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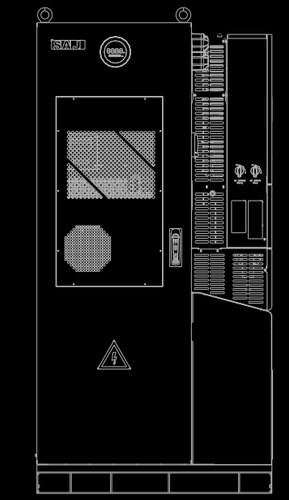

CHS2 Series

C&I ENERGY STORAGE SYSTEM

USER MANUAL

CHS2-(29.9K-50K)-(T4-T6)-X

(X=204.8V/280Ah/51.5kWh, 256.0V/280Ah/64.4kWh, 307.2V/280Ah/77.3kWh, 358.4V/280Ah/90.2kWh)

Preface

Thank you for choosing SAJ products. 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 and greener world.

Please check for the latest version at https://www.saj-electric.com/.

Guangzhou Sanjing Electric Co., Ltd.

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1.

SAFETY PRECAUTIONS

1.1. Scope of Application

This User Manual describes instructions and detailed procedures for installing, operating, maintaining, and troubleshooting of the following CHS2 Energy Storage Systems (ESS):

- CHS2-29.9K-T4-X, CHS2-30K-T4-X
- CHS2-49.9K-T6-X, CHS2-50K-T6-X

1.2. Safety Instructions

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.

1.3. Target Group

Only qualified electricians who have read and fully understood all safety regulations in this manual can perform installation and maintenance. Operators must be aware of the high-voltage device.

2.

PREPARATION

2.1. Safety Instructions

For safety, be sure to read all the safety instructions carefully prior to any operations, and follow the appropriate rules and regulations of the country or region where you install the energy storage system.

DANGER

- Possible danger to life due to electrical shock and high voltage.
- Do not touch the operating component of the inverter; it might result in burning or death.
- To prevent risk of electric shock during installation and maintenance, make sure all AC and DC terminals are plugged out.
- Do not touch the surface of the equipment while the housing is wet. Otherwise, it can cause electrical shock.
- Do not stay close to the equipment while there are severe weather conditions including storm, lighting, etc.
- Before opening the housing, the SAJ inverter must be disconnected from the grid and PV generator; you must wait for at least five minutes to let the energy storage capacitors completely discharged after disconnecting from power source.
- Keep the power off prior to any operations.
- Do not use the battery or the battery control unit if it is defective, broken, or damaged.
- Do not expose the battery to temperature higher than 50℃.
- Do not apply any strong force to the battery.
- Do not place the battery near a heat source, such as direct sunlight or a fireplace.
- Keep inflammable and explosive dangerous items or flames away from the battery.
- Do not soak the battery in water or expose it to moisture or liquids.
- Do not use the battery in vehicles.
- Do not use the battery in spaces where the ammonia level exceeds 20 ppm.

WARNING

- The installation, service, recycling and disposal of the inverters must be performed by qualified personnel only in compliance with national and local standards and regulations.
- Any unauthorized actions including modification of product functionality of any form may cause lethal hazard to the operator, third parties, the units or their property. SAJ is not responsible for the loss and these warranty claims.
- Be sure that the PV generator and inverter are well grounded to protect the properties and persons.
- For personal and property safety, do not short-circuit the positive (+) and negative (-) electrode terminals.

⚠ CAUTION
· The inverter becomes hot during operation. Do not touch the heat sink or peripheral surface during or shortly after operation. · Risk of product damage due to improper modifications. · Use professional tools when operating on the product.

! NOTICE
· During installation of the battery system, the circuit breaker must be disconnected from the battery pack wiring.

2.2. Explanations of Symbols

Symbol	Description
	**Danger of electrical voltage** This device is directly connected to public grid. All operations to the battery shall only be carried out by qualified personnel.
	**Danger to life due to high electrical voltage** There might be residual currents in inverter because of large capacitors. Wait at least 5 minutes before you remove the front lid.
	**No open flames** Do not place or install near flammable or explosive materials.
	**Danger of hot surface** The components inside the inverter will release a lot of heat during operation. Do not touch the metal plate housing during operating.
	**Attention** Keep the product out of reach of children.
	**An error has occurred** See the Troubleshooting section to remedy the error.

	**This device shall NOT be disposed of in residential waste.**
	**This battery module shall NOT be disposed of in residential waste.**
	**CE Mark** Equipment with the CE mark fulfills the requirements of the Low Voltage Directive and Electro Magnetic Compatibility.
	**Recyclable**

2.3. Battery Handling

Operate and use the battery properly according to the user manual. Any attempt to modify the battery without the permission from SAJ will void the limit warranty for the battery.

- The battery must be installed at a suitable location with sufficient ventilation.
- Do not use the battery if it is defective, damaged or broken.
- Only use the battery with the compatible inverter.
- Do not use the battery with other types of battery.
- Make sure the battery is grounded prior to use.
- Do not pull out any cables or open the battery enclosure when the battery is powered on.
- Only use the battery as intended and designed.

2.4. Potential Hazard and Preventions

The damaged battery can have the following types of potential hazard:

- **Chemical hazard**: Battery rupture may result in battery electrolyte leakage which is corrosive and flammable.

To prevent the chemical hazard:

1) Do not open the damaged battery.

2) Do not move the damaged battery to avoid further damage.
3) Keep the damaged battery away from water.
4) Do not expose the damaged battery to the sunlight to prevent battery internal heating.

- **Electrical hazard**: Battery explosion can result in fire and explosion accidents.

To prevent battery explosion:

1) Avoid short circuit of the battery.

Short circuit will generate high heat inside the battery, resulting in partial electrolyte gasification, which will stretch the battery shell. The temperature reaching ignition point of internal material will lead to explosive combustion.

2) Avoid battery overcharge.
3) Battery overcharge may precipitate lithium metal. If the shell is broken, it will come into direct contact with the air and causes combustion. The electrolyte will be ignited at the same time, resulting in strong flame and rapid expansion of gas and explosion.

2.5. Emergency Situation

Battery electrolyte contact

Despite of the protection design against any hazard, the damage of the battery may still be possible. If a small amount of battery electrolyte is released due to a serious damage of the outer casing, take the following actions immediately and seek medical advice:

1) Eye contact: Rinse eyes with a large amount of clean water thoroughly.
2) Skin contact: Wash the contacted skin with a large amount of clean water thoroughly.
3) Breathing difficulty due to inhalation: Move to fresh air immediately.

Fire hazard

WARNING

- If a small fire started shortly near the battery pack, try to disconnect the battery circuit breaker and cut off the power supply first, but only if you can do so without endangering yourself.
- If the battery is on fire, evacuate the crowd to an open area immediately before any attempt to extinguish the fire and report the fire.
- Wear a gas mask to avoid inhaling toxic gases and harmful substances when evacuating or attempting to extinguish the fire.

Applicable fire distinguishers for small-scale fire hazard:

1) Carbon dioxide (CO_2) fire extinguisher
2) Dry chemical fire distinguisher

Battery fire or explosion

DANGER

- If the battery is on fire, evacuate the crowd to an open area and report the fire immediately.
- Wear a gas mask to avoid inhaling toxic gases and harmful substances when evacuating.
- Do not use water to distinguish the burning battery. It can result in severe electrical shock.

3.

PRODUCT INFORMATION

3.1. Product Application Scope

This product is a high-performance Commercial & Industrial (C&I) Energy Storage System (ESS) equipped with advanced battery technology, ideal for large residential, small-scale industrial, and commercial applications. Designed to efficiently store energy for later use, the ESS features an integrated Battery Management System (BMS). This BMS optimizes battery performance while safeguarding against operation beyond its safe parameters, ensuring stability and durability.

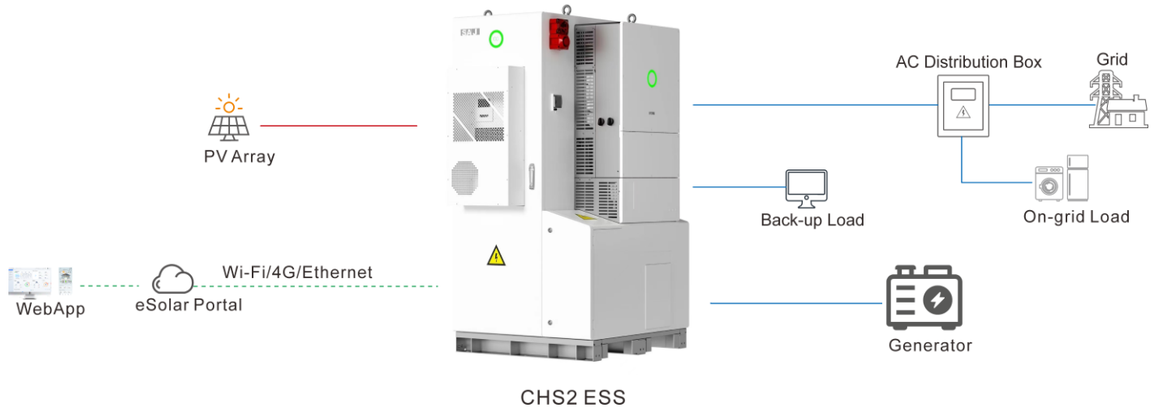


Figure 3.1. System overview

3.2. Specification of Product Model

CHS2 - ***x*K** - **T*x*** - **X**

① ② ③ ④

① CHS2 represents the product name.

② x indicates the rated energy of the storage system in kW. For example, 50 means 50 kW.

③ T means three phases. T means three phases; *x* indicates three phases with *x* number of MPPT.

④ X indicates the battery rated voltage, rated capacity, and usable energy. The value of X includes 204.8V/280Ah/51.5kWh, 256.0V/280Ah/64.4kWh, 307.2V/280Ah/77.3kWh, and 358.4V/280Ah/90.2kWh.

3.3. Dimension

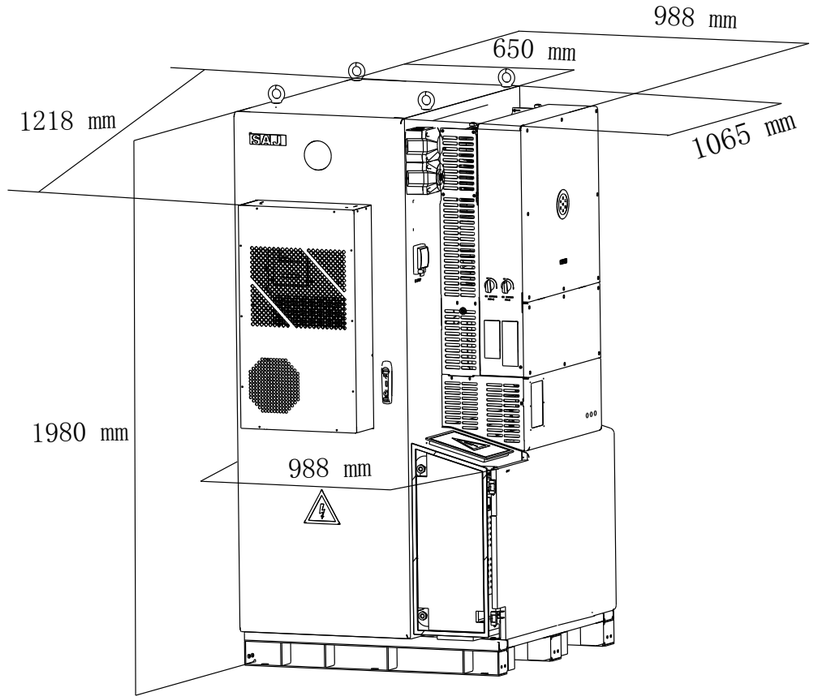


Figure 3.2. Dimensions of the ESS

3.4. Terminals Description

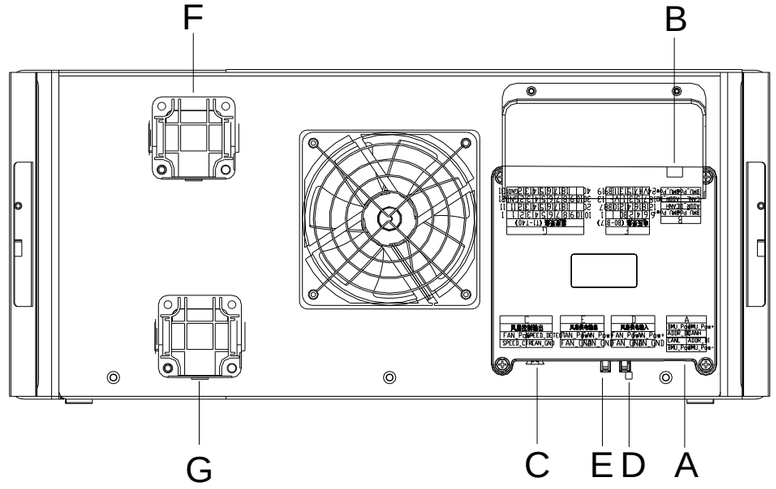


Figure 3.3. Electrical interfaces of battery modules

Callout	Silkscreen	Function
A	A	The communication input port.
B	B	The communication output port.
C	C	The fan control output port.
D	D	The fan power input port.
E	E	The fan power output port.
F	/	The positive port of battery connection.
G	/	The negative port of battery connection.

Table 3.1. Terminal descriptions of battery modules

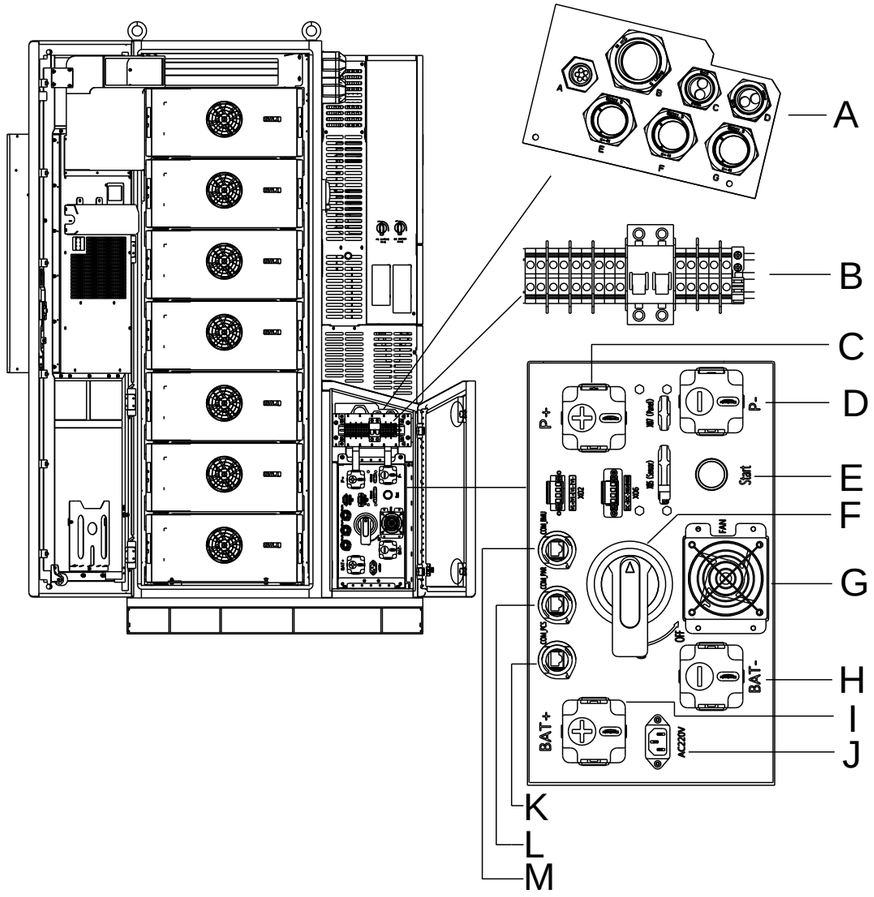


Figure 3.4. Electrical interfaces of the battery control unit

Callout	Silkscreen	Function
A	A, B, C, D, E, F, G	The water-proof ports for cable connections to /from the CH2 inverter and the expansion battery systems.
B	/	The AC circuit breaker.
C	P+	The positive port for DC input and output from/to the inverter.
D	P-	The negative port for DC input and output from/to the inverter.
E	Start	The Start button.
F	/	The main switch.
G	FAN	The fan for system cooling.
H	BAT-	The negative port for DC input and output from/to the first battery module.
I	BAT+	The positive port for DC input and output from/to the last battery module.
J	AC220V	The 220 V AC power supply from the inverter for the fans.
K	COM_PCS	The communication port connecting to the BMS_1 port of the inverter.
L	COM_PAR	The communication port connecting to the expanded battery system.
M	COM_BMU	The communication port connecting to the battery module.

Table 3.2. Terminal descriptions of the battery control unit

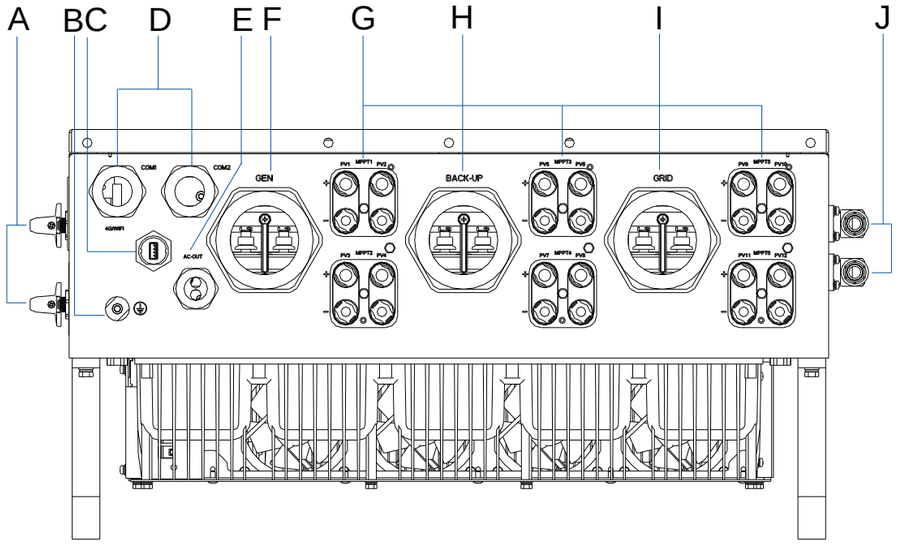


Figure 3.5. Electrical interfaces of the inverter

Callout	Silkscreen	Function
A	/	The DC switches.
B	/	The grounding cable connection port.
C	4G/WIFI	The communication module connection port.
D	COM1, COM2	The communication connections.
E	AC-OUT	The AC output connection port.
F	GEN	The external generator connection ports.
G	MPPT1-MPPT6	The PV connection ports.
H	BACK-UP	The AC back-up connection ports.
I	GRID	The grid connection port.
J	BAT+, BAT-	The battery connection ports.

Table 3.3. Terminal descriptions of the inverter

3.5. Datasheet

3.5.1. System

CHS2-(29.9K, 30K, 49.9K, 50K)-(T4, T6)-X

Model	CHS2-29.9K-T4-X	CHS2-30K-T4-X	CHS2-49.9K-T6-X	CHS2-50K-T6-X
DC Input				
Max. PV Array Power [Wp]@STC	59800	60000	99998	100000
Max. DC Voltage [V]	1000			
MPPT Voltage Range [V]	180–850			
Rated DC Voltage [V]	600			
Start Voltage [V]	200			
Max. DC Input Current [A]	4*45		6*45	
Max. DC Input Current per String [A]	22.5			
Max. DC Short Circuit Current [A]	4*55		6*65	
Number of Strings per MPPT	4		6	
Battery Parameters				
Battery Type	LiFePO4			
Rated Energy [kWh]	57.3–100.3			
Battery Voltage Range [V]	179.2–403.2			
Max. Charging/Discharging Current [A]	150			
AC Output [On-grid]				
Rated AC Power [VA]	29900	30000	49999	50000
Max. Apparent Power [VA]	29900	33000	49999	55000
Rated Output Current [A]@230V AC	43.3	43.5	72.1	72.5
Max. AC Continuous Current [A]	43.3	47.9	72.1	79.8
Current Inrush [A]	192			
Max. AC Fault Current [A]	182.6			
Rated AC Voltage [V]	3+N+PE, 380/400			
Rated Output Frequency/Range [Hz]	50 Hz: 45–55; 60 Hz: 55–65			
Power Factor [cos ϕ]	0i - 1 - 0c			
Total Harmonic Distortion [THDi]	<3%			
AC Input [On-grid]				
Rated AC Voltage [V]	3+N+PE, 400			
Rated Frequency [Hz]	50, 60			
Max. Input Current [A] ①	80	80	200	200
Max. Input Current [A] ②	43.3	47.9	72.1	79.8
AC Input [Generator]				

Model	CHS2-29.9K-T4-X	CHS2-30K-T4-X	CHS2-49.9K-T6-X	CHS2-50K-T6-X
Max. Input Power [VA]	138000	138000	138000	138000
Max. Input Current [A]@230V	200	200	200	200
Rated Input Voltage [V]	3+N+PE, 400			
Rated Input Frequency/Range [Hz]	50 Hz: 45–55; 60 Hz: 55–65			
AC Output [Back-up]				
Max. Apparent Power [VA]	29900	33000	49999	55000
Peak Output Apparent Power [VA]	29900	45000, 5s	49999	75000, 5s
Rated AC Voltage [V]	3+N+PE, 400			
Rated Output Frequency/Range [Hz]	50 Hz: 45–55; 60 Hz: 55–65			
Output THDv (@ Linear Load)	<3%			
Efficiency				
Max. Efficiency	≥98.0%			
Euro Efficiency	97.3%			
Max. Battery to AC Efficiency	96.0%			
Protection				
PV String Current Monitoring	Integrated			
PV Insulation Resistance Detection	Integrated			
Residual Current Monitoring	Integrated			
PV Reverse Polarity Protection	Integrated			
Anti-islanding Protection	Integrated			
AC Overcurrent Protection	Integrated			
AC Short Circuit Protection	Integrated			
AC Overvoltage Protection	Integrated			
DC Switch	Integrated			
DC Surge Protection	II			
AC Surge Protection	II			
AFCI	Integrated			
RSD	Optional			
General Parameters				
Communication	Wi-Fi/Ethernet/CAN/RS485			
Topology	Transformerless			
Operating Temperature Range	-30℃ to +50℃ (45℃ to 50℃ with derating)			
Cooling Method	Air Conditioner			
Ambient Humidity	5–95% (Non-condensing)			
Altitude [m]	2000			
Ingress Protection	Battery: IP55; Inverter: IP66			
Dimensions [H*W*D] [mm]	1980*988*1065			
Weight [kg]	1050 (57.3kWh), 1150 (71.6kWh), 1250 (85.9kWh), 1350 (100.3kWh)			

Model	CHS2-29.9K-T4-X	CHS2-30K-T4-X	CHS2-49.9K-T6-X	CHS2-50K-T6-X
Warranty [Year]	5/10			
Standard	VDE4105, IEC61727/62116, VDE0126, AS4777.2, CEI 0 21, EN50549-1, G98, G99, C10-11, UNE217002, NBR16149/NBR16150, IEC62109-1/-2, NBT32004-2018, EN61000-6-1, EN61000-6-2, EN61000-6-3, EN61000-6-4			

Note: X=204.8V/280Ah/51.5kWh, 256.0V/280Ah/64.4kWh, 307.2V/280Ah/77.3kWh, 358.4V/280Ah/90.2kWh

① The ESS is working for both battery charging and the bypass mode.

② The ESS is working for battery charging only.

3.5.2. Battery

Model	CB2-57.3-HV5	CB2-71.6-HV5	CB2-85.9-HV5	CB2-100.3-HV5
Rated Energy [kWh]	57.3	71.6	85.9	100.3
Usable Energy [kWh]	51.5	64.4	77.3	90.2
Rated Capacity [Ah]	280	280	280	280
No. of Modules	4	5	6	7
Nominal Voltage [V]	204.8	256	307.2	358.4
Voltage Range [V]	179.2–230.4	224–288	268.8–345.6	313.6–403.2
Charge/Discharge Current [A]	140	140	140	140
Rated Power [kW]	28.6	35.6	42.9	50.1
Weight [kg]	960	1060	1160	1260
Dimension [mm]	1980*988*1065			
Communication	CAN			
Operating Temperature Range [℃]	-30℃ to 50℃			
Cooling Method	Air Conditioner			
Relative Humidity	5-95% (non-condensing)			
Altitude [m]	2000			
Ingress Protection	IP55			
Mounting	Ground-Mounted			
Control Module	**CBC2-HV5**			
Dimension (H*W*D) [mm]	225*483*610			
Weight [kg]	28			
Battery Module	**CBU2-14.33-HV5**			
Rated Energy [kWh]	14.33			
Weight [kg]	115			
Dimension [mm]	231*523*805			
Applicable Standard	IEC62619-2017, UN38.3, IEC61000-6-2/4, IEC62477			

4.

INSTALLATION INSTRUCTIONS

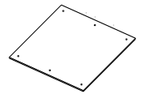
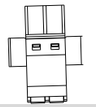
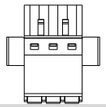
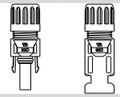
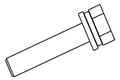
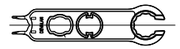
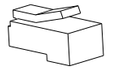
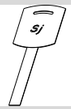
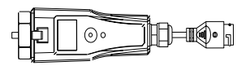
4.1. Unpacking

4.1.1. Check the Outer Package

Although SAJ products are thoroughly tested and checked before delivery, the products may suffer damages during transportation. 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

Contact after-sales if there are missing or damaged components.

			
CHS2 ESS	Positioning cardboard	2-pin plug x4	3-pin plug x2
			
6-pin plug x4	PV positive terminal x2 PV negative terminal x2	Terminal (RNBS 38-8) x5 (RNB70-10) x12	M8*25 screw x8
			
M12*80 expansion bolt x6	Removal tool	RJ45 plug x9	Mounting bracket
			
Key1 x2	Key2 x2	Communication module (optional)	Documents

4.2. Installation Method and Position

4.2.1. Installation Position and Space Requirement

This device is equipped with an air conditioner for cooling and provides the ingress protection of IP 55 (Battery) and IP66 (Inverter). The device can be installed either indoors or outdoors. For outdoor installation, the pollution degree classification needs to be IP44 at the minimum.

Poor air ventilation will affect the working performance of internal electronic components and shorten the service life of the system. Reserve enough clearance around the product to ensure a good air circulation at the installation area.

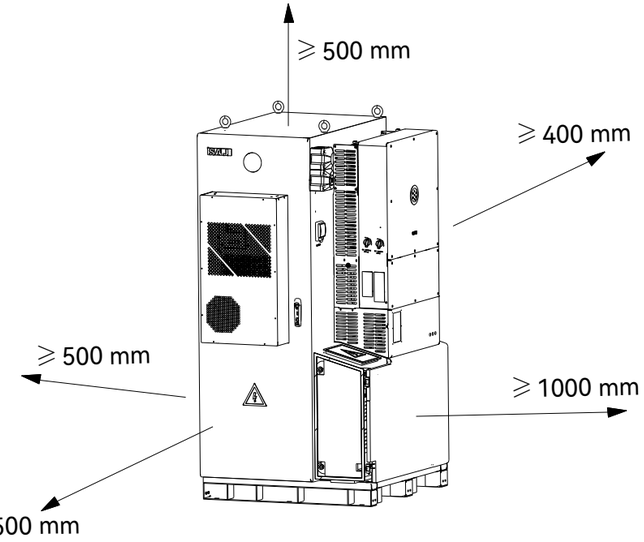


Figure 4.1. Installation space requirement of a single machine

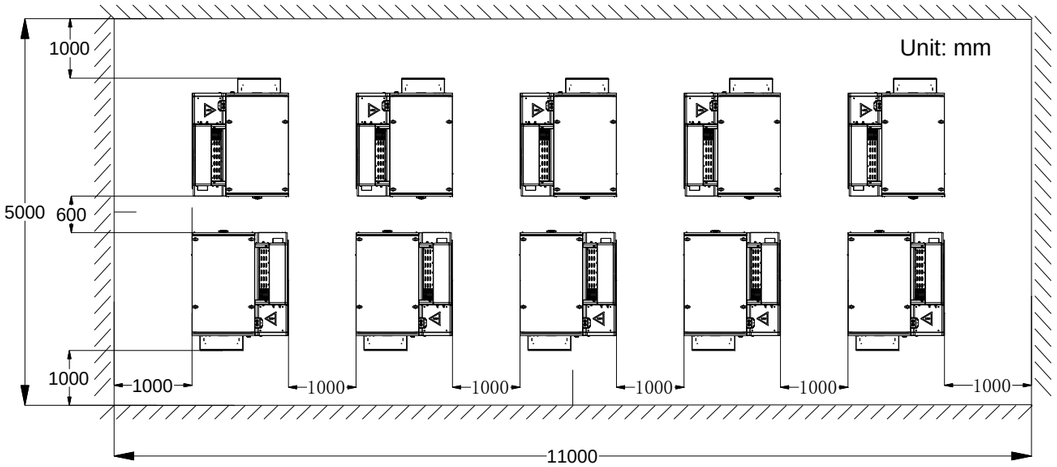


Figure 4.2. Installation space requirement of multiple machines

4.2.2. Mounting Method

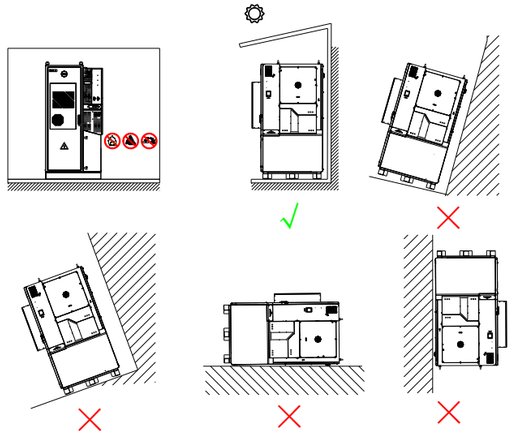


Figure 4.3. Mounting positions

- The equipment employs air conditioner cooling, and it can be installed indoor or outdoor.
- Mount vertically. Never install the device tilted forwards, sideways, horizontally or upside down.
- The ground should be flat without inclination. The load-bearing capacity of the ground should reach 1.5 tons.

Installation Environment Requirements

- The installation environment must be free of inflammable or explosive materials.
- Install the device away from heat sources.
- Do not install the device at a place where the temperature changes extremely.
- Keep the device away from children.
- Do not install the device at daily working or living arears, including but not limited to the following areas: bedroom, lounge, living room, study, toilet, bathroom, theater and attic.
- When installing the device at the garage, please keep it away from the drive-way.
- Keep the device from water sources such as taps, sewer pipes and sprinklers to prevent water seepage.

Note: When installed outdoors, the height of the device from the ground should be considered to prevent the device from soaking in water. The specific height is determined by the site environment.

4.3. Mounting Procedure

4.3.1. Installation Tools

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

Figure 4.4. Suggested installation tools

4.3.2. Transportation Equipment

The installers need to prepare proper equipment for transporting and lifting the product components. For example, a forklift or a crane.

Forklift

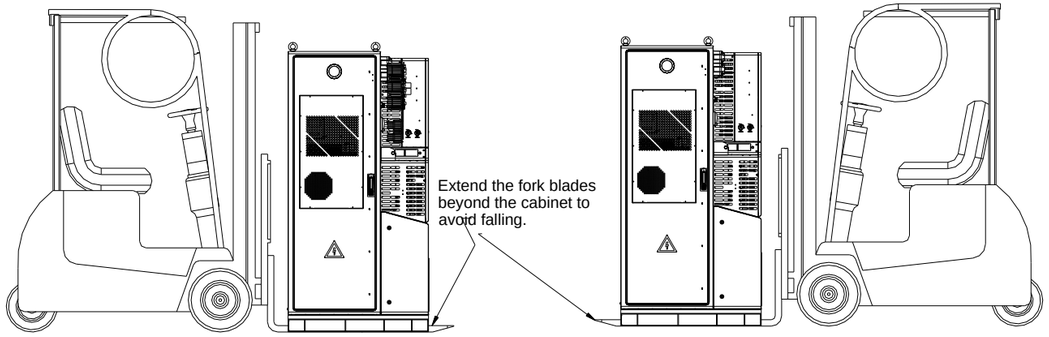


Figure 4.5. Transporting with a forklift

Use the following forklift to move or lift the cabinet:

- The load capacity must be greater than two tons.
- The length of the fork blades must be greater than 1.2 meters. Use fork extensions if needed.
- The fork blades can slide under the bottom of the cabinet without damaging the cabinet.

Follow specific guidelines below to move or lift the cabinet:

- Adjust the distance between the fork blades to ensure load stability.
- The fork blades must extend longer than the depth of the cabinet to avoid falling.

Crane

Use a crane to move or lift the cabinet. A force greater than two tons is required to move this device. The height between the sling and the top surface must be greater than or equal to 1.5 meters.

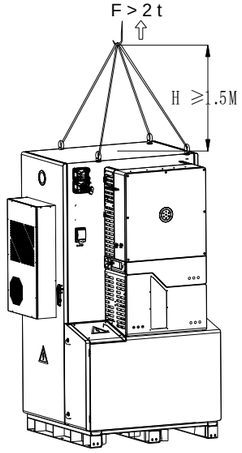


Figure 4.6. Transporting with a crane

4.3.3. Installation Personnel

⚠ CAUTION
The forklift and crane operators must have valid operation license or certification and follow the operation safety rules.

4.3.4. Mount the Cabinet

Select one of the following options to secure the cabinet:

- Secure with the screw bolts.
- Secure with the mounting brackets.

To secure the cabinet with the screw bolts:

Step 1. Place the positioning cardboard on the floor where the machine is to be located. Mark six drilling holes with the cardboard on the floor and remove the cardboard.

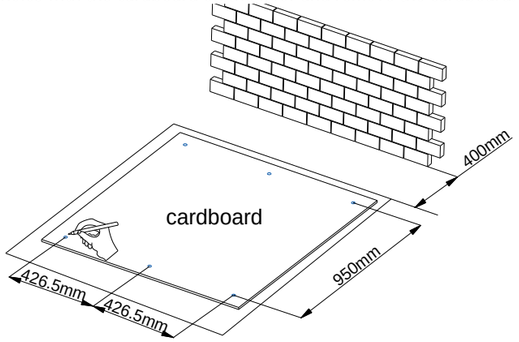


Figure 4.7. Marking the drilling positions

Step 2. Use an electrical drill to drill six holes on the floor at the depth of 80-90 mm. Put an M12*80 expansion tube in each hole.

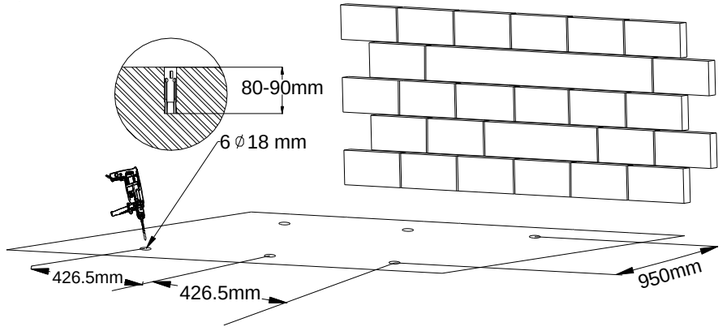


Figure 4.8. Drilling the holes

Step 3. Move and place the cabinet to the installation location with a forklift or crane. Align the holes at the cabinet bottom with the drilled holes.

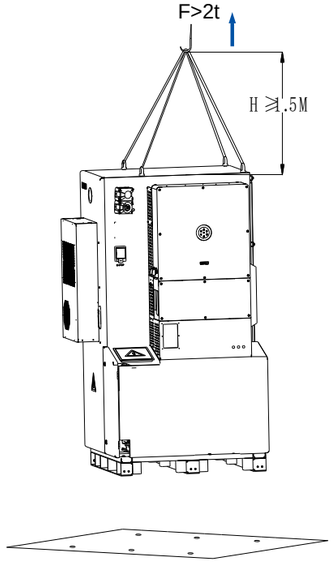


Figure 4.9. Placing the cabinet

Step 4. Use a wrench to tighten the M12*80 expansion bolts at the bottom to secure the cabinet to the floor.

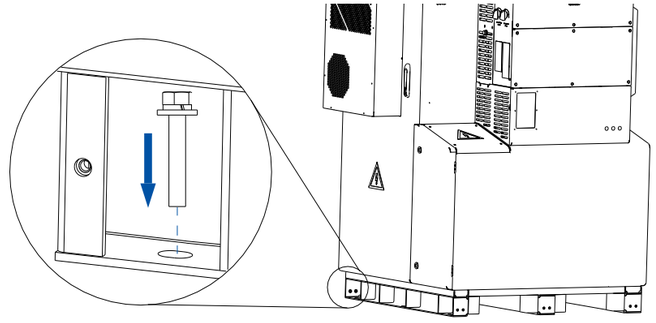


Figure 4.10. Securing the cabinet

To secure the cabinet with the mounting brackets:

Step 1. Move and place the cabinet to the installation location with a forklift or crane.

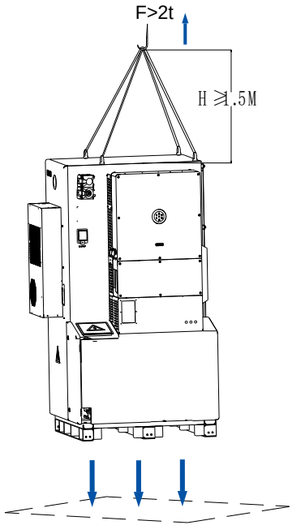


Figure 4.11. Placing the cabinet

Step 2. Place the four mounting brackets at the four corners of the cabinet horizontally and mark the drilling holes.

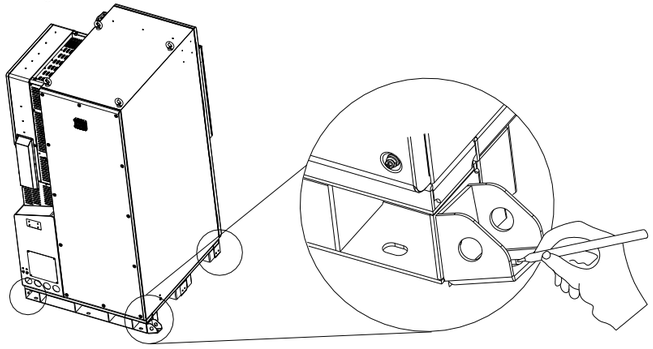


Figure 4.12. Marking the drilling positions

Step 3. Remove the mounting brackets, and use an electrical drill to drill four holes on the floor at the depth of 80-90 mm. Put an expansion tube in each hole. (M12*80)

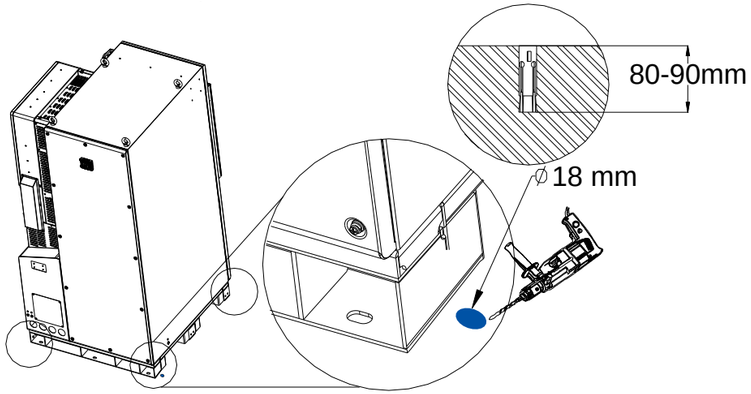


Figure 4.13. Drilling the holes

Step 4. Place the four mounting brackets back to the four corners and use a wrench to secure the brackets to the floor.

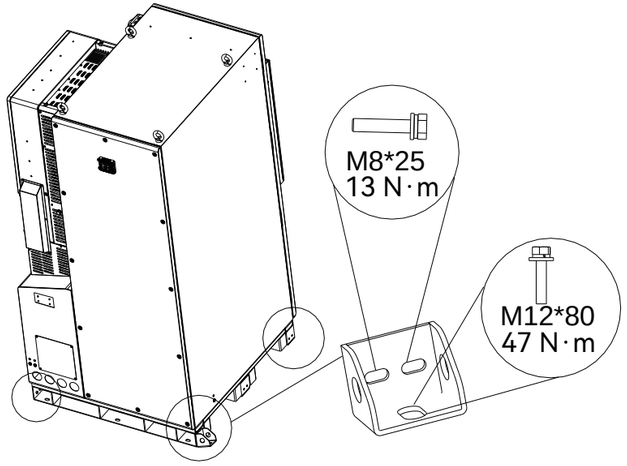


Figure 4.14. Securing the cabinet

5.

ELECTRICAL CONNECTION

5.1. Connect the Grounding Cable

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

⚠ WARNING
· Connect the grounding cable before other electrical connections.

The users need to prepare the cables and OT/DT terminals themselves. The recommended conductor cross-sectional area of the grounding cable is 6 mm².

Step 1. Assemble the cables with the RNBS38-8 OT/DT terminals as follows:

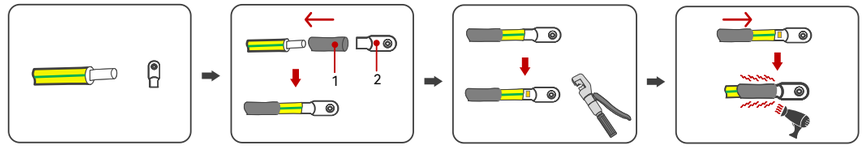


Figure 5.1. Preparing the grounding cable

1. Heat shrink tubing 2. OT/DT terminal

Step 2. Remove the screw of the grounding terminal, insert the screw through the OT/DT terminal, and tighten the cable with the screw.

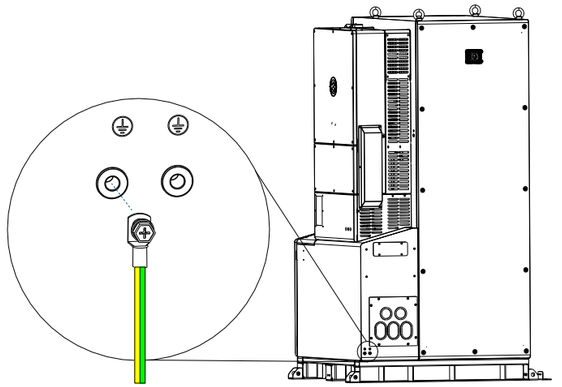


Figure 5.2. Connecting the grounding cable

5.2. Organize the Cables and Remove the Covers

Procedure

Step 1. Remove the metal plate at the bottom right corner of the cabinet for wiring convenience.

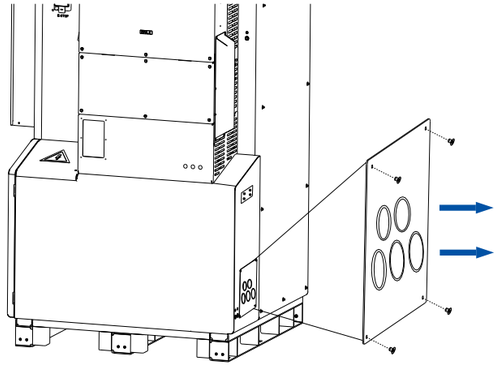


Figure 5.3. Removing the metal plate

Step 2. Pass the cables through the cable outlet holes.

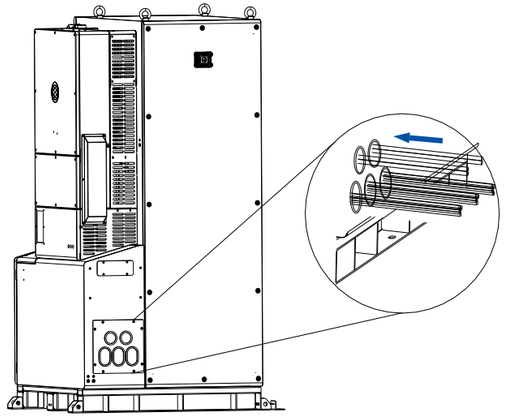


Figure 5.4. Organizing the cables

Step 3. Use a knife to cut the end of the cable sleeves at the cable outlet holes.

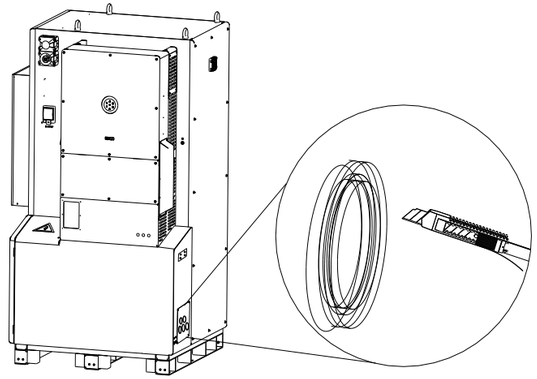


Figure 5.5. Cutting the cable sleeves

Step 4. Remove the decorative panel of the inverter.

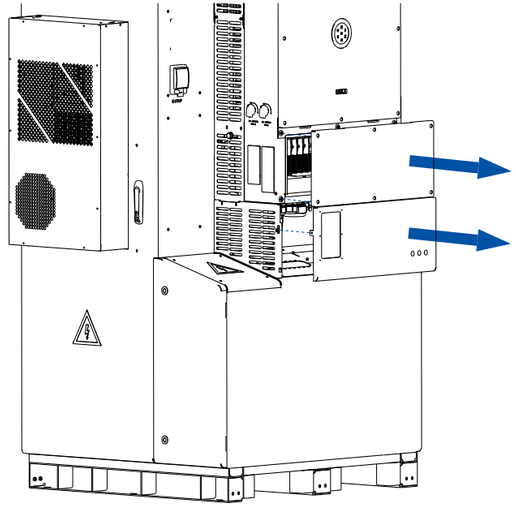


Figure 5.6. Removing the decorative panel

Step 5. Remove the baffle under the inverter.

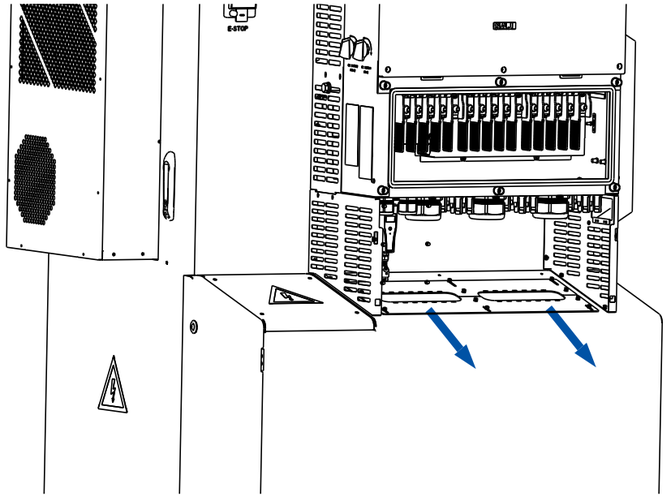


Figure 5.7. Removing the baffle

5.3. Connect the AC Cables

Prepare the GRID, GEN, and Backup cables according to different deployment scenarios of the customer. For detailed cable specifications, see Section 5.8 "System Connection Diagrams".

Note: If the grid-connection distance is large, select an AC cable with larger diameter for the actual condition.

Procedure

Step 1. Pass the cables through the GEN, BACK-UP, and GRID water proof nuts of the AC cover box.

Step 2. Secure the inner core wires of the GRID, GEN, and BACKUP cables to the terminals of L1, L2, L3, N, and PE on the inverter.

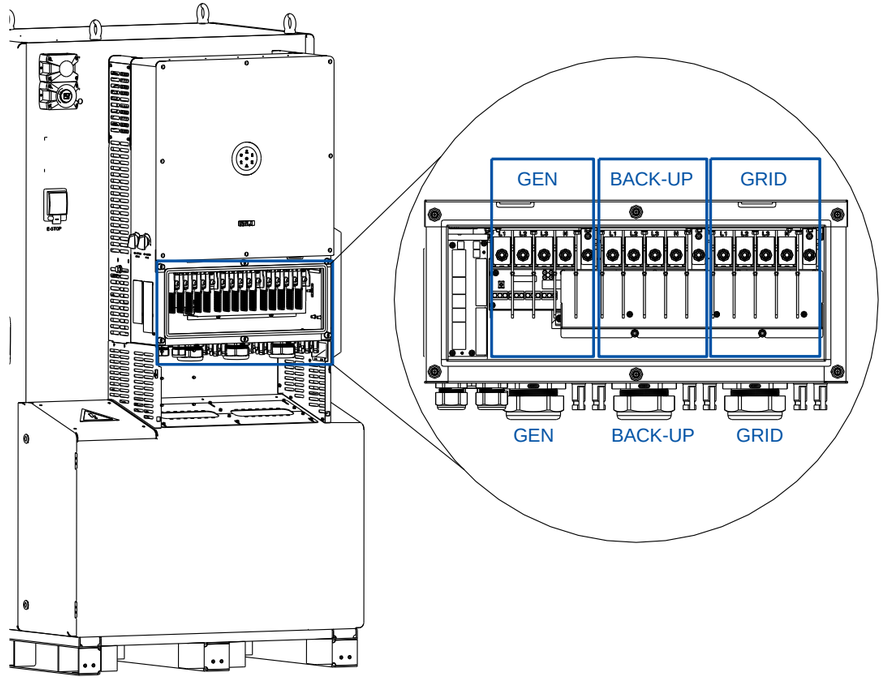


Figure 5.8. Inserting the cables

5.3.1. 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 ring light on the inverter LED panel will be lit up in red and an error code <31> can be viewed on the Elekeeper (used to be called eSAJ Home) App.

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

5.3.2. External AC Circuit Breaker

Install an external circuit breaker to ensure that the inverter can be disconnected from the grid safely. Prepare the circuit breaker according to the following recommended rated current (A) specification:

Model	Backup load connected	
	Yes	No
CHS2-(29.9K-50K)-T6-X	200 A	100 A
Notice: Do not connect multiple inverters to one AC circuit breaker.		

Table 5.1. Recommended circuit breaker specification

5.3.3. Residual Current Device

The inverter is integrated with a RCMU that can detect the real time external current leakage. When the detected current exceeds the limitation, the inverter will be disconnected from the grid quickly.

An external residual current device (RCD) can be connected with the inverter to protect the system from tripping when it is required by regional or local regulations. Either type A or type B RCD is compatible with the inverter. The action current of external residual current device should be 300 mA.

5.4. Connect the PV-side Cables

⚠ WARNING
Make sure the PV array is well insulated to the ground before connecting it to the inverter.

Conductor cross-sectional area of cables (mm^2)		Conductor material
Range	Recommended value	Outdoor copper wire cable, complying with 1000 V DC
4.0–6.0	4.0	

Table 5.2. Recommended specifications of DC cable

Note: When the inverters are used in parallel, it is necessary to ensure that the PV power of all inverters is consistent as much as possible.

⚠ WARNING
· Danger to life due to electric shock from touching the live components or DC cables. · When the photovoltaic array is exposed to light, it supplies DC voltage to the PCE. Touching live DC cables can result in death or lethal injures. · DO NOT touch the non-insulated parts or cables. · Disconnect the inverter from voltage sources. · DO NOT disconnect the DC connectors under load. · Wear suitable personal protective equipment for all operations.

ⓘ NOTICE
· Place the connector separately after unpacking to avoid confusion about cable connections. · Connect the positive connector to the positive side of the solar panels, and connect the negative connector to the negative side of the solar side. Be sure to connect them in the correct way.

Procedure

Step 1. Loosen the lock screws on the positive and negative connectors.

Figure 5.9. Loosening the connectors

Step 2. Use a 3-mm wide-bladed screwdriver to strip the insulation layer by 8 to 10 mm from one end of each cable.

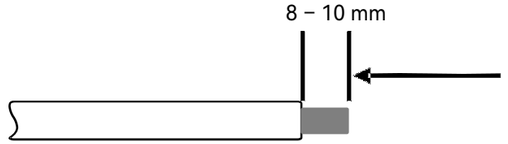


Figure 5.10. Striping the insulation

Step 3. Insert the cable ends to the sleeves. Use a crimping plier to assembly the cable ends.

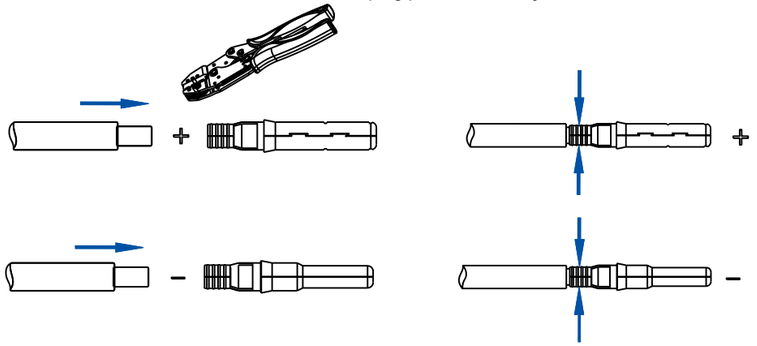


Figure 5.11. Assembling the cable ends

Step 4. Insert the positive and negative cables into the positive and negative connectors. Gently pull the cables backward to ensure firm connection.

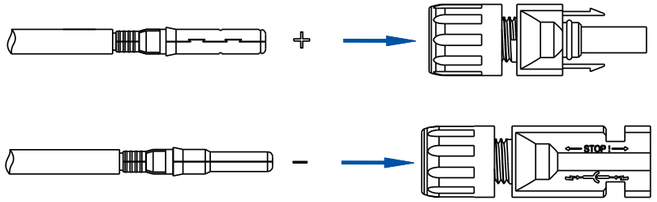


Figure 5.12. Assembling the cables

Step 5. Tighten the lock screws on the positive and negative cable connectors with the D4 assembly tool.

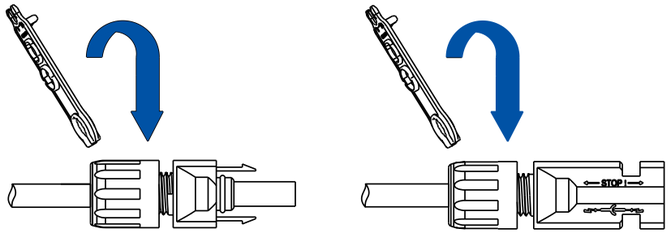


Figure 5.13. Tightening the connectors

Step 6. Make sure the two DC switches are at the OFF position.

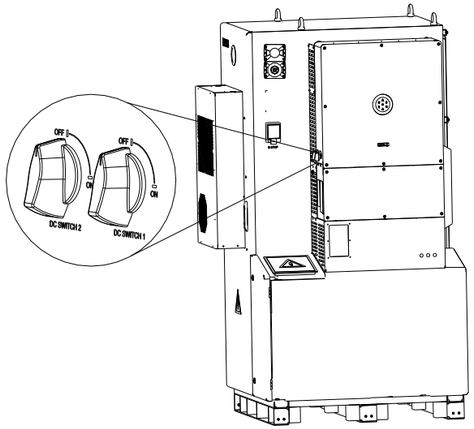


Figure 5.14. DC switch OFF

Step 7. Insert the positive and negative cable connectors into the positive and negative PV ports on the inverter until you hear a “click” sound.

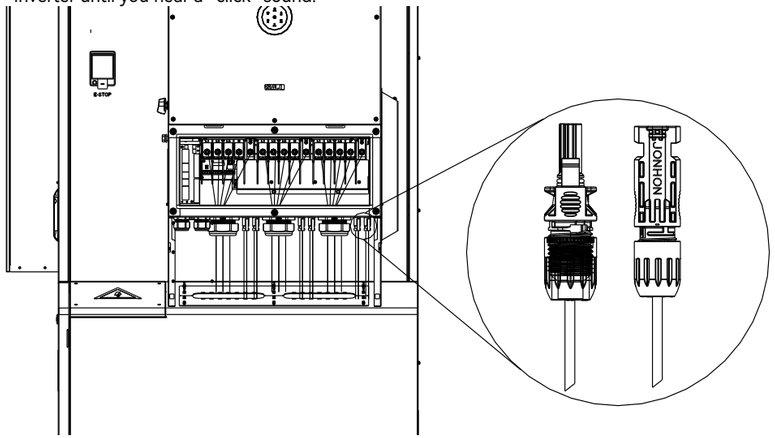


Figure 5.15. Inserting PV connectors

5.5. Communication Connection

5.5.1. Communication Interfaces Overview

The inverter provides the communication interfaces and ports that allow the inverter to communicate with external equipment and systems like the generator, the energy management system (EMS), and so on. The following figure shows the communication ports of the inverter:

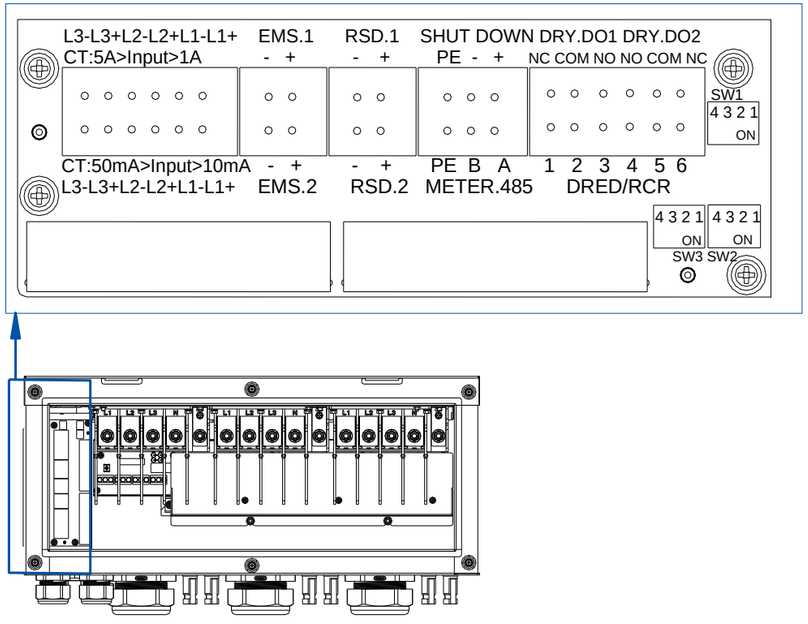


Figure 5.16. Communication interfaces overview

5.5.2. Connect the Communication Cables and Plugs

Step 1. Prepare the wires for the 2-pin, 3-pin, and 6-pin plugs depending on which communication functions are required.

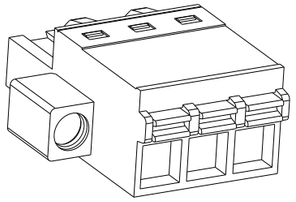


Figure 5.17. 3-pin plug

Step 2. Peel off the insulation skin of the wire by proper length. Insert the wire into the plug and press the orange button to secure the cable.

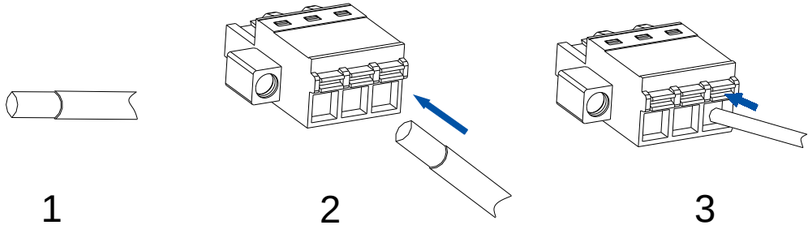


Figure 5.18. Assembling wires for plugs

Step 3. Connect the communication plugs for the corresponding functions according to the port descriptions in sections 5.5.3 “Grid Current Transformer Connection” to 5.5.11 “DIP Switch Connection”.

5.5.3. Grid Current Transformer Connection

The CT ports are provided to connect with the current transformers (CT) to sample the current flowing through the grid. The installer can select the corresponding terminals for connection depending on the following input current range of the CTs:

- 10 mA to 50 mA
- 1 A to 5 A

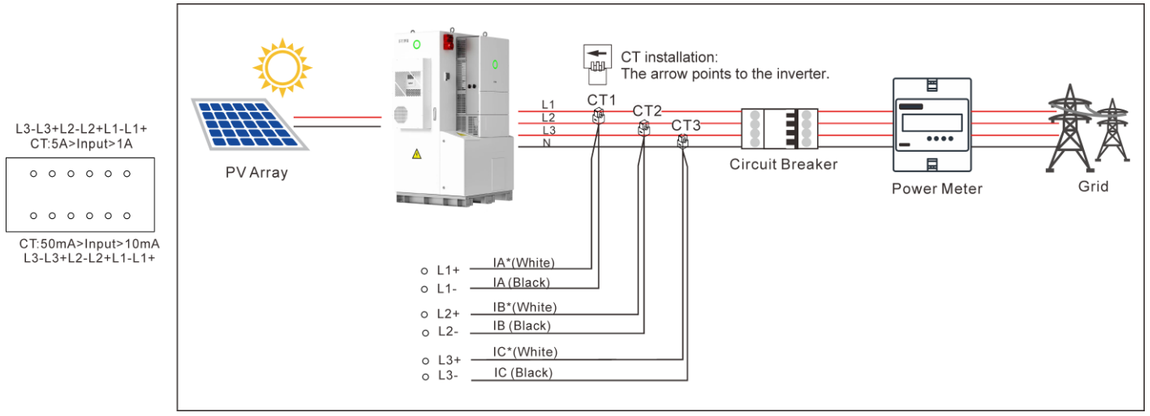


Figure 5.19. Grid Current Transformer Connection

5.5.4. EMS Connection

The EMS.1 and EMS.2 ports can supply power to the external energy management system (EMS) at the rated output voltage of 20 V in the parallel deployment of the inverters.

At least two inverters must provide the power supply to the EMS in parallel deployment. The length of the power supply wire to the EMS is limited to 50 meters.

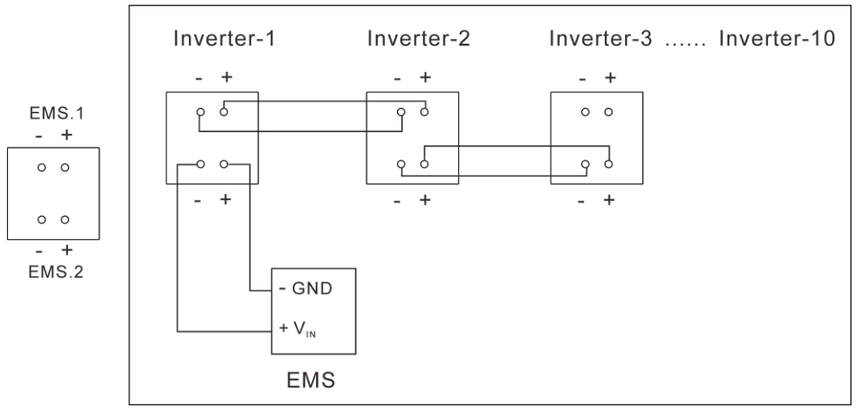


Figure 5.20. EMS connection in parallel

5.5.5. PV Connection

The RSD.1 and RSD.2 ports can supply power to the fast shutdown module of the photovoltaic system at the rated voltage of 12 V. The two ports control the fast shutdown and startup of the PV system by turning on or off the power supply to the fast shutdown module.

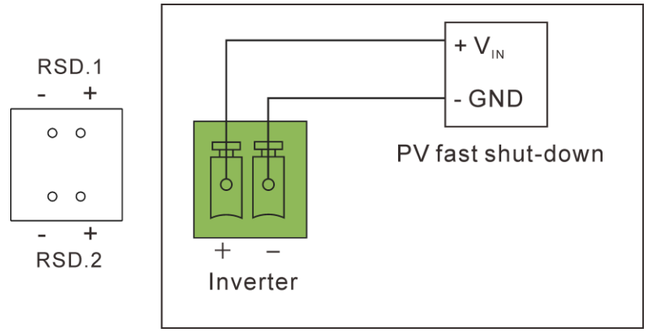


Figure 5.21. PV connection

5.5.6. Generator Connection

The DRY.DO1 port can connect with the generator to control the start and stop of the generator.

When the inverters are deployed in parallel, the generator needs connect to the DO4 interface of the EMS device.

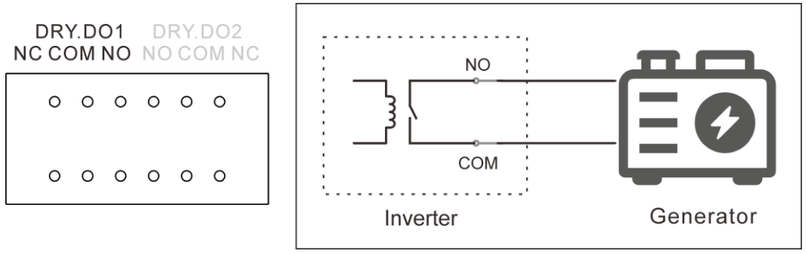


Figure 5.22. Generator connection

5.5.7. Dry Contact Connection

The DRY.DO2 ports are reserved as an output dry contact for future use.

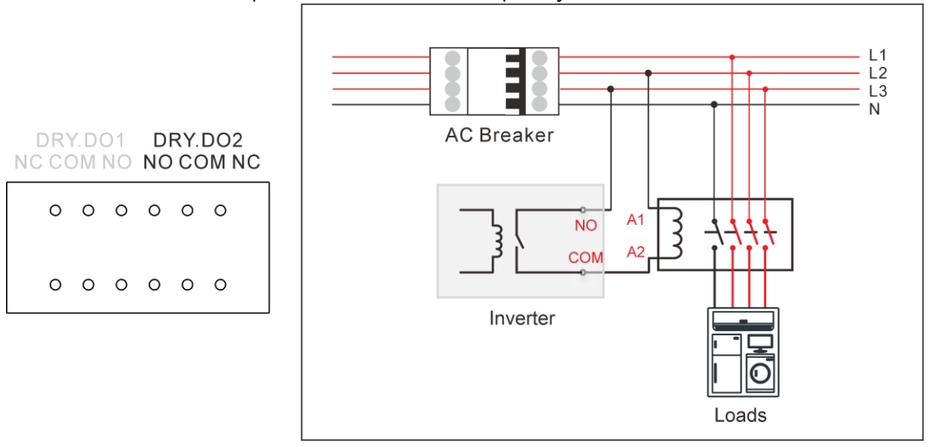


Figure 5.23. Output dry contact connection

5.5.8. Emergency Stop Switch Connection

The SHUT DOWN port can connect with an external switch to stop the inverter immediately in emergent situations.

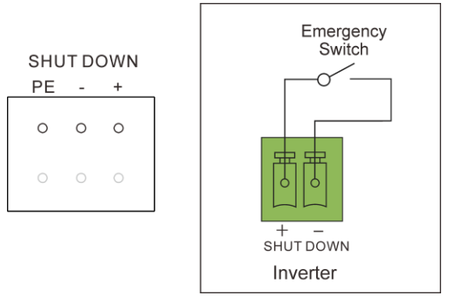


Figure 5.24. Emergency stop switch connection

5.5.9. RCD Connection

The DRED/RCR ports can connect with external residual current devices (RCD) or demand response enabling devices (DRED) to provide the RCR signal control function. This function meets the power grid dispatching requirements in Germany and other countries and regions.

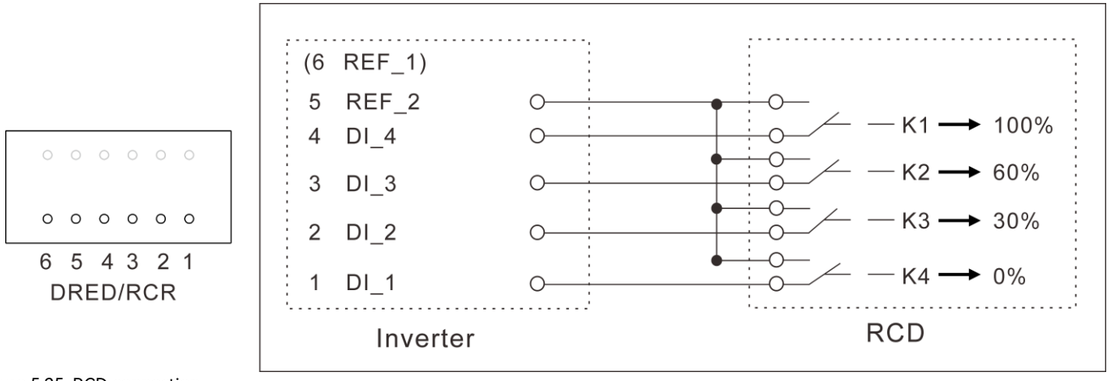


Figure 5.25. RCD connection

5.5.10. Meter Connection

The METER.485 port can connect with meter CHINT's DTSU666 to provide RS485 communication.

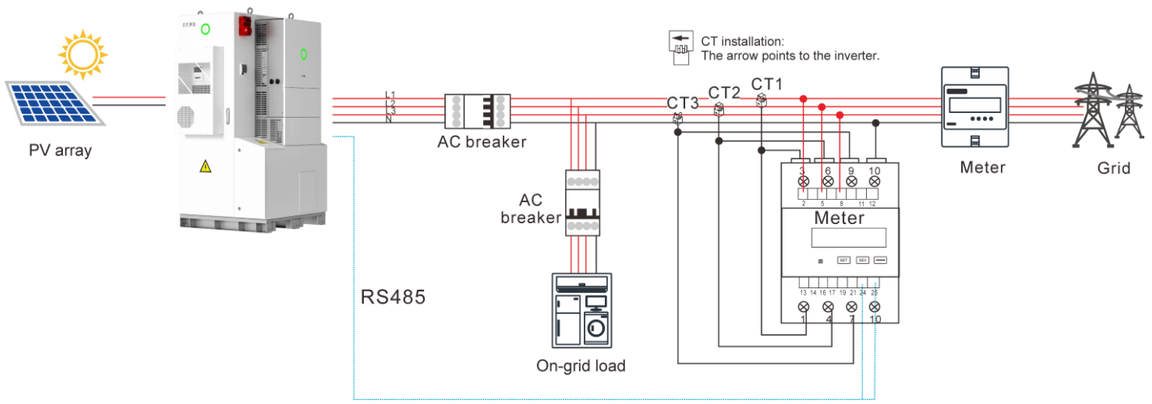


Figure 5.26. System diagram – one meter

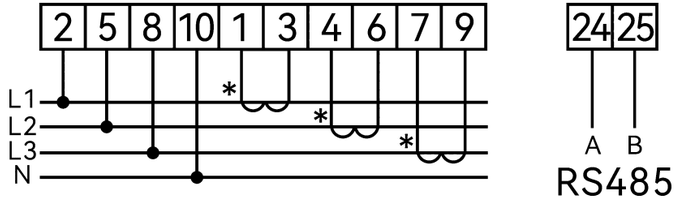


Figure 5.27. Meter connection

When two meters are used, set the address of the inverter-side meter to 2. Do NOT change the default address 1 of the grid-side meter. The CT arrow direction points to the CHS2 inverter.

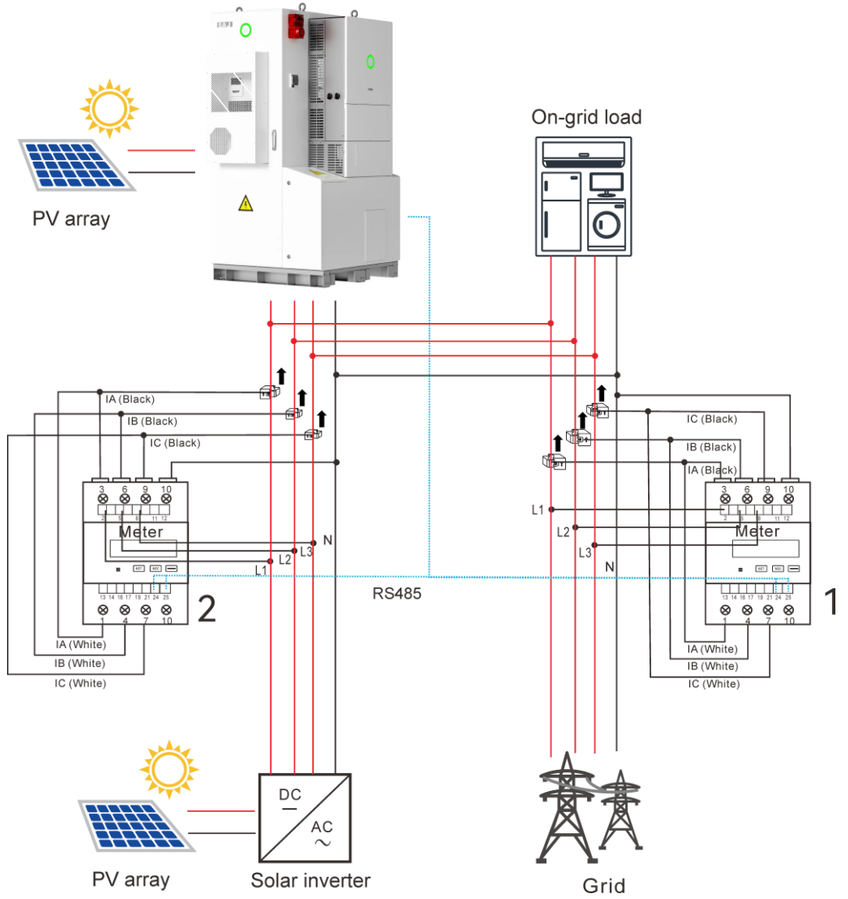
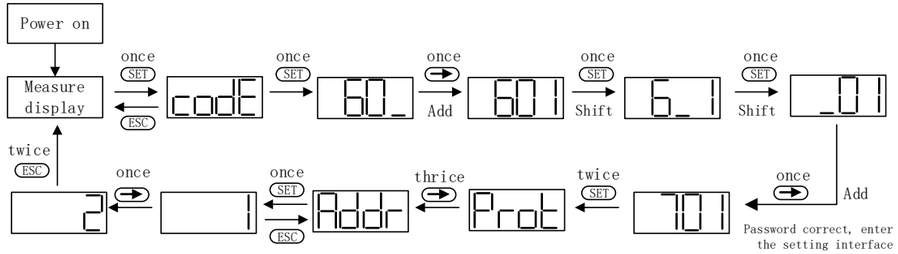


Figure 5.28. Meter connection – two meters

Meter DTSU666		
	**Button**	**Description**
	SET	Confirmation or cursor shift (when input digits)
	ESC	Exit
	→	Add

Table 5.3. Meter DTSU666 description

To set a three-phase meter, perform the following operations:



a. Power on the meter and enter **Measure display**, and then press **SET** twice to enter the password 701.

b. Press the → button to adjust the value of the first digit. One increment per pressing.

c. Press **SET** once to shift to the second digit and adjust the value in the same way. Set the default password to **701**.

d. When the password is entered correctly, press **SET** twice to enter the port interface and press the → button three times to enter the address page. Then, press **SET** once to start the meter address setting.

e. Press the → button to adjust the value of the address. One increment per pressing.

f. After the address is set successfully, press **ESC** twice to exit **Measure display** for the meter to start working.

5.5.11. DIP Switch Connection

The SW1/2/3 dual inline package (DIP) switches are provided to control the activation of 120 Ω terminal resistors to ensure the communication stability of the corresponding communication functions.

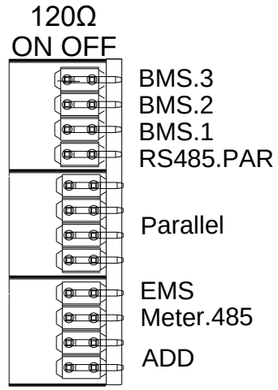


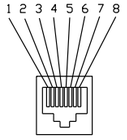
Figure 5.29. DIP switches

Switch	Function
BMS.3, BMS.2, BMS.1	Provide the 120 Ω terminal resistors for the CAN communication between battery management systems (BMS). Turn the switch on as needed.
RS485.PAR	Provide the 120 Ω terminal resistors for RS485 PAR1 communication. Turn the switch on as needed.
Parallel	Provide the 120 Ω terminal resistors when multiple inverters are deployed in parallel. Turn the switches to the ON position on the two inverters that are physically farthest apart.
EMS	Provide the 120 Ω terminal resistors for RS485 communication with the EMS. Turn the switch on as needed.
METER.485	Provide the 120 Ω terminal resistors for RS485 communication with the external meters. Turn the switch on as needed.
ADD	Reserved for future use.

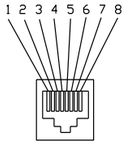
Table 5.4. DIP switch functions

5.5.12. RJ45 Ports Connection

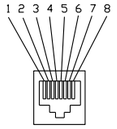
EMS	
1	NC
2	NC
3	NC
4	NC
5	NC
6	NC
7	RS485-A
8	RS485-B



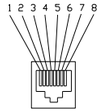
RS485.PAR.1/RS485.PAR.2	
1	NC
2	NC
3	NC
4	NC
5	NC
6	NC
7	RS485-A
8	RS485-B



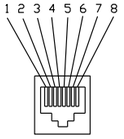
METER.485	
1	RS485-1B
2	RS485-1A
3	NC
4	RS485-2B
5	RS485-2A
6	NC
7	RS485-3A
8	RS485-3B



BMS.1/ BMS.2/ BMS.3	
1	Shut down—BMS
2	GND_S
3	NC
4	CANH
5	CANL
6	NC
7	NC
8	NC



Parelle1/ Parelle2	
1	SYN B
2	SYN A
3	SYN B
4	SYN B
5	SYN A
6	SYN A
7	CANL
8	CANH



LAN	
1	TX_D1+
2	TX_D1-
3	RX_D2+
4	BI_D3+
5	BI_D3-
6	RX_D2-
7	BI_D4+
8	BI_D4-

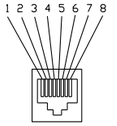


Table 5.5. RJ45 pin definitions

NOTICE

Confirm that the DC switch is OFF during installation to avoid short circuit.

Prepare the RJ45 cables using the original RJ45 plugs in the delivery package. Connect the cables for the corresponding functions as needed.

5.6. Install the Communication Module

Step 1. Plug in the communication module to the 4G/WIFI port and rotate the module to secure it.

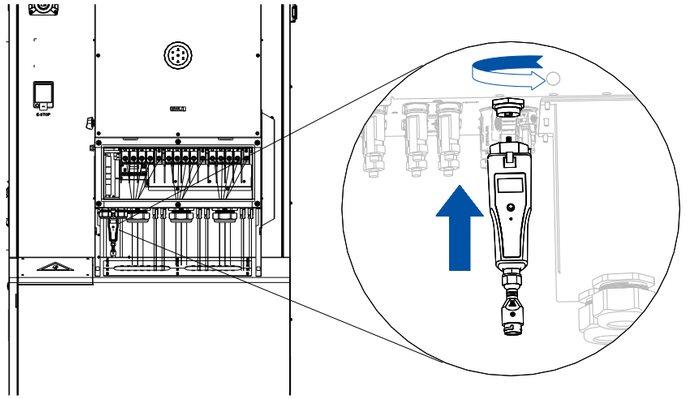


Figure 5.30. Installing the communication module

Step 2. Install the baffle back inside the inverter.

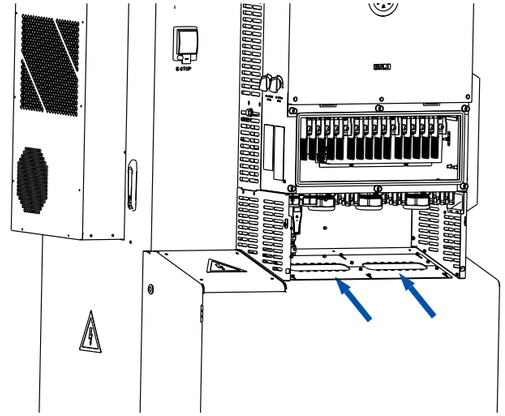


Figure 5.31. Installing the baffle

Step 3. Install back the decorative panel on the front of the inverter.

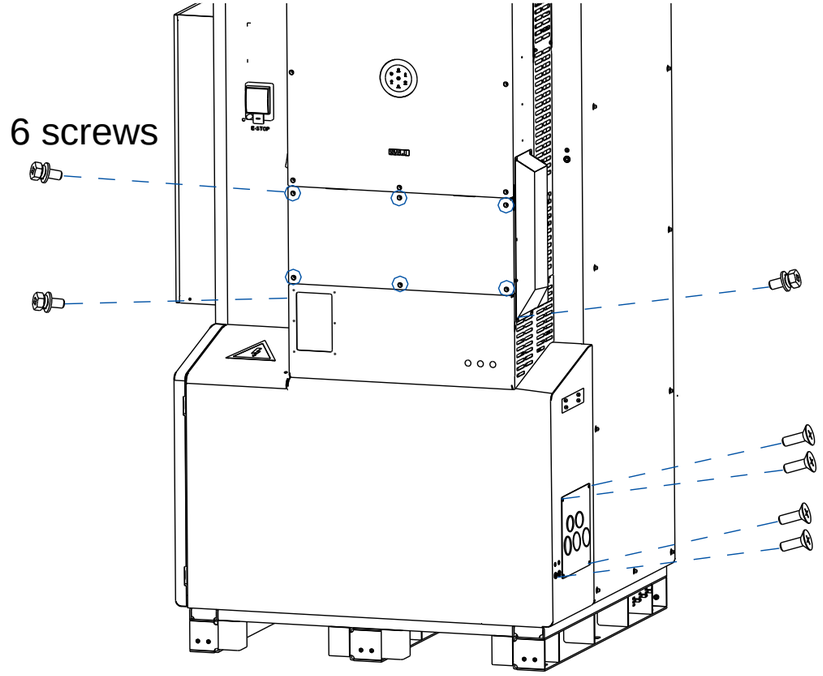
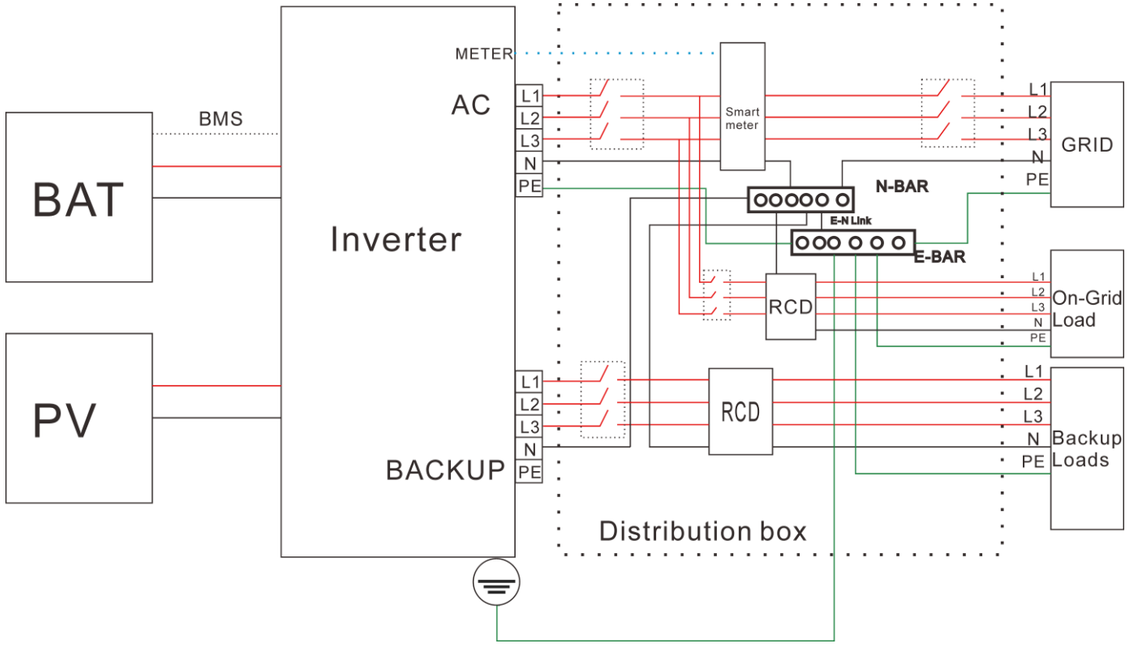


Figure 5.32. Installing the decorative cover

5.7. System Connection

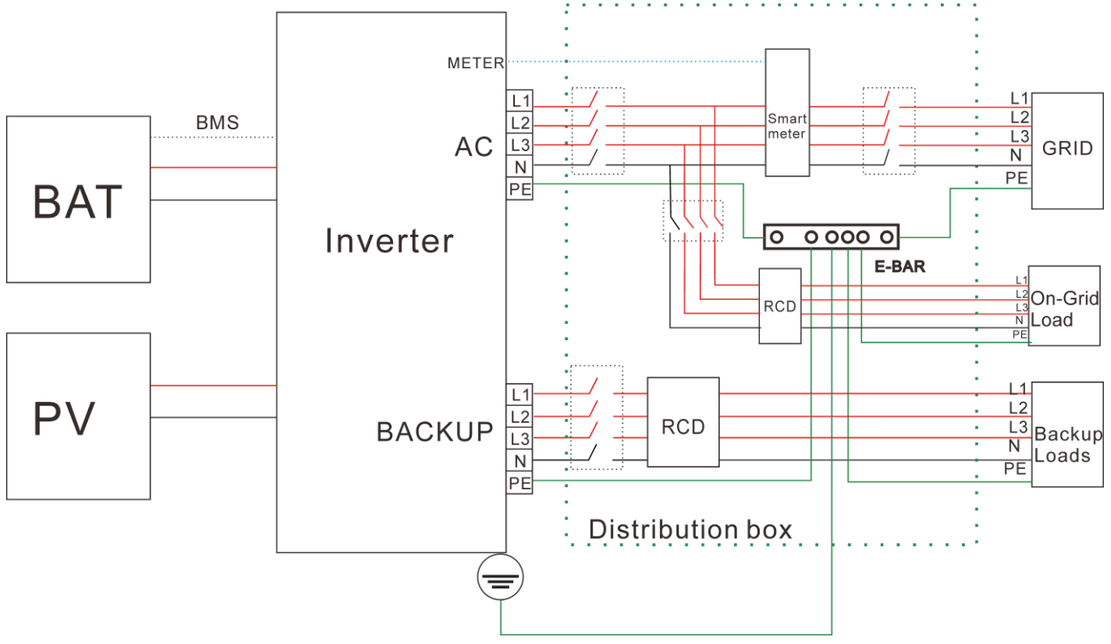
The following figure shows the system connection applicable in Australia and New Zealand.

- For safety, the neutral (N) cables of the grid and backup-load sides must be connected together.
- The PE terminal of the BACK-UP port is not connected.
- The E-BAR and the N-BAR must be short-circuited.



The following figure shows the system connection for the grid system without special requirements.

Note: The backup PE line and earthing bar must be grounded properly. Otherwise, the backup function may be inactive during blackout.



5.8. System Connection Diagrams

5.8.1. Backup Single Deployment

The following diagram shows the system connections of a single machine where both the backup and the on-grid loads are enabled.

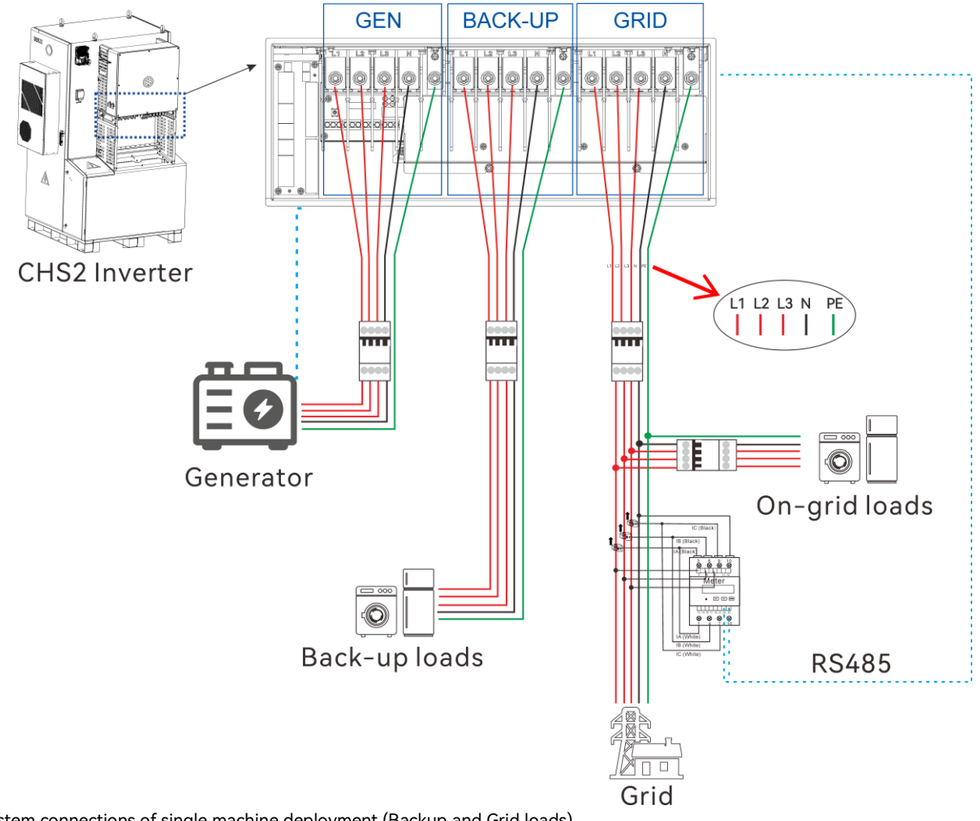


Figure 5.33. System connections of single machine deployment (Backup and Grid loads)

In this deployment, prepare the GRID, GEN, and Backup AC cables according to the following specifications:

Model	Cable cross-sectional area (mm^2)		Conductor material
	Value range	Recommended value	
CHS2-29.9K-T6-X	16-35	25	Copper
CHS2-30K-T6-X	16-35	25	
CHS2-49.9K-T6-X	25-70	50	
CHS2-50K-T6-X	25-70	50	

Note: If the grid-connection distance is large, select AC cables with larger diameter for the actual condition.

Table 5.6. Recommended specifications of GRID, GEN, and Backup cables

5.8.2. On-grid Single Deployment

When only the on-grid loads are enabled and the backup loads are disabled, prepare the GRID AC cables according to the following specifications:

Model	Cable cross-sectional area (mm^2)		Conductor material
	Value range	Recommended value	
CHS2-29.9K-T6-X	16-35	16	Copper
CHS2-30K-T6-X	16-35	16	
CHS2-49.9K-T6-X	25-70	25	
CHS2-50K-T6-X	25-70	25	

Note: If the grid-connection distance is large, select AC cables with larger diameter for the actual condition.

Table 5.7. Recommended specifications of GRID cables

For the diagram of system connections, see Figure 5.34 System connections of single machine deployment (On-grid loads only).

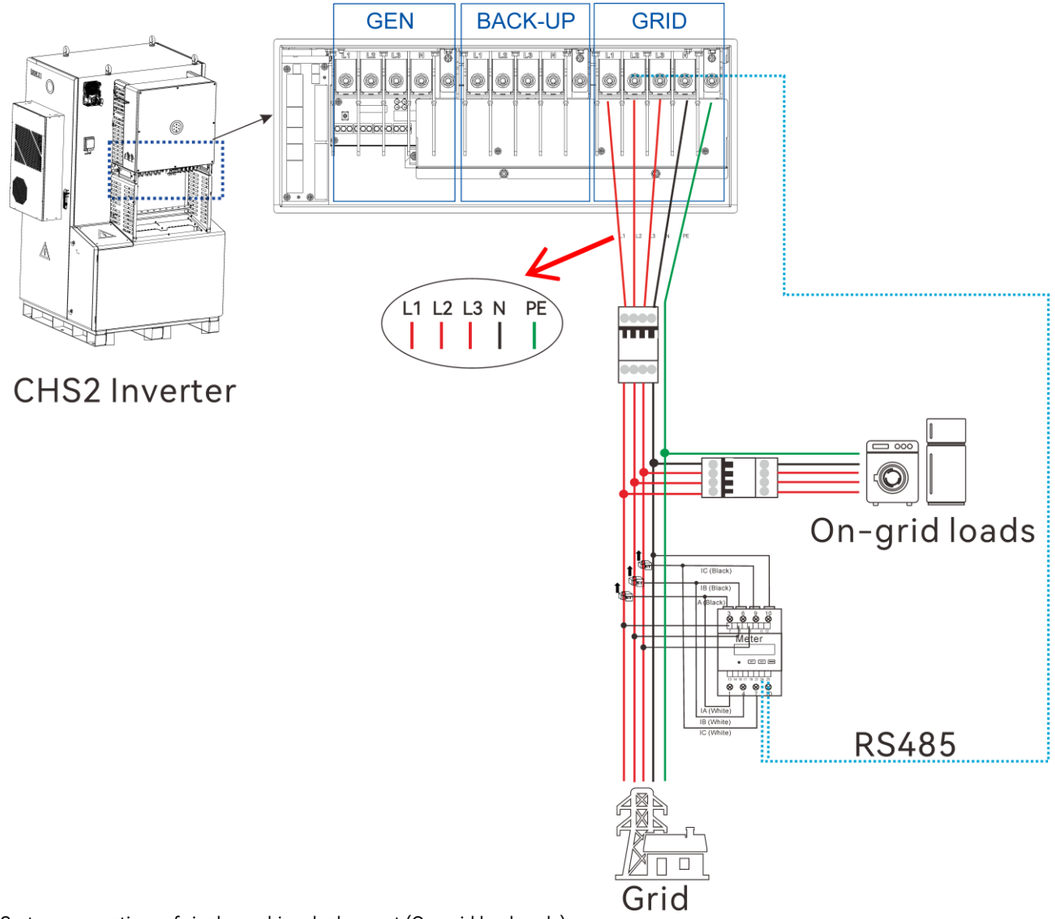
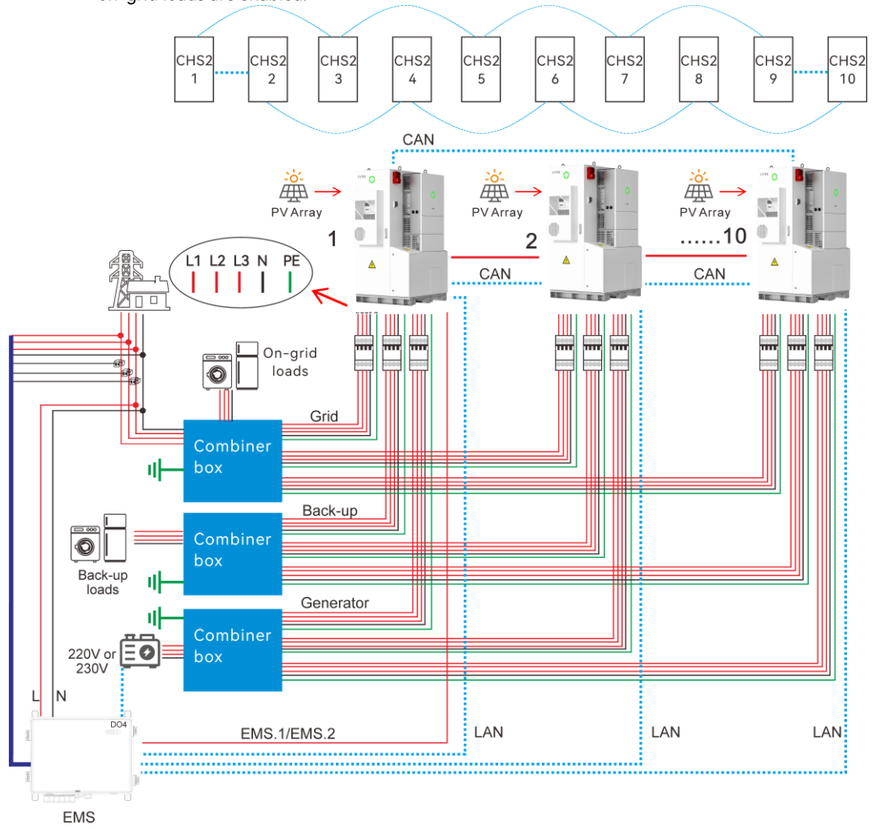


Figure 5.34. System connections of single machine deployment (On-grid loads only)

5.8.3. Backup Parallel Deployment

The following diagram shows the system connections of parallel deployment where both the backup and the on-grid loads are enabled.



Note: For detailed meter and EMS connections, see Section 5.5 "Communication Connection".

Figure 5.35. System connections of parallel deployment (Backup and on-grid loads)

In this deployment, prepare the GRID, GEN, and Backup AC cables according to the following specifications:

Model	Cable cross-sectional area (mm^2)		Conductor material
	Value range	Recommended value	
CHS2-49.9K-T6-X	70-120	70	Copper
CHS2-50K-T6-X	70-120	70	

Note: If the grid-connection distance is large, select AC cables with larger diameter for the actual condition.

Table 5.8. Recommended specifications of GRID, GEN, and Backup cables

5.8.4. On-grid Parallel Deployment

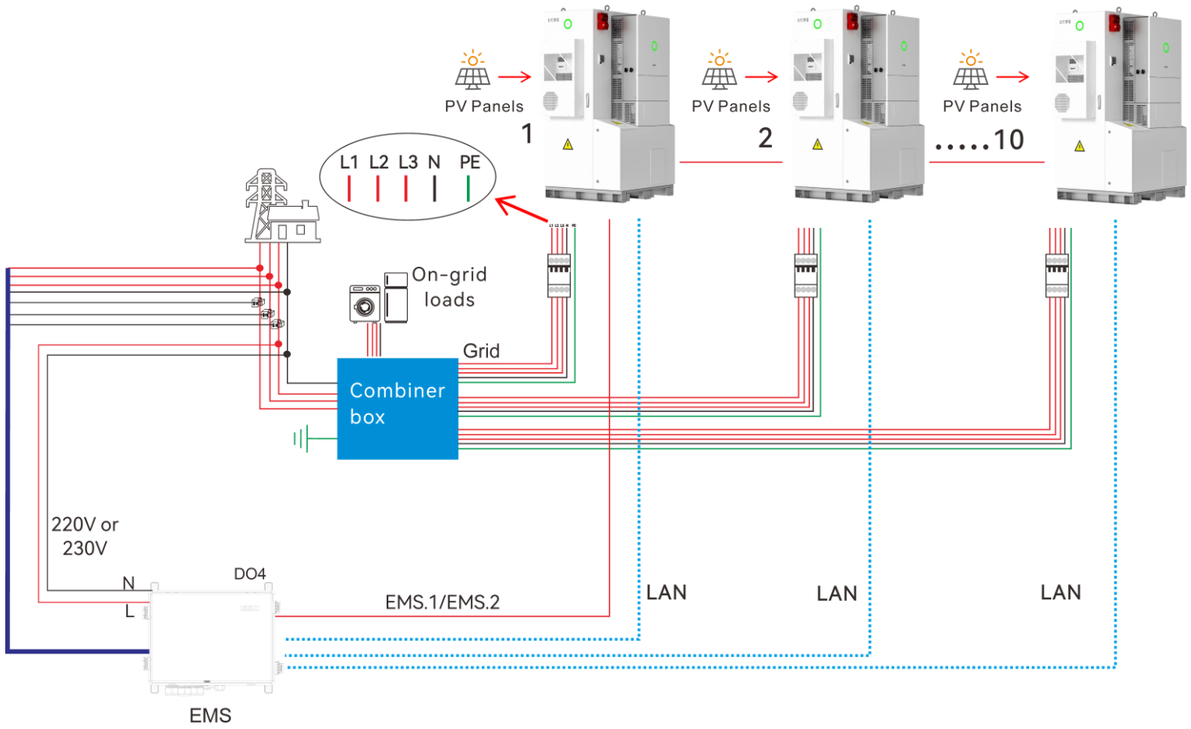
When only the on-grid loads are enabled and the backup loads are disabled, prepare the GRID AC cables according to the following specifications:

Model	Cable cross-sectional area (mm^2)		Conductor material
	Value range	Recommended value	
CHS2-49.9K-T6-X	25-70	25	Copper
CHS2-50K-T6-X	25-70	25	

Note: If the grid-connection distance is large, select AC cables with larger diameter for the actual condition.

Table 5.9. Recommended specifications of GRID cables

For the diagram of system connections, see Figure 5.36 System connections of parallel deployment (Grid loads only).



Note: For detailed meter and EMS connections, see section 5.5 "Communication Connection".

Figure 5.36. System connections of parallel deployment (Grid loads only)

5.9. AFCI

The inverter is equipped with an arc-fault circuit interrupter (AFCI). With AFCI protection, when there is an arc signal on the DC side due to the aging of the cable or loose contact, the inverter can quickly detect it and cut off the power to prevent fire to ensure the PV system safety.

6.

COMMISSIONING

6.1. Start Up and Shut Down the Inverter

6.1.1. Start Up

Step 1. Turn the two DC switches to the ON position on the inverter to enable the PV side connection.

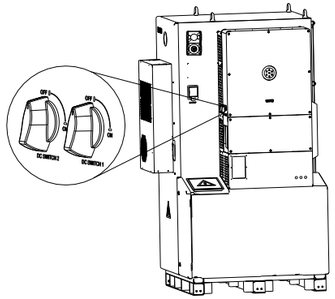


Figure 6.1. Turning on the DC switches

Step 2. Turn on the external AC circuit breaker to enable the connection to the grid.

Step 3. Rotate the main switch on the battery control unit to the **ON** position.

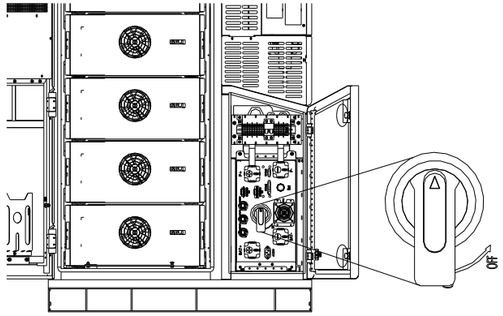


Figure 6.2. Rotating the main switch

Step 4. Press and hold the START button on the battery control unit for 3 seconds until the LED light flashes in green. It indicates that the CHS2 system starts up.

Note: If the main switch suddenly trips while the machine is running, reset the main switch and rotate the main switch to the **ON** position again.

Step 5. Close the cabinet doors and keep the keys at a safe place.

6.1.2. Shut Down

Step 1. Turn off the external AC circuit breaker to disconnect from the grid.

Step 2. Rotate the main switch on the battery control unit to the **OFF** position to shut down the battery system.

Step 3. Turn off the two DC switches on the inverter to disconnect from the PV.

Note: After closing the cabinet door, lock the door handle with the two locks.

6.2. LED Indicators Introduction

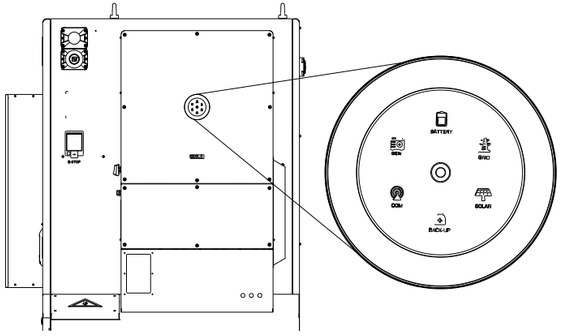


Figure 6.1. LED indicators

LED indicator	Status	Description
	LED off	The inverter is powered off.
	Breathing	The inverter is at the initial state or standby state.
	Solid	The inverter is running properly.
	Breathing	The inverter is upgrading.
	Solid	The inverter is faulty.
System	Solid	The inverter is importing electricity from the grid.
	On 1s, off 1s	The inverter is exporting electricity to the grid.
	On 1s, off 3s	No importing or exporting.
	Off	Off-grid.

LED indicator	Status	Description
Battery	Solid	The battery is discharging.
	On 1s, off 1s	The battery is charging.
	On 1s, off 3s	Low SOC.
	Off	The battery is disconnected or inactive.
Grid	Solid	The inverter is connected to the grid.
	On 1s, off 1s	Counting down to grid connection.
	On 1s, off 3s	The grid is faulty.
	Off	No grid.
Solar	Solid	The PV array is running properly.
	On 1s, off 1s	The PV array is faulty.
	Off	The PV array is not working.
Backup	Solid	The AC side load is running properly.
	On 1s, off 1s	The AC side consumption is overloaded.
	Off	The AC side is turned off.
Communication	Solid	The communication with both the BMS and the meter is working.
	On 1s, off 1s	The meter communication is working, but the BMS communication is lost.
	On 1s, off 3s	The BMS communication is working, but the meter communication is lost.
	Off	Lost communication with both the BMS and the meter.
GEN	Solid	The power input of the generator is connected.
	On 1s, off 1s	The power output of the generator is connected.
	Off	Disconnected from the generator.

Note: One breathing interval is 6 seconds.

6.3. Install the App

The Elekeeper App can be used for both nearby and remote monitoring through Bluetooth/4G or Bluetooth/Wi-Fi communication with the ESS. Search for “Elekeeper” in the App store or scan the following QR code to download the App.

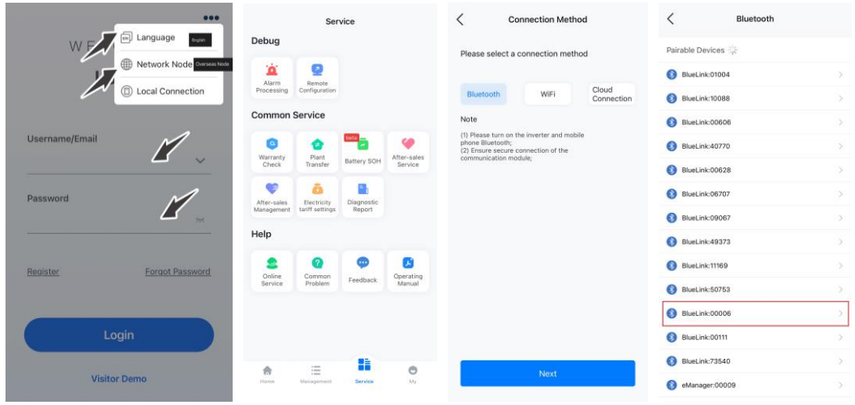
6.4. Log in to the App and Perform the Initialization

Step 1. Open the App and tap the three-dot icon on the top right corner. Set the **Language** to **English** and **Network Node** to **European Node** or **International Node**. Then, use your account to log in to the App. If you do not have an account, register first.

Step 2. Enable the Bluetooth function on your mobile phone.

Step 3. On the **Service** page, select **Remote Configuration**. Tap **Bluetooth** and then **Next**.

Step 4. Choose your inverter according to your inverter's SN. Tap the inverter to enter inverter settings.



Step 5. Complete the initialization by following the instructions on the screen.

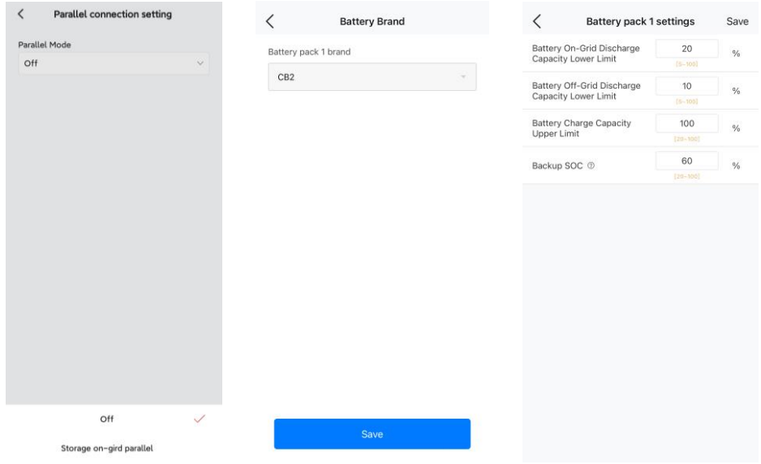
Working mode introduction:

Self-consumption Mode: When the solar energy is sufficient, the electricity generated by photovoltaic system will be supplied to load first; the surplus energy will be stored in battery; and the excess electricity will be exported to the grid. When the solar energy is insufficient, the battery will release electricity to supply load.

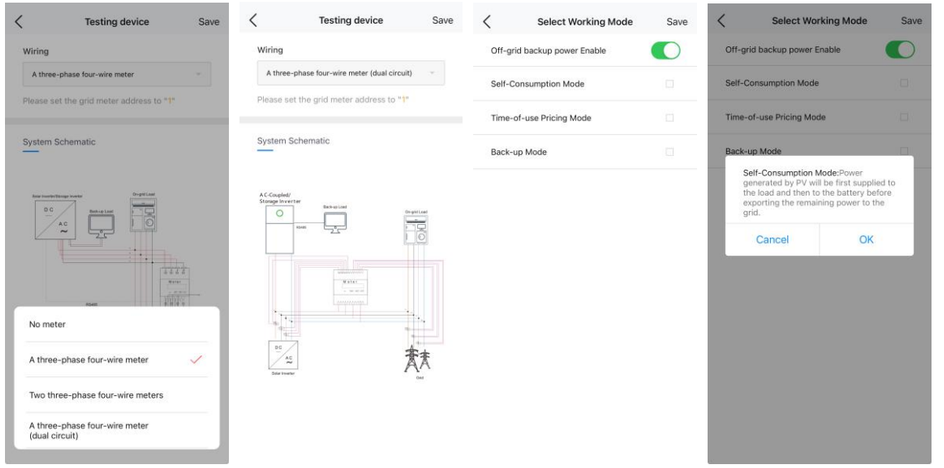
Back-up Mode: Reserved Backup SOC setting value can be adjusted. When the battery SOC is less than the reserved SOC value, the battery can only be charged. After the SOC reaches reserved value, the battery will stop charging. When the SOC is larger than the set value, the battery works in the Self-consumption mode.

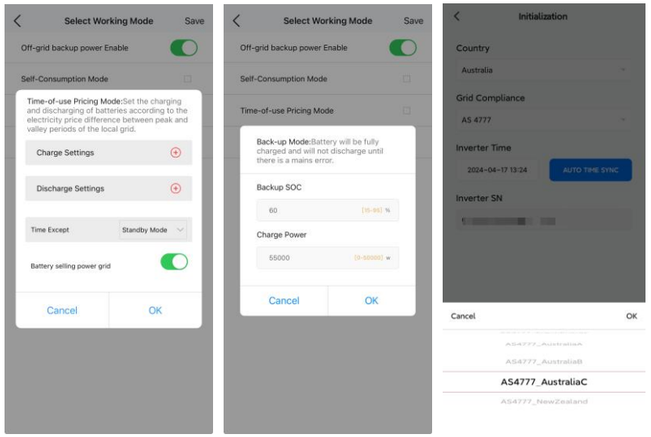
Time-of-use Mode: Battery charging period and discharging period can be set. The battery can only be charged or discharged during the charging or discharging period. For the rest of the period, the battery works in the Self-consumption mode.

For example:



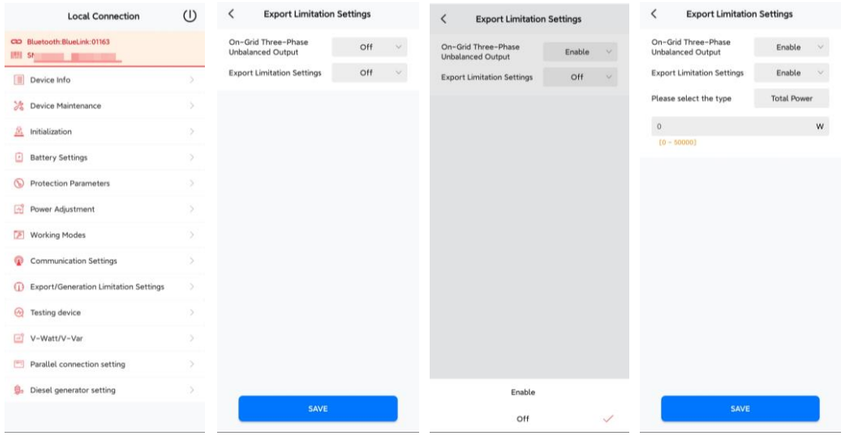
Note: When the inverters are used in parallel, select **Storage on-grid parallel** and set the corresponding parameters. For more instructions, refer to the eManager *User Manual*.





6.5. Set the Export Limit Function

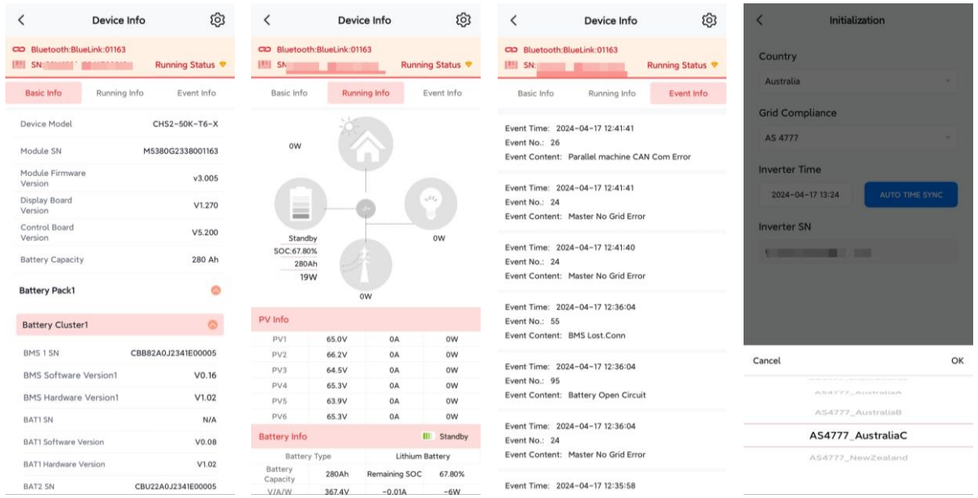
On the **Local Connection** page, tap **Export/Generation Limitation Setting** and set the parameters as required. When parameter **On-Grid Three-Phase Unbalanced Output** is enabled, the system controls the electricity generated by the inverter; when set to **Off**, the system controls the electricity exported to the grid.



6.6. View Inverter Settings and Status

After commissioning, the users can view the following device info on the App:

- On the **Device Info** page: **Basic Info**, **Running Info**, and **Event Info**
  - On the **Basic Info** page, you can view the inverter firmware version, including **Display Board Version** (ARM) and **Control Board Version**.
- On the **Safety Settings** page: **Country** and **Grid Compliance**.



7.

TRANSPORTATION & STORAGE

7.1. Transportation

Lithium batteries can be dangerous if not transported properly. This product has passed the test of UN38.3 and meets the transportation requirements as dangerous goods with lithium batteries. After the installation of the battery on site, the original packaging including the lithium battery identification should be kept. When the battery needs to be returned to the factory for repair, pack the battery with the original packaging to reduce unnecessary inconveniences.

Take care of the product during transportation and storage. Do not stack the products.

7.2. Storage

The battery should be installed within 6 months since it is delivered from the factory and used with compatible inverters. Before installation, store the battery according to the following instructions:

- Store it in a dry and ventilated environment. Keep it at least 600 mm away from heat sources;
- For storage period less than 3 months, keep it in an environment with storage temperature from -20℃ to +40℃ with humidity lower than 85% RH;
- For long-term storage longer than 3 months but shorter than 6 months, put it in an environment with storage temperature from -20℃ to +25℃ with humidity lower than 85% RH.
- For long term storage without installation, contact SAJ technical support to charge the battery to no less than 50% SOC everyone six months.

NOTICE
· The battery remains 50% power when it is sent from the factory. · The inverter and the battery do not require regular maintenance.

The battery cannot be disposed of as household refuse. When the service life of the battery reaches the limit, it is not required to return it to the dealer or SAJ, but it must be recycled to the special waste lithium battery recycling station in the area.

8.

TROUBLESHOOTING

8.1. Troubleshooting

Contact your supplier for troubleshooting and remedy.

Error Code	Error Message
1	Master Relay Error
2	Master EEPROM Error
3	Master Temperature High Error
4	Master Temperature Low Error
5	Lost Communication M<->S
6	GFCI Device Error
7	DCI Device Error
8	Current Sensor Error
9	Master Phase1 Voltage High
10	Master Phase1 Voltage Low
11	Master Phase2 Voltage High
12	Master Phase2 Voltage Low
13	Master Phase3 Voltage High
14	Master Phase3 Voltage Low
15	Grid Voltage 10Min High
16	Off Grid Output Voltage Low
17	Off Grid Output Short Circuit
18	Master Grid Frequency High
19	Master Grid Frequency Low
20	BAT Input Mode Error
21	Phase1 DCV High
22	Phase2 DCV High
23	Phase3 DCV High
24	Master No Grid Error
25	DC Reverse Connect Error
26	Parallel machine CAN Com Error
27	GFCI Error
28	Phase1 DCI Error

29	Phase2 DCI Error
30	Phase3 DCI Error
31	ISO Error
32	Bus Voltage Balance Error
33	Master Bus Voltage High
34	Master Bus Voltage Low
35	Master Grid Phase Lost
36	Master PV Voltage High
37	Master Islanding Error
38	Master HW Bus Voltage High
39	Master HW PV Current High
40	Master Self-Test Failed
41	Master HW Inv Current High
42	Master AC SPD Error
43	Master DC SPD Error
44	Master Grid NE Voltage Error
45	Master Fan1 Error
46	Master Fan2 Error
47	Master Fan3 Error
48	Master Fan4 Error
49	Lost Communication between Master and Meter
50	Lost Communication between M<->S
51	Lost Communication between inverter and Grid Meter
52	HMI EEPROM Error
53	HMI RTC Error
54	BMS Device Error
55	BMS Lost. Conn
56	CT Device Err
57	AFCI Lost Err
58	Lost Com. H<->S Err
59	Lost Communication between inverter and PV Meter
61	Slave Phase1 Voltage High
62	Slave Phase1 Voltage Low

63	Slave Phase2 Voltage High
64	Slave Phase2 Voltage Low
65	Slave Phase3 Voltage High
66	Slave Phase3 Voltage Low
67	Slave Frequency High
68	Slave Frequency Low
73	Slave No Grid Error
74	Slave PV Input Mode Error
75	Slave HW PV Curr High
76	Slave PV Voltage High
77	Slave HW Bus Volt High
81	Lost Communication D<->C
83	Master Arc Device Error
84	Master PV Mode Error
85	Authority expires
86	DRM0 Error
87	Master Arc Error
88	Master SW PV Current High
89	Battery Voltage High
90	Battery Current High
91	Battery Charge Voltage High
92	Battery Over Load
93	Battery Soft Connect TimeOut
94	Output OverLoad
95	Battery Open Circuit Error
96	Battery Discharge Voltage Low
97	BMS Internal Communication Error
98	Battery Module Sequence Error
99	Discharge Overcurrent Protection
100	Charge Overcurrent Protection
101	Module Under Voltage Protection
102	Module Over Voltage Protection
103	Single Cell Under Voltage Protection

104	Single Cell Over Voltage Protection
105	BMS hardware error
106	Charging temperature low protection
107	Charging temperature high protection
108	Discharging temperature low protection
109	Discharging temperature high protection
110	BMS relay error
111	Pre-charge error
112	BMS Insulation error
113	BMS supplier incompatibility
114	Battery cell supplier impartibility
115	Battery cell incompatibility
116	The battery pack model does not match
117	Circuit breaker is open
118	Temperature difference is too wide
119	Voltage difference is too wide (Class II)
120	Voltage difference is too wide (Class I)
121	BMS over temperature protect
122	Short circuit protect
123	Total voltage match failed
124	The system is locked
125	FUSE error protection
126	Voltage on charging port is high protection
129	CO sensor triggered
130	Stroke switch triggered
131	Temperature sensor triggered
132	Smoke sensor triggered
133	Water sensor triggered
134	Aerosol triggered
135	Emergency stop
136	T/H sensor communication lost
137	Air conditioning communication lost
138	Temperature inside cabinet too high

139	Temperature inside cabinet too low
140	Humidity too high
141	Humidity too low
142	Coil anti-freeze
143	Defrost probe error
144	Fuse error
145	Condensing temperature probe error
146	Temperature probe inside cabinet error
147	Outlet air temperature probe error
148	Humidity probe error
149	Internal fan error
150	Compressor error
151	High voltage alarm
152	Low voltage alarm
153	High voltage alarm lock alarm
154	Phase sequence alarm
155	CO sensor communication lost
156	Temperature of T/H sensor is too high
162	Gen Start or Stop fail
163	Lost Communication Gen Meter
165	The wood originating port is overloaded
166	Gen wiring error
167	Gen overvoltage fault
168	Gen undervoltage fault
169	Gen overfrequency fault
170	Gen underfrequency fault

9.

ROUTINE MAINTENANCE

9.1. Suggested Maintenance Operations

Product parts	Operation	Standard	Interval	Power OFF
Cabinet	Visual inspection: • Rust • Door locks • Air vents	No obvious coating peeling or scratches. No obvious paint fading or rusting. Door lock is not damaged. No dust accumulation in the vent. No insects, rats, snakes and other animals.	Quarterly	No
Air Conditioner	Visual inspection: • Outer appearance • Rust • Fan • Filter	No obvious damage. No obvious paint fading or rusting. No screw loose and falling off. The fan rotates normally without abnormal noises. The surface of the filter is clean and not blocked.	Quarterly	No
EMS	Viewing the indicator status.	The indicator is steady green.	Quarterly	No
Distributor Box	Visual inspection: • Check the appearance • Rust • Anything unusual in the cabinet	No obvious coating peeling, scratches. No obvious paint fading or rusting. The cabinet is clean and free of unexpected objects.	Quarterly	No
Labels	Visual inspection.	Clearly visible and free from defacement.	Quarterly	No
Air Conditioner External Fan	Clean the external fan filter.	The filter surface is clean and free of clogging.	Every 6 months	No
Battery Package	Charge the battery.	If the system is not in use for a long period of time, charge the battery to no less than 50% SOC.	Every 6 months	Yes
Battery Package	Visual inspection: • Check the appearance • Rust • Screws • Fan • Front panel vents	No obvious damage. No obvious paint fading or rusting. The screws are not loose or falling off. The fan rotates normally without abnormal noises. The surface of the front panel vents is clean and not clogged.	Yearly	Yes
Grounding and Equipotential Junction Point	• Ground wire • Internal equipotential	The grounding resistance must not be greater than 4Ω. Equipotential connections inside the cabinet are correct.	Yearly	Yes
Security Function	Emergency button	Check that the emergency stop button is working.	Yearly	Yes

10. APPENDIX

10.1. Recycling and disposal

This device should not be disposed as a residential waste.

The device that has reached the end of its operation life is not required to be returned to your dealer; instead, it must be disposed by an approved collection and recycling facility in your area.

10.2. Warranty

Visit the SAJ website for warranty conditions and terms: https://www.saj-electric.com/.

10.3. Contacting Support

Guangzhou Sanjing Electric Co., Ltd.

Address: SAJ Innovation Park, No.9, Lizhishan Road, Guangzhou Science City, Guangdong, P.R.China.

Postcode: 510663

Website: https://www.saj-electric.com/

Technical Support & Service

Tel: +86 20 6660 8588

Fax: +86 206660 8589

E-mail: service@saj-electric.com

International Sales

Tel: 86-20-66608618/66608619/66608588/66600086

Fax: 020-66608589

E-mail: info@saj-electric.com

China Sales

Tel: 020-66600058/66608588

Fax: 020-66608589

10.4. Trademark

SAJ is the trademark of Sanjing.