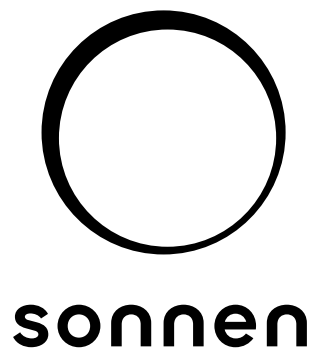




Operating instructions for Operators

sonnenBatterie 12



- This entire document must be read carefully.
- This document must be kept for reference purposes.

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1 Information about this document

This document describes the operation of the sonnenBatterie 12.

→ Make sure you read this entire document carefully.

→ Keep this document for reference purposes.

1.1 Target group of this document

This document is intended for customers who have purchased the storage system.

1.2 Designations in this document

The following designations are used in this document:

Complete designation	Designation in this document
sonnenBatterie 12	Storage system
sonnenInverter 6-1-2	Inverter
sonnenModule 5	Battery module
Authorised electrician	Electrician performing the installation/ Installer
The person who purchased the storage system and at whose premises it was installed	Operator

1.3 Explanation of symbols

DANGER

Extremely dangerous situation leading to certain death or serious injury if the safety information is not observed.

WARNING

Dangerous situation leading to potential death or serious injury if the safety information is not observed.

CAUTION

Dangerous situation leading to potential injury if the safety information is not observed.

NOTICE

Indicates actions that may cause material damage.

INFO

Important information not associated with any risks to people or property.

Symbol	Meaning
→	Work step
1. 2. 3. ...	Work steps in a defined order
✓	Condition
•	List

1.4 Change history

Version / Date	Changes compared to the previous version
00 / 30-09-2026	Initial creation.

2 Safety

2.1 Proper use

The sonnenBatterie 12 is a battery storage system designed to store electrical energy. It consists of the following main components: an inverter, a connection box, and battery modules.

Improper or unintended use may pose a risk to the life and limb of users or third parties and may cause damage to the product and other property.

The following points must be observed at all times in order to ensure **proper use**:

- The transport and storage conditions must be observed.
- The storage system must only be used at a suitable installation location.
- The storage system must be fully installed in accordance with the installation instructions.
- The storage system must be installed by an authorized electrician. Country-specific regulations concerning electrical installations must be observed at all times.
- The interfaces of the storage system must be connected in accordance with the product documentation.
- The storage system may be operated with a maximum of three battery modules.
- The storage system must not be used long-term without connection to the electricity grid.
- No generators may be connected downstream of the contactor for the Easy Backup backup power function.
- Only use the storage system in its original state - without any unauthorised modifications - and when it is in proper working order.
- The inverter may only be operated with PV modules with a class A rating in accordance with IEC 61730.
- The inverter is intended exclusively for use with PV generators in grid-connected PV systems, including zero feed-in systems.
- The inverter must only be used for PV generators whose connectors are not grounded.
- Repairs to the storage system may only be performed by service technicians authorised by sonnen.

Especially the following uses are not permissible:

- Operation in flammable environments or areas at risk of explosion.
- Operation in locations at risk of flooding.
- Use in the medical field or to supply life-sustaining devices.
- Operation of the battery modules without being connected to the connection box and the sonnenInverter, or when installed outside the battery stack.
- Bypassing, blocking or tampering with protective devices.

Danger due to electrical voltage



The components of the storage system contain live parts. This means there is always a risk of electric shock.

Therefore:

→ Electricians must disconnect the storage system from the power supply before performing any work on it.

High voltages may be present on live parts and wires inside the storage system, even when the system is turned off.

→ Do not open the inverter, the connection box, or the battery modules.



Operating the storage system

- The storage system may only be operated as described in the product documentation.
- This device can be used by children from the age of eight (8) years old and individuals with impaired physical, sensory or mental capabilities or individuals with limited knowledge and/or experience of working with the device, as long as they are supervised or have been trained to safely use the device and understand the resulting risks of doing so. Children must not play with the device.

INFO

Failure to comply with the conditions of the warranty and the information specified in this document invalidates any warranty claims.

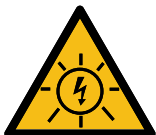
2.2 Qualifications of authorized personnel

The storage system must be installed and commissioned by authorised electricians only. Installation by unqualified and/or unauthorised persons may cause injury and/or component damage.

People who meet the following requirements are generally considered authorised electricians:

- A qualified electrician is a person with appropriate technical training, knowledge and experience, enabling them to recognise and avoid the hazards that may arise from electricity.
- The electrician must have valid installer accreditation at the time of installation.

2.3 Handling the inverter



The inverter fulfils international safety requirements, compliance with which has been verified by accredited test laboratories. Nevertheless, as with all electronic devices, there are residual risks.

When exposed to sunlight, the PV generators and cables as well as the DC cables connected to the connection box may be energised. There is a danger to life from electric shock and electrical discharge.

To ensure **intended use**:

- Disconnect the DC and AC connections from the power source before carrying out any work on the inverter and secure them against being switched on again.
- Do not make or disconnect any DC connections during operation.
- Do not make or disconnect any AC connections if the AC connection is live.
- Do not put the inverter into operation until the entire storage system has been installed in accordance with the installation instructions.
- The sonnenInverter 6-1-2 inverter may only be operated in combination with the battery stack and the other components of the storage system.
- The inverter must only be used with PV modules that have a Class A rating in accordance with IEC 61730.
- Always keep access to the disconnection device clear.
- Shut down the inverter immediately and disconnect it from the battery stack and the PV generators if any of the following components are damaged: inverter (no function, visible damage, smoke, liquid ingress, etc.), cables, PV generators, battery module.



The temperature of some parts of the inverter may exceed 60 °C during operation, therefore:

- Do not touch the inverter during operation.
- Wait until the inverter has cooled down before touching it.

2.4 Handling battery modules



The battery modules compatible with the storage system are protected by multiple protective devices and are safe when used properly. Improper use or a fault may cause the battery cells inside the battery modules to be damaged.

This can have the following effects:

- High heat generation on the surface of the battery cells.
- Leaking of electrolyte, vapours and/or smoke.
- The escaping electrolyte may ignite and cause an explosive flame.
- Irritation or burns to skin, eyes, respiratory tract and mucous membranes due to steam or smoke from burning battery modules.
- Irritation of skin, eyes, respiratory tract and mucous membranes due to leaking electrolyte.

In order to ensure **proper use**:

- Do not open the battery modules.
- Do not inflict mechanical damage (pierce, deform, disassemble, etc.) on the battery modules or otherwise modify them.
- Do not heat the battery modules. Keep them away from sources of ignition and operate them only within the permissible temperature range.
- Do not allow the battery modules to come into contact with water (except to extinguish a fire involving the storage system).
- Do not short-circuit the battery modules.
- Never continue to use the battery modules if they are damaged in any way.
- Do not deep-discharge the battery modules or charge them using external chargers.
- Do not operate battery modules outside of the storage system.
- Remove metal jewellery when handling battery modules.
- Do not place any tools or metal objects on the battery modules.

Transporting battery modules

The battery modules contain lithium-ion batteries and are classified as dangerous goods. Battery modules may only be transported by authorised personnel in accordance with the applicable dangerous goods regulations.

2.5 Conduct in the event of a fault or fire

If contents of the battery modules are released:

1. Leave or do not enter the room in which the battery stack with the battery modules is located.
2. Avoid contact with released electrolyte. If contact occurs, rinse the affected area thoroughly with water. In the case of irritation of the skin, eyes or mucous membranes, seek medical attention.
3. Contact the sonnen service team (service@sonnen.com.au).

A fire may occur even with electrical devices that are designed with care. A nearby fire can also cause the storage system to ignite. This may also lead to the contents of the battery modules being released.

In the event of fire of the battery stack or inverter:

1. Leave or do not enter the room/the area in which the battery stack and the inverter are located.
2. Avoid contact with escaping smoke or steam. If contact occurs, rinse the affected area thoroughly with water. In the case of irritation of the skin, eyes or mucous membranes, seek medical attention.
3. Contact the fire services.
4. Contact the sonnen service team (service@sonnen.com.au).

There is a danger of electrocution when extinguishing a fire while the storage system is switched on. In the event of a fire in the vicinity of the product or in the storage system itself, proceed as follows before beginning any extinguishing measures:

- De-energize the storage system [P. 22]. The battery modules remain live. The PV generators and cables, as well as the DC cables connected to the inverter, may remain live when exposed to sunlight.
- Switch off the mains fuses in the building.
- Leave or do not enter the room/area in which the battery stack and the inverter are located.

If the storage system or mains fuses cannot be safely switched off:

- Observe the minimum distances applicable for the specific extinguishing means used. The storage system works with a nominal voltage of 230 V (AC) and max. 288 V (DC). The voltage of the PV system of up to 550 V (DC) is applied to the inverter.

Extinguishing agents

- A storage system fire can be extinguished using conventional extinguishing agents.
- Water is recommended as an extinguishing agent in order to cool the battery modules and therefore prevent thermal runaway in battery modules which are still intact.

Information on the battery modules

- A single battery module has a nominal voltage of 96 V (DC).
- Up to three battery modules are connected in series and can thus form an operating voltage of 288 V (DC).
- The battery modules are equipped with lithium iron phosphate technology (LFP), which is known for its high thermal stability, long service life and increased safety.
- The battery modules do not contain metallic lithium.

Earth Fault Alarm

In the event of an earth fault at the inverter, a notification is sent via the sonnen App.

2.6 Symbols on the product

Warning: electrical voltage.



Warning: electrical voltage. Wait five minutes after switching off (capacitor de-energising time).



Warning: flammable materials.



Warning: hazards due to batteries.



Warning: product is heavy.



General Warning.



Warning: Risk of arc flash and electric shock. Do not disconnect from the power supply while the unit is under load. Doing so may cause an electric arc, which could result in a fire. Always wear appropriate personal protective equipment (PPE) during installation and removal work.



CE mark. The product meets the requirements of the applicable EU directives.



WEEE mark. The product must not be disposed of in household waste; dispose of it through environmentally friendly collection centres.



Recycling symbol for lithium-ion batteries.



Observe the documentation. The documentation contains safety information.

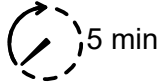


Protective earthing. Labelling of earthing points.

Additional safety markings on the inverter



High-voltage hazard! Work on the inverter may only be performed by qualified personnel.



Warning: electrical voltage. Wait five minutes after switching off (capacitor de-energising time).



Warning: Hot surface.

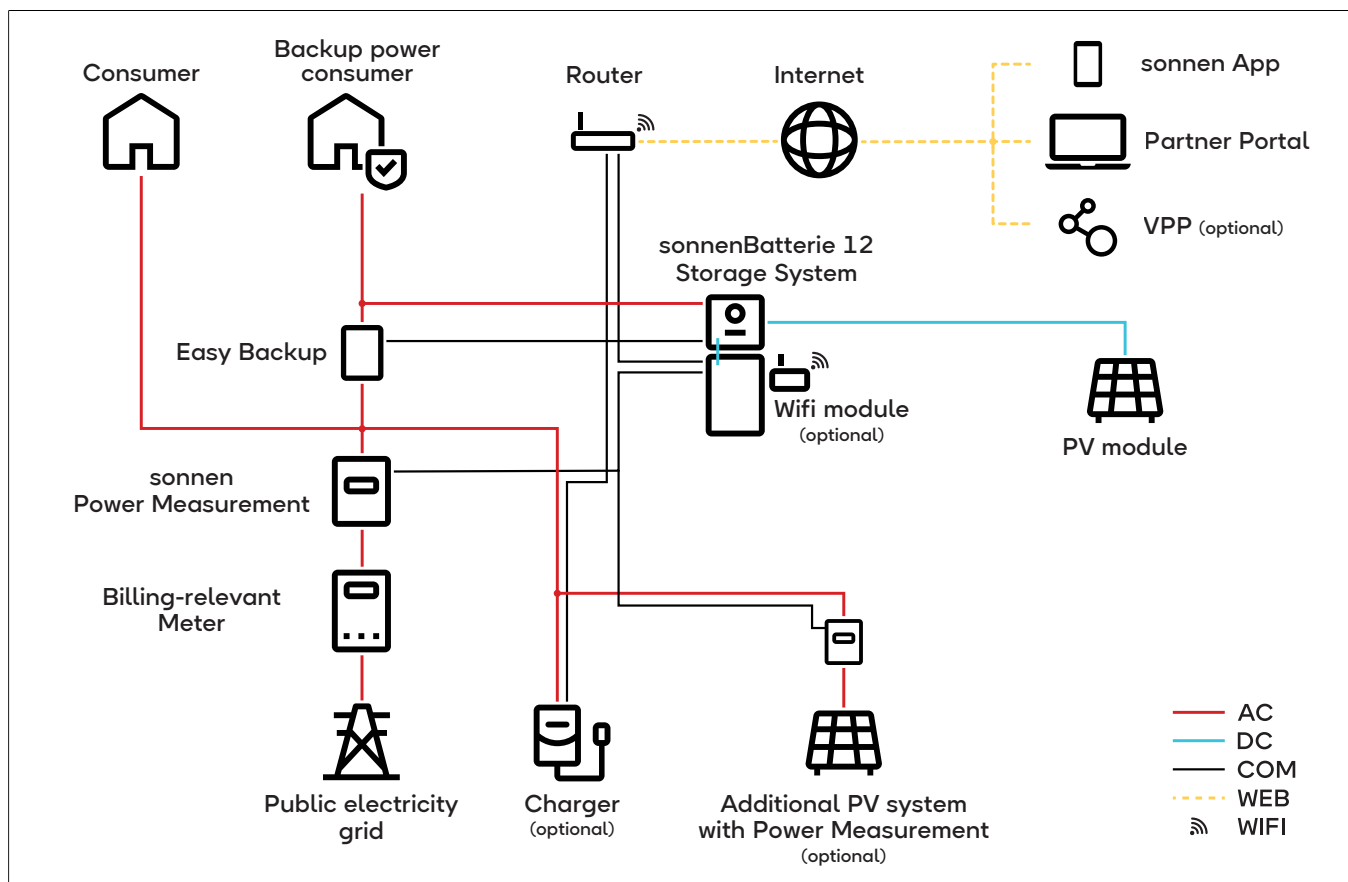


Do not disconnect while under load, as this may cause a fire.

Do not disconnect under load!

3 Product description

3.1 System overview (sonnen world)



3.2 System components

Storage system overview

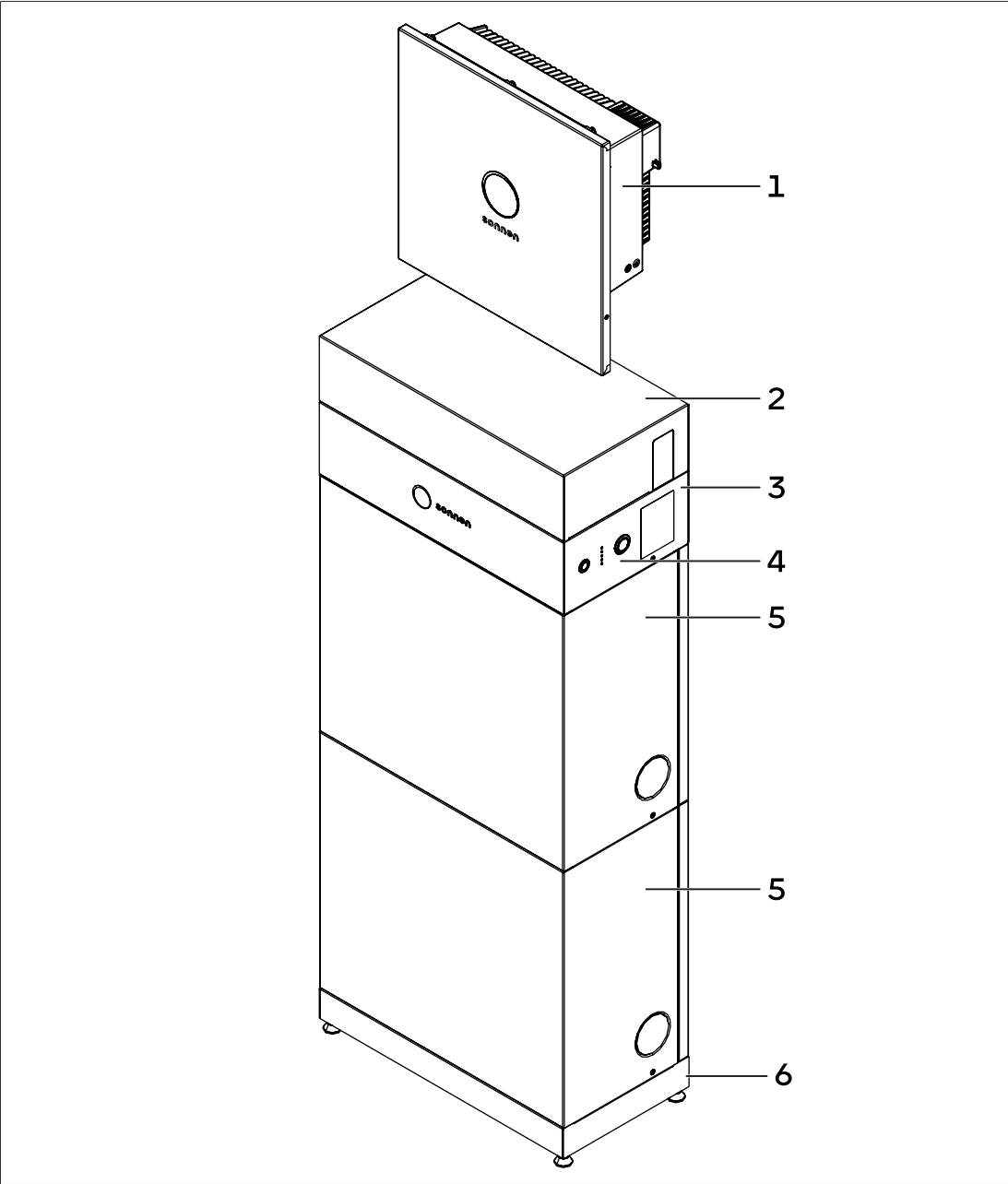


Illustration 1: Overview of the total storage system

No.	Designation	Function
1	sonnenInverter	Inverter for connecting the PV system.
2	Cover	Cover of the connection box and line entry.
3	Connection box	Connections and operating elements of the storage system.
4	Operating panel	Button and LED display for operation and type plate of the storage system.
5	sonnenModule 5	Battery module for storing electrical energy.
6	Base	Compensates for uneven floors and provides stable support for the other components.

Operating panel overview

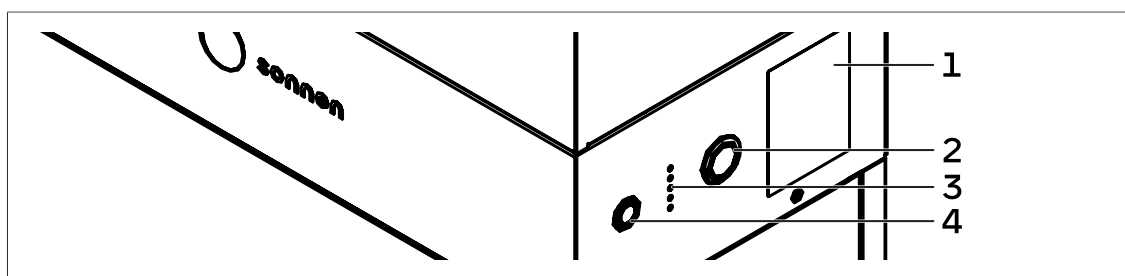


Illustration 2: Overview of the operating panel on the connection box

No.	Designation	Function
1	Type plate	Technical data and further information for identifying the storage system.
2	Backup power button	Button for starting backup power operation after overload and for starting backup power operation when PV generation is missing.
3	Status LED	Information about the current status of the storage system.
4	ON/OFF button	Button for switching the storage system on and off.

Inverter overview

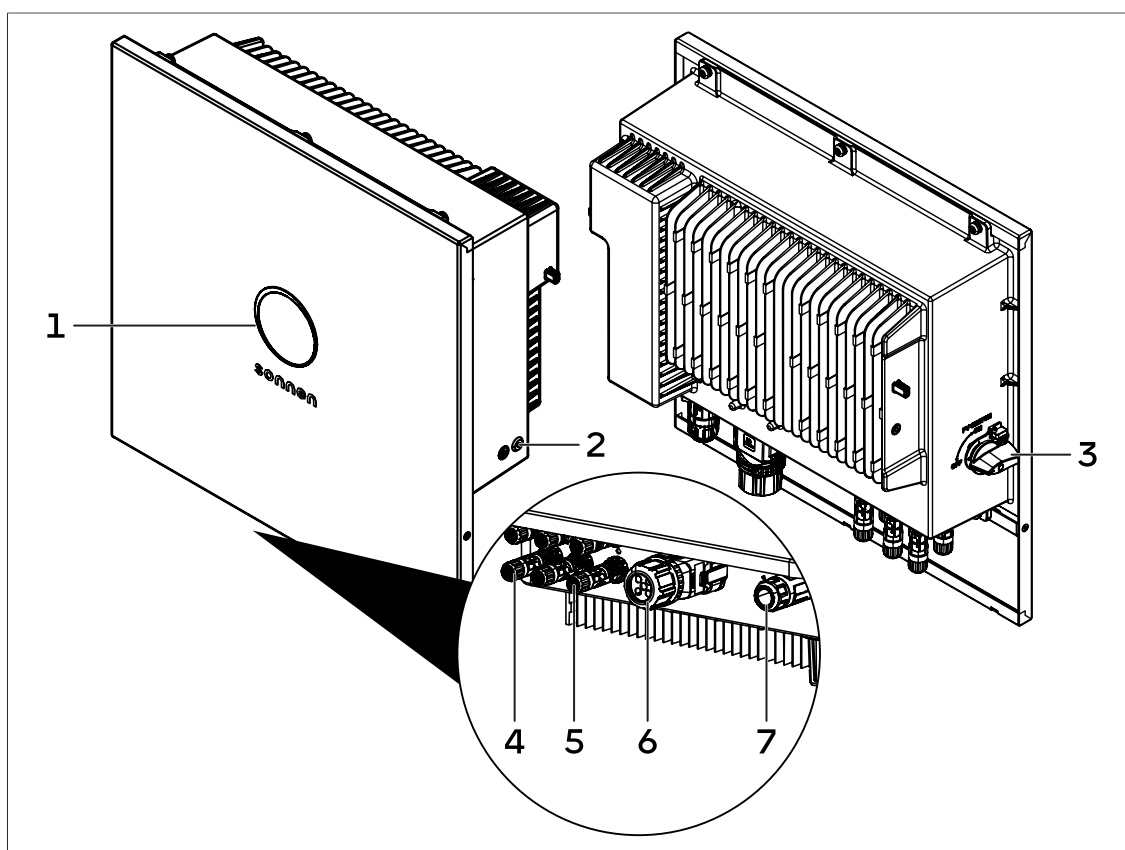


Illustration 3: Overview of the sonnenInverter

No.	Designation	Function
1	sonnen Eclipse	Illuminated ring in the sun logo for status display.
2	Ground connection	Connection to ground.
3	DC disconnect switch	Disconnecting the connection to the PV modules.
4	PV+ / PV- connections	Connection to the PV modules.
5	BAT+ / BAT-connection	Connection to the battery modules via the connection box.

No.	Designation	Function
6	COM connection	Communication with the connection box of the storage system.
7	AC connection	Connection to the electricity grid.

3.3 Function of the sonnen Eclipse and Status LEDs

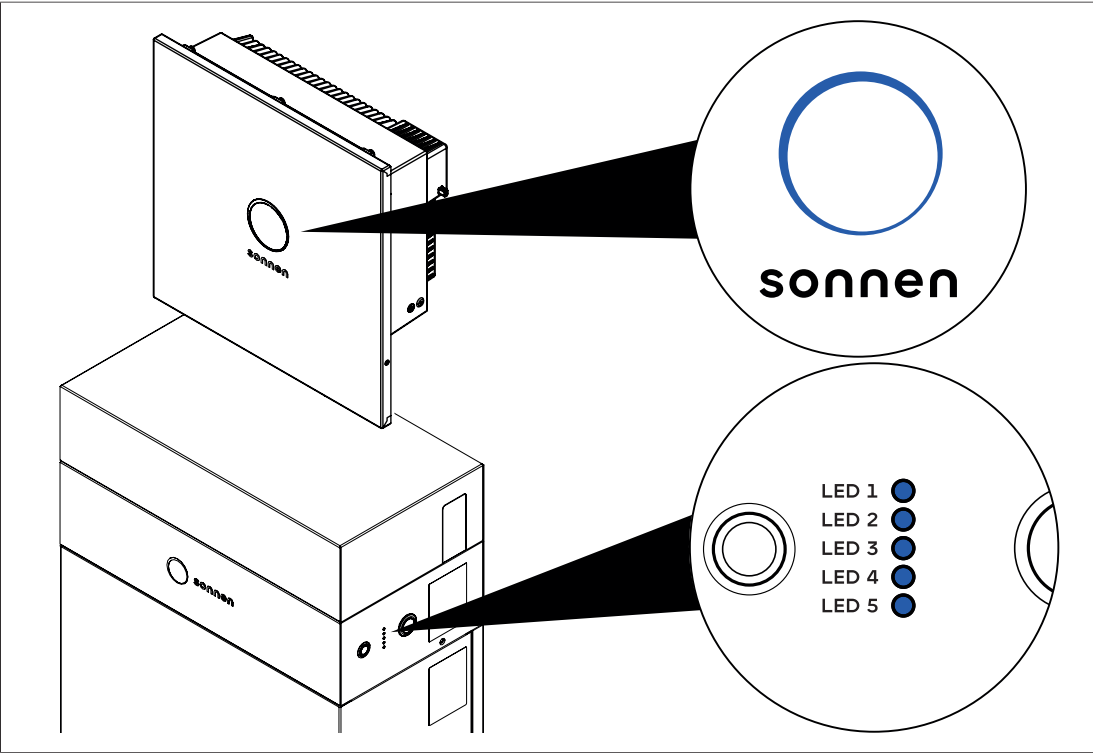


Illustration 4: Illuminated ring and LEDs on the storage system

The sonnen Eclipse (illuminated ring in the sonnen logo on the front of the inverter) and the 5 LEDs on the right side of the connection box indicate the current status of the storage system.

Mode	Description
static	Lights up continuously.
blinking	Turns on and off.
pulsing	Gradually gets brighter and dimmer.
rotating	Lights up sequentially and then turns off.

Table 1: Possible modes for the Eclipse/LEDs

sonnen Eclipse on the inverter

The following operating statuses are displayed:

Colour	Mode	Operating status
blue	blinking	Normal operation starting up.
	pulsing	Normal operation.
green	blinking	Backup operation starting up.
	pulsing	Backup operation. For storage systems without backup power function: No connection to the electricity grid. If this status persists for more than five minutes, the sonnen Eclipse switches off.
orange	blinking	Overload during backup operation.

Colour	Mode	Operating status
	pulsing	No internet connection.
orange/blue (gradient)	rotating	Full charge or trickle charge for battery maintenance.
	static	Updating software or component firmware.
red	blinking	Critical problem with the storage system.
	pulsing	Problem with the connected power meter.
	static	Problem with the storage system.

Status LEDs on the connection box

Colour	Mode	LEDs	Operating status
blue	blinking	1-5 successively	Normal operation starting up.
	static	1-5	Normal operation and display of SOC, see below.
green	blinking	1-5	Backup operation starting up.
	static	1-5	Backup operation and display of SOC, see below.
orange	static	1-5	During normal operation: No internet connection. During backup operation: Overload detected.
red	static	1-5	Problem with the storage system.
	blinking	see below	Battery module error.

State of Charge indicator

In normal or backup power mode, the LEDs indicate the current state of charge (SOC) of the storage system:

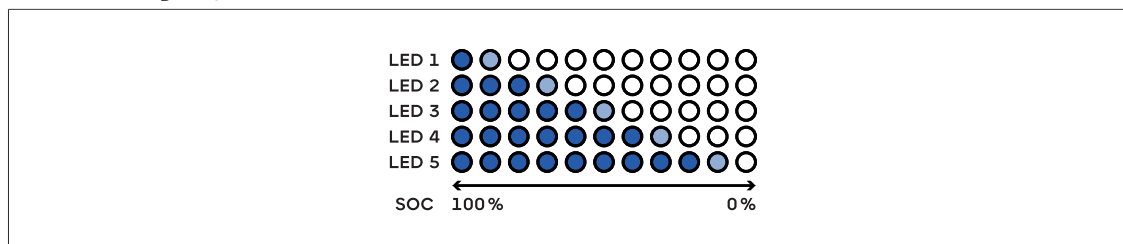


Illustration 5: Display of the SOC via the LEDs

Battery module error indicator

If a battery module fault occurs, blinking LEDs indicate which battery module has detected a fault. The LED number corresponds to the battery module number.

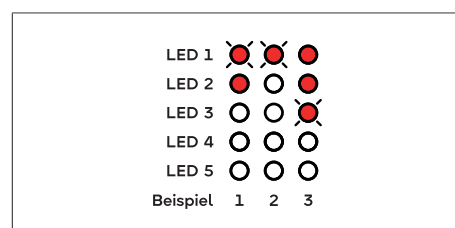


Illustration 6: Examples of the display when a battery module error occurs

Example 1: Two battery modules are installed; battery module 1 has a fault.

Example 2: One battery module is installed, and there is an error with it.

Example 3: There are 3 battery modules installed; battery module 3 has a fault.

LED in the ON/OFF button on the connection box

The ON/OFF button lights up when the storage system is switched on.

3.4 Type plate

The type plate for the storage system is located on the operating panel of the connection box. In addition, the inverter and the battery modules each have their own type plates.

The type plates allow you to clearly identify the storage system. You will need the information on the type plate for safe use and if you have any questions for the sonnen service team.

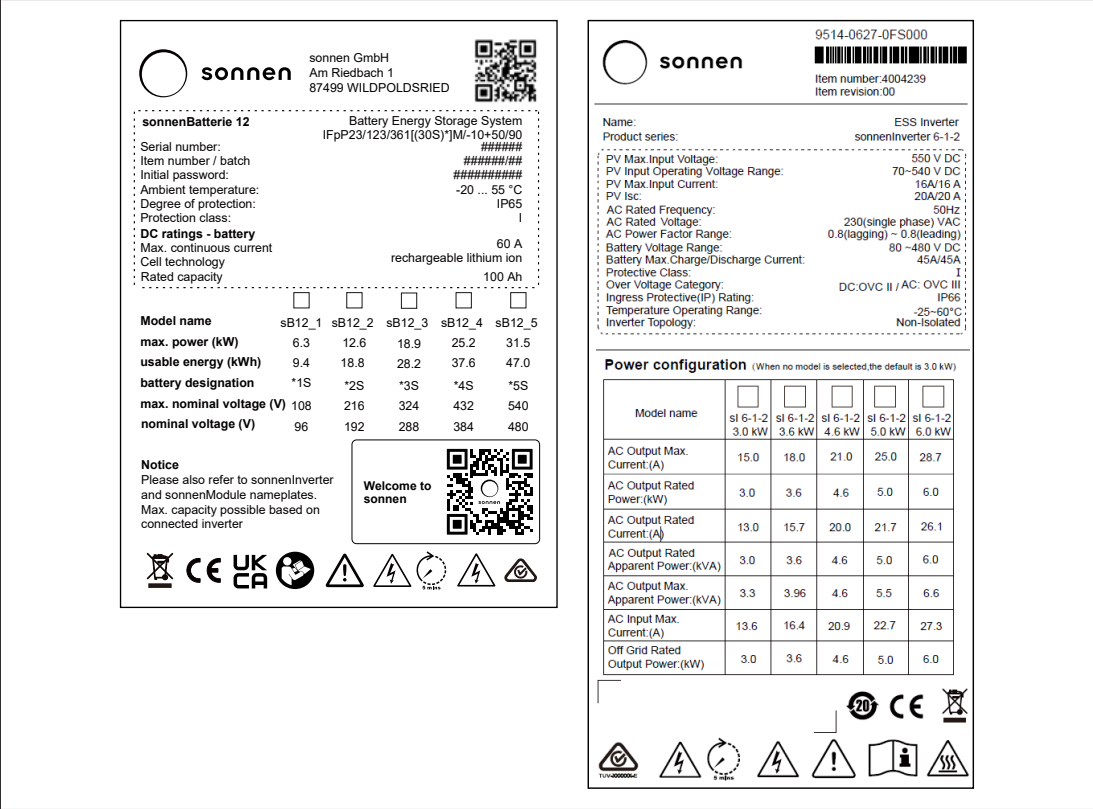


Illustration 7: Type plates of the connection box (left) and the inverter (right)

The following information is specified on the type plate:

- Item designation and number
- Serial number
- Technical data of the storage system
- Initial password

The overall product name and storage capacity (nominal and usable) depend on the number of battery modules installed. The inverter's power rating (and thus that of the storage system) is also variable¹ and must be selected during commissioning.

Therefore, after commissioning, the qualified electrician performing the work must check the boxes on the nameplates of the connection box and the inverter to indicate the number of battery modules installed and the AC output power.

3.5 Activating the warranty

During initial commissioning, the qualified electrician carrying out the installation runs the commissioning assistant and makes all the necessary settings on the storage system. In addition, details are recorded to assign the storage system to the customer and to document the installation.

The successful and complete completion of the commissioning wizard is a prerequisite for the proper operation of the storage system.

¹ Depending on the country, only certain performance configurations are available. Factory default setting is 3 kW.

Once the initial commissioning has been successfully completed, the current warranty terms and data protection provisions will be sent by email. The manufacturer's warranty is activated upon confirmation of these.

4 Operating the storage system

DANGER

Opening of the storage system by unauthorised persons

Danger to life due to electrocution!

- The storage system must only be opened by authorised electricians.
- Electrical work on the storage system and the associated distribution board must only be carried out by authorised electricians.

NOTICE

Limited access to the storage system

Objects left around the storage system may obstruct access for operation, maintenance and servicing work.

- Maintain the minimum clearances: 20 cm all round the inverter, 50 cm at the front; 45 cm on each side of the battery stack (60 cm recommended), 20 cm above and 50 cm at the front (100 cm recommended).
- Do not place any objects on the cover of the connection box or on the inverter.

INFO

The storage system is intended exclusively for use within the local customer network. It must not be made accessible from the public Internet under any circumstances. Improper configuration or exposure to the internet may result in significant security risks, including unauthorized access, data loss, or system compromise.

4.1 Switching on the storage system

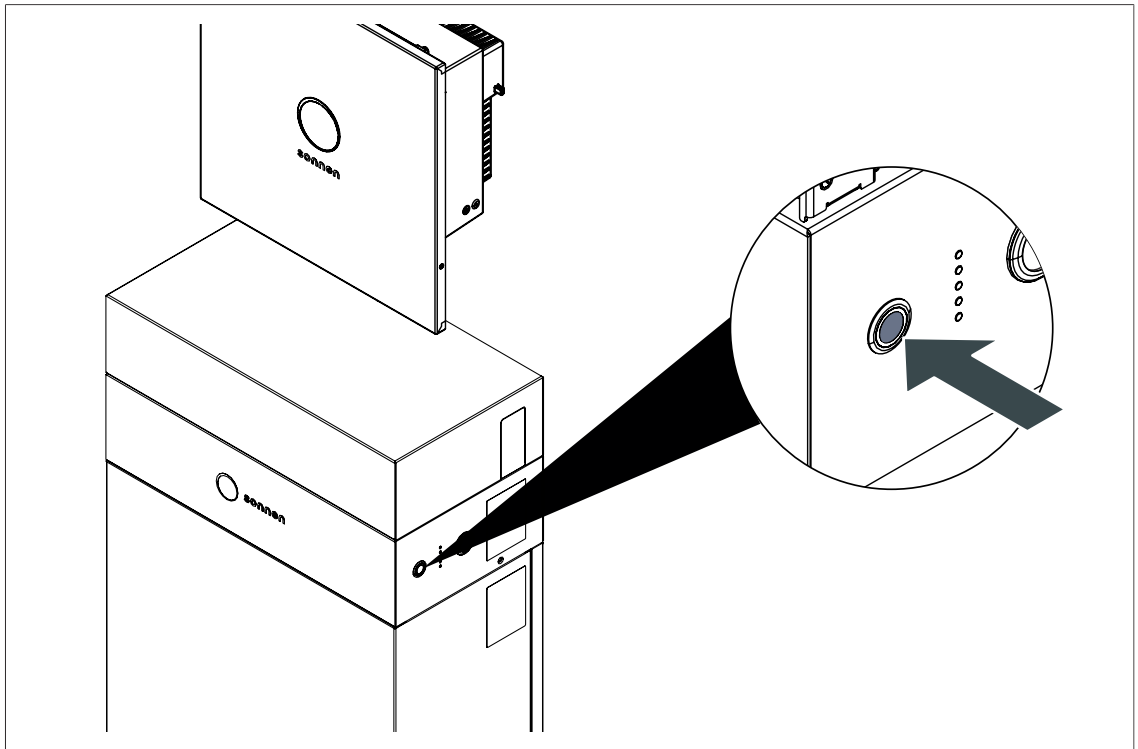


Illustration 8: Switching on the storage system

1. Press the ON/OFF button on the connection box. The button clicks into place and lights up.

The storage system then starts and runs a self-test. Once the self-test is successful, the storage system is ready to operate.

When the storage system is in normal operation, the sonnen Eclipse pulses blue, and the LEDs on the connection box light up blue to indicate the current charge level. All operating states and indicators are described in the section Function of the sonnen Eclipse and Status LEDs [P. 16].

4.2 Switching the storage system off

NOTICE

Deep-discharge of the battery modules

Destruction of the battery modules!

- Do not disconnect the storage system from the public electricity grid for long periods of time.
- Never continue to operate battery modules which have been deep-discharged.

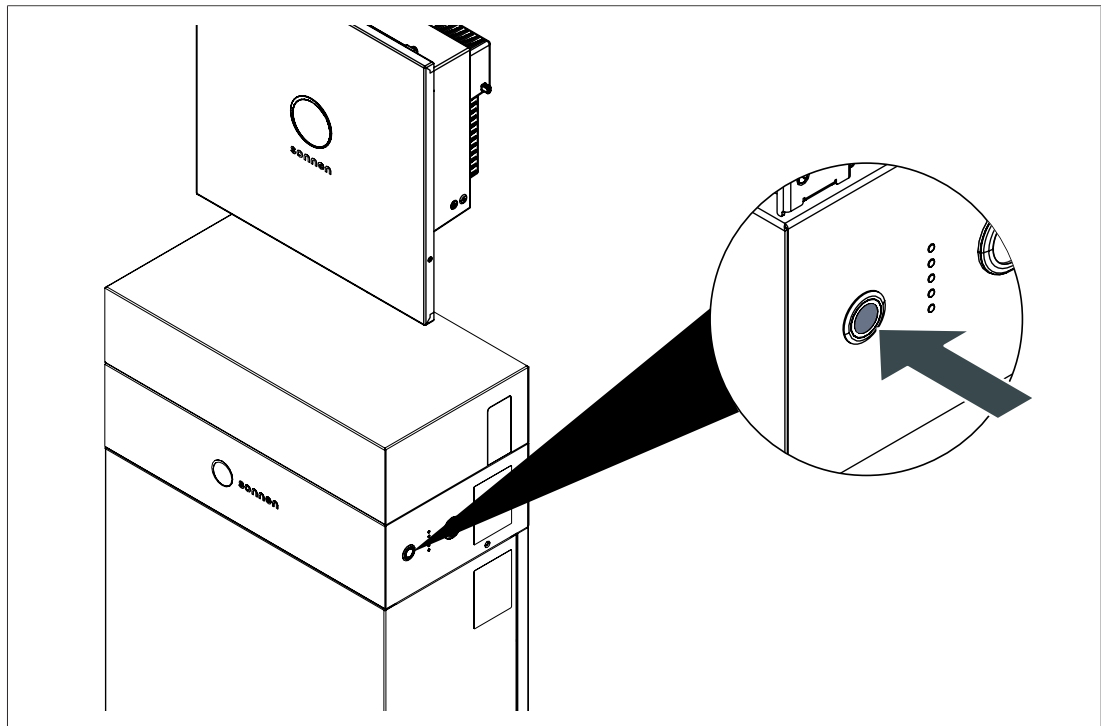


Illustration 9: Switching off the storage system

1. Press the ON/OFF button on the connection box. The sonnen Eclipse, the LEDs on the connection box, and the LED on the ON/OFF button will turn off.

The storage system is decommissioned when it is switched off.

DANGER! There is still live voltage inside the storage system. Before authorised electricians can work safely on the storage system, the storage system must be completely switched off to be electrically isolated.

5 Function

5.1 Basic principle

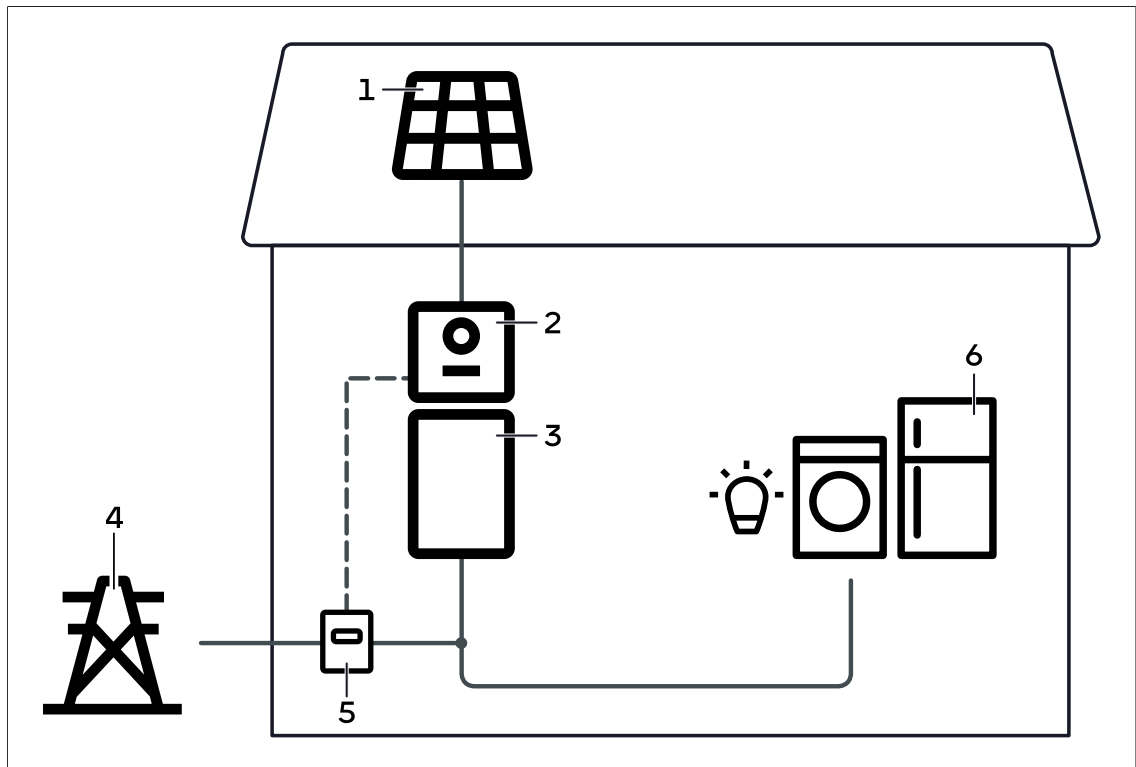


Illustration 10: sonnenBatterie function

- | | | | |
|---|---------------|---|---|
| 1 | PV system | 4 | Public electricity grid |
| 2 | Inverter | 5 | Power meter |
| 3 | Battery stack | 6 | Consumers in building (e. g. washing machine, hob, lamps, refrigerator, etc.) |

The storage system, comprising a battery stack (3) and an inverter (2), is connected to the PV system (1) and the public electricity grid (4). The current consumption of the electrical loads (6) in the house is measured using the power meter (5).

Generation > Consumption

If the generation of power is greater than the consumption, there is a surplus of electrical energy. In this case as much as possible of this surplus is used to charge the battery of the storage system.

If the entire portion of the surplus cannot be charged into the battery, the remaining surplus is fed into the public electricity grid.

Consumption > Generation

If the consumption is greater than the generation of power, there is a deficit of electrical energy. In this case the battery is discharged to even out as much of the deficit as possible.

If the entire deficit cannot be compensated by discharging the battery, the remaining deficit is covered by the public electricity grid.

5.2 Easy Backup backup power function (optional)

- Both when the sonnenBatterie 12 is first being installed and after the fact, the backup power function can be added to the system. The components required for this are included as standard (accessory kit).
- If the system is installed retroactively (after the storage system has already been in operation without a backup power function), changes may need to be made to the power metering and the electrical wiring in the home.

Connection options for the storage system with backup power function

The backup power function of the storage system is designed as standard to provide backup power for a single-phase household in the event of a grid outage (**connection option 1**). This is possible for household connections with a maximum fuse rating of 63 A per phase.

For a three-phase household connection or a higher connecting power, **separate backup power circuits** are required (**connection option 2**). Only the connected single-phase loads are supplied by the storage system via these backup power circuits.

→ The installing electrician decides together with the operator which connection option is to be used based on the on-site conditions and installs the storage system with backup function accordingly.

5.2.1 Overload detection during backup operation

- If the sonnen Eclipse pulses orange and the LEDs on the connection box light up orange, this means that the electrical loads connected to the backup power function are causing excessive power consumption.
- Backup power operation is stopped when an overload is detected until there is no more overload and the backup power button has been pressed for approx. 2 seconds.

When sonnen Eclipse and LEDs light up orange:

- Switch off electrical consumers or do not connect any electrical consumers if their power consumption exceeds the nominal power or (when switching on) the maximum power of the backup power operation.
- Press and hold the backup power button (LEDs blink green) until backup power operation starts (LEDs light up green).
- ⇒ Backup power operation has started successfully when the sonnen Eclipse pulses green and the LEDs of the connection box light up green.

INFO

In certain situations, it may take up to three minutes for backup power operation to start after the backup power button is pressed.

5.2.2 Switching the backup power function on/off

Switching on the backup power function

The backup power function is operation-ready as soon as the storage system is properly commissioned and switched on (see Switching on the storage system [P. 21]).

→ Ensure that the circuit breaker in the supply line of the storage system is switched on

Switching off the backup power function

To switch off the backup power function, the storage system must be switched off.

→ Switch the storage system off (see Switching the storage system off [P. 22]).

DANGER! Before authorised electricians can work safely on the backup power function, the storage system must be completely switched off to be electrically isolated.

5.2.3 Function

A storage system with backup power function automatically switches from grid to backup power operation or island operation and vice versa. The various operating states are described below.

5.2.3.1 Grid operation - no grid outage

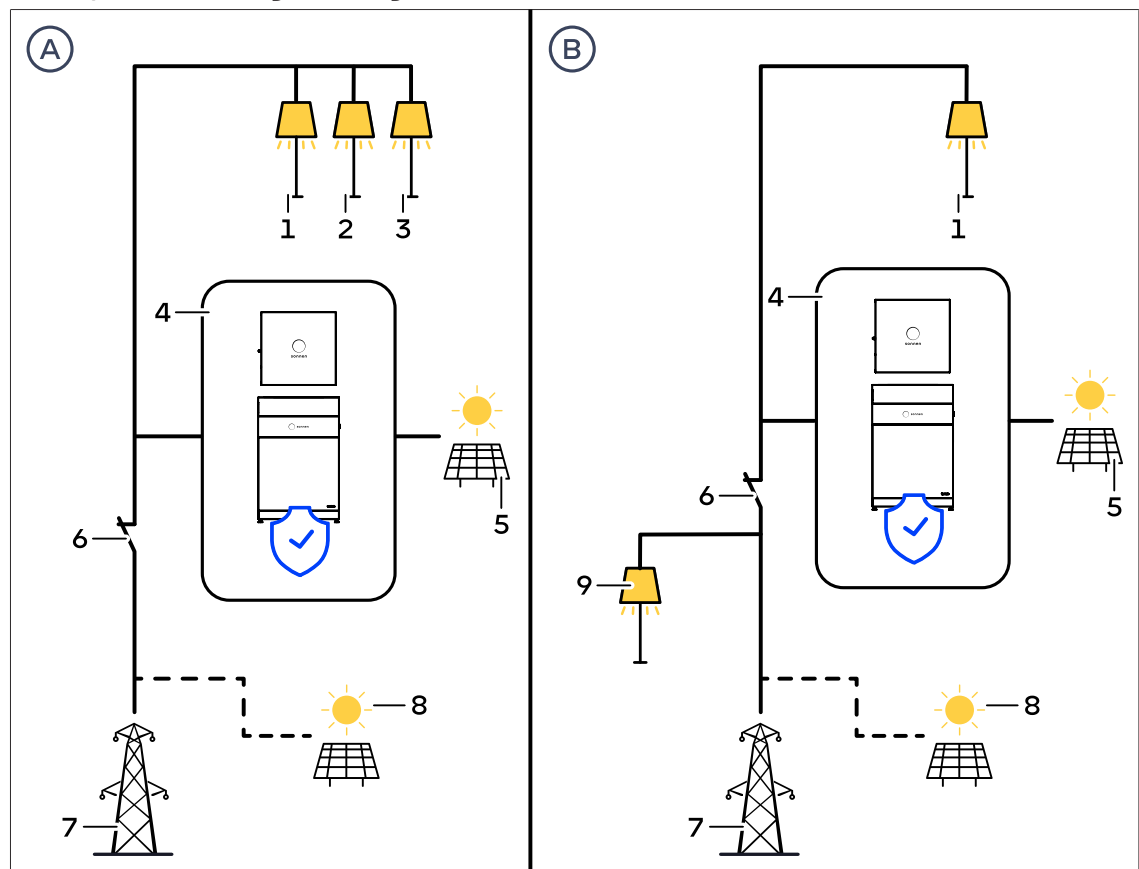


Illustration 11: Normal operation - no grid outage (A: connection option 1; B: connection option 2)

- 1 Consumers connected to phase L1
- 2 Consumers connected to phase L2
- 3 Consumers connected to phase L3
- 4 Storage system with backup power function
- 5 PV system
- 6 Easy Backup switch
- 7 Public electricity grid
- 8 Optional: additional PV system
- 9 Consumers outside the backup power circuit (only with connection variant 2)

In grid operation, all electrical consumers on phases 1 to 3 are connected to the public electricity grid (7). In connection option 2, the loads are connected either in the power circuit (9) or in the protected backup power circuit (1, 2, 3).

In addition to the PV system (5), which is connected to the inverter of the storage system, other PV systems (8) can also be integrated into the building grid to generate electricity.

All consumers in the building are supplied with electrical power. The storage system controls the flow of energy in the building, as described in the storage system product documentation.

5.2.3.2 Backup power operation – grid outage

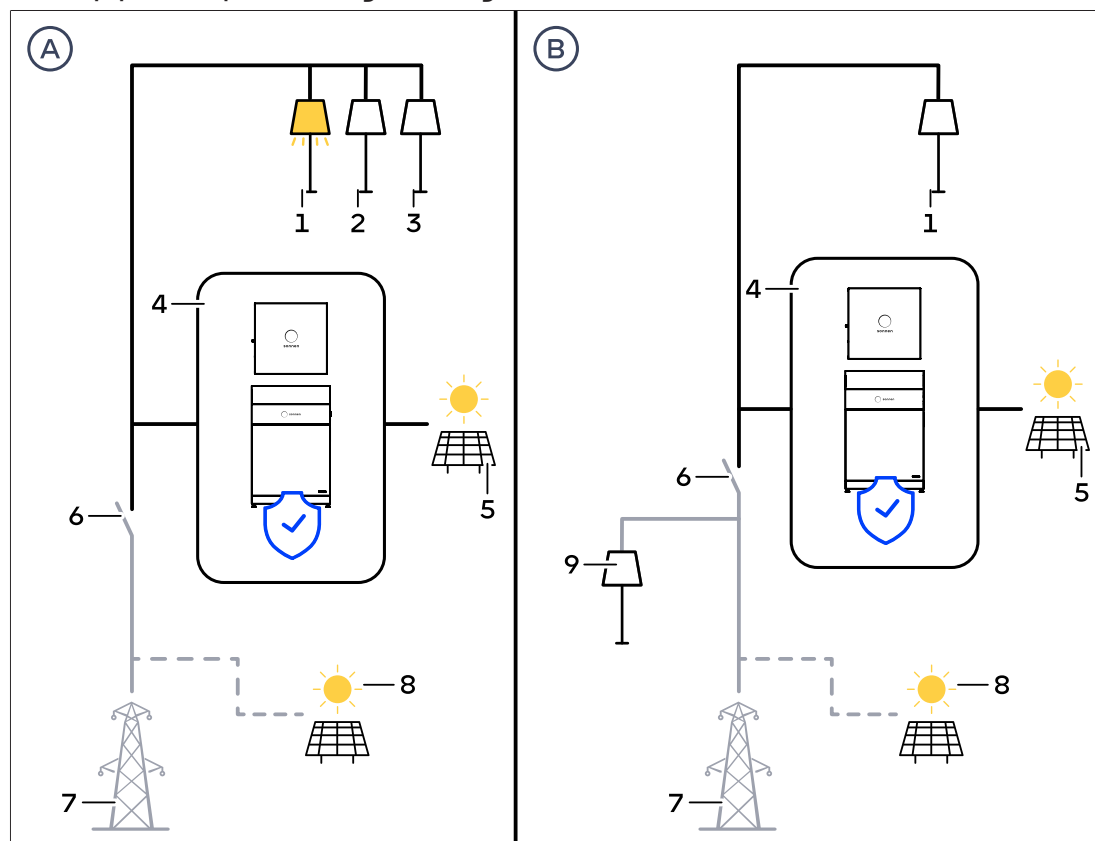


Illustration 12: Backup power operation – grid outage (A: connection option 1; B: connection option 2)

- 1 Consumers connected to phase L1
- 2 Consumers connected to phase L2
- 3 Consumers connected to phase L3
- 4 Storage system with backup power function
- 5 PV system
- 6 Easy Backup switch
- 7 Public electricity grid
- 8 Optional: additional PV system
- 9 Consumers outside the backup power circuit (only with connection variant 2)

The storage system with backup power function automatically detects a grid outage. As soon as a grid fault is detected, the connection to the public electricity grid is disconnected.

After < 100 ms, the storage system generates backup power.

With connection option 1 (A), all consumers in the house connected to phase 1 are supplied with electricity. With connection option 2 (B), only the electrical consumers connected to the backup power circuit are supplied with backup power, while the consumers connected to the other circuit (9) are not supplied with electrical energy.

The switch from grid to backup operation or standalone operation is indicated on the storage system by the sonnen Eclipse (light ring) and the status LEDs. The colour changes from **blue** (normal operation) to **green** (backup/standalone operation).

As soon as the public electricity grid is back up and running, the storage system switches back to grid operation.

5.3 Battery maintenance

To maintain the battery modules and therefore preserve their longevity, the storage system is regularly charged to 100 %.

Battery maintenance process and background

Depending on the system, deviations in the voltage and charge occur within the battery modules over time. Fully discharging and then charging the battery modules can counteract this effect, and this process is necessary to ensure the longevity of the storage system battery.

In summer months, the PV system production ensures that the battery modules are regularly fully charged. In winter months, PV system production is often not sufficient to fully charge the storage system, which is why battery maintenance is performed. Battery maintenance is performed by the storage system as often as necessary, especially during times when there is heavy snow and/or very short periods of sunlight.

Duration of battery maintenance

Battery maintenance usually takes around 24 hours, but it may take several days in individual cases.

Visualisation of battery maintenance

Whilst battery maintenance is being carried out, the sonnen Eclipse on the inverter displays a rotating orange-to-blue colour gradient. It is possible that the charge status line on the progress graph (on the online portal) may remain unchanged for a prolonged period and then rise sharply.

More information

A detailed description of battery maintenance can be found at sonnengroup.com/battery-maintenance.

5.4 Regular software updates

Regular software updates are performed to keep the storage system up to date and minimise potential malfunctions.

Software update procedure and background

Software updates are regularly sent to the storage system via the Internet connection and are then installed automatically.

The software updates are gradually distributed to all storage systems over a period of several days or weeks; there is no set day and/or time for the updates.

Software update duration

A software update generally takes 10 minutes or less to install. It may take longer if the internet connection is poor.

Software update visual indicators

Whilst the software update is being installed, the sonnen Eclipse on the inverter displays a rotating orange-to-blue colour gradient. Once the update is complete, the storage system returns to the same state as before the software update, and the sonnen Eclipse lights up accordingly.

The flow chart (on the internet portal) indicates a software update by a small gap in the drawings.

More information

Information on which software version is currently installed on your storage system can be found on the sonnen App or the internet portal (go to sonnenBatterie > Details). You will also find a link to the version notes there, which describe the changes implemented in the respective software version.

6 Digital sonnen world

Purchasing the storage system gives you access to digital products from sonnen. You have the following options to monitor the storage system and other sonnen products live and to make adjustments to the settings:

sonnen App

You can access the sonnen App at any time from home or on the go. It provides a detailed yet clear overview of products and contracts, data on electricity consumption and generation, energy services and your involvement in the sonnenCommunity.

Find out more here: Use the sonnen App [P. 29]

Digital welcome page

Here you will find information on the first steps after installing your sonnenBatterie, information on sonnen's extensive product range and helpful links: <http://sonnen-group.com/welcome>

Internet portal

You will still be able to access the internet portal online. In addition to an overview of your products and contracts, it also provides information on the sonnenCommunity and the energy services of sonnen.

Use the following link to access the internet portal: my.sonnen.de

6.1 Logging into the sonnen App

In order to use the sonnen App, you need a sonnen user account. To log in or register, first download the App to your mobile device:



- Use the QR code on the left to access the sonnen App download page in the App Store.
- Install and open the sonnen App.
- Click on the corresponding button to log in with your existing user account or to register again. The user account is the same as the one used when using the internet portal.

6.2 Use the sonnen App



Homescreen

The Homescreen is the main access point to the sonnen App.

Here you can get an overview of the energy status in your home, manage all your sonnen products, see the successes and discover other useful functions.

- Tap the battery symbol to view all information about the status and current charge of your storage system.
- Tap on the horizontal lines to view the detailed data view and an evaluation of the last few hours.
- Select backup buffer (if available) to determine the minimum energy reserve of your storage system and adapt it to your personal needs.

Real-time View

For a detailed overview of the energy generated and consumed at the current time, tap the Live Flow of Energy area. Here you get a real-time overview of where electricity is generated and where the energy flows.

Historical Data

A precise analysis of the energy generated and consumed can be found in the Historical Data section. Here you can find an overview of energy consumption, degree of self-sufficiency and contribution to the sonnenCommunity for selected dates or periods. The battery diagram shows you when the storage system was charged or discharged and when it was in battery maintenance mode. During battery maintenance, it is possible that the charge status line (green) does not change for an extended period of time and then increases sharply.

Help & Support

For help with the sonnen App and sonnen products, please go to Help & Support. Here you will find answers to frequently asked questions or you can send a support request directly to sonnen and also check the status of the requests.

7 Maintenance

Regular functional checks and cleaning of the storage system are essential for trouble-free operation, operational safety, reliability, and longevity.

- No maintenance of the storage system or the inverter is required, except for cleaning the exterior.
- No maintenance of the battery modules is required

7.1 Checking function

Maintenance interval	Action to be taken
Every 2 weeks	→ Check whether there is a fault with the storage system.
Every 6 months	→ Check for changes to the charging status. If functioning properly, the storage system should be charged to 100 % on a sunny day and the charging status should drop significantly overnight.
Following severe weather events (earthquakes, heavy rain, hail, storms, heavy snowfall, drought, dusty areas, etc.)	→ Check the storage system for external damage. → Check whether the storage system is malfunctioning. → Contact the sonnen service team if there is damage or a malfunction, or if it is unclear whether the storage system is damaged.

Table 2: Checking function

7.2 Cleaning

DANGER

Opening of the storage system by unauthorised persons

Danger to life due to electrocution!

- The storage system must only be opened by authorised electricians.
- Electrical work on the storage system and the associated distribution board must only be carried out by authorised electricians.

NOTICE

Damage due to improper cleaning

Material damage because of scratched surfaces and/or damage caused by penetration of water!

- Do not use scouring cloths or sponges.
- Do not use harsh or abrasive cleaning agents.
- Do not clean wet, only damp.
- Do not use water jets.

- If necessary, clean the outside of the storage system and the inverter with a soft, damp cloth. For stubborn dirt, a small amount of commercially available dishwashing detergent can be applied to the damp cloth.
- If necessary, use a vacuum cleaner to remove dust in the cooling fins of the inverter.

8 Uninstallation and Disposal

8.1 Uninstallation

⚠ DANGER

Improper uninstallation

Danger to life due to electrocution!

→ The storage system (battery stack and sonnenInverter) must only be uninstalled by authorised electricians.

8.2 Disposal

⚠ CAUTION

Improper transport of battery modules

Fire outbreak at battery modules or emission of toxic substances!

→ Only transport battery modules in packaging that meets applicable regulations.

→ Only transport damaged battery modules in accordance with the applicable regulations.

⚠ CAUTION

Improper disposal of battery modules

Explosion or fire outbreak at battery modules or emission of toxic substances!

→ Do not dispose of batteries in fire.

The storage system, the batteries it contains and the inverter **must not** be disposed of as domestic waste!

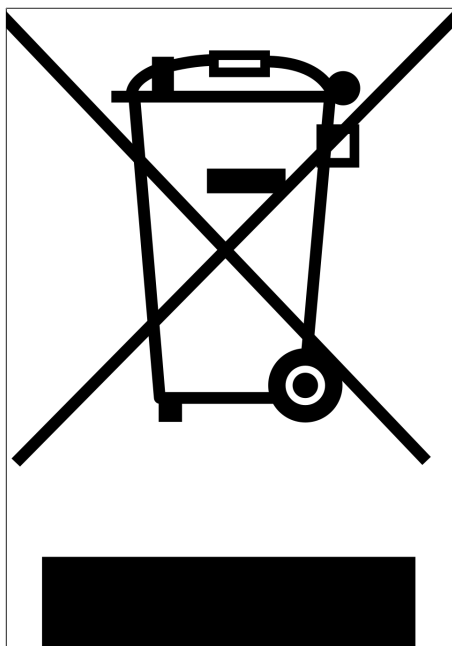


Illustration 13: WEEE symbol

→ Dispose of the storage system, the batteries it contains and the inverter in accordance with the disposal regulations for electrical waste applicable at the installation site.

→ Contact sonnen GmbH to dispose of old batteries.

9 Troubleshooting

9.1 sonnenBatterie 12 (without backup power function)

Fault	Possible cause(s)	Solution
sonnen Eclipse pulses blue. Status LEDs light up blue.	The storage system is in normal operation.	No troubleshooting necessary.
sonnen Eclipse lights up blue/orange.	Software or component firmware is being updated.	No troubleshooting necessary.
sonnen Eclipse rotates blue and orange.	A full charge or maintenance charge is performed.	No troubleshooting necessary.
sonnen Eclipse pulses continuously green or pulses green and turns off after about 5 minutes.	The storage system is not connected to the electricity grid.	→ Check that the circuit breaker in the supply line of the storage system is switched on. If so: The electricity grid does not provide any electrical energy (grid outage). → Wait until the electricity grid resumes supplying power. The storage system will then resume normal operation.
sonnen Eclipse pulses orange. Status LEDs light up orange.	The internet connection to the storage system has been interrupted.	→ Check whether the home network router is able to establish an internet connection. If so: → Ensure that the network line for the storage system is connected to the home network router.
sonnen Eclipse pulses red. Status LEDs light up red.	The storage system has detected a problem with the connected power meter.	→ Contact your installer or the sonnen service team to get help resolving the problem.
sonnen Eclipse lights up red. Status LEDs light up red.	The storage system has detected a problem that is preventing normal operation or may cause damage to the storage system.	→ Contact your installer or the sonnen service team to get help resolving the problem.
No online connection to the storage system.	No connection between the storage system and the server.	→ Make sure that the Ethernet line between the storage system and the router of the home network is correctly connected. → Make sure that the TCP or UDP ports of the following services are enabled for outgoing connections in the router: TCP ports: 443 (https) UDP ports: 123 (NTP); 1194, 1196 (VPN); 5353 (zeroconf)

9.2 sonnenBatterie 12 with backup power function (Easy Backup)

Fault	Possible cause(s)	Solution
Grid operation (no grid outage)		

Fault	Possible cause(s)	Solution
The electrical consumers are not supplied with energy in grid operation.	The lines have not been correctly connected. The MCB in the supply line to the storage system is switched off. Another circuit breaker is switched off. A circuit breaker has tripped.	→ Check the electrical wiring. → Switch on the MCB. → Switch on all circuit breakers. → Check the electrical wiring and the connected electrical consumers for faults. → Switch on the affected circuit breaker once any faults are corrected.
	Problem in the storage system.	→ Contact the sonnen service team to get help resolving the problem.
Backup power operation (grid outage) – backup power operation does not start		
Backup power operation does not start. sonnen Eclipse pulses green and switches off after several minutes.	No backup buffer is set. The batteries of the storage system have discharged so much that further discharging would lead to a deep discharge state and therefore damage the batteries. At the same time the PV system produces no or insufficient electrical energy to start the backup operation.	When the grid outage is over and the electricity grid once again begins supplying electrical energy, the storage system automatically switches to grid operation. → If the PV system produces sufficient electrical energy at one of the defined reenabling times and the grid outage continues, the backup operation starts again.
	The storage system is switched off.	→ Switch on the storage system.
Backup power operation does not start. sonnen Eclipse pulses green .	A circuit breaker is switched off. A circuit breaker has tripped.	→ Switch on all circuit breakers. → Check the electrical wiring and the connected electrical consumers for faults. → Switch on the affected circuit breaker once any faults are corrected.
Backup power operation does not start. sonnen Eclipse pulses orange .	Electrical consumers with too high of a power consumption are connected to the circuit.	→ Switch off electrical consumers or reduce their power consumption. → Press the backup power button until all Status LEDs light up green. Backup power operation restarts. → Only connect electrical consumers to the backup power circuit when they have a power consumption that does not exceed the maximum power (see Technical Data [P. 36]).
Backup power operation does not start. sonnen Eclipse does not light up .	Problem in the inverter or control unit of the storage system.	→ Contact the sonnen service team to get help resolving the problem.

Fault	Possible cause(s)	Solution
Backup power operation (grid outage) - backup power operation stops		
Backup power operation stops. The miniature circuit breaker (MCB) in the supply line and the circuit breakers in the circuit have not tripped. sonnen Eclipse pulses green and switches off after several minutes.	The backup buffer of the storage system batteries is depleted. The batteries have discharged so much that further discharging would lead to a deep discharge state and therefore damage the batteries. At the same time the PV production of the PV system has stopped or has decreased to such an extent that there is not enough electrical energy available for backup power operation.	When the grid outage is over and the electricity grid once again begins supplying electrical energy, the storage system automatically switches to grid operation. → If the PV system produces sufficient electrical energy at one of the defined reenabling times and the grid outage continues, the backup operation starts again.
Backup power operation stops. sonnen Eclipse pulses green . Status LEDs light up green .	The circuit breaker in the mains line or a circuit breaker in the circuit has tripped.	→ Contact your installer and have the electrical wiring and the connected electrical consumers checked for faults. → Switch on the affected circuit breaker once any faults are corrected.
Backup power operation stops. The miniature circuit breaker (MCB) in the supply line and the circuit breakers in the backup power circuit have not tripped. sonnen Eclipse pulses orange . Status LEDs light up orange .	Electrical consumers with too high power consumption are connected to the backup power circuit.	→ Switch off electrical consumers in the backup power circuit or reduce their power consumption. → Press the backup power button until all Status LEDs light up green. Backup power operation restarts. → Only connect electrical consumers to the backup power circuit when they have a power consumption that does not exceed the maximum power (see Technical Data [P. 36]).

10 sonnenBatterie 12 technical data

Battery stack	sB12_1	sB12_2	sB12_3
Cell technology	lithium iron phosphate (LiFePO4)		
Number of battery modules	1	2	3
Nominal voltage	96 V	192 V	288 V
Nominal capacity	9.6 kWh	19.2 kWh	28.8 kWh
Usable capacity	9.4 kWh	18.8 kWh	28.2 kWh
Maximum charge/discharge current	60 A	60 A	60 A
Current (Max. continuous)		100 A	
Short-circuit current (I _{sc})		4 kA	
Max. battery efficiency		95 %	
Thermal Management	Natural convection		
Installation Method	Floor-standing with wall support		
Protection			
Protection class	I / PE conductor		
Degree of Protection	IP65		
Overvoltage category	II		
Rated short-withstand current	200 A for < 10 s		
Compliance with Regulations and Standards	EMC 2014/30/EU, LVD 2014/35/EU, RoHS 2011/65/EU, REACH 1907/2006/EC, WEEE 2012/19/EU, BATR 2023/1542/EU, EN IEC 62477-1, IEC 62040-1, IEC 62619, IEC 60730-1, EN IEC 61000-6-1, EN IEC 61000-6-3, AS 62040.1, AS 62477.1, SA TS 5398, UN 38.3, UN 3480		
Origin	Designed and engineered in Germany		
Country of Manufacture	China		
Dimensions (H/W/D) and Weight			
Dimensions of battery stack	88/56/29 cm	139/56/29 cm	190/56/29 cm
Weight of battery module	~ 87 kg		
Weight of connection box	~ 15 kg		
Weight of base	~ 5.5 kg		
Environment			
Environment	Outdoor/Indoor		
Operating temperature range	-20 °C ... 55 °C ²		
Storage temperature range	-25 °C ... 60 °C		
Transport temperature range	-25 °C ... 60 °C		
Max. rel. humidity	95 %, non-condensing		
Permissible installation altitude	3,000 m above sea level		
Pollution degree	3		
Noise emission	< 15 dB (A)		

² Temperature-dependent power reduction is possible. Optimal temperature range: 15-30 °C

sonnenInverter 6-1-2**DC Input (PV)**

Maximum recommended PV power	12,000 Wp
Max. input voltage	550 V
Initial input voltage	90 V
MPP voltage range	70 V ... 540 V
Number of MPPTs / Input per MPPT	2 / 1
Max. input current per MPPT	16 A
Short-circuit current (I_{sc}) per MPPT	20 A
Backfeed current to array	20 A

DC Output (Battery)

Battery voltage range	80 - 480 V
Maximum charge/discharge current	45 A

AC Output (Grid)³

	3.0 kW	3.6 kW	4.6 kW	5.0 kW	6.0 kW
Nominal power ⁴	3,000 W	3,600 W	4,600 W	5,000 W	6,000 W
Apparent power	3,000 VA	3,600 VA	4,600 VA	5,000 VA	6,000 VA
Nominal current	13 A	15.7 A	20 A	21.7 A	26.1 A
Max. continuous current	15 A	18 A	21 A	25 A	28.7 A
Mains connection	single-phase (L/N/PE) 230 V 50 Hz				
Max. output fault current	300 mA				
Inrush current	< Nominal current				
Max. ext. overcurrent protection	32 A				
Grid forms	TN / TT				
Mains connection fuse	Miniature circuit breaker (MCB) Type B max. 32 A ⁵				
Power factor	> 0.99 @ Rated power (Adjustable from 0.8 LD to 0.8 LG)				
Max. THDi	< 3 % (Nominal power)				

AC Output (Backup)

	3.0 kW	3.6 kW	4.6 kW	5.0 kW	6.0 kW
Nominal power ⁶	3,000 W	3,600 W	4,600 W*	5,000 W*	6,000 W*
Overload (1 min)	3,600 VA	4,320 VA*	5,520 VA*	6,000 VA*	7,200 VA*
Overload (15 s)	4,350 VA*	5,220 VA*	6,670 VA*	7,250 VA*	8,700 VA**

* 3,950 W/VA with 1 battery module.

* 3,950 VA with 1 battery module, 7,900 with 2 battery modules.

Power factor	> 0.99 @ Rated power (Adjustable from 0.8 LD to 0.8 LG)
Max. THDi	< 5 % (Rated power)
Inverter Method of active Anti-Islanding	Active Frequency Drift (AFD)
Switchover time	< 100 ms
Switchback time	< 100 ms ⁷

AC Output (Backup)**In General**

Thermal Management	Natural convection
Installation Method	Wall mount

³ During commissioning, the AC output power is set to one of the listed power levels.⁴ at power factor of $\cos \phi = 1$ ⁵ Selection depends on the rated power selected during commissioning.⁶ at power factor of $\cos \phi = 1$ ⁷ After the network is restored, the wait time until reconnection can be up to 5.5 minutes due to country-specific regulations.

Maximum Efficiency (PV2AC)	97.8 %
European Efficiency (PV2AC)	97.0 %
Origin	Designed and engineered in Germany
Country of Manufacture	China
Protection	
Protection class	I / PE conductor
Degree of Protection	IP66
Required fault current monitoring	Integrated residual current monitoring unit ⁸
Overvoltage category	II (DC); III (AC)
Rated short-withstand current	45 A
Separation principle	no galvanic isolation, transformer-less
Compliance with Regulations and Standards	EMC 2014/30/EU, LVD 2014/35/EU, RoHS 2011/65/EU, REACH 1907/2006/EC, WEEE 2012/19/EU, EN IEC 62109-1, EN IEC 62109-2, EN IEC 61000-3-2, EN IEC 61000-3-3, EN IEC 61000-3-11, EN IEC 61000-3-12, EN IEC 61000-6-1, EN IEC 61000-6-2, EN IEC 61000-6-3, EN IEC 61000-6-4, EN IEC 62920, IEC 62477-1 (Annex P), AS/NZS 4777.2, CEI 0-21
Dimensions (H/W/D) and Weight	
Dimensions (including wall mount)	497/470/195 mm
Weight	~ 16.5 kg
Environment	
Environment	Outdoor/Indoor
Operating temperature range	-25 °C ... 60°C ⁹
Storage temperature range	-25 °C ... 60 °C
Transport temperature range	-25 °C ... 60 °C
Max. rel. humidity	100 %, non-condensing
Permissible installation altitude	3,000 m above sea level ¹⁰
Pollution degree	3
Noise emission	< 35 dB(A)
Power measurement with SU103 power meter	
Voltage measurement inputs	Nominal voltage (AC): 230 V (L-N), 400 V (L-L) connectible conductor cross-section: 0.2 ... 2.5 mm ²
Measurable current	Max. 63 A
Communication protocols	Modbus TCP (LAN), Modbus RTU (RS485)

Requirements for the installation site

- It is recommended to avoid direct sunlight and direct exposure to the elements (rain, snow).
- No danger due to flooding.
- No corrosive and explosive gases. The maximum permissible ammonia content is 20 ppm.
- No dust, especially flour dust or sawdust.
- No vibrations.
- No seismically active regions.
- Installation room should be ventilated.
- Easy access.

⁸ Local regulations regarding an additional residual current circuit breaker must be observed.

⁹ Temperature-dependent power reduction is possible. Optimal temperature range: 15–30 °C

¹⁰ Power reduction is possible at altitudes above 2,000 m.

- Mounting surfaces (walls) must be load-bearing, vertical, level, and made of non-combustible material.
- Floor is suitable for heavy loads.
- Observe applicable local building codes.
- Observe all fire safety guidelines and regulations.



<https://documents.sonnen.de/s/user-manual-sB12-AU-en>

