

# User Manual

## OPTimizer

SP600S





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# About This Manual

The manual mainly contains the product information, as well as guidelines for installation, operation and maintenance. The manual does not include complete information about the photovoltaic (PV) system. Readers can get additional information at [www.sungrowpower.com](http://www.sungrowpower.com) or on the webpage of the respective component manufacturer.

## Validity

This manual applies to the following product:

- SP600S

It is referred to as "optimizer" hereinafter unless otherwise specified.

## Target Group

This manual is intended for professional technicians who are responsible for installing, operating, and maintaining the optimizer and users who need to check optimizer parameters.

The optimizer must and can only be installed by professional technicians. The professional technician is required to meet the following requirements:

- Know electronic, electrical wiring, and mechanical expertise, and be familiar with electrical and mechanical schematics.
- Have received professional training related to the installation and commissioning of electrical equipment.
- Be able to quickly respond to hazards or emergencies that occur during installation and commissioning.
- Be familiar with local standards and relevant safety regulations of electrical systems.
- Read this manual thoroughly and understand the safety instructions related to operations.

## How to Use This Manual

Please read this manual carefully before using the product and keep it properly at a place for easy access.

Contents of the manual may be updated and amended continuously, so it is possible that there may be some errors or slight inconsistency with the actual product. Please refer to the actual product purchased, and the latest manual can be obtained from [support.sungrow-power.com](http://support.sungrow-power.com) or sales channels.

## Symbol Explanations

To ensure the safety of the users and their properties when they use the product and to make sure that the product is used in an optimal and efficient manner, this manual provides users with the relevant safety information highlighted by the following symbols.

Below is a list of symbols that are used in this manual. Review them carefully to make better use of this manual.

 **DANGER**

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

 **WARNING**

Indicates a moderately hazardous situation which, if not avoided, will result in death or serious injury.

 **CAUTION**

Indicates a slightly hazardous situation which, if not avoided, may result in minor or moderate injury.

**NOTICE**

Indicates a potential hazard which, if not avoided, will result in device malfunction or property damage.



Indicates additional information, emphasized contents, or tips that may be helpful, e.g. to help you solve problems or save time.



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# 1 Safety Instructions

When installing, commissioning, operating, and maintaining the device, strictly observe relevant safety instructions. Incorrect operation or work may cause:

- Injury or death to the operator or a third party.
- Damage to the device and other properties.

Strictly follow the safety instructions stated in the manual to avoid the hazards mentioned above.



- The safety instructions in this manual are only supplements and cannot cover all the precautions that should be followed. Perform operations considering actual on-site conditions.
- SUNGROW shall not be held liable for any damage caused by violation of general safety operation requirements, general safety standards, or any safety instruction in this manual.
- When installing, operating, and maintaining the device, comply with local laws and regulations. The safety precautions in this manual are only supplements to local laws and regulations.

## 1.1 Unpacking and Inspection

### WARNING

**Check all safety signs, warning labels, and nameplates on products. The safety signs, warning labels and nameplates must be clearly visible and cannot be removed or covered before the product is decommissioned.**

### NOTICE

**After receiving the product, check whether the appearance and structural parts of the device are damaged, and check whether the product received is consistent with the order. If there are problems with the above inspection items, do not install the device and contact SUNGROW in time.**

## 1.2 Installation Safety

### DANGER

**Make sure there is no electrical connection before installation.**

**NOTICE**

**Before operating the product, please check and ensure that tools to be used have been maintained regularly.**

### 1.3 Electrical Connection Safety

**⚠ DANGER**

**Before electrical connections, please make sure that the optimizer is not damaged. Otherwise, it may cause danger!**

**Before electrical connections, please make sure that all switches connected to the optimizer are set to "OFF". Otherwise, electric shock may occur!**

**The optimizer does not support hot plugging. Do not plug in and out the optimizer with power on. Otherwise, the optimizer may be damaged!**

**⚠ DANGER**

**The PV string will generate lethal high voltage when exposed to sunlight.**

- **Operators must wear proper personal protective equipment during electrical connections.**
- **Must ensure that cables are voltage-free with a measuring instrument before touching DC cables.**
- **Respect all safety instructions listed in relevant documents about PV strings.**

**⚠ DANGER**

**Lethal voltages may be present inside the optimizer!**

- **Be sure to use special insulation tools during cable connections.**
- **Note and observe the warning labels on the optimizer, and perform operations strictly following the safety instructions.**
- **Respect all safety precautions listed in this manual and other pertinent documents.**

**⚠ WARNING**

**Damage to the product caused by incorrect wiring is not covered by the warranty.**

- **Electrical connection must be performed by professionals.**
- **All cables used in the PV generation system must be firmly attached, properly insulated, and adequately dimensioned.**

**⚠ WARNING**

Check the positive and negative polarity of the PV strings, and connect the PV connectors to corresponding terminals only after ensuring polarity correctness. During the installation and operation of the optimizer, please ensure that the positive or negative polarities of PV strings do not short-circuit to the ground. Otherwise, the product may be damaged. And the damage caused by this is not covered by the warranty.

**NOTICE**

Comply with the safety instructions related to PV strings and the regulations related to the local grid.

## 1.4 Operation Safety

**⚠ DANGER**

- When the product is running, it is strictly forbidden to plug and unplug any connector on the optimizer.
- When the product is running, do not disassemble any parts of the optimizer. Otherwise, electric shock may occur.
- Do not touch the product when it is running. Otherwise, it may cause burns.

## 1.5 Maintenance Safety

**⚠ DANGER**

**Risk of device damage or personal injury due to incorrect service!**

- Be sure to use special insulation tools when perform high-voltage operations
- Before maintaining the optimizer, first cut off the power input and the power output, and measure the voltage and current with professional measuring instrument. Only when there is no voltage nor current can operators who wear protective equipment operate and maintain the optimizer.
- Even if the product is shut down, it may still be hot and cause burns. Operating the product with protective gloves after it cools down.

**⚠ WARNING**

If a fault occurs during operation, be sure to re-power the optimizer after the fault is cleared. Otherwise, the fault may expand, or the device may be damaged.

**⚠ CAUTION**

To prevent misuse or accidents caused by unrelated personnel, post prominent warning signs or demarcate safety warning areas around the product to prevent accidents caused by misuse.

**NOTICE**

To avoid the risk of electric shock, do not perform any other maintenance operations beyond this manual. If necessary, contact SUNGROW for maintenance. Otherwise, the losses caused are not covered by the warranty.

## 1.6 Disposal Safety

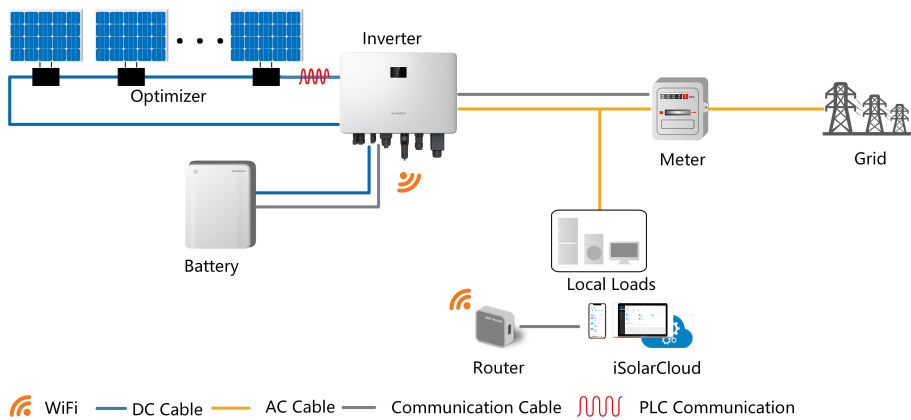
**⚠ WARNING**

Please scrap the product in accordance with relevant local regulations and standards to avoid property losses or casualties.

## 2 Product Description

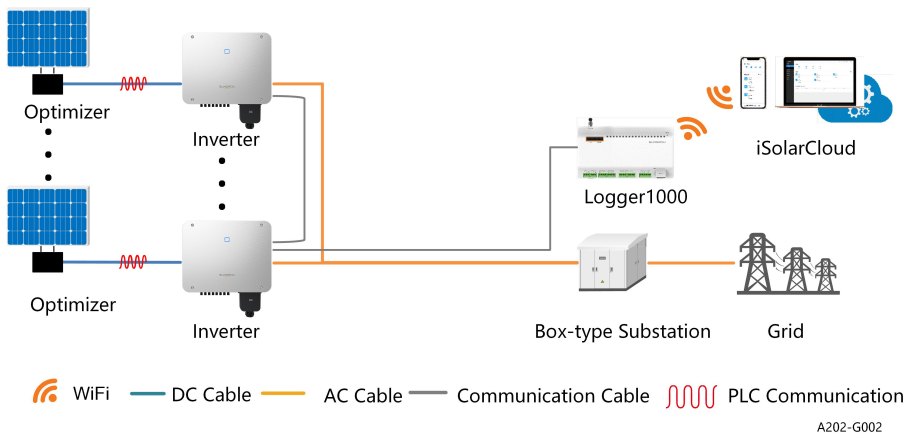
### 2.1 System Introduction

SP600S optimizer is mainly used to adjust the voltage and current of each PV module in real time to track the maximum power point of each module, thus improving the power generation capacity of the PV system. It can also realize module-level shutdown, module-level IV curve scanning and automatic physical positioning.



A202-G001

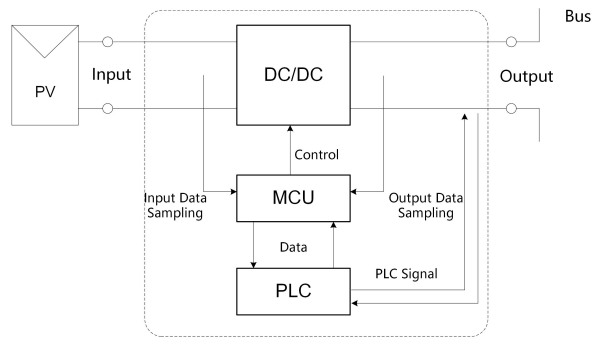
figure 2-1 Application to Residential PV and Storage System



**figure 2-2** Application to Industrial and Commercial System

## 2.2 Working Principle

The working principle of the optimizer is shown in the diagram below. Connected to the PV module by its input cable, the optimizer can track the module's maximum power and output the desired voltage through a DC/DC voltage conversion circuit.

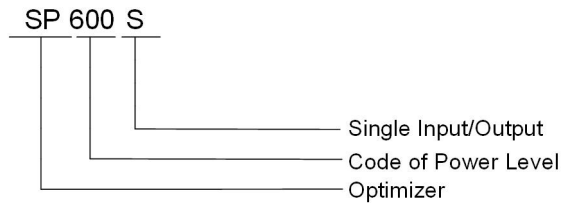


A202-G004

figure 2-3 Working Principle

## 2.3 Product Introduction

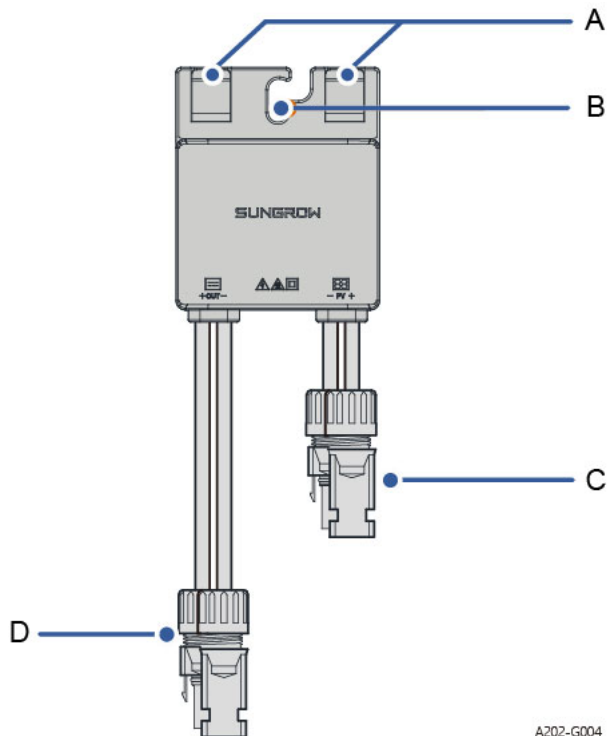
### Model Description



A202-G003

figure 2-4 Model Description

### Product Appearance



A202-G004

## Dimensions

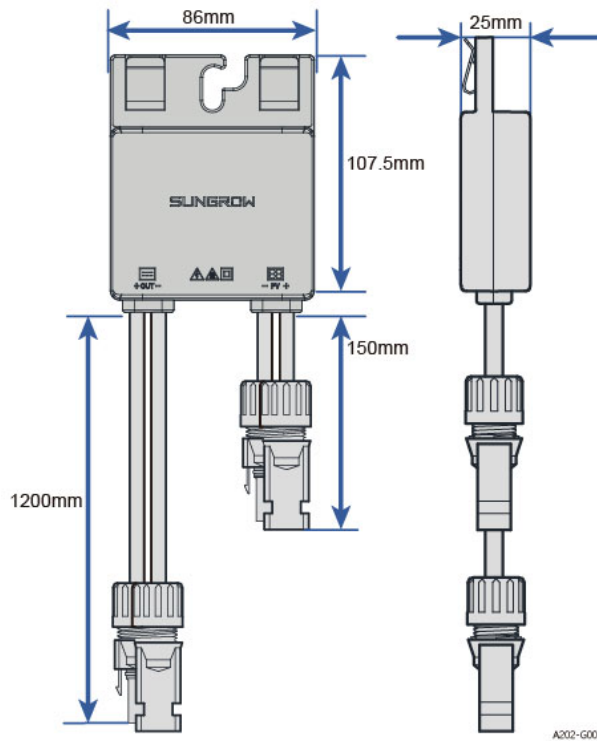









figure 2-6 Dimensions

## 2.4 Symbol Descriptions

Symbol	Description
	Do not dispose of the optimizer as household waste.
	Read the manual before performing any operation on the optimizer.
	Comply with CE certification. EU/EEA imports.
	Comply with RCM certification.
	Hot surface with a temperature that may exceed 60 °C. Risk of burns!



Symbol	Description
	Lethal high voltage! Only professional and qualified personnel can install and operate the optimizer!
	Equipment protected by double insulation or reinforced insulation.

## 3 Unpacking and Storage

### 3.1 Unpacking and Inspection

The device is thoroughly tested and strictly inspected before delivery. Nonetheless, damage may still occur during shipping. For this reason, please conduct a thorough inspection after receiving the device.

- Check the packing case for any visible damage.
- Check the inner contents for damage after unpacking.

Contact SUNGROW or the transport company in case of any damage or incompleteness, and provide photos to facilitate services.

Do not dispose of the original packing case. It is recommended to store the device in the original packing case when the product is decommissioned.

#### NOTICE

**After receiving the product, check whether the appearance and structural parts of the device are damaged, and check whether the packing list is consistent with the actual order. If there are problems with the above inspection items, do not install the device and contact SUNGROW in time.**

**If any tool is used for unpacking, be careful not to damage the product.**

### 3.2 Storage

If the optimizer is not put into operation immediately, store it under specific environmental conditions.

- Repack it with original packing case.
- The storage temperature ranges from  $-40\text{ }^{\circ}\text{C}$  to  $85\text{ }^{\circ}\text{C}$ , and the relative humidity ranges from 0 to 100%, without condensation.
- Stacking layers of optimizer shall not exceed the "stacking layer limit" marked on the outer case.
- The packing case cannot be tilted or turned upside down.
- Do not store the product in places susceptible to direct sunlight, rain, and strong electric field.
- Do not place the product in places with items that may affect or damage the product.

- Store the product in a clean and dry place with fine ventilation to prevent dust and water vapor from eroding.
- Do not store the product in places with corrosive substances or susceptible to rodents and insects.
- Carry out periodic inspections. Inspection shall be conducted at least once every six months. If any insect or rodent bites are found, replace the packaging materials in time.
- If the product has been stored for more than a year, inspection and testing by professionals are required before it can be put into operation.

**NOTICE**

**Please store the product according to the storage requirements. Product damage caused by failure to meet the storage requirements is not covered by the warranty.**

## 4 Mechanical Mounting

### ⚠ WARNING

Respect all local standards and requirements during mechanical installation.

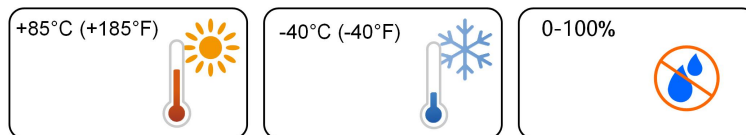
### 4.1 Installation Location Selection

Select an optimum installation location for a optimizer to operate safely, ensuring its service life and performance.

- The optimizer is rated IP68.
- It should be installed at a position convenient for electrical connection, operation and maintenance.

#### Installation Environment Requirements

- The installation environment must be free of flammable or explosive materials.
- The product must be out of reach of children.
- The allowable temperature and humidity range at the installation site are as follows:



- The product should be protected from direct sunlight, rain and snow to prolong its service life. A sheltered installation location is recommended.
- Install the device in a well-ventilated place to ensure good heat dissipation.

### 4.2 Installation Tools

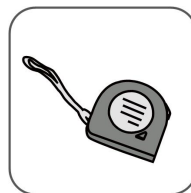
Installation tools include but are not limited to the following recommended ones. Use other auxiliary tools on site as needed.



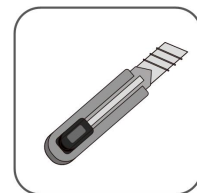
Protective gloves



Insulated shoes



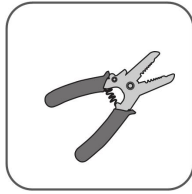
Tape



Utility knife



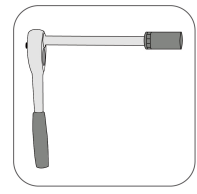
Wire cutter



Wire stripper



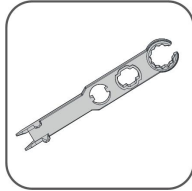
Crimping tool



Socket wrench (M8)



Multimeter



MC4 wrench

### 4.3 Installing Optimizer

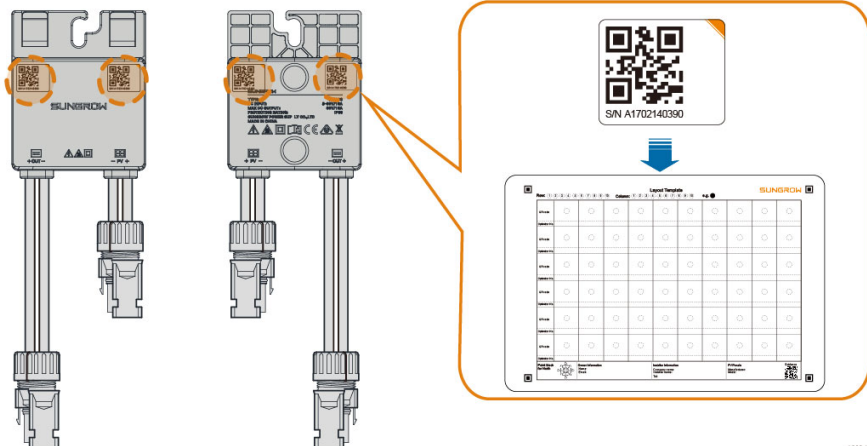
The optimizer supports both clip installation and bolt installation. Please choose the appropriate installation method according to the site conditions.

#### 4.3.1 Preparation Before Installation



Arrange the installation position of an optimizer reasonably to ensure that optimizer cables can be normally connected to the PV module and an adjacent optimizer. The communication distance between the optimizer and the inverter cannot exceed 300 m at most.

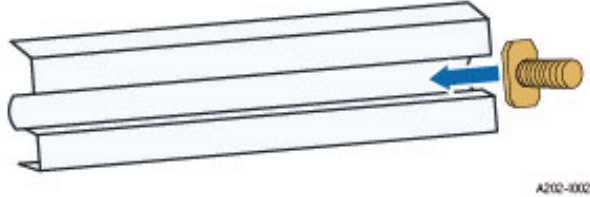
Select the appropriate installation position of the optimizer, remove the QR code label on the optimizer, and paste it onto the layout template as instructed.



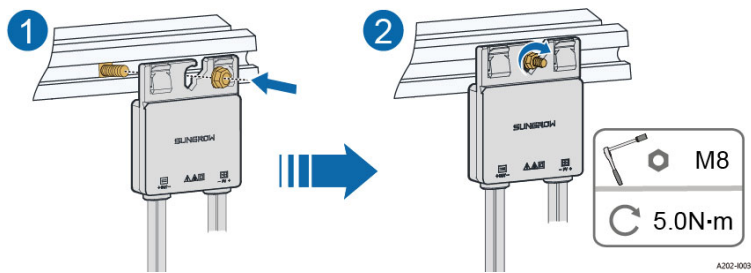
A202-501

### 4.3.2 Installed on Aluminum Guide Rail

step 1 It is recommended to use M8\*25 T-head bolt assembly (not included in the scope of delivery). Slide the T-head bolt into the groove in the aluminum guide rail.



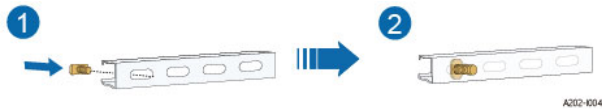
step 2 Hang the optimizer at the T-bolt through the bolt hole and fix it on the aluminum guide rail using a socket wrench in the order of nut, bolt hole and T-head bolt.



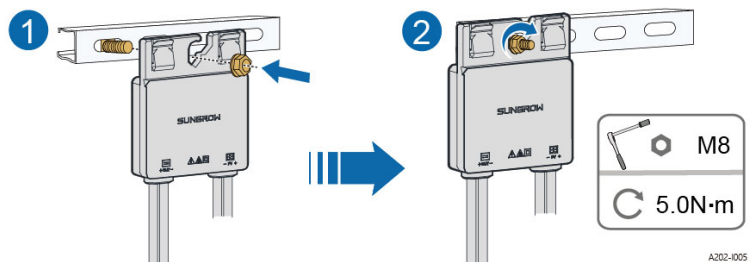
-- End

### 4.3.3 Installed on Steel Guide Rail (T-head Bolt)

step 1 It is recommended to use M8\*25 T-head bolt assembly (not included in the scope of delivery). Insert the T-head bolt through the guide rail and turn it 90°.



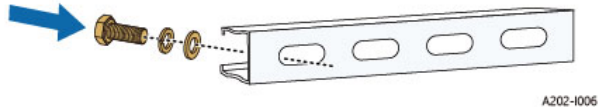
step 2 Hang the optimizer at the T-head bolt through the bolt hole and fix it on the steel guide rail using a socket wrench in the order of nut, bolt hole and T-head bolt.



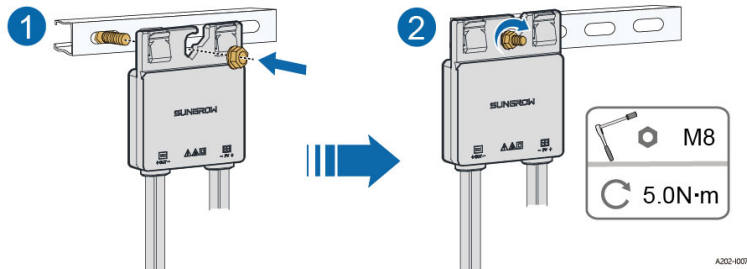
-- End

#### 4.3.4 Installed on Steel Guide Rail (Bolt Assembly)

step 1 It is recommended to use M8\*25 bolt assembly (not included in the scope of delivery). Insert the bolt assembly through the guide rail.



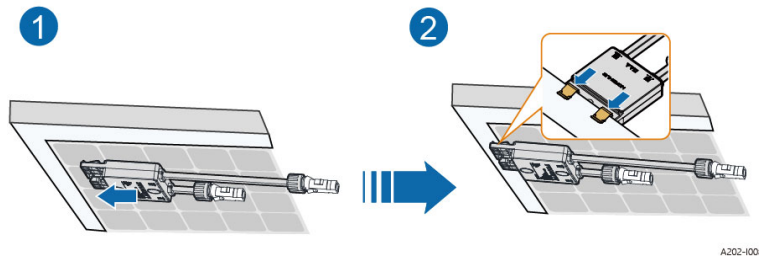
step 2 Hang the optimizer at the bolt through the bolt hole and fix it on the steel guide rail using a socket wrench in the order of nut, bolt hole, spring washer, flat washer and bolt.



-- End

#### 4.3.5 Installed on PV Module (Clip)

step 1 As shown in the figure below, clamp the optimizer parallel to the back of the PV module by clips.



#### NOTICE

- Do not forcibly bend the clips when installing the optimizer by clips. Otherwise, the clip may be damaged.
- Do not clamp and remove the optimizer multiple times. Otherwise, the clip may become loose, affecting normal use.

-- End

# 5 Electrical Connection

## 5.1 Safety Precautions

### DANGER

The PV string will generate lethal high voltage when exposed to sunlight.

- Operators must wear proper personal protective equipment during electrical connections.
- Must ensure that cables are voltage-free with a measuring instrument before touching DC cables.
- Respect all safety instructions listed in relevant documents about PV strings.

### DANGER

Before electrical connections, please make sure that the optimizer is not damaged. Otherwise, it may cause danger!

Before electrical connections, please make sure that all switches connected to the optimizer are set to "OFF". Otherwise, electric shock may occur!

The optimizer does not support hot plugging. Do not plug in and out the optimizer with power on. Otherwise, the optimizer may be damaged!

Please check the cable wiring of input and output terminals of each optimizer. If there is a reversed connection, correct it in time. Only proceed to create and activate a plant after confirming that there is no reversed connection. Otherwise, the optimizer wrongly connected may be damaged if the plant is activated, and the damage caused is not covered by the warranty.

### WARNING

Damage to the product caused by incorrect wiring is not covered by the warranty.

- Electrical connection must be performed by professionals.
- Operators must wear proper personal protective equipment during electrical connections.
- All cables used in the PV generation system must be firmly attached, properly insulated, and adequately dimensioned.



**NOTICE**

All electrical connections must comply with local and national/regional electrical standards.

- Cables used by the user shall comply with the requirements of local laws and regulations.

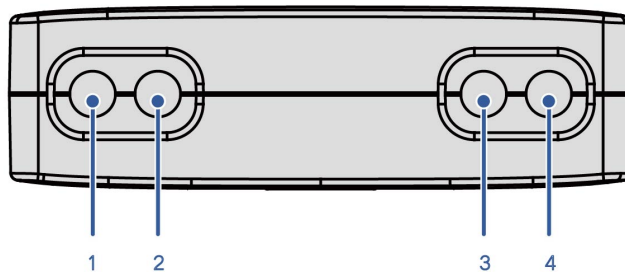
**NOTICE**

Comply with the safety instructions related to PV strings and the regulations related to the local grid.



The cable colors in the figures in this manual are for reference only. Please select cables according to local cable standards.

## 5.2 Terminal Description



A202-E001

figure 5-1 Internal Terminal

No.	Silk screen	Description
1	OUT+	Positive output
2	OUT-	Negative output
3	PV-	Negative Input
4	PV+	Positive input

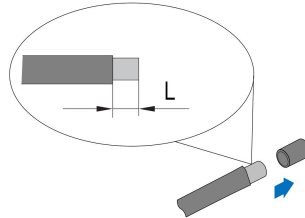
### 5.3 MC4 Terminal Preparation

In the process of connecting optimizers, if the distance between terminals is too long, it is necessary to prepare a pair of extension cables of suitable length with MC4 terminals at each end.

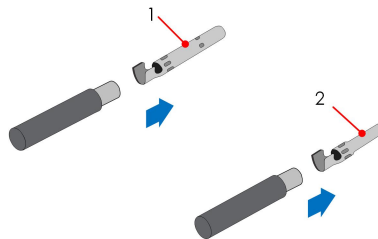
#### NOTICE

**The DC connector model of the optimizer is Staubli MC4. Please ensure that DC connectors on extension cables are also Staubli MC4 or compatible to Staubli MC4 terminals. Otherwise, the loss caused is not covered by the warranty.**

step 1 Strip the insulation layer of all DC cables to a length L of about 7 mm - 8 mm.



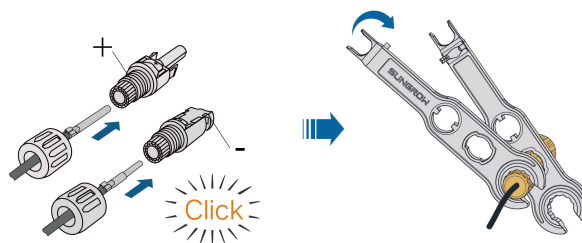
step 2 Assemble the cable ends with the wiring terminal by the crimping tool.



(1): Positive crimp contact

(2): Negative crimp contact

step 3 Lead the cable through cable gland, and insert the crimp contact into the insulator until it snaps into place. Gently pull the cable backward to ensure firm connection. Tighten the cable gland and the insulator with a torque of 2.5 N.m - 3 N.m.



A202-E006

step 4 Connect the positive terminals of the PV connector to corresponding negative terminals until there is an audible click.

-- End

## 5.4 Connecting to PV Module

### **⚠ DANGER**

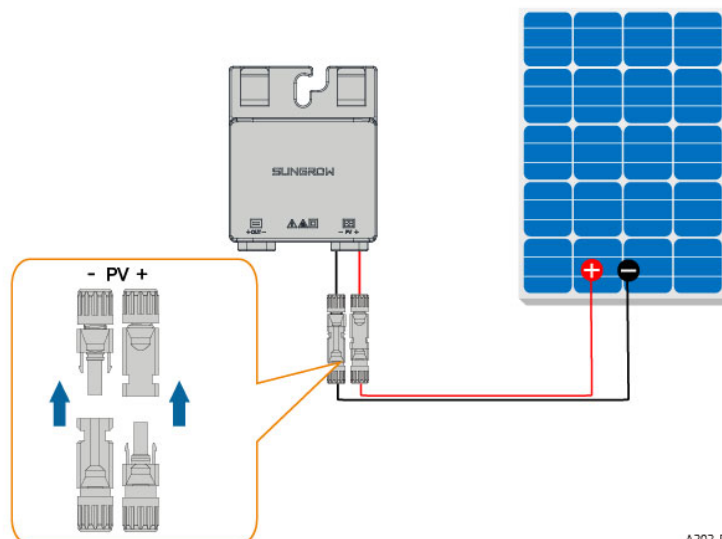
#### **Electric shock!**

**Pay attention! PV arrays will generate lethal high voltage when exposed to sunlight. Ensure all cables are voltage-free before performing electrical operations.**

### **⚠ WARNING**

- **Make sure the PV array is well insulated to the ground before connecting an optimizer to a PV module.**
- **Please arrange the plant layout reasonably according to local laws and regulations. If there are more than 30 optimizers per string, the rapid shutdown requirement is not met. 3. Please check the input and output terminals of all optimizers for reversed connection.**

step 1 Connect the PV+ and PV- of the optimizer to the positive and negative terminals in the junction box of the PV module respectively.

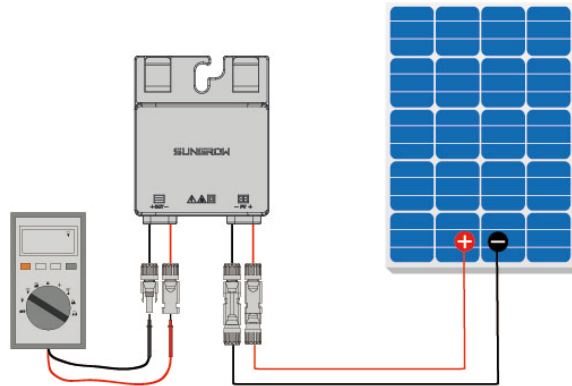


A202-E003

### **NOTICE**

**Do not connect the PV module to the OUT+ and OUT- of the optimizer. Otherwise, the optimizer or PV module will be damaged, and the loss is not covered by the warranty.**

- step 2 Connect the positive probe of a multimeter to OUT+ of the optimizer, and the negative probe of the multimeter to OUT- of the optimizer to check whether the optimizer is faulty. If the measured output voltage is between 0.9 V and 1.1 V, no fault occurs to the optimizer.



A202-E006

#### NOTICE

**If the output voltage is less than 0.9 V, check the following items:**

1. Check whether the sunlight is sufficient.
2. Check whether the input side of the optimizer is connected to the PV module.
3. If the fault is not caused by foregoing reasons and still persists, please replace the optimizer.

**If the output voltage is greater than 1.1 V, the optimizer fails. Please replace the optimizer.**

- step 3 Connect each optimizer to a PV module following the above steps.

-- End

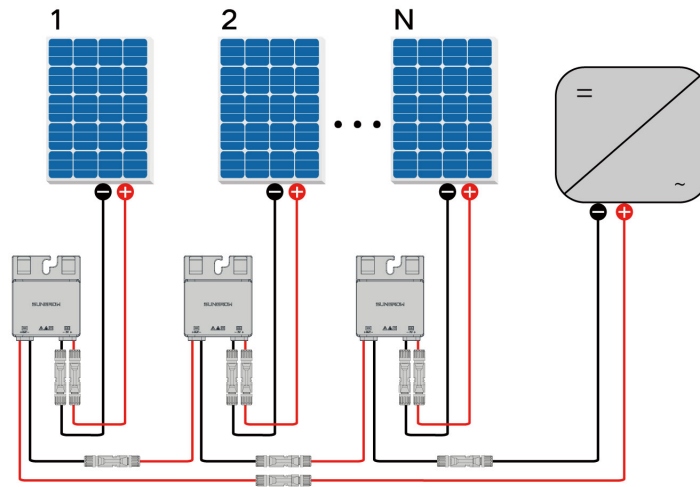
## 5.5 Connecting to Inverter

**⚠ DANGER**

**Ensure that all cables are voltage-free before performing electrical operations.**

### Connecting Multiple Optimizers

When connecting multiple optimizers, connect the OUT- of the first optimizer to the OUT+ of the second optimizer, and so on, and connect the OUT- of the last optimizer to the PV input terminal of the inverter.



A202-E005

**⚠ WARNING**

If each PV module is equipped with an optimizer, the total power of PV modules in a PV input shall not exceed the maximum input power of a single PV input of the inverter.

## 6 Commissioning

### 6.1 Inspection Before Commissioning

Check the following items before starting the optimizer:

- All equipment has been reliably installed.
- All cables are correctly connected.
- Please check the input and output terminals of all optimizers for reversed connection.
- All warning signs & labels are intact and legible

### 6.2 Commissioning Procedure

If all of the items mentioned above meet the requirements, set the optimizer on iSolarCloud App. For details, please refer to the *iSolarCloud App User Manual*. Scan the following QR code to obtain the *iSolarCloud App User Manual*.



If there is no topology, the short-circuit current of PV modules shall be no less than 2A. Therefore, please create a plant without topology under good irradiance conditions.

# 7 Optimizer Decommissioning

## 7.1 Disconnecting Optimizer

### ⚠ CAUTION

**Danger of burns!**

**Even if the product is shut down, it may still be hot and cause burns. Wear protective gloves before operating the optimizer after it cools down.**

- step 1 The inverter connected to the optimizer is powered down.
- step 2 Ensure that the DC cable is current-free via a current clamp.

-- End

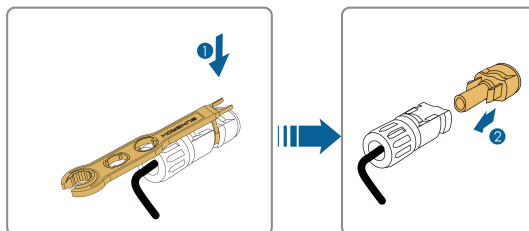
## 7.2 Dismantling Optimizer

### ⚠ CAUTION

**Risk of burn injuries and electric shock!**

**After the upstream and downstream devices of the optimizer are powered down, measure the voltage and current with professional instrument. Only when there is no voltage nor current can operators who wear protective equipment operate and maintain the optimizer.**

- step 1 Refer to "[5 Electrical Connection](#)" to disconnect all cables of the optimizer in reverse steps. In particular, when removing the DC connector, use an MC4 wrench to loosen the locking parts and install waterproof plugs.



- step 2 If the optimizer will be used again in the future, please refer to "[3.2 Storage](#)" for proper storage.

-- End

## 7.3 Disposal of Optimizer

Users take the responsibility for the disposal of the optimizer.

### WARNING

**Please scrap the optimizer in accordance with relevant local regulations and standards to avoid property losses or casualties.**

### NOTICE

**Some parts of the optimizer may cause environmental pollution. Please dispose of them in accordance with the disposal regulations for electronic waste applicable at the installation site.**



## 8 Troubleshooting and Maintenance

### 8.1 Troubleshooting

Once a fault occurs in the optimizer, the fault information is displayed on the App.

Fault Code	Fault Name	Possible Cause	Corrective Method
4	Input overvoltage	The output voltage of PV modules is greater than the input voltage of the optimizer.	<ol style="list-style-type: none"> <li>1. Measure whether the open circuit voltage of PV modules exceeds the input voltage of the optimizer.</li> <li>2. Check whether modules are connected in series.</li> <li>3. If the fault is not caused by the foregoing reasons and still exists, contact Sungrow Customer Service.</li> </ol>
32	Overtemperature alarm	The ambient temperature is excessively high or the optimizer is installed improperly.	<ol style="list-style-type: none"> <li>1. Check whether the ambient temperature of the device is too high.</li> <li>2. Check whether the device is in a well-ventilated place.</li> <li>3. Check whether the device is exposed to direct sunlight. Shield it if so.</li> <li>4. If the fault is not caused by the foregoing reasons and still exists, contact Sungrow Customer Service.</li> </ol>
16	Output overcurrent	The optimizer output circuit is short-circuited.	<ol style="list-style-type: none"> <li>1. Power down the system, unplug input cables and output cables of the optimizer 5 minutes later, then restore the input wiring and output wiring 1 minute later, and then power up the system.</li> <li>2. If the fault is not caused by the foregoing reason and still exists, contact Sungrow Customer Service.</li> </ol>

## 8.2 Maintenance

### 8.2.1 Maintenance Notices

#### DANGER

**Risk of device damage or personal injury due to incorrect service!**

- Be sure to use special insulation tools when perform high-voltage operations
- Before maintaining the optimizer, first cut off the power input and the power output, and measure the voltage and current with professional measuring instrument. Only when there is no voltage nor current can operators who wear protective equipment operate and maintain the optimizer.
- Even if the optimizer is shut down, it may still be hot and cause burns. Operating the optimizer with protective gloves after it cools down.

#### WARNING

**If a fault occurs during operation, be sure to re-power the optimizer after the fault is cleared. Otherwise, the fault may expand, or the device may be damaged.**

#### CAUTION

**To prevent misuse or accidents caused by unrelated personnel, post prominent warning signs or demarcate safety warning areas around the optimizer to prevent accidents caused by misuse.**

#### NOTICE

**As the optimizer contains no component parts that can be maintained, never open its enclosure or replace any internal components.**

**To avoid the risk of electric shock, do not perform any other maintenance operations beyond this manual. If necessary, contact SUNGROW for maintenance.**

**Otherwise, the losses caused are not covered by the warranty.**

#### NOTICE

**Touching the PCB or other static sensitive components may cause damage to the device.**

- Do not touch the circuit board unnecessarily.
- Observe the regulations to protect against electrostatic and wear an anti-static wrist strap.

## 8.2.2 Routine Maintenance

The maintenance item and period of the device are listed in the table below.

Check Item	Check Method	Maintenance Period
Running status	Check whether the device operates normally.	Once every six months
	Check whether there is abnormal noise or sound during operation.	
Electrical connection	Check whether cables are loose or fall off.	Once every six months to a year
	Check whether cables are damaged.	

## 8.2.3 Replacing Optimizer

- step 1 Refer to "[7.1 Disconnecting Optimizer](#)" to decommission the optimizer.
- step 2 After confirming that there is no voltage and current at the input and output terminals of the optimizer, dismantle the optimizer referring to "[7.2 Dismantling Optimizer](#)".
- step 3 Refer to "[4.3.1 Preparation Before Installation](#)" and "[5 Electrical Connection](#)" to install the optimizer and finish the cable connections.

-- End

## 9 Appendix

### 9.1 Technical Data

Parameter Name	SP600S
<b>Input</b>	
Rated DC input power	600 W
System max. allowable voltage	1100 V
Max. PV input voltage	80 V
MPP voltage range	8 ~ 80 V
Max. DC short-circuit current (Isc)	16A
<b>Output</b>	
Max. output current	16A
Max. output voltage	80 V
Safe output voltage of each power optimizer	1 ± 0.1 V
<b>Efficiency</b>	
Max. efficiency	99.5%
Weighted average efficiency	99.0%
<b>Regular Parameters</b>	
Dimensions (width * height * depth)	86 * 107.5 * 25 mm
Weight	0.53 kg
Degree of protection	IP68
Working ambient temperature range	-40°C to 85°C
Allowable relative humidity range	0% - 100%
Max. working altitude	4000 m
Input/Output connector type	Staubli MC4
Cable length (input/output)	150 mm/1200 mm
Country of Manufacturer	China

## 9.2 Quality Assurance

When product faults occur during the warranty period, SUNGROW will provide free service or replace the product with a new one.

### Evidence

During the warranty period, the customer shall provide the product purchase invoice and date. In addition, the trademark on the product shall be undamaged and legible. Otherwise, SUNGROW has the right to refuse to honor the quality guarantee.

### Conditions

- After replacement, unqualified products shall be processed by SUNGROW.
- The customer shall give SUNGROW a reasonable period to repair the faulty device.

### Exclusion of Liability

In the following circumstances, SUNGROW has the right to refuse to honor the quality guarantee:

- The free warranty period for the whole machine/components has expired.
- The device is damaged during transport.
- The device is incorrectly installed, refitted, or used.
- The device operates in harsh conditions beyond those described in this manual.
- The fault or damage is caused by installation, repairs, modification, or disassembly performed by a service provider or personnel not from SUNGROW.
- The fault or damage is caused by the use of non-standard or non-SUNGROW components or software.
- The installation and use range are beyond stipulations of relevant international standards.
- The damage is caused by unexpected natural factors.

For faulty products in any of above cases, if the customer requests maintenance, paid maintenance service may be provided based on the judgment of SUNGROW.

## 9.3 Contact Information

In case of questions about this product, please contact us.

We need the following information to provide you the best assistance:

- Model of the device
- Serial number of the device
- Fault code/name
- Brief description of the problem

For detailed contact information, please visit: <https://en.sungrowpower.com/contactUS>.