

Photovoltaic System Simulation Software

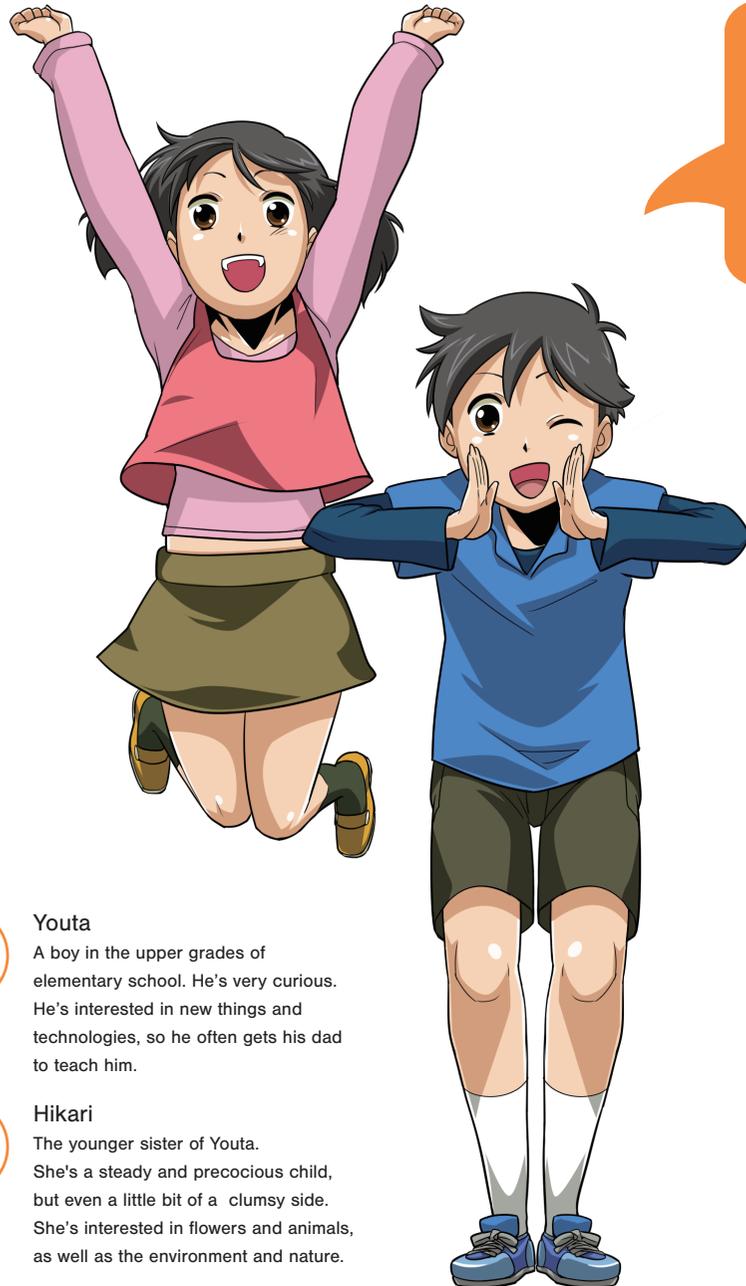
# Solar Pro

Trial version

Operation manual

We'll show you  
how to use it in  
an easy to  
understand way!





#### Youta

A boy in the upper grades of elementary school. He's very curious. He's interested in new things and technologies, so he often gets his dad to teach him.



#### Hikari

The younger sister of Youta. She's a steady and precocious child, but even a little bit of a clumsy side. She's interested in flowers and animals, as well as the environment and nature.

Thank you for downloading to  
**Solar Pro trial version.**



We will introduce "Making the plan on the roof top", "Generating capacity simulations", "Report Results", here's a series of works up to in this document.



The "Map service function" allows you to read maps from the internet and use them as a sketch. Note that the "Map service function" is not available in the trial version.



If you don't download the trial version yet, please download it for free.  
You can enjoy high-precision simulations.

**30 day free trial !**

**Solar Pro**



Search!

# Introduction

Photovoltaic System Simulation Software

# Solar Pro®

Achieving Optimal Design  
with High Technological Capability

## features

### 1. Accurate simulation of shadow effects

Only a partial shadow of the module will significantly reduce the amount of power generated by the system. "Solar Pro" provides accurate simulations that take into account the effects of shadows on a modular basis.

### 2. For complex system designs

You can freely set the installation method such as flat or wall installation, tilt of the array, installation direction, etc. Even in complex systems, you can consider installation methods that maximize the amount of power generated.

### 3. Reflected light simulation

Solar Pro can be used for a wide range of applications, including simulating power generation and reflected light.

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# 1. Create new



So let's start now!  
Start Solar Pro.(Figure 1) In the upper left of the screen, select "File"->"New".



When the "Wizard" window (Figure 2) is displayed, click "Cancel" to close the window.

Figure 1

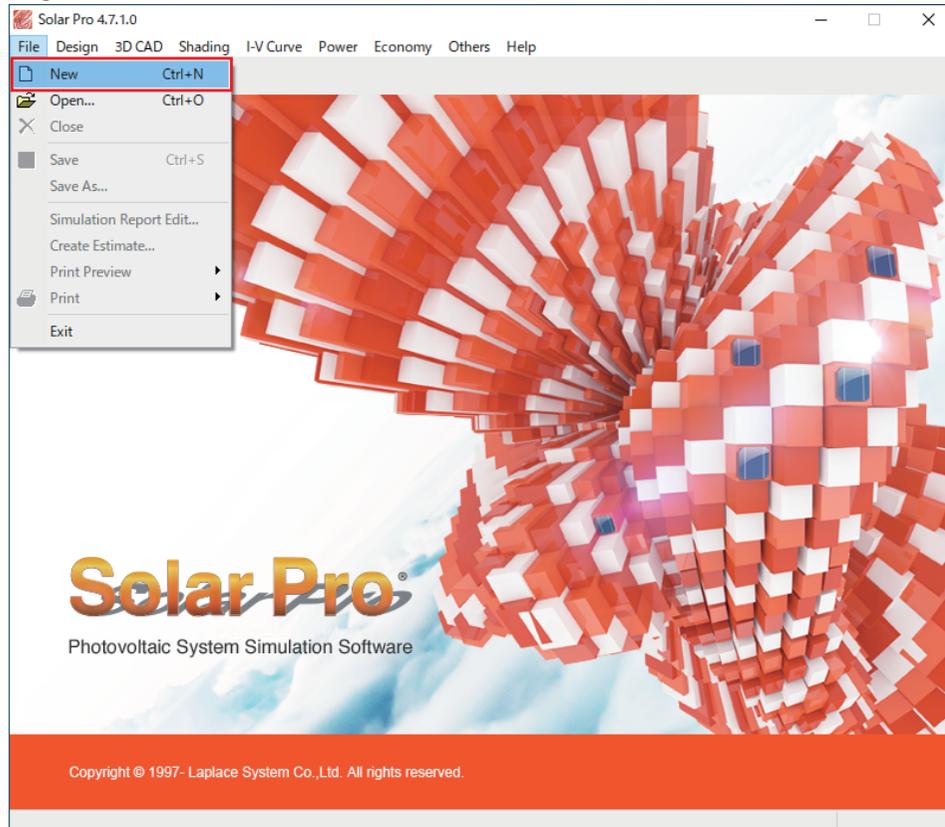
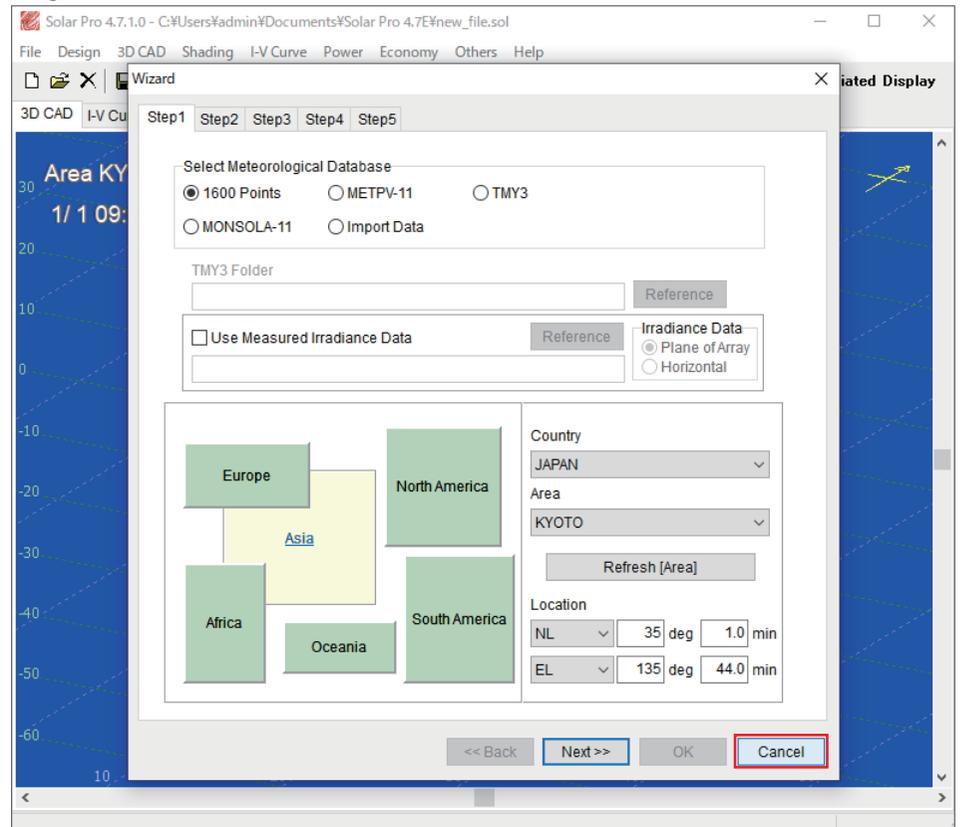


Figure 2



## 2. Selection of solar radiation data and setting of installation location



Select the solar radiation data and location for the simulation. "3D CAD"->"Location" in menus, and select (Figure 1) the "Location" window Open (Figure 2).



Check the setting items (Figure 2).

- ① [Select Meteorological Database] :1600 Points
- ② [Map] : Asia
- ③ [Country] : JAPAN  
[Area] : KYOTO

When you have finished making settings, select "OK".

Figure 1

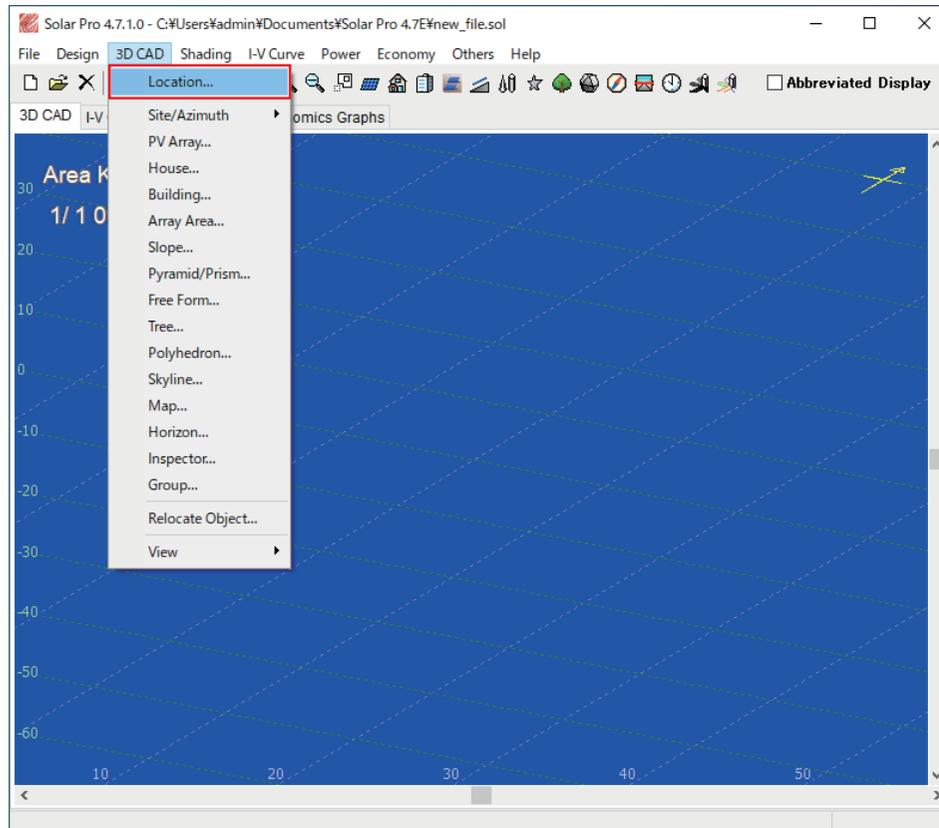
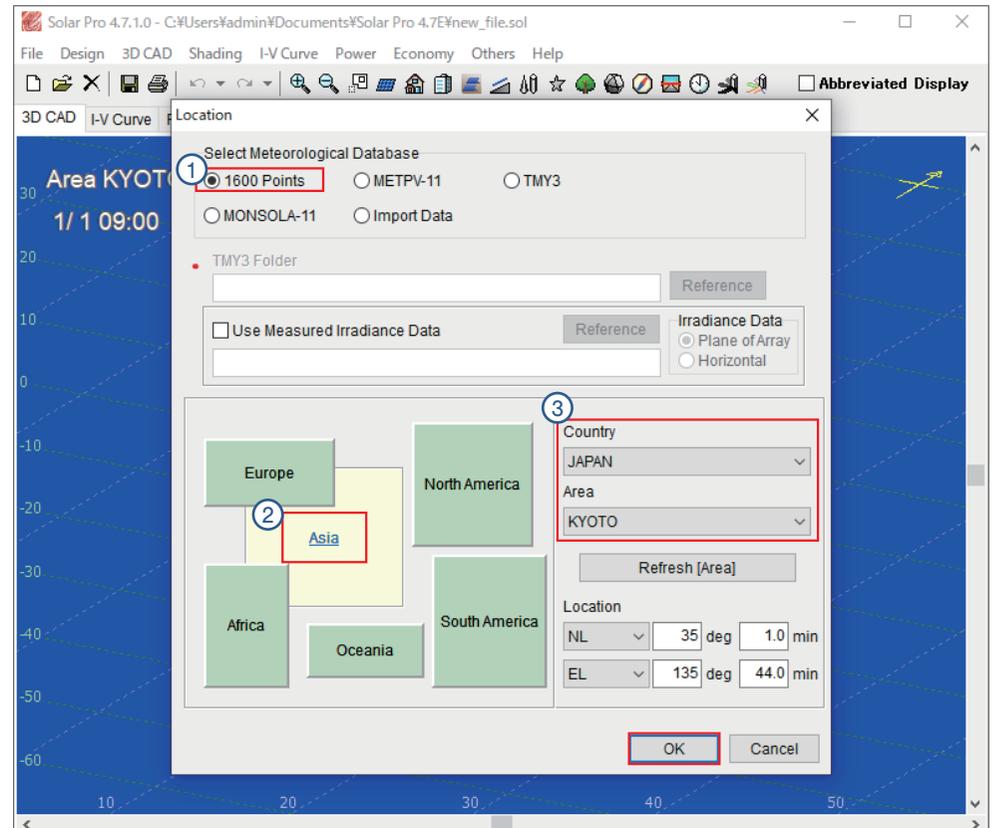


Figure 2



### 3. Input information of the house on with the PV array is placed



Create a house on 3D CAD. Select "3D CAD" - "House" (Figure 1). In the "Input Name" entry window (Figure 2) that select "OK" to display the "House" window (Figure 3).



Check the setting items (Figure 3).  
① **[Input Method]** : Roof Plan Input  
② **[Height]** : 6.000m  
**[Eave 1]** : 0.600m  
**[Eave 2]** : 0.600m  
③ Click "Roof Plan Setting".

Figure 1

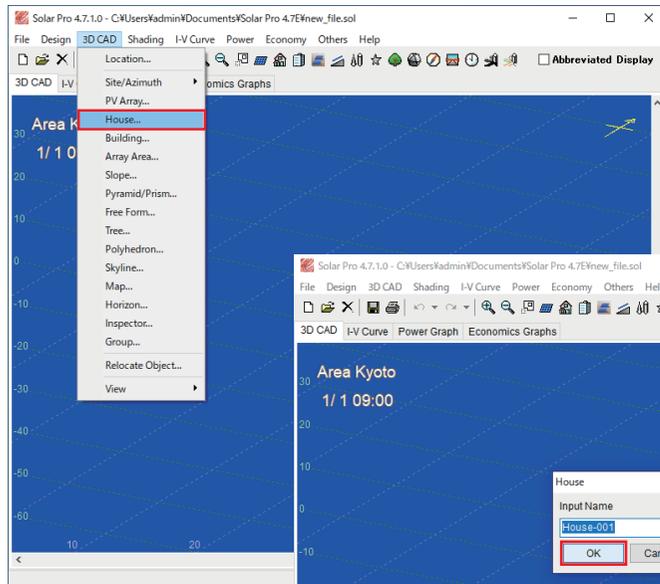
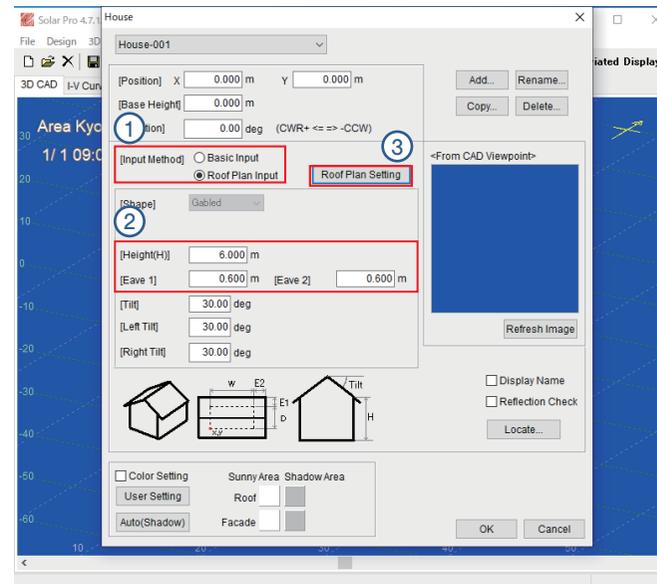


Figure 2

Figure 3



#### Point - Roof Plan Input -

Efficient design from building creation to solar module placement is possible, and it can be easily set even in complicated installation environments. Even with mega-solar and other ground-mounted facilities, it is easy to create compartments and automatically arrange PV arrays.

### 3. Input information of the house on with the PV array is placed



From here, create a roof using the drawing function. Draw the shape of the roof in the "Roof Plan Input" window (Figure 1). Now let's try a rectangle roof.

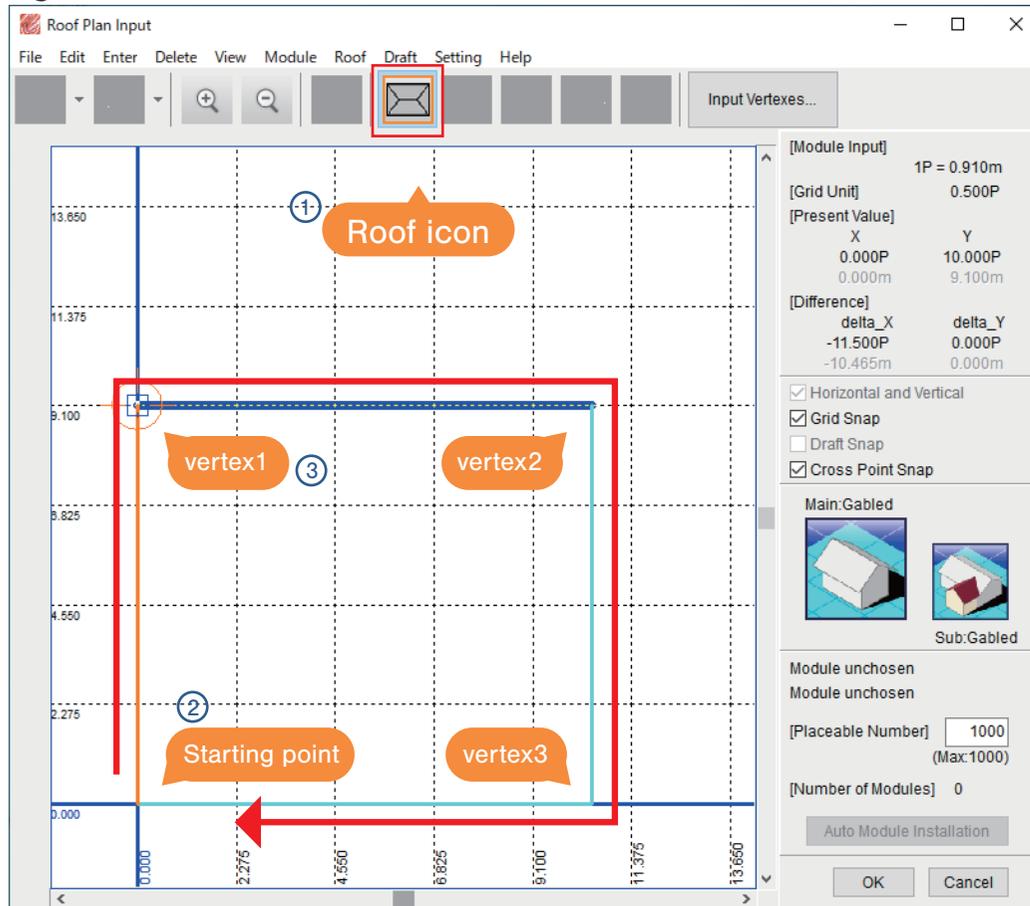


Now, I'll explain the operation.

- ① Select the roof icon
- ② Click the start point in the lower left
- ③ Click vertex 1, vertex 2, vertex 3, and start point in this order

\*Right-click to return to the previous vertex input  
One turn displays the roof drawing.

Figure 1



## 4. Setting and placement of solar modules①



Set up the solar modules to be placed on the roof. You can set this as is, but let's set the roof on the south side this time.

① Double-click the underside of the roof (Figure 1)



"Each Roof Plan Input" window (Figure 2) is displayed to set the selected roof. Select "Module" - "Module Setting" on the menu.

Be followed by



Figure 1

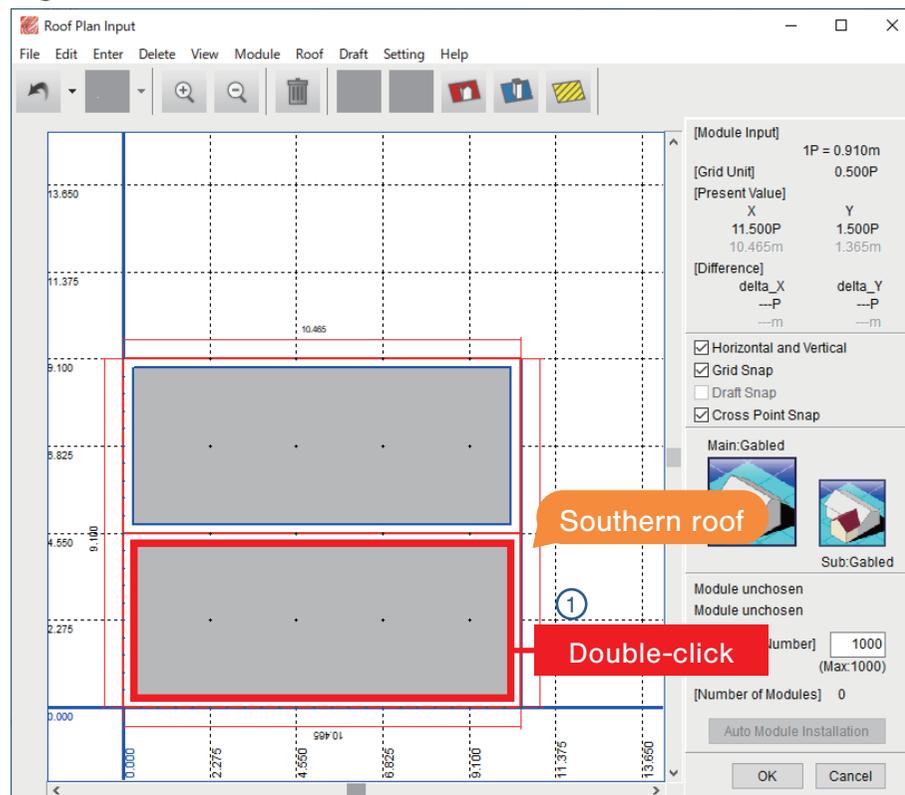
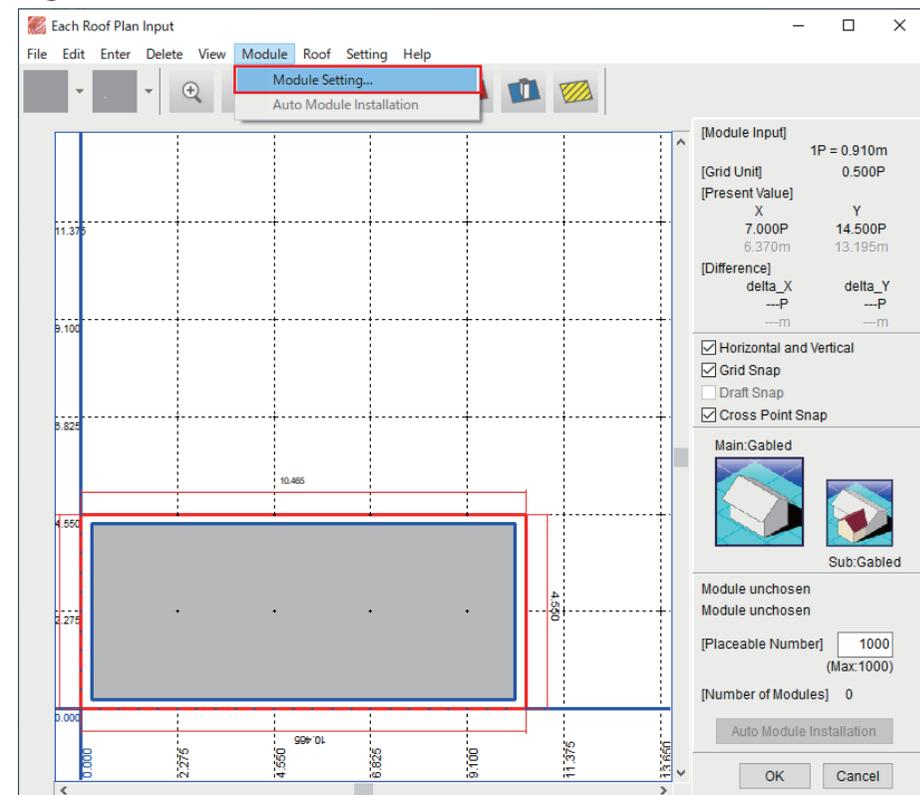


Figure 2



## 4. Setting and placement of solar modules②



On your screen (Figure 1), the red frame ① is a blank box. Set it.

- ①【Manufacturer】 : sample
  - 【Model】 : sample\_1
- Set it and select "OK".



Place the configured solar module on the roof. Click "Auto Module Installation" (Figure 2) to place the modules together on the roof surface. Once placed (Figure 3), click "OK" to return to the "Roof Plan Input" window.

Figure 1

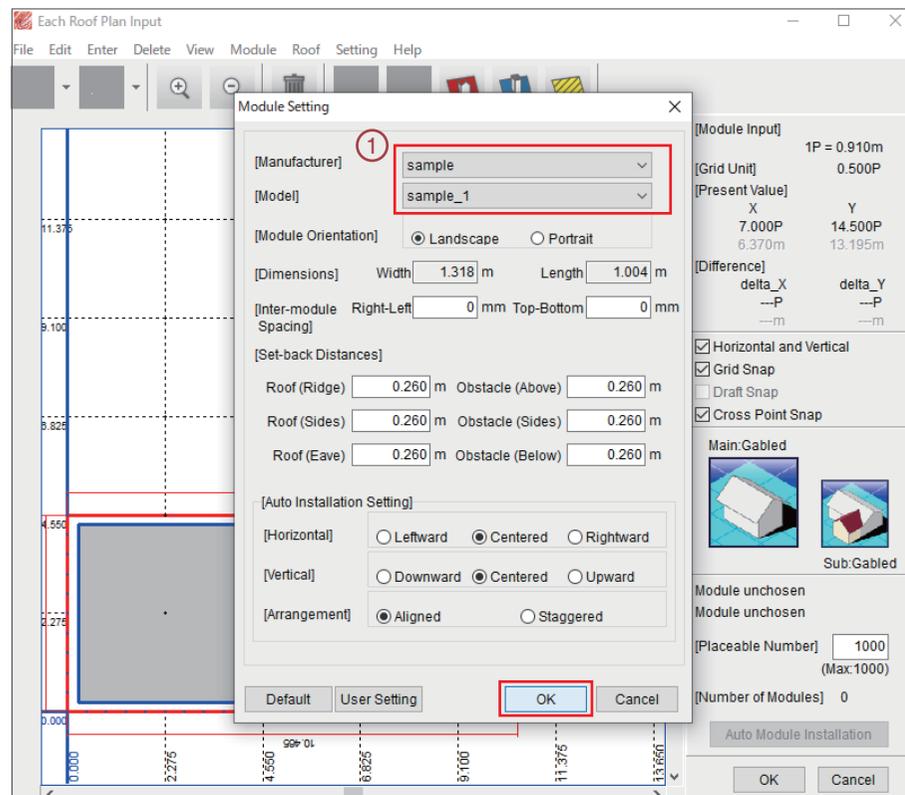


Figure 2

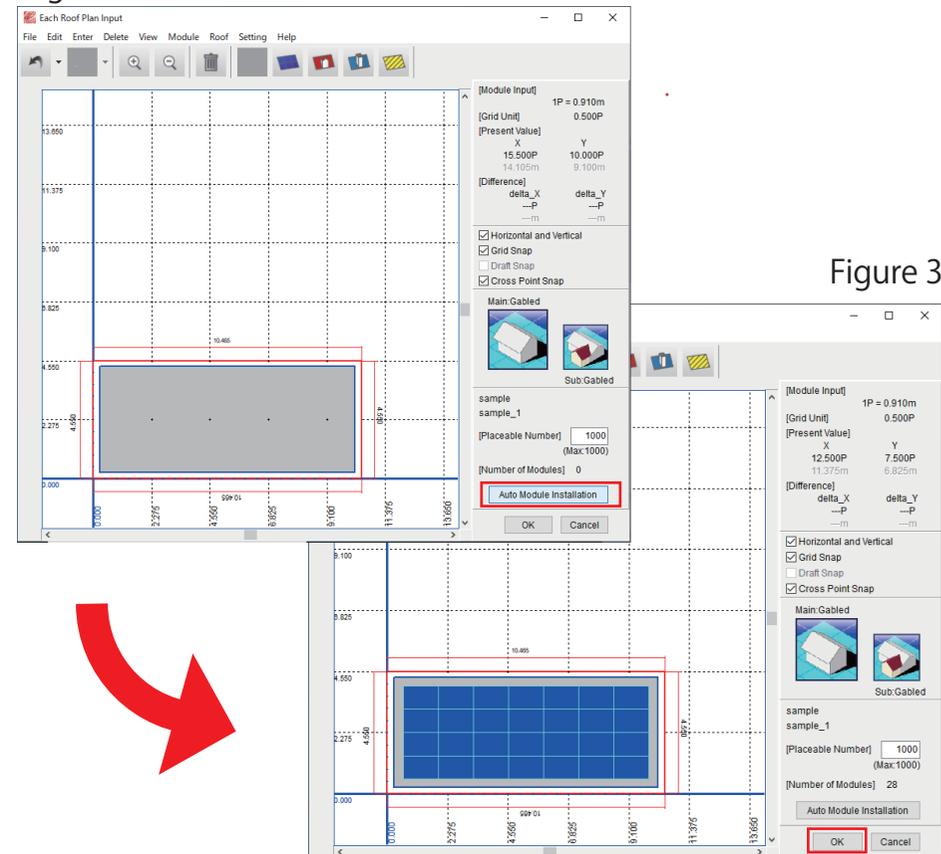


Figure 3

## 4. Setting and placement of solar modules③



Now, the solar module has been set up.  
Please select "OK".



Return to the "House" window (Figure 2).  
In addition Click "OK" to return to the main screen.

Figure 1

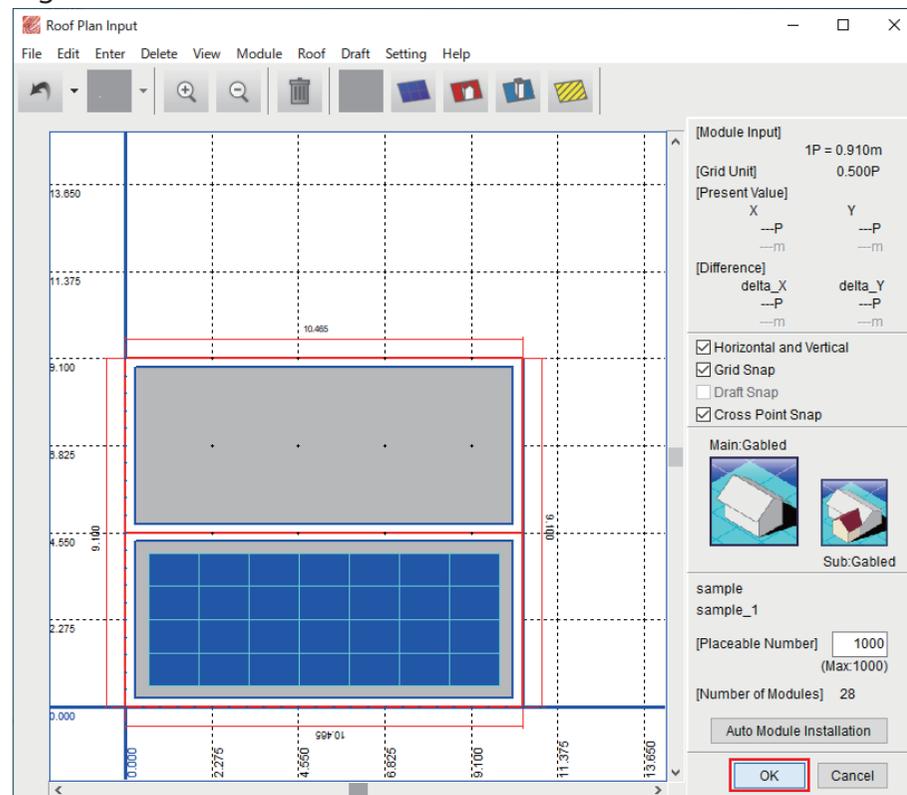
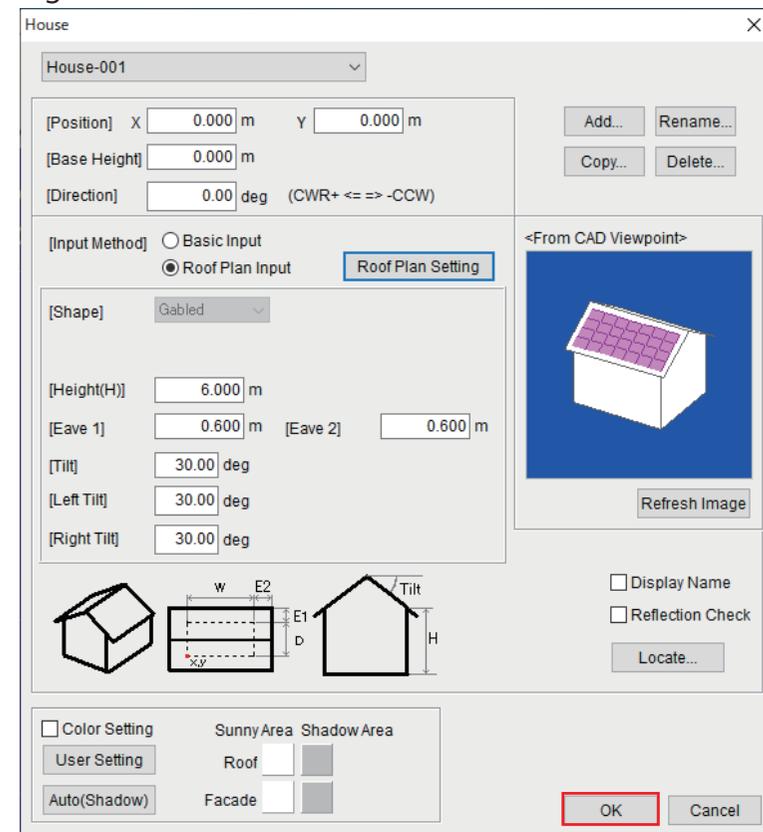


Figure 2



## 5. Setting of solar module connection①



Set up the series-parallel connection of the arranged modules.  
Select the menu "I-V Curve"- "Electrical Assembly" (Figure 1) and input a value.



Then I'll explain here. If you consider it calm, it's not a problem.  
Look closely at the screen.(Figure 2)

It seems a little more complicated...



Dad!!

Don't worry if dad tells you!

Figure 1

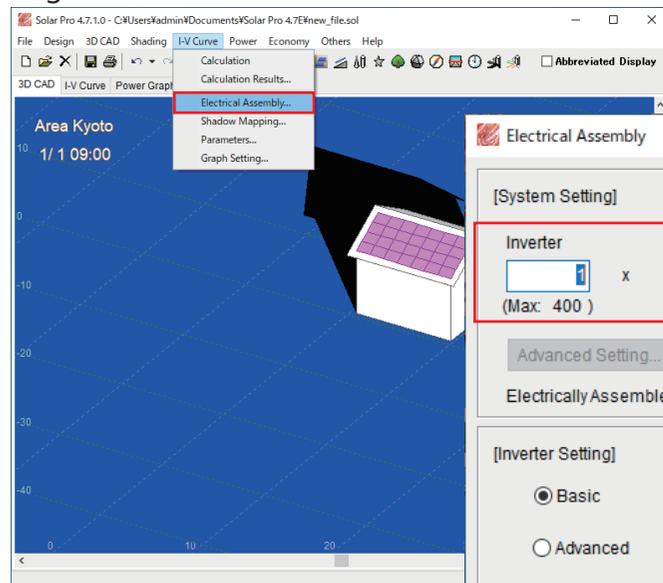
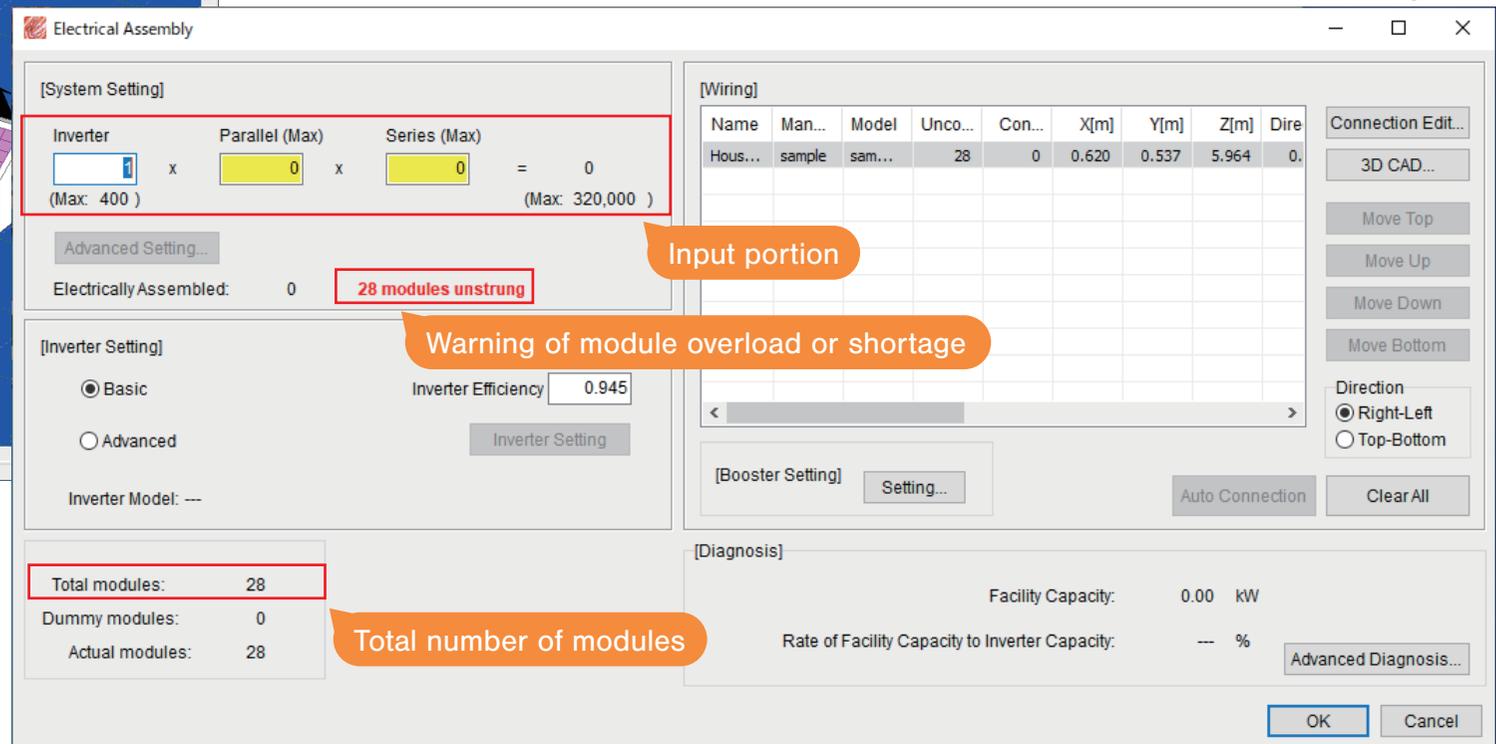


Figure 2



Input portion

Warning of module overload or shortage

Total number of modules



## 5. Solar module connection setting③

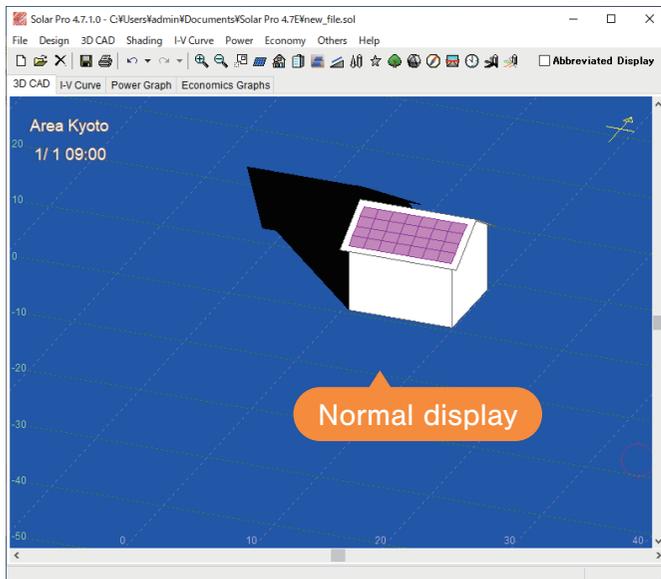


Each time you press the "F5" key on 3D CAD window (Figure 1), you can change the colors of the PV arrays for each string and inverter. (Figure 2・3)  
Check that the cables are correctly connected.



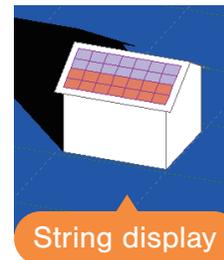
Everyone, it's just a little more.  
Please do your best.  
Then, I have to get going now.

Figure 1



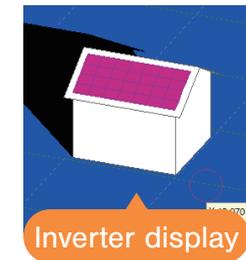
F5

Figure 2



F5

Figure 3



Press the F5 key to switch.

F5



### Point1 - Mousing -

- On 3D CAD window, you can use the mouse as shown below.
- Left drag: Rotate the line of sight starting at the center of the screen
  - Right drag: Shift the viewpoint
  - Mouse wheel: Expansion/Reduction



### Point2 - 3D CAD window shortcut key operation -

- F4 : Change the point/date display at the upper left of the screen
- F5 : Module Color Switching
- F6 : Move to Origin
- F7 : Expansion
- F8 : Reduction

## 6. Displaying I-V Curve graphs



Solar Pro calculates power generation by obtaining I-V properties every moment. Then, we'll explain about setting "I-V Curve" window to appear during the computation.

Select "Others" - "View Setting" (Figure 1) from the menu.



Check the setting items (Figure 2).

① **【During Calculation】** :

Check that the "I-V Curve" is checked, and if not, enter it.

Select "OK" when you are done.

\*Even if the "I-V curve display" is not checked, calculations are performed using the I-V curve.

Figure 1

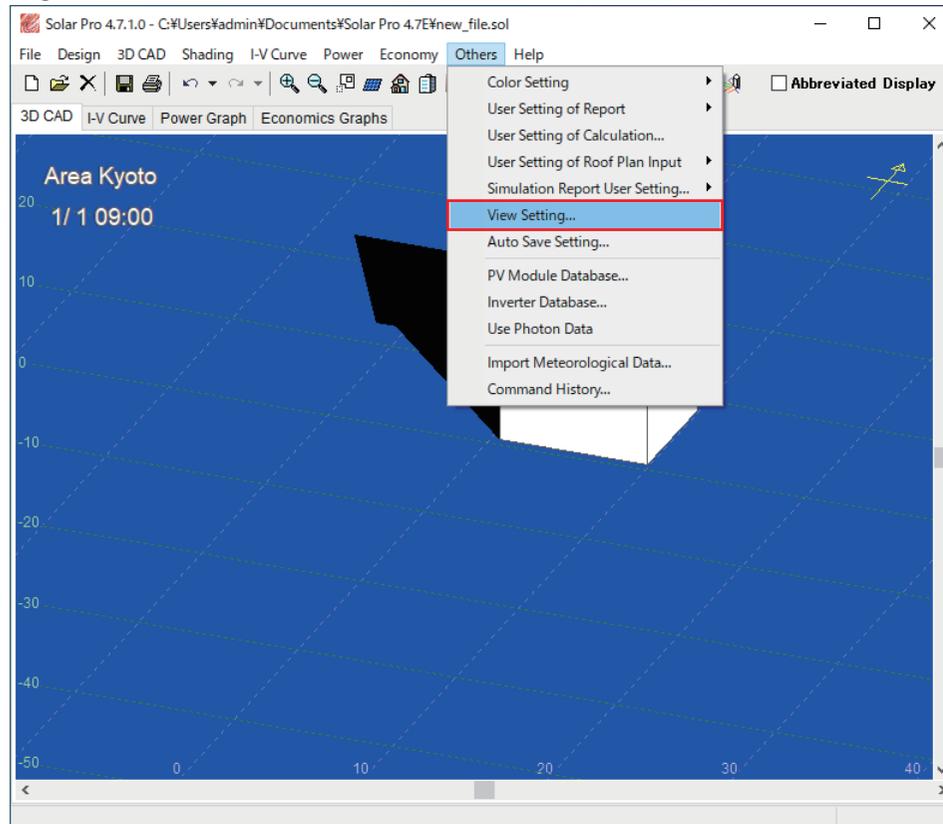
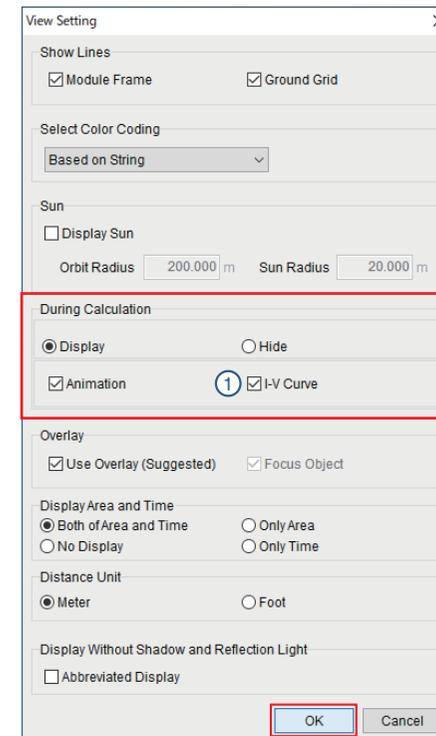


Figure 2



## 7. Calculate power generation①



Calculate the annual yield of the modules installed on the house. "Power" - "Calculation" on the menu (Figure 1) click to enter the "Calculation" window (Figure 2) is displayed.



① Check that the "Annual Transition" and "Monthly Average" are checked.  
② Click "Start".  
Then the calculation of annual power generation starts.

Figure 1

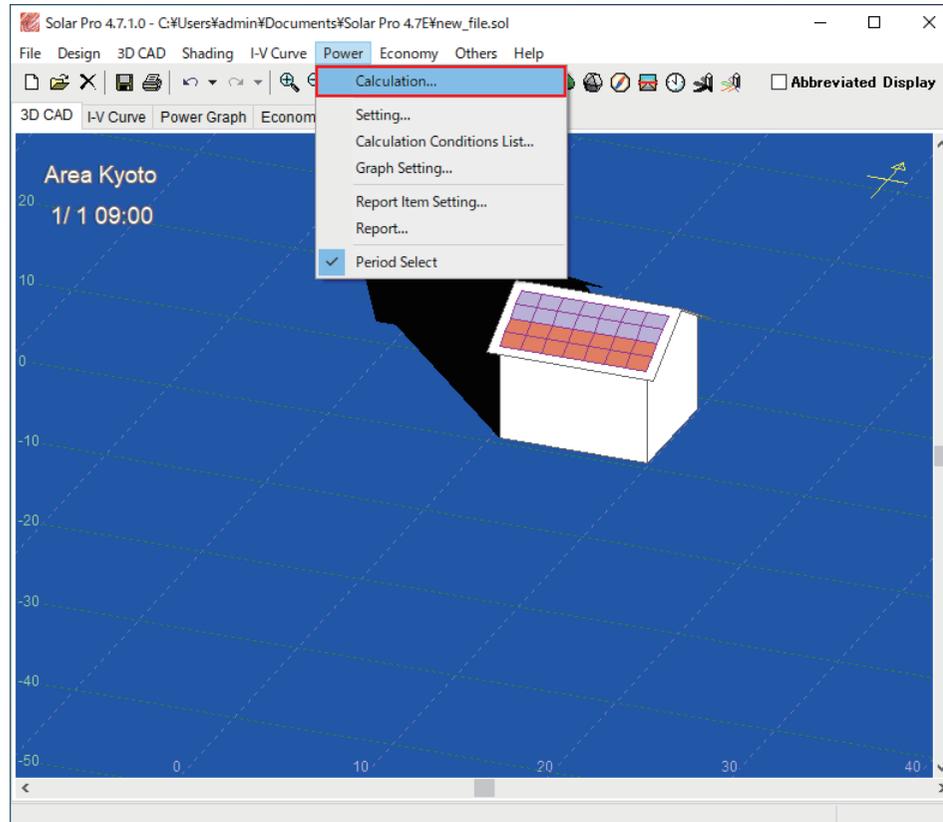
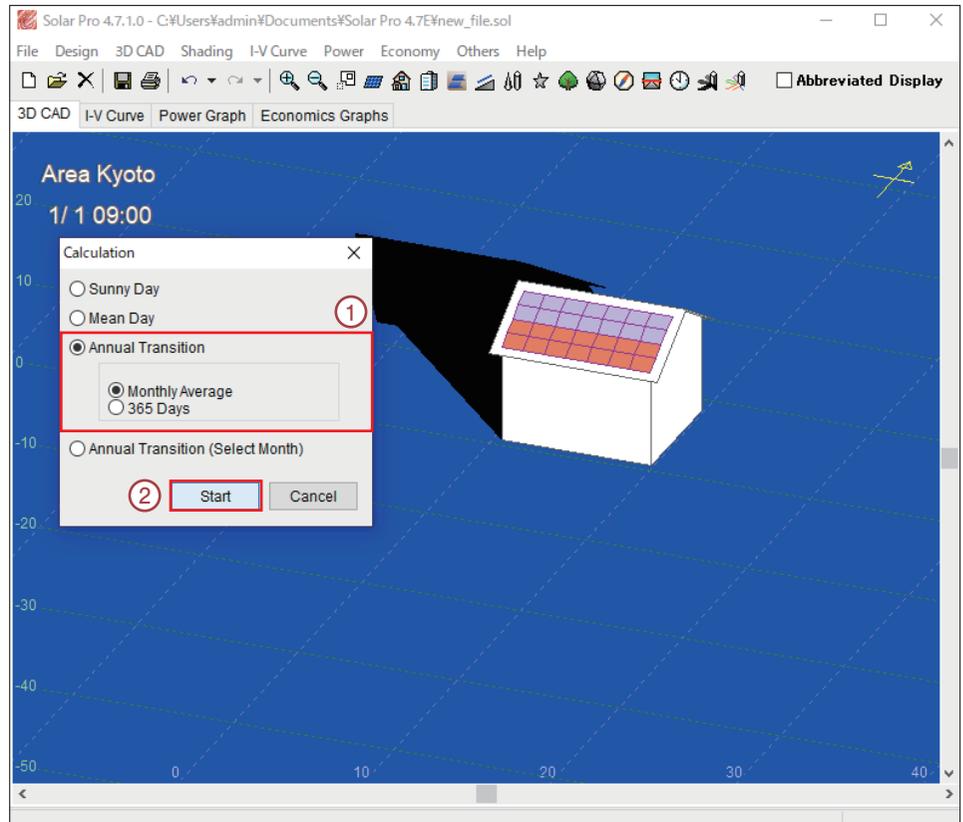


Figure 2



## 7. Calculate power generation②

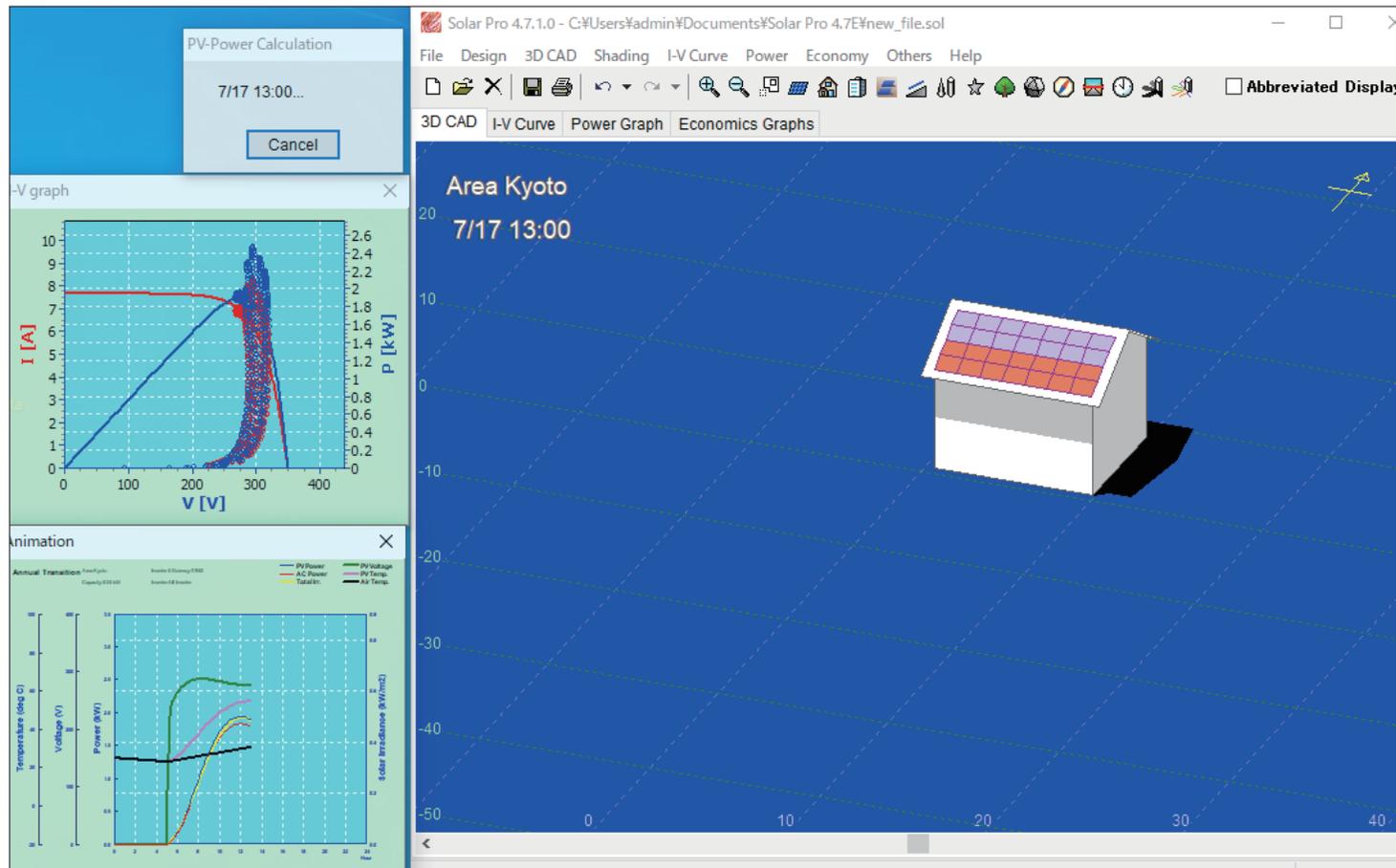


During the calculations, the window of the graph of the power generation and the I-V curve graph linked to 3D CAD window is displayed. (Figure 1)



Each window is displayed as an animation. Observe the movement of shadows, the transition of graphs, etc.

Figure 1

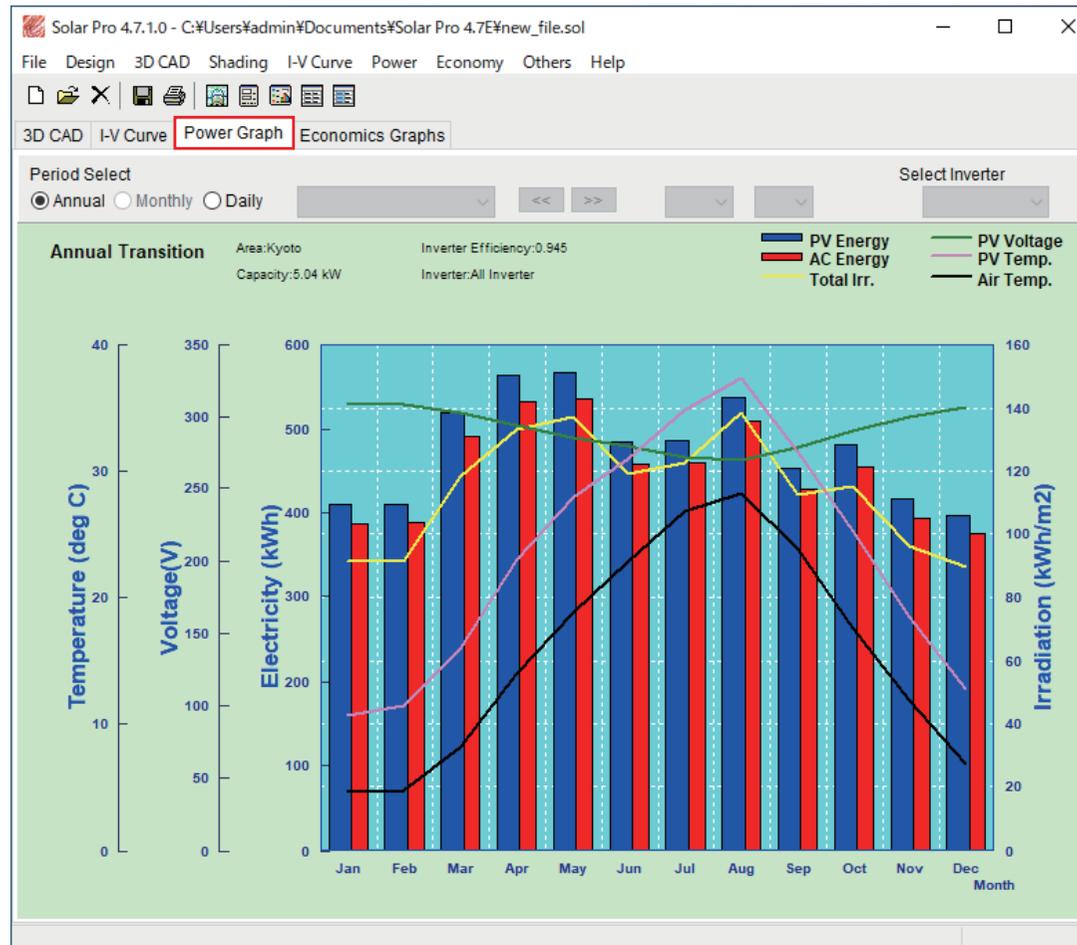


## 8. Result display



After the calculation is completed, select the "Power Graph" tab (Figure 1) to display the graph of annual transition.

Figure 1



## 9. Creating simulation report



You can create a report that summarizes the calculation results and settings.  
Select "File" - "Simulation Report Edit" (Figure 1) from the menu to display the "Simulation Report Edit" window (Figure 2).



"Simulation Report Edit" (Figure 2) displays the reports generated based on the calculation results. The displayed contents can be converted to PDF by "File" - "PDF Export" on the menu.

You can also edit and use the contents.

- You can move, resize, add, and delete objects freely.
- You can use the report data you have created as a template.

Figure 1

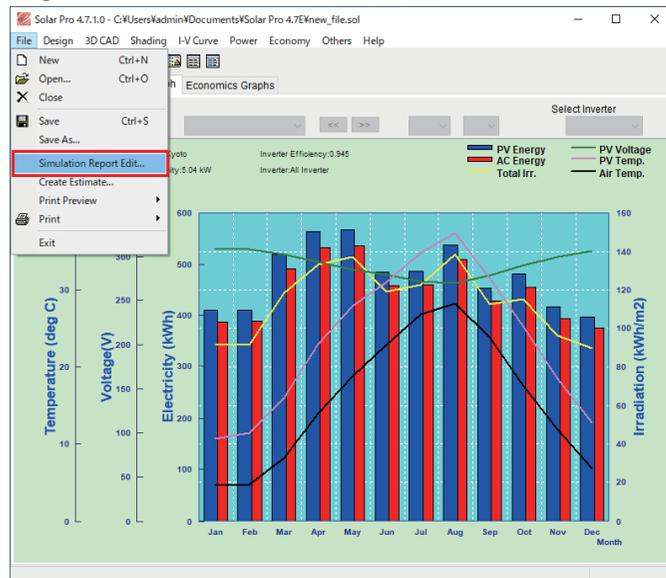
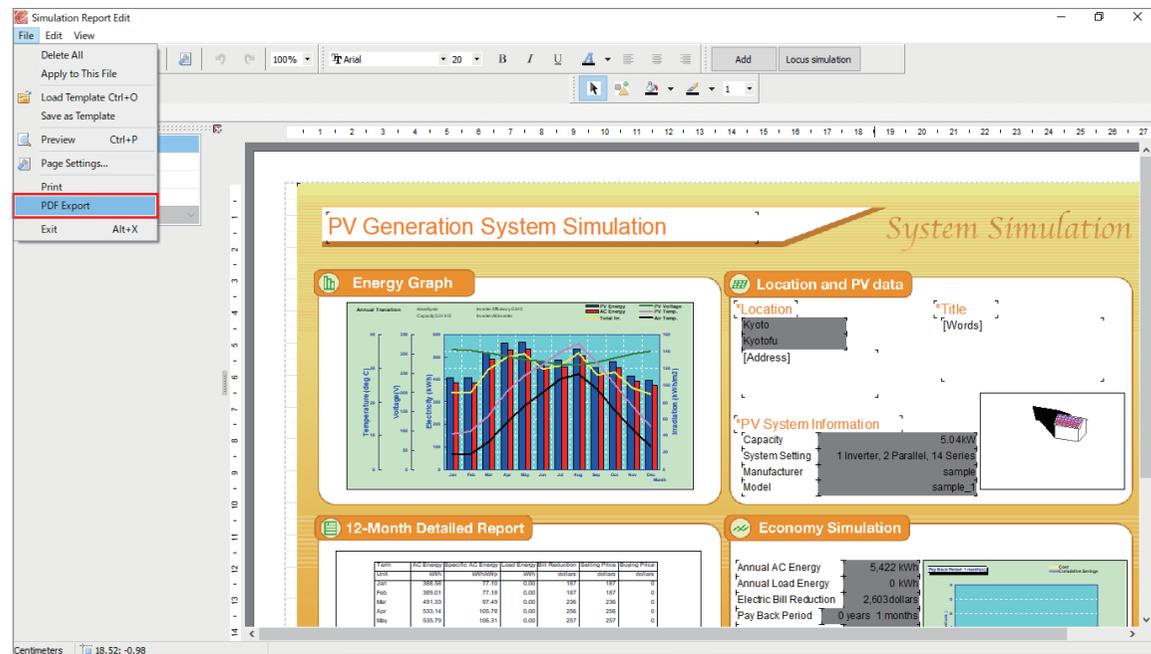


Figure 2



Thank you very much for reading this to the end.  
We will finish here.



In production version, "Map service function" is available. The building can be modeled and simulated more comfortably. Please use it!



Photovoltaic System Simulation Software

# Solar Pro

Achieving Optimal Design with High Technological Capability

We appreciate  
your continued support  
of **Solar Pro**



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Product specifications are as of March 2021. The specifications may change without prior notice.