Operating instructions | for operators

sonnenBatterie eco 8.0

EN

IMPORTANT

- Read this documentation carefully before installation / operation.
- Retain this document for reference purposes.

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1 Information about this document

This document describes the operation of the sonnenBatterie eco 8.0.

- ▶ Read this document in its entirety.
- ▶ Keep this document in the vicinity of the sonnenBatterie.

1.1 Target group of this document

This document is intended for the storage system operator.

1.2 Designations in this document

The following designations are used in this document:

Complete designation	Designation in this document
sonnenBatterie eco 8.0	Storage system

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.**

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

Table 1: Additional symbols

2 Safety

2.1 Intended Use

The sonnenBatterie eco 8.0 is a battery storage system which can be used to store electrical energy. Improper use of this system poses a risk of death or injury to the user or third parties as well as damage to the product and other items of value. The following points must therefore be observed in order to comply with the intended use of the prouct:

- The storage system must not be installed in any kind of combination.
- The storage system must be fully installed in accordance with the installation instructions.
- The storage system must be installed by an authorised electrician.
- The storage system must only be used at a suitable installation location.
- The transport and storage conditions must be observed.

Especially the following uses are not permissible:

- Operation in flammable environments or areas at risk of explosion.
- Operation in locations at risk of flooding.
- Operation outdoors.
- Operation of the battery modules outside of its storage system.

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

2.2 Operating the storage system

Incorrect operation can lead to injury to yourself or others and cause damage to property:

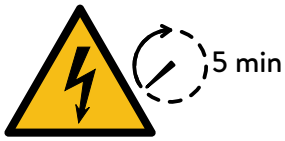
- The storage system must only be operated as described in the product documentation.
- This device can be used by children from the age of eight (8) years old and individuals impaired physical, sensory or mental capabilities or individuals with limited knowledge and/or experience of working with the 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. Cleaning and user maintenance must not be carried out by children without supervision.

2.3 Product modifications or changes to the product environment

- Only use the storage system in its original state - without any unauthorised modifications - and when it is in proper working order.
- Safety devices must never be overridden, blocker or tampered with.
- The interfaces of the storage system must be wired in accordance with the product documentation.

- An appropriate and readily accessible disconnect device shall be incorporated in the fixed wiring.
- All repairs on the storage system must be performed by authorised service technicians only.
- The replacement of battery modules must be performed by authorised service technicians only. When replacing batteries, replace with the same type and number of batteries or battery modules.

2.4 Voltage inside the storage system



The storage system contains live electrical parts, which poses a risk of electrical shock. Therefore:

- ▶ Do not open the storage system.

2.5 Handling the battery modules

The battery modules installed in the storage system are protected by multiple protective devices and can be operated safely. Despite their careful design, the battery cells inside the battery modules may corrode or experience thermal run-away in the event of mechanical damage, heat or a fault.

This can have the following effects:

- High heat generation on the surface of the battery cells.
- Electrolyte may escape.
- The escaping electrolyte may ignite and cause an explosive flame.
- The smoke from burning battery modules can irritate the skin, eyes and throat.

Therefore, proceed as follows:

- ▶ Do not open the battery modules.
- ▶ Do not mechanically damage the battery modules (pierce, deform, strip down, etc.)
- ▶ Do not modify the battery modules.
- ▶ Do not allow the battery modules to come into contact with water (except when extinguishing a fire in the storage system).
- ▶ Do not heat the battery modules. Operate them only within the permissible temperature range.
- ▶ Keep the battery modules well away from sources of ignition.
- ▶ Do not short-circuit the battery modules. Do not allow them to come into contact with metal.
- ▶ Do not continue to use the battery modules after a short circuit.
- ▶ Do not deep-discharge the battery modules.

In the event that module contents are released:

- ▶ Do not enter the room under any circumstance.
- ▶ Avoid contact with the escaping electrolyte.
- ▶ Contact the fire services.

2.6 Conduct in case of a fire

Fire may occur with electrical equipment despite its careful design. Likewise, a fire in the vicinity of the equipment can cause the storage system to catch fire, releasing the contents of the battery modules.

In the event of a fire in the vicinity of the product or in the storage system itself, proceed as follows:

- ▶ Only firefighters with appropriate protective equipment (safety gloves, safety clothing, face guard, breathing protection) are permitted to enter the room where the burning storage system is located.

There is a danger of electrocution when extinguishing fire while the storage system is switched on. Therefore, before starting to extinguish the fire:

- ▶ Switch off the storage system to electrically isolate it (see Switching the storage system off to electrically isolate it).
- ▶ Switch off the mains fuses in the building.

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

- ▶ Observe the minimum distances specified for the extinguishing agent used. The storage system works with an output voltage of 400 V (AC) and is therefore considered a low-voltage system.
- 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:

- The battery modules have a nominal voltage of 48 V (DC) and therefore fall into the range of protected extra-low voltage (under 60 V DC).
- The battery modules do not contain metallic lithium.

3 Product description

3.1 Technical data

sonnenBatterie eco	8.0/2,5	8.0/5	8.0/7,5	8.0/10	8.0/12,5	8.0/15
System data (AC)						
Nominal voltage	400 V					
Nominal frequency	50 Hz					
Nominal power	1,100 W	2,500 W	3,300 W	3,300 W	3,300 W	3,300 W
Nominal current	1.6 A	3.6 A	4.5 A	4.8 A	4.8 A	4.8 A
Power factor range	0.9 cap. ... 0.9 ind.					
Current (Max. continous)	4.8 A					
Max. output fault current	120 mA					
Inrush current	0 A					
Mains connection	three-phase, L1 / L2 / L3 / N / PE					
Max. ext. overcurrent protection	16 A, 3ph					
Mains topology	TN / TT					
Mains connections fuse	Miniature circuit breaker | Type B | 10 - 16 A					
Battery data (DC)						
Cell technology	lithium iron phosphate (LiFePO4)					
Max. capacity	2.5 kWh	5.0 kWh	7.5 kWh	10.0 kWh	12.5 kWh	15.0 kWh
Usable capacity	2.25 kWh	4.5 kWh	6.75 kWh	9.0 kWh	11.25 kWh	13.5 kWh
Nominal voltage	48 V					
Current (Max. continous)	75 A					
Short-circuit current(I_{SC})	90 A					
Min. number of battery modules	1					
Max. number of battery modules	6					
Dimensions / weight without extension cabinet (from 2.5 up to 5 kWh)						
Dimensions (H/W/D) in cm	88/67/23		-	-	-	-
Weight in kg	58	81	-	-	-	-
Dimensions / weight with small extension cabinet (from 2.5 up to 10 kWh)						
Dimensions (H/W/D) in cm	137/67/23				-	-
Weight in kg	74	97	120	143	-	-
Dimensions / weight with big extension cabinet (from 2.5 up to 15 kWh)						
Dimensions (H/W/D) in cm	186/67/23					
Weight in kg	85	108	131	154	154	200
Safety						
Protection class	I / PE conductor					
Required fault current monitoring	In TT networks: Residual current device (RCD) with a rated differential current of 300 mA; requirements on site must be observed.					

Degree of Protection	IP30
Rated short-withstand current(I_{CW})	10 kA
Separation principle PV -> AC	-
Separation principle Batt. -> AC	galvanic isolation (functional insulation)
Power meter	
Voltage measurement inputs	Nominal voltage (AC): 230 V (L-N), 400 V (L-L) | max. connectible conductor cross-section: 1.5 mm²
Clamp-on current transformer	Max. measurable current: 60 A (standard), optional up to 400 A
Ambient conditions	
Environment	indoor (conditional)
Ambient temperature range[1]	-5 °C ... 45 °C
Storage temperature range	0 °C ... 40 °C
Transport temperature range	-15°C ... 50 °C
Max. rel. humidity	90 %, non-condensing
Permissible installation altitude	2,000 m above sea level
Pollution degree	2
Additional ambient conditions:	

- The installation location must not be at risk of flooding.
- Installation room can be ventilated.
- The currently applicable building codes must be observed.
- Even floor, suitable for heavy loads.
- Observe fire control standards.
- Free from corrosive and explosive gases (ammonia content max. 20 ppm).
- Free from dust (especially flour dust or sawdust).
- Free from vibrations.
- Free access to the installation location.
- No direct sunlight.
- Smoke detectors must be installed both at the installation location and in bedrooms.

3.2 Type plate

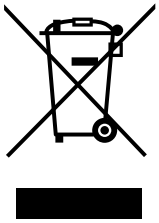
The type plate for the storage system is located on the outer surface of the system. The type plate can be used to uniquely identify the storage system. The information on the type plate is required for the safe use of the system and for service matters.

The following information is specified on the type plate:

- Item designation
- Item number
- Technical data of the storage system

[1] Optimal: 5 °C ... 30 °C | Derating possible below 5 °C / above 30 °C.

3.3 Symbols on the outside of the storage system

Symbol	Meaning
	Warning: flammable materials.
	Warning: hazards due to batteries.
	Warning: electrical voltage.
	Warning: electrical voltage. Wait five minutes after switching off (capacitor de-energising time).
	Warning: product is heavy.
	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.
	Observe the documentation. The documentation contains safety information.

3.4 Function

3.4.1 Basic principle

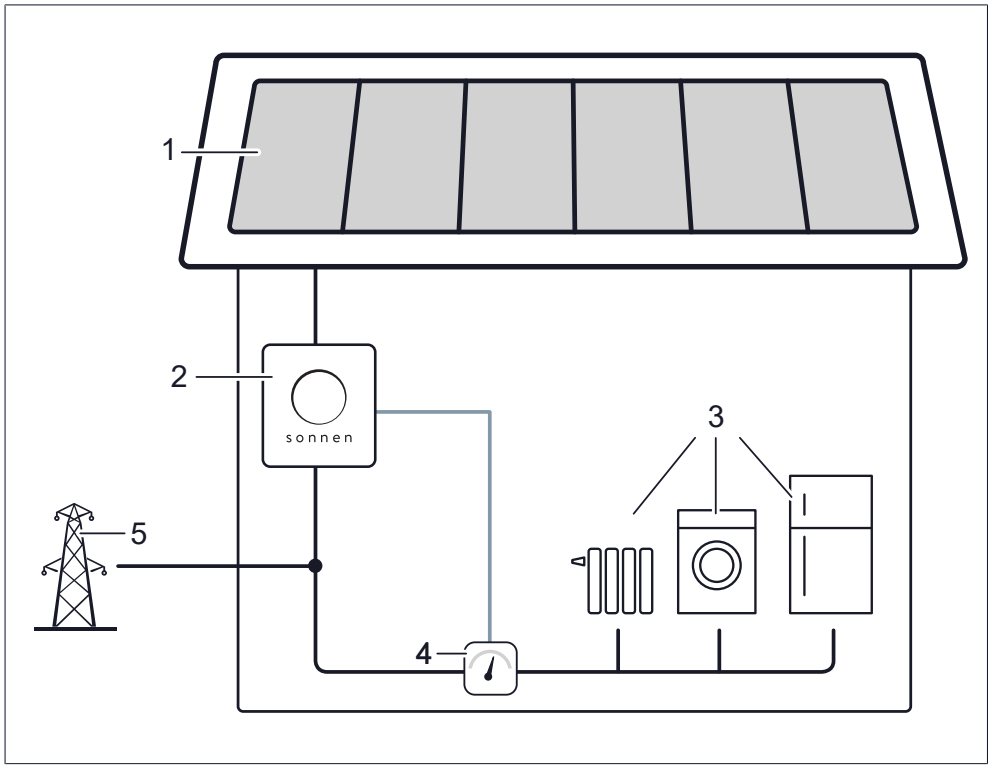


Illustration 1: sonnenBatterie function

1	PV system	2	Storage system
3	Consumers in building (e. g. washing machine, hob, lamps, refrigerator, etc.)	4	Measurement of consumption
5	Public electrical mains		

The storage system (2) is connected to the PV system (1) and the public electrical mains (5). Furthermore the current consumption of the consumers in the building (3) is constantly measured (4).

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 can not be charged into the battery, the remaining surplus is fed into the public electrical 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 can not be compensated by discharging the battery, the remaining deficit is covered by the public electrical grid.

3.4.2 Feed-in limit

PV systems are subject to a feed-in limit in some circumstances. The feed-in limit restricts the PV system's feed-in power at the mains connection point.

Example

Nominal power of PV system: 10 kWp

Power limit: 50%

Maximum feed-in power: 5 kW

In this example, the feed-in power of 5 kW must not be exceeded. The following figure shows an example of the PV system's production over the course of a day.

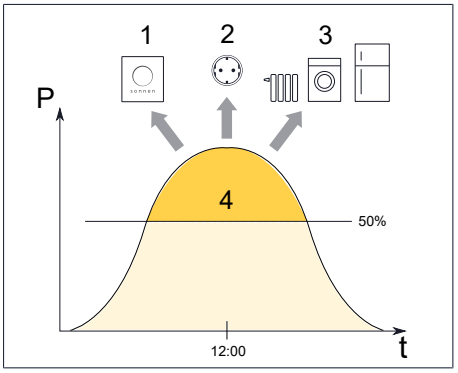


Illustration 2: Example: feed-in limit at 50% of nominal power

To prevent production reduction – and therefore energy loss – the excess energy is first stored in the storage system (1) and consumption is increased by switching on consumers (2, 3). Production is only reduced if these measures do not lead to the desired limit.

1 Charging of storage system
2 Switch-on of consumers via sonnenSmart plug
3 Switch-on of consumers via self-consumption switch
4 Midday peak, which must not be fed into the electrical mains

Measures for limiting feed-in are explained in detail in the following. The individual measures are carried out one after the other. Only when one measure does not achieve the desired reduction is the next measure introduced.

1. Charging of battery

Excess energy is directed to the storage system battery. In order for this to occur, there must be sufficient storage capacity available in the battery. For this reason, on sunny days it is often a good idea to reduce the charging power in the morning hours in order to reserve sufficient remaining capacity of the battery for midday. The charging behaviour is intelligently controlled for this purpose (see Intelligent charging management [P. 14]).

2. Switch-on of consumers (via sonnenSmart plug)

The consumers are activated as soon as the feed-in limit is exceeded. The consumers are deactivated again once the level has dropped below the limit and stayed there for at least three minutes.

3. Activation of the self-consumption switch

Consumers connected to the permanently wired switch output are switched on here.

4. Reduction of PV power

Production is reduced via an integrated switch contact on the inverter. This limited the PV inverter to a set power output. In order for this to occur, the inverter must support power reduction using a switch contact or an external solution (e.g. a solar datalogger). Configuration and connection are carried out by an authorised electrician.

3.4.3 Intelligent charging management

The charging behaviour of the storage system is controlled via intelligent charging management. The aims of this intelligent control are as follows:

- Storage of the midday peak in the storage system (sufficient storage capacity must still be available for this)
- Full charging of the storage system until evening (so there is sufficient energy for night-time)

The intelligent charging management only takes effect in storage systems which are operated together with PV systems for which a feed-in limit is activated.

Functional principle of intelligent charging management

The storage system is connected to a server via the internet. This server creates a consumption and production forecast for the individual hours of the day in question. The production forecast is based on

- the weather forecast,
- the nominal power of PV system and
- the orientation of the PV system.

The consumption forecast is calculated based on actual consumption from the previous week.

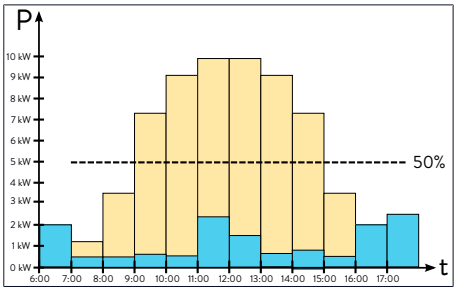


Illustration 3: Production forecast (yellow) and consumption forecast (blue)

The figure on the left shows an example of a production and consumption forecast. In this example, an average consumption of 0.5 kW and a production of approx. 9 kW are calculated for the time between 10 and 11 a.m.

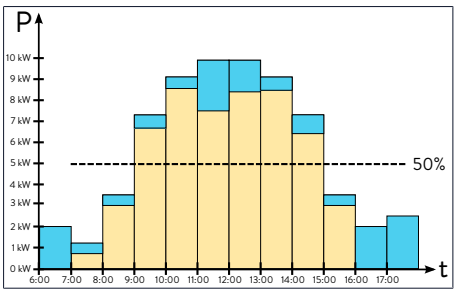


Illustration 4: Forecast surplus

Subtracting the consumption (blue) from the production (yellow) gives you the forecast surplus (8.5 kW in this example). The consumption bars have been placed on top of the production bars in the diagram.

In this example, feeding in the entire surplus at midday would lead to the feed-in limit (of 5 kW) being exceeded. For this reason it is ideal if as much of the energy surplus as possible exceeding the feed-in limit is used to charge the battery.

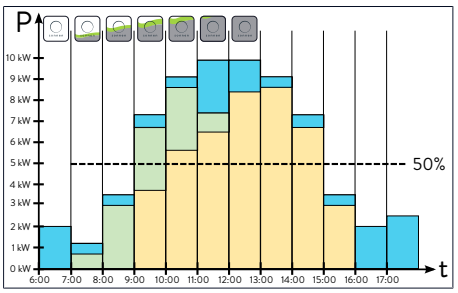


Illustration 5: Charging behaviour without intelligent charging management

yellow	forecast production
blue	forecast consumption
green	charging of storage system

Without intelligent charging management, the storage system would immediately use the surplus to charge the battery (until the maximum charging power is reached). In this example, this behaviour would result in the storage system being fully charged before midday, meaning that the surplus exceeding the feed-in limit after this point would no longer be able to be stored in the battery.

To stay within the Feed-in limit [P. 13], the power of the PV system would need to be reduced. This would lead to an energy loss and therefore also a financial loss. Intelligent charging management attempts to avoid fully charging the battery too early. To this end, the storage system receives a charging plan for the day early in the morning from the server.

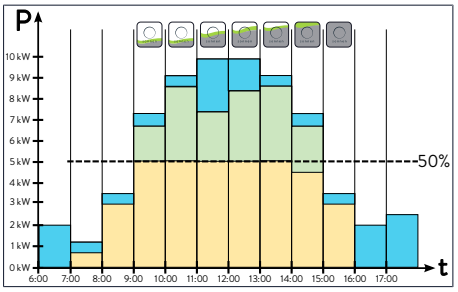


Illustration 6: Charging behaviour with intelligent charging management

yellow	forecast production
blue	forecast consumption
green	charging of storage system

In this example, charging of the storage system is avoided in the morning hours. At midday the storage system is charged only enough so that the feed-in limit can be observed.

Intelligent charging management adaptation

After commissioning the intelligent charging management system has to adapt to conditions on site. The production forecast, for example, depends on the weather forecast and the orientation, roof angle, shading, etc. of the PV system.

The consumption forecast depends on individual consumption and the electrical consumers in use.

Statistical consumption and production data is required in order for intelligent charging management to take these complex factors into account. Since none of this necessary information exists immediately after the storage system is installed, this data must first be collected. For this reason, intelligent charging management requires approx. seven days for calibration. During this time the charging behaviour may not be ideal. After these seven days have passed, intelligent charging management will have adapted to match your individual consumption and production profile.

Intelligent charging management limits

The effectiveness of intelligent charging management depends on how accurate the production and consumption forecasts are.

- An incorrect weather forecast results in an incorrect production forecast.
- The consumption forecast depends on consumption from the previous week. Drastically fluctuating consumption therefore negatively impacts the quality of the consumption forecast. The more consistent the consumption, the more accurate the consumption forecast.

4 Switching on the storage system

4.1 Switching on the storage system

NOTICE

If the storage system can't be switched on:

- ▶ Do not attempt switching on the storage system more than three times.
- ▶ Contact the service!
  - ⇨ Further attempts can damage the battery modules.

Fuse switch F1 establishes the connection between the battery and the inverter.

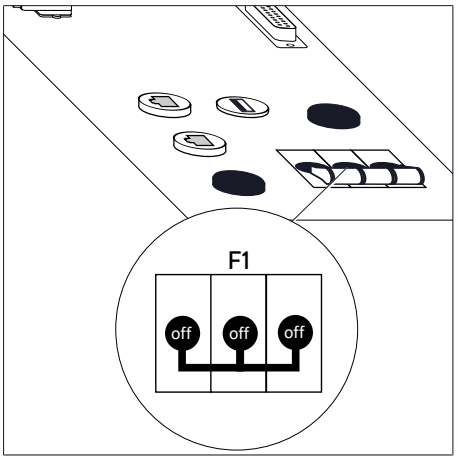


Illustration 7: Fuse switch F1 on the top side of the storage system

- ▶ Switch on fuse switch F1.

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

4.2 Switching on the grid voltage

- ▶ Switch on the grid voltage using the AC miniature circuit breaker.

5 Using the optional display

The storage system is not delivered with a display as standard. Retrofitting the display is not possible.

The installed display is a multi-touch screen. It can be controlled with movements of the hand (like a standard smartphone).

5.1 Activating the display

When the display is not touched for a longer period of time, the screen goes dark.

- ▶ Touch the display anywhere to reactivate the screen.

5.2 Home screen

The home screen displays the most important current data for the storage system.

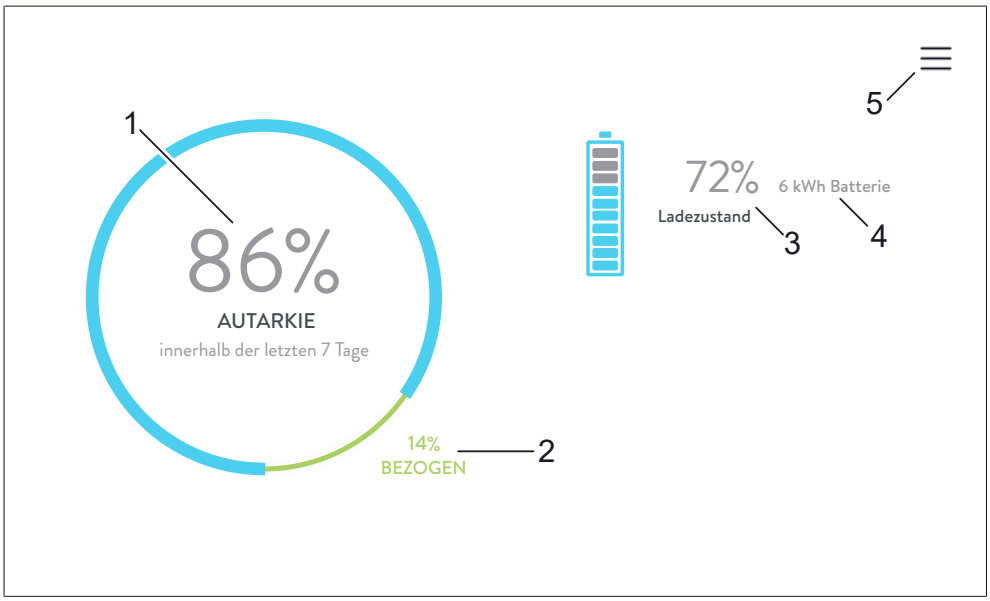


Illustration 8: Home screen

No.	Description
1	Self-sufficiency. Indicates the proportion of total consumption over the last 7 days which was self-generated.
2	Usage. Indicates the proportion of total consumption over the last 7 days which was drawn from the public grid.
3	Stage of charge of the storage system. Indicates the proportion of total capacity that is currently available.
4	Total capacity. Indicates the power that can be taken from a fully charged battery.
5	Main menu button. ▶ Press the button to switch to the main menu.

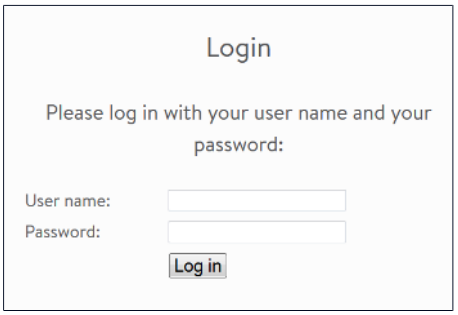
Table 2: Description of the home screen components

6 Internet portal

You can access current and saved data for your storage system on the internet portal.

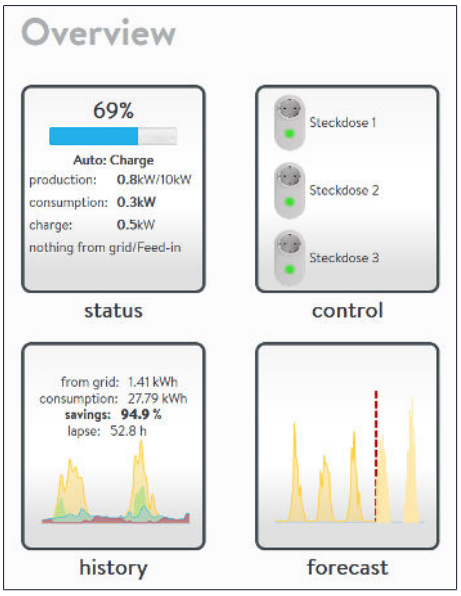
6.1 Logging into the internet portal

To log into the internet portal, proceed as follows:



1. Enter the following web address in the browser: https://my.sonnen-batterie.com
2. The login window opens, as shown on the left.
3. Enter your access data, which was provided as part of the scope of delivery.
4. Click on the **Log in** button.

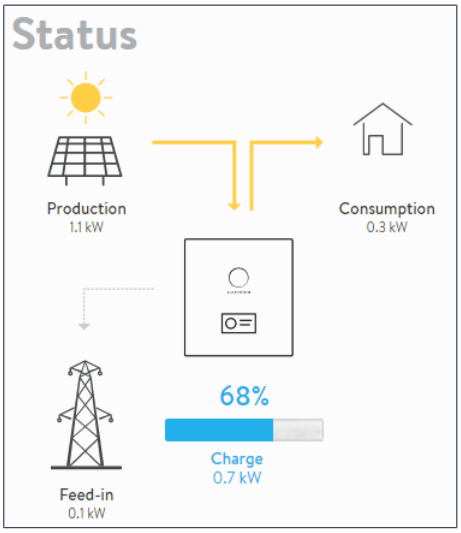
6.2 Using the overview page



The overview page shows a summary of all of the information which can be seen on the portal.

- You can click on the **status, control, history** and **forecast** buttons in order to open the specific page.

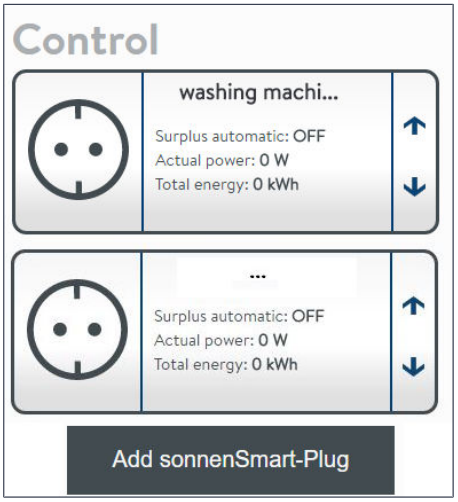
6.3 Using the status page



The status page shows the following current measured values:

- Current generation
- Current consumption
- Current usage/current feed-in
- Current charging status

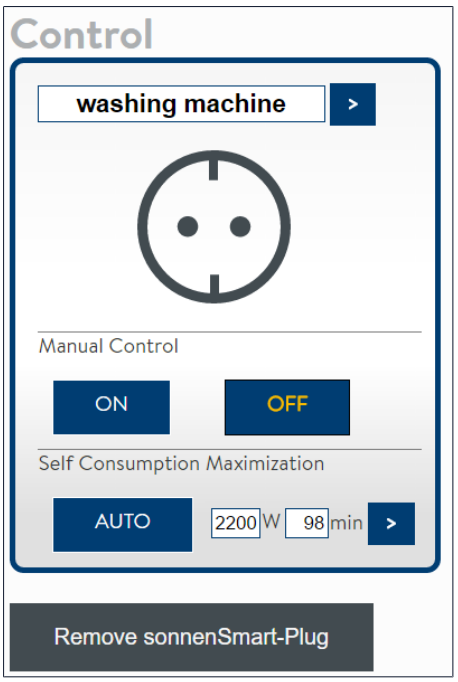
6.4 Using the control page



The control page contains an overview of the connected sonnenSmart-Plugs.

- ▶ Click on the relevant button to select a smart plug (e. g. washing machine).
- ▶ Click on the é or ê button to change the order of the smart plugs.

- ▶ Click on **Add sonnenSmart-Plug** to set up a new Smart-Plug. The program guides you through the necessary steps.



The name of the smart plug can be selected and replaced.

- Click **>** to confirm the new name of the smart plug.
- Click on the **ON** or **OFF** button to activate or deactivate the smart plug (manual control).
- To have the storage system automatically activate or deactivate the smart plug, click on the **AUTO** button.
- Under 'Self Consumption Maximization', set the excess energy level at which the consumer should be activated and the minimum duration for which the consumer should stay activated (minimum activation time). These parameters must be adapted to suit the connected consumer.

Example: Your washing machine has a nominal power of 2200 watts. Your selected washing programme takes one hour and 38 minutes to complete. Enter the following values under 'Self Consumption Maximization': 2200 W; 98 minutes.

- Confirm the values by clicking on **>**.
- Click on the **Remove sonnenSmart-Plug** button to remove the selected smart plug from storage system control.

6.5 Using the history page

The history page shows all relevant energy flows in a graph.

The values displayed are subject to measuring instrument tolerances and rounding errors. The only information that is relevant in terms of your energy bills is the data taken from the utility company's meters.

6.5.1 Elements of the power graph

The power graph presents the different energy flows in relation to time.

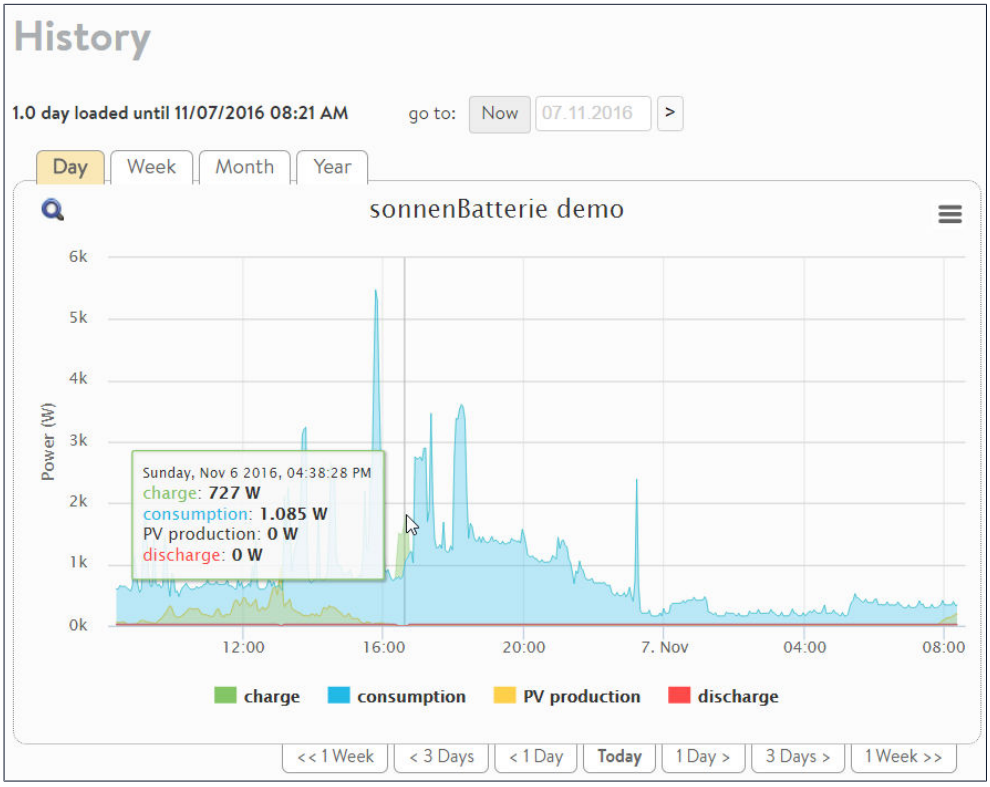


Illustration 9: Power graph on the history page

No.	Description
1	▶ Clicking on the input field to the right of **go to** allows you to select a date. ▶ Clicking on the button **>** confirms the date selection.
2	▶ Clicking on the **day, week, month** or **year** button defines the time frame shown in the graph.
3	▶ Clicking on the button provides the option of printing out the displayed graph.
4	▶ Clicking on the magnifying glass activates or deactivate full-screen mode.
5	The power is shown in watts (W) on the y-axis. The abbreviation 'k' stands for the prefix 'kilo'. 3,0 k therefore corresponds to 3,0 kilowatts or 3000 watts.
6	▶ Positioning the mouse cursor over the graph shows the exact values for the energy flows at this time. ▶ By clicking and dragging, you can select a smaller time frame in the graph.
7	Time is shown on the x-axis (in the above example, the time frame shown on the x-axis is one day).
8	This legend shows which energy flows are displayed in which colour in the graph (f. e. consumption is shown in blue). ▶ Clicking on the desired energy flow (e.g. consumption) shows or hides this flow in the graph.

No.	Description
9	▶ Clicking on one of the buttons below the graph allows you to navigate to previous or later time frames. By clicking on **< 1 Day** for example the specified period will scroll back one day.

Table 3: Description of the power graph elements

6.5.2 Analysis of power diagram

Given the high density of information, analysis of a power diagram is not too simple. For better understanding, some points in time of a power diagram are analysed in what follows.

The example below shows how it works in a facility with limitation of the feed-in to the public grid. This power limitation is a special feature that is used only in cases where the network owner demands it. If requirements are imposed on such an feed-in limitation, it can be controlled by the storage system.

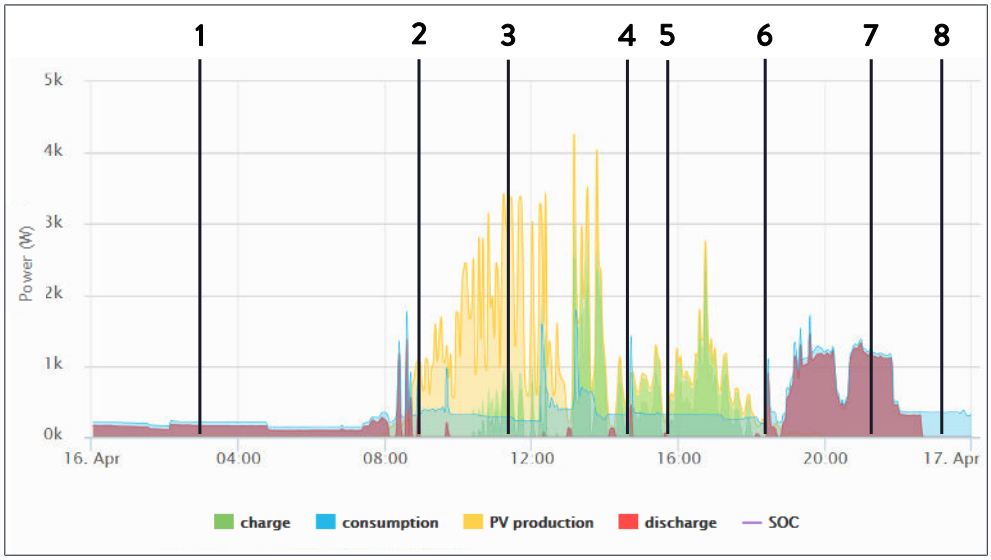


Illustration 10: Analysis of power diagram

Additional information:

- Nominal Power PV system: 5 kWp
- Feed-in Limitation: 50 % of the nominal power (here: 2.5 kW)

No.	Description
1	It is dark (no generation (yellow)). Consumption (blue) and discharging (red) have the same value. Consumption is therefore covered by the discharging of the storage system.
2	Generation (yellow) is approx. 1000 watts. This is used to cover consumption (blue). The intelligent charging management system has postponed charging; the charging buffer is needed to avoid breaching the feed-in limit. The energy that is not required is fed into the grid.

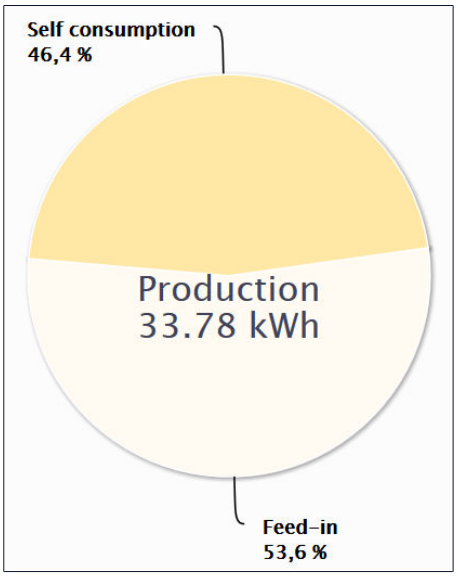
No.	Description
3	Generation has increased to approx. 3300 watts. This is used to cover consumption (blue) and charge the storage system (green) at a minimal level. Charging with higher power is prevented by the intelligent charging management system. This function ensures that storage capacity is kept free in order to store part of the midday peak in the storage system later.
4	Consumption (blue) exceeds generation and must be supplemented by the storage system.
5	A breach of the feed-in limit is no longer expected. PV generation covers consumption (blue) and the surplus is stored in the battery (green) so that it will be fully charged by evening.
6	From this point PV generation is no longer sufficient to cover consumption. The difference is discharged from the storage system.
7	The storage system discharge (red) covers total consumption.
8	The storage system is discharged and consumption is covered by usage from the public grid.

Table 4: Description of the power graph elements

6.5.3 Analysing pie charts

Two pie charts are shown below the power graph. The pie charts always refer to the time frame shown in the power graph.

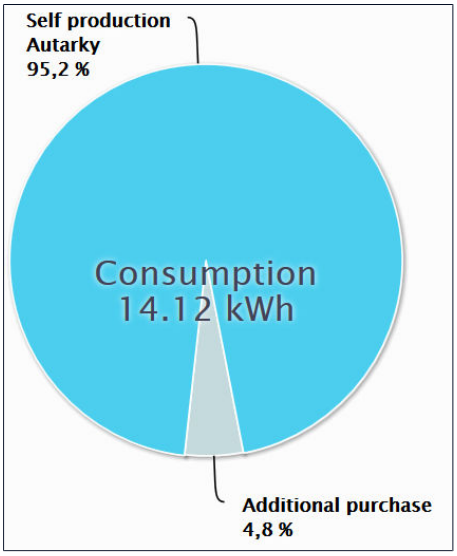
Production pie chart



The pie chart symbolises the electrical power gained by the generator in the analysed time frame.

The feed-in power is marked white in the chart. The yellow part represents self consumption. Self consumption is the part of the generated power that has not been fed in, bus has instead been stored temporarily in the battery or has been consumed.

Consumption pie chart



The pie chart shows the power that was required in the building during the analysed time frame.

Purchased power (taken from the mains) is marked in grey in the chart. The blue part represents self production. Self production is the part of the consumed energy that was not taken from the mains.

6.6 Using the forecast page

The forecast page shows the probable course of consumption and production in future.

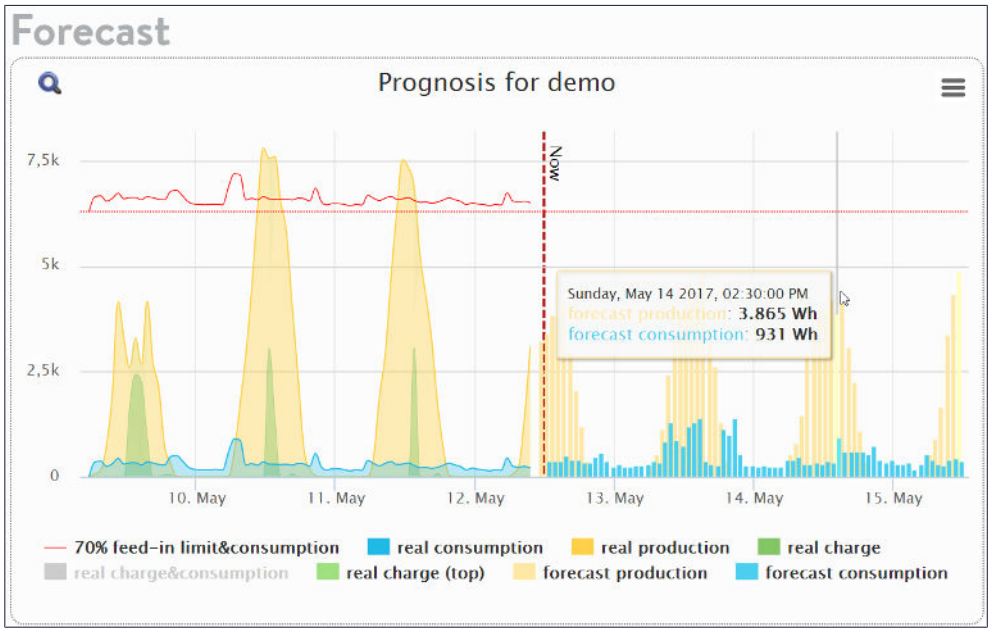


Illustration 11: Forecast page

The storage system is able to forecast consumption in the near future (blue) based on previous consumption trends. Accessing weather data can also produce a production forecast (yellow).

7 Maintenance

For fault-free, safe, reliable and long-lasting operation of the storage system, it is essential to carry out regular function checks and cleaning.

The battery modules installed in the storage system do not require maintenance.

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.

Table 5: Checking function

7.2 Cleaning

NOTICE

Use of unsuitable cleaning agent and/or excessive water

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

- ▶ Do not use scouring cloths, sponges or cleaning agent.
- ▶ Take particular care when cleaning the display (if applicable) and the LED ring, since these can easily be scratched.
- ▶ Use only moist cloths, not wet cloths, to clean the system.
- ▶ Do not use water jets.

- ▶ Carefully clean the outside of the storage system with a clean, moist cloth. For tougher dirt, use a small amount of household dishwashing detergent on a moist cloth.

8 Decommissioning

NOTICE

Deep-discharge of the battery modules

Destruction of the battery modules!

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

8.1 Switching the storage system off

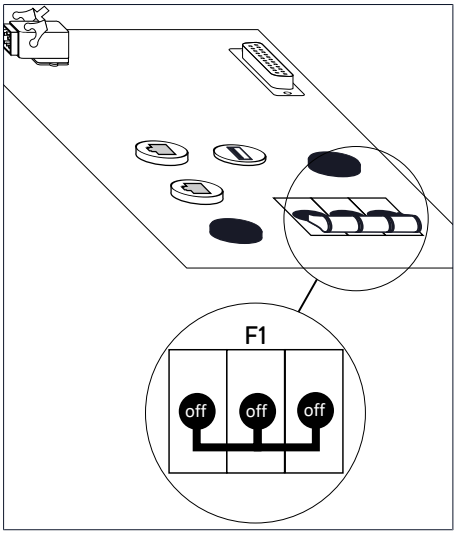


Illustration 12: Fuse switch F1 on the top side of the storage system

- Switch off fuse switch F1.

9 Troubleshooting

<table>
<tr><th>Disturbance</th><th>Possible reason(s)</th><th>Correction</th></tr>
<tr><td>No connection to the internet portal https://my.sonnen-batterie.com</td><td>No connection between the storage system and the server.</td><td>▶ Make sure that the Ethernet line between the storage system and the Router of the home network is correctly connected.
▶ Make sure that the Router of the home network allows connections on the following ports:
<table><tr><th>TCP Port</th><th>Service</th></tr><tr><td>22</td><td>ssh</td></tr><tr><td>80</td><td>http</td></tr><tr><td>8080</td><td>http</td></tr><tr><td>443</td><td>https</td></tr><tr><td>3333</td><td>debug</td></tr><tr><th>UDP Port</th><th>Service</th></tr><tr><td>1194</td><td>VPN</td></tr><tr><td>123</td><td>NTP</td></tr><tr><td>1196</td><td>VPN</td></tr></table></td></tr>
</table>

10 Uninstallation and disposal

10.1 Uninstallation

⚠ DANGER

Improper uninstallation of the storage system

Danger to life due to electrocution!

- The storage system must only be uninstalled by authorised electricians.

10.2 Disposal

⚠ CAUTION

Improper transport of battery modules

Fire outbreak at battery modules or emission of toxic substances!

- Transport the battery modules in their original packaging only. If you no longer have the original packaging, new packaging can be requested from sonnen GmbH.
- Never transport damaged battery modules.

⚠ 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 and the batteries it contains ***must not*** be disposed of as domestic waste!

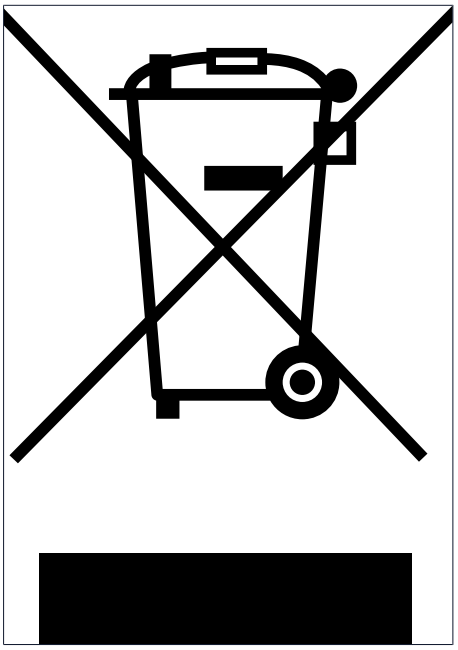


Illustration 13: WEEE symbol

- Dispose of the storage system and the batteries it contains in an environmentally friendly way through suitable collection systems.
- Contact sonnen GmbH to dispose of old batteries.

In accordance with the German Battery Act (BattG 2009), sonnen GmbH will accept old batteries free of charge. Please note that the cost of transporting old batteries is not covered.

ANNEX

1. Warranty

You can find the manufacturer’s warranty on the following pages.

Manufacturer's Warranty - sonnenBatterie

sonnen Australia Pty Ltd ACN 611 337 54

1.1 In this warranty, terms have the following meanings:

(a) **Authorised Partner:** partners or distributors authorised by sonnen to sell, install and/or repair the sonnenBatterie;

(b) **Complete Recharge Cycle is:**

(i) a full charge and a full discharge of the sonnenBatterie; or

(ii) partial charges and partial discharges of the sonnenBatterie which when aggregated together constitute a full charge and a full discharge of the sonnenBatterie.

(c) **Customer:** the purchaser of the sonnenBatterie, for whose benefit the sonnenBatterie is brought into service and where the purchase is not for the purpose of resupply;

(d) **Installation Certificate:** the sticker and/or certificate recording the serial number of the sonnenBatterie, Authorised Partner number and date on which the sonnenBatterie is brought into service, which is provided to the Customer by sonnen or the Authorised Partner or a certified installer or repairer;

(e) **sonnen:** sonnen Australia Pty Ltd ACN 611 337 547;

(f) **sonnenBatterie:** the product as first delivered to you, or any replacement or repaired product provided to you under the terms of this warranty.

1.2 This warranty is given by sonnen to the Customer in respect of the sonnenBatterie. To the extent permitted by law, the warranty will not transfer to any subsequent purchasers of the sonnenBatterie without the prior written consent of sonnen, such consent will not be unreasonably withheld.

1.3 If the Customer subsequently purchases additional sonnenBatteries, sonnen or its Authorised Partner will issue a separate Installation Certificate in respect of each sonnenBatterie, which will be subject to the warranties contained therein.

2 *Warranty details*

2.1 If the sonnenBatterie develops a fault or defect during the warranty period, and subject to the terms below, sonnen or its Authorised Partner will repair it or replace it. It may be replaced by a refurbished sonnenBatterie of the same type rather than being repaired. Refurbished parts may be used to repair the sonnenBatterie.

2.2 sonnen offers this warranty on top of any guarantees imposed by the *Competition and Consumer Act 2010* and any other applicable State or Territory legislation.

2.3 The warranty period commences on the date on which the sonnenBatterie is first brought into service as recorded on the Commissioning Report. The warranty period ends on whichever date occurs first:

(a) 10 years from the date of commencement of the warranty period; or

(b) 10,000 Complete Recharge Cycles of the sonnenBatterie.

2.4 The warranty does not cover:

(a) any sonnenBatterie where:

(i) the lead-sealing of the battery has been damaged;

(ii) it has not been installed or repaired by sonnen or an installer or repairer certified by sonnen, as recorded on the Installation Certificate;

(iii) it has been used or maintained other than in accordance with the sonnenBatterie's operating instructions or as set out in the technical data specification sheet provided with the sonnenBatterie;

(iv) regular examinations of the ordinary connection to the electricity network have not been carried out in accordance with sonnen's instructions; or

(v) it has been used with spare parts and accessories which do not comply with the original specifications issued by sonnen;

(b) negligence on the Customer's part;

(c) normal wear and tear;

(d) damages caused by events beyond sonnen's reasonable control, including but not limited to flood, fire, theft, lightening, earthquake or extreme hot or cold weather;

(e) faults or defects caused by third parties, including work done by unauthorised service or repair agents;

(f) damages caused by excess voltage from the electrical supply and/or power network to which the sonnenBatterie is connected;

(g) any incidental or consequential damages, loss of profits, loss of data or any other indirect damages;

(h) any costs or expenses incurred by the Customer for the procurement of substitute equipment or services; or

(i) any transport or travel costs incurred by the Customer in excess of $200.

2.5 The performance of the sonnenBatterie is reliant on routine software updates that sonnen provides remotely through the internet from time to time . If the sonnenBatterie is not connected to the internet, or software updates are not performed, sonnen does not warrant that the sonnenBatterie will be free from defects or faults. sonnen recommends that the Customer does not disconnect the sonnenBatterie from the internet for any extended periods of time.

2.6 Under normal usage the capacity of the SonnenBatterie is expected to reduce over time. sonnen warrants that during the warranty period the capacity of the sonnenBatterie will not fall below 80% of the nominal capacity stated on the technical data specification sheet provided with the sonnenBatterie.

3 *Making a warranty claim*

3.1 Warranty claims must be made:

(a) within 6 months after the date on which the Customer became aware of the fault or defect, or after which the fault or defect became reasonably apparent; and

(b) by no later than 3 months after the expiration of the warranty period.

3.2 To make a claim the Customer should first contact their Authorised Partner.

3.3 The Customer will then need to provide to the Authorised Partner the details in clause 6 below.

3.4 The warranty claim may be dealt with by sonnen or its Authorised Partner, as follows:

(a) accessing the sonnenBatterie through remote access in order to assess the warranty claim, and perform any repairs or updates to its software; and/or

(b) replacing or otherwise repairing the sonnenBatterie in accordance with clause 3.6.

3.5 The decision whether to repair or replace the sonnenBatterie is at sonnen's sole discretion unless there is a 'major failure' as defined in the Australian Consumer Law.

3.6 Any physical repairs, replacement or collection of the sonnenBatterie will be performed by sonnen or its Authorised Partner as follows:

(a) The repair, replacement or collection will be carried out from the place at which the sonnenBatterie was first delivered.

(b) If the claim is covered Sonnen will deliver any repaired or replaced sonnenBatterie back to the Customer.

(c) If the claim is not covered sonnen will deliver the sonnenBatterie back to the Customer.

3.7 If the claim is not covered, the Customer will be responsible for any transport, travel and labour costs incurred in dealing with the claim.

3.8 If the claim is covered, sonnen will be responsible for any transport, travel and labour costs to a maximum amount of $200.

4 *sonnen contact details*

Address: Level 6, Suite 604, 1-5 Railway Street, South Tower, Chatswood, NSW 2067.

Phone: 1300 867 856

Email: info@sonnen.com.au

5 *Statutory guarantees*

As well as the sonnen warranty, the sonnenBatterie comes with guarantees that cannot be excluded under the Australian Consumer Law. The Customer is entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. The Customer is also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

6 *Claim details*

If the Customer is making a claim under the warranty or the statutory guarantees, Sonnen will require the following information:

(a) Name;

(b) Address;

(c) Product purchased;

(d) Serial number on Installation Certificate;

(e) Date on which sonnenBatterie was brought into service (as shown on the Installation Certificate);

(f) Authorised Partner or certified installer or repairer number (as shown on the Installation Certificate); and

(g) Description of the problem.

sonnen

energy is yours

sonnen GmbH
Am Riedbach 1
D-87499 Wildpoldsried