



Charging equipment for electric vehicles

OWNER'S MANUAL

Kempower Power Unit, Station Charger & Satellites

© Copyright Kempower Oyj 2023

All rights reserved. Subject to change without notice. No parts of this work may be reproduced in any form or by any means – graphic, electronic, or mechanical, including photocopying, recording, taping, or information storage and retrieval systems – without prior written permission of the copyright holder. Kempower may have one or more patents or pending applications that protect the intellectual property rights mentioned in this information. Products that are referred to in this information may be either trademarks and/or registered trademarks of the respective owners. The publisher and the author make no claim to these trademarks. While every precaution has been taken in the preparation of this information, the publisher and the author assume no responsibility for errors or omissions, or for damages resulting from the use of this information or from the use of programs and source code that may accompany it. In no event shall the publisher and the author be liable for any loss of profit or any other commercial damage caused or alleged to have been caused directly or indirectly by these instructions. The original language of this information is English. Other language versions are translations from English. In case of a discrepancy, the English original will prevail. Kempower does not assume responsibility for errors in translation.



CONTENTS

1 INTRODUCTION	1
1.1 Disclaimer on products and services	1
1.2 Information about the warranty.....	1
1.3 Information about the manufacturer	2
1.4 Recycling.....	2
2 SAFETY	3
2.1 Symbols used in the instructions	3
2.2 Common risks	3
2.3 Defective or damaged equipment	4
2.4 Fire safety	4
2.5 Insulation monitoring circuit.....	5
2.6 Environment	5
2.7 Derating of the system in high temperatures.....	6
3 OVERVIEW	6
3.1 Planning the electric vehicle charging site.....	6
3.1.1 Backend integration requirements	8
3.1.2 Installation requirements	8
3.1.3 Commissioning requirements.....	10
3.1.4 Maintenance requirements.....	11
3.2 Kempower charging equipment for electric vehicles	13
3.2.1 Charging power management	13
3.3 Kempower charging power units	16
3.3.1 Identificators	16
3.3.2 Power Unit	16
3.3.3 Station Charger	18
3.4 Kempower DC Satellites.....	20
3.4.1 Satellite	20
3.4.2 Satellite Version 2	21
3.4.3 Liquid Cooled Satellite	22
3.5 Vehicle connector types.....	23
4 PACKAGING OF THE CHARGING EQUIPMENT	24
5 STORING THE CHARGING EQUIPMENT	26
6 UNPACKING THE CHARGING EQUIPMENT.....	27
7 MOVING AND LIFTING THE CHARGING EQUIPMENT	28
7.1 Moving and lifting the charging power unit	28
7.2 Moving and lifting the Satellite	32
7.3 Moving and lifting the Liquid Cooled Satellite.....	33
8 INSTALLING THE CHARGING EQUIPMENT	34
9 TURNING THE CHARGING EQUIPMENT OFF	34
10 USING THE CHARGING UNIT	35
10.1 User interface.....	35
10.2 Charging process	37
11 PREVENTIVE MAINTENANCE	40
12 MAINTENANCE OF THE CHARGING EQUIPMENT	41
13 TROUBLESHOOTING	42
14 CHANGE LOG	43

1 INTRODUCTION

1.1 Disclaimer on products and services

Kempower's electric vehicle (EV) charging equipment deliveries typically consist of charging power unit(s), charging points, and connectivity tools. Charging hardware and software, together with the power grid, data communication network, various electric vehicles, charging operators and users, form a complex entity.

Kempower is not liable for incidental or consequential damages arising from the use of any software or hardware.

Kempower reserves the right to change the specification of the product described at any time without prior notice.

Kempower constantly develops the software in terms of vehicle support, new features, and improvement of user interface experience. Kempower offers software updates upon request or periodically as part of a service contract.

1.2 Information about the warranty



When you replace parts under warranty, keep the faulty part until you have made sure that Kempower does not need to inspect it.



You must complete the Kempower certification training before you do installation, commissioning, service or maintenance tasks. Installation, commissioning, service or maintenance tasks done by an unapproved partner will void the warranty.

The warranty period is defined in your warranty policy. If you have purchased extended warranty, the warranty period is defined in your purchase agreement. For detailed information about the terms and conditions, see your warranty policy or purchase agreement. You can view the general warranty terms at kempower.com/kempower-terms-and-conditions.

The warranty only covers the product and its parts delivered by Kempower. The warranty does not cover consumable parts such as cables and connectors, any other materials, labor, accommodation, or travel costs.

1.3 Information about the manufacturer

Manufacturer	Kempower Oyj
Address	Ala-Okeroistentie 29 15700 Lahti, Finland
Phone	+358 29 0021900
Contact	kempower.com/support
Website	kempower.com

1.4 Recycling

- The product labeled with this symbol is in compliance with the **2008/98/EC Waste Framework Directive** on hazardous waste.
- Know and obey your local legislation. Bring the product or its parts to an establishment that carries out waste treatment operations on a professional level.
- Dispose of the product packaging according to the symbols on the packaging.
- When you make sure that the product is correctly reused and recycled, you protect the environment.
- When waste treatment operations are carried out on a professional level, the product is almost fully recyclable.



2 SAFETY

2.1 Symbols used in the instructions

**DANGER**

Indicates a hazardous situation which, if not avoided, will cause death or serious injury.

**WARNING**

Indicates a potentially hazardous situation which, if not avoided, may cause death or serious injury.

**CAUTION**

Indicates a potentially hazardous situation which, if not avoided, may cause moderate or minor injury.



Indicates a situation which, if not avoided, may cause property damage or an undesirable result or state.



Indicates advice and recommendations for the safe and efficient use of the product or highlights unusual points.

2.2 Common risks

**DANGER**

Electric vehicle charging equipment must be located at a safe distance from potentially explosive atmospheres. Know and obey local laws and regulations.

**WARNING**

You must complete the Kempower certification training before you do installation, commissioning, service or maintenance tasks.

**WARNING**

Do not use the charging unit if the unit, its cables or vehicle connectors are damaged. Risk of electrical shock or fire.

**CAUTION**

Before you use the electric vehicle charging system, make sure that it is fully commissioned and approved for use.

**CAUTION**

Do not use running water or pressure washing equipment to clean the charging unit. Use a pH neutral detergent if necessary.



Changes or modifications to the charging equipment, unless specifically agreed upon with Kempower, are prohibited and will void the warranty.



Only use spare parts approved by Kempower.



During charging do not wrap the cables around the charging unit. Straighten tight loops in the cables.



Do not put the vehicle connector on the ground. Put the connector in its holder after charging.



The vehicle connector pins do not have voltage when the device is not charging.

2.3 Defective or damaged equipment

WARNING



Do not use the charging unit if the unit, its cables or vehicle connectors are damaged. Risk of electrical shock or fire.

If you find that a charging unit is visibly damaged:

- Do not connect the vehicle connector to your vehicle or start a new charging session.
- Stop any ongoing charging sessions immediately and remove the vehicle connector from your vehicle.
- Contact your local service or maintenance provider.

2.4 Fire safety

WARNING



Do not use the charging unit if the unit, its cables or vehicle connectors are damaged. Risk of electrical shock or fire.

If there is a fire:

- If possible, stop the charging session, remove the vehicle connector from the vehicle, and move the vehicle away from the charging equipment.
- Only use fire extinguishers suitable for electric equipment (CO₂ fire extinguishers).

- Alert the local authorities and obey their instructions.
- If possible, turn the charging equipment off:
 - Press the equipment stop button (if available).
 - Disconnect the main power supply.
- After extinguishing the fire, always contact Kempower before you start any maintenance work. Kempower will perform a critical failure analysis before maintenance work can be done.

2.5 Insulation monitoring circuit

The Satellite includes an insulation monitoring circuit, which fulfills the requirements of IEC 61851-23:2014.

The internal measurement circuit measures leakage from DC+ and DC-. When no leakage is detected, operation continues normally. If leakage current is detected, the output is controlled to shut down and an alarm is displayed on the charging unit. The current detection limit is 6 mA.

2.6 Environment



See the product datasheets for specifications. Product datasheets are available at mediabank.kempower.com.

- The environment of the charging unit must conform with its IP classification.
- The airflow to and from the charging unit must be unrestricted.
- The preventive maintenance intervals depend on the environmental conditions. For additional information, see *11 Preventive maintenance*.

2.7 Derating of the system in high temperatures



See the product datasheets for specifications. Product datasheets are available at mediabank.kempower.com.

In higher temperatures, derating is used to prevent damage to the electrical components. Derating automatically decreases the charging power provided by the charging unit. Kempower charging units provide maximum charging power at the start of the charging session, and derate as necessary during the session if temperatures inside the charging unit rise too high. Note that electric vehicles also derate as necessary in higher temperatures.

3 OVERVIEW

3.1 Planning the electric vehicle charging site



DANGER

Electric vehicle charging equipment must be located at a safe distance from potentially explosive atmospheres. Know and obey local laws and regulations.



The site plan is the customer's responsibility. Kempower does not provide plans for individual installations.



See the product datasheets for the dimensions and weights of the units. Product datasheets are available at mediabank.kempower.com.

As the requirements of individual installations vary significantly, it is not possible to give detailed instructions that are valid for all sites. Take into account at least the following general issues when you plan the layout of the electric vehicle charging site:

- The local rules and requirements on civil works, electrical installations, cable routing, and cable dimensioning. Cable dimensioning is the electrical designer's responsibility. For assistance, contact [*Kempower Sales Support*](#).
- How the units are moved to and within the installation site. The maximum allowed tilting for the charging power units is 6 degrees.
- The installation surfaces of the site:

- The units can be installed directly on a flat, level, and solid surface that can withstand the weight of the unit, or on concrete foundations that are prefabricated or made on site.
- The cables can be routed above or below the ground. If the cables are installed in cable channels, make sure that the cable channels are wide enough for all required cables.
- The specific requirements and ambient conditions of the site:
 - If you plan to install the charging power unit in a closed space, contact Kempower Sales Support to approve the location before installation. If the unit is installed indoors, make sure that the air flow to the unit is sufficient.
 - If the temperature stays above 30 °C for long periods of time, we recommend placing the charging power unit in a well-ventilated shelter with the display screen facing away from direct sunlight. For assistance, contact Kempower Sales Support.
 - The location of the main supply point: the main distribution board, AC combiner box, or AC panel in the compact secondary substation (CSS).
 - The configuration of your communication system. Connectivity to the Kempower ChargeEye and possible OCPP backend system requires an Internet connection, either with a SIM card or Ethernet (SuperCat 6/7 shielded) cabling to your wide area network (WAN) router.
 - The charging power unit must be easily accessible for maintenance without disturbing traffic or other movement in the charging area.
 - The charging points must be easily accessible to the end users.
 - The maximum distance between the charging power unit and a connected charging point is approximately 80 m.

The Kempower delivery includes the charging equipment and cabling inside the units. Cabling from the AC main power supply to the unit(s), cabling between the units, and any other components are the customer's responsibility.

3.1.1 Backend integration requirements



Plan for any backend integrations as early on in the process as possible.

Backend systems

If you plan to use a third party backend system to manage the charging equipment, make sure to:

- Read the Open Charge Point Protocol (OCPP) and application programming interface (API) documentation provided by Kempower.
- Contact *Kempower Sales Support* for support in the integration process.

Payment service providers

If you plan to use a third party payment service provider, make sure to:

- Ask Kempower if the selected payment service provider is already supported by the system. If not, plan the integration work together with Kempower and adjust the project schedule accordingly.
- Note that Kempower provides the payment terminal hardware but does not provide payment services or participate in the implementation of the payment service.
- Contact the gateway/processing bank as soon as possible to start the registration process to reduce delays. Usually this stage takes at least 4 weeks.

3.1.2 Installation requirements

The installation phase includes both the mechanical and electrical installation of the charging equipment. For additional information, see the installation manual.

Qualifications

- You must be authorized to do electrical work and know the applicable electrical safety requirements.
- You must complete the Kempower certification training before you do installation, commissioning, service or maintenance tasks.

General requirements

- Obey local rules and requirements on civil works, electrical installations, cable routing, cable dimensioning, and health and safety, such as local regulations regarding personal protective equipment (PPE).
- Obey Kempower installation instructions. For additional information, see the installation manual.
- We recommend that site plans for sites with more than 250 kW of charging capacity and five or more charging outputs are submitted to be reviewed and approved by Kempower Sales Support before you start the installation.
- Use suitable tools and equipment for the installation. For additional information, see the Kempower certification training materials and the installation manual.
- Before you start the installation, make sure that all delivered parts are correct and not damaged.

Testing



Note that this is an indicative list, not a comprehensive checklist for testing your charging site.

- Test the installation for electrical safety (usually done by an external electrical inspector). Obey local rules and requirements.
- Examine and correctly set the AC main supply circuit breaker current for each Power Unit.
- Do the following electrical tests:

- Ethernet cables tests (such as correct cable type, correct wiring, attenuation).
- Continuity tests for power and control cables and the protective circuit.
- Other tests required by local rules and regulations.

Inspection

Inspect the installation according to the Kempower installation checklist. Submit the completed document to Kempower ChargEye. For additional information, contact *Kempower Technical Support*.

3.1.3 Commissioning requirements

The commissioning phase includes taking the charging equipment into use, such as powering, configuring and testing the equipment. For additional information, see the installation manual.

Qualifications

- You must complete the Kempower certification training before you do installation, commissioning, service or maintenance tasks.
- We recommend that you have an authorized electrician on site during commissioning to repair possible electrical installation errors.

General requirements

- Obey local rules and requirements, such as regarding the use of personal protective equipment (PPE).
- Obey Kempower commissioning instructions. For additional information, see the installation manual.
- Use the Kempower Commissioning Tool software (or Kempower Maintenance Tool for offline cases) to configure the charging equipment.

Testing



Note that this is an indicative list, not a comprehensive checklist for testing your charging site.

- Test the cloud connection to the third party backend system (option). Also test the second SIM card and wireless connection, if applicable.
- Test the connection to the third party payment provider (option). For additional information, contact [*Kempower Technical Support*](#).
- Test each charging output using either a suitable electric vehicle or a Comemso EV simulator/charger tester (min. 1 minute/vehicle connector).
- Test the equipment stop function (option).

Inspection

Complete the commissioning according to the Kempower commissioning checklist. Submit the completed document to Kempower ChargeEye. For additional information, contact [*Kempower Technical Support*](#).

3.1.4 Maintenance requirements

Maintenance includes both preventive and corrective maintenance tasks, such as on-site repairs, installing replacements, retrofits, upgrades and warranty work. For additional information, see the maintenance manual.

Qualifications

- You must be authorized to do electrical work and know the applicable electrical safety requirements.
- You must complete the Kempower certification training before you do installation, commissioning, service or maintenance tasks.
- You must be a Kempower Authorized Partner or other Kempower approved third party to perform warranty work.

General requirements

- Obey local rules and requirements, such as regarding the use of personal protective equipment (PPE).
- Obey Kempower maintenance instructions. For additional information, see the maintenance manual.
- Use suitable tools and equipment for the maintenance tasks. For additional information, see the Kempower certification training materials and the maintenance manual.
- Preventive and corrective maintenance tasks are invoiced according to fixed labor times per tasks as defined by Kempower.

Testing



Note that this is an indicative list, not a comprehensive checklist for testing your charging site.

- If electrical circuits are affected by the maintenance work, test the installation for electrical safety (usually done by an external electrical inspector). Obey local rules and requirements.
- Do the following electrical tests:
 - Continuity tests for power and control cables and the protective circuit.
 - Trip test for the power supply residual current device, in accordance with local standards and regulation, or at minimum the relevant IEC standards. For additional information, contact Kempower Technical Support.
 - Other tests required by local rules and regulations.
- Test each charging output using either a suitable electric vehicle or a Comemso EV simulator/charger tester (min. 1 minute/vehicle connector).

Inspection

Complete the Kempower field visit report. Submit the completed document to Kempower ChargeEye. For additional information, contact Kempower Technical Support.

3.2 Kempower charging equipment for electric vehicles

As the design of Kempower electric vehicle charging equipment is modular, the charging site can be expanded when necessary. The charging equipment is connected to the Internet and the Kempower ChargeEye system via a cellular or Wi-Fi network.

- The Kempower Power Unit is a charging power unit that receives power from the electric power distribution network and distributes it to 1–8 DC charging points. The Power Unit can be a single, double, or triple cabinet unit. Each cabinet can be equipped with 1–4 power modules (C500/500 V and C800/800 V). Charging power management can be dynamic or static, see [3.2.1 Charging power management](#).
- The Kempower Station Charger consists of a charging power unit, 1–2 DC vehicle connectors per cabinet, and a user interface. The Station Charger can be a single or double cabinet unit. Depending on the configuration, the Station Charger can also be connected to 1–2 Satellites.
- The Kempower Satellite is the charging point connected to the charging power unit.
- The Kempower Liquid Cooled Satellite is a high-power charging point connected to the charging power unit.

3.2.1 Charging power management

The charging power management method of the charging power unit can be dynamic or static. Dynamic charging power management is one of the key elements in optimizing the charging of electric vehicles. While it is possible to later expand the modular configuration, the type of charging power management cannot be changed from static to dynamic after installation unless you order a dynamic-ready configuration.

The charging power unit can have 1–12 power modules (1–4 per cabinet) that each have two independent power channels (2 x 25 kW). The power distribution module can distribute charging power to 1–8 charging points. The available charging power depends on the maximum charging power level that the electric vehicle can accept, the output capacity of the charging points, and the power capacity of the charging site.

In dynamic charging power management, the power distribution module routes and re-routes the power channels to the charging points during the charging session.

In static (S2, S4, S8) charging power management, a fixed amount of charging power is routed to the charging point(s).

Table 4. Example of dynamic and static charging power management

Charging power unit with 4 x 50 kW power modules (200 kW)	Output to 4 charging points
Dynamic output (Ds4) @ 400 V	25–200 kW
Dynamic output (Ds4, adaptive voltage) @ 800 V	50–200 kW
Dynamic output (Ds4) @ 667 V	25–200 kW
Static output (S4) @ 500 V/800 V	50 kW

Dynamic charging can operate in two modes:

- Democratic mode where the charging power is distributed evenly to all charging points in use. See [Figure 1](#).
- Priority mode where charging power is distributed in order of priority. The priority type is set in Kempower ChargeEye and can be customized to your needs. For example, arrival priority (FIFO, first in first out) is where the first arrival gets the most charging power (as requested by the vehicle). When the first vehicle leaves, the freed capacity is shared in arrival priority with the remaining vehicles. See [Figure 2](#).

Figure 1. Example of dynamic charging in democratic mode

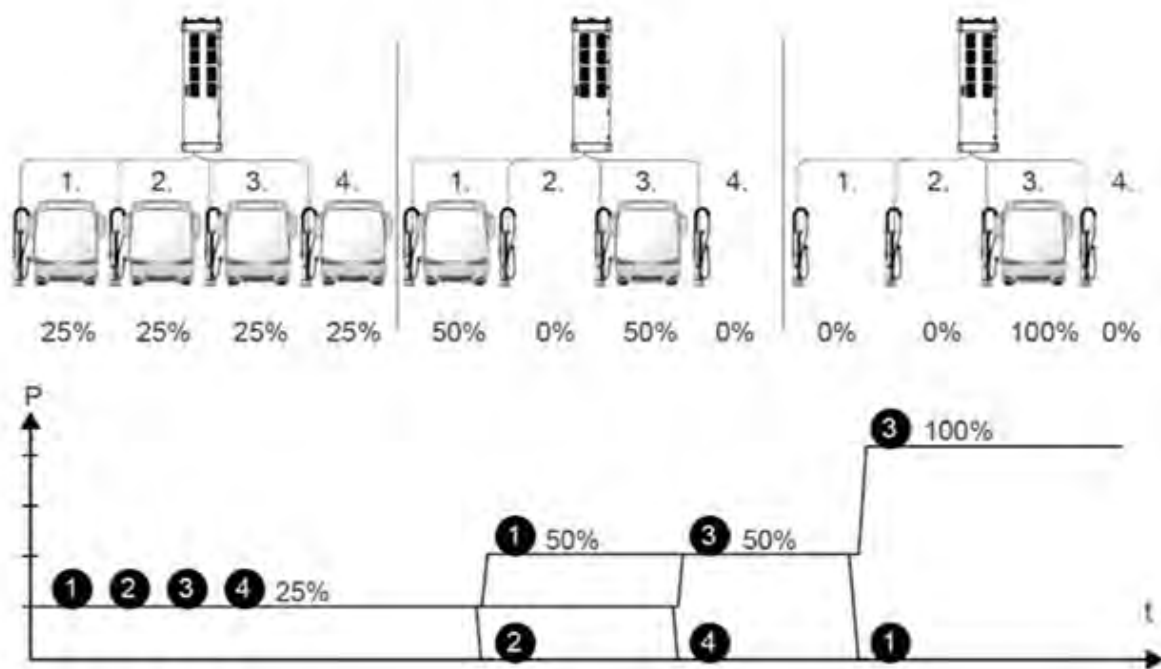
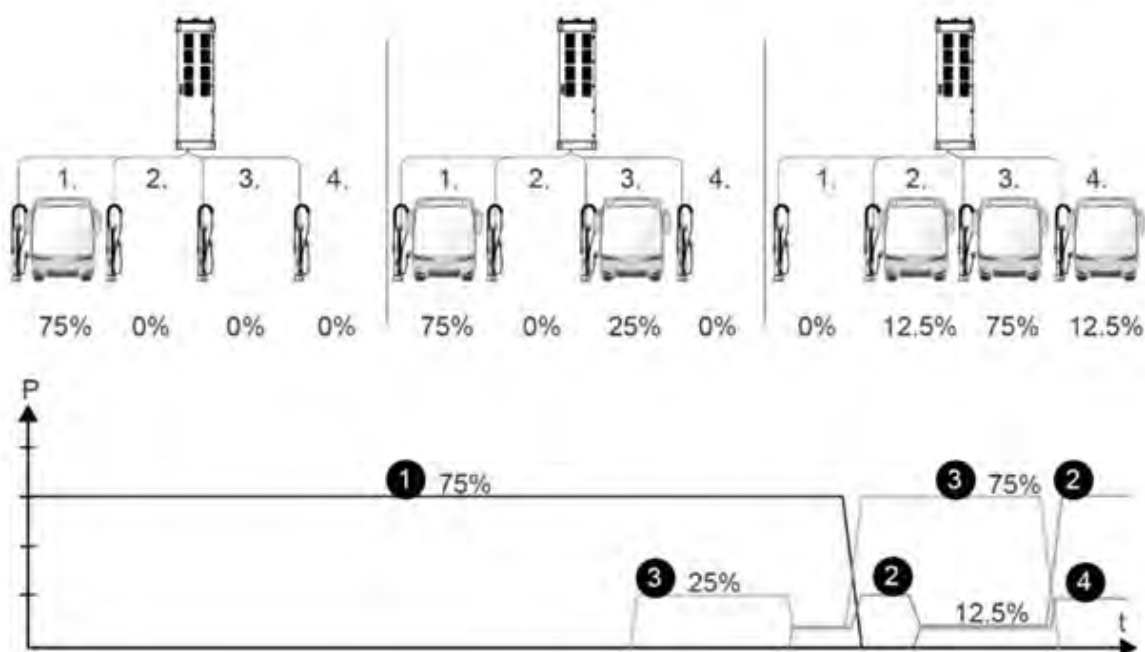


Figure 2. Example of dynamic charging in arrival priority mode (in this example the first vehicle requests only 75% of the available power)



3.3 Kempower charging power units

3.3.1 Identifiers

Serial number

The serial number of the unit is given on the rating plate. The correct serial number is important when you order spare parts or repair the unit.

Quick response (QR) code or barcode

The serial number and other information about the unit can also be given as a QR code or barcode on the unit's rating plate. Use a mobile phone with a QR application or a code reader to access the information.

Rating plate

Information about the unit is marked on the rating plate. If the unit is upgraded, Kempower adds a retrofit sticker to the unit. The location of the rating plate on the units:

- **Power Unit:** On the left side of the cabinet, in the top right corner.
- **Station Charger:** On the left side of the cabinet, in the top right corner.
- **Satellite:** On the rear side of the unit, in the top right corner.
- **Satellite Version 2:** On the rear side of the unit, in the top right corner.
- **Liquid Cooled Satellite:** On the rear side of the unit, in the top right corner.

3.3.2 Power Unit



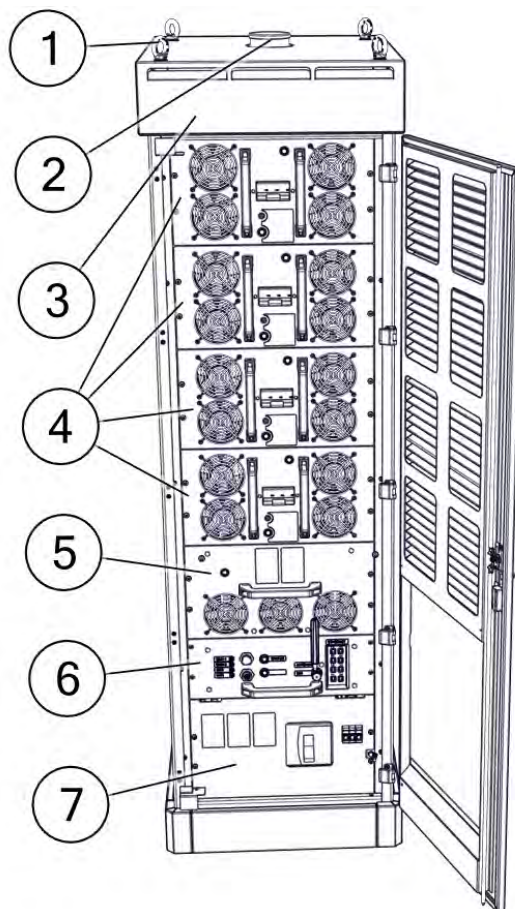
See the product datasheets for the dimensions and weights of the units. Product datasheets are available at mediabank.kempower.com.

The Kempower Power Unit is a charging power unit that receives power from the electric power distribution network and distributes it to 1–8 DC charging points. The Power Unit can be a single, double, or triple cabinet unit.

Each cabinet can be equipped with 1–4 power modules (C500/500 V and C800/800 V). One power module provides a maximum of 50 kW charging power.

Charging power management can be dynamic or static, see [3.2.1 Charging power management](#).

Figure 3. Kempower Power Unit overview (single cabinet, dynamic)



- | | | | |
|---|---------------------------------|---|---------------------------|
| 1 | Lifting lugs | 5 | Power distribution module |
| 2 | Cellular/Wi-Fi antenna | 6 | Control module |
| 3 | Unit roof with cooling outlets | 7 | Mains module |
| 4 | Power modules (1–4 per cabinet) | | |

3.3.3 Station Charger

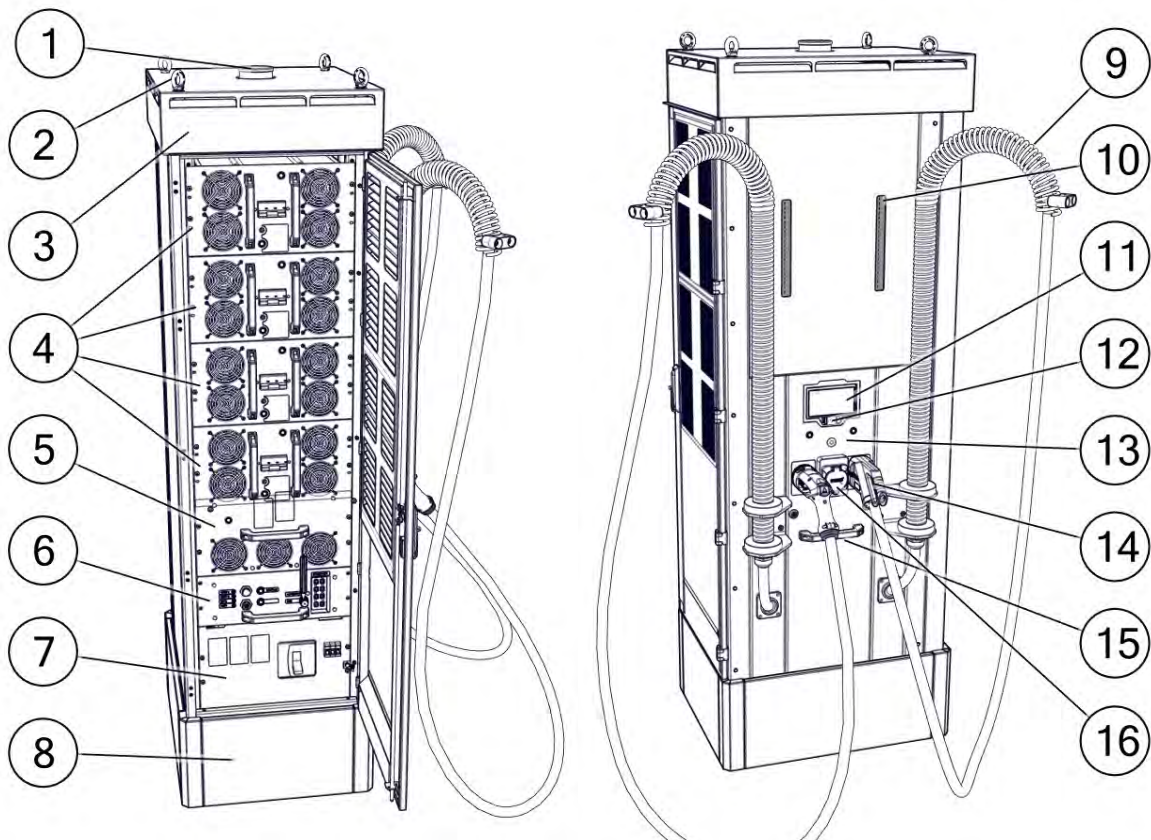


See the product datasheets for the dimensions and weights of the units. Product datasheets are available at mediabank.kempower.com.

The Kempower Station Charger consists of a charging power unit, 1–2 DC vehicle connectors per cabinet, and a user interface. The Station Charger can have an additional AC charging socket (option). See the product datasheet for the available charging cable and vehicle connector types. The Station Charger can be a single or double cabinet unit. Depending on the configuration, the Station Charger can also be connected to 1–2 Kempower Satellites.

Each cabinet can be equipped with 1–4 power modules (C500/500 V and C800/800 V). One power module provides a maximum of 50 kW charging power. Charging power management can be dynamic or static, see [3.2.1 Charging power management](#).

Figure 4. Kempower Station Charger overview (single cabinet, two DC vehicle connectors and optional AC charging socket)



- 1 Cellular/Wi-Fi antenna
- 2 Lifting lugs
- 3 Unit roof with cooling outlets
- 4 Power modules (1-4 per cabinet)
- 5 Power distribution module
- 6 Control module
- 7 Mains module
- 8 Steel base

- 9 Charging cable support springs
- 10 Charging status indicators
- 11 Touch screen
- 12 RFID reader
- 13 Function buttons
- 14 Vehicle connectors and holders
- 15 Front panel
- 16 AC charging socket (option)

3.4 Kempower DC Satellites

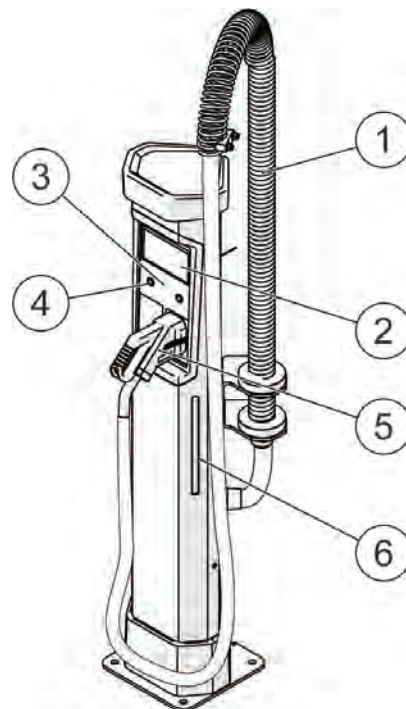
3.4.1 Satellite



See the product datasheets for the dimensions and weights of the units. Product datasheets are available at mediabank.kempower.com.

The Kempower Satellite is the charging point connected to the charging power unit. The single Satellite has one vehicle connector and the double has two. See the product datasheet for the available charging cable and vehicle connector types.

Figure 5. Kempower Satellite overview (single)



- | | | | |
|---|-------------------------------|---|---------------------------------|
| 1 | Charging cable support spring | 4 | Function buttons |
| 2 | Touch screen | 5 | Vehicle connector and holder |
| 3 | RFID reader | 6 | Charging status indicator LEDs* |

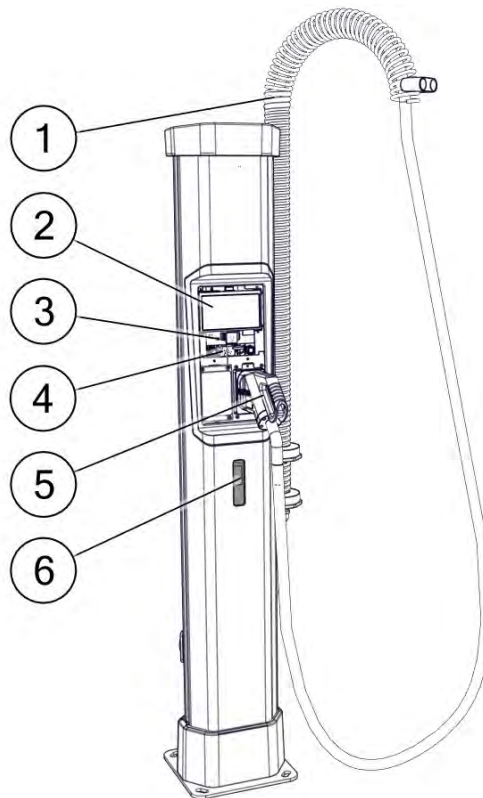
* Green: OK, ready to charge. Blue: charging. Red: error.
The height of the charging status indicator light-emitting diode (LED) bar indicates the state of charge (SoC) of the vehicle being charged.

3.4.2 Satellite Version 2

-  See the product datasheets for the dimensions and weights of the units. Product datasheets are available at mediabank.kempower.com.
-  The Satellite Version 2 does not have charging status indicator LEDs.

The Kempower Satellite is the charging point connected to the charging power unit. The single Satellite has one vehicle connector and the double has two. See the product datasheet for the available charging cable and vehicle connector types.

Figure 6. Kempower Satellite overview (single, with integrated energy meter)



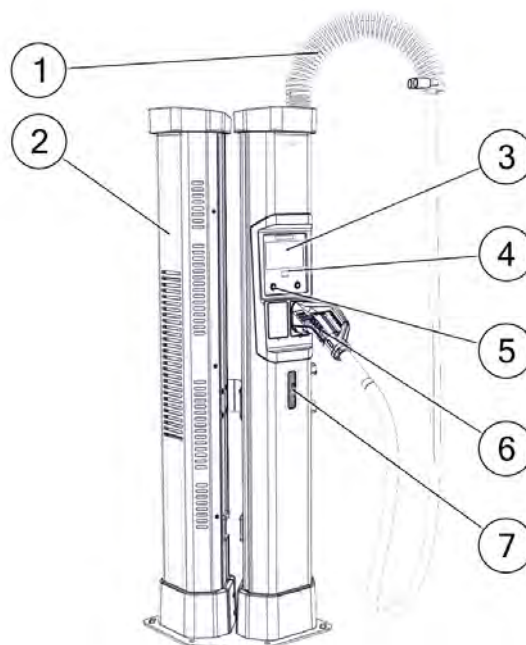
- | | | | |
|---|-------------------------------|---|------------------------------|
| 1 | Charging cable support spring | 4 | Function buttons |
| 2 | Touch screen | 5 | Vehicle connector and holder |
| 3 | RFID reader | 6 | Integrated energy meter |

3.4.3 Liquid Cooled Satellite

-  See the product datasheets for the dimensions and weights of the units. Product datasheets are available at mediabank.kempower.com.
-  The Liquid Cooled Satellite does not have charging status indicator LEDs.

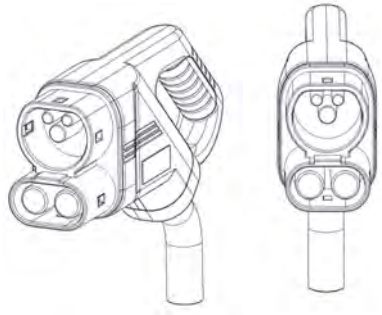
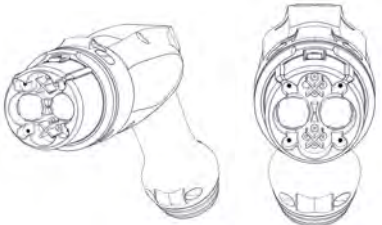
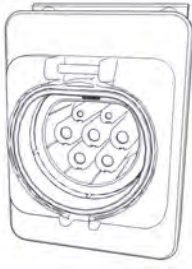
The Kempower Liquid Cooled Satellite is the high-power charging point connected to the charging power unit. See the product datasheet for the available charging cable and vehicle connector types.

Figure 7. Kempower Liquid Cooled Satellite overview (single)



- | | | | |
|---|-------------------------------|---|------------------------------|
| 1 | Charging cable support spring | 5 | Function buttons |
| 2 | Liquid cooling unit | 6 | Vehicle connector and holder |
| 3 | Touch screen | 7 | Energy meter window |
| 4 | RFID reader | | |

3.5 Vehicle connector types

	Combined Charging System (CCS2)*
	CHAdeMO
	Type 2 AC socket

* Only option available for the Liquid Cooled Satellite.

4 PACKAGING OF THE CHARGING EQUIPMENT



Do not stack the product packages during shipping.

Product	Image	Shipping
Power Unit (single)		• Size: 120 x 80 x 235 cm • Weight: 305–440 kg
Power Unit (double)		• Size: 145 x 105 x 240 cm • Weight: 665–890 kg

Product	Image	Shipping
Power Unit (triple)		• Size: 205 x 105 x 235 cm • Weight: 1130–1400 kg
Station Charger (single)		• Size: 145 x 105 x 235 cm • Weight: 460–595 kg
Station Charger (double)		• Size: 205 x 105 x 235 cm • Weight: Ca. 150 kg
Satellite (single)		• Size: 218 x 62 x 74 cm • Weight: 182 kg

Product	Image	Shipping
Satellite (double)		• Size: 218 x 62 x 148 cm • Weight: 364 kg
Liquid Cooled Satellite		• Size: 120 x 100 x 243 cm • Weight: 220 kg

5 STORING THE CHARGING EQUIPMENT

Product	Instructions	Temperature
Power Unit	• Store in a clean and dry indoor area • Do not stack • Make sure that the unit is the correct way up. For details, see the sticker on the packaging.	-40...+60 °C
Station Charger	• Store in a clean and dry indoor area • Do not stack • Make sure that the unit is the correct way up. For details, see the sticker on the packaging.	-40...+60 °C

Product	Instructions	Temperature
Satellite	• Store in a clean and dry indoor area • Stackable, max. 3 crates on top of each other • Make sure that the unit is the correct way up. For details, see the sticker on the packaging.	-40...+60 °C
Satellite Version 2	• Store in a clean and dry indoor area • Stackable, max. 3 crates on top of each other • Make sure that the unit is the correct way up. For details, see the sticker on the packaging.	-40...+60 °C
Liquid Cooled Satellite	• Store in a clean and dry indoor area • Do not stack • Store the unit upright. For details, see the sticker on the packaging. • If stored for more than five years, change the cooling fluid before using the charging unit.	-40...+60 °C

6 UNPACKING THE CHARGING EQUIPMENT



CAUTION

High center of gravity. Make sure that the cabinet does not fall over.



A single cabinet with four power modules weighs approximately 400 kg. Use appropriate lifting equipment operated by qualified professionals.



The maximum tilting angle of the charging power unit is 6 degrees.



The Liquid Cooled Satellite is shipped in a crate that weighs approximately 150 kg. Use appropriate lifting equipment operated by qualified professionals.

- Unpack and inspect the delivery as soon as possible. Make sure to remove the fixing brackets. If the equipment is damaged, do not start installation. For assistance, contact [Kempower Technical Support](#).
 - The Power Unit is shipped upright on a pallette and wrapped in plastic. The top of the unit is covered with a plywood board.
 - The charging cables and support springs of the Station Charger are installed on the unit at the factory. The unit is shipped upright on a pallette and wrapped in plastic. The top of the unit is covered with a plywood board.
 - The charging cable and support spring of the Liquid Cooled Satellite are installed on the unit at the factory. The coolant is prefilled inside the unit. The unit is shipped upright in a crate.
 - The charging cables and support springs of the Satellite are not installed on the unit at the factory. The unit and its charging cables and support springs are shipped in a horizontal position in a crate.
 - Do not remove the protective packaging from the vehicle connectors before you have installed the charging cables.
- The shipment may have a tilt indicator. If the tilt indicator indicates mishandling, do not start installation. For assistance, contact [Kempower Technical Support](#).

7 MOVING AND LIFTING THE CHARGING EQUIPMENT

7.1 Moving and lifting the charging power unit

**WARNING**

Do not go under the unit when it is lifted.

**CAUTION**

Use all lifting lugs of the unit when you lift it. Minimum angle of slings 60 degrees.

**CAUTION**

High center of gravity. Make sure that the cabinet does not fall over.



The maximum tilting angle of the charging power unit is 6 degrees.



A single cabinet with four power modules weighs approximately 400 kg. Use appropriate lifting equipment operated by qualified professionals.



Carefully remove the control module, the power distribution module, the bottom power module, and the front panel of the mains module from each cabinet before you lift the unit. This is done to reduce the weight and make space for installing the cables. Keep the modules clean and dry.



Make sure that you replace the same control module in each cabinet during installation. Each cabinet is identified with its unique serial number in ChargeEye.



Do not lift the power module from its guide pins.



The power module weighs approximately 43 kg.



The power distribution module weighs approximately 32 kg.

Figure 8. Remove the bottom modules before you lift the unit

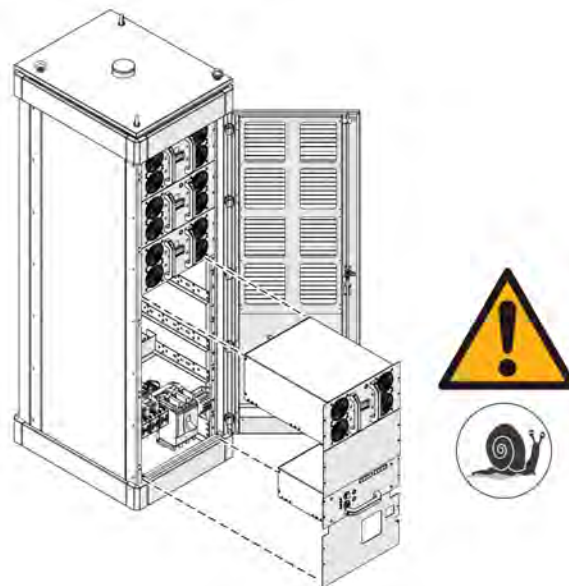


Figure 9. Left : lifting the unit to be installed without the steel base. Right: lifting the unit to be installed on the steel base.

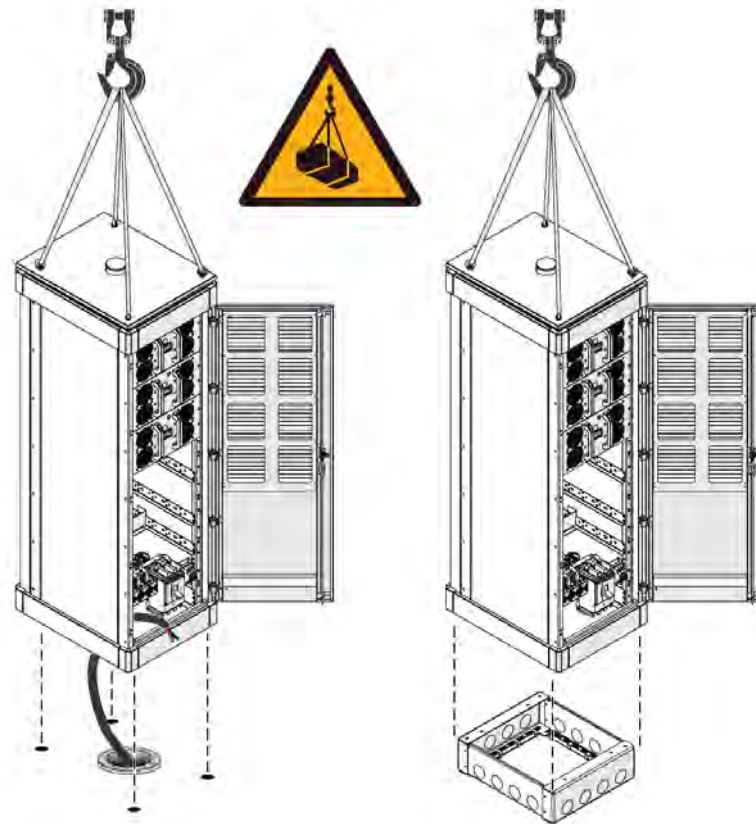


Figure 10. Lifting lugs on a single, double, and triple cabinet

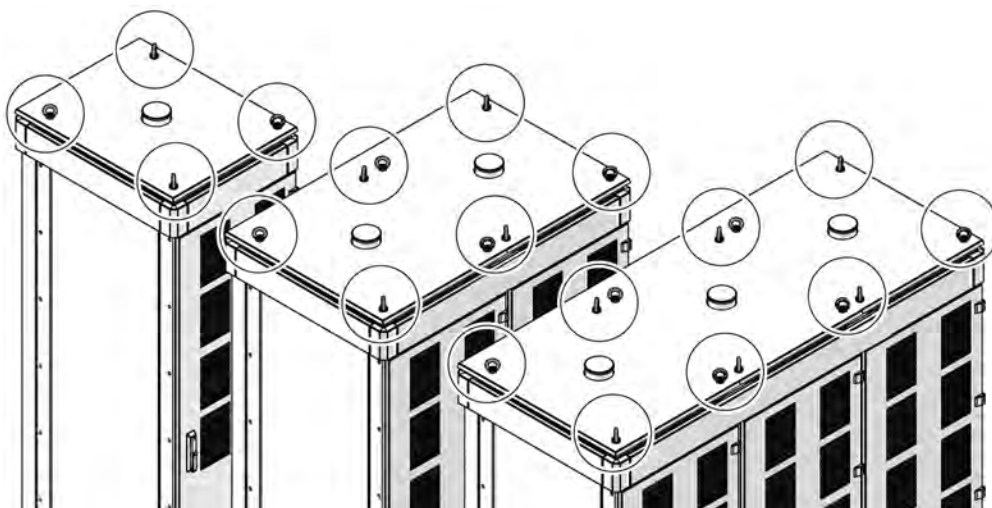
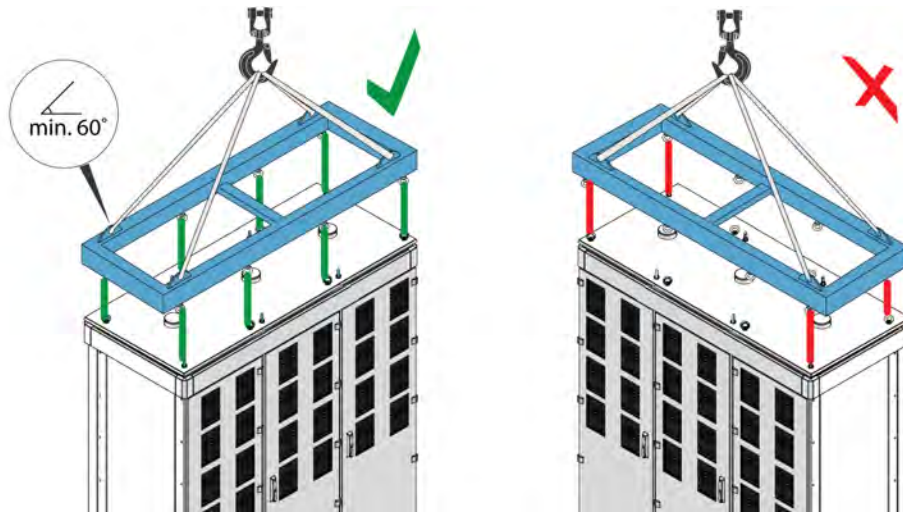


Figure 11. Use all fastening points if you use lifting beams



7.2 Moving and lifting the Satellite



Depending on the Satellite model, one shipping crate weighs on average 150 kg (with charging cables and support springs). Stack at maximum two crates on top of each other. Use appropriate lifting equipment operated by qualified professionals.



Two persons are needed for this task.



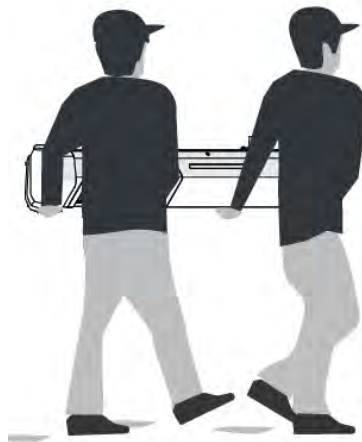
The Satellite frame weighs approximately 50 kg without the charging cables and support springs.



If the Satellite has two charging cables, you can use both support spring holders to lift the Satellite. Do not lift the Satellite from one holder.

The Satellite is shipped with its charging cables and support springs in a crate. The charging cables and support springs are not installed on the unit at the factory.

Figure 12. Moving the Satellite



7.3 Moving and lifting the Liquid Cooled Satellite



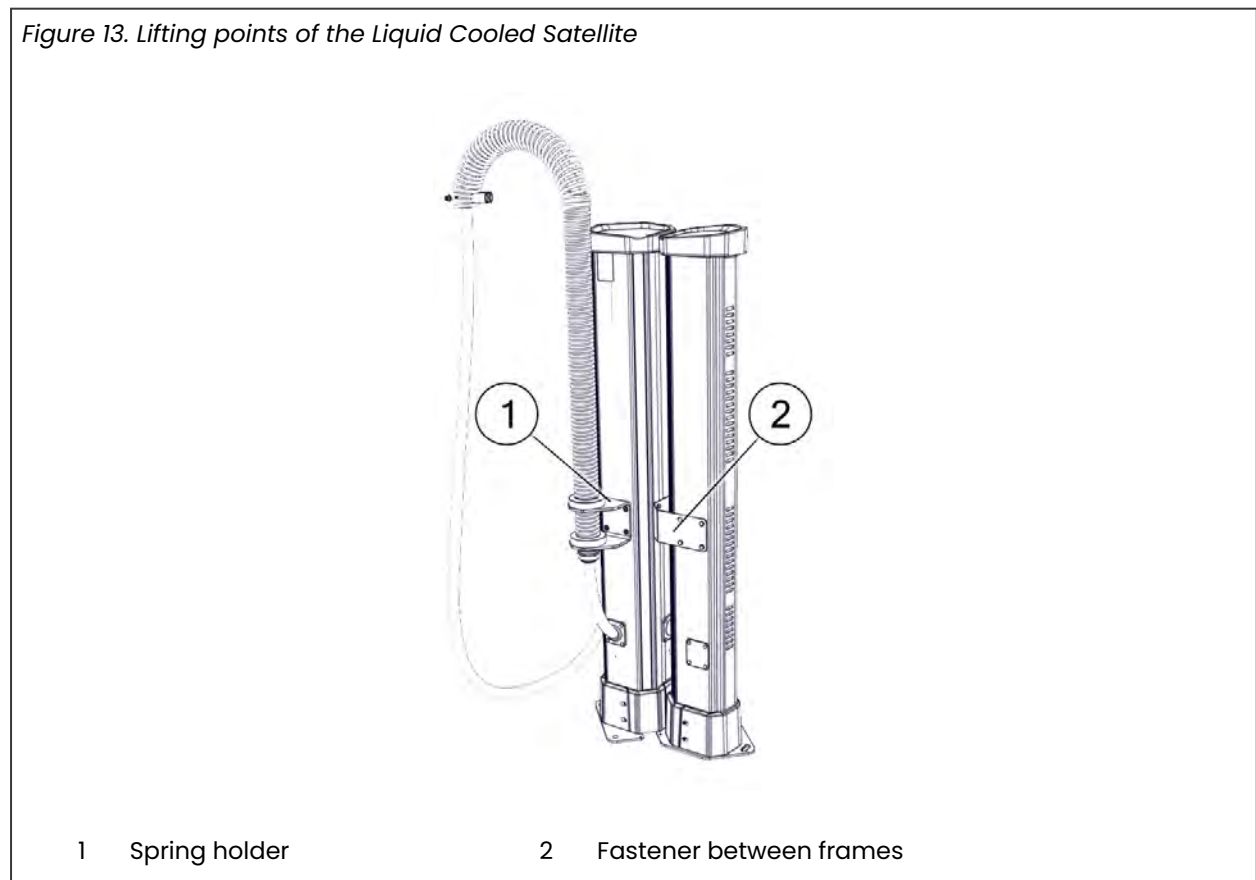
The Liquid Cooled Satellite is shipped upright in a crate. The total weight is approximately 150 kg. Use appropriate lifting equipment operated by qualified professionals.

The charging cables and support springs are installed on the unit at the factory.

The Liquid Cooled Satellite is delivered with the cooling liquid (Glysofor N) prefilled inside the unit. The maximum tilting angle of the Liquid Cooled Satellite is approximately 45 degrees. If liquid comes out of the Liquid Cooled Satellite during transportation, make sure that the expansion tank in the liquid cooling unit is approximately 1/3 full before you start operation. The coolant/water mix ratio is 50/50 when delivered. Use clean water when refilling.

The Liquid Cooled Satellite weighs approximately 150 kg and must be lifted to its installation position with lifting equipment and straps. See [Figure 13](#).

Figure 13. Lifting points of the Liquid Cooled Satellite



8 INSTALLING THE CHARGING EQUIPMENT

WARNING



You must complete the Kempower certification training before you do installation, commissioning, service or maintenance tasks.

You must be an authorized electrician to install and commission the charging equipment. For additional information, see the installation manual.

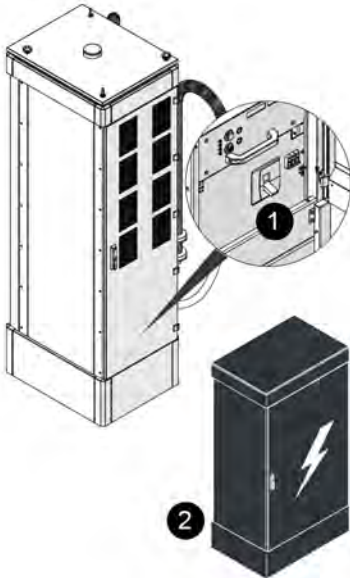
9 TURNING THE CHARGING EQUIPMENT OFF



Stop any ongoing charging sessions before you turn the equipment off.

Turn the charging equipment off if:

- It causes an immediate safety risk.
- Kempower or your local service or maintenance provider instructs you to do so.
- Maintenance tasks require you to do so. For maintenance instructions, see the maintenance manual.

	Unlock and open the door(s) of the charging power unit. Set the main switch of each cabinet (1) to OFF position. Disconnect the AC power supply to the unit from the main supply point (2). Lock the main switch in OFF position. WARNING  After you disconnect the power supply, wait at minimum two minutes for the capacitors of the power module(s) to discharge.
---	---

10 USING THE CHARGING UNIT

10.1 User interface

 The user interface can be customized in Kempower ChargeEye.

Figure 14. User interface

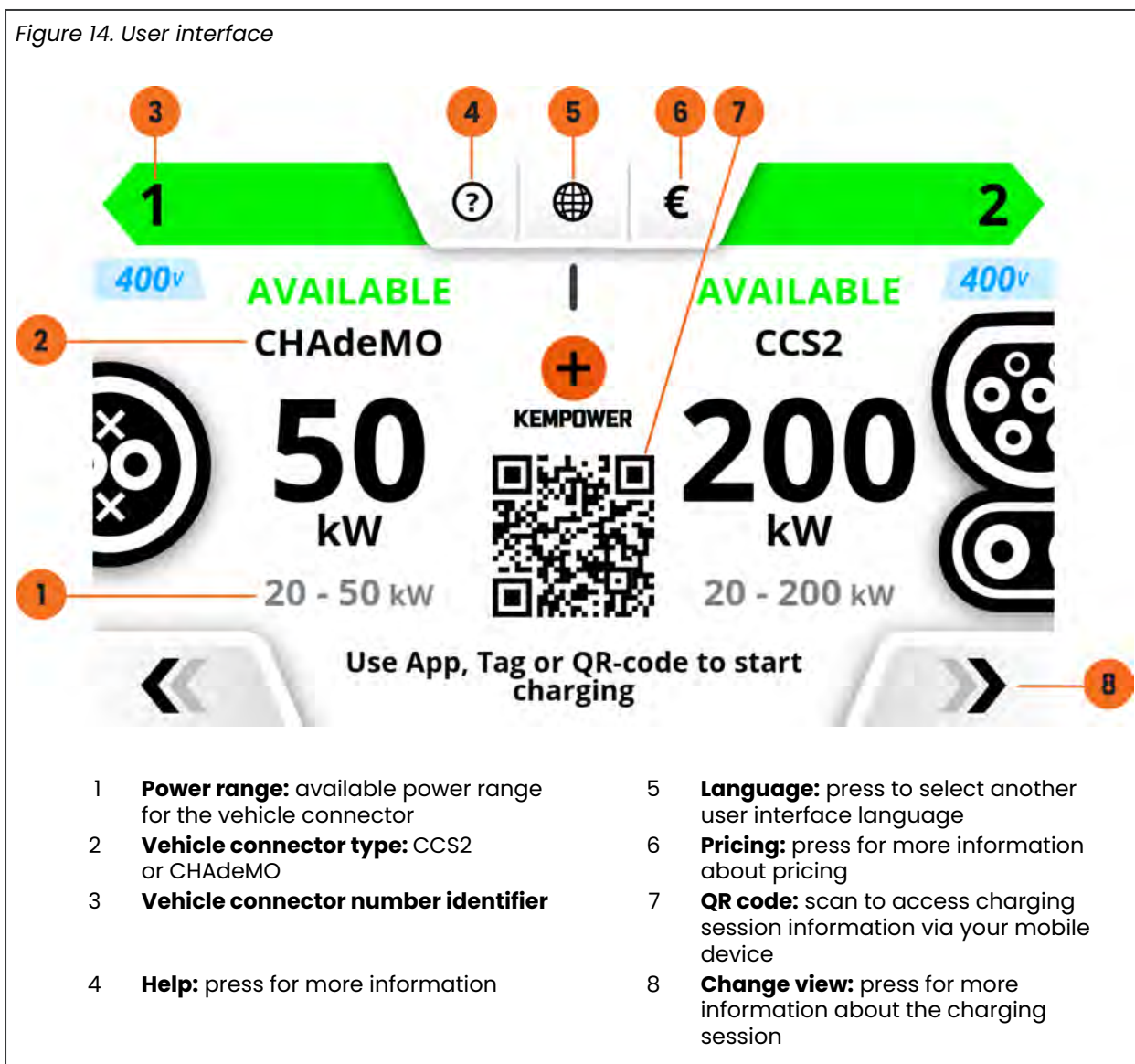
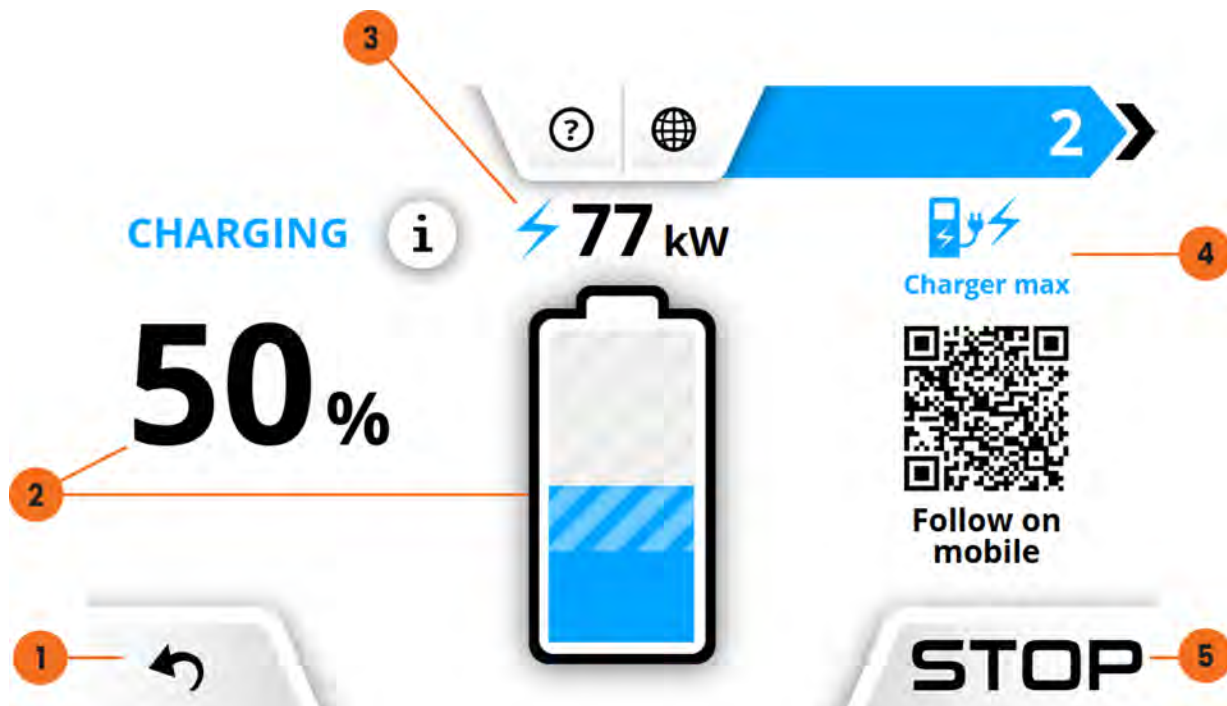


Figure 15. User interface - charging session information

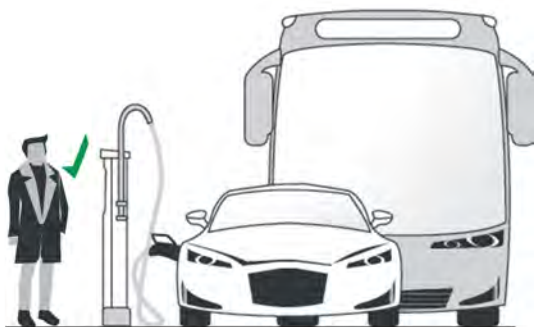
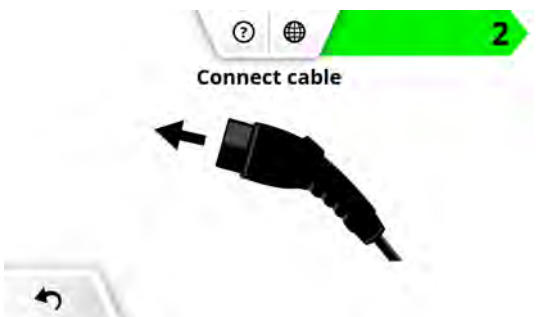


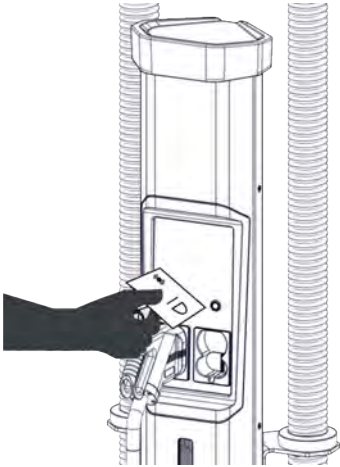
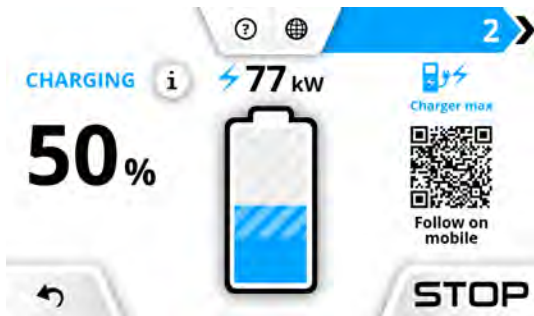
- 1 **Change view:** press to return to the previous view
- 2 **State of Charge (SoC):** press the battery icon for the charging curve.
- 3 **Charging power:** shows the current charging rate for the active charging session

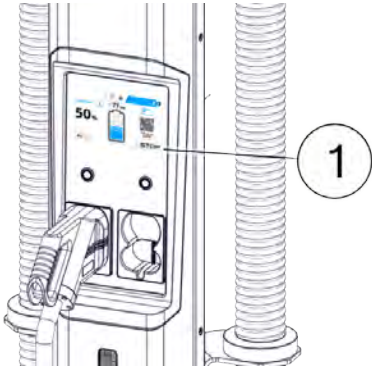
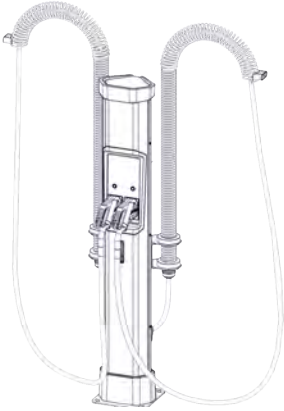
- 4 **Charging rate limit:** shows what is limiting the charging rate, for example the charging unit, the vehicle or the network
- 5 **Stop:** press to end the charging session

10.2 Charging process

Follow the device's on-screen instructions.

	Make sure that you have read and understood the instructions of the vehicle to be charged. The charging process starts when the vehicle connector is correctly connected to the vehicle and, if in use, when identification is done.
	Follow the on-screen instructions of the charging unit. Select the correct type of vehicle connector. See 3.5 Vehicle connector types. Attach the vehicle connector to the vehicle. Make sure that the vehicle connector is correctly connected. Listen for the vehicle's lock-in sound.

	If identification is necessary, the charging unit asks for it when the vehicle connector is connected to the vehicle. Use the identification method suggested by the charging unit. The charging unit can use for example radio-frequency identification (RFID), a card reader or a mobile application for the identification.
	Communication between the charging unit and the vehicle starts. Follow the progress on the display screen.
	When charging starts, the charging status is shown on the display screen. To see the charging process remotely, scan the quick response (QR) code with your mobile phone. A secure web page opens on your mobile phone and shows the charging status screen.

 A line drawing of a vertical charging station. It has a digital display screen at the top showing '50%' and a QR code. Below the screen are two circular buttons. The button on the right is labeled with a circled '1'. A charging cable is plugged into the station.	Press Stop (1) on the display screen or use the mobile application to end the charging session.
 A line drawing of a vertical charging station. It has a digital display screen at the top. Below the screen is a vehicle connector holder. A charging cable is plugged into the station.	Remove the vehicle connector from your vehicle and put it back in the vehicle connector holder.

11 PREVENTIVE MAINTENANCE



WARNING

You must complete the Kempower certification training before you do installation, commissioning, service or maintenance tasks.



CAUTION

Do not use running water or pressure washing equipment to clean the charging unit. Use a pH neutral detergent if necessary.



Obey the preventive maintenance plan to ensure the optimal performance of the electric vehicle charging system. Failure to obey the preventive maintenance plan and report the completed tasks to ChargeEye is cause to void the warranty.



The preventive maintenance schedule for cleaning and replacing components and consumable parts gives the indicative minimum intervals. Monitor the condition of the electric vehicle charging system and its wearing parts regularly. Adjust the intervals as necessary.

For maintenance instructions, see the maintenance manual.

To find your local service or maintenance partner, contact [*Kempower Technical Support*](#).

Periodic maintenance

	Annually	As necessary
Power Unit maintenance	•	
Station Charger maintenance	•	
Satellite maintenance	•	
Liquid Cooled Satellite maintenance	•	
Charging cable and vehicle connector maintenance		•

The maintenance interval always depends on environmental and site-specific conditions.

- Power Unit, Station Charger and Satellite maintenance:
 - Do annually, more often in demanding conditions. Maintenance tasks include a visual inspection and cleaning.
- Charging cable and vehicle connector maintenance:
 - Replace if any damage is found. Inspect regularly.

General maintenance

- Visually inspect the charging unit from all sides regularly. Make sure that:
 - There are no dents or other damage
 - The charging cables and vehicle connectors are not damaged
 - The user interface is not damaged
- Clean the outside of the charging unit regularly. Use a damp cloth and pH neutral detergent.
- Update the charging unit software as needed. Software updates are performed remotely by approved service or maintenance partners or Kempower upon request. You can also update the software directly from ChargEye.

If you find any damage, do not use the charging unit. Contact *Kempower Technical Support* or your local approved service partner.



You can disable the charging units from the ChargEye system to prevent use of the damaged device. We also recommend that you visibly notify users that the charging unit is not in use.

12 MAINTENANCE OF THE CHARGING EQUIPMENT

WARNING



You must complete the Kempower certification training before you do installation, commissioning, service or maintenance tasks.

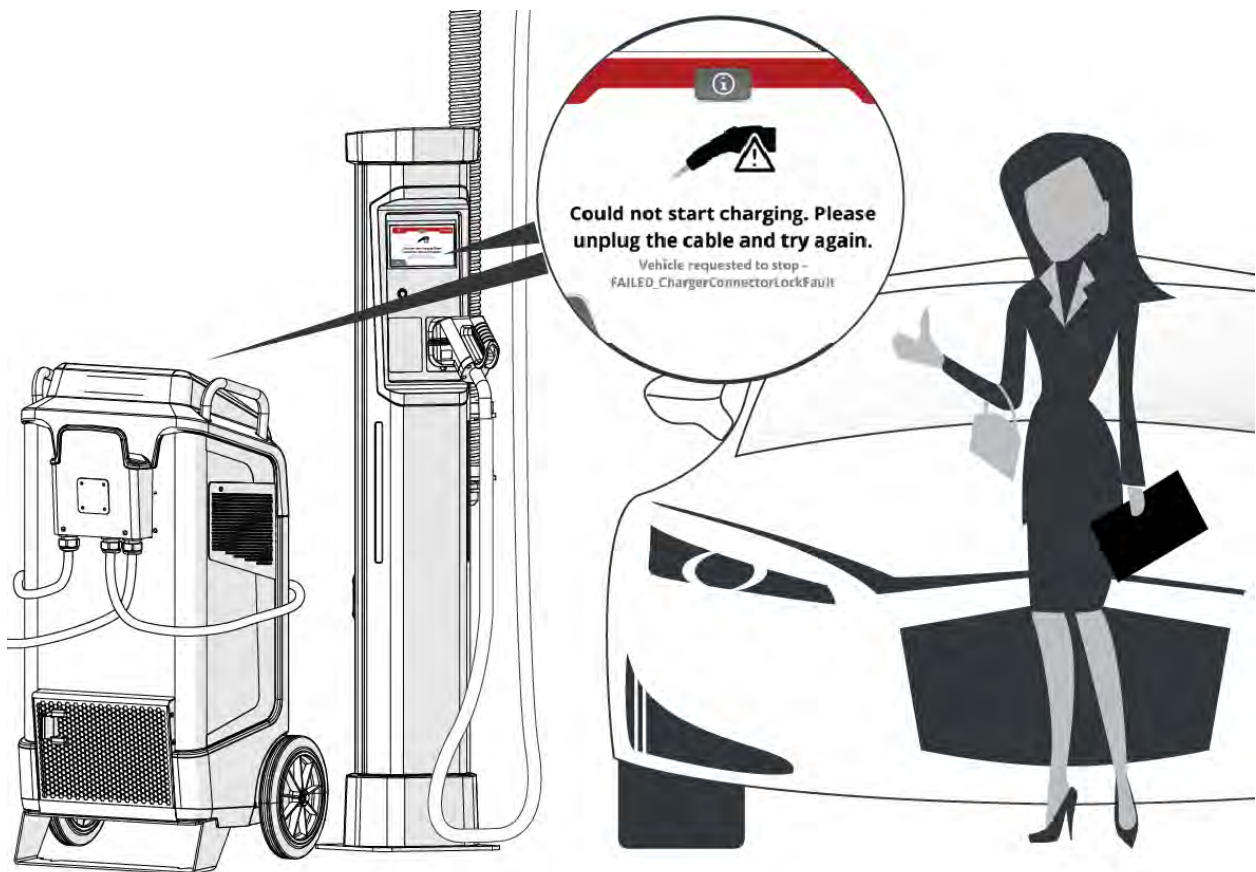
You must be an authorized electrician to do service or maintenance tasks. For additional information, see the maintenance manual.

13 TROUBLESHOOTING



You can also see the error codes in the ChargeEye system.

Instructions for problem situations are given on the device's display. The error codes help your service or maintenance partner to fix the problem. For assistance, contact *Kempower Technical Support*.



14 CHANGE LOG

Charging equipment for electric vehicles OWNER'S MANUAL v. 2.10	Changes
<u>3 Overview</u>	Added information about the Liquid Cooled Satellite
<u>4 Packaging of the charging equipment</u>	Added information about the Liquid Cooled Satellite
<u>5 Storing the charging equipment</u>	Added information about the Liquid Cooled Satellite
<u>6 Unpacking the charging equipment</u>	Added information about the Liquid Cooled Satellite
<u>7 Moving and lifting the charging equipment</u>	Added information about the Liquid Cooled Satellite
<u>11 Preventive maintenance</u>	Added information about the Liquid Cooled Satellite



Kempower • Ala-Okeroistentie 29, 15700 Lahti, Finland