



System Monitoring

SUNNY PORTAL

User Manual

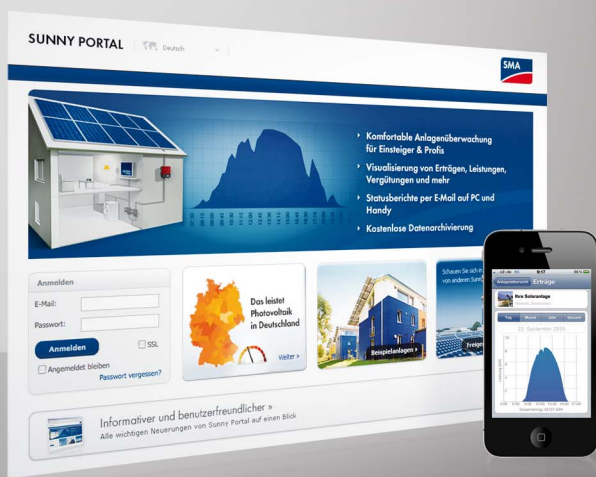


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1 Information about this Manual

1.1 Symbols Used

The following general information is used in this document:



Information

"Information" provides tips that are valuable for the optimal operation of the program.

1.2 Nomenclature

Type	Example of nomenclature
Menu, individual menu item	Select "File".
Several menu items	Select "File > Extras".
Button	Select [Save].

1.3 Additional Information

- The significance of the performance ratio for rating energy efficiency and the reliability of your PV plant is described in the "Performance Ratio" technical information.

2 Getting Started

2.1 Registering a PV Plant in Sunny Portal

You can register your PV plant in Sunny Portal exclusively through the following SMA Solar Technology AG communication products.

Sunny WebBox:

- Register the Sunny WebBox in Sunny Portal as described in the Sunny WebBox manual.

Sunny Boy Control/Plus:

- If your Sunny Boy Control/Plus is equipped with the optional NET Piggy-Back, you can forward the plant data to Sunny Portal directly via Ethernet, or through one of the possible modems. Configure data transmission to Sunny Portal in the Sunny Boy Control/Plus as described in the NET Piggy-Back manual.
- If your Sunny Boy Control/Plus is not equipped with the optional NET Piggy-Back, you can register your plant via Sunny Data Control.

Sunny Data Control:

- In Sunny Data Control, configure Sunny Portal e-mail as described in the Sunny Data Control help. You can download the Sunny Data Control software in the download area of www.SMA.de/en.

2.2 Logging In and Out of Sunny Portal

Logging In to Sunny Portal

Requirement:

- You have registered at Sunny Portal (see Section 2.1 "Registering a PV Plant in Sunny Portal" (page 7)).
1. Open www.SunnyPortal.com.
 2. Activate "SSL" for secure transmission of your login details.
 3. Enter the e-mail address you provided when registering in the "E-mail" field.
 4. Enter the password you received by e-mail in the "Password" field.
 5. Check the "Remain logged in" box to stay logged in. This way, you will not have to sign in again for your next Sunny Portal session. You will stay logged in, even after closing your browser or switching off your computer. The function will stay activated until you log out of Sunny Portal through the lock symbol in the upper right corner.



Public or Shared Computers

If you are using a public computer or sharing yours with other people, deactivate the "Remain logged in" function. Other people could call up your data in Sunny Portal.

6. Select [Login].
 - The "User information" page opens when first logging in.
7. Fill in your address details.
8. Select [Save].



Delays in Visualization

Under certain circumstances, it can take up to three hours until the data of your PV plant is displayed in Sunny Portal.

Display According to Plant Data Transferred

The displayed available data on the pages will vary according to the amount of transferred plant data.

Logging Out of Sunny Portal

- In order to end your Sunny Portal session, go to "User info/Logout > Logout".

2.3 Next Steps

- Change your password in order to protect your Sunny Portal account against unauthorized access (see Section 9.6 "Changing the Password" (page 65)).
- Get acquainted with Sunny Portal (see Section 3 "Menu Overview" (page 10)).
- Design your own pages according to your wishes (see Section 5 "Page Design" (page 15)).
- Use the report function of Sunny Portal and receive current updates about your PV plant by e-mail or text message (see Section 6.4 "Report Configuration" (page 42)).
- Enter the properties of your PV plant (see Section 7 "Plant Properties" (page 46)).
- Give friends access to your Sunny Portal as guests, default users, installers, or administrators, like yourself (see Section 9 "User Management" (page 63)).

3 Menu Overview

Menu	Meaning
Plant selection	The menu is only shown if your e-mail address is assigned to more than 1 plant. You can select the desired plant in this menu. The name of the currently chosen plant will be used for the main menu item under the "Plant selection" main menu. All other pages always refer to the currently selected plant.
Plant selection > Plant list	<p>The page includes an overview of plants that are assigned to your e-mail address. The following data is listed for each plant:</p> <ul style="list-style-type: none"> • Plant power in kWp • Total yield so far • Total yield for the following periods: <ul style="list-style-type: none"> - Current day - Previous day - Current month • Specific plant yield (kWh/kWp) for the following periods: <ul style="list-style-type: none"> - Current month - Current year <p>When accessing the page, the plant list is always sorted in ascending order according to the specific plant yield. Click on a blue value in the header to sort the list of plants in ascending order according to this value, click again to sort the list of plants in descending order.</p>
"Plant name"	The menu includes pages with the most important information about your plant: key data, yield, monitoring, and messages. Sunny Portal automatically creates the pages in this menu.
"Plant name" > Plant profile	This page includes an overview with information for the current plant. Sunny Portal compiles the plant profile from information that you have entered on your Sunny Portal pages. Information that you have not entered (e.g., "Operator") is not shown in the plant profile. Information in the plant profile (see Table "Information in the Plant Profile:" (page 12)).
"Plant name" > Energy and power	<p>The page shows the total yield for the current plant in 4 diagrams:</p> <ul style="list-style-type: none"> • Day: Power produced over the day • Month: Total yield per month in days • Year: Total yield per year in months • Total: Total yields per year
"Plant name" > Annual comparison	The page shows the total yield and the specific yield of the current plant per month in a yearly overview.

Menu	Meaning
<p>"Plant name" > Plant Monitoring</p>	<p>On this page there are 2 functions for monitoring the current plant:</p> <ul style="list-style-type: none"> • Monitoring of communication between Sunny Portal and your plant • Monitoring of plant by comparing inverters <p>Plant monitoring, see Section 6.3 "Plant Monitoring" (page 39).</p>
<p>"Plant name" > System logbook</p>	<p>The page shows messages from Sunny Portal and the current plant. These messages help you to identify plant failures, for example. The number after the colon shows the number of unread messages.</p>
<p>Visualization</p>	<p>The menu includes standard pages with visualizations of your plant data that is created automatically by Sunny Portal (standard pages, see Section 5.7 "Standard Pages" (page 33)). All pages that you create yourself are also stored here by Sunny Portal (creating pages, see Section 5.1 "Creating a New Page" (page 15)).</p>
<p>Configuration</p>	<p>The menu includes pages through which you can set different configurations for your Sunny Portal, e.g., create own pages, edit plant properties, and create new pages.</p> <ul style="list-style-type: none"> • Visualization, see Section 5 "Page Design" (page 15) • Plant properties, see Section 7 "Plant Properties" (page 46) • Device overview, see Section 8.1 "Calling Up and Filtering the Device Overview" (page 55) • Report configuration, see Section 6.4 "Report Configuration" (page 42) • User management, see Section 9 "User Management" (page 63)
<p>User info/logout</p>	<p>The menu lets you call up user information and end your Sunny Portal session. The "User information" page also lets you change your password.</p> <ul style="list-style-type: none"> • User information, see Section 9.5 "Changing User Information" (page 65) • Logout

Information in the Plant Profile:

The following table includes the possible information in the plant profile and the sources for changing or entering the information.

Information in the plant profile	Source
Location	Section 7.1.1 "Changing General Plant Data" (page 46): from the country and city information
Operator	Section 7.2 "Changing Operator Data" (page 50)
Commissioning	Section 7.1.1 "Changing General Plant Data" (page 46)
Plant power	Section 7.1.4 "Setting Plant Power" (page 48)
Annual yield	Section 7.3.3 "Entering the predicted annual yield" (page 52)
CO₂ saved	
Modules	Section 7.1.4 "Setting Plant Power" (page 48)
Tilt angle	Section 8.2.5 "Configuring the Generator Power" (page 60), paragraph "Configuring the Power of an Inverter through Multiple Strings" (page 60)
Tracking	
Inverter	Sunny Portal receives the information from the devices
Communication	
Description	Section 7.1.5 "Changing the Description of the Plant" (page 49)
Plant image next to the data	Section 7.1.6 "Changing/Deleting the Plant Image" (page 49)

4 Page, Table, and Diagram Functions

Page Functions:

At the end of each page with at least 2 tables or diagrams, you can change the end date for all diagrams and tables on the page. If the period presented in the table or the diagram is 1 year or 1 month, the year or the month of the entered end date will be adopted.

Table Functions:

The functions are described by means of the following example table.

Devices/Plants	Gesamtertrag Meter Change [kWh] 31/03/2010	Gesamtertrag Meter Change [kWh] March 2010	Gesamtertrag Meter Change [kWh] 2010
SB4200TL	10.43	395.34	517.11
SB5000TL	13.95	553.42	721.37
	24.38 [Total]	948.76 [Total]	1238.48 [Total]

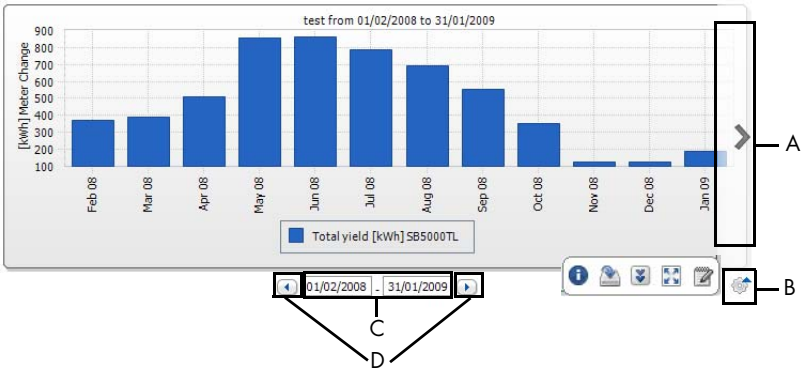
< Year < Month < Day 31/03/2010 Day > Month > Year >

C
D

Position	Meaning
A	The table header lets you sort the displayed data in ascending or descending order. Click on a blue value in the header to sort the data in the table in ascending order, click again to sort the data in descending order.
B	Opens a window for saving the data in the set format
C	Opens calendar In the calendar you can scroll through the months using the arrows and select the desired display period.
D	Here you can scroll to the next or previous display period within the displayed intervals.

Diagram Functions:

The functions are described by means of the following example diagram.



Position	Meaning
A	The right and left side of the diagram let you scroll to the next or previous display period if the data is available.
B	Opens more buttons for editing the diagram.
C	Opens calendar In the calendar you can scroll through the months using the arrows and select the desired display period.
D	Here you can scroll to the next or previous display period within the displayed intervals.

Buttons for Editing the Diagrams:

Symbol	Meaning
	Opens a submenu with the options described below for the diagram.
	Opens window with table view of diagram values. If the window does not open, see Section 10 "Troubleshooting" (page 66).
	Opens a window for saving the data in the set format.
	Shows legend
	Hides legend
	Shows full screen diagram
	Opens page configuration for editing the diagram.

5 Page Design

5.1 Creating a New Page

1. Select "Configuration > Visualization".
 - The "Page configuration (groups)" page opens.
2. Select [New page].
 - Page templates open.

The screenshot shows a web interface for creating a new page. At the top, there are two tabs: "New page" (selected) and "Help". Below the tabs, there is a text input field labeled "Please enter the page names:" with the text "New page" entered. Underneath, it says "Please select the page template:". A list of templates is shown, each with a description and a numbered button:

- Page with one diagram: 1
- Page with two diagrams: 2
- Page with three diagrams: 3
- Page with three diagrams: 3
- Page with four diagrams: 4
- Page with the image and logo on the right: 5
- Page with the image and logo on the left: 5
- Template for the report: 8
- Template for the report+: 12

At the bottom of the dialog, there is a blue "Back" button.


3. Enter page name in "Please enter the page name" field.
4. Select desired page template. Here you can select how the page should be divided. The divided sections can be filled with different contents. HINT: In page templates 8 and 12, the height of the two upper sections is limited. These sections are only suitable for small images, like logos.
 - The "Page configuration" page opens.
5. Select the desired page content in a section of the page in the "Module type" field.
6. Select [Create] and create desired page content (see Section 5.2 "Creating Page Contents" (page 16)).

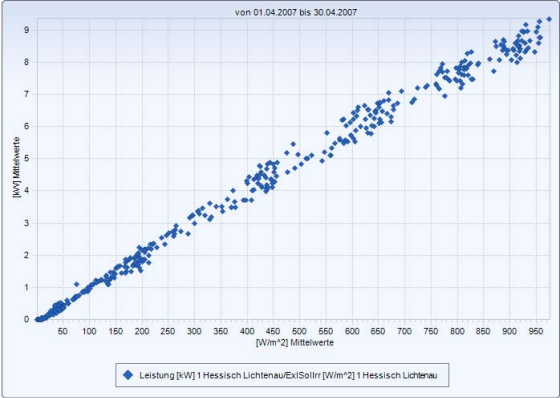
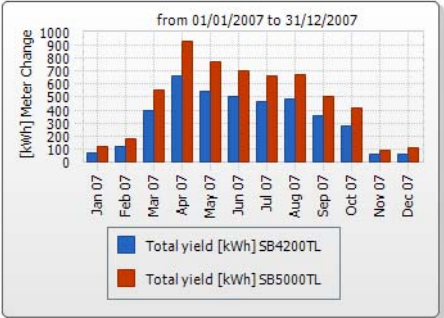
5.2 Creating Page Contents



5.2.1 Overview of Page Contents

You can choose from the following page contents:

Page content	Content																				
<p>Table</p>	<p>You can present the following data in tables:</p> <ul style="list-style-type: none"> • Channel values of the devices The channel values that can be selected depend on the device. • Channel values of the entire plant: <ul style="list-style-type: none"> - CO₂ saved - Total yield - Performance ratio - Power - Compensation - Specific plant yield <p>Example table:</p> <table border="1" data-bbox="386 767 997 890"> <thead> <tr> <th>Devices/Plants</th> <th>Gesamtertrag Meter Change [kWh] 31/03/2010</th> <th>Gesamtertrag Meter Change [kWh] March 2010</th> <th>Gesamtertrag Meter Change [kWh] 2010</th> </tr> </thead> <tbody> <tr> <td>SB4200TL</td> <td>10.43</td> <td>395.34</td> <td>517.11</td> </tr> <tr> <td>SB5000TL</td> <td>13.95</td> <td>553.42</td> <td>721.37</td> </tr> <tr> <td></td> <td>24.38</td> <td>948.76</td> <td>1238.48</td> </tr> <tr> <td></td> <td>[Total]</td> <td>[Total]</td> <td>[Total]</td> </tr> </tbody> </table> <p style="text-align: center; font-size: small;"> < Year < Month < Day 31/03/2010 Day > Month > Year > </p>	Devices/Plants	Gesamtertrag Meter Change [kWh] 31/03/2010	Gesamtertrag Meter Change [kWh] March 2010	Gesamtertrag Meter Change [kWh] 2010	SB4200TL	10.43	395.34	517.11	SB5000TL	13.95	553.42	721.37		24.38	948.76	1238.48		[Total]	[Total]	[Total]
Devices/Plants	Gesamtertrag Meter Change [kWh] 31/03/2010	Gesamtertrag Meter Change [kWh] March 2010	Gesamtertrag Meter Change [kWh] 2010																		
SB4200TL	10.43	395.34	517.11																		
SB5000TL	13.95	553.42	721.37																		
	24.38	948.76	1238.48																		
	[Total]	[Total]	[Total]																		

Page content	Content
<p>Plant profile</p>	<p>You can also use this information on your customized pages. Information in the plant profile:</p> <ul style="list-style-type: none"> • Plant name • Location • Operator • Date of commissioning • Plant power • Annual yield • CO₂ saved • PV modules • Azimuth • Tilt angle • Tracking • Inverter • Communication • Description <p>Example plant profile:</p> <div data-bbox="386 826 912 1150" style="border: 1px solid black; padding: 10px;"> <p>Plant Profile Sunny Trees</p> <div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="width: 60%;"> <p>Location: Kassel, Germany</p> <p>Commissioning: 27/06/2008</p> <hr/> <p>Plant power: 24,24 kWp</p> <hr/> <p>Inverter: 4 Sunny Boy 3000</p> </div> <div style="width: 35%; text-align: center;">  </div> </div> <p>Description:</p> <p> Lorem ipsum dolor et amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat. Ut vel enim ad minim veniam, quis nostrud exerci tation ullamcorper suscipit lobortis nisl ut aliquip ex ea commodo consequat. Duis autem vel eum irure dolor in hendrerit in vulputate velit esse molestie consequat, vel illum dolore eu feugiat nulla facilisis at vero et accumsan et justo odio dignissim qui blandit praesent luptatum zzril delenit augue duiis dolore te feugiat nulla facilisis. Lorem ipsum dolor et amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat. Ut vel enim ad minim veniam, quis nostrud exerci tation ullamcorper suscipit lobortis nisl ut aliquip ex ea commodo consequat. Duis autem vel eum irure dolor in hendrerit in vulputate velit esse molestie consequat, vel illum dolore eu feugiat nulla facilisis at vero et accumsan et justo odio dignissim qui blandit praesent luptatum zzril delenit augue duiis dolore te feugiat nulla facilisis. Nam liber tempor cum soluta nobis eleifend option congue nihil imperdiet doming id quod mazim placerat feuer possin assum.</p> </div>

Page content	Content
<p>XY diagram</p>	<p>You can display 2 channel values as coordinates. The x and y axes are assigned 1 channel value each. The time axis is not shown. Examples for sensible value pairs are: plant power and irradiation (only for plants with Sunny SensorBox), performance ratio and radiation.</p> <p>Example XY diagram:</p> 
<p>Diagram</p>	<p>You can display a timeline of the channel values of the devices and the entire plant as bar charts and line charts.</p> <p>Example diagram:</p> 
<p>Slideshow</p>	<p>You can display a slideshow which you have already created in a photo platform.</p>

Page content	Content
<p>Image</p>	<p>You can insert an image of your choice.</p> <p>Requirements:</p> <ul style="list-style-type: none"> • Maximum image size: 500 kB • Possible image formats: JPG, PNG, GIF • Height and width: Sunny Portal will proportionally adjust the image depending on the size of the page layout.
<p>Plant monitoring</p>	<p>You can present the following data:</p> <ul style="list-style-type: none"> • Communication status between the PV plant and Sunny Portal • Status of inverter comparison <p>Plant monitoring:</p> <div data-bbox="496 560 882 686" style="border: 1px solid black; padding: 5px; text-align: center;">  <p>Last contact 2 minutes ago Yield yesterday: 54,14 kWh</p> </div>
<p>Overview</p>	<p>You can present the following data:</p> <ul style="list-style-type: none"> • Energy of the PV plant • CO₂ saved by PV plant • Compensation for PV plant • Default image or custom image <p>Overview with default image:</p> <div data-bbox="516 927 844 1153" style="border: 1px solid black; padding: 5px; text-align: center;">  <p>Date: 27/04/2010 Energy: 48,948.72 kWh</p> <p>CO₂ avoided: 49,291.36 kg Revenue: EUR 26.69 Thousand</p> </div>
<p>Text</p>	<p>You can enter text in the editor and format it as you know it from any regular word processing program. If you are familiar with HTML, you can switch to the source code view and enter or edit the HTML code directly. Java Script is not permitted.</p>

5.2.2 Creating a Table


You can select a table from the templates or create your own table. The following table configurations are available:

Table configuration	Meaning
Standard configuration for displaying plant energy	The table includes the total yields of all plants to which you have access. The total yields are shown for the current day, month, and year.
Default configuration for displaying inverter energy	The table includes the total yields of all inverters of the current plant. The total yields are shown for the current day, month, and year.
Default configuration for displaying the specific inverter yield	The table includes the specific yields and the total yields of all inverters of the current plant. The specific yields are shown for the current day, month, and year. The total yields are shown for the current day.
Customized	Create your own table with values and timelines according to your own ideas and requirements.

Creating a Table with Default Configuration

1. Select desired default configuration.
 2. Select [Next].
 3. Select [Save].
 4. Select [Save].
- The table has been created and is displayed.

Creating a Customized Table

1. Select "User-defined".
 2. Select [Next].
 3. Select "Add device/plant".
 4. In the "Plant/devices" field, select a plant or a device. HINT: In order to narrow your selection, choose a device type or "Plants" in the "Narrow selection" field.
 5. Select [Submit].
 6. In order to add further plants or devices, select "Add device/plant" and repeat previous steps.
 7. Select .
- The "Channel configuration" page opens.

8. In order to add a heading for this table column or row, enter the heading in the "Name" field.
9. In the "Time unit" field, choose the period for which you would like to see the values.
10. In the "End date of display" area, activate the desired end date of the display. The following settings are possible:

Current	The values for the current date, e.g., current day, current month, are always shown.
User-defined	You can select the date for which to display the values, e.g., a certain day, a certain month.

11. Select desired channels in the "Channel" area.



Selectable Channels

For devices, all channels which are transferred to Sunny Portal are available here. For a plant, the calculated channels are available (CO₂ saved, energy, power, compensation, performance ratio, specific plant yield).

The unit of the first channel selected determines the additional channels available for selection.

12. If more than 1 device or more than 1 plant was added, the desired calculation method can be chosen in the "Result" field. The following settings are possible:

Total	Total of all channel contents within the presented period
Min	Minimum value of channel contents within the presented period
Mean values	Mean value of channel contents within the presented period
Max	Maximum value of channel contents within the presented period

13. Select [Submit].
 - The "Page configuration" page opens.
14. In order to add an additional column or rows for channels, select "Add channel" and repeat previous steps.
15. In the "Orientation" area, activate the desired orientation of the table.
16. In the "Download file type" field, select the format for saving table data. This will let you save the data in the page view of the table to your computer via "[Download](#)". The following settings are possible:

CSV	File format that describes the structure of a text file for saving or easily exchanging simply structured data.
ODS	File format for tables in the Open Document format which makes it possible to exchange Office files between different applications and operating systems.
XLSX	File in the Excel Workbook format which is supported by Microsoft from Excel version 2007 and up.

17. Select [Save].
18. Select [Save].
- The table has been created and is displayed.

5.2.3 Creating a Plant Profile

1. In order to add a heading, enter the heading in the "Title" field.
2. If several plants can be selected in the "Plant" field, select the desired plant.
3. Activate the desired fields for which to display the data.
4. Select [Save].
5. Select [Save].
- The plant profile has been created and is displayed.

5.2.4 Creating an XY Diagram

Procedure:

- Configure y axis, x axis
- Configure time settings
- Set advanced configuration

Configure Y Axis, X Axis

1. Select a plant or a device in the "Y axis", "X axis" area in the "Plant/devices" field. Only devices of the current plant can be selected. HINT: In order to narrow your selection, choose a device type or "Plants" in the "Narrow selection" field.
2. Select a channel in the "Channel" field.



Selectable Channels

For devices, all channels which are transferred to Sunny Portal are available here. For a plant, the calculated channels are available (CO₂ saved, energy, power, compensation, performance ratio, specific plant yield). The unit of the first channel selected determines the additional channels available for selection.

3. Select [+].
- Table with the selected device or plant is displayed.
4. In order to add further plants or devices, repeat the previous steps.



The Unit of the First Channel Selected Determines the Additional Channels Available for Selection

If the basic unit of the first selected channel is watts, the only channels selectable afterwards are those compatible with watts. The selection options are automatically limited accordingly by Sunny Portal.

5. Select the desired unit in the "Unit" field.

6. Select the channel type of the value in the "Value" field. The following channel types are available here, depending on the channel:

Analog values	
Mean values	The average value that the channel had for the set period.
Maximum values	Highest value that the channel had during the set period.
Minimum values	Lowest value that the channel had during the set period.

Meter channels	
Meter change	Increase within the period to be selected.
Meter reading	Current total meter reading of the value.
Cumulative change	Cumulative (= added) increase within the period to be selected.

7. Set automatic scaling or enter own scaling values:
- Automatic scaling: activate "Automatic scaling min" and "Automatic scaling max".
 - Custom scaling: enter scaling values into "Min" and "Max" fields.

Configuring Time Settings

1. Select the desired display period of the diagram in the "Display period" field in the "Time settings" area.
2. Select in the "Number of periods" field how many display periods are to be shown.
3. In the "Time unit" field, select into which time units the periods should be divided.
4. In the "End date of display" area, activate the desired end date of the display. The following settings are possible:

Current	The values for the current date (e.g., current day, current month) are always shown.
User-defined	You can select the date for which to display the values (e.g., a certain day, a certain month).

Making Advanced Configurations

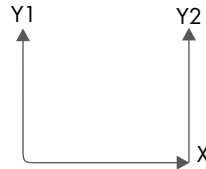
1. In order to add a heading in the "Advanced configuration" area, enter heading in "Diagram name" field.
2. In the "Download file type" field, select the format for saving diagram data. The following settings are possible:

CSV	File format that describes the structure of a text file for saving or easily exchanging simply structured data.
ODS	File format for tables in the Open Document format which makes it possible to exchange Office files between different applications and operating systems.
XLSX	File in the Excel Workbook format which is supported by Microsoft from Excel version 2007 and up.

3. In order to show the legend by default for this diagram, activate "Show legend".
 4. In order to view the preview, open the "Preview" area. Select [Update] to reload diagram after changes were made.
 5. Select [Save].
 6. Select [Save].
- The XY diagram has been created and is displayed.

5.2.5 Creating a Diagram

A diagram consists of at least one x axis (time settings) and one Y1 axis; the Y2 axis is optional. Several channel values with the same unit can be displayed on each y axis. Use the Y2 axis if you want to display values with another unit than on the Y1 axis.



Procedure:

- Configure Y1 axis (Y2 axis is optional)
- Configure time settings
- Set advanced configuration

Configure Y1 Axis (Y2 Axis is Optional)

1. Select a plant or a device in the "Y1 axis", "Y2 axis" area in the "Plant/devices" field. Only devices of the current plant can be selected. HINT: In order to narrow your selection, choose a device type or "Plants" in the "Narrow selection" field.
2. Select desired channel in the "Channel" field.



Selectable Channels

For devices, all channels which are transferred to Sunny Portal are available here. For a plant, the calculated channels are available (CO₂ saved, energy, power, compensation, performance ratio, specific plant yield). The unit of the first channel selected determines the additional channels available for selection.

3. Select [+].
 - Table with the selected device or plant is displayed.
4. In order to add further plants or devices, repeat the previous steps.



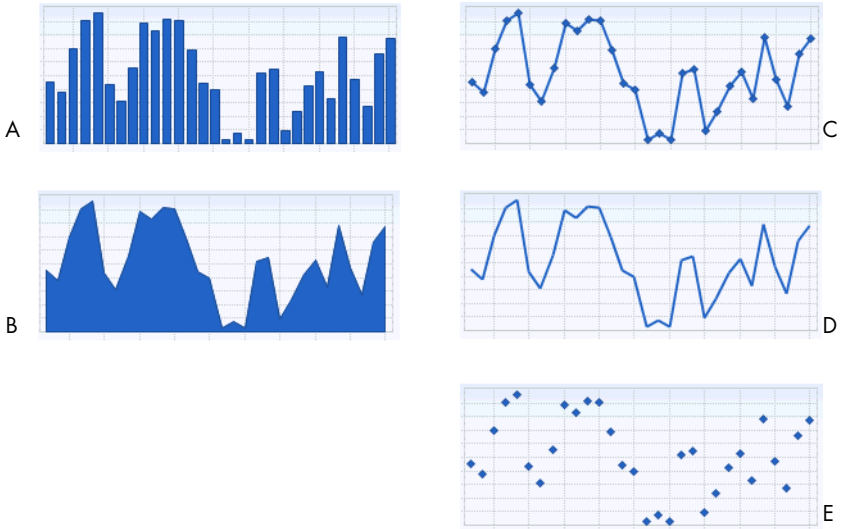
Selecting Additional Channels

The unit of the first channel selected determines the additional channels available for selection. If the basic unit of the first selected channel is watts, the only channels selectable afterwards are those compatible with watts. The selection options are automatically limited accordingly by Sunny Portal.

5. Select the desired unit in the "Unit" field.
6. Select the channel type of the value in the "Value" field. The following channel types are available, depending on the channel:

Analog values	
Mean values	The average value that the channel had for the set period.
Maximum values	Highest value that the channel had during the set period.
Minimum values	Lowest value that the channel had during the set period.
Meter channels	
Meter change	Increase within the period to be selected.
Meter reading	Current total meter value of the value.
Cumulative change	Cumulative (= added) increase within the period to be selected.

7. Select display type in the "Chart type" field. The following display types are possible:



Position	Meaning
A	Bar
B	Area
C	Line with dots
D	Line
E	Dots without line

8. Set automatic scaling or enter own scaling values:
- Automatic scaling: activate "Automatic scaling min" and "Automatic scaling max".
 - Custom scaling: enter scaling values into "Min" and "Max" fields.

Configuring Time Settings

1. Select the desired display period of the diagram in the "Display period" field in the "Time settings" area.
2. Select in the "Number of periods" field how many display periods are to be shown.
3. In the "Time unit" field, select into which time units the periods should be divided.
4. In the "End date of display" area, activate the desired end date of the display. The following settings are possible:

Current	The values for the current date (e.g., current day, current month) are always shown.
User-defined	You can select the date for which to display the values (e.g., a certain day, a certain month).

Making Advanced Configurations

1. In order to add a heading in the "Advanced configuration" area, enter heading in "Diagram name" field.
 2. In the "Download file type" field, select the download format.
 3. In order to show the legend by default for this diagram, activate "Show legend".
 4. In order to view the preview, open the "Preview" area. Select [Update] to reload diagram after changes were made.
 5. Select [Save].
 6. Select [Save].
- The diagram has been created and is displayed.

5.2.6 Creating a Slideshow

HINT: Select a page template with only 1 module on the page for the slideshow so that the slideshow will be shown in good quality.

Procedure:

- Select Picasa or Flickr photo album
- Integrate slideshow into Sunny Portal

Selecting a Picasa Photo Album

1. Register at picasa.google.com.
2. If you have no Picasa photo album, create a photo album as described at Picasa.
3. Select photo album.
4. Select [Link to this album].
5. Select [Integrate slideshow].
 - A window opens.
6. "Integrate slideshow" text field.

7. Select the HTML code and copy it to the clipboard.
8. Leave Picasa and switch to Sunny Portal.

Selecting a Flickr Photo Album

1. Register at www.flickr.com.
2. If you have no Flickr photo album, create a photo album as described at Flickr.
3. Select photo album.
4. Select [Slideshow].
 - Slideshow begins.
5. Select [Publish].
 - A window opens.
6. Select [Embed HTML].
7. Select [Copy to clipboard].
8. Leave Flickr and switch to Sunny Portal.

Integrating Slideshow into Sunny Portal

1. Call up page configuration of slideshow.
2. In order to add a heading, enter the heading in the "Title" field.
3. In the "Data source" field, select the name of the photo platform.
4. Copy HTML code into the "HTML code" field.
5. In order to see the preview, select [Preview].
6. Select [Save].
7. Select [Save].
 - The slideshow has been created and is displayed.

5.2.7 Creating an Image


Image Requirements:

- Maximum image size: 500 kB
- Possible image formats: JPG, PNG, GIF
- Height and width: Sunny Portal will proportionally adjust the image depending on the size of the page layout.

Procedure:

- Upload an image from own computer to gallery
- Add image from gallery to page

Uploading an Image from Own Computer to Gallery

1. Select .
 A new section opens up.
2. Select [Browse].
 The "Select file" window opens.
3. Open desired image.
 Path of the image is in the address bar.
4. Select [Upload selected file].
5. Repeat process in order to upload additional images.
 Image has been uploaded and is shown in the gallery.

Adding an Image from the Gallery to the Page

1. In order to add a caption, enter caption in the "Title" field.
2. Select image by double-clicking on it.
 Image is displayed.
3. In order to use a different image, select [Edit] and repeat previous steps.
4. Select [Save].
5. Select [Save].
 Image has been added on the page and is displayed.

5.2.8 Creating Plant Monitoring

Requirement:

Plant monitoring has been set (see Section 6.3).

1. In order to add a heading, enter the heading in the "Title" field.
 2. Activate "Communication monitoring" and/or "Inverter comparison".
 3. Select [Save].
 4. Select [Save].
- Plant monitoring has been set and is displayed.

5.2.9 Creating an Overview

Image Requirements:

- Maximum image size: 500 kB
- Possible image formats: JPG, PNG, GIF
- Height and width: Sunny Portal will proportionally adjust the image depending on the size of the page layout.

1. Activate the field of the desired value.
 2. Select size of the unit.
 3. Adding an image:
 - In order to use the displayed image, activate "Automatically".
 - In order to use own image, activate "User-defined" and select [Browse].
 4. Select [Save].
 5. Select [Save].
- The overview has been created and is displayed.

5.2.10 Creating Text

Forbidden HTML tags:

<SCRIPT> (and therefore Java Script), <META>, <APPLET>, <FORM>, <HTML>, <HEAD>, <FRAME>, <IFRAME>.


1. In order to add a heading, enter the heading in the "Title" field.
 2. Enter desired text in the editor.
 3. Select [Save].
 4. Select [Save].
- The text has been created and is displayed.

Example: Adding a Current Webcam Image

This example describes how to add the current webcam image with the editor. Every time the page is called up, the current image of the webcam is displayed.

Requirement:

The webcam program always saves the current image under the same name.

1. In order to add a heading, enter the heading in the "Title" field.
2. Select .
 The "Image properties" window opens.
3. Enter the URL of the webcam image in the "Select image" field.
4. Select [OK].

5.3 Changing/Deleting Page Content

1. Select name of the page in the "Visualization" menu.
 The selected page opens.
2. Select the "Page configuration" tab.
3. To change page contents:
 - Select [Edit] in the area of the page content to be changed.
 - Edit page content.
4. In order to delete page content, select [Delete] in the area of the page content to be deleted.

5.4 Deleting Pages

You can delete all pages of the "Visualization" menu.

1. Select name of the page in the "Visualization" menu.
 The selected page opens.
2. Select the "Page configuration" tab.
3. In order to delete the page, select [Delete page].
4. Click [Yes] to accept.

5.5 Changing the Page Name

1. Select name of the page in the "Visualization" menu.
 The selected page opens.
2. Select the "Page configuration" tab.
3. Change the page name in the "Name of this page" field.
4. Select [Save].

5.6 Publishing Pages

You can publish the following pages:

- All pages of the "Visualization" menu
- The following pages of the "Name of your plant" menu:
 - Plant profile
 - Energy and Power
 - Annual comparison

Options for Publishing:

- Presenting pages at www.SunnyPortal.com in the "Public plants" area
- Presenting pages on the Internet

Presenting Pages at Sunny Portal in the "Public plants" Area

1. Select the name of the desired page.
 - The selected page opens.
2. If you have chosen a page in the "Visualization" menu, select the "Page configuration" tab.
3. If you have chosen a page in the "Name of your plant" menu, select "Configuration > Name of page".
4. Activate "Also release page on www.sunnyportal.com" field.
 - The link "Send page by e-mail" is shown next to it.
5. In order to send the page by e-mail, select "Send page by e-mail". The window for sending e-mails opens. Make the following settings:
 - Enter the recipient's e-mail address in the "Recipient e-mail address" field.
 - In order to change the name of the sender, change entry in "Name of sender" field.
 - In order to add a message to the recipient, enter desired text in the "Your message to the recipient (optional)" field.
 - Select [Send e-mail].
6. Select [Save].
7. In order to see a preview, select "Open page in new window".
 - The page has been published.

Presenting Pages on the Internet

Every single one of your Sunny Portal pages has its own URL. You can use this URL to set a link from another web page to your page. You can call up the URL of the page as described below:

1. Select the name of the desired page.
 - The selected page opens.

2. Access the configuration:
 - If you have chosen a page in the "Visualization" menu, select the "Page configuration" tab.
 - If you have chosen a page in the "Name of your plant" menu, select "Configuration > Name of page".
3. In order to see a preview, select "Open page in new window".
4. Copy URL from "Page URL" field and copy it as a link into a program for creating web pages (e.g., Microsoft Office Frontpage) or integrate it into your own web page through a so-called iFrame.

5.7 Standard Pages

5.7.1 Overview of Standard Pages

Standard pages are pages with the most important data, which Sunny Portal creates automatically when first sending your plant data. The standard pages are saved in the "Visualization" menu.


| Standard page | Description |
|-----------------------------|---|
| Plant overview | Displayed data of entire plant: <ul style="list-style-type: none"> • CO₂ saved and energy for current day • Meter change of total yield per year in months • Meter change of total yield and mean power values for 2 days in hours |
| Energy and Power | Displayed data of entire plant: <ul style="list-style-type: none"> • Mean values of power and meter reading of total yield for 7 days in hours • Meter change and meter reading of total yield for 7 days in days |
| Specific plant yield | Displayed data: <ul style="list-style-type: none"> • Mean values of specific plant yield of 1 month in days • Mean values of specific plant yield of 1 year in months |
| Performance ratio | Is created and configured automatically in the following cases: <ul style="list-style-type: none"> • Sunny SensorBox is added to your Sunny Portal plant. • Communication device sends data of a radiation and temperature sensor to Sunny Portal[*]). Shows the following data of the entire plant: <ul style="list-style-type: none"> • Mean values of performance ratio of 1 month in days • Mean values of performance ratio of 1 year in months |











| Standard page | Description |
|--|---|
| Devices
> "Name of inverter"
overview | Displayed inverter data: <ul style="list-style-type: none"> • Meter change of total yield of 1 year in months • Mean value of power of 1 day in hours |
| Report
> Daily plant report | Displayed data: <ul style="list-style-type: none"> • Meter change of power for current day, current month, and current year • Meter change of total yield of 1 day in hours |
| Report
> Monthly plant report | Displayed data: <ul style="list-style-type: none"> • Meter change of total yield for current month and current year • Meter change of total yield for 1 month in days |
| Sensors
> "Name of sensor" | Is created and configured automatically in the following cases: <ul style="list-style-type: none"> • Sunny SensorBox is added to your Sunny Portal plant. • Communication device sends data of a radiation and temperature sensor to Sunny Portal *). |

*The sensor must be adjusted manually in this case (see Section 7.3.4 "Changing the Performance Ratio" (page 53)).

5.7.2 Creating Standard Pages

Sunny Portal creates the standard pages automatically. Should you have accidentally deleted or changed a standard page, you can create the standard pages as described below:

1. Select "Configuration > Visualization".
 - The "Page configuration (groups)" page opens.
2. Select [] in the "Create standard pages" area in the row of the selected page.

| Create Standard Page | | |
|----------------------|--------------------------------------|---|
| Page Name | Plant / Device Class | |
| Plant overview | Photovoltaic plant with Sunny WebBox |  |
| Energy and power | Photovoltaic plant with Sunny WebBox |  |
| Specific yield | Photovoltaic plant with Sunny WebBox |  |
| Performance Ratio | Photovoltaic plant with Sunny WebBox |  |
| Overview | Photovoltaic inverter |  |
| Monthly report | Photovoltaic plant with Sunny WebBox |  |
| Daily report | Photovoltaic plant with Sunny WebBox |  |
| Daily report | Photovoltaic plant with Sunny WebBox |  |
| Monthly report | Photovoltaic plant with Sunny WebBox |  |
| Sensor | Sensor |  |

- The selected standard page has been created in the "Visualization" menu.

5.8 Changing Page Arrangement in the Visualization Menu

This section describes how you can change the page arrangement in the "Visualization" menu and combine the pages in groups. This means you can create your own structure for the "Visualization" menu and arrange your pages.

5.8.1 Creating a New Group

After creating a new group, you can assign pages to the group by changing the page positions.

1. Select "Configuration > Visualization".
 - The "Page configuration (groups)" page opens.
 2. Select [New group].
 - The "Configure group" page opens.
 3. Enter a name for the group in the "Group title" field.
 4. Select [Save].
- New group can be seen in the directory tree and in the "Visualization" menu.

5.8.2 Changing the Positions of Pages and Groups

Groups are moved as groups, together with the pages assigned to them. The position of the "(without group)" cannot be changed; it always remains in first place.

1. Select "Configuration > Visualization".
 - The "Page configuration (groups)" page opens.
2. Select "Activate positioning".
3. Select name of the group or page.
 - Arrow keys are now active. The name of the page or group is highlighted in gray.
4. Use the up or down arrow to move the page or group.
 - The page or group will move by one step.
5. Keep selecting the according arrow until the desired position has been reached.
6. Select [Save].

5.8.3 Deleting a Group



Group and all subpages will be deleted permanently!

If you delete a group, all the subpages assigned to the group will also be deleted permanently!

1. Select "Configuration > Visualization".
 - The "Page configuration (groups)" page opens.
2. Select the name of the group.
3. Select [New group].
 - The "Configure group" page opens.
4. Select [Delete] to delete the group permanently.

6 System Monitoring

6.1 Monitoring Functions

Sunny Portal offers the following monitoring functions for your PV plant:

| Monitoring | Sunny Portal function | Section |
|---|--|--|
| Events of the PV plant | System logbook
The system logbook will let you see messages for events of your PV plant. | 6.2 "System Logbook" (page 38) |
| | Report configuration
If you are using report configuration, you will receive an e-mail with the events of your PV plant. | 6.4 "Report Configuration" (page 42) |
| Yield, compensation, power, CO ₂ saved | Report configuration
You can set that you will receive an e-mail with data of your PV plant. | |
| Inverter yields outside of the tolerance | Plant monitoring - inverter comparison
If you activate inverter comparison, you will receive an e-mail as soon as the specific yield of an inverter is outside of the tolerance. | 6.3.3 "Configuring Inverter Comparison" (page 41) |
| Communication between Sunny WebBox and Sunny Portal | Plant monitoring - communication monitoring
If you activate communication monitoring, you will receive an e-mail if Sunny WebBox stops sending data to Sunny Portal. | 6.3.2 "Configuring Communication Monitoring" (page 41) |

6.2 System Logbook

The page "Name of your plant > System logbook" will show you messages from Sunny Portal and your PV plant. These messages help you to identify plant failures, for example. The number after the colon of the menu name shows the number of unread messages (system logbook: x, x = number of messages).

6.2.1 Calling up and Filtering Messages

You can filter messages in the system logbook in order to only call up certain messages.

1. Select "Name of your plant".
2. Select "System logbook".
3. Configure the desired filters. The following settings are possible:

| | |
|------------------------|---|
| Go to | Here you can select the date for which to show the messages. |
| Status | <ul style="list-style-type: none"> • Unapproved: unapproved messages are displayed (default setting). • Approved: approved messages are displayed. • All: approved and unapproved messages are displayed. |
| Plant/devices | <ul style="list-style-type: none"> • All: messages from Sunny Portal, from the plant, from service, and from the devices are displayed. • Portal: messages from Sunny Portal are displayed. • Plant: messages from the current plant are displayed. • Devices (e.g., SB4200TL): messages for the selected device are displayed. |
| Number per page | Here you can select how many messages are to be displayed per page. |
| Type | Here you can select which messages should be displayed: info, warning, disturbance, error. |

6.2.2 Approving Messages

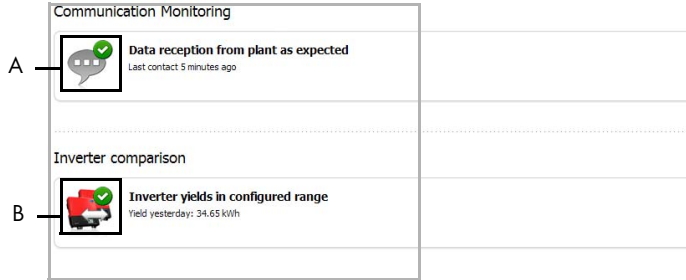
You can approve messages in order to mark them as read. This will let you distinguish between read messages and new messages.

1. Activate fields next to messages that should be approved.
2. In order to select all messages, activate "Select all".
3. Select the red checkmark to approve a message immediately.
4. Select [Execute].

6.3 Plant Monitoring

6.3.1 Overview of Plant Monitoring

The page "Name of your plant > Plant monitoring" gives you an overview of communication monitoring status and inverter comparison status.




| Position | Description |
|----------|--|
| A | Symbol for communication monitoring status |
| B | Symbol for inverter comparison status |

Communication Monitoring:




Sunny Portal offers communication monitoring for plants with the Sunny WebBox. At certain time intervals, Sunny Portal checks when Sunny WebBox has sent the data of your PV plant to Sunny Portal. Should data transmission be interrupted, Sunny Portal will inform you via e-mail. How to configure communication monitoring is described in Section 6.3.2 "Configuring Communication Monitoring" (page 41). The following tables explains the meaning of the symbols for communication monitoring:

| Symbol | Meaning |
|--------|--|
| | Communication monitoring has not been activated. Symbol is shown in color if communication monitoring has been activated. Symbol in the circle shows the status of communication monitoring. |
| | Communication between Sunny WebBox and Sunny Portal is ok. Time of last contact is displayed. |
| | Communication between Sunny WebBox and Sunny Portal is interrupted. The additionally displayed "Details" link gives you detailed information about the time of last contact with the Sunny WebBox. The following navigation options are available: <ul style="list-style-type: none"> • Link to device properties • Link to parameters • Link to messages of the Sunny WebBox in the system logbook |

| Symbol | Meaning |
|---|--|
|  | Stops sending of e-mail. Should the Sunny WebBox have sent no data to Sunny Portal for an extended period of time, a reminder will be sent by e-mail on up to 3 days in a row. You can stop sending of the e-mail by confirming the entry in the system logbook. |

Inverter Comparison:

Sunny Portal offers inverter comparison for plants with at least 2 PV inverters. Inverters of the Sunny Central type that are operating as a team are not supported. Based on the daily yield, Sunny Portal calculates the specific yield for every active inverter and compares it to the mean value of the specific yields of all inverters once a day. Should the specific yield be below a configurable tolerance, Sunny Portal will inform you by e-mail.

| Symbol | Meaning |
|---|--|
|  | Inverter comparison has not been activated. The symbol is shown in color if inverter comparison has been activated. The symbol in the circle shows the status of inverter comparison. |
|  | Inverter yields are within the configured range. The yield of the last day is shown. |
|  | Specific inverter yield is outside of tolerance for at least 1 monitored inverter. The additionally displayed "Details" link will let you read how high the specific yield of the affected inverter/s is and how high the comparison value from the mean value of all monitored inverters was. The following navigation options are available: <ul style="list-style-type: none"> • Link to device properties • Link to messages in the system logbook |

6.3.2 Configuring Communication Monitoring

1. Select "Plant name > Plant monitoring".
2. In the "Communication monitoring" area select [Settings].
3. Configure alarm. The following settings are possible:

| | |
|---------------------------------|---|
| Off | Data transmission is not monitored. |
| Liberal, tolerant, sharp | Here you can set how long Sunny Portal should wait for the Sunny WebBox data before notifying you. The time period will be shown to you during configuration. |

4. Enter the recipient's e-mail address for notifications in the "Recipient" field. Separate multiple e-mail addresses by commas.
5. Activate the "Monitoring" field for desired devices.
6. Select [Save].

6.3.3 Configuring Inverter Comparison

Displaying the Inverters in Groups or Individually:

All inverters of the same type, with the same tolerance set and which are selected for the inverter comparison are grouped. If at least 1 characteristic is different, the inverters will be listed individually.

1. Select "Plant name > Plant monitoring".
2. In the "Inverter comparison" area, select [Settings].
3. Enter the recipient's e-mail address for notifications in the "Recipient" field. Separate multiple e-mail addresses by commas.
4. Change the preset generator power in the "Generator power [kWp]" field, if required. Sunny Portal calculates the preset generator power based on the maximum DC voltage of the inverters. You can configure the generator power for every inverter (see Section 8.2.5 "Configuring the Generator Power" (page 60)).
5. In the "Tolerance [%]" field, change the preset tolerance allowed for the inverter's specific yield, if required. If the specific yield is outside the tolerance range, Sunny Portal will inform you by e-mail.
6. Activate "Monitoring" field for desired inverters. By activating the "Monitoring" field, the inverters are selected for the inverter comparison.
7. Select [Save].

6.4 Report Configuration

Reports contain plant data or events for your PV plant. Sunny Portal sends reports by e-mail.



Receiving E-Mails as Text Messages on your Mobile Phone

You can also receive report e-mails as text messages through your mobile operator or have them forwarded as text messages from your inbox. Find further information in the "E-mail to SMS" technical information, available in the download area at www.SMA.de/en.

Direct Text Messages from the Sunny WebBox with Optional GSM Modem

If a GSM modem is installed, the Sunny WebBox can directly inform you about "Error" type events via e-mail or text message.



Sunny Portal Considers Delayed Data in the Following Reports

If relevant data arrives after sending the report, Sunny Portal will consider the data in the following report.

There are the following 3 reports of which you can set 3 each:

| Report | Selectable channels |
|---------------------------------|--|
| Info report day 1 to 3 | <ul style="list-style-type: none"> • Daily yield (kWh) • Revenue today • Max. power today (kW) • CO₂ saved today (kg) |
| Info report month 1 to 3 | <ul style="list-style-type: none"> • Yield for the month (kWh) • Monthly revenue • Max. power for the month (kW) • CO₂ saved (kg) monthly |
| Event report 1 to 3 | <p>For the 3 event reports you can choose 4 message types from Sunny Portal, from the plant, and from service:</p> <ul style="list-style-type: none"> • Information • Warnings • Disturbances • Errors |

6.4.1 Configuring Daily Info Report/Monthly Info Report

For the daily info report, the channels' data for the respective day is sent; for the monthly info report, the channels' data for the respective month. You can configure 3 monthly info reports and 3 daily info reports that contain different data. Every daily info report can be sent at a set time; the monthly info reports are sent at the end of the month.

1. Select "Configuration > Report configuration".
2. In the "Report configuration" field, select a daily info report or a monthly info report.
3. Select [Edit].
4. Configure the report. The following settings are possible:

| | |
|--------------------------|---|
| Activate report | If the report is activated, it will be sent to the set e-mail address at the set interval. You can also save report settings and activate the report later. |
| Recipient | In the "E-mail address(es):" field enter recipient's e-mail address. Separate multiple e-mail addresses by commas. |
| Interval | In the "Send report at:" field select the time at which you would like to receive the e-mail. |
| Content | |
| Channel selection | Activate fields of channels that should be shown in the report. |
| Send report as | <p>Text: you will receive the e-mail with the data in text format.</p> <p>In the "Send data in:" area activate the fields in which the data should be shown in the e-mail.</p> <ul style="list-style-type: none"> • Subject of e-mail: the data is shown in the e-mail's subject heading. • E-mail body: the data is shown in the e-mail body. <p>HTML: you will receive the e-mail with the data in HTML format.</p> <p>PDF: you will receive the e-mail in text format and the data as a PDF attachment.</p> <p>In the "Portal page to be sent:" field select which Sunny Portal page should be sent with the e-mail. If you want to generate a default report page, save your report settings and create the report manually afterwards.</p> |

5. In order to send the test report to a set e-mail address, select [Send test report].
6. Select [Save].

6.4.2 Configuring an Event Report

You can configure 3 event reports that contain different events and are sent at different times. You can select 4 events of Sunny Portal and the plant: information, warnings, disturbances, errors.

1. Select "Configuration > Report configuration".
2. Select an event report in the "Report configuration" field.
3. Select [Edit].
4. Configure the report. The following settings are possible:

| | |
|--|---|
| Activate report | If the report is activated, it will be sent to the set recipients at the set interval. You can also save report settings and activate the report later. |
| Recipient | In the "E-mail address(es):" field enter recipient's e-mail address. Separate multiple e-mail addresses by commas. |
| Interval | In order to receive the report hourly, activate the "Hourly" field. In order to receive the report daily, activate the "Daily" field and select the time. |
| Content | |
| | Activate the according fields of the events that the report should contain in the "Portal" and "Plant" rows. |
| Send report as | Text: you will receive the e-mail with the data in text format. |
| | HTML: you will receive the e-mail with the data in HTML format. |
| | PDF: you will receive the e-mail in text format and the data as a PDF attachment. |
| Max. number of messages in one report | Select the maximum of messages that may be included in one report. |
| | If empty reports should be sent as well, activate "Also send empty reports if no new events are available". |

5. In order to send the test report to set e-mail addresses, select [Send test report].
6. Select [Save].

6.4.3 Regenerating a Report Manually

You can have the report for a certain date regenerated. After this, you can send the report to the e-mail addresses set in the report.

1. Select "Configuration > Report configuration".
 2. Select desired report in the "Report configuration" field.
 3. In the "Report date" field in the "Regenerate report manually" area, select for which date the report should be regenerated.
 4. Select [Generate].
- Next to the button you will see a message that the report has been sent.

7 Plant Properties

7.1 Plant Data

On the "Configuration > Plant properties" page you can view or edit general information on your PV plant. Some of the information is displayed on the "Plant profile" page.

You can make the following settings, which are explained in the following sections:

- Change general plant data
- Change plant name
- Delete plant
- Set power of plant
- Change description of the plant
- Create an image of the plant

7.1.1 Changing General Plant Data

1. Select "Configuration > Plant properties".
2. Select "Plant data" tab.
3. Select [Edit].
4. Change plant data. The following settings are possible:

| | |
|-------------------------|--|
| Name | Name of the current plant. The plant identifier is used as the default plant name. (Changing plant name, see Section 7.1.2 "Changing the Plant Name" (page 47)). |
| Plant identifier | Plant identifier for the plant currently selected. The plant identifier is defined when you register the plant. |
| Commissioning | Date on which the plant was created in Sunny Portal. |
| Street address | Street address to which the plant belongs. |
| Postal code/city | Postal code and city to which the plant belongs. |
| Country | Country in which the plant is located. |
| (Federal) state | Federal state in which the plant is located. |
| Time zone | Here you can select the time zone. |
| Longitude | Longitude and latitude of the plant location. In order to have geodata for location automatically entered from database, select "Search geodata". |
| Latitude | |
| Altitude | Altitude of plant location. |

5. Select [Save].

7.1.2 Changing the Plant Name

The plant identifier is used as the default plant name. You can change the plant name and give your plant a name. If you have registered several plants at Sunny Portal, you will be able to distinguish better between plants with relevant names.

1. Select "Configuration > Plant properties".
2. Select "Plant data" tab.
3. Select [Edit].
4. In the "Name" field, enter the desired name for the plant (e.g., "Smith House" or "WebBox plant South").
5. Select [Save].

7.1.3 Deleting a plant



You cannot undo the delete process!

If you delete a plant, all devices and data related to this plant are permanently deleted!

1. Select "Configuration > Plant properties".
1. Select "Plant data" tab.
2. Select [Edit].
3. Select [Permanently delete plant].
4. Select [Yes] in order to delete plant permanently.

7.1.4 Setting Plant Power

The plant power is the sum of the power of all PV modules.

Options for Configuring Plant Power:

- Entering plant power directly
- Calculate plant power from the sum of power of all inverters

Entering plant power directly

1. Select "Configuration > Plant properties".
2. Select "Plant data" tab.
3. Select [Edit].
4. In the "Power" area set the plant power in the "system power" field.
5. In order to set the manufacturer of PV modules, select a setting in the "Manufacturer" field.
6. In order to set the module type, select a setting in the "Module type" field. Possible settings depend on selected manufacturer.
7. Select [Save].

Calculating the Plant Power from Sum of Power of all Inverters

1. Set power of individual inverters, see Section 8.2.5 "Configuring the Generator Power" (page 60).
2. Select "Configuration > Plant properties".
3. Select "Plant data" tab.
4. Select [Edit].
5. In the "Power" area, activate "Calculate plant power from device properties" field.
 Plant power is calculated and displayed.
6. Select [Save].

7.1.5 Changing the Description of the Plant

You can enter important properties of the plant in the description. The editor can format text but does not support HTML. The text is also displayed on the "Plant profile" page.

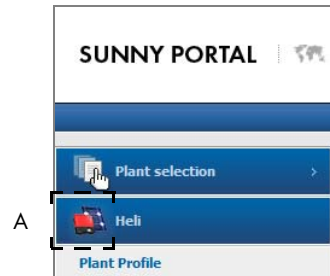
1. Select "Configuration > Plant properties".
2. Select "Plant data" tab.
3. Select [Edit].
4. Enter desired description in the "Description" area.
5. Select [Save].

7.1.6 Changing/Deleting the Plant Image

The plant image is the image (A) in the menu "Name of your plant". You can change this image. You can upload a picture from your computer or select an image from your own Sunny Portal image gallery. You can store own images in the gallery for later use on your pages.

Image Requirements:

- Maximum image size: 500 kB
- Possible image formats: JPG, PNG, GIF
- Height and width: Sunny Portal will proportionally adjust the image depending on the size of the page layout.



Changing/Deleting the Plant Image

1. Select "Configuration > Plant properties".
2. Select "Plant data" tab.
3. Select [Edit].
4. In order to upload images from your own computer:
 - Select [Load image] in the "Plant image" area.
 - The "Select file" window opens.
 - Select the desired image.
 - Select [Open].
 - Move gray squares with mouse to change the image section.

5. In order to select an image from the gallery:
 - Select [Select from gallery] in "Plant image" area.
 - The image gallery opens.
 - Select the desired image by double-clicking on it.
 - Move gray squares with mouse to change the image section.
6. Select [Save].

Deleting the Plant Image

You can delete your own plant images. If you have not created your own plant image, Sunny Portal will show the default plant image again.

1. Select "Configuration > Plant properties".
2. Select "Plant data" tab.
3. Select [Edit].
4. Select [No plant image] in the "Plant image" area.
5. Select [Save].

7.2 Changing Operator Data

You can enter the data of the plant operator in the plant properties at the Sunny Portal, as described in this chapter. The name of the operator is displayed on the "Plant profile" page. The operator is a private or legal person who, for example, owns large-scale PV plants for business purposes and who initiates utilization without necessarily being a user.

1. Select "Configuration > Plant properties".
2. Select "Operator" tab.
3. Select [Edit].
4. Change operator data.
5. Select [Save].

7.3 Parameters

The section describes how you can change parameters for displaying your plant in Sunny Portal. The settings are only for displaying your plant in Sunny Portal and have no effects on your devices. The following sections describe the parameters and for which calculations Sunny Portal requires these parameters.

7.3.1 Changing Compensation

You can consume the electricity from the PV plant yourself or sell it. Enter the cash amount for compensation or savings here. Sunny Portal calculates the amount of money you earn or save. In Germany, the feed-in tariff is regulated by the Renewable Energy Sources Act (EEG).

1. Select "Configuration > Plant properties".
2. Select the "Parameters" tab.
3. Select [Edit].
4. Enter feed-in tariff.
5. Select currency.
6. Select [Save].

Automatically Calculating Compensation - only for Germany

1. Select [Calculate compensation according to EEG].
 - The "Calculate compensation" window opens.
2. Select plant type.
3. Select year of PV plant's initial commissioning.
4. Select [Submit].
 - The window closes. Feed-in tariff is displayed.
5. Select [Save].

7.3.2 Changing CO₂ Saved

The CO₂ factor indicates how much CO₂ is produced for every single kilowatt hour of electricity generated in the country. Depending on the technology used and the efficiency, the CO₂ factor can vary between the different utility grid operators in the region. You can find out the level of the CO₂ factor of the electricity supplied to you by contacting your utility grid operator. Sunny Portal uses the CO₂ factor to calculate how much CO₂ has been avoided due to the environmentally friendly power generation of your PV plant.

1. Select "Configuration > Plant properties".
2. Select the "Parameters" tab.
3. Select [Edit].
4. Enter CO₂ factor in the "Factor" field or adjust with slider.
5. Select [Save].

7.3.3 Entering the predicted annual yield

The predicted annual yield is a PV plant's yield to be expected within one year. Sunny Portal uses a table to show, how the predicted annual yield of your PV plant is distributed throughout the months of the year.

The predicted annual yield of the PV plant is calculated from the specific annual yield (kWh/kWp) at the location of the PV plant multiplied by the plant power in kWp. The plant power is also called nominal power.

You can obtain the specific annual yield for your PV plant's location from irradiation maps. Local conditions such as, e.g., shadows or the plant's orientation are not taken into account. You can obtain your plant's power in kWp from your installer.

1. Select "Configuration > Plant properties".
2. Select the "Parameters" tab.
3. Select [Edit].
4. Enter specific annual yield in kWh/kWp in the "Specific annual yield" field.
5. If the "Plant power (nominal power)" field is empty, set the plant power (see section 7.1.4 "Setting Plant Power" (page 48)).
6. Select [Save].

Changing the Monthly Distribution of the Predicted Annual Yield

The monthly distribution shows how the predicted annual yield is distributed throughout the months of the year. Given complete information about the plant location, Sunny Portal can suggest a distribution. You can also enter the distribution manually.

1. Select "Configuration > Plant properties".
2. Select the "Parameters" tab.
3. Select [Edit].
4. In case the "Plant location" field is empty, enter information to the plant's location in the "Plant data" tab (see section 7.1.1 "Changing General Plant Data" (page 46)).
5. Select [Suggest monthly distribution].
6. In order to manually enter the monthly distribution, enter values in the "in %" fields.
7. Select [Save].

7.3.4 Changing the Performance Ratio

The performance ratio performance = is a measure of the quality of a PV plant that is independent of location and is therefore often described as a quality factor. The performance ratio (PR) is given in percent and describes the relationship between the actual and target yields of the PV plant. It therefore shows which proportion of the generated power is actually available after deducting energy losses (e.g., through thermal losses and cable losses) and the required operating power.

The closer the PR value determined for a PV plant approaches 100 %, the more efficiently the respective PV plant is operating. In real life, a value of 100 % cannot be achieved, as unavoidable losses always arise with the operation of the PV plant (e.g. thermal loss due to heating of the PV modules). However, high-performance PV plants can reach a performance ratio of up to 80 %.

The parameters for the performance ratio are configured automatically when the first Sunny SensorBox is added to your Sunny Portal plant. Normally you do not need to make any changes. You need to adjust parameters manually if you add further Sunny SensorBox devices for a plant to the Sunny Portal, if the channel list has changed, or if you are replacing a Sunny SensorBox. The reason is that the "Performance ratio" standard page in the "Visualization" menu is not updated automatically.

Adjusting the Radiation and Temperature Sensor Manually

1. Select "Configuration > Plant properties".
2. Select the "Parameters" tab.
3. Select [Edit].
4. Select the sensor in the "Radiation sensor" field based on the Sunny Sensor Box serial number.
5. Select the type of the radiation sensor. The following settings are possible:

| | |
|-----------------|---------------------------|
| ExtSolrr | External radiation sensor |
| IntSolrr | Internal radiation sensor |

6. Select the sensor in the "Temperature sensor" field based on the Sunny Sensor Box serial number.
7. Select the type of the temperature sensor. The following settings are possible:

| | |
|----------------|----------------------------|
| TmpAmb | Ambient temperature sensor |
| TmpMdul | Module temperature sensor |

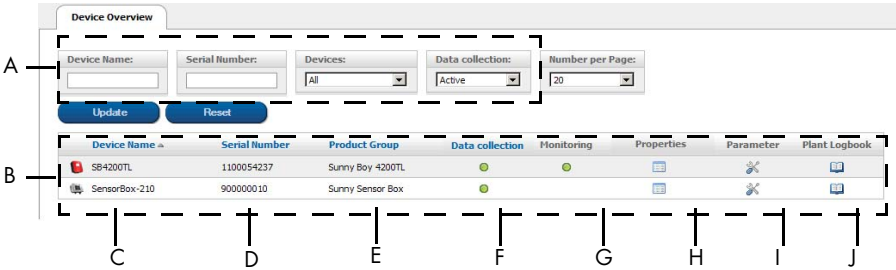
8. Select [Save].




8 Device Settings

8.1 Calling Up and Filtering the Device Overview

On the "Device overview" page you will receive information about all devices of your plant and can make device-specific settings.

1. Select "Configuration > Device overview".
 - The device overview of all devices of the current plant opens.



| Position | Meaning |
|----------|---|
| A | Settings for filtering the device overview |
| B | Device overview |
| C | Device name: name of the device |
| D | Serial number: serial number of the device |
| E | Product group: group of the device, e.g., Sunny Boy 4200TL |
| F | * ¹⁾ Data collection: Displays whether the data of this device is to be used on your Sunny Portal pages, see section 8.2.1 "Activating/Deactivating Device" (page 59). |
| G | * ¹⁾ Monitoring: shows whether the device (inverter, Sunny WebBox) is participating in plant monitoring, see Section 6.3 "Plant Monitoring" (page 39). |
| H |  Properties: opens tab with device properties of the device, see Section 8.2 "Accessing the Device Properties" (page 57). |
| I |  Parameters: opens the "Parameters" tab of the device, see Section 8.3 "Calling Up Parameters of a Device" (page 62). |
| J |  System logbook: Opens "Plant logbook" tab with filtered messages for this device, see section 6.2 "System Logbook" (page 38). |

*  = active,  = deactivated

2. Set the desired filters in order to filter the device overview. The following settings are possible:

| | |
|------------------------|--|
| Device name | Enter the complete device name or parts of a device name. |
| Serial number | Enter the complete serial number of the device or parts of the serial number. |
| Devices | Select the required device class, e.g., photovoltaic inverter or sensor. |
| Data collection | Select the status of the required devices. <ul style="list-style-type: none"> • All: activated or deactivated devices are shown. • Active: only activated devices are shown. • Deactivated: only deactivated devices are shown. |



3. Select [Update].
4. Select [Reset] in order to delete filter settings. HINT: You can sort the devices in the table of the device overview in ascending or descending order by clicking on a blue entry in the table head (device, serial number, device active).

8.2 Accessing the Device Properties



1. Select "Configuration > Device overview".
 2. Select symbol for device properties in the device row.
- The device properties open.

Explanation of Device Properties:

| Description | Meaning |
|--|---|
| Data collection | Shows whether the device has been activated in Sunny Portal (see Section 8.2.1 "Activating/Deactivating Device" (page 59)). Activated devices are used in the Sunny Portal, deactivated devices are not used.

 = device is activated in Sunny Portal.
 = device is deactivated in Sunny Portal. |
| Product group | Group of the device, e.g., Sunny Boy 4200TL |
| IP address
(only for Sunny WebBox) | If you click on the IP address, you can directly call up your Sunny WebBox user interface. In order to do this, you must first activate the Sunny WebBox IP address on your router. Please follow your router manual for this. |
| MAC address
(only for Sunny WebBox) | MAC address of Sunny WebBox |
| Serial number | Serial number of device |
| Manufacturer | Device manufacturer |
| Name | Device name

The serial number of the device is shown as the default name (changing the name, see Section 8.2.2 "Changing the Device Name" (page 59)). |
| Description | Room for remarks on the device (see Section 8.2.3 "Changing the Device Description" (page 59)) |
| Phase (L1, L2, L3) | Phases to which the device is connected (see Section 8.2.4 "Configuring the Phase" (page 60)).

 = the device is connected to this phase.
 = the device is not connected to the phase or the phase has not been configured yet. |
| Generator power | Sum of power of all PV modules that are connected to a PV inverter. |
| Communication monitoring
(only for Sunny WebBox) | Shows the settings of this Sunny WebBox for communication monitoring (see Section "Explanation of Device Properties - Communication Monitoring (only for Sunny WebBox):" (page 58)). |

| Description | Meaning |
|--|---|
| Inverter comparison
(only for inverters) | Shows the settings of the inverter for this inverter comparison (see Section "Explanation of Device Properties - Inverter Comparison (only for Inverters):" (page 58)). |

Explanation of Device Properties - Communication Monitoring (only for Sunny WebBox):

| Description | Meaning |
|--------------------|--|
| Monitoring | Here you can activate or deactivate communication monitoring for this Sunny WebBox. |
| Alarm after | Shows for how long there must be no contact between Sunny Portal and this Sunny WebBox until you receive an e-mail. |
| Interval | Shows how often the Sunny WebBox sends data to the Sunny Portal (configuration via Sunny WebBox user interface). |
| Period | Shows in which period the Sunny WebBox sends data to the Sunny Portal (configuration via Sunny WebBox user interface). |

Explanation of Device Properties - Inverter Comparison (only for Inverters):

| Description | Meaning |
|----------------------|--|
| Monitoring | Here you can activate or deactivate inverter comparison for this inverter. |
| Tolerance [%] | Here you can enter the tolerance for this inverter into which the specific yield of this inverter may fall. If it is outside of the tolerance, Sunny Portal will inform you by e-mail. |

8.2.1 Activating/Deactivating Device

If you want to remove a device from your PV plant or if you do not want have a device displayed on Sunny Portal, you can deactivate the device on Sunny Portal. The data of the deactivated device is then no longer available for calculating diagrams and tables. In contrast to the deletion process of a device (see section 8.2.6 "Deleting a Device" (page 62)), the data of a deactivated device however remains available on Sunny Portal.



Replacing a Device using the Configuration Wizard

After you have replaced a device using the configuration wizard (see section 8.2.7 "Adding/Replacing Devices" (page 62)), the replaced device is automatically deactivated.

1. Select "Configuration > Device overview".
2. Select symbol for device properties in the device row.
 - The device properties open.
3. Select [Edit].
4. In order to activate a device, activate "Data collection" field.
5. In order to deactivate a device, deactivate "Data collection" field.
6. Select [Save].

8.2.2 Changing the Device Name

The serial number of the device is displayed as the default device name.

1. Select "Configuration > Device overview".
2. Select symbol for device properties in the device row.
 - The device properties open.
3. Select [Edit].
4. Enter new name in the "Name" field.
5. Select [Save].

8.2.3 Changing the Device Description

1. Select "Configuration > Device overview".
2. Select symbol for device properties in the device row.
 - The device properties open.
3. Select [Edit].
4. Enter desired remarks for the device in the "Description" field.
5. Select [Save].

8.2.4 Configuring the Phase

You can configure the phase into which the inverter is feeding.

1. Select "Configuration > Device overview".
2. Select symbol for device properties in the device row.
 - The device properties open.
3. Select [Edit].
4. Activate according fields L1, L2, or L3 in the "Phase" area.
5. Select [Save].

8.2.5 Configuring the Generator Power

You only need to make the settings in this section if Sunny Portal is to calculate the entire power of your PV plant. Sunny Portal calculates the plant power from the inverter power (generator power).

Options for Configuring the Generator Power:

- Entering the power of an inverter manually
- Configuring the power of an inverter through multiple strings

Entering the Power of an Inverter Manually

1. Select "Configuration > Device overview".
2. Select symbol for device properties in the inverter row.
 - Device properties of the inverter open.
3. Select [Edit].
4. Enter inverter power in the "kWp" field under "Generator power".
5. Select [Save].
6. Activate calculation, see Section 7.1.4 "Setting Plant Power" (page 48), Paragraph "Calculating the Plant Power from Sum of Power of all Inverters" (page 48).

Configuring the Power of an Inverter through Multiple Strings

1. Select "Configuration > Device overview".
2. Select symbol for device properties in the inverter row.
 - The device properties open.
3. Select [Edit].
4. Call up page for configuring the string:
 - Select [Add string] in order to add a new string.
 - In order to copy an existing string, select [Copy] in the string row and edit it afterwards.
 - Select [Edit] in the string row in order to edit an existing string.
- The menu for configuring the string opens.

5. Configure the string. The following settings are possible:

| | |
|-------------------------|---|
| Description | Enter name for the string |
| Manufacturer | Select the module manufacturer |
| Module type | Select the type of module
You must set the manufacturer first. The menu contents vary depending on the manufacturer you select. |
| Module power | These data are entered automatically when you select the module type. You can enter changes into the fields using the arrows or your keyboard's arrow keys. |
| Module surface | |
| Efficiency | |
| Number of module | Enter number of modules per string |
| Azimuth | Here you can enter the azimuth angle of the string's module surfaces. The azimuth angle indicates, in degrees, the amount by which the module surfaces deviate from an exact southern orientation. <ul style="list-style-type: none"> Tracking
If your module surfaces track the sun automatically, activate this field. |
| Tilt angle | Here you can configure the tilt angle of the string's module surfaces. The tilt angle indicates, in degrees, the amount by which the module surfaces deviate from the horizontal. <ul style="list-style-type: none"> Optimized
If your plant is optimized based on the latitude, activate this field. The optimum orientation is 30° from the horizontal in Germany. |
| Description | Enter remarks |

6. Select [Submit].
 The "Device Properties" page opens. String has been configured.
7. Select [Save].
8. Activate calculation, see Section 7.1.4 "Setting Plant Power" (page 48), Paragraph "Calculating the Plant Power from Sum of Power of all Inverters" (page 48).

8.2.6 Deleting a Device





If you delete a device, all data of the device will be permanently deleted. Check in advance whether it is sufficient to deactivate the device (see section 8.2.1 "Activating/Deactivating Device" (page 59)).

1. Select "Configuration > Device overview".
2. Select symbol for device properties in the device row.
 - The device properties open.
3. Select [Edit].
4. Select [Delete].
 - A confirmation prompt opens.
5. Select [Delete] to delete the device permanently.

8.2.7 Adding/Replacing Devices

You can add new devices to the Sunny Portal or replace devices as soon as the communication device sends data of the new devices to Sunny Portal. Sunny Portal detects the new devices. Using the configuration wizard you can add new devices to the Sunny Portal or replace devices.

1. Select "Name of your plant > Plant monitoring".
2. Select "Set up device now".
3. In order to add a device, select .
4. In order to replace a device, select .
5. Follow the instructions of the configuration wizard.

8.3 Calling Up Parameters of a Device

The parameters are described in the respective manual of the device. You can only read the device parameters, not change them. If you want to change parameters, use the Sunny WebBox or the Sunny Explorer software by SMA Solar Technology AG.

1. Select "Configuration > Device overview".
 - The device overview of all devices of the current plant opens.
2. Select symbol for parameters in the device row.
 - The device parameters open.
3. In order to view a parameter's history, select history symbol.

9 User Management

9.1 User Concept with Roles and Rights

You can create additional users in your Sunny Portal, so they will be able to call up your Sunny Portal. You can assign roles to users. Roles differ in the rights the user has in your Sunny Portal, for example, whether the user is authorized to create a new page. The following roles are possible:

- Guest
- Default user
- Installer
- System administrator

Overview of Roles and Rights

| Rights | Role | | | |
|---|-------|---------|-----------|---------------|
| | Guest | Default | Installer | Administrator |
| Login | ✓ | ✓ | ✓ | ✓ |
| View pages | ✓ | ✓ | ✓ | ✓ |
| View and change user information | ✓ | ✓ | ✓ | ✓ |
| Change the password | - | ✓ | ✓ | ✓ |
| View plant properties | - | ✓ | ✓ | ✓ |
| View device properties | - | ✓ | ✓ | ✓ |
| View the report configuration | - | ✓ | ✓ | ✓ |
| View, change, and delete pages | - | - | ✓ | ✓ |
| View and change plant properties | - | - | ✓ | ✓ |
| View and change device properties | - | - | ✓ | ✓ |
| View and change the report configuration | - | - | ✓ | ✓ |
| View and change calculated channels | - | - | ✓ | ✓ |
| View the system logbook and confirm entries | - | - | ✓ | ✓ |
| Import data | - | - | ✓ | ✓ |
| View user management | - | - | - | ✓ |
| Create and delete users and assign roles | - | - | - | ✓ |

9.2 Creating a New User



User is Notified by E-Mail

When you create a new user, the user receives an e-mail indicating that he or she now has access to your Sunny Portal page under this e-mail address. If the new user is not registered at Sunny Portal yet, an automatically generated password will be sent additionally.

1. Select "Configuration > User management".
 2. Select [New user].
 3. In the "E-mail address:" field enter new user's e-mail address.
 4. In the "Roles" area, activate the desired role. The "Default user" role is activated by default.
 5. Select [Save].
- The new user has been created and receives an e-mail with access information.

9.3 Changing User Rights

1. Select "Configuration > User management".
2. Select symbol for editing in the user row.
3. In the "Roles" area, activate the desired role.
4. Select [Save].

9.4 Deleting a User



Never delete the e-mail address of the communication product!

Never delete the user with the e-mail address which the communication product (e. g. Sunny WebBox, Sunny Data Control) uses to send data to Sunny Portal. Otherwise, the communication product will no longer be able to send data to Sunny Portal. If you want to enter a new e-mail address in the communication product, proceed as follows:

- Create user with the new e-mail address in Sunny Portal and assign "Administrator" or "Installer" role (see Section 9.2 "Creating a New User" (page 64)).
 - Enter the new e-mail address for data transmission to the Sunny Portal in the communication product.
 - Delete the user with the old e-mail address in Sunny Portal as described below.
1. Select "Configuration > User management".
 - The "User Management" page opens.
 2. Select symbol for deleting in the user row.
 - A confirmation prompt opens.
 3. Click [Yes] to delete the user.

9.5 Changing User Information

Every created user (except for "Guest") receives his own "User information" page. On this page, every user can enter his own data.

1. Select "User info/logout".
2. Select "User information".
3. Select [Edit].
4. Fill in fields.
5. Select [Save].

9.6 Changing the Password

Every created user (except for "Guest") can change his password for his Sunny Portal login.

1. Select "User info/logout".
2. Select "User information".
3. Select "If you want to change your password, please click here" **under the table.**
 - The "Change password" tab opens.
4. Enter the old password in the "Old password" field.
5. Enter the new password in the "New password" field.
6. Enter new password again in the "Repeat new password" field.
7. Select [Save].

10 Troubleshooting

| Problem | Cause | Solution |
|--|---|---|
| Pop-up window
The pop-up window does not open. | Pop-up windows are blocked by the web browser or additional programs (e.g. Google Toolbar). | Enable pop-ups in the web browser and possible additional programs. |

11 Contact

If you have technical problems concerning our products, contact the SMA Technical Service Line. We require the following information in order to provide you with the necessary assistance:

- Plant name, plant identifier, or e-mail address (see Section 7.1).
- Data logger type and serial number (see data logger manual)
- Data transmission method (network, analog, ISDN, GSM)
- If it is possible to dial in to the data logger, we require the dial number.

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- Operating the product under incorrect safety or protection conditions
- Altering the product or supplied software without authority
- The product malfunctions due to operating attached or neighboring devices beyond statutory limit values
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