X3-IES-A

5 kW / 10 kW / 15 kW

User Manual

Version 0.0

www.solaxpower.com

eManual in the QR code or at
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About This Manual

Scope of Validity

This manual is an integral part of X3-IES-A system. It describes the installation, electrical connection, commissioning, maintenance and troubleshooting of the product. Please read it carefully before operating.

This X3-IES-A system includes a X3-IES-A series inverter and a T-BAT-SYS-HV-S50E.

X3-IES-A series inverter model list:

X3-IES-5K-A	X3-IES-10K-A
X3-IES-15K-A	

Components of T-BAT-SYS-HV-S50E:

BMS	Battery Module
TBMS-MCS0800E	TP-HS50E

Note:

"X3-IES-A system" is the name of three-phase residential energy storage system.

"X3-IES-A series inverter" (hereafter referred to as an "inverter") refers to three-phase energy storage inverter that can control battery and grid-connected charge or discharge.

“5K"means the rated output power is 5kW.

"T-BAT-SYS-HV-S50E” (hereafter referred to as an "T-BAT-SYS") is the name of battery system. lt includes a TBMS-MCS0800E, a TP-HS50E (s), a base (s), a cover and a series box.

"TBMS-MCS0800E" (hereafter referred to as an "BMS"), an electronic system, manages a rechargeable battery.

"TP-HS50E" (hereafter referred to as an "battery module(s)") is a type of electrical battery which can charge or discharge loads.

"Base" is an accsssory of the battery system. lt is installed under the battery module (s).

"Cover" is an accessory of the battery system. lt is installed on the top battery module of the expansion battery tower.

"Series box" is designed to connect the second tower in series through BMS wiring.

Target Group

The installation, maintenance and grid-related setting can only be performed by qualified personnel who

- Are licensed and/or satisfy state and local jurisdiction regulations.
- Have good knowledge of this manual and other related documents.

Conventions

The symbols that may be found in this manual are defined as follows.

Symbol	Description
DANGER	Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
WARNING	Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
CAUTION!	Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
NOTICE!	Provides tips for the optimal operation of the product.

Change History

Version 01 (2024-10-11)

Update "System Diagram C (applicable to Australia)" and "System Diagram D (applicable to Australia)"

Update "5.2 Scope of Delivery" (Added Australia version materials and WiFi connecting cable)

Update "7.2.4 Monitoring Connection (UPGRADE/ Port)" (Added WiFi connecting cable)

Update "6 Mechanical Installation" and "7 Electrical Connection" (Added Australia version anti-tamper bracket and cable shielding board installation)

Version 00 (2024-08-02)

Initial release

Table of Contents

1 Safety

1.1 General Safety

The X3-IES-A system has been meticulously designed and thoroughly tested to comply with all relevant state and international safety standards. Nevertheless, like all electrical and electronic equipment, safety precautions must be observed and followed during the installation of the inverter to minimize the risk of personal injury and ensure a safe installation.

Please thoroughly read, comprehend, and strictly adhere to the comprehensive instructions provided in the user manual and any other relevant regulations prior to the installation of the inverter. The safety instructions in this document serve as supplementary guidelines to local laws and regulations.

SolaX shall not be liable for any consequences resulting from the violation of the storage, transportation, installation, and operation regulations outlined in this document. Such consequences include, but are not limited to:

- Devices damage caused by force majeure events, such as earthquakes, floods, thunderstorms, lightning, fire hazards, volcanic eruptions, and similar events.
- Devices damage due to human cause.
- Usage or operation of the devices in violation of local policies or regulations.
- Failure to comply with the operation instructions and safety precautions provided with the product and in this document.
- Improper installation or usage of the devices in unsuitable environmental or electrical conditions.
- Unauthorized modifications to the product or software.
- Devices damage occurring during transportation by the customer.
- Failure to adequately maintain the equipment. An on-site inspection should be carried out by a qualified technician after 120 months of continuous use. If more than 120 months have been passed since the date of commissioning, or the user cannot prove that the equipment has been adequately maintained
- Storage conditions that do not meet the requirements specified in this document.
- Installation and commissioning performed by unauthorized personnel who lack the necessary licenses or do not comply with state and local jurisdiction regulations.
- A cement wall is required for the installation of X3-IES-A system. When the wall mounting is selected, please ensure that the thickness of any section of the wall should be greater than 150 mm. When the floor mounting is selected, the wall thickness of should be larger than 100 mm.

1.2 Safety Instructions of Inverter, Grid and Battery

Save these important safety instructions. Failure to do so may result in damage to the devices and injury or even loss of life.

1.2.1 Safety Instructions of Inverter

DANGER!

Potential risk of lethal electrical shock associated with the inverter

- Only operate the inverter if it is in a technically faultless condition. Operating a faulty inverter may lead to electric shock or fire.
- Do not attempt to open the enclosure without authorization from SolaX.
- Unauthorized opening of the enclosure will void the warranty and can result in lethal danger or serious injury due to electric shock.
- Make sure that the inverter is reliably grounded before any operation to prevent the risk of electric shock causing lethal danger or serious injury.
- Only qualified personnel can perform the installation, wiring, maintenance of the inverter by following this document and the related regulations.

WARNING!

- During operation, avoid touching any parts of the inverter other than the LCD panel (if any).
- Never connect or disconnect the AC connector while the inverter is running.
- Prior to conducting any maintenance, turn off the AC and DC power and disconnect them from the inverter. Wait for 5 minutes to fully discharge the energy.

WARNING!

Potential danger of scalding due to the hot enclosure of the inverter

- Avoid touching the inverter while it is running, as it becomes hot during operation and may cause personal injuries.

WARNING!

- When handling the battery, carefully follow all safety instructions provided in the battery manual. The battery used with the inverter must meet the specified requirements of the series inverter.

CAUTION!

- Make sure that children are supervised to prevent them from playing with the device.
- Pay attention to the weight of the inverter and handle it properly to avoid personal injuries.
- Use insulated tools when installing the device, and always wear personal protective equipment during installation and maintenance.

NOTICE!

- If an external Residual Current Device (RCD) is required by local regulations, verify the type of RCD required. It is recommended to use a Type-A RCD with a rating of 300 mA unless a lower value is required by the specific local electric codes. When required by local regulations, the use of an RCD type B is permitted.
- Keep all product labels and the nameplate on the inverter clearly visible and well maintained.

1.2.2 Safety Instructions of Utility Grid

NOTICE!

- Only connect the inverter to the grid with the permission of the local utility grid company.

1.2.3 Safety Instructions of Battery (T-BAT-SYS)

General Safety Precautions

- Overvoltage or wrong wiring may damage the battery module and cause combustion which may be extremely dangerous;
- Leakage of electrolytes or flammable gas may be occurred due to any type of product breakdown;
- Do not install the battery module in places where flammable and combustible materials are stored, and in which an explosive atmosphere is present;
- The battery module wiring must be carried out by qualified personnel;
- Battery module must be serviced by qualified personnel;
- Ensure that the grounding cable is connected before handling the battery module.

Battery Handling Guide

Do's

- DO keep the battery module away from flammables materials, heat sources, and water sources;
- DO keep the battery module out of reach of children and animals;
- DO practice proper battery storage by keeping the battery module in a clean environment, free of dust, dirt and debris;

- DO store the battery module in a cool and dry place;
- DO seal the outer cable connection hole to prevent ingress of foreign objects;
- DO confirm that the wiring of the device must be correct;
- DO install the device according to the local standards and regulations.

Don'ts

- DON'T expose the battery module to an open flame, or the temperature in excess of 140°F/60°C;
- DON'T install or operate the battery module in places where there is excessive moisture or liquids;
- DON'T place the battery module in a high-voltage environment;
- DON'T disconnect, disassemble or repair the device by unqualified personnel. Only a qualified personnel is allowed to handle, install and repair the device;
- DON'T damage the device by dropping, deforming, impacting, cutting or penetrating with a sharp object. Otherwise, it may cause a fire or leakage of electrolytes;
- DON'T touch the device if liquid spill on it. There is a risk of electric shock;
- DON'T step on the packaging or the device may be damaged;
- DON'T place any objects on top of the battery module;
- DON'T charge or discharge a damaged battery module;
- DON'T dispose of the battery module in a fire. It may cause leakage or rupture;
- DON'T mix different types or makes of the battery module. It may cause leakage or rupture, resulting in personal injury or property damage.

Response to Emergency Situations

In case the battery module leaks electrolyte or any other chemical materials, or gas may be generated due to the leakage of battery module, be sure to avoid contact with the discharge at all times. In case of accidentally coming into contact with them, please do as follows:

- In case of inhalation: Leave the contaminated area immediately, and seek medical attention at once;
- In case of contact with eyes: Rinse eyes with running water for 15 minutes, and seek medical attention;
- In case of contact with skin: Wash the contacted area thoroughly with soap, and seek medical attention;
- In case of ingestion: Induce vomiting, and seek medical attention.

If a fire breaks out where the battery module is installed, please do as follows:

- In case the battery module is charging when the fire breaks out, provide it is safe to do so, disconnect the battery module circuit break to shut off the power charge;
- In case the device is not on fire yet, use a Class ABC fire extinguisher or a carbon dioxide extinguisher to extinguish the fire;
- If the battery module catches fire, do not try to put out the fire, and evacuate immediately.
- The battery module may catch fire when it is heated above 302°F/150°C; and in case of catching fire, it will produce noxious and poisonous gas, DO not approach and keep away.

Effective ways to deal with accidents

- In case of the damaged battery module, place it into a segregated place, and call the local fire department at the place where the user lives or qualified personnel.
- If any part of the battery module, or wiring is submerged, DO stay out of the water and DON'T touch anything; If the battery module gets wet, DON'T touch it.
- If the battery module is damaged, DON'T use it. Otherwise, it may result in both personal injury and property damage.
- DON'T use the submerged battery module again, and contact the qualified personnel for assistance.
- DO contact SolaX immediately for assistance if the user suspects that the battery module is damaged.

⚠ WARNING!

- Do not crush or impact battery, and always dispose of it according to relevant safety regulations.
- The battery module may catch fire when heated above 150°C/302°F.
- In case of catching fire, the battery module will produce noxious and poisonous gases, and please keep away the battery.
- Damaged batteries may leak electrolyte or produce flammable gas. If users suspect that the battery is damaged, please immediately contact SolaX for advice and information.
- All operations of T-BAT SYS relating to electrical connection and installation must be carried out by qualified personnel.

⚠ CAUTION!

- If the battery module is not installed within a month after receipt, it must be charged for maintenance. Non-operational batteries should be discarded according to the local regulations.

1.3 Additional Safety Instructions

Anti-islanding Effect

The islanding effect means that when the power grid is cut off, the grid-connected power generation system fails to detect the power outage and still supplies power to the power grid. This is very dangerous for the maintenance personnel and the power grid on the transmission line. The inverter's use active frequency offset method to prevent islanding effect.

PE Connection and Leakage Current

All inverters incorporate a certified internal Residual Current Monitoring (RCM) in order to protect against possible electrocution and fire hazard in case of a malfunction in the cables or inverter. There are 2 trip thresholds for the RCM as required for certification (IEC 62109-2:2011).

The default value for electrocution protection is 30mA, and for slow rising current is 300mA. the house loads. If an external RCD is required by local regulations, it is recommended to choose a Type-A RCD with the rating residual current of 300 mA.

⚠ DANGER!

- High leakage current!
- Earth connection essential before connecting supply.

A faulty ground connection can result in equipment failure, personal and death injuries, and electromagnetic interference. Ensure correct according to grounding to IEC62109 and conductor diameter according to STANDARD specification. Do not connect the grounding end of the equipment in series to prevent multi-point grounding. Electrical appliances must be installed in accordance with the wiring rules of each country.

For United Kingdom

The installation that connects the equipment to the supply terminals shall comply with the requirements of BS 7671. Electrical installation of PV system shall comply with requirements of BS 7671 and IEC 60364-7-712. All protective devices cannot be changed.

User shall ensure that equipment is so installed, designed and operated to maintain at all times compliance with the requirements of ESQCR22(1)(a).

2 Product Overview

2.1 System Description

System Overview

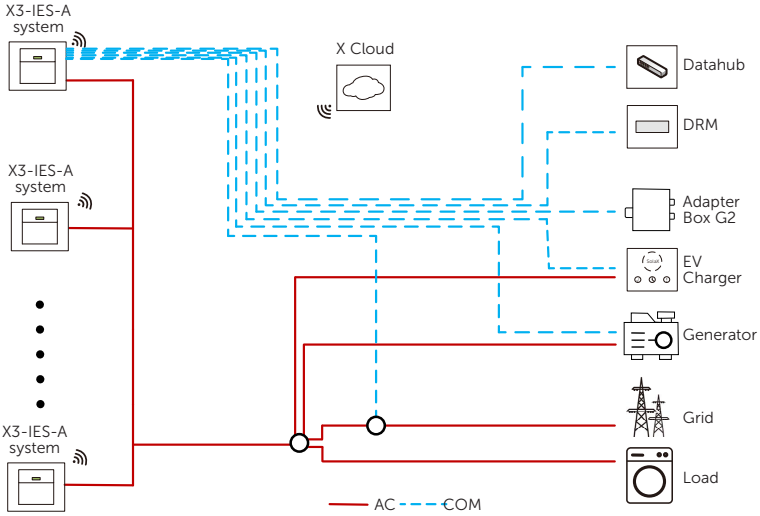


Figure 2-1 System overview diagram

X3-IES-A System

X3-IES-A series residential energy storage system integrates the inverter and a T-BAT-SYS into one.

Inverter

The inverter refers to Single-phase energy storage inverter that can control battery and grid-connected charge or discharge

T-BAT-SYS

The T-BAT-SYS is a high voltage battery. The battery communicates with inverter via BMS and must comply with the specification of regulations.

CT/ Meter

A CT or meter is used for detecting the input and output current on the grid side.

Grid

380V / 400V grid are supported.

SolaX Cloud

SolaX Cloud is an intelligent, multifunctional monitoring platform that can be accessed via wired or wireless connections. With the SolaX Cloud, the operators and installers can always view the real-time data.

DRM

DRM is applicable for AS NZS 4777.2-2015. With the use of an external control box, active or reactive power regulation can be realized in a timely and fast manner, and the inverter can be operated stably during the process of regulation.

Adapter Box

SolaX Adapter Box is matched with a heat pump with dry contact function, which can realize heat pump integrated photovoltaic inverter energy system management.

Datahub

SolaX DataHub is a device for monitoring platforms of photovoltaic power generation systems, which enables data detection, storage, output control, centralized monitoring, and centralized maintenance of devices such as inverters, electricity meters, and environmental monitoring instruments in photovoltaic power generation systems.

EV Charger

SolaX EV Charger is used for charging electric vehicle.

Generator

A generator is a device which can be matched with X3-IES-A system to supply energy in places where there are frequent power outages.

2.2 Supported Power Grid

There are different ways of wiring for different grid systems. Three grid types, TT / TN-S / TN-C-S are shown as below:

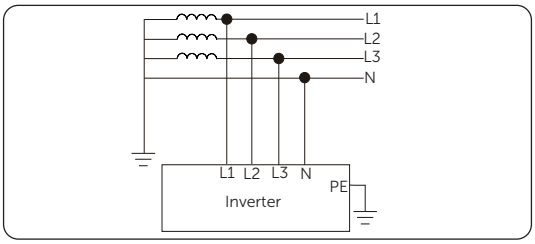


Figure 2-2 TT power grid

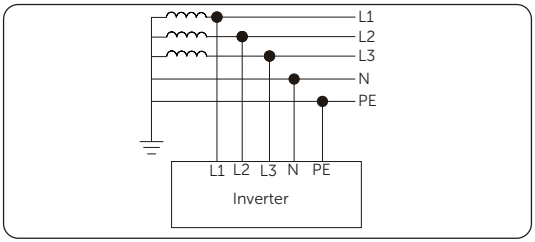


Figure 2-3 TN-S power grid

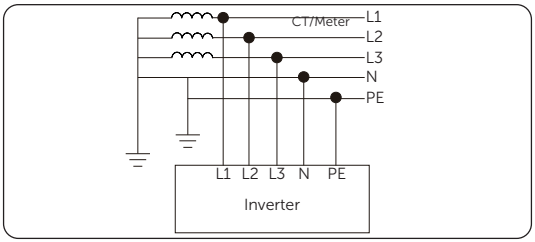


Figure 2-4 TN-C-S power grid

* Note: Please confirm with our SolaX after-sales team whether other grid systems are applicable.

2.3 Appearance

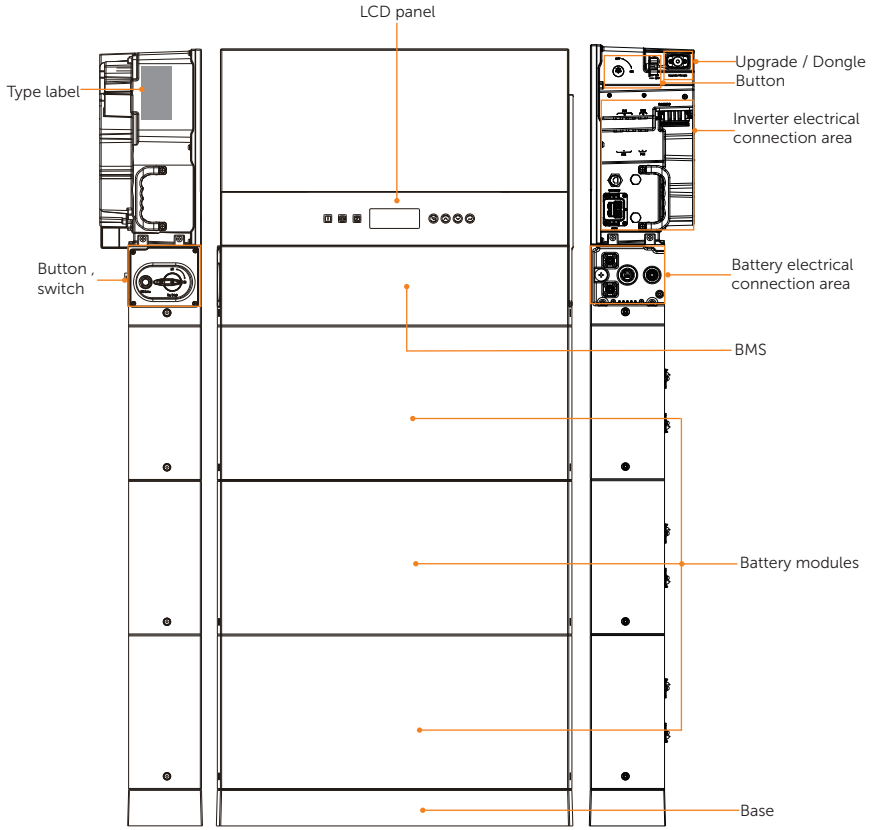


Figure 2-5 Appearance

Table 2-1 Desciption of appearance

Item	Description
Type label	Type label clearly identifies the device type, serial number, specific DC/AC parameters, certification, etc.
Button, switch	Power on or off the battery system. Please refer to "Figure 2-7 BMS" for details.
LCD panel	Including screen, indicators and keys. Screen displays the information; indicators indicates the operating status of inverter. Keys are used to perfom the parameter setting.

Item	Description
Upgrade/ Dongle	USB port for upgrading and communication module connection. Communication module includes a dongle/ 4G (optional) .
Button	Power on or off the inverter system.
Inverter electrical connection area	Including battery terminals, AC terminals, communication terminals, etc.
Battery electrical connection area	Including B+/B- ports, communication port, heat port, grounding port. Please refer to "Figure 2-7 BMS" for details.

2.3.1 Dimensions

Inverter Dimensions

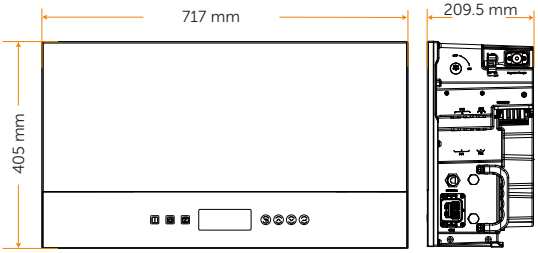


Figure 2-6 Inverter

Battery Dimensions

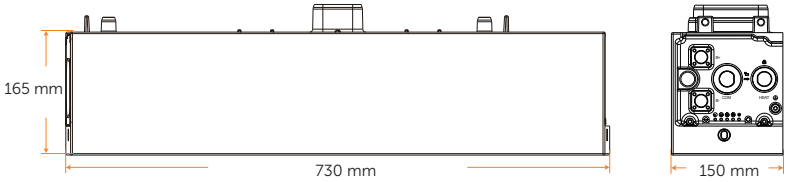


Figure 2-7 BMS

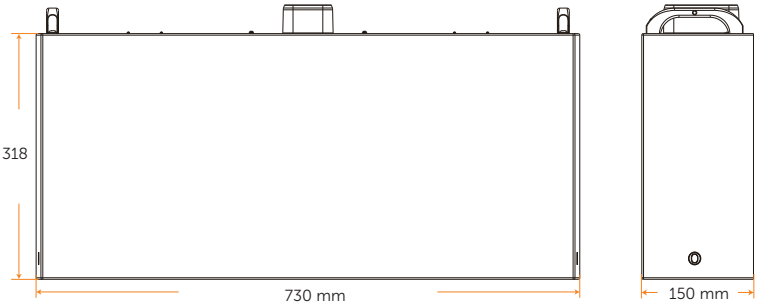


Figure 2-8 Battery module

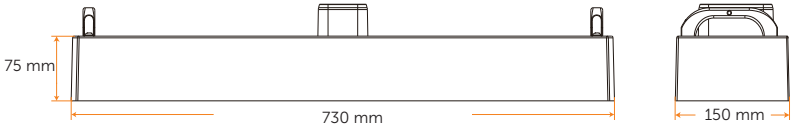


Figure 2-9 Base

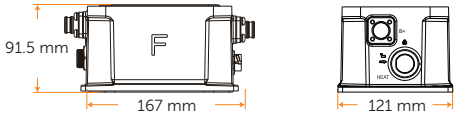


Figure 2-10 Series box

2.3.2 Control Panel and Indicators

Inverter Control Panel

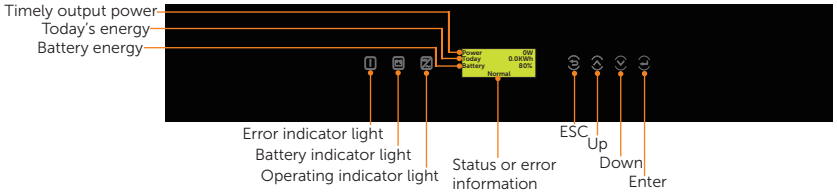


Figure 2-11 Control Panel

* The LCD screen in the whole passage is subject to the actual screen.

- 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 "11.1 Troubleshooting" in the user manual.

Table 2-2 Definition of indicators

LED indicator	Status		Definition
Operating	●	Solid blue	The inverter is in a normal state.
	◔	Blue blinking	The inverter is in a waiting state.
	○	Light off	The inverter is in a fault status.
Error	●	Solid red	The inverter is in a fault state.
	○	Light off	The inverter is in a normal state.
Battery	●	Solid green	The battery communication is in a normal state.
	◔	Green blinking	The battery communication is in an idle state.
	○	Light off	The battery is in a fault state.

* Note: When the inverter is in an idle state, you can reset the work mode, the Min SOC and the charging periods through the inverter LCD or the SolaX APP to charge the battery to the Min SOC in the charging periods and then awaken the inverter. Please make sure that the actual battery SOC - the modified Min SOC ≥ 2% under a specific work mode, so that other modifications are effective. When the current system time is within the new charging periods you reset, the battery begins charging.

Table 2-3 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

Battery Indicators

The power indicators show the current battery percentage. There are five indicators on the BMS, one status light and four SoC power indicators.

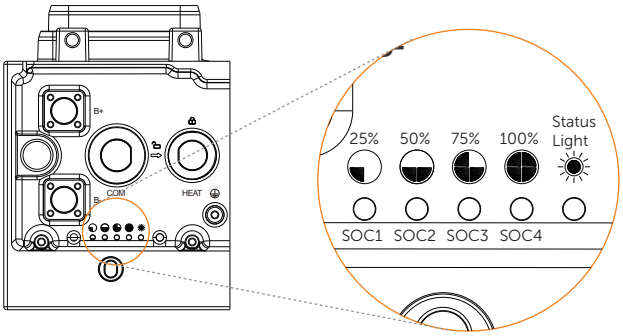


Figure 2-12 Indicators

Table 2-4 Definition of indicators

Status	Description
Startup	Press and hold the BMS button for about 1 to 2 seconds to activate the system, at this point, the status light flashes a yellow light every 0.1 seconds until finishing self test, of which the period lasts about 3 to 4 seconds. Then the status light flashes green light every 0.5 seconds after finishing self test. During the whole period, all the SoC power indicators were off. After successful communication to the inverter, the status light turns solid green light, and SoC power indicators come on solid green light based on the actual remaining capacity.
Shutdown	After pressing and holding the BMS BUTTON for more than 1 second, the status light comes on solid green light, and the SoC power indicators flash blue in turn. Then all lights are off within 2.4 seconds after releasing the button.
Standby	The status light flashes green for 1 second and turns off for 4 seconds. The SoC power indicators are off.

Status	Description
Charging	The status light comes on solid green light, and the state of SoC power indicators depends on the actual situation. For details, please refer to the following "Figure 2-5 Indicator information while charging".
Discharging	The status light comes on solid green light, and the state of SoC power indicators depends on the actual situation. For details, refer to the following "Figure 2-6 Indicator information while discharging".
Fault	In case of failure, the status light will remain on solid red light for 10 minutes, and then such red light will flash for 1 second and then turn off for 4 seconds. For details, please refer to "Figure 2-7 Indicators information while reporting errors".
Warning	In case of warning, the status light will flash yellow light for 1 second, and then turn off for 4 seconds.
Black Start	For details, please refer to "Black Start".

Table 2-5 Indicator information while charging

SoC value	Status light	SoC1	SoC2	SoC3	SoC4
0% ≤ SoC < 25%	Green	Flash	Light off	Light off	Light off
SoC < 50%	Green	Light on	Flash	Light off	Light off
SoC < 75%	Green	Light on	Light on	Flash	Light off
SoC < 100%	Green	Light on	Light on	Light on	Flash
SoC ≥ 100%	Green	Light on	Light on	Light on	Light on

Table 2-6 Indicator information while discharging

SoC value	Status light	SoC1	SoC2	SoC3	SoC4
SoC ≥ 75%	Green	Flash	Flash	Flash	Flash
SoC ≥ 50%	Green	Flash	Flash	Flash	Light off
SoC ≥ 25%	Green	Flash	Flash	Light off	Light off
SoC ≥ 0%	Green	Flash	Light off	Light off	Light off

Table 2-7 Indicators information while reporting errors

Fault	SoC1	SoC2	SoC3	SoC4
Huge differential pressure	Flash	Off	Off	Off
Voltage fault (undervoltage and overvoltage of unit, overvoltage and undervoltage of total voltage)	Off	Flash	Off	Off
Temperature fault (high temperature, low temperature)	Flash	Flash	Off	Off
Current fault (overcurrent charging, overcurrent discharging)	Off	Off	Flash	Off
Hardware fault (MCU fault, external short circuit fault, AFE fault, voltage sampling disconnection fault, temperature sampling, or current sensor default)	Flash	Off	Flash	Off
Relay fault	Off	Flash	Flash	Off
Insulation fault	Flash	Flash	Flash	Off
Self test fault	Off	Off	Off	Flash
Communication loss of inverter	Flash	Off	Off	Flash
Communication loss of battery module	Off	Flash	Off	Flash

NOTICE!

In case of pressing and holding BMS BUTTON, there are two circumstances as follows:

- Press and hold BMS BUTTON for more than 5 seconds but less than 20 seconds, the system will enter a startup mode of inverter.
- Press and hold BMS BUTTON for more than 20 seconds, the system will enter the Black Start.

Black Start

The equipment can provide **Black Start** capacity, meaning that our energy storage inverter and battery can continue to run even if the power grid and photovoltaic panel are out of service. The startup procedure for **Black Start** is as follows:

- First stage: in case of pressing and holding the **BMS BUTTON** for less than 20 seconds, the status light will flash green light for 1 second and then turn off for 4 seconds, with a period of 5 seconds.
- Second stage: after pressing and holding the **BMS BUTTON** for more than 20 seconds, the status light will come on solid green light, and SoC power indicators will flash as follows:
  - » Firstly, the indicator SoC3 comes on blue, and the rest of the indicators are off;
  - » Secondly, the indicators SoC2 and SoC4 come on blue, and the rest of the indicators are off;
  - » Thirdly, the indicator SoC1 comes on blue, and the rest of the indicators are off;
  - » Finally, all SoC power indicators are off. The time interval between each step is 0.1 seconds.

NOTICE!
• In the case of the second stage, the **BMS BUTTON** should be released at anytime in the process.

2.3.3 Ports of Devices of X3-IES-A System

Ports of Inverter

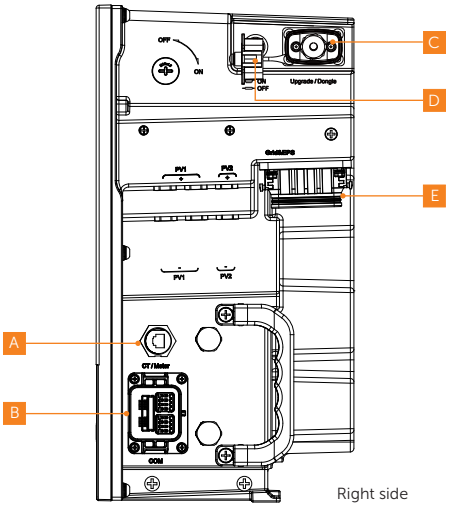


Figure 2-13 Ports of an inverter

Table 2-8 Description of ports

Item	Description
A	CT/ Meter port: Connect a CT or a meter
B	COM port: Connect communication cables
C	USB port for upgrading and communication module connection Communication module includes dongle, 4G (optional)
D	System button: Press to turn on or turn off the inverter system
E	Grid & EPS port: Connect Grid cables

Ports of Battery (T-BAT-SYS)

- BMS

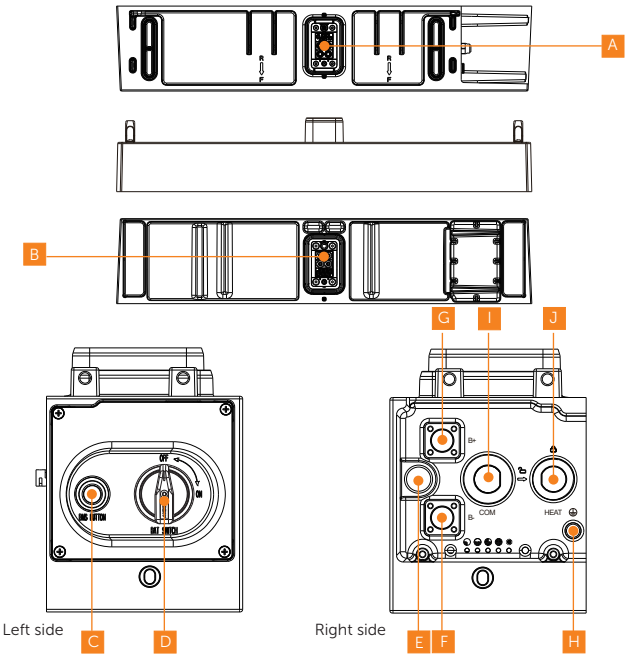


Figure 2-14 Ports of a BMS

Table 2-9 Description of ports

Item	Description
A*	The hot-plug interface connected to the inverter
B	The hot-plug interface connected to the battery module
C	BMS BUTTON: Start system
D	BAT SWITCH: A switch for battery's input and output
E	"DIP Switch": Realize battery's parallel function (a reserved function)
F	B-: Connect BMS's B- to BMS's B+ (or to the Series Box's B-)
G	B+: Connect BMS's B+ to BMS's B- (or to the Series Box's B+)
H	GND: Connect the grounding port of the Series Box (if any); or it doesn't need to be connected
I	COM: Connect the COM port of the series box (if any); or it doesn't need to be connected

Item	Description
J	HEAT: Connect the HEAT port of the series box (if any), or a short-circuit plug must be inserted into the port

NOTICE!

The mark "*" indicates that when stacking the inverter onto the BMS, the inverterbattery grounding and communications are connected directly through the connector. Hence, no additional external wiring is required.

- DIP Switch

A DIP Switch is equipped on the BMS.

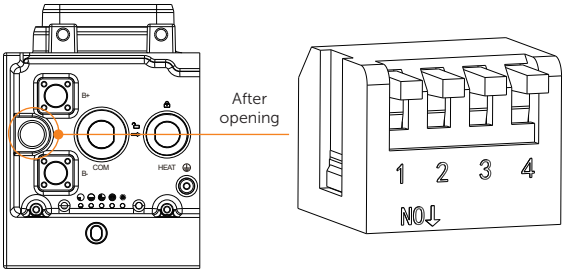


Figure 2-15 DIP switch

Table 2-9 Definition of DIP switch

	Description
DIP Switch 1	A reserved function
DIP Switch 2	A reserved function
DIP Switch 3	A reserved function
DIP Switch 4	Terminal resistance

NOTICE!

- The DIP switch 4 shall be flipped down (open the circuit) when connecting the BMS to inverter.
- In case of parallel connection, only shall be the DIP switch 4 on the last BMS be flipped down (open the circuit), and the DIP switch 4 on the rest of BMS shall be flipped up (close the circuit).
- The DIP switch 4 is pressed at the factory settings.
- To adjust the DIP switch, a small flat-head screwdriver shall be prepared by users themselves.

- Battery module

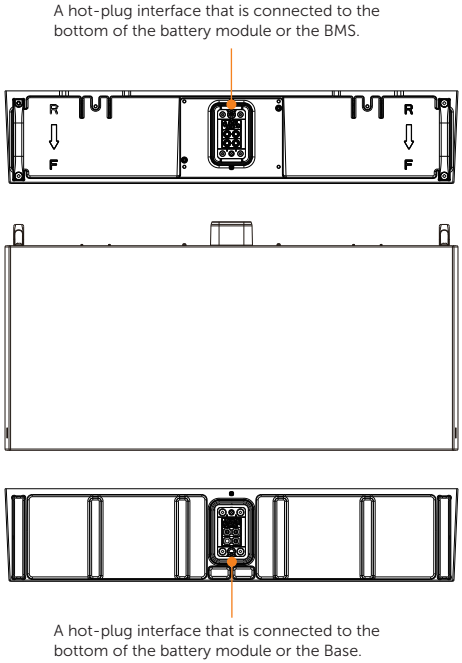


Figure 2-16 Ports of a battery module

- Base

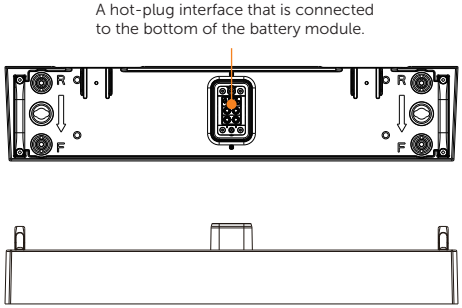


Figure 2-17 Ports of a base

- Series box

The series box shall be installed in case the battery modules purchased exceed 4 sets (including 4).

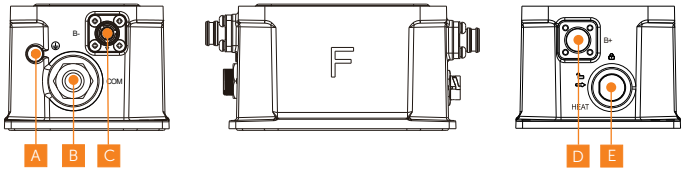


Figure 2-18 Ports of a series box

Table 2-10 Description of ports

Item	Description
A	GND: Connect to the grounding port of the BMS.
B	COM: Connect to the COM port of the BMS.
C	B-: Connect to the B- of the BMS.
D	B+: Connect to the B+ of the BMS.
E	HEAT: Connect to the HEAT port of the BMS.

2.3.4 Symbols on the Label and Devices of X3-IES-A System

Table 2-11 Description of symbols

Symbol	Description
CE	CE mark. The inverter complies with the requirementsof the applicable CE guidelines.
TÜVRheinland Certified	TUV certified.
RCM	RCM mark. The inverter complies with the requirementsof the applicable RCM guidelines.
	Additional grounding point
	Beware of hot surface. The inverter can become hot during operation. Avoid contact during operatior.

Symbol	Description
	Danger of high voltages. Danger to life due to high voltages in the inverter!
	Danger. Risk of electric shock!
	The battery module may explode.
	Keep the battery system away from open flames or ignition systems.
	Keep the battery system away from children.
	Observe enclosed documentation.
	The inverter and battery modules can not be disposed together with the household waste. Disposal information can be found in the enclosed documentation.
	Do not dispose of the battery module together with household waste.
	The battery system must be disposed of at a proper facility for environmentally-safe recycling.
	Do not operate this inverter until it is isolated from battery, mains and on-site PV generation suppliers.
	Danger to life due to high voltage. Residual voltage exists after the inverter is powered off, which needs 5 minutes to fully discharge. Wait 5 minutes before attempting any service.

2.4 Working Principle

2.4.1 Working Mode

The inverter has two configurable working periods: allowed discharging period and forced charging period.

For how to set the two working periods, please refer to "9.7 Settings" to set working modes.

The default value of allowed discharging period is 00:00~23:59, and the default value of forced charging period is 00:00~00:00 (closed in default). You can configure the two work mode by yourself.

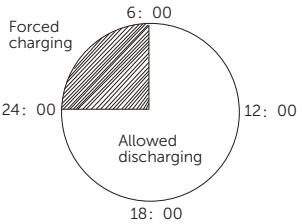


Figure 2-19 Time period

As shown in the example above, the allowed discharging period is 6 am to 24 pm, and the forced charging period is 24 pm to 6 am.

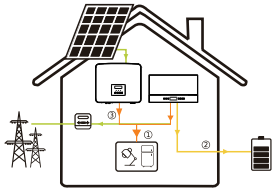
- Forced Charging Period

The priority of forced charging period is higher than all work modes. Under the forced charging period, the inverter will charge the battery first untill the battery SoC reaches the setting value.

- Allowed Discharging Period

Under the allowed discharging period, the inverter will allow the battery to discharge (but not force the battery to discharge). The following work modes will take effect under the allowed discharging period.

There are four work modes: Self Use, Feed-in Priority, Manual, Peak Shaving and TOU mode.



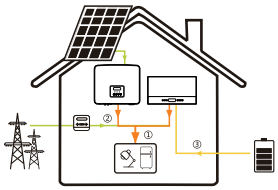
Self Use

The self-use mode is suitable for areas with low feed-in subsidies and high electricity prices.

The power of PV will supply the loads first, and surplus power will charge the battery, then the remaining power will feed into the grid.

Priority: Loads > Battery > Grid

* Without the grid-tied inverter, the output power is adjusted with the load according to the charging and discharging period settings



Feed-in Priority

The feed-in priority mode is suitable for areas with high feed-in subsidies, but has feed-in power limitation.

The power of PV will supply the loads first, and surplus power will feed into the grid, then the remaining power will charge the battery.

Priority: Loads > Grid > Battery

* Without the grid-tied inverter, the output power is adjusted with the load according to the charging and discharging period settings

Manual: This work mode is for the service team to do after-sales maintenance.

Peak Shaving Mode (With Grid-tied Inverter)

Peak Shaving mode is set for leveling out peaks in electricity use. System is controlled to charge up during off-peak hours and discharged during peak hours.

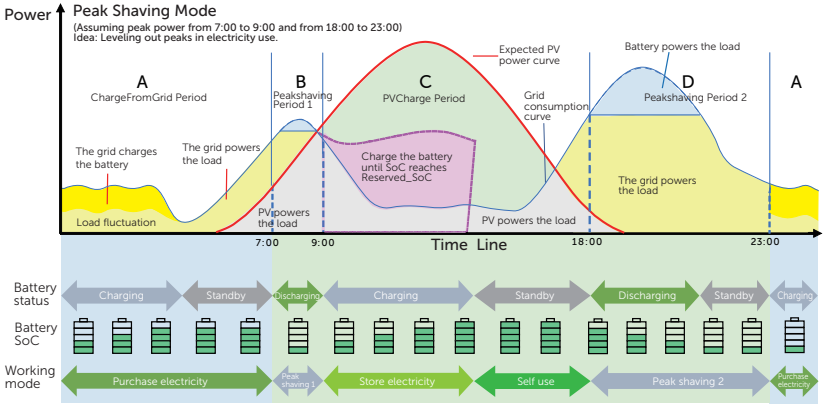


Figure 2-20 Peak Shaving time periods

Table 2-12 Descripton of Peak Shaving mode

Time period	Battery SOC	Load and peaklimits conditions	Inverter working status
Period A	X	X	Battery charging period during which discharging is not allowed and the PV will charge the battery first for peak shaving.
Period B and D	X	Load < Peaklimits	The PV will charge the battery first. When the battery is fully charged, the PV will supply power for loads, and the surplus power will feed into the grid.
	X	Load > Peaklimits	The PV and battery will discharge energy for loads and thus reduce the amount of energy purchased from the grid.
Period C	X	X	The battery does not discharge. The PV will charge the battery to the "Reserved SOC" first and then supply power for loads, with the surplus power feeding into the grid. Charging the battery first in these periods is storing energy for the peak shaving.

Note:

PeakLimits (W): The load consumption from grid side

Reserved SOC (%): Refers to the lower limit of SoC required for later peak shaving period. The default value is 50%. The adjustment range is 10~100%.

X: Not applicable

TOU mode

In the TOU mode, different working modes, i.e Self-use, Charging, Discharging, Peaking shaving and Battery off can be set for different time periods in accordance with actual needs and environment conditions through SolaX Cloud App or Web.

The day can be divided into up to 24 time slots, and the minimum time slot is 15 minutes, independent working mode can be set for each time slot. Please refer to Web Guide or App Guide for details about how to set the TOU mode.

Time Slot	Working Mode
x:xx~x:xx (e.g 0:00~0:15)	Choose one mode from Self-use / Charging / Discharging / Battery off / Peaking shaving

Note:

Self-use: Same working logic with "Self-use Mode", but it is not limited by the charging and discharging time slots. The priority of PV: Loads > Battery > Grid.

Charging: The power of PV will charge the battery as much as possible to the set SOC of Charge BAT to (%). You can set whether to Charge from grid. The default value of Charge BAT to (%) is 100%. When the battery reaches the set SOC, the surplus power will perform "Self-use Mode" or supply to the grid (based on the system setup), at this point, Charge from grid is not allowed.

Discharging: If allowed by the battery, the system outputs a specified power from the grid based on the set output percentage, controlling the power at the AC port. You need to set the RatePower (%) through Web or App when choosing Discharging mode. When the battery Discharge to (%) reaches the set SOC, the inverter performs "Self-use Mode".

Peak Shaving: The working logic is that when the power consumption from the grid exceeds the set PeakLimit value, the battery is allowed to discharge power. The excess power beyond the limit is provided by the combination of photovoltaic and battery to ensure that the maximum power purchased from the grid does not exceed the set limit. You need to set the PeakLimit value through Web or App when choosing Peak Shaving mode.

Battery off: The battery neither charges nor discharges. The power of PV will supply to loads or the grid. Only when the battery SOC is lower than the system (TOU) Min SOC, the battery can be charged.

2.4.2 Circuit Diagram

The inverter unit converts DC into AC that meets the requirements of the power grid and feeds it into the power grid. The lightning arrester at AC / DC side can realize the function of surge protection. The principle design of inverter is shown in the figure below:

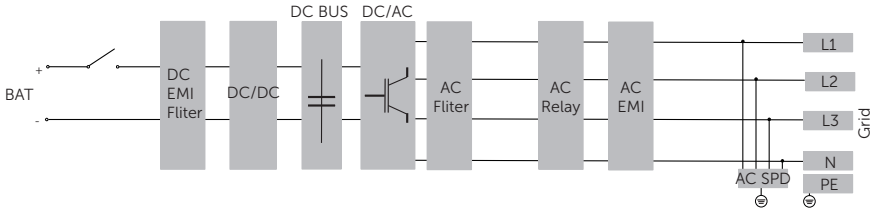


Figure 2-21 Circuit Diagram

System Diagram A (applicable to most countries)

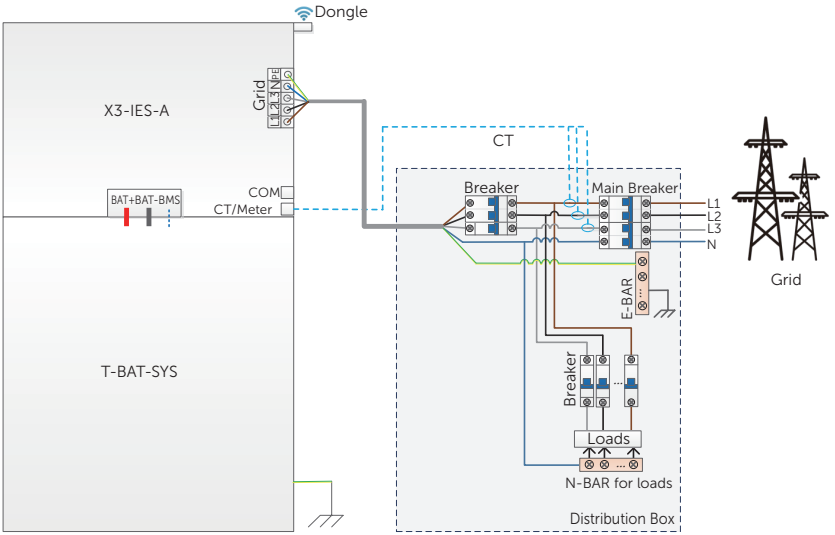


Figure 2-22 System diagram without grid-tied inverter for most countries

System Diagram B (applicable to most countries)

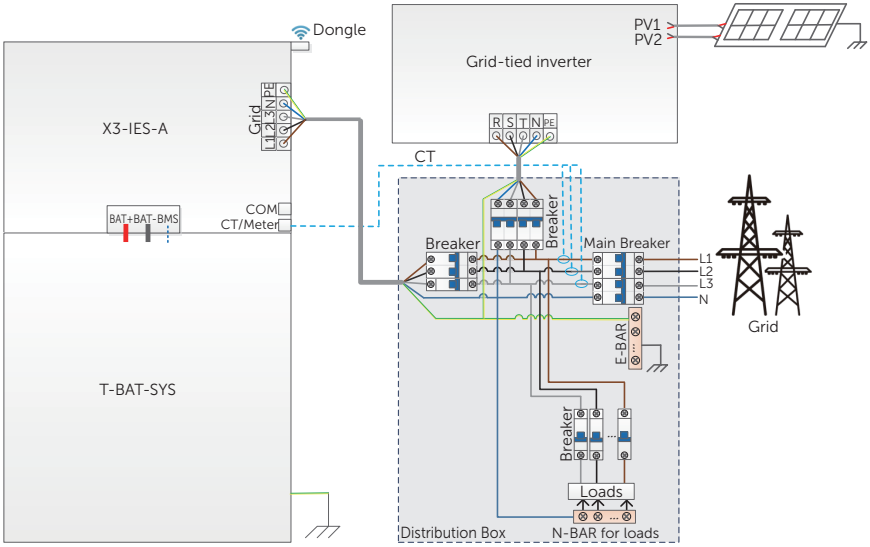


Figure 2-23 System diagram with grid-tied inverter for most countries

System Diagram C (applicable to Australia)

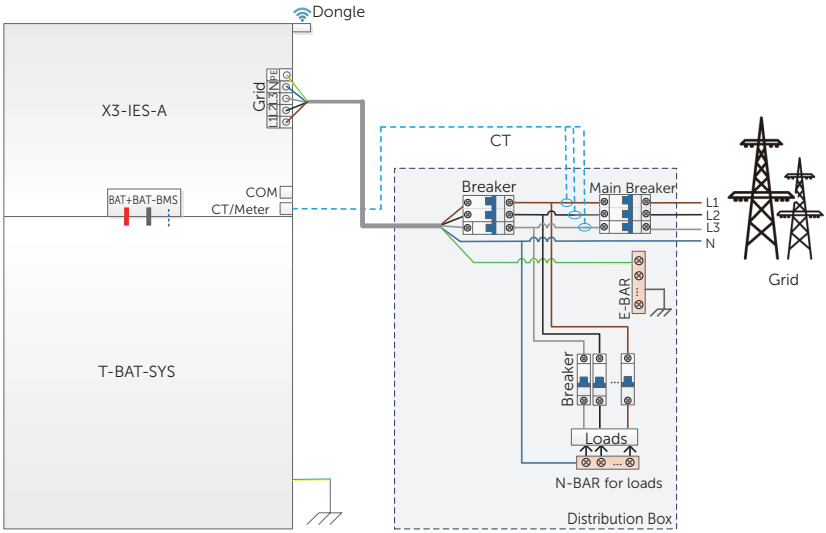


Figure 2-24 System diagram without grid-tied inverter for Australia

NOTICE!

The neutral wire is connected to the PE, and the diameter of the neutral wire must not be smaller than the diameter of the live wire. (Apply to Australia)

System Diagram D (applicable to Australia)

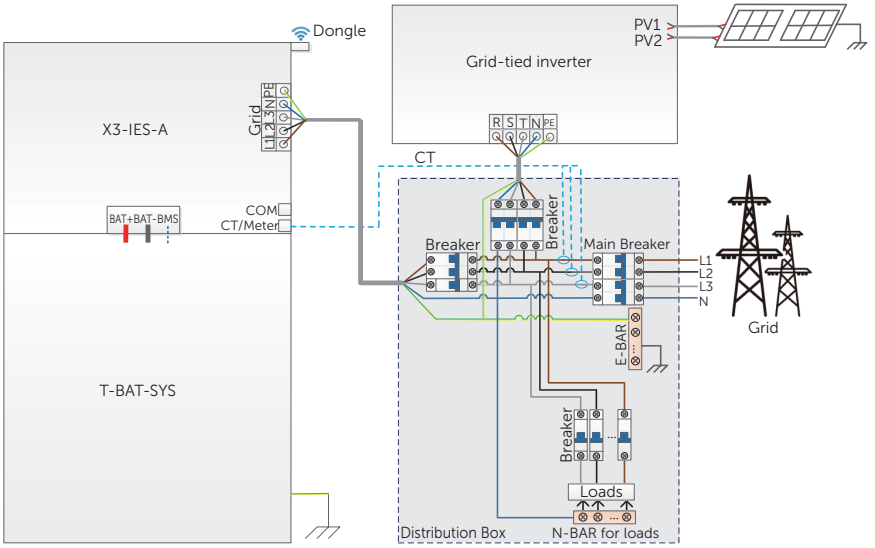


Figure 2-25 System diagram with grid-tied inverter for Australia

NOTICE!

The neutral wire is connected to the PE, and the diameter of the neutral wire must not be smaller than the diameter of the live wire. (Apply to Australia)

3 Transportation and Storage

If the devices of X3-IES-A system is not put into use immediately, the transportation and storage requirements needs to be met:

Transportation

- Observe the caution signs on the packaging of the devices before transportation.
- Pay attention to the weight of the devices. Be cautious to avoid injury when carrying the devices. Two installers are recommended.
- Wear protective gloves when carrying the equipment by hand to prevent injuries.
- Lifting up the devices in accordance with the handling signs on the cartons.

Storage

- The inverter must be stored indoors.
- Do not remove the original packaging material and check the outer packaging material regularly.
- The storage temperature of the inverter should be between -40℃ and +65℃ . The humidity of the inverter should be between 5% and 65%.
- The required storage temperature of T-BAT-SYS: the service life may be up to 6 months in case the temperature is between -30°C and +50°C, or it may be up to 12 months in case the temperature is between -20°C and +30°C. The relative humidity should be between 5% and 95%. Stack the inverter and T-BAT-SYS in accordance with the caution signs on cartons of the devices to prevent their falling down and device damage. Do not place it upside down.
- If the T-BAT-SYS have been stored for more than 1 year, it must be checked and tested by professionals before use.

4 Preparation before Installation

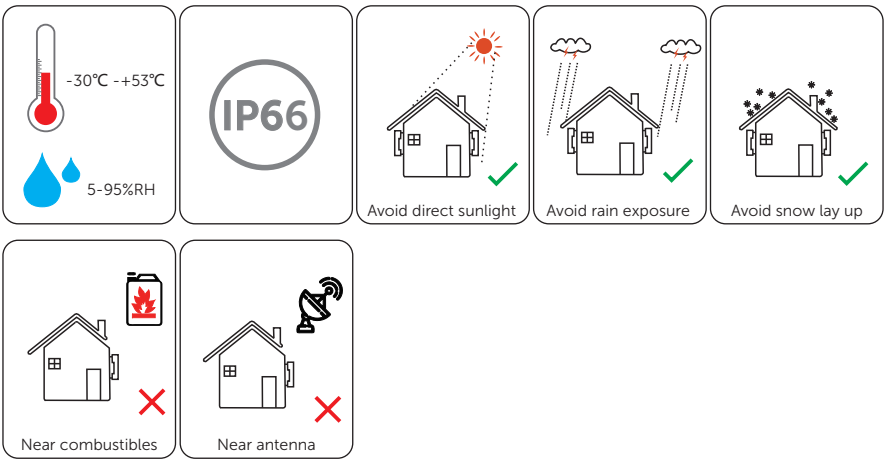
4.1 Selection of Installation Location

The installation location selected for the devices of X3-IES-A system is quite critical in the aspect of the guarantee of machine safety, service life and performance.

- Flaunting an IP66 enclosure, the battery can be used outdoors and indoors.
- The installation position shall be convenient for wiring connection, operation and maintenance.

4.1.1 Environment Requirement

- The operating temperature: -30℃ to +53℃ ;
- The humidity shall be between 5-95%;
- Do not install the devices in the areas where the altitude exceeds 3000 m;
- Install the devices in a well-ventilated environment for heat dissipation;
- Do not install the devices in areas with flammable, explosive and corrosive materials;
- Do not install the devices in areas near combustibles and antenna
- You are recommended to install an awning over it. Avoid direct sunlight, rain exposure and snow laying up.



NOTICE!

- For outdoor installation, precautions against direct sunlight, rain exposure and snow accumulation are recommended.
- Exposure to direct sunlight raises the temperature inside the device. This temperature rise poses no safety risks, but may impact the device performance.

- Install the inverter 500 meters away from sea and at the place where the sea breeze does not directly hit

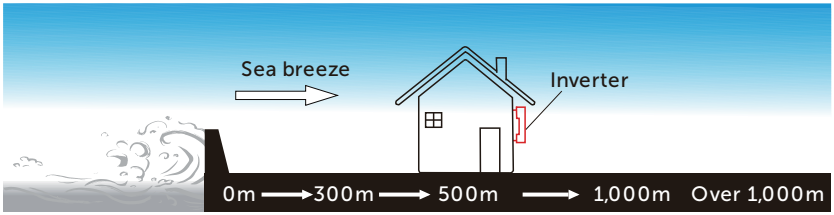


Figure 4-1 Recommended installation position

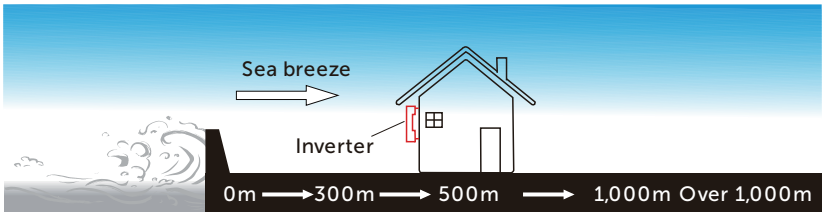


Figure 4-2 Incorrect installation position

4.1.2 Installation Options

NOTICE!

- X3-IES-A series inverter can match 2~6 battery modules. "Option A/ B/ C" is for one tower and "option D/ E/ F/ G" is for two towers.
- Generally, up to three battery modules in one tower are recommended. Four battery modules in one tower can be selected when installation space is limited.
- The following installation options apply to the modes of floor mounting and wall mounting.

There are 7 installation options available, with details as follows:

One Tower

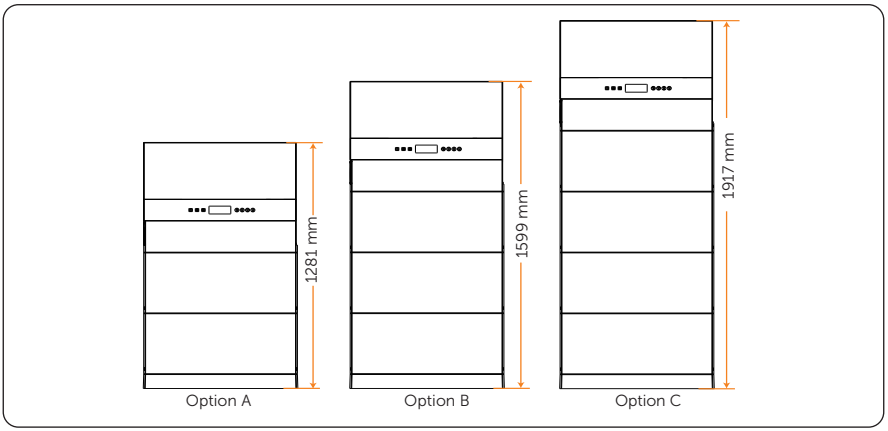


Figure 4-3 Installation options for one tower

Two Towers

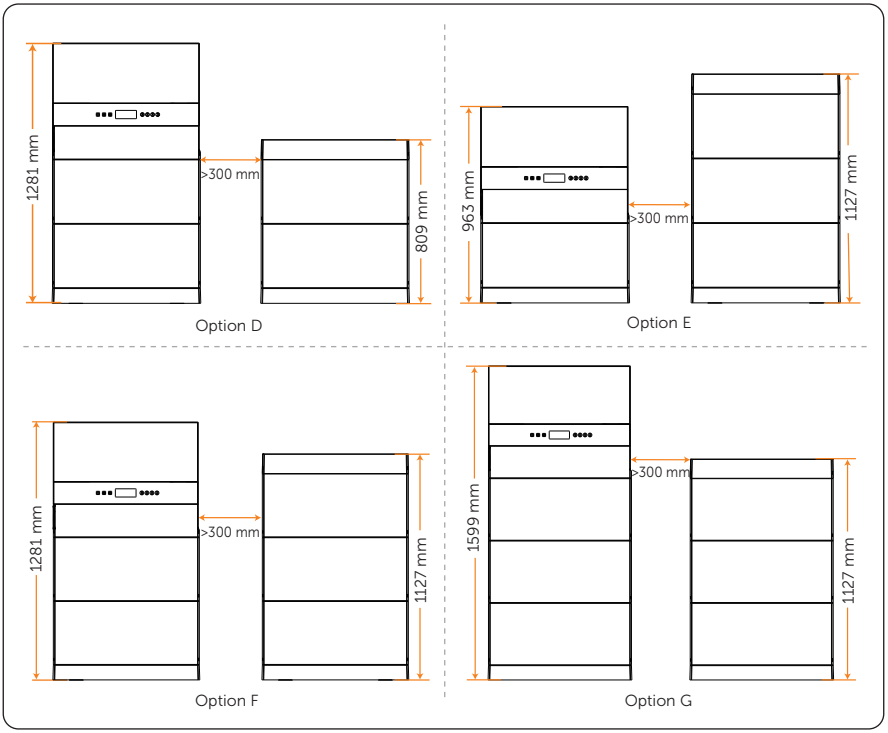


Figure 4-4 Installation options for two towers

Table 4-1 Net weight and dimensions of components

	Option A	Option B	Option C	Option D		Option E		Option F		Option G	
				Left tower	Right tower	Left tower	Right tower	Left tower	Right tower	Left tower	Right tower
Inverter	1	1	1	1	/	1	/	1	/	1	/
BMS	1	1	1	1	/	1	/	1	/	1	/
Battery module(s)	2	3	4	2	2	1	3	2	3	3	3
Base	1	1	1	1	1	1	1	1	1	1	1
Series box	/	/	/	/	1	/	1	/	1	/	1
Cover	/	/	/	/	1	/	1	/	1	/	1

* A base support (s) is (are) necessary if the wall mounting is selected for all installation options.

Net Weight and Dimensions of X3-IES-A system

- One Tower

Table 4-2 Net weight and dimensions of X3-IES-A system in one tower

	Option A	Option B	Option C
Net weight [kg]	138.7	185.7	232.7
Dimension [mm]	730 × 1281 × 209.5	730 × 1599 × 209.5	730 × 1917 × 209.5

- Two Towers

Table 4-3 Net weight and dimensions of X3-IES-A system in two towers

	Option D		Option E	
	Left Tower	Right Tower	Left Tower	Right Tower
Net weight [kg]	138.7	100.5	91.7	147.5
Dimensions [mm]	730 × 1281 × 209.5	730 × 809 × 150	730 × 963 × 209.5	730 × 1127 × 150

Table 4-4 Net weight and dimensions of X3-IES-A system in two towers

	Option F		Option G	
	Left Tower	Right Tower	Left Tower	Right Tower
Net weight [kg]	138.7	147.5	185.7	147.5
Dimensions [mm]	730 × 1281 × 209.5	730 × 1127 × 150	730 × 1599 × 209.5	730 × 1127 × 150

NOTICE!

- The net weight of inverters of different powers differs. Please check the specific net weight of the X3-IES-A series inverter when calculating the total weight of the devices of X3-IES-A system.
- Please consider the distance between the left tower and right tower under limited installation space.

Table 4-5 Net weight and dimensions of the inverter

Model	X3-IES-5K-A	X3-IES-10K-A	X3-IES-15K-A
Net weight [kg]		31.5	
Dimension [mm]		717 * 405 * 209.5	

Table 4-6 Net weight and dimensions of T-BAT-SYS

	BMS	Battery module	Base	Series box	Cover
Length (mm)	730	730	730	167	730
Width (mm)	150	150	150	121	150
Height (mm)	165	318	75	91.5	98
Net weight (kg)	9.3	47	3.9	1.3	1.3

4.1.3 Installation Carrier Requirement

The mounting location must be suitable for the weight and dimensions of the product and the support surface for installation must be made of a non-flammable material.

- Solid brick/concrete, or mounting surface with equivalent strength;
- Please ensure that the bearing capacity of the ground and the wall, respectively, that are used to install the X3-IES-A system must be over 940 kg, which is determined based on option B. If option C is chosen by the user, the bearing capacity of the ground and the wall, respectively, must be over 1090 kg;
- If you choose wall mounting, please make sure that the thickness of any section of the wall is greater than 150 mm. When choosing floor mounting, the wall thickness should be larger than 100 mm.
- The devices must not be installed on the wood wall.

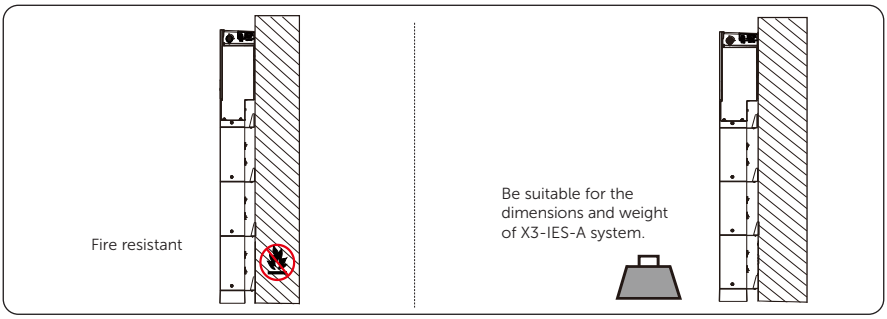


Figure 4-5 Installation carrier requirement

4.1.4 Clearance Requirement

To guarantee proper heat dissipation and ease of disassembly, the minimum space around the inverter must meet the standards indicated below.

- For installations with multiple devices, make sure to leave a minimum space of 300 mm between the left and right tower and 300 mm from the ceiling.
- If wall mounting is selected, the distance between the base support and the ground is decided by the corresponding requirement of the local regulations. For safety, it is suggested the base support be installed as low as possible.
- In areas with high ambient temperatures, increase the clearances between the devices and provide adequate fresh air ventilation if feasible.

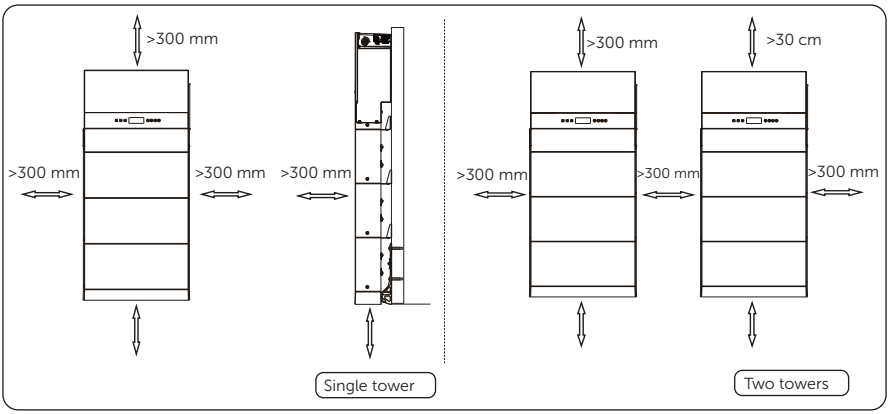
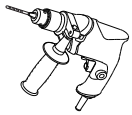
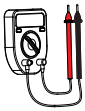


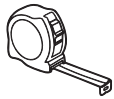
Figure 4-6 Clearance requirement

4.2 Tools Requirement

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

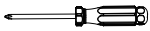

Hammer drill


Multimeter

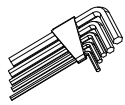

Measuring tape

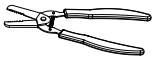

Utility knife


Marker


Cross screwdriver

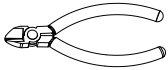

Flat-head screwdriver

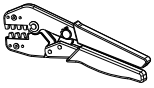

Allen key


Wire stripper


Crimping tool for RJ45

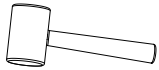

Torque wrench (M4)

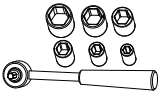

Diagonal pliers

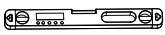

Crimping tool


Crimping tool for ferrules


Wire cutter


Rubber mallet

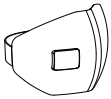

Torque wrench


Spirit level


Safety gloves


Safety boots


Safety goggles


Anti-dust mask

4.3 Additionally Required Materials

Battery

Table 4-7 Additionally required wires

No.	Required Material	Type	Diameter
1	Protective pipe	Corrugated pipe	External diameter: over 67.2 mm

Inverter

Table 4-8 Additionally required wires

No.	Required Material	Type	Conductor Cross-section
1	Communication wire	Network cable CAT5E	0.2 mm^2
2	Protective pipe	White corrugated pipe	External diameter: over 67.2 mm

Table 4-9 Grid wire and breaker recommended

Model	X3-IES-5K-A	X3-IES-10K-A	X3-IES-15K-A
Five-core wire (copper)	4-6 mm^2	6 mm^2	6 mm^2
Breaker	20 A	40 A	40 A

Note:

1. It is recommended that the outer diameter of Grid cables be 17.5~18.5mm or 19~21 mm. The electrical connection method of Grid cables with different outer diameters differ.

2. For a 5.0 kW inverter, please select suitable Grid ferrules from the inverter accessory pack in accordance with the diameter of the Grid cables actually used.

3. The parameters have some differences because of different environment and material. Please choose appropriate cable and micro-breaker according to the local conditions. Other technical requests should comply with the requirement of the local public grid.

4. X3-IES-A supports 10mm^2 Grid cables, if using 10mm^2 cable, please prepare 10mm^2 AC ferrules.

5 Unpacking and Inspection

The number of battery cartons will be different due to different modes of mounting. Therefore, please check whether the number of cartons received are correct before unpacking. For details, please refer to the following table.

Table 5-1 Number of cartons

	One Tower	Two Towers
Floor Mounting	A BMS carton, and carton(s) of battery modules	A BMS carton, a series box carton, and carton(s) of battery modules
Wall Mounting	A BMS carton, a base support carton, and carton(s) of battery modules	A BMS carton, two base support cartons, a series box carton, and carton(s) of battery modules

NOTICE!

- As for the number of cartons of battery modules, it depends on how many battery modules the users purchased.

5.1 Unpacking

- The devices of X3-IES-A system undergo 100% testing and inspection before shipping from the manufacturing facility. However, transport damage may still occur. Before unpacking the devices, please verify that the model and outer packing materials for damage, such as holes and cracks.
- Unpacking the inverter according to the following figure.

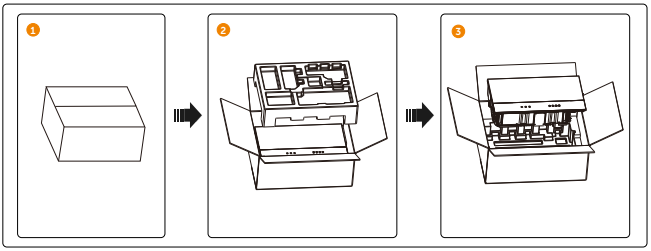


Figure 5-1 Unpacking the inverter

Unpacking the BMS and battery module(s) according to the following figures. If there are other cartons, such as the base support carton, and series box carton, the unpacking procedure can also be referred to the following figures.

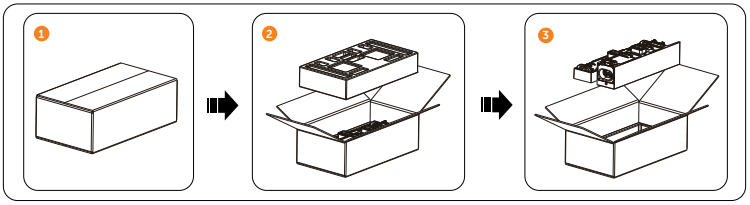


Figure 5-2 Unpacking the BMS

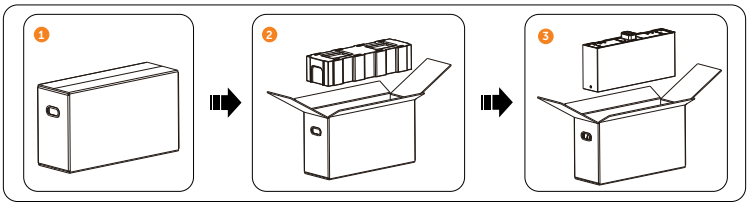


Figure 5-3 Unpacking the battery module

- Be careful when dealing with all package materials which may be reused for storage and relocation of the devices of X3-IES-A system in the future.
- Upon opening the package, check whether the appearance of the devices is damaged or lack of accessories. If any damage is found or any parts are missing, contact your dealer immediately.

5.2 Scope of Delivery

Inverter

Table 5-2 Packing list of inverter

Items	Quantity
Inverter	1 pc
Brackets	2 pcs
AC connector	1 pc
CT	1 pc

Items	Quantity
Communication connector	1 pc
Communication ferrules	16 pcs
Waterproof connector with RJ45	1 pc
M5*14 screws	6 pcs
M5*10 screws	2 pcs
Expansion tubes	2 pcs
Self-tapping screws	2 pcs
RJ45 terminals	3 pcs
RJ45 connector	1 pc
Cable shielding board	1 pc
6 mm^2 AC ferrules	5 pcs
4 mm^2 AC ferrules[1]	5 pcs only for a 5.0 kW inverter
Anti-tamper bracket	1 pc only for Australia version
M4*10 screws	2 pcs only for Australia version
Document	/
Positioning cardboard	1 pc
Dongle (optional)	1 pc
WiFi connecting cable	1 pc
WiFi stand	1 pc
Expansion tube	1 pc
Self-tapping screw	1 pc

Note:

- "[1]" means for a 5.0 kW inverter, select suitable AC ferrules that match the diameter of the Grid cables.
- A disassembling tool and an Allen wrench are included in the package of the AC connector.

BMS

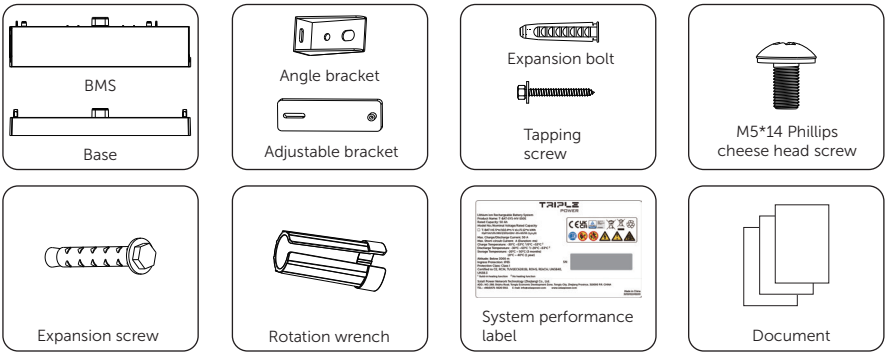
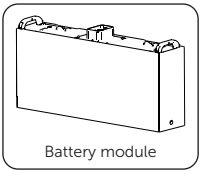


Table 5-3 Packing list of BMS

Item	Quantity
BMS	1 pc
Base	1 pc
Angle brackets	4 pcs
Adjustable brackets	4 pcs
Expansion bolts	6 pcs
Tapping screws	4 pcs
M5*14 Phillips cheese head screws	8 pcs
Expansion screws	2 pcs
Rotation wrench	1 pc
System performance label	1 pc
Document	/

Battery Module


Battery module


M5*14 Phillips cheese head screw

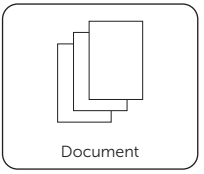
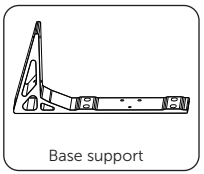
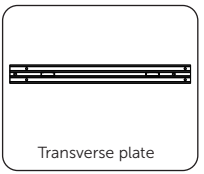

Document

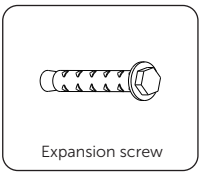
Table 5-4 Packing list of battery module

Item	Quantity
Battery module	1 pc
M5*14 Phillips cheese head screws	2 pcs
Document	/

Base Support (For wall mounting only)


Base support


Transverse plate


Expansion screw


M5*20 Phillips countersunk head screw


M5*8 Phillips countersunk head screw

Table 5-5 Packing list of base support

Item	Quantity
Base supports	2 pcs
Transverse plate	1 pc
Expansion screws	6 pcs
M5*20 Phillips countersunk head screws	6 pcs
M5*8 Phillips countersunk head screws	4 pcs

Series Box (For two towers only)

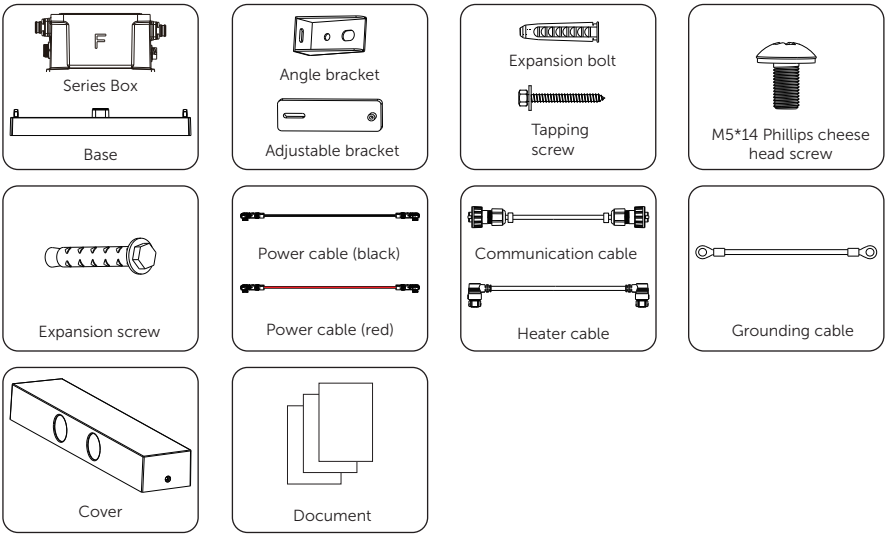
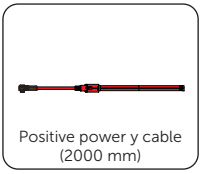
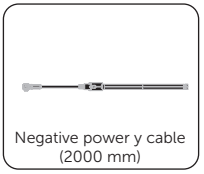


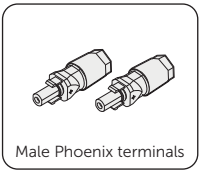
Table 5-6 Packing list of Series Box

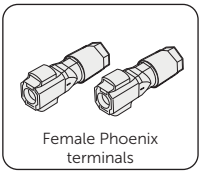
Item	Quantity
Series box	1 pc
Base	1 pc
Angle brackets	4 pcs
Adjustable brackets	4 pcs
Expansion bolts	6 pcs
Tapping screws	4 pcs
M5*14 Phillips cheese head screws	12 pcs
Expansion screws	2 pcs
Power cable (black)	1 pc
Power cable (red)	1 pc
Communication cable	1 pc
Heater cable	1 pc
Grounding cable	1 pc
Cover	1 pc
Document	/

Cable (Optional)


Positive power y cable (2000 mm)


Negative power y cable (2000 mm)


Male Phoenix terminals


Female Phoenix terminals

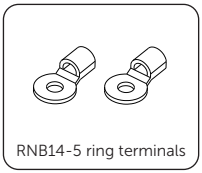

RNB14-5 ring terminals

Table 5-7 Packing list of cables

Item	Quantity
Positive power y cable (2000 mm)	1 pc
Negative power y cable (2000 mm)	1 pc
Male Phoenix terminals	2 pcs
Female Phoenix terminals	2 pcs
RNB14-5 ring terminals	2 pcs

NOTICE!

- Users can purchase the above-mentioned accessory kit based on their actual needs.
- Do not use the above-mentioned power y cables if the equipment is in parallel.
- The RNB14-5 ring terminal is suitable for 10 mm^2 grounding wire.

6 Mechanical Installation

6.1 Mechanical Installation of X3-IES-A System

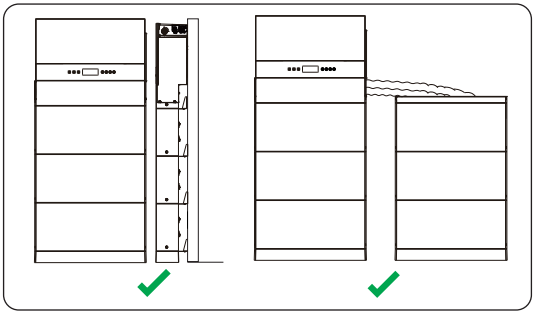


Figure 6-1 Correct installtion angle

NOTICE!
• The wall selected for installation should be flat and perpendicular to the floor.

The mechanical installation of the X3-IES-A system supports floor mounting and wall mounting. The two installation methods are illustrated below. Option B with three battery modules is taken as an example.

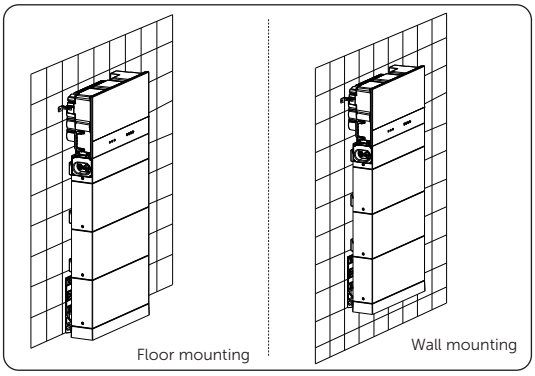


Figure 6-2 Installation modes

WARNING!

- Only the qulalified personel can perform the mechanical installation following the local standards and requirements.
- Check the existing power cables or other piping in the wall to prevent electric shock or other damage.

CAUTION!

- Always be aware of the weight of the devices. Personal injuries may result if the devices are lifted improperly or dropped while being transported or mounted.
- Use insulated tools and wear individual protective tools when installing the devices.

NOTICE!

- In the case of no more than 3 (including 3) battery modules in a tower, please ensure that the bearing capacity of the supporting surface for the system must be over 940 kg.
- In the case of 4 battery modules in a tower, please ensure the bearing capacity of the supporting surface for the system must be over 1090 kg.
- The devices must not be installed on the wood wall.
- Please ensure that the thickness of any part of the wall should not be less than 150 mm if the wall mounting is selected.
- At least two persons are required to move the devices of X3-IES-A system.
- Please reserve enough distance from the device to the ceiling (or the grounding) for capacity expansion.

6.2 Floor Mounting

6.2.1 One Tower for Floor Mounting

NOTICE!

- The mode of floor mounting is given priority for installation.
- Take the installation procedure for Option B (three battery modules in one tower) as an example.

Step 1: Remove dustproof covers from the base, battery module(s) and BMS before conducting installation.

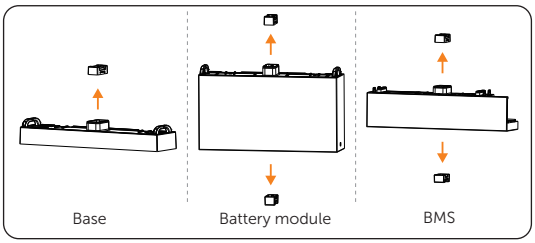


Figure 6-3 Removing dustproof covers

CAUTION!

- The dust cover can only be removed during installation and must be reattached after removing the battery.
- Do not touch the terminals during installation or removal of the battery.

Step 2: Place a spirit level to check whether the base is even. If yes, refer to the Step 4; if no, refer to the Step 3. The side with "R" shall be against the wall.

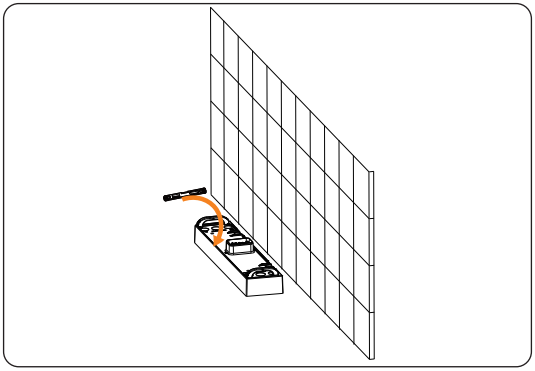


Figure 6-4 Determining whether the base is level

Step 3: Rotate the adjustment screws clockwise to ensure that it is even.

Turn clockwise to lower the base, and turn anticlockwise to raise the base.

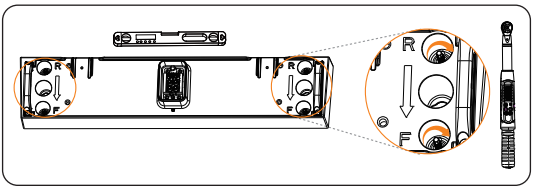


Figure 6-5 Rotating adjustment screws

NOTICE!

- Use a spirit level to measure both side of the base to ensure that the base is even;
- If not, please rotate the adjustment screws by a torque wrench being to ensure that the base is even.

Step 4: Locate the base 90 mm away from the wall, accurately mark the location of the base on both sides with a marker.

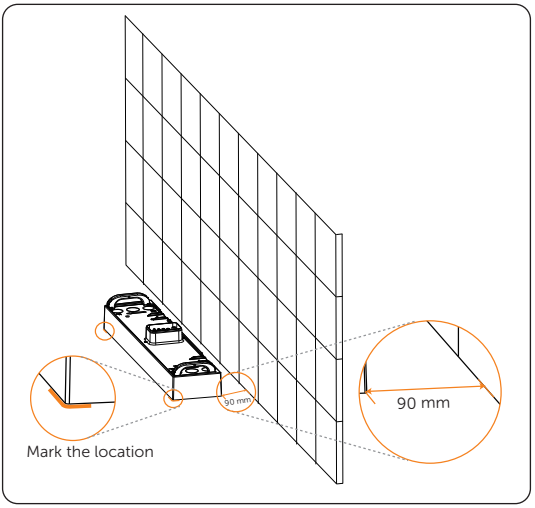


Figure 6-6 Placing the base

Step 5: Attach the angle bracket and adjustable bracket together by using M5*14 screws, but do not tighten them for a while.

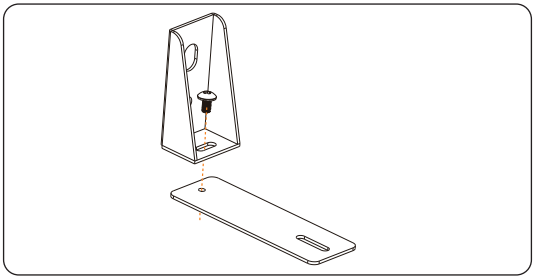


Figure 6-7 Attaching two brackets

Step 6: Place the assembled bracket on the wall, align the hole to the hole on the battery module; and circle along the inner ring of the holes on the angle brackets. Totalling 2 assembled brackets need to be installed.

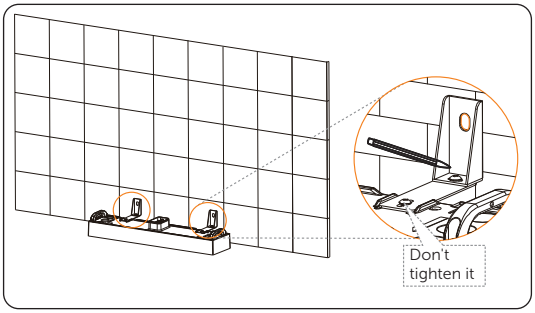


Figure 6-8 Circling inner ring of holes

NOTICE!
• Don't tighten screws fully until the angle bracket is secured on the wall.

Step 7: Remove the assembled bracket, and then drill two holes at a depth of more than 60 mm in the concrete wall by using a drill (Ø10 mm).

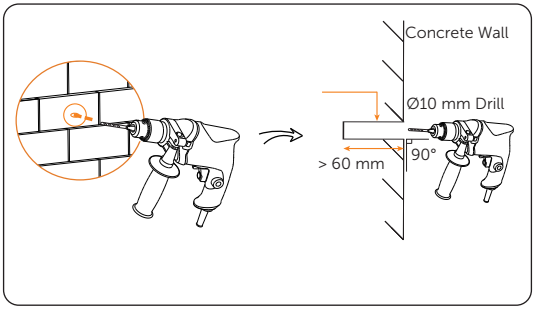


Figure 6-9 Drilling holes

NOTICE!

- An electric drill dust collector is recommended.
- To prevent dust from being released into the hot plug when drilling holes, users may use the package bag of the device or other materials to fully cover the battery module.

Step 8: Insert the expansion bolts into two holes, tighten the tapping screws to secure the assembled bracket on the wall (torque: 8-10 N·m), and then tighten M5*14 screws on both sides (torque: 2.2-2.5 N·m).

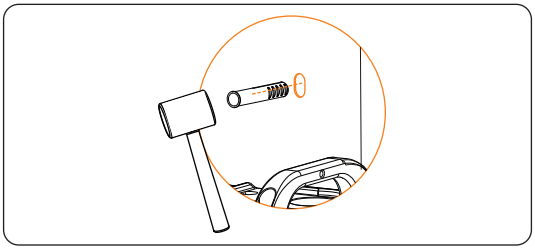


Figure 6-10 Inserting the expansion bolt

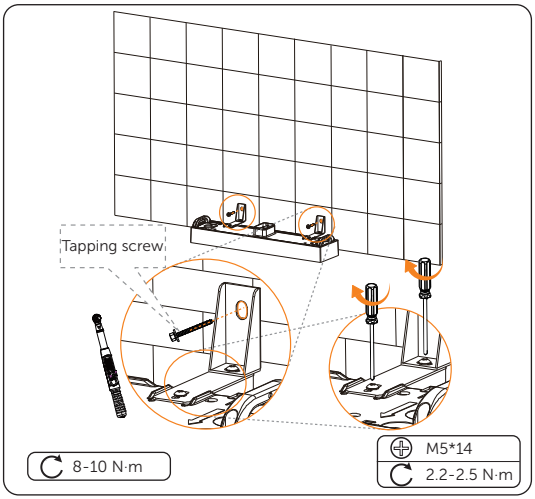


Figure 6-11 Securing the assembled bracket

NOTICE!

- If the base is shifted before securing assembled bracket, move it to its original location according to the mark previously drawn.

Step 9: Place a battery module on the base.

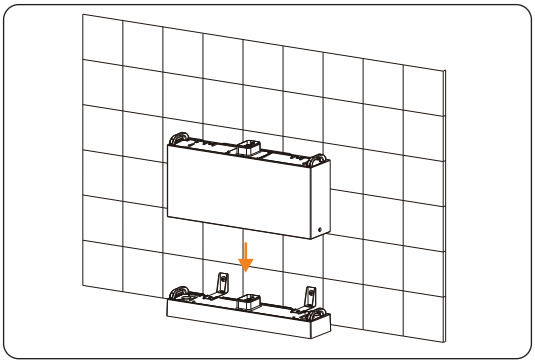


Figure 6-12 Placing the battery module

NOTICE!

- At least two persons are required to move the battery module.
- Please ensure that the side with "R" shall be against the wall.

Step 10: Insert and tighten M5*14 screws on both sides (torque: 2.2-2.5 N·m).

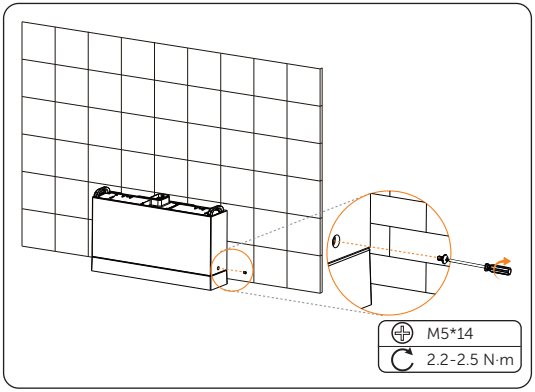


Figure 6-13 Tightening screws

NOTICE!

- Please make sure that the corners and edges of the base and battery module are aligned before tightening screws.

Step 11: Place the second and third battery modules, and make sure that the corners and edges of the battery modules are aligned.

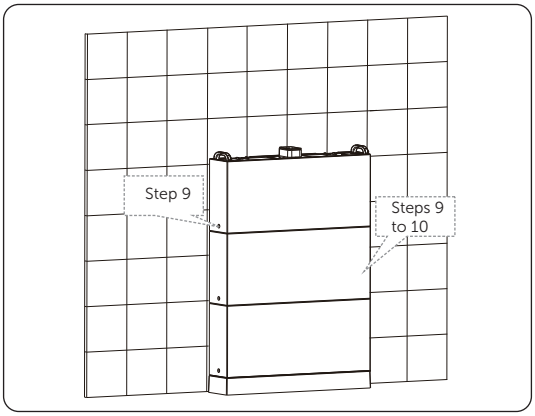


Figure 6-14 Placing battery modules

Step 12: Locate the position of the BMS and the inverter.

1. Attach the angle bracket and adjustable bracket together, tighten but not lock them with a M5*14 screw for a while;

2. Align the bracket with the holes on the BMS. Mark four dots through the

brackets on the wall;

3. Align the holes on the positioning cardboard with the dots in the second row on the wall;

4. Mark the dots where "X3-IES-A" is noted on the positioning cardboard.

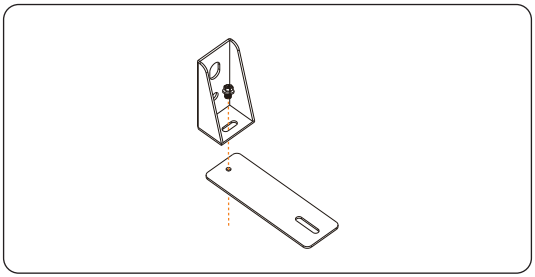


Figure 6-15 Attaching two brackets

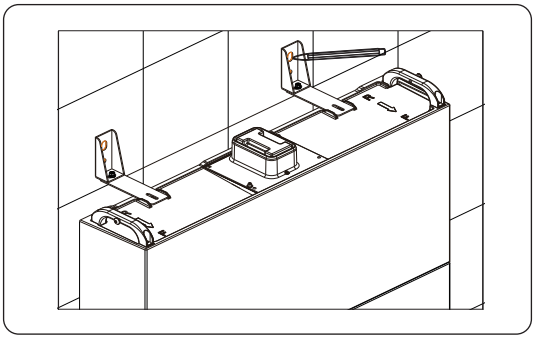


Figure 6-16 Marking the position of BMS

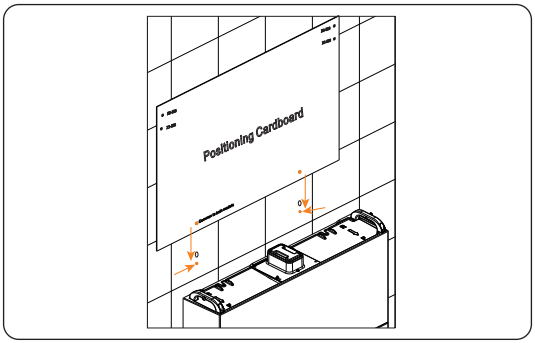


Figure 6-17 Aligning the positioning cardboard with the dots on the wall

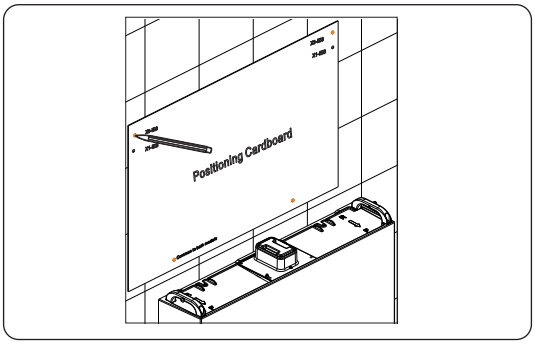


Figure 6-18 Marking the position of the brackets of the inverter

Step 13: Drill the holes for the BMS and the inverter and tighten them.

1. Remove the assembled brackets on the battery module, and then drill the four holes at a depth of more than 60 mm in the concrete wall by using a Drill (Ø10 mm);

2. Insert the expansion tubes into the four holes and knock them into the wall with a rubber hammer;

3. Thread the screw through the assembled bracket and into the holes on the battery module, and then tighten the screws. Thread the self-tapping screws through a washer and then the assembled bracket, insert the screws into the holes on the wall and tighten the screws.

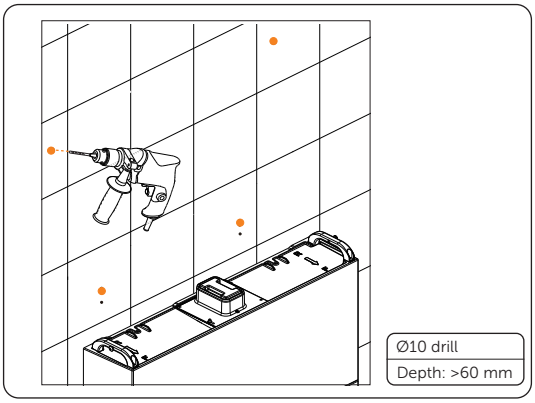


Figure 6-19 Drilling holes

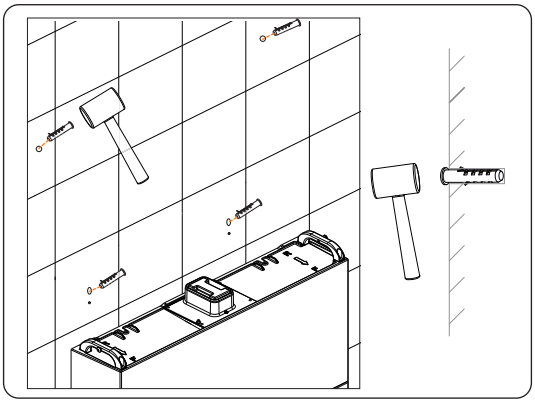


Figure 6-20 Knocking expansion tubes into the wall

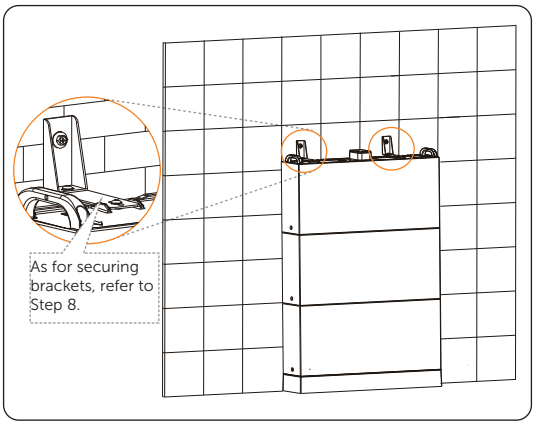


Figure 6-21 Tightening the BMS brackets

NOTICE!

- An electric drill dust collector is recommended.
- To prevent dust from being released into the hot plug when drilling holes, users may use the package bag of the device or other materials to fully cover the battery module.

Step 14: Place the BMS, and then tighten the M5*14 screws on both sides (torque: 2.2-2.5 N·m)

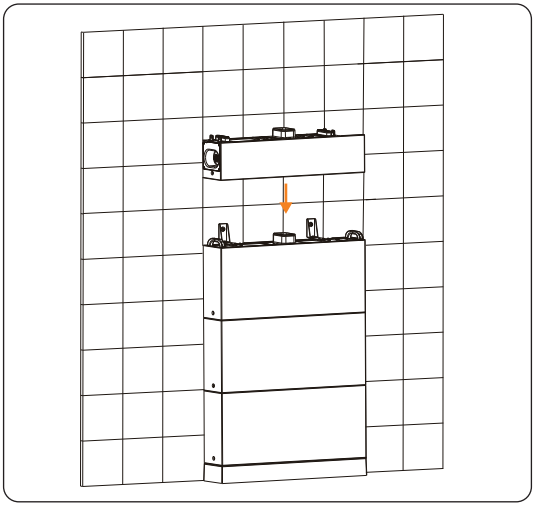


Figure 6-22 Placing the BMS

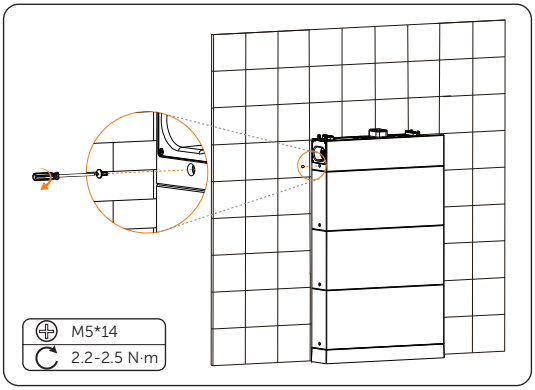


Figure 6-23 Tightening M5 screws

NOTICE!
• Please make sure that the corners and edges of the BMS and battery module are aligned before tightening screws.

Step 15: (For Australia version only) Install the anti-tamper bracket.

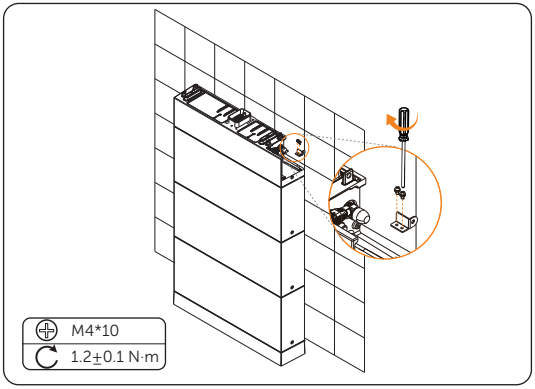


Figure 6-24 Install the anti-tamper bracket

Step 16: Remove the dustproof cover from the bottom of the inverter.

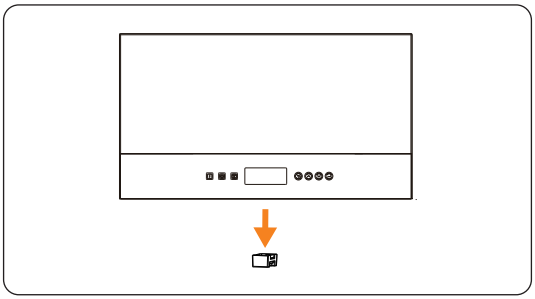


Figure 6-25 Removing the dustproof cover

Step 17: Install the inverter on the BMS.

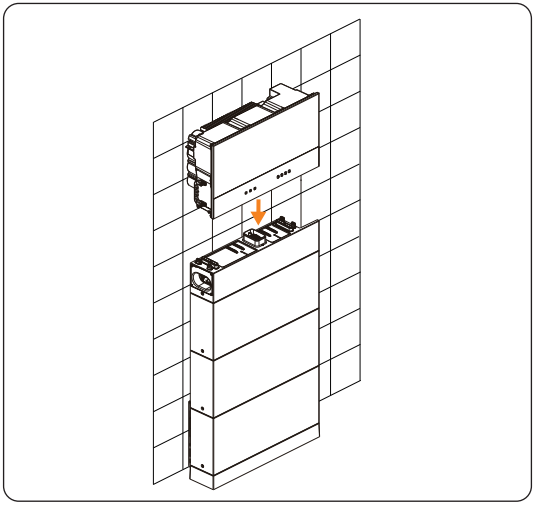


Figure 6-26 Installing the inverter

NOTICE!
• At least two persons are required to move the inverter.

Step 18: Lock the screws on both sides of the inverter with the BMS.

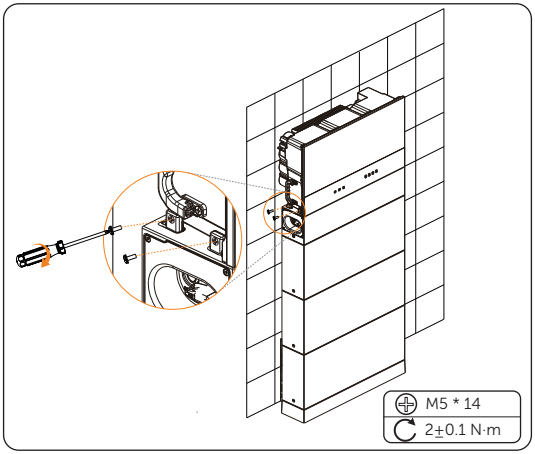


Figure 6-27 Locking the inverter with the BMS

Step 19: Lock the inverter brackets on both sides of the inverter.

1. Tighten but not lock the self-tapping screws into the wall.
2. Lock screws on the inverter.
3. Lock screws into the wall.

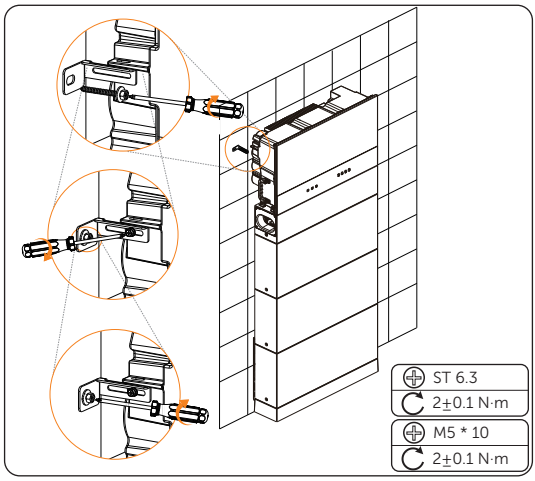


Figure 6-28 Locking the inverter brackets

Step 20: (Optional) Lock the inverter as needed. (The lock's diameter doesn't exceed 5mm.)

6.2.2 Two Towers for Floor Mounting

NOTICE!

- Take the installation procedure for option G as an example.

Step 1: As for the installation steps for the following figure, please refer to the installation procedure for "6.2.1 One Tower for Floor Mounting" (Steps 1 to 20) for the left tower and the "6.2.1 One Tower for Floor Mounting" (Steps 1 to 11) for the installation of the right tower.

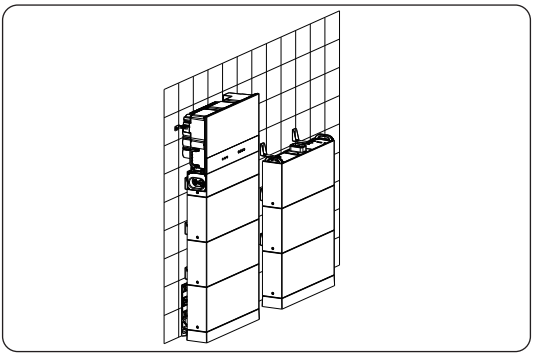


Figure 6-29 Installing two towers

Step 2: Place the series box, insert and tighten M5*14 screws, with totalling 4 screws.

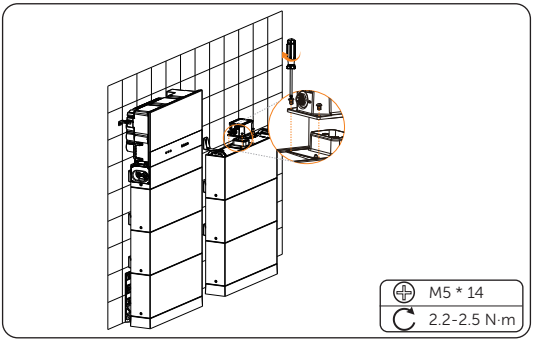


Figure 6-30 Placing the series box

NOTICE!

- The side of the series box with "R" shall be against the wall.
- The cover that covers on the series box shall be installed after finishing wiring. As for the installation procedure of the cover, please refer to the section of "7.1.3 Installation of Cover".

6.3 Wall Mounting

6.3.1 One Tower for Wall Mounting

NOTICE!
• Take the installation procedure for three battery modules as an example.

Step 1: Remove dust covers from the base, battery module(s) and BMS before conducting installation.

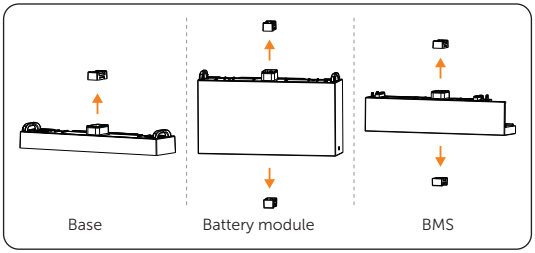


Figure 6-31 Removing dust covers

Step 2: Tighten M5*8 screws on both sides to attach the base support and transverse plate together (torque: 2.2-2.5 N·m).

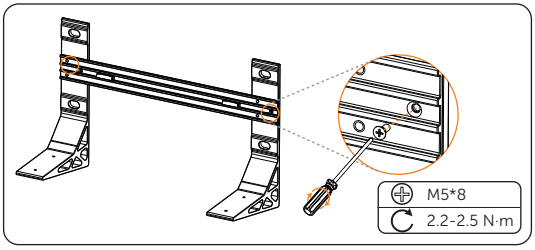


Figure 6-32 Attaching base support and transverse plate

Step 3: Place the assembled base support and transverse plate on the wall, check the cylindrical plastic bubble spirit level on the transverse plate. If the bubble isn't in the centre, slightly bow it to the horizontal.

Then circle along the inner ring of the four holes.

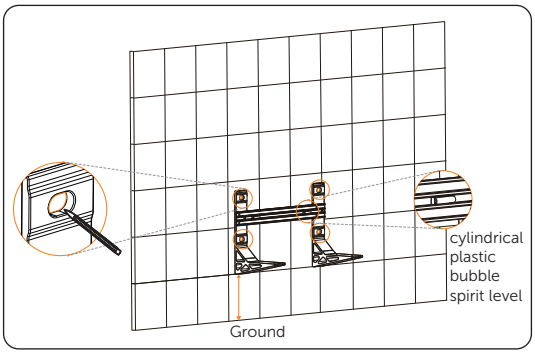


Figure 6-33 Drawing circles

NOTICE!

- The distance from the base support to the ground is decided according to the local regulations. And it is also the distance from the base to the ground. For the safety concerns, it is suggested that the height from the ground not be too high.
- Please leave enough distance to the ceiling to install the inverter.

Step 4: Remove the assembled base support and transverse plate, and then drill four holes at a depth of at least 110 mm by using a drill (Ø15 mm).

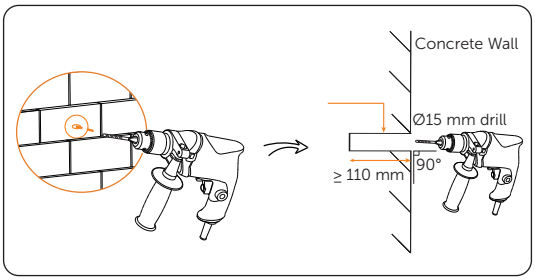


Figure 6-34 Drilling holes

NOTICE!

- An electric drill dust collector is recommended.
- To prevent dust from being released into the hot plug when drilling holes, users may use the package bag of the device or other materials to fully cover the base.

Step 5: Place the assembled base support and transverse plate on the wall again, and check whether the bubble is in the centre.

Attach the expansion screws to such four holes, hit it by using rubber mallet, and then tighten it by using torque wrench (torque: 20-25 N·m)

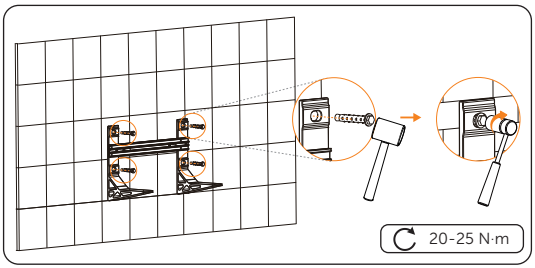


Figure 6-35 Tightening expansion screws

Step 6: Place the base on the base support, and secure both left and right sides with M5*20 screws (torque: 2.2-2.5 N·m). There are totalling 4 M5*20 screws shall be tightened.

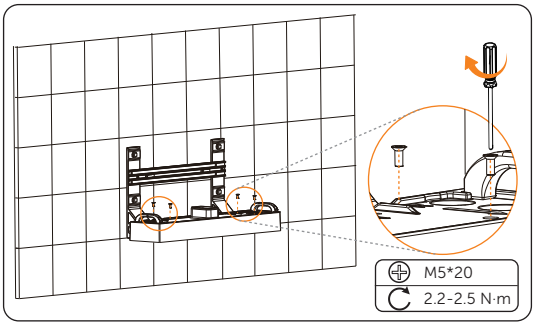


Figure 6-36 Securing the base

Step 7: Place the battery module on the base.

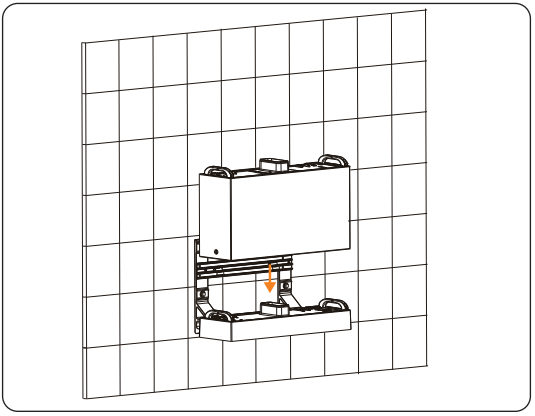


Figure 6-37 Placing battery module

NOTICE!

- At least two persons are required to move the battery module.
- Please ensure that the side with "R" shall be against the wall.

Step 8: Insert and tighten M5*14 screws on both sides (torque: 2.2-2.5 N·m).

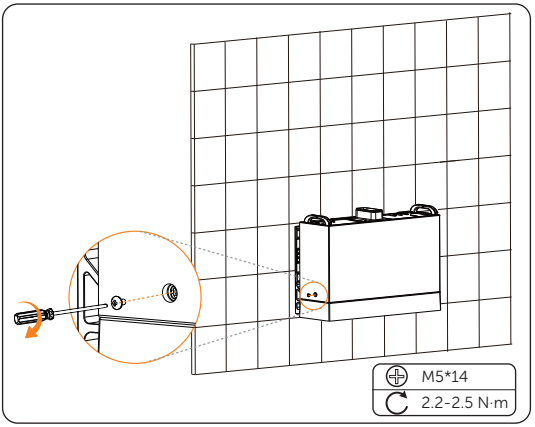


Figure 6-38 Tightening screws

NOTICE!

- Please make sure that the corners and edges of the base and battery module are aligned before tightening screws.

Step 9: Place the second and third battery modules, and make sure that the corners and edges of the battery modules are aligned.

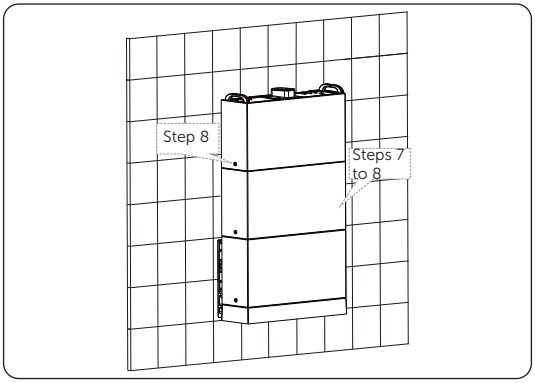


Figure 6-39 Placing battery modules

Step 10: Locate the position of the BMS and the inverter.

1. Attach the angle bracket and adjustable bracket together, tighten but not lock them with a M5*14 screw for a while;

2. Align the bracket with the holes on the BMS. Mark four dots through the brackets on the wall;

3. Align the holes on the positioning cardboard with the dots in the second row on the wall;

4. Mark the dots where "X3-IES-A" is noted on the positioning cardboard.

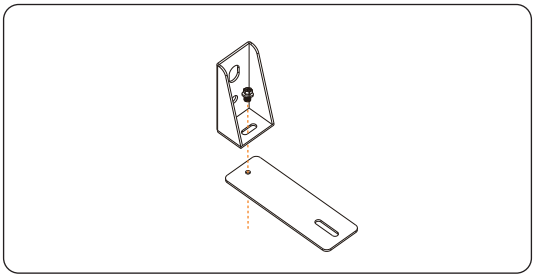


Figure 6-40 Attaching two brackets

NOTICE!
• Don't tighten screws fully until the angle bracket is secured on the wall.

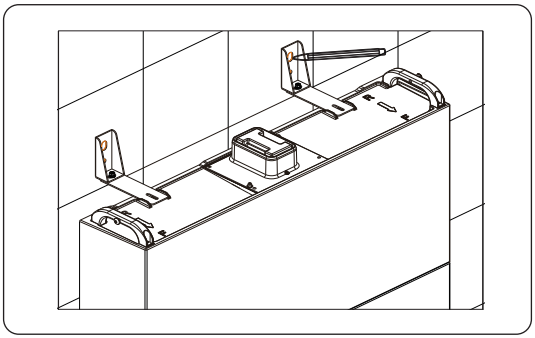


Figure 6-41 Marking the position of BMS

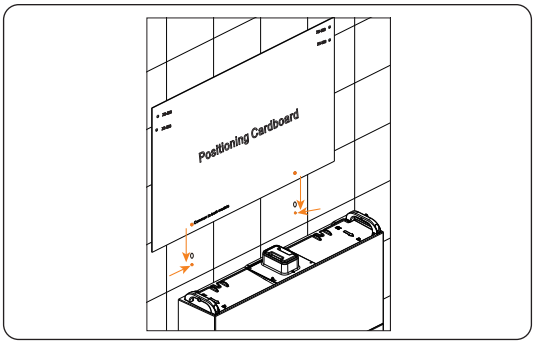


Figure 6-42 Aligning the positioning cardboard with the dots on the wall

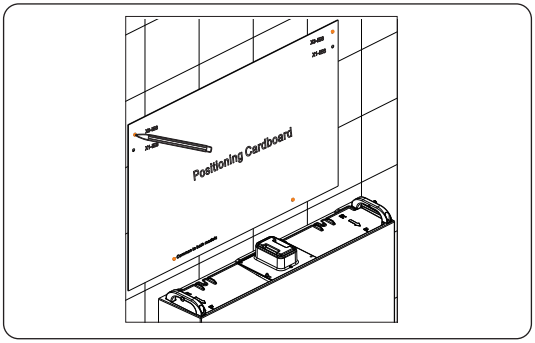


Figure 6-43 Marking the position of the brackets of the inverter

Step 11: Drill the holes for the BMS and the inverter and tighten them.

1. Remove the assembled brackets on the battery module, and then drill the four holes at a depth of more than 60 mm in the concrete wall by using a drill (Ø10 mm);

2. Insert the expansion tubes into the four holes and knock them into the wall with a rubber hammer;

3. Thread the screw through the assembled bracket and into the holes on the battery module, and then tighten the screws. Thread the self-tapping screws through a washer and then the assembled bracket, insert the screws into the holes on the wall and tighten the screws.

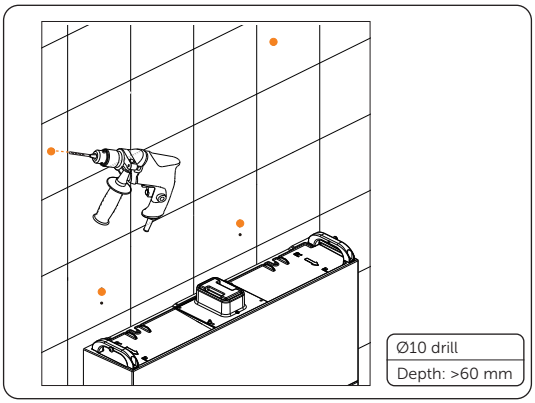


Figure 6-44 Drilling holes

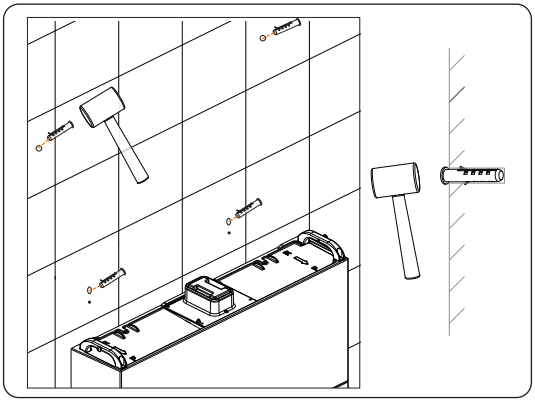


Figure 6-45 Knocking expansion tubes into the wall

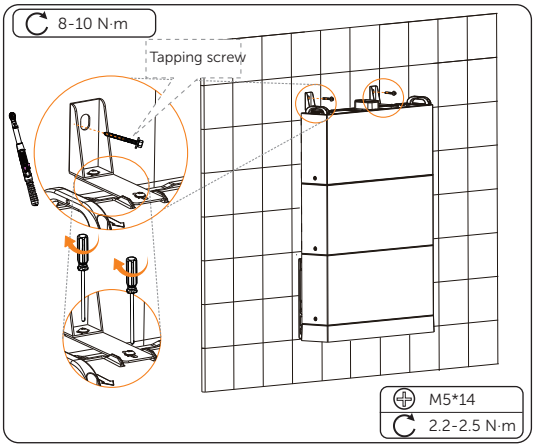


Figure 6-46 Securing the assembled bracket

NOTICE!

- An electric drill dust collector is recommended.
- To prevent dust from being released into the hot plug when drilling holes, users may use the package bag of the device or other materials to fully cover the battery module.

Step 12: Place the BMS, and then tighten the M5*14 screws on both sides (torque: 2.2-2.5 N·m)

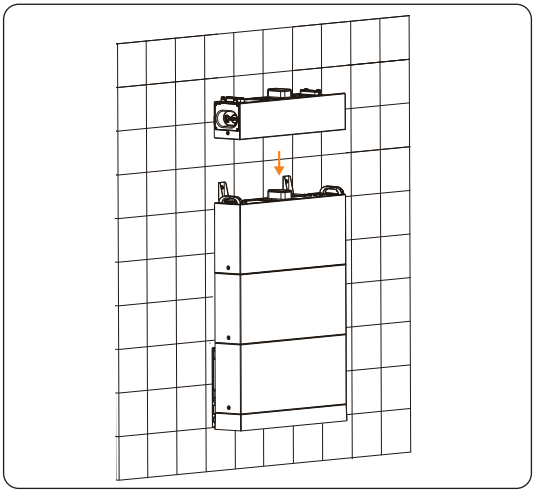


Figure 6-47 Placing the BMS

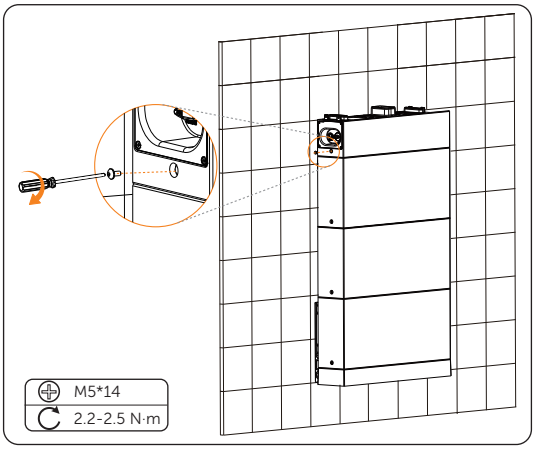


Figure 6-48 Tightening M5 screws

NOTICE!

- Please make sure that the corners and edges of the BMS and battery modules are aligned before tightening screws.

Step 13: (For Australia version only) Install the anti-tamper bracket.

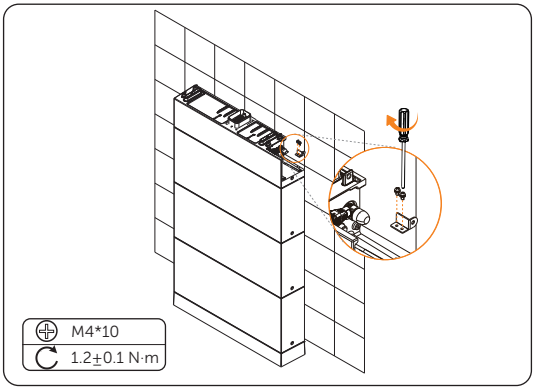


Figure 6-49 Install the anti-tamper bracket

Step 14: Remove the dustproof cover from the bottom of the inverter.

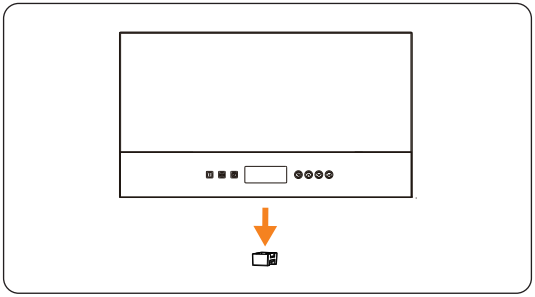


Figure 6-50 Removing the dustproof cover

Step 15: Install the inverter on the BMS.

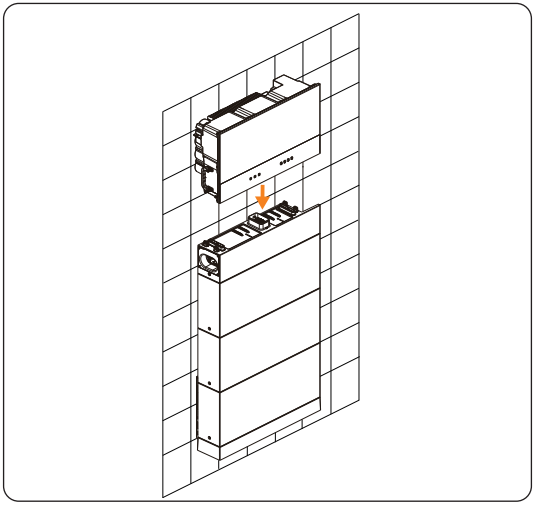


Figure 6-51 Installing the inverter

NOTICE!
• At least two persons are required to move the inverter.

Step 16: Lock the screws on both sides of the inverter with the BMS.

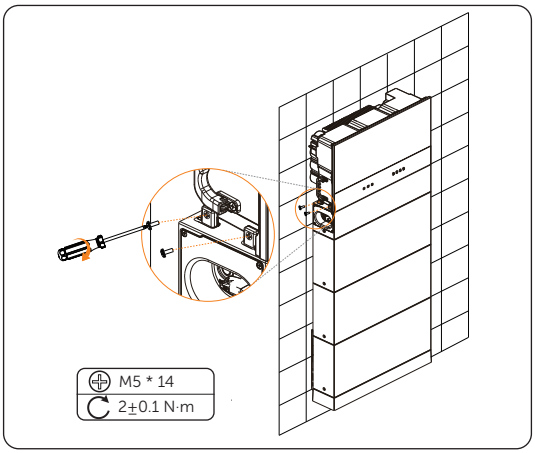


Figure 6-52 Locking the inverter with the BMS

Step 17: Lock the inverter brackets on both sides of the inverter.

1. Tighten but not lock the self-tapping screws into the wall.
2. Lock screws on the inverter.
3. Lock screws into the wall.

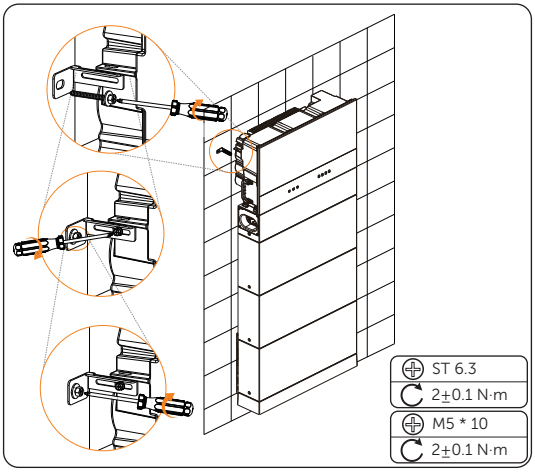


Figure 6-53 Locking the inverter brackets

Step 18: (Optional) Lock the inverter as needed. (The lock's diameter doesn't exceed 5mm.)

6.3.2 Two Towers for Wall Mounting

NOTICE!
• Take the installation procedure for six battery modules as an example.

Step 1: As for the installation steps for the following figure, please refer to the installation procedure for "6.3.1 One Tower for Wall Mounting" (Steps 1 to 18) for the installation procedure for the left tower and the "6.3.1 One Tower for Wall Mounting" (step 1~9) for the installation of the right tower.

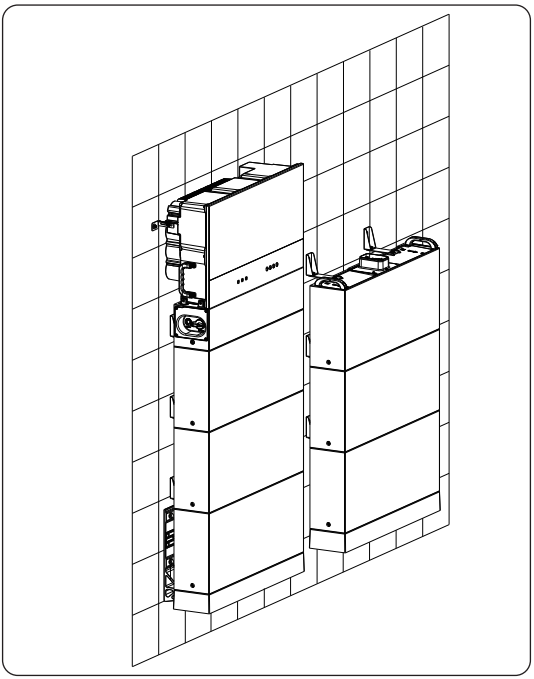


Figure 6-54 Installing two towers

Step 2: Place the series box, insert and tighten M5*14 screws, with totalling 4 screws (torque: 2.2-2.5 N·m).

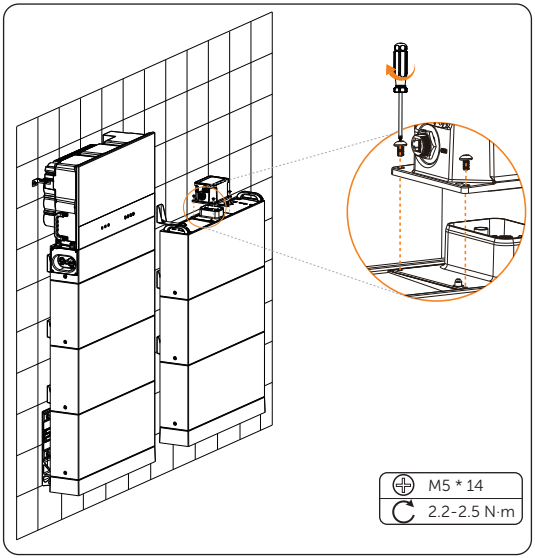


Figure 6-55 Placing the series box

NOTICE!

- The side of the series box with "R" shall be against the wall.
- The cover that covers on the series box shall be installed after finishing wiring. As for the installation procedure of the cover, please refer to the section of "7.1.3 Installation of Cover".

6.4 Battery Capacity Expansion

The device is allowed to increase the number of battery modules to achieve capacity expansion.

As for the battery capacity expansion, it may have to dismantle the inverter. In that case, please strictly follow the *User Manual* to remove or install the inverter.

NOTICE!

- Please confirm that there is enough space to increase the number of battery modules.
- Please make sure that the ground and wall that are used to install the new battery modules can handle the additional weight.

7 Electrical Connection

7.1 Electrical Connection of Battery

7.1.1 Details of Cables

Communication cable: There are two terminals at both ends. One connects to the COM port of the BMS, and the other connects to the COM port of the series box.

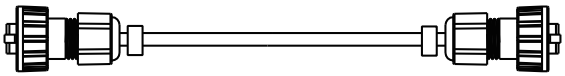


Figure 7-1 Communication cable

Heater cable: There are two terminals at both ends. One connects to the HEAT port of the BMS, and the other connects to the HEAT port of the series box.

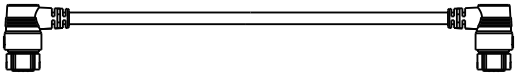


Figure 7-2 Heater cable

Power cable (black): There are two terminals with the same function at both ends. One connects to the "BAT-" of the BMS, and the other connects to the "BAT-" of the series box.

Figure 7-3 Power cable (black)

Power cable (red): There are two terminals with the same function at both ends. One connects to the "BAT+" of the BMS, and the other connects to the "BAT+" of the series box.

Figure 7-4 Power cable (red)

Grounding cable: There are two terminals at both ends. One connects the grounding port of the BMS, and the other connects to the grounding port of the series box.

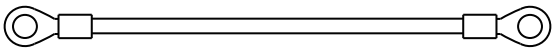


Figure 7-5 Grounding cable

NOTICE!

- The above-mentioned cables are delivered with the **Accessories of Series Box**.

7.1.2 Wiring Procedure

WARNING!

- Only the qualified personnel can perform the wiring.
- Follow this manual to wire connection. The device damage caused by incorrect wiring is not in the scope of warranty.

CAUTION!

- Use insulated tools and wear individual protective tools when connecting cables.

NOTICE!

- In the case of one tower, the BMS does not need to conduct wiring. The short power cable, short-circuit plug, and waterproof cap will be connected before delivery. And in that case, please don't remove the short power cable, short-circuit plug, or waterproof cap.
- The wiring procedure for both floor mounting and wall mounting is the same.
- Take the wiring procedure for two towers in the mode of floor mounting as an example.

Step 1: Before conducting wiring between the BMS and series box, press and hold the lock button to unplug the short power cable.

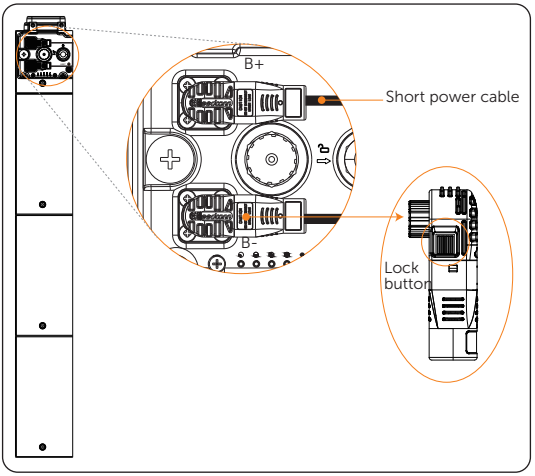


Figure 7-6 Removing short power cable

Step 2: Rotate the waterproof cap anti-clockwise to remove it. And rotate the short-circuit plug anti-clockwise. When the arrow on the rotating ring is aligned with the arrow on the panel, the short-circuit plug can be removed.

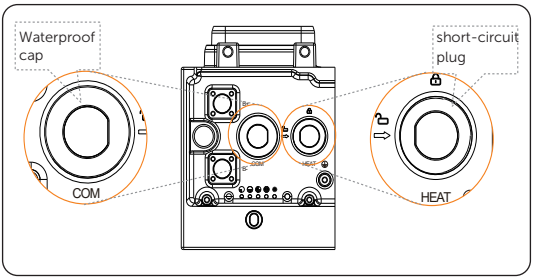


Figure 7-7 Removing waterproof cap

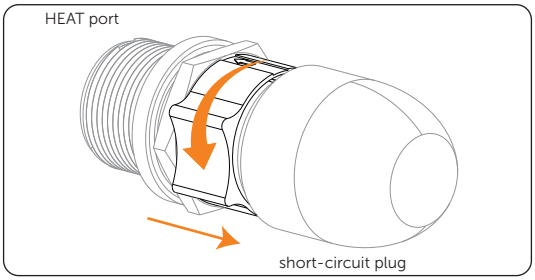


Figure 7-8 Closing short-circuit plug

NOTICE!

- Press and hold the lock button while unplugging the power cable, or it cannot be pulled out.
- Don't violently remove the short-circuit plug before the arrow on the rotating ring is aligned with the arrow on the panel.
- Don't violently remove the cable when it is locked.

Step 3: Connect B+ of the BMS to B+ of the series box;

Connect B- of the BMS to B- of the series box;

Connect COM port of the BMS to COM port of the series box;

Connect HEAT port of the BMS to HEAT port of the series box;

Connect the grounding port of the BMS to the grounding port of the series box.

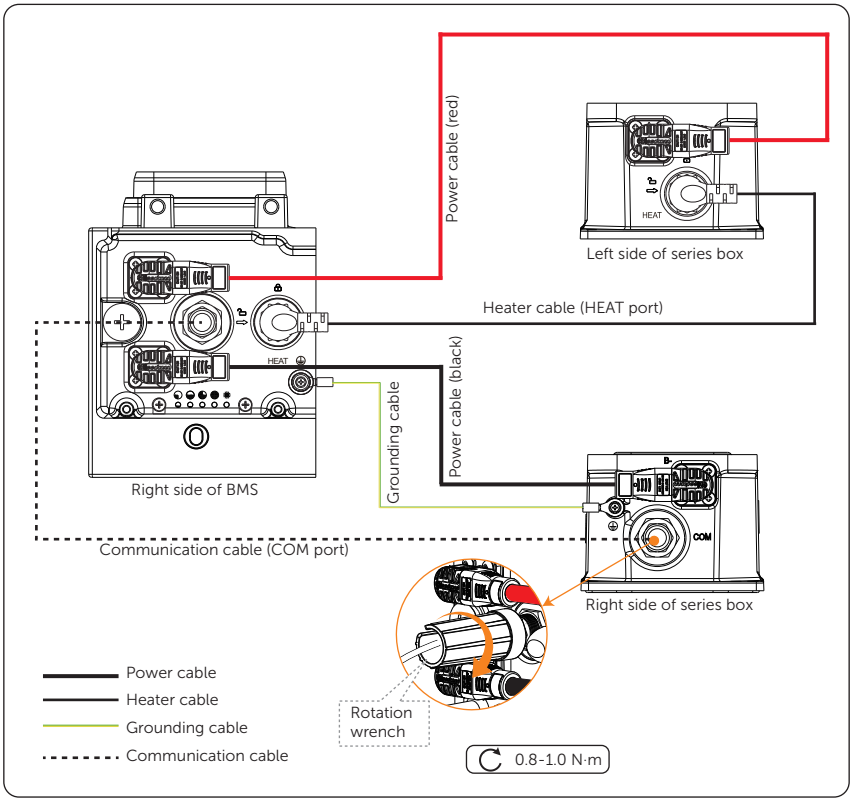


Figure 7-9 Connecting cables

NOTICE!

- There are two terminals on both ends of the power cable;
- Both ends of the communication cable shall be closed by using a rotation wrench.

Step 4: Pull cables through pipes after connecting cables to the BMS.

Pull the power cable (red) and heater cable through pipe 1, and pull the power cable (black), communication cable and grounding cable through pipe 2.

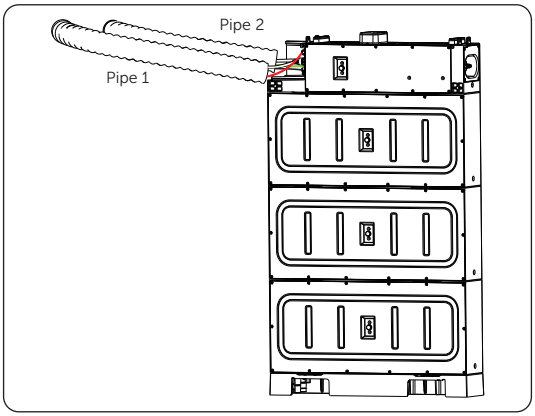


Figure 7-10 Pulling cables

NOTICE!
• A corrugated pipe should be prepared by the users themselves.

Step 5: Insert pipes into the holes on the cover, and then connect the cables to the series box.

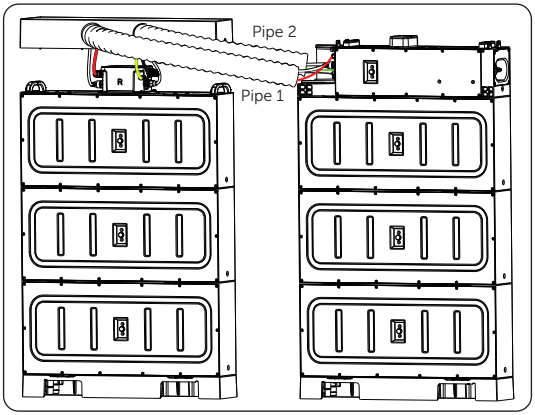


Figure 7-11 Inserting pipes into the cover

Step 6: Firstly rotate the rotating ring until the arrow on it is aligned with the arrow on the panel before removing the short-circuit plug, and then insert the heater cable into the HEAT port and rotate clockwise to close it.

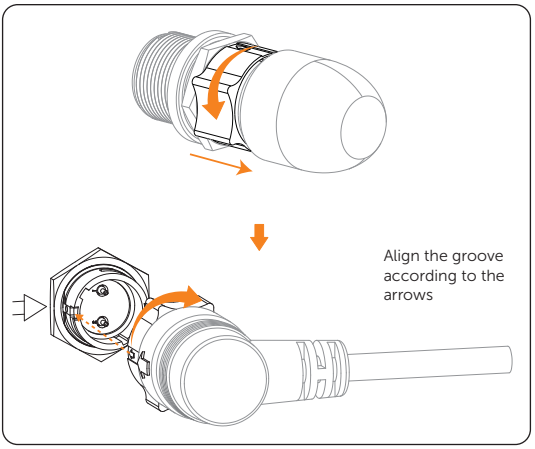


Figure 7-12 Locking heater cable

NOTICE!

- A rotation wrench is used to tighten both ends of the communication cable, and it may be removed after tightening.
- Don't violently remove the cable when it is locked.
- A corrugated pipe with an external diameter of 67.2 mm is recommended for use to keep cable insulation in place and avoid potential damages.

7.1.3 Installation of Cover

After finishing wiring, push the cover to the series box, and tighten M5*14 screws on both sides to secure the cover (torque: 2.2-2.5 N·m).

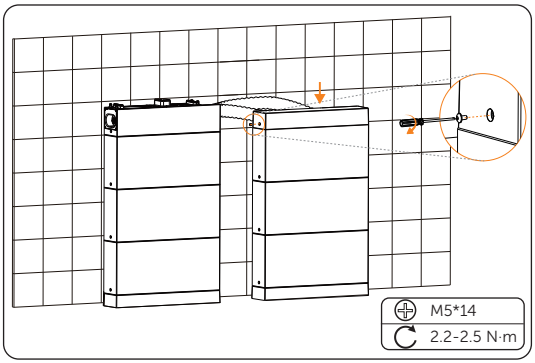


Figure 7-13 Tightening M5 screws

NOTICE!

- Please make sure that the corners and edges of the cover and battery modules are aligned before tightening screws.
- The above steps for installing the cover also apply to the mode of wall mounting.

7.2 Electrical Connection of Inverter

DANGER!

- Before electrical connection, make sure the DC switch of the battery (T-BAT-SYS), the inverter AC breaker are turned off. Otherwise, an electrical shock may be caused by high voltage, resulting in serious personal injury or death.

WARNING!

- Only the qulalified personel can perform the electrical connection following the local standards and requirements.
- Follow this manual or other related documents to wire cables. The device damage caused by incorrect wiring is not in the scope of warranty.

CAUTION!

- Use insulated tools and wear individual protective tools when connecting cables.

7.2.1 Wiring Sequence of the Inverter

Users should strictly follow the wiring sequence of the inverter.

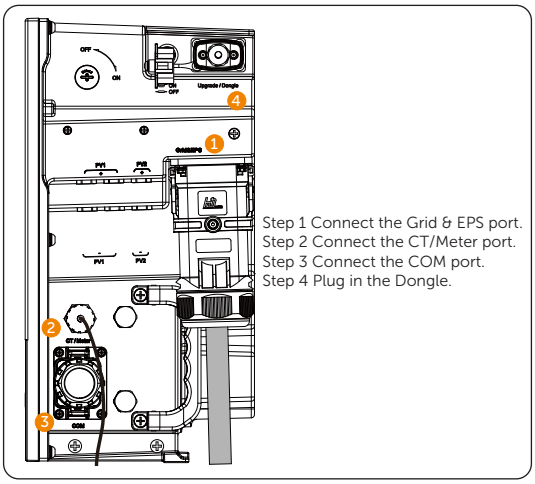


Figure 7-14 Wiring sequence of the inverter

7.2.2 Grid Connection

NOTICE!
• Before connecting the inverter to the grid, approval must be received by the local utility as required by national and state interconnection regulations.

Requirements for AC Side Connection

- Grid Voltage requirement
  - » The grid voltage must be within the permissible range. The inverter is suitable for rated voltage 380/400V, frequency 50/60Hz. Other technical requests should comply with the requirement of the local public grid.
- RCD requirement
  - » The inverter does not require an external residual-current device when operating. If an external RCD is required by local regulations, It is recommended to use a Type-A RCD with the value of 300 mA.
- AC breaker requirement
  - » An AC breaker that matches the power of the inverter must be connected between the inverter output and the power grid, and each inverter must be equipped with an independent breaker or other load disconnection unit to ensure the safe disconnection from the grid. Refer to "4.3 Additionally Required Materials" for specific data of AC breaker of Grid.
- Load requirement
  - » It is prohibited to connect any load between the inverter and the AC breaker.

Wiring Procedures

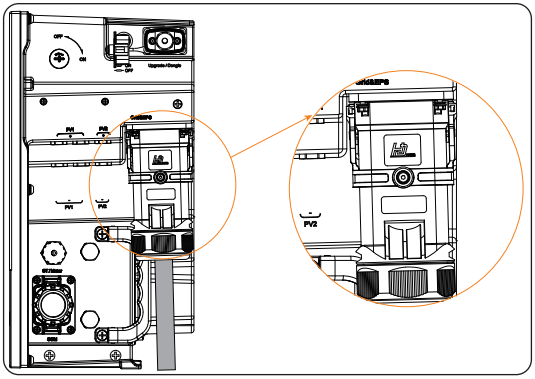


Figure 7-15 Well connected Grid cables

Step 1: Prepare a Grid cable (five-core wire) and strip the insulation jacket as below.

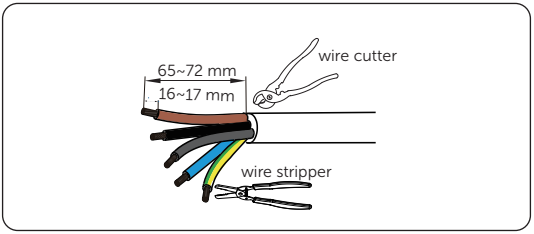


Figure 7-16 Striping the Grid cables

Step 2: Insert L1, L2, L3 and PE wires of the Grid cables into ferrules. Use a crimping tool for ferrules to crimp the ferrules. Make sure the conductors are correctly assigned and firmly seated in the ferrules.

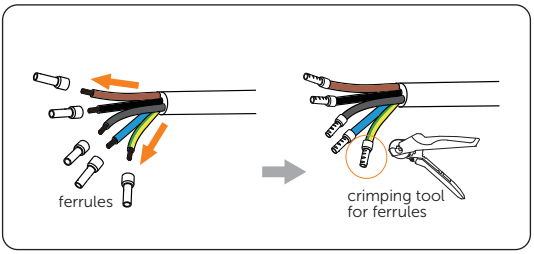


Figure 7-17 Crimping the Grid cables

NOTICE!

- For a 5.0 kW inverter, please select suitable Grid ferrules from theinverter accessory pack in accordance with the diameter of the Grid cables actually used.

Step 3: Take out the AC connector from the accessory pack. Disassemble the AC connector.

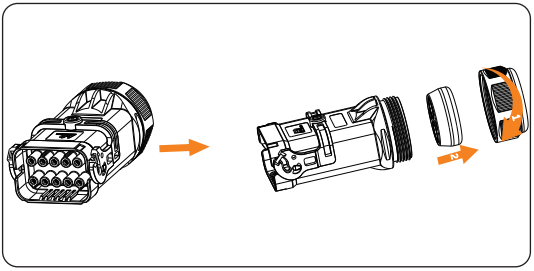


Figure 7-18 Disassembling the AC connector

» Cut the innermost round membrane with a utility knife.

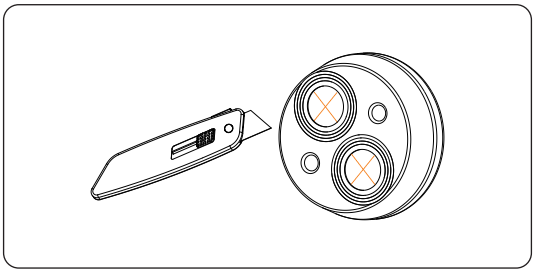


Figure 7-19 Cutting the round membrane

NOTICE!

- If only one round hole is needed, please do not cut the other round membrane, to ensure the sealing of the inverter.

» According to the outer diameters of the cable, take out the corresponding sealing plug with your hand.

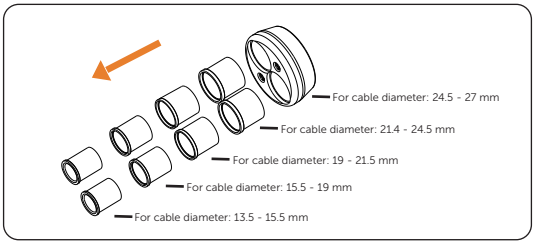


Figure 7-20 Taking out sealing plug

» Insert the diassembly tool for the rubber core into the AC connector. Press the diassembly tool with one hand, and meanwhile poke the rubber core from the other end of the AC connector with a screwdriver held by the other hand, until the rubber core is poked out of the enclosure of the AC connector.

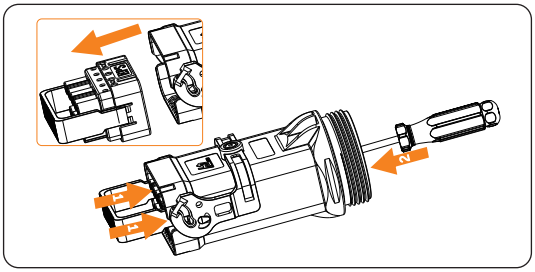


Figure 7-21 Poking the rubber core out

Step 4: Connect Grid cables to the AC connector.

» Thread the Grid cables through the swivel nut, cable support sleeve, and the enclosure separately. Insert the crimped conductors L1, L2, L3, N, and PE into the corresponding position of the rubber core and tighten them.

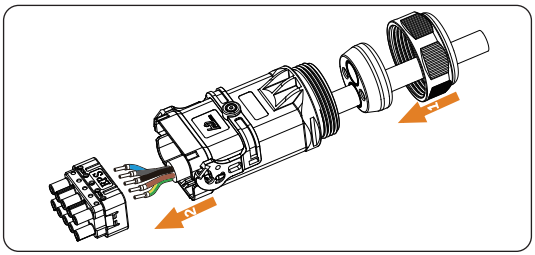


Figure 7-22 Inserting Grid cables into the AC connector

» Insert Condutor L1 of the Grid cable into Position L1 of the Grid side of the rubber core. Observe whether the conductor is in the right place through the hole of the rubber core. If yes, tighten the screw with the Allen key. Connect L2, L3, N, and PE in the same way.

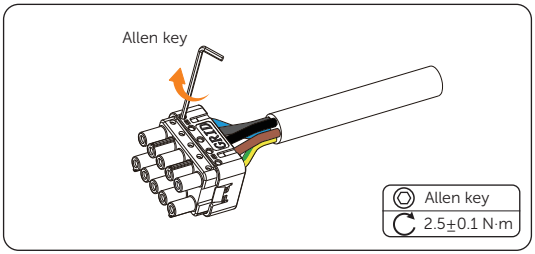


Figure 7-23 Locking wires in the AC connector

Step 5: Put the rubber core and cable support sleeve back to the AC connector enclosure, and tighten the swivel nut.

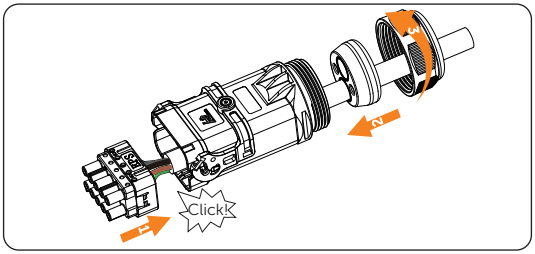


Figure 7-24 Assembling the AC connector

Step 6: Pull up the latch on the AC connector.

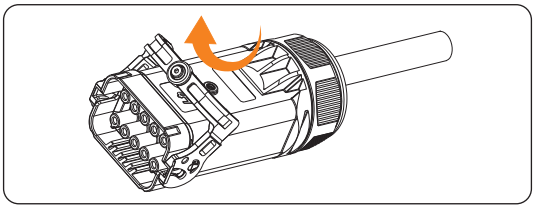


Figure 7-25 Pulling up the latch

Step 7: Remove the dustproof cover on the Grid & EPS port of the inverter.

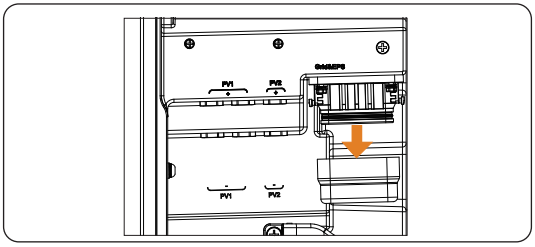


Figure 7-26 Removing the dustproof cover

Step 8: Plug the AC connector into the Grid & EPS port of the inverter and lock the AC connector with an Allen key.

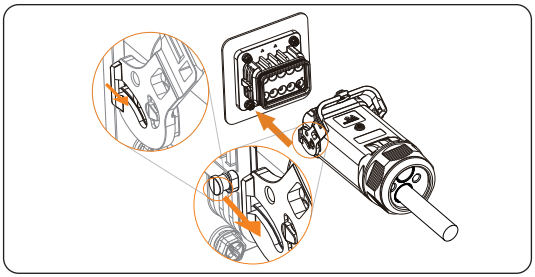


Figure 7-27 Plugging the AC connector into the port on the inverter

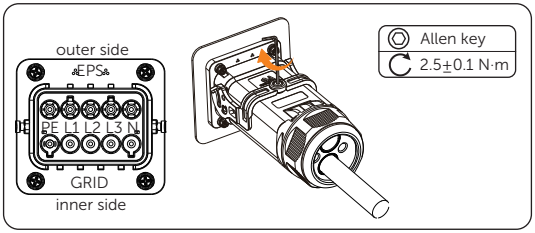


Figure 7-28 Tightening the lock on the AC connector

7.2.3 Communication Connection

COM and CT/Meter ports are for the communication function of the inverter.

Communication Port Introduction

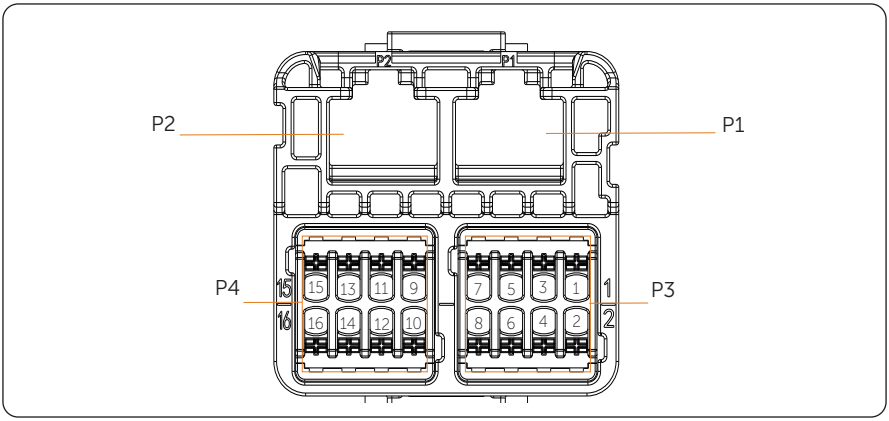


Table 7-1 Description of COM

Icon	PIN	Definition	Function	Comment
P1	1	PARALLE_SYNC1	Parallel signal output	Parallel signal port (RJ45)
	2	PARALLE_SYNC2		
	3	EPSBOX_RELAY_VCC		
	4	PARALLE485A		
	5	PARALLE485B		
	6	GND_COM		
	7	CAN_L		
	8	CAN_H		
P2	1	PARALLE_SYNC1	Parallel signal input	
	2	PARALLE_SYNC2		
	3	N/A		
	4	PARALLE485A		
	5	PARALLE485B		
	6	GND_COM		

Icon	PIN	Definition	Function	Comment
P2	7	CAN_L	Parallel signal input	Parallel signal port (RJ45)
	8	CAN_H		
P3	1	DRM1/5	Logic interface signal	Logical interface is for Australia (AS4777) and other standards
	2	DRM2/6		
	3	DRM3/7		
	4	DRM4/8		
	5	REF GEN/0		
	6	COM/DRM0		
	7	remote 485A	RS485 differential signal-A	communication with SolaX's datahub, EV-Charger and other internal devices
	8	remote 485B	RS485 differential signal-B	
P4	9	12V_COM	12V	Energy supply
	10	GND	GND	Ground connection
	11	modbus 485A	Modbus485	485 port for communication with other external devices
	12	modbus 485B		
	13	DO_1	Output drycontact	Output drycontact
	14	DO_2		
	15	DI_1	Input drycontact	Input drycontact
	16	DI_2		

* Professional personnel can use pins 11 and 12 to realize data acquisition and external control functions. The communication protocol is Modbus RTU. For details, please contact us.
* If customers want to use the inverter dry contact to control external equipment (such as a heat pump), it can be used with our Adapter Box.
* Only DRM 0/1/5 are available, others are under development.
* The inverter can be shut down through DRM0.

DRM Connection (COM Port)(Applicable to AS/NZS 4777)

According to Australia AS/NZS 4777, the inverter need to support the function of demand response mode (DRM), DRM 0, DRM 1 and DRM 5 are available now.

Table 7-2 Desciptions of DRM

Mode	Requirement
DRM 0	Operate the disconnection device.
DRM 1	Do not consume power.
DRM 2	Do not consume at more than 50% of rated power.
DRM 3	Do not consume at more than 75% of rated power and source reactive power if capable.
DRM 4	Increase power consumption (subject to constraints from other active DRMs).
DRM 5	Do not generate power.
DRM 6	Do not generate at more than 50% of rated power.
DRM 7	Do not generate at more than 75% of rated power and sink reactive power if capable.
DRM 8	Increase power generation (subject to constraints from other active DRMs.

External Devices Connection (COM Port)

COM is a standard communication interface, through which the monitoring data of the inverter can be directly obtained. Also the external equipment can be controlled through COM communication.

External Connection with a Datahub

Pin Assignment

Table 7-3 Inverter connected with a SolaX datahub

COM port of X3-IES-A series inverter		RS485-1/-2/-3/-4 port of SolaX datahub
Pin	Pin definition	Pin definition
7 (P3)	remote 485A	RS485A
8 (P3)	remote 485B	RS485B
10 (P4)	GND	GND

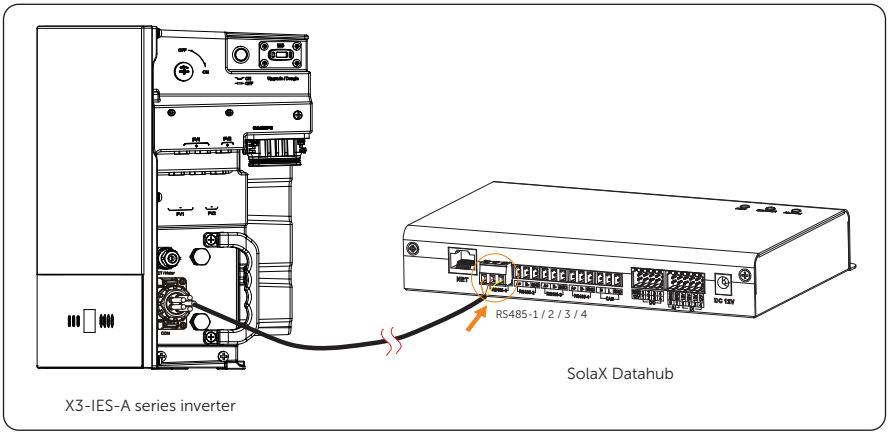


Figure 7-29 Inverter connected with a SolaX datahub

External Connection with an EV Charger

Pin Assignment

Table 7-4 Inverter connected with an SolaX EV Charger

COM port of X3-IES-A series inverter		COM port of SolaX EV Charger	
Pin	Pin definition	Pin	Pin definition
7 (P3)	remote 485A	4	A1
8 (P3)	remote 485B	5	B1

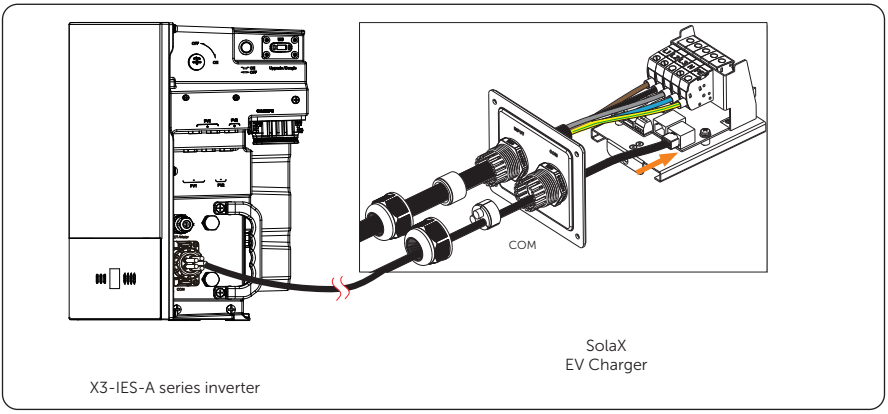


Figure 7-30 Inverter connected with a SolaX EV Charger

External Connection with an Adapter Box G2

Pin Assignment

Table 7-5 Inverter connected with an SolaX adapter box G2

COM port of X3-IES-A series inverter		485_INV port of SolaX Adapter Box G2	
Pin	Pin definition	Pin	Pin definition
7 (P3)	remote 485A	4	RS485-A
8 (P3)	remote 485B	5	RS485-B
9 (P4)	12V_COM	3	+13 V
10 (P4)	GND	6	GND

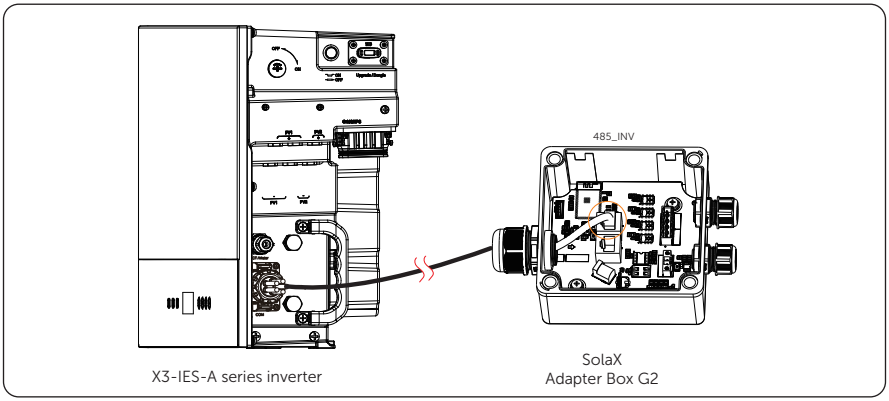


Figure 7-31 Inverter connected with a SolaX Adapter Box G2

Wiring Procedures

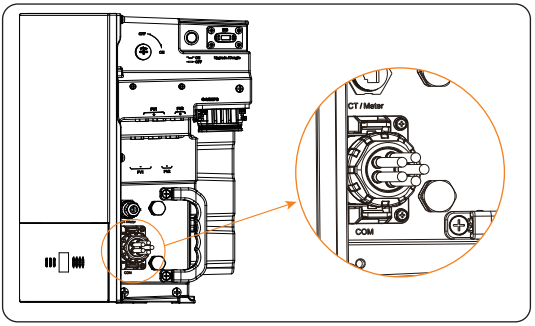


Figure 7-32 Well connected COM port

Step 1: Loosen the swivel nut and pull out the rubber stoppers inside. Press the bricks on the terminal block and pull the block out.

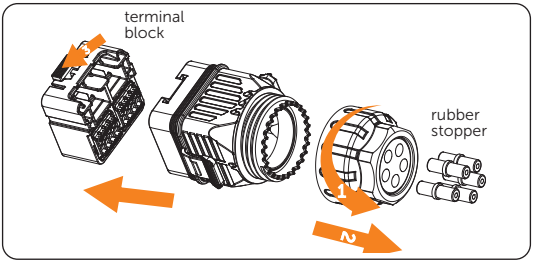


Figure 7-33 Disassembling the communication connector

Step 2: Thread two communication cables through the swivel nut and the communication connector. Slightly tighten the swivel nut but not lock it in case of its falling down. Strip 15 mm insulation jacket off.

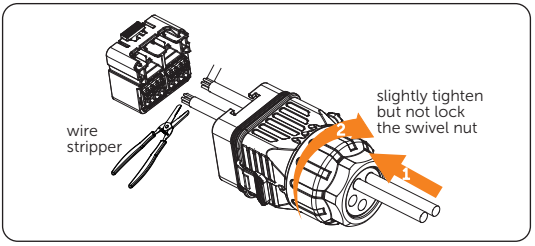


Figure 7-34 Stripping cables

NOTICE!

- Screw the swivel nut slightly in case of its falling down.

Step 3: Crimp the stripped end with RJ45 terminals with a crimping tool for RJ45.

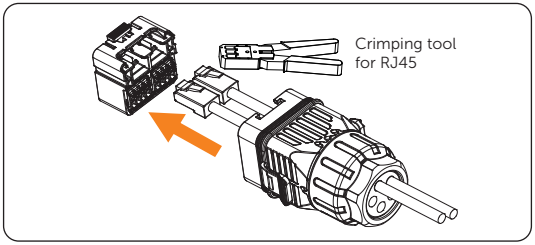


Figure 7-35 Crimping terminals

Step 4: Strip communication cables as needed as below.

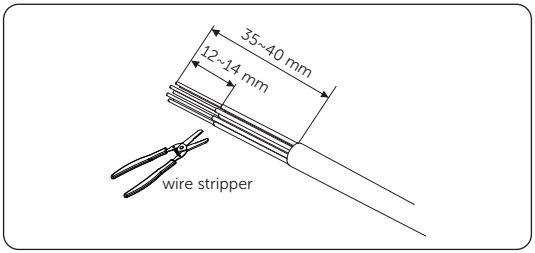


Figure 7-36 Stripping cables

Step 5: Thread communication cables through the swivel nut and the communication connector. Slightly tighten the swivel nut but not lock it in case of its falling down. Insert the wires into ferrules.

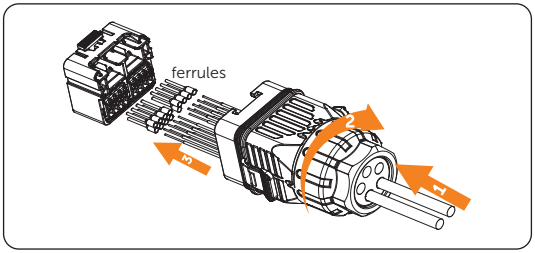


Figure 7-37 Inserting wires into ferrules

NOTICE!
• Screw the swivel nut slightly in case of its falling down.

Step 6: Crimp ferrules and plug well crimped wires into the terminal block as needed.

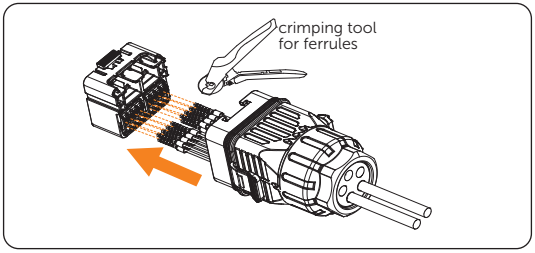


Figure 7-38 Crimping ferrules

Step 7: Insert the terminal block connected with cables into the communication connector until there is an audible click. Screw the swivel nut tightly.

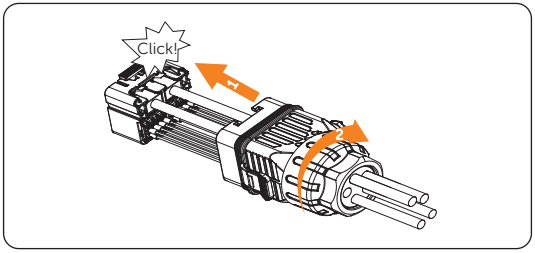


Figure 7-39 Inserting the terminal block into the connector

NOTICE!
• Please ensure ports of the communication connector are well sealed.

Step 8: Remove the dustproof cover on the COM port of the inverter. Plug the communication connector into the port.

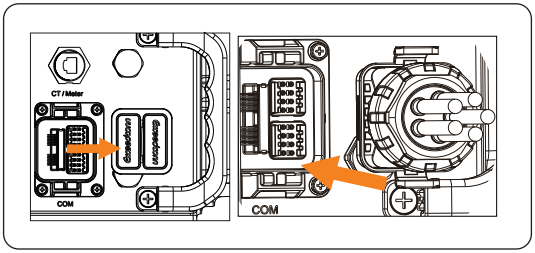


Figure 7-40 Removing the dustproof cover and plugging in the connector

CT/Meter Connection (CT/Meter Port)

This section only introduces the wiring of the CT/Meter port of the inverter. For wiring procedures of the CT and meter side, see "14.1 CT/Meter Connection Scenarios".

CAUTION!

- Compatible meters and CTs must be properly connected to the inverter, otherwise, the inverter will shut down and prompt a **Meter Fault** alarm.
- Meters and CTs that will be connected to the inverter must be authorized by SolaX. Unauthorized meters and CTs might be incompatible and cause damages to the inverter. SolaX will not be responsible for the impact caused by the use of other appliances.

NOTICE!

- For CT connection, we offer an RJ45 coupler for attaching extension cables. If needed, prepare a standard 8-pin communication cable of proper length in advance.

Pin Assignment

Table 7-6 Pin assignment of the inverter CT/Meter port

Item	CT1			Meter		CT2		
Pin	1	2	3	4	5	6	7	8
Definition	CT_ L1-1	CT_ L2-1	CT_ L3-1	METER485A	METER485B	CT_ L1-2	CT_ L2-2	CT_ L3-2

Wiring Procedure

Step 1: Disassemble the waterproof RJ45 connector to a waterproof connector and an RJ45 terminal (terminal A).

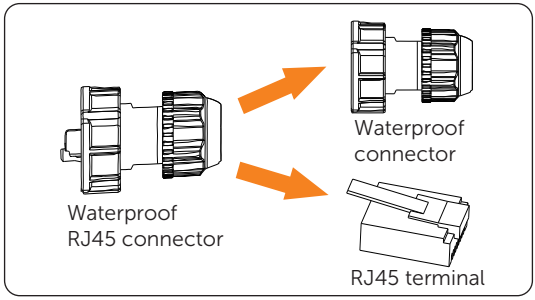


Figure 7-41 Disassembling the waterproof RJ45 connector

Step 2: Thread the communication cable through the waterproof connector.

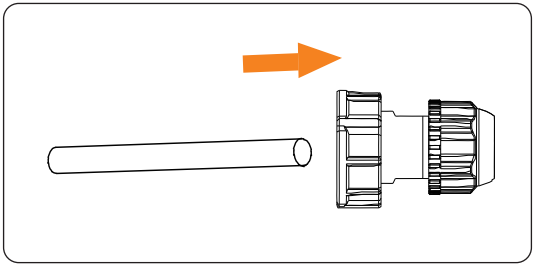


Figure 7-42 Threading the communication cable

Step 3: Strip and crimp the communication cable.

» For CT connection

a. Strip around 15 mm wire insulation off both ends of the cable.

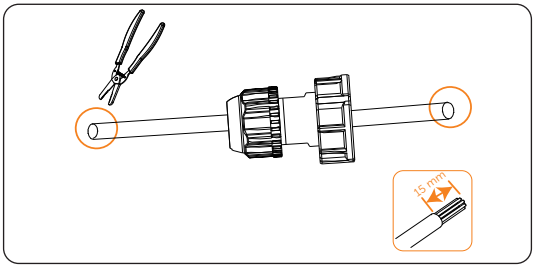


Figure 7-43 Stripping the communication cable for CT

b. Insert the conductors at both ends respectively to terminal A and another RJ45 terminal (Terminal B) based on the pin definition of the inverter CT/ Meter port, and then use a crimping tool to crimp both cable ends.

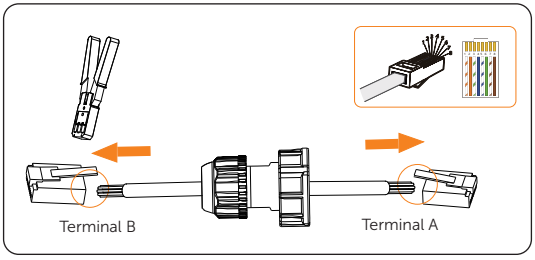
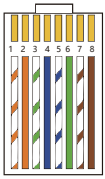


Figure 7-44 Crimping the communication cable for CT

Table 7-7 Pin number and color



PIN No.	Color	PIN No.	Color
1	Orange-White	5	Blue-White
2	Orange	6	Green
3	Green-White	7	Brown-White
4	Blue	8	Brown

» For meter connection

a. Strip around 15 mm wire insulation off one end of the communication cable.

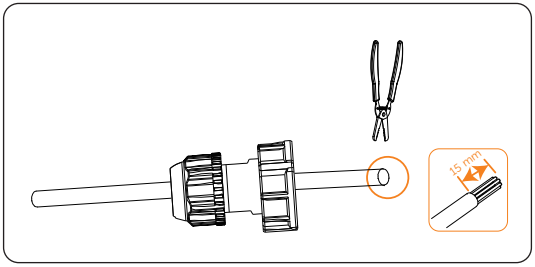


Figure 7-45 Stripping the communication cable for meter

b. Insert the conductors respectively into pin 4 and pin 5 of the RJ45 terminal, and then use a crimping tool to crimp them.

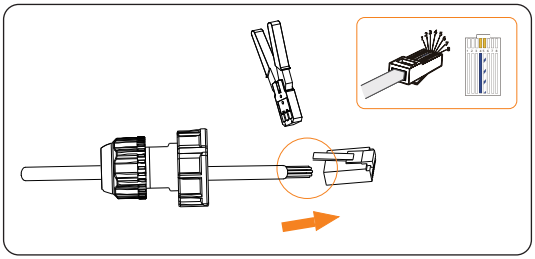


Figure 7-46 Crimping the communication cable for meter

Step 4: Remove the dustproof cover from the CT/Meter port of the inverter, insert the RJ45 terminal into the port, and then secure the waterproof connector.

An audible "Click" will be heard if it is successfully connected.

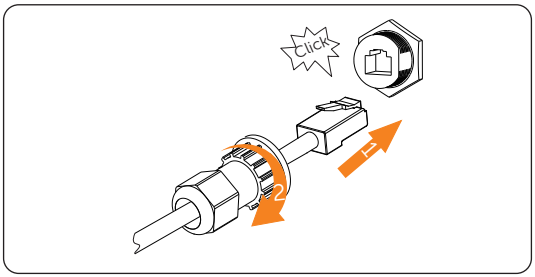


Figure 7-47 Connecting cable to the CT/Meter port

NOTICE!

- The cable shielding board of the Australia version is different from the general version, please refer to the corresponding version of the cable shielding board installation procedure.

Step 5: Install the cable shielding board.

» (For general version only) Hang the cable shielding board on the screws on the inverter and lock the screws at the bottom of the inverter.

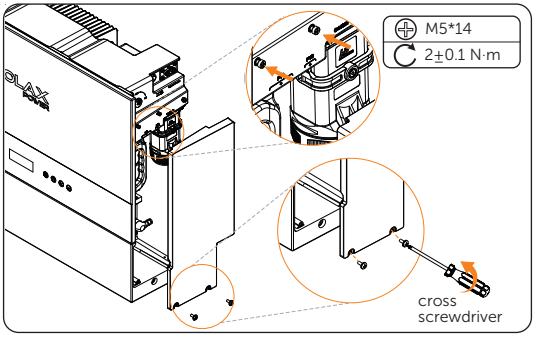


Figure 7-48 Locking the cable shielding board

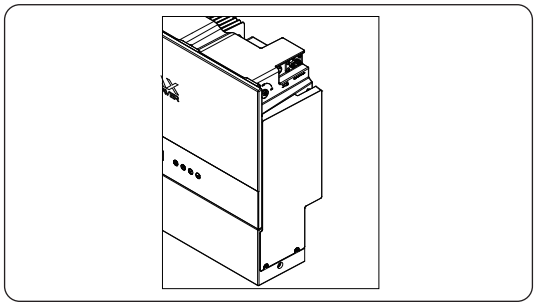


Figure 7-49 Locking the board well

» (For Australia version only) Hang the cable shielding board on the screws on the inverter and lock the screws at the bottom of the inverter. Install the padlock. (The lock rod 's diameter doesn't exceed 5 mm.)

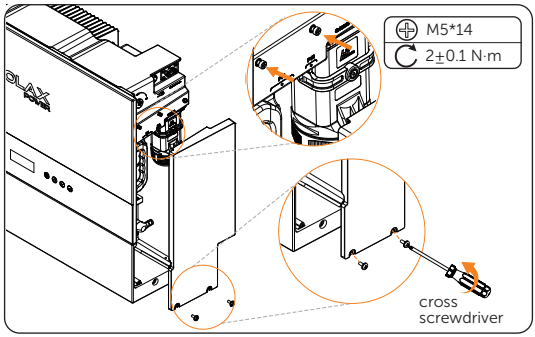


Figure 7-50 Locking the cable shielding board

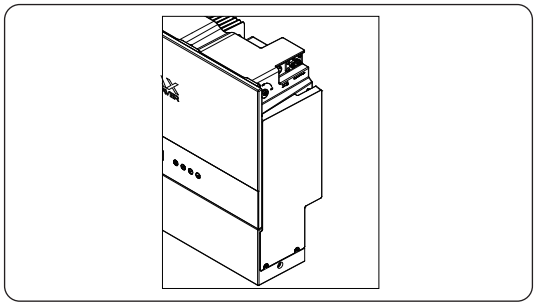


Figure 7-51 Locking the board well

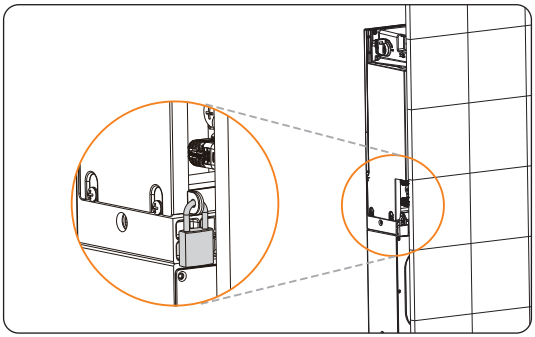


Figure 7-52 Installing the padlock

7.2.4 Monitoring Connection (UPGRADE/ Port)

The inverter provides a DONGLE terminal, which can transmit data of the inverter to the monitoring website via the WiFi+LAN dongle or WiFi+4G (optional). The WiFi+Lan dongle is equipped with 2 kinds of communication modes (WiFi mode or LAN mode).

NOTICE!
WiFi dongle • Harness the power of WiFi with WiFi dongle, connect to a local network within 50m of the installation to enable access to the Cloud monitoring platform.

NOTICE!
LAN dongle • If WiFi isn't suitable for your situation, the LAN dongle enables you to connect to your network via an ethernet cable. Ethernet allows for a much more stable connection with less interference.

NOTICE!
4G • 4G allows you to use a 4G connection to monitor your system without the option of connecting to a local network. (This product is not available in the UK.)

NOTICE!
• Ensure the DONGLE port is sealed with the dustproof cover when no device is plugged in. Otherwise, it may cause inverter damage.

Monitoring Connection Diagram

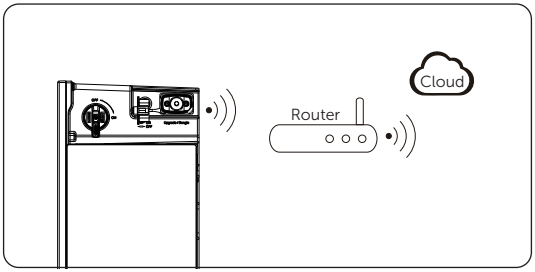


Figure 7-53 WiFi mode connection diagram

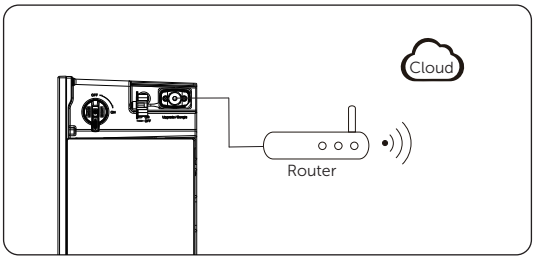


Figure 7-54 LAN mode connection diagram

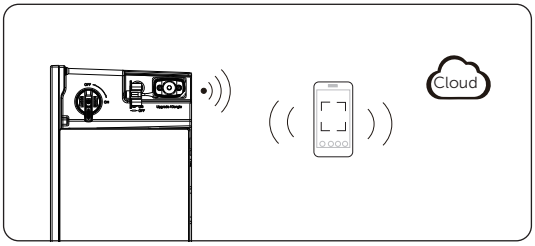


Figure 7-55 WiFi+4G connection diagram

Wiring Procedures

WiFi mode:

» Assemble the dongle;

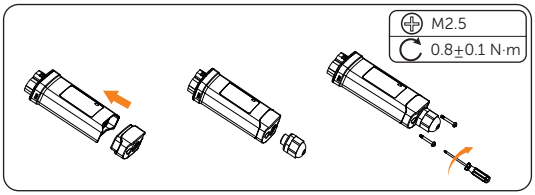


Figure 7-56 Assembling the dongle

» Plug the dongle to the inverter.

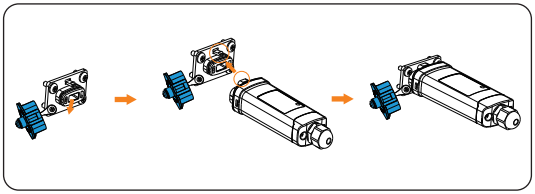


Figure 7-57 WiFi connection procedure

CAUTION!

- The buckles must be on the same side. Otherwise, the dongle may be damaged.

NOTICE!

- The longest connection distance between the router and the equipment should be no more than 100 meters; if there is a wall between the router and the equipment, the longest connection distance is 20 meters.
- When the WiFi signal is weak, please install a WiFi signal booster at the appropriate location.

NOTICE!

- Please refer to Pocket WiFi + LAN Installation Guide for instructions on configuring the WiFi. It is important to note that the WiFi configuration should be performed after powering on the inverter..

LAN mode:

» Disassemble the waterproof connector into components 1, 2 , 3 and 4; Component 1 is not used. Keep it in a safe place.

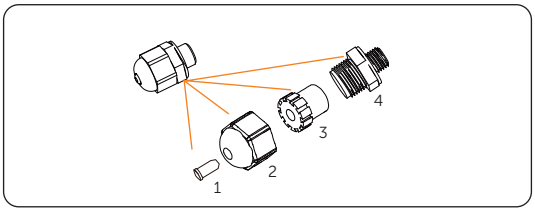


Figure 7-58 Disassembling the waterproof connector

» Assemble the dongle.

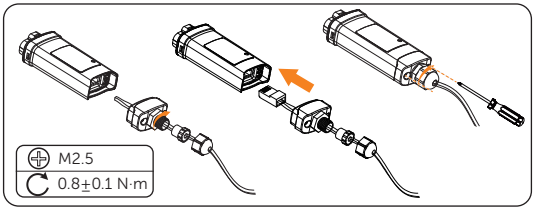


Figure 7-59 Assembling the LAN dongle

» Plug the dongle to the inverter.

For network configuration of the dongle, see "10 Operation on SolaX App and Web".

NOTICE!

- Install dongle with WiFi connecting cable according to the actual needs.

» Install dongle with WiFi connecting cable

a. Plug one end of the WiFi connecting cable into the inverter dongle terminal.

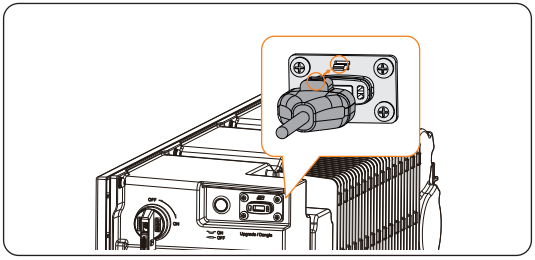


Figure 7-60 Installing the WiFi connecting cable

b. Drill one hole in the wall, then insert the expansion bolts into the hole. Install the WiFi connecting cable in WiFi stand, and mount the WiFi stand on the wall.

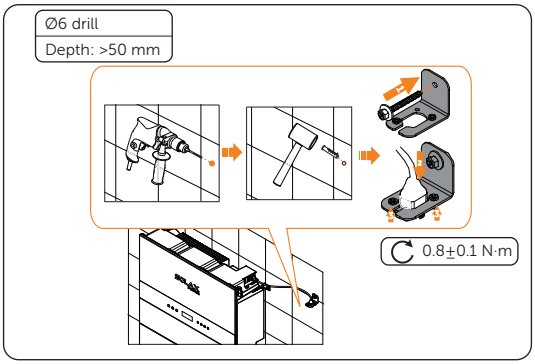


Figure 7-61 Mounting the WiFi stand

c. Plug the dongle into the WiFi connecting cable.

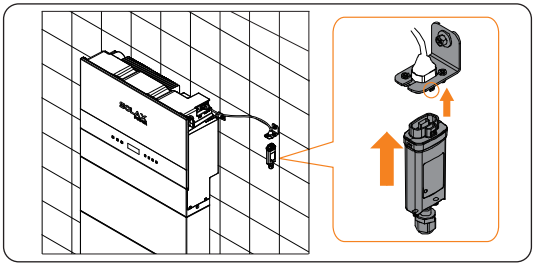


Figure 7-62 Plugging the dogle

8 System Commissioning

8.1 Checking before Power-on

a. Make sure that the device installed correctly and securely;

b. Make sure that the system BUTTON on the inverter and the AC breakers connected to the inverter are OFF.

c. Make sure that all the BMS BUTTON and BAT SWITCH are OFF;

d. Make sure that all Grid cables are connected correctly and securely;

e. Make sure that the PE wires of the Grid cables are correctly and securely;

f. Make sure that the inverter is connected to the battery correctly and securely;

g. Make sure that all communication cables are connected correctly and securely;

h. Make sure that the CT/meter is connected correctly and securely;

i. Make sure that the battery is connected correctly and securely;

j. Make sure that all the connectors which are not used sealed by covers;

k. Make sure that the covers and lids of the inverter is closed and the cover screws are tightened.

8.2 Powering on the System

Step 1: Turn on the AC breaker and check whether the LCD screen lights on. If the LCD screen is not on, turn off the AC breaker and check whether the Grid cable is conected correctly and securely.

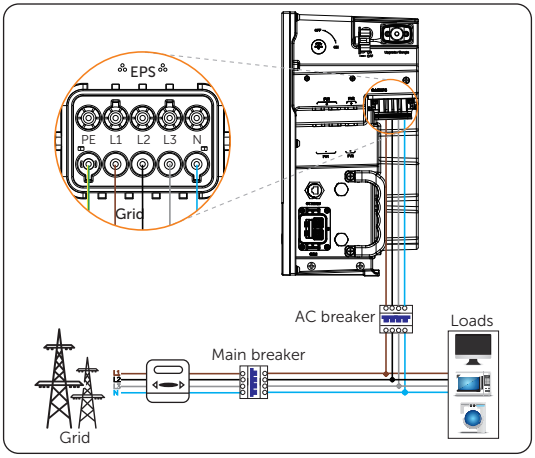


Figure 8-1 Turning on AC breaker

Step 2: Switch the BAT switch to the "ON" position. Press and hold the BMS button for 1-2 seconds (at the point, the SoC indicators will rapidly flash yellow lights and then turn to flash green lights).

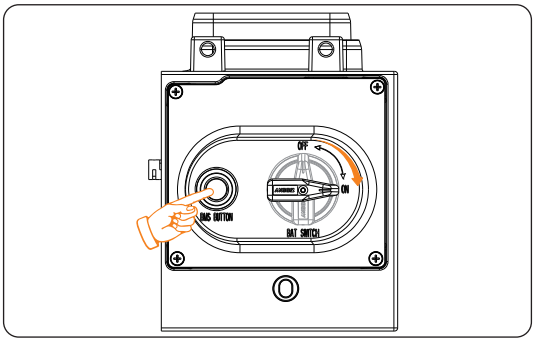


Figure 8-2 Turning on the battery

NOTICE!

- The button is in OFF status by default.
- A system problem may be encountered while pressing the button frequently. The user may need to wait at least 10 seconds and then try again.

Step 3: Turn on the inverter system BUTTON.

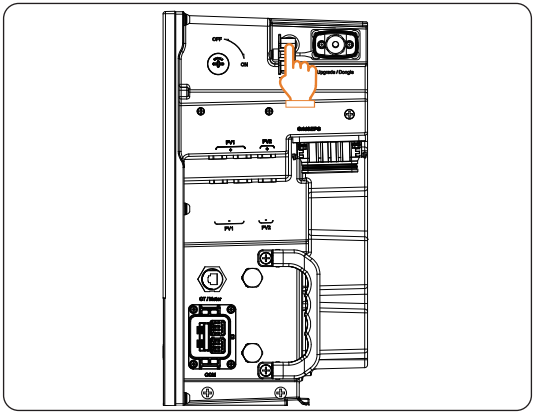


Figure 8-3 Pressing the inverter button

NOTICE!

- The button is in OFF status by default.
- A system problem may be encountered while pressing the button frequently. The user may need to wait at least 10 seconds and then try again.

Step 4: Check whether the current "Safety Code" complys with the local grid-tied regulations. Normally, the factory setting is set with the local regulations.

NOTICE!

- When the **Safety Code** is selected, parameters in **Power Factor**, **Pu Function**, **DRM function** and **FVRT function** under the **Advanced setting** interface can be automatically adjusted in accordance with the local grid-tied regulations.

Step 5: Set "System ON/OFF" as ON status on the inverter LCD screen, and the LCD displays waiting status.

NOTICE!

- Normal: When the inverter is working normally, the blue light is always on. At the same time, the LCD displays the output power.

Step 6: Check whether the CT/Meter is correctly connected.

» If CT is connected, please perform the "Setting Meter/CT Check" on the inverter LCD screen to check the correct connection.

» If meter is connected, please set "Setting Meter/CT Check" on the inverter LCD .

NOTICE!

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

8.3 Checking after Power-on

a. Check whether the inverter has any abnormal noise.

b. Check whether the indicator lights report an error and whether the LCD screen displays the error message.

c. Check whether the data of grid and battery are normal through the LCD screen.

d. Check whether the Work Mode is consistent with what had been set through LCD screen or the SolaX Cloud App.

8.4 Power Off

a. Turn off the inverter system BUTTON.

b. Turn off the AC breaker between the inverter and the power grid.

c. Turn off the BAT switch and press for 1-2 seconds to turn off the BMS BUTTON.

WARNING!

- After the inverter powers off, there will still be the remaining electricity and heat which may cause electric shocks and body burns. Please wear personal protective equipment (PPE) and begin servicing the inverter five minutes after power off.

9 Operation on LCD

9.1 Overview of LCD

Press **Up** and **Down** to select the setting item and press Enter to confirm it.

If there is no operation on the inverter's LCD screen for 10 minutes, it will go black. Press any key to illuminate the screen again.

The main interface is the default interface, the inverter will automatically return to this interface when the system starts successfully or does not operate for a period of time.

The information of the main interface is as below. **Power** means the current output power of the inverter; **Today** means daily generated power of the inverterl; **Battery** means the left capacity of the battery.

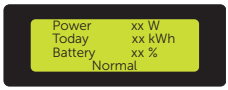


Figure 9-1 Information of the main interface

When the inverter is in the default control panel, press **Enter** to enter the menu interface. The screen only displays 4 items with the title included. You can press **Up** or **Down** to get full information.

Figure 9-2 Overview of the menu interface

- "System ON/OFF"
- "Work Mode"

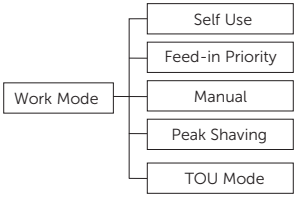


Figure 9-3 Work mode diagram

- "System Status"

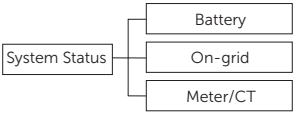


Figure 9-4 System status diagram

- "History Data"

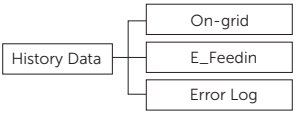


Figure 9-5 History data diagram

- Setting

User Setting and **Advance Setting** are included in **Setting**. Here below display the specific items under the two settings.

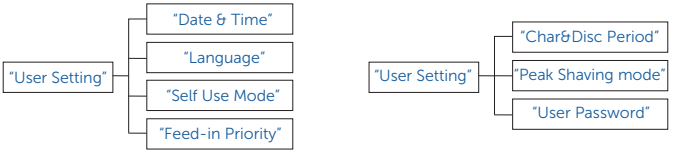


Figure 9-6 User setting diagram

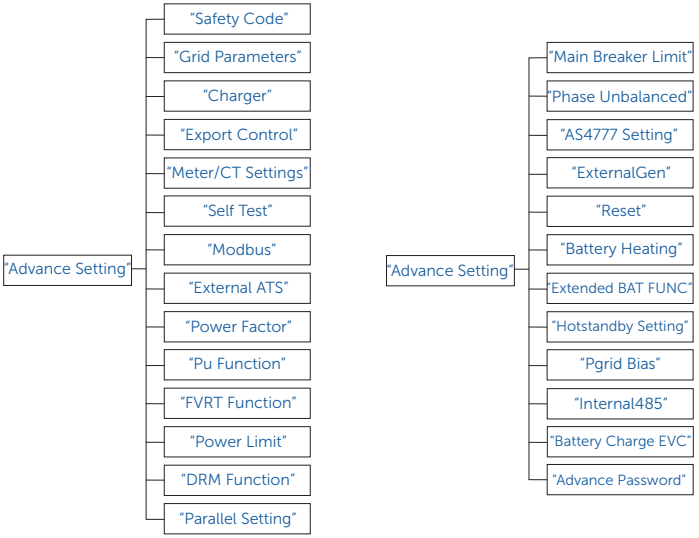


Figure 9-7 Advance setting diagram

- "About"

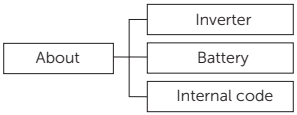


Figure 9-8 About diagram

NOTICE!

Property losses or system damage due to unauthorized access to the system when the keys on the LCD are mistakenly pressed.

- System ON/OFF, Work Mode can be set and System Status, Parallel Status, History Data and About can be browsed without any password. Keep the system out of reach of children.

NOTICE!

Property losses or system damage due to unauthorized access to the system when the user password is used.

- Date time, language, work mode, dry contact ect. under the User Setting can be set under the permission of user password by users. Replace the user password with a new secure password immediately. Advance Setting can only be set by installers.

9.2 System ON/OFF

Setting path: Menu > System ON/OFF

Setting System ON/OFF

ON means the inverter is turned on, and it is the default status.

OFF means the inverter is shut down, but the LCD screen is still on.

Default: OFF

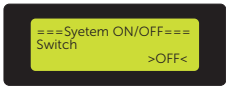


Figure 9-9 Turning on/off the system

9.3 Work Mode

Setting path: Menu > Work Mode

You can select a specific work mode to decide the working principle of the inverter in this interface.

Setting Work Mode

After entering the **Work Mode** interface, you can select **Self Use**, **Feed-in Priority**, **Manual**, **Peak Shaving** and **TOU Mode** as follows.

» Selecting Self Use

Self Use is the default work mode. Select a work mode and press **Enter** to confirm the work mode if another mode is to be selected. Select **Feed-in Priority**, and **Peak Shaving** with the same logic as Self Use.

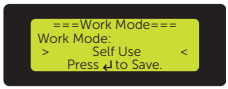


Figure 9-10 Selecting a work mode

» Selecting Manual

Manual is for after-sale team for maintaining devices.

Select **Manual** and enter the Manual interface. **Forced Discharge**, **Forced Charge** and **Stop Chrg&Dischrg** can be set in this interface.

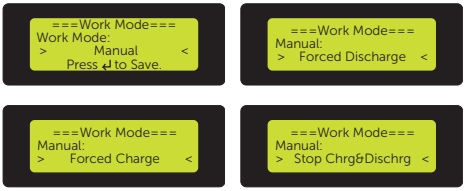


Figure 9-11 Setting items in Manual interface

» Selecting TOU Mode

Select **TOU Mode** and enter the interface, the inverter screen will display the Min SoC under this mode.

Figure 9-12 Displaying TOU system Min SoC

Different working modes, i.e Self-use, Charging, Discharging, Peaking shaving and Battery off can be set for different time periods in SolaX Cloud App or Web. The inverter screen will display current workin g mode. For example, if the current

working mode is Peak Shaving, it displays as follows.

Figure 9-13 Displaying the current work mode in TOU Mode interface

9.4 System Status

Displaying path: Menu > System Status

Displaying System Status

After entering the System Status interface, the status of **Battery**, **On-grid** and **Meter/CT** as follows.

» Battery

Here displays the battery status including the voltage, current and power of the BAT port, the present battery capacity, the battery cell temperature and BMS connection status.

Figure 9-14 Displaying battery status

» On-grid

Here display the voltage, current, power and frequency of each phase of the Grid port.

Figure 9-15 Displaying on-grid status

» Meter/CT

Here display the feedin power of each phase of Meter/CT1 and the power of each phase of Meter2. The third LCD below will display if a Meter2 is connected.

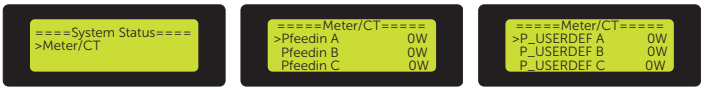


Figure 9-16 Displaying Meter/CT status

9.5 History Data

Displaying path: Menu > History Data

Displaying History Data

After entering the **History Data** interface, the status of **On-grid**, **E_Feedin** and **Error Log** as follows.

» On-grid

Here display today's output and input energy, total output and input energy under the on-grid condition.

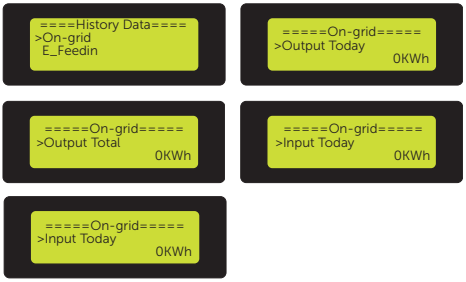


Figure 9-17 Displaying on-grid data

» E_Feedin

Here display today's and total energy feeding into the grid, today's and total energy taking from the grid.

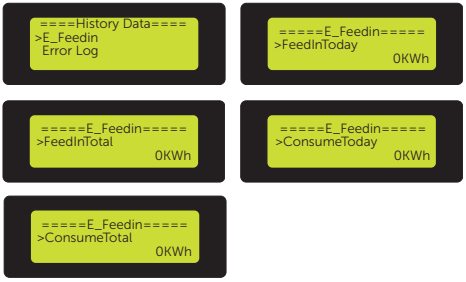


Figure 9-18 Displaying E_Feedin data

» Error Log

Here display error logs of the device. The default status is "No Error".

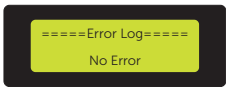


Figure 9-19 Displaying Error Log

9.6 Settings

Setting path: Menu > Settings

Enter the **Settings** interface and input the default password "**0000**" to enter the **User setting** interface. Contact SolaX after-sales team for the Advance setting password.

Figure 9-20 Entering a password

NOTICE!

- Professional installers can contact SolaX after-sales team for the password to revise items in the Advance setting interface. Users are porbidden to modify any settings under the Advance setting interface.

9.6.1 User Setting

Setting path: Menu > Setting > Password (0000) > User Setting

Users can set the items (refer to "Figure 9-6 User setting diagram") in the **User Setting** interface.

Setting Date & Time

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

The display format is "2023-07-06 10:05", 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.

Select **Date & Time** and press **Enter** to enter the interface. Press **Enter** to lock a specific number, press **Up** or **Down** to adjust the number and then press **Enter** to confirm this number and jump to set the next number with the same method until all numbers are well set. Press **Enter** to confirm your settings.

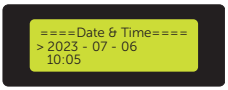


Figure 9-21 Setting the system date and time

Setting Language

This inverter provides multiple languages for customers to choose, such as English, Deutsch, francais, Polskie, Espanol, Português and Italiano.

Select **Language** in the **User Setting** interface, press **Enter** to enter the **Language** interface. Press **Up** or **Down** to select the display language based on actual need. Press **Enter** to confirm the language.

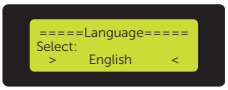


Figure 9-22 Setting system language

Setting Self Use Mode

» Setting Min SoC

Min SoC means the minimum battery SoC, and the battery won't discharge power when the actual battery SoC reaches this value.

Default Min SoC: 10%; range: 10%~100%

Figure 9-23 Set Min SoC

» Setting Charge from grid

Charge from grid means you can set whether the inverter can charge from the grid. **Disable** means the inverter is not allowed to charge from the grid.

Default setting: Disable

Charge battery to means the utility grid is allowed to charge the battery to this value when **Charge from grid** is set **Enable**.

Default Charge battery to: 30%; range: 10%~100%.

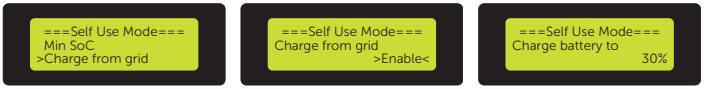


Figure 9-24 Setting Charge battery to

Setting Feed-in Priority

» Setting Min SoC

Min SoC means the minimum battery SoC, and the battery won't discharge power when the actual battery SoC reaches this value.

Default Min SoC: 10%; range: 10%~100%.

Figure 9-25 Setting Min SoC

» Setting Charge battery to

Charge battery to means the utility grid is allowed to charge the battery to this value.

Default Charge battery to: 100%; range: 10%~100%.

Figure 9-26 Setting Charge battery to

Setting Char&Disc Period

There are two setable time period need to be set: Char&Disc Period and Char&Disc Period2.

» Setting Char&Disc Period

Here you can set the start time and end time of a forced charging period and an allowed discharging period.

Figure 9-27 Setting Char&Disc Period

» Setting Char&Disc Period2

If another time period is needed, set Function Control as Enable in the Char&Disc Period2 interface. Please set the time period with the same logic with Char&Disc Period.

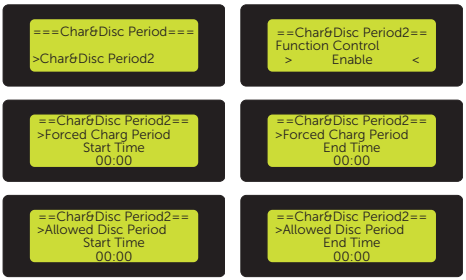


Figure 9-28 Setting Char&Disc Period2

Setting Peak Shaving mode

There are four parts to set: DischgPeriod1, DischgPeriod2, ChargeFromGrid and Reserved_SoC.

» Setting Dischg Period1

DischgPeriod1 is the discharging period for peak shaving during which the battery discharge energy for loads to leveling out peaks in electricity use.

You can set the **ShavingStartTime** and **ShavingEndTime** to define the peak shaving time period.

Default ShavingStartTime: 7:00

Default ShavingEndTime: 15:00

PeakLimits1 is set to limit the power that loads charge from the grid. Once the power of loads exceeds PeakLimits1 during DischgPeriod1, the battery discharge power for loads.

Figure 9-29 Setting Dischg Period1

» Setting DischgPeriod2

DischgPeriod2 is another discharging period for peak shaving during which the battery discharge energy for loads to leveling out peaks in electricity use.

You can set the **ShavingStartTime** and **ShavingEndTime** to define the peak shaving time period.

Default ShavingStartTime: 19:00

Default ShavingEndTime: 23:00

PeakLimits2 is set to limit the power that loads charge from the grid. Once the power of loads exceeds PeakLimits2 during DischgPeriod2, the battery discharge power for loads.

Figure 9-30 Setting Dischg Period2

» Setting ChargeFromGrid

The battery is not allowed to discharge in non-peak hours. Set **Enable** in the **ChargeFromGrid** interface if you want to get electricity from the grid.

Default setting: Disable.

After you set **Enable,** set **ChargePowerLimits** and **MAX_SoC**.

ChargePowerLimits range: 0 W~rated power (W)

Default MAX_SoC: 50%; range: 10%–100%

Set **ChargePowerLimits** to limit the power at no more than which the battery charges from the grid when the actual battery SoC is less than MAX_SoC.

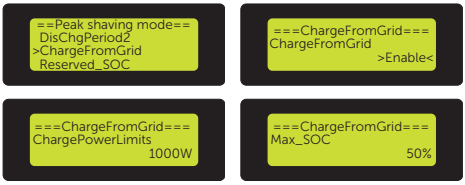


Figure 9-31 Setting ChargeFromGrid

» Reserved_SoC

Reserved_SoC is the battery capacity saved for the next peak shaving in the non-peak shaving period.

Default Reserved_SoC: 50%; range: 10%–100%

Figure 9-32 Setting Reserved_SoC

Setting User Password

You can reset the password in the **User Password** interface.

Default user password: 0000.

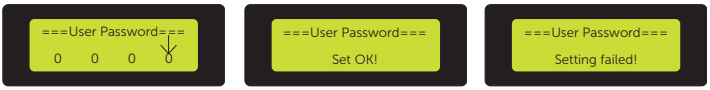


Figure 9-33 Resetting User Password

9.6.2 Advance Setting

Setting path: Menu > Setting > Password > Advance Setting

Only professional installers can modify the items (refer to "Figure 9-7 Advance setting diagram") in the **Advance Setting** interface under the permission of SolaX company.

Setting Safety Code

In order for the inverter to be able to feed in, the safety code must be set as the installation site correctly. Here you can set safety code according to different countries and grid-tied standards.

Nine standards are avaiable.(may be changed without notice)

Table 9-1 Standards

Standard	Country	Standard	Country
VDE 0126	Germany	EN 50438_NL	Netherland
ARN 4015	Germany	CEI 0-21	Italy
AS 4777	Australia	IEC61727_In	India
EN 50549_EU	Netherland	C10/11	Belgium
G98/G99	UK		

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.

NOTICE!

- For the Australian, please select Australian Region A/B/C in complicance with AS/NZS 4777.2:2020. Only after the safety code setting is completed, some designated parameters in the inverter system will take effect according to the corresponding safety regulations.

» Select and enter **Safety Code** interface. Select the correct safety code.

Figure 9-34 Setting the safety code

» For the Australian market, select the specific region in compliance with AS/NZS 4777.2:2020. The default setting for different regions are as follows for your reference:

Figure 9-35 Setting suitable grid regulations

Table 9-2 Setting the region

Region	Australia A	Australia B	Australia C	New Zealand	
Standarad Code Name	AS4777_2022_A	AS4777_2022_B	AS4777_2022_C	New Zealand	Setting Range
OV-G-V	265 V	265 V	265 V	265 V	230-300 V
OV-GV1-T	1.5 s	1.5 s	1.5 s	1.5 s	
OV-G-V2	275 V	275 V	275 V	275 V	230-300 V
OV-GV2-T	0.1 s	0.1 s	0.1 s	0.1 s	
UN-G-V1	180 V	180 V	180 V	180 V	40-230 V
UNGV1-T	10 s	10 s	10 s	10 s	
UN-G-V2	70 V	70 V	70 V	70 V	40-230 V
UNGV2-T	1.5 s	1.5 s	1.5 s	1.5 s	
OV-G-F1	52 Hz	52 Hz	55 Hz	55 Hz	50-55 Hz
OVGF1-T	0.1 s	0.1 s	0.1 s	0.1 s	
OV-G-F2	52HZ	52HZ	55HZ	55HZ	50-55 Hz
OVGF2-T	0.1 s	0.1 s	0.1 s	0.1 s	

Region	Australia A	Australia B	Australia C	New Zealand	
Standarad Code Name	AS4777_2022 _A	AS4777_2022 _B	AS4777_2022 _C	New Zealand	Setting Range
UN-G-F1	47 Hz	47 Hz	45 Hz	45 Hz	40-50 Hz
UNGF1-T	1.5 s	1.5 s	5 s	1.5 s	
UN-G-F2	47 Hz	47 Hz	45 Hz	45 Hz	45-50 Hz
UNGF2-T	1.5 s	1.5 s	5 s	1.5 s	
Startup-T	60 s	60 s	60 s	60 s	15-1000 s
Restore-T	60 s	60 s	60 s	60 s	15-600 s
Recover-VH	253 V	253 V	253 V	253 V	
Recover-VL	205 V	205 V	205 V	198 V	
Recover-FH	50.15 Hz	50.15 Hz	50.15 Hz	50.15 Hz	
Recover-FL	47.5 Hz	47.5 Hz	47.5 Hz	47.5 Hz	
Start-VH	253 V	253 V	253 V	253 V	
Start-VL	205 V	205 V	205 V	198 V	
Start-FH	50.15 Hz	50.15 Hz	50.15 Hz	50.15 Hz	
Start-FL	47.5 Hz	47.5 Hz	47.5 Hz	47.5 Hz	

Setting Grid Parameters

In Grid Parameters interface, the protection value of grid voltage and frequency can be set. The default setting will be adjusted by default under the current safety regulations.

The display content will be displayed according to the requirements of local laws and regulations. Please refer to the contents displayed on the inverter screen.

Setting Charger

The inverter is compatible with the lithium battery. You can set Max Charge, Max DisCharge and Charger upper limit to control the charge and discharge of the battery.

Default current: 50A; range: 0~50A.

Figure 9-36 Setting battery charging and discharging limits

Setting Export Control If Necessary

This function allows the inverter to control the output power to the grid. The user value set must be less than the maximum value. If the user does not want to supply power to the grid, set it 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.

- Setting the Export Control under Safety Code AS4777
  - » Set the **Safety Code** (refer to "Safety Code" for details)
  - » Select and enter **AS 4777 Settings** in **Advance Settings** interface . You will see **Exprot Control** (for active power output control) and **General Control** (for apparent power output control).

Figure 9-37 Setting items in AS4777 settings for Australian area

  - » Set the **Soft Limit** value and **Hard Limit** value.

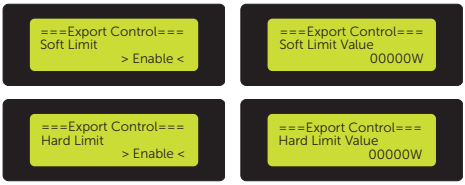


Figure 9-38 Setting the soft limit and hard limit in export control

NOTICE!

- Soft Limit: Control the output to grid by Software.
- Hard Limit: If the actual output value reaches the set **Hard Limit Value**, the system will automatically disconnect from grid and prompt error message on the LCD.

- Setting the Export Control under Other Safety Codes
  - » Set the **Safety Code** (refer to "Safety Code" for details)
  - » Select **Export Control** in **Advance Settings** and set the **User Value** you needed. For the countries with zero export controllimit, set the user value to "0".

Figure 9-39 Setting the export control limit

Setting Self Test (only for CEI 0-21)

In the **Self Test** interface, you can select **All Test** or a specific test item for testing.

Before testing, make sure that the inverter is connected to the grid. All Test takes about 6 minutes. For a specific test item, it takes about a few seconds or minutes.

Select and check **Test Report** to view the test results.

Figure 9-40 Setting to do tests

Setting Modbus

Here items in **Modbus** interface can be set to achieve communication with external devices.

Figure 9-41 Setting the baud rate and address

Setting External ATS

When the inverter is connected to X3-Matebox G2, X3-PBOX-60kW-G2 or X3-PBOX-150kW-G2, keep "Enable" in External ATS interface. Otherwise, set it "Disable".

Default setting: Enable.

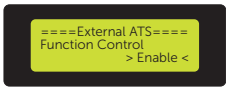


Figure 9-42 Enabling/disabling external ATS

Setting Power Factor (applicable to the local grid requirements of a specific country)

The items in the Power Factor interface will be adjusted in accordance with the local safety requirements and law regulations, casual modification is prohibited. Off, Over Excited, Under Excited, Curve, Q(u) and Fixed Q Power can be selected in Power Factor interface. Adjust the parameters under each setting in the table.

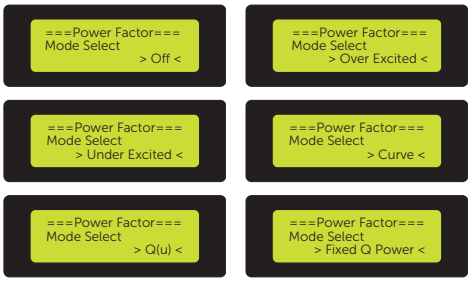


Figure 9-43 Selecting a mode in power factor

Table 9-3 Items under each mode

Mode Select	Items
Off	/
Over Excited	PF value
Under Excited	PF value
Curve	P1_PF
	P2_PF
	P3_PF
	P4_PF
Curve	Power 1
	Power 2
	Power 3
	Power 4
	PfLockInPoint
	PfLockOutPoint
	3Tau

Mode Select	Items
Q(u)	SetQuPower1
	SetQuPower2
	SetQuPower3
	SetQuPower4
	QuRespondV1
	QuRespondV2
	QuRespondV3
	QuRespondV4
	K
	3Tau
	QuDelayTimer
	QuLockEn
Fixed Q Power	Q Power

In the Q(u) interface, when QuLockEn is selected, the following items need to be set.

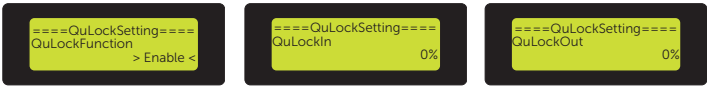


Figure 9-44 Enabling QuLockSetting

Setting Pu Function

The **PU function** is a volt-watt response mode required by certain national standards such as AS4777.2. This function can control the active power of the inverter according to the grid voltage. "Enable" means that this function is turned on. It is the default setting.

The items in the Pu Function interface will be adjusted in accordance with the local safety requirements and law regulations, casual modification is prohibited.

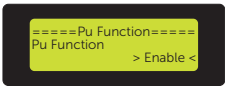


Figure 9-45 Enabling/disabling Pu Function

Table 9-4 Setting items in Pu Function

Pu Functiion	Items
	ResponseV1
	ResponseV2
	ResponseV3
	ResponseV4
	3Tau
	SetPuPower1
	SetPuPower2
	SetPuPower3
	SetPuPower4
	3Tau_Charge
	Pu Type

Setting FVRT Function (apply to 50549)

The items in the FVRT interface will be adjusted in accordance with the local safety requirements and law regulations, casual modification is prohibited.

Default VacUpper: 265 V

Default VacLower: 115 V

The default parameters adjust with the "Safety Code" selected.

Figure 9-46 Enabling FVRT function

Setting Power Limit

Set **Proportion** in the **Power Limit** interface to limit the power of the AC output of the inverter.

Default proportion: 1.00 (the max value)

If you set 0.5, the AC output of the inverter will be limited to 50%

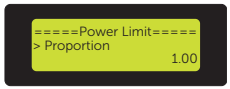


Figure 9-47 Setting proportion in power limit interface

- Reactive power control, reactive power standard curve cos φ = f(P)

  For VDE ARN 4105, the curve cos φ = f(P) should refer to curve A. The set default

value is shown in curve A.

For TOR, the curve cos φ = f(P) should be curve B. The set default value is shown in curve B.

For CEI 0-21, the default value of PFLockInPoint is 1.05. When Vac> 1.05Vn,

Pac> 0.2 Pn, curve cos φ = f(P) corresponds to curve C.

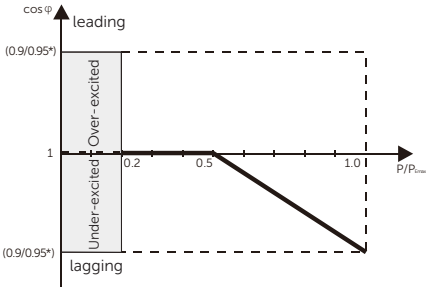


Figure 9-48 Figure 9-63 Curve A

*) If the grid-connected power of the inverter ≤4.6kW, the Power Factor is 0.95 at 1.0 power; if the grid-connected power of the inverter > 4.6kW, the Power Factor is 0.90 at 1.0 power.

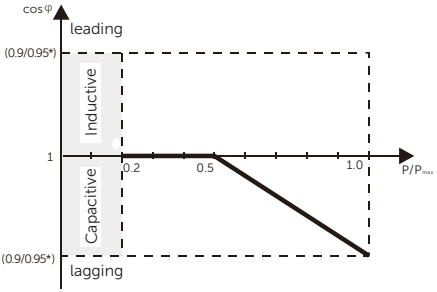


Figure 9-49 Curve B

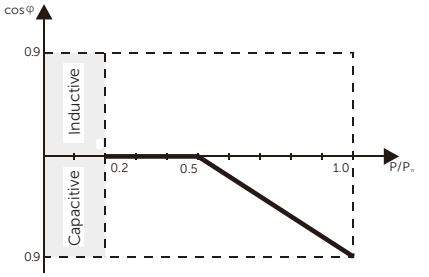


Figure 9-50 Curve C

- Reactive power control, reactive power standard curve Q= f(V).

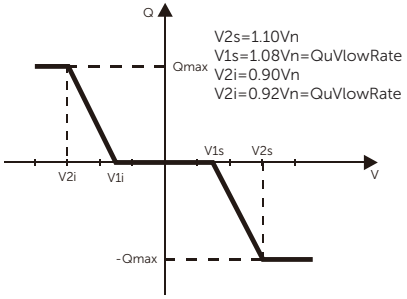


Figure 9-51 Curve Q=f(V)

Setting DRM Function (applied to NZS4777.2)

The DRM function is a demand response method required by the NZS4777.2 standard and is only applicable to NZS4777.2.

Default setting: Disable.

Figure 9-52 Enabling DRM function

Setting Parallel Setting

The inverter provides the parallel connection function. Up to 10 inverters can be connected in one system with an X3-PBOX-60kW-G2 or X3-PBOX-150kW-G2. Up to 3 inverters can be connected in one system if no X3-PBOX device is equipped. one inverter will be set as the "Master inverter" to control the other "Slave inverters" in the system via P1/P2 port.

There are three modes in parallel system, and your acknowledge of different inverter's work modes will help you understand parallel system better, therefore please read it carefully before operating.

Table 9-5 Mode selection

Free mode	Only if no one inverter is set as a **Master**, all inverters are in free mode in the system.
Master mode	When one inverter is set as a **Master**, this inverter enters master mode. Master mode can be changed to free mode.
Slave mode	Once one inverter is set as a **Master**, all other inverters will enter slave mode automatically. slave mode can not be changed from other modes by LCD setting.

NOTICE!

- Refer to section "7.2.3 Communication Connection" for specific parallel connection diagram.

NOTICE!

- Master inverter has an absolute lead in the parallel system to control all slave inverter's energy management and dispatch control. Once master inverter has some error and stop working, all slave inverter will be stop simultaneously. But master inverter is independent of all slave inverter to work and will not be affected by slave inverter's fault.
- Overall system will be running according to master inverter's setting parameters, and most setting parameters of slave inverter will be kept but not be cancelled.
- Once slave inverter exit from system and be running as an independent unit, its all setting will be re-excuted.

How to build the parallel connection

a. Turn on the power of the entire system, find the inverter connected to the meter, enter the setting page of the inverter LCD screen, click on the parallel settings, and select **Master**; then enter the **Resistance Switch** and set it to **ON**;

Figure 9-53 Switching on the master inverter

b. Find the last slave in the parallel system and enter the setting page of the inverter LCD screen and set the **Resistance Switch** to **ON**.

Figure 9-54 Switching on the last slave inverter

How to remove the parallel connection

a. Select the Parallel Settings, set the master inverter as Free and then set all slave inverters as Free.

Figure 9-55 Removing parallel connection

b. Disconnect all the network cables on the COM port.

NOTICE!

- If a slave inverter is set to **Free** mode but not disconnect the network cable, this inverter will return to **Slave** mode automatically.
- If a slave inverter is disconnected with other inverter but not be set to **Free** mode, this inverter will stop working and maintain **waiting** status.

LCD Display after Parallel Connection

- Once inverter enters parallel system, the **Today** yield will be replaced by the **Parallel Status of the inverter**, and parallel relevant fault has a higher priority than other faults and will be showed firstly on main display.

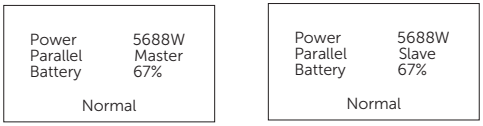


Figure 9-56 Displaying the master and slave inverter data

- User can obtain all the status data from master inverter. System power and individual slave inverter power can be obtained in status display of master inverter.

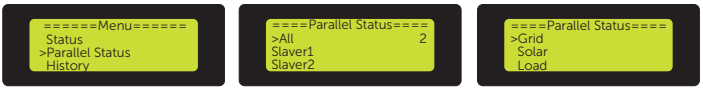


Figure 9-57 Getting all information from the master inverter

Setting Main Breaker Limit

For the power limit of a smart meter or CT, the current must be set in line with the utility's contract requirements. In the event of a failure to set, it may cause a circuit breaker fault on the main switchboard, adversely affecting the charging or discharging of the battery.

Enter the Main Break Limit interface and then set the current limit according to the utility's requirements.

Default main breaker limit current: 250A; range: 10~250A.

Figure 9-58 Setting main breaker current limit

Setting Phase Unbalanced

This function controls the distribution of AC output power.

Enable means each phase will be divided according to the loads connected with each phase.

Disable means each phase power will be divided equally. Disable is the default setting.

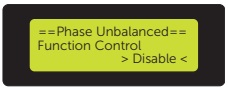


Figure 9-59 Enabling/disabling phase unbalanced function

Setting AS4777 Setting (applicable to Austrialian and New Zealand safety)

It is the same as the function of Export Control, but it's only applicable to Australia and New Zealand.

» Export Control

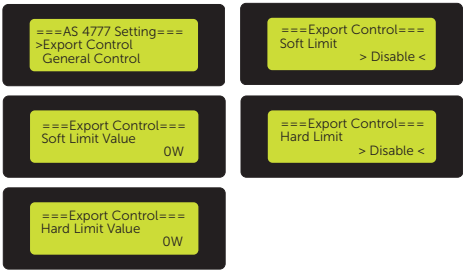


Figure 9-60 Setting export control in AS4777 setting interface

» General Control

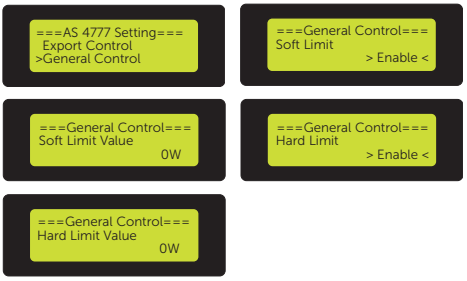


Figure 9-61 Setting general control in AS4777 setting interface

Setting ExternalGen

ExternalGen is set for controlling the generator connected.

- Set **Enable/Disable** in the **ExternalGen** interface. The following settings display when **Disable** is set.

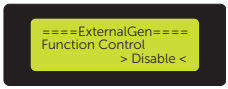


Figure 9-62 Enabling/ disabling ExternalATS function

Max Charge Power to be set in the interface must meet the following two conditions when the maximum charging power of batteries is to be set.

1) Max Charge Power < Rated Power of the Generator - Total Load Power

2) Max Charge Power ≤ Rated Power of the Inverter

- ATS Control

When you set **ATS Control**, you can set **MaxChargePower**, **Char&Disc period**, **Char&Disc period2** and **Charge from grid** in the following LCD screen.

» Setting MaxChargePower

Figure 9-63 Setting MaxChargePower

» Setting Char&Disc period

Figure 9-64 Setting Char&Disc period

» Setting Char&Disc period2

Figure 9-65 Setting Char&Disc period2

» Setting Charge from grid

Default Charge battery to: 10%, setable range: 10%~100%.

Figure 9-66 Setting Charge from grid

- Dry Contact

  When you set **Dry Contact**, you can set **MaxChargePower**, **Start Gen Method**, **Char&Disc period**, **Char&Disc period2** and **Charge from grid** in the following LCD screen.

  » Setting MaxChargePower

Figure 9-67 Setting MaxChargePower

  » Setting Start Gen Method

Figure 9-68 Setting Start Gen Method

» Setting MaxRunTime, MinRestTime, Allow Work

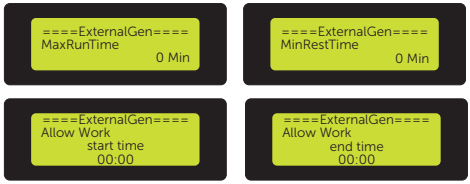


Figure 9-69 Setting MaxRunTime, MinRestTime, allow working period

» Setting Char&Disc period

Figure 9-70 Setting Char&Disc period

» Setting Char&Disc period2

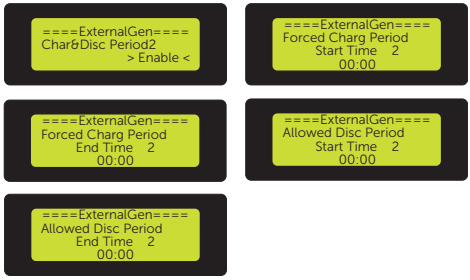


Figure 9-71 Setting Char&Disc period2

» Setting Charge from grid

Default Charge battery to: 10%, setable range: 10%~100%.

Figure 9-72 Setting Charge from grid

Setting Reset

You can set Reset Error Log, Reset Meter/CT, Reset INV Energy. Reset Wifi, Factory Reset in the Reset interface.

» Reset Error Log

Figure 9-73 Resetting Error Log

» Reset Meter/CT

Figure 9-74 Resetting Meter/CT

» Reset INV Energy

Figure 9-75 Resetting INV Energy

» Reset Wifi

Figure 9-76 Resetting Wifi

» Factory Reset

Figure 9-77 Factory Reset

Setting Battery Heating

Battery heating setting is used to restore the charging and discharging function of the battery in a low temperature environment. This function works when the battery connected supports battery heating.

Set **Enable** to define the battery heating periods as follows. If the battery does not support this function, then set it **Disable**.

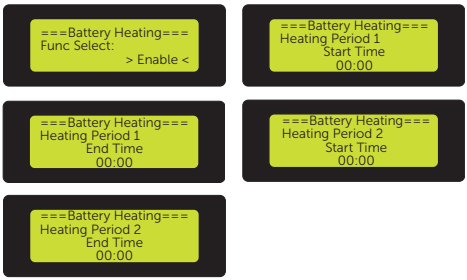


Figure 9-78 Enabling battery heating and setting working periods

Setting Extended BAT FUNC

This function is for averaging the capacity of every battery before battery expansion. When it is on-grid, enabling this setting shall make the inverter charge or discharge the battery SoC to about 40%, which is convenient for adding new batteries.

Figure 9-79 Enabling/ disabling battery expansion function

Setting Hotstandby Setting

Enable is the default setting. The inverter cannot enter standby status when **Disable** is set.

Figure 9-80 Enabling/ disabling hotstandby function

Setting Pgrid Bias

That the inverter dischages more energy to the grid or charges more from the grid can be selected or set in the Pgrid Bias interface.

Disable: disabling this function

Grid: the inverter will discharge more energy to the grid.

INV: the inveter will be biased to charge power from the grid.

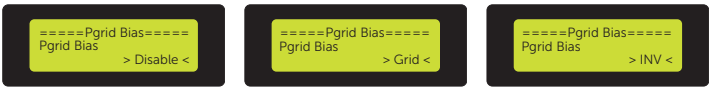


Figure 9-81 Setting the Pgrid bias

Setting Internal485

Here items in Internal485 interface can be set to achieve communication with SolaX devices.

» Set COM485 / EV Charger / DataHub / AdaptBoxG2 / EVC&AdaptBoxG2

Figure 9-82 Selecting the external device

» Set Braud Rate

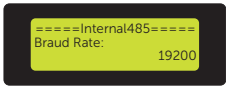


Figure 9-83 Setting the braud rate

» Set the Address of different devices

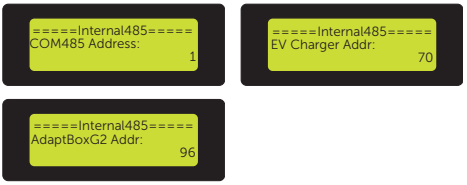


Figure 9-84 Setting the address of the external device

» Set EV Charger / AdaptBoxG2 COM STAT Connected or Disconnected

Figure 9-85 Connecting or disconnecting the external device

Setting Battery Charge EVC

You can set Enable/Disable to control whether the battery can discharge energy to an EV Charger.

Enable: the battery can discharge energy to an EV Charger.

Disable: the battery cannot discharge energy to an EV Charger.

Figure 9-86 Enabling/ disabling Battery Charge EVC function

Setting Advance Password

You can reset the password in the **Advance Password** interface. Please contact the SolaX after-sales team for the default Advance Password to enter Advance Setting or reset Advance Password.

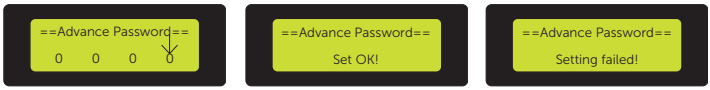


Figure 9-87 Resetting Advance Password

9.7 About

Displaying path: Menu > About

Users and Installers can enter the **About** interface to view the information about the **inverter**, the **battery** and the **internal code**.

Displaying Inverter Information

You can view the SN, register SN, DSP version, ARM version, the total time of on-grid status in the Inverter interface.

Figure 9-88 Displaying the inverter information

Displaying Battery Information

You can view battery cell brand, BMS SN, Slave 1 SN, Slave 2 SN, Slave 3 SN, Slave 4 SN, BMS FW version and slave FW version in the Battery interface.

Figure 9-89 Displaying the battery information

Displaying Internal Code Information

You can view BMS FW version and slave FW versions in the Internal Code interface.

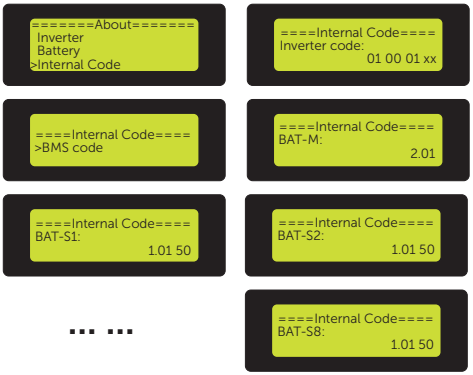


Figure 9-90 Displaying the internal code information

10 Operation on SolaX App and Web

10.7.1 Downloading and Installing App

Select and scan the QR code below to download SolaxCloud APP. You can also find the QR codes at the top left of the login page of www.solaxcloud.com or on the user manual of Pocket series communication module. In addition, you can search with the key word SolaxCloud in Apple Store or Google Play to download it.

Figure 10-1 QR code

Please watch the video or read the document on the SolaXCloud App for relevant operation.

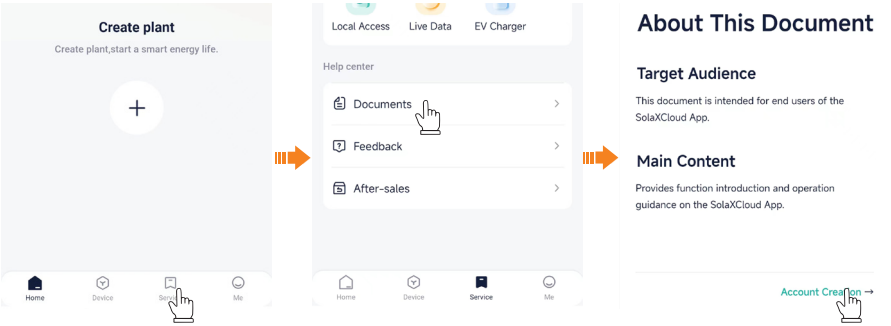


Figure 10-2 App guide on SolaXCloud

NOTICE!
• The screenshots in this chapter correspond to the SolaX Cloud App V6.2.0.

11 Troubleshooting and Maintenance

Before troubleshooting or maintenance operation, please ensure the system has been powered off (refer to "8.4 Power off" for specific steps).

11.1 Troubleshooting

This section contains information and procedures for resolving possible problems with the inverter and the rechargeable battery, and provides the troubleshooting tips to identify and solve most problems that may occur. Please conform the state of the indicators to check the status of the T-BAT-SYS system, check the warning or fault information on the system control panel or on the App and read the suggested solutions below when error occurs.

In case of the following circumstances, e.g. voltage or temperature exceeds the limit specified, a warning state will be triggered.

T-BAT-SYS system's BMS will periodically report its operating state to the inverter. Therefore, when a warning is reported, the inverter will stop working immediately.

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 devices.

Error Code	Fault	Descriptions and Diagnosis
IE 01	TZ Protect Fault	Overcurrent fault. • Wait for a while to check if you're back to normal. • Disconnect the batteries, reconnect. • Or ask for help from the installer if it can not return to normal.
IE 02	Grid Lost Fault	• Check the grid connection status. • Or ask the installer 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 ask the installer for help.
IE 04	Grid Freq Fault	Electricity frequency beyond range • If the utility returns to normal, the system reconnects. • Or ask the installer for help.
IE 06	Bus Volt Fault	• Press the "ESC" key to restart the inverter. • Or ask the installer for help.

Error Code	Fault	Descriptions and Diagnosis
IE 07	Bat Volt Fault	Battery voltage fault • Check battery input voltage if it's within normal range • Or ask the installer for help.
IE 08	AC 10mins Volt	Grid voltage out of range in the last 10 minutes • The system will return to normal if the grid returns to normal. • Or ask the installer for help.
IE 09	DCI OCP Fault	DCI overcurrent protection fault. • Wait for a while to check if it's back to normal. • Or ask the installer 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 ask the installer 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 ask the installer for help.
IE 13	Isolation Fault	Insulation Fault or earth fault, is normally caused by insulation issues. • Please check the wire insulation for damage. • Wait for a while to check if it's back to normal. • Or ask the installer for help.
IE 14	Temp Over Fault	Temperature beyond limit • Check if ambient temperature exceeds the limit. • Or ask the installer for help.
IE 15	Bat Con Dir Fault	Battery direction fault • Check if the battery cables are connected in the opposite direction. • Contact SolaX for help if it can not return to normal.
IE 17	Overload Fault	On-grid mode over load • Shutdown the high-power device and press the" ESC" key to restart the inverter. • Or ask for help from the installer if it can not return to normal.
IE 18	Bat Power Low	• Close 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.

Error Code	Fault	Descriptions and Diagnosis
IE 19	BMS Lost	External fault of BMS. Unable to establish communication with inverter. • Restart the BMS. • Contact the after-sales personnel of our company.
IE 21	Low Temp Fault	Low temperature fault. • Check if the ambient temperature is too low. • Or ask for help from the installer if it can not return to normal.
IE 25	InterCom Fault	Mgr InterCom Fault • Shut down photovoltaic, battery and grid, reconnect. • Or ask for help from the installer if it can not return to normal.
IE 26	INV EEPROM	Inverter EEPROM Fault. • Shut down photovoltaic, battery and grid, reconnect. • Or ask for help from the installer if it can not return to normal.
IE 27	RCD Fault	Fault of Residual Current Device • Check the impedance of DC input and AC output. • Disconnect the batteries, reconnect. • Or ask for help from the installer if it can not return to normal.
IE 28	Grid Relay Fault	Electrical relay failure • Disconnect the batteries and reconnect. • Or ask for help from the installer if it can not return to normal.
IE 31	Battery Relay	Charge relay fault • Press the ESC" key to restart the inverter. . • Or ask for help from the installer if it can not return to normal.
IE 36	Hard Limit Fault	HardLimitFault • Check the power value set in the HardLimit setting, increase the value larger if the value. • Or ask for help from the installer if it can not return to normal.
IE 37	CtMeterCon Fault	CT Meter ConFault • Check whether the cable connection of the CT or meter is proper or not. • Or ask for help from the installer if it can not return to normal.

Error Code	Fault	Descriptions and Diagnosis
IE 101	Power Type Fault	Power type fault • Upgrade the software and press the ESC" key to restart the inverter. • Or ask for help from the installer if it can not return to normal.
IE 103	Mgr Eeprom Fault	Manager EEEPROM Fault. • Shut down photovoltaic ,battery and grid ,reconnect. • Or seek help from the installer if it can not return to normal.
IE 105	NTC Sample Invalid	NTC invalid • Make sure the NTC is properly connected and the NTC is in good condition. • Please confirm that the installation environment is normal • Or ask for help from the installer, if it can not return to normal.
IE 106	Bat Temp Low	Battery temp low • Check the battery installation environment to ensure good heat dissipation. • Or ask for help from the installer, if it can not return to normal.
IE 107	Bat Temp High	Battery temp high • Check the battery installation environment to ensure good heat dissipation. • Or ask for help from the installer, if it can not return to normal.
IE 109	Meter Fault	Meter Fault • Please check that the instrument is working properly • Or seek help from the installer if it can not return to normal.
IE 110	Bypass Raley Flt	Bypass relay fault • Press the ESC" key to restart the inverter. • Or ask for help from the installer if it can not return to normal.
IE 111	ARM ParaCom Flt	ARMParaComFlt • Please check that the communication cables of inverters are well connected and the baud rate of COMM setting of inverters are the same. • Or seek help from the installer if it can not return to normal.

Error Code	Fault	Descriptions and Diagnosis
BE 01	BMS_ExterErr	Battery Error - External Communication Fault • Please contact the battery supplier.
BE 02	BMS_InterErr	Internal fault of BMS. Unable to establish communication among battery modules. • Restart the BMS. • Check whether the wire connections among battery modules are correct. • Contact the after-sales personnel of our company.
BE 03	BMS_OverVolt	BMS overvoltage Overvoltage of a single battery module. • Contact the after-sales personnel of our company.
BE 04	BMS_LowerVolt	BMS undervoltage Undervoltage of a single battery module. • Battery module is forced to charge through inverter. • Contact the after-sales personnel of our company.
BE 05	BMS_ChargeOCP	Overcurrent charging of BMS. • Restart the BMS. • Contact the after-sales personnel of our company.
BE 06	DischargeOCP	Discharge overcurrent of BMS. • Restart the BMS. • Contact the after-sales personnel of our company.
BE 07	BMS_TemHigh	The temperature of the BMS is too high. • Cool down the BMS to normal temperature, and then restart it. • Contact the after-sales personnel of our company.
BE 08	BMS_TempLow	The temperature of the BMS is too low. • Warm up the BMS, and restart it. • Contact the after-sales personnel of our company.
BE 09	CellImblance	Cell imbalance of BMS. Inconsistency of battery module. • Restart the BMS. • Contact the after-sales personnel of our company.
BE 10	BMS_Hardware	Battery hardware protection failure • Please contact the battery supplier.
BE 11	BMS_Circuit	Circuit fault of the BMS. • Restart the BMS. • Contact the after-sales personnel of our company.
BE 12	BMS_ISO_Fault	Insulation fault of the BMS. • Restart the BMS. • Contact the after-sales personnel of our company.

Error Code	Fault	Descriptions and Diagnosis
BE 13	BMS_VolSen	Voltage sampling fault of the BMS. • Restart the BMS. • Contact the after-sales personnel of our company.
BE 14	BMS_TempSen	Temperature sensor failure • Restart the battery. • Please contact the battery supplier.
BE 15	BMS_CurSen	Current sampling fault of the BMS. • Restart the battery. • Please contact the battery supplier.
BE 16	BMS_Relay	Relay contact adhesion fault of the BMS. • Restart the BMS. • Contact the after-sales personnel of our company.
BE 17	TypeUnmatch	Battery type failure • Upgrade the battery BMS software. • Please contact the battery supplier.
BE 18	Ver Unmatched	Battery version mismatch failure • Upgrade the battery BMS software. • Please contact the battery supplier.
BE 19	MFR Unmatched	Battery manufacturer did not match the fault • Upgrade the battery BMS software. • Please contact the battery supplier.
BE 20	SW Unmatched	Battery hardware and software mismatch failure • Upgrade the battery BMS software. • Please contact the battery supplier.
BE 21	M&S Unmatched	Battery master slave control mismatches • Upgrade the battery BMS software. • Please contact the battery supplier
BE 22	CR NORespond	Inverter does not respond the charging request. • Restart the BMS or the inverter. • Contact the after-sales personnel of our company.
BE 23	BMS SW Protect	Battery slave software protection failure • Upgrade the battery BMS software. • Please contact the battery supplier.
BE 24	BMS 536 Fault	BMS voltage sampling fault. • Restart the BMS. • Contact the after-sales personnel of our company.
BE 25	BMS SelfCheck	Self-test fault of the BMS. • Restart the BMS. • Contact the after-sales personnel of our company.

Error Code	Fault	Descriptions and Diagnosis
BE 26	BMS Tempdiff	BMS temperature varies greatly. • Restart the BMS. • Contact the after-sales personnel of our company.
BE 27	BMS_BreakFault	BMS sampling fault. • Restart the BMS. • Contact the after-sales personnel of our company.
BE 28	BMS_FlashFault	Battery hardware protection failure • Please contact the battery supplier.
BE 29	BMS_Precharge	External short circuit of the BMS. • Check the external connection and restart the BMS. • Contact the after-sales personnel of our company.
BE 30	AirSwitchBreaker	Battery air switch failure • Check that the battery breaker is off. • Please contact the battery supplier.

11.2 Maintenance

Regular maintenance is required for the devices. The table of "Proposal of Maintenance" 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 system devices.
- Only use the spare parts and accessories approved by SolaX for maintenance.

11.2.1 Maintenance Routines

Inverter Maintenance

Item	Check Notes	Maintenance Inverval
Safety check	• Check the items mentioned in section 1 "Safety" • The safety check shall be performed by manufacturer's qualified person who has adequate training, knowledge, and practical experience.	Every 12 months
Indicators	• Check if the indicators of the inverter are in normal state. • Check if the display of the inverter (if it has screen) is normal.	Every 6 months
Input and output cables	• Cables are securely connected. • Cables are intact, and in particular, the parts touching the metallic surface are not scratched. Check whether the sealing caps of idle DC input terminals fall off. • Check that the idle ports are locked by waterproof caps.	Every 6 months
Grounding reliability	Check whether the grounding terminal and ground cable are securely connected and all terminals and ports are properly sealed.	Every 6 months
Heat sink	Check whether the heat sink is covered with dirt, clean the machine and absorb dust if necessary	Every 6-12 months

Battery Maintenance

Precautions
• If the ambient temperature for storage is between 30°C and 50°C (86°F to 122°F), please recharge the battery modules at least once every 6 months. • If the ambient temperature for storage is between -20°C and 30°C (-4°F to 86°F), please recharge the battery modules at least once every 12 months. • For the first installation, the interval among manufacture dates of battery modules shall not be exceed 3 months. • If a battery module is replaced or added for capacity expansion, each battery's SOC should be consistent. The max. SOC difference should be ±5%. • If users want to increase their battery system capacity, please ensure that the SOC of the existing system capacity is about 40%. The manufacture date of the new battery module shall not exceed 6 months. If the manufacture date of the new one exceeds 6 months, please charge it to around 40%. • Batteries typically do not require maintenance by the installer or end user. If a battery is reporting an error message, SolaX can view the error message via Cloud online monitoring and then arrange for an on-site technical support engineer to go to the site to resolve the issue, as well as contacting an electrician if required.

11.2.2 Upgrading Firmware

Upgrade Precautions

WARNING!

- If the DSP and ARM firmware need to be upgraded, please note that ARM firmware must be upgraded first, then DSP firmware!
- Please make sure that the category format is correct, do not modify the firmware file name. Otherwise, the inverter may not work!

WARNING!

- For the inverter, ensure that the battery SoC is greater than 20% or the battery input voltage is greater than 180V. Otherwise, it may cause serious failure during the upgrade process!

CAUTION!

- If the ARM firmware upgrade fails or stops, please do not unplug the U disk power off the inverter and restart it. Then repeat the upgrade steps.

CAUTION!

- If the DSP firmware upgrade fails or stops, please check whether the power is off. If it is normal, plug in the U disk again and repeat the upgrading process. If the power is off, try restoring power and then repeat the upgrading process.

Upgrade Preparation

- Please check the inverter version and prepare a U disk (USB 2.0/3.0) and personal computer before upgrading. Please make sure that the size of the U disk is smaller than 32G, and the format is FAT 16 or FAT 32.
- Please contact our service support to obtain the firmware, and store the firmware in the U disk according to the following path.
  - » For ARM file: update\ARM\323101047300_IES_3P_ARM_V003.04_0729.usb
  - » For DSP file: update\DSP\323101047200_IES_3P_DSP_V005.00_20230801.usb

NOTICE!

- VX.XX refers to the file version, XX.XX refers to date.

Upgrade Steps

a. Please save the Upgrade firmware in your U disk first.

b. Find the **Upgrade** port of the inverter, unplug the monitoring module (dongle / 4G) by hand, and insert the USB flash drive. (Refer to "7.2.4 Monitoring Connection (UPGRADE/ Port)" for the specific position of **/Upgrade** port.)

c. Select **ARM** and **OK** to enter the software version interface;

Figure 11-1 Entering the ARM interface

d. Please confirm the new firmware version again and select the firmware to upgrade. The upgrade takes about 20 seconds. When it is completed, the LCD screen returns to the **Update** page.

Figure 11-2 Upgrading the ARM version

e. For DSP: Please wait for 10 seconds. When "Update" page shown as below, press down to select **DSP** and then press Enter. Please confirm the firmware version again and press Enter to upgrade. The upgrade takes about 2 minutes.

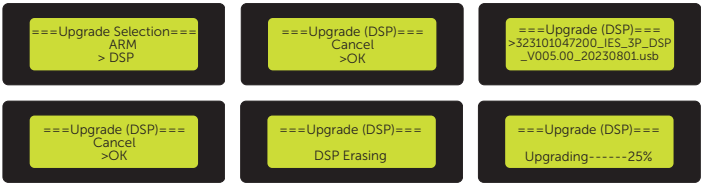


Figure 11-3 Upgrading the DSP version

f. After the upgrade is completed, the LCD screen displays **Upgrade Successful**.

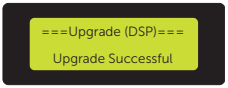


Figure 11-4 Upgrading the DSP version successfully

NOTICE!

- If the display screen is stuck after the upgrade, please turn off the photovoltaic power supply and restart, and the inverter will restart and return to normal. If not, please contact us for help.

12 Decommissioning

12.1 Disassembling X3-IES-A system

WARNING!

- When disassembling the X3-IES-A system, strictly follow the steps as below.
- Only use measuring devices with a DC input voltage range of 600 V or higher.

Disassembling X3-IES-A Series Inverter

Step 1: Press the buttons on the inverter and the battery to shut down the system.

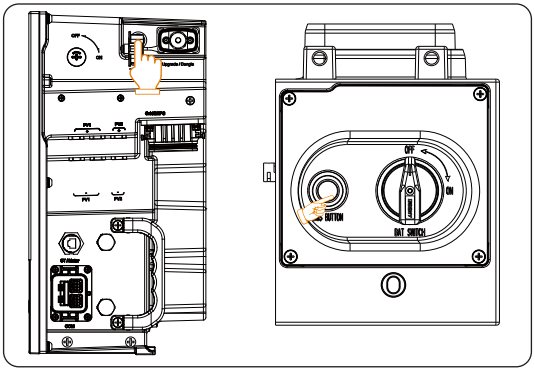


Figure 12-1 Pressing the buttons on the inverter and the battery

Step 2: Turn off the BAT switch on the battery.

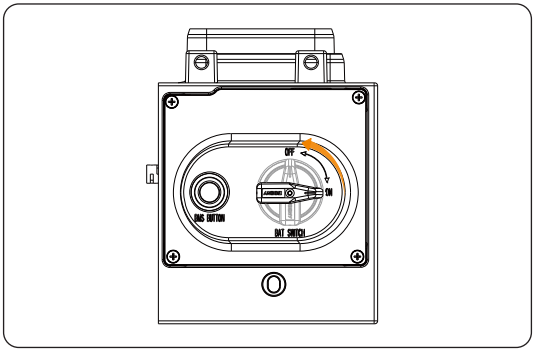


Figure 12-2 Turning off the BAT switch

Step 3: Turn off the AC breaker between the inverter and the power grid.

Step 4: Turn off the breakers between the inverter and the power grid.

Step 5: Wait for at least 5 minutes to fully discharge the capacitors inside the inverter.

Step 6: Disassemble the AC connector and disconnect the Grid cable.

a. Rotate the Allen wrench clockwise to unlock the latch on the AC connector.

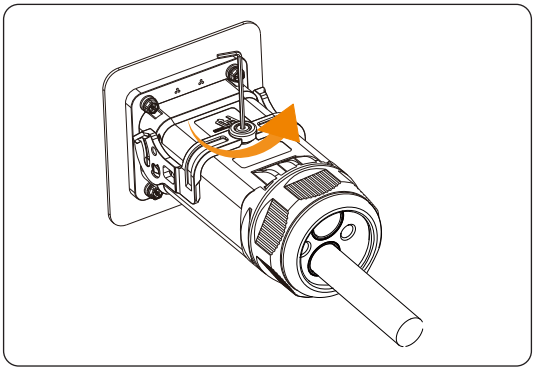


Figure 12-3 Loosening the AC connector

b. Pull up the latch to unlock the AC connector.

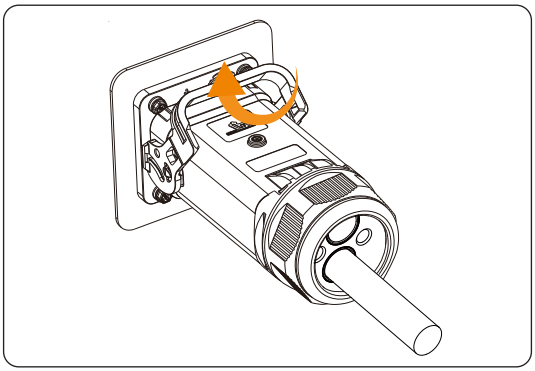


Figure 12-4 Removing the latch of the AC connector

c. Unplug the AC connector together with the Grid cables from the inverter.

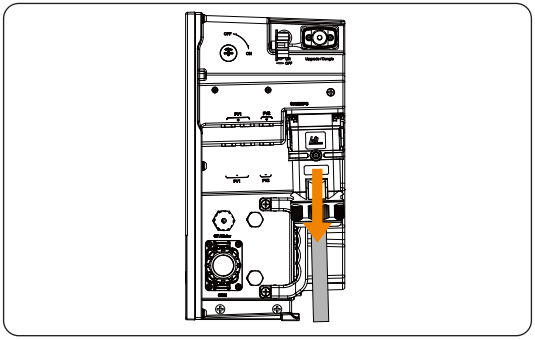


Figure 12-5 Unplugging the AC connector

d. Unscrew the swivel nut of the AC connector, and then pull out the rubber sealing stopper.

e. Insert the disassembling tool into the terminal block inside the AC connector, press and hold the double arc edges of the tool, push the Grid cables forward to poke the terminal block out from the connector, and then disconnect the cables.

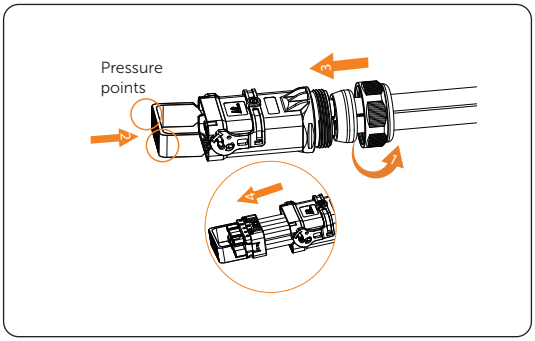


Figure 12-6 Poking the terminal block out of the AC connector

Step 7: Press the clips on both sides of the communication connector and pull the communication connector outward to disconnect the Communication cable.

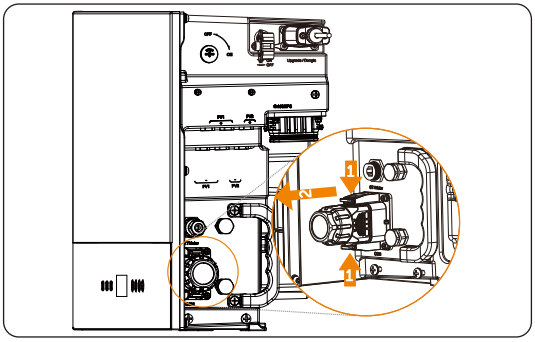


Figure 12-7 Disconnecting the communication connector

Step 8: Loosen the swivel nut and disconnect the CT/Meter cable.

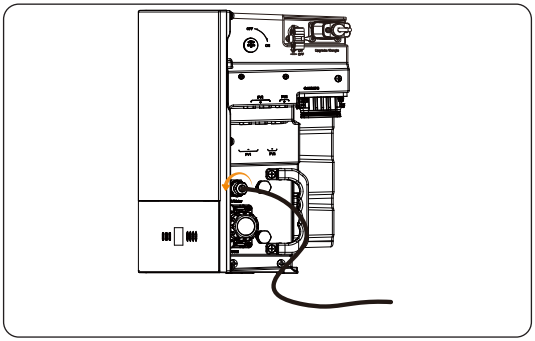


Figure 12-8 Disconnecting the CT/Meter cable

Step 9: Disconnect the WiFi .

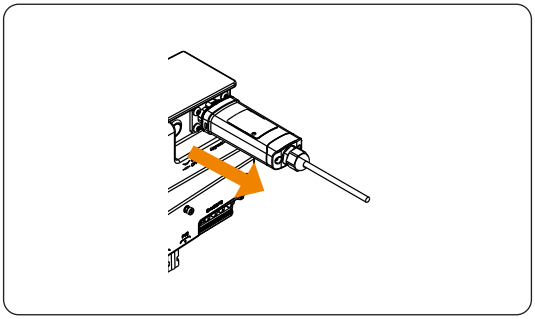


Figure 12-9 Unplugging the WiFi

Step 10: Put the original protective cap on the terminals.

Step 11: Unscrew the screws of fastening the wall mounting bracket and remove the wall mounting bracket.

Disassembling T-BAT-SYS-HV-S50E Battery System

Step 12: Press and hold the lock button on the terminals to unplug the short power cable in the case of one tower;

Or press and hold the lock button on the terminals to unplug power cables in the case of two towers.

Step 13: Rotate the ring anti-clockwise to unplug the heater cable after two arrows are aligned in the case of two towers.

Step 14: Use and rotate anti-clockwise a rotation wrench to unplug the communication cable in the case of two towers.

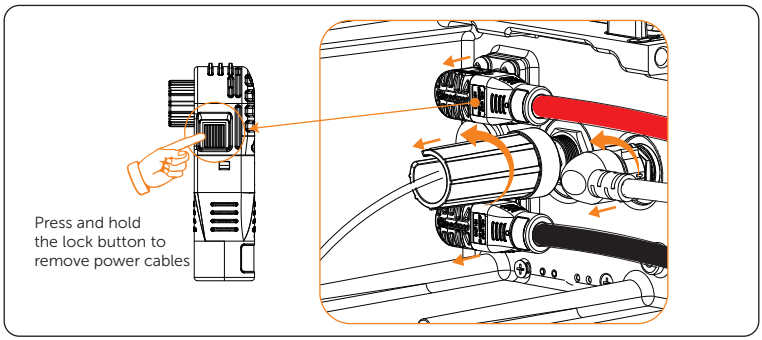


Figure 12-10 Disconnecting battery connectors

Step 15: Unscrew the screws to remove the grounding cable.

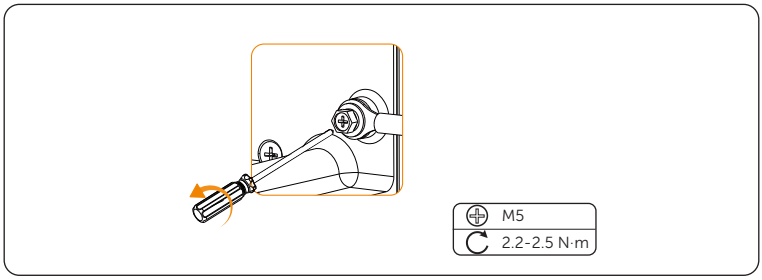


Figure 12-11 Disconnecting grounding cable

NOTICE!

- The above steps for disconnecting cables apply to both the BMS and series box.

12.2 Packing the Devices of X3-IES-A System

- Load the inverter, the devices of battery system into the original packing material if possible.
- If the original packing material is not available, you can also use the packing material which meets the following requirements:
  - » Suitable for the weight of product.
  - » Easy to carry
  - » Be capable of being closed completely

12.3 Disposing of the Devices of X3-IES-A System

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

13 Technical Data

- **Inverter**

AC Output

Model	X3-IES-5K-A	X3-IES-10K-A	X3-IES-15K-A
Norminal AC power [VA]	5000 (4999 for AS4777)	10000 (9999 for AS4777)	15000 (14999 for AS4777)
Max. apparent AC power [VA]	5500 (4999 for AS4777)	10000 (9999 for AS4777)	16500 (14999 for AS4777)
Max. single-phase AC power [VA]	2500	5500	5500
Rated grid voltage (AC voltage range) [V]		380/400	
Rated grid frequency [Hz]		50/60	
Rated AC output current	7.3	14.5	21.8
Max. AC current [A] @230V	8	14.5	24
Max. AC current [A] @220V	8.4	15.2	25
Displacement power factor		~1 (Adjustable from 0.8 leading to 0.8 lagging)	
Total harmonic distortion (THDi, rated power)		<3%	
Parallel operation		YES	
Load control		YES	

AC Input

Model	X3-IES-5K-A	X3-IES-10K-A	X3-IES-15K-A
Norminal AC power [VA]	5000	10000	15000
Max. AC current [A]	8	14.5	24.0
Rated grid voltage (AC voltage range) [V]		380/400	
Rated grid frequency [Hz]		50/60	
Power factor		~1 (Adjustable from 0.8 leading to 0.8 lagging)	
Short-circuit current (Icc) [a.c.A]		88A	

Battery

Model	X3-IES-5K-A	X3-IES-10K-A	X3-IES-15K-A
Battery voltage range [V]		160-800	
Recommended battery voltage [V]		600	
Max.charge/discharge current [A]		50	
Battery connection		1	
Communication interfaces		CAN/RS485	

Efficiency, Power Consumption, Protection and Standard

Model	X3-IES-5K-A	X3-IES-10K-A	X3-IES-15K-A
Rated battery charge/discharge efficiency		97.6% / 97.4%	
Internal consumption (night) [W]		<5	
Idle mode		YES	
SPD		Type2, AC	
AFCI		YES	
Safety		IEC62477 / IEC62109-1 / IEC62109-2	
EMC		EN 61000-6-1 / EN 61000-6-2 / EN 61000-6-3	
Cetification		VDE 0126-1-1 A1:2012 / VDE-AR-N 4105 /G98/G99/ AS4777 / EN50549/ CEI 0-21	

Generic Data

Model	X3-IES-5K-A	X3-IES-10K-A	X3-IES-15K-A
Demensions (WxHxD) [mm]		717 x 405 x 209.5	
Weight [kg]		31.5	
Cooling concept		Natural Cooling	
Topology		Non-isolated	
Communication		RS485 (Meter), Pocket-X, USB, RS485 (Modbus, EV charger, Datahub), Parallel (CAN+RS485), DO (SG ready controlled by Adapter Box), DI (OFF signal input)	
LCD display		IEC62477 / IEC62109-1 / IEC62109-2	
Protection class		IP66	
Operating temperature range [℃]		-35℃ ~60℃ (derating at +45°C)	
Humidity [%]		0~100 (condensing)	
Altitude [m]		≤3000	
Storage temperature [℃]		-40℃ ~65℃	
Noise emission (typical) [dB]		<33	
Over voltage category		III (electric supply side)	

- Battery

Configuration List

No.	Model	BMS	Battery Module	Nominal Energy (kWh)	Operating Voltage (Vdc)
1	T-BAT HS 5	TBMS-MCS0800E × 1	TP-HS50E × 1	5.1	90-116
2	T-BAT HS 10	TBMS-MCS0800E × 1	TP-HS50E × 2	10.2	180-232
3	T-BAT HS 15	TBMS-MCS0800E × 1	TP-HS50E × 3	15.3	270-348
4	T-BAT HS 20	TBMS-MCS0800E × 1	TP-HS50E × 4	20.4	360-464
5	T-BAT HS 25	TBMS-MCS0800E × 1	TP-HS50E × 5	25.6	450-580
6	T-BAT HS 30	TBMS-MCS0800E × 1	TP-HS50E × 6	30.7	540-696

Performance

Module	T-BAT HS 5	T-BAT HS 10	T-BAT HS 15	T-BAT HS 20	T-BAT HS 25	T-BAT HS 30
Nominal Voltage [Vdc]	102.4	204.8	307.2	409.6	512	614.4
Operating Voltage [Vdc]	90-116	180-232	270-348	360-464	450-580	540-696
Nominal Capacity [Ah][1]	50	50	50	50	50	50
Nominal Energy [kWh][1]	5.1	10.2	15.3	20.4	25.6	30.7
Usable Energy 90% DOD [kWh][2]	4.6	9.2	13.8	18.4	23.0	27.6
Max. Charge/Discharge Current [A][3]	50	50	50	50	50	50
Recommend Charge/Discharge Current [A][4]	30	30	30	30	30	30
Standard Power [kW]	3	6.1	9.2	12.2	15.3	18.4
Max. Power [kW]	5.1	10.2	15.3	20.4	25.6	30.7
Short-circuit current	3.57kA (0.333 ms)					
Battery Round-trip Efficiency (0.2 C, 25°C)[5]	95%					
Expected Lifetime (25°C)	10 years					
Cycle Life 90% DOD (25°C)	6000 cycles					
Charge Temperature	0°C ~ 53°C (Off heating function)[3] -30°C ~ 53°C (In heating function)[3]					
Discharge Temperature	-20°C ~ 53°C (Off heating function)[3] -30°C ~ 53°C (In heating function)[3]					
Storage Temperature	30°C ~ 50°C (6 months), -20°C ~ 30°C (12 months)					
Ingress Protection	IP66					
Protection Class	I					

NOTICE!

1. Test conditions: 25°C, 100%, depth of discharge (DoD), 0.2C charge & discharge.
2. System usable energy may vary with inverter different setting.
3. Discharge: In case of battery cell's temperature range of -20°C ~ 10°C and 45°C ~ 53°C, the discharge current will be reduced; Charge: In case of battery cell's temperature range of 0°C ~ 25°C and 45°C ~ 53°C, the charge current will be reduced. Product charge or discharge power depends on the actual temperature of the battery pack.
4. The battery can only be discharged and can not be charged when the battery cell's temperature range is between -20°C and 0°C.
5. Test conditions: 25°C, 100%, depth of discharge (DoD), 0.2C charge & discharge.

14 Appendix

14.1 CT/Meter Connection Scenarios

X3-IES-A 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 equipment 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 (CT/Meter Port)".

14.1.1 Connection of CT

NOTICE!

- Do not place the CT on the N wire or ground wire.
- Do not place CT on the N line and L line at the same time.
- Do not place the CT on non-insulated wires.
- The cable length between CT and inverter should not exceed 100 meters.
- After CT is connected, prevent the CT clip from falling off. 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.

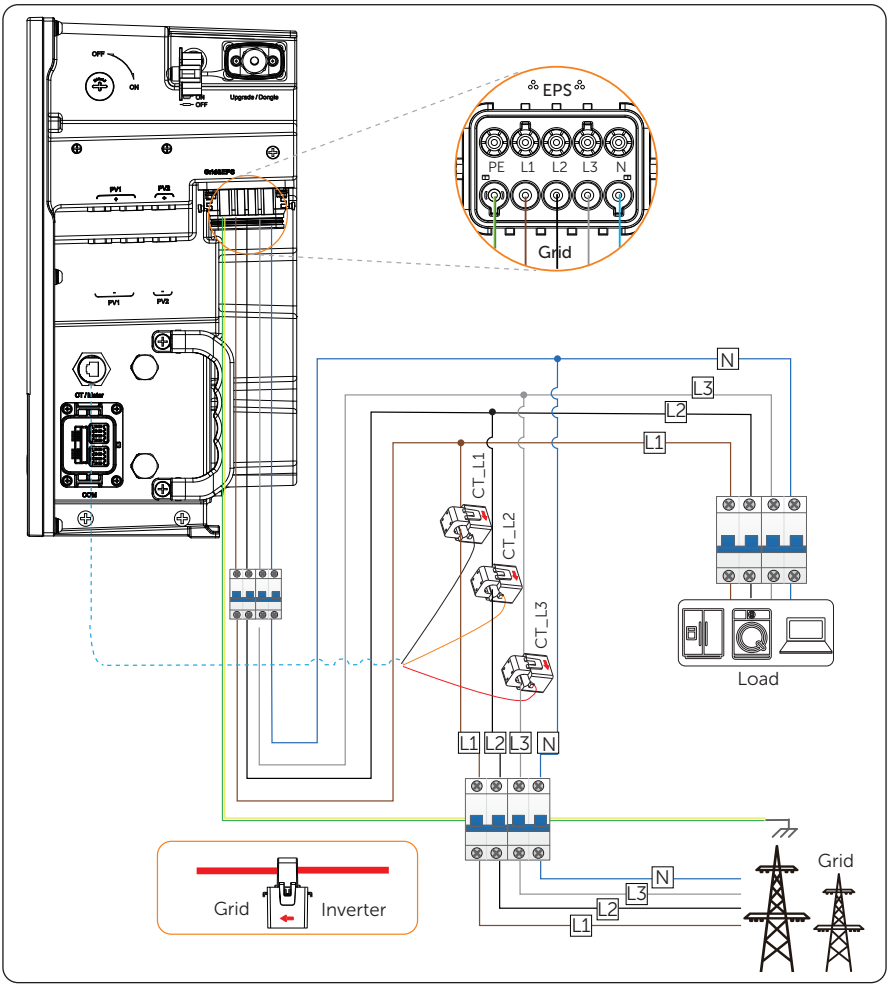


Figure 14-1 System wiring with CT

* The arrow on the CTs 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.

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.

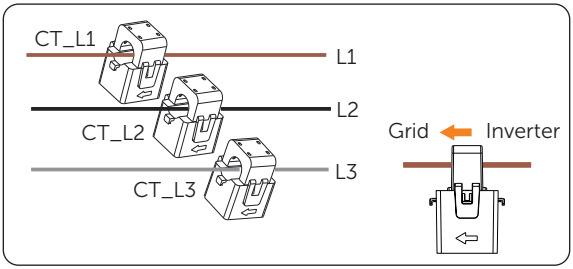


Figure 14-2 Clipping CTs to grid cables

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

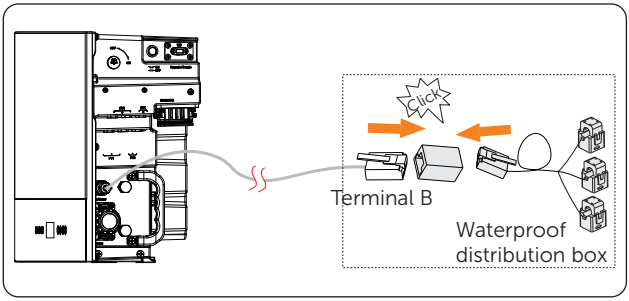


Figure 14-3 Connecting the inverter to the CT

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 14-4 Setting CT for the inverter

14.1.2 Connection of Direct-connected Meter

NOTICE!

- SolaX DTSU666 is used for example.

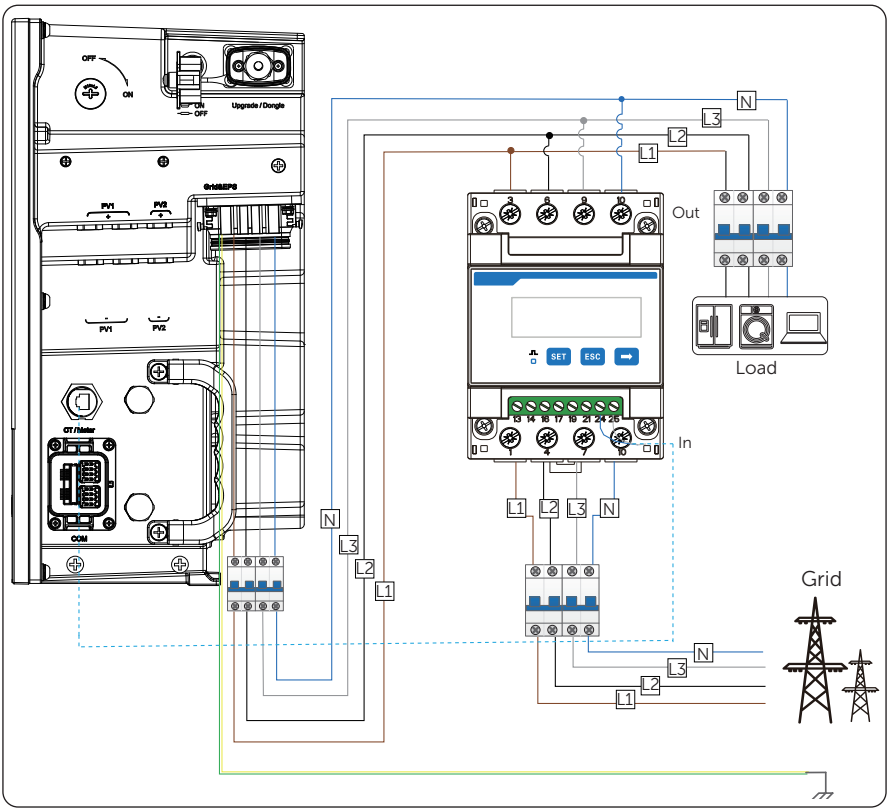


Figure 14-5 System wiring with direct-connected meter

*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 14-1 Terminal defintion of SolaX direct-connected meter

Terminal No.	Definition	Description
1, 4, 7	UL*	Voltage input terminal of the three phases (the grid side), respectively connected to L1, L2 and L3
3, 6, 9	UL	Voltage output terminal of the three phases (the inverter side), respectively connected to L1, L2 and L3
10	UN	Phase N voltage input and output terminal, 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.

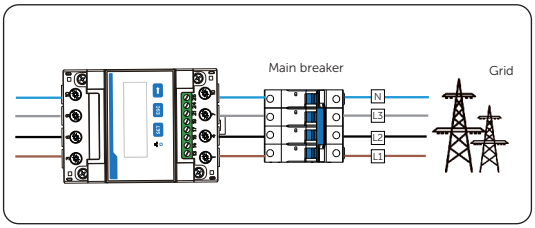


Figure 14-6 Connecting direct-connected meter to the grid

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

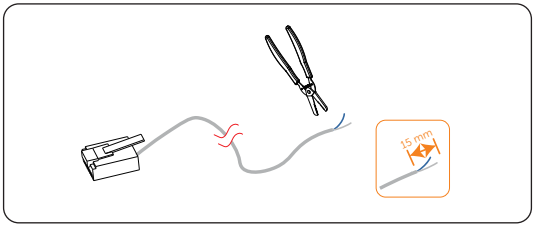


Figure 14-7 Stripping communication cable for meter

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

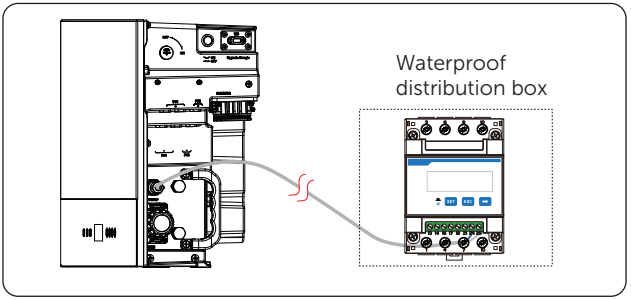


Figure 14-8 Connecting inverter to meter

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".

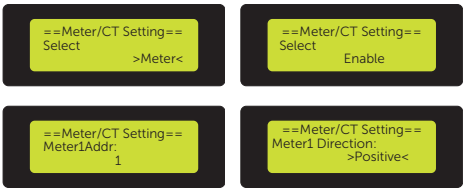


Figure 14-9 Setting meter for the inverter

14.1.3 Connection of CT-connected Meter

NOTICE!

- SolaX DTSU666-CT is used for example.
- The CTs referred to in this section are CTs that are delivered with the CT-connected meter.

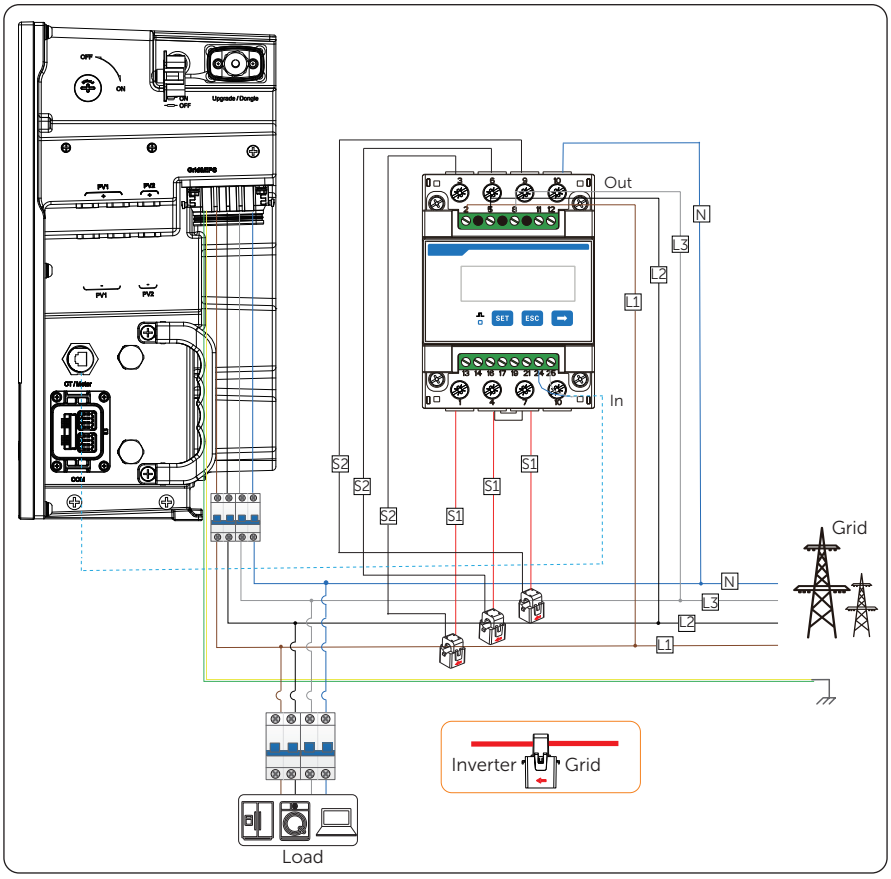


Figure 14-10 System wiring with CT-connected meter

*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 CTs must point at the inverter side.

Meter Terminal Definition

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

Terminal No.	Definition	Description
2, 5, 8	UL	Voltage input terminal of the three phases, respectively connected to L1, L2 and L3
10	UN	Phase N voltage input terminal, 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.

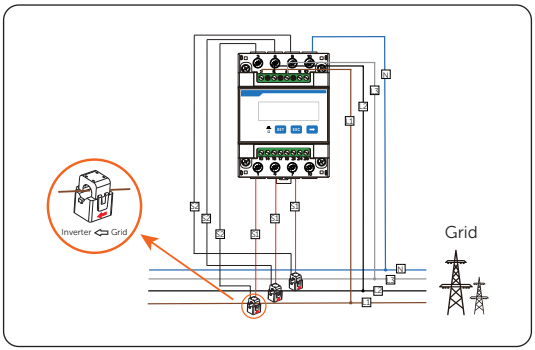


Figure 14-11 Connecting CT-connected meter to the grid

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

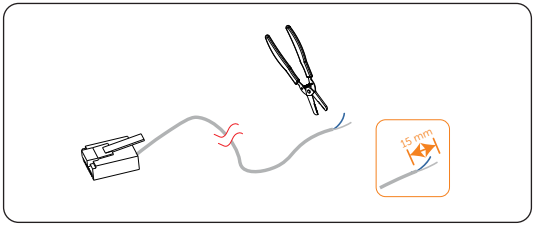


Figure 14-12 Stripping communication cable for meter

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

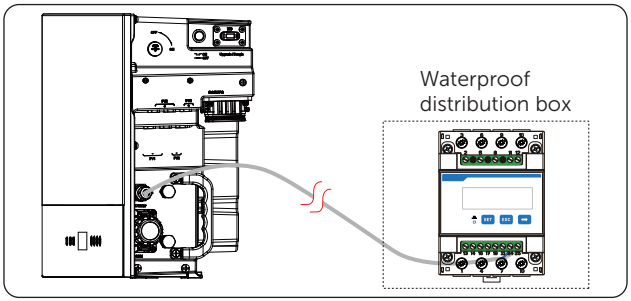


Figure 14-13 Connecting inverter to meter

Setting Procedure

After connecting the 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".

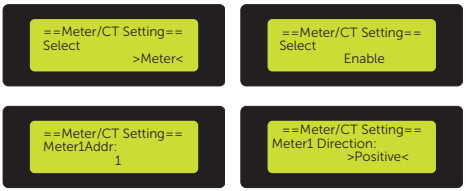


Figure 14-14 Setting meter for the inverter

14.1.4 Connection of Two Meters

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

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 equipment (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.

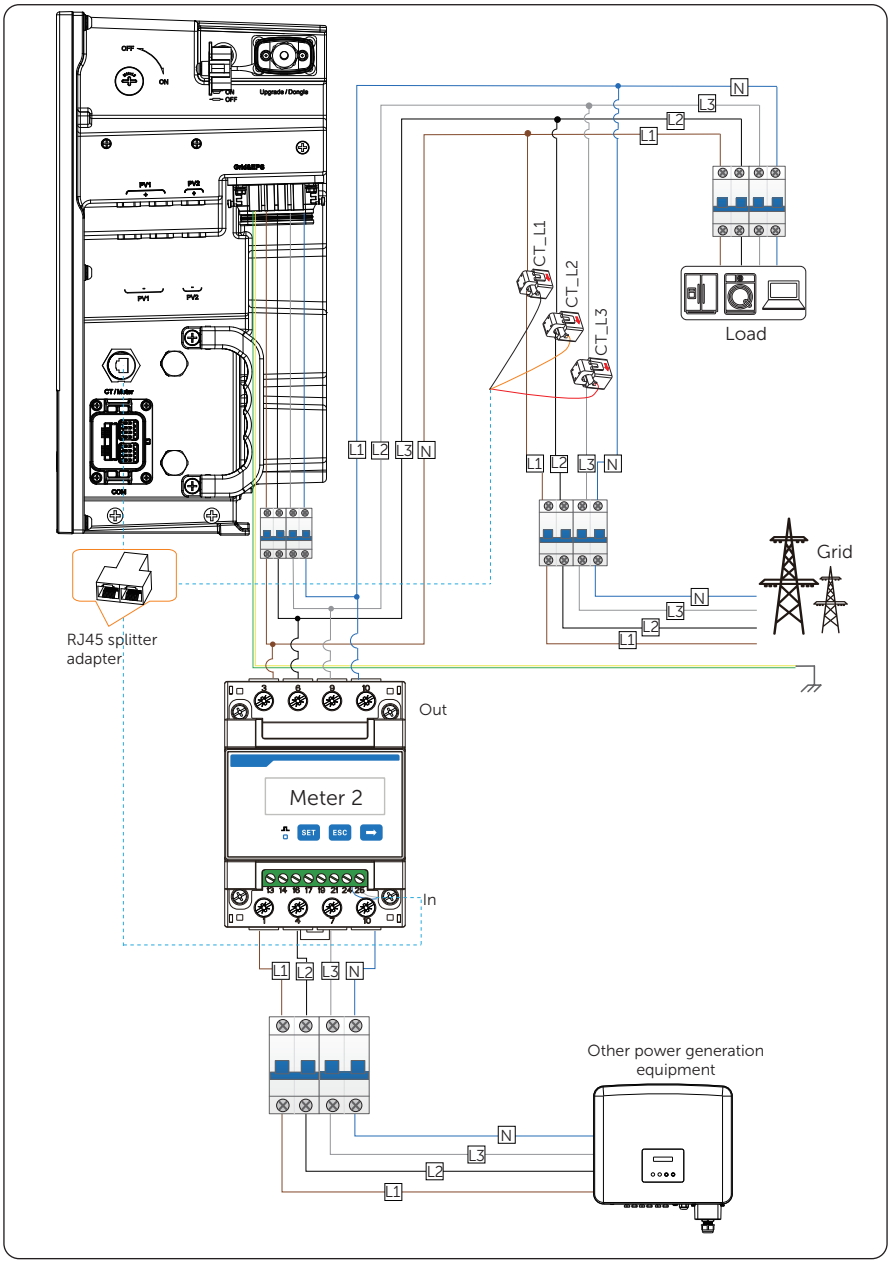


Figure 14-15 Connection diagram of CT and direct-connected meter

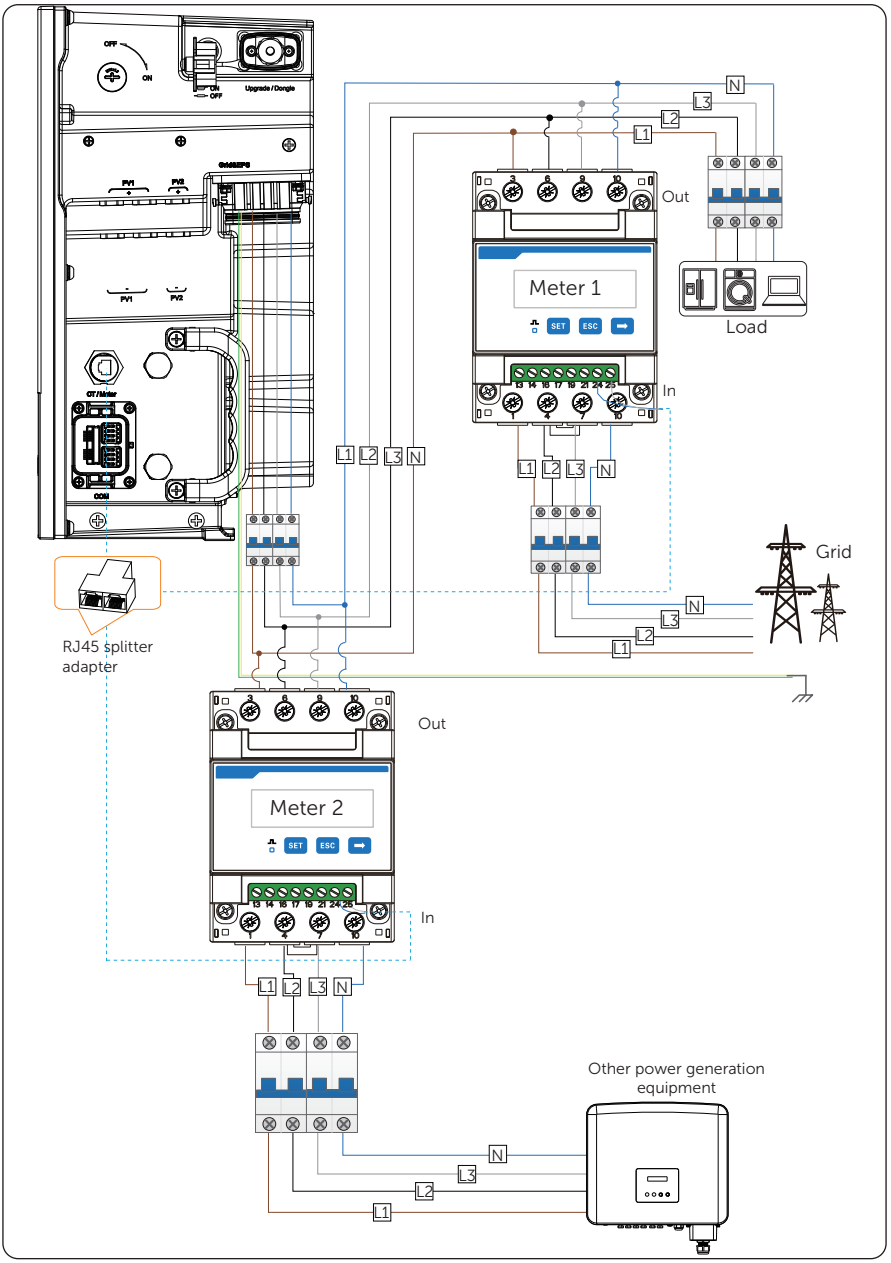


Figure 14-16 Connection diagram of two direct-connected meters

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 equipment). CT is set by default. Check whether the address and direction of Meter2 are set based on actual connection.

Figure 14-17 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 equipment). 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.

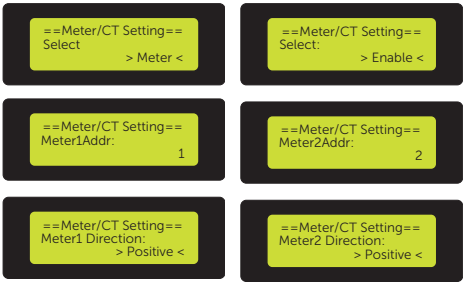


Figure 14-18 Selecting meter and set Meter 1 and Meter 2 data

Step 3: Set the CT type: select 100A or 200A CT.

Figure 14-19 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 14-20 Checking Meter/CT status

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