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SMA Warranty

You can download the current warranty conditions from the Internet at www.SMA-Solar.com.

Software licenses

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

Trademarks

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.

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1 Information on this Document

1.1 Validity
This document is valid for:
• SB5.5-LV-JP-41 (Sunny Boy 5.5-JP)

1.2 Target Group
This document is intended for qualified persons and end users. Only qualified persons are allowed to perform the activities marked in this document 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. Qualified persons must have the following skills:
• Registered qualification for electrically qualified persons, level 1 and 2
• Knowledge of how an inverter works and is operated
• Training in how to deal with the dangers and risks associated with installing, repairing and using electrical devices and installations
• Training in the installation and commissioning of electrical devices and installations
• Knowledge of all applicable laws, standards and directives
• Knowledge of and compliance with this document and all safety information
• Knowledge of building structures and building materials

1.3 Content and Structure of this Document
This document describes the mounting, installation, commissioning, configuration, operation, troubleshooting and decommissioning 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 Levels of Warning Messages
The following levels of warning messages may occur when handling the product.

| ![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, could result in death or serious injury. |
| ![CAUTION] | Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury. |
1.5 Symbols in the Document

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>🔄️</td>
<td>Information that is important for a specific topic or goal, but is not safety-relevant</td>
</tr>
<tr>
<td>☑️</td>
<td>Indicates a requirement for meeting a specific goal</td>
</tr>
<tr>
<td>✗️</td>
<td>Desired result</td>
</tr>
<tr>
<td>✗️️</td>
<td>A problem that might occur</td>
</tr>
</tbody>
</table>

1.6 Typographical Elements in the Document

<table>
<thead>
<tr>
<th>Typography</th>
<th>Use</th>
<th>Example</th>
</tr>
</thead>
</table>
| **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. |
| [Button] [Key] | • Button or key to be selected or pressed | • Select [Enter]. |
| # | • Placeholder for variable components (e.g., parameter names) | • Parameter WCtlHz.Hz# |

1.7 Designations in the Document

<table>
<thead>
<tr>
<th>Complete designation</th>
<th>Designation in this document</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sunny Boy</td>
<td>Inverter, product</td>
</tr>
</tbody>
</table>
1.8 Additional Information

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

<table>
<thead>
<tr>
<th>Title and information content</th>
<th>Type of information</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Application for SMA Grid Guard Code&quot;</td>
<td>Form</td>
</tr>
<tr>
<td>&quot;PUBLIC CYBER SECURITY - Guidelines for a Secure PV System Communication&quot;</td>
<td>Technical information</td>
</tr>
<tr>
<td>&quot;Efficiency and Derating&quot;</td>
<td>Technical Information</td>
</tr>
<tr>
<td>Efficiency and derating behavior of the SMA inverters</td>
<td></td>
</tr>
<tr>
<td>&quot;Parameters and Measured Values&quot;</td>
<td>Technical Information</td>
</tr>
<tr>
<td>Overview of all inverter operating parameters and their configuration options</td>
<td></td>
</tr>
<tr>
<td>&quot;SMA and SunSpec Modbus® Interface&quot;</td>
<td>Technical Information</td>
</tr>
<tr>
<td>Information on the Modbus interface</td>
<td></td>
</tr>
<tr>
<td>&quot;Modbus® parameters and measured values&quot;</td>
<td>Technical Information</td>
</tr>
<tr>
<td>Device-specific register HTML file</td>
<td></td>
</tr>
<tr>
<td>&quot;SMA SPEEDWIRE FIELDBUS&quot;</td>
<td>Technical information</td>
</tr>
<tr>
<td>&quot;Temperature Derating&quot;</td>
<td>Technical Information</td>
</tr>
</tbody>
</table>
2 Safety

2.1 Intended Use

The Sunny Boy is a transformerless PV inverter with 2 MPP trackers, which convert the direct current of the PV array into grid-compliant alternating current and feeds it into the utility grid.

The product is suitable for indoor and outdoor use.

The product must only be operated with PV modules and cables that have been recommended and sold by the distributor. Do not connect any energy sources other than PV modules to the product.

The product is not equipped with an integrated transformer and therefore has no galvanic isolation. The product must not be operated with PV modules whose outputs are grounded. This can cause the product to be destroyed. The product may be operated with PV modules whose frame is grounded.

PV modules with a high capacity to ground may only be used if their coupling capacity does not exceed 3.4 μF.

All components must remain within their permitted operating ranges and their installation requirements at all times.

The product is exclusively approved for the Japanese market and must only be used in Japan.

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 and is not intended to replace any local, state, provincial, federal or national laws, regulations or codes applicable 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 IMPORTANT SAFETY INSTRUCTIONS

Keep the manual for future reference.

This section contains safety information that must be observed at all times when working.

The product has been designed and tested in accordance with international safety requirements. As with all electrical or electronical devices, there are residual risks despite careful construction. To prevent personal injury and property damage and to ensure long-term operation of the product, read this section carefully and observe all safety information at all times.
DANGER

Danger to life due to electric shock when live components or DC cables are touched

When exposed to light, the PV modules generate high DC voltage which is present in the DC cables. Touching live DC cables results in death or lethal injuries due to electric shock.
  • Do not touch non-insulated parts or cables.
  • Disconnect the product from voltage sources and make sure it cannot be reconnected before working on the device.
  • Do not disconnect the DC connectors under load.
  • Wear suitable personal protective equipment for all work on the product.

DANGER

Danger to life due to electric shock when live components are touched on opening the product

High voltages are present in the live parts and cables inside the product during operation. Touching live parts and cables results in death or lethal injuries due to electric shock.
  • Do not open the product.

DANGER

Danger to life due to electric shock when touching live system components in case of a ground fault

If a ground fault occurs, parts of the system may still be live. Touching live parts and cables results in death or lethal injuries due to electric shock.
  • Disconnect the product from voltage sources and make sure it cannot be reconnected before working on the device.
  • Touch the cables of the PV array on the insulation only.
  • Do not touch any parts of the substructure or frame of the PV array.
  • Do not connect PV strings with ground faults to the inverter.
  • Ensure that no voltage is present and wait five minutes before touching any parts of the PV system or the product.
**DANGER**

**Danger to life due to electric shock in case of overvoltages and if surge protection is missing**

Overvoltages (e.g., in the event of a flash of lightning) can be further conducted into the building and to other connected devices in the same network via the network cables or other data cables if there is no surge protection. Touching live parts and cables results in death or lethal injuries due to electric shock.

- Ensure that all devices in the same network are integrated in the existing overvoltage protection.
- When laying the network cable outdoors, ensure that there is suitable surge protection at the network cable transition from the product outdoors to the network inside the building.
- The Ethernet interface of the product is classified as "TNV-1" and offers protection against overvoltages of up to 1.5 kV.

**WARNING**

**Danger to life due to fire or explosion**

In rare cases, an explosive gas mixture can be generated inside the product under fault conditions. In this state, switching operations can cause a fire inside the product or explosion. Death or lethal injuries due to hot or flying debris can result.

- In the event of a fault, do not perform any direct actions on the product.
- Ensure that unauthorized persons have no access to the product.
- Disconnect the AC circuit breaker, or keep it disconnected in case it has already tripped, and secure it against reconnection.
- Only perform work on the product (e.g., troubleshooting, repair work) when wearing personal protective equipment for handling of hazardous substances (e.g., safety gloves, eye and face protection, respiratory protection).

**WARNING**

**Risk of injury due to toxic substances, gases and dusts.**

In rare cases, damages to electronic components can result in the formation of toxic substances, gases or dusts inside the product. Touching toxic substances and inhaling toxic gases and dusts can cause skin irritation, burns or poisoning, trouble breathing and nausea.

- Only perform work on the product (e.g., troubleshooting, repair work) when wearing personal protective equipment for handling of hazardous substances (e.g., safety gloves, eye and face protection, respiratory protection).
- Ensure that unauthorized persons have no access to the product.
**WARNING**

**Danger to life due to electric shock from destruction of the measuring device due to overvoltage**

Overvoltage can damage a measuring device and result in voltage being present in the enclosure of the measuring device. Touching the live enclosure of the measuring device results in death or lethal injuries due to electric shock.

- Only use measuring devices with a DC input voltage range of 600 V or higher.

**CAUTION**

**Risk of injury due to weight of product**

Injuries may result if the product is lifted incorrectly or dropped while being transported or mounted.

- Transport and lift the product carefully. Take the weight of the product into account.
- Wear suitable personal protective equipment for all work on the product.

**NOTICE**

**High costs due to inappropriate Internet tariff**

Depending on use, the data volume of the product transferred via the Internet may vary in size. The data volume depends, for example, on the number of devices in the system, the frequency of device updates, the frequency of data transfer to Sunny Portal or the use of FTP push. High costs for the Internet connection can be the result.

- SMA Solar Technology AG recommends using an Internet flat rate.

**NOTICE**

**Damage to the product due to cleaning agents**

The use of cleaning agents may cause damage to the product and its components.

- Clean the product and all its components only with a cloth moistened with clear water.
3 Scope of Delivery

Check the scope of delivery for completeness and any externally visible damage. Contact your distributor if the scope of delivery is incomplete or damaged.

![Components included in the scope of delivery](image)

Figure 1: Components included in the scope of delivery

<table>
<thead>
<tr>
<th>Position</th>
<th>Quantity</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1</td>
<td>Inverter</td>
</tr>
<tr>
<td>B</td>
<td>1</td>
<td>Wall mounting bracket</td>
</tr>
<tr>
<td>C</td>
<td>4</td>
<td>Pan head screw (M5x12)</td>
</tr>
<tr>
<td>D</td>
<td>4</td>
<td>Washer M5</td>
</tr>
<tr>
<td>E</td>
<td>4</td>
<td>Positive DC connector</td>
</tr>
<tr>
<td>F</td>
<td>4</td>
<td>Negative DC connector</td>
</tr>
<tr>
<td>G</td>
<td>8</td>
<td>Sealing plug</td>
</tr>
<tr>
<td>H</td>
<td>1</td>
<td>AC connector</td>
</tr>
<tr>
<td>I</td>
<td>2</td>
<td>RJ45 protective sleeve: swivel nut, cable support sleeve, threaded sleeve</td>
</tr>
<tr>
<td>J</td>
<td>1</td>
<td>WLAN antenna</td>
</tr>
<tr>
<td>K</td>
<td>1</td>
<td>Quick reference guide, test report</td>
</tr>
</tbody>
</table>
Additionally Required Materials and Equipment

This section lists the materials and utilities that are required in addition to the components of the scope of delivery.

<table>
<thead>
<tr>
<th>Material or equipment</th>
<th>Quantity</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screws (maximum diameter: 8 mm)</td>
<td>3</td>
<td>For mounting the product</td>
</tr>
<tr>
<td>Washers (maximum external diameter: 30 mm)</td>
<td>3</td>
<td>For mounting the product</td>
</tr>
<tr>
<td>Screw anchors</td>
<td>3</td>
<td>For mounting the product (availability depending on support surface type)</td>
</tr>
<tr>
<td>RJ45 plugs, field assembly</td>
<td>1-2</td>
<td>Only required if the network cables are not equipped with RJ45 plugs</td>
</tr>
<tr>
<td>Utility knife</td>
<td>1</td>
<td>Used to unpack the product</td>
</tr>
<tr>
<td>Cross-head screwdriver (PH2)</td>
<td>1</td>
<td>For securing the inverter to the wall mounting bracket and for connecting the grounding cables</td>
</tr>
<tr>
<td>Press tool</td>
<td>1</td>
<td>Used to attach terminal lugs to grounding cables</td>
</tr>
<tr>
<td>Flat-blade screwdriver (blade width: 3.5 mm)</td>
<td>1</td>
<td>For assembling the DC connectors</td>
</tr>
<tr>
<td>Measuring device with a measurement range designed for the maximum AC and DC voltage of the inverter</td>
<td>1</td>
<td>For verifying that no voltage is present</td>
</tr>
<tr>
<td>Current clamp</td>
<td>1</td>
<td>For verifying that no voltage is present</td>
</tr>
</tbody>
</table>
5 Product Overview

5.1 Product Description

![Design of the product](image)

Figure 2: Design of the product

<table>
<thead>
<tr>
<th>Position</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>DC load-break switch</td>
</tr>
<tr>
<td>B</td>
<td>LEDs</td>
</tr>
<tr>
<td></td>
<td>The LEDs indicate the operating state of the product.</td>
</tr>
<tr>
<td>C</td>
<td>Label with QR Code for scanning via the SMA 360° App and easy connection to the inverter’s user interface via WLAN</td>
</tr>
<tr>
<td>D</td>
<td>Type label</td>
</tr>
<tr>
<td></td>
<td>The type label clearly identifies the product. The type label must remain permanently attached to the product. You will find the following information on the type label:</td>
</tr>
<tr>
<td></td>
<td>• Device type (Model)</td>
</tr>
<tr>
<td></td>
<td>• Serial number (Serial No. or S/N)</td>
</tr>
<tr>
<td></td>
<td>• Date of manufacture</td>
</tr>
<tr>
<td></td>
<td>• Identification key (PIC) for registration in Sunny Portal</td>
</tr>
<tr>
<td></td>
<td>• Registration ID (RID) for registration in Sunny Portal</td>
</tr>
<tr>
<td></td>
<td>• Wi-Fi password (WPA2-PSK) for the direct connection to the user interface of the product via Wi-Fi</td>
</tr>
<tr>
<td></td>
<td>• Device-specific characteristics</td>
</tr>
</tbody>
</table>
5.2 Symbols on the Product

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Explanation</th>
</tr>
</thead>
</table>
| ![Information](symbol) | Observe the documentation  
Observe all documentation supplied with the product. |
| ![Inverter](symbol) | Inverter  
Together with the green LED, this symbol indicates the operating state of the inverter. |
| ![Information](symbol) | Observe the documentation  
Together with the red LED, this symbol indicates an error. |
| ![Data transmission](symbol) | Data transmission  
Together with the blue LED, this symbol indicates the status of the network connection. |
| ![Grounding conductor](symbol) | Grounding conductor  
This symbol indicates the position for connecting a grounding conductor. |
| ![DC](symbol) | Direct current |
| ![WEEE designation](symbol) | WEEE designation  
Do not dispose of the product together with the household waste but in accordance with the disposal regulations for electronic waste applicable at the installation site. |
| ![House](symbol) | The product is suitable for outdoor installation. |
| **IP65** | Degree of protection IP65  
The product is protected against the penetration of dust and water that is directed as a jet against the enclosure from all directions. |
| ![Technical Regulation Conformity Certification](symbol) | This equipment contains specified radio equipment that has been certified to the Technical Regulation Conformity Certification under the Radio Law. |
| ![Utility grid](symbol) | The product is certified according to JEM1498 and does not generate any flicker on the utility grid. |
| ![JET seal of approval](symbol) | JET seal of approval |
5.3 Interfaces and Functions

User interface for monitoring and configuration
The product is equipped as standard with an integrated webserver, which provides a user interface for configuring and monitoring the product.
The product user interface can be called up via the web browser if there is an existing connection to an end device (e.g. computer, tablet PC or smartphone).

Smart Inverter Screen
The Smart Inverter Screen enables you to view the status display and to display the current power and consumption on the user interface login page. This gives you an overview of the most important inverter data without having to log into the user interface.
The Smart Inverter Screen is deactivated by default. The Smart Inverter Screen can be activated via the user interface once the inverter has been commissioned.

SMA Speedwire
The product is equipped with SMA Speedwire as standard. SMA Speedwire is a type of communication based on the Ethernet standard. SMA Speedwire is designed for a data transfer rate of 100 Mbps and enables optimum communication between Speedwire devices within systems.
The product supports the encrypted system communication with SMA Speedwire Encrypted Communication. In order to be able to use the Speedwire encryption in the system, all Speedwire devices, except for the SMA Energy Meter, must support the function SMA Speedwire Encrypted Communication.

SMA Webconnect
The product is equipped with a Webconnect function as standard. The Webconnect function enables direct data transmission between the product and Internet portals Sunny Portal and Sunny Places without any additional communication device and for a maximum of 13 products per visualized system. In PV systems with more than 13 products, there is the option of establishing data transmission between the products and Sunny Portal via the data logger (e.g., SMA Data Manager) or distributing the inverters over several systems. If there is an existing WLAN or Ethernet connection, you can directly access your visualized system via the web browser on your end device.

WLAN connection to SMA 360° app
The product has a QR code. By scanning the QR Code attached to the product via the SMA 360° app, access to the product is established via WLAN and the connection to the user interface is made automatically.
WLAN
The product is equipped with a WLAN interface as standard. The inverter is delivered with the WLAN interface activated as standard. If you do not want to use WLAN, you can deactivate the WLAN interface.
In addition, the product has a WPS function. The WPS function is for automatically connecting the product to a network (e.g. via router) and establish a direct connection between the product and an end device.

Modbus
The product is equipped with a Modbus interface. The Modbus interface is deactivated by default and must be configured as needed.
The Modbus interface of the supported SMA products is designed for industrial use – via SCADA systems, for example – and has the following tasks:
- Remote query of measured values
- Remote setting of operating parameters
- Setpoint specifications for system control

SMA ShadeFix
The inverter is equipped with the shade management system SMA ShadeFix. SMA ShadeFix uses an intelligent MPP tracking system to determine the operating point with the highest output during shading conditions. With SMA ShadeFix, inverters use the best possible energy supply from the PV modules at all times to increase yields in shaded systems. SMA ShadeFix is enabled by default. The time interval of SMA ShadeFix is usually six minutes. This means that the inverter determines the optimum operating point every six minutes. Depending on the PV system or shading situation, it may be useful to adjust the time interval.

All-pole sensitive residual-current monitoring unit
The all-pole sensitive residual-current monitoring unit detects alternating and direct differential currents. In single-phase and three-phase inverters, the integrated differential current sensor detects the current difference between the neutral conductor and the line conductor(s). If the current difference increases suddenly, the inverter disconnects from the utility grid.

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.

5.4 LED Signals
The LEDs indicate the operating state of the product.
<table>
<thead>
<tr>
<th><strong>LED signal</strong></th>
<th><strong>Explanation</strong></th>
</tr>
</thead>
</table>
| The green LED is flashing (two seconds on and two seconds off) | Waiting for feed-in conditions  
The conditions for feed-in operation are not yet met. As soon as the conditions are met, the inverter will start feed-in operation. |
| The green LED flashes quickly         | Update of central processing unit  
The central processing unit of the inverter is being updated. |
| The green LED is glowing              | Feed-in operation  
The inverter feeds in with a power of at least 90%. |
| The green LED is pulsing              | Feed-in operation  
The inverter is equipped with a dynamic power display via the green LED. Depending on the power, the green LED pulses fast or slow. If necessary, you can switch off the dynamic power display via the green LED. |
| The green LED is off                  | The inverter is not feeding into the utility grid. |
| The red LED is glowing                | Event occurred  
If an event occurs, a distinct event message and the corresponding event number will be displayed in addition on the product user interface or in the communication product (e.g. SMA Data Manager). |
| The blue LED flashes slowly for approx. 1 minute | Communication connection is being established  
The product is establishing a connection to a local network or is establishing a direct connection to an end device via Ethernet (e.g. computer, tablet PC or smartphone). |
| The blue LED flashes quickly for approx. two minutes (0.25 s on and 0.25 s off). | WPS active  
The WPS function is active. |
| The blue LED is glowing               | Communication active  
There is an active connection with a local network or there is a direct connection with an end device via Ethernet (e.g. computer, tablet PC or smartphone). |
5.5 **System Overview**

5.5.1 **Circuitry Overview**

![Diagram](image)

Figure 3: Circuitry overview (example)
5.5.2 Communication Overview

Figure 4: Design of system communication
6 Mounting

6.1 Requirements for Mounting

Requirements for mounting location:

| ☐ | A solid support surface must be available (e.g. concrete or masonry, free-standing constructions). When mounted on drywall or similar materials, the inverter emits audible vibrations during operation which could be perceived as annoying. |
| ☐ | The mounting location must be inaccessible to children. |
| ☐ | The mounting location must be suitable for the weight and dimensions of the product Section 14, page 89. |
| ☐ | The mounting location must not be exposed to direct solar irradiation. If the product is exposed to direct solar irradiation, the exterior plastic parts might age prematurely and overheating might occur. When becoming too hot, the product reduces its power output to avoid overheating. |
| ☐ | The mounting location should be freely and safely accessible at all times without the need for any auxiliary equipment (such as scaffolding or lifting platforms). Non-fulfillment of these criteria may restrict servicing. |
| ☐ | The DC load-break switch of the product must always be freely accessible. |
| ☐ | All ambient conditions must be met Section 14, page 89. |
| ☐ | To ensure optimum operation, the ambient temperature should be between -25 °C and +40 °C. |

Permitted and prohibited mounting positions:

- The product may only be mounted in a permitted position. This will ensure that no moisture can penetrate the product.
- The product should be mounted such that the LED signals can be read off without difficulty.

Figure 5: Permitted and prohibited mounting positions
Dimensions for mounting:

![Diagram showing dimensions for mounting]

Figure 6: Position of the anchoring points (Dimensions in mm)

**Recommended clearances:**

If you maintain the recommended clearances, adequate heat dissipation will be ensured. Thus, you will prevent power reduction due to excessive temperature.

- Maintain the recommended clearances to walls as well as to other inverters or objects.
- If multiple products are mounted in areas with high ambient temperatures, increase the clearances between the products and ensure sufficient fresh-air supply.
6.2 Mounting the product

Additionally required mounting material (not included in the scope of delivery):

- ☐ 3 screws, suitable for the support surface and the weight of the inverter (diameter: minimum 6 mm)
- ☐ 3 washers, suitable for the screws (outer diameter: minimum 18 mm)
- ☐ Where necessary, three screw anchors suitable for the support surface and the screws

**CAUTION**

**Risk of injury due to weight of product**

Injuries may result if the product is lifted incorrectly or dropped while being transported or mounted.

- Transport and lift the product carefully. Take the weight of the product into account.
- Wear suitable personal protective equipment for all work on the product.

Procedure:

1. **CAUTION**

**Risk of injury due to damaged cables**

There may be power cables or other supply lines (e.g., gas or water) routed in the wall.

- Ensure that no lines are laid in the wall which could be damaged when drilling holes.

2. Align the wall mounting bracket horizontally on the wall and mark the position of the drill holes. Use at least one hole on the right- and left-hand side and the lower hole in the middle of the wall mounting bracket. Tip: When mounting on a post, use the upper and lower central holes of the wall mounting bracket.
3. Set the wall mounting bracket aside and drill the marked holes.
4. Insert screw anchors into the drill holes if the support surface requires them.
5. Secure the wall mounting bracket horizontally using screws and washers.

6. Hook the inverter into the wall mounting bracket. When doing so, the two right- and left-hand keys on the ribs on the rear side of the inverter must be hooked into the respective keyways in the wall mounting bracket.

7. Ensure that the inverter is securely in place.
8. Secure the inverter to the wall mounting bracket on both sides with a pan head screw (M5x12) provided and a washer (M5). Insert a screw into the lower screw hole of the inverter’s anchorage bracket and tighten it (PH2, torque: 2.5 Nm).
7 Electrical Connection

7.1 Overview of the Connection Area

Figure 8: Connection areas at the bottom of the inverter

<table>
<thead>
<tr>
<th>Position</th>
<th>Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>2 positive and 2 negative DC connectors, input A</td>
</tr>
<tr>
<td>B</td>
<td>2 positive and 2 negative DC connectors, input B</td>
</tr>
<tr>
<td>C</td>
<td>Jack with protective cap for the WLAN antenna</td>
</tr>
<tr>
<td>D</td>
<td>Jack for the AC connection</td>
</tr>
<tr>
<td>E</td>
<td>Connection point for connecting a grounding conductor</td>
</tr>
<tr>
<td>F</td>
<td>Network port with protective cap</td>
</tr>
<tr>
<td>G</td>
<td>Connection point for connecting a grounding conductor (optional)</td>
</tr>
</tbody>
</table>

7.2 AC Connection

7.2.1 Requirements for the AC Connection

AC cable requirements as follows:

- The maximum permitted temperature of the terminal block for AC connection of 105 °C must be observed.
- Conductor type: copper wire
- External diameter: 12 mm to 18 mm
- Conductor cross-section: 5.5 mm² to 8 mm²
- Insulation stripping length: 15 mm
- Sheath stripping length: 50 mm
- The cable must be dimensioned in accordance with the local and national directives for the dimensioning of cables. The requirements for the minimum wire size derive from these directives. Factors influencing cable dimensioning include nominal AC current, cable type, routing method, cable bundling, ambient temperature and maximum desired line losses.
Grounding cable requirements:

**Use of fine-stranded conductors**

You can use an inflexible or a flexible, fine-stranded conductor.

- When using a fine-stranded conductor, it has to be double crimped by a ring terminal lug. Make sure that no insulated conductor is visible when pulling or bending. This will ensure sufficient strain relief by means of the ring terminal lug.

☐ Grounding cable cross-section: max. 8 mm²

Load-break switch and cable protection:

<table>
<thead>
<tr>
<th>NOTICE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Damage to the inverter due to the use of screw-type fuses as load-break switches</strong></td>
</tr>
<tr>
<td>Screw-type fuses (e.g. DIAZED fuse or NEOZED fuse) are not suitable as load-break switches.</td>
</tr>
<tr>
<td>- Do not use screw-type fuses as load-break switches.</td>
</tr>
<tr>
<td>- Use a load-break switch or a circuit breaker for load disconnection.</td>
</tr>
</tbody>
</table>

☐ In PV systems with multiple inverters, protect each inverter with a separate circuit breaker. Make sure to observe the maximum permissible fuse protection (see Section 14 “Technical Data”, page 89). This will prevent residual voltage from being present at the corresponding cable after disconnection.

☐ Loads installed between the inverter and the circuit breaker must be fused separately.

Residual-current monitoring unit:

The inverter does not require an external residual-current device when operating. If local regulations require the use of a residual-current device, the following must be observed:

☐ The inverter is compatible with residual-current devices that have a rated residual current of 30 mA or higher. Each inverter in the system must be connected to the utility grid via a separate residual-current device.

### 7.2.2 Connecting the Inverter to the Utility Grid

<table>
<thead>
<tr>
<th>QUALIFIED PERSON</th>
</tr>
</thead>
</table>

Requirements:

- The connection requirements of the grid operator must be met.
- The grid voltage must be within the permissible range. The exact operating range of the inverter is specified in the operating parameters.

Procedure:

1. Disconnect the circuit breaker and secure it against reconnection.
2. Dismantle the AC cable by 50 mm.
3. Shorten U, O and W by 8 mm each, so that the grounding conductor is 8 mm longer. This ensures that the grounding conductor is the last to be pulled from the screw terminal in the event of tensile strain.

4. Strip off the conductor insulation of U, O and W by 15 mm.

5. In the case of fine stranded wire, U, O and W are to be fitted with bootlace ferrules.

6. Strip the grounding cable insulation.

7. Insert the stripped part of the grounding cable into the ring terminal lug and crimp using a crimping tool.

8. Insert the pan head screw (M5x12) incl. washer (M5) into the screw hole in the ring terminal lug and screw the ring terminal lug with screw firmly onto the connection point (PH2, torque: 2.5 Nm).

9. Assemble the AC connector and connect the conductor to the AC connector (see manual of the AC connector).

10. Ensure that all conductors are securely connected to the AC connector.

11. Plug the AC connector into the jack for the AC connection. When doing so, align the AC connector so that the key on the inverter AC jack is inserted into the keyway on the AC connector bush insert.

7.3 Connecting the Network Cables

⚠️ QUALIFIED PERSON

Connect every network cable in accordance with the following procedure.
Electrical Connection

SMA Solar Technology AG
Operating manual
SB55-LVJP-41-BE-en-12

DANGER

Danger to life due to electric shock in case of overvoltages and if surge protection is missing

Overvoltages (e. g. in the event of a flash of lightning) can be further conducted into the building and to other connected devices in the same network via the network cables or other data cables if there is no surge protection. Touching live parts and cables results in death or lethal injuries due to electric shock.

• Ensure that all devices in the same network are integrated in the existing overvoltage protection.
• When laying the network cable outdoors, ensure that there is suitable surge protection at the network cable transition from the product outdoors to the network inside the building.
• The Ethernet interface of the product is classified as "TNV-1" and offers protection against overvoltages of up to 1.5 kV.

NOTICE

Product damage due to moisture penetration

Moisture penetration can damage the product and impair its functionality of the product.

• Connect the network cable with the supplied RJ45 protective sleeve to the product.

Additionally required material (not included in the scope of delivery):

☐ One or two network cables

Network cable requirements:
The cable length and quality affect the quality of the signal. Observe the following cable requirements.

☐ Cable type: 100BaseTx
☐ Cable category: minimum CAT5e
☐ Plug type: RJ45 of Cat5, Cat5e or higher
☐ Shielding: SF/UTP, S/UTP, SF/FTP or S/FTP
☐ Number of insulated conductor pairs and insulated conductor cross-section: at least 2 x 2 x 0.22 mm²
☐ Maximum cable length between two nodes when using patch cables: 50 m
☐ Maximum cable length between two nodes when using installation cables: 100 m
☐ UV-resistant for outdoor use.

Procedure:

1. Disconnect the product from voltage sources (see Section 10, page 59).
2. Unscrew the protective cap from the network port.

3. Press the cable support sleeve out of the threaded sleeve.
4. Feed the network cable through the swivel nut and threaded sleeve. Attach the cable sleeve to the network cable.

5. Press the cable support sleeve into the threaded sleeve.

6. Plug the network cable connector into the network port on the product and screw the threaded sleeve onto the network port thread on the product.

7. Ensure that the cable is correctly locked in place.
8. Screw the swivel nut onto the threaded sleeve.

9. If you would like to establish a direct connection, connect the other end of the network cable directly to the end device.
10. If you would like to integrate the product into a local network, connect the other end of the network cable to the local network (e.g. via a router).
7.4 Mounting the WLAN Antenna

**Requirement:**
☐ The WLAN antenna supplied must be used.

**Procedure:**

1. **DANGER**

   **Danger to life due to electric shock**
   - Disconnect the inverter from all voltage sources (see Section 10, page 59).

2. Remove the protective cap from the jack on the inverter.
3. Plug the WLAN antenna into the jack and screw tight (torque: 1 Nm).
4. Pull on the WLAN antenna to ensure that the WLAN antenna is securely in place.

7.5 DC Connection

7.5.1 Requirements for the DC Connection

**Requirements for the PV modules per input:**
☐ All PV modules should be of the same type.
☐ All PV modules should be aligned and tilted identically.
☐ On the coldest day based on statistical records, the open-circuit voltage of the PV array must never exceed the maximum input voltage of the inverter.
☐ The same number of series-connected PV modules must be connected to each string.
☐ The maximum input current per string must be maintained and must not exceed the through-fault current of the DC connectors (see Section 14 "Technical Data", page 89).
☐ The thresholds for the input voltage and the input current of the inverter must be adhered to (see Section 14 "Technical Data", page 89).
☐ The negative connection cables of the PV modules must be equipped with the negative DC connectors (see Section 7.5.2, page 32).
Use of Y adapters for parallel connection of strings

The Y adapters must not be used to interrupt the DC circuit.

- Do not use the Y adapters in the immediate vicinity of the inverter. The adapters must not be visible or freely accessible.
- In order to interrupt the DC circuit, always disconnect the inverter as described in this document (see Section 10, page 59).

7.5.2 Assembling the DC Connectors

<table>
<thead>
<tr>
<th>QUALIFIED PERSON</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DANGER</strong></td>
</tr>
</tbody>
</table>

Danger to life due to electric shock when live components or DC cables are touched

When exposed to light, the PV modules generate high DC voltage which is present in the DC cables. Touching live DC cables results in death or lethal injuries due to electric shock.

- Do not touch non-insulated parts or cables.
- Disconnect the product from voltage sources and make sure it cannot be reconnected before working on the device.
- Do not disconnect the DC connectors under load.
- Wear suitable personal protective equipment for all work on the product.

| NOTICE |

Destruction of the inverter due to overvoltage

If the open-circuit voltage of the PV modules exceeds the maximum input voltage of the inverter, the inverter can be destroyed due to overvoltage.

- If the open-circuit voltage of the PV modules exceeds the maximum input voltage of the inverter, do not connect any strings to the inverter and check the design of the PV system.

For connection to the inverter, all PV module connection cables must be fitted with the DC connectors provided. Assemble the DC connectors as described in the following. The procedure is identical for both connectors (+ and -). The graphics for the procedure are shown for only the positive connector as an example. Pay attention to the correct polarity when assembling the DC connectors. The DC connectors are marked with the symbols "+" and "-".

Figure 9: Negative (A) and positive (B) DC connectors
Cable requirements:

- Cable type: PV1-F, UL-ZKLA, USE2, H-CV, EM-CE
- External diameter: 5 mm to 8 mm
- Conductor cross-section for cable type PV1-F, UL-ZKLA, USE2: 2.5 mm² to 6 mm²
- Conductor cross-section for cable type H-CV, EM-CE: 2 mm² to 6 mm²
- Qty single wires: minimum 7
- Nominal voltage: minimum 600 V
- Using bootlace ferrules is not allowed.

Procedure:

1. Strip 12 mm of the cable insulation.
2. Insert the stripped cable into the DC connector up to the stop. When doing so, ensure that the stripped cable and the DC connector are of the same polarity.
3. Press the clamping bracket down until it audibly snaps into place.

☐ The stranded wire can be seen inside the clamping bracket chamber.

4. If the stranded wire is not visible in the chamber, the cable is not correctly inserted and the connector must be reassembled. To do this, the cable must be removed from the connector.
• Release the clamping bracket. To do so, insert a screwdriver (blade width: 3.5 mm) into the clamping bracket and pry the clamping bracket open.

• Remove the cable and go back to step 2.

5. Push the swivel nut up to the thread and tighten (torque: 2 Nm).

7.5.3 Connecting the PV Array

⚠️ QUALIFIED PERSON

⚠️ WARNING

Danger to life due to electric shock from destruction of the measuring device due to overvoltage
Overvoltage can damage a measuring device and result in voltage being present in the enclosure of the measuring device. Touching the live enclosure of the measuring device results in death or lethal injuries due to electric shock.

• Only use measuring devices with a DC input voltage range of 600 V or higher.

NOTICE

Destruction of the inverter due to overvoltage
If the open-circuit voltage of the PV modules exceeds the maximum input voltage of the inverter, the inverter can be destroyed due to overvoltage.

• If the open-circuit voltage of the PV modules exceeds the maximum input voltage of the inverter, do not connect any strings to the inverter and check the design of the PV system.

NOTICE

Damage to the DC connectors due to the use of contact cleaner of other cleaning agents
Some contact cleaners or other cleaning agents may contain substances that decompose the plastic of the DC connectors.

• Do not use contact cleaners or other cleaning agents for cleaning the DC connectors.
NOTICE

Damage to the inverter due to ground fault on DC side during operation

Due to the transformerless topology of the product, the occurrence of ground faults on DC side during operation can lead to irreparable damage. Damages to the product due to a faulty or damaged DC installation are not covered by warranty. The product is equipped with a protective device that checks whether a ground fault is present during the starting sequence. The product is not protected during operation.

- Ensure that the DC installation is carried out correctly and no ground fault occurs during operation.

Grounding cable requirements (optional):

Use of fine-stranded conductors

You can use an inflexible or a flexible, fine-stranded conductor.

- When using a fine-stranded conductor, it has to be double crimped by a ring terminal lug. Make sure that no insulated conductor is visible when pulling or bending. This will ensure sufficient strain relief by means of the ring terminal lug.

☐ Grounding cable cross-section: max. 8 mm²

Procedure:

1. Ensure that the circuit breaker is switched off and that it cannot be reconnected.
2. If an external DC load-break switch is installed, disconnect the external DC load-break switch from all voltage sources.
3. Set the DC load-break switch of the inverter to position O.
4. Measure the PV array voltage. Ensure that the maximum input voltage of the inverter is adhered to and that there is no ground fault in the PV array.
5. Proceed as follows to connect a grounding conductor (optional):
   - Strip the grounding cable insulation.
• Insert the stripped part of the grounding cable into the ring terminal lug and crimp using a crimping tool.

• Insert the pan head screw (M5x12) incl. washer (M5) into the screw hole in the ring terminal lug and screw the ring terminal lug with screw firmly onto the connection point (PH2, torque: 2.5 Nm).

6. Check whether the DC connectors have the correct polarity.
   If the DC connector is equipped with a DC cable of the wrong polarity, the DC connector must be reassembled. The DC cable must always have the same polarity as the DC connector.

7. Ensure that the open-circuit voltage of the PV array does not exceed the maximum input voltage of the inverter.

8. Connect the assembled DC connectors to the inverter.

☑ The DC connectors snap into place.

9. Ensure that all DC connectors are securely in place.

10. **NOTICE**

**Damage to the product due to sand, dust and moisture ingress if the DC inputs are not closed**

The product is only properly sealed when all unused DC inputs are closed with DC connectors and sealing plugs. Sand, dust and moisture penetration can damage the product and impair its functionality.

• Seal all unused DC inputs using the DC connectors and sealing plugs as described in the following. When doing so, do not plug the sealing plugs directly into the DC inputs on the inverter.

11. For unused DC connectors, push down the clamping bracket and push the swivel nut up to the thread.
12. Insert the sealing plug into the DC connector.

13. Insert the DC connectors with sealing plugs into the corresponding DC inputs on the inverter.

☐ The DC connectors snap into place.

14. Ensure that the DC connectors with sealing plugs are securely in place.

### 7.5.4 Disassembling the DC Connectors

**QUALIFIED PERSON**

To disassemble the DC connectors (e.g. due to faulty assembly), proceed as follows.

**DANGER**

Danger to life due to electric shock when touching exposed DC conductors or DC plug contacts if the DC connectors are damaged or loose

The DC connectors can break or become damaged, become free of the DC cables, or no longer be connected correctly if the DC connectors are released and disconnected incorrectly. This can result in the DC conductors or DC plug contacts being exposed. Touching live DC conductors or DC plug connectors will result in death or serious injury due to electric shock.

- Wear insulated gloves and use insulated tools when working on the DC connectors.
- Ensure that the DC connectors are in perfect condition and that none of the DC conductors or DC plug contacts are exposed.
- Carefully release and remove the DC connectors as described in the following.

**Procedure:**

1. Release and remove the DC connectors. To do so, insert a flat-blade screwdriver or an angled screwdriver (blade width: 3.5 mm) into one of the side slots and pull the DC connectors out. When doing so, do not lever the DC connectors out, but insert the tool into one of the side slots only to release the locking mechanism, and do not pull on the cable.
2. Remove the DC connector swivel nut.

3. Unlock the DC connector. To do this, insert a flat-blade screwdriver (blade width: 3.5 mm) into the side catch mechanism and pry the catch mechanism open.

4. Carefully pull the DC connector apart.
5. Release the clamping bracket. To do so, insert a flat-blade screwdriver (blade width: 3.5 mm) into the clamping bracket and pry the clamping bracket open.

6. Remove the cable.
8 Commissioning

8.1 Commissioning Procedure

<table>
<thead>
<tr>
<th>Procedure</th>
<th>See</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Commission each inverter.</td>
<td>Section 8.2, page 39</td>
</tr>
<tr>
<td>2. Establish a connection to the user interface of an inverter. The following connection options are available to choose from:</td>
<td>Section 9.1, page 43</td>
</tr>
<tr>
<td>• Direct connection via WLAN</td>
<td></td>
</tr>
<tr>
<td>• Connection via WLAN in the local network</td>
<td></td>
</tr>
<tr>
<td>• Direct connection via Ethernet</td>
<td></td>
</tr>
<tr>
<td>• Connection via Ethernet in the local network</td>
<td></td>
</tr>
<tr>
<td>3. Log into the user interface.</td>
<td>Section 9.2, page 46</td>
</tr>
<tr>
<td>4. Configure the inverter using the installation assistant.</td>
<td>Section 8.3, page 41</td>
</tr>
<tr>
<td>5. Save the configuration of the inverter in a file.</td>
<td>Section 9.13, page 56</td>
</tr>
<tr>
<td>6. Establish a connection to the user interface of each additional inverter in the system.</td>
<td>Section 9.1, page 43</td>
</tr>
<tr>
<td>7. Log into the user interface of each additional inverter.</td>
<td>Section 9.2, page 46</td>
</tr>
<tr>
<td>8. Configure each additional inverter using the configuration file of the first inverter.</td>
<td>Section 8.3, page 41</td>
</tr>
<tr>
<td>9. To monitor the PV system and visualize the PV system data, register in the Sunny Portal and create the system in Sunny Portal or add devices to an existing system.</td>
<td><a href="https://ennexos.sunnyportal.com">https://ennexos.sunnyportal.com</a> or <a href="https://www.sunnyportal.com">https://www.sunnyportal.com</a></td>
</tr>
</tbody>
</table>

8.2 Commissioning the Inverter

Requirements:
- The AC circuit breaker must be correctly rated and mounted.
- The product must be correctly mounted.
- All cables must be correctly connected.

Procedure:
1. Switch on the AC circuit breaker.
2. Turn the DC load-break switch of the inverter to position I.

☑ All three LEDs light up. The start-up phase begins.
☑ During start-up phase of the inverter, the desired firmware is being installed.
☑ All three LEDs go out again after approximately 90 seconds.
☑ The green LED starts to flash and, if the inverter is connected via Speedwire, the blue LED also starts to flash. Feed-in operation is stopped. The inverter will only feed-in once the operating state in the installation assistant is set to "MPP".

3. If the red LED is glowing, an error has occurred that must be rectified (see Section 12, page 63).
8.3 Selecting a configuration option

⚠️ QUALIFIED PERSON

After having assigned the password to the Installer or User, the Configuring the Inverter page opens.

Figure 10: Layout of the Configuring the Inverter page

<table>
<thead>
<tr>
<th>Position</th>
<th>Designation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Device information</td>
<td>Provides the following information:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Device name</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Inverter serial number</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Inverter firmware version</td>
</tr>
<tr>
<td>B</td>
<td>User information</td>
<td>Provides brief information on the listed configuration options</td>
</tr>
<tr>
<td>C</td>
<td>Configuration options</td>
<td>Provides a selection of the various configuration options</td>
</tr>
</tbody>
</table>

**Configuration options:**

On the Configuring the Inverter page, different configuration options are available to choose from. SMA Solar Technology AG recommends configuring the first inverter in the system with the installation assistant and configuring all other inverters in the system with the help of the configuration file of the first inverter. This way, you ensure that all relevant parameters will be set for the optimum operation of each inverter in the system.

- Adoption of configuration from a file
- Configuration with the installation assistant (recommended)
Accepting the settings

Saving the made settings is indicated by an hourglass symbol on the user interface. If the DC voltage is sufficient, the data is transferred directly to the inverter and accepted. If the DC voltage is too low (e.g. in the evening), the settings are saved, but they cannot be directly transferred to or accepted by the inverter. As long as the inverter has not yet received and accepted the settings, the hourglass symbol will continue to be displayed on the user interface. The settings will be accepted when there is sufficient DC voltage applied and the inverter restarts. As soon as the hourglass symbol appears on the user interface, the settings have been saved. The settings will not be lost. You can log off of the user interface and leave the system.

Adopting the Configuration from a File

You can adopt the inverter configuration from a file. To do this, there must be an inverter configuration saved to a file.

Procedure:

1. Select the configuration option Adopting configuration from a file.
2. Select [Browse...] and select the desired file.
3. Select [Import file].

Configuring the Installation Assistant (Recommended)

Procedure:

1. Select the configuration option Configuration with Installation Assistant.
   ☑ The installation assistant will open.
2. Follow the installation assistant steps and make the settings appropriate for your system.
3. For every setting made in a step, select [Save and next].
   ☑ In the last step, all made settings are listed in a summary.
4. To correct settings you made, select [Back], navigate to the desired step, correct settings and select [Save and continue].
5. Once all settings are correct, select [Next] in the summary.
6. To save the settings to a file, select [Export a summary] and save the file on your end device.
7. To export all parameters and their settings, select [Export all parameters]. This exports all parameters and their settings into an HTML file.
   ☑ The start page of the user interface opens.
9 Operation

9.1 Establishing a connection to the user interface

9.1.1 Establishing a Direct Connection via Ethernet

Requirements:
- The product must be commissioned.
- An end device (e.g. computer) with an Ethernet interface must be available.
- The product must be connected directly to the end device.
- The respective latest version of one of the following web browsers must be installed: Chrome, Edge, Firefox, Internet Explorer or Safari.

IP address of the inverter
- Standard inverter IP address for the direct connection via Ethernet: 169.254.12.3

Procedure:
1. Open the web browser of your end device, enter the IP address 169.254.12.3 in the address bar and press the enter key.
2. Web browser signals a security vulnerability
   After the IP address has been entered, a message might appear indicating that the connection to the user interface of the product is not secure. SMA Solar Technology AG guarantees the security of the user interface.
   - Continue loading the user interface.

☑ The login page of the user interface opens.

9.1.2 Establishing a direct connection via WLAN

You have several options to connect the product to an end device. The procedure can be different depending on the end devices. If the procedures described do not apply to your end device, establish the direct connection via Wi-Fi as described in the manual of your end device.

The following connection options are available:
- Connection to SMA 360° App
- Connection with WPS
- Connection with Wi-Fi network search

Requirements:
- The product must be commissioned.
- An end device (e.g. computer, tablet PC or smartphone) must be available.
- The respective latest version of one of the following web browsers must be installed: Chrome, Edge, Firefox, Internet Explorer or Safari.
- JavaScript must be enabled in the web browser of the end device.
Importing and exporting files with end devices having an iOS operating system is not possible.

For technical reasons, importing and exporting files (e.g., importing an inverter configuration, saving the current inverter configuration or exporting events and parameters) is not possible with mobile end devices having an iOS operating system.

- Use an end device that does not have an iOS operating system for importing and exporting files.

Connection to SMA 360° App

Requirements:
- An end device with camera must be available.
- The SMA 360° App must be installed on the end device.
- An user account for Sunny Portal must already exist.

Procedure:
1. Open the SMA 360° App and login with the Sunny Portal account details.
2. Select **QR-Code Scan** in the menu.
3. Scan the QR Code on your product via the SMA 360° App.
   - The end device automatically connects to the product. The web browser of your end device opens and the login page of the user interface is displayed.
4. If the web browser of your end device does not open automatically and the login page of the user interface is not displayed, open the web browser and enter **https://smalogin.net** in the address bar.

Connection with WPS

Requirements:
- The end device must have a WPS function.

Procedure:
1. Enable the WPS function on the inverter. To do this, tap on the enclosure lid of the inverter twice.
   - The blue LED flashes quickly for approx. two minutes. The WPS function is active during this time.
2. Enable the WPS function on your end device.
3. Open the web browser of your end device and enter **https://smalogin.net** in the address bar.

Connection with Wi-Fi network search

1. Search for Wi-Fi networks with your end device.
2. Select the SSID of the product **SMA[serial number]** in the list with the detected Wi-Fi networks.
3. Enter the device-specific Wi-Fi password (see WPA2-PSK on the type label of the product or the rear side of the manual included in delivery).

4. Open the web browser of your end device and enter https://smalogin.net in the address bar.
   ☑ The login page of the user interface is displayed.

5. If the login page of the user interface does not open, enter the IP address 192.168.12.3 or, if your end device supports mDNS services, SMA[serial number].local or https://SMA[serial number] in the address bar of the web browser.

### 9.1.3 Establishing a Connection via Ethernet in the local network

**Information** New IP address for connecting with a local network

If the product is connected to a local network (e.g. via a router), the product will receive a new IP address. Depending on the type of configuration, the new IP address will be assigned automatically by the DHCP server (router) or manually by you. Upon completion of the configuration, the product can only be reached via the following access addresses:

- Generally applicable access address: IP address manually assigned or assigned by the DHCP server (router) (identification via network scanner software or network configuration of the router).
- Access address for Apple and Linux systems: SMA[serial number].local (e.g. SMA0123456789.local)
- Access address for Windows and Android systems: https://SMA[serial number] (e.g. https://SMA0123456789)

**Requirements:**

☐ The product must be connected to the local network via a network cable (e.g. via a router).
☐ The product must be integrated into the local network. Tip: There are various methods of integrating the product into the local network with the aid of the installation assistant.
☐ An end device (e.g. computer, tablet PC or smartphone) must be available.
☐ The end device must be in the same local network as the product.
☐ The respective latest version of one of the following web browsers must be installed: Chrome, Edge, Firefox, Internet Explorer or Safari.

**Procedure:**

1. Open the web browser of your end device. Enter the IP address of the product in the address bar of the web browser. Then press Enter key.

2. **Web browser signals a security vulnerability**

   After the IP address has been entered, a message might appear indicating that the connection to the user interface of the product is not secure. SMA Solar Technology AG guarantees the security of the user interface.
   - Continue loading the user interface.
   - ☑ The login page of the user interface opens.
9.1.4 Establishing a Connection via WLAN in the Local Network

New IP address for connecting with a local network

If the product is connected to a local network (e.g. via a router), the product will receive a new IP address. Depending on the type of configuration, the new IP address will be assigned automatically by the DHCP server (router) or manually by you. Upon completion of the configuration, the product can only be reached via the following access addresses:

- Generally applicable access address: IP address manually assigned or assigned by the DHCP server (router) (identification via network scanner software or network configuration of the router).
- Access address for Apple and Linux systems: SMA[serial number].local (e.g. SMA0123456789.local)
- Access address for Windows and Android systems: https://SMA[serial number] (e.g. https://SMA0123456789)

Requirements:

☐ The product must be commissioned.
☐ The product must be integrated into the local network. Tip: There are various methods of integrating the product into the local network with the aid of the installation assistant.
☐ An end device (e.g. computer, tablet PC or smartphone) must be available.
☐ The end device must be in the same local network as the product.
☐ The respective latest version of one of the following web browsers must be installed: Chrome, Edge, Firefox, Internet Explorer or Safari.

Importing and exporting files with end devices having an iOS operating system is not possible.

For technical reasons, importing and exporting files (e.g., importing an inverter configuration, saving the current inverter configuration or exporting events and parameters) is not possible with mobile end devices having an iOS operating system.

- Use an end device that does not have an iOS operating system for importing and exporting files.

Procedure:

☐ Enter the IP address of the product in the address bar of the web browser.

☐ The login page of the user interface opens.

9.2 Logging In and Out of the User Interface

After a connection to the user interface of the inverter has been established, the login page opens. Log onto the user interface as described below.

Usage of cookies

For the correct display of the user interface, cookies are required. The cookies are used for convenience only. By using this user interface you agree to the placement of cookies.
Log in as Installer or User for the First Time

Password assignment for user and installer

The passwords for the user groups **Installer** and **User** must be assigned when accessing the user interface for the first time. If the inverter was registered in a communication device (e.g., SMA Data Manager) and the system password was assigned, the system password is also the installer password. In this case, only the user password must be assigned.

- If you as a specialist assign the user password, only pass the password on to persons to access the inverter data via the user interface.
- If you as a user assign the installer password, only pass the password on to persons to receive access to the system.

Installer password for inverters registered in a communication device or in Sunny Portal

To be able to register the inverter in a communication device (e.g., SMA Data Manager) or in a Sunny Portal system, the password for the user group **Installer** must match the system password. If you assign a password for the user group **Installer** via the user interface of the inverter, the same password must also be used as the system password.

- Assign a uniform installer password to all SMA devices in the system.

Procedure:

1. In the drop-down list **Language**, select the desired language.
2. In the **Password** field, enter a password for the **User** user group.
3. In the **Repeat password** field, enter the password again.
4. Click on **Save**.
5. In the **New password** field, enter a password for the **Installer** user group. Assign a uniform password to all SMA devices to be registered in a system. The installer password is also the system password.
6. In the **Repeat password** field, enter the password again.
7. Click on **Save and log in**.

☑ The **Configuring the Inverter** page opens.

Log in as the User or Installer

1. In the drop-down list **Language**, select the desired language.
2. In the **User group** drop-down list, select the entry **Installer** or **User**.
3. Enter the password in the field **Password**.
4. Select **Login**.

☑ The start page of the user interface opens.

Log Out as the User or Installer

1. On the right-hand side of the menu bar, select the menu **User Settings**.
2. In the subsequent context menu, select [Logout].

☑ The login page of the user interface opens. The logout was successful.
9.3 Start Page Design of the User Interface

Figure 11: Design of the user interface's start page (example)
### Position | Designation | Description
---|---|---
A | Menu | Provides the following functions:
  - **Home**
    Opens the user interface homepage
  - **Instantaneous values**
    Current measured values of the inverter
  - **Device Parameters**
    The various operating parameters of the inverter can be viewed and configured here depending on the user group.
  - **Events**
    All events that have occurred in the selected time period are displayed here. The event types are **Information**, **Warning** and **Error**. Currently existing events of the types **Error** and **Warning** will be additionally displayed in the **Device status** viewlet. However, only the higher-priority event is displayed. If, for example, there is a Warning and an Error present at the same time, only the Error will be displayed.
  - **Device configuration**
    Various settings for the inverter can be made here. The selection available is dependent on which user group you are logged in as and the operating system of the device with which the user interface has been called up.
  - **Data**
    You will find all data that is saved in the internal memory of the inverter or on an external storage medium on this page.

B | User settings | Provides the following functions, depending on the user group logged in:
  - Starting the installation assistant
  - SMA Grid Guard login
  - Logout

C | Help | Provides the following functions:
  - Displaying information on Open Source licenses used
  - Link to the website of SMA Solar Technology AG
<table>
<thead>
<tr>
<th>Position</th>
<th>Designation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>Status bar</td>
<td>Displays the following information:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Inverter serial number</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Inverter firmware version</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• IP address of the inverter within the local network and/or IP address of the inverter during WLAN connection</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• With WLAN connection: Signal strength of WLAN connection</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• User group logged in</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Date and device time of the inverter</td>
</tr>
<tr>
<td>E</td>
<td>Current power and current consumption</td>
<td>Temporal progression of the PV power and the power consumption of the household over the selected time period. Please note, the power consumption will only be displayed if an energy meter is installed in the PV system.</td>
</tr>
<tr>
<td>F</td>
<td>Status display</td>
<td>The various areas display information on the current status of the PV system.</td>
</tr>
</tbody>
</table>

**9.4 Activating the Smart Inverter Screen**

With the Smart Inverter Screen, the most important inverter data is displayed directly on the user interface login page. To activate the Smart Inverter Screen, proceed as listed in the following.

**Procedure:**

1. Activate the user interface (see Section 9.1, page 43).
2. Log in as **Installer** or **User**.
3. Select the menu **User Settings** (see Section 9.3, page 48) on the start page of the user interface.

4. Select **Smart Inverter Screen**.

☑ The Smart Inverter Screen has been activated.

### 9.5 Starting the Installation Assistant

**QUALIFIED PERSON**

The installation assistant leads you step-by-step through the steps necessary for the initial configuration of the inverter.

**Layout of the installation assistant**

![Diagram of installation assistant layout](image)

**Figure 12: Layout of the installation assistant (example)**

<table>
<thead>
<tr>
<th>Position</th>
<th>Designation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Configuration steps</td>
<td>Overview of the installation assistant steps. The number of steps depends on the type of device and the additionally installed modules. The current step is highlighted in blue.</td>
</tr>
<tr>
<td>B</td>
<td>User information</td>
<td>Information about the current configuration step and the setting options of the configuration step.</td>
</tr>
<tr>
<td>C</td>
<td>Configuration field</td>
<td>You can make settings in this field.</td>
</tr>
</tbody>
</table>

**Requirement:**

☐ When configuring after completion of the first ten feed-in hours or after exiting the installation assistant, the SMA Grid Guard code must be available in order to change the grid-relevant parameters (see "Application for SMA Grid Guard Code" at www.SMA-Solar.com).

**Procedure:**

1. Open the user interface (see Section 9.1, page 43).
2. Log in as **Installer**.
3. Select the menu **User Settings** (see Section 9.3, page 48) on the start page of the user interface.

4. In the context menu, select [Starting the installation assistant].

☑️ The installation assistant will open.

### 9.6 Activate WPS Function

The WPS function can be used for different purposes:
- Automatic connection to a network (e.g. via router)
- Direct connection between the product and an end device

Depending on the intended application of the WPS function, the procedure for activation will vary.

**Activating WPS function for automatic connection to a network**

**Requirements:**
- WLAN must be activated in the product.
- WPS must be activated on the router.

**Procedure:**
1. Open the user interface (see Section 9.1, page 43).
2. Log in as **Installer**.
3. Start the installation assistant (see Section 9.5, page 51).
4. Select **Network configuration**.
5. Select **WPS for WLAN network** button in the **WLAN** tab.
6. Select **Activate WPS**.
7. Select **Save and next** and exit the installation assistant.

☑️ The WPS function is activated and the automatic connection to the network can be established.

**Activating the WPS function for direct connection to the end device.**

- Enable WPS function on the product. To do this, tap on the enclosure lid of the product twice.

☑️ The blue LED flashes quickly for approx. 2 minutes. The WPS function is active during this time.

### 9.7 Switching WLAN On and Off

The inverter is equipped with an activated WLAN interface as standard. If you do not want to use WLAN, you can switch the WLAN function off and switch it on again whenever needed. In doing so, you can switch the WLAN direct connection and the WLAN connection in the local network on independently of each other.

**Switching on the WLAN function only possible via Ethernet connection**

If you switch off both the WLAN function for the direct connection and for the connection in the local network, access to the inverter user interface and therefore reactivation of the WLAN interface is only possible via an Ethernet connection.
The basic procedure for changing operating parameters is explained in another section (see Section 9.10 "Changing Operating Parameters", page 54).

Switching WLAN Off
If you would like to switch the WLAN function off completely, you must switch off both the direct connection and the connection in the local network.

Procedure:
• To switch off the direct connection in the parameter group PV system communication > WLAN, select the parameter Soft-access-point is turned on and set this to No.
• To switch off the connection in the local network in the parameter group PV system communication > WLAN, select the parameter WLAN is turned on and set this to No.

Switching WLAN On
If you have switched the WLAN function for direct connection or for connection in the local network off, you can switch the WLAN function back on in accordance with the following procedure.

Requirement:
☐ If the WLAN function was previously switched off completely, the inverter must be connected to a computer or router via Ethernet.

Procedure:
• To switch on the WLAN direct connection, in the parameter group PV system communication > WLAN, select the parameter Soft-access-point is turned on and set this to Yes.
• To switch on the WLAN connection in the local network, in the parameter group System communication > WLAN, select the parameter WLAN is turned on and set this to Yes.

9.8 Switching the Dynamic Power Display Off
As standard, the inverter signals its power dynamically via the pulsing of the green LED. When doing so, the LED flashes on and off uniformly or is permanently lit at full power. The various gradations are related here to the set active power limit of the inverter. If this display is not desired, switch this function off in accordance with the following procedure. Once this has been done, the green LED is lit permanently to signalize feed-in operation.

The basic procedure for changing operating parameters is explained in another section (see Section 9.10 "Changing Operating Parameters", page 54).

Procedure:
• In the parameter group Device > Operation, select the parameter Dynamic power display via green LED and set this to Off.
9.9 Changing the Password

The password for the inverter can be changed for both user groups. Furthermore, the user group Installer can change the password for the user group User as well as its own password.

PV systems registered in a communication product

With PV systems that are registered in a communication product (e.g. Sunny Portal, Sunny Home Manager), you can also assign a new password for the user group Installer via the communication product. The password for the user group Installer is also the system password. If you assign a password for the user group Installer via the user interface of the inverter that does not correspond to the system password in the communication product, the inverter can no longer be reached by the communication product.

- Ensure that the password for the user group Installer is the same as the system password in the communication product.

Procedure:
1. Activate the user interface (see Section 9.1, page 43).
2. Log into the user interface (see Section 9.2, page 46).
3. Call up the menu Device Parameters.
4. Select [Edit parameters].
5. In the parameter group User Rights > Access Control change the password of the desired user group.
6. Select [Save all] to save the changes.

9.10 Changing Operating Parameters

The operating parameters of the inverter are set to certain values by default. You can change the operating parameters to optimize the performance of the inverter.

This section describes the basic procedure for changing operating parameters. Always change operating parameters as described in this section. Some function-sensitive parameters can only be viewed by qualified persons and can only be changed by qualified persons by entering the personal SMA Grid Guard code.

Requirements:
☐ Changes to grid-relevant parameters must be approved by the responsible grid operator.

Procedure:
1. Open the user interface (see Section 9.1, page 43).
2. Log into the user interface (see Section 9.2, page 46).
3. Call up the menu Device Parameters.
4. Click on [Edit parameters].
5. Log in using the SMA Grid Guard code to change those parameters designated by a lock (only for installers):
   - Select the menu User Settings (see Section 9.3, page 48).
   - In the subsequent context menu, select [SMA Grid Guard login].
• Enter the SMA Grid Guard code and select [Login].

6. Expand the parameter group that contains the parameter which is to be configured.
7. Change the desired parameters.
8. Select [Save all] to save the changes.
☑ The inverter parameters are set.

Accepting the settings

Saving the made settings is indicated by an hourglass symbol on the user interface. If the DC voltage is sufficient, the data is transferred directly to the inverter and accepted. If the DC voltage is too low (e.g. in the evening), the settings are saved, but they cannot be directly transferred to or accepted by the inverter. As long as the inverter has not yet received and accepted the settings, the hourglass symbol will continue to be displayed on the user interface. The settings will be accepted when there is sufficient DC voltage applied and the inverter restarts. As soon as the hourglass symbol appears on the user interface, the settings have been saved. The settings will not be lost. You can log off of the user interface and leave the system.

9.11 Configuring the Modbus Function

⚠ QUALIFIED PERSON

If a Remote Output Control Device is installed in the system and an active connection is established between the Remote Output Control Device and the inverter, the Modbus interface of the inverter is automatically enabled and the communication ports 502 are set. Changes to the Modbus configuration may cause the communication between the Remote Output Control Device and the inverter not to function properly.

If there is no active connection established to a Remote Output Control Device, the Modbus interface is disabled and the communication ports 502 are set. If you want to use the Modbus interface, the Modbus interface must be enabled. After activating the interface, the communication ports of both IP protocols can be changed. For information on commissioning and configuration of the Modbus interface, see the technical information "SMA and SunSpec Modbus® Interface" at www.SMA-Solar.com.

For information on which Modbus registers are supported, see the technical information "Modbus® parameters and measured values" at www.SMA-Solar.com.

Data security during enabled Modbus interface

If you enable the Modbus interface, there is a risk that unauthorized users may access and manipulate the data or devices in your PV system.

To ensure data security, take appropriate protective measures such as:

• Set up a firewall.
• Close unnecessary network ports.
• Only enable remote access via VPN tunnel.
• Do not set up port forwarding at the communication port in use.
• In order to disable the Modbus interface, reset the inverter to the default settings or disable the parameter again.
9.12 Setting SMA ShadeFix

QUALIFIED PERSON

You can set the time interval in which the inverter has to determine the optimum operating point. If you do not want to use SMA ShadeFix, you can disable the feature.

The basic procedure for changing operating parameters is explained in another section (see Section 9.10 "Changing Operating Parameters", page 54).

Procedure:

- In the parameter group **DC-side > DC settings > SMA ShadeFix**, set the parameter **Time interval of SMA ShadeFix** and set the required time interval. The ideal time interval is usually six minutes. This value should only be increased if the shading situation changes extremely slowly.
  - The inverter optimizes the MPP of the PV system at the predetermined time interval.
- In order to disable the SMA ShadeFix feature, in the parameter group **DC-side > DC settings > SMA ShadeFix**, set the parameter **SMA ShadeFix switched on** to **Off**.

9.13 Saving the Configuration in a File

You can save the current configuration of the inverter in a file. You can use this file as a data backup for this inverter and then import this file into this inverter again or another inverter from the same type or device family to configure the inverter. When saving, only the device parameters will be saved, not any passwords.

Procedure:

1. Activate the user interface (see Section 9.1, page 43).
2. Log into the user interface (see Section 9.2, page 46).
3. Select the menu **Device Configuration**.
4. Select **[Settings]**.
5. In the context menu, select **[Saving the configuration in a file]**.
6. Follow the instructions in the dialog.

9.14 Adopting a Configuration from a File

QUALIFIED PERSON

To configure the inverter, you can adopt the configuration from a file. To be able to do this, you must first save the configuration of another inverter from the same type or device family in a file (see Section 9.13 "Saving the Configuration in a File", page 56). When saving, only the device parameters will be adopted, not any passwords.
9 Requirements:

- Changes to grid-relevant parameters must be approved by the responsible grid operator.
- The SMA Grid Guard code must be available (see "Application for SMA Grid Guard Code" at www.SMA-Solar.com).

9.15 Updating the Firmware

**QUALIFIED PERSON**

If no automatic update is set in the communication product (e.g. SMA Data Manager or Sunny Home Manager) or in Sunny Portal, you have the option of carrying out a manual firmware update.

You have the following options to update the firmware:

- Update the firmware with the existing update file via the user interface of the inverter.
- Search and install the firmware via the user interface of the inverter.

**Update the firmware with the existing update file via the user interface of the inverter.**

**Requirements:**

- An update file with the desired inverter firmware must be available. The update file is, for example, available for download on the product page of the inverter at www.SMA-Solar.com. To download the update file, it is necessary to enter the serial number of the inverter.

**Procedure:**

1. Open the user interface (see Section 9.1, page 43).
2. Log into the user interface as an Installer (see Section 9.2, page 46).
3. Select the menu Device Configuration.
4. Select [Settings].
5. In the context menu, select [Adopting the configuration from a file].
6. Follow the instructions in the dialog.

**Search and install the firmware via the user interface of the inverter.**

**Requirements:**

- The inverter must be connected to the Internet.
Procedure:
1. Open the user interface (see Section 9.1, page 43).
2. Log into the user interface as an Installer (see Section 9.2, page 46).
3. Click on [Edit parameters].
4. Go to Device > Update.
5. Select the parameter Check for update and install it and set it to Execute.
6. Click on [Save all].
☑ The firmware is updated in the background.
10 Disconnecting the Inverter from Voltage Sources

⚠️ QUALIFIED PERSON

Prior to performing any work on the inverter, always disconnect it from all voltage sources as described in this section. Always adhere to the prescribed sequence.

⚠️ WARNING

Danger to life due to electric shock from destruction of the measuring device due to overvoltage

Overvoltage can damage a measuring device and result in voltage being present in the enclosure of the measuring device. Touching the live enclosure of the measuring device results in death or lethal injuries due to electric shock.

- Only use measuring devices with a DC input voltage range of 600 V or higher.

Procedure:

1. Disconnect the AC circuit breaker and secure it against reconnection.
2. Set the DC load-break switch of the inverter to O.
3. Wait until the LEDs have gone out.
4. Use a current clamp to ensure that no current is present in the DC cables.
5. **DANGER**

**Danger to life due to electric shock when touching exposed DC conductors or DC plug contacts if the DC connectors are damaged or loose**

The DC connectors can break or become damaged, become free of the DC cables, or no longer be connected correctly if the DC connectors are released and disconnected incorrectly. This can result in the DC conductors or DC plug contacts being exposed. Touching live DC conductors or DC plug connectors will result in death or serious injury due to electric shock.

- Wear insulated gloves and use insulated tools when working on the DC connectors.
- Ensure that the DC connectors are in perfect condition and that none of the DC conductors or DC plug contacts are exposed.
- Carefully release and remove the DC connectors as described in the following.

6. Release and remove the DC connectors. To do so, insert a flat-blade screwdriver or an angled screwdriver (blade width: 3.5 mm) into one of the side slots and pull the DC connectors out. When doing so, do not lever the DC connectors out, but insert the tool into one of the side slots only to release the locking mechanism, and do not pull on the cable.

7. Ensure that no voltage is present between the positive terminal and negative terminal at the DC inputs using a suitable measuring device.

8. Ensure that no voltage is present between the positive terminal and ground as well as between the negative terminal and ground on the DC inputs using a suitable measuring device.
9. Unscrew the AC connector and pull it out of the jack for the AC connection.
11 Clean the product

<table>
<thead>
<tr>
<th>NOTICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Damage to the product due to cleaning agents</td>
</tr>
<tr>
<td>The use of cleaning agents may cause damage to the product and its components.</td>
</tr>
<tr>
<td>• Clean the product and all its components only with a cloth moistened with clear water.</td>
</tr>
<tr>
<td>• Ensure that the product is free of dust, foliage and other dirt.</td>
</tr>
</tbody>
</table>
12 Troubleshooting

12.1 Forgotten Password

If you have forgotten the password for the inverter, you can unlock the inverter with a Personal Unlocking Key (PUK). For each inverter, there is one PUK for each user group (User and Installer).

Tipp: With PV systems that are registered in a communication product, you can also assign a new password for the user group Installer via the communication product. The password for the user group Installer is the same as the system password in the communication product.

Procedure:
1. Contact the Service and request a PUK (see Section 15 “Contact”, page 92).
2. Open the user interface (see Section 9.1, page 43).
3. Enter the PUK instead of the password into the field Password.
4. Select Login.
5. Call up the menu Device Parameters.
6. Click on [Edit parameters].
7. In the parameter group User Rights > Access Control change the password of the desired user group.
8. Select [Save all] to save the changes.

Password assignment for inverters that are registered in a communication product

The password for the user group Installer is also the system password for the system in the communication product. Changing the password of the user group Installer can lead to the inverter no longer being able to be reached by the communication product.

- In the communication product, assign the changed password of the user group Installer as the new system password (see the manual of the communication product).
### 12.2 Event Messages

<table>
<thead>
<tr>
<th>Event number</th>
<th>Message, cause and corrective measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>101</td>
<td><strong>⚠️ QUALIFIED PERSON</strong></td>
</tr>
<tr>
<td></td>
<td>Grid overvoltage (spot value)</td>
</tr>
<tr>
<td></td>
<td>The grid voltage or grid impedance at the connection point of the inverter is too high. The inverter has disconnected from the utility grid.</td>
</tr>
<tr>
<td></td>
<td><strong>Corrective measures:</strong></td>
</tr>
<tr>
<td></td>
<td>• Check whether the grid voltage at the connection point of the inverter is permanently in the permissible range.</td>
</tr>
<tr>
<td></td>
<td>If the grid voltage is outside the permissible range due to local grid conditions, contact the grid operator. The grid operator must agree with an adjustment of the voltage at the feed-in point or with a change of the monitored operating limits.</td>
</tr>
<tr>
<td></td>
<td>If the grid voltage is permanently within the permissible range and this message is still displayed, contact Service.</td>
</tr>
<tr>
<td>102</td>
<td><strong>⚠️ QUALIFIED PERSON</strong></td>
</tr>
<tr>
<td></td>
<td>Grid overvoltage fast</td>
</tr>
<tr>
<td></td>
<td><strong>Corrective measures:</strong></td>
</tr>
<tr>
<td></td>
<td>• Check whether the grid voltage at the connection point of the inverter is permanently in the permissible range.</td>
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<td>If the grid voltage is outside the permissible range due to local grid conditions, contact the grid operator. The grid operator must agree with an adjustment of the voltage at the feed-in point or with a change of the monitored operating limits.</td>
</tr>
<tr>
<td></td>
<td>If the grid voltage is permanently within the permissible range and this message is still displayed, contact Service.</td>
</tr>
<tr>
<td>103</td>
<td><strong>⚠️ QUALIFIED PERSON</strong></td>
</tr>
<tr>
<td></td>
<td>Grid overvoltage slow</td>
</tr>
<tr>
<td></td>
<td><strong>Corrective measures:</strong></td>
</tr>
<tr>
<td></td>
<td>• Check whether the grid voltage at the connection point of the inverter is permanently in the permissible range.</td>
</tr>
<tr>
<td></td>
<td>If the grid voltage is outside the permissible range due to local grid conditions, contact the grid operator. The grid operator must agree with an adjustment of the voltage at the feed-in point or with a change of the monitored operating limits.</td>
</tr>
<tr>
<td></td>
<td>If the grid voltage is permanently within the permissible range and this message is still displayed, contact Service.</td>
</tr>
</tbody>
</table>
## Troubleshooting

### Event number 105

**Message, cause and corrective measures**

**Grid overvoltage very fast**

**Corrective measures:**

- Check whether the grid voltage at the connection point of the inverter is permanently in the permissible range.

  If the grid voltage is outside the permissible range due to local grid conditions, contact the grid operator. The grid operator must agree with an adjustment of the voltage at the feed-in point or with a change of the monitored operating limits.

  If the grid voltage is permanently within the permissible range and this message is still displayed, contact Service.

### Event number 202

**Grid undervoltage fast**

The utility grid has been disconnected, the AC cable is damaged or the grid voltage at the connection point of the inverter is too low. The inverter has disconnected from the utility grid.

**Corrective measures:**

- Ensure that the circuit breaker is switched on.
- Ensure that the AC cable is not damaged and that it is connected correctly.
- Ensure that the country data set has been configured correctly.
- Check whether the grid voltage at the connection point of the inverter is permanently in the permissible range.

  If the grid voltage is outside the permissible range due to local grid conditions, contact the grid operator. The grid operator must agree with an adjustment of the voltage at the feed-in point or with a change of the monitored operating limits.

  If the grid voltage is permanently within the permissible range and this message is still displayed, contact the Service.
### Event number 203

<table>
<thead>
<tr>
<th>Message, cause and corrective measures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Grid undervoltage slow</strong></td>
</tr>
<tr>
<td>The utility grid has been disconnected, the AC cable is damaged or the grid voltage at the connection point of the inverter is too low. The inverter has disconnected from the utility grid.</td>
</tr>
<tr>
<td><strong>Corrective measures:</strong></td>
</tr>
<tr>
<td>• Ensure that the circuit breaker is switched on.</td>
</tr>
<tr>
<td>• Ensure that the AC cable is not damaged and that it is connected correctly.</td>
</tr>
<tr>
<td>• Ensure that the country data set has been configured correctly.</td>
</tr>
<tr>
<td>• Check whether the grid voltage at the connection point of the inverter is permanently in the permissible range.</td>
</tr>
<tr>
<td>If the grid voltage is outside the permissible range due to local grid conditions, contact the grid operator. The grid operator must agree with an adjustment of the voltage at the feed-in point or with a change of the monitored operating limits.</td>
</tr>
<tr>
<td>If the grid voltage is permanently within the permissible range and this message is still displayed, contact the Service.</td>
</tr>
</tbody>
</table>

### Event number 205

<table>
<thead>
<tr>
<th>Message, cause and corrective measures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PLL not within limits</strong></td>
</tr>
<tr>
<td>The utility grid has been disconnected, the AC cable is damaged or the grid voltage at the connection point of the inverter is too low. The inverter has disconnected from the utility grid.</td>
</tr>
<tr>
<td><strong>Corrective measures:</strong></td>
</tr>
<tr>
<td>• Ensure that the circuit breaker is switched on.</td>
</tr>
<tr>
<td>• Ensure that the AC cable is not damaged and that it is connected correctly.</td>
</tr>
<tr>
<td>• Ensure that the country data set has been configured correctly.</td>
</tr>
<tr>
<td>• Check whether the grid voltage at the connection point of the inverter is permanently in the permissible range.</td>
</tr>
<tr>
<td>If the grid voltage is outside the permissible range due to local grid conditions, contact the grid operator. The grid operator must agree with an adjustment of the voltage at the feed-in point or with a change of the monitored operating limits.</td>
</tr>
<tr>
<td>If the grid voltage is permanently within the permissible range and this message is still displayed, contact the Service.</td>
</tr>
<tr>
<td>Event number</td>
</tr>
<tr>
<td>---------------</td>
</tr>
<tr>
<td>206</td>
</tr>
<tr>
<td></td>
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<tr>
<th>Event number</th>
<th>Message, cause and corrective measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>301</td>
<td><strong>GRID FAULT</strong></td>
</tr>
<tr>
<td></td>
<td>The ten-minute average value of the grid voltage is no longer within the permissible range. The grid voltage or grid impedance at the connection point is too high. The inverter disconnects from the utility grid to maintain power quality.</td>
</tr>
<tr>
<td></td>
<td><strong>Corrective measures:</strong></td>
</tr>
<tr>
<td></td>
<td>• During the feed-in operation, check whether the grid voltage at the connection point of the inverter is permanently in the permissible range.</td>
</tr>
<tr>
<td></td>
<td>If the grid voltage is outside the permissible range due to local grid conditions, contact the grid operator. The grid operator must agree with an adjustment of the voltage at the feed-in point or with a change of the monitored operating limits.</td>
</tr>
<tr>
<td></td>
<td>If the grid voltage is permanently within the permissible range and this message is still displayed, contact Service.</td>
</tr>
</tbody>
</table>
### Event number | Message, cause and corrective measures
--- | ---
401 | **⚠️ QUALIFIED PERSON**

**Grid fault**
The inverter has disconnected from the utility grid. A stand-alone grid or a very large change in the power frequency was detected.

**Corrective measures:**
- Check the grid connection for significant short-term frequency fluctuations.

404 | **⚠️ QUALIFIED PERSON**

**Frequency change not permitted**
The inverter has disconnected from the utility grid. A stand-alone grid or a very large change in the power frequency was detected.

**Corrective measures:**
- Check the grid connection for significant short-term frequency fluctuations.

501 | **⚠️ QUALIFIED PERSON**

**Grid fault**
The power frequency is not within the permissible range. The inverter has disconnected from the utility grid.

**Corrective measures:**
- If possible, check the power frequency and observe how often fluctuations occur.
  - If fluctuations occur frequently and this message is displayed often, contact the grid operator and request approval to change the operating parameters of the inverter.
  - If the grid operator gives his approval, discuss any changes to the operating parameters with the Service.

507 | **⚠️ QUALIFIED PERSON**

**Active power limit AC frequency**
The inverter has reduced its power due to a too-high power frequency to ensure grid stability.

**Corrective measures:**
- If possible, check the power frequency and observe how often fluctuations occur. If fluctuations occur frequently and this message is displayed often, contact the grid operator and request approval to change the operating parameters of the inverter. If the grid operator gives his approval, discuss any changes to the operating parameters with the Service.
<table>
<thead>
<tr>
<th>Event number</th>
<th>Message, cause and corrective measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>601</td>
<td><strong>⚠️ QUALIFIED PERSON</strong> Grid fault</td>
</tr>
<tr>
<td></td>
<td>The inverter has detected an excessively high proportion of direct current in the grid current.</td>
</tr>
<tr>
<td></td>
<td><strong>Corrective measures:</strong></td>
</tr>
<tr>
<td></td>
<td>- Check the grid connection for direct current.</td>
</tr>
<tr>
<td></td>
<td>- If this message is displayed frequently, contact the grid operator and check whether the monitoring threshold on the inverter can be raised.</td>
</tr>
<tr>
<td>701</td>
<td><strong>⚠️ QUALIFIED PERSON</strong> Frequency not permitted &gt; Check parameter</td>
</tr>
<tr>
<td></td>
<td>The power frequency is not within the permissible range. The inverter has disconnected from the utility grid.</td>
</tr>
<tr>
<td></td>
<td><strong>Corrective measures:</strong></td>
</tr>
<tr>
<td></td>
<td>- If possible, check the power frequency and observe how often fluctuations occur.</td>
</tr>
<tr>
<td></td>
<td>If fluctuations occur frequently and this message is displayed often, contact the grid operator and request approval to change the operating parameters of the inverter.</td>
</tr>
<tr>
<td></td>
<td>If the grid operator gives his approval, discuss any changes to the operating parameters with the Service.</td>
</tr>
<tr>
<td>901</td>
<td><strong>⚠️ QUALIFIED PERSON</strong> PE connection missing &gt; Check connection</td>
</tr>
<tr>
<td></td>
<td>The grounding conductor is not correctly connected.</td>
</tr>
<tr>
<td></td>
<td><strong>Corrective measures:</strong></td>
</tr>
<tr>
<td></td>
<td>- Ensure that the grounding conductor is correctly connected.</td>
</tr>
<tr>
<td>1001</td>
<td><strong>⚠️ QUALIFIED PERSON</strong> L / N swapped &gt; Check connection</td>
</tr>
<tr>
<td></td>
<td>The connection of U/W and O is swapped.</td>
</tr>
<tr>
<td></td>
<td><strong>Corrective measures:</strong></td>
</tr>
<tr>
<td></td>
<td>- Ensure that U/W and O are correctly connected.</td>
</tr>
<tr>
<td>Event number</td>
<td>Message, cause and corrective measures</td>
</tr>
<tr>
<td>--------------</td>
<td>----------------------------------------</td>
</tr>
</tbody>
</table>
| 1101         | **⚠️ QUALIFIED PERSON** Installation fault > Check connection  
A second line conductor is connected to O.  
**Corrective measures:**  
• Connect the neutral conductor O to the correct terminal at the AC connector. |
| 1302         | **⚠️ QUALIFIED PERSON** Waiting for grid voltage > Installation failure grid connection > Check grid and fuses  
U/W or O not connected.  
**Corrective measures:**  
• Ensure that U/W and O are connected.  
• Ensure that the circuit breaker is switched on.  
• Ensure that the AC cable is not damaged and that it is connected correctly. |
| 1501         | **⚠️ QUALIFIED PERSON** Reconnection fault grid  
The value of a grid parameter you have set does not correspond to the local requirements. The inverter cannot connect to the utility grid.  
**Corrective measures:**  
• Ensure that all grid parameters are set correctly. |
| 3302         | **⚠️ QUALIFIED PERSON** Unstable operation  
There is not enough power at the DC input of the inverter for stable operation. The inverter cannot connect to the utility grid.  
**Corrective measures:**  
• Ensure that the PV array is designed correctly.  
• Ensure that the PV array is not covered by snow or otherwise shaded.  
• Ensure that the PV array is free of errors. |
<table>
<thead>
<tr>
<th>Event number</th>
<th>Message, cause and corrective measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>3401</td>
<td><strong>DC overvoltage &gt; Disconnect generator</strong></td>
</tr>
<tr>
<td>3402</td>
<td>Overvoltage at the DC input. This can destroy the inverter. This message is signaled additionally by rapid flashing of the LEDs.</td>
</tr>
<tr>
<td></td>
<td><strong>Corrective measures:</strong></td>
</tr>
<tr>
<td></td>
<td>• Immediately disconnect the inverter from all voltage sources.</td>
</tr>
<tr>
<td></td>
<td>• Check whether the DC voltage is below the maximum input voltage of the inverter. If the DC voltage is below the maximum input voltage of the inverter, reconnect the DC connectors to the inverter.</td>
</tr>
<tr>
<td></td>
<td>• If the DC voltage exceeds the maximum input voltage of the inverter, ensure that the PV array has been correctly rated or contact the installer of the PV array.</td>
</tr>
<tr>
<td></td>
<td>• If this message is repeated frequently, contact the Service.</td>
</tr>
<tr>
<td>3501</td>
<td><strong>Insulation failure &gt; Check generator</strong></td>
</tr>
<tr>
<td></td>
<td>The inverter has detected a ground fault in the PV array.</td>
</tr>
<tr>
<td></td>
<td><strong>Corrective measures:</strong></td>
</tr>
<tr>
<td></td>
<td>• Check the PV system for ground faults.</td>
</tr>
<tr>
<td>3701</td>
<td><strong>Residual current too high &gt; Check generator</strong></td>
</tr>
<tr>
<td></td>
<td>The inverter has detected a residual current due to temporary grounding of the PV array.</td>
</tr>
<tr>
<td></td>
<td><strong>Corrective measures:</strong></td>
</tr>
<tr>
<td></td>
<td>• Check the PV system for ground faults.</td>
</tr>
<tr>
<td>3801</td>
<td><strong>DC overcurrent &gt; Check generator</strong></td>
</tr>
<tr>
<td>3802</td>
<td>Overcurrent at the DC input. The inverter briefly interrupts feed-in operation.</td>
</tr>
<tr>
<td></td>
<td><strong>Corrective measures:</strong></td>
</tr>
<tr>
<td></td>
<td>• If this message is displayed frequently, ensure that the PV array has been correctly rated and wired.</td>
</tr>
<tr>
<td>Event number</td>
<td>Message, cause and corrective measures</td>
</tr>
<tr>
<td>--------------</td>
<td>----------------------------------------</td>
</tr>
</tbody>
</table>
| 3901         | **Waiting for DC start conditions > Start conditions not met**  
The feed-in conditions for the utility grid are not yet fulfilled.  
**Corrective measures:**  
• Ensure that the PV array is not covered by snow or otherwise shaded.  
• Wait for higher irradiation.  
• If this message is displayed frequently in the morning, increase the voltage limit for starting grid feed-in. Change the parameter **Critical voltage to start feed-in.**  
• If this message is displayed frequently with medium irradiation, ensure that the PV array is correctly rated. |
| 3902         | **Self-diagnosis > Interference device**  
The cause must be determined by the Service.  
**Corrective measures:**  
• Contact the Service. |
| 6001-6416    | **Self-diagnosis > Overtemperature**  
The inverter has switched off due to excessive temperature.  
**Corrective measures:**  
• Clean the cooling fins on the rear of the enclosure and the air ducts on the top using a soft brush.  
• Ensure that the inverter has sufficient ventilation.  
• Ensure that the ambient temperature +40°C has not been exceeded.  
• Ensure that the inverter is not exposed to direct solar irradiation. |
| 6501         | **Minimum operating temperature not reached**  
The inverter will only recommence grid feed-in once the temperature has reached at least −25°C. |
| 6502         | **Self-diagnosis > Overload**  
The cause must be determined by the Service.  
**Corrective measures:**  
• Contact the Service.
## 12 Troubleshooting

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<thead>
<tr>
<th>Event number</th>
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<tr>
<td>7001</td>
<td><strong>⚠️ QUALIFIED PERSON</strong></td>
</tr>
<tr>
<td>7002</td>
<td>Sensor fault</td>
</tr>
<tr>
<td></td>
<td>A temperature sensor in the inverter is defective and the inverter interrupts the feed-in operation. The cause must be determined by the Service.</td>
</tr>
<tr>
<td></td>
<td><strong>Corrective measures:</strong></td>
</tr>
<tr>
<td></td>
<td>• Contact the Service.</td>
</tr>
<tr>
<td>7102</td>
<td><strong>⚠️ QUALIFIED PERSON</strong></td>
</tr>
<tr>
<td></td>
<td>Parameter file not found or defective</td>
</tr>
<tr>
<td></td>
<td>The parameter file was not found or is defective. The update failed. The inverter continues to feed in.</td>
</tr>
<tr>
<td></td>
<td><strong>Corrective measures:</strong></td>
</tr>
<tr>
<td></td>
<td>• Copy the parameter file to the correct folder again.</td>
</tr>
<tr>
<td>7105</td>
<td><strong>⚠️ QUALIFIED PERSON</strong></td>
</tr>
<tr>
<td></td>
<td>Param. setting failed</td>
</tr>
<tr>
<td></td>
<td>Parameters could not be set using the memory card. The inverter continues to feed in.</td>
</tr>
<tr>
<td></td>
<td><strong>Corrective measures:</strong></td>
</tr>
<tr>
<td></td>
<td>• Ensure that the parameters are set correctly.</td>
</tr>
<tr>
<td></td>
<td>• Ensure that the SMA Grid Guard code is available.</td>
</tr>
<tr>
<td>7106</td>
<td>Update file defective</td>
</tr>
<tr>
<td></td>
<td>The update file is defective. The update failed. The inverter continues to feed in.</td>
</tr>
<tr>
<td>7110</td>
<td>No update file found</td>
</tr>
<tr>
<td></td>
<td>No new update file was found. The update failed. The inverter continues to feed in.</td>
</tr>
<tr>
<td>7112</td>
<td>Update file successfully copied</td>
</tr>
<tr>
<td>7113</td>
<td>The memory card is full or write-protected</td>
</tr>
<tr>
<td>7201</td>
<td>Data storage not possible</td>
</tr>
<tr>
<td>7202</td>
<td></td>
</tr>
<tr>
<td>7303</td>
<td><strong>⚠️ QUALIFIED PERSON</strong></td>
</tr>
<tr>
<td></td>
<td>Update main CPU failed</td>
</tr>
<tr>
<td></td>
<td>The cause must be determined by the Service.</td>
</tr>
<tr>
<td></td>
<td><strong>Corrective measures:</strong></td>
</tr>
<tr>
<td></td>
<td>• Contact the Service.</td>
</tr>
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</tr>
<tr>
<td>7320</td>
<td>The device with serial number [xx] was successfully updated to firmware version [xxx]. The firmware update was completed successfully.</td>
</tr>
<tr>
<td>7324</td>
<td>Wait for update conditions</td>
</tr>
</tbody>
</table>
| 7330         | Condition test failed  
The testing of the update conditions was not successful. The firmware update package is not suitable for this inverter. |
| 7331         | Update transport started  
Update file is being copied. |
| 7332         | Update transport successful  
Update file was copied successfully to the inverter's internal memory. |
| 7333         | 🚨 QUALIFIED PERSON  
Update transport failed  
Update file could not be copied to the inverter's internal memory. In the event of connection with the inverter via WLAN, a poor connection quality can be the cause.  
Corrective measures:  
• Retry update.  
• For WLAN connection: Improve the WLAN connection quality (e.g., via WLAN repeater) or establish connection with the inverter via Ethernet.  
• If this message is displayed again, contact the Service. |
| 7340         | Update communication failed |
| 7342         | 🚨 QUALIFIED PERSON  
Update Bootloader failed  
The bootloader update failed.  
Corrective measures:  
• Retry update.  
• If this message is displayed again, contact the Service. |
| 7347         | 🚨 QUALIFIED PERSON  
Incompatible file  
The configuration file is not suitable for this inverter.  
Corrective measures:  
• Ensure that the selected configuration file is suitable for this inverter.  
• Retry import. |
<table>
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<tr>
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</table>
| 7348         | **⚠️ QUALIFIED PERSON** Incorrect file format  
The configuration file is not of the required format or is damaged.  
**Corrective measures:**  
• Ensure that the selected configuration file is of the required format and is not damaged.  
• Retry import. |
| 7349         | Incorrect login rights for configuration file  
The user group logged in does not have the user rights necessary to be able to import a configuration.  
**Corrective measures:**  
• Log in as Installer.  
• Import configuration file again. |
| 7350         | Transfer of a configuration file has started  
The configuration file is being transferred. |
| 7353         | Update time zone database  
The inverter is updating the time zone database. |
| 7354         | **⚠️ QUALIFIED PERSON** Update of time zone database not successful  
The update of the time zone database failed.  
**Corrective measures:**  
• Retry update.  
• If this message is displayed again, contact the Service. |
| 7356         | **⚠️ QUALIFIED PERSON** Update of the WebUI not successful  
The update of the inverter user interface failed.  
**Corrective measures:**  
• Retry update.  
• If this message is displayed again, contact the Service. |
| 7701         | **⚠️ QUALIFIED PERSON** Grid disconnection point  
Grid relay of the inverter defective.  
**Corrective measures:**  
• Contact the Service. |
<table>
<thead>
<tr>
<th>Event number</th>
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</tr>
</thead>
<tbody>
<tr>
<td>7702</td>
<td><strong>⚠️ QUALIFIED PERSON</strong> Relay defect</td>
</tr>
<tr>
<td></td>
<td>Grid relay of the inverter defective.</td>
</tr>
<tr>
<td></td>
<td><strong>Corrective measures:</strong></td>
</tr>
<tr>
<td></td>
<td>• Contact the Service.</td>
</tr>
<tr>
<td>7703</td>
<td><strong>⚠️ QUALIFIED PERSON</strong> 24h relay test</td>
</tr>
<tr>
<td></td>
<td>Relay test failed.</td>
</tr>
<tr>
<td></td>
<td><strong>Corrective measures:</strong></td>
</tr>
<tr>
<td></td>
<td>• If this message is displayed again,</td>
</tr>
<tr>
<td></td>
<td>contact the Service.</td>
</tr>
<tr>
<td>8003</td>
<td><strong>⚠️ QUALIFIED PERSON</strong> Active power</td>
</tr>
<tr>
<td></td>
<td>limit Temperature</td>
</tr>
<tr>
<td></td>
<td>The inverter has reduced its power</td>
</tr>
<tr>
<td></td>
<td>output for more than ten minutes</td>
</tr>
<tr>
<td></td>
<td>due to excessive temperature.</td>
</tr>
<tr>
<td></td>
<td><strong>Corrective measures:</strong></td>
</tr>
<tr>
<td></td>
<td>• Clean the cooling fins on the rear</td>
</tr>
<tr>
<td></td>
<td>of the enclosure and the air ducts</td>
</tr>
<tr>
<td></td>
<td>on the top using a soft brush.</td>
</tr>
<tr>
<td></td>
<td>• Ensure that the inverter has</td>
</tr>
<tr>
<td></td>
<td>sufficient ventilation.</td>
</tr>
<tr>
<td></td>
<td>• Ensure that the ambient temperature</td>
</tr>
<tr>
<td></td>
<td>+40°C has not been exceeded.</td>
</tr>
<tr>
<td></td>
<td>• Ensure that the inverter is not</td>
</tr>
<tr>
<td></td>
<td>exposed to direct solar irradiation.</td>
</tr>
<tr>
<td>8101</td>
<td><strong>⚠️ QUALIFIED PERSON</strong> Communication</td>
</tr>
<tr>
<td>8102</td>
<td>disturbed</td>
</tr>
<tr>
<td>8103</td>
<td>The cause must be determined by the</td>
</tr>
<tr>
<td></td>
<td>Service.</td>
</tr>
<tr>
<td>8104</td>
<td><strong>Corrective measures:</strong></td>
</tr>
<tr>
<td></td>
<td>• Contact the Service.</td>
</tr>
<tr>
<td>9002</td>
<td><strong>⚠️ QUALIFIED PERSON</strong> SMA Grid Guard</td>
</tr>
<tr>
<td></td>
<td>code invalid</td>
</tr>
<tr>
<td></td>
<td>The SMA Grid Guard code entered is</td>
</tr>
<tr>
<td></td>
<td>incorrect. The operating parameters</td>
</tr>
<tr>
<td></td>
<td>are still protected and cannot be</td>
</tr>
<tr>
<td></td>
<td>changed.</td>
</tr>
<tr>
<td></td>
<td><strong>Corrective measures:</strong></td>
</tr>
<tr>
<td></td>
<td>• Enter the correct SMA Grid Guard</td>
</tr>
<tr>
<td></td>
<td>code.</td>
</tr>
</tbody>
</table>
### Event number Message, cause and corrective measures

<table>
<thead>
<tr>
<th>Event number</th>
<th>Message, cause and corrective measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>9003</td>
<td><strong>Grid parameter locked</strong>&lt;br&gt;Changes to the grid parameters are now blocked. In order to be able to make changes to the grid parameters, from now on you must log in using the SMA Grid Guard code.</td>
</tr>
<tr>
<td>9007</td>
<td><strong>⚠️ QUALIFIED PERSON</strong>&lt;br&gt;Abort self-test&lt;br&gt;The self-test (Italy only) was terminated.&lt;br&gt;&lt;strong&gt;Corrective measures:&lt;/strong&gt;&lt;br&gt;• Ensure that the AC connection is correct.&lt;br&gt;• Restart the self-test.</td>
</tr>
<tr>
<td>10108</td>
<td><strong>Time adjusted / old time</strong></td>
</tr>
<tr>
<td>10109</td>
<td><strong>Time adjusted / new time</strong></td>
</tr>
<tr>
<td>10110</td>
<td><strong>⚠️ QUALIFIED PERSON</strong>&lt;br&gt;Time synchronization failed:</td>
</tr>
<tr>
<td>10118</td>
<td><strong>Parameter upload complete</strong>&lt;br&gt;The configuration file was loaded successfully.</td>
</tr>
<tr>
<td>10248</td>
<td><strong>⚠️ QUALIFIED PERSON</strong>&lt;br&gt;[Interface]: network busy&lt;br&gt;The network is busy. Data exchange between the devices is not at an optimum and is greatly delayed.&lt;br&gt;&lt;strong&gt;Corrective measures:&lt;/strong&gt;&lt;br&gt;• Increase the query intervals.&lt;br&gt;• If necessary, reduce the number of devices in the network.</td>
</tr>
<tr>
<td>10249</td>
<td><strong>⚠️ QUALIFIED PERSON</strong>&lt;br&gt;[Interface]: network overloaded&lt;br&gt;The network is overloaded. There is no data exchange between the devices.&lt;br&gt;&lt;strong&gt;Corrective measures:&lt;/strong&gt;&lt;br&gt;• Reduce the number of devices in the network.&lt;br&gt;• If necessary, increase the data query intervals.</td>
</tr>
<tr>
<td>Event number</td>
<td>Message, cause and corrective measures</td>
</tr>
<tr>
<td>--------------</td>
<td>---------------------------------------</td>
</tr>
<tr>
<td>10250</td>
<td><strong>⚠️ QUALIFIED PERSON</strong></td>
</tr>
<tr>
<td></td>
<td><strong>[Interface]: package error rate [ok / high]</strong></td>
</tr>
<tr>
<td></td>
<td>The package error rate has changed. If the package error rate is high, the network is overloaded or the connection to the network switch or DHCP server (router) is disturbed.</td>
</tr>
<tr>
<td></td>
<td><strong>Corrective measures if the package error rate is high:</strong></td>
</tr>
<tr>
<td></td>
<td>• Ensure that with an Ethernet connection, the network cable and the network connector are not damaged and that the network connectors are correctly plugged.</td>
</tr>
<tr>
<td></td>
<td>• If necessary, increase the data query intervals.</td>
</tr>
<tr>
<td></td>
<td>• If necessary, reduce the number of devices in the network.</td>
</tr>
<tr>
<td>10251</td>
<td><strong>[Interface]: communication status goes to [OK / Warning / Error / Not connected]</strong></td>
</tr>
<tr>
<td></td>
<td>The communication status to the network switch or DHCP server (router) has changed. An additional error message may be displayed.</td>
</tr>
<tr>
<td>10252</td>
<td><strong>⚠️ QUALIFIED PERSON</strong></td>
</tr>
<tr>
<td></td>
<td><strong>[Interface]: communication disrupted</strong></td>
</tr>
<tr>
<td></td>
<td>There is no valid signal on the network line.</td>
</tr>
<tr>
<td></td>
<td><strong>Corrective measures:</strong></td>
</tr>
<tr>
<td></td>
<td>• Ensure that with an Ethernet connection, the network cable and the network connector are not damaged and that the network connectors are correctly plugged.</td>
</tr>
<tr>
<td></td>
<td>• Ensure that the DHCP server (router) and any network switches are signalizing correct operation.</td>
</tr>
<tr>
<td>10253</td>
<td><strong>⚠️ QUALIFIED PERSON</strong></td>
</tr>
<tr>
<td></td>
<td><strong>[Interface]: connection speed goes to [100 Mbit / 10 Mbit]</strong></td>
</tr>
<tr>
<td></td>
<td>The data transfer rate has changed. The cause for the status [10 Mbit] can be a defective plug, a defective cable or the pulling or plugging of the network connector.</td>
</tr>
<tr>
<td></td>
<td><strong>Corrective measures if the status is [10 Mbit]:</strong></td>
</tr>
<tr>
<td></td>
<td>• Ensure that with an Ethernet connection, the network cable and the network connector are not damaged and that the network connectors are correctly plugged.</td>
</tr>
<tr>
<td></td>
<td>• Ensure that the DHCP server (router) and any network switches are signalizing correct operation.</td>
</tr>
<tr>
<td>Event number</td>
<td>Message, cause and corrective measures</td>
</tr>
<tr>
<td>--------------</td>
<td>----------------------------------------</td>
</tr>
<tr>
<td>10254</td>
<td><strong>QUALIFIED PERSON</strong></td>
</tr>
<tr>
<td></td>
<td><strong>[Interface]: duplex mode goes to [Full / Half]</strong></td>
</tr>
<tr>
<td></td>
<td>The duplex mode (data transfer mode) has changed. The cause for the status [Half] can be a defective plug, a defective cable or the pulling or plugging of the network connector.</td>
</tr>
<tr>
<td></td>
<td><strong>Corrective measures if the status is [Half]:</strong></td>
</tr>
<tr>
<td></td>
<td>• Ensure that with an Ethernet connection, the network cable and the network connector are not damaged and that the network connectors are correctly plugged.</td>
</tr>
<tr>
<td></td>
<td>• Ensure that the DHCP server (router) and any network switches are signalizing correct operation.</td>
</tr>
<tr>
<td>10255</td>
<td><strong>QUALIFIED PERSON</strong></td>
</tr>
<tr>
<td></td>
<td><strong>[Interface]: Network load OK</strong></td>
</tr>
<tr>
<td></td>
<td>The network load has returned to a normal range after being busy.</td>
</tr>
<tr>
<td>10282</td>
<td><strong>[User group]-Login via [protocol] locked</strong></td>
</tr>
<tr>
<td></td>
<td>After several incorrect login attempts, login has been blocked for a limited time. In this case, the User login will be blocked for 15 minutes, the Grid Guard login for 12 hours.</td>
</tr>
<tr>
<td></td>
<td><strong>Corrective measures:</strong></td>
</tr>
<tr>
<td></td>
<td>• Wait until the given time has expired and then retry login.</td>
</tr>
<tr>
<td>10283</td>
<td><strong>QUALIFIED PERSON</strong></td>
</tr>
<tr>
<td></td>
<td><strong>WLAN module faulty</strong></td>
</tr>
<tr>
<td></td>
<td>The WLAN module integrated in the inverter is defective.</td>
</tr>
<tr>
<td></td>
<td><strong>Corrective measures:</strong></td>
</tr>
<tr>
<td></td>
<td>• Contact the Service (see Section 15, page 92).</td>
</tr>
<tr>
<td>Event number</td>
<td>Message, cause and corrective measures</td>
</tr>
<tr>
<td>--------------</td>
<td>---------------------------------------</td>
</tr>
</tbody>
</table>
| 10284        | **⚠️ QUALIFIED PERSON** No WLAN connection possible  
The inverter does not currently have a WLAN connection to the selected network.  
**Corrective measures:**  
• Ensure that the SSID, the WLAN password and the encryption method have been entered correctly. The encryption method is specified by your WLAN router or WLAN Access Point and can be changed there.  
• Ensure that the WLAN router or WLAN Access Point is in range and is signalizing correct operation.  
• If this message is displayed often, improve the WLAN connection by using a WLAN repeater. |
| 10285        | **⚠️ QUALIFIED PERSON** WLAN connection established  
Connection to the selected WLAN network has been established. |
| 10286        | **⚠️ QUALIFIED PERSON** WLAN connection lost  
The inverter has lost WLAN connection to the selected network.  
**Corrective measures:**  
• Ensure that the WLAN router or WLAN Access Point is still active.  
• Ensure that the WLAN router or WLAN Access Point is in range and is signalizing correct operation.  
• If this message is displayed often, improve the WLAN connection by using a WLAN repeater. |
| 10287        | WLAN module detected |
| 10339        | **Webconnect enabled**  
The Webconnect function has been enabled. |
| 10340        | **Webconnect disabled**  
The Webconnect function has been disabled. |
| 10341        | **Webconnect error: no connection**  
No connection to Sunny Portal possible.  
**Corrective measures:**  
• Ensure that the Internet connection is working properly.  
• Ensure that the Webconnect function is enabled.  
• Ensure that the network cable at the inverter is correctly connected.
<table>
<thead>
<tr>
<th>Event number</th>
<th>Message, cause and corrective measures</th>
</tr>
</thead>
</table>
| 10343        | **Webconnect error: Default gateway not configured**  
The standard gateway was not configured.  
**Corrective measures:**  
• Configure the standard gateway. |
| 10344        | **Webconnect error: DNS server not configured**  
DNS server was not configured.  
**Corrective measures:**  
• Configure DNS server. |
| 10345        | **Webconnect error: No reply to DNS request |xx|**  
DNS server not available  
**Corrective measures:**  
• Ensure that the address of the DNS server has been entered correctly.  
• Ensure that the network cable at the inverter is correctly connected. |
| 10352        | **Webconnect error: Faulty communication**  
No connection to Sunny Portal possible.  
**Corrective measures:**  
• Ensure that the Internet connection is working properly.  
• Ensure that the Webconnect function is enabled.  
• Ensure that the network cable at the inverter is correctly connected. |
| 10517        | **Dynamic active power limitation started.**  
The inverter limits the active power of the PV inverters to the set limit. |
| 10518        | **Dynamic active power limitation terminated.**  
The inverter terminated the active power limitation of the PV inverters. |
| 27103        | **Set parameter**  
The parameter changes are being adopted. |
| 27104        | **Parameters set successfully**  
The parameter changes were successfully adopted. |
| 27107        | **Update file OK**  
The update file found is valid. |
| 27301        | **Update communication**  
The inverter is updating the communication component. |
| 27302        | **Update main CPU**  
The inverter is updating the inverter component. |
| 27312        | **Update completed**  
The inverter has successfully completed the update. |
### Event number | Message, cause and corrective measures
--- | ---
29001 | Installer code valid
The entered Grid Guard code is valid. Protected parameters have now been unlocked and you can adjust the parameters. The parameters will be automatically locked again after ten feed-in hours.

29004 | Grid parameters unchanged
Changing the grid parameters is not possible.

### 12.3 Checking the PV System for Ground Faults

| QUALIFIED PERSON |
---|
A ground fault may be present if the inverter beeps, the red LED lights up and the event numbers 3501, 3601 or 3701 are being displayed in the Results menu on the inverter user interface. The electrical insulation from the PV system to ground is defective or insufficient.

| DANGER |
---|
**Danger to life due to electric shock when touching live system components in case of a ground fault**
If a ground fault occurs, parts of the system may still be live. Touching live parts and cables results in death or lethal injuries due to electric shock.
- Disconnect the product from voltage sources and make sure it cannot be reconnected before working on the device.
- Touch the cables of the PV array on the insulation only.
- Do not touch any parts of the substructure or frame of the PV array.
- Do not connect PV strings with ground faults to the inverter.
- Ensure that no voltage is present and wait five minutes before touching any parts of the PV system or the product.

| WARNING |
---|
**Danger to life due to electric shock from destruction of the measuring device due to overvoltage**
Overvoltage can damage a measuring device and result in voltage being present in the enclosure of the measuring device. Touching the live enclosure of the measuring device results in death or lethal injuries due to electric shock.
- Only use measuring devices with a DC input voltage range of 600 V or higher.

**Procedure:**
In order to check the PV system for ground faults, perform the following actions in the prescribed order. The exact procedure is described in the following sections.
- Check the PV system for ground faults by measuring the voltage.
• If the voltage measurement was not successful, check the PV system via insulation resistance measurement for ground faults.

Test by Measuring the Voltage
Proceed as follows to check each string in the PV system for ground faults.

Procedure:

1. **DANGER**

   **Danger to life due to high voltages**
   - Disconnect the inverter from all voltage sources (see Section 10, page 59).

2. Measure the voltages:
   - Measure the voltage between the positive terminal and the ground potential (PE).
   - Measure the voltage between the negative terminal and the ground potential (PE).
   - Measure the voltage between the positive and negative terminals.
   If the following results are present at the same time, there is a ground fault in the PV system:
     - All measured voltages are stable.
     - The sum of the two voltages to ground potential is approximately equal to the voltage between the positive and negative terminals.

3. If a ground fault is present, determine the location of the ground fault via the ratio of the two measured voltages and eliminate the ground fault.

4. If a definite ground fault cannot be measured and the message is still displayed, measure the insulation resistance.

5. Reconnect the strings without ground faults to the inverter and recommission the inverter (see inverter installation inverter).

Location of the ground fault
The example shows a ground fault between the second and third PV module.

\[
V_1 = 80 \text{ V} \quad V_2 = 120 \text{ V}
\]
Test by Measuring the Insulation Resistance

If the voltage measurement does not provide sufficient evidence of a ground fault, the insulation resistance measurement can provide more exact results.

![Schematic diagram of the measurement](image)

Figure 13: Schematic diagram of the measurement

### Calculating the insulation resistance

The expected total resistance of the PV system or of an individual string can be calculated using the following formula:

\[
\frac{1}{R_{\text{total}}} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \ldots
\]

The exact insulation resistance of a PV module can be obtained from the module manufacturer or the datasheet. For the resistance of a PV module an average value can be assumed: for thin-film PV modules approximately 40 MOhm and for polycrystalline and monocristalline PV modules approximately 50 MOhm per PV module (for further information on calculating the insulation resistance see the Technical Information "Insulation Resistance (Riso) of Non-Galvanically Isolated PV Systems" at [www.SMA-Solar.com](http://www.SMA-Solar.com)).

### Required devices:

- Suitable device for safe disconnection and short-circuiting
- Measuring device for insulation resistance

### Device required for safe disconnection and short-circuiting of the PV array

The insulation resistance can only be measured with a suitable device for safe disconnection and short-circuiting of the PV array. If no suitable device is available, the insulation measurement must not be carried out.

### Procedure:

1. Calculate the expected insulation resistance per string.
2. **DANGER**
   
   **Danger to life due to high voltages**
   - Disconnect the inverter from all voltage sources (see Section 10, page 59).
3. Install the short circuit device.
4. Connect the measuring device for insulation resistance.
5. Short-circuit the first string.
6. Set the test voltage. The test voltage should be as close as possible to the maximum system voltage of the PV modules but must not exceed it (see datasheet of the PV modules).
7. Measure the insulation resistance.
8. Eliminate the short circuit.
9. Measure the remaining strings in the same manner.
   ☑ If the insulation resistance of a string deviates considerably from the theoretically calculated value, there is a ground fault present in that string.
10. Reconnect to the inverter only those strings from which the ground fault has been eliminated.
11. Reconnect all other strings to the inverter.
12. Recommission the inverter.
13. If the inverter still displays an insulation error, contact the Service (see Section 15, page 92). The PV modules might not be suitable for the inverter in the present quantity.
13 Decommissioning the Inverter

⚠️ QUALIFIED PERSON
To decommission the inverter completely upon completion of its service life, proceed as described in this Section.

⚠️ CAUTION

Risk of injury due to weight of product
Injuries may result if the product is lifted incorrectly or dropped while being transported or mounted.
- Transport and lift the product carefully. Take the weight of the product into account.
- Wear suitable personal protective equipment for all work on the product.

Procedure:

1. ⚠️ DANGER
   
   Danger to life due to high voltages
   - Disconnect the inverter from all voltage sources (see Section 10, page 59).

2. ⚠️ CAUTION
   
   Risk of burns due to hot enclosure parts
   - Wait 30 minutes for the enclosure to cool down.

3. Unscrew the swivel nut from the threaded sleeve for the network cable.

4. Unscrew and remove the threaded sleeve from the network port thread on the inverter.

5. Release the network cable plug and pull it out of the jack on the inverter.
6. Take the cable support sleeve out of the threaded sleeve and remove the network cable from the cable support sleeve.

7. Lead the network cable out of the threaded sleeve and the swivel nut.

8. Screw the protective cap onto the network port.

9. Unscrew and remove the antenna.

10. If there is a protective cap available, plug the protective cap onto the jack for connecting the antenna.

11. Remove the AC grounding conductor and, if present, the grounding cable of the PV array frame. For this purpose, unscrew the pan head screw M5x12 (PH2) at each connection point and remove the grounding cable.
12. Unscrew the left- and right-hand pan head screws M5x12 used to secure the inverter to the wall mounting bracket (PH2).

13. Remove the inverter by lifting it vertically up and off the wall mounting bracket.

14. Unscrew the screws for fastening the wall mounting bracket and remove the wall mounting bracket.

15. If the inverter is to be stored or shipped, pack the inverter, the AC connector, the DC connector, the RJ45 protective sleeve, the antenna and the wall mounting bracket. Use the original packaging or packaging that is suitable for the weight and dimensions of the inverter.

16. Dispose of the inverter in accordance with the locally applicable disposal regulations for electronic waste.
14 Technical Data

**DC Input**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum PV array power</td>
<td>13750 Wp</td>
</tr>
<tr>
<td>Maximum DC/AC-ratio</td>
<td>250 %</td>
</tr>
<tr>
<td>Maximum input voltage</td>
<td>450 V</td>
</tr>
<tr>
<td>MPP voltage range</td>
<td>60 V to 450 V</td>
</tr>
<tr>
<td>Rated input voltage</td>
<td>290 V</td>
</tr>
<tr>
<td>Minimum input voltage</td>
<td>60 V</td>
</tr>
<tr>
<td>Initial input voltage</td>
<td>80 V</td>
</tr>
<tr>
<td>Maximum input current, per input</td>
<td>18 A</td>
</tr>
<tr>
<td>Maximum input current total</td>
<td>30 A</td>
</tr>
<tr>
<td>Maximum short-circuit current, per input</td>
<td>25 A</td>
</tr>
<tr>
<td>Number of independent MPP inputs</td>
<td>2</td>
</tr>
<tr>
<td>Strings per MPP input</td>
<td>2</td>
</tr>
</tbody>
</table>

**AC Output**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated output power at power factor 0.95</td>
<td>5500 W</td>
</tr>
<tr>
<td>Rated output power at power factor 1.0</td>
<td>5500 W</td>
</tr>
<tr>
<td>Maximum apparent AC power at cos φ = 0.95</td>
<td>5790 VA</td>
</tr>
<tr>
<td>Maximum apparent AC power at cos φ = 1</td>
<td>5500 VA</td>
</tr>
<tr>
<td>Rated output voltage</td>
<td>202 V</td>
</tr>
<tr>
<td>Maximum output current</td>
<td>28.7 A</td>
</tr>
<tr>
<td>AC power frequency</td>
<td>50 Hz / 60 Hz</td>
</tr>
<tr>
<td>Power factor at rated power</td>
<td>0.95 underexcited</td>
</tr>
<tr>
<td>Displacement power factor cos φ, adjustable</td>
<td>1.0 to 0.8 underexcited</td>
</tr>
</tbody>
</table>

**Efficiency**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum efficiency, $\eta_{\text{max}}$</td>
<td>96.8 %</td>
</tr>
<tr>
<td>JIS efficiency</td>
<td>96.0 %</td>
</tr>
</tbody>
</table>

**Protective Devices**

<table>
<thead>
<tr>
<th>Protection Type</th>
<th>Protection Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC reverse polarity protection</td>
<td>Short-circuit diode</td>
</tr>
<tr>
<td>Input-side disconnection point</td>
<td>DC Load-Break Switch</td>
</tr>
<tr>
<td>AC short-circuit current capability</td>
<td>Current control</td>
</tr>
</tbody>
</table>
**Maximum overcurrent protection** 40 A  
**Ground fault monitoring**  
**Insulation monitoring: R_{so} > 100 kΩ**  
**All-pole sensitive residual-current monitoring unit** Available

### General Data

<table>
<thead>
<tr>
<th>Description</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width x height x depth</td>
<td>435 mm x 470 mm x 176 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>17 kg</td>
</tr>
<tr>
<td>Length x width x height of the packaging</td>
<td>495 mm x 595 mm x 250 mm</td>
</tr>
<tr>
<td>Transport weight</td>
<td>20.5 kg</td>
</tr>
<tr>
<td>Climatic category in accordance with IEC 60721-3-4</td>
<td>4K4H</td>
</tr>
<tr>
<td>Environmental category</td>
<td>Outdoors</td>
</tr>
<tr>
<td>Operating temperature range</td>
<td>-25°C to +60°C</td>
</tr>
<tr>
<td>Maximum permissible value for relative humidity (condensing)</td>
<td>100 %</td>
</tr>
<tr>
<td>Maximum operating altitude above mean sea level (MSL)</td>
<td>3000 m</td>
</tr>
<tr>
<td>Typical noise emission</td>
<td>≤ 30 dB(A)</td>
</tr>
<tr>
<td>Power loss in night mode</td>
<td>5 W</td>
</tr>
<tr>
<td>Maximum data volume per inverter with Speedwire/Webconnect</td>
<td>550 MB/month</td>
</tr>
<tr>
<td>Additional data volume when using the Sunny Portal live interface</td>
<td>660 kB/hour</td>
</tr>
<tr>
<td>Topology</td>
<td>Transformerless</td>
</tr>
<tr>
<td>Cooling method</td>
<td>Convection</td>
</tr>
<tr>
<td>Degree of protection for electronics in accordance with IEC 60529</td>
<td>IP65</td>
</tr>
</tbody>
</table>

### Climatic Conditions

**Installation in accordance with IEC 60721-3-4, Class 4K4H**

<table>
<thead>
<tr>
<th>Description</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extended temperature range</td>
<td>-25°C to +60°C</td>
</tr>
<tr>
<td>Extended humidity range</td>
<td>0% to 100%</td>
</tr>
<tr>
<td>Threshold for relative humidity, non-condensing</td>
<td>100 %</td>
</tr>
<tr>
<td>Extended air pressure range</td>
<td>79.5 kPa to 106 kPa</td>
</tr>
</tbody>
</table>
**Transport in accordance with IEC 60721-3-4, Class 2K3**

| Temperature range | -25°C to +70°C |

**Equipment**

<table>
<thead>
<tr>
<th>DC connection</th>
<th>SUNCLIX DC connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC connection</td>
<td>AC connector</td>
</tr>
<tr>
<td>WLAN</td>
<td>As standard</td>
</tr>
<tr>
<td>SMA Speedwire/Webconnect</td>
<td>As standard</td>
</tr>
</tbody>
</table>

**Torques**

<table>
<thead>
<tr>
<th>Description</th>
<th>Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screws for securing the inverter to the wall mounting bracket</td>
<td>2.5 Nm</td>
</tr>
<tr>
<td>Terminal of the grounding conductor</td>
<td>2.5 Nm</td>
</tr>
<tr>
<td>SUNCLIX swivel nut</td>
<td>2.0 Nm</td>
</tr>
<tr>
<td>Screw terminals of the AC connector</td>
<td>1.4 Nm</td>
</tr>
</tbody>
</table>

**Data Storage Capacity**

<table>
<thead>
<tr>
<th>Type</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily energy yields</td>
<td>63 days</td>
</tr>
<tr>
<td>Daily yields</td>
<td>30 years</td>
</tr>
<tr>
<td>Event messages for users</td>
<td>1024 events</td>
</tr>
<tr>
<td>Event messages for installers</td>
<td>1024 events</td>
</tr>
</tbody>
</table>
15 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:

- Device type
- Serial number
- Firmware version
- Event message
- Mounting location and mounting height
- Type and number of PV modules
- Optional equipment, e.g. communication products
- Use the name of the system in Sunny Portal (if available)
- Access data for Sunny Portal (if available)
- Special country-specific settings (if available)
- Detailed description of the problem

日本
SMAジャパン株式会社
東京
SMAサービスライン 0120 323 274
Sunny Portalへの登録に必要となるログインデータおよびWLANパスワード

製造番号

施工者用パスワード

ユーザー用パスワード