



X3-MIC G2

3 kW / 4 kW / 5 kW / 6 kW

8 kW / 10 kW / 12 kW / 15 kW

User Manual

Version 15.0

www.solaxpower.com



eManual in the QR code or
at <http://kb.solaxpower.com/>

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15 kW models. The nominal AC voltage is 127 V / 220 V for 5 kW-LV ~ 8 kW-LV models.




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 15.0 (2024-11-20)

Rewrote and updated the whole manual content

Version 14.0 (2024-06-27)

Updated 2.3 Explanation of Symbols (Modified the BIS Logo)

Updated 5.3 Installation Precaution (Modified the contents)

Version 13.0 (2024-03-18)

Updated 5 Installation and 6 Electrical Connections (Updated contents related to PV connection)

Version 12.0 (2024-01-12)

Updated 2.3 Explanation of Symbols (Deleted the UKCA Logo)

Updated 5 Installation and 6 Electrical Connections (Updated contents related to AC connection)

Version 11.0 (2023-10-30)

Updated 2.3 Explanation of Symbols (Added the BIS Logo)

Updated 4.4 General Data (Updated the data)

Updated 5 Installation and 6 Electrical Connections (Updated contents related to PV terminals)

Version 10.0 (2023-06-29)

Updated 4.2 AC Output (Updated the AC output data)

Updated 5 Installation and 6 Electrical Connections (Updated the figures and descriptions)

Updated 7.3 LCD Function & Operation (Added Nline Control)

Added Appendix: Lockable DC Switch

Version 9.0 (2022-12-23)

Added the model X3-MIC-10KW-G2 and all related contents

Updated 2.3 Explanation of Symbols (Modified the explanations of the symbols)

Updated 4 Technical Data (Modified and added new items)

Updated 6.2 Grid Connection (Modified "Table: Cable and Micro-breaker recommended")

Version 8.0 (2022-09-08)

Updated 2.3 Explanation of Symbols (Modified the TUV mark Logo)

Updated 2.4 EC Directives (Updated the specific standards)

Updated 7.3 LCD Function & Operation (Deleted Nline Control)

Version 7.0 (2022-06-30)

Modified the layout of the contents and added a new chapter as 6 Electrical Connections (Modified the contents of Communication Connection and added descriptions of parallel connection and EV-Charger function)

Updated 7.3 LCD Function & Operation (Added setting descriptions related to parallel connection and EV-Charger function)

Version 6.0 (2022-05-16)

Added the –LV models which work in low voltage and all related contents

Version 5.0 (2022-03-25)

Added notes related to an optional model of 10 kW

Updated 6.3 LCD Function & Operation (Modified the flow diagram of Grid Protection)

Updated 7.1 Trouble shooting (Added PowerTypeFault)

Version 4.0 (2022-01-05)

Updated 4 Technical Data (Modified the value for Max. short circuit current, Nominal AC voltage and Nominal AC output current; Modified the Safety & Protection part)

Updated 6.3 LCD Function & Operation (Modified the description of Safety and Grid Services)

Updated 7.1 Trouble shooting (Added PowerTypeFault)

Version 3.0 (2021-12-14)

Updated 2.3 Explanation of Symbols (Added UKCA and UKNI Logo)

Updated 5.2 Packing List (Updated the pictures and descriptions)

Updated 6.3 LCD Function & Operation (Modified the pictures and descriptions)

Updated 7.1 Trouble shooting (Modified the troubleshooting table)

Added the Warranty Registration Form

Version 2.0 (2021-09-13)

Updated 2.3 Explanation of Symbols (Deleted SAA Logo and added TUV mark Logo)

Version 1.0 (2021-08-11)

Updated 7.1 Trouble shooting (Modified the Diagnosis and solution part)

Version 0.0 (2021-06-11)

Initial release

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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



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.



- 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.



- 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



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.
- 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!**

- 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. When required by local regulations, the use of a Type-B RCD is 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 X3-MIC G2 Series is a transformerless three-phase PV grid-connected inverter which is designed to convert the direct current power generated from the PV modules into grid-compatible AC current and feeds the AC current to the utility grid.

2.2 Appearance

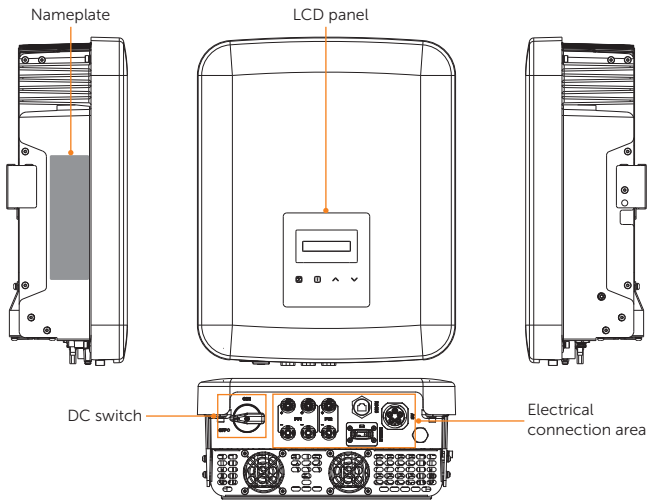


Figure 2-1 Appearance

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 DC circuit when necessary.
Electrical connection area	Including PV terminals, AC 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. Please confirm with SolaX whether other grid systems are applicable or not.

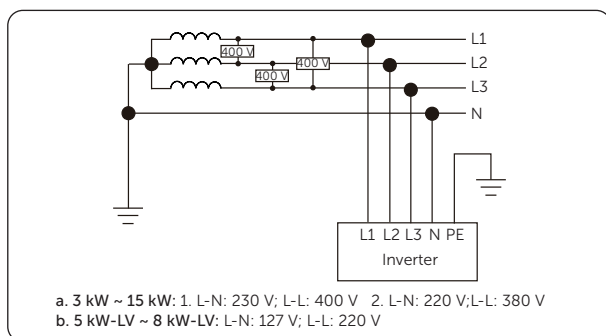


Figure 2-2 Supported power grid - TT

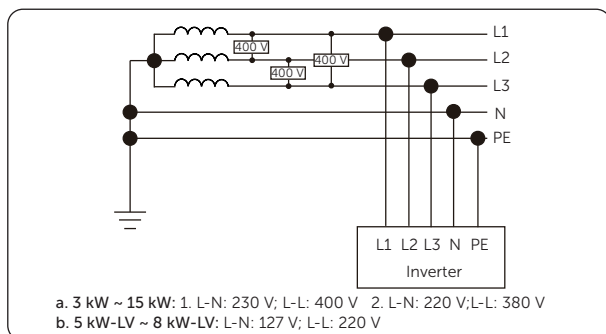


Figure 2-3 Supported power grid - TN-S

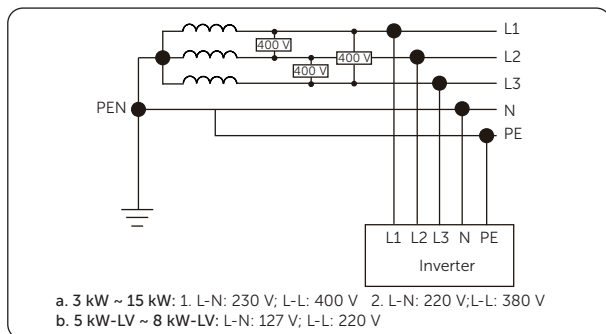















Figure 2-4 Supported power grid - TN-C-S

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.
	RCM mark. The inverter complies with the requirements of the applicable RCM guidelines.
	BIS mark of conformity.
	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 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.

Note: The table is only used for the description of symbols which may be used on the inverter. Please be subject to the actual symbols on the device.

2.5 Circuit Principle 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 principle design of inverter is shown in the figure below:

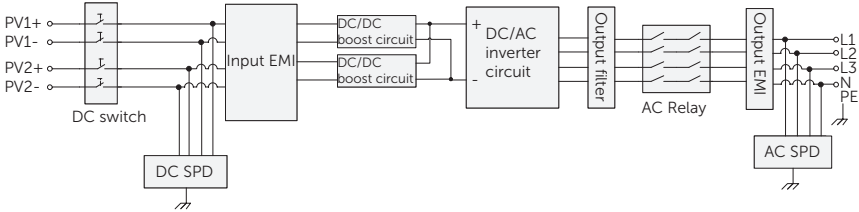


Figure 2-5 Circuit Diagram for the series inverter

2.6 Working State

The series inverter has Waiting, Checking, Normal, Fault state.

Table 2-3 Description of working state

State	Description
Waiting	The inverter is waiting for the conditions to be met in order to enter Checking state.
Checking	The inverter is checking for conditions to enter Normal state.
Normal	The inverter is working normally.
Fault	The inverter detects error and prompts error information.

2.7 Export Control Function

Solar export control is a limit on the amount of energy your solar system can export into the grid. You have a set limit on how much energy you can export to the grid.

How Export Control works

- Meter required
- Correct setting of the limit value of **Export Control** through the inverter.

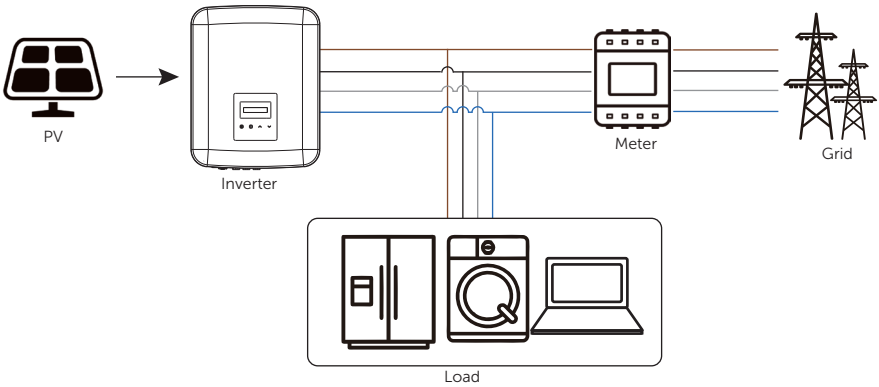


Figure 2-6 Zero export control

Note:

Export Control value can be set from 0 W to more than the rated output power.

For how to set the **Export Control** function, please refer to "[Export Control](#)".

3 System Overview

System Overview

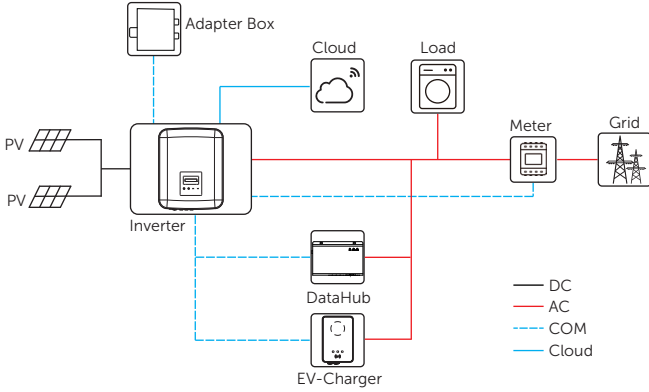


Figure 3-1 System diagram

NOTICE!

- The system diagram is for illustration purposes only. Some configurations cannot be used together.

Table 3-1 System item description

Item	Description
X3-MIC G2 series inverter (the device covered in this manual)	The X3-MIC G2 series is a PV grid-connected inverter that supports grid connection of a photovoltaic system.
PV modules	PV modules work in MPPT mode. The maximum number of MPPT is two for the inverters.
Meter	The meter is used by the inverter for import / export or consumption readings for smart energy management applications.

Item	Description
Adapter Box G2 (supported)	With SolaX Adapter Box G2, you can connect the smart heat pump to the solar systems, realizing the control of the heat pump through inverter. Please refer to " 15.3 Application of Adapter Box G2 " for specific wiring and setting.
DataHub (supported)	SolaX DataHub is a professional device that for monitoring platforms of photovoltaic power generation systems, which enables data collection, storage, output control, centralized monitoring, and centralized maintenance of devices such as inverters, electricity meters, and environmental monitoring instruments in photovoltaic power generation systems. Please refer to " 15.1 Application of Parallel Function " for specific wiring and setting.
EV-Charger (supported)	The series inverter can communicate with SolaX EV-Charger to form an intelligent photovoltaic and EV charging energy system, thus maximizing the utilization of photovoltaic energy. Please refer to " 15.2 Application of EV-Charger " for specific wiring and setting.
Grid	The grid voltage shown as below are supported: 3 kW ~ 15 kW: 230 V / 400 V and 220 V / 380 V; 5 kW-LV ~ 8 kW-LV: 127 V / 220 V.
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. (Maximum gross weight of X3-MIC G2: 21 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.

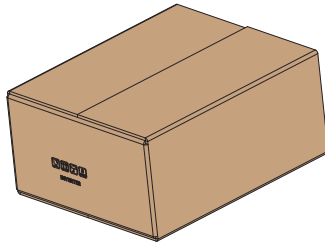


Figure 4-1 Caution signs on the packaging

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 -30°C and $+60^{\circ}\text{C}$. 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.

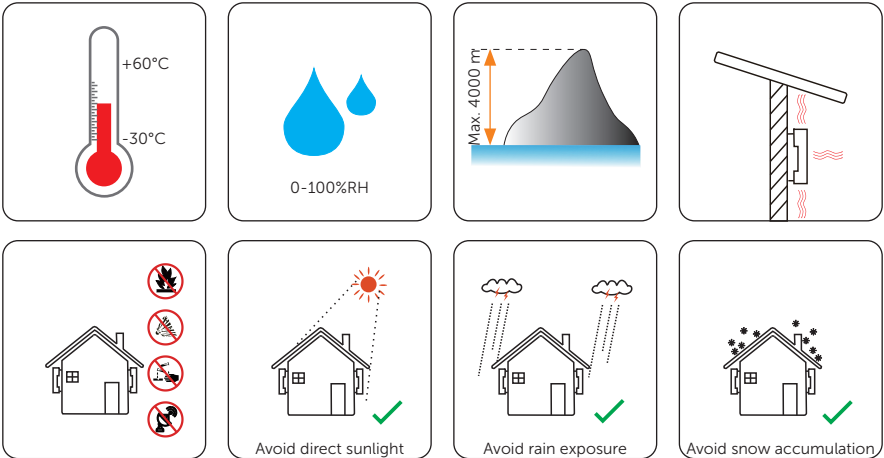
5 Preparation before Installation

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 IP66 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

- The ambient temperature: -30°C to $+60^{\circ}\text{C}$.
- The relative humidity shall be between 0-100%RH.
- Do not install the inverter in the areas where the altitude exceeds 4000 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.

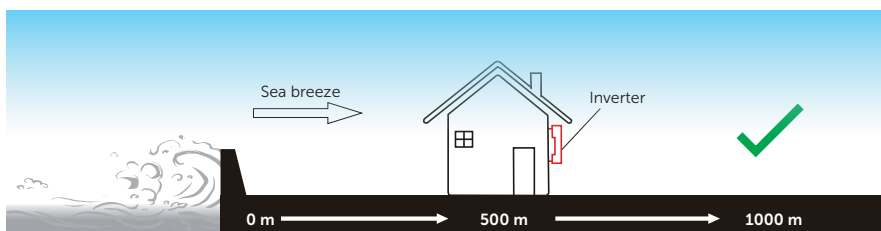


Figure 5-1 Recommended installation position

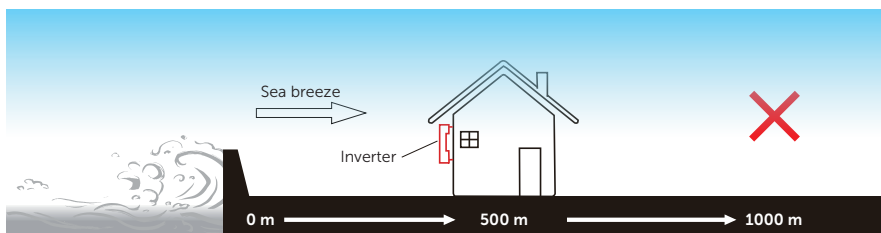


Figure 5-2 Incorrect installation position

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.

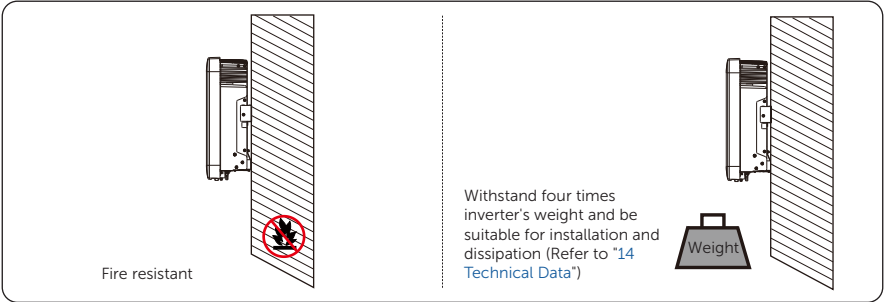


Figure 5-3 Installation carrier requirement

5.1.3 Clearance Requirement

The minimum clearance reserved for the connected terminal at the bottom of inverter should be 7 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, make sure to leave a minimum space of 35 cm horizontally between each inverter. In areas with high ambient temperatures, increase the clearances between the inverters and provide adequate fresh air ventilation if feasible.

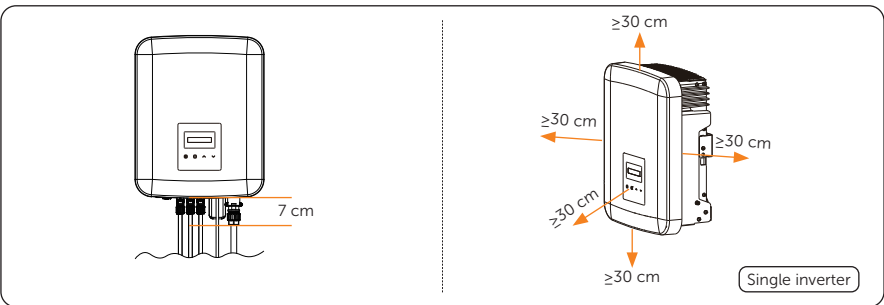


Figure 5-4 Clearance requirement for single inverter

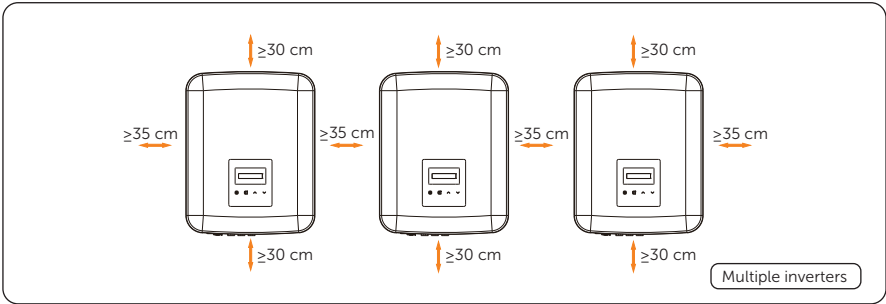
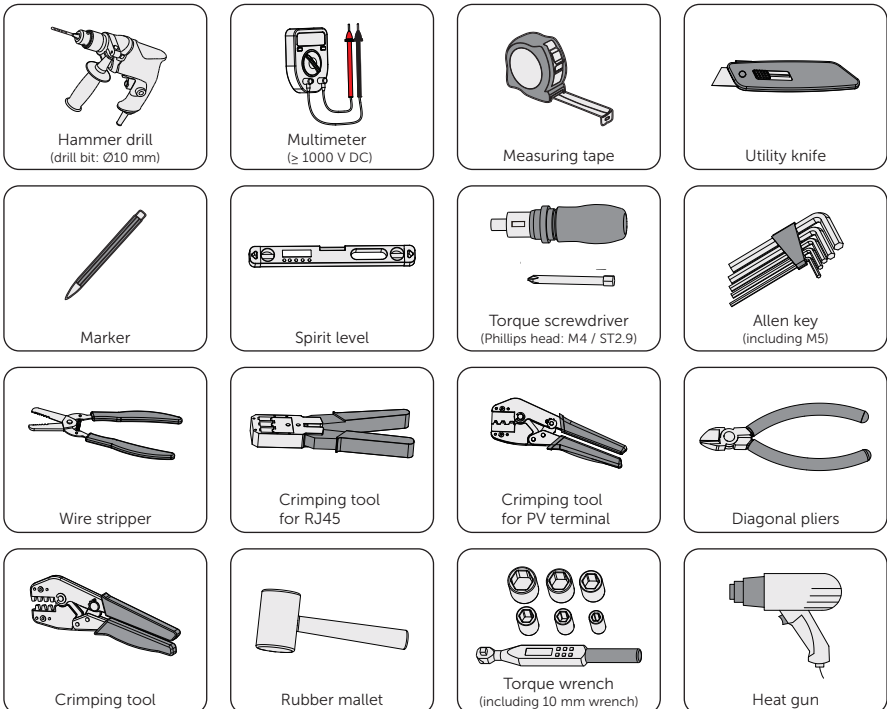
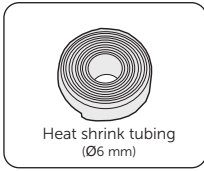


Figure 5-5 Clearance requirement for multiple inverters

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.





5.3 Additionally Required Materials

Table 5-1 Additionally required materials






No.	Required Material	Type	Conductor Cross-section
1	AC circuit breaker	 Refer to below tables	/
2	PV cable	 Dedicated PV wire with a voltage rating of 1000 V (3 kW~15 kW) / 800 V (5 kW-LV~8 kW-LV), a temperature resistance of 105°C, a fire resistance grade of VW-1	4 mm ²
3	AC cable	 Five-core copper cable	Refer to below tables
4	Communication cable	 Network cable CAT5	0.2 mm ²
5	Additional PE cable	 Conventional yellow and green wire	4 mm ² -6 mm ²

Table 5-2 AC cable and circuit breaker recommended

Model	X3-MIC-3K-G2	X3-MIC-4K-G2	X3-MIC-5K-G2	X3-MIC-6K-G2	X3-MIC-8K-G2	X3-MIC-10K-G2
L1, L2, L3 wire	4-5 mm ²	4-5 mm ²	4-5 mm ²	5-6 mm ²	5-6 mm ²	5-6 mm ²
N, PE wire	2.5-5 mm ²	2.5-5 mm ²	2.5-5 mm ²	2.5-6 mm ²	2.5-6 mm ²	2.5-6 mm ²
Circuit breaker	16 A	16 A	16 A	20 A	20 A	20 A

Model	X3-MIC-10KW-G2	X3-MIC-12K-G2	X3-MIC-15K-G2	X3-MIC-5K-G2-LV	X3-MIC-6K-G2-LV	X3-MIC-8K-G2-LV
L1, L2, L3 wire	5-6 mm ²	5-6 mm ²	5-6 mm ²	5-6 mm ²	5-6 mm ²	5-6 mm ²
N, PE wire	2.5-6 mm ²	2.5-6 mm ²	2.5-6 mm ²	2.5-6 mm ²	2.5-6 mm ²	2.5-6 mm ²
Circuit breaker	20 A	25 A	32 A	20 A	25 A	32 A

* The parameters have some differences because of different environment and material. Please choose appropriate cable and circuit breaker according to the local conditions.

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.

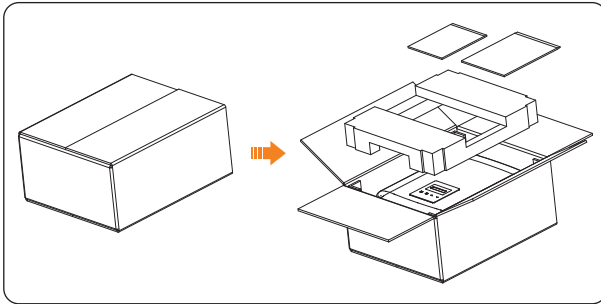


Figure 6-1 Unpacking the inverter

- 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

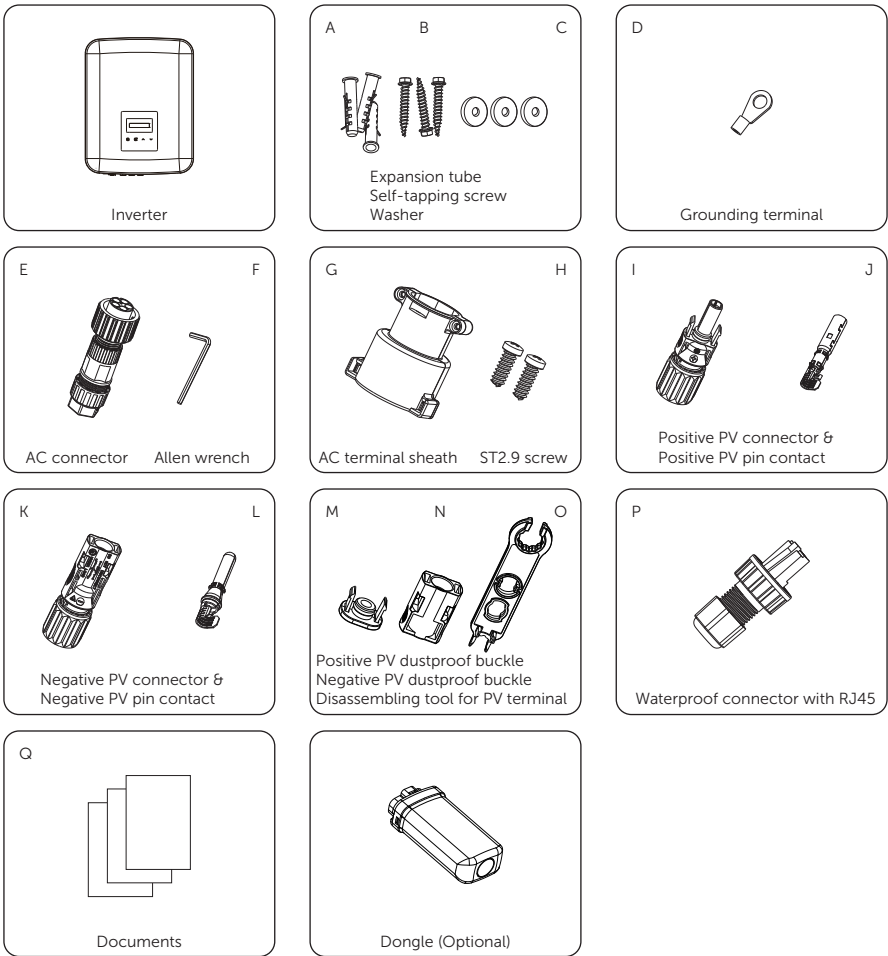


Table 6-1 Packing list

Item	Description	Quantity
/	Inverter	1 pc
A	Expansion tube	3 pcs
B	Self-tapping screw	3 pcs
C	Washer	3 pcs

Unpacking and Inspection

Item	Description	Quantity
D	Grounding terminal	1 pc
E	AC connector	1 pc
F	Allen wrench	1 pc
G	AC terminal sheath	1 pc
H	ST2.9 screw	2 pcs
I	Positive PV connector	2 pairs for 3 kW~8 kW and 10 kW (PV1: one string), 3 pairs for 12 kW~15 kW and 10 kW (PV1: two strings)
J	Positive PV pin contact	
K	Negative PV connector	2 pairs for 3 kW~8 kW and 10 kW (PV1: one string), 3 pairs for 12 kW~15 kW and 10 kW (PV1: two strings)
L	Negative PV pin contact	
M	Positive PV dustproof buckle	1 pair for 3 kW~8 kW and 10 kW (PV1: one string), 2 pairs for 12 kW~15 kW and 10 kW (PV1: two strings)
N	Negative PV dustproof buckle	
O	Disassembling tool for PV terminal	1 pc
P	Waterproof connector with RJ45	1 pc
Q	Documents	/
/	Dongle (Optional)	/

NOTICE!

- 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 5 degrees and avoid it being forward tilted, side tilted, or upside down.

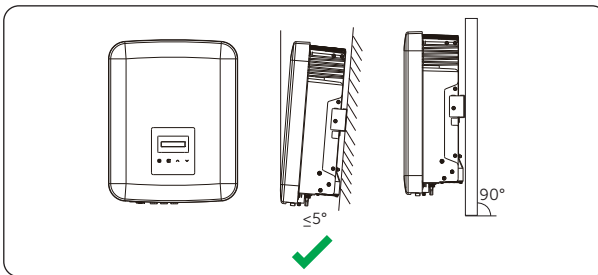


Figure 7-1 Correct installation

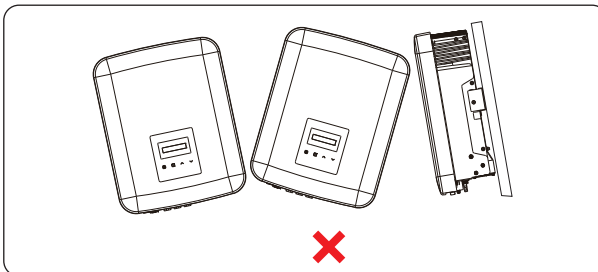


Figure 7-2 Incorrect installation

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.

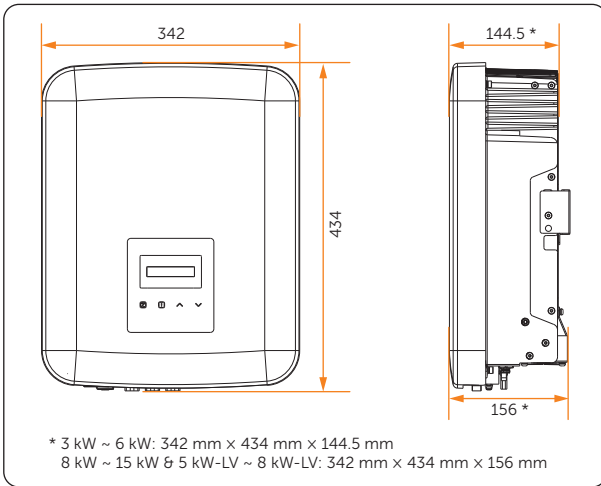


Figure 7-3 Dimensions 1 (Unit: mm)

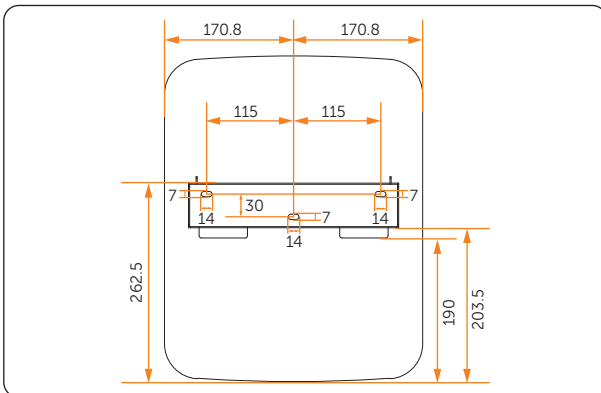


Figure 7-4 Dimensions 2 (Unit: mm)

7.2 Installation Procedures

Step 1: Unscrew the bracket from the back of the inverter.

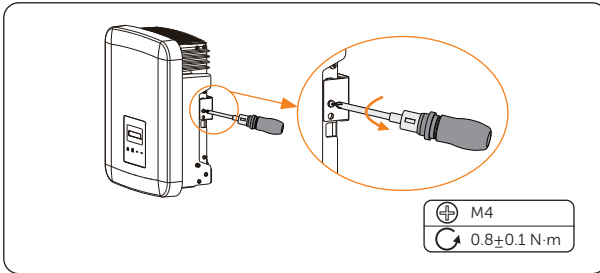


Figure 7-5 Unscrewing the bracket

Step 2: Horizontally align the bracket with the wall, adjust the position of the bracket with a spirit level until the bubble stays in the middle, and then mark holes.

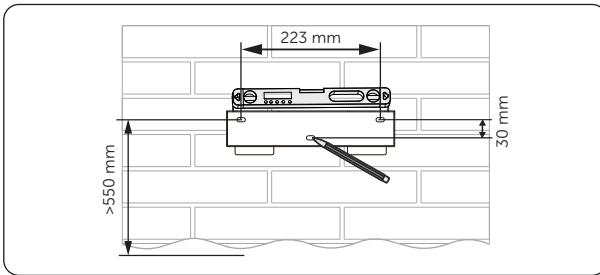


Figure 7-6 Marking the holes

Step 3: Set the bracket aside and drill holes with $\text{Ø}10$ drill bit. The depth of the holes should be at least 60 mm.

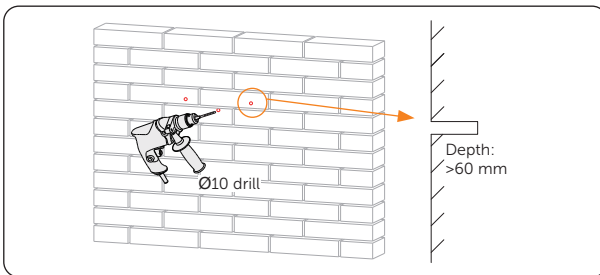


Figure 7-7 Drilling holes

Step 4: Insert the expansion tubes (part A) into the holes, use rubber mallet to knock the expansion tubes into the wall.

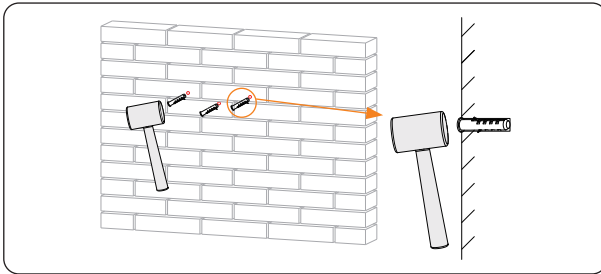


Figure 7-8 Inserting the expansion tubes

Step 5: Attach the bracket on the wall again. Secure the bracket with self-tapping screws (part B) and washers (part C).

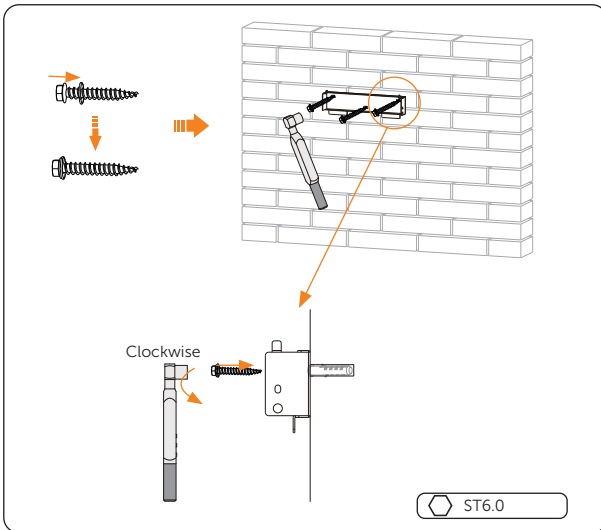


Figure 7-9 Securing the bracket

Step 6: Open the anti-static bag and take out the machine. If the inverter needs to be temporarily placed on the ground, use foam or other protective materials to protect it against potential damages.

- Step 7:** Lift up the inverter collaboratively by the required number of personnel in accordance with the local regulation and hang it onto the bracket. Make sure the two grooves on the back of the inverter are well-seated on the bracket.

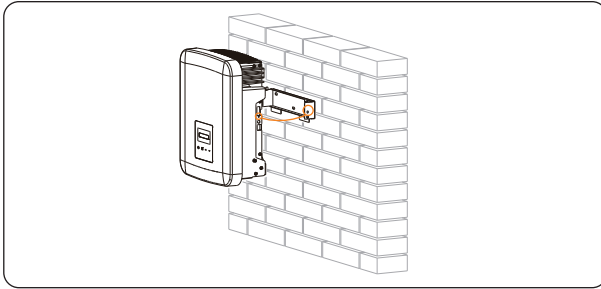


Figure 7-10 Lifting up and hanging the inverter

- Step 8:** Use the original cross recessed screw to secure the inverter on the right side.

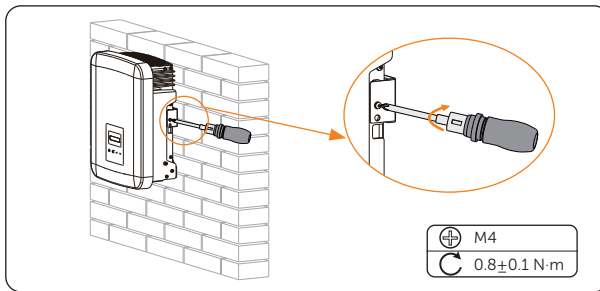


Figure 7-11 Securing the inverter

- Step 9:** (Optional) For safety reason, install an anti-theft lock. The anti-theft lock is not in the scope of delivery. If necessary, prepare a lock with a diameter $\varnothing 8$ mm by yourself, and keep the key to the lock in a safe place.

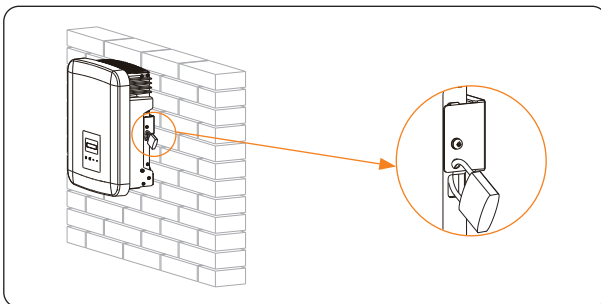


Figure 7-12 Locking the inverter

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 Overview of Electrical Connection

8.1.1 Terminals of Inverter

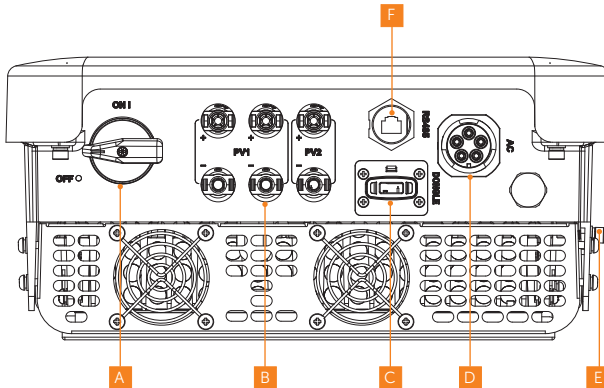


Figure 8-1 Terminals of Inverter

Table 8-1 Description of terminals

Item	Description	Remarks	Decisive voltage class
A	DC switch		-
B	PV connection terminal	For 12 kW and 15 kW inverters, PV1 has two strings and for 10 kW inverters, it has an optional with two strings.	DVC-C
C	Dongle terminal		DVC-A
D	AC connection terminal		DVC-C
E	Grounding point		-
F	RS485 terminal	Communication terminal for Meter, DataHub, Adapter Box G2, DRM, parallel connection etc.	DVC-A

8.1.2 Cable Connections of Inverter

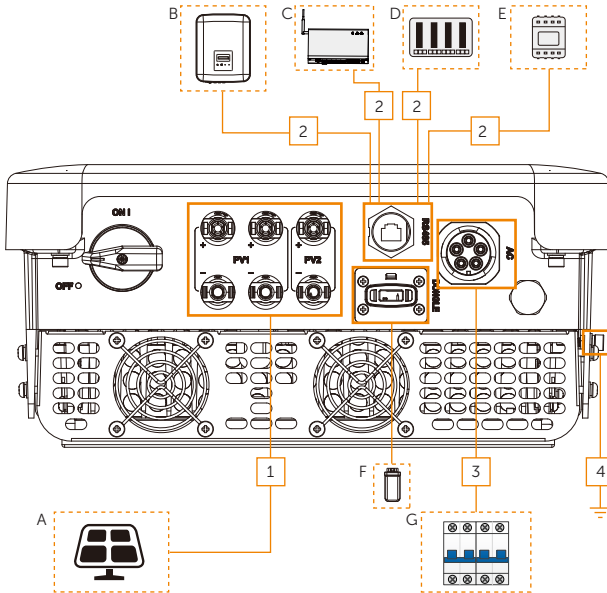


Figure 8-2 Cable connections of inverter

Table 8-2 Descriptions of connected part

Item	Part	Description	Source
A	PV module	A PV string is composed of the PV modules connected in series. The number of input PV strings varies in accordance with different models.	Prepared by user
B	(Optional) X3-MIC G2 series inverter	Select a same series inverter. [Should be connected with DataHub in parallel connection and using user-prepared RJ45 splitter(s).]	Purchased from SolaX
C	(Optional) SolaX communication device	SolaX DataHub, Adapter Box G2 and EV-Charger are supported. Select the device as needed.	Purchased from SolaX
D	Power grid scheduling device (only applicable to Australia and New Zealand)	Select the devices that meet the power grid scheduling requirements.	Prepared by user
E	Meter	Supported meter: SolaX authorized meter.	Purchased from SolaX
F	(Optional) Monitoring dongle	Only SolaX monitoring dongle supported.	Purchased from SolaX
G	AC circuit breaker	Select an appropriate AC circuit breaker according to the local regulations to ensure the inverter can be securely disconnected from the grid when an emergency occurs. Refer to " 5.3 Additionally Required Materials " for the recommended specifications of AC circuit breaker.	Prepared by user

Table 8-3 Descriptions of cables

Item	Cable	Type and specifications	Source
1	PV input power cable	Refer to " 5.3 Additionally Required Materials ".	Prepared by user
2	Communication cable		Prepared by user
3	AC output cable		Prepared by user
4	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.

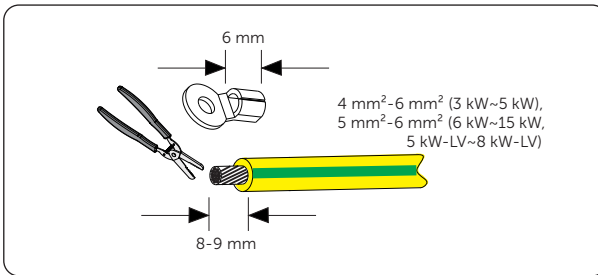


Figure 8-3 Stripping the PE cable

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

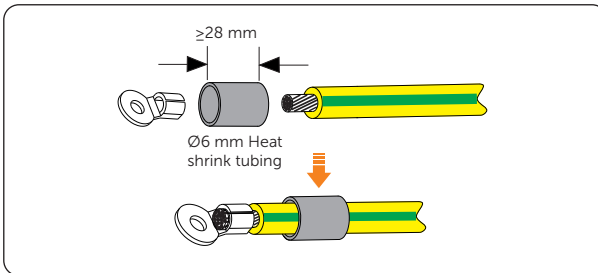


Figure 8-4 Installing the tubing and terminal

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

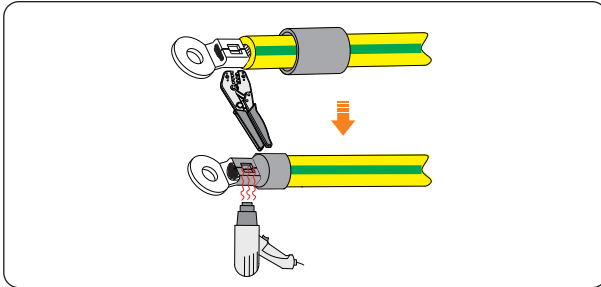


Figure 8-5 Crimping the cable and shrinking the terminal sleeve

Step 4: Remove the grounding screw from the right side of the inverter.

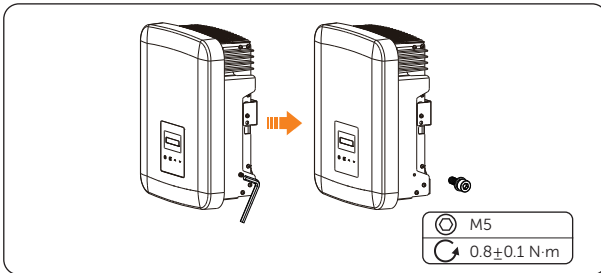


Figure 8-6 Removing the screw

Step 5: Connect the assembled PE cable to the grounding point of the inverter, and secure it with the original screw.

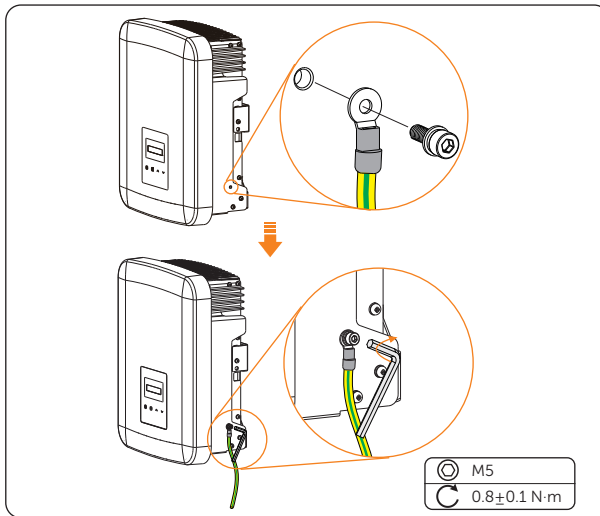


Figure 8-7 Securing the PE cable

8.3 AC Connection

NOTICE!

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

Requirements for AC connection

- Grid voltage requirement
 - » The grid voltage and frequency must be within the allowable range (230 V / 400 V, 220 V / 380 V for 3 kW ~ 15 kW models and 127 V / 220 V for 5 kW-LV ~ 8 kW-LV models, 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) inside the inverter. If an external RCD is required by local regulations, a 300 mA Type-A RCD is recommended. If required by local regulations, a Type-B RCD is also permitted.

- AC circuit breaker
 - » An AC circuit 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 circuit breaker, see "5.3 Additionally Required Materials".

Wiring procedures

Step 1: Disassemble the AC connector (part E) into three parts: Hold the male insert, anti-clockwise rotate the back shell to loosen it, and detach it from male insert. Then remove the cable nut from the back shell.

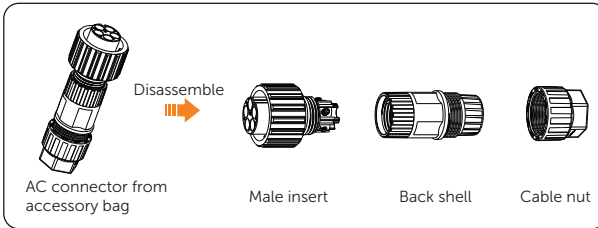


Figure 8-8 Disassembling the AC connector

Step 2: Remove the insulation jacket to 52.5 mm for L1, L2, L3 and N wire, 55 mm for PE wire. Strip the insulation of L1, L2, L3, N wire and PE conductor (12 mm). Then slide the cable nut and back shell onto the cable.

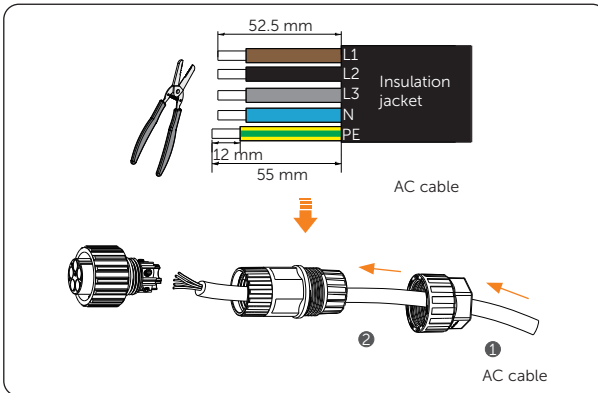


Figure 8-9 Stripping and threading the AC cable

Step 3: Insert the stripped end of the five wires into the appropriate holes of the male insert (The N wire and PE wire must be connected correctly), and then tighten each screw to ensure each wire in place using the accompanying Allen wrench (part F).

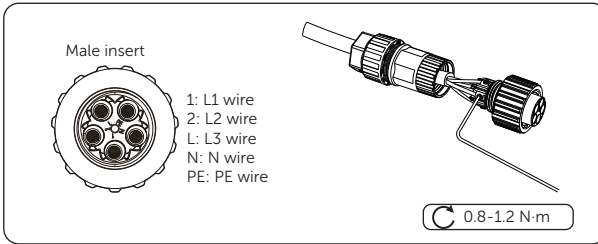


Figure 8-10 Securing the wires

Step 4: Tighten the back shell and the male insert. Then tighten the back shell and the cable nut.

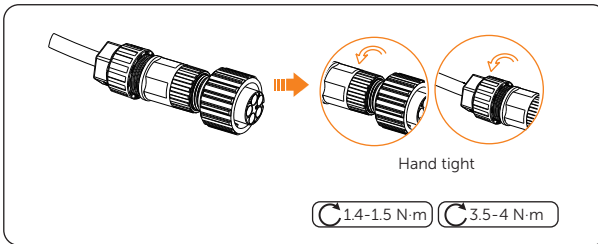


Figure 8-11 Tightening the connector

Step 5: Align the groove of male insert on the side of AC connector with the convex of female terminal on the side of the inverter.

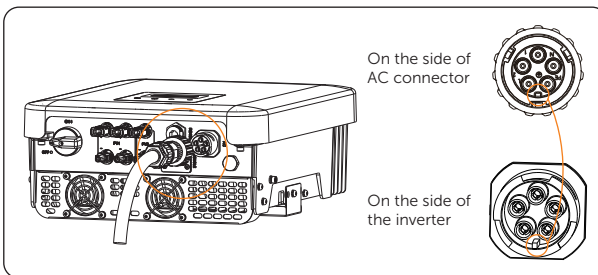


Figure 8-12 Aligning with the inverter

Step 6: Tighten the bush of the male terminal to connect the AC connector with the inverter.

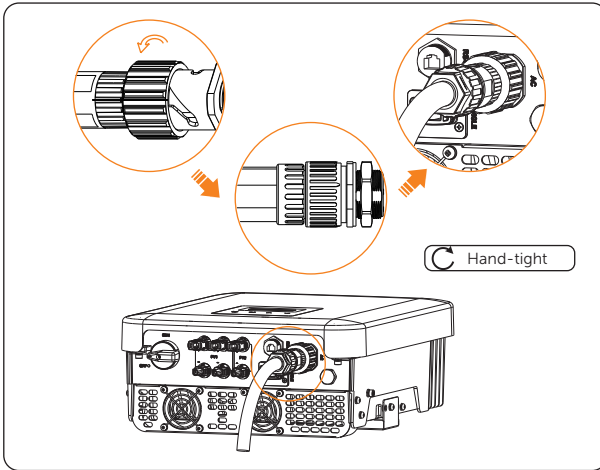


Figure 8-13 Connecting with the inverter

Step 7: Take out the AC terminal sheath (part G), separate it into two parts, and align them with the connected AC connector as shown below. Then, insert the two ST2.9 screws (part H) into the fixing holes and use a screwdriver to tighten them.

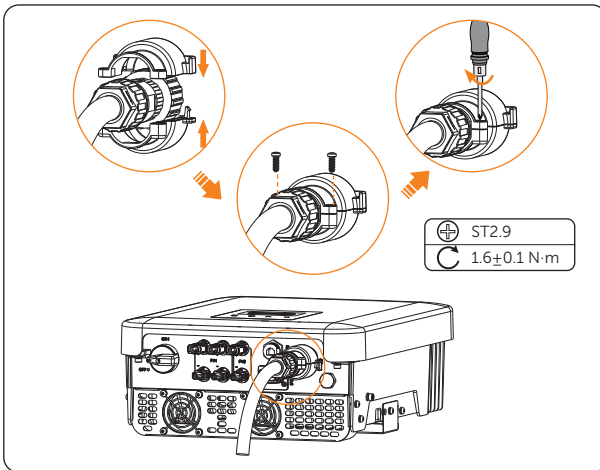


Figure 8-14 Installing the AC terminal sheath

 **DANGER!**

- The AC terminal sheath must be installed, or there may be a risk of danger.

 **DANGER!**

- Before powering on the inverter, make sure the AC connector has been installed correctly. Otherwise, electrical shock may be caused by high voltage, resulting in serious personal injury or death.

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.

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 (1000 V for 3 kW ~ 15 kW models and 800 V for 5 kW-LV ~ 8 kW-LV models) of the inverter. Otherwise, the inverter may be damaged.
 - » The operating voltage of PV modules must be within the MPPT voltage range (120-980 V for 3 kW ~ 15 kW models and 120-650 V for 5 kW-LV ~ 8 kW-LV models) of the inverter. Otherwise, the inverter will prompt a **PVVoltFault** alarm. 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: Strip the insulation of the PV cables to an appropriate length.

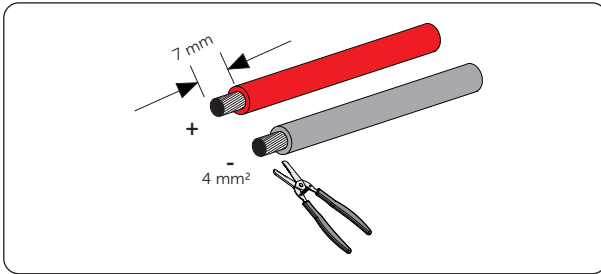


Figure 8-15 Stripping the PV cables

Step 2: Insert the stripped ends of the PV cables into the PV pin contacts (part J & L). Make sure the PV cable and the PV pin contact are of the same polarity.

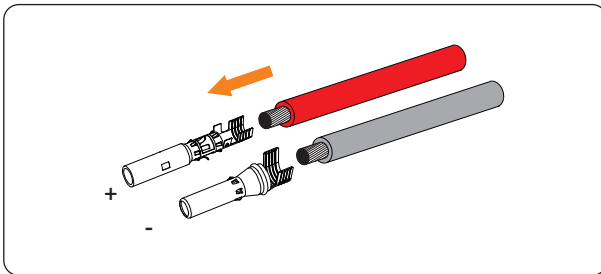


Figure 8-16 Inserting into the PV pin contact

Step 3: Crimp them with crimping tool for PV terminal. Pay attention to the crimping position.

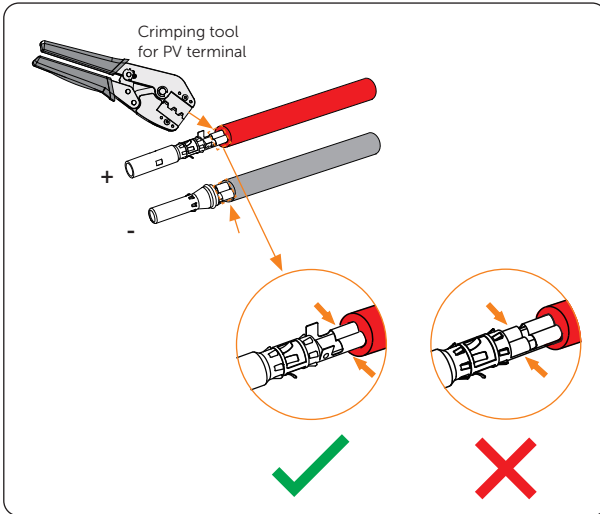


Figure 8-17 Crimping the PV cables with pin contacts

Step 4: Loosen the swivel nuts from the PV connectors (part I & K). Thread the PV cables through swivel nuts and insert the cables into the PV connectors.

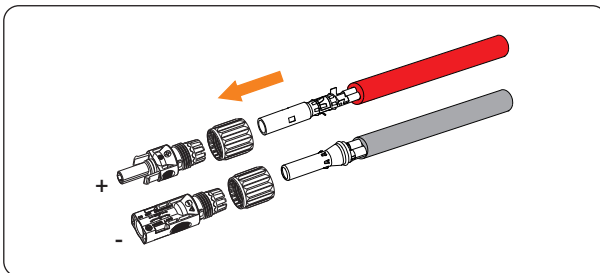


Figure 8-18 Threading the PV cables

Step 5: A "Click" will be heard if it is connected correctly. Gently pull the cable backward to ensure firm connection.

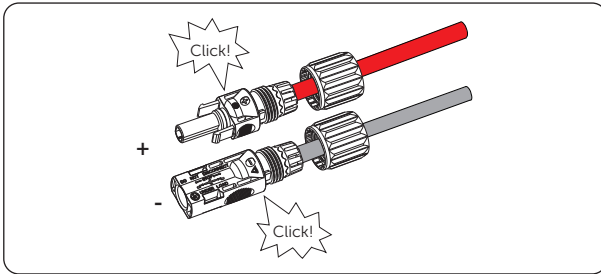


Figure 8-19 Securing the PV cables

Step 6: Tighten the swivel nuts clockwise. Verify that the PV connectors have the correct polarity before connection.

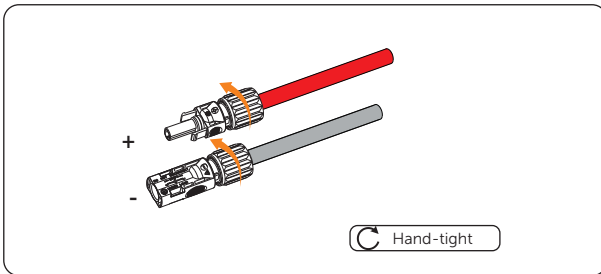


Figure 8-20 Tightening swivel nuts of PV connectors

Step 7: Use a voltage measuring 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 (1000 V for 3 kW ~ 15 kW models and 800 V for 5 kW-LV ~ 8 kW-LV models).

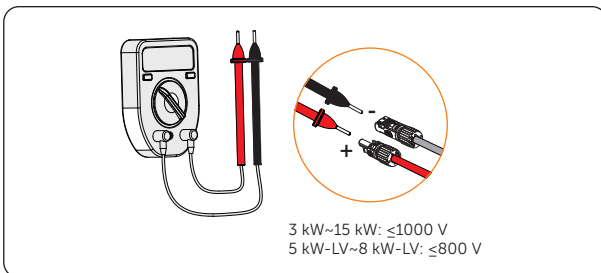


Figure 8-21 Measuring the voltage of PV connectors

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 8: Remove the PV terminal caps.

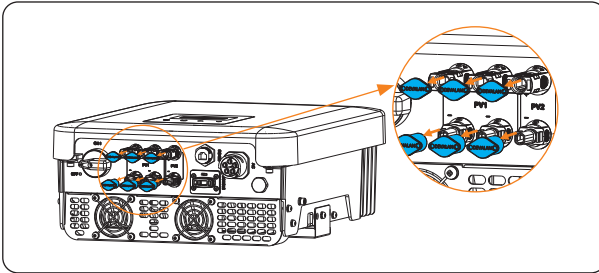


Figure 8-22 Removing the caps

Step 9: 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.

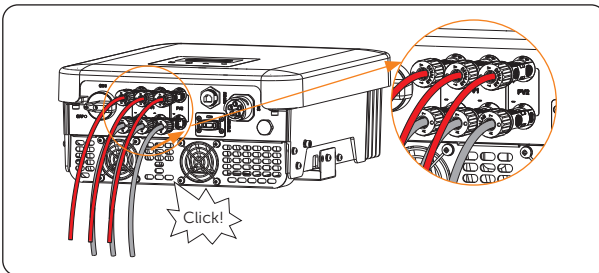


Figure 8-23 Connecting the PV cables

* Seal the unused PV terminals with the dustproof buckles (part M & N) from the accessory.

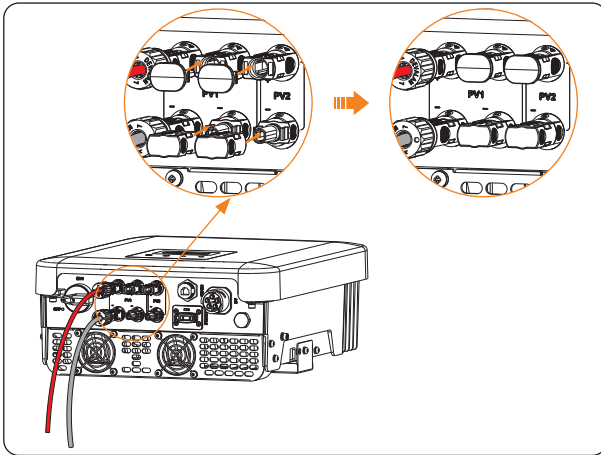


Figure 8-24 Sealing the unused PV terminals

! WARNING!

- 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 dustproof buckles and the PV cables

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

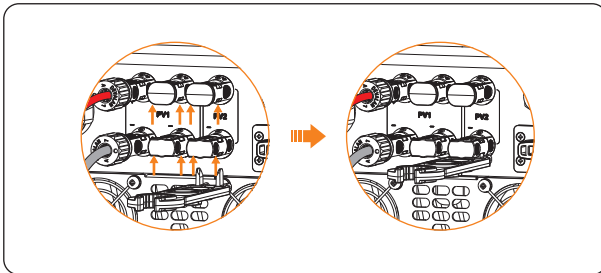


Figure 8-25 Disassembling the dustproof buckles

- Disassemble the PV connectors with the disassembling tool for PV terminal. Then remove the PV cable and slightly pull out the PV connectors.

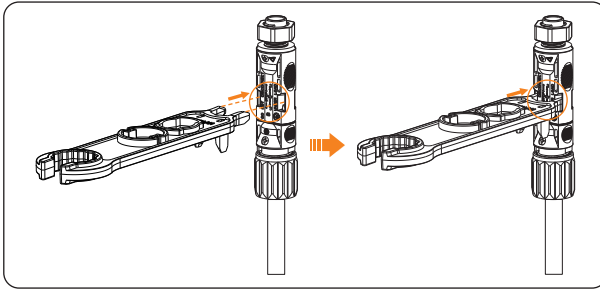


Figure 8-26 Disassembling the PV connectors

8.5 Communication Connection

There is an RS485 terminal on the bottom of the inverter. Through this terminal, the inverter can 1) communicate with the computer, DataHub or other devices and the meter and achieve the parallel function or EV-Charger application; or 2) achieve multiple functions like DRM (Demand Response Management), remote shutdown function and heat pump control via Adapter Box (First generation). Please refer to "[15 Appendix](#)" for the specific application.

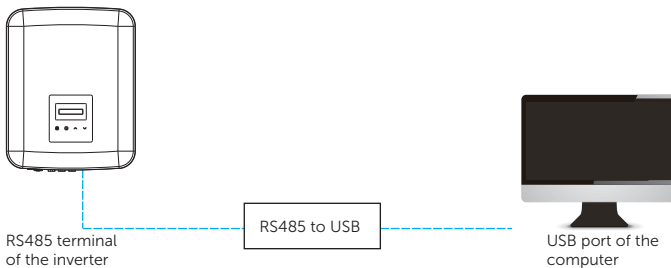


Figure 8-27 Communicating with computer

The product is equipped with a Modbus interface via RS485 terminal. The Modbus interface can be connected via RS485 to USB cable or external Modbus control device to SCADA systems for industrial use and has the following tasks:

- Remote query of measured values,
- Remote setting of operating parameters,
- Setpoint specifications for system control.

Pin Assignment

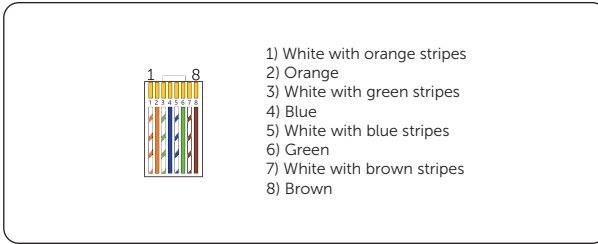


Figure 8-28 Pin of RS485 terminal

Table 8-4 Pin Definition

Item	DRM		Heat Pump	RS485/Meter		Heat Pump	-	-
Pin	1	2	3	4	5	6	7	8
Pin Definition	+12V	DRM0	Heat Pump	RS485_A	RS485_B	GND	X	X

- a. According to AS/NZS 4777.2, the inverter needs to support the function of demand response mode (DRM). With the use of an external control box, active or reactive power regulation can be realized in a timely and fast manner, and the inverter can be operated stably during the process of regulation.

Note: Only DRM 0 is available now. DRM0 (Demand Response Mode) here is specifically for AS/NZS 4777.2:2020; Short connect PIN1 (+12V) and PIN2 (DRM0) via external switch or relay, the inverter will reduce its output power to zero.

This remote shutdown function also applies to other safety codes.

- b. Heat Pump Controller is the controlling signal provide by the inverter to switch on or off the SG ready heat pump via Adapter Box (First generation).
- c. RS485/Meter can be used to connect with the meter or other supported devices.

Wiring Procedures

Step 1: Find the waterproof connector with RJ45 (part P) from the accessory bag and disassemble it.

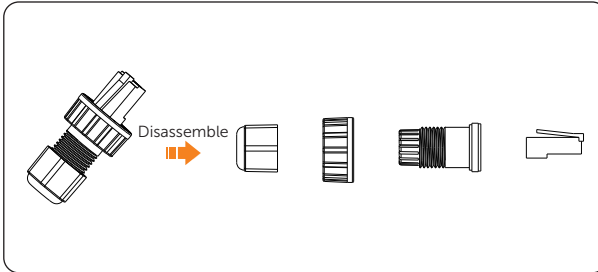


Figure 8-29 Disassembling the waterproof connector with RJ45

Step 2: Let the communication cable pass through the disassembled parts of the waterproof connector with RJ45. Then strip the insulation jacket from the communication cable.

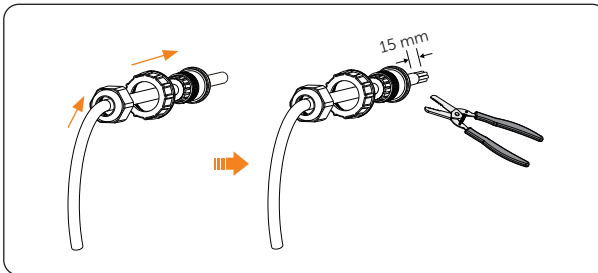


Figure 8-30 Threading and stripping the communication cable

Step 3: Insert the stripped cable into the RJ45 connector following the PIN definition rule and crimp the RJ45 connector with the crimping plier.

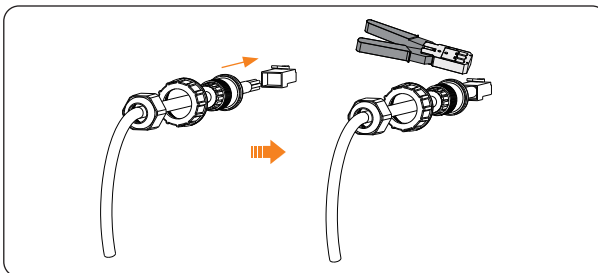


Figure 8-31 Crimping the RJ45 connector

Step 4: Reassemble the waterproof connector with RJ45 with the cable but do not tighten it.

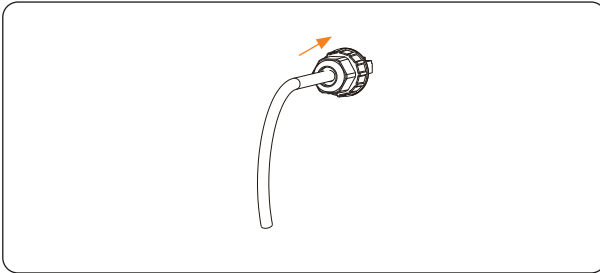


Figure 8-32 Reassembling the waterproof connector but not tightening

Step 5: Remove the protective cover on the RS485 terminal.

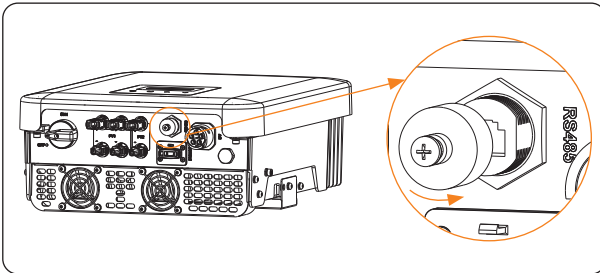


Figure 8-33 Removing the protective cover

Step 6: Connect the cable to the RS485 terminal of the inverter.

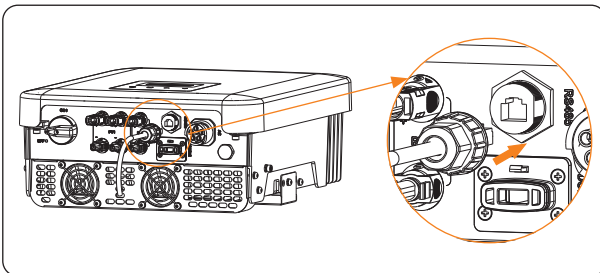


Figure 8-34 Connecting to the inverter

Step 7: Tighten the waterproof connector.

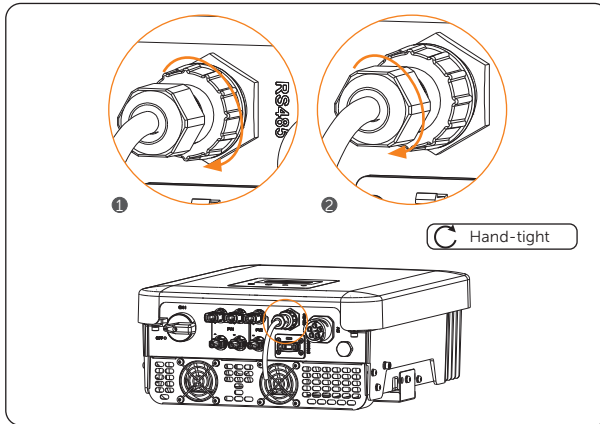


Figure 8-35 Tightening the waterproof connector

Meter Connection

The inverter can work with an electric meter to monitor household electricity usage. The electricity meter can transmit the relevant electricity data to the inverter or platform.

CAUTION!

- It is recommended to connect our smart meter to the inverter. If there is no smart meter installed, please disable the **Export Control** function in the inverter setting. Otherwise the inverter will shut down and report a **Meter Fault** alert. The **Export Control** is disabled by default, if an error occurs, please check if it is disabled.
- Smart meters must be authorized by our company. Unauthorized meter may be incompatible with the inverter, thereby resulting in inverter damage and malfunction. SolaX will not be responsible for the impact caused by the use of other appliances.
- Meter connection diagram

NOTICE!

- The following diagram take SolaX authorized DTSU666 meter connection for example.
- Please make PE connection for Meter if the meter has ground terminal.

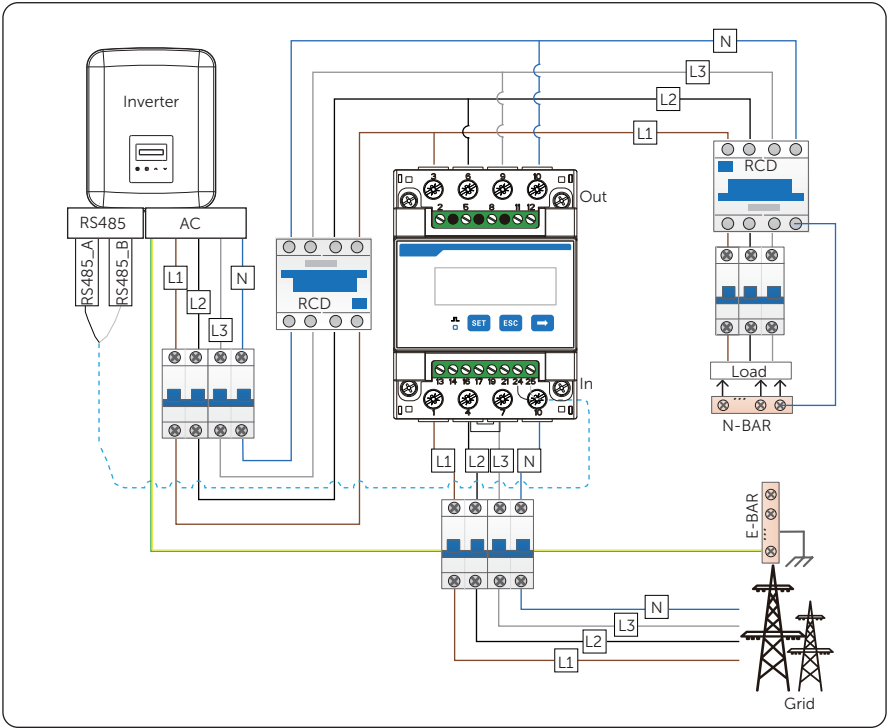


Figure 8-36 Meter connection diagram

*For direct-connected meter, the current flow direction should be from grid to the inverter.

*Terminal 1, 4 and 7 of the meter must be connected to the grid side, and terminal 3, 6 and 9 be connected to the inverter side of the system. Otherwise, the system power data might be misread.

For the meter connection, please see the Quick Installation Guide for three-phase meter for details.

8.6 Monitoring Connection

The inverter provides a Dongle terminal, which can transmit data of the inverter to the monitoring website via WiFi dongle (Optional), LAN dongle (Optional) and 4G dongle (Optional), etc. Users can choose based on actual needs. (If needed, purchase products from us.) The following contents takes WiFi dongle as an example.

Monitoring connection diagram

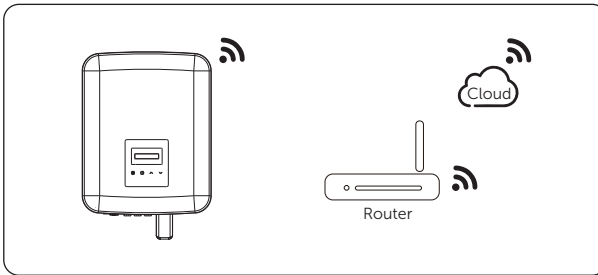


Figure 8-37 WiFi connection diagram

Monitoring wiring procedure

Remove the terminal cap and plug the WiFi dongle on the inverter.

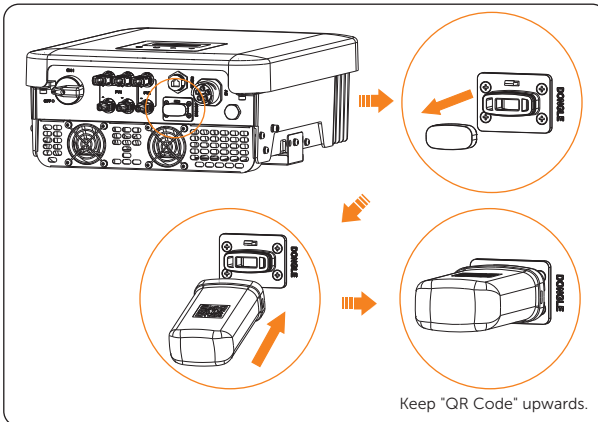


Figure 8-38 WiFi connection procedure

 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 WiFi signals are weak, install a WiFi signal booster.

NOTICE!

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

9 System Commissioning

9.1 Checking before Power-on

No.	Item	Checking details
1	Installation	The inverter 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 (if any) is connected correctly and securely. The ground cable is 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 AC terminal are connected correctly and securely.
5	Unused terminal	Unused terminals and ports are locked by waterproof caps.
6	Screw	All the screws are tightened.

9.2 Powering on the System

Step 1: Turn on the DC switch. (For the operation of lockable DC switch, please refer to "9.3 Lockable DC Switch".)

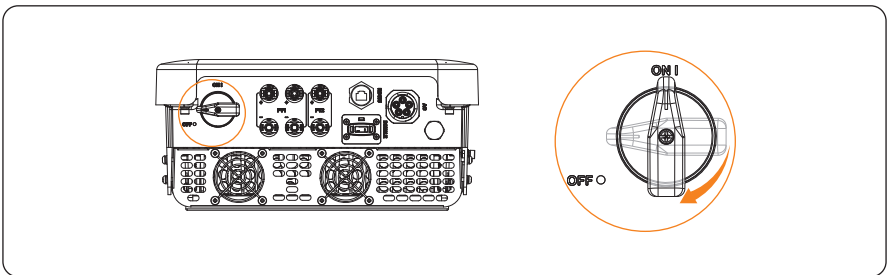


Figure 9-1 Turn on DC switch

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

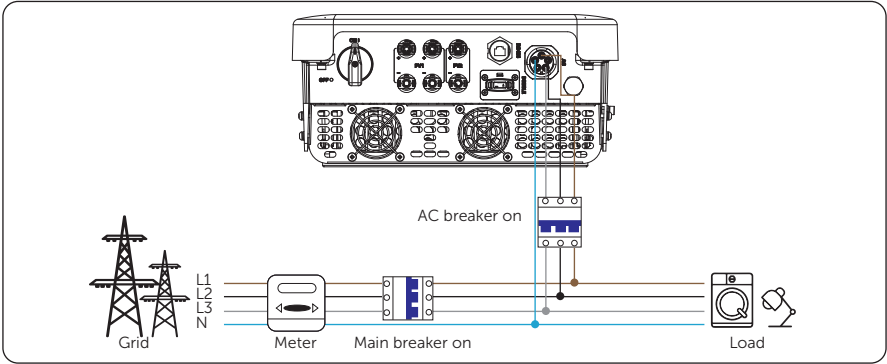


Figure 9-2 Switch on AC breaker

Step 3: Check the status of the LED indicators and LCD screen.

- » The operating LED indicator should be blue and the LCD screen should display the main interface.
- » If error information is displayed on the screen of the inverter, check the possible causes and restart the inverter.

9.3 Lockable DC Switch

There are two kinds of DC switch for the series inverters:

- Unlockable DC switch (without lock; applied to most countries and regions);
- Lockable DC switch (with lock; mainly applied to Australia and New Zealand).

States of the lockable DC switch

For the lockable DC switch, there are 3 states: ON, OFF and OFF+Lock and the default state is OFF.

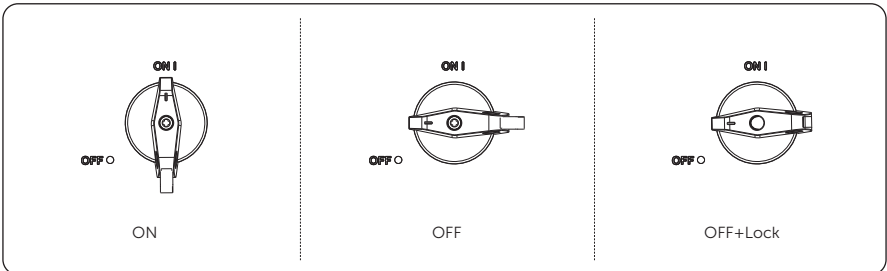


Figure 9-3 States of the lockable DC switch

Operation of the lockable DC switch

- » Turn on

Rotate from OFF state to ON state.

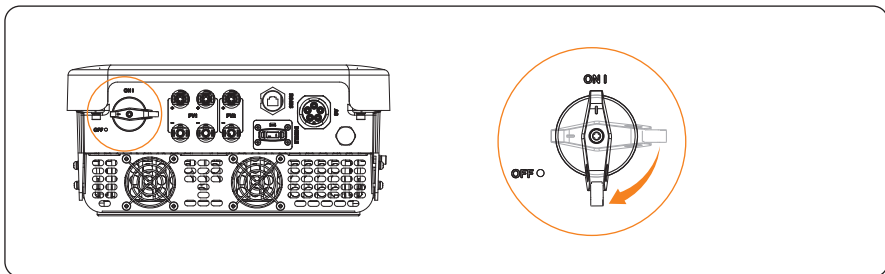


Figure 9-4 Turning on the lockable DC switch

- » Turn off

Rotate from ON state to OFF state.

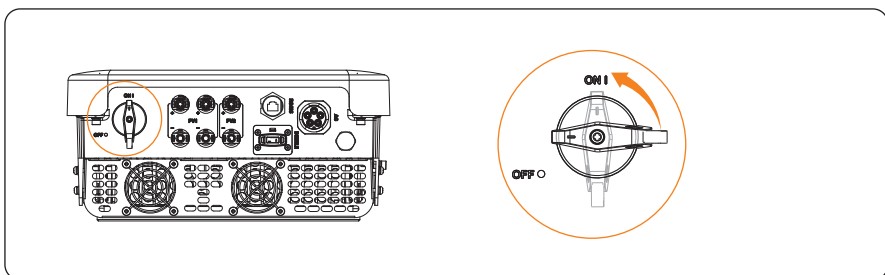


Figure 9-5 Turning off the lockable DC switch

- » Lock

Make sure the DC switch is in OFF state and push up the buckle as shown below. Then secure it with a lock (Please prepare a lock in advance).

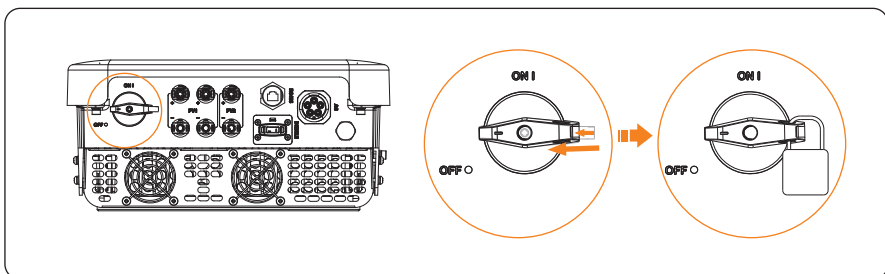


Figure 9-6 Locking the lockable DC switch

» Unlock

Remove the lock and wait for it to return to OFF state.

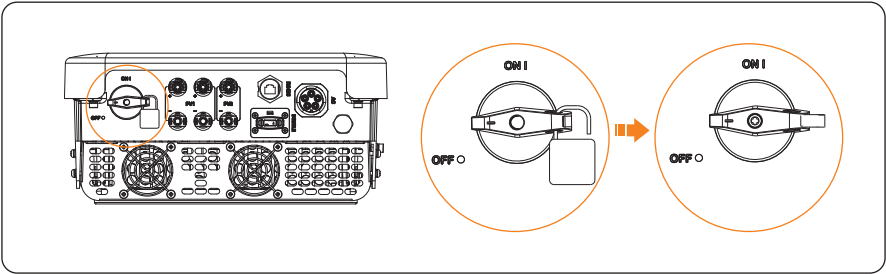


Figure 9-7 Unlocking the lockable DC switch

10 Operation on LCD

10.1 Introduction of Control Panel

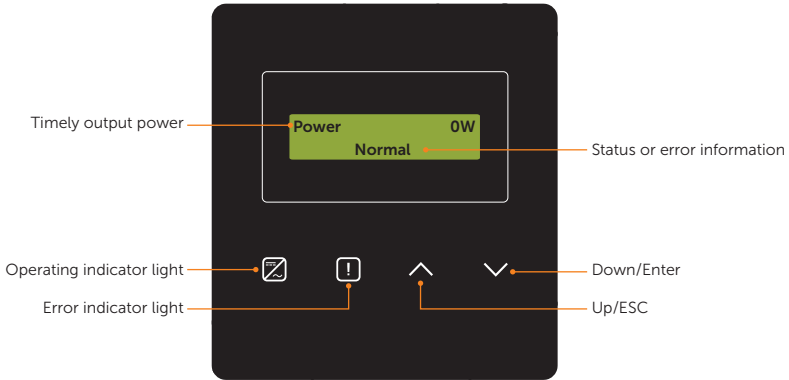


Figure 10-1 Control Panel

- In normal state, the **Power**, **Pgrid**, **Today** and **Total** information will be displayed respectively. You can press the keys to switch information.
- In an error state, the fault message will be displayed, please refer to "[12.2 Troubleshooting](#)" for corresponding solutions.

Table 10-1 Definition of indicators








LED indicator	Status		Definition
 Operating		Light on	The inverter is in a normal state.
		Blinking	The inverter is in a waiting or checking state.
 Error		Light on	The inverter is in a fault state.

Table 10-2 Definition of keys

Key	Definition
 Up/ESC key	Short press: Up, move the cursor to the upper part or increase the value. Long press: ESC, exit from the current interface or function, or confirm the function setting to take effect.
 Down/Enter key	Short press: Down, move the cursor to the lower part or decrease the value. Long press: Enter, confirm the selection or value change.

10.2 Introduction of Main Interface

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



The first line shows the following information:

- **Power** means the timely output power;
- **Pgrid** means the power export to or import from the grid (Positive value means the energy feeds into the grid, negative value means the energy used from the grid);
- **Today** means the energy generated within the day;
- **Total** means the energy generated until now.

The second line shows the running status of the inverter:

- **Normal** means the inverter is in normal status.
- When the inverter is in fault status, the error information will be displayed.

10.3 Introduction of Menu Interface

When the inverter shows the default interface, long press "Enter" key to enter the menu interface. There are seven submenus in the menu that can be selected for relevant operations.



- **Status:** Display the real-time value of the inverter, including **Grid** and **Solar**.
- **Language:** Set the language displayed on the inverter.
- **DateTime:** Set the date and time.
- **Settings:** Set the parameters of the inverter.
- **Meter Energy:** Display the import and export energy information of the inverter.
- **Error Logs:** Display the error logs of the inverter.
- **About:** Display the information about the inverter.

Status

Status display the real-time value of the inverter, including **Grid** and **Solar**.



- **Grid**

Grid shows the current condition of the AC output of the inverter, including **Ua, Ia, Fa, Ub, Ib, Fb, Uc, Ic, Fc, Pout, Pgrid**. The "a", "b" and "c" in the parameter item refers to L1, L2 and L3 respectively.

- » **U:** The voltage of each phase of the AC output of the inverter.
- » **I:** The current of each phase of the AC output of the inverter.
- » **F:** The frequency of each phase of the AC output of the inverter.
- » **Pout** measures the output power of the inverter.
- » **Pgrid** measures power export to or import from the grid. Positive value means the power feeds into the grid, negative value means the power used from the grid.



- **Solar**

Solar shows the real time PV condition of the system, such as input voltage, current and power situation of each PV input, including **U1, I1, P1, U2, I2, P2**.



Language

This inverter provides multiple languages for customers to choose, such as English, German, Polish, French, Portuguese, etc. You can set the display language based on actual need.



DateTime

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

The display format is "2021-08-15 15:34", 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.



Settings

The user can set the parameters of the inverter here.

- **Password**

Once entered from the menu page after selecting **Settings**, the password must be inputted.



The default password is "2014" for the installer, which only allows the installer to review and modify necessary settings complying to the local rules and regulations. If further advanced setting is required, please contact the distributor or us for assistance.

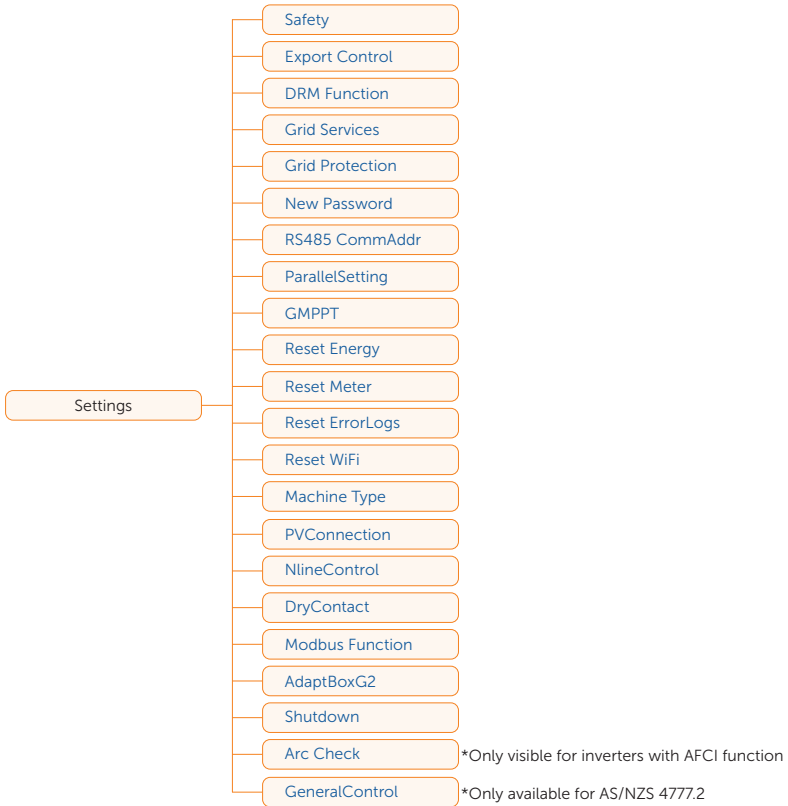
NOTICE!

- All the adjustable parameters including safety code, grid parameter, export control, etc. can be modified under the permissions of installer password. Unauthorized use of the installer password by unauthorized persons can lead to incorrect parameters being inputted, resulting in power generation loss or violation of local regulation. Get the installer password from the dealer and never open the password to unauthorized person.
- Replace the password with a new secure password for the consideration of account security.

After inputting the password, you can view the submenus of the setting parameters.



The submenus contain the following items. For details, please refer to "10.4 Detailed Operation of Settings".



Meter Energy

You can check the import and export energy by this function. There are four parameters: **Today Import**, **Total Import**, **Today Export**, **Total Export**. Only when a meter is installed in the system can the inverter accumulate the energy takes from or feeds into the grid. If there is no meter in the system, the value will be 0.



Error Logs

The **Error Logs** contain error information happened. It can record six items at most. Each item includes the date and time the error happened and the error name.



About

This interface shows the information of the inverter, including **Product SN, Master, Manager, Internal code.**



10.4 Detailed Operation of Settings

The user can set the safety code, grid, connection etc. of the inverter here.

Safety

NOTICE!

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

Here you can set safety code according to different countries and grid-tied standards. In addition, the inverter has an **UserDefined** option which allows you to customize relevant parameters with a wider range.



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

For Australia and New Zealand regions, select Australia Region A / B / C in compliance with AS/NZS 4777.2. Only after the safety code setting is completed, some designated parameters in the inverter system will take effect according to the corresponding safety regulations.

Table 10-3 Region settings

Region	Australia A	Australia B	Australia C	New Zealand	
Standard Code Name	AS4777_2020_A	AS4777_2020_B	AS4777_2020_C	New Zealand	Setting Range
OV-G-V	265 V	265 V	265 V	265 V	230-300 V
OV-GV1-T	1.5 s	1.5 s	1.5 s	1.5 s	
OV-G-V2	275 V	275 V	275 V	275 V	230-300 V
OV-GV2-T	0.1 s	0.1 s	0.1 s	0.1 s	
UN-G-V1	180 V	180 V	180 V	180 V	40-230 V
UNGV1-T	10 s	10 s	10 s	10 s	
UN-G-V2	70 V	70 V	70 V	70 V	40-230 V
UNGV2-T	1.5 s	1.5 s	1.5 s	1.5 s	
OV-G-F1	52 Hz	52 Hz	55 Hz	55 Hz	50-55 Hz
OVGF1-T	0.1 s	0.1 s	0.1 s	0.1 s	
OV-G-F2	52 Hz	52 Hz	55 Hz	55 Hz	50-55 Hz
OVGF2-T	0.1 s	0.1 s	0.1 s	0.1 s	
UN-G-F1	47 Hz	47 Hz	45 Hz	45 Hz	40-50 Hz
UNGF1-T	1.5 s	1.5 s	5 s	1.5 s	
UN-G-F2	47 Hz	47 Hz	45 Hz	45 Hz	45-50 Hz
UNGF2-T	1.5 s	1.5 s	5 s	1.5 s	
Startup-T	60 s	60 s	60 s	60 s	15-1000 s
Restore-T	60 s	60 s	60 s	60 s	15-600 s
Recover-VH	253 V	253 V	253 V	253 V	
Recover-VL	205 V	205 V	205 V	198 V	
Recover-FH	50.15 Hz	50.15 Hz	50.15 Hz	50.15 Hz	
Recover-FL	47.5 Hz	47.5 Hz	47.5 Hz	47.5 Hz	
Start-VH	253 V	253 V	253 V	253 V	
Start-VL	205 V	205 V	205 V	198 V	
Start-FH	50.15 Hz	50.15 Hz	50.15 Hz	50.15 Hz	
Start-FL	47.5 Hz	47.5 Hz	47.5 Hz	47.5 Hz	

Export Control

This function allows the inverter to control the output power to the grid. The setting parameters includes **Mode Select**, **Control mode** and **Meter/CT Check**.



- **Mode Select**

For **Mode Select**, the user can choose from **Disable** or **Meter**. The default setting is **Disable**. When **Disable** is chosen, the function will be shut off.

When the user wants to enable this function, choose **Meter**, the meter is used to monitor energy exported to the grid.



When enabled, the **User Value** can be set. The user value must be set within the range of 0 to 60 kW. If the user does not want to feed power to the grid, set **User Value** to "0 W".



NOTICE!

- Under safety code AS4777.2, after selecting **Meter** under **Export Control**, you can set the **Soft Limit** and **Hard Limit** of **Export Control** to control the power output to grid.

- **Control Mode**

For **Control Mode**, you can set whether to take power from the grid. You can choose from **Total** and **Per Phase**. **Total** means zero injection according to the total power of the three phases while **Per Phase** means zero injection according to the minimum power among the three phases when controlling zero export.



Under each selection, **Pgrid Bias** and **Pgrid Power** can be set.



For **Pgrid Bias**, the default setting is **Disable**, select **INV** for **Pgrid Bias** to take power from the mains.



For **Pgrid Power**, set the power biased within the range 1 to 1500 W according to actual needs when the function is enabled.



- **Meter/CT Check**

There are three items under **Meter/CT Check**: **Check Mode**, **Check Result** and **MeterDirection**. For this series inverter, only meter check is supported.



- » **Check Mode**

The default setting is **Disable**. When meter check is needed, you can select **Manual** and the inverter will start checking. And you can turn to **Check Result** to review the result 20 seconds later.



- » **Check Result**

The **Check Result** will display the result of the latest checking carried out within ten minutes, and display **no result** after ten minutes of checking action or with no checking action. The result contains **A-phase Result**, **B-phase Result**, **C-phase Result**. For each phase, there are four kinds of result: Correct wiring, wiring reversed, wrong position, no result.



- » **MeterDirection**

When the inverter is connected with meter, the default setting is **Positive**. If all the three phases of the meter are in reverse connection, you can select **Negative** to enable the meter to work normally.



DRM Function

The DRM function is a demand response method required by the AS/NZS 4777.2 standard. The default setting is **Disable**. Choose **Enable** to control the inverter's power off through the external communication.



Grid Services

Usually end users do not need to set the grid parameters. All default values have been set before leaving factory according to safety rules.

If reset is needed, any changes should be made according to the requirements of local grid.



There are five submenus under **Grid Services: P(freq), Soft Start, Reactive Power, P(u) Function, Power Limits.**

- **P(freq)**

Set the overfrequency and underfrequency parameters of the inverter here.



Table 10-4 Items under P(freq)

	Items	Description
	Enable/Disable	Enable or disable the over-frequency derating function
	CurveType (f1/ fstop)	Curve type
	fULCO	Upper limit of the continuous operation range for frequency
P(Over freq)	fhyste	Values for over-frequency hysteresis margin
	fPmin	Frequency where power output is zero
	FreqDroopRate	Rate of active power dropping gradient
	EntryDelayTime	Delay time into over-frequency derating
	ExitDelayTime	Delay time to exit over-frequency derating
	FreqStopPoint	Frequency where over-frequency derating stops

	Items	Description
P(Under freq)	Enable/Disable	Enable or disable the under-frequency ramp-up function
	fLLCO	Lower limit of continuous operation range for frequency
	fhyste	Values for under-frequency hysteresis margin
	fPmax	Frequency where power output level is maximum
	FreqDroopRate	Rate of active power increasing gradient
	EntryDelayTime	Delay time into under-frequency ramp-up

- **Soft Start**

Set the gradient of the power to increase from 0 to full power operation after the inverter enters the normal state if enabled.



Once enabled, the user can set the soft start rate. If set as shown, 9 percent of the rated power increase per minute.



- **Reactive Power**

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



Off, Fixed Q Power, Q(u), PF(p), Under Excited, and Over Excited can be selected in **Reactive Power** interface. Adjust the parameters under each setting in the table.

Table 10-5 Items under each mode of Reactive Power

Mode Select	Items	Description
Off	/	Disable reactive power control
Fixed Q Power	Q Power	Set a fixed reactive power value in Var
	FixQ_3Tau	Fixed Q power response time constant

Mode Select	Items	Description	
Q(u)	QPowerLockEn	Enable or Disable the curves of Voltage and Reactive Power	
	QuLockIn	Active Power ratio for entering Qu mode	
	QuLockOut	Active Power ratio of exiting Qu mode	
	QuGridV1	Curve of Voltage and Reactive Power; Set four points for the output curve	
	QuGridV2		
	QuGridV3		
	QuGridV4		
	QuQ1		
	QuQ2		
	QuQ3		
	QuQ4		
	Qu_3Tau	Qu curve response time constant	
	mincosf	Minimum power factor	
	PF(p)	PowerFactor1	Curves of Power and Power-factor; Set four points for the output curve
PowerFactor2			
PowerFactor3			
PowerFactor4			
PowerRatio1			
PowerRatio2			
PowerRatio3			
PowerRatio4			
EntryVolt		Voltage value for entering PF(p) mode	
ExitVolt		Voltage value for exiting PF(p) mode	
	PF(p)_3Tau	PF(p) curve response time constant	
Under Excited	PF Value	Adjustment of the reactive power by adjusting the power factor (phase angle lagging- load is inductive)	
Over Excited	PF Value	Adjustment of the reactive power by adjusting the power factor (phase angle leading - load is capacitive)	

- Reactive power control, reactive power standard curve $\cos \varphi = f(P)$
 - » For VDE ARN 4105, the curve $\cos \varphi = f(P)$ should refer to curve A. The set default value is shown in curve A.

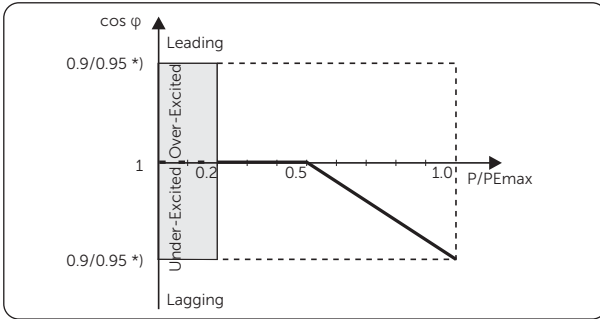


Figure 10-2 Curve A

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

- » For TOR, the curve $\cos \varphi = f(P)$ should be curve B. The set default value is shown in curve B.

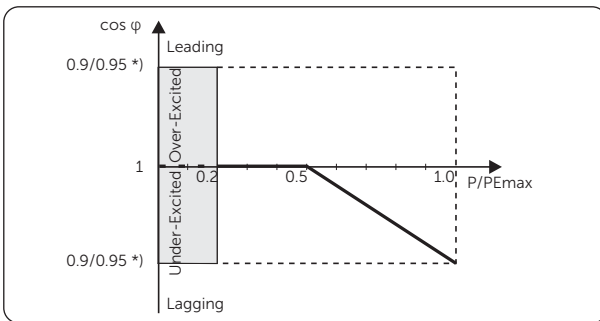


Figure 10-3 Curve B

*) Depend on the required Q capacity

- » For CEI 0-21, the default value of **EntryVolt** is 1.05Vn. When $V_{ac} > 1.05V_n$, $P_{ac} > 0.2 P_n$, curve $\cos \varphi = f(P)$ corresponds to curve C.

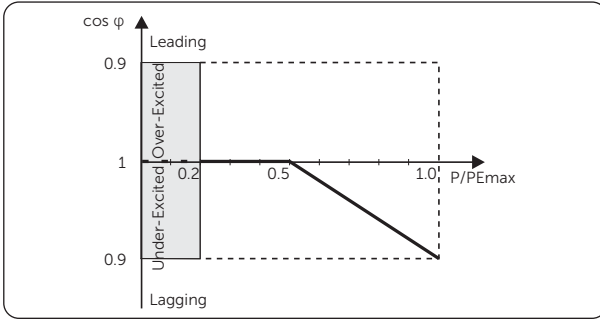


Figure 10-4 Curve C

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

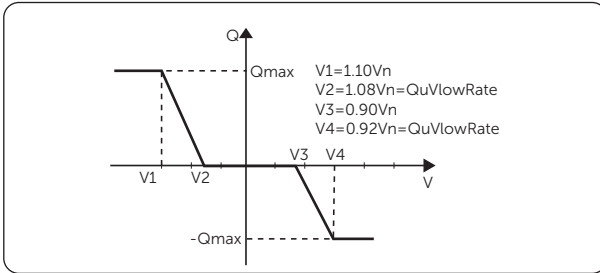


Figure 10-5 Curve $Q = f(V)$

- **P(u) Function**

(Applicable to specific countries, please refer to local grid requirements.)

The P(u) Function is a volt-watt response mode required by certain national standards such as AS/NZS 4777.2. This function can control the active power of the inverter according to the grid voltage. Enable means that this function is turned on.

The items in the **P(u) Function** interface will be adjusted in accordance with the local safety requirements and law regulations, casual modification is prohibited.



Table 10-6 Items under P(u) Function

Items	Description
Enable/Disable	Enable or disable the P(u) Function.
PuGridV1	
PuGridV2	
PuGridV3	
PuGridV4	Curve of Voltage and Active Power; Set four points for the output curve
Pu_PowerRatio1	
Pu_PowerRatio2	
Pu_PowerRatio3	
Pu_PowerRatio4	
Pu_3Tau	Pu curve response time constant

For AS/NZS 4777.2, the curve required for the volt-watt mode can be referred to the below curve.

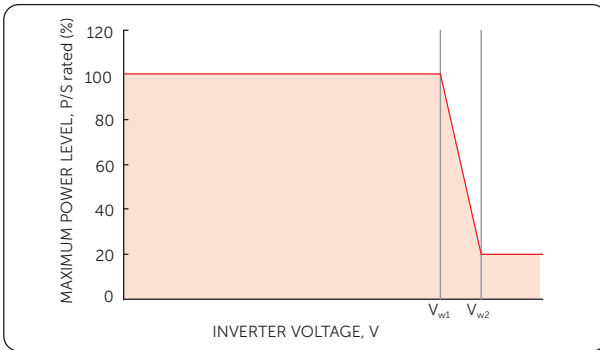


Figure 10-6 Curve for P(u)

- Power Limits**

Set **Proportion** in the **Power Limits** interface to limit the power of the AC output of the inverter. The setting value is between 0.00 and 1.00.



Grid Protection

Usually end users do not need to set the **Grid Protection**. All default values have been set before leaving factory according to safety rules.

If reset is needed, any changes should be made according to the requirements of local grid.



Table 10-7 Parameter under Grid Protection

Parameter	Description
O/V Stage1	Level 1 overvoltage protection point
U/V Stage1	Level 1 undervoltage protection point
O/V Stage2	Level 2 overvoltage protection point
U/V Stage2	Level 2 undervoltage protection point
O/V Stage3	Level 3 overvoltage protection point
U/V Stage3	Level 3 undervoltage protection point
O/V 10min En	Enable/disable the 10 minutes overvoltage protection
O/V 10min Set	Set the voltage value of 10 minutes overvoltage (average) protection
O/F Stage1	Level 1 overfrequency protection point
U/F Stage1	Level 1 underfrequency protection point
O/F Stage2	Level 2 overfrequency protection point
U/F Stage2	Level 2 underfrequency protection point
H/LVRT Function	Enable/disable high/low voltage ride-through
Frt_EnterVoltUp	Entry value of high voltage ride-through
Frt_EnterVoltDn	Entry value of low voltage ride-through
O/V 10min Time	Set the time of the 10 minutes overvoltage protection
VacOvp1stTime	Level 1 overvoltage tripping time
VacOvp2ndTime	Level 2 overvoltage tripping time
VacUvp1stTime	Level 1 undervoltage tripping time
VacUvp2ndTime	Level 2 undervoltage tripping time
FacOfp1stTime	Level 1 overfrequency tripping time

Parameter	Description	
FacOfp2ndTime	Level 2 overfrequency tripping time	
FacUfp1stTime	Level 1 underfrequency tripping time	
FacUfp2ndTime	Level 2 underfrequency tripping time	
VacOvp3rdTime	Level 3 overvoltage tripping time	
VacUvp3rdTime	Level 3 undervoltage tripping time	
LVRT_0_Current	Zero current switch	
Connection	Low frequency	Lower limit of power-on start-up frequency
	High frequency	Upper limit of power-on start-up frequency
	Low voltage	Lower limit of power-on start-up voltage
	High voltage	Upper limit of power-on start-up voltage
	Observationtime	Observation time of power-on start-up
	Gradient Enable	Enable soft start slope after power-on
	Gradient	Rate of soft start slope after power-on
	T_Start	Self-test time of power-on start-up
Reconnection	Low frequency	Lower limit of reconnection frequency
	High frequency	Upper limit of reconnection frequency
	Low voltage	Lower limit of reconnection voltage
	High voltage	Upper limit of reconnection voltage
	Observationtime	Observation time of reconnection
	Gradient Enable	Enable soft start slope after reconnection
	Gradient	Rate of soft start slope after reconnection
	T_Start	Reconnection time
FreqROCOF	Rate of frequency change	

New Password

You can reset the password here.



RS485 CommAddr

You can set the inverter address based on actual needs. Setting range is 1 ~ 255. The default address is "1".



ParallelSetting

Make sure it is kept disabled (by default). The series inverter does not support parallel connection without DataHub.

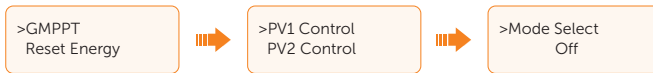


If you want to use the parallel system with DataHub, please refer to the instructions in section "15.1 Application of Parallel Function" for details of connection and settings.

GMPPT

You can set the shadow tracking speed with four options, which are **Off**, **Low**, **Middle**, and **High**. This function is off by default.

- **Off**: Switch off the shadow tracking function.
- **Low**: Scan the shadow every four hours.
- **Middle**: Scan the shadow every three hours.
- **High**: Scan the shadow per hour.



Reset Energy

You can clear the feed-in or export power energy data (i.e. **Today Import**, **Total Import**, **Today Export** and **Total Export** under **Meter Energy**) collected by the inverter by this function (if a meter is connected) when select **Yes**.



Reset Meter

You can clear the energy data collected by the meter (if used) by this function when select **Yes**.



Reset ErrorLogs

You can clear the error logs by this function when select **Yes**.



Reset WiFi

You can restart the WiFi by this function when select **Yes**.



Machine Type

You can check the machine type by this function. The number refers to the rated output power of the device and "**T**" means with two inputs of MPPT, "**LV**" means this specific model works in low voltage range.



PVCConnection

You can select the PV connection type based on the actual connection ways of PV panels by this function.



NlineControl

You can enable or disable the NlineControl by this function. If the N wire of the AC side were connected, select **Enable**; if not connected, select **Disable**.



DryContact

You can use the **DryContact** to connect SG Ready heat pump by this function via Adapter Box (First generation). Select **Load Management** to allow the communication.



There are three functions (**Disable/Manual/SmartSave**) which can be selected for **Load Management**. **Disable** means the heat pump is off. When **Manual** is selected the user can control the external relay to remain close or open manually. **SmartSave** mode can set the values of the heat pump's on/off time, conditions and operating modes.



If the user uses the inverter dry contacts to control heat pump through Adapter box, please refer to the *Adapter Box Quick Installation Guide* to set the parameters here.

Modbus Function

When the inverter works with other devices, please select **Ev Charger** for communication with the EV-Charger, select **COM485** for communication with devices except EV-Charger.



AdaptBoxG2

If the inverter is to work with the Adapter Box G2, **Enable** this function to allow the communication between the inverter and the Adapter Box G2.



Shutdown

When you want to use the remote shutdown function, enable this function.



Once enabled, you can select from **NC/NO**. **NO** (by default) means shutdown when the assigned pin (PIN1 & PIN2) of the RS485 terminal is connected. **NC** means shutdown when the assigned pin of the RS485 terminal is not connected. The inverter will display **Waiting(SHUT)** on the screen.



Arc Check (Only visible for inverters with AFCI function)

The inverter has an optional arc detection function, which detects the arcing of the DC side and cuts the circuit in time to protect the user and the electrical system. The arc module of the series inverter meets the requirements of IEC 63027.

The user can do settings about arc detection here, there are the following items: **Arc Enable**, **Arc Clear**, **Arc Version** and **AFD self check**.



Select **Enable** in **Arc Enable**, the inverter will report **Arc Fault** when faults are detected. When it is disabled, there won't be any reports even when faults occurred.



For **Arc Clear**, when it is disabled by default, the inverter will automatically clear the arc fault in five minutes for up to four consecutive times. If the arc fault happened the fifth time, manual clear is needed. For manual clear, select **Yes** in **Arc Clear**, the inverter will clear the arc fault immediately and restart the system.



The user can view the version of the arc module in **Arc Version**.



For **AFD self check**, the default setting is **No**. Select **Yes**, the inverter will self-check whether the arc detection function is working normally. If a fault is detected, an **ArcSelfTestFault** report will be displayed on the inverter main interface. If the inverter is working normally, the screen will return to **AFD self check** interface.

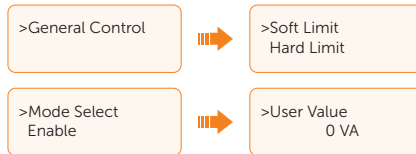


GeneralControl (Only available for AS/NZS 4777.2)

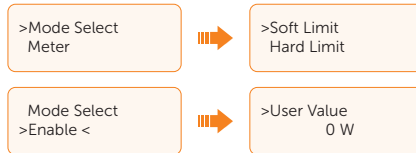
For compliance with AS/NZS 4777.2, two generation control functions are provided,

- generation limit control; and
- export limit control.

Please follow the **General Control** function to achieve generation limit control to limit the apparent power output level. The user can select from **Soft Limit** and **Hard Limit**, and decide whether to enable this function and set the user value if enabled.



Please follow the **Export Control** function (**Settings > Export Control**) to achieve export limit control to limit the active power output level. It is disabled by default, and choose **Meter** to enable the function. Then the user can select from **Soft Limit** and **Hard Limit**, and decide whether to enable this function and set the user value if enabled.



NOTICE!

- **Soft Limit:** The system will control the output value, but won't report any error information even when the actual output value exceeds the set value.
- **Hard Limit:** If the actual output value reaches the set user value for **Hard Limit**, the system will automatically disconnect from the grid and prompt error message on the screen.

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.



Figure 11-1 QR code

QR code can also be available when select **Download APP** on the login page of our official website (www.solaxcloud.com), and the user manual of the dongle.

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

11.2.2 Operation on the App

For instructions on related operations, create a new account and / or login to see the online tutorial (Click **Service > Help Center**) on the SolaXCloud App.

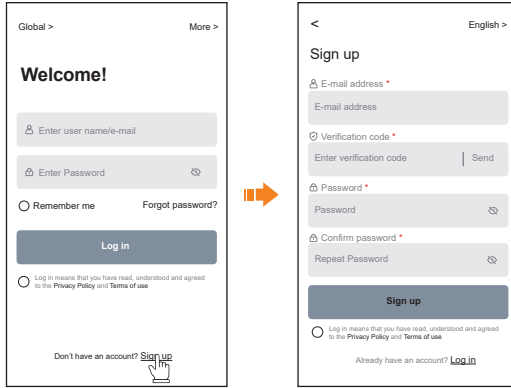


Figure 11-2 Create a new account on SolaXCloud

NOTICE!

- The screenshots in this chapter correspond to the SolaXCloud App V6.0.0.

11.3 Operations on SolaXCloud Webpage

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

12 Troubleshooting and Maintenance

12.1 Power off

- a. Set the DC switch to **OFF**.
- b. Turn off the AC switch between the inverter and the power grid.



- 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

Faults	Diagnosis and Solution
TzFault	Over Current Fault. <ul style="list-style-type: none">• Wait for about 10 seconds to check if the inverter is back to normal.• Disconnect PV and restart the inverter.• Contact SolaX for help.
GridLostFault	Grid Lost Fault. <ul style="list-style-type: none">• Check if the mains cable is loose.• Wait for a while and the system will reconnect when the utility is back to normal.• Contact SolaX for help.
GridVoltFault	Grid Voltage Out of Range. <ul style="list-style-type: none">• Check if the mains cable is loose.• Wait for a while and the system will reconnect when the utility is back to normal.• Contact SolaX for help.

Faults	Diagnosis and Solution
GridFreqFault	Grid Frequency Out of Range. <ul style="list-style-type: none">• Wait for a while and the system will reconnect when the utility is back to normal.• Contact SolaX for help.
PvVoltFault	PV Voltage Fault. <ul style="list-style-type: none">• Check whether the PV is overvoltage.• Contact SolaX for help.
BusVoltFault	DC Bus Voltage Out of Normal Range. <ul style="list-style-type: none">• Check if the PV input voltage is within the operating range of the inverter.• Disconnect PV wiring and reconnect.• Contact SolaX for help.
GridVolt10MFault	Grid Overvoltage for Ten Minutes Fault. <ul style="list-style-type: none">• The system will reconnect when the utility is back to normal.• Contact SolaX for help.
DclnjOcp	DCI Overcurrent Protection Fault. <ul style="list-style-type: none">• Wait for a while to check if the inverter is back to normal.• Contact SolaX for help.
HardLimitFault	Hard Limit Fault (in Australian standard). <ul style="list-style-type: none">• Wait for a while to check if the inverter is back to normal.• Contact SolaX for help.
SW OCP Fault	Software Overcurrent Protection Fault. <ul style="list-style-type: none">• Wait for a while to check if the inverter is back to normal.• Disconnect PV and grid, then reconnect.• Contact SolaX for help.
ResidualOCP	Overcurrent Protection Fault. <ul style="list-style-type: none">• Check the connections of the inverter.• Wait for a while to check if the inverter is back to normal.• Contact SolaX for help.
IsoFault	Isolation Fault. <ul style="list-style-type: none">• Check the connections of the inverter.• Contact SolaX for help.
OverTempFault	Over Temperature Fault. <ul style="list-style-type: none">• Check if the inverter and the ambient temperature exceeds the operating range.• Contact SolaX for help.
LowTempFault	Low Temperature Fault. <ul style="list-style-type: none">• Check if the ambient temperature is too low.• Contact SolaX for help.

Faults	Diagnosis and Solution
InternalComFault	<p>Internal Communication Fault.</p> <ul style="list-style-type: none"> Restart the inverter to check if it is back to normal. Update the ARM software or reburn the program. Contact SolaX for help.
FanFault	<p>Fan Fault.</p> <ul style="list-style-type: none"> Check whether the fan is faulty or damaged. Contact SolaX for help.
AcTerminalOTP	<p>AC Terminal Overtemperature Fault.</p> <ul style="list-style-type: none"> Check if the AC terminals are tightly connected. Check if the ambient temperature exceeds the operating range. Contact SolaX for help.
EepromFault	<p>DSP EEPROM Fault.</p> <ul style="list-style-type: none"> Disconnect PV wiring and reconnect. Contact SolaX for help.
RcDeviceFault	<p>Residual Current Device Fault.</p> <ul style="list-style-type: none"> Restart the inverter. Update the ARM software or reburn the program. Contact SolaX for help.
PvConnDirFault	<p>PV Direction Fault.</p> <ul style="list-style-type: none"> Check if the PV+/- sides are connected correctly. Contact SolaX for help.
GridRelayFault	<p>Relay Fault.</p> <ul style="list-style-type: none"> Check the grid connection. Restart the inverter. Contact SolaX for help.
OtherDeviceFault	<p>Model Incorrectly Set Fault.</p> <ul style="list-style-type: none"> Contact SolaX for help.
Mgr EEPROM Fault	<p>ARM EEPROM Fault.</p> <ul style="list-style-type: none"> Disconnect PV and grid, then reconnect. Contact SolaX for help.
Meter Fault	<p>Meter Fault.</p> <ul style="list-style-type: none"> Check the connection of the meter. Check if the meter is in working order. Contact SolaX for help.
Fan1 Warning	<p>External Fan 1 Abnormal Warning.</p> <ul style="list-style-type: none"> Check if the fan is working. Contact SolaX for help.
Fan2 Warning	<p>External Fan 2 Abnormal Warning.</p> <ul style="list-style-type: none"> Check if the fan is working. Contact SolaX for help.

Faults	Diagnosis and Solution
PowerTypeFault	<p>Power Type Fault.</p> <ul style="list-style-type: none"> • Check the version of ARM and DSP. • Check the product SN number. • Contact SolaX for help.
Arc Fault	<p>Arc Fault.</p> <ul style="list-style-type: none"> • Wait for 5 minutes to check if the inverter is back to normal. • Perform manual clear. • Contact SolaX for help.
ArcSelfTestFault	<p>Arc Self-check Fault.</p> <ul style="list-style-type: none"> • Wait for 5 minutes to check if the inverter is back to normal. • Contact SolaX for help.

Table 12-2 Other faults

Faults	Solution
Screen not on	<ul style="list-style-type: none"> • Check if the inverter correctly and normally connected to PV or grid. • Contact SolaX for help if the inverter is connected correctly.
Abnormal sound on fan	<ul style="list-style-type: none"> • Check if there is foreign objects stuck in the fan. • Contact SolaX for help.
Screen on but no content display	<ul style="list-style-type: none"> • Contact SolaX for help.
LCD screen stuck in Waiting state	<p>Check if the input voltage of PV is greater than 150 V.</p> <ul style="list-style-type: none"> • If it meets the requirement, contact SolaX for help. • If the input voltage of PV is less than 150 V, check the PV connection.
No readings on Load (on App or Web)	<ul style="list-style-type: none"> • Check if the load is connected correctly. • Check if the power of load on the LCD screen displays normally. • Check if the monitoring module works normally. • Contact SolaX for help if it can not return to normal.
No readings on Grid (on App or Web)	<ul style="list-style-type: none"> • Check if the grid connection is normal. • Check if the grid parameter on the LCD screen displays normally. • Check if the monitoring module works normally. • Contact SolaX for help if it can not return to normal.
No Feedin data (on App or Web)	<ul style="list-style-type: none"> • Check if the meter is connected correctly. • Check if the meter parameter on the LCD screen displays normally. • Check if the monitoring module works normally. • Contact SolaX for help if it can not return to normal.

Faults	Solution
No data on App or Web	<ul style="list-style-type: none"> • Check if the monitoring module works normally. • Contact SolaX for help.
No display on meter after power on	<ul style="list-style-type: none"> • If the meter connection is abnormal, reconnect them according to the wiring diagrams. • Wait for the grid voltage to restore. • Contact SolaX for help if it can not return to normal.
Abnormal electrical data on meter	<ul style="list-style-type: none"> • If the wiring is incorrect, reconnect them based on the wiring diagrams. • Set the voltage and current ratio according to the setting steps of meter user manual. • Contact SolaX for help if it can not return to normal.

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 12-3 Proposal of Maintenance

Item	Check notes	Maintenance interval
Fans	<ul style="list-style-type: none"> • 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 12 months
Electrical connection	<ul style="list-style-type: none"> • 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 12 months

Item	Check notes	Maintenance interval
Grounding reliability	<ul style="list-style-type: none"> • 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 12 months
Heat sink	<ul style="list-style-type: none"> • Check if there are foreign objects in the heat sink. 	Every 12 months
General status of inverter	<ul style="list-style-type: none"> • 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 150 V (preferably on sunny day). Failure to meet this condition 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 for the update firmware file, and save it to the USB drive.
 - » For ARM file: 618.xxxxx.xx_XXXXXXXX_ARM_Vx.xx_xxxxxxx.usb
 - » For DSP file: 618.xxxxx.xx_XXXXXXXX_DSP_Vx.xx_xxxxxxx.usb

Note: Vx.xx is version number, xxxxxxx is file completion dates.

- Check the folder name and file path:

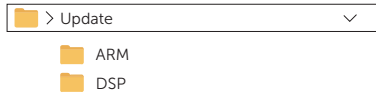


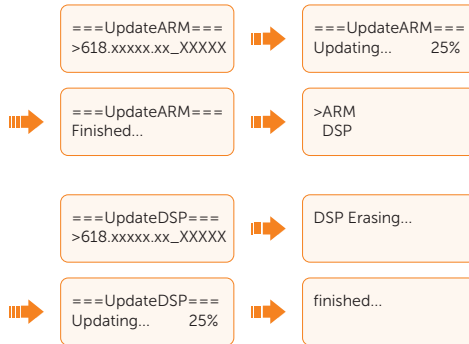
Figure 12-1 Folder name and path

Upgrade steps

- Remove the dongle (if connected) from the **Dongle** terminal of the inverter by hand, and then insert the USB drive. The inverter will automatically switch to the update interface. (For the position of **Dongle** terminal, see "8.1.1 Terminals of Inverter".)
- On the update interface, select **ARM** or **DSP** based on the file type, and then select **OK**.



- Confirm the firmware version, and then long press "enter" key to start updating. ARM update takes about 45 seconds, and DSP update takes about 4 minutes.



- After the upgrade is completed, pull out the USB drive, and connect the WiFi dongle back.

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, 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.

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 the DC switch to OFF.

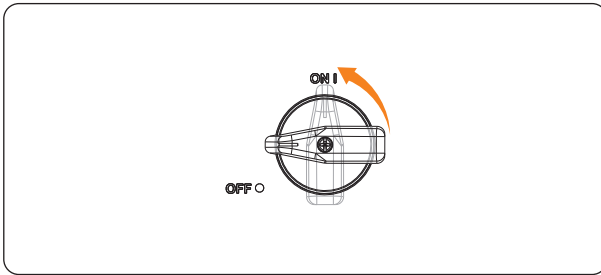


Figure 13-1 Turning off the DC switch

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

Step 3: Wait for at least 5 minutes to fully discharge the capacitors inside the inverter.

Step 4: Disconnect the PV connectors: Insert the removal tool into the notch of PV connectors and slightly pull out the connectors.

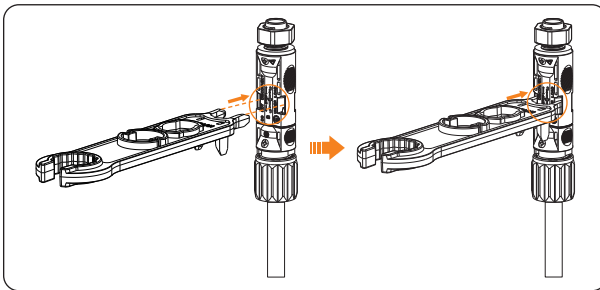


Figure 13-2 Releasing the PV connector

- Step 5:** Slightly pull out the dongle module.
- Step 6:** Disconnect the AC connector and disconnect the AC cable.
- Step 7:** Disconnect the RS485 communication cable.
- Step 8:** Put the original terminal caps on the terminals.
- Step 9:** Unscrew the grounding screw by Allen key and remove the grounding cable.
- Step 10:** Unlock the anti-theft lock if you installed it.
- Step 11:** Unscrew the cross recessed screw on the right side of inverter and vertically lift up the inverter to dismantle the inverter.
- Step 12:** Unscrew the screws for fastening the bracket and remove the bracket if needed.

13.2 Packing the Inverter

- Use the original packaging materials if available.

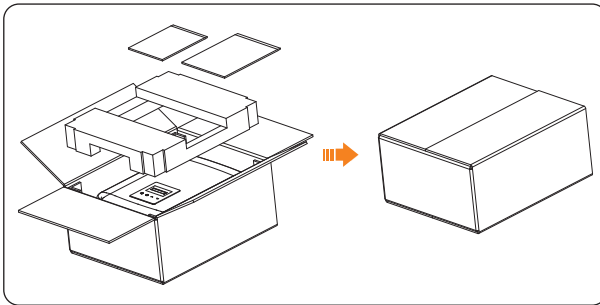


Figure 13-3 Packing the inverter

- 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

- DC Input

Model	X3-MIC-3K-G2	X3-MIC-4K-G2	X3-MIC-5K-G2	X3-MIC-6K-G2	X3-MIC-8K-G2	X3-MIC-10K-G2
Max. PV array input power [W]	6000	8000	10000	12000	16000	20000
Max. PV voltage [d.c. V]	1000	1000	1000	1000	1000	1000
Rated input voltage [d.c. V]	640	640	640	640	640	640
MPPT voltage range [d.c. V]	120-980	120-980	120-980	120-980	120-980	120-980
MPPT voltage range @ full load [d.c. V]	130-800	170-800	210-800	260-800	315-800	395-800 ¹
Max. PV current [d.c. A]	16/16	16/16	16/16	16/16	16/16	16/16 ¹
Isc PV array short circuit current [d.c. A]	20/20	20/20	20/20	20/20	20/20	20/20 ¹
Startup voltage [d.c. V]	150	150	150	150	150	150
No. of MPPT	2	2	2	2	2	2
Strings per MPPT	1/1	1/1	1/1	1/1	1/1	1/1 ¹
Max. MPPT power limit per MPPT [W]*	3000	4000	5000	6000	8000	8000
DC disconnection switch	Yes					
Max. inverter backfeed current to the array [d.c. A]	0					

Model	X3-MIC-10KW-G2	X3-MIC-12K-G2	X3-MIC-15K-G2	X3-MIC-5K-G2-LV	X3-MIC-6K-G2-LV	X3-MIC-8K-G2-LV
Max. PV array input power [W]	20000	24000	30000	10000	12000	16000
Max. PV voltage [d.c. V]	1000	1000	1000	800	800	800
Rated input voltage [d.c. V]	640	640	640	360	360	360
MPPT voltage range [d.c. V]	120-980	120-980	120-980	120-650	120-650	120-650
MPPT voltage range @ full load [d.c. V]	395-800	315-800	395-800	210-550	260-550	315-550
Max. PV current [d.c. A]	16/16	32/16	32/16	16/16	16/16	16/16
Isc PV array short circuit current [d.c. A]	20/20	40/20	40/20	20/20	20/20	20/20
Startup voltage [d.c. V]	150	150	150	150	150	150
No. of MPPT	2	2	2	2	2	2
Strings per MPPT	1/1	2/1	2/1	1/1	1/1	1/1
Max. MPPT power limit per MPPT [W]*	8000	PV1: 12000 PV2: 8000	PV1: 12000 PV2: 8000	5000	6000	8000
DC disconnection switch	Yes					
Max. inverter backfeed current to the array [d.c. A]	0					

* "Max. MPPT power limit per MPPT" means the maximum PV production when using one of the MPPTs only.

¹ PV1 connection terminal is optional with two strings (MPPT voltage range@ full load: 300-800 d.c. V, Max. PV current: 32 d.c. A, Isc PV array short circuit current: 40 d.c. A, Strings per MPPT: 2/1).

Technical Data

- AC Output

Model	X3-MIC-3K-G2	X3-MIC-4K-G2	X3-MIC-5K-G2	X3-MIC-6K-G2	X3-MIC-8K-G2	X3-MIC-10K-G2
Rated output apparent power [VA]	3000	4000	5000 ¹	6000	8000	10000 ²
Max. output apparent power [VA]	3300	4400	5500 ¹	6600	8800	11000 ²
Nominal AC voltage [a.c. V]	3~/N/PE, 220/380, 230/400; 3~/PE, 380, 400					
Nominal AC frequency [Hz]	50/60 (±5)					
Rated output current [a.c. A]*	4.6, 4.4	6.1, 5.8	7.6, 7.3	9.1, 8.7	12.2, 11.6	15.2, 14.5
Max. output continuous current [a.c. A]	4.8	6.4	8.0	9.6	12.8	16.0
Current (inrush) [a.c. A]	30 (20 µs)					
THDi, rated power	<3%					
Power factor range	0.8 leading-0.8 lagging					
Feed-in phase	Three-phase					
Maximum output fault current [a.c. A]	44					
Maximum output overcurrent protection [a.c. A]	39					
Short circuit current [a.c. A]	30					

Model	X3-MIC-10KW-G2	X3-MIC-12K-G2	X3-MIC-15K-G2	X3-MIC-5K-G2-LV	X3-MIC-6K-G2-LV	X3-MIC-8K-G2-LV
Rated output apparent power [VA]	10000	12000	15000 ³	5000	6000	8000
Max. output apparent power [VA]	10000	13200	15000 ³	5500	6600	8800
Nominal AC voltage [a.c. V]	3~/N/PE, 220/380, 230/400; 3~/PE, 380, 400			3~/N/PE, 127/220; 3~/PE, 220		
Nominal AC frequency [Hz]	50/60 (±5)					
Rated output current [a.c. A]*	15.2, 14.5	18.2, 17.4	22.7, 21.8	13.2	15.8	21
Max. output continuous current [a.c. A]	16.0	19.1	22.7	14.5	17.4	23.1
Current (inrush) [a.c. A]	30 (20 µs)					
THDi, rated power	<3%					
Power factor range	0.8 leading-0.8 lagging					
Feed-in phase	Three-phase					
Maximum output fault current [a.c. A]	44					
Maximum output overcurrent protection [a.c. A]	39					
Short circuit current [a.c. A]	30					

* "Rated output current": For models named without "-LV", the first data corresponds to 220/380 V, the second data corresponds to 230/400 V; for models named with "-LV" the data corresponds to 127/220 V.

¹ 4999 for AS/NZS 4777.2

² 9999 for AS/NZS 4777.2

³ 14999 for AS/NZS 4777.2

• Efficiency, safety and protection

Model	X3-MIC-3K-G2	X3-MIC-4K-G2	X3-MIC-5K-G2	X3-MIC-6K-G2	X3-MIC-8K-G2	X3-MIC-10K-G2
MPPT efficiency				99.90%		
Euro efficiency				97.80%		
Max. efficiency				98.30%		
Safety & Protection						
Over/under voltage protection				Yes		
DC isolation protection				Yes		
DC injection monitoring				Yes		
Back feed current monitoring				Yes		
Residual current detection				Yes		
Active anti-islanding method				Frequency Shift		
Over temperature protection				Yes		
SPD protection				Yes		
Arc-fault circuit interrupter(AFCI)				Optional		
AC auxiliary power supply(APS)				Optional		
Safety				IEC/EN 62109-1/-2		
Grid monitoring				EN50549, VDE-AR-N 4105, G98, G99, AS/NZS 4777.2,UTE C15, CEI 0-21, VFR2019		

Model	X3-MIC-10KW-G2	X3-MIC-12K-G2	X3-MIC-15K-G2	X3-MIC-5K-G2-LV	X3-MIC-6K-G2-LV	X3-MIC-8K-G2-LV
MPPT efficiency				99.90%		
Euro efficiency				97.80%		
Max. efficiency				98.30%		
Safety & Protection						
Over/under voltage protection				Yes		
DC isolation protection				Yes		
DC injection monitoring				Yes		
Back feed current monitoring				Yes		
Residual current detection				Yes		
Active anti-islanding method				Frequency Shift		
Over temperature protection				Yes		
SPD protection				Yes		
Arc-fault circuit interrupter(AFCI)				Optional		
AC auxiliary power supply(APS)				Optional		
Safety				IEC/EN 62109-1/-2 *		
Grid monitoring				EN50549, VDE-AR-N 4105, G98, G99, AS/NZS 4777.2,UTE C15, CEI 0-21, VFR2019 *		

* Please refer to the actual certifications of the specific model.

Technical Data

- General data

Model	X3-MIC-3K-G2	X3-MIC-4K-G2	X3-MIC-5K-G2	X3-MIC-6K-G2	X3-MIC-8K-G2	X3-MIC-10K-G2
Dimensions (W x H x D) [mm]	342x434x144.5			342x434x156		
Dimension of packing (W x H x D) [mm]	433x515x247					
Net weight [kg]	15.5	15.5	15.5	15.5	17.0	17.0 ¹
Installation	Wall-mounted					
Operating ambient temperature range [°C]	-30 to +60					
Storage temperature [°C]	-30 to +60					
Storage/Operation relative humidity	0%~100%					
Altitude [m]	4000					
Ingress protection	IP66					
Isolation type	Transformerless					
Protective class	I					
Night-time consumption [W]	<3					
Overvoltage category	III(MAINS), II(DC)					
Pollution degree	II(Inside), III(Outside)					
Cooling concept	Natural cooling			Smart fan cooling		
Noise level [dB]	<30			<45		
Inverter topology	Non-isolated					
Communication interface	USB / RS485 / DRM / WiFi/LAN/4G dongle (Optional)					

¹ PV1 connection terminal is optional with two strings (Net weight: 18.0 kg).

Model	X3-MIC-10KW-G2	X3-MIC-12K-G2	X3-MIC-15K-G2	X3-MIC-5K-G2-LV	X3-MIC-6K-G2-LV	X3-MIC-8K-G2-LV
Dimensions (W x H x D) [mm]	342x434x156					
Dimension of packing (W x H x D) [mm]	433x515x247					
Net weight [kg]	17.0	18.0	18.0	17.0	18.0	18.0
Installation	Wall-mounted					
Operating ambient temperature range [°C]	-30 to +60					
Storage temperature [°C]	-30 to +60					
Storage/Operation relative humidity	0%~100%					
Altitude [m]	4000					
Ingress protection	IP66					
Isolation type	Transformerless					
Protective class	I					
Night-time consumption [W]	<3					
Overvoltage category	III(MAINS), II(DC)					
Pollution degree	II(Inside), III(Outside)					
Cooling concept	Smart fan cooling					
Noise level [dB]	<45	<50	<45	<45	<50	<50
Inverter topology	Non-isolated					
Communication interface	USB / RS485 / DRM / WiFi/LAN/4G dongle (Optional)					

15 Appendix

15.1 Application of Parallel Function

15.1.1 Introduction of Parallel Function

The series inverter provides the parallel connection function when connected with DataHub, which could support at most 60 inverters to parallel in one system and can control zero injection to the grid with a meter installed in the main circuit. In this parallel system, the DataHub will be the master of the system, and all the inverters are the slaves. The DataHub can communicate with all the slave inverters.

Requirements for parallel connection

- All inverters are recommended to be of the same series.
- All inverters should be of the same software version. Otherwise, the parallel function cannot be used.
- 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 100 m.

NOTICE!

- Please do not install the inverters in parallel connection before confirming with local installer or us. For more details, please contact us.
- The series inverter cannot work in parallel system without DataHub.

15.1.2 Parallel System Connection Diagram

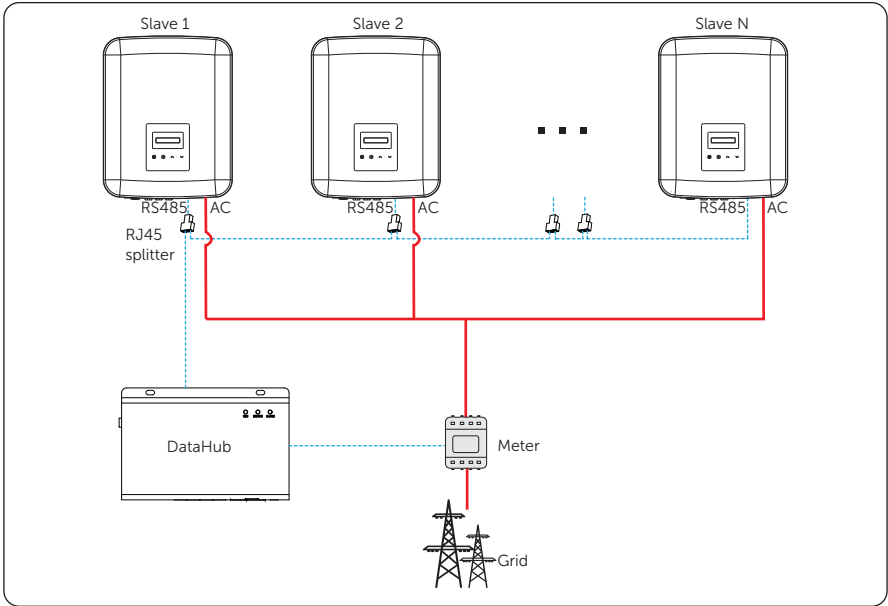


Figure 15-1 Parallel connection with DataHub

15.1.3 Settings for Parallel System

Before connecting the DataHub to the parallel system, please check and adjust the settings following the instructions below.

- a. Check the addresses under **Settings > RS485 CommAddr**. The addresses of all the inverters should be different. Otherwise, please reset the RS485 communication addresses.
- b. Select **Settings > Modbus Function > Function Select > COM 485**.
- c. Select **Settings > ParallelSetting > Mode Select > Disable**. The inverter connected with the DataHub should not enable the **ParallelSetting**. There is no need to set the **ParallelSetting** on the inverters, the parallel system with DataHub will start automatically.

15.1.4 Wiring Procedure for Parallel System

- a. Prepare several RJ45 splitters as needed.
- b. Connect one end of an RS485 communication cable with DataHub, and the other end with one of the slave inverters via a splitter.

Table 15-1 Pin-to-pin connection for inverter and DataHub

RS485 terminal of inverter		RS485-1 terminal of DataHub	
Pin	Pin assignment	Pin	Pin assignment
4	RS485_A	/	A+
5	RS485_B	/	B-

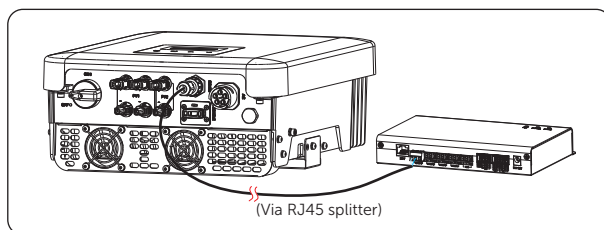


Figure 15-2 Connecting to DataHub

- c. Connect all the slave inverters with each other with RS485 communication cables via splitters.
- d. Connect the meter with the DataHub and the mains.

Please refer to "8.5 Communication Connection" for specific wire making and connection.

NOTICE!

- The communication cable between DataHub and inverter can not exceed 100 m.

NOTICE!

- For specific wiring and setting procedures of DataHub, see *DataHub 1000 User Manual*.

15.2 Application of EV-Charger

15.2.1 Introduction of EV-Charger Application

The EV-Charger is intended for charging electric vehicles. It should be installed in a fixed location and connected to the AC supply. The EV-Charger can communicate with other devices or systems (inverter, meter, CT, third-party charger management platform, etc.) to realize intelligent control of charging process.

15.2.2 Wiring Connection Diagram

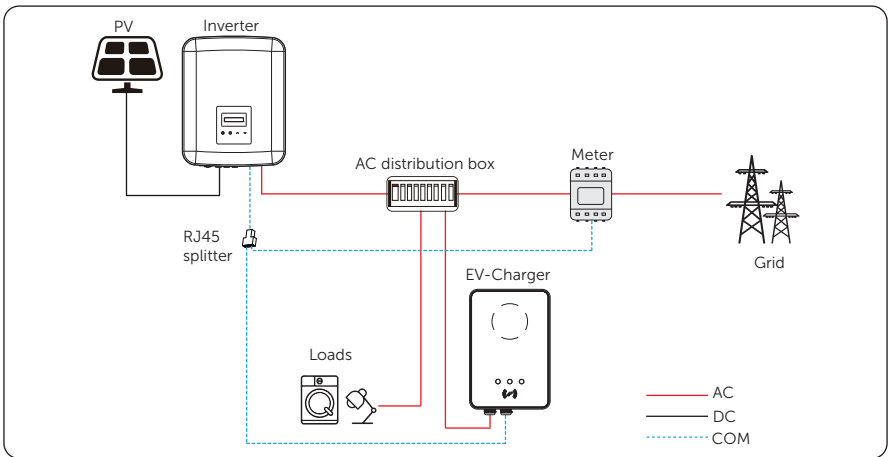


Figure 15-3 EV-Charger wiring diagram

15.2.3 Communication Connection with Inverter

- Connection terminal-RS485 terminal
- Connection pins

Table 15-2 Pin-to-pin connection for inverter and EV-Charger

RS485 terminal of inverter		COM terminal of EV-Charger	
Pin	Pin assignment	Pin	Pin assignment
4	RS485_A	4	A1
5	RS485_B	5	B1

- Connection steps
 - a) Prepare an RJ45 splitter and the splitter should be placed in a waterproof place.
 - b) Connect the communication cables of the EV-Charger, the meter and the inverter via the splitter following the PIN definition rules.
 - c) The communication cable to be connected with the inverter should be plugged into the RS485 terminal of the inverter.

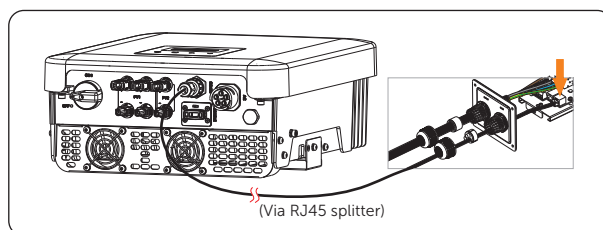


Figure 15-4 Connecting to EV-Charger

Please refer to "8.5 Communication Connection" for specific wire making and connection.

NOTICE!

- The communication cable between EV-Charger and inverter can not exceed 100 m.

15.2.4 Setting for EV-Charger

- a. Select **Settings > Export Control > Mode Select > Meter**;
- b. Select **Settings > Modbus Function > Function Select > Ev Charger**.

NOTICE!

- For specific wiring and setting procedures of EV-Charger, see *X1/X3-EVC Series User Manual*.

NOTICE!

- The EV-Charger application and the parallel system with DataHub cannot be used at the same time currently. If the EV-Charger function is enabled and DataHub is connected in the system, please remove the DataHub, then the EV-Charger will work normally. If the DataHub is to be remained in the parallel system, remove the DataHub first and select **Settings > Modbus Function > Function Select > COM485**, then reconnect the DataHub.

15.3 Application of Adapter Box G2

15.3.1 Introduction of Adapter Box G2 Application

With the SolaX Adapter Box G2, users can effectively utilize solar energy by commanding it to power their heat pump using settings available on the SolaX inverter and SolaXCloud. This intelligent integration allows for optimized solar self-consumption and ultimately helps in reducing electricity bills.

15.3.2 Wiring Connection Diagram

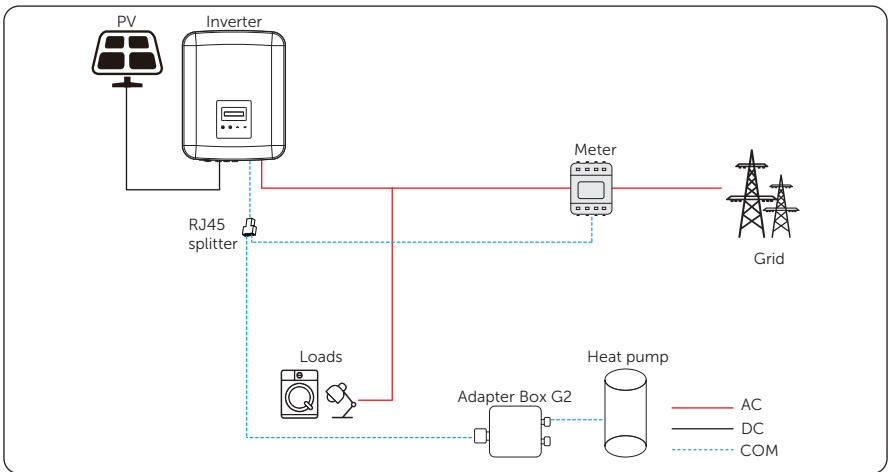


Figure 15-5 Adapter Box G2 wiring diagram

The inverter communicates with Adapter Box G2 via RS485. In case of excess power, the Adapter Box G2 can utilize it to heat the pump through the connection of dry contacts, SG Ready, or Analog output between the Adapter Box G2 and the heat pump. To power the Adapter Box G2, an external power adapter is required as the inverter itself cannot supply power to the Adapter Box G2.

15.3.3 Communication Connection with Inverter

- Connection terminal-RS485 terminal
- Connection pins

Table 15-3 Pin-to-pin connection for inverter and Adapter Box G2

RS485 terminal of inverter		RS485_INV terminal of Adapter Box G2	
Pin	Pin assignment	Pin	Pin assignment
4	RS485_A	4	RS485-A
5	RS485_B	5	RS485-B

- Connection steps
 - a) Prepare an RJ45 splitter and the splitter should be placed in a waterproof place.
 - b) Connect the communication cables of the Adapter Box G2, the meter and the inverter via the splitter following the PIN definition rules.
 - c) The communication cable to be connected with the inverter should be plugged into the RS485 terminal of the inverter.

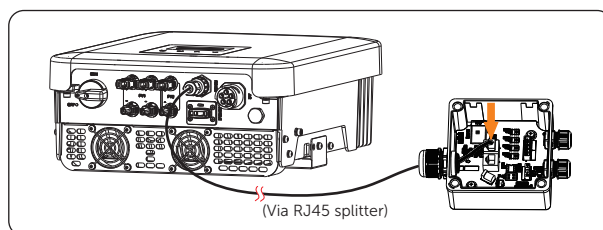


Figure 15-6 Connecting to Adapter Box G2

Please refer to "8.5 Communication Connection" for specific wire making and connection.

NOTICE!

- The communication cable between Adapter Box G2 and inverter can not exceed 100 m.

15.3.4 Settings for Adapter Box G2

- a. Select **Settings > Export Control > Mode Select > Meter**;
- b. Select **Settings > AdaptBox G2 > Mode Select > Enable**.

NOTICE!

- For specific wiring and setting procedures of Adapter Box G2, see *Adapter Box G2 User Manual*.

NOTICE!

- The Adapter Box G2 application and the parallel system with DataHub cannot be used at the same time currently.

Contact Information



UNITED KINGDOM



Unit C-D Riversdale House, Riversdale
Road, Atherstone, CV9 1FA



+44 (0) 2476 586 998



service.uk@solaxpower.com



TURKEY



Fevzi Çakmak mah. aslim cd. no 88 A
Karatay / Konya / Türkiye



service.tr@solaxpower.com



USA



3780 Kilroy Airport Way, Suite 200, Long
Beach, CA, US 90806



+1 (408) 690 9464



info@solaxpower.com



POLAND



WARSAW AL. JANA P. II 27. POST



+48 662 430 292



service.pl@solaxpower.com



ITALY



+39 011 19800998



support@solaxpower.it



PAKISTAN



service.pk@solaxpower.com



AUSTRALIA



21 Nicholas Dr, Dandenong South VIC 3175



+61 1300 476 529



service@solaxpower.com.au



GERMANY



Am Tullnaupark 8, 90402 Nürnberg,
Germany



+49 (0) 6142 4091 664



service.eu@solaxpower.com



service.dach@solaxpower.com



NETHERLANDS



Twekkeler-Es 15 7547 ST Enschede



+31 (0) 8527 37932



service.eu@solaxpower.com



service.bnl@solaxpower.com



SPAIN



+34 9373 79607



tecnico@solaxpower.com



BRAZIL



+55 (34) 9667 0319



info@solaxpower.com



SOUTH AFRICA



service.za@solaxpower.com



SolaX Power Network Technology (Zhejiang) Co., Ltd.

Add.: No. 278, Shizhu Road, Chengnan Sub-district, Tonglu County,
Hangzhou, Zhejiang, China
E-mail: info@solaxpower.com

