X1-HYB-LV-EU

3.0 kW / 3.7 kW / 4.0 kW
5.0 kW / 6.0 kW

User Manual

Version 1.0

www.solaxpower.com

eManual in the QR code or
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About This Manual

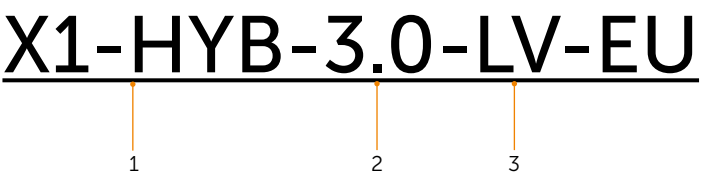
Scope of Validity

This manual is an integral part of X1-HYB-LV-EU series inverter. It describes the transportation, storage, installation, electrical connection, commissioning, maintenance and troubleshooting of the product. Please read it carefully before operating.

This manual is valid for the following inverter models:

- X1-HYB-3.0-LV-EU
- X1-HYB-3.7-LV-EU
- X1-HYB-4.0-LV-EU
- X1-HYB-5.0-LV-EU
- X1-HYB-6.0-LV-EU

Model description



Item	Meaning	Description
1	Product family name	"X1-HYB-LV-EU": single-phase energy storage series inverter that supports grid connection of photovoltaic system.
2	Power	"3.0": rated output power of 3 kW.
3	Voltage	"LV": low voltage.

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 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 1.0 (2024-10-28)

Updated "5.1.1 Environment Requirement" (Adjustment of related expressions)

Updated "5.2 Tools Requirement" (Added "Hydraulic wire crimper")

Updated "6.2 Scope of Delivery" (Adjustment of Communiacation terminal)

Updated "8.5 Battery Power Cable Connection" (Added the steps for unlocking the battery connector)

Updated "10 Operation on LCD" (Adjustment of interface)

Updated "14 Technical Data" (Added technical parameters)

Modified the contact information about Australia service.

Version 0.0 (2024-05-21)

Initial release

Table of Contents

1 Safety

1.1 General Safety

The series inverter has been meticulously designed and thoroughly tested to comply with the 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:

- Inverter damage caused by force majeure events, such as earthquakes, floods, thunderstorms, lightning, fire hazards, volcanic eruptions, and similar events.
- Inverter damage due to human causes.
- Usage or operation of the inverter 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 inverter in unsuitable environmental or electrical conditions.
- Unauthorized modifications to the product or software.
- Inverter damage occurring during transportation by the customer.
- 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 regulations.

1.2 Safety Instructions of PV, Inverter and Grid

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

1.2.1 Safety Instructions of PV

DANGER!

Potential risk of lethal electric shock associated with the photovoltaic (PV) system

- Exposure to sunlight can result in the generation of high DC voltage by PV modules, which can lead to electric shock causing severe injuries or even death.
- Never touch the positive or negative poles of the PV connecting device, and avoid touching both poles simultaneously.
- Do not ground the positive or negative poles of the PV modules.
- Only qualified personnel can perform the wiring of the PV modules.

WARNING!

- Overvoltage protection with surge arresters should be provided when the PV system is installed. The inverter is fitted with SPDs on both PV input side and MAINS side.
- Please consult professionals before installing SPDs.

WARNING!

- Make sure that the input DC voltage does not exceed the maximum DC input voltage specified for the inverter. Overvoltage can cause irreversible damage to the inverter, and such damage is not covered by the warranty.
- PV modules should have an IEC61730 class A rating.

1.2.2 Safety Instructions of Inverter

DANGER!

Potential risk of lethal electric 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 DC switch and LCD panel (if any).
- Never connect or disconnect the AC and DC 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.

WARNING!

- Use insulated tools when installing the device, and always wear personal protective equipment during installation and maintenance.

CAUTION!

- Make sure that children are supervised to prevent them from playing with the inverter.
- Pay attention to the weight of the inverter and handle it properly to avoid personal injuries.

NOTICE!

- The inverter has an integrated Type-B Residual Current Monitoring Unit (RCMU). 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. The use of a Type-B RCD is also permitted.
- Keep all product labels and the nameplate on the inverter clearly visible and well-maintained.

1.2.3 Safety Instructions of Utility Grid

NOTICE!

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

2 Product Overview

2.1 Product Introduction

The X1-HYB-LV-EU series is an energy storage PV grid-connected inverter. It supports various intelligent solutions such as load management, battery terminals, microgrids, etc. to achieve efficient and economical energy utilization.
The X1-HYB-LV-EU series inverter can be used with different capacities of SolaX battery.

2.2 Appearance

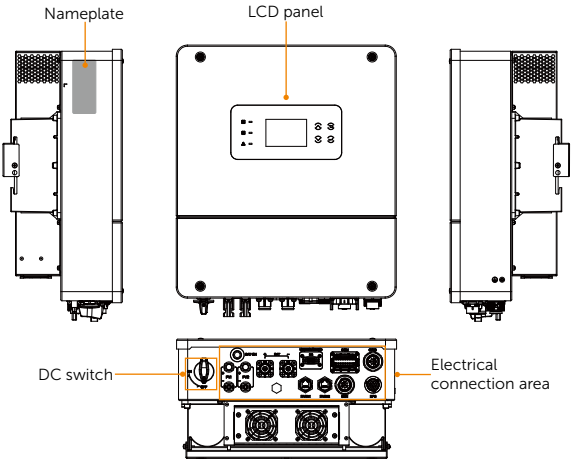


Figure 2-1 Appearance

Table 2-1 Description of appearance

Item	Description
Nameplate	Nameplate clearly identifies the device type, serial number, specific DC / AC parameters, certification, etc.
LCD panel	Including screen, indicators and keys. Screen displays the information; indicators indicate the status of inverter. Keys are used to perform the parameter setting.
DC switch	Disconnect the PV input when necessary.
Electrical connection area	Including PV terminals, battery terminals, grid terminals, EPS terminals, GEN terminals, communication terminals, etc.

2.3 Supported Power Grid

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

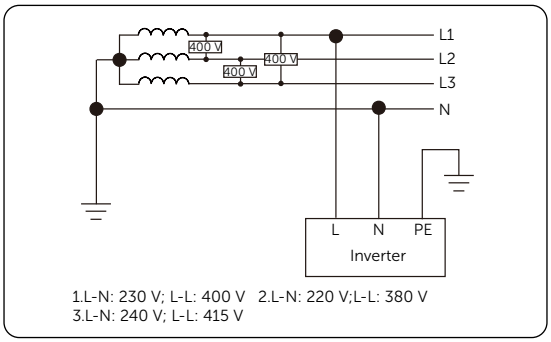


Figure 2-2 Supported power grid-TT

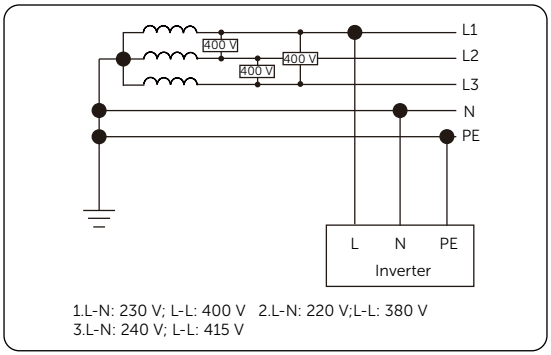


Figure 2-3 Supported power grid-TN-S

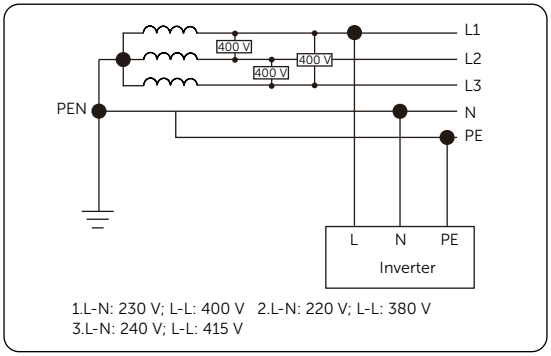


Figure 2-4 Supported power grid-TN-C-S

2.4 Symbols on the Label and Inverter

Table 2-2 Description of symbols

Symbol	Description
	CE mark. The inverter complies with the requirements of the applicable CE guidelines.
	TUV certified.
	Additional grounding point.
	Beware of hot surface. Do not touch a running inverter, as the inverter becomes hot during operation!
	Risk of electric shock. High voltage exists after the inverter is powered on!
	Risk of danger. Potential hazards exist after the inverter is powered on!
	Read the enclosed documentations.
	Do not dispose of the inverter together with household waste.
	Do not operate this inverter until it is isolated from battery, mains and on-site PV generation source.
	Danger of high voltage. Do not touch live parts for 5 minutes after disconnection from the power sources.

2.5 Working Principle

2.5.1 Circuit Diagram

The inverter is equipped with multi-channel MPPT for DC input to ensure maximum power even under different photovoltaic input conditions. The inverter unit converts direct current into alternating current that meets the requirements of the power grid and feeds it into the power grid. The lightning arrester at AC / DC side realizes the function of surge protection. The principle design of inverter is shown in the figure below:

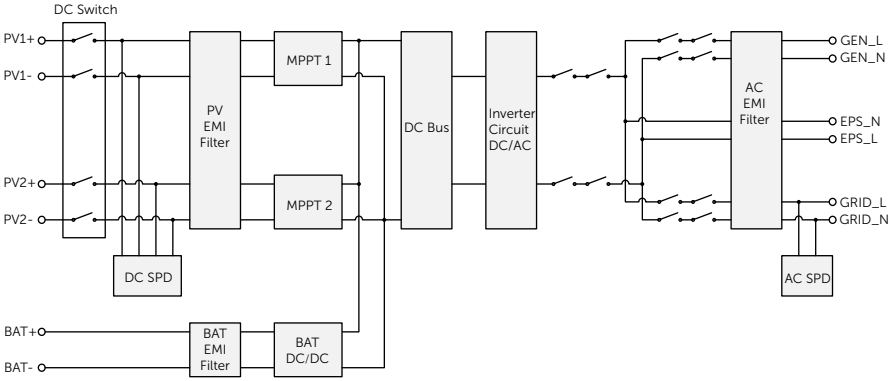


Figure 2-5 Circuit Diagram for X1-HYB-LV-EU series inverter

2.5.2 Application Schemes

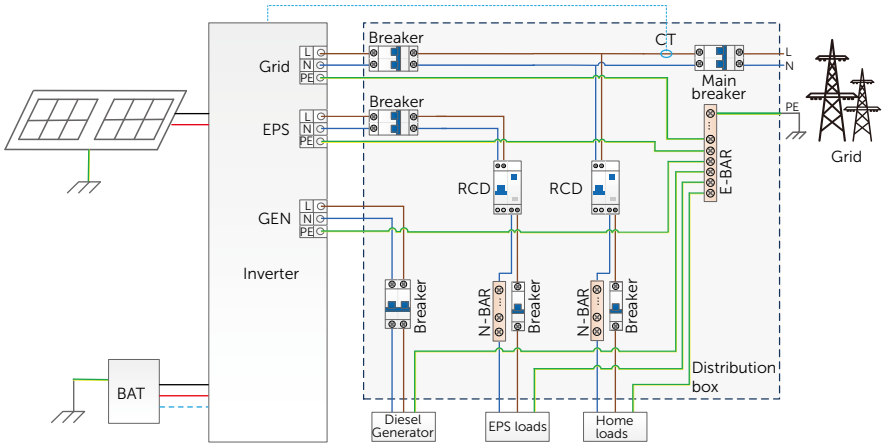


Figure 2-6 Partial home backup for Europe

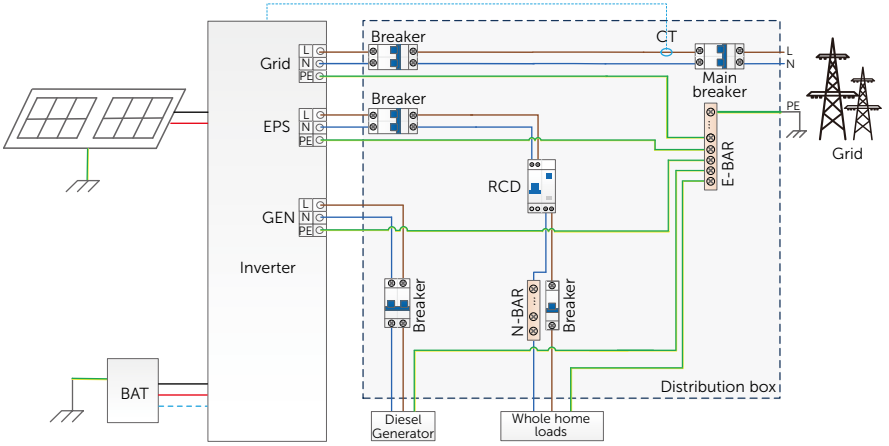


Figure 2-7 Whole home backup for Europe

2.6 Working State

The series inverter has Start, On and Off state.

Table 2-3 Description of working state

State	Description
Start	The inverter is checking for conditions to enter On state.
On	The inverter is working normally.
Off	• The inverter is waiting for the conditions to be met in order to enter the Start state. • The inverter detects error occurred and prompts error code.

2.7 Working mode

Three working modes are available for you to choose in on-grid status, i.e Backup, Self consumption and Force Time Use mode. You can choose the working modes according to your lifestyle and environment.

When the power supply from the electric power company is stopped due to a power outage, it automatically switches to EPS mode and connects to the distribution board for a specific load, thereby providing power to important electrical appliances.

For how to set the working mode, please refer to the section "10.3.1 Woke Mode Setting".

2.7.1 Backup Mode

Application Scenarios:

This mode uses the energy storage system as a backup power source and is suitable for applications where power outages are frequent. When the grid is normal, the load is powered by solar and the grid, and the battery is only charged without discharging. When there is a power outage, the energy storage system works in off-grid mode to supply power to important loads.

The load is prioritized to be powered by solar. If the solar power is insufficient, the load is powered by the grid. If the grid is unavailable, the load is powered by the battery + solar in off-grid mode.

If the PV power is greater than the load power, the excess power charges the battery.

After the battery is fully charged, the excess PV power can be either fed back to the grid or limited based on the zero-export setting.

(In terms of program control, it is consistent with the Self Consumption mode, where the battery charging/discharging power is controlled to be zero or the allowed power for grid feeding. However, the battery only charges and does not discharge.)

Note:

In this mode, if the priority setting for the battery charging source is:

Only Solar charging: No response, and the normal operating mode mentioned above is followed.

Solar then Utility charging: If solar power is available, only solar charges the battery. In the absence of solar power, the grid charges the battery.

Solar + Utility: Same as **Solar then Utility charging** (Only Utility charging).

2.7.2 Self consumption mode

Application Scenarios:

This mode is suitable for applications where electricity prices are high and solar power generation is not allowed to feed into the grid. Solar power takes priority in supplying the load, with any excess power being stored in the battery for later use.

The load is primarily powered by solar energy, with the battery taking over if solar power is insufficient, and grid power being the final option.

If the PV power exceeds the load power, the excess power will be used to charge the battery.

This mode defaults to zero feed-in control, preventing any power from being fed back into the grid.

Note:

In this mode, when the battery voltage is lower than the settable battery voltage of load-to-grid power supply, the battery will start charging, the load will be powered by grid, and the battery will be charged in the following modes according to the priority setting of battery charging power supply:

Only Solar charging: Solar charges the battery, and the load is completely powered by the power grid;

Solar then Utility charging: If there is Solar energy, only Solar energy will charge the battery; if there is no solar energy, the power grid will charge the battery;

Solar+Utility: Same as **Solar then Utility charging** (Only Utility charging);

When the battery is charged to the battery voltage supplied by the load to the battery, it will return to the normal operation mode.

2.7.3 Force Time Use mode

Application Scenarios:

This mode is more suitable for applications with peak and off-peak electricity price differences. When the electricity price is high, the battery discharges to power the load. When the electricity price is low, the battery is charged from solar or the grid to reach full capacity.

It provides three battery discharge time slots, corresponding to peak periods with higher electricity prices. During these periods, the battery discharges to power the load, providing

economic value to the customer. The operation during these periods is consistent with the normal operation mode of the Self Consumption mode. The difference lies in the fact that when the battery voltage drops below the voltage at which the load is switched to grid power in the Time of Use mode, the battery only charges without discharging.

Note:

In this mode, it also provides three battery charging time slots, corresponding to off-peak periods with lower electricity prices. During these periods, the battery is charged from PV or the grid, and the load is powered by the grid, providing economic value to the customer. Different priority settings for the battery charging source can be selected for each of the three battery charging time slots, and it is possible for the battery to reach full capacity and enter the float charging stage during these time slots.

Outside the peak and off-peak time slots set, the battery follows the priority setting mode for the battery charging source.

3 System Overview

System Overview

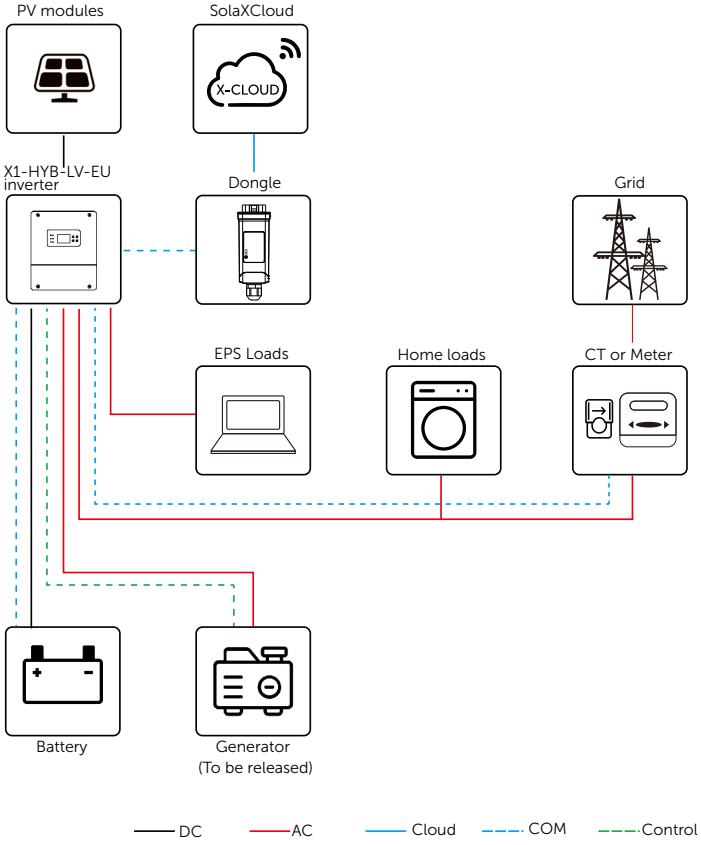


Figure 3-1 System overview diagram

Table 3-1 System item description

Item	Description
X1-HYB-LV-EU series (the device covered in this manual)	The series inverter combines solar inverter, solar charger, AC charger and emergency power supply (EPS) function together with IP65 degree of protection. The inverter can be used to optimize self-consumption, stored-in batteries for future use or fed into the public grid. The way it works depends on user preferences.
PV String	For 3 kW to 6 kW inverter, the number of PV string is two.
Battery	The series inverter should be coupled low voltage battery (Lithium or Lead-Acid). It communicates with the inverter via BMS and must comply with the specifications of the regulations.
CT or Meter	The CT/Meter is used by the inverter for import / export or consumption readings, and manages the battery charge / discharge accordingly for smart energy management applications.
Grid	220V/230V/240V grid are supported.
Generator (To be released)	SolaX PV-Genset solution ensures optimum interaction between the photovoltaics and diesel generator, which saves fuel, lowers energy costs and ensures a stable and reliable power supply.
SolaXCloud	SolaXCloud is an intelligent, multifunctional monitoring platform that can be accessed either remotely or through a hard wired connection. With the SolaXCloud, the operators and installers can always view key and up-to-date data.

4 Transportation and Storage

If the inverter is not put into use immediately, the transportation and storage requirements need to be met:

Transportation

- Observe the caution signs on the packaging of inverter before transportation.
- Pay attention to the weight of the inverter. Carry the inverters by the required number of personnel as specified by local regulations.(gross weight of 3.0 kW/ 3.7 kW/4.0 kW inverter: 21.2 kg; gross weight of 5.0kW/6.0kW inverter: 22 kg)
- Wear protective gloves when carrying the equipment by hand to prevent injuries.
- When lifting up the inverter, hold the bottom position of the carton. Keep the inverter horizontal in case of falling down.

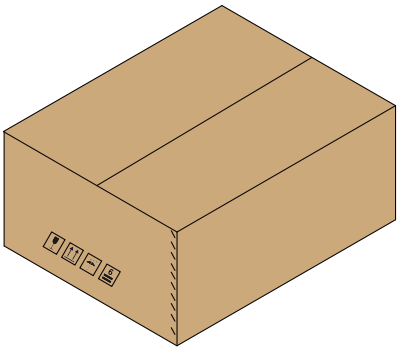


Figure 4-1 Caution signs on the packaging

Storage

- The inverter must be stored indoors.
- Do not remove the original packaging material and check the outer packaging material regularly.
- The storage temperature should be between -25°C and +70°C. The relative humidity should be between 5%RH and 65%RH.
- Stack the inverter in accordance with the caution signs on the inverter carton to prevent their falling down and device damage. Do not place it upside down.

5 Preparation before Installation

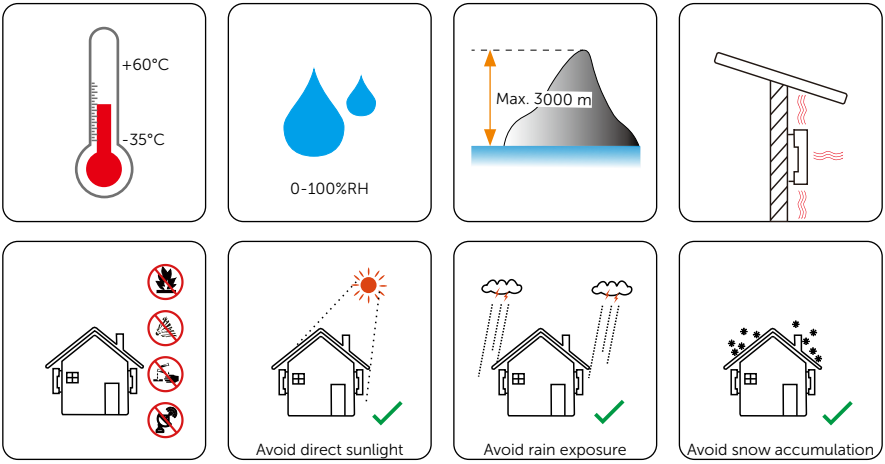
5.1 Selection of Installation Location

The installation location selected for the inverter is quite critical in the aspect of the guarantee of machine safety, service life and performance. It has the IP65 ingress protection, which allows it to be installed outdoor. The installation position shall be convenient for wiring connection, operation and maintenance.

5.1.1 Environment Requirement

Make sure the installation environment meets the following conditions:

- The ambient temperature: -25°C to +60°C.
- The relative humidity shall be between 0-100%RH.
- Do not install the inverter in the areas where the altitude exceeds 3000 m.
- Install the inverter in a well-ventilated environment for heat dissipation. It is recommended to install an awning over the inverter if it is installed on a support outdoor.
- Do not install the inverter in areas with flammable, explosive and corrosive materials or near antennas.
- Avoid direct sunlight, rain exposure and snow accumulation.



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 at least 500 meters away from the coast and avoid sea breeze directly hit.

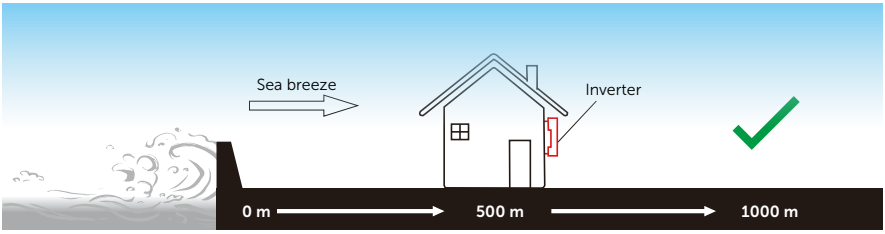


Figure 5-1 Recommended installation position

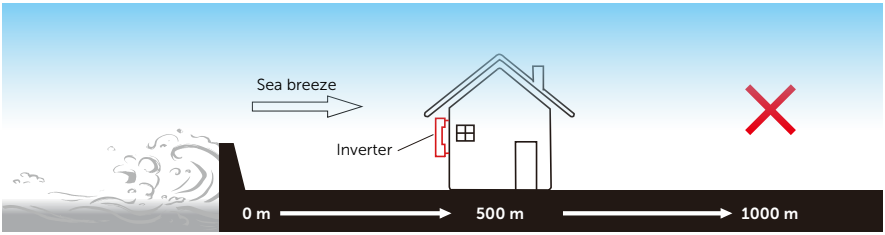


Figure 5-2 Incorrect installation position

NOTICE!

- For the installation of the whole system, please refer to the specific environment requirement of each unit.

5.1.2 Installation Carrier Requirement

The installation carrier must be made of a non-flammable material, such as solid brick, concrete, etc. and be capable of supporting the weight of the inverter and suitable of the dimensions of the inverter. If the wall strength is not enough (such as wooden wall, the wall covered by a thick layer of decoration), it must be strengthened additionally.

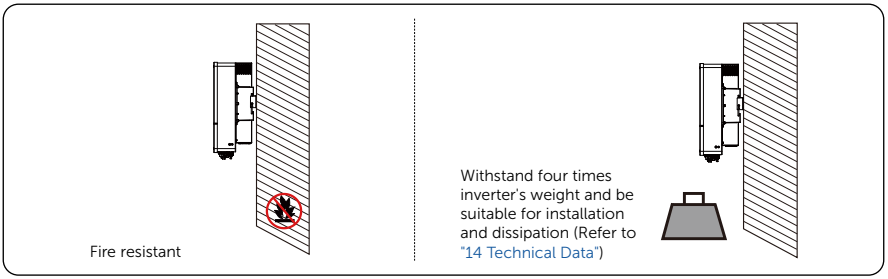


Figure 5-3 Installation carrier requirement

NOTICE!

- Please take the weight of battery into account when wall-mouting the whole system.

5.1.3 Clearance Requirement

The minimum clearance reserved for the connected terminal at the bottom of inverter should be 10 cm. When planning installation space, it is important to consider the bending radius of the wires.

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 inverters, please refer to the installation separation distance below. In areas with high ambient temperatures, increase the clearances between the inverters and provide adequate fresh air ventilation if feasible.

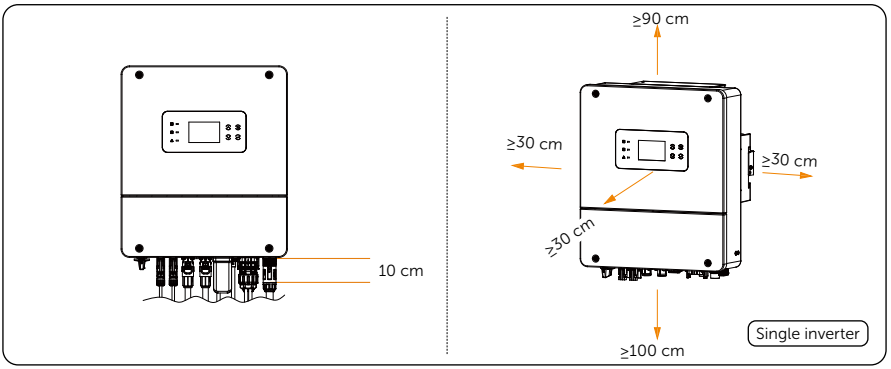


Figure 5-4 Clearance requirement for single inverters

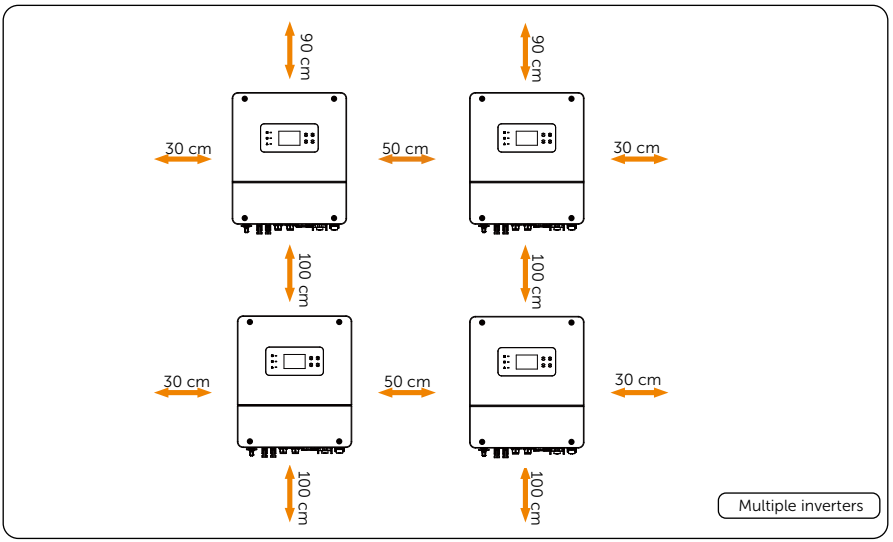
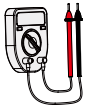


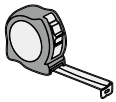
Figure 5-5 Clearance requirement for multiple inverter

5.2 Tools Requirement

Installation tools include but are not limited to the following recommended ones. If necessary, use other auxiliary tools on site. Please note that the tools used must comply with local regulations.


Hammer drill
(drill bit: Ø10 mm)

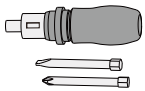

Multimeter
(≥ 1100 V DC)

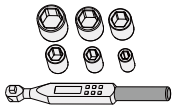

Measuring tape


Utility knife


Marker

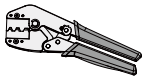

Spirit level

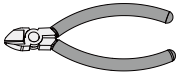

Torque screwdriver
(Flat-head: M2)
(Phillips head: M4)

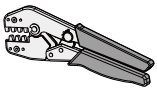

Torque wrench
(including 10 mm wrench)

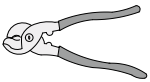

Wire stripper

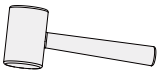

Crimping tool for RJ45


Crimping tool for
PV terminals

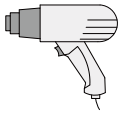

Diagonal pliers

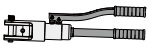

Crimping tool


Wire cutter


Rubber mallet


Heat shrink tubing
(Ø6 mm)

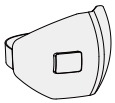

Heat gun


Hydraulic wire crimper


Safety gloves


Safety boots


Safety goggles


Anti-dust mask

5.3 Additionally Required Materials

Table 5-1 Additionally required wires

No.	Required Material		Type	Conductor Cross-section
1	PV wire		Dedicated PV wire with a voltage rating of 600 V	4 mm^2
2	Parallel connection cable& Communication cable		Network cable CAT5E	0.2 mm^2
3	Additional PE wire		Conventional yellow and green wire	4 mm^2-10 mm^2
4	Battery power cable		Conventional copper wire	21-27 mm^2 for 3 kW~4 kW or 34 mm^2 for 5 kW~6 kW
5	Grid, EPS and GEN wire		Triple-core copper cable	5.26 mm^2

Table 5-2 Circuit breaker recommended for Grid connection

Model	X1-HYB-3.0-LV-EU	X1-HYB-3.7-LV-EU	X1-HYB-4.0-LV-EU	X1-HYB-5.0-LV-EU	X1-HYB-6.0-LV-EU
Circuit breaker	32 A	40 A	40 A	50 A	50 A

Table 5-3 Micro-breaker recommended for EPS and GEN connection

Model	X1-HYB-3.0-LV-EU	X1-HYB-3.7-LV-EU	X1-HYB-4.0-LV-EU	X1-HYB-5.0-LV-EU	X1-HYB-6.0-LV-EU
Micro-breaker	25 A	25 A	25 A	32 A	40 A

6 Unpacking and Inspection

6.1 Unpacking

- The inverter undergoes 100% testing and inspection before delivery. However, damages may still occur during transportation. Before unpacking, please carefully check the external packaging for any signs of damage, such as punctures or cracks.
- Unpacking the inverter according to the following figure.

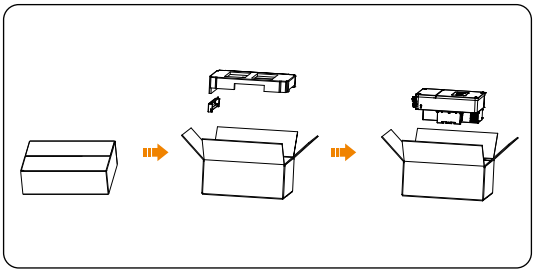
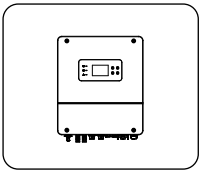
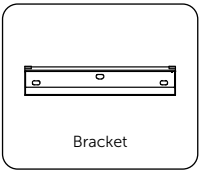


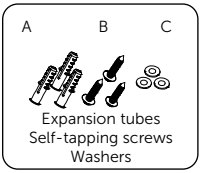
Figure 6-1 Unpacking the inverter

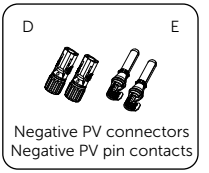
- Properly handle all the packaging materials in case they may be reused for storage and transportation of the inverter in the future.
- Upon opening the package, check whether the inverter is intact and whether all accessories are included. If any damage is found or any parts are missing, contact your dealer immediately.

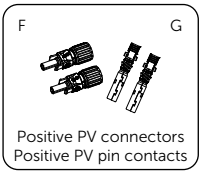
6.2 Scope of Delivery

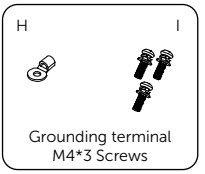


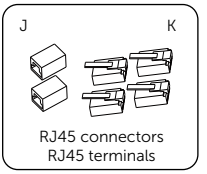


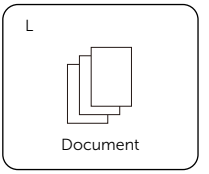


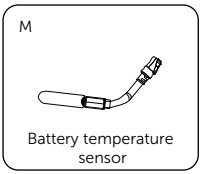


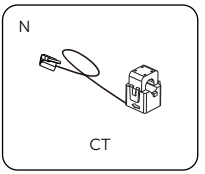


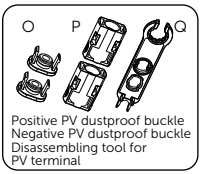


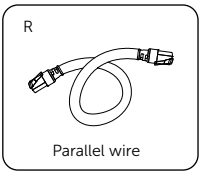


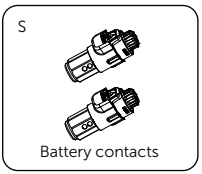


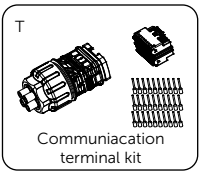


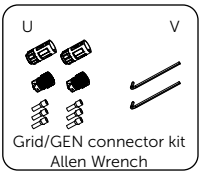


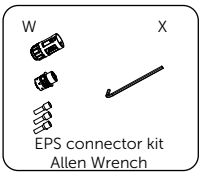












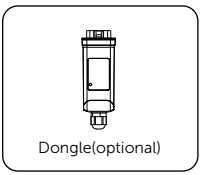


Table 6-1 Packing list

Item	Description	Quantity	Remark
/	Inverter	1 pc	
/	Bracket	1 pc	
A	Expansion tubes	3 pcs	For bracket installation
B	Self-tapping screws	3 pcs	
C	Washers	3 pcs	

Item	Description	Quantity	Remark
D	Negative PV connectors	2 pcs	For PV connection
E	Negative PV pin contacts	2 pcs	
F	Positive PV connectors	2 pcs	
G	Positive PV contacts	2 pcs	
H	Grounding terminal	1 pc	For PE connection
I	M4 Screws	3 pcs	1 pc for PE connection; 2 pcs for wall-mounting bracket installation
J	RJ45 connectors	2 pcs	1 pc for connecting CT, 1 pc for connecting battery temperature sensor
K	RJ45 terminals	4 pcs	1 pc for connecting CT, 1 pc for connecting battery temperature sensor, 2 pcs for parallel connection
L	Document	/	
M	Battery temperature sensor	1 pc	
N	CT	1 pc	CT cable: 50 cm
O	Positive PV dustproof buckle	2 pcs	
P	Negative PV dustproof buckle	2 pcs	
Q	Disassembling tool for PV terminal	1 pc	For removing PV connector
R	Parallel wire	1 pc	For parallel connection, Parallel wire: 1.5 m
S	Battery contacts	2 pcs	For Battery connection
T	Communiacation terminal kit	1 pc	For COM connection
U	Grid/GEN connector kit	2 pcs	For Grid/GEN connection
V	Allen Wrench	2 pcs	For Grid/GEN connection
W	EPS connector kit	1 pc	For EPS connection
X	Allen Wrench	1 pc	For EPS connection
/	Dongle (Optional)	1 pc	

NOTICE!

- Please refer to the actual delivery for the optional accessories.

7 Mechanical Installation

WARNING!

- Only qualified personnel are allowed to perform the mechanical installation in accordance with local laws and regulations.
- Check the existing power cables or other piping in the wall to prevent electric shock or other damage.
- Use insulated tools and wear personal protective equipment throughout the installation and maintenance process.

CAUTION!

- During installation, always be cautious about the weight of the inverter. Improper lifting or dropping of the inverter may result in personal injury.

NOTICE!

- Install the inverter at a maximum back tilt of 15 degrees and avoid it being forward tilted, side tilted, or upside down.

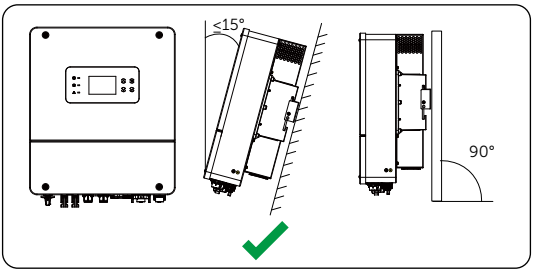


Figure 7-1 Correct installation

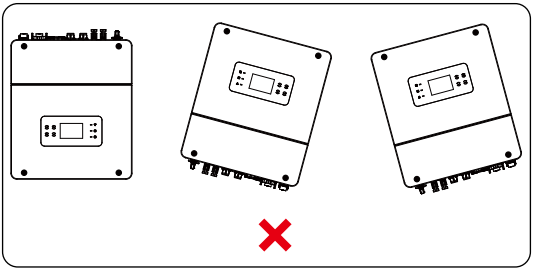


Figure 7-2 Incorrect installation

7.1 Dimensions for mounting

Before installation, check the dimensions of the bracket and ensure that enough space is reserved for the installation and heat dissipation of the entire system.

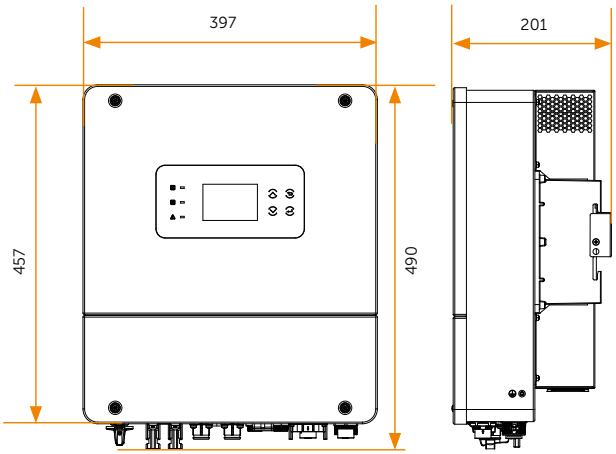


Figure 7-3 Dimensions 1 (Unit: mm)

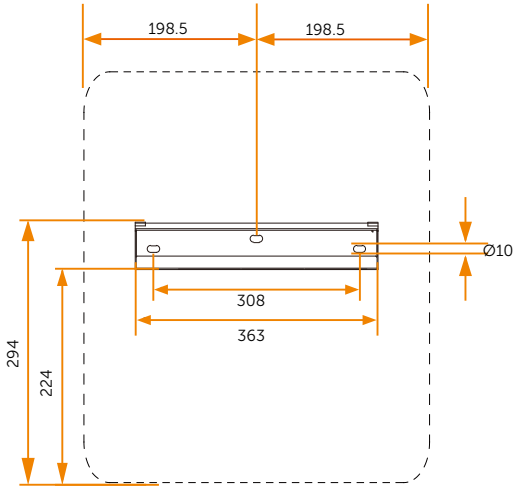


Figure 7-4 Dimensions 2 (Unit: mm)

7.2 Installation procedures

Step 1: Align the bracket horizontally on the wall and mark the position of the drill holes.

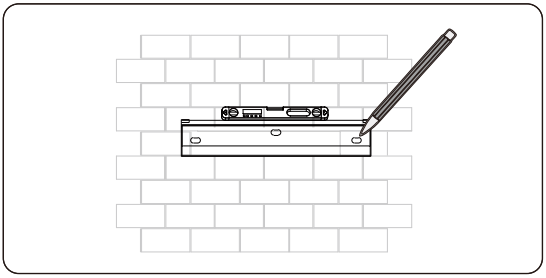


Figure 7-5 Marking the holes

NOTICE!

- Take the height of the battery into account when mounting the bracket.
- Observe the bubble of spirit level and adjust the bracket until the bubble stays in the middle.

Step 2: Set the bracket aside and drill holes with Ø10 drill bit. The depth of the holes should be greater than 80 mm. The hammer drill needs to be 90° perpendicular to the wall when using it. Do cover the inverter before drilling holes and clean up any dust in and around the holes using a dust collector.

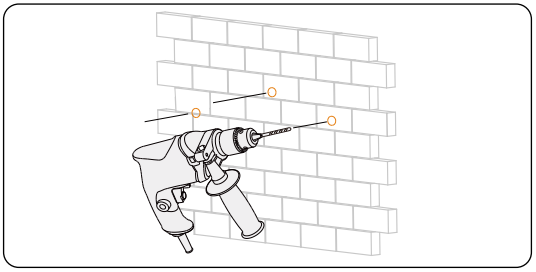


Figure 7-6 Drilling holes

Step 3: Insert the expansion tubes (Part A) into the holes and secure the bracket to the wall with self-tapping screws (Part B) and washers (Part C).

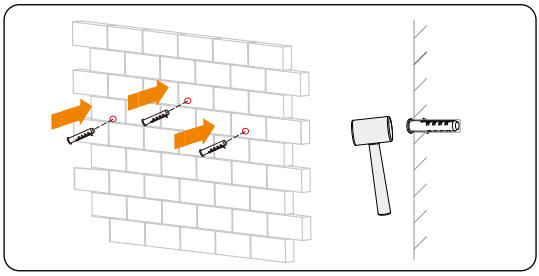


Figure 7-7 Insert the expansion tubes

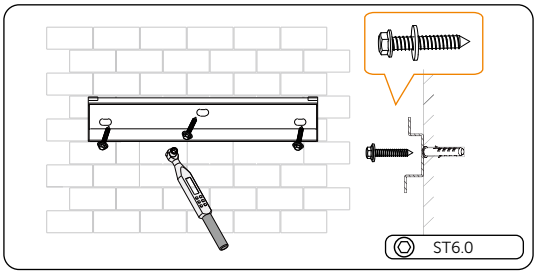


Figure 7-8 Securing the bracket

Step 4: Open the anti-static bag and take out the machine.If it is to be temporarily placed on the ground, the bottom of the inverter should be padded with protective material.

Step 5: Lift up the inverter by one installer and hang it on the bracket. The keyways of the inverter must be hooked into the buckles of bracket.

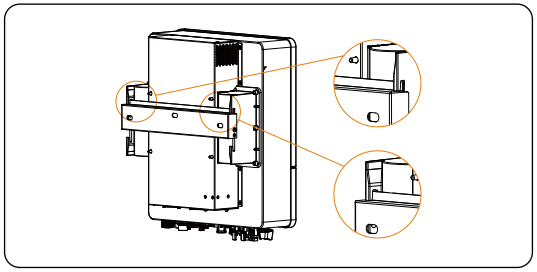


Figure 7-9 Hanging the inverter

Step 6: Secure the inverter to the bracket with M4 screws (Part I). Tighten the M4 screws on both sides.

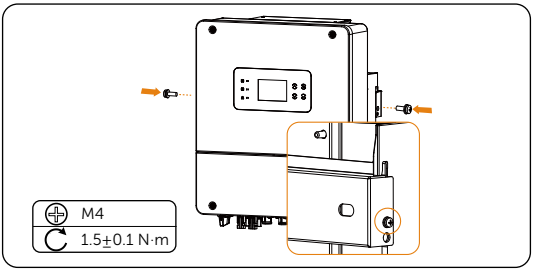


Figure 7-10 Securing the inverter

8 Electrical Connection

DANGER!

- Before electrical connection, make sure the DC switch and AC breaker are disconnected. Otherwise, the high voltage may cause electric shock, resulting in severe personal injuries or even death.

WARNING!

- Only qualified personnel are allowed to perform the electrical connection following local laws and regulations.
- Strictly follow the instructions of this manual or other related documentation for electrical connection. Inverter damages caused by incorrect wiring are not covered by the warranty.
- Use insulated tools and wear personal protective equipment throughout the electrical connection process.

8.1 Terminals of Inverter

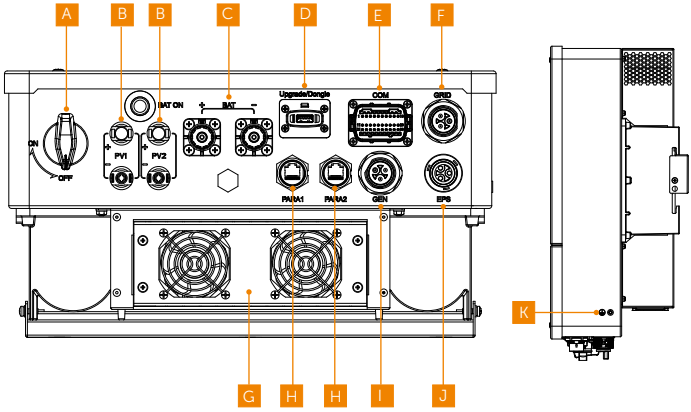


Figure 8-1 Terminals of Inverter

Table 8-1 Description of terminals

Item	Description	Remarks
A	DC switch	
B	PV connection terminal	
C	Battery connection terminal	
D	Upgrade/Dongle terminal	
E	COM communication terminal	Including BMS, RS485, DI, Meter, CT, DO. Refer to "8.7.1 Pin Assignment of COM Terminal".
F	Grid connection terminal	
G	Fans	
H	Parallel connection terminal	
I	GEN connection terminal	
J	EPS connection terminal	
K	Grounding point	

8.1.1 Cable Connections of Inverter

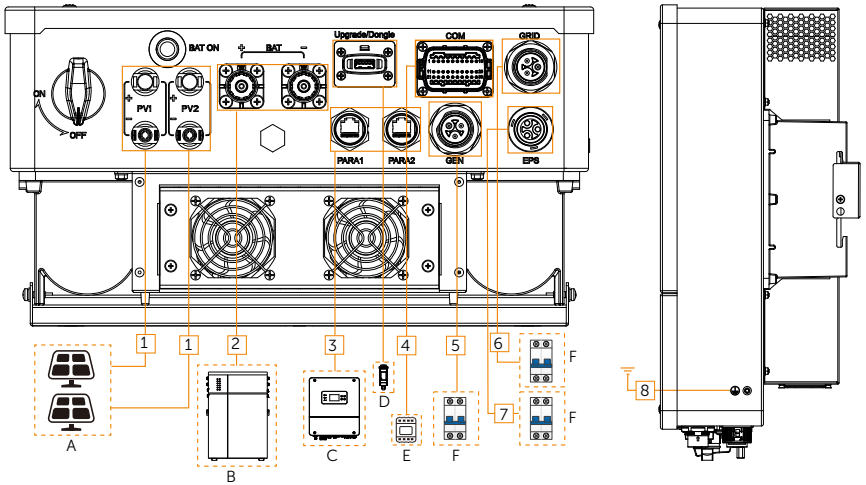


Figure 8-2 Cable connections of inverter

Table 8-2 Descriptons of connected part

Item	Part	Description	Source
A	PV module	A PV string is composed of the PV modules connected in series.	Prepared by user
B	Battery	LD53 can be connected with the series inverter.	Purchased from SolaX
		Lead-acid battery (48V) can be connected with the series inverter.	Prepared by user
C	(Optional) X1-HYB-LV-EU series inverter	Select a same model of inverter	Purchased from SolaX
D	(Optional) Monitoring dongle	Only SolaX monitoring dongle supported.	Purchased from SolaX
	USB drive	USB 2.0/3.0, ≤32 GB, FAT 16/32	Prepared by user
E	Meter/CT	Supported SolaX authorized DDSU666 or CT.	Purchased from SolaX
	BMS, RS485, DI, DO		Purchased from SolaX or prepared by user
E	AC switch	Select an appropriate AC switch according to the local regulations to ensure the inverter can be securely disconnected from the grid, EPS loads and the generator. when an emergency occurs.	Prepared by user

Table 8-3 Descriptions of cables

Item	Cable	Type and specifications	Source
1	PV DC input power cable	Refer to "5.3 Additionally Required Materials".	Prepared by user
2	Battery power cable	/	Delivered with battery
3	Parallel connection cable	Refer to "5.3 Additionally Required Materials".	Prepared by user or use the parallel wire in the accessories bag
4	Communication cable		Prepared by user
5	GRID, EPS and GEN wire		Prepared by user
6	GRID, EPS and GEN wire		Prepared by user
7	GRID, EPS and GEN wire		Prepared by user
8	PE cable		Prepared by user

8.2 PE Connection

The inverter must be reliably grounded. The PE connection point has been marked with ⏚ It is recommended to connect the inverter to a nearby grounding point.

PE connection procedures

Step 1: Strip the insulation of the PE cable to an appropriate length.

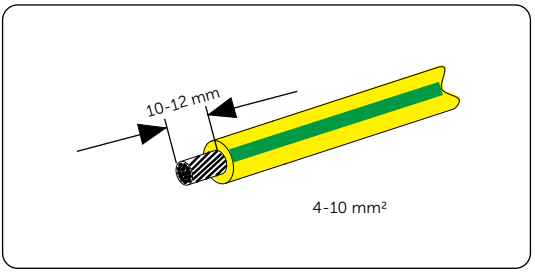


Figure 8-3 Striping the PE cable

Step 2: Pull the heat-shrink tubing over the PE cable and insert the stripped section into the Grounding terminal (part H) .

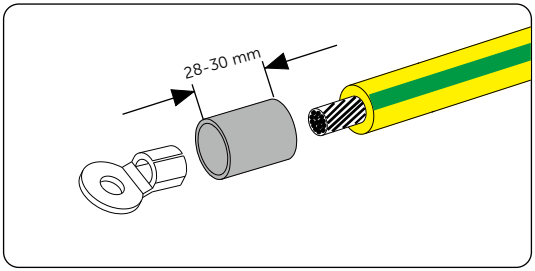


Figure 8-4 Installing the tubing and the grounding teriminal

Step 3: Crimp it with crimping tool, pull the heat-shrink tubing over the stripped section of the grounding terminal and use a heat gun to shrink it so that it can be firmly contacted with the terminal.

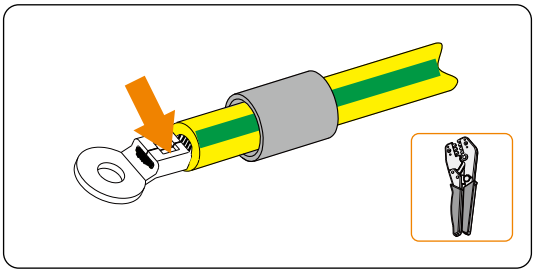


Figure 8-5 Crimping the cable

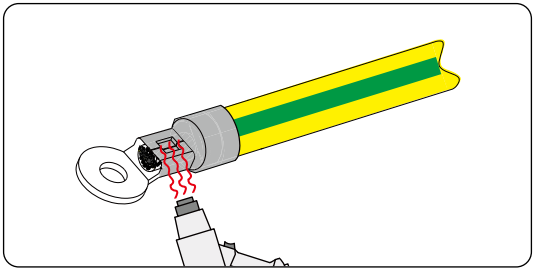


Figure 8-6 Shrinking the tubing

Step 4: Connect the assembled PE cable to the grounding point of the inverter, and secure it with the original screw. (Torque: 1.5±0.1 N·m)

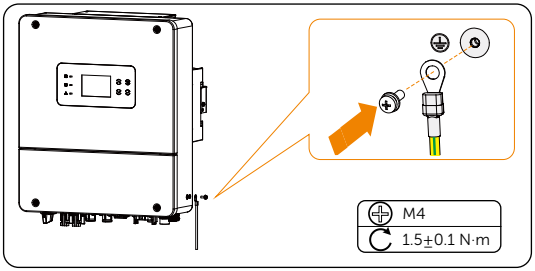


Figure 8-7 Securing the PE cable

8.3 EPS, Grid and GEN Connection

NOTICE!

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

The inverter supports the EPS mode. When connected to the grid, the inverter outputs go through the Grid terminal, and when disconnected from the grid, the inverter outputs go through the EPS terminal.

Requirements for AC connection

- Grid voltage requirement
  - » The grid voltage and frequency must be within the allowable range (220/230/240V, 50/60 Hz) and comply with the requirements of the local power grid.
- Residual Current Device (RCD)
  - » The inverter has an integrated Type-B Residual Current Monitoring Unit (RCMU). 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. The use of a Type-B RCD is also permitted.
- AC breaker
  - » An AC breaker that matches the power of the inverter must be used between the inverter output and the power grid. Each inverter must be equipped with an independent breaker or other load disconnection unit to ensure the safe disconnection from the grid. For specific information on the AC breaker for Grid, GEN and EPS, see "5.3 Additionally Required Materials".

- EPS load
  - » Make sure that the rated power of the EPS load is within the rated output power range of the inverter. Otherwise, the inverter will report a fault. In this case, turn off some loads to suit the rated EPS output power range of the inverter, and then turn back to the LCD screen to clear the fault.
  - » When connecting to the EPS terminal, pay attention to the following points:

Medical equipment	Connection prohibited
Precision instrument	Connection prohibited
Appliances susceptible to malfunctions in the event of power outages during use.	Connection prohibited

  - » For inductive loads such as refrigerators, air conditioner, washing machine, etc., ensure that their start power does not exceed the EPS peak power of the inverter.

Table 8-4 EPS load information

Type of load	Equipment	Start power
Resistive load	Lamp	Rated power
	Fan	Rated power
	Hair dryer	Rated power
Inductive load	Refrigerator	3-5 times rated power
	Air conditioner	3-6 times rated power
	Washing machine	3-5 times rated power
	Microwave oven	3-5 times rated power

* Refer to the nominal start power of the equipment for the actual start power.

Connection steps

Wiring procedures of EPS side:

Step 1: Prepare a triple-core cable and strip the insulation of L, N, PE and the grounding conductor to an appropriate length.

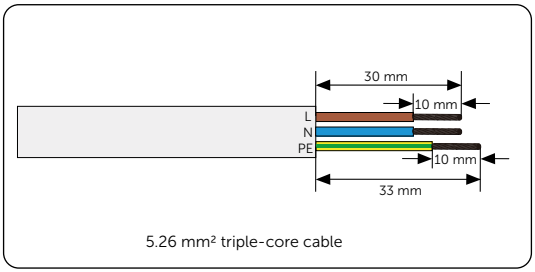


Figure 8-8 Stripping the EPS cable

Step 2: Crimp the terminals, and sleeve the terminal onto the cable.

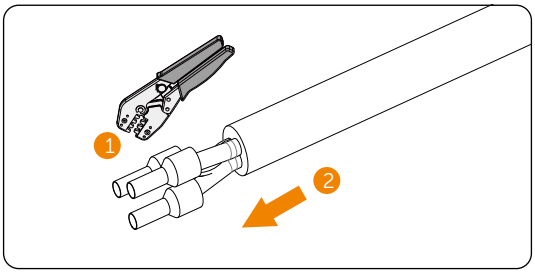


Figure 8-9 Sleeve the terminal onto the cable

Step 3: Set the parts (Part W) on the cable and insert the terminal holes in sequence. (The L wire, N wire and PE wire must be connected correctly).

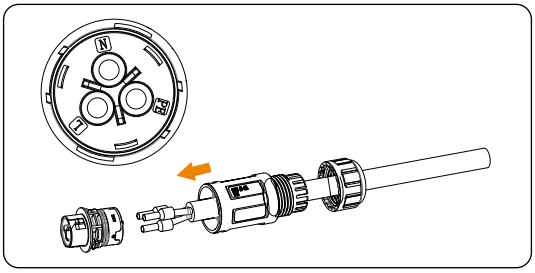


Figure 8-10 Set the parts on the cable

Step 4: Crimp the wire with allen wrench (Part X).

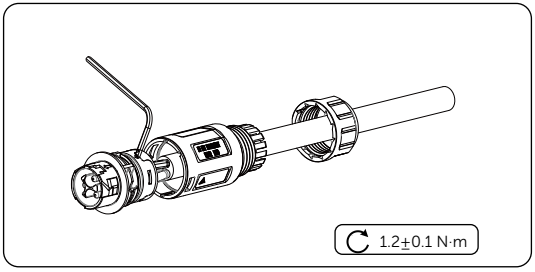


Figure 8-11 Crimping the wire

Step 5: Insert the main body into the rubber core until hear the "Click" sound.

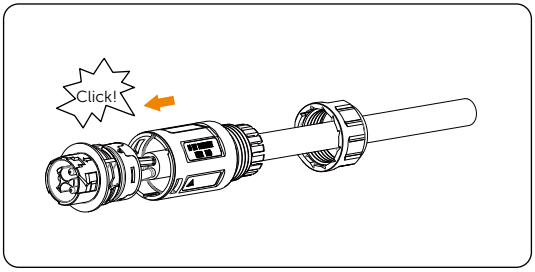


Figure 8-12 Insert the main body

Step 6: Tighten the nut until it connected correctly.

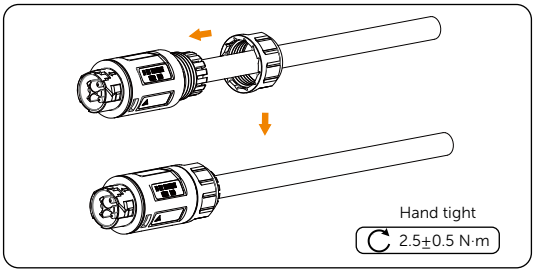


Figure 8-13 Tighten the nut

Wiring procedures of Grid and GEN side:

Step 1: Prepare a triple-core cable and strip the insulation of L, N, PE and the grounding conductor to an appropriate length.

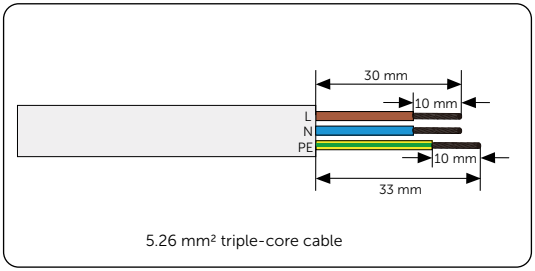


Figure 8-14 Stripping the Grid and GEN cable

Step 2: Crimp the terminals, and sleeve the terminal onto the cable.

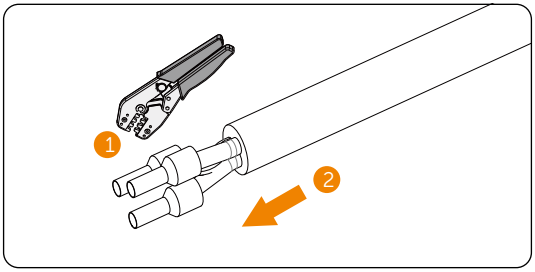


Figure 8-15 Sleeve the terminal onto the cable

Step 3: Set the parts (Part U) on the cable and insert the terminal holes in sequence (The L wire, N wire and PE wire must be connected correctly).

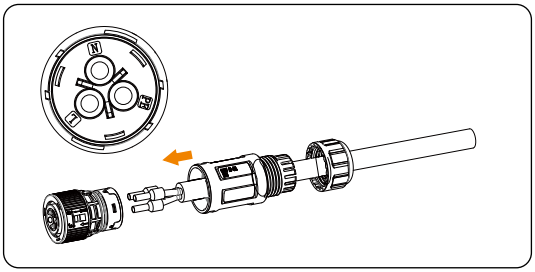


Figure 8-16 Set the parts on the cable

Step 4: Crimp the wire with allen wrench (Part V).

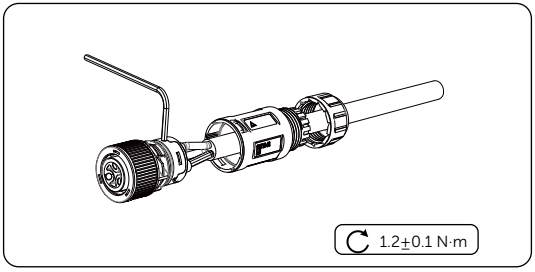


Figure 8-17 Crimping the wire

Step 5: Insert the main body into the rubber core until hear the "Click" sound.

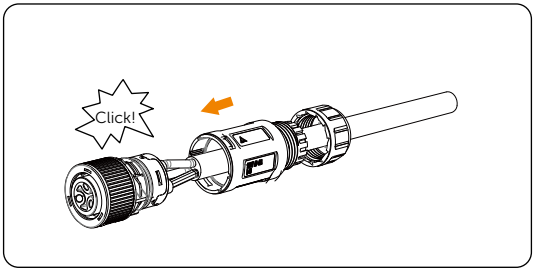


Figure 8-18 Insert the main body

Step 6: Tighten the nut until it connected correctly.

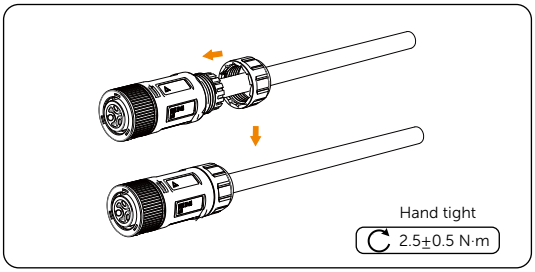


Figure 8-19 Tighten the nut

Connection steps of inverter side:

Step 7: Use the flat-head screwdriver to flip the lock.

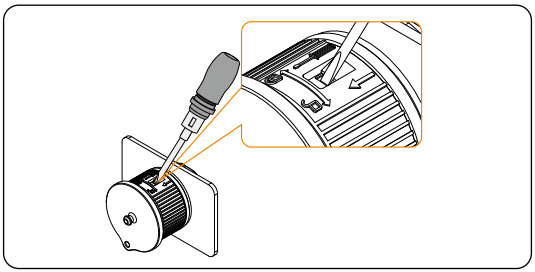


Figure 8-20 Flip the lock for EPS

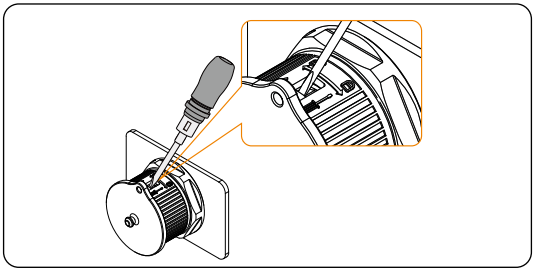


Figure 8-21 Flip the lock for Grid and GEN

Step 8: Rotate the latch and remove the dust cover.

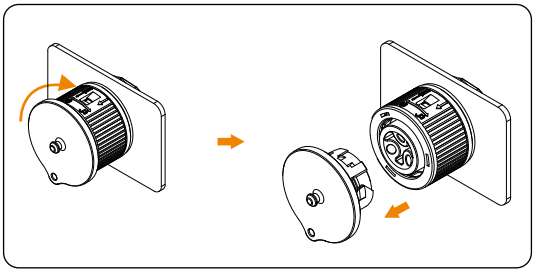


Figure 8-22 Remove the dust cover for EPS

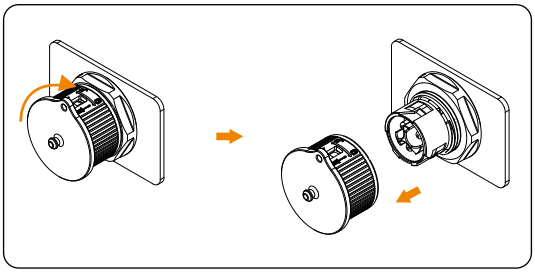


Figure 8-23 Remove the dust cover for Grid and GEN

Step 9: Plug the assembled EPS connector or Grid/GEN connector into the EPS terminal or the Grid terminal and GEN terminal accordingly.

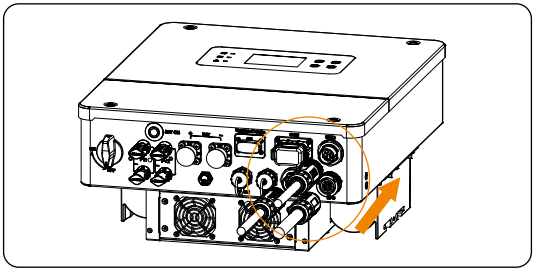


Figure 8-24 Plug the connector into the EPS, Grid and GEN terminal

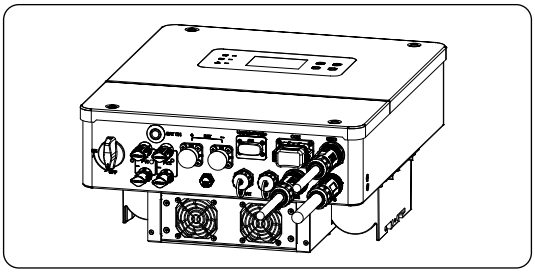


Figure 8-25 Completely connected

DANGER!

- Before powering on the inverter, make sure the AC connector has been installed correctly on the Grid and EPS terminal even if the EPS terminal is not wired. Otherwise, electrical shock may be caused by high voltage, resulting in serious personal injury or death.

WARNING!

- Reinstall AC terminal caps immediately after removing the connectors from the terminals.

8.4 PV Connection

DANGER!

- When exposed to the sunlight, PV modules will generate lethal high voltage. Please take precautions.
- Before connecting the PV modules, make sure that both DC switch and AC breaker are disconnected, and that the PV module output is securely isolated from the ground.

WARNING!

- To mitigate the risk of fire, it is crucial to utilize a dedicated crimping tool specifically designed for PV installations to ensure secure and reliable connections.

CAUTION!

- Power is fed from more than one source and more than one live circuit.

Requirements for PV connection

- Open circuit voltage and operating voltage
  - » The open circuit voltage of each module array cannot exceed the maximum PV input voltage (550 V) of the inverter. Otherwise, the inverter may be damaged.
  - » The operating voltage of PV modules must be within the MPPT voltage range (80-520 V) of the inverter. Otherwise, the inverter will prompt a fault. Consider the impact of low temperature on the voltage of the photovoltaic panels, as lower temperatures tend to result in higher voltages.
- PV module
  - » The PV modules within the same MPPT channel are of the same brand. Additionally, the strings within the same channel should have identical quantities, and be aligned and tilted identically.
  - » The positive or negative pole of the PV modules should not be grounded.
  - » The positive cables of the PV modules must be connected with positive DC connectors.

» The negative cables of the PV modules must be connected with negative DC connectors.

Wiring procedures

Step 1: Make sure that the DC switch is off, prepare a 4 mm² PV cable, and find the PV (+) connectors (Part F) and PV (-) connectors (Part D) in the package. Strip approx. 7 mm of the cable insulation.

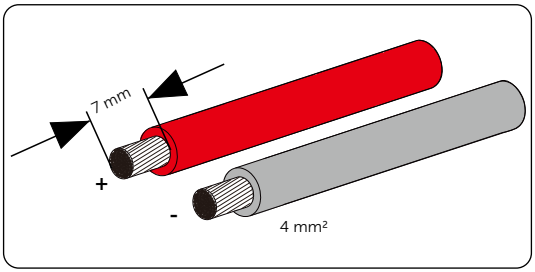


Figure 8-26 Stripping the PV cable

Step 2: Insert the stripped cable into the PV pin contact (Part E and G) . Ensure that the stripped cable and the PV pin contact are of the same polarity. Crimp it with crimping tool for PV terminal.

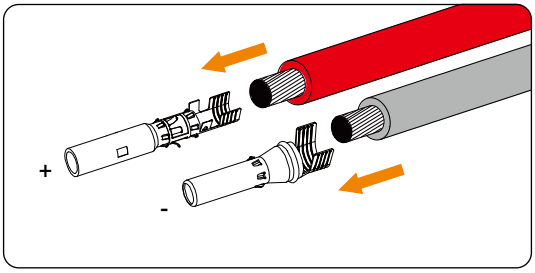


Figure 8-27 Inserting the PV pin contact

Step 3: Make sure the the PV cable and PV pin contact are of the same polarity. Crimp it with crimping tool for PV terminal. Pay attention to the crimping position.

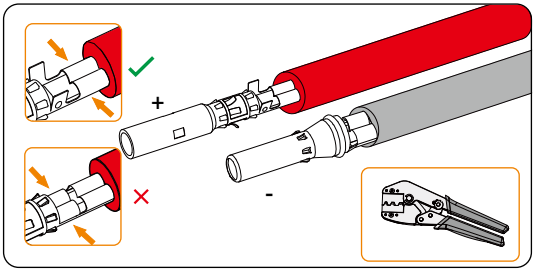


Figure 8-28 Crimping the terminal

Step 4: Thread the PV cable through swivel nut and insert the cable into the PV connector.

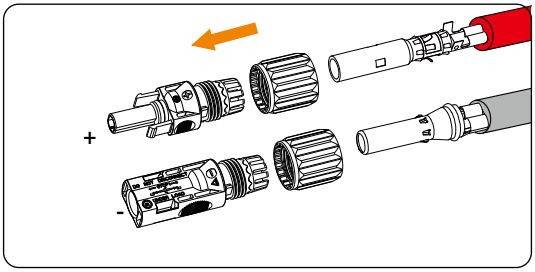


Figure 8-29 Threading the PV cable

Step 5: A "Click" will be heard if it is connected correctly. Gently pull the cable backward to ensure firm connection. Tighten the swivel nut clockwise. Verify that the PV connectors have the correct polarity before connection.

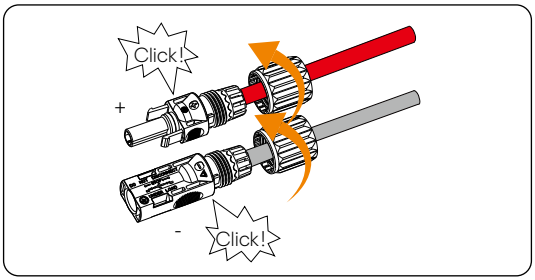


Figure 8-30 Securing the swivel nut

Step 6: Use a voltage measuing device which complies with the local regulation to measure the positive and negative voltage of the assembled PV connectors. Make sure the open circuit voltage does not exceed the input limit of 550 V.

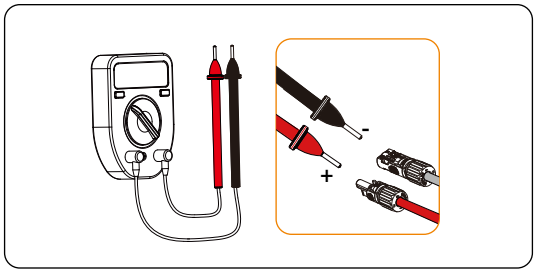


Figure 8-31 Measuring the voltage of PV connectors

NOTICE!

- If the voltage reading is negative, it indicates an incorrect DC input polarity. Please check if the wiring connections on the measuring device are correct or PV connectors are not mistakenly connected.

Step 7: Remove the PV terminal caps and connect the assembled PV connectors to the corresponding terminals until there is an audible "Click". The PV+ on the string side must be connected to the PV+ on the inverter side, and the PV– on the string side must be connected to the PV– on the inverter side.

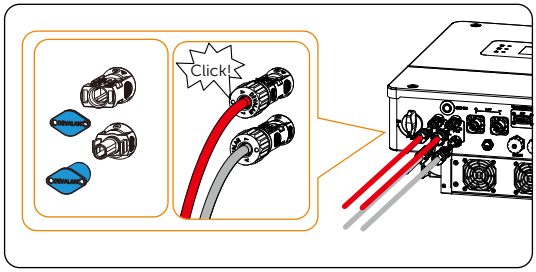


Figure 8-32 Connecting the PV cable

WARNING!

- Seal the unused PV terminals with the dustproof buckle. If all PV terminals are connected, keep the dustproof buckles in a safe place. Reinstall them immediately after removing the connectors from the terminals.

Disassembling the PV dustproof buckles

Disassemble the dustproof buckles with the disassembling tool for PV terminal (part Q).

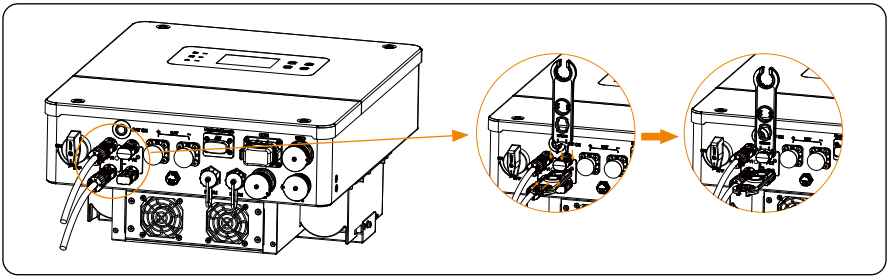


Figure 8-33 Disassembling the PV dustproof buckles

8.5 Battery Power Cable Connection

DANGER!

- Before connecting the cables, make sure the breaker, power button (if any) and DC switch (if any) of battery is OFF.
- Always ensure correct polarity. Never reverse the polarity of the battery cables as this will result in inverter damage.

NOTICE!

- The power cable of battery is in the battery accessory pack. NOT in the scope of inverter's delivery.

Requirments for battery connection

- Battery
  - » The series inverter system can be equipped with low voltage lithium battery and lead acid battery.
- Battery Breaker
  - » Before connecting the battery, a non-polar DC MCB must be installed to ensure safety.
  - » Before maintenance, the inverter need to be safely disconnected.

Model	X1-HYB-3.0-LV-EU	X1-HYB-3.7-LV-EU	X1-HYB-4.0-LV-EU	X1-HYB-5.0-LV-EU	X1-HYB-6.0-LV-EU
Voltage	Nominal voltage of DC breaker should be larger than maximum voltage of battery.				
Current[A]	100			150	

Battery connection diagram

Model	X1-HYB-3.0-LV-EU	X1-HYB-3.7-LV-EU	X1-HYB-4.0-LV-EU	X1-HYB-5.0-LV-EU	X1-HYB-6.0-LV-EU
Recommended battery capacity[kwh]	3~4.5	3.7 ~ 5.55	4.0 ~ 6.0	5.0 ~ 7.5	6.0 ~ 9.0

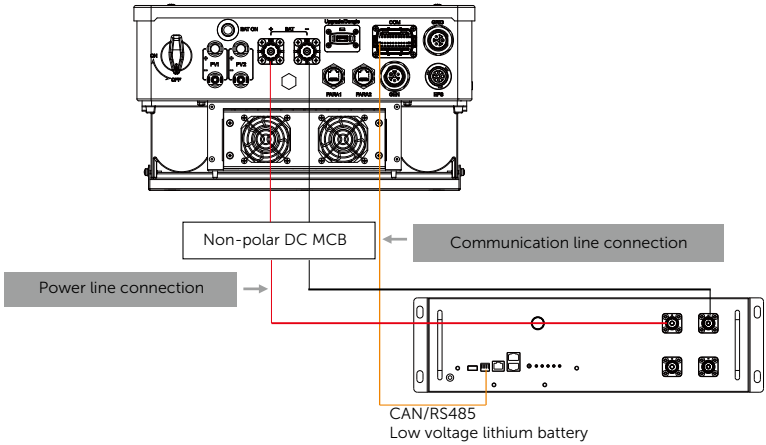


Figure 8-34 Battery connection diagram

DANGER!

- Make sure the breaker, power button (if any) and DC switch (if any) of battery is OFF.
- Always ensure correct polarity. Never reverse the polarity of the battery cables as this will result in inverter damage.

NOTICE!

- Please ensure that the BAT power line and BMS communication line are correctly connected when using the low-voltage batteries LD53. Check *LD53 Installation Manual* for details.

Wiring procedures

Step 1: Prepare a 21-27 mm^2 or 34 mm^2 battery power cable. Strip approx. 16 mm of the cable insulation.

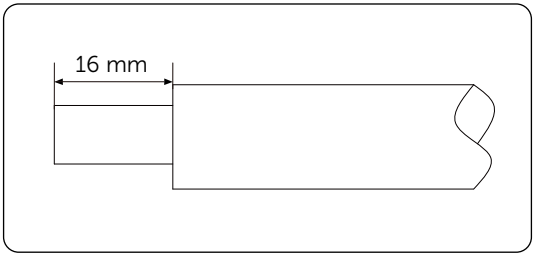


Figure 8-35 Stripping the battery cable

Step 2: Disassemble the battery connector (part S) into three parts.

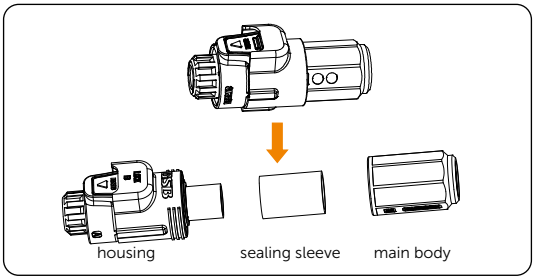


Figure 8-36 Disassemble the battery connector

Step 3: Thread the main body and sealing sleeve into the cable in sequence and insert the cable into the battery connector.

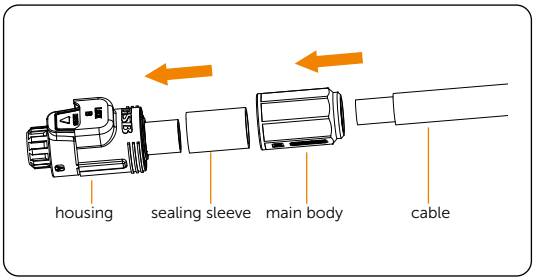


Figure 8-37 Insert the cable

Step 4: Use hydraulic wire crimper to hexagonal crimp terminals, crimp length should be not less than 11mm; for 3kW-4kW inverter, the crimp height should be 8 mm; for 5kW-6kW inverter, the crimp height should be 9 mm.

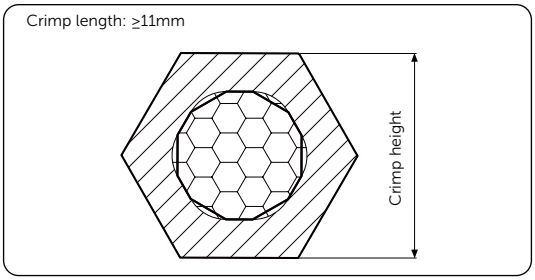


Figure 8-38 Crimp terminals

Step 5: Push the sealing sleeve into place, then tighten the body.

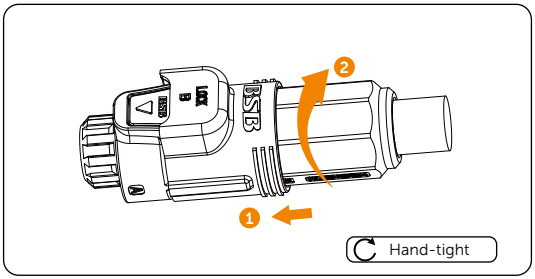


Figure 8-39 Tighten the body

Step 6: Remove the cap from the BAT terminal, and then plug the Battery connector into the BAT terminal, a "Click" will be heard if it is connected correctly.

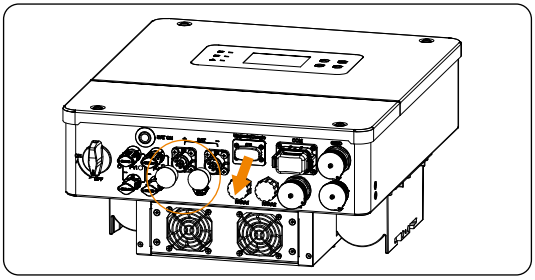


Figure 8-40 Remove the cap from the BAT terminal

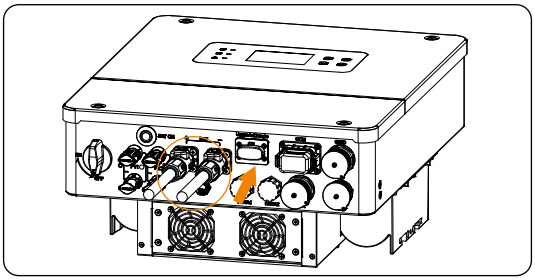


Figure 8-41 Plug the BAT connector into the BAT terminal

WARNING!

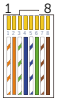
- Keep the terminal caps in a safe place if batteries are connected to the inverter.
- Reinstall the caps immediately after removing the connectors from terminals.

NOTICE!

- If only the battery is connected but the PV, GRID, and GEN are not connected, press and hold the battery power on button until the screen is on to start the inverter.

Battery temperature sensor connection

- Pin definition of Battery temperature sensor side



Pin	1	2	3	4	5	6	7	8
Pin Definition	X	X	BMS_GND	X	X	X	X	TEMP_BAT

- Pin definition of COM port of inverter side

	Pin	Pin assignment
For Battery temperature sensor connection	19	BMS_GND
	30	TEMP_BAT

- Battery temperature sensor connection diagram

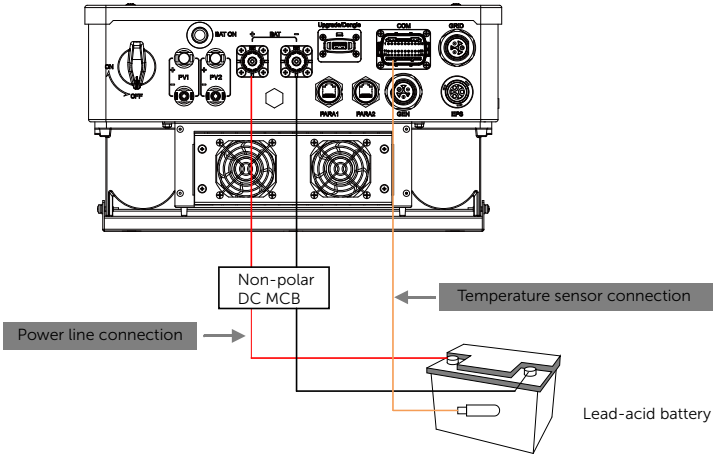


Figure 8-42 Battery temperature sensor connection diagram

- Battery temperature sensor wiring procedures

Step 1: Disassemble the communication connector (part T) into four parts.

Step 2: Use wire stripper to strip 13±1 mm insulation layer of the both sides of the cable.

Step 3: (See Connection Steps 3-5 in the "8.7.2 Wiring Connection") Connect one side of communication cable to the inverter COM port (Pin 19 and Pin 30), connect another side to RJ45 terminal (Pin 3 and Pin 8) and insert it into the RJ45 connector, then insert the battery temperature sensor(Part M) into the RJ45 connector.

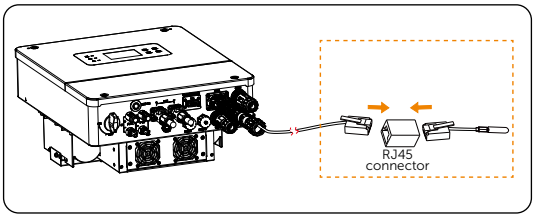


Figure 8-43 Connecting to battery temperature sensor

WARNING!

- Keep the terminal caps in a safe place if batteries are connected to the inverter. Reinstall the caps immediately after removing the connectors from the terminals.

8.6 Parallel Connection

The inverter provides the parallel connection function. One inverter will be set as the **Master** inverter to control the other **Slave** inverters in the system. For details, please refer to "15.1 Application of Parallel Function".

Parallel connection wiring procedure

Step 1: Strip the insulation layer (length: 15mm) at one end of the cable. Crimp a RJ45 terminal at the same end of the cable.(Or you can use the parallel wire (1.5 m)(Part R) in the accessories bag.)

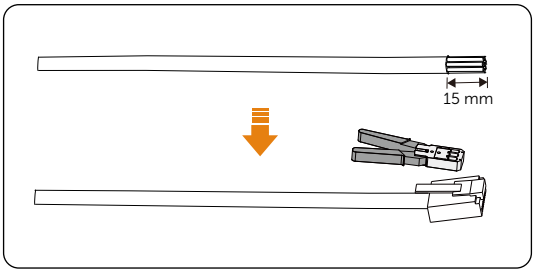


Figure 8-44 Prepare the cable

Step 2: Remove the sealing plugs from the parallel terminals.

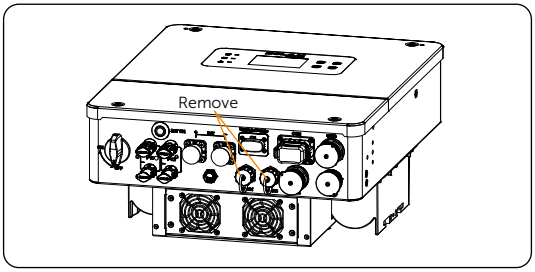


Figure 8-45 Removing the plugs

Step 3: Insert the parallel wire (Part R) to parallel terminal

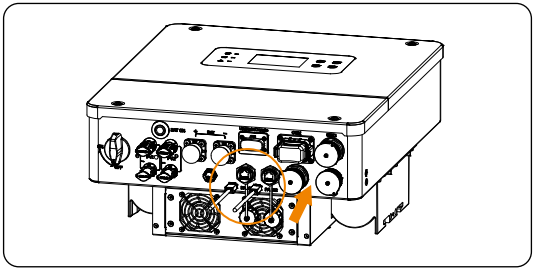


Figure 8-46 Insert the parallel wire

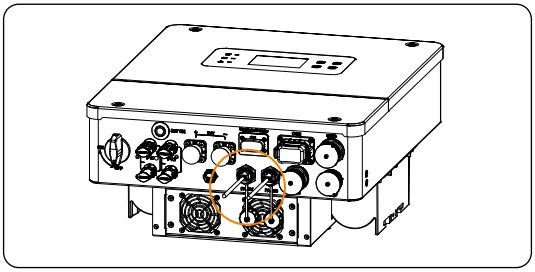


Figure 8-47 Connect the parallel wire

8.7 COM Communication Connection

8.7.1 Pin Assignment of COM Terminal

The COM terminal is used for battery communication via BMS terminal, external communication via RS485, DI, Meter, CT, and DO terminal.

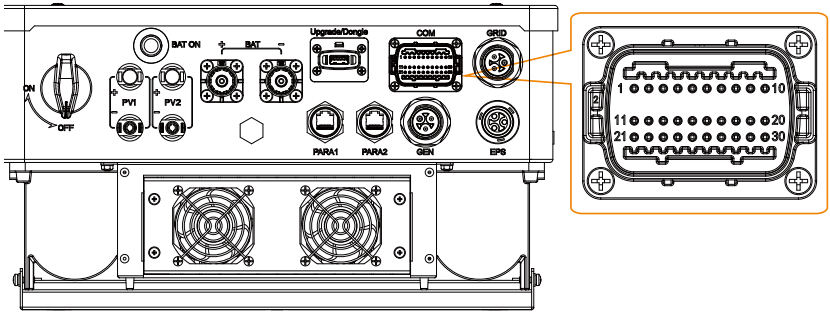


Table 8-5 Pin Assignment of COM Terminal

Port	Pin	Pin assignment
For RS485 and DI connection	5	REMOTE_485A
	6	REMOTE_485B
	15	DI-1
	16	DI-2
	26	GND_COM
For Meter/CT connection	7	METER_485A
	8	METER_485B
	9	CT1_1
	10	CT1_2
For DO connection	11	DO-1
	21	DO-2
For BMS connection	17	BMS_485B
	18	BMS_485A
	19	BMS_GND
	20	BMS_WAKEUP
	27	BMS_CANH
	28	BMS_CANL
	30	TEMP_BAT

8.7.2 Wiring Connection

NOTICE!

- The following wiring steps can be used when the inverter is connected to RS485, Meter/CT, battery temperature sensor and BMS.

Step 1: Disassemble the communication connector (part T) into the following parts.

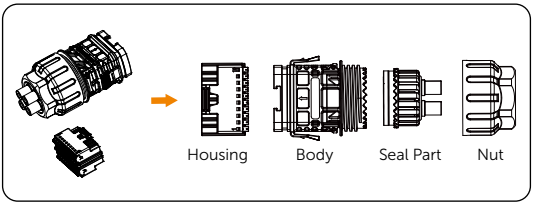


Figure 8-48 Disassembling the connector

Step 2: Select 0.5-0.75 mm² conductor and use wire stripper to strip 13±1 mm insulation layer of the cable end. Attach pins to wires.

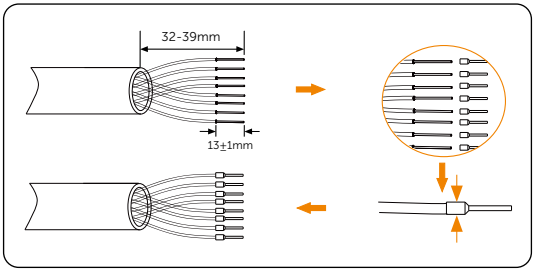


Figure 8-49 Strip the cable

Step 3: Set the nut, claw, seal body, seal ring and body on the communication cable in turn.

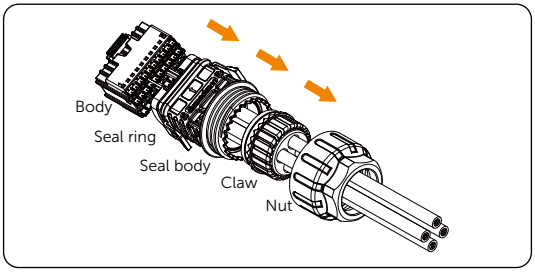


Figure 8-50 Set parts on the cable

Step 4: Insert the tube type terminal into the housing according to the label on it. Push the terminal-inserted housing into the body. There will be a slight sound of "Click" if it is correctly connected.

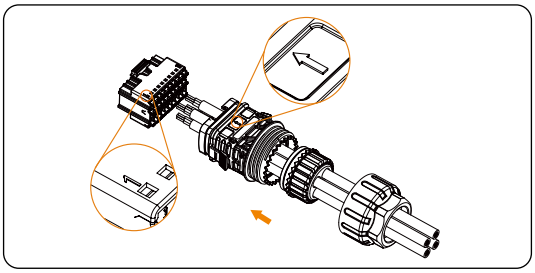


Figure 8-51 Insert the terminal into the body

Step 5: Push the seal body into seal ring, then push the claw, clockwise tighten the nut. Keep the buttons on both sides pressed and connect it to the COM port of the inverter. There will be a slight sound of "Click" if it is correctly connected.

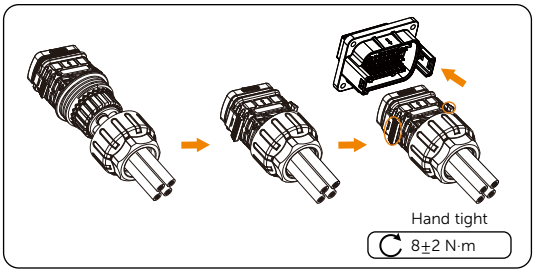


Figure 8-52 Connect to the COM port

8.7.3 BMS Connection

Through Communication terminal, the inverter can be connected to two independent batteries of different capacities. The model of each battery string must be the same.

Pin definition of BMS connection

Port	Pin assignment	Pin of COM port of inverter side	Pin of BMS side
For BMS connection	BMS_485B	17	1
	BMS_485A	18	2
	BMS_GND	19	3
	BMS_WAKEUP	20	7
	BMS_CANH	27	4
	BMS_CANL	28	5
	TEMP_BAT	30	X
	X	X	6

BMS connection diagrm

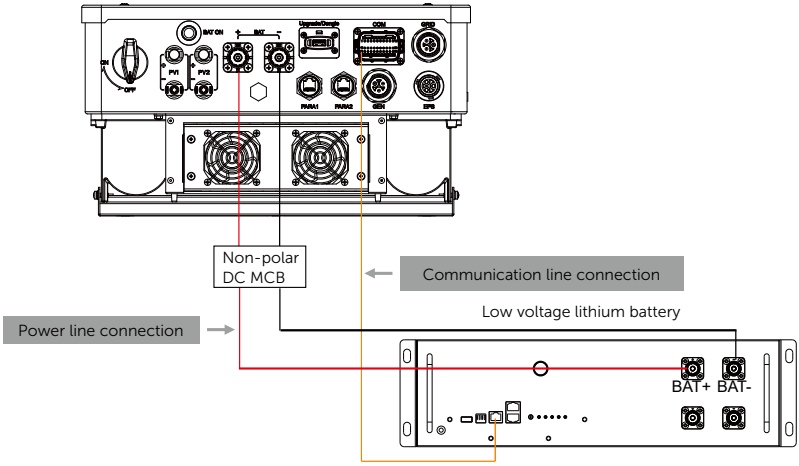


Figure 8-53 Lithium battery connection diagrm

NOTICE!

- The communication cable between battery and inverter can not exceed 3 m.

8.7.4 Meter/CT Connection

The inverter should work with an electric meter or current transformer (CT for short) to monitor household electricity usage. The electricity meter or CT can transmit the relevant electricity data to the inverter or platform.

⚠ CAUTION!

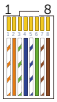
- The inverter is set to disable by default. In the enabled state, if the meter is not connected to the inverter, the inverter will shut down and indicate a fault. Smart meters must be authorized by our company. Unauthorized meter may be incompatible with the inverter, thereby resulting in inverter damage and working mode malfunction. SolaX will not be responsible for the impact caused by the use of other appliances.

NOTICE!

- Do not place the CT on the N wire or ground wire.
- Do not put CT on the N wire and L wire at the same time.
- Do not place the CT on the side where the arrow points to the inverter.
- Do not place the CT on non-insulated wires.
- The cable length between CT and inverter should not exceed 100 meters.
- It is recommended to wrap the CT clip around in circles with insulating tape.

Meter/CT connection steps

- Pin definition of CT side



Pin	1	2	3	4	5	6	7	8
Pin Definition	CT1-1	X	X	X	X	X	X	CT1-2

- Pin definition of COM port of inverter side

	Pin	Pin assignment
For Meter connection	7	METER_485A
	8	METER_485B
For CT connection	9	CT1_1
	10	CT1_2

- Wiring procedures

Step 1: Disassemble the communication connector into four parts.

Step 2: Use wire stripper to strip 13±1 mm insulation layer of the both sides of the cable.

Step 3: See Connection Steps 3-5 in the "8.7.2 Wiring Connection"
For Meter connection, connect one side of communication cable to the COM port (Pin 7 and Pin 8), connect the other side to the meter.
For CT connection, Connect one side of communication cable to the inverter COM port (Pin 9 and Pin 10), connect another side to RJ45 terminal (Pin 1 and Pin 8) and insert it into the RJ45 connector, then insert the CT(Part N) into the RJ45 connector.

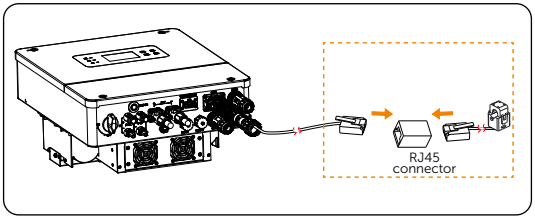


Figure 8-54 Connecting to CT

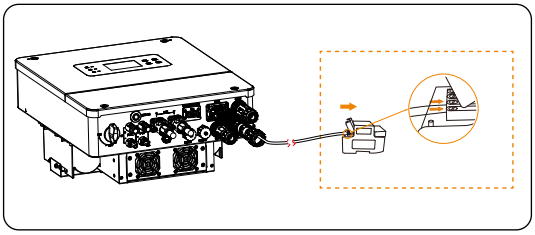


Figure 8-55 Connecting to Meter

Meter/CT connection diagram

NOTICE!

- The following diagrams take SolaX authorized DDSU666 meter connection for example.
- If you have other power generation equipment (such as an inverter) at home and wants to monitor both equipment, our inverter provides Meter 2 communication function to monitor the power generation equipment. For more information, please contact us.
- Please make PE connection for Meter if the meter has ground terminal.

- Meter connection diagram

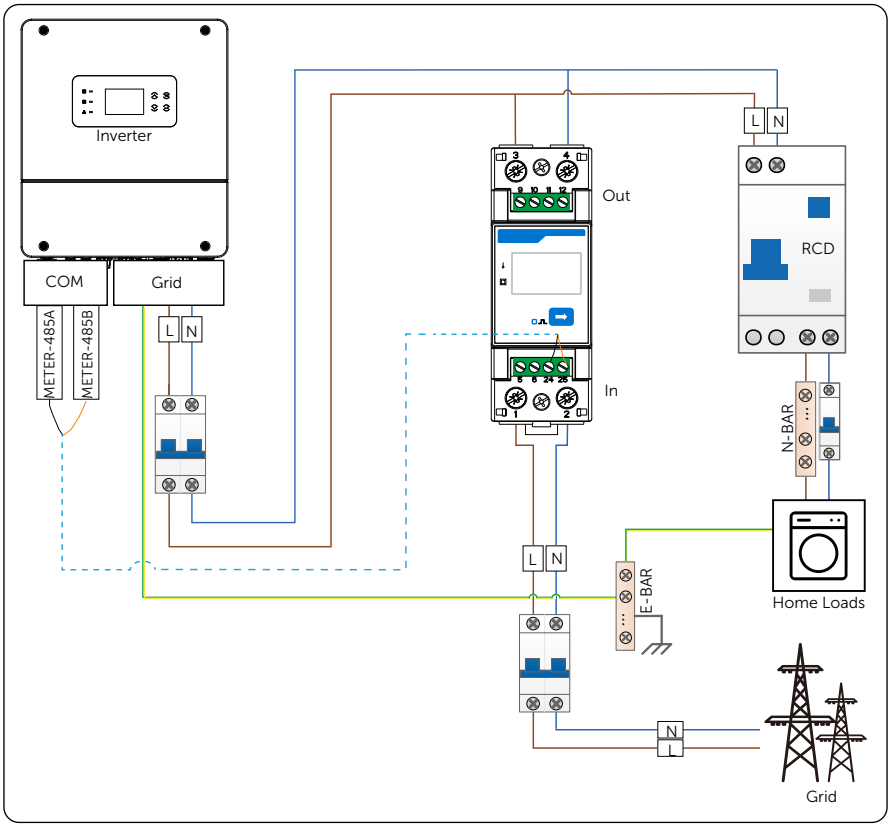


Figure 8-56 Meter connection diagram

- CT connection diagram

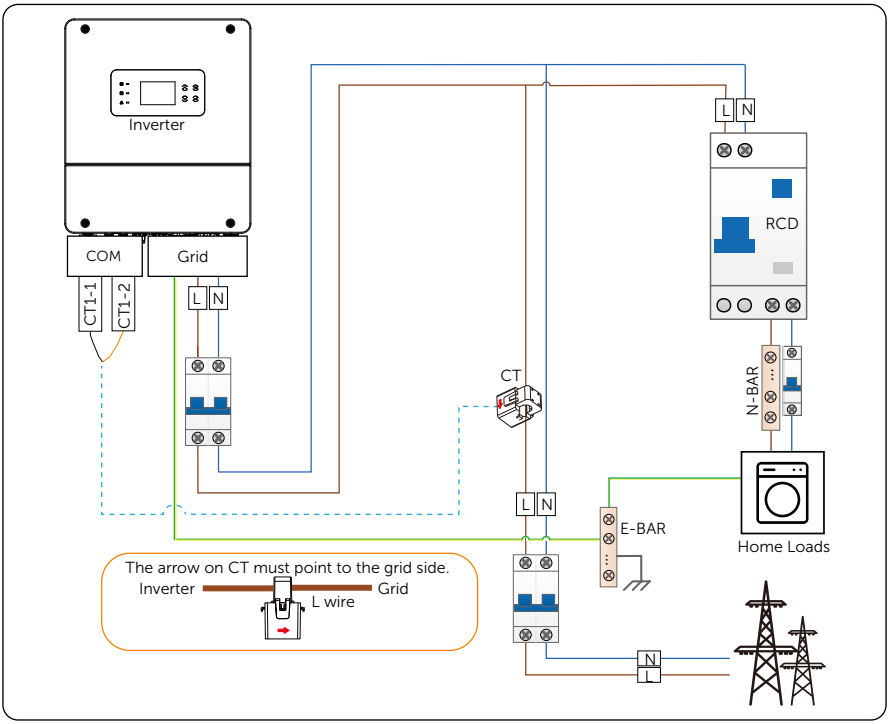


Figure 8-57 CT connection diagram

8.8 Monitoring Connection

The inverter provides a Upgrade/Dongle terminal, which can transmit data of the inverter to the monitoring website via WiFi+LAN dongle (Optional). The WiFi+LAN dongle is equipped with two kinds of communication modes (Wi-Fi mode or LAN mode). Users can choose based on actual needs. (If needed, purchase products from us.)

Monitoring connection diagram

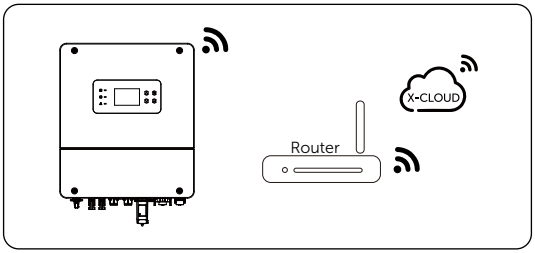


Figure 8-58 Wi-Fi mode connection diagram

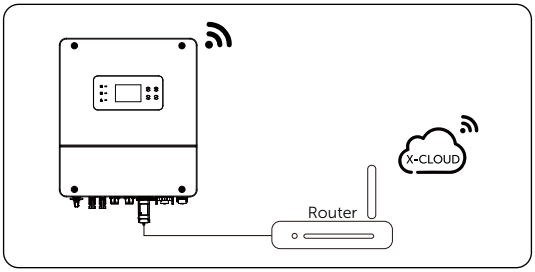


Figure 8-59 LAN mode connection diagram

Monitoring wiring procedure

Wi-Fi mode:

a. Assemble the dongle.

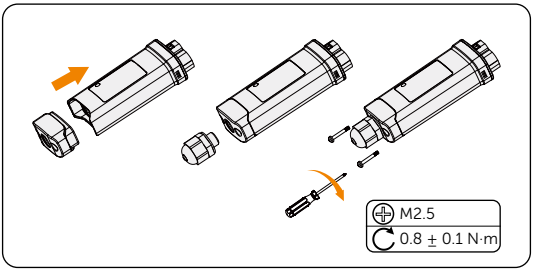


Figure 8-60 Assembling the dongle

b. Plug the dongle to the inverter.

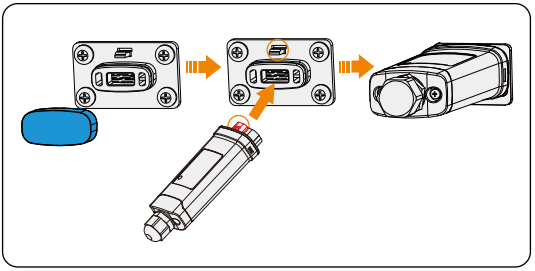


Figure 8-61 Dongle connection procedure

CAUTION!

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

NOTICE!

- The distance between the router and the inverter must be no more than 100 meters. If there are walls in between, the distance must be no more than 20 meters.
- For locations where Wi-Fi signals are weak, install a Wi-Fi signal booster.

NOTICE!

- For details on Wi-Fi configuration, see *Pocket WiFi + LAN Installation Manual*. You can configure Wi-Fi only after the inverter is powered on.

LAN mode:

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

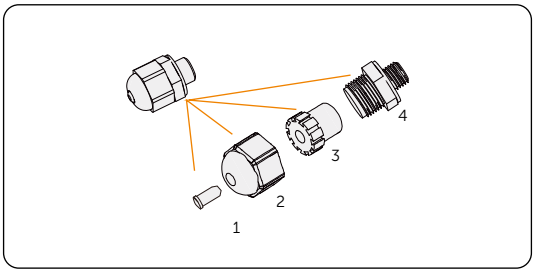


Figure 8-62 Disassembling the waterproof connector

b. Assemble the dongle.

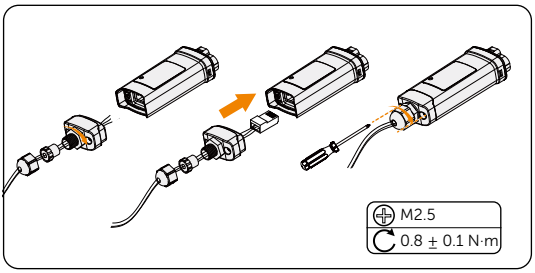


Figure 8-63 Assembling the dongle

c. Plug the dongle to the inverter.

9 System Commissioning

9.1 Checking before Power-on

No.	Item	Checking details
1	Installation	The inverter is installed correctly and securely. The battery is installed correctly and securely. Other device (if any) is installed correctly and securely.
2	Wiring	All DC, AC cables and communication cables are connected correctly and securely; The meter/CT is connected correctly and securely; The ground cable is connected correctly and securely; Photovoltaic panels are connected correctly and securely;
3	Breaker	All the DC breakers and AC breakers are OFF;
4	Connector	The external AC and DC connectors are connected; The connectors on the Grid, GEN and EPS terminal are connected correctly and securely.
5	Unused terminal	Unused terminals and ports are locked by waterproof caps. Seal the unused PV terminals with the dustproof buckle.
6	Screw	All the screws are tightened.

9.2 Powering on the System

Step 1: Turn on the grid port load and EPS port load breaker.

Step 2: Turn on the AC breaker between the inverter and wait for the inverter power on.

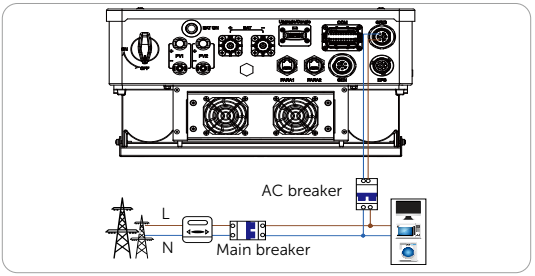


Figure 9-1 Turning on AC breaker

Step 3: Turn on the DC switch and check the LCD screen.

» If the LCD screen is not on, turn off the DC switch and check whether the PV polarity is connected correctly.

» If the error of any channel of PV is displayed on LCD, turn off the DC switch and check the corresponding channel of PV connection.

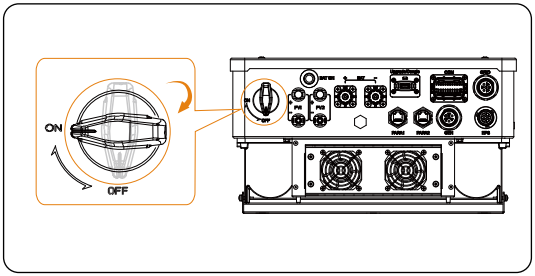


Figure 9-2 Turning on DC switch

Step 4: Switch on the battery or the breaker, button, DC switch of the battery. Check Battery Installation Manual for details.

Step 5: Press the button on the inverter. Please note that pressing this button is necessary only when the battery is connected; it is not necessary to press the button when the PV or grid is connected.

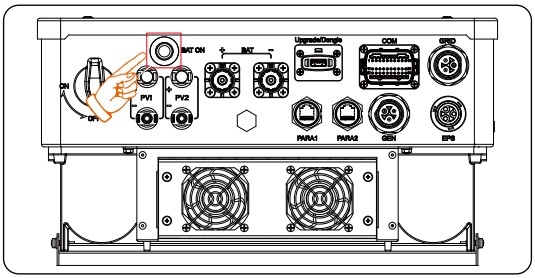


Figure 9-3 Pressing the button

Step 6: Check the LCD screen to verify if the inverter can start normally.

WARNING!

- Only when all the installation work of the inverter has been completed can you switch on the PV/battery/Grid/GEN/EPS terminal.

10 Operation on LCD

10.1 Introduction of Control Panel

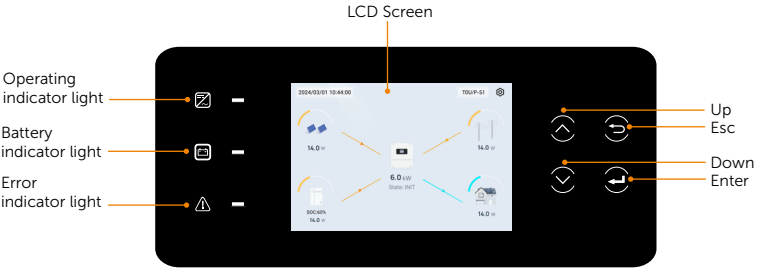


Figure 10-1 Control Panel

- In a normal state, the **PV**, **Inverter**, **Load**, **Grid** and **Battery** information will be displayed. You can touch the screen or press the keys to check information.
- In an error state, the error message will be displayed, please refer to "12.2 Troubleshooting" for corresponding solutions.

Table 10-1 Definition of indicators

LED indicator	Status		Definition
Operating		Solid green	The inverter is in grid-connected operation state or off-grid operation state.
		Green blinking	The inverter is in the process of grid connection or off-grid.
		Light off	The inverter is in a fault or manual shutdown state.
Battery		Solid blue	The battery is online and the voltage is normal.
		Light off	Low battery voltage or no battery.
Error		Solid red	The inverter is in fault status.
		Red blinking	The inverter has alarm information.
		Light off	There are no faults and alarms in the inverter.

NOTICE!

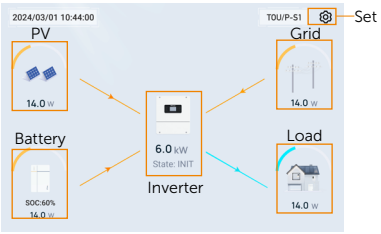
- While upgrading, the green, blue and red indicator lights will flash in turns, indicating that the upgrade is in progress.

Table 10-2 Definition of keys

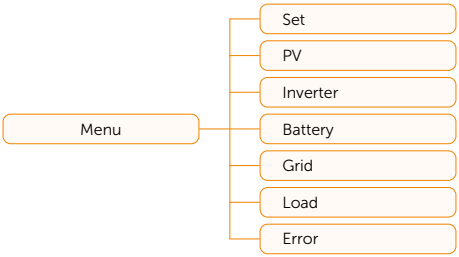
Key	Definition
ESC key	Exit from the current interface or function
Up key	Move the cursor to the upper part or increase the value
Down key	Move the cursor to the lower part or decrease the value
Enter key	Confirm the selection

10.2 Introduction of Menu Interface

The default menu is shown as below. In this interface, you can power on/off the inverter, and check the specific information of **PV**, **Grid**, **Battery** and **Load** by tapping the corresponding icons.

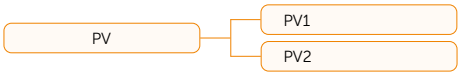


The menu is the default interface, the inverter will automatically return to this interface when the system started up successfully or not operated for a period of time. The information of the interface is as below.

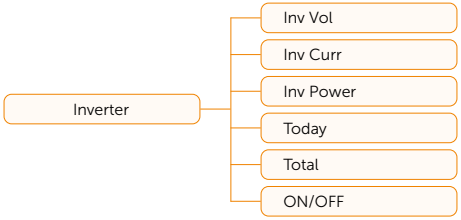


There are seven submenus in the menu that can be selected for relevant setting operations.

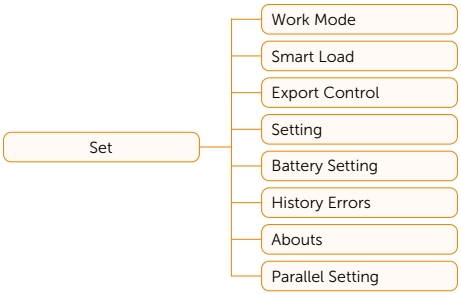
- **PV**: Display the real-time value of PV. Including PV1, PV2.

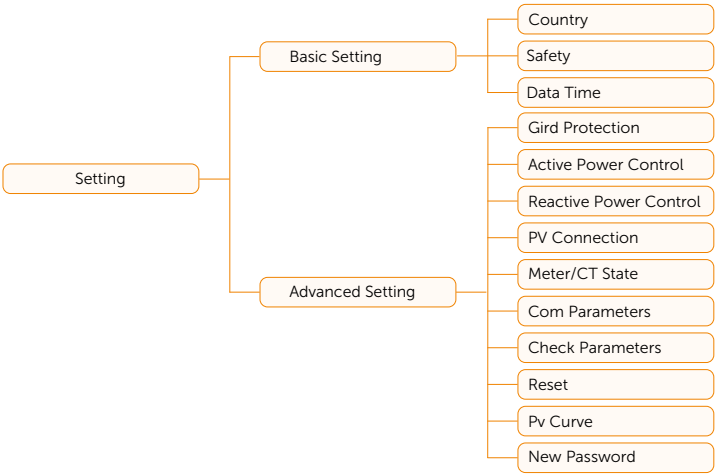


- **Inverter:** Display the real-time value of inverter. Including voltage, current, power, today and total, History Error.
  ON/OFF: Switch on and off the inverter.

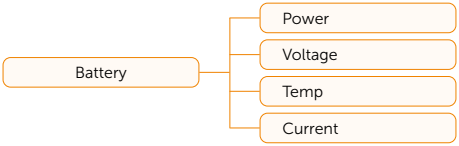


- **Set:** Set the parameters of the inverter, including Work Mode, Smart Load, Export Control, Setting, Battery Setting, History Errors, Abouts and Parallel Setting.

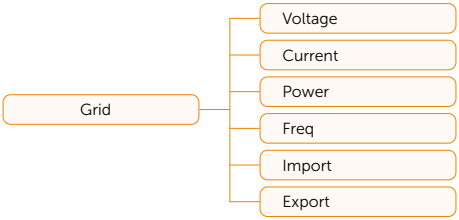




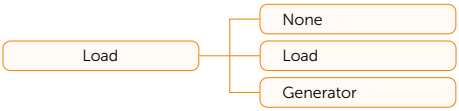
- **Battery**: Display the real-time value of Battery. Including Power, Voltage, Temperature and Current.



- **Grid**: Display the voltage, current, power, frequency, import and export value.



- **Load**: Display three options: None, Load, and Generator.

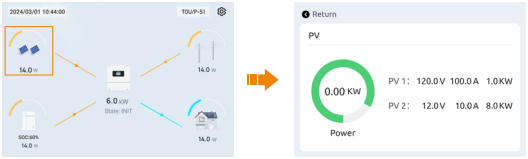


- **Error**: Display the error state of the inverter.

10.2.1 PV

Setting path: **Menu**>**PV**

Here you can see information of **PV1**, **PV2**. Information contains input voltage, current and power of each PV.



10.2.2 Inverter

Selecting path: **Menu**>**Inverter**

Here you can check the real-time value of inverter. Including Voltage, Current, Power, etc.

Today means the power generated within the day.

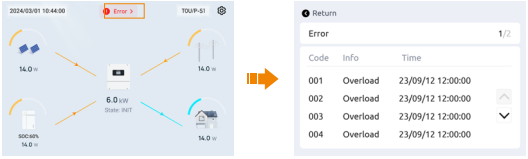
Total means the power generated until now.

Select **ON** or not to switch on and off the inverter. When you select **ON,** the inverter starts running.

10.2.3 Error

Selecting path: **Menu**>**Error**

Here users can view the current errors. There are a total of two pages with a total of 8 records.



10.3 Set

Set includes **Work Mode**, **Smart Load**, **Export Control**, **Setting**, **Battery Setting**, **History Errors**, **Abouts** and **Parallel Setting**;

Setting includes **Basic Settings** and **Advanced Settings**.

10.3.1 Work Mode Setting

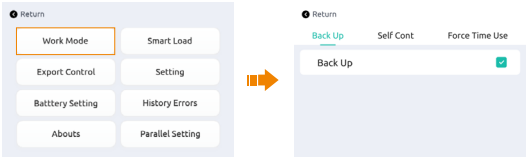
Here you can only select the working mode. Four working modes are available for you to choose in on-grid status, i.e **Back up** mode, **Self Cont** mode and **Force Time Use** mode. You can choose the working modes according to your lifestyle and environment.

Selecting path: **Menu>Set>Work Mode**

Please refer to "2.7 Working Mode" for working logic of these modes.

Setting Backup Mode

When "**Back Up**" mode is selected, the inverter will run in the Backup Mode.



Setting Self Consumption Mode

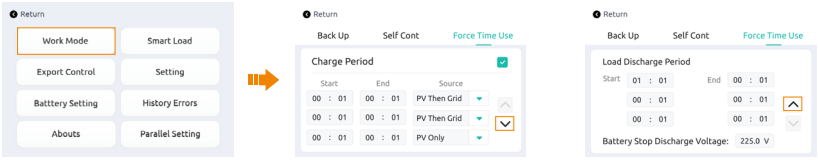
When "**Self Cont**" mode is selected, the inverter will run in the Self Consumption Mode.

- **Return To Utility Voltage**: Display the Return to Utility Voltage(V), the range is 42 V-50 V.
- **Return To Battery Voltage**: Display the Return to Battery Voltage(V), the range is 48 V-59 V.

Setting Force Time Use Mode

When "**Force Time Use**" mode is selected, there will be two interface pages for setting the charge period and load discharge period. Users can switch between the two pages using the up and down buttons:

- **Charge Period**:
  - » Charge Start Time P1/P2/P3, Charge End Time P1/P2/P2, P1/P2/P3 Charge Source (including **Only PV**, **Only Grid**, **PV Then Grid** and **PV+Grid**)
- **Load Discharge Period**:
  - » Load Start Time P1/P2/P3, Load End Time P1/P2/P3
  - » **Battery Stop Discharge Voltage**(V): the default value is 225 V (When inverter is connected with lead-acid or user-defined batteries).
  - » **Battery Stop Discharge SOC**(%): the default value is 225 V (When inverter is connected with lithium batteries).



10.3.2 Smart Load

Setting path: **Menu>Set>Smart Load**

The generator port has three options:

- **None**: No device is connected to the generator port;
- **Load**: The generator port is connected to a load;

  There are two types of Battery: Lead acid (Voltage type) and Lithium (SOC type).
  - » **Smart Load Battery Off Voltage/SOC**: When the voltage/SOC is lower than the setted value, the battery will no longer supply power to the smart load;
  - » **Smart Load Battery On Voltage/SOC**: When the voltage/SOC is higher than the setted value, the battery will supply power to the smart load again.

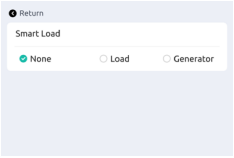
    Smart Load Battery Off Voltage: Default:48V, range:40-52V

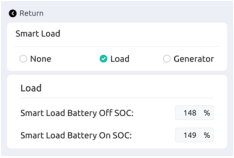
    Smart Load Battery On Voltage: Default:52V, range:41-53V

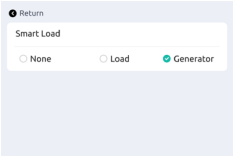
    Smart Load Battery Off SOC: Default:30%, range:15-80%

    Smart Load Battery On SOC: Default:50%, range:30-85%

- **Generator**: The generator port is connected to the generator.





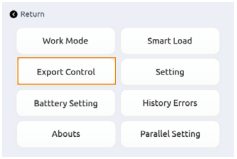


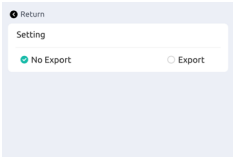
10.3.3 Export Control

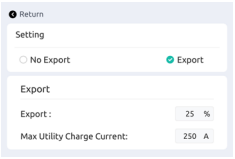
Setting path: **Menu**>**Set**>**Export Control**

Here users can choose between feeding excess PV power into the grid or limiting it.

- **No Export:** disallows feeding power into the grid.
- **Export:** allows feeding power into the grid and enables to set the percentage of power to be fed in as needed. Range:0~100%
  - » **Max Utility Charge Current**: setting the current that can be taken from the power grid when the battery is charged. Default: 250A; Range: 0~250A.







10.3.4 Battery Setting

Setting path: **Menu**>**Set**>**Battery Setting**

- **Battery Type:** you can select the following battery types: Lead acid; (Lithium Type) SolaX-LV, Cyclone, Volta; and (User defined) User.
  - » Lead acid battery: Here you can tap Lead Acid to choose Lead acid battery.

    Max Charge Current: Default: 250A, range:0~250A

    Max Discharge Current: Default: 250A, range:0~250A

    Min Discharge Voltage: Default: 42V, range:40~47V
  - » Lithium battery: Here you can choose the specific lithium battery from Solax-LV, Cyclone, Volta.

    Max Charge Current: Default: 250A, range:0~250A

    Max Discharge Current: Default: 250A, range:0~250A

    OnGrid Min Discharge SOC: Default: 20A, range:10~70A

    OffGrid Min Discharge SOC: Default: 10A, range:5~30A

OffGrid Recover Discharge SOC: Default: 30A, range:0~100A

» User: Here you can choose other batteries according to your actual needs.

Max Charge Voltage: Default: 58V, range:49~59V

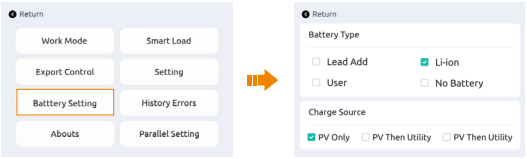
Float Charge Voltage: Default: 54.4V, range:49~59V

Min Discharge Voltage: Default: 42V, range:40~47V

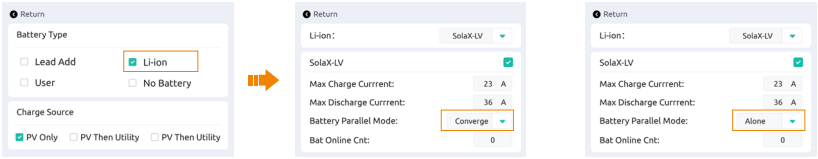
Max Charge Current: Default: 250A, range:0~250A

Max Discharge Current: Default: 250A, range:0~250A

- **Charge Source:** For charging the battery, there are three options to choose from: PV Only, PV Then Utility and PV+Utility.
  - » **PV Only:** allows only PV charging.
  - » **PV Then Utility:** prioritizes PV charging and supplements with grid charging when needed.
  - » **PV+Utility:** allows for both PV and grid charging.



- **Capacity Expansion & Power Expansion:** Please note that wiring needs to be consistent with the setup.
  - » For expanding the capacity of battery, you should choose **Converge** in the **Battery Parallel Mode**.
  - » For expanding the power of battery, you should choose **Alone** in the **Battery Parallel Mode**.



10.3.5 Parallel Setting

The series inverters support up to 10 units in the parallel system.

- **Master/Slaver Settings**: Here you can set the state of inverter to **Single** or **Parallel**. When parallel, the state of inverter can be set to Master/Slaver1~9/Phase one~three.

- **Parallel Numbers**: Here you can set parallel numbers to 1~10, the series inverters support up to 10 units in the parallel system.

10.3.6 Basic Setting

Setting path: **Menu>Set>Setting>Basic**

Setting Country, Safety and Date Time

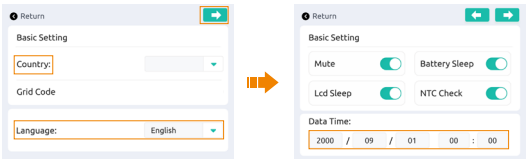
Country: You can choose Country;

Language: you can choose language;

Grid Code: You can choose Grid Code;

Date Time: you can set the current date and time of the installation site.

The display format is "2024-05-01 00:00", in which the first four numbers represent the year (e.g. 2000~2099); the fifth and sixth numbers represent the month (e.g. 01~12); the seventh and the eighth numbers represent the date (e.g. 01~31). The remaining numbers represent the time.



NOTICE!

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

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

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

Table 10-3 Grid code

Grid code	Country
CEI0-21	Italy
50549-2	Europe
VDE4105	Germany

Only after the grid code setting is completed, some designated parameters in the inverter system will take effect according to the corresponding safety regulations.

Table 10-4 Region settings

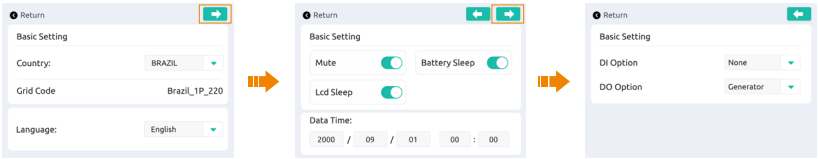
Region	Italy
Standard Code Name	CEI0-21
OV-G-V1	253 V
OV-GV1-T	600 s
OV-G-V2	264.5 V
OV-GV3-T	0.2 s
UN-G-V1	195.5 V
UN-GV1-T	1.5 s
UN-G-V2	34.5 V
UN-GV2-T	0.2 s
UN-G-V3	34.5 Hz
UN-GV3-T	0.2 s
OV-G-F1	50.2 Hz
OV-GF1-T	0.1 s
OV-G-F2	51.5 Hz
OV-GF2-T	0.1 s
OV-G-F3	52 Hz
OV-GF3-T	0.1 s
UN-G-F1	49.8 s
UN-GF1-T	0.1 s
UN-G-F2	47.5 s
UN-GF2-T	0.1 s

Region	Italy
Standard Code Name	CEI0-21
UN-G-F3	47 Hz
UN-GF3-T	0.1 s
Startup-T	60 s
Restore-T	60 s
Recover-VH	235 V
Recover-VL	195.5 V
Recover-FH	50.1 Hz
Recover-FL	49.8 Hz
Start-VH	253 V
Start-VL	195.5 V
Start-FH	50.1 Hz
Start-FL	49.8 Hz

Setting Other Options

Users can switch between the two pages using the arrow buttons.

- **Mute**: When the inverter is running off-grid, you can choose whether the buzzer is turned on or not.
- **Battery Sleep**: you can choose whether the battery is sleep or not.
- **Lcd Sleep**: you can choose whether the LCD is sleep or not.
- **DI Option**: you can choose whether the DI function is turned on or not.
- **DO Option**: you can choose whether the DO function is turned on or not.



10.3.7 Advanced Setting

Setting path: **Menu>Set>Setting>Advanced**

NOTICE!

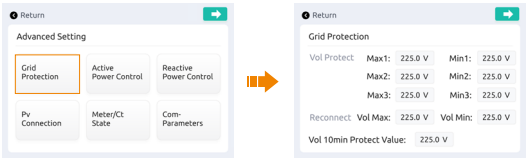
The default password for **Advanced Setting** is "2 0 1 4".

NOTICE!

- All the adjustable parameters including Grid Protection, Active Power Control, Com-Parameters etc. can be modified under the permissions of installer password. Unauthorized use of the installer password by unauthorized persons can lead to incorrect parameters being inputted, resulting in power generation loss or violation of local regulation. The default password should be changed for the consideration of account security, and never open the password to unauthorzied person.

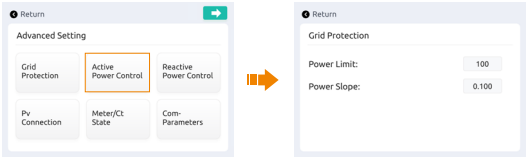
Setting Grid Protection

When the Safety is selected, the parameters of **Grid Protection** corresponding to the selected grid code will be automatically matched. The default value is the specified value under the current safety regulations. The contents will be displayed according to the requirements of local laws and regulations.
You can also set the parameters according to your actual needs within the range of the specific Safety.



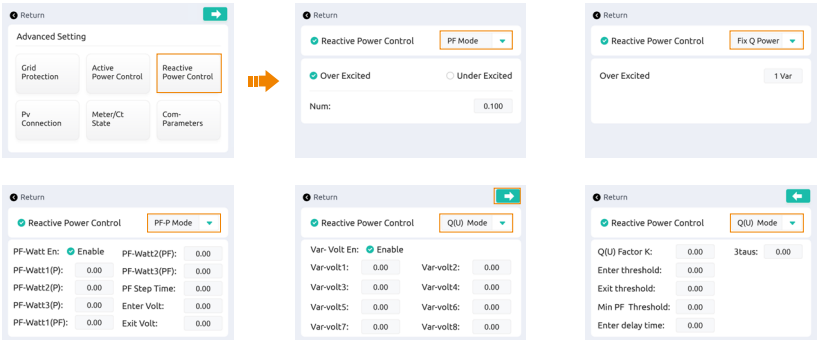
Setting Active Power Control

- **Power Limit** (%): Output power limitation; Range:0~110.
- **Power Slope** (% Pmax/Min): Rising slope of active power; Range:-1.0~1.0.



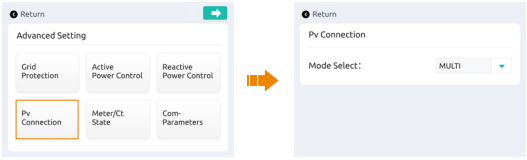
Setting Reactive Power Control

Here you can enable or disable the reactive power control. After enabling, there are four modes can be selected: **PF Mode**, **Fix Q Power**, **PF_P Mode** and **QU Mode**.



Setting PV Connection

Here you can set PV connection mode. There are two modes can be selected: **MULTI** and **COMM**.



Setting Meter/CT State

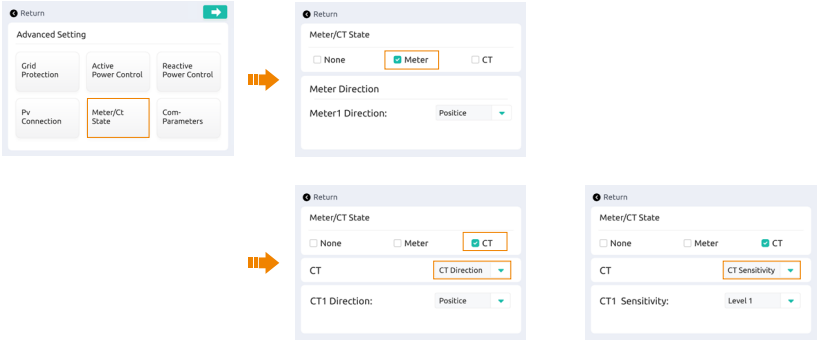
Users can set Meter Direction of Meter:

- Meter Direction: Here you can set the direction of Meter to Positive or Negative connection according to the actual situation.

Users can set CT Direction and CT Sensitivity of CT:

- **CT Direction**:Here you can set the direction of CT to Positive or Negative connection according to the actual situation.

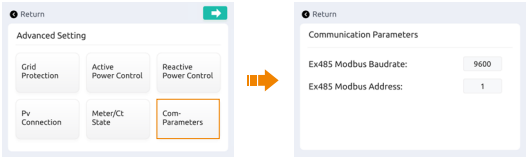
- **CT Sensitivity**: Here you can set the sensitivity level of CT. There are three levels to choose from: level1/2/3. The larger the number, the higher the sensitivity.



Setting Com-Parameters

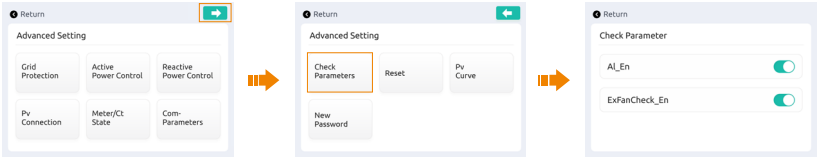
Users can set **Ex485 Modbus Baudrate** and **Ex485 Modbus Address**.

- **Ex485 Modbus Baudrate**: can be set as 4800, 9600, 19200;
- **Ex485 Modbus Address:** Default: 1.



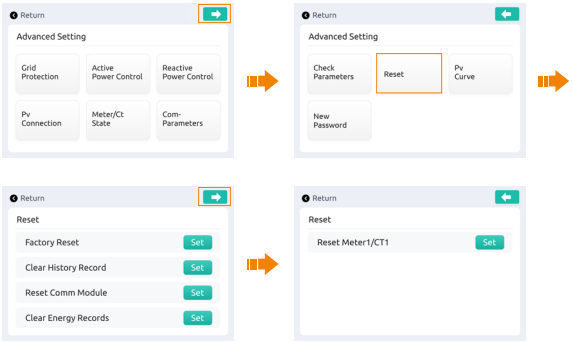
Setting Check Parameters

- **AI_En**: choose it to enable the active islanding function;
- **ExFanCheck_En**: choose it to enable the external fan failure detection function;



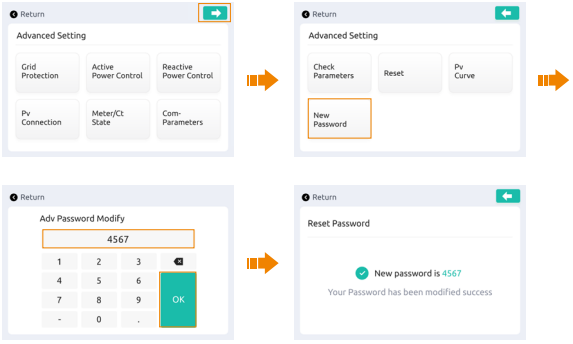
Reset Setting

Here you can reset value of Comm Module and Meter1/CT1; Clear history record and energy records; and restore to the factory set.



Setting New Password

Enter your New Password to reset the password.



11 Operation on SolaX App and Web

11.1 Introduction of SolaXCloud

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

11.2 Operation Guide on SolaXCloud App

11.2.1 Downloading and Installing App

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

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

Figure 11-1 QR code

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

11.2.2 Operation on the SolaXCloud App

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

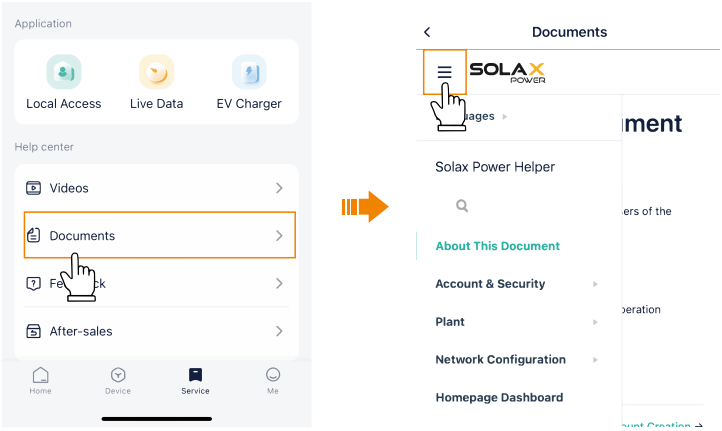


Figure 11-2 Online help on SolaXCloud

NOTICE!

- The screen shots in this chapter correspond to the SolaXCloud App V6.2.0, which might change with version update and should be subject to the actual situations.

11.3 Operations on SolaXCloud Web Page

Open a browser and enter www.solaxcloud.com to complete registration, login, add site and other related operations according to the guide.

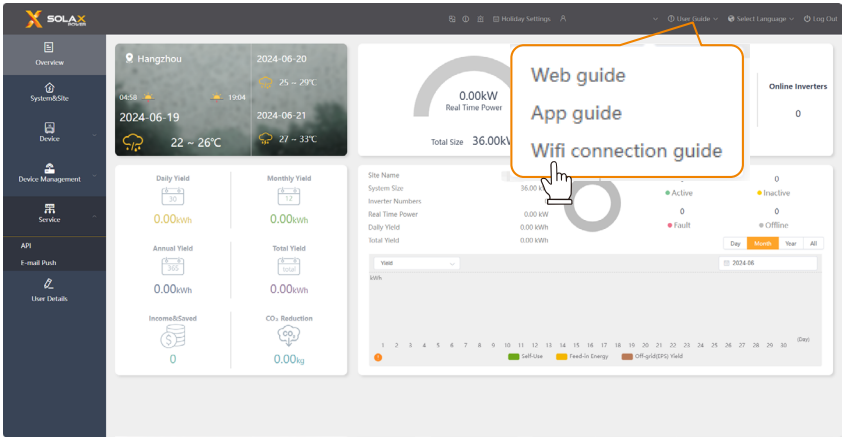


Figure 11-3 Guide on web page

12 Troubleshooting and Maintenance

12.1 Power off

a. Turn off the system on LCD screen.

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

c. Set the DC switch to **OFF**.

d. Switch off the battery or the breaker, button, DC switch of the battery (see documentation of the battery manufacturer).

⚠ WARNING!

- After the inverter is powered off, there may still be residual electricity and heat which may cause electric shocks and body burns. Please wear personal protective equipment (PPE) and start maintaining the inverter at least five minutes after power off.

12.2 Troubleshooting

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

Table 12-1 Troubleshooting list

Error Type	Fault	Diagnosis and Solutions
INSTALL	INSTALL	Insulation impedance detection failed. • Check whether the wire insulation is intact.
INSTALL	NO_PWR_METER	Electricity meter has no power. • Check the status of the meter.
INSTALL	REMOTE_TURN_OFF	Remote shutdown • Restart the inverter.
INSTALL	FREQ_CFG_UNMATCH	Frequency configuration mismatch • Check whether the frequency is within the correct range.
INSTALL	ARC_FAIL	Arc fault • Wait for a while to see if it returns to normal.

Error Type	Fault	Diagnosis and Solutions
INSTALL	EPS_OVER LOAD_105PER	1.05 times overload • Turn off high-power load.
INSTALL	EPS_OVER LOAD_125PER	1.25 times overload • Turn off high-power load.
INSTALL	EPS_OVER LOAD_150PER	1.5 times overload • Turn off high-power load.
INSTALL	EPS_OVERLOAD_ LOCK	Overload self-locking • Turn off high-power load, PV, battery and power grid, and restart inverter.
INSTALL	PV_CONN_CFG_ ERROR	PV connection configuration error. • Turn off PV, battery and power grid, restart inverter, and confirm whether PV connection is correct.
INSTALL	PV_OR_BAT_NOT_ AVAIL	Startup state failed. • Wait for a while to check if it's back to normal.
INSTALL	BUCKBST_CFG_ MODE_ERR	BUCKBST configuration mode error. • Check whether the configuration mode of BUCKBST is correct.
INSTALL	EXTERN_FAN_FAIL	External fan failure • Please check if the external fan is damaged or blocked.
INSTALL	DSP_UPDATE_FAIL	DSP upgrade failure • Please contact after-sales for assistance with software up grade.
INSTALL	ARM_UPDATE_FAIL	ARM upgrade failure • Please contact after-sales for assistance with software up grade.
INSTALL	SMCU_UPDATE_ FAIL	SMCU upgrade failure • Please contact after-sales for assistance with software upgrade.
INSTALL	NO_METER	Meter loss • Please check if the meter is connected or if the meter communiction line works normally.
INSTALL	NO_CT	CT loss • Please check if the CT is connected.
INSTALL	NO_NTC	NTC loss • Please check if the NTC is connected correctly.

Error Type	Fault	Diagnosis and Solutions
INSTALL	BMS_LOST	Communication loss between inverter and battery management system equipment. • Please check the connection status between the BMS device and the inverter.
PV	PV_01_REVERSE	PV1 reverse connection • Turn off PV, battery and power grid, restart inverter, and check the connection status of positive and negative poles of PV1.
PV	PV_02_REVERSE	PV2 reverse connection • Turn off PV, battery and power grid, restart inverter, and check the connection status of positive and negative poles of PV2.
PV	PV_01_VOLT_HIGH	PV1 Voltage is too high • Check the output voltage of PV1.
PV	PV_02_VOLT_HIGH	PV2 Voltage is too high • Check the output voltage of PV2.
BAT	BAT_TYPR_CFG_ERR	Battery type configuration error • Turn off PV, battery and power grid, restart inverter, and confirm whether the battery type is correct.
BAT	BATT_VOLT_HIGH	Battery voltage is too high • Check whether the battery output voltage is within the normal range.
BAT	BAT_BMS_CELL_FAULT	BMS battery failure • Please contact the battery supplier.
BAT	BAT_BMS_COMM_FAULT	BMS communication failure • Check whether the communication between battery and inverter is normal.
BAT	BAT_SOC_LOW	Low battery SOC • Please charge the battery in time.
BAT	BAT_CURR_HIGH	High battery current • The load is too high, please reduce it appropriately.
GRID	GRID_LOSS	Power grid loss • Check whether the grid voltage is within the normal working range.
GRID	GRID_OVP1	The grid voltage exceeds the allowable value 1 • Check whether the grid voltage is within the normal working range.

Error Type	Fault	Diagnosis and Solutions
GRID	GRID_OVP2	The grid voltage exceeds the allowable value 2 • Check whether the grid voltage is within the normal working range.
GRID	GRID_UVP1	The grid voltage is lower than the allowable value 1. • Check whether the grid voltage is within the normal working range.
GRID	GRID_UVP2	The grid voltage is lower than the allowable value 2. • Check whether the grid voltage is within the normal working range.
GRID	GRID_OFP1	Power grid frequency exceeds the allowable value 1. • Check whether the grid frequency is within the normal working range.
GRID	GRID_OFP2	Power grid frequency exceeds the allowable value 2 • Check whether the grid frequency is within the normal working range.
GRID	GRID_UFP1	The power grid frequency is lower than the allowable value 1. • Check whether the grid frequency is within the normal working range.
GRID	GRID_UFP2	The power grid frequency is lower than the allowable value 2. • Check whether the grid frequency is within the normal working range.
INV	BST01_SW_OCP	BST1 software overcurrent • Wait for a while to see if it returns to normal.
INV	BST02_SW_OCP	BST2 software overcurrent • Wait for a while to see if it returns to normal.
INV	BST01_HW_OCP	BST1 hardware overcurrent • Wait for a while to see if it returns to normal.
INV	BST02_HW_OCP	BST2 hardware overcurrent • Wait for a while to see if it returns to normal.
INV	BST_OVER_PWR	BST overpower • Wait for a while to see if it returns to normal.
INV	BUCKBST_HW_OCP	BuckBst hardware overcurrent • Wait for a while to see if it returns to normal.
INV	BUCKBST_SW_OCP	BuckBst software overcurrent • Wait for a while to see if it returns to normal.
INV	BUCKBST_SW_OVP	BuckBst software overvoltage • Wait for a while to see if it returns to normal.

Error Type	Fault	Diagnosis and Solutions
INV	BUCKBST_SW_UVP	BuckBst software undervoltage • Wait for a while to see if it returns to normal.
INV	LLC_HW_OCP	Llc hardware overcurrent • Wait for a while to see if it returns to normal.
INV	LLC_START_FAIL	Llc startup failed. • Wait for a while to see if it returns to normal.
INV	BUCKBST_START_FAIL	BuckBst startup failed. • Wait for a while to see if it returns to normal.
INV	DCBUS_INIT_CHK_FAIL	DCBUS initialization detection failed. • Turn off PV, battery and power grid, and restart inverter.
INV	DCBUS_INIT_CHK_FAIL	DCBUS initialization detection failed. • Turn off PV, battery and power grid, and restart inverter.
INV	DCBUS_HW_OVP	DCBUS hardware overvoltage • Wait for a while to see if it returns to normal.
INV	DCBUS_SW_OVP	DCBUS software overvoltage • Wait for a while to see if it returns to normal.
INV	DCBUS_SW_UVP	DCBUS software overvoltage • Wait for a while to see if it returns to normal.
INV	DCBUS_SHORT	DCBUS short circuit • Turn off PV, battery and power grid, and restart inverter.
INV	DCBUS_INV_SS_FAIL	DCBUS inverter soft start failed. • Wait for a while to see if it returns to normal.
INV	DCBUS_BST_SS_FAIL	DCBUS BST soft start failed. • Wait for a while to see if it returns to normal.
INV	DCBUS_BUCKBST_SS_FAIL	DCBUS BUCKBST soft start failed. • Wait for a while to see if it returns to normal.
INV	INV_PLL_FAIL	Inverter phase-locked failure • Wait for a while to see if it returns to normal.
INV	INV_RLY_FLT	Inverter relay fault • Wait for a while to see if it returns to normal.
INV	INV_RLY_ON_FAIL	Pull-in fault of inverter relay • Wait for a while to see if it returns to normal.
INV	INV_EPS_RLY_FAULT	EPS end relay failure • Wait for a while to see if it returns to normal.

Error Type	Fault	Diagnosis and Solutions
INV	INV_SS_ACVOLT_FAIL	Soft start AC voltage failed. • Wait for a while to see if it returns to normal.
INV	INV_SW_OCP	Inverter software overcurrent • Wait for a while to see if it returns to normal.
INV	INV_HW_WAVE_OCP	Inverter hardware half-wave overcurrent • Wait for a while to see if it returns to normal.
INV	INV_HW_OCP	Inverter hardware overcurrent • Wait for a while to see if it returns to normal.
INV	INV_GFCI_CT_FAIL	CT fault • Wait for a while to see if it returns to normal. Check whether CT works properly.
INV	INV_GFCI_PROT	GFCI fault • Wait for a while to see if it returns to normal.
INV	INV_FREQT_OCP	Inverter frequent overcurrent alarm • Wait for a while to see if it returns to normal. • Check whether the inverter current works in the normal range.
INV	INV_SW_OVP	Inverter software overvoltage • Please shut down and restart.
OVER TEMP	ALM_ID_INV_HTSK_OTP	High heat sink temperature • Wait for a while to see if it returns to normal.
OVER TEMP	ALM_ID_ENVIR_TMP_HIGH	High ambient temperature • Wait for a while to see if it returns to normal.
OVER TEMP	ALM_ID_BAT_POS_CONN_OTP	High battery copper row positive pole temperature • Wait for a while to see if it returns to normal.
OVER TEMP	ALM_ID_BAT_NEG_CONN_OTP	High battery copper row negative pole temperature • Wait for a while to see if it returns to normal.
VER	TYPE_MODEL_ERR	Model configuration error • Turn off PV, battery and power grid, and restart inverter. • Check whether the inverter model is configured correctly.
BMS	BMS_CELL_OVER_FAULT	Overvoltage fault of cell. • Wait for fault recovery, restart the battery and contact after-sales personnel.
BMS	BMS_CELL_LOW_FAULT	Undervoltage fault of cell. • Recharge the battery.

Error Type	Fault	Diagnosis and Solutions
BMS	BMS_CELL_DIFF_FAULT	Excessive voltage difference fault of cell. • Ensure that the battery works in the normal voltage range.
BMS	BMS_HVB_OVER_FAULT	Overvoltage fault of total voltage. • Wait for fault recovery, restart the battery and contact after-sales personnel.
BMS	BMS_HVB_LOW_FAULT	Undervoltage fault of total voltage. • Recharge the battery.
BMS	BMS_TEMP_OVER_FAULT	High temperature fault. • Stop using the battery and wait for the temperature to recover.
BMS	BMS_SELF_CHECK_FAULT	Self-test fault. • Check the battery failure and contact the after-sales personnel.
BMS	BMS_POS_RLY_ADH_FAULT	Main positive relay sticking fault. • Please contact the after-sales personnel.
BMS	BMS_POS_RLY_OPEN_FAULT	Main positive relay open circuit fault. • Please contact the after-sales personnel.
BMS	BMS_NEG_RLY_ADH_FAULT	Main negative relay sticking fault. • Please contact the after-sales personnel.
BMS	BMS_NEG_RLY_OPEN_FAULT	Main negative relay open circuit fault. • Please contact the after-sales personnel.
BMS	BMS_PRECHG_FAIL_FAULT	Pre-charge failure fault. • Reset the battery. If this fault is reported many times, please contact after-sales personnel.
BMS	BMS_CELL_SAMPLE_FAULT	Cell sampling fault. • Please contact the after-sales personnel.
BMS	BMS_TEMP_SAMPLE_FAULT	Temperature sampling fault. • Please contact the after-sales personnel.
BMS	BMS_SYS_FAULT	System fault. • Please contact the after-sales personnel.
BMS	BMS_DSG_OVER_FAULT	Over-discharge current fault. • Stop using the battery and wait for it to recover or restart the battery. If this fault is reported many times, please contact the after-sales personnel.
BMS	BMS_CHG_OVER_FAULT	Over-charge current fault. • Ensure that the battery works in the normal voltage range.

Error Type	Fault	Diagnosis and Solutions
BMS	BMS_AFE_COM_FAULT	AFE communication fault. • Please contact the after-sales personnel.
BMS	BMS_INV_COM_FAULT	External network communication fault. • Check the communication line between the battery and the inverter. If this fault still occurs after reinserting the line, please contact the after-sales personnel.
BMS	BMS_MID_COM_FAULT	Intermediate network communication fault. • Check the communication line between the batteries. If this fault still occurs after reinserting the line, please contact the after-sales personnel.
BMS	BMS_VOLT_SENSOR_FAULT	Voltage sensor fault. • Please contact the after-sales personnel.
BMS	BMS_ID_REPET_FAULT	ID duplication fault. • Check if the system connections are correct and follow the initial installation steps to perform the startup operation again.
BMS	BMS_TEMP_LOW_FAULT	Low temperature fault. • Wait for fault recovery, restart the battery and contact after-sales personnel.
BMS	BMS_CURR_SENSOR_FAULT	Current sensor fault. • Please contact the after-sales personnel.
BMS	BMS_LINE_FAULT	Power line open circuit fault. • Check whether the power line is connected properly and restart the battery.
BMS	BMS_FLASH_FAULT	Flash fault. • Please contact the after-sales personnel.
BMS	BMS_AFE_PROTECT_FAULT	AFE self-protection fault. • Please contact the after-sales personnel.
BMS	BMS_CHG_REQ_FAULT	Charging request fault. • Check if the inverter is correctly supplying power to the battery.
BMS	BMS_INS_FAULT	Insulation fault. • Please contact the after-sales personnel.
INV	BAT_VOLT_OUTRANGE	Battery voltage overrun • Ensure that the battery works in the normal voltage range.
INV	PV_VOLT_OUTRANGE	Ensure that PV works in the normal voltage range. • Please contact the after-sales personnel.

Error Type	Fault	Diagnosis and Solutions
INV	BAT_SOC_LOW_ ON_GRID	Low soc of grid-connected battery • Stop discharging and start charging.
INV	BAT_SOC_LOW_ OFF_GRID	Low soc of off-grid battery • Stop discharging and start charging.
INV	INV_PWR_DRT	Inverter power derating • Ensure that the inverter power is within the normal range.
INV	BAT_CHRG_PWR_ DRT	Battery charging power derating • Ensure that the battery charging power is within the normal range
INV	BAT_SOC_LOW_ ON_GRID	Low soc of grid-connected battery • Stop discharging and start charging.
INV	BAT_DISCHRG_ PWR_DRT	Battery discharge power derating • Stop discharging and start charging.
INV	BAT_FLOATING_ CHRG	Battery floating charge • Check battery voltage.
INV	BAT_REPLENISH_ CHRG	Battery recharge • Check the battery voltage and replenish the power in time.
INV	BAT_PWR_IN_ CFG_MODE	Battery power configuration mode • Make sure that the battery works correctly.
INV	BST_IN_CVS_ MODE	BST constant voltage source mode. • BST operates in constant voltage source mode.
INV	PV_PWR_DRT_ INV_PWR_LMT	Inverter power limit • Ensure that the inverter output power is within the normal range.
INV	PV_PWR_DRT_ ZERO_EXPORT	Anti-reflux. • Ensure that it is in an anti-reflux state.
INV	PV_PWR_DRT_ CHRG_PWR_LMT	Charging power limit. • Ensure that the charging power is within the normal range.
INV	PV_PWR_DRT_ CURR_LMT	Current limiting • Ensure that the current works within the normal range.
COM	INTER_FAN_FAIL	Internal fan failed. • Check whether there is any foreign matter inside the fan.

12.3 Maintenance

Regular maintenance is required for the inverter. Please check and maintain the following items based on the instructions below to ensure the optimal performance of the inverter. For inverters working in inferior conditions, more frequent maintenance is required. Please keep maintenance records.

WARNING!

- Only qualified person can perform the maintenance for the inverter.
- Only spare parts and accessories authorized by SolaX can be used for maintenance.

12.3.1 Maintenance routines

Table 12-2 Proposal of Maintenance

Item	Check notes	Maintenance interval
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 is normal.	Every 6 months
Fans	• Check if the fan makes noise or is covered by dust. • Clean the fan with a soft and dry cloth or brush, or replace the fan if necessary.	Every 6-12 months
Electrical connection	• Ensure that all cables are firmly connected. • Check the integrity of the cables, ensuring that there are no scratches on the parts touching the metallic surface. • Verify that the sealing caps on idle terminals are not falling off.	Every 6-12 months
Grounding reliability	• Check if the grounding cables are firmly connected to the grounding terminals. Use a ground resistance tester to test the grounding resistance from the inverter enclosure to the PE bar in the power distribution box.	Every 6-12 months

Item	Check notes	Maintenance interval
Heat sink	• Check if there are foreign objects in the heat sink.	Every 6-12 months
General status of inverter	• Check if there is any damage on the inverter. • Check if there is any abnormal sound when the inverter is running.	Every 6 months

12.3.2 Upgrading Firmware

WARNING!

- Make sure that the type and format of the firmware file are correct. Do not modify the file name. Otherwise, the inverter may not work properly.
- Do not modify the folder name and file path where the firmware files are located, as this may cause the upgrade to fail.

WARNING!

- Before upgrading, ensure that the PV input voltage is higher than 180 V (preferably on sunny day), or that the battery SOC is higher than 20%, or the battery input voltage is higher than 180 V. Failure to meet one of these conditions may result in upgrade process failure.

Upgrade preparation

- Prepare a USB drive (USB 2.0/3.0, ≤32 GB, FAT 16/32).
- Check for the current firmware version of the inverter.
- Contact our service support to get the update files ("*.bin" and "*.txt" file), and store the two files in the root path of the U disk. Files:
  - » X1HybridLV_3_6kW_Iap.txt
  - » X1HybridLV_3_6kW_***.bin

Upgrade steps

a. Plug the U disk into the upgrading port below: If the WiFi+LAN dongle is connected to the port, please remove the dongle first.

b. After the U disk is plugged in, the system will start upgrading, and the three indicator lights will flash in turns. (Operating indicator: green; battery indicator: blue; Error indicator: Red). Wait approximately 10-15 seconds.

c. After the LCD screen turns off, the buzzer will make a beep sound, and then the screen and three indicator lights will light up again and flash in turns.

d. If the three indicators light up at the same time, it means that the upgrade has been successful. If only the red light is on, it means that the upgrade has failed. If the upgrade fails, please contact our after-sales support.

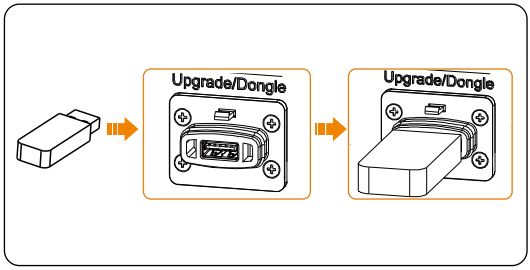


Table 12-3 Plug in the U disk

CAUTION!

- If the ARM firmware upgrade fails or stops, do not unplug the USB drive. Power off the inverter, restart it, and then repeat the above upgrade steps.

CAUTION!

If the DSP firmware upgrade fails or stops, perform operations below to troubleshoot:
- Check if the DC switch is turned off. If it is off, turn it on.

NOTICE!

- If the LCD screen lags or freezes after the upgrade, turn off the DC switch, and then restart the inverter. Check if the inverter returns to normal. If not, contact us.

NOTICE!

- The USB disk can be plugged in when the inverter is in normal status.
- After the upgrade is completed, the current state of the indicator will be maintained for 1 minute, and the inverter will be automatically switched on.

13 Decommissioning

13.1 Disassembling the Inverter

WARNING!

- Strictly follow the steps below to disassemble the inverter.
- Only use the dedicated removal tool delivered with the inverter to disassemble PV connector.

Step 1: Turn off the system on LCD screen.

Step 2: Disconnect the external AC and EPS breaker of the inverter.

Step 3: Turn the DC switch to OFF.

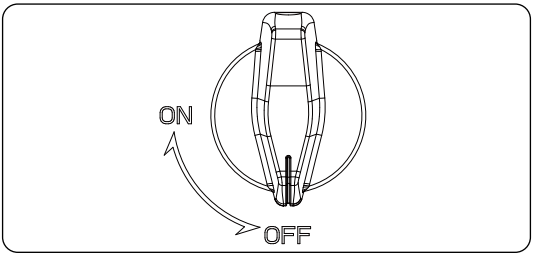


Figure 13-1 Turning off the DC switch

Step 4: Turn off the battery switch / button / breaker (if any). (See documents of battery)

Step 5: Use a current clamp to ensure there is no current present in the PV cables.

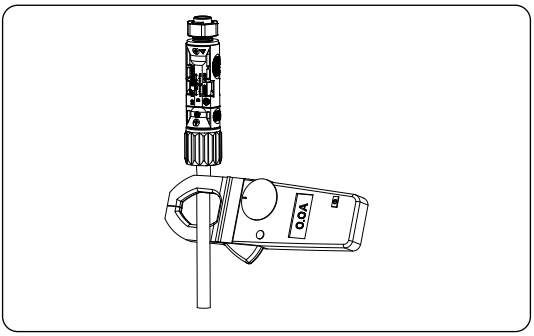


Figure 13-2 Measuring the current

Step 6: Use the disassembling tool for PV terminal to disassemble the PV cables. Then remove the PV cables, and slightly pull out the cables.

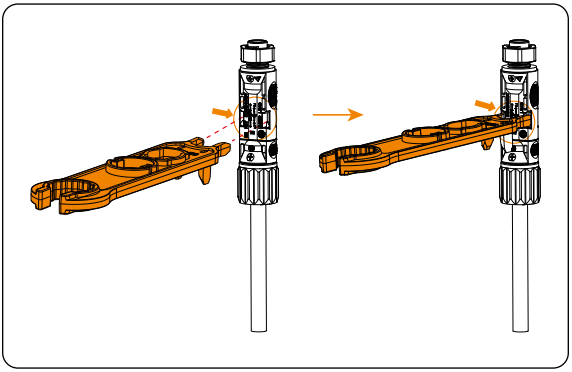


Figure 13-3 Disassembling the PV cables

Step 7: Measure whether there is AC voltage. If not, remove the cables from Grid, GEN and EPS port.

Step 8: Unlock the battery connector: Open the latch with a screwdriver in the position shown, and move the release sleeve. Press the button and pull out the plug.

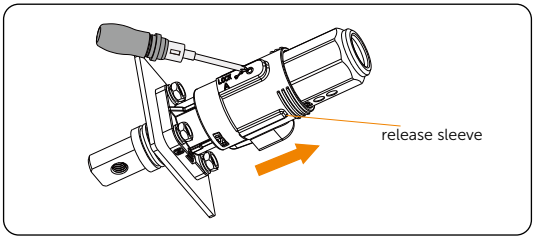


Figure 13-4 Open the latch and move the release sleeve

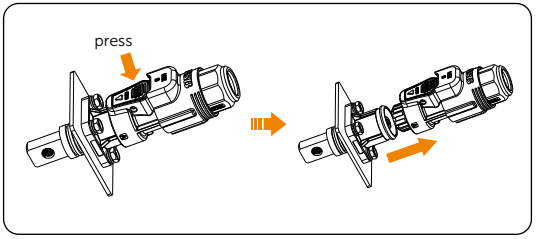


Figure 13-5 Pull out the plug

Step 9: Remove the Communication cable. (Keep the buttons on the two sides pressed and pull out the cable to make it unlocked)

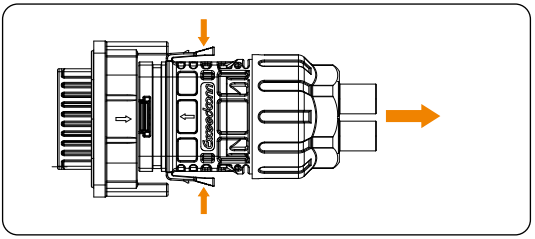


Figure 13-6 Releasing the communication cable

Step 10: Remove the PE cable.

Step 11: Remove the Dongle.

Step 12: Remove the inverter.

Step 13: Unscrew the screws for fastening the bracket and remove the bracket.

13.2 Packing the Inverter

- Use the original packaging materials if available.

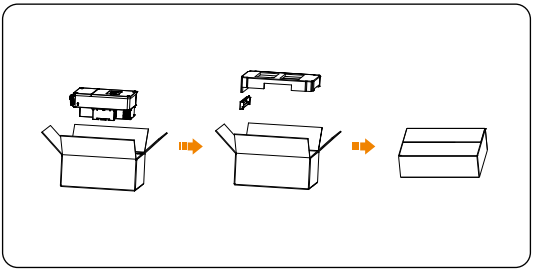


Figure 13-7 Packing the inverter

- If the original packing material is not available, use the packing material which meets the following requirements:
  - » Suitable for the weight and dimension of product
  - » Convenient for transportation
  - » Can be sealed with adhesive tape

13.3 Disposing of the Inverter

Properly dispose of the inverter and accessories in accordance with local regulations on the disposal of electronic waste.

14 Technical Data

- PV Input

Model	X1-HYB-3.0-LV-EU	X1-HYB-3.7-LV-EU	X1-HYB-4.0-LV-EU	X1-HYB-5.0-LV-EU	X1-HYB-6.0-LV-EU
Max. PV array power [Wp]	4500	5500	6000	7500	9000
Max. PV Voltage [d.c.V]			550		
Start output voltage [V]			110		
Nominal input voltage [V]			360		
MPPT voltage range [d.c.V]			80 ~ 520		
No. of MPPT/Strings per MPPT			2 / 2		
Max. PV Current [d.c.A]			16/16		
Isc PV Array Short Circuit Current [d.c.A]			20/20		
Max. inverter backfeed current to the array [d.c. A]			0		
MPPT Voltage Range[V](Full Load)	115~440	140~440	150~440	190~440	230~440

- AC Output & Input

Model	X1-HYB-3.0-LV-EU	X1-HYB-3.7-LV-EU	X1-HYB-4.0-LV-EU	X1-HYB-5.0-LV-EU	X1-HYB-6.0-LV-EU
Nominal AC Output Current[A]	13	16	17.4	21.7	26.1
Rated AC Output Power [VA]	3000	3680	4000	5000	6000
Max. AC Output Apparent Power [VA]	3300	3680	4400	5000	6000
Max. AC Output Continuous Current [a.c.A]	15	16	20	22.7	27.3
Current (inrush) [a.c. A]			30		
Maximum output fault current [a.c. A]			73.5		
Maximum output overcurrent protection [a.c. A]			94		
Max. AC Input Apparent Power [VA]	6000	7360	8000	9200	9200
Max. AC Input Current [A]	26.1	32	34.8	40	40
Nominal AC voltage [a.c.V], frequency [Hz]			220/230/240, 50/60		
Displacement power factor			0.8 leading ~ 0.8 lagging		
THDi (rated power) [%]			<3		
AC Connection			L/N/PE		

- Battery Data

Model	X1-HYB-3.0-LV-EU	X1-HYB-3.7-LV-EU	X1-HYB-4.0-LV-EU	X1-HYB-5.0-LV-EU	X1-HYB-6.0-LV-EU
Battery type	Lithium/Lead-Acid				
Battery voltage range [d.c.V]	40-60				
Nominal Battery Voltage[V]	48				
Max. Charging Voltage[V]	≤60 (Adjustable)				
Max. Charging/Discharging Current [d.c.A]	75	75	75	120	120
Charging Strategy for Li-Ion Battery	Self-adaption to BMS				
Charging Strategy for Lead-Acid Battery	3 stages curve				
Temperature Sensor	Yes				

- EPS Output

Model	X1-HYB-3.0-LV-EU	X1-HYB-3.7-LV-EU	X1-HYB-4.0-LV-EU	X1-HYB-5.0-LV-EU	X1-HYB-6.0-LV-EU
Nominal output power [W]	3000	3680	4000	5000	6000
Peak apparent power [VA]	2 times the rated power, 10s				
Nominal Output Current [A]	13	16	17.4	21.7	26.1
Nominal EPS Voltage [a.c.V], frequency [Hz]	230, 50/60				
Switch Time [ms]	<10				

- System Data

Model	X1-HYB-3.0-LV-EU	X1-HYB-3.7-LV-EU	X1-HYB-4.0-LV-EU	X1-HYB-5.0-LV-EU	X1-HYB-6.0-LV-EU
MPPT Efficiency	>99.9%				
Max. efficiency [%]	97.6				
Euro. efficiency [%]	97.0				
Battery charge/discharge effciency [%]	96.0/95.0				

- Protection device

Model	X1-HYB-3.0-LV-EU	X1-HYB-3.7-LV-EU	X1-HYB-4.0-LV-EU	X1-HYB-5.0-LV-EU	X1-HYB-6.0-LV-EU
Anti-Islanding Protection			Yes		
PV String Input Reverse Polarity Protection			Yes		
Insulation Resistor Detection			Yes		
Residual Current Monitoring Unit			Yes		
Output Over Current Protection			Yes		
Output Short Protection			Yes		
Output Over Voltage Protection			Yes		
Surge Protection			AC Type II/DC Type II		
Battery Terminal Temp Protection			Yes		

- Power consumption & Environment limit

Model	X1-HYB-3.0-LV-EU	X1-HYB-3.7-LV-EU	X1-HYB-4.0-LV-EU	X1-HYB-5.0-LV-EU	X1-HYB-6.0-LV-EU
Self Consumption(night) [W]			Standby < 40, Shutdown < 10		
Ingress Protection			IP65		
Operating Ambient Temperature Range [°C]			-25 ~ +60 (derating above +45)		
Relative humidity [%]			0 ~ 100 (condensing)		
Max. operation altitude [m]			<3000		
Storage Temperature[%]			-25 ~ +70		
Noise Emission(typical)[dB]	<39	<39	<39	<50	<50

- General data

Model	X1-HYB-3.0-LV-EU	X1-HYB-3.7-LV-EU	X1-HYB-4.0-LV-EU	X1-HYB-5.0-LV-EU	X1-HYB-6.0-LV-EU
Dimensions(WxHxD) [mm]	397x490x201				
Net weight [kg]	18	18	18	18.8	18.8
Cooling concept	Natural			Smart cooling	
Topology	Transformerless for PV Side/HF for battery Side				
HMI Interface	LED+LCD				
Active anti-islanding method	Frequency Shift				
Pollution degree	II(Inside), III(Outside)				
Communication interfaces	CAN, RS485, CT, Meter, USB, NTC, Dongle Interface				

- STANDARD

Model	X1-HYB-3.0-LV-EU	X1-HYB-3.7-LV-EU	X1-HYB-4.0-LV-EU	X1-HYB-5.0-LV-EU	X1-HYB-6.0-LV-EU
Safety	IEC/EN 62109-1/-2				
EMC	EN IEC 61000-6-1/2/3/4, EN IEC 61000-3-2/11, EN 61000-3-3/12, EN 55011, EN 62920				
Grid Monitoring	CEI016, CEI021, G98, G99, RD1699, NTS, UNE, INMETRO				

15 Appendix

15.1 Application of Parallel Function

15.1.1 Introduction of parallel application

The inverter provides the parallel connection function. One inverter will be set as the Master inverter to control other Slave inverters in the system. It supports up to 10 units in the parallel system. Details as follows:

15.1.2 Notice for parallel application

- All inverters should be of the same software version.
- For optimal efficiency, it is recommended that all inverters have the same model, and are connected to batteries of the same model and quantity.
- In parallel system, there are three status: **Free**, **Slave** and **Master**.

Table 15-4 Three status

Free	Only if no one inverter is set as a **Master**, all inverters are in **Free** mode in the system.
Slave	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.
Master	When one inverter is set as a **Master**, this inverter enters **Master** mode. **Master** mode can be changed to **Free** mode.

- 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 inverters will be stop simultaneously. But master inverter is independent of all slave inverters 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 exits from the system and be running as an independent unit (the network cable is disconnected simultaneously), its all setting will be re-activated.
- The parallel system is extremely complex and requires a large number of cables to be connected. Therefore, the cables must be connected in the correct wire sequence. Otherwise, any small mistake can lead to system failure.

- The communication cable length should not exceed 3 m.

15.1.3 System wiring diagram

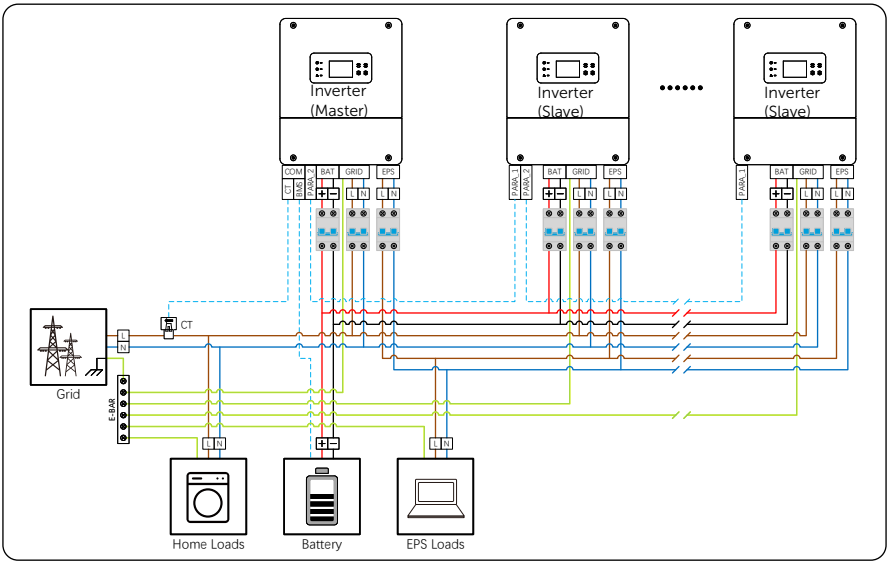


Figure 15-8 System wiring diagram 1

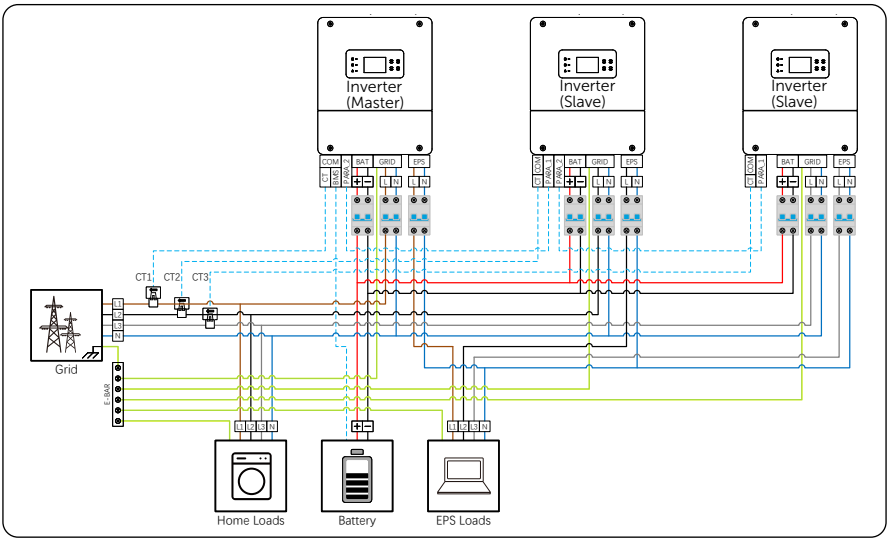


Figure 15-9 System wiring diagram 2

15.1.4 System wiring procedure

Power cable wiring-Grid and EPS terminal

a. Use triple-core copper cable to connect Master-Slave inverter.

b. Grid terminal of Master and Slave inverter: L connects to L and N connects to N,

c. EPS terminal of Master and Slave inverter: L connects to L and N connects to N,

d. All PE cable connects to the same E-BAR nearby.

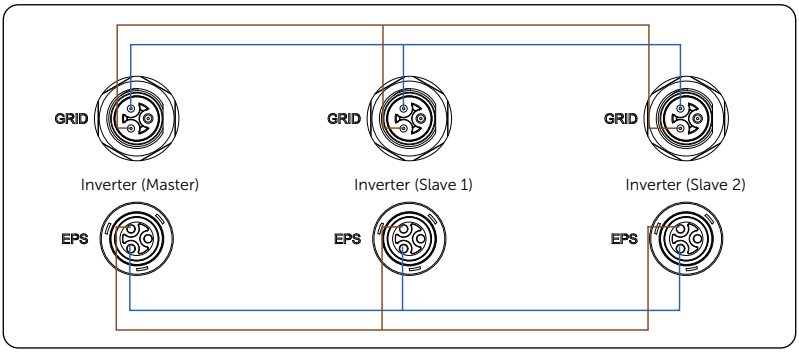


Figure 15-10 Power cable wiring

Communication cable wiring-COM terminal

- Parallel connection.

a. Use standard network cables for Master-Slave inverter connection.

b. Master inverter PARA2 connects to Slave 1 inverter PARA1.

c. Slave 1 inverter PARA2 connects to Slave 2 inverter PARA1.

d. Meter connects to COM communication terminal of the Master inverter. Please refer to "8.7.4 Meter/CT Connection".

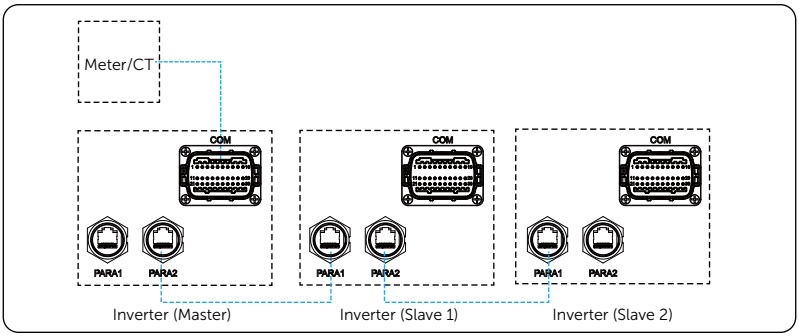


Figure 15-11 Communication wiring

NOTICE!

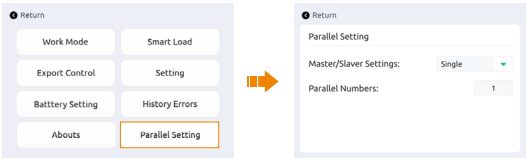
- For details on the specific wiring of the inverter, see "8.3 EPS, Grid and GEN Connection" and "8.6 Parallel Connection".

15.1.5 Settings for parallel connection

Parallel setting

The series inverters support up to 10 units in the parallel system.

- **Master/Slaver Settings**: Here you can set the state of inverter to **Single** or Parallel. When parallel, the state of inverter can be set to Master/Slaver1~9/Phase one~three.
- **Parallel Numbers**: Here you can set parallel numbers to 1~10, the series inverters support up to 10 units in the parallel system.



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