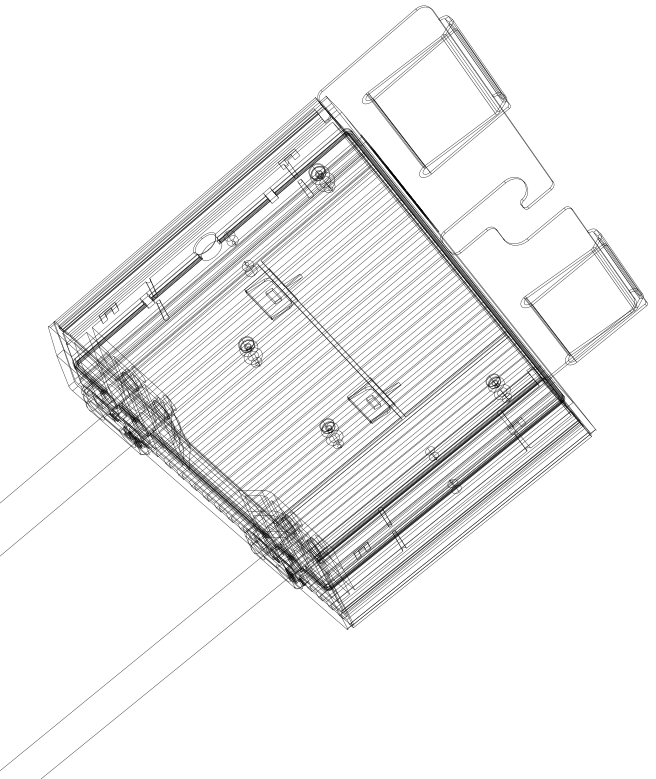
GO WITH SUNSHINE

Installation Manual of PV Optimizer

SUNGO iOPT 800W

SUNGO-iOPT™-V1-2024 EN

Always Optimized



Our values

E-Excellent

S-Smart

S-Stable

CONTENTS

1. IMPORTANT SAFETY PRECAUTIONS


This manual includes installation instructions for PV optimizer, from SUNGO Energy Technology(Jiangsu) Co.,Ltd. (known as "SUNGO").


DO NOT open, disassemble or repair PV optimizer , for your life's security.All these operations should be carried out by trained and qualified personnel.


Before installing and using PV optimizer, please read and understand ALL NOTICES and WARNINGS on the PV optimizer, and also please read and understand related instructions in manuals of PV inverters and PV Modules.


For fire and electric shock risks, please strictly follow local electrical codes and standards.


Installation must be carried out by trained professional persons. SUNGO would reject warranty or compensation for damages caused by improper installation, operation and use.


Before installation, please remove your metal decorations, to reduce electric shock risks. DO NOT install or commission in bad weather.


Before commissioning, please check and esure all cables arecorrectly and firmly connected.


DO NOT connect or disconnect PV optimizer under load. Please shut down inverter before connecting or disconnecting PV optimizer.


If any PV optimizer from SUNGO is damaged before installation, please DO NOT install or operate.


For assistance, please contact SUNGO.

2. ABOUT PV OPTIMIZER

Optimizer
SUNGO iOPT 800W

Data Gateway (GT)

- Module-level MPPT, fearless of shading, power generation increased by **5%~30%**
- Module-level rapid shutdown, ensuring fire and maintenance safety
- Module-level data intelligent monitoring and accurate management
- Fully utilize roof space to achieve system maximization
- Suitable for retrofitting existing power plants and installing new photovoltaic power plants
- 12-year standard warranty, high stability, service life over 25 years

3. TECHNICAL SPECIFICATIONS

Optimizer Technical Parameters

Model	SUNGO iOPT 800W
DC Input	
Max input power	800W
Max voltage	70V
MPPT voltage range	12-60V
Max continuous input current	21A
Max input short-circuits current	23A
Night self-consumption	0W
DC Output	
Output voltage	0-60V
Max continuous output current	21A
Max output power	780W
Max system voltage	1500V
DC Output During Shutdown	
Output voltage (without SUNGO GT)	1±0.1V
Efficiency	
Peak MPPT efficiency	≥99.7%
Communication	
Communication Method	PLC
Communication parameter	PV Voltage, Output Voltage, Output Current, Output Power, Temperature, State
Advanced Protection	
Input overvoltage protection	>75V
Output overcurrent protection	>22A
Output overload protection	>800W
High temperature protection	>110℃
General Data	
Dimensions (W*D*H)	116*31.5*123mm
Weight	0.865kg
Input/output cable length	IN+ 200 / IN- 1100 / OUT+ 750 / IN- 750mm
Input/output cable size	4mm²(12AWG) / 4mm² (12AWG)
Terminals	MC4(Compatible)
Protection rating	IP68
Relative humidity	0-100%RH
Operating temperature range	-40~+65℃
Cooling	Natural cooling
Certification	CE
Packaging	28pcs/CTN 840pcs/pallets

Data Gateway Technical Parameters

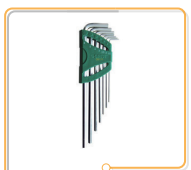
Model	SUNGO GT
Match with	SUNGO iOPT 800W
AC Input Parameters	
AC input voltage range	90-264V
AC input frequency	50/60Hz
Maximum AC input power	5W
Maximum AC input current	0.1A@90Vac
PV Input Parameters	
Terminals	MC4(Compatible)
Maximum system voltage	1500V
Nos of input strings	2
Max current of each string	21A
Max Module Nos per string	30
Communication Method	
Communication with optimizer	PLC
Communication with upper machine	2.4GHz Wi-Fi / RS485
Rapid Shutdown	
Initial state	1. OFF when AC is not connected 2. ON when AC is connected
Switch-on	Press the button once until the Running light is on
Switch-on time	<5s
Shut-down	1. Press the button once until the RSD indicator lights up 2. Controller AC power off, all indicator lights off
Shut-down time	<30s
Standards	
Electromagnetic compatibility (EMS)	IEC61000-6-1, IEC61000-6-2, IEC61000-6-3
Safety	IEC62109-1
RoHs	Yes
Installation Specification	
Dimension (W*D*H)	140*33.5*175mm
Weight	0.88kg
AC input cable length	1m
Protection level	IP67
Working temperature range	-40~+70℃
Cooling	Natural cooling
Form of installation	Wall hanging/holding, screw locking
Certification	CE
Packaging	5pcs/CTN 40pcs/pallets

4. Instructions for use

4.1 Tools

Following tools would be needed for installation, check and replace:

Phillips screwdriver



Allen wrench

Multimeter

Clamp ammeter

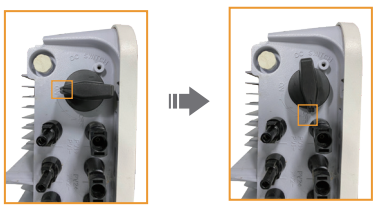
MC4 connector wrench

Wireless router

4.2 Installation steps

Step 1.

Before installing the optimizer, make sure the inverter is stopped (DC switch OFF) and disconnect the inverter from the module array.



DC switch Placement in OFF position Schematic

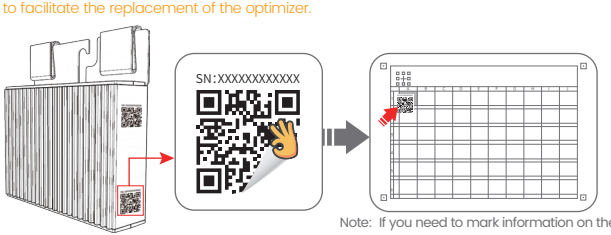
Step 2.

Plan the optimizer installation location properly to ensure proper connection of cables between the optimizer, components, and neighboring optimizers. Optimizer IN+: 200mm exposed IN-: 1100mm exposed OUT+/OUT-: 750mm

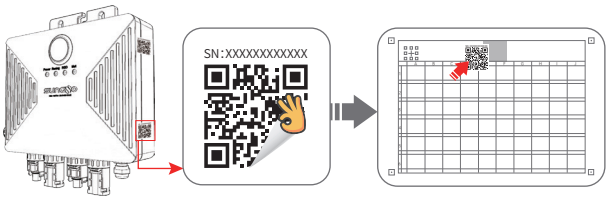
Step 3.

After confirming the installation location of the optimizer and data gateway (Stay close to the strings and away from the inverter), start installing the optimizer and data gateway. At the same time remove the SN label and paste it to the physical layout template.

The optimizer must do the physical location layout, so that when the optimizer location fails, you can find the faulty optimizer location according to the physical location layout diagram to facilitate the replacement of the optimizer.

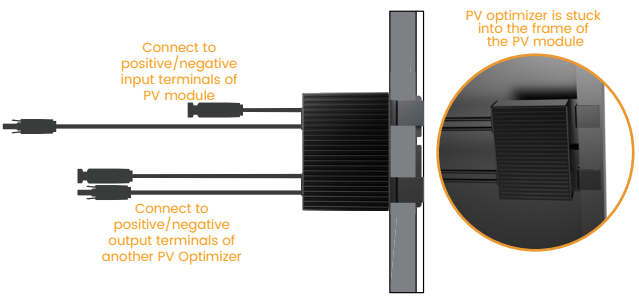


Note: If you need to mark information on the physical layout template, please use a marker pen



Step 4.

After removing the SN label, Install PV Optimizer on the frame of PV modules.

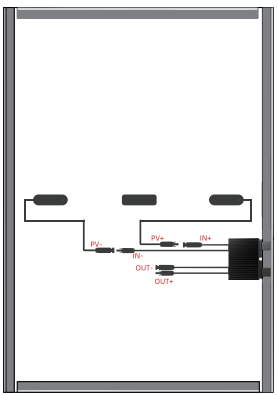


For clips

Attach PV optimizer to PV module frame, push the clips hardly. If the frame get to the bottom of the clips, installation is accomplished.

Step 5: Connect input cables

- Connect the positive output (PV+) connector of the PV module to the positive input (IN+) connector of the optimizer.
- Connect the negative output (PV-) connector of the PV module to the negative input (IN-) connector of the optimizer.
- Repeat the above actions to complete the input wire connection for all photovoltaic modules and ensure that the connectors are securely connected.



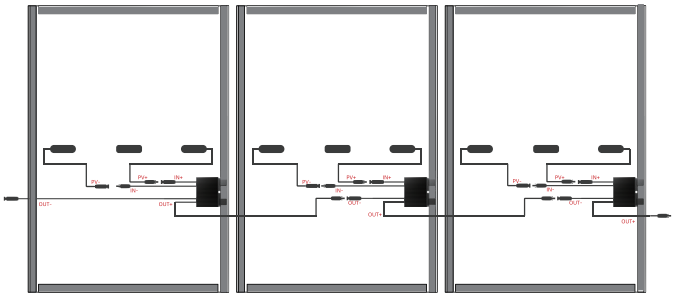
Caution!

In installation
Input cables of PV optimizer MUST be connected first, output cables of PV optimizer should be connected second.

In disassembly
Output cables of PV optimizer MUST be disconnected first, input cables of PV optimizer should be disconnected second.

Step 6: Connect output cables into strings

- Connect the positive output (OUT+) connector of the first optimizer in the series to the negative output (OUT-) connector of the second optimizer in the series; Repeat the above actions until the group string connection is complete.

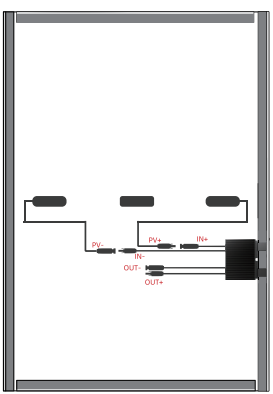


Step 7. Optimizer Detection

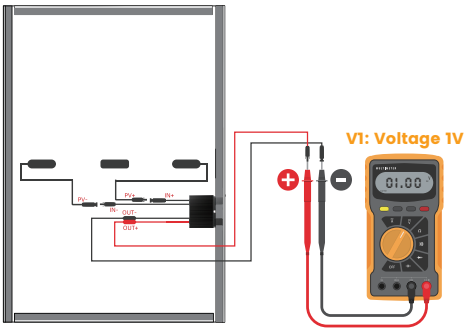
Notice

Make sure the optimizer input (IN) and output (OUT) are wired correctly. If the connection is reversed, the device may be damaged.

1. Connect the optimizer input (IN) to the pv junction box.

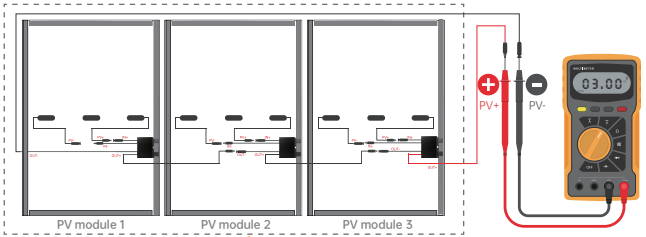


2. Use the positive pen of the multimeter to connect the positive output of the optimizer, and the negative to connect the negative output , and check the output voltage of a single optimizer.



Voltage	Reason	Solve suggestion
0.9V ≤ V1≤ 1.1V	Optimizer normal	——
V1 >1.1 V	Optimizer fault	Replacement optimizer
V1 < 0.9V	·Weak light ·optimizer input is not connected ·The optimizer is wired incorrectly ·Optimizer fault	1. Voltage is measured when light is sufficient。 2. Connect the optimizer input cable 3. Adjust the optimizer cable connection and connect the optimizer input cable to the PV module output 4. If the voltage is still abnormal, replace the optimizer
V1≈ -1V	The multimeter pen is reversed	Multimeter pen positive and negative exchange

3. After confirming that the optimizer and the input cable are properly connected, connect the optimizer output cable. When the light is sufficient, the voltage of the photovoltaic string is measured.



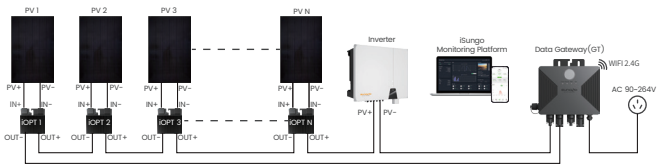
PV String

Voltage	Reason	Solve suggestion
The string voltage is 0	·PV module strings have open circuit ·The cables are not in the same string	1. Check whether the group string is open circuit faulty 2. Connect the strings cables correctly
The string voltage is negative	·The multimeter pen is reversed ·The label on the cable is incorrect	1. Multimeter pen positive and negative exchange 2. Make proper cable labels
The string voltage is less than the number of optimizers	·Some optimizer input missed connections ·Some optimizer outputs miss connections ·Some optimizer outputs are connected opposite	Check whether the PV modules and strings cables are correctly connected
The string voltage is greater than the number of optimizers	·The actual number of optimizers in the group string is greater than the expected number ·The photovoltaic panel is not connected to the optimizer, and is directly connected to the group string	1. Check that the number of optimizers in the group string is correct 2. Check whether the PV modules and series cables are correctly connected

Step 8. Stringing into the inverter

Connect the (OUT+) of the last optimizer of the string to the (PV+) of the inverter, then connect the (OUT-) of the first optimizer of the string to the Data Gateway GT (as shown below) and connect the Data Gateway GT (as shown below) to the inverter (PV-).
The second string repeats the way the first string is connected.

Note: One data gateway can be connected to a maximum of two strings. The data gateway location near string, away from inverter.



Step 9. Turn on the inverter

Confirm that the system is connected correctly, the inverter DC switch is ON, and the inverter is turned on.

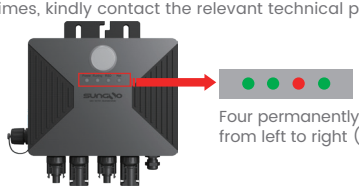
Step 10. Connecting the data gateway to a power source

Connect the data gateway to 90~264V mains power supply. Ensure that the power indicator green light is always on, and the running indicator green light is also always on. Check whether the inverter is working normally.

Step 11. Optimizer Management

Search Optimizer self-test and indicator status

Press the center button to allow the Running light to illuminate normally. Let the Rapid Shutdown (RSD) go out for an extended period. After 5 seconds, press and hold the button. After a few seconds, the GT enters the self-test mode, and when the 2, 3,4, indicator light flashes back and forth, release the button. Wait for about 10 minutes until the Running indicator light flashes, indicating a successful self-test. Press the button again to make the Running indicator light continuously on, confirming that the optimizer is operating normally. If the 3 indicator lights are blinking, it signifies a test failure. In such a case, please check the connections and rerun the test. If the test fails three times, kindly contact the relevant technical personnel.

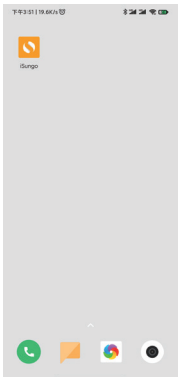


Four permanently illuminated status indicators from left to right (1, 2, 3, 4)

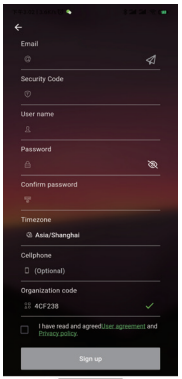
Note: Indicator status indicates

1, 2, 4 Indicator status schematic: ● Indicates normally lit ● Indicates extinguished ◐ Indicates blinking 3 Indicator status schematic: ● Indicates normally lit ● Indicates extinguished ◐ Indicates blinking	
None of the four indicator lights are lit Wrong or faulty circuit connection	1 on 2 off 3 on 4 on Turn off the optimizer, the network is connected normally
1, 2 on 3, 4 off Start optimizer, network not connected	1 on 2 blinking 3 blinking 4 blinking Search Optimizer self-test
1, 2 on 3 off 4 on Start the optimizer, the network is connected normally	1 on 2Blinking 3on 4 on or off Search Optimizer self-test successful
1 on 2 off 3 on 4 off Optimizer off, network not connected	1 on 2 off 3 blinking 4 on or off Search Optimizer self-test failed

Step 12. Download APP and register account

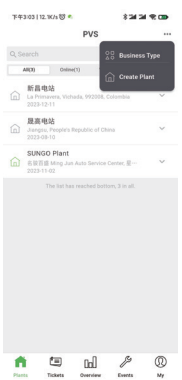


Download the iSungo app



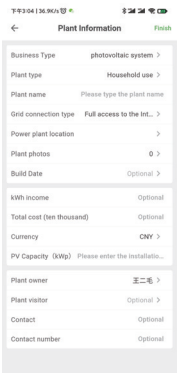
Open the APP to register an account

Step 13. Creation of PV power plants

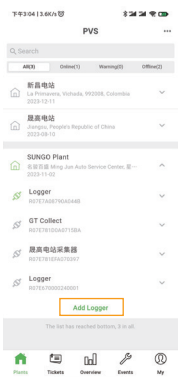


Click on the top right corner to create a power station

Step 14. Fill in the power station information



Step 15. Sweeping Code Collection Data Gateway

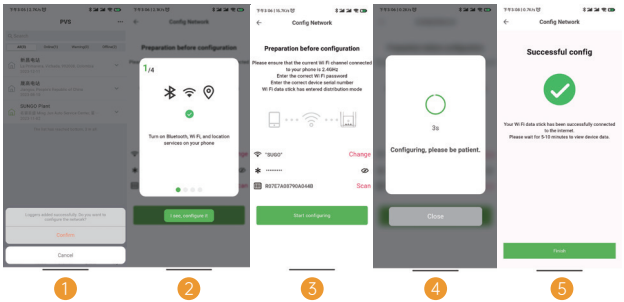


WIFI Serial Number:
XXXXXXXXXXXXXXX

Example of QR code
on the left side of GT

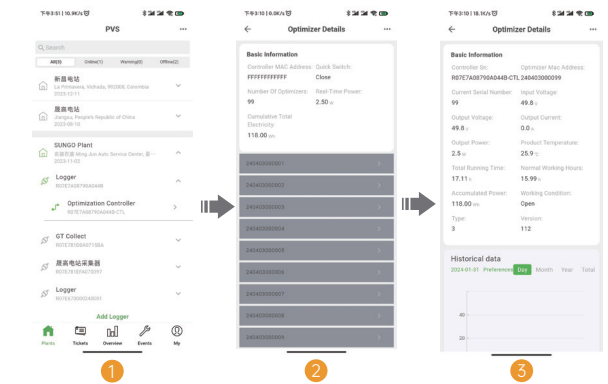
Click the arrow on the right side of the power station, scroll down, and click 'Add Collector.' Then, scan the WIFI serial number on the left side of the Data Gateway GT by using the QR Code.

Step 16. GT WIFI Distribution Network



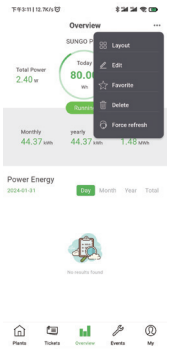
Just follow the instructed process to show the successful distribution of the network.

Step 17. Optimizer Status View



After successful grid distribution, click on the arrow to the right of the power station project until the optimizer controller appears, then click on the optimizer controller, then click on the Optimizer Code to view the optimizer details.

Step 18. Check the status of the power station



Click on APP OVERVIEW, then open the drop-down menu in the upper right corner of the page. Click on the layout to see the status

After clicking on the layout, the status of the power plant is displayed in several states as shown below.

State of affairs	Clarification
Figure 1 - Green circle in the upper right corner	Optimizer is running fine
Figure 2 - Gray circle in the upper right corner	Optimizer is offline, please check that the SN and location information is correct and then search the device again!
Figure 3 - Red circle in the upper right corner	Optimizer failure, need to replace optimizer

5. Quality Assurance Statement

5.1 Warranty content

The intelligent optimizer products sold by the company are produced in strict accordance with the ISO 9000 certification management system, and the products sold by the company are provided with the following quality assurance:

(1) Ensure that the product will be strictly inspected before leaving the factory to ensure that the product pass rate reaches 100%;

(2) Ensure that within 12 years from the date of delivery of the product, if the product itself has quality problems, the company is responsible for free repair or replacement. If the product exceeds the warranty period of the company, we will also provide you with the corresponding paid service within a reasonable range.

Name	Specification and model	Standard (extensible)	Warranty scope
PV optimizer	Whole series	12(25) years	Quality problems due to product process and material defects
Note: The warranty period can be extended from 12 to 25 years for an additional 30% FOB fee			

(1) During the warranty period, our company determines the defects within the scope of the warranty through inspection, and our company will choose to repair or replace the defective products free of charge, or the actual value of the product defects at the time the warranty holder notifies the company will be determined by the company.

(2) Free repair or replacement of defective products and other after-sales services during the warranty period does not mean that the corresponding warranty period starts again, and the corresponding warranty period is not therefore extended or renewed. After replacement or repair, the product warranty period is the original remaining warranty period.

(3) During the warranty period, it covers the parts and labor necessary to repair or replace the defects in the process or materials of the product itself, but does not include the transportation cost of returning the defective product on the road, nor does it include the cost of loading and unloading the goods or other costs related to disassembly, installation or troubleshooting.

5.2 Warranty liability limitation

5.2.1 During the warranty period, the following defects or damages shall not be covered by the warranty:

(1) Changes in appearance due to normal wear and tear, including fading and scratches;

(2) The model number, nameplate or serial number of the product is changed, erased or unrecognizable;

(3) Installation, use, repair and maintenance in violation of the provisions of the product manual;

(4) Loss caused by disassembling, refitting or replacing products or parts without authorization;

(5) Damage to the product due to intentional or negligent acts;

(6)Damages caused by non-product quality factors such as lightning, storms, hail, flood, fire, earthquake, war, unrest, or other natural disasters or human factors;

(7) Unexpected events or accidents due to external influences and pressures;

(8) Personal injury or death and property damage other than products;

5.2.2 The essential warranty statement has clearly defined limitations and excludes all implied, implicit, or unspecified warranties, including but not limited to any warranties of merchantability or fitness for a particular purpose or application. Any other warranties, responsibilities, or obligations are expressly agreed upon, signed, or approved in writing by the company. Without explicit written agreement, signature, or approval by the company, they shall not be valid.

5.2.3 In any circumstance, the company shall not be held responsible for any indirect, consequential, incidental, special, or exceptional damages or losses, including but not limited to loss of production, revenue, profit, goodwill, business, or delay. Regardless of whether the possibility of such losses has been informed, and irrespective of whether the claim is based on contract, warranty, negligence, or strict liability, the company's liability is limited to the purchase cost of the product itself.

5.3 Warranty liability performance

5.3.1 To obtain a repair or replacement service, credit or refund (if applicable) limited warranty under this Statement, you must comply with the following policies and procedures:

All defective products must be returned with a return authorization; For RMA products, customers should contact the company's technical support representative to evaluate and resolve the problem. If the customer's on-site troubleshooting fails to solve the problem, the customer needs to provide the following information:

(1) Provide purchase documents, including but not limited to the relevant purchase agreement, invoice, logistics receipt, installation confirmation, acceptance letter and other written certification documents, such documents are the necessary documents to identify the company's maintenance of the product;

(2) The serial number and model of the defective product, the detailed description of the defect, the delivery address of the returned repair or replacement product;

5.3.2 All defective products authorized for return must be returned in the original shipping container or other packaging of equal protection to the product.

5.4 Services outside the warranty period

(1) Out-of-warranty services refer to paid services outside the warranty period after the expiration of the aforementioned quality guarantee period.

(2) If replacement of products, accessories and components is involved outside the quality guarantee period, the company will provide products, accessories and components, and only charge the cost of products, accessories and components.

(3) The treatment of on-site failures outside the quality guarantee period, the implementation of paid after-sales service, the specific fee standard according to the company's effective price documents for the year.

6.Contact Information

Europe Headquarters
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KONKA&SUNGO Smart Energy (Zhejiang) Co., Ltd.
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