User manual

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DEYE SUN microinverter

Installation / User Manual

Photovoltaics Grid-connected micro-inverters (with built-in WIFI-G3)

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Important safety instructions

This manual contains important instructions to follow when installing and maintaining the grid-connected photovoltaic inverter (microinverter). To avoid the risk of electric shock and to ensure the safe installation and operation of the microinverter, the following symbols are used in this document to indicate hazardous conditions and important safety instructions.

Specifications subject to change without notice - Please make sure you are using the latest manual available on the manufacturer's website.

CAUTION: This symbol indicates a situation where failure to follow the instructions may result in a serious hardware failure or personal injury. Use extreme caution when performing this task.

NOTICE: This sign indicates information that is important for optimal operation of the micro inverter. Follow these instructions strictly.

Safety instructions

√ DO NOT disconnect the PV module from the microinverter without disconnecting the AC supply.

√ Only qualified personnel should install and/or replace the microinverters.

√ Carry out all electrical installations in accordance with local electrical regulations.

√ Before installing or using the microinverter, please read all instructions and warnings in the technical documentation and on the microinverter system and solar array

√ Note that the housing of the micro inverter serves as a heat sink and can reach a temperature of 80℃. To avoid the risk of burns, do not touch the housing of the micro inverter.

√ DO NOT attempt to repair the microinverter. In the event of a defect, contact technical support to obtain an RMA number and initiate the replacement procedure. Damaging or opening the microinverter will void the warranty.

√ Caution!
The external protective earth conductor is connected to the micro inverter's protective earth terminal via the AC connection.
When connecting, connect the AC terminal first to ensure the inverter is earthed and then make the DC connections.
When disconnecting, disconnect the AC first by opening the branch circuit breaker, but leave the protective conductor in the branch circuit breaker connected to the inverter, and then disconnect the DC inputs.

√ Under no circumstances connect the DC input when the AC plug is disconnected.

√ Install disconnecting devices on the AC side of the inverter.

Explanation of radio interference suppression

CE EMC Compliance: The unit complies with the requirements of the CE EMC Directive, which is designed to protect against harmful interference when installed in a residential area. The unit may radiate radio frequency energy, which may cause harmful interference to radio communications if the instructions are not followed during installation and use of the unit. However, there is no guarantee that interference will not occur in a particular installation.
If this equipment does cause interference to radio or television reception, the following measures may correct the problem:

A) Position the receiving antenna differently and keep it at a greater distance from the unit.

B) Consult the dealer or an experienced radio/TV technician for help. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Meaning of symbols

	Caution, risk of electric shock.
	Caution, risk of burns - do not touch.
	Caution, hot surface.
	Symbol for the marking of electrical and electronic equipment in accordance with Directive 2002/96/EC. It indicates that the appliance, accessories and packaging must not be disposed of as unsorted municipal waste and must be collected separately at the end of their working life. Please refer to local ordinances or regulations for disposal or contact an authorised representative of the manufacturer for information on the disposal of equipment.

CE	The CE mark is affixed to the solar inverter to confirm that the device complies with the provisions of the European Low Voltage and EMC Directives.
	Follow the operating instructions
qualified staff	Person who is adequately advised or supervised by a qualified electrician to identify risks and avoid hazards that may arise from electricity. For the purposes of the safety instructions in this manual, a "qualified person" is a person who is familiar with the safety requirements of the refrigeration system. person" means a person who is familiar with safety, cooling system and EMC requirements and is authorised to energise, ground and tag equipment, systems and circuits in accordance with established safety procedures. The inverter and end-use system may only be commissioned and operated by qualified personnel.

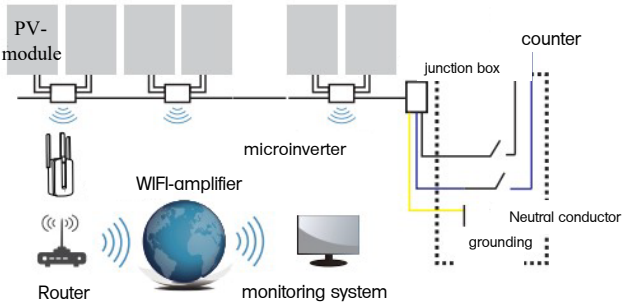
Introduction to the micro inverter system

The microinverter is used in grid-connected applications and consists of two key elements: :

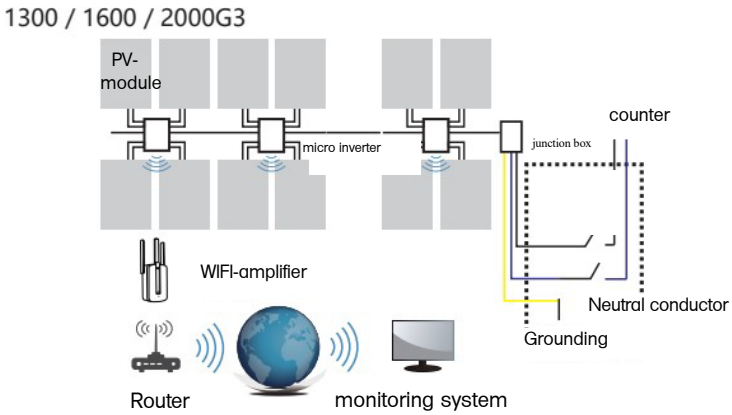
- microinverter
- router

This series of microinverters has a built-in WIFI module so that it can communicate directly with the router.

300 / 500 / 600 / 800 / 1000G3



DEYE SUN microinverter



NOTE: If the WLAN signal in the area of the micro inverter is weak, a WLAN signal booster must be placed at a suitable location between the router and the micro inverter.

This integrated system improves safety, maximises solar energy harvesting, increases system reliability and simplifies solar system design, installation, maintenance and management.

Microinverters maximise PV energy production

Each PV module has an individual MPPT (Maximum Peak Power Tracking) control, which ensures that the maximum power is fed into the grid regardless of the power of the other PV modules in the array.

More reliable than central or string inverters

The distributed microinverter system ensures that there is not a single point of failure in the entire PV system. Microinverters are designed to operate at full power at outdoor temperatures of up to 149°F (65℃). The housing of the inverter is designed for outdoor installation and complies with protection class IP65.

DEYE SUN microinverter

Easy to install

You can install individual PV modules in any combination of module number, orientation, different types and power rates. The earth wire (PE) of the AC cable is connected to the enclosure inside the microinverter, which may eliminate the need to install an earth wire (check local regulations).

Data collection is done via internal WiFi, a wireless router is required near the micro inverter. After completing the installation of the micro inverter, configure the WLAN router with the internal WLAN (see WLAN user manual). The data will be uploaded automatically. Users can monitor and manage the micro inverter via the corresponding website or APP.

Introduction to microinverters

The microinverters can be connected to the single-phase grid and several microinverters can also be used in the form of a single-phase grid to achieve a three-phase grid.

Modell-No.	AC network	Max. Number per branch
SUN300G3-EU-230	50/60Hz, 230V	17 for 25A LS-switch
SUN500G3-EU-230	50/60Hz, 230V	10 for 25A LS-switch
SUN600G3-EU-230	50/60Hz, 230V	8 for 25A LS-switch
SUN800G3-EU-230	50/60Hz, 230V	6 for 25A LS-switch
SUN1000G3-EU-230	50/60Hz, 230V	5 for 25A LS-switch
SUN1300G3-EU-230	50/60Hz, 230V	4 for 25A LS-switch
SUN1600G3-EU-230	50/60Hz, 230V	4 for 45A LS-switch
SUN2000G3-EU-230	50/60Hz, 230V	3 for 45A LS-switch

Installation of the micro inverter system

A PV system with microinverters is easy to install. Each microinverter can be easily mounted on the PV frame directly under the PV module(s). The low voltage DC cables are connected directly from the PV module to the microinverter, avoiding the risk of high DC voltage. Installation MUST be carried out in accordance with local regulations and technical rules.

Special note! An AC RCD should not be used to protect the microinverter's circuit, even if it is an external circuit. None of the small RCDs (5-30mA) are designed for backfeeding and will be damaged if backfeeding occurs. Similarly, AC circuit breakers are not designed for regenerative power and can be damaged if regenerated with the output of a PV inverter.

CAUTION: Carry out all electrical installations in accordance with local electrical regulations

CAUTION: Note that the installation and/or replacement of microinverters must only be carried out by qualified personnel.

CAUTION: Before installing or using a microinverter, please read all instructions and warnings in the technical documentation and on the microinverter system itself and on the PV generator

CAUTION: Note that there is a risk of electric shock when installing this unit.

CAUTION: Do not touch any live parts of the system, including the PV generator, when the system is connected to the mains.

NOTE: It is strongly recommended to install surge protectors in the designated meter box.

Additional components for the installation

- AC plugs and sockets (sold separately
- Sealing end caps (sold separately)

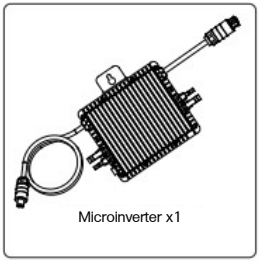
Parts and tools required from you

In addition to your PV generator and the associated hardware, you will need the following parts:

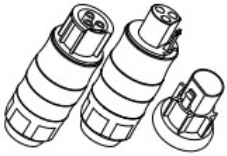
- an AC junction box
- mounting material suitable for the installation of the modules
- sockets and spanners for the mounting parts
- a continuous earthing conductor and earthing washers
- Phillips screwdriver
- a torque spanner

Parts list

Please use the following chart to check if all parts are included in the package：


Microinverter x1

User manual x1

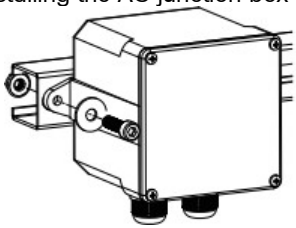

AC-Plug (optional) x1

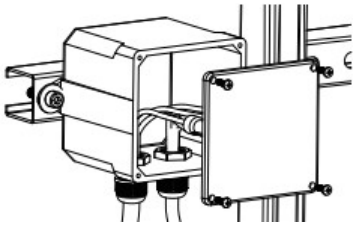

Antenna x1*

* This antenna is for micro inverters with built-in WiFi module.

Installation procedure

Step 1 - Installing the AC junction box





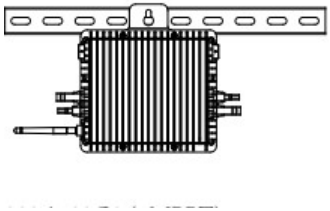
a. Install a suitable junction box at a suitable location on the PV racking system (usually at the end of a module branch).
b. Connect the open wire end of the AC cable to the junction box with a suitable gland or strain relief.
c. Wire the cores of the AC cable (230/400Vac): L - red; N - black; PE - yellow-green.
d. Connect the AC junction box to the connection point of the supply network.

CAUTION: The wiring colour code may vary depending on local regulations; check all wires in the installation before connecting to the AC cable to ensure they match. Incorrect wiring may cause irreparable damage to the microinverters, which is not covered by the warranty.

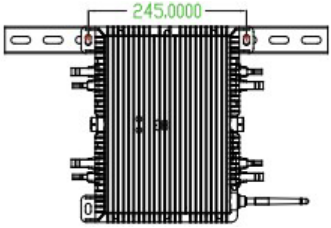
Step 2 - Fixing the micro inverter to the frame or to the PV module frame

a. Mark the location of the microinverter on the rack with respect to the PV module junction box or other elements.

b. Mount a microinverter at each of these locations using the parts recommended by the module rack manufacturer.



300 / 500G3 (1MPPT)
600 / 800 / 1000G3
(2MPPT) mounting



1300 / 1600 / 2000G3
(4MPPT) mounting

CAUTION: Before installing a microinverter, check that the mains voltage at the common connection point matches the rated voltage on the microinverter label.

CAUTION: Do not place the inverters (including the DC and AC connections) in locations exposed to the sun, rain or snow, including in the spaces between the modules. Leave a minimum clearance of 3/4 (1.5 cm) between the roof and the bottom of the microinverter to ensure good air circulation.

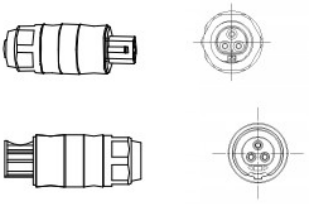
Step 3 - Parallel connection of the micro inverters

300 / 500G3 (1MPPT) 600 / 800 / 1000G3 (2MPPT) connect in parallel

1300 / 1600 / 2000G3 (4MPPT) connect in parallel

a. Check the microinverter technical data on page 5 for the maximum number of microinverters allowed in each AC branch circuit.

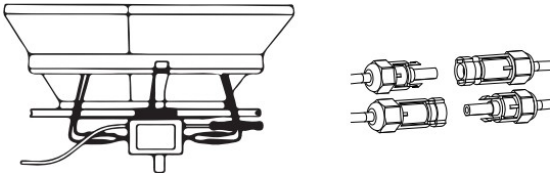
b. Insert the AC plug of the micro inverter into the socket to connect it.



CAUTION: DO NOT exceed the maximum number of microinverters in an AC branch circuit as indicated on page 5 of this manual.

Step 4 - Fitting an AC cable protection cap to the end of the AC cable

Step 5 - Connecting the Microinverter to the PV modules



NOTE: If AC power is already present when the DC cables are plugged in, the microinverter should immediately flash red and start working within the set time (standard 60 seconds). If no AC power is present, the red light will flash three times quickly and repeat after one second until AC power is connected.

Operating instructions for the Microinverter system

Operation of the microinverter PV system:

1. switch on the AC line circuit breaker on each AC branch circuit of the micro inverter.
2. switch on the main AC circuit breaker of the utility grid. Your system will start generating power after a one-minute wait.

3. he units should flash red one minute after the AC circuit breaker is switched on. Then the blue LED flashes. This means that the units are generating power normally. The faster the blue LED flashes, the more power is being generated.
4. Configure the internal WiFi module according to the instruction manual.
5. The microinverters will start sending performance data to the network via the Wi-Fi module every 5 minutes. This allows customers to monitor the performance data of each microinverter via the website and the APP.

NOTE: When AC power is present but the microinverter is not operating, approximately 0.1 A of current and 25 VA (W) of power can be measured for each microinverter with a power meter. This power is reactive power that is not consumed by the utility grid.

Troubleshooting

Qualified personnel can perform the following troubleshooting steps if the PV system is not functioning properly:

Status displays and error messages

Start-LED

One minute after the first application of DC voltage to the microinverter, a short red flash indicates a successful start-up sequence of the microinverter. An equal or greater short red flash after the first application of DC voltage to the microinverter indicates a microinverter setup error.

Operating LED

Flashes slowly blue	- Generates low power
Flashes quickly blue	- Generates high power
Flashes red	- no power
Flashes red twice	- AC undervoltage or high voltage
Flashes red three times	- Mains fault

GFDI-Error

A red LED flashing four times indicates that the micro inverter has detected a GFDI (Ground Fault Detector Interrupter) fault in the PV system. As long as the GFDI fault has not been rectified, the LED continues to flash four times.

Other Errors

All other errors can be reported via the website and the APP.

CAUTION: Never disconnect the DC line connections under load. Make sure that no current is flowing in the DC lines before disconnecting. Before disconnecting the module, the module can be covered with an opaque cover.

Troubleshooting a malfunctioning microinverter

There are a total of two possible error areas:

A. The microinverter itself may have a problem.
B. The microinverter itself is working properly, but the communication between the microinverter and the network is disturbed. The following points refer to problems with the microinverter, not communication problems:

A quick method to determine if it is a microinverter or communication problem:

1. Diagnosis on the microinverter: a red light - either flashing or continuous - on the microinverter or no light at all means that there is definitely a problem with the microinverter.
2. 2. 0 Watt or 2 Watt: Possibly a problem with the micro inverter.

2. diagnosis via the network:

a. No data display: The website and the APP do not display any data, check the network configuration.

b. It only shows that the micro inverter is online, but no data. This may be because the server is being updated.

To deal with a malfunctioning microinverter, carry out the following steps in order:

1. Make sure that the mains voltage and frequency are within the ranges specified in the "Technical data" section of this manual. "Technical Data" section of this manual.
2. Check the connection to the mains. Disconnect the AC first, then the DC and make sure that the voltage of the mains can be measured at the AC connection. Never disconnect the DC lines while the microinverter is generating power. Reconnect the DC module connectors and watch for three short LED flashes.
3. Check the AC branch circuit connection between all microinverters. Make sure that each inverter is powered by the utility grid as described in the previous step.
4. Make sure that all AC switches are working properly and are closed.
5. Check the DC connections between the micro-inverter and the PV module.
6. Make sure that the DC voltage of the PV module is within the permissible range specified in the technical data of this manual.
7. If the problem persists, please contact technical support.

CAUTION: Do not attempt to repair the microinverter and contact technical support if troubleshooting methods fail.

Replace

Proceed as follows to replace a failed micro inverter

A. Disconnect the microinverter from the PV module in the order shown below:
   1. Disconnect the alternating current (AC) by switching off the circuit breaker.
   2. Disconnect the AC plug of the micro inverter.
   3. Cover the module with an opaque cover.
   4. Disconnect the DC cable connections of the PV module from the micro inverter.
   5. Remove the microinverter from the rack of the PV generator.

B. Attach a new microinverter to the bracket and remove the opaque cover. Look for the flashing LED light once the new microinverter is connected to the DC cables.

C. Connect the AC cable of the replacement micro inverter.

Technical data

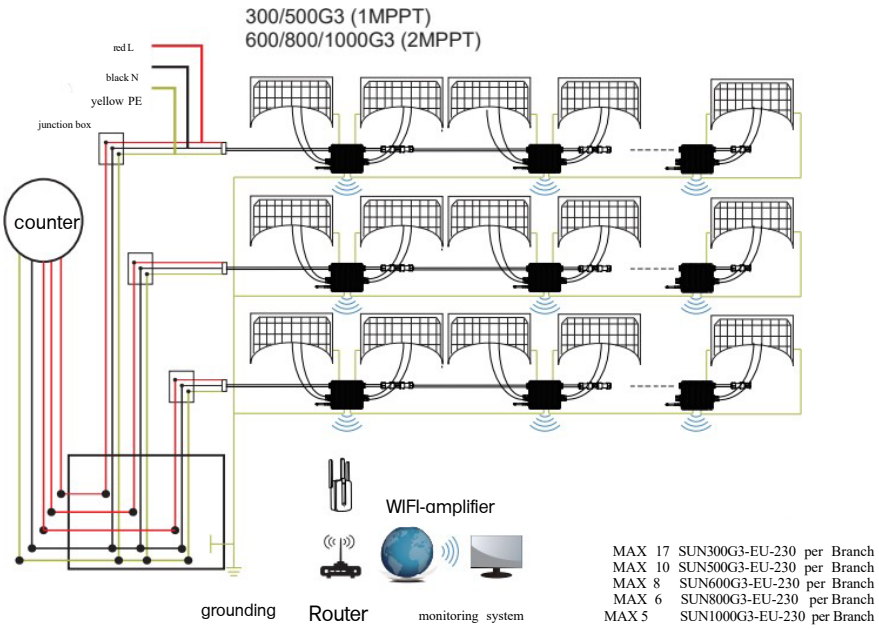
CAUTION: Make sure that the voltage and current specifications of your PV-Module match those of the microinverter. Refer to the data sheet or the user manual.

CAUTION: You must match the DC operating voltage range of the PV module with the permissible input voltage range of the micro inverter.

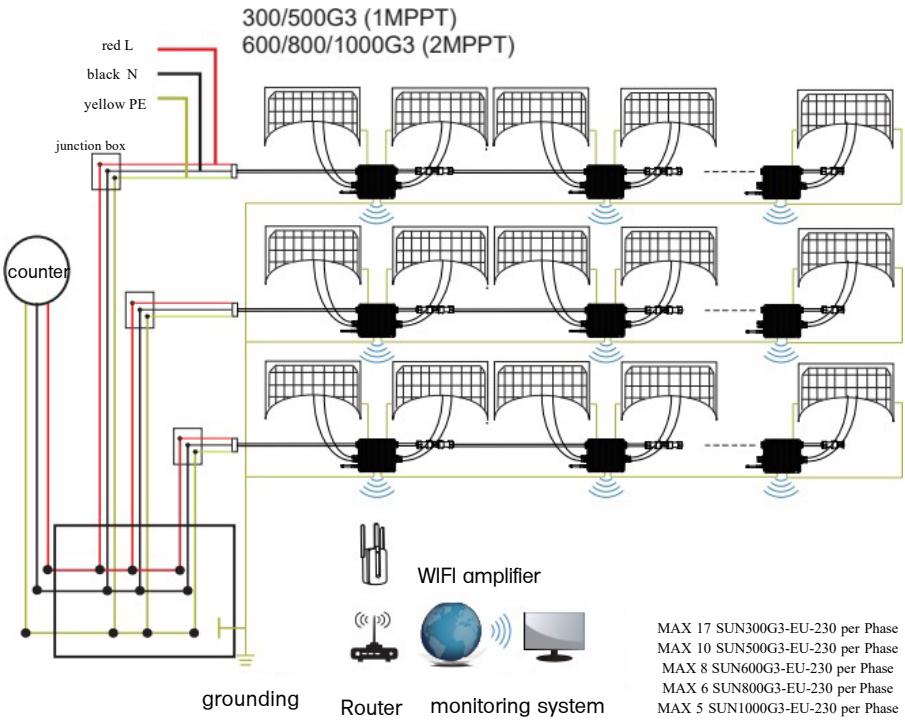
CAUTION: The maximum open-circuit voltage of the PV module must not exceed the specified maximum input voltage of the inverter.

Connection diagram

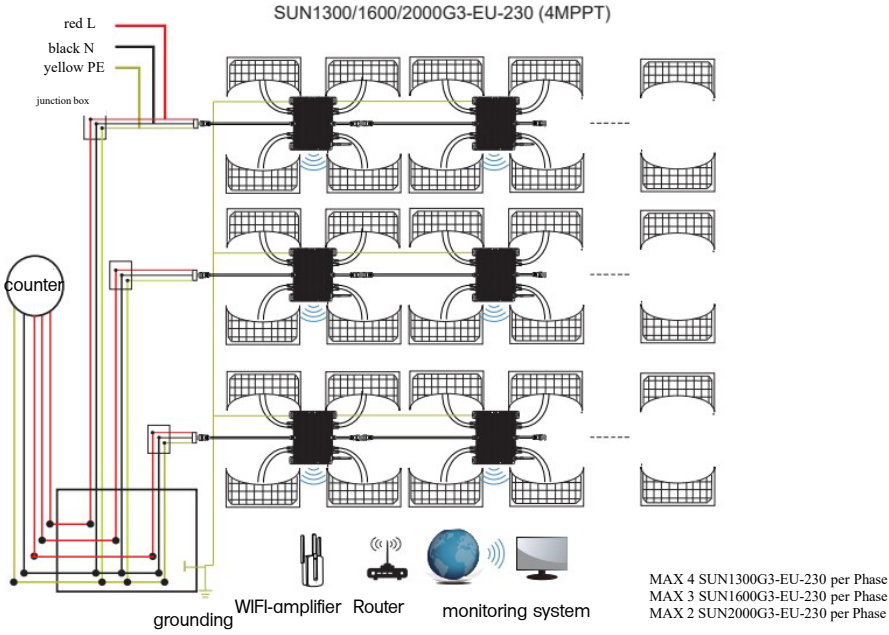
Sample wiring diagram, three-phase



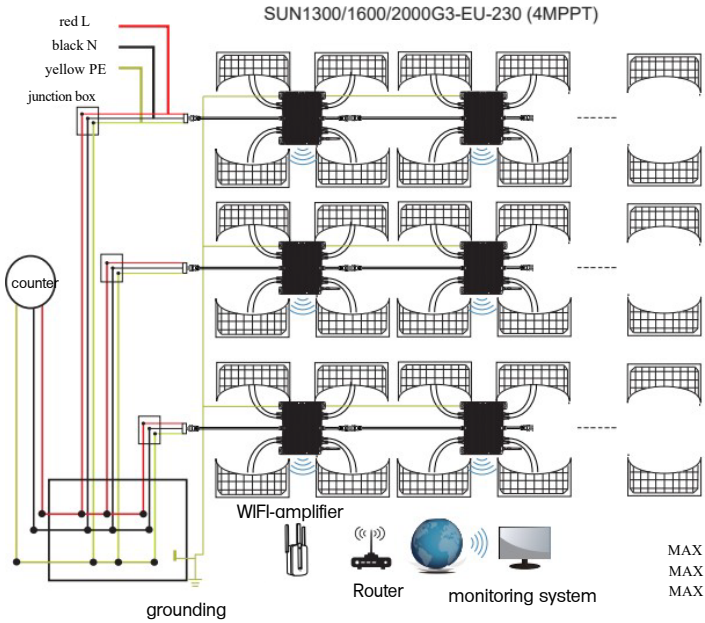
Sample wiring diagram single-phase



Sample wiring diagram, three-phase



Sample wiring diagram single-phase



MAX 4 SUN1300G3-EU-230 per Phase
MAX 3 SUN1600G3-EU-230 per Phase
MAX 2 SUN2000G3-EU-230 per Phase

Monitoring platform

This series of microinverters has a built-in WIFI module that can communicate directly with a WLAN router. For WIFI configuration, please refer to the manual " Integrated WIFI Module WIFI Configuration Manual".

Web monitoring address: ***https://pro.solarmanpv.com*** (for Solarman merchant account);
https://home.solarmanpv.com (for Solarman end user account)

For mobile phone monitoring, scan the QR code to download the APP.

You can also find it by searching for "solarman business" in the App Store or Google Play; this app is for dealers/installers.

Search for "solarman smart" in the App Store or Google Play and select "solarman smart"; this app is for system owners.

SOLARMAN Smart
for end consumers

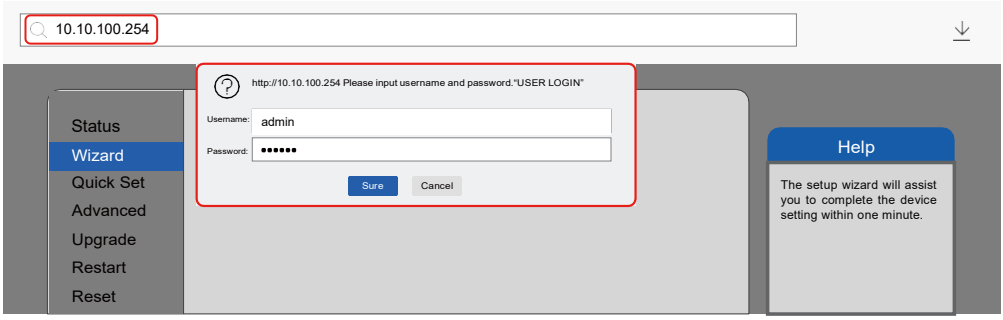
SOLARMAN Business
for dealers/installers

How is the microinverter configured for the router via the Internet?

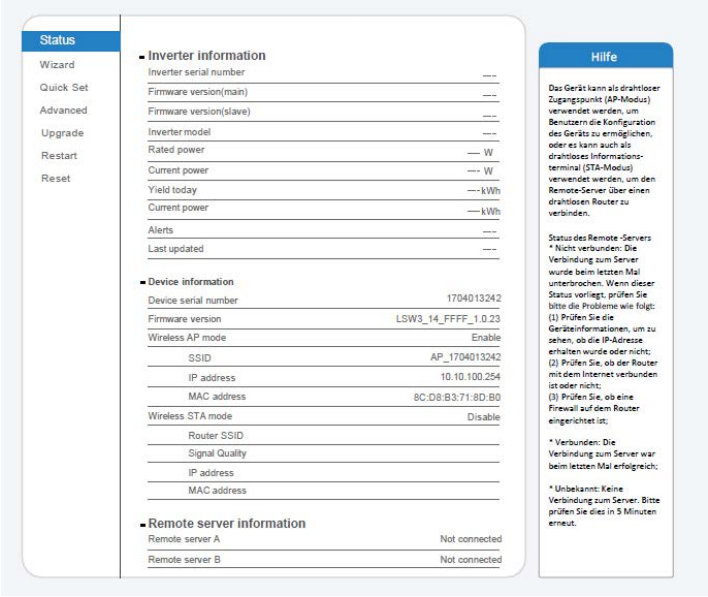
1. Open a wireless network.
2. Select the logger network (network name: AP+SN) and establish a connection. The default password is 12345678.

Mikrowechselrichter-SN: 2208314002; Eingebauter Datenlogger:1704013242

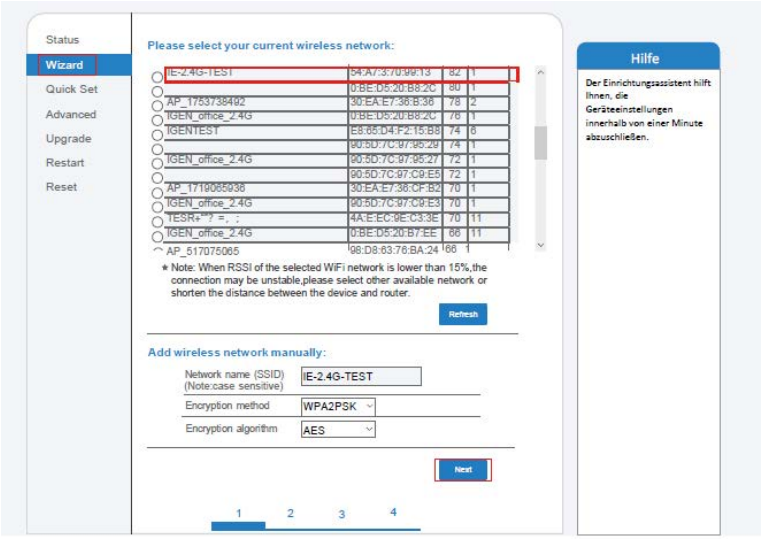
3. Open a browser and enter 10.10.100.254. Both the username and password are admin. (Recommended browser: IE 8+, Chrome 15+, Firefox 10+ and the default username is "admin" and password is "admin").



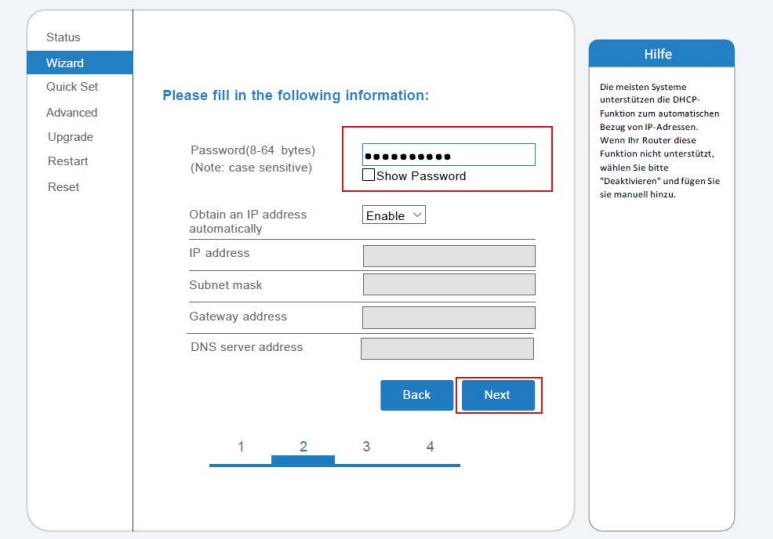
4. Go to the logger setup page. The basic information is listed here.



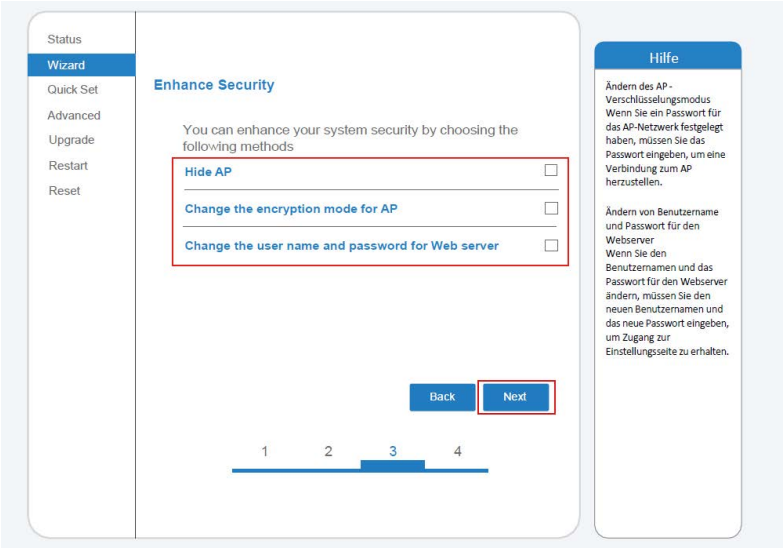
5. Go to the Setup Guide, click Update and locate the wireless network. Select the destination network and connect.



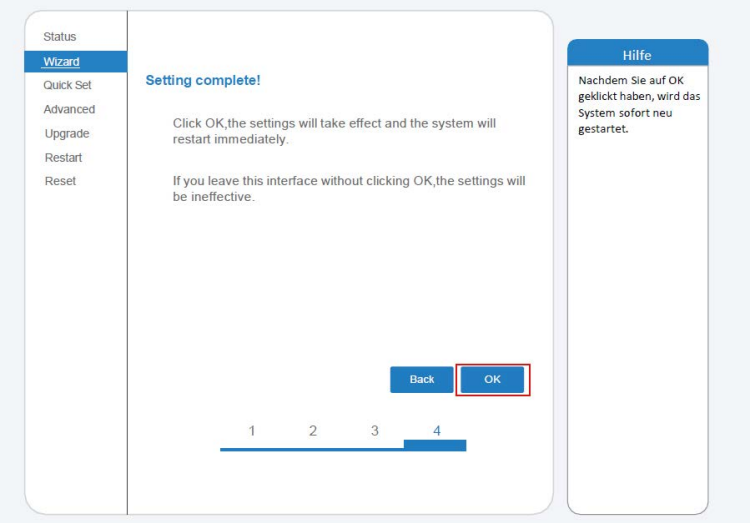
6. Enter the password and click Next.



7. You can select the following options to increase security and click Next

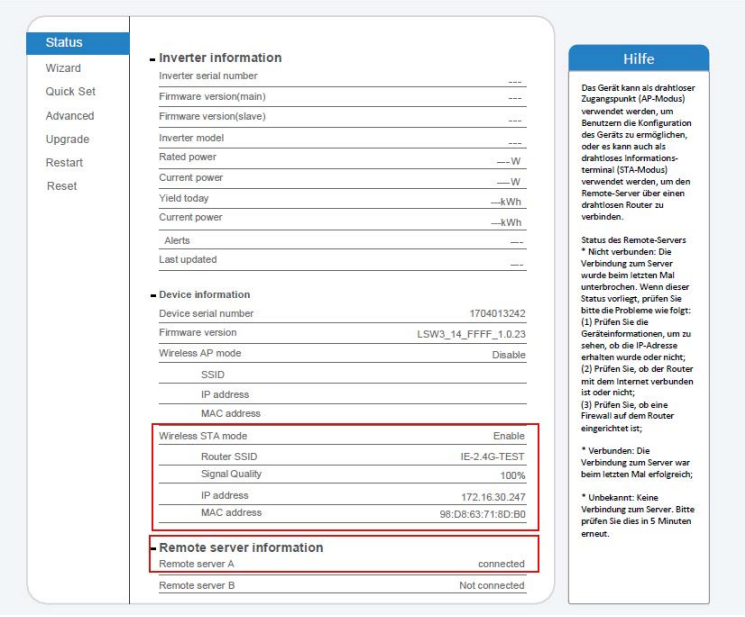


8. After successful setup, the following page is displayed; confirm with OK to restart the module.



9.

Connect to the AP network of the Microinverter, log in again at 10.10.100.254 and check the system information here. After the network settings are made, the STA mode of the wireless network is activated. The information about the router is displayed on the page and the remote server A is connectable.



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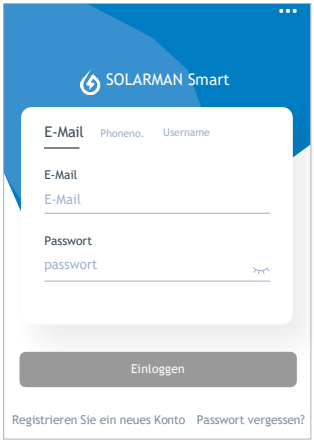
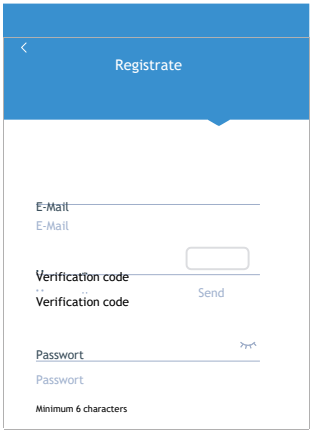
If the remote server cannot be connected, please refresh the page or try again.

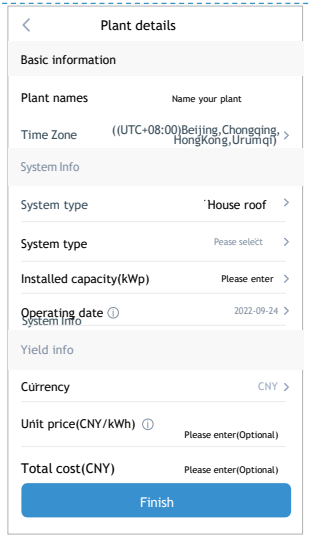
How to connect in the App

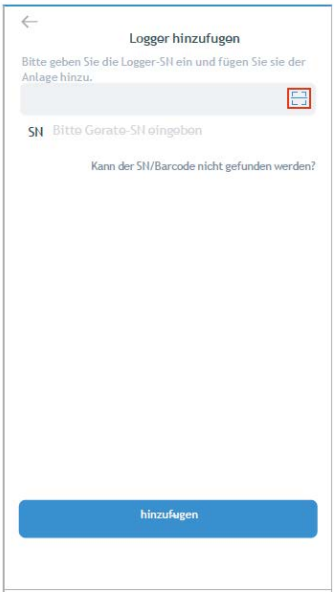
1.Registration
Go to SOLARMAN Smart and register. Click on "Register" and create your account here.





2.Create an plant
Click on "Add Now" to create your plant.
Enter the basic data of the installation and further information here..





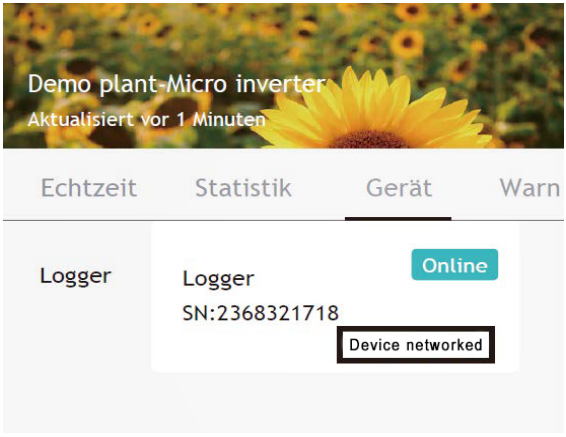
3.Add a logger (recording device)

Option 1: Enter the logger SN manually.

Option 2: Click the icon on the right and scan the logger SN. You will find the logger SN on the packaging or the logger housing.

4. Network configuration

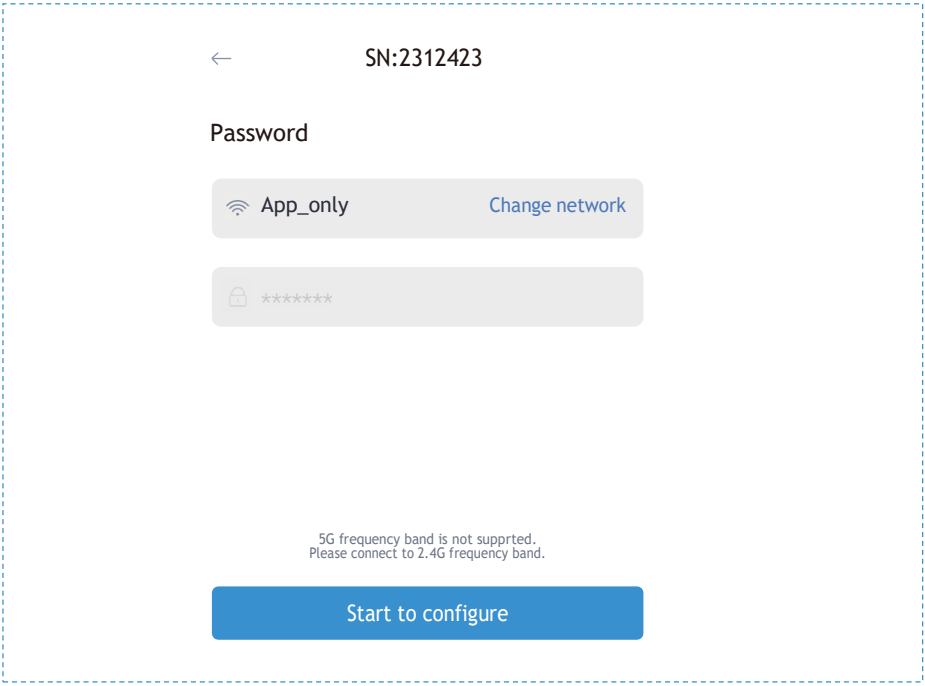
After adding the logger, configure the network for normal operation.
Go to "Plant Details" - "Device List", find the target SN and click on "Networking".



Step 1: Confirm WiFi Info

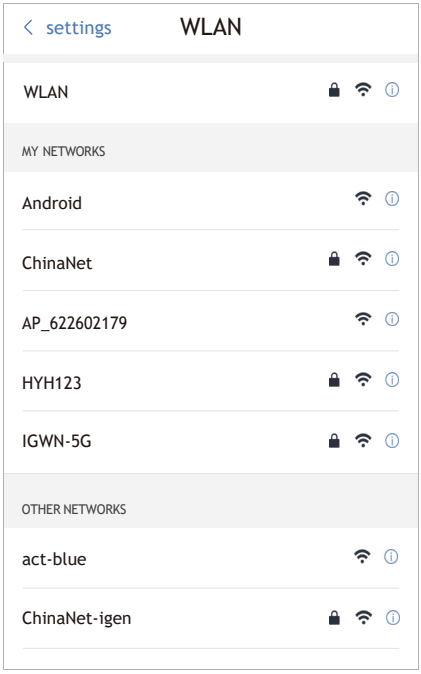
Ensure that your mobile phone is connected to the correct WiFi network. Click on "Start".

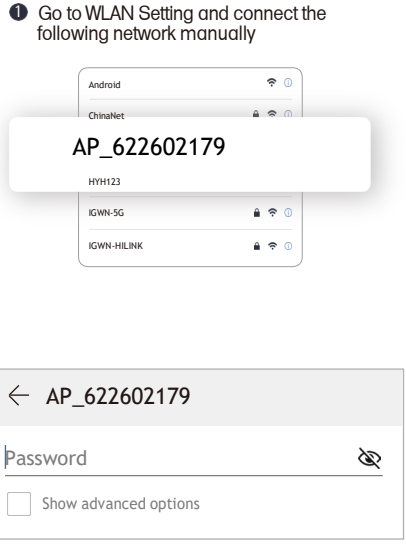
Notice:
5GHz WiFi is not supported.
Special characters (e.g. , ; =) in router name and password are not supported.



Step 2： Connect to the AP network

Click on "Go to connect" ("Connect") and search for the correct "AP_XXXXXX XXXX" network ("XXXXXXXXXX" here stands for the logger SN. For the required password, please enter "12345678".
Go back to the SOLARMAN Smart APP after you have connected to the AP network.

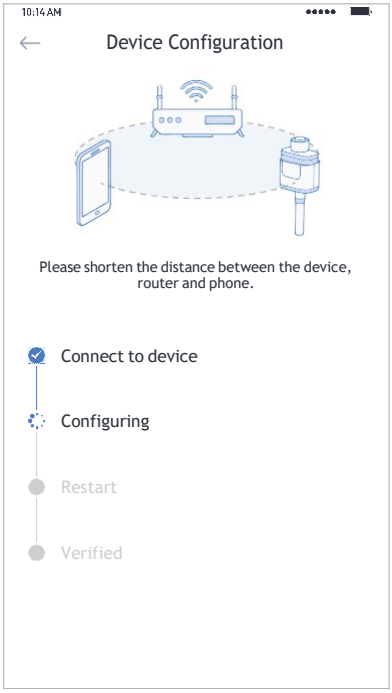


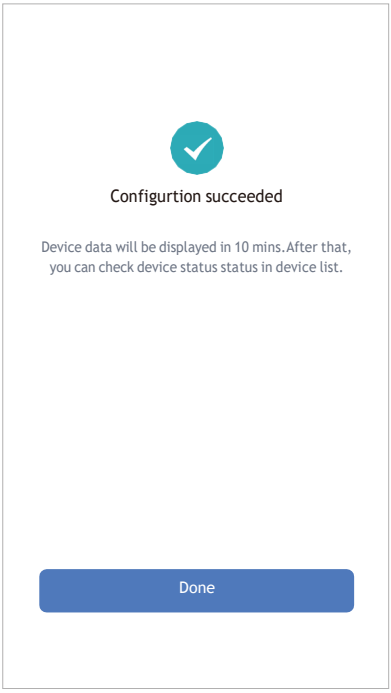


Step 3：Automatic configuration

Please wait for a while until the configuration is completed. Then the system will switch to the following page.

Click "Done" to check the system data (Usually, the data will be updated within 10 min.).


10:14 AM
Device Configuration
Please shorten the distance between the device, router and phone.
Connect to device
Configuring
Restart
Verified


Configurtion succeeded
Device data will be displayed in 10 mins. After that, you can check device status status in device list.
Done