



Edition 11/2023

OPERATING INSTRUCTIONS

SICHARGE

SICHARGE D

8EM5907-0AA00-1AA7.06

SICHARGE D

Charging station SICHARGE D

Operating Instructions

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Charging station SICHARGE D

Operating Instructions

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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

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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.

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Introduction

1.1 About the operating instructions

These operating instructions contain the information for the safe operation and intended use of the SICHARGE D charging station. The operating instructions are aimed primarily at operators. Together with the documentation in the section "AUTOHOTSPOT", they form the basic documentation of the SICHARGE D.

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.

Topic page SICHARGE D technical documentation



The topic page provides you with direct access to the technical documentation of your SICHARGE D. The topic page can be found here on the Internet (<https://www.siemens.com/sicharge-d-manuals>).

Using the operating instructions

How to use the operating instructions correctly:

- Make the operating instructions available to all persons involved before and during the 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.

Illustrations may deviate

The figures in this manual may have equipment features other than the configuration of your SICHARGE D.

Definition

If this document refers to a partly completed machine, then this refers to the rope box of the cable management system in the non-installed state.

Validity of the documentation

This document is valid as of software version V3.0.0 and hardware version V2.3.
This document applies to devices without measurement in compliance with calibration law.
Use the documents 8EM5907-0AA00-5AA3 and 8EM5907-0AA00-5AA4 for devices with measurement in compliance with calibration law.

Conventions

Please pay particular attention to notes highlighted as follows:

NOTE

Notes contain important information on the product, handling the product or on part of the documentation to which you should pay particular attention.

Changes compared to previous versions

Compared to the 11/2022 edition, this manual contains the following changes:

- Addition to the configuration options (section "Configuration options (Page 30)")
 - New configurations: CC Terminals Wordline Valina, Payter P66, Castles (NEFTIS); DC meter MID/LNE
 - Invalid configurations: CHAdEMO 200 A cable
- Addition to the cable management (section "Installing the cable management (Page 86)")
- Technical specifications updated
- General corrections

Compared to the 01/2022 edition, this manual contains the following changes:

- Conversion of the article number
- Adaptation of the nameplate
- Note on use of the cable bridge for TN-C systems
- List of applicable documents
- List of technical specifications
- Additional maintenance instructions (section "Servicing the charging station (Page 125)")
- General corrections

1.2 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

1.3 Open-source software

Open-source software is used in the firmware of the product described. The 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. We make the open source software readme available in these ways:

- On the Siemens homepage (<https://support.industry.siemens.com/cs/de/de/view/109796318/en>) for download
- On the touch screen of the charging station. To do this, open the front door with the charging station switched on.

1.4 Processing of personal data

For operation, the charging station collects, processes and stores the following personal data:

- UID (Unique Identifier) of the RFID card (if RFID authorization method is set)
- EVCC ID (MAC address of the on-board communication controller) (if AUTOCHARGE authorization method is set)

This data is only available to the manufacturer in pseudonymized form and is processed, transmitted and stored within the framework of the legal provisions.

Safety instructions

The safety instructions section describes the intended use by the target groups and potential dangers.

2.1 General

2.1.1 Requirements

If you have read and understood the operating instructions and meet the requirements, then you are allowed to work on the charging station and the partly completed machine.
The minimum age for working on the rope box is 18 years.

2.1.2 Intended use, modifications to the device

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 an AC charging socket or a DC charging socket.
DC charging sockets:

- CCS 2
- CHAdeMO

AC charging socket:

- Type 2

NOTICE

Do not use adapters between charging plug and vehicle

You may not use adapters, for example, to extend the charging cables or to charge vehicles with an unsupported charging standard.

If an adapter was used, then the manufacturer does not assume any responsibility or liability for any damage caused. Point this out to the users of the charging station, e.g. by means of a clearly visible sticker.

The charging station can be used indoors and outdoors. For proper use, the permissible ambient conditions at the location of use must be observed. The SICHARGE D charging station may only be operated in a perfect technical condition.

NOTE

In the device version with EMC emission class A, the charging station is not suitable for use in residential areas. The charging station could therefore interfere with radio reception in such areas. If the charging station is installed in residential environments, select the "EMC emission class B" option.

NOTE

Charging of buses and trucks

Perform a compatibility test before charging a bus or truck at the charging station. Please contact your Siemens contact partner in relation to this.

Alterations to the device

The operating instructions describe all permissible alterations to the charging station. Any other modification that is not part of this or any other official Siemens document is not permitted. This applies to both electrical modifications (connecting, disconnecting or swapping connections of electrical devices, etc.) and mechanical modifications (e.g. drill holes). Unauthorized modifications void the manufacturer's warranty and the approvals of the device become invalid.

Any person may use the charging station to charge electric vehicles in accordance with the operating requirements. Only qualified, trained and authorized personnel are allowed to perform maintenance and repairs. The operator checks the qualification and authorizes the personnel. The charging station may only be opened by authorized persons (qualified electricians).

The SICHARGE D charging station is intended for charging electric vehicles according to EN 61851-1/-23 and must not be used for other vehicles or purposes. Any other use is not as intended and constitutes misuse of the device.

Set up the charging station according to the specifications in these operating instructions. Transport, installation, maintenance, cleaning, and normal operation must follow the instructions or procedures specified in these operating instructions.

 **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

2.1.3 Qualified personnel

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.

2.1.4 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 personnel for work performed inside the charging station.
- Do not leave the charging station unattended when the device door is open.

NOTE

The charging station is supplied with replaceable locking cylinders and matching keys. These standard keys are located on the inside of the front door.

The operator must replace the locking cylinder as protection against unauthorized opening. The operator must also keep the associated keys safely. The operator must provide service personnel with access to the charging station for maintenance work.

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

Replacing the locking cylinders

The charging station is supplied with replaceable locking cylinders (standard half cylinders (10/30) according to DIN 18252) and matching keys. In the section "Locking system & replacing the lock cylinders (Page 37)", you will find detailed instructions on how to replace the locking cylinders.

2.2 Hazards during transport, mounting, operation and maintenance

2.2.1 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.

When working use the required personal protective equipment, such as:

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

2.2.2 Fall arrester

When working at heights 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.

2.2.3 Danger to life when standing under raised loads

If hoisting gear or load handling equipment fails, a raised load can drop. If you are in the hazardous area under or next to the raised 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 raised loads.

2.2.4 Danger to life due to improper transport

If you transport the charging station improperly, the device may tip over. A tipping charging station can cause death, serious injury and material damage. Observe the following points:

- 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.

2.2.5 Work areas

Danger of tripping or slipping.

Keep work areas clean and tidy to prevent tripping and slipping.

If you allow the rope of the cable management system to protrude too far, there is a risk of people tripping or falling.

Accident hazards

Avoid accidents and injuries to persons, as well as damage to vehicles and the SICHARGE D. Accident hazards include:

- Inattention
- Danger of tripping or slipping.
- Vandalism

Provide additional protective measures, such as:

- Warning signs
- Safe location of SICHARGE D
- Barriers
- Training of drivers and operators
- Sufficient lighting
- Padlocks to protect against restarting
- Suitable weather protection

Safety area for mounting

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

2.2.6 Falling parts

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

2.2.7 Risk of crushing or cuts

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

The rope box of the cable management system is constantly under spring tension.

The rope box is a partly completed machine. Only use the rope box if it is professionally installed and covered with the cover.

2.3 Hazards in the event of fire, explosions and emergencies

2.2.8 Moving parts

The rope box is a partly completed machine. Therefore, there are possibilities of intervention in moving mechanical parts. If the rope box is installed according to the instructions, then contact protection is in place.

Do not reach into the rope box until the assembly is complete. Do not use the rope box until assembly is complete.

2.2.9 Fast roll-up

If the rope breaks, it is pulled into the rope box by the spring force. Rapid coiling/whipping of the rope can result in injuries/burns.

During mounting and disassembly, leave the rope clamp and pulley on the rope until the rope box is fully integrated.

When recycling, only cut the rope directly at the inlet when the roof is installed.

2.2.10 Danger of wrapping around body parts

Do not wrap the rope around body parts. The cable management system retracts the rope with pretensioned spring force. If the rope is wrapped around body parts it could, for example, strangle a person or crush the body part.

2.2.11 Risk of injury due to hot surfaces

When opening the front door or back door, you can come into contact with hot surfaces. This applies, for example, to the area of the 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.

2.2.12 Environmental influences

Protect the cable management system and the charging station from water ingress and other weather conditions.

2.3 Hazards in the event of fire, explosions and emergencies

Fire and explosion protection

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

Fire hazard

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

Insufficient ventilation

Insufficient ventilation clearances result in components overheating and, in the worst case, in the generation of smoke and fire. A fire can result in severe injuries.

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


2.4 Dangers due to electrical current

2.4.1 Protection against ingress of liquid

If the doors are locked correctly and the roof is mounted correctly, then the cabinet of the charging station meets the IP54 degree of protection. The IP54 degree of protection of the cabinet protects the charging station from ingress of water splashing against it from all directions. The protection standard prevents ingress of precipitation and any liquid not under pressure that comes into contact with the cabinet surface.

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

- Never use a pressure washer or steam cleaner to clean the charging station
- Set up the charging station at 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.
Observe the following points when there is a risk that liquid may have entered the charging station:
<ul style="list-style-type: none">• Take the charging station out of operation by switching it off at the electrical distributor and the main switch -QA2• Qualified personnel must dry the charging station and check it for damage.

2.4.2 Damaged parts

Only use undamaged devices or parts

Improper handling can damage devices. Hazardous voltages may be present on the cabinet or exposed components if devices are damaged. Dangerous voltages can result in severe injuries or death. Observe the following points:

- Never exceed the limit values of the technical data during transport, storage and operation.
- Check the charging cables and charging plugs for tempering, damage and foreign bodies
- Never use damaged devices or parts.

2.4.3 The five safety rules for electrical work

The European standard EN 50110-1:2023 "Operation of electrical installations" prescribes safety rules for work on and in electrical installations. 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. Verify there is no voltage on the electrical distribution board and the workstation.
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.

2.4.4 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 severe injuries or death. To ground the charging station, connect the protective conductor in conformance with regulations.

For more information on connection, refer to the section "Connecting the charging station (Page 97)"

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

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

- Tighten all power connections to the prescribed tightening torque.
- Check all power connections regularly, in particular after transport.
- Mark drawn connections, for example, with a red paint-marker

For more information on connection, refer to the section "Connecting the charging station (Page 97)"

2.4.6 Residual charge in capacitors

The discharging process of the capacitors starts after the power supply of the charging station has been switched off. 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.
- Make sure that the charging station is safely isolated from the power supply.
- Only then should you start work on the charging station.

2.5 Dangers from electric fields

2.5.1 Pacemakers/implants

No dangerous radiation emanates from the charging station. Interference with pacemakers and implants is excluded.

2.5.2 Electromagnetic fields

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

- Noise immunity: Class A (Industry)
- Emission (radiated): Class A (Industry), optional: Class B (Residential and Mixed Use)
- Emission (conducted, AC input): Class A (Industry), optional: Class B (Residential and Mixed Use)
- Emission (conducted, AC port): Class A (Industry), optional: Class B (Residential and Mixed Use)
- Emission (conducted, DC port): Limits according to Table 12 from IEC 61851-21-2:2018 (< 75 kVA)

NOTE

Operation of this device is intended for both public and industrial areas. Suitability is reduced to industrial areas if the device is configured for Class A emission.


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 61000-6-3:2007 + A1:2011 + AC:2012: Electromagnetic compatibility (EMC) - Part 6-3: Generic standards – Emission standard for residential, commercial and light-industrial environments, 2007
- EN 62311:2008: Evaluation of electrical and electronic equipment with respect to limiting human exposure to electromagnetic fields (0 Hz to 300 GHz), 2008



2.6 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

Safety sign	Meaning
	Warning of general danger

Safety sign in the charging station

Safety sign	Meaning
	Warning of dangerous voltage
	Warning of hot surface

Safety sign on the rope box

Safety sign	Meaning
	Warning of highly prestressed coil spring Do not open the housing

Information on the nameplate

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

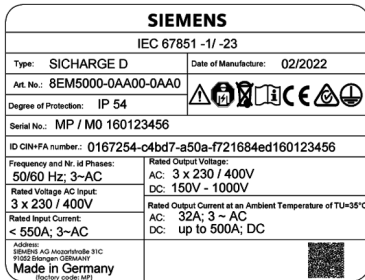


Figure 2-2 SICHARGE D nameplate (older hardware release)



Figure 2-3 SICHARGE D nameplate (newer hardware release)

2.8 Safety loop and emergency stop

The emergency stop of the charging station is triggered when the safety loop of the charging station is interrupted. The safety loop includes by default the door contacts on the front and rear. You can select additional equipment in the configuration process:

- Emergency Stop switch on the front
- Option for integration into an existing safety loop
- Connection of an external load management system

Triggering the emergency stop

The safety loop of the charging station can be interrupted by opening the doors, actuating the Emergency Stop switch, or triggering the external safety loop or the load management system. The emergency stop then triggers immediately.

The section "Error message "Emergency Stop was triggered" ([Page 119](#))" describes various other error scenarios and the respective behavior of the charging station in each case in addition to the emergency stop.

Position of the Emergency Stop switch

The optional Emergency Stop switch is located in the middle of the front of the charging station, below the also optional AC charging socket. Its recessed position protects it from unintentional operation.

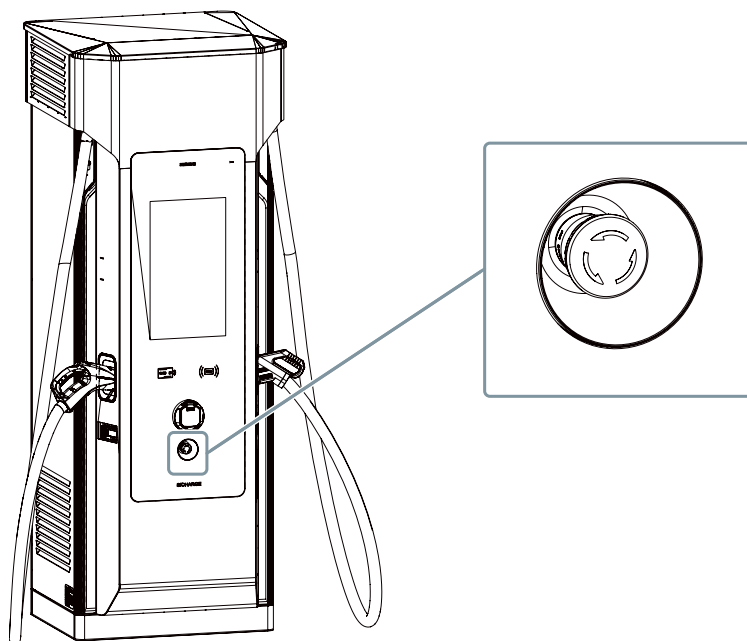


Figure 2-4 Position of the switch

Function of the switch

The function of the switch is described in detail in the section "Emergency Stop switch ([Page 36](#))".

Revoking the emergency stop

NOTE

Eliminate the hazardous situation

First eliminate the hazardous situation when you want to revoke the emergency stop.

If the emergency stop was triggered by the switch at the charging station, it can be revoked again with this switch. The 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.

The charging station automatically starts to restore charging readiness after it is unlocked. 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 during operation

To prevent the repeated (misused) actuation of the switch and thus the failure of the charging station without a safety-related reason, a waiting time is initiated when the switch is actuated during operation. This waiting time starts after the switch is unlocked. Once the waiting time has elapsed, the charging station starts to restore its readiness. This waiting time can be individually set in the SICARGE Configuration Backend (SCB). See also: "SICARGE Configuration Backend ([Page 58](#))"

Integration into an existing safety loop

The charging station has additional terminals in its input area which act as an interface for integration of an existing system safety loop (designed as Normally Closed, NC). Interrupting the external safety loop triggers the emergency stop of the charging station. See also: "External Emergency Stop ([Page 51](#))"

Integration of an external load management system

In the event of a fault, the load management system must be able to switch the charging station to the emergency stop in order to protect the network against overload. An interface to the safety loop of the internal charging station is also required for this purpose. See also: "Connection to an external load management system ([Page 51](#))"

2.9 Industrial Security

Siemens AG offers 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. 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 updates be applied as soon as they are available and that the latest hardware and software versions be used. Using versions that are obsolete or are no longer supported can increase the risk of cyber threats.

Description

3.1 Product overview

The SICHARGE D charging station is designed for rapid charging of electric vehicles. It supports the DC charging standards CCS and CHAdeMO and AC charging Mode 3. This means that nearly all vehicle models from various manufacturers can be charged quickly and efficiently. The SICHARGE D charging station is characterized by its modularity and platform principle.

Performance features

The charging station provides the following performance features:

Charge performance:

- Scalable and subsequently expandable DC power
- Autonomous health monitoring for maximum availability
- Dynamic power distribution and optimum use of installed DC power

Optional

- Can be expanded by up to two additional distributed DC charging points by using a dispenser
- 22 kW AC charging socket with shutter
- Simultaneous charging of up to 5 vehicles

Operation and environment:

- High level of protection against environmental influences (IP54) and vandalism (IK10)
- Space-saving design and minimal footprint for foundation mounting
- Wide temperature range with intrinsically safe operating start
- Status LEDs on the cabinet
- Barrier-free 24" touch screen in accordance with DIN EN 301549

Optional

- Noise-optimized operation with time-based maximum noise levels
- EMC emission class B (for use in residential and mixed environments)

Software:

- Over-the-Air updates
- Connection of various operator backend systems thanks to OCPP interface and connection of the SICHARGE Configuration Backend (service) via mobile wireless (2G/ 3G/ 4G (LTE)) or Ethernet connection

Application

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

- Inner cities
- Parking garages
- Service areas and truck stops
- Gas stations
- Terminals
- Vehicle depots
- Company parking lots

NOTE

In the device version with EMC emission class A, the charging station is not suitable for use in residential areas. The charging station could therefore interfere with radio reception in such areas. If the charging station is installed in residential environments, select the "EMC emission class B" option.

Compatibility

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

Table 3-1 Compatibility overview

Type	Standards
AC charging Type 2	IEC 61851-1 IEC 62196 Mode 3
CCS 2	IEC 61851-23 IEC 62196 Mode 4
CHAdeMO	CHAdeMO 0.9 to CHAdeMO 1.2 JEVS G105
Communication	IEC 61851-24

3.2 Configuration options

The following table shows the various selection and equipment options of the SICARGE D.

SICARGE D Compact Charger		Version 19.09.2023																
MLFB configurations	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Z	
Position	8	E	M	5	0	0	0	.	.	0	.	.	0	- Z
Standard																		
IEC	0																	
Power class																		
160 kW	0																	
180 kW	1																	
240 kW	3																	
300 kW	5																	
Metering																		
w/o DC meter	0																	
w/ basic meter	1																	
w/ DC meter MID/LNE compliant	2																	
Compliant to german metering regulation (ERK)	3																	
Left outlet																		
CCS2, 5m, 250/ 400A peak	A																	
CCS2, 3.1m, 250A/400A peak	E																	
CHAdeMO, 3.1m, 125A*	G																	
CHAdeMO, 5m, 125A*	H																	
Right outlet																		
CCS2, 5m, 250/ 400A peak	A																	
CCS2, 5m, 500A liquid cooled	C																	
CCS2, 3.1m, 250A/400A peak	E																	
CCS2, 3.1m, 500A liquid cooled	F																	
Cable management																		
w/o cable management	0																	
with cable management	1																	
Dispenser / DPA																		
Prepared for Dispenser (2 outlets; High Flex)	0																	
w/o prepared Dispenser Outlet; High-Flex	1																	
w/o prepared Dispenser Outlet; Low-Flex	2																	
Branding																		
Standard colour	0																	
HMI and front panel																		
w/o AC Charging Socket/meter; w/o emergency stop button	A																	
with AC Charging Socket/meter; w/o emergency stop button	B																	
w/o AC Charging Socket/meter; with emergency stop button*	C																	
with AC Charging Socket/meter; with emergency stop button*	D																	
Authentication and payment																		
with RFID-Reader; no Credit Card Terminal	B																	
with RFID-Reader; with contactless Credit Card Terminal (CCV KNB)	C																	
with RFID-Reader; with contactless Credit Card Terminal (VR Payment)	D																	
with RFID-Reader; with contactless Credit Card Terminal (Payone)	E																	
with RFID-Reader; with Credit Card Terminal WorldlineValina	H																	
with RFID-Reader; with Credit Card Terminal Payter P66	K																	
with RFID-Reader; with Credit Card Terminal Castles UPT1000F (Neftis)	P																	
HW revision																		
Revision 0	0																	
Z-Options																		
AC income meter	M00																	
EMC emission class B	E00																	
Additional fuse for CCS2	E10																	
Enhanced SPD (only with dispenser)	E20																	
External Load Management System activation	S00																	
Noise level adjustment (silent mode)	S10																	

*not applicable for ERK version

Figure 3-1 Configuration options

The descriptions in the following sections always reflect the maximum configuration of the charging station. The figures below may contain options and special equipment.

3.3 Scope of supply

The following components are also included in the scope of delivery of every charging station:

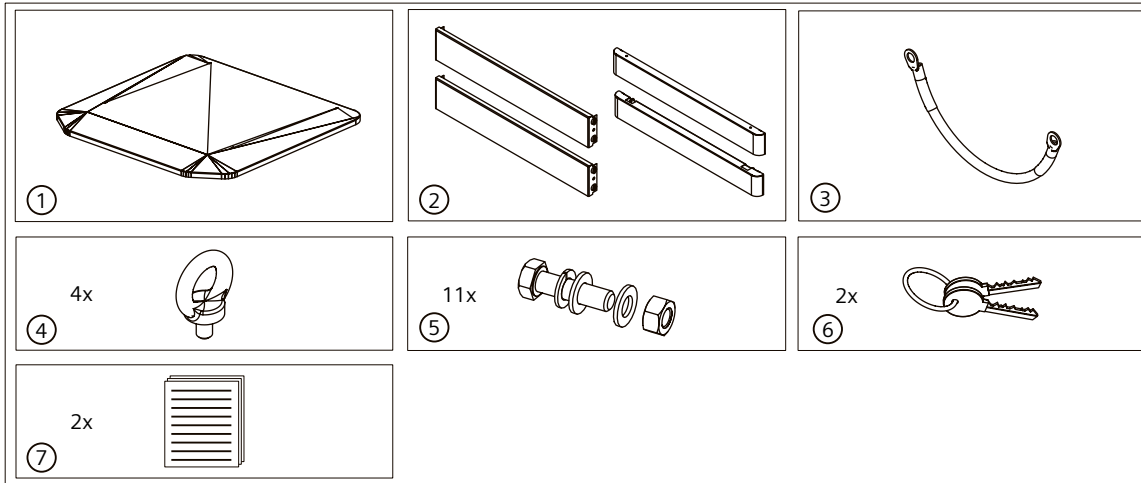


Figure 3-2 Overview of scope of delivery

Table 3-2 Description of scope of delivery

No.	Number of	Description
①	1*	Cover*
②	4	Base cover parts
③	1	PEN bridge
④	2	Key
⑤	4	Lifting eyebolt M12
⑥	11	M12 cable glands
⑦	2	<ul style="list-style-type: none"> • Safety instructions • Circuit diagram

* This cover is not included with the ordered cable management

3.4 Scope of delivery of cable management

To install the cable management system on the SICCHARGE D charging station, you will need the following materials.

Table 3-3 Scope of delivery of cable management

Number of	Description	Order number	Order designation
1	Mounting plate left	8EM5902-1AA02-1AA7	SICCHARGE D cable Mgmt left
1	Mounting plate right	8EM5902-1AA02-1AA8	SICCHARGE D cable Mgmt right
1	Fan cover plate	8EM5901-1AA07-7AA1	cover plate fan
1	Cover	8EM5902-1AA02-2AA2	AA cover hood
1	Bridge	8EM5901-1AA07-7AA0	bridge
1	Bezel bracket left	8EM5901-1AA08-0AA8	Rear bezel bracket left
1	Bezel bracket right	8EM5901-1AA08-0AA7	Rear bezel bracket
2	Nipple for bezel bracket	8EM5904-0AA03-2AA8	Nippel-fuer-Federlasche
2	Rubber sphere	8EM5901-1AA07-7AA3	absorber sphere
4	Cable clamp	8EM5902-1AA00-8AA3	Charging Cable Clamp
2	Meander pin	8EM5901-1AA05-4AA2	Meander Element CC
50 cm	Rubber adhesive tape, self-adhesive on one side	8EM5901-2AA01-0AA4	Cable Clamp Rubber Insert
4	M12x30 hexagon screw	-	-
10	M6x16 half-round hexagon socket-head screw	-	-
8	M4x14 hexagon socket-head screw	-	-
4	M8 hexagon nut	-	-
4	M6 hexagon nut	-	-
10	M4 hexagon nut	-	-

3.5 Display elements and operator controls

3.5.1 Overview

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

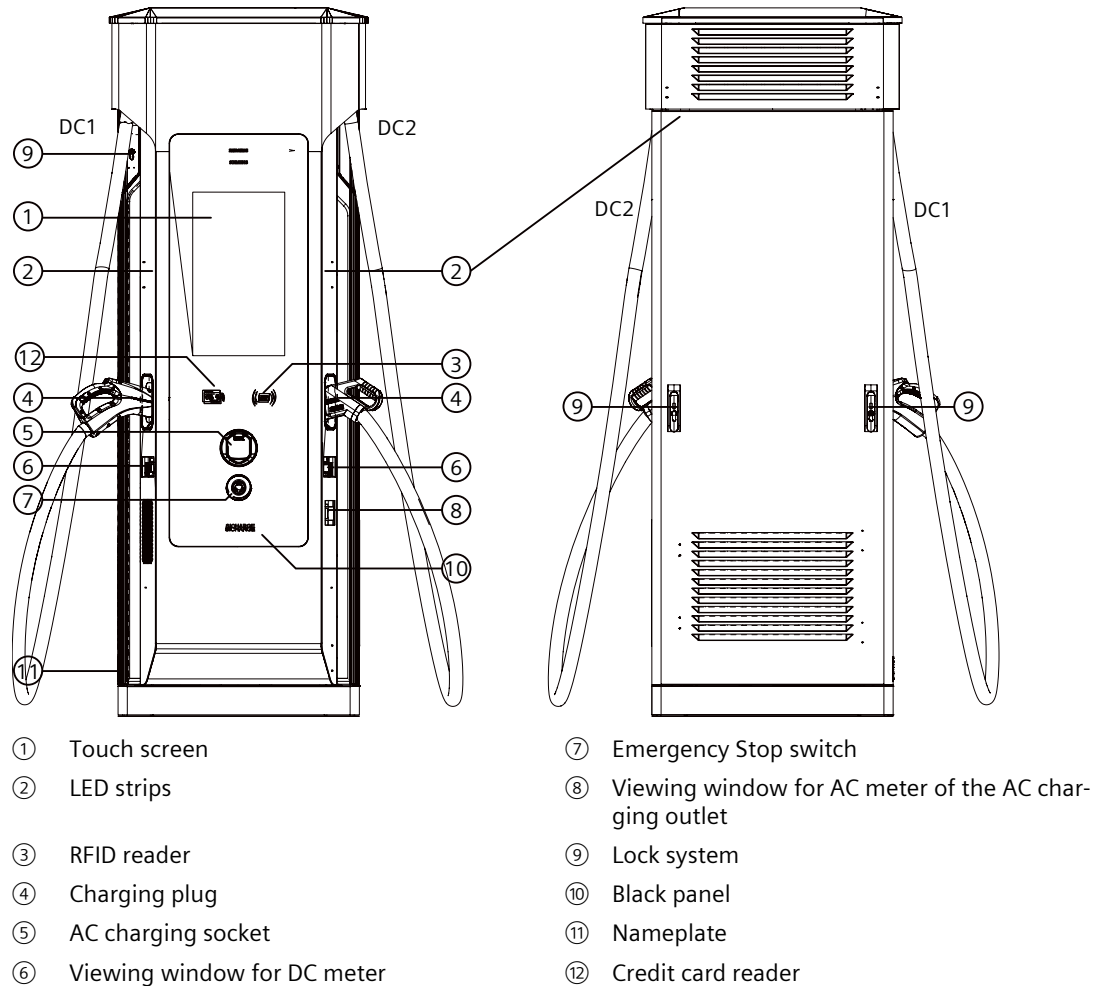


Figure 3-3 Display elements and operator controls of the charging station

See also

[Switching off the charging station \(Page 108\)](#)

[SICHARGE Configuration Backend \(Page 58\)](#)

[OCPP backend \(Page 60\)](#)

[Safety loop and emergency stop \(Page 25\)](#)

3.5.2 Touch screen

The charging station is equipped with a centralized touch screen. You can set the touch screen display to 3 different heights/positions. To adjust the display, use the two buttons at the top and bottom of the screen. The charging station thus complies with DIN EN 301549 for barrier-free operation.

The 178° viewing angle of the touch screen allows the operator control information to be recognized from all viewing directions. The brightness of the touch screen is controlled automatically depending on the ambient brightness. The control of the brightness guarantees good readability, even in direct sunlight.

The intuitive menu navigation guides the user and provides information about the various states of the charging process.

3.5.3 LED strips

The LED strips signal the state of the charging station or the individual DC charging points. 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 3-4 Meaning of the LED color codes

Color code	Meaning
White	Powering up the charging station, or not ready to charge
Green	Ready to charge
Red	Critical error, emergency stop triggered or service mode active
Blue	DC charging cable connected to vehicle
Pulsating blue	Active charging

3.5.4 RFID reader



The RFID reader is located below the touch screen. The icon lights up when it is time for the user to sign on via RFID.

3.5.5 Charging plug and charging plug holder

The DC charging cables are located on the right and left of the charging station. When not in use, insert the charging plug into the respective charging plug holder. In this way, the plug is protected against mechanical damage and environmental impacts.

Charging plug and charging plug holder are parts that are subject to wear.

3.5.6 AC charging socket

The optional AC charging socket is located below the credit card reader and RFID reader. The cover prevents the ingress of dust and moisture. The integrated shutter is a mechanical protection measure for personal safety. The shutter ensures that the power contacts cannot come into contact with fingers or objects.

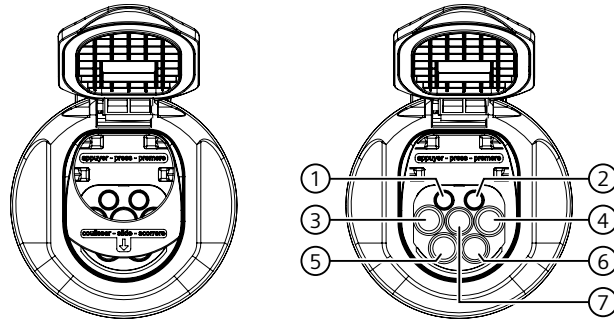


Figure 3-4 AC charging socket with protective cap and integrated shutter

The charging socket is equipped with an actuator. The actuator locks the charging cable before the start of the charging process and unlocks it again after the charging process. The charging cable with Type 2 plug must be provided by the user. The charging cable must support mode 3.

3.5.7 AC meter (charging outlet)

If the optional AC charging socket is installed, then an AC counter is also installed.

The window with the display of the AC meter is located below the viewing window of the DC meter. The AC meter shows the amount of energy emitted by the AC charging socket. For information about the contents displayed, refer to the operating instructions of the AC meter you are using. You can find the type of device used in the bill of materials of your charging station.

3.5.8 DC meters

The window with the display of the DC meters of the respective charging point is located below the plug holder. The amount of energy supplied can be read on the DC meter. For information about the contents displayed, refer to the operating instructions of the DC meter you are using. You can find the type of device used in the BOM of your charging station.

3.5.9 Emergency Stop switch

The Emergency Stop switch is integrated in the charging station's safety loop. If the following is present and set up, then a message is sent to the following locations when the emergency shutdown switch is activated:

- To the SCB. See section "SICHARGE Configuration Backend [\(Page 58\)](#)"
- To the OCPP backend of the operator. See section "OCPP backend [\(Page 60\)](#)"

During the emergency stop, the following is switched off:

- Rotating parts such as the main fan and cooling unit fan are switched off
- The power lines for charging are switched off
- The quick shutdown of the converters is started
- The circuit breaker of the converters is switched off
- The DC outlet contactors to the vehicle are opened
- The interlocks of the charging plugs on the charging station are released.
- Optional AC charging socket and charging outlets to the dispenser are switched off

The auxiliary circuit with controller and touch screen remains active during the emergency stop. The following functions therefore continue to be active:

- Touch screen
- Communication to the backend
- Auxiliary fans in the automation area to protect against overtemperature

The LED strips of the charging station light up red. You cannot charge in emergency stop state. The message "Emergency stop triggered" appears on the touch screen of the charging station.

The charging station returns to its normal operating state after the emergency switch has been unlocked. See section "Safety loop and emergency stop [\(Page 25\)](#)"

3.5.10 Locking system & replacing the lock cylinders

The door locks and the door opener secure access to the inside of the charging station.

Monitoring of the doors

The position switches on the doors detect whether the doors are closed. If the doors are opened without authorization during operation despite the lock system, the emergency stop is triggered. The circuit breaker opens automatically and interrupts the power supply to the power strings. Power supply to the controller is maintained.

Shut down the charging station before opening a door. The shutdown process is described in the section "Switching off the charging station (Page 108)".

Door and locking cylinder, front

At the front, the lock cylinder is in the cover at the top left next to the device door.

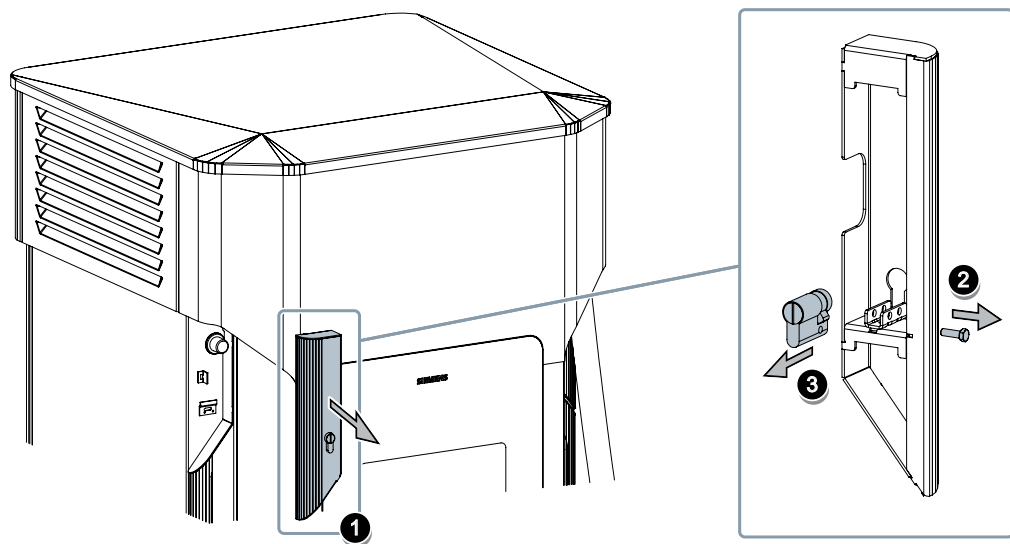


Figure 3-5 Lock cylinder, front

To maintain the industrial security concept, replace the supplied locking cylinders with your own standard half cylinders (10/30) according to DIN 18252.

1. Unlock the lock. Remove the cover by pressing the cover upwards. Press the button under the cover to open the door.
2. Remove the fixing screw on the rear.
3. Remove the locking cylinder.

Install your own locking cylinder in the reverse order. The maximum torque of the fixing screw is 2.5 Nm. Then mount the cover back on the charging station.

Door and locking cylinder, rear

There are two additional locking cylinders of the same type on the rear of the charging station in the two twist levers.

To open the rear door of the device, turn the two folded-out twist levers inwards. First, tilt the upper part of the door slightly. After that, lift the door out upwards. On the left side, the ground cable connects the door and the cabinet.

Proceed in reverse order when inserting the door. First thread the door in at the bottom again. Then press the upper part of the door against the cabinet on the left side. Turn the twist levers outwards and lock the door.

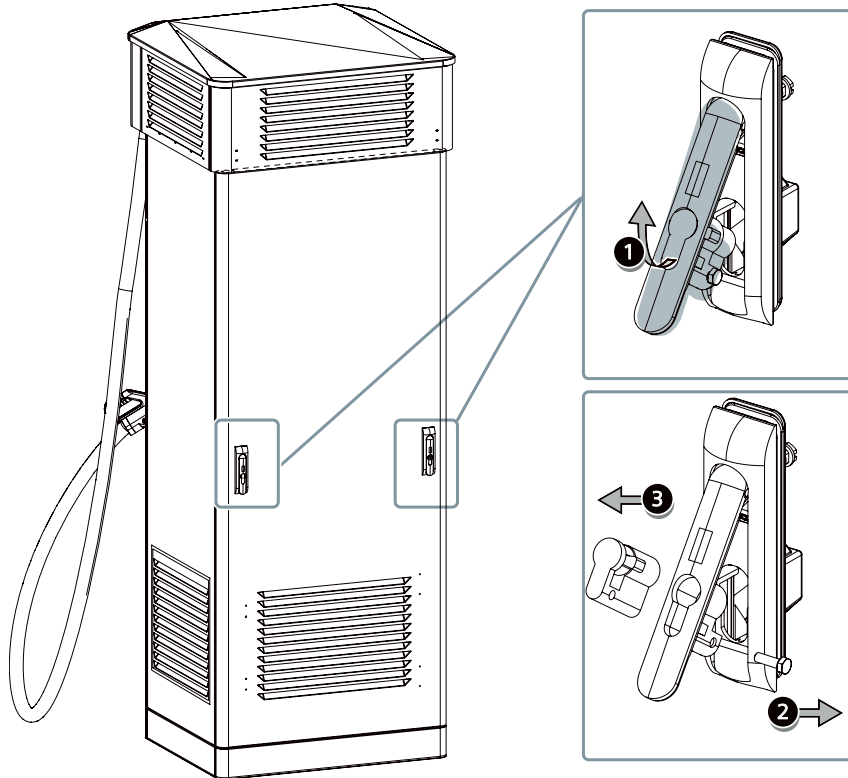


Figure 3-6 Locking cylinder, rear

To maintain the industrial security concept, replace the supplied locking cylinders with your own standard half cylinders (10/30) according to DIN 18252.

1. Unlock the levers to deflect them.
2. Remove the fixing screw in the folded-out lever.
3. Remove the locking cylinder.

Install your own locking cylinder in the reverse order. The maximum torque of the fixing screw is 2.5 Nm.

3.5.11 Black panel

The black panel is the black glass unit on the front of the charging station. Depending on the version, the following devices are integrated in the black panel:

- The touch screen
- The emergency stop switch
- The AC charging socket
- The credit card reader
- The RFID reader

3.5.12 Credit card reader



The following payment terminals are available:

- Contactless terminals, integrated behind the black panel:
 - CCV
 - Payter P66
- Terminals including touch screen (PIN on glass), chip reader and magnetic stripe reader:
 - Worldline Valina
 - Castles UPT1000F

The processes of the transaction are shown on the touch screen of the charging station or on the display of the credit card terminal.

For information on commissioning and operation of the credit card terminal, refer to document 8EM5907-0AA00-7AA4 Credit card payment for SICARGE D (<https://support.industry.siemens.com/cs/us/en/view/109814747>).

For more information on how to exchange the credit card terminal, see document 8EM5907-0AA00-4AA1 Repair Instructions for SICARGE D. This document is available on request.

3.6 Charging points

The DC cables mounted on the charging station have the charging plug type CCS or CHAdeMO. The two types of charging plugs differ in the shape of the plug as well as in the number and use of the individual pins.

Charging plug and charging plug holder are parts that are subject to wear. The insertion cycles of the respective plugs are listed in the tables.

CCS plug (Combo 2)

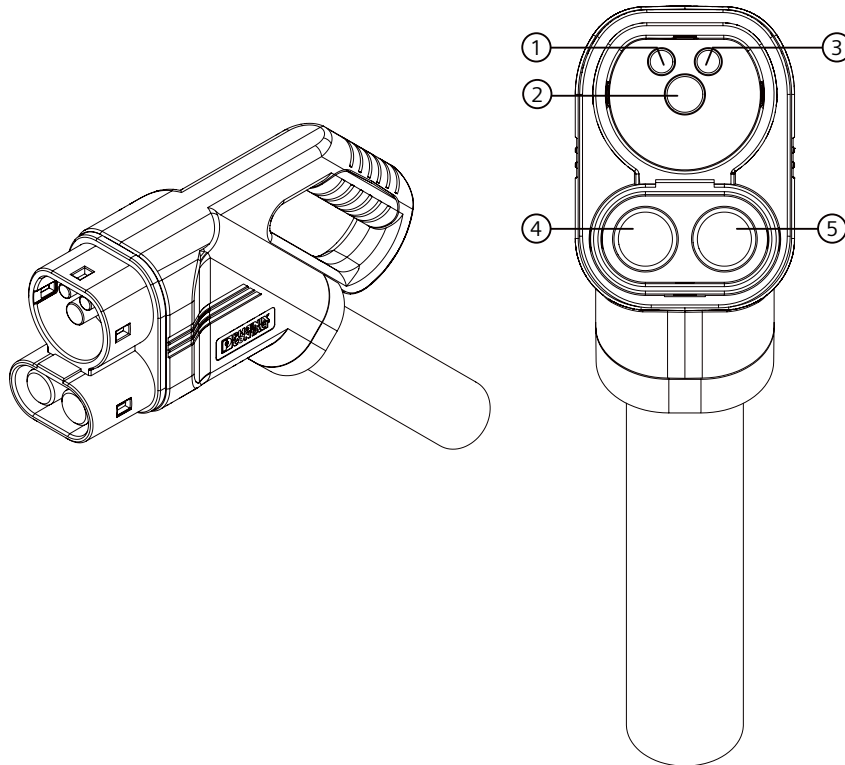


Figure 3-7 CCS plug (Combo 2)

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

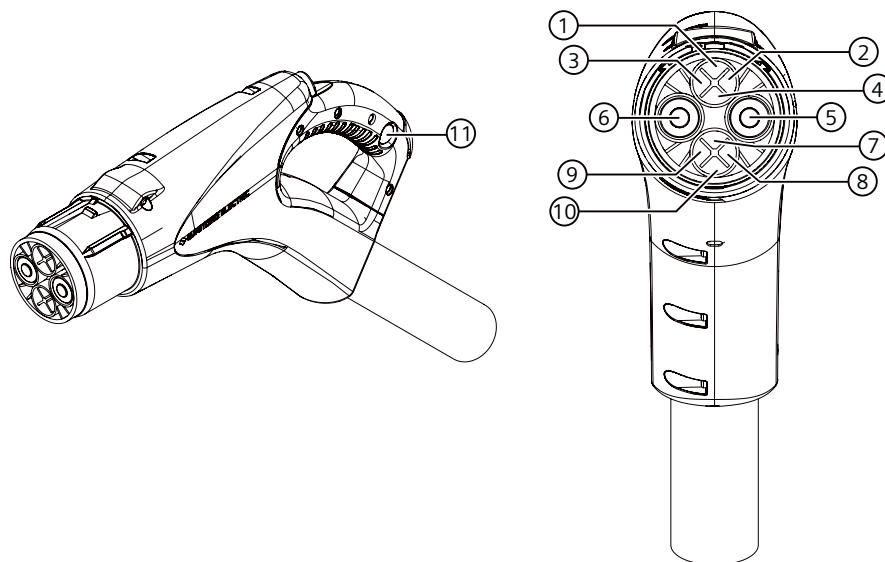


Figure 3-8 CHAdeMO plug

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 isolation test
⑪	LED	Signals interlock

The CHAdeMO connector has a locking button above the handle. After charging, press the lock button to unlock and disconnect the plug from the vehicle.

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

AC charging socket

Due to the optional AC charging socket, the charging station offers an additional charging point. The AC charging socket is described in detail in the section "AC charging socket (Page 35)" .

Interlock

For safe charging, do not disconnect the charging plug and charging socket under load. After plugging in and initiating the charging process, an electromechanical actuator in the vehicle or in the AC charging socket locks the plug connection. The lock is released again when the charging process has been completed.

Temperature monitoring

Depending on the configuration of the DC charging cables, these cables also have an integrated temperature sensor in the plug. 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 / 400 A peak (uncooled)	500 A (cooled)
Rated voltage	1000 V DC	
Cable outer diameter	(32.0 ± 0.4) mm	(35.7 ± 0.4) mm
Operating cycles	> 10,000	
Insertion and withdrawal force	< 100 N	

* Valid when ambient air temperatures ≤ 35 °C

The CCS charging cable for the 400 A peak mode is designed for a nominal current of 250 A. Thanks to the integrated temperature monitoring, a peak current of up to 400 A is possible. The duration of this increased current transmission depends on the environmental conditions such as ambient temperature, solar radiation, cable length.

CHAdeMO

Table 3-8 CHAdeMO performance features

Characteristic	Value
Standard	IEC 62196-3, JEVS G105
Rated current*	125 A
Rated voltage	500 V DC

* Valid when ambient air temperatures ≤ 35 °C

Characteristic	Value	
Cable outer diameter	(29.0 + 1.5) mm	(36.0 + 1.8) mm
Operating cycles	> 10,000	
Insertion and withdrawal force	< 100 N	

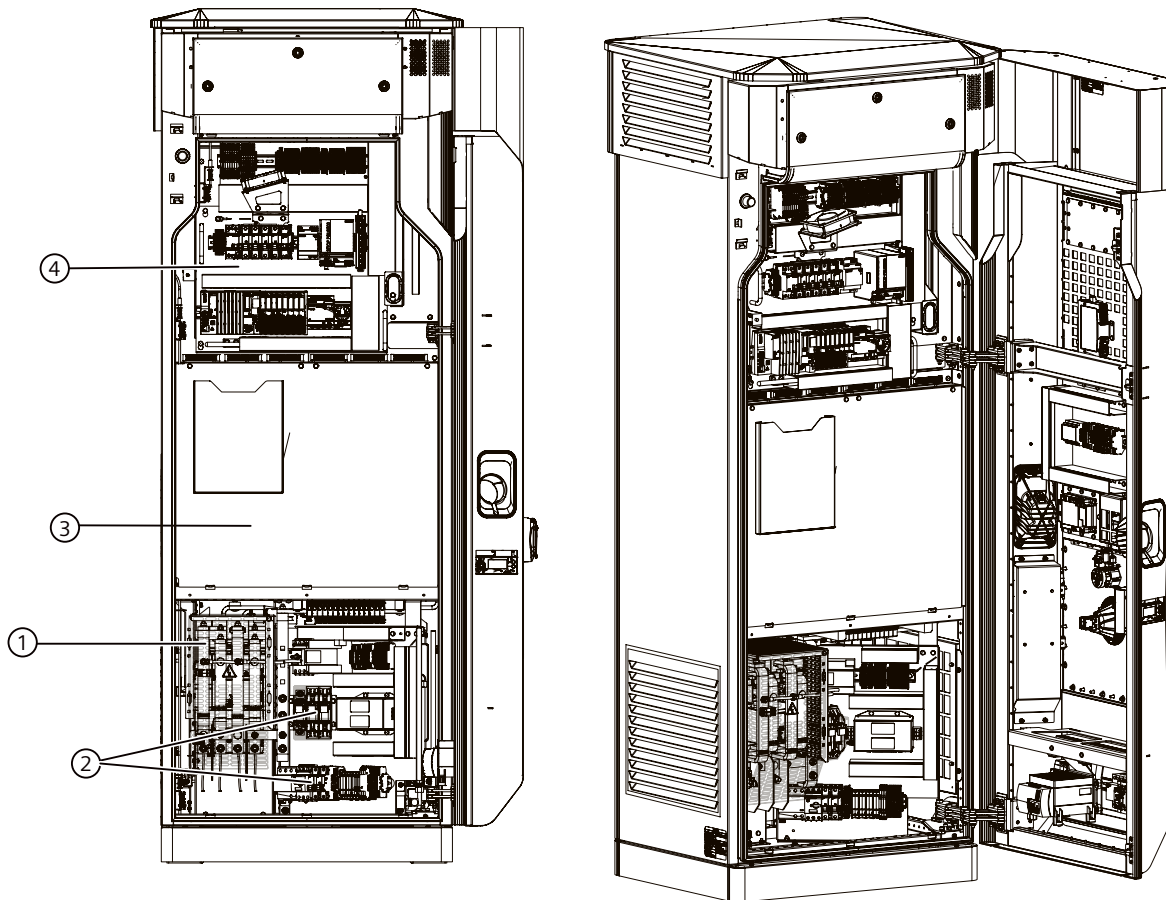
* Valid when ambient air temperatures $\leq 35\text{ }^{\circ}\text{C}$

3.7 Design of the charging station

The cabinet is made of zinc-phosphated steel. It is painted in RAL 9006 as standard.

Front view

The charging station is divided into five different areas. Four areas are arranged one above the other. The 5th area is the molded door. The figure below shows the charging station in the front view.



- ① Protective cover in front of the copper bars and circuit breaker, connection of the power supply cables
- ② Protective devices
- ③ Panel in front of converters (charging modules) with circuit diagram pocket
- ④ Control and communication part

Figure 3-9 Interior

3.7 Design of the charging station

In the lower area ①, the underground cables are connected to the copper rails of the charging station. See section "Mains connection (Page 98)". From here, power is supplied to the power strings and automation devices as well as other consumers. The protective elements for the internal devices and the fuses for the power supplies of the dispenser ② are also located here.

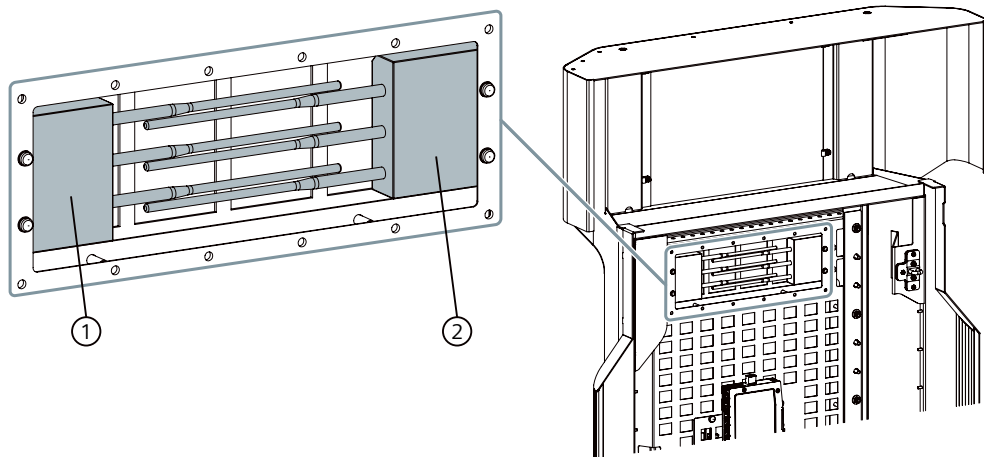
The converters are located in the center area of the charging station behind a cover ③. Among other things, the converters ensure galvanic isolation between the supply system and the vehicle.

The automation devices ④ are located above the converter cover.

On the inside of the front door, the devices for measuring consumption are located on the side under the AC charging line.

Inside front door

The routers for the wireless connection to the backend systems are located at the top behind a cover. More information about these devices can be found in the section "Routers (Page 53)". The following figure shows the interior view of the door.

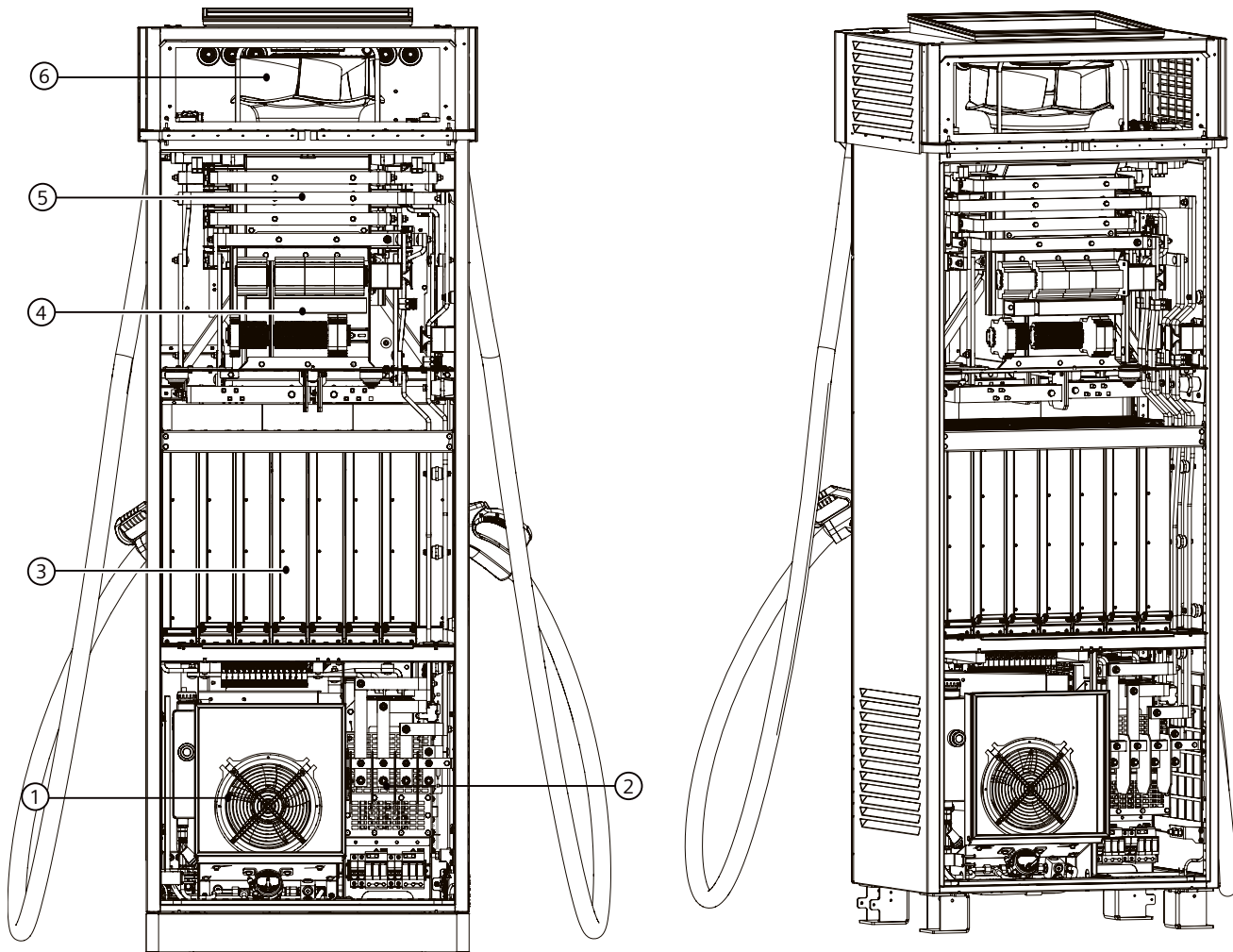


- ① Customer router, Router 2 (-XF4)
- ② Siemens router, Router 1 (-XF3)

Figure 3-10 Position of the routers

Rear view

The figure below shows the rear of the charging station with the rear panel open.



- ① Cooling unit (only present if cooled cable is selected)
- ② Shielded AC line filter
- ③ Converters (charging modules)
- ④ Isolation monitors and voltage transformers
- ⑤ DC busbar system with switching matrix
- ⑥ Radial fans

Figure 3-11 Interior space back with open door

At the bottom left is the cooling unit (①). To the right of the cooling unit is the AC line filter (②) and the DC copper rails for the dispenser. Above the line filter are the AC copper rails to which the converters (③) are connected.

The DC distribution system with the switching matrix (⑤), the DC filter and the outlet fuses is connected via the converter. The isolation monitors and voltage transformers (④) for monitoring the DC charging outlets are also located here.

3.8 Dynamic power distribution

The cable management, the radial fan (⑥) and the outlets for the charging cables are located under the cover.

3.8 Dynamic power distribution

The dynamic power distribution is a basic feature of every SICHARGE D charging station. Depending on the charging power required by the vehicle, the charging station first reserves the unused converter groups for charging the vehicle. The "First come, first serve" principle applies when allocating the reserved charging power. If all converter groups are used and another vehicle connects, then the new vehicle gets at least the converter group assigned primarily to the port for charging.

The charging station detects when the charging power requested by the vehicle decreases. In this case, the charging station releases converter groups that are no longer needed during a charging process. The available charging power is optimally utilized in this way. For example, additional power is made available while the charging process is already running.

Defective converters are detected autonomously. The available charging power of the group is automatically reduced and the group is still available. This maximizes the availability of the charging station.

Depending on the configuration and the associated structure, the performance of the dynamic power distribution of the charging station differs. In the Low Flex variant, the charging station has two converter groups. The two converter groups are fed separately or together from a DC charging outlet.

In the High Flex variant, the charging station has four converter groups. The charging power of the converter groups is distributed to the individual outlets as required and fully automated via the switching matrix. Due to the higher modularity compared to the Low Flex variant, the reservation of charging power is more precisely adapted to the needs of the vehicle. Converter groups that are not required are thus available at the other DC charging outlets or are released more quickly during a charging process. As a result, the charging station reacts very flexibly to various scenarios and offers the user the optimal charging performance.

If the charging station is configured and prepared for a dispenser, then the charging station automatically has the High Flex variant. If you don't want to connect a dispenser, you can select between the two variants. The figure below shows this connection.

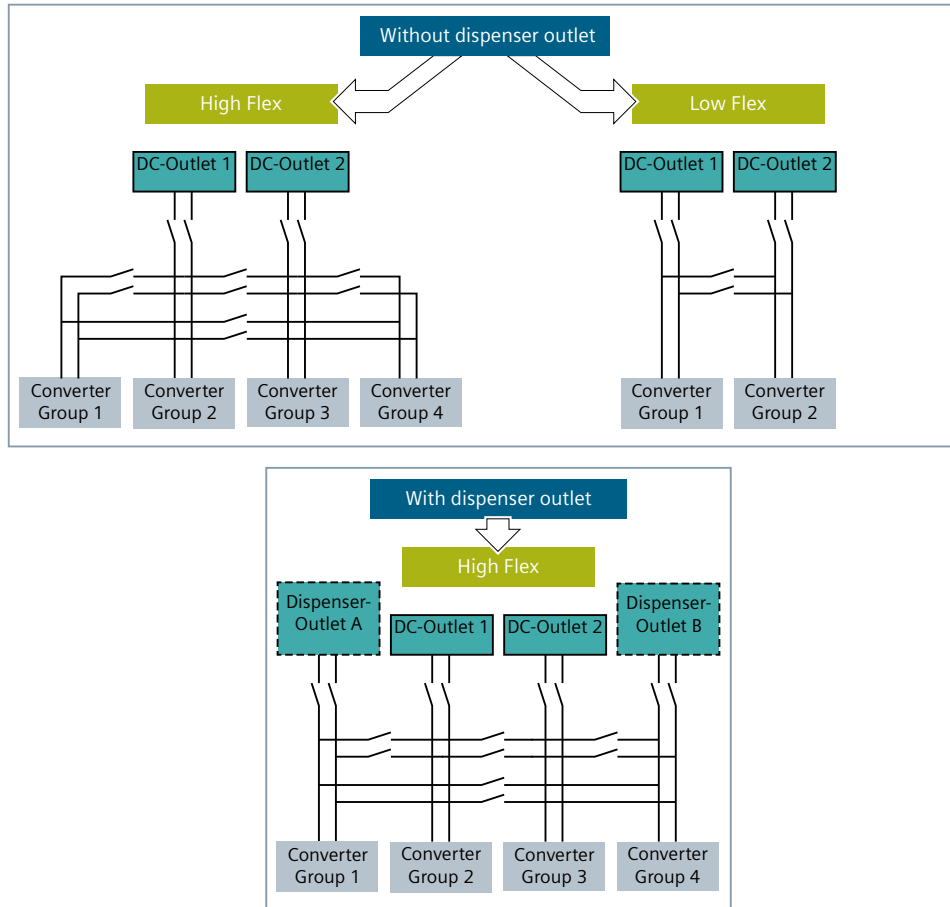


Figure 3-12 Low Flex and High Flex variants

The following table shows the available output power per DC output for the High Flex variant.

Table 3-9 High Flex variant

Number of vehicles	1			3*			4*			
	DC 1	DC 2	DC 3	DC 1	DC 2	DC 3	DC 1	DC 2	DC 3	DC 4
160 kW	160	120	40	40	40	80	40	40	40	40
		80	80	40	80	40				
		40	120	80	40	40				
180 kW	180	120	60	40	60	80	40	60	40	40
		80	100	40	100	40				
		40	140	80	60	40				
200 kW	200	140	60	40	60	100	40	60	60	40
		100	100	40	100	60				

* = via dispenser

Description

3.8 Dynamic power distribution

Number of vehicles	1		2				3*			4*	
		40	160	100	60	40					
220 kW	220	160	60	40	60	120	40	60	60	60	
		100	120	40	120	60					
		40	180	100	60	60					
240 kW	240	180	60	60	60	120	60	60	60	60	
		120	120	60	120	60					
		60	180	120	60	60					
260 kW	260	180	80	60	80	120	60	80	60	60	
		120	140	60	140	60					
		60	200	120	80	60					
280 kW	280	200	80	60	80	140	60	80	80	60	
		140	140	60	140	80					
		60	220	140	80	60					
300 kW	300	220	80	60	80	160	60	80	80	80	
		140	160	60	160	80					
		60	240	140	80	80					

* = via dispenser

The following table shows the available output power per DC output for the Low Flex variant.

Table 3-10 Low Flex variant

Number of vehicles	1		2	
	DC 1 or DC 2	DC 1	DC 1	DC 2
160 kW	160	80	80	80
180 kW	180	80	80	100
200 kW	200	100	100	100
220 kW	220	100	100	120
240 kW	240	120	120	120
260 kW	260	120	120	140
280 kW	280	120	120	160
300 kW	300	120	120	180

3.9 Electrical protection devices

Lightning protection and overvoltage protection

The installed surge protection devices (SPD) comply with the relevant product standards IEC 61643-1 and -11. This means that the charging station only protects itself and not any peripherals. When the option of extended lightning and overvoltage protection is selected, the Ethernet and DC cables to the dispenser are also protected.

The SPDs in the electrical supply cables and communication cables protect against transient interference. To prevent device defects, the power electronics are switched off in these cases:

- In the case of undervoltage
- In the case of overvoltage
- If low limits are violated
- If high limits are violated

NOTE

The planner decides whether to use the "advanced lightning and overvoltage protection" option in combination with a dispenser. Siemens is not responsible for this decision.

- To do this, prepare a risk evaluation in accordance with IEC 62305
-

Overload protection

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

Each converter is intrinsically safe in accordance 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). If the user uses an AC charging cable designed for lower charging power/charging current, then the charging station communicates the maximum charging current to the vehicle. If the current exceeds 1.3 times the permissible value for more than 1 minute, then the charging station will stop charging.

The controller monitors the DC output current per charging outlet. If 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.

You can protect the charging station and the vehicle from short-circuit currents with optional temperature fuses at the charging outgoing feeders.

3.10 Self-checks & health monitoring

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 isolation monitoring device in the charging station constantly monitors the resistance between the DC+ and DC- contacts to ground. If the low limit is violated, 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 isolation monitoring device sends a message to the controller, which in turn transmits the event to the SCB.

3.10 Self-checks & health monitoring

Among other things, the charging station checks these electrical conditions.

Insulation monitoring

The insulation resistances of the charging cable are monitored continuously. The insulation monitoring device undergoes a self-test on a cyclic basis. Damage and faults in the charging cable are thus immediately detected. During active charging, the insulation resistance of the entire charging line is checked by connecting the outlet contactors.

Converter testing

During each boot process, it is checked whether the quick shutdown of the converters is working correctly. The charging station detects the correct number of converters in a group and whether the correct converter group goes into the fast shutdown. This feature ensures additional operational reliability, especially with regard to retrofitting of converters.

Health monitoring

The charging station permanently monitors the feedback messages of the converters, contactors, protective devices and fans. Malfunctions are detected and displayed in the SCB in the form of error flags. This function is being improved and extended continuously.

3.11 External Emergency Stop

You can integrate the charging station into the safety loop of an existing system. The charging station has an interface for the signal cables of the external emergency stop. The charging station is factory-equipped with a wire jumper at this interface. When commissioning and integrating the external safety loop, remove the wire jumper. See section "Mains connection (Page 98)".

The charging station has the option of external emergency stop if the charging station is prepared for a dispenser or external load management system.

When the external emergency stop triggers, the following happens:

- The charging station goes out of order
- An error message is displayed on the touch screen
- The LED strips on the cabinet light up red
- An error message is generated in the SCB

NOTE

No measuring data relevant to the calibration law in the case of emergency stop

The charging process is aborted immediately when the emergency stop is triggered during a charging process. No measuring data relevant to the calibration law can be created for an aborted charging process. Billing for this charging process is not possible.

3.12 Connection to an external load management system

The charging station can be integrated into an external load management system (ELMS), which can dynamically limit the power consumption of the charging station (see section "Mains connection (Page 98)"). One application case is, for example, a charging park with limited supply system power and additional battery storage to handle load peaks. The ELMS interface offers the possibility to limit the power consumption of the charging stations in real time, depending on the grid connection, battery capacity and demand of the charging stations.

The charging station and the ELMS communicate via a local Modbus TCP connection. In this case the WAN port of router -XF3 must be reconfigured to enable communication with the controller. Ethernet ("Wired WAN") is then no longer available as a failover to -XF3. See section "Routers (Page 53)".

The power reduction of the charging station can also take place during an ongoing charging process. This reduction is communicated to the vehicle, which then requests a lower charging current. This procedure only takes a few seconds. Similarly, the ELMS can revoke a previously limited power consumption.

If the communication between the charging station and ELMS fails, a fallback value is defined that the charging station does not exceed at its supply system connection. In the event of a fault, the ELMS can also trigger the emergency stop of the charging station to protect the supply system from overload.

You can operate several charging stations with one load management system at the same time. To do this, make sure that no IP address is assigned multiple times on the WAN ports.

For more details, see operating instructions 8EM5907-0AA00-1AA8 ELMS (<https://support.industry.siemens.com/cs/us/en/view/109814743>).

3.13 Climate and environmental concept

The charging station is equipped with an intelligent climate and temperature control. The following components form the basis for this:

- Multiple built-in temperature sensors and humidity sensors
- Roof fan
- Fan in the automation area
- Fan heater in the door
- Converters with temperature sensors and dedicated fans
- Cooling unit of the CCS charging cable, consisting of fan and coolant pump (optional)

Heating and cooling

The fan heater regulates the climate in the charging station at low temperatures or at high humidity. The permitted operating range of the installed components is, therefore, not exceeded.

At high temperatures, the fans cool the components as required. If the cooling capacity is not sufficient, then the charging power is reduced by derating. The reduced charging power results in less heat loss in the charging station. This avoids overheating of the components.

If the temperatures in the charging cable require it, then the cooling unit of the CCS charging cable is switched on. The heating up of the charging cable is determined mainly by the duration and amount of the charging current. If there are high ambient temperatures at the same time, then the maximum possible charging current can be reduced.

Noise emissions

If the temperatures inside require it, then the fans are activated. This minimizes noise emissions from the charging station. If the "Noise level adjustment" option is configured, you can use the SCB to set the maximum noise emission as a guide for the behavior of the charging station. The charging power is regulated in such a way that the defined high limit is not exceeded. In addition, you can set the maximum permissible noise level based on time. These settings minimize noise pollution at night, for example.

Through a limiting of the maximum noise emission, the available charging power can be reduced. The available charging power depends mainly on the ambient conditions and the temperature inside the charging station.

3.14 Routers

The charging station is equipped with two preconfigured routers. Each router is connected to a backend system.

Basic information

The router -XF3 ("Router 1") for communication with the SCB. This router is equipped ex works with an M2M SIM card. The router establishes a connection to the Internet via this SIM card. This SIM card is the property of the manufacturer. After the final decommissioning of the charging station, the operator must remove the SIM card and return it to Siemens AG. With the door open, the router is located on the right.

The router -XF4 ("Router 2") is intended for the Internet connection to the OCPP backend of the operator and the credit card terminal. This router is located on the left side when the door is open. The router is configured by default to connect to the Internet via Ethernet. To do this, connect a network cable to the WAN port (-FA6) in the connection area of the charging station.

Changing the access method to the Internet

Make sure you have all the required credentials when you change the routers' method of accessing the internet. Then contact Siemens Support.

Changes to the router configurations can be made via the SCB. If you have selected the IP address of the device you want to change in the "Router configuration" section, the current configuration will be loaded first. You can then select the desired access method and the access data can be entered. Saving the new settings will restart the device. In the case of router 1, the connection to the SCB is interrupted briefly.

If no connection to the SCB is possible, then a local connection is allowed. You can find the corresponding instructions depending on the access method below. Put the charging station in maintenance mode before opening the door, if possible.

a) Router 1 (-XF3) from mobile wireless to Ethernet

Ethernet ("wired WAN") is active by default as the failover. Ensure that a SIM card is no longer inserted in the router. Then connect a network cable to the free WAN port of the router. The router then automatically attempts to connect to the Internet via the connected network.

This access method is not possible, however, when the charging station is operated with an ELMS (see section 3.10. "Connection of an external load management system" [\(Page 51\)](#)) and the free WAN port has been occupied by Router 1 and reconfigured.

b) Router 1 (-XF3) on consumer SIM or Router 2 (-XF4) on mobile wireless

The following steps refer to the firmware version RUT2XX_R_00.01.13.3).

1. Obtain all necessary access data from your mobile network provider (PIN, PUK, APN, etc.).
2. Ask Siemens for the router password.
3. Set the IP of your notebook to the range 10.20.17.190 ... 255.
4. Connect a notebook to the internal switch of the charging station.
5. Open the Web browser and go to
 - <http://10.20.17.1> for Router 1 (-XF3)
 - or
 - <http://10.20.17.2> for Router 2 (-XF4)

6. Enter the router password.

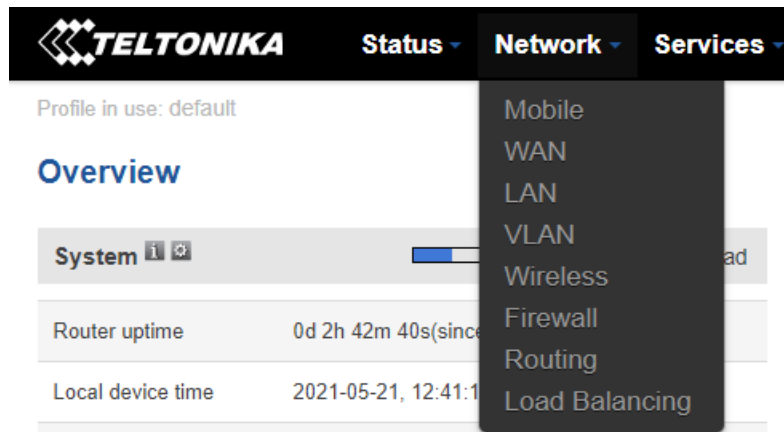
Authorization Required

Please enter your username and password.

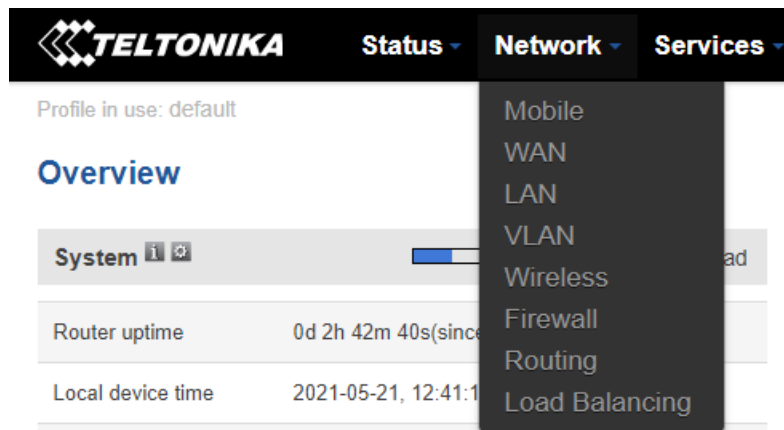
Username

Password

7. Go to "Network" → "Mobile".











8. Enter the access data of your SIM card.
9. Save the settings.
10. Go to "Network" → "WAN".




11. Select "Mobile" as the main WAN.

WAN

Your WAN configuration determines how the router will be connecting to the internet.

Operation Mode					
Main WAN	WAN Fallover	Interface Name	Protocol	IP Address	Sort
 <input checked="" type="radio"/>	<input type="checkbox"/>	Mobile (WAN)	None	100.103.178.153	
 <input type="radio"/>	<input type="checkbox"/>	Wired (WAN3)	DHCP	-	 
 <input type="radio"/>	<input type="checkbox"/>	WiFi (WAN2)	DHCP	-	 



12. Save the settings.

c) Set up WLAN

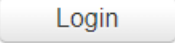
1. Get the required access data of the network (SSID, password).
2. Ask Siemens for the router password.
3. Connect a notebook to the internal switch of the charging station.
4. Open the Web browser and go to
 - Router 1 (-XF3) http://10.20.17.1
 - or
 - Router 2 (-XF4) http://10.20.17.2
5. Enter the router password.

Authorization Required

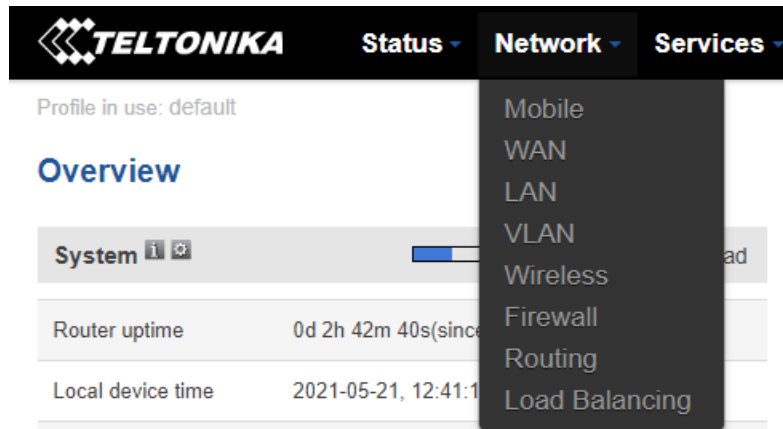
Please enter your username and password.

Username

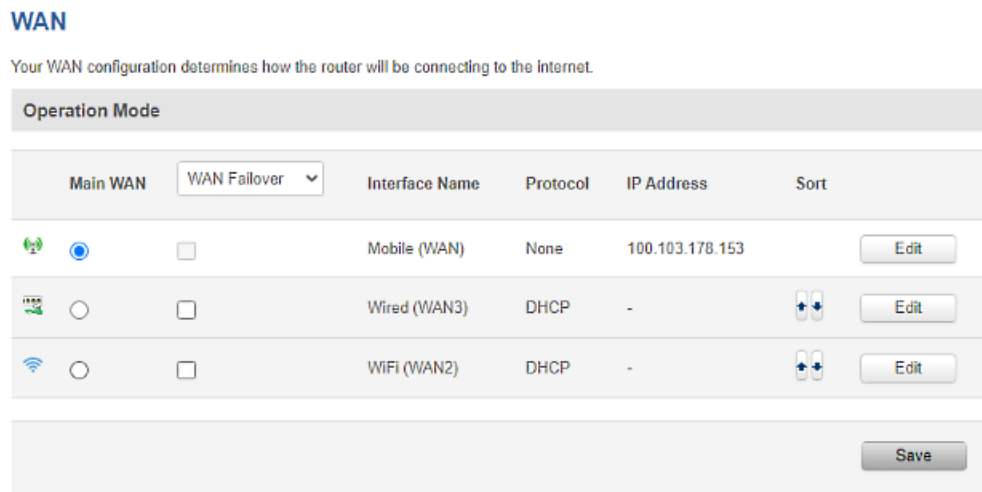
Password



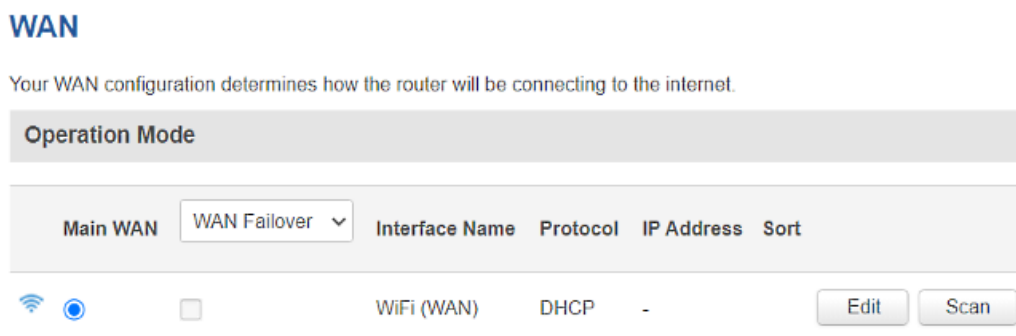
- Go to "Network" → "WAN".



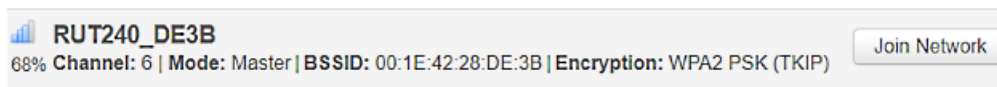
- Select "WiFi" as the main WAN.



- Save the settings.
- Click "Scan".



- Click "Join Network" for the desired network.



11. Enter the password.

WPA passphrase 

12. Save the settings.

SIM cards

The SIM card slots on the devices are in the center between the connections of the WAN/LAN ports and the power supply. The SIM cards can be inserted or removed without uninstalling the router.

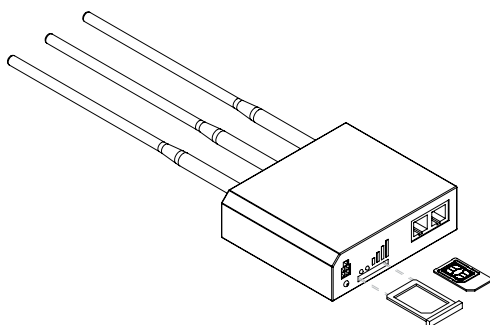


Figure 3-13 Router and SIM card slot

For the installation in the routers, a mini SIM card (15 x 25 mm) or a corresponding adapter for this card format is required.

Transmission power

The maximum transmission powers within the frequency bands supported by the routers are listed below. You can look up your wireless provider and the utilized frequency bands at: <https://halberdbastion.com/intelligence/mobile-networks> (<https://halberdbastion.com/intelligence/mobile-networks>)

Table 3-11 Frequency bands and their maximum transmission powers

Character-istic	Frequency band	max. transmit power
2G	B2 (1900 MHz)* B3 (1800 MHz) B5 (850 MHz)* B8 (900 MHz)	33 dBm
3G	B1 (2100 MHz) B2 (1900 MHz)* B4 (1700 MHz)* B5 (850 MHz)* B6 (800 MHz)* B8 (900 MHz) B19 (800 MHz)*	24 dBm

*Applies only to the global product variant RUT240 *7****

3.15 SICHARGE Configuration Backend

4G	B1 (2100 MHz) B2 (1900 MHz)* B3 (1800 MHz) B4 (1700 MHz)* B5 (850 MHz)* B7 (2600 MHz) B8 (900 MHz) B12 (700 MHz)* B13 (1800 MHz)* B18 (850 MHz)* B19 (800 MHz)* B20 (800 MHz) B25 (1900 MHz)* B26 (850 MHz)* B28A (700 MHz) B38 (2600 MHz)* B39 (1900 MHz)* B40 (2300 MHz)* B41 (2500 MHz)*	23 dBm
WiFi	2401 – 2495 MHz	20 dBm

*Applies only to the global product variant RUT240 *7****

3.15 SICHARGE Configuration Backend

The SICHARGE Configuration Backend (SCB) is a web-based system for commissioning, configuration and detailed error analyses. The connection to the SCB is made via a dedicated router (-XF3) using M2M SIM cards (applies only to EU, CH, NO, UK; in other countries, consumer SIM cards must be used). This connection is secured using certificates, private keys and TLS 1.2 encryption. Note that operating errors can cause the charging station to fail.

Basic features

- Listing of all SICHARGE D including current status and software version
- Searching for specific charging stations based on ID or location
- Master data of a charging station (location, customer, serial number, order number) can be displayed and edited
- Upload of related documents of a charging station
- Activation of the charging station in the SCB after initial startup
- Deletion of the charging station from the SCB after final decommissioning
- Remote maintenance access for emergencies via SSH by Siemens
- Restart of the charging station
- Over-the-air firmware 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)
 - Activation of additional features and bug fixes
- Multi-tenancy
- User management with various access rights

General configurations for each charging station

- Setup of the OCPP backend
- General timeout and screen configuration (e.g. logout screen after 30 s or wait time after repeated triggering of the emergency stop)
- Configuration of the permissible noise level of the charging station (per day of the week/time)
- Languages on the touch screen
- Setting up and operator logo as the home screen
- Maximum power consumption of the charging station at the AC input
- Connection of an external load management system (e.g. battery storage device)
- Store service hotline of the operator
- Router configuration
 - WAN type: Ethernet, mobile wireless or WiFi
 - Read out password

Charging point configuration

- Definition of charging standard (CCS or CHAdeMO) per DC charging outlet
- Authentication active/inactive per charging outlet
- Selection of supported authentication mechanisms (RFID, PIN, QR code, credit card)
- Maximum output power per charging point
- AC and DC meter configuration
- Deactivate charging process at the request of the operator

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)
- Charging process

Status analysis in the event of fault

Malfunctions can be detected via the error flags of the controller. These messages include, for example:

- Door open
- Status of DC contactors
- Overtemperature
- Emergency stop triggered
- Etc.

3.16 OCPP backend

The OCPP backend is used for interacting with the user, for controlling, and for handling the charging transaction. This includes authentication, payment transactions, reservations, load management, etc. The charging station meets 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 or you wish to have a compatibility test. See also the software manual (8EM5907-0AA00-4AA6).

The following messages with associated functions from the Core, Local Auth List Management, Firmware Management (partial) and Reservation profiles are supported by the charging station.

OCPP messages with description of functions

Table 3-12 Core messages

Message	Function
Authorize	Query authorizations for starting or ending a charging process
BootNotification	Charging station sends information about its restart
ChangeAvailability	Change availability of the charging station or charging port
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 configured parameters
Heartbeat	Charging station sends ping
MeterValues	Charging station sends configurable list of measured values
RemoteStartTransaction	Start a charging process via remote access
RemoteStopTransaction	End a charging process via remote access
Reset	Initiate restart of charging station
StartTransaction	Notification on the start of a charging process
StatusNotification	Status transmission of the charging station or charging port
StopTransaction	Notification about the end of a charging process
UnlockConnector	Unlocking of the charging cable on the part of the charging station (This function is not supported)

Table 3-13 Local Auth List Management Messages

Message	Function
GetLocalListVersion	Output of the authorization list saved locally in the charging station
SendLocalList	Overwriting the local authentication list

Table 3-14 Firmware management messages

Message	Function
GetDiagnostics	Request diagnostics data
DiagnosticsStatusNotification	Status of diagnostics data transfer

Table 3-15 Reservation messages

Message	Function
CancelReservation	Delete reservation of a charging port
ReserveNow	Reserve charging port

Other functions may be added with updates

Tariff information

The OCPP & California Pricing Requirements

(<https://www.openchargealliance.org/uploads/files/OCPP-California-Pricing-Requirements.pdf>) specify that the running and final costs of a charging process generally need to be calculated on the OCPP backend side. The charging station only shows the transferred information and cannot calculate the costs itself.

The reason for this is the multitude of scenarios which may occur in connection with the billing of a charging process. If the operator of the charging station and the eMobility Service Provider (eMSP) are different parties, for example, the price for the end user is already different to the price the operator pays to the eMSP. Different pricing models can be agreed between these two parties. The charging station cannot access this data, however. OCPP 1.6 does not offer any functions to configure and transmit the cost and tariff information.

Apart from different pricing models between the eMSP and the charging station operator, there may also be different pricing models between operator and end user. For this purpose, the SICARGE D also offers the option of displaying different tariffs for different end users in addition to the OCPP & California Pricing Requirements. User-defined messages allow the operator to decide which of these options to display.

- No tariff
- Standard tariff
- A user-defined tariff, e.g. after authentication by RFID or PIN

The tariff information can be stored and active, even if no tariff is displayed.

If no tariff is to be displayed, the charging process starts directly after successful authentication. However, if a tariff is displayed, the user waits for confirmation or the payment process is aborted after 30 seconds of inactivity.

Additional details can be found in the document with article no. 8EM5907-0AA00-7AA4 "Credit Card Payment for SICARGE D

(<https://support.industry.siemens.com/cs/us/en/view/109814747>)".

3.17 Dispenser

The SICHARGE D charging station can optionally supply two additional DC charging points in one dispenser. For this purpose, the corresponding DC busbar systems are prepared for connection on the back of the charging station. The connection options for auxiliary power supply, communication and integration into the control system are on the front of the charging station. For more information about the dispenser, please refer to the document with order number 8EM5907-2AA00-0AA1.

Laying cables between the charging station and the dispenser

To connect a dispenser to the charging station, the foundation must be provided with openings for this purpose. To do this, you need to lay the DC underground cables, a ground cable, cables for auxiliary AUX power supply and communications. More detailed information on this topic can be found in these sections:

- Base area and foundation ([Page 76](#))
- Setting up the charging station ([Page 82](#))
- Connecting the charging station ([Page 97](#))

Transport and storage

4.1 General information

Depending on the local conditions and customer requirements, two transport options are available. In general, transport from the factory and to the installation location is by truck. These options are 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). 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. Only transport the charging station vertically. For exact details, refer to Technical specifications ([Page 136](#)).

NOTE

Please note that the transport packaging does not provide sufficient protection against the weather. Before installation, store the equipment only under a roof and protected from the effects of the weather.

Transporting charging stations on the load carriers

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

Elevating tailgate of a truck

When transporting with a truck with an elevating tailgate, follow these instructions and specifications.

- Minimum payload of the elevating tailgate is designed for the sum of these weight specifications:
 - Weight of the ordered charging station
 - Weight of the lift truck or industrial truck used
 - Weight of one person
- Do not tilt the elevating tailgate for unloading. A few examples of this:
 - Unload at an elevated curb
 - Unload with a forklift
 - Unload with a crane

You can request a so-called truck-mounted forklift when ordering for transport.

Transporting the charging station with a forklift

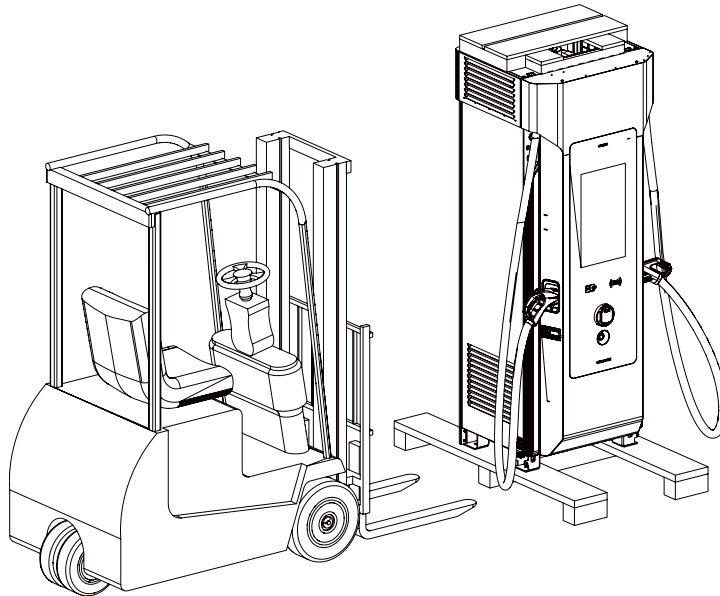


Figure 4-1 Transport with a forklift in delivery state

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 are protruding at the other side.

⚠ DANGER

Tilting of the charging station

The charging station may tilt if transported improperly. A tilting charging station can cause death or serious injury. Stay completely away from any hazardous areas.

3. Lift the charging station vertically. Pay attention to the center of gravity of the device and avoid uneven surfaces.
4. Transport the charging station standing vertical to the site.

Transporting the charging station with a crane

Ensure adequate carrying capacity, depending on the hoisting gear used. Maintain an angle of inclination of $\leq 45^\circ$ between the chain and the perpendicular 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. Attach the accompanying eyebolts to the four corners of the roof of the cabinet frame.
Screw in the lifting eyebolts completely until the contact surfaces are level and fully in contact. Avoid improper loading (see figure).

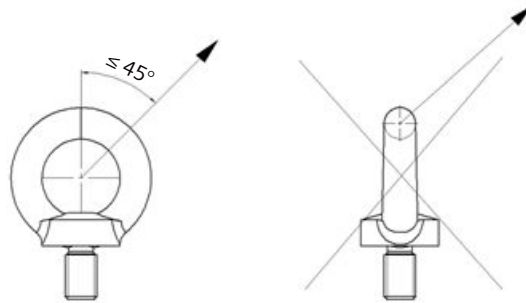


Figure 4-2 Standard load (left) and impermissible load (right)

When using your own lifting eyebolts, make sure that:

- Lifting eyebolt corresponds to at least the requirements of DIN 580
- 25 to 30 mm long M12 thread
- Suitable for weight of the charging station
- Follow the respective mounting instructions

2. Hook the hoisting gear into the eyebolts.

⚠ DANGER
Suspended load A falling charging station or parts can cause death or serious injury. Stay completely away from any hazardous areas.

3. Lift the charging station vertically

4. Transport the charging station hanging vertically to the site

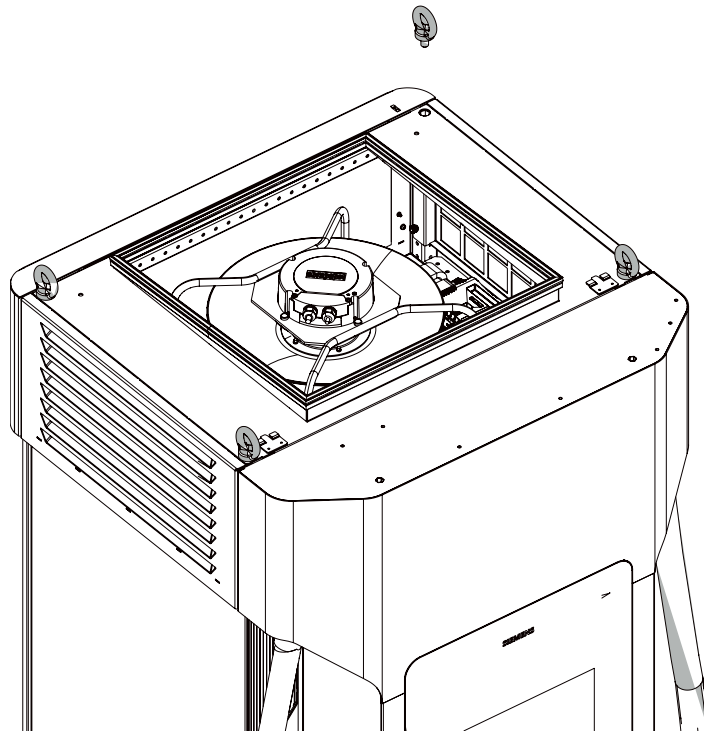


Figure 4-3 Mounting the eyebolts

4.2 Road transport

Description of packaging

Always use the supplied transport skids including screw material.

In road transport, the packaging consists of two transport skids as load carriers, a polyethylene (PE) hood and an attachment frame. The box of accessories is attached to the side of the packaged charging station.

Information on the dimensions and weight of the packaging can be found in the section "Technical specifications (Page 136)".

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 load must be additionally secured with lashing material and a lashing force of 400 daN. A tension belt is placed around the package. The attachment frame on the roof protects the charging station from possible damage caused by the force exerted by the tension belts. The attachment frame must always be put in place before the tension belt is attached. Only transport skids from Siemens AG are used for transport and load securing purposes.

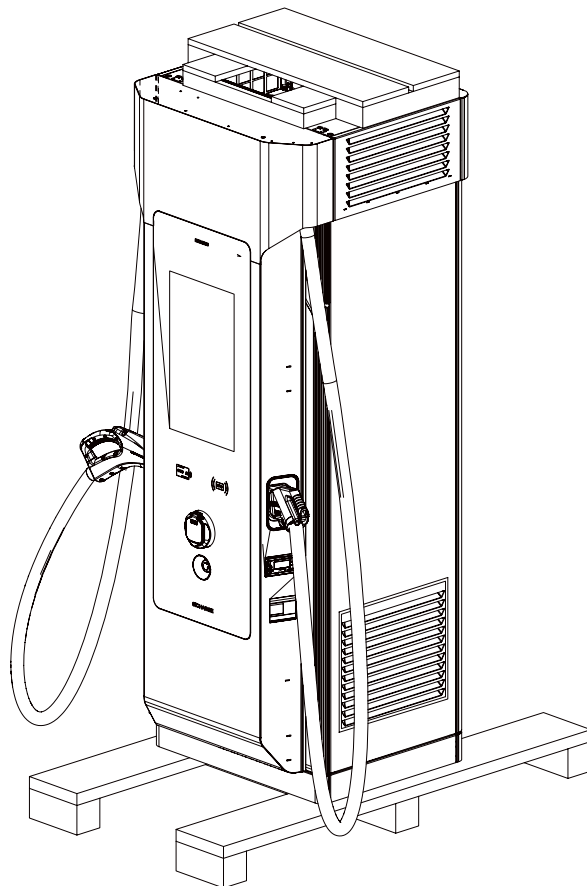


Figure 4-4 Packaging for road transport

4.3 Sea transport and air transport

When transported by sea or air, the charging station is placed on a reinforced and insulated wooden pallet. An aluminum composite foil protects the charging station inside the wooden box from moisture and salt air.

Information on the dimensions and weight of the packaging can be found in the section "Technical specifications [\(Page 136\)](#)".

The packaging consists of the following elements:

- Export packaging in accordance with IPPC standard (ISPM15)
- Plywood box, suitable for container stowing
- Pallet base
- PE cover
- Attachment frame
- Straps for securing load
- Box of accessories 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.

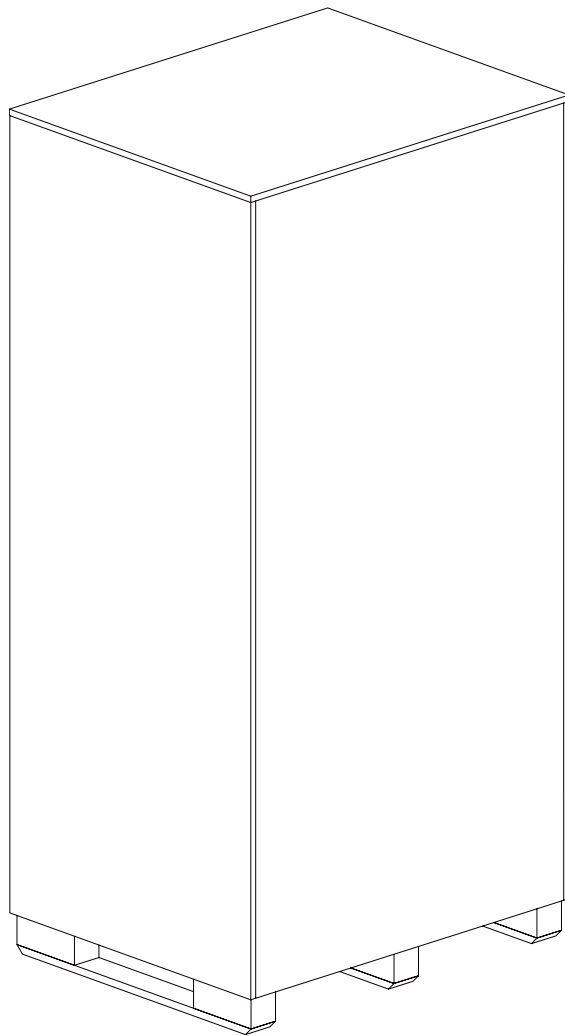


Figure 4-5 Sea packaging

4.4 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 from mechanical stress (e.g. shocks, vibrations)
- 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 are switched off for more than a year, storage damage can occur to the components.

- | |
|---|
| <ul style="list-style-type: none">• Store the charging station for a longer period of time only if necessary.• Put the charging station back into operation no later than one year after the date of manufacture (see imprint on the nameplate) or after one year if it is decommissioned. |
|---|

Installation and mounting

5.1 Preparation

An Installation and commissioning video (<https://www.youtube.com/watch?v=W6StEHvtZLE>) is available for an overview of the most important steps. Extended version on request.

Tools list

Ensure that before beginning work all required tools, materials and lifting gear is available. (Additional tools and aids may be needed):

- Personal protective equipment (PPE) (Page 16)
- Fall arrester (Page 16)
- Forklift or crane
- Drill hammer
- Drilling machine
- 12 mm drill bit for concrete
- 4 x M12 stud bolts with approx. 50 mm long thread
- 4 x nuts M12 DIN 934
- 4 x spring washers M12
- 4 x spring washers M12 DIN 125
- Shims for alignment
- Step drill
- Cable knife
- Crimping tool for cable lugs of the cable cross-section used
- Torque wrench up to 70 Nm
- Torque wrench up to 10 Nm
- Socket wrench set up to at least 19 mm width across flats
- Ring wrench set up to at least 19 mm width across flats
- Open-ended wrench, size up to at least 19 mm
- Two pliers wrenches or adjustable open-end wrenches for the cable glands
- Allen key size 2.5 to 6 mm
- Torx screwdrivers TX20 and TX30
- Hammer
- Spirit level
- Stepladder
- Hot air gun
- Shrink-on sleeve for cable diameter used
- Folding ruler
- Permanent marker
- Two-pole voltage tester
- Installation tester

5.2 Installation location

- EVSE tester
- Mini USB cable
- Ethernet cable
- Degreasing cleaner and cloth

5.2 Installation location

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

Internet connection

The charging station needs a good, stable Internet connection to the SICARGE Configuration Backend as well as to the OCPP backend in order to function properly and fully. This is used, among other things, to process safety-related updates and the possibility of billing the charging processes. The quality of wireless connections depends on many factors, so it is not possible to give generalized standard values here.

If the planned installation location is unsuitable for mobile radio, consider connecting the router via WiFi or Ethernet. In case of uncertainty, contact your wireless provider.

You can find more information on the Internet (https://wiki.teltonika-networks.com/view/Mobile_Signal_Strength_Recommendations).

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.
 - Comply with IEC 62305 if there is a risk of a direct lightning strike.
-

Noise emission

Select the location of the charging station in such a way that local requirements and regulations are met. Example: Technical Instructions for Protection Against Noise (TA Noise) (<https://www.bfqa.de/arbeitschutz-lexikon-von-a-bis-z/fachbegriffe-s-u/ta-laerm-fachbegriff/>).

Minimum clearances

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

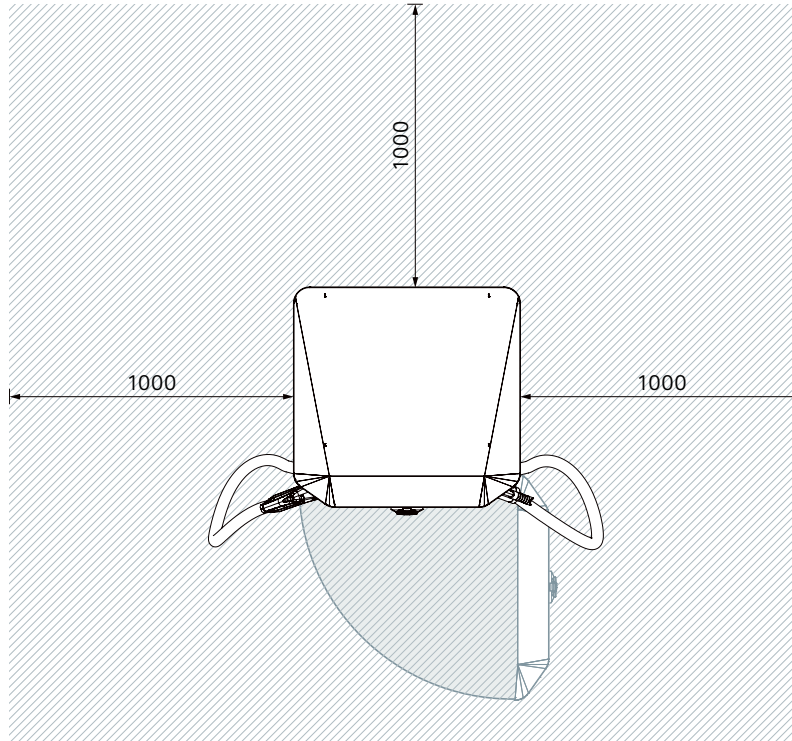


Figure 5-1 Minimum clearances of SICARGE D, top view

We recommend that you set up the charging station as free-standing as possible. If you position two SICARGE D next to each other, then maintain twice the minimum distances between the two devices. The cooling concept is maintained in this way. Note the swivel range of the door.

You need a minimum distance from the top of the charging station to the ceiling for maintenance at the planned location. Depending on the conditions on site and the procedure for setting up the charging station, the minimum clearance required could be greater for assembly reasons.

Table 5-1 Minimum distance to the ceiling

Charging station with cable management system (CMS)	Minimum distance to the ceiling
No	200 mm
Yes	250 mm

Shading

Choose the location of the charging station so that the device is protected from direct sunlight. If necessary, install suitable shading equipment as shown in the following example figure. Direct sunlight can additionally heat the charging station and charging cables. If the charging station gets too warm, the charging power is reduced (derating) or the charging station switches off.

Strong UV radiation can cause premature aging of the insulation of the charging cables. This could significantly reduce maintenance intervals.

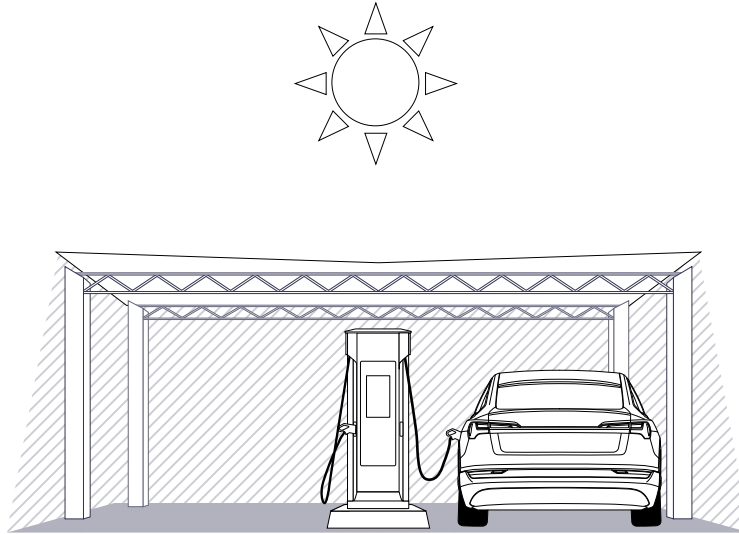


Figure 5-2 Example of shading

Maximum operating temperature at the air inlet

The maximum operating temperature at the air inlet is 55 °C. In the range between 35 °C and 55 °C, the available charging power may be reduced depending on the duration of the charging process and the requested power of the vehicle (derating).

Direction of air flow

The supply air enters the two sides and the back of the charging station from below. The airflow inside the charging station is from the bottom to the top. The warm exhaust air escapes on both sides and the back. This means that the warm exhaust air does not reach the operator at the front of the charging station.

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 supply system (230/400 V AC, 3 ph., clockwise phase sequence). Comply with local standards and installation regulations for the connection to the distribution system.

The free Siemens SIMARIS design software supports you in planning and dimensioning the connection, including the dimensioning of the connecting cables Planning (<https://new.siemens.com/global/en/products/energy/medium-voltage/simaris/simaris-design.html>).

Connecting cable

Use only insulated cables approved for the operating voltages. Select the cable cross-sections according to the rated current, cable length, and permissible voltage drop. If you want to upgrade the charging power in the future, then take into account the higher rated current. We recommend fine-stranded or flexible cables. The maximum cable cross-section is 2 x 185 mm² or 1 x 300 mm² per conductor. Siemens recommends use of copper wires. If you use aluminum cables, then special cable lugs may be required.

The following table shows the maximum current consumption of the charging station per phase at 400 V nominal voltage with AC charging and without AC charging.

Table 5-2 Maximum current consumption of the charging station at 400 V nominal voltage per phase

Installed DC power	I _{max} without AC charging	I _{max} with AC charging
160 kW	269 A	301 A
180 kW	300 A	332 A
200 kW	330 A	362 A
220 kW	361 A	393 A
240 kW	391 A	423 A
260 kW	422 A	454 A
280 kW	452 A	484 A
300 kW	483 A	515 A

System ground electrode

Install a system ground electrode in accordance with local standards and regulations. According to VDE 4100, you must run the charging station with a system ground electrode. The system ground electrode is not part of the scope of delivery. The system ground electrode fulfills the following functions:

- Protective equipotential bonding
- Functional equipotential bonding
- Grounding of the lightning protection system and the surge protection devices.

Follow the instructions and regulations from DIN 18014 when planning and installing the system ground electrode. Also observe the technical connection conditions of your grid operator.

For installation in a public area, the system grounding electrode must be implemented as a ring ground electrode outside the foundation. In private or semi-public areas, it can alternatively be implemented as a ground rod.

5.3 Base area and foundation

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.

Fixing points and foundation

The feet of the charging station are each provided with two horizontally and two vertically arranged slots. This creates degrees of freedom for positioning on the base area. The feet do not provide any height compensation. The following figure shows the charging station from below, including the cutouts for inserting the power and dispenser cables. You can find more information on installation in the document with order number 8EM5907-0AA00-3AA4 Foundation_Installation_SICHARGE_D

(<https://support.industry.siemens.com/cs/ww/en/view/109814888>).

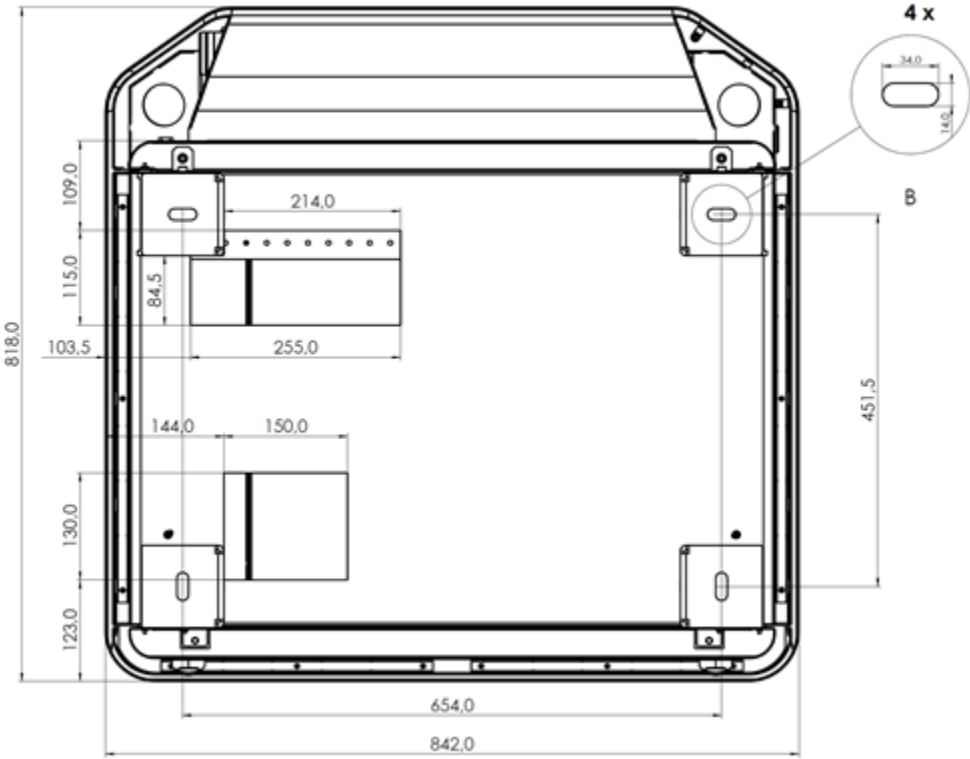
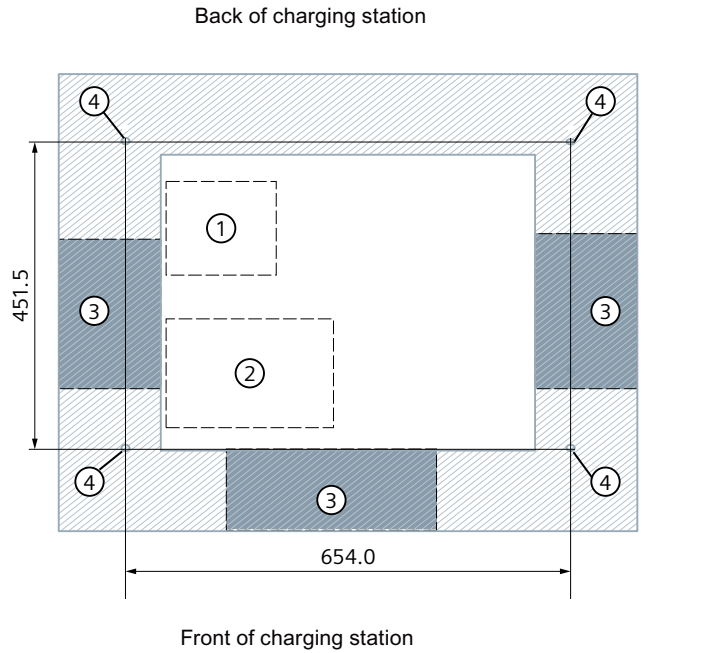


Figure 5-3 Charging station from below including recesses

5.3 Base area and foundation

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



- ① Cable bushing for dispenser cable
- ② Cable bushing for power supply cord
- ③ Example recesses in the foundation walls for cable routing
- ④ Fastening points

Figure 5-4 Top view of the base area

Use the hole drilling template with order number 8EM5905-0AA00-2AA3 to ensure that the drill holes and outlets of the connecting cables are positioned correctly. This accessory can be ordered together with the SICHARGE D.

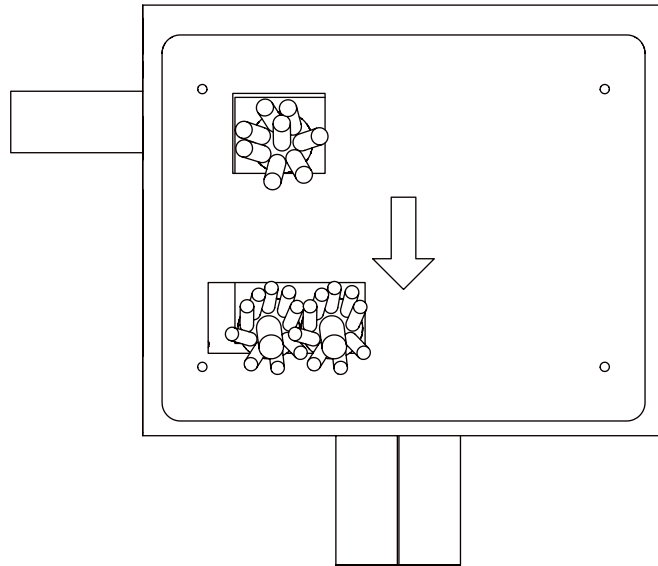


Figure 5-5 Drilling template

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

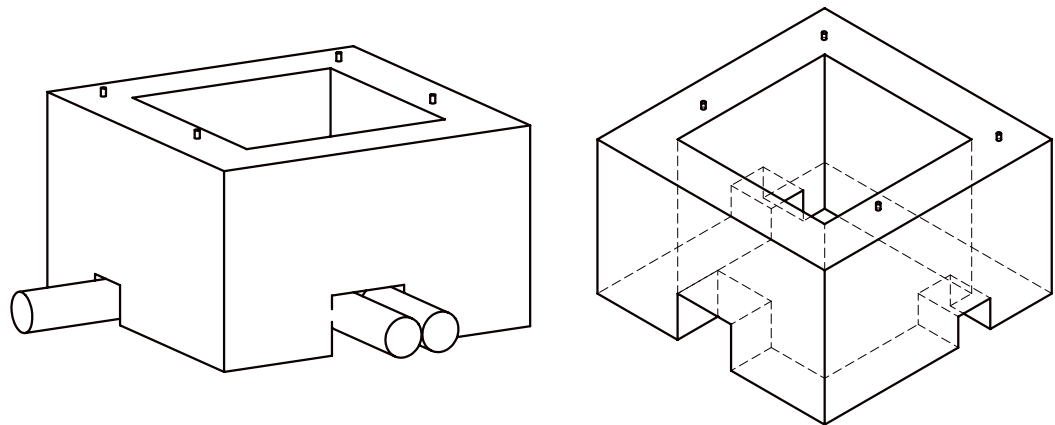


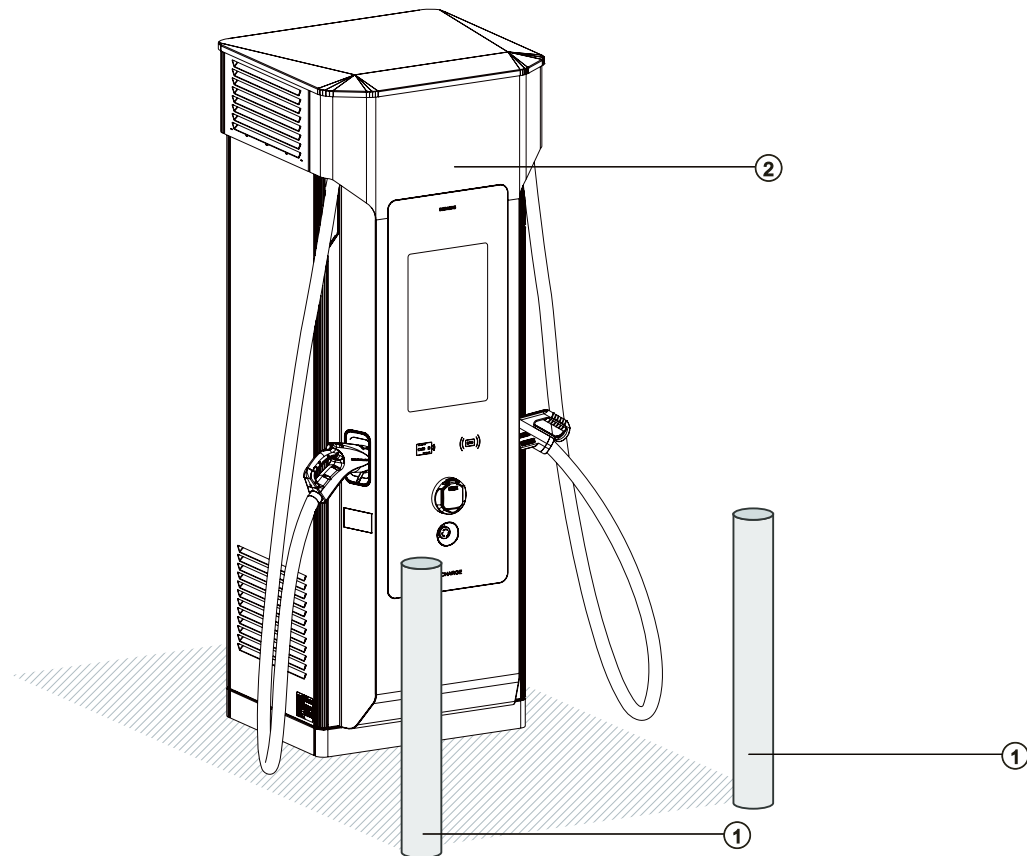
Figure 5-6 Example of a foundation with bolt anchors and recesses for the various cables

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.

Impact protection

To protect the charging station from collisions with vehicles, impact protection is recommended (e.g. in the form of a bollard). Observe the swivel range of the door of 80 cm in front of the charging station to allow the door to be fully opened.



- ① Impact protection
- ② Charging station

Figure 5-7 Example: Correct position of impact protection and charging station

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 Inspect and remove transport packaging

Start the inspection of the transport packaging with the visual inspection. Any damage must be promptly reported to and acknowledged by the carrier.

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

NOTE

The transport packaging does not provide sufficient protection against the weather.

Completely remove all parts of the transport packaging and insert the charging plugs into the corresponding holder in the door.

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

You can find the list of the scope of delivery here:

- Charging station [\(Page 31\)](#)
- Cable management system [\(Page 32\)](#)

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.

An Installation and commissioning video (<https://www.youtube.com/watch?v=W6StEHvtZLE>) is available for an overview of the most important steps. Extended version on request.

NOTE

IP protection is only guaranteed after installation of the roof (see Mounting the roof and filter cover (Page 94)) or cable management (see Installing the cable management (Page 86)). In any case, install one of these elements (depending on the selected configuration) before exposing the station to outdoor weathering. Otherwise, penetrating water may damage the device.

5.5.1 Preparing cables

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

Power supply cable

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

 WARNING
Observe the five safety rules according to DIN EN 50110-1:2013
Working on live parts can result in severe injuries and death. Only work on the electrical equipment when it is in a de-energized state.

1. Shorten the cables to a length that allows you to easily introduce them into the charging station, recommendation: 60 cm measured from the top edge of the foundation. 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.

Network cable

You can connect the charging station to the network using an Ethernet cable. Ensure proper protection of the cable from environmental impacts such as dirt and moisture. Note the information on installing from the section "Base area and foundation (Page 76)".

Dispenser cable

If a dispenser is to be connected to the charging station, proceed as follows:

1. Shorten the cables to a length that allows you to easily introduce them into the charging station, recommendation: 60 cm measured from the top edge of the foundation. Observe the exact position of the cable entry for the DC cables on the rear 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 dispenser requires an auxiliary power supply, communication cables and integration into the controller 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.

Observe the operating instructions of the dispenser.

5.5.2 Positioning the charging station

To set up the charging station at the location, you need to lift the charging station from the transport carrier using either a crane or a forklift (see section 4 "Transport and storage" (Page 63)). Then transport the charging station to the prepared base area. Lifting and positioning with a crane is recommended.

Lifting the charging station from the transport carrier

 DANGER
Suspended load A falling charging station or parts can cause death or serious injury. Stay completely away from any hazardous areas.

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):
Attach the eyebolts to the four corners of the roof of the cabinet frame (see figure 4-2 in section General information (Page 63)). When using your own eyebolts, 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 hang the hoist
 - 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 transport carrier.
5. Lift the charging station vertically.

Positioning the charging station

⚠ WARNING

Risk of crushing or cuts

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

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

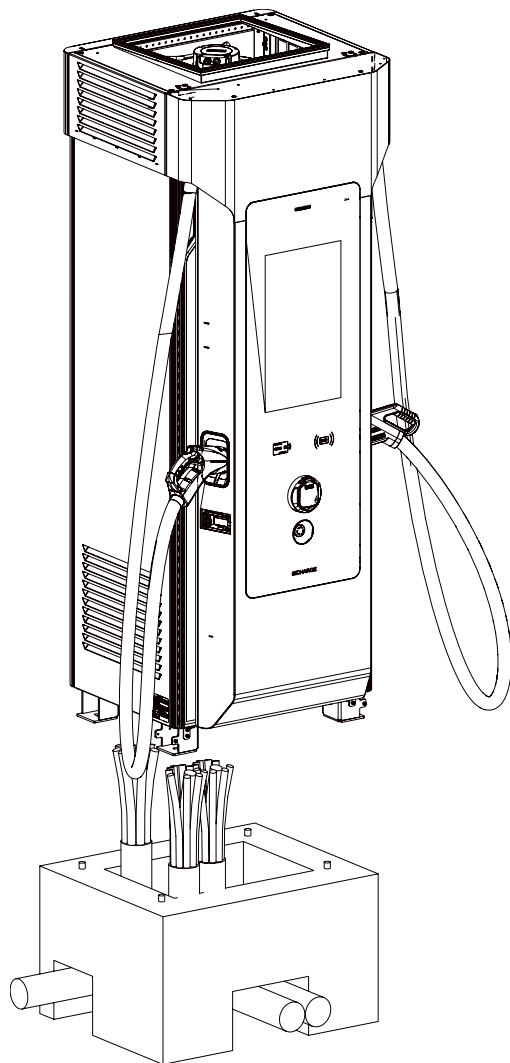


Figure 5-8 Positioning the charging station on the foundation

5.5.3 Inserting the cables into the cabinet

Open the device door and remove the protective cover of the conductor connections to the circuit breaker. Pull the conductors through the opening in the cabinet floor.

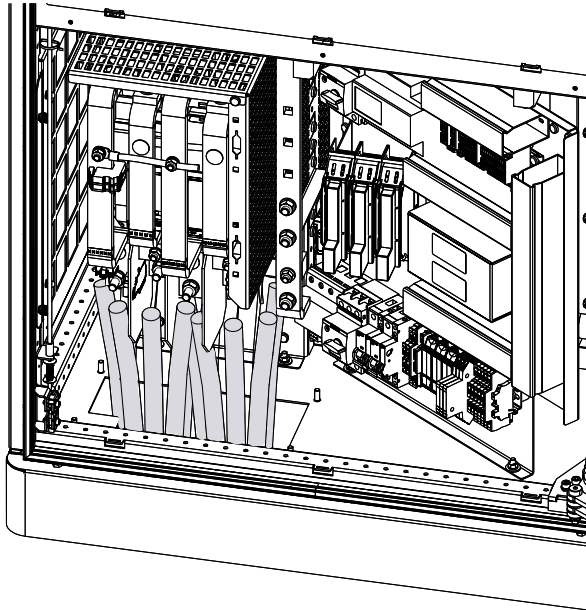


Figure 5-9 Inserting the cable into the cabinet

5.5.4 Securing the charging station

After you have routed the cables into the cabinet, fasten the charging station on 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 lock washers M12
- 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 76](#)) to secure the charging station. Use washers, spring lock washers and nuts to secure the charging station. The tightening torque for the bolt anchor is 70 Nm.

5.5.5 Installing the cable management

5.5.5.1 Installing the mounting plates

The following operating instruction shows how to install the mounting plates of the cable management of the charging station.

If you install the cable management system afterwards, make sure that the system is completely isolated from the power supply.

⚠ WARNING

Do not pull on the rope of the rope box

Do not pull on the rope of the rope box because the spring force can cause injuries or damage to the cable management due to the rope stopping mechanism.

1. Screw in one nipple each ② with an M4 hexagon nut ① to the bezel bracket on the right ③ and the bezel bracket on the left. The tightening torque is 3 Nm.

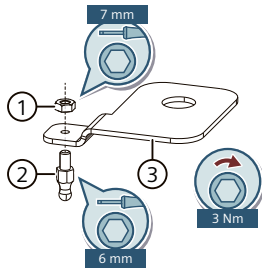


Figure 5-10 Example: Bezel bracket right

2. Place a square washer ① on each M12 thread ②. Place the two mounting plates for the left and right DC charging points on the charging station.

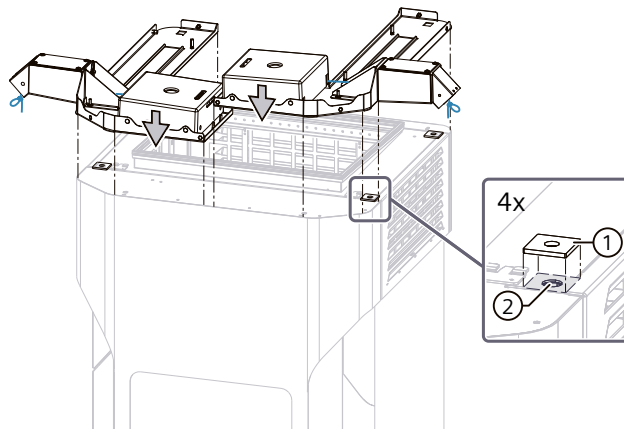


Figure 5-11 Placing the mounting plates

3. Place the bezel bracket on the left and bezel bracket on the right parallel to the cutout. Screw the mounting plates down with the 4 M12x30 hexagon screws. Make sure that the bezel brackets do not twist when screwing in. Do not tighten the screws yet.

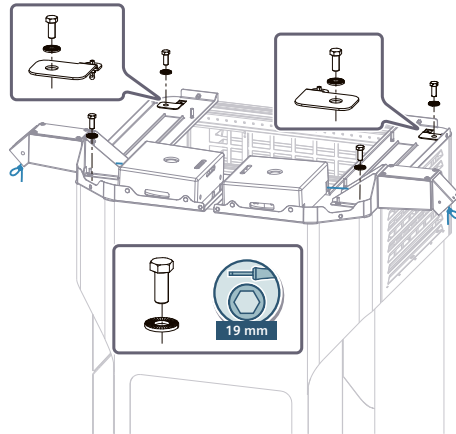


Figure 5-12 Screwing the mounting plates

4. Place the bridge between the left and right mounting plates. The four threaded bolts must pass completely through the holes of the bridge. Screw in the bridge with four M6 hex nuts. Do not tighten the nuts yet.

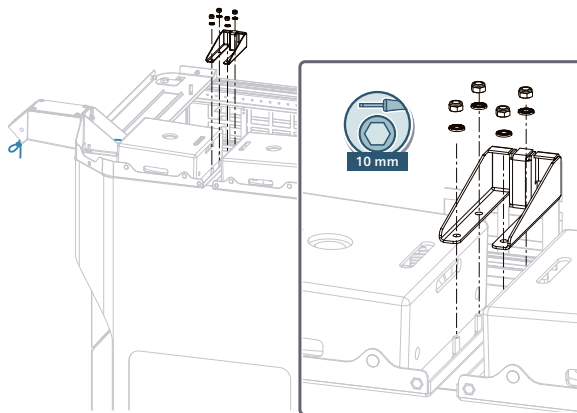


Figure 5-13 Screwing in the bridge

5. Position the cover plate so that the four threaded bolts pass completely through the holes of the fan cover plate. Screw in the cover plate with four M8 hex nuts.

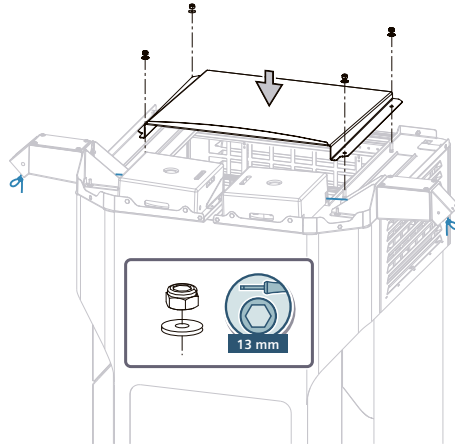


Figure 5-14 Screwing down the fan cover plate

6. Tighten the bolts and nuts according to these instructions:
 - M12x30 hexagon screw: Wrench width 19 mm, the tightening torque is 46 Nm. When tightening, make sure that the bezel brackets do not twist.
 - M6 hexagon nut: Wrench width 10 mm, the tightening torque is 8 Nm
 - M8 hexagon nut: Wrench width 13 mm, the tightening torque is 13 Nm

If you operate the charging station in accordance with German calibration law, then seal the cover plate with sealing stickers ①.

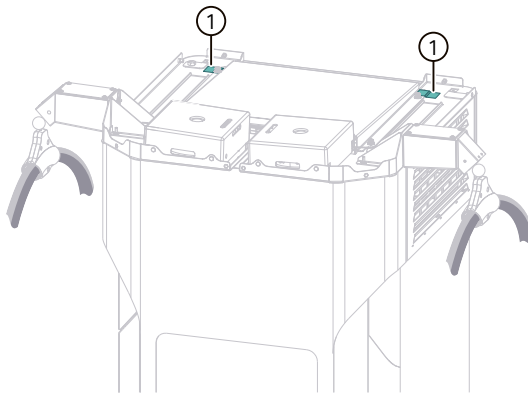
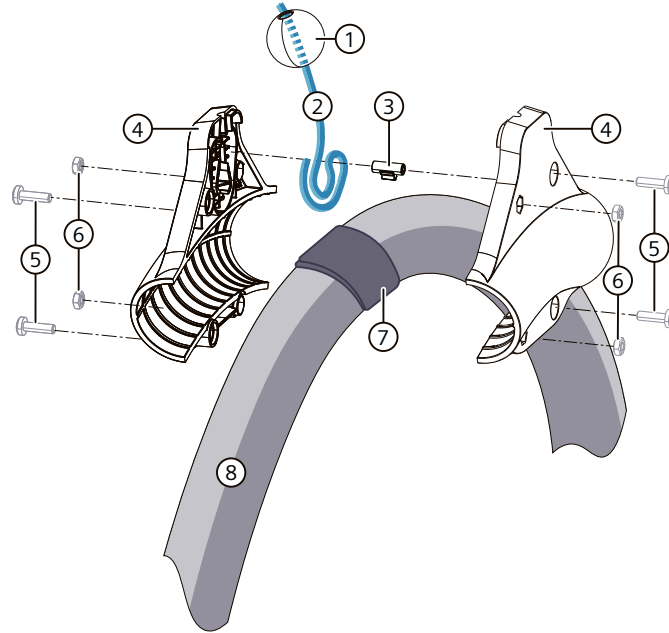


Figure 5-15 Sealing sticker ① on the cover plate

5.5.5.2 Installing the cable clamp

The following operating instruction shows how to install a cable clamp of the cable management system.



- | | | | |
|---|---------------|---|---|
| ① | Rubber sphere | ⑤ | M4x14 hexagon socket-head screw |
| ② | Rope | ⑥ | M4 hexagon nut |
| ③ | Meander pin | ⑦ | Rubber adhesive tape, self-adhesive on one side |
| ④ | Cable clamp | ⑧ | Charging cable |

Figure 5-16 Cable clamp overview

NOTE

Do not pull on the rope with force

Do not pull on the rope with force during the installation of the cable clamp. The spring force and the rope stopping mechanism can cause injuries or damage to the cable management system.

1. Measure 2.4 m from the cable outlet of the charging plug. Clean the area with the grease-dissolving cleaner and cloth. Wrap the rubber adhesive tape (7) overlapping around the charging cable (8) at this point. The number of windings depends on the cable type. See the number of windings in the table. Cut off unneeded rubber adhesive tape.

Cable type	Number of windings
EV-T2M4CC-DC250A-...	3.5
EV-T2HPCC-DC500A-...	2
SEVS20-003(S)B_SEVD-02E-...	5

5.5 Setting up the charging station

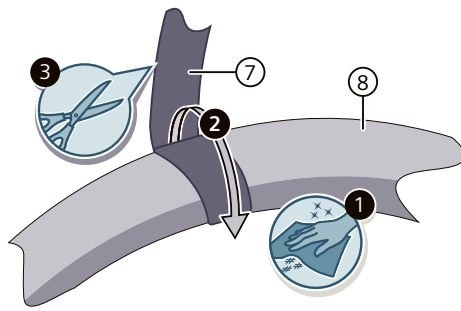


Figure 5-17 Wrapping tape around the charging cable

2. Untie the knot at the end of the rope. Pull the rope through the hole of the rubber sphere ①.

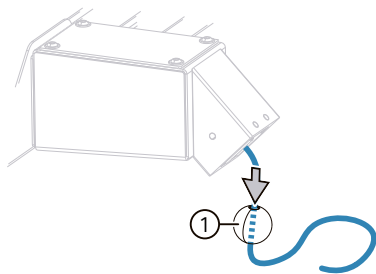


Figure 5-18 Rubber sphere

3. Place the charging cable in a cable clamp. Place the rubber tape in the middle of the cable clamp.

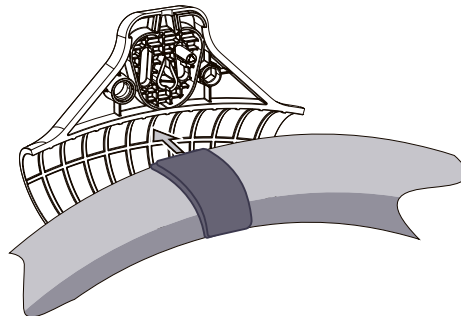


Figure 5-19 Inserting the charging cable

- Place the rope ② in the rope clamp in the form shown in the figure.

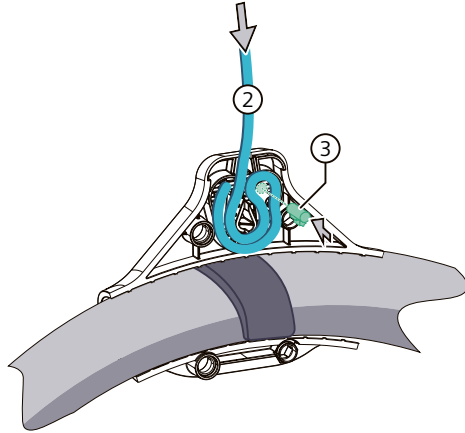


Figure 5-20 Positioning the rope and meander pin

- Place the meander pin ③ in the rope loop and in the groove provided in the rope clamp. Make sure that the smooth side of the meander pin faces upwards towards the rope loop.
- Join both parts of the cable clamp together. Ensure the correct fit of the meander pin and rope.

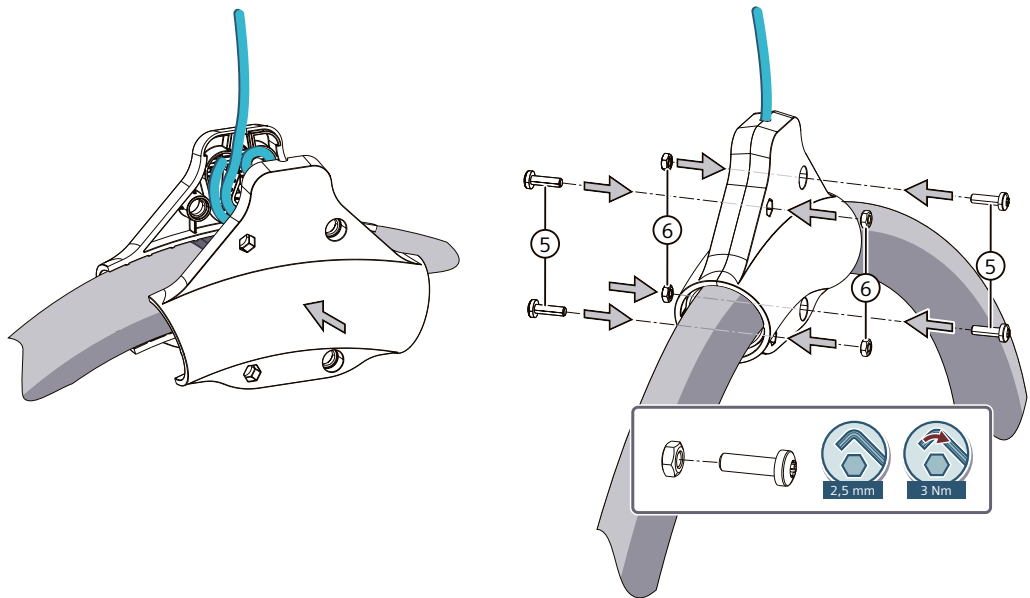


Figure 5-21 Screwing in the cable clamp

- Place the M4 nuts in the hex holes. Insert the M4x14 hexagon socket-head screws opposite the nuts. Carefully screw in the cable clamp.
 - Allen key size 2.5 mm
 - The tightening torque is 3 Nm

5.5.5.3 Removing the rope stopping mechanism

The following operating instruction shows how to remove the rope stopping mechanism of the right charging point of the charging station. The procedure for the left charging point is identical.

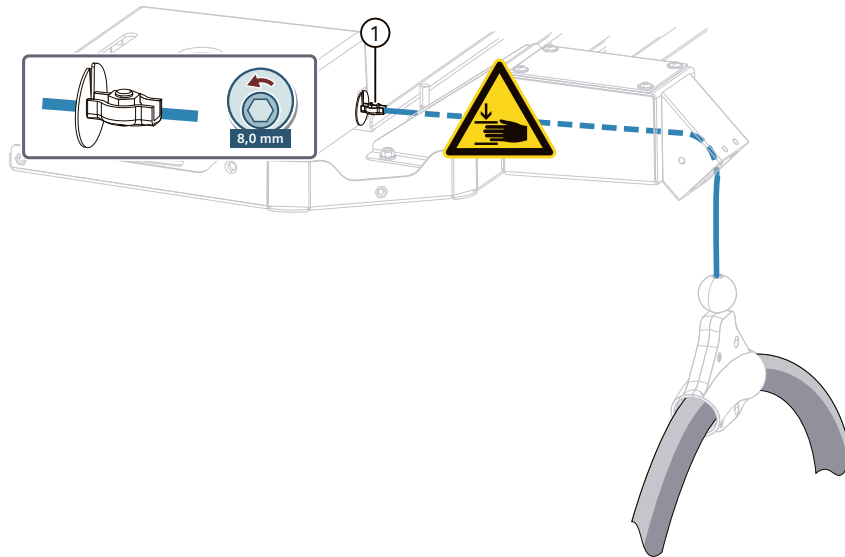


Figure 5-22 Removing the rope stopping mechanism

NOTICE

Danger of crushing by rope box

The rope is tensioned by a spring tension mechanism in the rope box. Avoid crushing and burning. Pull the cable down on the cable clamp until the rope clamp is relieved. This allows you to remove the rope clamp on the rope box.

Pull the cable at the cable clamp only until the rope clamp is relieved and free. If you pull too far, the rope clamp may damage the pulleys in the pulley cross. Remove the rope stopping mechanism with an 8 mm socket. Remove the pulley.

NOTE

Store aside rope clamp and pulley

If a repair is required – on the cable clamp or the charging cable for example – then you must secure the rope on the rope box. Therefore, keep the rope clamp and pulley in a DIN A4 envelope in the document pocket of the charging station.

5.5.5.4 Installing the cover

The following operating instruction shows how to install the cover of the charging station.

1. Place the cover on the charging station.

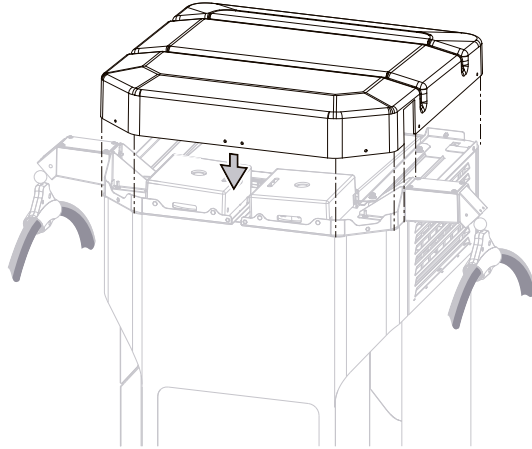


Figure 5-23 Placing the cover

2. Screw in the cover with the ten M6x16 hexagon socket-head screws.
 - Allen size is 4 mm
 - The tightening torque is 3 Nm

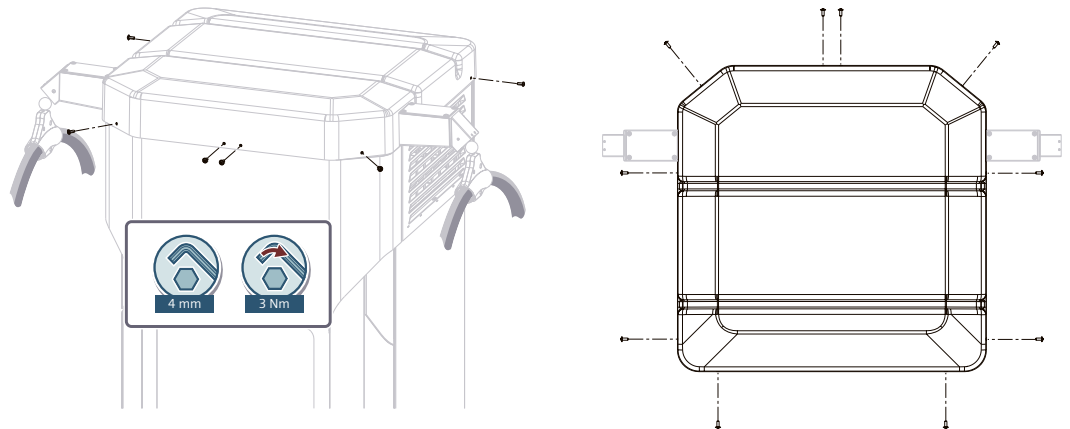


Figure 5-24 Screwing down the cover

3. Click the filter cover first upwards and then downwards in the cabinet. Lock the quick fasteners and install the rear device door again. Follow the same instructions as in figure 7 of the section Installing the roof and filter cover [\(Page 94\)](#).

5.5.6 Mounting the roof and filter cover

This section describes the installation of the roof and the filter cover. If no cable management system is installed, then skip the section.

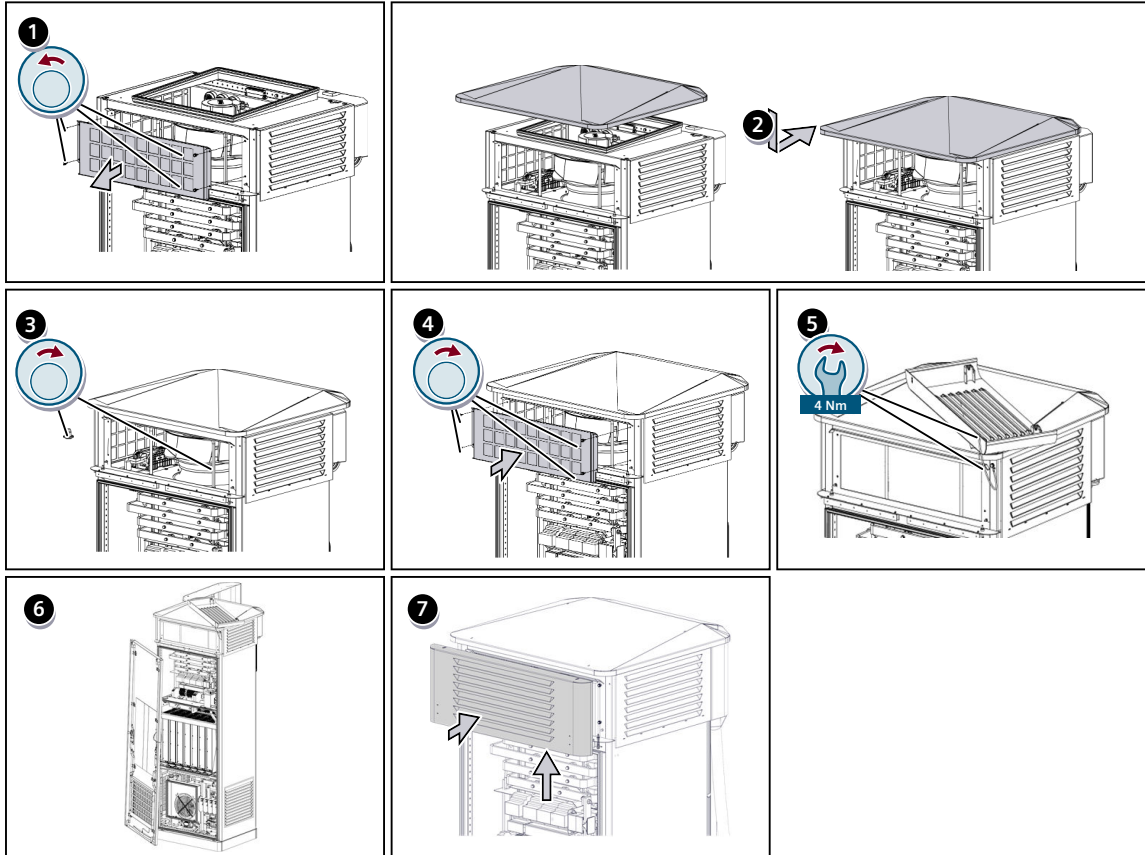


Figure 5-25 Mounting the roof and filter cover

1. Loosen the four quarter-turn fasteners of the filter box and remove it.
2. Slide the roof from the back of the charging station forward under the metal guides provided.
3. Screw down the roof at the bottom left and right with two M6 combination screws from the box of accessories.
4. Insert the filter box and secure it with the four quarter-turn fasteners.
5. Place the filter cover from the box of accessories onto the roof. Attach the grounding cable to the threaded bolt in the filter cover with the tightening torque of 4 Nm.
6. Remove the rear device door. Note the information on the locking system from the section "Overview (Page 33)".
7. Click the filter cover first upwards and then downwards in the cabinet. Lock the quick fasteners and install the rear device door again.

5.5.7 Install the cable gland plate

Adapting the cable gland plate

The number and cross-sections of the power cables may vary depending on the selected connection to the supply system, the power drawn and whether a dispenser is used. Adjust the cable gland plates according to the cables you are using.

Power supply cable and external communication cable

The power cables and the external communication via Ethernet are on the front of the charging station.

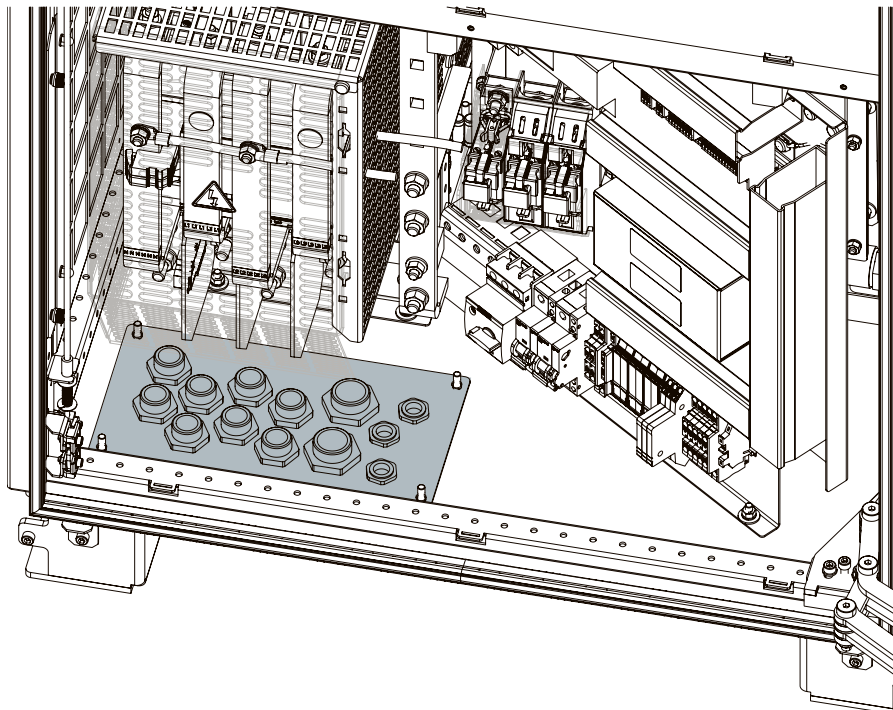


Figure 5-26 Cable gland plate

1. Open the device door.
2. Mark the drill holes for the required cable glands. When marking, pay attention to the following:
 - Space around the cable glands for mounting and tightening the cap nut
 - Position of the cable glands for good implementation and connection of the power cable
 - Position of the Ethernet cable for external communication (if available)
3. Drill the marked holes
4. Install the cable glands in the drilled holes
5. Guide the conductors, correctly positioned according to the connection points, through the cable glands of the cable entry plate.
6. Secure the cable gland plate with a tightening torque of 4 Nm.

7. Tighten the cap nuts of the cable glands.
8. If necessary, seal the plate with suitable materials to prevent the ingress of moisture and small animals.

Dispenser

The cable entry plate for the dispenser cables is on the rear of the charging station under the dispenser busbars.

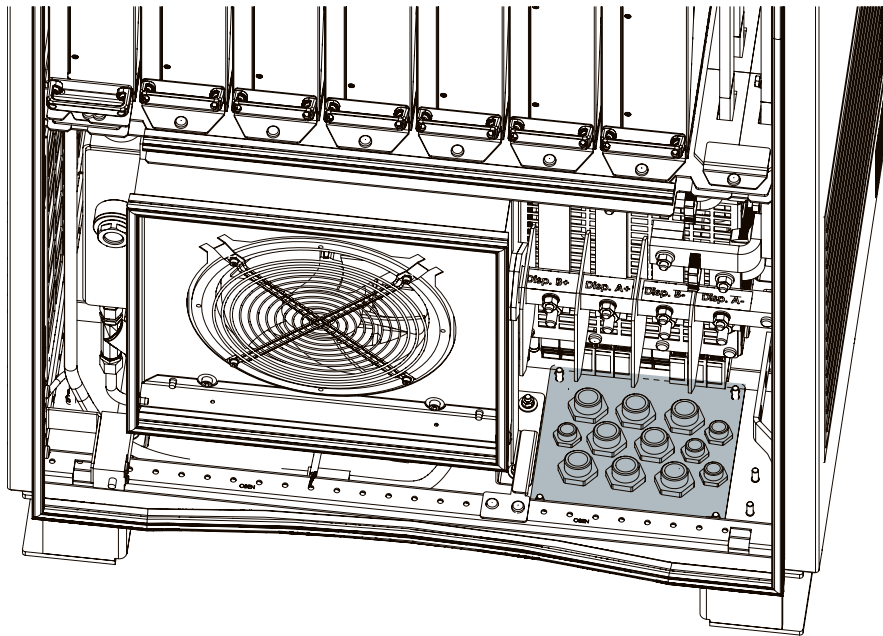


Figure 5-27 Cable gland plate for the dispenser cables

1. Open the rear device door.
2. Mark the drill holes for the required cable glands. When marking, pay attention to the following:
 - Space around the cable glands for mounting and tightening the cap nut
 - Position of the cable glands for good implementation and connection of the DC cables for the dispenser
 - Position of the cable gland for the communication cable
 - Position of the cable gland of the AUX-230 V cable
 - Position of the cable gland of the signal line
3. Drill the marked holes
4. Install the cable glands in the drilled holes
5. Guide the conductors, correctly positioned according to the connection points, through the cable glands of the cable entry plate.
6. Secure the cable gland plate with a tightening torque of 4 Nm.
7. Tighten the cap nuts of the cable glands.
8. If necessary, seal the plate with suitable materials to prevent the ingress of moisture and small animals.

5.5.8 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 plugged in and additionally screwed in from above with the front door open.

Disassembly is only possible in reverse order.

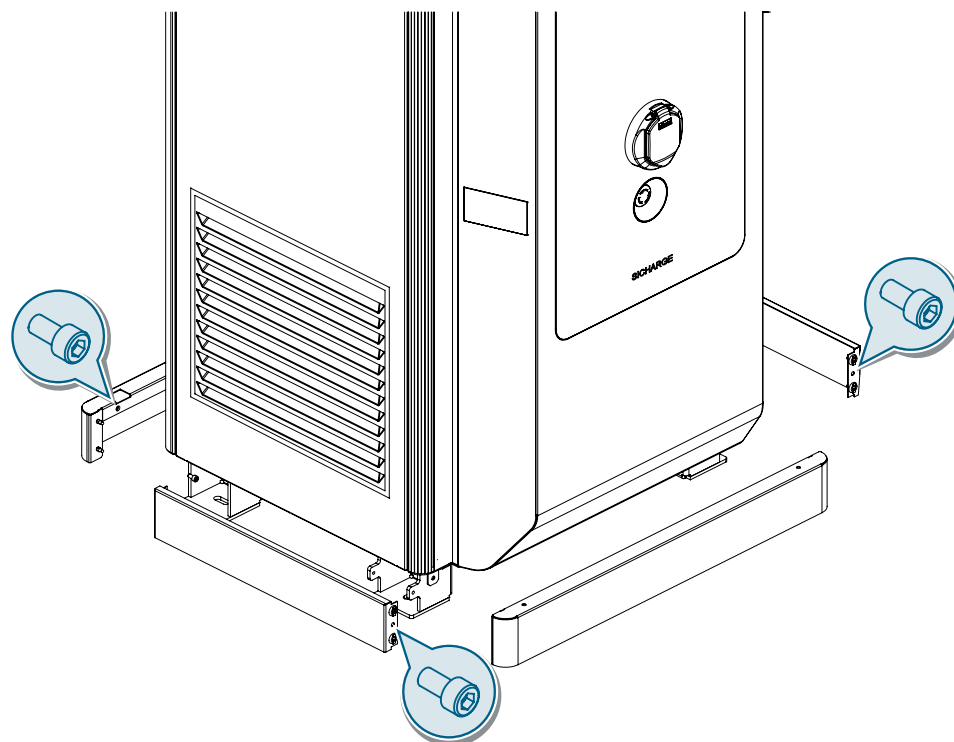


Figure 5-28 Baseboard assembly

5.6 Connecting the charging station

5.6.1 Safety instructions

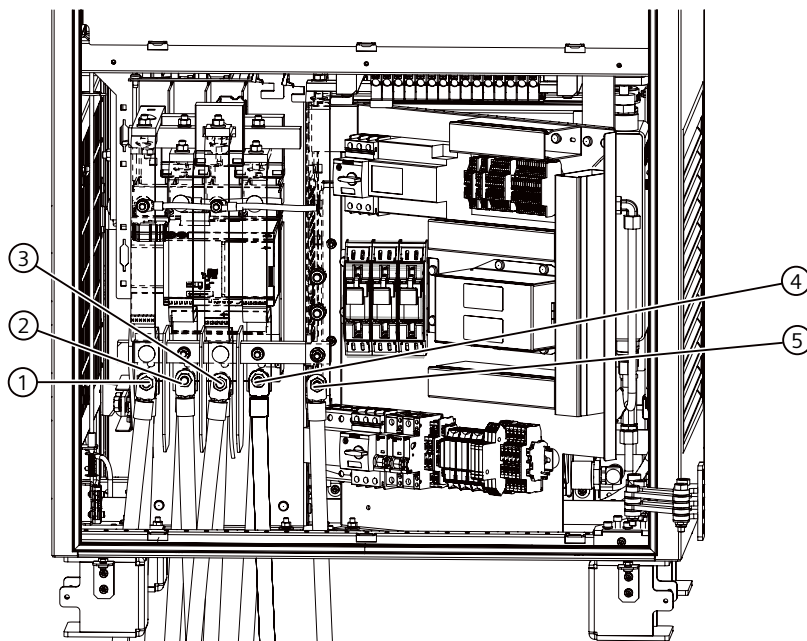
The installer is responsible for the electrical connection of the charging station. Connect the charging station in accordance with the relevant regulations (for conductor cross-section, fuses, ground connection).

For all work on the charging station, observe the safety instructions (Page 13), the requirements of DIN EN 50110-1:2013 for safe working with and on electrical installations or equivalent applicable local guidelines.

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.

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 5-29 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:

⚠ WARNING

Observe the five safety rules according to DIN EN 50110-1:2013

Working on live parts can result in severe injuries and death. Only work on the electrical equipment when it is in a de-energized state.

1. Select an M10 cable lug for your conductor cross-section
2. Shorten the conductors to the final length
3. Strip the insulation from the end of the conductor so that the remaining insulation extends up to the cable lug.
4. Slide a shrink-on sleeve over the wire
5. Fasten the cable lug correctly to the end of the conductor.
6. Pull the shrink-on sleeve over the joint and heat it

Connecting the conductors (for TN-C system type only)

First connect the PEN conductor of the power cable to the PE bar 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. If you contact a connecting bar with two conductors, note that there is one cable lug on each side of the copper bar. See figure 5-15.
3. Tighten the fastening nuts with the tightening torque of 40 Nm.
4. Conclude by installing the supplied PEN bridge to PE and N using M10 screws, washers and nuts as shown in the figure.

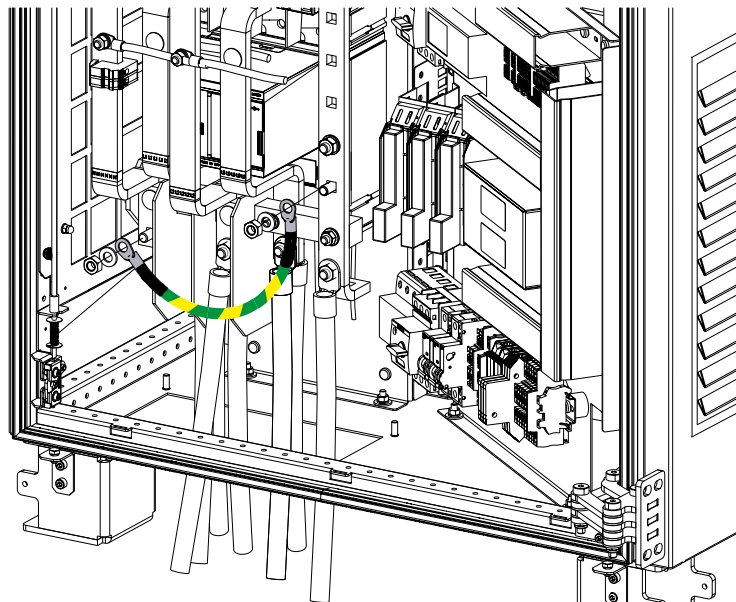


Figure 5-30 Connecting the PEN bridge

5. Tighten the fastening nuts of the PEN bridge with the tightening torque of 40 Nm.
6. Mark drawn connections, for example, with a red paint-marker
7. Replace the protective cover after you have connected all the conductors.
8. Tighten the fixing screws with a maximum torque of 4 Nm.

Connecting the conductors (TN-S/ TT supply system type)

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. If you contact a connecting bar with two conductors, note that there is one cable lug on each side of the copper bar. See figure 5-15.
3. Tighten the fastening nut with the required tightening torque of 40 Nm.
4. Mark the tightened connection, for example, with a red paint stick.
5. Replace the protective cover after you have connected all the conductors.
Tighten the fixing screws with a maximum torque of 4 Nm.

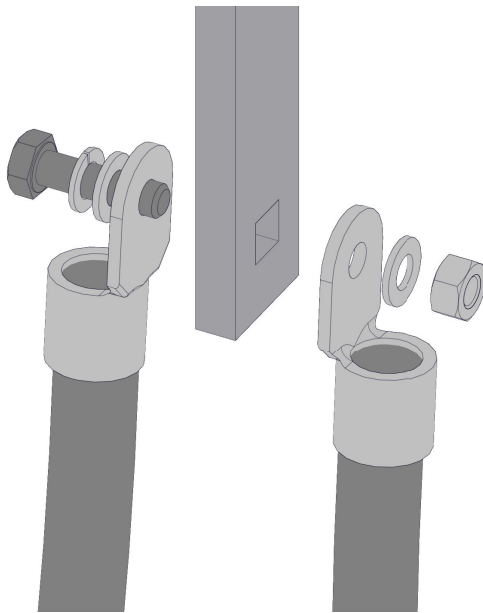
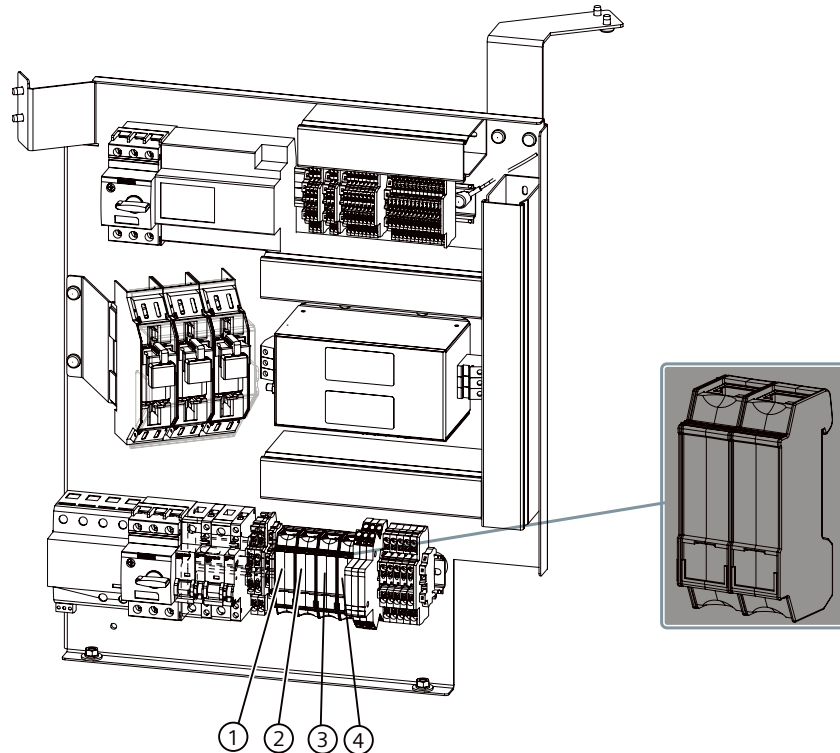


Figure 5-31 Connection to the copper bars

Connecting the Ethernet cables

If you want to establish a connection between the OCPP backend and the charging station via Ethernet, you must connect the Ethernet cable to the port (-FA6) (see figure below). If you want to operate the charging station together with an external load management system (ELMS) connect the Ethernet cable between the ELMS and charging station to the right port -FA13. The connection between the ELMS and charging station has to be mechanically guarded so that no third party can undo the connection and make a connection themselves. Secure the cables with a strain relief. These terminals also take on the function of overvoltage protection.



- ① Dispenser 1
- ② Dispenser 2 (not used)
- ③ Ethernet port for Router 2 (-XF4)
- ④ ELMS

Figure 5-32 Terminals of the Ethernet cables

External emergency stop

If the charging station is integrated in the safety loop of the customer system, remove the wire jumper between -XD36:5 and -XD36:6 and connect the signal lines here.

If an ELMS is connected, remove the wire jumper between XD36:7 and XD36:8 and connect the signal lines here.

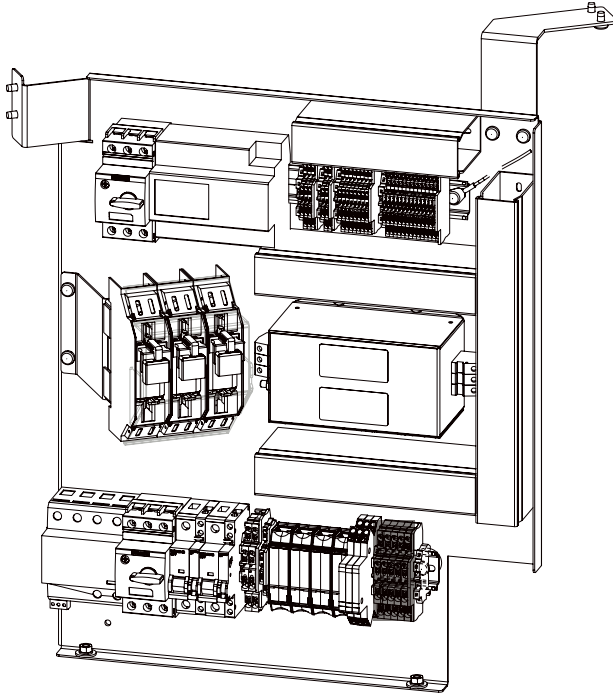


Figure 5-33 Connections for external emergency stop

External load management system

In addition to the signal cables for the emergency stop, the communication cable must be connected to -FA13.

The WAN port of Router 1 (-XF3) must be reconfigured to VLAN in the SCB so that communication up to the controller can be established. See section "Routers (Page 53)":

- VLAN IP: 10.20.37.1...255
- Port: 400

Ensure that the ELMS is set to the same address range.

5.6.3 Dispenser

If a dispenser is to be connected to the charging station, you must 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 controller of the charging station. The connections for these cables are located on the device panel on the front.

Connections for the DC cable

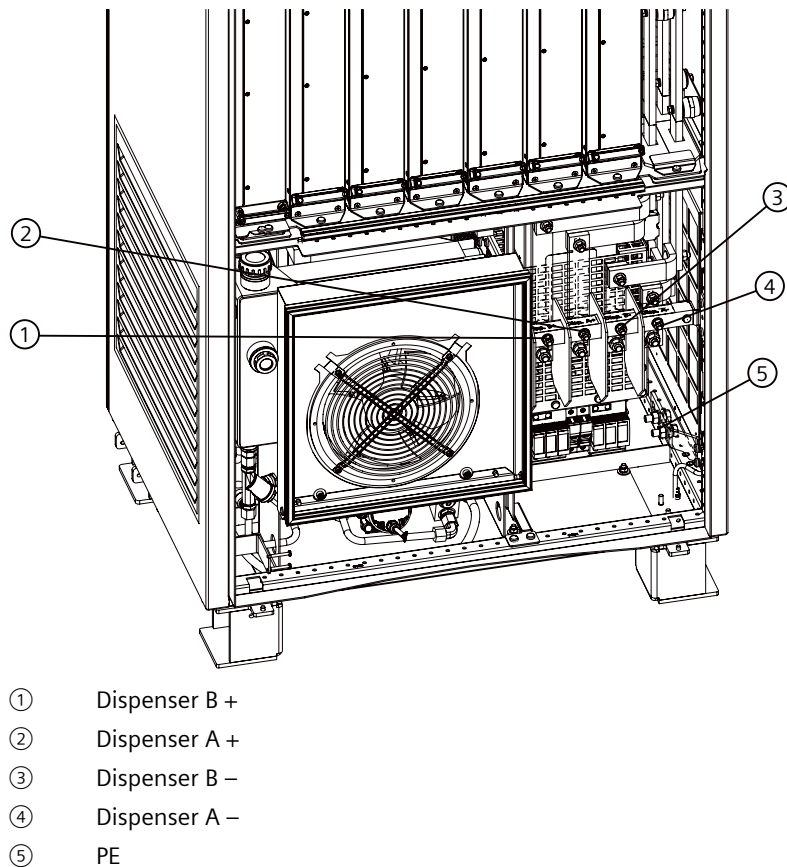


Figure 5-34 Connections for the dispenser cable

Preparing conductors

1. Select an M10-size cable lug for the corresponding conductor cross-section.
2. Shorten the conductors to the final length.
3. Strip the insulation from the end of the conductor so that the remaining insulation extends up to the cable lug.
4. Slide a shrink-on sleeve over the wire.
5. Fasten the cable lug correctly to the end of the conductor.
6. Pull the shrink-on sleeve over the joint and heat it up.

Connecting the conductors

1. Insert the connection bolt through the screw holes of the cable lug and copper bar.
2. Fasten the conductors according to Figure 5-15 with an M10 fastening nut and a tightening torque of 40 Nm.
3. Mark the tightened 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

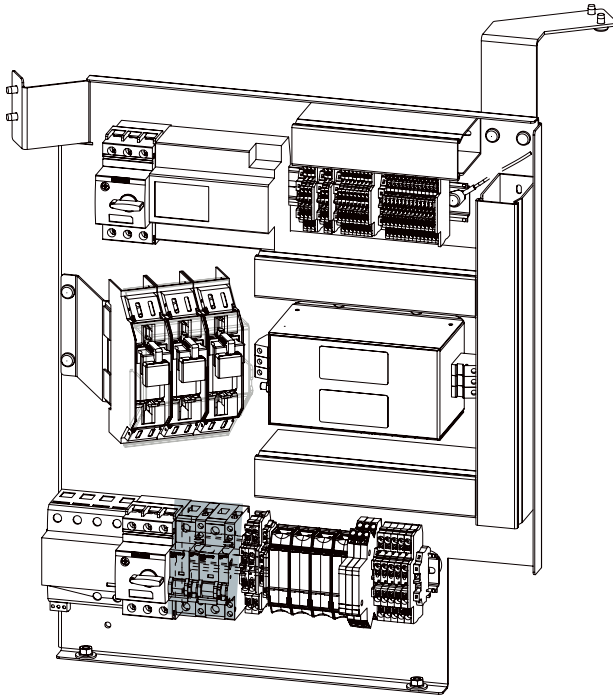


Figure 5-35 Connections for the auxiliary power supply

Connect the conductors for Dispenser 1 via -FC2 and Dispenser 2 (not used) via -FC3 as follows:

- -XD35:1 for N (-FC2)
- -XD35:2 for L (-FC2)
- -XD35:3 for N (-FC3) (not used)
- -XD35:4 for L (-FC3) (not used)

The maximum conductor cross-section is 4 mm². 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 controller of the charging station

The dispensers are not autonomous charging points. Many components are only present in the central charging station, including the main controller, for example. Consequently, the dispensers must be integrated into the controller and automation of the SICHARGE D. For this, clamping points in the charging station must be connected as follows:

- -FA7 ... -FA11 (older hardware version)
- -FA10 ... -FA12 and -XD36 (newer hardware version)

.

Ethernet cables

The dispensers are connected to the central charging station via Ethernet cables. Dispenser 1 is connected to port -FA4 and Dispenser 2 (not used) to port -FA5 for this purpose. This provides communication and remote access to the dispensers via the backend systems.

Commissioning

6.1 Safety precautions before initial commissioning


Before initial commissioning, check the charging station in accordance with the applicable local regulations, e.g. DIN VDE 0100-600. This includes, in particular, measurement of the protective conductor impedance and the insulation resistances. Also check the supply-side fuse protection of the charging station. Consult the test recommendation with order number 8EM5907-0AA00-4AA4 for guidance. Please contact your Siemens office if you do not have this document.

Ensure that the charging cables have not become loose during transport. If needed, retighten the cable glands to a maximum torque of 30 Nm.

In addition, refer to the checklist in Appendix B "Checklist for commissioning" ([Page 143](#)) to check all remaining work steps again.

This step is mandatory.

6.2 Switch on charging station

 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.

Automatic starting of the charging station

The charging station starts automatically. A progress display in percent is shown on the display when the charging station is booting or updating. Wait for the charging station to fully start up. This may take several minutes. 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.

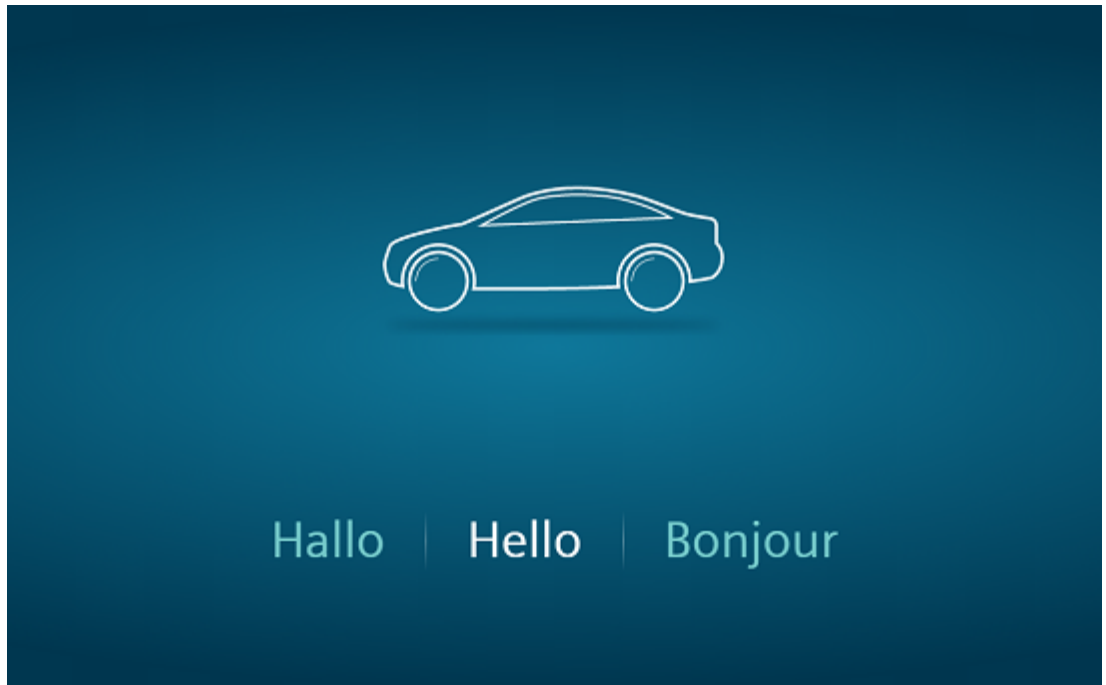


Figure 6-1 Start menu

NOTE

In standby, the unloaded EMC filters generate capacitive reactive power. This is compensated as soon as a vehicle is charged with DC. Then the charging station consumes almost exclusively active power.

6.4 Restarting the charging station

Cold start function

To protect components, the controller checks whether the climatic conditions in the charging station are permissible each time it boots up. If the temperature is too low or the air humidity is too high, a heating fan is switched on initially, which ensures optimal climatic conditions inside the charging station. This prevents possible damage, for example, due to condensation.

The display, LED strips and other components remain switched off during this time. The heating fan operation is audible at the front of the charging station. The charging station resumes booting and the remaining components are switched on as soon as the climatic conditions are okay.

This duration of this process depends on the actual conditions and can last up to 30 minutes. Do not open the doors during this time, in order to avoid interrupting the process. Cold or moist incoming air can further increase the duration.

6.3 Switching off the charging station

You can only shut down the charging station on site. If you open one of the two doors, then a message appears on the touch screen that one door is open and two buttons appear on the touch screen. The "Shutdown" button shuts down the charging station. When the touch screen and the LED strips are off, you can activate the charging station via the upstream switchgear.

The charging station is only turned off after shutdown. The supply voltage is still present in the charging station. To activate the charging station, you must activate the upstream switching device outside the charging station.

If you are working on the charging station, then observe The five safety rules for electrical work [\(Page 20\)](#).

NOTE

Before activating the system, shut down the charging station using the procedure described.

6.4 Restarting the charging station

You can restart the charging station either on site or remotely via the SCB. If you open one of the two doors, then a message appears on the touch screen that one door is open and two buttons appear on the touch screen. The "Restart" button shuts down the charging station and starts it up again automatically after a short waiting time.

6.5 Service mode

You can activate service mode via the SCB. Active charging processes are not terminated. When the charging process is no longer active, the circuit breaker disconnects the power lines from the supplying network for charging. Power supply to the controller and the touch screen is maintained in this state. Now the service personnel on site can open the door of the charging station.

In service mode, you can change different configurations of the controller. For example, it is possible to change the limiting of power drawn from the grid and the power of the DC charging points.

After the work is finished, close the doors. Apply or discard the changes and exit the SCB. After you have left the SCB, the circuit breaker switches on again and the charging station restores the readiness for charging.

For example, if you need to replace components, then you need to unlock the charging station. The procedure for this is described in the section "Switching off the charging station (Page 108)".

If you are working on the charging station, then observe The five safety rules for electrical work (Page 20).

Operation

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 element of the charging station.

- Use only your fingers or a suitable stylus pen to operate the touch screen.
- Note the information provided in the section "Cleaning the touch screen (Page 125)".

NOTICE**Damage due to unsuitable objects**

When you touch the touch screen with unsuitable objects, you reduce the service life of the display. If there is severe damage, the touch screen can also fail.

In order not to damage the touch screen, follow the instructions below:

- Do not touch the touch screen with sharp or pointed objects.
- Avoid shock or impact with hard objects.
- Use only your fingers or a suitable stylus pen to operate the touch screen.

NOTE**Displays during ERK execution**

The touch screen serves as an informative display. The calibration-relevant notices are displayed on the left and right, at the side behind the viewing windows.

7.2 Starting the charging process

Select language

You select the language by tapping on the respective greeting in the desired language. If you tap anywhere in the field, the default language or the most recently selected language will automatically be selected (highlighted in white).

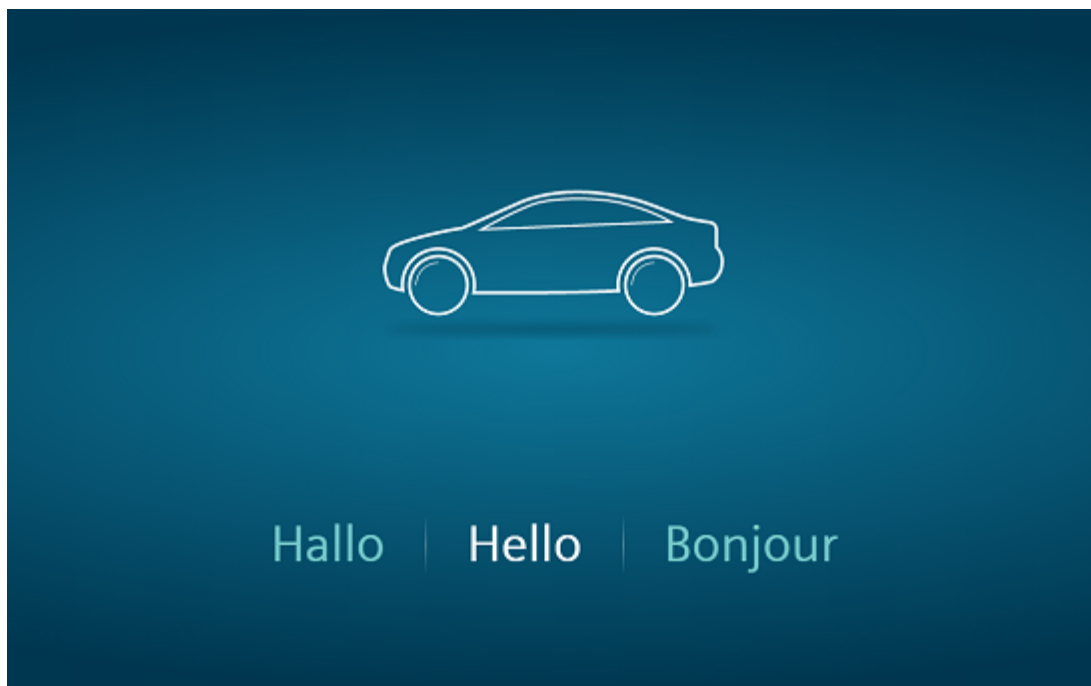


Figure 7-1 Select greeting and language

Selecting a charging point

After the language selection, the available charging points and their states are displayed. You have two options for selecting a charging point.

- Tap on the charging point you want to use to charge your vehicle. The charging points are arranged on the touch screen in the same way as they are on the charging station. In the "Selecting a charging point" figure, the CHAdeMO charging cable is on the left, the AC charging socket is in the middle, and the CCS charging cable is on the right. Select the charging point you want to use to charge your vehicle. Follow the instructions on the touch screen.
- Connect your vehicle to a free and ready charging point.

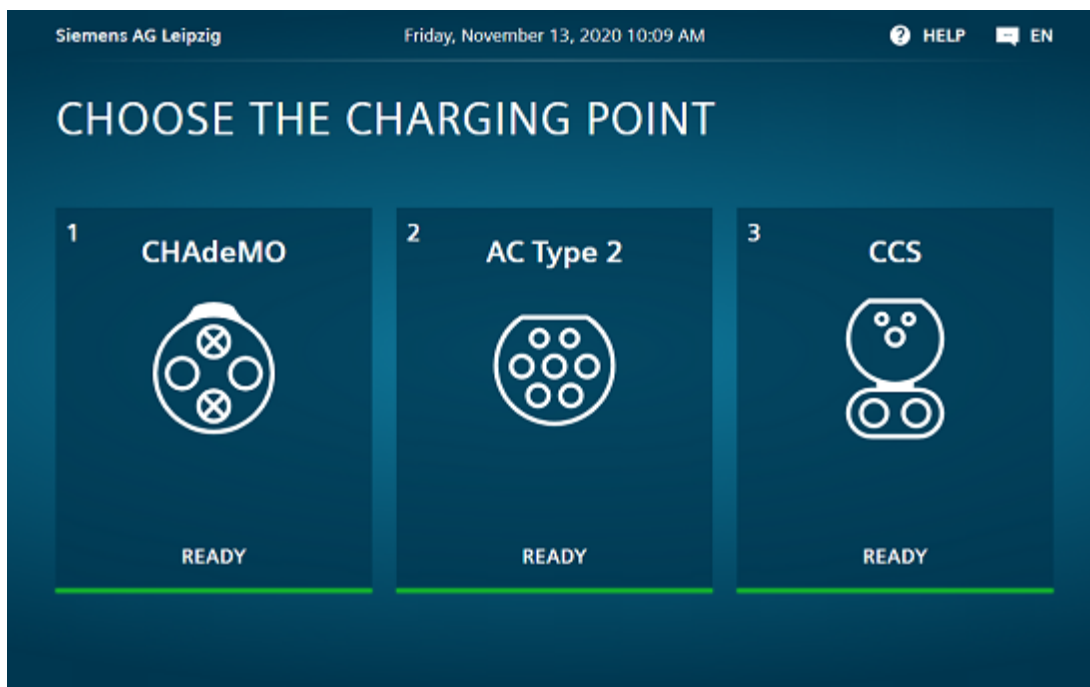


Figure 7-2 Selecting a charging point

Authentication

Whether or not authentication is required depends on the configuration in the SCB. If no authentication is required, the charging process is free of charge for the user.

If authentication is required, there are 4 options available. Follow the instructions on the touch screen, depending on selection.

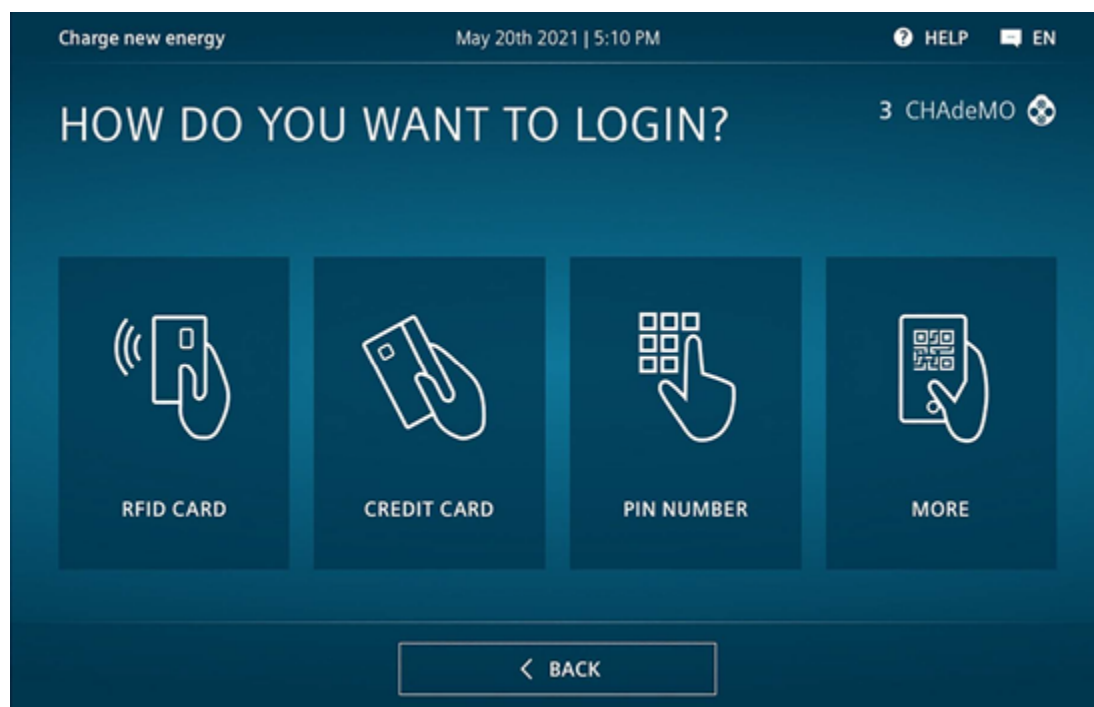


Figure 7-3 Authentication

- **RFID**
The RFID reader is located behind the glass under the display. You will receive a corresponding RFID card, for example, after registering with a mobility service provider. For example, to log in, you will need to enter your account details. When prompted, hold your RFID card in front of the RFID reader.
- **PIN**
After successful registration at the operator of the charging station, the customer receives a PIN. This PIN is used as the authentication factor. Enter the PIN via the touch screen. Valid PINs contain 6 digits.

NOTE

With an increasing number of valid PINs as authentication medium, the probability of random guessing and corresponding unauthorized use increases.

- **QR code**
Scanning a QR code initiates an operator-specific authorization process in the OCPP backend. In some circumstances, a QR code may require the use of an app. The charging process is started from the OCPP backend.
A charging-point-specific QR code can be displayed on the touch screen after entering the URL in the SCB. Alternatively, a general QR code can also be displayed.





- Credit card

The credit card reader is located below the touch screen. The credit card terminal is activated when the contactless payment process is ready.

The transaction processes are displayed on the touch screen of the charging station.

Before the charging process begins, the limit for credit card transactions is reserved for contactless payments and shown on the display. The limit is set by the OCPP backend (PaymentTXMaxAmount). If you do not finish the charging process beforehand, the OCPP backend will terminate the charging process when this limit is reached.

To download the e-receipt of your transaction, select the help screen. Scan the QR code displayed. On this website you can then download the e-receipt for your transaction to your end device.

Registration with an EMSP backend is not necessary, in contrast to contract-based charging.

NOTE

An e-receipt service is available for CVV terminals. This service is configured via the SCB.

Plugging in the charging cable

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

If you are charging via the CHAdeMO port, then you will have 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 amount of information depends on the charging port and whether tariff information is available from the OCPP backend. You can navigate using the arrows to view more 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.

Note that there may be different displays of charging power between the charging station and the vehicle. This is the case if, for example, the vehicle only displays the power drawn to charge the batteries, but at the same time still uses the total charging power drawn in other ways. Examples of this are heating or cooling the batteries. This is not a fault of the charging station.

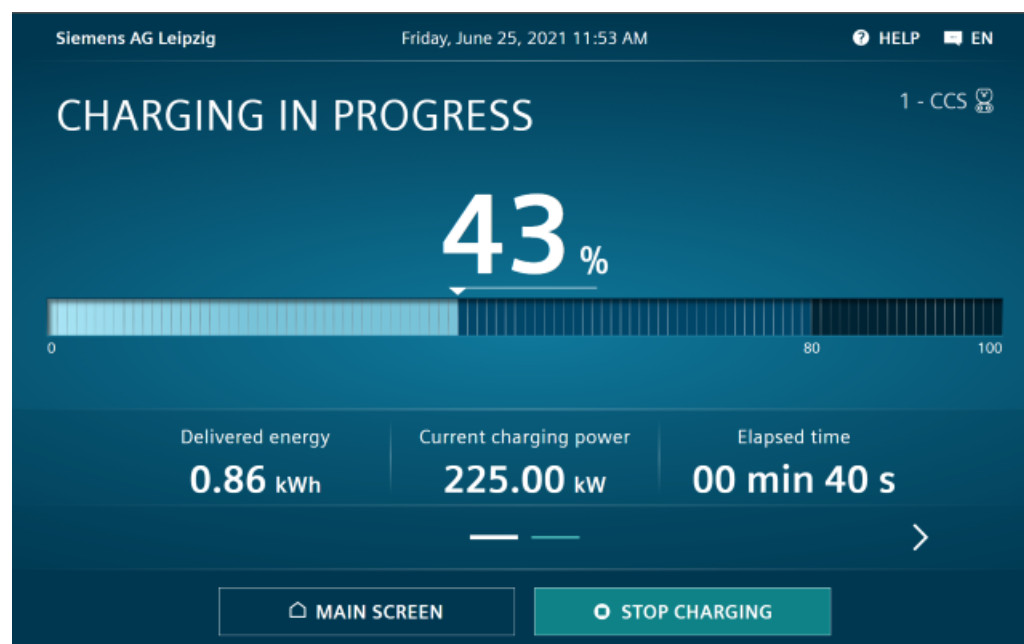


Figure 7-4 Information during charging

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. Active charging processes are not terminated. 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 SCB, 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
- Emergency stop is triggered by actuation of the emergency stop switch, opening of the device doors, interruption of the external safety loop or by the external load management system

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. Following this, the summary of the charging process appears.

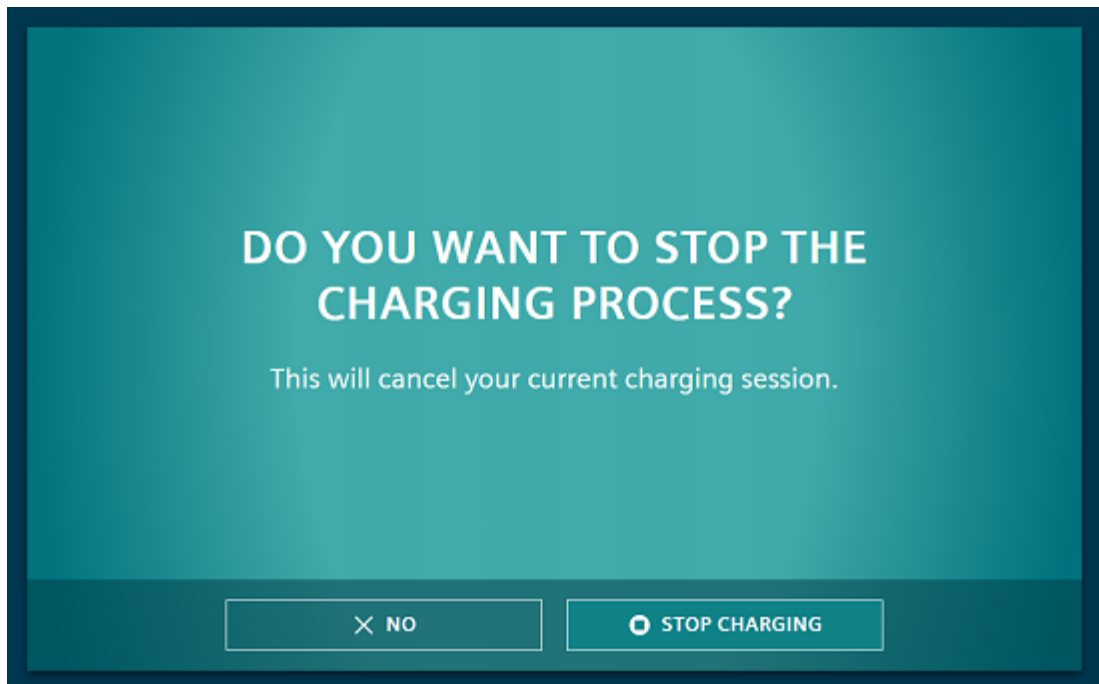


Figure 7-5 Stopping the charging process

Depending on the setting in the SCB, the user must authenticate again for confirmation. All instructions are displayed on the touch screen. After successful completion, the display changes again and the user receives summarized information about the charging process. This information again depends on the selected charging port and the available tariff information.

After completion of the charging process, insert the charging plug into the corresponding holder.

7.5 Calling the help function

Help can be shown in almost every view by tapping the icon (?) in the upper right corner of the screen. Operators have the option of importing the telephone number of their service hotline via the SCB. This can also be used to read the Charger ID in the screen above. The WiFi symbol indicates whether there is a connection to the SCB.

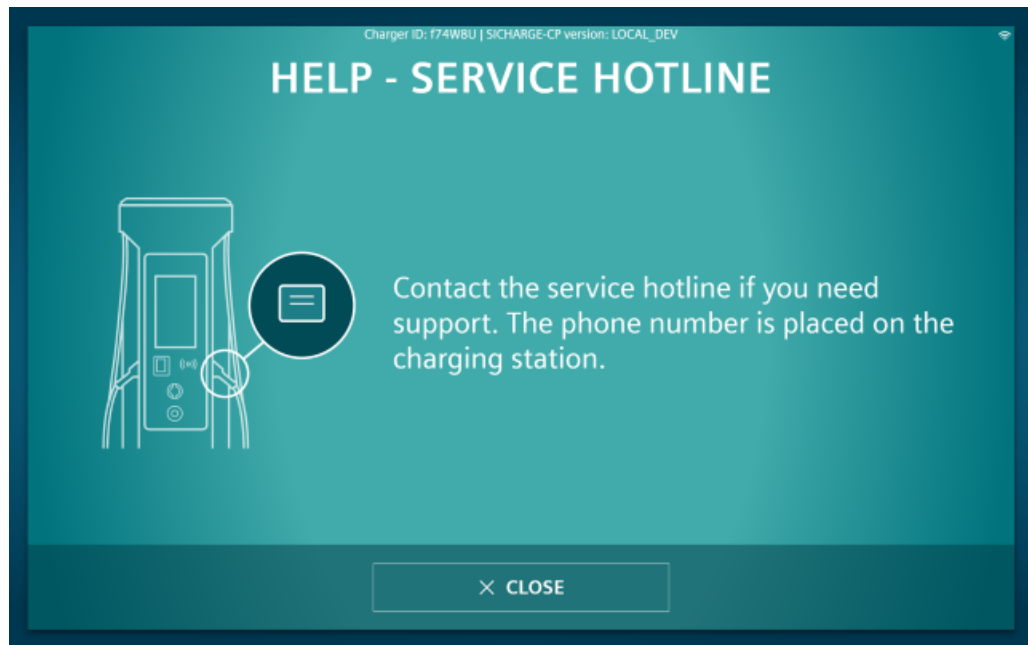


Figure 7-6 Help screen

Error messages and remedy

In the event of an error, the charging station automatically performs error diagnostics. In the case of error, the charging station sends one or more error messages to the OCPP backend (see also "OCPP backend (Page 60)") and to the SCB (see also "SICHARGE Configuration Backend (Page 58)"). The error messages in the SCB are very detailed and facilitate error analyses when service is required.

The charging station displays the following messages on the central touch screen to inform the end user:

- Error messages in full screen mode:
 - Error message "Emergency Stop was triggered" (Page 119)
 - Error message "Charging station out of service" (Page 120)
- Messages in the menu:
 - Charging point message "Out of operation" (Page 121)
 - "Connection failed" message (Page 122)

8.1 Error message "Emergency Stop was triggered"

To bring the charging station into a safe state immediately in case of danger, the charging station can be equipped with an integrated Emergency Stop switch. If it is actuated, the display of the charging station shows the following error message.



Figure 8-1 Error message "The emergency stop switch has been activated"

NOTE

Without an associated message at the charging station, it is not possible to differentiate between interruption of the external safety loop and actuation of the Emergency Stop switch.

Emergency stop

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

Revoking the emergency stop

First eliminate the hazardous situation. Make sure that no vehicle is connected with the charging station. If the emergency stop has been triggered by the emergency stop switch, you can revoke the emergency stop via the emergency stop switch.

8.2 Error message "Charging station out of service"

The controller of the charging station automatically detects any critical fault. If the error affects the entire charging station, it is put out of service. The operator is informed via a message to the OCPP backend that support from Siemens Service is required. This service can first analyze the problem remotely via the SCB. This message contains additional information about the exact cause of the error. The touch screen shows the following error message. The display shows the error message "Out of order" in full screen mode. The charging station cannot be operated in this state.

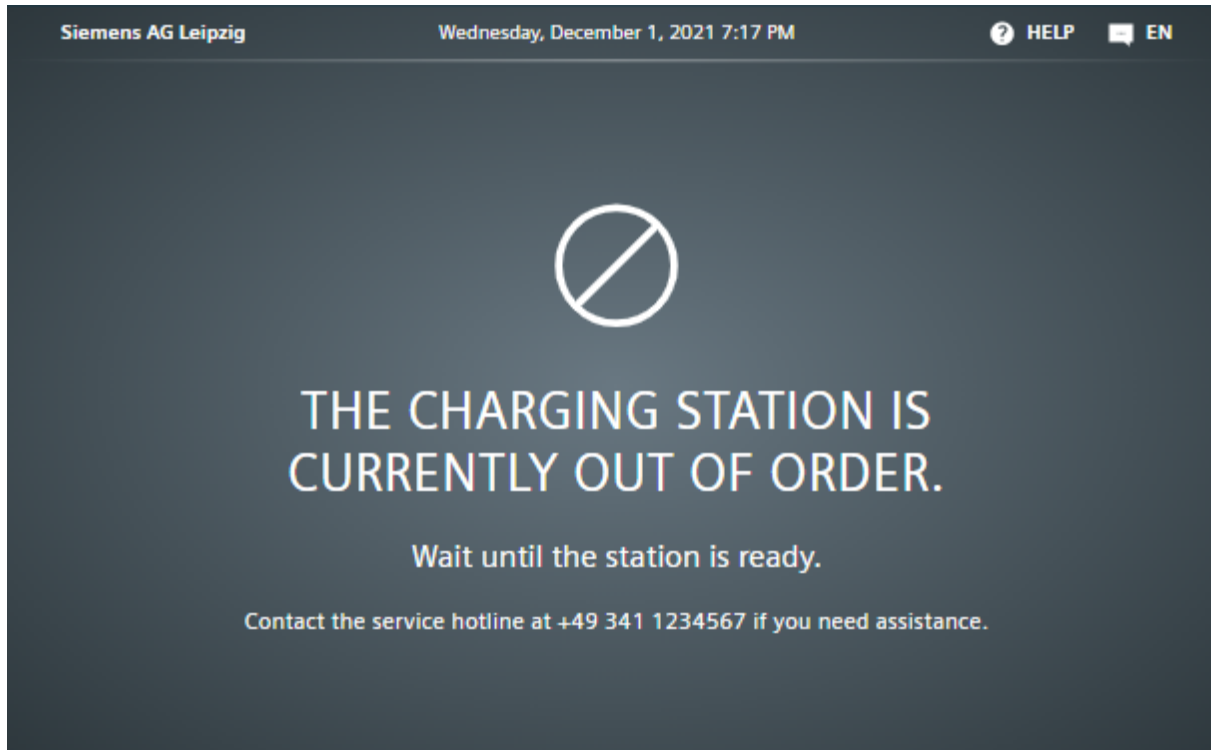


Figure 8-2 Error message "The charging station is currently out of order"

NOTE

This error message is also displayed if the Emergency Stop was triggered by a dispenser or the external load management system.

End error state

Using the information sent to the SCB, the service personnel on site can localize and correct the fault.

8.3 Charging point message "Out of operation"

If the controller detects that only one charging point is affected by an error, then only this charging point is deactivated. The other charging points will continue to be available for charging. This prevents a complete failure of the charging station.

In the menu for charging point selection, the deactivated charging point is highlighted in color. "Out of order" is displayed as the status.

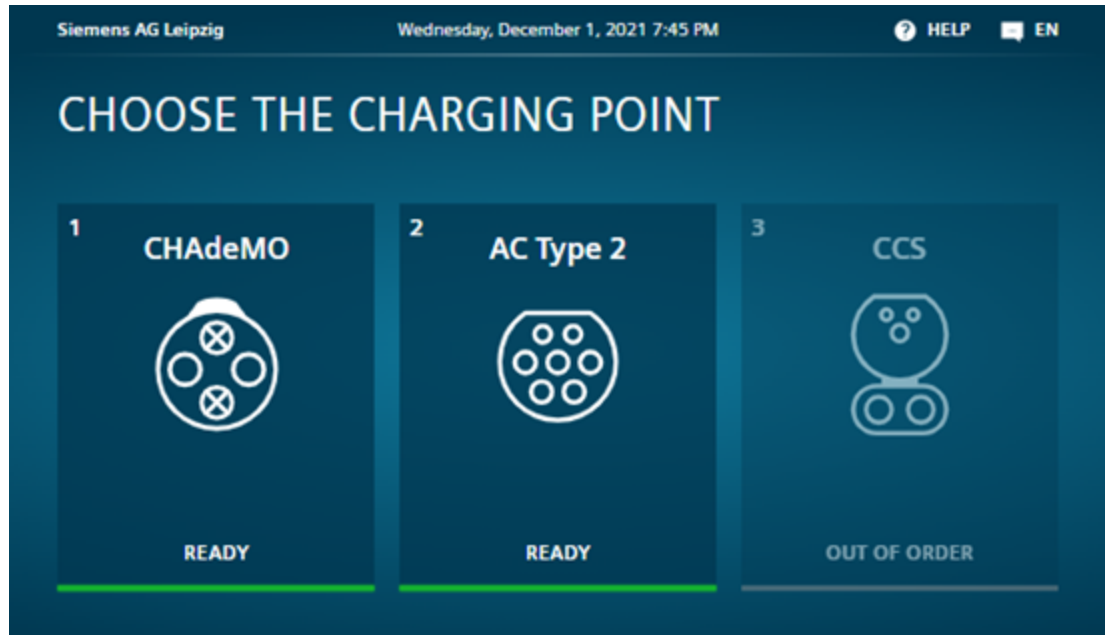


Figure 8-3 Charging point message "Out of operation"

NOTE

Shortly after the charging station has been started, the DC charging points are still displayed as "Out of order" until the grouping and the fast shutdown check of the converters is successfully completed. The charging points automatically switch to operational status after passing checks.

8.4 "Connection failed" message

If the user's own AC charging cable does not lock correctly when plugged in for the first time, then no charging process will start. The user is prompted to replug the charging cable. The following message appears on the touch screen.

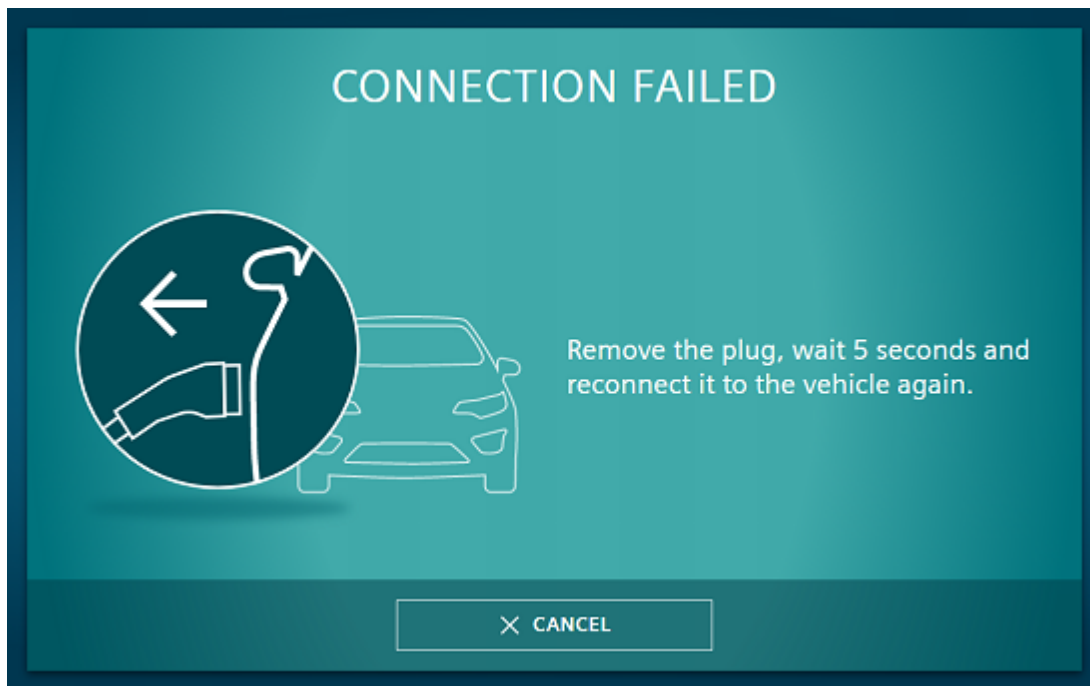


Figure 8-4 Connection failed

Maintenance and service

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**

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.

- Perform any maintenance and service work on the inside only on a de-energized charging station. Activate the charging station on the main switch -QA2 and on the connected distributor.
- Observe the five safety rules for electrical work ([Page 20](#))

 **WARNING**

Electrical shock due to residual charges in capacitors

The discharging process of the capacitors starts after the power supply of the charging station has been switched off. 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 approximately 10 minutes after switching off the power supply.
- Make sure that the charging station is de-energized.
- 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 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.

NOTE

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, make sure that no foreign objects remain in and on the charging station.
 - Fasten loose parts again after maintenance work.
 - Remove accumulated dirt.
-

9.2 Maintenance plan

The following maintenance measures are required to maintain the functionality and operational safety of the charging station. You can find detailed instructions for replacement of components in the document with order number 8EM5907-0AA00-4AA1.

Times of testing

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

- 6 months after commissioning
- 12 months after commissioning

After the first year, carry out the tests every 12 months. Perform the checks at shorter intervals if necessitated by the ambient conditions of the SICHARGE D charging station (e.g. high dust exposure).

Checking the charging station

For technical specifications, refer to the document with the order number 8EM5907-0AA00-7AA3 "Preventive Maintenance Checklist (<https://support.industry.siemens.com/cs/us/en/view/109814289>)".

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.

NOTICE**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

Cleaning the touch screen when it is switched on may result in operating errors. This can, for example, cause ongoing charging processes to be interrupted unintentionally if no authentication is set. Only clean the touch screen when no vehicle is charging.

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.

NOTICE

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.

The air filters are wear parts. Replace them on a regular basis according to the ambient conditions, but at least every 12 months, to ensure control of the charging station climate within the permissible temperature range and to minimize power derating.

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 Spare Parts List (<https://support.industry.siemens.com/cs/us/en/view/109814736>).

Filter mat at front bottom left

The filter mat dimensions are 380 x 480 x 20 mm.

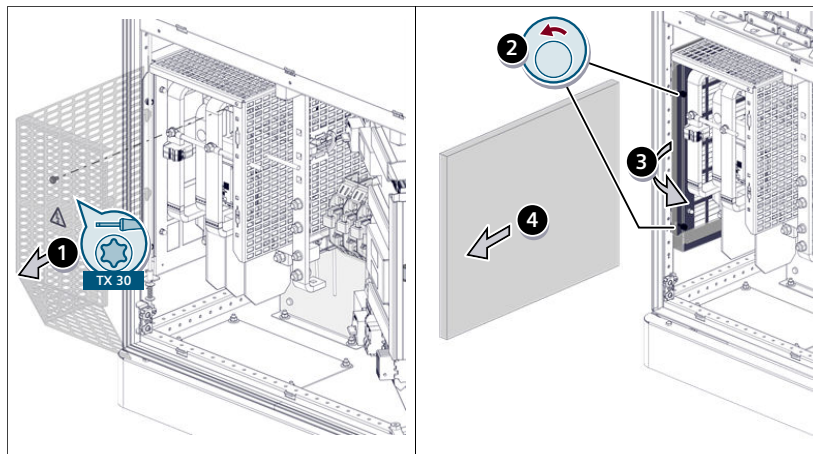


Figure 9-1 Filter mat at front bottom left

1. Remove the protective grille with a TX 30 screwdriver
2. Remove the 2 knurled screws of the holding plate
3. Remove the holding plate
4. Remove the filter mat

Insert the new filter mat with the marking facing out in the reverse order.

Filter mat at front bottom right

The filter mat dimensions are 380 x 480 x 20 mm.

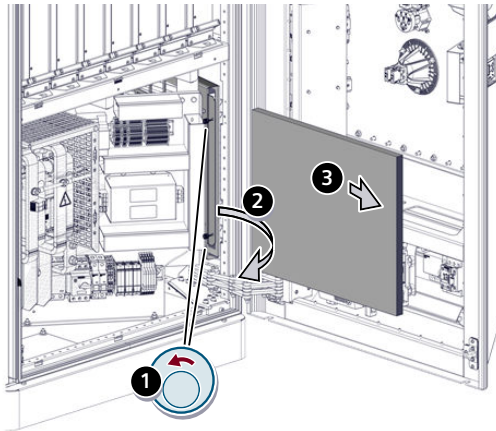


Figure 9-2 Filter mat at front bottom right

1. Remove the 2 knurled screws of the holding plate
2. Remove the holding plate
3. Remove the filter mat

Insert the new filter mat with the marking facing out in the reverse order.

Filter mat on back at top

The filter mat dimensions are 200 x 640 x 20 mm.

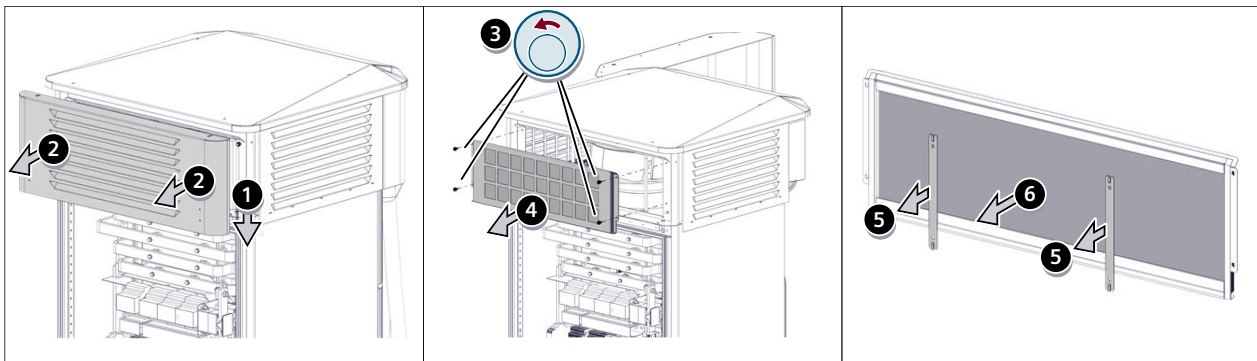


Figure 9-3 Filter mat on back at top

1. With the door open, pull down the filter cover
2. Remove the filter cover
3. Remove the 4 knurled screws
4. Remove the cabinet with the filter mat
5. Remove the 2 plates
6. Remove the filter mat

Insert the new filter mat with the marking facing out in the reverse order.

Filter mat in roof area on left

The filter mat dimensions are 220 x 520 x 20 mm.

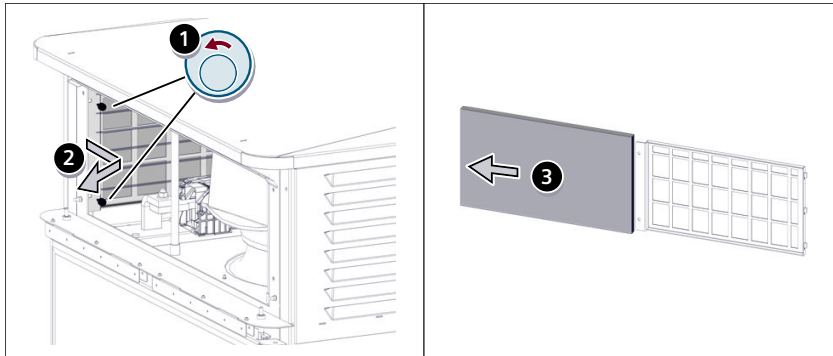


Figure 9-4 Filter mat at top left

1. Remove the 2 knurled screws of the holding plate
2. Remove the holding plate
3. Remove the filter mat

Insert the new filter mat with the marking facing out in the reverse order.

Filter mat in roof area on right

The filter mat dimensions are 220 x 520 x 20 mm.

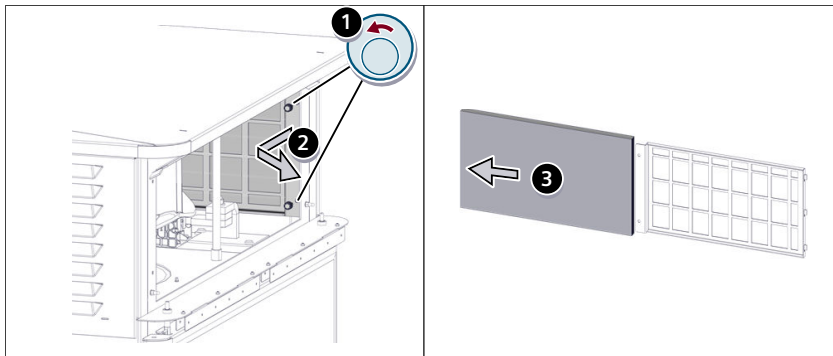


Figure 9-5 Filter mat at top right

1. Remove the 2 knurled screws of the holding plate
2. Remove the holding plate
3. Remove the filter mat

Insert the new filter mat with the marking facing out in the reverse order.

Filter mat in rear device door

The filter mat dimensions are 380 x 550 x 20 mm.

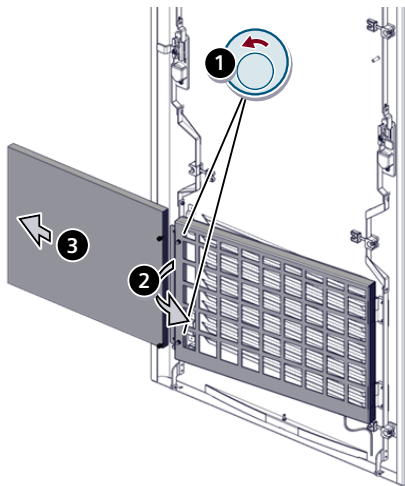


Figure 9-6 Filter mat in rear device door

1. Remove the 2 knurled screws of the holding plate
2. Remove the holding plate
3. Remove the filter mat

Insert the new filter mat with the marking facing out in the reverse order.

Filter mat for fan in automation area

The filter mat dimensions are 130 x 170 x 20 mm.

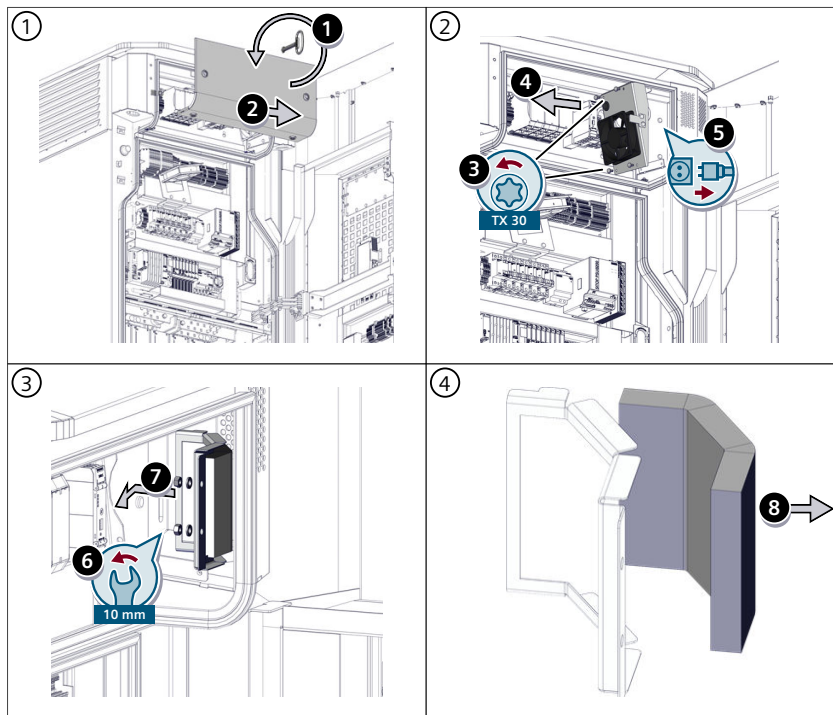


Figure 9-7 Filter mat for fan in automation area

1. Use a suitable key/tool to open the locks of the cover plate.
 2. Remove the cover plate
 3. Remove the 4 screws of the fan plate with a TX 30 screwdriver
 4. Remove the plate with the fan
 5. Lock the fan
 6. Remove the 2 nuts and washers with a 10 mm open-end wrench
 7. Remove the cabinet with the filter mat
 8. Remove the filter mat
- Insert the new filter mat with the marking facing out in the reverse order.

9.3.4 Charging cable gland

The proper attachment of the charging cables to the charging station can change due to temperature fluctuations and impermissible tensile loads. Therefore, check the cable glands for tightness with a maximum tightening torque of 30 Nm. Refer to the following table for the wrench sizes for the cable glands of your charging station:

Table 9-1 Required tools

Charging cable	Width across flats
125 A CHAdeMO	SW45
200 A CHAdeMO	SW57
250 A / 400 A (peak) CCS	SW45
500 A CCS	SW57

9.3.5 Checking the coolant

Check the coolant level in the sight glass of the cooling unit at the interval defined in the service plan schedule. If the coolant level is low, add coolant as described in section Adding coolant (Page 133).

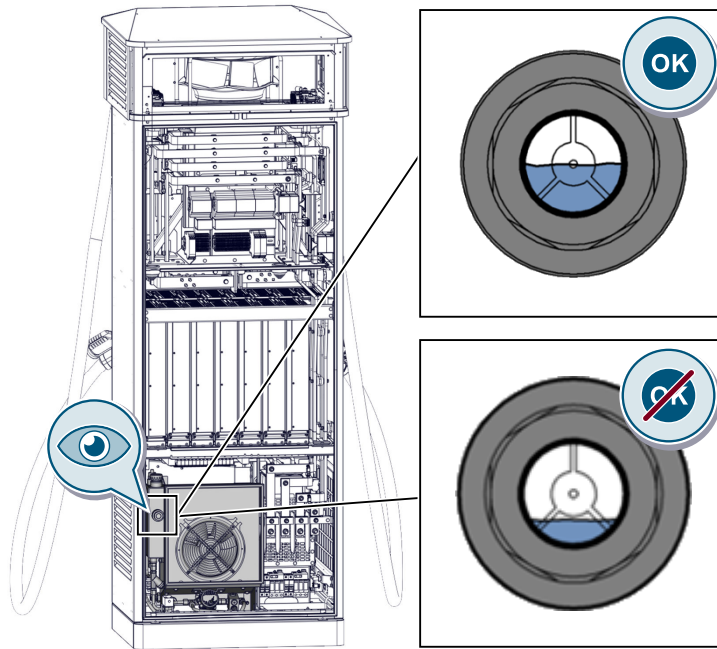


Figure 9-8 Checking the coolant level

9.3.6 Adding coolant

NOTICE

Contact with coolant is harmful to health

Wear eye/face protection and chemical-resistant impervious gloves when working on the cooling unit. In case of contact with the coolant, follow the instructions of the safety data sheet of the coolant.

Follow these instructions for adding coolant.

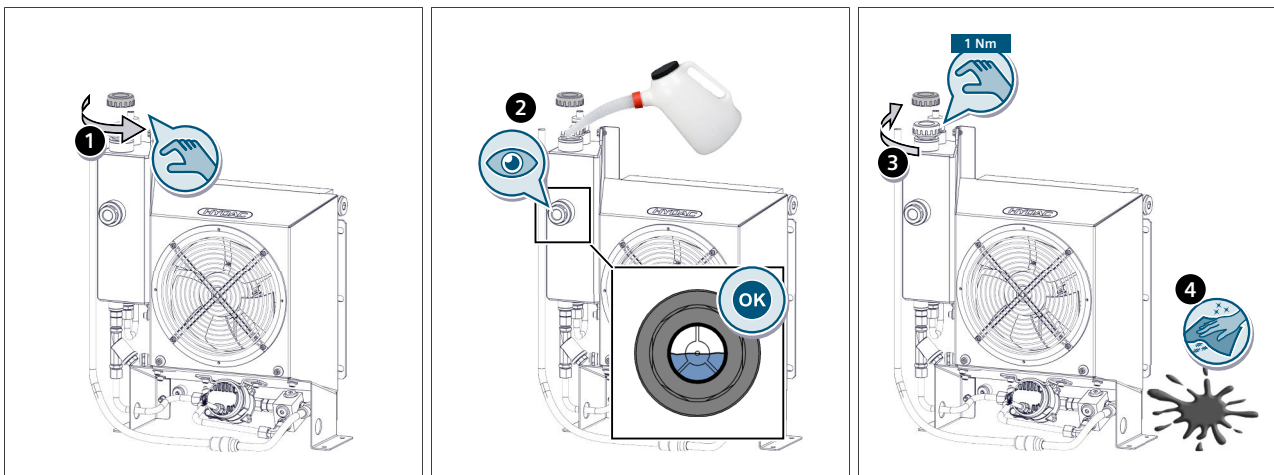


Figure 9-9 Adding coolant

1. Open the closure of the coolant expansion tank
2. Add coolant until the sight glass is filled half way.
3. Close the coolant expansion tank with a maximum tightening torque of 1 Nm
4. Remove coolant residues

9.4 Spare parts

The order number of the spare part list is: 8EM5907-0AA00-2AA6. You can download the spare part list here (<https://support.industry.siemens.com/cs/ww/en/view/109814736>).

These products are parts that are subject to wear:

- Filter mats
- Coolant
- Charging plug
- Charging plug holder
- Rope box and cable management system

Decommissioning and disassembly

Follow the procedure described below to decommission and disassemble the charging station:

- Observance of the 5 safety rules (Page 20); ensure isolation of the charging station via the upstream switching device.
- Switch off the charging station as described in section 6.3. Isolate the charging station via the upstream switching device.
- Uninstall the utilized SIM cards from the router (see section 3.12) and return the SIM card in Router 1 (-XF3) to your Siemens sales office. When using your own SIM cards: Deregister these cards or follow the instructions of the card owner.
- Disconnect communication and power cables from the device. Proceed in the reverse order to that described in sections 5.6.2 and 5.6.3 for this. If necessary, remove the cable lugs and the plugs of the communication cables to allow you to pass them out through the cable glands later.
- Disassemble the base covers (see section 5.5.6), the cable gland plate(s) (see section 5.5.5) and the roof (section 5.6.4).
- Prepare the station for transport away from the installation location. For this, screw in the eyebolts for crane transport into the threaded holes provided for that purpose. Read the information provided in sections 4.1 and 5.5.2.
- Loosen the 4 bolts with the studs (connection to the foundation). Be sure to secure the station adequately to prevent tipping.
- Lift the charging station with a suitable hoist. We recommend using a crane. Read the information provided in sections 4.1 and 5.5.2.
- Set the charging station down safely and secure it to prevent it from tipping. Ideally, use the provided loaded carrier. For more information, read section 4.1.
- Take suitable measures to protect the open cable ends against contact, moisture and dirt. If necessary, disassemble the supply lines and installed foundations and other peripherals (e.g. impact protection).
- Set the "Out of order" status in the SCB or delete the charging station if you are disposing of it (see next section).

Recycling and disposal

Environmental protection and resource conservation are high priorities for Siemens. Global environmental management according to ISO 14001 ensures adherence to laws and sets high standards for this. 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. Comply with the local 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 according to local regulations. Do not allow coolant for the charging cable to escape into the environment. Recycle the injection-molded parts (charging plug holder and recess for the Emergency Stop switch). Return the SIM card from the Siemens router to your Siemens sales office.

Dispose of the rope box

To ensure environmentally sustainable recycling and to dispose of your old device, contact a certified waste disposal service. Dispose of the equipment according to the applicable regulations in your country.

- Do not dispose of the rope box in household waste.
- Only qualified and trained personnel are permitted to open the rope box
- Follow the Safety instructions ([Page 13](#))
- After the material has been separated, recycle the components.

 **WARNING**

The destruction of the cabinet, e.g. by a trash compactor, could release the preloaded coil spring

Broken coil springs can also relax dangerously.

Technical specifications

AC nominal input	Unit	Value
Voltage	V	400 ± 10 %
Current at nominal voltage per phase	A	Depending on the selected configuration of the SICARGE D 301 ... 515 Table for individual configuration (Page 75)
Input power	kVA	170 ... 340
Frequency	Hz	50/60
Power factor	cos φ	> 0.99
Short-circuit strength	kA	50 kA
THDi	%	< 3
Line supply type		TN-C, TN-S, TT (permanently connected)
Connection to the power grid		Input voltage AC
		TN-S: Up to 2x(5x185 mm ²) or 1x(5x300 mm ²)
		TN-C/TT: Up to 2x(4x185 mm ²) or 1x(4x300 mm ²)

Unless otherwise specified, all values apply to room temperature 25 °C

DC output	Unit	Value
Nominal power ex works	kW	160, 180, 240, 300
Upgradable in the field		Up to 300 (in 20 kW increments)
Dynamic Power Allocation (DPA)		Between DC charging points during the charging process
Voltage (range)	V	150 ... 1000
Power consumption in standby	W	Max. 260, when fans and heaters are turned off
Charging point options	DC	<ul style="list-style-type: none"> • 2 x CCS2 • 1 x CCS2, 1 x CHAdeMO
	AC optional	AC Type 2 mode 3 socket with cover and lock, 22 kW, 32 A including RCD
Maximum current of the charging cables	A	CCS2: 1x400 (air-cooled charging cable)
		CCS2: 1x500 (liquid-cooled charging cable)
		CHAdeMO: 1x125
Interface for additional dispensers (parallel charging)		Can be ordered with a pre-installed interface for connecting 1 dispenser with 2 DC charging points
Efficiency η	%	> 95 rated value > 96 peak value
Cable length	m	<ul style="list-style-type: none"> • 3.1 • 5

Unless otherwise specified, all values apply to room temperature 25 °C

Ambient conditions	Unit	Value
Operating environment		<ul style="list-style-type: none"> Indoor Outdoor
Operating temperature	°C	-25 ... +55 (derating possible from 35 °C) ¹⁾ ambient temperature
Storage temperature	°C	-40 ... +60
Maximum operating altitude above sea level	m	2000 m
Air humidity	%	5 ... 95% (no condensation)
Degree of pollution		3

Unless otherwise specified, all values apply to room temperature 25 °C

1) With no direct solar radiation

Mechanical features	Unit	Value
Cabinet protection		IP54, IK10 including glass control panel
		IP54, IK09 with PIN Pad Valina
		IP54, IK08 with PIN Pad Castles
Cabinet material		Zinc-phosphated steel powder-coated, anti-graffiti paint
Coating		C4-M/ C5-L according to ISO 12944
Color		RAL 9006 – white aluminum
Installation		Stationary on foundation or ground
Overall dimensions L x W x H	mm	845 x 825 x 2300 without cable management system
	mm	1251 x 825 x 2400 with cable management system
Foundation dimension L x W	mm	680 x 620
Approximate weight depending on configuration	kg	540 ... 820 (depending on configuration)

Packaging details	Unit	Value
Road transport packaging	mm	160 x 90 x 250
	kg	75+ weight of the configured charging station
Packaging for sea transport / air transport	mm	127 x 102 x 252
	kg	115 + Weight of the configured charging station

General specifications	Value
Local user interface and LEDs	Full-color 24" touch screen (1920 x 1080) Adjustable brightness up to 1000 cd/m ² Viewing angle 178° Contrast 5000:1 Customizable position of the local user interface Status LED for each DC charging point
User authentication and payment	RFID, credit card (optional)
RFID	ISO 18092: MIFARE ISO/IEC14443 A/B, FeliCa JIS X6319-4; ISO/IEC15693, Legic Prime, Legic Advant

Unless otherwise specified, all values apply to room temperature 25 °C

2) Accuracy class B

3) Accuracy class A (according to EN 50470-3: 2006 and EN 50470-1:2006)

4) Hardware-capable

General specifications		Value
Providers of credit card payments		Contactless credit card terminal behind the black panel <ul style="list-style-type: none"> • CCV (KNB, Payone, VR Payment) • Payter P66
		Credit card terminal with chip or magnetic stripe reader <ul style="list-style-type: none"> • Castles UPT1000F (Neftis) • Worldline Valina
Emergency Stop switch		Optional (not for ERK)
Network connection		Ethernet 10/100 Base, 2G, 3G, 4G (LTE)
Electrical protective devices		Overvoltage protection, Overvoltage category III
Operating noise level at a distance of 3 m		< 65 dB(A) (Silent mode: < 50 dB(A), time configurable, e.g. for day and night)
Metering options	DC	DC meter per charging point: <ul style="list-style-type: none"> • Standard meter²⁾ • according to German Measuring and Calibration Ordinance²⁾ • compliant with MID/LNE²⁾
	AC	AC meter for Type2 charging point <ul style="list-style-type: none"> • Standard meter²⁾ • according to German Measuring and Calibration Ordinance³⁾ AC meter for input power
Remote control		<ul style="list-style-type: none"> • Remote access via OCPP and SICCHARGE configuration backend • Over-The-Air (OTA) software updates • External load management via ModBus⁴⁾

Unless otherwise specified, all values apply to room temperature 25 °C

- 2) Accuracy class B
- 3) Accuracy class A (according to EN 50470-3: 2006 and EN 50470-1:2006)
- 4) Hardware-capable

Standards and guidelines	
Charging standards	DC: <ul style="list-style-type: none"> • EN 61851-1/23 • ISO 15118 (DIN 70121)⁴⁾ • IEC62196-3 (Mode 4, Type 2) • JEVS G105 (Mode 4, CHAdeMO1.2) AC (optional): <ul style="list-style-type: none"> • IEC 61851-1 • IEC 62196-2, (Mode 3, Type 2)
Communication protocol	OCPP 1.6J
EMC guidelines	<ul style="list-style-type: none"> • EN 61000-6-2 Electromagnetic compatibility (EMC) Immunity standard for industrial environments, Class A • Optional: EN 61000-6-3 Electromagnetic compatibility (EMC) Emission standard for equipment in residential environments, Class B
Certifications and conformity	CE, RCM, German Measuring and Calibration Ordinance (optional)
RoHS	IEC 63000
AC charging Type 2	IEC 61851-1, IEC 62196-2, Mode 3

Unless otherwise specified, all values apply to room temperature 25 °C

- 4) Hardware-capable

Standards and guidelines	
DC charging CCS 2	IEC 61851-23, IEC 62196-3, Combo 2, Mode 4
DC charging CHAdeMO	CHAdeMO 1.2, JEVS G105, Mode 4
Accessibility	According to DIN EN 301549
Protection against electric shock	Class I; IEC 61140

Unless otherwise specified, all values apply to room temperature 25 °C

4) Hardware-capable

See also

[Installation location \(Page 72\)](#)

Adhesive surfaces

You may apply stickers or paint to defined areas of the charging station.

In the "Design Template A (<https://see-siemens.highspot.com/items/61e695f2811b220b3d3c2972?lfrm=rhp.58#1>)" document, you will find the dimensions and positions of the surfaces that you are allowed to paint or attach stickers to. Make sure that the black panel and the vertical area of the cable holders are not affixed with stickers or painted.

NOTICE
Protect filter mats from heat
If you use a hot air dryer when foiling, then remove the filter mats beforehand. The filter mats can be damaged by the heat. In the section "Servicing the charging station (Page 125)", you can find the instructions for removing and installing the filter mats.

Declaration of Conformity

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 has a copy of the EU Declaration of Conformity available for official purposes at the following location:

Siemens AG
Smart Infrastructure
Siemenspromenade 10
91058 Erlangen
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You can download the Declaration of Conformity here

<https://support.industry.siemens.com/cs/ww/en/view/109814737>).

List of abbreviations and explanation of terms



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
ELMS	External load management system
EMSP	eMobility Service Provider
ERK	Compliant with (German) calibration law
ESVE	Electric Vehicle Supply Equipment
HMI	Human Machine Interface
OCPP	Open Charge Point Protocol
PE	Polyethylene
PE	Protective Earth
RFID	Radio Frequency Identification Device
SCB	SICARGE Configuration Backend
SoC	State of Charge
SPD	Surge Protection Device
SW	Width across flats

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 charging outlets
Dispenser	A (DC) charging point that is remote (distributed) from the charging station and is non-autonomous

Checklist for commissioning

The checklists for configuration, installation and commissioning can be found here on the Internet (<https://support.industry.siemens.com/cs/de/en/view/109818029>)

Other applicable documents

You will find a topic page on SiePortal where you can find documents for SICHARGE D: Topic page (<https://support.industry.siemens.com/cs/ww/en/view/109817191>)

Table C-1 Overview of applicable documents

8EM5907-0AA00-1AA6	SICHARGE D safety notes (https://support.industry.siemens.com/cs/ww/en/view/109801264)	SICHARGE D safety instructions
8EM5907-0AA00-1AA8	External Load Management System ELMS (https://support.industry.siemens.com/cs/ww/de/view/109814743/en)	External load management system ELMS
8EM5907-0AA00-2AA6	Spare Part List SICHARGE D (https://support.industry.siemens.com/cs/ww/en/view/109814736)	SICHARGE D spare parts list
8EM5907-0AA00-3AA4	Foundation Installation SICHARGE D (https://support.industry.siemens.com/cs/ww/en/view/109814888)	SICHARGE D foundation installation
8EM5907-0AA00-3AA5	Dimensions SICHARGE D (https://support.industry.siemens.com/cs/ww/en/view/109814888)	SICHARGE D dimensions
8EM5907-0AA00-4AA1	Siemens Repair Instruction SICHARGE D*	Siemens repair manual for SICHARGE D
8EM5907-0AA00-4AA4	VDE 0100-600 Commissioning Test*	VDE 0100-600 Commissioning test
8EM5907-0AA00-5AA2	Power Upgrade Documentation SICHARGE D*	SICHARGE D power upgrade documentation
8EM5907-0AA00-5AA8	Basic Electrical Overview SICHARGE D*	Basic electrical overview of SICHARGE D
8EM5907-0AA00-7AA3	Preventive Maintenance Checklist for SICHARGE D and Dispenser (https://support.industry.siemens.com/cs/ww/de/view/109814289/en)	Maintenance log for SICHARGE D
8EM5907-0AA00-7AA4	Credit Card Terminal Commissioning SiD (https://support.industry.siemens.com/cs/ww/en/view/109814747)	Credit card reader commissioning SiD
8EM5907-0AA00-7AA7	Commissioning Parameters (https://support.industry.siemens.com/cs/ww/en/view/109817382)	Commissioning parameters
8EM5907-0AA00-8AA0	Checklists for Configuration, Installation and Commissioning (https://support.industry.siemens.com/cs/de/en/view/109818029)	Checklists for configuration, installation and commissioning

* Available on request

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More information

<https://www.siemens.com/emobility>

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