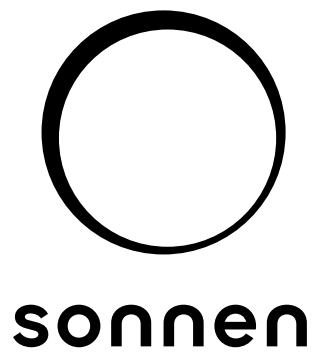




Installation instructions for Electricians

sonnenHome Charger 2



EN

IMPORTANT

- This entire document must be read carefully.
- This document must be kept for reference purposes.

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1 Information about this document

This document describes the installation of the sonnenHome Charger 2 charging station.

Further information on operation can be found in the operating instructions.

INFO

People with colour blindness require support in assigning all error displays.

→ Make sure you read this entire document carefully.

→ Keep this document for reference purposes.

1.1 Designations in this document

The following designations are used in this document:

Complete designation	Designation in this document
sonnenHome Charger 2	Charging station

1.2 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.

INFO

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

1.3 Change history

Version / Date	Changes compared to the previous version
01 / 05-09-2025	Proper use [P. 6] updated. Firmware update during new installation [P. 30] added.
00 / 02-04-2025	Initial creation.

2 Safety

2.1 Proper use

The charging station is suitable for charging electric and hybrid vehicles in accordance with IEC 61851-1, charging mode 3.

In this charging mode, the charging station ensures the following:

- The current is only activated when the vehicle is connected correctly.
- The maximum amperage has been balanced.

The charging station has a display that lets you follow the measurement process during the charging operation.

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 be observed at all times in order to ensure **proper use**:

- The charging station must be fully installed in accordance with the installation instructions.
- The installation, electrical connection and commissioning of the charging station must be carried out by an authorised and qualified electrician.
- The charging station must only be used in a technically proper condition.
- The charging station must never be commissioned if the connection cable or plug is visibly damaged.
- The charging station must be connected to a sonnenBatterie storage system. It cannot be operated without a storage system, as it is controlled by it.
- The charging station is compatible with sonnenBatterie storage systems from the eighth generation onwards. Older storage systems cannot be combined with the charging station.
- One charging station can be operated per storage system. It is not permitted to combine multiple charging stations (sonnenHome Charger 2 or sonnenCharger) with one storage system. A storage system cascade can also only be combined with one charging station.
- The charging station must only be used at a suitable installation location.
- The charging station must only be used with a stable internet connection.
- The transport and storage conditions must be observed.

Especially the following uses are not permissible:

- Improper use.
- Installation, commissioning and repairs by unqualified personnel (not a qualified electrician).
- Unauthorised conversion of the device without the approval of the manufacturer.
- Charging cable extended with an extension cable or adapter.
- Other devices connected to the charging station.
- Use of non-original spare parts.
- Improper disposal after decommissioning.
- Operation in flammable environments or areas at risk of explosion.
- Operation in locations at risk of flooding.
- Bypassing, blocking or tampering with protective devices.



Danger due to electrical voltage

- Dangerously high voltage inside the charging station which poses a risk of electrical shock.
- The charging station does not have its own power switch. The protective devices installed on the mains side are used for mains disconnection, too.

Installing the charging station

- The local legal requirements for electrical installations, fire protection, safety regulations and escape routes at the planned installation site must be observed.
- Qualified electricians must be properly grounded during the installation of the charging station.
- When the charging station is opened, professional precautions must be taken to prevent and protect against electrostatic discharge (ESD).
- Grounded anti-static wristbands must be worn when handling boards that are electrostatic hazards. The professional ESD protective precautions must be observed. Wristbands must only be worn when mounting and connecting the charging unit. Wristbands must never be worn at a live charging station.
- The charging station must not be installed in potentially explosive atmospheres (Ex zones).
- The charging station must not be installed in environments with ammonia or air containing ammonia.
- The charging station must not be installed outdoors during rainy weather.
- The charging station should be protected from damage caused by frost, hail and the like.

Connecting the charging station to electricity

- All three phases must be electrically connected. The phase change occurs automatically.
- Each charging station must be protected by its own residual current circuit breaker and circuit breaker in the connection installation (see Requirements for the electrical connection [P. 16]).
- Before connecting the charging station to electricity, make sure that the electrical connections are de-energised.
- Ensure that the correct connection cable is used for the electrical mains connection.
- Do not leave the charging station unattended with the installation cover open.
- Change the setting of the DIP switches only when the device is switched off.
- Take note of any registrations required with the power grid operator.

Commissioning the charging station

- The charging station must only be commissioned by an authorised and qualified electrician.
- The correct connection of the charging station must be checked by a qualified electrician before commissioning.
- Do not connect a vehicle when the charging station is being used for the first time.
- Before commissioning, check the charging station for visual damage. The commissioning of a damaged charging station or charging station with a damaged charging cable/connector is not permitted.

Operating the charging station

- The charging station may only be operated as described in the product documentation.
- Visually inspect the charging station for damage before use. If damaged, do not use the charging station.

- Ensure that the charging cable and connector are protected against being driven on, trapped or subjected to other mechanical hazards.
- Protect the charging cable and connector from contact with external heat sources, water, dirt and chemicals.
- Take the charging station out of operation if the charging station, cable, connector or socket are damaged.
- The cover of the installation area must not be removed during operation.
- Do not remove markings, warning symbols or the type plate from the charging station.
- Only pull out the charging cable holding the charging connector.
- Do not expose the charging cable to any tensile load.
- The charging cable must be hung in the cable holder provided when not in use. The charging connector must be locked into place in the holder. The charging cable is wrapped around the cable holder loosely in a way that does not touch the ground.

i INFO

Failure to comply with the warranty conditions and the information specified in the installation and operating instructions will invalidate all warranty and guarantee claims.

2.2 Qualified electricians

Installation and commissioning must be performed by authorised electricians only. Installation by unqualified and/or unauthorised persons may cause injury and/or component damage.

People who meet the following requirements are generally considered authorised electricians:

- 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 electrician has successfully completed the sonnen certification training and participated in the product-specific trainings.

2.3 Symbols on the outside of the charging station

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

3 Product description

3.1 Model overview



Permanently attached charging cable (type 2)
with charging connector holder

Cable length: 7.5 m

Meter: compliant with calibration legislation

Max. charging output: 11 kW with 3-phase
connection

3.2 System components

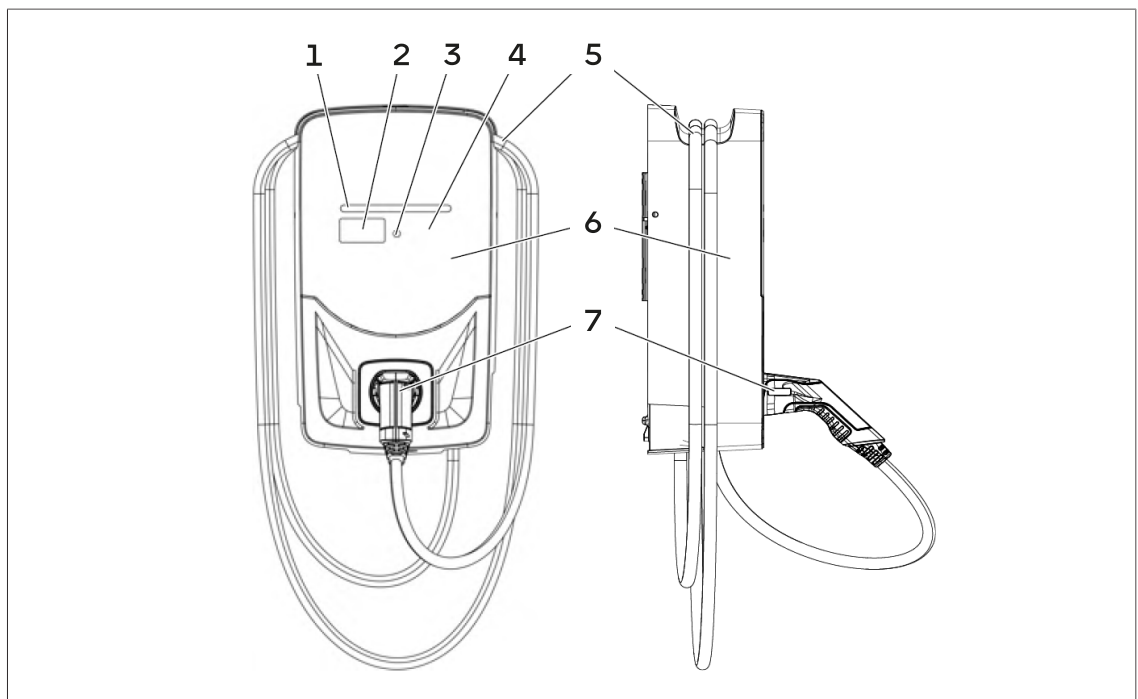


Illustration 1: sonnenHome Charger 2

- 1 LED indicator
- 2 Display (calibration legislation/MID)
- 3 Ambient light/brightness sensor
- 4 RFID reader
- 5 Charging cable holder
- 6 Design cover
- 7 Charging connector holder

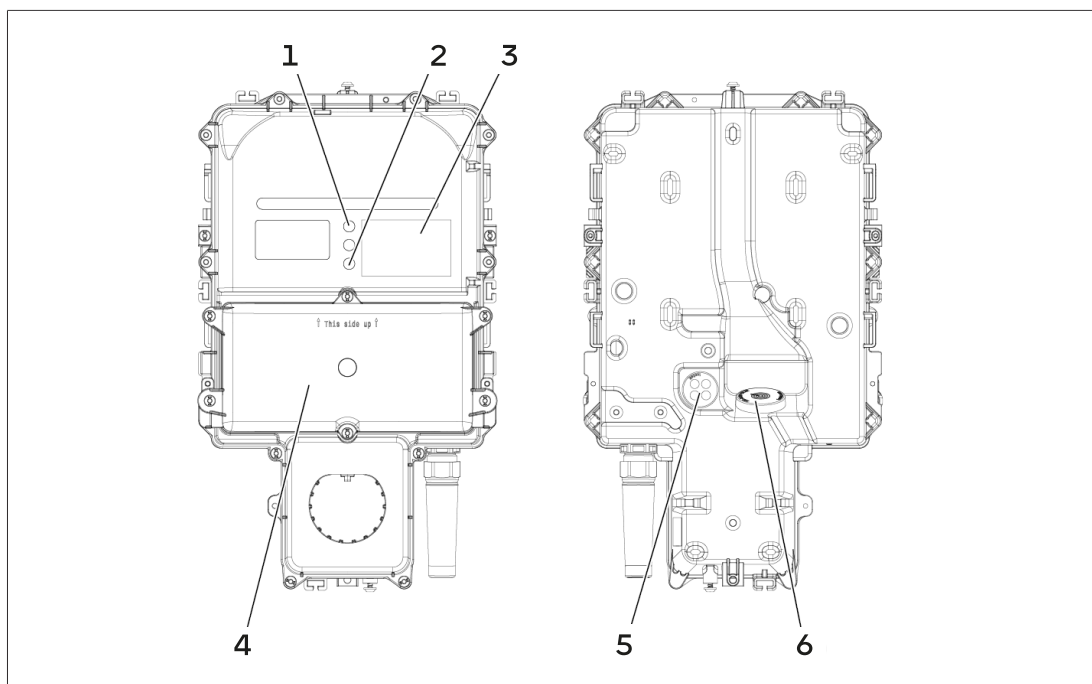


Illustration 2: Overview of basic housing without Design cover

- 1 MID - visual test output
- 2 Calibration legislation - visual test output
- 3 Type plate
- 4 Installation cover
- 5 Signal line cable entry
- 6 Mains connection cable entry

3.3 Type plate

The type plate is shown below. This type plate contains information about the charging station in general and in relation to the Measuring Instruments Directive (MID).

The bottom-right area of the type plate is a free field reserved for the calibration mark.

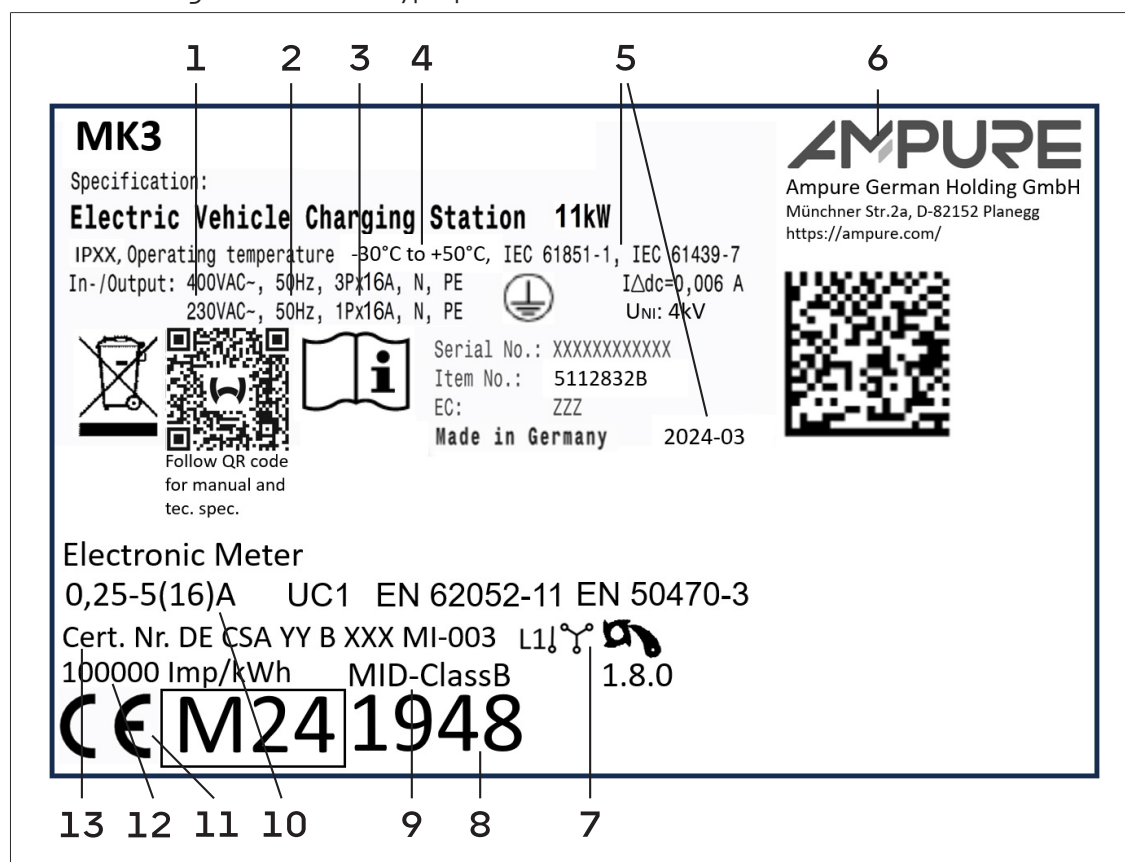


Illustration 3: Example of a charging station type plate

Item MID-relevant information

- | Item | MID-relevant information |
|------|---|
| 1 | Reference voltage |
| 2 | Reference frequency |
| 3 | The number of phases and the number of conductors for which the meter is suitable |
| 4 | Operating temperature range |
| 5 | Serial number and year of manufacture |
| 6 | Manufacturer's name |
| 7 | Number of phases, number of conductors and non-return device |
| 8 | Metrology labelling |
| 9 | Meter accuracy class |
| 10 | I min. I ref. and I max. |
| 11 | Conformity marking |
| 12 | Meter constant |
| 13 | Number of the EU type examination certificate issued by the European Union |

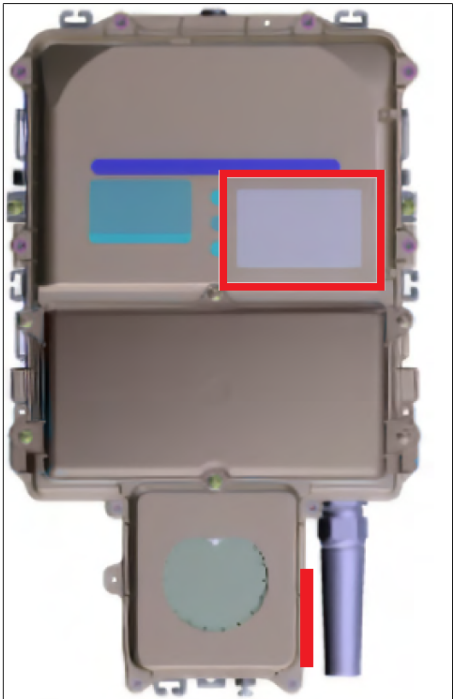


Illustration 4: Position of the type plate

The charging station described in this document is the **sonnenHome Charger 2**. The exact device description corresponding to the material number, which consists of a seven-digit number and a letter, is specified on the type plate.

Information compliant with calibration legislation

A second type plate is located at the bottom right of the charging station. This type plate concerns calibration legislation and is described in the supplementary calibration legislation document¹.

3.4 Scope of delivery

Designation	Quantity
sonnenHome Charger 2	1
Design cover	1
Wall mounting bracket	1
Drilling template	1
Quick Start Guide ('Important information on the operating and installation instructions')	1
RFID card	2
Assembly material for wall mounting:	
- Wall anchors, 8x50 mm (Fischer UX R 8)	5
- Screws, 6x70, T25 (wall anchor)	5
- Screws, M4x14 8.8, T20 (charging station to wall mounting bracket)	2
Electrical installation:	
- Cable grommet (signal lines)	1
- Cable ties (signal lines)	1
- Cable grommet, incl. nut (mains connection top/rear)	1
- Cable feed-through, incl. nut (mains connection at bottom)	1
Installation cover:	
- Screws, M4x14, T20	6
Design cover:	
- Screws, M4x10 SL	2
- Cover caps (top)	1
- 'sonnen Contact' sticker	1
Optional: installation kit for country-specific purposes	(1)

¹ <https://help.ampure.com/en/eu/ampure-boost-supporting-documents>

i INFO

The Fischer universal plug UX R 8 supplied is a plastic plug made from high-quality nylon. The universal plug expands in solid building materials and knots in hollow and panel building materials for maximum hold.

3.5 Required tools

Designation	Quantity
Slotted screwdriver, 0.5 x 3.5 mm	1
Slotted screwdriver, 1.0 x 6 mm	1
Torx screwdriver, TX20	1
Torx screwdriver, TX25	1
Torque wrench, TX20/25 2-6 Nm	1
Torque wrench, SW29 4-5 Nm	1
Combination pliers	1
Mallet	1
Tape measure	1
Spirit level	1
Stripping tool	1
Round file	1
Drill with drill bit, 8 mm (wall)/32 mm (plastic, optional)	1
Installation measuring device	1
EV simulator with rotating field display or electric vehicle to test functionality	1

3.6 Additional parts required**Cables**

- Mains cable, recommended for standard installation: 6 mm², see Requirements for the electrical connection [P. 16].
- Network cable
- Earthing cable for stand (optional)

Fuses, circuit breakers

- RCD circuit breaker, see Requirements for the electrical connection [P. 16].
- LS switch, see Requirements for the electrical connection [P. 16].

4 Storage and transport

4.1 Storage

→ Ensure that the required ambient conditions (see technical data [P. 41]) are maintained during storage.

4.2 Transport

Suitable packaging must be selected for transportation that at least corresponds to the properties of the original packaging.

→ Ensure that the required ambient conditions (see Technical data [P. 41]) are maintained during transportation.

5 Requirements for installation area/location

The following points must be taken into account when selecting the installation location for the charging station:

- When installing, the bottom edge of the mounting template included in the delivery should be at least 0.9 m away from the ground.
- If two charging stations are installed, the distance between them must be at least 0.7 m.
- The mounting surface must be solid and stable.
- The mounting surface must be completely flat (max. 1 mm difference between the individual mounting points).
- The mounting surface must not contain any highly flammable substances.
- Observe local building and fire safety regulations.
- The infrastructure's possible electrical connections must be taken into account.
- Select an installation location where vehicles cannot start inadvertently. If this cannot be ruled out, protective measures must be taken.
- Select an installation location where the charging cable does not block or obstruct passage and cannot be driven on.
- Walkways and escape routes must not be obstructed.
- Select an installation location away from direct sunlight.
- Select an installation location where the charging station cannot be damaged by falling objects.
- Select an installation location where the usual parking position of the vehicle is easily accessible, taking into account the vehicle's charging plug position.
- The installation location must not be near water-spraying systems (e.g. car washes).

6 Requirements for the electrical connection

NOTICE

Charging stations compliant with calibration legislation

The charging station, which is compliant with calibration legislation, comes with four seals that must not be removed or damaged. The charging station will not operate in accordance with calibration legislation if seals are missing or damaged.

→ Check that the seals on the charging station are complete and undamaged.

i INFO

The charging station is certified in accordance with Module B and Module D as compliant with calibration law according to MessEV and MessEG. The product is launched on the market in compliance with calibration law. After the calibration period of 8 years has expired, the charging station must be recalibrated if this is relevant for billing purposes. Please contact your local calibration office for this. The year of initial calibration can be found on the type plate.

i INFO

The safety concept of the charging station is based on the presence of earthing, which must be ensured by a qualified electrician during installation.

i INFO

In addition to the product documentation, local regulations relating to operation, installation and the environment must also be observed and complied with.

Electrical connection criteria

Before starting the connection work, the prerequisites for installing the charging station must be checked by a qualified electrician.

The maximum charging current is indicated on the type plate of the charging station. With DIP switches, the maximum charging current can be adjusted to the value of the circuit breaker in the installation (see DIP switch setting [P. 24]). The DIP switches for setting the maximum current per phase must be set at the maximum value of the circuit breaker in the installation.

In addition, software can be used to limit the maximum charging current during commissioning with the sonnen Partner App.

i INFO

The current values of the selected protective devices must never exceed the current value specified on the type plate of the charging station.

Depending on the country, the regulations of the authorities and grid operators must be observed, e.g. registering the charging station as a controllable grid connection in conjunction with the storage system with the responsible distribution network operator (DNO).

i INFO

Observe local connection regulations, e.g. local specifications may limit single-phase charging to a specific current.

The protective devices specified below must be designed in such a way that the charging station is disconnected from the mains in the event of a fault. When selecting protective devices, the national installation regulations and standards must be applied.

Dimensioning of the residual-current circuit breaker

Generally, the national installation regulations apply. Unless they specify otherwise, each charging station must be protected with a suitable residual-current device (RCD type A) with a tripping threshold of ≤ 30 mA.

Dimensioning of the miniature circuit breaker

The miniature circuit breaker (MCB) must comply with EN 60898. The energy let through (I^2t) must not exceed 80,000 A²s.

Alternatively, a residual-current circuit breaker with overcurrent protection (RCBO) according to EN 61009-1 may also be used. The aforementioned parameters also apply to this combination device.

Mains disconnecter

The charging station does not have its own power switch. The protective devices installed on the mains side are used for mains disconnection, too.

Cross-sectional dimensioning of the mains cable

A qualified electrician is to determine the cable cross section (see Technical data [P. 41]).

The cross section of the mains cable depends on:

- The maximum power availability of the building connection.
- The cable length.
- The continuous power to be transmitted.

Depending on the cable and the type of installation, the recommended minimum cross section for a standard installation is:

- 6 mm² (for 16 A)

7 Assembly and installation

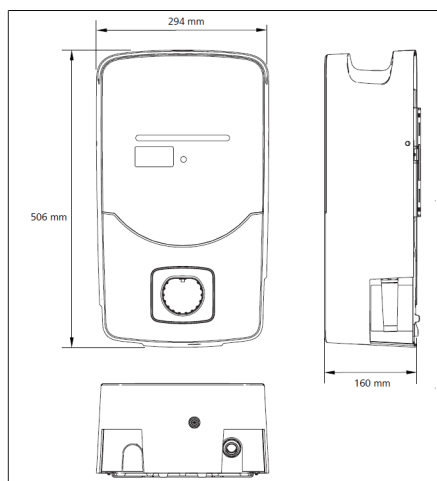
⚠ DANGER

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 authorized electricians are permitted to carry out electrical work.

7.1 Wall mounting

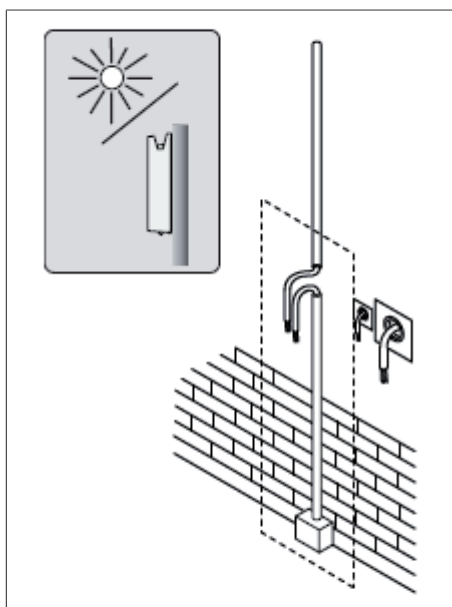


The supplied mounting material is intended for installing the charging station on brickwork or a concrete wall.

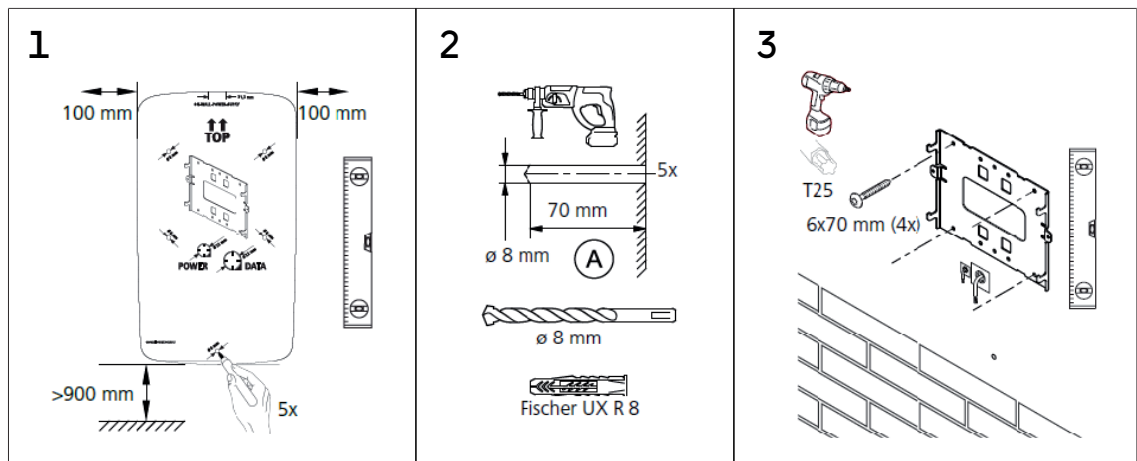
i INFO

The tools shown are not included in the scope of delivery of the charging station.

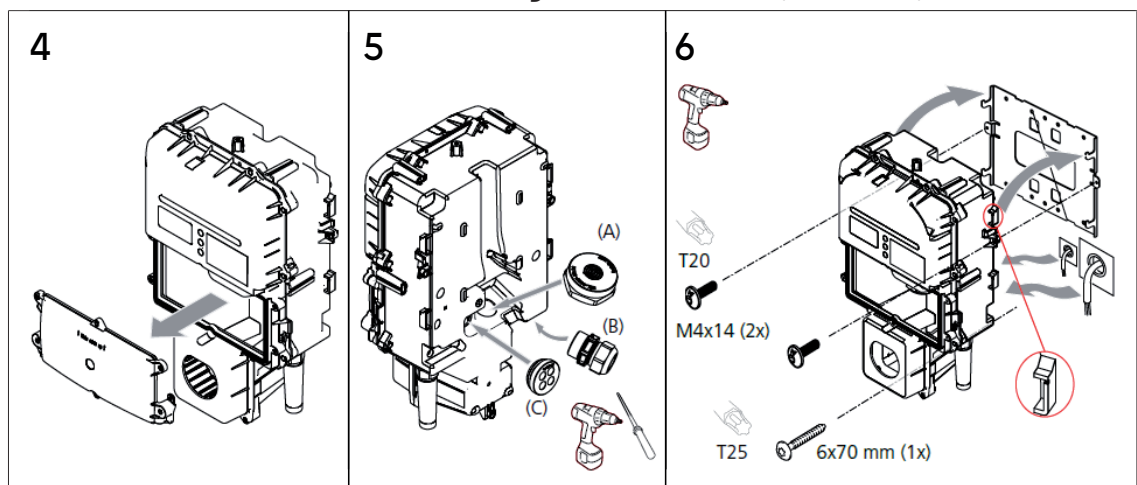
- Unpack the charging station.
- Prepare the tools and other materials.



- Check the installation location (see Requirements for installation area/location [P. 15]).
- Has the home installation been prepared?
- Determine the mounting position at the installation site.



- Pay attention to the distances from other objects (1).
- The recommended minimum distance from the bottom edge of the charging station to the ground is 900 mm.
- The lowest point of the vehicle charging plug should be at a height of 0.5 m to 1.5 m above the ground when stored in the charging plug holder.
- Mark the five positions of the drill holes at the installation site using the drilling template (1).
- Drill the 5 drill holes with Ø 8 mm at the marked positions and then insert the wall anchors (2).
- Position and screw in the wall mounting bracket (4 screws, 6x70 mm, T25) (3).



- Make the installation area accessible by removing the installation cover (4).
- Prepare the charging station for the cabling. The charging station is designed to connect to various cabling methods (see Installation [P. 20]) (5).

Mains connection from top/rear

- Prepare the cable grommet and attach it to the housing with the nut (A).

Alternatively: mains connection from below

- Drill and deburr a Ø 32 mm hole in the plastic housing (drill markings). **NOTICE! Maximum drill bit length: 65 mm.**
- Mount the cable feed-through, incl. nut, on the housing (B).
- Mount the cable feed-through, keeping it closed with the nut on the rear side (A), and use it to seal the rear opening in compliance with ingress protection (IP) standards.

Network cable

- Prepare the supplied cable grommet and press it into the housing (C). Place cable ties in the installation area.

INFO

The cable grommet is used for IP-compliant, tight sealing of the charging station.

- Feed the mains cable and network cable through the respective cable grommet/feed-through provided for this purpose into the charging station (5).
- Hang the charging station on the already-assembled wall mounting bracket and fasten in place with the two supplied screws (M4x14, T20) and a torque of 2 Nm (6).
- Screw the charging station (bottom) into the 5th wall anchor with additional screw (6x70 mm, T25) (6).

7.2 Mounting on stand

The mounting material for a standing installation is included in the delivery of the stand.

- Unpack the charging station.
- Prepare the tools and other materials.
- Check the installation location (see Requirements for installation area/location [P. 15]).
- Has the home installation been prepared?
- Determine the position of the stand at the installation location.
- Pay attention to the distances from other objects.
- **Mount and install the stand according to the instructions included with the stand. When laying cables, pay attention to the different methods for laying the cables (see Installation [P. 20]).**

7.3 Installation**7.3.1 Electrical mains connection****⚠ DANGER****Electrical work on the charging station**

Danger to life due to electrocution!

- Switch off the charging station to electrically isolate it.
- Disconnect the relevant electrical circuits.
- Secure against anyone switching on the device again.
- Check that the device is disconnected from the power supply.
- Only authorized electricians are permitted to carry out electrical work.

The sockets designated IN L3, IN L2, IN L1, IN N and IN PE are used for the charging station's electrical supply. Please note the labelling below the connections for this. The rotating field must be correctly connected accordingly.

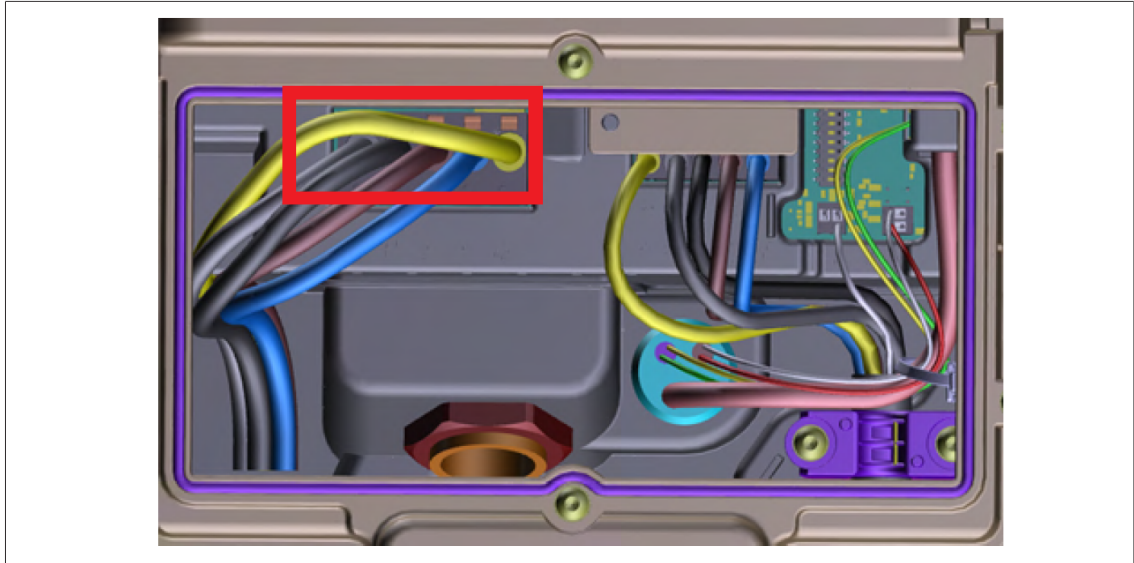


Illustration 5: Mains connection area

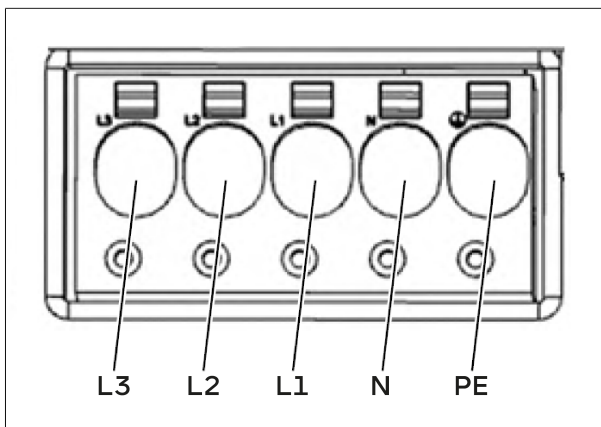


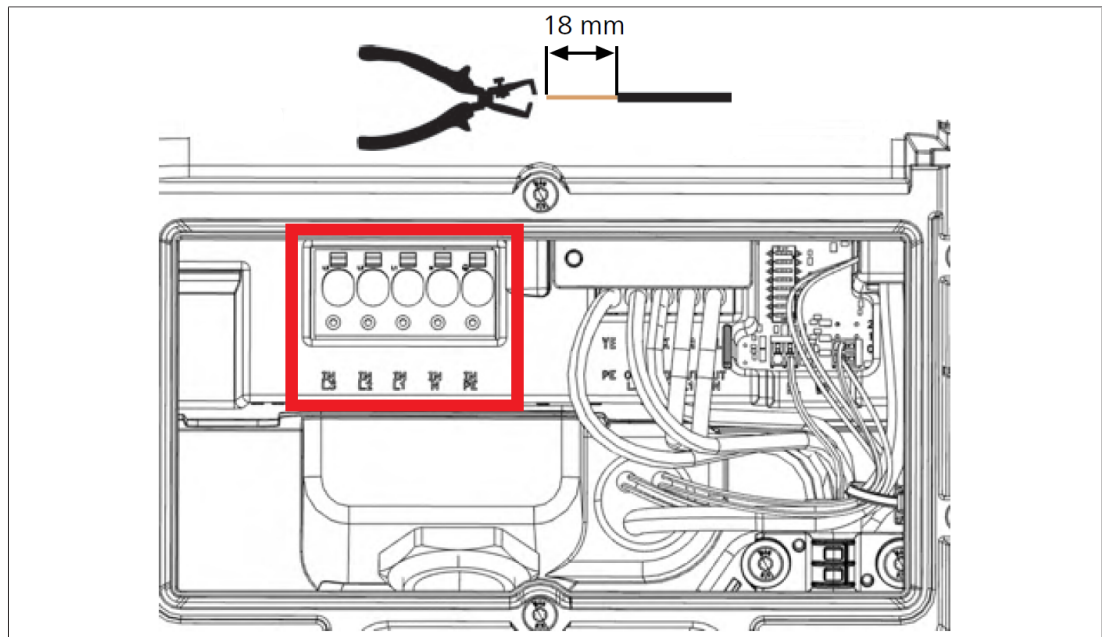
Illustration 6: Mains input connection block



Illustration 7: Mains connection cable feed-through, top (l.), rear (m.), bottom (r.)

- Ensure that the mains cable is de-energised.
- Ensure that measures have been taken to prevent the device from being switched back on.
- Check and meet all the requirements for the connection that are specified in these instructions.
- Remove the sheathing of the mains cable

- When using a rigid mains cable, bend the individual cables in compliance with the minimum bending radii in such a way that they can be connected to the terminals without a large mechanical load.



- Using the slotted screwdriver (3.5 mm), connect the individual cable ends to the left-hand terminal block labelled 'IN' as specified. **NOTICE!** When connecting, pay attention to the correct connection sequence of a clockwise rotating field.

WARNING

Observe the correct sequence when connecting

The protective earth (PE) conductor must be connected first and must not be removed until the device's power supply is completely insulated.

- Carefully press the slotted screwdriver into the upper opening of the spring release of the terminal block provided for this purpose and open the terminal spring.
- Insert the individual cables into the provided connection opening on the terminal block provided (lower opening).
- Then, pull out the screwdriver and, with a tug, make sure that the individual cables are correctly and completely clamped and that no open spots of copper are visible.
- Repeat the steps for the remaining cables.
- Remove any foreign matter such as insulation residue from the connection area.
- Check again that all lines are sitting securely in the corresponding clamps.

INFO

Make sure that all possible cable glands are present and sealed. Ensure that there are no air gaps between the housing and the cable entry grommet. Improper installation of the cable gland will invalidate the warranty.

- For a **mains connection from below**, tighten the clamping nut with a torque of 4.5 Nm.

7.3.2 Network cable (LAN cable)

i INFO

A permanent internet connection is part of the warranty conditions and a prerequisite for the full functionality of the charging station.

→ Please inform the operators that the internet connection must not be permanently interrupted

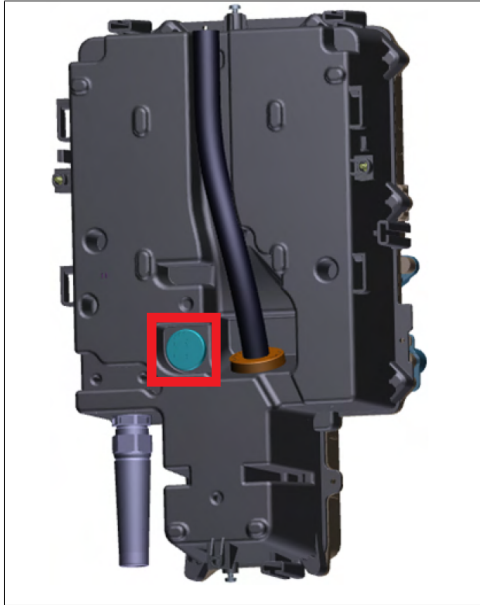


Illustration 8: Network cable (LAN cable) feed-through

The LAN cable must be routed through the charging station opening provided for signal lines (see illustration) to connect it to the LAN socket.

When the installation area is opened, the data interfaces are located at the top right of the connection area.

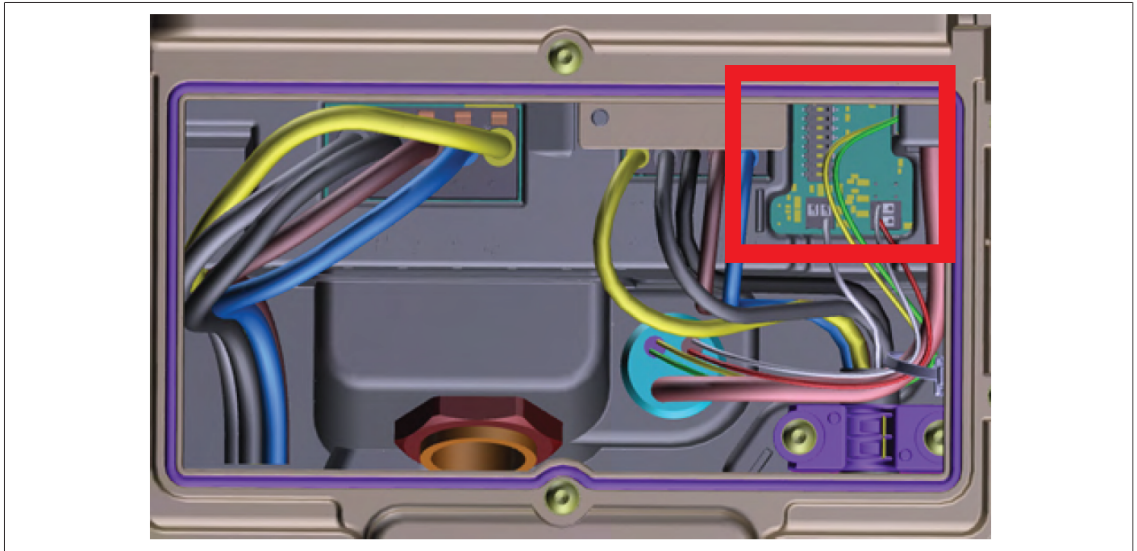


Illustration 9: LAN cable connection area (RJ45)

Network cable (RJ45 LAN cable)

- The charging station must be connected to the network infrastructure at the installation location (see Network cable (LAN cable) [P. 23]) so that it can connect to the storage system in the same network.
- A direct connection to the same network device (e.g. switch, router) is recommended.

- A DHCP server (typically provided by a router) is mandatory for commissioning. The charging station and storage system can then be set to a fixed IP range during set-up.
- The charging station then establishes the connection to the storage system, which must be connected for the charging station to function.
- A CAT7 network cable is recommended; CAT5e is also sufficient.
- The LAN cable must be routed through the charging station opening provided for signal lines in order to connect it to the LAN socket.

7.3.3 DIP switch setting

DANGER

Electrical work on the charging station

Danger to life due to electrocution!

- Switch off the charging station to electrically isolate it.
- Disconnect the relevant electrical circuits.
- Secure against anyone switching on the device again.
- Check that the device is disconnected from the power supply.
- Only authorized electricians are permitted to carry out electrical work.

NOTICE

DIP switch maximum

The DIP switches must be adapted to the upstream installation by a qualified electrician before commissioning. Generally, DIP settings above the specified rated power will not have any function.

- With a charging station with 11 kW charging output, the DIP switch settings must be set to a maximum of 16 A or lower.

DIP switch settings determine, among other things, the maximum amperage of the charging station. The setting can then be changed via the sonnen Partner App in 1 A increments up to the maximum value, which is configured permanently through the DIP switches.

The charging current can also be reduced via the sonnen App. However, the maximum charging current for this cannot exceed the maximum value preset by the installer via the sonnen Partner App.

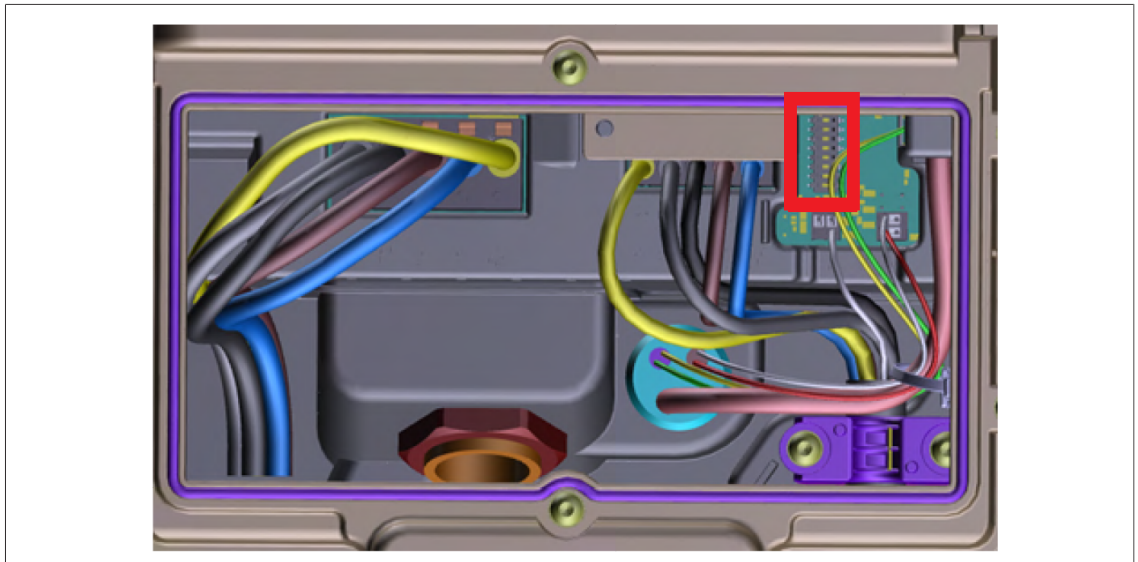


Illustration 10: Position of the DIP switches

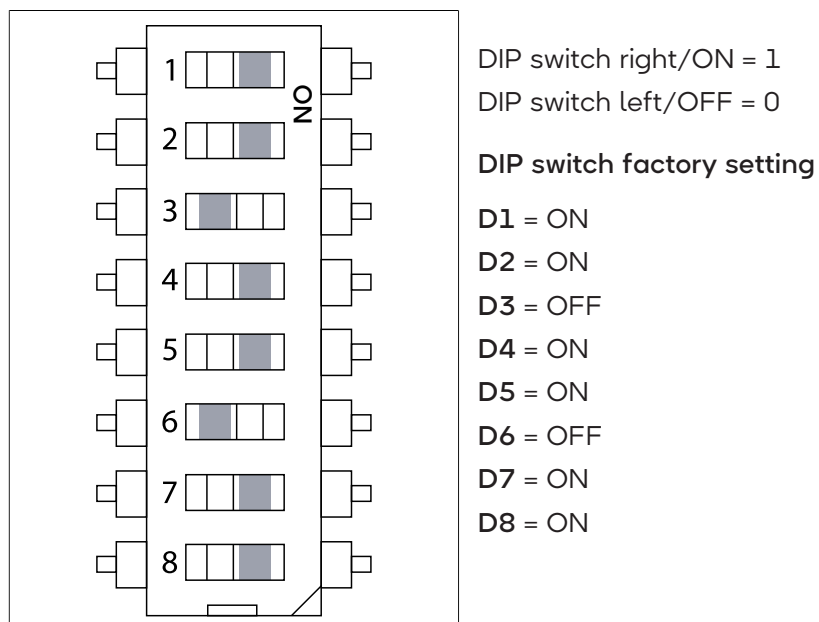


Illustration 11: DIP switch factory setting

i INFO

Changes to the DIP switch settings only become active after a re-start of the charging station.

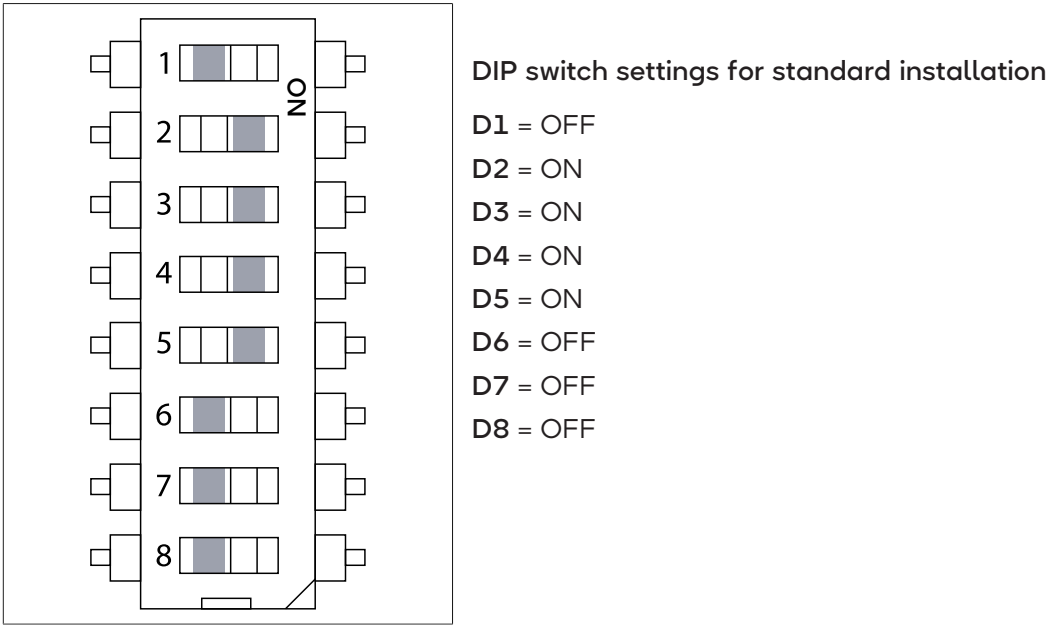
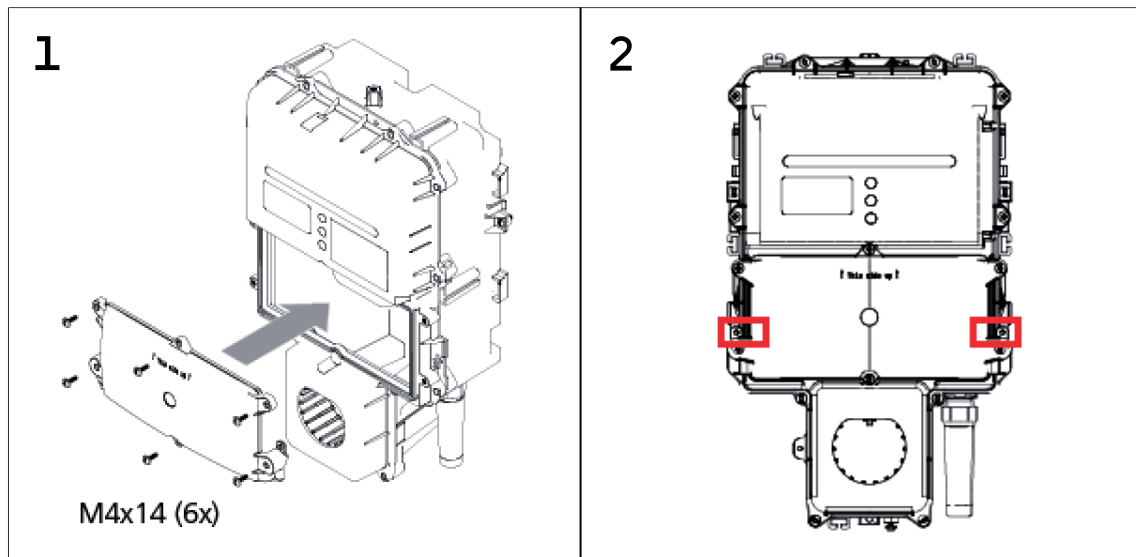


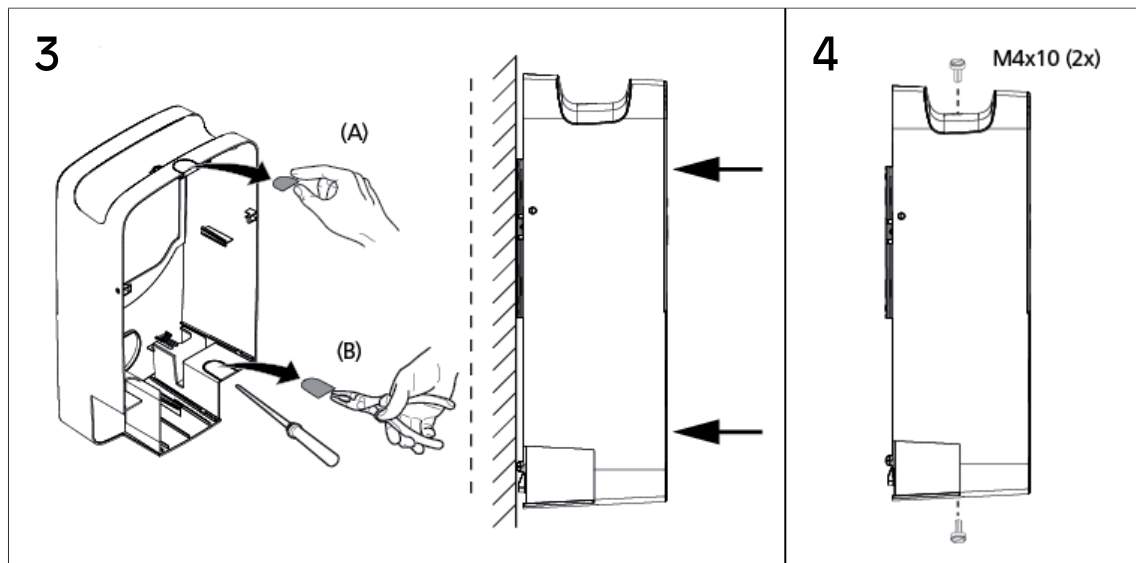
Illustration 12: DIP switch standard installation

[A]	D1	D2	D3	Description
6	1	1	1	
8	0	0	0	
10	0	0	1	
13	0	1	0	
16	0	1	1	
20	1	0	0	
25	1	0	1	
32	1	1	0	Factory setting
D4	D5	Description		
0	0	No skew load limitation for single-phase charging		
0	1	Skew load limitation to max. 20 A		
1	0	Skew load limitation to max. 16 A		
1	1	Skew load limitation to max. 16 A (factory setting)		
D6	Description			
1	IT network (not possible, only for single-phase mains connection)			
0	TN/TT network (factory setting)			
D7 and D8 are used to set the potential-free contact for the use of a ripple control receiver via a DNO.				
D7	D8	Description		
0	0	No DNO limit (factory setting)		
0	1	DNO limitation to 0 A		
1	0	DNO limitation to 6 A		
1	1	DNO limitation to 8 A		

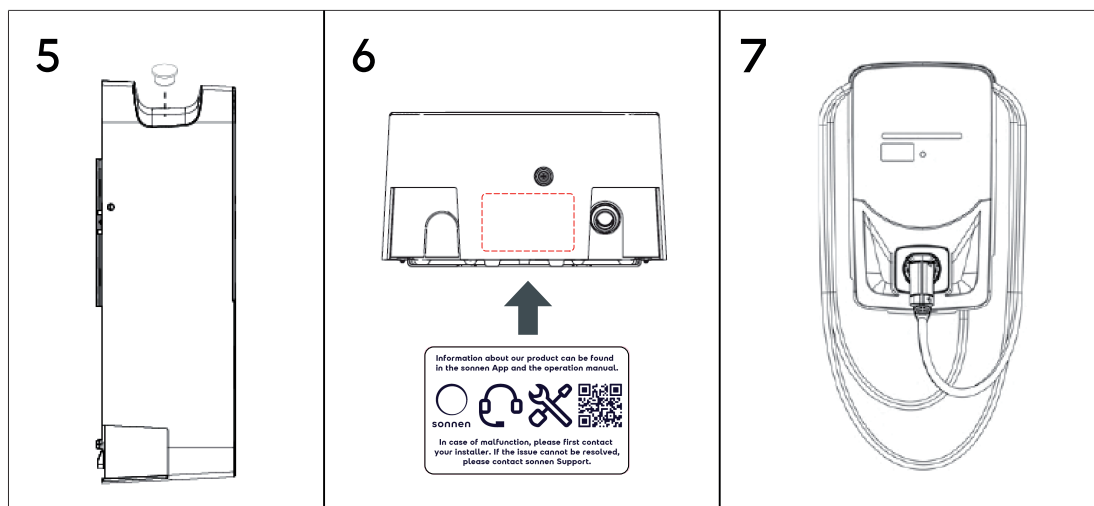
7.4 Completion of assembly



- Check that the installation is correct and that all clamp connections are secure.
- Close the installation area with the installation cover. Tighten the six screws (M4x14, T20) with a torque of 3 Nm (1).
- **Optional:** the installation area can also be secured with two seals (not included with the delivery) (2).



- Attach the design cover by clipping it onto the charging station. When laying cables **from above (A)**, the cap for the cable entry must be removed beforehand. When laying cables **from below (B)**, the opening for the cable feed-through must be broken off beforehand (remove any protruding remains if necessary) (3).
- Screw on the design cover with the two screws (M4x10) and tighten the screws using a slotted screwdriver with a torque of 1 Nm (4).



→ Mount the cover caps on the top side (5).

→ Affix the 'sonnen Contact' sticker included with the delivery to the underside of the design cover (6).

→ Wrap the cable around the charging station and place the charging connector in the holder (7).

i INFO

Contact in the event of a fault

Inform the operators that in the event of a fault, the installing electrician should be contacted first and sonnen Service should be contacted if the fault has not been resolved.

8 Initial commissioning

INFO

To make use of the full function of the charging station, the sonnenHome Charger 2 must be set up and commissioned via the sonnen Partner App in order to link the charger station to the existing site and storage system.

Professional installation is documented by the sonnen Partner App. No additional installation protocol needs to be filled out.

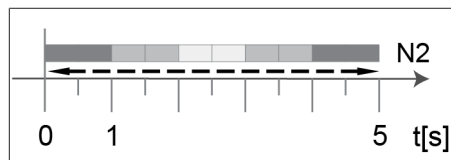
8.1 Safety check

→ Document the test and measurement results of the initial commissioning in accordance with the applicable installation rules and standards.

Local operating, installation and environmental regulations apply.

8.2 Boot procedure

1. Switch on the mains voltage.



- The boot sequence will start.
- You can see a white chase light when you boot the charging station.
- It may take several minutes to boot the charging station.

- When the boot process is complete, the display changes from a white chase light to a steady green LED (N8) and then a green LED flashes on and off (standby, N7) (see LED indicators [P. 34]).

2. No authentication is required in factory condition. If desired, the settings can be changed to require authentication, e.g. RFID (see Authentication at the charging station [P. 36]).

3. The protective functions must be checked during installation according to national specifications and, if necessary, documented in a report. The charging connector serves as the measuring point, and an EV simulator or an electric vehicle serves as the measuring tool.

4. Use the EV simulator to simulate and test the individual operating and protection functions if required.

8.3 Digital commissioning

Conditions:

- ✓ Requirements from network line description [P. 23] are fulfilled.
 - ✓ The charging station has a stable internet connection.
- Open the sonnen Partner App and log in to your account.
- Search for the site/ customer, where the charging station shall be linked to (at the search screen type at least three letters/digits; e. g. first name, last name, serial number of storage system).
- Click on the **Add new charger** button and follow the commissioning process in the app.



- During the commissioning process the sonnen Partner App will ask for the serial number of the charging station or a QR code can be scanned. This information can be found on the sticker in the Quick Start Guide supplied.

INFO

Check the internet connection of the charging station, if the sonnenHome Charger 2 can not be found.

After successful commissioning, the charger appears in the customer's sonnen app.

Firmware update during new installation

The charging station performs an automatic update of the device firmware during new installation. No vehicle may be connected during this time.

During the update, the LED strip on the charging station may display alternating red/red-yellow/purple LEDs for a short time, contrary to the description in the manual. This is not an error.

After approx. 20 minutes, the update is complete and the LEDs light up green. The first vehicle charge and the final function test can be carried out after this waiting period.

If the LEDs continue to light up red after 20 minutes, please switch the charging station fuse off and on again to initiate a restart.

8.4 Connection to vehicle after digital commissioning

→ Connect the charging cable to a vehicle.

- The LED changes to pulsing blue (N4). When the charging process starts (depending on the authentication settings) in an ISO 15118-compatible vehicle, the blue LED bar lights up in 10% increments from left to right as the charge level increases until the full LED is lit. Otherwise, the LED stays lit in blue until it reaches 100% (N6).

9 Operation

i INFO

A permanent internet connection is part of the warranty conditions and a prerequisite for the full functionality of the charging station.

i INFO

Changes to the settings in the local Ampure dashboard are not allowed as they jeopardise smooth operation. Failure to comply with this requirement may result in the invalidation of the warranty.

9.1 Settings

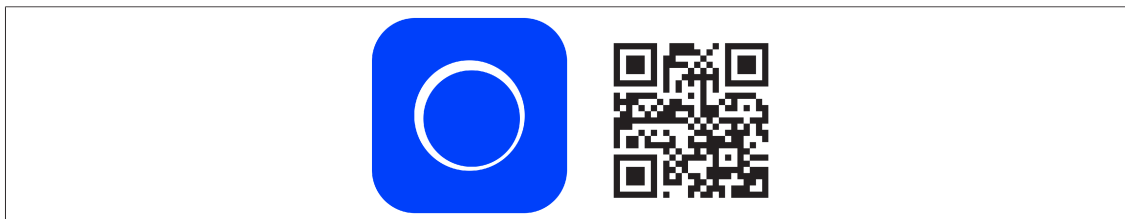


Illustration 13: Logo of sonnen App and QR code for download

You can make settings on the charging station as follows:

Regarding installation

- sonnen Partner App

Regarding operation and settings

- sonnen App

i INFO

Further information on operation can be found in the operating instructions (<https://documents.sonnen.de/s/user-manual-Charger-2-en>).

9.2 Displays

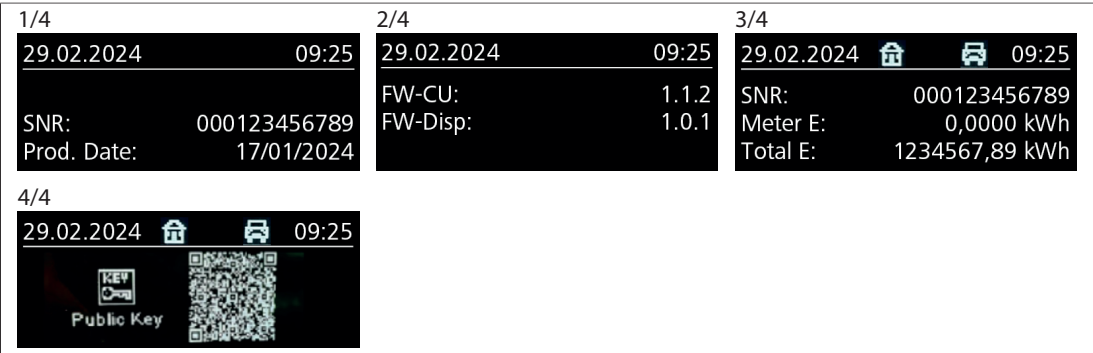
The charging station is equipped with a display compliant with calibration legislation and the MID. The displays are largely defined by the specifications of the MID/ calibration legislation.

The charging process (duration, energy) can be monitored via the display. The display remains as it is until the next charging session. Until that time, an objection can be made if the data is incorrect.

The time shown on the display refers to UTC (Coordinated Universal Time). This eliminates the need to change the time for daylight saving time and standard time.

Display standby mode

The display goes into standby mode when the charging station is not in use. In this mode, 4 different screens are displayed, including the public key. The screens change at a defined interval.



Display charging mode

The displays enable users to see where the invoice items in their electricity bill arise from.

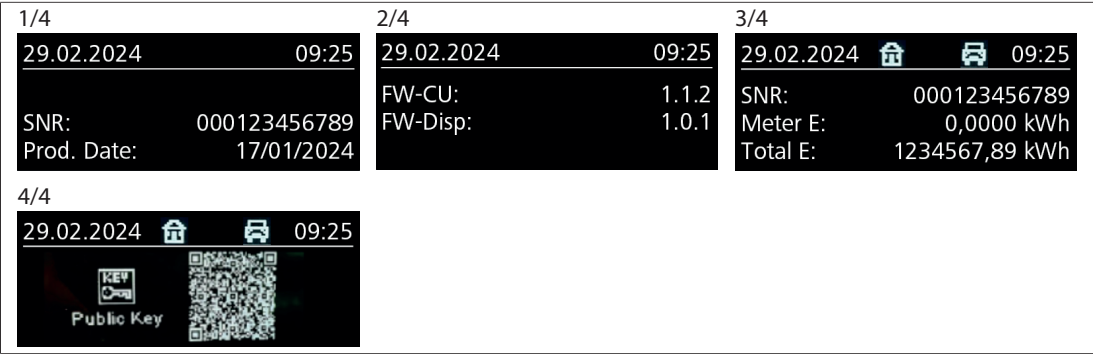
The displays can be distinguished into the following four sequences:

- Booting the charging station
- Starting the charging session
- During the charging session
- Finishing the charging session

In each sequence, different screens change at a defined interval (e.g. 5 seconds).

In the sequence 'During the charging session', the flow of energy between the charging station and the vehicle is illustrated with an animated arrow (>>).

Booting the charging station:



Starting the charging session:

1/2	2/2
29.02.2024  >>  09:25	29.02.2024  >>  09:25
FW-CU: 1.1.2	Power: 11,00 kW
FW-Disp: 1.0.1	Price: 0,39 EUR/kWh
	Total E: 1234567,89 kWh

During the charging session:

1/2	2/2
29.02.2024  >>  09:25	29.02.2024  >>  09:25
Duration: 01:23:45	Power: 11,00 kW
Charged E: 1,23 kWh	Charged E: 1,23 kWh
Total E: 1234567,89 kWh	Total E: 1234567,89 kWh

Finishing the charging session:

1/3	2/3	3/3
29.02.2024   09:25	29.02.2024   09:25	29.02.2024   09:25
Duration: 01:23:45	Duration: 01:23:45	 Public Key 
Charged E: 1,23 kWh	Charged E: 1,23 kWh	
Total E: 1234567,89 kWh	Price: 0,39 EUR/kWh	

The following table explains the information on the display.

Display	Explanation
1 Date	Presented in the format dd.mm.yyyy
2 Time	UTC, Display in 24-hour format
3 SNR	Serial number of the meter
4 Prod. date	Date of manufacture of the charging station
5 FW CU	Firmware of the control unit
6 FW disp	Firmware of the display unit
7 Meter E*	Total charging energy (meter/MID) in kWh (uncompensated, non-resettable energy register), OBIS code (simplified): 1.8.0
8 Total E*	Total charging energy of the charging station in kWh (compensated, non-resettable energy register), OBIS code (simplified): 1.8.0
9 Price ²	Price in EUR/kWh
10 Power	Charging output of the charging station in kW
11 Duration	Charging time of the current charging session in the format hh:mm:ss
12 Charged E	Energy charged in the charging station's current charging session in kWh (compensated, resettable energy register)
13 Key - QR code	Numerical sequences relevant for calibration legislation, assigned for each charging point. They allow charging point users to check the accuracy of measurements taken remotely.

The values marked with an asterisk (*) are the results of calibrated functions.

For the values 'Meter E' and 'Total E', the number of decimal places (digits to the right of the decimal point) is adjusted in line with the amount of energy displayed. Four decimal places are displayed for small amounts of energy; two decimal places are displayed for larger amounts of energy.

** INFO**

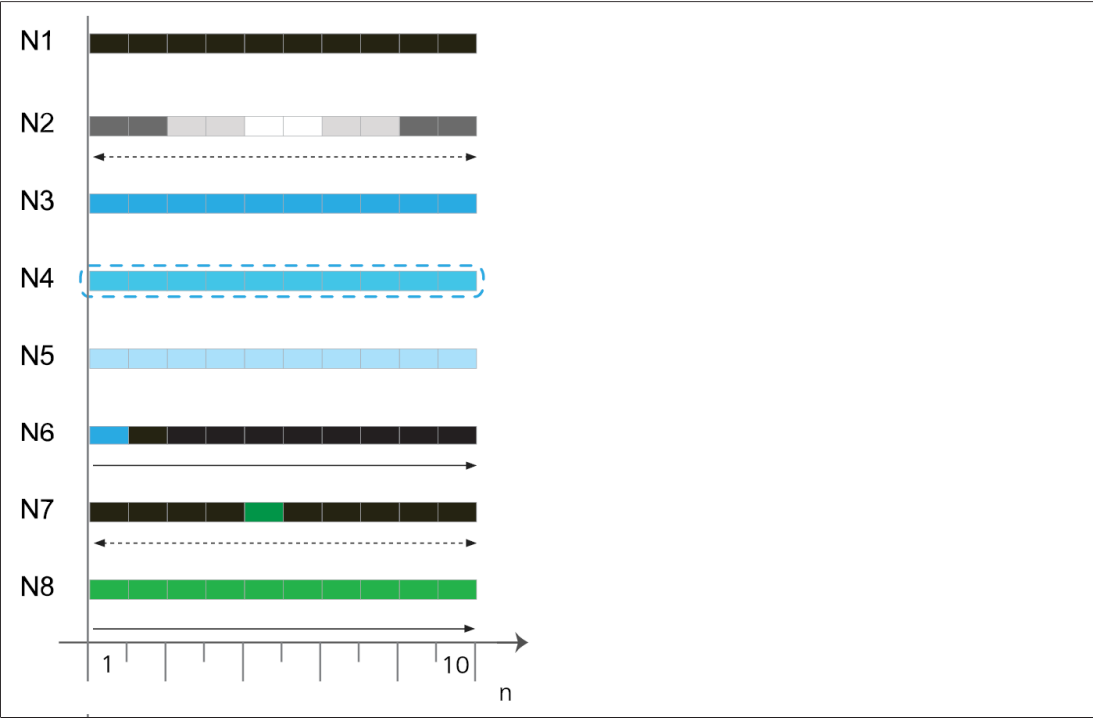
Values that are not displayed cannot be used for billing purposes. When displayed values are based on uncalibrated functions, they are purely informational and cannot be used for billing purposes.

² Will be adjustable in the future after an over-the-air (OTA) update.

9.3 LED indicators

The charging station is equipped with a light sensor that regulates the brightness of the LED indicators based on the configured dimming value and the actual lighting conditions.

Operation and error indicators

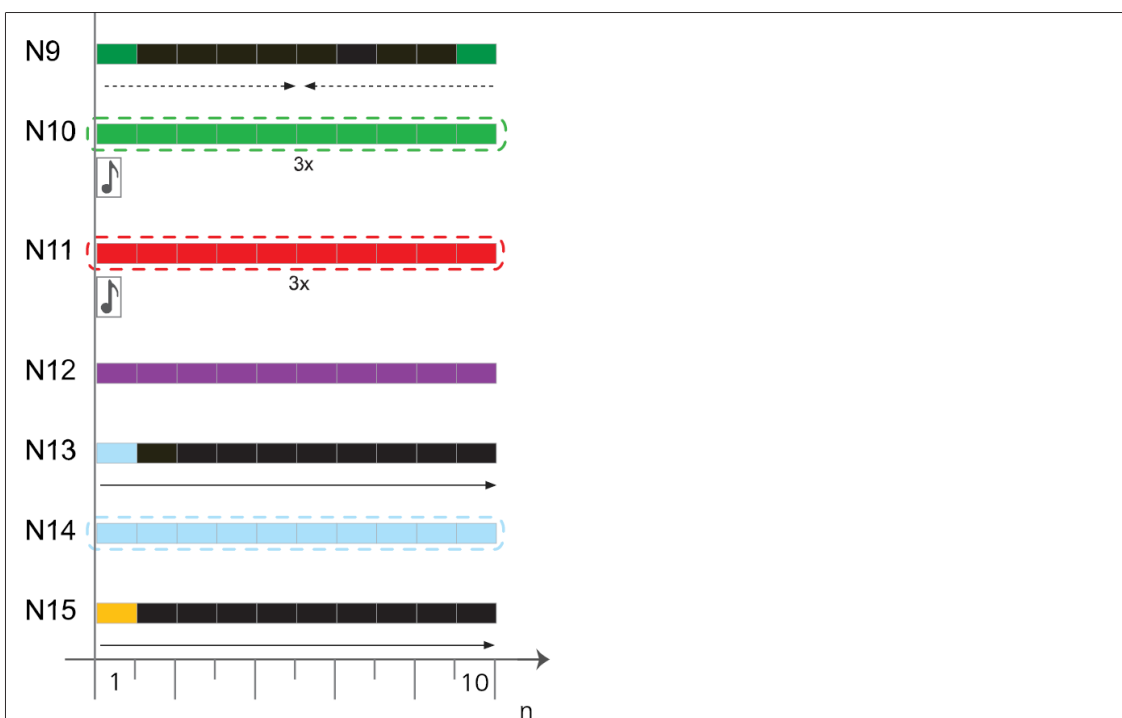


Operation Description
indicator

N1	LED bar does not light up: charging station is off.
N2	White chase light goes back and forth: charging station is booting (rebooting), updating or is in the RFID card linking mode.
N3	LED bar lights up blue: ready for user action, charging cable not connected to vehicle // Authorized charging via key card deactivated (switches to standby after approx. 60 sec. - N7). or If charging finished: If vehicle is ISO 15118-compatible: the LED bar lights up blue in 10% increments according to the charge level. If vehicle is not ISO 15118-compatible: the LED bar lights up completely blue.
N4	LED bar pulsing blue: charging connector connected to the vehicle. The charging station has detected that the vehicle is connected, but the charging session has not yet started or has been interrupted.
N5	LED bar lights up light blue: the charging session is interrupted and paused.
N6	LED bar has progressing blue light: the charging station is in use, the vehicle is charging. If vehicle is ISO 15118-compatible: the LED bar progresses in 10% increments as the charge level increases. If vehicle is not ISO 15118-compatible: the LED bar progresses cyclically from 0% to 100%.
N7	Green LED flashes on and off: the charging station is in standby mode.

Operation Description indicator

N8 LED bar lights up green: the charging station is ready for operation and waiting for authentication // Authorized charging via key card deactivated.



Operation Description indicator

N9 Green LED runs together from outside to inside: card detected / authentication process with RFID card detected // Authorized charging via key card deactivated.

N10 LED bar flashes green 3 times and an audible signal sounds for 0.3 s: RFID card detected and accepted // Authorized charging via key card deactivated.

N11 LED bar flashes red 3 times and an audible signal sounds for 0.3 s: RFID card not accepted // Authorized charging via key card deactivated.

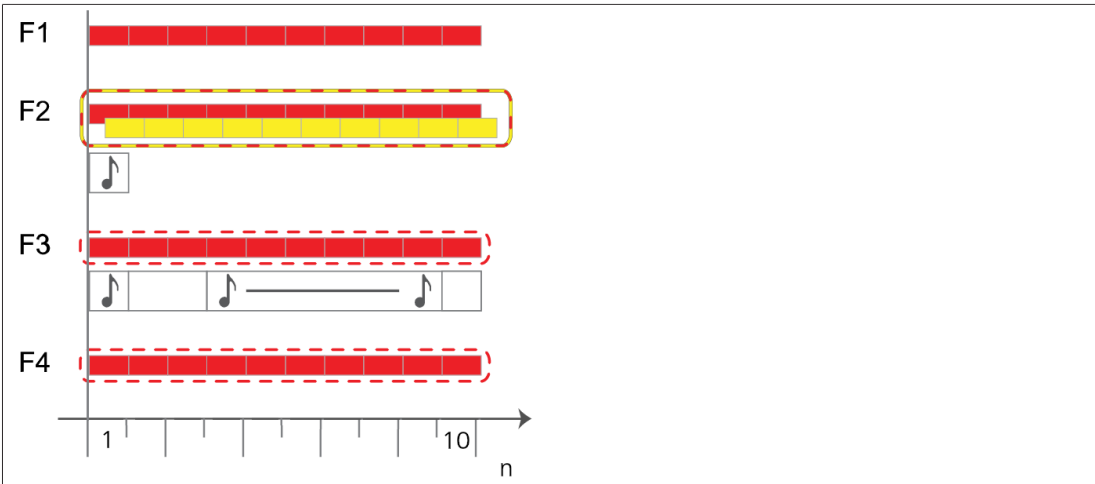
N12³ LED bar lights up purple: the charging station is reserved.

N13 LED bar has progressing blue light: the charging station is in use but is charging at reduced power due to corresponding external control (e.g. DNO or HEMS). If vehicle is ISO 15118-compatible: the LED bar progresses in 10% increments as the charge level increases. If vehicle is not ISO 15118-compatible: the LED bar progresses cyclically from 0% to 100%.

N14 LED bar pulsing light blue: external limitation to 0 A (e.g. DNO or HEMS) or delay ('randomised delay' according to UK requirements).

N15 LED bar has progressing dark yellow light: the charging station is running very hot and charging at reduced power. After a cooling-down period, the charging station resumes the normal charging process. If vehicle is ISO 15118-compatible: the LED bar progresses in 10% increments as the charge level increases. If vehicle is not ISO 15118-compatible: the LED bar progresses cyclically from 0% to 100%.

³ Currently not used, can be used later after an over-the-air (OTA) update.



Error in- dicator	Description
F1	LED bar lights up red: the charging station is not operable
F2	LED bar alternates between red and yellow, and an audible signal sounds for 0.5 s when the following occurs: • Possibility 1: excess temperature. The charging function is interrupted. After a cooling-down period, the charging station resumes the normal charging process. • Possibility 2: installation error at the charging station connection; phase monitoring is active; supply voltage is outside the valid range. → Rotating field/phase sequence (clockwise rotation field required), mains frequency, DIP switch setting and earth resistance to be checked by a qualified electrician. • Possibility 3: vehicle error. → Reconnect the vehicle. • Possibility 4: internal error at low voltage (e.g. 12 V supply). → To be checked by a qualified electrician.
F3	LED bar pulsing red; an audible signal sounds for 0.5 s and after a 1 s pause again for 5 s: there is a safety hazard and the charging station has switched off. → To be checked by a qualified electrician. → DANGER! Note the risk of electrocution. Fatal injuries may occur! Switch off the electrical power supply to the charging station in the installation and secure it against being switched back on. Only after doing that, disconnect the charging cable from the vehicle.
F4	LED bar pulsing red: there is an error and the charging station output has switched off. → To be checked by a qualified electrician.

NOTICE! During a firmware update, the LED indicator may flash red/red-yellow/ purple alternately. This is not an error. A firmware update can take up to 20 minutes.

i INFO

ISO 15118 is an international standard that regulates communication between electric vehicles (EVs) and charging stations. The charging station is equipped with hardware that complies with current communication standards.

9.4 Authentication at the charging station

Authorization is deactivated by default, meaning that the vehicle can be charged directly without authorization using a key card (RFID card).

Authorization can be activated and the supplied key cards can be programmed in the sonnen App settings. To do this, follow the steps in the sonnen App.

When activated, the key card must be presented each time the vehicle is connected in order to activate the charging process.

If the charging processes are to be used for billing, authorization must be active.

Two key cards are included in the scope of delivery. Additional key cards can be added. If you need additional key cards, you can order them from your specialist partner or use your own RFID cards. All ISO 14443 A-compatible RFID cards can be used for authorization.

 INFO

A green LED bar on the charging station indicates a locked state, i.e., active authorization.

10 Maintenance, cleaning and repair

Maintenance

Maintenance must only be carried out by qualified electricians and in accordance with local regulations.

Cleaning

DANGER

Incorrect cleaning with running water

Note the risk of electrocution. Fatal injuries may occur!

→ Do not clean the charging station with running water.

NOTICE

Use of unsuitable cleaning products and/or excessive water

Penetrating water may cause internal damage.

→ Do not use abrasive cloths or sponges.

→ Do not use aggressive cleaning products, wax or solvents.

→ Do not use a water jet (high-pressure cleaner, garden hoses or similar appliances).

→ Use only moist cloths, not wet cloths, to clean the system.

Repair

Unauthorised repairs to the charging station are prohibited.

Only original parts from the manufacturer may be used.

sonnen reserves the right to carry out repairs to the charging station.

Replacing the charging cable

The charging cable cannot be replaced as the charging cable forms part of the charging station that is certified according to calibration legislation.

If the charging cable is defective, the entire charging station must be replaced.

11 Decommissioning and uninstallation

DANGER

Improper decommissioning and uninstallation of the charging station

Danger to life due to electrocution!

- The charging station must only be decommissioned and uninstalled by authorised electricians.

Digital decommissioning

- Open the sonnen Partner App and log in to your account.
- Search for the location/customer to which the charging station should be linked (enter at least three letters/numbers in the search box (e.g. first name, last name, storage system serial number)).
- Select the Charger that is going to be uninstalled.
- Follow the steps in the sonnen Partner App.

Uninstallation

- Disconnect the mains supply and the vehicle charging cable.
- Remove the cover caps and screws at the top and bottom of the design cover.
- Remove the design cover by loosening the internal clamps (e.g. by pressing in with a screwdriver).
- Remove the cover of the charging station installation area.
- Release all clamps on the terminal block.
- Remove all connection cables and signal cables.
- Remove the wall bracket fixing screws from the charging station and the bottom wall screw from the charging station.
- Lift the charging station from the wall mounting bracket.
- Close the cover of the installation area.
- Remove the wall mounting bracket.
- Return to sonnen with a service order, otherwise ensure proper disposal (see Disposal [P. 40] chapter).

12 Disposal

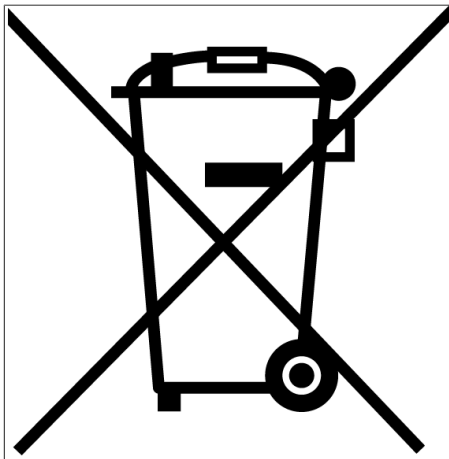


Illustration 14: WEEE symbol

The crossed-out wheeled garbage can symbol indicates that this electrical and electronic equipment must not be disposed of with household waste at the end of its service life.

Free collection points for waste electrical and electronic equipment are available nearby. You can obtain the addresses from your city or local authority. The separate collection of waste electrical and electronic equipment is intended to enable the reuse, material recycling or other forms of recycling of old equipment and to avoid negative consequences for the environment and human health when disposing of the hazardous substances that may be contained in the equipment.

→ Dispose of the packaging in the appropriate recycling container in accordance with the applicable national legislation.

Austria:

The WEEE Ordinance (EAG-VO) in Austria transposes EU law into national law. Among other things, the implementation ensures that waste electrical and electronic equipment from private households (EAG) can be returned to public collection points free of charge. WEEE (EAG) may no longer be disposed of in mixed municipal waste, but must be handed in at the designated collection points. This allows functioning appliances to be reused or valuable components from broken appliances to be recycled. This should contribute to a more efficient use of resources and thus to more sustainable development. In addition, separate collection is the only way to ensure that hazardous components of appliances (such as CFCs or mercury) are adequately treated, thus avoiding negative effects on the environment and human health. Free return and collection options are available to you for your private old appliances from local authorities and manufacturer systems. You can find an overview of the available collection points on the following website: <https://secure.umweltbundesamt.at/eras/registerabfrageEAGSammelstelleSearch.do> All electrical and electronic appliances for household use are marked with the symbol of a crossed-out wheelie garbage can. These appliances may be handed in at all collection points listed under the link and should not be disposed of with household waste.

13 Technical data

INFO

The charging station is not suitable for 3-phase IT networks.

Electrical characteristics of the charging station

Description	Data
Nominal current [A] (configurable connection values)	16 Three-phase The charging station is configurable in 1 A increments
Nominal voltage [V/AC]	230/400 (Europe): Tolerance range -18% to +13%
Mains frequency [Hz]	50 (±10%, for MID-compliant/calibration-legislation-compliant use ±2%)
Mains topology	TN/TT (3-phase)
EMC class	Electromagnetic interference: Class B (residential, business, commercial) Electromagnetic immunity: Residential, business, commercial and industrial areas
Overvoltage category	III according to EN 60664
Protection class	I
Required protective devices	Type A residual-current devices (RCD) and miniature circuit breakers must be provided on the installation side based on the country in question.
Integrated protective device	DC residual current protection 6 mA
Phase rotation	Automatic phase sequence detection with error detection if the phase sequence is incorrect.
Standby power loss [W]	< 6
Mounting type	Wall-mounted or standing (fixed)
Cable entry	Surface-mounted or flush-mounted
Electrical connection/input terminal	Cross section of the connection cable (Cu) taking into account the local requirements, laws and standards (permanent electrical connection): • Rigid (min.-max.): 2.5-16 mm² • Flexible (min.-max.): 2.5-16 mm² • Flexible (min.-max.) with wire end ferrule: 2.5-16 mm² Depending on the cable and the type of installation, the recommended minimum cross section for a standard installation is: • 6 mm² (for 16 A)
Charging cable	Type 2 charging cable: up to 16 A/400 VAC according to EN 62196-1 and EN 62192-2, length: 7.5 m
Output voltage [V/AC]	230/400
Max. charging output [kW]	11

Technical data for integrated meter

Description	Data
Integrated meter	• MID-compliant variant • Charging connector discharge point: accuracy class A according to EN IEC 62052-11:2021/A11:2022 and EN 50470-3:2022 (variant compliant with calibration legislation)
Meter type	3-phase meter
Minimum current (meter) $I_{\min}$ [A]	0.25
Nominal current (meter) I_n [A]	5
Maximum current (meter) $I_{\max}$ [A]	16
Starting current (meter) I_{st} [A]	0.02

Description	Data
Transition current (meter) I_{tr} [A]	0.5
Nominal voltage (meter) U_n [V]	3x230/400
Nominal frequency (meter) f_n [A]	50
Pulse output (meter) [Imp/kWh]	100,000
Rated surge voltage (meter) [kV]	Min. 4
Electromagnetic environment (meter)	E2 according to 2014/32/EU Measuring Instruments Directive
Utilisation category (UC)	UC1 compliant with EN 62052-31
Verification of measurement data	https://transparenz.software/

INFO

For integration in a specific environment, please also observe the requirements and instructions of the provider.

Communication & functions	Description	Data
	Authentication	- RFID reader: Mifare Classic 1K and NXP Mifare Ultralight EV1 128 bytes, type A (ISO 14443 A) - sonnen app
	Indicators	RGB LEDs, buzzer, display (calibration)
	Network interfaces	- LAN (RJ45) - 10/100 BASE-TX - RFID
	RFID modules	- Frequency: 13.56 MHz - Transmit power: <0 dBm / m (max) at a distance of 10 m
	Communication protocols	In use: OCPP 1.6 J (OCPP 2.0.1 ready*) Other: Modbus TCP, Modbus RTU, EEBus (ready*), IEC 61851-1 (Annex A), ISO 15118-2 (ready*)
	External interfaces	- Potential-free contact for ripple control receiver (DNO) - RJ45 for network connection

Mechanical characteristics	Description	Data
	Dimensions (WxHxD) [mm]	294x506x160
	Weight [kg]	7.8
	IP protection class, device	IP65
	Protection against mechanical impact	IK10

Ambient conditions	Description	Data
	Location of installation	No direct sunlight (recommended)
	Operating temperature range [°C]	-30 to +50
	Operating temperature limits for measuring accuracy (meter) [°C]	-30 to +50
	Temperature behaviour	To prevent the charging station from exceeding the temperature limits, the charging current may be reduced or switch off.
	Storage and transport temperature range [°C]	-40 to +85
	Permissible relative humidity [%]	5 to 95, non-condensing
	Altitude [m]	Max. 3,000 (above sea level)
	Regulations and directives	- CE conformity 2014/53/EU Radio Equipment Directive 2011/65/EU RoHS Directive 2001/95/EC General Product Safety

Description	Data
	• 2012/19/EU Waste Electrical and Electronic Equipment Directive • 1907/2006 REACH Regulation • 2014/32/EU Measuring Instruments Directive (MID) • German Measuring and Calibration Regulation and Measuring and Calibration Act (MessEG and MessEV respectively)
*Required components installed, can be used later after product launch via over-the-air (OTA) update.	

Glossary

DNO

Distribution network operator

ESD

Electrostatic discharge

EV

Electric Vehicle

HEMS

Home Energy Management System

LED

Light-emitting diode

MCB

Miniature circuit breaker. Overcurrent safety device that protects the lines from damage caused by overheating as a result of excessive current.

MID

Measurement Instruments Directive

RFID

Radio-frequency identification



<https://documents.sonnen.de/s/manual-Charger-2-en>

