



User Manual

Webconnect Systems in SUNNY PORTAL



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1 Information on this Document

Validity

This document applies to systems in Sunny Portal consisting only of inverters with integrated or retrofitted SMA Webconnect function.

Target Group





This document is intended for end users.

Additional Information

Links to additional information can be found at www.SMA-Solar.com:

Document title	Document type
CO ₂ Factor – Factor for calculating the amount of CO ₂ avoided in power generation	Technical Information
Performance ratio – Quality factor for the PV plant	Technical Information

Symbols

Symbol	Explanation
 DANGER	Indicates a hazardous situation which, if not avoided, will result in death or serious injury
 WARNING	Indicates a hazardous situation which, if not avoided, can result in death or serious injury
 CAUTION	Indicates a hazardous situation which, if not avoided, can result in minor or moderate injury
NOTICE	Indicates a situation which, if not avoided, can result in property damage
	Information that is important for a specific topic or goal, but is not safety-relevant
<input type="checkbox"/>	Indicates a requirement for meeting a specific goal
<input checked="" type="checkbox"/>	Desired result
x	A problem that might occur

Typographies

Typography	Use	Example
bold	<ul style="list-style-type: none"> • Display texts • Elements on a user interface • Terminals • Elements to be selected • Elements to be entered 	<ul style="list-style-type: none"> • The value can be found in the field Energy. • Select Settings. • Enter the value 10 in the field Minutes.
>	<ul style="list-style-type: none"> • Several elements that are to be selected 	<ul style="list-style-type: none"> • Select Settings > Date.
[Button/Key]	<ul style="list-style-type: none"> • Button or key to be selected or pressed 	<ul style="list-style-type: none"> • Select [Next].

Nomenclature

Complete designation	Designation in this document
Small wind turbine system	System
PV system	System
SMA Webconnect function	Webconnect function

The designation "**My Webconnect system**" is used as a placeholder for the name that you have given your Webconnect system in Sunny Portal.

Abbreviations

Abbreviation	Designation	Explanation
DHCP	Dynamic Host Configuration Protocol	Protocol for the dynamic assignment of IP configurations
IP	Internet Protocol	-
PIC	Product Identification Code	-
PV	Photovoltaics	Identification key for registration in Sunny Portal
RID	Registration Identifier	Registration key for registration in Sunny Portal

2 Sunny Portal

2.1 Intended Use

Sunny Portal is an Internet portal for the monitoring of systems as well as the visualization and presentation of system data.

In order to use Sunny Portal, you will need an SMA product that can record your system data and send it to Sunny Portal (see Section 2.3 "System Requirements", page 8). Depending on the product that sends the data, various functions are available in Sunny Portal.

2.2 SMA Webconnect Function

The SMA Webconnect function enables data transmission between Sunny Portal and a maximum of four inverters. This data transmission takes place via a router with Internet access.

You can register a maximum of four inverters with Webconnect function in a joint Sunny Portal system. Only one of these inverters is allowed to be of the type Sunny Boy Smart Energy. If you have more than four inverters or more than one inverter of type Sunny Boy Smart Energy, you can register the inverters in additional Sunny Portal systems.

2.3 System Requirements

- A computer with Internet access must be available.
- An Internet browser must be installed on the computer.
- JavaScript must be activated in the Internet browser.



Selecting a suitable Internet tariff for small systems

To use the new Webconnect function, you will need a permanent Internet connection.

Depending on the quality of the Internet connection, the transmission volume for one inverter will be between 150 MB and 550 MB/month. When using the system overview in Sunny Portal with live data display, there is an additional data volume of 600 kB per hour.

- SMA Solar Technology AG recommends using an Internet flat rate.
- Since there is a constant Internet connection to Sunny Portal time-based billing systems should be avoided. High costs could be incurred.

Required SMA Products

To use Sunny Portal for Webconnect systems, you will need inverters with integrated or retrofitted Speedwire/Webconnect interface. Information on whether an inverter has an integrated Speedwire/Webconnect interface or can be retrofitted with a Speedwire/Webconnect interface can be found in the download area of the respective inverter at www.SMA-Solar.com.

Supported Internet browsers

You can find a list of supported Internet browsers in the technical data on the Sunny Portal product page www.sma-america.com/sunny-portal.

Recommended Display Resolution

- Minimum 1,024 pixels x 768 pixels

3 Getting Started

3.1 Registering the Inverter in Sunny Portal

Requirements:

- The PV system must be commissioned.
- DHCP must be enabled for the router of the PV system.
- The router of the PV system must have an Internet connection.
- The PIC and RID of all inverters must be available (see inverter type label or sticker near the type label).

Procedure:

- Start the PV System Setup Assistant in Sunny Portal
- Registering as a New User in Sunny Portal
 or
 Login as an existing user in Sunny Portal
- Creating a Webconnect System in Sunny Portal

Starting the PV System Setup Assistant in Sunny Portal

The PV System Setup Assistant guides you step-by-step through user registration and the registration of your PV system in Sunny Portal.

Procedure:

1. Go to **www.SunnyPortal.com**.
2. Select [**PV System Setup Assistant**].
 - The PV System Setup Assistant opens.
3. Select [**Next**].
 - The page **User Registration** opens.

Register as a new user in Sunny Portal

1. Activate the checkbox **I am not yet registered** and select [**Next**].
2. Enter the necessary data for registration.
3. Select [**Next**].
 - You will receive an e-mail containing a hyperlink and your access data to Sunny Portal within a few minutes.
 - You did not receive an e-mail from Sunny Portal?
 - The e-mail may have been automatically redirected to your spam mail folder.
 - Check whether the e-mail is in the spam mail folder.
 - You may have stated a different e-mail address.
 - Check whether the e-mail was sent to the other e-mail address.
 - If the other e-mail address is an unknown address, restart the PV System Setup Assistant and register as a new user again.
4. Follow the hyperlink in the confirmation e-mail within 24 hours.
 - Sunny Portal opens a separate window and confirms successful registration.
 - Select [**Next**].
 - The page **Select PV system** opens.

Login as an Existing User in Sunny Portal

In addition to your existing system, another system will be created in Sunny Portal for your Webconnect system. You can call up the systems via the menu **PV System Selection**.

Requirement:

- You must already be registered in Sunny Portal.

Procedure:

1. Enter the e-mail address and the Sunny Portal password in the fields **E-mail Address** and **Password**.
2. Select [**Next**].
- The page **Select PV system** opens.

Create a Webconnect system in Sunny Portal

1. Select the option **Create a new PV system** and enter a PV system name (e.g. **My Webconnect system**) in the field **PV System Name**.
2. Enter the system password for the user role "Installer" of your system in the field **PV System Password**. If you have not yet changed the system password for the user role "Installer", the default system password **1111** is set. In such cases, you must now assign a new system password.
3. Enter the system password again in the field **Repeat password**.

4. Select **[Next]**.
 - The page **Select devices** opens.
5. Enter the PIC and RID of an inverter in your system in the **PIC** and **RID** fields (for PIC and RID, see inverter type label or sticker near the type label).
6. Select **[Identify]**.
 - The PV System Setup Assistant establishes a connection to the inverters and then adopts the data entered without displaying an error message.
 - Is an error message displayed?
 - Rectify the error as stated in the error message.
7. To add up to three more inverters, enter the PIC and RID for each additional inverter and select **[Identify]**. A Webconnect system can consist of up to four inverters. To add more inverters, create another Webconnect system after completion of the registration.
8. Select **[Next]**.
 - The page **Extended PV System Properties** opens.
9. Enter the system properties.
10. Select **[Next]**.
 - The PV System Setup Assistant shows a summary of your entered data.
11. Select **[Finish]**.
 - Sunny Portal configures your Sunny Portal system.
12. To switch to the Sunny Portal system, select **[To the PV system]**
 - Your Webconnect system in Sunny Portal opens.

3.2 Logging In and Out of Sunny Portal

Logging into Sunny Portal

Requirement:

- You must already be registered in Sunny Portal.

Procedure:

1. Go to **www.SunnyPortal.com**.
2. In the **Login** area, enter your e-mail address in the field **E-mail**.
3. Enter the Sunny Portal password in the field **Password**.
4. Activate the **SSL** checkbox to transmit the encrypted login data.
5. Activate the **Remain logged in** checkbox to stay logged in for your next Sunny Portal visits. This means that you will remain logged into Sunny Portal until you actively log out.
6. Select **[Login]**.


Logging Out of Sunny Portal

By logging out of the Sunny Portal user interface, you protect your system against unauthorized access.

Procedure:

- Select [**Logout**] in the header.
or
- Select **User Info/Logout > Logout** in the page and menu selection.

3.3 Setting the Language


1. In the user interface header, move the mouse pointer onto .
 A drop-down menu opens.
2. Select the desired language.

4 User Interface

4.1 Overview of the User Interface



Figure 1: User interface of Sunny Portal (example)

Position	Designation	Explanation
A	Header	Contains the language selection and logout from Sunny Portal
B	Content area	Contents of the selected page
C	Page and menu selection	Access to the pages and menu items Released pages of the menu " My Webconnect system " are marked with the icon  (see Section 5.4.2 "Releasing Pages for Viewing in Sunny Portal", page 29).

4.2 Overview of Menus and Pages

System Selection Menu

Requirement for displaying the menu:

- Your e-mail address must be assigned to more than one system in Sunny Portal.


In this menu you can select the desired system. The name of the currently selected system is adopted as the name of the second menu item. All other pages always refer to the currently selected system.

Page	Explanation
PV System List	The page includes an overview of systems that are assigned to your e-mail address. By default, the system list is sorted in ascending order according to the specific system yield. You can also sort the system list by other values and in descending order (see Section 5 "Page Settings", page 27).

Menu "My Webconnect System"

This menu contains all pages with information, system data, and visualizations for your system.

Page	Explanation
System Overview	<p>This page provides you with an overview of the most important information about your system. The display and range of functions of the page depend on your user role (see Section 10.1, page 57).</p> <p>For information on system data, see Section 4.3.</p> <p>If the checkbox Display the monthly distribution in the yearly comparison, as well as energy and power is activated, the average expected yield will also be displayed in the diagram in the Year and Total tabs (see Section 7.1.1, page 46).</p>
System Profile	Sunny Portal compiles the system profile from information that you can enter on different Sunny Portal pages (see Section 4.3.2, page 20).
Energy Balance	<p>This page will only be displayed if there is an inverter of type Sunny Boy Smart Energy registered in your Sunny Portal system.</p> <p>The display visualizes the temporal progression of the power or energy flowing between your PV system, your household, the utility grid and your battery.</p> <p>For further information on this page, see Section 4.4.</p>

Page	Explanation
Annual Comparison	<p>This page provides you with a summary of the total yield and the specific system yield per month in a year overview.</p> <p>If the checkbox Display the monthly distribution in the yearly comparison, as well as energy and power is activated, the average expected yield will also be displayed (see Section 7.1.1, page 46).</p>
PV System Monitoring	<p>On this page, the following PV system monitoring functions are available (see Section 6.4):</p> <ul style="list-style-type: none"> • Communication monitoring: monitoring of the communication between Sunny Portal and the inverters • Inverter comparison: system monitoring via comparison of the inverter yields, provided that at least two inverters are present in the system <p>If the communication monitoring or the inverter comparison show an error or warning, the icon  will be displayed in the page and menu selection next to the menu PV System Monitoring. The icon will be displayed until communication is restored or the inverter comparison error has been eliminated.</p>
PV System Logbook	<p>This page shows messages in connection with system status, e.g. disturbances in your system. The number after the colon indicates the number of unread messages.</p> <p>For further information on this page, see Section 6.2.</p>
Inverter	<p>On the Day tab on this page, you can view the power values of all inverters for specific days.</p> <p>On the Month, Year, Total tabs, you can view the energy values of all inverters.</p> <p>You can select the display type above the diagram:</p> <ul style="list-style-type: none"> • absolute: displays the system yield (kWh) • specific: displays the specific system yield (kWh/kWp) <p>For further information on this page, see Section 5.3.</p>

Configuration Menu

This menu contains pages on which you can make configurations. This menu is only displayed if you have the user role **Installer** or **Administrator**.






Page	Explanation
System Properties	On this page, you can use the various tabs to configure your Sunny Portal system.
System Presentation	On this page you have the following options: <ul style="list-style-type: none"> • Send third parties a hyperlink to your released pages (see Section 5.4.2, page 29). • Embed the page PV system profile in other websites.
Device Overview	All the devices of your system are listed on this page. You can call up device properties, parameters, and messages.
Report Configuration	On this page you can configure Sunny Portal to inform you by e-mail of events and other information such as yield (see Section 6.3, page 33).
User Management	This page displays a list of all users to whom you have granted access to the system (see Section 10.2, page 59).







User Info/Logout Menu




Page	Explanation
User Information	Displays your user information
Logout	Ends your session in Sunny Portal

4.3 "My Webconnect System" > PV System Overview Page

4.3.1 PV System Data Area

Information	Symbol	Explanation
Current Power		<p>This value indicates the current power. If the value cannot be currently updated due to a temporary connection problem with your PV system, the last known value with corresponding time stamp will be displayed.</p> <p>The icon shows how high the current power is compared to the installed system power (peak power).</p> <p>You can access the page Energy Balance using the hyperlink Energy Balance.</p>
Current Consumption*		<p>Current consumption of your PV system</p> <p>You can access the page Energy Balance using the hyperlink Energy Balance.</p> <p>The symbols indicate the kind of energy being consumed:</p>
		Your household is currently drawing power from the PV system and the utility grid.
		Your household is currently drawing power from the PV system.
		Your household is currently drawing power from the utility grid
Current battery status*		<ul style="list-style-type: none"> The battery is currently being charged with power from your PV system. The number of bars indicates the battery state of charge. Specification in %: battery state of charge Specification in W: power currently being charged to the battery.
	(example)	<p>Tip: If you move the mouse pointer to the battery symbol, the battery state of charge and the current battery capacity compared to nominal battery capacity are displayed. Battery capacity decreases with age. This is due to a natural aging process.</p>

Information	Symbol	Explanation
	 <p>(example)</p>	<ul style="list-style-type: none"> The battery is currently being discharged. Your household is currently drawing power from the battery. The number of bars indicates the battery state of charge. Specification in %: battery state of charge Specification in W: power currently being drawn from the battery by the household.
	 <p>(example)</p>	<ul style="list-style-type: none"> Currently, the battery is neither being charged or discharged. The number of bars indicates the battery state of charge. Specification in %: battery state of charge Specification in W: since the battery is being neither charged nor discharged, the power value is 0.
<p>Current PV system status</p>		<p>The icon displays the current system status (for explanations, refer to Section 4.3.2).</p> <p>You can activate the page PV System Logbook using the hyperlink PV System Logbook.</p>
<p>Energy</p>		<p>Today: the value states the energy produced so far by the PV system on the current day.</p> <p>Total: the value states the total energy produced so far by the PV system, based on the aggregate meter readings of the inverters.</p>
<p>Reimbursement**</p>		<p>This icon is only displayed if the feed-in tariff has been set (see Section 7.8).</p> <p>Today: the value states the reimbursement calculated so far for the current day.</p> <p>Total: the value states the total reimbursement calculated so far.</p>
<p>CO₂ avoided</p>		<p>Today: the value states the CO₂ emission avoided by the PV system so far on the current day.</p> <p>Total: the value states the CO₂ emission avoided by the PV system since it was commissioned.</p>






Information	Symbol	Explanation
System information		The value states the installed system power (peak power) of the PV system. The date is the commissioning day of the PV system. You can activate the page PV System Profile using the hyperlink PV System Profile .
Weather		The current weather for the PV system location is displayed. You can scroll to the weather forecast for the next day at noon using the hyperlink Tomorrow .
Location		Displays the PV system location on a map extract. A larger view of the map can be activated via the hyperlink Enlarge map .

* Only displayed if there is an inverter of type Sunny Boy Smart Energy in your PV system.

** Only displayed if you have entered the feed-in tariff (see Section 7.8, page 45). The data is not suitable for billing purposes. The data may deviate from the data supplied by the energy meter.

4.3.2 System Status in the PV System Data Area

The text below the icon is a hyperlink that can be used to activate the PV system logbook.


Symbol	Text below the icon	Explanation
	PV System Logbook	All existing status information for the devices is OK.
	n device/s cannot be reached	All existing status information for the devices is OK; however, information is not available for all devices. The text below the icon shows the number of devices that cannot be reached. The status of these devices could not be captured.
	n device/s with warnings	A warning has occurred. The text below the icon shows the number of devices that are affected by the warning.
	n device/s with errors	An error has occurred. The text below the icon shows the number of devices that are affected by the error.
	PV System Logbook	The status of all devices is unknown. Further information can be accessed via the hyperlink PV System Logbook below the icon.




Sunny Portal compiles the system profile from information that you can enter on different Sunny Portal pages. The following table includes the possible information in the system profile and the source for changing or entering the information.

Information	Configuration
Location	(see Section 7.2 "Changing System Data", page 40)
Operator	(see Section 7.6 "Changing Operator Data", page 43)
Commissioning	(see Section 7.2 "Changing System Data", page 40)
Nominal system power	(see Section 7.4 "Setting the Nominal System Power", page 41)
Annual production	(see Section 7.10 "Automatic Calculation of the Predicted Annual Yield", page 46)
CO ₂ avoided	(see Section 7.9 "Entering the Amount of CO ₂ Avoided", page 45)
Modules	(see Section 7.1 "Entering String Properties", page 39)
Azimuth	
Tilt angle	
Communication	No configuration necessary, this information is automatically detected.
Inverter	
Description	(see Section 7.5 "Changing the System Description", page 42)
PV system image	(see Section 7.7 "Changing/Deleting the System Image", page 43)

4.3.3 Messages for the System Data Area


On the page **PV system overview**, messages are displayed if Sunny Portal cannot retrieve any current data from the devices. In this case, the data displayed on the page **PV System Overview** is not current.

Messages are displayed on the right above the **PV System Data** area with the symbol . The number in the icon represents the number of messages. The color of the symbol indicates the message category.

Symbol	Meaning
 *	red = error
	yellow = warning
	blue = information

* The table gives examples of the symbol with three messages.

Retrieving Messages

1. Select the symbol .
- A window appears containing the message and a possible corrective measure.
2. To close the window, select [OK].

4.4 Energy Balance



Requirements for displaying the page:

- There must be one Sunny Boy Smart Energy in the Sunny Portal system.
- The SMA Energy Meter must be connected to the Sunny Boy Smart Energy.

Showing and hiding data

- You can show and hide the data indicated in the legend of the diagram. To do this, click on the respective value in the legend which you wish to show or hide.
- If a battery is present in your PV system, you can choose between the simplified view without battery data and the detailed view with battery data. To do this, you must activate or deactivate the checkbox **Detailed view**.

Scaling values in the diagram up to peak system power

- Use the tabs **Current** and **Day** to configure scaling of the values up to peak system power. To do this, move the mouse pointer to the gearwheel icon on the right underneath the diagram  and select  in the drop-down menu.

The page **Energy Balance** includes the following tabs:

Tab	Content
Current	<p>Data in the diagram Consumption:</p> <ul style="list-style-type: none"> • Current consumption: Power that your household is currently drawing from your PV system (direct consumption), the utility grid (purchased electricity) and, if applicable, the battery (battery discharging). • Purchased electricity: Power that your household is currently drawing from the utility grid. • Internal power supply: Power that your household is drawing directly from your PV system (direct consumption) and the battery (battery discharging). • Battery discharging*: Power that your household is currently drawing from the battery. • Direct consumption*: Power that your household is currently drawing from your PV system, without intermediate storage in the battery.

Tab	Content
Current	<p>Data in the diagram Generation:</p> <ul style="list-style-type: none"> • Current power: Power that your PV system is currently generating. • Self-consumption: Power that your household is currently drawing directly from your PV system (direct consumption) and the power that your PV system is currently storing in the battery (battery charging). • Battery charging*: Power that your PV system is currently storing in the battery. • Grid feed-in: Power that your PV system is currently feeding in to the utility grid. <p>If your PV system is producing more power than your household needs at the moment, the surplus power is fed into the utility grid. For PV systems including battery, the battery will first be charged and then the surplus power fed into the utility grid.</p>
Day	<p>Data in the diagram Consumption:</p> <ul style="list-style-type: none"> • Daily consumption: Energy that your household has drawn from your PV system (direct consumption), the utility grid (purchased electricity) and, if applicable, the battery (battery discharging) on the day selected. • Purchased electricity: Energy that your household has drawn from the utility grid on the day selected. • Internal power supply: Energy that your household has drawn directly from your PV system (direct consumption) and the battery (battery discharging) on the day selected. • Battery discharging*: Energy that your household has drawn from the battery on the day selected. • Direct consumption*: Energy that your household has drawn directly from your PV system on the day selected, without intermediate storage in the battery. <hr/> <p>Data in the diagram Generation:</p> <ul style="list-style-type: none"> • Daily yield: Energy that your PV system has generated on the day selected. • Self-consumption: Energy that your household has drawn directly from your PV system on the day selected (direct consumption) and energy stored by your PV system in the battery (battery charging) on the day selected. • Battery charging*: Energy that your PV system has stored in the battery on the day selected. • Grid feed-in: Energy fed by your PV system into the utility grid on the day selected.

Tab	Content
Day	<p>Additional data:</p> <ul style="list-style-type: none"> • Self-sufficiency quota: Ratio of internal power supply to daily consumption • Self-consumption rate: Ratio of self-consumption to daily yield. • Direct consumption rate*: Ratio of direct consumption to daily yield.
Month	<p>Data in the diagram Consumption:</p> <ul style="list-style-type: none"> • Monthly consumption: Energy that your household has drawn from your PV system (direct consumption), the utility grid (purchased electricity) and, if applicable, the battery (battery discharging) during the month selected. • Purchased electricity: Energy that your household has drawn from the utility grid during the month selected. • Internal power supply: Energy that your household has drawn directly from your PV system (direct consumption) and the battery (battery discharging) during the month selected. • Battery discharging*: Energy that your household has drawn from the battery during the month selected. • Direct consumption*: Energy that your household has drawn directly from your PV system during the month selected, without intermediate storage in the battery. <hr/> <p>Data in the diagram Generation:</p> <ul style="list-style-type: none"> • Monthly yield: Energy that your PV system has generated during the month selected. • Self-consumption: Energy that your household has drawn directly from your PV system during the month selected (direct consumption) and the energy that your PV system stored in the battery (battery charging) during the month selected. • Battery charging*: Energy that your PV system has stored in the battery during the month selected. • Grid feed-in: Energy that your PV system has fed into the utility grid during the month selected. <hr/> <p>Additional data:</p> <ul style="list-style-type: none"> • Self-sufficiency quota: Ratio of internal power supply to monthly consumption • Self-consumption rate: Ratio of self-consumption to monthly yield • Direct consumption rate*: Ratio of direct consumption to monthly yield.

Tab	Content
Year	<p>Data in the diagram Consumption:</p> <ul style="list-style-type: none"> • Yearly consumption: Energy that your household has drawn from your PV system (direct consumption), the utility grid (purchased electricity) and, if applicable, the battery (battery discharging) in the year selected. • Purchased electricity: Energy that your household has drawn from the utility grid during the year selected. • Internal power supply: Energy that your household has drawn directly from your PV system (direct consumption) and the battery (battery discharging) during the year selected. • Battery discharging*: Energy that your household has drawn from the battery during the year selected. • Direct consumption*: Energy that your household has drawn directly from your PV system during the year selected, without intermediate storage in the battery. <hr/> <p>Data in the diagram Generation:</p> <ul style="list-style-type: none"> • Annual yield: Energy that your PV system has generated during the year selected. • Self-consumption: Energy that your household has drawn directly from your PV system during the year selected (direct consumption) and the energy that your PV system stored in the battery (battery charging) during the year selected. • Battery charging*: Energy that your PV system has stored in the battery during the year selected. • Grid feed-in: Energy that your PV system has fed into the utility grid during the year selected. <hr/> <p>Additional data:</p> <ul style="list-style-type: none"> • Self-sufficiency quota: Ratio of internal power supply to yearly consumption. • Self-consumption rate: Ratio of self-consumption to annual yield. • Direct consumption rate*: Ratio of direct consumption to annual yield.

Tab	Content
Total	<p>Data in the diagram Consumption:</p> <ul style="list-style-type: none"> • Total consumption: Total amount of energy that your household has drawn from your PV system (direct consumption), the utility grid (purchased electricity) and, if applicable, the battery (battery discharging) so far. • Purchased electricity: Total amount of energy that your household has drawn from the utility grid so far. • Internal power supply: Total amount of energy that your household has drawn from your PV system (direct consumption) and the battery (battery discharging) so far. • Battery discharging*: Total amount of energy that your household has drawn from the battery so far. • Direct consumption*: Total amount of energy that your household has drawn directly from your PV system so far, without intermediate storage in the battery. <hr/> <p>Data in the diagram Generation:</p> <ul style="list-style-type: none"> • Total yield: Total amount of energy that your PV system has generated so far. • Self-consumption: Total amount of energy that your household has drawn directly from your PV system so far (direct consumption) and total amount of energy that your PV system has stored in the battery (battery charging) so far. • Battery charging*: Total amount of energy that your PV system has stored in the battery so far. • Grid feed-in: Total amount of energy that your PV system has fed into the utility grid so far. <hr/> <p>Additional data:</p> <ul style="list-style-type: none"> • Self-sufficiency quota: Ratio of internal power supply to total consumption. • Self-consumption rate: Ratio of self-consumption to total yield. • Direct consumption rate*: Ratio of direct consumption to total yield.

* Only displayed for PV systems with battery

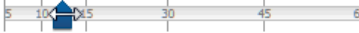
5 Page Settings



5.1 Configuring Settings for Diagrams

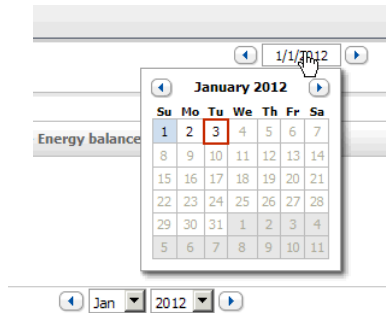
5.1.1 Setting the Display Period

Depending on the diagram, you can set various display periods. The control element for setting the display period can be found below each diagram.

Procedure:

- If there is a slider below the diagram, click the blue arrow and keeping the left mouse button pressed, set the display time period. 
- If there is a date and arrow icon below the diagram, set the date using the arrow icons or a calendar:

- To set the date using the arrow icons, browse backward using  and browse forward using  and select the desired date.
- To set the date using the calendar, click on the date between the arrow icons and select the desired date.



- If there are drop-down lists between the arrow icons, use these to select the desired display period.




5.1.2 Saving Diagram Data

You can save diagram data as CSV files.



Requirement:

- You must have the user role **Installer** or **Administrator** (see Section 10.1 "User Roles and User Rights in Sunny Portal", page 57).





Procedure:

1. If you can see the gearwheel icon  on the right below the diagram, move the mouse pointer onto the gearwheel icon and select  in the drop-down menu.
2. If there are two icons on the right below the diagram, select .
3. Select **[Save]**.
4. Select the target directory.
5. Select **[Save]**.

5.1.3 Printing Diagram Data

1. Move the mouse pointer onto  on the right below the diagram.
 - A drop-down menu opens.
2. Select  and then select [**Print**].
3. Select the desired printer and select [**Print**].

5.1.4 Enlarging the View

- If  is visible on the right below the diagram, move the mouse pointer onto  and select .
- If there are two icons on the right below the diagram, select .

5.2 Sorting the System List

By default, the system list is sorted in ascending order according to the specific system yield. You can also sort the system list by other values and in descending order.

Procedure:

1. Select **PV System Selection > PV System List** in the page and menu selection.
2. Set the desired sorting criteria:
 - To sort the list by another value, click one of the other blue values in the header.
 - To sort the list in descending order, click on the blue value in the header again.

5.3 Setting Options on the Inverter Page

On the page "**My Webconnect system**" > **Inverter** > **Device Selection**, you have the following setting options:

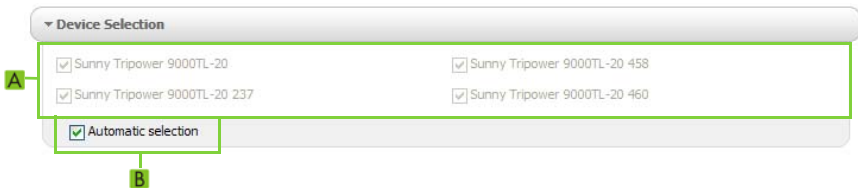


Figure 2: Structure of the settings area on the **Inverter** page

Position	Meaning
A	Area for selecting the inverters to be shown For this purpose, the checkbox Automatic selection must be deactivated.
B	Checkbox for automatic selection of all inverters in area (A) If you activate the checkbox, all inverters in area (A) will be selected automatically and manual selection will be deactivated.

5.4 Publishing Sunny Portal Pages

5.4.1 Pages to Be Published

You can publish the following pages of the menu "My Webconnect system":

- System Overview
- System Profile
- Energy and Power
- Annual Comparison



5.4.2 Releasing Pages for Viewing in Sunny Portal

If you release pages for viewing in Sunny Portal, other Sunny Portal users can view these pages.

Requirement:

- You must have the user role **Installer** or **Administrator** (see Section 10.1 "User Roles and User Rights in Sunny Portal", page 57).

Procedure:

1. Select the desired page in the page and menu selection.
 2. In the Contents area at the bottom, select [**Configuration - "Name of the page"**].
 3. In the area **Approval**, activate the checkbox **Also release page on www.sunnyportal.com**.
 4. To send the page by e-mail, select **Send the page by e-mail**, enter the e-mail address of the recipient, select [**Send e-mail**], and select .
 5. Select [**Save**].
- The icon  is displayed in the page and menu selection next to the name of the released page.

5.4.3 Presenting Pages on the Internet

Each of your Sunny Portal pages is assigned a specific URL. You can use these URLs to place a hyperlink to your Sunny Portal page on other websites.

Requirement:

- You must have the user role **Installer** or **Administrator** (see Section 10.1 "User Roles and User Rights in Sunny Portal", page 57).

Procedure:

1. Select the desired page in the page and menu selection.
2. In the Contents area, select [**Configuration - "Name of the page"**].
3. To view a preview of the page, select **Open page in a new window**.
4. Copy the URL from the field **URL of the Page** onto the clipboard.
5. Copy the URL from the clipboard to a program for creating websites (e.g. Microsoft Office FrontPage) or integrate it in your own website by means of a so-called inline frame.

6 PV System Monitoring

6.1 PV System Monitoring Options

Monitoring	Option in Sunny Portal	See
System events	PV System Logbook You can view messages regarding system events.	Section 6.2
	Report Configuration You receive e-mails reporting the events of your system.	Section 6.3
Yield, power, and CO ₂ avoided	Report Configuration You receive e-mails reporting the data of your system.	
Inverter yields	Inverter Comparison You will be notified by e-mail if the specific yield of one inverter is outside the average specific yield of all the inverters. To use this function, the system must include at least two inverters.	Section 6.6
	Requirement for display of inverter comparison: <input type="checkbox"/> Your Sunny Portal system must contain at least two inverters.	
Communication between the inverters and Sunny Portal	Communication Monitoring You will be notified by e-mail if an inverter cannot be accessed for a period of 24 hours.	Section 6.5

6.2 PV System Logbook

6.2.1 Retrieving and Filtering Messages

Messages help you, for instance, to identify disturbances in your system. Depending on your user role, you will only be able to view the messages that are relevant for your user group.

In the PV system logbook messages are entered relating to:

- System
- Inverter
- Communication device
- Sunny Portal

The following types of message are available, in ascending order according to the importance of the event:

Message type	Meaning
Info	Displays events serving information purposes
Warning	Displays events as warnings if an unusual operating condition is present.
Disturbance	Displays events as disturbances if operation is temporarily disabled. As soon as the disturbance is remedied, operation is restarted automatically.
Error	Displays events as errors if operation is permanently disabled. Operation cannot be restarted automatically.

Requirement:

- You must have the user role **Standard user**, **Installer**, or **Administrator** (see Section 10.1 "User Roles and User Rights in Sunny Portal", page 57).

Retrieving Messages

- Select "**My Webconnect system**" > **PV System Logbook** in the page and menu selection.

Filtering Messages

You can filter messages in the PV system logbook to restrict retrieval to certain messages only.

Procedure:

1. Select **PV System Logbook** in the page and menu selection.
2. To filter messages, set one or more of the following filters:

Input field or drop-down list Explanation

- | | |
|-------|---|
| Go to | <ul style="list-style-type: none"> • To display messages up to a certain date, enter the date. Tip: click the calendar icon and select a date in the calendar. |
|-------|---|

Input field or drop-down list	Explanation
Status	<p>The status of a message indicates whether you have already confirmed the message (see Section 6.2.2).</p> <ul style="list-style-type: none"> To display all unconfirmed messages, select Not approved. To display all confirmed messages, select Approved. To display both confirmed and unconfirmed messages, select All.
System/Devices	<ul style="list-style-type: none"> To display Sunny Portal, system and device messages, select All. To display Sunny Portal messages, select Portal. To display system messages, select PV System. To display device-specific messages, select the desired device.
Number per page	<ul style="list-style-type: none"> Select the number of messages that you would like to see.
Type	<ul style="list-style-type: none"> To display messages of a specific type, activate the appropriate checkbox Info, Warning, Failure, or Error.


6.2.2 Confirming Messages

You can confirm messages in order to mark them as read.

Requirement:

- You must have the user role **Standard user**, **Installer**, or **Administrator** (see Section 10.1 "User Roles and User Rights in Sunny Portal", page 57).

Procedure:

- Select "**My Webconnect system**" > **PV System Logbook** in the page and menu selection.
- To confirm messages individually, select  in the message line and the column **Confirmed**.
- To confirm several messages, mark the required messages:
 - To mark individual messages, activate the relevant checkboxes on the left of the messages.
 - To mark all messages, activate the checkbox **Select All**.
- Select [**Submit**].

6.3 Reports

6.3.1 Report Overview

Reports are documents containing system data or system events. You can configure the content to be included in the reports and have them sent to you via e-mail from Sunny Portal.

The following report types are available:

- Info reports: Contain system data and are sent to you at regular intervals.
- Event reports: Notify you if certain events occur in the system.

Report	Possible content
Daily info report	<ul style="list-style-type: none"> • Daily yield (kWh) • Reimbursement today • CO₂ avoided today (kg) • Diagram of the Energy Balance page for the day*
Monthly info report	<ul style="list-style-type: none"> • Monthly yield (kWh) • Monthly reimbursement • Monthly CO₂ avoided (kg) • Diagram of the Energy Balance page for the month*
Event report	<ul style="list-style-type: none"> • Information • Warnings • Error

* Only displayed for systems with Sunny Boy Smart Energy if the report is sent as a PDF.

6.3.2 Creating Info Reports

You can create three daily info reports and three monthly info reports with different content. Sunny Portal sends you the daily info reports when it has processed all the data of the previous day. Monthly info reports are sent as soon as Sunny Portal has processed all the data of the last day of the month.

Requirements:

- You must have the user role **Installer** or **Administrator** (see Section 10.1 "User Roles and User Rights in Sunny Portal", page 57).
- You must have entered the CO₂ avoided factor (see Section 7.9 "Entering the Amount of CO₂ Avoided", page 45).

Procedure:

1. Select **Configuration > Report Configuration** in the page and menu selection.
2. In the drop-down list **Report Configuration**, select **Daily info report** or **Monthly info report**.
3. Select **[Edit]**.
4. In the area **Activate Report**, activate the checkbox **Active**.
5. In the field **E-mail Address(es)** in the **Recipient** area, enter the e-mail address(es) of the recipient(s). Separate multiple e-mail addresses by commas. The number of characters in the input field is limited. This means that you can enter only a certain number of e-mail addresses.
6. In the field **Send Report at** in the **Interval** area, set the time from which the report is to be sent.
7. In the field **Select Channel(s)** in the **Contents** area, activate the content that is to be displayed in the e-mail.
8. In the field **Send Report as** in the **Contents** area, select the format in which Sunny Portal is to send the report.
9. To send a test report to the stated e-mail address, select **[Send test report]**.
10. Select **[Save]**.

6.3.3 Configuring Event Reports

You can configure three event reports with different content.

Requirement:

- You must have the user role **Installer** or **Administrator** (see Section 10.1 "User Roles and User Rights in Sunny Portal", page 57).

Procedure:

1. Select **Configuration > Report Configuration** in the page and menu selection.
2. In the drop-down list **Report Configuration**, select an event report.
3. Select **[Edit]**.
4. In the area **Activate Report**, activate the checkbox **Active**.

5. In the field **E-mail Address(es)** in the **Recipient** area, enter the e-mail address(es) of the recipient(s). Separate multiple e-mail addresses by commas. The number of characters in the input field is limited. This means that you can enter only a certain number of e-mail addresses.
6. Configure the settings in the area **Interval**:
 - To receive an hourly e-mail with the event report, activate the option **Hourly**.
 - To receive one daily e-mail with the event report, activate the option **Daily** and, in the drop-down list, select the time you would like to receive the e-mail.
7. Configure the settings in the area **Contents**:
 - Activate the checkboxes for the required messages. In each case, you can select up to three event types from Sunny Portal and the system: **Information, Warnings, Errors**.
 - In the area **Send Report as**, select the format in which Sunny Portal is to send the report.
 - In the area **Limit messages in one report**, use the drop-down list to select the maximum number of messages to be displayed in the e-mail.
 - If you wish to send reports even if there are no new events, activate the checkbox **Send empty reports if no new events are available**.
8. To send a test report to the stated e-mail address, select **[Send test report]**.
9. Select **[Save]**.

6.3.4 Retroactively Generating a Report

You can create a report for a specific date in the past.

Requirement:

- You must have the user role **Installer** or **Administrator** (see Section 10.1 "User Roles and User Rights in Sunny Portal", page 57).

Procedure:

1. Select **Configuration > Report Configuration** in the page and menu selection.
2. Select the desired report in the drop-down list **Report Configuration**.
3. In the field **Report Date** in the **Regenerate Report Manually** area, enter the date for which you wish to create a report. Tip: click the calendar icon and select a date in the calendar.
4. Select **[Generate]**.
 - A message that the report has been sent successfully is displayed.





6.4 Overview of the System Monitoring Page

The page "**My Webconnect system**" > **PV system Monitoring** is made up of the areas **Communication Monitoring** and **Inverter comparison**.

Communication Monitoring Area

Communication monitoring shows the current communication status between the inverters and Sunny Portal. If an inverter cannot be accessed, Sunny Portal informs you by e-mail (see Section 6.5 "Setting Communication Monitoring", page 37).

The communication monitoring status is displayed in Sunny Portal with the following icons:




Symbol	Status	Explanation
	Deactivated	Communication monitoring is not set (see Section 6.5 "Setting Communication Monitoring", page 37).
	OK	Communication with the inverters is error-free. The time of last contact is displayed.
	Error	<p>Communication with the inverters is interrupted. Use the hyperlink Details to access detailed information on the time of last contact.</p> <p>The error will be displayed until it has been cleared.</p> <p>If the error is not corrected, Sunny Portal will send another e-mail reminder on up to three days after the first e-mail was sent.</p>
	E-mail reminder is activated.	<p>Click the bell icon to stop reminder e-mails for the current error from being sent.</p> <p>If a new error occurs, the e-mail reminder will recommence.</p>

Inverter Comparison Area

Requirement for display of the area:

- The system must contain at least two inverters.

Sunny Portal can recognize potential yield losses via the inverter comparison option. If the specific yield of one inverter differs significantly from the average yield of all the inverters, Sunny Portal can notify you by e-mail (see Section 6.6 "Setting the Inverter Comparison", page 38).

Symbol	Status	Explanation
	Deactivated	Inverter comparison is not activated (see Section 6.6 "Setting the Inverter Comparison", page 38).
	OK	The specific yield of each inverter is within the average yield range of all inverters. The total yield of all inverters on the last day is displayed.
	Error	For at least one monitored inverter, the specific yield is outside the average yield range of all inverters. Use the hyperlink Details to access the following information: <ul style="list-style-type: none"> • Specific yield of the affected inverters • Average value of all monitored inverters

6.5 Setting Communication Monitoring

Via communication monitoring, you can be notified by e-mail if an inverter cannot be reached for a period of 24 hours.

Requirement:

- You must have the user role **Installer** or **Administrator** (see Section 10.1 "User Roles and User Rights in Sunny Portal", page 57).

Procedure:

1. Select "**My Webconnect system**" > **PV System Monitoring** in the page and menu selection.
2. In the area **Communication Monitoring**, select [**Settings**].
 - The page **Configuration communication monitoring** opens.
3. To activate communication monitoring, activate the **active** checkbox and enter the e-mail address of the recipient(s) in the field **Recipient**. Separate multiple e-mail addresses by commas.
4. To deactivate communication monitoring, deactivate the checkbox **active**.
5. Select [**Save**].

6.6 Setting the Inverter Comparison

Sunny Portal can recognize potential yield losses via the inverter comparison option. If the specific yield of an inverter differs significantly from the mean yield of all the inverters, Sunny Portal can notify you by e-mail. Inverter comparison will only be displayed if there is more than one inverter in your Sunny Portal system.

Requirements:

- Your Sunny Portal system must contain at least two inverters.
- The PV array power of the inverters must be configured (see Section 8.4 "Entering the PV Array Power", page 50).
- You must have the user role **Installer** or **Administrator** (see Section 10.1 "User Roles and User Rights in Sunny Portal", page 57).

Procedure:

1. Select "**My Webconnect system**" > **PV System Monitoring** in the page and menu selection.
2. In the area **Inverter comparison**, select [**Settings**].
 - The page **Configuration of inverter comparison** opens.
3. To activate inverter comparison, activate the **active** checkbox and enter the e-mail addresses of the recipient(s) in the field **Recipient**. Separate multiple e-mail addresses by commas.
4. To deactivate inverter comparison, deactivate the checkbox **active**.
5. Select [**Save**].

7 System Settings



7.1 Entering String Properties


A string designates a group of series-connected PV modules. Normally, a system is made up of multiple strings. Each string has specific properties, such as deviation to south (azimuth) or the roof tilt angle.

Requirement:

- You must have the user role **Installer** or **Administrator** (see Section 10.1 "User Roles and User Rights in Sunny Portal", page 57).

Procedure:

1. Call up the inverter properties (see Section 8.1 "Calling up the Device Properties", page 49).
2. Select [**Edit**].
 - The menu for setting the device properties opens.
3. To add a new string, select [**Add string**].
 - The menu for setting the string opens.
4. To copy a previously set string:
 - In the string line and the column **Copy**, select .
 - In the column **Edit** of the copied string line, select .
 - The menu for setting the string opens.
5. Enter the string properties:

Input field or drop-down list	Explanation
Designation	Name of the string, e.g. String 1
Manufacturer	PV module manufacturer
Module type	Depending on the selected manufacturer, various module types are displayed in the drop-down list.
Module power	These values are entered automatically once you have selected the module type. You can change the values using  or the arrow keys on the keyboard.
Module surface	
Efficiency	
Number of modules	Number of PV modules comprising the string.

Input field or drop-down list	Explanation
Azimuth	<p>The azimuth angle indicates by how many degrees the module surfaces deviate from a southern orientation.</p> <ul style="list-style-type: none"> In the field, enter the deviation of the module surfaces from a southern orientation in degrees. Enter a negative value (e.g. - 20) for a deviation to the east and a positive value (e.g. 20) for a deviation to the west. If the module surfaces track the sun automatically, activate the checkbox Tracking.
Tilt angle	<p>The tilt angle indicates by how many degrees the module surfaces deviate from the horizontal. In some systems, the module surfaces are optimally aligned according to the latitude.</p> <ul style="list-style-type: none"> In the field, enter the deviation of the module surfaces from the horizontal in degrees. If the module surfaces are optimally aligned according to the latitude, activate the checkbox Optimized.
Description	<ul style="list-style-type: none"> Enter any comments.

6. Select [**Submit**].

7. Select [**Save**].

7.2 Changing System Data

Requirement:

- You must have the user role **Installer** or **Administrator** (see Section 10.1 "User Roles and User Rights in Sunny Portal", page 57).

Procedure:

- Select **Configuration > PV System Properties** in the page and menu selection.
- Select the tab **PV System Data**.
- Select [**Edit**].
 - The menu for setting PV system data opens.
- Make the desired changes to the system data.
- Select [**Save**].

7.3 Changing the System Name

You can change the system name entered during system registration.

Requirement:

- You must have the user role **Installer** or **Administrator** (see Section 10.1 "User Roles and User Rights in Sunny Portal", page 57).

System name requirement:

- The system name can have a maximum of 30 characters.

Procedure:

1. Select **Configuration > PV System Properties** in the page and menu selection.
2. Select the tab **PV System Data**.
3. Select **[Edit]**.
 - The menu for setting PV system data opens.
4. In the field **Name**, enter the desired system name.
5. Select **[Save]**.

7.4 Setting the Nominal System Power

7.4.1 Manual Entry of Nominal System Power

The PV system power is the aggregate maximum power of all PV modules. You can obtain the nominal PV system power specifications from your installer.

The nominal PV system power is required in order to display the following data:

- Specific PV system yield
- Average expected yield

Requirement:

- You must have the user role **Installer** or **Administrator** (see Section 10.1 "User Roles and User Rights in Sunny Portal", page 57).

Procedure:

1. Select **Configuration > PV System Properties** in the page and menu selection.
2. Select the tab **PV System Data**.
3. Select **[Edit]**.
 - The menu for setting PV system data opens.
4. In the field **PV System Power** in the **Power** area, enter the system power.
5. To set the manufacturer of the PV modules, select the manufacturer in the drop-down list **Manufacturer**.
6. To set the module types, select the module types in the drop-down list **Module Type**.
7. Select **[Save]**.

7.4.2 Automatic Calculation of Nominal System Power

The nominal system power is the sum of the power of all PV modules. It can be calculated automatically from the data in the device properties.

The nominal PV system power is required in order to display the following data:

- Specific PV system yield
- Average expected yield

Requirements:

- You must have entered the PV array power of all inverters (see Section 8.4 "Entering the PV Array Power", page 50).
- You must have the user role **Installer** or **Administrator** (see Section 10.1 "User Roles and User Rights in Sunny Portal", page 57).

Procedure:

1. Select **Configuration > PV System Properties** in the page and menu selection.
2. Select the tab **PV System Data**.
3. Select **[Edit]**.
 - The menu for setting PV system data opens.
4. In the area **Power**, activate the checkbox **Calculate PV system performance from device properties**.
 - The calculated nominal system power is displayed.
5. Select **[Save]**.

7.5 Changing the System Description

You can enter important features of the system in the description. The text is displayed on the **PV system profile** page.

The editor supports text only and not typography with HTML tags.

Requirement:

- You must have the user role **Installer** or **Administrator** (see Section 10.1 "User Roles and User Rights in Sunny Portal", page 57).

Procedure:

1. Select **Configuration > PV System Properties** in the page and menu selection.
2. Select the tab **PV System Data**.
3. Select **[Edit]**.
 - The menu for setting PV system data opens.
4. Enter a description in the area **Description**.
5. Select **[Save]**.

7.6 Changing Operator Data

The operator is a private individual or legal entity assuming ownership of energy generating systems, e.g. for business purposes. The operator can farm out the use of the system without necessarily being the user himself.

The name of the operator is displayed on the page **PV system profile**.

Requirement:

- You must have the user role **Installer** or **Administrator** (see Section 10.1 "User Roles and User Rights in Sunny Portal", page 57).

Procedure:

1. Select **Configuration > PV System Properties** in the page and menu selection.
2. Select the tab **Operator**.
3. Select **[Edit]**.
 - The menu for setting the operator data opens.
4. Enter the operator data.
5. Select **[Save]**.

7.7 Changing/Deleting the System Image

The system image is the image in the page and menu selection next to the menu item **"My Webconnect system"**.

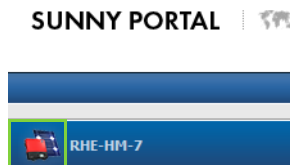


Figure 3: PV system image

You can replace the standard system image with a user-defined system image. The user-defined system image will also be displayed at the following locations:

- **PV system profile** page
- If there are released pages for Sunny Portal, it will be shown on the list of released systems on the www.SunnyPortal.com homepage.

You can save several images in a gallery in Sunny Portal. This allows you to easily change the system image and access your images from different computers.

Changing the System Image

Requirement:

- You must have the user role **Installer** or **Administrator** (see Section 10.1 "User Roles and User Rights in Sunny Portal", page 57).

System image requirements:

- Maximum image size: 500 kB
- Possible image formats: JPG, PNG, GIF

Procedure:

1. Select **Configuration > PV System Properties** in the page and menu selection.
2. Select the tab **PV System Data**.
3. Select **[Edit]**.
 - The menu for setting PV system data opens.
4. In the **PV system image** area, select **[Load image]**.
5. Select the desired image from one of your directories.
6. Select **[Open]**.
7. To change the system image size, move the gray squares with the mouse.
8. To modify the image section, click on the image section and move it while holding the left mouse button pressed.
9. Select **[Save]**.
10. To save an image in the gallery, upload the image to the gallery as follows:
 - Select **[Select from the gallery]**.
 - Select **[Upload]**.
 - Select **[Browse]**.
 - Select the desired image from one of your directories.
 - Select **[Upload selected file]**.
 - Close the window of the gallery.
 - The image is saved in the gallery.
11. To upload an image from the gallery as the system image, select **[Select from the gallery]**.
12. Double-click the desired image.
13. Select **[Save]**.

Deleting the User-Defined System Image

If you delete the user-defined system image, Sunny Portal will display the default system image.

Procedure:

1. Select **Configuration > PV System Properties** in the page and menu selection.
2. Select the tab **PV System Data**.
3. Select **[Edit]**.
 - The menu for setting PV system data opens.
4. Select **[No PV system image]** in the area **PV system image**.
5. Select **[Save]**.

7.8 Entering the Feed-In Tariff

Requirement:

- You must have the user role **Installer** or **Administrator** (see Section 10.1 "User Roles and User Rights in Sunny Portal", page 57).

Procedure:

1. Select **Configuration > PV System Properties** in the page and menu selection.
2. Select the tab **Parameters**.
3. Select **[Edit]**.
 - The menu for setting parameters opens.
4. In the area **Reimbursement**, enter the feed-in tariff per kWh in the field **Reimbursement / Currency**. At the same time, select the desired currency in the accompanying drop-down list.
5. Select **[Save]**.

7.9 Entering the Amount of CO₂ Avoided

The CO₂ factor indicates how much CO₂ is produced during the generation of one kilowatt hour. The CO₂ factor can vary depending on the grid operator. To find out the CO₂ factor for one kilowatt hour of electricity, contact your grid operator.

Sunny Portal uses the CO₂ factor value to calculate how much CO₂ has been saved by the power generation of your system.

You can view the amount of CO₂ avoided on the following pages:

- **PV system profile** page
- **Daily info report** or **Monthly info report** (see Section 6.3 "Reports", page 33).

Requirement:

- You must have the user role **Installer** or **Administrator** (see Section 10.1 "User Roles and User Rights in Sunny Portal", page 57).

Procedure:

1. Select **Configuration > PV System Properties** in the page and menu selection.
2. Select the tab **Parameters**.
3. Select **[Edit]**.
 - The menu for setting parameters opens.
4. In the appropriate field in the **Factor** area, enter the CO₂ factor or click the slide control and hold the left mouse button pressed to set the CO₂ factor.
5. Select **[Save]**.

7.10 Automatic Calculation of the Predicted Annual Yield

Sunny Portal can display in a table how the predicted annual yield of your system is likely to be distributed throughout the months of the year.

The predicted annual yield of the system is calculated from the specific annual yield (kWh/kWp) at the system location multiplied by the system power.

You can obtain the specific annual yield for your system location from irradiation maps. Local conditions such as the shading or orientation of the PV system are not taken into account by Sunny Portal.

Requirements:

- The system power must be set (see Section 7.4).
- You must have the user role **Installer** or **Administrator** (see Section 10.1 "User Roles and User Rights in Sunny Portal", page 57).

Procedure:

1. Select **Configuration > PV System Properties** in the page and menu selection.
2. Select the tab **Parameters**.
3. Select **[Edit]**.
 - The menu for setting parameters opens.
4. In the **Yield Expectations** area, enter the specific annual yield in the field **Specific Annual Yield**.
 - The predicted annual yield is displayed in the field **Predicted Annual yield**.
5. To enable configuration of the average expected yield on the pages **Energy and Power** and **Annual Comparison**, activate the checkbox **The monthly distribution can be configured in the diagrams**.
6. Select **[Save]**.

7.11 Setting 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.

You have the following options:

- Letting Sunny Portal Suggest the Monthly Distribution
- Manually Entering the Monthly Distribution

Letting Sunny Portal Suggest the Monthly Distribution

Requirements:

- The system location must be entered (see Section (see Section 7.2 "Changing System Data", page 40)).
- You must have the predicted annual yield calculated (see Section 7.10 "Automatic Calculation of the Predicted Annual Yield", page 46).

- You must have the user role **Installer** or **Administrator** (see Section 10.1 "User Roles and User Rights in Sunny Portal", page 57).

Procedure:

1. Select **Configuration > PV System Properties** in the page and menu selection.
2. Select the tab **Parameters**.
3. Select [**Edit**].
 - The menu for setting parameters opens.
4. In the area **Yield expectations**, select [**Suggest a monthly distribution**].
 - The monthly distribution is displayed in the table with the months.
5. To display the average expected yield and the monthly distribution in the diagrams on the **Annual Comparison** and **Energy and Power** pages, activate the checkbox **Display the monthly distribution in the yearly comparison, as well as energy and power**.
6. To enable configuration of the average expected yield on the pages **Annual comparison** and **Energy and power**, activate the checkbox **The monthly distribution can be configured in the diagrams**.

Manually Entering the Monthly Distribution**Requirement:**

- You must have the user role **Installer** or **Administrator** (see Section 10.1 "User Roles and User Rights in Sunny Portal", page 57).

Procedure:

1. Select **Configuration > PV System Properties** in the page and menu selection.
2. Select the tab **Parameters**.
3. Select [**Edit**].
 - The menu for setting parameters opens.
4. In the **Yield expectations** area, enter values in the fields **in %** in the table with the months.
5. To display the predicted annual yield and the monthly distribution in the diagrams on the pages **Annual comparison** and **Energy and power**, activate the checkbox **Display the monthly distribution in the yearly comparison, as well as energy and power**.
6. To enable configuration of the predicted annual yield on the pages **Annual comparison** and **Energy and power**, activate the checkbox **The monthly distribution can be configured in the diagrams**.
7. Select [**Save**].

7.12 Editing Data Releases

You can configure an option for sharing your system data on the PV database "sonnenertrag.eu". By providing this data, you can contribute to improving this PV database. The more users participate, the better "sonnenertrag.eu" will be able to indicate the expected yields for the different locations.

Requirement:

- You must have the user role **Installer** or **Administrator** (see Section 10.1 "User Roles and User Rights in Sunny Portal", page 57).

Procedure:

1. Select **Configuration > PV System Properties** in the page and menu selection.
2. Select the tab **Data releases**.
3. Select [**Edit**].
 - The menu for setting data releases opens.
4. Activate or deactivate the data releases checkbox.
5. Select [**Save**].

8 Device Settings

8.1 Calling up the Device Properties

The tab with the device properties displays information on each device. Depending on the device and the device settings, various device properties can be displayed on this tab.

Requirement:

- You must have the user role **Installer** or **Administrator** (see Section 10.1 "User Roles and User Rights in Sunny Portal", page 57).

Procedure:

1. Select **Configuration > Device Overview** in the page and menu selection.
2. In the device line and the column **Properties**, select .



8.2 Calling Up the Device Parameters

The parameters of a device are described in the respective device manual. The device parameters on this page can only be read but not changed. If you want to change the parameters, use the Sunny Explorer software (see Sunny Explorer help). You can obtain Sunny Explorer free of charge from the download area at www.SMA-Solar.com. Inverters with Webconnect function are compatible with Sunny Explorer as of software version 1.04.

Requirement:

- You must have the user role **Installer** or **Administrator** (see Section 10.1 "User Roles and User Rights in Sunny Portal", page 57).

Procedure:

1. Select **Configuration > Device Overview** in the page and menu selection.
2. In the device line and the column **Parameters**, select 
 - You can read off the parameters in the parameter list.
3. To display changes to the parameters, select  in the column **History**.

8.3 Entering Line Conductors

In the device properties, Sunny Portal can display the line conductors to which each inverter is connected. To display the line conductors, they must first be entered.

Requirement:

- You must have the user role **Installer** or **Administrator** (see Section 10.1 "User Roles and User Rights in Sunny Portal", page 57).

Procedure:

1. Call up the inverter properties (see Section 8.1 "Calling up the Device Properties", page 49).
2. Select [**Edit**].
 - The menu for setting the device properties opens.
3. In the area **Phase**, activate the checkbox of the line conductor to which the inverter is connected.
4. Select [**Save**].

8.4 Entering the PV Array Power

The PV array power is the maximum power of the PV modules connected to one inverter.

Procedure:

- Calculate the PV array power via the string properties (see Section 7.1 "Entering String Properties", page 39).
- or**
- Enter the PV array power manually.

SMA Solar Technology AG recommends calculating the PV array power via the string properties. A string designates a group of series-connected PV modules. Normally, a system is made up of multiple strings. Each string has specific properties, such as deviation to south (azimuth) or the roof tilt angle. If you enter the properties of the strings, Sunny Portal can determine the PV array power more precisely.

Entering the PV Array Power Manually

To find out the connected PV array power present at each inverter, contact your installer. Using the PV array power, Sunny Portal can calculate the nominal system power of your system (see Section 7.4.2 "Automatic Calculation of Nominal System Power", page 42).

Requirement:

- You must have the user role **Installer** or **Administrator** (see Section 10.1 "User Roles and User Rights in Sunny Portal", page 57).

Procedure:

1. Call up the inverter properties (see Section 8.1 "Calling up the Device Properties", page 49).
2. Select [**Edit**].
 - The menu for setting the device properties opens.
3. Enter the **PV array power** in the Generator capacity area in the field **kWp**.
4. Select [**Save**].

8.5 Changing the Device Name

By default, the device type and the last three numbers of the device serial number are displayed as the device name.

Requirement:

- You must have the user role **Installer** or **Administrator** (see Section 10.1 "User Roles and User Rights in Sunny Portal", page 57).

Device name requirement:

- The device name can have a maximum of 20 characters.

Procedure:

1. Call up the device properties (see Section 8.1 "Calling up the Device Properties", page 49).
2. Select [**Edit**].
 - The menu for setting the device properties opens.
3. Enter a device name in the field **Device Name**.
4. Select [**Save**].

8.6 Changing a Device Description

You can enter an arbitrary description for each device. The description of the device is displayed in **Device Properties**.

Requirement:

- You must have the user role **Installer** or **Administrator** (see Section 10.1 "User Roles and User Rights in Sunny Portal", page 57).

Procedure:

1. Call up the device properties (see Section 8.1 "Calling up the Device Properties", page 49).
2. Select [**Edit**].
 - The menu for setting the device properties opens.
3. Enter a description in the field **Description**.
4. Select [**Save**].

8.7 Activating/Deactivating Automatic Update for Devices

Sunny Portal can carry out an automatic firmware update on the devices of your PV system. This means that you will benefit from ongoing product enhancements.

You can set the automatic update for individual devices or for all devices. When you change and save the setting for one device, you will be asked whether the setting should be adopted for all devices.

1. Call up the device properties (see Section 8.1 "Calling up the Device Properties", page 49).
2. Select [**Edit**].
 - The menu for setting the device properties opens.
3. In the area **Automatic updates**, activate or deactivate the checkbox **Automatically update device**.
4. Select [**Save**].
 - A prompt appears.
5. To adopt the setting for all devices, select [**Accept**].

9 System Management

9.1 Adding Inverters

A Webconnect system in Sunny Portal can consist of a maximum of four inverters with Webconnect function. If your Webconnect system in Sunny Portal already consists of four inverters, you will need to create a new system in Sunny Portal (see Section 3.1 "Registering the Inverter in Sunny Portal", page 10).

Requirements:

- The new inverter must have Webconnect function.
- The new inverter must be commissioned in your system.
- The new inverter must be connected to the router/network switch and the Internet (see installation manual of the inverter with integrated Webconnect function or the installation manual of the retrofitted Speedwire/Webconnect interface).
- The PIC and RID of all inverters must be available (see inverter type label or sticker near the type label).
- You must have the user role **Administrator** (see Section 10.1 "User Roles and User Rights in Sunny Portal", page 57).

Procedure:

1. Go to **www.SunnyPortal.com**.
2. Select **[PV System Setup Assistant]**.
 - The PV System Setup Assistant opens.
3. Select **[Next]**.
 - The page **User Registration** opens.
4. Enter the e-mail address and the Sunny Portal password in the fields **E-mail Address** and **Password**.
5. Select **[Next]**.
 - The page **Select PV system** opens.
6. Select the option **Add or replace devices**.
7. In the system line and the column **Option**, select **+** and **[Next]**.
 - The page **Select devices** opens.
8. Enter the PIC and RID of a new inverter in the fields **PIC** and **RID**.
9. Select **[Identify]**.
10. To add more inverters, enter the PIC and RID of a further inverter and select **[Identify]**.
11. Select **[Next]**.
 - A summary is displayed.
12. Select **[Finish]**.

9.2 Replacing an Inverter

Requirements:

- The new inverter must be of the same device type as the inverter to be replaced and be enabled for Webconnect function.
- The new inverter must be commissioned in your system.
- The new inverter must be connected to the router/network switch and the Internet (see installation manual of the inverter with integrated Webconnect function or the installation manual of the retrofitted Speedwire/Webconnect interface).
- The PIC and RID of the new inverter must be available (see inverter type label or sticker near the type label).
- You must have the user role **Administrator** (see Section 10.1 "User Roles and User Rights in Sunny Portal", page 57).




Device replacement: do not delete the old inverter

If the inverter being replaced is deleted from Sunny Portal, all the data of that inverter will be irretrievably deleted from Sunny Portal.

- To retain the data of the old inverter in Sunny Portal, do **not** delete the old inverter.

Procedure:

1. Go to www.SunnyPortal.com.
2. Select [**PV System Setup Assistant**].
 - The PV System Setup Assistant opens.
3. Select [**Next**].
 - The page **User Registration** opens.
4. Enter the e-mail address and the Sunny Portal password in the fields **E-mail Address** and **Password**.
5. Select [**Next**].
 - The page **Select PV system** opens.
6. Select the option **Add or replace devices**.
7. In the system line in which inverters are to be replaced, select  and [**Next**].
 - The page **Select devices** opens.
8. Enter the PIC and RID of a new inverter or a new Speedwire/Webconnect interface in the fields **PIC** and **RID**.
9. Select [**Identify**].
10. To add more inverters, enter the PIC and RID of a further inverter and select [**Identify**].
11. Select [**Next**].
 - The page **Replace devices** opens.
12. In the line of the old inverter, select the new inverter in the drop-down list **Replace with**.

13. Select [**Next**].
 - A summary is displayed.
14. Select [**Finish**].

9.3 Deactivating/Activating the Inverters

In the following cases, you must deactivate inverters in Sunny Portal:

- You have removed an inverter with integrated or retrofitted Webconnect function from your system.
- or**
- You no longer wish to display an inverter in Sunny Portal.

The data of the deactivated inverter is retained in Sunny Portal.

Requirement:

- You must have the user role **Installer** or **Administrator** (see Section 10.1 "User Roles and User Rights in Sunny Portal", page 57).

Procedure:

1. Call up the inverter properties (see Section 8.1 "Calling up the Device Properties", page 49).
2. Select [**Edit**].
 - The menu for setting the device properties opens.
3. To deactivate the inverter in Sunny Portal, deactivate the checkbox **active** in the area **Data Collection**.
4. To activate the inverter in Sunny Portal, activate the checkbox **active** in the area **Data Collection**.
5. Select [**Save**].

9.4 Deleting Inverters

Requirement:

- You must have the user role **Installer** or **Administrator** (see Section 10.1 "User Roles and User Rights in Sunny Portal", page 57).

Inverter data is irretrievably deleted

If you delete the inverter, all the data of that inverter will be irretrievably deleted from Sunny Portal. The data will be retained in the memory of the inverter. The amount of data depends on the size of the inverter memory.

- Check whether it is sufficient to deactivate the inverter (see Section 9.3 "Deactivating/Activating the Inverters", page 55).

Procedure:

1. Call up the inverter properties (see Section 8.1 "Calling up the Device Properties", page 49).
2. Select [**Edit**].
3. Select [**Delete**].
 - A window with a security prompt opens.
4. To irretrievably delete the inverter, select [**Delete**].

9.5 Deleting a Sunny Portal System

If you delete your system, the system and its data will be irretrievably deleted in Sunny Portal.

Requirement:

- You must have the user role **Installer** or **Administrator** (see Section 10.1 "User Roles and User Rights in Sunny Portal", page 57).

Procedure:

1. Select **Configuration > PV System Properties** in the page menu selection.
2. Select the tab **PV System Data**.
3. Select [**Edit**].
4. In the area **PV System Data**, select [**Irretrievably delete PV system**].
 - A security prompt opens.
5. To irretrievably delete the system, select [**Yes**].

10 User Management

10.1 User Roles and User Rights in Sunny Portal

If you have the user role **Administrator**, you can create further users in Sunny Portal so that they have access to your Sunny Portal system. You must assign every user a user role. The user roles have different rights in your Sunny Portal system.

The following user roles are possible:

- Guest
- Standard user
- Installer
- System administrator

General Rights

Rights	User role			
	Guest	Standard user	Installer	System administrator
View pages	✓	✓	✓	✓
Release pages for viewing in Sunny Portal and publish pages	✗	✗	✓	✓
Save diagram data	✗	✓	✓	✓
View/change user information	✓	✓	✓	✓
Change Sunny Portal password	✗	✓	✓	✓
Change system password	✗	✗	✓	✓
View and read out device properties	✗	✗	✓	✓
View/change system properties	✗	✗	✓	✓
Configure PV modules	✗	✗	✓	✓
View/change report configuration	✗	✗	✓	✓
Change device properties	✗	✗	✓	✓
Replace/delete devices	✗	✗	✓	✓
Delete system	✗	✗	✓	✓
Set communication monitoring	✗	✗	✓	✓
Set inverter comparison	✗	✗	✓	✓
View PV system logbook and confirm entries	✗	✓	✓	✓
Import data	✗	✗	✓	✓

Rights	User role			
	Guest	Standard user	Installer	System administrator
View user management	✘	✘	✘	✓
Create/delete users and assign user roles	✘	✘	✘	✓

Rights to the System Overview Page

PV System Data area:

Rights	User role			
	Guest	Standard user	Installer	System administrator
View current inverter status	✘	✘	✓	✓
View status of inverter comparison	✘	✘	✓	✓
View energy yield	✓	✓	✓	✓
View monetary yield	✘	✓	✓	✓
View CO ₂ avoided	✓	✓	✓	✓
View the PV system information	✓*	✓	✓	✓
View meteorological data	✓	✓	✓	✓
View current PV system power	✘	✘	✓	✓

* Also sees the system image, if available.

Yield Overview area:

Rights	User role			
	Guest	Standard user	Installer	System administrator
View energy and power	✘	✓	✓	✓

10.2 Creating a New User

Requirement:

- You must have the user role **Administrator** (see Section 10.1 "User Roles and User Rights in Sunny Portal", page 57).

Procedure:


1. Select **Configuration > User Management** in the page and menu selection.
2. Select [**New User**].
3. Enter the e-mail address of the new user in the field **E-mail Address**.
4. Activate the desired user role in the area **Roles**.
5. Select [**Save**].
 - The new user receives an e-mail with the access data.

10.3 Deleting a User

Requirement:

- You must have the user role **Administrator** (see Section 10.1 "User Roles and User Rights in Sunny Portal", page 57).

Procedure:


1. Select **Configuration > User Management** in the page and menu selection.
2. In the user line and the column **Delete**, select .
3. Confirm the security prompt with [**Yes**].

10.4 Changing User Rights

Requirement:

- You must have the user role **Administrator** (see Section 10.1 "User Roles and User Rights in Sunny Portal", page 57).

Procedure:

1. Select **Configuration > User Management** in the page and menu selection.
2. In the user line and the column **Edit**, select 
 - The areas **E-mail Address** and **Roles** open.
3. Activate the desired user role in the area **Roles**.
4. Select [**Save**].

10.5 Changing User Information

Every user can enter user information. User information includes, for instance, name and address.

Procedure:

1. Select **User Info/Logout > User information** in the page and menu selection.
2. Select **[Edit]**.
 - The menu for setting user information opens.
3. Enter the user information.
4. Select **[Save]**.

11 Passwords

11.1 Selecting Secure Passwords

To enhance the security of your password, note the following:

- Select passwords containing at least eight characters.
- Use combinations of upper-case and lower-case letters, special characters and numbers.
- Do not use names or common words (e.g. "dog", "cat", "house").
- Avoid using words that have any personal relevance to you such as the names of persons or pets, personnel numbers, identification numbers, or car license plates.
- Do not repeat names or words (e.g. "househouse" or "catcat").
- Do not use number or letter combinations as they appear on the keyboard (e.g. "12345", "qwerty").

11.2 Required Passwords

11.2.1 Sunny Portal Password

The Sunny Portal password protects your Sunny Portal system from unauthorized access. You can log into Sunny Portal with the Sunny Portal password. If you register a system in Sunny Portal, you must create a Sunny Portal password during registration. You can change the Sunny Portal password (see Section 11.3.1)

11.2.2 System Password

System Password Basics

The security concept for systems from SMA Solar Technology AG generally distinguishes the two user groups **User** and **Installer**. The user groups have different rights. The following system passwords are configured in the devices by default: **User** = **0000**, **Installer** = **1111**. You will only be able to access the devices of your system via communication product (e.g. Sunny Explorer) providing that the same system password has been set for all devices. You can find more information on system passwords and on the user group and security concept in the Sunny Explorer help.

System Password in Sunny Portal

For the registration of your system, Sunny Portal requires the system password for the user group **Installer**. You entered the system password when registering your systems in Sunny Portal.

Via Sunny Portal you can change the system password of the user group **Installer** for all devices registered in your Sunny Portal system (see Section 11.3.2). The system password for the user group **User** cannot be changed in Sunny Portal. To change the system password for the user group **User**, use e.g. Sunny Explorer (see Sunny Explorer help).



Changing default system passwords

Change the default system passwords for both user groups (**user/installer**) promptly in order to prevent unauthorized access to your system.

11.3 Changing Passwords

11.3.1 Changing the Sunny Portal Password

Sunny Portal password requirements:

- The Sunny Portal password can consist of a maximum of eight characters.
- You must have the user role **Standard user**, **Installer**, or **Administrator** (see Section 10.1 "User Roles and User Rights in Sunny Portal", page 57).

The following special characters are permitted:

- ! \$ % & / () = ? + - . ; : _ < > #
- Space

Procedure:

1. Select **User Info/Logout > User information** in the page and menu selection.
2. On the tab **User Information**, select the hyperlink **If you want to change your password, please click here**.
3. Enter the old and the new Sunny Portal password in the fields provided.
4. Select [**Save**].

11.3.2 Changing the System Password

Via Sunny Portal you can change the system password of the **Installer** user group for all devices registered in your Sunny Portal system. If you change the system password in Sunny Portal, the system password of the inverters registered in Sunny Portal will also be changed.

Requirement:

- You must have the user role **Installer** or **Administrator** (see Section 10.1 "User Roles and User Rights in Sunny Portal", page 57).

System password requirement:

- The system password can be a maximum of twelve characters.

The following special characters are permitted:

- ? _ ! -

Procedure:

1. Select **Configuration > PV system properties**.
2. Select the tab **PV System Data**.
3. Select [**Edit**].
4. In the area **PV System Data**, enter the old password in the field **Old PV system password**.
5. In the area **PV System Data**, enter a new password in the field **New PV system password**.
6. In the area **PV System Data**, enter the new password again in the field **Repeat password**.

7. Select [**Save**].

A message is displayed confirming that the password change was successful.

You get a message stating that the password change was not successful?

It is possible that a device cannot be accessed right now.

- Try to change the system password again later.
- If the problem persists, change the system password of the devices via Sunny Explorer (see Sunny Explorer help) and then enter the new password in Sunny Portal. Otherwise, Sunny Portal will not be able to display any new data from the devices.

11.4 Sunny Portal Password Forgotten

1. Go to www.SunnyPortal.com.

2. In the **Login** area, select the hyperlink **Forgotten password?**.

3. In the field **E-mail**, enter the e-mail address used for registering in Sunny Portal.

4. Select [**Generate New Password**].

You will receive an e-mail with a new password.

5. Change the assigned password (see Section 11.3.1 "Changing the Sunny Portal Password", page 62).

12 Glossary

Azimuth angle

In the Northern hemisphere, the azimuth angle indicates by how many degrees the module surface deviates from the compass point South. In the southern hemisphere, it indicates the deviation from the compass point North. The azimuth angle is counted from south (0°) via west ($+90^\circ$) with positive values and from south (0°) via east (-90°) with negative values.

DHCP

DHCP is short for "Dynamic Host Configuration Protocol" and is a server service with which devices are automatically integrated into a network. If DHCP is not activated in the network (e.g., at the router), devices will need to be integrated in the network manually. An IP address and subnet mask suitable for the network must be manually configured in the device to be integrated.

kWp

See peak power

Log file

A log file is an automatically logged protocol of events on a computer system. A log file contains errors that occurred during operation of the computer system, for example.

Nominal power (kWp)

See peak power

Nominal PV system power in kWp

The nominal PV system power in kWp (kilowatt peak) is the maximum possible PV system power. The nominal PV system power in kWp is also known as the nominal power of the PV system.

The peak power of a PV system is the aggregate peak power of all PV modules installed (see peak power of a PV module). The peak power of a PV system can, for instance, be used to compare the system yield and system costs with other PV systems. The peak power of a PV system is often referred to as "system power (kWp)".

An installed system can rarely achieve peak power because it is not installed in laboratory conditions.

Peak power (kWp)

The peak power is the maximum power output calculated for a PV module under STC (Standard Test Conditions).

The peak power is measured in watt peak (Wp), kilowatt-peak (kWp), or megawatt-peak (MWp). Peak power is also called nominal power.

STC (Standard Test Conditions): Standardized test conditions in the laboratory, under which the electrical characteristics of PV modules are measured. This enables the comparison of different PV modules. The PV modules are subjected to a vertical irradiation of $1,000 \text{ W/m}^2$, an ambient temperature of 25°C and a wind speed of 1 m/s . The electrical characteristics are then measured. The test conditions are designed to correspond to the ideal ambient conditions for operation of an installed PV module.

PIC

See abbreviations (see Section 1 "Information on this Document", page 6).

Predicted annual yield (kWh)

The predicted annual yield of a system is calculated from the specific annual yield (kWh/kWp) at the system location and the system power in kWp (also known as nominal power).

You can obtain the specific annual yield for the location of your PV system from irradiation maps.

Specific annual yield (kWh/kWp) × nominal power (kWp) = predicted annual yield (kWh)

Example: Calculation of the predicted annual yield

The specific annual yield at a PV system location is approximately 900 kWh/kWp. The nominal power of the PV system is 4.8 kWp.

Predicted annual yield = 900 kWh/kWp × 4.8 kWp = 4,320 kWh

PV array

Technical device for the conversion of solar energy into electrical energy. All series (= in series) and parallel installed and connected PV modules of a PV system are referred to as a PV array.

For PV systems with micro inverters, a PV array consists of one PV module, as only one PV module can be connected to a micro inverter.

PV array power

The PV array power is the maximum power of the PV modules connected to one inverter.

PV module

Electrical circuitry of several PV cells encapsulated in an enclosure to protect the sensitive cells from mechanical stress and environmental influences.

PV System Setup Assistant

The PV System Setup Assistant is an application in Sunny Portal that helps you register your system in Sunny Portal.

RID

See abbreviations (see Section 1 "Information on this Document", page 6).

SMA Connection Assist

SMA Connection Assist helps you configure the devices for your network if they do not automatically integrate into your network and connect to Sunny Portal.

Specific annual yield (kWh/kWp)

The specific annual yield is a calculated average value of specific system yield values of different PV systems for a particular location. You can obtain the specific annual yield for the location of your PV system from irradiation maps. You can assess the efficiency of your PV system by comparing the specific system yield of your PV system with the specific annual yield for the PV system location.

Specific system yield (kWh/kWp)

The specific system yield is a key figure that describes the efficiency of a PV system, regardless of its size. The specific system yield is dependent on the irradiation at the location, the ambient temperature, shading, tilt and azimuth angle of the PV modules, and the module and inverter power.

You can assess the efficiency of your PV system by comparing the specific system yield of your PV system with the specific annual yield for the PV system location.

The specific system yield is calculated from the actual measured energy yield (kWh) of a PV system for a specific period (e.g. one year or one month) divided by the peak power (kWp) of the PV system.

Example: calculation of the specific system yield for one year

Your PV system consists of 40 PV modules, each with a peak power of 120 Wp (watt peak) as per manufacturer specification. Hence, your PV system has a peak power of $40 \times 120 \text{ Wp} = 4,800 \text{ Wp} = 4.8 \text{ kWp}$.

To calculate the specific system yield of your PV system for the year 2011, for example, you will need the actual (measured) energy yield of your PV system for 2011, e.g. 3,200 kWh. You can now calculate the specific system yield of your PV system for the year 2011: 3,200 kWh divided by 4.8 kWp = 666 kWh/kWp in 2011.

Tilt angle

The tilt angle indicates by how many degrees the tilt of the module surface deviates from the horizontal.

13 Contact

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

- For inverters with integrated Webconnect function:
 - Inverter type and serial number of the inverter (see type label of the inverter)
 - If possible: firmware version of the inverter (see Sunny Explorer)
- For inverters with retrofitted Webconnect function:
 - PIC of the Speedwire/Webconnect interface (see inverter type label or sticker near the type label)
 - Inverter type and serial number of the inverter (see type label of the inverter)
 - If possible: firmware version of the inverter (see Sunny Explorer)
- Quantity and type of all inverters
- Error description

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Danmark	Se Deutschland (Tyskland)		

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Magyarország	lásd Česko (Csehország)	
Nederland	zie Belgien (België)	
Österreich	Siehe Deutschland	
Perú	Ver España	
Polska	Patrz Česko (Czechy)	

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