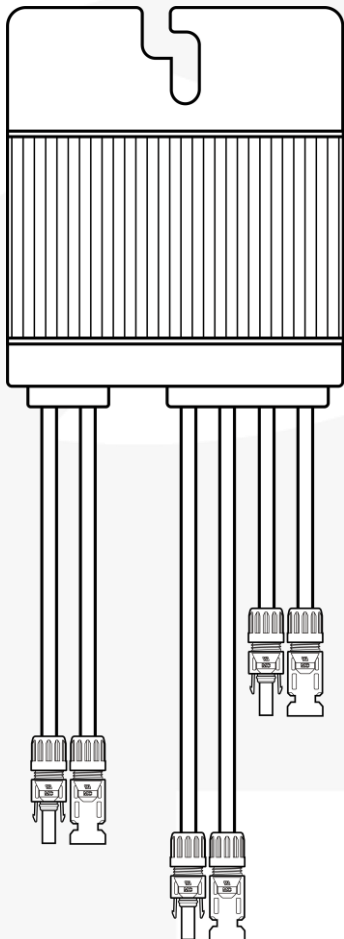# SolarPilot

Smart PV Optimizer

SP4-1600W-A

Quick installation manual

1. Must read before installing

SolarPilot

When carrying out all operations of this product, it is necessary to strictly follow the relevant equipment precautions and special safety instructions provided by SolarPilot.

It is strictly forbidden to open the shell, disassemble, and repair the product to ensure the safety of personnel. For service, find a trained or qualified professional.

Operators should comply with local regulations and norms.

It is strictly forbidden to wear watches, bracelets, bracelets, rings and other easily conductive objects on the wrist during operation.

Installation or maintenance operations must be carried out in accordance with the sequence of the tasks and the structure and installation sequence of the equipment should not be changed without the permission of the manufacturer.

A certain distance should be reserved between the optimizer and surrounding objects to ensure that there is sufficient space for installation and heat dissipation.

Installation, electrical connections, maintenance, troubleshooting, and replacement operations of the optimizer must be carried out by a professional electrical technician.

The optimizer is forbidden to be installed in a location where water can be submerged for a long time.

Improper operation during the installation and operation of the optimizer may lead to fire, and it is forbidden to store flammable and explosive materials in the installation location area.

It is forbidden to cut the cable that comes with the optimizer, otherwise the warranty will be invalid.

During the string operation of the optimizer, 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 relevant documents.
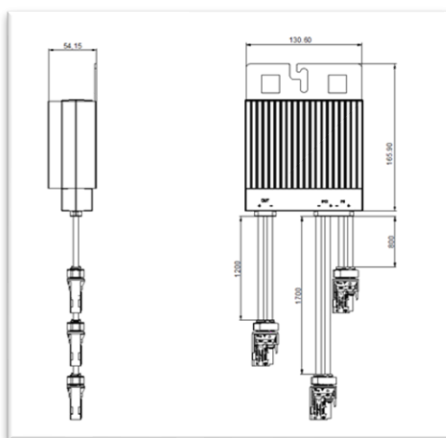
When the optimizer is running, the temperature is high and there is a risk of burns, so do not touch it.

When operating the equipment, local regulations and norms should be followed.
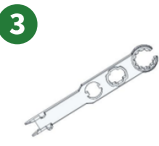
The optimizer can only be powered back on after the fault has been handled, otherwise the fault may expand or the device will be damaged.

2. Product Introduction

SP4-1600W-A optimizer is Optimizer 2x for PV modules, which can connect two PV modules at the same time on the input side, and continuously track the maximum power point (MPPT) of each PV module to increase the power generation of the PV system, and has functions such as module-level shutdown and module-level monitoring.


3. Supporting materials

1. **Insulated shoes**
2. **Insulated gloves**
3. **MC4 wrench**
4. **M6/M8 sockets**
5. **Wire strippers**
6. **Pincers**
7. **MC4 crimping pliers**
8. **Multimeter**

4. Prepare your materials

Number	Material name	Specifications and models	Use	Remark
1	DC connectors	MC4/EVO2	Connectors for connecting various electrical devices	
2	DC cables	PV1-F 1*4mm²	Cables are used to connect various electrical devices	
3	Bolt sleeve	M6 or M8	Fixed optimizer	
4	Wi-SUN Gateway	SP4-WiSUN-GW-N or SP4-WiSUN-GW-G	Data monitoring of the optimizer	
5	Switching power supplies	20W/12V output	Wi-SUN Gateway power supply	
6	Cable	Super Six Categories	Wi-SUN Gateway network supply	For SP4-WiSUN-GW-N Gateway
7	IoT cards	The process of each sub-equipment is about 1M/day	Wi-SUN Gateway network supply	For SP4-WiSUN-GW-N Gateway
8	Distribution box	Size≥ 250*300*160mm The protection level is IP54 or above	Install the gateway and switching power supply	
9	Cables	ZR-YJV-3*2.5mm²	The switching power supply is connected to alternating current	
10	Power cord	BVR-1mm²	The switching power supply is connected to the gateway	
11	Communication lines	RVSP-3*0.75mm²/RVSP-2*0.75mm²	Communication lines	If you don't have other communication equipment, don't prepare it
12	Guide rail	The length of the national standard guide rail is 35mm/0.2m	Fixed gateways and switching power supplies	
13	Auxiliary materials	Mounting aids		
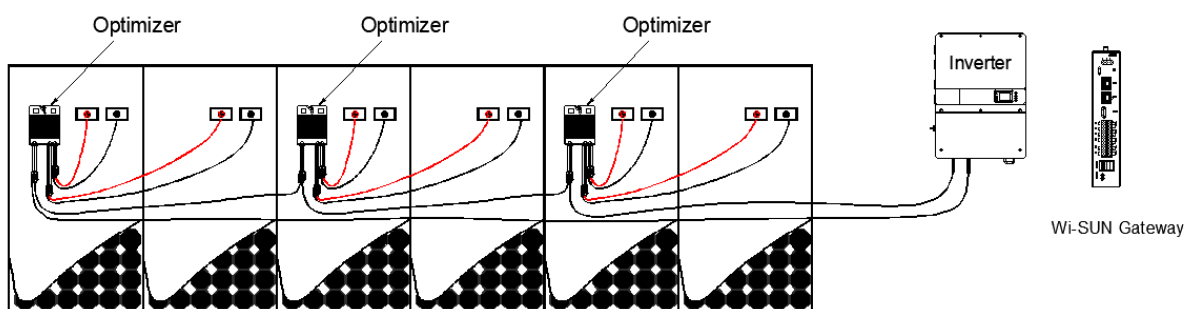
6. Installation Steps

01 Determine the installation location

02 Determine how to install it

03 Electrical connections

04 The gateway is powered on and connected to the Internet
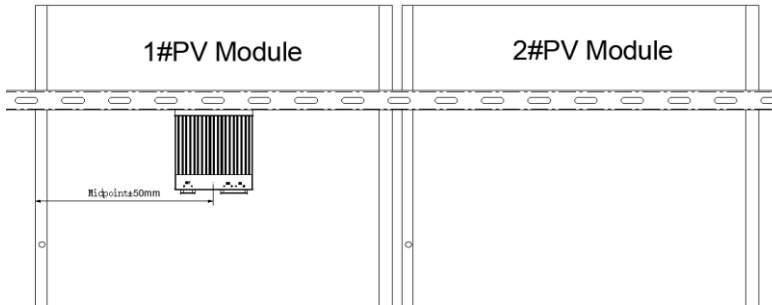
05 APP operation and network configuration

06 Recover from fast breaking

6.1 Determine the installation location
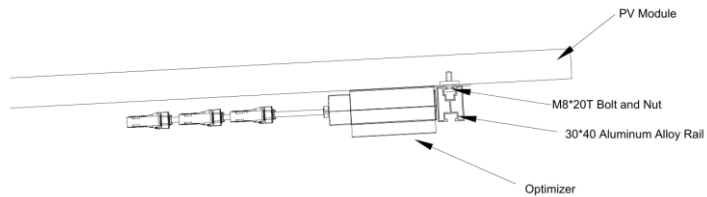
The position of the optimizer is recommended to be placed on a bracket with one of the two PV modules in the middle ± 50mm position, which can connect module 1 and module 2, without additional cables, otherwise additional cables need to be added.
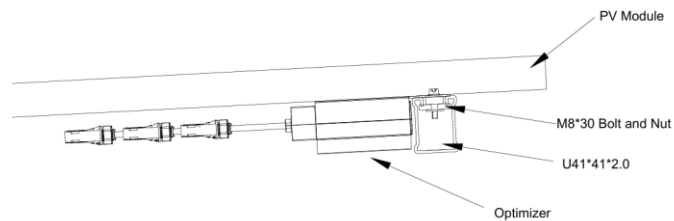

6.2 Determine the installation method

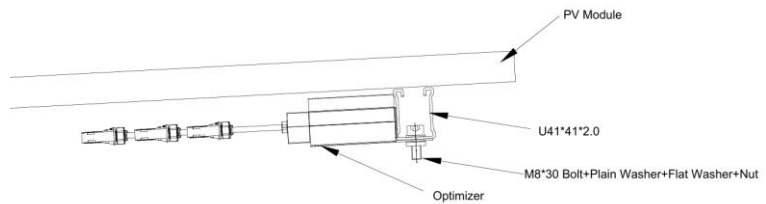| **Color steel tile roof installation method** **Required material: M8*20T bolt + nut**	PV Module M8*20T Bolt and Nut 30*40 Aluminum Alloy Rail Optimizer
Cement flat roof installation method 1 **Material required: M8*30 bolt + rotor nut**	PV Module M8*30 Bolt and Nut U41*41*2.0 Optimizer
Cement flat roof installation method 2 **M8*30bolt+spring-pads+flat pads+nut**	PV Module U41*41*2.0 M8*30 Bolt+Plain Washer+Flat Washer+Nut Optimizer

6.3 Electrical connections

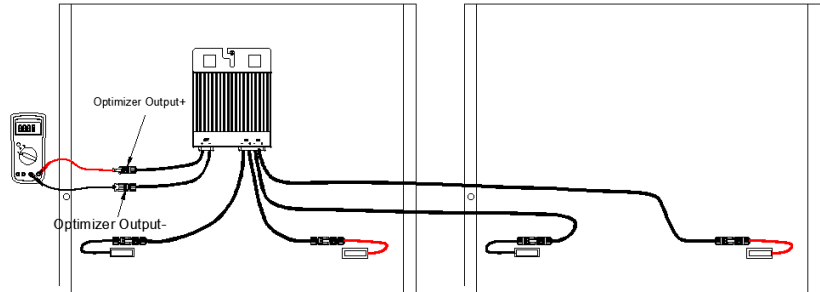**1.** Measure the component voltage and detect that the voltage is normal.
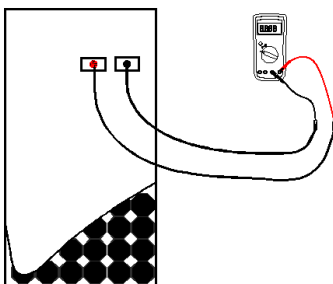
2. Connect the component to the optimizer.

6.4 APP operation and network configuration
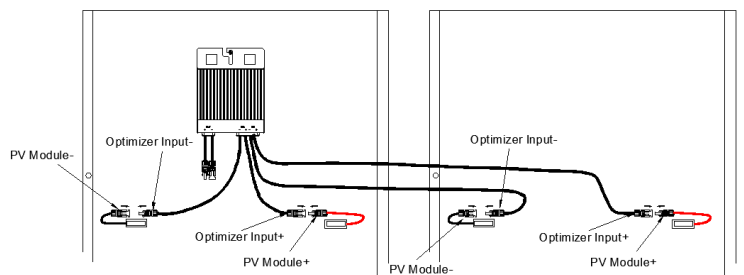
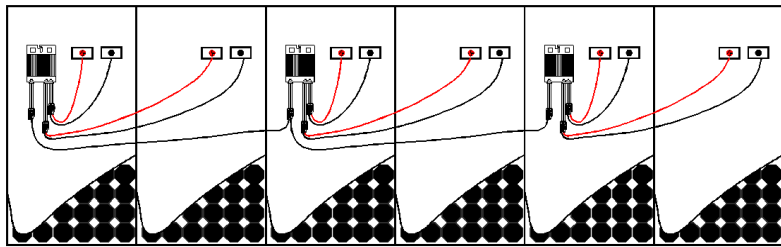**Detect the optimizer output voltage**

Check whether the optimizer voltage is normal, and the output voltage is normal at 1.2V±10% (if the business has been turned off and turned off, the output voltage of the optimizer = 2 * component open circuit voltage * 0.95).

**Connect the optimizers in turn**

According to the design requirements, connect the optimizers to each other one-to-one.

Test string voltage
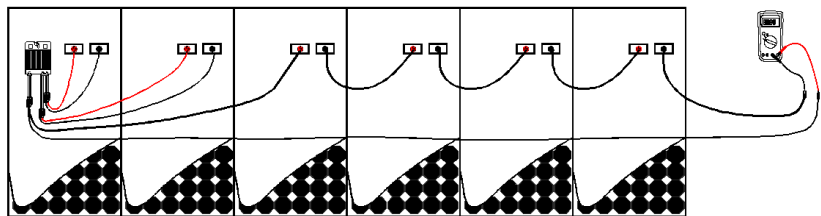
Check whether the voltage of the string is normal, voltage = number of optimizers * 1.2 is normal (if the business has been contacted to close the shutdown state, the string voltage = component open circuit voltage * 0.95), there is a part of the string installation optimizer, the voltage value please read the "SP4-1600W-A User Manual" in detail.
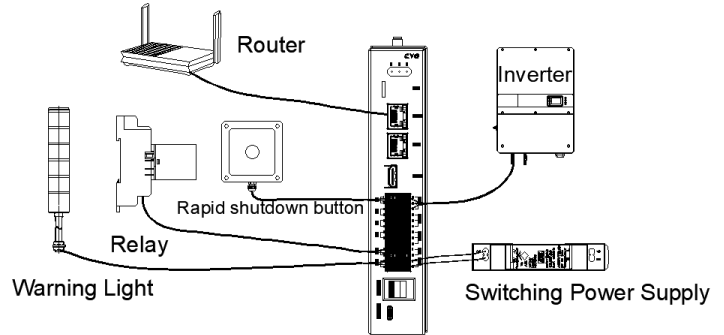
Connect to the inverter
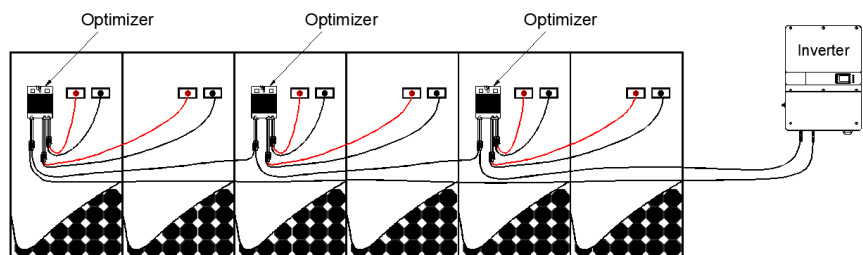
After the string voltage test is normal, the remaining outputs in a string are positively connected to the positive of the inverter, and the output is negative to the negative of the inverter.

6.5 Gateway powered on and connected to the Internet

To power on the Wi-SUN gateway and connect it to the network, see the Wi-SUN Gateway Quick Installation Manual or Wi-SUN Gateway User Manual for gateway installation.
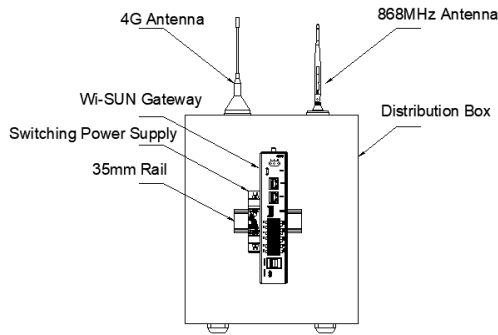
Schematic diagram of gateway installation   Schematic diagram of gateway wiring

6.6 APP operation and network configuration

Download APP

Method 1

iPhone users: Search for "SolarPilot Smart PV" in the App Store"

Icon

Method 2

Android mobile phone users: search for "SolarPilot smart PV" in the Android app market
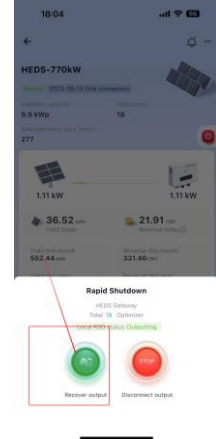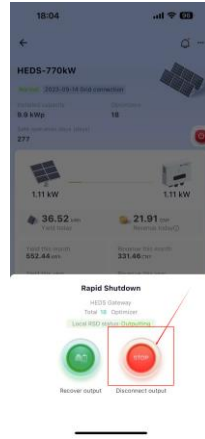

Android version   IOS version

Follow the gateway operation process to complete the network configuration

For more information, see the gateway operation process 《 SP4-WiSUN-GW User Manual》or《SP4-WiSUN-GW Quick installation manual》.

6.7 Resuming Quick Break (Very Important)

Resume the quick-break operation	Quick-break test	Resume the quick-break operation
You need to send a quick break recovery command on the APP, otherwise the PV system will not be able to operate normally (it will be turned off by default).	After 5 minutes, a quick shutdown command is issued to observe whether the inverter stops working.	After 5 minutes, a quick shutdown and recovery command is issued to observe whether the photovoltaic system is running and working.

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