

# SAJ



GUANGZHOU SANJING ELECTRIC CO.,LTD

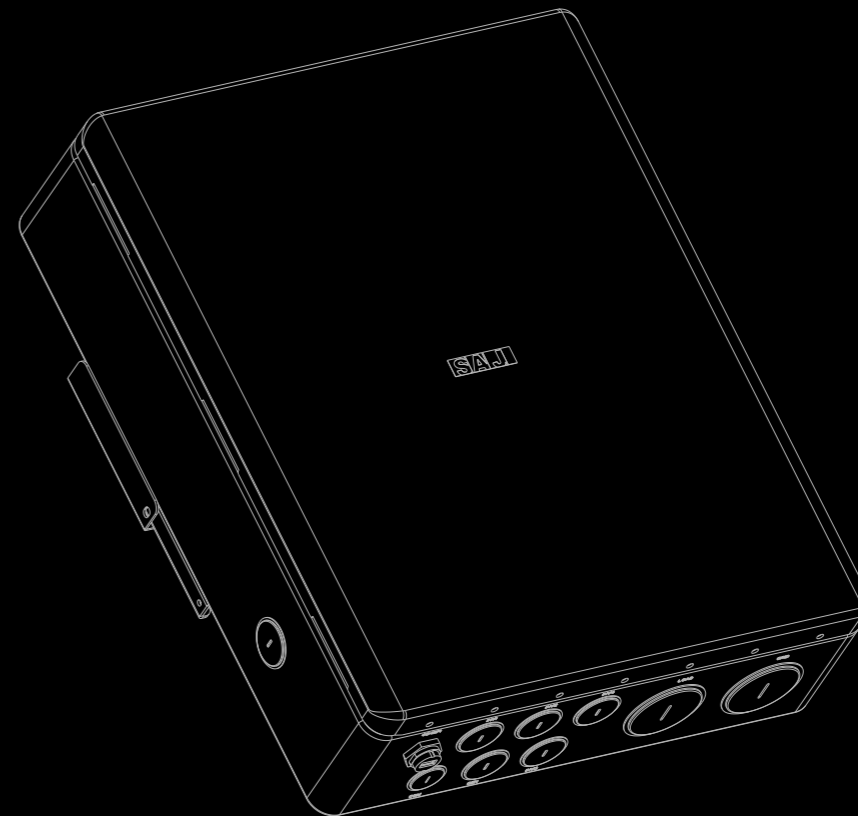


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V1.0

# SAJ



## SBU Series

### SMART BACKUP UNIT

### USER MANUAL

# Preface

Thank you for choosing SAJ Smart Backup Unit. We are pleased to provide you first-class products and exceptional service.

This manual includes information for installation, operation, maintenance, trouble shooting and safety. Please follow the instructions of this manual so that we can ensure delivery of our professional guidance and wholehearted service.

Customer-orientation is our forever commitment. We hope this document proves to be of great assistance in your journey for a cleaner, greener world.

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Guangzhou Sanjing Electric Co., Ltd.

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- Before installing, using, and maintaining this equipment, read the safety information and precautions thoroughly, and comply with them during operations.
- Failure to follow any of the instructions or warnings in this document can result in electrical shock, serious injury, or death, or can damage the equipment, potentially rendering it inoperable. SAJ shall take no responsibility for any personal injuries or property damage caused by improper use.
- Please use the equipment within the scope of specification. Excessive current or voltage may cause device damage.

## 1.1 Scope of Application

This User Manual describes instructions and detailed procedures for installing, operating, maintaining, and troubleshooting of the following SAJ products:

SBU-200.

Please read this manual carefully before installations and operations. Keep this manual in a readily accessible place for future reference.

## 1.2 Target Group



**DANGER**

· DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.



**WARNING**

· WARNING indicates a hazardous situation which, if not avoided, can result in death or serious injury or moderate injury.



**CAUTION**

· CAUTION indicates a hazardous condition which, if not avoided, can result in minor or moderate injury.



**NOTICE**

· NOTICE indicates a situation that can result in potential damage, if not avoided.

# SAFETY PRECAUTIONS



## 2.

## PREPARATION



## 2.1 Safety Instructions

For safety, be sure to read all the safety instructions carefully prior to any works, and please observe the appropriate rules and regulations of the country or region where you installed this product.

### DANGER


- Please keep the power off prior to any operations.
- Do not touch non-insulated parts or cables.
- Disconnect the Smart Backup Unit from voltage sources and make sure it cannot be reconnected before working on the device.
- Do not disconnect the DC connector under load.
- Do not touch the live parts and cables inside the Smart Backup Unit during operation, it might result in burning or death.
- To prevent risk of electric shock during installation and maintenance, please make sure that all AC and DC terminals are disconnected.
- Do not touch the surface of the inverter while the housing is wet, otherwise, it might cause electrical shock.
- Do not stay close to the inverter while there are severe weather conditions including storm, lighting, etc.
- Before opening the housing, the SAJ Smart Backup Unit must be disconnected from the inverter, grid and generator.

### WARNING

- Only qualified personnel who has full knowledge of local safety regulations and local standards can install, maintain, retrieve and process this product.
- SAJ electric shall not be liable for any loss or warranty claims arising from any unauthorized change of product which may cause fatal injury to the operator, third party or equipment performance.
- For personal and property safety, do not short-circuit the positive (+) and negative (-) electrode terminals.








### CAUTION

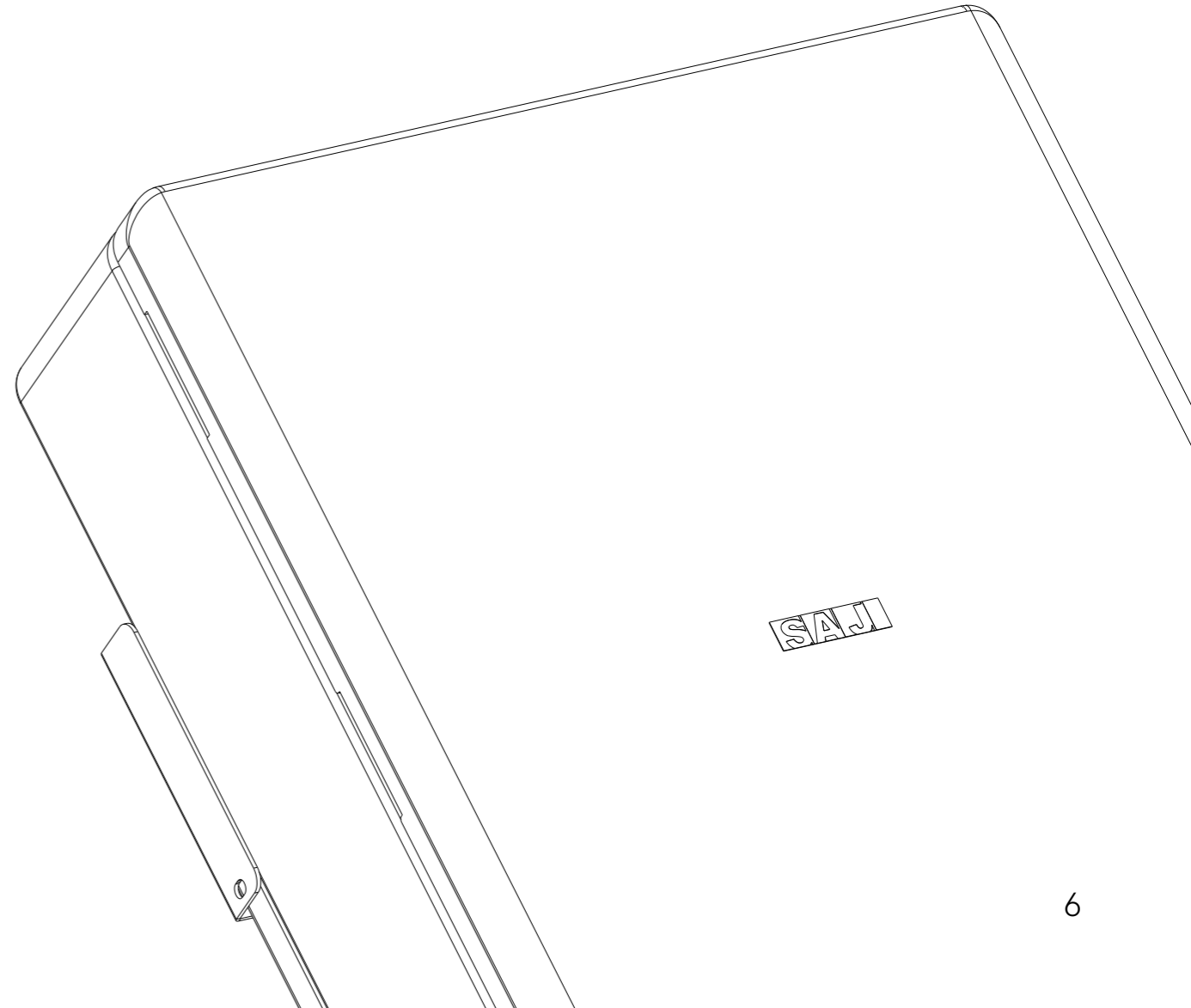
- Do not modify or change any components in the product.
- Risk of damage due to improper modification
- Use professional tools when operating the products.

 <b>NOTICE</b>
<ul style="list-style-type: none"> <li>· During installation of the Smart Backup Unit, circuit breaker must be disconnected from the inverter, grid and generator wiring.</li> <li>· The Smart Backup Unit used as a set with SAJ's H2 high voltage series storage inverter, otherwise it cannot be used normally.</li> </ul>

## 2.2 Explanations of Symbols

To ensure the safety of people and equipment, follow the safety symbols on the equipment.

Symbol	Description
	<b>Dangerous electrical voltage</b> This device is directly connected to public grid, thus all work to the SBU shall only be carried out by qualified personnel.
	<b>Danger to life due to high electrical voltage!</b> There might be residual currents in SBU because of large capacitors. Wait for 5 minutes before you remove the front lid.
	<b>Danger of hot surface</b> The components inside the battery will release a lot of heat during operation. Do not touch metal plate housing during operating.
	<b>Notice, danger!</b> This is directly connected with electricity generators and public grid.
	<b>An error has occurred</b> Please go to "Troubleshooting" to remedy the error.
	<b>This device SHALL NOT be disposed of in residential waste</b> Please go to "Recycling and Disposal" for proper treatments.
	<b>CSA Mark</b> The CSA mark means the SBU has been tested and compliant with the relevant standards in the US and Canada.



# 3.

# PRODUCT INFORMATION



## 3.1 Application Scope of Products

The Smart Backup Unit (SBU-200) controls the switch of the relays to provide power to the load stated as backup unit.

Power Supply load in both grid-tied and off-grid conditions. There is a contactor in SBU-200) to provide user a simple connection. SBU-200 is operating with inverter for the purpose of providing the split phase power when grid accidentally or unexpectedly goes off. This approach allows the home critical loads continuously to be supplied.

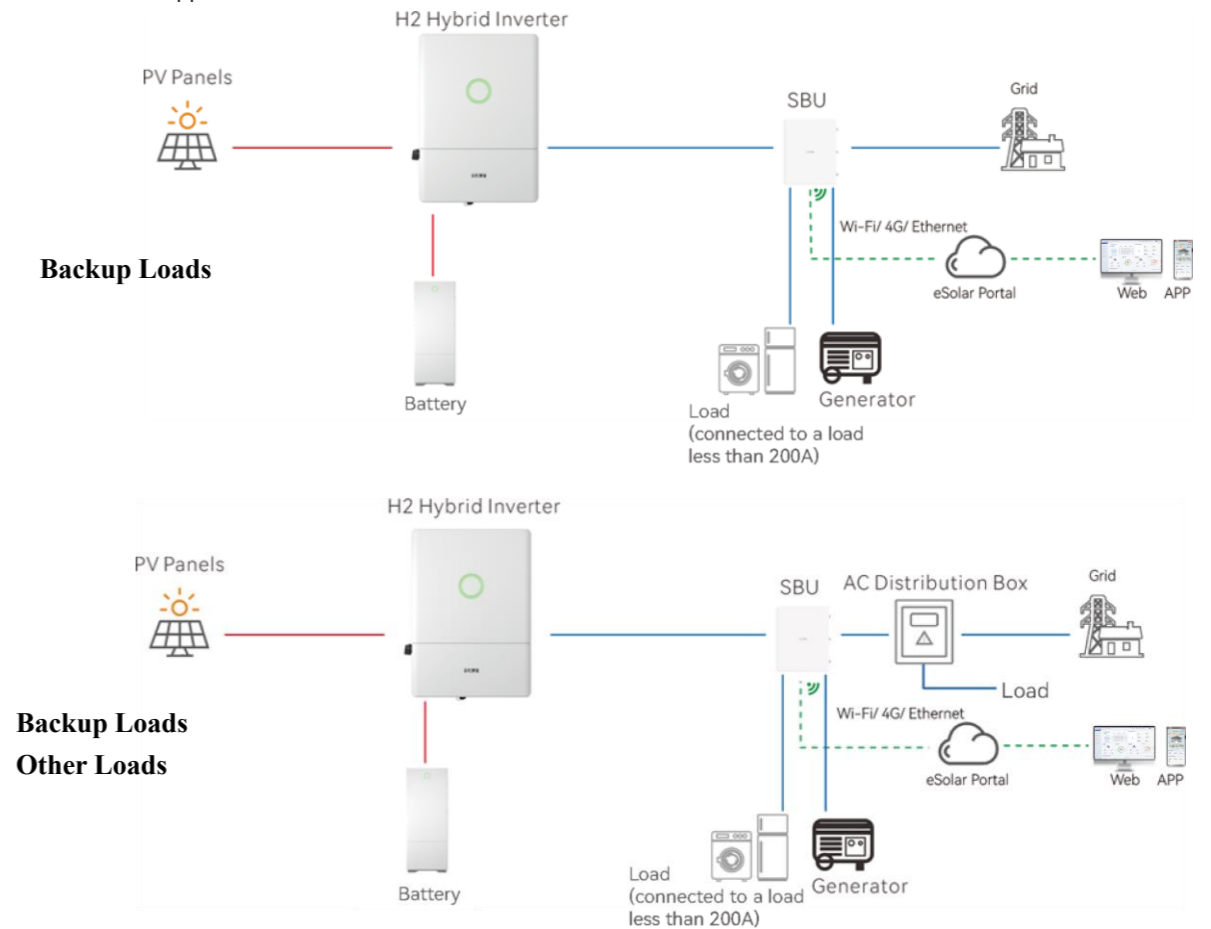


Figure 3.1  
SBU application

### 3.2 Specification for Product Model

**SBU - X.X**

①                      ②

①SBU for product name.

②X.X represents Max. XA load access capacity of Smart Backup Unit, for example, 200 means 200A.

### 3.3 Overview of Products

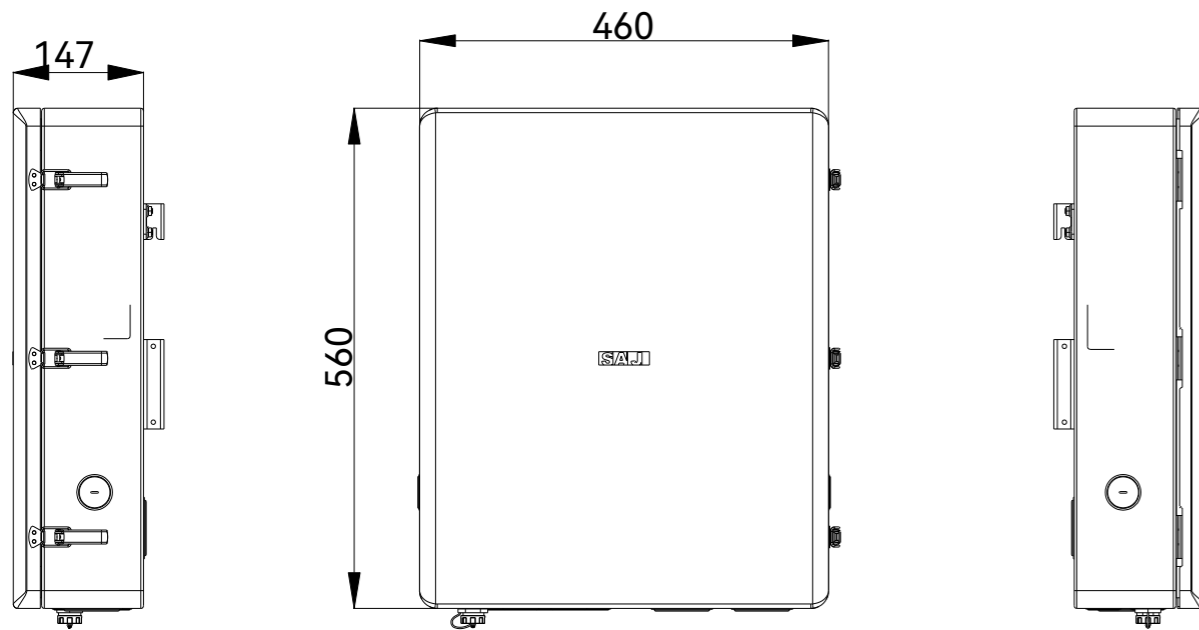


Figure 3.2  
Dimensions of SBU

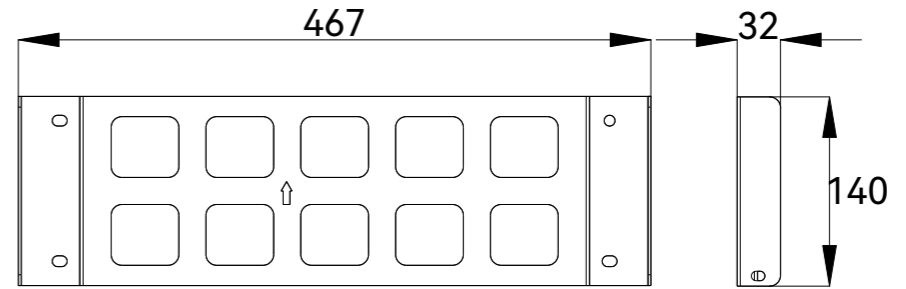


Figure 3.3  
Dimensions of wall bracket

### 3.4 Cable Holes

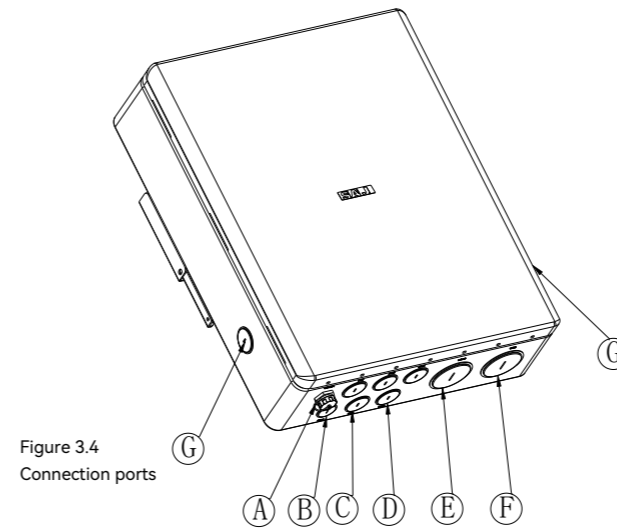


Figure 3.4  
Connection ports

Callout	Name
A	4G/WI-FI
B	COM
C	GEN
D	INV
E	LOAD
F	GRID
G	Reserve cable holes



### 3.5 Datasheet

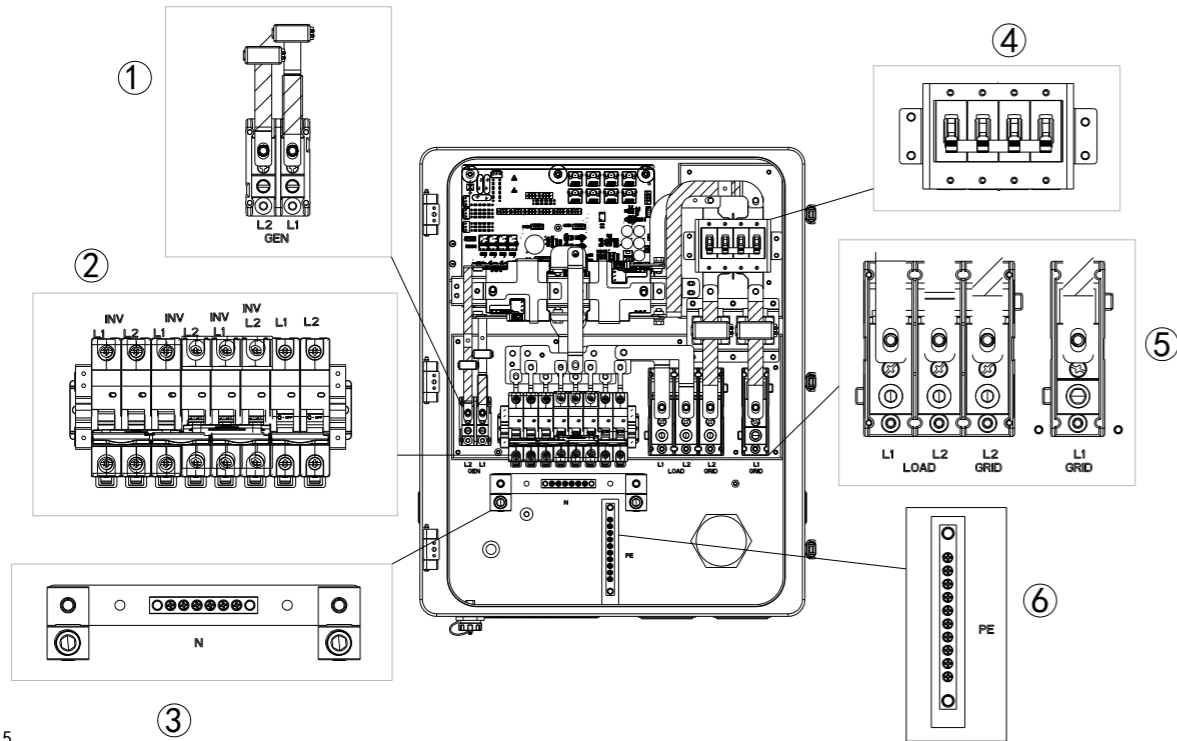


Figure 3.5  
Electrical Interface of the SBU

Callout	Name
1	GEN terminal base (to generator)
2	INV terminal (Max. four terminals supported) (to inverter)
3	N terminal
4	Circuit breaker
5	LOAD (to back up load) /GRID (to grid) terminal base
6	PE terminal

Table 3.2  
Electrical Interface of the SBU

Model		SBU-200
Grid	Max. Continuous Power	Max. Continuous Power 38400W@240V
	Nominal AC Voltage	208V,240V
	Nominal AC Frequency	60Hz
	Max. Protection current	200A AC
Load	Max. Continuous Power	41600W@208V 48000W@240V
	Nominal AC Voltage	208V,240V
	Nominal AC Frequency	60Hz
	Max. Protection current	200A AC
Inverter	Max. Inverter inputs	4
	Max. Continuous Current	200A AC
Generator	Max. Continuous Power	21600W@240V
	Nominal AC Voltage	240V
	Max. Continuous Current	90A AC
Dimension (H*W*D) [mm]		560*460*147
Weight [kg]		14
Mounting		Wall-Mounted
Ambient Humidity		0 ~ 95% non-condensing
Communication		CAN
Cooling Method		Natural Cooling
Warranty [Year]		Refer to the warranty policy
Enclosure Type		NEMA 4X
Operating Temperature		-13°F to +131°F(-25 to +55°C)
Applicable Standard		UL 1741, CSA C22.2, No.107.1

table 3.3  
SBU datasheet

# 4.

# INSTRUCTIONS FOR INSTALLATION



## 4.1 Unpacking and Inspection

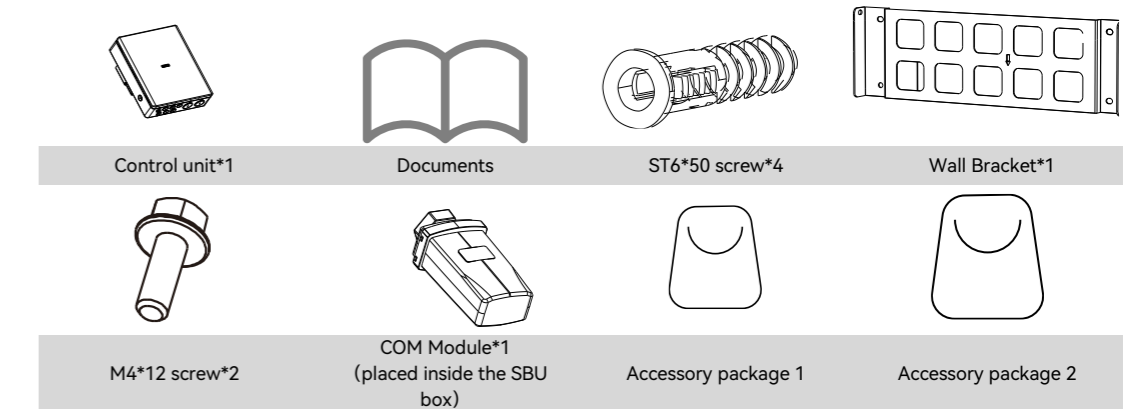
### 4.1.1 Checking the Package

Although SAJ's SBU have thoroughly tested and checked before delivery, it is uncertain that the SBU may suffer damages during transportation. Please check the package for any obvious signs of damage, and if such evidence is present, do not open the package and contact your dealer as soon as possible.

### 4.1.2 Scope of Delivery

Please contact after sales if there are missing or damaged components.

#### SBU Package



## 4.2 Installation Method and Position

### 4.2.1 Installation Position and Clearance

This device is cooled by natural convection and suggested an indoor installation or an installation under a sheltered place to prevent the product from exposure to direct sunlight, rain and snow erosion.

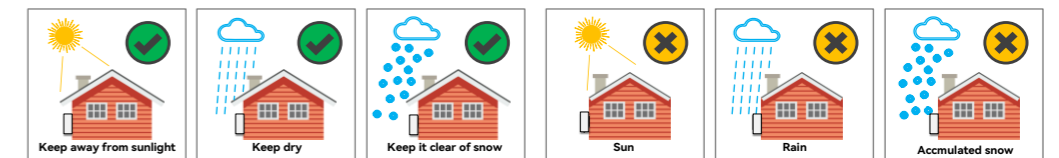


Figure 4.1  
Installation location

Please reserve enough clearance around the SBU to ensure a good air circulation at the installation area. Because poor air ventilation will affect the working performance of internal electronic components and shorten the service life of the system.

**Note:** The SBU is installed within 5m of the H2 high-voltage energy storage machine.

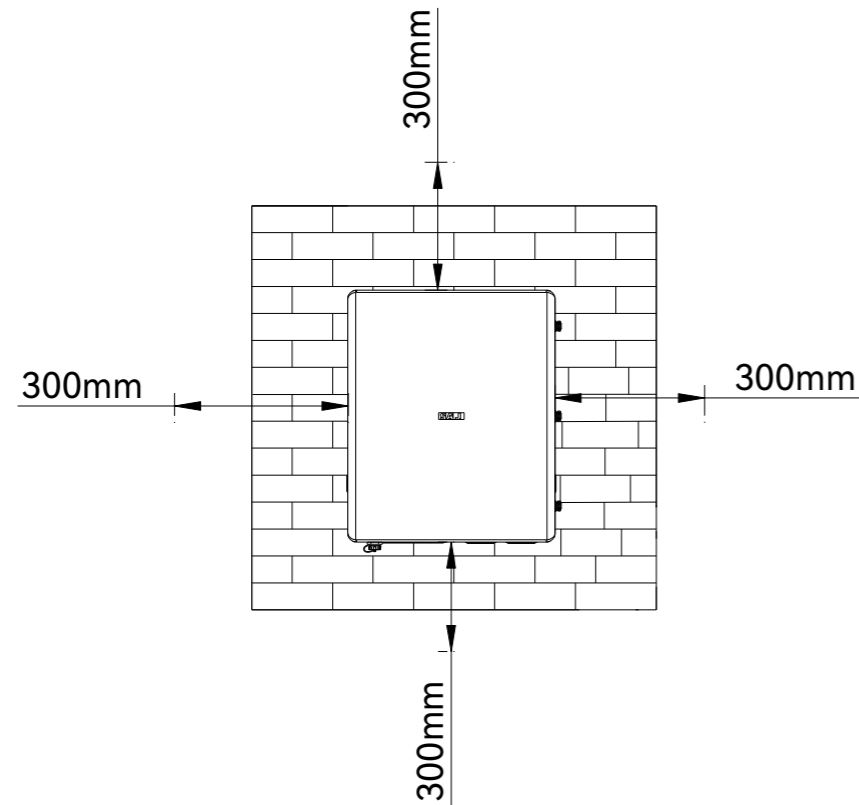


Figure 4.2  
Installation clearance

## 4.2.2 Mounting Method

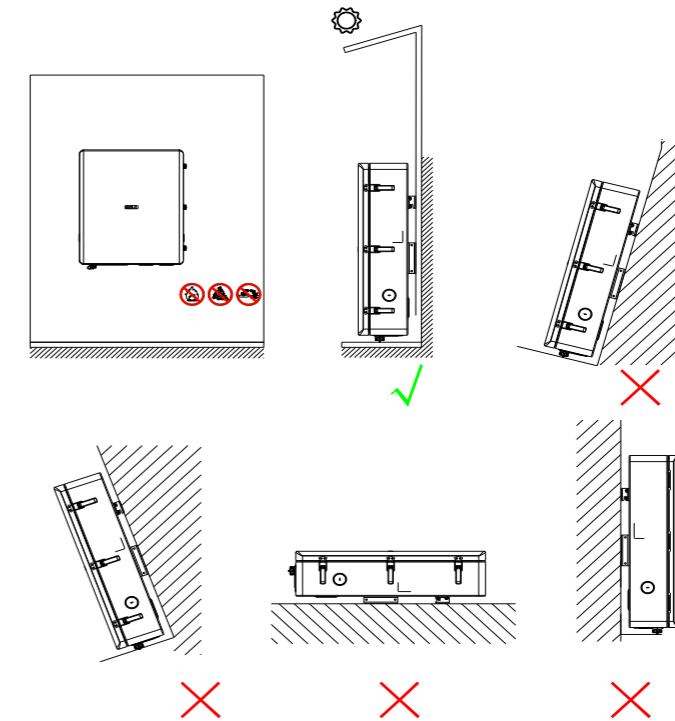


Figure 4.3  
Mounting method

- ① The equipment employs natural convection cooling, and it can be installed indoor.
- ② Mount vertically. Do not lean forward, sideways, horizontally or upside down.
- ③ When mounting , please consider the solidity of the wall , including accessories, make sure the wall has enough strength to hold the screws and bear the weight of products. Please ensure the mounting bracket mounted tightly.

### Installation Environment Requirements

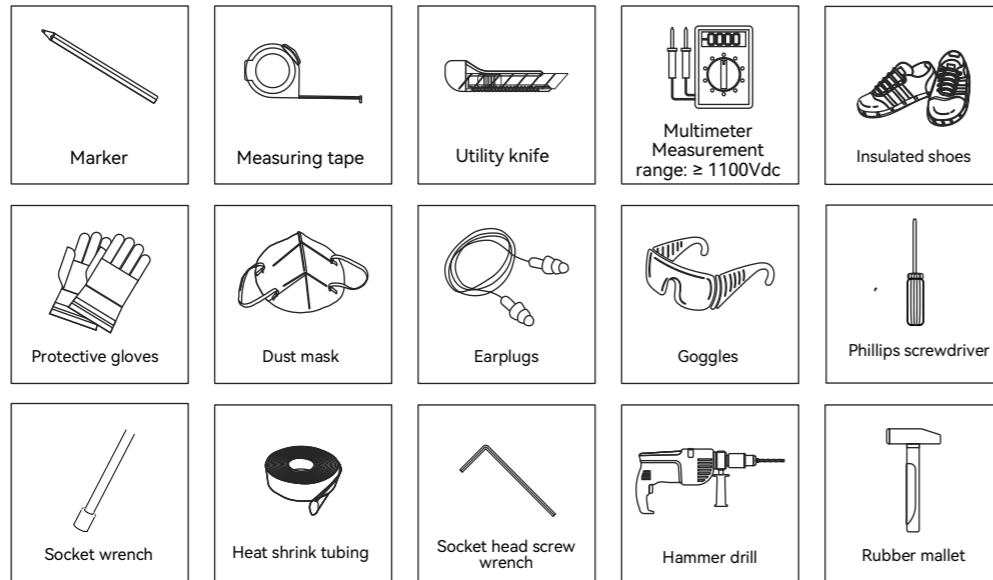
- The installation environment must be free of inflammable or explosive materials.
- Install away from heat source.
- Do not install in place where the temperature changes extremely.

- Keep away from children.
- Do not install in daily working or living areas, including but not limited to the following areas: bedroom, lounge, living room, study, toilet, bathroom, theater and attic.
- When installing in the garage, please keep it away from drive way.
- Keep away from water sources such as taps, sewer pipes and sprinklers to prevent water seepage.

## 4.3 Mounting Procedure

### 4.3.1 Installation Tools

Installation tools include but are not limited to the following recommended ones. Please use other auxiliary tools on site if necessary.



### 4.3.2 Mounting Procedures

The SBU employs either wall mounting and its position is determined by the drilled holes of bracket.

## Wall Mounting

Make sure that the wall is capable of mounting screws and supporting the weight of the SBU before installation. For safety reason, solid wall is recommended for wall mounting, cavity wall and timber wall are not allowed to install the SBU system.

**Step1:** Place the wall bracket horizontally on the wall and mark the position of 4 holes for screws.

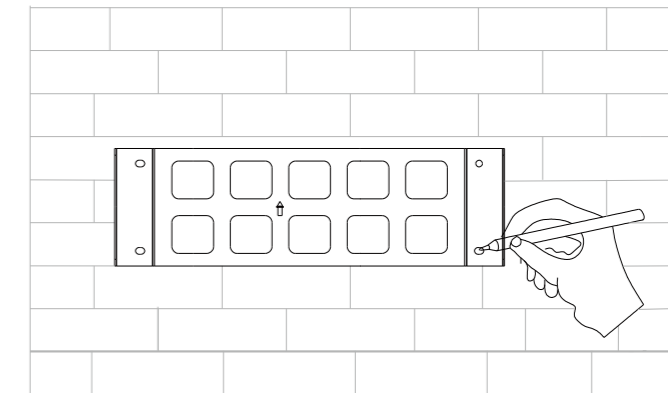
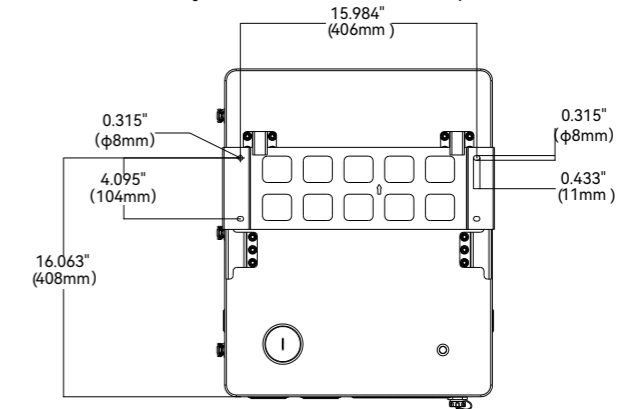


Figure 4.4  
Holes position for the wall bracket

**Step2:** Remove the wall mount and drill 4 holes were marked, Drill holes with  $\phi 8$  drill Depth: at least 55mm.

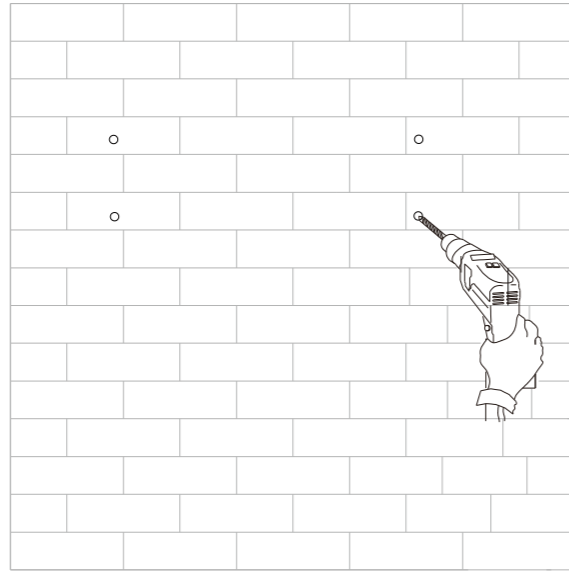


Figure 4.5  
Drilling holes for the wall bracket

**Step3:** First knock expansion screw into the hole with Rubber hammer and then place the wall bracket align with the marked position on the wall. Last, screw the self-tapping screw into the expansion pipe.

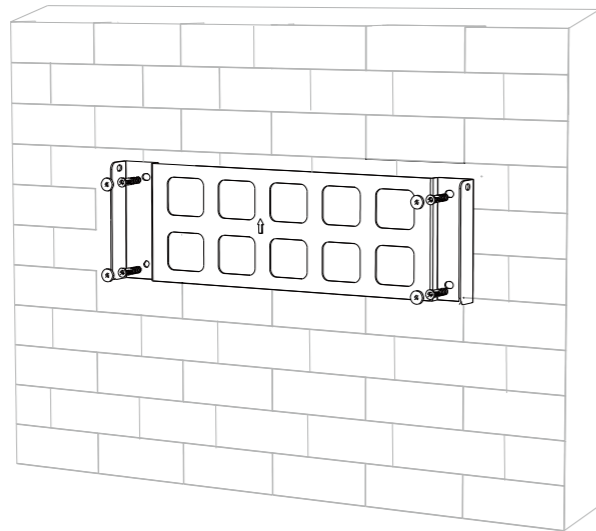


Figure 4.6  
Installation of the wall bracket

**Step4:** Tighten the screws on both sides of the wall bracket.

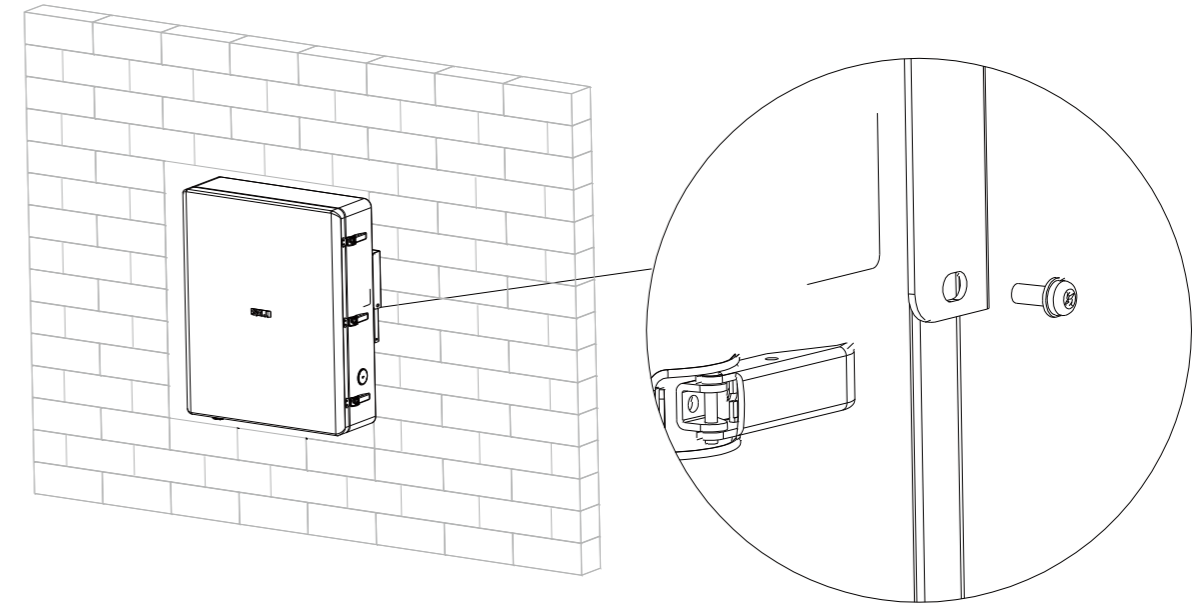


Figure 4.7  
Fixing the SBU and the wall bracket

## 5.

ELECTRICAL  
CONNECTION

## 5.1 Earth Fault Alarm

This inverter complies with IEC 62109-2 clause 13.9 for earth fault alarm monitoring. If an earth Fault Alarm occurs, the second LED indicator will be lit up until the error being solved and inverter functioning properly.

**Note:** The inverter cannot be used with functionally earthed PV Arrays.

## 5.2 Cables Description

Electrical connection must only be operated by professional technicians. Before connection, necessary protective equipment must be employed by technicians, including insulating gloves, insulating shoes and safety helmet.

**Note:** The high-voltage inverter is set to a single-phase 240V grid, do not connect to a 120V load.

**⚠ WARNING**

Risk of personal injury due to electric shock!

1. Ensure that the equipment is powered off before performing wiring operations.
2. Improper wiring of AC conductors will result in risk of electrical failure or equipment damage. Please ensure that all connections are made correctly in accordance with the instructions in this document and in accordance with local wiring codes and regulations before applying power to the unit.

1. Wires below should be prepared before installation.

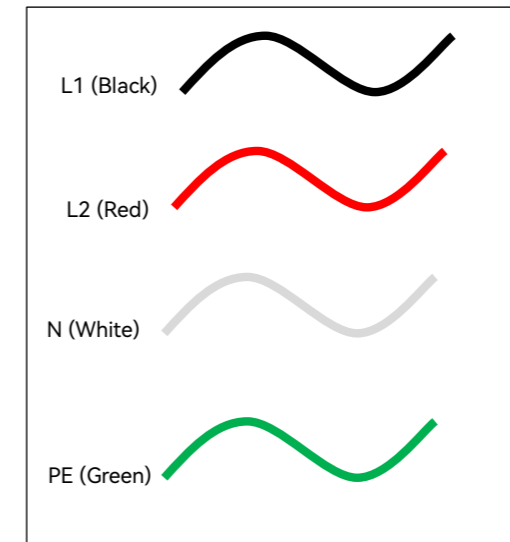


Figure 5.1  
Cables Making

2. Cable description.

Cable	Type	Conductor Cross sectional Area Range	Recommended cable	Source
LOAD	1.Use cables that can withstand 90°C (194°F) or 105°C (221°F). 2.Use four copper cables (L1, N, L2, PE) for outdoor .	L1, L2: 250MCM~6 AWG N: 250KCMIL~6AWG PE:4~14 AWG CU	L1, L2: 0AWG N: 4AWG*2 PE: 9AWG	Purchased by customer
GRID	1.Use cables that can withstand 90°C (194°F) or 105°C (221°F). 2.Use four copper cables (L1, N, L2, PE) for outdoor .	L1, L2: 250MCM~6 AWG N: 250KCMIL~6AWG PE: 4~14 AWG CU	L1, L2: 0AWG N: 4AWG*2 PE: 9AWG	Purchased by customer
INV	1.Use cables that can withstand 90°C (194°F) or 105°C (221°F). 2.Use four copper cables (L1, N, L2, PE) for outdoor .	L1, L2:10~8 AWG N: 4~14 AWG CU PE: 4~14 AWG CU	L1, L2:8AWG N: 8AWG PE: 14AWG	Purchased by customer
GEN	1.Use cables that can withstand 90°C (194°F) or 105°C (221°F). 2. Use four copper cables (L1, N, L2, PE) for outdoor .	L1, L2:2~14 AWG N: 250KCMIL~6AWG PE: 4~14 AWG CU	L1,L2: 5AWG N: 5AWG PE: 5AWG	Purchased by customer
Communication cable	/	/	/	Purchased by customer

Table 5.1  
Cable description.

5.3 SBU Diagram of Wiring

SBU-200 Diagram Of Wiring

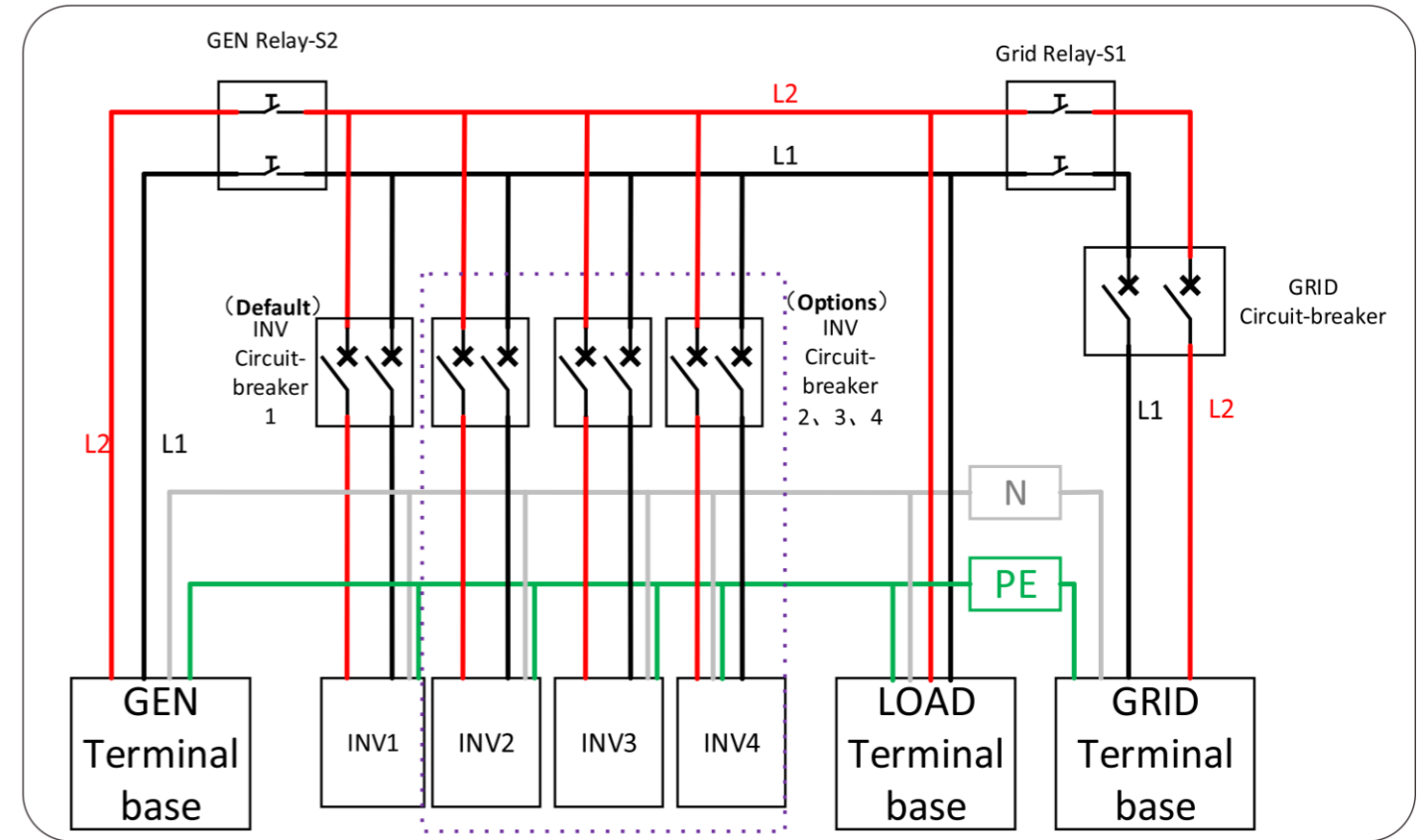


Figure 5.2  
SBU diagram of Wiring

## 5.4 LOAD Connection

- Step 1:** Use the screwdriver to loosen screws in positions L1 and L2 at the contactor's "LOAD" inputs.
- Step 2:** Insert L1 (Black) and L2 (Red) of the "LOAD" conductors in to the "LOAD" input terminals of L1 and L2, and tighten to 165LB-IN(18.63Nm).
- Step 3:** Use the screwdriver to secure cable(White) to the "N" terminal, and tighten to 165LB-IN(18.63Nm).
- Step 4:** Use the screwdriver to secure cable(Green) to the "PE" terminal, and tighten to 26LB-IN(2.9Nm).
- Note:** For cable specifications and refer to [Table 5.1 Cable Description](#).

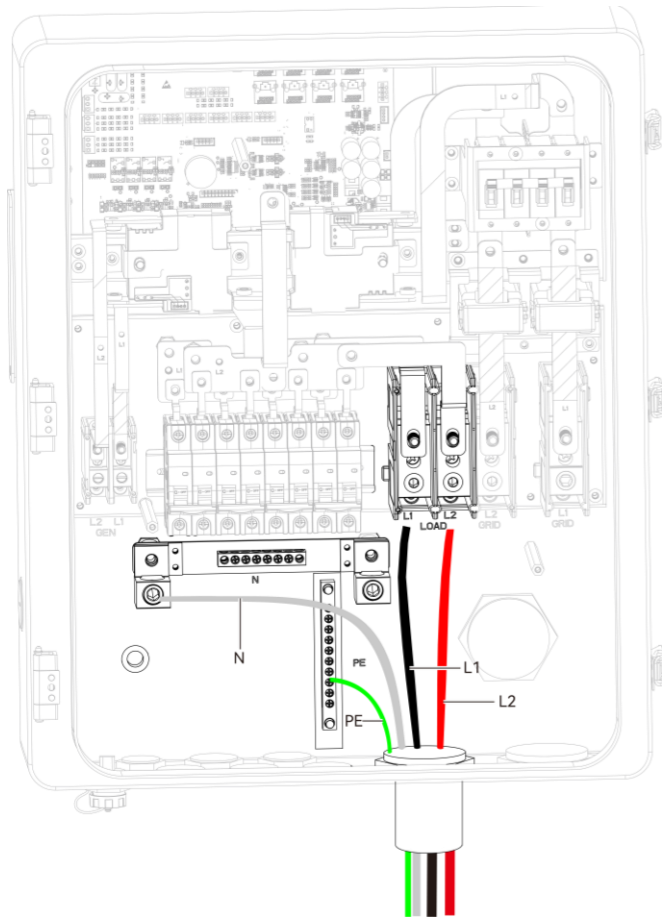


Figure 5.3  
LOAD conductor connection

## 5.5 GRID Connection

- Step 1:** Use the screwdriver to loosen screws in positions L1 and L2 at the contactor's "GRID" inputs.
- Step 2:** Insert L1 (Black) and L2 (Red) of the "GRID" conductors in to the "GRID" input terminals of L1 and L2, and tighten to 165LB-IN(18.63Nm).
- Step 3:** Use the screwdriver to secure cable(White) to the "N" terminal, and tighten to 165LB-IN(18.63Nm).
- Step 4:** Use the screwdriver to secure cable(Green) to the "PE" terminal, and tighten to 26LB-IN(2.9Nm).
- Note:** For cable specifications and refer to [Table 5.1 Cable Description](#).

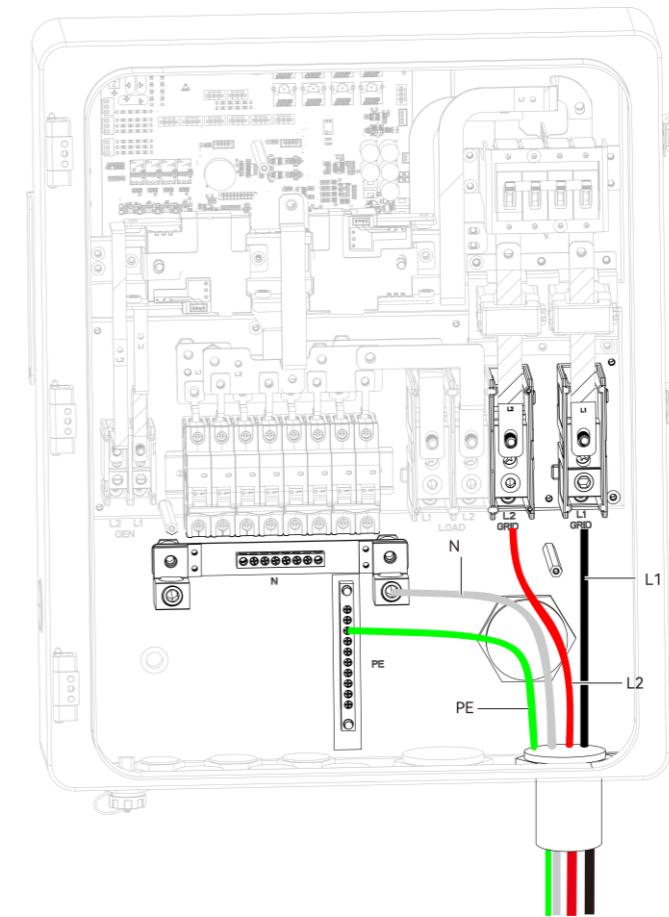


Figure 5.4  
GRID conductor connection



## 5.6 INV Connection

### Conductor connection:

**Step 1:** Use the screwdriver to loosen screws in positions L1 and L2 at the contactor's "INV" inputs.

**Step 2:** Insert L1(Black) and L2(Red) of the "INV" conductors in to the "INV" input terminals of L1 and L2, and tighten to 22-30LB-IN(2.5-3.5Nm).

**Step 3:** Use the screwdriver to secure cable(white) to the "N" terminal, and tighten to 26LB-IN(2.9Nm).

**Step 4:** Use the screwdriver to secure cable(Green) to the "PE" terminal, and tighten to 26LB-IN(2.9Nm).

**Notes:** For cable specifications and refer to [Table 5.1 Cable Description](#).

The SBU is equipped with one circuit breaker as standard. Max. four circuit breakers supported.

Recommended circuit breaker brand Noark and mode B1E2D63.

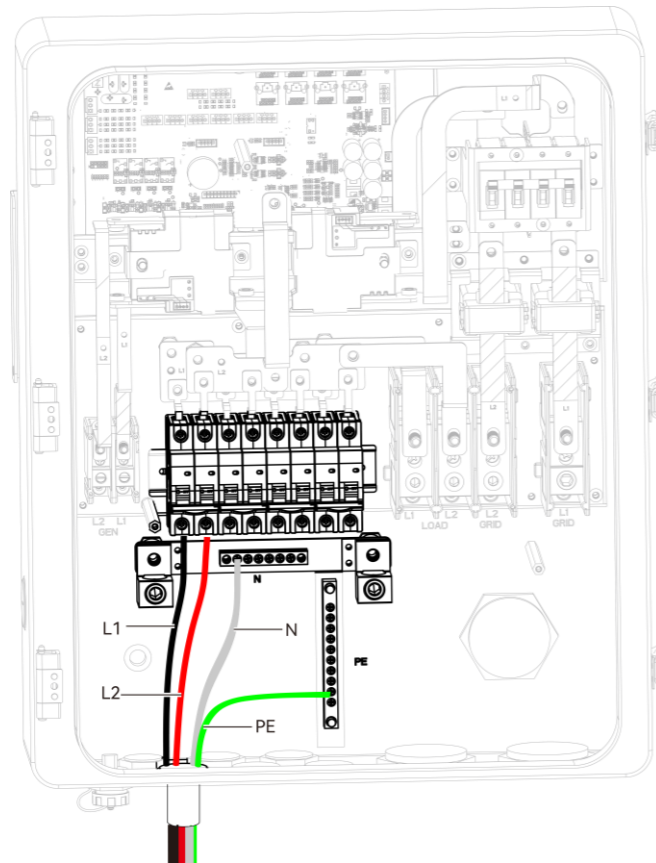


Figure 5.5  
INV conductor connection

### 12V power cables connection:

**Step 1:** Insert the 12 V power cables (red and black) through cable hole D. For cable hole location, see section 3.4 "Cable holes".

**Step 2:** Connect the 12V power cables from positions 1 and 4 in the SBU to positions 9 and 10 of the high-voltage terminals in the inverter, as show below.

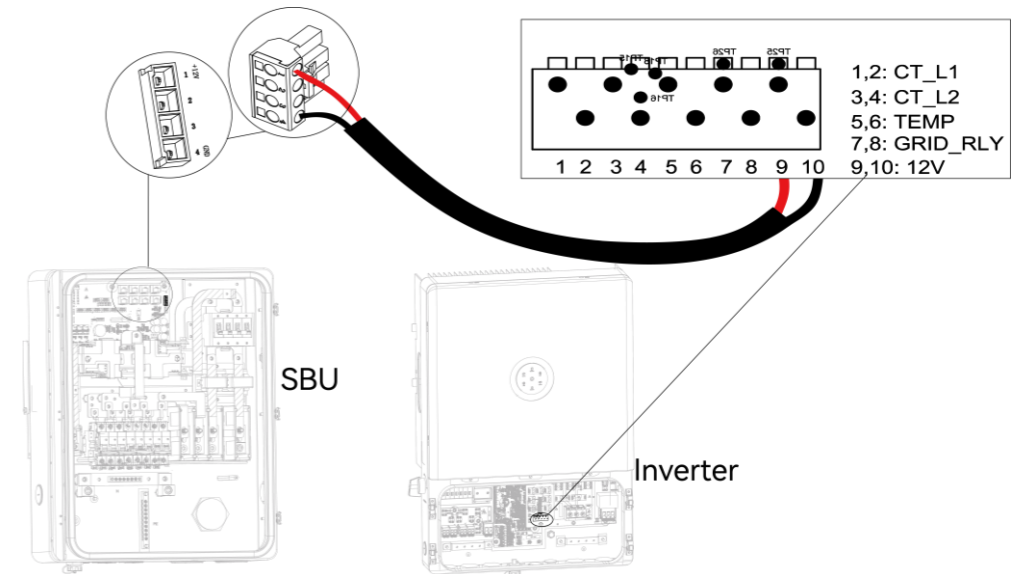


Figure 5.6  
12V power cable connection

**Non-parallel situation: Communication cable connection**

**Step 1:** Communication Cable connection: H2-CAN connected to the inverter GATEWAY\_CAN connection.

**Step 2:** The communication cable is connected through the COM port at the bottom of the SBU.

**Step 3:** Toggle the DIP switch down.

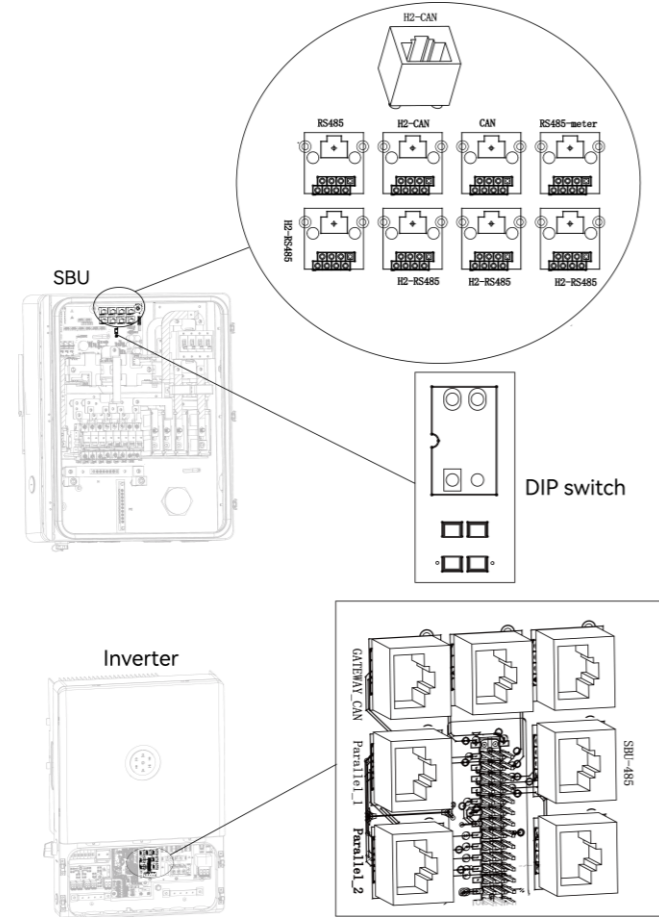


Figure 5.7  
Non-parallel situation

**parallel situation: Communication cable connection**

**Step 1:** Communication Cable connection: H2-CAN connected to the inverter GATEWAY\_CAN connection.

**Step 2:** Communication Cable connection: H2-RS485 connected to the inverter SBU-485 connection.

**Step 3:** The communication cable is connected through the COM port at the bottom of the SBU.

**Step 4:** Toggle the DIP switch down.

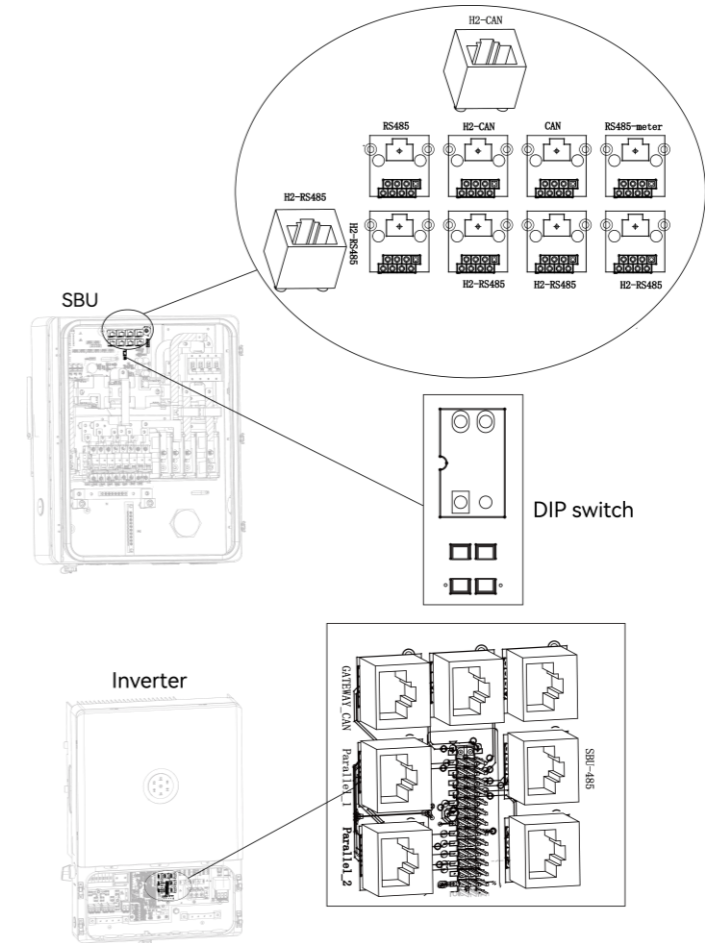


Figure 5.8  
parallel situation

**Communication Interface:**

- Notes:** 1) The communication cable is one end crimped, this crimped end is for SBU side connection. The other end is for inverter side connection. Customer should crimp the other end of communication cable by themselves.
- 2) The pinout of CAN is detailed in Table 5.2 below.
- 3) The pinout of RS 485 is detailed in Table 5.3 below.

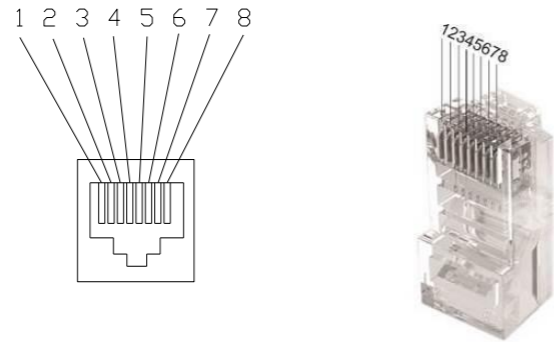


Figure 5.9  
Pinout of CAN/RS485

	Color	Name
1	White-orange	/
2	Orange	/
3	White-green	/
4	Blue	CAN-H
5	White-blue	CAN-L
6	Green	/
7	White-brown	/
8	Brown	/

Table 5.2  
Pinout of CAN  
Description

	Color	Name
1	White-orange	RS485_B
2	Orange	RS485_A
3	White-green	/
4	Blue	/
5	White-blue	/
6	Green	/
7	White-brown	/
8	Brown	/

Table 5.3  
Pinout of RS485  
Description

## 5.7 GEN Connection

- Step 1:** Use the screwdriver to loosen screws in positions L1 and L2 at the contactor's "GEN" inputs.
- Step 2:** Insert L1 (Black) and L2 (Red) of the "GEN" conductors in to the "GEN" input terminals of L1 and L2, and tighten to 45LB-IN(5.08Nm).
- Step 3:** Use the screwdriver to secure cable(White) to the "N" terminal, and tighten to 165LB-IN(18.63Nm).
- Step 4:** Use the screwdriver to secure cable(Green) to the "PE" terminal, and tighten to 26LB-IN(2.9Nm).
- Step 5:** Connect the SBU-200 dry contact with the AC240V dry contact of the generator, and the generator receives the start command (if the generator has no dry contact, ignore this step for manual start).
- Note:** For cable specifications and refer to [Table 5.1 Cable Description](#).

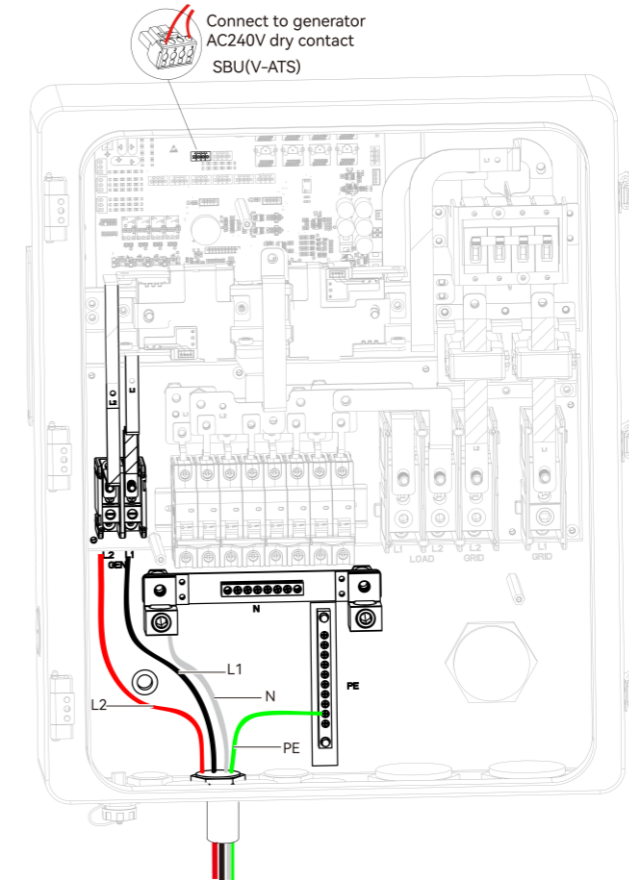


Figure 5.10  
GEN conductor Connection

## 5.8 4G /Wi-Fi Connection

### Serial Port Definition:

SBU has an RS232 communication port integrated, located at the bottom of the wiring compartment and with the appearance of USB port. This port is used to connect the monitoring devices such as Wi-Fi module, etc.

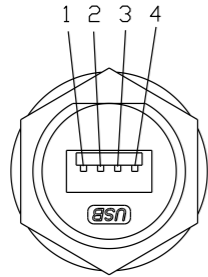


Figure 5.11  
9-Pin serial port

Pin Number	Description	Effect
1	+7V	Power supply
2	RS-232 TX	Send data
3	RS-232 RX	Receive data
4	GND	Ground wire

Table 5.4  
9-Pin serial port introduction

### 4G /Wi-Fi connection:

Plug in the communication module to 4G/Wi-Fi port and secure the module by rotating the nut.

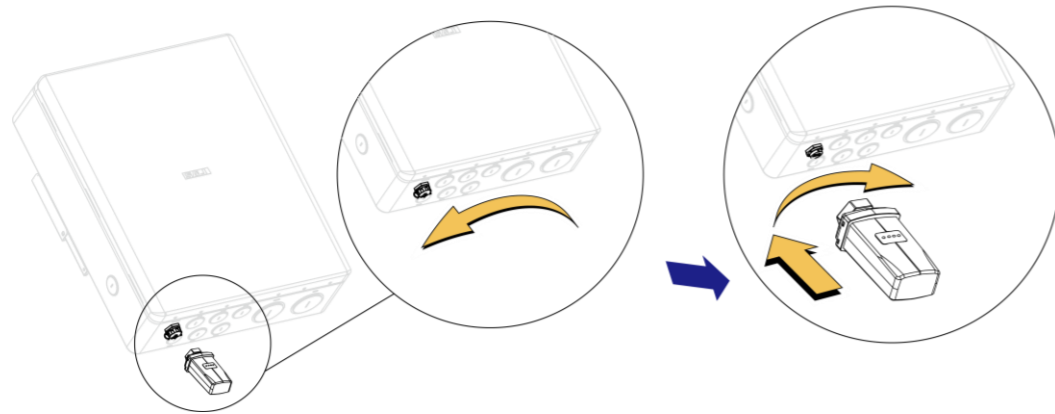


Figure 5.12  
4G /Wi-Fi connection

### LED Indicators:

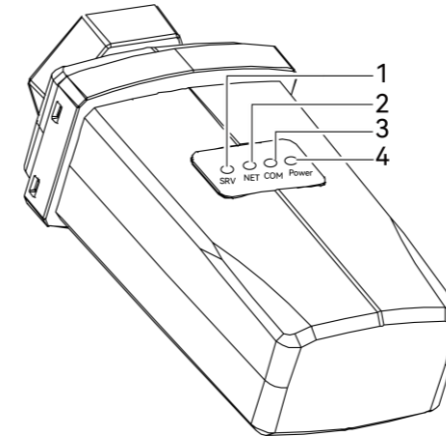


Figure 5.13  
LED Indicators

Pin Number	LED Indicator	Description
1	SRV	Off: Power off ON: Startup normal Flash: Connect to platform abnormal
2	NET	Off: Power off ON: Connect to Internet normal Flash: Disconnect from Internet
3	COM	Off: Power off ON: Connect to Inverter normal Flash: Communicate with Inverter abnormal
4	Power	Off: Power off ON: Power 's being supplied from DC input

## 5.9 CT Connection

**Step 1:** The CT contactor input terminals of the SBU include GEN-CT, MAIN-CT, GRID-CT, and mini-INV, and the positions are shown in the figure below.

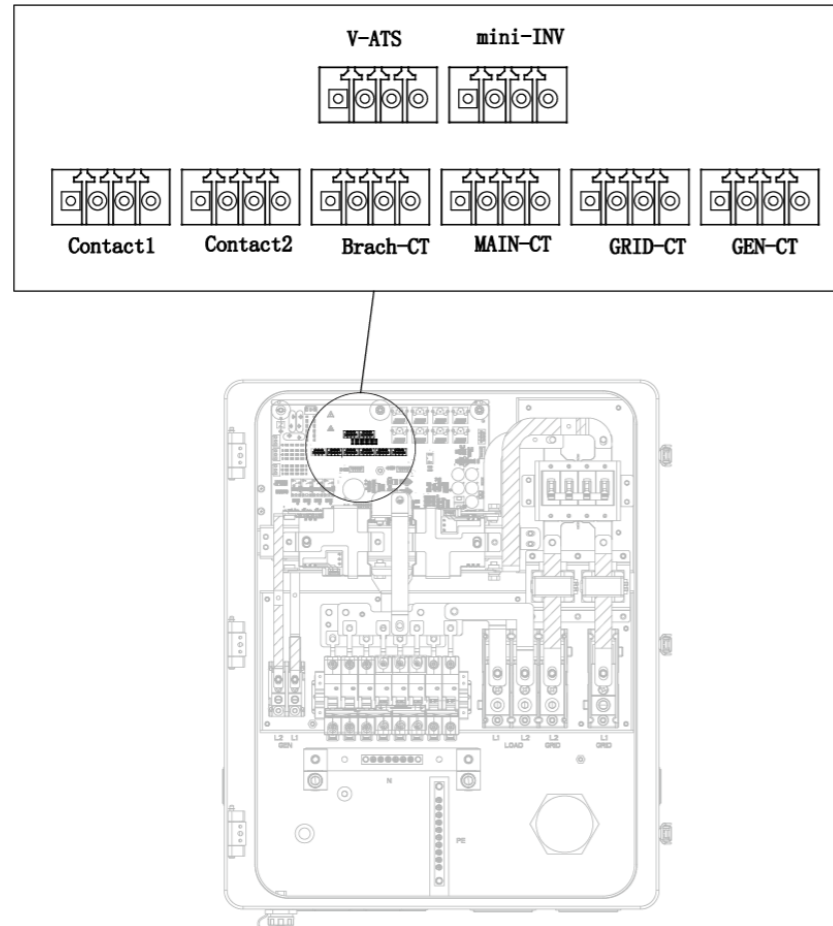


Figure 5.14  
The CT contactor input terminal

### Step 2:

Connecting the CT on L1: Connect the white cables of the CT to position 1 on the SBU terminal, and the blue cables to position 2 on the SBU terminal.

Connecting the CT on L2: Connect the white cables of the CT to position 3 on the SBU terminal, and the blue cables to position 4 on the SBU terminal. As show below.

**Notes:** 1. GRID-CT (CT1) equipment comes with and installed at the factory, no need to connect.

2. The installation direction of the CT points to the SBU box.

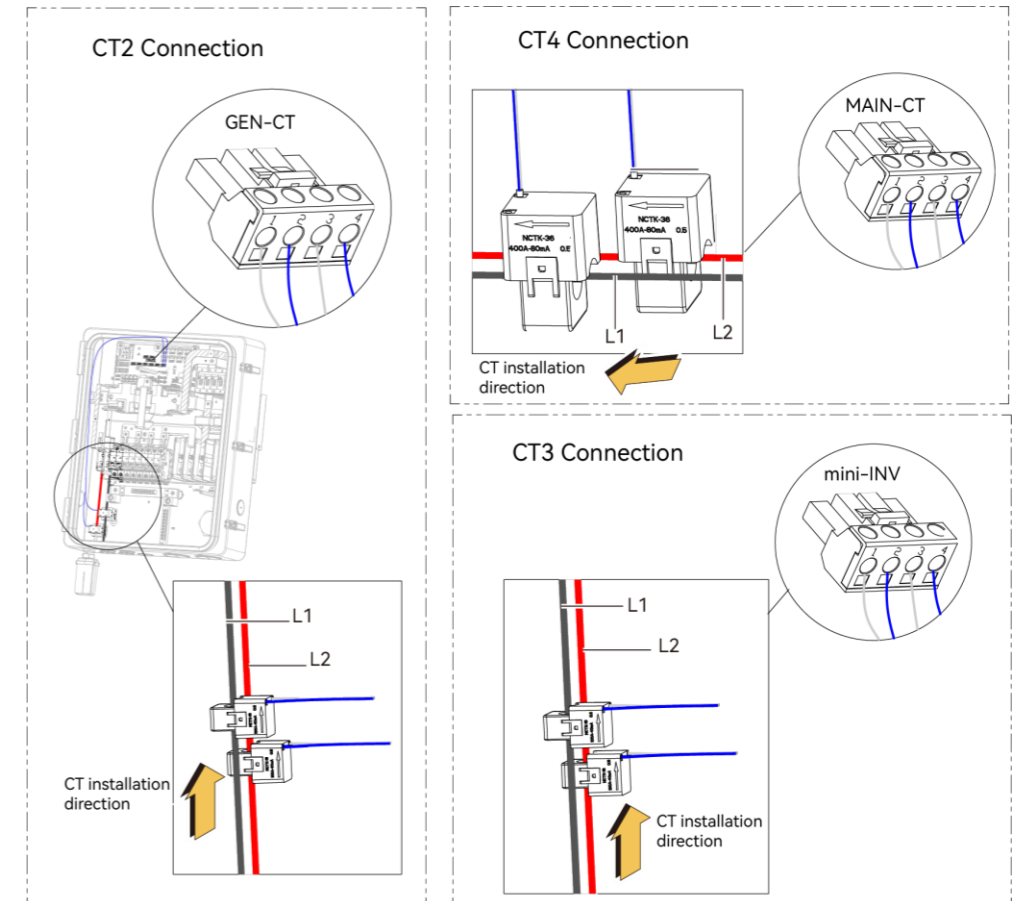


Figure 5.15  
The CT Connection

## 5.10 System Connection

### 5.10.1 Whole-Home Backup

1. Whole-Home backup loads are connected to 'LOAD' terminal base by panel.
2. Site-level metering by integrated Site CT1.
3. Mini-INV (if it had been Installed) is connected to 'load' or 'INV' terminal base. CTs are connected to the contactor input terminals on the SBU internal communication board. The name is 'mini-INV'.

**Note: The model of CT2 and CT3 is recommended nominal current 100A, ratio1:2500.**

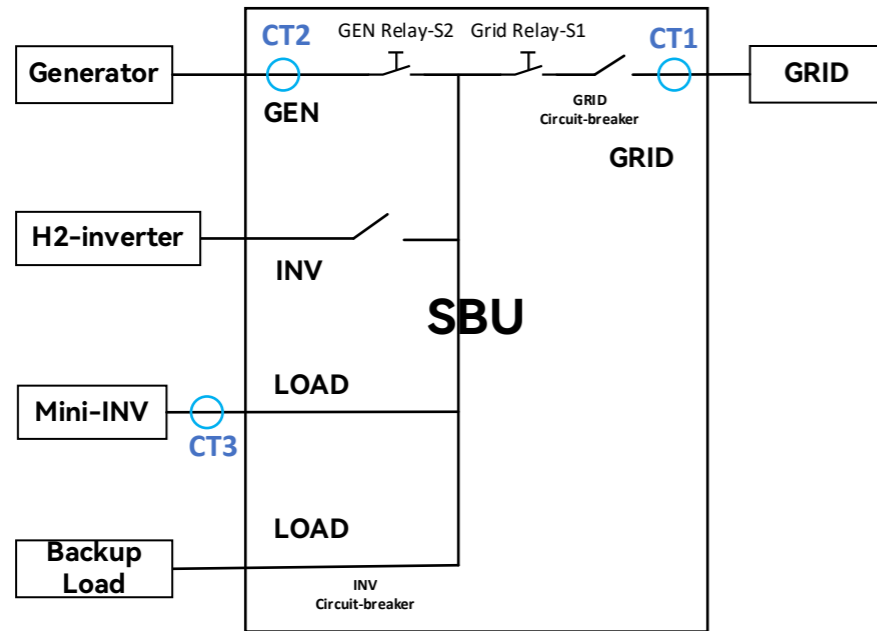


Figure 5.16  
Whole-Home Backup

### 5.10.2 Partial-Home Backup

The Pg\_CT4 is used to monitoring the power of total house loads. They are connected to the contactor input terminals on the SBU internal communication board. The name is 'MAIN-CT'.

**Note: The model of Pg\_CT4 is recommended nominal current 400A, ratio1:5000.**

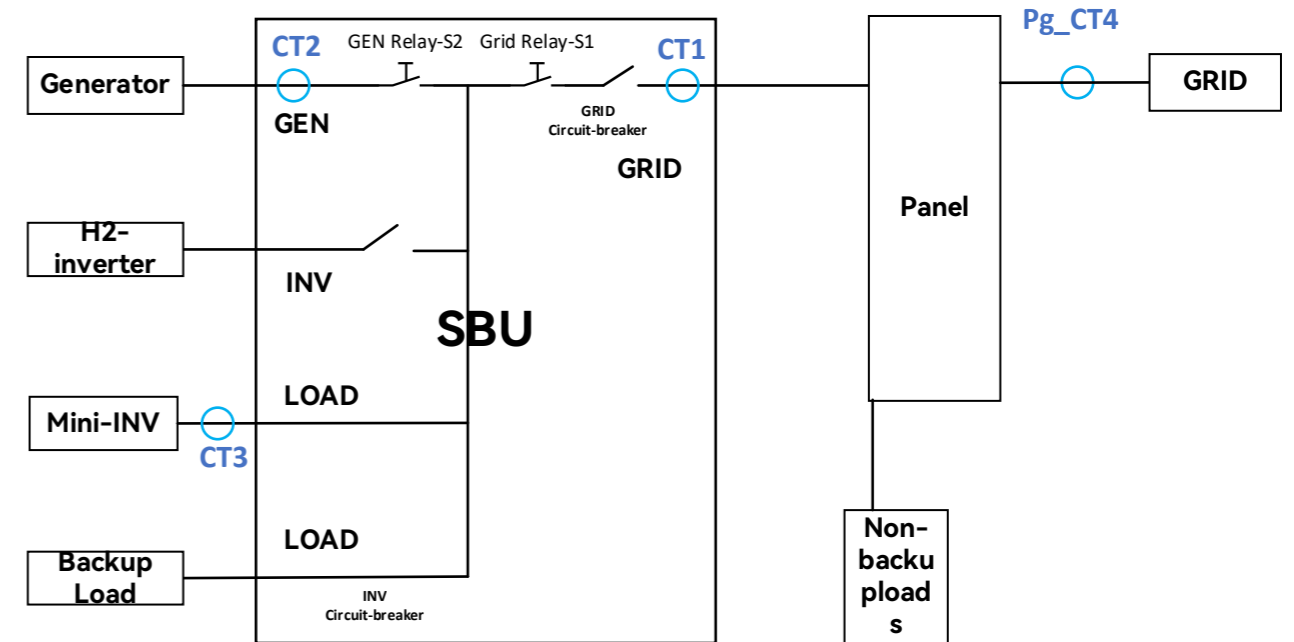


Figure 5.17  
Partial-Home Backup

## 6.1 Recycling and Disposal

The device should not be disposed as residential waste. The SBU that has reached the end of its life and is not required to be returned to your dealer, it must be disposed carefully by an approved collection and recycling facility in your area.

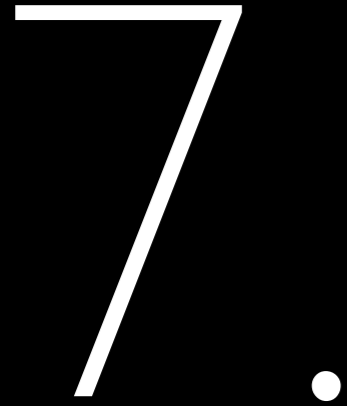
## 6.2 Transportation

Take care of the product during transportation and storage, Keep less than 7 cartons of the SBU in one stack.



# RECYCLING & DISPOSAL





# TROUBLESHOOTING

# & WARRANTY



## Troubleshooting

Error Description	Explanation	Solution
Load Overload	Load power is too high	<ol style="list-style-type: none"> <li>1.Power off, check whether the load is short-circuited.</li> <li>2.Check whether the load power exceeds the rated output power of the SBU.</li> <li>3.Contact the local SAJ technical support service center or supplier.</li> </ol>
Diesel Overload	Diesel engine output power is too high	<ol style="list-style-type: none"> <li>1.Power off, check whether the load power exceeds the rated input power of the diesel generator.</li> <li>2.Contact the local SAJ technical support service center or supplier.</li> </ol>
Grid Overload	Grid output power is too high	<ol style="list-style-type: none"> <li>1.Power off, check whether the load power exceeds the rated input power of the grid.</li> <li>2.Contact the local SAJ technical support service center or supplier.</li> </ol>
Can Communication Lost	Communication exception between SBU and Inverter	<ol style="list-style-type: none"> <li>1.Power off, check whether the CAN line is connected.</li> <li>2.Check whether the CAN lines correspond to each other.</li> <li>3.Check whether the CAN line is communicating.</li> <li>4.Contact the local SAJ technical support service center or supplier.</li> </ol>
485 Communication Lost	Communication exception between SBU and Inverter	<ol style="list-style-type: none"> <li>1.Power off, check whether the RS485 line is connected.</li> <li>2.Check whether the RS485 lines correspond to each other.</li> <li>3. Check whether the CAN line is communicating.</li> <li>4.Contact the local SAJ technical support service center or supplier.</li> </ol>
Flash Exception	Flash storage communication exception	Contact the local SAJ technical support service center or supplier.
Eeprom Exception	Eeprom storage communication exception	Contact the local SAJ technical support service center or supplier.
Adc Exception	The status check of the grid-connected control relay at the diesel generator end is abnormal	<ol style="list-style-type: none"> <li>1.Turn off the power, plug and unplug the wire of the diesel generator relay again to eliminate the problem of poor contact.</li> <li>2.Contact the local SAJ technical support service center or supplier.</li> </ol>



Error Description	Explanation	Solution
Grid Relay Abnormality	The status check of the grid-connected control relay at the grid end is abnormal	1.Turn off the power, plug and unplug the wire of the grid relay again to eliminate the problem of poor contact. 2.Contact the local SAJ technical support service center or supplier.
Diesel Generator Lost	The normal voltage or frequency of the input port of the diesel engine cannot be captured	1.Power off, check if the wiring of the diesel generator is correct. 2.Check whether the output of diesel engine is normal. 3.Contact the local SAJ technical support service center or supplier.
Diesel Generator Underfrequency	The frequency of diesel engine port is detected to be too low	1.Power off, check if the wiring of the diesel generator is correct. 2.Check whether the output of diesel engine is normal. 3.Contact the local SAJ technical support service center or supplier.
Diesel Generator Over frequency	The frequency of diesel engine port is detected to be too high	1.Power off, check if the wiring of the diesel generator is correct. 2.Check whether the output of diesel engine is normal. 3.Contact the local SAJ technical support service center or supplier.
Diesel Generator Undervoltage	The voltage of diesel engine port is detected to be too low	1.Power off, check if the wiring of the diesel generator is correct. 2.Check whether the output of diesel engine is normal. 3.Contact the local SAJ technical support service center or supplier.
Diesel Generator Overvoltage	The voltage of diesel engine port is detected to be too high	1.Power off, check if the wiring of the diesel generator is correct. 2.Check whether the output of diesel engine is normal. 3.Contact the local SAJ technical support service center or supplier.
Grid Underfrequency	The frequency of grid port is detected to be too low	1.Power off, check if the wiring of the grid is correct. 2.Check whether the output of grid is normal. 3.Contact the local SAJ technical support service center or supplier.

Error Description	Explanation	Solution
Grid Over frequency	The frequency of grid port is detected to be too high	1.Power off, check if the wiring of the grid is correct. 2.Check whether the output of grid is normal. 3.Contact the local SAJ technical support service center or supplier.
Grid Undervoltage	The voltage of grid port is detected to be too low	1.Power off, check if the wiring of the grid is correct. 2.Check whether the output of grid is normal. 3.Contact the local SAJ technical support service center or supplier.
Grid Overvoltage	The voltage of grid port is detected to be too high	1.Power off, check if the wiring of the grid is correct. 2.Check whether the output of grid is normal. 3.Contact the local SAJ technical support service center or supplier.
Grid Lost	The normal voltage or frequency of the grid input port cannot be captured	1.Power off, check if the wiring of the grid is correct. 2.Check whether the output of grid is normal. 3.Contact the local SAJ technical support service center or supplier.

## Warranty

Please go to SAJ website for warranty conditions and terms  
<https://www.saj-electric.com/>