries.
		MOS over temperature	Power off the battery and power on the battery after 30 minutes.
		Insulation fault	Restart battery. In case the fault still exists, please call service.
		Total voltage fault	Restart battery. In case the fault still exists, please call service.
		Precharge failure	Restart battery. In case the fault still exists, please call service.



## 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	G3-S8-INV	G3-S5-INV	G3-S3.6-INV	G3-B5-INV
<b>Input DC (PV side)</b>				
Recommended max. PV power	10000 W	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	22.5 A / 22.5 A	18.75 A / 18.75 A		N/A
MPPT number	2			N/A
Max. input strings number per MPPT	1			N/A
<b>Battery</b>				
Battery type	LFP (LiFePO4)			
Battery voltage range	80 ~ 467.2 V	80 ~ 450 V		
Max. charge power	8 kW	5 kW	3.6 kW	5 kW
Maximum charge/discharge current	60 A / 60 A			
Communication	CAN			
<b>Output AC (Backup side) when Off-Grid</b>				
Rated output power	8 kW	5 kW	3.68 kW	5 kW
Max. apparent output power	8 kVA	5 kVA	3.68 kVA	5 kVA
Output power > 60 s	8.8 kW	5.5 kW	4.0 kW	5.5 kW
Output apparent power > 60 s	8.8 kVA	5.5 kVA	4.0 kVA	5.5 kVA
Output power ≤ 30 s	12 kW	7.5 kW	5.5 kW	7.5 kW
Output apparent power ≤ 30 s	12 kVA	7.5 kVA	5.5 kVA	7.5 kVA
Output power ≤ 1 s		10 kW	7.36 kW	10 kW
Output apparent power ≤ 1 s		10 kVA	7.36 kVA	10 kVA
Back-up switch time	<20 ms			
Rated output voltage	L/N/PE, 230 V			

<b>Rated frequency</b>	50/60 Hz			
<b>Rated output current</b>	34.8 A	21.7 A	16 A	21.7 A
<b>THDv(@linear load)</b>	3%			
<b>Output AC (Backup side) when on Grid</b>				
<b>Rated output power</b>	11.5 kW	5kW 8.05 kW*	3.68 kW	5 kW
<b>Max. apparent output power</b>	11.5 kVA	8.05 kVA*	3.68 kVA	5 kVA
<b>Rated output voltage</b>	L/N/PE, 230 V			
<b>Rated frequency</b>	50/60 Hz			
<b>Rated output current</b>	50 A	21.7 A 35 A*	16 A	21.7 A
<b>THDv(@linear load)</b>	3%			
<b>Input AC (Grid side)</b>				
<b>Rated output voltage</b>	L/N/PE, 230 V			
<b>Rated frequency</b>	50/60 Hz			
<b>Rated input power</b>	11.5 kW	10 kW	7.36 kW	10 kW
<b>Max. input current</b>	50 A	43.5 A	32 A	43.5 A
<b>Output AC (Grid side)</b>				
<b>Rated output power</b>	8 kW	5 kW	3.68 kW	5 kW
<b>Max. apparent output power</b>	8 kVA	5 kVA	3.68 kVA	5 kVA
<b>Operation phase</b>	Single phase			
<b>Rated grid voltage</b>	L/N/PE, 230 V			
<b>Grid voltage range</b>	180 ~ 270 V			
<b>Rated grid frequency</b>	50 / 60 Hz			
<b>Rating grid output current</b>	34.8 A	21.7 A	16 A	21.7 A
<b>Power factor</b>	>0.99 (0.8 leading - 0.8 lagging)			
<b>THDi</b>	< 3%			
<b>Protection class</b>	I			
<b>Overvoltage category</b>	III			
<b>Efficiency</b>				
<b>Max. efficiency</b>	>97%			
<b>EU efficiency</b>	>96.2%			
<b>Protection</b>				
<b>Anti-Islanding protection</b>	Integrated			
<b>Insulation resistor detection</b>	Integrated			
<b>Residual current monitoring unit</b>	Integrated			

<b>Output over current protection</b>	Integrated	
<b>Output short protection</b>	Integrated	
<b>Output overvoltage protection</b>	Integrated	
<b>PV reverse polarity protection</b>	Integrated	
<b>PV overvoltage protection</b>	Integrated	
<b>PV switch</b>	Integrated	
<b>Battery breaker</b>	Integrated	
<b>General data</b>		
<b>Dimensions (W*H*D)</b>	610*212*366 mm	
<b>Weight</b>	21kg	19.5kg
<b>Topology</b>	Transformerless	
<b>Operation temperature range</b>	-25~+60 °C	
<b>Max. permissible value for relative humidity (condensing)</b>	100%	
<b>Ingress protection</b>	IP65	
<b>Display</b>	LCD	
<b>Noise emission</b>	<40 dB(A) @1m	<30 dB(A) @1m
<b>Cooling concept</b>	Fan cooling	Natural convection
<b>Max. operation altitude</b>	3000 m	
<b>Features</b>		
<b>PV connection</b>	Vaconn D4 connectors	
<b>Grid connection</b>	Vaconn plug in connector	
<b>Backup connection</b>	Plug in connector	
<b>BAT connection</b>	Screw terminal	
<b>Communication</b>	LAN, Wi-Fi (optional)	

\*Only for South Africa

## 12.2. Datasheet of Battery

### 12.2.1. Datasheet of battery SMILE-G3-BAT-8.2P

Model	SMILE-G3-BAT-8.2P
Battery type	LFP (LiFePO <sub>4</sub> )
Weight	78.3 kg
Dimension (W*H*D)	610*793*212 mm
Ingress protection	IP21
Installed energy	8.2 kWh
Usable capacity	7.8 kWh
DoD	95%
Nominal voltage	256 V
Operating voltage range	240 ~ 288 V
Max. charge current*	32 A
Max. discharge current*	32 A
Operating temperature range	Charge: 0<T≤50°C / Discharge: -10<T≤50°C
Monitoring parameters	System voltage, current, cell voltage, cell temperature, PCBA temperature
BMS communication	CAN
<b>System</b>	
Safety	IEC62619/ IEC63056/IEC62040
Transportation	UN38.3

\* Max. charge/discharge current derating will occur related to ambient temperature and SOC.



**12.2.2. Datasheet of battery SMILE-G3-BAT-10.1P**

<b>Model</b>	<b>SMILE-G3-BAT-10.1P</b>
<b>Battery type</b>	LFP (LiFePO <sub>4</sub> )
<b>Weight</b>	90 kg
<b>Dimension (W*D*H)</b>	610*210*790 mm
<b>Ingress protection</b>	IP65
<b>Installed energy</b>	10.1 kWh
<b>Usable energy</b>	9.6 kWh
<b>DoD</b>	95%
<b>Nominal voltage</b>	96 V
<b>Operating voltage range</b>	90 ~ 108 V
<b>Max. Charge /discharge current *</b>	60 A
<b>Operating temperature range</b>	Charge: 0<T≤50°C Discharge: -10<T≤50°C
<b>Monitoring parameters</b>	System voltage, current, cell voltage, cell temperature, PCBA temperature
<b>BMS communication</b>	CAN
<b>System</b>	
<b>Safety</b>	IEC62619/ IEC63056/IEC62040
<b>Transportation</b>	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 <sub>4</sub> )
Weight	38.5 kg
Dimension (W*H*D)	610*435*212 mm
Ingress protection	IP21
Installed energy	3.84 kWh
Usable energy	3.65 kWh
DoD	95%
Nominal voltage	96 V
Operating voltage range	90 ~ 108 V
Max. charge current*	40 A
Max. discharge current*	40 A
Operating temperature range	Charge: $0 < T \leq 50^{\circ}\text{C}$ / Discharge: $-10 < T \leq 50^{\circ}\text{C}$
Monitoring parameters	System voltage, current, cell voltage, cell temperature, PCBA temperature
BMS communication	CAN
System	
Safety	IEC62619/ IEC63056/IEC62040
Transportation	UN38.3

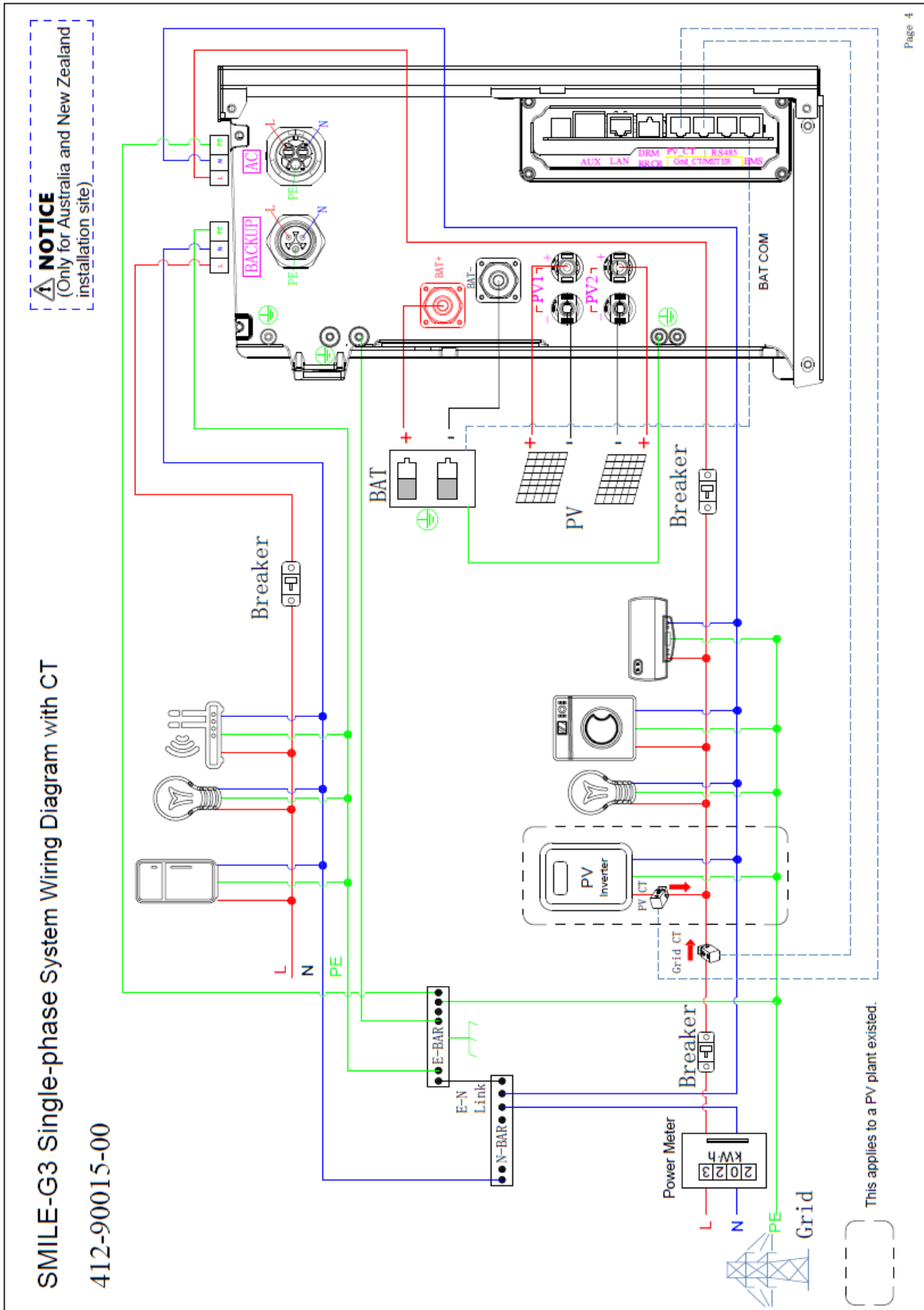
\* Max. charge/discharge current derating will occur related to ambient temperature and SOC.

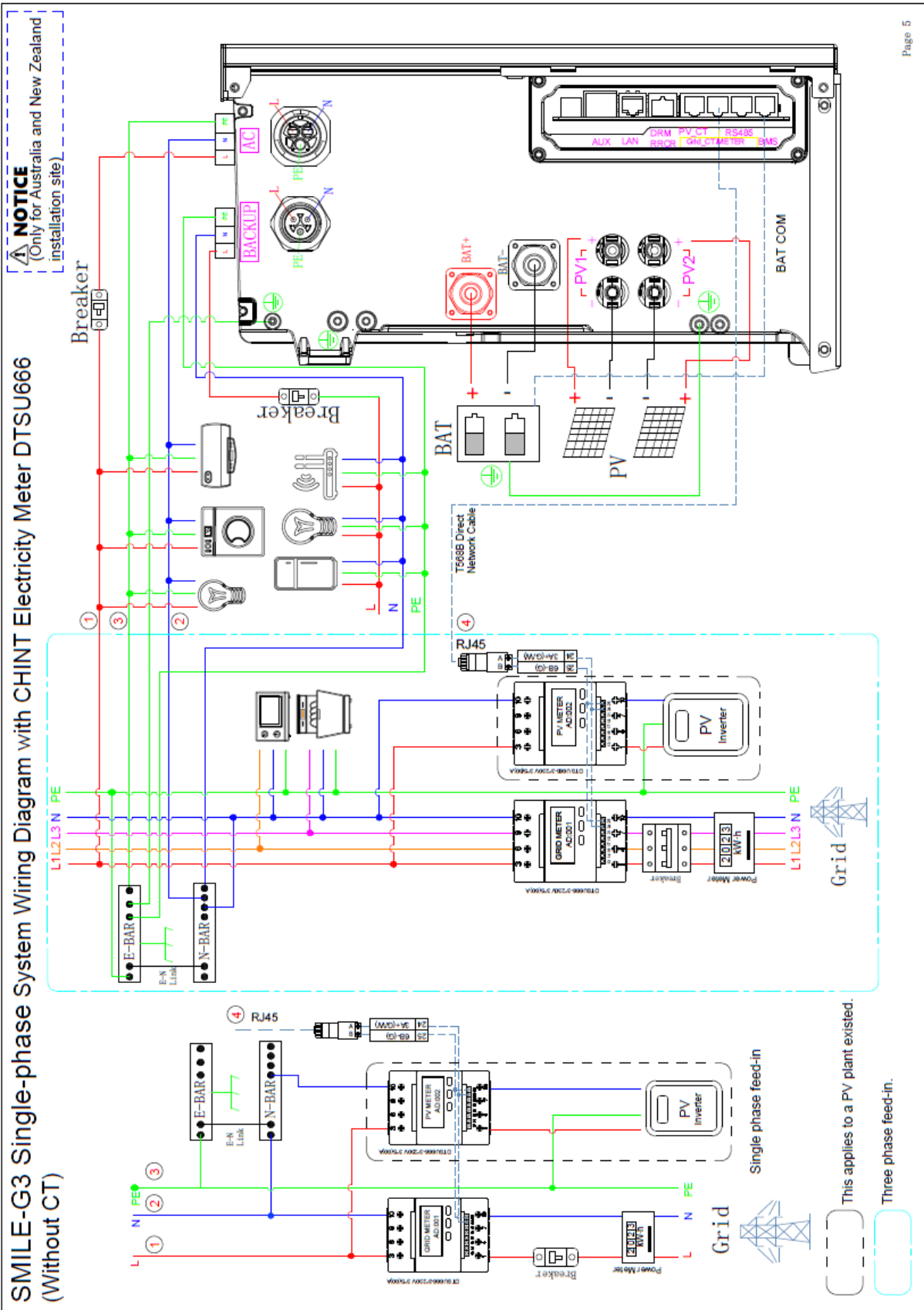
#### 12.2.4. Datasheet of battery SMILE-G3-BAT-4.0S

<b>Model</b>	<b>SMILE-G3-BAT-4.0S</b>
<b>Battery type</b>	LFP (LiFePO <sub>4</sub> )
<b>Weight</b>	43.2 kg
<b>Dimension (W*H*D)</b>	610*435*212.5 mm
<b>Ingress protection</b>	IP65
<b>Installed energy</b>	4.0 kWh
<b>Usable energy</b>	3.8 kWh
<b>DoD</b>	95%
<b>Nominal voltage</b>	96 V
<b>Operating voltage range</b>	90 ~ 108 V
<b>Max. charge current*</b>	42 A
<b>Max. discharge current*</b>	42 A
<b>Operating temperature range</b>	Charge: 0<T≤50°C / Discharge: -10<T≤50°C
<b>Monitoring parameters</b>	System voltage, current, cell voltage, cell temperature, PCBA temperature
<b>BMS communication</b>	CAN
<b>System</b>	
<b>Safety</b>	IEC62619/ IEC63056/IEC62040
<b>Transportation</b>	UN38.3

\* Max. charge/discharge current derating will occur related to ambient temperature and SOC.

# Appendix 1: System Overview



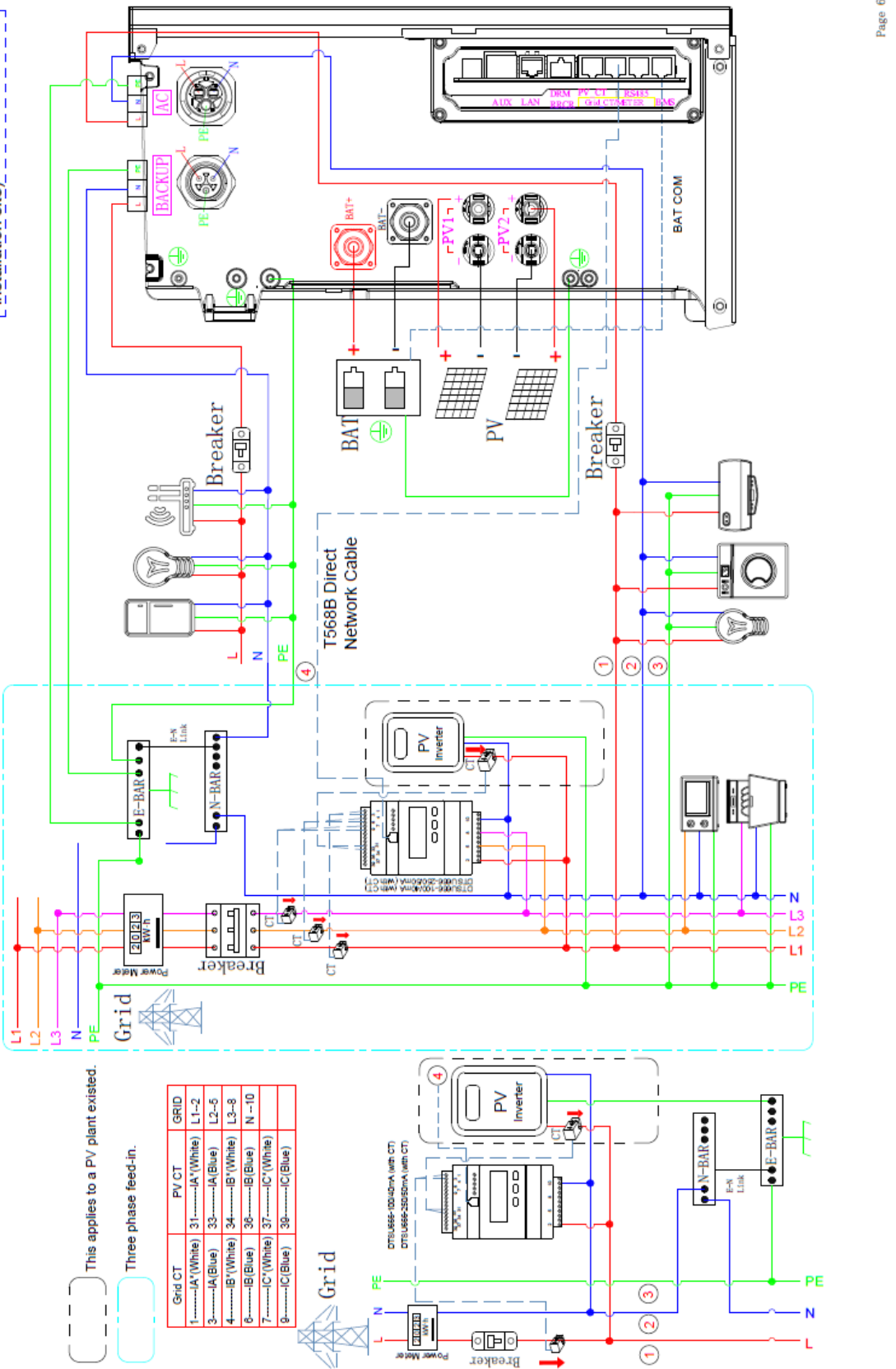


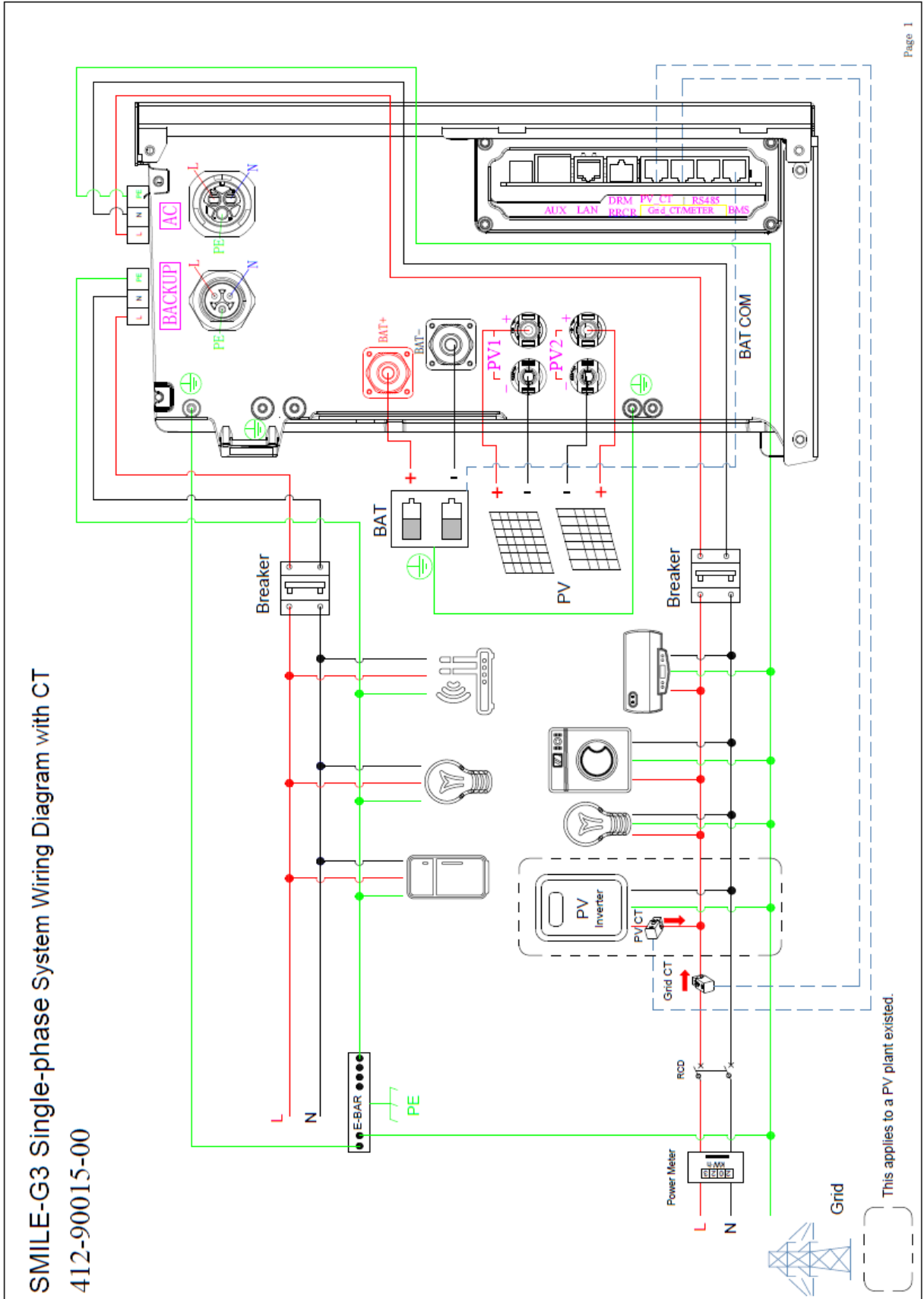
SMILE-G3 Single-phase System Wiring Diagram with CHINT Electricity Meter  
DTSU666 (With CT)

**NOTICE**  
(Only for Australia and New Zealand installation site)

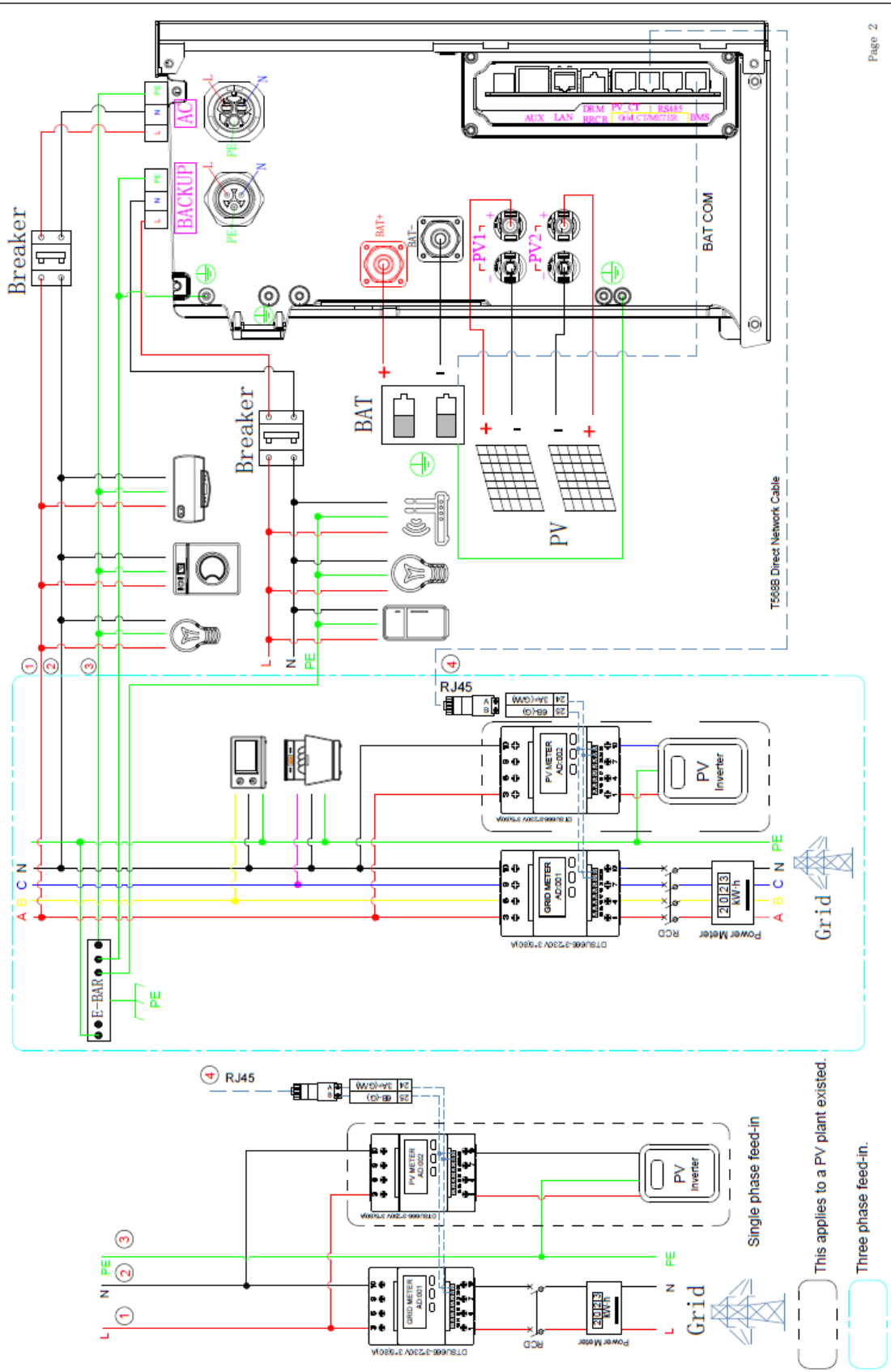
This applies to a PV plant existed.  
Three phase feed-in.

Grid CT	PV CT	GRID
1.....A*(White)	31.....A*(White)	L1-2
3.....A*(Blue)	33.....A*(Blue)	L2-5
4.....B*(White)	34.....B*(White)	L3-8
6.....B*(Blue)	36.....B*(Blue)	N -10
7.....C*(White)	37.....C*(White)	
9.....C*(Blue)	39.....C*(Blue)	





SMILE-G3 Single-phase System Wiring Diagram with CHINT Electricity Meter DTSU666 (Without CT)









## 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 regulations).

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

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