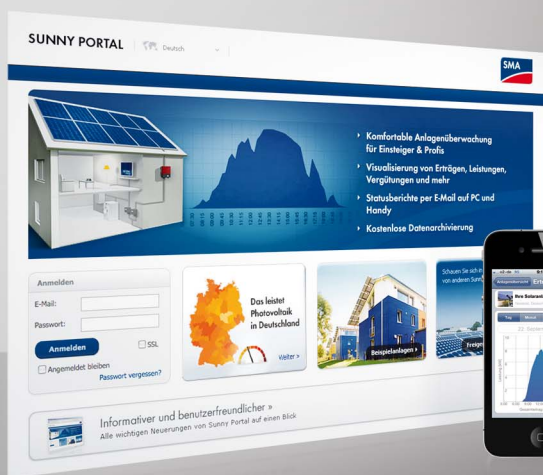




# Plant Monitoring

## SUNNY PORTAL

### User Manual





Copyright © 2011 SMA America, LLC. All rights reserved.

No part of this document may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photographic, magnetic or otherwise, without the prior written permission of SMA America, LLC.

Neither SMA America, LLC nor SMA Solar Technology Canada Inc. makes representations, express or implied, with respect to this documentation or any of the equipment and/or software it may describe, including (with no limitation) any implied warranties of utility, merchantability, or fitness for any particular purpose. All such warranties are expressly disclaimed. Neither SMA America, LLC nor its distributors or dealers nor SMA Solar Technology Canada Inc. nor its distributors or dealers shall be liable for any indirect, incidental, or consequential damages under any circumstances.

(The exclusion of implied warranties may not apply in all cases under some statutes, and thus the above exclusion may not apply.)

Specifications are subject to change without notice. Every attempt has been made to make this document complete, accurate and up-to-date. Readers are cautioned, however, that SMA America, LLC and SMA Solar Technology Canada Inc. reserve the right to make changes without notice and shall not be responsible for any damages, including indirect, incidental or consequential damages, caused by reliance on the material presented, including, but not limited to, omissions, typographical errors, arithmetical errors or listing errors in the content material.

All trademarks are recognized even if these are not marked separately. Missing designations do not mean that a product or brand is not a registered trademark.

The *Bluetooth*<sup>®</sup> word mark and logos are registered trademarks owned by Bluetooth SIG, Inc. and any use of such marks by SMA America, LLC and SMA Solar Technology Canada Inc. is under license.

SMA America, LLC  
3801 N. Havana Street  
Denver, CO 80239 U.S.A.

SMA Solar Technology Canada Inc.  
2425 Matheson Blvd. E, 8th Floor  
Mississauga, ON L4W 5K5, Canada

## IMPORTANT SAFETY INSTRUCTIONS

### SAVE THESE INSTRUCTIONS

This manual contains important instructions for the following products:

- Sunny Portal

This manual must be followed during installation and maintenance.

The product is designed and tested according to international safety requirements, but as with all electrical and electronic equipment, certain precautions must be observed when installing and/or operating the product. To reduce the risk of personal injury and to ensure the safe installation and operation of the product, you must carefully read and follow all instructions, cautions and warnings in this manual.

### Other symbols in this document

In addition to the safety and hazard symbols described on the previous pages, the following symbol is also used in this manual:



#### Information

This symbol accompanies notes that call attention to supplementary information that you must know and use to ensure optimal operation of the system.

## General warnings



### General warnings

All electrical installations must be done in accordance with the local and *National Electrical Code*<sup>®</sup> ANSI/NFPA 70 or the *Canadian Electrical Code*<sup>®</sup> CSA C22.1. This document does not and is not intended to replace any local, state, provincial, federal or national laws, regulation or codes applicable to the installation and use of the product, including without limitation applicable electrical safety codes. All installations must conform with the laws, regulations, codes and standards applicable in the jurisdiction of installation. SMA assumes no responsibility for the compliance or noncompliance with such laws or codes in connection with the installation of the product.



# Table of Contents

<b>1</b>	<b>Information on this Manual</b> .....	<b>10</b>
<b>2</b>	<b>Getting Started</b> .....	<b>11</b>
2.1	Registering a Plant in Sunny Portal.....	11
2.2	Logging In and Out of Sunny Portal.....	12
2.3	Next Steps.....	13
<b>3</b>	<b>Menu Overview</b> .....	<b>14</b>
<b>4</b>	<b>Page, Table and Diagram Functions</b> .....	<b>18</b>
<b>5</b>	<b>Page Design</b> .....	<b>20</b>
5.1	Creating a New Page.....	20
5.2	Generating Page Contents.....	21
5.2.1	Overview of Page Contents.....	21
5.2.2	Creating Tables.....	25
5.2.3	Creating a Plant Profile.....	27
5.2.4	Creating an XY Diagram.....	27
5.2.5	Creating a Diagram.....	29
5.2.6	Creating a Slide Show.....	31
5.2.7	Creating an Image.....	33
5.2.8	Creating Plant Monitoring.....	34
5.2.9	Creating an Overview.....	34
5.2.10	Creating Text.....	34
5.3	Changing/Deleting Page Contents.....	35
5.4	Deleting Pages.....	35
5.5	Changing the Page Name.....	35
5.6	Publishing Pages.....	36
5.7	Standard Pages.....	37
5.7.1	Overview of Standard Pages.....	37
5.7.2	Creating Standard Pages.....	39

5.8	Changing Page Arrangement in the Visualization Menu . . . . .	39
5.8.1	Creating a New Group. . . . .	39
5.8.2	Changing the Positions of Pages And Groups . . . . .	40
5.8.3	Deleting a Group . . . . .	40
<b>6</b>	<b>System Monitoring . . . . .</b>	<b>41</b>
6.1	Monitoring Functions . . . . .	41
6.2	System Logbook . . . . .	42
6.2.1	Calling Up and Filtering Messages. . . . .	42
6.2.2	Approving Messages . . . . .	42
6.3	Plant Monitoring . . . . .	43
6.3.1	Overview of Plant Monitoring . . . . .	43
6.3.2	Setting the Communication Monitoring. . . . .	47
6.3.3	Setting Inverter Comparison . . . . .	48
6.3.4	Setpoint Monitoring: Setting the E-Mail Alert . . . . .	48
6.4	Report Configuration. . . . .	49
6.4.1	Setting the Daily Info Report/Monthly Info Report . . . . .	50
6.4.2	Setting an Event Report. . . . .	51
6.4.3	Regenerating Report Manually. . . . .	51
<b>7</b>	<b>Plant Properties . . . . .</b>	<b>52</b>
7.1	Plant Data . . . . .	52
7.1.1	Changing General Plant Data . . . . .	52
7.1.2	Changing the Plant Name. . . . .	53
7.1.3	Deleting a Plant. . . . .	53
7.1.4	Setting the Plant Power . . . . .	54
7.1.5	Changing the Description of the Plant. . . . .	54
7.1.6	Changing/Deleting the Plant Image . . . . .	55
7.2	Changing Plant Operator Data . . . . .	56
7.3	Parameters . . . . .	56
7.3.1	Changing the Feed-in Tariff. . . . .	56
7.3.2	Changing CO <sub>2</sub> Avoided Factor . . . . .	56



7.3.3	Entering the Predicted Annual Yield . . . . .	57
7.3.4	Changing the Performance Ratio . . . . .	58
<b>8</b>	<b>Device Settings . . . . .</b>	<b>59</b>
8.1	Calling Up and Filtering the Device Overview . . . . .	59
8.2	Calling Up Device Properties . . . . .	61
8.2.1	Activating/Deactivating the Device. . . . .	63
8.2.2	Changing the Device Name . . . . .	63
8.2.3	Changing the Description of the Device . . . . .	63
8.2.4	Setting the Phase. . . . .	64
8.2.5	Setting the Generator Capacity . . . . .	64
8.2.6	Deleting a Device . . . . .	66
8.2.7	Adding/Replacing Devices (Configuration Wizard). . . . .	66
8.3	Calling up the Parameters of a Device . . . . .	67
<b>9</b>	<b>User Management . . . . .</b>	<b>68</b>
9.1	User Concept with Roles and Privileges . . . . .	68
9.2	Creating a New User . . . . .	69
9.3	Changing User Privileges . . . . .	69
9.4	Deleting Users. . . . .	69
9.5	Changing User Information. . . . .	70
9.6	Changing the Password . . . . .	70
<b>10</b>	<b>Troubleshooting . . . . .</b>	<b>71</b>
<b>11</b>	<b>Contact . . . . .</b>	<b>72</b>

# 1 Information on this Manual

## Validity

This manual is valid for the "Sunny Portal" Internet portal.

## Target Group

This manual is intended for skilled workers and end users. Only skilled workers with appropriate qualification are allowed to perform certain tasks set forth in this manual. These tasks are identified by an information note.

Additional information is available at [www.SMA-America.com](http://www.SMA-America.com) or from the SMA Service Line.

Document Title	Document Type
Performance Ratio	Technical Information

## Typography

Typography	Usage	Example
"light"	<ul style="list-style-type: none"> <li>Information displayed on the inverter</li> <li>Elements on a software interface</li> <li>Terminals</li> </ul>	<ul style="list-style-type: none"> <li>The value can be read in the "Energy" field.</li> </ul>
<b>bold</b>	<ul style="list-style-type: none"> <li>Elements to be selected</li> <li>Elements to be entered</li> </ul>	<ul style="list-style-type: none"> <li>Select <b>Settings</b>.</li> <li>Enter <b>10</b> in the "Minutes" field.</li> </ul>
>	<ul style="list-style-type: none"> <li>Several elements that are to be selected</li> </ul>	<ul style="list-style-type: none"> <li>Select <b>Settings &gt; Date</b>.</li> </ul>
[Button/Key]	<ul style="list-style-type: none"> <li>Button or key to be selected or pressed</li> </ul>	<ul style="list-style-type: none"> <li>Select [Next].</li> </ul>

## Nomenclature

In this document, PV plants and small wind turbine systems are collectively referred to as "plant".

In this document, SMA America Production, LLC and SMA Solar Technology Canada Inc. are hereafter referred to as "SMA".

## 2 Getting Started

### 2.1 Registering a Plant in Sunny Portal

You can register your plant in the Sunny Portal by means of the following SMA communication products only:

#### **Sunny WebBox / Sunny WebBox with *Bluetooth*<sup>®</sup> Wireless Technology:**

- Register the Sunny WebBox in Sunny Portal as described in the Sunny WebBox / Sunny WebBox with *Bluetooth* manuals.

#### **Sunny Boy Control / Plus:**

- If your Sunny Boy Control or Sunny Boy Control Plus is equipped with the optional NET Piggy-Back, you can send the plant data to Sunny Portal directly via Ethernet or by means of one of the available modems. Set the type of data transfer to Sunny Portal in the Sunny Boy Control or Sunny Boy Control Plus according to the instructions in the NET Piggy-Back manual.
- If your Sunny Boy Control or 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. The Sunny Data Control software is available in the download area at [www.SMA-America.com](http://www.SMA-America.com).

## 2.2 Logging In and Out of Sunny Portal

### Logging In to Sunny Portal

#### Requirements:

- You have already registered your plant in Sunny Portal (see Section 2.1 "Registering a Plant in Sunny Portal" (page 11)).
1. Open [www.SunnyPortal.com](http://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 70)).
- Get acquainted with Sunny Portal (see Section 3 "Menu Overview" (page 14)).
- Design your own pages according to your wishes (see Section 5 "Page Design" (page 20)).
- 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 49)).
- Enter the properties of your plant (see Section 7 "Plant Properties" (page 52)).
- Give friends access to your Sunny Portal as guests, standard users, installers, or administrators, (see Section 9 "User Management" (page 68)).

### 3 Menu Overview

Menu	Meaning
<b>Plant Selection</b>	The menu is only shown if your e-mail address is assigned to more than one 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.
<b>Plant Selection</b> > <b>Plant List</b>	<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"> <li>• Plant power in kWp</li> <li>• Total yield so far</li> <li>• Total yield for the following periods: <ul style="list-style-type: none"> <li>- Current day</li> <li>- Previous day</li> <li>- Current month</li> </ul> </li> <li>• Specific plant yield (kWh/kWp) for the following periods: <ul style="list-style-type: none"> <li>- Current month</li> <li>- Current year</li> </ul> </li> </ul> <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>
<b>"Name of your plant"</b>	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.
<b>"Name of your plant"</b> > <b>Plant Description</b>	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 17)).
<b>"Name of your plant"</b> > <b>Energy and Power</b>	<p>This page shows the following data of the current plant in 4 diagrams:</p> <ul style="list-style-type: none"> <li>• Day: Power produced over the day</li> <li>• Month: Total yield per month in days</li> <li>• Year: Total yield per year in months</li> <li>• Total: Total yields per year</li> </ul>

Menu	Meaning
<p><b>"Name of your plant"</b>  <b>&gt; Feed-in Management</b></p>	<p>This page is only displayed in plants with Power Reducer Box, providing that the Power Reducer Box is registered in Sunny Portal. The use of the Sunny Portal must also be activated in the Power Reducer Box.</p> <p>The page shows the following data in diagrams:</p> <ul style="list-style-type: none"> <li>• Plant power and the setpoint for active power limitation by the grid operator</li> <li>• Setpoint for active power limitation for all three phases</li> <li>• Setpoint for phase shift cos Phi</li> </ul>
<p><b>"Name of your plant"</b>  <b>&gt; Energy Balance</b></p>	<p>This page is only displayed in plants with Meter Connection Box. The page displays the following data in a diagram depending on the type of meter connected:</p> <ul style="list-style-type: none"> <li>• Plant power</li> <li>• Purchased electricity</li> <li>• Self-consumption</li> </ul>
<p><b>"Name of your plant"</b>  <b>&gt; Annual Comparison</b></p>	<p>The page shows the total yield and the specific yield of the current plant per month in a yearly overview.</p>
<p><b>"Name of your plant"</b>  <b>&gt; Plant Monitoring</b></p>	<p>On this page, the following functions for monitoring the current plant are available:</p> <ul style="list-style-type: none"> <li>• Monitoring of communication between Sunny Portal and your plant</li> <li>• Monitoring of plant by comparing inverters</li> <li>• Monitoring of the setpoints of the grid operator on your plant (only for plants with a Power Reducer Box)</li> </ul> <p>Plant monitoring, see Section 6.3 "Plant Monitoring" (page 43).</p>
<p><b>"Name of your plant"</b>  <b>&gt; System Logbook</b></p>	<p>The page shows messages from Sunny Portal and the current plant. These messages help you to identify plant interferences, for example. The number after the colon shows the number of unread messages.</p>
<p><b>Presentation</b></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 37)). All pages that you create yourself are also stored here by Sunny Portal (creating pages, see Section 5.1 "Creating a New Page" (page 20)).</p>

Menu	Meaning
<b>Configuration</b>	<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"> <li>• Visualization, see Section 5 "Page Design" (page 20)</li> <li>• Plant properties, see Section 7 "Plant Properties" (page 52)</li> <li>• Device overview, see Section 8.1 "Calling Up and Filtering the Device Overview" (page 59)</li> <li>• Report configuration, see Section 6.4 "Report Configuration" (page 49)</li> <li>• User management, see Section 9 "User Management" (page 68)</li> </ul>
<b>User Info/Logout</b>	<p>This menu enables you to 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"> <li>• User information, see Section 9.5 "Changing User Information" (page 70)</li> <li>• Logout</li> </ul>



**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.

<b>Information in the Plant Profile</b>	<b>Source</b>
<b>Location</b>	Section 7.1.1 "Changing General Plant Data" (page 52): from the country and city information
<b>Operator</b>	Section 7.2 "Changing Plant Operator Data" (page 56)
<b>Commissioning</b>	Section 7.1.1 "Changing General Plant Data" (page 52)
<b>Plant Power</b>	Section 7.1.4 "Setting the Plant Power" (page 54)
<b>Annual Yield</b>	Section 7.3.3 "Entering the Predicted Annual Yield" (page 57)
<b>CO<sub>2</sub> avoided</b>	
<b>Modules</b>	Section 7.1.4 "Setting the Plant Power" (page 54)
<b>Tilt Angle</b>	Section 8.2.5 "Setting the Generator Capacity" (page 64), paragraph "Configuring the Power of an Inverter through Multiple Strings" (page 64)
<b>Tracking</b>	
<b>Inverter</b>	Sunny Portal receives the information from the devices
<b>Communication</b>	
<b>Description</b>	Section 7.1.5 "Changing the Description of the Plant" (page 54)
<b>Plant Image next to The data</b>	Section 7.1.6 "Changing/Deleting the Plant Image" (page 55)

## 4 Page, Table and Diagram Functions

### Page Functions:

At the end of each page with at least two tables or diagrams, you can change the end date for all diagrams and tables on the page. If the display period of the table or diagram is 1 year or 1 month, the year or month of the specified 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]

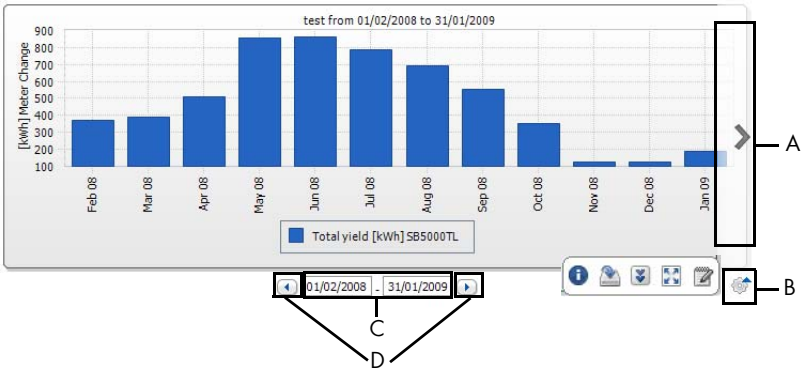
< Year < Month < Day | 31/03/2010 | Day > Month > Year >

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 sub-menu 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 71).
	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 'New page' dialog box with a 'Help' button. It contains a text input field for 'Please enter the page names:' with the value 'New page'. Below this is a section titled 'Please select the page template:' with a list of options, each with a numbered icon in a blue box:

- 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 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. TIP: 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. In the "Module type" field in one section of the page, select the desired page content.
6. Select [Create] and create desired page content (see Section 5.2 "Generating Page Contents" (page 21)).

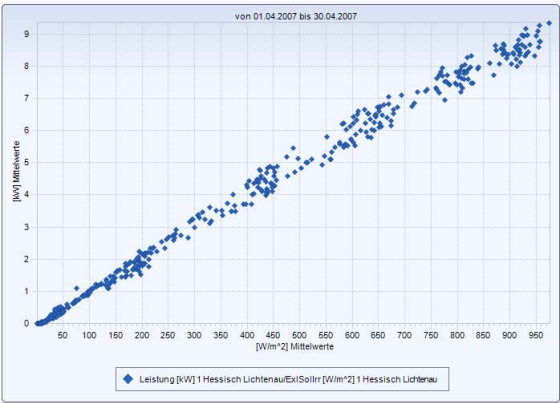
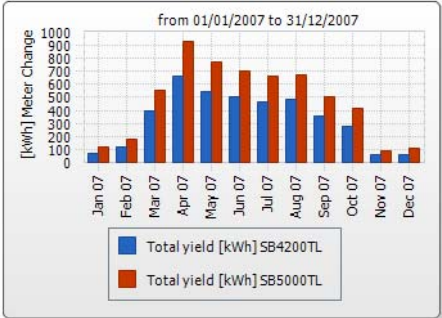
## 5.2 Generating Page Contents





### 5.2.1 Overview of Page Contents

You can choose between the following page contents:

Page Contents	Contents																				
<p><b>Table</b></p>	<p>You can display the following data in tables:</p> <ul style="list-style-type: none"> <li>• Channel values of the devices Selectable channel values depend on the device.</li> <li>• Channel values of the entire plant:                             <ul style="list-style-type: none"> <li>- CO<sub>2</sub> avoided</li> <li>- Total yield</li> <li>- Performance ratio</li> <li>- Power</li> <li>- Feed-in tariff</li> <li>- Specific plant yield</li> </ul> </li> </ul> <p><b>Example of Table:</b></p> <table border="1" data-bbox="386 767 996 890"> <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;">                     &lt; Year &lt; Month &lt; Day <span style="border: 1px solid black; padding: 0 2px;">31/03/2010</span> Day &gt; Month &gt; Year &gt;                 </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 Contents	Contents
<p><b>Plant Description</b></p>	<p>You can also use this information on your customized pages. Information in the plant profile:</p> <ul style="list-style-type: none"> <li>• Plant name</li> <li>• Location</li> <li>• Operator</li> <li>• Date commissioned</li> <li>• Plant power</li> <li>• Annual yield</li> <li>• CO<sub>2</sub> avoided</li> <li>• PV modules</li> <li>• Azimuth</li> <li>• Tilt angle</li> <li>• Tracking</li> <li>• Inverter</li> <li>• Communication</li> <li>• Description</li> </ul> <p><b>Example of Plant Profile:</b></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;"> <div style="width: 60%;"> <p><b>Location:</b> Kassel, Germany</p> <p><b>Commissioning:</b> 27/06/2008</p> <hr/> <p><b>Plant power:</b> 24,24 kWp</p> <hr/> <p><b>Inverter:</b>  4 Sunny Boy 3000</p> </div> <div style="width: 35%; text-align: center;">  </div> </div> <p><b>Description:</b></p> <p> Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat. Ut wisi 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 sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat. Ut wisi 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 feacil postin assum.</p> </div>

<p><b>Page Contents</b></p>	<p><b>Contents</b></p>
<p><b>XY Diagram</b></p>	<p>You can display two channel values as coordinates to one another. The x and y axes are assigned one 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 irradiation.</p> <p><b>Example of XY Diagram:</b></p> 
<p><b>Graph</b></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><b>Example of Diagram:</b></p> 
<p><b>Slide Show</b></p>	<p>You can display a slide show which you have already created in a photo platform.</p>

Page Contents	Contents						
<p><b>Image</b></p>	<p>You can insert an image of your choice.</p> <p><b>Requirements:</b></p> <ul style="list-style-type: none"> <li>• Maximum image size: 500 kB</li> <li>• Possible image formats: JPG, PNG, GIF</li> <li>• Height and width: Sunny Portal adjusts the proportions of the image based on the size of the page layout.</li> </ul>						
<p><b>Plant Monitoring</b></p>	<p>You can display the following data:</p> <ul style="list-style-type: none"> <li>• Communication status between the plant and Sunny Portal</li> <li>• Status of the inverter comparison</li> </ul> <p><b>Plant Monitoring:</b></p> <div data-bbox="496 560 882 687" style="border: 1px solid black; padding: 5px; text-align: center;">  <p>Last contact 2 minutes ago    Yield yesterday: 54.14 kWh</p> </div>						
<p><b>Overview</b></p>	<p>You can display the following data:</p> <ul style="list-style-type: none"> <li>• Energy of the PV plant</li> <li>• CO<sub>2</sub> avoided by PV plant</li> <li>• Feed-in tariff for PV plant</li> <li>• Standard image or a random image</li> </ul> <p><b>Overview with Standard Image:</b></p> <div data-bbox="516 927 838 1121" style="border: 1px solid black; padding: 5px; text-align: center;"> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: left;">Date: 27/04/2010</td> <td style="width: 50%; text-align: right;">Energy: 48,948.72 kWh</td> </tr> <tr> <td colspan="2" style="text-align: center;">  </td> </tr> <tr> <td style="width: 50%; text-align: left;">CO2 avoided: 49,291.36 kg</td> <td style="width: 50%; text-align: right;">Revenue: EUR 26.69 Thousand</td> </tr> </table> </div>	Date: 27/04/2010	Energy: 48,948.72 kWh			CO2 avoided: 49,291.36 kg	Revenue: EUR 26.69 Thousand
Date: 27/04/2010	Energy: 48,948.72 kWh						
							
CO2 avoided: 49,291.36 kg	Revenue: EUR 26.69 Thousand						
<p><b>Text</b></p>	<p>You can enter and format text in the editor in the same way you would do so in normal text editing programs. 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 Tables


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

Table Configurations	Meaning
<b>Standard configuration for displaying plant energy</b>	The table includes the total yields of all plants to which you have access. The total yields are displayed for the current day, month and year.
<b>Standard configuration for displaying the energy of inverters</b>	The table includes the total yields of all inverters of the current plant. The total yields are displayed for the current day, month and year.
<b>Standard configuration for displaying specific inverter yield</b>	The table includes the specific yields and the total yields of all inverters of the current plant. The specific yields are displayed for the current day, month and year. The total yields are displayed for the current day.
<b>User-defined</b>	Create your own table with values and time periods tailored to your needs.

### Creating a Table with Default Configuration

1. Select desired standard configuration.
  2. Select [Next].
  3. Select [Save].
  4. Select [Save].
- 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. TIP: 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:

<b>Current</b>	The values from the current date (e.g. current day, current month) will always be displayed.
<b>Selectable</b>	You can select the date whose values should be displayed, 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. For a plant, the calculated channels are available (CO<sub>2</sub> avoided, 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:

<b>Sum</b>	Total of all channel contents within the period indicated
<b>Min</b>	Minimum value of channel contents within the period indicated
<b>Mean Values</b>	Mean value of channel contents within the period indicated
<b>Max</b>	Maximum value of channel contents within the period indicated

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:

<b>CSV</b>	File format that describes the layout of a text file used for the storage or exchange of data which are simply structured.
<b>ODS</b>	File format for tables with an Open Document Format that enables the exchange of Office files between various applications and operating systems.
<b>XLSX</b>	File format of the Excel Workbook format supported by Microsoft since the Excel 2007 version.

17. Select [Save].
18. Select [Save].
- 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 fields whose data should be displayed.
  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
- Make advanced configurations

#### Configuring 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. TIP: 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. For a plant, the calculated channels are available (CO<sub>2</sub> avoided, 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 selection of further channels is based on the unit of the first channel

If the base unit of the first selected channel is "Watts", the only channels subsequently selectable are those compatible with "Watts". The selection options are automatically restricted by Sunny Portal accordingly.

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:

<b>Analog values</b>	
<b>Mean values</b>	The average value that the channel had for the set period.
<b>Maximum values</b>	The highest value that the channel had for the set period.
<b>Minimum values</b>	The lowest value that the channel had for the set period.

<b>Meter channels</b>	
<b>Meter change</b>	Increase within the period to be selected.
<b>Meter reading</b>	Current total meter reading of the value.
<b>Cum. change</b>	Cumulated (= total) 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:

<b>Current</b>	The values from the current date (e.g. current day, current month) will always be displayed.
<b>Selectable</b>	You can select the date whose values should be displayed (e.g. a certain day, a certain month).

### Making Advanced Configurations

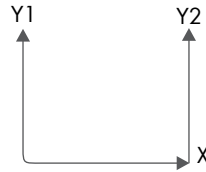
1. In order to add a heading in the "Advanced configuration" area, enter heading in "Diagram name" field.
2. In the "Download file type" field, select the format for saving diagram data. The following settings are possible:

<b>CSV</b>	File format that describes the layout of a text file used for the storage or exchange of data which are simply structured.
<b>ODS</b>	File format for tables with an Open Document Format that enables the exchange of Office files between various applications and operating systems.
<b>XLSX</b>	File format of the Excel Workbook format supported by Microsoft since the Excel 2007 version.

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 the Y1 axis (Y2 axis is optional)
- Configure the time settings
- Make advanced configurations

### Configuring the 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. TIP: In order to narrow your selection, choose a device type or "Plants" in the "Narrow selection" field.
2. Select the desired channel in the "Channel" field.



#### Selectable Channels

For devices, all channels which are transferred to Sunny Portal are available. For a plant, the calculated channels are available (CO<sub>2</sub> 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 selection of further channels is based on the unit of the first channel. If the base unit of the first selected channel is "Watts", the only channels subsequently selectable are those compatible with "Watts". The selection options are automatically restricted by Sunny Portal accordingly.

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

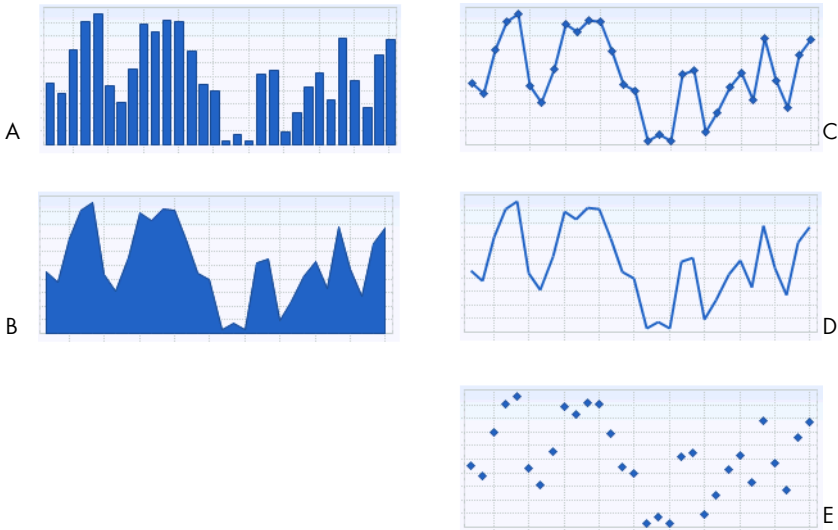
6. Select the channel type of the value in the "Value" field. The following channel types are available, depending on the channel:

Analog Values	
<b>Mean Values</b>	The average value that the channel had for the set period.
<b>Maximum Values</b>	The highest value that the channel had for the set period.
<b>Minimum Values</b>	The lowest value that the channel had for the set period.

Meter Channels	
<b>Meter Change</b>	Increase within the period to be selected.
<b>Meter Reading</b>	Current total meter reading of the value.
<b>Cum. change</b>	Cumulated (= total) 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 markers
D	Line
E	Markers 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:

<b>Current</b>	The values from the current date (e.g. current day, current month) will always be displayed.
<b>Selectable</b>	You can select the date whose values should be displayed (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].
- Diagram has been created and is displayed.

### 5.2.6 Creating a Slide Show

TIP: Select a page template for the slide show with only one display module on the page so that the slide show will be displayed in good quality.

#### Procedure:

- Select Picasa or Flickr photo album
- Integrate slide show into Sunny Portal

#### Selecting a Picasa Photo Album

1. Register on [picasa.google.com](http://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 this to the clipboard.
8. Leave Picasa and switch to Sunny Portal.

### **Selecting a Flickr Photo Album**

1. Register on [www.flickr.com](http://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].
  - Slide show 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 Slide Show into Sunny Portal**

1. Call up page configuration of slide show.
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].
  - Slide show 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 adjusts the proportions of the image based on the size of the page layout.

### Procedure:

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

### Uploading an Image from Own Computer to Gallery

1. Select .  
 A new section opens.
2. Select [Browse].  
 The "Select file" window opens.
3. Open desired image.  
 The path of the image is in the line.
4. Select [Upload selected file].
5. To upload other images, repeat the procedure.  
 Image has been uploaded and is displayed 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 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 is inserted on page and displayed.

## 5.2.8 Creating Plant Monitoring

### Requirements:

- Plant monitoring is 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 adjusts the proportions of the image based on the size of the page layout.

1. Activate field of desired value.
  2. Select size of 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].
- Overview has been created and is displayed.

## 5.2.10 Creating Text

### Impermissible HTML Tags:

<SCRIPT> (and thus JavaScript), <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 editor.
  3. Select [Save].
  4. Select [Save].
- Text has been created and is displayed.

## Example: Adding a Current Webcam Image

This example shows how you insert the current image of a webcam using the editor. Each time the page is called up, the current image of the webcam is displayed.

### Requirement:

The program of the webcam 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 Contents

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 contents.
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 Description
  - Energy and Power
  - Annual comparison

### Options for Publishing:

- Presenting pages at [www.SunnyPortal.com](http://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 the field "Also release page on [www.sunnyportal.com](http://www.sunnyportal.com)".
  - 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". Window to send the e-mail 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".
  - Page is published.

## Presenting Pages on the Internet

Each of your Sunny Portal pages has its own URL. You can use this URL to set a link from another website to your page. You can call up the URL of the page as follows:

1. Select the name of the desired page.
  - The selected page opens.
2. Call up 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   |
|-----------------------------|---|
| <b>Plant Overview</b>       | Displayed data of entire plant: <ul style="list-style-type: none"> <li>• CO<sub>2</sub> avoided and energy of current day</li> <li>• Meter change of total yield per year in months</li> <li>• Meter reading of total yield and mean values of power for two days in hours</li> </ul> |
| <b>Energy and Power</b>     | Displayed data of entire plant: <ul style="list-style-type: none"> <li>• Mean values of power and meter reading of total yield for seven days in hours</li> <li>• Meter change and meter reading of total yield for seven days in days</li> </ul>                                     |
| <b>Specific Plant Yield</b> | Data displayed: <ul style="list-style-type: none"> <li>• Mean values of specific plant yield for one month in days</li> <li>• Mean values of specific plant yield for one year in months</li> </ul>   |











| Standard Page   | Description   |
|---|---|
| <b>Performance Ratio</b>                                  | <p>Is created and configured automatically in the following cases:</p> <ul style="list-style-type: none"> <li>• Sunny SensorBox is added to your Sunny Portal plant.</li> <li>• Communication device sends data of an irradiation and temperature sensor to Sunny Portal<sup>*</sup>.</li> </ul> <p>Shows the following data of the entire plant:</p> <ul style="list-style-type: none"> <li>• Mean values of performance ratio for one month in days</li> <li>• Mean values of performance ratio for one year in months</li> </ul> |
| <b>Devices</b><br><b>&gt; Overview "Name Of Inverter"</b> | <p>Displayed data of inverter:</p> <ul style="list-style-type: none"> <li>• Meter change of total yield for one year in months</li> <li>• Mean value of power for one day in hours</li> </ul>   |
| <b>Report</b><br><b>&gt; Daily Plant Report</b>           | <p>Data displayed:</p> <ul style="list-style-type: none"> <li>• Meter reading of energy on current day, current month and current year</li> <li>• Meter change of total yield for one day in hours</li> </ul>   |
| <b>Report</b><br><b>&gt; Monthly Plant Report</b>         | <p>Data displayed:</p> <ul style="list-style-type: none"> <li>• Meter change of total yield for current month and current year</li> <li>• Meter change of total yield for one month in days</li> </ul>  |
| <b>Sensors</b><br><b>&gt; "Name of the Sensor"</b>        | <p>Is created and configured automatically in the following cases:</p> <ul style="list-style-type: none"> <li>• Sunny SensorBox is added to your Sunny Portal plant.</li> <li>• Communication device sends data of a irradiation and temperature sensor to Sunny Portal<sup>*</sup>.</li> </ul>   |

\* The sensor must be manually adjusted in this case (see Section 7.3.4 "Changing the Performance Ratio" (page 58)).

## 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 page" 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

Once you have created 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 the 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.
  - Page or group moves one step
5. Keep selecting the corresponding arrow until the desired position is 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 plant:

| Monitoring  | Sunny Portal Function  | Section   |
|---|--|---|
| Events of the plant   | <b>System Logbook</b><br>The system logbook will let you see messages for events of your plant.  | 6.2 "System Logbook" (page 42)                                  |
|   | <b>Report Configuration</b><br>If you are using report configuration, you will receive an e-mail with the events of your plant.  | 6.4 "Report Configuration" (page 49)                            |
| Yield, tariff, power output, CO <sub>2</sub> avoided                | <b>Report Configuration</b><br>You can set that you will receive an e-mail with data of your plant.  |   |
| Inverter yields outside of the tolerance                            | <b>Plant Monitoring – Inverter Comparison</b><br>If you set the inverter comparison option, you will receive an e-mail as soon as the specific yield of an inverter has gone outside of the tolerance.                         | 6.3.3 "Setting Inverter Comparison" (page 48)                   |
| Communication between Sunny Portal and SMA communication products * | <b>Plant Monitoring – Communication Monitoring</b><br>If you set the communication monitoring option, you will receive an e-mail whenever the connection between Sunny Portal and SMA communication products * is interrupted. | 6.3.2 "Setting the Communication Monitoring" (page 47)          |
| Incoming setpoints of the grid operator for your plant              | <b>Setpoint Monitoring</b><br>If you activate the setpoint monitoring, you will receive an e-mail as soon as the grid operator sends setpoints to your Power Reducer Box (e.g. to limit the active power).                     | 6.3.4 "Setpoint Monitoring: Setting the E-Mail Alert" (page 48) |

\* Sunny WebBox with Bluetooth, Sunny WebBox, Power Reducer Box

## 6.2 System Logbook

On the page "Name of your plant > System logbook" you will receive messages from Sunny Portal and your 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. Set the desired filter. The following settings are possible:

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

### 6.2.2 Approving Messages

You can approve messages in order to mark them as read. This allows you to differentiate between messages which you have already read, and new messages.

1. Activate fields before 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" provides information on the monitoring status of your plant. Various monitoring options are available, which you can set and activate. If desired, the plant monitoring can send you an alert via e-mail. The "Plant monitoring" page is subdivided into a maximum of 4 areas:

| Area                            | Meaning   |
|---------------------------------|---|
| <b>Plant Configuration</b>      | Is only displayed if Sunny Portal has detected a new device in your plant (see Section 8.2.7 "Adding/ Replacing Devices (Configuration Wizard)" (page 66)).   |
| <b>Communication Monitoring</b> | Indicates whether there is connectivity between Sunny Portal and SMA communication products * . Alerts per e-mail possible.   |
| <b>Inverter Comparison</b>      | Displays whether the inverter yields of the selected inverters are in the configured range. Alerts per e-mail possible.   |
| <b>Setpoint Monitoring</b>      | <p>This page is only displayed for plants with Power Reducer Box, providing that the Power Reducer Box is registered in Sunny Portal. The use of the Sunny Portal must also be activated in the Power Reducer Box.</p> <p>Displays whether the plant feeds into the power distribution grid without restrictions by the grid operator. This section only indicates setpoints for active power limitation.</p> <p>Alerts per e-mail possible when the following setpoints are received:</p> <ul style="list-style-type: none"> <li>• Active power limitation</li> <li>• Reactive power setpoint (fixed reactive power or phase shift factor <math>\cos \Phi</math>)</li> </ul> |

\* Sunny WebBox with Bluetooth, Sunny WebBox, Power Reducer Box

**Communication Monitoring:**

Communication monitoring monitors the link between Sunny Portal and the following devices:





- Sunny WebBox / Sunny WebBox with *Bluetooth*:


At certain time intervals, Sunny Portal checks whether Sunny WebBox has sent the data to Sunny Portal at the desired interval. The interval at which Sunny WebBox should send data to Sunny Portal can be set in the user interface of Sunny WebBox.

- Power Reducer Box:

Sunny Portal checks whether the Power Reducer Box reports regularly in Sunny Portal. The frequency with which the Power Reducer Box should report in Sunny Portal can be set in the user interface of the Power Reducer Box.

If one of these devices does not report in Sunny Portal over a prolonged period of time, an alert mail will be sent to the given e-mail address. After the alert mail, a reminder e-mail is sent on up to three subsequent days that the error still exists. The error will be displayed in Sunny Portal until the device reports to Sunny Portal again. How to configure communication monitoring is described in Section 6.3.2 "Setting the Communication Monitoring" (page 47). The following table explains the meaning of the communication monitoring symbols:

| Communication Monitoring  |             |  |
|---|-------------|--|
| Symbol  | Status      | Meaning  |
|    | Deactivated | Communication monitoring is not set.   |
|    | OK          | Communication with Sunny Portal is OK. The time of last contact is displayed.  |
|    | Error       | Communication with Sunny Portal is interrupted. The "Details" link provides you with detailed information on the time of last contact. The following navigation options are available: <ul style="list-style-type: none"> <li>• Link to the device properties</li> <li>• Link to the parameters</li> <li>• Link to the device reports in the system logbook</li> </ul> |
|  |             | Clicking on this bell icon stops the sending of reminder e-mails for the current error. For new errors, the reminder e-mail is sent again.   |




| Status of the Device*   |         |   |
|---|---------|---|
| Symbol  | Status  | Meaning   |
|  | Failure | Communication with Sunny Portal has been interrupted. |

\* Sunny WebBox with *Bluetooth*, Sunny WebBox, Power Reducer Box

**Inverter Comparison:**

Sunny Portal offers the inverter comparison option for plants with at least 2 PV inverters. Sunny Central inverters working in team operation are not supported.

By means of the daily yield, Sunny Portal calculates the specific yield for each active inverter and compares this once a day with the mean value of the specific yields of all inverters. Should the specific yield be below a configurable tolerance, Sunny Portal will inform you by e-mail. How to configure the inverter comparison option is described in Section 6.3.3 "Setting Inverter Comparison" (page 48). The following table explains the meaning of the inverter comparison symbols:




| <b>Inverter Comparison</b>  |               |  |
|---|---------------|--|
| <b>Symbol</b>   | <b>Status</b> | <b>Meaning</b>   |
|  | Deactivated   | Inverter comparison has not been activated.  |
|  | OK            | The yields of the monitored inverters are within the configured range. The yield of the last day is displayed.   |
|  | Error         | Specific inverter yield is outside of tolerance for at least one monitored inverter. The additionally displayed "Details" link provides you with information on the actual specific yield of the respective inverter or inverters and the comparison value calculated from the mean values of all monitored inverters. The following navigation options are available: <ul style="list-style-type: none"> <li>• Link to the device properties</li> <li>• Link to messages in the system logbook</li> </ul> |




### Setpoint Monitoring:

Sunny Portal provides a setpoint monitoring option for all plants with the Power Reducer Box. In the "Setpoint monitoring" area you can see whether the grid operator has specified any setpoints for the active power limitation of your plant. If you wish, Sunny Portal can inform you by e-mail about incoming setpoints for active power limitation and reactive power setpoint (fixed reactive power or phase shift factor  $\cos \Phi$ ). How to configure the e-mail notification for setpoint monitoring is described in Section 6.3.4 "Setpoint Monitoring: Setting the E-Mail Alert" (page 48).

In addition to setpoint monitoring, you should use the communication monitoring for the Power Reducer Box (see Section 6.3.2). Through this monitoring option, Sunny Portal can identify whether or not the information in the setpoint monitoring is outdated.

The following table explains the meaning of the setpoint monitoring symbols:

| Status of setpoint monitoring for active power limitation                         |                                  |   |
|---|----------------------------------|---|
| Symbol  | Status                           | Meaning   |
|  | No setpoint                      | There is no setpoint for active power limitation. |
|  | Setpoint                         | There is a setpoint for active power limitation.  |
|  | Problem with a Power Reducer Box | There is a problem with a Power Reducer Box.      |

| Status of the Power Reducer Box   |        |  |
|---|--------|--|
| Symbol  | Status | Significance   |
|    | OK     | The Power Reducer Box is working correctly.  |
|   | Fault  | The Power Reducer Box has received a signal from the radio ripple control receiver that is not configured in the Power Reducer Box.          |
|  | Error  | The Power Reducer Box has no connection to at least one Sunny WebBox.<br>or<br>There is no registered Sunny WebBox in the Power Reducer Box. |

### 6.3.2 Setting the Communication Monitoring

**Requirements:**

- If you want to monitor the communication between Sunny WebBox and Sunny Portal:
    - The Sunny WebBox is registered in Sunny Portal (see Sunny WebBox manual).
    - On the user interface of the Sunny WebBox, the use of the Sunny Portal is activated (see Sunny WebBox manual).
  - If you want to monitor the communication between the Power Reducer Box and Sunny Portal:
    - The Power Reducer Box is registered in Sunny Portal (see Power Reducer Box manual).  
To this end, all Sunny WebBoxes must be registered in the Power Reducer Box and at least one of these Sunny WebBoxes must be registered in Sunny Portal.
    - The use of Sunny portal is activated in the Power Reducer Box and communication monitoring is switched on (see Power Reducer Box manual).
1. Select "Plant name > Plant monitoring".
  2. In the "Communication monitoring" area select [Settings].
  3. Set alerts. The following settings are possible:

|                         |   |
|-------------------------|---|
| <b>Off</b>              | Communication monitoring is deactivated in Sunny Portal.  |
| <b>Slow/Medium/Fast</b> | <p>Here, you can select how fast you wish to be notified about the interrupted communication. The time period indicates how long Sunny Portal should wait before notifying you by e-mail. The time period is displayed during the setting procedure. It is calculated as follows:</p> <ul style="list-style-type: none"> <li>• For the Sunny WebBox / Sunny WebBox with <i>Bluetooth</i>:<br/>The time period is calculated from the alert phase selected here and the frequency of upload to the Sunny Portal configured in the Sunny WebBox.</li> <li>• For the Power Reducer Box:<br/>The time period is calculated from the alert phase selected in Sunny Portal and the interval set in the Power Reducer Box for the communication monitoring.</li> </ul> |

4. Enter the recipient's e-mail address for notifications in the "Recipient" field. If you enter several e-mail addresses, separate these by commas.
5. For the required devices activate the "Monitoring" field.
6. Select [Save].

### 6.3.3 Setting 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 one feature is different, the inverters are 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. If you enter several e-mail addresses, separate these 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 each inverter (see Section 8.2.5 "Setting the Generator Capacity" (page 64)).
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].

### 6.3.4 Setpoint Monitoring: Setting the E-Mail Alert

#### Requirements:

- The Power Reducer Box is registered in Sunny Portal (see Power Reducer Box manual).
- The use of Sunny Portal is activated in the Power Reducer Box (see Power Reducer Box manual).

1. Select "Plant name > Plant monitoring".
2. In the "Setpoint monitoring" area, select [Settings].
3. To receive an alert via e-mail:
  - Activate field "Send alert whenever control commands are received from grid operator".
  - Enter the recipient's e-mail address for notifications in the "Recipient" field. If you enter several e-mail addresses, separate these by commas.
4. If you do not wish to receive an alert, deactivate the field "Send alert whenever control commands are received from grid operator".
5. Select [Save].



## 6.4 Report Configuration

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



### Receiving e-mails as text messages on your cell phone

You can also receive the report e-mails as a text message through your mobile network provider or have them forwarded as a text message from your mailbox. You can find further details on the SMA Service Line.

### Direct text messages from the Sunny WebBox with optional GSM modem

If you have an installed GSM modem, the Sunny WebBox can notify you directly via e-mail and text message about error events.



### Sunny Portal takes delayed data into account in the following reports

If relevant data is received after the report has been sent, Sunny Portal will incorporate the data into the subsequent report.

The following three reports are available, and you can set three in each case:

| Report                            | Selectable channels   |
|-----------------------------------|---|
| <b>Daily info report 1 to 3</b>   | <ul style="list-style-type: none"> <li>• Daily yield: (kWh)</li> <li>• Reimbursement today</li> <li>• Max. power today (kW)</li> <li>• CO<sub>2</sub> avoided today (kg)</li> </ul>   |
| <b>Monthly info report 1 to 3</b> | <ul style="list-style-type: none"> <li>• Yield for the month (kWh)</li> <li>• Monthly feed-in tariff</li> <li>• Max. power for the month (kW)</li> <li>• Monthly CO<sub>2</sub> avoided (kg)</li> </ul>   |
| <b>Event report 1 to 3</b>        | <p>For the three event reports you can choose four message types from Sunny Portal, from the plant, and from service:</p> <ul style="list-style-type: none"> <li>• Information</li> <li>• Warnings</li> <li>• Interferences</li> <li>• Error</li> </ul> |

### 6.4.1 Setting the Daily Info Report/Monthly Info Report

For the daily info report, the channels' data from the respective day is sent; for the monthly info report, the channels' data from the respective month. You can set three monthly info reports and three 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. Set report. The following settings are possible:

|                          |  |
|--------------------------|--|
| <b>Activate report</b>   | 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.  |
| <b>Recipient</b>         | In the "E-mail address(es):" field enter recipient's e-mail address. If you enter several e-mail addresses, separate these by commas.  |
| <b>Interval</b>          | In the "Send report at:" field select the time at which you would like to receive the e-mail.  |
| <b>Contents</b>          |  |
| <b>Channel selection</b> | Activate the channel fields that should be displayed in the report.  |
| <b>Send report as:</b>   | Text: You receive the e-mail with the data in text format.<br>In the "Send data in:" area activate the fields in which the data should be shown in the e-mail. <ul style="list-style-type: none"> <li>• Subject of the mail: The data is displayed in the subject line of the e-mail.</li> <li>• Contents of the mail: The data is displayed in the e-mail.</li> </ul>               |
|                          | HTML: You receive the e-mail with the data in HTML-Format.<br>PDF: You receive the e-mail in text format, with the data in PDF format as an attachment.<br>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. |

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

## 6.4.2 Setting an Event Report

You can set up three event reports which contain different events and are sent at different times. You can select four 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. Set report. The following settings are possible:

|   |   |
|---|---|
| <b>Activate Report</b>                          | 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.   |
| <b>Recipient</b>                                | In the "E-mail address(es):" field enter recipient's e-mail address. If you enter several e-mail addresses, please separate these by commas.              |
| <b>Interval</b>                                 | 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. |
| <b>Contents</b>                                 |   |
|   | Activate the respective fields of the events that the report should contain in the "Portal" and "Plant" rows.   |
| <b>Send report as:</b>                          | Text: You receive the e-mail with the data in text format.  |
|   | HTML: You receive the e-mail with the data in HTML-Format.  |
|   | PDF: You receive the e-mail in text format, with the data in PDF format as an attachment.   |
| <b>Maximum number of messages in one report</b> | Select the maximum number of messages that is permitted 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 Report Manually

You can generate a report of a certain date at a later point in time. 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:

- Changing General Plant Data
- Changing the Plant Name
- Deleting a Plant
- Setting the plant power
- Changing the description of the plant
- Creating 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:

|                         |  |
|-------------------------|--|
| <b>Name</b>             | 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 53)). |
| <b>Plant identifier</b> | Plant identifier for the plant currently selected. The plant identifier is defined when you register the plant.  |
| <b>Commissioning</b>    | Date on which the plant was created in Sunny Portal.   |
| <b>Street/no.</b>       | Street address to which the plant belongs.   |
| <b>Postal code/city</b> | Postal code and city to which the plant belongs.   |
| <b>Country</b>          | Country in which the plant is located.   |
| <b>Federal state</b>    | Federal state in which the plant is located.   |
| <b>Time zone</b>        | You can select the time zone here.   |
| <b>Longitude</b>        | Longitude and latitude of the plant location. In order to have geodata for location automatically entered from the database, select "Search geodata".            |
| <b>Latitude</b>         |  |
| <b>Height</b>           | 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 the Plant Power

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

### Options for Configuring Plant Power:

- Enter the plant power manually
- Calculate plant power from the sum of power of all inverters

### Entering the Plant Power Manually

1. Select "Configuration > Plant properties".
2. Select "Plant data" tab.
3. Select [Edit].
4. In the "Power" area set the plant power in the "Plant 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 "Setting the Generator Capacity" (page 64).
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.

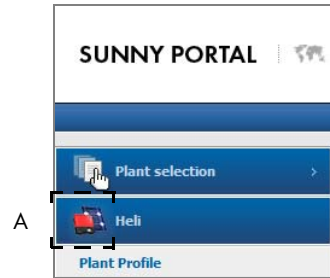
1. Select "Configuration > Plant properties".
2. Select "Plant data" tab.
3. Select [Edit].
4. Enter desired description in the "Description" area.
5. Select [Save].

## 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 an image 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 adjusts the proportions of the image based on the size of the page layout.



### Changing the Plant Image

1. Select "Configuration > Plant properties".
2. Select "Plant data" tab.
3. Select [Edit].
4. To upload an image from your own computer:
  - Select [Load image] in the "Plant image" area.
  - The "Select file" window opens.
  - Select desired image.
  - Select [Open].
  - To change the image section, move the gray square using the mouse.
5. 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 it.
  - To change the image section, move the gray square using the mouse.
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 Plant Operator Data

You can enter the data of the plant operator in the plant properties at the Sunny Portal, as described in this section. 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 contain a description of the parameters and information on the calculations for which Sunny Portal needs these parameters.

### 7.3.1 Changing the Feed-in Tariff

You can consume the electricity from the plant yourself or sell it. Here you enter the amount specifying the feed-in tariff or the savings. Sunny Portal calculates the amount of money you earn or save. The feed-in tariff in Germany is regulated by the Renewable Energy Sources Act (EEG).

1. Select "Configuration > Plant properties".
2. Select the "Parameters" tab.
3. Select [Edit].
4. Enter amount of compensation.
5. Select currency.
6. Select [Save].

### 7.3.2 Changing CO<sub>2</sub> Avoided Factor

The CO<sub>2</sub> factor indicates how much CO<sub>2</sub> is produced for every single kilowatt hour of electricity generated in the country. Depending on the technology used and the efficiency, the CO<sub>2</sub> factor can vary between the different electric utility companies in the region. You can find out the value of the CO<sub>2</sub> factor of the electricity supplied in your region from your electric utility company. The CO<sub>2</sub> factor is used by Sunny Portal to calculate how much CO<sub>2</sub> has been saved by your plant's eco-friendly power generation.

1. Select "Configuration > Plant properties".
2. Select the "Parameters" tab.
3. Select [Edit].
4. Enter CO<sub>2</sub> 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., shadings or the plant's orientation are not taken into account. You can obtain the plant 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 the Plant Power" (page 54)).
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. If the "Plant location" field is empty, enter information on the plant's location in the "Plant data" tab (see Section 7.1.1 "Changing General Plant Data" (page 52)).
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 is a measure of the quality of a PV plant that is independent of the 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 plant. It thus shows the proportion of the energy that is actually available for feed-in to the grid after deduction of energy loss (e.g. due to thermal losses and conduction losses ) and of operating current needed.

The closer the PR value determined for a plant is to 100 %, the more efficiently the respective plant is operating. In real life, a value of 100 % cannot be achieved, as unavoidable losses always arise with the operation of the plant (e.g. thermal loss due to heating of the PV modules). However, high-performance 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. You normally do not have 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 Irradiation and Temperature Sensor Manually

1. Select "Configuration > Plant properties".
2. Select the "Parameters" tab.
3. Select [Edit].
4. In the "Irradiation sensor" field, select the sensor by means of the serial number of the Sunny SensorBox.
5. Select the type of irradiation sensor. The following settings are possible:

|                  |                             |
|------------------|-----------------------------|
| <b>ExtSollrr</b> | External irradiation sensor |
| <b>IntSollrr</b> | Internal irradiation sensor |

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

|                |                            |
|----------------|----------------------------|
| <b>TmpAmb</b>  | Ambient temperature sensor |
| <b>TmpMdul</b> | Module temperature sensor  |

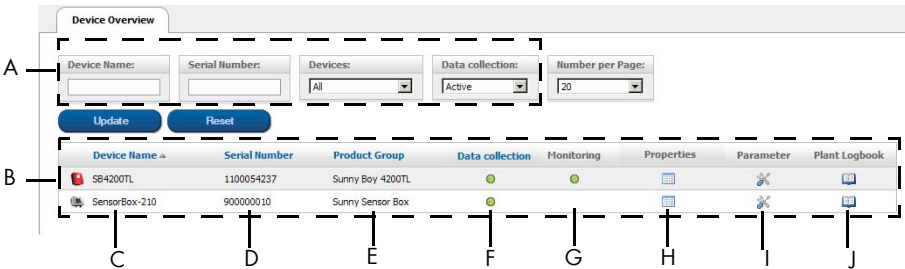
8. Select [Save].




# 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. The "Overview new devices" tab is only visible if Sunny Portal has detected new devices in your plant.

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: device group, e.g., Sunny Boy 4200TL  |
| F        | * 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 the Device" (page 63).  |
| G        | * Monitoring: shows whether the device (inverter, Sunny WebBox) is participating in plant monitoring, see Section 6.3 "Plant Monitoring" (page 43).  |
| H        |  Properties: opens tab with device properties of the device, see Section 8.2 "Calling Up Device Properties" (page 61).          |
| I        |  Parameters: opens the "Parameters" tab of the device, see Section 8.3 "Calling up the Parameters of a Device" (page 67).       |
| J        |  System logbook: Opens "System logbook" tab with filtered messages for this device, see Section 6.2 "System Logbook" (page 42). |

\*  = active,  = deactivated

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





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

3. Select [Update].
4. Select [Reset] in order to delete filter settings. TIP: 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 Calling Up Device Properties

1. Select "Configuration > Device overview".
  2. In the device line, select the icon for the device properties.
- The device properties open.

### Explanation of Device Properties:

| Designation   | Meaning  |
|---|--|
| <b>Data Collection</b>                                      | Displays whether the device is activated in Sunny Portal (see Section 8.2.1 "Activating/Deactivating the Device" (page 63)). Activated devices are used in Sunny Portal, deactivated devices are not used.<br><br> = Device is activated in Sunny Portal.<br> = Device is deactivated in Sunny Portal. |
| <b>Product Group</b>  | Device group, e.g. Sunny Boy 4200TL  |
| <b>IP Address</b><br>(only with Sunny WebBox)               | If you select the IP address, you can call up your Sunny WebBox user interface directly. In order to do this, you must first activate the Sunny WebBox IP address in your router. To do this, follow the manual for your router.   |
| <b>MAC Address</b><br>(only with Sunny WebBox)              | MAC address of Sunny WebBox  |
| <b>Serial number</b>  | Serial number of device  |
| <b>Manufacturer</b>   | Device manufacturer  |
| <b>Name</b>   | Device name<br><br>The serial number of the device is displayed as the default device name (to change the name, see Section 8.2.2 "Changing the Device Name" (page 63)).   |
| <b>Description</b>  | Space for comments on the device (see Section 8.2.3 "Changing the Description of the Device" (page 63))  |
| <b>Phase (L1, L2, L3)</b>                                   | Phases to which the device is connected (see Section 8.2.4 "Setting the Phase" (page 64)).<br><br> = The device is connected to this phase.<br> = The device is not connected to the phase or the phase is not configured.   |
| <b>Generator Power</b>                                      | Total power of all PV modules connected to a PV inverter.  |
| <b>Communication Monitoring</b><br>(only with 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 62)).   |

| <b>Designation</b>                                  | <b>Meaning</b>  |
|---|---|
| <b>Inverter Comparison</b><br>(only with inverters) | Shows the settings of the inverter for this inverter comparison (see Section "Explanation of device properties - Inverter comparison (only for Inverters):" (page 62)). |

**Explanation of device properties – Communication monitoring (only for Sunny WebBox):**

| <b>Designation</b> | <b>Meaning</b>  |
|--------------------|---|
| <b>Monitoring</b>  | Here you can activate or deactivate communication monitoring for this Sunny WebBox.   |
| <b>Alert after</b> | Indicates the period of time with no contact between Sunny Portal and this Sunny WebBox which must elapse before you receive an e-mail. |
| <b>Interval</b>    | Shows the frequency with which the Sunny WebBox sends data to the Sunny Portal (configuration via Sunny WebBox user interface).         |
| <b>Time Period</b> | 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):**

| <b>Designation</b>   | <b>Meaning</b>   |
|----------------------|--|
| <b>Monitoring</b>    | Here you can activate or deactivate the inverter comparison for this inverter.   |
| <b>Tolerance [%]</b> | The permissible tolerance for the specific yield of this inverter can be entered here for this inverter. If the specific yield is outside the tolerance range, Sunny Portal will inform you by e-mail. |

## 8.2.1 Activating/Deactivating the Device

If you want to remove a device from your plant or if you do not want to 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 of a device (see Section 8.2.6 "Deleting a Device" (page 66)), the data of a deactivated device is retained 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 (Configuration Wizard)" (page 66)), the replaced device is automatically deactivated.

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

## 8.2.3 Changing the Description of the Device

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

## 8.2.4 Setting the Phase

You can set the phase to which the inverter feeds in.

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

## 8.2.5 Setting the Generator Capacity

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

### Options for setting the generator power:

- Enter the power of an inverter manually
- Configure the power of an inverter through multiple strings

### Entering the Power of an Inverter Manually

1. Select "Configuration > Device overview".
2. In the inverter line, select the icon for the device properties.
  - The device properties of the inverter opens.
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 the Plant Power" (page 54), paragraph "Calculating the Plant Power from Sum of Power of All Inverters" (page 54).

### Configuring the Power of an Inverter through Multiple Strings

1. Select "Configuration > Device overview".
2. In the inverter line, select the icon for the device properties.
  - 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.
- Menu to set the string opens.



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

|                          |  |
|--------------------------|--|
| <b>Designation</b>       | Enter name for the string  |
| <b>Manufacturer</b>      | Select the display module manufacturer   |
| <b>Module type</b>       | Select the type of module<br>You must set the manufacturer first. The menu contents vary depending on the manufacturer you select.   |
| <b>Module power</b>      | These data are entered automatically when you select the module type. You can enter adjustments in the fields using the arrows or the arrow keys on the keyboard.  |
| <b>Module surface</b>    |  |
| <b>Efficiency</b>        |  |
| <b>Number of modules</b> | Enter the number of display modules on the string  |
| <b>Azimuth</b>           | You can enter the azimuth angle of the string module surfaces here. 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"> <li>Tracking<br/>If your module surfaces track the sun automatically, activate this field.</li> </ul>                          |
| <b>Tilt angle</b>        | Set the tilt angle of the string 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"> <li>Optimized<br/>If your plant is optimized based on the latitude, activate this field. The optimum orientation is 30° from the horizontal in Germany.</li> </ul> |
| <b>Description</b>       | Enter comments   |

6. Select [Submit].  
 The device properties page opens. The string is configured.
7. Select [Save].
8. Activate calculation, see Section 7.1.4 "Setting the Plant Power" (page 54), paragraph "Calculating the Plant Power from Sum of Power of All Inverters" (page 54).

## 8.2.6 Deleting a Device






**If you delete a device, all the data of that device is deleted permanently. Check in advance whether it is sufficient to deactivate the device (see Section 8.2.1 "Activating/Deactivating the Device" (page 63)).**

1. Select "Configuration > Device overview".
2. In the device line, select the icon for the device properties.
  - 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 (Configuration Wizard)

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 recognizes the new devices and opens the configuration wizard automatically when you log into Sunny Portal with your access data. From a total of 10 or more devices, you can add several devices simultaneously by selecting the button under the list. After you have replaced a device using the configuration wizard, the replaced device is automatically deactivated in Sunny Portal.

1. To open the configuration wizard manually, select "Name of your plant > Plant monitoring" or "Configuration > Device overview > Overview new devices".
  - The configuration wizard opens.
2. Select "Set up device now".
3. To add a device, select  in the device line and follow the instructions of the configuration wizard.
4. To replace a device, select  in the device line and follow the instructions of the configuration wizard.
5. To permanently delete a device (if you no longer want to have the device and its data displayed in Sunny Portal), select .
6. To add or replace another device, repeat steps.

## 8.3 Calling up the Parameters of a Device

The parameters are described in the respective manual of the device. You can only read the parameters of the device, you cannot change them. If you want to change the parameters, use the Sunny WebBox or the Sunny Explorer software from 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 Privileges

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 privileges the user enjoys in your Sunny Portal, for example, whether the user is authorized to create a new page. The following roles are possible:

- Guest
- Standard user
- Installer
- Plant administrator

#### Overview of Roles and Privileges

| Privileges                                  | Role  |          |           |               |
|---|-------|----------|-----------|---------------|
|   | Guest | Standard | Installer | Administrator |
| Login                                       | ✓     | ✓        | ✓         | ✓             |
| View pages                                  | ✓     | ✓        | ✓         | ✓             |
| View and change user information            | ✓     | ✓        | ✓         | ✓             |
| Change password                             | -     | ✓        | ✓         | ✓             |
| View plant properties                       | -     | ✓        | ✓         | ✓             |
| View device properties                      | -     | ✓        | ✓         | ✓             |
| View report configuration                   | -     | ✓        | ✓         | ✓             |
| View, change and delete pages               | -     | -        | ✓         | ✓             |
| View and change plant properties            | -     | -        | ✓         | ✓             |
| View and change device properties           | -     | -        | ✓         | ✓             |
| View and change 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

If you create a new user, he will receive an e-mail informing him that he has access to your Sunny Portal under this e-mail address. If the new user is not yet registered at Sunny Portal, he will also receive an automatically generated password.

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 "Standard user" role is activated by default.
  5. Select [Save].
- The new user has been created and he will receive an e-mail with the access details.

## 9.3 Changing User Privileges

1. Select "Configuration > User management".
2. In the user line, select the edit icon.
3. In the "Roles" area, activate the desired role.
4. Select [Save].

## 9.4 Deleting Users



### Never delete the e-mail address used by the communication product.

Never delete the user whose e-mail address is used by the communication product (e. g. Sunny WebBox, Sunny Data Control) 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 the user with the new e-mail address in Sunny Portal and assign the role of "Administrator" or "Installer" (see Section 9.2 "Creating a New User" (page 69)).
  - In the communication product, enter the new e-mail address for the sending of data to Sunny Portal.
  - In Sunny Portal, delete the user with the old e-mail address in the manner described below.
1. Select "Configuration > User management".
    - The "User Management" page opens.
  2. In the line of the user, select the delete icon.
    - A confirmation prompt opens.
  3. Click [Yes] to delete the user.

## 9.5 Changing User Information

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

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

## 9.6 Changing the Password

Each user created (except "Guest") can change the password for the Sunny Portal access.

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 new password in the "New password" field.
6. Enter new password again in the "New password (re-enter):" field.
7. Select [Save].

## 10 Troubleshooting

| <b>Problem</b>   | <b>Cause</b>  | <b>Remedy</b>   |
|--|---|---|
| <b>Pop-up window</b><br>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 Service Line. We need the following data in order to provide you with the necessary assistance:

- Plant name, plant identifier, or e-mail address (see Section 7.1).
- Type of data logger and serial number (see data logger manual)
- Type of data transmission (network, analog, ISDN, GSM)
- If there is an option to dial into the data logger, we need the phone number.

### **SMA Solar Technology America, LLC**

6020 West Oaks Blvd, Ste 300

Rocklin, CA 95765

Tel. +1 916 625 0870

Tel. +1 877-MY SMA TECH

Tel. +1 877 697 6283 (Toll free, available for USA, Canada, and Puerto Rico)

Fax +1 916 625 0871

Service@SMA-America.com

www.SMA-America.com

### **SMA Solar Technology Canada Inc.**

2425 Matheson Blvd E , 8th Floor

Mississauga, ON L4W 5K5

Canada

Tel. +1 877 506 1756 (Toll free, available for Canada)

Service@SMA-Canada.ca

www.SMA-Canada.ca





**SMA Solar Technology**

**www.SMA-Solar.com**

**SMA America, LLC**

[www.SMA-America.com](http://www.SMA-America.com)

