

Photovoltaic System Simulation Software

Solar Pro Trial version

Operation manual

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

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 skecth. 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 Q Search!





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.



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.

Introduction

Photovoltaic System Simulation Software



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 8 Solar Pro 4.7.1.0 _ File Design 3D CAD Shading I-V Curve Power Economy Others Help 🗅 New Ctrl+N 🔁 Open... Ctrl+O × Close Save Save As... Simulation Report Edit... Create Estimate.. Print Preview Print Exit Photovoltaic System Simulation Software Copyright © 1997- Laplace System Co., Ltd. All rights reserved.

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





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 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.
①Select the roof icon
②Click the start point in the lower left
③Click 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.

4. Setting and placement of solar modules



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. ①Double-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.





Figure 1





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".

Figure 1

1	ach F	Roof Plan	Input										· □ >
File	Edit	Enter	Delete	View	Module	Roof	Setting	Help					
	•		• 0	2	Module	Setting					×		
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	<		2.27		4.56		6.82		9 <u>11</u> 6	85 101	< 137	ОК	Cancel



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.



4. Setting and placement of solar modules ③



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 2

House	×
House-001 V	
[Position] X 0.000 m Y 0.000 m [Base Height] 0.000 m	Add Rename Copy Delete
[Direction] 0.00 deg (CWR+ <= => -CCW)	
[Input Method] O Basic Input	<from cad="" viewpoint=""></from>
[Shape] Gabled V	
[Height(H)] 6.000 m	
[Eave 1] 0.600 m [Eave 2] 0.600 m	
[Tilt] 30.00 deg	
[Left Tilt] 30.00 deg	Refresh Image
[Right Tilt] 30.00 deg	
W E2 / Tilt	Display Name
	Reflection Check
	Locate
Color Setting Sunny Area Shadow Area User Setting Roof Auto(Shadow) Facade	OK Cancel



5. Setting of solar module connection ①



Set up the series-parallel connection of the arranged modules.

Select the menu "I-V Curve"- "Electrical

Assembly" (Figure 1) and input a value.

It seems a little more complicated...



File 3D

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Image: Second secon	🕽 🛋 🍭 🗌 Abbreviated Display				V V										Figure 2
Area Kyoto Parameters 1/ 1 09:00 Graph Setting	Electrical Assembly					1									- 🗆 X
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														C	Cancel



Then I'll explain here. If you consider it calm, it's not a problem.

Look closely at the screen.(Figure 2)



Dad!!

5. Setting of solar module connection **2**



The number of modules depends on the size of the roof you make. As an example, let's set a total of 28.

1 Inverter 1

- 2 Parallel(Max): 2
- (3)Series(Max):14 \rightarrow 1×2×14=28
- (4) Click "Auto Connection"
- After setting, click "OK".

Figure 1





This makes the connection setting possible, isn't it? How to confirm this is shown on the following page.



Thanks dad!!

5. Solar module connection setting ③



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.



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.

Figure 1





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.

View Setting	×
Show Lines	
Module Frame	Ground Grid
Select Color Coding	
Based on String	~
Sun	
Display Sun	
Orbit Radius 200.000 r	m Sun Radius 20.000 m
During Calculation	
Oisplay	⊖ Hide
Animation	1) I-V Curve
Overlay	
Use Overlay (Suggested)	Focus Object
Display Area and Time	-
Both of Area and Time	Only Area Only Time
Distance Unit	
Meter	⊖ Foot
-Display Without Shadow and Re	eflection Light
Abbreviated Display	
	OK Cancel



7. Calculate power generation ①



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.



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

Figure 1





7. Calculate power generation 2



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)

Figure 1



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





8. Result display



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



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).

Figure 1



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.

- $\,^{\circ}\text{You}$ can use the report data you have created
- as a template.



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 notic

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