Operating instructions | for operators

sonnenBackup-Box

for sonnenBatterie eco 8.0 and hybrid 8.1

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 sonnenBackup-Box.

- ▶ 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 operator of the storage system and the Backup-Box.

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
sonnenBatterie hybrid 8.1	
sonnenBackup-Box	Backup-Box

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 sonnenBackup-Box is an emergency power unit designed to supplement the sonnenBatterie eco 8.0 or hybrid 8.1. The Backup-Box - in conjunction with the appropriate storage system of the sonnen GmbH - serves to supply power in the event of a power failure. Any other use is considered improper use.

Improper use 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 product:

- Only operate the Backup-Box together with the right storage system.
- The Backup-Box must be installed by an authorised electrician.
- The Backup-Box must only be connected to the storage system as described here.
- Isolated operation is **not** possible with the Backup-Box. A generator (e.g. a PV system) must never be connected after the output of the Backup-Box.
- Intended use includes observing this document as well as all accompanying product documentation of the appropriate storage system.
- The Backup-Box must only be used at 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.

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

2.2 Requirements for the electrician

Improper installation can result in personal injury and/or damage to components. For this reason, the Backup-Box must only be installed and commissioned by authorised electricians. Authorised electricians must meet the following criteria:

- The electrician must be a person with a technical knowledge or sufficient experience to enable him/her to avoid dangers which electricity may create.
- The company for which the electrician works must be certified by sonnen GmbH.
- The electrician must have successfully complete sonnen GmbH certification training for the product.

2.3 Operating the Backup-Box

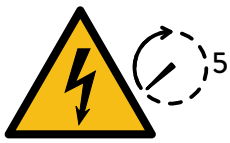
Incorrect operation can lead to injury to yourself or others and cause damage to property.

- The Backup-Box 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.

2.4 Product modifications or changes to the product environment

- The Backup-Box must only be used in its original state without any user modifications and only when in perfect working order.
- Safety devices must never be overridden, blocked or tampered with.
- The interfaces of the Backup-Box and the storage system must be wired in accordance with the product documentation.
- All repairs on the Backup-Box must be performed by authorised service technicians only.

2.5 Voltage inside the Backup-Box



The Backup-Box contains live electrical parts, which poses a risk of electrical shock. The Backup-Box and storage system inverter also contain capacitors which carry voltage even after the storage system is switched off.

Therefore:

▶ Do not open the Backup-Box.

3 Product description

3.1 Technical data

	sonnenBackup-Box
System data	
Maximum power (2 sec.)	4,100 VA
Overload (30 min.)	max. 2,800 VA
Nominal power	1,800 VA
Nominal frequency	50 Hz
Output voltage	230 V +/- 10 %
Mains connection	three-phase, L1 / L2 / L3 / N / PE
Mains connection fuse	Miniature circuit breaker | Type C | 32 A
Operating concept	single-phase power supply via phase L1 | The switch to backup operation takes place automatically through the storage system.
Switchover time to backup operation	approx. 3 seconds
Mains topology	TN / TN-S / TN-C-S
Threshold power	approx. 5 W
Safety / Protective devices	
Protection class	I (PE conductor)
Degree of protection	IP30
Protective functions	Overvoltage protection, Overcurrent protection, Overtemperature protection
Fault-current circuit breaker (RCD)	external RCD required
Separation principle Batt. -> AC	galvanic isolation
Dimensions / Weight	
Dimensions (H/W/D) in cm	70/67/23
Weight in kg	46
Ambient conditions	
Environment	indoor (conditional)
Ambient temperature range	-5 °C ... 45 °C
Max. rel. humidity	90 %, non-condensing
Permissible installation altitude	2,000 m above sea level
Additional ambient conditions	The ambient conditions prescribed for the storage system apply.

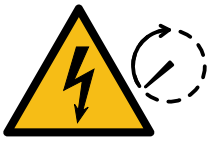
3.2 Type plate

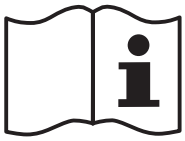
The type plate is located on the outer surface of the Backup-Box. The type plate can be used to uniquely identify the Backup-Box. The information on the type plate is required for the safe use of the system and for service matters.

The following information is specified on the type plate:

- Item designation
- Item number
- Technical data

3.3 Symbols on the outside of the Backup-Box

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: The information in the manuals regarding the rotary switch settings must be observed.
	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.

Symbol	Meaning
	Observe the documentation. The documentation contains safety information.

4 Operation

NOTICE

Using three-phase consumers in emergency operation

Damage to components/devices!

- Do not switch on any three-phase (polyphase, high-voltage) electrical consumers during emergency operation. These consumers may be damaged because the sonnenBackup box only supplies electricity on one phase.

4.1 Function

A storage system with Backup-Box automatically switches from grid to backup operation (and vice versa). The two operating modes are described in the following.

4.1.1 Grid operation - no grid outage

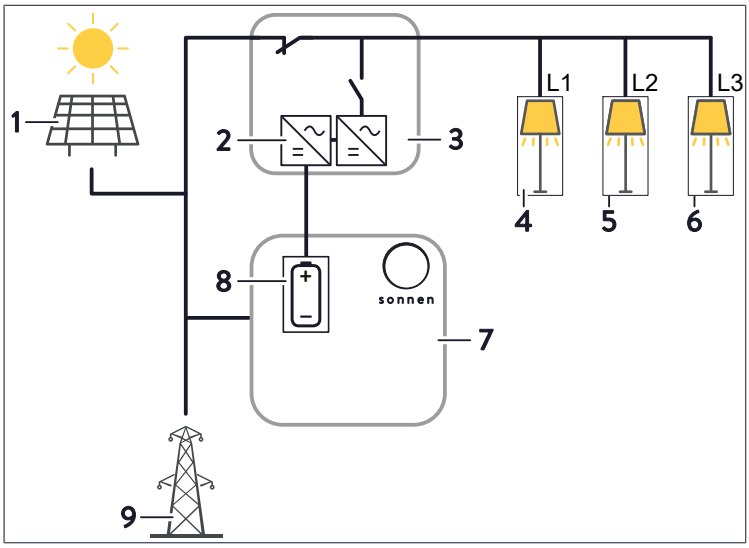


Illustration 1: Grid operation - no grid outage

1	PV system	7	Storage system
2	Inverter of the Backup-Box	8	Battery of the storage system
3	Backup-Box	9	Public electrical mains
4	Consumer connected to phase L1		
5	Consumer connected to phase L2		
6	Consumer connected to phase L3		

In grid operation the consumers in the building (4 - 6) are connected to the public electrical mains. All consumers in the house are supplied with electrical power. The storage system controls - as described in the product documentation of the storage system - the energy flows in the building.

4.1.2 Backup operation - grid outage

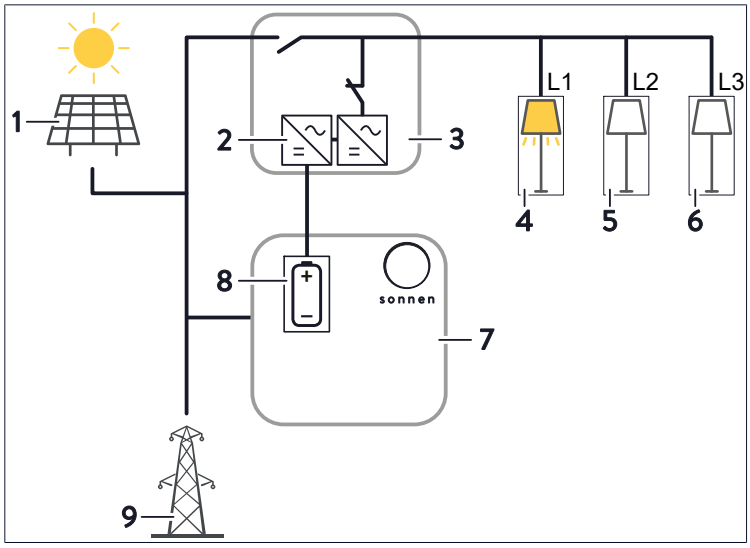


Illustration 2: Backup operation - grid outage

1	PV system	7	Storage system
2	Inverter of the Backup-Box	8	Battery of the storage system
3	Backup-Box	9	Public electrical mains
4	Consumer connected to phase L1		
5	Consumer connected to phase L2		
6	Consumer connected to phase L3		

The Backup-Box (3) automatically detects a grid outage. As soon as the voltage of the electrical mains drops to approx. 180 V, the connection to the public electrical mains (9) and to the PV system (7) is disconnected.

Backup power is generated after approx. 3 seconds. In this case, the direct current of the battery of the storage system (8) is converted into alternating current using the inverter of the Backup-Box (2). The consumers connected to the phase L1 in the house (4) are thereby supplied with electrical power. Consumers connected to the phase L2 (5) or L3 (6) will not be supplied with electrical power.

The storage system with Backup-Box switches from backup to grid operation as soon as the public electrical mains (9) start to deliver electrical power again.

Automatic stop of the backup operation

The storage system with Backup-Box generates electrical power until a minimum state of charge of the battery is reached. Thereafter, no further discharge is allowed.

4.2 Setting the backup buffer

Proceed as follows to set what percentage of the capacity of the storage system should be available for the Backup-Box in the event of a grid outage.

Conditions:

✓ The storage system is connected to the router of the home network.

✓ Your laptop or PC also accesses the home network.

Proceed as follows to access the storage system web interface:

▶ Enter the following address into your browser's address line:

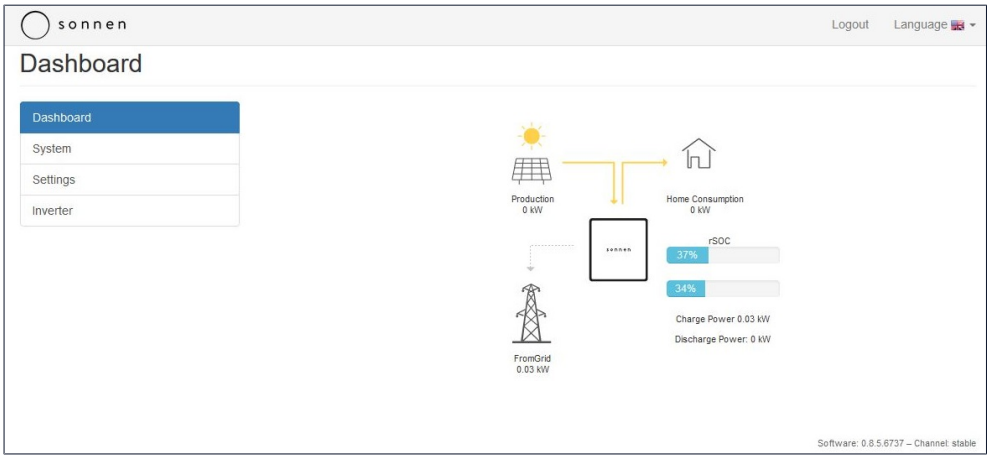
The following window appears:

▶ Click the 'Configure' button.

The login page appears.

▶ Log in as user with the following password: ***Sonnen2016***

The Dashboard appears.



▶ On the web interface of the storage system, navigate to the ***Settings*** page.

▶ Change the percentage for ***backup-buffer*** to a desired value.

5 Switching off the Backup-Box

To switch off the Backup-Box manually, the following procedure can be carried out. In order to be able to work on the Backup-Box safely it must be disconnected from the power supply (see next section).

1. Disconnect the power supply to the storage system as described in the relevant product documentation.
2. Wait at least five minutes until the internally stored energy inside the storage system inverter has discharged.

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.

6 Maintenance and Cleaning

6.1 Checking function

The backup circuit is equipped with a residual current device (RCD). The function of the RCD can be tested by pressing the test key T. After pressing, the RCD must switch off (the backup circuit is interrupted).

Maintenance interval	Action to be taken
Every 6 months	▶ Check the function of the RCD with help of the Test key.

Table 2: Checking function

6.2 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 agents.
- ▶ Take particular care when cleaning the LED ring, since it can easily be scratched.
- ▶ Use only moist cloths, not wet cloths.
- ▶ Do not use water jets.

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

7 Uninstallation and disposal

7.1 Uninstallation

⚠ DANGER

Improper uninstallation of the Backup-Box

Danger to life due to electrocution!

- ▶ The Backup-Box must only be uninstalled by authorised electricians.

7.2 Disposal

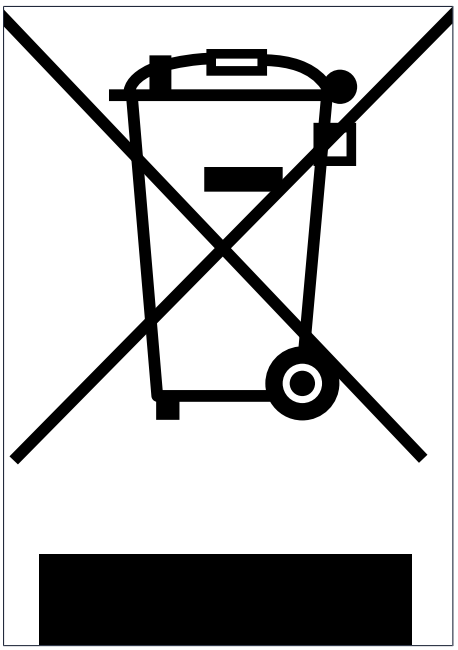


Illustration 3: WEEE symbol

The Backup-Box must not be disposed of as domestic waste!

- ▶ Dispose of the Backup-Box in an environmentally friendly way through suitable collection systems.

8 Troubleshooting

Grid operation - no grid outage

Fault	Possible causes	Rectification
The electrical consumers in the building are not supplied with energy in grid operation.	The mains cables (AC lines) have not been correctly connected.	Contact your installer to check the electrical wiring.
	The F1.B miniature circuit breaker in the Backup-Box is switched off.	Contact your installer to check if the F1.B miniature circuit breaker is switched on.

Backup operation - grid outage

Fault	Possible causes	Rectification
The Backup-Box is not supplying electrical energy to the consumers connected to phase L1.	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.	In this case the only thing to do is wait until the grid outage passes, the public electrical grid once again starts supplying electrical energy and the Backup-Box automatically switched to grid operation.
	The F1.B miniature circuit breaker in the Backup-Box is switched off.	Contact your installer to check if the F1.B miniature circuit breaker is switched on.
	The storage system is switched off.	Switch on the storage system.
	Consumption is greater than the specific nominal power of the Backup-Box .	Switch off electrical consumers or reduce their power consumption.
		Only connect electrical consumers to phase L1 when they have a power consumption that does not exceed the nominal power of the Backup-Box .
		Only connect electrical consumers to phase L1 when they have a power consumption that does not exceed the maximum power of the Backup-Box when switched on.

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energy is yours

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