Installation instructions | for authorised electricians

sonnenProtect 1300

for sonnenBatterie eco 8.2 or eco 9.43

EN

IMPORTANT

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

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Table of contents

1 Information about this document

This document describes the installation of the sonnenProtect 1300 in connection with the sonnenBatterie eco 8.2 or eco 9.43 storage system.

- ▶ 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 authorised electricians. The actions described here must only be performed by authorised electricians.

1.2 Designations in this document

The following designations are used in this document:

Complete designation	Designation in this document
sonnenBatterie eco 8.2	Storage system
sonnenBatterie eco 9.43	
sonnenProtect 1300	sonnenProtect

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

Symbol	Meaning
•	List

Table 1: Additional symbols

2 Safety

2.1 Intended use

The sonnenProtect 1300 is an emergency power unit designed to supplement the sonnenBatterie eco 8.2 or eco 9.43. The sonnenProtect provides power to the connected consumer even if a grid outage occurs. It can only be operated together with the right storage system from sonnen GmbH. 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 sonnenProtect together with the right storage system.
- The sonnenProtect must be installed by an authorised electrician.
- The sonnenProtect must only be connected to the storage system as described here. The output of the sonnenProtect must not be connected to the building mains.
- Only connect an electrical consumer that does not exceed the nominal power (in continuous operation) and maximum power (when switched on) of the sonnenProtect.
- The sonnenProtect must only be used at suitable installation location.
- The transport and storage conditions must be observed.

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 sonnenProtect 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 sonnenProtect

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

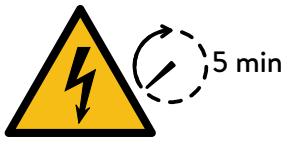
- The sonnenProtect must only be operated as described in the product documentation.

- 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 sonnenProtect 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 sonnenProtect and the storage system must be wired in accordance with the product documentation.
- The number of plug outputs on the sonnenProtect must not be changed.
- All repairs on the sonnenProtect must be performed by authorised service technicians only.

2.5 Voltage inside the sonnenProtect



The sonnenProtect contains live electrical parts, which poses a risk of electrical shock. The storage system inverter also contains capacitors which carry voltage even after the storage system is switched off. As the sonnenProtect is connected to the inverter of the storage system, this means that the voltage from the inverter also flows into the sonnenProtect. Therefore:

▶ Disconnect the sonnenProtect from the power (see Disconnecting the sonnenProtect from the power supply [P. 32]).

Only then can the sonnenProtect be opened.

3 Product description

3.1 Technical data

	sonnenProtect 1300
System data	
Maximum power (2 sec.)	2,200 W
Nominal power	1,300 W
Output voltage (AC)	230 V +/- 10 %
Nominal frequency	50 Hz
Network configuration in emergency operation	IT
Operating concept	Single-phase power supply via plug outlet. The switch to emergency operation takes place automatically through the storage system.
Switchover time to emergency operation	approx. 5 seconds
Dimension/Weight	
Dimensions (H/W/D) in mm	235/150/124
Weight in kg	approx. 2 kg
Safety	
Protection class	I (PE conductor)
Degree of protection	IP21
Overvoltage category	III
Protective functions	Overcurrent protection, insulation monitor (as per IEC 61557-8)
Ambient conditions	
Environment	indoor (conditional)
Ambient temperature range	5 °C ... 30 °C
Storage temperature range	0 °C ... 40 °C
Transport temperature range	-15°C ... 30 °C
Max. rel. humidity	90 %, non-condensing
Permissible installation altitude	2,000 m above sea level
Pollution degree	2
Additional ambient conditions	The ambient conditions prescribed for the storage system apply.

Table 2: Technical data

3.2 System components

3.2.1 System components of the sonnenProtect

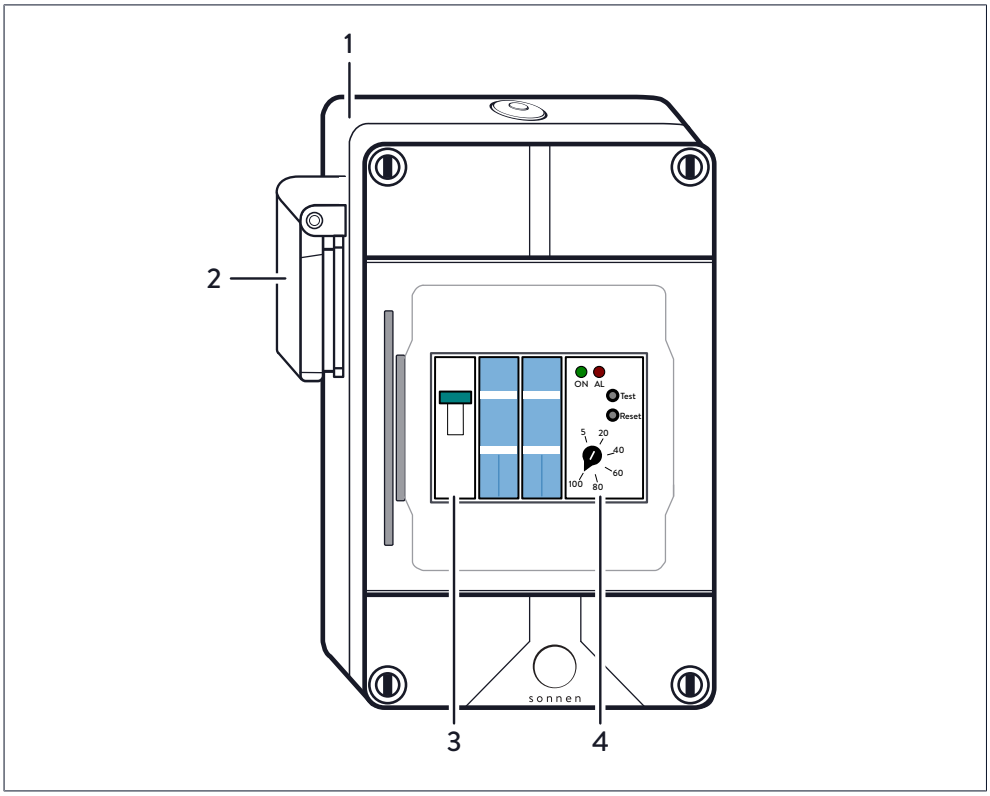


Illustration 1: System components sonnenProtect

1 sonnenProtect
2 Plug outlet
3 F1.P (Z6) miniature circuit breaker
4 K2.P insulation monitor

3.2.2 Control and display elements

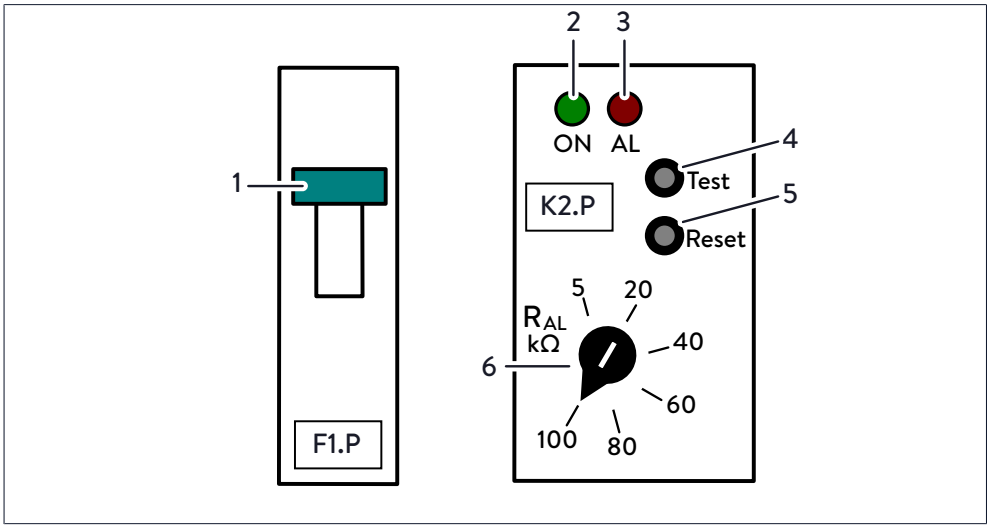


Illustration 2: Control and display elements

No.	Designation	Function
1	Miniature circuit breaker	Reversing the switch activates/deactivates the plug outlet of the sonnenProtect.

No.	Designation	Function
2	‘ON” LED	Lights up when power supply is on (indicates emergency operation).
3	‘AL’ LED	Lights up when an insulation fault occurs, i. e. when the insulation resistance drops below the set alarm value ($R_E < R_{AL}$) (in emergency operation).
4	Test key	Pressing the test key simulates an insulation fault, thereby testing the function of the device. The ‘AL’ LED lights up and the connection to the plug outlet of the sonnenProtect is interrupted for as long as the test key is held.
5	Reset key	No function.
6	R_{AL} setting	Turning sets the R_{AL} alarm value (recommended setting: 100 kΩ/V).

Table 3: Description of the control and display elements

3.3 Function

The plug outlet oft the sonnenProtect supplies electrical power both in grid and emergency operation. The switchover time between grid and emergency operation is stated in the section Technical data [P. 9].

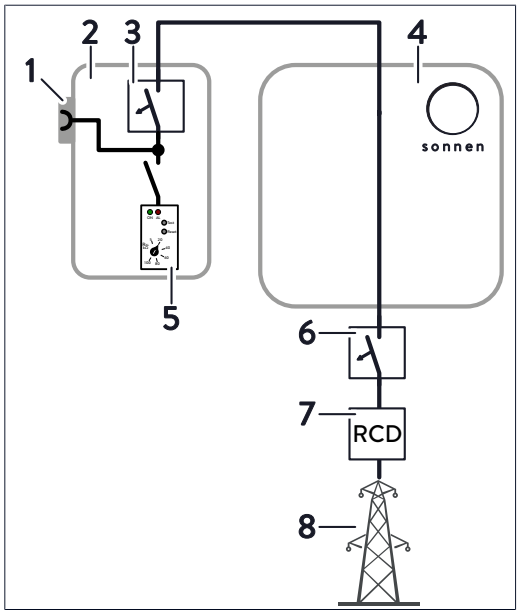


Illustration 3: Grid operation

The insulation monitor (5) deactivates in ***grid operation*** (‘ON’ LED off). Protection against indirect contact is ensured by the residual current device (RCD) at the feed to the storage system.

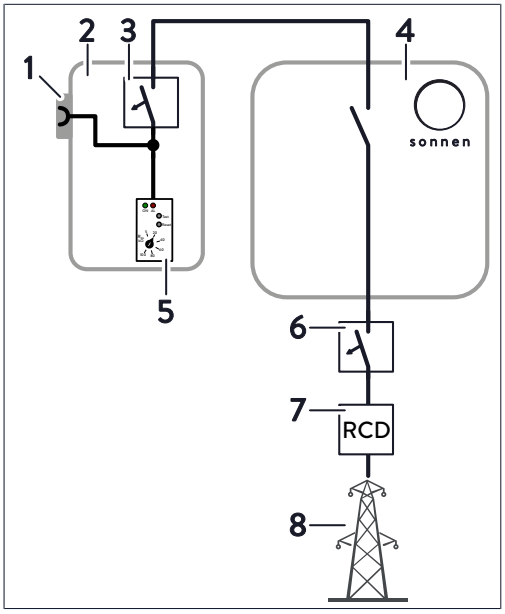


Illustration 4: Emergency operation

1 Plug outlet of the sonnenProtect
2 sonnenProtect
3 F1.P miniature circuit breaker
4 Storage system
5 Insulation monitor
6 AC miniature circuit breaker
7 Residual current device (RCD) - 30 mA
8 Public grid (electrical mains)

If a ***grid outage*** occurs, the connection to the public grid is disconnected in the storage system. The plug outlet (1) is supplied with electrical power from the storage system until the battery's minimum charging status is achieved. The insulation monitor is activated ('ON' LED lights up). This protects against indirect contact.

If an insulation fault occurs ($R_E < R_{AL}$), the insulation monitor terminates the connection to the plug outlet. The 'AL' LED lights up. When the insulation fault no longer exists, the connection to the plug outlet is automatically reestablished. The 'AL' LED goes out.

The storage system switches back to grid operation with a delay after a grid outage. This can take a few minutes. During this time the plug outlet is supplied with power in emergency operation.

3.4 Type plate

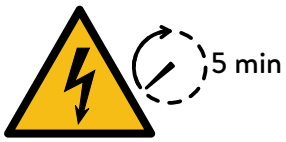
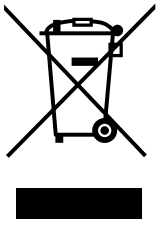
The type plate is located on the outer surface of the sonnenProtect. The type plate can be used to uniquely identify the sonnenProtect. The information on the type plate is required for the safe use of the system and for service matters.

The following information is specified on the type plate:

- Item designation
- Item number

- Technical data

3.5 Symbols on the outside of the sonnenProtect

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

4 Transport and storage

Transport and storage conditions are defined in the product documentation of the storage system.

- Observe the same transport and storage conditions for the sonnenProtect.

5 Mounting

5.1 Scope of delivery

▶ Check the following scope of delivery to ensure it is complete.

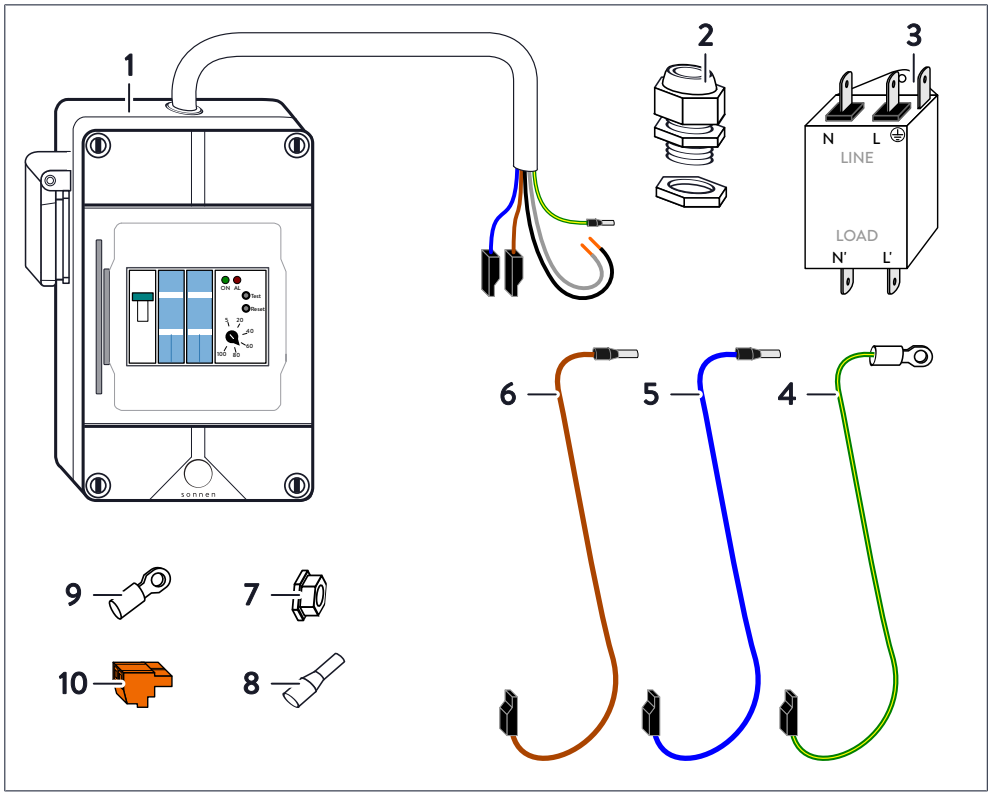


Illustration 5: Scope of delivery

1 sonnenProtect including connection cable
2 M20 cable gland
3 Mains filter
4 Pre-assembled strand - PE
5 Pre-assembled strand - N
6 Pre-assembled strand - L
7 Locking nut
8 Wire end ferrule (only for installation with eco 9.43)
9 Cable lug (only for installation with eco 9.43)
10 Connector X3 (only for installation with eco 9.43)

5.2 Selecting the installation location

5.2.1 Requirements for the installation location

▶ Observe the required ambient conditions (see Technical data [P. 9]).

5.2.2 Observe minimum distances

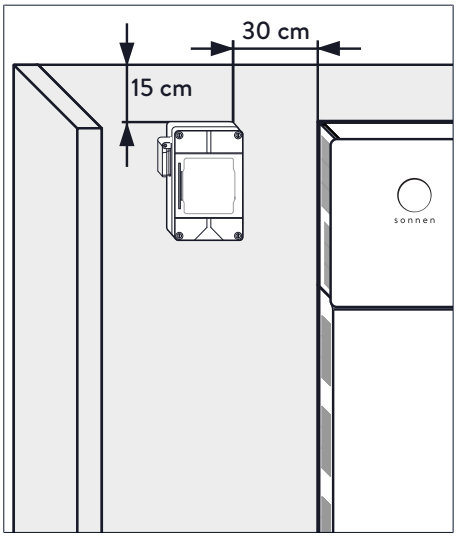


Illustration 6: Minimum distances

- ▶ Observe the specified minimum distances between the device and the storage system and neighbouring objects.
- ▶ Install the sonnenProtect at the same level as the top edge of the storage system, if possible. This keeps the cable length as short as possible.

The minimum distances ensure that

- the sonnenProtect can be easily reached and
- there is sufficient space for installation and maintenance work.

5.3 Mounting the sonnenProtect

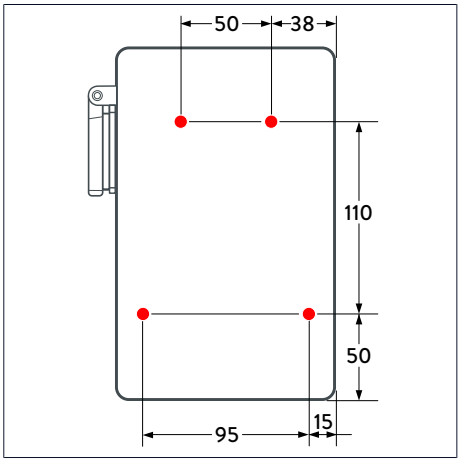


Illustration 7: Drill template for sonnenProtect (figure is not to scale - all specifications are in millimetres)

- ▶ Drill the holes shown in red in the illustration on the left.
- ▶ Secure the sonnenProtect using appropriate fastening material.

6 Installation with sonnenBatterie eco 8.2

⚠ DANGER Electrical work on the storage system

Danger to life due to electrocution!

- ▶ Switch off the storage system to electrically isolate it.
- ▶ Disconnect the relevant electrical circuits.
- ▶ Secure against anyone switching on the device again.
- ▶ Wait five minutes so the capacitors can discharge.
- ▶ Check that the device is disconnected from the power supply.
- ▶ Only authorised electricians are permitted to carry out electrical work.

6.1 Removing the inverter cover

NOTICE Contact with the components inside the inverter

Damage to components due to electrostatic discharge (ESD)!

- ▶ Use ESD-compliant equipment.
- ▶ Do not touch any conductive components inside the inverter.

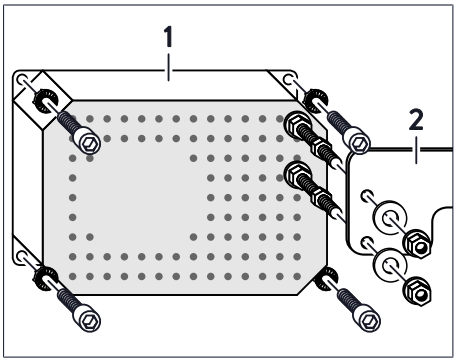


Illustration 8: Inverter cover and touch guard inside the storage system

Tools:

- Allen screw | 5 mm
- Spanner | 10 mm

- ▶ Open the storage system.
- ▶ Remove the touch guard (2) and the cover (1) for the inverter.

6.2 Installing the mains filter

The components inside the storage system can be arranged differently. This means that the installation of the main filter may vary.

- ▶ In the following, select the appropriate case and install the mains filter accordingly.

6.2.1 Case 1: Sufficient free space on mounting rail

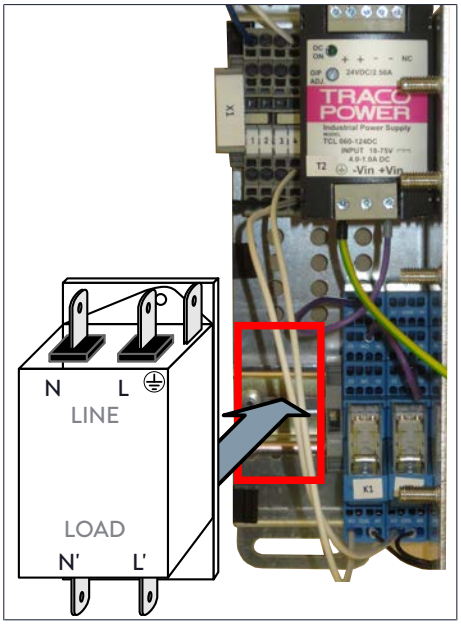


Illustration 9: Installation on mounting rail

- Remove the end stop on the left side of the relay K1 on the mounting rail.
- Install the mains filter on the mounting rail.

6.2.2 Case 2: Not enough free space on mounting rail

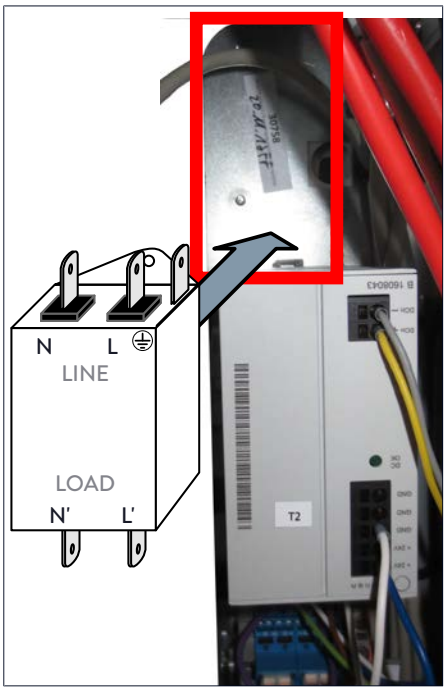


Illustration 10: Installation on bolts

- Remove the mounting plate with DIN rail adapter which is mounted on the mains filter.
- Mount the mains filter on the two free bolts using the two supplied locking nuts, as shown in the left figure.

6.3 Connecting the cable and strands

6.3.1 Removing the dummy plug

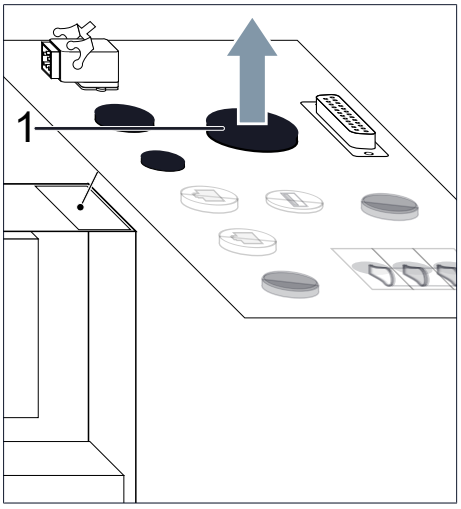


Illustration 11: Dummy plugs on the top of the storage system

Tools:

- Screwdriver with a thin blade (0.4 mm)

▶ Remove the dummy plug (1).

A screwdriver with a thin blade can be used for this purpose.

6.3.2 Installing the cable gland

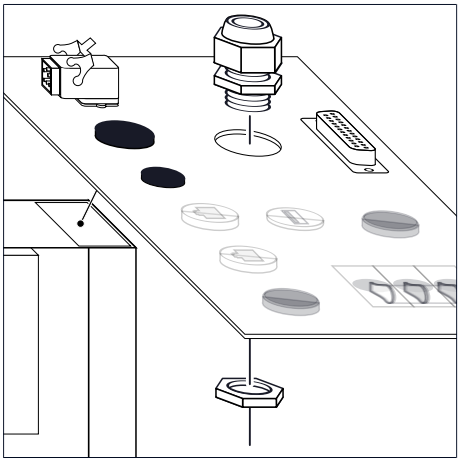


Illustration 12: Installing the cable gland on the top of the storage system

Tools:

- Spanner | 25 mm

▶ Install the cable gland as shown in the left illustration.

6.3.3 Wiring the cable

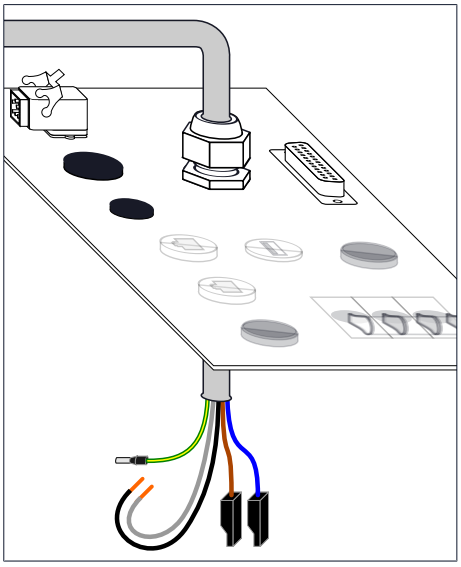


Illustration 13: Connection cable of the sonnenProtect

- ▶ Wire the connection cable of the sonnenProtect through the cable gland to the inside of the storage system.

6.3.4 Connecting the cables and strands

Tools:

- Spanner | 10 mm | 5 Nm
- Stripping pliers

- ▶ Strip approx. 1 cm from the end of the black and grey cable.
- ▶ Connect the cable and pre-assembled strands as shown in the following illustrations. Run the strands through the cable gland (3) to the inside of the inverter (1).
- ▶ Tighten the self-locking nut (6) with a torque of 5 Nm.

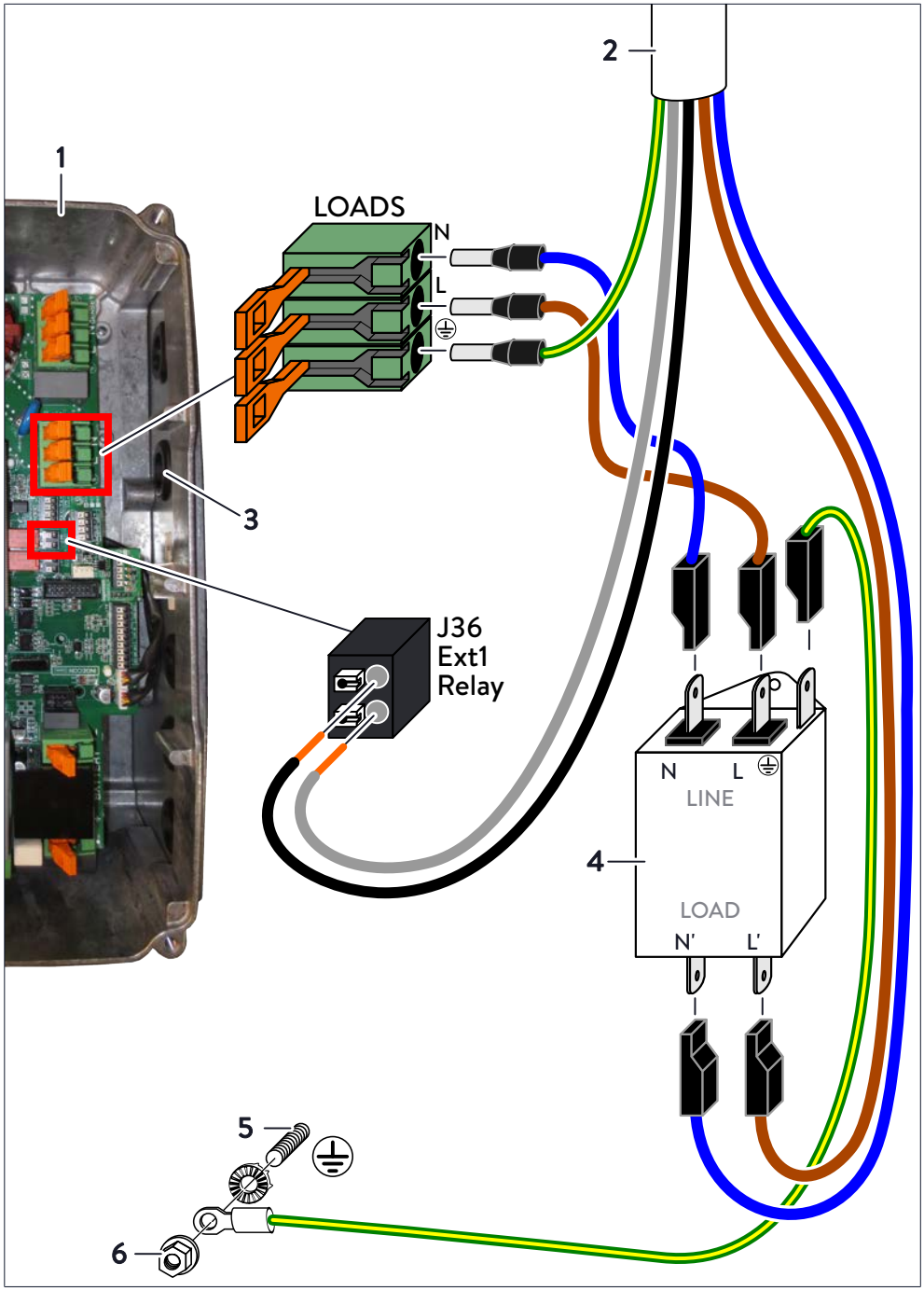


Illustration 14: Wiring inside the storage system

1	Inverter	2	Connection cable of the sonnenProtect
3	Cable gland	4	Mains filter
5	Earth bolt	6	Self-locking nut

6.4 Completing installation

- ▶ Install the previously removed cover of the inverter and the touch guard.
- ▶ Close the storage system.

7 Installation with sonnenBatterie eco 9.43

⚠ DANGER Electrical work on the storage system

Danger to life due to electrocution!

- ▶ Switch off the storage system to electrically isolate it.
- ▶ Disconnect the relevant electrical circuits.
- ▶ Secure against anyone switching on the device again.
- ▶ Wait five minutes so the capacitors can discharge.
- ▶ Check that the device is disconnected from the power supply.
- ▶ Only authorised electricians are permitted to carry out electrical work.

7.1 Changes to the storage system

7.1.1 Storage system fuse protection

✓ According to the installation instructions, the public network line was protected with a type B circuit breaker with 16 A ('B16').

A higher power consumption may occur in the inverter of the storage system due to the sonnenProtect, causing the B16 circuit breaker to trip.

- ▶ Install a type B circuit breaker with 20 A instead. This will ensure that the full scope of the storage system and sonnenProtect is available at all times.

7.1.2 Measurement concept used

The GP measurement concept (setup 4) is recommended when installing a sonnenBatterie eco 9.43 with a sonnenProtect 1300. Read the description in this section to determine whether the measurement concept used needs to be adapted.

Option 1: use the standard measurement concept (setup 1 or 5)

The standard measurement concept (CP or setup 1 and 5) is used if the power meter has been installed as described in the storage system installation instructions.

Advantage: no changes to the installation in the electrical distributor need to be made.

Disadvantage: the storage system controls cannot detect the consumption of electrical consumers connected to the sonnenProtect when the CP measurement concept is used. As a result, this consumption is also not included in the energy manager's calculations.

Nevertheless, you can continue using this measurement concept if the installation inside the electrical distributor cannot be changed or if the power used by the consumer connected to the emergency power box is not significant.

Option 2: use the GP measurement concept (setup 4)

Advantage: the consumption of the electrical consumer connected to the sonnenProtect is added to the household consumption calculation through measurement point G (grid).

Disadvantage: if the GP measurement concept has been used previously, the consumption measurement point needs to be changed. To do so, proceed as follows:

- Remove the clamp-on current transformer at measurement point C (consumption) and install it at measurement point G (grid).
- Change the power meter setting and select the 'Setup 4' measurement concept in the commissioning wizard (on the 'Power Meter' page).

Consult the 'Power meters' instructions (KD-300) for detailed information on the measurement concepts and their use.

7.2 Installing the mains filter

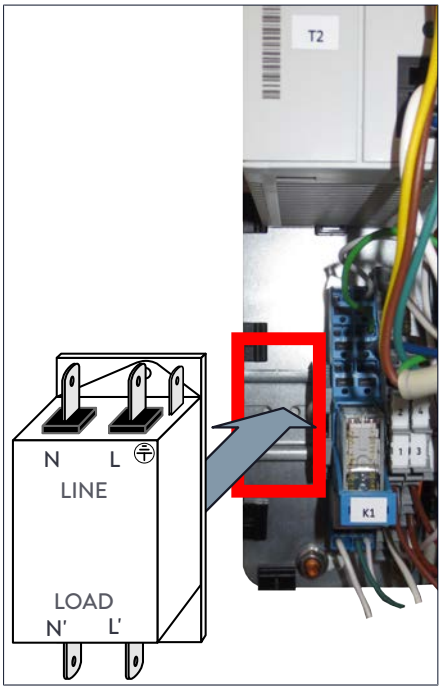


Illustration 15: Installation mains filter on mounting rail

- Remove the end stop on the left side of the relay K1 on the mounting rail.
- Install the mains filter on the mounting rail.

7.3 Connecting the cable and strands

7.3.1 Removing the dummy plug

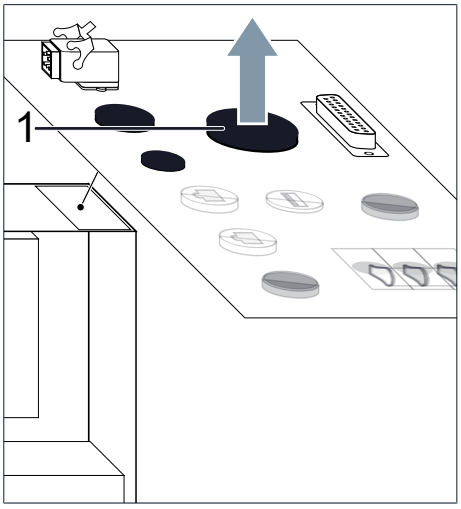


Illustration 16: Dummy plugs on the top of the storage system

Tools:

- Screwdriver with a thin blade (0.4 mm)

▶ Remove the dummy plug (1).

A screwdriver with a thin blade can be used for this purpose.

7.3.2 Installing the cable gland

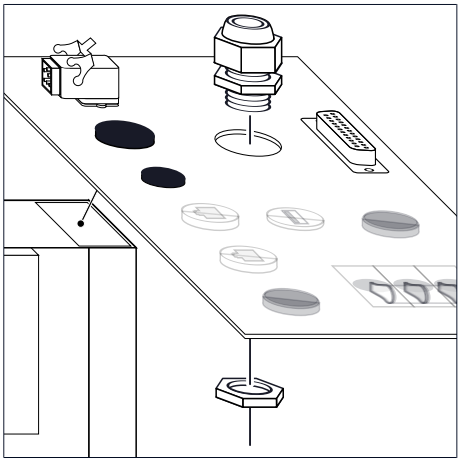


Illustration 17: Installing the cable gland on the top of the storage system

Tools:

- Spanner | 25 mm

▶ Install the cable gland as shown in the left illustration.

7.3.3 Wiring the cable

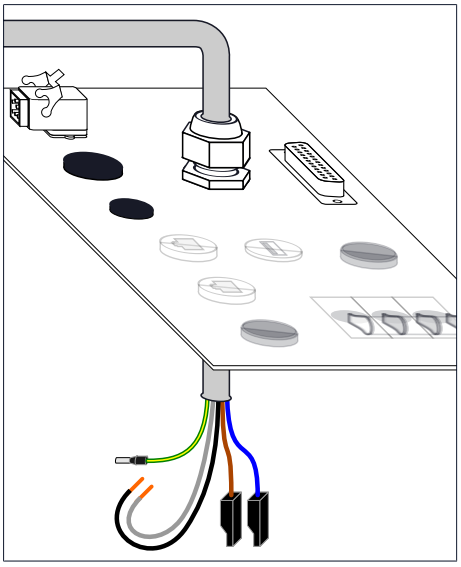


Illustration 18: Connection cable of the sonnenProtect

- ▶ Wire the connection cable of the sonnenProtect through the cable gland to the inside of the storage system.

7.3.4 Connecting the cables and strands

Tools:

- Spanner | 10 mm | 5 Nm
- Stripping pliers
- Crimping pliers

- ▶ Remove the wire end ferrule of the green yellow strand of the connection cable and attach the supplied cable lug instead.
- ▶ Mount the supplied wire end ferrules (7) to the grey and black strand.
- ▶ Install the supplied orange X3 connector (8) to the grey and black strand.
- ▶ The wire end ferrules on the N and L strands are too long for mounting them to the X2 connector. Replace them with the supplied wire end ferrules (7).
- ▶ Connect the X2 connector and the pre-assembled strands to the mains filter and the inverter, as shown in the following illustration.
- ▶ Tighten the self-locking nut (6) with a torque of 5 Nm.

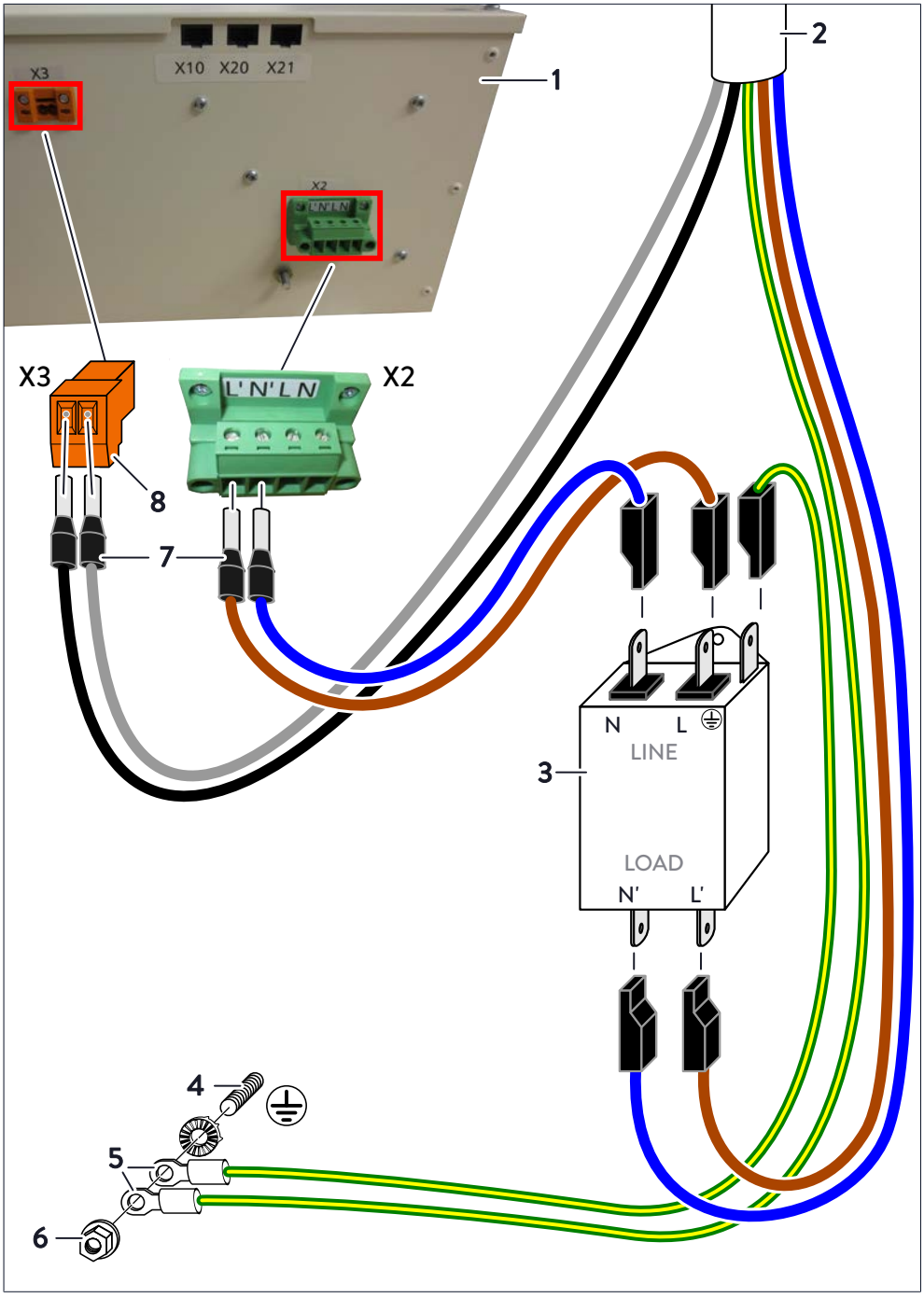


Illustration 19: Wiring inside the storage system

1	Inverter	2	Connection cable of the sonnenProtect
3	Mains filter	4	Earthing bolt
5	Cable lugs	6	Self-locking nut
7	Wire end ferrules	8	X3 connector

▶ Close the storage system.

8 Commissioning

8.1 Commissioning the storage system

It is essential to follow the instructions in the given order when switching on a storage system with sonnenProtect because the storage system cannot otherwise function properly.

8.1.1 Switching on the miniature circuit breaker

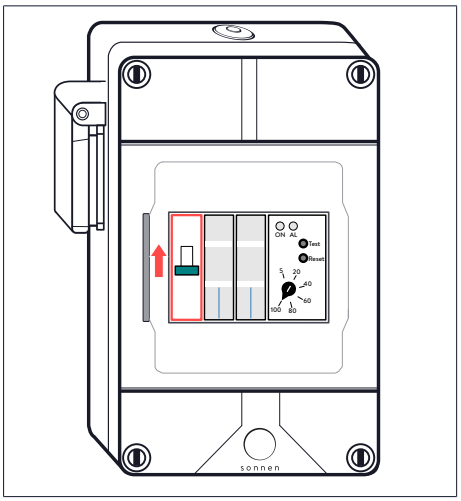


Illustration 20: Switching on F1.P

- Switch on the F1.P miniature circuit breaker for the sonnenProtect.

8.1.2 Switching on the storage system

- Switch on the storage system as described in the respective installation instructions.

8.1.3 Switching on the grid voltage

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

8.2 Testing function

Before the sonnenProtect is operated, a function test must be carried out:

1. Wait until the storage system is completely started up.
2. Check whether the sonnenProtect is behaving as described for grid operation in section Function [P. 11].
3. Switch off the AC miniature circuit breaker at the mains line to the storage system to simulate a grid outage.
4. Check whether the sonnenProtect is beaving as described for emergency operation in section Function [P. 11].
5. Press the test key of the insulation monitor to simulate an insulation fault.
6. Check whether the sonnenProtect is behaving as described for emergency operation in section Function [P. 11].

If the sonnenProtect is behaving as described in section Function [P. 11], the function test is successful. The sonnenProtect can be operated.

If the sonnenProtect is not behaving as described in section Function [P. 11], the sonnenProtect must not be operated.

- In this case, check the wiring (see section Installation with sonnenBatterie eco 8.2 [P. 17] or Installation with sonnenBatterie eco 9.43 [P. 22]).
- Contact the sonnen customer service if the problem cannot be solved.

8.3 Setting up the sonnenProtect

8.3.1 Generating a commissioning code

We recommend that you generate a commissioning code before installing the sonnenProtect on the premises of the storage system operator.

Conditions:

- ✓ There must be an Internet connection.
- ✓ You must have access details for the Internet portal.
- Enter the following address into your browser's address line to access the Internet portal: https://my.sonnen-batterie.com
- Log on to the Internet portal.
- Go to the page called 'sonnenProtect'.
- Enter the serial numbers of the sonnenBatterie and the sonnenProtect units which are to be connected. You will find the serial numbers on each unit's type plate.
- Confirm your entries. The commissioning code will be displayed.
- Make a note of the commissioning code.

8.3.2 Establishing connection to the storage system

- Connect the laptop (4) to the router of the home network (2). The storage system must also be connected to the router of the home network.

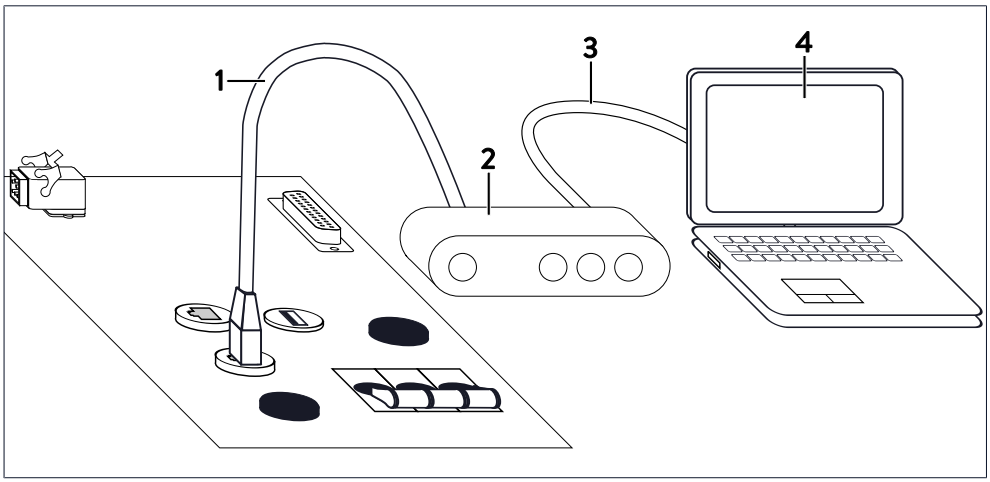


Illustration 21: Ethernet wiring

1, 3 Ethernet line
2 Router of the home network
4 Laptop

- Enter the address ‘https://find-my.sonnen-batterie.com‘ into your browser’s address line.

The following window appears:

Illustration 22: Website find-my.sonnen-batterie.com

- Choose the storage system to be configured. To do this, click the ***Configure*** button.

The login page appears.

If the storage system is not displayed:

- Follow the instructions in section ‘Troubleshooting’ of the installation manual of the storage system.
- Select your preferred language and log in as ‘Installer’. The password was given to you throughout the certification training for the storage system.

The Dashboard page appears.

- Click on the button ***Commissioning Assistant.***
- Click on the button ***Continue*** until you reach the page ‘sonnenProtect’.
- Enter die Serial number of the sonnenProtect which you installed.
- Enter the commissioning code which you created as described in section Generating a commissioning code [P. 28].
- Confirm your entry.

The sonnenProtect is now activated and connected to the sonnenBatterie.

8.3.3 Setting the backup buffer

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

- Navigate to the Dashboard page.

- Click on the button ***Settings***.
- Select ***Backup Buffer***.
- Change the percentage of the Backup Reserve to a desired value.

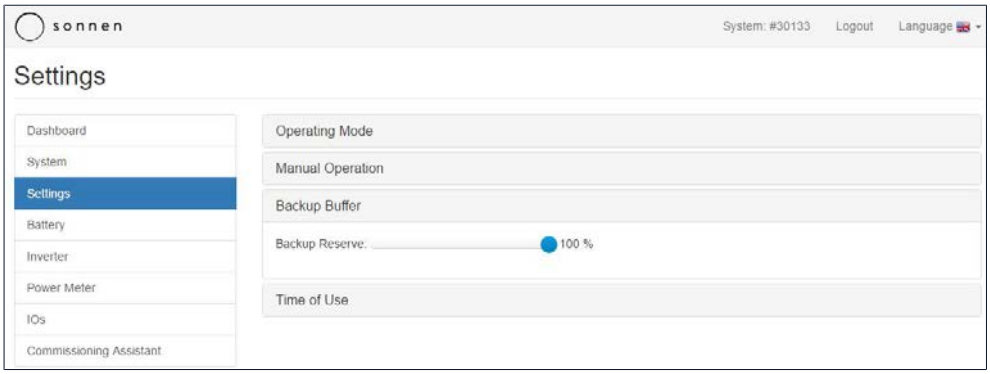


Illustration 23: Settings page

9 Troubleshooting

Disturbance	Possible reason(s)	Correction
The plug outlet of the sonnenProtect is not supplying any power. The 'AL' LED of the insulation monitor is on.	There is an insulation fault.	▶ Correct the insulation fault.
The plug outlet of the sonnenProtect is not supplying any power. The 'ON' and 'AL' LED of the insulation monitor are off.	There is a grid outage. The battery is completely discharged.	▶ Wait until the public grid begins supplying power again.
	The F1.P miniature circuit breaker of the sonnenProtect is switched off.	▶ Switch on the F1.P miniature circuit breaker.
	The storage system is switched off.	▶ Switch on the storage system.
The F1.P miniature circuit breaker is switching off immediately, or after the sonnenProtect hast been operating for a longer period.	An electrical consumer with a power consumption rating that is too high is connected to the plug outlet of the sonnenProtect.	▶ Only connect consumers with a power consumption that does not exceed the nominal power of the sonnenProtect. ▶ Only connect consumers with a power consumption that does not exceed the maximum power of the sonnenProtect when switched on.
The consumer connected to the plug outlet of the sonnenProtect functions in grid operation but not in emergency operation.	Some consumers do not function in an IT network configuration. For example, a flame monitor, which is often integrated in gas condensing systems, requires a connection to the earth potential, which does not exist in an IT network configuration.	▶ Check whether the electrical consumer functions in an IT network configuration.
The page 'sonnenProtect' is not available within the commissioning assistant.	The storage system has a non-current software version installed.	✓ Make sure that the storage system is connected to the internet. ▶ Go to the first page of the commissioning assistant and start an update by clicking on the button 'Install System Updates'.

10 Decommissioning

⚠ DANGER Voltage in the event of a grid outage

Danger to life due to electrocution!

The plug outlet of the sonnenProtect remains live even in the event of a grid outage or when the main fuses are switched off.

▶ The sonnenProtect must be switched off separately.

10.1 Switching off the plug outlet

▶ Switch off the F1.P miniature circuit breaker.

The plug outlet of the sonnenProtect is switched off.

10.2 Disconnecting the sonnenProtect from the power supply

Before working inside the sonnenProtect, it must be completely disconnected from the power supply:

1. Switch off the F1.P miniature circuit breaker.
2. Disconnect the storage system from the power supply.
3. Wait at least five minutes until the capacitors inside the storage system inverter have discharged.
4. Check that the voltage is no longer active.

11 Uninstallation and disposal

11.1 Uninstallation

⚠ DANGER Improper uninstallation of the sonnenProtect

Danger to life due to electrocution!

- The sonnenProtect must only be uninstalled by authorised electricians.

11.2 Disposal

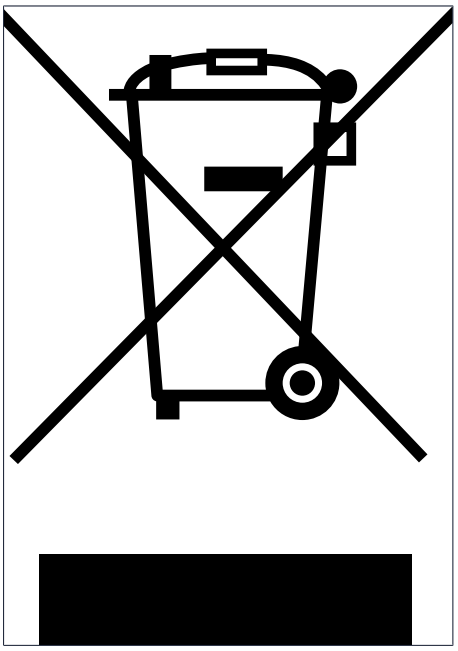


Illustration 24: WEEE symbol

The sonnenProtect must not be disposed of as domestic waste!

- Dispose of the sonnenProtect in an environmentally friendly way trough suitable collection systems.

sonnen

energy is yours

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