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# Instructions for checking, installing, configuring, monitoring and maintaining Optimizer



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## Instructions for checking installation, configuration, Monitor and maintain Optimizer.

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### 1. Instructions for using Physical Layout Template:

- Need to prepare: Print "Physical Layout Template" to mark the actual position and QR code of PV module (including 06 rows and 10 columns)

Follow

Post

Sheet \_\_\_ of \_\_\_ To sheet \_\_\_ ↑ Physical Layout Template

Mark for north	Customer	Installer	Panel	Inverter	Optimizer	Issue: 02				
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>										
Column	A	B	C	D	E	F	G	H	I	J
Row	1	Lable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		Alias								
	2	Lable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		Alias								
	3	Lable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		Alias								
	4	Lable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		Alias								
	5	Lable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		Alias								
	6	Lable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		Alias								

To sheet \_\_\_ ↓

Note:

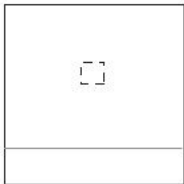
- Before fixing the Optimizer to the PV module, be sure to remove the QR code in front or after the Optimizer and paste it into the Physical Layout Template.

### Recommended

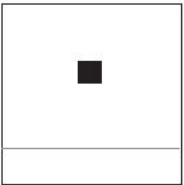
- How do I convert my wireles
- Help me open the port
- use fusionsolar
- WLAN
- n






- If the actual location does not have PV module panels, leave that position blank as shown below.



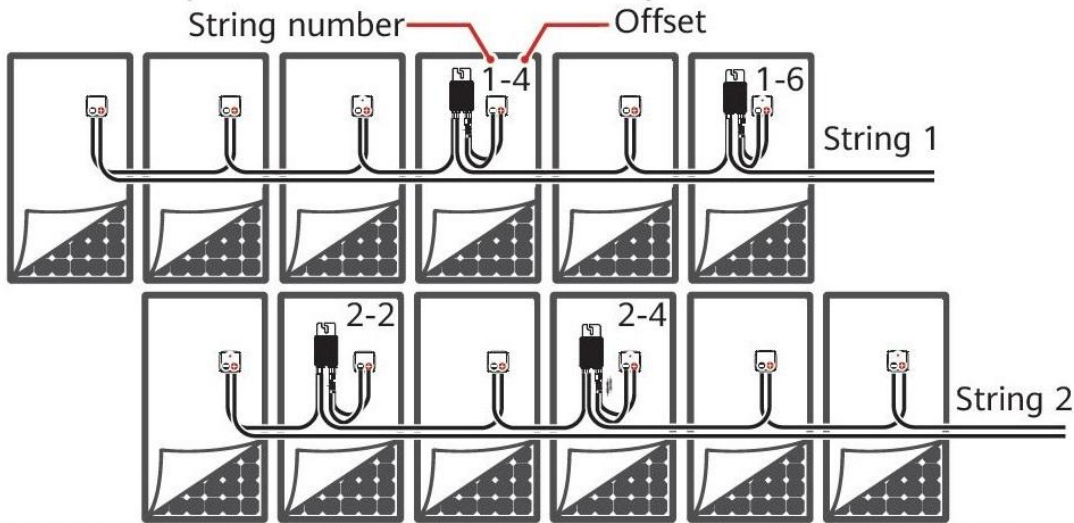
- If the actual location has a PV module, but the Optimizer is not installed, highlight that location as shown in the figure below.



- If the actual location has a PV module and has an Optimizer installed, remove the QR code on the back of the Optimizer, then paste and mark it as shown in the picture below (note that the QR code image is not pasted out of the specified frame). For example, 1-6 means PV string number 1 and PV module number 6.

E	F	G
		
	1-6	

Example 1: PV string is aligned and <= 10 PV modules



Sheet 1 of 1 To sheet      Physical Layout Template

Mark	for north	Customer	Installer	Panel	Inverter	Optimizer	Issue: 02
1	Lable	■	■	■	■	■	■
	Alias			1-4		1-6	
2	Lable	□	■	■	■	■	■
	Alias		2-2	2-4			
3	Lable	□	□	□	□	□	□
	Alias						
4	Lable	□	□	□	□	□	□
	Alias						
5	Lable	□	□	□	□	□	□
	Alias						
6	Lable	□	□	□	□	□	□
	Alias						

To sheet     

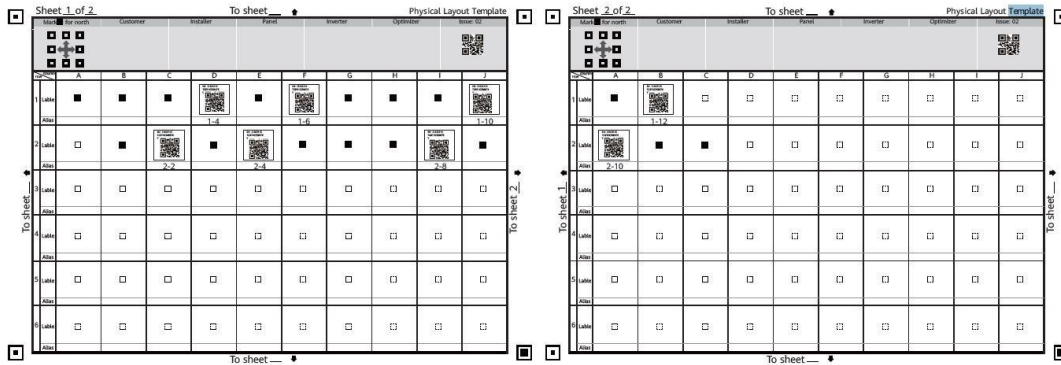
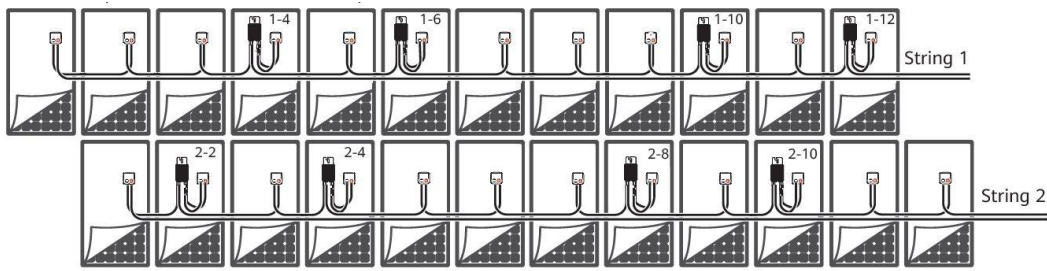
Example 2: PV string is not aligned and on the same physical layout:

Sheet 1 of 1 To sheet      Physical Layout Template

Mark	for north	Customer	Installer	Panel	Inverter	Optimizer	Issue: 02
1	Lable	■	■	■	■	■	■
	Alias			1-4			
2	Lable	■	■	■	■	■	■
	Alias	2-2	1-6				
3	Lable	■	■	■	■	■	■
	Alias	2-4					
4	Lable	□	□	□	□	□	□
	Alias						
5	Lable	□	□	□	□	□	□
	Alias						
6	Lable	□	□	□	□	□	□
	Alias						

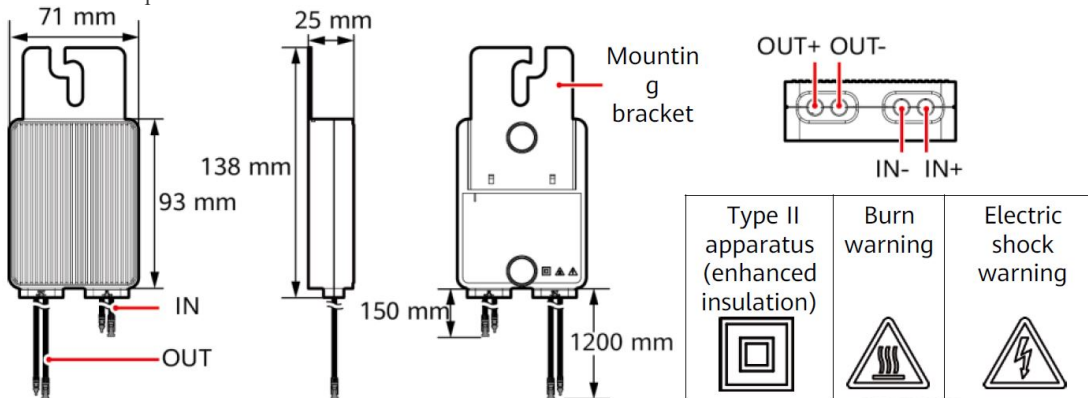
To sheet

Example 3: PV strings are aligned and > 10 PV modules (1 not in the same Physical layout)



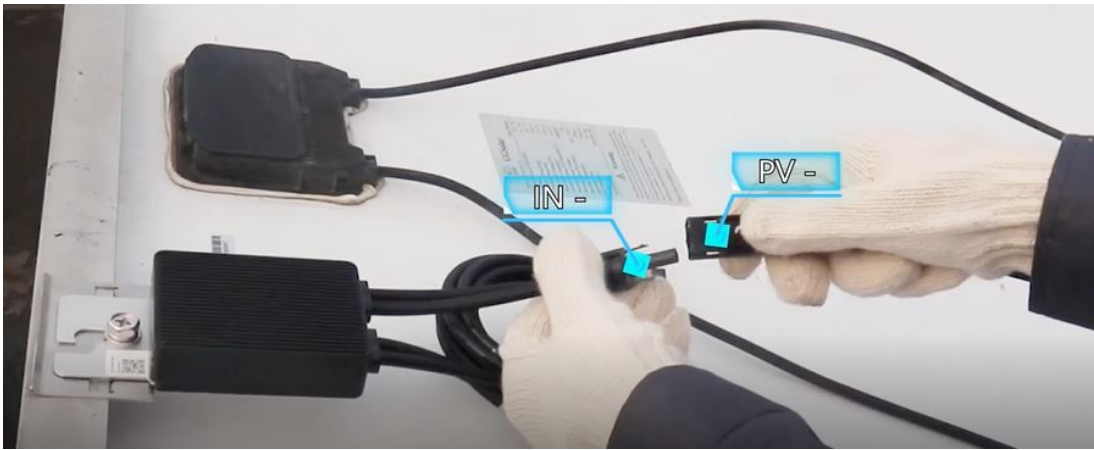
2. Optimizer installation instructions:

- Structure of Optimizer:



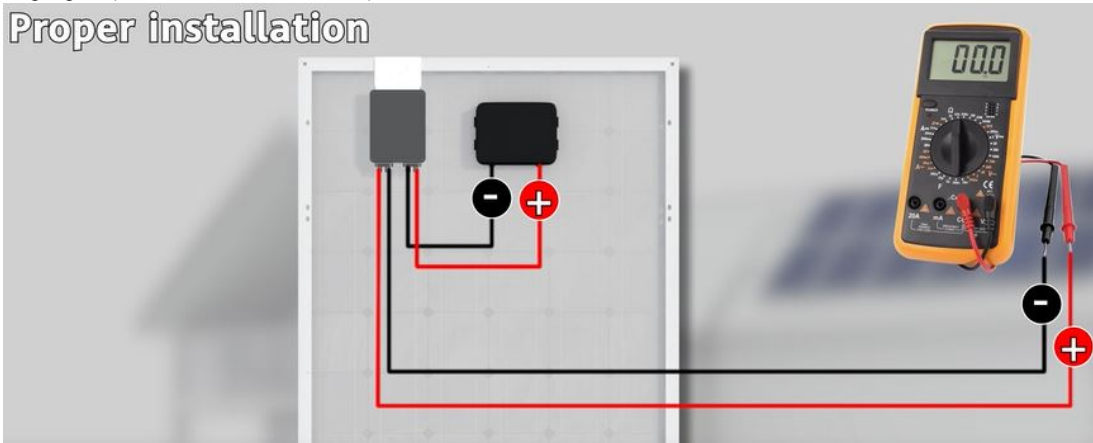
- Optimizer input port: connect to PV module.





+ After the Input port is connected to the PV module, use a multi-meter to check the resistance of the Optimizer output port (scale 10kOhm or 100kOhm).

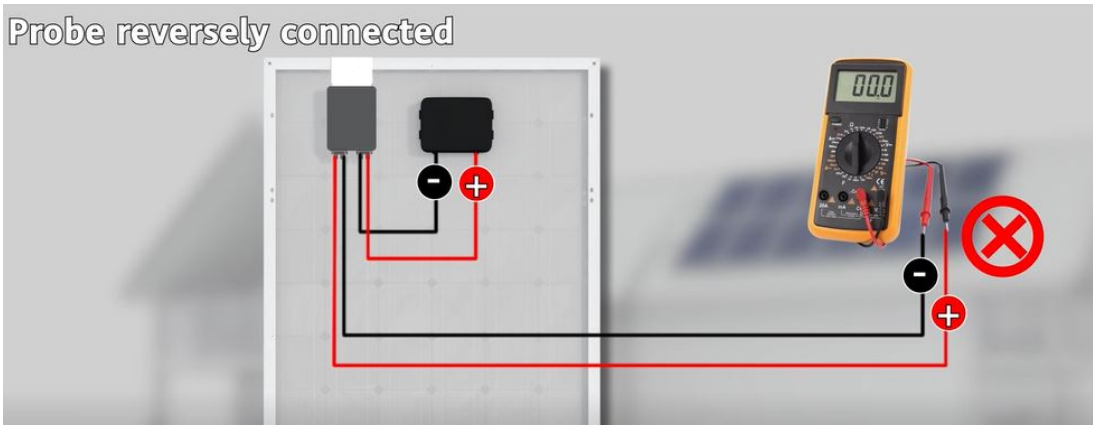
### Proper installation



+ If the measured value is between 0.9 and 1.1 kOhm, the Optimizer works fine.

+ If the measured value is  $< 0.9$  kOhm, the measurement direction is in reverse.

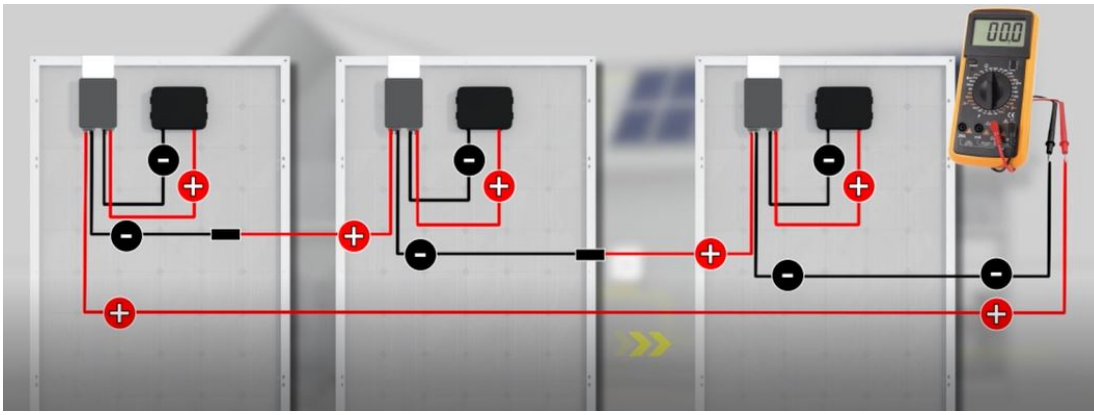
### Probe reversely connected



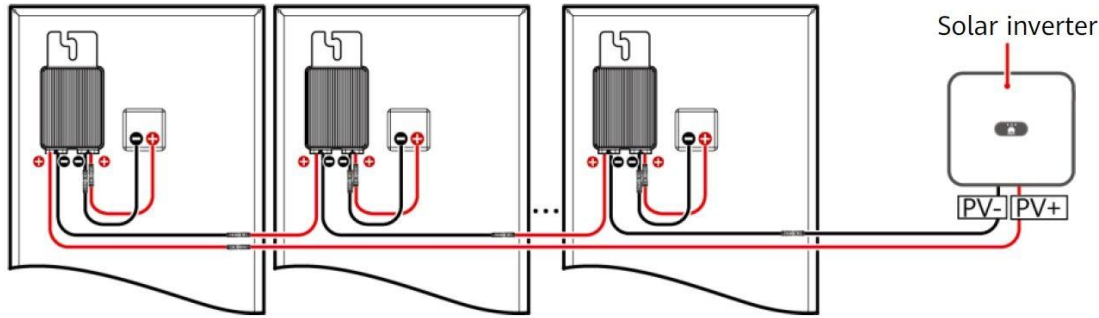
+ If the measured value is  $> 1.1$  kOhm, one of the following cases may occur: "Optimizer Input port is not connected to PV module" or "mismatched Optimizer Output port with PV module" or "Radiation is low or at night" or "Optimizer has a loss"

- Optimizer output port: connect to the Output port of the next Optimizer or connect to the inverter or connect to the PV module next to it.

+ Check the resistance of the Optimizer chain before connecting to the inverter. For example, the Optimizer series consists of 10 Optimizers, the resistance measurement value will be from 9kOhm to 11kOhm.

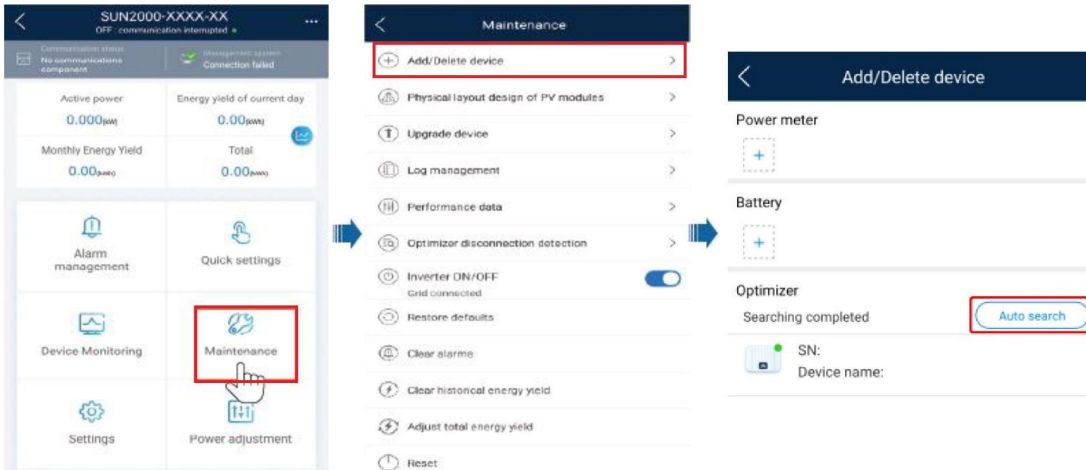


+ Connect the Optimizer string to the PV input of the inverter.



**3. Connect the Optimizer to the inverter:**

- Use Fusionsolar/SUN2000 app to connect locally to the inverter by USB WLAN or by USB data cable.
- Log in with Installer user, select **Maintenance/ Add device/** At Optimizer select Auto Search to connect inverter with Optimizer.



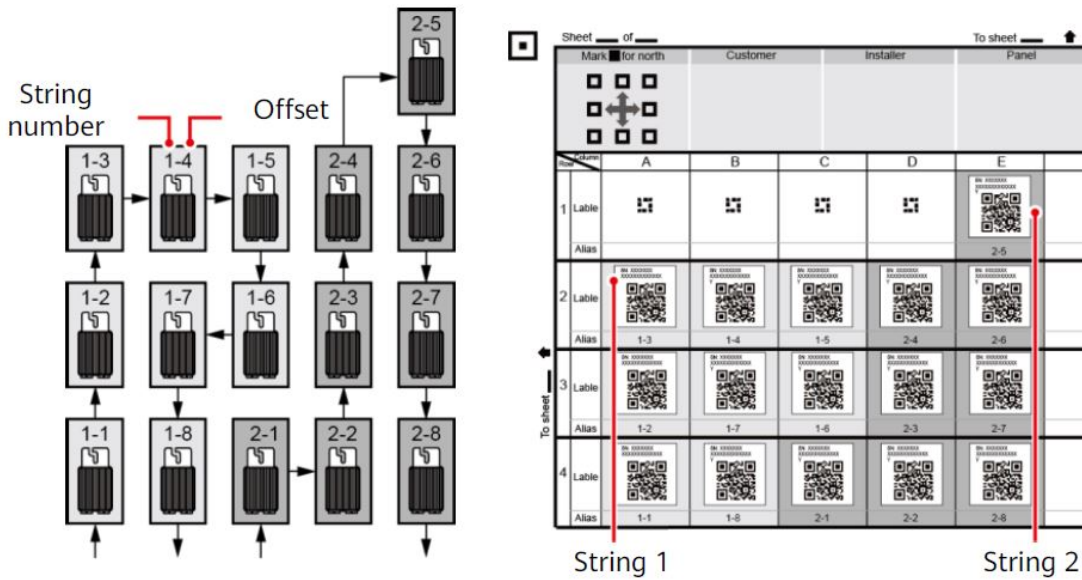
- Check the number of Optimizer after connecting with the actual number of optimizer.

**4. Create Physical layout to monitor PV module via Optimizer:**

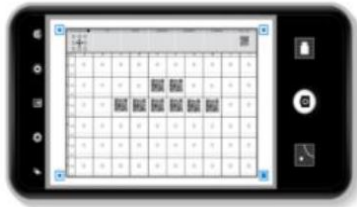
**4.1. Method 1: Create Physical layout using local SUN2000 apps**

**4.1.1 Create Physical layout automatically (by SUN2000 App):**

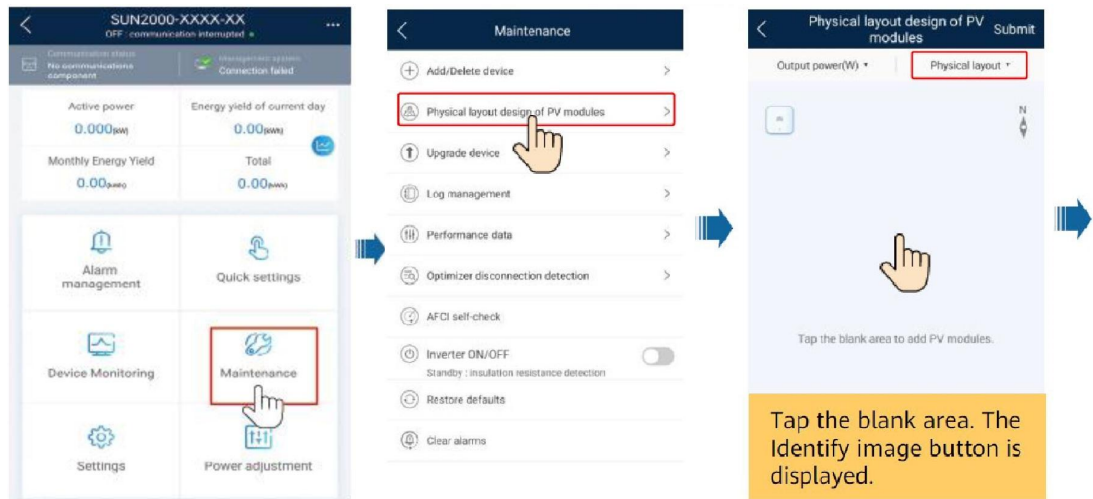
- Check the Physical layout again after pasting the QR code and marking the position of PV string - PV module (in fact, there can be more than 1 Physical layout).



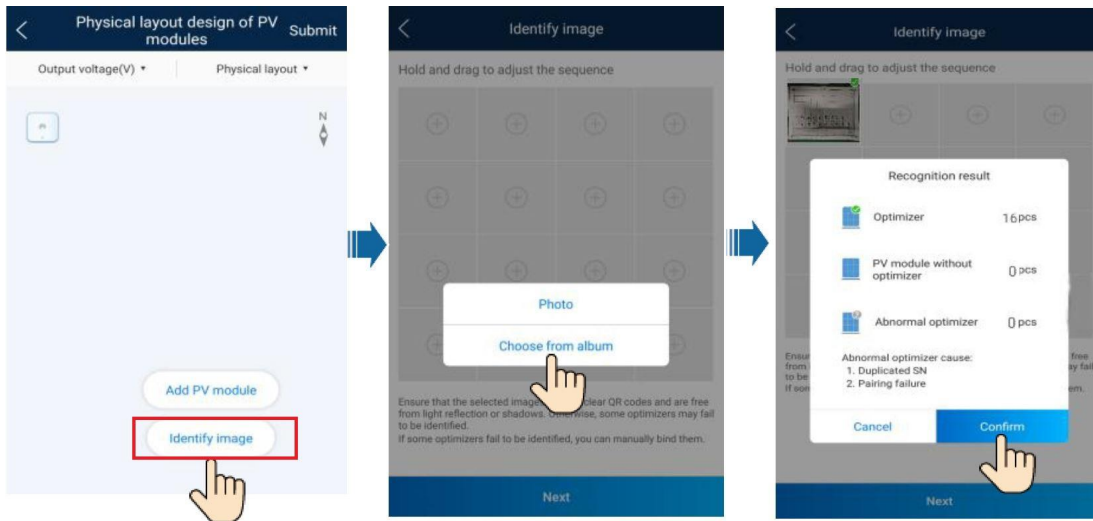
- Use your phone to take a picture of each Physical layout.
- + Keep the phone parallel to the layout.
- + Capture the entire layout, without missing any corners.
- + Paste the QR code within the allowed frame limit, do not paste it out of the frame.



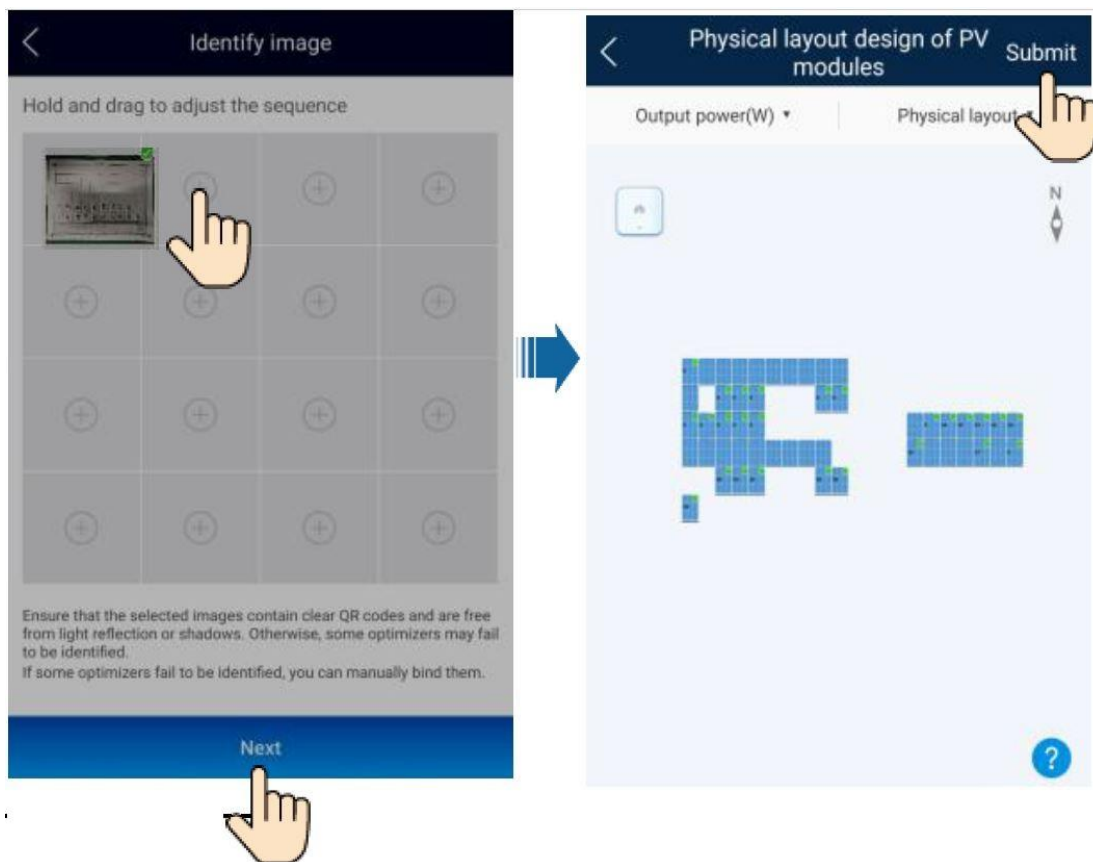
- Use Fusionsolar/SUN2000 app to connect locally to the inverter by USB WLAN or by USB data cable. Log in with the Installer user, select **Maintenance/ Physical layout design of PV modules/ Physical layout** .



- Select **Identify image/ press (+)** to load Physical layout image (load 1 image at a time)/ **Confirm** and compare with actual number of Optimizer .



- If more than 1 Physical layout, continue to select **Identify image/** press (+) to continue loading image/ select **Next and Confirm.**



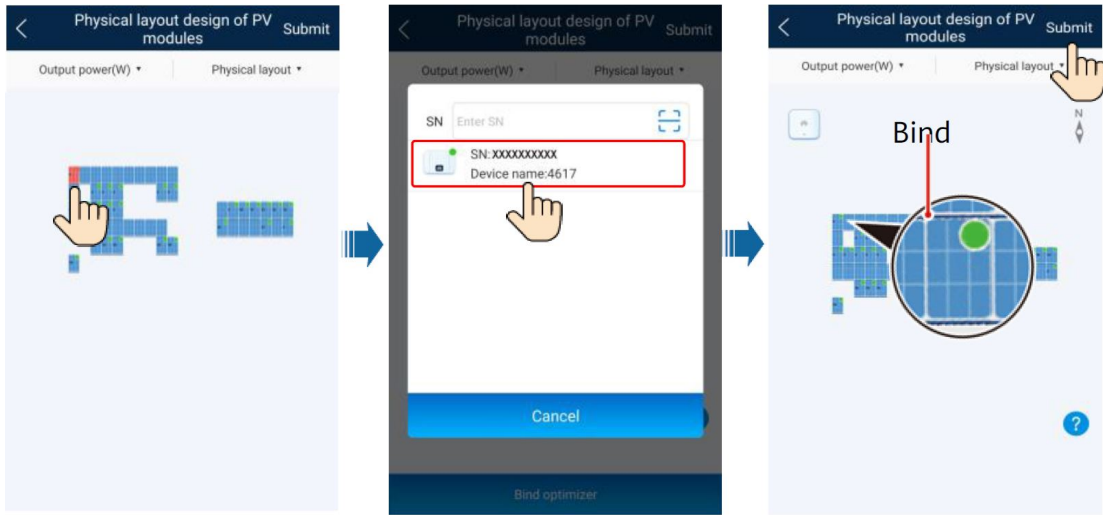
- Click **Submit** to finish creating Physical layout.

- If the QR code is blurred or torn, making the QR code unrecognizable, we can assign the Optimizer to the corresponding PV panel.

+ At **Maintenance / Physical layout design of PV modules / Physical layout**, click on the position of PV module you want to assign Optimizer / Select Optimizer with the corresponding SN.

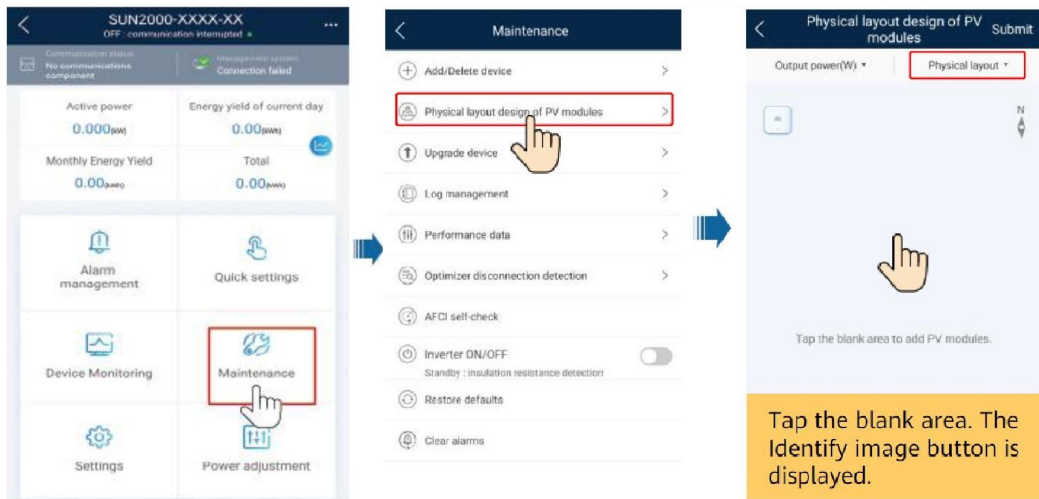
+ Repeat with other PV modules, click **Submit** to complete.



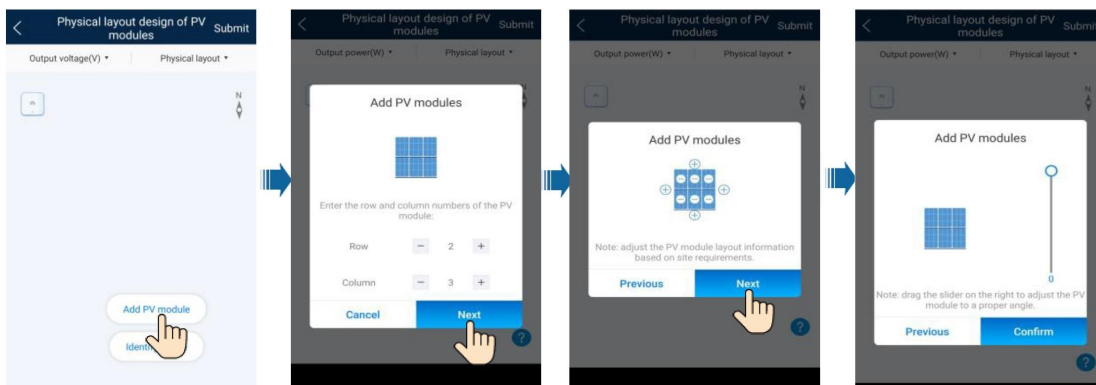


**4.1.2. Create physical layout manually (with SUN2000 App):**

- Use Fusionsolar/SUN2000 app to connect locally to the inverter by USB WLAN or by USB data cable. Log in with the Installer user, select **Maintainance/ Physical layout design of PV modules/ Physical layout** .

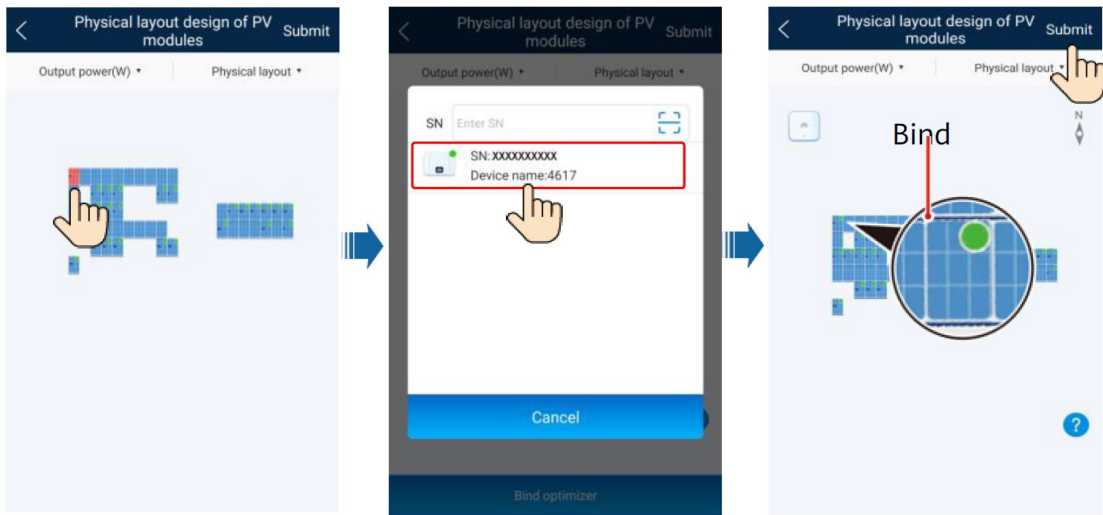


- + Select **Add PV module/** enter the row number and column number of PV module, then **Next**.
- + Next, we use (+) or (-) to add PV module with the same shape and actual position, then **Next**.
- + Next, **adjust the tilt angle** for PV module (default is 0), then **Confirm**.



- After finishing creating the Physical layout, next we will assign the Optimizer to each PV module corresponding to the actual installation.

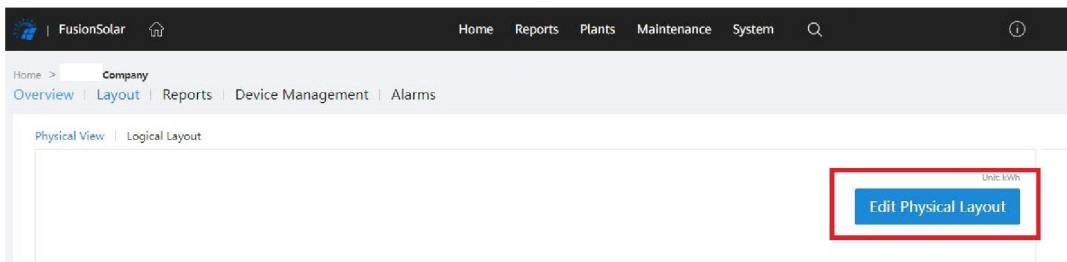
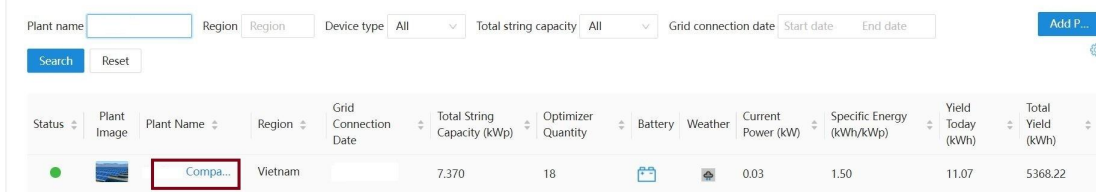
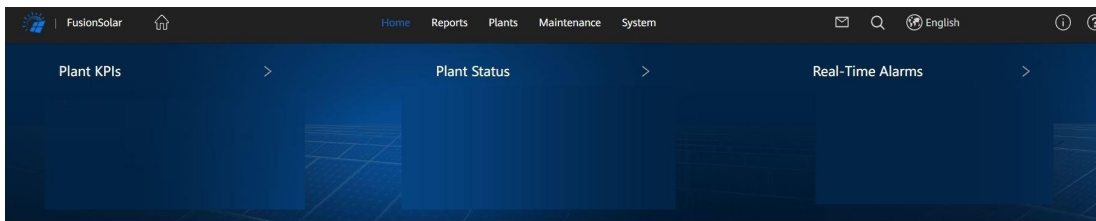
- + At **Maintainance / Physical layout design of PV modules / Physical layout**, click on the position of **PV module** you want to assign **Optimizer / Select Optimizer** with the corresponding **SN**.
- + Repeat with other PV modules, click **Submit** to complete.



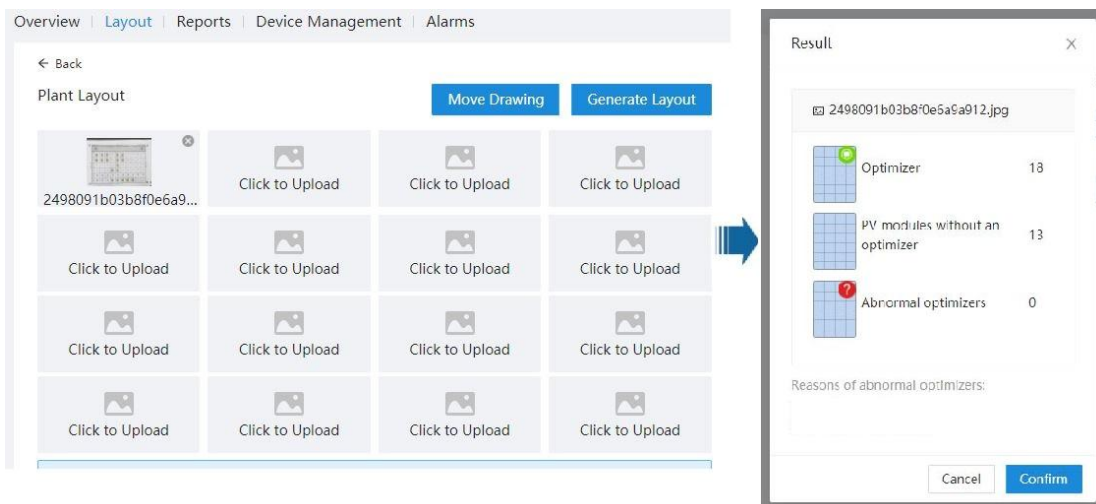
4.2. Method 2: Create Physical layout using Fusionsolar WebUI:

4.2.1. Automatic physical layout creation (Fusionsolar WebUI):

- Log in to your Fusionsolar account at <https://sg5.fusionsolar.huawei.com>, after logging in, select the project/ Layout/ Physical view/ Edit Physical layout.

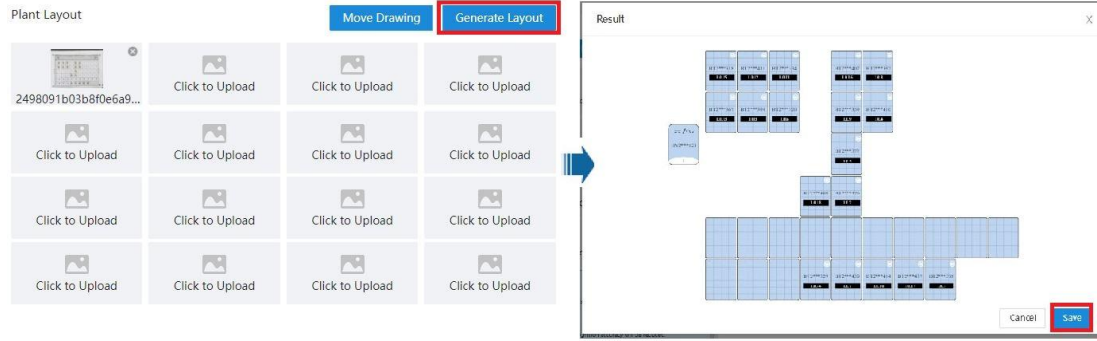


- Click “ Click to Upload ” to upload the Physical layout image. After successfully uploading the image, the system will automatically determine the number of Optimizer ( Confirm and compare with the actual number of Optimizer).

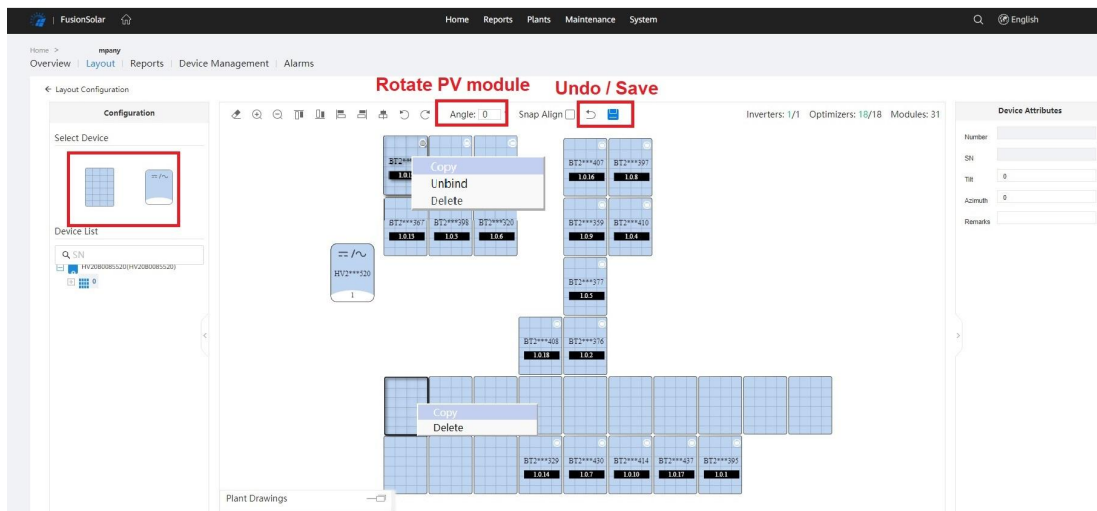
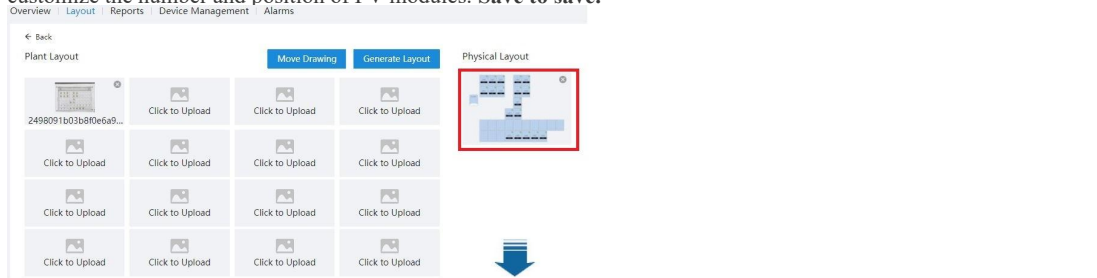


- If there are more than 01 physical layout images, continue to select Click to Upload to upload images (maximum 16 images (4x4) equivalent to the actual size of 40 rows x 24 columns PV module).

- After downloading all Physical layout images, click **Generate Layout** to let the system create a composite physical layout.

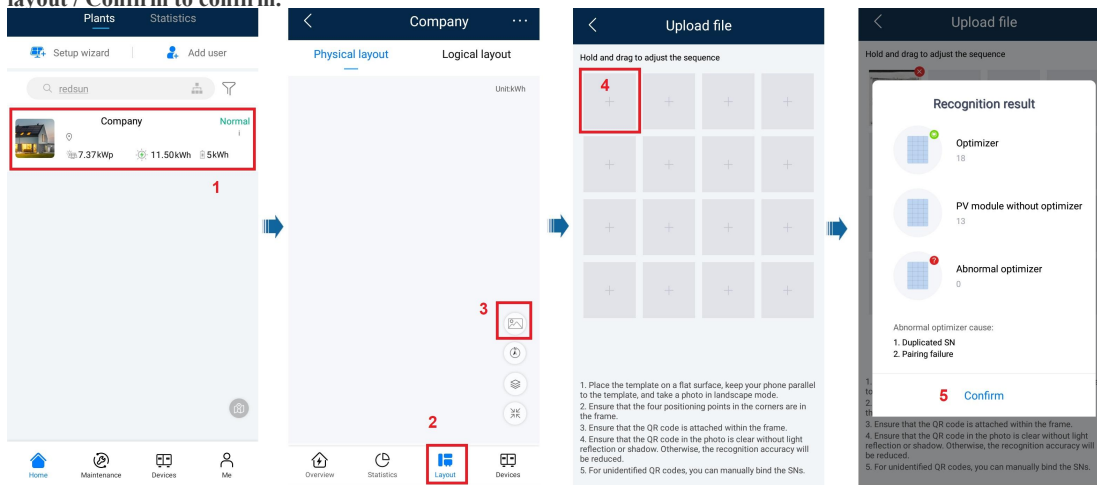


- In case the PV module position is wrong compared to reality or the PV module is moved, we can custom reset the PV module position accordingly .  
 + Click on Physical layout, can **drag, drop, copy, paste PV module , Bind/Unblind** when replacing Optimizer to customize the number and position of PV modules. **Save to save.**

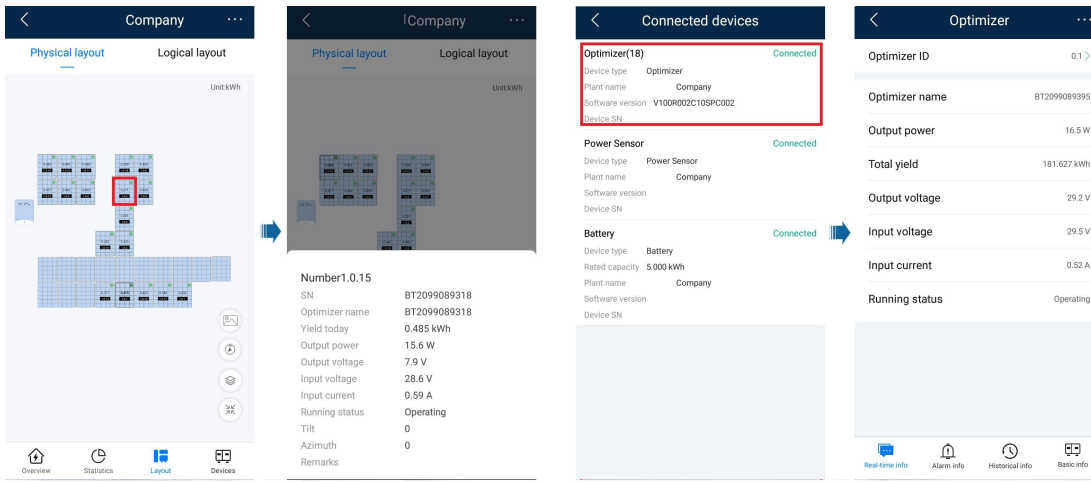


**4.2.2. Automatic physical layout creation (Fusionolar app):**

- Log in to your Fusionsolar account, select the corresponding Plant / Layout / Download each image Physical layout / Confirm to confirm.

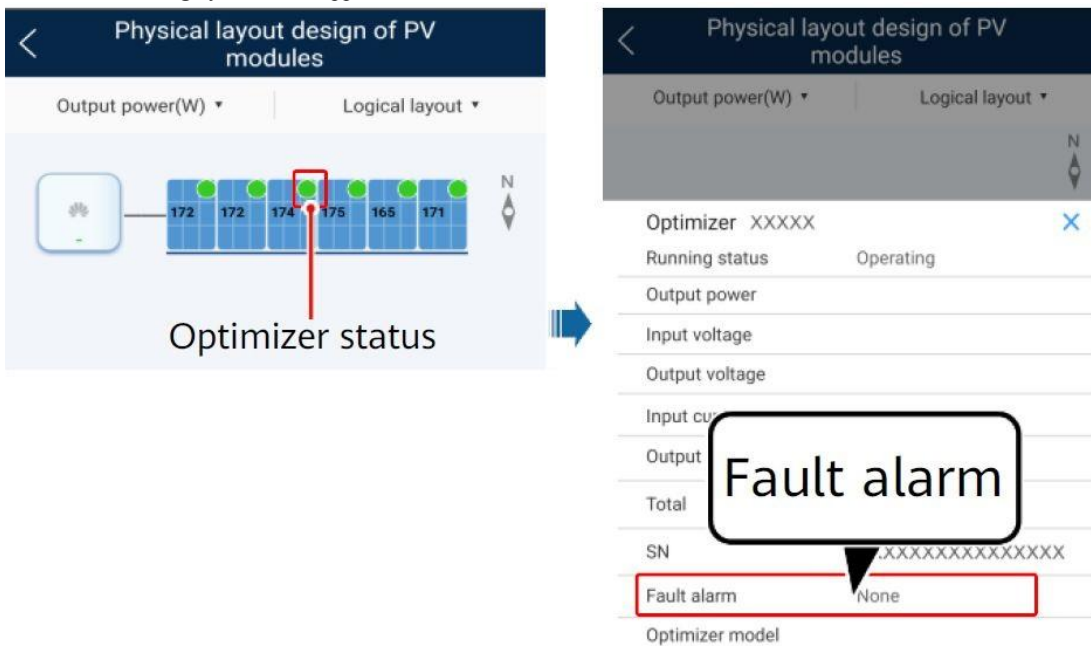


- After completing the image loading, the Physical layout will be completed. You can click on each Optimizer to check the status and operating parameters.



**5. Optimizer monitoring and troubleshooting:**

- On-site monitoring by SUN2000 app:

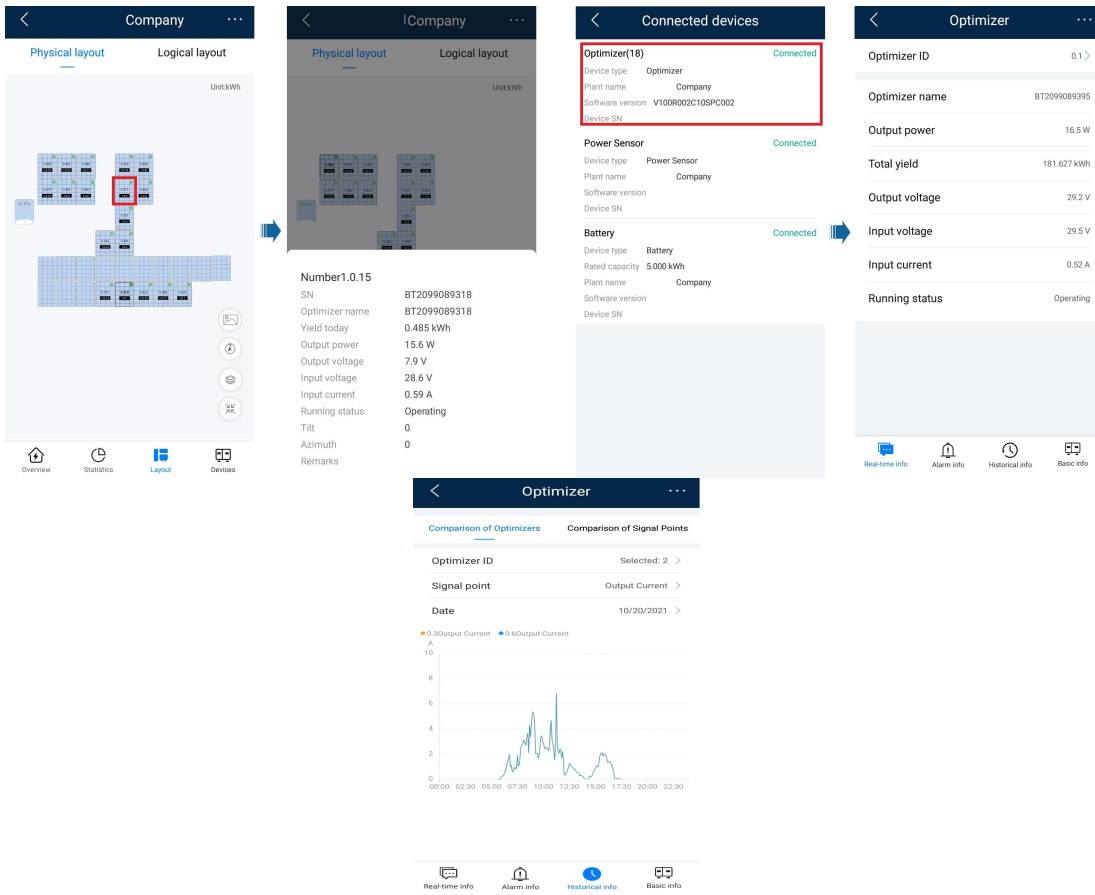


- + Green indicator light: optimizer works normally.
- + Gray indicator: optimizer offline (normally when it's dark or need to auto search again if it's light).
- + Red light: Optimizer reports an error.

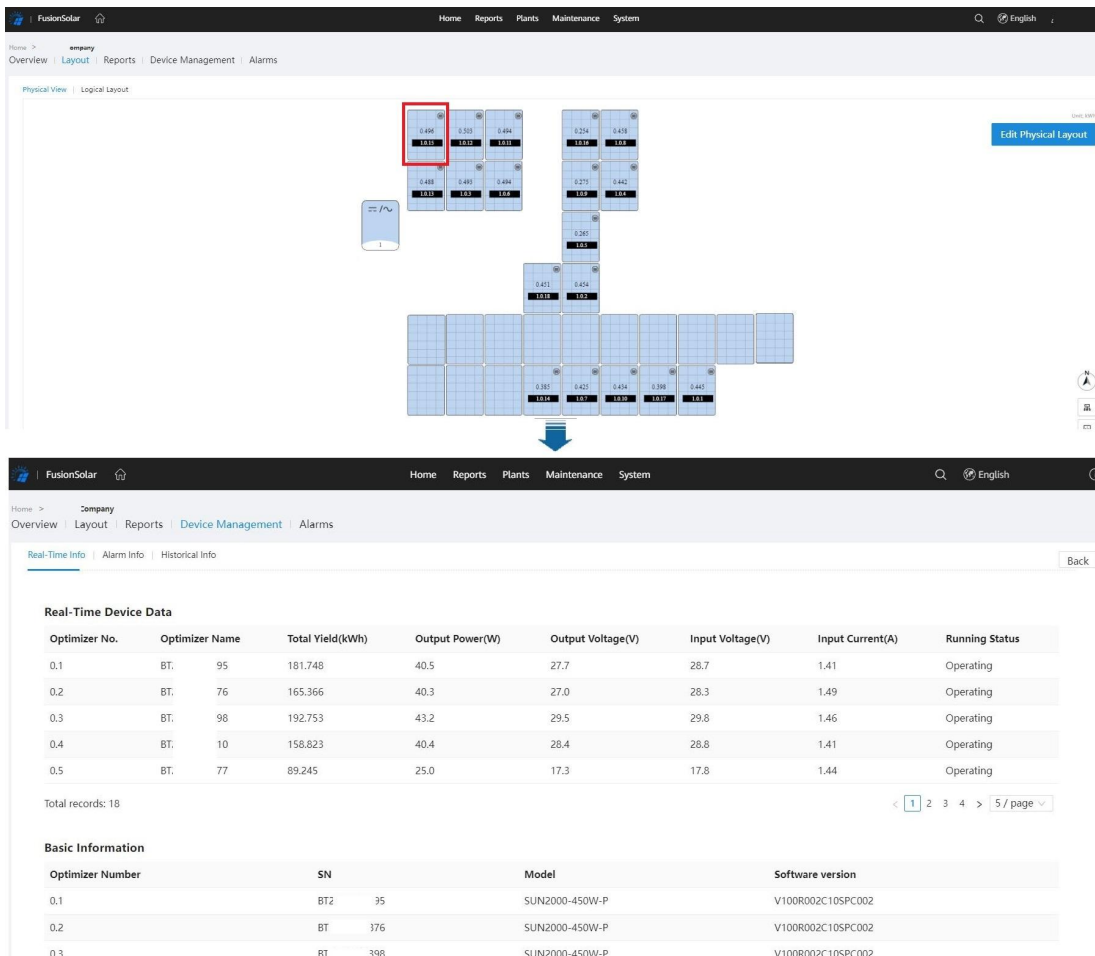
Error name	Reason	Treatment
Input Overvoltage – High input voltage	PV module voltage is greater than the specified input voltage of the Optimizer	Check if the PV module's open circuit voltage Voc exceeds 80VDC
Overtemperature – Overheating	Ambient temperature exceeds the threshold or the Optimizer installation is not in accordance with the recommendations.	1. Check the ventilation and the trunogwf ambient temperature at the place where the Optimizer is installed. Need to improve if conditions are not met. 2. If environmental conditions are met, contact Huawei technical department.
Internal hardware fault – Hardware fault	Optimizer is installed incorrectly or has been corrupted.	Contact Huawei technical department.

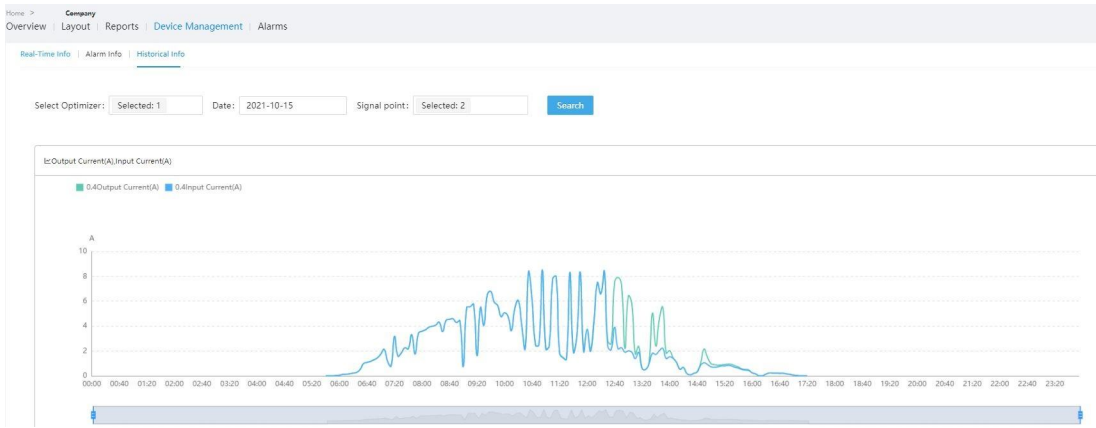
- Remote monitoring using Fusionsolar app:

- + Real-time info: parameters when operating.
- + Alarm info: error information.
- + Historical Info: input-output voltage chart, input-output current, power.
- + Basic info: device information.



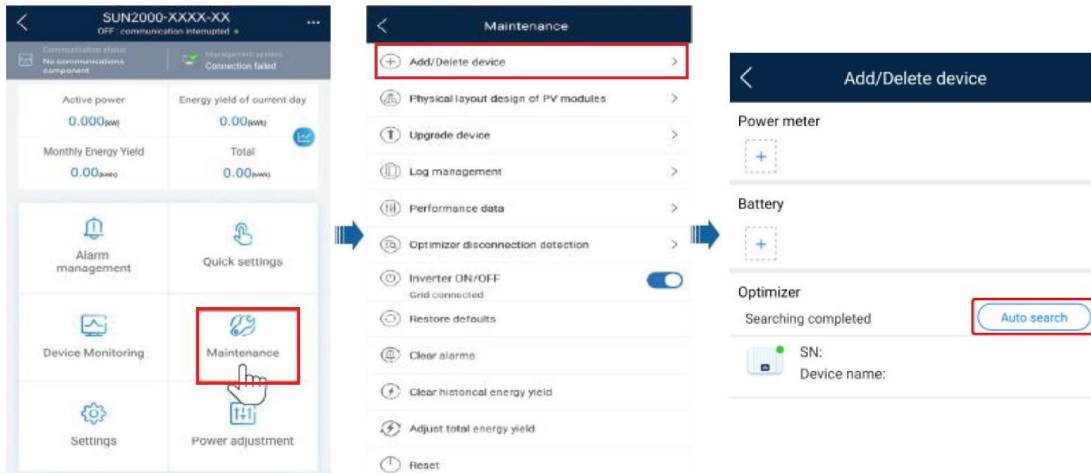
- Remote monitoring by Fusionsolar WebUI: Go to Layout, click on a PV module with Optimizer:
  - + Real-time info: parameters when operating.
  - + Alarm info: error information.
  - + Historical Info: input-output voltage chart, input-output current, power.



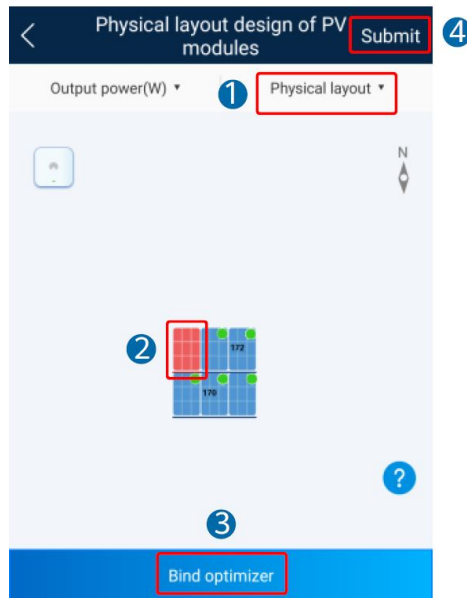


**6. Replace Optimizer in case the Optimizer is damaged:**

- Turn off the inverter according to the recommended procedure in the user manual.
- Then, remove the Faulty optimizer from the PV module (note the labor protection).
- Replace the new Optimizer and check the Output port resistance of the new optimizer.
- Use the SUN2000 app to connect locally to the inverter, log in with the Installer user, select **Maintenance / Add device / At Optimizer click Auto Search to connect the new Optimizer to the inverter.**



- Then click on the corresponding PV module on the Physical layout, and the new Bind (link) Optimizer (by Serial Number).



Please contact Vietnam Solar Service team at [apsupport@huawei.com](mailto:apsupport@huawei.com) for assistance.

Huawei Vietnam Solar Service hotline contact: +84967799834 (Mr.Thanh)  
 +84964854806 (Mr.Eng)  
 +84393786230 (Mr.Minh)

THANK YOU !

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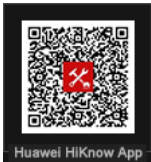
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