

# Installation Manual of PV Optimizer

SUNGO OPT PRO



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## 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 security. All these operations should be operated by trained and qualified.



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 electric codes and standards.



Installation must be operated 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 commissioning in bad weather.



Before commission, please check and make sure all cables are connected correctly and firmly.



DO NOT connect or disconnect PV optimizer underload. 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 any help, please contact SUNGO.

## 2. About PV Optimizer



**PV Optimizer**



Module-level MPPT ensures optimal performance regardless of shadows, malfunction, etc, resulting in a remarkable power generation increase of 5%-30%



Matching mainstream PV modules and various inverters for worry-free installation of PV power plants in operation and under construction



Fully utilize roof space to achieve system maximization



Bolts + Clips installation, convenient and fast



12-year standard warranty, high stability, service life over 25 years

## 3. Technical Specification

### Smart Optimizer Technical Parameters

Model	SUNGO OPT PRO
<b>DC Input</b>	
Max input power	800W
Max voltage	70V
MPPT voltage range	7~60V
Max continuous input current	21A
Max input short-circuit current	23A
Night self-consumption	0W
<b>DC Output</b>	
Rated output voltage	58V
Max continuous output current	21A
Max output power	780W
Max system voltage	1500V
<b>Efficiency</b>	
Peak efficiency	99.7%
Power loss @5A	0.9W
Power loss @8A	1.4W
Power loss @12A	2.9W
Power loss @15A	4.5W
Power loss @20A	7.2W
<b>General Data</b>	
Dimensions (W*D*H)	103*21.3*105.3mm
Weight	0.65kg
Input/output cable length	IN+ 200 / IN- 1100 / OUT+ 750 / IN- 750mm
Input/output cable size	4mm <sup>2</sup> (12AWG) / 4mm <sup>2</sup> (12AWG)
Terminals	MC4(compatible)
Protection rating	IP67/NEMA6
Relative humidity	0~100%RH
Operating temperature range	-40~+60°C
Cooling	Natural cooling
Overvoltage category	OVC II
Maximum altitude	≤4000m
Certification	CE
EMC	EN IEC 61000-6-1:2019EN IEC 61000-6-2:2019EN IEC 61000-6-3:2021ENIEC 61000-6-4:2019
Packaging	20pcs/CTN 900pcs/pallets

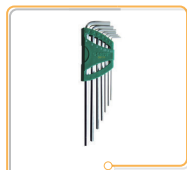
## 4. Installation Instructions

### 4.1 Tools

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



Phillips screwdriver



Allen wrench



Multimeter



Clamp ammeter



MC4 connector wrench



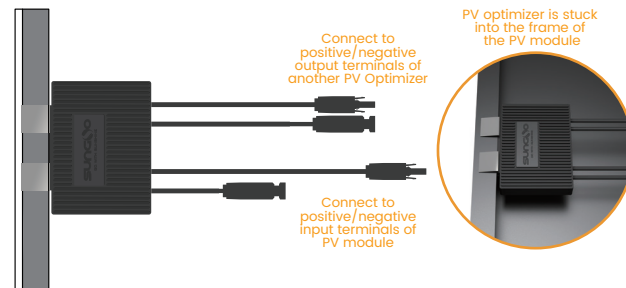
### 4.2 Steps

#### Step 1.

Shut down PV inverter, disconnect PV modules from arrays and strings.

#### Step 2.

Install PV Optimizer on the frame of PV modules.

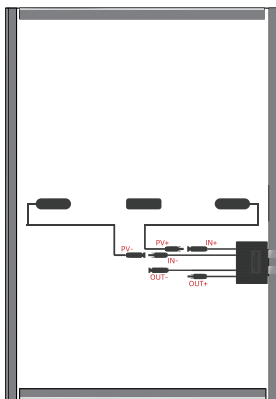


#### For clips

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 3: 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

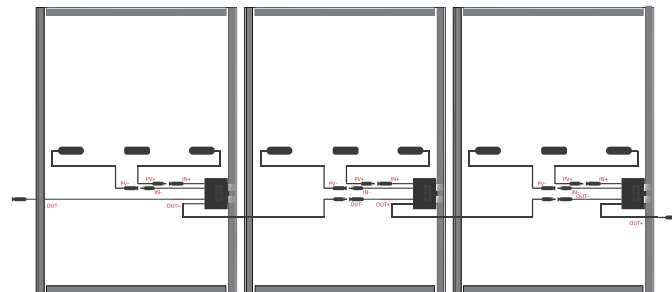
Input cables of PV optimizer MUST be connected first, output cables of PV optimizer should be connected second.

#### In disassembly

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

### Step 4: Connect output cables into strings

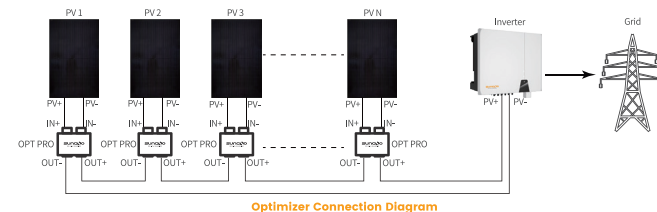
- Connect the positive output (OUT+) connector of the first optimizer in the series to the negative output (OUT-) connector of the second optimizer in the series; Repeat the above actions until the group string connection is complete.



### Step 5: Connect the strings to PV inverter

Connect the (OUT-) of the first optimizer to the (PV-) of the inverter and then connect the (OUT+) of the last optimizer to the (PV+) of the inverter.

The second string repeats the connection of the first string.



### Step 6. Inverter startup

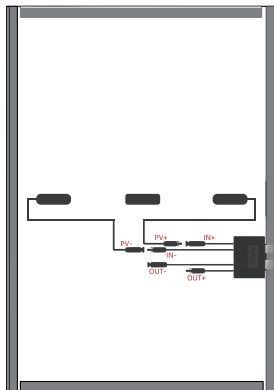
Check all connections of entire system, then turn on PV inverter.

## 5. Detection Method

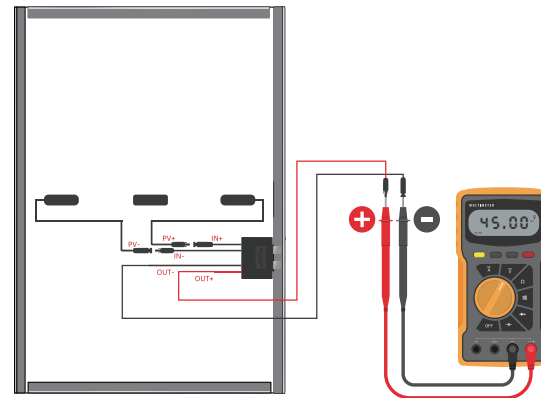
### Notice

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

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



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
$V = V_{oc} \times 95\%$	Optimizer normal	—
$V < V_{oc} \times 30\%$	Optimizer fault	Replacement optimizer
$V_{oc} \times 30\% < V < V_{oc} \times 95\%$	<ul style="list-style-type: none"> <li>Weak light</li> <li>The optimizer is wired incorrectly</li> <li>Optimizer fault</li> </ul>	<ol style="list-style-type: none"> <li>1. Voltage is measured when light is sufficient</li> <li>2. Connect the optimizer input cable</li> <li>3. Adjust the optimizer cable connection and connect the optimizer input cable to the PV module output</li> <li>4. If the voltage is still abnormal, replace the optimizer</li> </ol>

## 6. Quality Assurance Statement

### 6.1 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.

### 6.2 Warranty liability limitation

6.2.1 Any of the following defects or damages occurring during the warranty period 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) lightning, storm, hail, flood, fire, earthquake, war, unrest and other natural disasters or human factors caused by non-product quality causes;
- (7) Unexpected events or accidents due to external influences and pressures;
- (8) Personal injury or death and property damage other than products;

6.2.2 The Essential warranty is expressly limited and excludes all implied, implied or unspecified warranties, including but not limited to any warranties of merchantability or fitness for use, application or for a special purpose. Other warranties, obligations or obligations are expressly agreed to, signed or approved by the Company in writing and shall not be effective unless expressly agreed to, signed or approved by the Company in writing.

6.2.3 In no event shall the Company be liable for any indirect, derivative, incidental or incidental, special or exceptional damage or loss, including but not limited to loss of production, loss of earnings, loss of profits, loss of goodwill, loss of business or loss of delay, whether or not it has been advised of the possibility of such loss, Regardless of whether the claim is based on contract, warranty, tort of negligence or strict liability, the amount of liability borne by the Company shall not exceed the purchase cost of the product itself.

## 6.3 Warranty liability performance

6.3.1 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;

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

## 6.4 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.

## 7.Contact Information

### Europe Headquarters

SUNGO Energy Technology B.V.  
Add: Hoofdweg-Noord 9T, 2913LB Nieuwerkerk aan den IJssel, The Netherlands

### Global Headquarters

SUNGO Energy Technology (Jiangsu) Co., Ltd.  
Add: Unit 01, Floor 1, NO.179 Suhong West Road, Suzhou Industrial Park, Suzhou City, Jiangsu Province, China

### Optimizer&Energy Storage Production base

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