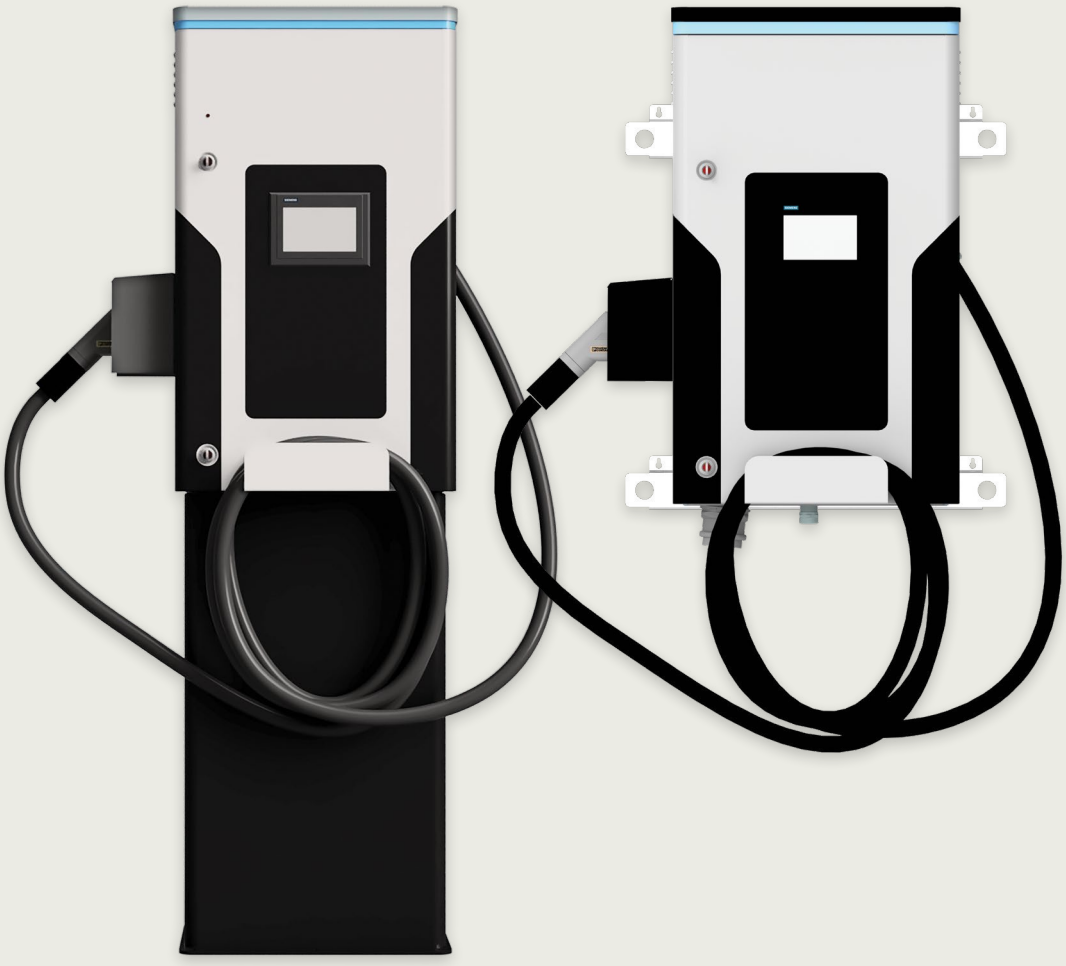
SIEMENS

INSTALLATION AND OPERATIONS MANUAL

SICHARGE UC 150 UL Plug-in Dispenser

June 2024

usa.siemens.com/sichargeuc



Sections

Important Safety Instructions

SAVE THESE INSTRUCTIONS—This guide contains important instructions that must be followed during installation, operating and maintenance. When using electric products, basic precautions should always be followed.

Symbols indicating hazards

This manual contains notices you must observe 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. These notices are shown below:

The addition of either symbol to a “Danger” or “Warning” safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING

Indicates a potentially hazardous situation which, if not avoided, can result in death or serious injury.

⚠ CAUTION

Indicates a potentially hazardous situation which, if not avoided, can result in minor or moderate injury.

NOTICE

Used without the safety alert symbol, This indicates important information for optimal system operation. Follow instructions closely.

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

Indicates a potentially hazardous situation which, if not avoided, can result in death or serious injury.

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. Consult the vehicle's OEM manual prior to use. 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

Disclaimer of Liability

Table of Contents

SECTION 1

Introduction

1.1 FCC compliance

This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protections against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, this is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not expressly approved by the party responsible for compliance may void the user's authority to operate the equipment and the warranty on the product.

Contact information

Siemens Industry, Inc.
Smart Infrastructure
3617 Parkway Ln.
Peachtree Corners, GA 30092
(855) 950-6339, option 9
usa.siemens.com/sichargeuc

More information

Product information is subject to change without notice.

1.2 About the operating instructions

These operating instructions contain the information necessary for the safe operation and intended use of the SICHARGE UC dispenser.

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 SICHARGE UC dispenser.
- Make the operating instructions easily accessible for all persons involved at all times.
- When you transfer the SICHARGE UC dispenser to a third party, also transfer the operating instructions.

Using the operating instructions

How to use the operating instructions correctly:

- Make the operating instructions available to all persons involved before they start working and while they are working on the SICHARGE UC dispenser.
- Read the operating instructions carefully before starting work.
- Follow the safety instructions and handling instructions.

Definition

- **SICHARGE UC charging station**
  The SICHARGE UC charging station converts the connected main voltage into direct voltage for charging electric vehicles. To provide multiple charge points for electric vehicles at a SICHARGE UC charging station, you can connect multiple SICHARGE UC dispensers in series to the SICHARGE UC charging station.
- **SICHARGE UC dispenser**
  The SICHARGE UC dispenser switches and controls the charging of connected electric vehicles.

1.3 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. Please also read the information that is supplied with the product or made available here (assets.new.siemens.com/siemens/assets/api/uuid:beda63de-e83a-4598- 9863-7645d0c0dda8/sicharge-uc-open-source-software.pdf).

1.4 Security Information

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

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

Customers are responsible for preventing unauthorized access to their plants, systems, machines and networks. Such systems, machines and components should only be connected to an enterprise network or the internet if and to the extent such a connection is necessary and only when appropriate security measures (such as firewalls and/or network segmentation) are in place.

For additional information on industrial security measures that may be implemented, please visit (https://www.siemens.com/industrialsecurity).

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. Use of product versions that are no longer supported and failure to apply the latest updates may increase customer exposure to cyber threats.

To stay informed about product updates, subscribe to the Siemens Industrial Security RSS feed at (https://www.siemens.com/industrialsecurity).

1.5 Note regarding the general data protection regulation

Siemens observes the principles of data protection; in particular, the principle of data minimization (privacy by design). For this product this means:

The product does not process / store any personal data, only technical functional data (such as the time stamp). If the user links this data with other data (such as shift plans) or stores personal data on the same medium (such as a hard disk) and thus establishes a personal reference, the user must ensure compliance with data protection regulations.

SECTION 2

Safety instructions

2.1 Basic safety instructions

The SICHARGE UC dispenser meets all required technical standards and therefore provides 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.

Important safety instructions

SAVE THESE INSTRUCTIONS - This manual contains important instructions for SICHARGE UC that must be followed during the installation, operation and maintenance of the unit. Please note the ambient temperature ratings in section 13.1.

Guidelines and regulations

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

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

Target group

These operating instructions are intended for the following persons:

- Planners
  - Planning the location of the SICHARGE UC dispenser
- Carriers
  - Transporting the SICHARGE UC dispenser to the place of use
- Installers
  - Mounting the SICHARGE UC dispenser
- Qualified electricians
  - Connecting electrical cables to the SICHARGE UC dispenser
  - Performance of the electrical work on the SICHARGE UC dispenser
- Users
  - Charging electric vehicles
- Service personnel
  - Performing maintenance and servicing

Intended use

Intended use of the SICHARGE UC dispenser is limited exclusively to the charging of batteries of electric vehicles. The electric vehicle must be equipped with a CCS type 1 charging socket for this. The SICHARGE UC dispenser charges electric vehicles in accordance with the SAE J1772 and SAE J3105 standards. Any other or additional use is not in accordance with the intended use and constitutes misuse of the device. The SICHARGE UC dispenser can be used indoors and outdoors. Observe the permissible ambient conditions when used for the intended purpose.

Qualified personnel

All work on the SICHARGE UC dispenser may only be performed after having received the proper instructions.

Non-electrical work, such as 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 familiarity of the relevant standards.

Personal protective equipment (PPE)

PPE protects you against hazards to your health and safety. Use your PPE in accordance with occupational safety guidelines and accident prevention regulations.

Fall arrester

When you are working at a height above 1 m, use a fall arrester.

Use work platforms/lifting platforms to provide qualified personnel with a stable surface.

Take necessary precautions to prevent tools and components from falling.

Fire and explosion protection

Do not store or use highly flammable liquids that produce flammable vapors, such as gasoline or ethanol, in the proximity of the SICHARGE UC dispenser. Electrostatic charge or heat generated during charging can ignite explosive and flammable liquids.

⚠ WARNING

In case of a fire, leave the danger zone.

Do not use the SICHARGE UC dispenser in case of a fire.

Protection against electromagnetic fields

The electromagnetic emission in the SICHARGE UC dispenser meets the requirements of the UL 2202 standard:

NOTICE

Radio interferences

The operation of this device can cause radio interferences in residential areas

Protection against ingress of liquid

The protection standard of the cabinet protects the SICHARGE UC dispenser from ingress of water splashing against it from all directions. In particular, the NEMA 3R enclosure prevents the ingress of precipitation and any liquid not under pressure that comes into contact with the cabinet surface.

In addition, protect the SICHARGE UC dispenser from liquids hitting the cabinet surface under pressure:

- Never use a pressure washer or steam cleaner to clean the SICHARGE UC dispenser.
- Set up the SICHARGE UC dispenser at a flood-proof location.

⚠ WARNING

Electric shock due to ingress of liquid.

Powerful water jets or flooding can cause the liquid to enter the SICHARGE UC dispenser. Moisture or liquid inside the SICHARGE UC dispenser can lead to electric shock.

Conduct the following safety measures when there is a chance that liquid may have entered the SICHARGE UC dispenser:

- Shut down the SICHARGE UC dispenser by disconnecting the power supply to the SICHARGE UC charging station.
- Qualified personnel must dry the SICHARGE UC dispenser and check it for damages.

Protection against unauthorized opening

A lock system protects the SICHARGE UC dispenser from unauthorized opening of the device door.

- Only make the key available to authorized personnel for work performed inside the SICHARGE UC dispenser.
- Do not leave the SICHARGE UC dispenser unattended when the device door is open.

Alterations to the device

The operating instructions describe all permissible alterations to the SICHARGE UC dispenser.

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 no longer present. Undetected dangers can result in accidents regarding serious physical injury or death.

- Use the operating instructions to verify that all safety signs and warnings are attached.
- Replace missing safety signs and warnings.
- Do not remove safety signs and warnings.
- Replace unrecognizable safety signs and warnings.

NOTICE

Manipulation at the connections

Manipulation of the following connections is prohibited:

- Charging plug
- AC/DC inputs
- AC/DC outputs
- Damage to the plug can be caused by improper usage. Ensure that the connector latch behaves properly before commencing operation. The charger will automatically shut down if it is disconnected during the charging process.

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 the charging plugs for manipulation, damage and foreign bodies.
- Do not use a device if it is damaged.

2.2 The five safety rules for electrical work

NFPA 70E “Standard for Electrical Safety in the Workplace” prescribes safety rules for working in and on electrical systems. To ensure the safety of persons and property in accordance with the standards, always comply with the following safety rules:

Securing an electrical system before starting work

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

1. Disconnect the charging station from the voltage source
2. Secure against reclosing
3. Ensure there is no voltage present
4. Install temporary grounding means
5. Install temporary shields over any 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 all persons no longer required.
- Remove all tools, equipment and aids used.

Switch on the electrical system again

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

1. Remove temporary shields over live parts
2. Remove temporary grounding means
3. Reinstate any reclosing
4. Close and latch all doors
5. Switch the system back on

2.3 Safety sign

Safety signs are attached to the SICHARGE UC dispenser and on the packaging for safe handling of the SICHARGE UC dispenser.

Safety signs on the packaging

The following safety signs are attached to the packaging of the SICHARGE UC dispenser:

Safety sign	Meaning
	Marking of the center of gravity
	Warning of tipping hazard
	Marking of the places at which forklifts are not allowed to lift
	Tilt indicator

Safety signs in the cabinet of the SICHARGE UC dispenser

The following safety signs are attached in the cabinet of the SICHARGE UC dispenser:

Safety sign	Meaning
	Warning of dangerous voltage

2.4 Industrial Security

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

Implement and maintain the industrial security concept

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement and continuously maintain a holistic, state-of-the-art industrial security concept. Siemens' products and solutions constitute one element of such a concept. Customers are responsible for preventing unauthorized access to their plants, systems, machines and networks. 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 (such as using firewalls and network segmentation).

In addition, the recommendations of Siemens regarding appropriate protective measures should be observed. You can find additional information about Industrial Security at: (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.

2.5 Identification of the device

The nameplate clearly identifies the SICHARGE UC dispenser. To this end, the nameplate contains the identification data of the device, the manufacturer and the UL marking.

Information on the nameplate

You can find the following information on the nameplate of the SICHARGE UC dispenser:

P3REC000100059

SIEMENS

SICHARGE UC
DC BATTERY CHARGING REMOTE DISPENSER

INPUT		
NOMINAL POWER: 150kW	NOMINAL VOLTAGE: 750VDC	NOMINAL CURRENT: 200ADC
VOLTAGE RANGE/: 100 ... 950VDC	CURRENT RANGE: 0 ... 200ADC	
NOMINAL VOLTAGE: 230VAC	CURRENT RANGE: 0 ... 10AAC	NOMINAL CURRENT: 2AAC

OUTPUT		
NOMINAL POWER: 150kW	NOMINAL VOLTAGE: 750VDC	NOMINAL CURRENT: 200ADC
DUTY CLASS: CONTINUOUS		

ALTITUDE (WITHOUT DERATING): 2000M / 6561FT	TEMPERATURE RANGE: -25C TO +45C	
DEGREE OF PROTECTION: NEMA3R	COOLING METHOD: AF	WEIGHT: 163KG / 360LBS.

UNIT SERIAL NUMBER: XXXXXXXXXX-XXXX

MANUFACTURING PART NUMBER: P3REC100003604	MANUFACTURE DATE: XX-XX-XXXX

7000 SIEMENS DR. WENDELL, NC, USA **MADE IN USA OF US AND IMPORTED PARTS**

Figure 2-1 Example of a SICHARGE UC dispenser UL nameplate

Position of the nameplate on the device

- The nameplate is attached to the left exterior of the SICHARGE UC dispenser.
- Another nameplate is located on the inside of the door.

SECTION 3

Description

3.1 Product overview

The SICHARGE UC dispenser allows for the high power charging of vehicles powered by electricity. Thanks to the support of the open, universal charging standard CSS type 1, the SICHARGE UC dispenser charges a variety of vehicle models from different manufacturers both quickly and efficiently.

The SICHARGE UC dispenser is used for the decentralized distribution of charging ports of a SICHARGE UC charging station.

Performance features

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

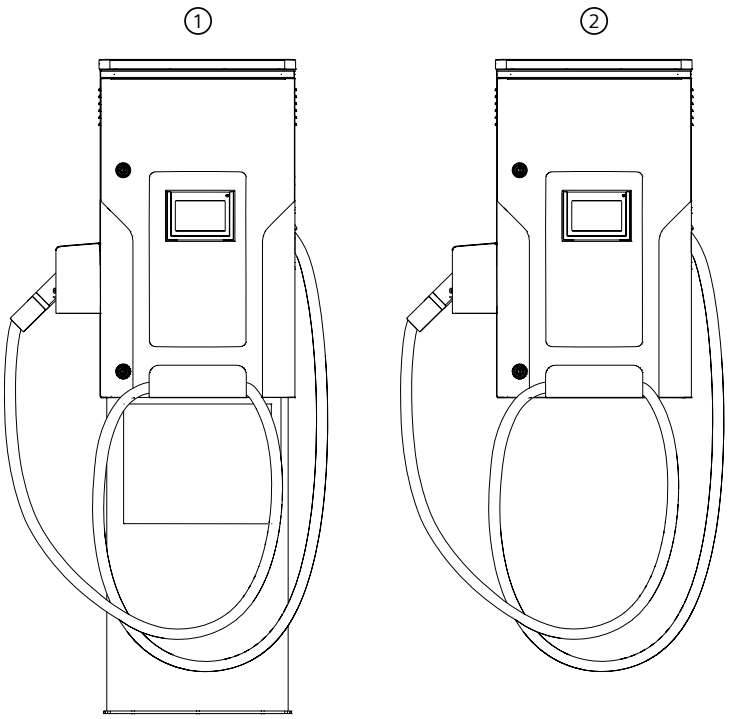
The SICHARGE UC dispenser is characterized by the following performance features:

- Fully automatic control of the charging process
- User-friendly operation thanks to a central HMI screen
- Space-saving construction
- High availability
- Easy maintenance and servicing
- Attractive indication LEDs

Different versions

The SICHARGE UC dispenser is available in various versions. Therefore, the graphics are displayed with many options. The local SICHARGE UC dispenser may not include one of the options described.

The figure below shows the two different mounting variants:



① Floor mounting

② Wall mounting

Figure 3-1 Mounting variants

Application

The SICHARGE UC dispenser is intended for charging of electric vehicles in semi-public commercial and industrial areas such as:

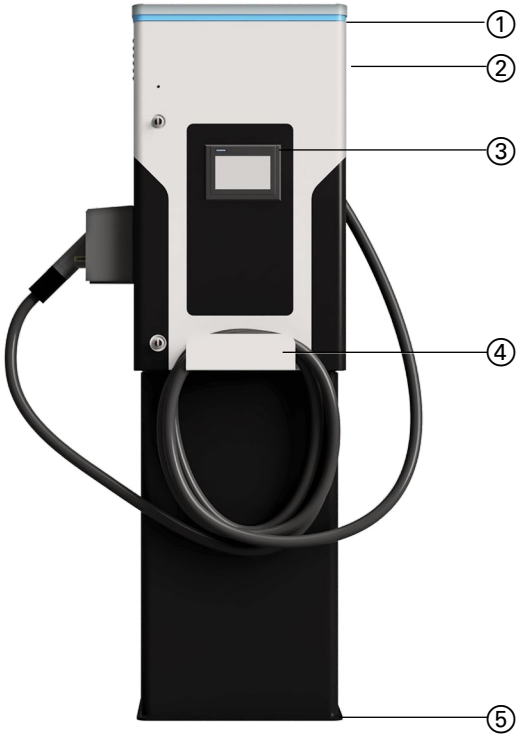
- Terminals
- Vehicle depots
- Company parking lots

3.2 Overview of variants

Overview of variants for floor mounting

The following table shows a comparison of the basic version and the variant with all options available for floor mounting:

Floor mounting

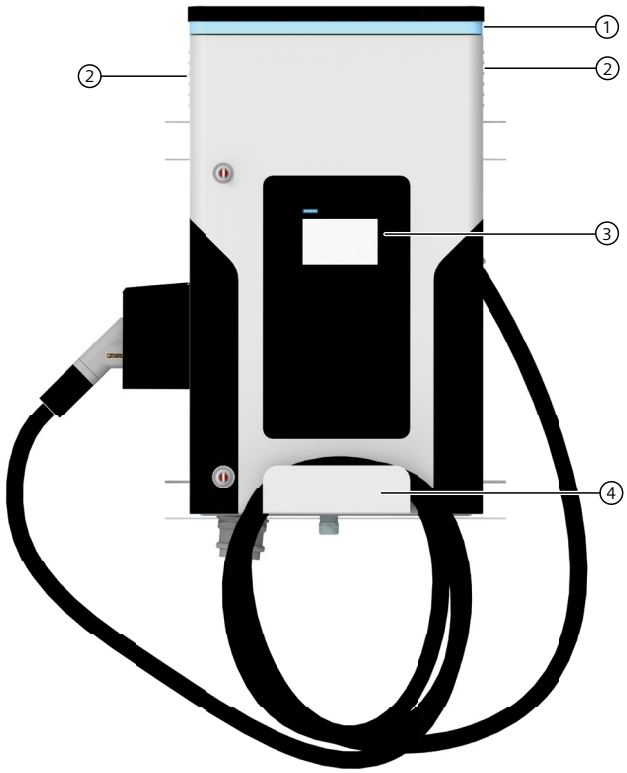


① LED display
② Ventilation slots
③ HMI screen
④ Cable holder
⑤ Floor mounting plate

Overview of variants for wall mounting

The following table shows a comparison of the basic version and the variant with all options available for wall mounting.

Wall mounting



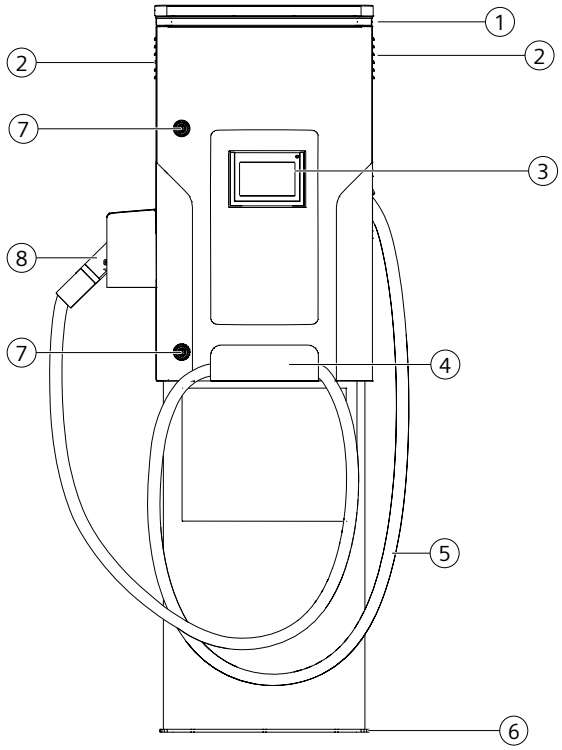
① LED display
② Ventilation slots
③ HMI screen
④ Cable holder

3.3 Structure of a SICHARGE UC dispenser

3.3.1 External structure

Structure, display and operator controls

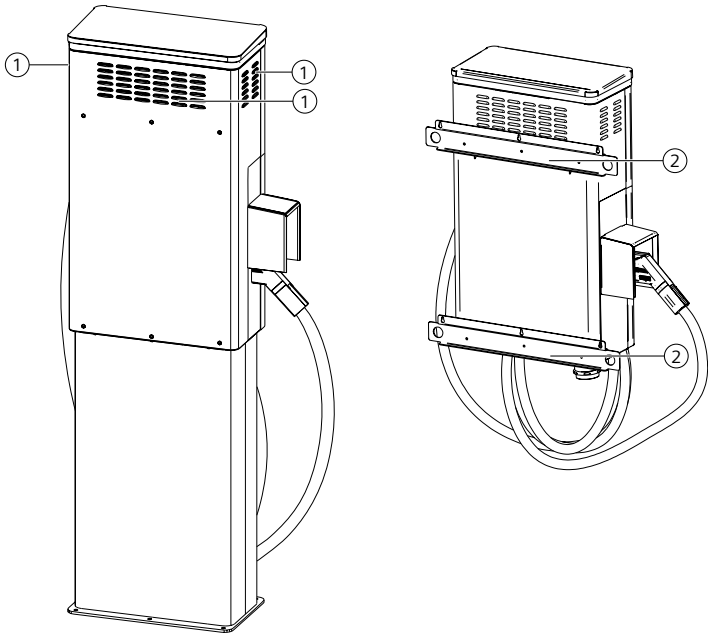
This figure shows the external structure, display and operator controls of the SICHARGE UC dispenser. For this example, we selected a floor-mounted dispenser.



Structure, display and operator controls

① LED display
② Ventilation slots
③ HMI screen
④ Cable holder
⑤ Charging cable
⑥ Floor mounting plate
⑦ Control cabinet lock
⑧ Charging plug and plug holder

Ventilation grilles for discharging the air of the air conditioner are installed on the rear.



Rear view

① Ventilation grille of the air-conditioning unit

② Mounting bar for wall mounting

LED display

The SICHARGE UC dispenser can be equipped with an LED display. The LED display signals different states.

LED display	Indication	Status	Description
Red	Permanent light	Active fault/shutdown state	Not ready to charge
	Rapid flashing	E-STOP	
Blue	Permanent light	Charging	Charging in progress
	Slow flashing	Vehicle connected but not charging (charging about to start or in queue)	
Green	Permanent light	Vehicle not connected, idle	
	Flashing	Charging completed	
White	Permament light	Charger is booting up, charger has malfunctioned	Not ready to charge

HMI screen

The SICHARGE UC dispenser can be equipped with an HMI screen. The SIPLUS HMI KTP700 Basic has an HMI screen with a 7" 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.

Lock system

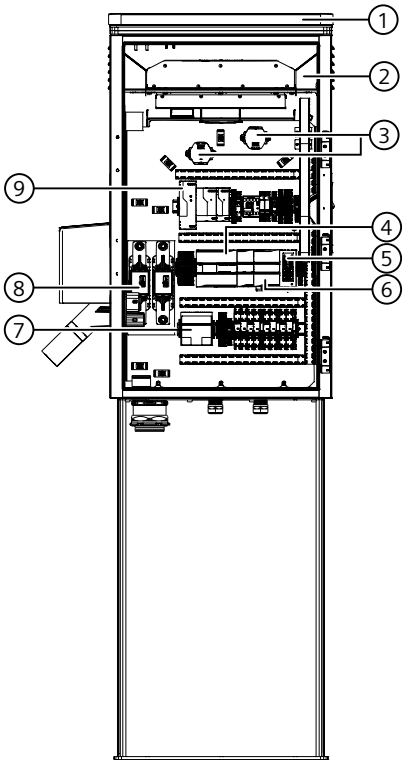
To protect the SICHARGE UC dispenser from unauthorized opening, the device door of the SICHARGE UC dispenser is equipped with a lock system. The door locks secure access to the inside of the SICHARGE UC dispenser. You need a special door key to open the device door. The door key is included in the delivery.

Charging plug and cable holder

Use the charging plug to establish a charging connection to all electric vehicles that are equipped with a charging socket according to standard CCS type 1. When not in use, keep the charging plug stored in the plug holder of the SICHARGE UC dispenser. When it is plugged in, the plug holder protects the charging plug from mechanical damage and environmental influences. The cable holder safely stores the charging cable in a space-saving manner; this protects the charging cable from damage.

3.3.2 Internal structure

The figure below shows the internal structure of the SICHARGE UC dispenser as well as the mounting variants on the floor and wall.



① LED display
② Air-conditioning unit
③ DC contactors
④ Siemens controller
⑤ Ethernet switch
⑥ PLC gateway
⑦ Control cabinet heater
⑧ DC fuses
⑨ Industrial power supply

3.4 Charging cable type 1

The SICHARGE UC dispenser is equipped with a charging cable for charging electric vehicles with direct current. The charging cable enables charging of electric vehicles according to the standard CCS type 1 (SAEJ1772).

Charging contacts

To safely transmit the high charging power, the CCS1 connector of the charging cable uses the following charging contacts:

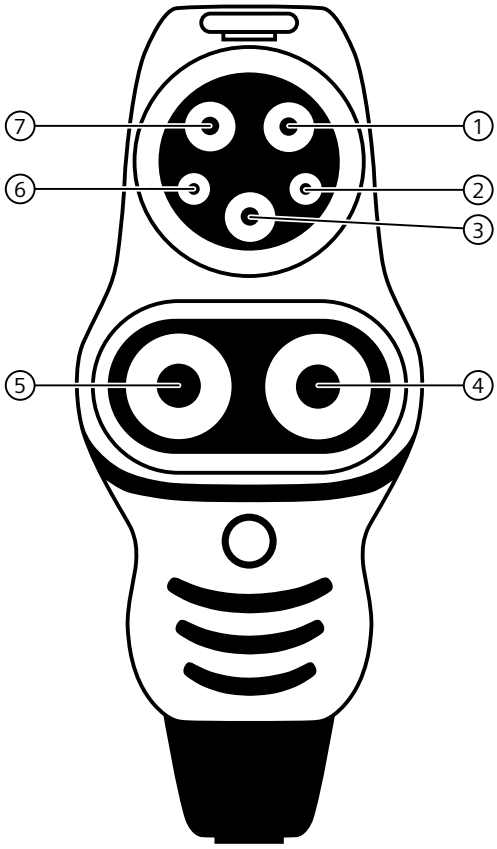


Figure 3-2 Charging contacts

No.	Contact	Use
①	AC Power (L2, N)	AC neutral contact or DC- when using Level 1 power (note that this contact is not utilized for the SICHARGE application)
②	Control Pilot (CP)	Vehicle and charging station communicate via the signal contact CP
③	Protective Earth (PE)	The PE grounding contact protects the device in case of a faulty cable connection
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 plus pole for direct current charging
⑥	Control Status (CS)	The PD contact enables the vehicle to detect the presence of a charging plug
⑦	AC Power (L1)	Single-phase AC contact or DC+ when using Level 1 power

Locking

Charging mode 4 for DC charging according to the standard SAEJ1772 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 automatically locks the plug-in connection in the electric vehicle after plugging in.

Temperature monitoring

The integrated temperature monitoring of the charging cable ensures the safe transfer of the charging power. Temperature sensors monitor the charging contacts DC+ and DC- during the entire charging process. When the temperature at one of the charging contacts exceeds 86 °C / 188 °F, the charge controller reduces the maximum output current. When the temperature at one of the charging contacts exceeds 90 °C / 194 °F, the charge controller immediately switches off the power supply of the charging cable.

Performance features

The table below shows the performance features of the SICHARGE UC dispenser charging cable:

Feature	Value
Charging standard	SAEJ1772
Charging mode	4
Rated current	200 A
Rated voltage	1,000 V DC
Cable outer diameter	1.45” +/-.020”
Power contacts	DC+, DC-, PE
Degree of protection with an inserted charging plug	NEMA 3R
Degree of protection with a charging plug not inserted	NEMA 1

3.5 Electrical protection devices

The SICHARGE UC dispenser is equipped with multiple electrical protection devices.

NOTICE

No EMERGENCY OFF button on the SICHARGE UC dispenser

The EMERGENCY OFF button is installed directly on the connected SICHARGE UC charging station.

On the outside of the SICHARGE UC dispenser, attach a visible map with the location of the connected SICHARGE UC charging station. All persons in this area must be instructed on how to act in an emergency.

⚠ WARNING

Resetting alarm states

Some alarm states may only be reset by qualified electricians.

Overvoltage protection

The overvoltage protection is provided by an upstream SICHARGE UC charging station.

The SICHARGE UC charging station offers comprehensive protection against overvoltages from the distribution network. Voltage-dependent resistors 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 main voltage exceeds or falls below the permissible limits, the charging station interrupts the charging process in progress or does not start the charging process.

Overload protection

A separate system constantly monitors the input current and the output current in the SICHARGE UC dispenser. The SICHARGE UC dispenser supplies the system with power directly through the input voltage. This allows the system to monitor currents even when there is no output voltage.

The charge controller constantly monitors the input current and the output current. If a measured current value exceeds the preset limits, the control system opens the main contactor. The open main contactor electrically separates the charging module and the vehicle. The charging current ceases to flow between the SICHARGE UC dispenser and the vehicle. A fuse at the input protects the SICHARGE UC dispenser from overcurrents.

Insulation monitoring

Insulation monitoring is provided by the upstream SICHARGE UC charging station. To ensure that an electric vehicle is safe, the high-voltage electrical supply system of the vehicle must not be grounded with an electrically conductive material. An insulation monitoring device in the upstream SICHARGE UC, therefore, constantly monitors the resistance between the DC+ and DC- contacts to the protective earth (PE). If this resistance falls below the permissible limit, the insulation monitoring device switches off the output current and disconnects the AC/DC converter from the AC input. In addition, the insulation monitoring device sends a message to the controller that shows the “Ground Fault Detection” alarm message. For safety reasons, the charging station switches to the safe EMERGENCY OFF state. In the EMERGENCY OFF state, the operation of the SICHARGE UC dispenser is not possible. When the alarm has been reset, the SICHARGE UC dispenser is ready for operation again. The EMERGENCY OFF state is automatically reset when the insulation fault has been rectified. Contact the electrician in charge if the EMERGENCY OFF fault persists.

SECTION 4

Application planning

4.1 Incoming inspection of the devices

4.1.1 Checking the delivery for completeness and correctness

When the carrier delivers the SICHARGE UC dispenser, you should immediately perform an incoming inspection of the devices.

Checking delivery

Begin the incoming inspection of the equipment with the following steps:

- Check the completeness of the delivery
- Check that the delivery documents correspond to the goods delivered

Additional material

The following is transferred directly to the customer during the transfer process:

- Documents
- Password

NOTICE

Disclaimer of liability

Customers are responsible for safekeeping of the documents and objects received. Siemens is not obligated to reproduce transferred documents and objects..

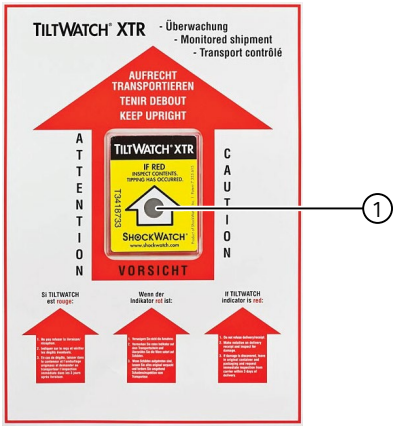
Siemens is not liable for the improper use of intelligent devices.

4.1.2 Checking the transport packaging

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

Checking the tilt indicator

A tilt indicator is affixed to the transport packaging of the SICHARGE UC dispenser. To check the tilt status of the transported package, follow the instructions on the label.



① Indicator

Figure 4-1 Schematic example: Tilt indicator

The tilt indicator monitors the container for tilting throughout its transport. The indicator tube indicates that the container has been tilted by more than 80° by turning red. A red indicator can be a sign of damage during transport.

Perform a visual inspection of the tilt indicator as follows:

1. Check for the presence of a tilt 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 the incoming inspection of the devices with a visual inspection of the entire transport packaging.

4.1.3 Unpackaging the SICHARGE UC dispenser

Depending on the transport route, the carrier supplies the SICHARGE UC dispenser in different transport packaging. Therefore, the packaging does not look the same. Specifications for the disposal of the packaging material can be found in the section Disposal (Page 112).

Removing the packaging for road transport

To remove the packaging, proceed as follows:

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

Removing the packaging for air transport

To remove the packaging, proceed as follows:

1. Remove the side walls of the packaging one-by-one as follows:
   - Unscrew the screws in the side panel
   - Remove the side panel
2. Remove the cover of the transport packaging

Removing the packaging for sea transport

To remove the packaging, proceed as follows:

1. Remove the aluminum compound foil
2. Remove the side walls of the packaging one-by-one as follows:
   - Unscrew the screws in the side panel
   - Remove the side panel
3. Remove the cover of the transport packaging

4.1.4 Reporting missing delivery components or transport damage

If you discover that the delivery is incomplete or that there is transport damage, first document the damage. 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, such as 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

For the safe operation of the SICHARGE UC dispenser, you need a location that meets the following requirements:

NOTICE

Accident risks

Avoid accidents and injuries as well as damages to vehicles and the SICHARGE UC dispenser such as inattentiveness, slipping and tripping risks as well as vandalism. Provide additional protective measures, for example:

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

NOTICE

The SICHARGE UC dispenser has been tested for operation and protection in a corrosive environment per UL 50E Type 3R. Environments with prolonged exposure to salt water or salty air may result in a higher rate of corrosion than in more mild settings. The prospective installation location should be chosen so that the metal enclosures have limited exposure to these types of conditions. For specific concerns related to coastal installations, contact your Siemens sales representative.

Selection criteria for a safe location

Select the location of the SICHARGE UC dispenser so that all charging actions are safe.

The user must be able to connect the vehicle without the use of extension cables. Therefore, the SICHARGE UC dispenser must be within close proximity of the supplied mounting surfaces. The SICHARGE UC dispenser must not pose a risk to persons or vehicles and must not be installed in direct sunlight or on dark asphalt so as to preserve derating characteristics.

Properties of the mounting surface

- Floor mounting:

To ensure the stability of the SICHARGE UC dispenser, the floor space must meet the following requirements:

– Level
– Dry
– Sufficiently strong and able to bear the weight the dispenser

NOTICE

Sealing the mounting plate

Seal the mounting plate and the cable openings in the foundation with suitable materials to prevent moisture, animals and insects from getting inside the station.

- Wall mounting:

To ensure a secure hold of the SICHARGE UC dispenser, the mounting surface must meet the following requirements:

– Level
– Dry
– Sufficiently solid and stable
– Take into account the static of building

You can find the dimensions for assembly in the section Preparing the mounting surface (Page 39).
Additional data can be found in the section Technical specifications (Page 114).

Minimum clearances for floor mounting

For operation and maintenance and to ensure proper ventilation of the SICHARGE UC dispenser, you must maintain the following minimum physical clearances (in mm), while also adhering to all building and installation codes:

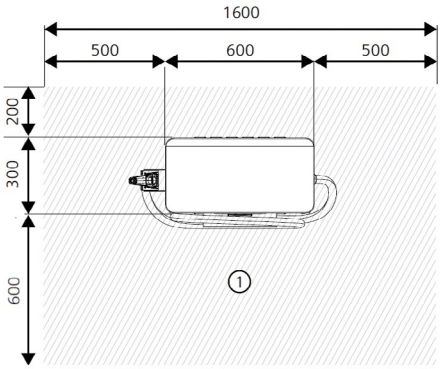


Figure 4-2 Minimum clearances for floor mounting (top view)

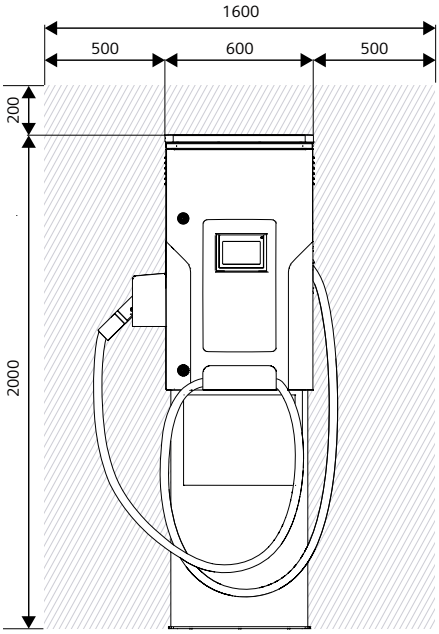


Figure 4-3 Minimum clearances for floor mounting (front view)

Minimum clearances for wall mounting

For operation and maintenance and to ensure proper ventilation of the SICHARGE UC dispenser, you must maintain the following minimum clearances (in mm):

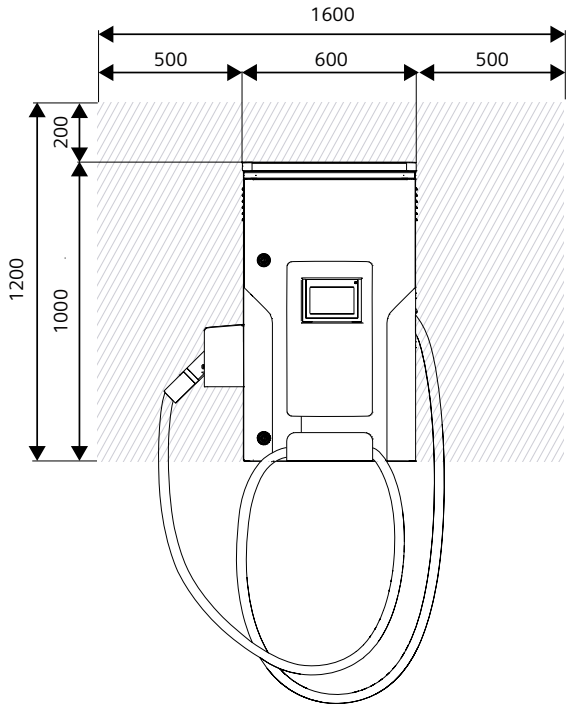


Figure 4-4 Minimum clearances for wall mounting (front view)

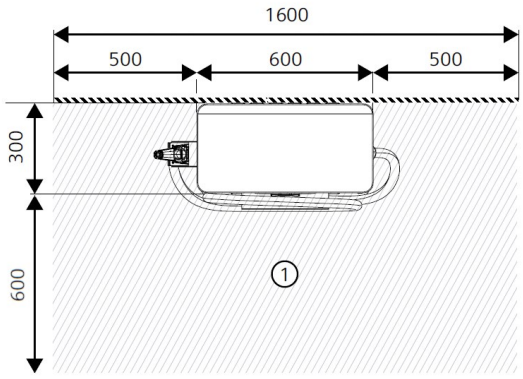


Figure 4-5 Minimum clearances for wall mounting (top-down view)

Maximum allowable temperature at air inlet

The maximum permissible ambient temperature is 45 °C. When the ambient temperature exceeds 45 °C, the charging process is interrupted. The SICHARGE UC dispenser must not be operated above the maximum permissible ambient temperature.

Direction of air flow

Please note the direction of air flow when installing:

- Air-conditioning unit:
  The supply air enters the SICHARGE UC dispenser from the back.
  The exhaust air escapes through the louvers on both sides.

Avoid recirculating the exhaust air for cooling.

Electrical installation

- Auxiliary voltage:
  The SICHARGE UC dispenser is designed for the connection to the low-voltage network (230 VAC) via the SICHARGE UC charging station. Connect the SICHARGE UC dispenser to the SICHARGE UC charging station using a properly sized supply line.

- Direct voltage:
  The SICHARGE UC dispenser is designed for the connection of direct voltage to a SICHARGE UC charging station. Connect the SICHARGE UC dispenser using a properly sized cable.

NOTICE

Routing of DC cables to prevent radio interference

The DC charging cables from the SICHARGE UC charging station to the SICHARGE UC dispenser must either be buried underground or fastened directly to the floor. We recommend using shielded cables for running the cables above ground to reduce the electromagnetic radiation of the cables. Additional measures may be necessary, however, in case of interferences of the radio spectrum these include, for example, the use of EMC filters or ferrites that must then be installed at the output of the DC charging cable..

- Ethernet:
  Connect the SICHARGE UC dispenser and the SICHARGE UC charging station with an Ethernet cable.

  These are the specifications for cable routing:
  - Low-voltage and DC cables must be installed shielded from the Ethernet cable.
  - Separate cable routing to low-voltage and DC cables (minimum 20 cm).
  - Lay the Ethernet cable close to grounded cabinet components.
  - Ethernet cables and low-voltage and DC cables may only cross each other at a 90° angle.
  - Ground the shielding of the Ethernet cable at both cable ends.

- Fiber:
  - Connect the SICHARGE UC dispenser and the SICHARGE UC charging station with fiber-optic cable.
  - Avoid sharp bends in the fiber-optic cable during installation.

Grounding instructions

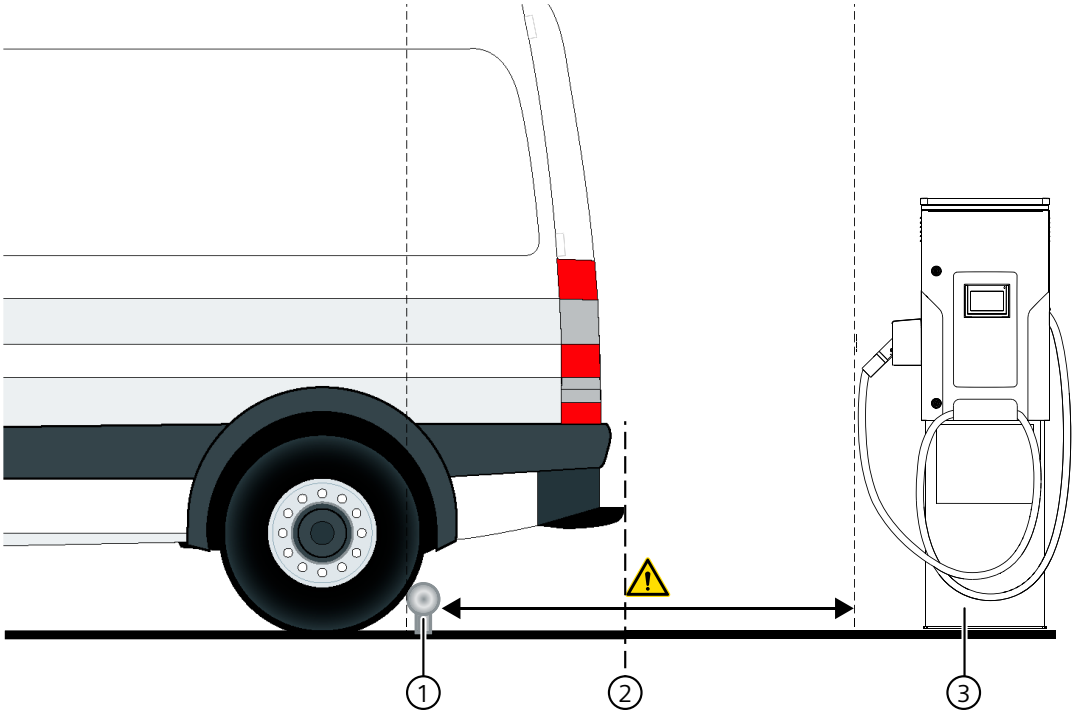
This unit is to be connected to a grounded, metal, permanent wiring system; or an equipment-grounding conductor is to be run with circuit conductors and connected to an equipment-grounding terminal or lead on the SICHARGE UC charging station. Connections to the SICHARGE UC charging station shall comply with all local codes and ordinances.

Cable routing considerations

All circuits (incoming AC power wiring, DC wiring to dispensers and communications wiring) should be ran in separate conduit runs until reaching the cable gland plates.

Bumper

To protect the SICHARGE UC dispenser from the impact of other vehicles, install a bumper ①.



① Bumper

② Vehicle

③ SICHARGE UC dispenser

Figure 4-6 Example: Correct position of bumper and SICHARGE UC dispenser

Plan for bumpers based on the dimensions of the vehicles used. The bumper must stop the vehicle before the vehicle overhang touches the SICHARGE UC dispenser. However, the bumper must not prevent opening the cabinet door of the SICHARGE UC dispenser.

4.3 Preparing the mounting surface

4.3.1 Preparing for floor mounting

To securely fasten the SICHARGE UC dispenser to the intended mounting surface on the floor, you must prepare the mounting surface.

⚠ CAUTION

Secure work area

Ensure a sufficiently large safety zone around the mounting surface. For example, use warning signs and barriers.

Cable entry position

The following figure shows the position of the cable entry into the SICHARGE UC dispenser from below.

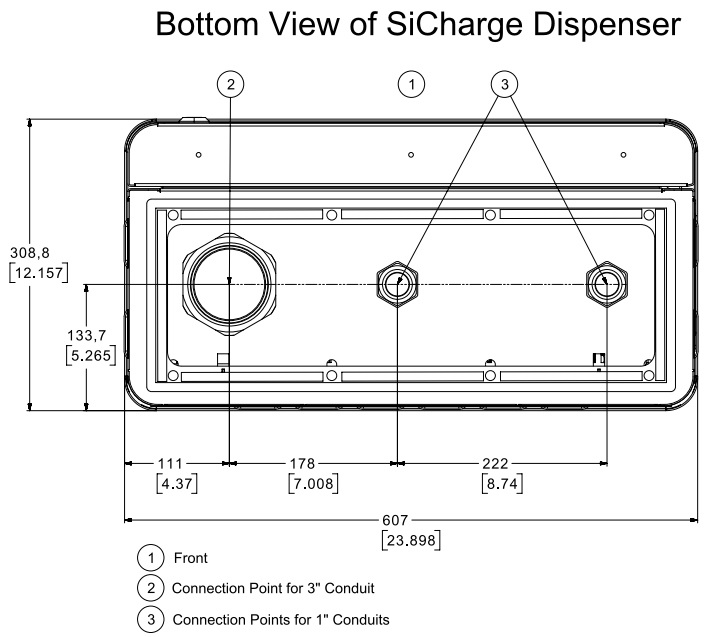


Figure 4-7 Cable entry

Drill holes for fixing points on the floor

To fasten the SICHARGE UC dispenser, the following drill holes must be available for the fixing points:

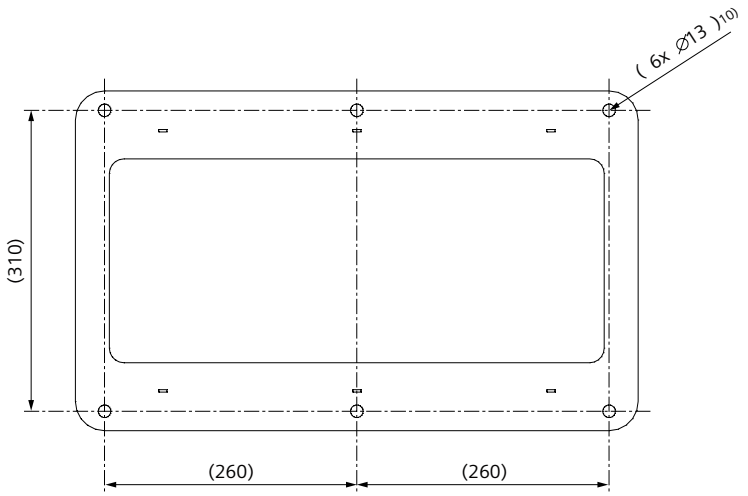


Figure 4-8 Fixing points of the mounting plate

Fixing to the floor

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

We recommend the following fixing material for mounting the SICHARGE UC dispenser to the base area:

- 6 bolt anchors M12
- 6 washers M12
- 6 nuts M12
- Sealing material to prevent the ingress of moisture, animals and insects

4.3.2 Preparing for wall mounting

To securely fasten the SICHARGE UC dispenser to the intended mounting surface, you must prepare the mounting surface.

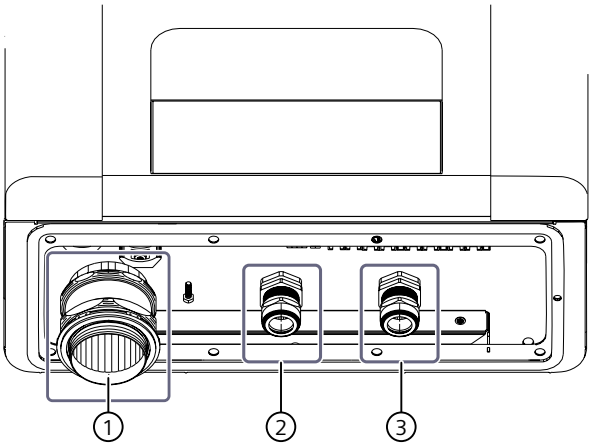
⚠ CAUTION

Secure work area

Ensure a sufficiently large safety zone around the mounting surface. For example, use warning signs and barriers.

Cable entry position

The following figure shows the position of cable entry from below into the SICHARGE UC dispenser with the option to connect additional dispensers (daisy chain). In the case of additional dispensers, the entrance and exit for cable connections will route through the same cable gland.



① Cable glands for DC cable and PE cable

② Cable gland for AC cable

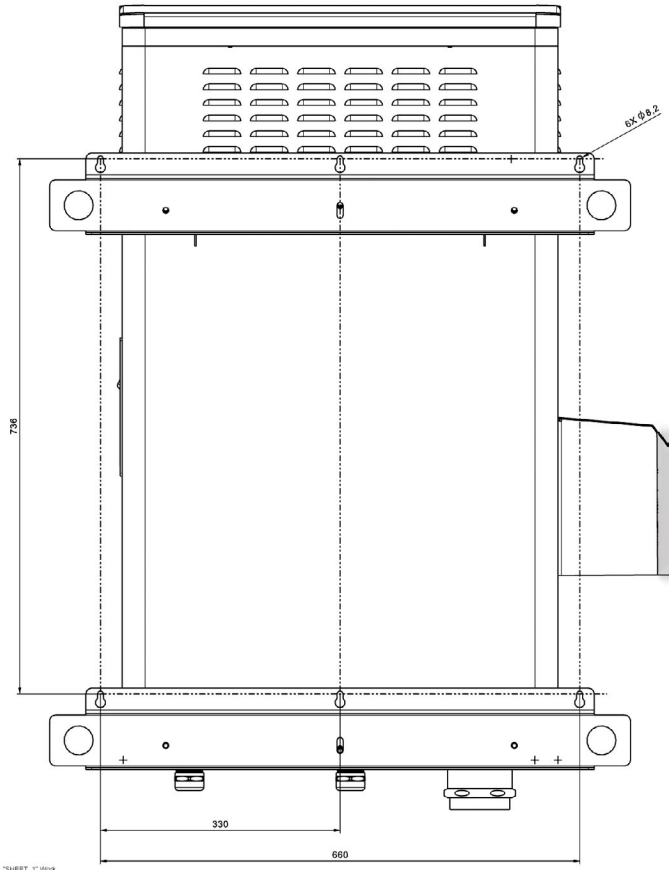
③ Ethernet cable gland

Figure 4-9 Cable entry for wall mounting

You will find a table with the connection plan for connection to the SICHARGE UC dispenser and the cable diameters in the section Technical specifications (Page 114).

Installing anchors

Using a hammer drill, drill six ¼" holes into the concrete wall. The minimum drill depth is 1 and ¼" deep. The drill template is shown below:



After drilling the six holes, insert the ¼" stud anchors. These will need to be hammered in. Loosely install the retaining washer and hex nut on all six anchor studs.

Hanging the dispenser on the wall

With the dispenser wall mount brackets installed to the dispenser, position the studs into the hanging holes on the mounting bracket. The ¼" washer and hex nut will fit into the larger hole on the mounting bracket. Once all studs are aligned in the holes, the dispenser can be set down into the smaller slots on the mounting bracket. To secure the dispenser, apply thread adhesive and torque hex nuts to 4 ft. – lbs.

4.4 Storing the dispenser

Proper storage of the SICHARGE UC dispenser is a requirement for the safe operation of the device.

NOTICE

Damage to property due to improper storage.

In case of improper storage, there is a risk of damages to the SICHARGE UC dispenser, such as corrosion damage.[1]

- Observe the conditions for proper storage.

Storage conditions

Store the SICHARGE UC dispenser inside a building. The storage location must meet the following conditions:

- Horizontal surface
- Protection from mechanical stress (for example, due to shocks or vibrations)
- Dust-free
- Low-pollutant atmosphere
- Constant room temperature
- Permissible room temperature range: -40 °C to +75 °C
- Permissible relative humidity: up to 95% (no condensation)

Long-term storage

NOTICE

Material damage due to excessive storage time.

When the electronic components of the SICHARGE UC dispenser remain switched off for more than one year, the components may be subject to storage damages.

- Only store the SICHARGE UC dispenser for a longer period when necessary.
- Do not keep the SICHARGE UC dispenser decommissioned for more than one year.

Also, observe the following when storing the SICHARGE UC dispenser for an extended period:

- Use the original transport packaging.
- Regularly check that the actual storage conditions do not allow condensation to form.
- Regularly check the SICHARGE UC dispenser for damages.

4.5 Transporting the dispenser

⚠ WARNING

Danger to life when standing under lifted loads.

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

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

⚠ DANGER

Danger to life due to improper transport.

If you transport the SICHARGE UC dispenser incorrectly, the device may tip over. Tipping of the SICHARGE UC dispenser can result in death, serious injury and material damage.

- Only qualified personnel may transport the SICHARGE UC dispenser.
- Only use approved means of transport and hoisting gear.
- Pay attention to the center of gravity of the SICHARGE UC dispenser. The center of gravity is marked on the device and on the packaging.
- Pay attention to the weight of the SICHARGE UC dispenser.
- Only transport the SICHARGE UC dispenser in an upright position.
- The forks of the forklift must protrude at the rear of the transport pallet. The bottom boards of the transport pallet cannot bear loads.

NOTICE

Transporting the SICHARGE UC dispenser on a transport pallet

The transport pallet protects the SICHARGE UC dispenser from damages and makes transport easier.

- Therefore, always transport the SICHARGE UC dispenser on the transport pallet.

Transporting with pallet

To transport the SICHARGE UC dispenser to a location using a forklift or a pallet truck, follow these steps:

1. Drive into the transport pallet with the forks on the transverse or longitudinal side.
2. Drive in until the forks are protruding out of the pallet at the other end.
3. Lift the SICHARGE UC dispenser vertically.
4. Transport the SICHARGE UC dispenser to the location in an upright position.

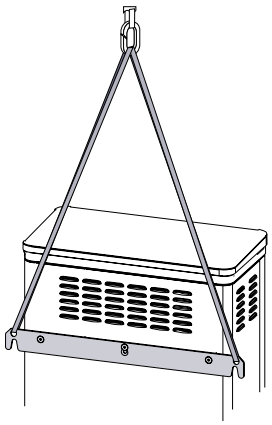
Transporting the dispenser for floor mounting with lifting equipment

The SICHARGE UC dispenser floor mounting is delivered with two transport plates for mounting.

1. Connect the transport plates of the SICHARGE UC dispenser and the lifting equipment. Only use suitable and approved lifting equipment.
2. Lift the SICHARGE UC dispenser vertically from the transport pallet.
3. Transport the SICHARGE UC dispenser suspended to the location.

Transporting the dispenser for wall mounting with lifting equipment

The SICHARGE UC dispenser wall mounting is delivered with mounting rails on the rear of the device.



1. Mount the shackle into the holes on the right and left of the mounting rail.
2. Attach the shackles to the lifting equipment. Only use suitable and approved lifting equipment.
3. Lift the SICHARGE UC dispenser vertically from the transport pallet.
4. Transport the SICHARGE UC dispenser suspended to the location.

SECTION 5

Installation

5.1 Safety instructions

Observe the following safety instructions when installing the SICHARGE UC dispenser.

⚠ DANGER

Electric shock due to exposed electrical connections or components.

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

If damage or tampering is visible (such as damage to the cabinet), do not install the SICHARGE UC dispenser.

⚠ 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 correctly.
- Do not stay in the hazardous area under or next to a lifted load.

⚠ WARNING

Fall arrester

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

⚠ WARNING

Falling parts

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

⚠ CAUTION

Risk of stumbling or slipping

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

NOTICE

Accident risks

Avoid accidents and injuries as well as damages to vehicles and the SICHARGE UC dispenser. These include, for example, inattentiveness, slipping and tripping risks as well as vandalism. Provide additional protective measures, for example:

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

NOTICE

Safety area for mounting

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

NOTICE

Use the PPE

Use the PPE required for the work according to NFPA70E. For example:

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

NOTICE

Risk of crushing/cutting

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

Routing of DC cables to prevent radio interference

If the dispenser connection cables are not installed in EMT conduit, Siemens recommends using shielded cables to reduce electromagnetic interference.

Grounding instructions

This unit is to be connected to a grounded, metal permanent wiring system; or an equipment-grounding conductor is to be run with circuit conductors and connected to an equipment-grounding terminal or lead on the SICHARGE UC charging station. Connections to the SICHARGE UC charging station shall comply with all local codes and ordinances.

Cable routing considerations

All circuits (incoming AC power wiring, DC wiring to dispensers and communications wiring) should be ran in separate conduit runs until reaching the cable gland plates.

5.2 Floor mounting

5.2.1 Mounting the dispenser on the floor

To mount the SICHARGE UC dispenser at the location, you must lift the SICHARGE UC dispenser off the transport pallet. If the SICHARGE UC dispenser is heavy, transport it to the prepared mounting area using a forklift.

Lifting the SICHARGE UC dispenser

To lift the SICHARGE UC dispenser off the transport pallet, follow these steps:

1. Connect the transport lugs of the SICHARGE UC dispenser and the lifting equipment.
   Only use suitable and approved lifting equipment.
2. Lift the SICHARGE UC dispenser vertically from the transport pallet.
3. Transport the SICHARGE UC dispenser suspended to the location.

Required tools and fasteners

To mount the SICHARGE UC dispenser, you need the following tools:

- Torque wrench
- Hexagonal socket

The mounting material is not included in the scope of delivery. We recommend the following fixing material for mounting the SICHARGE UC dispenser to the base area:

- 6 bolt anchors M12
- 6 washers M12
- 6 nuts M12

Mounting the SICHARGE UC dispenser

To position the SICHARGE UC dispenser on the base area, follow these steps:

1. Position the SICHARGE UC dispenser on the mounting surface using the bolt anchors.
2. Guide any underground cables into the mounting base of the SICHARGE UC dispenser.
3. Check whether the alignment of the SICHARGE UC dispenser with the bolt anchors of the mounting surface is correct.
4. Lower the SICHARGE UC dispenser onto the base area.
5. Place the washers on the bolt anchors.
6. Attach a bolt lock to the bolt anchors. We recommend Loctite 243.
7. Screw the cap nuts onto the bolt anchors.
8. Tighten the nuts with the tightening torque of the bolt anchors per the manufacturer's instructions.
9. Seal the openings from the mounting surface to the mounting plate with a suitable sealant to prevent the ingress of moisture, animals and insects.
10. Remove the one transport bracket on the rear of the SICHARGE UC dispenser. Keep the transport plates.
11. Detach the sealing washers, which should be zip tied to the transport plate.
12. Reinstall the bolt with the silicone washers stacked upon one another. Washers are provided loosely in place upon arrival in the dispenser enclosure.
13. Replace the hardware in the top three holes on the back of the dispenser using the sealing washers and existing bolts. Detach the sealing washers from the transport bracket.
14. Use one (1) sealing washer and one (1) M8 stainless steel bolt to secure the bracket to the dispenser using the center weld nut hole and the center slot on the bracket. Tighten the bolt using a torque wrench to 150 in-lbs.
15. Use one (1) sealing washer and one (1) M8 stainless steel bolt in the left weld nut hole, but DO NOT tighten. Repeat for the right weld nut hole.
16. Using a torque wrench, alternate between the left and right bolts, tightening the bolts in equal increments until they both are tightened to 150 in-lbs.

5.3 Wall mounting

5.3.1 Mounting the dispenser to the wall

To mount the SICHARGE UC dispenser at the location, you must lift the SICHARGE UC dispenser off the transport pallet. If the SICHARGE UC dispenser is heavy, transport it to the prepared mounting area using a forklift.

Lifting the SICHARGE UC dispenser

The SICHARGE UC dispenser wall mounting is delivered with mounting rails on the rear of the device.

To lift the SICHARGE UC dispenser off the transport pallet, follow these steps:

1. Mount the shackle into the holes on the right and left of the mounting rail.
2. Attach the shackles to the lifting equipment. Only use suitable and approved lifting equipment.
3. Lift the SICHARGE UC dispenser vertically from the transport pallet.
4. Transport the SICHARGE UC dispenser suspended to the location.

Required tools and fasteners

To mount the SICHARGE UC dispenser, you need the following tools:

- Torque wrench
- Hexagonal socket

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

We recommend the following fixing material for mounting the SICHARGE UC dispenser to the mounting surface:

- 4 bolt anchors M12
- 4 washers M12
- 4 nuts M12
- Screw lock (for example, Loctite 243)

Mounting the SICHARGE UC dispenser

To position the SICHARGE UC dispenser on the mounting surface, follow these steps:

1. Position the SICHARGE UC dispenser on the mounting surface using the bottom bolt anchor.
2. Check whether the alignment of the SICHARGE UC dispenser above the bottom bolt anchor of the mounting surface is correct.
3. Lower the SICHARGE UC dispenser onto the bottom bolt anchor.
4. Attach the washers to the bottom bolt anchors.
5. Screw the cap nuts onto the bottom bolt anchors.
6. Remove the lifting gear and the shackles from the top mounting rail.
7. Slide the SICHARGE UC dispenser onto the top bolt anchor up to the mounting surface.
8. Attach the washers to the top bolt anchors.
9. Attach a bolt lock to the top bolt anchors. We recommend Loctite 243.
10. Screw the cap nuts onto the top bolt anchors.
11. Unscrew the bottom cap nuts to a moderate degree.
12. Attach a bolt lock to the bottom bolt anchors. We recommend Loctite 243.
13. Tighten all nuts with the tightening torque of the bolt anchors per the manufacturer’s instructions.

SECTION 6

Connecting

6.1 Safety instructions

The installer is responsible for the electrical connection of the SICHARGE UC dispenser. The electrical connection of the SICHARGE UC dispenser must be done according to the relevant regulations (such as conductor cross section, fuses and ground connection).

When working on the SICHARGE UC dispenser, observe the section Safety instructions (Page 10).

Take into account the requirements listed in NFPA 70 for the secure operation of electrical installations or other applicable local guidelines. In addition, observe the following safety instructions:

⚠ WARNING

Electric shock due to lack of grounding

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

⚠ WARNING

Qualified personnel

Only qualified and trained persons may work on the SICHARGE UC dispenser.

⚠ WARNING

Fall arrester

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

⚠ WARNING

Falling parts

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

NOTICE

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

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

- Tighten all power connections to the specified tightening torque.
- Check all power connections at regular intervals, particularly after transport.

NOTICE

Risk of crushing/cutting

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

⚠ CAUTION

Risk of stumbling or slipping

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

6.2 Connecting the power supply cable

To connect the SICHARGE UC dispenser to the SICHARGE UC charging station, connect the power supply cable to the L1 and N fuses of the SICHARGE UC dispenser.

Grounding instructions
This unit is to be connected to a grounded, metal permanent wiring system; or an equipment-grounding conductor is to be run with circuit conductors and connected to an equipment-grounding terminal or lead on the SICHARGE UC charging station. Connections to the SICHARGE UC charging station must comply with all local codes and ordinances.

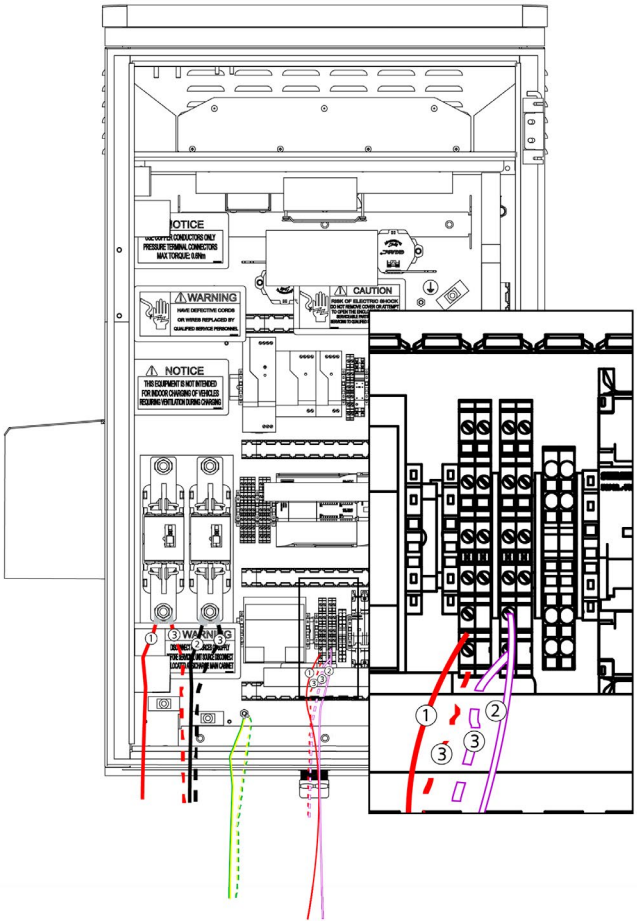
Cable routing considerations
All circuits (incoming AC power wiring, DC wiring to dispensers and communications wiring) should be ran in separate conduit runs until reaching the cable gland plates.

Requirements

- You have opened the cabinet.
- You have inserted the power cable into the cabinet.

Connections of the power supply cable

The figure below shows the connection of the power supply cable. AC cables should be torqued to a value of 0.5 to 0.6 Nm.



① Terminal X23 (L1, 14 AWG - red)
② Terminal X24 (N, 14 AWG - red/white)
③ Loop through for daisy chain - L1 and N - shown as dashed lines

Figure 6-1 Power supply cable connection

Connecting the PE conductor

First, connect the PE conductor of the power supply cable to the grounding connector:

1. Remove the sheath of the power supply cable to approximately 8 cm in length.
2. Select a wire end ferrule for the appropriate conductor cross section.
3. Strip the insulation from the end of the conductor so that the remaining insulation extends up to the ferrule.
4. Properly attach the wire end ferrule to the conductor end.
5. Insert the wire end ferrule into the terminal strip of the ground connection.
6. Check the connection of the PE conductor to the PE terminal.

Connecting cable L1, N

To connect a conductor, follow these steps:

1. Remove the sheath of the power supply cable to a length of approximately 5 cm.
2. Select a wire end ferrule for the appropriate conductor cross section.
3. Strip the insulation from the end of the conductor so that the remaining insulation extends up to the ferrule.
4. Properly attach the wire end ferrule to the conductor end.
5. Insert the wire end ferrule into the terminal strip of the respective conductor.
6. Check the connection of the conductor to the terminal.

Attaching the power supply cable

Secure the power supply cable after the connection to the cable duct.

Connection of additional SICHARGE UC dispensers

The main connection is looped through to connect additional SICHARGE UC dispensers to the same SICHARGE UC charging station. This is shown as item ④ in the “Power supply cable connection” figure. To do this, follow the above sequence to connect the power supply cable.

6.3 Connecting the DC cable

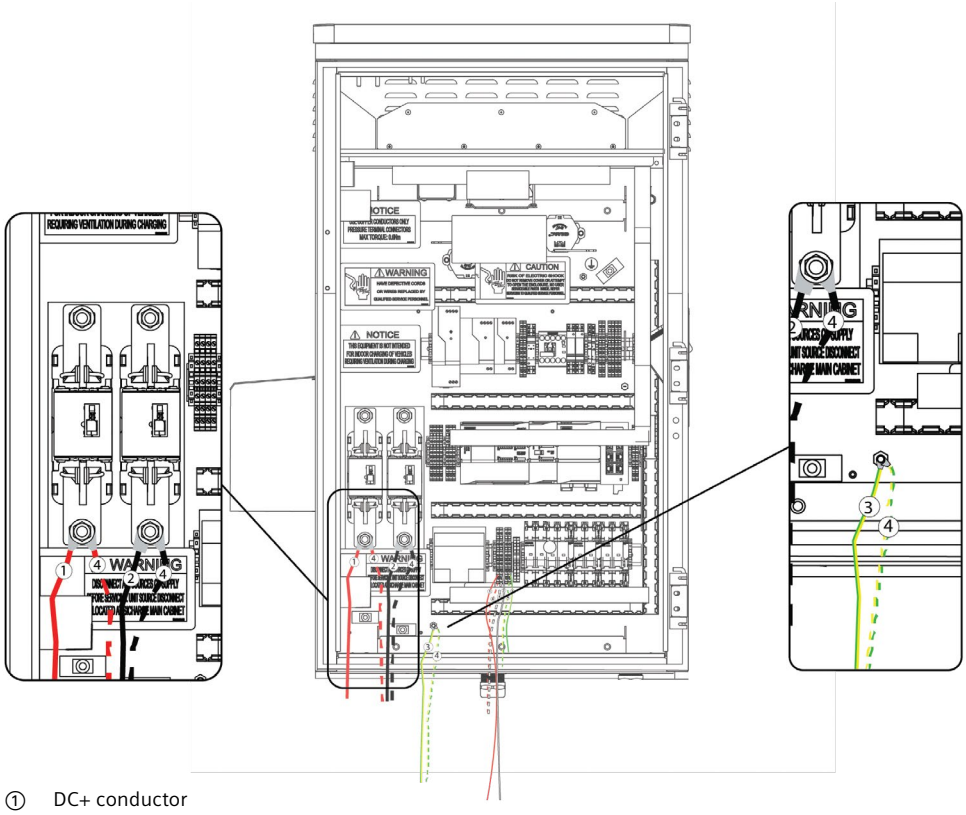
To connect the SICHARGE UC dispenser to the SICHARGE UC charging station, connect the DC cable to the DC connectors of the SICHARGE UC dispenser.

Requirements

- You have opened the cabinet.
- You have removed the protective cover on the left.
- You have inserted the DC cable into the cabinet.

Connections for the DC cable

The following figure shows the connection of the DC cable.



① DC+ conductor
② DC- conductor
③ PE conductor
④ Loop through for daisy chain
(DC+, DC-, PE) shown as dashed lines

Figure 6-2 DC cable connection

Connect protective conductor

First, connect the protective conductor of the DC cable to the grounding connector:

1. Remove the sheath of the cable to connect the cable lug.
2. Choose a cable lug for the appropriate conductor cross section.
3. Strip the insulation from the end of the conductor so that the remaining insulation extends up to the cable lug.
4. Fasten the cable lug correctly to the end of the conductor.
5. Insert the cable lug into the grounding connection.
6. Tighten the nut at the grounding connection with a tightening torque of 32 Nm.
7. Check the connection between the PE conductor and the grounding connection.
8. Apply sealing paint.

Connecting the DC+/DC- conductors

Connect the DC+/DC- conductors of the DC cable to the DC busbars:

1. Remove the sheath of the cable to connect the cable lug.
2. Choose a cable lug for the appropriate conductor cross section.
3. Strip the insulation from the end of the conductor so that the remaining insulation extends up to the cable lug.
4. Fasten the cable lug correctly to the end of the conductor.
5. Insert a shrink-on sleeve over the cable lug. The shrink-on sleeve must extend slightly beyond the insulation of the cable and cover the crimping point of the cable lug.
6. Use a suitable tool to heat the shrink-on sleeve.
7. Plug the DC+ cable lug onto the DC+ busbar.
8. Tighten the screw with the DC+ cable lug with a tightening torque of 54 Nm.
9. Insert the DC- cable lug onto the DC- busbar.
10. Tighten the screw with the DC cable lug with a tightening torque of 54 Nm.
11. Verify that the DC conductor is connected to the DC terminals.
12. Apply sealing paint.

Connection of additional SICHARGE UC dispensers

The DC connector and the PE are looped through to connect additional SICHARGE UC dispensers to the same SICHARGE UC charging station. This is shown as item ④ in the “DC cable connection” (Figure 6-2). To do this, follow the above sequence to connect the DC cable and the PE conductor.

Never install the two conductors on one side of the copper busbar. Mount one conductor on the front of the busbar and the other on the back of the respective DC busbar. For the PE conductor, mount one conductor on the right and the other on the left side of the PE connector.

6.4 Connecting the communication cable

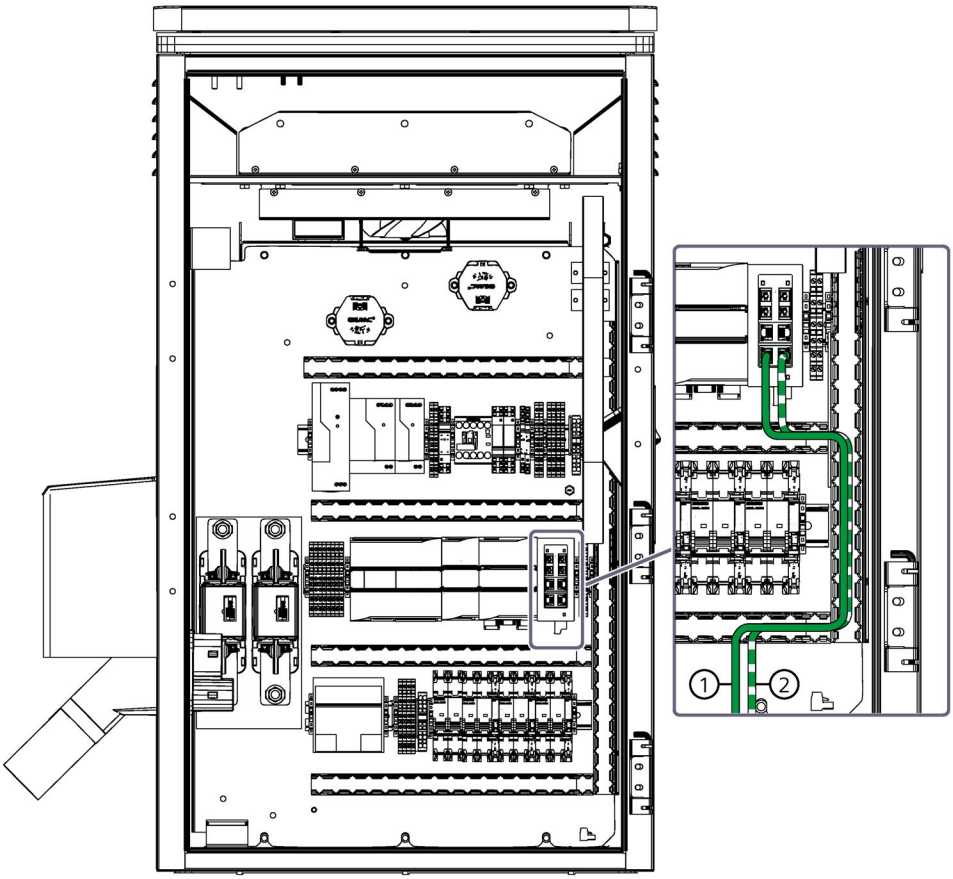
To connect the SICHARGE UC dispenser to the SICHARGE UC charging station, connect the Ethernet cable to the Ethernet switch of the SICHARGE UC dispenser.

Requirements

- You have opened the cabinet.
- You have inserted the Ethernet cable into the cabinet.

Ethernet connection

The following figure shows the connection of the communication cable (either Ethernet or fiber-optic):



① Ethernet cable

② Loop through for daisy chain - dashed lines

Figure 6-3 Communication connection

Connecting the Ethernet or fiber-optic cable

NOTICE

Network connection

The SICHARGE UC devices form a closed network.
Do not establish a connection to other networks and devices.

Observe the specifications for the routing of Ethernet cables in the section Location planning (Page 37).

1. Insert the Ethernet cable into the SICHARGE UC dispenser to the right of the DC cables.
2. Insert the RJ45 plug of the Ethernet cable into a free connection of the SICHARGE UC dispenser Ethernet switch -A2.

Observe the specifications for the routing of fiber-optic in the section Location planning (Page 37).

1. Insert the fiber-optic plug (SC socket type) into the SICHARGE UC dispenser to the right of the DC cables.
2. Insert the of the fiber-optic cable into a free connection of the SICHARGE UC dispenser Ethernet switch -A2 (Port 1 or Port 4).

NOTICE

Assembling the industrial Ethernet connector

Follow the instructions of the connector manufacturer to assemble the industrial Ethernet connector.

Cable routing considerations

All circuits (incoming AC power wiring, DC wiring to dispensers and communications wiring) should be ran in separate conduit runs until reaching the cable gland plates.

Fastening the cable

Ensure that the communication cable is not making contact with any other wires.

Connection of additional SICHARGE UC dispensers

The Ethernet connection is looped through to connect additional SICHARGE UC dispensers to the same SICHARGE UC charging station. This is shown as item ② in the “Communication connection” (Figure 6-3).
To do this, perform the sequence shown above to connect the Ethernet cable.

SECTION 7

Commissioning

7.1 Switching on the dispenser

To commission the SICHARGE UC dispenser, switch on the power supply of the SICHARGE UC charging station.

⚠ WARNING

Qualified personnel

Only a qualified and trained electrician may work on the SICHARGE UC dispenser.

⚠ DANGER

Risk of electric shock when moist due to condensed water

Before commissioning the SICHARGE UC dispenser, an authorized and qualified electrician must check whether there is moisture inside the SICHARGE UC dispenser. Manually remove even small amounts of condensation before commissioning. Take appropriate measures for drying.

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

⚠ WARNING

Injuries or damages

When the charging plug is not plugged into the plug holder before commissioning, it can cause injuries or damages when the device is switched on.

- Before you switch on the SICHARGE UC dispenser, make sure that the charging plug is in the plug holder.
- Leave the charging plug in the plug holder during the entire switch-on operation.

NOTICE

Location of the SICHARGE UC charging station with EMERGENCY OFF buttont

Preparing the SICHARGE UC dispenser for switch-on

Switch on the following switching elements at the SICHARGE UC charging station for the power supply cable of the SICHARGE UC dispenser:

- Backup fuse
- Residual current operated circuit breaker

Automatic startup

The SICHARGE UC dispenser starts automatically. Wait until the SICHARGE UC dispenser has started up completely. When the display shows the "Start" menu, the SICHARGE UC dispenser is ready for operation.

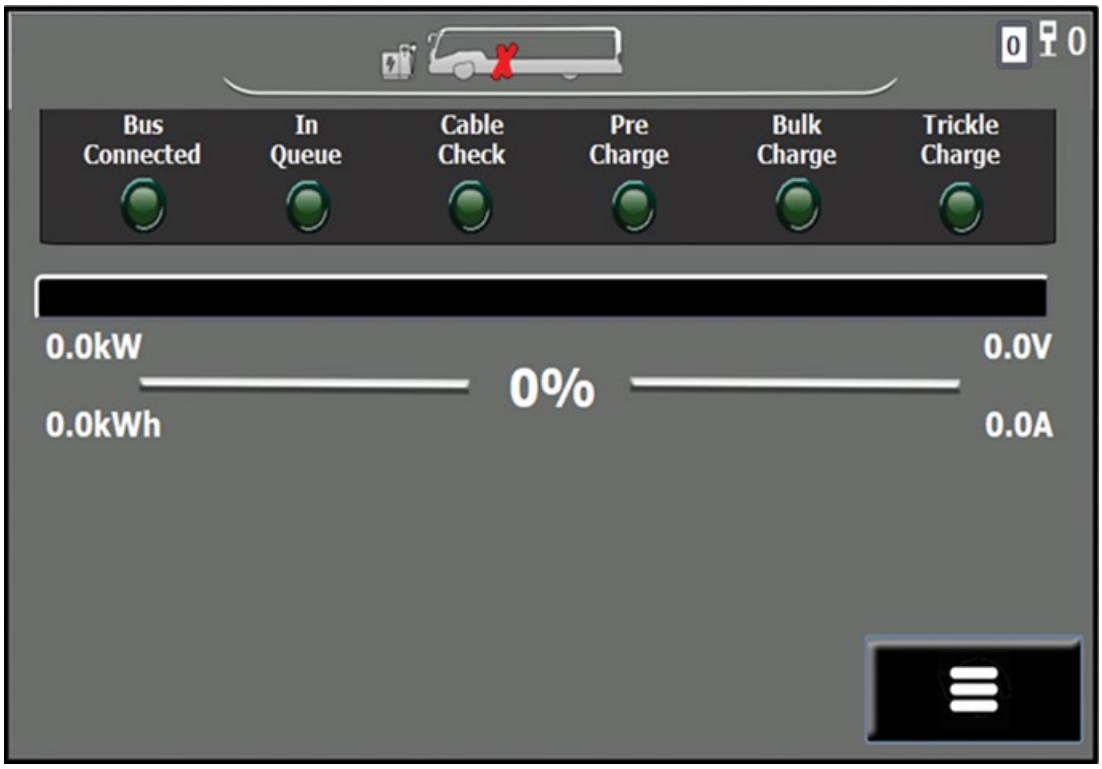


Figure 7-1 "Start" menu

SECTION 8

Operation

8.1 Safety instructions

Observe the following safety instructions for the safe operation of the SICHARGE UC dispenser.

NOTICE

Accident risks

Avoid accidents and injuries as well as damages to vehicles and the SICHARGE UC dispenser. These include, for example, inattentiveness, slipping and tripping risks as well as vandalism. Provide additional protective measures, for example:

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

⚠ WARNING

Falling parts

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

⚠ CAUTION

Defective components

Use the SICHARGE UC dispenser only with undamaged components. If the components are damaged, contact the electrician in charge.

NOTICE

Location of the SICHARGE UC charging station with EMERGENCY OFF button.

NOTICE

Access to the EMERGENCY OFF button

Ensure that only trained personnel operate the SICHARGE UC dispenser.

To operate the EMERGENCY OFF button immediately in case of an emergency, these persons must be guaranteed access to the SICHARGE UC charging station.

NOTICE

Displays

Use the SICHARGE UC dispenser only with working displays. Notify the electrician in charge when the HMI display or the LED display fails.

Use the charging cable safely

To use the charging cable safely, it is essential that the following safety instructions are observed:

- Never use force to remove the charging plug from the charging socket of the vehicle or the holder of the SICHARGE UC dispenser.
- Check the vehicle's charging cable and charging socket for damage or dirt before charging.
- Only start charging with an undamaged and clean charging cable and charging socket of the vehicle.
- Do not change the vehicle position during charging.
- Always use the charging cable without an adapter or extension cable.
- Do not bend or twist the charging cable.
- Do not drop the charging cable.
- After removing the charging plug, place it immediately into the plug holder of the SICHARGE UC dispenser.
- Always place the charging cable back on the cable holder of the SICHARGE UC dispenser.
- Protect the charging plug from rain (plug holder or plugged into the vehicle).

Safe operation of the HMI screen

The HMI screen is the central display and operator control element of the SICHARGE UC dispenser.

- Only operate the HMI screen with your fingers or a touch pen.
- Observe the information regarding cleaning and care in the section Cleaning the HMI screen (Page 108).

NOTICE

Damage due to unsuitable objects

If you touch the HMI screen with unsuitable objects, you are significantly reducing the service life of the display. If there is severe damage, the HMI screen can also fail.

To avoid damaging the HMI screen, follow the instructions below:
- Do not touch the HMI screen with sharp or pointed objects.
- Avoid shock or impact with hard objects.
- Touch the HMI screen only with your fingers or a touch pen.

8.2 Plugging in the charging cable

To start charging, simply plug the charging cable into the charging socket of the electric vehicle. The SICHARGE UC dispenser automatically assumes control of the charging process. Immediate locking of the charging plug in the vehicle's charging socket ensures a secure connection to the vehicle during the charging process. In addition, the SICHARGE UC dispenser sets the charging parameters for an optimal charging process, depending on the specific vehicle.

⚠ DANGER

Explosion or electric shock

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

- Before each use, check the vehicle's charging cable, charging plug and charging socket for damage.
- 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 EMERGENCY OFF button of the SICHARGE UC charging station.

Requirements

- You have positioned the vehicle with the charging socket within reach of the charging plug.
- You have engaged the parking brake of the vehicle.
- You have switched off the motor.

Plug in the charging cable

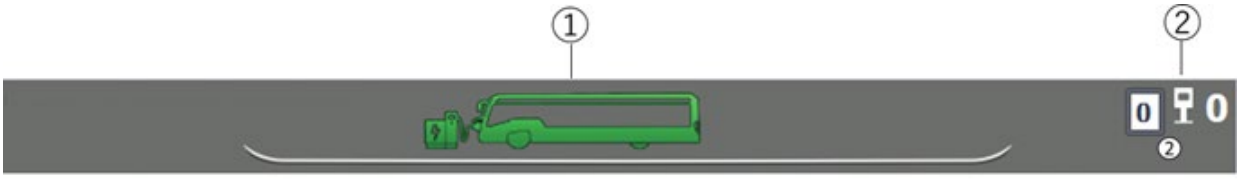
Proceed as follows to plug in the charging cable:

1. Take the charging plug from the plug holder of the SICHARGE UC dispenser.
2. If you need more cable length, remove the cable from the cable holder.
3. Insert the charging plug into the vehicle's charging socket.

The electric vehicle automatically locks the plug-in connection between the charging cable and the electric vehicle.

Automatic start of the charging process

Once the plug-in connection is locked, the charging process starts automatically. The "Start" menu is displayed on the SICHARGE UC dispenser HMI screen. Symbols in the status bar indicate the current vehicle status and connection status.



① "Vehicle is charging" symbol

② "Connection locked" symbol

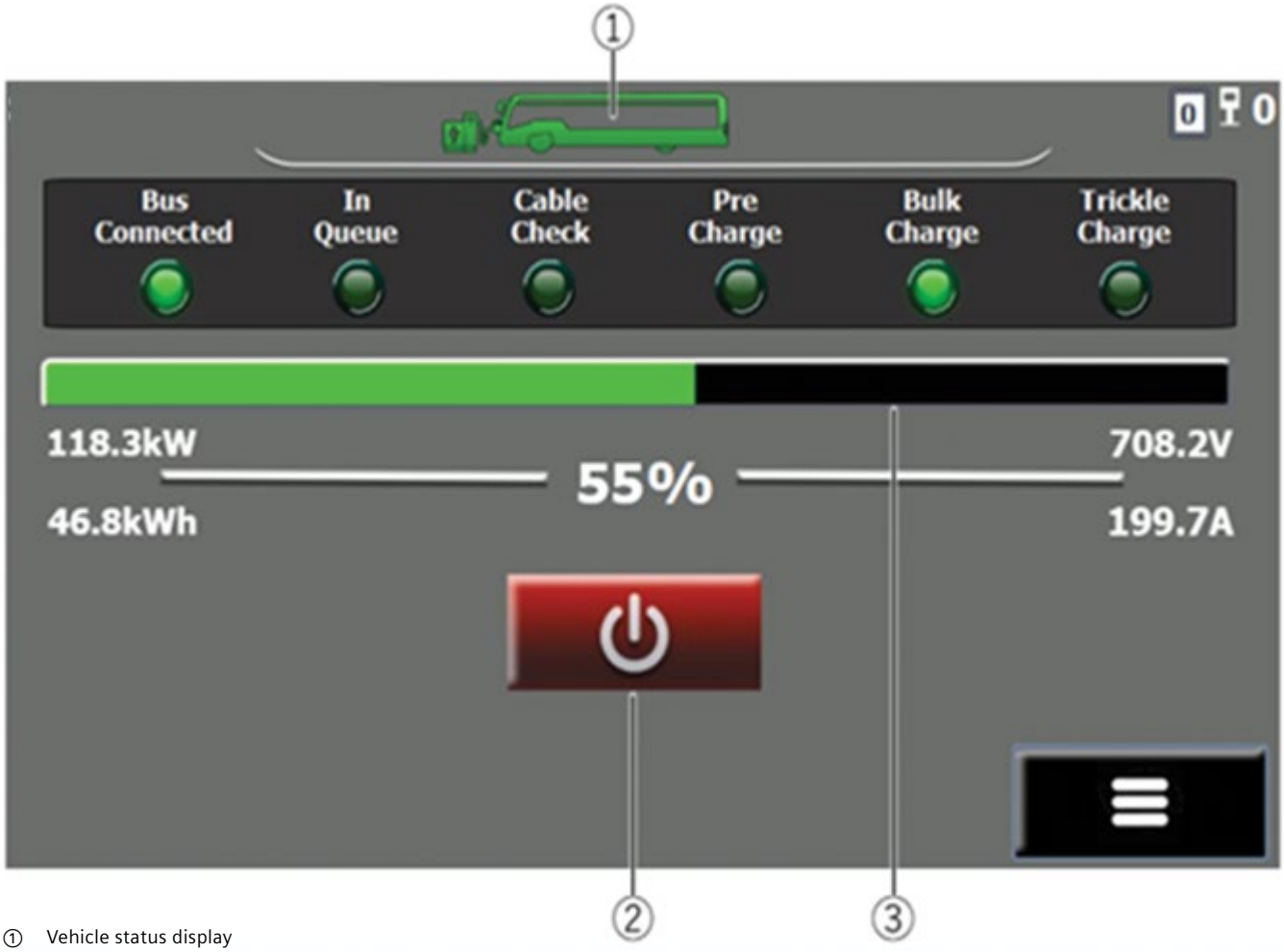
Figure 8-1 Status bar

8.3 Monitoring the charging process

After you have connected the electric vehicle to the SICHARGE UC dispenser, the SICHARGE UC dispenser display automatically shows the "Start" menu. Several display elements provide precise information about the progress of the charging process.

“Start” menu

To monitor the charging process, the "Start" menu offers you the following display elements:



① Vehicle status display

② “Stop charging process” button progress indicator

③ Charge level indicator

Figure 8-1 "Start" menu

Vehicle status display

Using the vehicle status display, you can easily determine whether your vehicle is connected to the SICHARGE UC dispenser and is charging.

Symbol	Vehicle status
	The vehicle is not ready for charging.
	The vehicle is connected and ready for charging.
	The vehicle is charging.
	The battery is fully charged.

Connection status display

The following symbols provide information about the connection status between the vehicle and the SICHARGE UC dispenser:

Symbol	Connection status
	The plug connection is unlocked.
	The plug connection is locked.

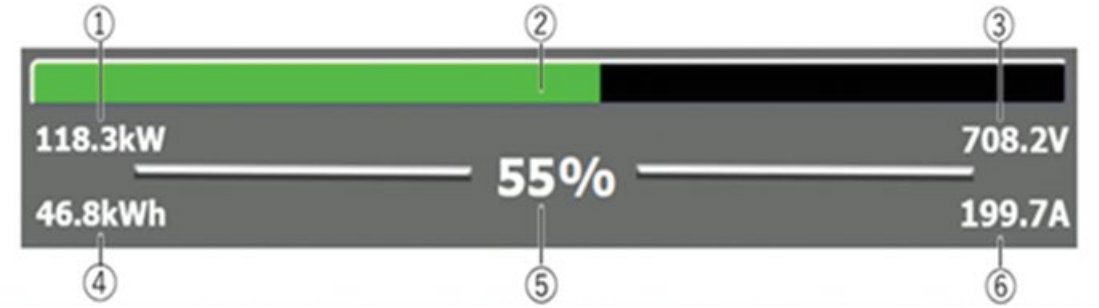
Progress display

The progress bar provides you with an overview of the charging process. The display element shows the individual steps of the charging process:

Step	Meaning
Electric vehicle connected	The electric vehicle was connected to the SICHARGE UC dispenser. The controller of the SICHARGE UC dispenser has recognized the connection.
Cable check	The SICHARGE UC dispenser is checking the cable connection to the electric vehicle.
Pre-charge	The SICHARGE UC dispenser is increasing the charging voltage to the maximum voltage level of the vehicle battery.
Charging	The SICHARGE UC dispenser is charging the electric vehicle.
Bulk charging	The SICHARGE UC is supplying a high voltage/amperage that the vehicle is requesting.
Trickle charge	The SICHARGE UC is supplying a lower voltage/amperage to the vehicle as the vehicle is nearing 100% SoC.

Charge level indicator

The charge level indicator shows the following information about the charging process:



① Charging power
② Progress bar
③ Charging voltage
④ Amount of energy charged
⑤ Vehicle battery state of charge
⑥ Charging current

Figure 8-2 Charge level indicator

8.4 Stopping charging

You can stop an active charging process at any time by pressing the “Stop charging” button.

“Stop charging” button

In the “Start” menu, the SICHARGE UC dispenser displays the “Stop charging” button:

① “Stop charging” button
Figure 8-3 “Start” menu

Stop charging

To stop the charging process, press the “Stop charging” button. The SICHARGE UC dispenser will stop the charging process.

8.5 Unplugging the charging cable

When the charging process is complete, the electric vehicle automatically unlocks the plug-in connection. You can then unplug the charging cable.

⚠ DANGER

Explosion or electric shock

If you force the charging plug out of the charging socket, dangerous electric arcs can cause death or serious injury.

- Never forcibly remove the charging plug from the charging socket.
- First, check whether the plug-in connection has been unlocked.

Checking the end of the charging process

The HMI screen displays the status of the connection of the charging cable and the vehicle in the status bar. Before unplugging the charging cable, check the connection status. Only when the SICHARGE UC dispenser displays the following symbols in the status bar can you unplug the charging cable.

Symbol	Meaning
	Charging is complete.
	The plug connection is unlocked.

Unplugging the charging cable

To unplug the charging cable from the electric vehicle, proceed as follows:

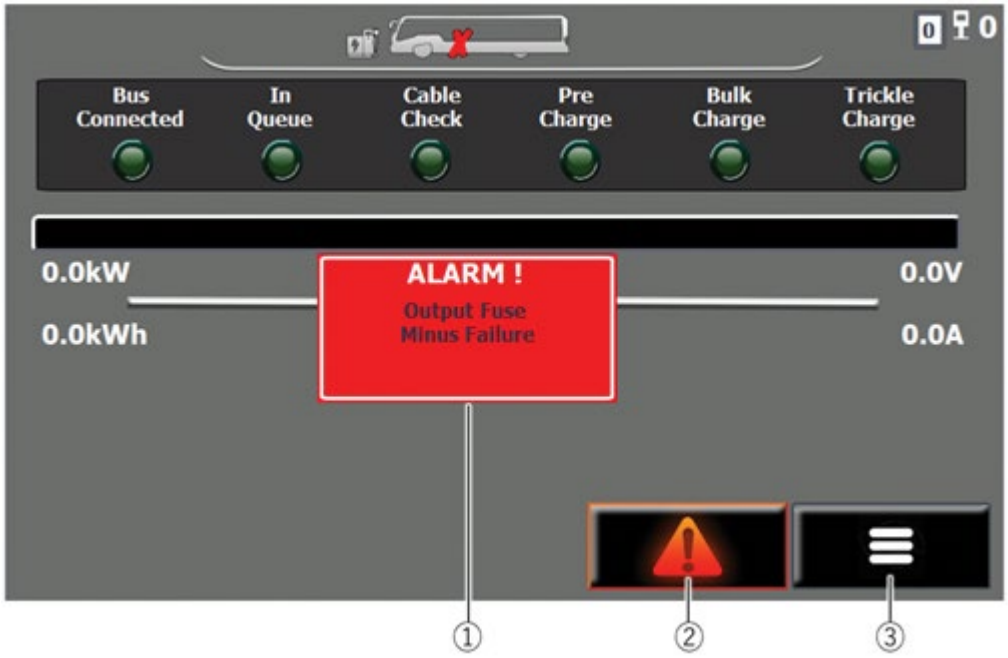
1. Unplug the charging plug from the vehicle's charging socket.
2. Place the cable back on the cable holder.
3. Plug the charging plug into the plug holder on the SICHARGE UC dispenser.

8.6 Displaying alarms

In case of an alarm, the SICHARGE UC dispenser stops the charging process. The HMI screen shows an alarm message in the full-screen mode or an alarm button in the “Start” menu.

Alarm button in the “Start” menu

After an alarm, the SICHARGE UC dispenser displays an alarm button ② in the “Start” menu.



① Alarm message

② Alarm button

③ “Options” menu button

Figure 8-4 Alarm

To open the alarm history, press the “Options” menu button ③.

To access the “Alarms History” menu

In the “Options” menu, press the “Alarms History” button.

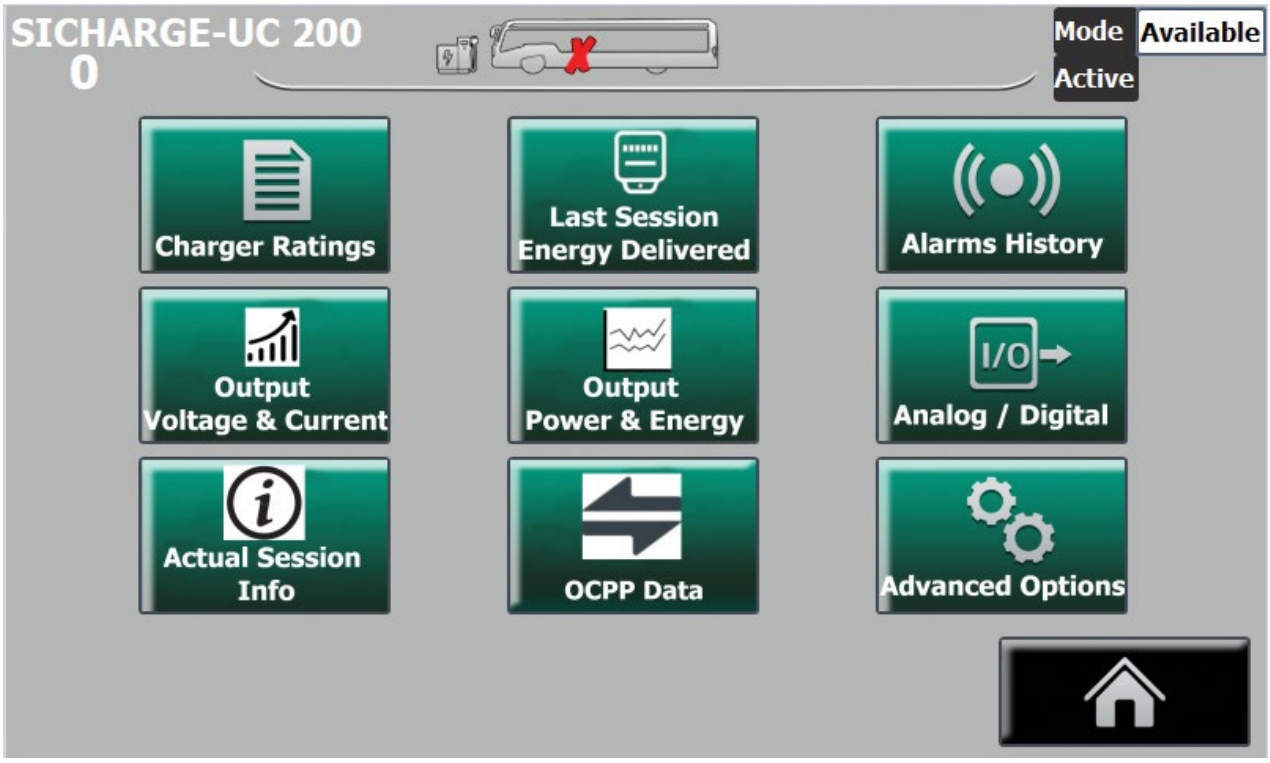


Figure 8-5 “Options” menu

“Alarm History” menu

In the “Alarm History” menu, the SICHARGE UC dispenser lists all recorded alarms:

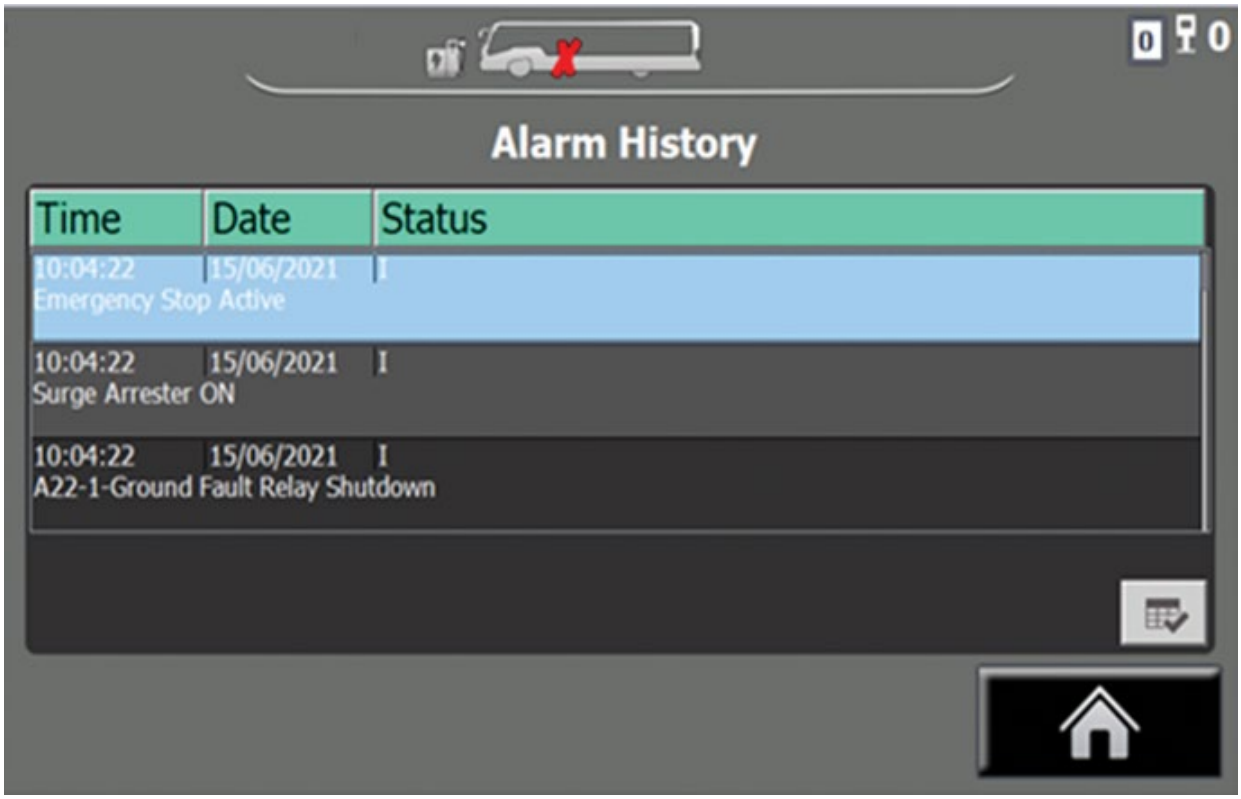


Figure 8-6 “Alarm History” display

8.7 Operating the Service menu

8.7.1 Selecting options

Opening the "Options" menu

To access the "Options" menu, press the following button on the "Start" menu:

Figure 8-7 "Options" menu button

"Options" menu

The HMI screen displays the following option buttons in the "Options" menu:

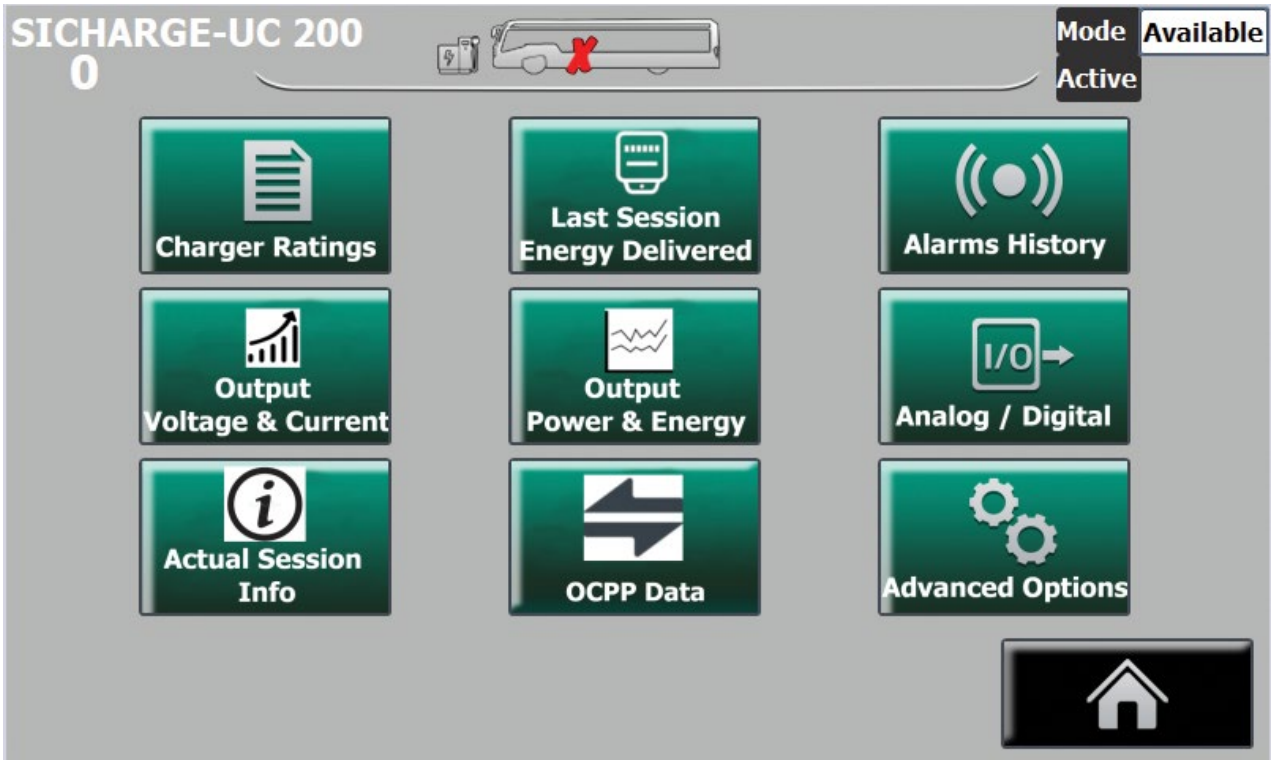


Figure 8-8 Option buttons

Selecting options

Use the option buttons to select the following option:

Button	Option
Charger Ratings	The HMI screen displays the charger part number and ratings of the unit.
Last Session Energy Delivered	The HMI screen shows the start and end date of the charging process, the charge states at the start and end, the energy transferred, and an alarm code.
Alarms History	The HMI screen displays the alarm history menu. The menu contains a list of all recorded alarms of the SICHARGE UC.
Output Voltage & Current	The HMI screen displays output voltage and current.
Output Power & Energy	The HMI screen displays ouput power and energy.
Analog/Digital	The HMI screen displays I/O (input/output) status of the PLC in real-time.
Actual Session Info	The HMI screen displays the real-time actual voltage values and current values.
OCPP Data	The HMI screen displays information received from the OCPP servers.
Advanced Options	The HMI screen provides manual control of several charger functions.

8.7.2 Checking recorded alarms

When the SICHARGE UC dispenser triggers an alarm due to an undesirable operating state, the SICHARGE UC dispenser immediately stops the charging process. The HMI screen of the SICHARGE UC dispenser shows an alarm message in the full-screen mode or the “Alarm” button in the menu.

Requirements

- You have opened the “Options” menu.
- You have pressed the “Alarm” button in the “Options” menu.

“Alarm History” menu

The HMI screen displays a list of the recorded alarms in the “Alarm History” menu:

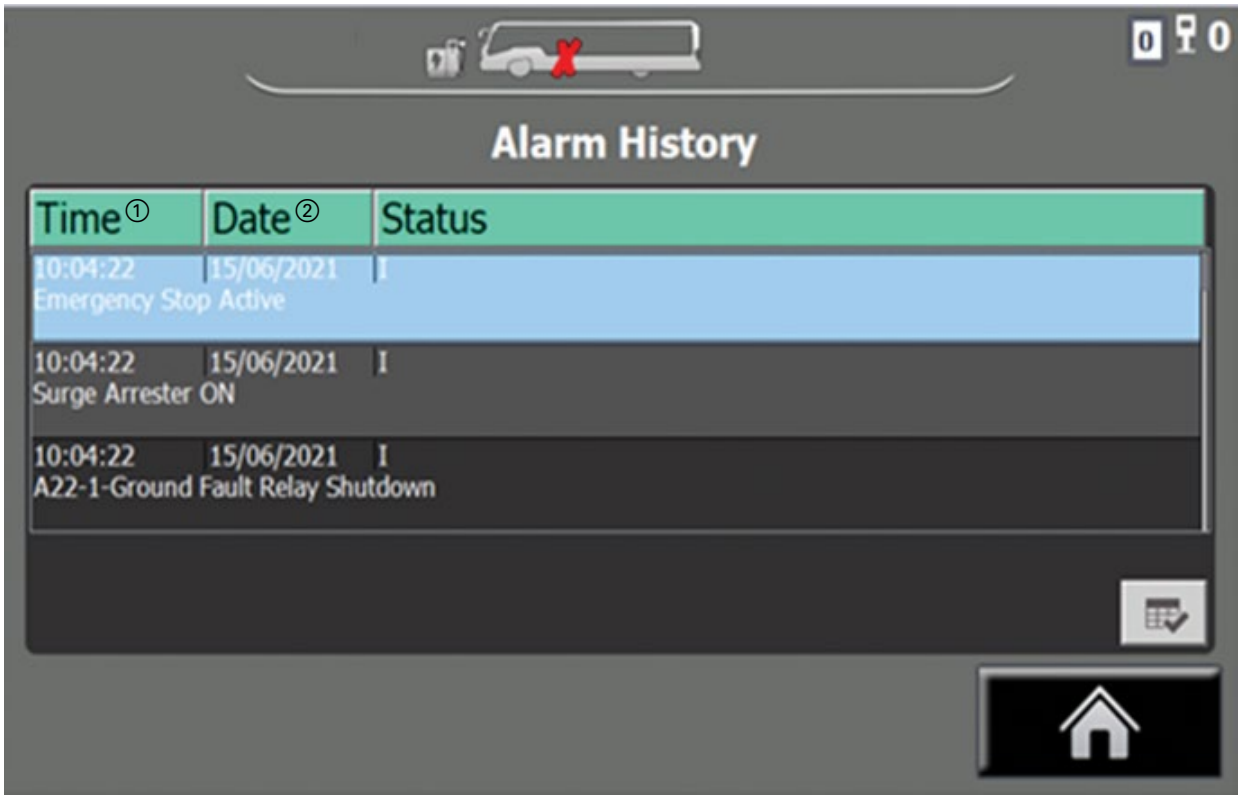


Figure 8-9 List of recorded alarms

For each recorded alarm, the HMI screen displays the time ① and date ② that the alarm was tripped as well as the alarm status:

No.	Alarm status	Meaning
①	I	Active alarm
②	(I)O	Inactive alarm

The “Alarm History” also highlights the active alarm with a light blue coloring.

8.7.3 Restarting the charging process after an alarm

When the SICHARGE UC dispenser triggers an alarm, the SICHARGE UC dispenser automatically switches off the power supply of the charging cable. The SICHARGE UC dispenser does not charge during the alarm state. To charge an electric vehicle again, you need to first deactivate the active alarm.

NOTICE

First eliminate the cause of the alarm

Only trained personnel may operate the SICHARGE UC dispenser and reset alarms.

When you press the "Acknowledge alarm" button when deactivating an alarm, the controller of the SICHARGE UC dispenser checks the cause of the alarm again. As long as the cause of the alarm is still present, the SICHARGE UC dispenser does not deactivate the alarm.

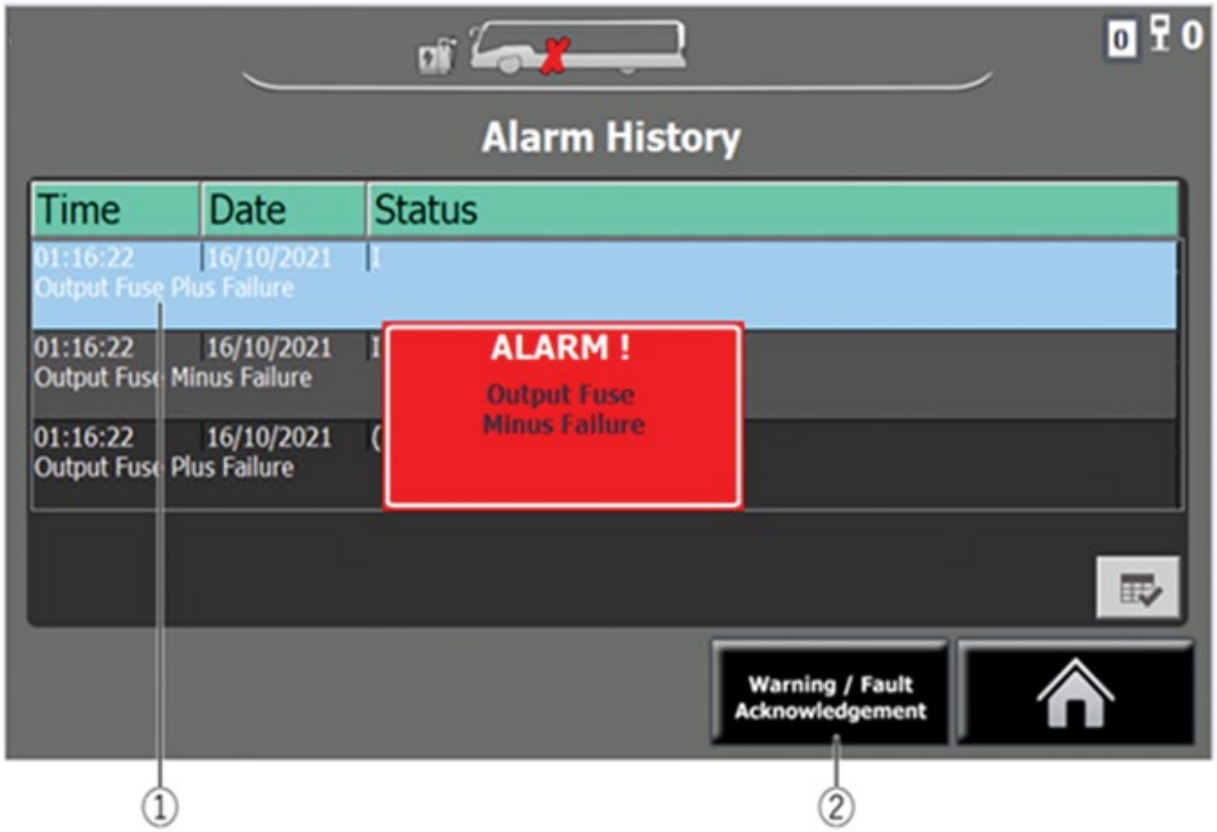
- First eliminate the cause of the alarm.
- Then deactivate the alarm.

Requirements

- You have opened the "Options" menu.
- You have pressed the "Alarm" button in the "Options" menu.

“Alarm History” menu

In the “Alarm History” menu, the SICHARGE UC dispenser shows the currently active alarm against a light blue background:



① Active alarm

② “Warning / Fault Acknowledgment” button

Figure 8-10 “Alarm History” menu

Deactivate alarm and start charging again

To restart the charging process after an alarm, proceed as follows:

1. Press the “Warning / Fault Acknowledgment” button.
2. Press the main "Menu" button.

The SICHARGE UC dispenser deactivates the alarm. In the “Status” column, the status value “(I)O” is displayed for the deactivated alarm. The SICHARGE UC dispenser continues the interrupted charging process.

NOTICE

Alarm that cannot be deactivated

When the SICHARGE UC dispenser does not deactivate the alarm after pressing the “Warning / Fault Acknowledgment” button, the cause of the alarm is still present.

- Continue to observe the safety instructions in the general section Safety instructions (Page 10) and the safety instructions for the operation (Page 62).
- Then check again whether you can eliminate the cause of the alarm.
- If you cannot eliminate the cause of the alarm, contact technical support.

8.7.4 Displaying information about the SICHARGE UC dispenser

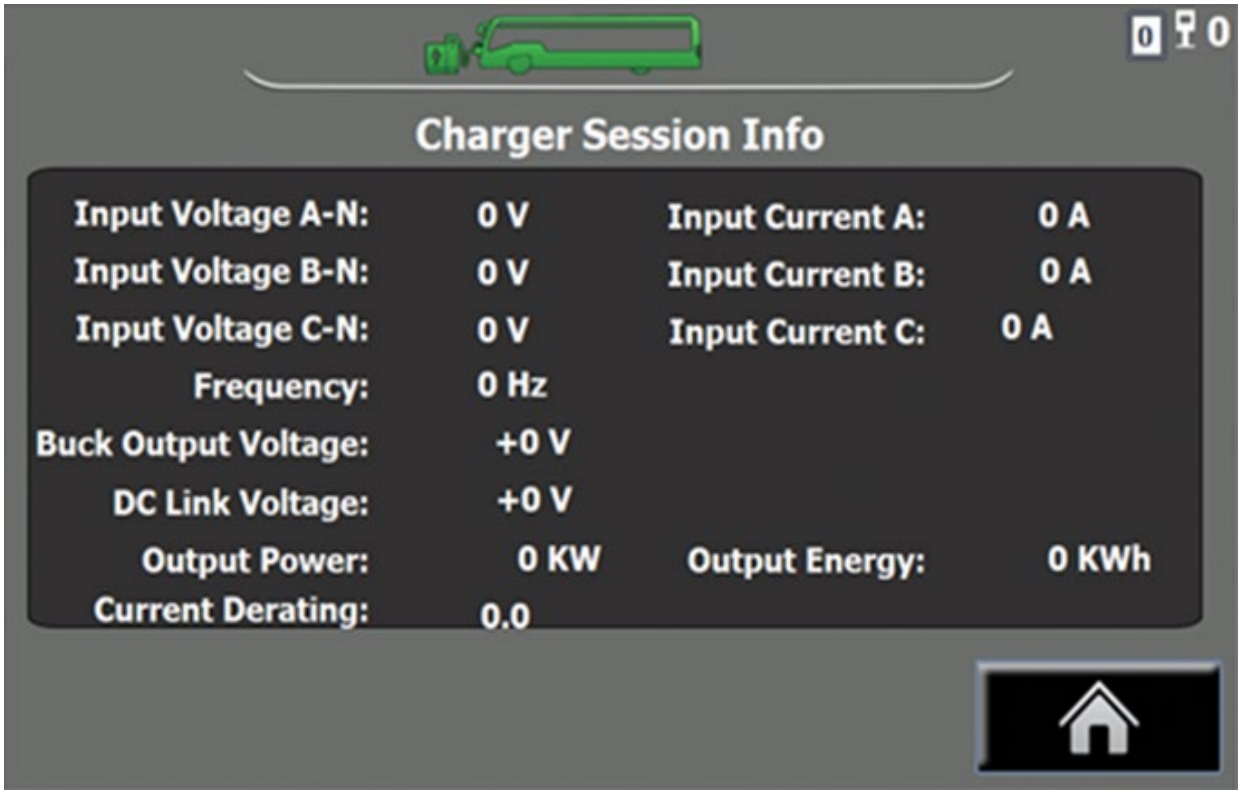
In the “Charger Session Info” menu, the SICHARGE UC dispenser displays the actual voltage and current values of the power supply.

Requirements

- You have opened the “Options” menu.
- You have pressed the “Charger Info” button in the “Options” menu.

“Charger Session Info” menu

In the “Charger Session Info” menu, the SICHARGE UC dispenser displays the following values of the SICHARGE UC charging station:


0
0
Charger Session Info
Input Voltage A-N:
0 V
Input Current A:
0 A
Input Voltage B-N:
0 V
Input Current B:
0 A
Input Voltage C-N:
0 V
Input Current C:
0 A
Frequency:
0 Hz
Buck Output Voltage:
+0 V
DC Link Voltage:
+0 V
Output Power:
0 KW
Output Energy:
0 KWh
Current Derating:
0.0

Voltage and current values

For the SICHARGE UC dispenser, the HMI screen of the displays the following values:

Value	Meaning
Input voltage A-N	AC voltage measured in line conductor A-N
Input voltage B-N	AC voltage measured in line conductor B-N
Input voltage C-N	AC voltage measured in line conductor C-N
Input current A	AC current measured in line conductor A
Input current B	AC current measured in line conductor B
Input current C	AC current measured in line conductor C
DC link voltage	Voltage measured at the internal DC bus
Buck output voltage	Voltage measured at the DC output
Frequency	Current frequency
Output power	Calculated current output power
Current reduction	Amount of derating at the charger output
Output energy	Calculated energy during charging

8.7.5 Displaying energy delivered during last charging session

The SICHARGE UC dispenser has an energy meter. The energy meter provides you with basic information on the current charging process.

Requirements

- You have opened the “Options” menu.
- You have pressed the “Last Session Energy Delivered” button in the “Options” menu.

"Energy Delivered During Last Charging Session" menu

The HMI screen displays the following information for the current charging process in the "Energy Delivered During Last Charging Session" menu:

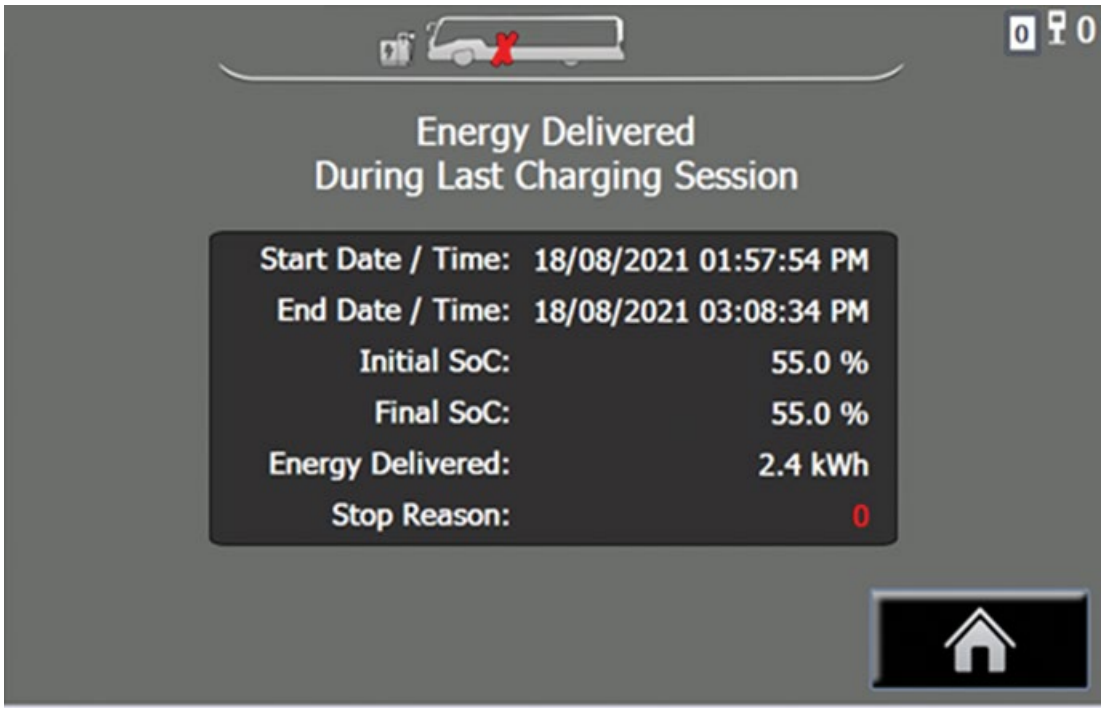


Figure 8-12 "Energy Meter" menu

Value	Description
Start Date	Specifies the start date and time of the charging process.
Initial SoC	Indicates the initial state of charge (SoC) of the vehicle battery.
End Date	Indicates the end date and time of charging.
Final SoC	Displays the final state of charge (SoC) of the vehicle battery.
Energy Delivered	Indicates the amount of energy transferred to the electric vehicle during charging.
Alarm Code	The SICHARGE UC dispenser displays the following alarm codes: • Value "0": The SICHARGE UC dispenser has completed the charging process without errors. • Values "1" to "43": The SICHARGE UC dispenser has aborted the charging process prematurely with an alarm. You can find a list of the alarm messages in the section Alarm messages in the alarm history (Page 95).

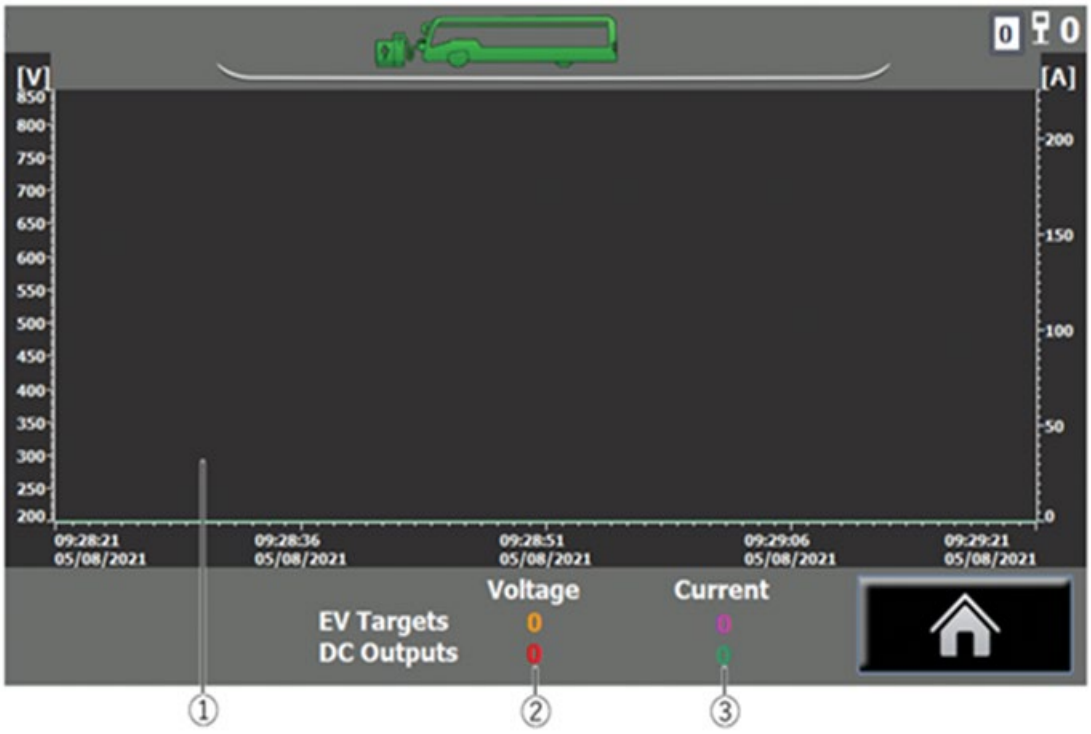
8.7.6 Displaying the current and voltage trend of the charging process

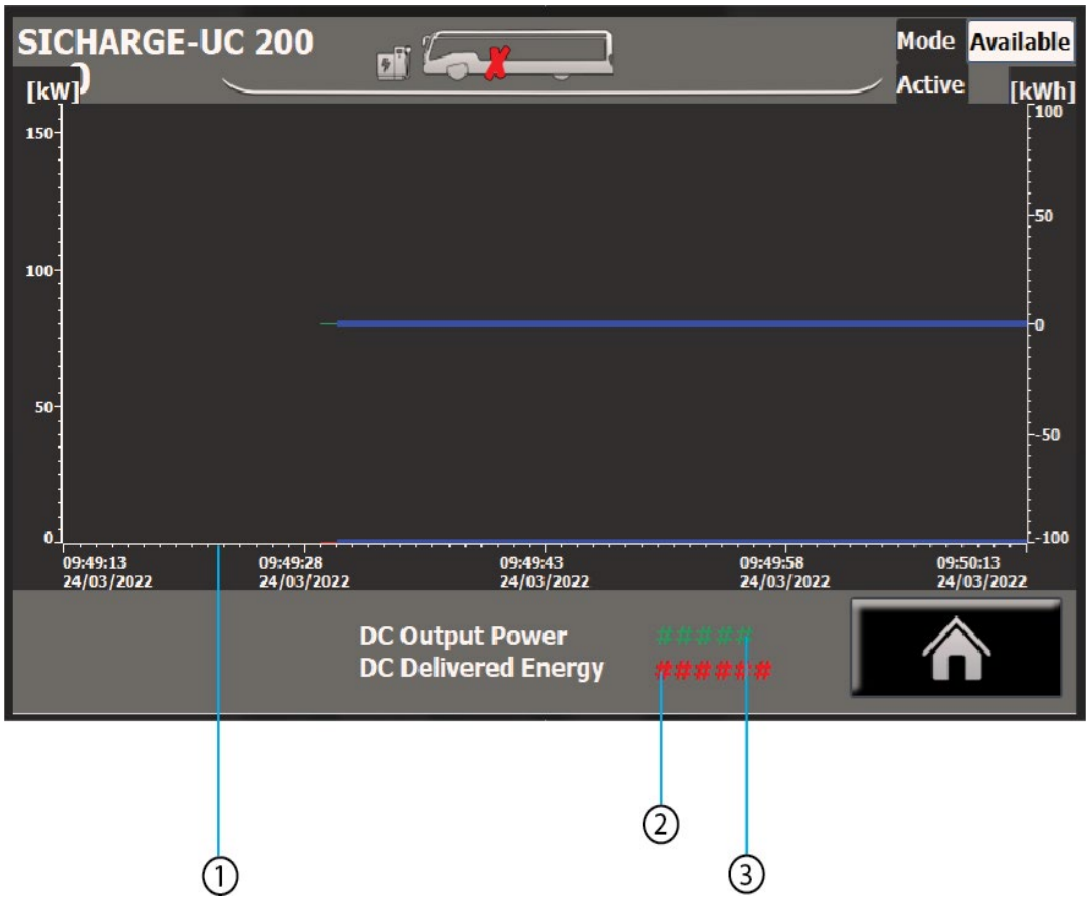
Requirements

- You have opened the “Options” menu.
- In the “Options” menu, you have pressed the “Graphics” button.

“EV Targets & DC Outputs” menu

In the “EV Targets & DC Outputs” menu, the SICHARGE UC dispenser visually displays the setpoints and actual values of charging voltage and charging current.





① Diagram area

② Display for actual value and setpoint of charging voltage

③ Display for actual value and setpoint of charging current

Figure 8-14 “EV Targets & DC Outputs” menu

Changing the diagram area

To change the displayed diagram area, control the HMI screen with the following gestures:

Gesture	Function
Move your finger on the display to the left	The diagram area shifts to the right on the time axis.
Move your finger on the display to the right	The diagram area shifts to the left on the time axis.

8.7.7 Selecting advanced options

In the “Extended information” menu, you can monitor and control the SICHARGE UC charging station and additional SICHARGE UC dispensers.

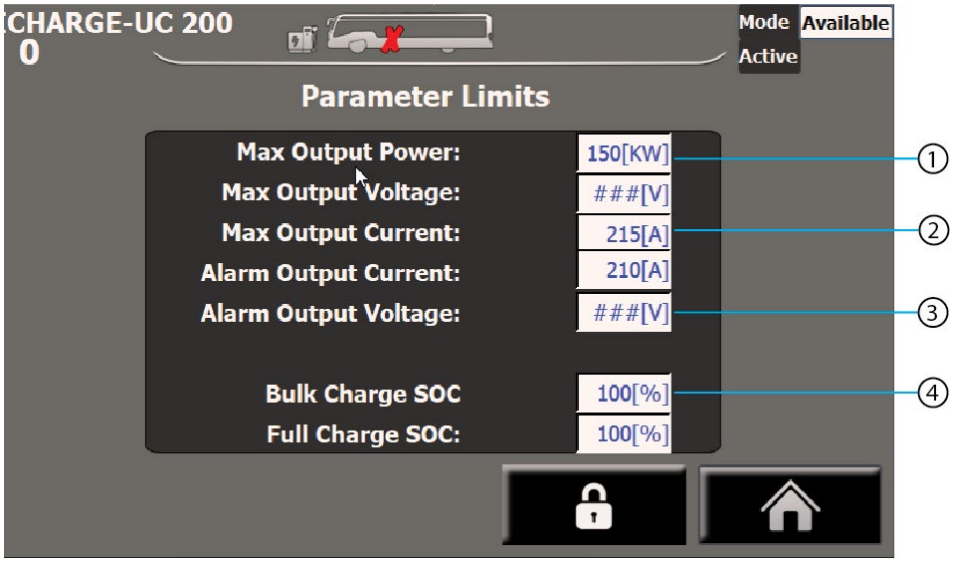
Requirements

- You have opened the “Options” menu.
- You have pressed the “Extended information” button in the “Options” menu.

Select device

① Parameter limits
② Control PID
③ Exit Runtime

In this screen, you select the “Options” menu that you want to access.



① Maximum output power limit

② Maximum output voltage/current

③ Maximum alarm output voltage/current

④ Bulk charge state of charge

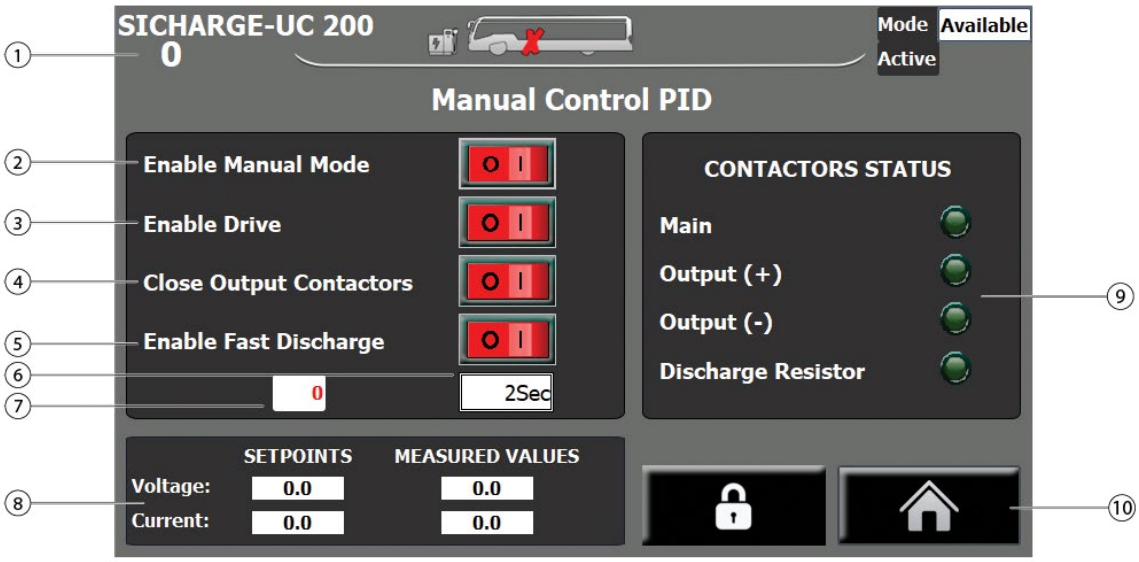
Figure 8-15 Parameter limits

Parameter Limits

The “Parameter limits” allows the user the option of changing limits on Output Power, Output Voltage and Current, and Alarm Output Current and Voltage. Bulk and full charge SoC limits are used with (optional) sequential charging when setting up a two-step system. These limits cannot be set above the charger physical maximum limits.

Manual Control PID

The following figure shows the Manual Control PID for controlling the selected SICHARGE UC dispenser.



① Dispenser Number

② Switch for automatic or manual test charging procedure

③ Switch for DC converter manual

④ Switch for manual output contactor

⑤ Switch for engaging fast discharge of DC output

⑥ Setpoint for fast discharge in seconds (defaults to 2 seconds)

⑦ Countdown timer to selected fast discharge setting

⑧ Setpoint for voltage and current

⑨ Status lights for main contactor, output (+/-) and discharge resistor

⑩ Home button

Figure 8-16 Manual Control PID

8.8 Sequential Charging Concept

When equipped with two or more dispensers, the SICHARGE UC150 kW can charge one EV per dispenser sequentially.

8.8.1 Bulk Charge / Trickle Charge Scheme

Depending on the battery characteristics, the charging process for a single EV can be prolonged. This can be problematic during sequential charging for all EVs to be adequately charged. The SICHARGE UC150 kW DC charger utilizes a bulk charge/trickle charge scheme. The charging process is divided into two stages. The first stage is a quick-charge process called bulk charging. This charges the battery with high current until the bulk charge complete level, typically around 80% state of charge (SoC) but can be set by the customer depending on the battery charging profile. The second stage is a slow-charge process called trickle charging, which charges the battery to full SoC.

A trickle charge is initiated only when all other EVs have completed bulk charging. The following flowchart illustrates the bulk charge/trickle charge scheme:

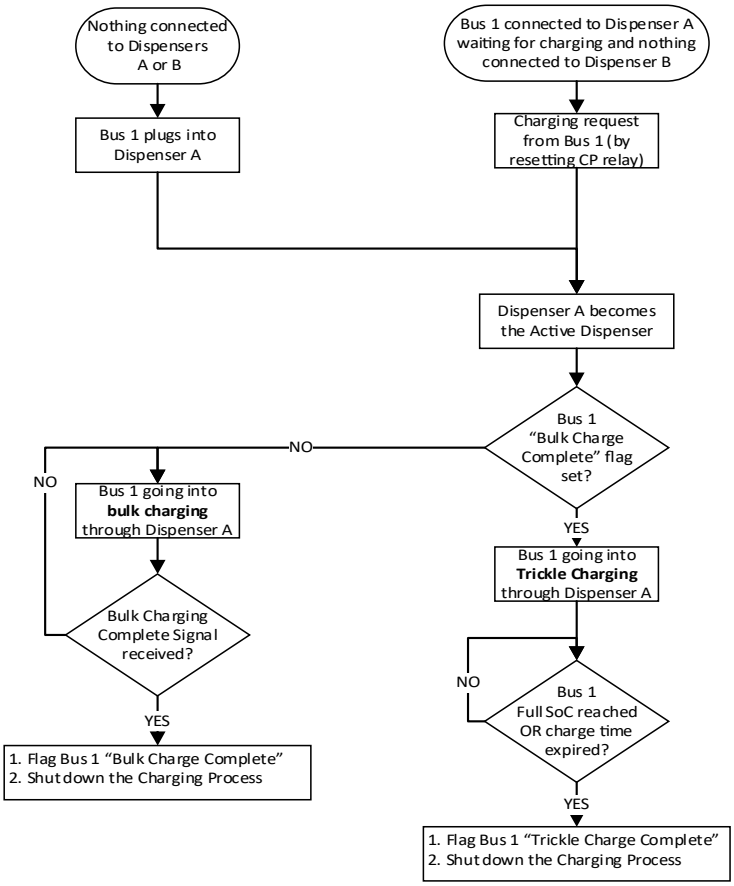


Figure 8-17 Bulk Charge/Trickle Charge Flowchart

8.8.2 Sequential Charging Strategies

Although up to four dispensers can be connected to one charger, only one dispenser can actively charge an EV. If there are more than one EV plugged into the dispensers, the EVs will be placed in a queue to wait for their turns to be charged. The following rules are followed when processing the order of the queue:

1. Bulk charging takes precedence over trickle charging.

An EV that needs bulk charging will always take precedence over an EV that needs trickle charging. This will ensure that all EVs are sufficiently charged in the fastest time possible. When a bulk charge EV with a battery that is below 85% SoC is connected to a dispenser, it will be placed in the queue ahead of all the EVs waiting for trickle charging. If there is an active dispenser that is trickle charging an EV, then that active charging process will be terminated and the bulk charging for the incoming EV will be started. This is illustrated in the following example (see Table 8.1 – Sequential charging example for three dispensers below).

2. All EVs are assigned equal duration of time for trickle charging.

The charging current decreases as the battery approaches full SoC. The trickle charging process takes significantly longer to get to full SoC as compared to bulk charging. It is not practical to wait for one EV to complete a trickle charge to full SoC before moving on to the next EV. Instead, every charger is allocated a fixed amount of time in trickle charging.

3. Trickle charging takes place continuously to “top off” the EV batteries.

A fully charged EV can still drain battery through auxiliary circuits. As a result, an EV battery needs to be topped off continuously. The EV triggers a charging request through the CP relay continuously at fixed time intervals. If the battery is fully charged, the EV will cut the current demand to only maintain the battery auxiliary circuit running to avoid overcharging.

SICHARGE UC uses state B1 to indicate that the EVSE is not ready to supply energy by not turning on the oscillator.

State B1 is used by the EVSE to maintain the current charge session during sequential charging; in other words, it is used to keep the vehicle in the queue. This state may last for an extended period of time.

The vehicle may enter a sleep mode during this state and wake upon detection of the EVSE turning on the oscillator and entering state B2.

The EVSE will stay in state B1 until the time to allow charge, and then move to B2. The vehicle would initially wake up, see state B1, time out, and go to sleep until B2 is obtained, where it would wake up and then move to state C to allow charge.

The EVSE triggers a new charging session in trickle charging using the BEB toggle. It is required for the vehicle to be able to start a new charging session by detecting a B1/B2 transition on the CP line only without PP connection status change.

8.8.3 Sequential Charging Example

The following is a representation of a sequential charging scenario when three dispensers are used. It is assumed that the bulk charge complete SoC is set as 85% and the interval between bulk charging sessions is set as 30 minutes here. EV 2 was charging when EV 1 arrived and was connected. Automatically, EV 1 enters bulk charging while EV 2 is placed in Queue 1, waiting for trickle charging. The rest of the scenario is detailed below:

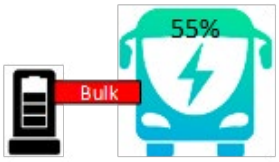
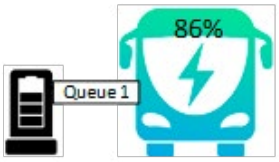
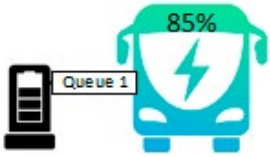
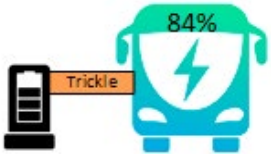
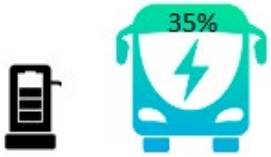
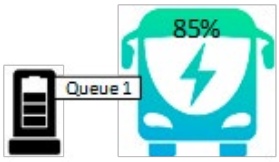
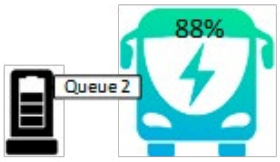
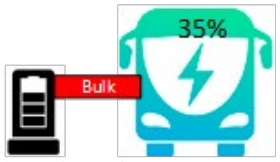
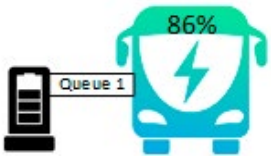
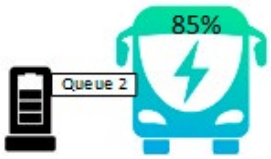
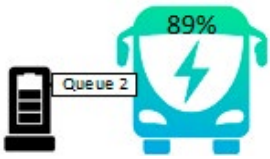
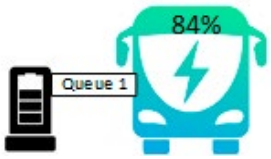
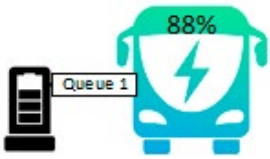
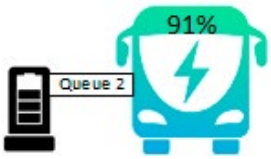
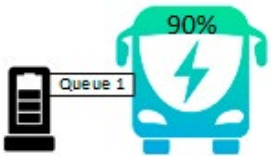
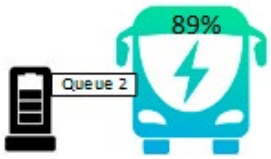
Bus 1	Bus 2	Bus 3	
			- EV 1 arrives and enters bulk charging - EV 2 goes in Queue 1
			- Once EV 1 reaches 85%, it stops charging and then goes in Queue 1 after a new charging request from the EV - EV 2 resumes the trickle charge - EV 3 arrives but not connected
			- EV 3 is connected and goes in bulk charging - EV 1 stays in Queue 1 - EV 2 stops charging and goes in Queue 2 after a new charging request from the EV
			- EV 1 starts trickle charging and stays in trickle charging for 15 minutes - EV 2 goes in Queue 1 - EV 3 finishes bulk charging and goes in Queue 2 after a new charging request from the EV
			- After 15 minutes, EV 1 stops charging and goes in Queue 2 after a new charging request from the EV - EV 2 goes in trickle charging - EV 3 goes in Queue 1
			- EV 1 goes in Queue 1 - After 15 minutes, EV 2 stops charging and goes in Queue 2 after a new charging request from the EV - EV 3 goes in trickle charging
			- EV 1 goes to trickle charging - EV 2 goes in Queue 1 - After 15 minutes, EV 3 stops charging and goes in Queue 2 after a new charging request from the EV

Table 8-1 Sequential charging example for three dispensers

SECTION 9

Handling alarms and errors

9.1 Overview

In case of an error, the SICHARGE UC dispenser automatically conducts an error diagnostics. Depending on the type of error, the SICHARGE UC dispenser issues different alarm messages. On the central HMI screen, the SICHARGE UC dispenser provides information through messages from the SICHARGE UC dispenser and the SICHARGE UC charging station.

- Full screen alarms:
  - "Emergency Stop" alarm message (Page 91)
  - "Cabinet's Door Opened" alarm message (Page 93)
  - "Ground Fault Detection" alarm message (Page 94)
- Alarm messages in the "Alarm history" (Page 95)
- "Energy Meter" alarm code menu (Page 82)

9.2 "Emergency Stop" alarm message

To bring the SICHARGE UC dispenser into a safe state immediately in case of danger, the SICHARGE UC charging station is equipped with an EMERGENCY OFF button. When you press the EMERGENCY OFF button on the front, the display of the SICHARGE UC dispenser shows an alarm message.

"Emergency Stop" alarm message

The display shows the "Emergency Stop" alarm message in full screen mode:

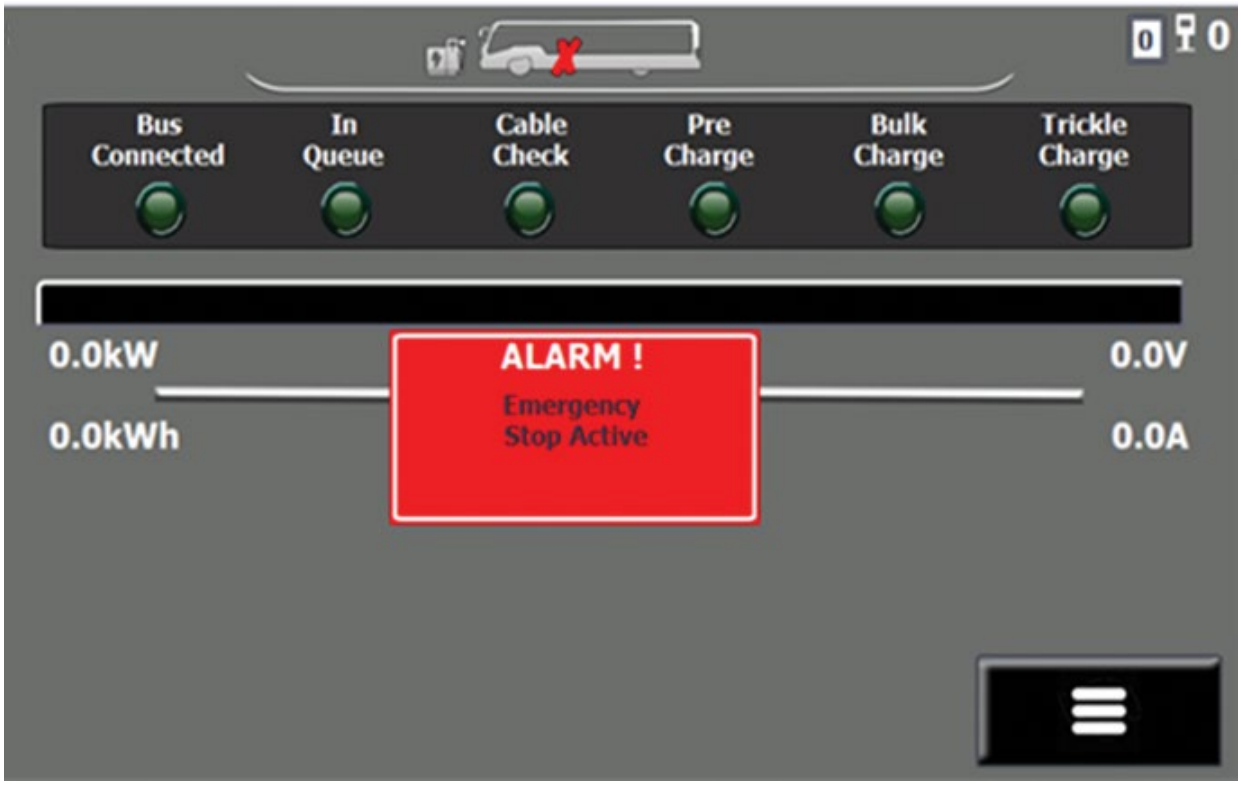


Figure 9-1 Alarm message

EMERGENCY OFF state

The EMERGENCY OFF function switches off the power supply of the charging cable. The charging process is stopped immediately. The SICHARGE UC dispenser switches to the safe EMERGENCY OFF state. In the EMERGENCY OFF state, operation of the SICHARGE UC dispenser is no longer possible for safety reasons.

Cancel the EMERGENCY OFF state

NOTICE

Eliminate the hazardous situation

First eliminate the hazardous situation. Only then cancel the EMERGENCY OFF state.

To cancel the EMERGENCY OFF state, reset the EMERGENCY OFF button on the SICHARGE UC charging station.

9.3 “Cabinet’s Door Opened” alarm message

When you open the cabinet door of a SICHARGE UC dispenser or the SICHARGE UC charging station, the display shows the following alarm message.

“Cabinet’s Door Opened” alarm message

The display shows the alarm message “Cabinet’s Door Opened” in full screen mode:

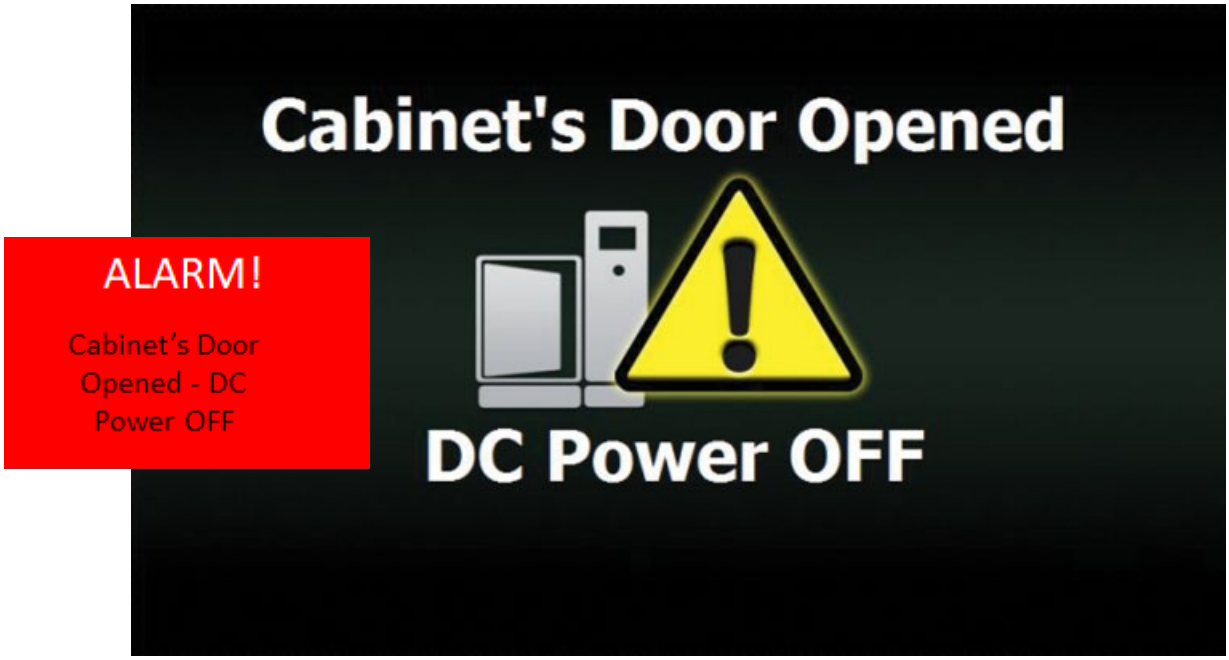


Figure 9-2 Alarm message

“Cabinet’s Door Opened” Alarm status

When you open a cabinet door, the SICHARGE UC dispenser automatically switches off the power supply of the charging cable. The safety shutdown also ends any charging in progress. The SICHARGE UC dispenser switches into a safe state. When a cabinet door is open, operation of the SICHARGE UC dispenser is not possible.

Ending the alarm state

When you close the cabinet door, the SICHARGE UC dispenser ends the alarm state. The SICHARGE UC dispenser restarts automatically. When the “Start” menu opens on the display, the SICHARGE UC dispenser is ready for operation again.

9.4 “Ground Fault Detection” alarm message

To avoid a dangerous situation, the SICHARGE UC dispenser constantly monitors the insulation of the connected electric vehicle. If the insulation monitor detects a ground fault, the display shows an alarm message.

“Ground Fault Detection” alarm message

The display shows the “Ground Fault Detection” alarm message in full screen mode:

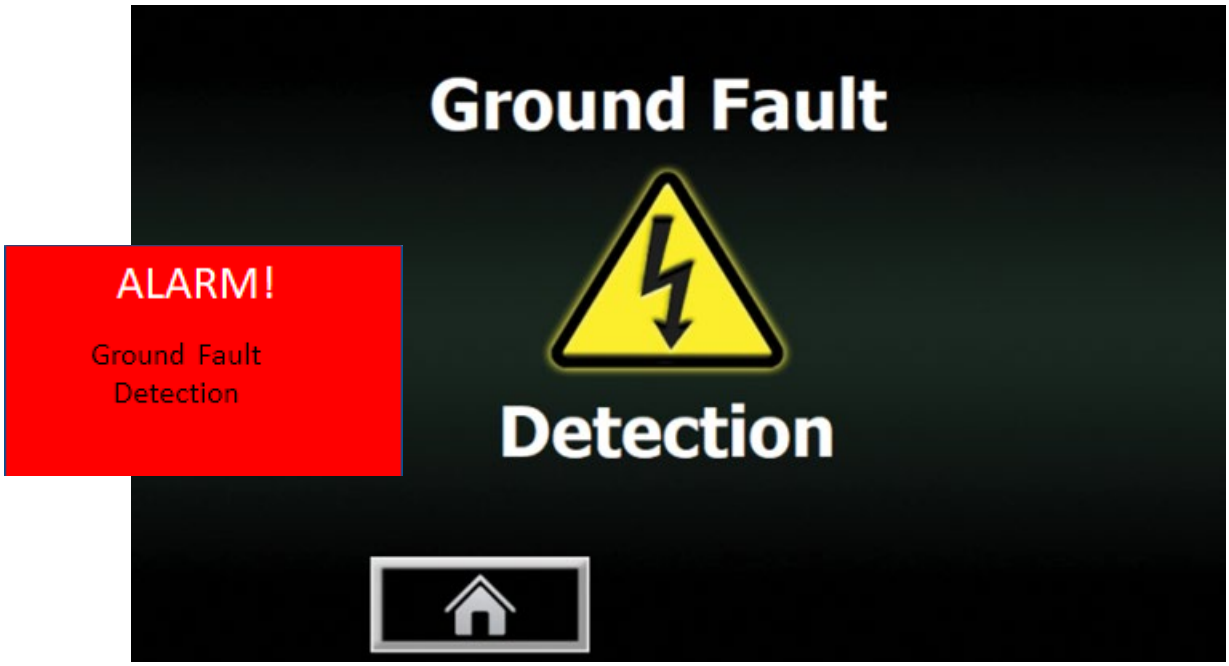


Figure 9-3 Alarm message

“Ground Fault Detection” alarm status

When the insulation monitoring triggers the “Ground Fault Detection” alarm, the SICHARGE UC dispenser switches off the power supply of the charging cable for safety reasons. The safety shutdown also takes place during an ongoing charging process. The SICHARGE UC dispenser switches into a safe state. During the alarm state, the SICHARGE UC dispenser cannot be operated for safety reasons.

NOTICE

Occurrence of a ground fault

A ground fault can occur either at the SICHARGE UC dispenser, at the charging cable, or at the vehicle.

Canceling the alarm state

To cancel the alarm state, you need to disconnect the electric vehicle. When you unplug the charging plug, the SICHARGE UC dispenser changes back to normal operation. When the display of the SICHARGE UC dispenser shows the “Start” menu, the SICHARGE UC dispenser is ready for operation again.

9.5 Alarm messages in the alarm history

In case of an error, the SICHARGE UC dispenser triggers an alarm and automatically performs diagnostics.
For each alarm, the SICHARGE UC dispenser shows 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 (error handling steps that involve measuring or applying changes while SICHARGE UC is active should be performed by a local Siemens service representative):

Main cabinet error codes

Description	Error Code	Error Handling	OCPP Error Category
No_Error	0	N/A	NoError
Emergency Stop Active	1	Check the emergency stop button	OtherError
		Eliminate the hazardous situation	
		Reset the emergency off button	
		Switch off the alarm	
		If external emergency stop is installed, repeat the above steps for the external button, and check the external Emergency Stop circuit wiring if necessary	
Surge Arrester ON	2	Check the surge protector SPD1 for a broken wire or a loose connection	InternalError
A22-1-Ground Fault Relay Warning	3	There may be a ground fault at the charging station or on the vehicle	GroundFailure
		Ensure the CCS charging plug is in good condition	
		Insert the charging plug into the plug holder	
		Start the charging station in manual mode	
		If no fault appears, the vehicle is causing the ground fault	
A22-1-Ground Fault Relay Shutdown	4	There may be a ground fault at the charging station or on the vehicle	GroundFailure
		Ensure the CCS charging plug is in good condition	
		Insert the charging plug into the plug holder	
		Start the charging station in manual mode	
		If no fault appears, the vehicle is causing the ground fault	
High Input Voltage Warning	5	The voltage difference between the phases must not exceed a tolerance range. The high output voltage can be caused by various specific events	Overvoltage
		Repeat the charging process	
		Check whether the fault persists	
High Input Voltage Shutdown	6	Measure the level of the input voltage at the AC input breaker	Overvoltage
		Measure the AC input voltage on the SinePower board	
		Measure the artifical netural on the SinePower board	
		Measure the resistance of RY1 and RY2	
Low Input Voltage Warning	7	Measure the level of the input voltage at the AC input breaker	Undervoltage
		Measure the AC input voltage on the SinePower board	
		Measure the artifical netural on the SinePower board	
		Measure the resistance of RY1 and RY2	

Description	Error Code	Error Handling	OCPP Error Category
Low Input Voltage Shutdown	8	Measure the level of the input voltage at the AC input breaker	Undervoltage
		Measure the AC input voltage on the SinePower board	
		Measure the artifical netural on the SinePower board	
		Measure the resistance of RY1 and RY2	
High Output Voltage Warning	9	The voltage difference between the phases must not exceed a tolerance range. The high output voltage can be caused by various specific events	Overvoltage
		Repeat the charging process	
		Check whether the fault persists	
High Output Voltage Shutdown	10	The voltage difference between the phases must not exceed a tolerance range. The high output voltage can be caused by various specific events	Overvoltage
		Repeat the charging process	
		Check whether the fault persists	
High Output Current Warning	11	The high output current can be caused by various specific events	OverCurrentFailure
		Repeat the charging process	
		Check whether the fault persists	
High Output Current Shutdown	12	The high output current can be caused by various specific events	OverCurrentFailure
		Repeat the charging process	
		Check whether the fault persists	
K1-Main CONT CTRL OPN Alarm	13	Check the K1 contactor for damage	PowerSwitchFailure
K1-Main CONT CTRL CLS Alarm	14	Check the main contactor coil for damage	PowerSwitchFailure
		Check for a broken wire or a loose connection	
K2-Main Trafo Premag CONT CTRL OPN Alarm	15	Check the K2 contactor for damage	PowerSwitchFailure
K2-Main Trafo Premag CONT CTRL CLS Alarm	16	Check the transformer premag contactor coil for damage	PowerSwitchFailure
		Check for a broken wire or a loose connection	
RL11-DC Output + CONT CTRL CLS Alarm	17	Check for damage on R11	PowerSwitchFailure
		Check for damage on K11 contactor coil	
		Check for a broken wire or a loose connection	
RL11-DC Output + CONT CTRL OPN Alarm	18	Check the K11 contactor for damage	PowerSwitchFailure
RL12-DC Output - CONT CTRL OPN Alarm	19	Check the K12 contactor for damage	PowerSwitchFailure
RL12-DC Output - CONT CTRL CLS Alarm	20	Check for damage on R12	PowerSwitchFailure
		Check for damage on K12 contactor coil	
		Check for a broken wire or a loose connection	
RL13-Fast Discharge CONT CTRL OPN Alarm	21	Check the K13 contactor for damage	PowerSwitchFailure
RL13-Fast Discharge CONT CTRL CLS Alarm	22	Check for damage on R13	PowerSwitchFailure
		Check for damage on K13 contactor coil	
		Check for a broken wire or a loose connection	
RL31-Bridge Rectifiers Heatsink Fan Startup Alarm	23	Measure the AC input to the fan	InternalError
		Check for a broken wire or a loose connection	
RL31-Bridge Rectifiers Heatsink Fan Shutdown Alarm	24	Check the relay for damage	InternalError
		Check for a broken wire or a loose connection	
RL32-IGBT Heatsink 1 Fan Startup Alarm	25	Measure the AC input to the fan	InternalError
		Check for a broken wire or a loose connection	
RL32-IGBT Heatsink 1 Fan Shutdown Alarm	26	Check the relay for damage	InternalError
		Check for a broken wire or a loose connection	
RL33-IGBT Heatsink 2 Fan Startup Alarm	27	Measure the AC input to the fan	InternalError
		Check for a broken wire or a loose connection	
RL33-IGBT Heatsink 2 Fan Shutdown Alarm	28	Check the relay for damage	InternalError
		Check for a broken wire or a loose connection	

Description	Error Code	Error Handling	OCPP Error Category
RL34-Output Diode Heatsink Fan Startup Alarm	29	Measure the DC input to the fan	InternalError
		Check for a broken wire or a loose connection	
RL34-Output Diode Heatsink Fan Shutdown Alarm	30	Check the relay for damage	InternalError
		Check for a broken wire or a loose connection	
A24-Selectivity Module Alarm	31	Check the Selectivity Module settings	PowerSwitchFailure
		Check for a broken wire or a loose connection	
OL2-Main Trafo PreMAG OL Relay Tripped	33	Check feedback wire between PLC and OL2 for a broken wire or a loose connection	PowerSwitchFailure
F11-DC Output Plus Fuse Blown	34	Check F11 for a blown fuse	OverCurrentFailure
		Ensure that the low voltage microswitch is making contact for each fuse	
F12-DC Output Minus Fuse Blown	35	Check F12 for a blown fuse	OverCurrentFailure
		Ensure that the low voltage microswitch is making contact for each fuse	
HS1-Bridge Rectifier Heatsink Temperature Derating	36	Check the air filter for dirt	HighTemperature
HS1-Bridge Rectifier Heatsink Temperature Shutdown	37	Check the air filter for dirt	HighTemperature
HS1-Bridge Rectifier Heatsink Thermal Switch Tripped (80C)	38	Check the air filter for dirt	HighTemperature
		Check connection between TS1 and X41	
		Check PT1 for a broken wire or a loose connection	
HS2-IGBT Heatsink 1 Temperature Derating	39	Check the air filter for dirt	HighTemperature
HS2-IGBT Heatsink 1 Temperature Shutdown	40	Check the air filter for dirt	HighTemperature
HS2-IGBT Heatsink 1 Thermal Switch Tripped (80C)	41	Check the air filter for dirt	HighTemperature
		Check connection between TS2 and X42	
		Check PT2 for a broken wire or a loose connection	
HS3-IGBT Heatsink 2 Temperature Derating	42	Check the air filter for dirt	HighTemperature
HS3-IGBT Heatsink 2 Temperature Shutdown	43	Check the air filter for dirt	HighTemperature
HS3-IGBT Heatsink 2 Thermal Switch Tripped (80C)	44	Check the air filter for dirt	HighTemperature
		Check connection between TS3 and X43	
		Check PT3 for a borken wire or a loose connection	
HS4-Output Diode Heatsink Temperature Derating	45	Check the air filter for dirt	HighTemperature
HS4-Output Diode Heatsink Temperature Shut-down	46	Check the air filter for dirt	HighTemperature
HS4-Output Diode Heatsink Temperature Switch Tripped (95C)	47	Check the air filter for dirt	HighTemperature
		Check connection between TS4 and X44	
		Check PT4 for a broken wire or a loose connection	
T1-TS-Main Trafo Heatsink Temperature Derating	48	Check the air filter for dirt	HighTemperature
T1-TS-Main Trafo Heatsink Temperature Shutdown	49	Check the air filter for dirt	HighTemperature
T1-TS-Main Trafo Thermal Switch tripped (150C)	50	Check the air filter for dirt	HighTemperature
		Check PT4 for a broken wire or a loose connection	
SWL-Left Door Opened	51	Close the cabinet door completely	OtherError
		Switch off the alarm	
SWR-Right Door Opened	52	Close the cabinet door completely	OtherError
		Switch off the alarm	
Q3-Primary Control Trafo CB Opened	53	Check feedback wire between PLC and Q3 for a broken wire or a loose connection	OverCurrentFailure
		Check Q3 for damage	
Q4-Primary Peripheral Trafo CB Opened	54	Check feedback wire between PLC and Q4 for a broken wire or a loose connection	OverCurrentFailure
		Check Q4 for damage	

Description	Error Code	Error Handling	OCPP Error Category
Q5-Primary Heater Trafo CB Opened	55	Check feedback wire between PLC and Q5 for a broken wire or a loose connection	OverCurrentFailure
		Check Q5 for damage	
CB1-Secondary Control Trafo CB Opened	56	Check feedback wire between PLC and CB1 for a broken wire or a loose connection	OverCurrentFailure
		Turn CB1 off and on	
CB2-24V Digital Control PS Input CB Opened	57	Check feedback wire between PLC and CB2 for a broken wire or a loose connection	OverCurrentFailure
		Turn CB2 off and on	
CB3-24V Analog Control PS Input CB Opened	58	Check feedback wire between PLC and CB3 for a broken wire or a loose connection	OverCurrentFailure
		Turn CB3 off and on	
CB4-24V Output Contactor PS Input CB Opened	59	Check feedback wire between PLC and CB4 for a broken wire or a loose connection	OverCurrentFailure
		Turn CB4 off and on	
CB21-Sceondary Peripheral Trafo CB Opened	60	Check feedback wire between PLC and CB21 for a broken wire or a loose connection	OverCurrentFailure
		Turn CB21 off and on	
CB5-Bridge Rectifier Heatsink Fan CB Opened	61	Check feedback wire between PLC and CB5 for a broken wire or a loose connection	OverCurrentFailure
		Turn CB5 off and on	
CB6-IGBT Heatsink 1 Fan CB Opened	62	Check feedback wire between PLC and CB6 for a broken wire or a loose connection	OverCurrentFailure
		Turn CB6 off and on	
CB7-IGBT Heatsink 2 Fan CB Opened	63	Check feedback wire between PLC and CB7 for a broken wire or a loose connection	OverCurrentFailure
		Turn CB7 off and on	
CB8-Output Diode heatsink Fan CB Opened	64	Check feedback wire between PLC and CB8 for a broken wire or a loose connection	OverCurrentFailure
		Turn CB8 off and on	
High Cabinet Temperature Derating	65	Check the air filter for dirt	HighTemperature
High Cabinet Temperature Shutdown	66	Check the air filter for dirt	HighTemperature
Low Cabinet Temperature Derating	67	Ensure that the ambient temperature is not below -25 Celsius	OtherError
		Ensure that the heaters are operational	
Low Cabinet Temperature Shutdown	68	Ensure that the ambient temperature is not below -25 Celsius	OtherError
		Ensure that the heaters are operational	
CAN Communication Lost	69	Termination of CAN communication can be caused by various specific events	InternalError
		Repeat the charging process	
		Check whether the fault persists	
		Check whether the control of the power converter is	
		switched on and the LEDs are flashing	
		Check the CAN connections on the SinePower board and the AKKA controller	
Discharge Failed	71	Check F13 for a blown fuse	InternalError
		Check R13 for damage	
		Check K13 for damage	
		Ensure that K13 is opening and closing at the appropriate time	
Cable Check Failed	72	Check that the IGBTs are properly switching	InternalError
		Check the rectifiers for damage	
		Check for a balanced DC link voltages	

Description	Error Code	Error Handling	OCPP Error Category
Startup_Sequencer_Failure	73	Check that K2 briefly closes on start up	InternalError
		Check that K1 closes on start up	
		Measure resistance of RBD1, RBD2 and RBD3	
		Restart startup sequence	
Stop_Sequencer_Failure	74	Check if K11 and K12 have opened after a stopped session	InternalError
		Check if the sinepower board turned off after a charge session	
		Check if K1 turned off after a charge session	
		Ensure that the AC capacitors have discharged	
SinePower: Input_Main_Low_Error	75	Measure the level of the input voltage at the AC input breaker	Undervoltage
		Measure the AC input voltage on the SinePower board	
		Measure the artifical netural on the SinePower board	
		Measure the resistance of RY1 and RY2	
SinePower: Input_Contactor_OFF_Error	76	Check K1 feedback wire for a broken wire or loose connection	PowerSwitchFailure
SinePower: Over_Temperature_Error	77	Ensure that all fans are running	HighTemperature
SinePower: Output_Short_Circuit_Error	78	Measure the resistance between the DC output	InternalError
SinePower: Output_Overload_Error	79	Requested output voltage and current is too high	Overvoltage
SinePower: Input_Mains_High_Error	80	Measure the level of the input voltage at the AC input breaker	Overvoltage
		Measure the AC input voltage on the SinePower board	
		Measure the artifical netural on the SinePower board	
		Measure the resistance of RY1 and RY2	
		Turn breaker CB3 off and on	
SinePower: DC_Link_Under_Voltge_Error	81	Measure each bus for a balanced voltage	Undervoltage
		Turn breaker CB3 off and on	
SinePower: Retifier_IGBT_Desaturation_Error	82	Check for a short circuit on IGBT output	InternalError
		Turn breaker CB3 off and on	
SinePower: Input_Mains_Current_Error	83	Check for a short circuit on the AC input panel	OverCurrentFailure
		Turn breaker CB3 off and on	
SinePower: Shutdown_Rectifier_Error	84	Check rectifier for a broken wire or a loose connection	InternalError
		Check each nut for a proper torque	
		Turn breaker CB3 off and on	
SinePower: Inverter_IGBT_Desaturation_Error	85	Check for a short circuit on IGBT output	InternalError
		Turn breaker CB3 off and on	
SinePower: DC_BUS_Pre_Charge_Timeout_Error	86	No longer monitored by SinePower	InternalError
		Turn breaker CB3 off and on	
SinePower: DC_Link_Over_Voltage_Error	87	Measure each bus for a balanced voltage	Overvoltage
		Turn breaker CB3 off and on	
SinePower: DC_Link_Under_Balance_Error	88	Measure each bus for a balanced voltage	OtherError
		Turn breaker CB3 off and on	
SinePower: Output_Over_Voltage_Error	89	Measure AC input voltage. Voltage should not exceed 10% of specified AC input voltage	Overvoltage
		Turn breaker CB3 off and on	
SinePower: Output_Under_Voltage_Error	90	Measure AC input voltage. Voltage should not exceed 10% of specified AC input voltage	Undervoltage
		Turn breaker CB3 off and on	
SinePower: Start_Timeout_Error	91	Turn breaker CB3 off and on	InternalError
SinePower: Frequency_Deviation_Error	92	Measure the frequency of the alternating current	OtherError
		The charging station is set to an input frequency of 50/60 Hz ±10%	

Description	Error Code	Error Handling	OCPP Error Category
SinePower: CAN_Communication_Timeout_Error	93	Check all ethernet connections in the dispenser	InternalError
		Check Ethernet connection from dispenser to main cabinet	
		Ensure Ethernet cables are routed according to installation and instruction manual	
RL35-Ground Fault Test Relay OPN Alarm	95	Check K13 contactor for damage	PowerSwitchFailure
RL35-Ground Fault Test Relay CLS Alarm	96	Check RL35 for damage	PowerSwitchFailure
		Check for a broken wire or a loose connection	
CB11-Secondary Heaters Trafo Opened	97	Check feedback wire between PLC and CB8 for a broken wire or a loose connection	OverCurrentFailure
		Ensure that CB8 is turned on	
F01,F02,F03-Trafo Secondary1 Fuse Blown	98	Check F01, F02 and F03 for a blown fuse	OverCurrentFailure
		Ensure that the low voltage microswitch is making contact for each fuse	
F04,F05,F06-Trafo Secondary2 Fuse Blown	99	Check F04, F05 and F06 for a blown fuse	OverCurrentFailure
		Ensure that the low voltage microswitch is making contact for each fuse	
Plug_POS_TEMP_Derating[1]	100	Temperature at CCS plug exceeded. Cable must cool before charging	HighTemperature
Plug_POS_TEMP_Derating[2]	101	Temperature at CCS plug exceeded. Cable must cool before charging	HighTemperature
Plug_POS_TEMP_Derating[3]	102	Temperature at CCS plug exceeded. Cable must cool before charging	HighTemperature
Plug_POS_TEMP_Derating[4]	103	Temperature at CCS plug exceeded. Cable must cool before charging	HighTemperature
Plug_POS_TEMP_Derating[5]	104	Temperature at CCS plug exceeded. Cable must cool before charging	HighTemperature
Plug_POS_TEMP_Derating[6]	105	Temperature at CCS plug exceeded. Cable must cool before charging	HighTemperature
Plug_POS_TEMP_Shutdown[1]	106	Temperature at CCS plug exceeded. Cable must cool before charging	HighTemperature
Plug_POS_TEMP_Shutdown[2]	107	Temperature at CCS plug exceeded. Cable must cool before charging	HighTemperature
Plug_POS_TEMP_Shutdown[3]	108	Temperature at CCS plug exceeded. Cable must cool before charging	HighTemperature
Plug_POS_TEMP_Shutdown[4]	109	Temperature at CCS plug exceeded. Cable must cool before charging	HighTemperature
Plug_POS_TEMP_Shutdown[5]	110	Temperature at CCS plug exceeded. Cable must cool before charging	HighTemperature
Plug_POS_TEMP_Shutdown[6]	111	Temperature at CCS plug exceeded. Cable must cool before charging	HighTemperature
Plug_NEG_TEMP_Derating[1]	112	Temperature at CCS plug exceeded. Cable must cool before charging	HighTemperature
Plug_NEG_TEMP_Derating[2]	113	Temperature at CCS plug exceeded. Cable must cool before charging	HighTemperature
Plug_NEG_TEMP_Derating[3]	114	Temperature at CCS plug exceeded. Cable must cool before charging	HighTemperature
Plug_NEG_TEMP_Derating[4]	115	Temperature at CCS plug exceeded. Cable must cool before charging	HighTemperature
Plug_NEG_TEMP_Derating[5]	116	Temperature at CCS plug exceeded. Cable must cool before charging	HighTemperature
Plug_NEG_TEMP_Derating[6]	117	Temperature at CCS plug exceeded. Cable must cool before charging	HighTemperature
Plug_NEG_TEMP_Shutdown[1]	118	Temperature at CCS plug exceeded. Cable must cool before charging	HighTemperature
Plug_NEG_TEMP_Shutdown[2]	119	Temperature at CCS plug exceeded. Cable must cool before charging	HighTemperature
Plug_NEG_TEMP_Shutdown[3]	120	Temperature at CCS plug exceeded. Cable must cool before charging	HighTemperature
Plug_NEG_TEMP_Shutdown[4]	121	Temperature at CCS plug exceeded. Cable must cool before charging	HighTemperature
Plug_NEG_TEMP_Shutdown[5]	122	Temperature at CCS plug exceeded. Cable must cool before charging	HighTemperature
Plug_NEG_TEMP_Shutdown[6]	123	Temperature at CCS plug exceeded. Cable must cool before charging	HighTemperature
Q7-Harmonic Filter Breaker Opened	124	Measure the level of the input voltage at the AC input breaker	OverCurrentFailure
		Check the K1 contactor for damage	
K23-Harmonic Filter Contactor CLS Alarm	125	Check the main contactor coil for damage	PowerSwitchFailure
		Check for a broken wire or a loose connection	
K23-Harmonic Filter Contactor OPN Alarm	126	Check the K23 contactor for damage	PowerSwitchFailure
AC Input Out of Range	127	The average AC input is lower than 84.2% or higher than 110% of the rated value. Check the PN/CAN Link Ethernet connection.	InternalError
Active Dispenser Faulted	150	Indicates a fault in a connected dispenser. Refer to the error code reported by the dispenser for more information	InternalError
Client_Communication_Fault[1]	220	Communication between main cabinet and dispenser was interrupted. Check the network cables for loose connections	InternalError
		Verify the dispenser A1-PLC is in RUN state (Green RUN/STOP LED)	

Description	Error Code	Error Handling	OCPP Error Category
Client_Communication_Fault[2]	221	Communication between main cabinet and dispenser was interrupted. Check the network cables for loose connections	InternalError
		Verify the dispenser A1-PLC is in RUN state (Green RUN/STOP LED)	
Client_Communication_Fault[3]	222	Communication between main cabinet and dispenser was interrupted. Check the network cables for loose connections	InternalError
		Verify the dispenser A1-PLC is in RUN state (Green RUN/STOP LED)	
Client_Communication_Fault[4]	223	Communication between main cabinet and dispenser was interrupted. Check the network cables for loose connections	InternalError
		Verify the dispenser A1-PLC is in RUN state (Green RUN/STOP LED)	
Client_Communication_Fault[5]	224	Communication between main cabinet and dispenser was interrupted. Check the network cables for loose connections	InternalError
		Verify the dispenser A1-PLC is in RUN state (Green RUN/STOP LED)	
Client_Communication_Fault[6]	225	Communication between main cabinet and dispenser was interrupted. Check the network cables for loose connections	InternalError
		Verify the dispenser A1-PLC is in RUN state (Green RUN/STOP LED)	

Table 9-1: Main cabinet error codes

Dispenser cabinet error codes

Description	Error Number	Error Handling	OCPP Error Category
FRONTEND_DOOR	201	Close the cabinet door completely	InternalError
		Check wiring from SF20 to A1_PLC	
		Check mounting of the door switch for proper function	
OUTPUT_FUSE_PLUS_BLOWN	202	Check F15 for a blown fuse	OverCurrentFailure
		Ensure that the low voltage microswitch is making contact for each fuse	
OUTPUT_FUSE_MINUS_BLOWN	203	Check F16 for a blown fuse	OverCurrentFailure
		Ensure that the low voltage microswitch is making contact for each fuse	
OUTPUT_CONTACTOR_PLUS_Closing_Timeout	204	Check for damage on K16 contactor coil	PowerSwitchFailure
		Check for a broken wire or a loose connection	
OUTPUT_CONTACTOR_PLUS_Opening_Timeout	205	Check the K15 contactor for damage	PowerSwitchFailure
OUTPUT_CONTACTOR_MINUS_Closing_Timeout	206	Check for damage on K16 contactor coil	PowerSwitchFailure
		Check for a broken wire or a loose connection	
OUTPUT_CONTACTOR_MINUS_Opening_Timeout	207	Check the K15 contactor for damage	PowerSwitchFailure
CHARGING_SYSTEM_INCOMPATIBILITY	208	Vehicle-generated alarm. Refer to vehicle OEM manual for troubleshooting	EVCommunicationError
EV_SHIFT_POSITION	209	Vehicle-generated alarm. Refer to vehicle OEM manual for troubleshooting	EVCommunicationError
CHARGING_VOLTAGE_OUT_OF_RANGE	210	Vehicle-generated alarm. Refer to vehicle OEM manual for troubleshooting	EVCommunicationError
EVRESS_MALFUNCTION	211	Vehicle-generated alarm. Refer to vehicle OEM manual for troubleshooting	EVCommunicationError
RESS_TEMPERATURE_INHIBIT	212	Vehicle-generated alarm. Refer to vehicle OEM manual for troubleshooting	EVCommunicationError
CHARGING_CURRENT_DIFF	213	Vehicle-generated alarm. Refer to vehicle OEM manual for troubleshooting	EVCommunicationError
CHARGER_CONNECTOR_LOCK_FAULT	214	Vehicle-generated alarm. Refer to vehicle OEM manual for troubleshooting	EVCommunicationError
Communication to Server Lost	215	Communication between main cabinet and dispenser was interrupted. Check the network cables for loose connections	InternalError
		Verify the main cabinet A31-PLC is in RUN state (Green RUN/STOP LED)	
CAN_COMMUNICATION_LOST	216	Termination of CAN communication can be caused by various specific events	InternalError
		Repeat the charging process	
		Check whether the fault persists	
		Check the CAN connections on the AKKA controller	
CB12_BREAKER_TRIPPED	217	Check feedback wire between PLC and CB12 for a broken wire or a loose connection	OverCurrentFailure
		Turn CB12 off and on	
		Check PS1 power supply for damage	
CB13_BREAKER_TRIPPED	218	Check feedback wire between PLC and CB13 for a broken wire or a loose connection	OverCurrentFailure
		Turn CB13 off and on	
		Check PS2 power supply for damage	
CB14_BREAKER_TRIPPED	219	Check feedback wire between PLC and CB14 for a broken wire or a loose connection	OverCurrentFailure
		Turn CB14 off and on	
		Check PS3 power supply for damage	

Table 9-2: Dispenser error codes

SECTION 10

Maintenance and service

10.1 Safety instructions

To guarantee the safety of persons and equipment during maintenance and service of the SICHARGE UC dispenser, observe the following safety instructions.

⚠ WARNING

Qualified personnel

Only qualified and trained persons may work on the SICHARGE UC dispenser.
Only a qualified and trained electrician may work on the SICHARGE UC dispenser.

⚠ WARNING

Electric shock from live parts

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

- Perform any maintenance and service work on the inside only on the disconnected SICHARGE UC dispenser and the connected SICHARGE UC charging station.
- Observe the five safety rules for electrical work (Page 14).

⚠ WARNING

Electrical shock due to residual charges in capacitors

After disconnecting the power supply of the SICHARGE UC dispenser and the connected SICHARGE UC charging station, the capacitors in the SICHARGE UC charging station will start discharging. Live parts remain under dangerous electrical voltage for up to 10 minutes during discharging. Touching the live parts can lead to death or serious injury.

- Wait 10 minutes after switching off the power supply.
- Make sure that the SICHARGE UC dispenser does not carry any live voltage.
- Only then start working on the SICHARGE UC dispenser.

⚠ WARNING

Fall arrester

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

⚠ WARNING

Falling parts

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

⚠ CAUTION

Risk of stumbling or slipping

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

⚠ CAUTION

Risk of crushing/cutting

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

NOTICE

Safety area for maintenance and service

Create a safety area around the SICHARGE UC dispenser with warning signs and barriers.

NOTICE

Use the PPE

Use the PPE required for the work. For example:

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

NOTICE

Damage to property due to foreign objects inside the station

During maintenance work, foreign objects such as dirt, tools or loose components can be left behind in the SICHARGE UC dispenser. This can result in a short circuit, reduced cooling capacity or increased running noise. The SICHARGE UC dispenser can be damaged.

- Make sure that no foreign objects are left in and on the SICHARGE UC dispenser.
- Fasten loose components again after maintenance work.
- Carefully remove any dirt.

10.2 Maintenance plan

The following maintenance/service measures are necessary to maintain the functionality and operational safety of the SICHARGE UC dispenser. Maintenance of the dispenser should coincide with maintenance of the SICHARGE charging cabinet. Be aware that not heeding the maintenance plan may void equipment warranty.

Check the outside of the charging station

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

- 6 months after commissioning
- 12 months after commissioning

After the first year, carry out the tests every 12 months.

Run the tests at shorter intervals as required by the ambient conditions of the SICHARGE UC dispenser.

Location	Type of test	Test	Estimated completion time (in minutes)
External	Visual check for damage	• Check the exterior of the dispenser enclosure and pedestal for damage or corrosion • Check the HMI screen for damage	3
	Visual check and cleaning	• Clean all dust and/or dirt accumulation from the dispenser cabinet exterior and ventilation slots • Clean all dust and/or dirt accumulation from the dispenser pedestal • Clean the HMI screen with a microfiber cloth • Check the cabinet door locks and hinges for ease of movement	5
	Visual check	• Check the charging plug and pins for damage and wear • Check charging plug for presence of moisture, dust, or corrosion • Check the plug-locking mechanism to ensure that it is working properly • Check position of the charging plug in the plug holder	5
	Visual check	• Check the charging cable for damage and wear • Check the strain relief where the charging cable exits the dispenser and ensure it is properly tightened • Check that the cable is not able to shift in the strain relief	3
	Testing for proper function	• Check the HMI screen for display and function • Check that the HMI screen is correctly responding to touch • Check the LED display for function • Check the cabinet door for smooth opening • Check whether a fault message is displayed on the HMI screen when the cabinet doors were opened	5
Internal	Visual check, noise check	• Ensure all warning labels are legible • Check for abnormal sounds from running fans and power supplies • Check for abnormal smells, damage/changes to installed components, corrosion[①]	3
	Visual check and cleaning	**Do not check with an energized charger.** • Clean all dust and/or dirt accumulation from the cabinet's interior	4
	Mechanical Check	**Do not check with energized charger.** • Check that DC input connections are correctly torqued (DC+, DC-, PE) • Check that AC input connections are correctly torqued (L1, N) • Check fastening points that hold the SICHARGE UC dispenser to the pedestal	10

[①] Over time, main fuse holders, chokes, and inductors may see discoloration due to oxidation. This will not affect the functionality or operation of the equipment.

See also

Cleaning the ventilation grille (Page 110)

10.3 Checking the outside of the SICHARGE UC dispenser

Maintenance interval

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

- 6 months after commissioning
- 12 months after commissioning

After the first year, carry out the tests every 6 months.

Run the tests at shorter intervals as required by the ambient conditions of the SICHARGE UC dispenser.

Visual check of the outside

Check the following:

1. Visible damage to the cabinet exterior
2. Correct position of the charging plug
3. Correct position of the charging plug holder
4. Ventilation openings
5. The charging plug for signs of wear, humidity, dust or corrosion
6. The charging cable for damage and wear
7. Check the display for contamination and damage (if available)
8. Function of the display (if available)
9. Function of the LED display (if available)

Noise testing

Check the fan for atypical running noises.

10.4 Testing the inside of the SICHARGE UC dispenser

Maintenance interval

- Testing every 6 months

⚠ WARNING

Qualified electrician

Only a qualified and trained electrician may work on the SICHARGE UC dispenser.

Visual check of the inside

1. Check the plug holder for humidity, dust and corrosion
2. Check for abnormal smells, damage/changes to installed components, corrosion.

NOTICE

Over time, main fuse holders, chokes and inductors may see discoloration due to oxidation. This will not affect the functionality or operation of the equipment.

Mechanical check of the inside

1. Check the tightening torque of 0.5 to 0.6 Nm of the connections L1, N and PE
2. Check the tightening torque of 45 Nm of the connections DC+, DC- and PE, and apply sealing paint
3. Check the eight fastening points that hold the SICHARGE UC dispenser to the pedestal

10.5 Servicing the SICHARGE UC dispenser

10.5.1 Cleaning the HMI screen

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

⚠ WARNING

Electric shock due to water ingress

Water entering the SICHARGE UC dispenser can damage the SICHARGE UC dispenser. 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 pressure washer, steam cleaner or water jet to clean the SICHARGE UC dispenser.

⚠ WARNING

Damage to property due to improper cleaning agents

Improper cleaning agents can damage the HMI screen of the SICHARGE UC dispenser.

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

NOTICE

Only clean the HMI screen when it is switched off

If you clean the HMI screen when it is switched on, you can trigger operator errors. This may unintentionally put the SICHARGE UC dispenser into an undesirable operating state.

- Switch off the HMI screen of the SICHARGE UC dispenser before you clean it.

Permitted cleaning agents and tools

- Use a mild, non-corrosive cleaning agent, even in the case of heavy soiling. An example of a mild detergent would be dishwashing liquid.
- Use only soft cleaning cloths.

NOTICE

Read the information on chemical resistance

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

Information on resistance (https://support.industry.siemens.com/cs/ww/en/view/39718396)

Cleaning the HMI screen

Clean the HMI screen as follows:

1. Apply the cleaning agent on 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.

See also

Chemical resistance of the HMI device:
(support.industry.siemens.com/cs/ww/en/view/39718396)

10.5.2 Cleaning the cabinet and the charging cable

⚠ WARNING

Electric shock due to water ingress

Water entering the SICHARGE UC dispenser can damage the SICHARGE UC dispenser. 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 pressure washer or steam cleaner to clean the SICHARGE UC dispenser.

⚠ WARNING

Damage to property due to improper cleaning agents

Improper cleaning agents can damage the exterior surfaces of the SICHARGE UC dispenser.
Therefore, do not use any solvents. Also, never use aggressive or abrasive cleaning agents.

Permitted cleaning agents and tools

- Use only soft cleaning cloths.
- Use a mild, non-corrosive cleaning agent, even in the case of heavy soiling. An example of mild detergent would be dishwashing liquid.
- Deionized water is particularly suitable for cleaning the unit.

Cleaning the exterior surfaces of the cabinet

- Wipe down the exterior surfaces of the SICHARGE UC dispenser with a damp cloth.
- Then rub the SICHARGE UC dispenser dry.
- Do not scrape off stubborn dirt with 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 and dirty contacts with a dry cloth.
- Never immerse the charging cable and charging plug into liquids.

10.5.3 Cleaning the ventilation grille

The ventilation grilles of the SICHARGE UC dispenser prevent foreign objects from entering. To guarantee air conditioning of the SICHARGE UC dispenser cooling within the permissible temperature range, remove any dirt and foreign objects from the ventilation openings.

⚠ WARNING

Electric shock due to water ingress

Water entering the SICHARGE UC dispenser can damage the SICHARGE UC dispenser. 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 pressure washer or steam cleaner to clean the SICHARGE UC dispenser.

⚠ WARNING

Damage to property due to improper cleaning agents

Improper cleaning agents can damage the exterior surfaces of the SICHARGE UC dispenser.
Therefore, do not use any solvents. Also, never use aggressive or abrasive cleaning agents.

Permitted cleaning agents and tools

- Use only soft cleaning cloths.
- Use a mild, non-corrosive cleaning agent, even in the case of heavy soiling. An example of mild detergent would be dishwashing liquid.
- Deionized water is particularly suitable for cleaning the unit.

Cleaning the ventilation grille

- Vacuum dirt and foreign bodies at the ventilation grilles.
- Wipe down the ventilation grilles of the SICHARGE UC dispenser with a damp cloth.
- Then rub the ventilation grilles of the SICHARGE UC dispenser dry.
- Do not scrape off stubborn dirt using hard objects.
- Do not use any sharp-edged tools.

SECTION 11

Disposal

11.1 Disposing of packaging

The environmental protection and the preservation of its resources are of high priority for our company goals. 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. Below, please find the recommendations for environmentally friendly disposal of the SICHARGE UC dispenser and its components.

Disposing of packaging material

- Dispose of packaging material in an environmentally friendly manner or recycle the material. Comply with the waste 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.

11.2 Disposing of the SICHARGE UC dispenser

For environmentally friendly recycling and disposal of the device, contact a certified electronic waste disposal company. Dispose of the device and specific material, such as capacitors, in accordance with the applicable regulations in your country. The device should be rendered inoperable before disposal.

Recycling considerations

The SICHARGE UC dispenser is an environmentally friendly product with long lifetime and high recyclability. Key components should be treated per the following recommendations:

Parts	**Recommended Treatment**
Steel parts	Materials recovery
Plastic parts	Thermoplastic parts possible for materials recovery
Thermosetting	Parts for incineration or recovery
Copper parts	Materials recovery
Circuit boards	Landfill/discard

Note: Because of safety reasons, consider the safety instructions in this operating manual. The product should be dismantled by qualified personnel. Please get in contact with your local Siemens service representative.

SECTION 12

Service and Support

Customer Support

Phone

For customer support, call us at +1 (855) 950-6339, option 9

Business Hours: Monday – Friday, 6:00 a.m. to 8:00 p.m., Eastern Standard Time

Submit a ticket

Visit www.usa.siemens.com/createcase

1. Select **"Emobility/Vehicle Charging Products"** from the Create a Case dropdown menu.
2. Click "Next" and proceed to follow the instructions.
   Business Hours: Monday to Friday, 6:00 a.m. to 8:00 p.m., Eastern Standard Time

Customer Support FAQs

Our Siemens eMobility staff is trained as a dedicated response team to all hardware and software products. Located here are a few commonly asked questions regarding our standard level of customer support.

Coming soon!

SECTION 13

Technical specifications

13.1 Technical specifications

Core statement

Supply voltage input	
Voltage	230 V AC, 1 phase, +/- 10%
Frequency	60 Hz

DC output	
Rated power	100 ... 150 kW
Current (maximum)	100 ... 200 A
Voltage (range)	100 ... 1,000 V DC
Efficiency η (at 100% load)	99.50%

Internal energy consumption at 230 V	
Basic variant	276 W

Ambient conditions	
Ambient temperature	-25 °C to 45 °C (-13 °F to 113 °F)
Humidity	5 ... 95% (no condensation)
Maximum operating altitude (ft / m)	6,561.68 ft / 2,000 m above sea level

Mechanical specifications	
Operating environment	Interior and exterior
Cabinet protection without HMI	NEMA 3R
Cabinet protection with HMI	NEMA 3R
Cabinet material	Steel, powder coated
Color	Cabinet: RAL 9010 Cream White Accents: RAL 9005 Jet Black
Overall dimensions W x D (in / mm)	24 x 16.5 in / 610 x 420 mm
Overall dimensions H (in / mm)	Wall mount: 41 in /1,045 mm; Floor mount: 79.5 in / 2,020 mm

Connection plan

Type	Charging station	Dispenser	Outer cable diameter (in / mm)	Description
DC+	-F11	-F15	0.63 ... 1.10 in / 16 ... 28 mm	DC single conductor
DC-	-F12	-F16	0.63 ... 1.10 in / 16 ... 28 mm	DC single conductor
PE	PE	PE	0.51 ... 0.82 in / 13 ... 21 mm	PE single conductor
L	CB21-2	X23-TB1_1	0/35 ... 0.67 in / 9 ... 17 mm	AC cable
N	CB21-4	X24-TB1_1	0/35 ... 0.67 in / 9 ... 17 mm	AC cable
Ethernet	A13	A2	0.27 ... 0.31 in / 7 ... 8 mm	Ethernet cable
Fiber-optic	A13_P4	A2_P3	0.12... 0.24 in / 3...6 mm	Multimode glass fiber-optic with SC socket (Class A Profinet)

13.2 Charging current/power curve

The charging current and the power curve depend on the connected charging station.

Charging current

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

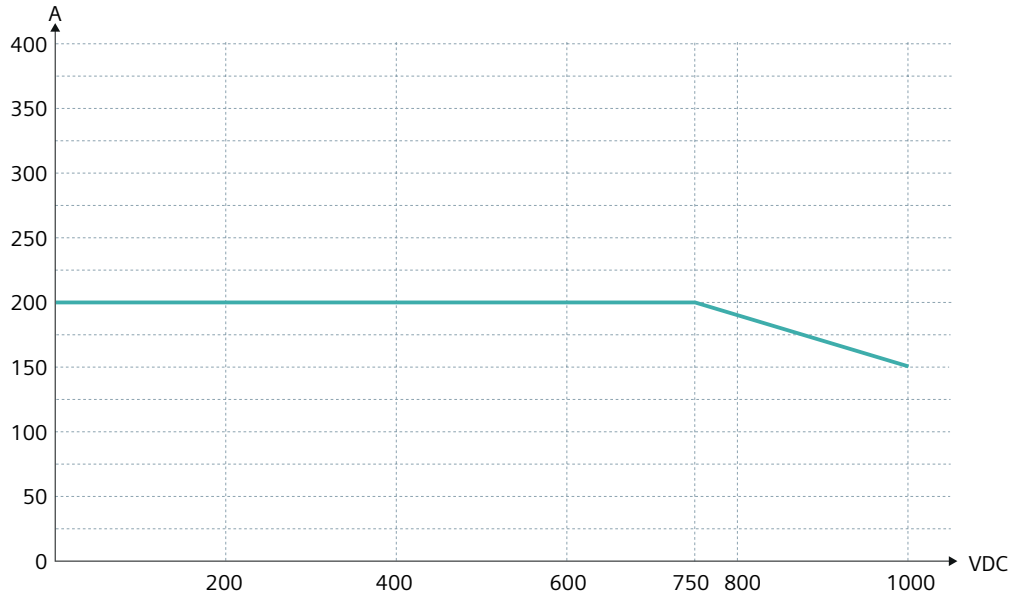


Figure 13-1 Charging current UC 150 charging station

Power curve

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

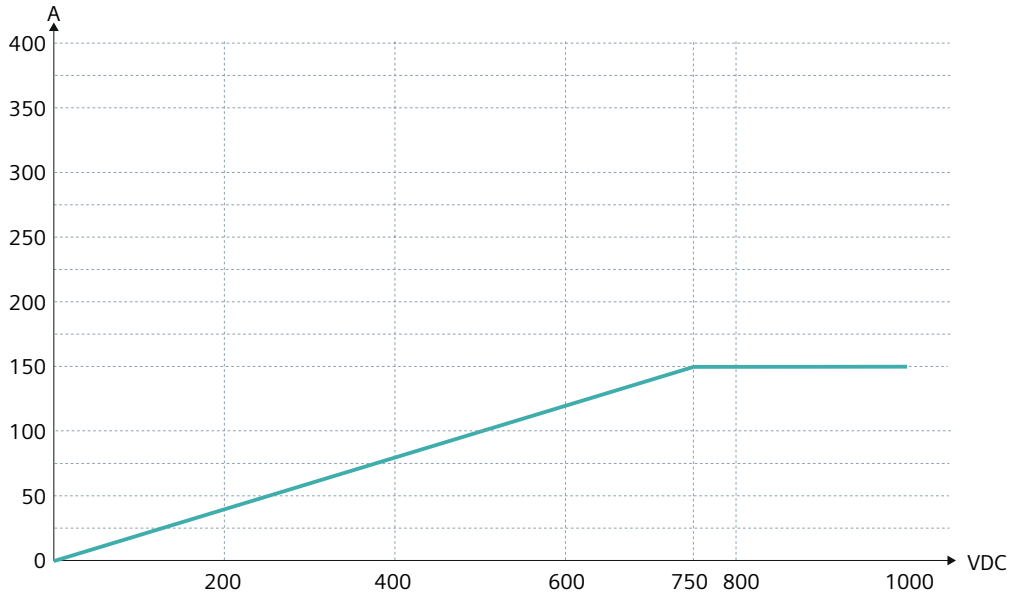


Figure 13-2 UC 150 charging station power curve

SECTION 14

Declaration of Conformity

14.1 Declaration of Conformity

The SICHARGE UC dispenser complies with the harmonized UL standards for charging stations.

Declaration of Conformity at a glance

The SICHARGE UC dispenser meets the requirements and protection targets of the following directives:

- UL2202 Standard for Electric Vehicle (EV) Charging System Equipment.
- UL2231 Personnel Protection Systems for Electric Vehicle (EV) Supply Circuits: Particular Requirements for Protection Devices for Use in Charging System

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:

Legal Manufacturer
Siemens Industry, Inc.
3617 Parkway Ln.
Peachtree Corners, GA 30092
United States of America

APPENDIX A

List of abbreviations

Abbreviation	Term
AC	Alternating Current
CAN	Controller Area Network
CCS	Combined Charging System
DC	Direct Current
OCPP	Open Charge Point Protocol
HMI	Human Machine Interface
IGBT	Insulated Gate Bipolar Transistor
SOC	State of Charge
SW	Width Across Flats

APPENDIX B

Dispenser Maintenance Checklist

Date:		Equipment ID#:	
Customer:		Serial number:	
Location:		Date of manufacture:	

	Preventive maintenance action list	OK?		
No.	**Checklist Item**	**Yes**	**No**	**N/A**
1	Check the exterior of the dispenser enclosure and pedestal for damage or rust/corrosion	☐	☐	☐
2	Check the air inlet slots for damage, obstructions, or corrosion	☐	☐	☐
3	Check the HMI screen for damage	☐	☐	☐
4	Clean all dust and/or dirt accumulation from the dispenser cabinet exterior and air inlet slots with a microfiber cloth and mild detergent (reference manual)	☐	☐	☐
5	Clean the HMI screen with a microfiber cloth & mild detergent	☐	☐	☐
6	Clean the dispenser pedestal exterior with a microfiber cloth & mild detergent	☐	☐	☐
7	Check the HMI screen for errors and record any found. Attempt to acknowledge/clear them (if possible)	☐	☐	☐
8	Listen for abnormal sounds from running fans and power supplies	☐	☐	☐
9	Check the HMI screen for display and function	☐	☐	☐
10	Check that the HMI screen is correctly responding to touch	☐	☐	☐
11	Check the LED display for function; is illuminated green	☐	☐	☐
12	Open the dispenser door slightly to verify a Front End Door Open alarm is displayed on the HMI display, and that the LED display turns red	☐	☐	☐
13	Deenergize the dispenser from the charger MCCB (exterior on/off switch) according to the 6 safety rules. Pay attention to the following note regarding the AC and DC capacitors.	☐	☐	☐
NOTE	**After disconnecting the power supply of the SICHARGE UC dispenser and the connected SICHARGE UC charging station, the capacitors in the SICHARGE UC charging station will start discharging. Live parts remain under dangerous electrical voltage for up to 10 minutes during discharging. Touching live parts can lead to death or serious injury.** **Wait 10 minutes after switching off the power supply.** **Ensure that the SICHARGE UC dispenser does not carry any live voltage.** **Only then start working on the SICHARGE UC dispenser.**			
14	Check the dispenser door for smooth opening	☐	☐	☐
15	Check the dispenser door locks and hinges for ease of movement	☐	☐	☐
16	Check the door gasket for damage and placement	☐	☐	☐
17	Check that no condensation or pooling water is found on the bottom of the dispenser cabinet	☐	☐	☐
18	Check the charging plug and pins for damage and wear	☐	☐	☐
19	Check charging plug for presence of moisture, dust or corrosion	☐	☐	☐
20	Check the plug-locking mechanism to ensure that it is working properly	☐	☐	☐
21	Check the position of the charging plug in the plug holder	☐	☐	☐
22	Check the charging cable for damage and wear	☐	☐	☐
23	Check the strain relief where the charging cable exits the dispenser and ensure it is properly tightened	☐	☐	☐
24	Check that the cable is not able to shift in the strain relief	☐	☐	☐
25	Ensure all interior warning labels are legible	☐	☐	☐
26	Check for abnormal smells, damage/changes to installed components, corrosion	☐	☐	☐
27	Clean the interior of the dispenser if necessary	☐	☐	☐
28	Check that the output cables (DC+, DC-) are not showing signs of damage	☐	☐	☐

	Preventive maintenance action list		OK?		
No.	**Checklist Item**		**Yes**	**No**	**N/A**
29	Check that the output cables (DC+, DC-) are not interfering with each other or other internal components		☐	☐	☐
30	Check fastening points that secure the UC dispenser to the pedestal		☐	☐	☐
31	Check that the door earthing wire is tight and not damaged		☐	☐	☐
32	Check that the DC input connections are correctly torqued (DC+, DC-, PE) and use a paint pen to mark connections	**DC+, DC-, PE (setpoint): 45Nm** DC+ (measured): DC- (measured): PE (measured):	☐	☐	☐
33	Check that the AC input connections are correctly torqued (L1, N)	**L1, N (setpoint): 0.5-0.6Nm** L1 (measured): N (measured):	☐	☐	☐
34	Close and lock the dispenser door		☐	☐	☐
35	**Optional check (if vehicle is available)** Insert the plug into the vehicle's inlet and confirm that the charging procedure goes through the following phases:				
35A	**Cable check**		☐	☐	☐
35B	**Pre-charge**		☐	☐	☐
35C	**Charging/Bulk charging/ Trickle charge**		☐	☐	☐

Comments and findings:

	Name	Function	Signature
Responsible Person			
Customer (optional)			

Index

Legal Manufacturer

Siemens Industry, Inc.
3617 Parkway Ln.
Peachtree Corners, GA 30092
United States of America

Telephone: (855) 950-6339, option 9, or visit
www.usa.siemens.com/createcase
for service.

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