SmartBox-S3

Suitable for Inverter

Quick Installation Manual

Disclaimer

SmartBox needs to be transported, used and operated under suitable environmental and electrical conditions.

Prior to installation, it is essential to thoroughly review the user manual to familiarize oneself with the product information and safety precautions. Operators are required to wear personal protective gear. Any actions that breach international or local laws and regulations will void the equipment warranty. All installation procedures must be conducted by qualified electrical technicians.
Before installation, verify that the delivery is complete and check for any visible damage according to the packing list. If there are any missing items or damage, please contact your dealer.
Damage to equipment resulting from non-compliance with the provided instructions is excluded from the warranty coverage. The cable colors referenced in this document are intended solely for informational purposes, and the choice of cables must adhere to local standards.

Note: Due to product version upgrades or other reasons, the content of this document will be updated from time to time. Unless otherwise agreed, this document is only used as a guide, and all statements, information and suggestions in the document do not constitute any express or implied guarantee.

Safety and Warnings

SmartBox strictly abides by relevant safety regulations for product design and testing. During installation, operation or maintenance, please carefully read and follow all instructions and precautions in the user manual, any improper operation may cause personal or property damage.

Any installation and operation must be done by a qualified electrician in accordance with local grid or company standards, wiring rules or requirements.
This product has been tested for insulation before leaving the factory, and the wrong dielectric test will destroy the control system. It is strictly forbidden to carry ATS for dielectric test.

Symbol Definition and Explanation

	Warning! Failure to follow the warning signs in this manual could result in personal injury.
	High voltage and electric shock hazard!
	Hot surface!
	Product components are recyclable.
	This side up! Arrows must always point upwards during transport, handling and storage.
	Disposal as domestic rubbish is prohibited.
	See operating instructions.
	Stay dry! Please store product in a dry and protected place, avoid excessive moisture.
	After the inverter is powered off, there is a delay in the discharge of internal components. Please wait for 5 minutes until the device is fully discharged.

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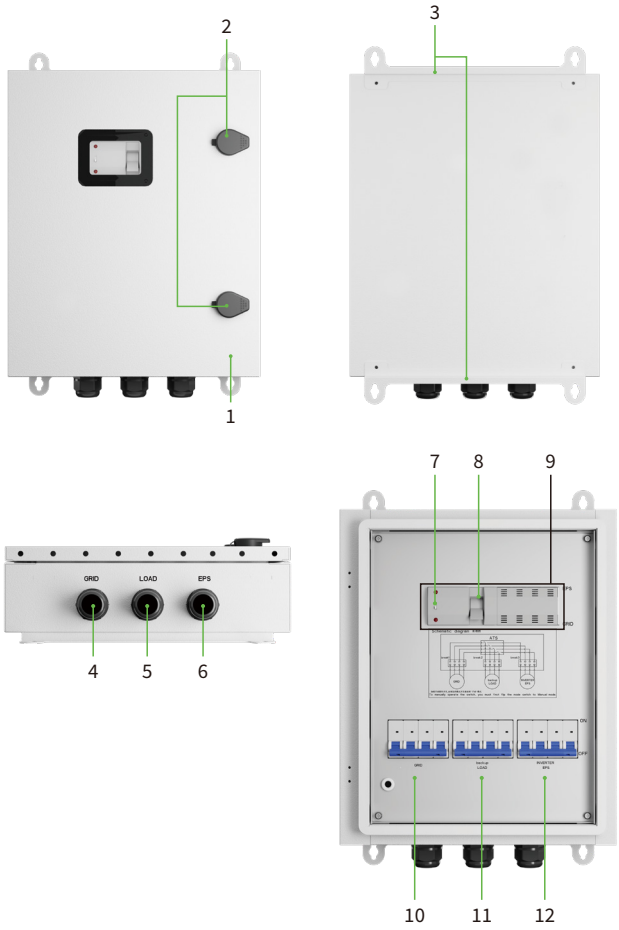
1. Introduction

1.1 Product introduction

Function

The smartbox is an integral component of the household rooftop power station system. It manages the transition between on-grid and off-grid modes for the inverter. In the event of a power grid failure, the system automatically shifts to off-grid mode, providing power to the connected loads in backup modes. When the power grid is restored, the system automatically shifts to on-grid mode.

Product appearance



1. Front panel
2. Lock
3. Mounting plate
4. [GRID] interface
5. [LOAD] interface
6. Inverter [EPS] port
7. Automatic/manual mode switch
8. Changeover switch
9. ATS
10. Power grid circuit breaker
11. Critical load circuit breaker
12. EPS circuit breaker

1.2 Technical specification

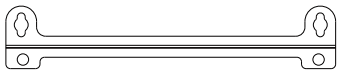
Input From Grid	
Rated AC Power	30000W
Max. AC Input Overcurrent Protection	50A
Max. Continuous Input Current	45A
AC Output Voltage(Nominal)	400V/230V,380V/ 220V,3L/N/PE
AC Output Voltage Range	324-438V/187-253V 3L/N/PE
AC Frequency(Nominal)	50Hz/60Hz
AC Frequency Range	45-65Hz
Grid Disconnection Switch Time	<150ms
Grid recovery Switch Time	<30ms
Input From Inverter	
Rated AC Power	30000W
Max. AC Input Overcurrent Protection	50A
Max. Continuous Input Current	45A
AC Output Voltage(Nominal)	400V/230V,380V/ 220V,3L/N/PE
AC Output Voltage Range	324-438V/187-253V 3L/N/PE
AC Frequency(Nominal)	50Hz/60Hz
AC Frequency Range	45-65Hz

Output to Load	
Rated AC Power	30000W
Max. AC Output Overcurrent Protection	50A
Max. Continuous Input Current	45A
AC Output Voltage(Nominal)	400V/230V,380V/ 220V,3L/N/PE
AC Output Voltage Range	324-438V/187-253V 3L/N/PE
AC Frequency(Nominal)	50Hz/60Hz
AC Frequency Range	45-65Hz
Additional Features	
Operating Temperature Range	–25 °C~60 °C
Protection Rating	IP65
Operating Humidity(RH)	Up to 100%
Maximum Elevation	3000m
Mounting options	Wall mounted
Weight	11kg
Dimensions(H/W/D)	365/450/123mm
Manual Control Bypass Switch	Yes

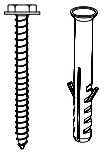
2. Equipment installation

2.1 Packing list

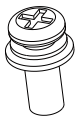
SmartBox*1



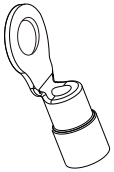
Mounting plate*2



Expansion bolts*4

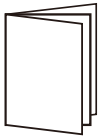


M5 screw*5

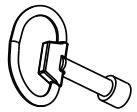


Terminals 1*3

Terminals 2*12



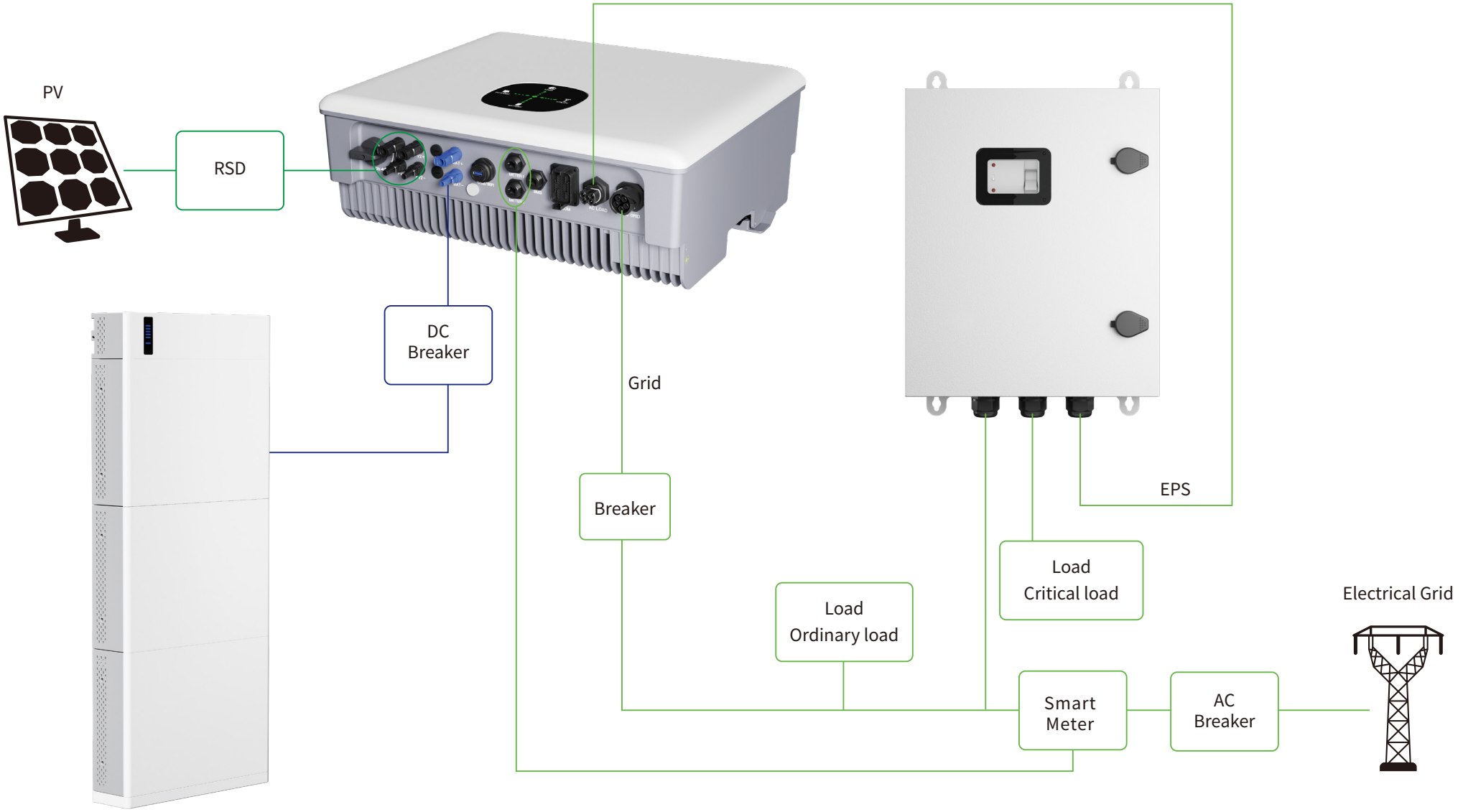
Quick installation manual*1



Key*1

2.2 System structure

The energy storage system of a household rooftop power station is generally composed of photovoltaic strings, energy storage systems, inverters, grid-connected and off-grid control boxes, management systems, AC switches and distribution units.



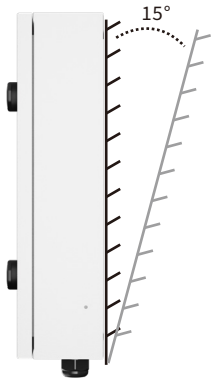
2.3 Equipment installation

2.3.1 Installation requirements

Danger

1. For outdoor installations, it is important to prevent direct exposure to sunlight by selecting a shaded location or utilizing an awning.
2. Ensure that a lightning arrester is installed on the side where the smart box connects to the electrical grid.

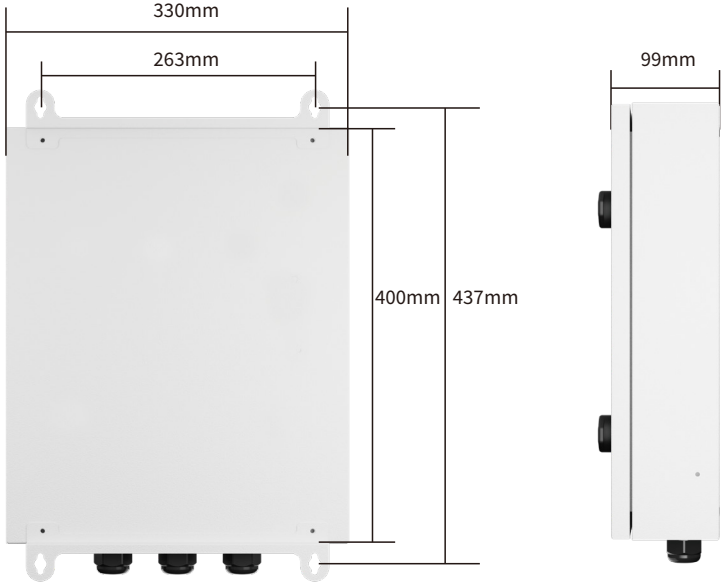
Installation Space and Angle



Installation Position and Dimensions

Danger

Before drilling, make sure to avoid the water and electricity lines embedded in the wall to avoid danger.

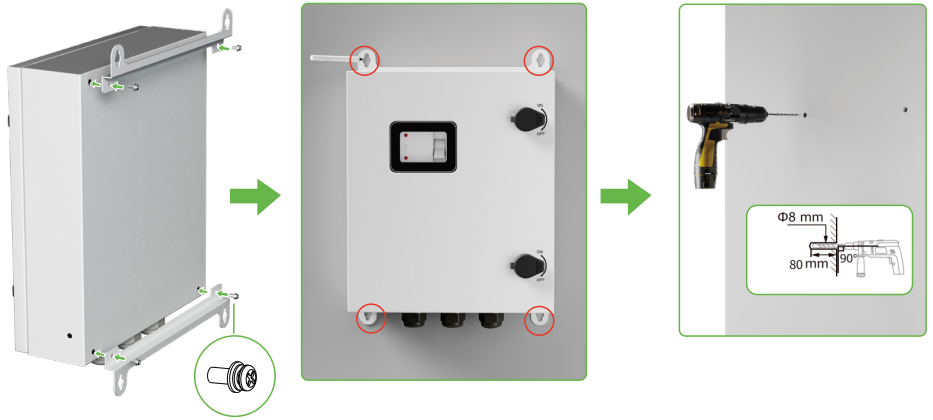


2.3.2 Smart box installation

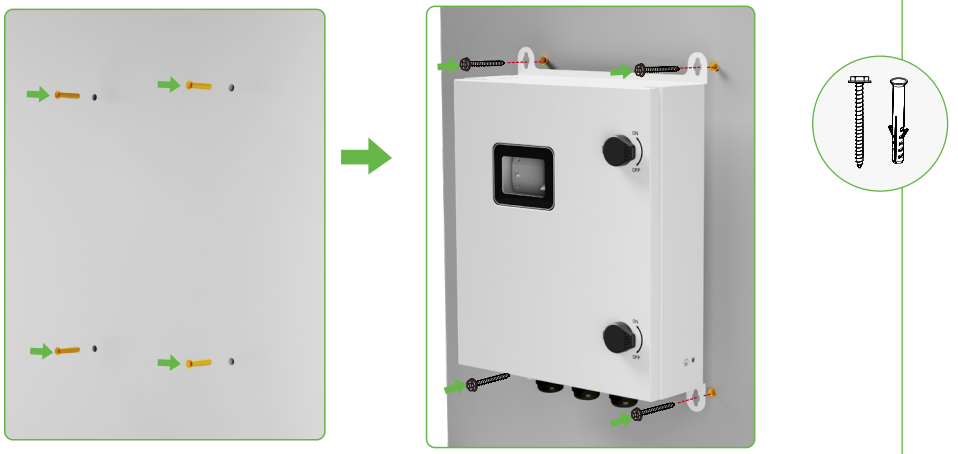
Description:

- The M6 x 60 expansion bolts are delivered with the box. If the length or quantity cannot meet the installation requirements, please prepare M6 stainless steel expansion bolts for yourself.
- The expansion bolts delivered with a box are mainly used for walls of solid brick-concrete structure. If the equipment is installed on other wall types, please make sure it meets the bearing requirements of the smart box and prepare the appropriate bolts accordingly by yourself.
- In residential areas, do not install the inverter on gypsum walls or similar structures with poor sound insulation, as the noise produced by the inverter may disrupt the comfort of nearby residents.

1. Secure the upper and lower mounting plates to the box with cross screws.
2. Mark the location of the punch with a marker.
3. Use a drill to drill holes on the marked points.



4. Insert the four expansion tubes into the holes.
5. Lock the four screws on the upper and lower mounting plates.



2.4 Electrical connections

2.4.1 Preparation before installation

Notice

• Electrical connections must comply with the installation regulations specific to the country or region where the equipment is located.

•Before electrical connection, ensure that the circuit breaker of the smart box and all switches connected to the device are in the "OFF" state. Otherwise, high voltage may lead to electric shock.

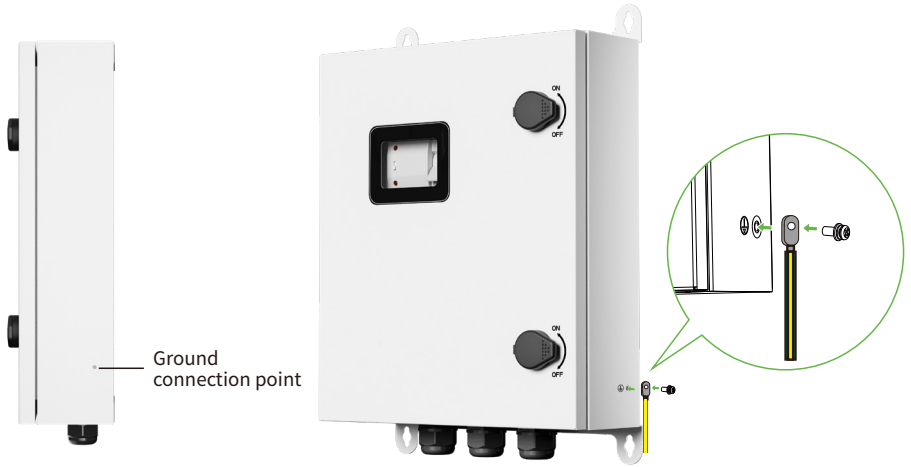
Users should prepare cables based on actual application scenarios.

Items	Cables	Type	Conductor cross-sectional area range	Outside diameter
1	Protective ground wire	Single-core outdoor copper cable	4mm²~10mm²	—
2	Off-grid load	Outdoor copper core cable	10mm²~13mm²	7mm~9mm
3	Ac power grid output cable	Outdoor copper core cable	10mm²~13mm²	7mm~9mm
4	Inverter AC input cable	Outdoor copper core cable	10mm²~13mm²	7mm~9mm

2.4.2 Protective ground cable installation

Danger

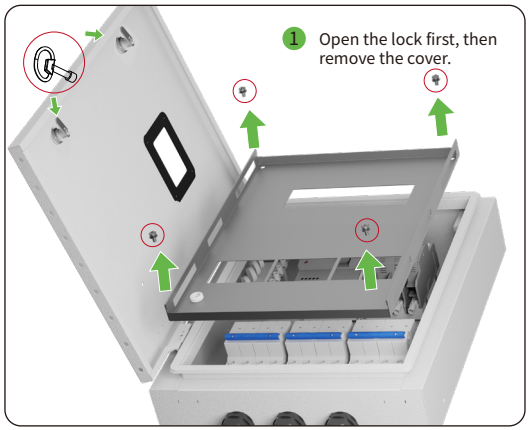
Do not connect the N cable to the box as a protective ground cable. Otherwise, electric shocks may occur.

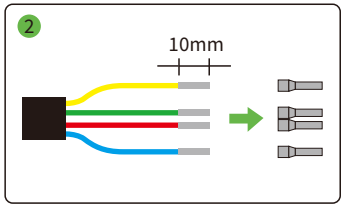


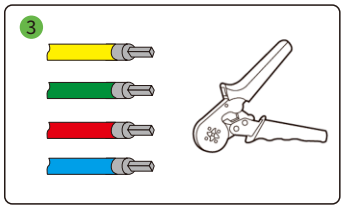
2.4.3 Power cable installation

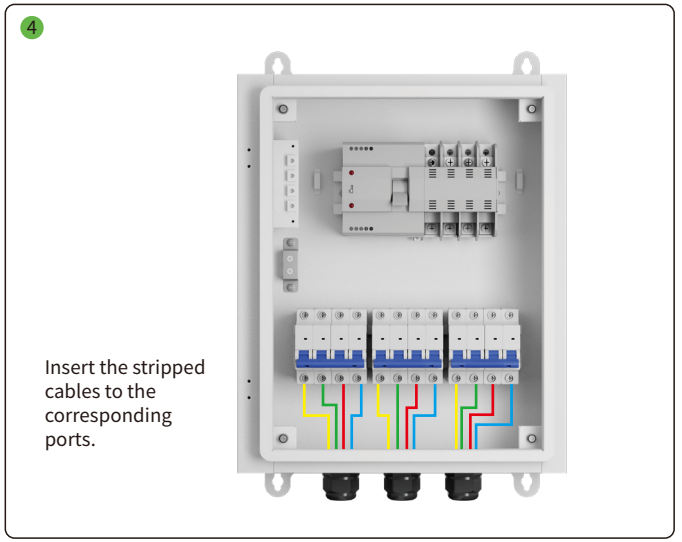
Description

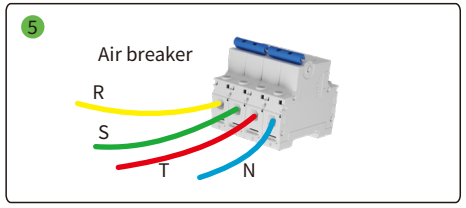
Before connecting cables, open the panel of the smart box. Then connect the cables into the ports. Reinstall the panel after all the cables are connected.

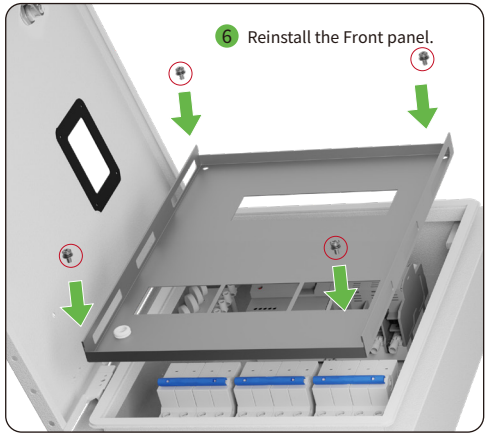






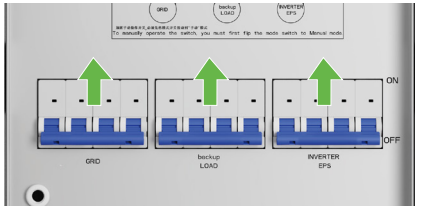






6 Reinstall the Front panel.

7 All three circuit breakers are switched to the “ON” state.



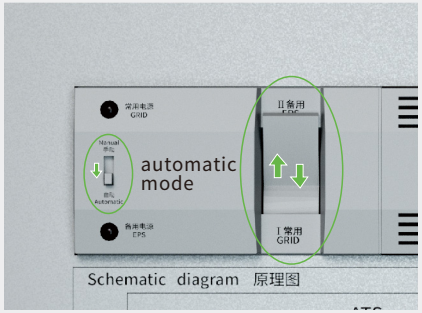
3. Instructions for use

1. Before operation, please check whether the voltage input meets the requirements. The control voltage is AC380V, and the voltage range required for normal operation of the switch is AC324V~AC438V.

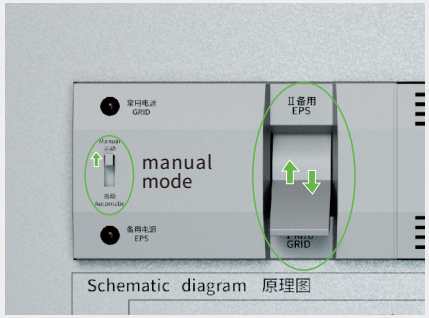
2. Please test whether the ATS can work normally in the manual mode. Then turn the changeover switch to automatic mode for testing. It can be put into use after passing the test.

3. If you need to manually operate the switch, you must turn the mode switch to “manual” mode first.

• Automatic mode: When connected to grid, it will automatically switch to GRID. When power failure occurs, it will automatically switch to EPS.



• Manual mode: You can switch to GRID or EPS mode manually.



(Automatic mode is recommended)

Precautions

• In order to prevent dust and dirt from causing malfunctions, please remove them in time.

• Please check whether the electrical contact parts are deformed or damaged, and remove metal particles and burn marks on and around the contact surface of the contacts.

• Rust, acidification and dust on the contact surface can cause poor contact, please manually operate the ATS several times, and measure the contact resistance when necessary.

• After removing dust and dirt, use a 500V megohmmeter to measure the insulation resistance at the terminals of both critical and normal loads, as well as between their corresponding poles, including the insulation resistance between all live components and the installation rail. The insulation resistance should not be lower than 10MΩ before use.