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SICHARGE UC 150 Operating instructions

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OPERATING INSTRUCTIONS

SICHARGE

SICHARGE UC 150

(8EM4010-2XXXX-XXXX)

SIEMENS

SICHARGE

SICHARGE UC 150

Operating Instructions

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Legal information

Warning notice system

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

DANGER

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

WARNING

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

CAUTION

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

NOTICE

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

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

Qualified Personnel

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

Proper use of Siemens products

Note the following:

WARNING

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

Trademarks

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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 required for safe operation and intended use of the SICHARGE UC charging station.

Safekeeping the operating instructions

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

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

Using the operating instructions

How to use the operating instructions correctly:

- Make the operating instructions available to all persons involved before and during work on the charging station.
- Read the operating instructions carefully before starting work.
- Follow the safety instructions and handling instructions.

Definitions and naming conventions

- Charging station:
The term "charging station" is used in this documentation for the "SICHARGE UC 150".

1.2 Open-source software

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

For legal reasons, we are obliged to publish the original text of the license conditions and copyright notices. For this, read the information included with the product or provided on the Internet (<https://assets.new.siemens.com/siemens/assets/api/uuid:beda63de-e83a-4598-9863-7645d0c0dda8/sicharge-uc-open-source-software-V2.pdf>).

Safety instructions

2.1 Basic safety instructions

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
- DIN ISO 0100-600, or IEC 60364-6 and other country-specific regulations

Target group

These operating instructions are intended for the following persons:

- Planners
 - Plan the location of use of the charging station.
- Carriers
 - Transport the charging station to the location of use.
- Installers
 - Install the charging station.
- Qualified electricians
 - Connect electrical cables to the charging station.
 - Perform electrotechnical work on the charging station.
- Users
 - Charge the electric vehicles.
- Service personnel
 - Perform maintenance and service.

2.1 Basic safety instructions

Intended use

The intended use of the charging station is exclusively to charge the battery of an electric vehicle. For this, the electric vehicle must be equipped with a charging socket of the type CCS Combo 2. The charging station charges electric vehicles according to the standards EN 62196-3 and EN 61851-23.

Charging is only possible with a charging cable at the charging station. Any other or additional use is not in accordance with the intended use and constitutes misuse of the device. The charging station is suitable for indoor and outdoor use. The permissible ambient conditions at the place of use must be observed for intended use.

Qualified personnel

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.

Work on a live charging station can only be performed by qualified electricians that meet the following requirement:

- Ability to work on live equipment according to DGUV regulation 103-011

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.

Fire and explosion protection

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

Protection against electromagnetic fields

The electromagnetic emission in the charging station meets the IEC 61851-21-2 standard:

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

The charging station complies with immunity requirements for Class A industrial areas according to the generic standard IEC 61000-6-2:2016 Electromagnetic Compatibility (EMC).

 WARNING
Danger to life from electromagnetic fields when door is open When the door is open, the switched-on charging station emits electromagnetic fields (EMF) to the outside. Electromagnetic fields are particularly dangerous for people with pacemakers or other implants in the immediate vicinity of a system. • Therefore, switch off the power supply before opening the door of the charging station. • If you open the door forcibly, the charging station automatically switches off the power supply to the AC-DC converters.

Protection against ingress of liquid

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

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

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

 WARNING
Electric shock due to ingress of liquid Strong jets of water or flooding can cause liquid to enter the charging station. Moisture or liquid inside the charging station can cause electric shock. If liquid has entered the charging station, take the following safety precautions: • Take the charging station out of service by switching it off at the electrical distributor. • Qualified personnel must dry the charging station and check it for damage.

2.1 Basic safety instructions

Protection against unauthorized opening

A lock system protects the charging station from unauthorized opening of the device door.

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

Alterations to the device

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



WARNING

Danger due to missing or unrecognizable safety signs and warnings

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

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

Only use undamaged equipment or parts



WARNING

Electric shock in case of damaged equipment

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

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

2.2 The five safety rules for electrical work

The European standard EN 50110-1 "Operation of electrical installations" prescribes safety rules for electrical 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
2. Secure against reclosing
3. Ensure there is no voltage present
4. Ground and short-circuit
5. Cover or shield 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 people that are no longer needed.
- Remove all used tools, equipment and aids.

Switch on the electrical system again

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

1. Remove short-circuit
2. Remove grounding
3. Remove covers or barriers
4. Remove fuse to prevent restart
5. Switch the system back on

2.3 DC shutdown button

In a dangerous situation, pressing the DC shutdown button immediately puts the charging station into a safe state.

Position of the button

The DC shutdown button is positioned on the front of the charging station in the middle of the device door.



① DC shutdown button

Figure 2-1 Position of the button

Function of the DC shutdown button

Pressing the DC shutdown button triggers an alarm. The control system of the charging station immediately switches off the power supply to the charging cable. The charging station changes to a safe state. The charging station displays the Alarm message "DC shutdown" on the touch screen. For safety reasons, the charging station cannot be operated in the DC shutdown state. The charging station only returns to its normal operating state after the button has been reset.

Revoke the DC shutdown state again

Note**Eliminate the hazardous situation**

First eliminate the hazardous situation. Only then cancel the DC shutdown state.

The DC shutdown button is equipped with a rotary release. An arrow on the top of the button indicates the direction of rotation for unlatching.

Unlock the DC shutdown button

To cancel the DC shutdown state, proceed as follows:

- Remove the charging cable from the vehicle.
- Turn the DC shutdown button in the direction of the arrow until the button is released.

The charging station will automatically start up. When the charging station display shows the Start menu, the charging station is back in normal operating mode.

2.4 Safety sign

To handle the charging station safely, safety signs are attached to the charging station and the packaging.

2.4 Safety sign

Safety signs on the packaging

The following safety signs are attached to the packaging of the charging station:

Safety sign	Meaning
	Marking of the center of gravity
	Warning of tipping hazard
	Identification of locations that cannot be used for pickup using a forklift

Safety sign on the charging station cabinet

The following safety signs are attached to the charging station cabinet:

Safety sign	Meaning
	Warning of general danger
	Warning of dangerous voltage
	Warning of tipping hazard

Warning signs in the cabinet of the charging station

The following warning signs are installed in the charging station:

Safety sign	Meaning
	The device contains noise filters at the input and output. A central ground connection is required for safety reasons and for proper functioning. Leakage currents to ground occur with this device.
	Merely disconnecting the network supply is not sufficient for safe execution of maintenance work. Wait for 10 minutes after switching off so that the DC capacitors can discharge. Only remove the cover afterwards.
	The device does not contain any parts that can be maintained by the user. Only qualified personnel may open the device.
	The module has capacitors. Discharge the capacitors before you touch the connections.

2.5 Cybersecurity at Siemens

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

Implement and maintain the cybersecurity 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 cybersecurity 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. 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).

In addition, the recommendations of Siemens regarding appropriate protective measures should be observed. For more information about cybersecurity, please visit:

Cybersecurity at Siemens (<https://www.siemens.com/cybersecurity#ouraspiration>)

Only use current product versions

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

2.6 Identification of the device

The nameplate clearly identifies the charging station. The nameplate also contains the identification data of the device, the manufacturer and the CE marking.

Information on the nameplate

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

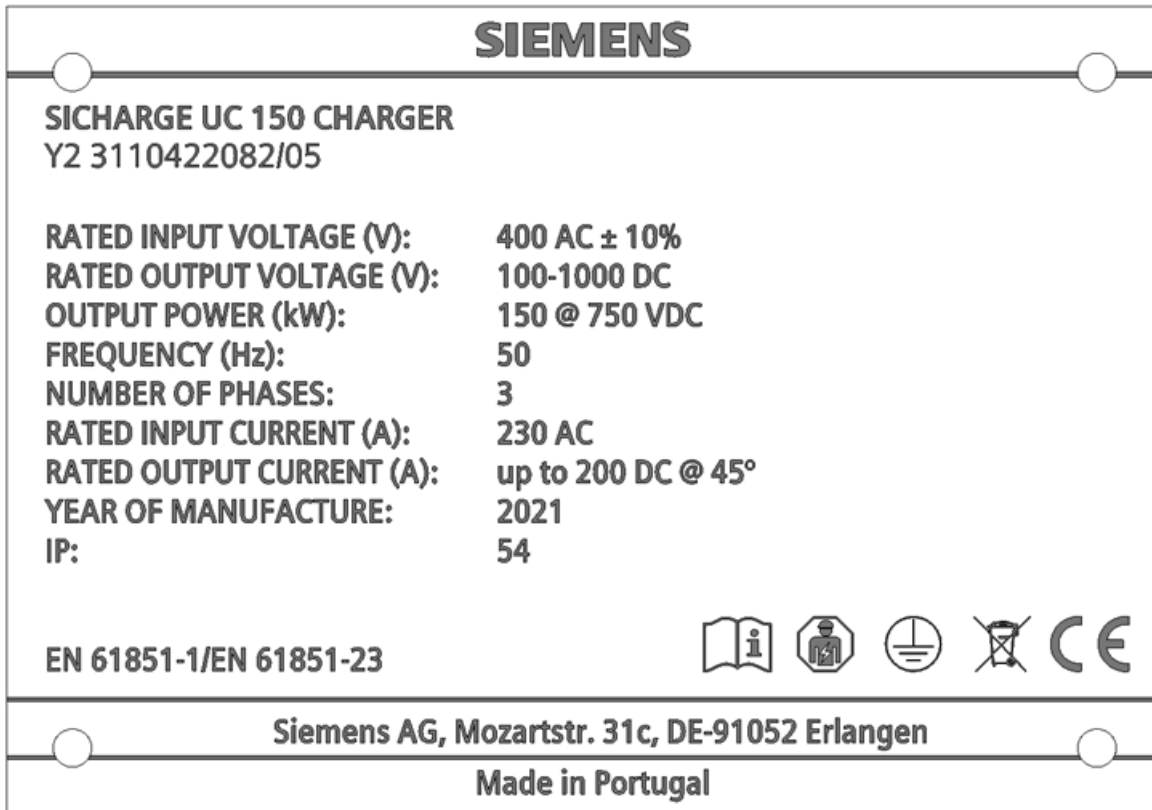


Figure 2-2 Example: Charging station nameplate

Position of the nameplate on the device

The nameplate is located on the left exterior of the device in the lower left corner of the cabinet.

Description

3.1 Product overview

The SICHARGE UC 150 charging station enables high-performance charging of electric vehicles. The connector type used, CCS Type 2, allows for the connection of commercial vehicles. Commercial vehicles are, for example:

- Electric buses
- Electric trucks
- Similar electric vehicles

Performance features

The SICHARGE UC 150 charging station charges your electric vehicle quickly and safely. To start the charging process, simply connect the charging cable to your vehicle. The charging station then controls the entire charging process precisely and fully automatically.

The charging station features the following performance characteristics:

- Fully automatic control of the charging process
- User-friendly operation by a central touch screen
- Space-saving design
- High availability
- Easy maintenance and servicing

Equipment variants

The SICHARGE UC 150 charging station is available in various equipment variants with the following components:

Components	Equipment variant 1	Equipment variant 2	Equipment variant 3
Human Machine Interface (HMI)	✓	✓	-
Charging cable	✓	-	-
DC output for dispenser	-	✓	✓

Application

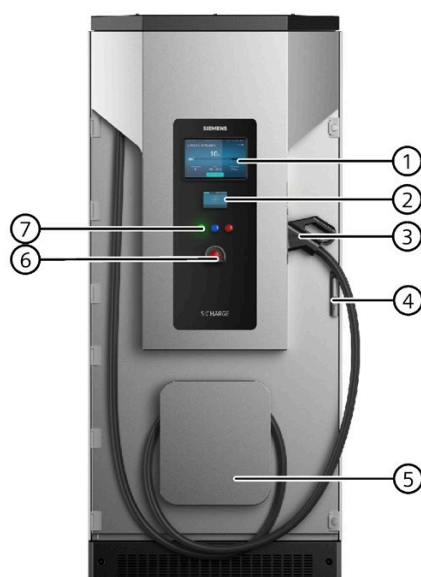
The charging station is designed for charging electric vehicles in semi-public commercial and industrial areas, for example:

- Terminals
- Vehicle depots
- Company parking lots

3.2 Display and operator controls

Display and operator controls

The charging station has the following displays and operator controls:



- ① Touch screen (depending on the equipment variant)
- ② RFID reader (depending on the equipment variant)
- ③ Charging plug (depending on the equipment variant)
- ④ Door lock
- ⑤ Cable holder
- ⑥ DC shutdown button
- ⑦ Status LED (depending on the equipment variant)

Figure 3-1 Display elements and operator controls of the charging station

Touch screen

The charging station can optionally be equipped with a central 10" Human Machine Interface (HMI) ①. The HMI has a touch screen with a 10" display in widescreen format. The large viewing angle of the display makes it easier to recognize the operating information from different viewing directions. To adapt the display to different lighting situations, the backlight of the display can be dimmed over a wide range of brightness.

Charging plug and cable holder

The charging device is located on the side of the charging station. You use the charging plug to establish a charging connection ③ to all electric vehicles that are equipped with a charging socket according to standard CCS Combo 2. When not in use, keep the charging plug in the plug position of the charging station. When plugged in, the plug holder protects the charging plug from mechanical damage and environmental influences. The cable holder ⑤ holds the charging cable safely and in a space-saving manner, while protecting the charging cable from damage.

DC shutdown button

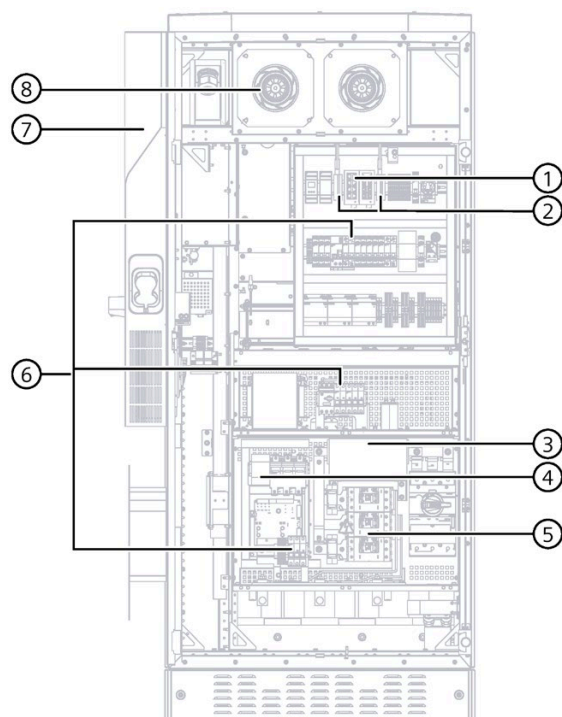
The charging station is equipped with a DC shutdown button ⑥. If you press the DC shutdown button in a dangerous situation, the charging station stops charging immediately. The charging station changes to the safe DC shutdown state. The touch screen shows the alarm message "DC shutdown". For safety reasons, the charging station cannot be operated in the DC shutdown state. The charging station only returns to its normal operating state after the button has been reset.

Lock system

To protect the charging station from unauthorized opening, the door of the charging station is equipped with a lock system. The door lock ④ secures access to the interior of the charging station. You need a special door key to open the device door. The door key is included in the delivery.

3.3 Design of the charging station

The control system with the communication modules, fuse elements and switching elements are located inside the charging station at the front. The following figure provides an overview of the positions of the various components.

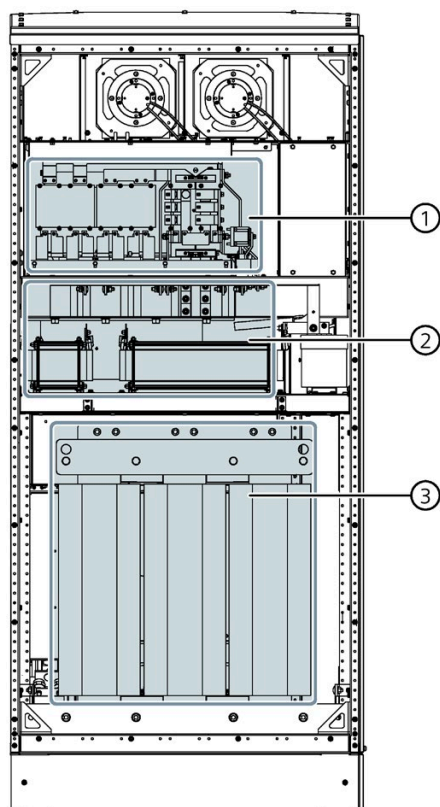


- ① Industrial Ethernet Switch
- ② Router for mobile communication
- ③ Line filter
- ④ Main contactors
- ⑤ Overvoltage protection
- ⑥ Miniature circuit breakers
- ⑦ Siemens controller
- ⑧ Fan

Figure 3-2 Interior front

3.3 Design of the charging station

Electronic components of the DC output and several inductors are arranged on the back. The transformer of the charging station is positioned in the middle of the cabinet behind the central switchboard.



- ① Electronic components DC output (accessible from the front)
- ② Inductors
- ③ Transformers

Figure 3-3 Interior rear

3.4 Charging cable

The charging station can be ordered with a charging cable for charging electric vehicles with direct current. The charging cable enables charging of electric vehicles in accordance with the standard CCS Combo 2 (IEC 62196-3).

Charging contacts

In order to transfer high charging power quickly and safely, the Combo 2 plug of the charging cable uses the following charging contacts:

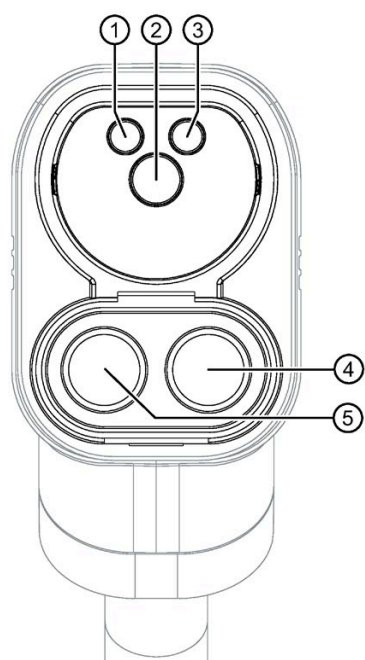


Figure 3-4 Charging contacts

No.	Contact	Use
①	Control Pilot (CP)	Vehicle and charging station communicate via the CP signal contact.
②	Protective Earth (PE)	The PE ground contact protects in case of an electrically faulty cable connection.
③	Proximity Pilot (PP)	The charging station and the electric vehicle recognize the maximum charging current transferred by the charging cable via the PP contact.
④	Direct Current Minus (DC-)	The DC- contact forms the negative pole for DC charging.
⑤	Direct Current Plus (DC+)	The DC+ contact forms the positive pole for DC charging.

Locking

Charging mode 4 for DC charging according to the standard IEC 62196-3 requires secure locking of the plug-in connection between the charging plug and the charging socket of the vehicle during the entire charging process. An electromechanical actuator, therefore, automatically locks the plug-in connection in the electric vehicle after plugging in.

Temperature monitoring

The integrated temperature monitoring of the charging cable ensures safe transfer of the charging power. Temperature sensors monitor the charging contacts DC+ and DC- during the entire charging process. If the temperature at one of the charging contacts rises above 90 °C, the charge control system switches off the power supply to the charging cable immediately and safely.

3.5 Decentralized charge points

Depending on the equipment variant, the charging station is designed to supply various distributed charge points for electric vehicles with charging current via a fixed DC cable.

Charge points

You can operate one of the following charge points for electric vehicles at the charging station:

- SICHARGE UC Dispenser
- SICHARGE MastHood
- SICHARGE MastPanto

Routing cables between the charging station and the charge point

The DC charging cables from the charging station to the SICHARGE UC Dispenser, SICHARGE MastHood, or SICHARGE MastPanto must be installed either underground or routed directly on the ground. We recommend using shielded cables when routing cables above ground to reduce any electromagnetic radiation of the cables. If there is still interference in the frequency spectrum, further measures may be necessary, for example, using EMC filters or ferrites, which must be attached to the starting point of the DC charging cable.

Additional information

For more information on connecting and operating charge points together with the charging station, refer to the following documentation:

- SICHARGE UC Dispenser operating instructions
- SICHARGE MastHood operating instructions
- SICHARGE MastPanto operating instructions

3.6 Electrical protection devices

The charging station is equipped with several electrical protection devices.

Overvoltage protection

The charging station has comprehensive protection against overvoltages from the distribution network. Surge arresters with short response times protect each line conductor of the power cable against overvoltages. In addition, the control system of the charging station constantly monitors the mains voltage. If the mains voltage exceeds or falls below the permissible limits, the charging station interrupts a charging process in progress or does not start the charging process.

Overload protection

The charging station constantly monitors the input current and the output current. If a measured current exceeds the limit values during a charging process, the charging station stops the charging process. The output contactors are opened so that no current flows to the vehicle. For increased safety, the input contactors are opened and the converter is thus disconnected from the input.

The charging station and the vehicle are also protected by a circuit breaker that opens in the event of an overcurrent at the input, as well as two output fuses (one per output) that open in the event of an overcurrent at the output.

Insulation monitoring

To ensure that an electric vehicle is safe, the vehicle's high-voltage electrical system must not be grounded via electrically conductive material. For this reason, an insulation monitoring device in the charging station constantly monitors the resistance between the DC+ and DC- contacts to earth. If this resistance falls below the permissible limit value, the insulation monitoring device switches off the output current. In addition, the insulation monitoring device sends a message to the Siemens control system. For safety reasons, the charging station switches to the safe DC shutdown state. The charging station can no longer be operated in the DC shutdown state. To reset the charging station, the user must confirm the alarm. When the alarm disappears, the charging station is ready for use again. If the alarm remains active, there is still an error and the station is not ready for operation. You will find further information in "Handling alarms and errors (Page 77)".

Preparing for use

4.1 Checking incoming goods

4.1.1 Checking the delivery for completeness and correctness

When the carrier delivers the charging station, immediately perform an incoming goods inspection.

Checking delivery

Start the incoming goods inspection with the following steps:

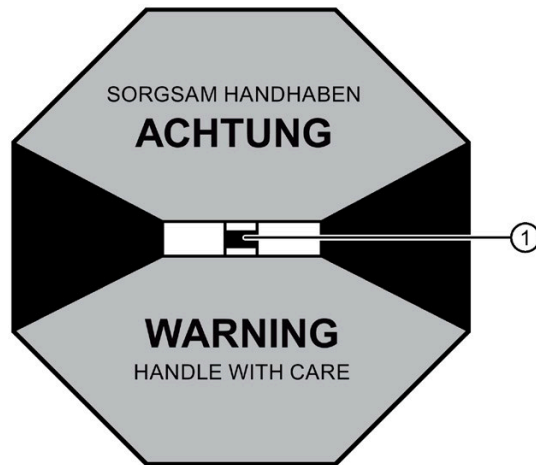
- Check the delivery for completeness.
- Check that the shipping documents match the items delivered.

4.1.2 Checking the transport packaging

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

Checking the shock indicator

During transport, a transport pallet with shock absorbers protects the charging station from shocks and vibrations. However, the effect of extreme G-forces can overload the shock absorbers. A shock indicator is attached to the transport packaging of the charging station to detect the occurrence of such a damaging event.



① Indicator tube

Figure 4-1 Schematic example: Shock indicator

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

Perform a visual inspection of the shock indicator as follows:

1. Check whether there is a shock indicator on the transport packaging.
2. Check whether the glass tube in the middle of the indicator has turned red.
3. Report any red colored or missing indicator to the carrier immediately.

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

Check the overall transport packaging

After you have checked the shock indicator, continue checking the incoming goods with the visual inspection of the overall transport packaging.

4.1.3 Unpackaging the charging station

Depending on the transport route, the forwarding agent delivers the charging station in different transport packaging.

Removing packaging for road transport

To remove the packaging, proceed as follows:

1. Remove the transport film.
2. Remove the edge protection strips.
3. Remove the spacers.

Remove packaging for air transport

To remove the packaging, proceed as follows:

1. Remove the screws from the side panel of the packaging.
2. Take off the side panel.
3. Remove the cover of the transport packaging.

Remove the packaging for sea transport

To remove the packaging, proceed as follows:

1. Remove the aluminum compound foil.
2. Remove the screws from the side panel of the packaging.
3. Take off the side panel.
4. Remove the cover of the transport packaging.

4.1.4 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

4.2 Location planning

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

Selection criteria for a safe location

Select the location of the charging station so that all actions around charging are always safe. The user must be able to connect the vehicle without using extension cables. The charging station, therefore, must be located in the immediate vicinity of the charging areas but without itself posing a danger to persons or vehicles.

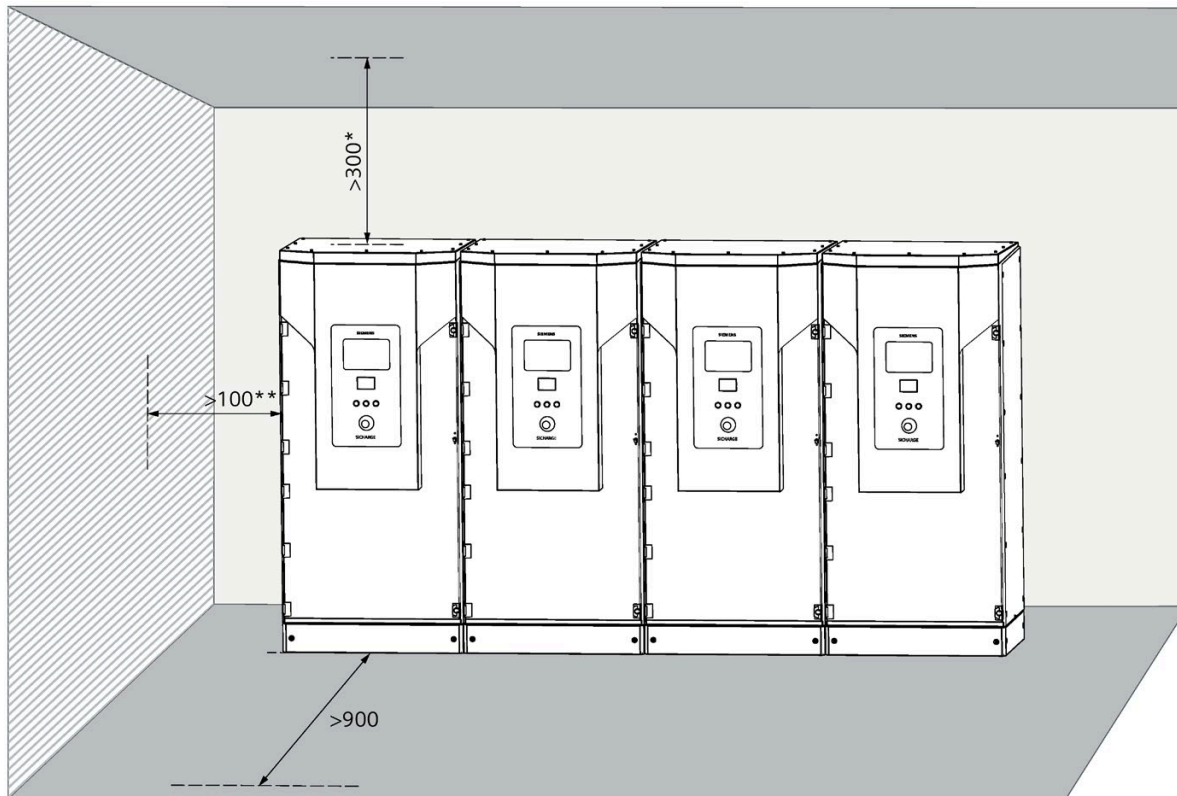
Properties of the base area

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

- Level
- Dry
- Sufficiently solid and capable of bearing the load (e.g. concrete area in quality class C30/37)

Minimum clearances

To ensure operation, maintenance and ventilation of the charging station, you need to maintain the following minimum clearances (in mm):



- *) The distance is required to allow sufficient space for raising and lowering the charging station during assembly and installation.
- **) The distance is required so that the control cabinet door can be opened at an angle of more than 90 degrees. Smaller distances are permissible and result in smaller opening angles.

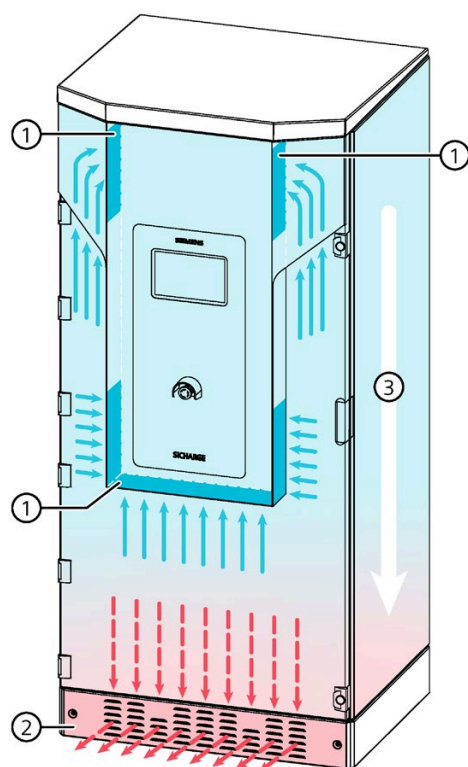
Figure 4-2 Minimum clearances

Maximum allowable temperature at air inlet

The maximum permissible temperature in the control cabinet is 45 °C. When the temperature rises above 45 °C, the rated output is reduced. Make sure that the ambient temperature does not exceed the maximum permissible temperature.

Direction of air flow

The supply air enters via the fan in the front of the charging station. The exhaust air exits through outlets at the front in the bottom section of the charging station. For good cooling, avoid recirculation of the exhaust air.



- ① Supply air openings
- ② Exhaust air opening
- ③ Exhaust air direction

Electrical installation

The charging station is designed for connection to the low-voltage network (400 V). Connect the charging station to the electrical distributor via a supply line dimensioned for the expected current load.

The following table provides a recommendation for the cable cross-section under "Installation type in ground".

The fuse size must be suitable for the selected cable and larger than the input fuse of the charging station.

Observe the maximum total length of the cable of 100 m.

Lay the cables carrying current separately and with a distance of at least 20 cm from the communication cables.

Note

Installer is responsible for calculation and design

The installer is responsible for calculating and implementing the connection.

Connection of the charging station must comply with standards and regulations.

Table 4- 1 Suggested cable cross-sections

Area	Function		Charging station	Cable type
Supply line	AC400V connection	L1/L2/L3/PE	1 x 4 x 95 mm ²	0.6/1.0kV, Cu/XLPE/AWA/PVC
Charging station - Dispenser	DC750V connection	L+	1 x 1 x 95 mm ²	0.6/1.0kV, Cu/XLPE/AWA/PVC
Charging station - Dispenser	DC750V connection	L-	1 x 1 x 95 mm ²	0.6/1.0kV, Cu/XLPE/AWA/PVC
Charging station - Dispenser	Grounding	PE	1 x 1 x 70 mm ²	Cu/PVC (Y/G)
Charging station - Dispenser	AC230V-AUX supply	L/N/PE	1 x 3 x 2.5 mm ²	0.3/0.5 kV,Cu/PVC
Charging station - Dispenser	Communication		- RJ45 CAT 6 (TP) - or - F.O. 50/125, OM4, 4 fib.	LIYCY (TP)
Charging station - MastHood	DC750V connection	L+	1 x 1 x 95 mm ²	0.6/1.0kV, Cu/XLPE/AWA/PVC
Charging station - MastHood	DC750V connection	L-	1 x 1 x 95 mm ²	0.6/1.0kV, Cu/XLPE/AWA/PVC
Charging station - MastHood	Grounding	PE	1 x 1 x 70 mm ²	Cu/PVC (Y/G)
Charging station - MastHood	Communication		- RJ45 CAT 6 (TP) - or - F.O. 50/125, OM4, 4 fib.	LIYCY (TP)
Charging station - MastHood	AC230V-AUX supply	L/N/PE	1 x 3 x 2.5 mm ²	0.3/0.5 kV,Cu/PVC
Charging station - Mast Panto	DC750V connection	L+	1 x 1 x 95 mm ²	0.6/1.0kV, Cu/XLPE/AWA/PVC

Area	Function		Charging station	Cable type
Charging station - Mast Panto	DC750V connection	L-	1 x 1 x 95 mm ²	0.6/1.0kV, Cu/XLPE/AWA/PVC
Charging station - Mast Panto	Grounding	PE	1 x 1 x 70 mm ²	Cu/PVC (YIG)
Charging station - Mast Panto	Communication		- RJ45 CAT 6 (TP) or - F.O. 50/125, OM4, 4 fib.	LIYCY (TP)
Charging station - Mast Panto	AC230V-AUX supply	L/N/PE	1 x 3 x 2.5 mm ²	0.3/0.5 kV, Cu/PVC

The cable cross-sections relate to the installation type "Installation type in ground".

Cable routing

- Low voltage:
 - The charging station is designed for connection to the low-voltage network (400 V AC, 50 Hz, $\pm 10\%$). Connect the charging station to the electrical distributor via a properly dimensioned supply line.
 - The SICHARGE UC MastHood, MastPanto or Dispenser is designed for connection to the low-voltage network (230 V AC, 50 Hz, $\pm 10\%$) via the charging station. Connect the device to the charging station using a properly dimensioned supply line.
- Direct voltage:
Connect the charging station with the SICHARGE UC MastHood, MastPanto or Dispenser via a properly dimensioned cable.

Note

Routing of DC cables to prevent radio interference

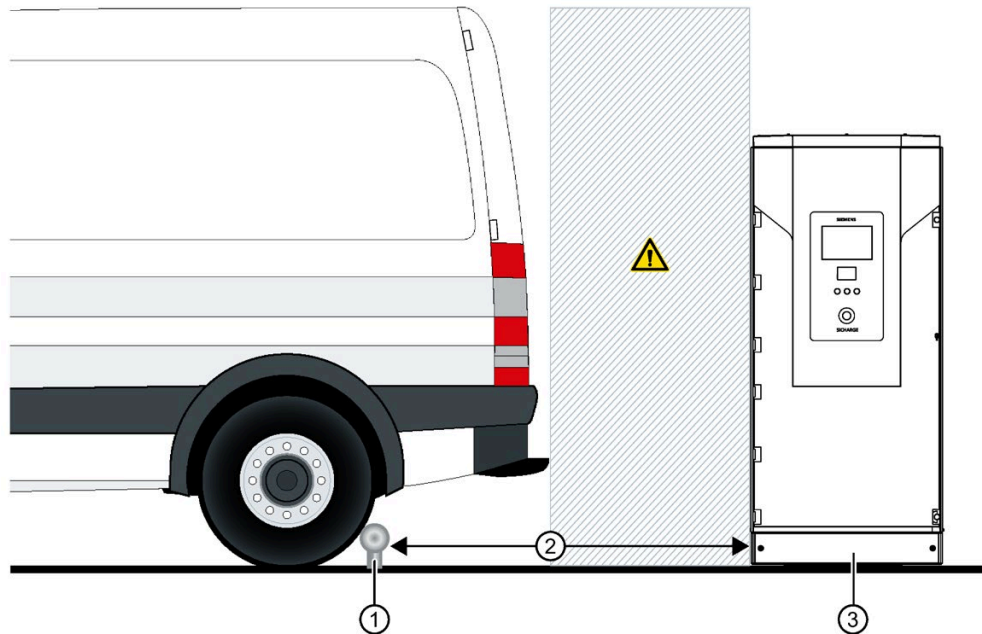
Lay the DC charging cables from the charging station to the SICHARGE UC MastHood, MastPanto or Dispenser underground.

In exceptional cases, you can fasten the DC charging cables on the ground with suitable protection. We recommend using shielded cables when routing cables above ground to reduce the electromagnetic radiation of the cables.

- Ethernet:
Connect the charging station to the SICHARGE UC MastHood, MastPanto or Dispenser using an Ethernet cable.
Specifications for laying of cables:
 - Low-voltage and DC cables must be installed shielded from the Ethernet cable.
 - Separate cable routing to low-voltage and DC cables (min. 15 cm).
 - Lay the Ethernet cable close to grounded cabinet components.
 - Ethernet cables, low-voltage and DC cables may only cross each other at 90° angles.
 - Ground the shielding of the Ethernet cable at both cable ends.

Bumper

To protect the charging station against contact by vehicles, install a bumper ①.



- ① Bumper
- ② Safety clearance
- ③ Charging station

Figure 4-3 Example: Correct position of the bumper and charging station

Plan for bumpers based on the dimensions of the vehicles used. The bumper must stop the vehicle before the vehicle overhang touches the charging station ③. The bumper must not interfere with the opening of the charging station's cabinet door.

4.3 Preparing the base area

In order to secure the charging station securely on the intended base area, you need to prepare the base area.

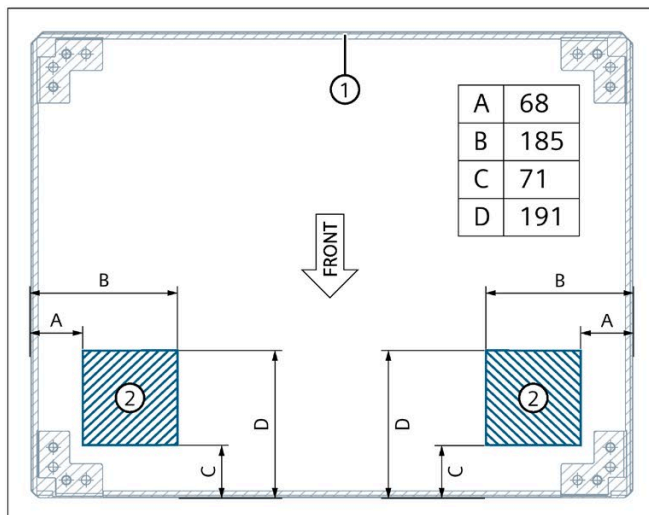
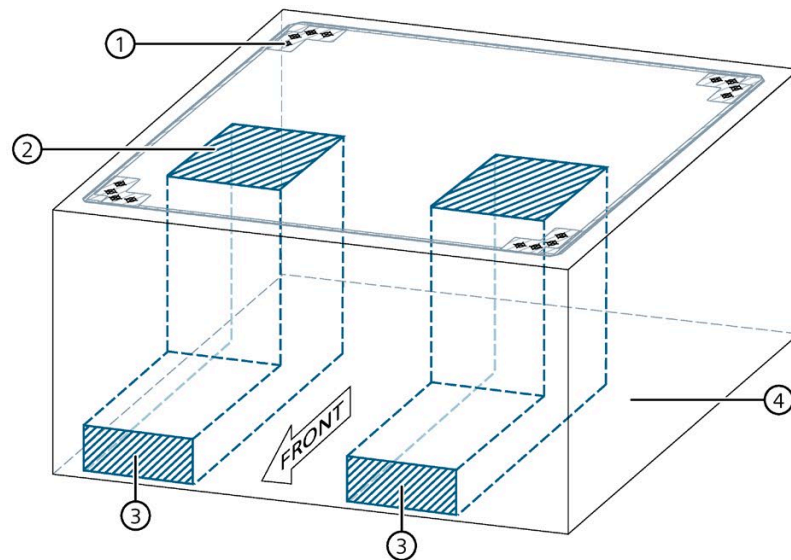
Example of foundation

Make a static calculation for the base area to ensure stability. This calculation must include the following factors, among others:

- Ground survey
- Wind load
- Snow load
- Earthquakes

4.3 Preparing the base area

The dimensions and design of the foundation are determined by the static calculation. The figure below shows a schematic example of the design of the foundation made of reinforced concrete. The cable routing ③ serves only as an example. Plan cable routing in accordance with the local conditions. The dimensions for the area of cable laying are specified in mm in the figure.



- ① Base area of charging station
- ② Area for the cable routing
- ③ Area for cable inlet
- ④ Reinforced concrete

Figure 4-4 Example for footprint and foundation

Drill holes for fastening points

The following figure shows the dimensions of the holes for fastening the charging unit.

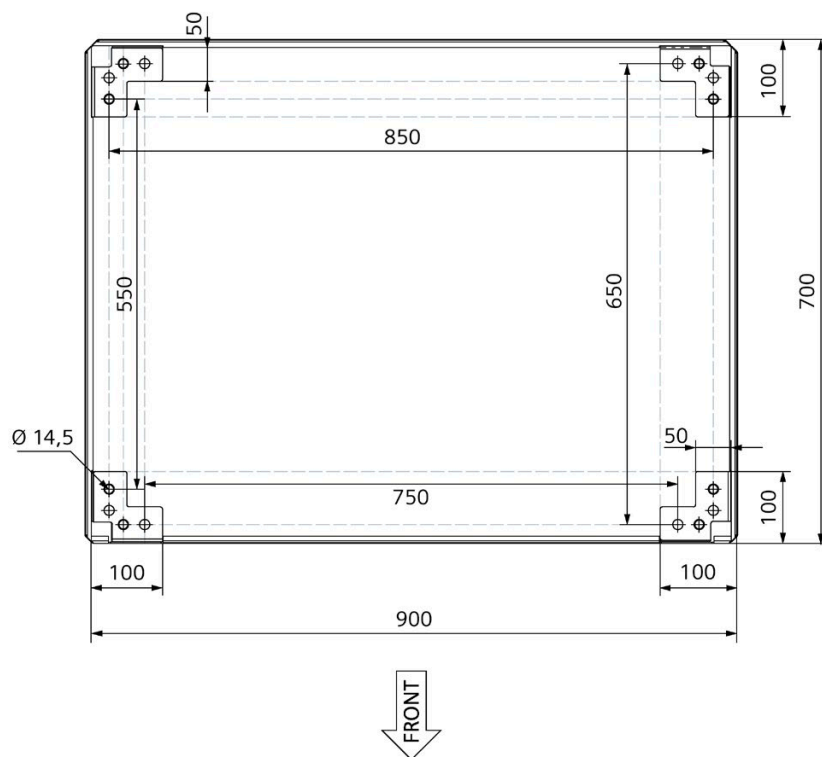


Figure 4-5 Fastening points

Screws for securing the charging station

To attach the charging station to the base area (Page 46), you need the following fasteners:

- 8 M12 screws
- 8 M12 washers
- 8 M12 cement sockets

4.4 Storing the charging station

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 indoors. The storage location must meet the following conditions:

- Horizontal surface
- Protection from mechanical stress (for example due to shocks, vibrations)
- Dust-free
- Low-pollutant atmosphere
- Room temperature as constant as possible
- Permissible room temperature range: -40 °C to +70 °C
- Permissible relative humidity: 5% to 95% (non-condensing)

Long-term storage

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

If you store the charging station for a longer period, also observe the following:

- Use the original transport packaging.
- Regularly check that the actual storage conditions do not allow condensation to form.
- Check the charging station at regular intervals for damage.

4.5 Transporting the charging station

! DANGER

Danger to life due to improper transport

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

- Only qualified persons may transport the charging station.
- Only use approved means of transport and hoisting gear.
- Pay attention to the center of gravity of the charging station.
- Only transport the charging station in a vertical position.
- Note the weight of the charging station.

! WARNING

Danger to life when standing under lifted loads

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

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

Note

Transporting the charging station on the transport pallet

The transport pallet protects the charging station from damage and facilitates transport.

- Therefore, always transport the charging station on the transport pallet.

Transporting the charging station with a forklift

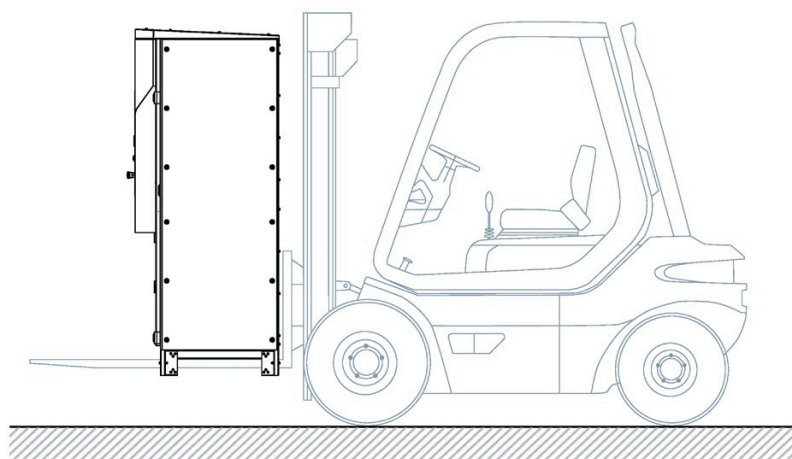


Figure 4-6 Forklift transport

4.5 Transporting the charging station

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

1. Drive into the transport pallet with the forks on the transverse or longitudinal side.
2. Drive in until the forks protrude on the other side of the pallet.
3. Lift the charging station vertically.
4. Transport the charging station upright to the site.

Transporting the charging station with a crane

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

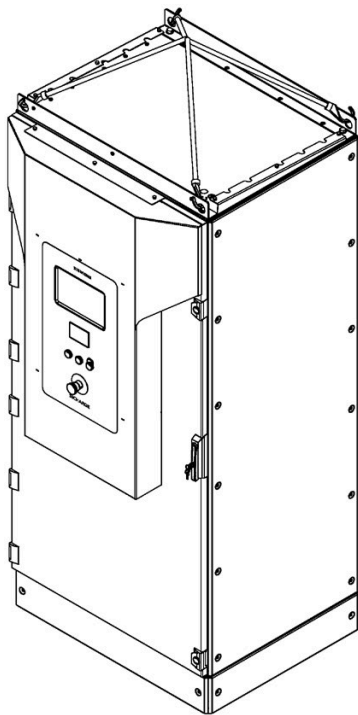
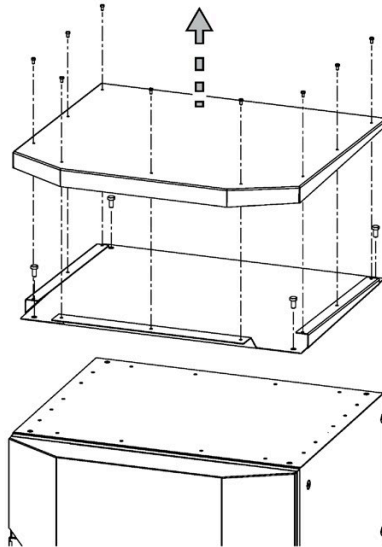


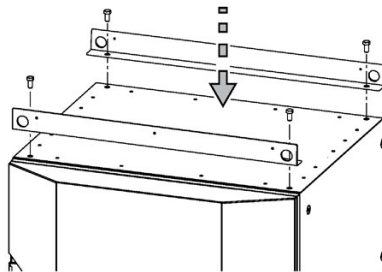
Figure 4-7 Transport with crane

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

1. Remove the cover on the top by loosening the 9 screws and removing the cover plate.



2. Remove the plate by loosening the 4 screws.
3. Mount the two supplied rails and fix them to the outer holes with two screws each.



4. Hook the hoisting gear into the crane lugs.
5. Lift the charging station vertically.
6. Transport the charging station hanging upright to the site.
7. Remove the two rails and mount the cover plate.

Installation

5.1 Preparing the cable gland plate

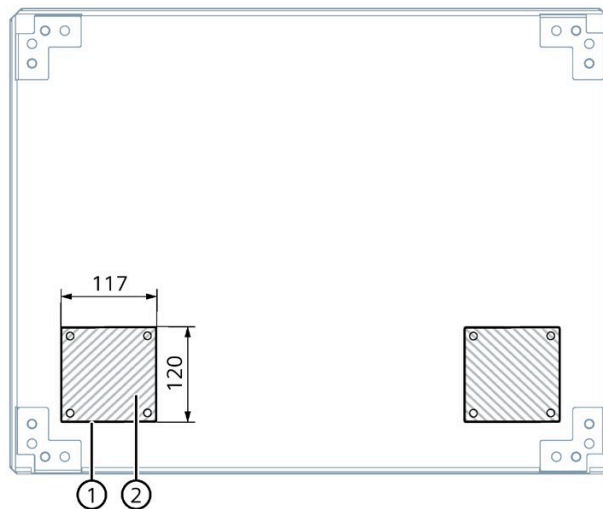
Remove the protective cover

To make the cable gland accessible, first remove the lowest protective cover inside the charging station:

1. Open the cabinet door.
To prevent the door from closing suddenly, fix it in place with suitable aids.
2. Remove the handle of the main switch.
3. Unscrew the fastening screws of the lowest protective cover.
4. Remove the protective cover.

Preparing the cable gland plate

The figure below shows the cable gland plate.



- ① Cable gland plate
- ② Cable glands area

Figure 5-1 Cable gland plate

1. Mark the drill holes for the cable glands.
2. Loosen the four fastening screws of the cable gland plate.
3. Remove the cable gland plate from the cabinet.
4. Drill the holes for all connecting cables in the size of the cable glands used.
5. Mount the cable glands.

5.2 Positioning the charging station

To set up the charging station at the site, you need to lift the charging station from the transport pallet. Then transport the charging station to the prepared base area.

WARNING

Danger to life when standing under lifted loads

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

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

DANGER

Danger to life due to improper lifting

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

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

Requirement

- You have mounted the rails for the crane.
- You have removed the cable bushing plates.
- The cables for the connections protrude sufficiently from the foundation.

Position the charging station above the base

To position the charging station above the foundation, follow these steps:

1. Remove the cover on the top by loosening the 9 screws and removing the cover plate.
2. Mount the two supplied rails and fix them to the outer holes with two screws each.
3. Attach the hoisting gear to the crane eyes and lift the charging station vertically upwards with the crane.
4. Transport the charging station in a vertical position to the base.
5. Position the charging station above the base.

Use suitable tools (e.g. wooden blocks) to secure the charging station against falling.

5.3 Inserting the connecting cable into the cabinet

After positioning the charging station on the base for the first time, insert the connection cables into the cabinet of the charging station.

Requirement

- You have positioned the charging station with a crane above the base.
- You have removed the cable bushing plates.
- The cables for the connections protrude sufficiently from the foundation.

Inserting the connecting cable into the cabinet

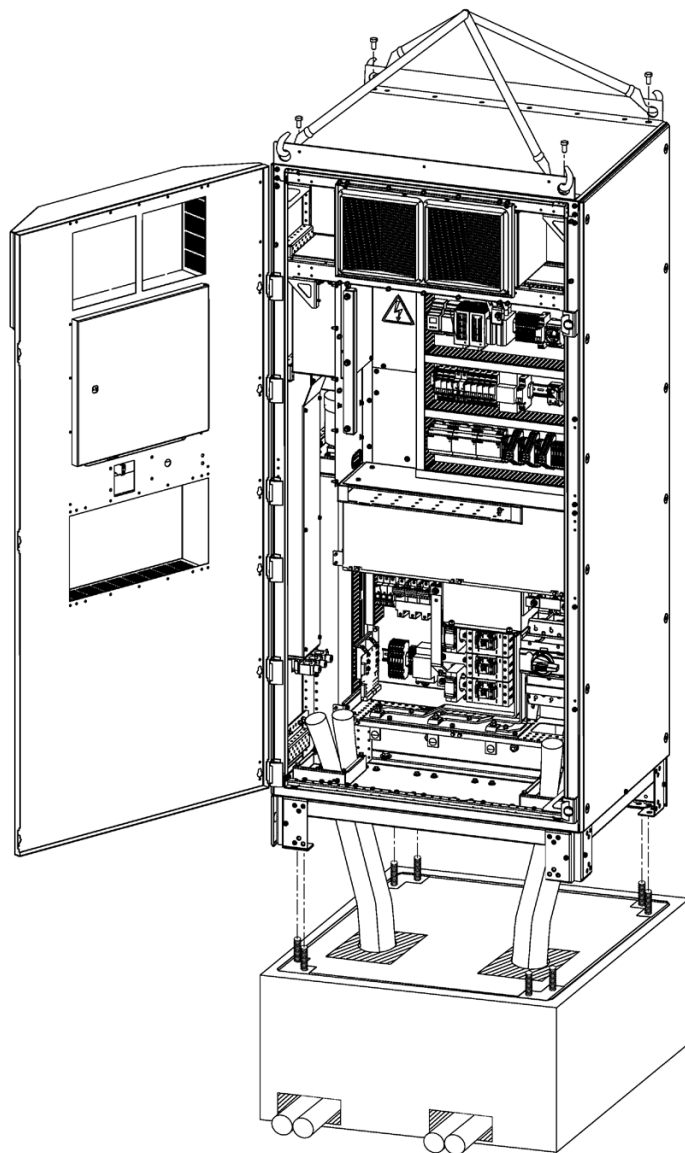


Figure 5-2 Inserting the connecting cable into the cabinet

To insert the cables for the connections into the cabinet, proceed as follows:

1. Open the cabinet door.

To prevent the door from closing suddenly, fix it in place with suitable aids.

2. Slowly lower the charging station and guide the cables through the openings.
3. Lower the charging station onto the base. Make sure that the foundation anchors are guided through the drill holes of the charging station.

See section "Securing the charging station (Page 46)".

5.4 Securing the charging station

Guiding the cables through the cable glands

1. Guide all cables used through the cable glands of the cable gland plate.
2. Slide the cable gland plate to the cutout from which it was removed.
3. Screw the cable gland plate to the cabinet with the four fastening screws.
4. Tighten the cable glands on the cables.

5.4 Securing the charging station

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

Required tools and fasteners

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

- Torque wrench
- Socket: Hexagonal, width across flats 19

You will also need the following fasteners:

- 8 M18 screws, property class 8.8
- 8 washers
- 8 cement sockets

Securing the charging station

To secure the charging station, follow these steps:

1. Insert the fastening screws into the drill holes.
2. Tighten the screws.

Tightening torque: 81 Nm

Result

The charging station is securely fixed to the base.

To remove the transport aids, proceed as follows:

1. Remove the hoisting gear from the crane rails.
2. Remove the two rails.
3. Mount the cover plate on the charging station.

5.5 Install the cable gland plate

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

Pull the mains cable through the cable gland plate

1. Open the device door.
2. Pick up the cable gland plate.
3. Pull the power cable through the hole in the cable gland plate.

Pull the DC cable through the cable gland plate¹

If you are installing a charging station for charging via decentralized charge points, pull the DC cable through the hole in the cable gland plate.

¹⁾ Only applies to equipment variants of the charging station that are set up for SICHARGE UC Dispenser, SICHARGE MastHood, or SICHARGE MastPanto.

Pulling the Ethernet cable through the cable gland plate¹

If you are installing a charging station for charging via distributed charge points, pull the Ethernet cable through the opening in the cable gland plate.

¹⁾ Only applies to equipment variants of the charging station that are set up for SICHARGE UC Dispenser, SICHARGE MastHood, or SICHARGE MastPanto.

Pull the auxiliary current cable through the cable gland plate¹

If you are installing a charging station for charging via decentralized charge points, pull the auxiliary current cable through the hole in the cable gland plate.

¹⁾ Only applies to equipment variants of the charging station that are set up for SICHARGE UC Dispenser, SICHARGE MastHood, or SICHARGE MastPanto.

Install the cable gland plate

1. Push the cable gland plate onto the fastening screws in the cabinet floor.
2. Screw the nuts onto the fastening screws.
3. Tighten all nuts.

5.6 Re-attaching protective cover

Once you have finished working on the connections of the charging station, you must reassemble the protective cover for the interior.

Mounting the protective cover

To fit the protective cover, proceed as follows:

1. Position the protective cover.
2. Tighten the fastening screws of the protective cover.
3. Replace the main switch handle on the handle extension.

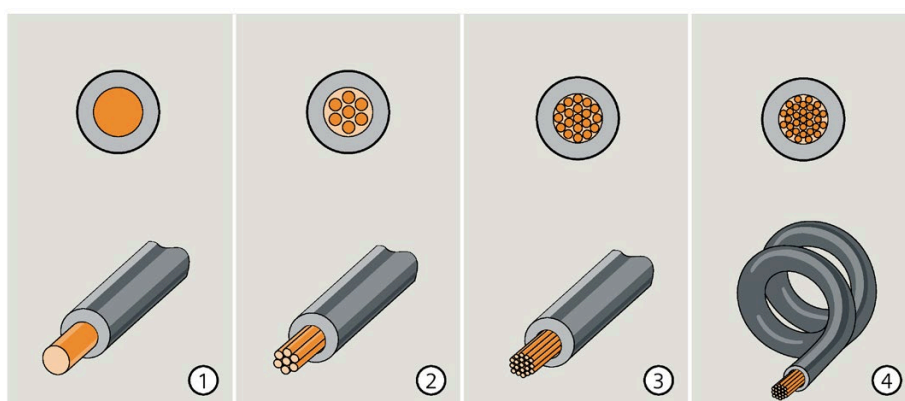
Connecting

6.1 General information about power cables

Cable designation and classes

Flexibility is a design feature of a cable. This flexibility primarily depends on the number of conductors inside the cable.

Cable classes acc. to IEC 60228:



- ① Class 1 - cables with a single-strand conductor in the core
- ② Class 2 - cables with multi-strand conductors in the core
- ③ Class 5 - cables with fine-strand conductors in the core
- ④ Class 6 - cables with multiple extra fine-strand conductors in the core.

Figure 6-1 Cable classes

6.1 General information about power cables

Class 1 and class 2 cables are rigid cables with a single strand or multiple strands. They are used mainly for smaller cable bending radii and fixed or rigid components.

Flexible class 5 and class 6 cables allow for larger cable bending radii.

Low-voltage power distribution uses mainly cables of class 1, class 2, class 5, and class 6.

Single-strand cables of class 1 are usually only used up to a cross-section of 16 mm².

Note: Single-strand cables of class 1 and class 2 have the same conductor cross-section as cables of class 5 and class 6. However, they have a smaller diameter. This may result in clamping cables of equal diameters but different conductor cross-sections.

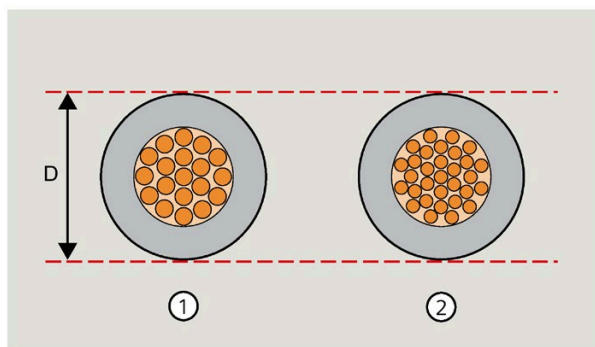


Figure 6-2 Conductor classes

Single-strand and multi-strand sector-shaped conductors are also used.

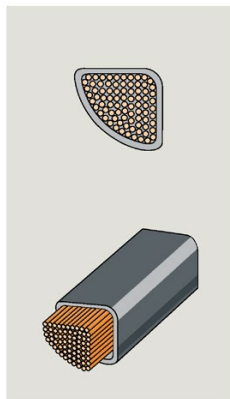


Figure 6-3 Sector-shaped conductor

Cable lugs and end sleeves

Cable lugs and end sleeves are also used to reliably connect cables to compact circuit breakers. They ensure a solid connection to the compact circuit breaker.

Before the cable lug or end sleeve is attached to the cable, the cable is first stripped to size L. Use crimp-type cable lugs according to DIN 46234.

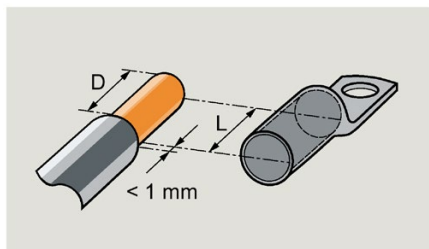


Figure 6-4 Stripping insulation

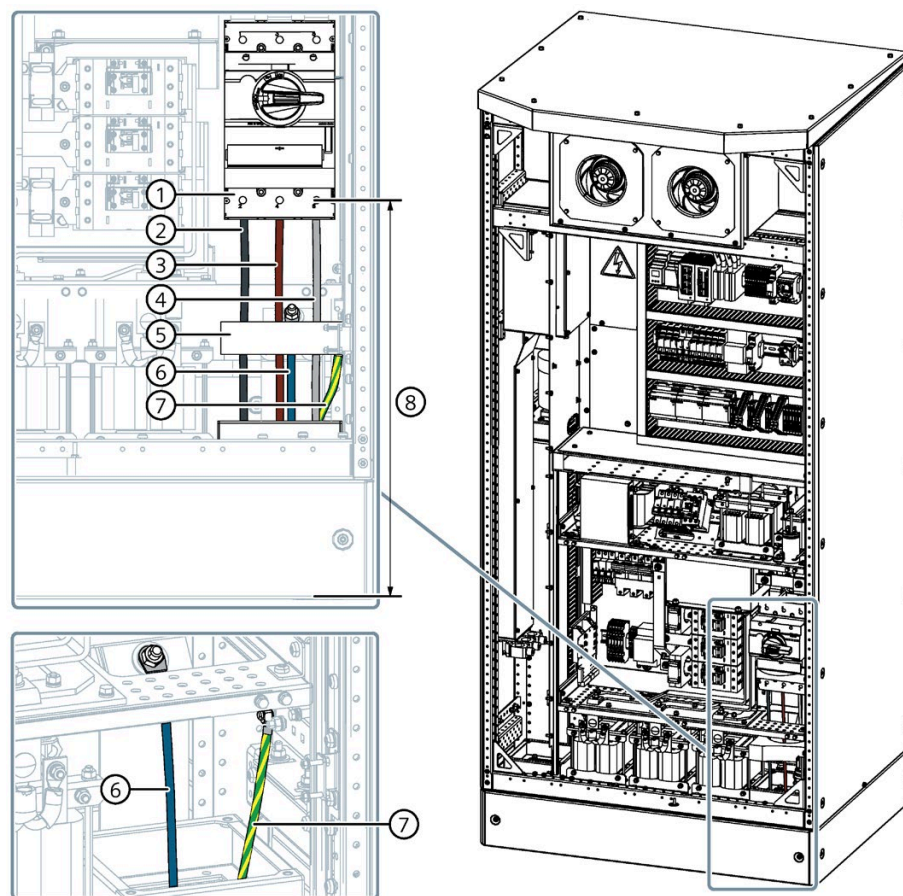
6.2 Connecting the power supply cable

To connect the charging station to the distribution network, connect the power cable to the main switch of the charging station.

Requirements

- You have removed the bottom protective cover.
- You have inserted the power cable into the cabinet.
- Cable cross-sections from 50 mm² to a maximum of 300 mm² can be connected.

Connections of the power supply cable



- ① Terminals L1 (-Q1:2); L2 (-Q1:4); L3 (-Q1:6)
- ② L1
- ③ L2
- ④ L3
- ⑤ Summation current transformer
- ⑥ Connection for neutral conductor
- ⑦ PE ground connection (PE cabinet)
- ⑧ Distance from base to connection points 498 mm

Figure 6-5 I/Os

Connecting the PE conductor

First connect the protective conductor of the power cable to the ground terminal:

1. Loosen the four screws of the plate of the summation current transformer.
2. To expose the ground connection, remove the summation current transformer with plate.
3. Remove the sheath of the power cable to a length of approx. 20 cm.
4. Select an M12-size cable lug for the corresponding conductor cross-section.
5. Strip off the end of the conductor so that the remaining insulation reaches up to the cable lug.
6. Fasten the cable lug correctly to the end of the conductor.
7. Plug the cable lug onto the bolt of the PE cabinet ground connection ⑦.
8. Tighten the fastening nut with the required torque:
 - Size of fastening nut: M12
 - Required tightening torque: 20 Nm ($\pm 10\%$)
9. Mount the summation current transformer with plate.

Connect conductors L1, L2, L3

To connect a conductor, proceed as follows:

1. Select an M10-size cable lug for the corresponding conductor cross-section.
2. Strip off the end of the conductor so that the remaining insulation reaches up to the cable lug.
3. Fasten the cable lug correctly to the end of the conductor.
4. If necessary, insulate the cable lug sleeve to maintain the minimum clearances and creepage distance.
5. Feed the cables through the summation current transformer.
6. Insert the cable lug into the -XL-2 terminal of the main switch.
7. Insert the connection bolt through the screw holes of the cable lug and terminal.
8. Tighten the fastening nut with the required torque:
 - Size of fastening nut: M10
 - Required tightening torque: 13 Nm ($\pm 10\%$)

6.3 Connecting DC cables

To connect the charging station to the DC cable to supply the charge point with power, connect the DC cable to the DC+ and DC- connectors of the charging station.

Requirements

- You have removed the handle of the main switch.
- You have removed the bottom protective cover.

Connections for the DC cable

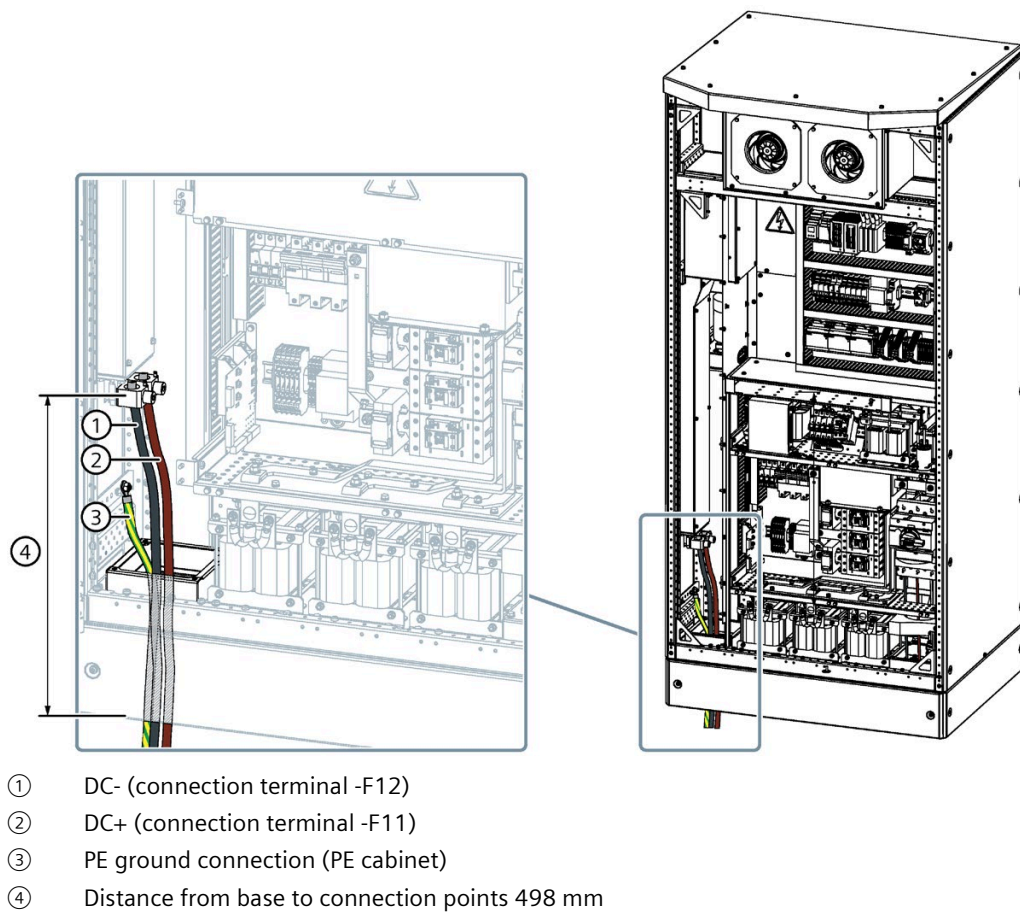


Figure 6-6 Connections for the DC cable

Connecting the PE conductor

First connect the PE conductor of the DC cable to the ground connection:

1. Remove the sheath of the power cable to a length of approx. 20 cm.
2. Select an M12-size cable lug for the corresponding conductor cross-section.
3. Strip off the end of the conductor so that the remaining insulation reaches up to the cable lug.
4. Fasten the cable lug correctly to the end of the conductor.
5. Plug the cable lug onto the bolt of the PE cabinet ground connection ③.
6. Tighten the fastening nut with the required torque:
 - Size of fastening nut: M12
 - Required tightening torque: 20 Nm

Connecting DC+ and DC- conductors

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

To connect a DC conductor, proceed as follows:

1. Select an M8-size cable lug for the corresponding conductor cross-section.
2. Strip off the end of the conductor so that the remaining insulation reaches up to the cable lug.
3. Fasten the cable lug correctly to the end of the conductor.
4. If necessary, insulate the cable lug sleeve to maintain the minimum clearances and creepage distance.
5. Insert the cable lug into the terminal DC- (-F12) ① or DC+ (-F11) ②.
6. Insert the connection bolt through the screw holes of the cable lug and terminal.
7. Tighten the fastening nut with the required torque:
 - Size of fastening nut: M8
 - Required tightening torque: 20 Nm

6.4 Connecting the communication cable

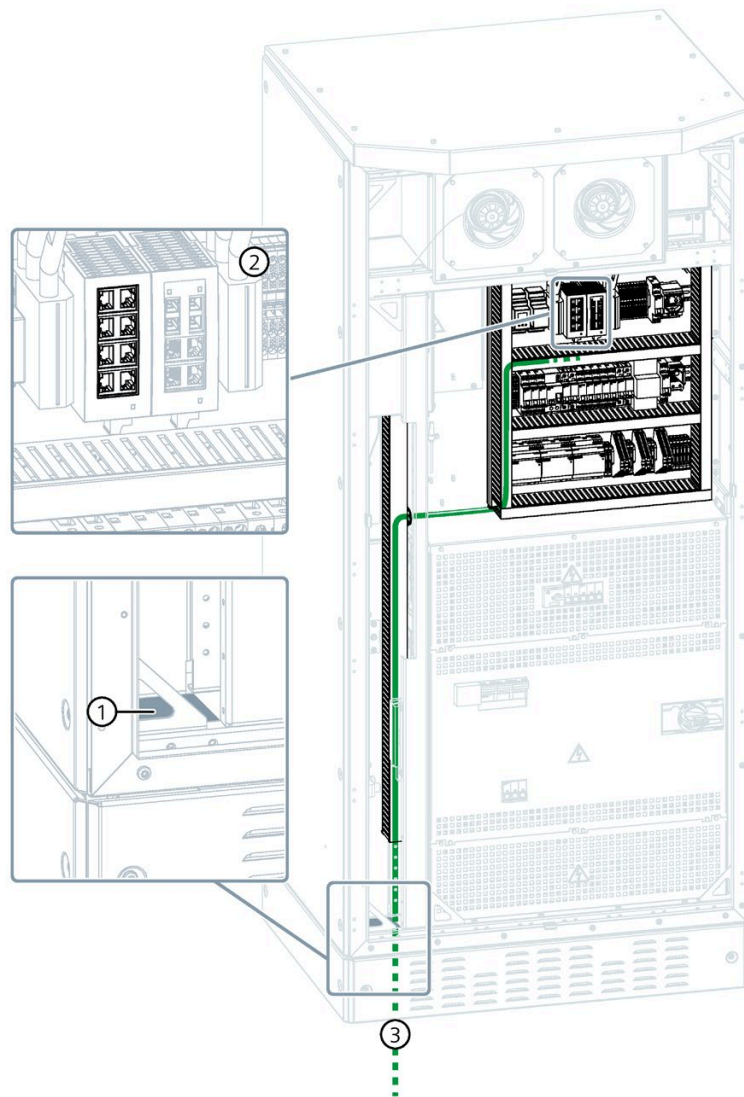
When using the distributed charge points, connect the communication cable to the charging station.

Requirements

- You have removed the bottom protective cover.
- You have inserted the communication cable into the cabinet and guided it upwards through the cable duct on the left side.

Cable routing for the Ethernet cable

The following figure shows an example of an Ethernet switch for connecting an Ethernet cable.



- ① Opening for the cable bushing
- ② SCALANCE Ethernet switch
- ③ Ethernet cable

Figure 6-7 Cable routing for the Ethernet cable

Connecting the Ethernet cable

Insert the RJ45 plug of the Ethernet cable into a free connection of the SCALANCE Ethernet switch.

Connecting the fiber-optic cables

Connect the fiber-optic cables to the optical ports of the SCALANCE Ethernet switch.

6.5 External communication

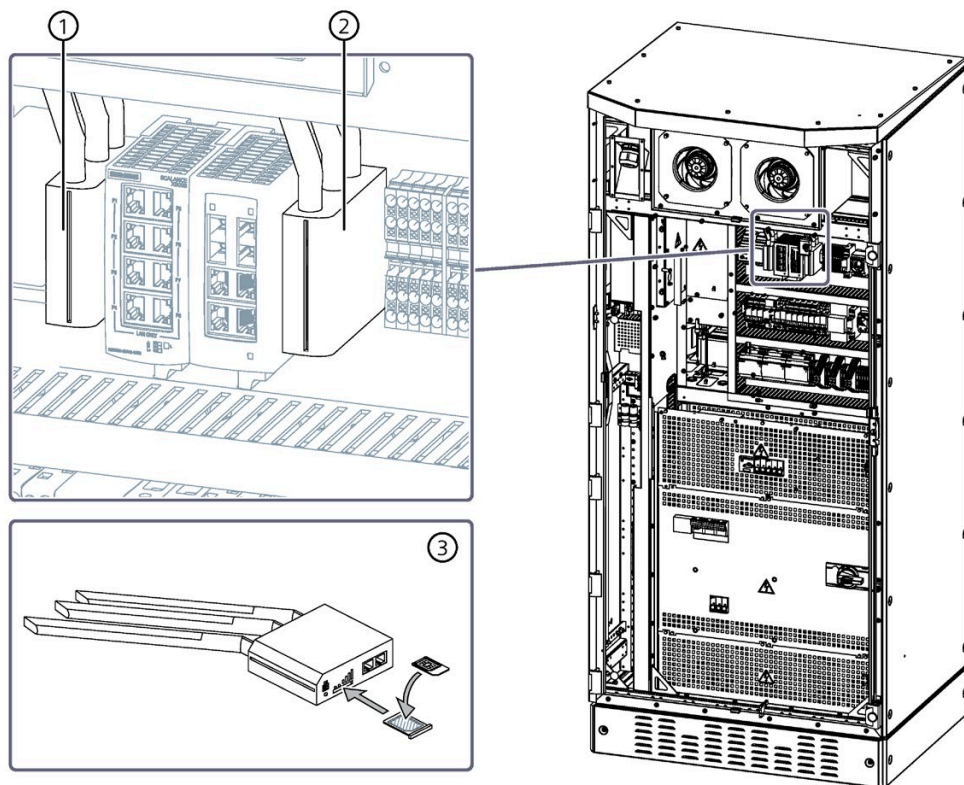
You can equip the charging station with a router.

The router can be installed for the wireless connection to the Siemens Configuration Backend and the OCPP backend.

Router for mobile communication

The slot for the SIM card is located between the LAN ports and the power supply. You can insert or remove the SIM card without removing the router.

The following graphic shows the position of the router in the charging station and the slot for the SIM card.



- ① Router for Siemens backend
- ② Router for customer backend
- ③ Detailed view of the slot for the SIM card

Figure 6-8 Router for mobile communication

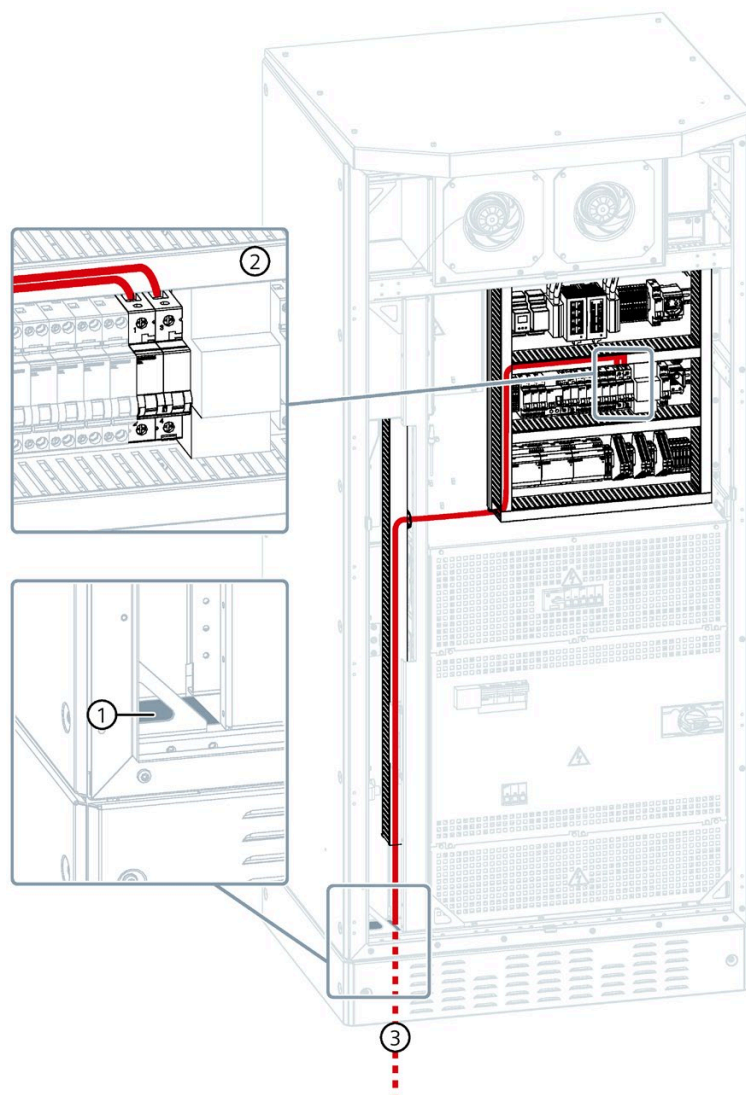
The required SIM card is provided by the operator. An M2M SIM card is recommended.

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

6.6 Connecting the auxiliary power supply

The charging station supplies further charge points with operating current.

Cable routing for the auxiliary current



- ① Opening for the cable bushing
- ② Terminals for the auxiliary power supply
- ③ Cable for the 230 V auxiliary current

Figure 6-9 Cable routing for the auxiliary current

Cable cross-sections up to a maximum of 4.0 mm² can be connected to the terminals for the auxiliary power supply.

Connecting the auxiliary power supply

To connect the L and N cables of the auxiliary power supply, follow these steps:

1. Strip the insulation from the end of the conductor so that the remaining insulation extends up to the ferrule.
2. Properly attach the wire end ferrule to the conductor end.
3. Connect the L conductor of the cable to the "-QDP:2" terminal.
4. Connect the N conductor of the cable to the "-QDP:4" terminal.
5. Make sure that the conductors are firmly connected to the screw terminal connections.

You can find the terminal designations and the connection plan in the circuit diagram and here (Page 95).

Commissioning

7.1 Initial commissioning

The "Initial commissioning" section provides an overview of the activities to be performed during initial commissioning. The following persons may perform these activities:

- Service technicians from Siemens
- External persons trained and commissioned by Siemens

Optical check

Take photos of the installation for the commission report. It is recommended to take pictures of the front and side view of each installed device (charging units, front ends, mast hoods).

You can obtain the commissioning report and checklists from your Siemens partner.

Installation check

! WARNING

Switching off the circuit breaker

Before proceeding with the checklist, make sure the circuit breaker is switched off.

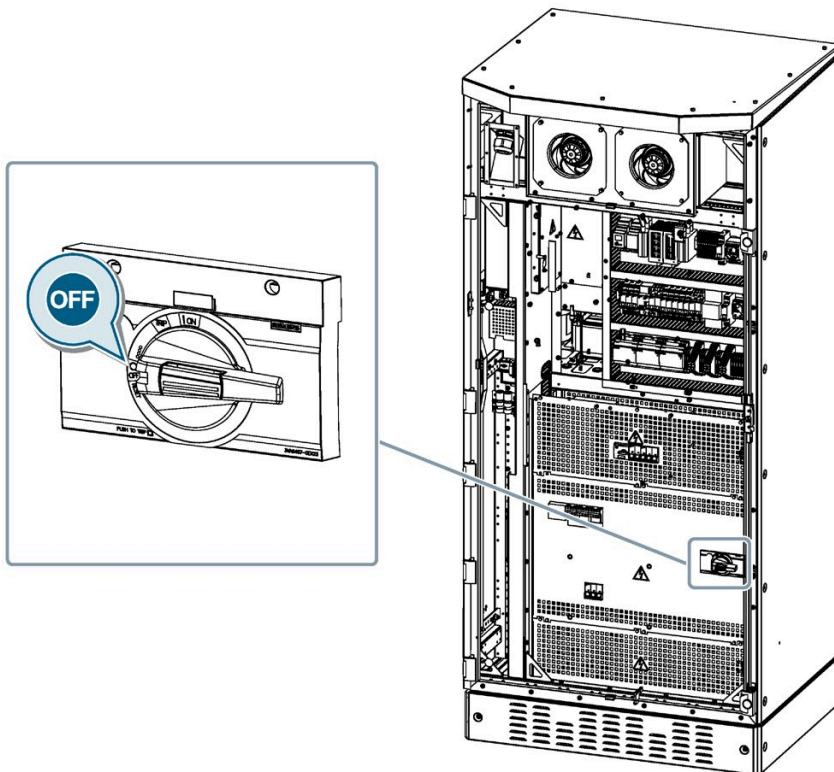


Figure 7-1 Station with OFF position

The following tools and measuring devices are required to check the installation:

- Torque wrench with appropriate attachments
- Multimeter
- Three-phase rotating field measuring device
- Torque measurements
 - Check that anchor bolts are correctly installed on the base of the charging unit
 - Check that the charging unit and the phases are correctly screwed into the circuit breaker.
- Current parameters of the charging unit's main switch.
 - Ensure that the trim pots report the correct overload current and short-circuit current values. Reference to the technical section. You will need to check the crossover to verify the settings.

7.1 Initial commissioning

- Circuit breaker on the control panel (fan grid)
 - Switch off the circuit breaker.
 - Check the input voltage between the phase and protective conductor.
- Rotate and switching on phases
 - Check the phase rotation. The phases must be connected to provide a clockwise rotating field.
 - Switch on the main switch of the charging unit charging station.
 - Ensure that the HMI is activated.

Software verification

The service technician verifies and updates the versions of the following components as needed during initial commissioning:

- Linux Siemens Charger Controller (SiCC)
- Supply Equipment Communication Controller (SECC)
- AC platform
- Output platform
- Fan control platform
- DSP platform

Verification of electrical functionality

The service technician checks the following components and functions during initial commissioning:

- DC shutdown switch
 - Press the DC shutdown switch
 - Alarm message on HMI indicates DC shutdown switch actuation
 - Unlock the DC shutdown switch
 - Alert on HMI is automatically reset
- Check the functionality of AC contactors and DC contactors and the feedback of the contactors on the HMI (optional)

Checking the charging session

Note

A vehicle with low SoC (< 60 %) must be available to proceed with this device.

You need to connect your laptop to the charging station to proceed with this device.

1. Connect the CCS plug to the CCS inlet of the vehicle.
2. Make sure that the charging station is in "Cable check" mode.
 - "Cable check" HMI display
 - The voltage rises to almost 500 V within a few seconds and then goes down to 0 V.
3. Make sure that the charging station is in "Pre-charge" mode.
 - "Pre-charge" HMI display.
 - Voltage ramps up to vehicle battery voltage.
4. Make sure that the charging station is in "Current demand" mode.
 - "Charging" HMI display.
 - Current ramps up to meet the demand of the vehicle.
5. End the session using the dedicated stop button on the HMI.
 - Charging process stops.
 - Charge finished is displayed on the HMI.

Note

The charging station response of 100 % depends on the request from the vehicle.

- If the vehicle requests the charging process to stop at 100 %, the charging station stops.
 - If the vehicle request does not stop the charging process at 100 %, the charging station will continue with the process. The customer then has to stop the process.
-

Operation

8.1 Introduction

For easier operation the charging station is equipped with an HMI to display a user interface. Alternatively, the charging station and dispenser are also available as an equipment variant without HMI.

8.2 Operation via HMI

The user interface on the parent charging station guides you through the charging process. You can change the language of the user interface and make other settings.

Menu bar

The menu bar is available during the entire charging process.



The menu bar consists of the following elements:

-  New alert
If an event generates an alert (Page 73), the information is displayed in the menu bar.
- Date and time
The time is factory set to the UTC time zone. When the charging station is connected to the Internet, the time is synchronized. Information on how to set the time manually can be obtained from your Siemens partner.
-  Settings
To access the general settings (Page 70), press this element.
- 
To change the language of the user interface (Page 65), press this element.

8.2.1 Select language

You can change the language of the user interface using the language selection screen.

Procedure

To change the language, follow these steps:

1. Press the  icon in the menu bar. The current language is displayed next to the icon.

The language selection screen opens.

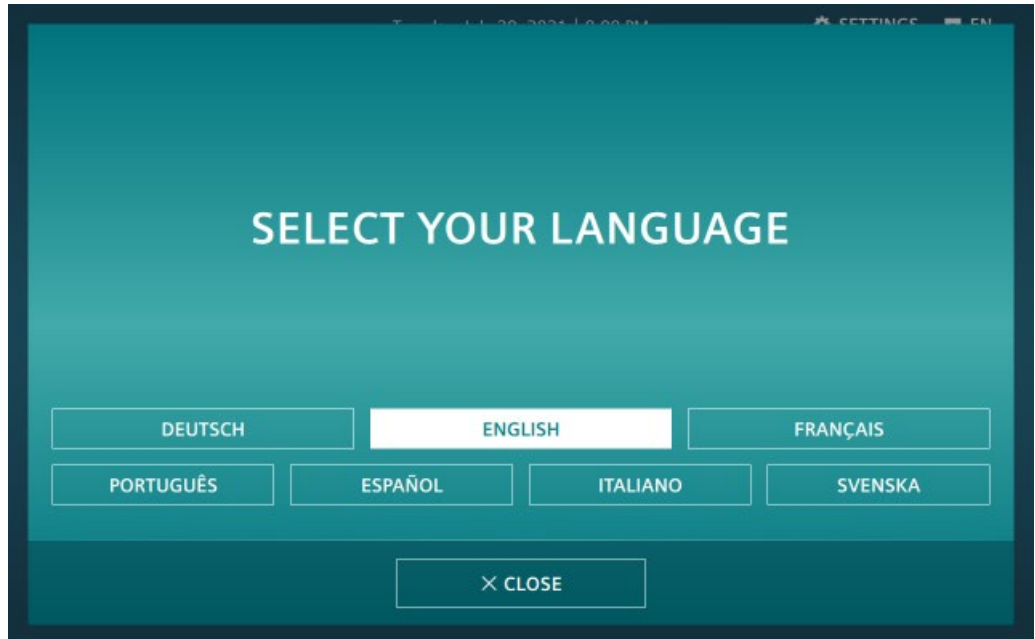


Figure 8-1 Example of language selection

2. To select the required language, press the relevant button.
3. To exit the language selection, press "Close".

The language of the user interface is changed.

8.2.2 Selecting a dispenser

Requirement

The desired charging point is ready for use (the LED on the charging station lights up green).
You can read the status of a charging station on the user interface or on the LEDs.

Procedure

To select the dispenser, follow these steps:

1. Select the required user interface language.
2. Select a free charging station.

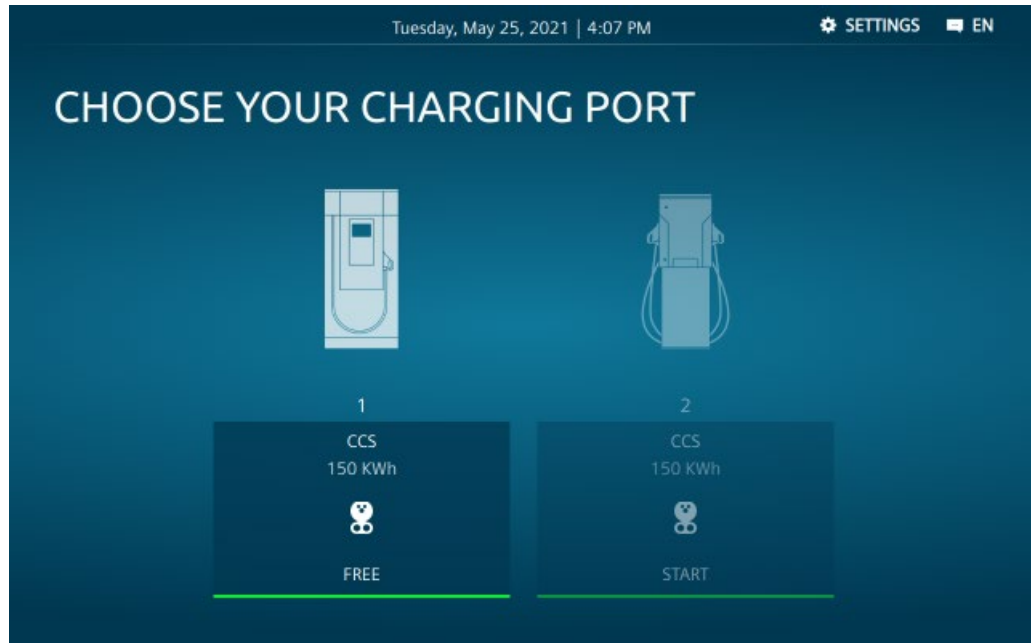


Figure 8-2 Selecting a dispenser

The current status of each charging station is displayed. The states are as follows:

- FREE
The charging station is free and available.
- START
The connection is established, you can start the charging process.
- WAIT
The connection has been established, the charging process has not yet been carried out.
- CHARGE
The charging station is busy and is charging.
- OUT OF SERVICE
The charging station is out of service.

3. Select the type of charging cable.

This example uses a CSS charging cable.

8.2.3 Connecting the charging cable

Connecting the vehicle

If you have not yet connected the charging cable to the vehicle, you are prompted after the authentication to connect the plug with your vehicle.

 **DANGER**

Explosion or electric shock

If you are using a damaged charging cable or a damaged charging socket, you may cause explosions, electric shock or short-circuits.

- Check the charging cable, the charging plug and the charging socket of the vehicle for damage before each use.
- Never use a damaged charging cable.
- Never plug the charging plug into a damaged charging socket.
- If the charging cable or the plug-in connection is damaged during charging, immediately press the DC shutdown switch of the charging station.



Figure 8-3 Connecting the charging cable

The charging plug is locked and the vehicle and charging station set up a connection. Communication setup may take up to 60 seconds. If communication has not been successfully established after 60 seconds, remove the charging cable and restart the process.

8.2.4 Connecting the vehicle

Requirement

- The vehicle is connected to the charging station via the charging cable.
- A communication connection between the vehicle and charging station was set up successfully.

Monitoring the charging process

A successfully started charging process can be monitored via the display. The type and volume of the information depends on the charging port and on whether tariff information is available.

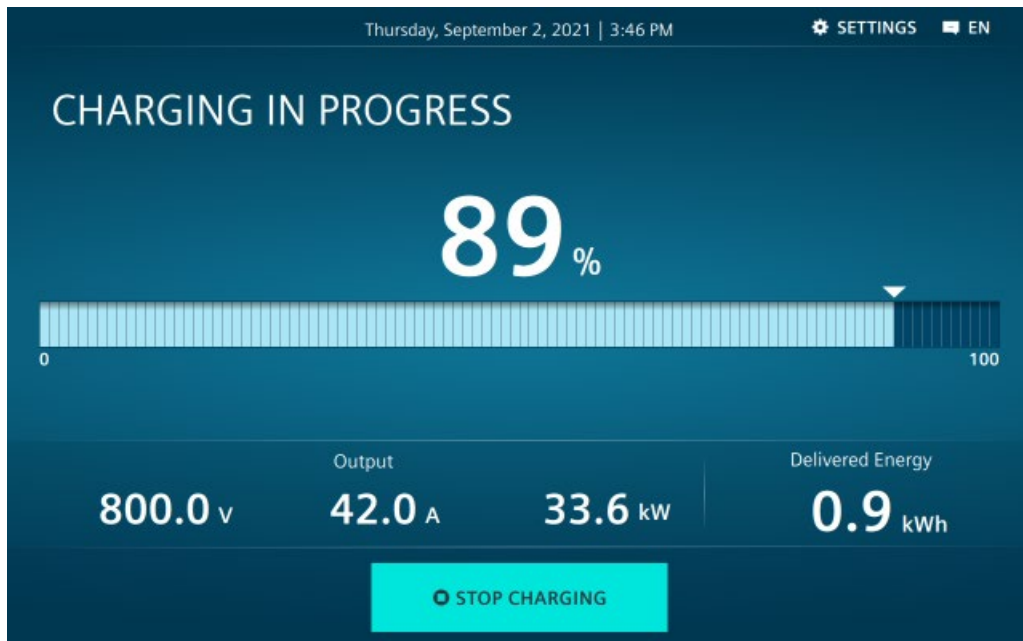


Figure 8-4 Detail view of the charging process

The following information is displayed:

- Charging progress
- Voltage, electric current and power at the output
- Delivered energy

Press the "Stop charging" button to manually terminate the charging process before it is completed.

8.2.5 Terminating the charging process

The charging process can be ended automatically or manually.

Automatic termination

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

- Vehicle ends charging process
- Vehicle detects a fault
- Charging station detects an internal critical error (internal)
- Emergency off is triggered
 - By actuating the emergency stop switch
 - By opening the device doors (external)

Manual termination

1. Switch to the detail view of your charging process (Page 68) on the display.
2. Press the "Stop charging" button.

On the display you are asked whether you really want to end the charging process.

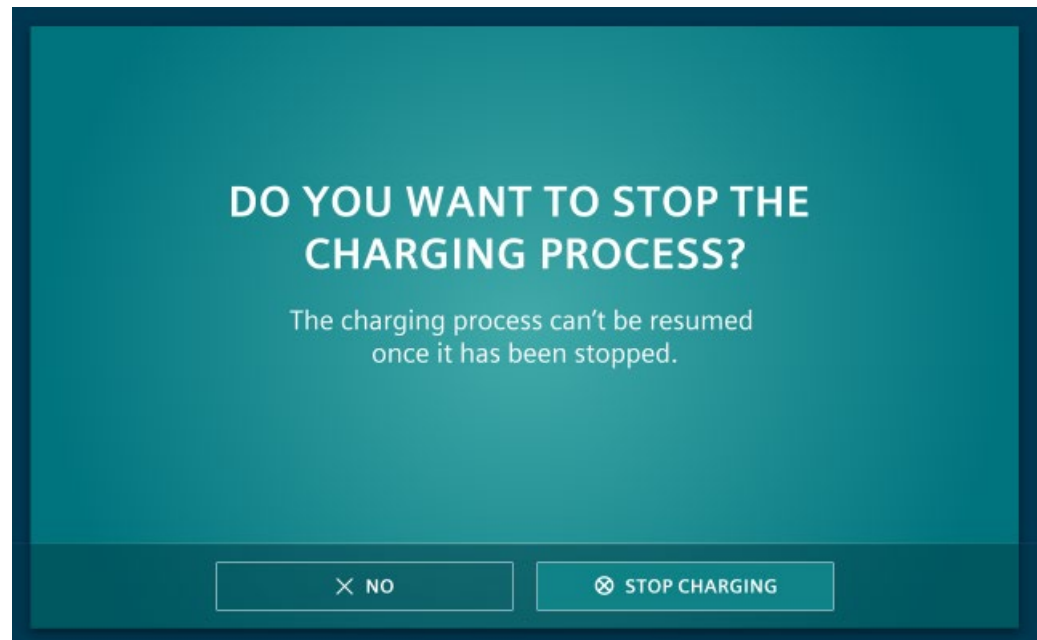


Figure 8-5 Confirming termination of the charging process

3. Confirm the dialog with the "Stop charging" button.

To cancel termination of the charging process and resume the charging process, press "No".

Result

After successful charging, you can retrieve summarized information on your charging process in the "Settings (Page 70) > Last charging report (Page 72)". This information depends on the selected charging port and the available tariff information.

Remove the charging cable from the vehicle.

8.2.6 Settings

8.2.6.1 Settings

In the settings you can view information on the system and retrieve detailed information on the following areas:

- Last report (Page 72)
- Alert log (Page 73)
- Advanced mode (Page 74)

General system overview

To open the screen settings, press on the  icon.

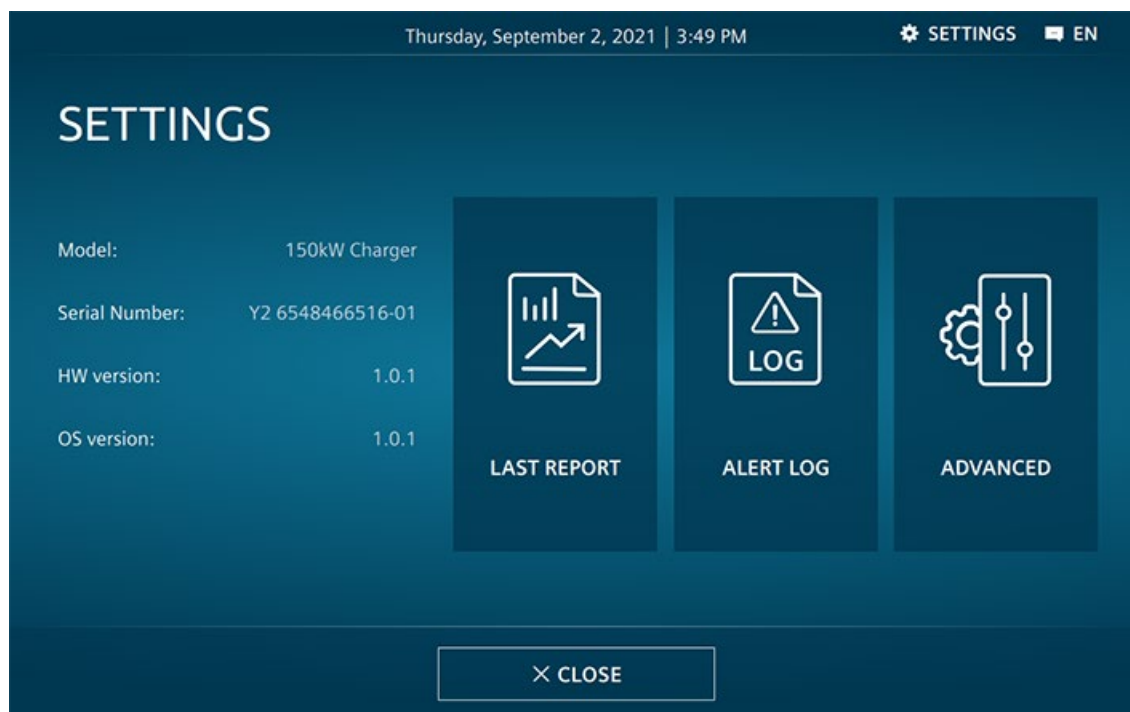


Figure 8-6 Settings

The following information is displayed below the system information:

- Model
Model of the charging station
- Serial number
unique serial number of the charging station
- HW Version
Version of hardware
- OS Version
Version of operating system

The following detailed information on the following areas is available:

- Last report (Page 72)
- Alert log (Page 73)
- Advanced mode (Page 74)

To open the screen with the information, press the relevant button.

8.2.6.2 Last charging report

Information on the last charging process for each dispenser is displayed in the area "Last charging report". To open the charging report, select the "Last report" in the Settings (Page 70).

There may be several charging points connected to a charging station without their own user interface. In this case, select the desired charging point via the drop-down menu.

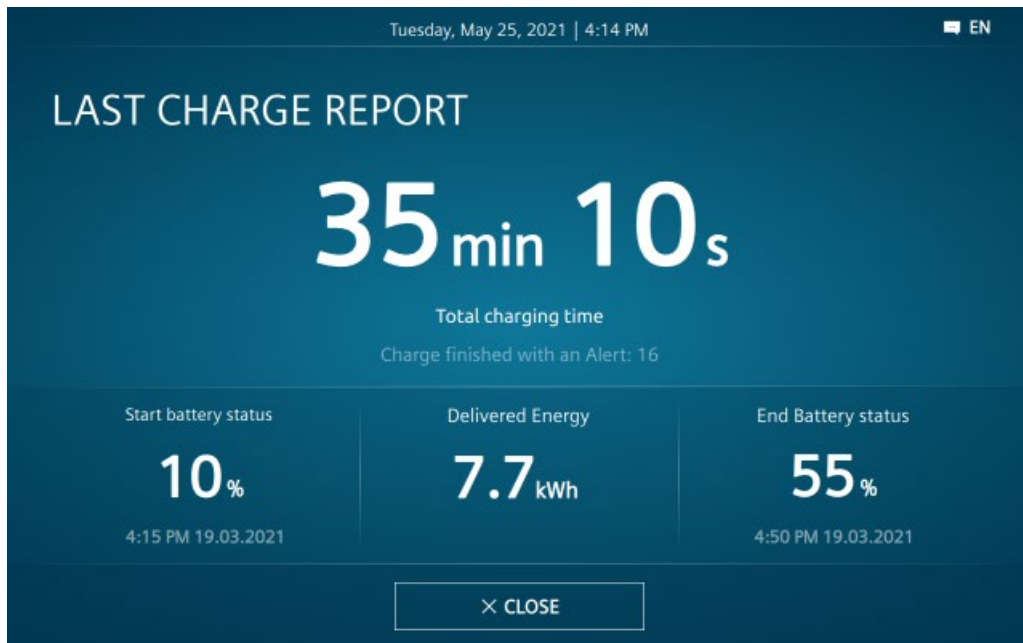


Figure 8-7 Last charging report

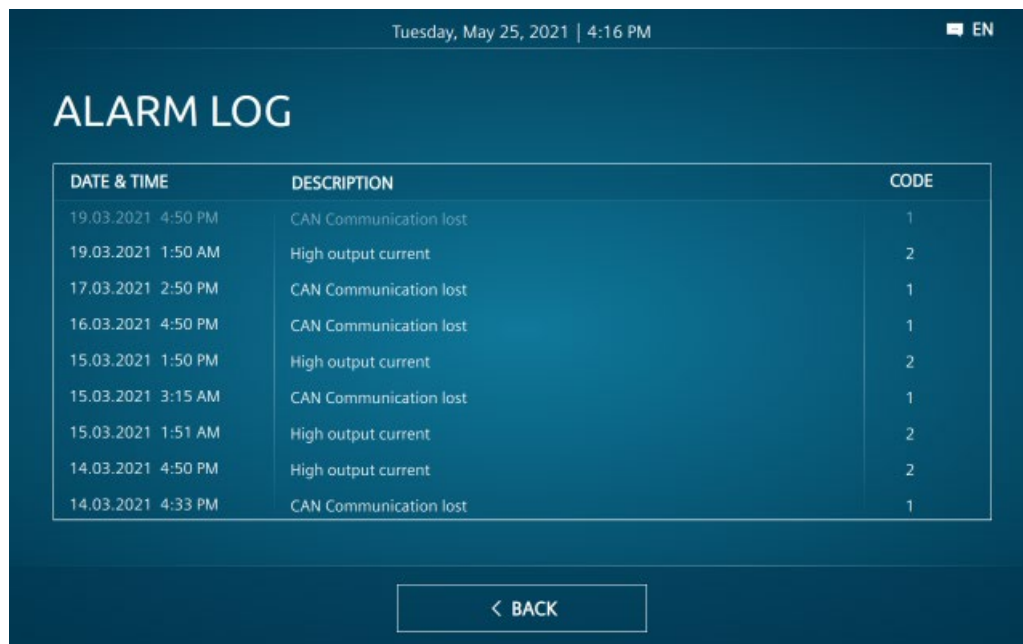
The following information is displayed:

- Duration of charging process
- Type of termination
- Battery status at start of charging
- Charged energy in kWh
- Battery status at end of charging

To close the area and return to the settings, press "Close".

8.2.6.3 Alert log

The last alerts are displayed in the "Alert log" area. To open the Alert log, select the "Alert log" button in the Settings (Page 70).



DATE & TIME	DESCRIPTION	CODE
19.03.2021 4:50 PM	CAN Communication lost	1
19.03.2021 1:50 AM	High output current	2
17.03.2021 2:50 PM	CAN Communication lost	1
16.03.2021 4:50 PM	CAN Communication lost	1
15.03.2021 1:50 PM	High output current	2
15.03.2021 3:15 AM	CAN Communication lost	1
15.03.2021 1:51 AM	High output current	2
14.03.2021 4:50 PM	High output current	2
14.03.2021 4:33 PM	CAN Communication lost	1

Figure 8-8 Alert log

The following information is displayed:

- **Date & Time**
Shows the date and time of the alert event.
- **Description**
Provides a description of the alert.
- **Device**
Shows the device on which the event occurred.
- **Code**
Shows the numerical error code.
- **Read**
Confirm that you have read the error. Take further necessary steps if required.

To close the area and return to the settings, press "Close".

You can find more information on the error codes in the section "Handling alarms and errors (Page 77)".

8.2.6.4 Advanced mode

Requirement

You have authenticated yourself by entering a PIN.

Advanced settings

Information and setting options for each charging port are shown in the area "Advanced settings". To open the area, select the "Advanced settings" button in the Settings (Page 70).



Figure 8-9 Advanced settings

If there are several dispensers, select the one you require using the drop-down menu.

The following information is displayed:

Table 8- 1 Information about the electricity supply

Section	Voltage	Current
L1-L2	Voltage between the phases in Volt	Current between the phases in Ampere
L2-L3	Voltage between the phases in Volt	Current between the phases in Ampere
Output	Voltage at the output in Volt	Current at the output in Ampere
DC link voltage	Voltage between rectifier and inverter	
Frequency	Line frequency in Hz	

Table 8- 2 Information about temperature

Section	Temperature	Speed
Fan control system	Temperature at the fan control	Fan speed in % of the maximum speed To change the maximum fan speed, press the text box and enter a value using the numeric keypad.
IGBT	Temperature at the power switch modules	

You can make the following settings:

- Input contactor
Open / close the input contactor
- Power converter
Open / close the power converter
- Output contactor
Open / close the output contactor

Target point

To change the target point voltage, press the text box and enter a value using the numeric keypad.

To change the setpoint current, press the text box and enter a value using the numeric keypad.

8.3 Operation without HMI

When using the equipment variant without HMI, the status of the charging point is displayed via LEDs only. The charging process can only be monitored via external interfaces (e.g. the vehicle itself).

Charging the vehicle

To charge the vehicle, proceed as follows:

1. Select a free charging point.

The status of the charging point is displayed via LEDs. The following states are displayed:

- Lit red

An error event is active at the charging point.

- Flashing blue

Charging is in progress at the charging point.

- Lit blue

The charging process is completed and the vehicle is still connected to the charging point.

- Lit green

The charging point is available and ready

2. To authenticate, hold the RFID card to the card reader.
3. Connect the charging cable to the vehicle.

 **DANGER**

Explosion or electric shock

If you are using a damaged charging cable or a damaged charging socket, you may cause explosions, electric shock or short-circuits.

- Check the charging cable, the charging plug and the charging socket of the vehicle for damage before each use.
- Never use a damaged charging cable.
- Never plug the charging plug into a damaged charging socket.
- If the charging cable or the plug-in connection is damaged during charging, immediately press the DC shutdown switch of the charging station.

The charging plug locks and the vehicle is being charged.

4. Once the vehicle is charged or you finish charging via an external interface, remove the charging cable from your vehicle.

Handling alarms and errors

In the event of an error, the charging station automatically performs error diagnostics. Depending on the nature of the error, the charging station issues different alarm messages. A list of all messages and how to correct the error can be found under "Alarm messages in the alarm history (Page 78)".

Alarm messages in full screen mode

On the central touch screen, the charging station provides information through the following messages: Depending on the error message, there is additional information and possible troubleshooting.

In the following figure you can see a message that was triggered by a DC shutdown.

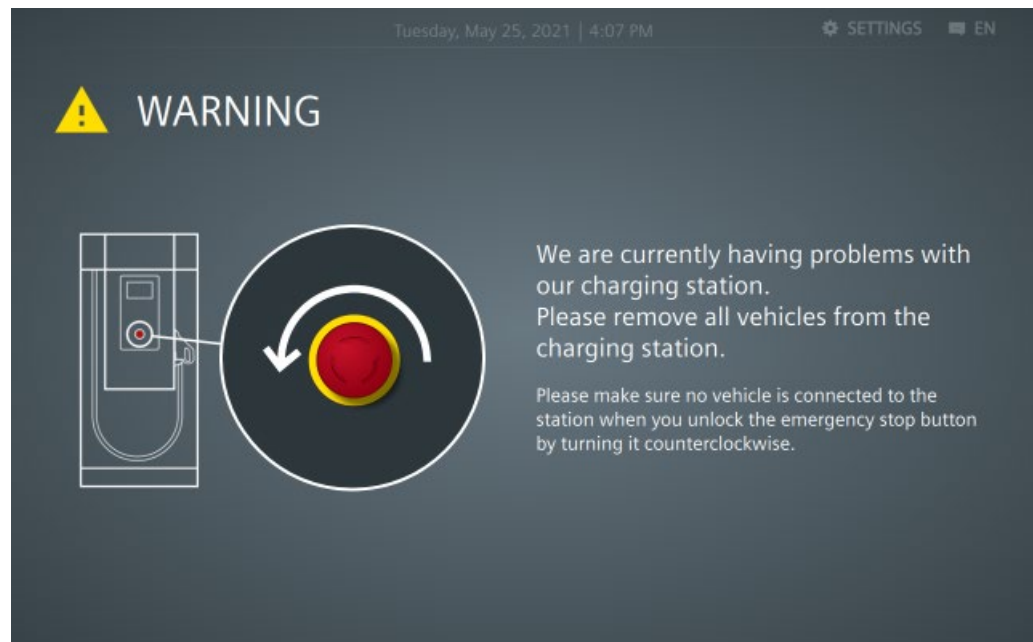


Figure 9-1 Example of a message

9.1 Alarm messages in the alarm history

In the event of a fault, the charging station triggers an alarm and automatically performs diagnostics. For each alarm, the charging station displays the following data in the "Alarm history" menu:

- Alarm time
- Date when the alarm was triggered
- Alarm status
- Alarm message

Alarm messages and error handling

In the "Alarm history" menu, the charging station lists the following alarm messages:

Table 9- 1 Alarm messages and error handling

Alarm message	Description
outputEnabledTimeout	Timeout when activating the charging station output
outputEnabledFail	Error when activating the output (e.g. channel closed)
outputEnabledUnhandled	Output activation received without active command
outputDisabledTimeout	Timeout when deactivating the charging station output
outputDisabledFail	Error when deactivating the output (e.g. channel closed)
outputDisabledUnhandled	Output deactivation received without active command
voltageSetpointTimeout	Timeout at voltage setpoint
voltageSetpointFail	Error at voltage setpoint (e.g. channel closed)
voltageSetpointUnhandled	Voltage setpoint received without active command
currentSetpointTimeout	Timeout at current setpoint
currentSetpointFail	Error at current setpoint (e.g. channel closed)
currentSetpointUnhandled	Setpoint of current received without active command
bindedCheckFail	Not connected to any process
assertVoltageLowerThanFail	Voltage value at output not low enough within expected period. Momentary use only during switching off (voltage less than 10 V)
assertVoltageHigherThanFail	Voltage value at output not high enough within the expected period. Momentary use only during cable check (voltage greater than $475\text{ V} * 0.95$)
assertCurrentLowerThanFail	Current value at output not low enough within expected period. Momentary use only during switching off (current less than 2 A)
assertCurrentHigherThanFail	Current value at output not high enough within expected period
IllegalTransition	Illegal transition of EVSEcore state
mainProcessError	Error at main processor fiber, most likely an unexpected sequence of AKKA stages
cpStateFault	Unexpected transition of CP state from C/D to A
noCommunicationToAkka	Communication with AKKA was not established (configurable timeout)
communicationLostAkka	Loss of communication with AKKA (configurable timeout)

Alarm message	Description
highOutputVoltage	Voltage value too high for the momentary stage (IEC 61851, Annex C)
highOutputCurrent	Current value too high for this stage (IEC 61851, Annex C)
ressTemperatureInhibit	Electric vehicle fault
evShiftPosition	Electric vehicle fault
chargerConnectorLockFault	Electric vehicle fault
evRessMalfunction	Electric vehicle fault
chargingCurrentDiff	Electric vehicle fault
chargingVoltageOutOfRange	Electric vehicle fault
chargingSystemIncompatibility	Electric vehicle fault
sessionSetupFailure	After setup of the TCP connection, the session could not reach the cable check
slacFailure	Session could not establish a TCP connection, error at SLAC
sendMessageError	An error has occurred when sending a message
EVSEShutdownTimeout	Timeout for normal shutdown of the vehicle
dispenserContactorTimeout	Timeout of the contactors of the charging station
dcPlusTemperature	Connector temperature outside of the range at the DC+
dcMinusTemperature	Connector temperature outside the range at the DC-
cpStateLost	Unexpected transition of CP state from C/D to A
pantographError	Pantograph error (top and bottom)
pantographDidNotMove	Pantograph did not move
pantographTimeout	Pantograph did not reach the end position in time
unexpectedError	Unexpected error occurred (error not defined)
cpBToCTimeout	Transition of CP state B to C timeout
sequenceError	Incorrect message sequence
messageTimeout	Request not received in time
invalidDataReceived	Invalid data received in request message
unknownSession	Unknown session received by vehicle
invalidStage	Invalid EVSECore stage when analyzing a request
pantographButtonPressed	Pantograph button was pressed
positionSensorError	Loss of the position sensor signal during charging
noCommunicationToACD	No communication established with ACD (configurable timeout)
communicationLostACD	Loss of communication with ACD (configurable timeout)
inputBreakerTimeout	Timeout when closing/opening the input circuit breaker
converterTimeout	Timeout during switching ON/OFF of the converter
outputBreakerTimeout	Timeout when closing/opening the output circuit breaker
noCommunicationToGreenInvert	No communication established with GreenInvert (configurable timeout)
communicationLostGreenInvert	Loss of communication with GreenInvert (configurable timeout)
inputBreakerFail	Unexpected state of the input circuit breaker received
outputBreakerFail	Unexpected state of the output circuit breaker received
dcOverVoltage	DC voltage value too high for the specific hardware
dcOverCurrent	DC current value too high for the specific hardware
emergencyButtonPressed	Feedback Emergency Off pressed received
isolationFault	Feedback Insulation monitoring failure received

9.1 Alarm messages in the alarm history

Alarm message	Description
doorOpened	Door is open
voltageLowerThanFail	Voltage value not low enough in the specified period (before the DC contactor). Momentary use only during switching off (voltage less than 10 V)
DC_Link_Under_Balance_Error	Internal converter error
DC_Link_Over_Voltage_Error	Internal converter error
DC_Link_Under_Voltage_Error	Internal converter error
Frequency_Deviation_Error	Internal converter error
Inverter_IGBT_Desaturation_Error	Internal converter error
Input_Mains_High_Error	Internal converter error
Input_Mains_Low_Error	Internal converter error
Input_Mains_Current_Error	Internal converter error
Rectifier_IGBT_Desaturation_Error	Internal converter error
Start_Timeout_Error	Internal converter error
Shutdown_Rectifier_Error	Internal converter error
Output_Short_Circuit_Error	Internal converter error
Output_Overload_Error	Internal converter error
Output_Over_Voltage_Error	Internal converter error
Output_Under_Voltage_Error	Internal converter error
CAN_Communication_Timeout_error	Internal converter error
Input_Contactor_OFF_Error	Internal converter error
DC_BUS_PreCharge_Timeout_Error	Internal converter error
Over_Temperature_Error	Internal converter error
externalButton1Pressed	First external button pressed
externalButton2Pressed	Second external button pressed
acOverVoltageL1	AC voltage value too high for the specific hardware (only set when converter ON)
acOverVoltageL2	AC voltage value too high for the specific hardware (only set when converter ON)
acOverVoltageL3	AC voltage value too high for the specific hardware (only set when converter ON)
acUnderVoltageL1	AC voltage value too low for the specific hardware (only set when converter ON)
acUnderVoltageL2	AC voltage value too low for the specific hardware (only set when converter ON)
acUnderVoltageL3	AC voltage value too low for the specific hardware (only set when converter ON)
acOverCurrentL1	AC current value too high for the specific hardware
acOverCurrentL2	AC current value too high for the specific hardware
acOverCurrentL3	AC current value too high for the specific hardware
softStartTimeout	Timeout during switching ON/OFF of softStart
converterTimeout	Timeout during switching ON/OFF of the converter
outputBreakerTimeout	Timeout when closing/opening the output circuit breaker
communicationLostSoftStart	Loss of communication with SoftStart (configurable timeout)
communicationLostDSP	Loss of communication with DSP (configurable timeout)
communicationLostOutput	Loss of communication with output platform (configurable timeout)
communicationLostFans	Loss of communication with fans (configurable timeout)

Alarm message	Description
emergencyButtonPressed	Feedback Emergency Off pressed received
isolationFault	Feedback Insulation monitoring failure received
doorOpened	Door is open
transformerThermostat	Thermostat of transformer has tripped

10.1 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.

- Only perform maintenance and service work inside the station when the charging station is disconnected from the power supply.
- Observe the five safety rules for electrical work (Page 11).



WARNING

Electrical shock due to residual charges in capacitors

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

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

NOTICE

Damage to property due to foreign objects inside the station

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

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

10.2 Maintenance plan

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

Maintenance period

Depending on the area of application, perform the general maintenance work and maintenance work every twelve months. If the charging station is used in difficult conditions, shorten this period accordingly.

Servicing the charging station

Establish a de-energized condition before proceeding with the maintenance and servicing inside the charging station. The following table describes the required maintenance measures.

Area	No.	Checklist item
Exterior	1	- Check the exterior of the cabinet for visible damage, stickers, graffiti, etc. - Check touch screen (HMI) for visible damage - Check charging cable and plug for moisture, dust or corrosion - Check the position of the charging plug in the plug holder (option for CCS charging)
	2	Check HMI for errors on the charger
	3	- Check function of cabinet door (lubricate hinges if necessary) - Check door locks and hinges for ease of movement - Check whether an error message appears on the touch screen display (HMI) after opening the cabinet door.
	4	- Check Emergency STOP button (NOT during charging process) - Check whether an error message appears on the touch screen display (HMI) after pressing the button. Observe if charger comes back to default function after button is released.
Interior	5	- Check ventilation openings ¹⁾ - Clean grilles of fans and air intakes ¹⁾ - Check all filter mats and clean or replace if dirty ¹⁾ - Check the indoor fans and clean them ¹⁾ - Check fans for unusual running noises ¹⁾ - Check fan for damages ¹⁾
	6	Inspect inside charger sealing, doors, grating, and cable bushings
	7	Visual inspection of the cabinet for any damages of all components
	8	Cleaning of the interior if necessary
	9	- Are country-specific additional signs available? - Is system documentation (circuit diagrams, product documentation, OEM documentation) available?

10.3 Servicing the charging station

Area	No.	Checklist item
	10	• Check if SW-updates are available
	11	• Check tightening torques or mark on nut – L1 – L2 – L3 • Check tightening torque or mark on nut of the PE ground connections
	12	• Ensure the earthing straps are complete and check for damage and tightness
	13	• Electrical safety measurements of electrical protective devices and ground resistance according to local regulations and standards ¹⁾

¹⁾ = Adapt the maintenance period to the conditions on site

You can find instructions on replacing the filter and fan in the following sections:

- Filter change (Page 87)
- Fan change (Page 89)

10.3 Servicing the charging station

10.3.1 Cleaning the touch screen

The touch screen is designed for low-maintenance operation. Clean the touch screen regularly to keep it in top condition.



WARNING

Electric shock due to water ingress

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

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



WARNING

Damage to property due to improper cleaning agents

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

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

Note

Only clean when the touch screen is switched off

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

- Before cleaning the touch screen, switch off the charging station.
-

Permitted cleaning agents and tools

- Use a mild, non-corrosive cleaning agent, even in the case of heavy soiling. Mild detergents include dishwashing liquids.
 - Use only soft cleaning cloths.
-

Note

Read the information on chemical resistance

To ensure that the touch screen achieves the longest possible service life, observe the following information on the chemical resistance of SIMATIC HMI devices:

Information on resistance (<http://support.automation.siemens.com/WW/view/en/39718396>)

Cleaning the touch screen

Clean the touch screen as follows:

1. Apply cleaning agent to the cleaning cloth.
2. Start cleaning at the edge of the screen.
3. Wipe with the cleaning cloth from the edge of the screen to the inside.

10.3.2 Cleaning the cabinet



WARNING

Electric shock due to water ingress

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

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



WARNING

Damage to property due to improper cleaning agents

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

Permitted cleaning agents

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

Cleaning the exterior surfaces of the cabinet

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

Cleaning the charging cable

- Only clean the charging cable when it is not connected.
- Clean the charging cable with a dry cloth.
- Never immerse the charging cable in liquids.

Clean the charging plug

- Switch off the charging station.
- Clean the charging connector with a dry cloth.
- Never immerse the charging plug in liquids.

10.3.3 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 interior of the charging station is less cooled due to the reduced air flow. This causes the temperature inside the charging station to rise.

To keep the air inside the charging station within the permitted temperature range, regularly replace the fabric filters of the cabinet fans.

Required tools and spare parts

You will need the following tools to replace an air filter:

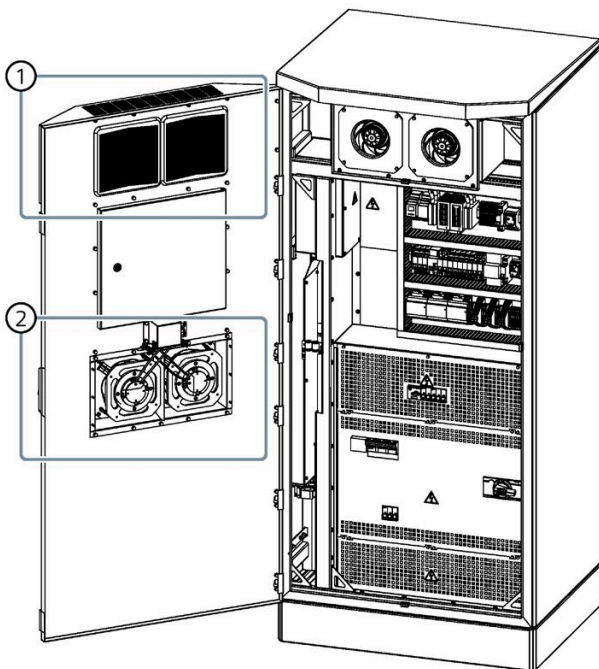
- Screwdriver
- Bit: Hexagon socket, width across flats 6

You will also need the following spare part:

- 4-fabric filter: Filter class G3 according to standard EN 779, dimensions: 223 x 223 mm

Position of the air filter

The following diagram shows the fan cover and the position of the air filters in the door.



- ① Filter for the upper fans
- ② Filter for the fans in the door

Figure 10-1 Air filter with open door

Replacing an air filter

To replace the air filter, proceed as follows:

1. Open the door of the charging station.
2. Set the circuit breaker to the "OFF" position.
3. Remove the old fabric filters for the upper fan from the filter holder.
4. To remove the air filter for the lower fans, loosen the two hex screws at the guide rail.

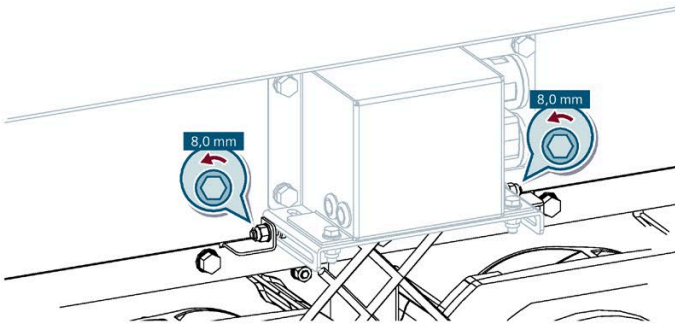


Figure 10-2 Loosen the fans at the guide rail

5. To be able to remove old fabric filters from the filter holder ④, pull the fan unit back ② and swivel the fan upward ③.

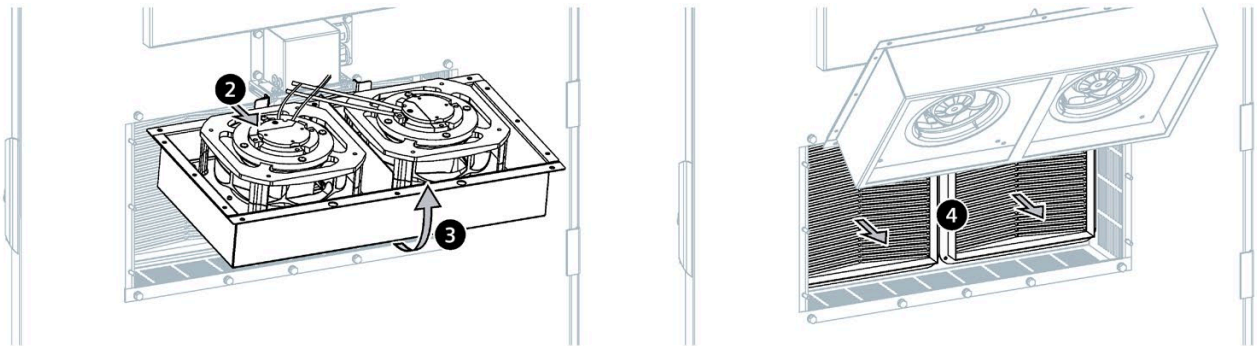


Figure 10-3 Removing filters

6. Insert the new fabric filters into the filter holder.
7. Install the lower fan and secure it to the guide rail using the two hex screws.
8. Set the circuit breaker to the "ON" position.
9. Close and lock the door of the charging station.

10.4 Replacing the cabinet fan

In the fan unit of the charging station, three cabinet fans air-condition the interior of the charging station.

WARNING

Electric shock from live parts

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

- Only perform maintenance and service work inside the station when the charging station is disconnected from the power supply.
- Observe the five safety rules for electrical work (Page 11).

WARNING

Electrical shock due to residual charges in capacitors

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

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

NOTICE

Damage to property due to foreign objects inside the station

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

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

Required tools and spare parts

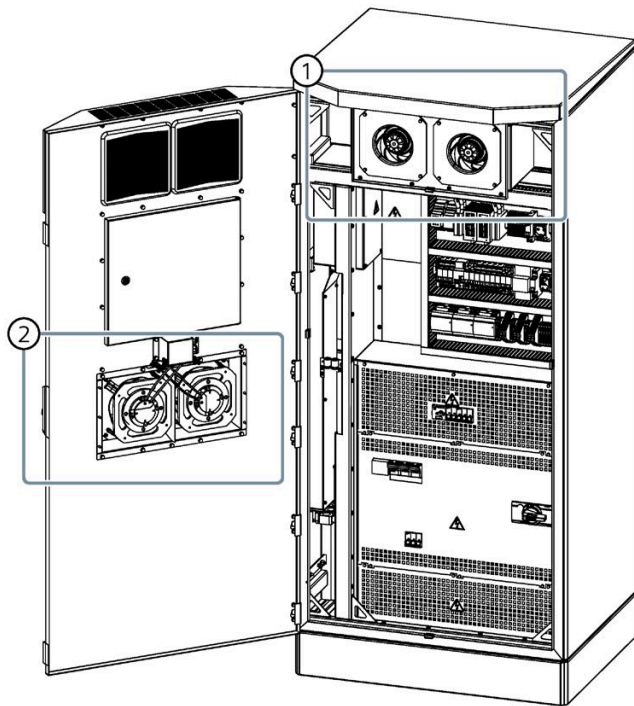
You will need the following tools to replace the cabinet fan:

- Screwdriver
- Bit: Hexagon socket, width across flats 6
- Screwdriver

You will also need the following spare part:

- Cabinet fan

Position of the cabinet fan



- ① Top cabinet fan
- ② Cabinet fan in the door

Figure 10-4 Position of the cabinet fan

Removing the cabinet fan

To remove the cabinet fan, proceed as follows:

1. Open the door of the charging station.
2. Set the circuit breaker to the "OFF" position.
3. Unscrew the fastening screws of the cabinet fan.
4. Pull out the cabinet fan.
5. Disconnect the connection cables of the fan.

Install a new cabinet fan

To install the cabinet fan, proceed as follows:

1. Connect the connecting cables of the fan.
2. Insert the cabinet fan.
3. Tighten the fastening screws of the cabinet fan.
4. Set the circuit breaker to the "ON" position.
5. Close the door of the charging station.

10.5 Replace lock cylinder

Required tools and spare parts

You will need the following tools to replace the lock cylinder:

- Screwdriver
- Bit: Hexagon socket, width across flats 6

You will also need the following spare part:

- Lock cylinder

The installed handle with lock has the part number "L2D0095760".

Position of the lock cylinder

The lock cylinder is located in the door lock of the cabinet door.

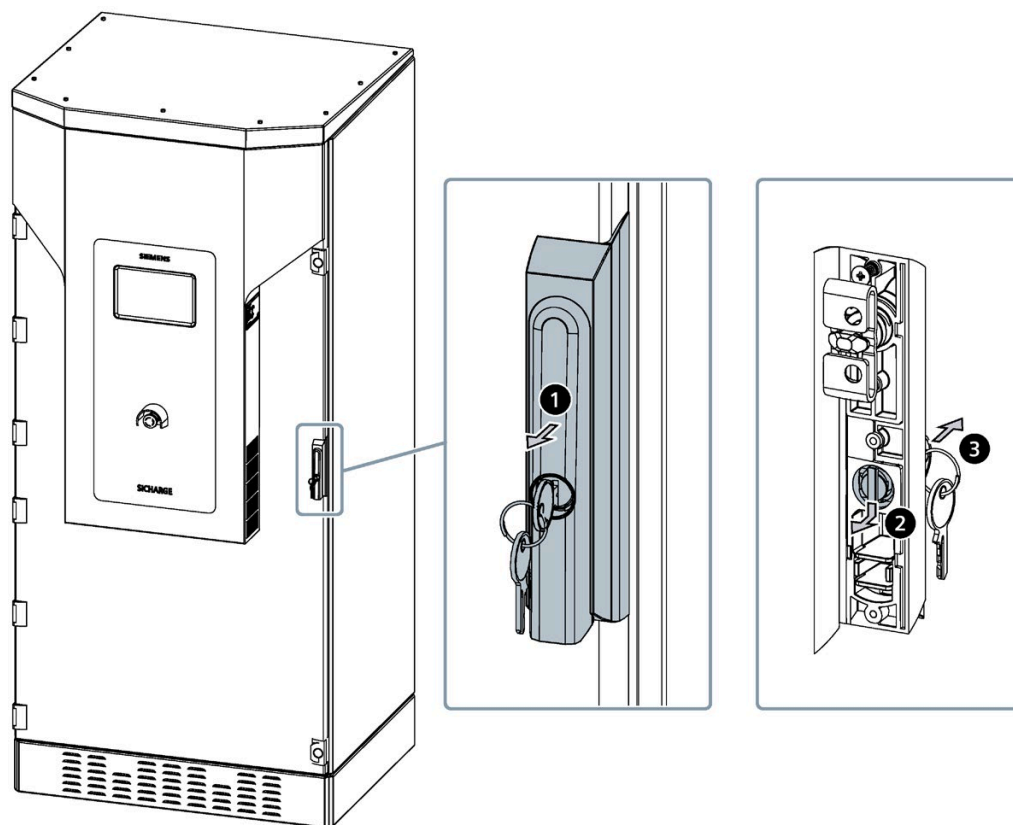


Figure 10-5 Replacing the lock cylinder

Replace lock cylinder

To change the lock, proceed as follows:

1. Open the door lock.
2. Lift the handle upward ①.
3. Pull the adapter bar ② out downwards.
4. Pull the lock cylinder ③ forwards out of the door lock.
5. Insert the new lock cylinder into the door lock.
6. Insert the adapter bar.
7. Close the door lock.

Disposal

We consider environmental protection and the conservation of your resources as corporate goals of a high priority. A worldwide environmental management system in accordance with ISO 14001 ensures compliance with the law and sets high standards. Environmentally friendly design, technical safety and health protection are solid targets even during the development of our products. The following provides recommendations for environmentally friendly disposal of the charging station and its components.

Disposing of packaging material

- Dispose of packaging material in an environmentally friendly manner or recycle the material. Observe the disposal regulations and environmental protection regulations.
- If needed, contact a specialist disposal company.
- Wooden packaging for sea 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 friendly recycling and disposal of the device, contact a certified electronic waste disposal company. Dispose of the device and specific material, e.g. capacitors, in accordance with the applicable regulations in your country.

Service & Support

12.1 Siemens Industry Support

Technical questions and additional information



If you have technical questions or require more information, please contact the Customer Support Center.

Tel.: +49 89 143770229

Have the following information at hand when you call:

- Type of the charging station
- Serial number

You can find this information on the nameplate of the charging station.

The eMobility Team

(<https://new.siemens.com/global/en/products/energy/medium-voltage/solutions/emobility/sicharge-uc.html>) will also answer questions on products and services.

Technical specifications

13.1 Technical specifications

Input nominal	
Voltage	400 V AC (3 ~ + PE) $\pm 10\%$
Current at rated voltage per phase	228 A
Current (max.) per phase	256 A
Frequency	50 Hz
Power factor (cos phi)	> 0.9
Power loss in standby	130 W

DC output	
Rated power	0 ... 150 kW
Current (range)	0 ... 250 A
Voltage (range)	100 ... 1000 V DC
Efficiency η (at 100 % load)	96%

Ambient and operating conditions	
Operating temperature	-25 °C ... +55 °C (that derating starts from 45 °C)
Humidity	5 ... 95% (no condensation)
Maximum operating altitude above sea level	2000 m

Mechanical specifications	
Operating environment	Interior and exterior
Cabinet protection	IP54
Cabinet material	Steel, galvanized, colored, C4H
Color	Cabinet - main section: RAL 9006 - White aluminum Roof and base: RAL 9017 - Traffic black
Overall dimensions W x D x H (mm)	920 x 905 x 2058
Dimension of the foundation W x D (mm)	900 x 700
Weight, approx.	1400 kg

General specifications	
Charge control system	Siemens controller
Local user interface	10" touch screen HMI (optional)

13.1 Technical specifications

General specifications	
User login	RFID (optional)
Network connection	Ethernet interface or 3G and 4G or WLAN
Electrical safety relay	RCD Type B (optional)
Communication protocol	OCPP 1.6 (J-SON)
Charging cable lengths	3.5, 6, 10 m
Max. cable length between the charging station and the dispenser	100 m
Charging standards	EN 61851-1/23/24, ISO 15118 (DIN 70121)
EMC standards	EN 55016-2-1 & -3; EN 61000-4-2 & -3 & -4 & -5 & -6
Conformity	CE declaration

Connection plan

Table 13- 1 Connection plan between charging station and Dispenser

Type	Charging station	Dispenser	Diameter cable jacket	Description
DC+	-Foutp (busbar)	L+	16 ... 28 mm	DC single conductor
DC-	-Foutn (busbar)	L-	16 ... 28 mm	DC single conductor
PE	PE cabinet	PE cabinet	13 ... 21 mm	PE single conductor
L	-QDP:2	-XD10:1b	7 ... 17 mm	AC cable
N	-QDP:4	-XD10:2b		
PE	PE cabinet	-XD10:5b		
Communication	Linux_board: ETH1	-KF22:P1	7 ... 8 mm	Twisted pair cable
	-SwitchFO:P3	-KF22:P1	7 ... 9 mm	Fiber-optic cable

13.2 Power factor/efficiency

Power factor/efficiency

The following table shows the power factor and the efficiency depending on the output power.

Table 13- 2 Power factor/efficiency

Output line %	Power factor $\cos \varphi$	Efficiency η
25	0.97	0.94
33	0.98	0.95
50	0.98	0.96
66	0.98	0.96
75	0.98	0.96
100	0.99	0.96

13.3 Charging current/power curve

Charging current

The following figure shows the progression of the charging current depending on the charging voltage.

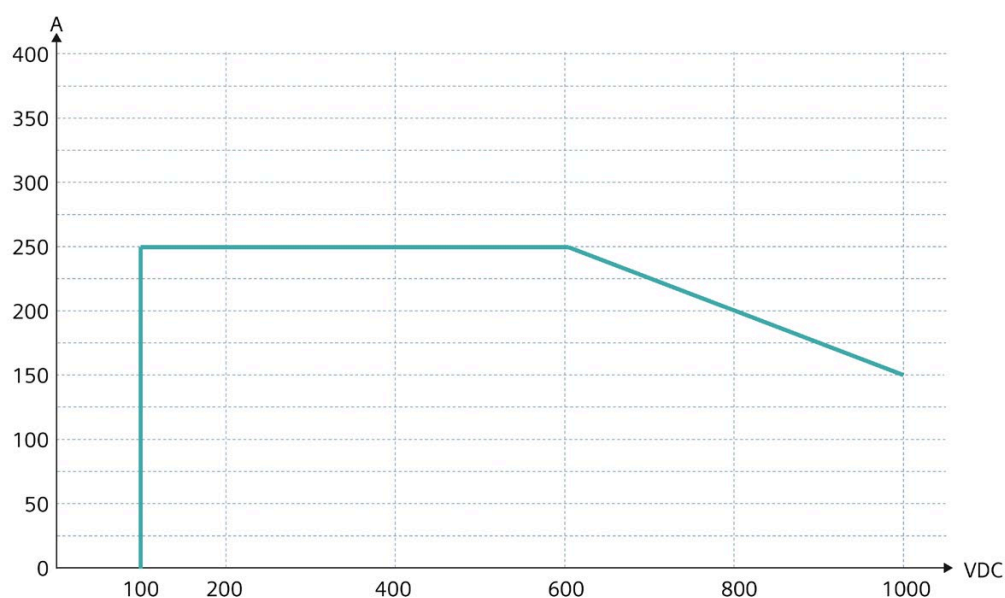


Figure 13-1 Charging current

Power curve

The following figure shows the power curve depending on the charging voltage.

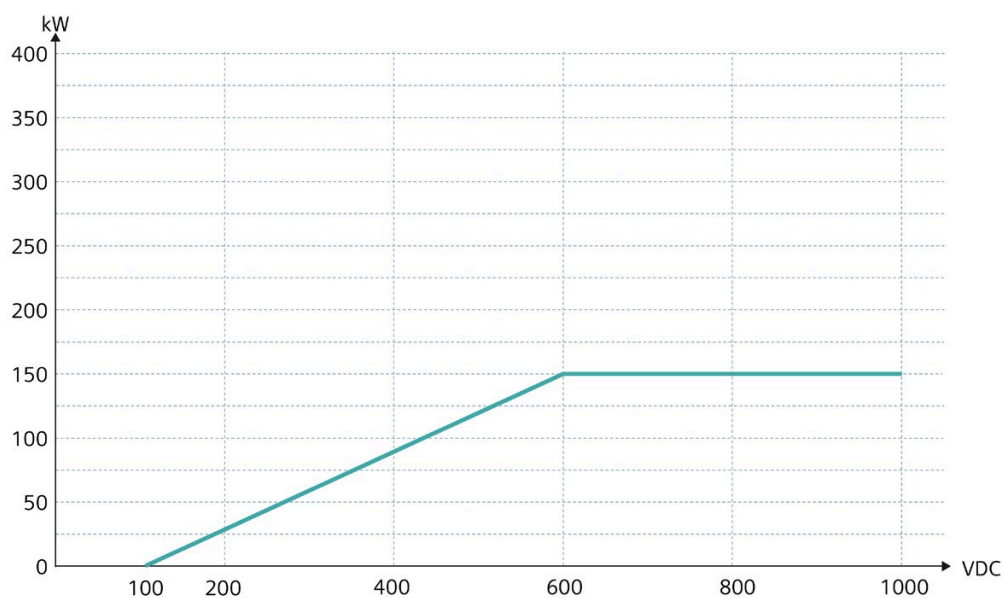


Figure 13-2 Power curve

Dimension drawings

Dimension drawing of charging station

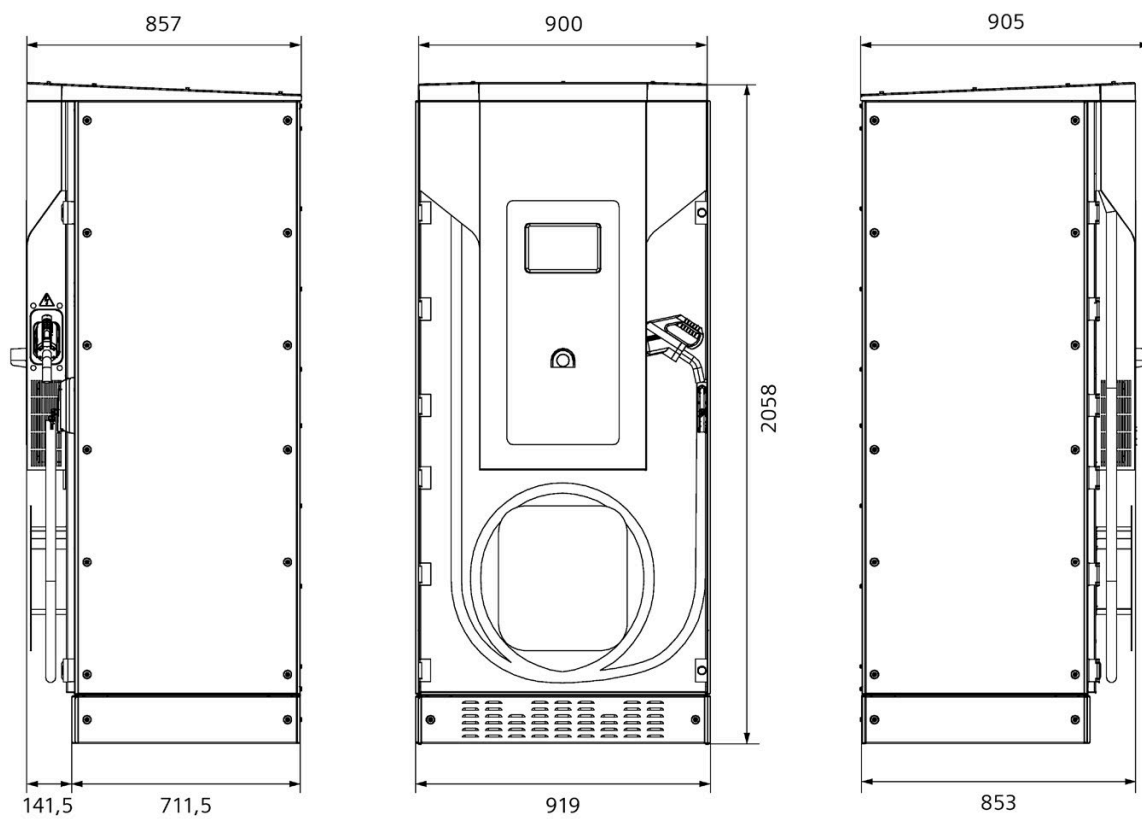


Figure 14-1 Side and front view

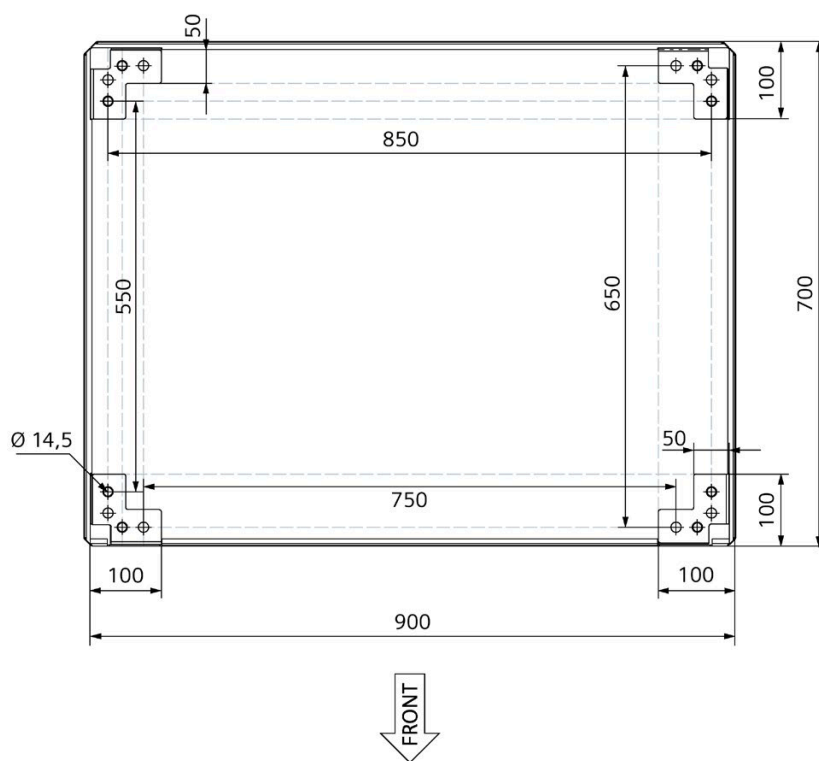


Figure 14-2 Top view

Declaration of Conformity

15.1 Declaration of Conformity

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

Declaration of conformity at a glance

The charging station meets the requirements and protection targets of the following directives:

- EN 61851-1:2011 Electrical equipment of electrical road vehicles - conductive charging systems for electric vehicles - Part 1-2: General requirements
- EN 61851-23:2014 Electric vehicle conductive charging systems - Part 23: Direct current charging stations for electric vehicles
- EN 62196-1:2014 Plugs, socket-outlets, vehicle connectors and vehicle inlets - Conductive charging of electric vehicles - Part 1: General requirements
- EN 62196-3:2014 Plugs, socket-outlets, vehicle connectors and vehicle inlets - Conductive charging of electric vehicles - Part 3: Requirements and main dimensions for pins and sockets for interchangeability of vehicle plugs and socket outlets for dedicated DC charging and combined AC/DC charging
- IEC 61851-21-2 Electric vehicle conductive charging system - Part 21-2: EMC requirements for external charge systems for electric vehicles
- EN 50581: Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances
- BS EN ISO 3746: Acoustics - Determination of sound power levels and sound energy levels of noise sources using sound pressure - Survey method using an enveloping measurement surface over a reflecting plane

Safekeeping location of the declaration of conformity

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

SIEMENS AG
Smart Infrastructure
Distribution Systems
Mozartstr. 31c
91052 Erlangen, Germany

List of 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
DGUV	German statutory accident insurance e.V.
OCPP	Open Charge Point Protocol
HMI	Human Machine Interface
IGBT	Insulated-Gate Bipolar Transistor
SoC	State of Charge

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Further Information

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

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