

A1-Micro 1 in 1

300 W / 400 W / 450 W / 500 W / 600 W

Installation Manual

Version 1.0

www.solaxpower.com










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

Safety

1. Contents may be periodically updated or revised. SolaX reserves the right to make improvements or changes in the product(s) and the program(s) described in this manual without the prior notice.
2. The installation, maintenance and grid-related setting can only be performed by qualified personnel who:
 - Are licensed and/or satisfy state and local jurisdiction regulations;
 - Have good knowledge of this manual and other related documents.
3. Before installing the device, carefully read, fully understand and strictly follow the detailed instruction of the user manual and other related regulations. SolaX shall not be liable for any consequences caused by the violation of the storage, transportation, installation, and operation regulations specified in this document and the user manual.
4. Use insulated tools when installing the device. Individual protective tools must be worn during installation, electrical connection and maintenance.
5. Please visit the website www.solaxpower.com of SolaX for more information.

Descriptions of Labels

	CSA mark for UL1973		Caution, risk of danger
	Caution, risk of electric shock		Caution, hot surface
	Read the enclosed documentations		Do not dispose of the inverter together with household waste.
	FCC mark of conformity		

A1-Micro 1 in 1 series micromicroinverter is designed and tested to meet all applicable North American and International safety standards. However, like all electrical and electronic equipment, safety precautions must be observed and followed during installation and operation of the A1-Micro 1 in 1 series microinverter to reduce the risk of personal injury and to ensure a safe installation. Installation, commissioning, service, and maintenance of A1-Micro 1 in 1 series microinverter must only be performed by authorized personnel that are licensed and/or satisfy state and local jurisdiction regulations.

Before starting installation or commissioning, read the entire manual carefully to ensure correct and safe installation or commissioning. All US electrical installations must comply and be in accordance with all the state, local, utility regulations, and National Electrical Code ANSI/NFPA 70.

DANGER!

- Danger to life due to high voltages in the microinverter! Before connecting the product to the electrical utility grid, contact the local utility company. Children should be supervised to ensure that they do not play with the appliance.

 **WARNING!**

- This document does not replace and is not intended to replace any local, state, provincial, including without limitation applicable in the jurisdiction of installation. SolaX assumes no responsibility for the compliance or non-compliance with such laws or codes in connection with the installation of the product.

 **WARNING!**

- Do not operate the microinverter when the device is running.

 **WARNING!**

- Risk of electric shock!

 **WARNING!**

- When handling battery, adhere to all manufacturer safety instructions!

 **WARNING!**

- Only accessories shipped with the microinverter are recommended for use. Using other accessories may result in a fire or injury to the user.

 **WARNING!**

- Do not disassemble any parts of the microinverter which are not mentioned in the installation guide. It contains no user-serviceable parts. See warranty for instructions on obtaining service. Attempting to service the microinverter yourself may result in a risk of electric shock or fire and will void your warranty.

 **WARNING!**

- The microinverter input and output circuits are isolated from the enclosure. This system does not include an isolation transformer and should be installed with an ungrounded PV array in accordance with the requirements of ANSI/NFPA 70, NEC 690.41.
- Equipment grounding is the responsibility of the installer and must be performed in accordance with all applicable Local and National Codes.

 **WARNING!**

- Before operating the microinverter, ensure that the microinverter is grounded properly. This product must be connected to a grounded, metal, permanent wiring system, or an equipment-grounding conductor must be run with the circuit conductors and connected to the equipment grounding terminal or lead on the product.

 **WARNING!**

- When a ground fault is indicated, normally grounded conductors may be ungrounded and energized or normally ungrounded conductors may be grounded.

 **WARNING!**

- Keep away from flammable and explosive materials to avoid fire.
- Do not install or store the system in a corrosive environment where it may be exposed to ammonia, corrosive gases, acids, or salts (e.g.: chemical plant, fertilizer storage areas, tanneries, near volcanic ash eruption).

 **WARNING!**

- Neither touch the positive nor the negative pole of the PV connecting device. Never touch both poles at the same time.

 **WARNING!**

- The input and output circuits are isolated from the enclosure and that system grounding, when required by Sections 690.41, 690.42, and 690.43 of the National Electric Code, ANSI/NFPA 70, is the responsibility of the installer.
- This unit is not provided with a GFDI device. This inverter or chargecontroller must be used with an external GFDI device as required by the Article 690 of the National Electrical Code for the installation location.

 **CAUTION!**

- A1-Micro 1 in 1 series microinverter only supports a certain type of lithium-ion battery! (Manufacturer certified battery)

 **CAUTION!**

- Possible damage to health as a result of the effects of radiation!
- Do not stay closer than 7.87 in/20 cm to microinverter for a long time.

 **CAUTION!**

- Danger of burn injuries due to hot enclosure parts!
- During operation, the enclosure may become hot.

 **CAUTION!**

- Risk of electric shock from energy stored in the capacitor.
- Never operate on the microinverter couplers, the Mains cables, battery cables and PV cables when power is applied. After switching off the PV, battery and Mains, always wait for 5 minutes to fully discharge the intermediate circuit capacitors before unplugging DC, battery and Mains couplers.

 CAUTION!

- The unit contains capacitors that remain charged to a potentially lethal voltage after the MAINS , battery and PV supply have been disconnected. Hazardous voltage will be present for up to 5 minutes after disconnection from the power supply.

 CAUTION!

- When accessing the internal circuit of the microinverter, it is very important to wait 5 minutes before operating the power circuit or demounting the electrolyte capacitors inside the device. Do not open the device beforehand since the capacitors require time to sufficiently discharge!

 CAUTION!

- Use insulated tools when installing the device. Individual protective tools must be worn during installation, electrical connection and maintenance.

NOTICE!

- The microinverter is heavy. Use of lift equipment is recommended.

NOTICE!

- Make sure that existing wiring is in good condition and that wire is not undersized.

NOTICE!

- Measure the voltage between terminals UDC+ and UDC- with a multi-meter (impedance at least 1Mohm) to ensure that the device is discharged before working (35VDC) inside the device.

NOTICE!

- Wiring methods in accordance with the National Electrical Code, ANSI/NFPA 70 are to be used.

NOTICE!

- The input or output leads or AC output paralleling cable assembly or trunk cable supplied with this device has fine stranded, flexible conductors and if unterminated or if any factory-installed connectors have been removed, shall only be terminated using connections that have been rated for use with such conductors.

NOTICE!

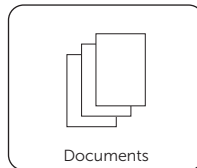
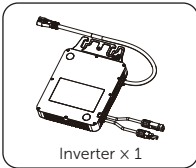
- GFDI is installed outside the microinverter and connected between the DC input negative terminal and the PE terminal to achieve negative grounding of the photovoltaic module

NOTICE!

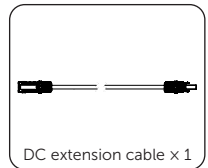
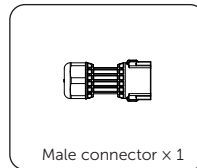
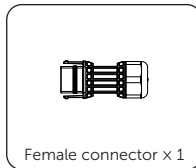
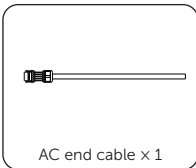
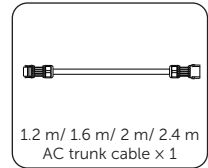
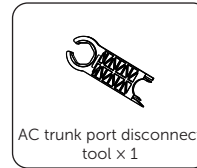
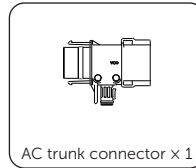
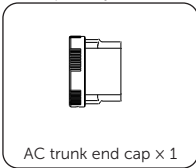
- Overcurrent protection for the ac output circuit is to be provided by the user, installer and agent and installed on the end of the bus in the distributor box.

Packing List

Included in the box:

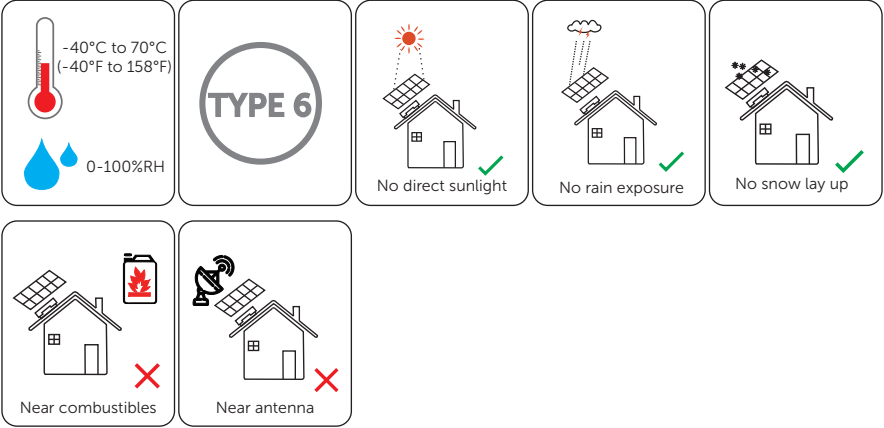


Sold separately:

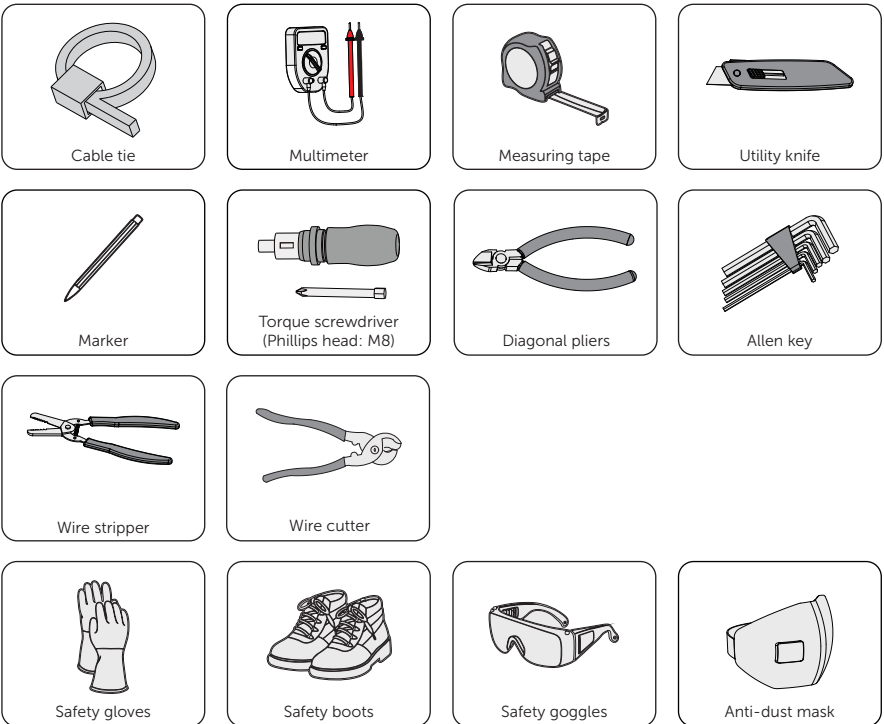


* The actual quantity of accessories needs to be based on the number of microinverter to be installed. The quantity of materials in the packing list above is the recommended quantity for one microinverter. If you need to install multiple microinverters, the actual situation prevails.

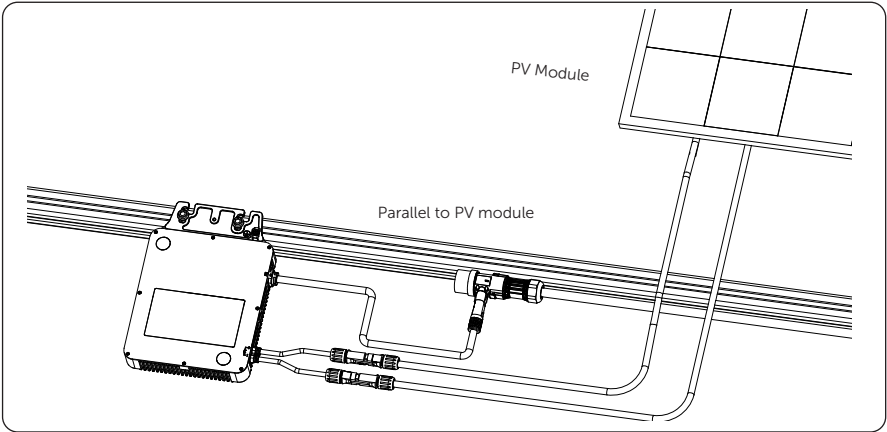
Installation Site



Installation Tools



Installation Angle



Additionally Required Materials

No.	Required Material	Requirements
1	AC circuit breaker	Current: 50A for 10 AWG/40 A for 12 AWG (If there are additional safety regulations, please refer to the local safety regulations)
2	Guide rail	At least two guid rails
3	Sliding block	Matching with the guide rail
4	Screw	Matching with the guide rail

AC Branch Circuit Capacity

A1-Micro 300P/400P/450P/500P/600P can be used with the provided AC Trunk Cable and AC Trunk Connectors. The maximum number of microinverters on each AC branch is listed as follows:

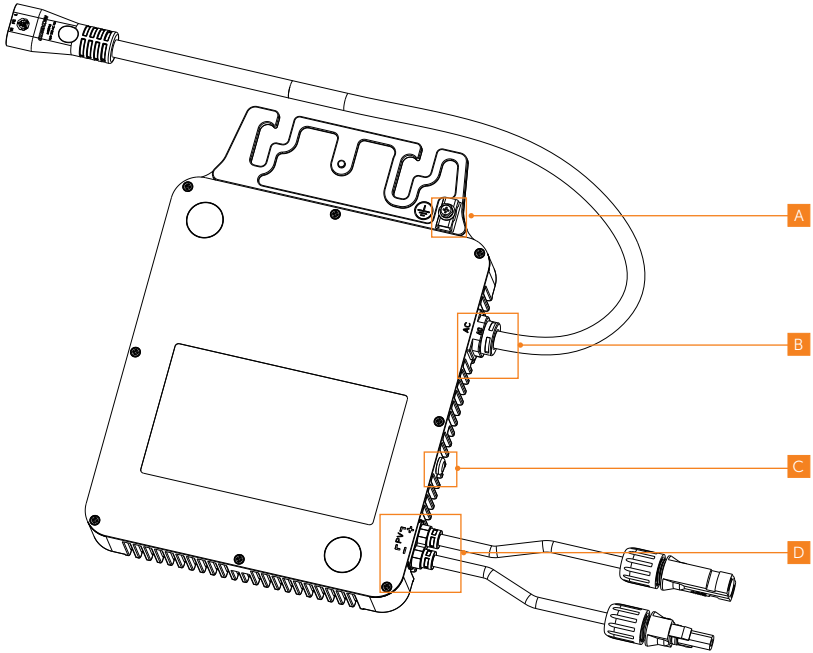
	A1-Micro 300P	A1-Micro 300P	Maximum over current protection device
Maximum number per 10 AWG branch	32	24	50A
Maximum number per 12 AWG branch	25	19	40A

	A1-Micro 4500P	A1-Micro 500P	Maximum over current protection device
Maximum number per 10 AWG branch	21	19	50A
Maximum number per 12 AWG branch	17	15	40A
	A1-Micro 600P	Maximum over current protection device	
Maximum number per 10 AWG branch	16	50A	
Maximum number per 12 AWG branch	12	40A	

An AC branch can connect to 1-in-1/2 in 1/4-in-1 microinverters at the same time, provided that the total current is less than the AC branch circuit capacity stipulated in local rules and regulations.

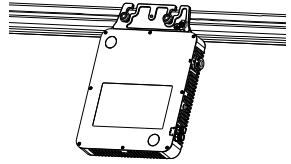
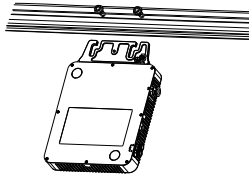
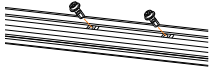
How many microinverters that each AC branch can connect depends on the current-carrying capacity of the cable.

Terminal Description



Key	Item	Description
A	Earth lug	A connection component for electrical devices which need grounding.
B	AC terminal	For AC connection.
C	Indicator	Show the status of the equipment.
D	PV terminals	For PV connection.

Mechanical Installation

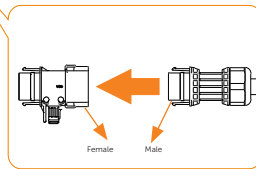
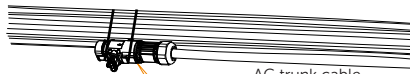
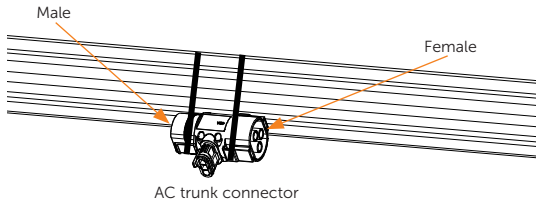


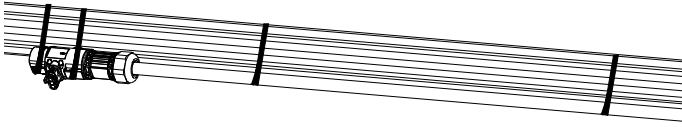
NOTICE!

- Choose the screwdriver according to the corresponding screws of the rail.

NOTICE!

- In order to better fix the AC trunk cable, it is recommended to use more cable ties to band the AC trunk cable.
- Choose the cable tie according to the rail width and the length of self-purchased accessories.

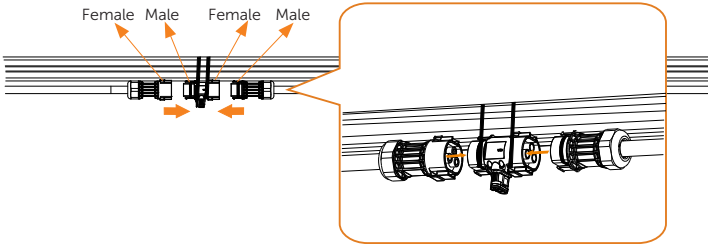




4

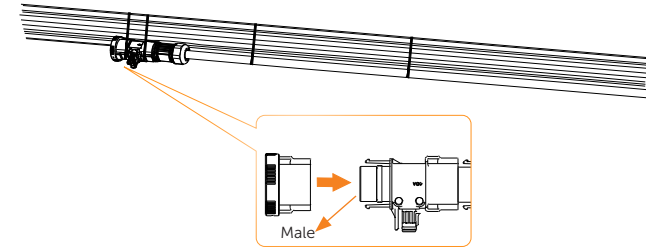
NOTICE!

- When connecting AC cables in the middle, please follow the diagram below.



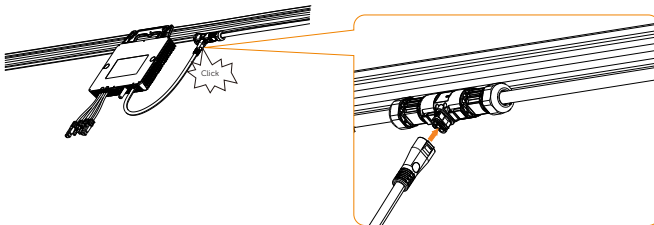
Female Male Female Male

5



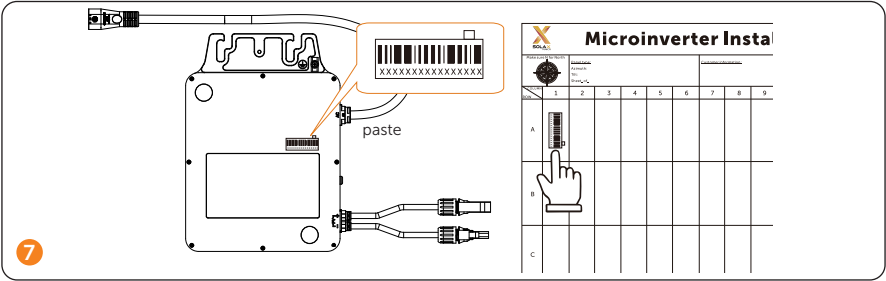
Male

6



NOTICE!

- Avoid placing AC connectors nearby any drainage channels.
- If you need to disconnect the AC connector from the AC cable, use the AC Trunk Port Disconnect Tool (see packing list).

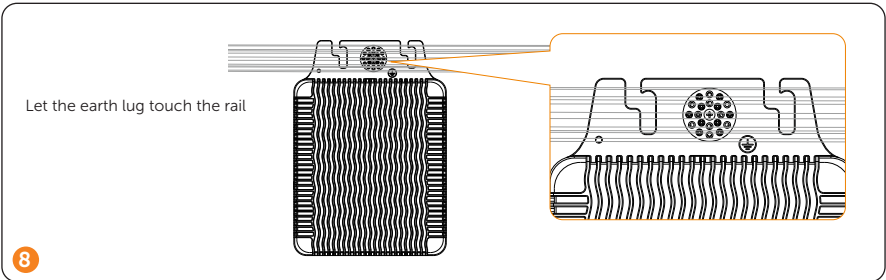


PE Connection

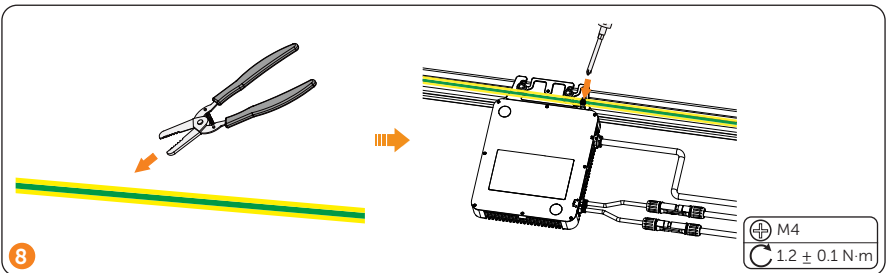
NOTICE!

- Choose the suitable grounding method according to local safety regulations.

Method 1 (major grounding method): Let the earth lug touch the rail.



Method 2: Strip the PE cable, place the PE cable on the rail and fix it with screws.



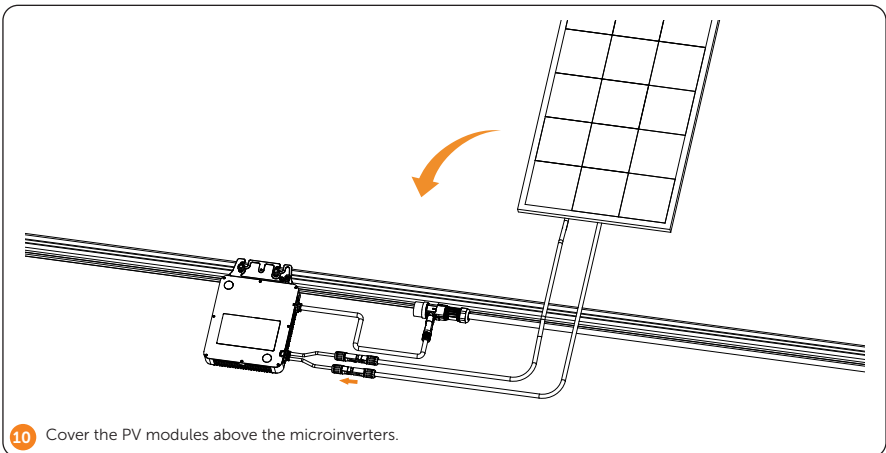
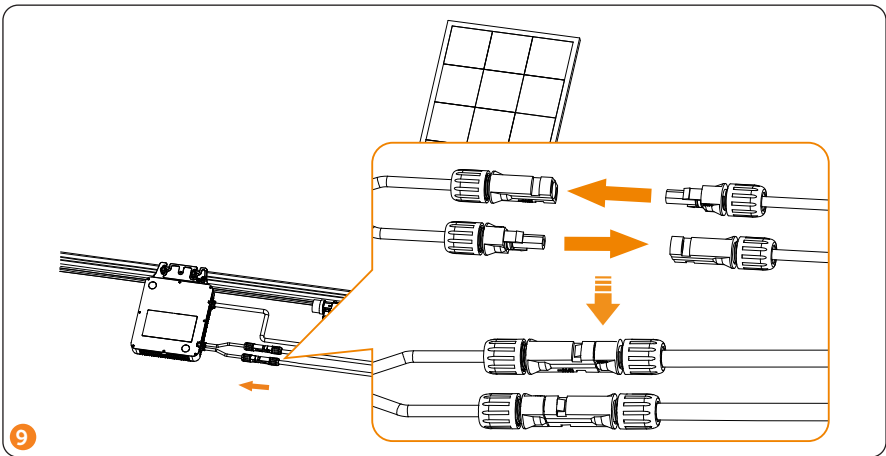
DC Side Connection

⚠ WARNING!

- Please connect PV terminals in the correct way. Reverse connection may damage the microinverter!

NOTICE!

- The PV line length should be less than 3 m.
- If the panels are too far from the microinverter, please use DC extension cable for connection.

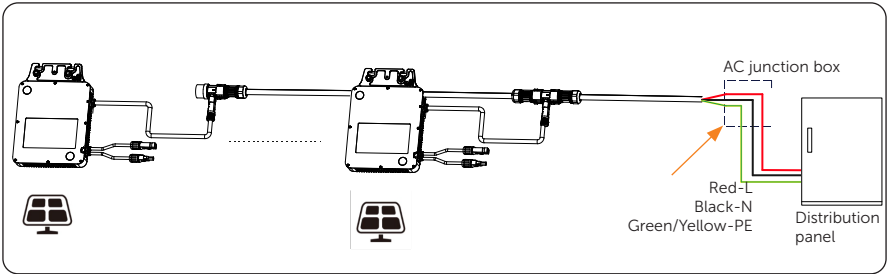


Power on the System

Step 1: First turn on the AC breaker on the branch circuit and then the main AC breaker of the house.

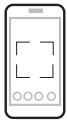
Step 2: Wait for about 2 minutes until the system is initiated.

Please install microinverters in the middle of pv modules as much as possible.



On-site Inspection

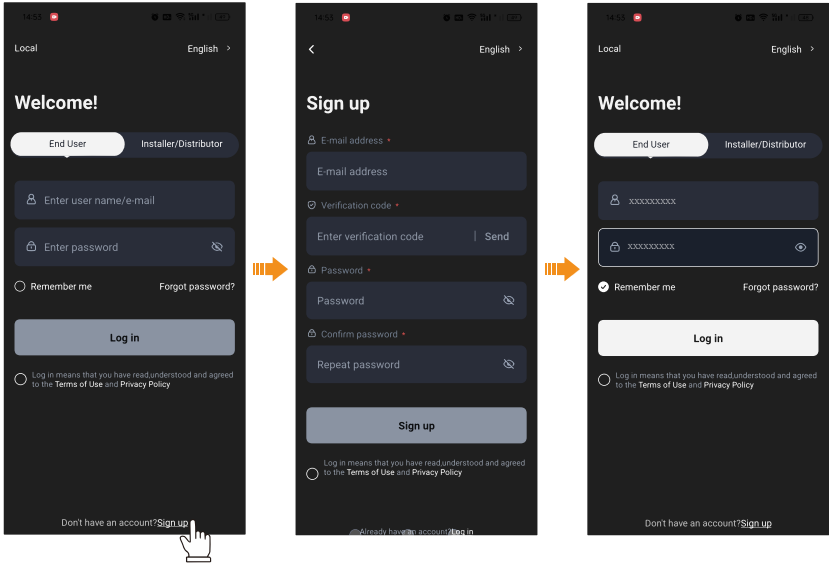
Step 1: Download APP.



Scan the QR code to download SolaXCloud App.

SolaXCloud

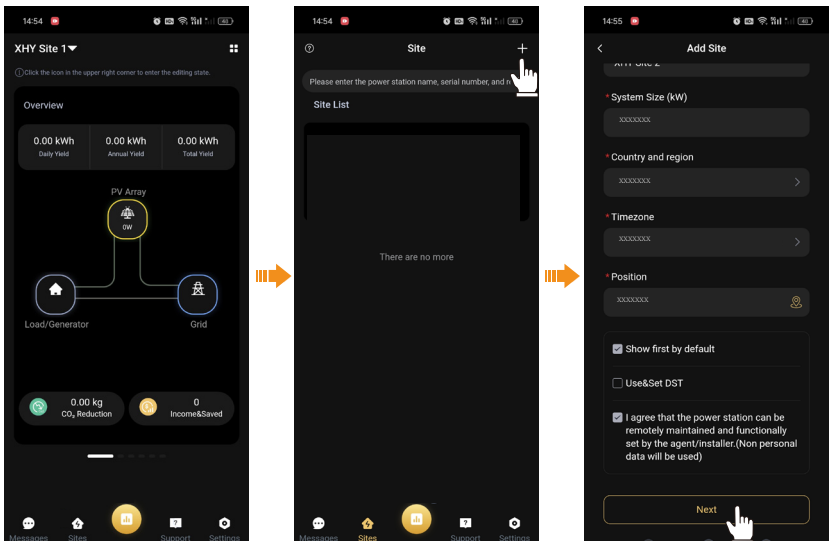
Step 2: Register an account and log in.



NOTICE!

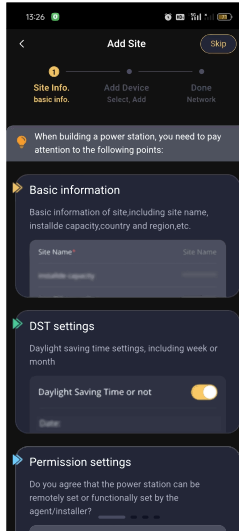
- Before configuring network, please make sure that A1-Micro 1 in 1, ECC and ECC-PLC have been connected as a system.

Step 3: Add a site.

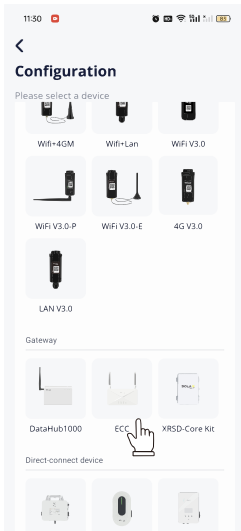


NOTICE

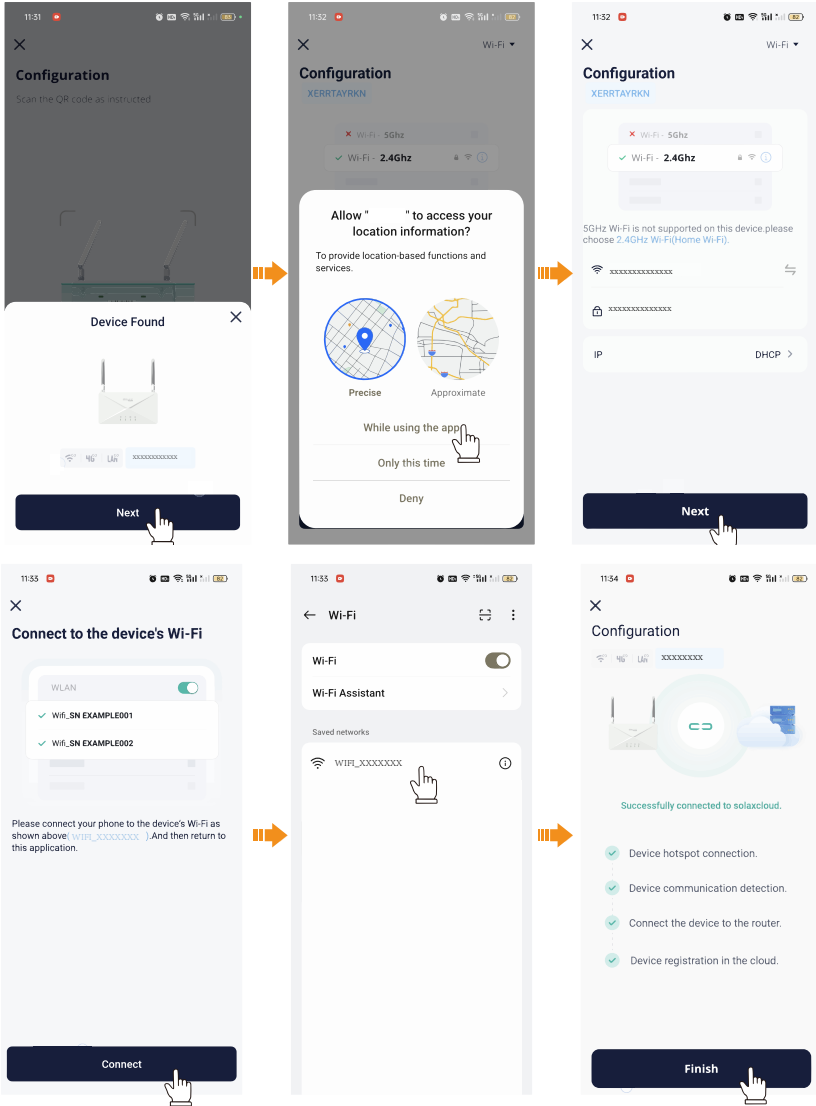
- Click the corresponding notice to know more details about how to Add Site. If you don't need reading these notices, click Skip.



Step 4: Bind ECC in the added site.

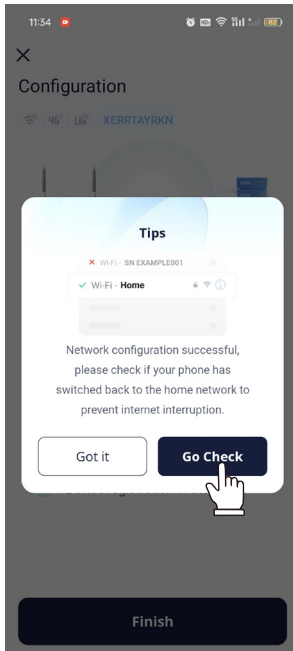


Step 5: Configure network for ECC.

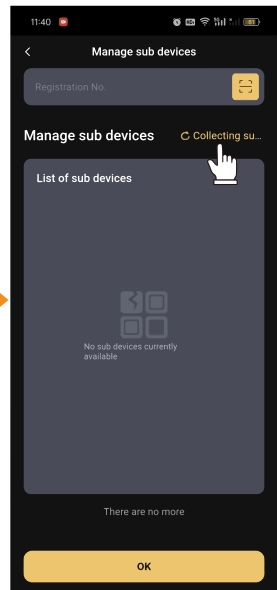
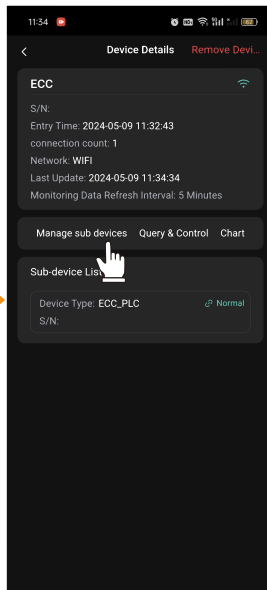
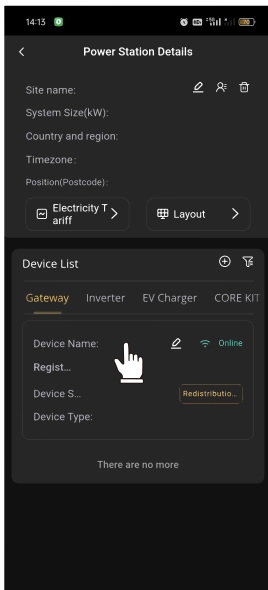


NOTICE

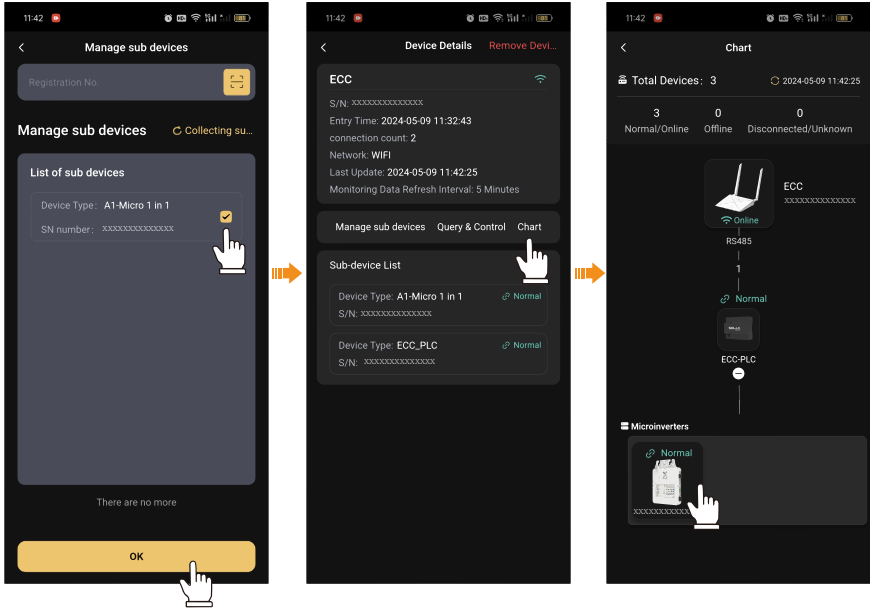
- After ECC configuration succeeds, the connected ECC-PLC will show on the Gateway list.
- Remember to switch to your home WiFi for the subsequent operation.



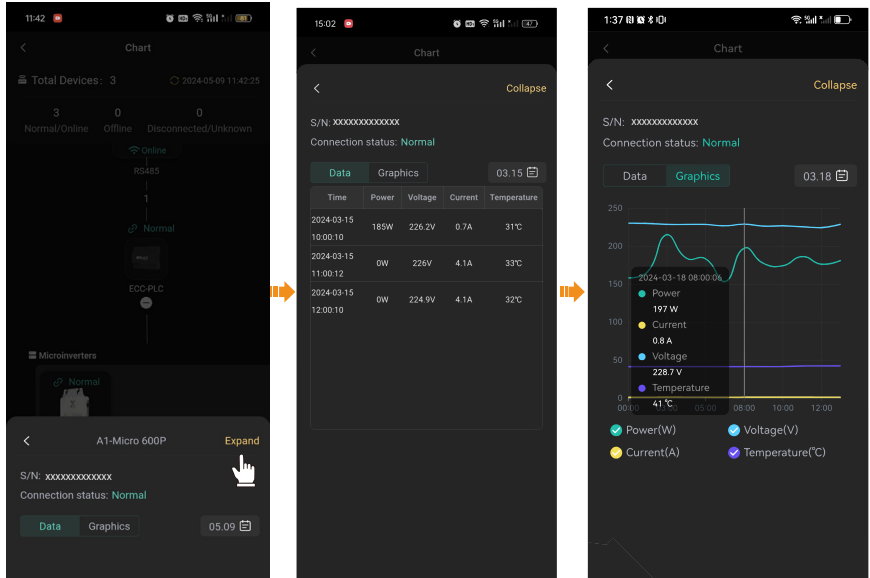
Step 6: Enter the Device Detail interface, click Manage sub devices and collecting sub devices to bind A1-Micro 1 in 1.



Step 7: After binding A1-Micro 1 in 1, click Chart to see more detail information.



Step 8: Click Expand to check the data and graphics.



LED Indicator Status

LED Indicator Status	Description
Yellow light flash	Microinverter startup. If the light flashes twice in 1s, flashes in 10s or still flashes after 10s, microinverter startup fails.
Yellow light steady on	Microinverter standby/self-checking.
Green light flash (5s)	Normal operation; normal AC grid; communicating with gateway/router.
Green light flash (2s)	Normal operation; normal AC grid; no connection with gateway/router.
Red light flash (2s)	No AC grid or AC grid outside the regulatory range.
Red light steady on	Error: non-grid abnormal fault. Machine fault like grounding detection fault and PV side fault.
Green/Red light flash alternately (1s; 1s gap)	Firmware upgrade.

About 10s after connection with DC power, the light turns yellow;

The yellow light flashes for 10s continuously and then keeps steady on which stands for microinverter self-check;

Afterwards, if the system is not powered on, the red light will flash, indicating for no grid existence;

After microinverter connects with DC power for the first time, red light flashes indicates for errors during microinverter startup.

Technical Data

- DC Input

Model	A1-Micro 300P	A1-Micro 400P	A1-Micro 450P	A1-Micro 500P	A1-Micro 600P
Max. PV array input power [kWp]	240 to 410+	320 to 550+	360 to 600+	400 to 670+	400 to 670+
Max. PV voltage [d.c. V]	60				
MPPT voltage range [d.c. V]	22-60				
Max. PV current [d.c. A]	12	15	16	18	20
Isc PV array short circuit current [d.c. A]	20	20	25	25	25
Start output voltage [d.c. V]	20				
No. of MPPT trackers	1				
Strings per MPPT tracker	1				

- AC Output

Model	A1-Micro 300P	A1-Micro 400P	A1-Micro 450P	A1-Micro 500P	A1-Micro 600P
Rated output apparent power [VA]	300	400	450	500	600
Maximum continuous output power [VA]	300	400	450	500	600
Nominal AC voltage [a.c. V] ¹	240/211-264				
Nominal AC frequency / range [Hz] ¹	60/55-65				
Rated output current [a.c. A]	1.25	1.67	1.88	2.08	2.50
Power factor range	>0.99 (-0.8~0.8 adjustable)				
Total harmonic distortion [%]	<3				

Note:

*1 Nominal AC voltage/frequency range may vary according to local rules and regulations.

*2 Refer to local rules and regulations for the specific number of microinverters per branch.

- Efficiency, Standard and Environment limit

Model	A1-Micro 300P	A1-Micro 400P	A1-Micro 450P	A1-Micro 500P	A1-Micro 600P
Peak efficiency [%]	96.50				
CEC Eciency [%]	96.50				
Nominal MPPT efficiency	99.50				
Night power consumption [mW]	< 63				
Compliance	UL 1741, UL 1741 SA, CSA C22.2 No.107.1-16, FCC Part 15 Class B, IEEE 1547, CA Rule 21				
PV rapid shutdown	Conforms with NEC-2017 and NEC-2020 Article 690.12				
Ingress protection rating	Type 6				
Operating temperature range [°C]	-40°C to 70°C (-40°F to 158°F)				
Humidity [%]	0 ~ 100 (condensing)				
Storage temperature [°C]	-40°C to 70°C (-40°F to 158°F)				

Contact Information



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Authorised Representative (EU)

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Tel: +31 (0)85 2737 932

E-mail: service.eu@solaxpower.com

Warranty Registration Form



For Customer (Compulsory)

Name _____ Country _____
Phone Number _____ Email _____
Address _____
State _____ Zip Code _____
Product Serial Number _____
Date of Commissioning _____
Installation Company Name _____
Installer Name _____ Electrician License No. _____

For Installer

Module (If Any)

Module Brand _____
Module Size(W) _____
Number of String _____ Number of Panel Per String _____

Battery (If Any)

Battery Type _____
Brand _____
Number of Battery Attached _____
Date of Delivery _____ Signature _____

Please visit our warranty website: <https://www.solaxcloud.com/#/warranty> or use your mobile phone to scan the QR code to complete the online warranty registration.



For more detailed warranty terms, please visit SolaX official website: www.solaxpower.com to check it.



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