User Manual

# SUNNY EXPLORER

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# 1 Information on this Document

## Validity

This document is valid for Sunny Explorer as of software version 1.07.

## Target Group

This document is intended for qualified persons and end users. Only qualified persons with the appropriate skills are allowed to perform certain tasks described in this document (see Section 2.2 "Skills of Qualified Persons", page 7). Such tasks are marked with a warning symbol and the caption "Qualified person". Tasks that do not require any particular qualification are not marked and can also be performed by end users.

## Additional Information

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

| Document title | Document type |
|---|---|
| SMA *Bluetooth*® Wireless Technology in Practice | Technical Information |
| SMA *Bluetooth*® Wireless Technology | Technical Description |

## 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 |
| **⚠ QUALIFIED PERSON** | Chapters or sections describing tasks to be performed by qualified personnel only |
| **i** | Information that is important for a specific topic or goal, but is not safety-relevant |
| ☐ | Indicates a requirement for meeting a specific goal |
| ☑ | Desired result |
| ✖ | A problem that could occur |

## Typographies

| Typography | Usage | Example |
|---|---|---|
| bold | • Display texts<br>• Elements on a user interface<br>• Terminals<br>• Elements to be selected or entered | • The value can be found in the **Energy** field.<br>• Select **Settings**.<br>• Enter the value **10** in the **Minutes** field. |
| > | • Connects several elements to be selected | • Select **Settings > Date**. |
| [**Button/Key**] | • The button or key to be selected or pressed | • Select [**Next**]. |

## Nomenclature

| Complete designation | Designation in this document |
|---|---|
| PV system | System |
| Wind turbine system | System |
| SMA *Bluetooth*® Wireless Technology | *Bluetooth* |
| SMA Speedwire | Speedwire |
| SMA Speedwire/Webconnect data module | Speedwire/Webconnect data module |
| SMA Speedwire/Webconnect Piggy-Back | Speedwire/Webconnect Piggy-Back |
| SMA Webconnect function | Webconnect function |

## Abbreviations

| Abbreviations | Designation | Explanation |
|---|---|---|
| PV | Photovoltaics | – |

# 2   Sunny Explorer

## 2.1   Intended Use

With the Sunny Explorer software, you can visualize and manage the data of your *Bluetooth* or Speedwire system. You can also use it to configure single devices or entire device classes in your system.

Connection to the devices is established using either wireless technology via *Bluetooth* or wire-linked via Speedwire. For wireless connection, the computer must be equipped with *Bluetooth*, e.g. via an integrated *Bluetooth* module or via a USB *Bluetooth* stick. The Speedwire connection is made via the network connection of the computer. In the *Bluetooth* network, Sunny Explorer acts as the grid-forming device (master device).
Master devices are communication products which set up the *Bluetooth* network, display devices and collect and analyze device data.

Sunny Explorer can manage up to 50 devices in the *Bluetooth* or Speedwire network.

Sunny Explorer is designed for private and industrial use.

You can change the safety-related parameters of SMA inverters using Sunny Explorer.
Certain parameters are further protected by SMA Grid Guard and can only be altered with the appropriate authorization (see Section 8.5 "SMA Grid Guard", page 47).

Sunny Explorer does not support the configuration of inverters with integrated web server and with their own user interface (e.g. Sunny Boy 1.5/2.5). It is possible to detect these inverters via Sunny Explorer, however, it is expressly not recommended to use Sunny Explorer for the configuration of these inverters. SMA Solar Technology AG does not accept liability for missing or incorrect data and possibly resulting yield losses.

For login to Sunny Explorer there are two user groups at your disposal, **Installer** and **User**. The user group **Installer** must only be used by qualified personnel who are authorized to make changes to the network parameters of the connected devices (see Section 2.2, page 7). Incorrect parameter settings can damage or destroy the inverter. Do not alter these safety-relevant parameters without prior consultation with your grid operator. Unauthorized changes to the SMA Grid Guard parameters void the system operating license.

Do not use the data from Sunny Explorer for billing purposes. Read the relevant documentation of your *Bluetooth* or Speedwire devices and only use Sunny Explorer for the purpose described in this document.

## 2.2   Skills of Qualified Persons

Only qualified persons are allowed to perform the tasks marked in this document with a warning symbol and the caption "Qualified person". Qualified persons must have the following skills:

- Training in the installation and commissioning of electrical devices and systems
- Knowledge of how to deal with the dangers and risks associated with installing and using electrical devices and systems
- Knowledge of all applicable standards and directives
- Knowledge of how an inverter works and is operated
- Knowledge of and adherence to this document and all safety precautions

## 2.3  Supported Products

**SMA Inverters**

- All 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 on the product page of the respective inverter at www.SMA-Solar.com.

- SMA inverters with integrated or retrofitted *Bluetooth* interface

  Information on whether an inverter has an integrated *Bluetooth* interface or can be retrofitted with a *Bluetooth* interface can be found on the product page of the respective inverter at www.SMA-Solar.com.

**Additional SMA Products**

- SMA *Bluetooth* Repeater
- SMA micro inverter and Sunny Multigate
- Sunny SensorBox
- SMA accessories with integrated *Bluetooth* technology or Speedwire

## 2.4  Functions

The most important Sunny Explorer functions are:

- System control with *Bluetooth* Wireless Technology or Speedwire
- Quick overview of the current status of the system
- Graphic display of key system data
- Parameterization of individual devices or entire device classes
- Simple diagnostics thanks to display of device faults and events
- Access protection with the SMA password concept
- Data export of inverter energy values and events in CSV format
- Graphic display of daily, monthly and yearly energy values for each device
- Device updates via *Bluetooth* or Speedwire
- Graphic display of the *Bluetooth* network topology
- Display of the connection quality between the individual *Bluetooth* devices

**New Functions**

The Sunny Explorer software version 1.07 features the following new functions:

- Supports Sunny Boy 3600 / 5000 Smart Energy
- Supports SMA Energy Meter

## 2.5   System Requirements

### Supported operating systems

- Microsoft Windows XP from SP2
- Microsoft Windows Vista
- Microsoft Windows 7
- Microsoft Windows 8 (except for Windows 8 RTM)

### Recommended display resolution

Minimum: 1,024 pixels x 768 pixels

### Recommended *Bluetooth* sticks

- FreeTec *Bluetooth* Mini-USB adapter; *Bluetooth* 2.0; Class 1
- Hama *Bluetooth* USB micro-adapter; *Bluetooth* 2.1 + EDR; Class 1

USB *Bluetooth* sticks manufactured by AVM are not supported.

| i | **Selecting a *Bluetooth* stick**
Only use *Bluetooth* sticks with Class 1 range (up to 100 m). The range of Class 2 devices (up to 10 m) is not sufficient.

### Supported *Bluetooth* device drivers

- Microsoft from Service Pack 2
- Toshiba
- Broadcom

*Bluetooth* device drivers manufactured by BlueSoleil are not supported.

| i | **Installing *Bluetooth* sticks and *Bluetooth* device drivers**
Install the USB *Bluetooth* stick directly in Windows using the *Bluetooth* device drivers available there. Only install the device driver supplied with the USB *Bluetooth* stick if required.

Programs sometimes use the term '*Bluetooth* stack' to refer to *Bluetooth* device drivers.

### Supported languages

German, English, Italian, Spanish, French, Greek, Korean, Czech, Portuguese, Dutch

# 3 Installation

## Installing Sunny Explorer in Windows XP

| **i** | **Sunny Explorer requires ".NET Framework 2.0"**

In the event that .NET Framework version 2.0 or higher is not installed on your computer, this will be installed by the Sunny Explorer Installation Assistant. You will require the relevant authorization to install .NET Framework on your computer. If necessary, contact your administrator.

**Procedure:**

1. Run setup file.

    ☑ The Sunny Explorer Setup Assistant opens.

2. Follow the instructions of the Setup Assistant.

    ☑ The installation is being performed.

☑ Sunny Explorer is installed.

## Installing Sunny Explorer in Windows Vista or Windows 7

1. Run setup file.

2. Confirm the security prompt.

    ☑ The Sunny Explorer Setup Assistant opens.

3. Follow the instructions of the Setup Assistant.

    ☑ The installation is being performed.

☑ Sunny Explorer is installed.

# 4 Commissioning

## 4.1 *Bluetooth* System

### 4.1.1 Determining a Free NetID

**⚠ QUALIFIED PERSON**

All devices must be set to the same NetID so that the SMA *Bluetooth* devices in a system can communicate with each other. Systems with SMA *Bluetooth* operating in close proximity to one another are distinguished by their individual NetID.

To make sure that you do not set a NetID which is already in use by another *Bluetooth* system in the vicinity, you need to determine a free NetID prior to commissioning your *Bluetooth* system.

Once you have determined a free NetID for your *Bluetooth* system and set this NetID for the devices, you can create a new system in Sunny Explorer (see Section 4.1.2, page 14).

If you have not yet determined a free NetID for your *Bluetooth* system, you will need to do this first.

**i** | **There is no need to determine a free NetID for *Bluetooth* systems with Sunny Explorer and one single inverter.**

You may leave the default NetID set to 1 in your inverter if your *Bluetooth* system consists of the following products:

- one inverter
- up to two computers with *Bluetooth* and Sunny Explorer

If you are using additional SMA *Bluetooth* devices, e.g. an SMA *Bluetooth* Repeater, you must determine a free NetID.

**Determining a free NetID with a Laptop and Sunny Explorer**

**Requirement:**

☐ The SMA *Bluetooth* devices of your system must be switched off.

**Procedure:**

1. Switch off any available SMA *Bluetooth* devices (see SMA *Bluetooth* device manuals).
2. Position the laptop near a *Bluetooth* device in the system.
3. Start *Bluetooth* on your laptop.
4. Start Sunny Explorer.
   - ☑ The system assistant opens.
5. Select **Enter a new system** in the system assistant.
6. Enter the desired name for the system in the field **System name**. This name can be freely selected and will be used as the file name for the system file.
7. To configure a different directory for saving the system file, click on the button [**...**] in the field **Directory**.

8.  Select [**Next**].

9.  In the drop-down list **Communication type**, select the entry *Bluetooth* and then [**Next**].

    ☑ The system search begins.

    ☑ The NetIDs of the *Bluetooth* systems detected within radio range are displayed in the field **Systems found** (e.g. NetID 4 and NetID A). All the NetIDs listed here are reserved and cannot be used. Repeat the system search on each *Bluetooth* device of the system, and also at the mounting location of the computer with Sunny Explorer. In larger systems, it is sufficient to carry out the system search just on the devices which are located on the periphery of the system. There is no need to run the system search on devices which are surrounded by other devices.

    

10. Select [**Repeat search**].

    ☑ Newly found *Bluetooth* systems are added in the field **Systems found** and do not need to be noted.

11. When the system search has been run on each device, choose a NetID which is **not yet** reserved (e.g., NetID E in the diagram).
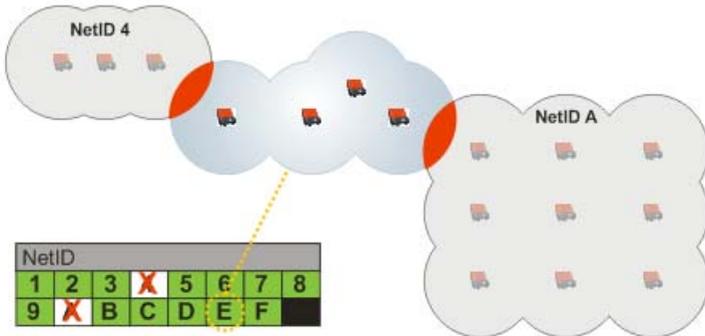
12. Refer to the following table for a list of possible NetIDs and their functions:

| NetID allocation | | | |
| --- | --- | --- | --- |
| **NetID** | **Function** | | **Display in Sunny Explorer** |
| 0 | *Bluetooth* is switched off. | | |
| 1 | *Bluetooth* is switched on. The device can link up with a maximum of two communication products from SMA Solar Technology AG with NetID set to 1. |  | Devices with NetID 1 are listed separately in the field **Systems found**. |
| 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F | *Bluetooth* is switched on. The device can link up with *Bluetooth* devices using the same NetID. |  | All devices with the same NetID will be displayed in the field **Systems found** under the plus symbol [+] of the relevant NetID. |

13. Close Sunny Explorer.

☑ You have determined the free NetID.

14. Commission the *Bluetooth* system (see Section 4.1.2 "Creating a New Bluetooth System", page 14).

## 4.1.2  Creating a New *Bluetooth* System

**ⓘ** **Always commission a *Bluetooth* system with only one master.**

Always commission a *Bluetooth* system with strictly only one master (e. g., Sunny Explorer). As soon as the *Bluetooth* network is up and running, you can integrate further masters into the *Bluetooth* network.

**Requirement:**

☐ A free NetID must have been set for the devices of your *Bluetooth* system (see the respective device manuals).

**Procedure:**

1. Start Sunny Explorer.

    ☑ The system assistant opens.

2. Select **Enter a new system** in the system assistant.

3. Enter the desired name for the system in the field **System name**. This name can be freely selected and will be used as the file name for the system file.

4. To configure a different directory for saving the system file, click on the button [**...**] in the field **Directory**.

5. Select [**Next**].

6. In the drop-down list **Communication type**, select the entry **Bluetooth** and then [**Next**].

    ☑ Sunny Explorer searches for all *Bluetooth* systems within radio range and lists the NetIDs of the *Bluetooth* systems detected in the field **Systems found**.

    – If Sunny Explorer does not list the NetID of your *Bluetooth* system, refer to Troubleshooting (see Section 10 "Troubleshooting", page 50).

You can either specify the device through which Sunny Explorer should connect to the entire *Bluetooth* system yourself, or have it selected automatically by Sunny Explorer. Sunny Explorer (master) connects directly to the selected device (slave).

By bypassing all other *Bluetooth* nodes, this enables significantly faster data transmission between Sunny Explorer and the selected device.

If you are not sure which option to choose, select the NetID of your system.

    – Automatic: If Sunny Explorer is to select the root node automatically, select the NetID of your system.
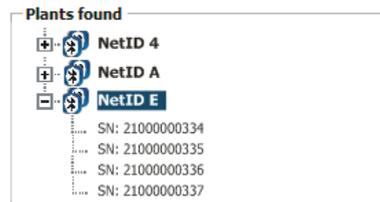
- Specific device: If Sunny Explorer is to connect to a specific device, select the device in the list under the NetID of your system.
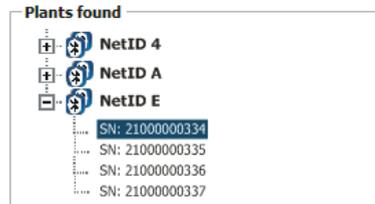


7. Select [**Next**].

☑ The connection to the system is established and the login window opens.

8. Select the user group in the drop-down list **User group**. The user group **Installer** must only be used by qualified personnel who are familiar with setting safety-relevant system parameters.

9. In the field **System password**, enter the specific password for the selected user group and select [**Next**].

> ### NOTICE
>
> **Damage due to unauthorized access to your system**
>
> The system password protects your system from unauthorized access and the associated risks.
>
> - After initial login to a new system, change the default password for both user groups (**User** and **Installer**) (see Section 8.3 "System Password", page 45).

☑ Sunny Explorer will establish the connection to all devices with the selected NetID.

☑ The Sunny Explorer user interface opens in the screen option of the chosen user group.

☑ The connection to your *Bluetooth* system is established. Your settings for the system are stored in the PV system file on your computer.

10. To open the system again later on, proceed as described in Section 6.2.

## 4.2  Speedwire System

## 4.2.1  Commissioning a Speedwire System

**⚠ QUALIFIED PERSON**

1. Commission the Speedwire inverters and connect to the network as described in the respective manual.
   - ☑ The Speedwire system is commissioned and the Speedwire inverters are connected to the network.
2. Establish a connection to your Speedwire system using Sunny Explorer (see Section 4.2.2, page 16).

## 4.2.2  Creating a New Speedwire System

**Requirement:**

☐ The Speedwire system must be commissioned (see Section 4.2.1, page 16).

**Procedure:**

1. Start Sunny Explorer.
   - ☑ The system assistant opens.
2. Select **Enter a new system** in the system assistant.
3. Enter the desired name for the system in the field **System name**. This name can be freely selected and will be used as the file name for the system file.
4. To configure a different directory for saving the system file, click on the button [**...**] in the field **Directory**.
5. Select [**Next**].
6. In the drop-down list **Communication type**, select the entry **Speedwire** and then [**Next**].
   - ☑ The system search begins.
   - ☑ Sunny Explorer searches for Speedwire devices in all network connections linked to the computer.
   - ☑ If there are multiple network connections to Speedwire devices, these are listed in a tree view and the devices found are displayed as sub-nodes.
7. If multiple network connections are displayed, select the network connection to which the Speedwire devices are connected and select [**Next**].
   - ☑ The connection to the selected Speedwire network is established and the login window opens.
8. Select the user group in the drop-down list **User group**. The user group **Installer** must only be used by qualified personnel who are familiar with setting safety-relevant system parameters.

9. In the field **System password**, enter the specific password for the user group selected and select [**Next**].

>
> **Damage due to unauthorized access to your system**
>
> The system password protects your system from unauthorized access and the associated risks.
>
> - After initial login to a new system, change the default password for both user groups (**User/Installer**) (see Section 8.3 "System Password", page 45).
>
> ☑ Sunny Explorer will establish the connection to all devices in the selected Speedwire network.
>
> ☑ The Sunny Explorer user interface opens in the screen option of the chosen user group.

☑ The connection to your Speedwire system is established and a new system has been created in Sunny Explorer. Your settings for the system are stored in the PV system file on your computer.

10. To open the system again later on, proceed as described in Section 6.2.

# 5   User Interface

The user interface permits quick access to all crucial information on the system and its devices.
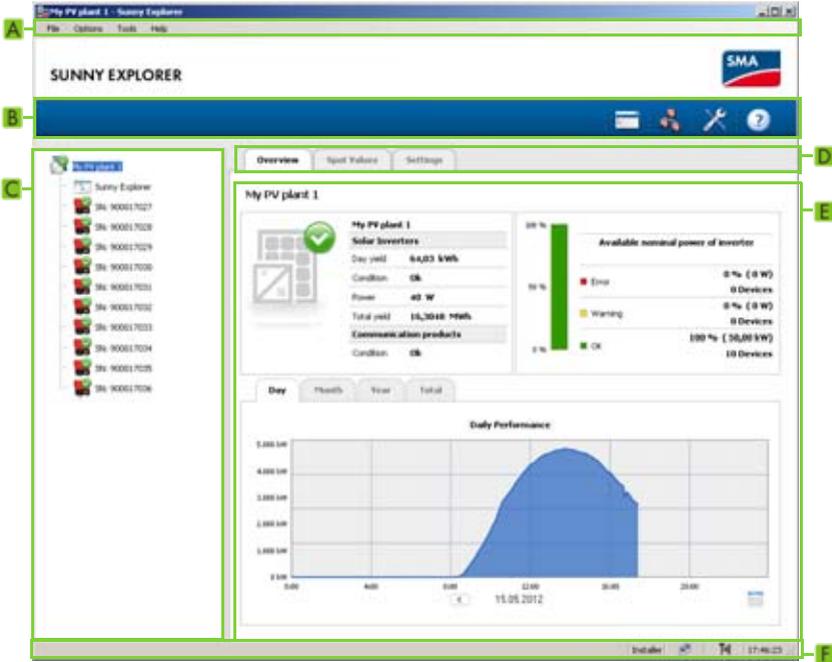


Figure 1:   User interface of Sunny Explorer (example)

| Item | Designation | Explanation |
|------|-------------|-------------|
| A | Menu bar | Enables access to the basic functions of Sunny Explorer |
| B | Icon bar | Enables quick access to the main functions of Sunny Explorer |
| C | System tree | Depicts all devices of the system in a tree structure |
| D | Device menu | Enables access to information and configuration of the devices selected in the system tree |
| E | Content area | Displays the content of the selected tab in the device menu (D) |
| F | Status bar | Displays the following information: <br> • User group <br> • Connection status to the system <br> • System time |

## 5.1  Menu Bar

| Category | Entries | Explanation |
| --- | --- | --- |
| File | New... | Enables creation of a new system in Sunny Explorer |
| | Open... | Opens a dialog box for file selection which allows you to open an existing system in Sunny Explorer |
| | Last used | Opens a sub-menu showing the last ten systems opened in Sunny Explorer |
| | Exit | Quits Sunny Explorer |
| Options | Language | Selection of the user interface language |
| | Change user group... | Opens the login dialog with which you can change the user group |
| | SMA Grid Guard® ... | Opens the dialog box **SMA Grid Guard** |
| | | You can enter your personal access code for SMA Grid Guard here. |
| | | This entry is only visible to the user group **Installer.** |
| | Set system time... | Opens the dialog box **System time** |
| | | Use this dialog box to set the system time. |
| | Repeat establishment of connection | Enables retry of setting up a connection to the system devices following an interruption |
| Tools | Export data... | Opens the dialog box **Data export** |
| | | Here you can export the data of your devices. |
| | Export battery data... | Opens the dialog box **Export battery data** |
| | | Here you can export the data of your battery. |
| | | This entry is only visible to the user group **Installer.** |
| | Device update... | Opens the dialog box **Device update** |
| | | This enables you to update the devices of your system. |
| | Delete local yield data storage | Opens the dialog box **Delete local yield data storage** |
| | | You can delete the yield data stored locally here. |
| Help | Contents... | Opens the Sunny Explorer help |
| | Create report... | Enables you to create an error report |
| | Licensing agreements | Opens the Sunny Explorer licensing agreements in a separate dialog box |
| | Info | Opens a small dialog box containing information on the currently installed software version of Sunny Explorer |

## 5.2  Icon Bar

| Symbol | Designation | Meaning |
|---|---|---|
|  | Device overview | Opens the system view with the system tree and the device menu |
| | | The button is only displayed if the communication type *Bluetooth* has been selected. |
|  | Network topology | Opens the topological display of all SMA *Bluetooth* devices in the system |
| | | The button is only displayed if the communication type *Bluetooth* has been selected. |
|  | Settings | Opens the Sunny Explorer settings |
| | | Alternatively, you can access the settings via the tab **Settings** in the device menu. |
|  | Help | Opens the Sunny Explorer help |

## 5.3  System Tree

From the point of view of system communication, a system consists of several devices that are connected to one another via the same type of communication (*Bluetooth* or Speedwire).

The logical system structure is represented by the system tree in Sunny Explorer. In addition, all devices in a system (including Sunny Explorer) are displayed underneath the system (A).

### System Tree in Sunny Explorer

The system view is displayed if you select your system (A) in the system tree. If you select an individual device (B), the device view for this device will be displayed.

## 5.4  Device Menu

The device menu shows the setting options and spot values of the system or an individual device. The individual device must first be selected in the system tree. The tabs adapt to the selection accordingly.

| Tab | Explanation |
|---|---|
| Overview | Displays the most important information on the system selected in the system tree or the selected device |
| | In addition to the actual status display, this page also contains a brief overview of the most important data. |
| Spot Values | Displays current data on the system or the selected device, depending on the particular user group |
| Settings | Allows you to view and configure various parameters, depending on the user group |
| Events | Displays the events that have occurred in a device |
| | The events displayed are dependent on the user group. |

## 5.4.1 Overview

**Device View**

When a device has been selected in the system tree, the tab **Overview** displays the status and a summary of the most important values for that device. For Sunny Boy inverters of type Smart Energy, the status and most important values of the battery are also displayed.

| Symbol | Status | Explanation |
|---|---|---|
| | Neutral | The status of the device/battery is currently being updated. |
| | OK | The device/battery is operational and in perfect working order. |
| | Warning | The device/battery is not operating properly. It may be possible to remedy the error automatically. |
| | Error | Device/battery is in error status. A problem has occurred. Check the device/battery. |
| | Communication error | The device is currently not able to communicate. This may happen at night, for example, when the inverter is not feeding in. |
| | No grid feed-in | The device is operational, but is currently not feeding any energy into the utility grid. |

**Battery Temperature Symbols**

| Symbol | Status | Explanation |
|--------|--------|-------------|
| 🟢 | Battery temperature normal | Battery temperature is within the permitted range. |
| 🟠 | Battery temperature high | Battery temperature is in a critical range. The battery function may be impaired. |
| 🔴 | Battery temperature too high | Maximum permissible battery temperature has been exceeded. The battery has been shut down because the maximum permissible battery temperature has been exceeded. |

## System View

If the system is selected in the system tree, the tab **Overview** displays a summary of the status of the most important values for the entire system.

The system status is shown by the icon in the system tree and on the tab **Overview**. If one or more devices in the system have the status **Warning** or **Error**, the system status will be adjusted correspondingly.

| Symbol | Status | Explanation |
|--------|--------|-------------|
|  | Neutral | The status of the system is unknown and is currently being updated. |
|  | OK | All system devices are operating without error. |
|  | Warning | At least one device in the system has the status **Warning.** No device is displaying the **Error** status. |
|  | Error | At least one device in the system is displaying the **Error** status**.** |

**Diagrams for Yield and Power Values**

The yield and power values are also displayed as diagrams in the device and system views. There are four diagrams that can be accessed via the following tabs:

| Tabs | Explanation |
|------|-------------|
| Day | Displays the total power over the course of one day |
| Month | Displays the total daily yield over the course of one month |
| Year | Displays the total monthly yield over the course of one year |
| Total | Displays the total annual yield over the course of the last ten years |

**Detailed Information in the Month, Year and Total Tabs**

If you move the mouse over the diagram in the **Month**, **Year** and **Total** tabs, additional information is displayed.

Using the arrows below the diagram, you can navigate to the next time period. You can use the calendar symbol to select a time period directly.

**Daily Diagram for Battery State of Charge**

For Sunny Boy inverters of type Smart Energy, an additional daily diagram for battery state of charge is displayed.

If you move the mouse over the diagram, additional details are displayed.

Scroll down to the next time period using the arrows below the diagram. You can use the calendar symbol to select a time period directly. You can have the battery state of charge displayed for the last 31 days.

## 5.4.2   Spot Values

The tab **Spot Values** displays all the measured values of the device or system selected in the system tree. Which values are displayed depends on the particular user group. All values are collected into groups (parameter groups) and subgroups.

**Device View**

If you have selected a device in the system tree, the tab **Spot Values** displays the values for that particular device.

**System View**

If you have selected the system in the system tree, the tab **Spot Values** displays the values for entire device classes. If you click on the parameter group, the device classes are displayed separately (e.g., PV inverters and communication products).

Certain values from the individual devices in a device class are aggregated (e.g., total power (A)).

Figure 2:    Sum of inverter power when the system view is selected (example)

Depending on the type of value, a meaningful aggregate for the device class is displayed:

| Symbol | Explanation |
|---|---|
| Σ | Total |
| Ø | Average value |
| e.g. 20°C to 50°C | Smallest and greatest value |

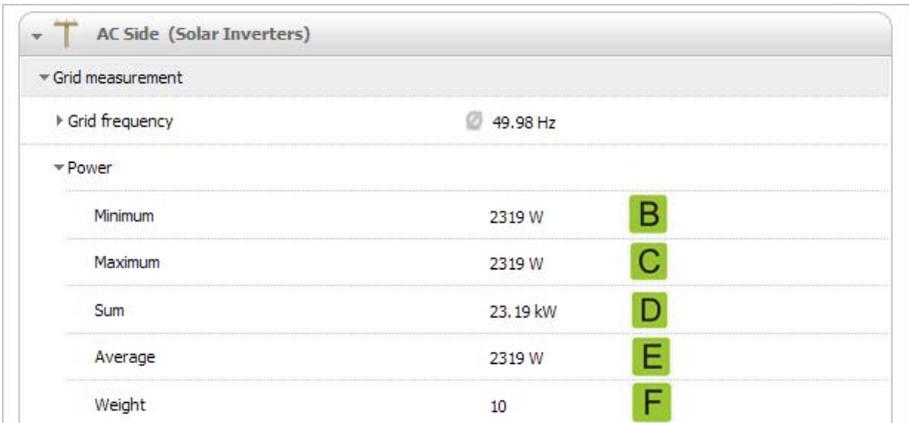The aggregate value can be expanded to reveal additional information.



Figure 3:    Further Information on the **Power** value (example)

| Item | Explanation |
|---|---|
| B | Lowest power value of the ten devices |
| C | Highest power value of the ten devices |
| D | Sum of power values of the ten devices |
| E | Mean power value for the ten devices |
| F | Number of devices in the device class |

## 5.4.3 Settings

The tab **Settings** displays all parameters of the device selected in the system tree or the selected system. Which parameters are displayed depends on the particular user group. All parameters are summarized in groups (parameter groups) and subgroups.

### Device View

If a device is selected in the system tree, you can modify the parameters of that device under the tab **Settings** (see Section 6.6 "Changing Parameters", page 34).

### System View

If you have selected the system in the system tree, you can modify the parameters for an entire device class under the tab **Settings** (see Section 6.6 "Changing Parameters", page 34). All devices in the device class are set to the new parameter value. If you click on the parameter group, the device classes are displayed separately (e.g., PV inverters and communication products).

If different values are set for devices in the same device class, this is indicated in editing mode by an empty field (A).

The different options are shown in drop-down lists. The number of devices set to each option is shown in brackets (see (B) and (C)). By selecting and saving an option, all devices in this device class will be set to this value.
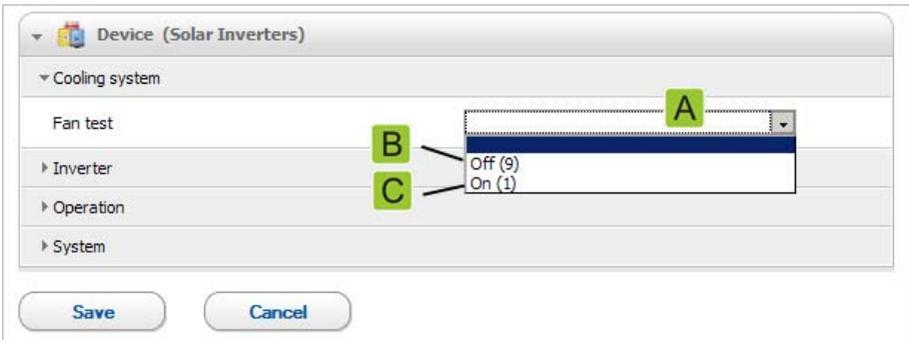


Figure 4:     Drop-down list **Fan test** (example)

With text fields, an empty field will appear in which you must enter the new value for all devices.

## 5.4.4   Events

Sunny Explorer can display the events which have occurred in individual devices. Sunny Explorer retrieves the event list directly from the devices.
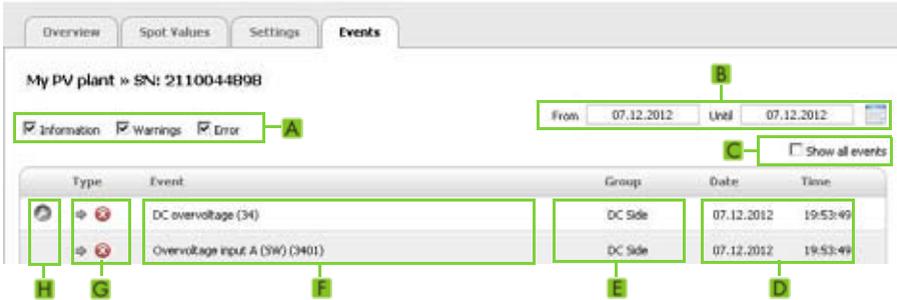


Figure 5:    Tab **Events** (example)

| Item | Explanation |
|------|-------------|
| A | Filter for the event types |
| B | Filter for the time period of the events displayed |
| C | Selection field for displaying all events |
| D | Date and time at which the event occurred |
| E | Group of the relevant parameter (parameter group) |
| F | Event in plain text and event number in brackets |
| G | Type of event |
| H | Priority of event |

### Event Types

There are three event types which Sunny Explorer displays using symbols.

- Information
- Warning
- Error

### Symbols and Meaning of Event Types

Events can adopt three different statuses:

- Incoming: the event has occurred.
- In progress: the event has existed for some time and could not yet be automatically remedied.
- Outgoing: the event has come to an end.

| Symbol | Explanation |
|--------|-------------|
| ⊗ | Fault persists |
| ⇨ ⊗ | Incoming error |
| ⊗ ⇨ | Outgoing error |
| ⚠ | Warning |
| ⇨ ⚠ | Incoming warning |
| ⚠ ⇨ | Outgoing warning |
| ⓘ | Information |
| ⇨ ⓘ | Incoming information |
| ⓘ ⇨ | Outgoing information |

Priority of Events

| Symbol | Explanation |
|--------|-------------|
|  | This type of event can only be remedied on the device through intervention by the installer. |
|  | Contact your installer and provide the device serial number and the event number. |
|  | Contact the SMA Service Line and provide the serial number of the device and the event number (see Section 11 "Contact", page 56). |

## 5.5  Symbols

### Symbols for Access Rights

Each device is depicted in the system tree with a symbol for the access right. If no symbol is displayed behind a device, you have access rights to the device according to your user group.

| Symbol | Explanation |
|--------|-------------|
| 🔒 | You do not have access to the device. The device password differs from the current system password. |
| 🔧 | You are authorized to change SMA Grid Guard parameters. |

## Symbols for Device Replacement of SMA Micro Inverters

Symbols for device replacement of SMA micro inverters are displayed in the system tree and on the overview page of the device.

| Symbol | Explanation |
|--------|-------------|
| 🗑 | Function for deleting devices |
| ↺ | Function for replacing devices |

## Device Symbols

Device symbols are displayed in the system tree and on the overview page of the device.

| Symbol | Explanation |
|--------|-------------|
|  | Device, e.g. Sunny Boy inverter |
|  | Device, e.g. Sunny Boy inverter of type Smart Energy |
|  | Battery of Sunny Boy inverter of type Smart Energy |
|  | Device, e.g. Sunny Tripower inverter |
|  | Device, e.g. Sunny Multigate |
|  | Device, e.g. Sunny Boy micro inverter |
|  | Unknown inverter |
|  | Device, e.g. Sunny SensorBox |

## Group Symbols for Spot Values and Settings

Group symbols are used for the separate parameter groups.

| Symbol | Meaning |
| --- | --- |
| | **Status** |
| | General values describing the status of the devices |
| | The status of other components in the device (e.g., modems) is not listed here. |
| | **Type label** |
| | All values describing the devices |
| | **Device** |
| | Values which apply directly to the device and which do not fall into any of the special categories (e.g., DC side, AC side, system communication, etc.) |
| | **User rights** |
| | All values affecting access protection to the devices |
| | **DC side** |
| | Values affecting the direct-current side of the devices (e.g. PV modules) |
| | **AC side** |
| | Values affecting the grid side of the devices |
| | **Grid monitoring** |
| | Parameters affecting the utility grid and partially protected by the personal SMA Grid Guard code |
| | **Grid connection** |
| | Parameters affecting the grid connection of the devices |
| | **System and device control** |
| | Parameters for devices which must fulfill special requirements for grid feed-in at the medium voltage level |
| | These parameters are protected by the personal SMA Grid Guard code. |
| | **System communication** |
| | All values defining communication between communication devices and the system |
| | **Data recording** |
| | All values affecting device data recording (storage location, storage intervals, storage format) |
| | **Device components** |
| | Parameters and measured values relating to the components of a device |
| | This group is a kind of "expanded type label". For example, it files the version numbers of the system components. |

| Symbol | Meaning |
|---|---|
| | **Meteorology**<br>All measured values of the connected sensors (e.g., temperature, irradiation, wind speed) |
| | **Energy management**<br>Parameters affecting energy management |
| | **Battery**<br>All values affecting the battery of the device |
| | **Diesel generator**<br>All values affecting the connected diesel generator |
| | **External communication**<br>All values affecting the communication between the devices and external systems such as Sunny Portal |

## Other Symbols

| Symbol | Meaning |
|---|---|
| | *Bluetooth* system |
| | *Bluetooth* device with NetID 1 |
| | Speedwire system |
| | Indicates that values are being saved in a device |
| | Indicates an average value |
| | Indicates aggregated values |
| | Indicates a maximum value |
| | Indicates a minimum value |
| | Indicates that values are being read out from the device or a function such as the removal of a micro inverter is being performed |
| | Indicates when values are more than ten minutes old |
| | Opens a calendar for selecting a date or a start and end date. |

# 6 Basic Functions

## 6.1 Changing the Language

**Requirement:**

☐ For the correct display of Korean characters, the appropriate language pack must be installed on the operating system of the computer (for information on the installation of language packs see operating system help).

**Procedure:**

1. Select **Options > Language** in the menu bar.
2. Select the desired language.

## 6.2 Opening an Existing System

Your settings for a particular system are stored in a system file on your computer. If you have already created a system in Sunny Explorer and filed it on your computer, you can reload it.

**Procedure:**

1. Start Sunny Explorer.
2. Select **Open an existing system** in the system assistant.

    **or**

    In the menu bar, select **File > Open**.
3. Select the desired system file and select [**Next**].

    ☑ The login dialog opens.
4. In the drop-down list **User group**, select the user group with which you wish to log in.
5. In the field **System password**, enter the appropriate password for the user group you have selected.
6. Select [**Next**].

☑ The selected system is open in the selected user group.

## 6.3  Changing the System Name

The system name is assigned via the settings in Sunny Explorer. The system name is identical for all user groups.

**Procedure:**

1. Select **Sunny Explorer** in the system tree and the tab **Settings** in the device menu.

    **or**

    Click the button  in the toolbar.

2. Select the parameter group **Type Label**.

3. Select [**Edit**].

4. In the field **System name**, enter a freely selectable name for your system.

5. Select [**Save**].

☑ The system name is changed and displayed in the system tree.

## 6.4  Changing the System Time

The date and time of a system constitute the system time.

When commissioning your system with a communication product (e.g., Sunny Explorer), the devices of the system automatically assume the system time of the communication product. If additional communication products are added to the system, the new communication products automatically adopt the existing system time. Thus, all devices in the system are set to the same system time.

You will only need to change the system time in Sunny Explorer if it is not correct. If you change the system time in a communication product, all inverters will immediately adopt the new system time. Any further communication products in the system will adopt the system time only after some time has elapsed (max. seven hours later).

**Procedure:**

1. In the menu bar, select **Options > Set system time**.

    ☑ The dialog box **System time** opens.

2. To adopt the operating system time on your computer as the system time, select [**Apply operating system time**] and then [**OK**].

3. To set the system time manually, proceed as follows:

    • Select the current date in the field **Date**.

    • Select the current time in the field **Time**.

    • In the drop-down list **Time zone**, select the time zone in which the system is located.

4. Select [**OK**].

☑ The system time is set.

## 6.5  Summer/winter time adjustment

1. Select the system in the system tree.
2. Select the tab **Settings** in the device menu.

   ☑ The parameter groups for the entire system are displayed.
3. Select the parameter group **Device (communication products)**.
4. Select [**Edit**].
5. In the drop-down list **Standard/Daylight Saving Time conversion on** choose the favoured entry.
6. Select [**Save**].

☑ The Summer/winter time change over is adjusted

## 6.6  Changing Parameters

[ i ] **No configuration of inverters with integrated web server**

Sunny Explorer does not support the configuration of inverters with integrated web server and with their own user interface (e.g. Sunny Boy 1.5/2.5). It is possible to detect these inverters via Sunny Explorer, however, it is expressly not recommended to use Sunny Explorer for the configuration of these inverters. SMA Solar Technology AG does not accept liability for missing or incorrect data and possibly resulting yield losses.

### Changing the Parameters of an Individual Device

1. Select the device in the system tree.
2. Select the tab **Settings** in the device menu.

   ☑ The existing parameter groups for the device are displayed.
3. Select the parameter group that contains the required parameter. Note that it may take a moment to read off the values since they are retrieved directly from the device.
4. Select [**Edit**].
5. Change the desired parameter.
6. Select [**Save**].

☑ The device parameter is set.

[ i ] **Saving after parameter changes**

The saving process is indicated by an hourglass. After the changes have been saved in Sunny Explorer, the data is transmitted to the device. The saving process can sometimes take several hours if the device (e.g., an inverter) is in night mode. When the device starts up, the data is transmitted to the main drive and the hourglass disappears.

**Changing the Parameters for a Device Class**

You can configure all the devices in a device class simultaneously. However, it is not possible to configure different device classes at the same time. Save the changes made to one device class before processing another device class.

**Procedure:**

1. Select the system in the system tree.
2. Select the tab **Settings** in the device menu.
   - ☑ The parameter groups for the entire system are displayed.
3. Select the parameter group that contains the parameter to be configured.
   - ☑ The individual device classes are listed. It may take a moment for all the data to be read out from the devices.
4. Select [**Edit**] below the relevant device class.
5. Change the desired parameters.
6. Select [**Save**].
   - ☑ The settings will be applied to all devices in the device class.
- ☑ The parameters for a device class have been set.

## 6.7  Device Replacement of Micro Inverters

### 6.7.1  Removing a Micro Inverter

**⚠ QUALIFIED PERSON**

If a micro inverter is permanently removed from a PV system, e.g. in the event of a device defect or the installation of another PV system, the assignment of the micro inverter must be deleted from the memory of the Sunny Multigate. It is not possible to transfer parameters or data.

**Requirements:**

- ☐ The micro inverter must have been deleted from the PV system.
- ☐ You must be logged into Sunny Explorer with the user group **Installer**.

**Procedure:**

1. In the system tree, select the micro inverter to be deleted.
2. In the system tree
   **or**
   on the overview page, select 🗑.
3. Confirm the security prompt.
- ☑ The micro inverter has been permanently removed from the Sunny Multigate and from the system in Sunny Explorer.

## 6.7.2   Replacing a Micro Inverter

⚠ **QUALIFIED PERSON**

If a micro inverter is to be removed from a Sunny Multigate in the PV system and replaced with a new micro inverter, the old micro inverter should be deleted from the memory of the Sunny Multigate. However, it is possible to transfer the parameters and data of the old micro inverter to the new micro inverter.

**Requirements:**

☐ The micro inverters must have been exchanged in the PV system.

☐ The new micro inverter must be correctly installed and ready for operation.

☐ The new micro inverter must not feed into the utility grid until the device replacement process is completed in Sunny Explorer.

☐ You must be logged into Sunny Explorer in the user group **Installer**.

☐ The new micro inverter must be displayed in the system tree in Sunny Explorer.

**Procedure:**

1. Select the old micro inverter in the system tree.

2. If the parameters and data of the old micro inverter are not to be adopted, delete the old micro inverter immediately (see Section 6.7.1, page 35).

3. In the system tree
   **or**
   on the overview page, select ⟲.
   ☑ The dialog box **Device replacement** opens.

4. In the replaceable devices list, select the newly added micro inverter.

5. Select [**Replace**].

☑ The removed micro inverter is deleted in Sunny Multigate and the inverter data is transferred to the newly added micro inverter.

## 6.7.3   Device Conflict

> ⚠ **QUALIFIED PERSON**

A device conflict occurs when a micro inverter is removed from a Sunny Multigate and connected to a different Sunny Multigate within the same system. In this case, the old Sunny Multigate retains the allocation of the micro inverter and the micro inverter is allocated to two Sunny Multigates. The old allocation must be deleted in Sunny Explorer. It is not possible to transfer parameters or data.

**Requirement:**

☐  You must be logged into Sunny Explorer in the user group **Installer**.

**Procedure:**

1.  In the system tree, select the micro inverter to be deleted in the old Sunny Multigate.
2.  Select 🗑.
3.  Confirm the security prompt.
☑  The removed micro inverter is deleted in the old Sunny Multigate and the inverter data is deleted.
4.  Restart Sunny Explorer and log in again.
☑  In the system tree, the micro inverter is assigned to the Sunny Multigate to which it is connected.

## 6.8   Changing the Device Name

1.  Select the relevant device in the **System tree**.
2.  Select the tab **Settings** in the device menu.
3.  Select the parameter group **Type Label**.
4.  Select [**Edit**].
5.  Enter the desired name in the field **Device name**. Remember that the maximum permitted number of characters is 24.
6.  Select [**Save**].
☑  The new name is saved in the device.

## 6.9  Network Topology

The network topology in Sunny Explorer is a schematic overview of the SMA *Bluetooth* devices and the connections within the system. In the event of connection problems, you can use the network topology to display and check the connection quality of each connection. Poor connection quality can be improved by changing the location of individual devices or by using repeaters.

The network topology can only be displayed for *Bluetooth* systems with a minimum of two SMA *Bluetooth* devices and Sunny Explorer.

**Procedure:**

- To open the network topology of the *Bluetooth* system, select  in the icon bar.
  - ☑ The *Bluetooth* network topology opens.
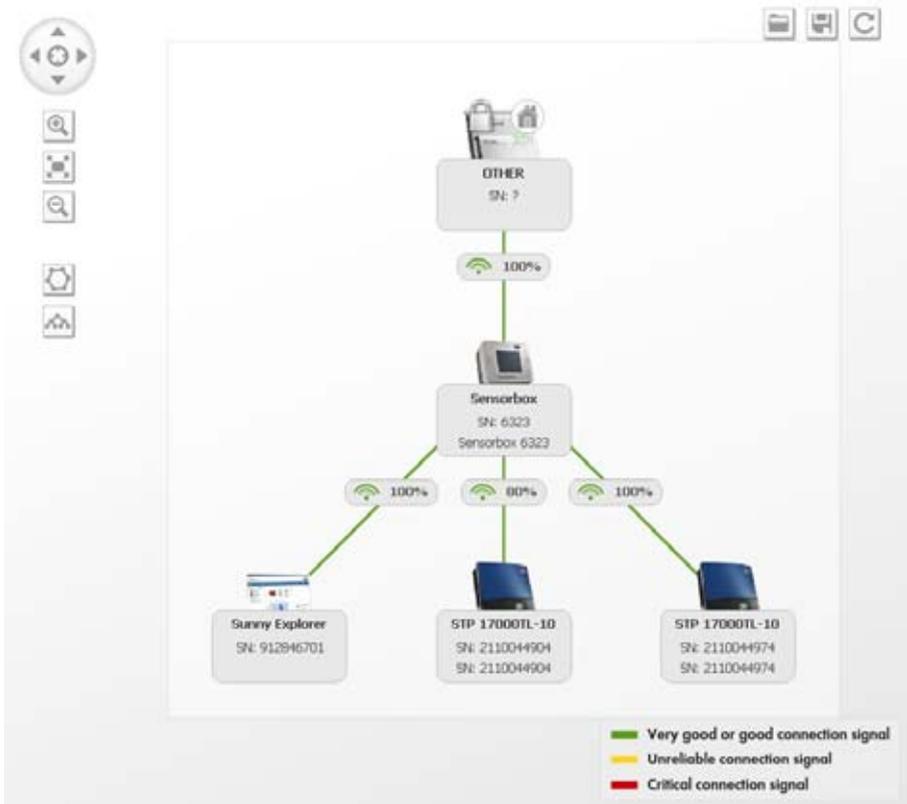


Figure 6:    *Bluetooth* network topology (example)

## Symbols

| Symbol | Meaning |
|---|---|
| | **Network topology navigation element** |
| | By clicking on the appropriate arrow buttons, you can move the view up, down, left and right, or to the home position. |
| | **Zoom in** |
| | Enlarges the view of the network topology |
| | **Zoom standard size** |
| | Sets the view of the network topology to standard size |
| | **Zoom out** |
| | Reduces the view of the network topology |
| | **Display the system as a ring structure** |
| | Displays the network topology as a ring structure |
| | **Display the system as a tree structure** |
| | Displays the network topology as a tree structure |
| | **Open system topology** |
| | Opens the previously saved device allocation of the network topology |
| | **Save system topology** |
| | Saves the current device allocation of the network topology |
| | **Refresh system data** |
| | Updates the system data of the network topology |
| | **Root node** |
| | Displays the root node of the *Bluetooth* network |
| | Each time the *Bluetooth* network reforms, the root node can be a different device. The root node is always the device that initiates the formation of the entire *Bluetooth* network. |

## 6.10 Updating Devices

**⚠ QUALIFIED PERSON**

**Requirement:**

☐ You must be logged into Sunny Explorer in the user group **Installer**.

**Procedure:**

1. Download the update file in the download area of www.SMA-Solar.com and save it to your computer.

2. In the menu bar of Sunny Explorer, select **Tools > Device update**.

   ☑ The dialog box **Device update** opens.

3. Select the button [**...**] in the field **Update file**.

   ☑ The file selection window opens.

4. Select update file.

5. Select [**Open**].

   ☑ Sunny Explorer indicates that the update file has been saved successfully and displays information on the update file.

6. Select [**Next**].

   ☑ The dialog box **Device update** opens. The update starts.

   **ℹ Duration of the update process**

   The update can sometimes take several hours if the device to be updated is in night mode.

☑ The update has been transferred to the devices.

# 7    Additional Functions

## 7.1    Creating a Report

You can create a report that can be used by the SMA Service Line as the basis for further troubleshooting. The report file is stored in ZIP format in the selected directory on your computer, and contains information about your PV system. No access data is stored in the report.

**Procedure:**

1.  In the menu bar, select **Help > Create a report**.

    ☑ The dialog box **Create a report** opens.

2.  In the field **Save in**, select the required target directory with the button [**...**].

3.  Enter a precise description of the error or your comments in the field **Comment**.

4.  To add the entire object database to the report file, select the option **Export whole object database**.

5.  Select [**OK**].

☑ The report file is stored in the selected target directory.

## 7.2    Exporting Battery Data

You can export the battery data of the Sunny Boy Smart Energy. The export of battery data facilitates support by the SMA Service Line in case of servicing. The file is saved in ZIP format to the target directory on your computer and contains information on the battery, e.g. battery temperature or battery state of charge. The file is password-protected. No access data is stored in the file.

**Requirement:**

☐ You must be logged into Sunny Explorer in the user group **Installer**.

**Procedure:**

1.  In the menu bar select **Tools > Export battery data**.

    ☑ The dialog box **Export battery data** opens.

2.  In the area **Configuration**, select the button [**...**].

    ☑ The dialog box **Save as** opens.

3.  Select the required battery data and the target directory.

4.  If necessary, change the file name of the battery data file and select [**Save**].

5.  In the dialog box **Export battery data**, select [**Next**].

☑ The battery data file is stored in the selected target directory.

## 7.3 Saving System Data on the Computer

With Sunny Explorer, you can save system yields and events on your computer. The data is saved in CSV files. The CSV files can be opened in Microsoft Excel and the data can be used e.g. to create diagrams.

> **ℹ️ Existing files with system data will be overwritten**
>
> If the selected directory already contains files with system data, Sunny Explorer will overwrite the files. This ensures that the data in the files is always complete and up-to-date.

### File Name

The file name is composed of the system name and the date on which the device data was generated.

The file name of the event files also includes the user group. Sunny Explorer only stores events in the event file that can be viewed by the respective user group.

| File | File name structure | Example |
|---|---|---|
| Daily file | *Systemname-YYYYMMDD*.csv | MySystem-20091017.csv |
| Monthly file | *Systemname-YYYYMM*.csv | MySystem-200910.csv |
| Event file | For the user group Installer: | |
| | *Systemname*-Installer-Events-*YYYYMMDD-YYYYMMDD*.csv | MySystem-Installer-Events-20091017-20091018.csv |
| | For the user group User: | |
| | *Systemname*-User-Events-*YYYYMMDD-YYYYMMDD*.csv | MySystem-User-Events-20091017-20091018.csv |

### File Structure

The table below describes the CSV file columns in Microsoft Excel.

| | | | |
|---|---|---|---|
| 1 | Information on the CSV file for the programs | | |
| 2 | Empty line | | |
| 3 | | Name of device 1 (serial number or changed name) | Name of device 2 (serial number or changed name) |
| 4 | | Model of device 1 | Model of device 2 |
| 5 | | Serial number of device 1 | Serial number of device 2 |
| 6 | | Name of the values | Name of the values |
| 7 | Date and time format | Value unit | Value unit |
| 8 | Time (date and time) when the device generated the value. | Value for device 1 | Value for device 2 |
| 9 | ... | ... | ... |

**Procedure:**

1. In the menu bar select **Tools > Export data**.
   - ☑ The dialog box **Data export** opens.
2. Select the files you wish to save. You have the following options:

| Selection | Generated file | Meaning |
|---|---|---|
| Daily files | Daily file with the total yield of the system | A file is saved for each day in the selected time frame. |
| | | The file contains the total yield of the system which is saved every five minutes from the inverters. |
| Monthly files* | Monthly file with daily yields of the system | A file is saved for each month in the selected time frame. |
| | | The file contains the daily yields of the system. |
| Events | File with system events | A file is saved that contains the system events for each day in the selected time frame. |

\* When you set the time period for monthly files, Sunny Explorer always rounds off the time period to the full month (start to end of the month). Inverters only save the yield data for a limited time. Daily and monthly files can only be saved for the time period for which the yield data of the inverter is available.

3. In the fields **from** and **to**, select the time period for which the data is to be captured.
4. In the field **Directory**, select the required target directory with the button [**...**].
5. Select [**Next**].
   - ☑ Sunny Explorer reads the data from the devices and generates the files.
6. Select [**Next**].
- ☑ The system data is saved on the computer.

# 8    User Groups and Safety Concept

## 8.1    Basics

SMA Solar Technology provides a comprehensive safety concept that protects your system from unauthorized access.

- System protection by means of a system password for each user group (**User/Installer**)
- Controlled access via SMA Grid Guard

SMA Solar Technology AG makes a general distinction between the two user groups: **User** and **Installer**. Installers can adjust additional settings on devices after entering the SMA Grid Guard code. The user groups have the following rights:

| User group | Right |
|---|---|
| User | This user group allows the user to read out all display-relevant information, such as spot values and parameter settings. Settings that affect functionality cannot be modified. |
| | The user can choose any system password for the user group **User**. |
| Installer | In addition to the rights available to users, this user group is also authorized to set or change system parameters that affect functionality. |
| | Furthermore, this user group is authorized to reset the user system password, and to adapt additional settings to devices after entering the SMA Grid Guard code. |

## 8.2    Changing the User Group

1. In the menu bar, select **Options > Change user group**.
   - ☑ The login dialog opens.
2. In the drop-down list **User group**, select the user group with which you wish to log in.
3. In the field **System password**, enter the appropriate password for the user group you have selected.
4. Select [**Next**].
- ☑ The user group has been changed.

## 8.3  System Password

The system password for the respective user group is the same for all devices in a system. After logging in with the system password (**User**/**Installer**), you will be able to perform configurations on several devices of your system at the same time. If the device password is not the same as the system password, for example, when adding a new device to an existing system, the device is depicted with a padlock in the system tree.

---

| **NOTICE** |
| --- |

**Damage due to unauthorized access to your system**

The system password protects your system from unauthorized access and the associated risks.

- After initial login to a new system, change the default password for both user groups (**User**/**Installer**).

---

☐ **System password at delivery**

All devices are delivered with the user password 0000 and the installer password 1111.

### Changing the System Password

In order to ensure full password protection, you must determine a system password for each user group (**User**/**Installer**). Change the default system password after initial start-up.

**Permitted characters and length of password**

☐ Maximum number of characters: 12.

☐ Permissible special characters: ? _ ! - .

**Requirement:**

☐ The requirements for a secure password must be taken into account (see Section 8.6 "Strength of Passwords", page 48).

**Procedure:**

1. Select the system in the system tree.
2. Select the tab **Settings** in the device menu.
3. Select the parameter group **User Rights (All Devices)**.
4. Select [**Edit**].
5. Change the password.
6. Select [**Save**].

☑ The system password will be changed for all devices in the system for which you have rights.

### Adjusting the Password of a Device to the System Password

If the password of a device is different from the system password, the device will be displayed with a padlock in the system tree. This may occur, for example, when a new device is added to an existing system.

**Procedure:**

1. Create a new system in Sunny Explorer and log in with the system password of the new device. You can delete the new system later and use your usual system in Sunny Explorer.

2. Select the new system in the system tree.

3. Select the tab **Settings** in the device menu.

4. Select the parameter group **User Rights (All Devices)**.

   ☑ The parameter group opens.

5. Enter the system password of your existing system for the corresponding user group. If you are logged in as **Installer**, you can also change the password for the user group **User** providing that you know that password.

6. Select [**Save**].

   ☑ The settings are saved to the new devices.

7. Open your existing system in Sunny Explorer and log in using the system password of your system.

☑ The device is displayed in the system tree without a padlock. The device password is set to the system password.

## 8.4  Forgot Password?

If you have forgotten your system password, you can unlock the inverters by means of a Personal Unlocking Key (PUK). For every inverter, there is one PUK per user group (**User** and **Installer**).

**Requesting a PUK**

1. Download the PUK application form (application form available at www.SMA-Solar.com).

2. Complete the application form and sign it.

3. Send the application form to the SMA Service Line by e-mail, fax or mail (see Section 11 "Contact", page 56).

☑ The SMA Service Line will check your application and send you the requested PUKs.

**Unlocking the Inverter using a PUK**

| i | **Unlocking several inverters using a PUK**

   Each PUK can only be used for one inverter and one user group.

   • If you have requested PUKs for several inverters, you must unlock each inverter individually with the corresponding PUK.

| i | **Only unlock the inverter if there is a connection between Sunny Explorer and the inverter.**

   • Do not unlock the inverter with a PUK if the inverter is in night mode.

**Procedure:**

1. In the drop-down list **User group**, select the user group for which the PUK was generated by the SMA Service Line.

2. Enter the PUK in the field **System password**.

3. Select [**Next>**].

   ☑ Sunny Explorer displays the inverter in the system tree without a padlock icon.

4. Change the inverter password:

   – Select the inverter in the system tree.

   – Select the tab **Settings**.

   – Select the parameter group **User Rights > Access Control**.

   – Select [**Edit**].

   – Assign password for relevant user group.

5. To unlock further inverters with a PUK, select **Options > Change user group**.

6. Assign a new system password (see Section  "Changing the System Password", page 45).

# 8.5  SMA Grid Guard

⚠ **QUALIFIED PERSON**

SMA Grid Guard is a security concept for country-specific settings in the inverter which determine the grid behavior within a utility grid. These settings (SMA Grid Guard parameters) are dependent on the country standard configured in the inverter and can only be configured with the SMA Grid Guard code.

In order to change SMA Grid Guard parameters, you will not only need to be logged in as **Installer**, but you will also need your personal SMA Grid Guard code which can be obtained from SMA Solar Technology AG. You can find the relevant application from the download area at www.SMA-Solar.com.

### Entering the SMA Grid Guard Code

⚠ **DANGER**

**Lethal electric shock as a result of changing the internal safety specifications of the inverter**

Unauthorized changes to the SMA Grid Guard parameters void the operating license.

• Do not change any SMA Grid Guard parameters unless you have the express permission of the grid operator.

**Requirement:**

☐ You must be logged into Sunny Explorer in the user group **Installer**.

**Procedure:**

1.  Select **Options > SMA Grid Guard**® in the menu bar.
    - ☑ The dialog box **SMA Grid Guard** opens.
2.  Enter the SMA Grid Guard code in the field **Individual access code**.
3.  Select [**Next**].
- ☑ The SMA Grid Guard code is set.
- ☑ The devices that can be processed in SMA Grid Guard mode are identified with the SMA Grid Guard symbol: 

**Exiting the SMA Grid Guard Mode**

To exit SMA Grid Guard mode, you must close Sunny Explorer.

**Procedure:**

- In the menu bar, select **File > Exit.**
    - ☑ This quits Sunny Explorer.

## 8.6  Strength of Passwords

Check the quality of your password, and change it if necessary. To increase the security of your password, note the following when selecting a password:

- Use passwords with a minimum length of eight characters. The longer the password, the more secure it is. A maximum of twelve characters is possible. Blank passwords are not permitted.
- Do not use names or common words (e.g. "dog", "cat", "house").
- Avoid using words that have any personal relevance to you (e.g. names of persons or pets, personal or identification numbers, car registration plates, etc.).
- Do not repeat names or words (e.g. "househouse" or "catcat").
- Use a combination of upper and lower case letters, special characters and numbers. The following special characters are permitted: ? _ ! - .
- Do not use number and letter combinations following the keyboard arrangement (e.g., "12345", "qwert").

# 9 Uninstall Procedure

## Uninstalling Sunny Explorer in Windows XP

1. In Windows, select **Start > Settings > Control Panel > Software**.
2. Select Sunny Explorer from the list of installed programs and select [**Remove**].
   ☑ Sunny Explorer will be uninstalled from your computer.

☑ Sunny Explorer is uninstalled.

## Uninstalling Sunny Explorer in Windows Vista or Windows 7

1. In Windows, select **Start > Computer**.
   ☑ The dialog box **My computer/Computer** opens.
2. Select **Uninstall or change a program**.
   ☑ The dialog box **Uninstall or change program** opens.
3. Select Sunny Explorer from the list of installed programs and select [**Uninstall/Change**].
   ☑ Sunny Explorer will be uninstalled from your computer.

☑ Sunny Explorer is uninstalled.

# 10 Troubleshooting

## *Bluetooth* Connection

| Problem | Cause and corrective measures |
|---|---|
| **System search**<br><br>Connection to the *Bluetooth* system failed. | • Connection to the *Bluetooth* system is too weak.<br>  – Reduce the distance to the devices and try to reconnect.<br>• There are already four masters connected to the *Bluetooth* system.<br>  – **⚠ QUALIFIED PERSON**<br>     Remove one master and try to reconnect.<br>• There are already two nodes connected to the device through which you wish to connect to the *Bluetooth* system.<br>  – **⚠ QUALIFIED PERSON**<br>     Select another device or remove another communication device, and try to reconnect. |
| **System search**<br><br>The displayed device names and NetIDs are not up-to-date. | • Depending on the *Bluetooth* stack used, it is possible that changes to the NetID or the device name are not correctly recognized by an inverter.<br>Proceed as follows:<br>1. Close the *Bluetooth* stick software, if applicable.<br>2. Briefly remove and reinsert the *Bluetooth* stick.<br>3. If necessary, restart the *Bluetooth* stick software.<br>4. Repeat the system search in Sunny Explorer. |
| **System search**<br><br>The device address is displayed, but the device name is not displayed. | • Sunny Explorer has not finished reading the device name from the device.<br>  – Repeat system search so that Sunny Explorer updates the device name. |
| **Inverter is not accessible**<br><br>After setting parameters for communication via *Bluetooth*, the inverter cannot be accessed for an extended period. | • When setting parameters that regulate the *Bluetooth* connection (e.g. parameters for the transmission power and country parameters), communication via *Bluetooth* is interrupted for some time because the inverter is carrying out a restart of the communication interface.<br>  – Wait until the inverter has completed its restart. The inverter will then be accessible again. |

## Speedwire Connection

| Problem | Cause and corrective measures |
|---|---|
| **System search**<br><br>No Speedwire system found | • The network connection to the Speedwire system is interrupted.<br>   – ⚠ **QUALIFIED PERSON**<br>     Check the network connection between the computer and your Speedwire system.<br>   – Ensure that your network is only using components (e.g. network switches) that support IP Multicast.<br>• The network connection is deactivated.<br>   – Activate the network connection on your computer.<br>• The network connection has been incorrectly configured.<br>   – Configure the network connection so that the computer is in the same subnet as the Speedwire devices. Contact your network administrator if you require assistance. |
| **System search**<br><br>Connection to the Speedwire system has failed. | • The network configuration has changed.<br>   – Repeat the system search in Sunny Explorer.<br>   – Restart Sunny Explorer and create a new system. |
| **Inverter is not accessible**<br><br>After setting parameters for Speedwire communication, the inverter is no longer accessible. | • Changing the parameters that regulate the Speedwire connection (e.g. IP parameters) may interrupt Speedwire communication.<br>   – Configure the network connection so that the computer is in the same subnet as the Speedwire devices. Contact your network administrator if you require assistance.<br>   – Try to reconnect. To do this, select **Options > Repeat establishment of connection**. |

## Display on User Interface

Sunny Explorer reads out the data directly from the connected devices. Depending on the size of the system, the display of data may therefore take some time.

| Problem | Cause and corrective measures |
|---|---|
| **User interface**<br><br>The user interface is not being displayed properly. | • Occasionally, display errors may arise on the user interface (e.g. defective layout, white screen).<br><br>  – Press the **F5** key to have the user interface updated by Sunny Explorer. |
| **Performance diagram**<br><br>There are gaps in the performance diagram. | • The transfer of device data is not yet complete.<br><br>  – Wait until the transmission of device data has been fully completed. |
| **Performance diagram**<br><br>The performance diagram is not updating. | • Updating the performance diagram can take up to 30 seconds. Device data is read out directly from the connected devices. Depending on the communication hierarchy, reading out the data can take some time.<br><br>  – Wait until the data is fully read out. |
| **No monthly or yearly energy values**<br><br>In an inverter with retrofitted SMA *Bluetooth* Piggy-Back, no monthly or yearly energy values are displayed. | • Your inverter is retrofitted with an SMA *Bluetooth* Piggy-Back with software version older than 02.00.00.R. Parameter configuration and the graphic display of monthly and yearly energy values is not supported.<br><br>  –   ⚠ **QUALIFIED PERSON**<br>    Update the *Bluetooth* Piggy-Back (see Section 6.10 "Updating Devices", page 40). |

## General

| Problem | Cause and corrective measures |
|---|---|
| **Sunny Explorer will not start** | • In some cases, Sunny Explorer will not start if the computer was previously in standby mode and therefore Sunny Explorer was not shut down properly.<br><br>  – Quit Sunny Explorer via the Windows Task Manager. You can then restart Sunny Explorer. |
| **Unknown device in system tree**<br><br>**An unknown inverter is displayed in the system tree.** | • The system tree shows all devices which share the same NetID. If another system with SMA *Bluetooth* located in the vicinity is using the same NetID, the devices of this system will also be displayed in your system in Sunny Explorer.<br><br>  – Determine a free NetID and configure this in the devices (see the individual device manuals). |

| Problem | Cause and corrective measures |
|---|---|
| **Device conflict** | • In the current configuration, at least one micro inverter has been assigned to different Sunny Multigates.<br><br>– **⚠ QUALIFIED PERSON**<br>Delete duplicate assignment of the affected micro inverters (see Section 6.7 "Device Replacement of Micro Inverters", page 35). |
| **Own inverter displayed as unknown device in system tree**<br><br>**One of your own inverters with integrated *Bluetooth* is displayed as an unknown device.** | • An old version of the software suite is installed on the inverter with integrated *Bluetooth*.<br><br>– **⚠ QUALIFIED PERSON**<br>Update the software suite version on your inverter to version 2.0 or higher, or use Sunny Data Control to read out the inverter data. Sunny Data Control* is available for download at www.SMA-Solar.com. |
| **Own inverter displayed as unknown device in system tree**<br><br>Although you have entered the system password correctly, some of your inverters are displayed as unknown devices in the system tree. | • Certain packages have been lost during data transmission so that Sunny Explorer cannot properly log into the devices.<br><br>– Repeat login. To do this, select **Options > Change user group** in the menu bar, and log in again with your user group. |
| **New inverter missing in system tree** | • Sunny Explorer constantly updates the system tree.<br><br>– **⚠ QUALIFIED PERSON**<br>Ensure that the inverter has been set to the NetID of your system and commissioned (see inverter installation manual).<br><br>– Ensure that there is an active connection to the system. If necessary, repeat connection setup. To do this, select **Options > Repeat establishment of connection** in the menu bar. |
| **Forgot system password** | **⚠ QUALIFIED PERSON**<br>• Unlock the inverter with a Personal Unlocking Key (PUK) (see Section 8.4 "Forgot Password?", page 46). |

| Problem | Cause and corrective measures |
|---|---|
| **No SMA Grid Guard rights**<br><br>You do not have SMA Grid Guard rights even though the SMA Grid Guard symbol is displayed. | • The inverters have not automatically reset the SMA Grid Guard mode after ten hours. The SMA Grid Guard rights have expired but the SMA Grid Guard symbol is still being displayed in error.<br><br>  – ⚠ **QUALIFIED PERSON**<br>    Enter your personal SMA Grid Guard code (see Section 8.5 "SMA Grid Guard", page 47). |
| **SMA Grid Guard mode**<br><br>The symbol for SMA Grid Guard mode is no longer displayed. | • If an installer has logged into Sunny Explorer in SMA Grid Guard mode, the inverters automatically reset the SMA Grid Guard mode after ten hours to avoid unauthorized access. Tip: You can also exit the SMA Grid Guard mode by closing Sunny Explorer. |
| **Changed parameters adopted for only one device class** | • Each device class has its own interface for processing and storing settings. Sunny Explorer only stores changes for the device class that is assigned to the particular interface. Changes to other device classes that are still open for processing will not be saved.<br><br>  – First save the changes made to one device class before processing another device class. |
| **Entering parameters in a smaller unit** | • Sunny Explorer saves entered values in the unit specified next to the input field.<br><br>  – If you wish to enter values in a smaller or larger unit, you must convert the value to the specified unit. Sunny Explorer will automatically adjust the unit. Example: If you want to change a parameter from 20 MWh to 900 kWh, you must enter 0.9. Sunny Explorer automatically adjusts the entered unit and saves the parameter as 900 kWh. |
| **Parameters cannot be edited** | • You do not possess the necessary rights for changing the parameter.<br><br>  – Change the user group.<br><br>• Your inverter is retrofitted with an SMA *Bluetooth* Piggy-Back with software version older than 02.00.00.R. Parameter configuration and the graphic display of monthly and yearly energy values is not supported.<br><br>  – ⚠ **QUALIFIED PERSON**<br>    Update the *Bluetooth* Piggy-Back (see Section 6.10 "Updating Devices", page 40). |

| Problem | Cause and corrective measures |
|---------|-------------------------------|
| **Events are not sorted**<br><br>The events are not correctly sorted according to date and time. | • Sunny Explorer sorts the events using the same consecutive number that the device uses to store the events.<br>The advantage is that the events will always be listed in the order in which they have occurred in the device.<br><br>  – The events will only be sorted incorrectly if the time or the date of the system has been changed (e.g., when switching from daylight saving time to standard time). |
| **Values are marked as out of date even though they are current.**<br><br>**Values are marked as current even though they are out of date.** | • This problem may arise if the computer clock was changed while Sunny Explorer was in operation.<br><br>  – Restart Sunny Explorer. |
| **No connection can be established to the PV system via Speedwire** | • This behavior may occur if the IGMP Querier service has been switched off.<br>Proceed as follows:<br><br>1. Leave Sunny Explorer running. On the computer, open the task manager and, depending on the operating system, select the tab **Processes** or **Services** (see operating system manual).<br><br>2. Display the processes of all users. Remember that, depending on the operating system, administrator rights are required for this procedure.<br><br>3. Check whether the process **SMA.Multicasting.IGMP.QuerierService.exe** is listed on the tab **Processes** or **Services**.<br><br>4. If the process or service is not listed, restart the computer. If the process or service is still not listed, install the latest version of Sunny Explorer.<br><br>5. If the process is listed, open the Windows firewall on the computer and configure an exception for the service in the firewall settings (see operating system manual). |

\* Not available in all countries (for information on whether the product is available in your country, see the website of the SMA subsidiary in your country at www.SMA-Solar.com or contact your distributor).

# 11 Contact

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

- Sunny Explorer software version
- Type of communication used by your system.
- Sunny Explorer report file

| | | | |
|---|---|---|---|
| Australia | SMA Australia Pty Ltd. Sydney | Toll free for Australia: | 1800 SMA AUS (1800 762 287) |
| | | International: | +61 2 9491 4200 |
| Belgien/ Belgique/ België | SMA Benelux BVBA/SPRL Mechelen | +32 15 286 730 | |
| Brasil | Vide España (Espanha) | | |
| Česko | SMA Central & Eastern Europe s.r.o. Praha | +420 235 010 417 | |
| Chile | Ver España | | |
| Danmark | Se Deutschland (Tyskland) | | |
| Deutschland | SMA Solar Technology AG Niestetal | Medium Power Solutions | |
| | | Wechselrichter: Kommunikation: | +49 561 9522-1499 +49 561 9522-2499 |
| | | SMA Online Service Center: www.SMA.de/Service | |
| | | Hybrid Energy Solutions | |
| | | Sunny Island: | +49 561 9522-399 |
| | | Power Plant Solutions | |
| | | Sunny Central: | +49 561 9522-299 |
| España | SMA Ibérica Tecnología Solar, S.L.U. Barcelona | Llamada gratuita en España: | 900 14 22 22 |
| | | Internacional: | +34 902 14 24 24 |

| France | SMA France S.A.S.<br><br>Lyon | Medium Power Solutions | |
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| Luxemburg/<br>Luxembourg | Siehe Belgien<br>Voir Belgique | | |
| Magyarország | lásd Česko (Csehország) | | |
| Nederland | zie Belgien (België) | | |
| Österreich | Siehe Deutschland | | |
| Perú | Ver España | | |
| Polska | Patrz Česko (Czechy) | | |
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| Schweiz | Siehe Deutschland | | |
| Slovensko | pozri Česko (Česká republika) | | |
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|---|---|---|