SolarPilot

Smart PV RSD

SP5-RSD-AG

User Manual

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About this manual

This document mainly introduces the functional characteristics, electrical parameters, product structure and so on of smart PV RSD for purpose of overview, installation, commissioning, maintenance, and troubleshooting. The pictures in this article are for reference only, and the specifics are subject to the actual product. Please read the manual carefully before using the product and keep it in a convenient place.

The content of the manual will be constantly updated and revised, but it is inevitable that there will be slight discrepancies or errors with the actual product.

Users should refer to the purchased product, and can download the latest version of the manual through www.solarpilot.com or sales channels.

Scope of application

This manual is mainly aimed at the following products:

Smart PV RSD(SP5-RSD-AG)

Hereinafter, unless otherwise noted, are referred to as "RSD".

Intended Readers

- Sales engineer
- Technical support engineer
- Hardware installation engineer
- Maintenance engineer

Symbolic conventions

In order to ensure the personal and property safety of users when using the product, and to use the product more efficiently and optimally, the relevant information is provided in the manual, and the following symbols are used to highlight it. The following lists the symbols that may be used in this manual, please read them carefully to make better use of this manual.

Symbol	Description
DANGER	Indicates a high potential hazard that, if not avoided, would result in death or serious injury.
WARNING	Indicates a moderate potential hazard that,if not avoided, would result in death or serious injury.
CAUTION	Indicates a low potential hazard that, if not avoided, would result in moderate or light injury.
NOTICE	Indicates a potentially hazardous situation that, if not avoided, would result in equipment damage, data loss, performance deterioration, or unanticipated results. NOTICE is used to address practices not related to personal injury

NOTE	Supplements the important information in the main text. NOTE is used to address information not related to personal injury, equipment damage, and environment deterioration.

SolarPilot

Directory

1 Safety Instructions

As a power electronic device, the RSD must comply with relevant safety regulations during its installation, practice running, operation and maintenance. Unreasonable use or misoperation may lead to:

- Harm the life and personal safety of the operator or a third party.
- Damage to the RSD or other property belonging to the operator or a third party.

Precautions during operation will be explained in detail in the corresponding section.

NOTE

The safety precautions in this manual cannot contain all the specifications that should be followed, and various tasks should be carried out in combination with the actual situation on site.

SolarPilot does not accept any responsibility for any loss caused by not following the safety precautions in the manual.

1.1 General Security Precautions

- When carrying out various operations of this product, the relevant equipment precautions and special safety instructions provided by SolarPilot Energy GmbH must be strictly followed. Personnel responsible for installing and maintaining SolarPilot Energy GmbH equipment must first undergo strict training, understand various safety precautions, and master correct operation methods before installing, operating and maintaining the equipment. SolarPilot Energy GmbH does not assume any responsibility for violations of general safe operating requirements and safety standards for the use of equipment.
- Before starting the operation, please read the precautions and operation instructions in this manual carefully to avoid accidents. The "dangers", "warnings", "instructions" and "precautions" in each manual do not represent all the safety matters that should be observed, but only supplement the safety precautions in various operations.
- Operators are expected to comply with local regulations and codes. The safety precautions in the manual are only in addition to local safety codes.
- It is strictly forbidden to wear watches, bracelets, rings and other easily conductive objects during operation.
- Special insulated tools must be used during operation.
- Torque wrenches should be used to fix the bolts and double-checked with red and blue markings. After the installer confirms that the bolts are tightened, paint the blue logo on the bolts; after the inspector confirms that the bolts are tightened, paint the red logo. If the bolts or bolts of the fixed equipment are not installed according to the torque requirements, there is a risk that the equipment will come loose from the installation.
- Installation or maintenance operations must conform to the sequence of steps of the task, and do not change the structure and installation sequence of the equipment without the manufacturer's permission.
- Installation must be carried out in strict accordance with the requirements of the Quick Guide.

1.2 Statement

In the event of any of the following circumstances, SolarPilot Energy GmbH has the right not to carry out quality assurance.

- Damage in transit.
- Damage caused by storage conditions not meeting product doc requirements.
- Incorrect installation and use of product.
- Unqualified personnel to install and use product.
- Failure to follow the operating instructions and safety warnings in the product and doc.
- Operate in harsh environments beyond product and doc specifications.
- Operate beyond the parameters specified in the applicable technical specifications.
- Unauthorized disassembly, modification of products, or modification of software code.
- Damage caused by abnormal natural environment. (Force majeure, such as lightning, fire, storm, etc.)
- Exceeded the quality assurance period and did not extend the quality assurance service.
- Any installation and operating environment beyond those specified in the relevant international standards.

1.3 Personnel Requirements

RSD installation, electrical connection, maintenance, troubleshooting, and replacement operations must be performed by professional electrical technicians.

- Operators need to undergo professional training.
- Operators should read this manual completely and master the safety matters related to operation.
- Operators should be familiar with the relevant safety regulations of electrical systems.
- Operators need to be fully familiar with the composition and working principle of the entire photovoltaic grid-connected power generation system, as well as the relevant standards of the country/region where the project is located.
- Operators must wear personal protective equipment.

1.4 Mark Protection

- The warning label on the RSD contains important information for its safe operation, and human alteration and damage are strictly prohibited.
- There is a nameplate on the back of the RSD, which contains important parameter information related to the product, and artificial alteration and damage are strictly prohibited.

1.5 System Installation

- The RSD is prohibited from being installed in locations where water can submerge for a long time.
- Improper operation during the installation and operation of the RSD may lead to fire, and the storage of flammable and explosive materials is prohibited in the installation location area.
- It is forbidden to cut the cable that comes with the RSD, otherwise the quality assurance will fail.
- When installing the RSD, make sure that it is not electrically connected and energized.
- A certain distance should be reserved between the RSD and the surrounding objects to ensure sufficient installation and heat dissipation space.

1.6 Electrical Connections

DANGER

Before making electrical connections, make sure that the RSDis not damaged, otherwise it may cause electric shock or fire.

- All electrical connections must meet the electrical standards of the country in which they are located.
- The cables used in the photovoltaic grid-connected power generation system must be firmly connected, well insulated, and of suitable specifications.
- The RSD output terminal does not support hot swapping, otherwise, it may cause damage to the RSD.
- The DC connector model of the RSD is Staubli EVO2 , make sure the mating DC connector model is the same. If the model is different, the DC connector manufacturer must provide a connector compatibility report and a third-party external laboratory (TUV, VED or Bureau Veritas) report. Using other incompatible DC connectors may have serious consequences, and equipment damage caused by them is not covered by the equipment quality assurance.

1.7 Operation

DANGER

During the operation of the RSD in the string, there is a high voltage, which may produce electric shock, resulting in death, serious personal injury, or serious property damage. Please strictly follow the safety precautions listed in this manual and other related documents.

- When the RSD is running, the temperature is high and there is a risk of burns. Do not touch it.
- Local regulations and codes should be observed when operating equipment.

1.8 Maintenance and Replacement

DANGER

During the operation of the RSD, there is a high voltage, which may produce electric shock, resulting in death, serious personal injury, or serious property damage. Therefore, before any maintenance work, the RSD must be powered off and operated strictly in accordance with the safety precautions listed in this manual and other related documents.

- Maintain the RSD with a good understanding of this manual and with appropriate tools and test equipment.
- During the maintenance process, please try to avoid unrelated personnel entering the maintenance site, and temporary warning signs or fences must be erected for isolation.
- The fault must be dealt with before the RSD can be powered on again, otherwise it may cause the fault to expand or damage the equipment.
- During maintenance, please follow the electrostatic protection regulations and wear anti-static gloves.
- If the equipment fails, please contact your dealer or the original factory.

2 Product Description

2.1 Applicable Systems

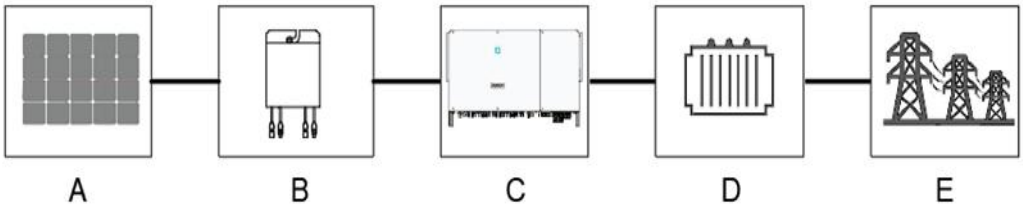
SP5-RSD-AG series products belong to PV RSD for 2× PV modules , which can connect two PV modules at the input side at the same time.The PV RSD device is a safety device used in photovoltaic systems. It is mainly used to quickly cut off the connection between photovoltaic modules and inverters in an emergency to ensure the safe operation of the system.

The RSD can be applied to the following scenarios:

(1) Grid-connected PV system;(2) Off-grid PV and ESS system;(3)Grid-connected PV and ESS system.

⚠ CAUTION

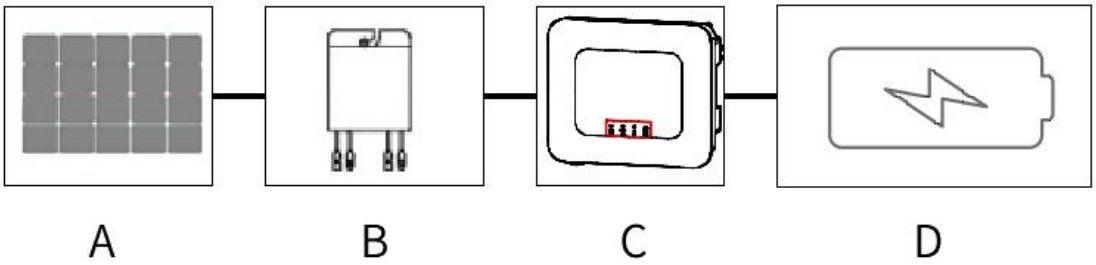
- The RSD cannot be connected to photovoltaic strings that require positive or negative ground.
- During the installation and operation of the RSD, please ensure that the positive or negative poles of the photovoltaic string are not short-circuited to ground, otherwise, it may cause a DC short circuit of the RSD, resulting in equipment damage, which will not be within the scope of quality assurance.
- Before the RSD is installed, confirm that the module parameters meet the requirements of the RSD.



1) Grid-connected PV system

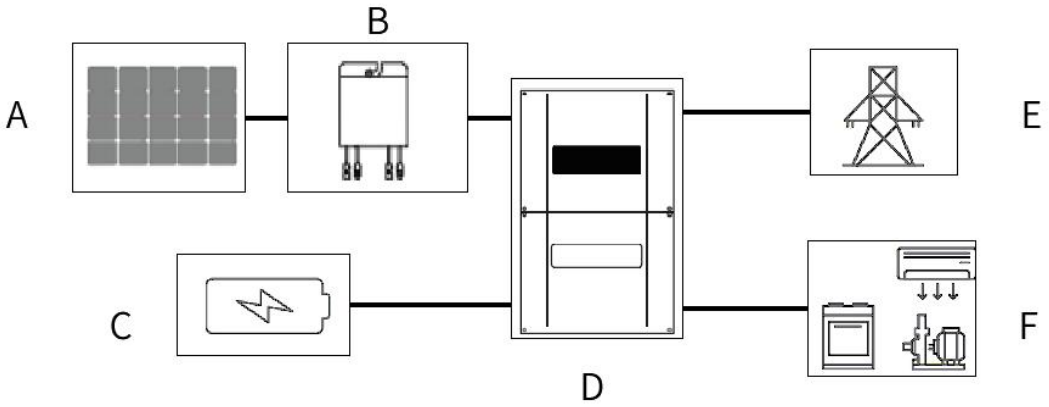
Section	Description	Remarks
A	PV modules	Monocrystalline silicon, polycrystalline silicon, thin film battery without grounding
B	RSD	SP5-RSD-AG
C	Inverter	String inverter, centralized inverter, distributed inverter
D	Step-up transformer	Raise the output voltage of the inverter to a level that meets the requirements of the grid
E	Power grid	Power Grid Supported by Inverters

2) Off-grid PV and ESS system



Section	Description	Remarks
A	PV modules	Monocrystalline silicon, polycrystalline silicon, thin film battery without grounding
B	RSD	SP5-RSD-AG
C	Off-grid inverter	Off-grid inverter
D	Battery	Lead-acid battery, lithium battery

3) Grid-connected PV and ESS system



Section	Description	Remarks
A	PV modules	Monocrystalline silicon, polycrystalline silicon, thin film battery without grounding
B	RSD	SP5-RSD-AG
C	Battery	Lead-acid battery, lithium battery
D	All-in-One inverter	All-in-One inverter
E	Power grid	Power Grid
F	Load	DC or AC load

2.2 Product Introduction

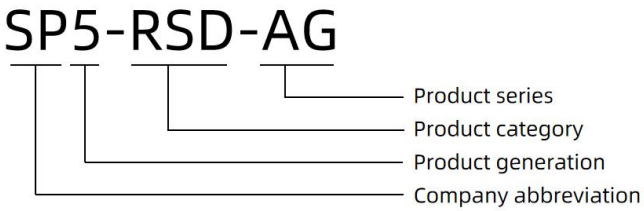
The smart PV RSD is a safety device used in photovoltaic systems. It complies with the NEC2020 690.12 standard requirements, supports remote rapid shutdown and local rapid shutdown functions, and can collect PV module operating parameters in real time to ensure the safe operation of photovoltaic power stations.

2.2.1 Functional Features

- Module-level shutdown function: Realize module-level voltage shutdown, by operating the local RSD button or operating the APP, the RSD can adjust the module output voltage to a safe range.
- Module-level monitoring function: Detect the operation status of PV modules, including voltage, current, temperature and other data, to achieve module-level monitoring.

2.2.2 Model Description

The description is as follows:



RSD model	Rated input power	Input1 line length	Input2 line length	Output line length
SP5-RSD-AG	1600W(2*800W)	0.5m/1.2m	1.2m/0.5m	1.8m/1.8m

2.2.3 Product interface

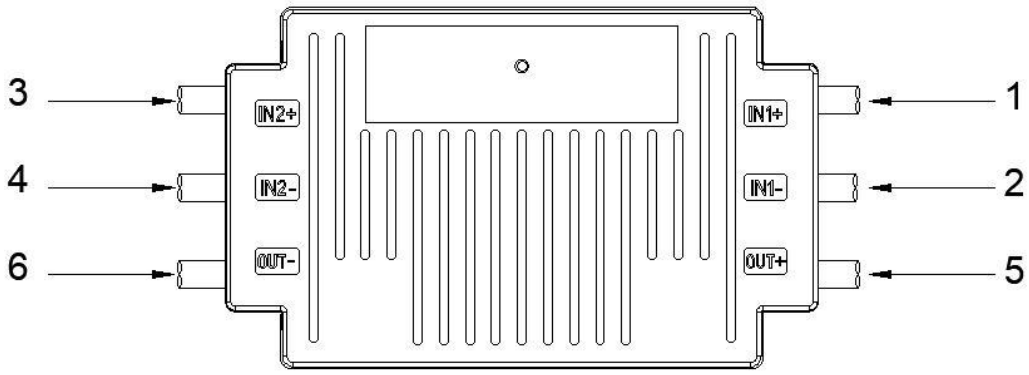


Figure 2.2-1 Schematic diagram of the RSD interface

Number	Name	Description
1	VIN1+	Connect to the positive pole of the photovoltaic module, 0.5m
2	VIN1-	Connect to the negative pole of the photovoltaic module, 1.2m
3	VIN2+	Connect to the positive pole of the photovoltaic module, 1.2m
4	VIN2-	Connect to the negative pole of the photovoltaic module, 0.5m
5	VOUT+	Connect to the positive pole of the inverter, or the VOUT- of the series RSD, 1.8m
6	VOUT-	Connect to the negative pole of the inverter, or the VOUT+ of the series RSD, 1.8m

2.2.4 Product Size

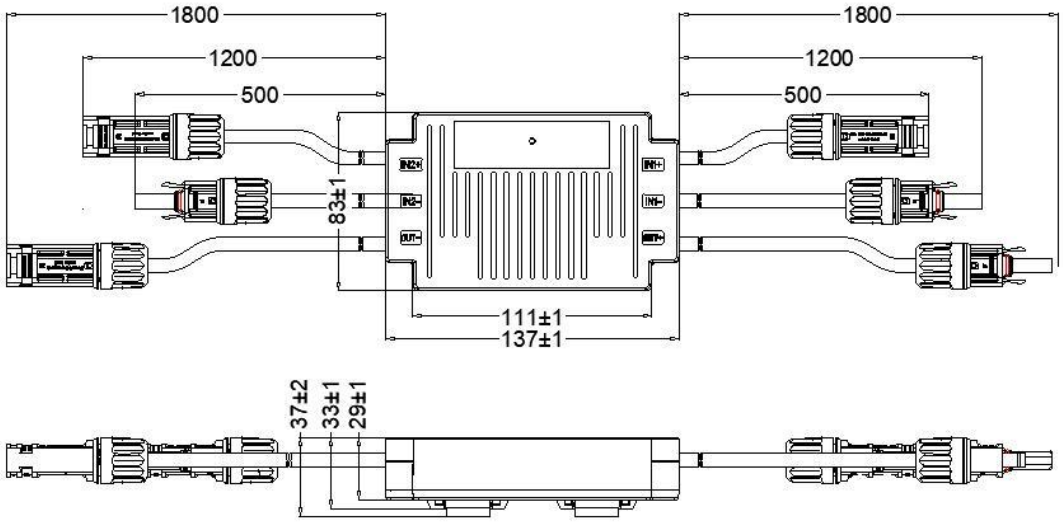


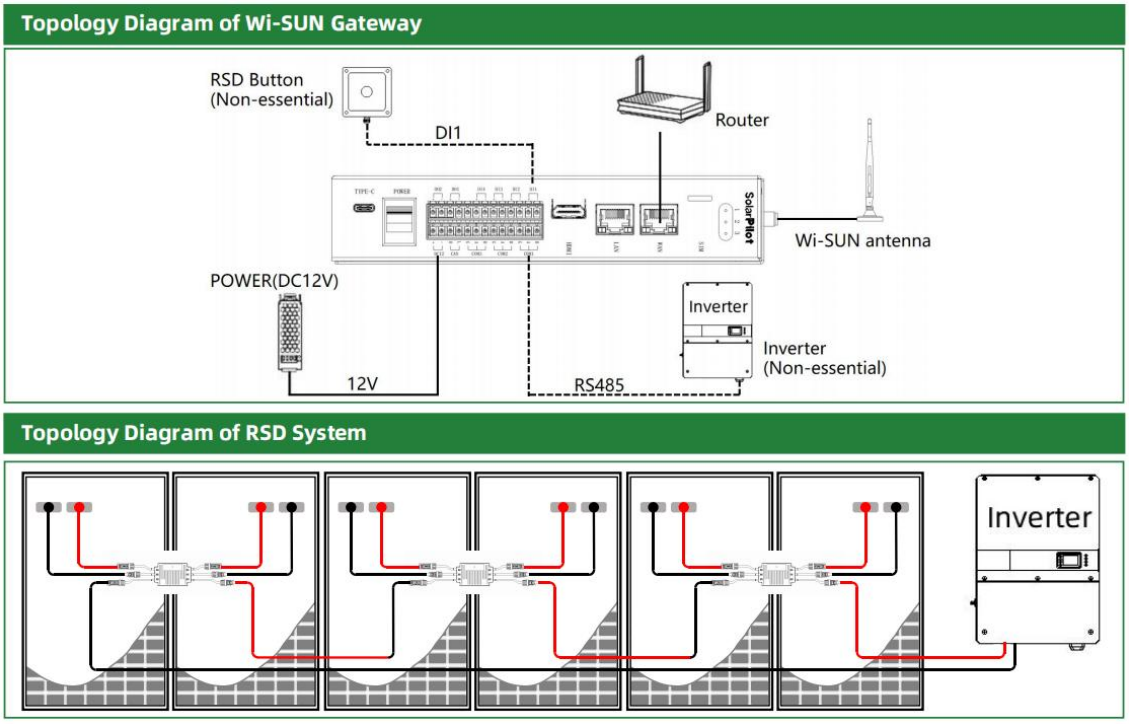
Figure 2.2-2 RSD dimension

2.3 System Topology

2.3.1 Typical topology

In order to achieve module-level monitoring, the SP5 series RSD needs to be used with a Wi-SUN gateway. The typical topology is shown below.

In the gateway topology, the RSD button and RS485 can be left unconnected if not needed.



2.3.2 Other topology

In practical applications, the following simplified typologies may exist:

- RSD+ Gateway + RSD Button: It can realize module-level operation and maintenance monitoring, and local/remote rapid shutdown control.
- RSD+ Gateway: It can realize module-level operation and maintenance monitoring, and remote rapid shutdown control.

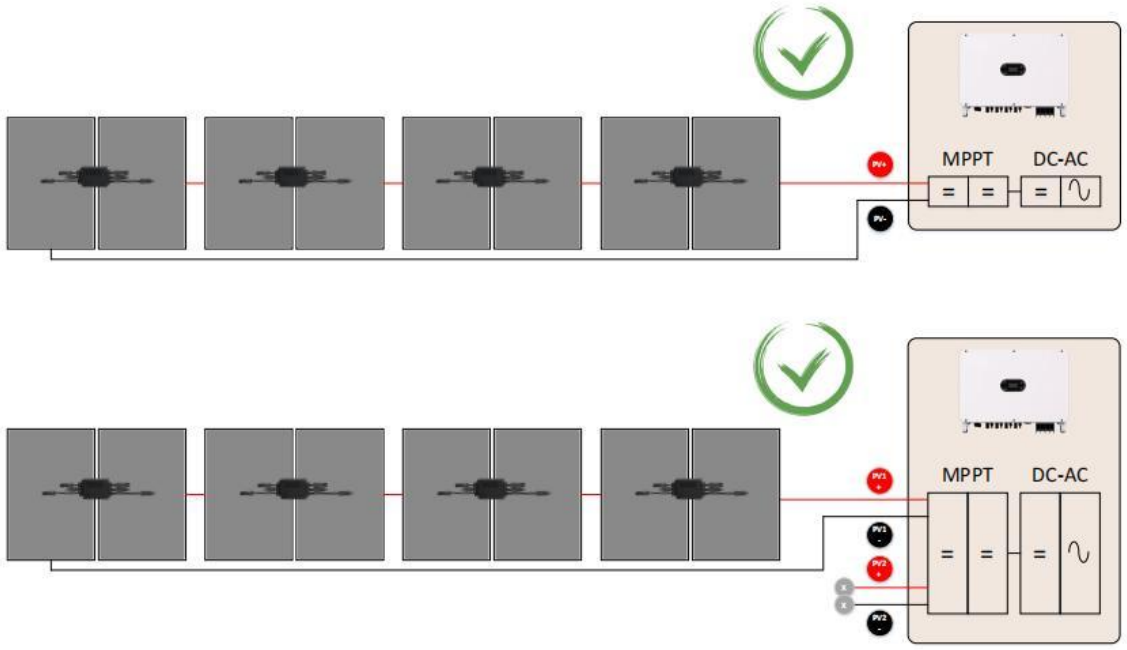
2.3.3 Configuration Principles

When installing PV RSD for different types of inverters, the number of RSD supported by the string, the upper limit of the string power, and the parallel requirements for the strings are different. The principles of PV RSD configuration are as follows:

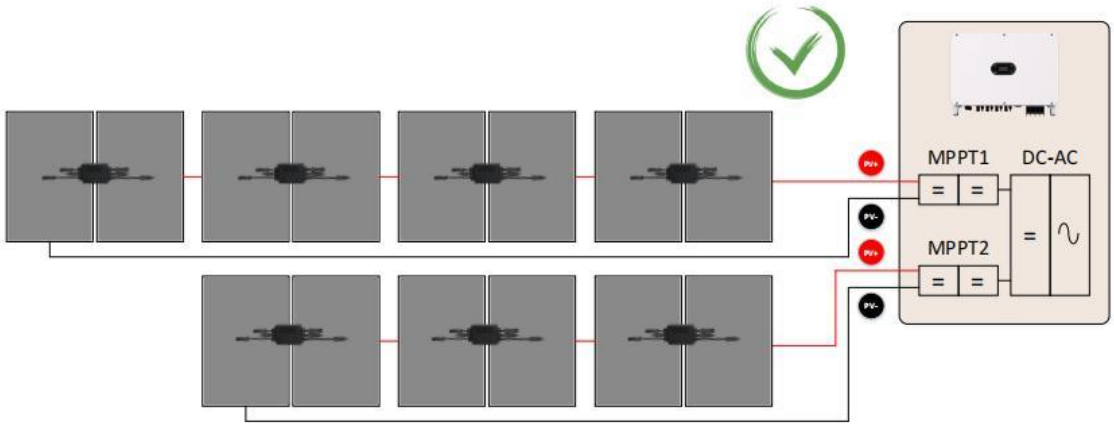
NOTE

- If only one string is connected to one MPPT, all of the modules in the string need to be installed with RSD;
- If multiple strings are connected in parallel under one MPPT, the number and model of modules in different strings must be exactly the same, and all modules need to be installed with RSD.

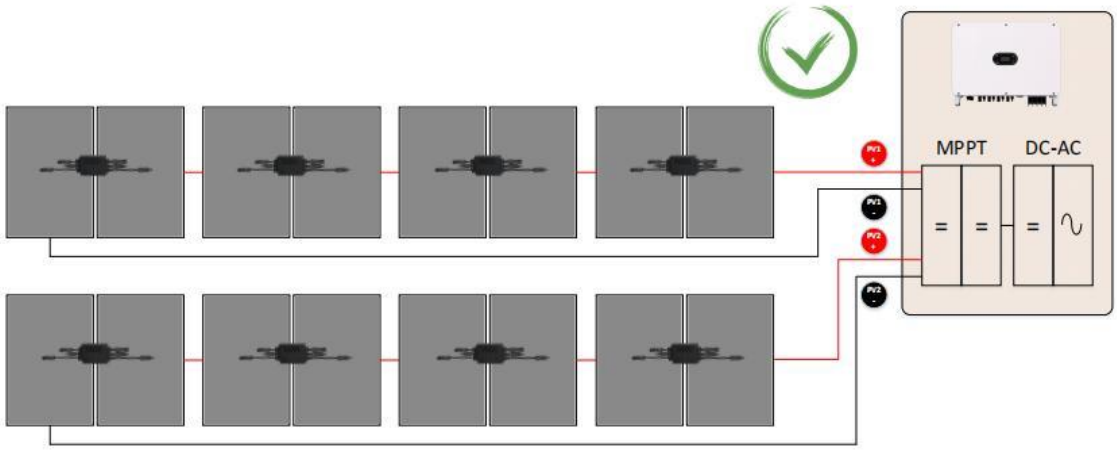
Examples of correct configuration:



One MPPT connects one string

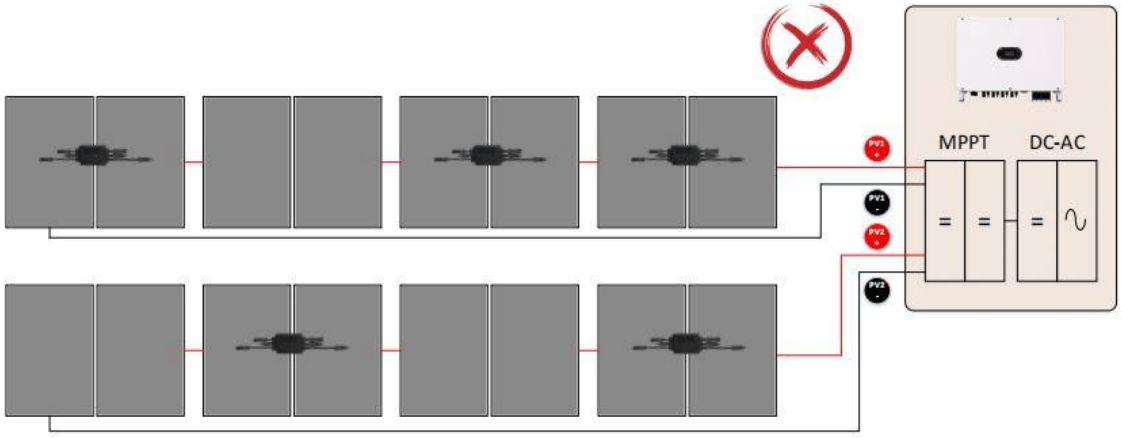


The MPPTs are isolated from each other and the RSD can be installed separately

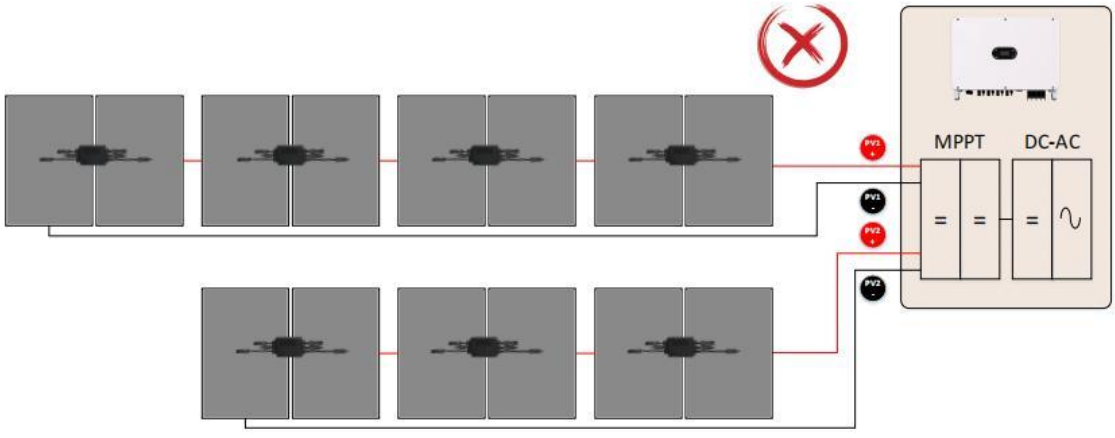


One MPPT supports multiple strings. The number and model of modules in the string must be exactly the same, and all of them must be installed with RSD

Examples of incorrect configuration:



One MPPT supports multiple strings which do not support installing RSD on some modules



One MPPT supports multiple strings which do not support inconsistent number of modules

3 Unpacking and Storage

3.1 Unpacking and Inspection

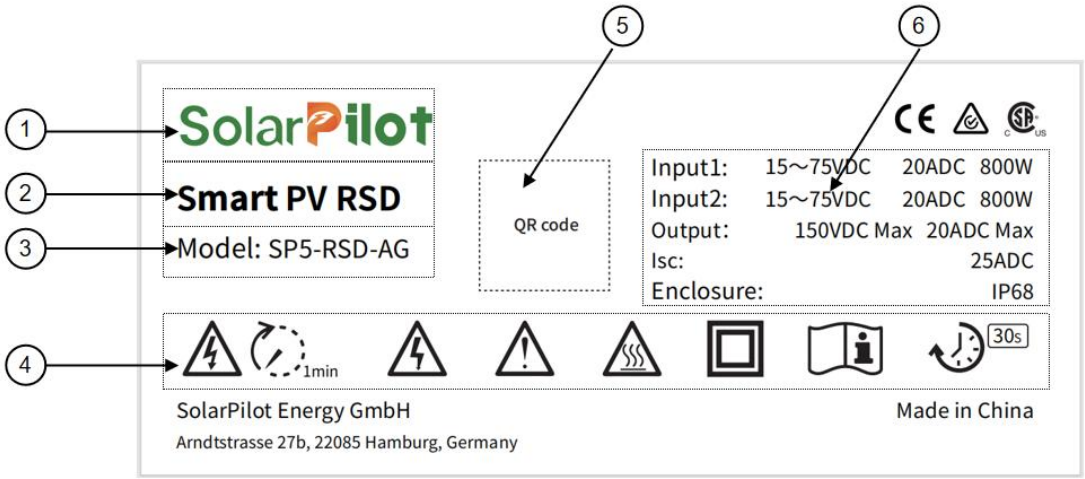
The RSD has been fully tested and strictly inspected before leaving the factory, but damage may still occur during transportation. Please conduct a detailed inspection before signing for the product.

- Inspect the packing box for damage.
- Check whether the goods are complete and in accordance with the order according to the packing list.
- Unpack and check whether the internal equipment is intact.

If any damage is found, please contact the transportation company or directly with SolarPilot Energy GmbH Company, and provide photos of the damage to facilitate service. Do not discard the original packaging of the RSD. It is best to store the RSD in the original packaging box after it is out of service and dismantled.

3.2 Identify the RSD

There is a nameplate attached to the back of the RSD. The nameplate provides the model information of the RSD as well as the most important parameters and certification marks.

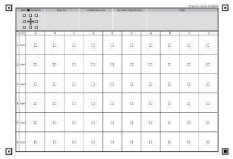
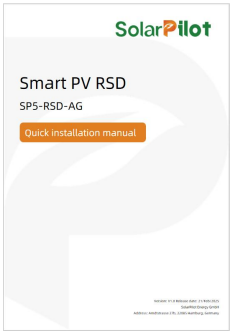


Number	Description
1	SolarPilot Trademark
2	Product Name
3	Model Specification
4	Related Symbols
5	Product SN QR code
6	Related Parameters

Description of Nameplate Symbol Identification

	Discharge time, <1min
	High Voltage warning
	Warning Danger
	High temperature warning
	Double insulated marking
	Read instruction manual
	30 seconds quick break

3.3 Scope of Supply

			
RSD	Layout card	Quick installation manual	Certificate

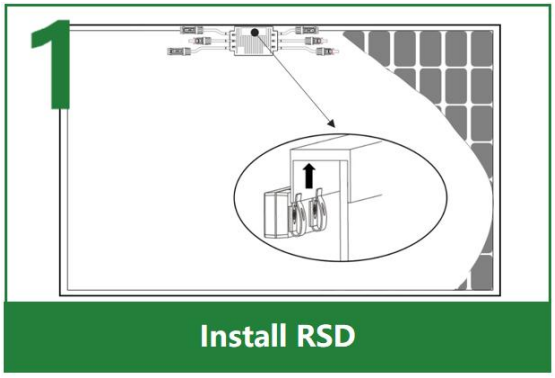
3.4 RSD storage

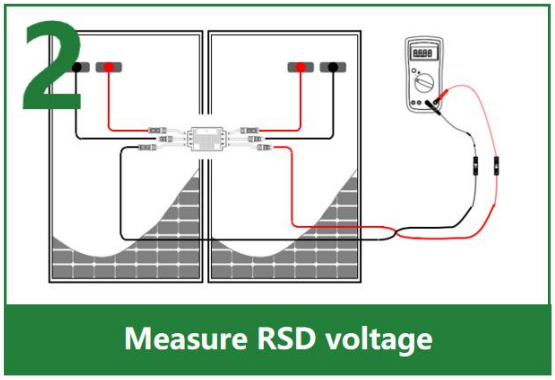
If you do not use the RSD immediately, you need to store it in a specific environment.

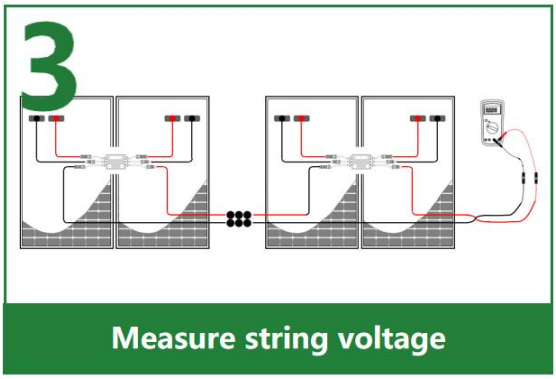
- Repack using the original packaging box, retaining the desiccant.
- Storage temperature range -40 ℃-70 ℃, relative humidity range 0-95%, no condensation.
- The storage time of the RSD is more than half a year, and it needs to be fully checked and tested by professionals before it can be put into operation.

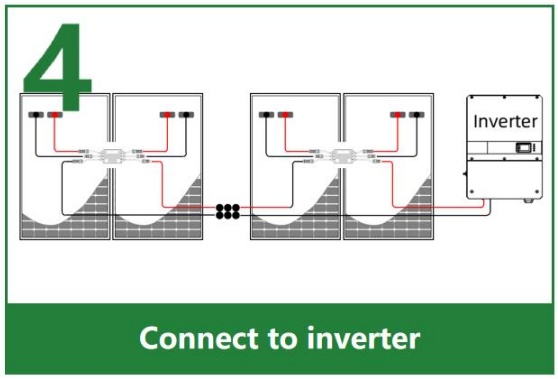
4 Installation steps

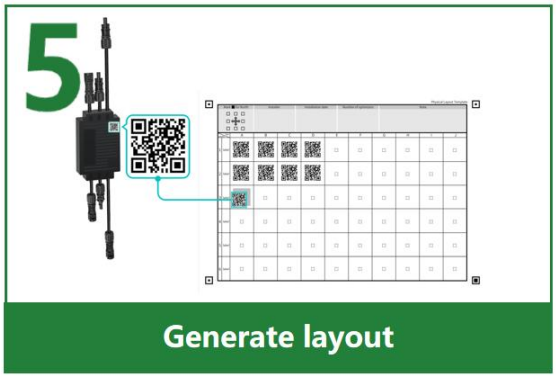
The RSD should be installed and debugged according to the following steps:

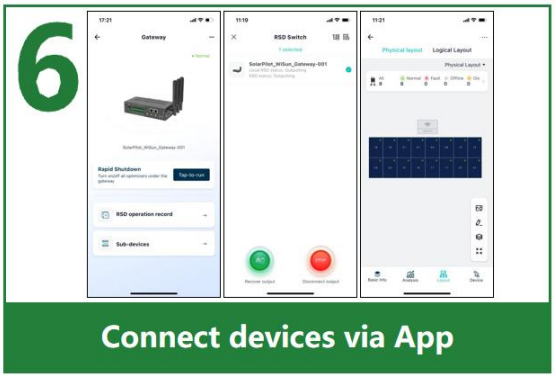












4.1 Requirements and Precautions

DANGER

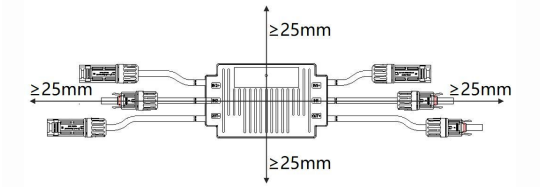
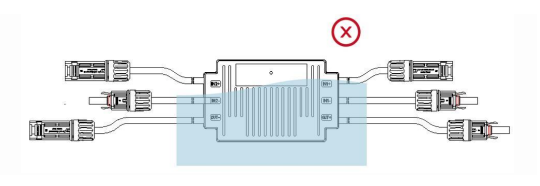
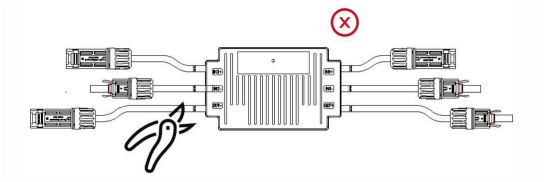
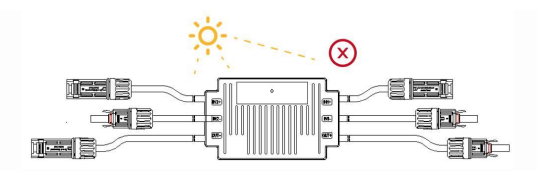
Before installing the RSD, make sure there are no electrical connections

CAUTION

- Improper handling of equipment may result in minor injuries or contusions
- The position of the heat sink of the equipment must be kept uncovered, otherwise the heat dissipation of the RSD will be affected and the good operation of the system will be affected

The RSD installation requirements are as follows:

- The RSD needs to reserve enough heat dissipation space, otherwise it may cause the RSD to malfunction due to high temperature.
- The RSD is prohibited from being immersed in water, otherwise it may cause the RSD to be damaged.
- It is prohibited to damage the RSD original cables, otherwise the equipment damage caused by this is not covered by the warranty.
- Avoid exposing the RSD to sunlight, otherwise it may cause the RSD to malfunction due to high temperature.

	
1. Reserve enough space for heat dissipation	2.Do not install in places that may be flooded
	
3. Do not damage original cables	4. Do not expose to the sun

4.2 Installation Method

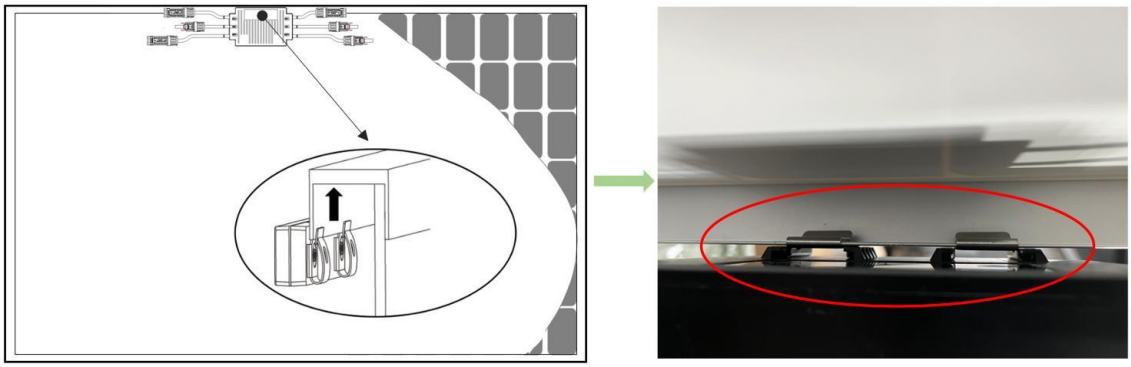
4.2.1 Installation Tools

		
Insulated shoes	Insulated gloves	Safety glasses
		
Wire stripper	M6/M8 sleeve	Pliers
		
EVO2 wrench	EVO2 pliers	Multimeter

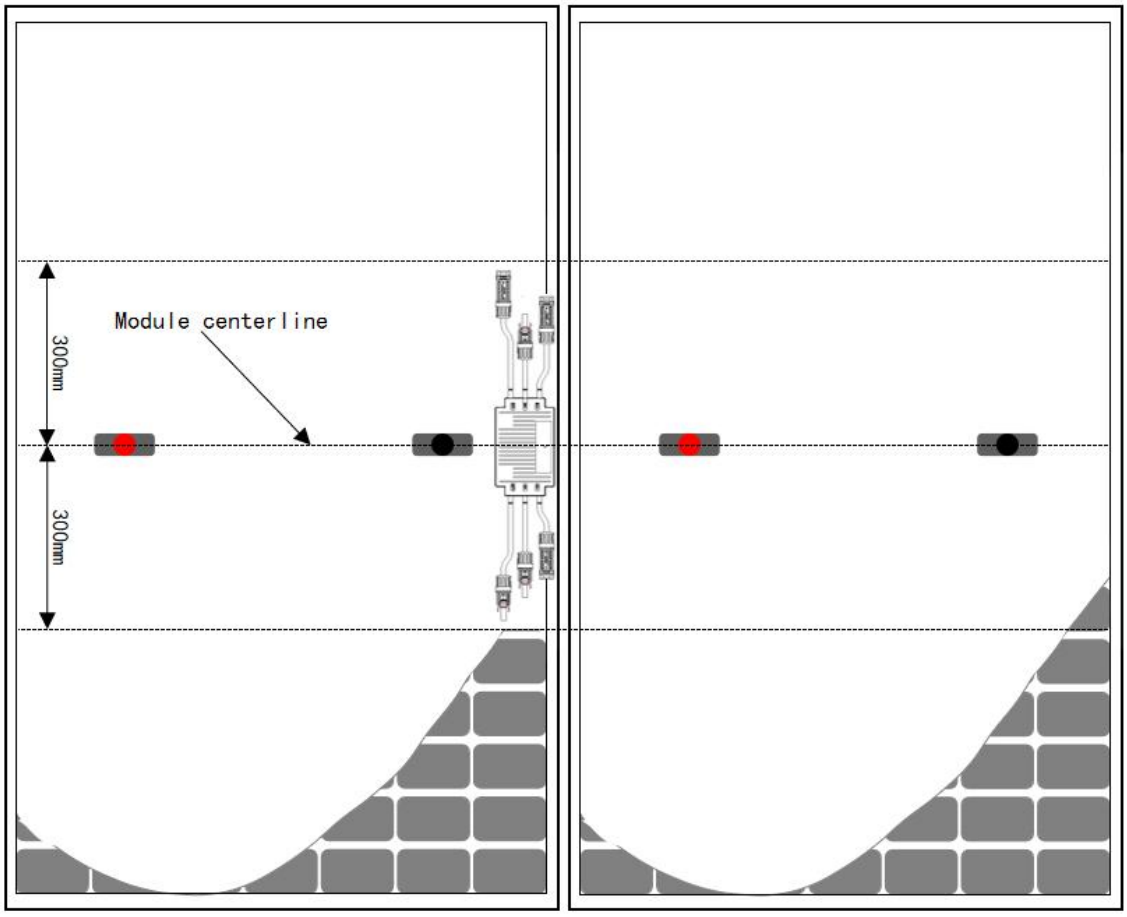
4.2.2 Clip-on installation

The RSD is installed in a clip-on manner and can be installed on the frame of the PV frame.

Note that the front of the RSD should face outward during installation, otherwise it will affect the wireless communication performance.



Since the RSD supports two PV module inputs at the same time, the installation position should be close to the middle of the two modules as much as possible, and the distance from the center line is ±300mm, without the need for additional extension cables.



4.3 Measure RSD Voltage

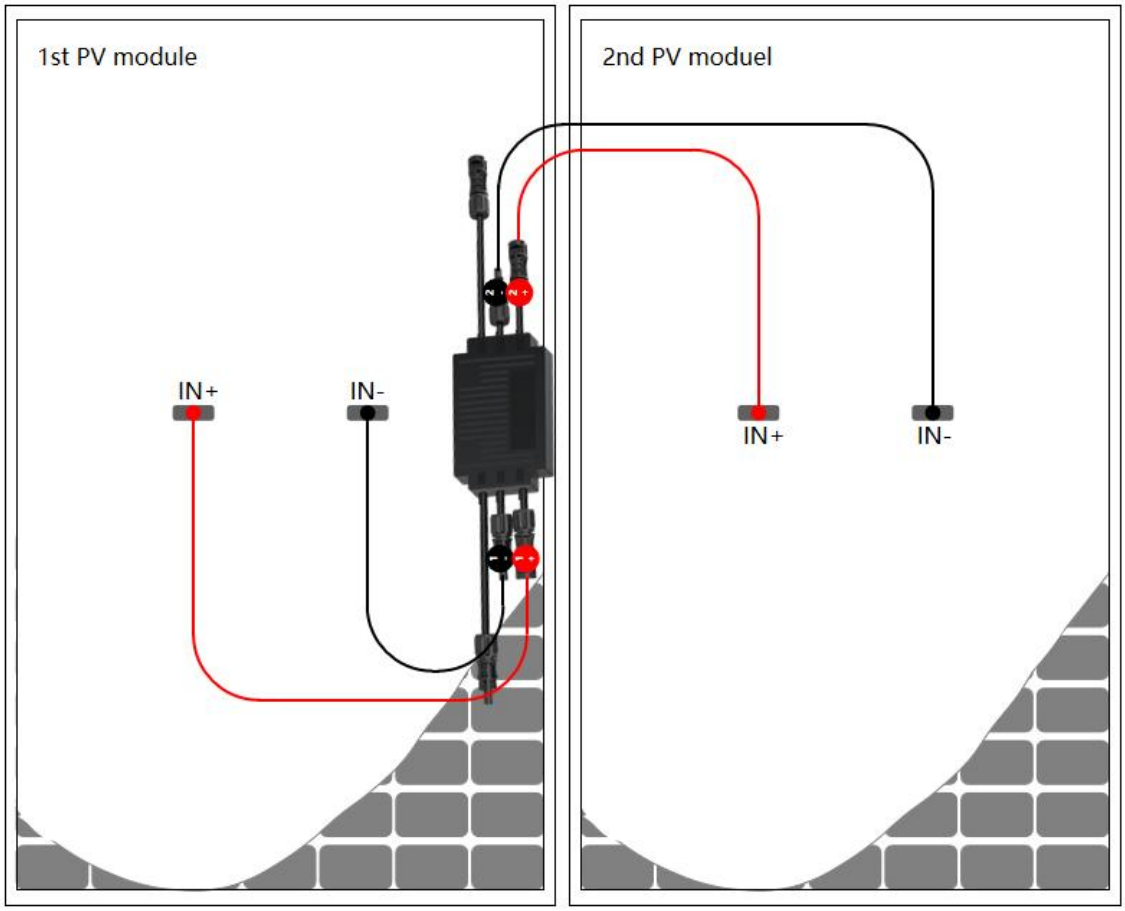
4.3.1 Connected with PV modules

VIN1+ of the RSD is connected to the positive electrode of the 1st PV module,

VIN1- of the RSD is connected to the negative electrode of the 1st PV module,

VIN2+ of the RSD is connected to the positive electrode of the 2nd PV module,

VIN2- of the RSD is connected to the negative electrode of the 2nd PV module.



NOTICE

Ensure that the input (IN) and output (OUT) power cables of the RSD are correctly connected. If they are reversely connected, the device may be damaged.

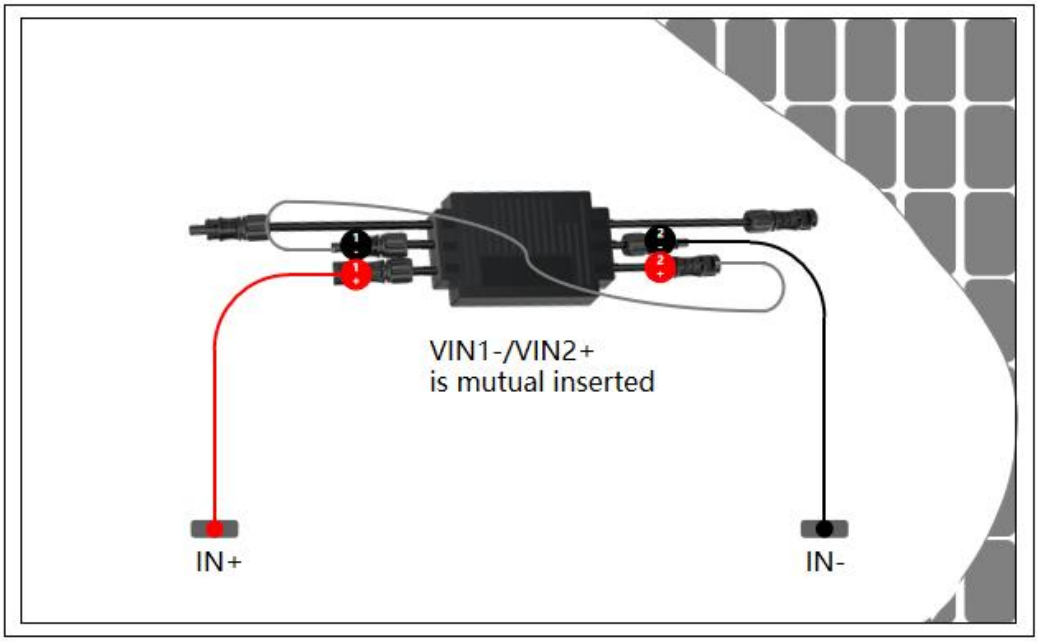
Do not short-circuit the output (OUT), otherwise the device may be damaged.

For an odd number of modules, for example, if there are 17 modules in a string, the first 16 modules are normally installed with the RSD according to the above connection method, and the 17th module needs to be connected to the RSD according to the following connection method, as shown in the figure below.

VIN1+ is connected to the positive electrode of the PV module,

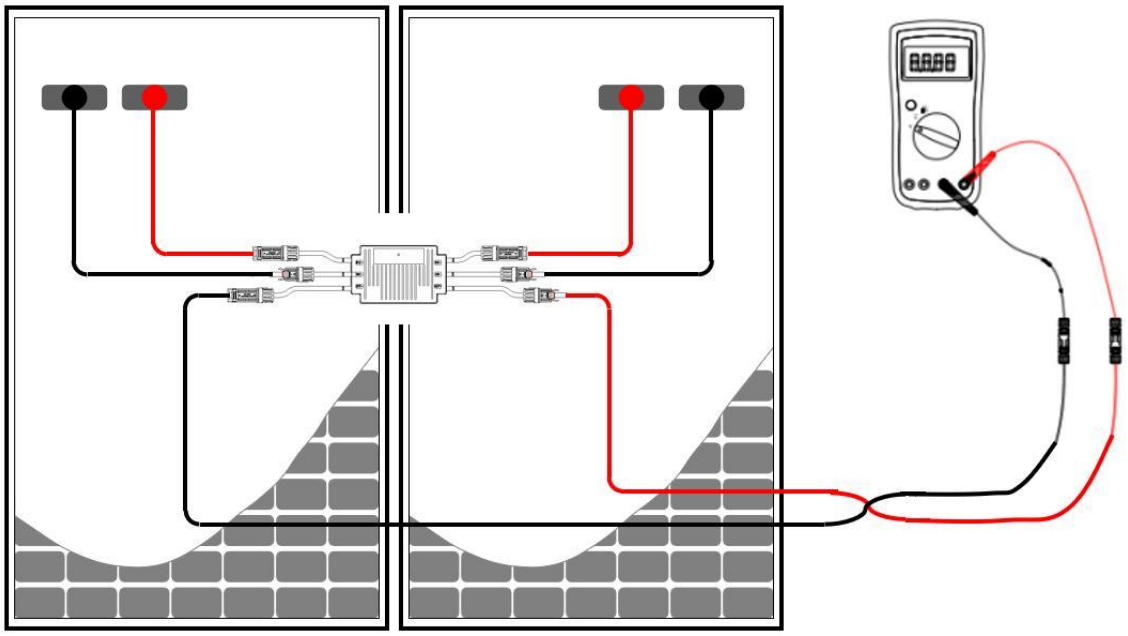
VIN2- is connected to the negative electrode of the PV module,

VIN1-/VIN2+ are connected to each other.



4.3.2 Measure RSD voltage

Connect the positive probe of the Multimeter to the positive output terminal of the RSD and the negative probe to the negative output terminal to check the output voltage of the RSD.



NOTE

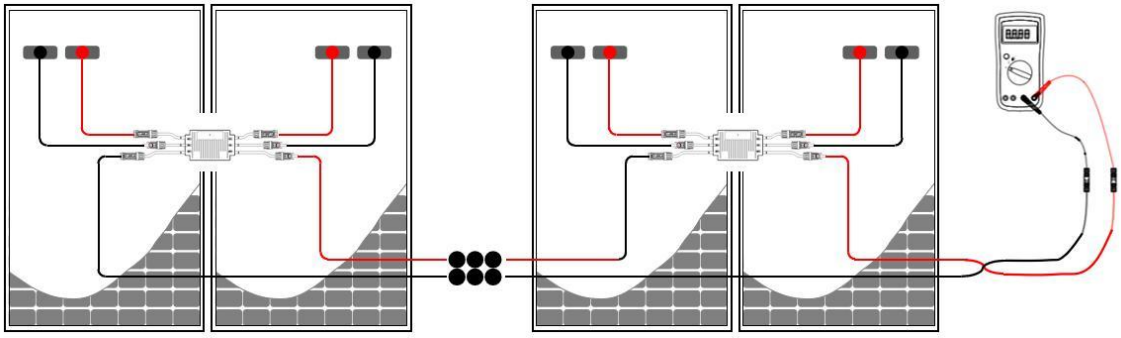
- When a RSD is connected to PV modules, the typical output voltage of the RSD is 2 V (±10%) in RSD mode.
- If the output voltage of a RSD is abnormal, rectify the fault by referring to Table 4-1.

Table 4-1 Troubleshooting abnormal RSD output voltage

Voltage	Cause	Suggestion
V=2V(±10%)	The RSD is normal.	-
V > 2V(±10%)	● The RSD is faulty. ● The RSD works in Normal mode.	● Execute RSD via the APP and re-measure the voltage. ● Replace the RSD.
V < 2V(±10%)	● The irradiance is low. ● The RSD input cables are not connected. ● The RSD cables are incorrectly connected. ● The RSD is faulty.	● Measure the voltage when the irradiance is adequate. ● Correct the RSD cable connections. ● Connect the RSD input power cables to the PV module output power cables. ● If the voltage is still abnormal, replace the RSD.
V≈-2V(±10%)	● The probes are reversely connected.	● Reconnect the positive and negative probes correctly.

4.4 Measure string voltage

After checking that the RSD and their input power cables are properly connected, connect the RSD output power cables. Measure the PV string voltage when the irradiance is adequate.



NOTE

PV string voltage = V1 + V2 + ... + VN ≈ N x 2 V (N=number of RSD)

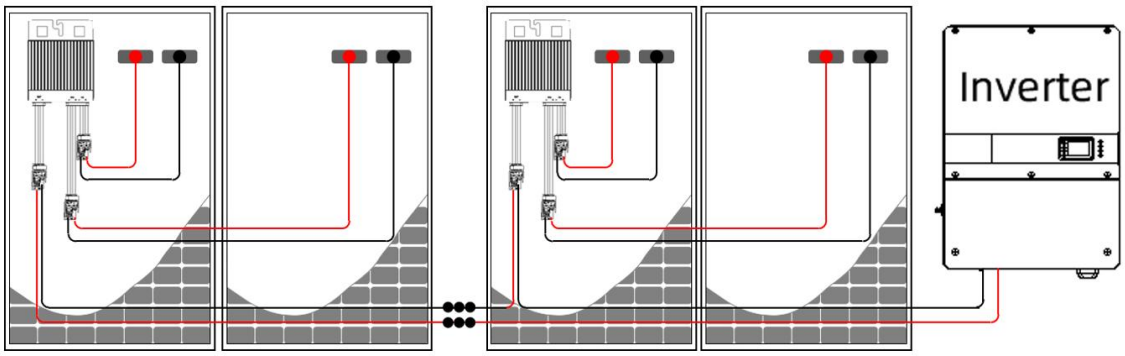
- When RSD is connected to PV modules, the output voltage of each RSD should be 2 V (±10%). Therefore, the voltage value of the PV string is approximately equal to the number of PV modules.
- For odd module, although only one PV module is connected, the output voltage of RSD should still be 2 V (±10%).
- If the PV string voltage is abnormal, rectify the fault by referring to Table 4-2.

Table 4-2 Troubleshooting abnormal PV string voltage

Voltage	Cause	Suggestion
V=N*2 V(±10%)	● The PV string is normal.	-
V≈0	● The PV string is open-circuited. ● The cables are not connected to the same PV string.	● Check whether the PV string is open-circuited. ● Identify the string cables correctly.
V < 0	● The probes are reversely connected. ● The cable labels are incorrect.	● Reconnect the positive and negative probes correctly. ● Attach correct cable labels.
0 < V < N*2 V(±10%)	● Some RSD input power cables are not connected. ● Some RSD output power cables are not connected. ● Some RSD output power cables are reversely connected.	● Check whether PV modules and PV string cables are correctly connected.
V > N*2 V(±10%)	● The actual number of RSD in the PV string is greater than expected. ● PV modules are directly connected to PV strings without being connected to RSD. ● Partial RSD work in Normal mode.	● Check whether the number of RSD in the PV string is correct. ● Check whether PV modules and PV string cables are correctly connected. ● Execute RSD via the APP and re-measure the voltage.

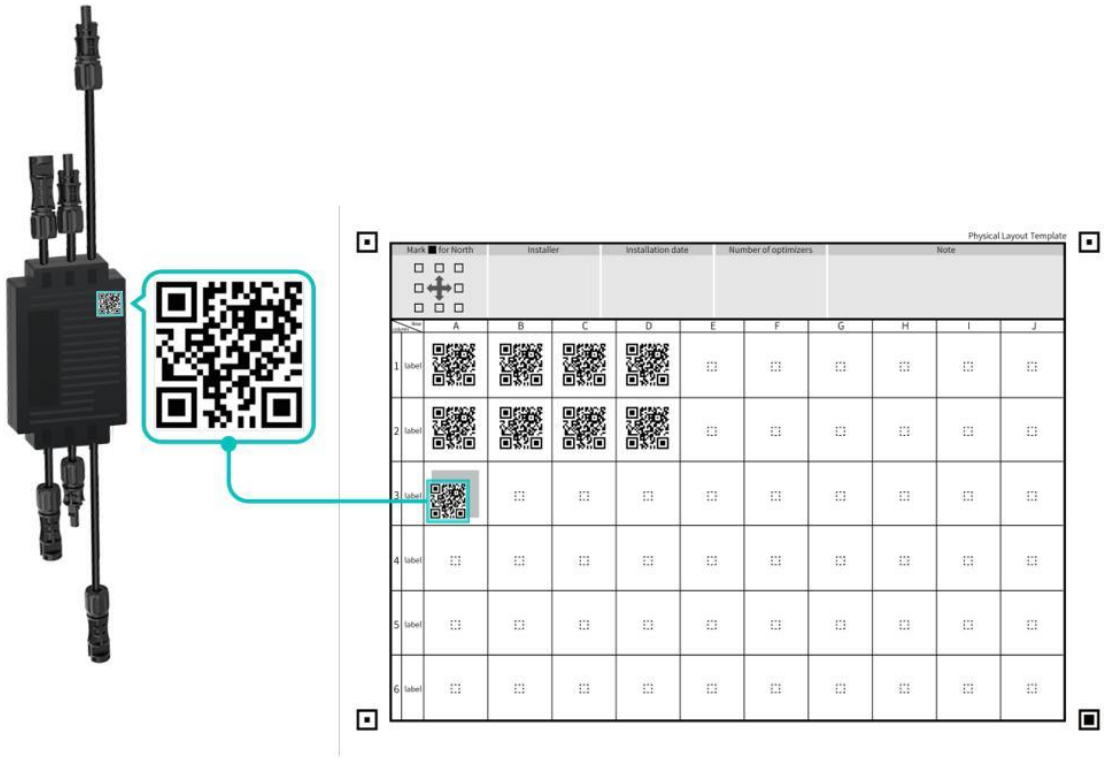
4.5 Connect to the inverter

Connect cables between the PV string and the inverter.



4.6 Generate Layout

After determining the RSD installation location, remove the SN label from the RSD and stick it on the physical layout template.

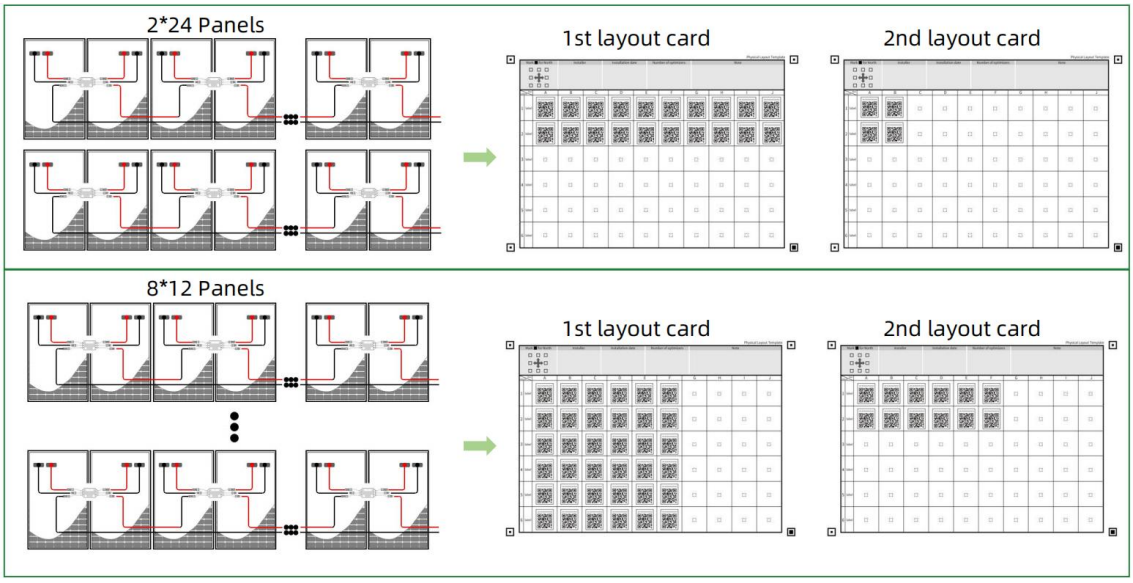


NOTE

When pasting a QR code, the following principles must be followed, otherwise the RSD will fail to recognize the QR code.

- Please stick the QR code flatly in the center of the frame without blocking the border;
- Multiple QR codes must not block or cover each other;
- When taking pictures, face the paper directly and ensure that the paper is flat, with the paper area accounting for more than 50% of the entire image area, and the background is a solid color to avoid QR code reflection;
- When taking pictures with a mobile phone, the shooting range needs to cover the entire layout card, that is, including the 4 positioning squares around the layout card.

If there are a large number of RSD, you can use multiple templates to paste the QR codes according to the actual layout.



5 APP operation guide

5.1 Download the APP

Method 1: Download from APP Store & Google Play.

iPhone mobile phone users: search for "SolarPilot Energy" in the App Store.

Other mobile phone users： search for "SolarPilot Energy" in the application market.

Method 2: Download by scanning below QR code.

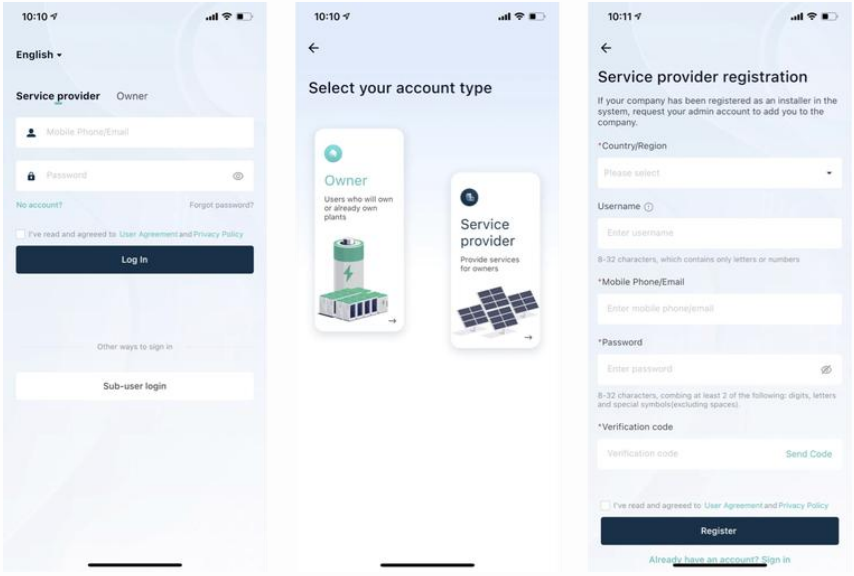
Android

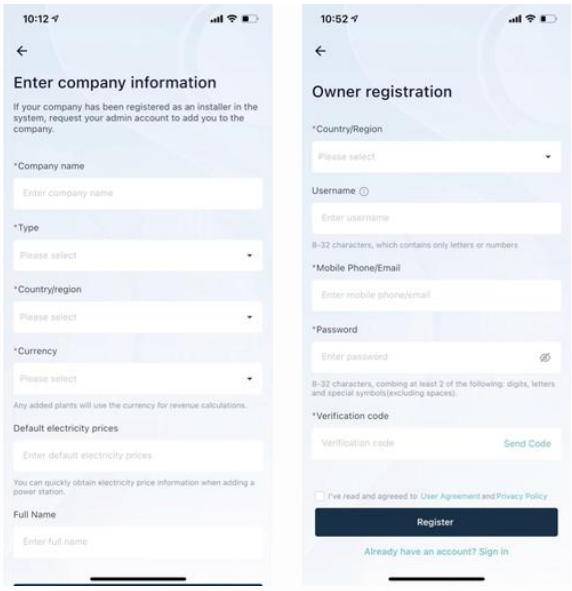
IOS

Note: When you selecting "Browser download" method. If prompted "This application is from an unofficial app store..." and other prompts during the installation process, please click "Continue installation".

5.2 Registration and Login

Please follow the prompts, enter your mobile phone number or email account correctly and verify it. After passing the verification, complete the business information.

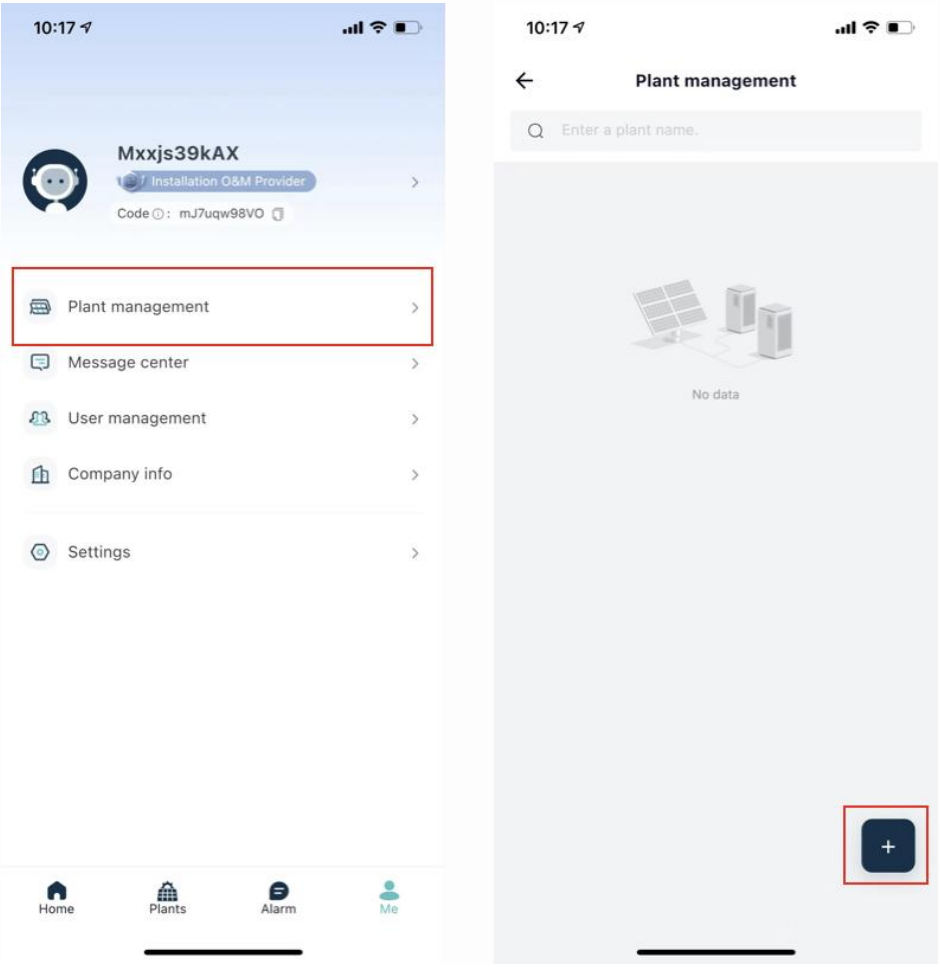




5.3 Create a Power Station

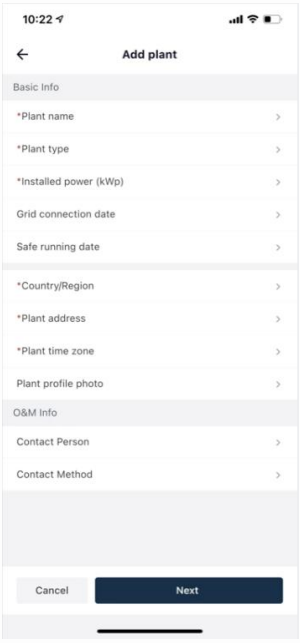
Step 1: Enter the power station addition page

Log in to the account you just created, and click [Me] - [Plant Management] - [+] to enter the power station addition page.



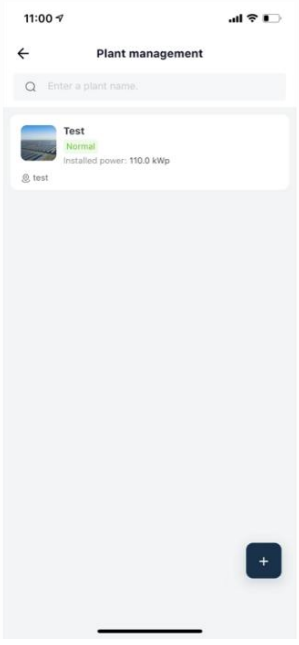
Step 2: Improve the power station information

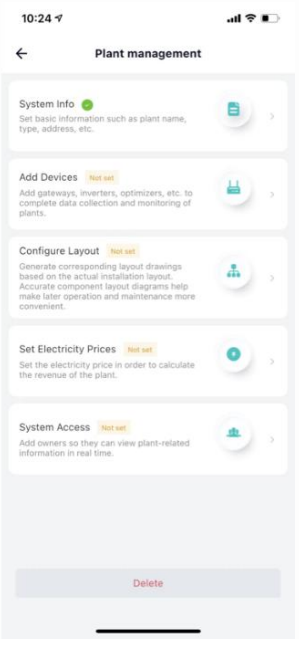
1) Please follow the prompts to improve the basic information of the power station: the name of the power station, the location of the power station, the area, the address, the installed power, etc. The fields indicated with an asterisk are required, and the more complete the rest of the information is, the better it is for you to manage the power station.



2) After completing the power station information, please click the [Next] button at the bottom of the page to complete the creation, and the system will enter the interface of Figure 1 below.

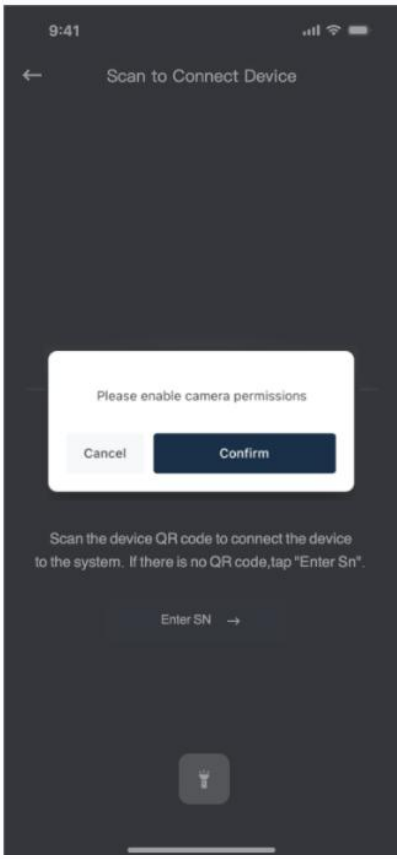
- You can directly add devices and authorized users on the Power Station Creation Success page in Figure 1, or click the [Done] button in the upper right corner to skip device binding and authorization first.
- Later, you can also directly in the power station management list interface (Figure 2 below), click the power station name to enter the main interface of the power station editor (Figure 3) to complete and supplement the information.





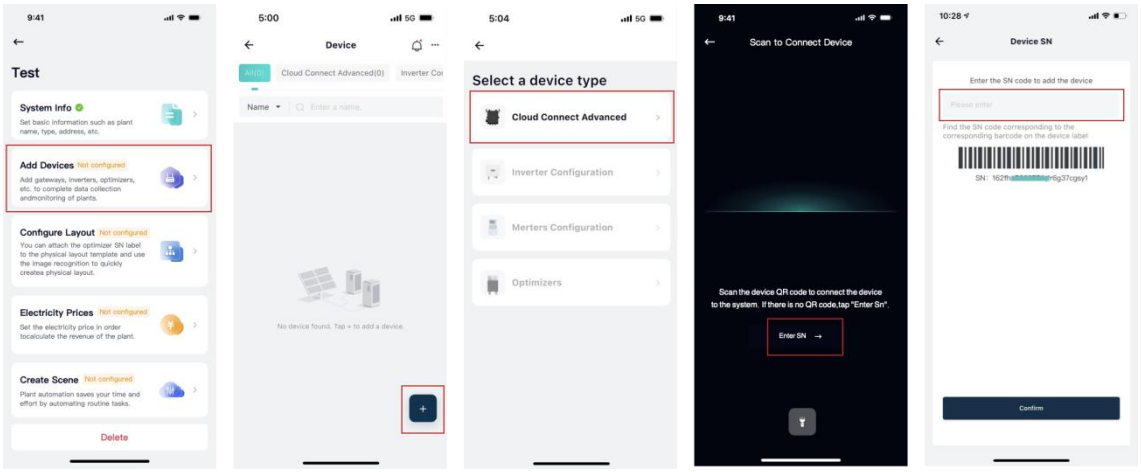
Step 3: Configure the gateway

1) Enable the camera permission of the mobile phone: Click [Add Gateway] on the power station creation successfully completed page or click [Add Devices] on the main interface of power station editing, and the system will enter the code scanning interface. When using it for the first time, the page prompts that the permission of camera needs to be enabled, which is convenient for you to scan the code for identification.



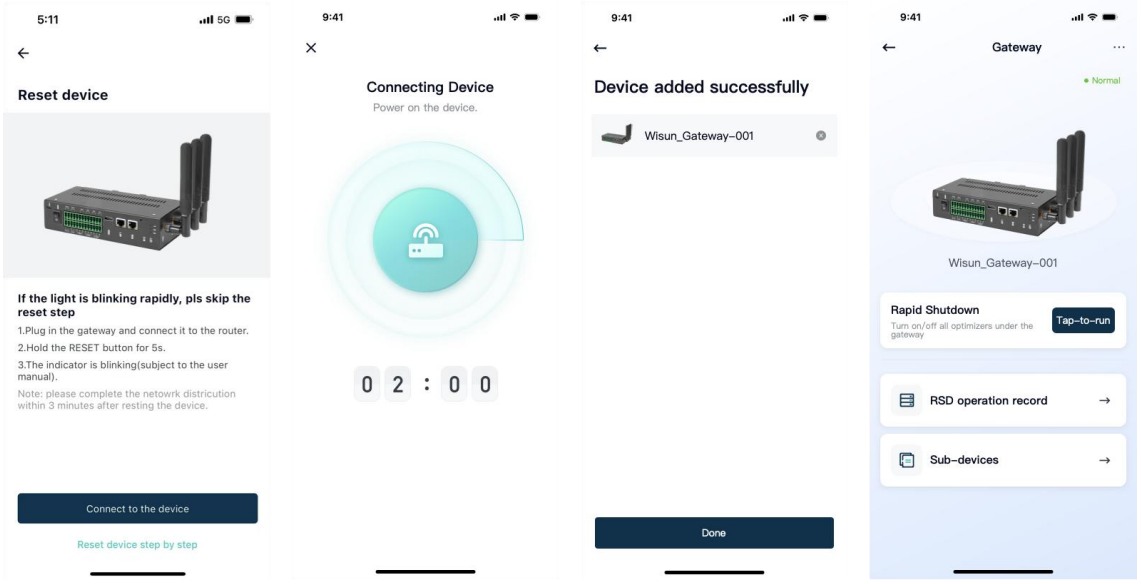
2) Reset the device: Connect the power supply, connect to the router via the Ethernet cable, and confirm that the indicators are as expected: LED1 is always on、LED2 is flashing or always on.

3) After completing the authorization and confirming that the device is connected to the Internet, you can choose to directly scan the bar-code or QR code on the device to add it, or manually enter the serial number to add it.



4) The device will enter the distribution network interface if the code is successfully scanned, and the distribution network will count down for 2 minutes.

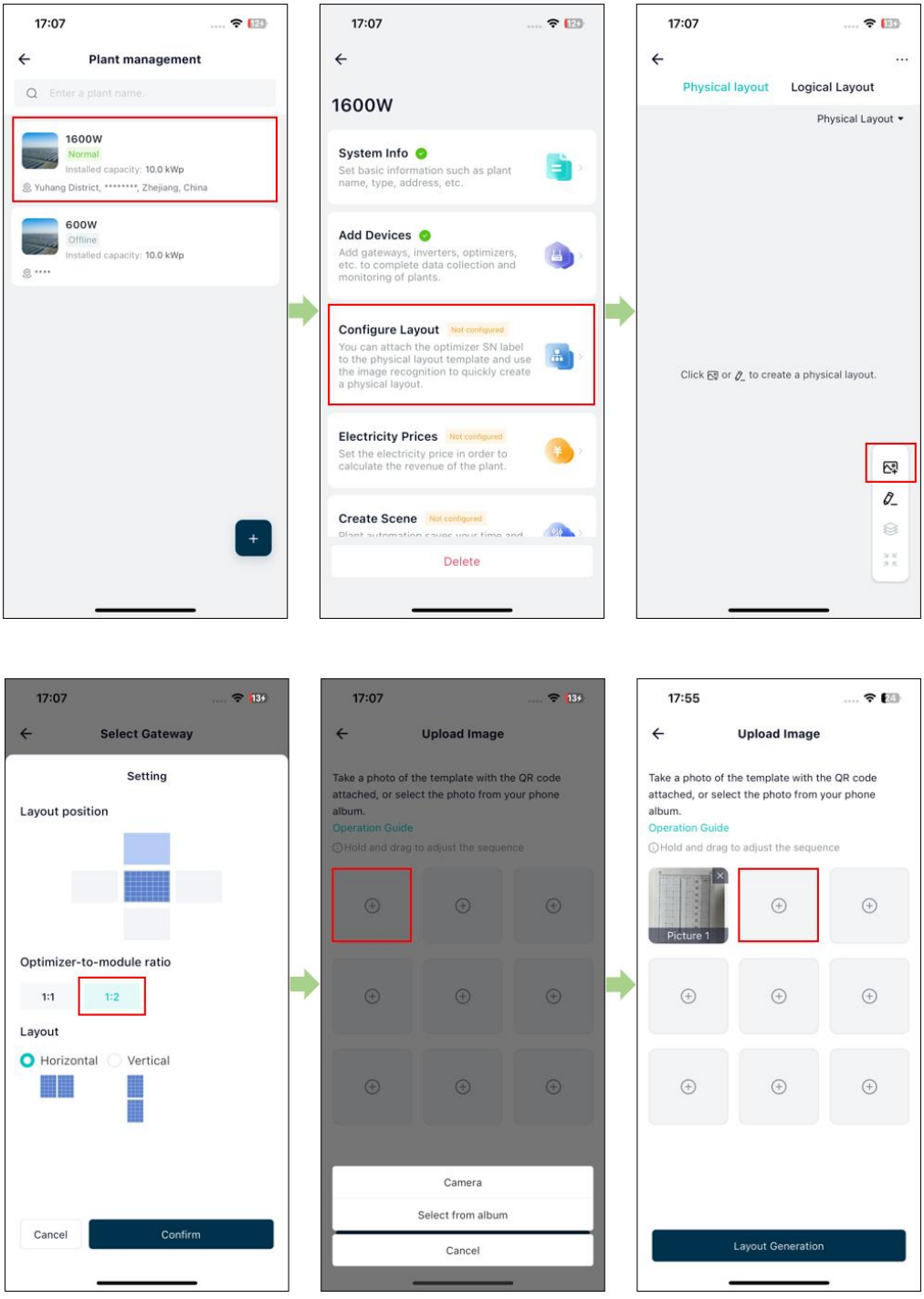
- If the addition is successful, the system will enter the distribution network success interface (Figure below). You can set the device name in the current interface. After setting the name, click the [Done] button to enter the main interface of the gateway.
- If the gateway fails to be added, the system will enter the distribution network failure interface. Please check the device and network conditions. And the network distribution can be performed again after the device is reset.

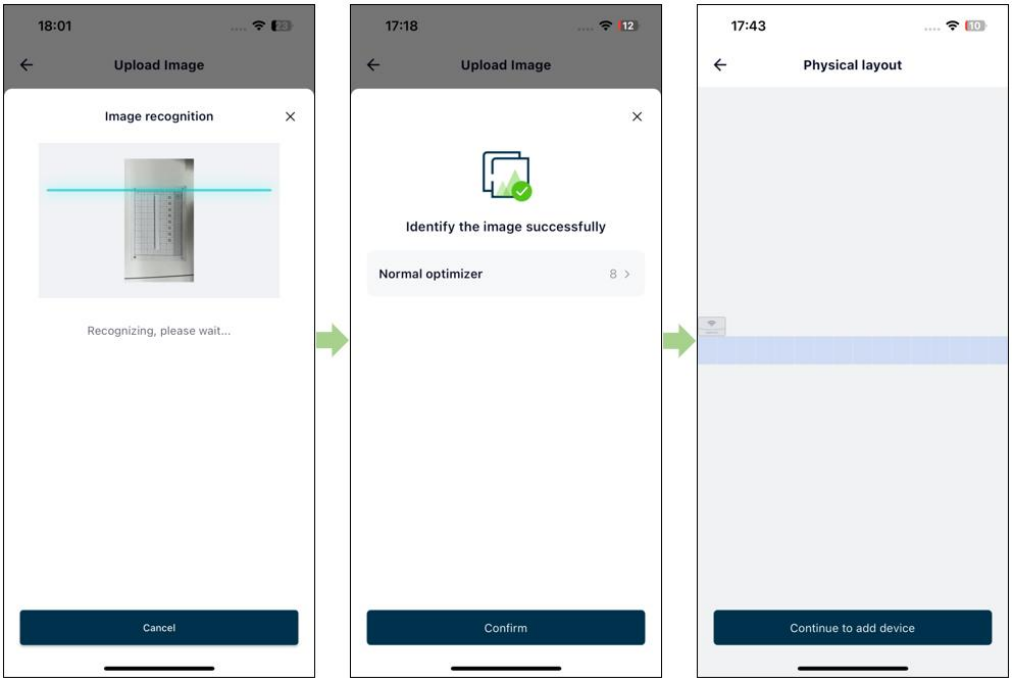


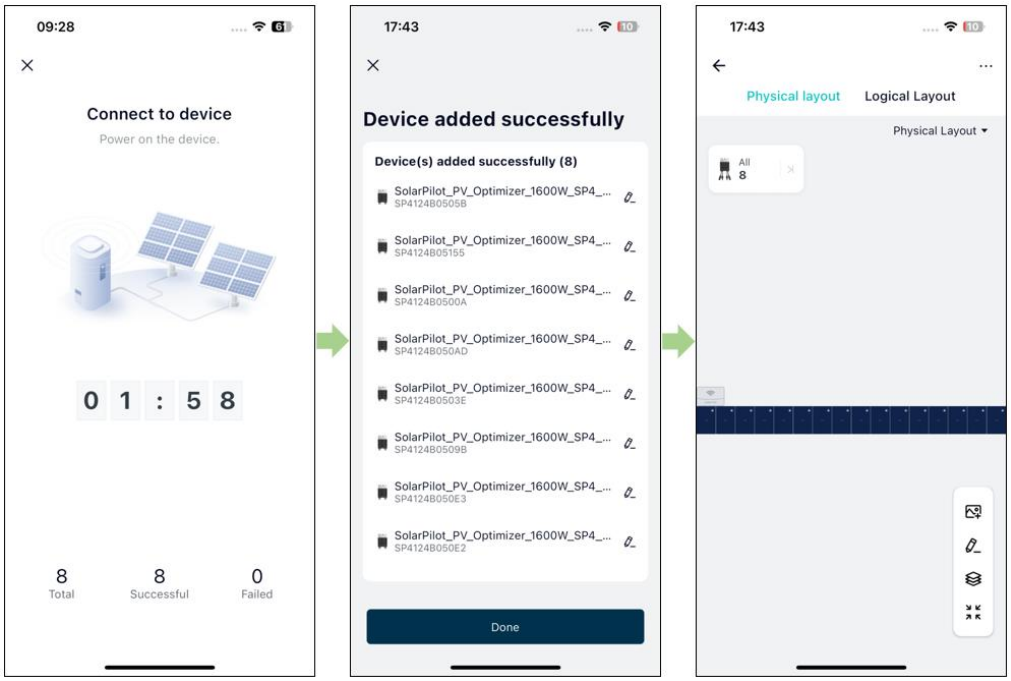
5.4 Add Layout

Select the gateway to which the RSD needs to be configured, then use the camera to take a photo of the template with the QR code just pasted on it, and follow the instructions in the figure below to complete the RSD layout generation.

Note: A Wi-SUN gateway can have a maximum of 300 RSD




18:01
Upload Image
Image recognition
Recognizing, please wait...
Cancel
17:18
Upload Image
Identify the image successfully
Normal optimizer
8
Confirm
17:43
Physical layout
Continue to add device


09:28
Connect to device
Power on the device.
0 1 : 5 8
8
Total
8
Successful
0
Failed
17:43
Device added successfully
Device(s) added successfully (8)
SolarPilot_PV_Optimizer_1600W_SP4_...
SP4124B0505B
SP4124B05155
SP4124B0500A
SP4124B050AD
SP4124B0503E
SP4124B0509B
SP4124B050E3
SP4124B050E2
Done
17:43
Physical layout
Logical Layout
Physical Layout
All
8

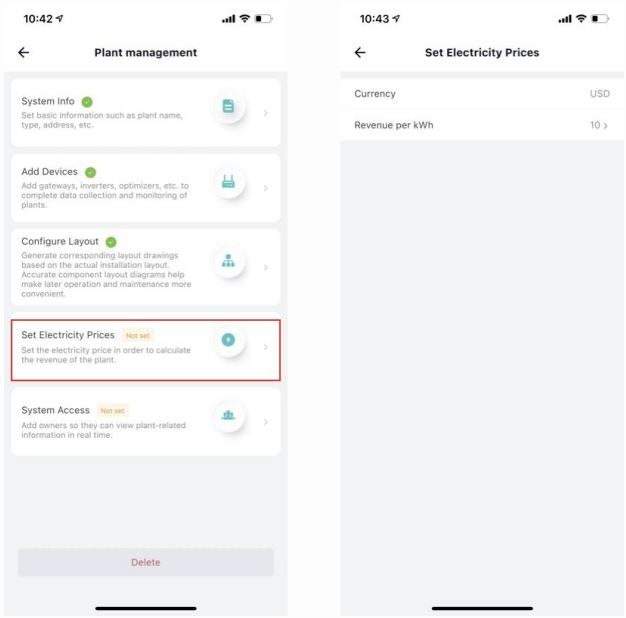
5.5 Improve the information

Improve the electricity revenue, owner information, etc. to facilitate better operation and maintenance of photovoltaic power stations.

Not required, if not used, you can ignore the following steps.

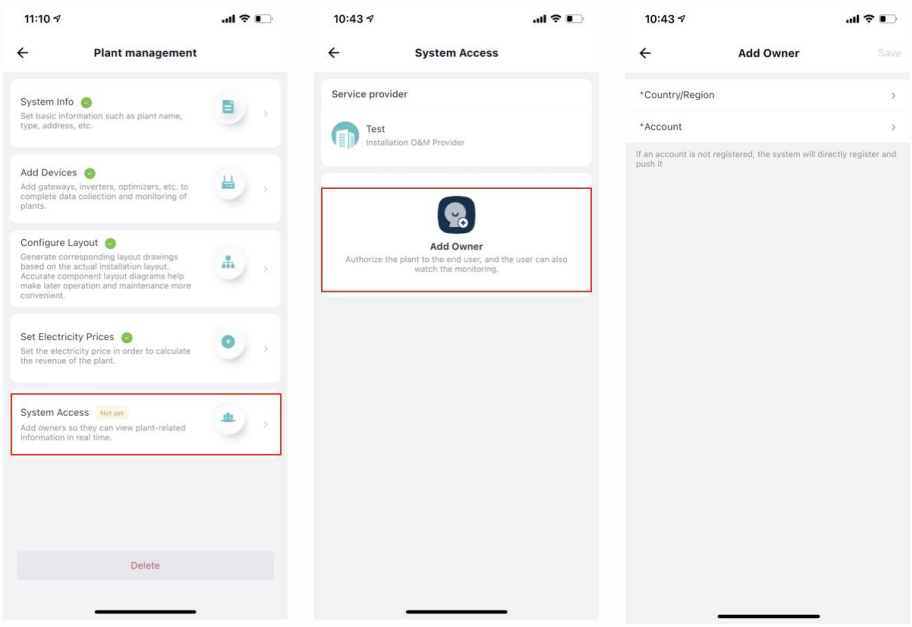
5.5.1 Set electricity price

Enter the revenue per kilowatt hour, and the system will calculate the revenue of the entire power station according to the unit price set here.



5.5.2 Add owner

Enter the owner account number and user name to complete the authorization operation of the power station.



6 Practice Running

NOTICE

- All cables and accessories are connected properly and securely.
- The cables are reasonably distributed and well protected without mechanical damage.
- The vacant terminals are sealed.
- All safety signs and warning labels are firmly affixed and clearly visible.

6.1 Practice Running Steps

Step 1: Turn the DC switch on the inverter to "ON".

Step 2: If there is an AC switch between the inverter and the power grid, close the switch.

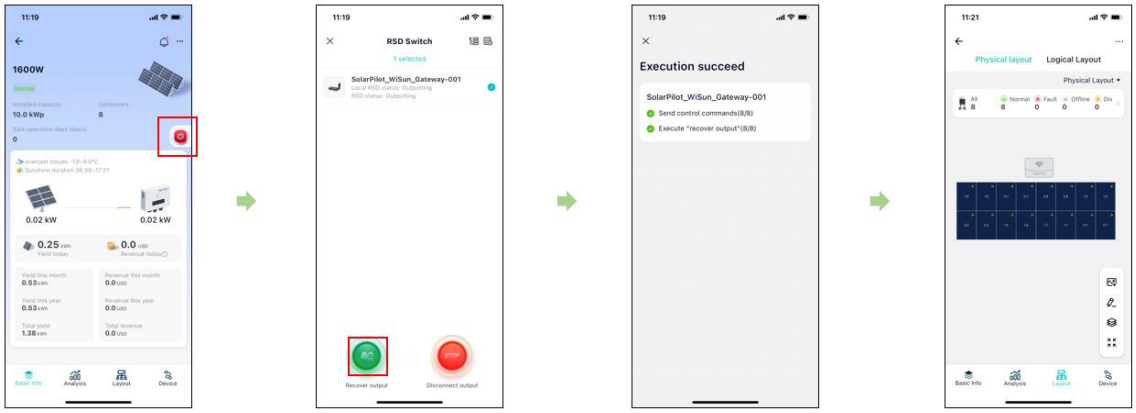
Step 3: If DC switch is provided between the inverter and the photovoltaic string, close the switch.

Step 4: When the irradiance is adequate and the grid conditions meet the grid requirements, the power station will operate normally.

6.2 Execute Recover 0utput(Very Important)

The RSD works in RSD mode by default and needs to recover output.

Otherwise the PV system will work abnormally.



7 Troubleshooting

- Once the RSD fails, the fault information can be displayed on the mobile App interface or the PC interface.
- The fault codes and troubleshooting methods of all RSD are detailed in the table below. The model you purchased may only contain part of the fault information. When the RSD fails, you can use the fault code or alarm name on the mobile App to carry out the corresponding information.

Fault code	Alarm name	Suggestions
0300	Input1 overvoltage	Check whether the RSD input1 voltage exceeds 75V.
0303	Input1 overcurrent	Check whether the RSD input1 current exceeds 20A.
0408	Input2 overvoltage	Check whether the RSD input2 voltage exceeds 75V.
0410	Input2 overcurrent	Check whether the RSD input2 current exceeds 20A.
0414	Input1 voltage abnormal	Check whether the RSD input1 is in good contact with the PV panel.
0415	Input2 voltage abnormal	Check whether the RSD input2 is in good contact with the PV panel.
0310	MOS overtemperature	Check whether the ventilation of the installation location of the RSD is good and whether the ambient temperature exceeds the maximum allowable ambient temperature range.
0306	Short OverLoad	Check whether the maximum input power of the RSD is greater than 1600W.
0307	Long OverLoad	

8 Replace the RSD

NOTICE

- Please use special insulation tools, wear insulated shoes and insulated gloves before operating.
- Prepare the new smart PV RSD.
- Prepare your phone with SolarPilot app.

1) Wear insulated gloves to disconnect the external AC circuit breaker and prevent re-connection due to misoperation.
2) Disconnect the external DC circuit breaker and turn the DC switch of the inverter to "OFF".
3) Execute disconnect output operation through APP to ensure that the string voltage is reduced to a safe range.
4) Use the current clamp to detect the DC cable and confirm that there is no current.
5) Disconnect the input and output terminal of the RSD.
6) Remove the old RSD.
7) Install the new RSD and check if the output voltage is normal.
8) Use the APP to add a new RSD and re-execute the recover output operation.
9) Re-power the inverter and observe the operating status of the PV system through the APP.

9 Technical Parameters

Product specification	SP5-RSD-AG
DC Input(2-way)	
Maximum input power	1600W（2x800W）
Maximum input voltage	150V（2x75V）
Maximum input current	20A|20A
Input voltage range	15 ~ 75V|15 ~ 75V
DC Output	
Maximum output power	1600W
Maximum output voltage	150V
Maximum output current	20A
Shutdown output voltage	2V(±10%)
Detection Accuracy	
Voltage	0.01V
Current	0.01A
General Parameters	
Dimension	137mm*83mm*37mm
Net weight	≤980g

Ingress Protection	IP68
System voltage	1500V
Data sampling interval	1min（I/V/P）/5min/15min
Wireless data transmission distance	≤200m（outdoor）
	≤50m（indoor）
Connector	EVO2
Input DC cable length	0.5m|1.2m 1.2m|0.5m
Output DC cable length	1.8m|1.8m
Operating temperature	-40℃ ~ 85℃
Storage temperature	-40℃ ~ 70℃
Operating humidity	0% ~ 100%
Operating altitude	≤2000m
Power supply	PV module
Shutdown time	≤10S
Installation method	Clip-on installation
Function	
Bypass cut-off function	YES
Auto shutdown function	YES
Manual shutdown function	YES
DC over-voltage protection	YES
DC over-load protection	YES
Reverse polarity protection	YES
Over-temperature protection	YES
Wireless data collection	YES

Appendix A: Contact Information

If you have technical questions concerning our products, please contact our support through SolarPilot web service portal**:** www.solarpilot.com/support

Region	Country	Email	Tel.

If you have technical queries concerning our products,

please contact us:

Address: Arndtstrasse 27b, 22085 Hamburg, Germany

E-mail: info@solarpilot.com

Website: https://www.solarpilot.com