User Manual





SUNNY PORTAL powered by ennexOS

Legal Provisions

The information contained in these documents is the property of SMA Solar Technology AG. No part of this document may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, be it electronic, mechanical, photographic, magnetic or otherwise, without the prior written permission of SMA Solar Technology AG. Internal reproduction used solely for the purpose of product evaluation or other proper use is allowed and does not require prior approval.

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

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

Specifications are subject to change without notice. Every attempt has been made to make this document complete, accurate and up-to-date. Readers are cautioned, however, that product improvements and field usage experience may cause SMA Solar Technology AG to make changes to these specifications without advance notice or per contract provisions. SMA Solar Technology AG shall not be responsible for any damages, including indirect, incidental or consequential damages, caused by reliance on the material presented, including, but not limited to, omissions, typographical errors, arithmetical errors or listing errors in the content material.

Software licenses

The licenses for the installed software modules (open source) can be found in the user interface of the product.

Trademarks

2

All trademarks are recognized, even if not explicitly identified as such. Missing designations do not mean that a product or brand is not a registered trademark.

SMA Solar Technology AG

Sonnenallee 1 34266 Niestetal Germany Tel. +49 561 9522-0 Fax +49 561 9522-100 www.SMA.de E-mail: info@SMA.de Status: 11/24/2023 Copyright © 2023 SMA Solar Technology AG. All rights reserved.

Table of Contents

1	Info	rmation	on this [Document	5	
	1.1	Validity.			5	
	1.2	Target G	Froup		5	
	1.3	Content	and Structure	e of this Document	5	
	1.4	Symbols	in the Docu	nent	5	
	1.5	Typogra	phies in the o	document	5	
	1.6	Designa	tions in the D	ocument	6	
	1.7	Addition	al Informatio	n	6	
2	Safe	ety			. 7	
	2.1	Intendec	Use		7	
	2.2	System F	Requirements		7	
3	Proc	duct Ove	erview		. 9	
	3.1	3.1 Sunny Portal				
	3.2	Interface	es and Function	ons	9	
	3.3	Design of the User Interface				
	3.4	User Rol	es and User	Rights	12	
4	Get	ting Star	rted		15	
	4.1	Registering in Sunny Portal			15	
	4.2	Creating a System			16	
	4.3	Configuring the Energy Meter			17	
	4.4	Configuring Notifications				
5	Оре	eration			. 19	
	5.1	Device A	Administratio	٦	19	
		5.1.1	Overview	v device administration	19	
		5.1.2	System w	ith SMA Data Manager	19	
			5.1.2.1	Adding an SMA Data Manager	19	
			5.1.2.2	Replacing an SMA Data Manager	20	
			5.1.2.3	Replacing Subordinate Devices	21	
			5.1.2.4	Adding Reset Devices Again	21	
		5.1.3	PV system	with SMA inverter powered by ennexOS	21	
			5.1.3.1	Replacing an SMA Inverter powered by ennexOS	21	
			5.1.3.2	Replacing Subordinate Devices	22	
			5.1.3.3	Adding Reset Devices Again	22	
		5.1.4	PV system	with Sunny Home Manager 2.0	23	
			5.I.4.I	Adding a Sunny Home Manager 2.0	23	

6

		5.1.4.2	Replacing a Sunny Home Manager 2.0	23
	5.1.5	System wit	h SMA inverters with Webconnect function	24
		J.I.J.I	Adding SMA Inverters with Webconnect function	24
		5.1.5.2	Replacing an SMA Inverter with Webconnect Function	24
	5.1.6	Adding Vi	rtual Generators	25
	5.1.7	Adding Vi	rtual Loads	25
	5.1.8	Disabling	devices	26
5.2	Deleting th	ne System		26
5.3	System Pro	operties		27
5.4	System Mo	onitoring		28
5.5	Managing System Groups			29
5.6	Managing System Sections			30
5.7	Changing Device Parameters			30
5.8	Sensor Ass	signment		32
5.9	Digital Pro	ducts		32
5.10	Analysis			33
5.11	Event Mon	nitor		34
Conto	Contact			36

1 Information on this Document

1.1 Validity

This document is valid for:

• Sunny Portal powered by ennexOS as of version 1.19.0

1.2 Target Group

This document is intended for end users.

1.3 Content and Structure of this Document

This document describes the configuration, operation and troubleshooting of the product as well as the operation of the product user interface.

You will find the latest version of this document and further information on the product in PDF format and as eManual at www.SMA-Solar.com. You can also call up the eManual via the user interface of the product.

Illustrations in this document are reduced to the essential information and may deviate from the real product.

1.4 Symbols in the Document

Symbol	Explanation
i	Information that is important for a specific topic or goal, but is not safety-rele- vant
	Indicates a requirement for meeting a specific goal
I	Required result
	Example

1.5 Typographies in the document

Typography	Use	Example
bold	 Messages Terminals Elements on a user interface Elements to be selected Elements to be entered 	 Connect the insulated conductors to the terminals X703:1 to X703:6. Enter 10 in the field Minutes.
>	 Connects several elements to be selected 	• Select Settings > Date .

Typography	Use	Example
[Button] [Key]	 Button or key to be selected or pressed 	• Select [Enter].
#	 Placeholder for variable components (e.g., parameter names) 	Parameter WCtlHz.Hz#

1.6 Designations in the Document

Complete designation	Designation in this document	
Sunny Portal powered by ennexOS	Sunny Portal	

1.7 Additional Information

For more information, please go to www.SMA-Solar.com.

Title and information content	Type of information
"Direct Marketing Interface"	Technical information
"Performance Ratio"	Technical Information
"PUBLIC CYBER SECURITY - Guidelines for a Secure PV System Communication"	Technical Information
"SMA DATA MANAGER M"	Operating manual
"SMA DATA MANAGER L"	Operating manual
"SMA DATA MANAGER / SUNNY PORTAL powered by ennexOS - Functions"	Technical Information
"SUNNY HOME MANAGER 2.0 in Sunny Portal powered by ennexOS"	Operating manual
"SUNNY TRIPOWER X 12 / 15 / 20 / 25"	Operating manual
Answers to frequently asked questions	FAQ on product page
User information on the operation and features of the product	User information on the user interface

2 Safety

2.1 Intended Use

Sunny Portal is an Internet portal which enables you to monitor and configure systems and to visualize 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. Depending on the SMA product that sends the data, various functions are available in Sunny Portal.

Use SMA products only in accordance with the information provided in the enclosed documentation and with the locally applicable laws, regulations, standards and directives. Any other application may cause personal injury or property damage.

Alterations to the SMA products, e.g., changes or modifications, are only permitted with the express written permission of SMA Solar Technology AG. Unauthorized alterations will void guarantee and warranty claims and in most cases terminate the operating license. SMA Solar Technology AG shall not be held liable for any damage caused by such changes.

Any use of the product other than that described in the Intended Use section does not qualify as the intended use

The enclosed documentation is an integral part of this product. Keep the documentation in a convenient, dry place for future reference and observe all instructions contained therein.

This document does not replace any regional, state, provincial, federal or national laws, regulations or standards that apply to the installation, electrical safety and use of the product. SMA Solar Technology AG assumes no responsibility for the compliance or non-compliance with such laws or codes in connection with the installation of the product.

The type label must remain permanently attached to the product.

2.2 System Requirements

i Ports for data communication

In small local networks the use of certain ports is unrestricted. In industrial networks, the use of these ports may require authorization from the system administrator. For proper operation, the outgoing Internet connection must allow the use of the following ports and URLs:

- Updates: Port 80 and 443 (http/https) / update.sunnyportal.de
- Time synchronization with Sunny Portal (if not provided by the Internet router): Port 123 (NTP) / ntp.sunny-portal.com
- Data transmission: Port 443 (https/TLS) / ldm-devapi.sunnyportal.com
- User interface: Port 443 (https/TLS) / ennexos.sunnyportal.com
- SMA Webconnect 1.5 and SMA SPOT: Port 9524 (TCP) / wco.sunnyportal.com
- □ A smart end device (e.g. laptop or tablet PC) must be available.
- □ An active Internet connection must be established.
- □ The respective latest version of one of the following web browsers must be installed on the smart device: Chrome, Edge, Firefox or Safari.
- □ JavaScript must be enabled in the web browser of the smart device.

Required SMA products



i Availability of SMA products in your country

Not all SMA products are available in all countries. For information on whether an SMA product is available in your country, contact your distributor.

The following SMA products are capable of capturing and sending system data to the Sunny Portal:

SMA Data Manager:

- 1 SMA Data Manager as superordinate system manager
 - Further subordinate SMA Data Managers possible
 - For the number of supported subordinate devices, please refer to the manual of the SMA Data Manager
- Available worldwide
- 100 days extended, intraday AC/DC measured values
- Intraday measured values for standard views for 5 years

Sunny Home Manager 2.0:

- 1 Sunny Home Manager 2.0 per system
 - For the number of supported subordinate devices, please refer to the manual of the Sunny Home Manager 2.0
- Is supported in Sunny Portal, except in the following countries: Australia, Austria, Belgium, France, Germany, Italy, Luxembourg, the Netherlands, Portugal, Spain, and Switzerland
- 100 days extended, intraday AC/DC measured values
- Intraday measured values for standard views for 5 years

SMA inverter powered by ennexOS:

- 1 SMA inverter as superordinate system manager (e.g. Sunny Tripower X)
 - The number of supported subordinate devices depends on the inverter (see manual of the inverter)
- Available worldwide
- 30 days extended, intraday AC/DC measured values
- Intraday measured values for standard views for 5 years

SMA inverter with Webconnect function:

- 4 SMA inverters in one system (Japan: 13 SMA inverters in one system)
- Is supported in Sunny Portal, except in the following countries: Austria, Belgium, France, Germany, Italy, Luxembourg, the Netherlands, Portugal, Spain, and Switzerland
- 30 days extended, intraday AC/DC measured values
- Intraday measured values for standard views for 5 years

3 Product Overview

3.1 Sunny Portal

Sunny Portal is an Internet portal which enables you to monitor and configure systems and to visualize 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. Depending on the SMA product that sends the data, various functions are available in Sunny Portal.

There are two Sunny Portal versions: the Sunny Portal Classic (https:// www.sunnyportal.com) and the newly developed Sunny Portal powered by ennexOS (https:// ennexOS.sunnyportal.com). Both systems differ in their supported functions. With an existing user account, you can log into both portals, the Sunny Design (system planning software from SMA) as well as the app SMA 360°. For information on which Sunny Portal is supported by your SMA product, see the manual of the SMA product.

3.2 Interfaces and Functions

The product can be equipped or retrofitted with the following interfaces and functions: The availability of the functions depends on the product version and additional options purchased.

For more information on the current and future functions, see the product page at www.SMA-Solar.com (e.g. detailed descriptions of function or information on parameterization).

Dashboard

On the dashboard, system and component information is displayed clearly and at a glance by using widgets. The dashboard display can vary depending on the system's functional scope and user rights.

Plant-wide parameterization

You can use the system parameter assistant to change the parameters of connected devices at the same time and to compare them. Simply select the desired devices from a list and change the parameters that are suitable for simultaneous change. The status of the parameter changes is accessible at all times.

Satellite-based data

Sunny Portal provides the possibility to display solar irradiation values, external and cell temperatures, and wind speeds at the system's location without local sensors. These values can be used to determine the performance ratio (PR) of systems for example. Satellite-based data can be used for the sensor assignment. When using satellite-based data, the system properties must be correct. The system location and system orientation are of particular importance. The system location can be set with the aid of Google Maps.

The satellite-based data is not available in all countries. Satellite-based data can be used for the following countries:

Andorra, Albania, Belgium, Bosnia and Herzegovina, Bulgaria, Denmark, Germany, Estonia, France, Gibraltar, Greece, Great Britain, Guernsey, Ireland, Isle of Man, Israel, Italy, Jersey, Croatia, Latvia, Liechtenstein, Lithuania, Luxemburg, Malta, Macedonia, Monaco, Montenegro, the Netherlands, Austria, Poland, Portugal, San Marino, Sweden, Switzerland, Serbia, Slovakia, Slovenia, Spain, the Czech Republic, Turkey, Hungary, Vatican City, Cyprus.

Sunny Design projects

Systems planned in Sunny Design can be imported into the Sunny Portal and reused during commissioning.

SMA Smart Connected

SMA Smart Connected is the free monitoring of the product via the SMA Sunny Portal. Thanks to SMA Smart Connected, the operator and qualified person will be informed automatically and proactively about product events that occur.

SMA Smart Connected is activated during registration in Sunny Portal. In order to use SMA Smart Connected, it is necessary that the product is permanently connected to Sunny Portal and the data of the operator and qualified person is stored in Sunny Portal and up-to-date.

SMA Smart Connected can only be used in Sunny Portal when this feature is supported by the inverters.

SMA SPOT

You can use SMA SPOT in combination with Sunny Portal and a compatible SMA product. SMA SPOT is a solution for easy direct selling of solar power for roof-mounted and commercial PV systems. The customers and installers benefit from the technical knowhow of SMA and from many years of experience in the marketing of energy of the MVV Energie AG.

This function is not available in all countries.

Digital Products

Sunny Portal has basic functions that are available for all systems. Depending on the SMA product added or additionally acquired digital product, Sunny Portal offers additional functions.

3.3 Design of the User Interface

The user interface of the SMA product (e.g. SMA Data Manager) and the user interface of Sunny Portal are uniform.

The number of functions and menus depends on whether you are on the local user interface of the product or in Sunny Portal.



Figure 1: Design of the user interface (example)

Position	Designation	Description
A	Focus navigation	 Enables the navigation between the following levels: System portfolio System group System section System Device
В	User settings	Provides the following functions: • Configuring personal data • Log out
С	System information	Displays the following information: • Terms of use • Privacy statement • Legal notice • Manual • Version
D	Notifications	Display of higher-level notifications for events in the system
E	System search	Search for systems
F	Content area	Displays the dashboard or content of the selected menu
G	Configuration	Offers different configuration options, depending on the scope of the connected devices and the selected level.

Position	Designation	Description
Η	Analysis	 Offers detailed information on measured values of the system and of connected devices. The following functions are available for this purpose: Analysis Pro (Measured values of individual devices with each other, with the overall system or with systems of the entire portfolio) PV inverter comparison (Compare performance of individual PV inverters) Annual comparison (Compare yield and energy balance of individual months over the entire system period)
1	Monitoring	Displays depending on the selected device the following information on the current level and the superior levels: • Status list • Event monitor • Energy balance • Energy and power
J	Dashboard	Displays information and instantaneous values of the de- vice or system currently selected.
К	Home	Opens the user interface homepage

3.4 User Roles and User Rights

User roles

In Sunny Portal, you can assign users different user roles. The user roles describe the function of the users within a system. User roles are independent of user rights. The following user roles can be assigned:

- Owner
- Installer
- Operator

User rights

In Sunny Portal, users have different user rights. The user rights determine which functions are available to the user in a system. Functions depending on user rights might not be shown due to missing authorization. The user account that was used to register a system gets administrator rights. The scope of functions can be changed by means of updates and purchase of additional licenses. The following user rights are available:

- Administrator
- Installer

• User

Function	User rights in a system		
	Administrator	Installer	User
Displaying Analysis Pro	✓	✓	-
Displaying system properties	✓	✓	✓
Configuring system properties	✓	1	_
Creating and configuring system groups	1	_	_
Displaying system monitoring	✓	✓	✓
Configuring system monitoring	1	1	_
Displaying configuration of system monitoring	1	1	-
Displaying user rights	✓	-	_
Configuring user rights	1	_	_
Configuring notifications	1	1	_
Displaying notification configuration	1	1	_
Displaying CO ₂ widget	1	1	1
Exporting data and parameters	✓	✓	_
Displaying energy balance	✓	✓	1
Displaying energy balance widget	✓	✓	1
Displaying energy and power	✓	✓	1
Displaying event monitor	✓	✓	_
Displaying yield widget	✓	1	1
Entering device data manually (e.g. gas meter)	1	1	1
Change device properties	1	1	_
Adding devices to systems	1	1	_
Show annual comparison	✓	1	1
Displaying grid management service widget	1	1	✓
Importing parameters	✓	1	-
Configuring parameter values	✓	1	-
Displaying performance ratio widget	1	1	✓
Displaying sensor widgets	1	1	1

Function	User rights in a system			
	Administrator	Installer	User	
Activating service access	✓	✓	-	
Configuring the SMA Smart Con- nected	1	1	-	
Configuring SMA SPOT	✓	1	-	
Displaying status widget	1	1	✓	
Creating and configuring system sections	1	1	_	
Displaying inverter comparison	✓	✓	-	
Displaying weather widget	✓	✓	✓	

4 Getting Started

4.1 Registering in Sunny Portal

You can log in with an existing Sunny Portal, Sunny Design or Sunny Places user account. If you have a user account, register in Sunny Portal. A user account can be assigned to several systems. Thus, the user account has access to these systems. Several systems can therefore be monitored with one user account.

Register as a new user in Sunny Portal.

Requirements:

- □ A smart end device (e.g. laptop or tablet PC) must be available.
- □ An active Internet connection must be established.

Procedure:

- 1. Call up the Internet address https://ennexOS.SunnyPortal.com in the web browser.
- 2. Select I require a user account.
- 3. Enter the necessary data for registration.
- 4. Select [Register].
 - After a few minutes you will receive an e-mail containing a confirmation link for registration in Sunny Portal.
- 5. If you have not received an e-mail from Sunny Portal, check whether the e-mail has been redirected to a folder for junk mail or whether an incorrect e-mail address has been entered.
- 6. Follow the confirmation link in the e-mail within 48 hours.
 - ☑ Sunny Portal opens a separate window to confirm successful registration.
- 7. Call up the Internet address https://ennexOS.SunnyPortal.com in the web browser.
- 8. Enter the e-mail address and the Sunny Portal password in the fields **User** and **Password**.
- 9. Select [Login].

Log in to Sunny Portal as an existing user.

Requirements:

- □ You must have access to a user account in Sunny Portal, Sunny Places or Sunny Design.
- □ An active Internet connection must be established.

Procedure:

- 1. Call up the Internet address https://ennexOS.SunnyPortal.com in the web browser.
- 2. Enter the e-mail address and the Sunny Portal password in the fields User and Password.
- 3. Select [Login].

1.5

4.2 Creating a System

In order to be able to monitor and configure the devices of your system, create a system in Sunny Portal. The settings can be changed at any time in the system properties. There are three ways to create a system in Sunny Portal:

- create new system
- create a system planned in Sunny Design
- import a system existing in the Sunny Portal Classic to replace a communication device by a SMA Data Manager, for example

The system setup assistant is a step-by-step guide to the processes required for the registration of your system in Sunny Portal.

powere	I by ennexOS		SUNNY PORTAL 🗸 🔔	
٨	۰		٩.) Ø
₿		Arlinge arlinger		
Ģ		t die Yang And generally anwellt kinne 1018 Politik impire webs, die Is die neuelle Rahme gangen niel		
Ŀ		No office Se, on So do non Solige origine of State		
\$		•		
		0		
		0		

Figure 2: Overview creating system

i Service access and assistance with problems

To ensure a better quality of service, activate the switch for service access during registration. Indicate which role you have in the system. With this information, we will be able to offer you additional services such as SMA Smart Connected, and contact the correct persons in the event of problems.

Requirements:

- □ The registration ID (RID) and the identification key (PIC) of the type label of the SMA product or of other provided labels must be available.
- □ All devices in the local network must be in operation and connected to the Sunny Portal via an Internet router.
- A maximum of one Data Manager with the option **Master** may be present in a system.

- 1. Log into Sunny Portal.
- 2. Select the menu **Configuration**.

3. Select [Create system] in the context menu.

☑ The system setup assistant opens.

4. Select how the system is to be created and then follow the installation assistant steps.

4.3 Configuring the Energy Meter

Feed-in meters and grid-supply meters can be configured in Sunny Portal and added to a system. As a result, the energy balance of the system can be calculated and displayed. The configured energy meters are synchronized with the SMA Data Manager or SMA inverter powered by ennexOS configured as the superordinate system manager for the control at the point of interconnection (see manual of the SMA product).

Procedure:

- 1. Select a system in Sunny Portal.
- 2. Select the Meter configuration menu item in the Configuration menu.
- 3. Select Device and Channel for Grid feed-in and Grid-supplied power.
- 4. Click on [Save].

4.4 Configuring Notifications

To be informed of certain events in your system, you can turn on notifications. Notifications inform all system users registered in Sunny Portal, a system group or a system section simultaneously. The language of the sent notifications matches the language assigned to the user account. The following notification types are available:

Notification	Explanation
Alarm communication moni- toring	The alarm informs you of communication disturbances between your PV system and the Sunny Portal.
Alarm grid management services	The alarm informs you of events relating to grid management services.
Alarm performance ratio	The alarm informs you when the performance ratio is outside the tol- erance.
Alarm inverter comparison	The alarm informs you of the yield warnings of the inverter comparison.
Alarm active power limita- tion	The alarm informs you of active power limitations in your PV system.
Detailed report	The detailed report informs you of in-depth device data in your sys- tem and of deviations of the specific yield.
Event report	The event report informs you of all events occurring in your PV system.
Infor report	The info report informs you regularly of the yields of your system.
AS 5033	The alarm informs you about grounding fault events according to the standard AS 5033.

Notification	Explanation
IEC 62109-2	The alarm informs you about events regarding grounding faults, residual current and the grid disconnecting device according to the standard IEC 62109-2 / DIN EN 62109-2.
SMA Remote Service: Firmware Update Informa-	This report gives you information about available updates for your central inverter.
tion	The SMA Remote Service function must be activated in the system properties. An SMA Data Manager L must be installed in the system.

- 1. Log into Sunny Portal.
- 2. Select system, system group or system section.
- 3. Select the menu **Configuration**.
- 4. In the context menu, select [Notifications].
- 5. To add a new notification, click the button \therefore .
- 6. To configure a notification, click the button 🏶.
- 7. Configure notification and confirm with [Save].

5 Operation

5.1 Device Administration

The device administration contains information on all active devices in your system. Within the device management, depending on the system constellation, different options are available to manage the system and its devices. You can add, replace and disable devices of your system in the device administration system.

5.1.1 Overview device administration

The device administration offers the following options:

- Configuring (configuration is only valid for temporary session) the scope of the displayed information (e.g. installed firmware version or date of commissioning)
- Displaying device parameters
- Displaying device properties
- Adding directly communicating devices (e.g. SMA Data Manager)
- Adding virtual devices
- Replacing devices
- Disabling devices

SUNN	SUNNY PORTAL 👔					
ŵ	•	•			_@ (ا ب	
œ		Gerillener volkung •				
Ģ		ina Tanàna Mana			± 10000	
~		To Marcan	1000		: 0	
			100 million (100	100000		
\$			100000			
			No. or Contract	10.000		
	>		1000	1100 000		
			101000	10.000		
			101000000	110100		

Figure 3: Overview device administration

5.1.2 System with SMA Data Manager

5.1.2.1 Adding an SMA Data Manager

You can add SMA Data Managers to a system that are configured as a subordinate system managers. These are subordinate devices that are controlled by a superordinate system manager.

Requirements:

□ The registration ID (RID) and the identification key (PIC) of the type label of the SMA product or of other provided labels must be available.

- □ All devices in the local network must be in operation and connected to the Sunny Portal via an Internet router.
- □ A maximum of 1 subordinate device may be present in a system as a system manager.

Procedure:

- 1. Log into Sunny Portal.
- 2. Select system.
- 3. Select the menu **Configuration**.
- 4. Select [Device management] in the context menu.
- 5. Select the 🔁 button.

☑ The system setup assistant opens.

- 6. Select SMA device and confirm with [Next].
- 7. Enter the PIC and RID of the new device and confirm with [Identify].
- 8. Select new device from the list and confirm with [Save].

5.1.2.2 Replacing an SMA Data Manager

When the SMA Data Manager configured as system manager or as superordinate system manager is replaced with a new device, this device replacement must also be made in Sunny Portal.

Exchanged SMA Data Managers are replaced with new devices. The existing data of the exchanged SMA Data Manager are copied.

Requirements:

- □ The registration ID (RID) and the identification key (PIC) of the type label of the SMA product or of other provided labels must be available.
- □ All devices in the local network must be in operation and connected to the Sunny Portal via an Internet router.
- □ A maximum of 1 subordinate device may be present in a system as a system manager.

- 1. Log into Sunny Portal.
- 2. Select system.
- 3. Select the menu **Configuration**.
- 4. Select [Device management] in the context menu.
- 5. In the device row, click the … button.
- 6. Select [**Replace device**] device.
- 7. Enter the PIC and RID of the new device and confirm with [Identify].
- 8. Select new device from the list and confirm with [Replace].

5.1.2.3 Replacing Subordinate Devices

Subordinate devices that are captured in a superordinate system manager (e.g. SMA Data Manager, Sunny Tripower X) cannot be replaced in Sunny Portal. Subordinate devices must be replaced via the user interface of the superordinate system manager (see manual of the superordinate system manager). The deleted device is disabled in Sunny Portal. The new device is displayed in Sunny Portal. The data of both the old and the new device are visible in the analysis in Sunny Portal.

Also see:

• Analysis ⇒ page 33

5.1.2.4 Adding Reset Devices Again

You can add devices reset to the default setting, which are configured as system manager (e.g. SMA Data Manager, Sunny Tripower X), to an existing system again. Additionally, reset devices are displayed in the notifications and there can be added to the system again.

Procedure:

- 1. Log into Sunny Portal.
- 2. Select system.
- 3. Select the menu **Configuration**.
- 4. Select [Device management] in the context menu.
- 5. In the device row, click the … button.
- 6. Select [Show device properties].
- 7. Click the button [Include reset device in the system again].

☑ The system setup assistant opens.

Also see:

• Configuring Notifications ⇒ page 17

5.1.3 PV system with SMA inverter powered by ennexOS

5.1.3.1 Replacing an SMA Inverter powered by ennexOS

When the inverter configured as system manager is replaced with a new device, this device replacement must also be made in Sunny Portal.

Replaced inverters are disabled and the new inverters are added. However, the data of the disabled inverters are not transferred.

Requirements:

- □ The registration ID (RID) and the identification key (PIC) of the type label of the SMA product or of other provided labels must be available.
- □ All devices in the local network must be in operation and connected to the Sunny Portal via an Internet router.
- □ A maximum of 1 subordinate device may be present in a system as a system manager.

Procedure:

- 1. Log into Sunny Portal.
- 2. Select system.
- 3. Select the menu **Configuration**.
- 4. Select [Device management] in the context menu.
- 5. In the device row, click the … button.
- 6. Select [Replace device] device.
- 7. Enter the PIC and RID of the new device and confirm with [Identify].
- 8. Select new device from the list and confirm with [Replace].

5.1.3.2 Replacing Subordinate Devices

Subordinate devices that are captured in a superordinate system manager (e.g. SMA Data Manager, Sunny Tripower X) cannot be replaced in Sunny Portal. Subordinate devices must be replaced via the user interface of the superordinate system manager (see manual of the superordinate system manager). The deleted device is disabled in Sunny Portal. The new device is displayed in Sunny Portal. The data of both the old and the new device are visible in the analysis in Sunny Portal.

Also see:

• Analysis ⇒ page 33

5.1.3.3 Adding Reset Devices Again

You can add devices reset to the default setting, which are configured as system manager (e.g. SMA Data Manager, Sunny Tripower X), to an existing system again. Additionally, reset devices are displayed in the notifications and there can be added to the system again.

Procedure:

- 1. Log into Sunny Portal.
- 2. Select system.
- 3. Select the menu Configuration.
- 4. Select [Device management] in the context menu.
- 5. In the device row, click the … button.
- 6. Select [Show device properties].
- 7. Click the button [Include reset device in the system again].

☑ The system setup assistant opens.

Also see:

• Configuring Notifications ⇒ page 17

5.1.4 PV system with Sunny Home Manager 2.0

5.1.4.1 Adding a Sunny Home Manager 2.0

You can add Sunny Home Managers 2.0 to a system that directly communicate with Sunny Portal. These are Sunny Home Managers 2.0 that control connected devices, take over the monitoring of the system and the communication to Sunny Portal. For more details refer to the manual of the Sunny Home Manager 2.0.

Requirements:

- □ The registration ID (RID) and the identification key (PIC) of the type label of the SMA product or of other provided labels must be available.
- □ All devices in the local network must be in operation and connected to the Sunny Portal via an Internet router.

Procedure:

- 1. Log into Sunny Portal.
- 2. Select system.
- 3. Select the menu Configuration.
- 4. Select [Device management] in the context menu.
- 5. Select the 🔁 button.

☑ The system setup assistant opens.

- 6. Select SMA device and confirm with [Next].
- 7. Enter the PIC and RID of the new device and confirm with [Identify].
- 8. Select new device from the list and confirm with [Save].

5.1.4.2 Replacing a Sunny Home Manager 2.0

When a Sunny Home Manager 2.0 has been replaced with a new device in the system, this device replacement must also be made in Sunny Portal.

When you are replacing a Sunny Home Manager 2.0, the existing data of the exchanged Sunny Home Manager 2.0 are copied. For more details refer to the manual of the Sunny Home Manager 2.0.

Requirements:

- □ The registration ID (RID) and the identification key (PIC) of the type label of the SMA product or of other provided labels must be available.
- □ All devices in the local network must be in operation and connected to the Sunny Portal via an Internet router.

- 1. Log into Sunny Portal.
- 2. Select system.
- 3. Select the menu **Configuration**.
- 4. Select [Device management] in the context menu.

- 5. In the device row, click the … button.
- 6. Select [**Replace device**] device.
- 7. Enter the PIC and RID of the new device and confirm with [Identify].
- 8. Select new device from the list and confirm with [Replace].

5.1.5 System with SMA inverters with Webconnect function

5.1.5.1 Adding SMA Inverters with Webconnect function

You can add inverters with Webconnect function to a system. These are inverters that do not manage any further subordinate devices and only send their own data to Sunny Portal.

Requirements:

- □ The registration ID (RID) and the identification key (PIC) of the type label of the SMA product or of other provided labels must be available.
- □ All devices in the local network must be in operation and connected to the Sunny Portal via an Internet router.

Procedure:

- 1. Log into Sunny Portal.
- 2. Select system.
- 3. Select the menu **Configuration**.
- 4. Select [Device management] in the context menu.
- 5. Select the 🔁 button.

☑ The system setup assistant opens.

- 6. Select SMA device and confirm with [Next].
- 7. Enter the PIC and RID of the new device and confirm with [Identify].
- 8. Select new device from the list and confirm with [Save].

5.1.5.2 Replacing an SMA Inverter with Webconnect Function

When an SMA inverter with Webconnect function has been replaced with a new device, this device replacement must also be made in Sunny Portal.

When you are replacing an inverter, the old inverter is disabled and the data are not transferred.

Requirements:

- □ The registration ID (RID) and the identification key (PIC) of the type label of the SMA product or of other provided labels must be available.
- □ All devices in the local network must be in operation and connected to the Sunny Portal via an Internet router.

- 1. Log into Sunny Portal.
- 2. Select system.
- 3. Select the menu Configuration.

- 4. Select [Device management] in the context menu.
- 5. In the device row, click the … button.
- 6. Select [Replace device] device.
- 7. Enter the PIC and RID of the new device and confirm with [Identify].
- 8. Select new device from the list and confirm with [Replace].

5.1.6 Adding Virtual Generators

You can add virtual generators to a system with SMA Data Manager. The data of the virtual generators are collected by energy meters and transmitted to Sunny Portal.

Requirements:

- □ An SMA Data Manager must be installed in the system.
- □ All devices in the local network must be in operation and connected to the Sunny Portal via an Internet router.

Procedure:

- 1. Log into Sunny Portal.
- 2. Select system.
- 3. Select the menu Configuration.
- 4. Select [Device management] in the context menu.
- 5. Select the 🔁 button.

☑ The system setup assistant opens.

5.1.7 Adding Virtual Loads

You can add virtual loads to a system with SMA Data Manager, Sunny Home Manager 2.0 or SMA inverters powered by ennexOS. A virtual load uses the energy and power values of an energy meter. For this purpose, an energy meter that has not yet been assigned must be assigned to the virtual load.

Requirements:

- □ An SMA Data Manager, a Sunny Home Manager 2.0 or an SMA inverter powered by ennexOS must be installed in the system.
- □ All devices in the local network must be in operation and connected to the Sunny Portal via an Internet router.

- 1. Log into Sunny Portal.
- 2. Select system.
- 3. Select the menu Configuration.
- 4. Select [Device management] in the context menu.
- 5. In the energy meter row, click the … button.

6. Select [Configure as load].

- ☑ The system setup assistant opens.
- 7. Follow the steps of the system setup assistant and confirm with [Save].

5.1.8 Disabling devices

You can disable devices that directly communicate with Sunny Portal. Devices that are subordinate to other devices, must be disabled in the superordinate device. You can disable the following devices:

- Devices that were added via the context menu [Device administration]
- Devices that exist in the system, but have not provided any data for five days

The data of disabled devices are still visible in the menu Analysis.

Requirements:

□ All devices in the local network must be in operation and connected to the Sunny Portal via an Internet router.

Procedure:

- 1. Log into Sunny Portal.
- 2. Select system.
- 3. Select the menu **Configuration**.
- 4. Select [Device management] in the context menu.
- 5. In the device row, click the … button.
- 6. Select [Disable device].
- 7. Confirm with [Disable].

☑ Disabling the device resets all configurations for this device.

5.2 Deleting the System

You can delete a system from Sunny Portal. All system data will be lost. Keep in mind that you require administrator rights for this function.

Procedure:

- 1. Log into Sunny Portal.
- 2. Select system.
- 3. Select the menu Configuration.
- 4. Select [System properties] in the context menu.
- 5. Click the button [If you want to delete the system, click here.].
- 6. Select [Delete].

☑ The system and all related data will be permanently deleted.

5.3 System Properties

You can change the following system properties subsequently that you assigned when creating a system.

System properties	Explanation			
System properties	You can add an asset image for each asset, which will be displayed in the asset properties and dashboard.			
System data	The system data are general data relevant to the PV system. The fol- lowing data can be changed, for example: System name Date of commissioning Description Currency Feed-in tariff National metering identifier (Identification number to uniquely identify each power connection point in Australia)¹⁾ 			
Operator and installer data	Information on the operator and installer of the system. With this in- formation, we will be able to offer you additional services such as SMA Smart Connected, and contact the correct persons in the event of problems.			
Location	You can manage your system portfolio by means of your location in- formation, and receive location-specific weather and power fore- casts. The location is selected via map input and can be adjusted manually if necessary.			
PV modules	If a PV array is installed in the system, power and yield prognoses can be identified on the basis of this information and a performance ratio (PR) calculated as accurately as possible. The values must be stated in kW.			
	For an optimized energy management you can indicate the module surfaces of your PV system as well as their orientation and inclina- tion. Thus, various orientations can be configured and taken into ac- count. To calculate the performance ratio, sensors for solar irradia- tion and module temperature must be configured for all PV modules. A sensor for outside temperature can be integrated in addition. Lo- cally available sensors or satellite-based data can be used.			
SMA SPOT	The PV current generated by your system can be directly marketed with SMA SPOT. ¹⁾			

¹⁾ This function is not available in all countries.

System properties	Explanation				
External access	The access to the system and the quality of the data communication are configured here. The following configurations are possible:				
	External parameterization				
	Service access				
	 Intensity of the data communication (high, medium, low) 				
	The service access is activated automatically as soon as the SMA Remote Service has been enabled in the settings for system monitoring.				
	If the external parameterization is disabled, this can only be undone via the user interface of the SMA Data Manager or the SMA inverter powered by ennexOS.				
Automatic updates	All update-capable SMA products of your system can receive auto- matic function and security updates. The function can also be set in- dividually for each device in the parameter list.				
System password	Here you must set a system password for communication with SMA inverters with Webconnect function and with Sunny Home Manager 2.0.				

i Profiles for data communication

Different profiles are available to control the intensity of data communication in the system. The profiles can be edited in the system properties at any time in Sunny Portal to adjust the intensity. Note that when switching from a low to a high intensity data communication, the data from the past is not retroactively adjusted. The adjustment applies from the date of the change. The following profile can be selected for data communication:

- High (default setting): Devices send all relevant data to the Sunny Portal every 5 minutes.
- Medium: Devices send all relevant data to the Sunny Portal every 15 minutes.
- Low: Devices send the most important data to the Sunny Portal 6 times per day.

5.4 System Monitoring

System monitoring provides information on the monitoring status of your system. Various monitoring options are available, which you can set and enable. If desired, the PV system monitoring can send you an alert via e-mail. The following functions can be enabled and set in system monitoring:

Function	Explanation
Inverter comparison	With the inverter comparison function, possible yield losses can be identified. If the specific yield of an inverter deviates significantly from the set tolerance to the mean value of the yields of all inverters, you can be notified by e-mail.
	Inverter comparison will only be displayed if there is more than one inverter in your system. An alarm is issued if the deviation exceeds 1 kWh/kWp.

28

Function	Explanation					
Performance ratio	The performance ratio (PR) is a measure of the quality of a PV sys- tem that is independent of location and is therefore often referred to as quality factor. The performance ratio is the ratio between the ac- tual yield and the target yield of the system. Hence, it indicates the proportion of generated energy that is actually available for feed-in after deduction of energy losses (e.g. due to thermal and conduction losses) and of the requisite operating current.					
	With the performance ratio, you can check the quality of your sys- tem. The closer the PR value determined for a system is to 1, the more efficiently the respective system is operating.					
	The performance ratio is calculated by means of the following for- mula:					
	$\label{eq:PR} \begin{split} & \text{PR} = \frac{\begin{array}{c} \text{Actual} \\ \text{PV generation} \\ \text{Estimated} \\ \text{PV generation} \end{array} = \frac{\begin{array}{c} \text{Daily energy / PV generation [kWh]} \\ \hline (\text{Irradiation [kWh/m^2] x nominal system power [kW] / [STC]*) x} \\ \hline (1+(\alpha^* \text{module temperature [°C]} - 25 [°C])) \end{split} \end{split}$					
	* STC = Standard Test Condition 1 kWh/m ²					
	* α = Temperature coefficient of the PV module. Sunny Portal uses the average value -0.4%/°C for the calculation.					
	To calculate the performance ratio, sensors for solar irradiation and module temperature must be configured for all PV modules. A sensor for outside temperature can be integrated in addition.					
Expected PV yield	With the expected PV yield, deviations between expected and ac- tual annual yield of the PV system can be shown. The expected an- nual yield of the PV system is calculated from the specific annual yield at the PV system location and the PV system power.					
SMA remote service	Enable the option for the SMA Remote Service if it is part of the pur- chased functionality for your SMA central inverter. As part of this service, the factory warranty includes free updates for your central inverter. You will be automatically informed about the availability of new updates. An appropriate notification is created for you when you enable this option. You can customize this at any time in the no- tification configuration. Enabling this option also enables service ac- cess for SMA and remote parameterization. To be able to use this function, an SMA Data Manager L must be in- stalled in the system.					

5.5 Managing System Groups

In Sunny Portal, systems can be bundled together in system groups for better management. Rights and notifications that have been configured for system groups are automatically adopted for all systems of a system group. Thus, access to several systems can be granted to several users simultaneously.

Procedure:

- 1. Select the portfolio 🕋 in Sunny Portal.
- 2. Select the menu item System group in the menu Configuration.
- 3. To delete system groups, select the button 📋 behind the system group.
- 4. To create system groups, select the button 🕒, fill out the input fields and click on **Save**.
- 5. To delete systems and members of a system group, open the submenu of the system group via the button √, fill out the input fields and click on **Save**.
- ☑ System groups are shown as a separate level above the system level in the focus navigation.

5.6 Managing System Sections

In Sunny Portal, system can be divided in system sections for better analysis or structuring purposes. Systems can be divided into sections, such as buildings, PV module orientation or expansion stage of system project.

Procedure:

- 1. Select a system in Sunny Portal.
- 2. Select the menu item System section configuration in the menu Configuration.
- 3. To delete system sections, select the button 📋 behind the system section.
- 4. To create system sections, select the button ④, follow the instructions of the installation assistant and click on **Save**.
- 5. To modify system sections, select the system section, follow the instructions of the installation assistant and click on **Save**.
- ☑ System sections are shown as a separate level below the system level in the focus navigation.

5.7 Changing Device Parameters

You can use the system parameter assistant to change parameters of individual or several connected devices at the same time. You can also transfer parameters of a device to replaced devices or to devices added to the system. Changes made to individual device parameters can be viewed retrospectively.

Requirements:

- □ All devices in the local network must be in operation and connected to the Sunny Portal via an Internet router.
- □ The external parameterization must be in operation.

Changing the parameters of a device

- 1. Log into Sunny Portal.
- 2. Select the device whose parameters are to be changed.
- 3. Select the menu Configuration.

- 4. In the context menu, select [Parameters].
- 5. Change parameters and confirm with [Save].
 - ☑ It may take a while until the parameters are transferred to the device. You can view the details of your parameter changes in the **Event monitor**.

Changing parameters of several devices simultaneously

- 1. Log into Sunny Portal.
- 2. Select system.
- 3. Select the menu Configuration.
- 4. In the context menu, select [Device parameter adjustment].
- 5. Click the button [System parameter assistant].
 - ☑ The system setup assistant opens. After completing the system setup assistant, the status of the parameter changes can be viewed. You can view the details of your parameter changes in the **Event monitor**.

Transmitting parameters

- 1. Log into Sunny Portal.
- 2. Select the device whose parameters are to be transmitted.
- 3. Select the menu **Configuration**.
- 4. In the context menu, select [Parameters].
- 5. Select the [Download] button and confirm with [Download now].

A CSV file with all parameter settings is downloaded.

- 6. Select system.
- 7. Select the menu Configuration.
- 8. In the context menu, select [Device parameter adjustment].
- 9. Click the button [System parameter assistant].

☑ The system setup assistant opens.

- 10. Click the [Import] button.
- Select the CSV file containing the parameter settings and confirm with [Upload]. Make sure that the formatting of the CSV file is not changed. Please note that texts must be edited with a text editor.
 - After completing the system setup assistant, the status of the parameter changes can be viewed. You can view the details of your parameter changes in the Event monitor.

View parameter changes

- 1. Log into Sunny Portal.
- 2. Select the device from which the parameter changes are to be viewed.
- 3. Select the menu Configuration.
- 4. In the context menu, select [Parameters].
- 5. To list parameter changes of the past chronologically, select the \mathfrak{O} button.

5.8 Sensor Assignment

Sunny Portal uses sensor data to calculate the performance ratio (PR) of the system. Satellite-based data or data of locally connected sensors can be used. The data are shown in a sensor widget on the dashboard. A sensor for solar irradiation, external temperature, cell temperature and wind speed can be each assigned. When using satellite-based data, the system properties must be correct. The system location and system orientation are of particular importance.

Procedure:

- 1. Select a system in Sunny Portal.
- 2. Select the menu item Sensor assignment in the menu Configuration.
- 3. Click the 🕒 button to assign a new sensor.
- 4. Select the name of the local sensor or **Satellite** from the selection menu **Device**.
- 5. Select the input channel that is configured for the sensor from the selection menu Input.
- 6. When using satellite-based data, enter the system properties.
- 7. Click on [Save].

5.9 Digital Products

At system level, you can see the range of functions your system has. SMA products and Sunny Portal are equipped with basic functions and specific features. Going forward, the features can be extended by other digital products.

SUNN	Y PORTAL 🔯					SUNNY PORTAL
ŵ	•					ଦ 🔺 ୭
₿		Liperspierte Rud	let an an			
Ģ		Page 1	-		-	
~		-	0	Recording on Divisiong Name of Society State presenting searching	1000-1000-000-1000-000-004	
\$			o	Internet Anton a Unit, National Anton Marine A High N A High Share Antonia Share Marine Antoneous Antoneous Marine A High Antoneous A High Ant		
			٢	Denne Verser Villey fordyn oddy seriff 1 silligen fan Seriffer fan Seriffer 1 silligen stategen versjoer ban Helgens stategen versjoer ban Helgens stategen versjoer ban 1 silligen	Norme Miller (1) Miller (1) (1) Miller (1) (1)	

Figure 4: Overview of digital products

5.10 Analysis

Using the function **Analysis Pro** in the menu **Analysis** you can compare detailed measured values of individual devices with each other, with the overall system or with systems of the entire portfolio.



Figure 5: Analysis Pro function (example)

Position	Explanation
А	Tabs Energy and power - PV and Detailed analysis
	The tab Energy and power - PV shows energy yields for day, week, month, year or the entire period.
	The tab Detailed analysis shows detailed AC and DC measured values for day and week. In the detailed analysis, individual measured values can be enabled and disabled for the diagram preview. The selection of the measured values can be saved as its own channel profile. Pre-defined and own channel profiles can be se- lected in the left area of the detailed analysis.
В	Tabs to select the time periods for displaying the energy yields
С	Diagram preview
	The diagram preview is divided into sections by lines. If you select a section in the diagram preview, the content is shown in the large diagram.
D	Absolute yield or specific yield
	In this area you can select whether the absolute yield or the specific yield is dis- played.
E	Diagram
	Tip: If you move the mouse on to the diagram, the value from the area Details is shown next to the cursor.
F	Details area
	This area contains the power values of the displayed diagram as 15-minute mean values. The values can be exported as a CSV file.

Position	Explanation
G	Event monitor area This area contains messages from selected devices and associated higher-level sys- tem messages.
Н	Event monitor filter area In this area, you can filter messages of the selected devices and systems.
I	All systems and devices area In this area, you can select whether values of the system and/or individual devices are to be displayed in the large diagram and in the Details area. To display data of decommissioned devices, enable the selection.
J	Current selection area In this area, you can select devices and systems for the analysis.

5.11 Event Monitor

The event monitor displays messages about devices, systems and the entire portfolio. Messages are saved for a maximum time period of 180 days.

SUNNY P	ORTAL 🛞						SUNNY	PORTAL V 1
. *	•							୍ କ୍ ୭
	-	Beignional	iter .					
•		1000		1000	1000	1000	-	
	×	10000	0			The second party of the se		
*	* Inging	$[1,1] = \{1,2,3,4,1\}$	•					
	•	10000			100	Territory (
	·	10000	0			10.000.000		
		10,000,000	•		-	Sanata (Sanata) (Sanata) Sanata (Sanata) (Sanata) (Sanata) Sanata (Sanata) (Sanata) (Sanata) (Sanata) Sanata		
		-	0			Normal (17 Norm Norm Toppic constant top and as in the second of the Shade of Shade , and a		
			•			Annes and a state of the set of t		
		10000	0 →			1000-1000-000-1000-0000-0000-00000-000		
						Terrare and the spile former		



Position	Explanation
A	Filters
	In this area filters can be set to select messages by categories.
В	Event monitor area
	This area contains messages of the selected devices, systems and the entire portfo- lio.

Event Types

Symbol	Designation	Explanation
	Error	The Error event has existed for some time and could not yet be remedied.
→ []	Incoming error	An Error event has occurred.
€→	Outgoing error	The Error event no longer exists.
A	Warning	The Warning event has existed for some time and could not yet be automatically remedied.
\rightarrow	Incoming warning	The Warning event has occurred.
\rightarrow	Outgoing warning	The Warning event no longer exists.
0	Information	The Information event has existed for some time.
→	Incoming information	The Information event has occurred.
€	Outgoing information	The Information event no longer exists.

6 Contact

If you have technical problems with our products, please contact the SMA Service Line. The following data is required in order to provide you with the necessary assistance:

- Type of the communication products connected
- Use the name of the system in Sunny Portal (if available)
- Access data for Sunny Portal (if available)
- Detailed description of the problem

You can find your country's contact information at:



https://go.sma.de/service





www.SMA-Solar.com

