Installation instructions | for electricians

sonnenCharger

EN

IMPORTANT

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

Publisher	
sonnen GmbH	
Am Riedbach 1	
D-87499 Wildpoldsried	
Service number	+44 3303 3544 45 / +49 8304 9999 037
Email	international@sonnen.de

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1 Information about this document

This document describes the installation of the sonnenCharger.

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

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
sonnenCharger	Charging station

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 sonnenCharger is an intelligent charging station for electric vehicles. Members of the sonnenCommunity with their own photovoltaic system and sonnenBatterie can use it to charge their electric vehicles using completely clean electricity.

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:

- The charging station must be fully installed in accordance with the installation instructions.
- The charging station must be installed by an authorised electrician.
- The charging station must never be commissioned if the connection cable or plug is visibly damaged.
- The charging station must only be used at a suitable installation location.
- The transport and storage conditions must be observed.

Especially the following uses are not permissible:

- Operation in flammable environments or areas at risk of explosion.
- Operation in locations at risk of flooding.

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 charging station 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 charging station

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

- The charging station 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 with impaired physical, sensory or mental capabilities or individuals with limited knowledge and/or experience of working with the device, as long as they are supervised or have been trained to safely use the device and understand the resulting risks of doing so. Children must not play with the device.

2.4 Product modifications or changes to the product environment

- The charging station 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 charging station must be wired in accordance with the product documentation.
- All repairs on the charging station must be performed by authorised service technicians only.

2.5 Internal voltage

The charging station contains live electrical parts, which poses a risk of electrical shock. Therefore:

▶ Switch off the protective devices (residual current device and miniature circuit breaker) before commencing any work.

Only then can the charging station be opened.

3 Product description

3.1 Technical data

	sonnenCharger
System data	
Maximum charging output	22.0 / 7.4 (three/one-phase connection
Nominal voltage in V	400 /230 (three/one-phase connection)
Electrical connection[1]	5 x 6 mm² or 5 x 10 mm²
Required fault current monitoring	Type B or type A EV residual current device with DC residual current detection
Connectivity	Ethernet
Mechanical data	
Charging plug	Type 2
Length of charging cable	4.5 m or 7 m
Cable holder	magnetic
Degree of Protection	IP56
Colour	Grey or White
Dimensions/weight	
Dimensions (H/W/D) in cm	45/27/13.5
Weight (with 4.5 m cable length)	11.6 kg
Weight (with 7 m cable length)	12.8 kg
Ambient conditions	
Operating temperature range (operation)	-25 °C ... +65 °C
Max. rel. humidity	95%, non-condensing

- The sonnenCharger is limited to 11 kW/3.7 kW (three/one-phase connection) by default. If all technical requirements (see Preconditions for a maximum charging output of 22 kW [P. 10], among other requirements) are fulfilled, a charging output of 22 kW/7.4 kW (three/one-phase connection) can be activated.
- Important information:
  - No separate meters can be installed for the sonnenCharger.
  - No separate mains connection is set up for the sonnenCharger, as otherwise no PV self-consumption is possible.

3.2 Scope of delivery

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

Quantity	Description
1	sonnenCharger (including charging cable with type 2 plug)
1	Wall mounting panel
9	Wall spacer (length 20 mm)
2 × 9	Screws
9	Dowels

[1] Depending on connection conditions.

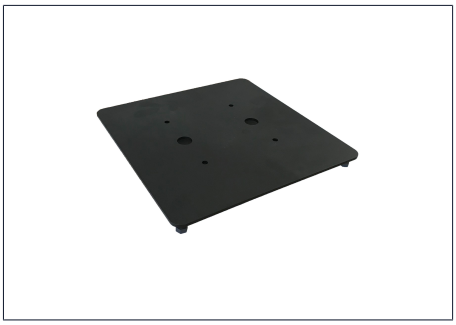
Quantity	Description
1	Installation instructions
1	Operating instructions

3.3 Optional accessories

The following accessories for mounting the charging station are available from sonnen GmbH:

- **Stand for one charging station (also available for two charging stations)**

Stand (150 x 27 cm) incl. floor plate (20 x 20 cm); weight: 13 kg



- **Floor plate for interiors**

e.g. for installing the stand temporarily, for demonstration purposes and so on.

- **Set for underground anchoring**

Anchoring frame, L-profiles (2x), concrete anchors (4x)

3.4 System components

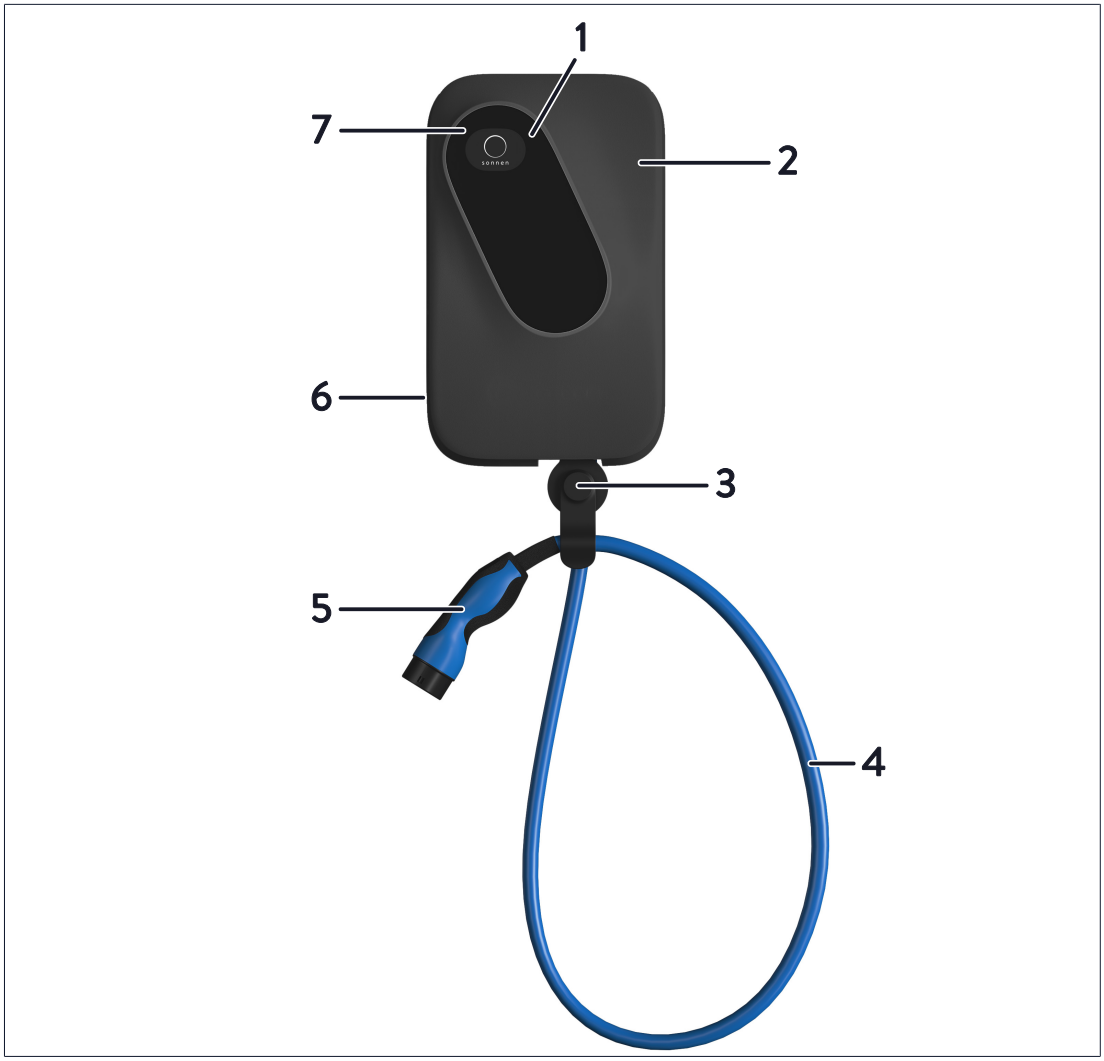
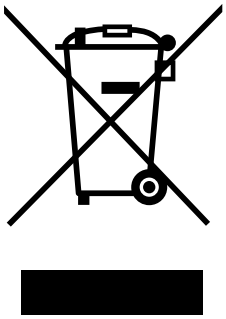


Illustration 1: sonnenCharger components

1 Polycarbonate panel with touch display and LEDs
2 Housing
3 Cable holder, magnetic
4 Charging cable
5 Charging plug, type 2
6 Side service cover (with type plate on inside)
7 LEDs

3.5 Symbols on the outside of the charging station

Symbol	Meaning
CE	CE mark. The product meets the requirements of the applicable EU Directives.

Symbol	Meaning
	WEEE mark. The product must not be disposed of in household waste, dispose of it through environmentally friendly collection centres.
	Observe the documentation. The documentation contains safety information.

3.6 Preconditions for a maximum charging output of 22 kW

The following additional requirements must be met, among others, in order to use the maximum charging output of 22 kW:

- Compliance with local technical connection conditions.
- Registration of a mains connected load of min. 44 A with the responsible distribution network operator (DNO).
- The supply line to the charging station must be dimensioned appropriately for the charging output (five-wire cable).
- The overvoltage protection, residual current device and miniature circuit breaker must be dimensioned appropriately for the load which occurs.
- Sufficient air circulation must be ensured at the installation location, as increased heat build-up is possible due to the higher output.
- The meter panel layout must meet the requirements set out in VDE-AR-N 4100 ('Technical connection rules for low-voltage'). This standard defines a charging station for electric vehicles as a continuous current system.

Operation mode		Meter locations with BKE-I or three-point mounting according to DIN VDE 0603-2-1					
		wire cross-section 10 mm²			wire cross-section 16 mm²		
		Single-field	Double-field		Single-field	Double-field	
		Meter	Meter 1	Meter 2	Meter	Meter 1	Meter 2
Usage	I	≤ 63 A	≤ 63 A	≤ 63 A	≤ 63 A	≤ 63 A	≤ 63 A
	$I_{N\,SH}$	≤ 63 A	≤ 63 A	≤ 63 A	≤ 63 A	≤ 63 A	≤ 63 A
Continous current	I	≤ 32 A*	≤ 32 A*	≤ 32 A*	≤ 44 A*	≤ 32 A	≤ 32 A
	$I_{N\,SH}$	≤ 35 A	≤ 35 A	≤ 35 A	≤ 50 A	≤ 35 A	≤ 35 A
Usage/Continous current	I	-	≤ 63 A	≤ 32 A*	-	≤ 63 A	≤ 32 A
	$I_{N\,SH}$	-	≤ 63 A	≤ 35 A	-	≤ 63 A	≤ 35 A

* For outdoor meter connection cabinets, the values according to DIN VDE 0603-2-1 (VDE 0603-2-1) must be multiplied by a factor of 0.94 due to the ambient conditions.

Illustration 2: Table based on Table 7 of VDE-AR-N 4100:2019-04

Requirements for electrical domestic installation for implementing an ampacity of 44 A:

- The meter panel wiring has a cross-section of 16 mm². This means that the wiring from the upstream fuse for the meters to the miniature circuit breakers must have a cross-section of 16 mm².
- Single assignment of the corresponding meter panel has been implemented.
- The upstream fuse for the meters is dimensioned appropriately for the loads which occur.

4 Procedure overview

4.1 Installation for a charging output of 11 kW

1. Register the sonnenCharger as a wallbox with the responsible distribution network operator (DNO).
2. Install fuse protection for the charging station in the electrical distributor.
3. Dimension and lay the supply line.
4. Mount the charging station.
5. Electrically connect the charging station.
6. Commission the charging station and establish a permanent internet connection.
7. Set up the app.
8. Send the following document to international-service@sonnen.de:
   - sonnenCharger commissioning report [P. 29]

4.2 Installation for a charging output of 22 kW

1. Register a mains connected load of min. 44 A and register the sonnenCharger as a wallbox with the responsible DNO.
2. Adapt the meter panel wiring, upstream fuse for the meters and meter panel assignment in accordance with the relevant regulations.
3. Install fuse protection for the charging station in the electrical distributor.
4. Dimension and lay the supply line.
5. Mount the charging station.
6. Electrically connect the charging station.
7. Commission the charging station and establish a permanent internet connection.
8. Set up the app.
9. Send the following documents to international-service@sonnen.de:
   - sonnenCharger commissioning report [P. 29]
   - Declaration for activating the sonnenCharger for a charging output of 22 kW [P. 30]
10. Upon receipt and review of the documents, sonnen will activate the sonnenCharger software for a maximum charging output of 22 kW.

5 Assembly and installation

⚠ DANGER **Work on the electrical distributor**

Danger to life due to electrocution!

- ▶ Disconnect the relevant electrical circuits.
- ▶ Secure against anyone switching on the device again.
- ▶ Check that the device is disconnected from the power supply.
- ▶ Only authorised electricians are permitted to carry out electrical work.

5.1 Selecting the installation location

- The charging station should be mounted at an appropriate height so that the touch display can be operated with ease (recommended installation height: 100 cm from the ground to the bottom edge of the mounting panel).
- During mounting the customer's parking direction and the position of the plug connection on the electric vehicle should be taken into account.
- The charging station has a degree of protection of at least IP56. The charging station can be used indoors and outdoors, if the ambient conditions meet the following criteria:
  - Altitude < 2,000 m above sea level.
  - Temperature range -25°C to +65°C.
  - Air humidity max. 95%, non-condensing.
- The installation location of the charging station should be protected from direct sunlight and extreme weather.

5.2 Earthing the charging station

For safe use the sonnenCharger must be earthed properly. Earthing must meet country-specific safety regulations and standards. The main purpose of earthing is to prevent or minimise the risk of electric shock and fire through an earth connection.

- ▶ Take a measurement of the earth resistance before commissioning in order to ensure that all parts of the charging station to which the users have access are not live.

The following earthing systems are supported: TN-S, TN-C, TN-C-S and TT.

Important note:

- The IT earthing system must not be used.
- The earth conductor cross-section must be at least as large as the cross-section of the power supply line.
- It is also important to earth other conductive parts around the charging station. The authorised electrician must measure the earth resistance to determine the quality of the earthing.
- The earth resistance must be lower than 10 ohms or less than 8% of the specified resistance.

5.3 Installing fuse protection for the charging station

Required elements for protecting the sonnenCharger in the electrical distribution board

The sonnenCharger must be connected via a cable with separate fuse protection (separate circuit).

- ***Overvoltage protection:*** This element protects against high electrical voltages. Take country-specific stipulations and the technical connection conditions of the local DNO into account. These may call for the installation of class II overvoltage protection. Contact your DNO if in doubt.
- ***Residual current device:*** A residual current device must be installed in accordance with the applicable regulations. This protective device is used to protect persons or prevent fires. A type B or alternatively type A EV residual current device with DC residual current detection must be installed. *Important note:* The residual current device must be tested at least once per year. This ensures correct operation, as a potential failure could be life-threatening.
- ***Miniature circuit breaker:*** This element protects the power supply cable and sonnenCharger from overload and short circuit. A miniature circuit breaker with tripping characteristic C must be installed.

Integration of the sonnenCharger in the sonnen measurement concept

The sonnenCharger is integrated in the sonnen measurement concept as a normal building consumer. ***Important note:*** Electricity measurement A2, which only exists in connection with the sonnenBatterie, must detect the total consumption (including sonnenCharger). If this does not happen, the sonnenBatterie cannot be controlled properly. The following figure shows how the sonnenCharger is integrated in an installation with the sonnenBatterie and sonnenFlat (if applicable).

Further information on the correct control of the sonnenBatterie and on the implementation of the sonnen measurement concept can be found in the installation instructions for the sonnenBatterie and for the sonnenFlat.

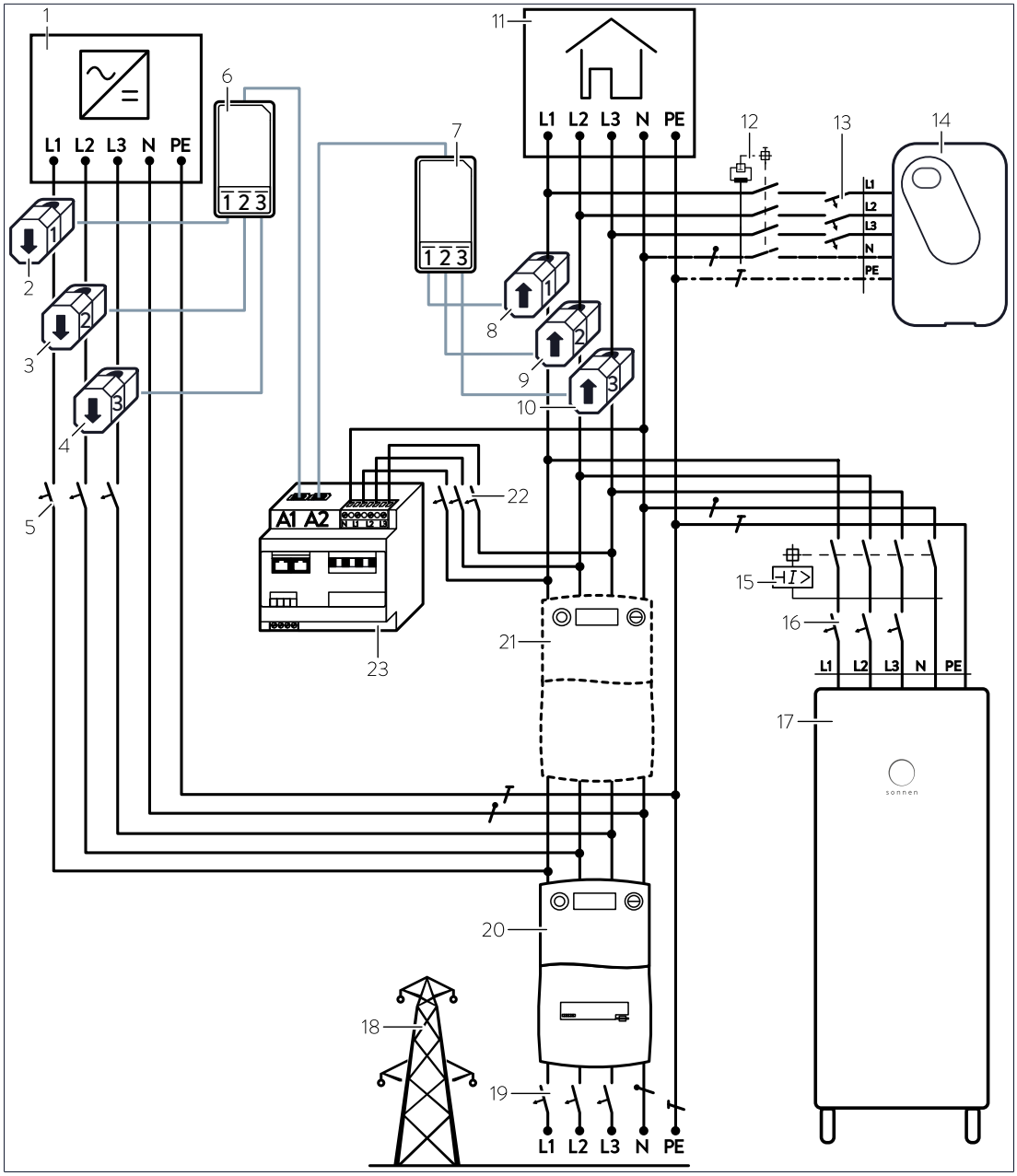


Illustration 3: Circuit diagram overview – electrical connection of the sonnenCharger

1	PV inverter	14	sonnenCharger
2	Clamp-on current transformer generation L1	15	Residual current device
3	Clamp-on current transformer generation L2	16	Miniature circuit breaker
4	Clamp-on current transformer generation L3	17	Storage system
5	PV inverter miniature circuit breaker	18	Public grid (electrical mains)
6	Transformer interface for generation (A1)	19	Selective miniature circuit breaker (SMCB)
7	Transformer interface for consumption (A2)		
8	Clamp-on current transformer consumption L1	20	Bidirectional meter (e.g. sonnenMeter GRID)
9	Clamp-on current transformer consumption L2		
10	Clamp-on current transformer consumption L3	21	sonnenMeter CONSUMPTION (if applicable)
11	Consumers in building		
12	Residual current device | type B or type A EV	22	Miniature circuit breaker
13	Miniature circuit breaker (characteristic C)	23	WM271 power meter

5.4 Mounting and electrically connecting the charging station

Before installation, check whether the maximum connected load of your home connection is high enough to supply all your existing consumers and the sonnenCharger.

The power supply line to the charging station must be dimensioned appropriately for the loads which occur, the required length and method of laying. Take country-specific stipulations into account during this process. The following figure can be used as a guide:

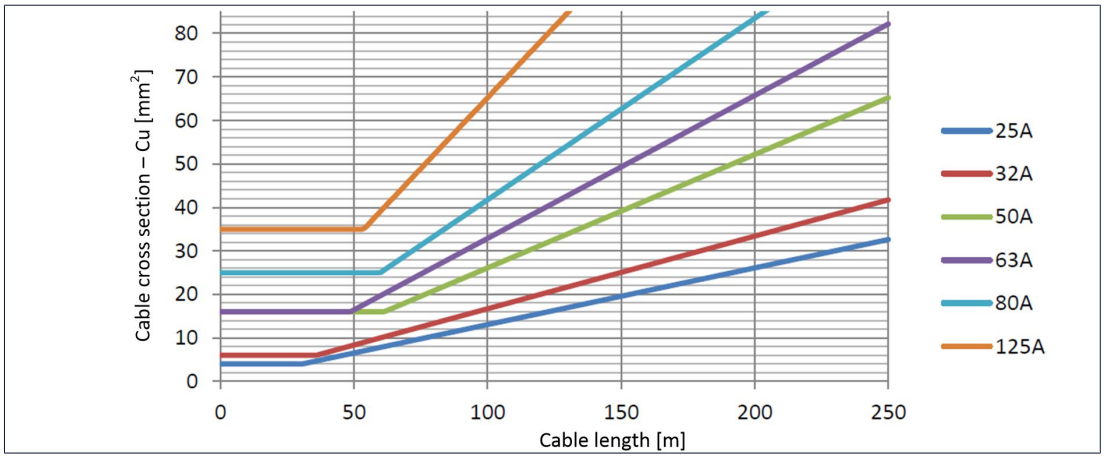


Illustration 4: Dependence between cable length and line cross-section

The following steps only need to be carried out if you are installing a **charging station with a stand**.

If the charging station is being fitted to a wall:

- ▶ continue with the steps in the section “Mounting on a wall”.

Installing with an underground anchoring structure

- Lay a suitable empty conduit for the electrical supply line and Ethernet connection.
- We recommend using a flexible cable for the electrical supply line.

- ▶ Dig a hole with the minimum basic dimensions of 42 x 50 cm and a depth of 60 cm.
- ▶ Feed the electrical supply line and the Ethernet cable through the opening in the anchoring frame (leaving around 2 m to spare).

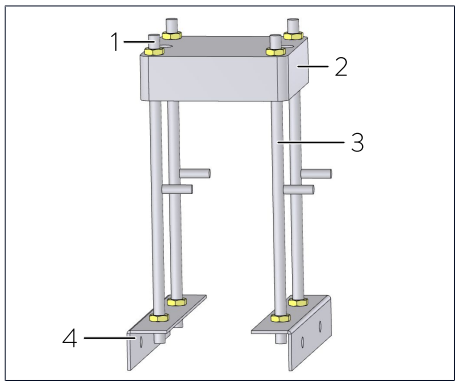


Illustration 5: Anchoring frame

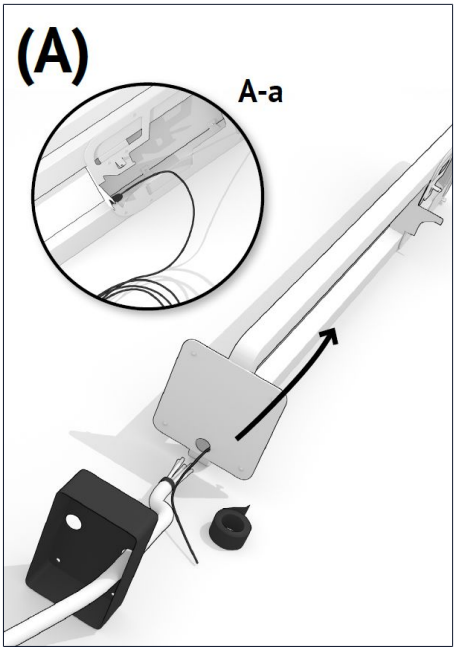
- ▶ Create an underground anchoring structure as shown in the adjacent illustration. The thread of the concrete anchors (**1**) should protrude approximately 3 cm from the anchoring frame (**2**). Connect two concrete anchors (**3**) at each end with an L-profile (**4**) so that the two anchors are in line. Repeat this procedure with the second L-profile.
- ▶ You can then begin with the concrete work.

Mounting on concrete floors (with floor plate)

To fit the unit on a concrete floor (or another floor type which you cannot dig), use the floor plate. Attach this to the floor using appropriate bolt anchors.

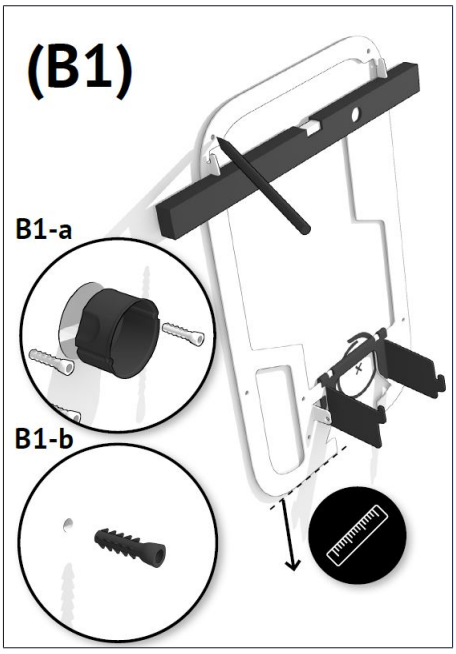
- ▶ Using the floor plate as a template (20 x 20 cm), drill four holes and fit the appropriate bolt anchors.

- Feed the electrical supply line and the Ethernet cable through the opening in the floor plate (leaving around 2 m to spare).
- Place the floor plate with its openings over the threads of the bolt anchors. Each thread should protrude around 3 cm above the floor plate.



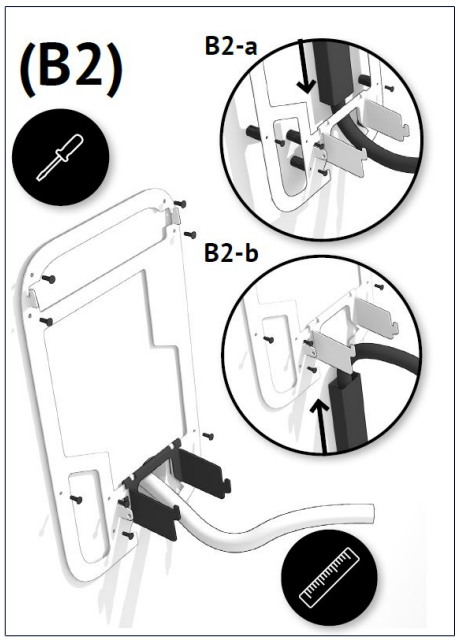
- Feed the electrical supply line and the Ethernet cable through the opening in the stand and lead it to the connection area.
- Attach the stand to the anchoring frame or floor plate. To do this, screw the nuts (M10) onto the protruding threads.

Mounting on a wall



- Mark out the intended holes. Use a spirit level if necessary.
- Drill the holes.
- Use a suitable mounting material.

The mounting panel has a pre-made entry point at the bottom end for the electrical supply line and Ethernet cable. The cables can be inserted from behind (**B2**), above (**B2-a**) or below (**B2-b**). The supply line must be laid in such a way that it can be inserted in the connection area. The additional cable length should be about 40 cm.

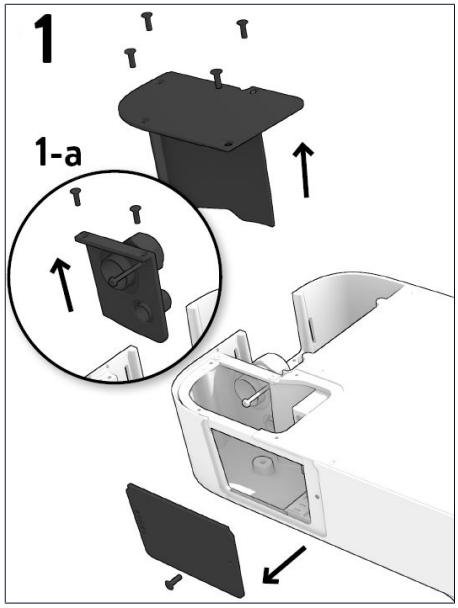


- Mount the mounting panel to the wall using the supplied screws.

Information on B2-a: If the cable is inserted into the back of the charging station from above, a cable duct must be installed as shown in the figure.

- Use the supplied wall spacer for this purpose.

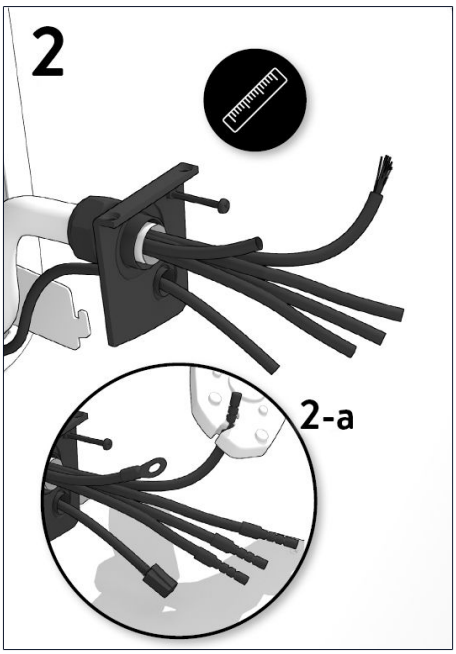
Electrical connection



- Remove the service covers on the side and back (**1**).
- Then remove the cable gland (**1-a**).

A rubber grommet is already attached at the cable gland. If you are using a cable with dimensions of up to 5 × 6 mm²:

- Replace the existing rubber grommet with a smaller one. To replace the rubber grommet, loosen the plastic nut of the screw connection.

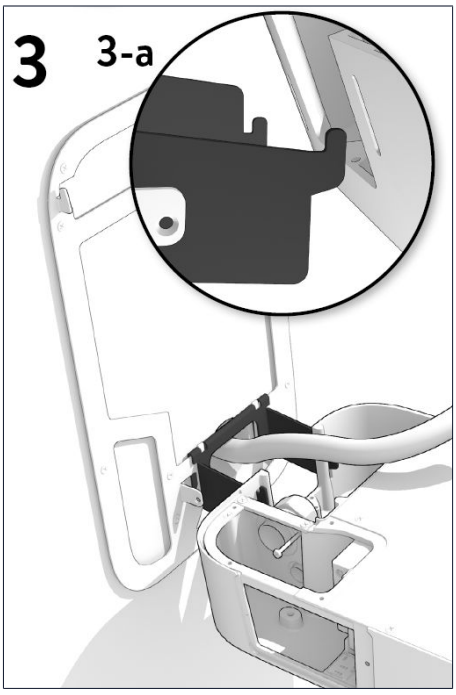


- Route the electrical supply line and the Ethernet cable (without RJ45 connector) through the cable gland (**2**).

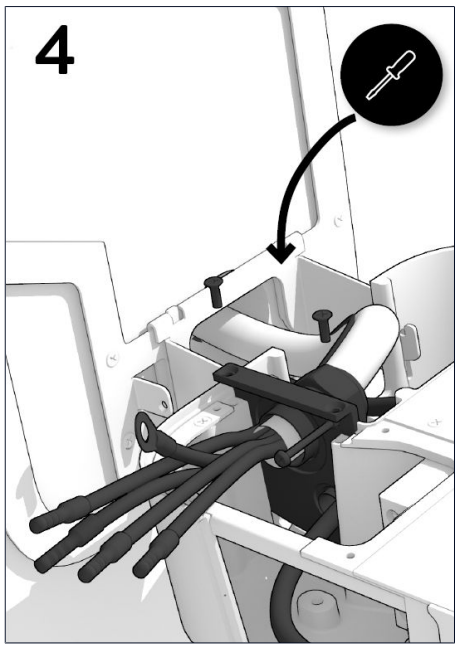
Approx. 15 cm of the power supply line and approx. 17 cm of the Ethernet cable must be routed through the cable gland.

- Ensure that the cables have strain relief provided by the screw connection. The screw connection can be tightened by twisting the plastic nut.
- Insulate the individual cables and attach the following connections (**2-a**):

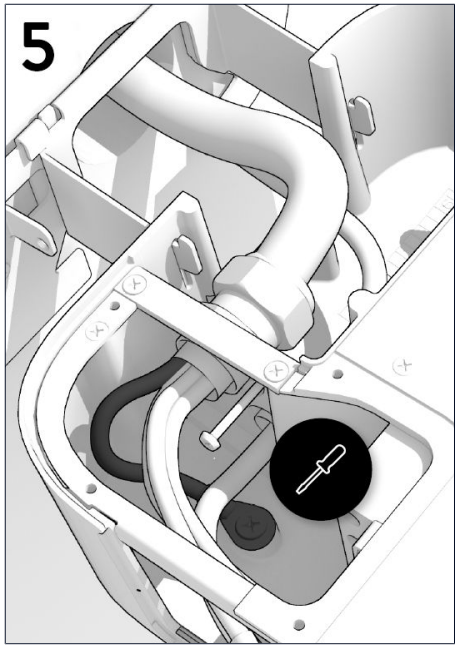
Designation	Colour	Type of necessary connection
Conductor phase 1 (L1)	Brown	Wire end ferrule
Conductor phase 2 (L2)	Black	Wire end ferrule
Conductor phase 3 (L3)	Grey	Wire end ferrule
Neutral conductor (N)	Blue	Wire end ferrule
Protective earth (PE)	Green-yellow	Ring cable lug (M6 screw)
Ethernet cable	-	RJ45 connector without plastic cover



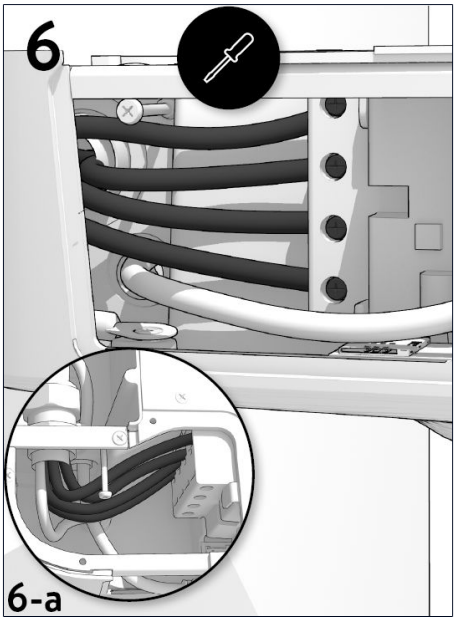
- Hang the charging station in the intended bracket on the mounting panel (**3, 3-a**). This bracket (**3-a**) is only needed during mounting.



- Secure the cable gland at the designated position (**4**).



- Connect the cable lug for the protective earth (PE = green-yellow) to the designated screw on the housing (**5**).



- Connect lines L1, L2, L3 and N to the designated terminals of the residual current device (**6**).

The connection assignment depends on the type of circuit breaker (MCB).

- Using the designation on the circuit breaker, select the correct type and connect the lines accordingly:

Type: ISKRA RI 64

(Installed in all sonnenChargers **from** serial number: **18240057**)

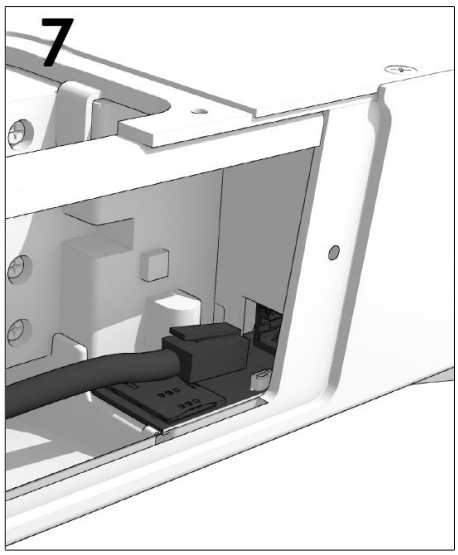
Cable	Colour	Designation at the MCB
Conductor phase 1 (L1)	Brown	7
Conductor phase 2 (L2)	Black	5
Conductor phase 3 (L3)	Grey	3
Neutral conductor (N)	Blue	1

Type: ISKRA RI 63N

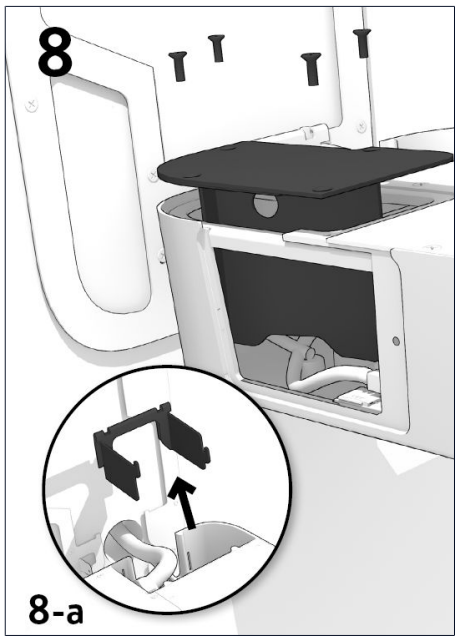
(Installed in all sonnenChargers up to serial number: **18240056**)

Cable	Colour	Designation at the MCB
Conductor phase 1 (L1)	Brown	2
Conductor phase 2 (L2)	Black	4
Conductor phase 3 (L3)	Grey	6
Neutral conductor (N)	Blue	N

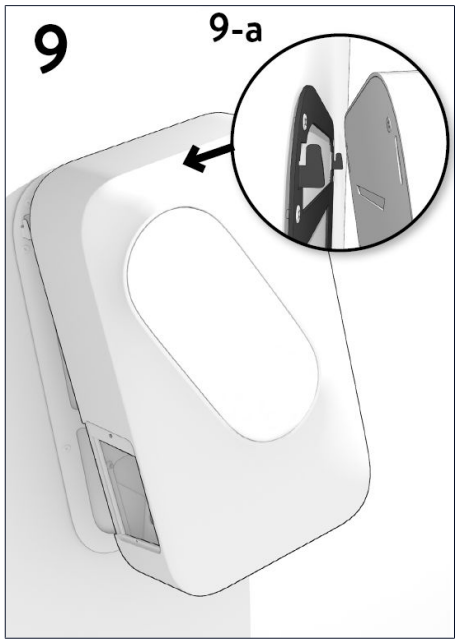
An electric vehicle with a single-phase on-board charger uses only phase 1 to charge. The phase assignment is especially important when using multiple sonnenCharger stations (see Unbalanced phase load when using multiple charging stations [P. 23]).



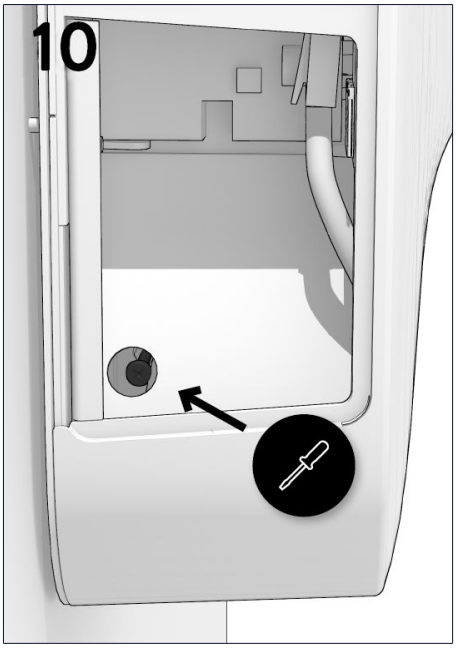
- Connect the RJ45 connector on the Ethernet cable to the Ethernet port (**7**).



- Attach the back service cover (**8**).
- Remove the bracket mounted on the mounting panel (from step 3, **8-a**).



- Hang the charging station on the mounting panel (**9-a**).
- Mount the magnetic holder in the next step. Use the two designated screw connections for this purpose, which are located on the bottom of the sonnenCharger (cable gland area).



▶ Screw in the displayed screw onto the holder (**10-a**).

▶ Attach the side service cover (**11**).

5.5 Installing multiple charging stations

- When connecting multiple charging stations it is important to ensure that each charging station is connected directly to the electrical distributor by a separate electrical supply line. This is the only way to ensure that the protective elements are selective.

Fuse protection for the installation of multiple charging stations can be implemented in different ways:

Option 1: separate residual current devices

With this option, each charging station is protected by a separate type B residual current device.

Option 2: one residual current device

One type B residual current device protects multiple charging stations. If this residual current device trips, all of the downstream sonnenCharger stations will be disconnected from the mains.

Please note:

- Country-specific stipulations must be observed.
- Charging stations for electric vehicles must be dimensioned with a demand factor of 1. The sum of the maximum charging currents for the individual charging stations must not exceed the maximum nominal current (I_n) of the residual current device.
- The maximum charging output of the charging stations can be adapted in the software by sonnen. To change the charging output please contact sonnen.

When installing multiple charging stations, please also observe the information provided in section Unbalanced phase load when using multiple charging stations [P. 23].

5.6 Unbalanced phase load when using multiple charging stations

Initial situation:

- Multiple three-phase charging stations are installed at the same mains connection. The mains connected load has been dimensioned appropriately. Electric vehicles with one-phase and three-phase on-board chargers are charged at the charging stations.

Problem:

- When an electric vehicle with one-phase on-board charger is charged at the charging station, only the first phase connected to the charging station is used. When multiple electric vehicles with one-phase on-board chargers are charged at the same time or when three-phase and on-phase electric vehicles are charged at the same time, unbalanced loads may occur between the individual phases.

Solution:

- The phase sequence when connecting multiple charging stations must vary. This approach avoids overloading the phases.
- The phases should be rotated during connection as shown in the following figure.

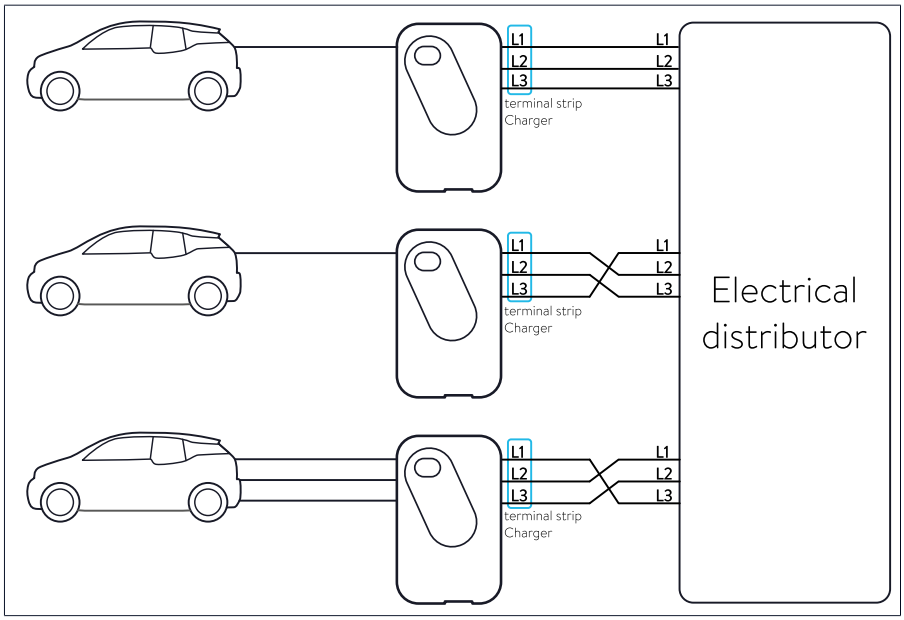


Illustration 6: Multiple three-phase connected charging stations are installed, to which multiple electric vehicles with one-phase or three-phase on-board chargers are connected

6 Commissioning

6.1 Electrical commissioning

Before commissioning:

- ▶ Check whether the protective element integrated in the charging station is set to 'ON'. This element is located under the side service cover.

Establish a connection to the electrical mains:

- ▶ Switch on the corresponding miniature circuit breaker in the electrical distribution board.
- ▶ Switch on the corresponding residual current device in the electrical distribution board.

The charging station may perform a firmware update during the initial start up. This can take up to 10 minutes, depending on the ethernet connection. **Important:** The power supply and ethernet connection must not be interrupted during the update!

- ▶ Check whether the status light above the touch display is green. This indicates that the charging station is ready for use.

6.2 Configuring the app

To make use of the full function of the sonnenCharger (especially the 'smart' charging mode), the sonnenCharger and app must be connected and the app must be configured successfully. Only then can the commissioning report, which is essential to meet the warranty conditions, be completed in full and submitted to sonnen.

Conditions:

- ✓ The Ethernet cable has been connected to the sonnenCharger and the home network router.
- ✓ The network supports DHCP.
- ✓ The sonnenCharger has a stable internet connection.
- ▶ Open the sonnenCharger app. If the app is not installed on your smartphone or tablet yet, you can download it free of charge from the Apple App Store or Google Play Store.
- ▶ Log in with your sonnenID (email address and password).

If you do not have a sonnenID:

- ▶ Register at my.sonnen.de or in the app to get a sonnenID.

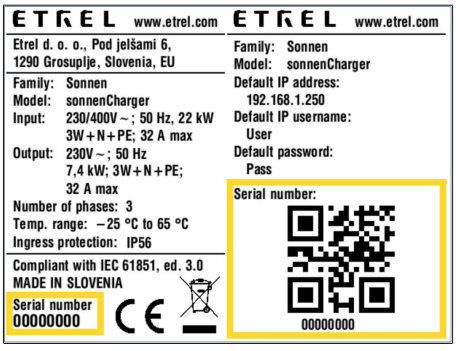


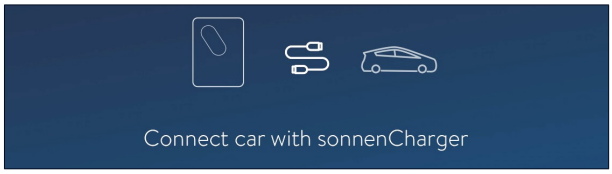
Illustration 7: sonnenCharger type plate

- A QR code must be scanned when the app is set up. This code is located at multiple points (e.g. on the packaging, type plate). As soon as the QR code has been scanned, the app and sonnenCharger begin communicating with each other.
- If scanning the QR code does not work, the serial number of the sonnenCharger can be entered in the app. This number can be found on the type plate of the sonnenCharger, among other places.

The sonnenCharger's type plate is affixed to the inside of the maintenance cover.

If configuring the sonnenCharger app does not work:

1. Check the internet connection of the sonnenCharger.
2. Contact the sonnen service team on the following telephone number: +49 8304 9999 037



If this display appears, a connection has been established between the app and the sonnenCharger.

- The charging cable can be connected to the electric vehicle to start the charging process.

6.3 Description of the LEDs

LED behaviour	Meaning
Green LED is flashing quickly.	The sonnenCharger is starting up.
Green LED is flashing slowly.	The sonnenCharger is ready for use.
Green LED is flashing quickly while the electric vehicle is connected and the sonnenCharger is ready for use.	The sonnenCharger is waiting for feedback from the electric vehicle in order to start the charging process.
Blue LED is flashing.	The electric vehicle is charging.
Red LED is on.	An error has occurred.

7 Troubleshooting

7.1 General

Fault	Possible cause(s)	Solution
The range shown on the electric vehicle does not match the sonnenCharger display or the app.	The actual range that the electric vehicle can cover in the current conditions (weather, temperature, etc.) is displayed on the vehicle. The sonnenCharger or app show the charged range based on standard data for the electric vehicle in question.	-
The QR code cannot be scanned.	-	▶ Enter the serial number of the sonnenCharger instead.
The app is reporting that the sonnenCharger is offline.	The internet connection to the sonnenCharger has been interrupted.	▶ Check the internet connection. ▶ Reset the router if necessary. ▶ Restart the sonnenCharger.
'Smart' charging mode has been selected on the sonnenCharger display but is not displayed in the app.	The internet connection to the sonnenCharger has been interrupted. If the sonnenCharger does not have a stable internet connection, it switched to 'power' charging mode in order to ensure that the electric vehicle is charged in any case.	▶ Check the internet connection. ▶ Reset the router if necessary.
A problem has occurred when logging in or registering in the sonnenCharger app.	-	▶ Contact customer support.

▶ If in doubt, contact your installer or customer support (sonnen service team: +49 8304 9999 037).

7.2 Charging the electric vehicle

Fault	Possible cause(s)	Solution
The charging cable cannot be disconnected from the electric vehicle.	The electric vehicle prevents the removal of the charging cable during the charging process.	▶ Unlock the electric vehicle to interrupt the charging process. The charging cable can then be disconnected from the vehicle.
The charging process does not start or was interrupted during charging (when not in 'smart' charging mode).	The residual current device or miniature circuit breaker has tripped.	▶ Check the circuit breakers and correct any errors that may have led to the devices tripping.

Fault	Possible cause(s)	Solution
The charging process does not start or was interrupted during charging (when not in 'smart' charging mode).	Timer-based charging was set on the electric vehicle.	▶ Disable timer-based charging on the electric vehicle.
	The electric vehicle is reporting an error.	▶ Check and resolve any error messages output by the electric vehicle.
The charging process does not start or was interrupted during charging (in 'smart' charging mode).	The 'smart' charging mode controls the charging process in an intelligent way. This means that the charging process may begin later or may be interrupted and then restarted as the situation demands.	-
	Timer-based charging was set on the electric vehicle.	▶ Disable timer-based charging on the electric vehicle.
	The residual current device or miniature circuit breaker has tripped.	▶ Check the circuit breakers and correct any errors that may have led to the devices tripping.
	The electric vehicle is reporting an error.	▶ Check and resolve any error messages output by the electric vehicle.
The electric vehicle has not been fully charged.	**'Power' charging mode:** The electric vehicle was disconnected from the sonnenCharger before the minimum time that the vehicle needed for the battery to be 100% charged was reached.	-
	'Smart' charging mode: The charging process was ended before the specified departure time.	-
	'Smart' charging mode: In expert mode the sonnenCharger has been set to only charge for a certain range.	-
	Timer-based charging was set on the electric vehicle.	▶ Disable timer-based charging on the electric vehicle.
The electric vehicle is not being charged at 11 kW or 22 kW.	The maximum charging output at which an electric vehicle can be charged is determined by the vehicle's own on-board charger. The sonnenCharger adapts itself to the electric vehicle.	▶ Check the maximum charging output of the electric vehicle's on-board charger. This output varies from vehicle to vehicle.

▶ If in doubt, contact your installer or customer support (sonnen service team: +49 8304 9999 037).

8 Uninstallation and disposal

⚠ DANGER **Improper uninstallation of the charging station**

Danger to life due to electrocution!

▶ The charging station must only be uninstalled by authorised electricians.

The charging station must not be disposed of as domestic waste!

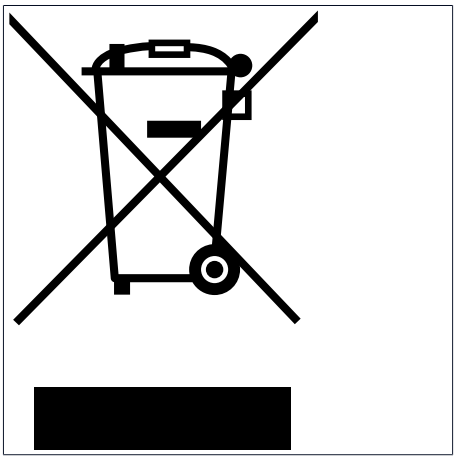


Illustration 8: WEEE symbol

▶ Dispose of the charging station in an environmentally friendly way through suitable collection systems.

sonnenCharger commissioning report (IBPC)

▶ The completed commissioning report must be sent to the following email address within five working days of successful commissioning: international-service@sonnen.de

▶ The email subject line must read 'IBPC' and include the customer number (e.g. '**IBPC_DE12345678**').

Commissioning details

Serial number of the sonnenCharger

Serial number of the sonnenBatterie (if any)

Date of commissioning

Operator details

Customer number (sonnenCommunity)

sonnenContract ID (sonnenFlat) (if any)

Surname, first name

Street

Post code, town

Telephone

Email address

Location of the sonnenCharger (if different from the above address)

Street

Post code, town

Specialist partner / SBC details

Company

Street

Telephone

Email address

Details on electrician carrying out the work

Name

Company

Certification number

Details on network topology

☐ TT | ☐ TN-S | ☐ TN-C-S

☐ TN-C (classic earthing)

sonnenCharger connection

☐ one-phase ☐ three-phase

The sonnenCharger was installed for the following charging output: □ 11 kW | □ 22 kW*

*For 22 kW the following document must additionally be submitted to sonnen: **'Declaration of activating the sonnenCharger for a charging output of 22 kW'**

Meter for transformer measurement

Does (transformer) measurement need to be semidirect? (tick appropriate box) □ No □ Yes

Special notes/points to be addressed:

Electrician's declaration

□ I confirm that my details are correct.

□ I have properly installed and commissioned the sonnenCharger. I followed the installation instructions in doing so.

□ The sonnenCharger has been registered with the responsible distribution network operator (DNO) as a wallbox.

□ I have informed the operator that due to high outputs, either immediate or as a result of extending the charging output, semidirect (transformer) measurement can be necessary.

□ The sonnenCharger and app have been successfully connected. The sonnenCharger has a permanent internet connection.

Place, date Signature of electrician

Operator's declaration

□ I confirm that my details are correct.

□ I confirm that the conditions of the warranty have been complied with.

Place, date Signature of operator

Declaration of activating the sonnenCharger for a charging output of 22 kW

Note: To activate the sonnenCharger for a maximum charging output of 22 kW, this document must be completed and sent to the following email address: international-service@sonnen.de

► The email subject line must read '22kW_Charger' and include the customer number (e.g. '**22kW_Charger_DE12345678**').

Upon receipt and review of the document, sonnen will activate the sonnenCharger software for a maximum charging output of 22 kW.

sonnenCharger data	Specialist partner / SBC details
Serial number of the sonnenCharger	Company
Serial number of the sonnenBatterie (if any)	Street
Date of commissioning	Telephone
Operator details	Email address
Customer number (sonnenCommunity)	**Details on electrician carrying out the work**
sonnenContract ID (sonnenFlat) (if any)	Name
Surname, first name	Company
Street	Certification number
Post code, town	**Location of the sonnenCharger** (if different from the above address)
Telephone	Street
Email address	Post code, town

Meter for transformer measurement		
Does (transformer) measurement need to be semidirect? (tick appropriate box)	□ No	□ Yes

Electrician's declaration

□ I confirm that my details are correct.

□ The responsible distribution network operator (DNO) has approved the request to use the sonnenCharger at a max. charging output of 22 kW.

□ I confirm that all necessary measures and requirements stipulated by the aforementioned operator in order to run the sonnenCharger at a maximum charging output of 22 kW have been implemented.

The following list is only intended for authorised electricians who based on their specialist training and knowledge of applicable standards are able to evaluate the described information, identify any hazards and take the necessary steps to avoid them. This list is only intended as a guide and does not represent the complete instructions for the mechanical or electrical installation of the sonnenCharger. The final inspection of the measures to be carried out must be conducted by the electrician performing the installation.

The following standards and requirements, among others, must be observed for a charging output of 22 kW:

- The technical connection conditions of the local distribution network operator (DNO) as applicable at the time.
- The installation instructions have been observed.
- Registration of the sonnenCharger as a wallbox with the responsible DNO.
- The requirements for 'low-voltage electrical installations' as per DIN VDE 0100-722 VDE 0100-722:2016-10 (IEC 60364-7-722:2015).

  ...which among other things prescribe the following:

  - A suitable circuit must be provided for connecting the sonnenCharger.

- Safety precautions must be taken to protect against DC residual currents.

- The meter panels must meet the requirements set out in VDE-AR-N 4101 ‘Technical requirements for meter panels in low-voltage electrical systems’.

The following preconditions must be met for an installed ampacity of 44 A:

- Registration of a mains connected load of 44 A with the responsible DNO.
- The meter panel wiring has a cross-section of 16 mm^2.
- The overvoltage protection, residual current device and miniature circuit breaker are dimensioned appropriately for the loads which occur.
- The upstream fuse for the meters is dimensioned appropriately for the loads which occur.
- Single assignment of the corresponding meter panel has been implemented.
- The supply line to the sonnenCharger is dimensioned appropriately for the charging output (five-wire cable).

Place, date Signature of electrician

Operator’s declaration

□ I confirm that my details are correct and that I have read and understood this document.

Place, date Signature of operator

sonnen

energy is yours

sonnen GmbH
Am Riedbach 1
D-87499 Wildpoldsried