Step 2: Attach the large cable cover (Part B1) to the cabinet, and insert and tighten the M6 hexalobular screws by using a hexalobular key.

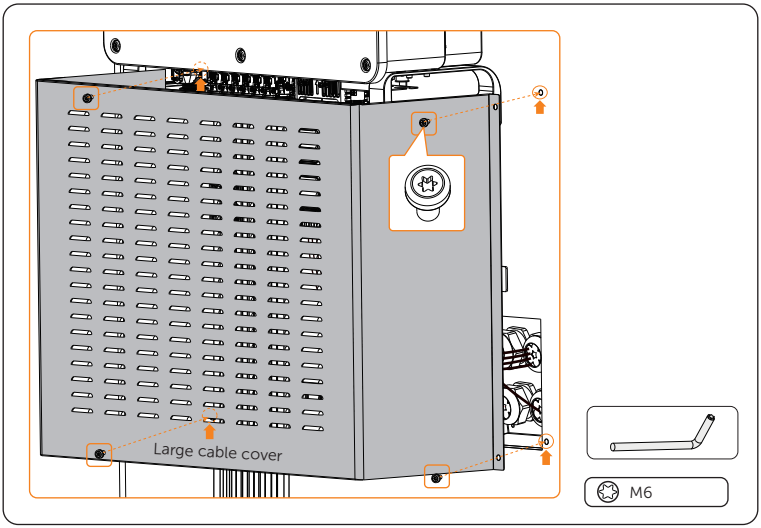


Figure 7-93 Attaching large cable cover

Step 3: Attach the small cable cover (Part C1) to the cabinet, and insert and tighten the M6 hexalobular screws by using a hexalobular key.

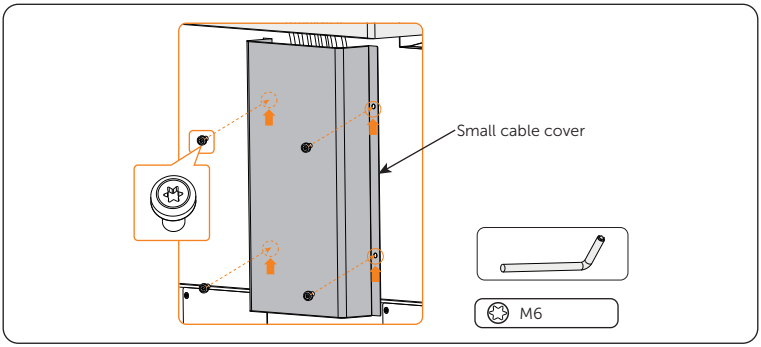


Figure 7-94 Attaching small cable cover

NOTICE!

- Must clean the materials, such as metal parts, screws, etc., in the cabinet after finishing wiring.
- It is recommended to seal off the gap between foundations after finishing wiring.

8 System Commissioning

8.1 Checking before Power-on

Ensure that all the cables connecting to the EPS and distribution box (grid side) are wired and securely fastened. For details, please refer to the following Table 8-1.

Table 8-1 Checklist

No.	Item	Description
1	Device appearance	• Check the device is in good condition, with a clean, non-peeling paint, and rust-free surface. • Ensure that the labels on the device are clear and easy to read. If it is damaged, the label shall be replaced at once.
2	Installation	• The battery cabinet, inverter and other device (if any) are installed correctly and securely. • All the screws are tightened.
3	Cable appearance	• Check that the cable jacket is in good condition. • Check that the protective pipes are in good condition.
4	Cable connection	• Check that the cable connection position is consistent with the design principles. • Ensure that the procedure for crimping terminals strictly observe the requirements, and the terminals are securely fastened. • Check that the labels on the both sides of cables are clear, and the direction of both labels is the same. • Check that all DC, AC cables, ground cable, communication cables and meter/CT of the inverter are connected correctly and securely • Check that the external AC and DC connectors are connected; The connectors on the Grid and EPS terminal are connected correctly and securely. • Check the unused terminals and ports of the inverter are locked by waterproof caps. • Check that all photovoltaic panels are connected correctly and securely.

No.	Item	Description
5	Wiring	• Ensure that the wiring procedure is consistent with the principle of separation of strong and weak electricity. • Ensure that the cables are neatly places. • Leave a little extra length for adjustments. • Keep cables tidy in the cabinet. • Check if the grid connection voltage meets: L1+N=220/230 V, L2+N=220/230 V, L3+N=220/230 V, L1+L2=380/400 V, L2+L3=380/400 V, L1+L3=380/400 V.
6	Copper bars in the battery pack	• Check to make sure the copper bars are not deformed.
7	Button/Switch	• Check the distribution box's switch is "OFF". • Check the battery packs' switches are "OFF". • All the DC breakers and AC breakers are "OFF"

8.2 Power ON

NOTICE!

- Please check that the emergency stop button remains in the closed position before powering on.

Regarding the detailed location of the modules in the cabinet, see following figure.

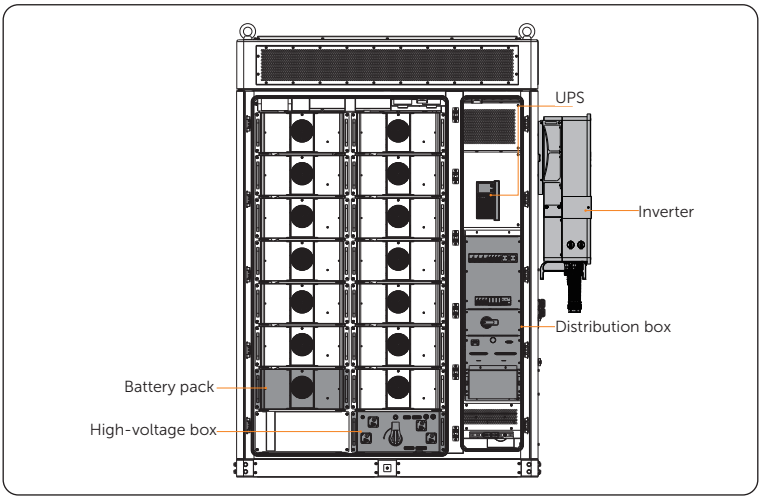


Figure 8-1 Location of modules

Step 1: Start the distribution box.

» Rotate the switch on the distribution box 90° clockwise to "ON";

» Flip up the "SPD MCB" breaker;

» Flip up the "HVAC MCB" breaker;

» Flip up the "EPS" breaker;

» Flip up the "APS" breaker;

» Flip up the "UPS" breaker.

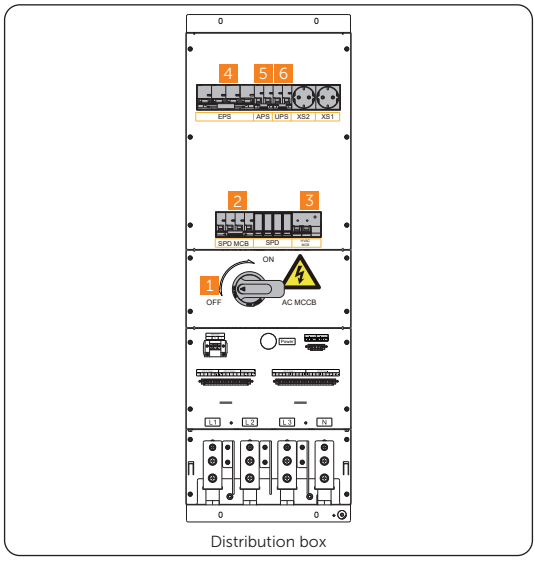


Figure 8-1 Starting sequence of distribution box

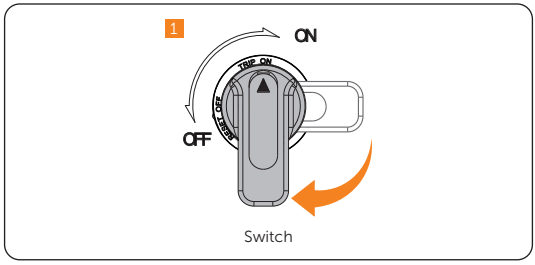


Figure 8-2 Rotating switch

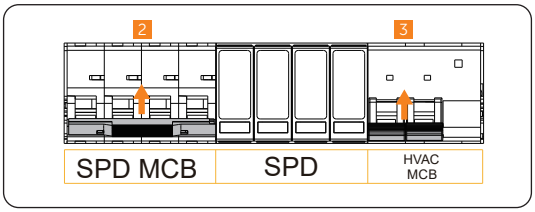


Figure 8-3 Flipping up breakers

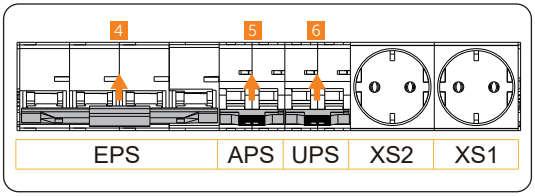


Figure 8-4 Flipping up breakers

Step 2: The startup sound on boot will be heard when holding and pressing the "Power on/off" button to start the UPS.

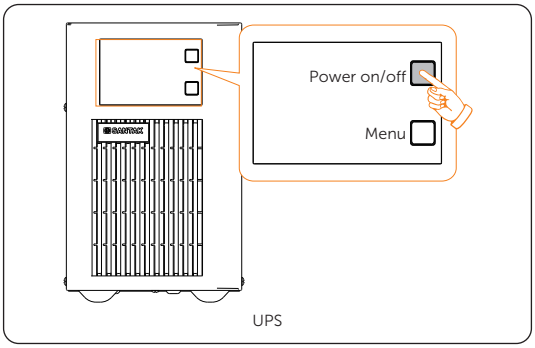


Figure 8-5 Holding and pressing button

Step 3: Rotate the disconnector of the high-voltage box to "ON", and then gently press the power button. At the point, the LED light will come on green.

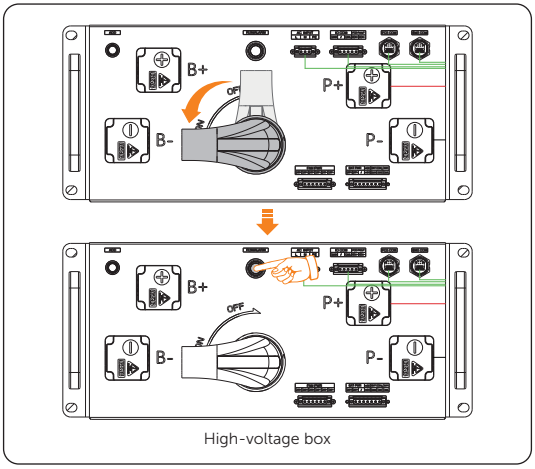


Figure 8-6 Starting the high-voltage box

Step 4: Close the door after the device has been started.

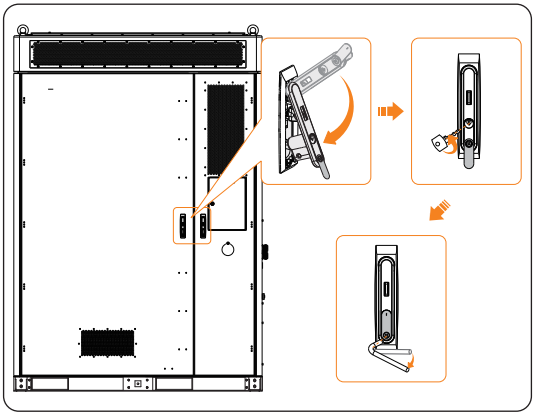


Figure 8-7 Closing the door

NOTICE!

- Please properly keep the key.

Step 5: Start the inverter.

a. Turn on the AC breakers and check whether the LCD screen lights on.

» If the LCD screen is not on, turn off the AC breakers and check whether the Grid cable is connected correctly and securely.

b. Switch on the inverter DC switch and check the LCD screen, check the PV voltage.

» If the PV voltage is 0, turn off the DC switch, pull out the PV connectors and then measure the voltage of the positive and negative PV port (in MPPT voltage range 160-950 V) or check whether the positive and negative poles of PV cables are reversed.

c. Press and turn on the inverter system button.

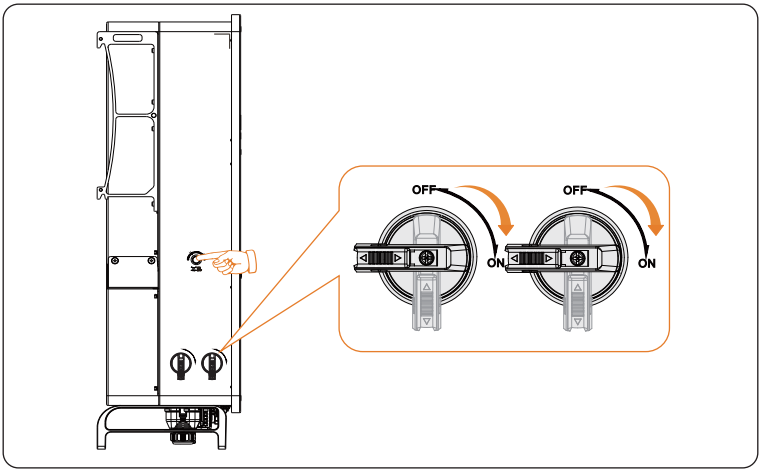


Figure 8-8 Starting the inverter

d. Set **System ON/OFF** as ON status on the inverter screen, and the LCD displays waiting status.

e. When the photovoltaic panels generate enough power or the battery supplies power, the inverter will start automatically. The inverter will go Waiting, Checking and Normal status in sequence.

f. Check whether the meter/CT is correctly connected.

» If CT is connected, please perform the Meter/CT Check to check the correct connection through the setting path: **Menu**>**Setting**>**Advance Setting**>**Meter/CT Settings**>**Meter/CT Check**

» If meter is connected, please set the connection of Meter through the setting path: **Menu**>**Setting**>**Advance Setting**>**Meter/CT Settings.**

NOTICE!

- When the meter or CT is correctly connected, the meter/CT power displays on the METER/CT check interface; when the connection method is wrong, **Meter Fault** displays on this interface.

8.3 Checking after Power-on

a. Check whether the system has any abnormal noise.

b. Check whether the indicator lights report an error and check the system for alarm through the cabinet screen

c. Check the running status of the system through the cabinet screen.

9 System Configuration

9.1 Operation on Inverter LCD

9.1.1 Introduction of Control Panel

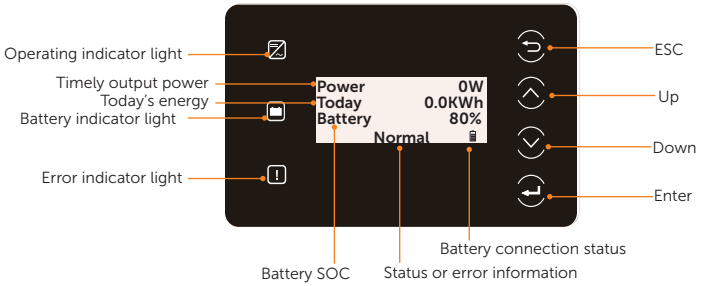


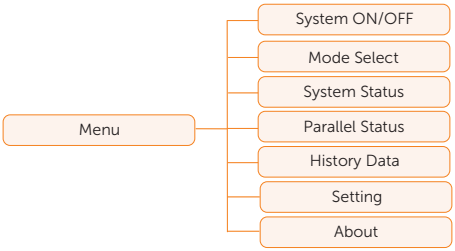
Figure 9-1 Control Panel

- In a normal state, the "Power", "Today" and "Battery" information will be displayed. You can press the keys to switch information.
- In an error state, the fault message and error code will be displayed, please refer to "11.3 Troubleshooting" for corresponding solutions.

Table 9-1 Definition of keys

Key	Definition
ESC key	Exit from the current interface or function
Up key	Move the cursor to the upper part or increase the value
Down key	Move the cursor to the lower part or decrease the value
Enter key	Confirm the selection

9.1.2 Introduction of Menu Interface



NOTICE!

This section only introduces the necessary inverter related LCD operations after the system is powered on, for the complete operations on inverter LCD, please refer to the *X3-AELIO Series User Manual*.

9.1.3 Setting

Settings includes User Settings and Advanced Settings.

User setting

Setting path: **Menu**>**Setting ("0 0 0 0 ")**>**User Setting**

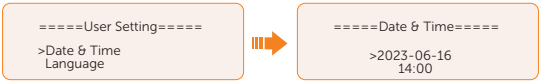
NOTICE!

The default password for **User Setting** is "0 0 0 0".

- Setting Date & Time

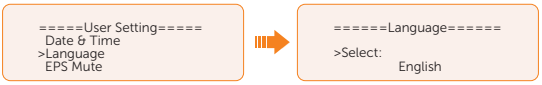
You can set the current date and time of the installation site.

The display format is "2023-06-16 14:00", in which the first four numbers represent the year (e.g. 2000~2099); the fifth and sixth numbers represent the month (e.g. 01~12); the seventh and the eighth numbers represent the date (e.g. 01~31). The remaining numbers represent the time.



- Setting Language

This inverter provides multiple languages for customers to choose, such as English, Deutsch, Francais, Polskie, Espanol, Português. The default language is English.



Advance setting

Setting path: **Menu**>**Setting**>**Advance Setting**

NOTICE!
Property losses or system damage due to unauthorized access to adjustable parameters. • All the adjustable parameters including safety code, grid parameter, export control, etc can be modified under the permissions of installer password. Unauthorized use of the installer password by unauthorized persons can lead to incorrect parameters being input, resulting in power generation loss or violation of local regulation. Get the installer password from the dealer and never open the password to unauthorized person.

- Setting Safety Code

NOTICE!
• The inverter cannot be connected to the grid before the safety code is correctly set. If there is any doubt about your safety code where the inverter installed, please consult your dealer or SolaX service for details. • The setup will vary from different safety codes.

Here you can set safety code according to different countries and grid-tied standards.

There are several standards to choose from, please refer to the LCD screen on the inverter. (May be changed or added without notice)

» When you select safety code **CEI 0-21**, there will be additional **Self Test** option for setting under the path of **Menu**>**Setting**>**Advance Setting.**

» When you select safety code **AS4777,** there will be additional **AS4777 Setting** option for **General Control** and **Export Control** under the path of **Menu**>**Setting**>**Advance Setting**.

- Setting Export Control

This function allows the inverter to control the amount of electricity output to the grid. The **User Value** set here must be less than the maximum value. If the user does not want to supply power to the grid, set **User Value** to "0".

NOTICE!

- Under Safety Code AS4777, **Export Control** is in the path of **Advance Setting**> **AS4777 Setting**. You can set the **Soft Limit** and **Hard Limit** of **Export Control** to control the power output to grid. Please refer to X3-AELIO Series User Manual for details.

9.2 Inverter Screen Cover Installation

After the inverter is well installed on the wall or on the cabinet, all cables are wired on the inverter, the process of powering on and powering off is checked and all necessary Settings are set on the inverter LCD screen, the inverter screen cover should be installed. Here below the inverter installed on the cabinet is taken for an example. Wall-mounting inverter shares the same screen cover installation method.

Step 1: Put the inverter screen cover (Part V2) on the inverter and secure the cover on the two sides of the inverter with M4*10 screws (Part U2) (Torque: 1.5±0.3 N·m).

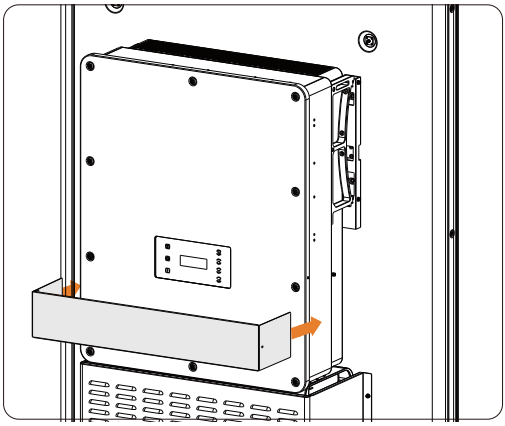


Figure 9-2 Putting the screen cover on the inverter

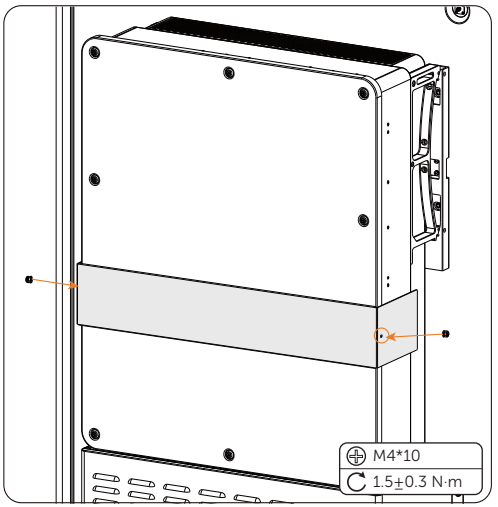


Figure 9-3 Securing the cover with the inverter

9.3 Operation on Cabinet Screen

Gently and correctly guide the key (Part R) into the keyhole, and then turn it clockwise to unlock the screen door.

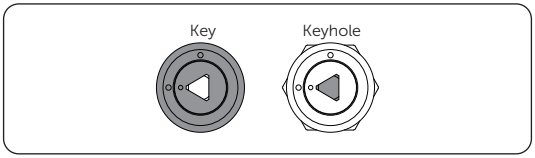


Figure 9-4 Correct position

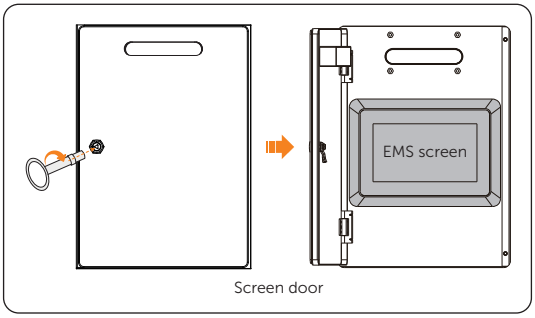


Figure 9-5 Unlocking screen door

9.3.1 Logging in

On the login screen, enter the username and password, and then tap **Login**.

Admin and user accounts are supported.

Table 9-2 Account information

Username	Password	Remarks
Admin	EMS SN	The password cannot be modified
User	123456 by default	The password can be modified on EMS1000 webpage.

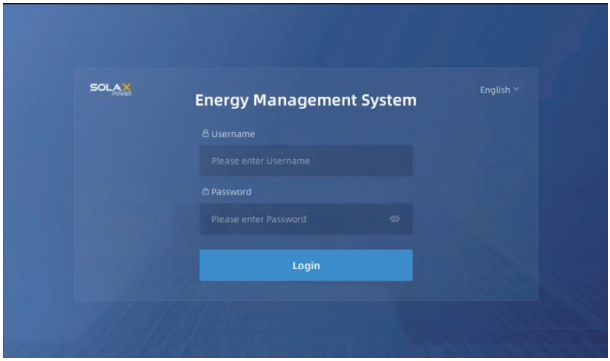


Figure 9-6 Logging in to the screen

9.3.2 Adding Inverter

NOTICE!

- This function is only available for Admin account.

Add the inverter to EMS1000 for unified system management.

Step 1: Log in to the screen, and then tap **Device**.

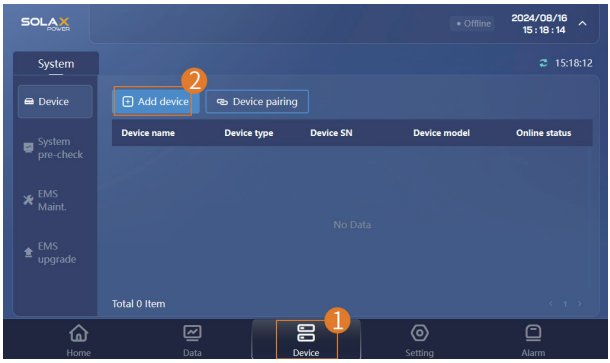


Figure 9-7 Adding inverter

Step 2: Tap **Add device**, set **Device type** to **Inverter** and **COM method** to **MODBUS TRU**, set the remaining parameters, and then tap **Confirm**.

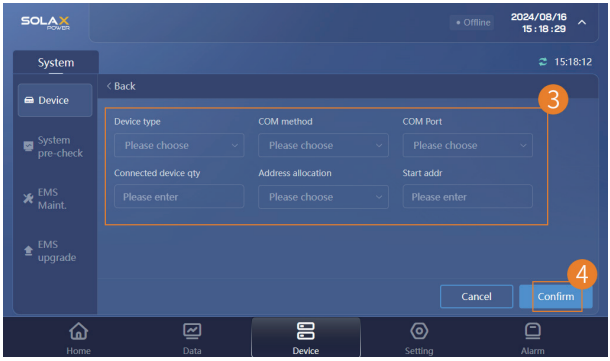


Figure 9-8 Setting parameters

Table 9-3 Parameter description

Parameter	Value Range	Description
COM Port	1-8	Number of RS485 terminal of EMS1000 that the inverter is connected to. For example, if the inverter is connected to the 8th RS485 terminal of the Device, the Serial Num is 8.
Connected device qty	1-20	Number of inverters that EMS1000 will be connected to. Up to 20 inverters can be connected.

Parameter	Value Range	Description
Address allocation	• Manual • Auto	• Auto: In this mode, EMS1000 will automatically assign and recognize an RTU address for your inverter. • Manual: In this mode, you will need to manually modify the Modbus address.
Start addr	/	The minimal Modbus address For manual address allocation, enter the minimal address that is configured for the inverter; For auto address allocation, enter 1.

After the inverter is successfully added, the inverter and the meter that it is bound to will be displayed on the device list. If EMS1000 identifies other devices in the cabinet such as battery and IO module, these devices will also be displayed on the screen.

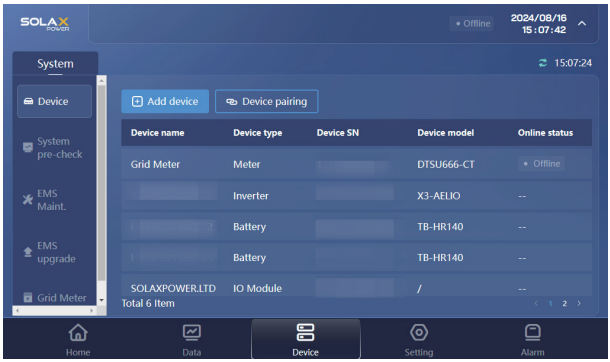


Figure 9-9 Adding inverter successfully

9.3.3 Pairing Inverter and Cabinet

NOTICE!

- This function is only available for Admin account.

You can pair the inverter and the cabinet for easier organization and management.

Step 1: Log in to the screen, and then tap **Device Pairing**.

The inverter, cabinet and related devices will pair automatically, and the pairing result will be displayed.

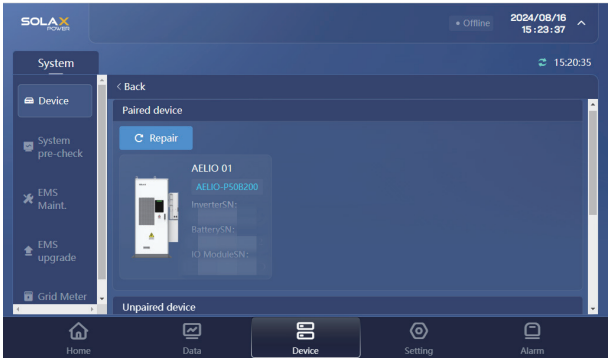


Figure 9-10 Pairing devices successfully

Step 2: Tap **Save and Pre-check** to save the pairing results.

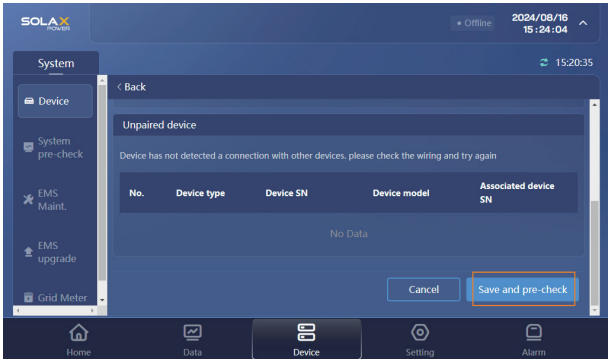


Figure 9-11 Save pairing

Step 3: On the pairing confirmation pop-up, tap **OK**.

The device list will be refreshed and displayed in architecture.

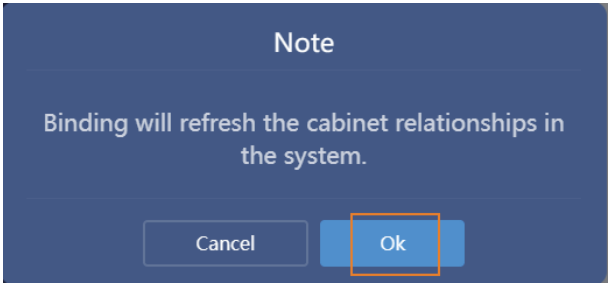


Figure 9-12 Confirming pairing

10 SolaXCloud App

10.1 Introduction of SolaXCloud

SolaxCloud is an intelligent management platform for home energy, which integrates energy efficiency monitoring, device management, data security communication and other integrated capabilities. While managing your home energy device, it helps you optimize the efficiency of electricity consumption and improve the revenue of power generation.

10.2 Operation Guide on SolaXCloud App

10.2.1 Downloading and Installing App

Method 1: Scan the QR code below to download the App.

The QR codes are also available on the login page of our official website (www.solaxcloud.com).

Figure 10-1 QR code

Method 2: Search for **SolaXCloud** in Apple Store App or Google Play, and then download the App.

10.2.2 Operation on the SolaXCloud App

For instructions on the related operations, see the online documents on the SolaXCloud App.

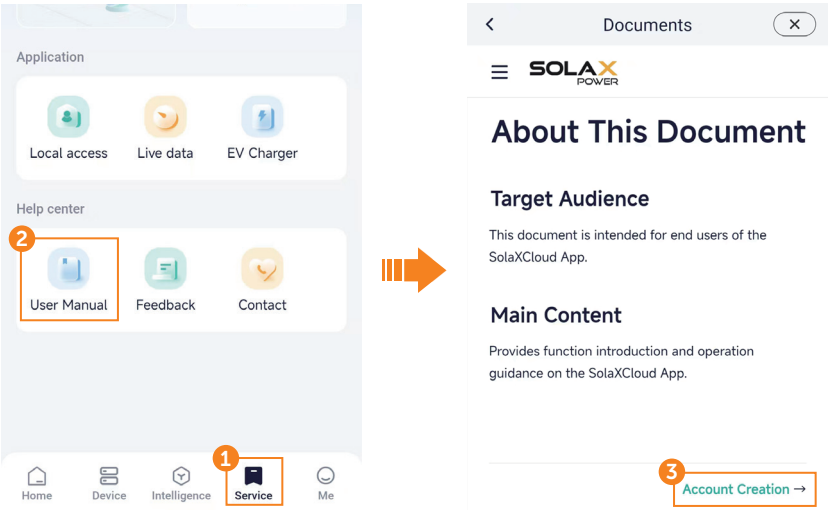


Figure 10-2 Online help on SolaXCloud

NOTICE!

- The screen shots in this chapter correspond to the SolaXCloud App V6.5.1, which might change with version update and should be subject to the actual situations.

11 Troubleshooting and Maintenance

11.1 Power Off

WARNING!

- Check whether the system is still running before power off. Do not power off if the device is "under load".

Regarding the detailed location of the modules in the cabinet, please refer to "Figure 8-1 Location of modules".

There are two circumstances: 1. Normal power off; 2. Emergency power off.

Normal Power Off

Step 1: Inverter power off.

a. Set **OFF** in the **System ON/OFF** on the inverter LCD screen.

b. Turn off the inverter system button.

c. Set the DC switch1 and DC switch2 to "OFF".

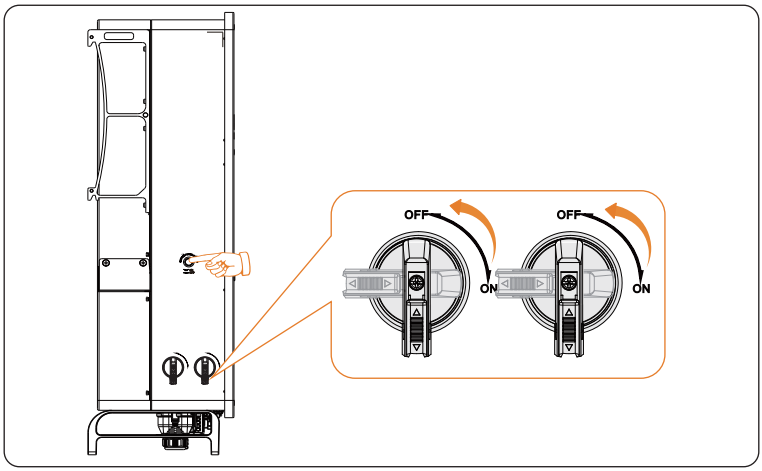


Figure 11-3 Shutting down the inverter

Step 2: Open the front doors.

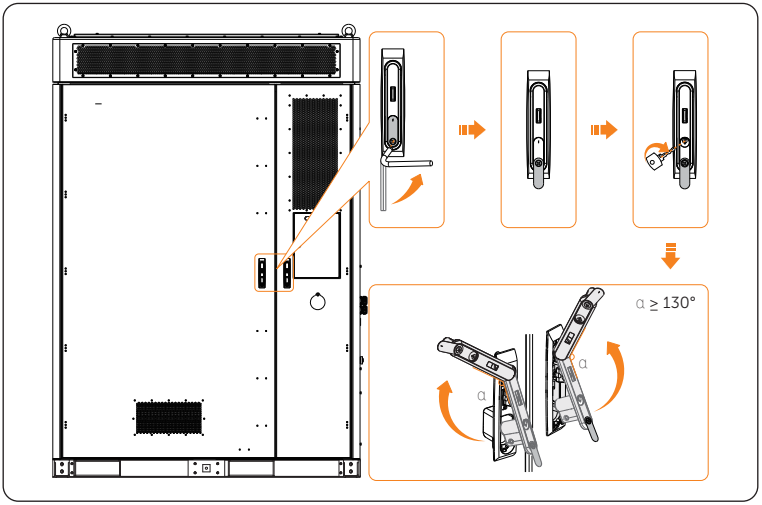


Figure 11-1 Opening front doors

Step 3: Shut down the inverter.

Step 4: Gently press the power button, and rotate the disconnector of the high-voltage box to "OFF".

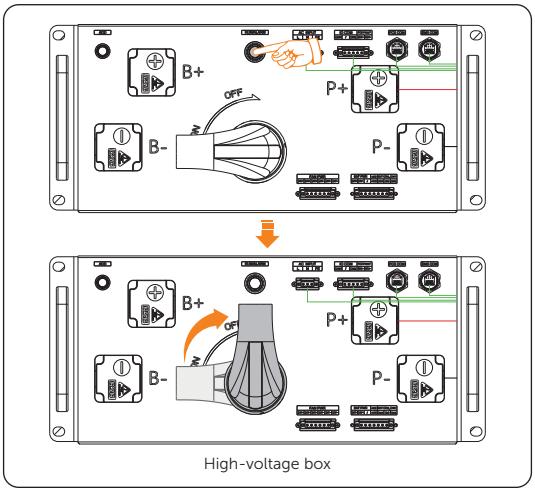


Figure 11-2 Shutting down the high-voltage box

Step 5: Shut down the distribution box.

» Flip down the "SPD MCB" breaker;

» Flip down the "HVAC MCB" breaker;

» Flip down the "EPS" breaker;

» Flip down the "APS" breaker;

» Flip down the "UPS" breaker;

» Rotate the switch on the distribution box 90° counter-clockwise to "OFF".

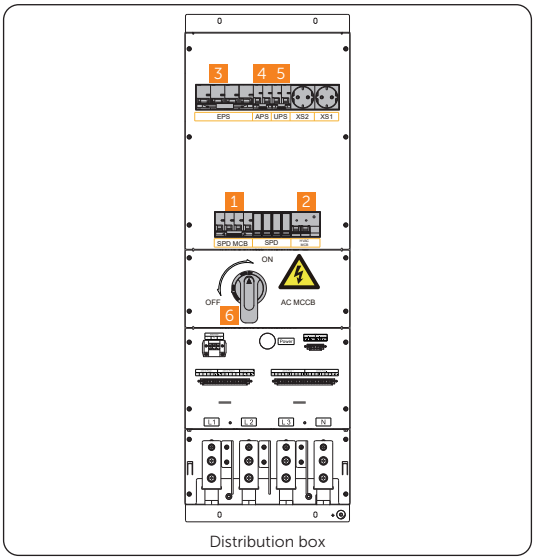


Figure 11-3 Shutting down sequence of distribution box

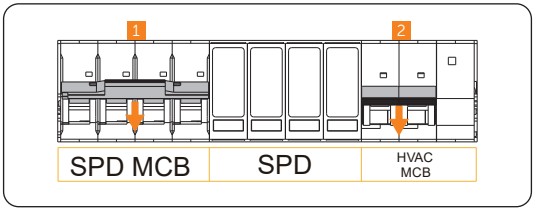


Figure 11-4 Flipping down breakers

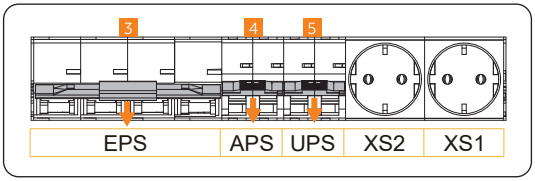


Figure 11-5 Flipping down breakers

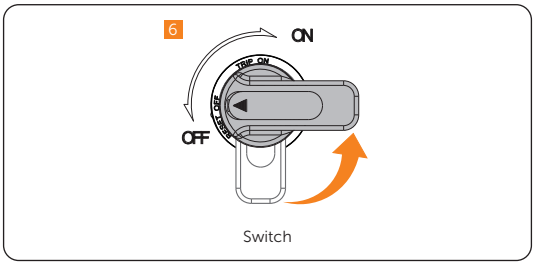


Figure 11-6 Rotating switch

Step 6: Hold and press the "Power on/off" button to power off the UPS.

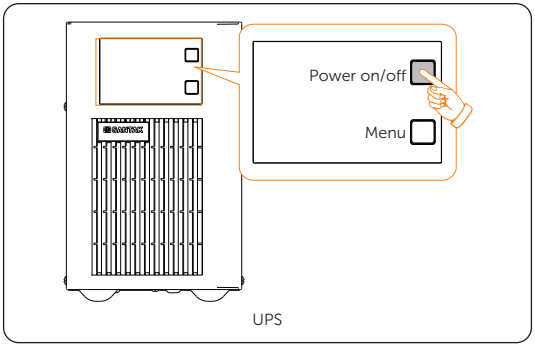


Figure 11-7 Holding and pressing button

WARNING!

- The device may still have power and heat after turning off, which may cause electric shock and personal injuries. Therefore, please allow it to cool for at least 15 minutes and wear PPE before conducting maintenance.

Emergency Power Off

WARNING!

- Do not press the emergency stop button except for emergencies.
- Some modules inside the cabinet may still have power after pressing the emergency stop button, therefore, non-professionals are not allowed to operate them.

Step 1: Rotate the cover

Step 2: Press the emergency stop button.

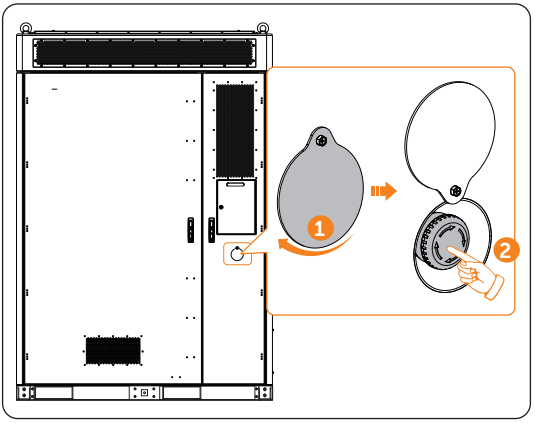


Figure 11-8 Pressing emergency stop button

NOTICE!

If it has been pressed, the emergency stop button must be reset before starting the device. The reset steps are shown as follows:

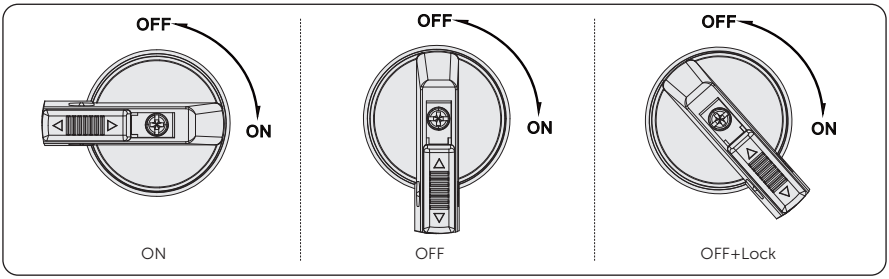
a. Rotate the cover;
b. Rotate the button according to the arrow direction shown on the button. Then the button will spring back to its original position.

11.2 Operation of Lockable DC Switch (for Australia Version Only)

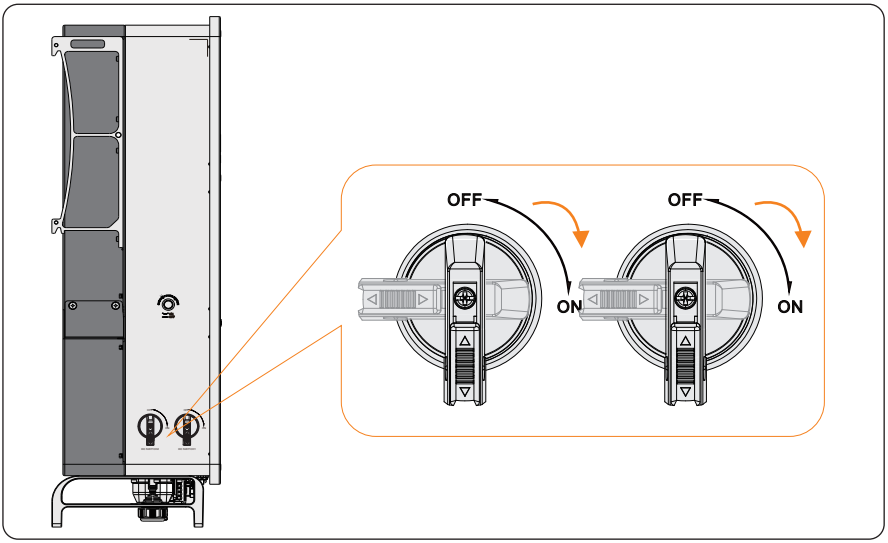
NOTICE!

- The Australian version DC switch is a lockable DC switch to prevent accidental switching on during maintenance, the lock needs to be prepared by the user.

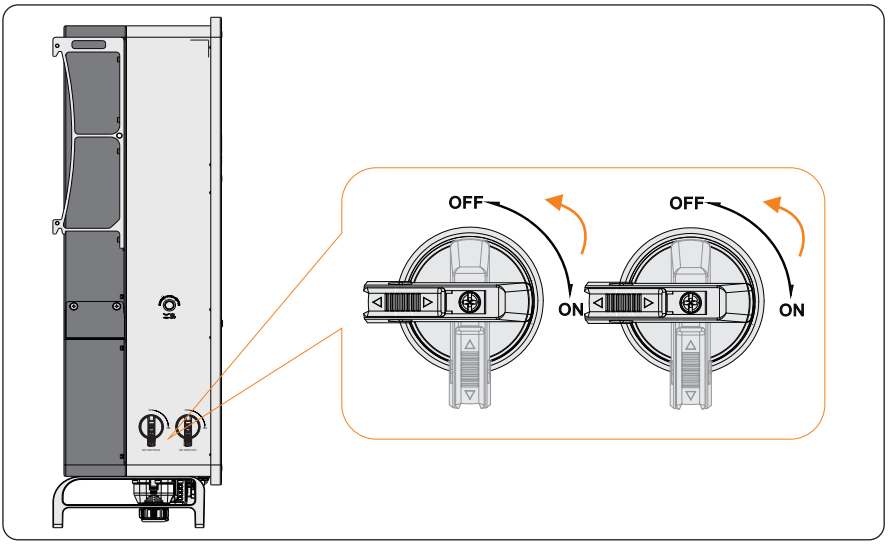
The lockable DC switch includes 3 states: ON, OFF, and OFF+Lock. The DC switch is in the OFF state by default.



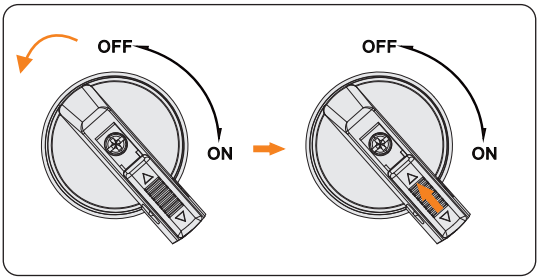
- Turn on the DC switch: rotate the DC switch from OFF state to ON state.



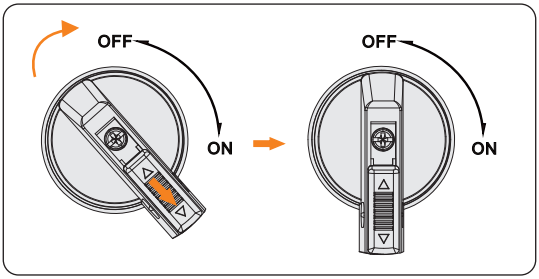
- Turn off the DC switch: rotate the DC switch from ON state to OFF state.



- Lock the DC switch
  a. Rotate the DC switch to OFF state, then rotate the DC switch to the left side;
  b. Push the position indicated by the arrow upward (as shown in the diagram below).
  c. (Optional) After pushing the position upward, choose to lock the DC switch with a lock.



- Unlock the DC switch
  a. Remove the lock. (If any);
  b. Push the position indicated by the arrow down (as shown in the diagram below);
  c. Wait for it to return to OFF state.



11.3 Troubleshooting

11.3.1 Battery Cabinet Troubleshooting

This section lists the possible problems with the device, and provides information and procedures for identifying and resolving them. In case of any errors, check for the warnings or error messages on the system control panel or App, and then refer to the suggestions below. For further assistance, contact SolaX Customer Service. Please provide the model and SN of the cabinet, and be prepared to describe the system installation details.

Table 11-1 Troubleshooting list

Fault	Description and Diagnosis
UCellHi_4	Single Cell Overvoltage Category IV • Do not power on, and the charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 3 seconds. • Or contact SolaX for help.
UCellHi_5	Single Cell Overvoltage Category V • Do not power on, and the charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 1 second. • Or contact SolaX for help.
UCellLow_4	Single Cell Undervoltage Category IV • Do not power on, and the charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 3 seconds. • Or contact SolaX for help.

Fault	Description and Diagnosis
UCellLow_5	Single Cell Undervoltage Category V • Do not power on, and the charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 3 seconds. • Or contact SolaX for help.
UCellDiff	Voltage difference fault • Or contact SolaX for help.
HVBOver_4	Overvoltage category IV of total voltage • The charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 3 seconds. • Or contact SolaX for help.
HVBOver_5	Overvoltage category V of total voltage • The charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 1 second. • Or contact SolaX for help.
HVBLow	Undervoltage category IV of total voltage • The charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 1 second. • Or contact SolaX for help.
HVBLow	Undervoltage category V of total voltage • The charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 1 second. • Or contact SolaX for help.
PosRlyAdh	Sticking contacts of main positive relay • The charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 1 second. • Or contact SolaX for help.
PosRlyOpen	Open circuit of main positive relay • The charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 1 second. • Or contact SolaX for help.

Fault	Description and Diagnosis
TempHigh	Overtemperature fault • The charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 1 second. • Or contact SolaX for help.
TLineFlt_1	Temperature sampling fault level 1 • Check if the temperature sensor is short-circuited. • Or contact SolaX for help.
TLineFlt_4	Temperature sampling fault level 4 • The charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 3 seconds. • Or contact SolaX for help.
TempLow	Low-temperature fault • The charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 1 second. • Or contact SolaX for help.
DsgOver_4	Discharge overcurrent fault level 4 • The charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 3 seconds. • Or contact SolaX for help.
DsgOver_5	Discharge overcurrent fault level 5 • The charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 1 second. • Or contact SolaX for help.
ChgOver_4	Charge overcurrent fault level 4 • The charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 3 seconds. • Or contact SolaX for help.
ChgOver_5	Charge overcurrent fault level 5 • The charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 1 second. • Or contact SolaX for help.

Fault	Description and Diagnosis
ICOMFault	Internal communication fault • Do not power on, and the charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 1 second. • Or contact SolaX for help.
OCOMFault	External communication fault • Do not power on, and the charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 1 second. • Or contact SolaX for help.
MCOMFault	Intermediate network communication fault • Do not power on, and the charging current is limited to 0 A. • Or contact SolaX for help.
UCellLineOpenFlt	Voltage sampling fault • The charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 1 second. • Or contact SolaX for help.
VoltSensorFlt	Voltage sensor fault • The charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 1 second. • Or contact SolaX for help.
CurrSensorFlt	Current sensor fault • Contact SolaX for help.
NegRlyAdh	Sticking contacts of main negative relay • Restart the device. • Or contact SolaX for help.
NegRlyOpen	Open circuit of main negative relay • Restart the device. • Or contact SolaX for help.
FlashFlt	Flash fault • Check if the external Flash communication is normal. • Or contact SolaX for help.
ChgReqFlt	Charging request fault • Check the device is properly charged. • Or contact SolaX for help.

Fault	Description and Diagnosis
InsFlt	Insulation fault • The charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 1 second. • Or contact SolaX for help.
SOCLowFlt	Low SOC • Check if the device is running out of power. • Or contact SolaX for help.
PreChgFailFlt	External short-circuit fault • The charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 1 second. • Or contact SolaX for help.
AFEProtectFlt	Battery's hardware protection fault • The charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 1 second. • Or contact SolaX for help.
SelfCheckFlt	Self-test fault • The charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 1 second. • Or contact SolaX for help.
LinkerTempHilFlt_3	Fault on overtermperature of high-voltage connector • Check whether the charge/discharge current is over 50% of rated charge/discharge current. • Or contact SolaX for help.
LinkerTempHilFlt_5	Fault on overtermperature of high-voltage connector • Check whether the charge/discharge current is over 50% of rated charge/discharge current. • Or contact SolaX for help.
BatLinkerTempHi_5	High-temperature fault of pole • The charging current is limited to 0 A. If the relay does not receive a power-off instruction from the inverter, it will be turned off forcefully after 3 seconds. • Or contact SolaX for help.
FanFault	Fan fault • Check whether any foreign objects stick to the fan. • Contact SolaX for help.

Fault	Description and Diagnosis
FuseSt	Fuse fault • Contact SolaX for help.
DCSwitch	DC switch fault • Contact SolaX for help.

11.3.2 Inverter Troubleshooting

This section contains information and procedures for resolving possible problems with the inverter, and provides the troubleshooting tips to identify and solve most problems that may occur. Please check the warning or fault information on the system control panel or on the App and read the suggested solutions below when error occurs. Contact SolaX Customer Service for further assistance. Please be prepared to describe the details of your system installation and provide the model and serial number of the inverter.

Table 11-1 Troubleshooting list

Error Code	Fault	Descriptions and Diagnosis
IE 01	TZ Protect Fault	Overcurrent fault. • Wait for a while to check if it returns to normal. • Disconnect PV+ PV- and batteries, reconnect. • If the system is in off-grid state, check if the power of EPS loads exceeds the maximum limit of the system or exceeds the current power supply of battery. • If the system fails to restore to its normal state, please contact SolaX for help.
IE 02	Grid Lost Fault	Grid Lost Fault • Check the grid connection status • Or contact SolaX for help.
IE 03	Grid Volt Fault	Power grid voltage overrun • Wait a moment, if the utility returns to normal, the system will reconnect. • Please check if the grid voltage is within normal range. • Or contact SolaX for help.
IE 04	Grid Freq Fault	Grid overfrequency • Wait a moment, If the utility returns to normal, the system reconnects. • Or contact SolaX for help.

Error Code	Fault	Descriptions and Diagnosis
IE 05	PV Volt Fault	PV overvoltage • Check the output voltage of the PV panel. • Check if the DC switch is OFF. • Or contact SolaX for help.
IE 06	Bus Volt Fault	• Press the **ESC** key to restart the inverter. • Check if the PV input open circuit voltage is in the normal range. • Check if the power of half-wave load exceeds the system limit. • Or contact SolaX for help.
IE 07	Bat Volt Fault	Battery voltage fault • Check if the battery input voltage is within normal range • Or contact SolaX for help.
IE 08	AC10mins Volt	Grid voltage out of range in the last 10 minutes. • The system will return to normal if the grid returns to normal. • Or contact SolaX for help.
IE 09	DCI OCP Fault	DCI overcurrent protection fault. • Wait for a while to check if it's back to normal. • Or contact SolaX for help.
IE 10	DCV OVP Fault	DCV EPS(Off-grid) overvoltage protection fault. • Wait for a while to check if it's back to normal. • Or contact SolaX for help.
IE 11	SW OCP Fault	Software detection of overcurrent Fault. • Wait for a while to check if it's back to normal. • Shut down photovoltaic, battery and grid connections. • Or contact SolaX for help.
IE 12	RC OCP Fault	Overcurrent protection fault. • Check the impedance of DC input and AC output. • Wait for a while to check if it's back to normal. • Or contact SolaX for help.
IE 13	Isolation Fault	Insulation fault • Please check the wire insulation for damage. • Wait for a while to check if it's back to normal. • Or contact SolaX for help.
IE 14	Temp Over Fault	Temperature out of range • Check if the ambient temperature exceeds the limit. • Or contact SolaX for help.

Error Code	Fault	Descriptions and Diagnosis
IE 15	Bat Con Dir Fault	• Battery direction fault • Check if the battery lines are connected in the opposite direction. • Or ask for help from the installer if it can not return to normal.
IE 16	EPS Overload	EPS(Off-grid) overload fault • Shutdown the high-power device and press the **ESC** key to restart the inverter. • Or contact SolaX for help if it can not return to normal.
IE 17	Overload Fault	On-grid mode overload fault • Shutdown the high-power device and press the **ESC** key to restart the inverter. • Or contact SolaX for help if it can not return to normal.
IE 18	BatPowerLow	Bat Power Low • Shutdown the high-power device and press the **ESC** key to restart the inverter. • Please charge the battery to a level higher than the protection capacity or protection voltage.
IE 19	BMS Lost	Battery communication lost • Check that the communication cable between the battery and the inverter are properly connected. • Or contact SolaX for help if it can not return to normal.
IE 20	Fan Fault	Fan Fault • Check for any foreign matter that may have caused the fan not to function properly. • Or contact SolaX for help if it can not return to normal.
IE 21	Low TempFault	Low temperature fault. • Check if the ambient temperature is too low. • Or contact SolaX for help if it can not return to normal.
IE 25	InterComFault	Inter_Com_Fault • Restart the inverter. • Or contact SolaX for help if it can not return to normal.
IE 26	INV EEPROM	Inverter EEPROM Fault. • Shut down photovoltaic, battery and grid, reconnect. • Or contact SolaX for help if it can not return to normal.

Error Code	Fault	Descriptions and Diagnosis
IE 27	RCD Fault	Residual Current Device fault • Check the impedance of DC input and AC output. • Disconnect PV + PV - and batteries, reconnect. • Or contact SolaX for help if it can not return to normal.
IE 28	Grid Relay Fault	Electrical relay fault • Disconnect PV+ PV- grid and batteries and reconnect. • Or contact SolaX for help if it can not return to normal.
IE 29	EPS Relay	EPS(Off-grid) relay fault • Disconnect PV+ ,PV-, grid and batteries and reconnect. • Or contact SolaX for help if it can not return to normal.
IE 30	PV ConnDirFault	PV direction fault • Check if the PV input lines are connected in the opposite direction. • Or contact SolaX for help if it can not return to normal.
IE 31	Battery Relay	Charge relay fault • Press the **ESC** key to restart the inverter. • Or contact SolaX for help if it can not return to normal.
IE 32	Earth Relay	EPS(Off-grid) earth relay fault • Press the **ESC** key to restart the inverter. • Or contact SolaX for help if it can not return to normal.
IE 100	PowerTypeFault	Power type fault • Upgrade the software and press the **ESC** key to restart the inverter. • Or contact SolaX for help if it can not return to normal.
IE 102	Mgr EEPROM Fault	Mgr E2prom Error. • Shut down photovoltaic ,battery and grid, and then reconnect. • Or contact SolaX for help if it can not return to normal.
IE 103	Fan4 Fault	FAN4 Fault • Check if the foreign objects stuck in the fan. • Or contact SolaX for help.

Error Code	Fault	Descriptions and Diagnosis
IE 104	NTC Sample Invalid	NTC Sample Fault • Make sure the NTC is properly connected and the NTC is in good condition. • Please confirm that the installation environment is normal • Or contact SolaX for help if it can not return to normal.
IE 107	CT Fault	CT Fault • Check if the CT is working properly • Or contact SolaX for help if it can not return to normal.
IE 109	Meter Fault	Meter Fault • Check if the meter is working properly • Or contact SolaX for help if it can not return to normal.
IE 110	BypassRelayFlt	Bypass Relay Fault • Press the **ESC** key to restart the inverter. • Or contact SolaX for help if it can not return to normal.
IE 111	FAN3 Fault	FAN3 Fault • Check if the foreign objects stuck in the fan. • Or contact SolaX for help.
IE 112	ARMParaComFlt	ARM Parameter Communication fault • Check that the communication cables of inverters are well connected and the baud rate of COMM setting of inverters are the same. • Or contact SolaX for help if it can not return to normal.
IE 113	FAN1 Fault	FAN1 Fault • Check if the foreign objects stuck in the fan. • Or contact SolaX for help.
IE 114	FAN2 Fault	FAN2 Fault • Check if the foreign objects stuck in the fan. • Or contact SolaX for help.
IE 115	20305Com Fault	Com Fault • Check the connection of the monitoring module, reinsert the module. • Please contact SolaX for help.
BE 01	BMS1_UCellOver BMS2_UCellOver	Battery Error - Cell Overvoltage Fault • Please contact SolaX for help.

Error Code	Fault	Descriptions and Diagnosis
BE 02	BMS1_UCellLow BMS2_UCellLow	Battery Error - Cell Undervoltage Fault • Please contact SolaX for help.
BE 03	BMS1_UCellDiff BMS2_UCellDiff	Battery Error - Large Cell Differential Pressure Fault • Please contact SolaX for help.
BE 04	BMS1_HVBOver BMS2_HVBOver	Battery Error - Total Voltage Overvoltage Fault • Please contact SolaX for help.
BE 05	BMS1_HVBLow BMS2_HVBLow	Battery Error - Total Voltage Undervoltage Fault • Please contact SolaX for help.
BE 06	BMS1_TempOver BMS2_TempOver	Over temperature in battery system • Please contact SolaX for help.
BE 07	BMS1_SelfCheck BMS2_SelfCheck	Self check fault in battery system • Please contact SolaX for help.
BE 08	BMS1_PoRlyAdh BMS2_PoRlyAdh	Battery Error - Main Positive Relay Adhesion Fault • Please contact SolaX for help.
BE 09	BMS1_PoRlyOpen BMS2_PoRlyOpen	Battery Error - Main Positive Open Relay Fault • Please contact SolaX for help.
BE 10	BMS1_NeRlyAdh BMS2_NeRlyAdh	Battery Error - Main Negative Relay Adhesion Fault • Please contact SolaX for help.
BE 11	BMS1_NeRlyOpen BMS2_NeRlyOpen	Battery Error - Main Negative Open Relay Fault • Please contact SolaX for help.
BE 12	BMS1_PreChgFail BMS2_PreChgFail	Battery Error - Battery Precharge Fault • Please contact SolaX for help.
BE 13	BMS1_CellSample BMS2_CellSample	Battery Error - Battery Cell Sampling Fault • Please contact SolaX for help.
BE 14	BMS1_TempSample BMS2_TempSample	Battery Error - Battery Temperature Sampling Fault • Please contact SolaX for help.
BE 15	BMS1_Sys BMS2_Sys	Battery Error - Battery System Fault • Please contact SolaX for help.

Error Code	Fault	Descriptions and Diagnosis
BE 16	BMS1_DsgOver BMS2_DsgOver	Battery Error - Battery Discharge Overcurrent Fault • Please contact SolaX for help.
BE 17	BMS1_ChgOver BMS2_ChgOver	Battery Error - Battery Charge Overcurrent Fault • Please contact SolaX for help.
BE 18	BMS1_AFECom BMS2_AFECom	Battery Error - Battery AFE communication Fault • Please contact SolaX for help.
BE 19	BMS1_InvCom BMS2_InvCom	Battery Error - Extranet Communication Fault • Please contact SolaX for help.
BE 20	BMS1_MidCom BMS2_MidCom	Battery Error - Intermediate Network Communication Fault • Please contact SolaX for help.
BE 21	BMS1_VoltSensor BMS2_VoltSensor	Battery Error - Voltage Sensor Fault • Please contact SolaX for help.
BE 22	BMS1_IDRepet BMS2_IDRepet	Battery Error - Repetitive ID Fault • Please contact SolaX for help.
BE 23	BMS1_TempLow BMS2_TempLow	Battery Error - Low Temperature Fault • Please contact SolaX for help.
BE 24	BMS1_CurrSensor BMS2_CurrSensor	Battery Error - Current Sensor Fault • Please contact SolaX for help.
BE 25	BMS1_Line BMS2_Line	Battery Error - Open Power Cable Fault • Please contact SolaX for help.
BE 26	BMS1_Flash BMS2_Flash	Battery Error - Flash Fault • Please contact SolaX for help.
BE 27	BMS1_AFEProtect BMS2_AFEProtect	Battery Error - AFE Self-protection Fault • Please contact SolaX for help.
BE 28	BMS1_ChgReq BMS2_ChgReq	Battery Error - Charge Request Fault • Please contact SolaX for help.
BE 29	BMS1_Ins BMS2_Ins	Battery Error - Battery Insulation Fault • Check that the battery is properly grounded and restart the battery. • Please contact SolaX for help.

Error Code	Fault	Descriptions and Diagnosis
BE 30	BMS1_MCB	Battery Error - Micro Circuit Breaker Fault • Please contact SolaX for help.
	BMS2_MCB	
BE 31	BMS1_LinkerTemp	Battery Error - Contactor Over Temperature Fault • Please contact SolaX for help.
	BMS2_LinkerTemp	
BE 32	BMS1_BatLinker	Battery Error - Internal contact point Abnormally high in the battery • Please contact SolaX for help.
	BMS2_BatLinker	
BE 33	BMS1_Fan	Battery Error - Fan Fault • Check if the foreign objects stuck in the fan. • Or contact SolaX for help.
	BMS2_Fan	

11.4 Maintenance

Regular maintenance is required for the device. The table below lists the operational maintenance for expressing the optimum device performance. More frequent maintenance service is needed in the worse work environment. Please make records of the maintenance.

WARNING!

- Only qualified person can perform the maintenance for the device.
- Only use the spare parts and accessories approved by SolaX for maintenance.

Maintenance routine of battery cabinet

Table 11-2 Power on routine maintenance list

Check Item	Description	Interval Time
The operating status and environment of the system	• Check whether there is any damage to the distributed energy system, and the device is deformed. • Check whether there is any abnormal noise in the running system. • Check whether the temperature of the device shell is normal. Meanwhile, it is suggested to use a thermal imager or any other monitoring systems to identify signs of heat. • Check whether the surrounding is at normal humidity level, and there is any damage to the dust and air filters. a. Must ensure that the air intake is well ventilated. Otherwise, the battery pack failure will be caused due to overheating. b. Please gently open the door to prevent raising dust from the filter cotton. Otherwise, the smoke detector will alarm and give a command to the automatic fire sprinkler to spray gas.	Once a year
Cabinet screen	• Check whether the screen displays normally. • Check **Alarm info** on the screen.	Once a year
Battery pack	• Check whether the fan of the battery pack is running normally • Check the appearance of the battery pack for damage or deformation. • Check whether there is any abnormal noise during operation.	Once a year

Check Item	Description	Interval Time
Inverter	• Check whether the fan of the inverter is running normally • Check the appearance of the inverter for damage or deformation. • Check whether there is any abnormal noise during operation.	Once a year
Air conditioner and cabinet fan	• Check that there are no potential hazards and contaminants around the device, and that there is no rubbish in the vicinity. • Check whether there is any abnormal noise, abnormal vibration and blade jammingin in the running outdoor unit fan.	Once a year
Smoke detector, temperature sensor, toxic gases detector	• Check the appearance and patrol lights visually. • Use special testing device to add smoke or heat on smoke detectors and temperature detectors to test the action of the detectors.	Once a year
Aerosol	• Check the appearance of the aerosol: no deformation and nozzle integrity, confirm no agent leakage	Once a year
Distribution box, UPS	• Check the appearance for damage or deformation. • Check whether there is any abnormal noise during operation.	Once a year
EMS1000, I/O module	• Check whether the indicator lights normally.	Once a year
Antennae	• Check whether the antenna is rusty due to salt spray, if so, the antenna needs to be replaced.	Once a year
Safety function	• Check whether the emergency stop button and LED is in good working condition. • Check the stopping signal and communication by simulating the shutdown operation. • Check whether there are any damages to warning signs and other labels pasted on the device. If so, please replace them in time.	Once a year

NOTICE!
The system must be shut down before perform the following maintenance.

Table 11-3 Power off routine maintenance list

Check Item	Description	Interval Time
Electrical connection	• Check whether the power cables are fastened securely. If not, please tighten them again according to the torque written in the document. • Check the electrical connection of battery packs, inverter, distribution box, UPS and other major devices for looseness and cable jacket damage, especially the cable jacket connecting with the metal parts. • Check whether the inverter, distribution box and UPS are reliably grounded. • Verify that the sealing caps on idle terminals of inverter are and not falling off. • Check whether the electrical insulation tape is in good condition and no peeling.	The check shall be scheduled within one month after the first commissioning, and then can be scheduled every 12 months
Terminal and block connection	• Check whether there is any fading to the screws and copper bars. • Check whether the screws are fastened securely. If not, please tighten them again according to the torque written in the document.	The check shall be scheduled within one month after the first commissioning, and then can be scheduled every 12 months
System cleaning	• Check whether the circuit boards and components are clean. • Check whether the heat sink of the inverter is covered with foreign objects. • Check and clean the filter to ensure that there is no dirty blockage of air conditioner and cabinet fan. • Clean the inverter cooling fans with a soft dry cloth or brush or replace it if necessary. • If necessary, clean the modules by air compressor. The maintenance period shall be shortened if the cabinet is installed in heavily polluted environments.	Once a year

11.4.1 Disassembly and Clean of Air Conditioner Filter

WARNING!

- The air conditioner must be powered off before disassembly and clean of air conditioner.
- The device may still have power and heat after turning off, which may cause electric shock and personal injuries. Therefore, please allow it to cool for at least 5 minutes and wear PPE before conducting maintenance.

Step 1: Unscrew M6 screws, and orderly dismantle aluminum mesh plate and black filter.

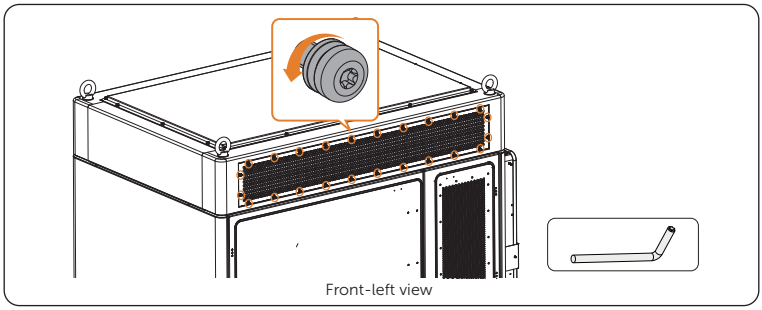


Figure 11-9 Unscrewing M6 screws

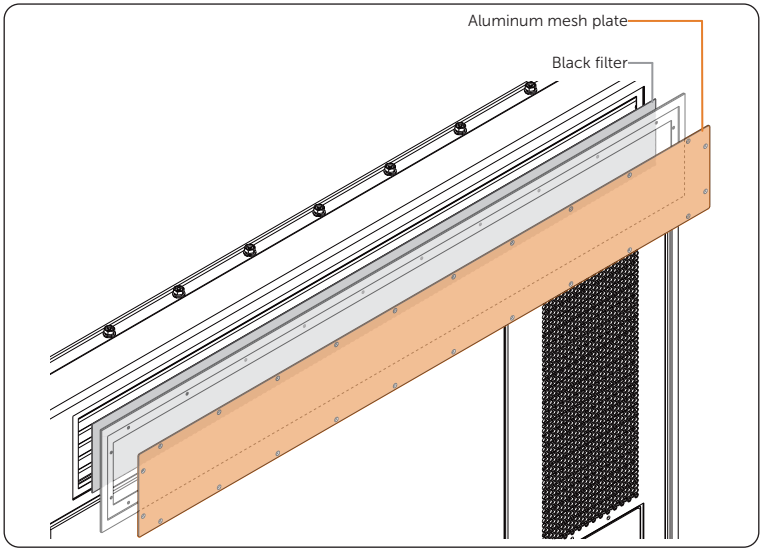


Figure 11-10 Dismantling aluminum mesh plate and black filter

Step 2: Clean aluminum mesh plate and replace the black filter.

Step 3: Orderly reinstall the black filter and aluminum mesh plate.

Step 4: Insert and tighten M6 screws (x 24).

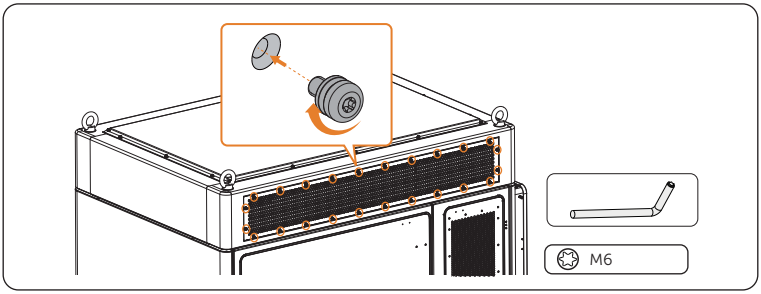


Figure 11-11 Tightening M6 screws

12 Decommissioning

12.1 Disposing of the Wasted and Damaged Battery Pack

Regarding the wasted or damaged battery packs, SolaX will not recycle them. Therefore, users can contact a recycling agency to dispose of them. The expenses incurred shall be borne by the users themselves.

Step 1: Contact a recycling agency, and estimate the expenses.

Step 2: The recycling agency will take full responsibility for dispose of the wasted or damaged battery packs.

12.2 Disposing of the Wasted and Damaged Inverter

Please dispose of the inverters or accessories in accordance with the disposal regulations for electronic waste which is applied at the installation site.

13 Technical Data

DC side

Model	AELIO-P50B200	AELIO-P60B200
Max. PV input power [kW]	100	120
Max. PV input voltage [V]	1000	1000
Start output voltage [V]	200	200
Rated input voltage [V]	650	650
MPPT voltage range [V]	160~950	160~950
No. of MPP trackers / Strings per MPP tracker	5 (2 per MPPT)	6 (2 per MPPT)
Max. input current [A]	40	40
Max. input short circuit current [A]	50	50

AC side

Model	AELIO-P50B200	AELIO-P60B200
Rated AC output power [kW]	50.0	60.0
Rated AC output current [A]	75.8 @ 220V 72.5 @ 230V 69.5 @ 240V	91.0 @ 220V 87.0 @ 230V 83.4 @ 240V
Max. AC output apparent power [kVA]	55.0	66.0
Max. AC output current [A]	83.4 @ 220V 79.8 @ 230V 76.4 @ 240V	100.0 @ 220V 95.7 @ 230V 91.7 @ 240V
Nominal grid voltage [V]	3/N/PE, 220/380, 230/400, 240/415	
Nominal grid frequency [Hz]	50/60	
Auxiliary Power Input Voltage [a.c. V]	L/N/PE, 220, 230, 240	
Auxiliary Power Input Current [a.c. A]	Max. 10	
Auxiliary Power Frequency [Hz]	50/60	
Auxiliary Power Short Current [A]	350	

Model	AELIO-P50B200	AELIO-P60B200
Adjustable power factor range	1 (0.8 Leading ~ 0.8 Lagging)	
THDi (Rated power) [%]	< 3	

Battery

Model	AELIO-P50B200	AELIO-P60B200
Battery type	LiFePO4	
Rated battery capacity [kWh]	200	
Rated battery voltage [V]	716.8	
Battery voltage range [V]	560~817.6	
Discharge depth [%]	90	
Rated charge/discharge current [A]	140	
Max charge/discharge current [A]	160 (80 × 2)	

General parameter

Model	AELIO-P50B200	AELIO-P60B200
Dimensions (with Inverter) (W×H×D) [mm]	2070 × 2420 × 1200	
Dimensions (without Inverter) (W×H×D) [mm]	1680 × 2420 × 1200	
Weight (with Inverter) [kg]	2800	
Weight (without Inverter) [kg]	2700	
Operating ambient temperature range [°C]	-30~50	
Relative humidity (Non-condensing) [%]	0~100	
Max. operating altitude [m]	3000	
Cooling concept	Smart air cooling	
Ingress protection	Cabinet: IP55; Inverter: IP66	
Fire protection	Aerosol / Water	
Topology	Non-isolated	
Standard	IEC62619, IEC63056:2000, IEC61000, IEC62477-1, UN38.3	

14 Appendix

14.1 Requirements for OT/DT/TO Terminal

For different types of cables, select proper terminals and additional components for connection.

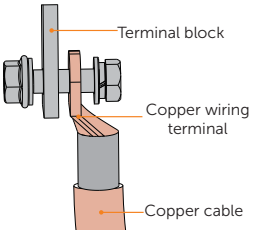
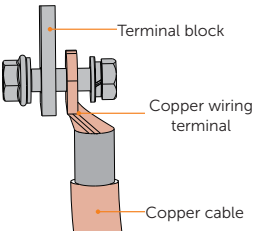
CAUTION!

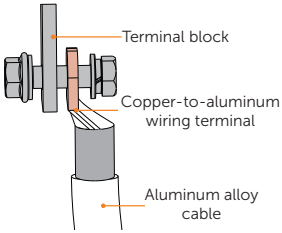
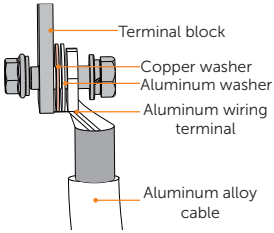
- Do not connect the aluminum wiring terminal directly to the terminal block or copper bar in case of electrochemical corrosion, which might affect the reliability of cable connection.
- While using an aluminum wiring terminal, copper washer, and aluminum washer, pay special attention to the position of the two washers. The copper washer shall make contact with the terminal block, and the aluminum washer shall make contact with the aluminum wiring terminal.

NOTICE!

- The copper-to-aluminum wiring terminal used in scenario 3, and aluminum wiring terminal, copper washer, and aluminum washer used in scenario 4 must comply with the requirements in IEC61238-1.

Table 14-1 Terminal requirements for different types of cables

Scenario	Cable Type	Wiring Terminal Type	Figure Illustration
1	Cooper cable	Copper wiring terminal	
2	Copper-clad aluminum cable	Copper wiring terminal	

Scenario	Cable Type	Wiring Terminal Type	Figure Illustration
3	Aluminum alloy cable	Copper-to-aluminum wiring terminal	
4	Aluminum alloy cable	• Aluminum wiring terminal • Copper washer • Aluminum washer	

14.2 How to Repaint the Cabinet

Check the paint damage on the surface of the cabinet, with details below:

- For light scratches or small areas of stubborn stains, please see "14.2.1 Light Scratches & Small Areas of Stubborn Stains" to treat them.
- If the deep scratches or large areas of stubborn stains can be treated by users, please refer to "14.2.2 Deep Scratches and Large Areas of Stubborn Stains".
- If the damaged area is too large and cannot be treated, please contact the after-sale personnel for assistance.

WARNING!

- If the cabinet is installed outdoors without shield, do not repaint it in rainy, snowy, windy, or stormy days.

NOTICE!

- Use paint of pantone11-4202TPG color.
- For light scratches and small areas of stubborn stains, spray paint and hairbrush are recommended.
- For deep scratches or large areas of stubborn stains, oil paint and paint sprayer are recommended.

14.2.1 Light Scratches & Small Areas of Stubborn Stains

This solution applies to light scratches without reaching the steel substrate and stubborn stains on the surface.

Tools and materials required

Prepare tools and enough materials according to actual conditions.

Table 14-2 Tools and materials

No.	Tool/Material	No.	Tool/Material
1	Spray/oil paint	2	Fine sandpaper
3	Anhydrous ethanol	4	Cotton cloth
5	Hairbrush (for small scratched area)	6	Spray paint (if there is a large area of light scratch, paint sprayer is recommended.)

Repainting procedure

Step 1: Gently sand the scratched area with a fine sandpaper to remove rust and stains on the surface.

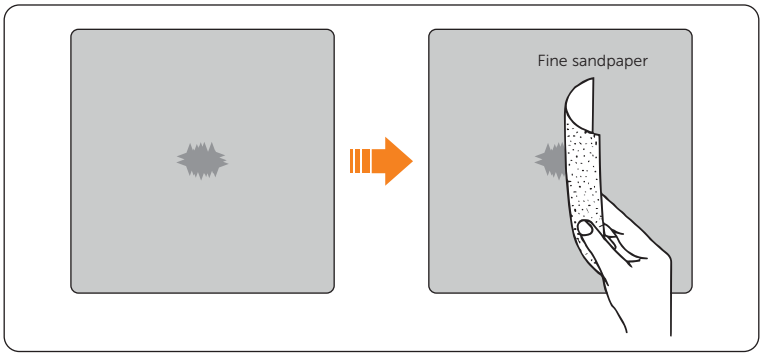


Figure 14-1 Sanding the scratched area

Step 2: Moisten a cotton cloth with anhydrous ethanol, wipe the scratched area with it to remove dust and dirt, and then use a dry cotton cloth to wipe the area dry.

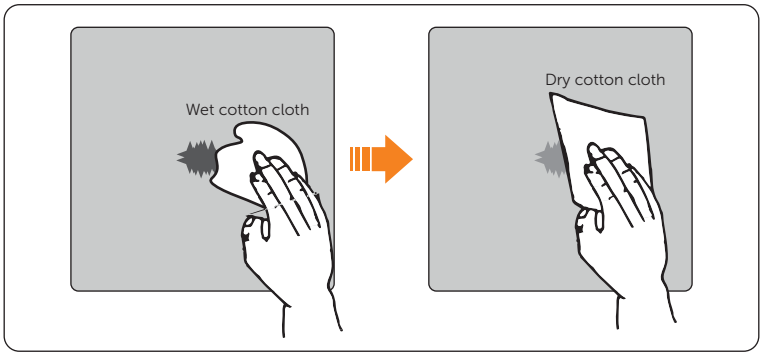


Figure 14-2 Cleaning the scratched area

Step 3: Use hairbrush or spray paint to apply paint to the surface of the scratched area until it is fully and evenly covered.

NOTICE!

- While applying paint, make sure the newly applied paint is thin and even, so that the scratched area can appear consistent and smooth on the surface.
- If there is color difference between the scratched area and the surroundings, cover the surrounding area with tape or paper in case of color contamination.

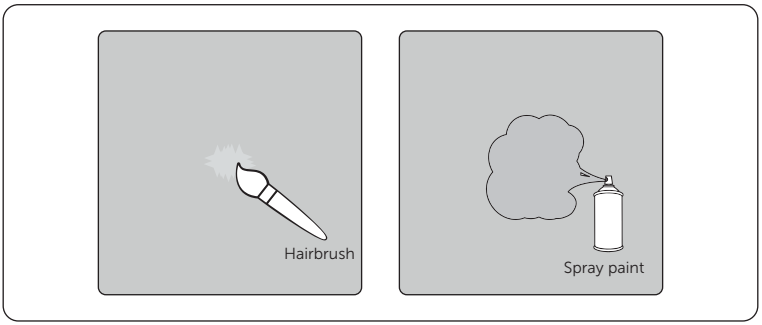


Figure 14-3 Applying paint

Step 4: After completing applying the paint, wait for around 30 minutes for the paint to get dry, and then check whether the repaired area meets the requirements.

NOTICE!

- The color of the repaired area shall be consistent with the surrounding area.
  - » Use a colorimeter to measure the color difference, of which Delta E shall be ≤ 3.
  - » If the color cannot be measured by a colorimeter, make sure that there is no obvious color difference at the edges between the repaired area and the surrounding area, as well as no bumps, scratches, flakings, or breaks.
- For spray painting, we recommend painting for at least 3 times before pausing to check the effect, and then repeat spray painting and observing until it meets the requirements.

14.2.2 Deep Scratches and Large Areas of Stubborn Stains

This solution applies to deep scratches where the primer has been damaged and reach the steel substrate.

Tools and materials required

Prepare tools and enough materials according to actual conditions.

Table 14-3 Tools and materials

No.	Tool/Material	No.	Tool/Material
1	Spray/oil paint	2	Zinc-rich primer
3	Fine sandpaper	4	Anhydrous ethanol
5	Cotton cloth	6	Hairbrush (for small areas of deep scratches and stubborn stains)

No.	Tool/Material	No.	Tool/Material
7	Paint sprayer (for large areas of deep scratches and stubborn stains)		

Repainting procedure

Step 1: Gently sand the scratched area with a fine sandpaper to remove rust and stains on the surface.

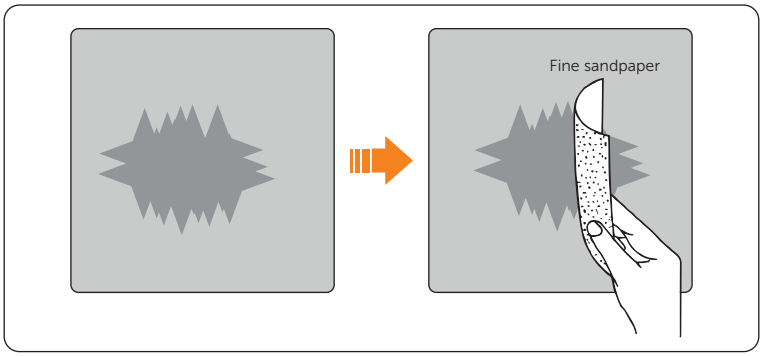


Figure 14-4 Sanding the scratched area

Step 2: Moisten a cotton cloth with anhydrous ethanol, wipe the scratched area with it to remove dust and dirt, and then use a dry cotton cloth to wipe the area dry.

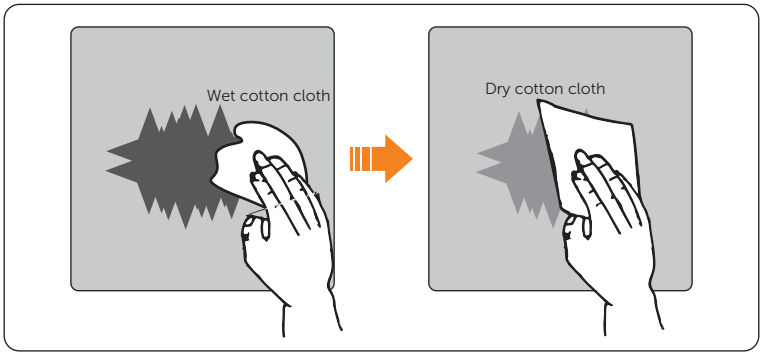


Figure 14-5 Cleaning the scratched area

Step 3: Use a paint spray to apply the zinc-rich primer to the scratched area.

NOTICE!

- If the steel substrate is visible on the scratched area, the zinc-rich primer must be applied first to entirely cover the substrate.
- Wait for the primer to get dry before applying the top coat to the scratched area.

Step 4: Use a paint spray to apply paint to the surface of the scratched area until it is fully and evenly covered.

NOTICE!

- While applying paint, make sure the newly applied paint is thin and even, so that the scratched can appear consistent and smooth on the surface.
- If there is color different between the scratched area and the surroundings, cover the surrounding area with tape or paper in case of color contamination.

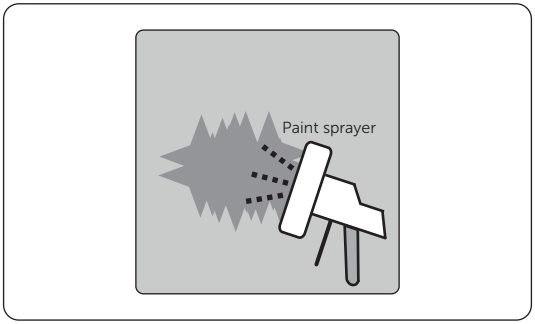


Figure 14-6 Applying paint

Step 5: After completing applying the paint, wait for around 30 minutes for the paint to get dry, and then check whether the repaired area meets the requirements.

NOTICE!

- The color of the repaired area shall be consistent with the surrounding area.
  - » Use a colorimeter to measure the color difference, of which Delta E shall be ≤ 3.
  - » If the color cannot be measured by a colorimeter, make sure that there is no obvious color difference at the edges between the repaired area and the surrounding area, as well as no bumps, scratches, flakings, or breaks.
- For spray painting, we recommend painting for at least 3 times before pausing to check the effect, and then repeat spray painting and observing until it meets the requirements.

14.2.3 Logo & Pattern damaged, Dents or Dings

In this case, we recommend contacting a local spray painting company for customized treatment based on the actual conditions.

Table 14-4 Damage extent and recommended solution

No.	Damaged Area	Recommended Solution
1	• Size < 100 mm^2 • depth < 3 mm	Use a poly-putty base to fix the dents and dings first, and then deal with them according to "Repainting Procedure" for Deep Scratches.
2	• Size > 100 mm^2 • depth > 3 mm	Contact local supplier to make a plan for repair.

14.3 Micro-grid Application

14.3.1 Introduction of Micro-grid Application

Due to Islanding Effect, on-grid inverter is unable to work during off-grid. This characteristic makes user losing the on-grid inverter PV energy when off-grid. Micro-grid is the function that making hybrid inverter simulate the grid to active on-grid inverter during off-grid by connecting on-grid inverter to hybrid inverter's EPS terminal.

14.3.2 Wiring Connection Diagram

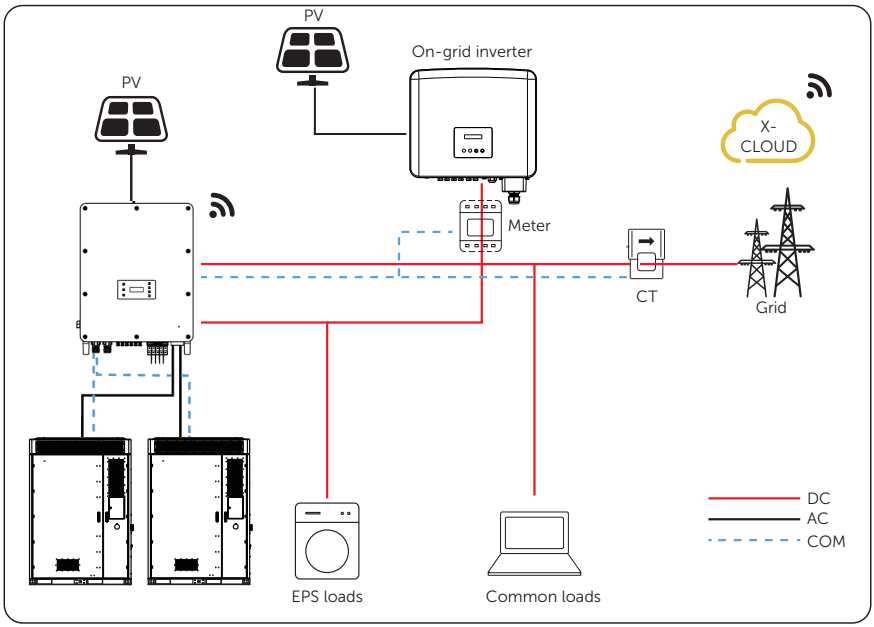


Figure 14-1 Micro-grid wiring connection

14.3.3 Working Modes

Grid on

- When PV is sufficient, the hybrid and on-grid inverters power the general and critical loads together. When there is surplus energy on the on-grid inverter, it will also charge the battery connected to the hybrid inverter.
- When PV is insufficient, the hybrid, on-grid inverter and grid power all the loads.

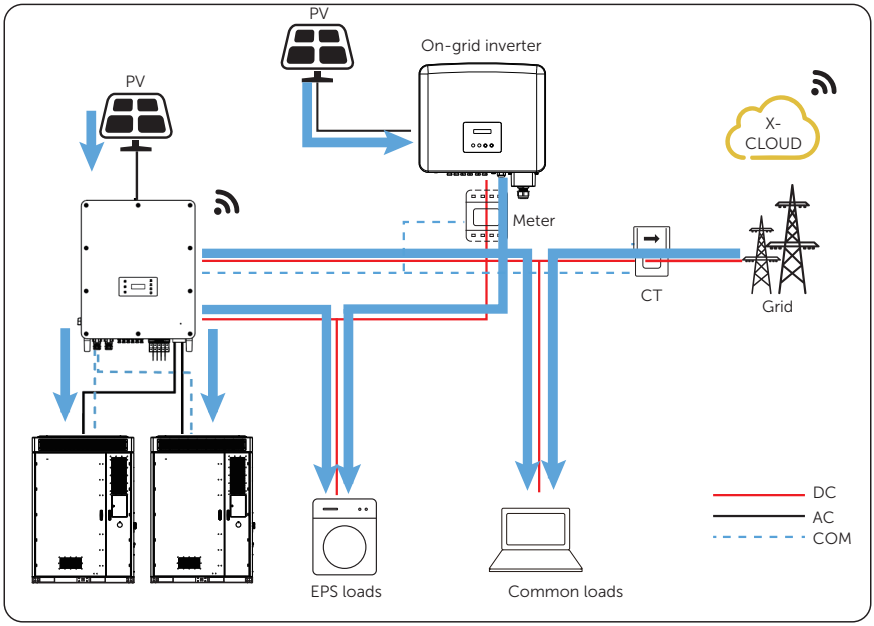


Figure 14-2 Power flowing when grid on and PV sufficient

Grid off

In this case, the hybrid inverter will simulate the grid so as to make the on-grid inverter can still work. Hybrid and on-grid inverter will power the EPS loads together. If there is surplus energy, it will charge the battery.

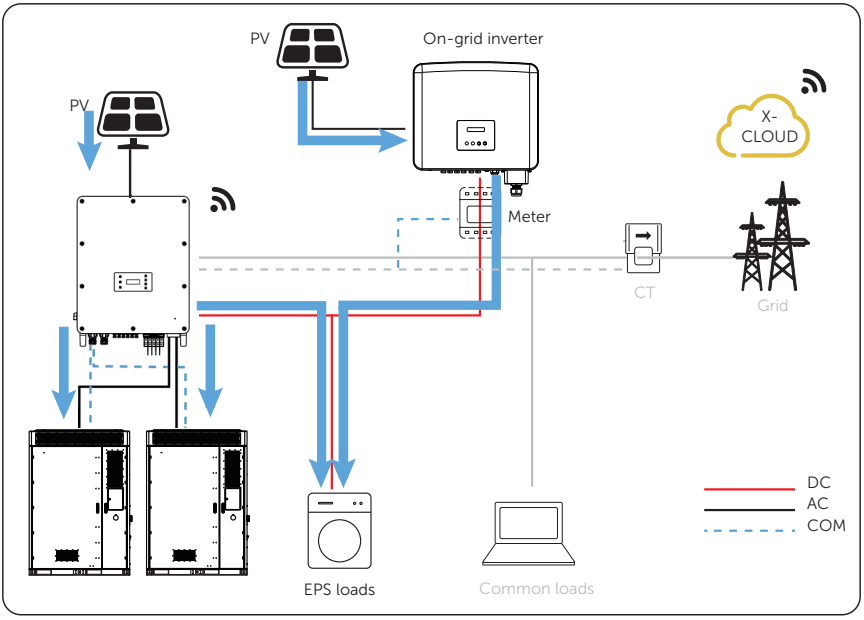


Figure 14-3 Power flowing when grid off

Notice for Micro-grid application

- Any brand of on-grid inverter that supports "frequency adaptation"
- On-grid inverter output power≤Max hybrid inverter EPS output power
- On-grid inverter output power≤Max battery charging power, refer to the table below:

NOTICE!

- Since X3-AELIO series inverter is unable to control the output power of on-grid inverter in grid connection mode, therefore X3-AELIO series inverter can not achieve zero export when loads power + battery charging power < on-grid inverter output power.

14.3.4 Cable Connection (Hybrid inverter)

Please refer to "7.2.2 AC Connection" for Grid and EPS connection on X3-AELIO series inverter.

14.3.5 Cable Connection (On-grid Inverter)

Please connect the AC cable of on-grid inverter to the EPS terminal of X3-AELIO series inverter through a circuit breaker. Please refer to the user manual of specific on-grid inverter.

14.3.6 Cable Connection (Meter)

To detect and monitor the power data generated from the on-grid inverter, you can install a meter on the on-grid inverter side. Otherwise, the relevant power data of on-grid inverter can not be monitored.

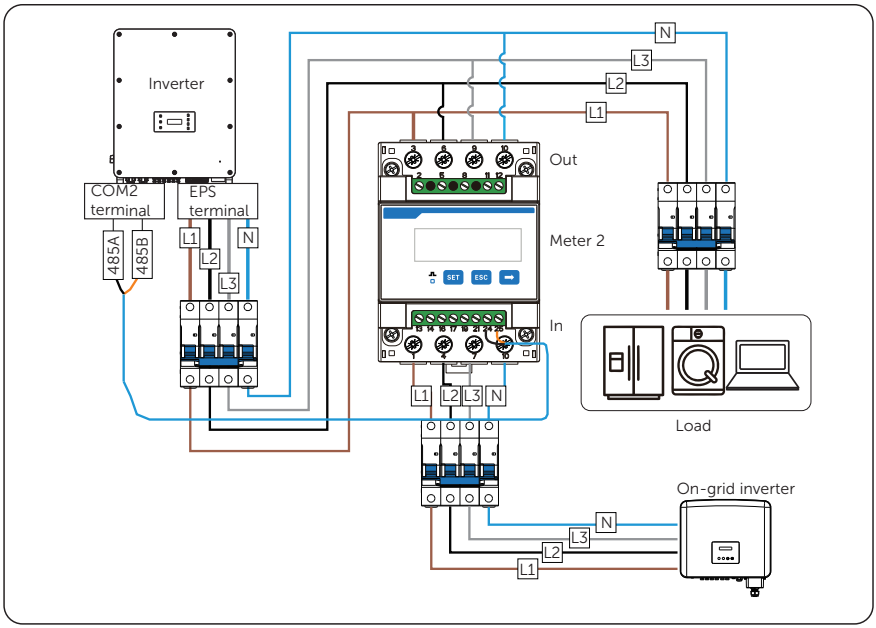


Figure 14-4 Connection diagram of Meter on EPS terminal

NOTICE!

- If one-to-two adapter for RJ45 terminal is used, it should be placed in a waterproof enclosure.

- Pin defition

Table 14-1 Pin defition for meter and CT

Application	For CT1			For meter		For CT2		
Pin	1	2	3	4	5	6	7	8
Assignment	CT_ R1_ CON	CT_ S1_ CON	CT_ T1_ CON	METER _485A	METER _485B	CT_ T2_ CON	CT_ S2_ CON	CT_ R2_ CON

- Meter/CT connection steps

Please refer to "14.4 CT/Meter Connection Scenarios" and meter/CT user manual for specific connection steps.

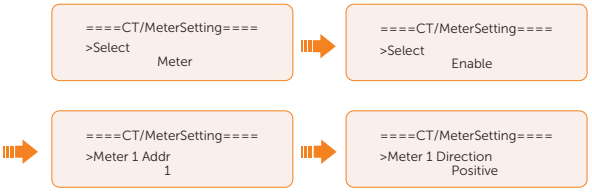
- Setting on the LCD

Setting path: **Menu**>**Setting**>**Advance Setting**>**Meter/CT Setting**

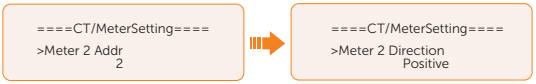
① For meter 1 and meter 2 solution (Meter 1 for gird connection, Meter 2 for EPS connection)

a. Select and enter the **Meter/CT Setting** according the setting path.

b. Set the address and direction of Meter 1: You can check the connection status in **Meter/CT Check.**



c. Set the address and direction of Meter 2: You can check the connection status in **Meter/CT Check.**



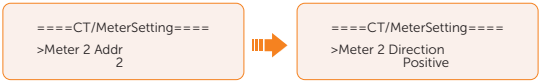
d. After connection succeeded, check the feed-in power of Meter 1 in the path of **Menu**>**System Status**>**Meter/CT** and check the output power (**Output Today** and **Output Total**) of Meter 2 in the path of **Menu**>**History Data**>**E_USERDEF.**

② For CT and meter 2 solution (CT for grid connection, Meter 2 for EPS connection)

a. Select and enter the **Meter/CT Setting** according the setting path.

b. The default device is CT and the status is enable by default. You can check the connection status in **Meter/CT Check.**

c. Set the address and direction of Meter 2: You can check the connection status in **Meter/CT Check.**



d. After connection succeeded, check the feed-in power of Meter 1 in the path of **Menu**>**System Status**>**Meter/CT** and check the output power (**Output Today** and **Output Total**) of Meter 2 in the path of **Menu**>**History Data**>**E_USERDEF.**

14.4 CT/Meter Connection Scenarios

X3-AELIO inverter series can be connected to a single batch of CTs, a direct-connected meter, or a CT-connected meter, and also supports a Meter 2 function for you to monitor another power generation device at home.

Followings are the detailed wiring and setting procedures of these scenarios. For wiring procedure of the inverter CT/Meter port, see "CT/Meter connection".

14.4.1 Connection of CT

NOTICE!

- Do not place the CT on the N wire or ground wire.
- Do not put CT on the N line and L line at the same time.
- Do not place the CT on the side where the arrow points to the inverter.
- Do not place the CT on non-insulated wires.
- The cable length between CT and inverter should not exceed 10 meters.
- It is recommended to wrap the CT clip around in circles with insulating tape.

NOTICE!

- The CTs referred to in this section are the CT batch delivered with the inverter.

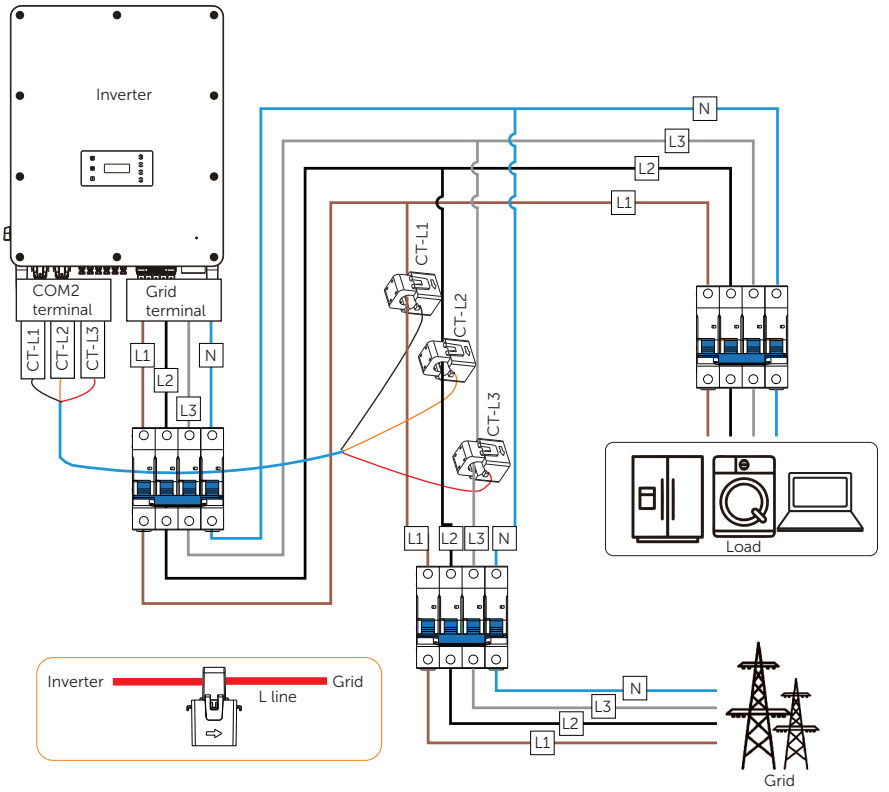


Figure 14-5 System wiring with CT

NOTICE!

- The arrow on the CT must point at the public grid.
- Markings on the CTs might be R, S and T or L1, L2 and L3. Make sure to clip CT-R/CT-L1 to the L1 wire, CT-S/CT-L2 to the L2 wire, and CT-T/CT-L3 to the L3 wire.
- The emergency load is connected to the EPS terminal of the inverter, which is not shown in the diagram.

Wiring procedure

Step 1: Clip CT_L1, CT_L2 and CT_L3 respectively onto the L1, L2 and L3 cables of the grid.

Make sure the arrow on the CTs is pointing to the grid side from the inverter.

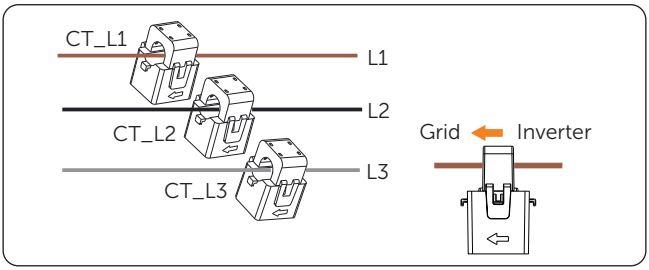


Figure 14-6 Clipping CTs to grid cables

Step 2: Use the RJ45 coupler to connect the extension communication cable and the batch of CTs.

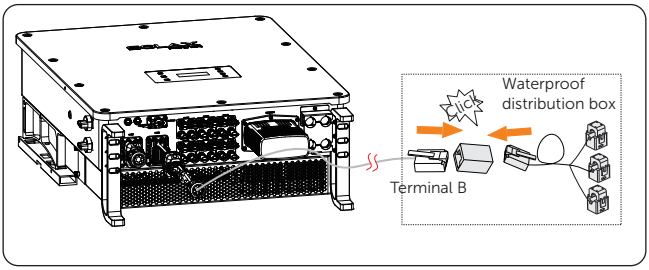


Figure 14-7 Connecting to CT

Setting procedure

After connecting CT to the inverter, set parameters for them on the inverter.

Step 1: Select **Advance Settings > Meter/CT Setting**.

Step 2: Enable CT, and then select the supported CT type.

You can check the connection status in **Meter/CT Check.** For details, see "Setting Meter/CT Check".

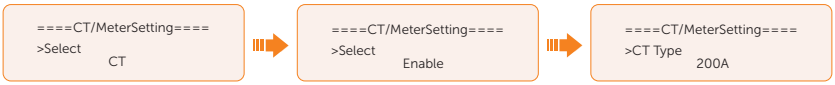


Figure 14-8 Setting CT for the inverter

14.4.2 Connection of Direct-connected Meter

NOTICE!

- The following figures take inverter with Meter DTSU666 as an example.
- Please make PE connection for Meter if the meter has ground terminal.

- Meter connection diagram

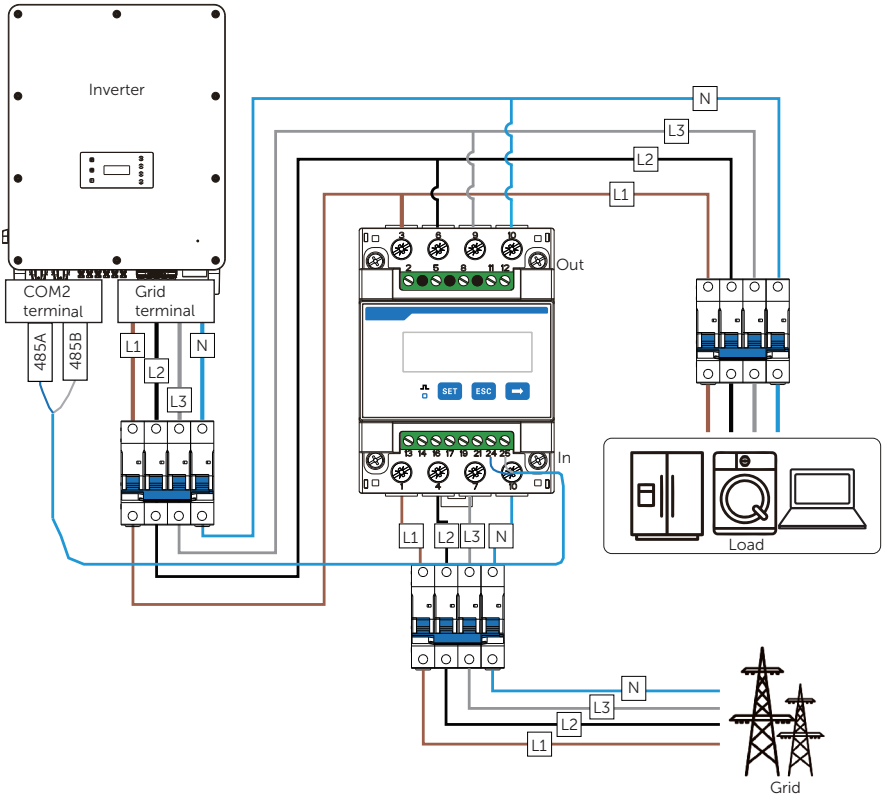


Figure 14-9 System wiring with direct-connected meter

NOTICE!

- For direct-connected meter, the current flow direction should be from grid to the inverter.
- Terminal 1, 4 and 7 of the meter must be connected to the grid side, and termimnal 3, 6 and 9 be connected to the inverter side of the system. Otherwise, the system power data might be misread.

Meter terminal definition

Table 14-2 Terminal defintion of SolaX direct-connected meter

Terminal No.	Definition	Description
1, 4, 7	UA*, UB*, UC*	Voltage input terminal of phase A, B and C, respectively connected to L1, L2 and L3 wire
3, 6, 9	UA, UB, UC	Voltage output terminal of the three phases, respectively connected to L1, L2 and L3 wire
10	UN	Connected to the N wire
24	RS485A	RS485 terminal A
25	RS485B	RS485 terminal B

Wiring procedure

Step 1: Strip around 10 mm wire insulation off the grid voltage cables, and then connect L1, L2 and L3 wires respectively to terminal 1 and 3, 4 and 6, 7 and 9, and N wire to terminal 10 of the meter.

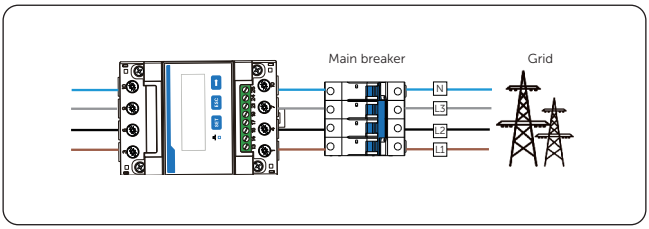


Figure 14-10 Connecting direct-connected meter to the grid

Step 2: Strip 15 mm wire insulation off the other end of the communication cable.

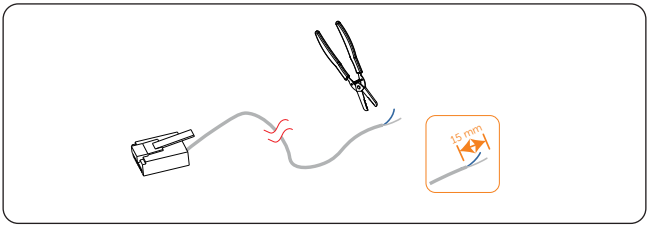


Figure 14-11 Stripping communication cable for meter

Step 3: Connect the conductors to terminal 24 and 25 of the meter.

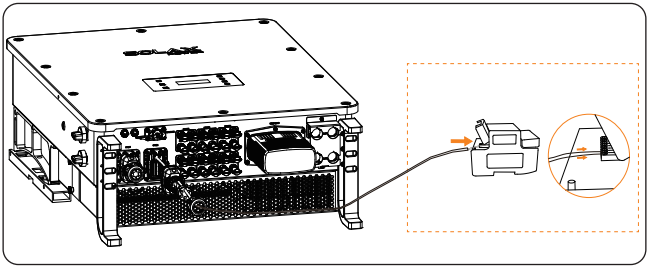


Figure 14-12 Connecting inverter to meter

Setting procedure

After connecting meter to the inverter, set parameters of the meter on the inverter.

Step 1: Select **Advance Settings > Meter/CT Setting**.

Step 2: Enable **Meter**, and then set **Meter1Addr** to **1** and **Meter1 Direction** to **Positive**.

You can check the connection status in **Meter/CT Check.** For details, see "Setting Meter/CT Check".

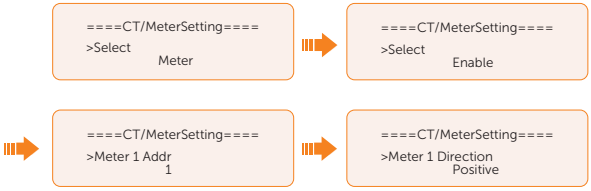


Figure 14-13 Setting meter for the inverter

14.4.3 Connection of CT-connected Meter

NOTICE!

- The following figures take inverter with Meter DTSU666-CT as an example.
- Please make PE connection for Meter if the meter has ground terminal.
- The CTs referred to in this section are CTs that are delivered with the CT-connected meter.

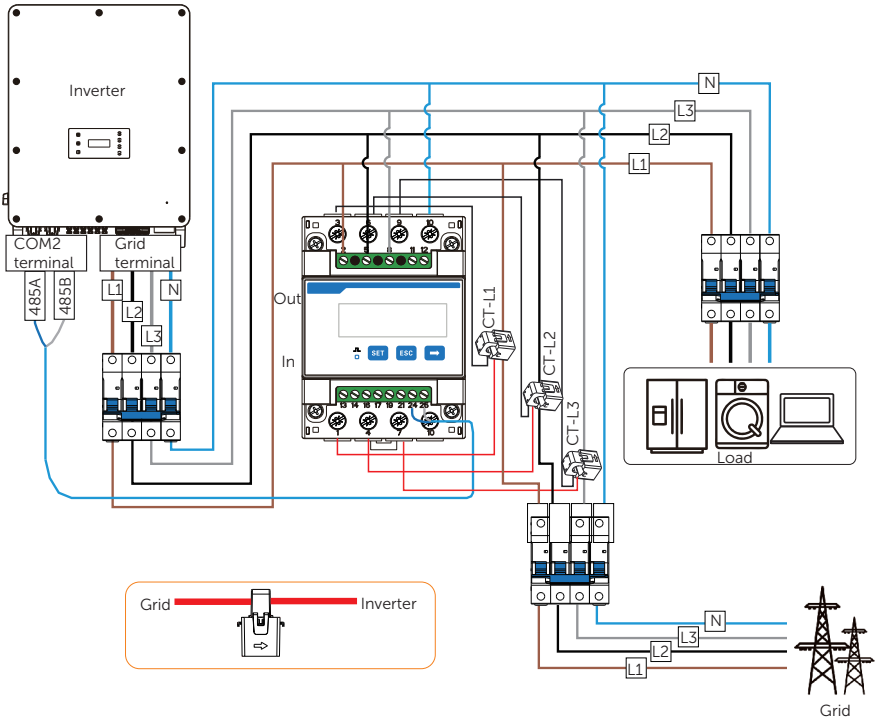


Figure 14-14 System wiring with CT-connected meter

NOTICE!

- Terminal 2, 5 and 8 of the meter must be connected to the grid side. Terminal 1, 4 and 7 must be connected to the S1 wire of the CTs, and terminal 3, 6 and 9 be connected to the S2 wire of the CTs. Otherwise, the system power data might be misread.
- The arrow on the CT must point at the inverter.
- Markings on the CTs might be R, S and T or L1, L2 and L3. Make sure to clip CT-R/CT-L1 to the L1 wire, CT-S/CT-L2 to the L2 wire, and CT-T/CT-L3 to the L3 wire.

Meter terminal definition

Table 14-3 Terminal defintion of SolaX CT-connected meter

Terminal No.	Definition	Description
2, 5, 8	UA, UB, UC	Voltage input terminal of phase A, B and C respectively connected to L1 L2 and L3 wire
10	UN	Connected to the N wire
1, 4, 7	IA*, IB*, IC*	Current input terminal of the three phases, connected to the S1 wire of CT
3, 6, 9	IA, IB, IC	Current input terminal of the three phases, connected to the S2 wire of CT
24	RS485A	RS485 terminal A
25	RS485B	RS485 terminal B

Wiring procedure

Step 1: Strip around 10 mm wire insulation off the voltage cables,and then connect L1, L2 and L3 wires respectively to terminal 2, 5 and 8, and the N wire to terminal 10 of the meter.

Step 2: Clip the CTs onto the L1, L2 and L3 wires in the direction from gird to inverter.

Step 3: Connect the S1 wire of the three included CTs respectively to terminal 1, terminal 4 and terminal 7, and S2 wire of the CTs respectively to terminal 3, 6 and 9 of the meter.

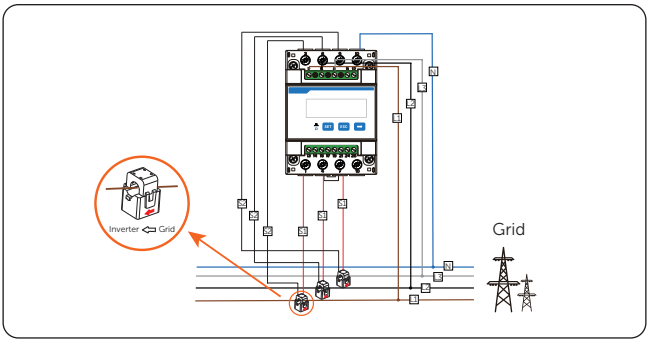


Figure 14-15 Connecting CT-connected meter to the grid

Step 4: Strip 15 mm wire insulation off the other end of the communication cable.

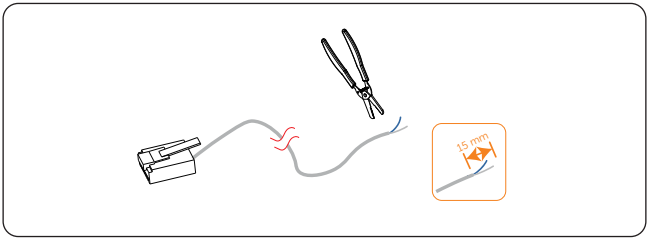


Figure 14-16 Stripping communication cable for meter

Step 5: Connect the conductors to terminal 24 and 25 of the meter.

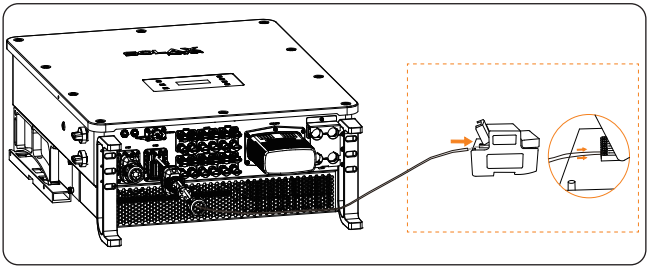


Figure 14-17 Connecting inverter to meter

Setting procedure

After connecting CT to the inverter, set parameters for them on the inverter.

Step 1: Select **Advance Settings > Meter/CT Setting**.

Step 2: Enable **Meter**, and then set **Meter1Addr** to **1** and **Meter1 Direction** to **Positive**.

You can check the connection status in **Meter/CT Check**. For details, see "Setting Meter/CT Check".

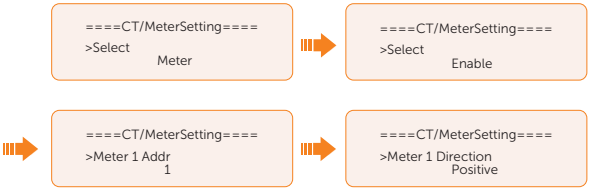


Figure 14-18 Setting meter for the inverter

14.4.4 Connection of Two Meters

If you have another power generation device (such as an inverter) at home and wants to monitor both device, our inverter provides a Meter 2 Communication function to monitor the other power generation device.

NOTICE!

- For connecting CT and meter, or connecting two meters, prepare an RJ45 splitter adapter and a proper waterproof enclosure for it in advance.
- The device for monitoring the system (device at Meter 1 position) can be CT, direct-connected meter and CT-connected meter, but the device for monitoring the other power generation device (device at Meter 2 position) can only be meters, either direct-connected meter or CT-connected meter. The following diagrams use the connection of CT and direct-connected meter for example.

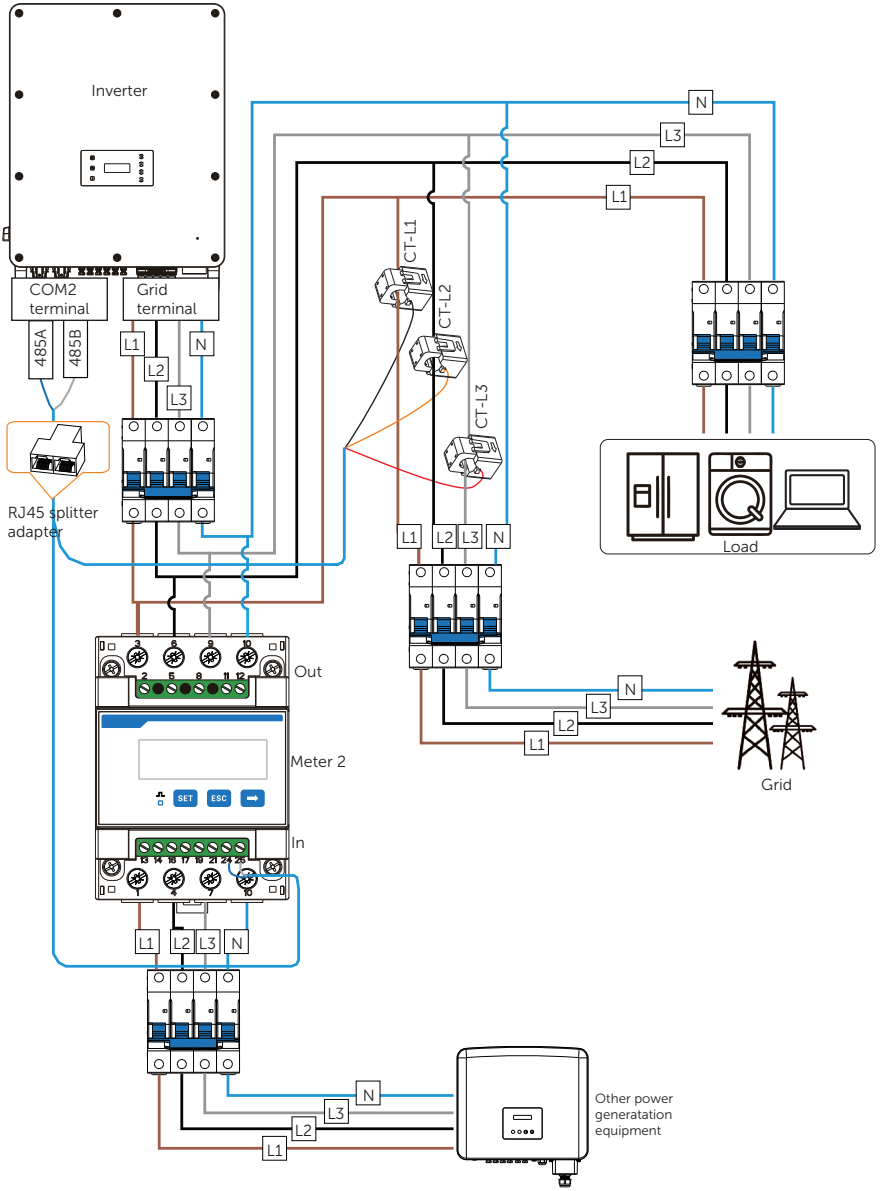


Figure 14-19 Connection diagram of CT and direct-connected meter

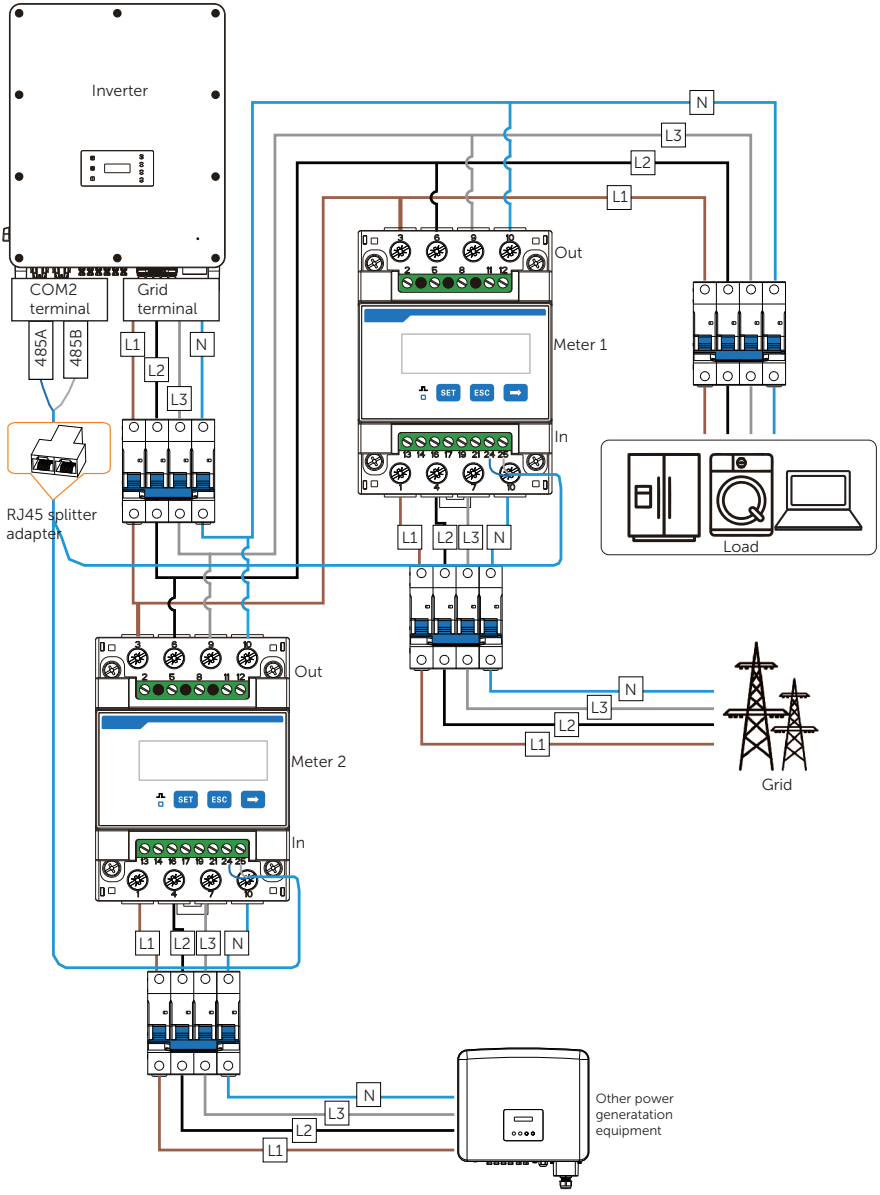


Figure 14-20 Connection diagram of two direct-connected meters

Wiring procedure

Step 1: Follow the above steps to connect the meter, CT and inverter.

Step 2: Connect the RJ45 terminals to the RJ45 splitter adapter.

Setting procedure

After connecting the CT and meter to the inverter, you need to set parameters on the inverter LCD before the they can work normally for the system.

Step 1: Select **Advance Settings > Meter/CT Setting**.

Step 2: Set the Meter/CT:

» Case 1: CT and Meter 2 are connected (CT for SolaX inverter, Meter 2 for another power generation device). CT is set by default. Check whether the address and direction of Meter2 are set based on actual connection.

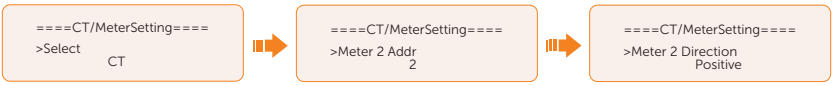


Figure 14-21 Selecting CT and set Meter2 data

» Case 2: Meter 1 and Meter 2 are connected (Meter 1 for SolaX inverter, Meter 2 for another power generation device). Select **Meter** and enble the Meter function. Check whether the address and direction of Meter 1 and Meter 2 are set based on actual connection.

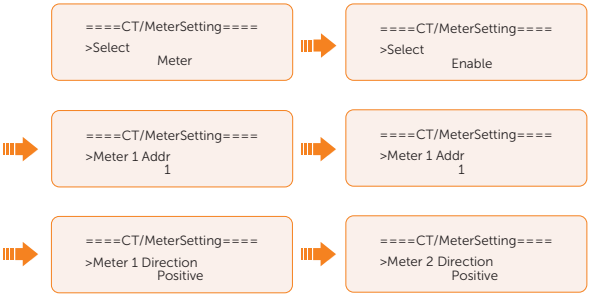


Figure 14-22 Selecting meter and set Meter 1 and Meter 2 data

Step 3: Set the CT type.

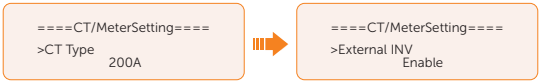


Figure 14-23 Setting the limits

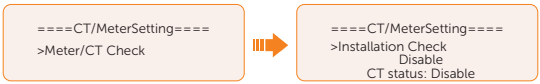
Related operation

Setting Meter/CT Check

- **Installation Check**: It is for checking whether the Meter/CT has been correctly connected. It is vital to the normal function of the whole system. Therefore, we recommend performing installation check after connecting the Meter/CT.

  Select **Meter/CT Setting** > **Meter/CT Check**, and then enable **Installation Check**.

  The system will perform Meter/CT check immediately after you enable it, and then automatically restores to the disabled status after the check completes.



- **Cyclic Check**: It is for periodically checking whether the Meter/CT is in good condition when the inverter is running.

  Select **Meter/CT Setting** > **Meter/CT Check**, and then enable **Cyclic Check**.

  Once Cyclic Check is enabled, the system will check the Meter/CT status periodically based on the defined cycle.

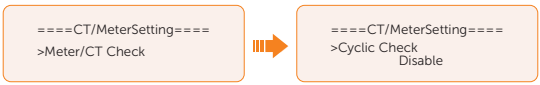


Figure 14-24 Checking Meter/CT status

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