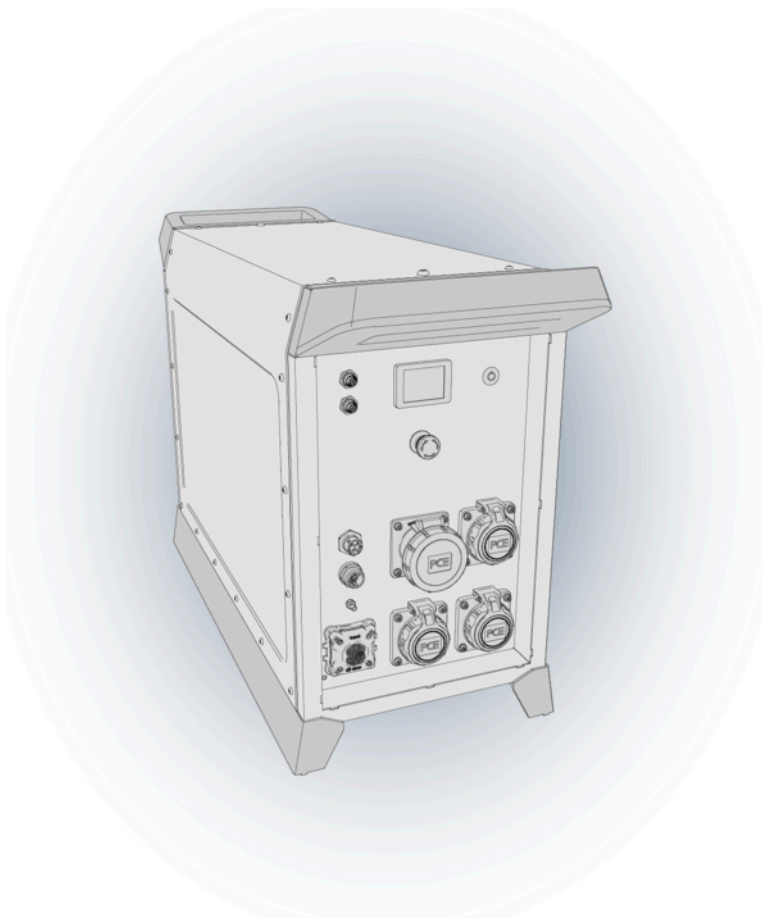


# ecoPowerTrolley



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# Table of contents

1	About this content.....	1
1.1	Validity.....	1
1.2	Content and purpose.....	1
1.3	Other information:.....	1
1.4	Change history.....	1
1.5	Warnings and categories.....	1
2	Getting to know the device.....	2
2.1	Intended use.....	2
2.2	Improper use.....	2
2.3	Technical features.....	2
2.4	Which device variants are available?.....	2
2.5	How is the device constructed?.....	2
2.6	Interpret labels.....	4
2.6.1	Identify the device using the nameplate.....	4
2.6.2	Other markings on the device.....	5
2.7	Technical data.....	6
3	Safety first!.....	9
3.1	General and special safety instructions.....	9
3.2	Fire protection measures.....	12
4	Check scope of delivery and procure accessories.....	14
5	Installing the wheels and feet.....	15
6	Transport and set up the device.....	18
7	Operating the device.....	20
7.1	First step: Getting to know the emergency stop function.....	20
7.2	Ensure heat dissipation.....	20
7.3	Charging the battery.....	21
7.4	Connecting the consumer for operation (discharging).....	21
7.5	Switch on device.....	21
7.6	Charge electric vehicle.....	22
7.7	Read out and set operating parameters.....	22
7.8	About standby mode.....	26
7.9	Switch off device.....	26
8	Storing the device.....	27
9	Clean and maintain the device.....	28
10	Identifying and fixing faults.....	29
11	Repairing the device.....	32
12	Appendix.....	33
12.1	Environmental protection.....	33
12.2	Disposal and recycling.....	33
12.3	Service, maintenance and support.....	33
12.4	Accessories and spare parts.....	33



# 1 About this content

Below is important information about the content.

## 1.1 Validity

The content is valid for the following product:

- Product Name: ecoPowerTrolley

## 1.2 Content and purpose

This information is limited to the assembly, installation, setup and basic operation of the product.

## 1.3 Other information:




Additional information can be downloaded here: ► <http://www.ecopowertrolley.com>

## 1.4 Change history

- BA\_ecoPowerTrolley\_1.0: Release
- BA\_ecoPowerTrolley\_1.1: Various adjustments
- BA\_ecoPowerTrolley\_1.2: Mounting wheels and feet
- BA\_ecoPowerTrolley\_1.3: Various adjustments
- BA\_ecoPowerTrolley\_1.4: Various adjustments

## 1.5 Warnings and categories

Warnings must be observed and are therefore specially marked. They contain information on potential damage or injuries so that accidents and damage can be prevented.

 <b>DANGER</b>
Indicates an immediate threat which could lead to serious injuries or death.
 <b>WARNING</b>
Indicates a potentially dangerous situation which could lead to serious injuries or death.
 <b>CAUTION</b>
Indicates a potentially dangerous situation which could lead to minor injuries.
<b>Safety instruction</b>
This warning concerns the proper way to handle the product. If ignored, it could lead to damage or loss.
<b>INFORMATION</b>
Contains additional information on the product to help users better understand and operate the product.

## 2 Getting to know the device

### 2.1 Intended use

The device is a mobile, battery-powered energy supply for electrical consumers that will be operated off-grid with household or three-phase current.

### 2.2 Improper use

Any use that deviates from these operating instructions is contrary to the intended use. Use contrary to the intended purpose may result in malfunctions and damage to property or personal injury.

### 2.3 Technical features

Due to the specific design of the ecoPowerTrolley, the operation of sensitive loads (e.g. AV devices) as well as the use of devices with strong repercussions on the AC grid (e.g. due to high starting currents or reactive power requirements) does not pose a problem.

The ecoPowerTrolley meets the requirements of protection class IP65 and is therefore suitable for both indoor and outdoor use.

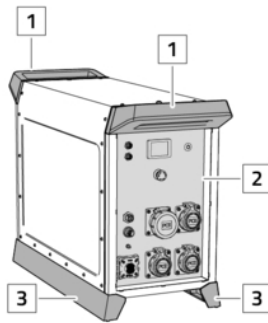
The ecoPowerTrolley complies with the strict limit values for the emission of electromagnetic interference and its insensitivity to such interference, meaning that it is equally suitable for use in residential and industrial areas.

### 2.4 Which device variants are available?

- ecoPowerTrolley version for EU
- ecoPowerTrolley version for CH

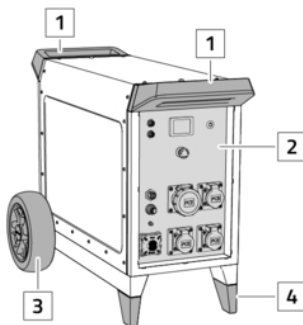
### 2.5 How is the device constructed?

#### Device with runners



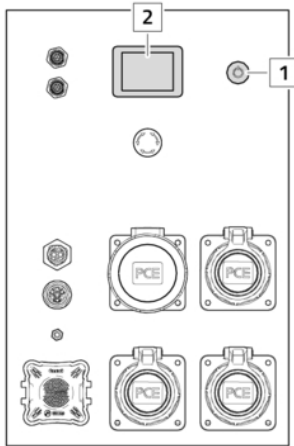
- 1 Carrying handle
- 2 Control panel
- 3 Runners
- 4 Cooling fins

#### Device with wheels and feet



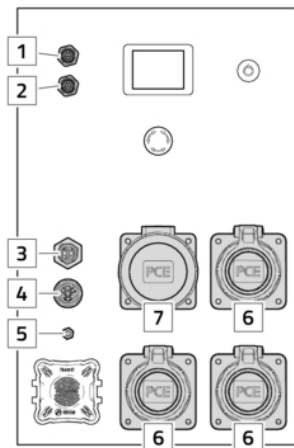
- 1 Carrying handle
- 2 Control panel
- 3 Wheels
- 4 Feet
- 5 Cooling fins

### Controls



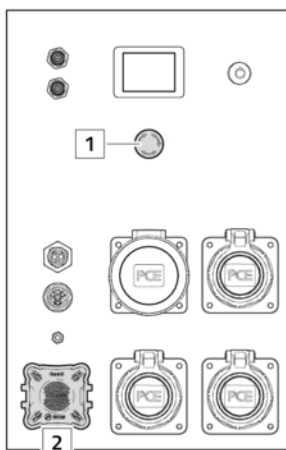
- 1 On/Off button
- 2 Display/touchscreen (touch screen)

### Connections



- 1 Connection for CAN communication
- 2 Output 24 V DC
- 3 Connection for charging cable of PV system  
or  
Connection for parallel connection of max. 2 trolleys  
(coming soon)
- 4 Connection for charging cable
- 5 Connection for external grounding
- 6 3 outputs 230 V; L + N + PE (CEE7 / T23)
- 7 1 output 3 x 400 V; 3 L + N + PE (CEE16)

### Safety devices

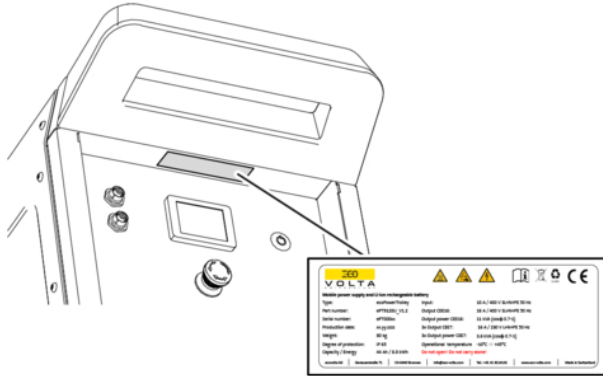


- 1 Emergency stop button
- 2 Bursting membrane (battery safety valve)

## 2.6 Interpret labels

### 2.6.1 Identify the device using the nameplate

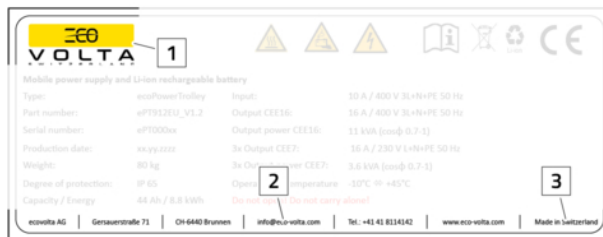
#### Find nameplate



The nameplate can be found on the frame above the display

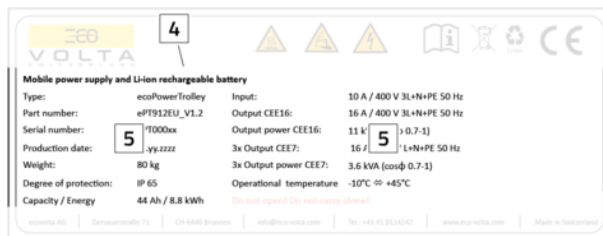
Make sure that these operating instructions belong to your device  
These operating instructions do not apply to other devices, even if they look similar or appear to be identical.

#### Interpret information on the nameplate



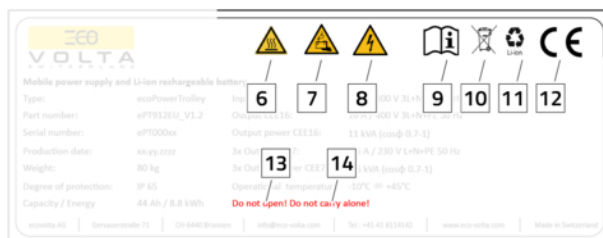
#### Manufacturer details

- 1 Manufacturer logo
- 2 Manufacturer contact details
- 3 Country of origin



#### Technical data

- 4 Device name
- 5 Technical data

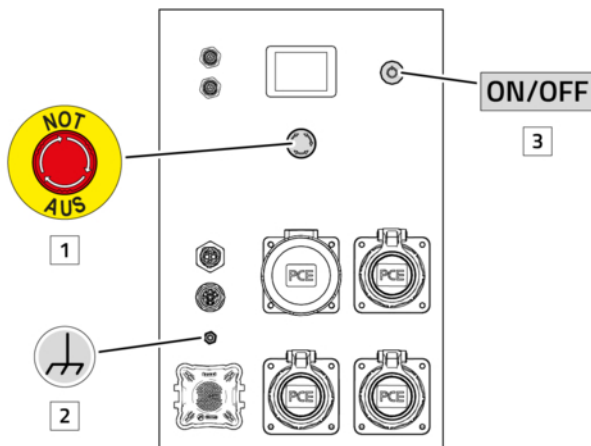


#### Safety and warning instructions

- 6 Hot surface warning (cooling fins)
- 7 Warning about the dangers from charging batteries
- 8 Electrical voltage warning
- 9 Read the operating manual!
- 10 Do not dispose of the device in household waste!
- 11 Dispose of lithium-ion batteries in a recycling facility!
- 12 CE marking
- 13 Do not open the device!
- 14 Do not carry the device alone!



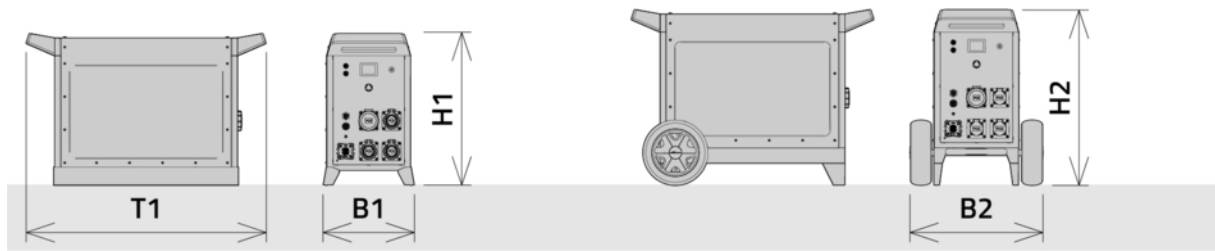
## 2.6.2 Other markings on the device



- 1 Marking of the emergency stop button
- 2 Symbol for external ground connection
- 3 Labeling of the on/off button

## 2.7 Technical data

### Physical data



B1	Width	357 mm	B2	Width	540 mm
H1	Height	596 mm	H2	Height	685 mm
T1	Depth	944 mm			
Weight		80 kg	Weight		83 kg

### Electrical data

Outputs	3 sockets (CEE7 / T23): 230 V L + N + PE; 50/60 Hz 1 socket (CEE16): 3 x 400 V 3 L + N + PE; 50/60 Hz
Inputs	Charging voltage from the mains, from the generator or from the PV system: 3L/N/PE AC 400 V 50 Hz or L/N/PE AC 230 V 50 Hz
Communication interface	CAN
Ground connection	M6 threaded bolt
Continuous power	11 kW
Max. Discharge rate	1 minute: 13 kW
Charging capacity	4.4 kW
Net Capacity	8 kWh
Gross capacity	8.9 kWh
Overall efficiency	>95% at nominal power
Protection class	IP65

### Environmental conditions

Operating mode	Temperature range	Relative humidity
Operation (unloading)	-10...+45 °C	max. 95% (non-condensing)
Loading	0...+40 °C	
Storage up to 3 months	-10...+45 °C	
Storage >3 months	0...+25 °C	

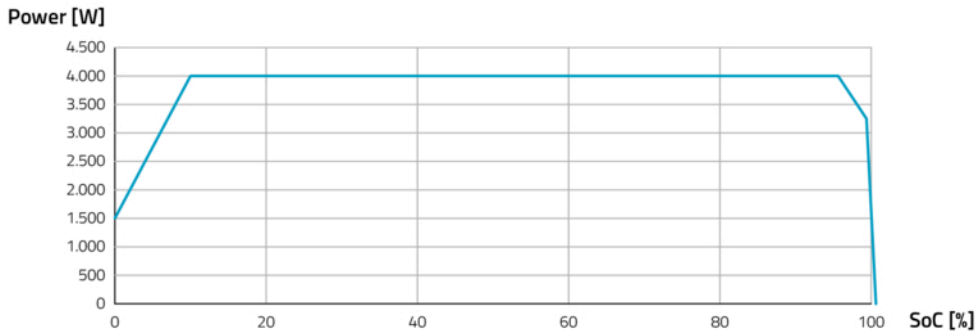
### Derating operation

In order to extend the battery life and prevent failures, the device automatically switches to derating mode in extreme operating conditions. In derating mode, the power that can be supplied to the device during charging or withdrawn during operation is limited

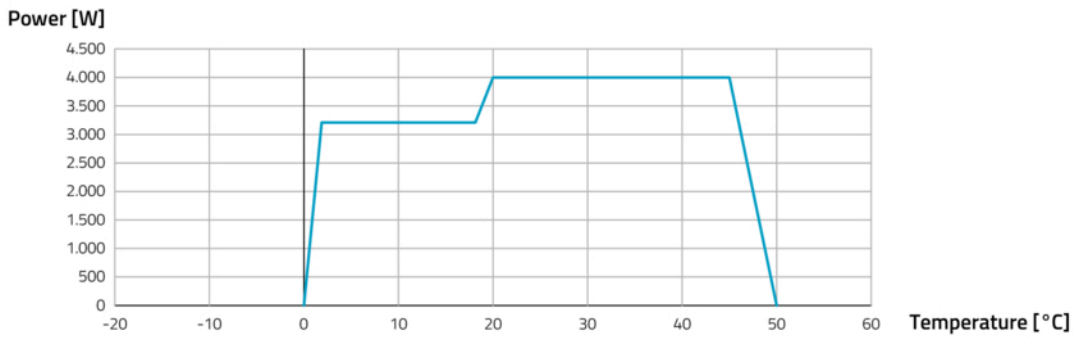
The triggering factors for derating operation include:

- High battery temperature
- Low battery charge status

The following curves show the derating behavior:

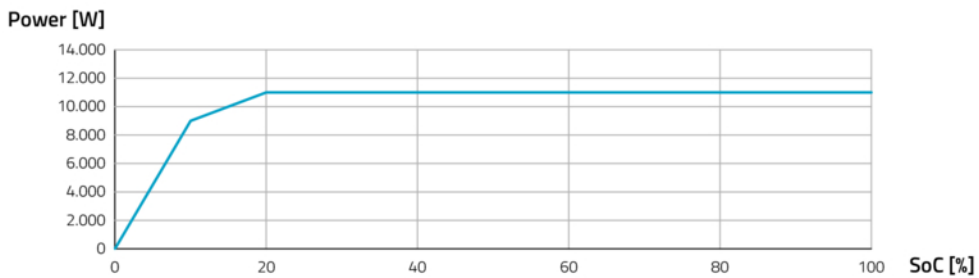


Charging power depending on the battery charge status



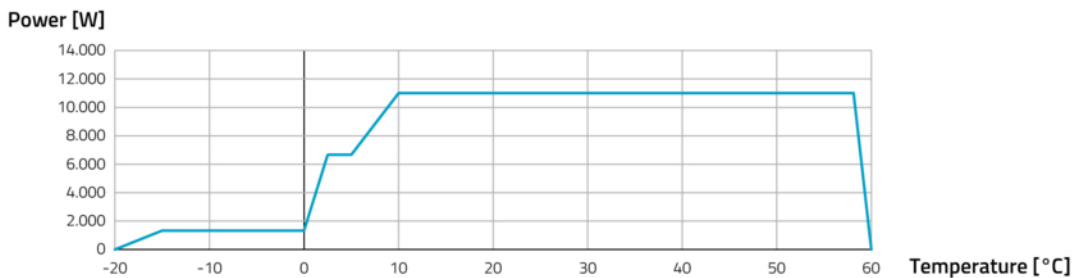
Charging power depending on the battery temperature

Notice: The charging process does not start outside the permissible temperature window.



Output power depending on battery state of charge

Notice: If the reference power is exceeded, the device switches off.



Output power depending on the battery temperature

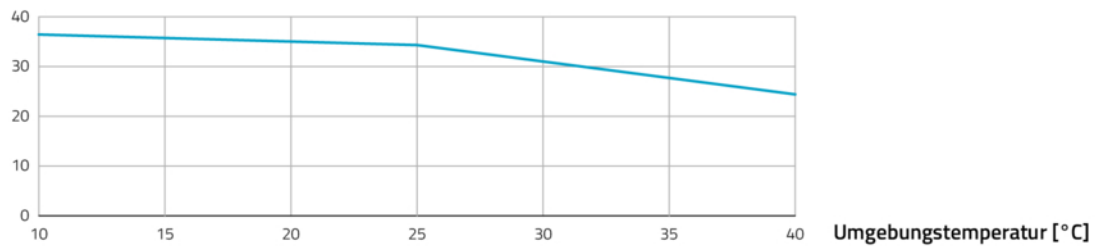
### Operation at high ambient temperatures

The ecoPowerTrolley dissipates the waste heat generated during operation via cooling fins to the ambient air. Consequently, the attainable cooling capacity is reduced at high ambient temperatures. If the peak power is removed for a short time, this effect is not significant; otherwise, the following limitations arise:

- When the maximum output power is removed, the attainable running time is reduced.
- The achievable continuous power is reduced depending on the ambient temperature.

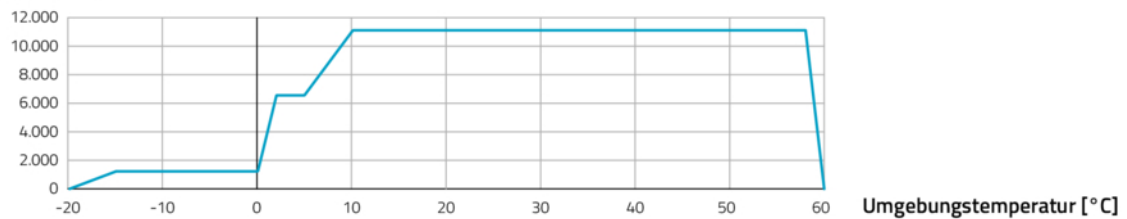
The following curves show the influences of the ambient temperature:

Laufzeit [Minuten]



Achievable runtime as a function of ambient temperature at maximum continuous output

Dauerleistung [W]



Attainable runtime as a function of ambient temperature at maximum continuous output

## 3 Safety first!

### 3.1 General and special safety instructions

#### Personnel qualification

- No special personnel qualification is required to use the device. The device may be used by any person who is physically and mentally capable of doing so and who has read and understood the operating instructions.
- Maintenance and repair work may only be carried out by a qualified electrician.

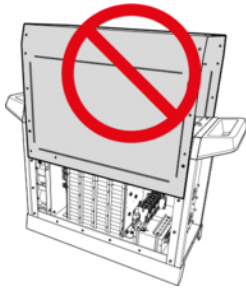
#### What are the safety features of the device?

- **Galvanic isolation and IT network**  
The device provides an IT network in which all conductors are galvanically isolated from the ground (housing). In addition, there is galvanic isolation between the charging input and the outputs.
- **Operation of consumers of protection class I**  
Due to the design-guaranteed equipotential bonding at the outputs, consumers of protection class I can be operated safely on the device.
- **Limitation of short-circuit current**  
The internal DC fuse limits the short-circuit current to <500 A (peak).
- **Protection in the event of insulation faults**  
In the event of a (single) insulation fault, no body current can flow because the outputs have no ground reference.
- **Automatic shutdown in the event of a ground fault or housing closure**  
In the event of an internal or external ground fault or housing closure, the device switches off immediately.
- **Automatic shutdown in case of overload**  
The device shuts down due to overload in the following cases:
  - Exceeding the time limit when drawing the full nominal current
  - Exceeding the maximum permissible withdrawal current
- **Automatic shutdown in case of overheating**  
Overheating occurs when both values "ambient temperature" and "discharge current" exceed a limit value over a certain period of time. Then the device switches off.

#### What additional safety precautions must the user take?

- **Comply with legal safety regulations**  
By connecting several loads to the device, a low-voltage network is created, during the operation of which legal safety regulations must be observed. Research the regional safety regulations and implement them under your own responsibility.
- **Limit the line network for connected loads**  
With the increasing expansion of the line network, the risk of malfunctions and undetected sources of error, e.g. damaged cables, increases.
  - Do not use unnecessary distribution sockets.
  - Do not use extension cords or use them as short as possible.
  - Make sure that the cables are clearly arranged.
- **Maintain operational reliability of the connected consumers**  
Have the consumers regularly checked for electrical safety by a qualified electrician.
- **When installed in a vehicle**  
Connect the device to the vehicle chassis via the external ground connection.
- **For stationary use**  
Connect the device to the ground via the external ground connection using a ground spike.

### General Safety Instructions



- Do not open the device case.
- Only use the device under the permissible environmental and operating conditions.
- Do not use the device as a storage surface or for sitting or climbing.
- Make sure that the device is always placed on level ground without wobbling.
- Do not change any controls, connectors or safety elements.
- Do not immerse the device in water or mud.
- Avoid contact of the appliance with chemicals, fuels and lubricants.

### Safety when handling the battery



- Do not open the battery.
- Only operate the device within the permissible temperature range.

### Warning for persons with medical implants



- Keep away from the device. During operation of the device, electromagnetic radiation is generated, which may have an impact on medical implants.

### Health protection information

#### • **Danger due to harmful fumes.**

In case of damage and improper use of the device, fumes may leak out that irritate the respiratory tract. If fumes have leaked, supply fresh air and seek medical attention if you have any complaints.

#### • **Danger due to harmful fluids.**

If the device is damaged and used improperly, liquids may leak out that irritate the skin. If you have had skin contact with the liquids, rinse the skin under running water. If the fluids have gotten into the eye, consult a doctor.

### Electrical safety information

- At all times, comply with the regionally applicable regulations for setting up low-voltage installations and for the safe operation of electrical loads.
- Do not operate the device if a cable is defective (e.g. damaged insulation or pinching and kinking points).
- Comply with prescribed standard tests.
- Do not connect defective loads to the device.
- Switch off the connected loads when ending operation.

### Information on ambient temperature and heat dissipation

- Keep the device away from external heat sources (direct sunlight, radiators, fire).
- Ensure that the cooling fins can freely dissipate the waste heat.
- Do not install the device in a container or housing.

### Charging safety

- Charge the battery only within its performance limits.
- Charge the battery only under the permissible environmental conditions.

### **Safety during operation (unloading)**

- **High voltage and high currents at the voltage outputs.**  
Danger due to arc fault when disconnecting the mains plug of a connected consumer.  
Before unplugging the mains plug, switch off the consumer.
- **Hot cooling fins in operation.**  
Danger of burns.  
Do not touch the cooling fins.
- **Danger of heat accumulation.**  
Keep a minimum distance of 20 cm from walls and objects all around.
- Only operate the device within its performance limits.
- Only operate the device under the permissible ambient conditions.
- Avoid short circuits at the outputs.

### **Storage security**

- Allow the device to cool down completely before storing it.
- Store the device in a horizontal position.
- Store the device for a maximum of 3 months in the temperature range of -10 to +45 °C.
- Store the device for more than 3 months in the temperature range of 0...+25 °C.
- Protect the device from direct sunlight.
- Protect the device from mechanical influences.
- Store the device in such a way that unauthorized access is prevented.

### **Safety during transport**

- Allow the device to cool down completely before transporting it.
- Wear steel-toed shoes and non-slip protective gloves.
- Only lift the device on the appropriate carrying handles.
- When carrying, make sure that the device does not tip over or fall down.
- Secure the On/Off button against being pressed unintentionally.
- When carrying the device, make sure that nobody is in the fall zone.
- When transporting in vehicles, make sure that the load is properly secured.
- Carry a suitable fire extinguisher when transporting in vehicles.

### **Cleaning and maintenance security**

- Allow the device to cool down completely before cleaning and maintenance.
- Wear safety gloves when cleaning.

### **Note on maintenance and repair**

- Maintenance and repair work may only be carried out by qualified personnel.

## 3.2 Fire protection measures

### WARNING

#### **Organic cell contents are flammable above 125 °C.**

In the event of overheating or fire, harmful gases will escape and the battery may explode.

Harmful gases:

- Hydrogen fluoride
- Carbon monoxide
- Carbon dioxide

Prevent causes of overheating:

- External heat exposure
- Exceeding the maximum permissible load
- Overcharging
- Short circuit
- Mechanical damage

#### **Preventive measures**

- Adhere to the storage instructions for Li-ion batteries.
- Inform the fire department about the storage locations of the Li-ion batteries and where the vehicles are parked or the machines stored.
- Mark the escape and emergency routes.
- Have suitable extinguishing agent available on site:
  - Water
  - Water with extinguishing additives
  - Gel Extinguishing Agent

#### **Safety instruction**

The following extinguishing agents are not suitable and must not be used:

- ABC or BC powder
- Metal fire powder
- Carbon dioxide

#### **Fire fighting measures**

- If possible, remove the batteries from hazardous areas.
- Exit the vehicle.
- Alert the fire department with the indication of a burning Li-Ion battery.
- Do not expose yourself to the personal risk of endangering yourself.
- Only take your own measures if you are sufficiently practiced in doing so.
- Wear suitable personal protective equipment during fire-fighting:
  - Self-contained breathing apparatus according to NIOSH/MSHA
  - Protective clothing
  - Protective gloves
- Keep people that are unprotected or not required for emergency response outside of the hazardous area.
- Fight the fire with suitable extinguishing agent. See: "Preventive measures".
- Maintain the following minimum distances when fighting the fire:
  - In the case of portable and movable fire extinguishers with spray jet: at least 1 meter
  - In the case of wall hydrants with spray jet (Euro nozzle): at least 3 meters
  - In the case of wall hydrants with full jet: at least 5 meters



- In the event of significant amounts of smoke or gas being released:
  - Immediately leave the room or the hazardous area.
  - Ensure there is sufficient ventilation.

**Fire watch**

<b>Safety instruction</b>
<p>Batteries may also re-ignite after a long period of time.            Store the batteries under water once they have been extinguished:</p> <ul style="list-style-type: none"> <li>• In a sufficiently large water tank</li> <li>• In an emergency container</li> </ul>

If the extinguished battery has to be brought to a different location for the fire watch:

- Obtain information from the manufacturer about the transport regulations.
- Obtain transport approval from the relevant authorities.
- Have the battery transported by a specialized company.

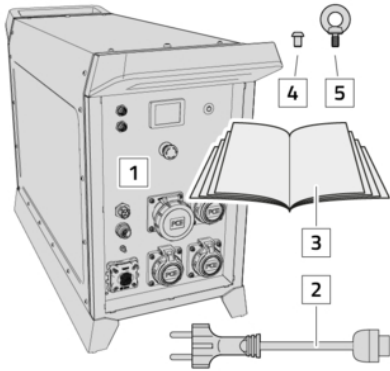
## 4 Check scope of delivery and procure accessories

### Check scope of delivery

Check the scope of delivery for completeness and perfect condition.

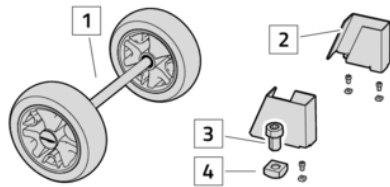
In case of missing parts or damage, contact the supplier.

The scope of delivery consists of:



- 1 ecoPowerTrolley
- 2 Charging cable 230 V
- 3 Quick Start Guide (also available for download, see QR code on the Quick Start Guide)
- 4 2 x housing screw  
(Replacement for eyebolts)
- 5 2 x eyebolt (attachment points for lifting gear)

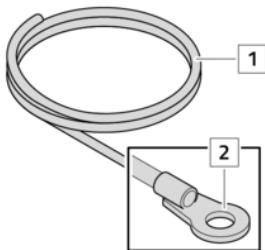
In the version with wheels and feet additionally:



- 1 Axle with wheels
- 2 2 x feet
- 3 4 x screws
- 4 4 x square nuts

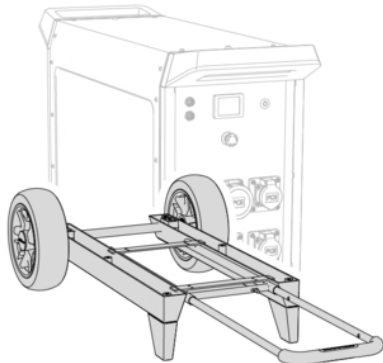
### Procure the necessary accessories

If external grounding is required for safe operation of the device:



- 1 Ground cable (min. 6 mm<sup>2</sup>)
- 2 Ring terminal

### Procure recommended accessories



Wheels and pull-out handle.  
Allows easy movement of the device.

## 5 Installing the wheels and feet

### Note on the version with wheels and feet

If the unit was delivered in the variant with wheels and feet, the wheels and the feet must be mounted by the user.

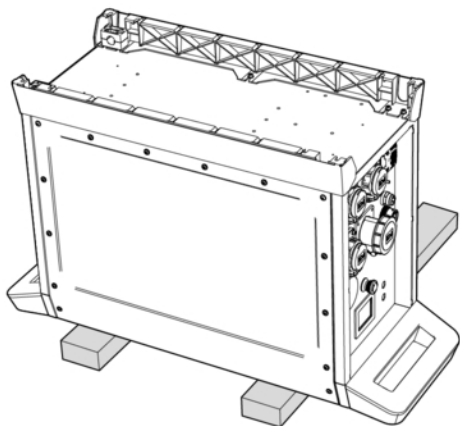
### Preparation

For installation, the device may exceptionally be set upside down.

If the device was already in use before installation:

<p><b>⚠ CAUTION</b></p>
<p><b>The cooling fins of the device are hot.</b> Risk of burns when touching.</p> <ul style="list-style-type: none"> <li>• Switch off the connected loads.</li> <li>• Switch off the device.</li> <li>• Disconnect all cables from the device.</li> <li>• Allow the device to cool down completely.</li> </ul>

### Installing the wheels and feet



### Setting up the device:

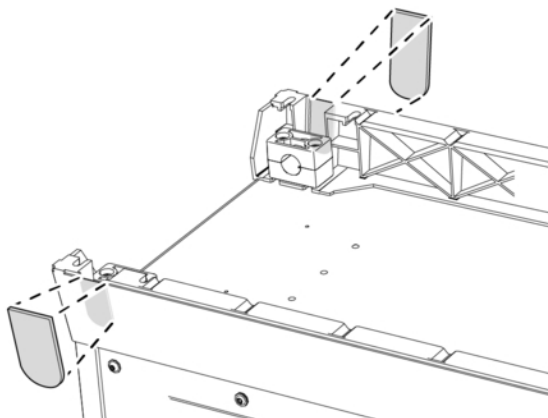
Prepare two squared timbers.

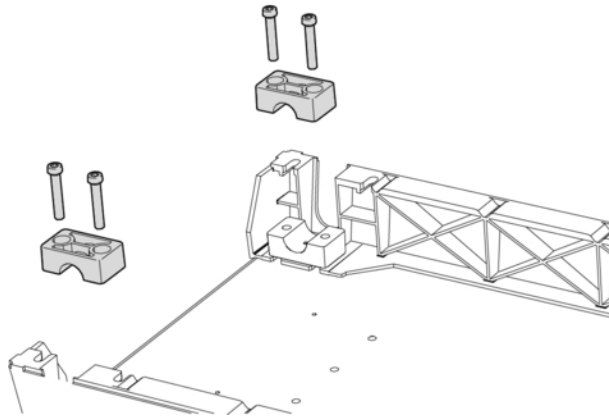
Place the device upside down on the squared timbers.

### Installing the wheels:

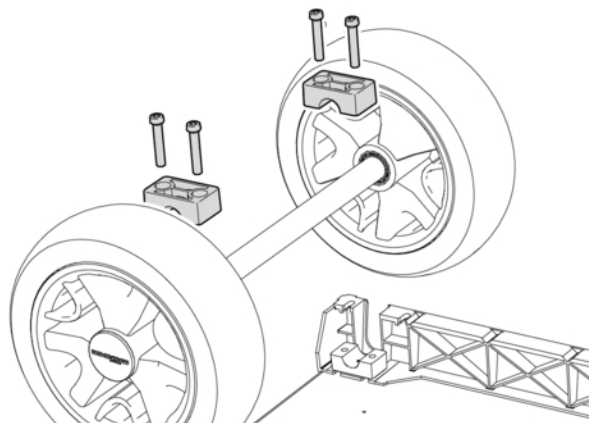
On the runners:

Break out the recesses for the axle.

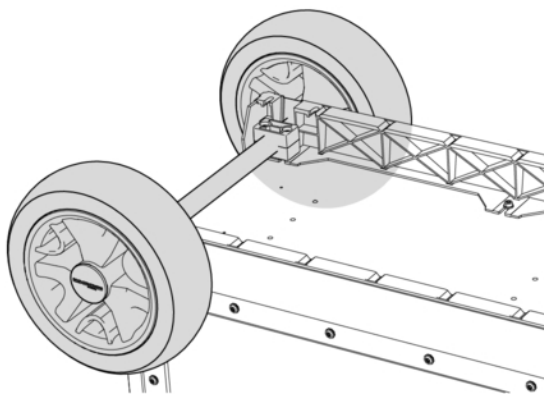




Unscrew the axle bearings.

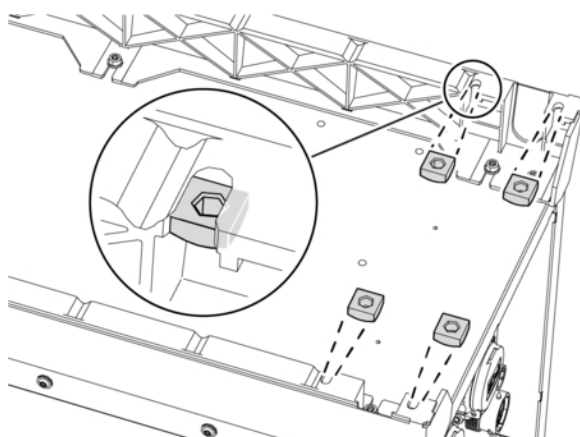


Install the wheels.

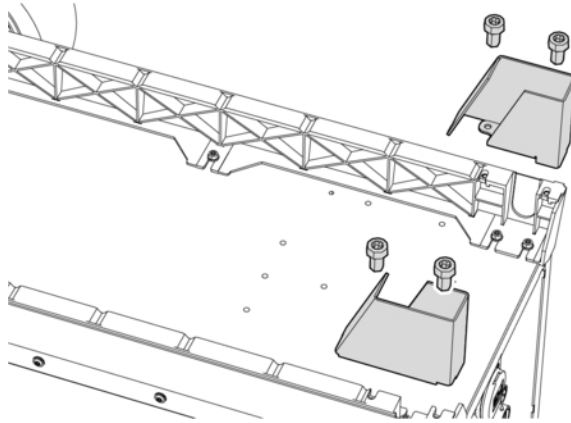


The wheels are installed.

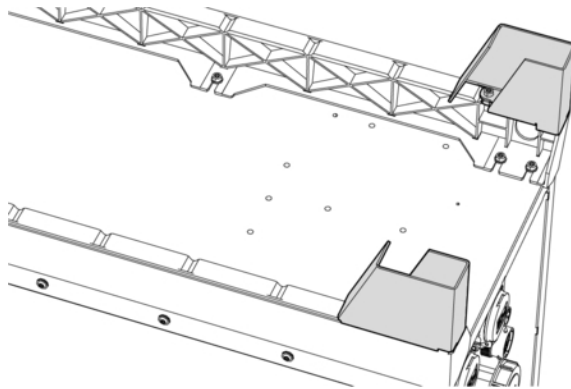
**Installing the feet:**



Insert the square nuts.

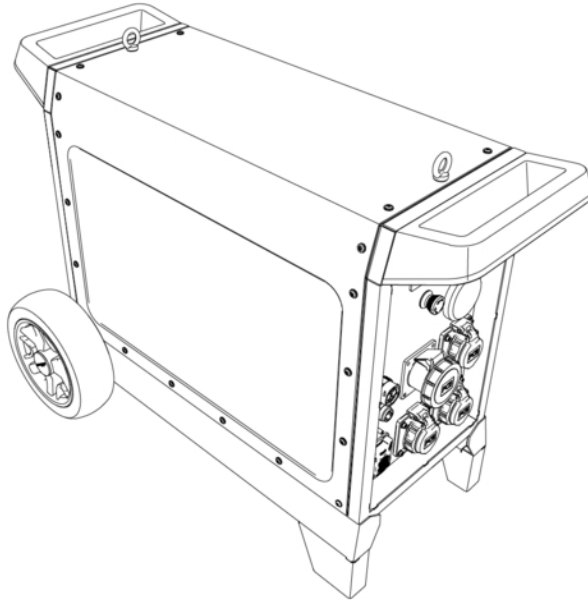


Install the feet.



The feet are installed.

**Complete the installation:**



Place the device in the correct position.

## 6 Transport and set up the device

### Requirements for the transport route

Make sure that the following requirements are met:

- The floor is loadable, as level as possible and free of obstacles.
- The ambient conditions at the installation site correspond to the technical data.
- All operating elements and connections are freely accessible at the installation site.

### Special requirement for the installation site during operation (discharging)

Safety instruction
Hot cooling fins during operation when discharging (max. 65 °C). Danger of heat accumulation. Keep a minimum distance of 20 cm from people, objects and walls all around.

### Wear the device

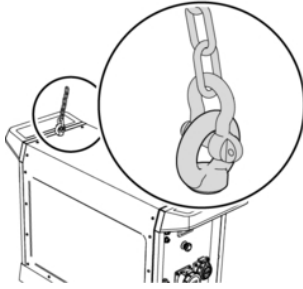
Device with runners without wheels and feet: Carry the device by the carrying handles in groups of four people.

### Moving the device

Device with wheels and feet: Lift the device to move it.

Safety instruction
Heavy equipment. Danger of tipping over when the center of gravity is exceeded. Lift the device only as far as is necessary to move it.

### Transport device with hoist



The device is equipped with two eyebolts at the factory.

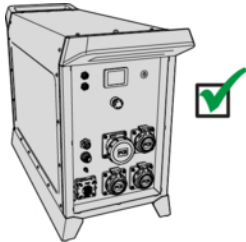
- Use the eyebolts as anchor points for transport with lifting equipment.



After transport:

- Replace the eyebolts with the housing screws (part of the scope of delivery).
- Keep the eyebolts for further transport.

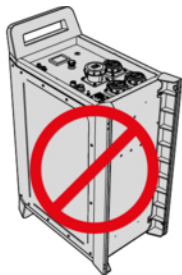
### Setting up the device



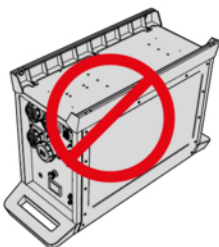
Place the device in a horizontal position.



Do not place the device on its side.



Do not place the device in an upright position.



Do not place the device upside down.

## 7 Operating the device

### 7.1 First step: Getting to know the emergency stop function

Familiarize yourself with the emergency stop function before starting up the device.

Emergency stop button is used to stop the device immediately in a dangerous situation. The consequences:

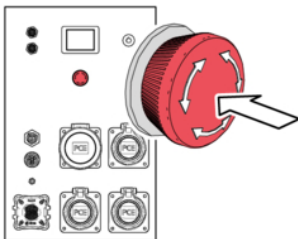
- All outputs are switched voltage-free.
- All inputs are separated.
- The internal electronics remain in operation.
- The display shows "emergency stop button pressed".

#### Safety instruction

The emergency stop forces an irregular stop.

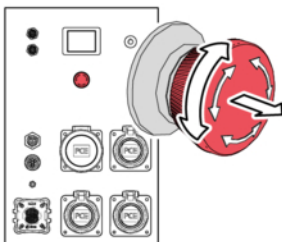
Do not use the emergency stop button to switch the device on and off.

Use the On/Off button to turn the device on and off.



#### Press emergency stop:

- 1 Press the emergency stop button until it clicks into place.
  - ✓ The device is stopped.



#### Unlock emergency stop:

- 1 Make sure that the cause for actuating the emergency stop button has been eliminated.
- 2 Turn the button in any direction until it disengages.
  - ✓ The device resumes its function.
  - ✓ All connected consumers start up again. Consumers with restart protection must be restarted manually.

### 7.2 Ensure heat dissipation

#### WARNING

#### The device generates waste heat during operation.

In the event of heat build-up, there is a risk of operational disruptions and fire.

- Ensure that the cooling fins can freely dissipate the waste heat.
- Keep the appliance away from external sources of heat (e.g. direct sunlight, radiators, fire).
- Do not install the device in a container or housing.



### 7.3 Charging the battery

#### Preparing the device for the first start-up

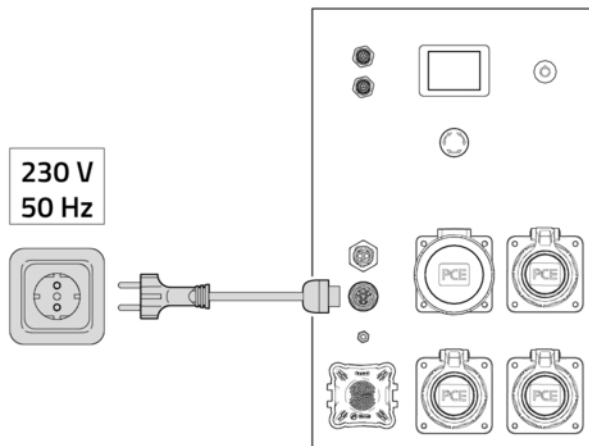
The battery is charged with approx. 30% SoC upon delivery. Fully charge the battery before using the device for the first time.

#### Choose a suitable charging socket

Due to the increased leakage current of the device of > 10 mA, the battery can only be charged at the following sockets:

- Sockets with 30 mA residual current circuit breaker (RCD type A / type B)
- Sockets without residual current circuit breaker (RCD type A / type B)

#### Charging the batteries

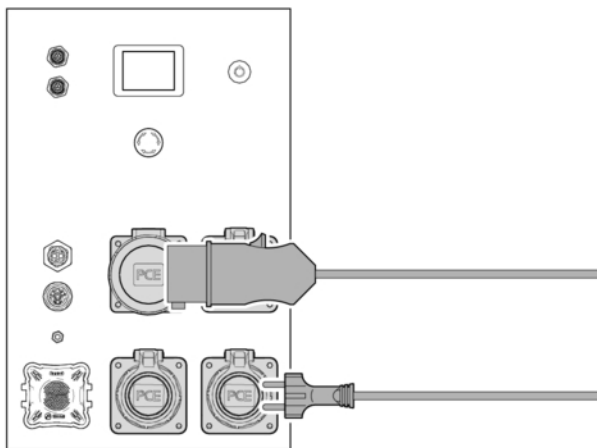


- 1 Make sure the device is switched off.
- 2 Connect the charging cable to the device. Lock the device plug by turning it to the right until it stops.
- 3 Connect the charging cable to the mains.
  - ✓ The device switches on.
  - ✓ The charging process begins.
  - ✓ The display shows the main screen.

After fully charging:

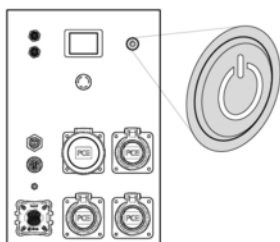
- 4 Switch off the device.
- 5 Remove the charging cable.

### 7.4 Connecting the consumer for operation (discharging)



- 1 Switch on the device.
  - 2 Connect the consumers.
- ✓ The device is ready for operation.

### 7.5 Switch on device



- 1 To switch on the device: Press the On/Off key for at least 3 seconds.
- 2 Wait until the display shows the current operating values.
  - ✓ All output voltages are available.
  - ✓ The device is ready for operation.
- 3 Switch on the connected loads.

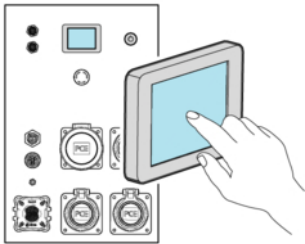
## 7.6 Charge electric vehicle

If the ecoPowerTrolley is to be used to charge an electric vehicle, use a manufacturer-independent mobile charging unit for this purpose.

Examples: **NRGkick** or **Juice Booster**. These devices are tested for proper function on the ecoPowerTrolley.

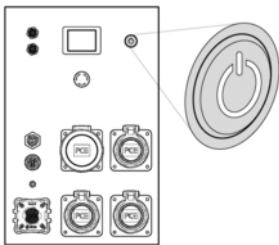
## 7.7 Read out and set operating parameters

### About the function of the display



The display is a touchscreen (touch screen). It reacts like a smartphone to command inputs by touching with the finger or with an input pen.

### Switch on device



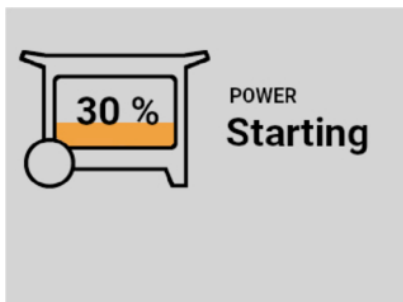
To switch on the device:

- Press the On/Off key for at least 3 seconds.



While the device is starting, the startup screen is displayed.

- Wait until the main screen is displayed.

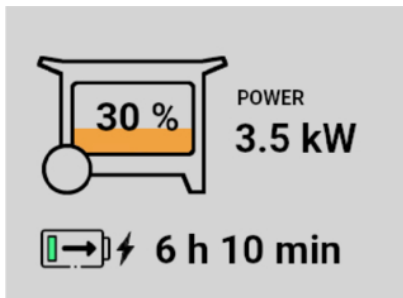


As soon as the main screen is displayed, the device is ready for operation.

The main screen displays the following value:

- **30 %**: Current state of charge of the battery in percent

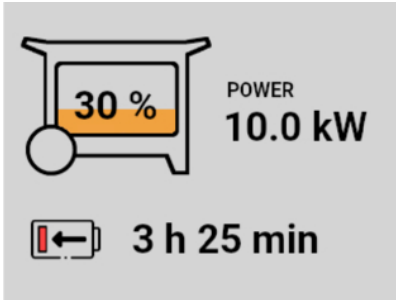
### Screen display during charging



When charging, the screen displays the following values:

- **30 %**: Current state of charge of the battery in percent
- **3.5 kW**: Current charging power
- **6 h 10 min**: Estimated remaining charging time until the battery is fully charged.

### Screen display during operation



During operation (when discharging) the screen shows the following values:

- **30 %:** Current state of charge of the battery in percent
- **10.0 kW:** Current output power
- **3 h 25 min:** Estimated remaining operating time

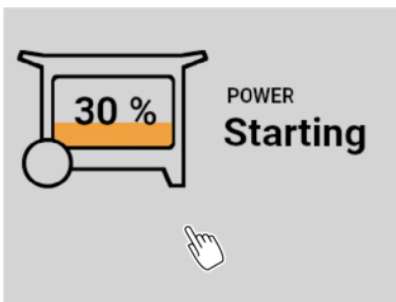


If the screen shows an empty battery:

- Charge the battery to prevent uncontrolled failure of the connected loads.

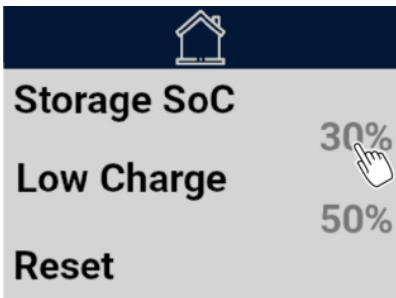
### Set operating parameters

To set the operating parameters, proceed as follows:



Tap the screen.

- ✓ The settings are displayed.

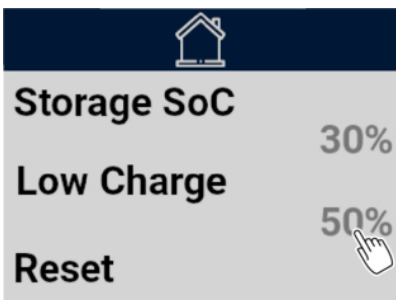


**Storage SoC:** This function allows you to set a charge limit for the battery in order to store or transport the battery.



Switch back and forth between the values:

- **30 %:** Set charging limit to 30%
- **OFF:** Cancel charging limit

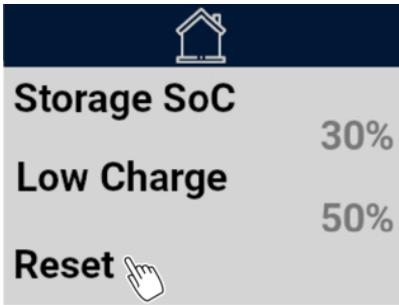


**Low Charge:** This function allows you to limit the input power.



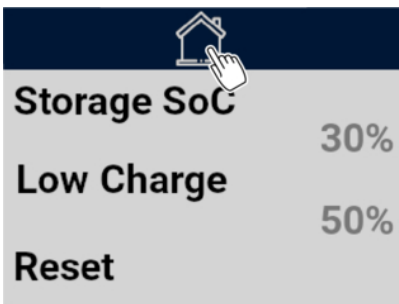
Switch back and forth between the values:

- **50 %:** Limit input power to 50
- **OFF:** Cancel limitation



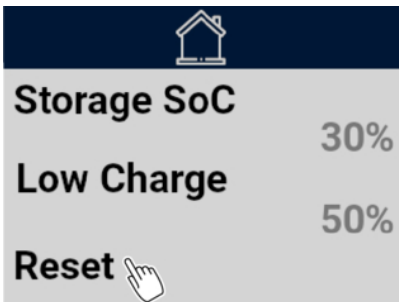
**Reset:** This function allows you to delete your settings and reset the device to the factory settings.

See: "Reset device to factory settings"

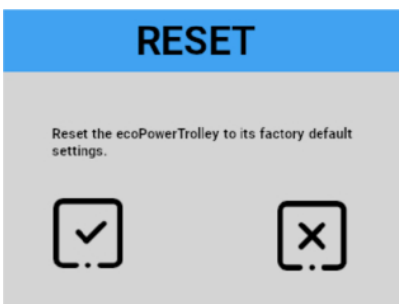


To return to the main screen:  
Click the "Home" icon.

**Reset device to factory settings**



- Select "Reset".



The screen displays the reset options.



If you are sure:

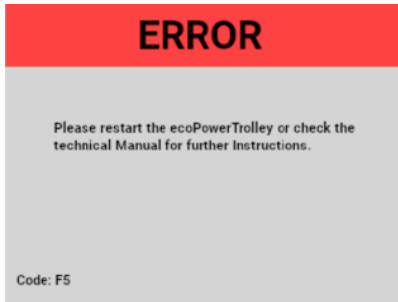
- Perform the reset.
- ✓ All entries are deleted.
- ✓ The display jumps back to the main screen.



If you are not sure:

- Cancel the reset.
- ✓ All settings are retained.
- ✓ The display jumps back to the previous screen.

### Respond to an error message



If a malfunction has occurred, the display shows an error message.

- Look up the cause of the error in the operating instructions.
- Eliminate the cause of the error.
- Restart the device.

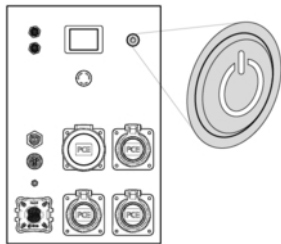
### Detect emergency stop



If the emergency stop button has been pressed, the device has switched off.

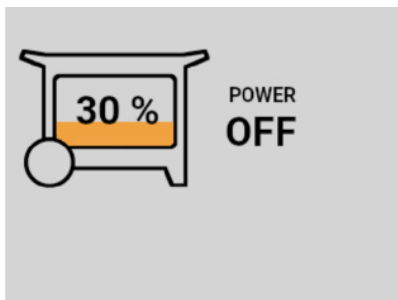
- Eliminate the cause of the emergency stop.
- Restart the device.

### Switch off device



To switch off the device:

- Press the On/Off key for at least 3 seconds.



When the device is switched off, the screen displays the following value:

- **30 %**: Current state of charge of the battery in percent

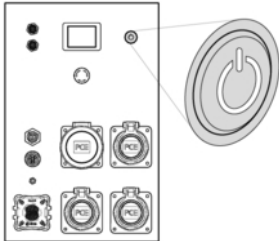
## 7.8 About standby mode

### How does the standby mode manifest itself?

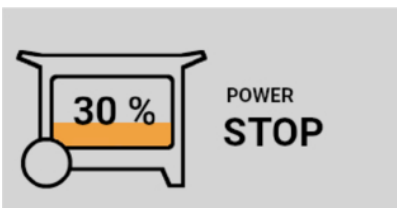
- The device switches off the internal power electronics.
- No output voltages are available.
- The display shows "POWER -".

### Activate standby mode

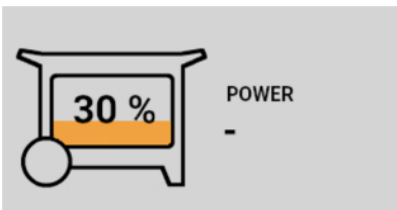
To activate the standby mode manually:



- Briefly press the On/Off key.



- ✓ The display shows "POWER STOP".
- ✓ The internal power electronics are switched off.



- Once the internal power electronics has switched off:
- ✓ The display changes to "POWER -".
  - ✓ The standby mode is activated.

### Cancel standby mode

To cancel the standby mode, switch the device on again.

- 1 Briefly press the On/Off key.
  - 2 Wait until the display shows the current operating values again.
- ✓ All output voltages are available again.
  - ✓ The device is ready for operation again.
- 3 Switch on the connected loads.

## 7.9 Switch off device

- 1 Switch off the connected loads.
- 2 To switch off the device:  
Press the On/Off key for at least 3 seconds.

As soon as the display goes out:

- ✓ All outputs are voltage-free.
- ✓ The device is switched off.

## 8 Storing the device

### What is meant by "storage"?

"Storage" refers to the immobilization of the device so that it is not used for a longer period of time.

### Basic information on storage

- Store the device in the temperature range of  $-10...+45\text{ °C}$  in an environment with low humidity. For the sake of a longer service life, the temperature range of  $0...+25\text{ °C}$  is recommended for storage for more than 3 months.

### Store your device at short notice

Storage for a maximum of 3 months:

- Fully charge the battery, at least to  $>30\%$  SoC.

### Long-term storage of the device

Storage for more than 3 months:

- Fully charge the battery, at least to  $>30\%$  SoC.
- Check the charge level every 3 months.
- If the charge level drops below  $30\%$  SoC: Fully charge the battery.

### Avoid deep discharge

Batteries are subject to self-discharge, which means that the battery voltage gradually decreases, even if no energy is drawn.

If the battery voltage drops below a minimum value, there is a risk of harmful deep discharge. In order to prevent deep discharge, the protective function of the battery management system (BMS) comes into effect as follows:

- The battery is switched off.
- Switch the device on again is blocked.
- The battery is only released after it has been fully charged.

In order to preserve the battery and ensure the operational readiness of the device:

- Adhere to the 3-month check interval.
- Recharge the battery in time.

## 9 Clean and maintain the device

### Cleaning the device

- Switch off the connected loads.
- Switch off the device.
- Disconnect all cables from the device.
- Close all connection covers.
- Allow the device to cool down completely.
- Clean with gentle tools.
- Check the device for damage.

Safety instruction
<ul style="list-style-type: none"><li>• Do not use sharp objects or aggressive or abrasive cleaning agents for cleaning.</li><li>• Do not clean the device with a high-pressure cleaner.</li></ul>



Housing: Clean the housing with a damp cloth.

Display: Clean the display with a slightly damp microfiber cloth.

Cooling fins: Clean the spaces between the cooling fins with a narrow joint brush.

### Maintaining the device

Ensure that the following markings are undamaged and clearly legible or recognizable:

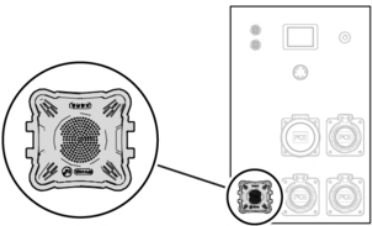
- Nameplate
- Identification of the emergency stop button
- Symbol for external grounding
- Labeling of the on/off button

Replace damaged or illegible markings.



## 10 Identifying and fixing faults

### The bursting membrane has been triggered

Detection	Cause	Remedy
 <ul style="list-style-type: none"> <li>• During operation: Hissing or whistling sound or bang</li> <li>• The device has switched off.</li> </ul>	Overpressure in the battery due to overheating because of short circuit or overload	<b>⚠ CAUTION</b> <b>Leaking toxic fumes.</b> Ensure thorough ventilation or move the device outdoors.
		<ol style="list-style-type: none"> <li>1. Allow the device to cool down.</li> <li>✓ After cooling, the bursting membrane resets itself.</li> <li>✓ When the bursting membrane is reset, the device is ready for operation again.</li> <li>2. Check the device for proper function.</li> <li>3. Avoid the cause of re-triggering.</li> </ol>

### The display shows an error code

#### Application error

Code	Cause	Remedy
1	Battery empty	Charge the battery.
2	Overcurrent occurred	Disconnect all loads from the device. Disconnect the charging cable from the device. Restart the device.
3	Emergency stop button pressed	Cancel the emergency stop. Restart the device.
4	Charging voltage missing (1 phase)	Restart the device.
5	Charging voltage missing (3 phases)	
6	Phase L1 overloaded	Disconnect all loads from the device. Disconnect the charging cable from the device. Restart the device.
7	Phase L2 overloaded	
8	Phase L3 overloaded	

#### Error in the battery management system (BMS)

Code	Cause	Remedy
10	General BMS error	Restart the device.
11	Battery temperature too high	Disconnect some loads from the device. Allow the battery to cool down.
12	Battery temperature too low	Move the device to a warmer environment.
13	Cell voltage too high	Wait until the battery has discharged sufficiently (at least 4 hours). Restart the device.
14	Cell voltage too low	Charge the battery.
19	Error int. Battery switch	Restart the device.

**Error in the power electronics**

Code	Cause	Remedy
20	General. Inverter error	Restart the device.
21	Phase voltage L1 faulty	Disconnect all loads from the device. Disconnect the charging cable from the device. Restart the device.
22	Phase voltage L2 faulty	
23	Phase voltage L3 faulty	
25	General. Error power electronics	Restart the device.
27	General. Error DC/DC converter	Disconnect all loads from the device. Disconnect the charging cable from the device. Restart the device.
28	General. Error power electronics	
29	Pre-charging error charging mode	Restart the device.

**System error**

Code	Cause	Remedy
30	Internal fan blocked	Service is required. Contact your supplier.
31	Input protection error	Restart the device.
32	Output protection error	
35	State machine error	
36	DC link error	
40	Time-out error	
41	Initialization error	
42	DC precharge error	Switch off the device for 30 sec. Restart the device.
43	Time-out error	Restart the device.
44	Time-out error	
45	System error	
46	Time-out error	
47	Time-out error	
48	System error	
49	Time-out error	
50	Time-out error	
51	System error	
52	Time-out error	
53	Time-out error	
60	Output protection error	
61	Output protection error	
62	Input protection error	
63	Input protection error	

**ISO monitor**

<b>Code</b>	<b>Cause</b>	<b>Remedy</b>
90	IMD error	Disconnect all loads from the device.
91	IMD communication error	Disconnect the charging cable from the device.
92	Insulation resistance too low, ground fault	Restart the device.
93	IMD error	Restart the device.
94	Time-out error	

## 11 Repairing the device

There is no repair work that can be performed by the user.  
Contact your supplier in case of service.

## 12 Appendix

### 12.1 Environmental protection

The products of the ecovolta AG are designed with eco-design in mind to minimize their impact on the environment. The following features are considered standard in the design of the products:

- The products of the ecovolta AG are made of high quality materials to maximize the life of their.
- The product design allows the separation of the different materials for reprocessing and efficient recycling.
- The ecovolta AG is always working to further develop its products and continuously reduce their environmental impact.

The products of the ecovolta AG serve to use energy more efficiently and thereby reduce everyday environmental pollution. The ecovolta AG tries to keep the impact on people and the environment low throughout the product cycle and to return as much as possible to the material cycle. It is important that the user handles all products with care and uses them efficiently.

For information on return and disposal of the products see "Disposal and recycling".

### 12.2 Disposal and recycling



Information on the disposal of electrical and electronic equipment and batteries can be found at <https://eco-volta.com/products/downloads>.



The packaging materials are recyclable. Please do not throw the packaging into the household waste, but reuse it or return it separately according to the local recycling system.

### 12.3 Service, maintenance and support

Service, maintenance and support are provided by ecovolta AG and their partners.

### 12.4 Accessories and spare parts

Accessories and spare parts are purchased at:

ecovolta AG

Gersauerstrasse 71

6440 Brunnen

Switzerland

+41 41 811 41 42

[info@eco-volta.com](mailto:info@eco-volta.com)

[eco-volta.com](http://eco-volta.com)