SIEMENS

Operating instructions

SICHARGE

SICHARGE D

8EM5907-0AA00-1AA7.01

Edition 02/2021

siemens.com/sicharge

SIEMENS

SICHARGE

SICHARGE D

Operating Instructions

A5E50556539-AB

02/2021

8EM5907-0AA00-1AA7.01

Legal information

Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

⚠ DANGER

indicates that death or severe personal injury **will** result if proper precautions are not taken.

⚠ WARNING

indicates that death or severe personal injury **may** result if proper precautions are not taken.

⚠ CAUTION

indicates that minor personal injury can result if proper precautions are not taken.

NOTICE

indicates that property damage can result if proper precautions are not taken.

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified Personnel

The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

Proper use of Siemens products

Note the following:

⚠ WARNING

Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.

Trademarks

All names identified by ® are registered trademarks of Siemens AG. The remaining trademarks in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owner.

Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

Siemens AG
Smart Infrastructure
Mozartstr. 31C
91052 Erlangen
GERMANY

8EM5907-0AA00-1AA7.01
Ⓟ 02/2021 Subject to change

Table of contents

Introduction 1

1.1 About the operating instructions

These operating instructions contain the information necessary for the safe operation and intended use of the SICHARGE D charging station and are aimed predominantly at operators of the charging station.

Safekeeping the operating instructions

The operating instructions are an integral part of the product and an indispensable part of the product safety concept. The following requirements therefore apply for safekeeping the operating instructions:

- Keep the operating instructions for the entire service life of the charging station.
- Make the operating instructions easily accessible at all times for all persons involved.
- If you transfer the charging station to third parties, also pass along the operating instructions.

Using the operating instructions

How to use the operating instructions correctly:

- Make the operating instructions available to all persons involved before and during work on the charging station.
- Read the operating instructions carefully before starting work.
- Follow the safety instructions and handling instructions.
- Failure to comply with the information in these operating instructions can result in personal injury, material damage, dangerous situations and loss of warranty.

1.2 Open-source software

Open-source software is used in the firmware of the product described. Open Source Software is provided free of charge. We are liable for the product described, including the open-source software contained in it, pursuant to the conditions applicable to the product. Siemens accepts no liability for the use of the open source software over and above the intended program sequence, or for any faults caused by modifications to the software.

For legal reasons, we are obliged to publish the original text of the license conditions and copyright notices. Read the information on this provided for download on the Siemens homepage (https://new.siemens.com/global/en/products/energy/medium-voltage/solutions/emobility-readme-oss.html).

Safety instructions

2

2.1 Basic information

The charging station complies with all prescribed technical safety standards and thereby offers the greatest possible product safety. To ensure the safety of all persons, systems and equipment at all times, adhere to the following basic safety instructions.

Guidelines and regulations

In order to ensure comprehensive safety, adhere to the following guidelines and regulations:

- Guidelines for occupational safety
- Regulations for prevention of accidents
- Trade regulations
- Technical connection conditions of the power supply unit
- Building regulations
- Generally accepted rules of technology

Target group

These operating instructions are intended for the following persons:

- Operators
- Qualified electricians
- Assemblers
- Planners
- Service personnel
- Carriers

Intended use

The SICHARGE D charging station has up to three ports for charging the batteries of electric vehicles. For this purpose, the vehicle requires a DC charging socket

- CCS 2
- CHAdeMO

or an AC charging socket

- Type 2

The use of adapters between charging plug and vehicle, e.g. for charging vehicles in a way that deviates from the intended standards, is not permitted.

The charging station can be used indoors and outdoors. The permissible ambient conditions at the place of use must be observed for intended use. The SICHARGE D charging station may only be operated in a perfect technical condition. No modifications must be made to the charging station. This applies to both electrical modifications (connecting, disconnecting or swapping connections of electrical devices, etc.) and mechanical modifications (e.g. bores). Modifications void the operating permit and warranty.

In general, any person may use the SICHARGE D charging station to charge electric vehicles in accordance with the operating requirements. Only trained and authorized personnel is allowed to perform maintenance. The SICHARGE D charging station may only be opened by authorized persons (electricians).

The SICHARGE D charging station is intended for charging electric vehicles according to EN 61851-1/EN 61851-23 and must not be used for other vehicles or purposes. Any other use or use that goes beyond the use described here is not intended and represents a misuse of the device.

The charging station must be set up in accordance with the statements in these operating instructions. Transport, installation, maintenance, cleaning, and normal operation must follow the instructions or procedures specified in these operating instructions.

Qualified personnel

All work on the charging station may only be performed after having received the proper instructions. Non-electrical work, e.g. transport and assembly, may only be performed by qualified personnel. Qualified personnel are qualified by training and experience to recognize risks arising during the respective work and to avoid possible hazards.

Electrical engineering work may only be performed by qualified electricians themselves or under their direction and supervision. A qualified electrician is someone who is able to assess the work assigned to them and recognize potential dangers due to their professional training, knowledge and experience as well as knowledge of the relevant standards.

Personal protective equipment (PPE)

Personal protective equipment protects you against hazards to your health and safety. Use your personal protective equipment in accordance with occupational safety guidelines and accident prevention regulations.

Fall arrester

When you are working at a height above 1 m, use a fall arrester. Use work platforms or lifting platforms to provide qualified personnel with a stable surface. Take the necessary precautions to prevent tools and components from falling.

Fire and explosion protection

Do not store or use flammable liquids that produce flammable fumes, such as gasoline or ethanol, in the vicinity of the charging station. Electrostatic charge or heat generated during charging can ignite explosive and flammable liquids.

⚠ WARNING

Fire hazard

In the event of a fire, leave the danger zone. Do not use the charging station in the event of fire.

Protection against electromagnetic fields

The charging station meets the requirements of IEC 61851-21-2:2018:

- Noise immunity: Class A
- Emission (radiated): Class A
- Emission (conducted, AC input): Class A
- Emission (conducted, DC port): Limits according to IEC 61851-21-2:2018

Note

The device is intended for industrial applications.

The charging station also complies with the following standards:

- EN 61000-6-2:2005/AC:2005: Electromagnetic compatibility (EMC) - Part 6-2: Generic standards – Immunity for industrial environments, 2005
- EN 55011:2009/A1:2010: Industrial, scientific and medical (ISM) radio-frequency equipment – Electromagnetic disturbance characteristics – Limits and methods of measurement
- EN 62311:2008: Evaluation of electrical and electronic equipment with respect to limiting human exposure to electromagnetic fields (0 Hz to 300 GHz)

Protection against ingress of liquid

The IP54 degree of protection of the cabinet protects the charging station from ingress of water splashing against it from all directions. In particular, the protection standard prevents the penetration of precipitation and protects against all liquids applied to the surface of the cabinet without pressure.

Also protect the charging station from liquids that exert pressure on the surface of the cabinet:

- Never use high-pressure cleaners or steam cleaners when cleaning the charging station.
- Place the charging station in a flood-proof location.

⚠ WARNING

Electric shock due to ingress of liquid

Strong jets of water or flooding can cause liquid to enter the charging station. Moisture or liquid inside the charging station can cause electric shock.

If liquid has entered the charging station, take the following safety precautions:

- Take the charging station out of service by switching it off at the electrical distributor.
- Qualified personnel must dry the charging station and check it for damage.

Protection against unauthorized opening

A lock system protects the charging station from unauthorized opening of the device doors at the front and back.

- Keep the key for the door locks safe against access by unauthorized persons.
- Only make the key available to authorized persons for work in the charging station.
- Do not leave the charging station unattended with the device door open.

Note

The charging station is supplied with replaceable locking cylinders and matching keys.

For protection against unauthorized opening, the lock cylinders should be replaced by the operator and the matching keys should be stored in a safe place. For maintenance work, the operator should allow maintenance personnel access to the charging station.

Use different lock cylinders for each individual charging station. This ensures that each charging station can only be opened by the matching key.

Replacing the lock cylinders

The charging station is supplied with replaceable lock cylinders (standard half cylinders according to DIN 18252) and matching keys. You will find detailed instructions on replacing the cylinders in section 3.3 (Page 23).

Alterations to the device

The operating instructions describe all permissible changes to the charging station. Any other or additional changes are not permitted. Unauthorized modifications void the manufacturer's warranty and the approvals of the device become invalid.

⚠ WARNING

Danger due to missing or unrecognizable safety signs and warnings

Missing or unrecognizable safety signs or warnings do not indicate that danger is not no longer present. Undetected dangers can result in accidents with serious physical injury or death.

- Check the presence of all safety signs and warnings using the operating instructions
- Replace missing safety signs and warnings
- Do not remove safety signs and warnings
- Replace unrecognizable safety signs and warnings

Only use undamaged equipment or parts

⚠ WARNING

Electric shock in case of damaged equipment

Improper handling can damage the equipment. Damaged devices may have dangerous voltages on the cabinet or exposed components, which can cause serious injury or death if touched.

- Comply with the technical specifications for transport, storage and operation.
- Check the charging cables and charging plugs for tampering, damage and foreign objects.
- Do not use a device if it is damaged.

2.2 The five safety rules for electrical work

The European standard EN 50110-1 "Dead working" prescribes safety rules for working in and on electrical systems. To ensure the safety of persons and property in accordance with the standards, always comply with the following safety rules.

Securing an electrical system before starting work

Before starting work on and in electrical installations, apply the following five safety rules:

1. Disconnect at electric distributor
2. Secure against reconnection at electric distributor
3. Ensure that electric distributor is de-energized
4. Ground and short-circuit at the electric distributor
5. Erect barriers around or cover adjacent live parts

Prepare to switch on again after work is finished

After finishing and checking the work, prepare the restart as follows:

- Inform persons no longer required that the work is completed and no further work is permitted.
- Withdraw persons who are no longer required.
- Remove all tools, equipment and aids that have been used.

Switch on the electrical system again

After finishing the work, rescind the protective measures and switch the system on again:

1. Remove the short-circuit.
2. Remove the grounding.
3. Remove covers or barriers.
4. Remove the fuse to prevent the system from being switched on again.
5. Reconnect the system to the power supply.

2.3 Emergency Stop switch

In a hazardous situation, pressing the Emergency Stop switch immediately puts the charging station into the safe emergency stop state. In the "Emergency Stop pressed" error message (Page 85) section, the emergency stop state is described, as well as the various error scenarios and the respective behavior of the charging station.

Position of the switch

The Emergency Stop switch is located in the center on the front of the charging station, under the AC charging socket. Its recessed position protects it from unintentional operation.

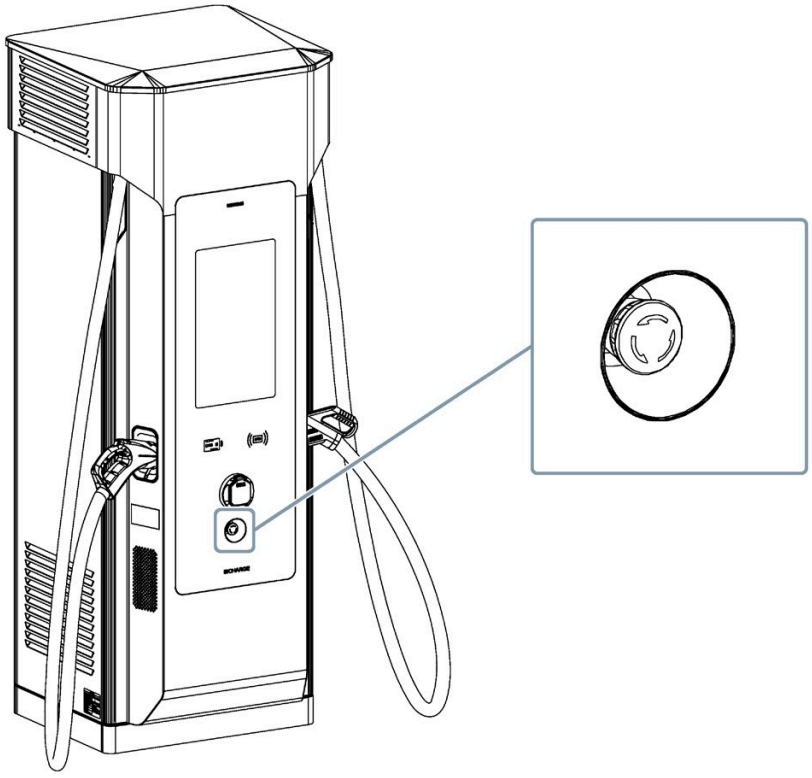


Figure 2-1 Position of the switch

Function of the Emergency Stop switch

The function of the switch is described in detail in the Display elements and operator controls (Page 23) section. In the Behavior in the event of errors and error messages (Page 84) section, the various error scenarios and the respective behavior of the charging station are also described in addition to the emergency stop state.

Canceling the emergency stop state

Note

Eliminate the hazardous situation

First eliminate the hazardous situation. Only then can the emergency stop state be canceled.

The Emergency Stop switch is equipped with a rotate-to-unlatch mechanism. An arrow on the top of the button indicates the direction of rotation for unlatching. Instructions are also shown on the display.

Unlatching the Emergency Stop button

To cancel the emergency stop state, proceed as follows:

- Turn the Emergency Stop switch in the direction of the arrow until it is released.

The charging station will automatically start to return to readiness for charging. This may take a few minutes. The LED strips signal this process and light up in white. After a successful self-check, the LEDs light up green. The start menu is shown on the display. The charging station is back in normal operating mode.

Misuse of the switch

To prevent repeated pressing of the switch (misuse) and thus the failure of the charging station without a safety-relevant reason, a wait period is introduced when the switch is pressed before the charging station is ready for charging again. The time between repeated pressing and the wait period can be individually configured in the Siemens Configuration Backend (see section Siemens Configuration Backend (Page 38)).

2.4 Safety sign

Safety signs are attached to the charging station and on the packaging for safe handling of the charging station.

Safety signs on the packaging

The following safety sign is attached to the packaging of the charging station:

Safety sign	Meaning
	Warning of general danger

Safety sign in the charging station

The following safety sign is attached to the charging station:

Safety sign	Meaning
	Warning of dangerous voltage

2.5 Industrial Security

SIEMENS AG provides products and solutions with industrial security functions that support the secure operation of plants, systems, machines and networks.

Implement and maintain the industrial security concept

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens' products and solutions constitute one element of such a concept.

Customers are responsible for preventing unauthorized access to their plants, systems, machines and networks. This includes replacing the supplied DIN lock cylinders that are part of a universal locking system.

Systems, machines, and components should only be connected to the enterprise network or the Internet if and to the extent that it is necessary and with appropriate security measures in place (e.g. using firewalls and network segmentation).

Through suitable configuration of the charging station and OCPP backend, the operator must ensure that only secure RFID cards can be used for authorization. For example, Mifare Classic cards are not classified as secure. At least OCPP 1.6J+ must be used for secure communication between charging station and OCPP backend.

In addition, the recommendations of Siemens regarding appropriate protective measures should be observed. For more information about industrial security, please visit: (http://www.siemens.com/industrialsecurity)

Only use current product versions

Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends that product updates are applied as soon as they are available and that the latest product versions are used. Using versions that are obsolete or are no longer supported can increase the risk of cyber threats.

2.6 Identification of the device

The nameplate clearly identifies the charging station and is located in the bottom right corner on the left-hand cabinet wall (see Figure 2-2). The nameplate also contains the identification data of the device, the manufacturer and the CE marking.

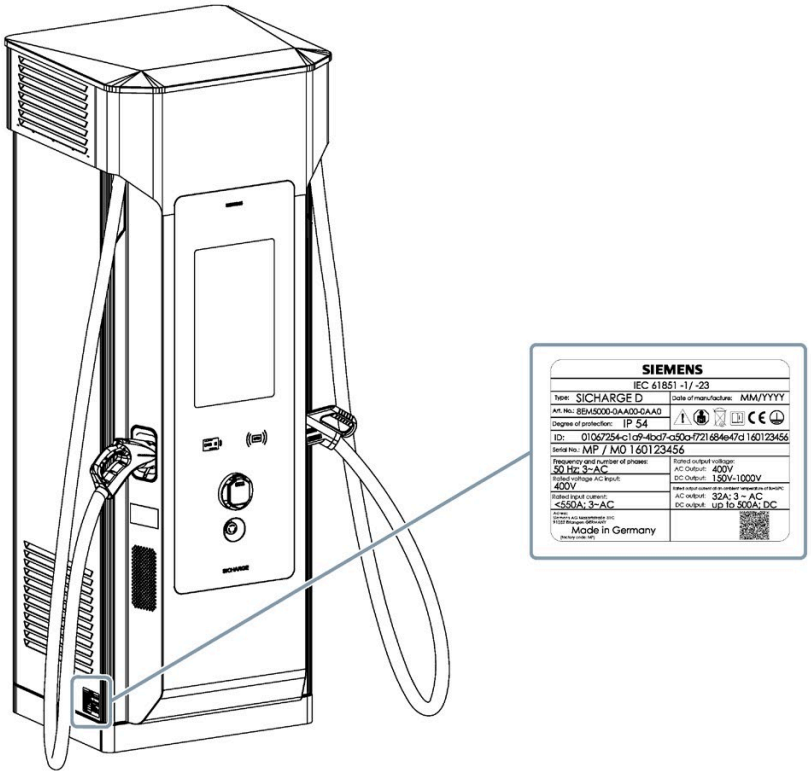


Figure 2-2 Position of the nameplate

Information on the nameplate

You can find the following information on the nameplate of the charging station:

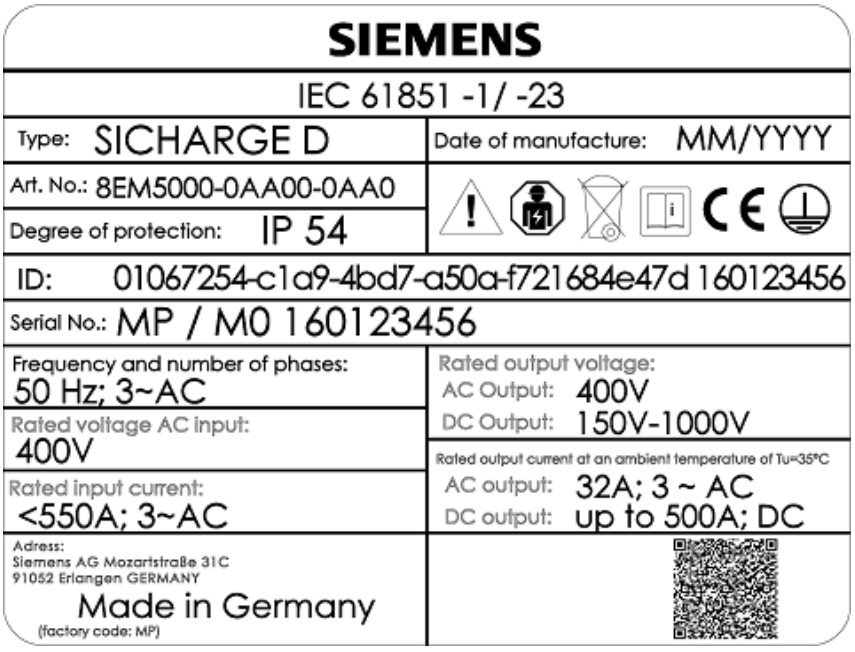


Figure 2-3 SICHARGE D nameplate

Description

3

3.1 Product overview

The SICHARGE D charging station enables high-performance charging of electric vehicles. The charging station can support the DC charging standards CCS, CHAdeMO and AC charging mode 3. This means that nearly all vehicle models from various manufacturers can be charged quickly and efficiently.

Performance features

The charging station features the following performance characteristics, whereby some are optional:

Charge performance:

- Scalable and subsequently expandable performance
- Dynamic power distribution and optimum use of installed power
- Can be expanded by up to two additional distributed DC charging points (dispensers)
- 22 kW AC charging socket with shutter
- Simultaneous charging of up to five vehicles
- Autonomous health monitoring for maximum availability

Operation and environment:

- Attractive design with status LEDs on cabinet
- Accessible 24" touch screen
- Noise-optimized operation
- High level of protection against environmental influences (IP54) and vandalism (IK10)
- Space-saving construction and minimal cross-section for foundation mounting
- Wide temperature range with intrinsically safe operating start

Software:

- Over-the-Air Update
- Connection of a range of backend systems thanks to OCPP interface and connection of the Siemens Configuration Backend (Service) via mobile wireless (2G/ 3G/ 4G (LTE)) and Ethernet connection

Application

The charging station is designed for charging electric vehicles in public and semi-public commercial and industrial areas, e.g:

- Terminals
- Vehicle depots
- Company parking lots

Compatibility

Only vehicles that meet the following standards can be charged at the charging station:

Table 3- 1 Standards

AC charging Type 2	IEC 61851-1 IEC 62196 Mode 3
CCS 2	IEC 61851-23 IEC 62196 Mode 4
CHAdeMO	CHAdeMO 1.2 JEVS G105
Communication	DIN SPEC 70121 IEC 61851-24 ISO 15118

3.2 Configuration options

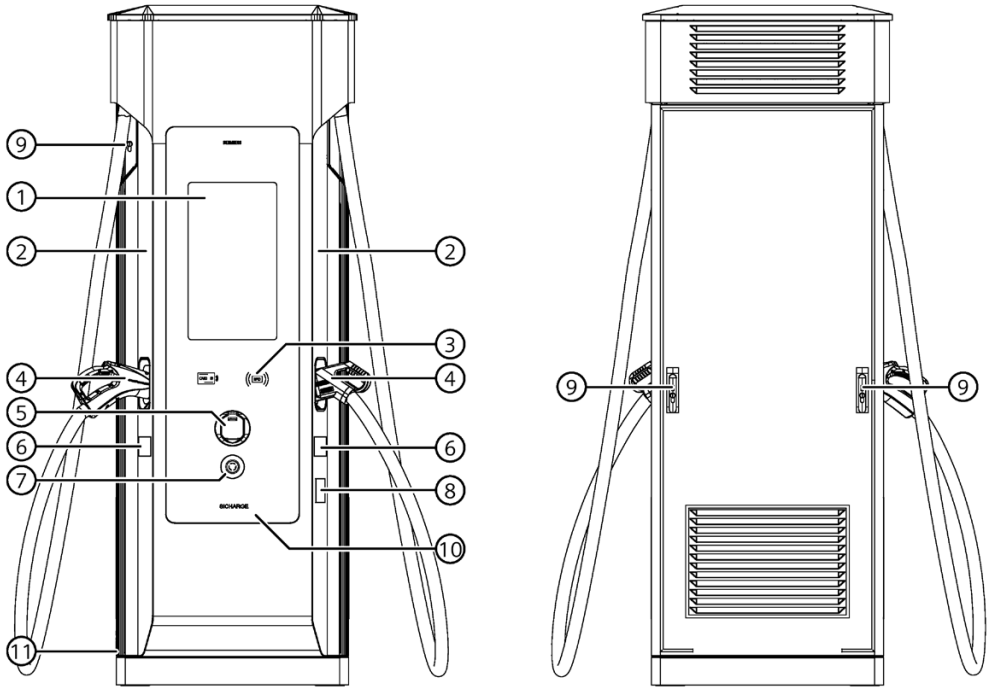
The following table clearly shows the different selection and feature options. The following sections always describe the full configuration of the charging station with maximum diversity.

Table 3- 2 Configuration options

Characteristic	**Configuration**		
Installed DC charging power	160 ... 300 kW		
Retrofitted DC charging power	Possible as standard		
Dynamic load distribution	on request		
DC charging cable 1 (left)	CHAdeMO 125 A, uncooled	CHAdeMO 200 A, uncooled	
DC charging cable 2 (right)	CCS 250 A, uncooled	CCS 500 A, cooled	
Charging cable length	3.10 m		
prepared DC outlet for dispenser	-	1x CCS (up to 500 A)	2x CCS (500 A each)
AC charging socket (22 kW)	Included by default		
Touch screen	24" for barrier-free access		
LED status display	Per DC charging cable by default		
RFID reader	Included by default		
Emergency stop	Included by default		
Lightning protection	Standard	Extended (only for prepared dispensers)	
DC meter (charging outlet)	Yes	No	
AC meter (charging outlet)	Included by default		
EMC immunity	Class A (Industry)		
EMC emission	Class B (Industry)	Class B (Residential and Mixed Use) on request	
Line supply type	TN-C	TN-S	TT
Dispatch & transportation	Land	Sea	Air
Crane lugs for mounting	Yes	No	

3.3 Display elements and operator controls

The charging station has the following display elements and operator controls:



① Touch screen
② LED strips
③ RFID reader
④ Charging plug
⑤ AC charging socket
⑥ Viewing window for DC meter
⑦ Emergency stop
⑧ Viewing window for AC meter of the AC charging outlet
⑨ Lock system
⑩ Black panel
⑪ Nameplate

Figure 3-1 Displays and operator controls of the charging station

Touch screen

The charging station is equipped with a central touch screen. Using two buttons on the top and bottom edge of the screen, the display on the 24" touch screen can be set to three different heights according to the desired viewing height. This allows barrier-free and convenient operation. The charging station therefore complies with DIN 18040.

The large viewing angle of the display makes it easier to recognize the operating information from different viewing directions. The brightness of the display is controlled automatically depending on the ambient brightness. This guarantees good readability, even in direct sunlight.

The user is led by the intuitive menu and can obtain information about the vehicle via the different states.

LED strips

The LED strips signal the state of the charging station or the individual DC charging outlets. In this way, the user can recognize from a distance if the charging station is free, the vehicle is fully charged or there is an error.

Table 3- 3 Meaning of the LED color codes

Color code	Meaning
White	Charging station powered up, not ready to charge (without critical error)
Green	Ready to charge
Red	Critical error or emergency stop activated
Blue	DC charging cable connected to vehicle
Pulsating blue	Active charging

RFID reader

The RFID reader is located below the touch screen. The symbol lights up continuously as soon as user is to be authenticated via this interface.

Charging plug and holder

The DC charging cables are located on the side of the charging station in each case. If they are not in use, the charging plugs should be inserted into the provided fixtures. In this way, the plug is protected against mechanical damage and environmental impacts.

AC charging socket

The AC charging socket is located below the RFID reader. The cover prevents the ingress of dust and moisture. The integrated shutter represents an additional mechanical protective measure for personal safety and is intended to ensure that the power contacts cannot be touched by fingers or objects.

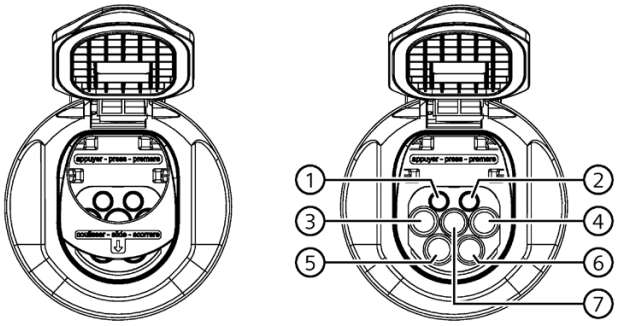


Figure 3-2 AC charging socket with protective cap and integrated shutter

The charging socket is also equipped with an actuator which locks the charging cable before the charging process is started, and only releases it again when the charging process is complete. The charging cable with Type 2 plug must be provided by the user and it must support Mode 3.

The following table illustrates the pin assignment of the socket.

Table 3- 4 Pin assignment of the AC charging socket

No.	Contact	Use
①	Proximity Pilot (PP)	Detects presence of the plug
②	Control Pilot (CP)	Communication signal between vehicle and charging station
③	L1	Line conductor L1
④	N	Neutral conductor
⑤	L2	Line conductor L2
⑥	L3	Line conductor L3
⑦	PE	Protective conductor

DC meter (optional)

The window with the display of the DC meters of the respective charging outlet on which the released energy can be read is located below the plug holder. Please refer to the operating instructions on the use of the device for more information on the contents displayed. Take the exact device type from the parts list of your charging station.

Emergency stop switch

The emergency stop switch is integrated in the charging station's emergency stop loop. Pressing the switch sends a message to the Siemens Configuration backend (charging station management system for configuration purposes and detailed error analyses, see also section 3.9) and to the OCPP backend of the operator (management system with small functional scope, see also section 3.10), if it is present and the functionality is integrated.

In addition to the rotating parts (fans), the power lines for charging are also set to the safe emergency stop state. The charging station controller initiates emergency shutdown of the AC/DC converters, releases their power supply via the circuit breaker, and opens the DC outlet contactors to the vehicle. The release of the circuit breaker also ends charging via the AC charging socket and dispenser (remote and non-autonomous charging points). Existing interlocks of the charging plug are released by the charging station. The LED strips of the charging station light up red. Charging is not possible in the emergency stop state. The "Out of service" message remains on the display of the charging station.

The auxiliary power circuit with control system and touch screen remains active in emergency stop state. This means that communication to the backend is maintained. The touch screen displays information on the current state of the charging station. The charging station can return to the normal operating state once the switch is unlocked.

AC meter (charging outlet)

Below the viewing window of the DC meter on the right is the window with the display of the AC meter for the electricity dispensed at the AC charging socket. Please refer to the operating instructions on the use of the device for more information on the contents displayed. Take the exact device type from the parts list of your charging station.

Locking system & replacing the lock cylinders

The door locks and the door opener secure access to the inside of the charging station. At the front, the lock cylinder is in the cover at the top left next to the device door. Remove the cover by pressing upwards. There is a pushbutton under the cover which can be used to open the door.

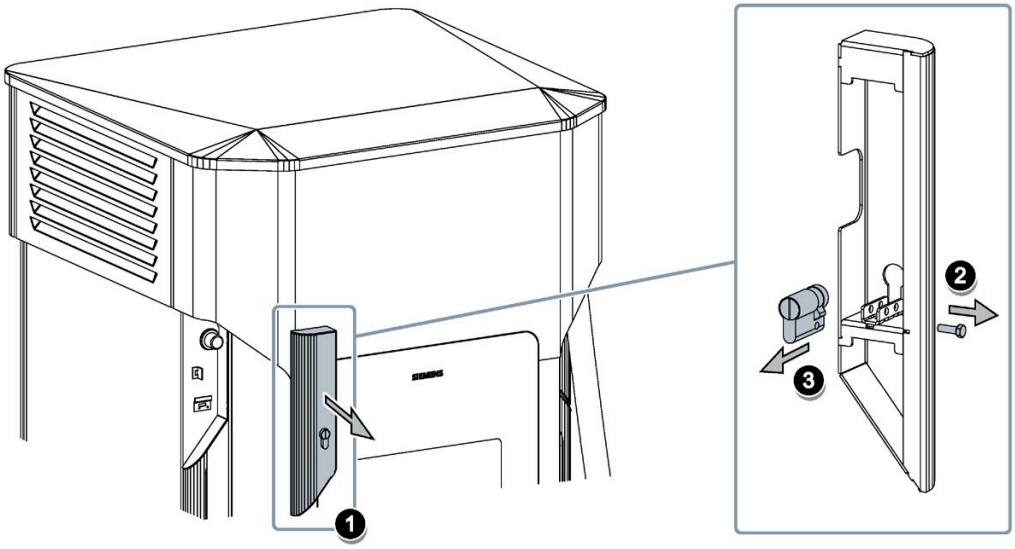


Figure 3-3 Lock cylinder, front

The lock cylinder can be removed by loosening the fixing screw on the back of the cover. Insert the new cylinder and secure it. Observe the maximum torque of 2.5 Nm. Then mount the cover back on the charging station.

On the back of the charging station, there are two further lock cylinders in the two swiveling levers. Unlock the levers to deflect them. By rotating them inwards, the rear device door can be lifted and removed.

Remove the fixing screw in the deflected lever to replace the lock cylinders. Proceed in the same way as for the front side.

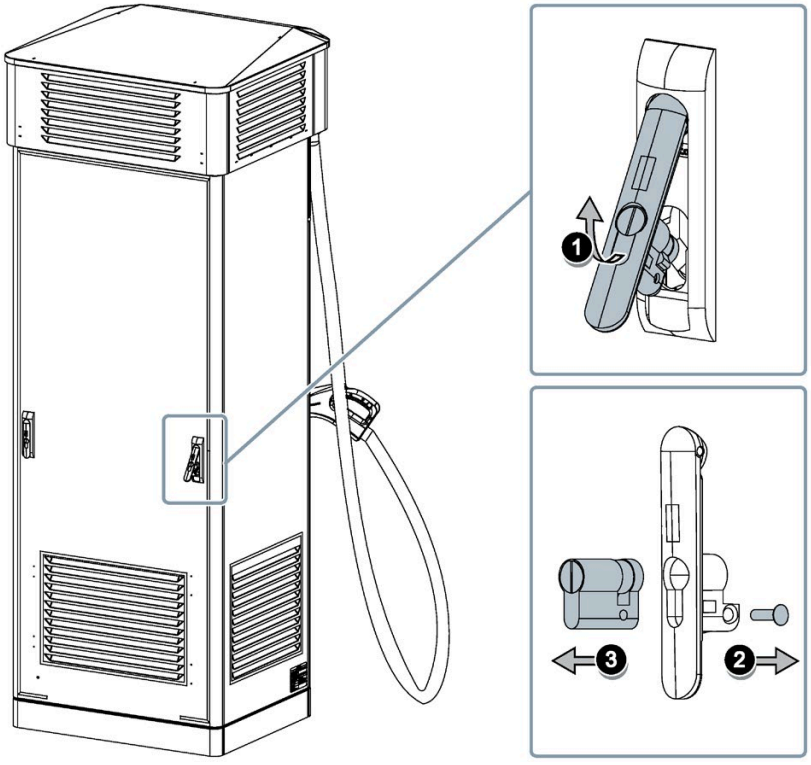


Figure 3-4 Lock cylinder, rear

Position switches detect whether the doors are closed. If the doors are opened without authorization during operation, despite the lock system, a hazard shutdown is initiated. The circuit breaker is triggered and interrupts the power supply to the power branches. Power supply to the control system is maintained.

If the doors are to be opened, the charging station must first be shut down. This is performed preferably by switching off the circuit breaker via the configuration backend or by the upstream switching device (see section 6.3 (Page 76)). After switch-off via the backend, the charging station also needs to be disconnected via the upstream switching device.

Black panel

The black panel is the black glass unit on the front of the charging station. Various devices are installed with it, for example, the display, the emergency stop switch, the AC charging socket and the RFID reader.

3.4 Charging ports

The DC cables mounted on the charging station have the charging plug type CCS or CHAdeMO. These two types differ primarily with respect to their connectors and the number and usage of the individual pins.

CCS plug (Combo 2)

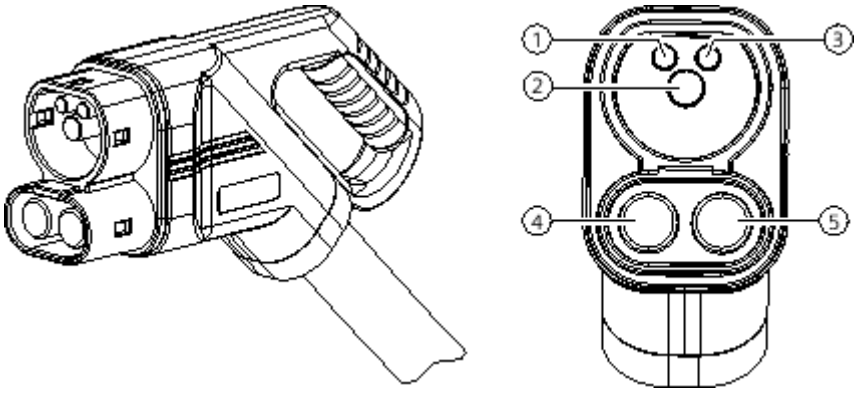


Figure 3-5 CCS plug (Combo 2)

Table 3- 5 Pin assignment of the CCS plug (Combo 2)

No.	Contact	Use
①	Control Pilot (CP)	Communication signal between vehicle and charging station
③	Proximity Pilot (PP)	---
②	Protective Earth (PE)	Protective conductor
④	DC positive pole (DC+)	Positive pole for DC charging
⑤	DC negative pole (DC-)	Negative pole for DC charging

CHAdeMO plug

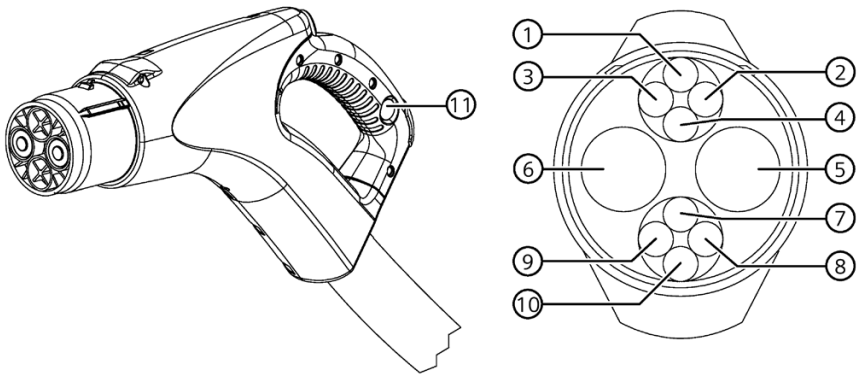


Figure 3-6 CHAdeMO plug

Table 3- 6 Pin assignment of the CHAdeMO plug

No.	Contact	Use
①	Protective Earth (PE)	Protective conductor
②	Signal 1	Initialization of the charging process
③	---	---
④	Signal 2	Release/lock the charging process
⑤	DC negative pole (DC-)	Negative pole for DC charging
⑥	DC positive pole (DC+)	Positive pole for DC charging
⑦	Signal 3	Detects presence of the plug
⑧	CAN-H	Data connection, CAN bus high signal
⑨	CAN-L	Data connection, CAN bus low signal
⑩	Signal 4	Start of the charging process after successful insulation test
⑪	LED	LED lights up red when the interlock between plug and vehicle is active.

A special feature of the CHAdeMO plug is an interlock button above the handle. After the charging process ends, the button has to be pressed to remove the plug from the vehicle inlet.

An LED (11) on the handle lights up when the interlock between plug and vehicle is active.

AC charging socket

The AC charging socket provides a third charging port on the charging station. The charging socket was already described in detail in section 3.3 (Page 23).

Interlock

To guarantee secure charging, the charging plug and charging socket cannot be disconnected under load. After plugging in and initiating the charging process, an electromechanical actuator automatically locks the plug-in connection in the vehicle inlet or the AC charging socket. The connection is released again when the charging process is complete.

Temperature monitoring

Depending on the configuration of the DC charging cables, they also feature integrated temperature measurement. The evaluation of these values ensures increased protection and secure transfer of the charging power. Correct and risk-free use is guaranteed.

Performance features

CCS*

Table 3- 7 CCS performance features

Characteristic	Value	
Standard	IEC 62196-3	
Rated current	250 A uncooled	500 A cooled
Rated voltage	1000 V DC	
Cable outer diameter	(32.0 ± 0.4) mm	(35.7 ± 0.4) mm
Power contacts	DC+, DC-	
Operating cycles	> 10,000	
Insertion and withdrawal force	< 100 N	

* Max. current usually not possible continuously because there may be derating based on the cooling capacity of the pump, ambient temperature, cable length, vehicle inlet temperature

CHAdeMO

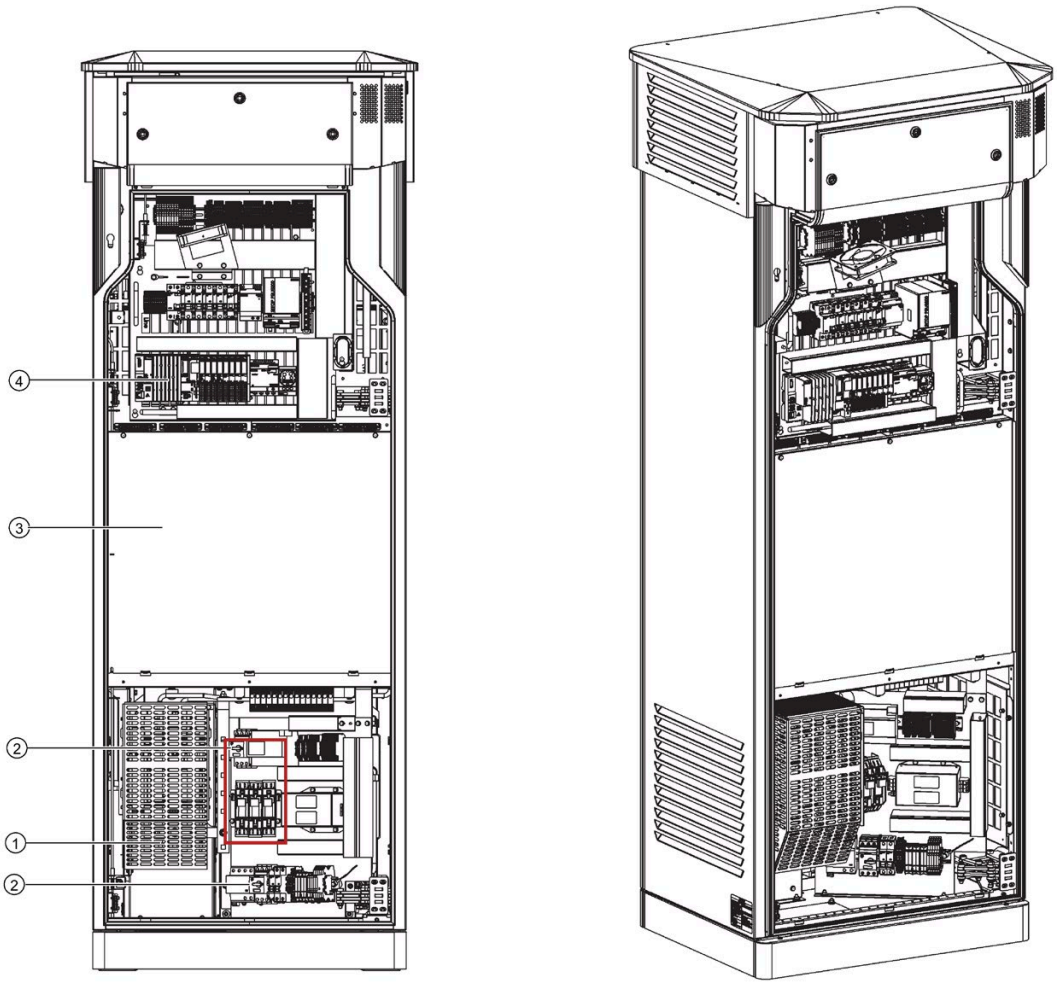
Table 3- 8 CHAdeMO performance features

Characteristic	Value	
Standard	IEC 62196-3	
Rated current	125 A	200 A
Rated voltage	500 V DC	
Cable outer diameter	(29.0 + 1.5) mm	(36.0 + 1.8) mm
Power contacts	DC+, DC-	
Operating cycles	> 10,000	
Insertion and withdrawal force	< 100 N	

3.5 Design of the charging station

The features can vary depending on the individual configuration of the charging station. Therefore, the maximum possible full configuration is described below. Differences result, for example, from fewer features due to the configuration.

The charging station is subdivided into five different areas. Four areas are arranged above one another, while the molded door represents the fifth area. The following figure shows the charging station with open door from the front.



① Protective cover in front of the copper bars and circuit breaker, connection of the power supply cables
② Protective devices
③ Cover of AC/DC converters
④ Control and communication part

Figure 3-7 Interior space front with open door

In the lower area, the ground cables are connected to the busbars of the charging station (cf. Section Mains connection (Page 66)). From here, the supply of the power lines and the automation as well as other consumers takes place. The protective elements for the internal devices and the fuses for the supplies of the dispensers are also located here.

The AC/DC converters are in the center area of the charging station behind a cover. Among other things, they guarantee galvanic isolation between the mains and the vehicle.

The automation devices are located above the converter cover.

On the back of the door, the AC power line is at the bottom, the devices for consumption measurement at the side, and the routers for wireless connection to the backend system at the top behind a cover. More information on the devices is provided in the section Routers (Page 37). The following figure shows the rear view of the door.

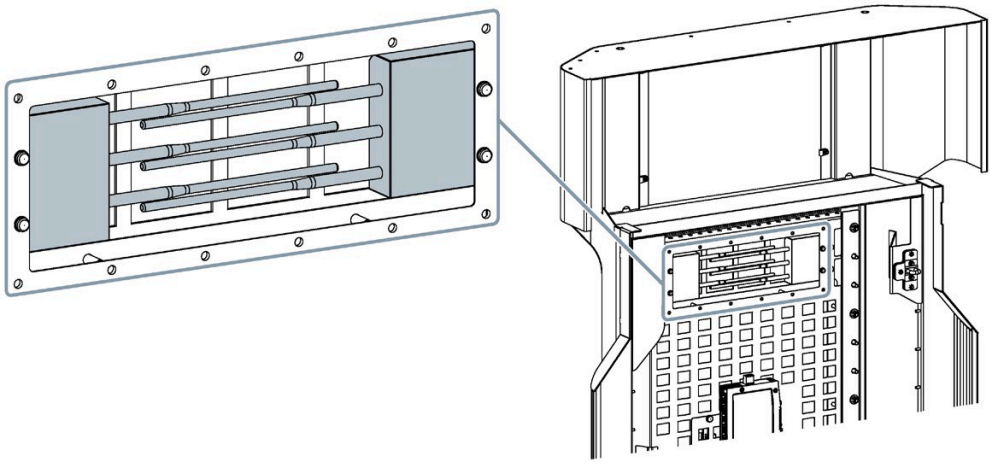
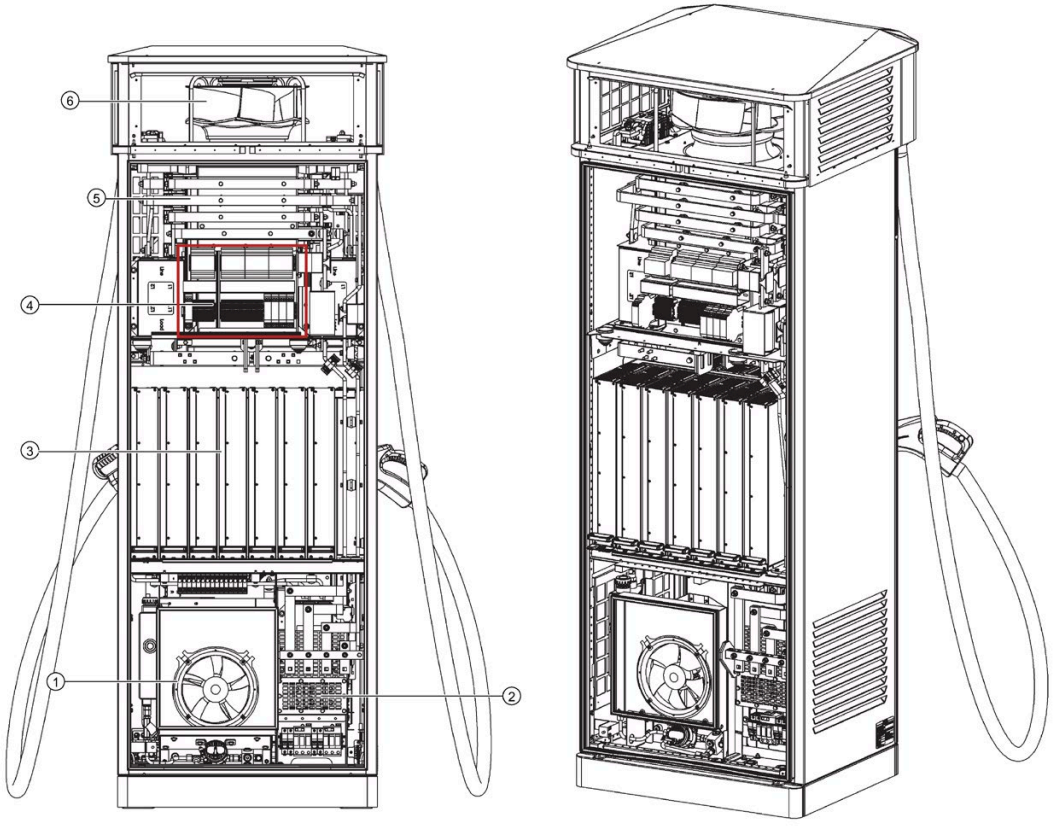


Figure 3-8 Position of the router

The following figure shows the back of the charging station with open rear panel. The coolant pump (left) is also located in the lower area. The line filter and the DC busbars for the dispensers are arranged to the right next to the coolant pump. Above them are the AC busbars to which the AC/DC converters are connected.

The DC distribution system including switching matrix, DC filter, output fuses and electronic components for monitoring the charging outputs is located above the AC/DC converter.

The outlets for the charging cables and the radial fans are located under the roof.



① Cooling unit
② Shielded AC line filter
③ AC/DC converter
④ Electronic components
⑤ DC busbar system with switching matrix
⑥ Roof fan

Figure 3-9 Interior space back with open door

3.6 Dispenser

The SICHARGE D charging station can optionally supply up to two additional dispensers. For this purpose, the corresponding DC busbar systems for connecting the customer's own infrastructure are prepared on the back of the charging station. The connection options for auxiliary power supply, communication, and integration into the control system of the charging station are located on the front of the charging station.

The connections are designed for the CCS charging standard. With parallel operation of the two busbar systems, a charging current of up to 1000 A is possible. This charging current requires the use of all DC/AC converters of the charging station. As a result, simultaneous charging via the DC charging cable is not possible at this time.

Laying cables between the charging station and the dispenser

To connect dispensers to the charging station, corresponding recesses in the foundation must be taken into consideration and the DC ground cables and cables for auxiliary power supply and communication need to be laid. Detailed explanations on this topic are provided in the sections Base area (Page 54), Setting up the charging station (Page 58) and Connecting the charging station (Page 65).

3.7 Electrical protection devices

The charging station is equipped with several electrical protection devices.

Lightning protection and overvoltage protection

Overvoltage protection devices in the electrical supply cables and the external communication cables provide the best possible protection against transient voltages. To prevent device defects, temporary undervoltages or overvoltages with violation of the high or low limits lead to a switch-off of the power-electronic components.

In addition, with the option of extended lightning and overvoltage protection, all connecting cables to the dispensers are protected.

Overload protection

At the AC power input, the circuit breaker provides short-circuit protection for the charging station. Electric vehicles are supplied with power either via the AC/DC converters (DC fast charging) or directly via AC mains connection (optional AC charging).

Each AC/DC converter is intrinsically safe in line with IEC 62477-1 and has multiple protective mechanisms at its interfaces.

The AC charging outlet is protected for the maximum charging power of 22 kW (32 A). When the user uses an AC charging cable for lower charging powers, this is automatically adapted to the rated values of the cable. If the current is more than 1.3 times greater than this value, the charging station aborts the charging process.

The control system monitors the DC output current per charging outlet. When a measured current value exceeds the preset limits, the charging process is aborted and the outlet contactors are opened. The vehicle and charging station are electrically separated. No more charging current flows between the charging station and the vehicle.

At the individual charging outlets, fuses protect the charging station and vehicle from short-circuit currents.

Insulation monitoring

To ensure that the protection principle of galvanic isolation is adhered to, the vehicle's high-voltage electrical system must not be grounded via electrically conductive material. For this reason, an insulation monitoring device in the charging station constantly monitors the resistance between the DC+ and DC- contacts to ground. If the value falls below the limit value, there is a safety shutdown. The charging process is aborted, and the charging station performs a self-test. After a successful test, the charging outlet is available again for the next charging process.

In addition, the insulation monitoring device sends a message to the control system, which transmits the event to the backend.

3.8 Routers

The charging station can be equipped with up to two routers. Each router only has a connection to one backend system.

The router for communication with the Siemens Configuration Backend is contained as standard and already has a SIM card. This SIM card is the property of the manufacturer and must be removed and returned to Siemens AG after final decommissioning of the charging station by the operator. With the door open, the router is located on the right.

A second router can be installed for wireless connection to the OCPP backend. With the door open, it is located on the left. The SIM card required for this must be provided by the operator. Use of an M2M SIM card is recommended. The SIM card slots on the devices are in the center between the connections of the LAN ports and the power supply. The SIM cards can be inserted or removed without uninstalling the router.

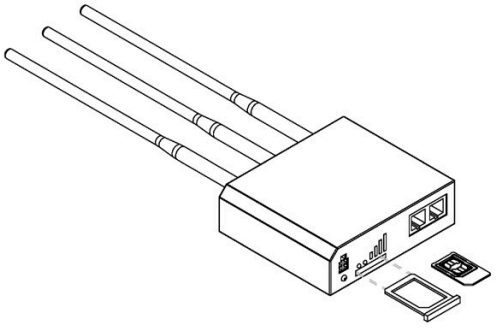


Figure 3-10 Router and SIM card slot

For installation in the routers, a mini SIM card or a corresponding adapter for this card format is needed.

3.9 Siemens Configuration Backend

The Siemens Configuration Backend (Configuration Backend for short) is the management system for configuration purposes and detailed error analyses. The connection to the Configuration Backend is realized with a dedicated router via M2M SIM cards. This connection is secured by means of certificates and private keys.

Access to the Configuration Backend is secured by 2-factor authentication. All security-relevant actions are logged. On product start, only selected Siemens employees will have access to the Configuration Backend.

The Configuration Backend has the following features:

- List of all SICHARGE D incl. current status
- Option to search for specific charging stations based on ID or location
- Base data of a charging station (location, customer) can be displayed and edited
- Configuration display/change per charging station:
  - OCPP configuration
  - General timeout and screen configuration (e.g. logout screen after 30 s or wait time after repeated pressing of the emergency stop)
  - Configuration of the permissible noise generation (depending on day of the week/time)
  - Router configuration
    WAN type (Ethernet, LTE, Wi-Fi)
  - Outlet configuration
    Authentication active/inactive
    Supported authentication mechanisms (RFID, PIN, QR code, credit card)
  - Technical configuration
    Max. output power
    Counter configuration
- Logging
  - Detailed, time stamp-based log entries for error analysis
  - Log entries across all hardware and software components
  - Cloud-based saving
  - Searchable and categorized by log type (error, warning, debug information)
- Detailed, time stamp-based log entries for error analysis Log entries across all hardware and software components Cloud-based saving Searchable and categorized by log type (error, warning, debug information)
  - Door open yes/no
  - Status of contactors
  - Temperatures
  - Etc.

- Over-the-Air Update
  - Provision of fail-safe software updates to the charging station
  - Inclusion of all components that can be updated (router, PLC, charge controller, application board)
- Remote maintenance access for emergencies
  - For emergencies, Siemens makes secured SSH access available after activation in the Configuration Backend
  - Access is logged

3.10 OCPP backend

The operator backend is a management system with a lower scope of functions than the Configuration Backend. But not all functions from the OCPP backend are relevant in the Configuration Backend, which means not all functions can be implemented here. The charging station fulfils the specification according to OCPP 1.6j+. You can find all details on this protocol at the following link: (https://www.openchargealliance.org/downloads/)

The display and wording of the various functions may differ depending on the OCPP backend used. Contact Siemens Support if you have questions about the compatibility of your backend.

The following messages with corresponding functions from the two profiles Core and Local Auth List Management are supported by the charging station.

Table 3- 9 Message with corresponding functions

Message	Function
Authorize	Organize authorizations for starting or ending a charging process
BootNotification	Query information on the configuration of the device
ChangeConfiguration	Make change to configured parameters
Clear Cache	Clear authentication cache
DataTransfer	The charging station can be expanded by functionalities that are not defined in the OCPP. These must be implemented as specific adaptation to your system.
GetConfiguration	View set parameters of the configuration
Heartbeat	Query readiness for operation
MeterValues	Query meter values
RemoteStartTransaction	Start a charging process via remote access
RemoteStopTransaction	End a charging process via remote access
StartTransaction	Notification on the start of a charging process
StatusTransaction	Query status of the charging port
StopTransaction	Notification about the end of a charging process
GetLocalListVersion	Output of the authorization list saved locally in the charging station
SendLocalList	Overwriting the local authentication list

Other functions may be added with updates

Transport and storage

4

4.1 General information

Depending on the local conditions and customer requirements, two transport options are available for selection. In general, transport from the factory and to the installation location is by truck. The following options are thus available at the installation location:

- Truck for forklift unloading
- Truck for crane unloading

Note

The packaging is different depending on the shipping type (road, air or sea) and offers optimum protection of the product. The packaging materials for export by air or sea correspond to the IPCC standard ISPM no. 15.

Make sure that the hoisting gear and machines used are suitable for the weight of the charging station. Also pay attention to the dimensions of the charging station. For specific information, refer to the document with the order number 8EM5907-0AA00-2AA7.

Safety instructions

⚠ WARNING

Danger to life when standing under lifted loads

If hoisting gear or load handling equipment fail, a lifted load can drop. If you are in the hazardous area under or next to the lifted load at this time, death, serious injury and material damage may result.

- Always use hoisting gear and load handling equipment properly.
- Do not stay in the hazardous area under or next to lifted loads.

DANGER

Danger to life due to improper transport

If you transport the charging station improperly, the device may tip over. Tipping of the charging station can cause death, serious injury and material damage.

- Only qualified persons may transport the charging station.
- Only use approved means of transport and hoisting gear.
- Pay attention to the center of gravity of the charging station. The center of gravity is marked on the device and on the packaging.
- Note the weight of the charging station.
- Only transport the charging station in a vertical position.
- The forks of the forklift must protrude at the rear of the transport pallet.

Note

Transporting charging stations on load carriers

The charging station is always delivered fastened to the load carrier. The load carrier can vary depending on the shipping type. Transportation on a load carrier protects the charging station from damage and facilitates transport.

- Therefore, always transport the charging station on the load carrier.

Transporting the charging station with a forklift

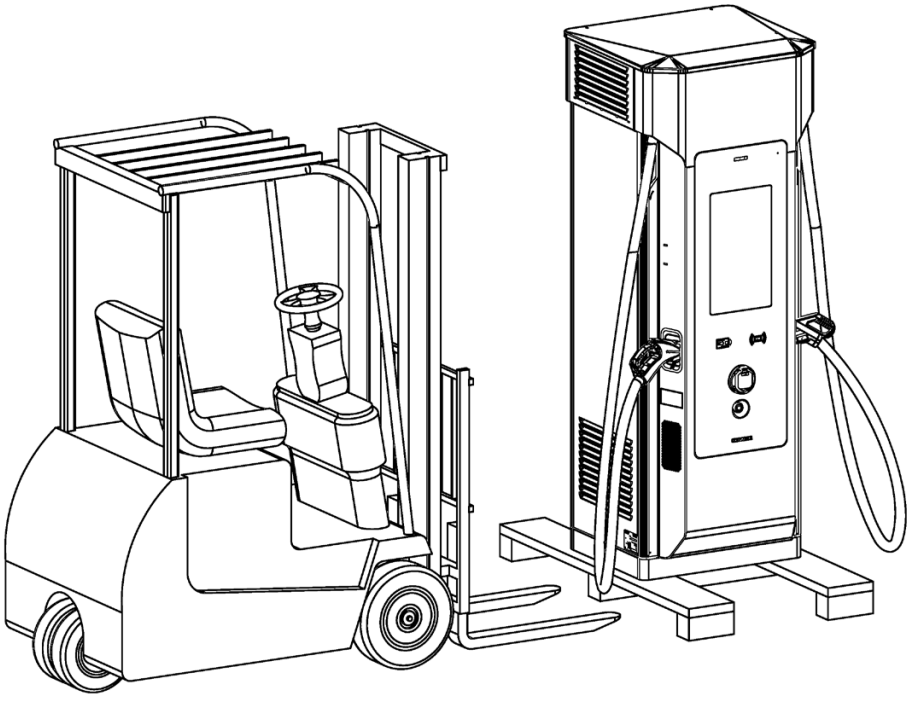


Figure 4-1 Transport with a forklift in delivery state

To transport the charging station to the installation site with a forklift, proceed as follows:

1. Drive into the load carrier with the forks on the longitudinal side.
2. Drive in until the forks protrude on the other side.
3. Lift the charging station vertically, paying attention to the center of gravity of the device. Avoid uneven ground.
4. Transport the charging station standing upright to the site.

Transporting the charging station with a crane

Ensure adequate carrying capacity, depending on the hoisting gear used. Keep an angle of inclination of 15 to 60° between the chain and the load at the attachment point. We recommend, for example, a standard harness with 1 m sling chains of grade 8 or higher.

To transport the charging station to the installation site with a crane, proceed as follows:

1. Mount the orderable crane lugs at the four corners of the enclosure frame on the roof. When using your own crane lugs, ensure that they have an M12 thread that is 25 to 30 mm long and are suitable for the weight of the charging station.
2. Hook the hoisting gear into the crane lugs.
3. Lift the charging station vertically.
4. Transport the charging station hanging upright to the site.

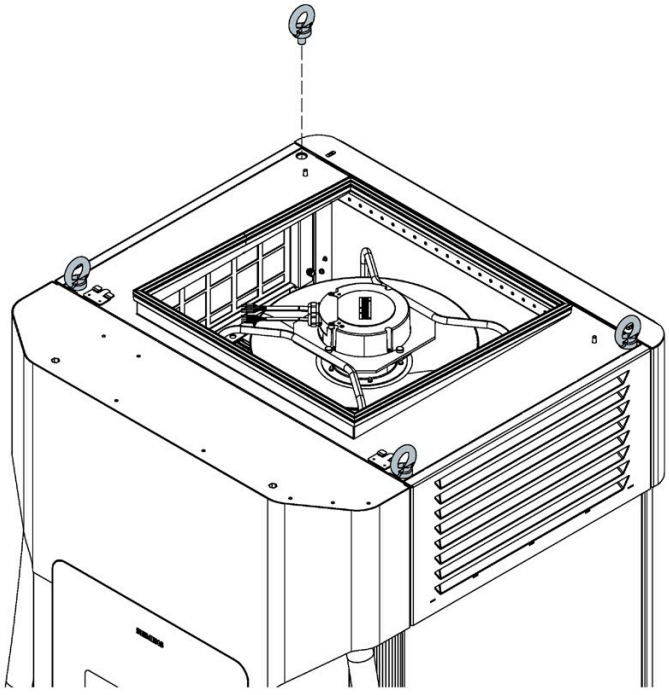


Figure 4-2 Transporting the charging station with a crane

Packaging and accessories

With all packaging types, shock indicators are attached to the charging station as standard. Suitable crane lugs can be ordered as accessories during the configuration process.

4.2 Road transport

Description of packaging

Always use the supplied transport skids including screw material.

For road transport, the packaging consists of two transport skids, a PE cover and an attachment frame. The box of accessories is attached to the side of the packaged charging station.

Load securing

Load securing must always be performed properly and only by qualified personnel. The package must be arranged on the truck in a form-fitting manner. For additional load securing, anti-slip mats must be placed under the entire contact area between the transport pallet and the loading area of the truck.

The cargo must be secured in combination with an anti-slip mat, lashing material and a lashing force of 400 daN. A securing strap is placed around the package. The attachment frame in the roof area protects the charging station against possible damage which could result from the impact of the securing straps. The attachment frame must always be placed in the roof area before applying the securing strap. Only transport skids from Siemens AG are used for transport and load securing purposes.

4.3 Air transport

Description of packaging

If the charging station is sent as air freight, it is placed on a reinforced and insulated wood pallet. In addition, foil protects the charging station from dirt particles and moisture.

The packaging consists of the following elements:

- Export packaging according to IPPC standard (ISPM15)
- Solid wooden crate
- Base plate
- Pallet base
- PE cover
- Attachment frame
- Straps for securing load
- The box of accessories is attached to the side of the packaged charging station.

Note

Air packaging cannot be stacked.

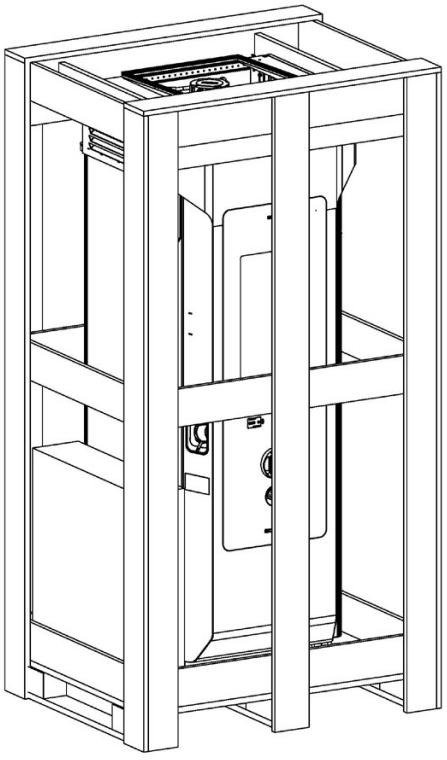


Figure 4-3 Air packaging

4.4 Sea transport

If the charging station is shipped as sea freight, it is placed on a reinforced and insulated wooden pallet. In addition, an aluminum compound foil protects the charging station inside the wooden box from moisture and salt air.

The packaging consists of the following elements:

- Export packaging according to IPPC standard (ISPM15)
- Plywood box, suitable for container stowing
- Pallet base
- PE cover
- Attachment frame
- Straps for securing load
- The box of accessories is attached to the side of the packaged charging station.

Use of desiccant method with aluminum compound foil for preservation: Climate packaging. Duration of preservation: 6 months.

Note

Sea packaging cannot be stacked.

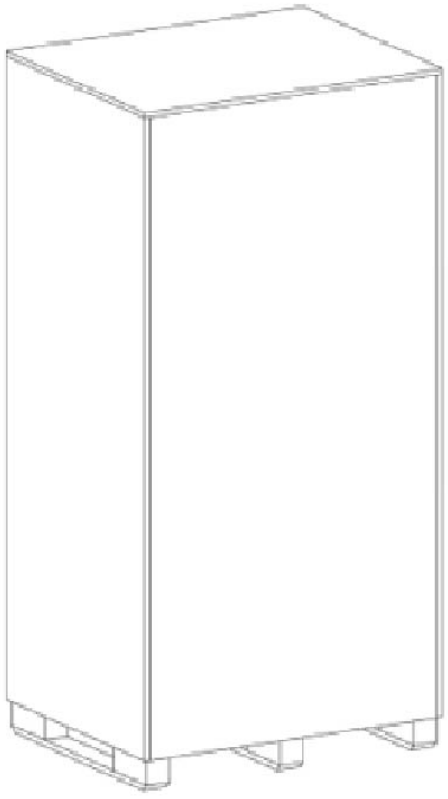


Figure 4-4 Sea packaging

4.5 Storage

Safe operation of the device requires proper storage of the charging station.

NOTICE
Damage to property due to improper storage Improper storage may result in damage to the charging station, e.g. corrosion damage. • Observe the conditions for proper storage.

Storage conditions

Store the charging station in a clean, dry internal area. The storage location must meet the following conditions:

- Horizontal surface
- Protection against mechanical stress (e.g. from shock, vibration)
- Dust-free
- Low-pollutant atmosphere
- Room temperature as constant as possible
- Permissible relative humidity: 5 % to 70 % (non-condensing)

Long-term storage

NOTICE
Material damage due to excessive storage time If the electronic components of the charging station remain switched off for more than a year, storage damage to the components may occur. • Only store the charging station for an extended time if necessary. • Put the charging station back into operation after one year at the latest.

Installation and mounting

5

5.1 Safety instructions

In order to mount the charging station safely, observe the following safety instructions.

⚠ DANGER

Electrical shock from contact with exposed electrical connections or components

Before starting any installation work, check that the feeder cables have been de-energized and secured against being switched on again unintentionally.

If damage or tampering is visible (e.g. damage to the cabinet), do not install the charging station.

⚠ WARNING

Danger to life when standing under lifted loads

If hoisting gear or load handling equipment fail, a lifted load can drop. If you are in the hazardous area under or next to the lifted load at this time, death, serious injury and material damage may result.

- Always use hoisting gear and load handling equipment properly.
- Do not stay in the hazardous area under or next to a lifted load.

⚠ WARNING

Fall arrester

Use approved protective equipment to protect persons, components and tools against falling from a working height of 1 m.

⚠ WARNING

Falling parts

When working at an elevated height, watch out for falling parts, cables or plugs.

⚠ CAUTION

Risk of tripping or slipping

Keep the work area clean and tidy to prevent tripping and slipping.

⚠ CAUTION

Accident risks

Avoid accidents and damage to persons, vehicles and the SICHARGE D. Accident risks include inattention, danger of slipping and tripping and vandalism.

Provide additional protective measures, for example:

- Warning signs
- Safe location of the SICHARGE D dispenser
- Barriers
- Training of drivers and operators
- Sufficient lighting

⚠ CAUTION

Safety area for mounting

Create a safety area around the mounting surface with warning signs and barriers.

⚠ CAUTION

Use personal protective equipment (PPE)

Use the required personal protective equipment for the work, such as:

- Protective shoes
- Helmet
- Safety vest
- Gloves
- Protective goggles

⚠ CAUTION

Risk of crushing or cuts

When mounting, look out for moving parts and protruding cables and bolts.

5.2 Installation location

To operate the charging station safely, you need a location that meets the following requirements.

CAUTION

Accident risks

Avoid accidents and damage to persons, vehicles and the SICHARGE D. Accident risks include inattention, danger of slipping and tripping and vandalism. Provide additional protective measures:

- Warning signs
- Safe location of SICHARGE D
- Barriers
- Training of drivers and operators
- Sufficient lighting

Selection criteria for a safe location

Select the location of the charging station in such a way that all operations are safe. The charging station itself must not pose a risk to persons or vehicles.

Note

Do not install the charging station in an open area

Do not install the charging station in an open area without an interception rod or external lightning protection. Otherwise, complete protection cannot be guaranteed.

Noise emission

Select the location of the charging station so that the specifications of the Technical Instructions for Protection Against Noise (TA Noise) (https://www.verwaltungsvorschriften-im-internet.de/bsvwvbund_26081998_IG19980826.htm) are observed.

Minimum clearances

⚠ WARNING

Insufficient ventilation

Insufficient ventilation clearances result in components overheating and, in the worst case, in the generation of smoke and fire. Severe injuries could result.

Furthermore, the service life of installed components is reduced significantly by excess temperatures.

To enable operation and maintenance and to ensure proper ventilation of the charging station, you need to maintain the following minimum clearances:

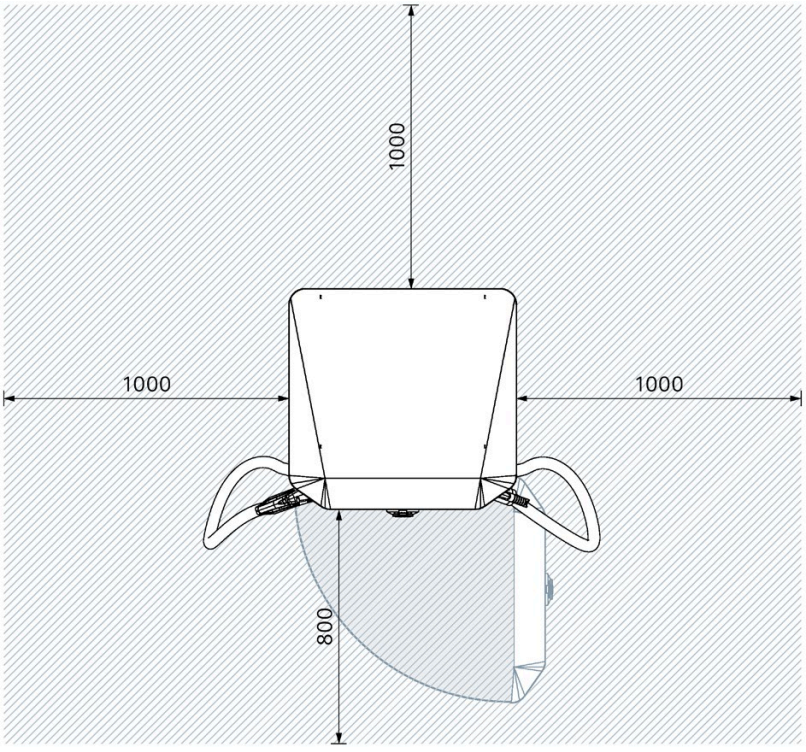


Figure 5-1 Minimum clearances of SICHARGE D, top view

However, we recommend installing the charging station free-standing as far as possible. If two charging stations are installed next to one another, double minimum clearances apply between the two devices.

In addition, a minimum clearance of 20 cm between the top of the charging station and the ceiling of the room is required at the intended location. Depending on the conditions on site and your planned procedure for setting up the charging station, the minimum clearance that you require could be greater for assembly reasons.

Shading

Protecting the charging station from direct sunlight by means of appropriate shading equipment is recommended. Direct sunlight can additionally heat the charging station and especially the charging cables, which automatically reduces the charging power.

In addition, strong UV radiation can cause premature aging of the insulation of the charging cables. This could significantly reduce maintenance intervals.

Maximum allowable temperature at air inlet

The maximum permissible rated temperature at the air inlet is 35 °C. In the range between the rated temperature and the maximum permissible ambient temperature of 55 °C, the available charging power is restricted.

Direction of air flow

The supply air enters the two sides and the back of the charging station from below. The air flow within the charging station goes from the bottom to the top. The warm exhaust air escapes on both sides and the back. This means that it does not hit the operator at the front of the charging station.

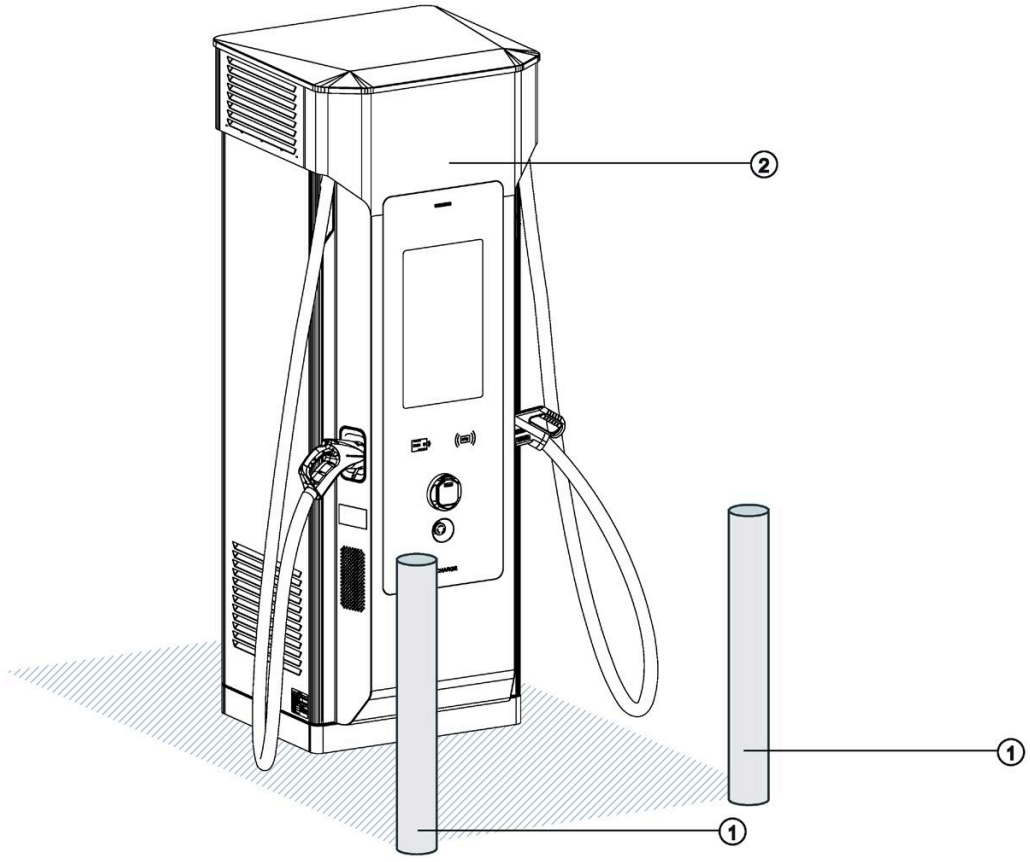
Therefore, the operator must ensure that the air entry openings are kept free and not blocked by obstacles, such as snow or leaves.

Electrical installation

The charging station is designed for connection to the low-voltage network (400 V AC). Connect the charging station to the electrical distributor via a supply line dimensioned for the expected current load. When selecting the cable cross-sections, also take into consideration whether an increase in the charging power and therefore greater power consumption will be desired later. Flexible conductors are recommended.

Bumper

To protect the charging station against contact by vehicles, impact protection is recommended (e.g. in the form of a bollard).



① Bumper
② Charging station

Figure 5-2 Example: Correct position of the bumper and charging station

5.3 Base area

Properties of the base area

To ensure the stability of the charging station, the concrete base area must meet the following requirements:

- Level
- Dry
- Sufficiently solid and stable, according to the ground conditions on site

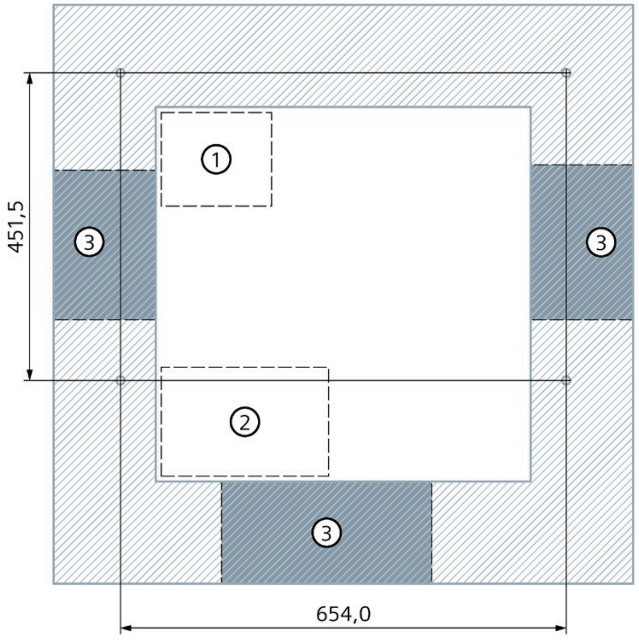
Note

Illustrations of example

The illustrations below serve as examples. Plan and adjust the base area together with the foundation planner in accordance with your circumstances.

Securing points

In order to be able to mount the station, the following drill holes must be available for the securing points:



① Cable bushing for dispenser cable
② Cable bushing for power supply cord
③ Example recesses in the foundation walls for cable routing

Figure 5-3 Top view of the base area

After drilling, insert M12 bolt anchors with suitable fasteners (e.g. dowels). The bolt anchors must protrude about 50 mm from the foundation.

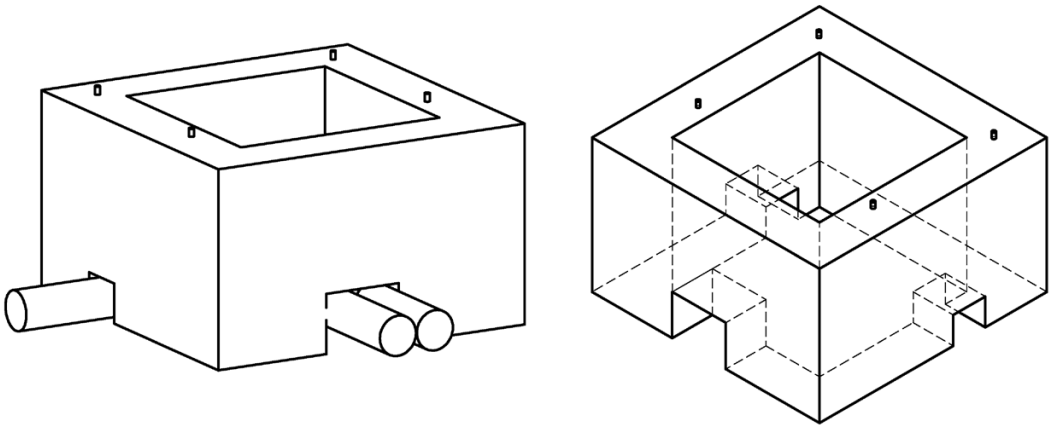


Figure 5-4 Example of a foundation with bolt anchors and recesses for the various cables

Position the recess for the AC supply cable and DC cable according to the local conditions. Figure 5-4 shows an example of the AC power supply from the front, while the dispensers are installed at the side of the charging station. Make the cutouts large enough to make it easy to lay and connect the cables.

Depending on the installation location, ensure that the foundation depth is sufficient to guarantee frost-free conditions. Also observe the maximum permissible bending radii of the connecting cables you are using. Lay communication, control and auxiliary cables separately and protected from the power cables. To avoid electromagnetic interfaces, a minimum clearance of 25 cm is recommended. Also avoid routing the cables parallel to the power cables and, if possible, route the cables orthogonally to the power cables. Observe the country-specific regulations.

Only use sufficiently insulated cables for the operating voltages. Select the cable cross-sections according to the rated current, cable length and permissible voltage drop. Also take into consideration the increased rated current if greater charging power will be desired later. Fine-stranded or superfine-stranded cables are recommended.

Deep grounding with TT mains

Consider the installation of a deep grounding electrode when connecting the charging station to a TT mains. The recommended design of the foundation provides sufficient flexibility for this.

5.4 Goods acceptance

5.4.1 Checking the delivery for completeness and correctness

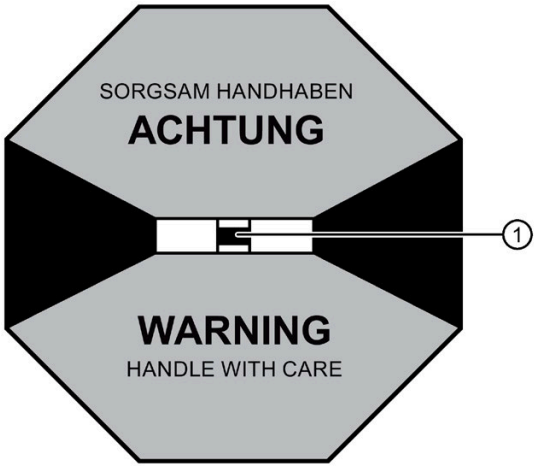
Perform an incoming goods inspection as soon as the goods are delivered. Check the goods for completeness and correctness based on the delivery documents.

5.4.2 Checking the transport packaging

Start the inspection of the transport packaging with a visual inspection of the shock indicator.

Checking the shock indicator

A shock indicator is attached to the charging station to detect the occurrence of extreme G forces. The indicator tube shows that the tolerance limit for G-forces has been exceeded by red coloring.



① Indicator tube

Figure 5-5 Schematic example: Shock indicator

The shock indicator monitors any G-forces acting during the entire transport. If the charging station is subjected to unacceptably high G-forces during transport, the shock indicator is triggered. The indicator tube shows that the tolerance limit for G-forces has been exceeded by red coloring.

Perform a visual inspection of the shock indicator as follows:

1. Check whether there is a shock indicator on the charging station.
2. Check whether the glass tube in the middle of the indicator has turned red.
3. Check whether the serial number of the indicator matches the number on the delivery note.
4. When an indicator is red, missing or deviating from the delivery note, report this to the carrier immediately.

The carrier must confirm the red colored or missing indicator on the receipt.

Visual inspection and unpacking

After you have checked the shock indicator, continue checking the incoming goods with the visual inspection of the overall transport packaging. Any damage should also be reported to the carrier.

After the visual inspection, start to unpack the charging station.

5.4.3 Report missing delivery components or transport damage

If you discover that the delivery is incomplete or that there is transport damage, document the damage first. Then submit a damage report.

Documenting damage

Take immediate action to determine the exact extent, cause and origin of the damage. Take immediate and appropriate measures to limit the damage.

In particular, document the damage as follows:

- Photograph the damage.
- Record all known information on the damaging event, e.g. location, time and date.

Report incomplete delivery or damaged delivery items

If the delivery is incomplete or damaged, inform the following persons immediately:

- Contact of the supplier (see delivery note)
- Contact of the purchaser (see delivery note)
- Person responsible for the transport company

5.5 Setting up the charging station

Note

Secure and clear communication between the crane or forklift driver and the installer must be guaranteed while the charging station is being positioned and set up.

5.5.1 Preparing cables

Prepare all required conductors and connections before you start positioning the charging station on the foundation.

Preparing the conductors of the power supply cable

To connect the individual wires correctly, you need to prepare the individual conductors of the power supply cable. Proceed as follows:

1. Shorten the cables to a length that enables you to easily insert them into the charging station. Note the exact position of the AC cable entry on the front of the charging station.
2. Remove the sheath from the AC cables.
3. Protect the individual conductors properly from environmental influences such as dirt and moisture.

Preparing the network cable

The charging station offers the possibility of connection to the network via an Ethernet cable. Ensure proper protection of the cable from environmental impacts such as dirt and moisture. Read the information on laying in section 5.3 (Page 54).

Preparing dispenser cables

If dispensers are to be connected to the charging station, proceed as follows:

1. Shorten the cables to a length that enables you to easily insert them into the charging station. Also note the exact position of the cable entry for the DC cables on the back of the charging station.
2. Remove the sheath of the DC cables.
3. Protect the individual conductors properly from environmental influences such as dirt and moisture.

In addition to the power connections, the dispensers require an auxiliary power supply, communication lines and integration into the control system of the charging station. Lay these cables separately from the power cables. Ensure proper protection of the cables from environmental effects such as dirt and moisture.

5.5.2 Positioning the charging station

To set up the charging station at the site, you need to lift the charging station from the transport pallet using either a crane or a forklift (see section Transport and storage (Page 40)). Then transport the charging station to the prepared base area. Lifting and positioning with a crane is recommended. If crane lugs are needed, they can be specified and ordered in the configurator.

Lifting the charging station from the load carrier

To lift the charging station from the load carrier, proceed as follows:

1. Open the device door, remove the cable gland plate below the connection bars on the circuit breaker and close the door.
2. Repeat this step on the back of the device if you want to connect dispensers to the charging station.
3. Procedure with crane or forklift
   - Using a crane (recommended):
     Mount the orderable crane lugs at the four corners of the enclosure frame on the roof. When using your own crane lugs, ensure that they have an M12 thread that is 25 to 30 mm long and are suitable for the weight of the charging station. Then place the hoist (see section 4.1) into the four crane lugs.
   - Using a forklift:
     Drive the forks from the front or from behind under the bottom of the cabinet until the forks protrude on the other side. Pay attention to the center of gravity of the device.
4. Loosen the screws between the charging station and load carrier.
5. Lift the charging station vertically.

Positioning the charging station

1. Release the charging station carefully above the base area. Position the four feet with their slots using the concrete anchors.
2. Do not damage the concrete anchors when placing them on the base area.

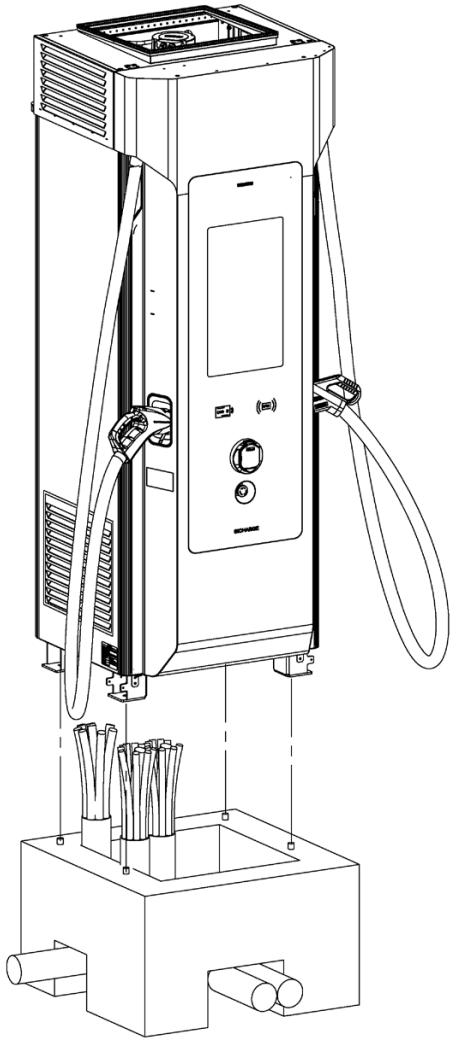


Figure 5-6 Positioning the charging station

5.5.3 Inserting the power cable into the cabinet

Open the device door and remove the protective cover of the cable connections on the circuit breaker. Pull the cables through the opening in the cabinet floor.

⚠ WARNING

Danger to life when standing under lifted loads

If hoisting gear or load handling equipment fail, a lifted load can drop. If you are in the hazardous area under or next to the lifted load at this time, death, serious injury and material damage may result.

- Always use hoisting gear and load handling equipment properly.
- Do not stay in the hazardous area under or next to lifted loads.

⚠ DANGER

Danger to life due to improper lifting

If you lift the charging station improperly, the device may tip over. Tipping of the charging station can cause death, serious injury and material damage.

- Only qualified personnel should lift the charging station.
- Only use approved hoisting gear.
- Pay attention to the center of gravity of the charging station.
- Note the weight of the charging station.
- Only lift the charging station in a vertical position.
- The forks of the forklift must protrude on the opposite side of the charging station.

5.5.4 Securing the charging station

After inserting the power cord into the cabinet, attach the charging station to the base area.

Required tools and fasteners

You will need the following tools to secure the charging station:

- Torque wrench
- Socket: Hexagon, SW18

The fastening material is not included in the scope of delivery.

We recommend the following fastening material:

- 4 nuts M12 DIN 934
- 4 spring washers M12 DIN 125
- 4 fastening elements, for example: Bolt anchors M12

Securing the charging station

Use the four studs in the prepared base (Page 54) to secure the charging station. Use washers, spring washers and nuts to secure the charging station. Select the tightening torque according to your selected bolt anchor.

5.5.5 Install the cable gland plate

After you have secured the charging station, re-install the cable gland plate.

Mains connection

The number and cross-sections of the power supply cables can vary depending on the selected mains connection and the power drawn. Adapt the cable gland plate according to your connection. To do this, proceed as follows:

1. Open the device door.
2. For each conductor of the mains connection, drill a hole at the relevant position in the cable gland plate so that you can optimally pass the conductors through and connect them.
3. If you wish to connect to your charging station via Ethernet, also drill a hole for the external Ethernet cable in the cable gland plate.
4. In each drill hole, insert a cable gland according to the cross-section of the individual conductors.
5. Pull the cables through the holes in the cable gland plate.
6. Secure the cable gland plate with a tightening torque of 4 Nm.
7. If necessary, seal the plate with suitable materials to prevent the ingress of moisture and small animals.

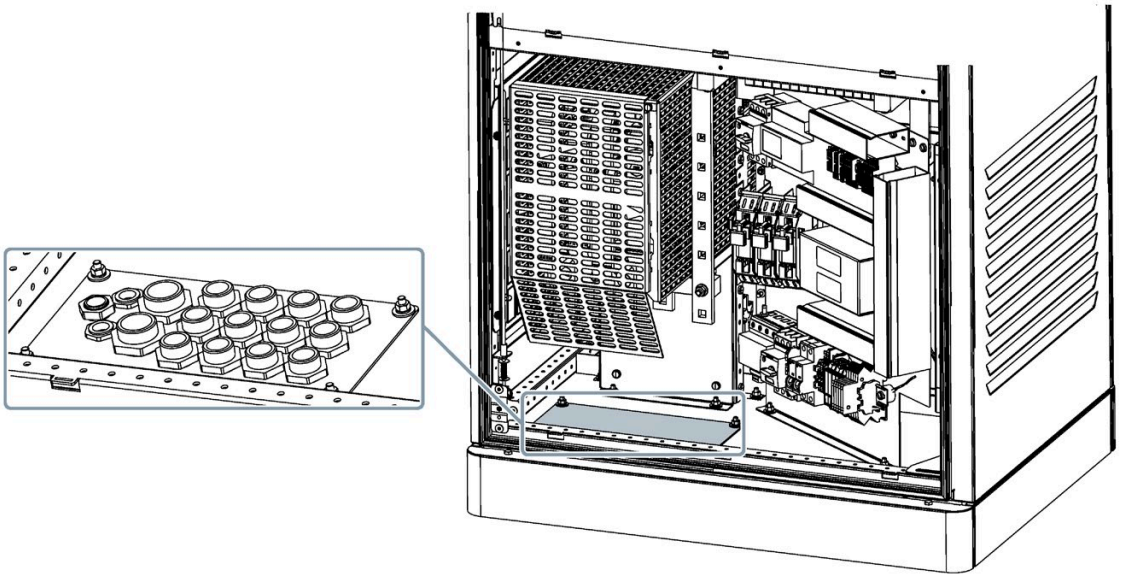


Figure 5-7 Cable gland plate

Dispenser

If you connect dispensers to the charging station, you must also prepare the second cable entry plate on the back below the busbar taps. In the work steps, proceed in a similar way as with the mains connection. Take into consideration all required cables, such as power cables, communication cables, any auxiliary supply cables, etc.

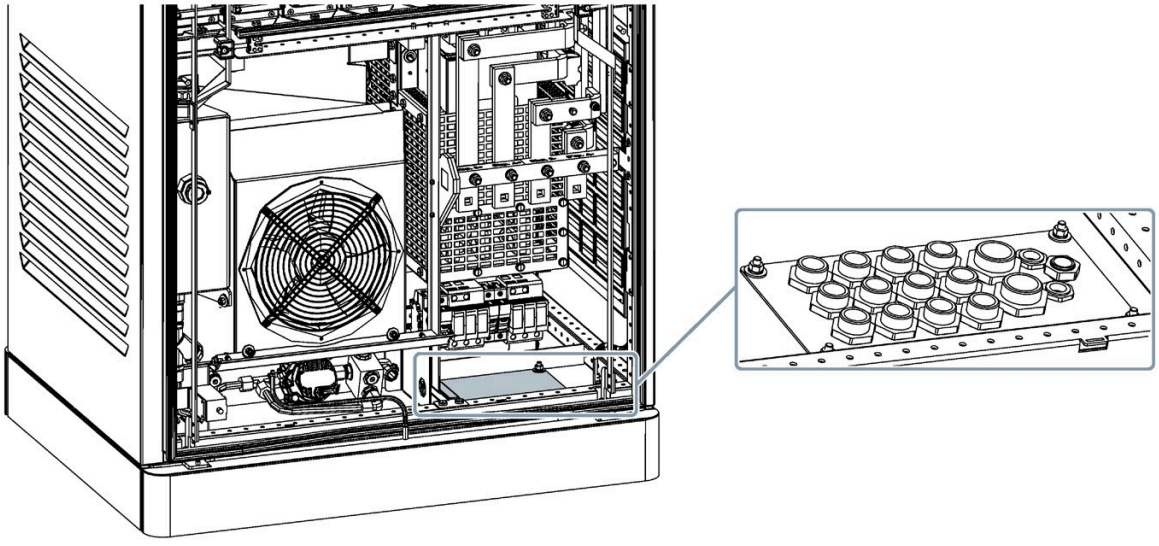


Figure 5-8 Cable gland plate

5.5.6 Installing baseboards

Mount the baseboards as follows:

1. Start with the rear baseboard. Use two M6 Allen screws (5 mm Allen wrench) to screw the rail to the rear device support feet.
2. The two lateral baseboards are inserted into the rear baseboard and then fixed to the two front device support feet with M6 Allen screws.
3. The front baseboard is also inserted.

Disassembly is only possible in reverse order.

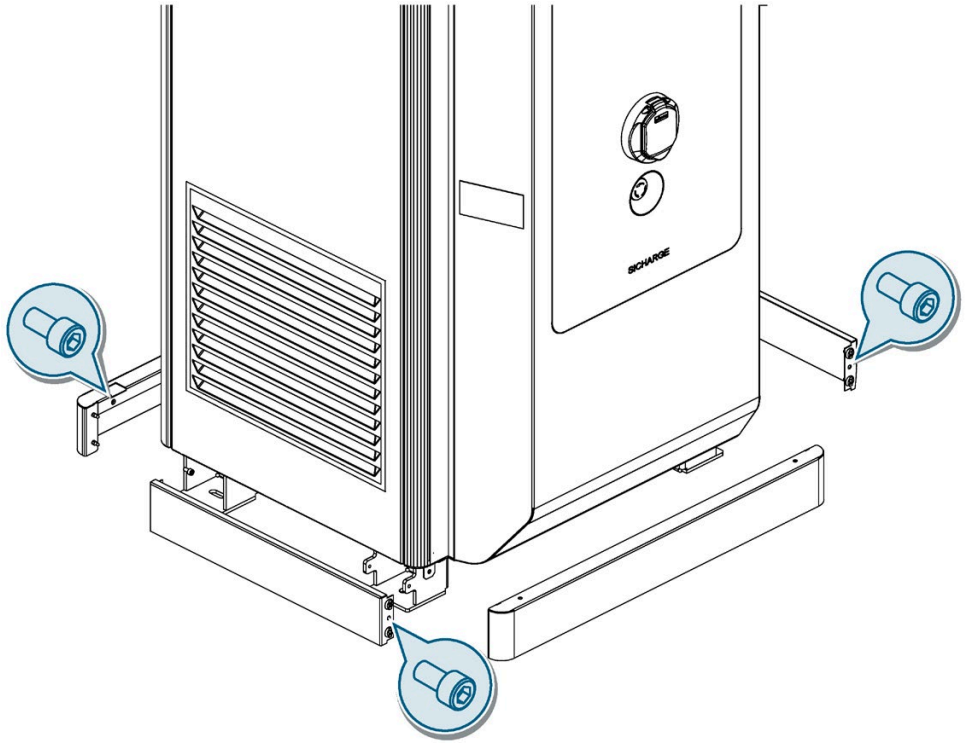


Figure 5-9 Baseboard assembly

5.6 Connecting the charging station

5.6.1 Safety instructions

The installer is responsible for the electrical connection of the charging station. The electrical connection of the charging station must be performed in accordance with the relevant regulations (such as conductor cross-section, fuses, ground connection).

During all work on the charging station, observe the basic safety instructions (Page 8), the requirements of DIN EN 50110-1 for safe working with and on electrical installations or equivalent applicable local guidelines. Also observe the following safety instructions.

⚠ WARNING

Electric shock due to lack of grounding

If the protective conductor connection is missing or incorrectly connected, high voltages may be present on exposed parts. Touching the parts can lead to serious injury or death. To ground the charging station, connect the protective conductor properly.

⚠ WARNING

Qualified personnel

Only qualified and trained persons may work on SICHARGE D. Only qualified and instructed electricians may work on the SICHARGE D.

⚠ WARNING

Fall arrester

Use approved protective equipment to protect persons, components and tools against falling from a working height of 1 m.

⚠ WARNING

Falling parts

When working at an elevated height, watch out for falling parts, cables or plugs.

⚠ CAUTION

Danger to life and damage to property due to loose power connections

Insufficient tightening torques and vibrations lead to loose power connections. Loose power connections can result in high voltages on exposed parts. Touching the parts can lead to serious injury or death. Loose power connections can also cause fire damage, defects to the device or malfunctions.

- Tighten all power connections to the specified tightening torque.
- Check all power connections at regular intervals, especially after transport.
- Mark drawn connections, for example, with a red paint stick.

⚠ CAUTION

Use personal protective equipment (PPE)

Use the required personal protective equipment for the work, such as:

- Protective shoes
- Helmet
- Safety vest
- Gloves
- Protective goggles

⚠ CAUTION

Accident risks

Avoid accidents and damage to persons, vehicles and the SICHARGE D. Accident risks include inattention, danger of slipping and tripping and vandalism.

Provide additional protective measures, such as:

- Warning signs
- Safe location of SICHARGE D
- Barriers
- Training of drivers and operators
- Sufficient lighting
- Keep the installation site tidy

⚠ CAUTION

Safety area for mounting

Create a safety area around the mounting surface with warning signs and barriers.

⚠ CAUTION

Risk of crushing or cuts

When mounting, look out for moving parts and protruding cables and bolts.

⚠ CAUTION

Risk of tripping or slipping

Keep the work area clean and tidy to prevent tripping and slipping.

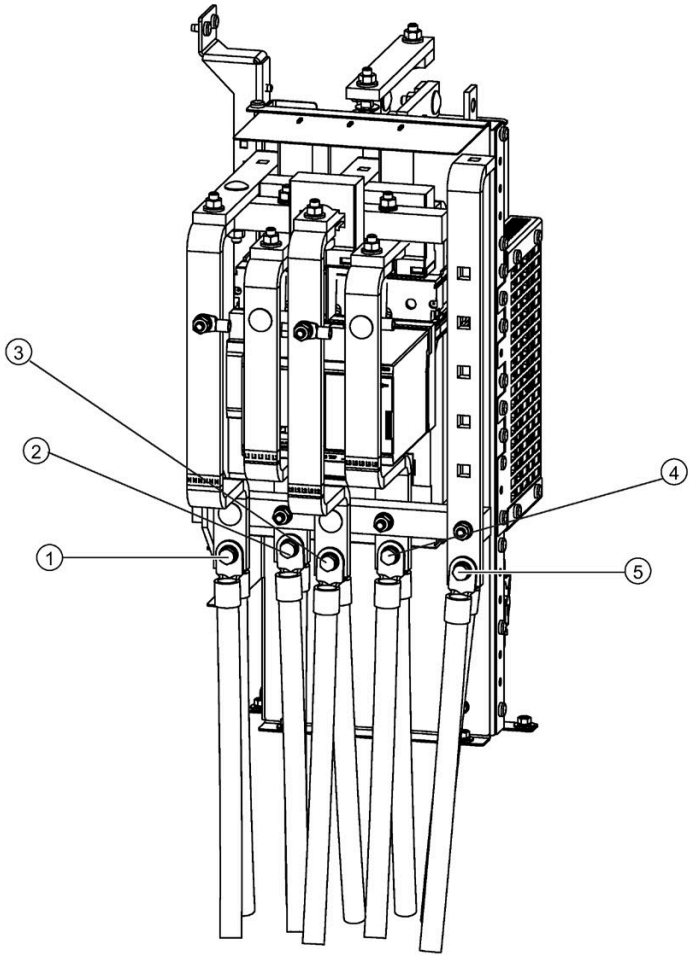
5.6.2 Mains connection

To connect the charging station to the supply network, connect the power cable to the busbars of the charging station. Use the fastening material pre-mounted on the connection bars of the charging station.

Requirements

- You have removed the protective cover in front of the connections of N, L1, L2 and L3.
- You have inserted all cables on the supply side into the cabinet and installed the cable gland plate again.

Connections for the power supply cable



① Connection for N
② Connection for L1
③ Connection for L2
④ Connection for L3
⑤ Connection for PE

Figure 5-10 Connections of the power supply cable

Preparing conductors

To connect the individual wires correctly, you need to prepare the individual conductors of the power supply cable. Proceed as follows:

1. Select an M10 cable lug for your conductor cross-section.
2. Strip off the conductor ends so that the remaining insulation reaches up to the cable lug.
3. Fasten the cable lug correctly to the end of the conductor.

Connecting the conductor

First connect the protective conductor of the power cable before proceeding with the installation of the remaining conductors. To do this, proceed as follows:

1. Insert the M10 screws from behind through the square cutouts of the connection rails.
2. Contact a connection bar with two conductors. Ensure that there is one cable lug on each side of the copper busbar.
3. Tighten the fastening nut with the required torque of 40 Nm.
4. Mark the drawn connections, for example, with a red paint stick.
5. Replace the protective cover after you have connected all conductors.

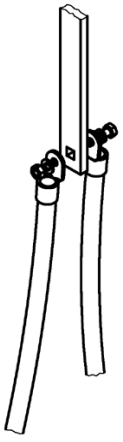


Figure 5-11 Connection to the copper bars

Mounting the protective cover

After you have connected all conductors, you need to mount the protective cover again.

Connecting the Ethernet cable

If you want to establish a connection between the OCPP backend and the charging station via Ethernet, you need to connect the Ethernet cable to the right-hand port (see following figure). Secure the cable with a strain relief. The connection point also takes on the function of overvoltage protection.

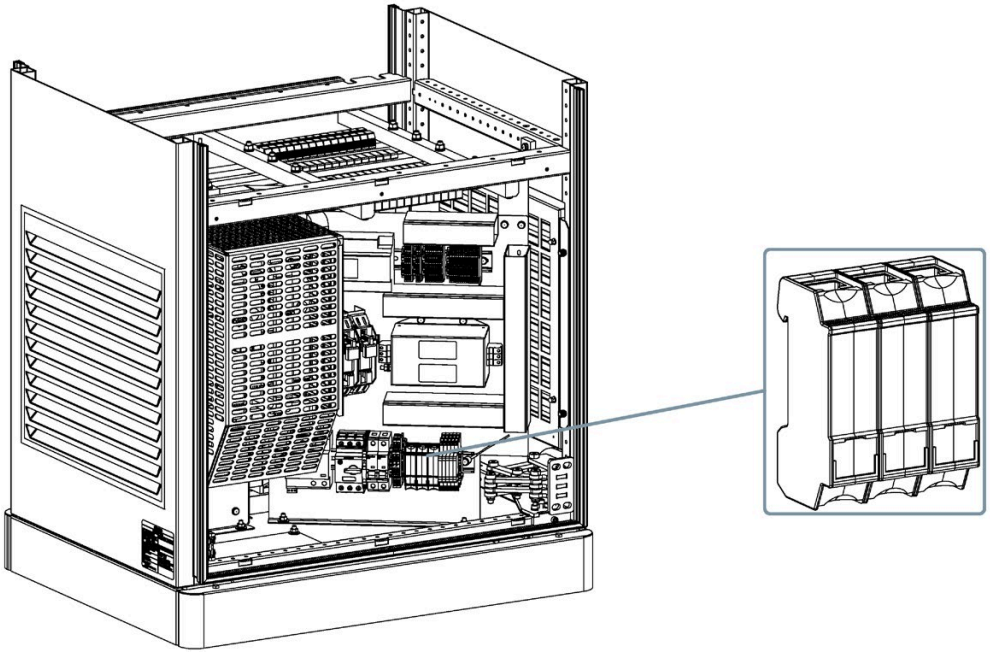
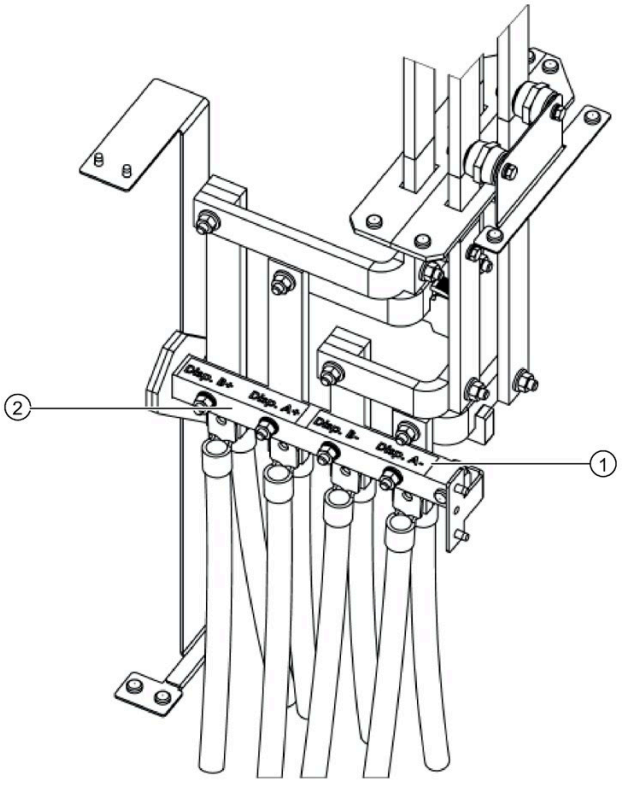


Figure 5-12 Connecting the Ethernet cable

5.6.3 Dispenser

If dispensers are to be connected to the charging station, you need to connect the DC cables to the corresponding busbars on the back of the device. Use the fastening material pre-mounted on the connection bars of the charging station. Also connect the required conductors for auxiliary power supply (230 V AC), communication and integration into the control system of the charging station. The connections for these cables are located on the device panel on the front.

Connections for the DC cable



① Connection terminal DC-
② Connection terminal DC+

Figure 5-13 Connections for the DC cable

PE conductor

First connect the protective conductor of the DC cable to the terminal lug on the right:

1. Select an M10-size cable lug for the corresponding conductor cross-section.
2. Strip off the end of the conductor so that the remaining insulation reaches up to the cable lug.
3. Fasten the cable lug correctly to the end of the conductor.
4. Secure the protective conductor to the copper bar with an M10 fastening nut and a tightening torque of 40 Nm.
5. Mark the drawn connections, for example, with a red paint stick.

Connecting DC+ and DC- conductors

Connect the DC+/DC- conductors of the dispenser cable.

To connect a DC conductor, follow these steps:

1. If necessary, insulate the cable lug sleeve to maintain the minimum clearances and creepage distance.
2. Insert the connection bolt through the screw holes of the cable lug and copper bar.
3. Tighten the fastening nut with the required torque:
   - Size of fastening nut: M10
   - Required tightening torque: 40 Nm
4. Mark the drawn connections, for example, with a red paint stick.

Auxiliary power supply

The SICHARGE D charging station can supply the associated dispensers with the required 230 V operating voltage via a secure auxiliary power supply.

Connections for the auxiliary power supply

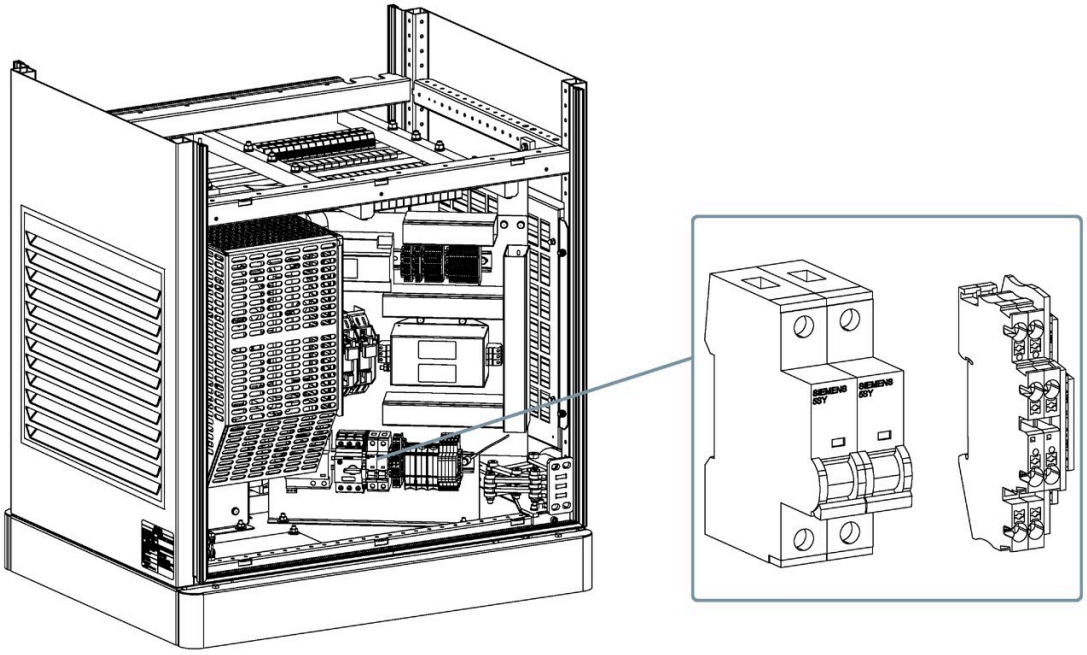


Figure 5-14 Connections for the auxiliary power supply

Connect the line conductors to the circuit breakers and the neutral conductors to the terminals on the right next to the circuit breakers. Cable cross-sections up to a maximum of 4 mm2 can be connected to the terminals for the auxiliary power supply.

The connections are intended exclusively for supplying dispensers. These circuits are not protected against residual currents, e.g. by a residual current circuit breaker.

Integration into the control system of the charging station

The dispensers are not autonomous charging points. Many components are only present in the central charging station, including the control system, for example. Consequently, the dispensers need to be integrated into the control system and automation of the charging station.

Ethernet cables

The dispensers are connected to the central charging station via Ethernet cables. This ensures communication and remote access to the dispensers through the backend.

5.6.4 Mounting the roof and filter cover

To then mount the roof of the charging station, proceed as follows:

1. Loosen the four quarter turn fasteners of the filter box and remove it.
2. Take the roof and slide it from the back to the front under the metal guides provided towards the front of the charging station.
3. Screw the roof onto the left and right side from the bottom with two M6 combi screws from the box of accessories.
4. Reinstall the filter box and secure it again with the four quarter turn fasteners.
5. Place the filter cover from the box of accessories onto the roof and mount the grounding cable on the threaded bolt in the filter cover.
6. Remove the rear device door.
7. Click the filter cover first upwards and then downwards in the cabinet. Close the quick locks.
8. Install the rear device door again.

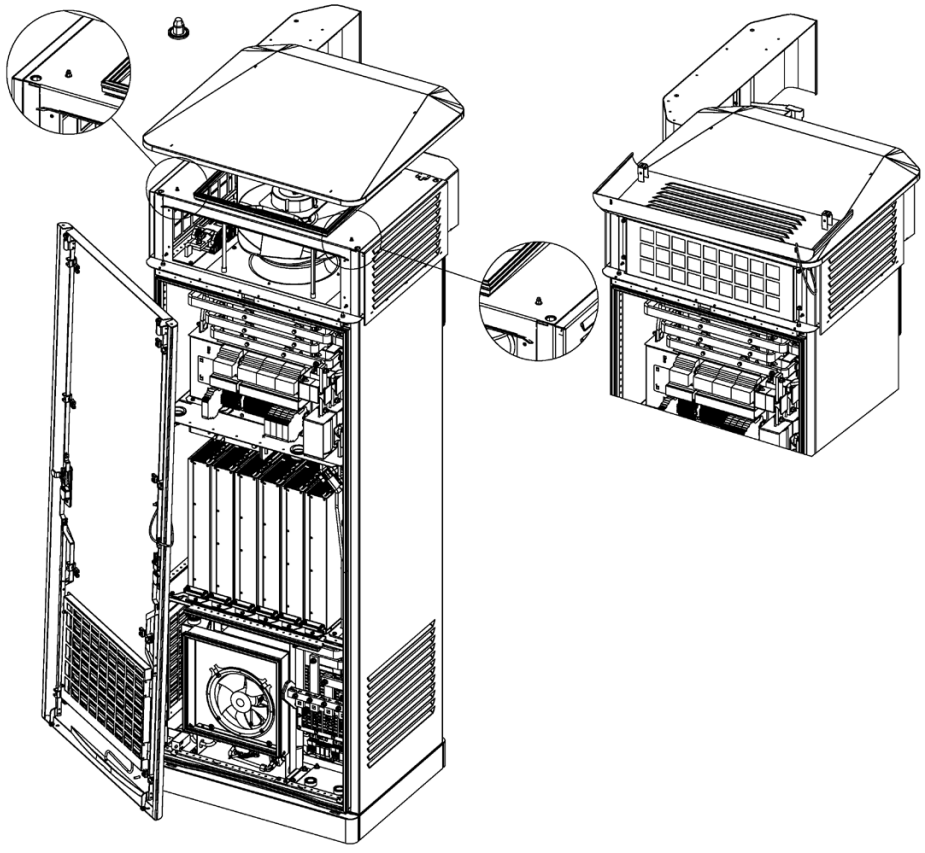


Figure 5-15 Mounting the roof and filter cover

Commissioning 6

6.1 Safety precautions before initial commissioning

Before initial commissioning, check the charging station in accordance with DIN VDE 0100-600. This includes, in particular, measuring the impedance of the protective conductor and the insulation resistances. Also check the fuse protection of the charging station on the mains side.

6.2 Switch on charging station

⚠ WARNING

Qualified personnel

Only qualified and instructed electricians may work on the SICHARGE D.

⚠ WARNING

Injury or damage to property

If the charging plug is not plugged into the plug holder before commissioning, the charging plug can be damaged. This can cause injury or damage to property when the charging station is switched on.

- Before switching on the charging station, make sure that the charging plug is in the plug holder.
- Leave the charging plug in the plug holder during the entire switch-on process.

⚠ DANGER

Risk of electric shock when moist due to condensed water

Before putting the charging station into operation, an authorized and qualified electrician must check whether there is any moisture in the charging station. Manually remove even small amounts of condensation before commissioning. Take appropriate measures for drying.

Do not switch off the power supply for an extended period of time after commissioning. This will prevent condensation in the charging station.

To switch on the charging station, proceed as follows:

1. Open the cabinet door.
2. Check whether all circuit breakers and miniature circuit breakers are switched on. The devices are in the AC input area, the automation area and in the door.
3. Close the cabinet doors.
4. Make sure that the cabinet door is locked.
5. Switch on via the upstream switching device.

Automatic starting of the charging station

The charging station starts automatically. Wait until the charging station is fully started. The LED strips light up white initially during startup. In ready-to-operate state, the LED strips are lit green and the display shows the start menu.

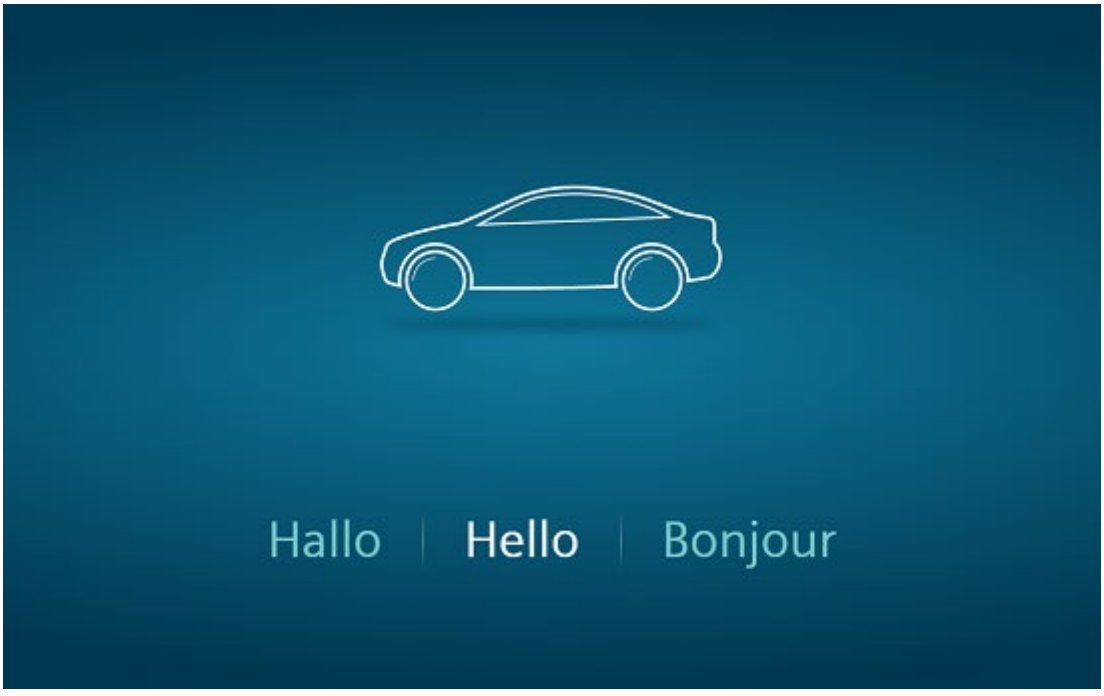


Figure 6-1 Start menu

6.3 Switching off the charging station

To shut down the charging station properly, the charging station first needs to be set to maintenance mode (ConfigMode) via the Configuration Backend. Active charging processes are ended, and the circuit breaker disconnects the power lines for charging from the supplying mains.

Then, the service personnel on location can open the door of the charging station. Supply to the control system and the display is maintained. If the charging station must be disconnected from the power supply for further work, e.g. to replace components, this is done with the reboot command via the Configuration Backend. When the boot screen appears on the display, the -FC12 fuse in the upper area must be actuated with the door open. This is necessary to shut down the operating system correctly.

Then follow the five safety rules for working with electrical equipment. Disconnect the charging station fully from the power via the upstream switching device.

Operation 7

The SICHARGE D charging station is operated via the touch screen. The individual operator options and menu guidance are described in this section. The illustrations may differ slightly depending on the firmware of the device.

7.1 Safety instructions

Observe the following safety instructions for safe operation of the charging station.

Operating the touch screen

The touch screen is the central display and operator control of the charging station.

- Only use your fingers or a touch pen to operate the touch screen.
- Follow the instructions for cleaning and care.

NOTICE
Damage due to unsuitable objects If you touch the touch screen with unsuitable objects, you will greatly reduce the service life of the display. In severe damage occurs, the touch screen may even fail completely. To avoid damaging the touch screen, follow the instructions below: • Never touch the touch screen with pointed or sharp objects. • Avoid shock or impact with hard objects. • Only touch the touch screen with your fingers or a touch pen.

7.2 Starting the charging process

Getting started

The language is selected by tapping on the respective greeting in the desired language. If you tap at any other point instead, the default language or the last selected language is automatically selected (highlighted left and white, in this case, English).

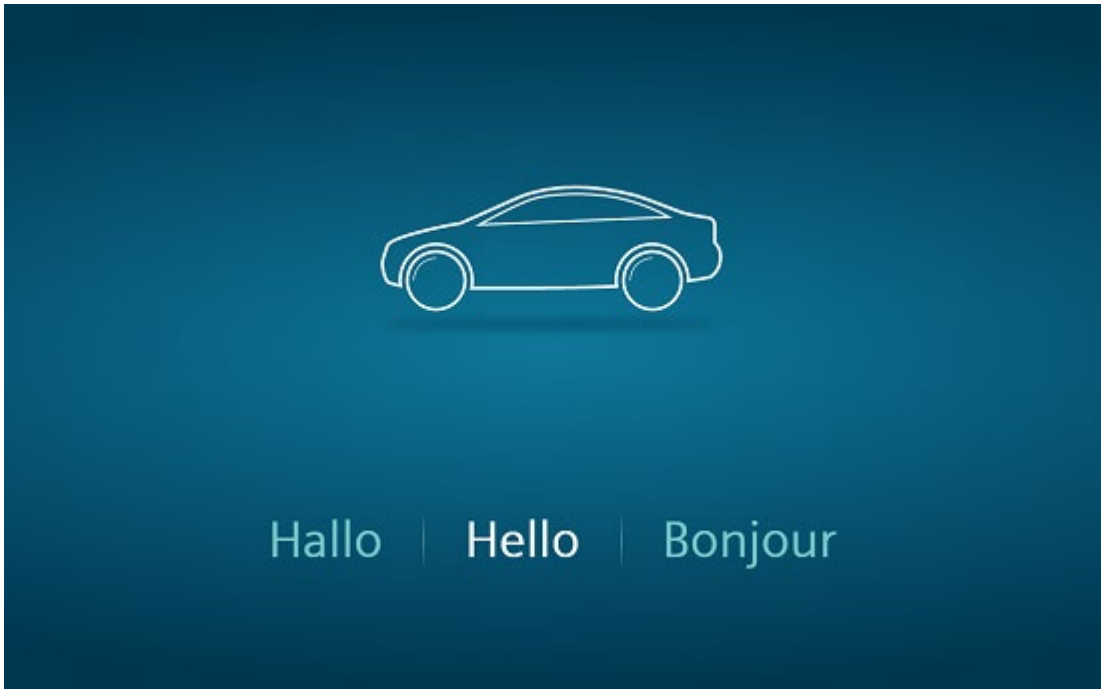


Figure 7-1 Start charging

The available charging ports and their states are then displayed. Tap on the charging outlet where you want to charge your vehicle. For better orientation, the arrangement of the outlets on the screen corresponds to the actual arrangement at the charging station as well. In the example below, the CHAdeMO charging cable is located on the left side, the AC charging socket in the middle and the CCS charging cable on the right side.

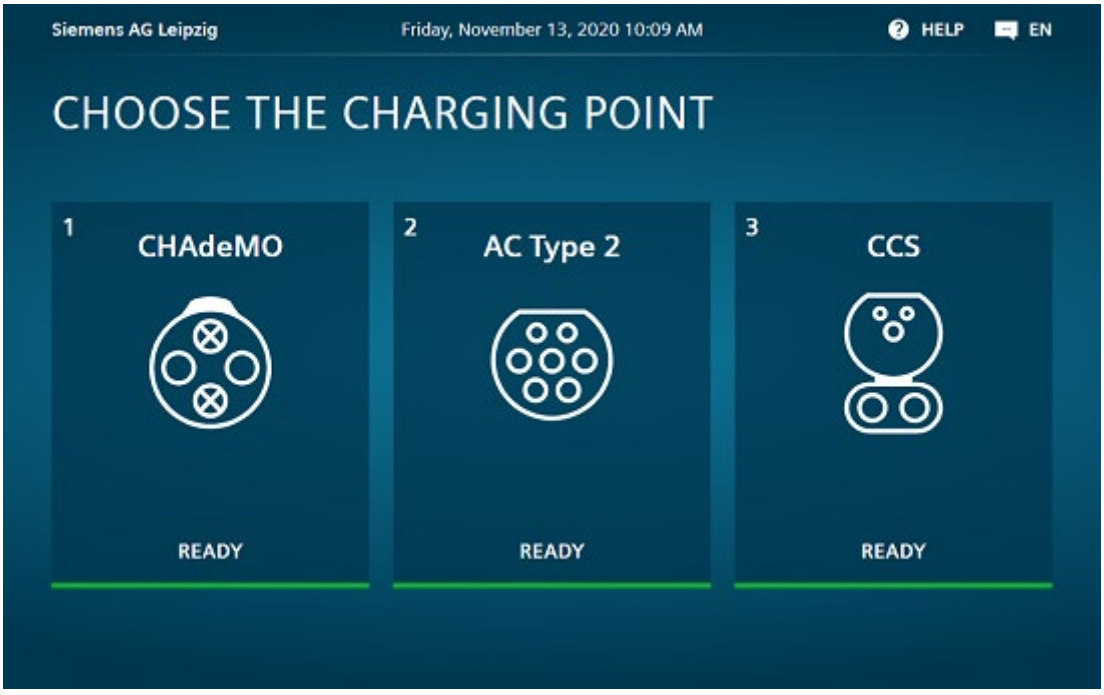


Figure 7-2 Selecting a charging point

Alternatively, you can also start the charging process by connecting your vehicle directly to the charging cable or the AC charging socket.

Authentication

The configuration in the backend determines whether authentication is required or not. If no authentication is requested, the charging process is free for the customer.

If authentication is required, up to three options are available. These are login via RFID (standard), PIN or QR code. Follow the instructions on the display, depending on your selection.

You can receive a corresponding RFID card from a Mobility Service Provider, for example.

After registration at the operator of the charging station, the customer receives a PIN.

Scanning a QR code initiates an operator-specific authorization procedure in the backend system. This may require the use of an app, for example. The charging process is then started from the OCPP backend.

Connecting the charging cable

If the charging cable is not yet connected to the vehicle, you are prompted after the authentication to connect the plug with your vehicle. The charging process starts automatically for the CCS and AC Type 2 plug types.

In contrast, if you use the CHAdeMO port for charging, you need to start the charging process manually on the screen.

Communication between the vehicle and charging station begins. The charging plug is locked, and the charging process begins after a brief preparation period. The display switches again and various information on your charging process is displayed.

A customer charging cable is required for charging at the AC charging socket. In addition to the protective cover, the socket has an integrated shutter. Lift the protective cover to connect the charging cable plug to the charging station. Insert the plug into the socket at the top and push it in the direction of the charging station. This removes the shutter lock. Move the charging plug downwards. When the plug has reached the final position, it latches into the contacts of the socket. After initialization, the charging cable is locked by the charging station and the charging process is started.

7.3 Monitoring the charging process

A successfully started charging process can be monitored via the display. The type and volume of the information depends on the charging port and on whether tariff information is available. You can navigate using the arrows to view additional information, including the estimated charging time remaining, the amount of energy drawn, elapsed charging duration, and much more. The bars in the lower area of the screen show how many pages can be displayed and which page is currently displayed.

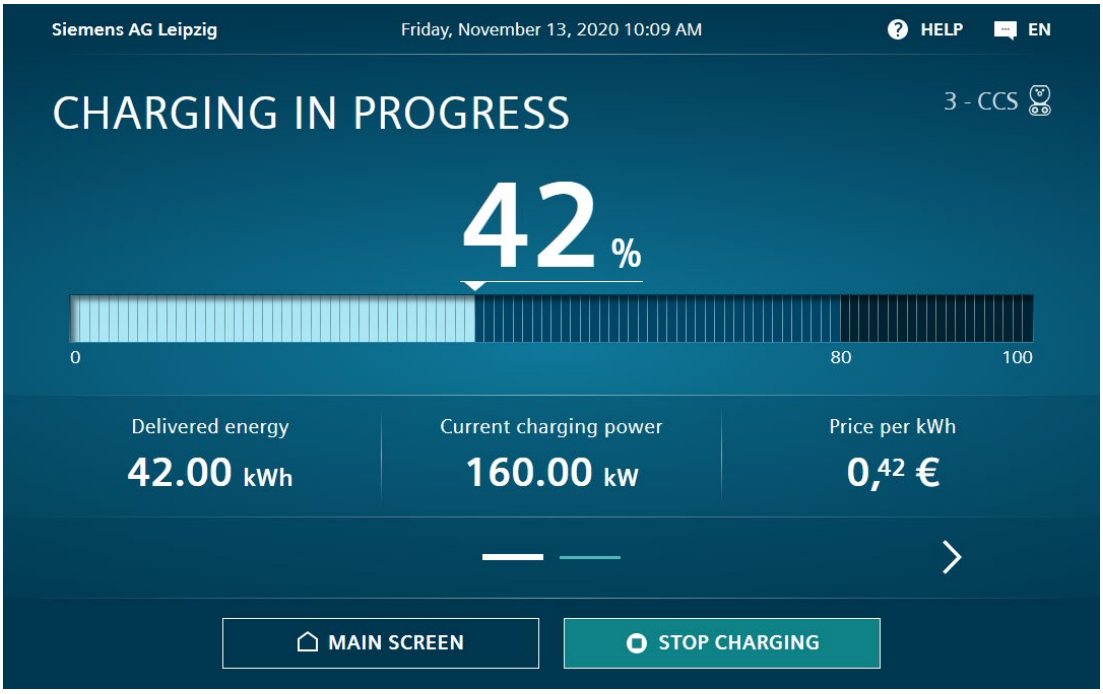


Figure 7-3 Charging

Timeout

A countdown begins after a long period of inactivity (timeout). Without interaction, you are automatically logged off after this period and the display switches to the main menu. Alternatively, you can also return directly to the main screen via the display and log off.

After log-off, you can view the details of your charging process again at any time. Depending on the configuration in the backend, either no authentication is required or the same method that you used to log on when you started the charging process.

If authentication is not required, you merely need to select the charging port for which you want information on the screen.

In contrast, if authentication is required, e.g. via RFID card, scanning the card brings you to the charging screen immediately.

7.4 Stopping the charging process

Automatic stopping

The following scenarios result in automatic termination of the charging process:

- Vehicle ends charging process regularly
- Vehicle detects a fault
- Charging station detects an internal critical error (internal)
- Emergency shutdown is triggered by operating the emergency stop switch or opening the device doors (external)

Manual stopping

To stop the charging process manually, you must be logged in. Switch to the detail view of your charging process. You can end the charging process by pressing the "Stop charging" button on the bottom right. You will be asked if you want to end the charging process. Confirm by tapping the button on the bottom right again.

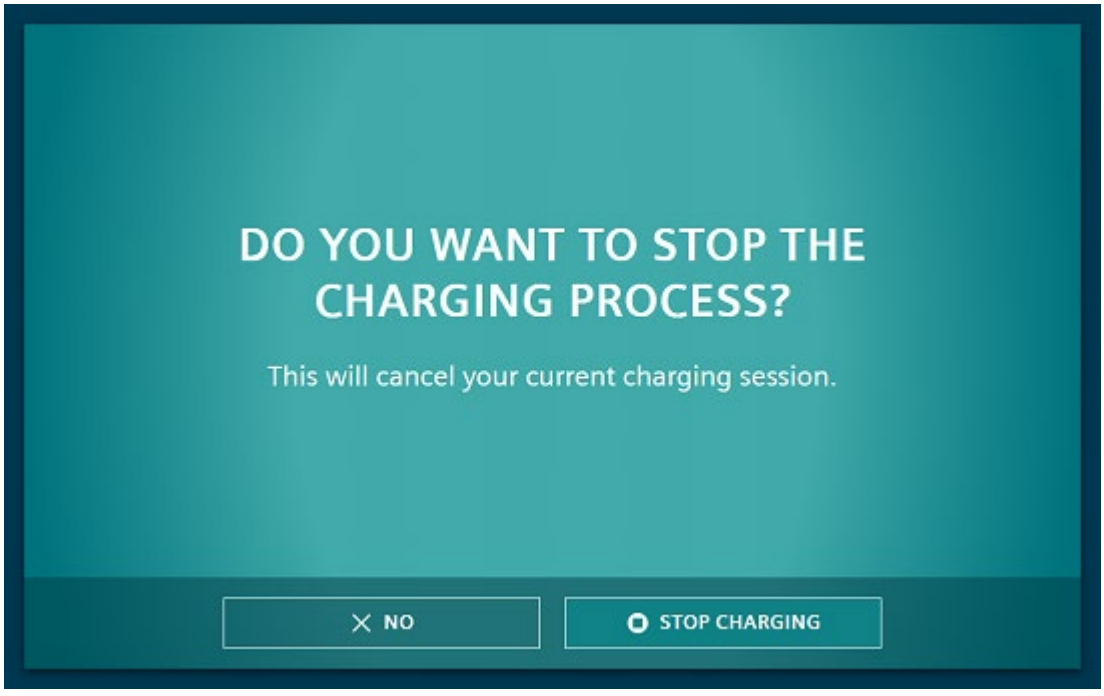


Figure 7-4 Stopping the charging process

Depending on the configuration of the backend, users may need to authenticate themselves again to confirm. All instructions are displayed on the touch screen. After successful completion, the display changes again and you receive a summary of information about your charging process. This information again depends on the selected charging port and the available rate information.

7.5 Calling the help function

Help can be shown in the upper right-hand corner in almost every view. The operator can import the telephone number of the service hotline via the Configuration Backend.

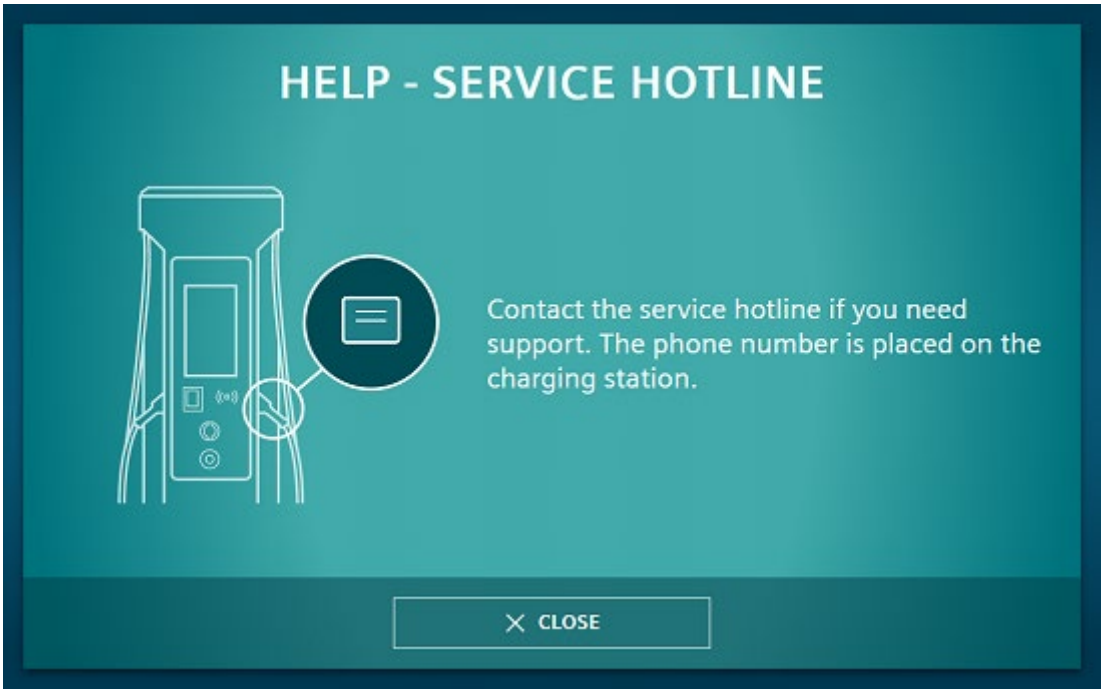


Figure 7-5 Service hotline

Behavior in the event of errors and error messages 8

In the event of an error, the charging station automatically performs error diagnostics. In the event of an error, it sends one or more error messages to the OCPP backend (see section 3.10 (Page 39)) and the Configuration Backend (see section 3.9 (Page 38)).

On the central touch screen, the charging station provides information through the following messages:

- Error messages in full screen mode:
  - "Emergency Stop pressed" error message (Page 85)
  - "Out of service" error message (Page 86)
- Error messages in the menu:
  - "Outlet not available" error message (Page 87)
  - "Reinsertion of charging cable" error message (Page 88)

8.1 "Emergency Stop pressed" error message

To bring the charging station into a safe state immediately in case of danger, the charging station is equipped with an Emergency Stop switch. When you press the Emergency Stop switch on the front, the display of the charging station shows an error message.

"Emergency Stop pressed" error message

With the Emergency Stop switch pressed, the display shows the following error message.

Figure 8-1 "Emergency Stop pressed" error message

EMERGENCY STOP state

The emergency stop function switches off the power supply of all charging outlets. Any charging in progress is aborted immediately. The charging station switches to the safe emergency stop state. The control system, communication with the operator and the display remain active. The LEDs light up red. In the emergency stop state, operation of the charging station is no longer possible for safety reasons.

Removing the EMERGENCY STOP state

First eliminate the hazardous situation. Make sure that no vehicle is connected with the charging station. Only then do you unlock the pressed Emergency Stop switch as shown on the touch screen to remove the emergency stop state.

8.2 "Out of service" error message

The control system of the charging station detects automatically when a critical fault is present. If a critical error occurs, the control system puts the device or the charging outlet out of service. By means of a message to the backend, the operator is informed that intervention on site is required. This message contains additional information about the exact cause of the error. The touch screen shows the following error message.

"Out of service" error message

The display shows the "Out of service" error message in full screen mode. The charging station cannot be operated in this state.

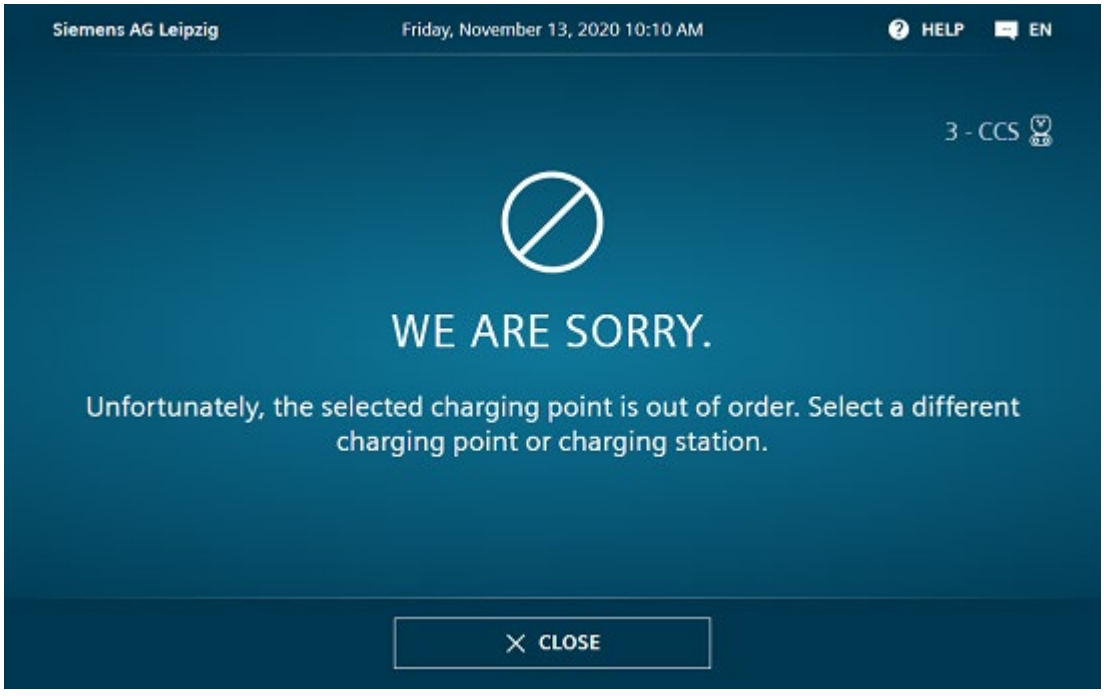


Figure 8-2 "Out of service" error message

End error state

The service personnel can localize and correct the error on site using the information sent to the backend. Afterwards, the charging station restarts automatically. When the Start menu appears on the display, the charging station is ready for use again.

8.3 "Outlet not available" error message

If the control system detects that only one charging outlet is affected by an error case, only this charging outlet is locked selectively. A complete failure of the charging station does not occur. This means that the availability of the charging station remains high. The remaining charging outlets remain available for charging.

"Outlet not available" error message

The affected outlet is highlighted in red in the outlet selection menu item. "Error" is displayed as the status.

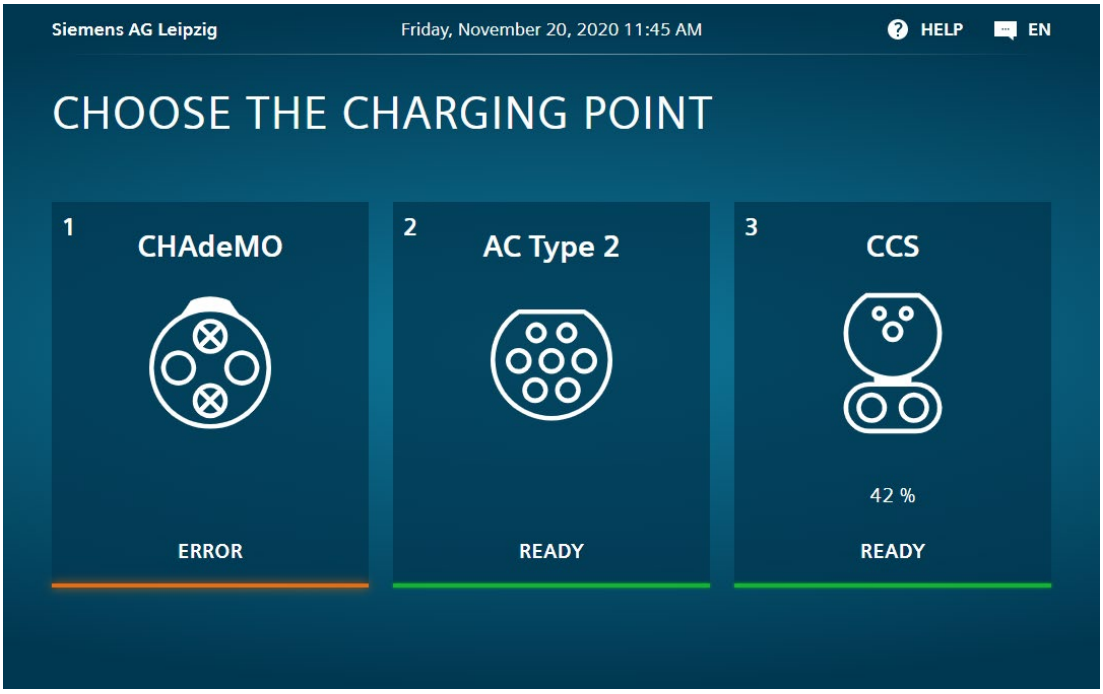


Figure 8-3 "Outlet not available" error message

8.4 "Reinsertion of charging cable" error message

It may happen that the customer's own AC charging cable is not locked correctly the first time it is plugged in. No charging process can be started in this case. The user is then asked to plug in the charging cable again. The following error message appears on the display.

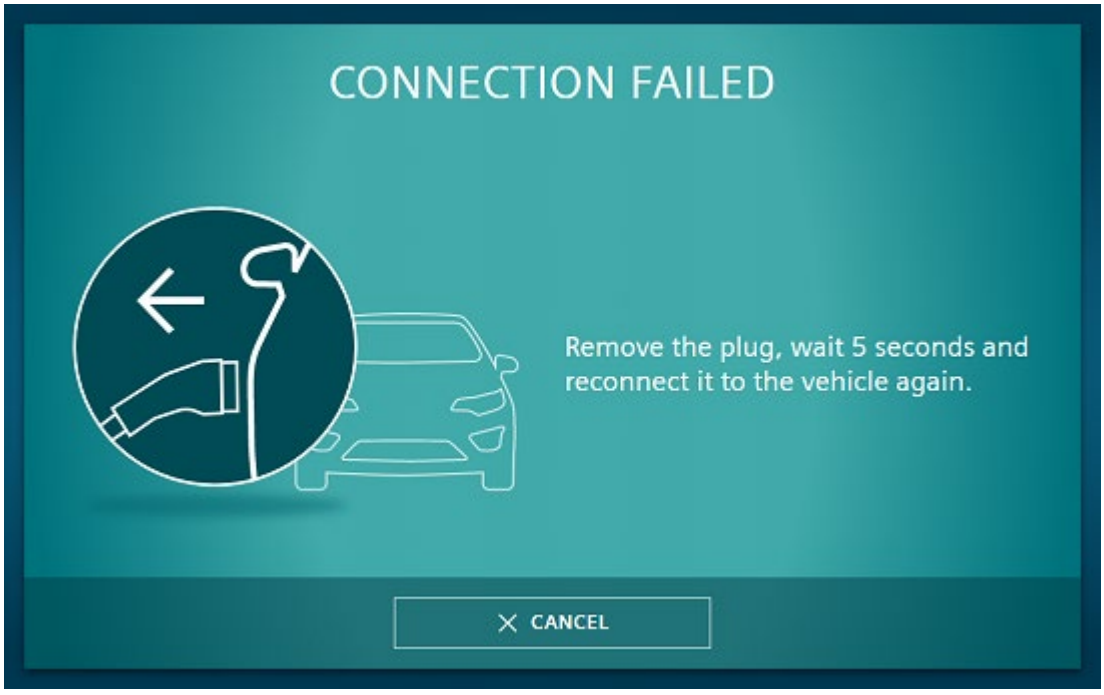


Figure 8-4 Connection failed

Maintenance and service

9

9.1 Safety instructions

To ensure the safety of persons and property during maintenance and servicing of the charging station, observe the following safety instructions.

⚠ WARNING

Qualified personnel

Only qualified and trained persons may work on SICHARGE D. Only qualified and instructed electricians may work on the SICHARGE D.

⚠ WARNING

Electric shock from live parts

Electrical systems have live parts during operation. If the system has not been disconnected from the power supply before maintenance work is performed inside the station, death, serious injury or damage to property may occur.

- Only perform maintenance and service work inside the station when the charging station is disconnected from the power supply.
- Observe the five safety rules for electrical work (Page 13).

⚠ WARNING

Electrical shock due to residual charges in capacitors

After switching off the power supply to the charging station, the capacitors begin to discharge. Live parts remain under dangerous electrical voltage for up to 10 minutes during discharging. Touching the live parts can lead to death or serious injury.

- Wait 10 minutes after switching off the power supply.
- Ensure that the charging station is not live.
- Only then should you start work on the charging station.

⚠ WARNING

Hot surfaces

When opening the front or back door, you can easily come into contact with hot surfaces. This applies, for example, to the area of the AC/DC converters or the copper bars. Before starting work, wait at least 10 minutes after switching off the charging station until all hot surfaces have cooled down.

⚠ WARNING

Fall arrester

Use approved protective equipment to protect persons, components and tools against falling from a working height of 1 m.

⚠ WARNING

Falling parts

When working at an elevated height, watch out for falling parts, cables or plugs.

⚠ CAUTION

Risk of tripping or slipping

Keep the work area clean and tidy to prevent tripping and slipping.

⚠ WARNING

Safety area for maintenance and service

Create a safety area around the mounting surface with warning signs and barriers.

⚠ CAUTION

Use personal protective equipment (PPE)

Use the required personal protective equipment for the work, such as:

- Protective shoes
- Helmet
- Safety vest
- Gloves
- Protective goggles

⚠ CAUTION

Risk of crushing or cuts

During maintenance and service, pay attention to moving parts and protruding cables and bolts.

NOTICE

Damage to property due to foreign objects inside the station

During maintenance work, foreign bodies such as dirt, tools or loose components may remain in the charging station. This can result in a short-circuit, reduced cooling capacity or increased running noise. The charging station may be damaged.

- During maintenance work, ensure that no foreign objects remain in and on the charging station.
- Fasten loose components again after maintenance work.
- Carefully remove any dirt.

9.2 Maintenance plan

The following maintenance measures are required to maintain the functionality and operational safety of the charging station.

Times of testing

After commissioning, carry out the tests at the following intervals:

- 6 months after commissioning
- 12 months after commissioning

After the first year, carry out the tests every 12 months. Run the tests at shorter intervals if required by the ambient conditions of the SICHARGE D charging station.

Check the outside of the charging station

Run the following tests:

Type of test	Checks
Visual inspection to ensure proper condition	• Check the exterior of the cabinet for visible damage, stickers, graffiti, etc. • Check black panel for visible damage • Check ventilation openings • Check charging cable and plug connections • Check AC charging socket for damage • Check emergency stop switch for damage • Check display windows of meters • Check for material deposits, such as snow or accumulations of dirt, and remove if necessary • Check fill level of coolant/check for leaks in the coolant circuit • Check safety devices, e.g. circuit breakers, fuses, etc. • Check that the seal of the CFast card is intact
Acoustics test	• Check fan for unusual running noises • Check power supply unit for unusual operating noises
Testing for proper function	• Check cabinet door for smooth opening • Check function of the Emergency Stop switch • Check whether an error message appears on the touch screen display after the switch is pressed. • Check automatic setting of readiness to operate after unlocking the pressed Emergency Stop switch • Test function of residual current circuit breaker using test button

Checking safety signs

Ensure that all security signs (pictograms) are still clearly visible and replace them with new ones if necessary.

Checking the air filter

The maintenance interval for the air filters depends on the ambient conditions at the location of the charging station. If there is a great deal of dust, we recommend that you check the air filters regularly at short intervals, e.g. after 1, 3, 6, 12 months. Set your maintenance interval according to when unacceptable contamination of the filter mats occurs, for example.

Checking the fan

Run the following tests:

Type of test	Checks
Visual inspection to ensure proper condition	• Check contact protection cover • Check cabinet for visible damage • Check blades for visible damage • Check the fastening of the connection cables • Check the fastening of the protective conductor connection • Check the insulation of the cables for visible damage • Check impeller for damage • Check impeller for signs of wear, deposits or corrosion

Check mains connections of the charging station

Check the following:

Type of test	Checks
Check to ensure proper condition	• Check tightening torques (40 Nm) of the L1, L2, L3, N connections • Check tightening torques (40 Nm) of the DC+ and DC- connections • Check tightening torque (40 Nm) of the PE ground connections

9.3 Servicing the charging station

9.3.1 Cleaning the touch screen

The touch screen is designed for low-maintenance operation. Clean the touch screen regularly to ensure that the touch screen is in perfect condition.

⚠ WARNING

Electric shock due to water ingress

Water entering the charging station can damage the charging station. If the unit is damaged, dangerous voltages may be present on the cabinet or exposed components, which can cause serious injury or death if touched.

- Always keep the cabinet doors closed during cleaning.
- Never use a high-pressure cleaner, steam jet or water jet when cleaning the charging station.

⚠ WARNING

Damage to property due to improper cleaning agents

Improper cleaning agents can damage the touch screen of the charging station.

- Therefore, do not use solvents.
- Also, never use aggressive or abrasive cleaning agents.

Note

Only clean the touch screen when it is switched off

If you clean the touch screen when it is switched on, you can trigger operator errors. This can unintentionally put the charging station into an undesirable operating state.

- Switch off the touch screen of the charging station before you clean it.

Permitted cleaning agents and tools

- Use a mild, non-corrosive cleaning agent, even in the case of heavy soiling. Mild cleaning agents are, for example, commercially available glass cleaners or a mixture of water and vinegar (ratio 5:1).
- Use only soft cleaning cloths.
- Only in exceptional cases should you use sharp-edged tools, such as stove scrapers, to carefully remove stubborn adhesive residues from the glass.

9.3.2 Cleaning the cabinet

⚠ WARNING

Electric shock due to water ingress

Water entering the charging station can damage the charging station. If the unit is damaged, dangerous voltages may be present on the cabinet or exposed components, which can cause serious injury or death if touched.

- Always keep the cabinet doors closed during cleaning.
- Never use a high-pressure cleaner or steam jet when cleaning the charging station.

⚠ WARNING

Damage to property due to improper cleaning agents

Improper cleaning agents can damage the exterior surfaces of the charging station. Therefore, do not use solvents. Also, never use aggressive or abrasive cleaning agents.

Permitted cleaning agents

- Use a mild, non-corrosive cleaning agent, even in the case of heavy soiling. Mild detergents are, for example, dishwashing liquids.
- Deionized water is particularly suitable for cleaning the unit.

Cleaning the exterior surfaces of the cabinet

- Wipe the exterior surfaces of the charging station with a damp cloth.
- Then rub the charging station dry.
- Do not scrape off stubborn dirt using hard objects.
- Do not use any sharp-edged tools.
- Soften paper stickers in advance for easy removal.

Cleaning the charging cable

- Only clean charging cables that are not connected to a vehicle.
- Clean the charging cable and dirty contacts with a dry cloth.
- Never immerse the charging cable and charging plug in liquids.

9.3.3 Replacing an air filter

The air filters of the charging station remove the dust from the outside air pulled in for cooling the interior. With increasing operating time, the filtered dust particles reduce the air flow through the filters. The reduced airflow cools the interior of the charging station less. This causes the temperature inside the charging station to rise.

Regularly replace the fabric filters of the enclosure fans to ensure that the air conditioning of the charging station is within the permissible temperature range.

Only replace the filter mats when the device is de-energized. For the correct order number of the spare parts, refer to the document 8EM5907-0AA00-2AA6.

Replace filter mats below

You need to open both device doors to access the three filter mats.

1. Open the front device door.
2. Loosen the two quarter turn fasteners on the filter grilles on the left and right. Then swing the grille inwards and remove the filter mats.
3. Insert the new filter mats, secure the grille and close the front device door.
4. Then open the rear device door.
5. Loosen the two quarter-turn fasteners on the filter grille on the door. Swing the grille to the side and remove the filter mat.
6. Insert the new filter mat, secure the grille and mount the rear device door.

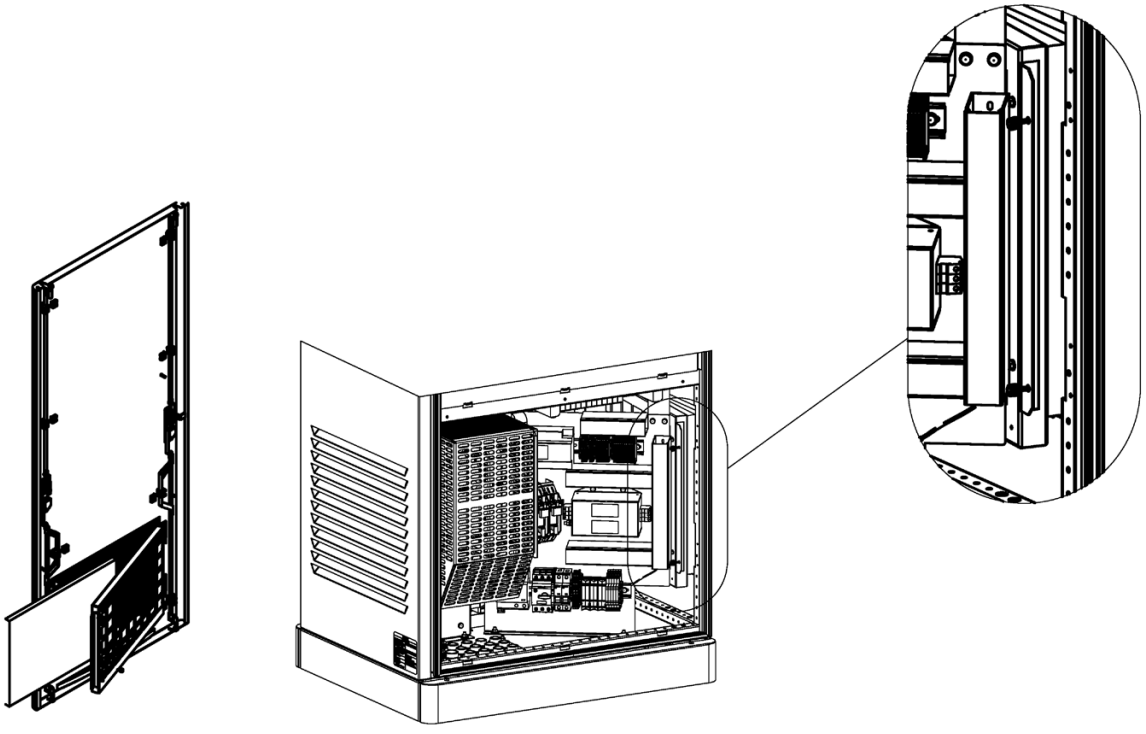


Figure 9-1 Replace filter mats below

Replace filter mats above

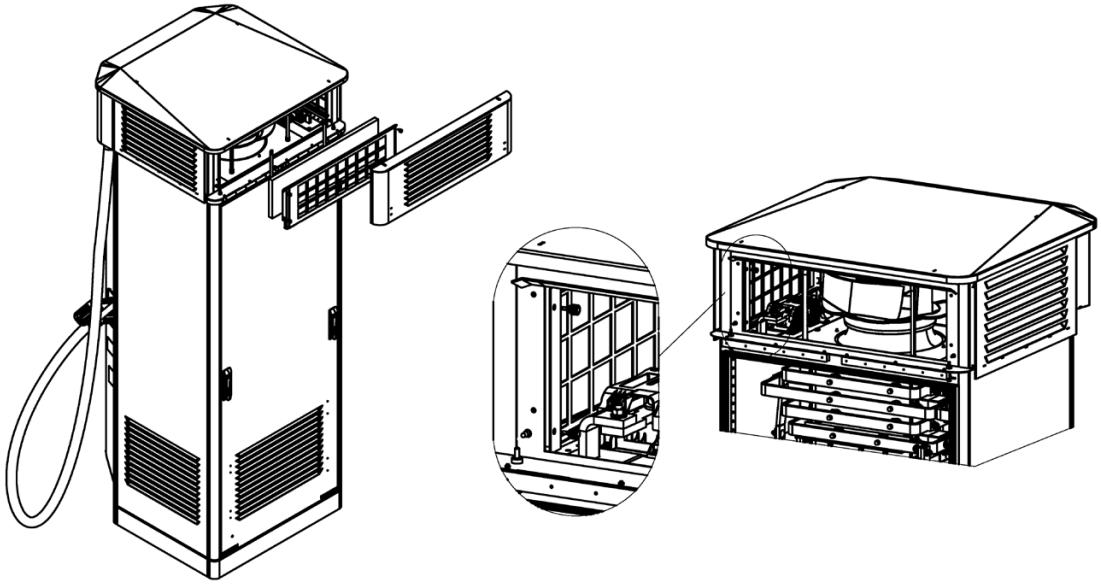


Figure 9-2 Replace filter mats above

1. Open the rear device door.
2. Loosen the panel with the ventilation slots on the rear of the charging station. Pull the hooks down and rotate them to the side to lock them in place.
3. Loosen the filter cover. To do this, pull the bottom edge of the cover backwards and then downwards. Place the filter cover on the roof.
4. Loosen the four quarter turn fasteners of the filter box and remove it. Replace the filter mat.
5. Also loosen the two quarter turn fasteners on the filter grilles on the left and right. Then swing the grille inwards and replace the filter mats.
6. Secure the filter grille and the filter box. Close the charging station again with the filter cover and the rear device door.

9.4 Spare parts

Contact your sales contact to get access to the spare parts list. The order number is: 8EM5907-0AA00-2AA6.

Disposal

10

Environmental protection and the preservation of resources are of high priority for our company goals. Global environmental management according to ISO 14001 ensures adherence to laws and sets high standards for this. Environmentally friendly design, technical safety and health protection are solid targets even during the development of our products. The charging station is ROHS-compliant. Below, please find the recommendations for environmentally friendly disposal of the charging station and its components.

Disposing of packaging material

- Dispose of packaging material in an environmentally friendly manner or recycle the material. Observe the disposal regulations and environmental protection regulations.
- If needed, contact a specialist disposal company.
- Wooden packaging for sea and air transport consists of impregnated wood. Observe the local regulations.
- The foil of the sealed packaging is an aluminum compound foil. The foil can be thermally recycled. Soiled foils must be disposed of via waste incineration.

Disposing of the charging station

For environmentally sound recycling and disposal of the device, contact a certified electronic waste disposal company. Dispose of the device in accordance with the applicable regulations in your country. Do not allow coolant for the charging cable to escape into the environment. Discard the injection molded parts to plastic recycling.

11 Technical specifications

For technical specifications, refer to the document with the order number 8EM5907-0AA00-2AA7. These can be found here: (https://new.siemens.com/global/en/products/energy/medium-voltage/solutions/emobility-manuals.html)

Declaration of Conformity

12

The SICHARGE D charging station complies with the harmonized European standards (EN) for charging stations published in the official gazettes of the European Union.

Safekeeping location of the declaration of conformity

SIEMENS AG keeps the EU Declaration of Conformity of the charging station available for the responsible authorities at the following location:

SIEMENS AG
Smart Infrastructure
Distribution Systems
Research & Development
Mozartstraße 31C
91052 Erlangen
Germany

List of abbreviations and explanation of terms

A

Abbreviations

The following abbreviations are used in these instructions:

Abbreviation	Term
AC	Alternating Current
CAN	Controller Area Network
CCS	Combined Charging System
DC	Direct Current
OCPP	Open Charge Point Protocol
PE	Polyethylene
PE	Protective Earth
HMI	Human Machine Interface
SoC	State of Charge
SW	Width across flats
RFID	Radio Frequency Identification Device

Terms

The following terms are used in these instructions:

Term	Meaning
Backend	Charging station management system
Switching matrix	DC distribution system for dynamic power distribution to the individual power outlets
Dispenser	A (DC) charging point that is remote (distributed) from the charging station and is non-autonomous

Checklist for commissioning

B

Table B- 1 Checklist

No.	Work step	Done
1	**Check installation location**	
1.1	Check sufficient lighting	
1.2	Check minimum clearances: • front: 0.80 m • side: 1 m • rear: 1 m • top: 0.20 m	
2	**Prepare & check the base area**	
2.1	Base area level?	
2.2	Base area dry?	
2.3	Carrying capacity sufficient for overall weight of the charging station?	
2.4	Position of the power supply cable gland suitable? (from front: front left)	
2.5	Position of the DC cable gland suitable? (from front: rear left)	
2.6	Check dimensional accuracy of fastening points • Distances at sides: 451.5 mm • Distances front and rear: 654 mm height bolt anchor: 50 mm	
2.7	Check sufficient recesses for power cable entry	
2.8	Minimum clearance 0.25 m for laying communication, control and auxiliary cables to power cables possible?	
2.9	For TT system only: Install deep grounding	
3	**Prepare cables**	
	Check that cables are disconnected from the power	
3.1	Lay the power cable	
3.2	If present: Lay the Ethernet cable	
3.3	If dispenser: Lay the DC cable	
3.4	If dispenser: Lay communication, control and auxiliary cables with 0.25 m minimum clearance to power cables	
3.5	Cut cables and wires to length	
3.6	Remove cable sheath	
3.7	Protect cables and wires from environmental influences	
4	**Goods acceptance**	
4.1	Check the transport packaging	
4.2	Check the shock indicator • Present • Intact • Serial number	
4.3	Check completeness and correctness of the delivery	

No.	Work step	Done
4.4	If applicable, document and report damage, deviations and missing components	
4.5	Acknowledgment and confirmation by carrier	
5	**Transport to base area and prepare for setup**	
5.1	Transport to the base area If crane: Mount crane lugs	
5.2	Remove cable gland plates	
6	**Set up the charging station**	
6.1	If applicable, Mount crane lugs and fasten the hoisting gear	
6.2	Loosen screw connection with load carrier	
6.3	Lift charging station from load carrier and position it over base area	
6.4	Introduce cables and wires and lower the charging station	
6.5	Fasten the charging station to the base area, tightening torque according to bolt anchor used	
6.6	Drill holes in the cable gland plate and insert cable glands, take Ethernet cable into consideration, if applicable	
6.7	Insert and screw in cable gland plate, tightening torque: 4 Nm, seal cable gland plate, if applicable	
6.8	If dispenser: Repeat work steps on the back of the charging station, take comm., control and auxiliary cables into consideration	
6.9	Install baseboards	
6.10	Install roof	
7	**Connect the charging station**	
7.1	Finally cut conductor of the power supply cable to length and apply M10 cable lug	
7.2	Connect conductor to copper bars, tightening torque: 40 Nm, mark with pen	
7.3	Protective cover in front of circuit breaker installed again	
7.4	Ethernet cable for CPO connected to right-hand port	
7.5	If dispenser: Finally, cut DC cable to length and apply M10 cable lug, connect to DC busbars, tightening torque 40 Nm and mark with pen	
7.6	If dispenser: Connect communication, control and auxiliary cables	
7.7	Insert filter box, ground and install filter cover	
8	**Commissioning**	
8.1	Check consistency and low impedance of protective conductor	
	Check insulation resistances	
8.2	Check whether all circuit breakers (automation area), circuit breakers (AC input area), residual current devices (door) are switched on	
8.3	Close/lock device doors	
8.4	Switch on via upstream switching device	
8.5	Check for correct power-up	
8.6	Check function of the Emergency Stop switch	

Index

R

S

T

Futher Information

Siemens:
www. siemens.com

Siemens AG
Smart Infrastructure
Distribution Systems
Mozartstr. 31
91052 Erlangen
Germany