KEMPOWER

Charging equipment for electric vehicles

INSTALLATION MANUAL

Power Unit, Station Charger and Satellites

CONFIDENTIAL – CERTIFIED PARTNERS REV 2.40 en 04-2024

TABLE OF CONTENTS

1. Introduction 1
1.1. Disclaimer on products and services 1
1.2. Information about the warranty 2
1.3. Information about the manufacturer 2
1.4. Environment 3
1.5. Recycling 3
2. Safety 4
2.1. Symbols used in the instructions 4
2.2. Common risks 4
2.3. Defective or damaged equipment 5
2.4. Fire safety 5
2.5. Insulation monitoring circuit 6
3. Kempower charging equipment for electric vehicles 6
3.1. Charging power management 7
3.2. Identificators 9
3.3. Kempower charging power units 13
3.3.1. Power Unit 13
3.3.2. Power Unit Version 3 14
3.3.3. Station Charger 15
3.4. Modules of the charging power unit 17
3.4.1. Power module 17
3.4.2. Dynamic power distribution module 18
3.4.3. Control module 19
3.4.4. Mains module 20
3.5. Steel base (option) 21
3.6. Kempower DC Satellites 24
3.6.1. Satellite 24
3.6.2. Satellite Version 2 25
3.6.3. Liquid Cooled Satellite 26
3.6.4. Control Unit 27
3.7. Kempower AC Satellites 28
3.7.1. AC Satellite 28
3.7.2. AC Satellite with charging cables 29
3.7.3. AC Satellite Version 2 with charging cables 30
3.8. Mounting tube for Satellites (option) 31
3.9. Vehicle connector types 32
4. Planning the electric vehicle charging site 33
4.1. Mechanical planning 34
4.2. Electrical planning 36
4.2.1. AC mains power cables to the charging power unit 37
4.2.2. Cabling between the charging power unit and DC charging points 38
4.2.3. AC Satellite cabling 40
4.3. Required tools and equipment 41
5. Installing the charging equipment 42
5.1. Mechanical installation 42
5.1.1. Preparing for the installation 42
5.1.2. Installing the steel base (option) 44
5.1.3. Moving and lifting Power Unit 52
5.1.4. Moving and lifting Power Unit Version 3 55
5.1.5. Moving and lifting Station Charger 59
5.1.6. Moving and lifting Satellite 63
5.1.7. Moving and lifting Liquid Cooled Satellite 64
5.1.8. Moving and lifting Control Unit 65
5.1.9. Installing the charging power unit 66

5.1.10. Installing Satellite ... 68
5.1.11. Installing Liquid Cooled Satellite ... 72
5.1.12. Installing Control Unit 200 A ... 74
5.1.13. Installing the charging cable to Satellite ... 78
5.2. Electrical installation ... 84
5.2.1. Preparing for the installation ... 84
5.2.2. Terminal blocks (charging power units manufactured before 6/2023) ... 85
5.2.3. Terminal blocks (charging power units manufactured after 6/2023) ... 87
5.2.4. Terminal blocks (Satellite Version 2) ... 89
5.2.5. Terminal blocks (Liquid Cooled Satellite) ... 90
5.2.6. Terminal blocks (Control Unit 200 A) ... 91
5.2.7. Installing Station Charger cables ... 91
5.2.8. Installing the AC mains power cables to the charging power unit ... 92
5.2.9. Installing the DC output power cables ... 93
5.2.10. Installing the control cables ... 94
5.2.11. Installing the communication cables ... 95
5.2.12. Connecting the DC input power cables to Liquid Cooled Satellite ... 99
5.2.13. Configuring the main switch of the charging power unit ... 100
5.2.14. Installing AC Satellite cables ... 102
6. Installing the equipment stop circuit (option) ... 105
6.1. Needed for the task ... 106
6.2. Task ... 106
7. Finishing the installation ... 114
7.1. Inspecting the installation ... 114
7.1.1. Sensory inspection ... 115
7.1.2. Electrical installation and safety inspection ... 116
8. Commissioning ... 117
8.1. Commissioning checklist ... 119
9. Unit footprints and clearances ... 120
9.1. Single cabinet footprint and fixing points ... 125
9.2. Double cabinet footprint and fixing points ... 126
9.3. Triple cabinet footprint and fixing points ... 127
9.4. Satellite footprint and fixing points ... 128
9.5. Liquid Cooled Satellite footprint and fixing points ... 129
9.6. Steel base footprints and fixing points ... 130
10. Examples of connecting output and control cables to charging points ... 132
10.1. Dynamic (Ds2) – 1 double Satellite ... 133
10.2. Dynamic (Ds2) – 2 single Satellites ... 133
10.3. Dynamic (Ds4) – 2 double Satellites ... 134
10.4. Dynamic (Ds4) – 4 single Satellites ... 134
10.5. Dynamic (Ds6) – 3 double Satellites ... 135
10.6. Dynamic (Ds6) – 6 single Satellites ... 135
10.7. Dynamic (Ds4) – 4 Liquid Cooled Satellites ... 136
10.8. Static (S4) – 1 single Satellite ... 136
10.9. Static (S4) – 4 single Satellites ... 137
10.10. Static (S4) – 2 double Satellites ... 137
10.11. Static (S8) – 8 single Satellites ... 138
11. Examples of connecting cables to the Satellites ... 139
11.1. Satellite Version 1 with one CCS vehicle connector ... 139
11.2. Satellite Version 1 with two CCS vehicle connectors ... 140
11.3. Satellite Version 1 with one CCS and one CHAdeMO vehicle connector ... 141
11.4. Satellite Version 2 with one CCS vehicle connector ... 142
11.5. Satellite Version 2 with two CCS vehicle connectors ... 143
11.6. Satellite Version 2 with one CCS and one CHAdeMO vehicle connector ... 144
11.7. Liquid Cooled Satellite with one CCS vehicle connector ... 145
11.8. X-Satellite with one CCS and one CHAdeMO vehicle connector ... 146

11.9. X-Satellite with one CCS, one CHAdeMO vehicle connector and a kWh meter 147
11.10. Control Unit 200 A with one CCS vehicle connector 148
11.11. AC Satellite Version 2 with two vehicle connectors 149
11.12. AC Satellite Version 2 with two sockets 150
11.13. AC Satellite Version 2 with two sockets or vehicle connectors 151
12. Control signal wires of the charging cable 152
12.1. CCS charging cables 152
12.2. CHAdeMO charging cables 153
12.3. AC charging cables 154
13. Examples of concrete foundations 156
14. Indicative dimensions for concrete foundations 157
15. Change log 161

1. INTRODUCTION

NOTICE
These instructions are for persons who have completed the Kempower certification training. Do not share these instructions with other parties without prior written permission of the copyright holder.

These instructions are for the installation of the following products manufactured by Kempower:

- Power Unit
- Power Unit Version 3
- Station Charger
- Satellite
- Satellite Version 2
- Liquid Cooled Satellite
- Control Unit
- AC Satellite
- AC Satellite with charging cables

For individual components not covered in these instructions, refer to the component manufacturer's specifications and instructions.

1.1. Disclaimer on products and services

Kempower 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.

Kempower provides software support for all active and valid ChargEye licenses.

1.2. Information about the warranty

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

NOTICE
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.

NOTE
Kempower guarantees spare parts available for a minimum of 10 years after production ramp down for the product.

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. Environment

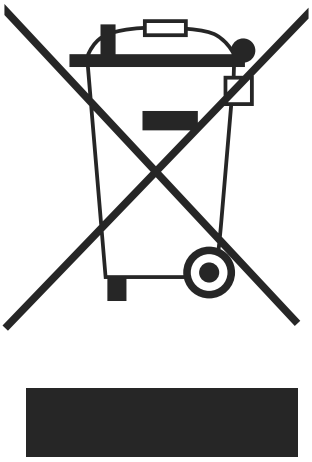
DANGER
Electric vehicle charging equipment must be located at a safe distance from potentially explosive atmospheres. Know and obey local laws and regulations.

NOTE
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.

1.5. Recycling

- The product labeled with this symbol reminds that the product contains electrical and electronic parts and batteries which must be recycled in compliance with the **2012/19/EU on waste electrical and electronic equipment (WEEE) directive**.
- Comply with local laws. Always return packaging materials to dedicated collection points in accordance with the symbols on the packaging. After end of the product's working life, the product must be delivered to the local waste management company, which handles the recycling of the product in accordance with the law and regulations.
- 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.

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

NOTE
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.

DANGER
High-voltage installation. Make sure that the units are correctly isolated and the lockout-tagout (LOTO) procedure completed when necessary during installation, service or maintenance work. Know and obey general and local safety regulations and procedures. Use adequate personal protection equipment (PPE).

WARNING
You must be authorized to do electrical work. The instructions are for persons who know electrical work and the applicable electrical safety requirements.

WARNING
The instructions are for persons who know civil works and the applicable safety requirements.

WARNING
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.

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

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

NOTICE
Make sure that you have enough working space and that it is safe. Direct traffic accordingly. Weatherproof the working space if you do tasks that make it necessary.

NOTICE
Make sure that the installed Satellite is protected from direct sunlight. Risk of overheating and damage to electronic parts.

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 (CO^2 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.

> **NOTE**
> The AC Satellite is not connected to a charging power unit. It is connected directly to 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.

3. 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 ChargEye system via a cellular or Wi-Fi network.

- 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 3.1: Charging power management.
- 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.
- Kempower Satellite is the charging point connected to the charging power unit.
- Kempower Liquid Cooled Satellite is a high-power charging point connected to the charging power unit.

- Kempower Control Unit is a charging point connected to the charging power unit.
- Kempower AC Satellite is a standalone AC charging point that is not connected to a charging power unit but directly to the main power supply.

3.1. 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.

With parallel connection (Ds2, Ds4, Ds6, D8) of either C500 or C800 power modules, up to 8 charging points can deliver charging power in 25 kW steps, balancing the requirements of the vehicle(s) being charged and the load of the other charging points. The voltage reference for power calculation when planning the charging site is 400 V (for C500) and 667 V (for C800).

With series connection (Ds2, Ds4, Ds6) of C500 power modules, the power distribution module adapts the charger's voltage to the voltage type of the vehicle (500 V or 800 V). Up to 6 charging points can deliver charging power in 50 kW steps, balancing the requirements of the vehicle(s) being charged and the load of the other charging points. The voltage reference for power calculation when planning the charging site is 400 V (for 500 V vehicles) and 800 V (for 800 V vehicles).

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

Table 1. 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 ChargEye 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

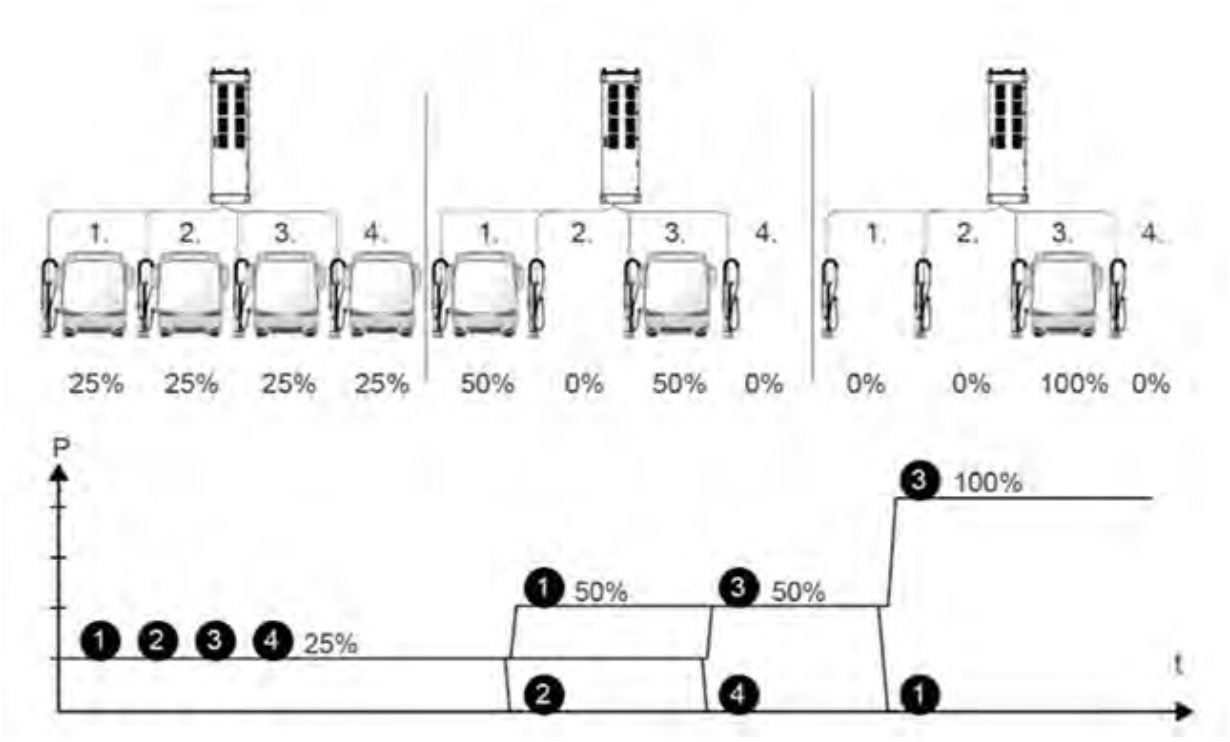
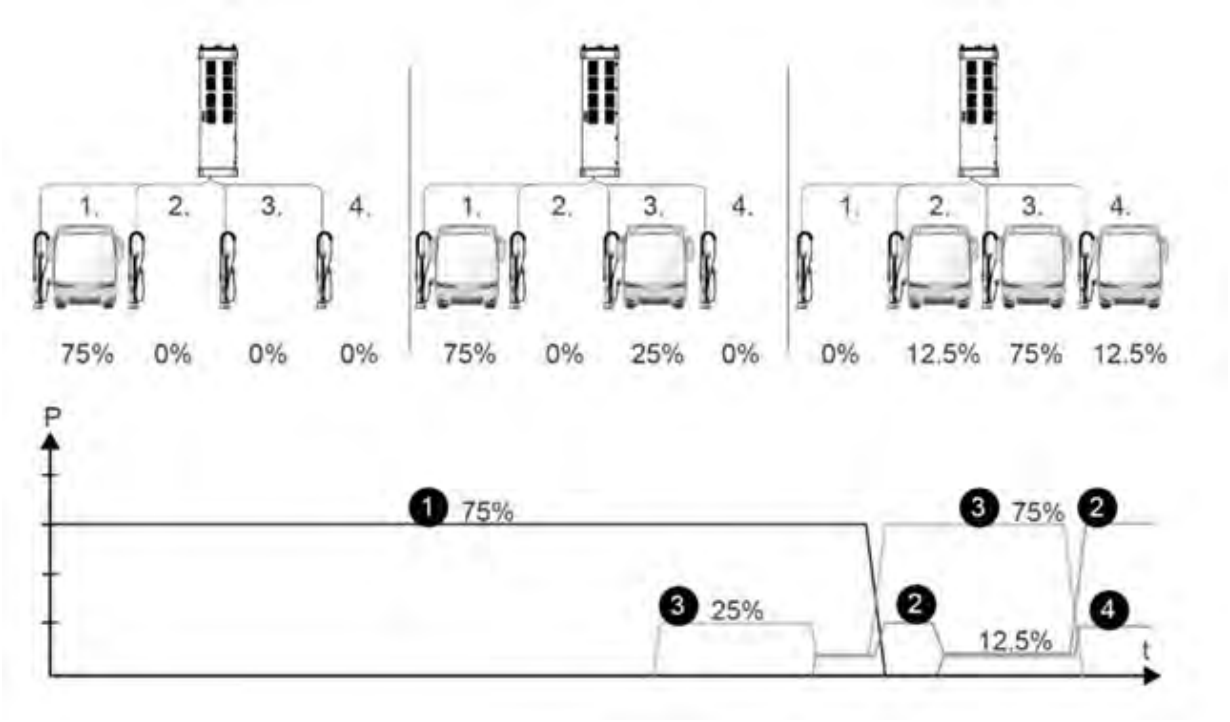


Figure 2. Example of dynamic charging in arrival priority mode (in this example the first vehicle requests only 75% of the available power)



3.2. Identificators

Serial number

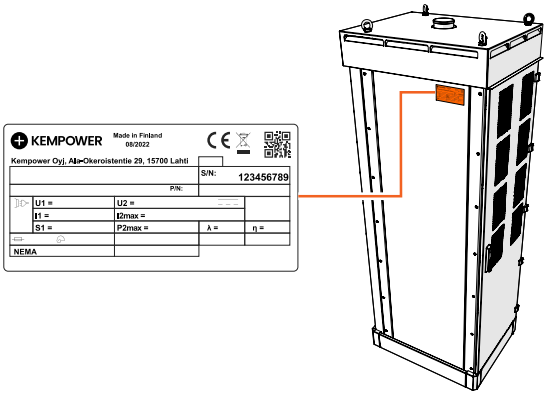
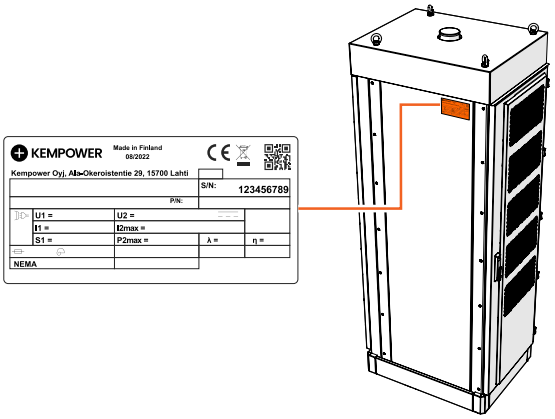
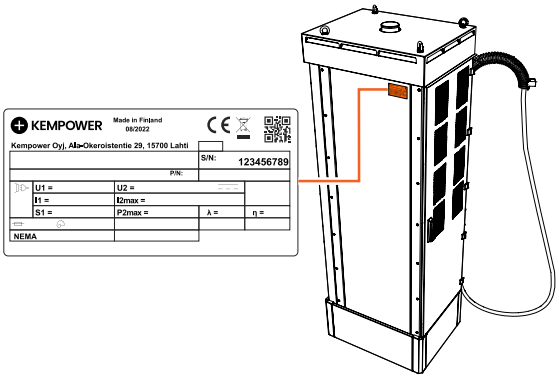
The serial number of the unit is given on the rating plate. The correct serial number is important when you order spare parts or repair the unit.

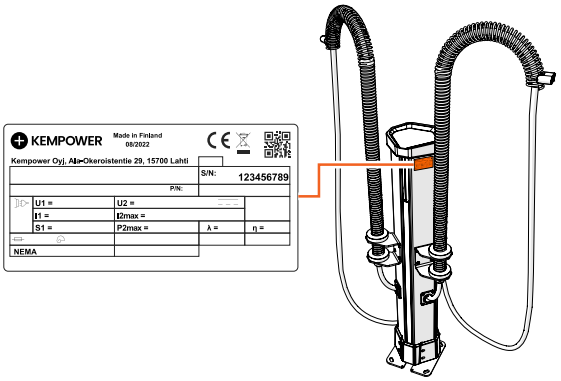
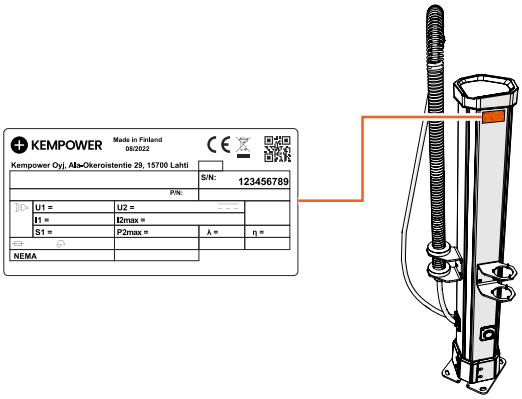
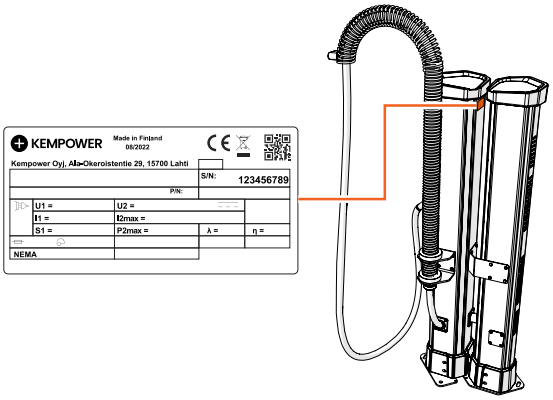
Quick response (QR) code or barcode

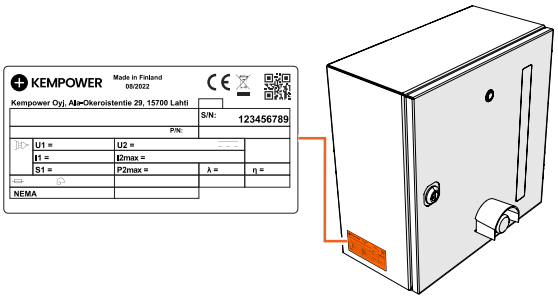
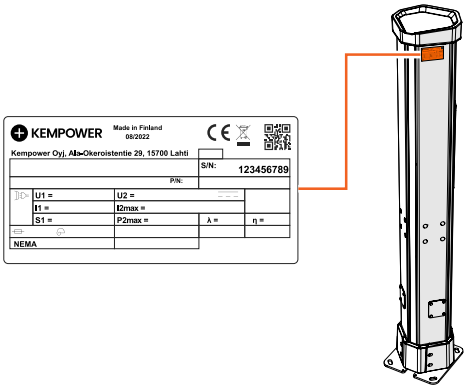
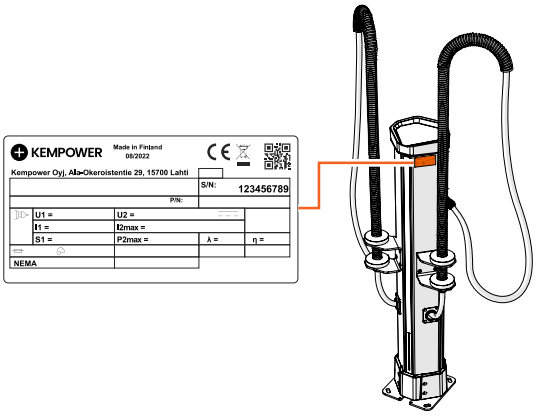
The serial number and other information about the unit can also be given as a QR code or barcode on the unit's rating plate. Use a mobile phone with a QR application or a code reader to access the information.

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:

Product	Description	Image
Power Unit	On the left side of the cabinet, in the top right corner.	
Power Unit Version 3	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.	

Product	Description	Image
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.	

Product	Description	Image
Control Unit	On the left side of the unit, in the bottom left corner.	
AC Satellite	On the rear side of the unit, in the top right corner.	
AC Satellite with charging cables	On the rear side of the unit, in the top right corner.	

3.3. Kempower charging power units

3.3.1. Power Unit

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

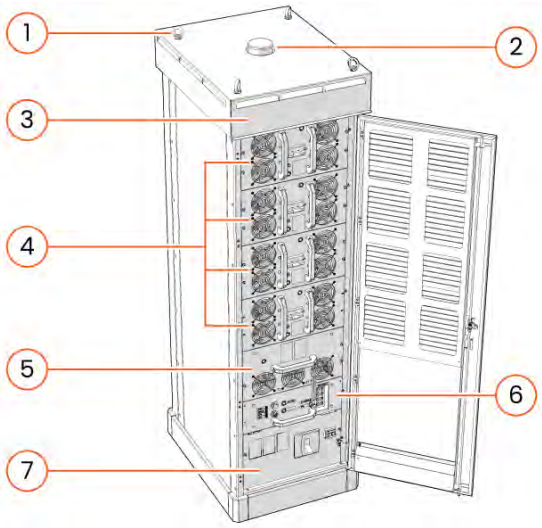
NOTE
See 9: Unit footprints and clearances for the footprints and required clearances of the units.

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. 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.

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)		

3.3.2. Power Unit Version 3

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

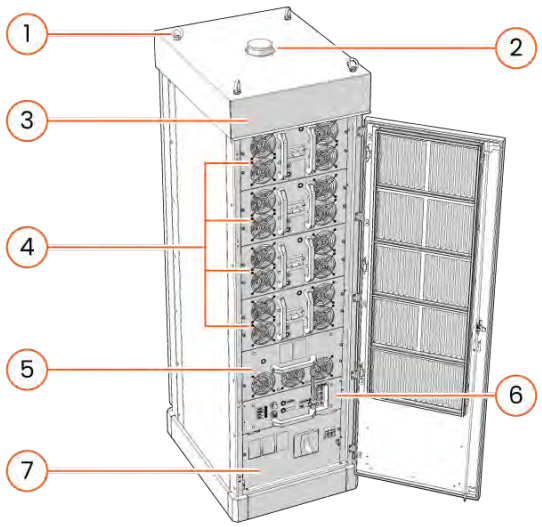
NOTE
See 9: Unit footprints and clearances for the footprints and required clearances of the units.

Kempower Power Unit Version 3 is a charging power unit that receives power from the electric power distribution network and distributes it to 1–8 DC charging points. Power Unit Version 3 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.

Figure 4. Kempower Power Unit Version 3 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

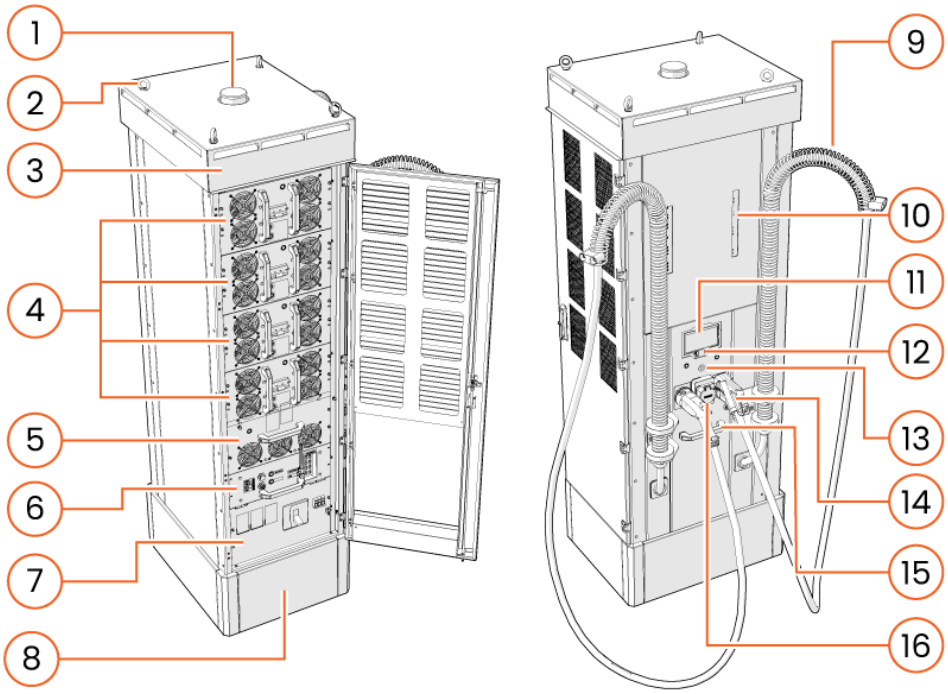
NOTE
See the product datasheets for the dimensions and weights of the units. Product datasheets are available at mediabank.kempower.com.

NOTE
See 9: Unit footprints and clearances for the footprints and required clearances of the units.

Kempower Station Charger consists of a charging power unit, 1–2 DC vehicle connectors per cabinet, and a user interface. Station Charger can have an additional AC charging socket (option). See the product datasheet for the available charging cable and vehicle connector types. Station Charger can be a single or double cabinet unit. Depending on the configuration, 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 3.1: Charging power management.

Figure 5. Kempower Station Charger overview (single cabinet, two DC vehicle connectors and optional AC charging socket)



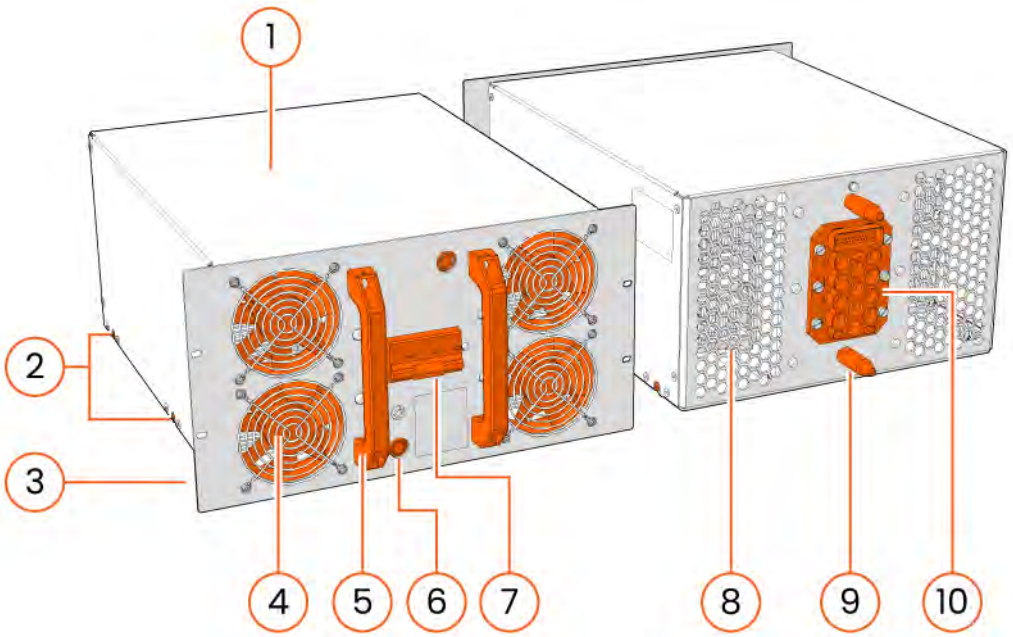
1	Cellular/Wi-Fi antenna	9	Charging cable support springs
2	Lifting lugs	10	Charging status indicators
3	Unit roof with cooling outlets	11	Touch screen
4	Power modules (1–4 per cabinet)	12	RFID reader
5	Power distribution module	13	Function buttons
6	Control module	14	Vehicle connectors and holders
7	Mains module	15	Front panel
8	Steel base	16	AC charging socket (option)

3.4. Modules of the charging power unit

3.4.1. Power module

The power module (C500/500 V and C800/800 V) provides the power for the charging power unit. The power module has two channels (2 x 25 kW), A on the right and B on the left.

Figure 6. Power module overview



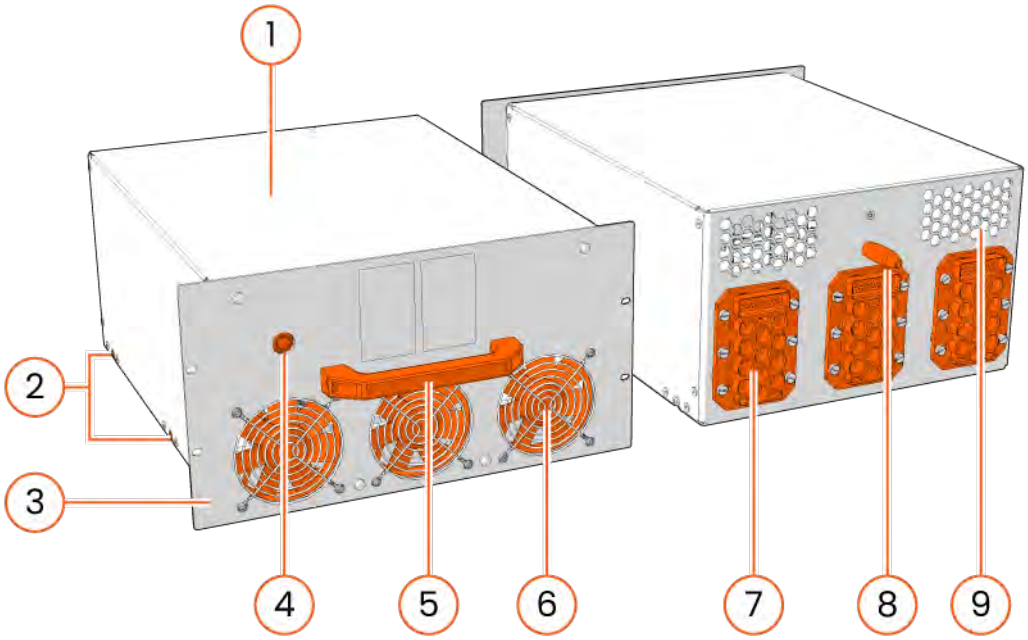
1	Cover	6	Channel status indicators[a]
2	Rollers	7	Circuit breaker
3	Front panel	8	Cooling outlets
4	Cooling fans	9	Guide pins
5	Handles	10	Multi-quick connector

[a]*Green: OK, ready for operation. Blue: operation. Red: error.*

3.4.2. Dynamic power distribution module

The dynamic power distribution module of the charging power unit routes and re-routes the power channels to the charging points during the charging session.

Figure 7. Dynamic power distribution module overview



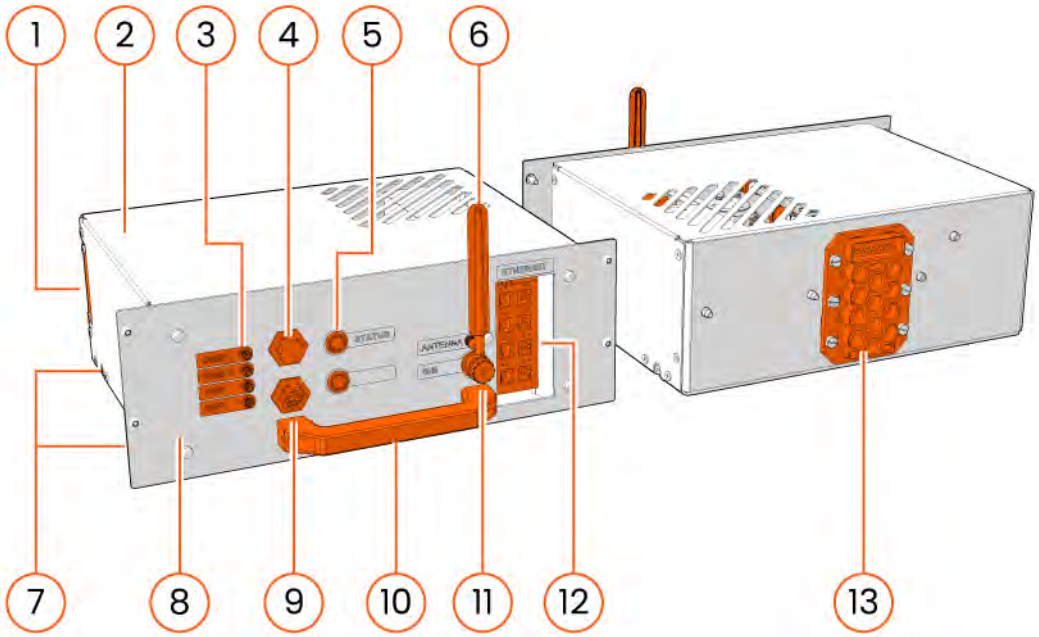
1	Cover	6	Cooling fans
2	Rollers	7	Multi-quick connectors
3	Front panel	8	Guide pin
4	Status indicator[a]	9	Cooling outlets
5	Handle		

[a] *Green: OK, ready for operation. Blue: operation. Red: error.*

3.4.3. Control module

The control module handles the communication in the charging power unit.

Figure 8. Control module overview



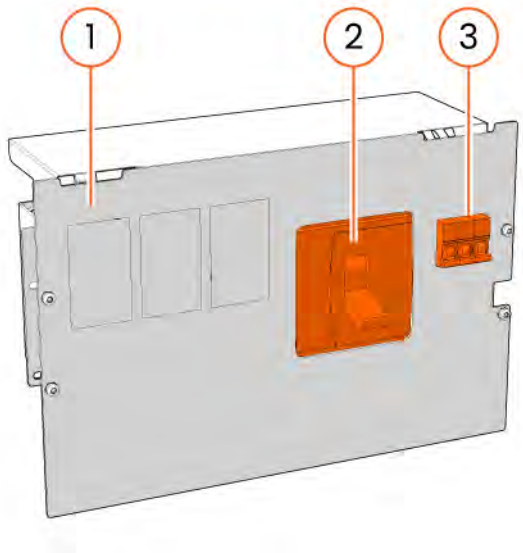
1	Mounting plate for printed circuit boards	8	Front panel
2	Cover	9	Ethernet port (external)
3	Antenna cable connectors	10	Handle
4	USB port	11	SIM card adapter (for customer SIM)
5	Status indicator[a]	12	Ethernet switch (internal)
6	Antenna (for customer modem)	13	Multi-quick connector
7	Rollers		

[a]*Green: OK, ready for operation. Blue: operation. Red: error.*

3.4.4. Mains module

The mains module of the charging power unit houses the terminal blocks for the main AC supply power cables, the main switch for the cabinet, and the miniature circuit breaker (MCB) for the auxiliary circuit.

Figure 9. Mains module overview

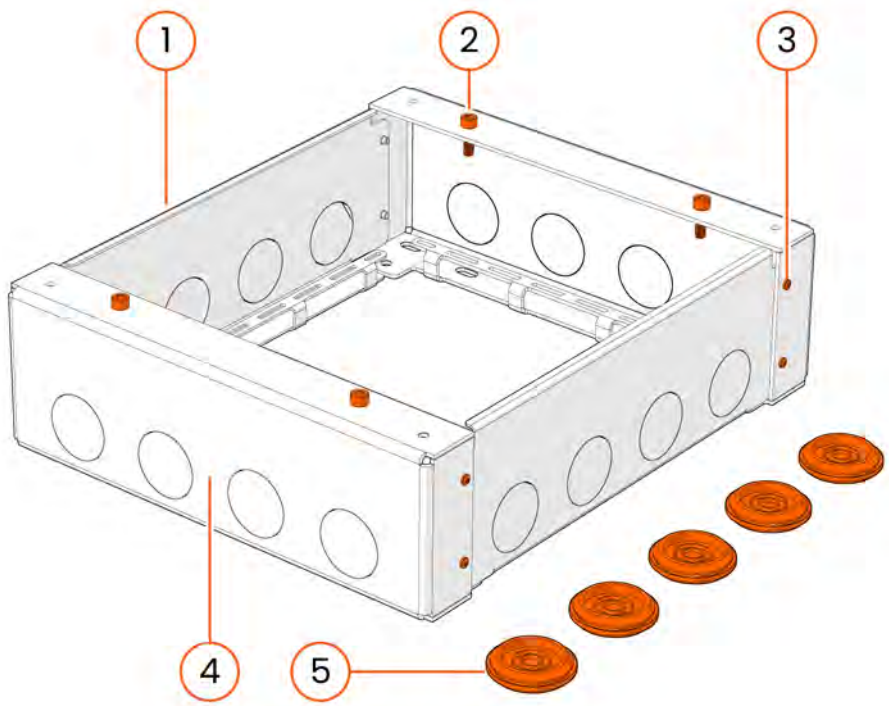


1 Front panel
2 Main switch (circuit breaker)
3 Miniature circuit breaker (MCB) for the control voltage

3.5. Steel base (option)

The steel base is an installation foundation that provides additional height under the cabinet for surface-installed cables. It is a standard part for Kempower Station Chargers (included in the delivery) and an optional part for Kempower Power Units (ordered separately). All sides of the steel base have pre-machined knock-outs for cables.

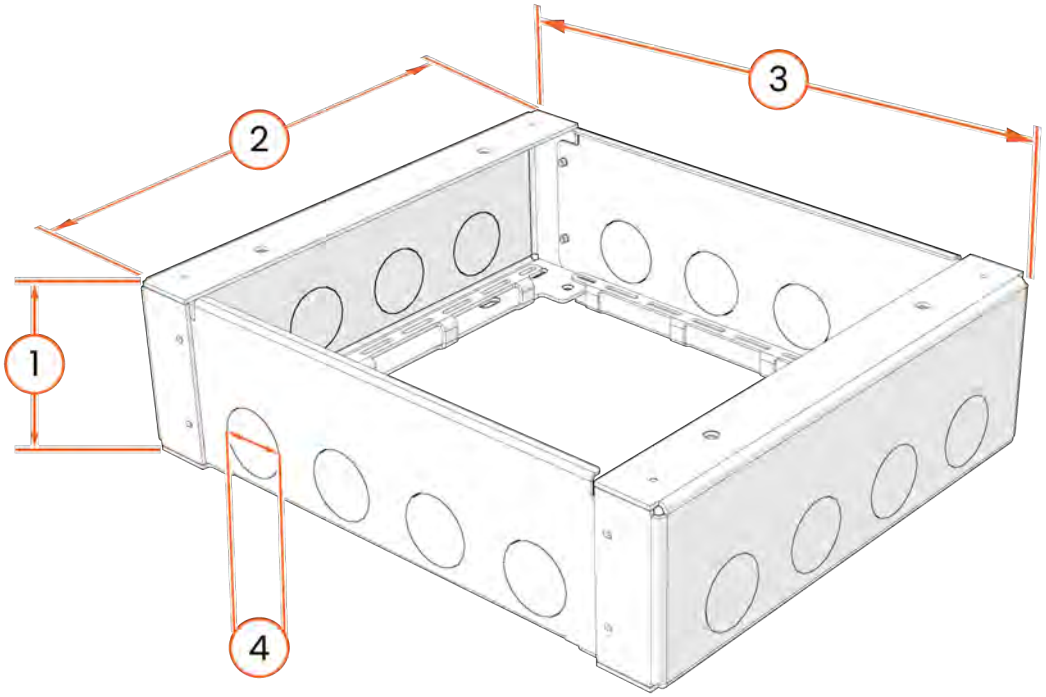
Figure 10. Steel base parts



1	End panel	4	Side panel
2	M12 bolt	5	Cable bushings
3	M6 bolt		

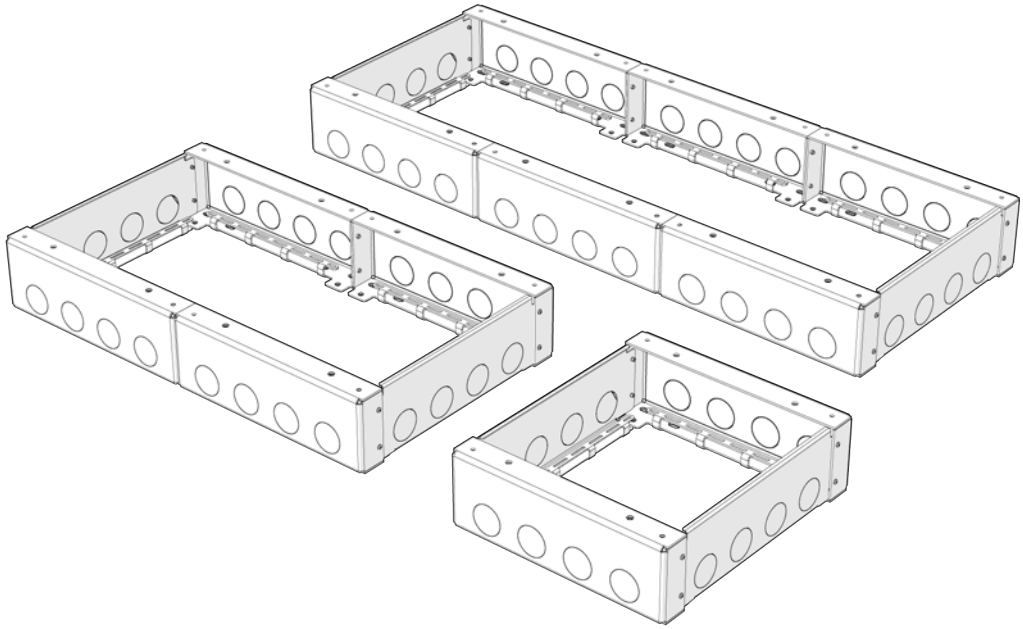
NOTE
The fasteners used for installing the steel base to the installation surface are not included in the delivery.

Figure 11. Steel base dimensions



1 Height 200 mm
2 Depth 702 mm
3 Width 600 mm
4 Diameter 80 mm

Figure 12. Steel base options



3.6. Kempower DC Satellites

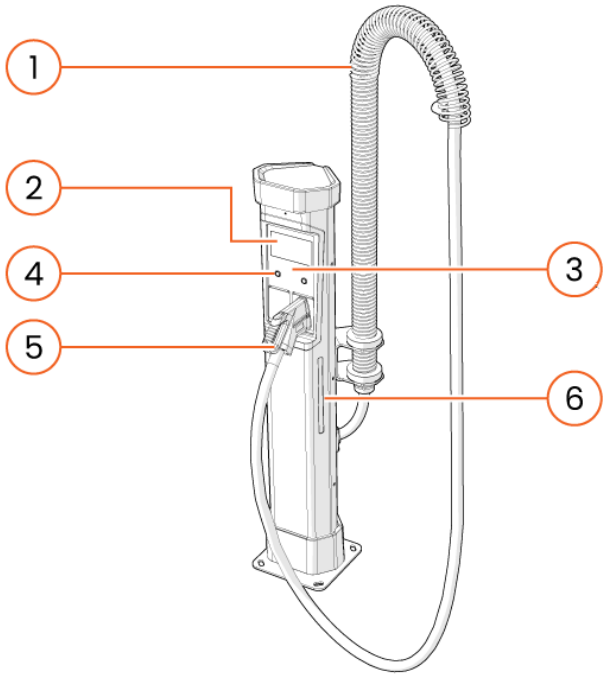
3.6.1. Satellite

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

NOTE
See 9: Unit footprints and clearances for the footprints and required clearances of the units.

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 13. 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[a]

[a]*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.

3.6.2. Satellite Version 2

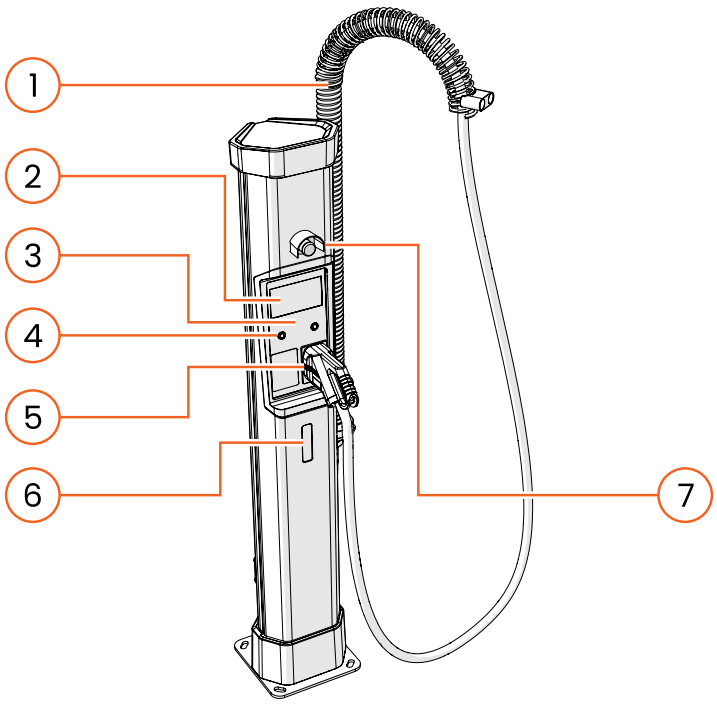
NOTE
See the product datasheets for the dimensions and weights of the units. Product datasheets are available at mediabank.kempower.com.

NOTE
See 9: Unit footprints and clearances for the footprints and required clearances of the units.

NOTE
The Satellite Version 2 does not have charging status indicator LEDs.

Kempower Satellite Version 2 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 14. Kempower Satellite Version 2 overview (single, with integrated energy meter)



1	Charging cable support spring	5	Vehicle connector and holder
2	Touch screen	6	Integrated energy meter
3	RFID reader	7	Equipment stop button (option)
4	Function buttons		

3.6.3. Liquid Cooled Satellite

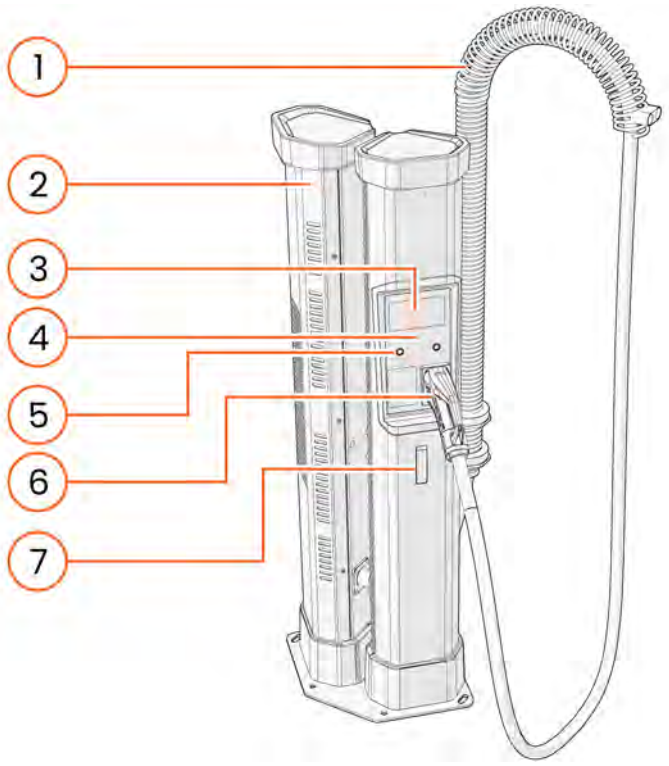
NOTE
See the product datasheets for the dimensions and weights of the units. Product datasheets are available at mediabank.kempower.com.

NOTE
See 9: Unit footprints and clearances for the footprints and required clearances of the units.

NOTE
Liquid Cooled Satellite does not have charging status indicator LEDs.

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 15. Kempower Liquid Cooled Satellite overview (single)



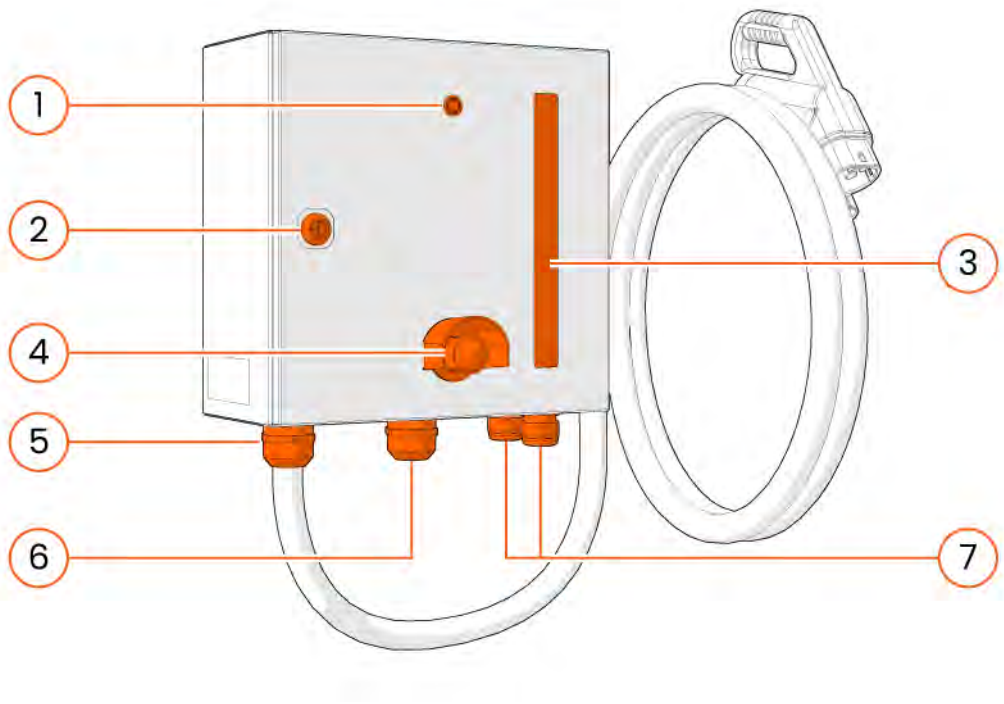
1	Charging cable support spring	5	Function buttons
2	Liquid cooling unit	6	Vehicle connector and holder
3	Touch screen	7	Energy meter window
4	RFID reader		

3.6.4. Control Unit

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

Kempower Control Unit is the charging point connected to the charging power unit. Control Unit has one vehicle connector. See the product datasheet for the available charging cable and vehicle connector types.

Figure 16. Kempower Control Unit overview



1	Control button with LED indicator	5	Charging cable
2	Front panel lock	6	Supply DC power cable
3	Charging status indicator[a]	7	Cable strain reliefs for control cable, control bus, and additional equipment stop cable
4	Equipment stop button		

[a] *Green: OK, ready to charge. Blue: charging. Red: error.*

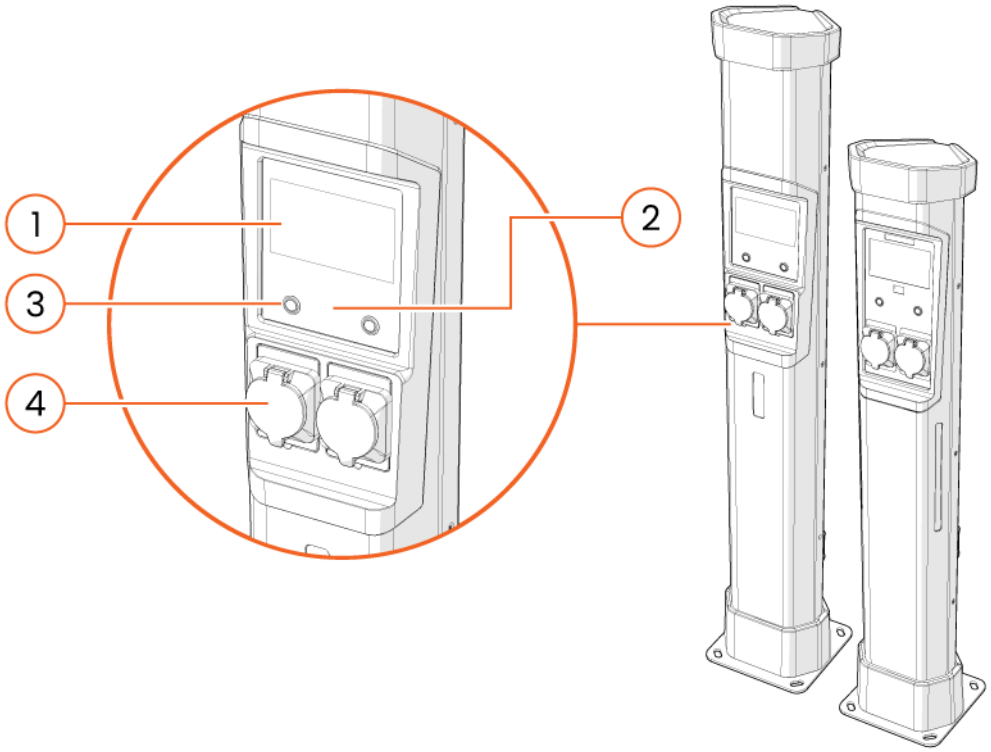
3.7. Kempower AC Satellites

3.7.1. AC Satellite

NOTE
AC Satellite Version 2 does not have charging status indicatior LEDs.

Kempower AC Satellite is a standalone AC charging point that is not connected to the charging power unit but directly to the main power supply. The single AC Satellite has one AC charging socket and the double has two.

Figure 17. AC Satellite overview

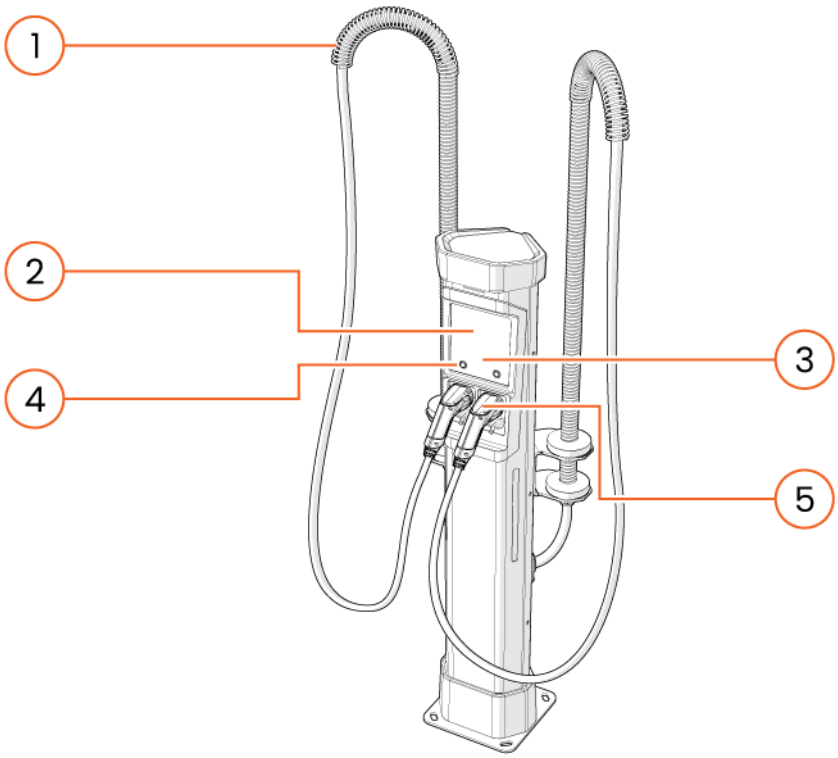


1 Touch screen
2 RFID reader
3 Function buttons
4 Charging connectors

3.7.2. AC Satellite with charging cables

The Kempower AC Satellite with cables is a standalone AC charging point that is not connected to a charging power unit but directly to the main power supply. The single AC Satellite has one AC vehicle connector and the double has two.

Figure 18. Kempower AC Satellite with charging cables overview



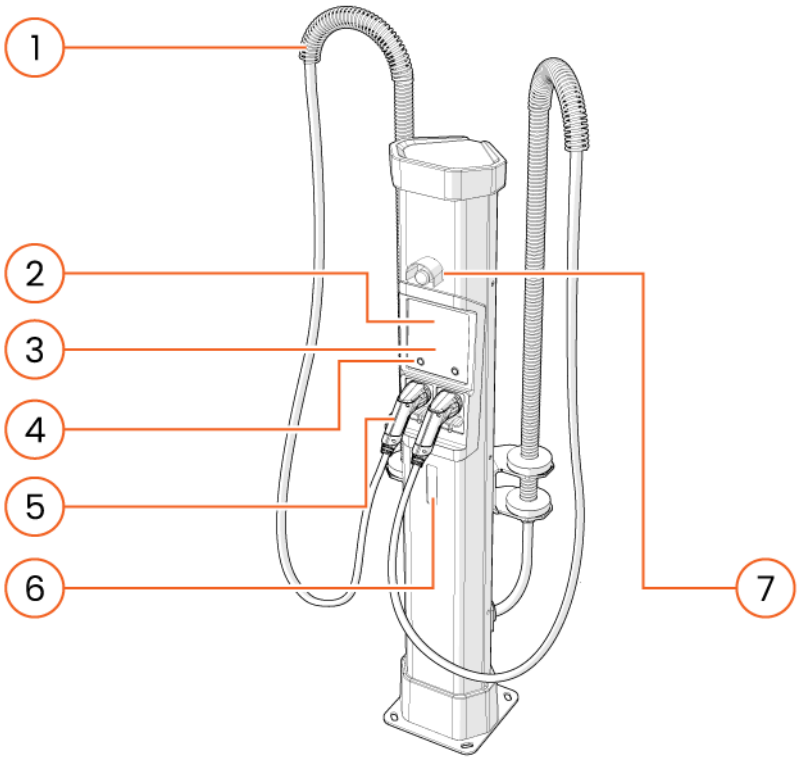
1 Charging cable support spring
2 Touch screen
3 RFID reader
4 Function buttons
5 Vehicle connectors and holders

3.7.3. AC Satellite Version 2 with charging cables

NOTE
AC Satellite Version 2 does not have charging status indicator LEDs.

Kempower AC Satellite with cables is a standalone AC charging point that is not connected to a charging power unit but directly to the main power supply. The single AC Satellite has one AC vehicle connectors and the double has two.

Figure 19. Kempower AC Satellite with charging cables overview



1	Charging cable support spring	5	Vehicle connectors and holders
2	Touch screen	6	Energy meter window
3	RFID reader	7	Emergency stop button (option)
4	Function buttons		

3.8. Mounting tube for Satellites (option)

The standard installation flange of the Satellite cannot be used if the Satellite is installed in a concrete element typically used for e.g. lamp posts. In this case, order the mounting tube separately as an option.

The optional mounting tube is compatible with concrete elements designed for posts that have a diameter of 127 mm and it is available in different lengths. For assistance, contact Kempower Sales Support.

Figure 20. Optional mounting tube for Satellites

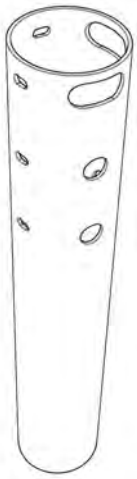
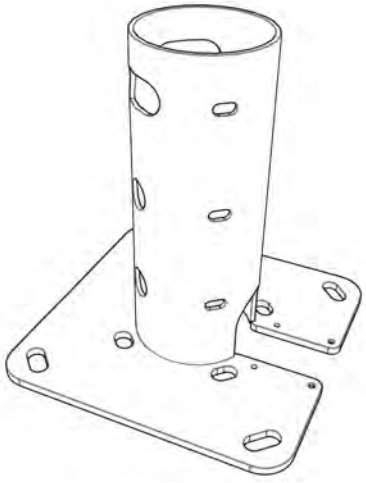
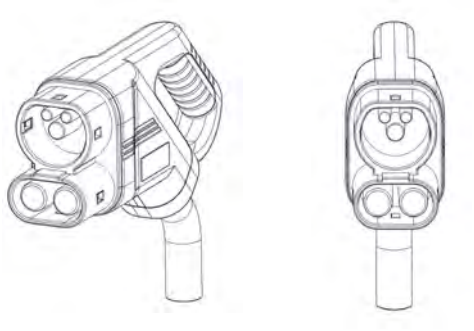
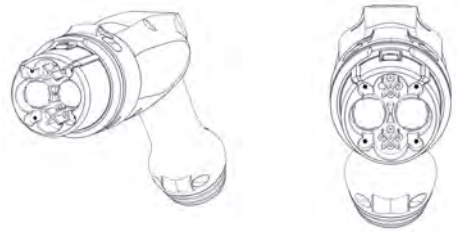
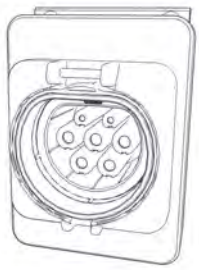
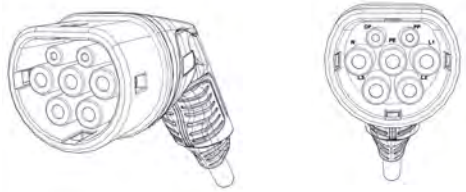


Figure 21. Standard installation flange for Satellites



3.9. Vehicle connector types

	Combined Charging System (CCS2)[a]
	CHAdeMO
	Type 2 AC socket
	Type 2 AC vehicle connector

[a]*Only option available for Liquid Cooled Satellite and Control Unit.*

4. 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.

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

NOTICE
Branding according to Kempower Branding Guidelines. Applying additional painting or stickers to the unit by the customer voids the warranty.

NOTE
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.
- When you determine cable lengths:
  - Leave an additional 1000 mm of supply power cable length above the installation surface.
  - For Satellites, leave an additional 1700 mm of control cable and communication cable length above the installation surface.
- 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. See 13: Examples of concrete foundations.
  - 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: supply grid main distribution board or one of the secondary substations.
  - The configuration of your communication system. Connectivity to the Kempower ChargEye 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.

4.1. Mechanical planning

NOTE
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 the local rules and requirements on civil works, electrical installations, cable routing, and cable dimensioning. For assistance, contact Kempower Sales Support.

The Kempower delivery includes the charging equipment and cabling inside the units. The steel base is the standard installation foundation for the Station Charger, and it is included in the delivery. If the cables are routed above the ground, order the optional steel base for the Power Unit to add installation space below the unit. See 3.5: Steel base (option).

The standard installation flange of the Satellite cannot be used if the Satellite is installed in a prefabricated concrete element typically used for

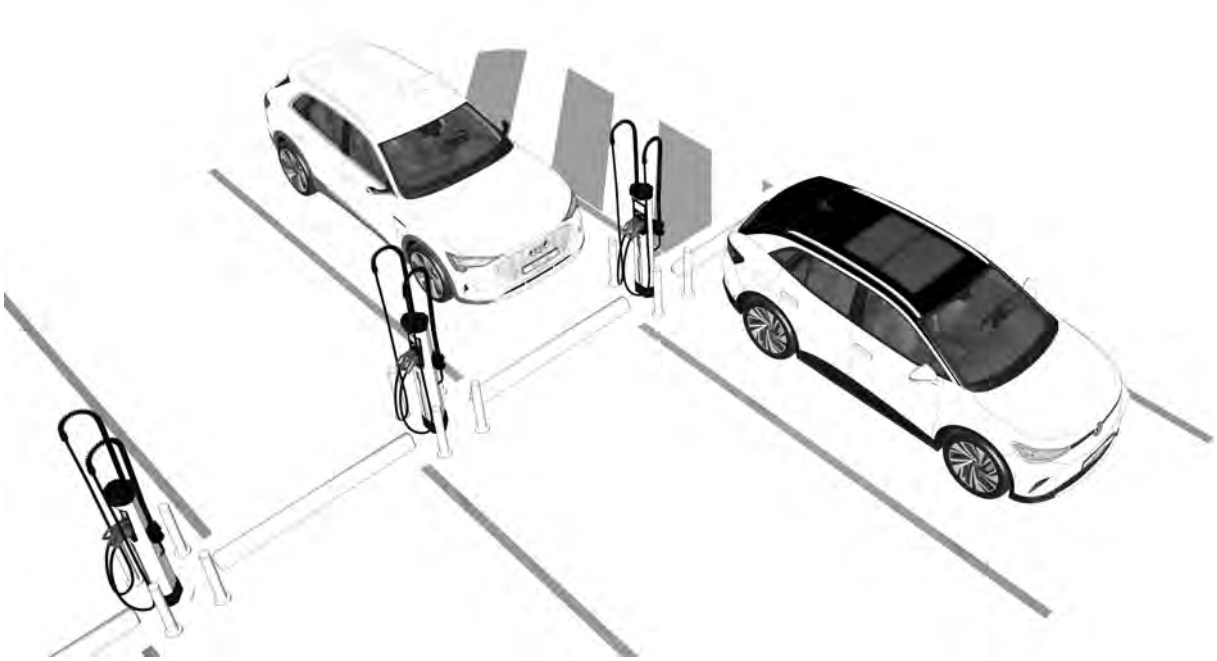
e.g. lamp posts. In this case, order the mounting tube separately as an option. See 3.8: Mounting tube for Satellites (option).

All other installation requirements such as concrete elements or foundations, cable channels etc. are the customer's responsibility. For assistance, contact Kempower Sales Support.

- For the footprints and clearances, see 9: Unit footprints and clearances.
- For examples and indicative dimensions of concrete foundations, see 14: Indicative dimensions for concrete foundations.
- Take into account the bending radius of the cables, especially if units are installed near walls. The cables to all units are always routed from below the unit.
    - The AC mains power cables are routed to the charging power unit from the front or the left side of the unit. See 4.2.1: AC mains power cables to the charging power unit.
    - The connection cables to the charging point(s) are routed from behind or the right side of the charging power unit. See 4.2.2: Cabling between the charging power unit and DC charging points.
- The maximum distance between the charging power unit and a connected charging point is approximately 80 m. To reduce the cable diameter:
    - Place the charging points as close to the charging power unit as possible.
    - Place the charging power unit approximately midway between the charging points connected to it.
- Make sure that the charging points are placed and oriented so that the charging cables easily reach the vehicles to be charged.
    - The maximum reach of the 5 m charging cable (nominal length, the actual length is 6 m) is approximately 4 m.
    - The maximum reach of the 7 m charging cable (nominal length) is approximately 6 m.
    - Place the Satellites in the top corner of each parking slot, on the driver's side of the vehicle.
    - As the charging socket can be located on either side of the vehicle, we recommend that the width of each parking slot is at minimum 3 m.
    - Rotate the single Satellite 45–60 degrees to provide maximum operating area for the charging cable.

- Rotate the double Satellite 90 degrees to provide maximum operating area for the charging cable on both sides. If possible, index the parking slots. See Figure 22.

Figure 22. Example of indexed parking slots for double Satellites



4.2. Electrical planning

CAUTION
The minimum network requirement per cabinet for the uninterrupted short-circuit current (Ik) is 13 kA/200 kW and for the short-circuit power (Ssc) 10 MVA/200 kW. If the values of your network are less than this, contact Kempower Sales Support.

NOTICE
Obey local laws and regulations about the emergency stop circuit. If necessary, include the emergency stop switches and a main circuit breaker on the supply side.

NOTICE
Selecting the correct cable type and size is the electrical designer's responsibility. Obey the relevant standards, local laws, and regulations. Take into account the specific requirements of the installation site.

NOTICE
Dimension the main AC supply to the current specified in the datasheet of the charging power unit.

NOTICE
The cabling between the charging power unit and connected charging points must support the maximum output current of the charging points.

NOTICE
Do not exceed the bending radius of the cable given by the cable manufacturer.

NOTE
AC Satellite is not connected to a charging power unit. It is connected directly to the main power supply.

NOTE
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 the local rules and requirements on electrical installations, cable routing, and cable dimensioning. For assistance, contact Kempower Sales Support.

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.

4.2.1. AC mains power cables to the charging power unit

NOTICE
Selecting the correct cable type and size is the electrical designer's responsibility. Obey the relevant standards, local laws, and regulations. Take into account the specific requirements of the installation site.

NOTE
The maximum wire size of the terminal is 2 x 240 mm^2.

The neutral wire is not used in the Power Unit (TN-C network). If the network cable has a neutral wire, it is connected to the cabinet's neutral wire terminal block (N) to keep the wire securely in place. The neutral wire is not connected to earth in the cabinet.

The neutral wire is only used in the Station Charger if it has an optional AC charging output (TN-C-S network). The neutral wire is connected to the cabinet's neutral wire terminal block (N).

Phases 1–3 (L1, L2, L3) and neutral (N) can be aluminum or copper wires. We recommend using copper wire for protective earth (PE).

4.2.1.1. Units manufactured after 3/2023

> **NOTE**
> In double and triple cabinet units manufactured after 3/2023, the AC supply terminal blocks of the cabinets are not jumpered together at the factory. If you install jumpers, one cabinet's main switch does not shut off the power in the other cabinet(s) of the unit. You must mark the units clearly to indicate the danger.

When the AC supply terminal blocks of the cabinets are not jumpered together:

- In single cabinet units, at maximum two AC mains power cables can be connected to one cabinet.
- In double and triple cabinet units, one AC mains power cable must be connected to each cabinet.
- If you want to install jumpers, obey the specifications for units manufactured before 3/2023.

4.2.1.2. Units manufactured before 3/2023

> **NOTE**
> In double and triple cabinet units manufactured after 3/2023, the AC supply terminal blocks of the cabinets are not jumpered together at the factory. If you install jumpers, one cabinet's main switch does not shut off the power in the other cabinet(s) of the unit. You must mark the units clearly to indicate the danger.

- The jumpers can be removed on site. In this case obey the specifications for units manufactured after 3/2023.
- When the AC supply terminal blocks of double cabinets are jumpered together, one AC mains power cable can be connected to one of the cabinets.
- When the AC supply terminal blocks of triple cabinets are jumpered together, one AC mains power cable can be connected to each of the end cabinets. No AC mains power cable is connected to the middle cabinet.

4.2.2. Cabling between the charging power unit and DC charging points

> **NOTE**
> AC Satellite is not connected to a charging power unit. It is connected directly to the main power supply.

4.2.2.1. DC output power cables

NOTICE
The cabling between the charging power unit and connected charging points must support the maximum output current of the charging points.

NOTE
Depending on the Power Unit version, the maximum size of the wire terminal is 2 x 50 mm^2 or 2 x 150 mm^2.

The dimensioning of the DC output power cable depends on the maximum output current of the charging point. Multiply the output current with the number of cabinets in the charging power unit.

The DC output power cable can be shielded or non-shielded. Non-shielded cables must have 5 wires (2 x DC+, 2 x DC-, PE). We recommend using copper wires.

Indicative cable types for single Satellite (300 A)

- 2 x (4 x 35 mm^2 + PE) or 2 x (5 x 35 mm^2)
- 4 x 50 mm^2 + PE or 5 x 50 mm^2

Indicative cable types for double Satellites (300 A)

NOTE
Note that this is the maximum wire size that fits inside the double Satellite.

- 4 x (4 x 25 mm^2 + PE) or 4 x (5 x 25 mm^2)
- 2 x (4 x 50 mm^2 + PE) or 2 x (5 x 50 mm^2)

NOTICE
Selecting the correct cable type and size is the electrical designer's responsibility. Obey the relevant standards, local laws, and regulations. Take into account the specific requirements of the installation site.

See also 10: Examples of connecting output and control cables to charging points and 11: Examples of connecting cables to the Satellites.

4.2.2.2. Control cable

The control cable is 4 x 1.5 mm^2 Cu cable If the distance between the charging power unit and a connected charging point is up to 50 m. The control cable is 6 x 1.5 mm^2 Cu cable if the distance is more than 50 m. In this case, use two parallel auxiliary power wires (+24 V) and ground wires (0 V) to compensate for voltage drop. The cable shield is grounded at the charging power unit end.

Indicative cable type

- 7 x 1.5 mm^2 Cu cable
  - Control signal wire
  - Auxiliary power wire for the user interface of the satellite (+24 V)
  - Ground wire (GND, 0 V)

4.2.2.3. Communication cable

NOTE
Each Satellite must have its own communication cable. The communication cable is not included in the delivery.

Indicative cable type

- SuperCat 6/7 shielded Ethernet cable 4 x 2 x 0.25 mm^2

The Ethernet shield is grounded at one end only, either charging power unit or Satellite.

Connectivity to the Kempower ChargEye and possible OCPP backend system requires an Internet connection, either with a SIM card in the control module of the master charging power unit or Ethernet cabling between your wide area network (WAN) router and the master charging power unit.

4.2.3. AC Satellite cabling

NOTICE
Do not connect the Ethernet cable of AC Satellite to the charging power unit. Doing so will stop the operation of both units.

NOTE
AC Satellite is not connected to a charging power unit. It is connected directly to the main power supply.

- The AC Satellite requires only AC mains power cables.
- An Ethernet cable between the AC Satellite and the site Ethernet network is optional but not required. The indicative cable type is SuperCat 6/7 shielded Ethernet cable 4 x 2 x 0.25 mm^2. Connectivity to the Kempower ChargEye and possible OCPP backend system requires an Internet connection, either with a SIM card or Ethernet cabling to your wide area network (WAN) router.
- Each charging socket or vehicle connector of the AC Satellite has dedicated residual-circuit monitoring (RCM). Obey local laws and

regulations about the type A residual-current device (RCD) required for the supply side.

4.3. Required tools and equipment

To do installation tasks, make sure that you have the necessary tools and equipment.

Personal protective equipment (PPE)

- Protective gloves
- Protective eyewear
- Safety shoes

Access

- Charging power unit door key
- Access to the main AC power supply point
- Triangle key
- Control Unit door key

Required tools

- H3, H4, H5, H6 and H8 key
- T25 and T30 bit
- Security T30 bit
- Screwdriver
- Electrician's crosshead screwdriver
- Electrician's flathead screwdriver
- 1/4 ratchet wrench (or your preferred tool, to use the Allen keys)
- Torque Wrench 1-50 Nm
- 100 mm extension (50 mm and 200 mm also recommended)
- Multimeter, capable of insulation tests up to 1000 V

Recommended tools

- Long nose pliers
- Side cutters
- Electric tape, multiple colors
- Work light
- Digital camera or mobile phone with camera

Some task-specific additional tools may also be needed.

5. INSTALLING THE CHARGING EQUIPMENT

The recommended maximum distance between the charging power unit and a connected charging point is approximately 80 m. If longer distances are necessary, make sure that the requirements are specified in the electrical design documentation of your site.

5.1. Mechanical installation

DANGER
High-voltage installation. Make sure that the units are correctly isolated and the lockout-tagout (LOTO) procedure completed when necessary during installation, service or maintenance work. Know and obey general and local safety regulations and procedures. Use adequate personal protection equipment (PPE).

5.1.1. Preparing for the installation

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

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

NOTICE
The maximum tilting angle of the charging power unit is 6 degrees. High center of gravity.

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

NOTICE
The electrical installation must be done in dry conditions. If necessary, weatherproof the installation area before you start the installation.

- Inspect the delivery as soon as possible. Make sure to remove the fixing brackets. If the equipment is damaged, do not start the installation. For assistance, contact Kempower Technical Support.
  - Power Unit is shipped upright on a pallet 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 pallet 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.
  - The charging cable of Control Unit is not installed on the unit at the factory. The unit and the charging cable are shipped in two separate boxes.
  - Do not remove the protective packaging from the vehicle connectors before you have installed the charging cables.

- Power Unit and Station Charger shipments have a tilt indicator. Shipments of other products may also have a tilt indicator. If the tilt indicator indicates mishandling, do not start the installation. For assistance, contact Kempower Technical Support.
- Know the site's electrical installation plan before you start mechanical installation.
- If an emergency stop circuit is included, make sure that it is in place before you start installation.
- Make sure that the AC mains power cables of the charging power unit have been routed to the foundation or installation location before you install the charging power unit in place.
- Make sure that the connection cables have been routed from the charging power unit to the charging point before you install the charging point in place. The connection cables are routed to the Liquid Cooled Satellite frame that has the user interface.
- Make sure that the AC mains power cables and the communication cable (optional) have been routed to the AC Satellite before you install it in place.

5.1.2. Installing the steel base (option)

5.1.2.1. Installing the steel base (single)

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.

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

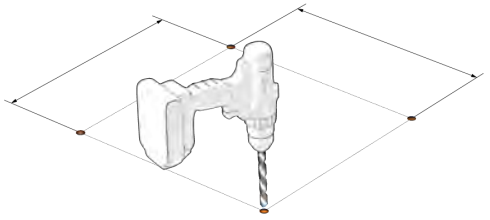
NOTICE
Make sure that the installation surface is solid and as level as possible.

NOTICE
Make sure that the door of the unit has space to open when the unit is in position.

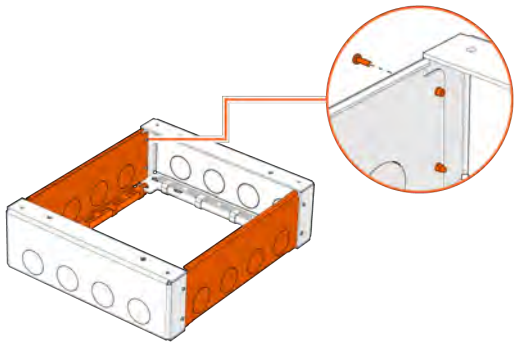
NOTE
Note the cable routes and open the necessary knock-out holes of the steel base. Use cable bushings or file the sharp metal edges of the knock-out holes to protect the cables from damages.

1. Drill the fixing holes into the installation surface. Make sure that the installation surface is solid and as level as possible.

   For more information, see 9.6: Steel base footprints and fixing points.

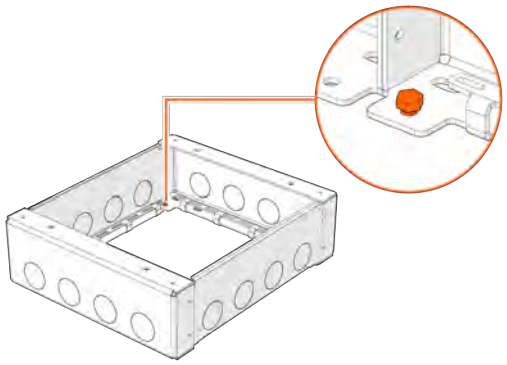


2. Assemble the steel base. Use two M6 bolts for each seam to attach the panels together.



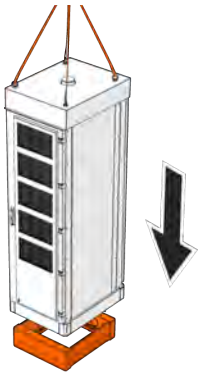
3. Use fasteners to install the steel base to the installation surface.

> **NOTE**
> The fasteners used for installing the steel base to the installation surface are not included in the delivery.



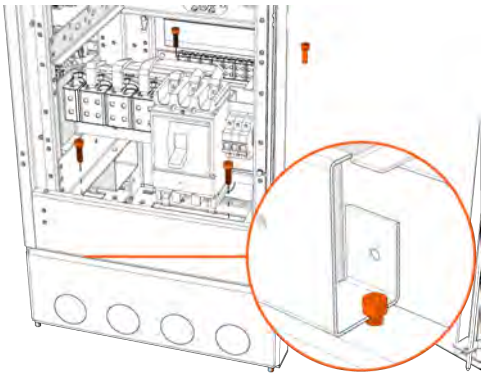
4. Lift the charging power unit onto the steel base. For moving and lifting instructions, see 5.1.3: Moving and lifting Power Unit.

   Make sure that the unit is horizontally level.



5. Install the charging power unit to the steel frame using four M12 bolts.

   At first, tighten the bolts only loosely. Once all the bolts are in place, tighten them completely.



> **NOTE**
> If the charging power unit does not fit correctly onto the steel base, you may need to go back and readjust the steel base.

6. Finalize the installation of the charging power unit. For instructions, see 5.1.9: Installing the charging power unit.

5.1.2.2. Installing the steel base (double)

> **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.

> **NOTICE**
> One cabinet with four power modules weighs approximately 400 kg. Use appropriate lifting equipment operated by qualified professionals.

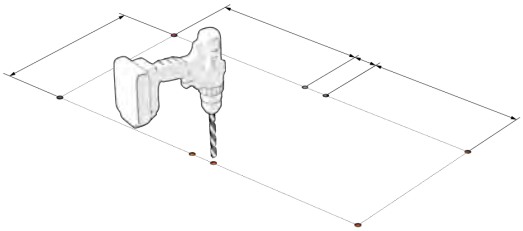
> **NOTICE**
> Make sure that the installation surface is solid and as level as possible.

> **NOTICE**
> Make sure that the door of the unit has space to open when the unit is in position.

> **NOTE**
> Note the cable routes and open the necessary knock-out holes of the steel base. Use cable bushings or file the sharp metal edges of the knock-out holes to protect the cables from damages.

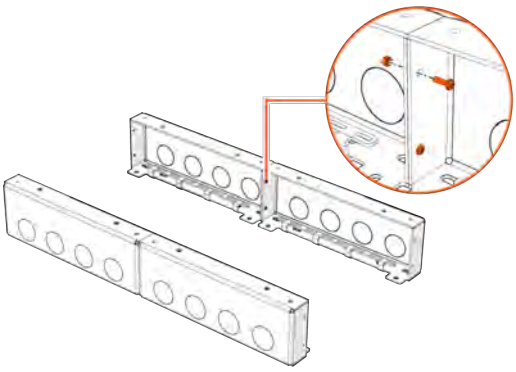
1. Drill the fixing holes into the installation surface. Make sure that the installation surface is solid and as level as possible.

   For more information, see 9.6: Steel base footprints and fixing points.



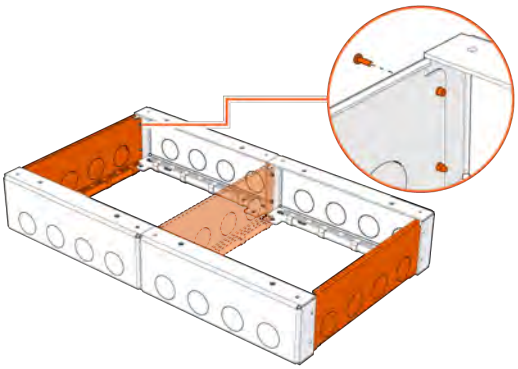
2. Assemble the side panels of the steel base. Use two M6 bolts and nuts for each seam to attach the panels together.

   Use the appropriate number of side panels for your installation. Two for a double cabinet and three for a triple cabinet.

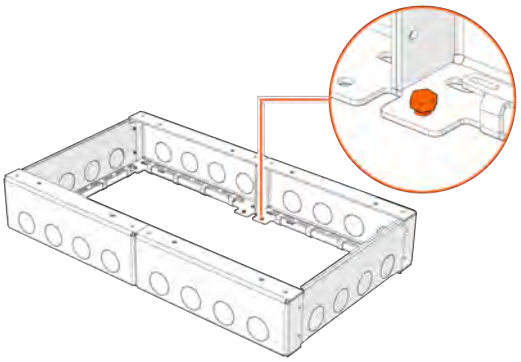


3. Attach the end panels using two M6 bolts per seam.

   The middle panel is optional.



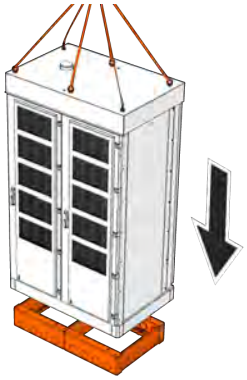
4. Use fasteners to install the steel base to the installation surface.



> **NOTE**
> The fasteners used for installing the steel base to the installation surface are not included in the delivery.

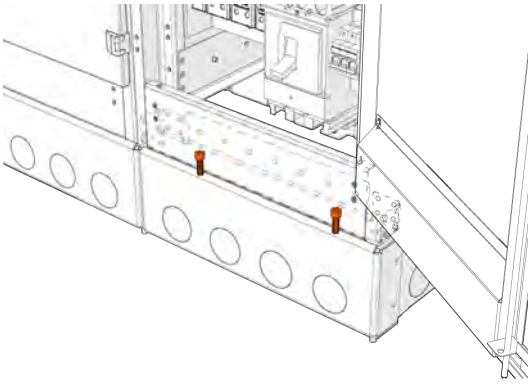
5. Lift the charging power unit onto the steel base. For moving and lifting instructions, see 5.1.3: Moving and lifting Power Unit.

   Make sure that the unit is horizontally level.



6. Install the charging power unit to the steel frame using four M12 bolts per cabinet.

   At first, tighten the bolts only loosely. Once all the bolts are in place, tighten them completely.



> **NOTE**
> If the charging power unit does not fit correctly onto the steel base, you may need to go back and readjust the steel base.

7. Finalize the installation of the charging power unit. For instructions, see 5.1.9: Installing the charging power unit.

5.1.2.3. Installing the steel base (triple)

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.

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

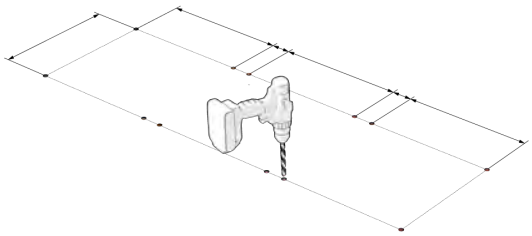
NOTICE
Make sure that the installation surface is solid and as level as possible.

NOTICE
Make sure that the door of the unit has space to open when the unit is in position.

NOTE
Note the cable routes and open the necessary knock-out holes of the steel base. Use cable bushings or file the sharp metal edges of the knock-out holes to protect the cables from damages.

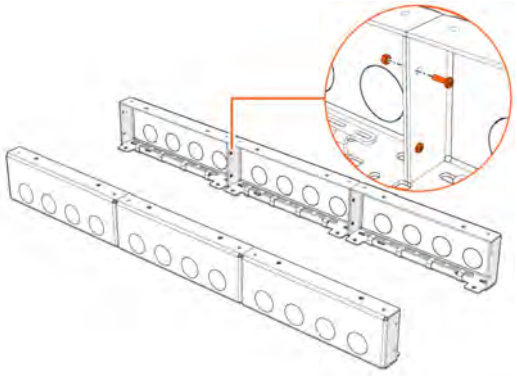
1. Drill the fixing holes into the installation surface. Make sure that the installation surface is solid and as level as possible.

   For more information, see 9.6: Steel base footprints and fixing points.



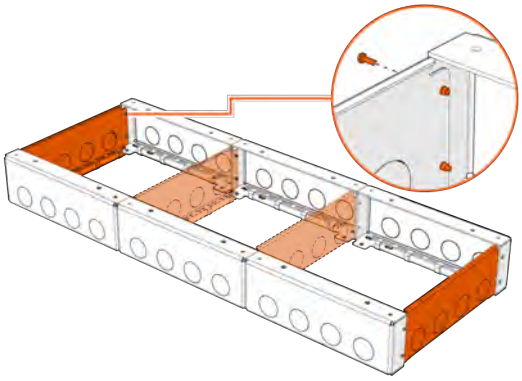
2. Assemble the side panels of the steel base. Use two M6 bolts and nuts for each seam to attach the panels together.

   Use the appropriate number of side panels for your installation. Two for a double cabinet and three for a triple cabinet.



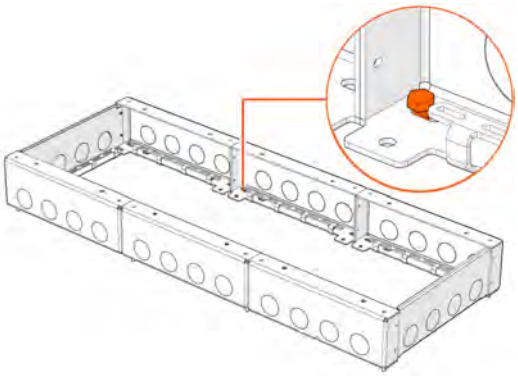
3. Attach the end panels using two M6 bolts per seam.

   The middle panels are optional.



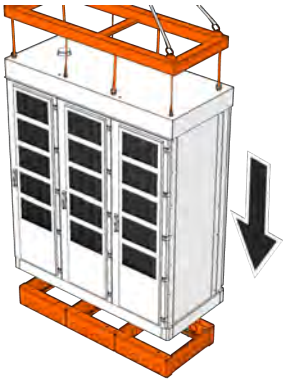
4. Use fasteners to install the steel base to the installation surface.

   NOTE
   The fasteners used for installing the steel base to the installation surface are not included in the delivery.



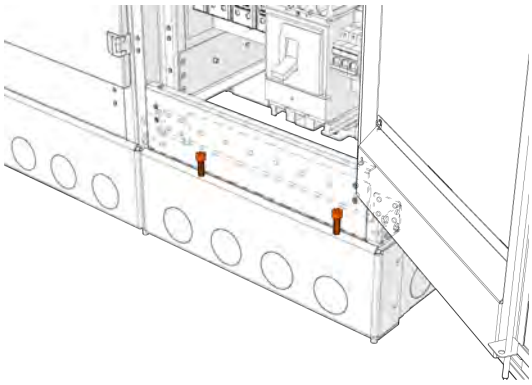
5. Lift the charging power unit onto the steel base. For moving and lifting instructions, see 5.1.3: Moving and lifting Power Unit.

   Make sure that the unit is horizontally level.



6. Install the charging power unit to the steel frame using four M12 bolts per cabinet.

   At first, tighten the bolts only loosely. Once all the bolts are in place, tighten them completely.



> **NOTE**
> If the charging power unit does not fit correctly onto the steel base, you may need to go back and readjust the steel base.

7. Finalize the installation of the charging power unit. For instructions, see 5.1.9: Installing the charging power unit.

5.1.3. Moving and lifting 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.

CAUTION
The module rails inside the cabinet have sharp edges. Be careful when removing and installing modules.

NOTICE
The maximum tilting angle of the charging power unit is 6 degrees. High center of gravity.

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

NOTICE
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.

NOTICE
Make sure that you replace the same serial number card to the same cabinet when you install or replace control modules. Each cabinet is identified with its unique serial number in ChargEye.

NOTICE
Do not lift the power module from its guide pins.

NOTE
The power module weighs approximately 43 kg.

NOTE
The power distribution module weighs approximately 32 kg.

Figure 23. Remove the bottom modules before you lift the unit

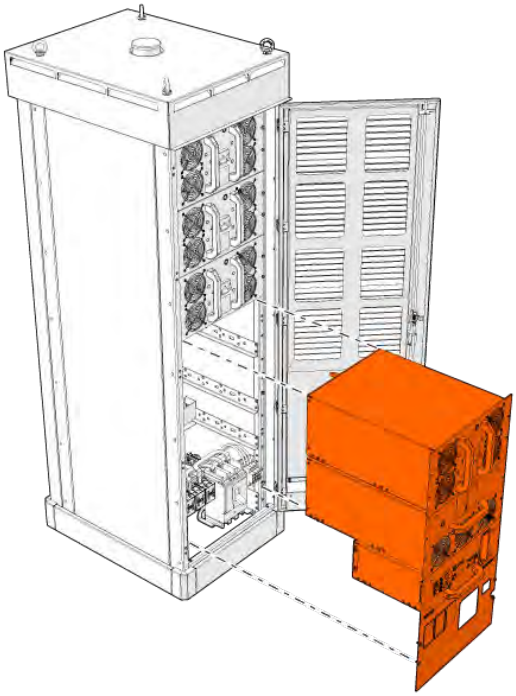


Figure 24. Left : lifting the unit to be installed without the steel base. Right: lifting the unit to be installed on the steel base.

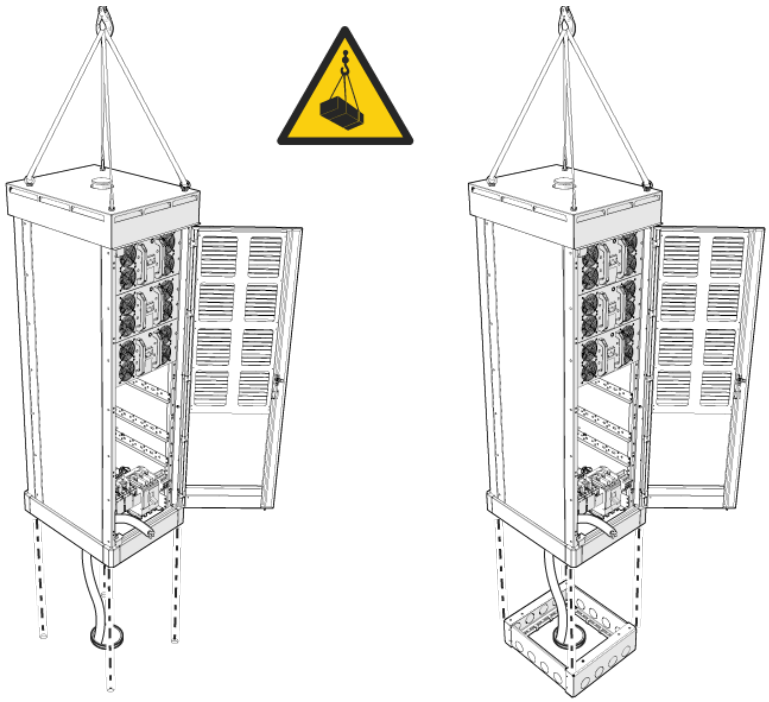


Figure 25. Lifting lugs on a single, double, and triple cabinet

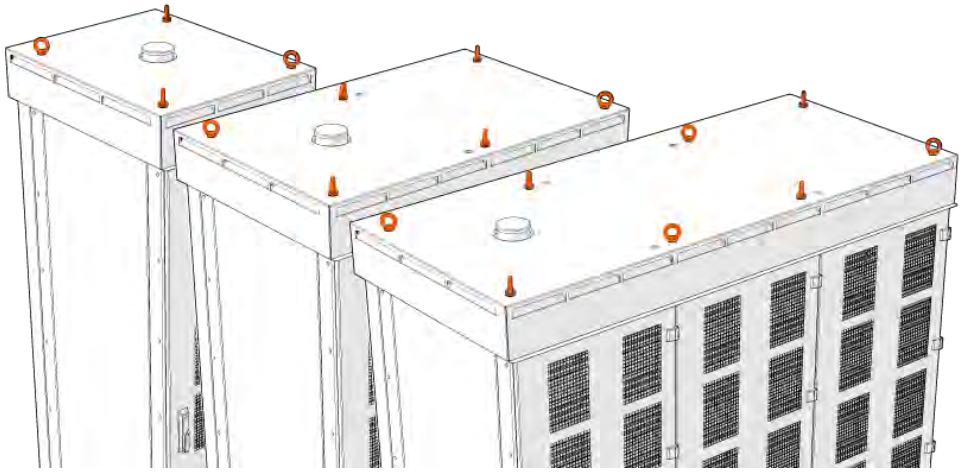
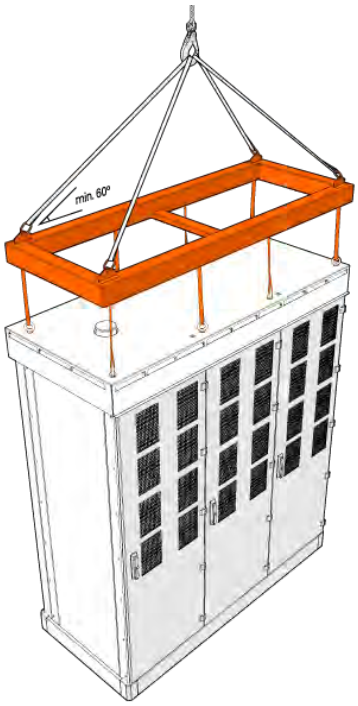


Figure 26. Use all fastening points if you use lifting beams



5.1.4. Moving and lifting Power Unit Version 3

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.

NOTICE
The maximum tilting angle of the charging power unit is 6 degrees. High center of gravity.

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

NOTICE
Carefully remove the control module, the power distribution 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.

NOTICE
Make sure that you replace the same serial number card to the same cabinet when you install or replace control modules. Each cabinet is identified with its unique serial number in ChargEye.

NOTE
The power distribution module weighs approximately 32 kg.

Figure 27. Remove the control module, the power distribution module and the front panel of the mains module before you lift the unit

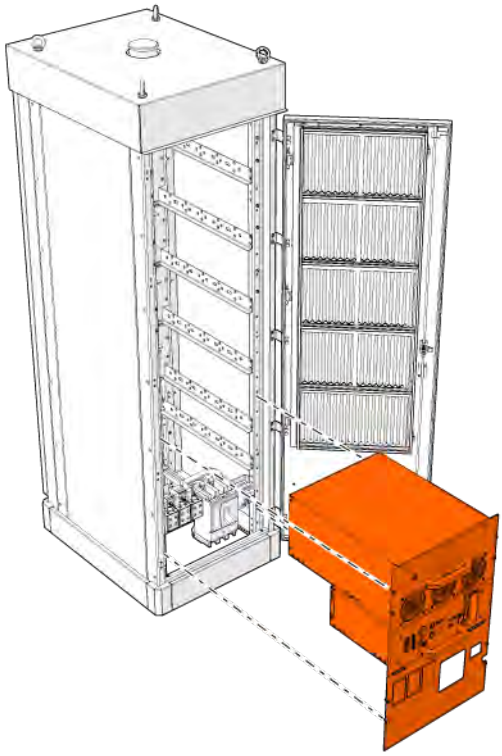


Figure 28. Left : lifting the unit to be installed without the steel base. Right: lifting the unit to be installed on the steel base.

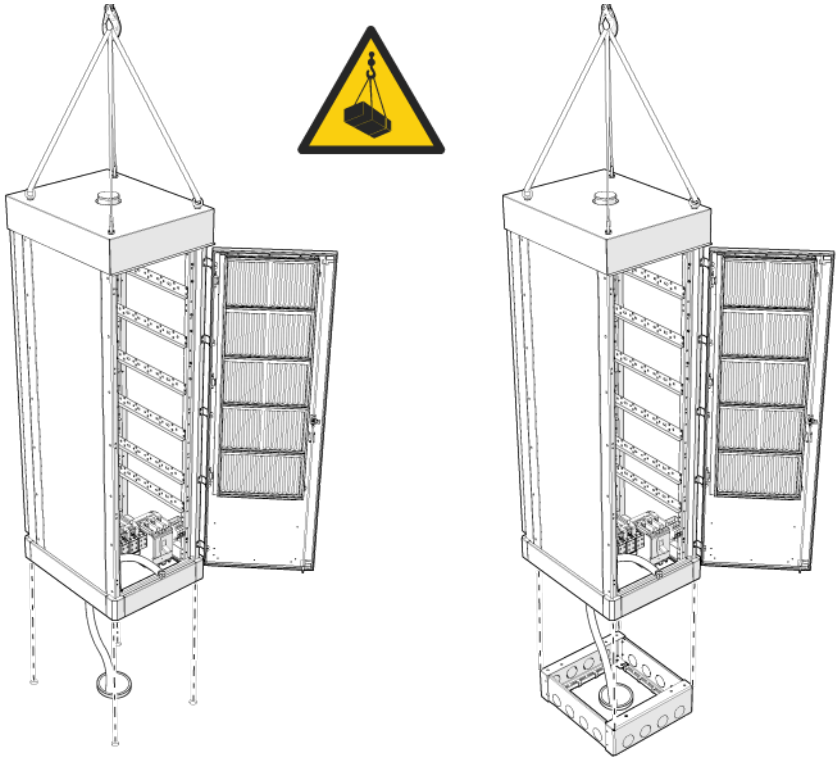


Figure 29. Lifting lugs on a single, double, and triple cabinet

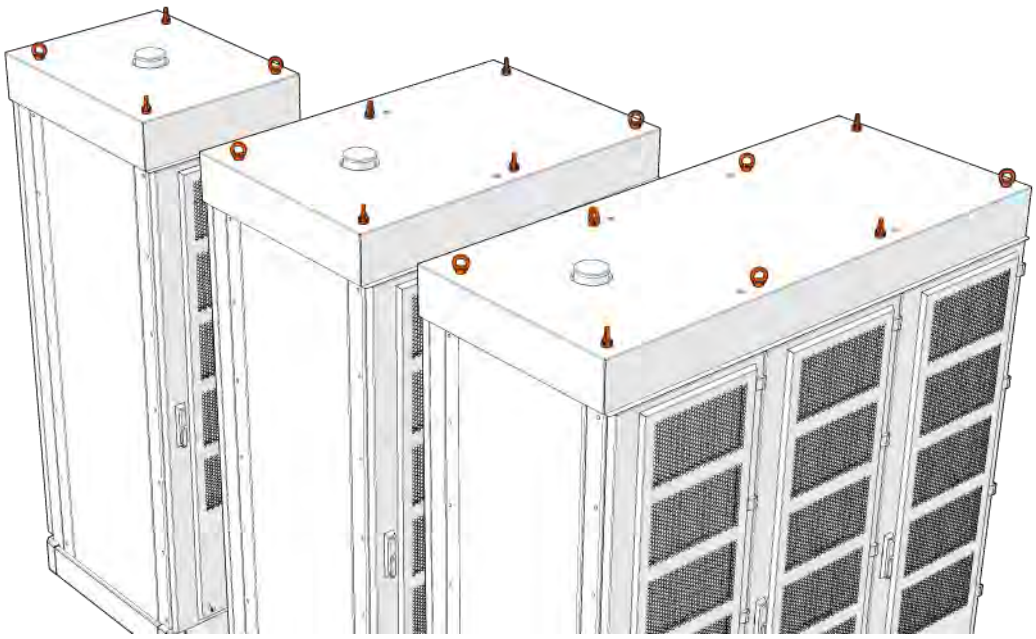
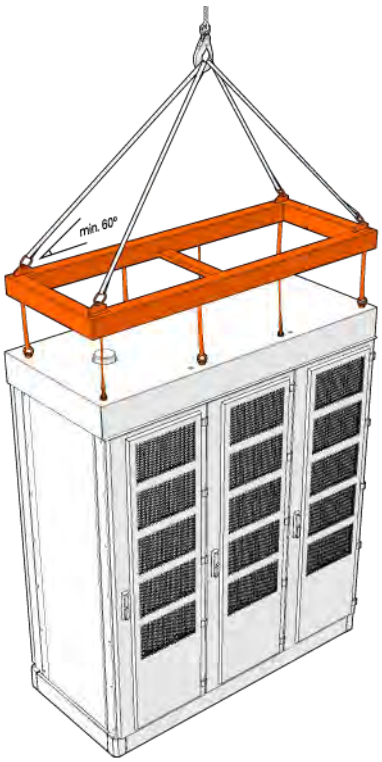


Figure 30. Use all fastening points if you use lifting beams



5.1.5. Moving and lifting Station Charger

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.

NOTICE
The maximum tilting angle of the charging power unit is 6 degrees. High center of gravity.

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

NOTICE
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.

NOTICE
Make sure that you replace the same serial number card to the same cabinet when you install or replace control modules. Each cabinet is identified with its unique serial number in ChargEye.

NOTICE
Do not lift the power module from its guide pins.

NOTE
The power module weighs approximately 43 kg.

NOTE
The power distribution module weighs approximately 32 kg.

Figure 31. Remove the bottom modules before you lift the unit

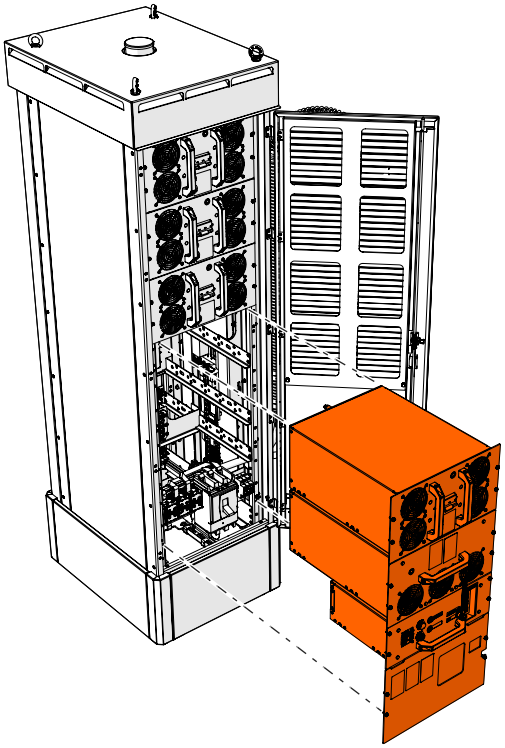


Figure 32. Lifting the unit to be installed on the steel base.

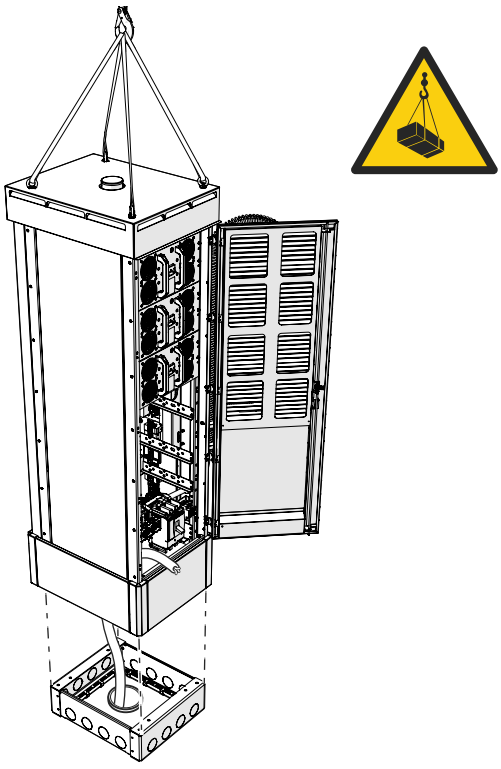


Figure 33. Lifting lugs on a single, double, and triple cabinet

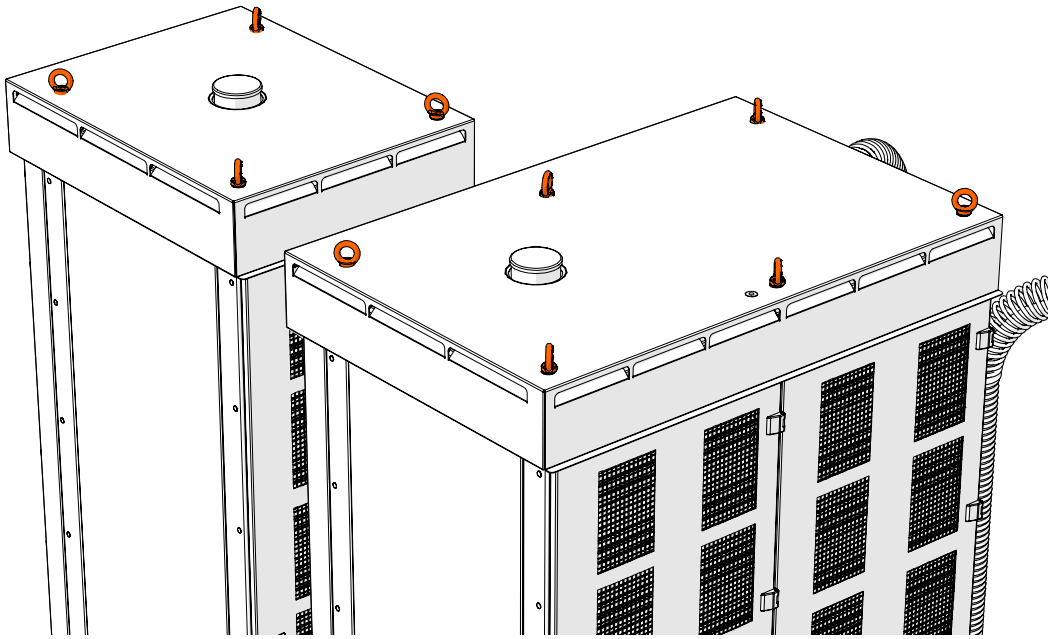
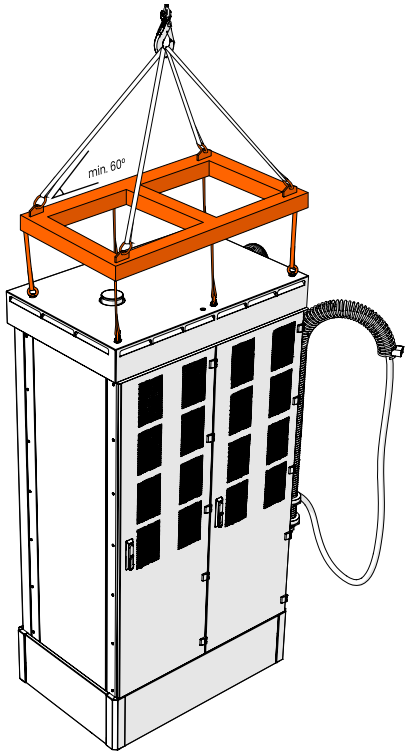


Figure 34. Use all fastening points if you use lifting beams



5.1.6. Moving and lifting Satellite

NOTICE
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.

NOTICE
Two persons are needed for this task.

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

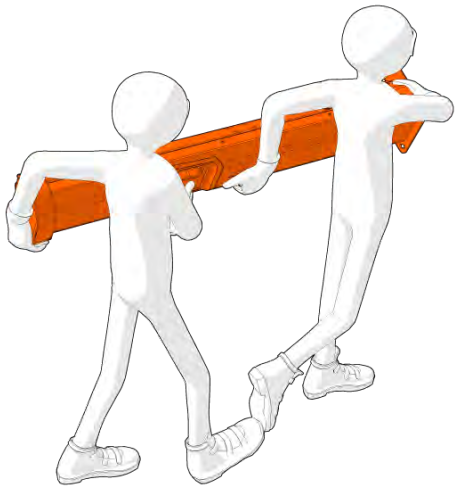
NOTICE
The AC Satellite frame weighs approximately 36 kg without the charging cables and support springs.

NOTICE
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

The AC Satellite is shipped in a crate. If the AC Satellite has charging cables, they are packed in the same crate with the support springs. The charging cables and support springs are not installed on the unit at the factory.

Figure 35. Moving the Satellite



5.1.7. Moving and lifting Liquid Cooled Satellite

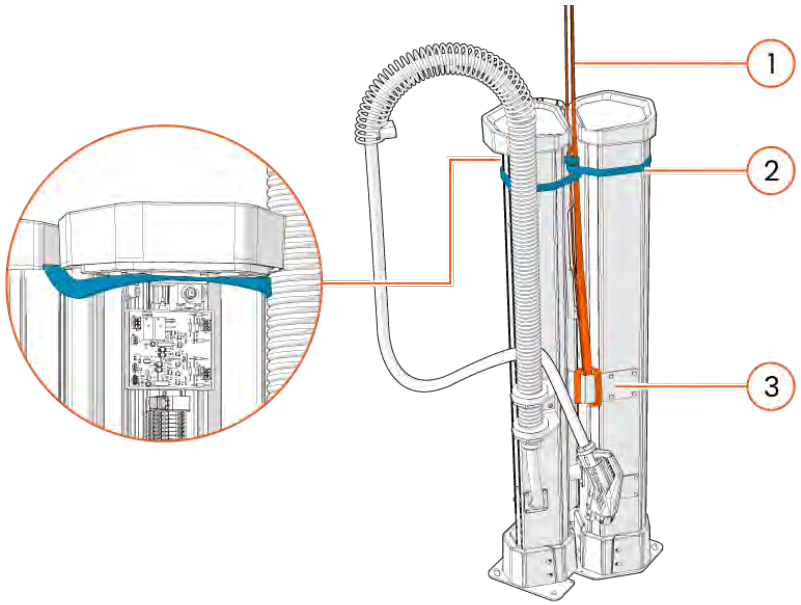
NOTICE
The Liquid Cooled Satellite is shipped upright in a crate. The total weight is approximately 150 kg. Use appropriate lifting equipment operated by qualified professionals.

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 refilliing.

The Liquid Cooled Satellite weighs approximately 150 kg and must be lifted to its installation position with lifting equipment and straps. See Figure 36.

Figure 36. Lifting points of the Liquid Cooled Satellite



1	Lifting strap	3	Fastener between frames
2	Fastening strap		

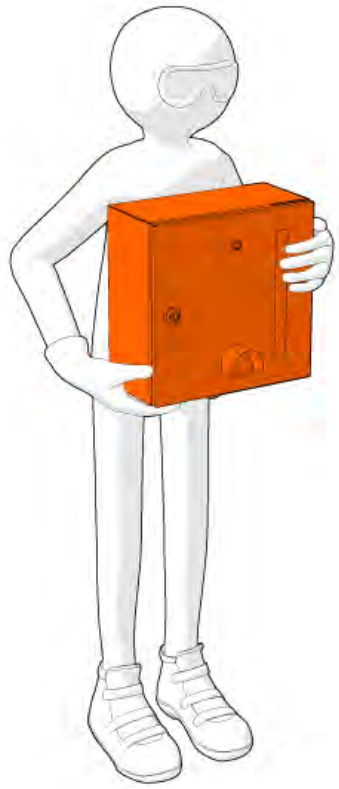
5.1.8. Moving and lifting Control Unit

NOTICE
The Control Unit frame weighs approximately 12.5 kg without the charging cable.

The Control Unit is shipped in two boxes, one for the unit and another for the charging cables. The charging cables are not installed on the unit at the factory.

The weight of the Control Unit box is less than 15 kg and the weight of the charging cable box is less than 22 kg so they can be lifted without lifting equipment.

Figure 37. Lifting the Control Unit



5.1.9. Installing the charging power unit

CAUTION
The module rails inside the cabinet have sharp edges. Be careful when removing and installing modules.

NOTICE
Make sure that the AC mains power cables have been routed to the foundation or installation location before you install the units in place. The distance from the bottom of the cabinet to the bottom of the AC terminal blocks is approximately 290 mm.

NOTICE
Make sure that the installation surface is solid and as level as possible.

NOTICE
Make sure that the door of the unit has space to open when the unit is in position.

NOTICE
Two persons are needed for this task.

NOTE
Use four M12 anchor bolts or equivalent per cabinet.

1. Drill the fixing holes. See 9: Unit footprints and clearances.
2. Install the fixing anchors in place. If necessary, use epoxy or equivalent to fasten them.
3. Make sure that the installation level is horizontal. If necessary, use appropriate washers.
4. To make cable routing easier, strap the power and control cables together with electric tape or equivalent.
5. If the steel base is used, install it in place.
   - Note the cable routes and open the necessary knock-out holes of the steel base.
   - Use cable bushings or file the sharp metal edges of the knock-out holes to protect the cables from damages.
   - Route the cables into the steel base.

     NOTICE
     Do not exceed the bending radius of the cable given by the cable manufacturer.

6. Fasten the door(s) of the unit in the open position with duct tape or equivalent.

7. Remove the control module, the power distribution module, the bottom power module, and the front panel of the mains module from each cabinet. Lift the unit to its installation position. See 5.1.3: Moving and lifting Power Unit.

   WARNING
   Do not go under the unit when it is lifted.

   CAUTION
   The module rails inside the cabinet have sharp edges. Be careful when removing and installing modules.

   NOTE
   The power distribution module weighs approximately 32 kg.

   NOTE
   The power module weighs approximately 43 kg.

   NOTICE
   Make sure that you replace the same serial number card to the same cabinet when you install or replace control modules. Each cabinet is identified with its unique serial number in ChargEye.

8. Before the unit is set down, through the door guide the cables inside the unit. Make sure that cables are not caught between the unit and the installation surface.

   NOTICE
   Do not exceed the bending radius of the cable given by the cable manufacturer.

9. Install the unit on the fixing anchors or onto the steel base.
   - Make sure that the unit is horizontally level.
   - If you are using a concrete base, prevent ground moisture from rising into the unit. When the installation is finished, fill the base with granular clay or equivalent.

10. If the electrical installation is done immediately after the mechanical installation, do not install the removed modules and front panel of the mains module back into the unit. See 5.2: Electrical installation. Otherwise, carefully push the modules back into the unit and install the front plate of the mains module in place.

    CAUTION
    The module rails inside the cabinet have sharp edges. Be careful when removing and installing modules.

NOTICE
Do not lift the power module from its guide pins.

NOTICE
Make sure that the module's connectors and connector pins are in good operating condition. When you push the module into the unit, be very careful not to damage the connector pins.

5.1.10. Installing Satellite

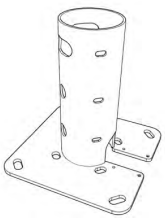
NOTICE
Two persons are needed for this task.

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

NOTICE
Do not exceed the bending radius of the cable given by the cable manufacturer.

NOTE
Use four M16 anchor bolts or equivalent per Satellite installation flange.

Install the Satellite with its installation flange on a stable, hard surface. The installation flange of the Satellite is part of the standard delivery.



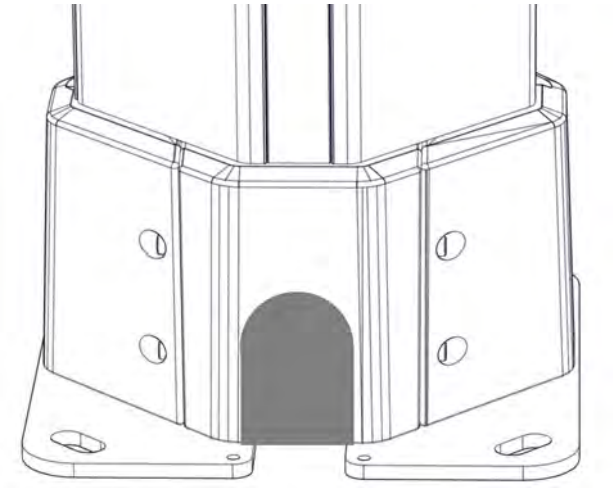
The standard installation flange of the Satellite cannot be used if the Satellite is installed in a concrete element typically used for e.g. lamp posts. In this case, remove the standard installation flange and replace it with the mounting tube (option). See 5.1.10.1: Removing the standard installation flange of the Satellite.

1. Make sure that:
   - The installation flange or mounting tube is tightly fixed to the Satellite.
   - The front panel has room to open when the Satellite is installed.

- The bending radius of the cables is not exceeded when the Satellite is installed.

2. To make cable routing easier, strap the power and control cables together with electric tape or equivalent.
3. Drill the fixing holes. See 9: Unit footprints and clearances.
4. Install the fixing anchors in place. If necessary, use epoxy or equivalent to fasten them.
   - Make sure that the installation level is horizontal. If necessary, use appropriate washers.
5. If the cables are surface-installed, make an opening in the collar on the bottom of the Satellite for routing the cables. See Figure 38.
   - The collar is plastic. Use a suitable tool such as a hole saw.
   - To make installing the cables easier, extend the opening to the bottom edge of the collar.
6. Remove the three security T30H screws and open the front panel of the Satellite. Fasten it in the open position with duct tape or equivalent.
7. Lift the Satellite to the installation position. Before you set the Satellite in place, route the cables into the Satellite through the installation flange or mounting tube.
8. Install the Satellite on the fixing anchors or into the concrete element.
   - Make sure that the unit is horizontally level.
   - If you are using a concrete base, prevent ground moisture from rising into the unit. When the installation is finished, fill the base with granular clay or equivalent.
9. If the Satellite has charging cable(s), install them and their support spring(s) as soon as possible. See 5.1.13: Installing the charging cable to Satellite.
10. Connect the cables. See 5.2: Electrical installation.

Figure 38. Opening in Satellite collar for surface-installed cables



5.1.10.1. Removing the standard installation flange of the Satellite

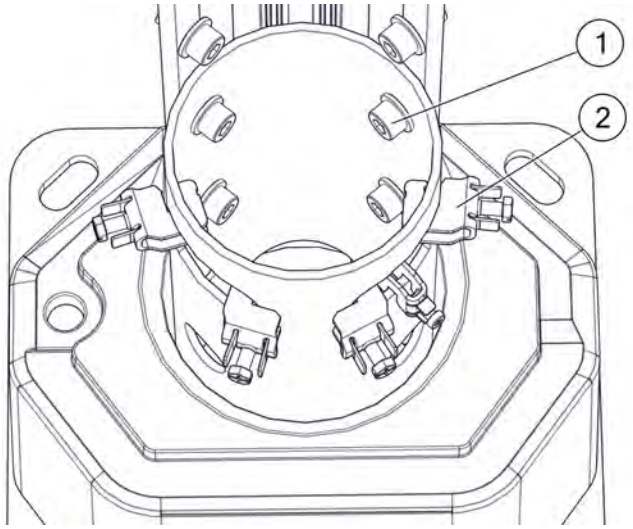
NOTICE
Two persons are needed for this task.

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

- Place the Satellite so that you can open the front panel and slide the standard installation flange out from the bottom of the Satellite.
- Remove the three security T30H screws and open the front panel of the Satellite.
- Remove the busbar connectors from the installation flange.
- Remove the four H8 fixing screws of the installation flange.
- Slide out the installation flange.

Assemble in the reverse order.

Figure 39. Removing the standard installation flange



1 Fixing screws
2 Busbar connectors

5.1.11. Installing Liquid Cooled Satellite

NOTICE
Two persons are needed for this task.

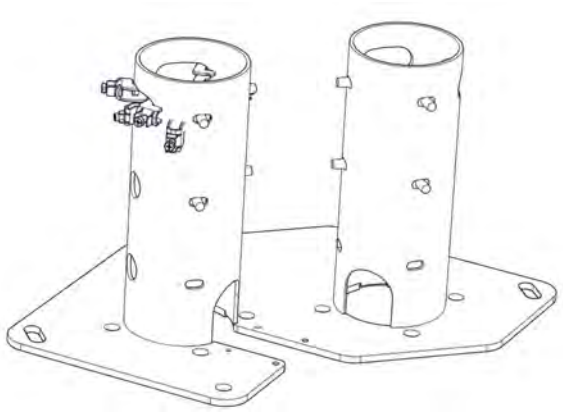
NOTICE
Liquid Cooled Satellite weighs approximately 150 kg. Use appropriate lifting equipment operated by qualified professionals.

NOTICE
Do not exceed the bending radius of the cable given by the cable manufacturer.

NOTE
Use five M16 anchor bolts or equivalent per Liquid Cooled Satellite installation flange.

Install Liquid Cooled Satellite with its installation flange on a stable, hard surface. The tube of the installation flange with the opening for cable routing is for the Liquid Cooled Satellite frame that has the user interface.

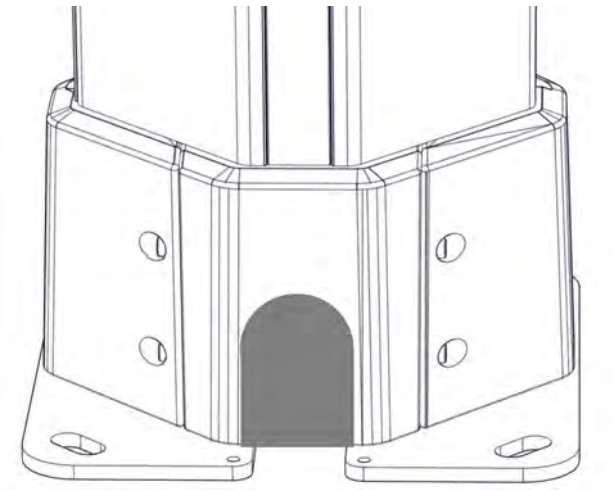
The optional mounting tube cannot be used with Liquid Cooled Satellite.



1. Make sure that:
   - The installation flange is tightly fixed to Liquid Cooled Satellite.
   - The front panel has room to open when Liquid Cooled Satellite is installed.
   - The bending radius of the cables is not exceeded when Liquid Cooled Satellite is installed.
2. The cables are routed to the Liquid Cooled Satellite frame that has the user interface. To make cable routing easier, strap the power and control cables together with electric tape or equivalent.
3. Drill the fixing holes. See 9: Unit footprints and clearances.
4. Install the fixing anchors in place. If necessary, use epoxy or equivalent to fasten them.
   - Make sure that the installation level is horizontal. If necessary, use appropriate washers.

5. If the cables are surface-installed, make an opening in the collar on the bottom of Liquid Cooled Satellite for routing the cables. See Figure 40.
   - The collar is plastic. Use a suitable tool such as a hole saw.
   - To make installing the cables easier, extend the opening to the bottom edge of the collar.
6. Remove the three security T30H screws and open the front panel of Liquid Cooled Satellite. Fasten it in the open position with duct tape or equivalent.
7. Lift Liquid Cooled Satellite to the installation position. Before you set Liquid Cooled Satellite in place, route the cables into Liquid Cooled Satellite through the installation flange.
8. Install Liquid Cooled Satellite on the fixing anchors or into the concrete element.
   - Make sure that the unit is horizontally level.
   - If you are using a concrete base, fill the base with granular clay or equivalent when the installation is finished.
9. Connect the cables. See 5.1.13: Installing the charging cable to Satellite.
10. Connect the cables. See 5.2: Electrical installation.

Figure 40. Opening in Liquid Cooled Satellite collar for surface-installed cables



5.1.12. Installing Control Unit 200 A

DANGER
High-voltage installation. Make sure that the units are correctly isolated and the lockout-tagout (LOTO) procedure completed when necessary during installation, service or maintenance work. Know and obey general and local safety regulations and procedures. Use adequate personal protection equipment (PPE).

NOTICE
The Control Unit frame weighs approximately 12.5 kg without the charging cable.

NOTICE
Do not exceed the bending radius of the cable given by the cable manufacturer.

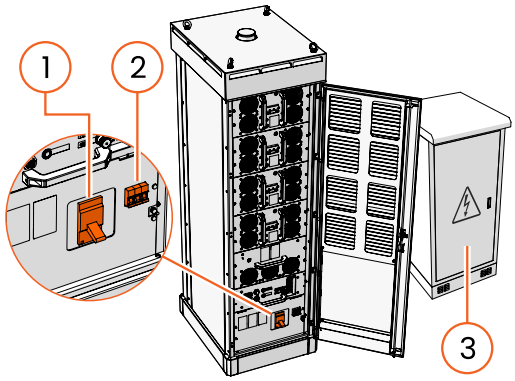
NOTE
See 11: Examples of connecting cables to the Satellites for more information.

1. Unlock and open the door(s) of the charging power unit.

   In each cabinet, set the miniature circuit breaker (MCB) for control voltage (2) and main switch (1) to OFF position.

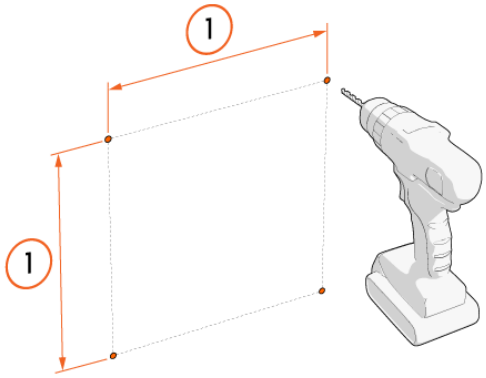
   Disconnect the AC power supply to the unit from the main supply point (3).

   Complete the lockout-tagout (LOTO) procedure.

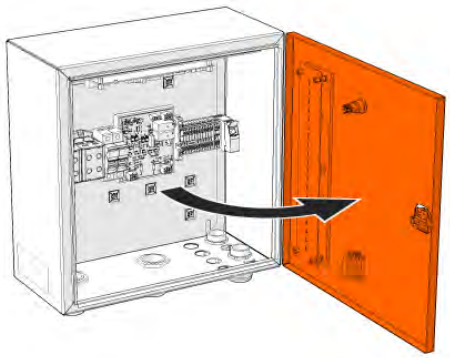


WARNING
After you disconnect the power supply, wait a minimum of two minutes for the capacitors of the power modules to discharge before you continue. Before you start work, measure the voltage of the electrical circuits to make sure that no dangerous voltage remains.

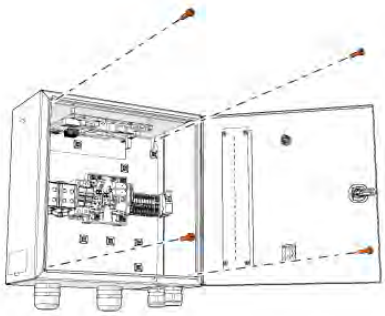
2. Drill the fixing holes (1): 350 x 350 mm.



3. Open the Control Unit door and align the unit with the fixing holes.



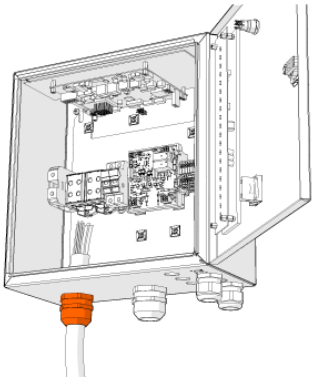
4. Install the fixing screws into place. Make sure that the installation level is horizontal. If necessary, use appropriate washers.



NOTICE
6 mm fixing screws are recommended for wall-mounted installations. Use 8 mm fixing screws for more challenging installations.

5. Route the charging cable into the unit. Make sure that the wires reach the terminals.

   Tighten the cable bushing.

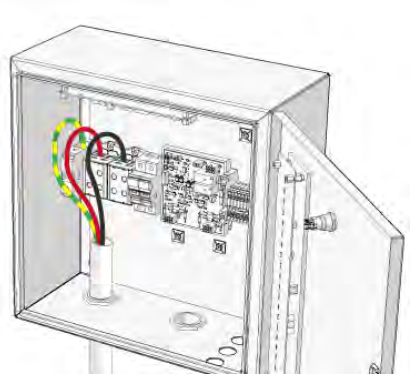


6. Connect the charging cable wires to the terminals.

   Tighten each screw terminal to the correct torque.

   - 6–25 mm^2: 12 Nm
   - 35–95 mm^2: 22 Nm

   NOTICE
   Do not exceed the bending radius of the cable given by the cable manufacturer.

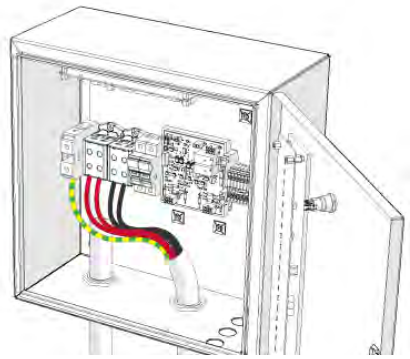


7. Route the supply cable into the unit and connect the wires to the terminals.

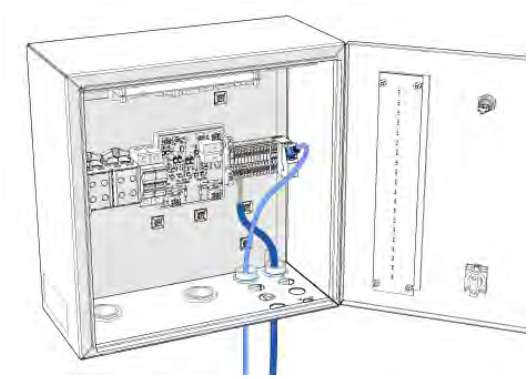
   Tighten each screw terminal to the correct torque.

   - 6–25 mm^2: 12 Nm
   - 35–95 mm^2: 22 Nm

   NOTICE
   Do not exceed the bending radius of the cable given by the cable manufacturer.

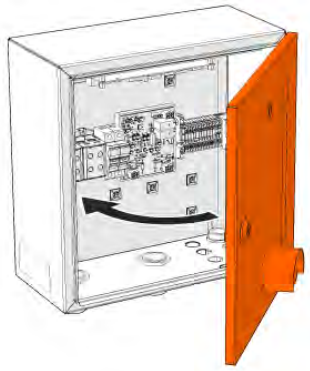


8. Route the control cable into the unit and connect the wires to the terminals.



> **NOTICE**
> Do not exceed the bending radius of the cable given by the cable manufacturer.

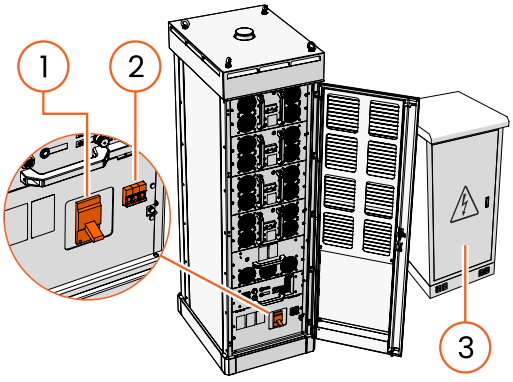
9. Close the Control Unit door.



10. Connect the AC power supply to the unit from the main supply point (3).

    In each cabinet, set the miniature circuit breaker (MCB) for control voltage (2) and main switch (1) to ON position.

    Lock the door(s) of the unit.



5.1.13. Installing the charging cable to Satellite

NOTICE
Install the charging cables a s soon as possible to prevent dust or water getting inside the Satellite.

NOTICE
Do not remove the packaging of the vehicle connector before installation. It protects the vehicle connector from damages.

NOTICE
When you install charging equipment in environments that have large temperature variations, schedule a site visit to examine and adjust the tightening torques of the terminal blocks when the temperature is significantly higher or lower than at the time of installation. Ambient temperature variations cause wires to expand and contract.

NOTE
See also 12: Control signal wires of the charging cable.

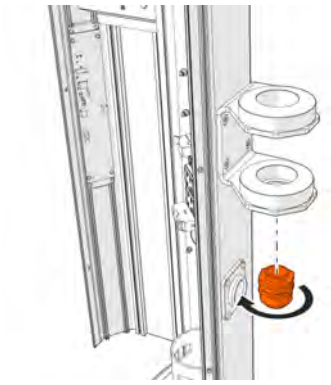
1. Tape the wire ends of the charging cable to avoid fraying.

2. Pull the charging cable through its support spring until approximately 400–600 mm (1) of the charging cable remains outside of the support spring.

   NOTE
   If necessary, use the draw tape and lubricant to pull the cable.

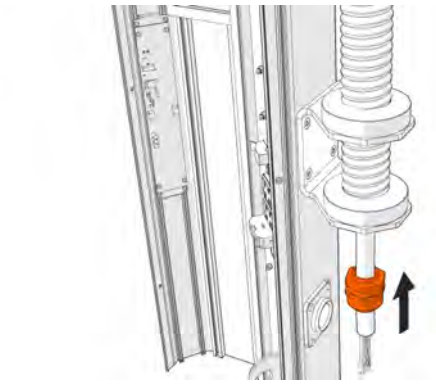
3. To make the handling of the charging cable and support spring easier during installation, you can temporarily lock the charging cable inside its support spring. The size of the cable clamp's nuts is M10.

4. Remove the cable bushing from the spring holder.

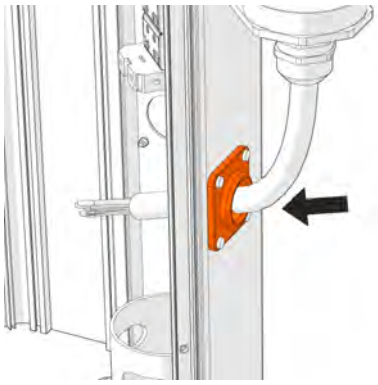


5. Lift the support spring with the charging cable into the spring holder.

6. First install the cable bushing and then the hose clamp on the charging cable.

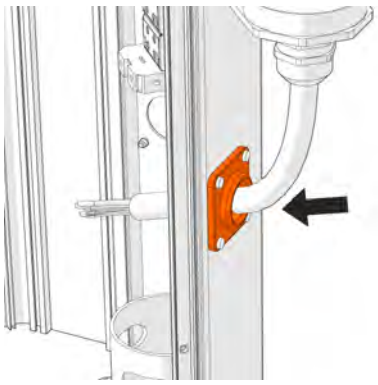


7. Route the charging cable inside the unit through the rubber grommet. Make sure that the part of the charging cable inside the unit has:
   - Approximately 50 mm of insulation
   - Approximately 350–550 mm of stripped wire



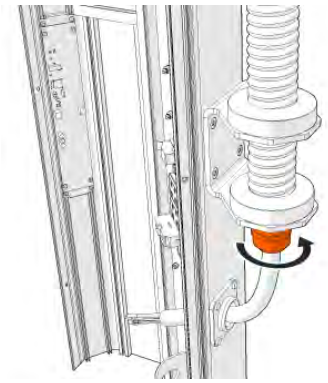
8. Make sure that the wires reach the terminals.

9. Make sure that the rubber grommet's seal sets correctly on the charging cable:
   - Push the charging cable slightly inside the unit so that the seal goes inside the unit.
   - Tighten the seal in place with the hose clamp.



10. Tighten the cable bushing of the charging cable below the spring holder.

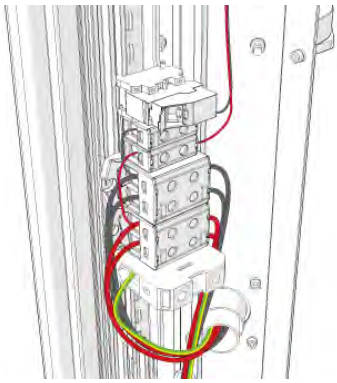
    - Depending on the charging cable, the size of the cable bushing is 55–68 mm



11. Connect the wires to the terminals.

> **NOTE**
> Tighten each screw terminal to the correct torque. The tightening torque is marked on the terminal block.

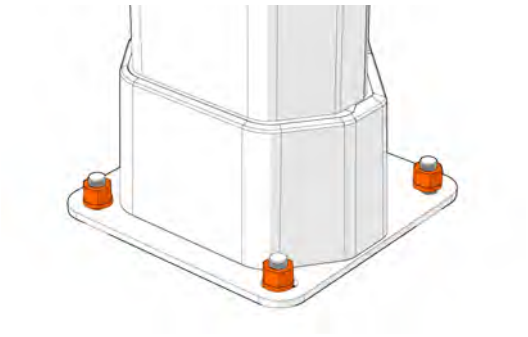
> **NOTE**
> For the control signal wire colors of different charging cables, see 12: Control signal wires of the charging cable.



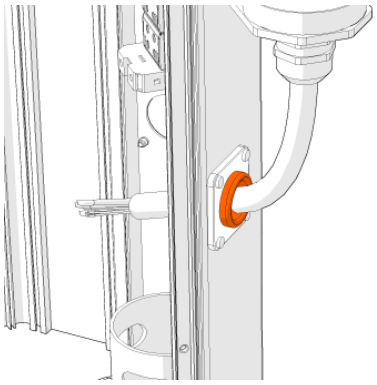
12. Lock the charging cable in place inside its support spring. See 5.1.13.1: Locking the charging cable inside its support spring.

> **NOTICE**
> Do not overtighten the cable clamp. Overtightening damages the charging cable.

13. Make sure that the Satellite is firmly secured to the installation surface.



14. Examine the seal of the charging cable in the rubber grommet. If necessary, apply flexible polyurethane sealant to waterproof the opening.



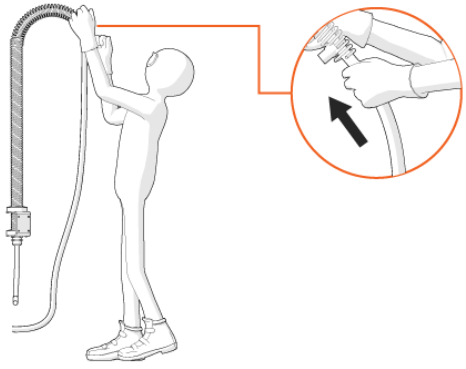
5.1.13.1. Locking the charging cable inside its support spring

> **NOTE**
> Use method A or method B to lock the charging cable in place inside its support spring.

1. **Method A**

   Make sure that the cable bushing below the spring holder is correctly tightened.

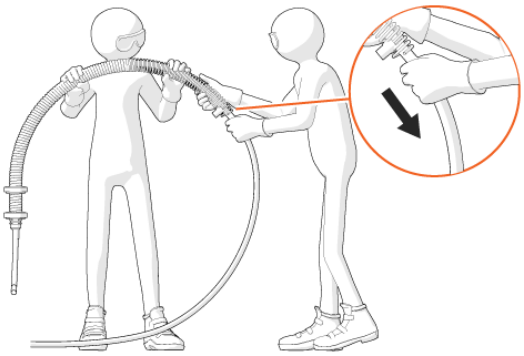
   Push the charging cable into its support spring so that it touches the top side of the support spring



Method B

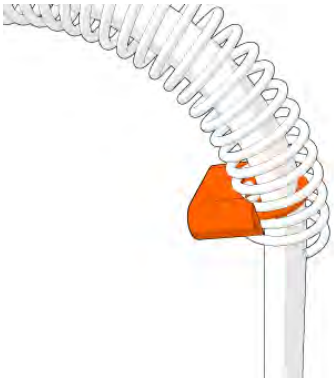
Make sure that the cable bushing below the spring holder is correctly tightened.

Have another person hold the support spring in an extended position. Pull the charging cable from the support spring.



2. Tighten the cable clamp to lock the charging cable in place inside its support spring.

   The size of the cable clamp's nuts is M10.

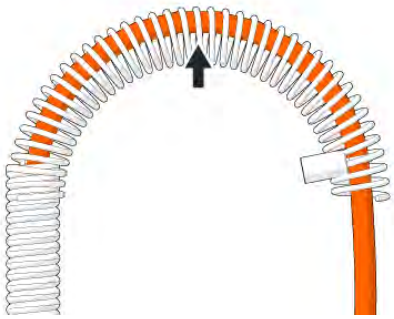


> **NOTICE**
> Have the cable clamp's locking part face toward the inside bend of the charging cable to avoid it hitting the vehicle during charging.

> **NOTICE**
> Do not overtighten the cable clamp. Overtightening damages the charging cable.

3. Make sure that the charging cable is in contact with the top part of its support spring when it is not in use.

   This protects the charging cable from chafing against its support spring or the cable gland when it is extended.



5.2. Electrical installation

DANGER
High-voltage installation. Make sure that the units are correctly isolated and the lockout-tagout (LOTO) procedure completed when necessary during installation, service or maintenance work. Know and obey general and local safety regulations and procedures. Use adequate personal protection equipment (PPE).

NOTICE
Prevent the AC and DC power cables from crossing to minimize electro-magnetic compatibility (EMC) disturbances.

NOTICE
Do not exceed the bending radius of the cable given by the cable manufacturer.

NOTICE
When you install charging equipment in environments that have large temperature variations, schedule a site visit to examine and adjust the tightening torques of the terminal blocks when the temperature is significantly higher or lower than at the time of installation. Ambient temperature variations cause wires to expand and contract.

NOTE
Route the cables to all units from below the unit.

NOTE
Tighten each screw terminal to the correct torque. The tightening torque is marked on the terminal block.

5.2.1. Preparing for the installation

NOTICE
Make sure that you have the necessary electrical design documentation before you start the installation.

NOTICE
The electrical installation must be done in dry conditions. If necessary, weatherproof the installation area before you start the installation.

NOTICE
Two persons are needed for this task.

NOTE
The power module weighs approximately 43 kg.

NOTE
The power distribution module weighs approximately 32 kg.

If they are inside the unit, remove the control module, the power distribution module, the bottom power module, and the front panel of the mains module to make space for installing the cables. Keep the modules clean and dry.

Keep the AC mains supply disconnected and the main switch in the OFF position until:

- All cables are connected to the terminals in the charging power unit.
- All electrical safety measurements required by local laws and regulations are done.

5.2.2. Terminal blocks (charging power units manufactured before 6/2023)

NOTICE
If the Station Charger has an optional AC charging output, it requires a neutral wire (TN-C-S network).

The terminal blocks for the AC mains power cables and protective earth (PE) are located in the front of the cabinet, next to the main switch.

The neutral wire is only used in the Station Charger if it has an optional AC charging output (TN-C-S network). Connect the neutral wire to the cabinet's neutral wire terminal block (N) that is located on a DIN rail behind the terminal blocks for the AC supply power cables.

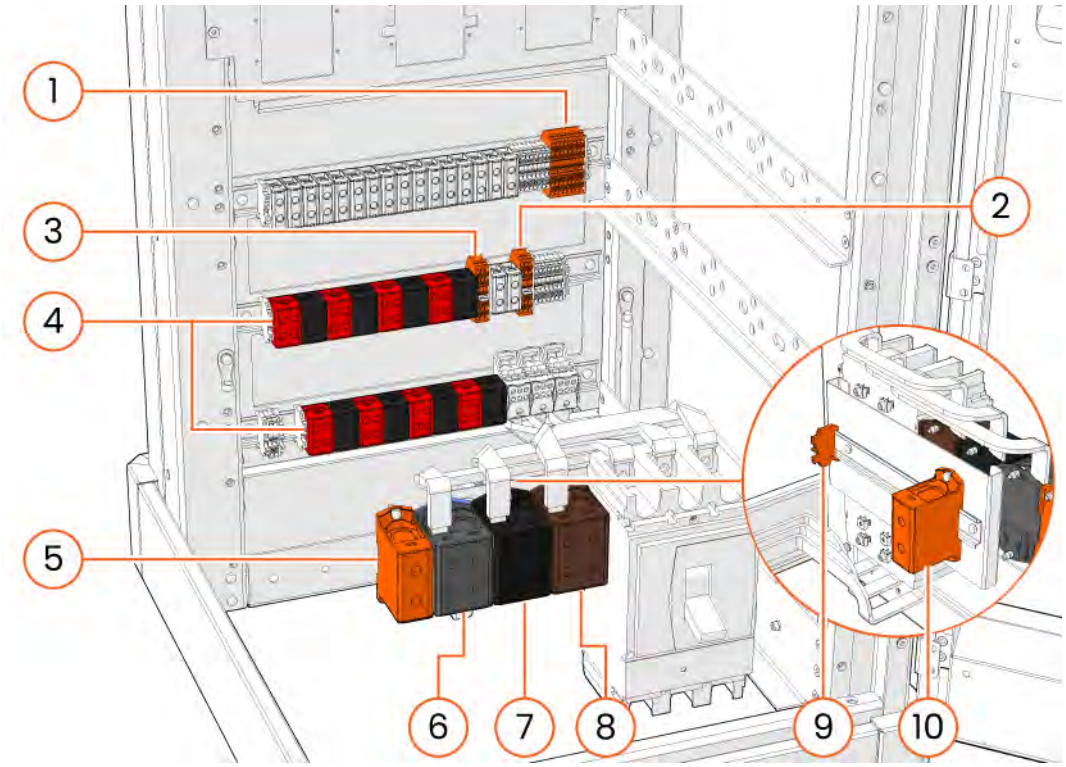
If your network cable has a neutral wire but the Station Charger does not have an AC charging output (TN-C network), connect the neutral wire to the cabinet's neutral wire terminal block (N) to keep the wire securely in place. Do not connect the neutral wire to earth in the cabinet.

The neutral wire is not used in the Power Unit (TN-C network). If your network cable has a neutral wire, connect it to the cabinet's neutral wire terminal block (N) to keep the wire securely in place. Do not connect the neutral wire to earth in the cabinet.

The fasteners for the Ethernet terminals are located on a DIN rail next to the neutral wire terminal block behind the terminal blocks for the AC supply power cables.

The terminal blocks for the DC output power cables (max. 50 mm^2) and control cable wires are located on DIN rails at the back of the cabinet.

Figure 41. Terminal blocks in the charging power unit (max. DC output 50 mm²)



1	Control cable signal wires	6	AC supply power cable phase 1 (L1)
2	Control cable ground wires (0 V)	7	AC supply power cable phase 2 (L2)
3	Control cable auxiliary power wires (+24 V)	8	AC supply power cable phase 3 (L3)
4	DC output power cables (red +, black -)	9	Fasteners for Ethernet terminal blocks
5	Protective earth (PE)	10	Neutral (N)

5.2.3. Terminal blocks (charging power units manufactured after 6/2023)

NOTICE
If the Station Charger has an optional AC charging output, it requires a neutral wire (TN-C-S network).

The terminal blocks for the AC mains power cables and protective earth (PE) are located in the front of the cabinet, next to the main switch.

The neutral wire is only used in the Station Charger if it has an optional AC charging output (TN-C-S network). Connect the neutral wire to the cabinet's neutral wire terminal block (N) that is located on a DIN rail behind the terminal blocks for the AC supply power cables.

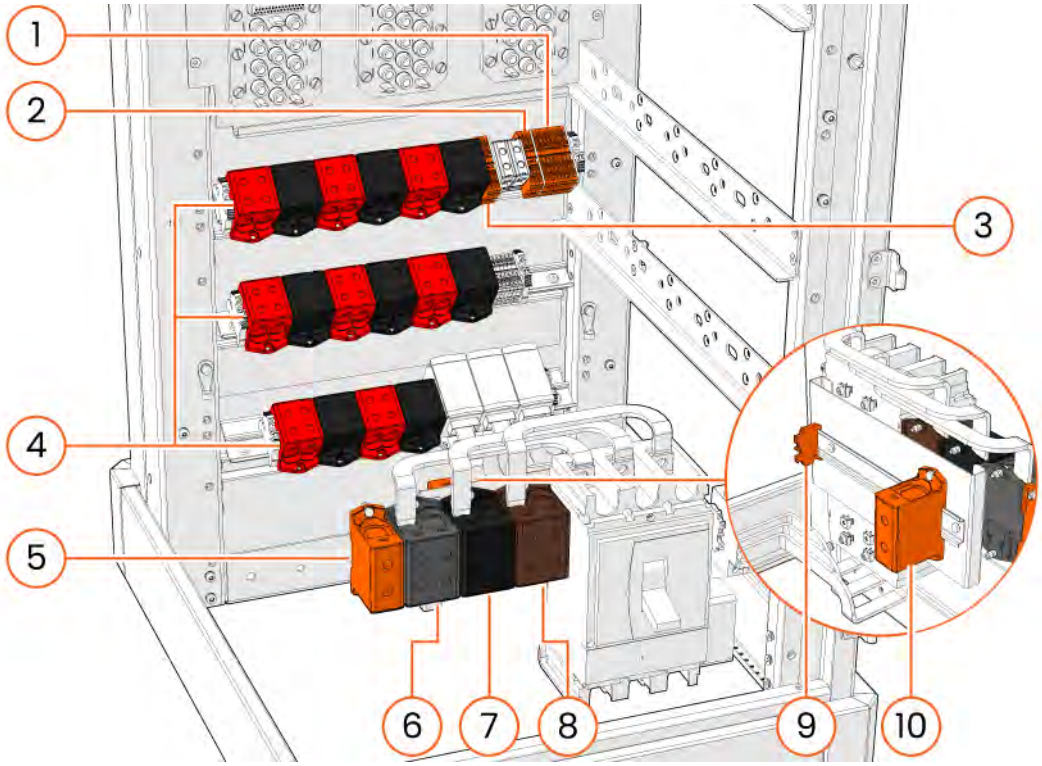
If your network cable has a neutral wire but the Station Charger does not have an AC charging output (TN-C network), connect the neutral wire to the cabinet's neutral wire terminal block (N) to keep the wire securely in place. Do not connect the neutral wire to earth in the cabinet.

The neutral wire is not used in the Power Unit (TN-C network). If your network cable has a neutral wire, connect it to the cabinet's neutral wire terminal block (N) to keep the wire securely in place. Do not connect the neutral wire to earth in the cabinet.

The fasteners for the Ethernet terminals are located on a DIN rail next to the neutral wire terminal block behind the terminal blocks for the AC supply power cables.

The terminal blocks for the DC output power cables (max. 150 mm^2) and control cable wires are located on DIN rails at the back of the cabinet.

Figure 42. Terminal blocks in the charging power unit (max. DC output 150 mm²)

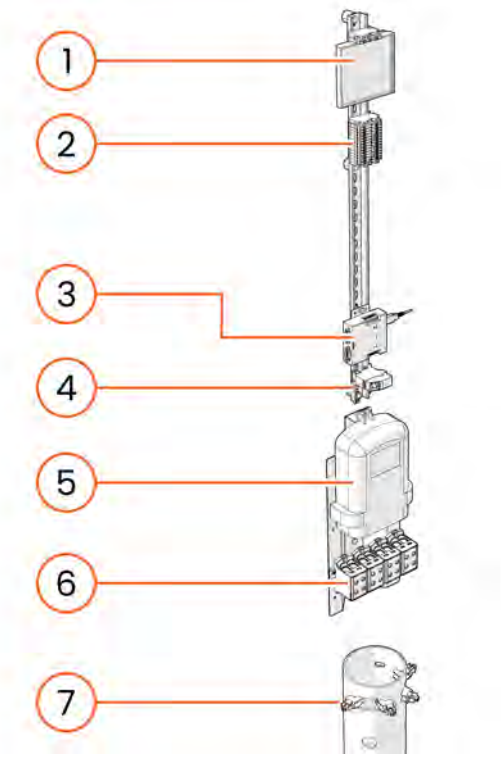


1	Control cable signal wires	6	AC supply power cable phase 1 (L1)
2	Control cable ground wires (0 V)	7	AC supply power cable phase 2 (L2)
3	Control cable auxiliary power wires (+24 V)	8	AC supply power cable phase 3 (L3)
4	DC output power cables (red +, black -)	9	Fasteners for Ethernet terminal blocks
5	Protective earth (PE)	10	Neutral (N)

5.2.4. Terminal blocks (Satellite Version 2)

See also 10: Examples of connecting output and control cables to charging points and 11: Examples of connecting cables to the Satellites.

Figure 43. Terminal blocks in the single Satellite Version 2



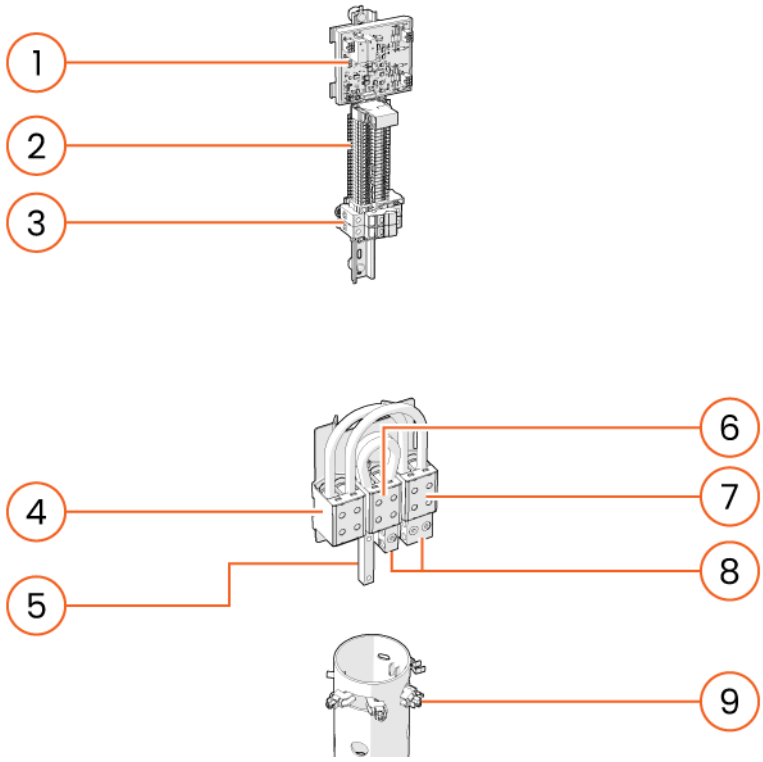
1	Voltage and insulation monitor	5	kWh meter
2	Terminal blocks for control cable	6	Terminal blocks for DC power cables (2 x 150 mm^2 screw terminal)[a]
3	USB converter	7	Protective earth (PE) clamps
4	Terminal block RJ45		

[a] *Input left, output right*

5.2.5. Terminal blocks (Liquid Cooled Satellite)

See also 10: Examples of connecting output and control cables to charging points and 11: Examples of connecting cables to the Satellites.

Figure 44. Terminal blocks in the single Liquid Cooled Satellite

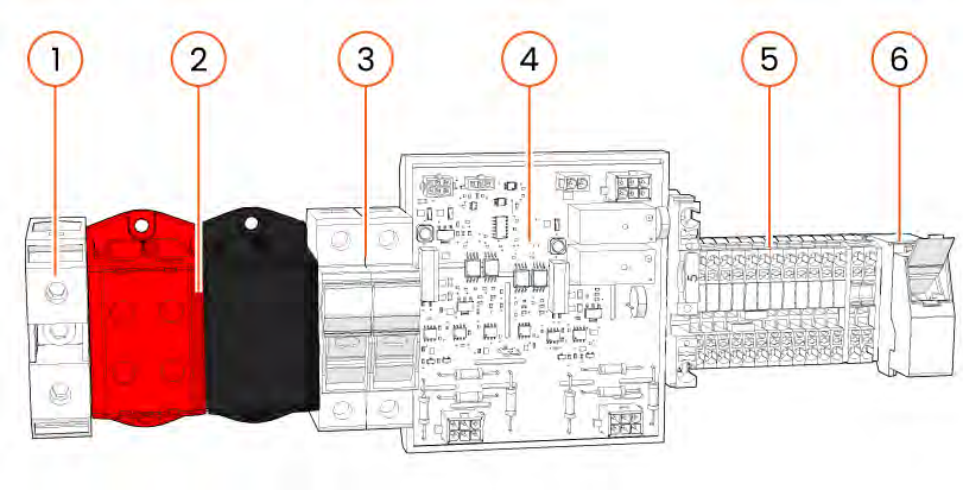


1	Voltage and insulation monitor	6	DC- IN and DC- OUT for charging cable
2	Terminal blocks for control cable	7	DC+ OUT for charging cable
3	Charging voltage measurement fuse block (1000 VDC)	8	Connection wiring cooling blocks
4	DC+ IN from Power Unit (2 x 240 mm^2 screw terminal)	9	Protective earth (PE) clamps
5	DC- IN from Power Unit (copper terminal bar with D10 mm holes)		

5.2.6. Terminal blocks (Control Unit 200 A)

See also 10: Examples of connecting output and control cables to charging points and 11: Examples of connecting cables to the Satellites.

Figure 45. Terminal blocks in the Control Unit 200 A with CCS cables



1	Terminal block for (power cable) PE wires	4	Voltage and insulation monitor
2	Terminal blocks for DC power cable (2 x 95 mm^2 screw terminal)	5	Terminal blocks for control cable
3	DC voltage measurement fuses	6	Terminal block RJ45

5.2.7. Installing Station Charger cables

NOTE
The neutral wire (N) is required if Station Charger has an AC charging output (TN-C-S network). The terminal for the neutral wire (N) is located behind the AC supply terminals. The neutral wire can be aluminum or copper.

Station Charger is delivered with the charging cables installed.

Installing the AC supply cables, see 5.2.8: Installing the AC mains power cables to the charging power unit.

If you are connecting additional charging points to the Station Charger, see:

- 5.2.9: Installing the DC output power cables
- 5.2.10: Installing the control cables

5.2.8. Installing the AC mains power cables to the charging power unit

DANGER
Before you install any of the cables of the charging equipment, make sure that the main AC supply power is not connected. Risk of electric shock.

CAUTION
To keep the isolation of the cables intact, make sure that each individual phase cable is at a sufficient distance from the cabinet's frame.

NOTICE
Use ferrules for terminating fine-stranded wires (IEC 60228 class 5 and 6 or equivalent).

NOTICE
If the Station Charger has an optional AC charging output, it requires a neutral wire (TN-C-S network).

NOTE
Tighten each screw terminal to the correct torque. The tightening torque is marked on the terminal block.

All terminals are labeled for identification.

There are two screw terminals for each phase. The maximum wire size of the terminal is 240 mm^2.

Phases 1–3 (L1, L2, L3) and neutral (N) can be aluminum or copper wires. We recommend using copper wire for protective earth (PE).

5.2.8.1. Units manufactured after 3/2023

NOTE
In double and triple cabinet units manufactured after 3/2023, the AC supply terminal blocks of the cabinets are not jumpered together at the factory. If you install jumpers, one cabinet's main switch does not shut off the power in the other cabinet(s) of the unit. You must mark the units clearly to indicate the danger.

When the AC supply terminal blocks of the cabinets are not jumpered together:

- In single cabinet units, connect at maximum two AC mains power cables to one cabinet.
- In double and triple cabinet units, connect one AC mains power cable to each cabinet.

- If you install jumpers, obey the specifications for units manufactured before 3/2023.

5.2.8.2. Units manufactured before 3/2023

NOTE
In double and triple cabinet units manufactured after 3/2023, the AC supply terminal blocks of the cabinets are not jumpered together at the factory. If you install jumpers, one cabinet's main switch does not shut off the power in the other cabinet(s) of the unit. You must mark the units clearly to indicate the danger.

- You can remove the jumpers on site. In this case obey the specifications for units manufactured after 3/2023.
- When the AC supply terminal blocks of double cabinets are jumpered together, connect one AC mains power cable to one of the cabinets.
- When the AC supply terminal blocks of triple cabinets are jumpered together, connect one AC mains power cable to each of the end cabinets. Do not connect an AC mains power cable to the middle cabinet.

5.2.9. Installing the DC output power cables

NOTICE
Prevent the AC and DC power cables from crossing to minimize electro-magnetic compatibility (EMC) disturbances.

NOTICE
Use ferrules for terminating fine-stranded wires (IEC 60228 class 5 and 6 or equivalent).

NOTE
Label the cables clearly at both ends. Documenting which output supplies which charging point helps with later troubleshooting.

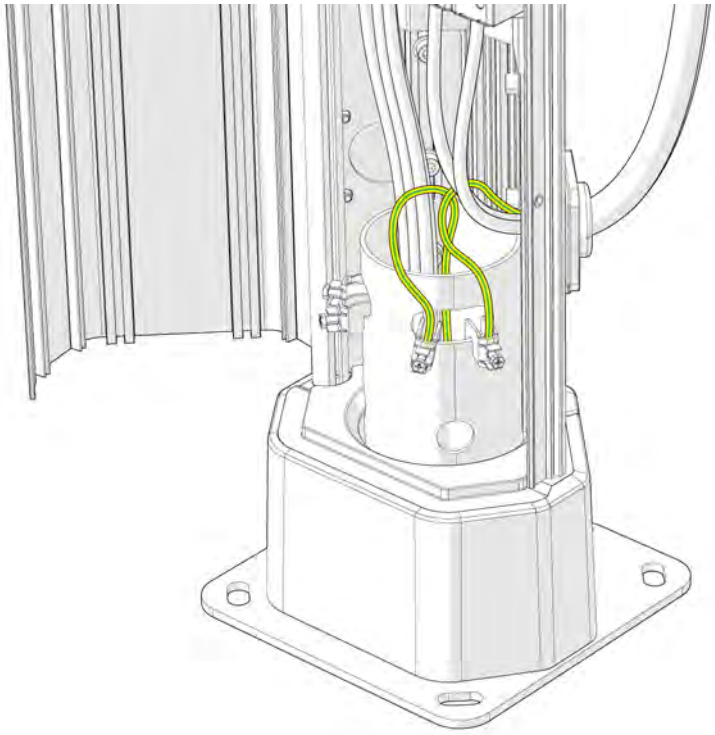
NOTE
Tighten each screw terminal to the correct torque. The tightening torque is marked on the terminal block.

NOTE
After you connect the cables to the screw terminals, make sure that the voltage measurement wires are still correctly connected.

The DC output power cable can be shielded or non-shielded. Non-shielded cables must have 5 wires (2 x DC+, 2 x DC-, PE).

Connect the PE wires in the Satellite to the installation flange using the PE clamps. The PE clamps are included in the delivery, in a plastic bag.

Figure 46. Connecting the PE wires to the installation flange using PE clamps



The terminals are numbered and labeled. Start from terminal 1 in the cabinet and continue in ascending order. If there are more terminals than cables, leave the last ones empty.

See also 10: Examples of connecting output and control cables to charging points and 11: Examples of connecting cables to the Satellites.

5.2.10. Installing the control cables

NOTE
Label the cables clearly at both ends. Documenting which output supplies which charging point helps with later troubleshooting.

The control cable between the charging power unit and the charging point consists of the following:

- Signal line (CT)
  - Single Satellite (one vehicle connector): terminal block CT A (CT A and CT B are jumpered together)
  - Double Satellite Version 2 (two vehicle connectors): terminal blocks CT A and CT B

- DC auxiliary power wire for the user interface of the Satellite (+24 V)
  - If the distance between the charging power unit and the charging point is more than 50 m, use two parallel auxiliary power wires to compensate for voltage drop.
  - Ground the cable shield at the charging power unit end.
- Ground wire (0 V)

See also 10: Examples of connecting output and control cables to charging points and 11: Examples of connecting cables to the Satellites.

5.2.11. Installing the communication cables

NOTICE
Do not make holes or openings in the cabinet structure for the cables. Do not route the cables through the connectors or cooling outlets behind the modules. Changes or modifications, unless specifically agreed upon with Kempower, will void the warranty.

NOTE
Each Satellite must have its own communication cable.

NOTE
Ground the Ethernet shield at one end only, either at the charging point or near the Ethernet switch of the charging power unit.

Included in the delivery (inside the Satellite)

- Clip-type Ethernet terminal blocks for the charging power unit and the charging point
- RJ45 connectors
- Extension Ethernet cable between the Ethernet terminal block and the Ethernet switch in the control module

Not included in the delivery

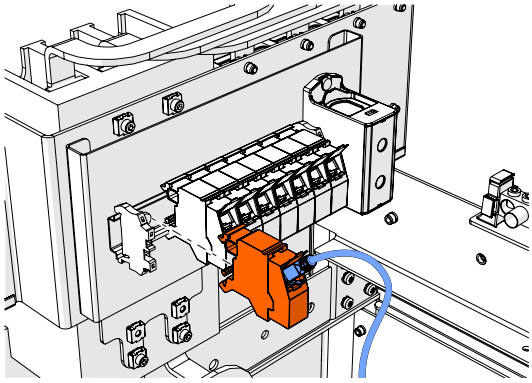
- Ethernet SuperCAT 6 cable, shielded

5.2.11.1. Charging power unit

1. Terminate the Ethernet cable wires with the RJ45 connectors.
   - The connector wiring scheme is standard T-568B.

> **NOTE**
> The Ethernet cable is not included in the delivery.

2. Install the Ethernet terminal block(s) on the DIN rail behind the charging power unit's main switch.



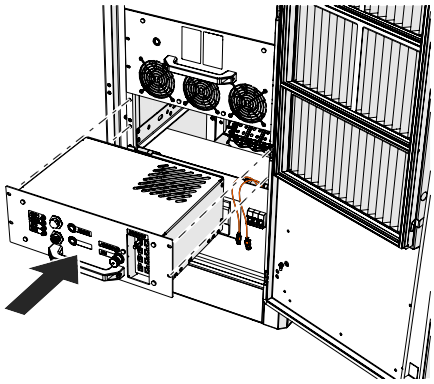
3. Connect the Ethernet cable from each Satellite to the Ethernet terminal block of the charging power unit using the RJ45 connector.

> **NOTE**
> Make sure that the cables are clearly labelled. This helps with later troubleshooting.

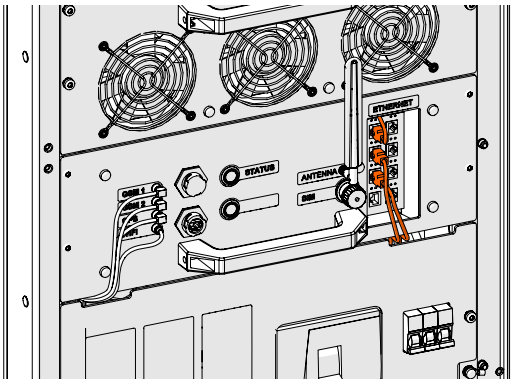
4. Install the extension Ethernet cable to the Ethernet terminal block.

5. Install the control module back in the charging power unit.

> **NOTE**
> Route the cables through the openings between the mains module and the control module.



6. Connect the extension Ethernet cable from the Ethernet terminal block on the DIN rail to any port of the Ethernet switch in the front face of the control module.

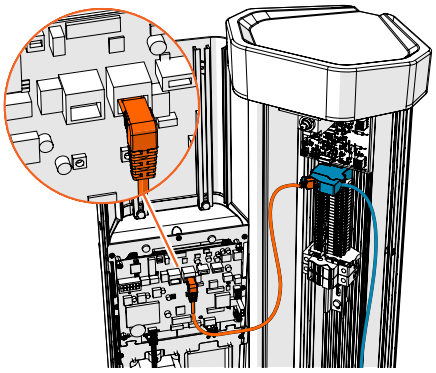


5.2.11.2. Satellite

1. Terminate the Ethernet cable wires with the RJ45 connectors.
   - The connector wiring scheme is standard T-568B.

> **NOTE**
> The Ethernet cable is not included in the delivery.

2. Install the Ethernet terminal block on the DIN rail in the Satellite. Remove the label from the terminal block.



3. Connect the Ethernet cable to the Ethernet terminal block using the RJ45 connector.

4. Install the extension Ethernet cable to the Ethernet terminal block.

5. Install the extension Ethernet cable to the INT port of the control board.

6. Close the front panel of the unit. Make sure that the extension Ethernet cable does not push against other components.

5.2.12. Connecting the DC input power cables to Liquid Cooled Satellite

The Liquid Cooled Satellite is delivered with the charging cable already installed.

Connect the DC input power cables from the Power Unit to the copper terminal bars of the Liquid Cooled Satellite with cable lugs and M10 screws. Leave a minimum of 8 mm between the cable lugs. Connect the protective earth wire to the Liquid Cooled Satellite's installation flange with a wire clamp. For details, see 11.7: Liquid Cooled Satellite with one CCS vehicle connector.

Be careful not to damage the coolant hoses when you connect the power cables. The coolant hoses are routed to the frame with the liquid cooling unit from below the power cable terminal blocks.

The frame with the liquid cooling unit does not need any installation work. Make sure that there are no leaks and that the expansion tank in the liquid cooling unit is approximately 1/3 full before you start operation. The coolant system has a liquid level sensor that will give an alarm on the user interface screen when the system is powered on if the level of coolant is below the limit.

5.2.13. Configuring the main switch of the charging power unit

DANGER
High-voltage installation. Make sure that the units are correctly isolated from the main power supply before you do this task. Know and obey general and local safety regulations and procedures. Use adequate personal protection equipment (PPE).

CAUTION
Make sure that selectivity requirements are fulfilled in accordance with local laws and regulations.

Configure the settings for the main switch of each cabinet on the site:

1. Set the unit's main switch and the miniature circuit breaker (MCB) to OFF position (down).
2. If the front panel of the mains module is in place, remove it.
3. Identify the manufacturer of the main switch and see the respective instructions:
   - 5.2.13.1: ABB circuit breaker
   - 5.2.13.2: Chint circuit breaker
   - 5.2.13.3: Schneider circuit breaker
4. When you finish configuring the main switch, push the circuit breaker's test button and make sure that the unit trips.
5. Make sure that the rating of the supply side circuit breaker is higher than that of the cabinet's main switch.

5.2.13.1. ABB circuit breaker

NOTE
Adjust the switches according to the number of power modules in the cabinet.

NOTE
Use the appropriate factor to include the short circuit value in the selected settings.

NOTICE
Adjust the DIP switches carefully to avoid damaging them.

Select the correct values on the DIP switch panel marked *L* at the bottom of the circuit breaker.

Table 2. ABB circuit breaker (product code ABB 1SDH002011A1002_XT5S)

Number of power modules	Value	DIP switch setting (L)			
		0.04	**0.08**	**0.16**	**0.32**
4	368 A	ON	OFF	ON	ON
3	272 A	ON	ON	ON	OFF
2	192 A	OFF	ON	OFF	OFF
1	160 A	OFF	OFF	OFF	OFF
ON = up, OFF = down					

5.2.13.2. Chint circuit breaker

NOTE
Adjust the switches according to the number of power modules in the cabinet.

NOTE
Use the appropriate factor to include the short circuit value in the selected settings.

NOTICE
Adjust the DIP switches carefully to avoid damaging them.

Select the correct values on the DIP switch panel marked *Ir* at the bottom of the circuit breaker.

Table 3. Chint circuit breaker (product code NM8N-400QEN4003P)

Number of power modules	Value	DIP switch setting (Ir)		
		Left	**Middle**	**Right**
4	360 A	ON	OFF	ON
3	280 A	OFF	ON	ON
2	200 A	OFF	OFF	ON
1	160 A	OFF	OFF	OFF
ON = up, OFF = down				

5.2.13.3. Schneider circuit breaker

NOTE
Adjust the switches according to the number of power modules in the cabinet.

NOTE
Use the appropriate factor to include the short circuit value in the selected settings.

NOTE
Turn the rotary switch carefully with a flat screwdriver. Do not rotate the switch 360 degrees.

Select the correct values on the left-hand side rotary switch at the bottom of the circuit breaker. You should feel when the switch engages on the setting.

Table 4. Schneider circuit breaker (product code NLJF36400U31XTW)

Number of power modules	Rotary switch setting (left-hand side)
4	400 A
3	300 A
2	200 A
1	125 A

5.2.14. Installing AC Satellite cables

DANGER
Make sure that AC Satellite is correctly isolated when necessary during installation, service or maintenance work. Know and obey general and local safety regulations and procedures. Use adequate personal protection equipment (PPE).

NOTICE
Do not connect the Ethernet cable of AC Satellite to the charging power unit. Doing so will stop the operation of both units.

NOTE
AC Satellite is not connected to a charging power unit. It is connected directly to the main power supply.

NOTE
An Ethernet cable between AC Satellite and the local area network (LAN) is optional but not required.

NOTE
Tighten each screw terminal to the correct torque. The tightening torque is marked on the terminal block.

Connect L1, L2, L3, N and PE to the correct terminal blocks:

- Connection to charging socket/vehicle connector 1 to the terminal blocks labelled L1, L2, ...
- Connection to charging socket/vehicle connector 2 to the terminal blocks labelled L1.2, L2.2, ...
- PE wire to the terminal block on the DIN rail. Do not connect the PE wire to the front panel of the unit.

If the site has multiple AC Satellites, we recommend shifting the phase order L1→L2.2 | L2→L3.2 | L3→1.2 to balance the power consumption in the grid.

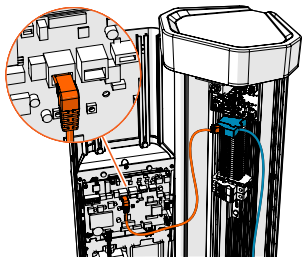
In the AC Satellite with charging cables:

- Route each charging cable through the residual current monitor (RCM) before you connect it to the contactor (K4, K5).
- Connect only the white CP signal wire of the charging cable to the unit connector (X4 right, X5 left).

If the optional Ethernet cable is used:

1. Install the Ethernet terminal block to the top of the DIN rail.
2. Connect the Ethernet cable between the control board and the terminal block.
3. Connect the site network Ethernet cable to the other side of the terminal block.

Figure 47. Connecting the AC Satellite Ethernet cable

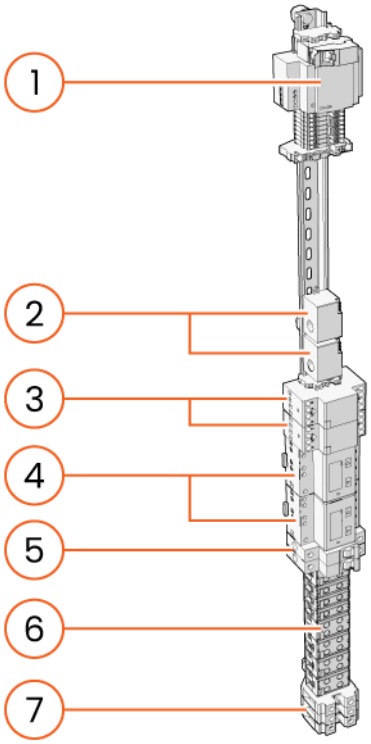


See also 11.11: AC Satellite Version 2 with two vehicle connectors and 5.2.14.1: Terminal blocks (AC Satellite with charging cables).

5.2.14.1. Terminal blocks (AC Satellite with charging cables)

See also 10: Examples of connecting output and control cables to charging points and 11: Examples of connecting cables to the Satellites.

Figure 48. Terminal blocks in the double AC Satellite with charging cables



1	Power supply	5	Circuit breaker
2	Residual current monitor (RCM)	6	Terminal blocks for AC supply power cables (2 x 50 mm^2 screw terminal)
3	Contactor	7	Terminal blocks for PE wires
4	kWh meter		

6. INSTALLING THE EQUIPMENT STOP CIRCUIT (OPTION)

WARNING
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.

WARNING
You must be authorized to do electrical work. The instructions are for persons who know electrical work and the applicable electrical safety requirements.

WARNING
After you disconnect the power supply, wait a minimum of two minutes for the capacitors of the power modules to discharge before you continue. Before you start work, measure the voltage of the electrical circuits to make sure that no dangerous voltage remains.

CAUTION
Know and obey the general and local safety regulations and procedures.

NOTICE
The electrical installation must be done in dry conditions. If necessary, weatherproof the installation area before you start the installation.

NOTICE
Two persons are needed for this task.

NOTE
The power module weighs approximately 43 kg.

NOTE
The power distribution module weighs approximately 32 kg.

6.1. Needed for the task

This installation requires software configuration. Only Kempower personnel can do the software configuration. Contact Kempower Technical Support and make sure that they are available for remote support while you are on site. Give the serial number of your charging unit in the support request.

Estimated time of labor 0.5 h.

Tools and equipment

- Equipment stop push button or contactor circuit (NC, normally closed)
- Protective gloves
- Protective eyewear
- Power unit door key
- Access to the main AC power supply
- Screwdriver T30
- Digital camera or mobile phone with camera
- Clean and dry compressed air (max. 4 bar)
- Vacuum cleaner (optional)
- Contact cleaner spray (optional)

6.2. Task

CAUTION
If you have a double or triple cabinet, only install the equipment stop circuit in the master cabinet (first cabinet on the left).

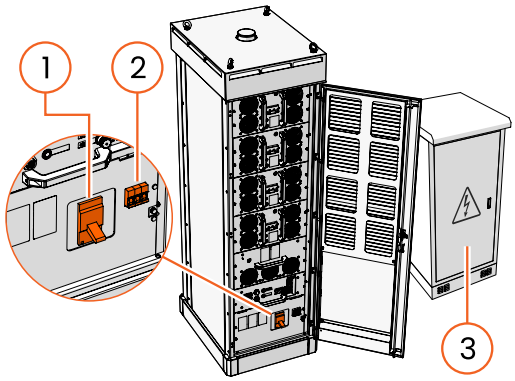
NOTE
Remove the lowest power module, the power distribution module, the control module, and the front panel of the mains module to make room for the installation.

1. Unlock and open the door(s) of the charging power unit.

   In each cabinet, set the miniature circuit breaker (MCB) for control voltage (2) and main switch (1) to OFF position.

   Disconnect the AC power supply to the unit from the main supply point (3).

   Complete the lockout-tagout (LOTO) procedure.



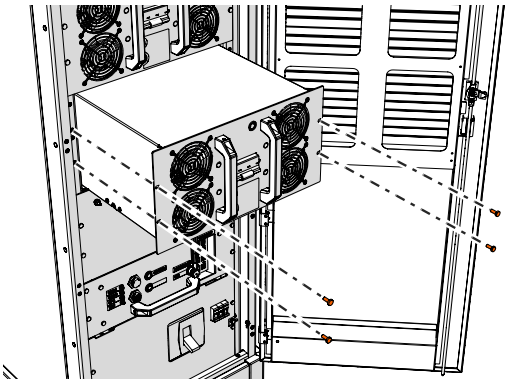
WARNING
After you disconnect the power supply, wait a minimum of two minutes for the capacitors of the power modules to discharge before you continue. Before you start work, measure the voltage of the electrical circuits to make sure that no dangerous voltage remains.

2. Remove the power module.

   Set the power module's circuit breakers in OFF position (down).

   Remove the four T30 fixing screws on the edges of the module's front panel.

   The module moves on its rollers on the rack. Use the handles to carefully pull out the module.

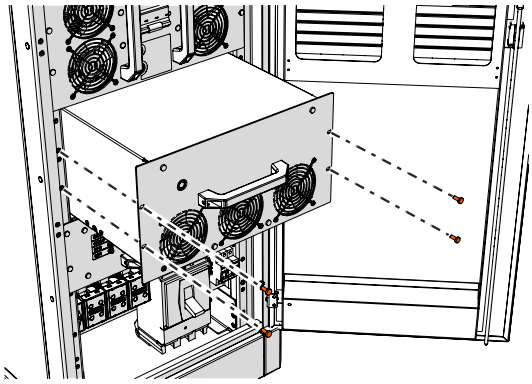


NOTICE
Protect the components that are installed back into the unit from dirt.

3. Remove the power distribution module.

   Remove the four T30 fixing screws on the edges of the module's front panel.

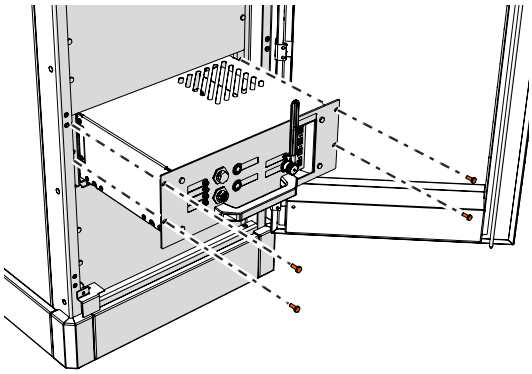
   The module moves on its rollers on the rack. Use the handle to carefully pull out the module.



> **NOTICE**
> Protect the components that are installed back into the unit from dirt.

4. Remove the control module.

> **NOTE**
> Before you detach wires, cables, or connectors, take a photograph of them.



   Detach all cables or wires connected to the control module's front panel.

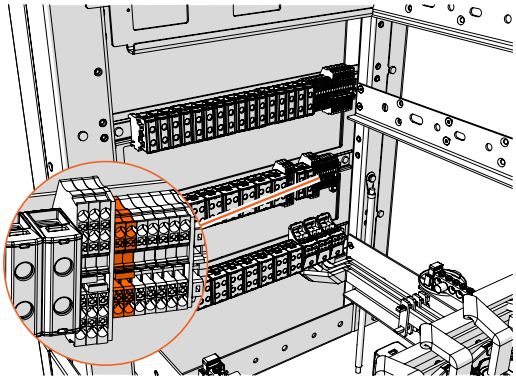
   Remove the four T30 fixing screws on the edges of the module's front panel.

   The module moves on its rollers on the rack. Use the handle to carefully pull out the module.

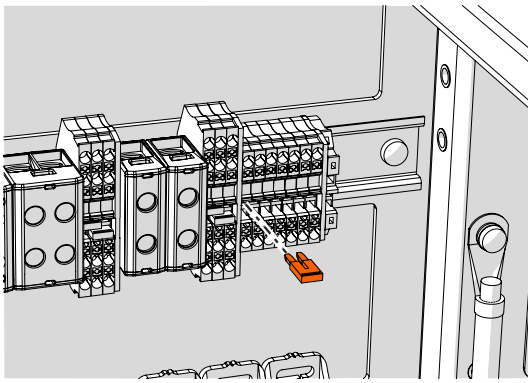
> **NOTICE**
> Protect the components that are installed back into the unit from dirt.

5. Only install the equipment stop circuit in the master cabinet (first cabinet on the left).

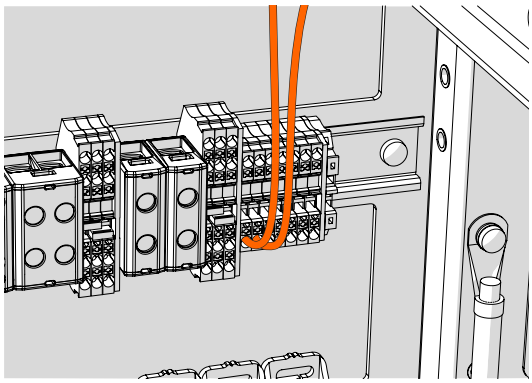
   Locate the ES terminal blocks on the right side of the middle DIN rail.



6. Remove the red jumper piece between the ES terminal blocks.



7. Connect the equipment stop button or wire the contactor circuit to the ES terminal blocks. Make sure that the circuit type is normally closed (NC).

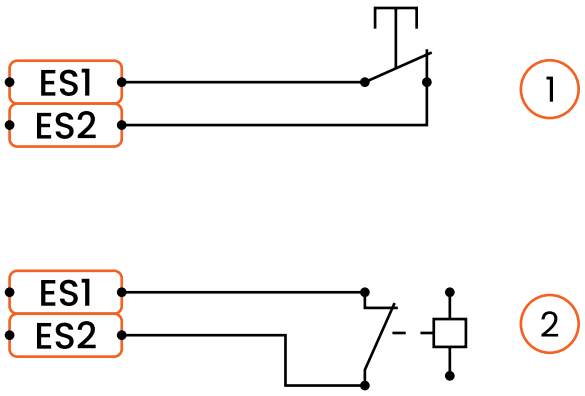


WARNING
Never connect main AC power to the equipment stop circuit. Risk of fire and permanent damage to the control module.

NOTICE
Do not make holes or openings in the cabinet structure for the cables. Do not route the cables through the connectors or cooling outlets behind the modules. Changes or modifications, unless specifically agreed upon with Kempower, will void the warranty.

NOTE
Route the cables to all units from below the unit.

Figure 49. Equipment stop circuit



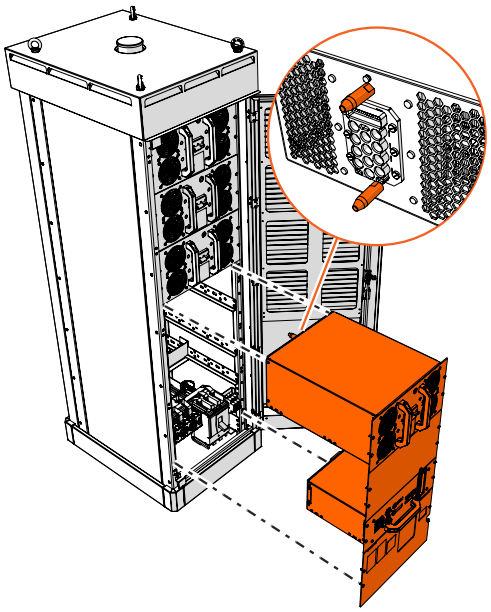
1 Equipment stop (NC)

2 Contactor (NC)

8. Push the power module, power distribution module, and control module into the unit. Make sure that you do not damage the modules.

   Install the fixing screws to the edges of the modules' front panels.

   Set the power module's circuit breakers in ON position (up).



NOTICE
Do not lift the power module from its guide pins.

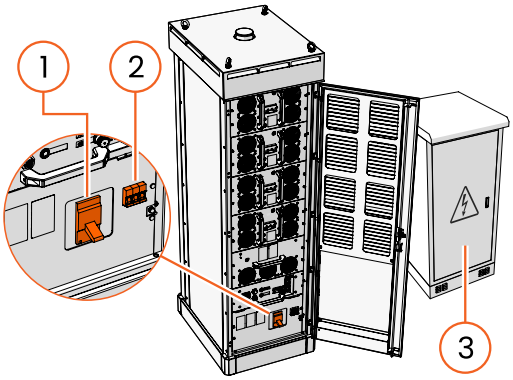
NOTE
Make sure that the module's connectors and connector pins are in good operating condition. When you push the module into the unit, be very careful not to damage the connector pins.

If necessary, clean the connectors with compressed air and/or spray the connectors with contact cleaner spray.

9. Connect the AC power supply to the unit from the main supply point (3).

   In each cabinet, set the miniature circuit breaker (MCB) for control voltage (2) and main switch (1) to ON position.

   Lock the door(s) of the unit.



10. Kempower Technical Support remotely enables the equipment stop function. Give the serial number of your charging unit in the support request.

> **CAUTION**
> The system must be rebooted to complete the software configuration. Stop any ongoing charging session before you continue. You can disable charging units from ChargEye. Kempower recommends that you also visibly notify users that the charging unit is not in use.

11. Do a functional test:

    - Start charging a suitable electric vehicle or an EV simulator/ charger tester for a minimum of 1 minute per vehicle connector.
    - During charging, push the equipment stop button. Make sure that each charging unit in the system goes into service mode.
    - Release the equipment stop button.
    - Reboot the system to reset it.

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

7. FINISHING THE INSTALLATION

CAUTION
When you have connected all cables correctly, make sure that the fuse rating setting is correct in the charging power unit.

NOTE
Make sure that the expansion tank in the liquid cooling unit is approximately 1/3 full before you start operation. See 5.1.7: Moving and lifting Liquid Cooled Satellite.

NOTE
Upload all available site documentation to ChargEye to help with future troubleshooting.

The electrical installation is done when:

- A qualified electrician who has completed the Kempower certification training has installed and connected all cables and electrical components as specified in the electrical design documentation.
- The main switch of the charging power unit has been correctly configured.
- The control module and mains fuse settings obey the electrical design.
- The electrician has done all required electrical safety tests according to local regulations, and stored the test reports on-site.
- The electrical installation contractor has done the required inspections for all site units, and delivered the checklist to the commissioner of the charging site:
  - 7.1.1: Sensory inspection
  - 7.1.2: Electrical installation and safety inspection

7.1. Inspecting the installation

CAUTION
Know and obey the local laws, regulations, and requirements.

CAUTION
Keep the AC main power supply disconnected during the inspection.

Do the installation inspection when the electrical installation is done. See 7: Finishing the installation.

The commissioning checklist is a separate document provided by Kempower. This is an overview of the items to be

inspected. The complete commissioning checklist, is available at mediabank.kempower.com.

- Clearly document all observations and possible deviations you find during the inspection.
- Take pictures of the installation site:
  - Layout of the charging power unit and charging points
  - Distribution/transformer cabinet that supplies the charging power unit
  - Cable connections in and between the charging power unit and charging points

7.1.1. Sensory inspection

The electrical contractor does the sensory inspection. Its purpose is to verify that the installation obeys the local laws, regulations, and requirements. Make sure that:

- Fire safety is inspected and approved.
- The voltage-carrying conductors are correctly touch-protected.
- The bending of cables does not exceed the minimum bending radius specified by the cable manufacturer.
- All components and cables are in place, correctly installed, and protected.
- All units are in operating condition and have no visible damages.
- All charging cables, vehicle connectors, and possible charging sockets are in operating condition and have no visible damages.
- All units are firmly secured to their installation surface.
- All labels on the units are clear and obey the electrical design documentation.
- If the configuration has an equipment stop button (option), it is in place and operates correctly.
- If the configuration requires an emergency stop circuit, it is in place and operates correctly.

7.1.2. Electrical installation and safety inspection

CAUTION
Make sure that the electrical safety tests have been done according to local laws and regulations.

CAUTION
If you remove touch protection for the inspection, install it back again.

NOTE
Note the name, number and revision of the electrical design documentation.

The electrical contractor does the electrical installation and safety inspection. Its purpose is to verify that the installation obeys the local laws, regulations, and requirements.

Item to inspect	Power Units	Station Charger	Satellite	Satellite Version 2	Liquid Cooled Satellite	Control Unit	AC Satellite	AC Satellite with charging cables
Phase order of AC supply power cable connections correct	•	•					•	•
Tightening torques of AC supply power cable connections correct	•	•					•	•
DC output power cables correctly labeled at both ends	•	•	•	•	•	•		
Tightening torques of DC output power cable connections correct	•	•	•	•	•	•		
Control cables correctly labeled at both ends	•	•	•	•	•	•		
Charging cable wires connected to correct terminals		•	•	•	•	•	•	•
Cable bushings of charging cables correctly tightened		•	•	•	•	•	•	•
Ethernet cables tested with LAN tester	•	•	•	•	•	•	•	•

Item to inspect	Power Units	Station Charger	Satellite	Satellite Version 2	Liquid Cooled Satellite	Control Unit	AC Satellite	AC Satellite with charging cables
AC supply wires correctly labeled (L1–L2–L3)							•	•
AC supply phases correctly reordered (multiple AC satellites)							•	•
Ethernet cable connected to EXT port of control board (option)							•	•

8. COMMISSIONING

NOTICE
Commissioning done by an unapproved partner will void the warranty.

During commissioning the charging site is connected to the ChargEye backend system and the charging site's set-up and functions are configured. As a general rule, approximately one hour is needed to configure a charging site with one charging power unit and four Satellites.

You do not have to be a licensed electrician to do the commissioning but you must have extensive knowledge of electrical installations and have completed the Kempower certification training. We recommend that you have a licensed electrician on site during commissioning to repair possible electrical installation errors.

Before you start the commissioning make sure that:

- The installation has been inspected and approved.
- You have received the electrical safety test report.
- The site is online.
- If necessary, remote commissioning support has been booked in advance from Kempower Technical Support.
- All necessary OCPP information is available (option).

The charging site is configured with the Commissioning Tool software. The set-up of the charging site in ChargEye consists of the following steps:

- Adding the new charging site to the backend system.
- Adding the general information of the charging site to the backend system (location, owner, etc.).
- Specifying the settings (technical values, authorization).
- Specifying the access rights for different user groups and roles.
    - Request new users or change of access rights from Kempower Technical Support.

When the charging site is configured, the following tasks can be done through ChargEye (depending on the user's access rights):

- Reading data and troubleshooting logs
- Updating software
- Restarting chargers
- Monitoring connection status
- Monitoring energy consumption

8.1. Commissioning checklist

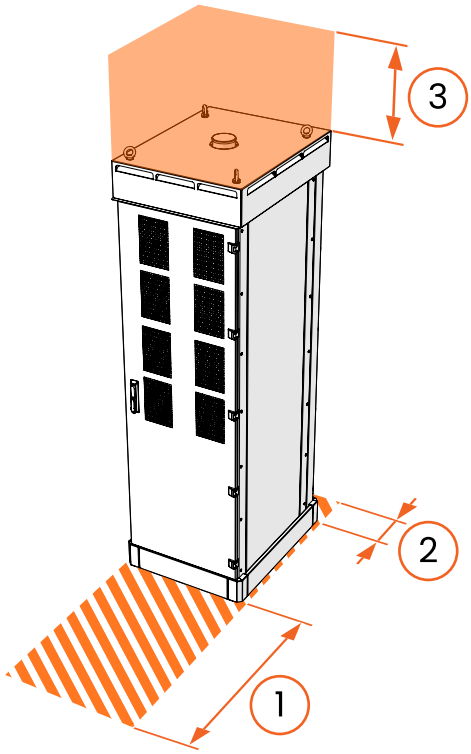
Task	Power Units	Station Charger	Satellite	Satellite Version 2	Liquid Cooled Satellite	Control Unit	AC Satellite	AC Satellite with charging cables
Site configuration is completed using the Commissioning Tool	•	•					•	•
Connection to ChargEye operates correctly	•	•					•	•
Connection to customer's backend system operates correctly (if applicable)	•	•					•	•
All user interface screens operate correctly		•	•	•	•		•	•
All user interface screens have correct identification and maximum power information		•	•	•	•		•	•
No error messages on user interface screens		•	•	•	•		•	•
All charging points tested and operate correctly		•	•	•	•	•	•	•
User interface's STOP button tested and stops the charging session		•	•	•	•	•	•	•
Electric vehicle's STOP function tested and stops charging session		•	•	•	•	•	•	•
Equipment's stop button tested and stops charging session (option)		•	•	•	•	•	•	•
Charging status LED indicators operate correctly and for correct charging outlet		•	•			•		

9. UNIT FOOTPRINTS AND CLEARANCES

NOTICE
In addition to the given clearances, obey the cable bending radius if cables are surface-installed. Increase the clearance if necessary.

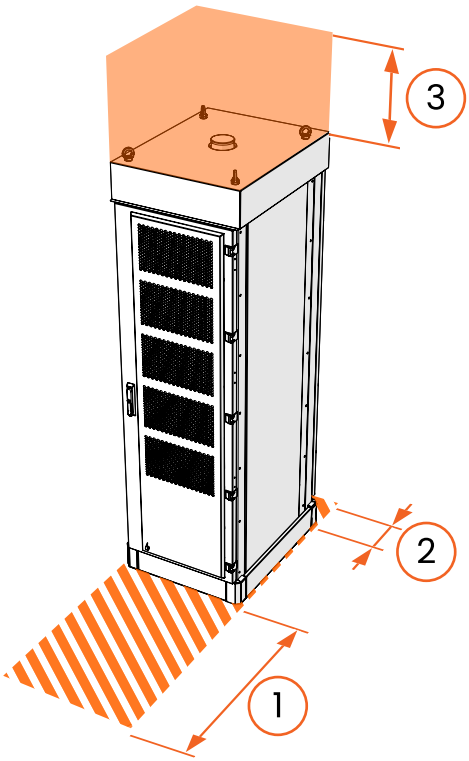
- The cables to all units are always routed from below the unit.
  - The AC mains power cables are routed to the charging power unit from the front or the left side of the unit.
  - The connection cables to the charging point(s) are routed from behind or the right side of the charging power unit.
- Leave at minimum 1000 mm free space in front of the installed cabinet. It must be possible to open the door of the unit fully and remove modules from the rack.
- Leave at minimum 200 mm free space between the back of the cabinet and a solid wall. If possible, we recommend leaving 800 mm accessible space behind the cabinet, for example by positioning the cabinet's side toward the wall. Otherwise, if it is necessary to remove the cabinet's back panel to gain access to the back of the cabinet, the cabinet must be moved.
- Leave at minimum 500 mm free space above the cabinet. If it is necessary to remove the cabinet's back panel to gain access to the back of the cabinet, the cabinet's roof element must first be removed.
- Leave at minimum approximately 20 mm free space between the charging power units. A double or triple cabinet is one unit.
- Leave at minimum 500 mm free working space in front of the installed Satellite. It must be possible to open the front panel of the unit fully.
- Leave at minimum 500 mm free space above the installed Satellite.

Figure 50. Clearances for Power Unit



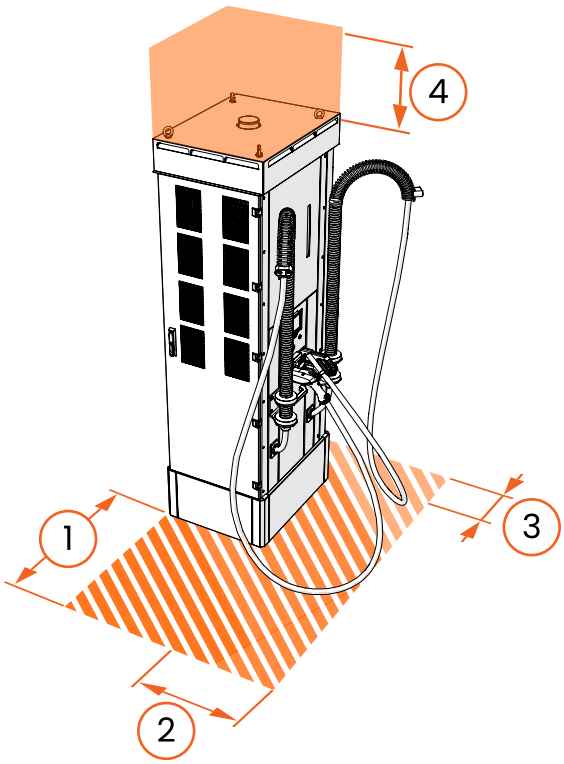
1	1000 mm	3	500 mm
2	200 mm		

Figure 51. Clearances for Power Unit Version 3



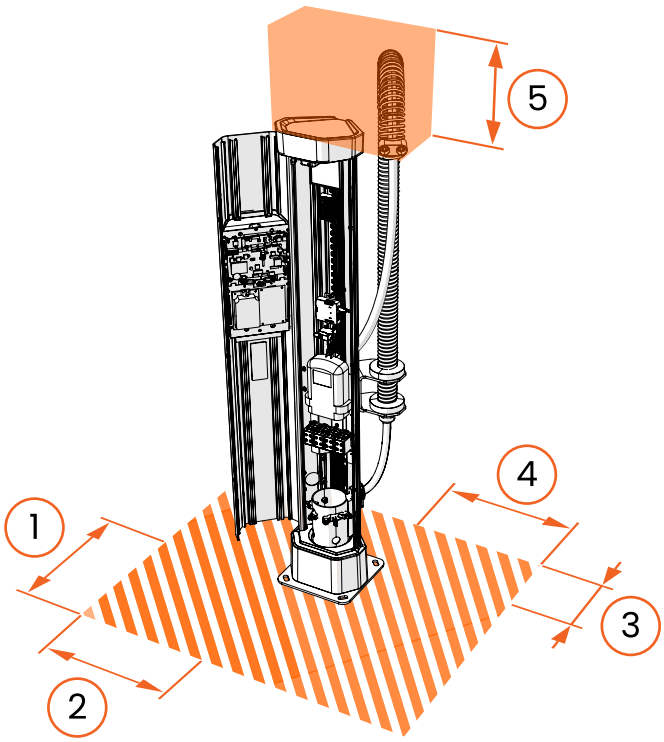
1	1000 mm	3	500 mm
2	200 mm		

Figure 52. Clearances for Station Charger



1	1000 mm	3	200 mm
2	500 mm	4	500 mm

Figure 53. Clearances for Satellite

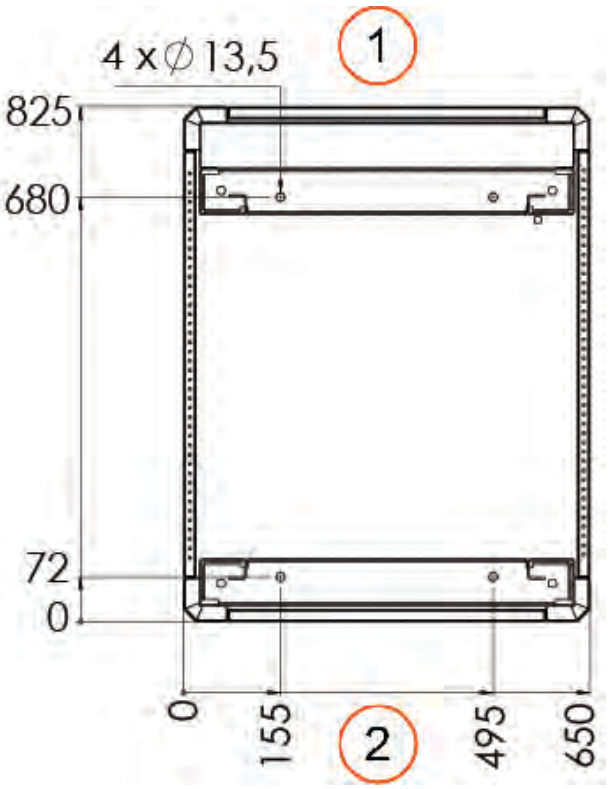


1	500 mm	4	500 mm
2	500 mm	5	500 mm
3	300 mm		

9.1. Single cabinet footprint and fixing points

NOTE
Use four M12 anchor bolts or equivalent per cabinet.

Figure 54. Single cabinet footprint and fixing points (mm)

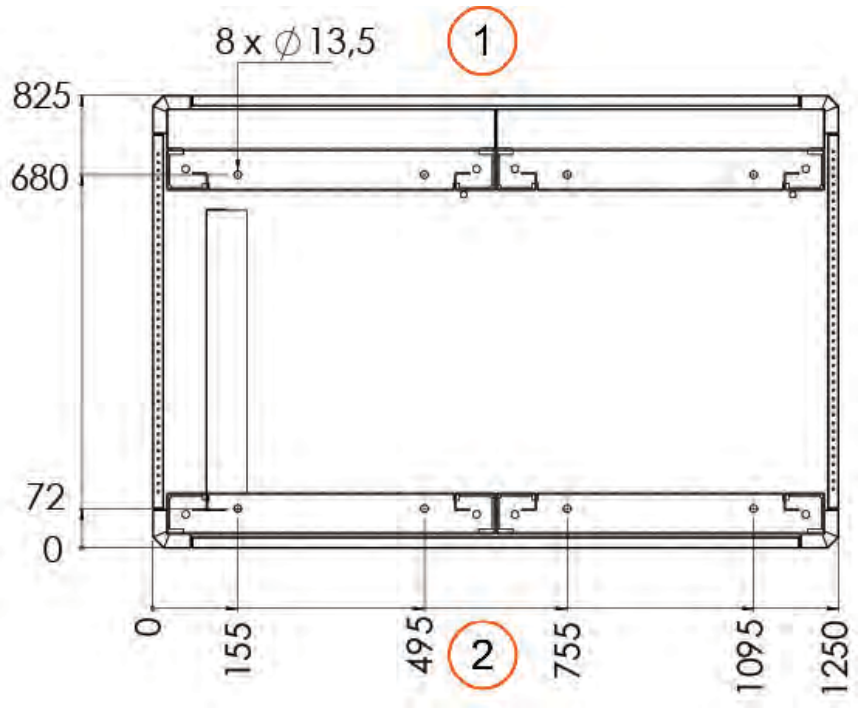


1 Back
2 Front

9.2. Double cabinet footprint and fixing points

NOTE
Use four M12 anchor bolts or equivalent per cabinet.

Figure 55. Double cabinet footprint and fixing points (mm)

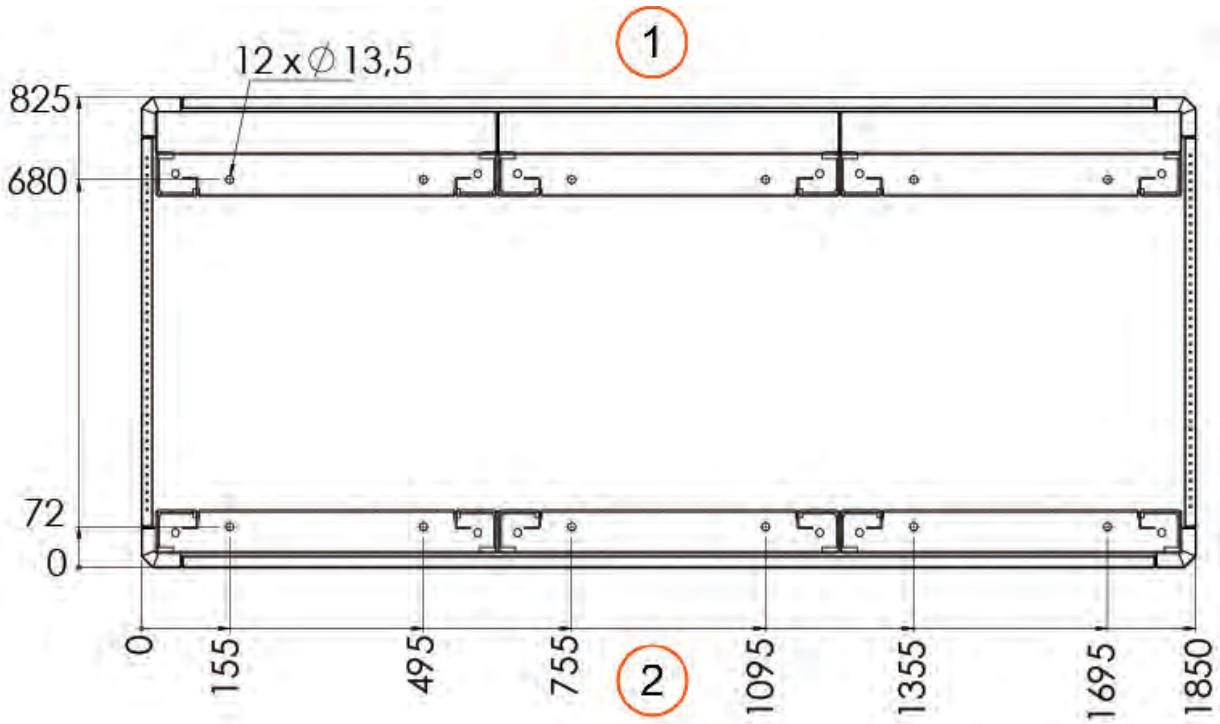


1 Back
2 Front

9.3. Triple cabinet footprint and fixing points

NOTE
Use four M12 anchor bolts or equivalent per cabinet.

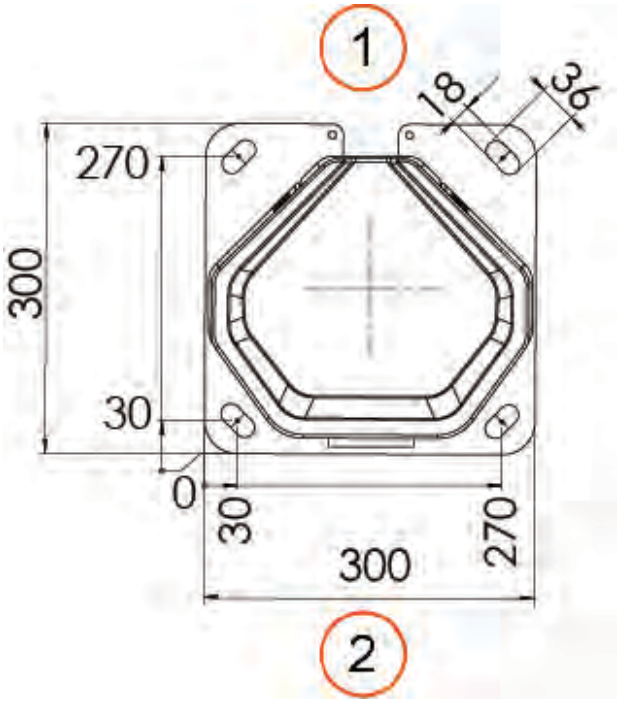
Figure 56. Triple cabinet footprint and fixing points (mm)



1 Back
2 Front

9.4. Satellite footprint and fixing points

Figure 57. Satellite footprint and fixing points (mm)



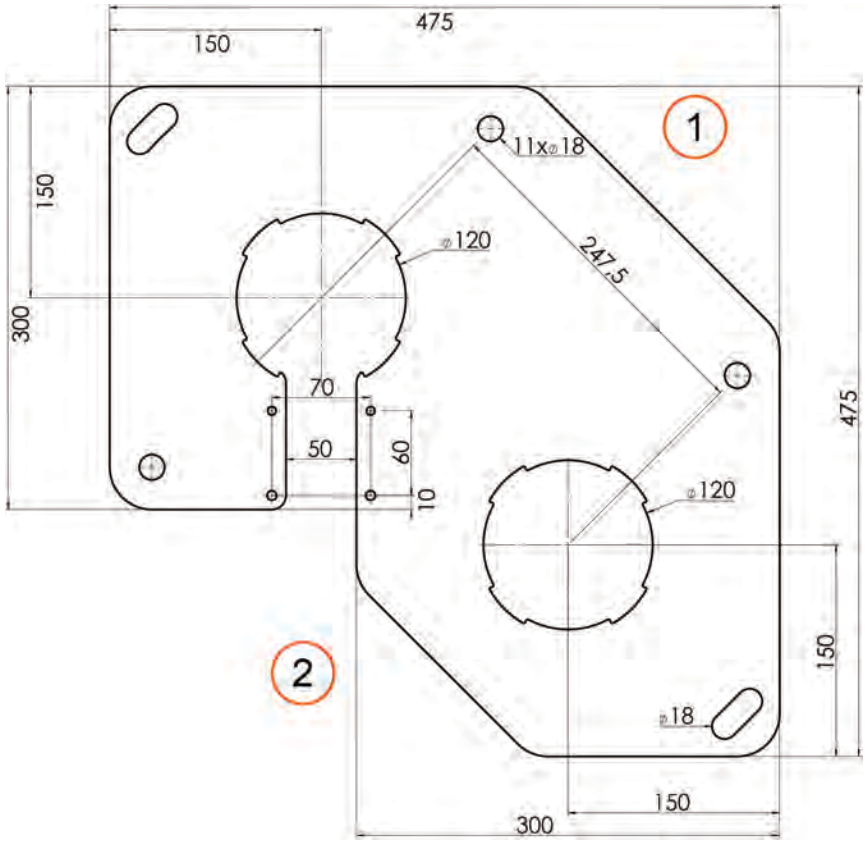
1 Back

2 Front

9.5. Liquid Cooled Satellite footprint and fixing points

NOTE
Use five M16 anchor bolts or equivalent per Liquid Cooled Satellite installation flange. The tube of the installation flange with the opening for cable routing is for the Liquid Cooled Satellite frame that has the user interface.

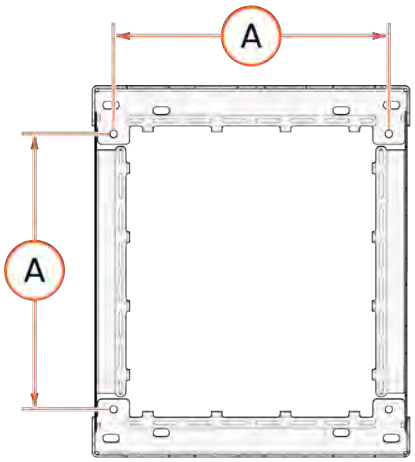
Figure 58. Liquid Cooled Satellite footprint and fixing points (mm)



1 Front
2 Back

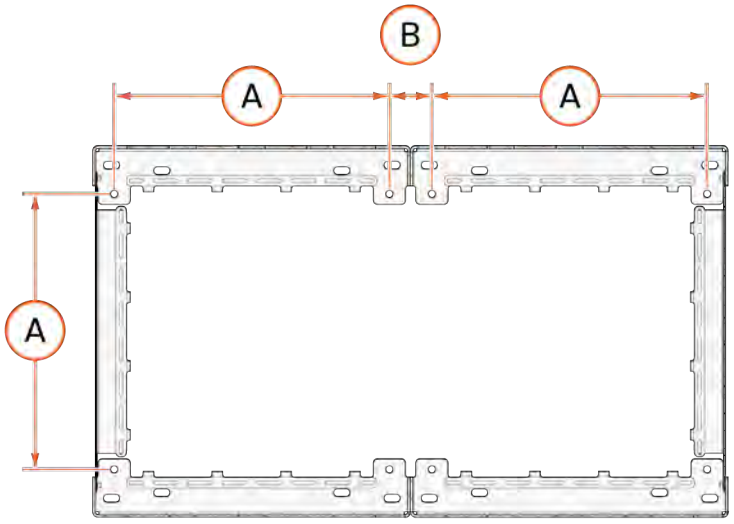
9.6. Steel base footprints and fixing points

Figure 59. Single cabinet footprint and fixing points (mm)



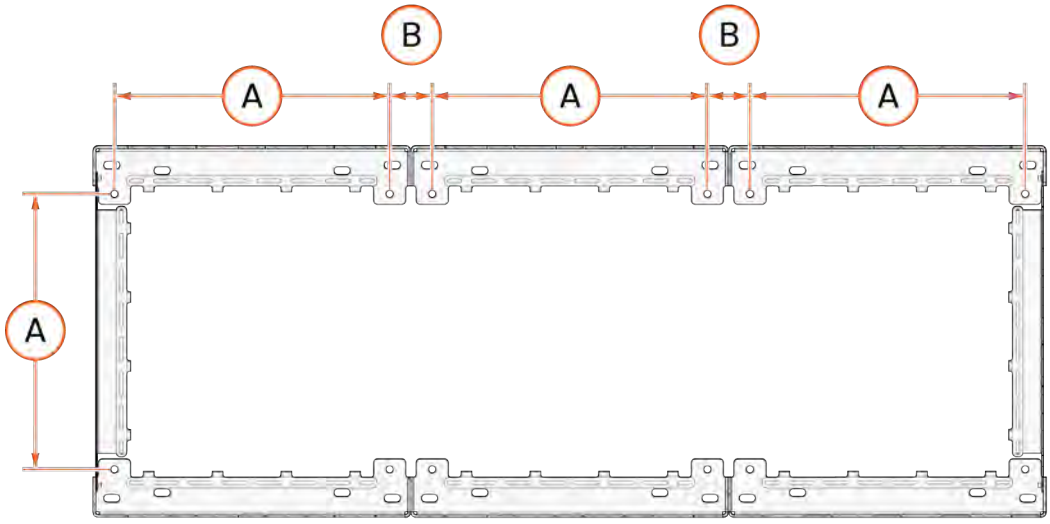
A	520

Figure 60. Double cabinet footprint and fixing points (mm)



A	520
B	80

Figure 61. Triple cabinet footprint and fixing points (mm)



A	520
B	80

10. EXAMPLES OF CONNECTING OUTPUT AND CONTROL CABLES TO CHARGING POINTS

In the cabinet, the DC output (OUT n) and control cable (CT n) terminals are numbered.

In the double Satellite, the DC input terminals are marked CAB 1 (right-hand side) and CAB 2 (left-hand side), and the control cable terminals CT A (right-hand side) and CT B (left-hand side). In the single Satellite, the vehicle connector is always on the right-hand side.

Connect the corresponding output and control cable pairs from the cabinet to the same Satellite. If the site has several Satellites, connect them in ascending order starting from cabinet terminal 1 to Satellite 1. If the cabinet has more DC output terminals than you need, leave the last terminals empty.

Depending on the needed charging capacity, you can connect DC outputs in parallel in the cabinet to form one configuration output. Connect the corresponding configuration output and control cable pair to the same Satellite.

The ChargEye connector is configured in ChargEye during commissioning. The first number notates the sequence number of the Satellite, and the second number notates the vehicle connector. Number 2 is the right-hand side vehicle connector, and number 1 the left-hand side vehicle connector. The CHAdeMO vehicle connector is the exception and it is always number 2 regardless of which side it is on.

10.1. Dynamic (Ds2) – 1 double Satellite

Table 5. Ds2 connected to 1 double Satellites (2 x 375 A configuration output)

Config. output	ChargEye connector	Max. current	Terminals			
			DC output	Control cable	DC input	Control cable
1	12 (right)	375 A	Power Unit 1		Satellite 1	
			OUT 1	CT 1	CAB 1	CT A
			OUT 5			
			OUT 3			
2	11 (left)	375 A	Power Unit 1		Satellite 1	
			OUT 2	CT 2	CAB 2	CT B
			OUT 6			
			OUT 4			

10.2. Dynamic (Ds2) – 2 single Satellites

Table 6. Ds2 connected to 2 single Satellites (2 x 500 A configuration output)

Config. output	ChargEye connector	Max. current	Terminals			
			DC output	Control cable	DC input	Control cable
1	12 (right)	500 A	Power Unit 1		Satellite 1	
			OUT 1	CT 1	CAB 1	CT A
			OUT 5			
			OUT 3			
2	22 (right)	500 A	Power Unit 1		Satellite 2	
			OUT 2	CT 2	CAB 1	CT A
			OUT 6			
			OUT 4			

10.3. Dynamic (Ds4) – 2 double Satellites

Table 7. Ds4 connected to 2 double Satellites (4 x 2 x 200 A configuration output)

Config. output	ChargEye connector	Max. current	Terminals			
			DC output	Control cable	DC input	Control cable
1	12 (right)	2 x 200 A	Power Unit 1		Satellite 1	
			OUT 1	CT 1	CAB 1	CT A
			OUT 5			
2	11 (left)	2 x 200 A	Power Unit		Satellite	
			OUT 2	CT 2	CAB 2	CT B
			OUT 6			
3	22 (right)	2 x 200 A	Power Unit 1		Satellite 2	
			OUT 3	CT 3	CAB 1	CT A
			OUT 7			
4	21 (left)	2 x 200 A	Power Unit 1		Satellite 2	
			OUT 4	CT 4	CAB 2	CT B
			OUT 8			

10.4. Dynamic (Ds4) – 4 single Satellites

Table 8. Ds4 connected to 4 single Satellites (4 x 200 A configuration output)

Config. output	ChargEye connector	Max. current	Terminals			
			DC output	Control cable	DC input	Control cable
1	12 (right)	200 A	Power Unit 1		Satellite 1	
			OUT 1	CT 1	CAB 1	CT A
2	22 (right)	200 A	Power Unit 1		Satellite 2	
			OUT 2	CT 2	CAB 1	CT A
3	32 (right)	200 A	Power Unit 1		Satellite 3	
			OUT 3	CT 3	CAB 1	CT A
4	42 (right)	200 A	Power Unit		Satellite 4	
			OUT 4	CT 4	CAB 1	CT A

10.5. Dynamic (Ds6) – 3 double Satellites

Table 9. Ds6 connected to 3 double Satellites (6 x 200 A configuration output)

Config. output	ChargEye connector	Max. current	Terminals			
			DC output	Control cable	DC input	Control cable
1	12 (right)	200 A	Power Unit 1		Satellite 1	
			OUT 1	CT 1	CAB 1	CT A
2	11 (left)	200 A	Power Unit 1		Satellite 1	
			OUT 2	CT 2	CAB 2	CT B
3	22 (right)	200 A	Power Unit 1		Satellite 2	
			OUT 3	CT 3	CAB 1	CT A
4	21 (left)	200 A	Power Unit 1		Satellite 2	
			OUT 4	CT 4	CAB 2	CT B
5	32 (right)	200 A	Power Unit 1		Satellite 3	
			OUT 5	CT 5	CAB 1	CT A
6	31 (left)	200 A	Power Unit 1		Satellite 3	
			OUT 6	CT 6	CAB 2	CT B

10.6. Dynamic (Ds6) – 6 single Satellites

Table 10. Ds6 connected to 6 single Satellites (6 x 200 A configuration output)

Config. output	ChargEye connector	Max. current	Terminals			
			DC output	Control cable	DC input	Control cable
1	12 (right)	200 A	Power Unit 1		Satellite 1	
			OUT 1	CT 1	CAB 1	CT A
2	22 (right)	200 A	Power Unit 1		Satellite 2	
			OUT 2	CT 2	CAB 1	CT A
3	32 (right)	200 A	Power Unit 1		Satellite 3	
			OUT 3	CT 3	CAB 1	CT A
4	42 (right)	200 A	Power Unit 1		Satellite 4	
			OUT 4	CT 4	CAB 1	CT A
5	52 (right)	200 A	Power Unit 1		Satellite 5	
			OUT 5	CT 5	CAB 1	CT A
6	62 (right)	200 A	Power Unit 1		Satellite 6	
			OUT 6	CT 6	CAB 1	CT A

10.7. Dynamic (Ds4) – 4 Liquid Cooled Satellites

Table 11. Triple cabinet Ds4 connected to 4 Liquid Cooled Satellites

Config. output	ChargEye connector	Max. current	Terminals			
			DC output	Control cable	DC input	Control cable
1	12 (right)	500 A	Power Unit 1, 2, 3		Satellite 1	
			OUT 1	CT 1	CAB 1	CT A
			OUT 5			
2	22 (right)	500 A	Power Unit 1, 2, 3		Satellite 2	
			OUT 2	CT 2	CAB 1	CT A
			OUT 6			
3	32 (right)	500 A	Power Unit 1, 2, 3		Satellite 3	
			OUT 3	CT 3	CAB 1	CT A
			OUT 7			
4	42 (right)	500 A	Power Unit 1, 2, 3		Satellite 4	
			OUT 4	CT 4	CAB 1	CT A
			OUT 8			

10.8. Static (S4) – 1 single Satellite

Table 12. S4 connected to 1 single Satellite (1 x 500 A/300 A configuration output)

Config. output	ChargEye connector	Max. current	Terminals			
			DC output	Control cable	DC input	Control cable
1	12 (right)	500 A/300 A	Power Unit 1		Satellite 1	
			OUT 1	CT 1	CAB 1	CT A
			OUT 2			
			OUT 3			
			OUT 4			

10.9. Static (S4) – 4 single Satellites

Table 13. S4 connected to 4 single Satellites (4 x 125 A/75 A configuration output)

Config. output	ChargEye connector	Max. current	Terminals			
			DC output	Control cable	DC input	Control cable
1	12 (right)	125 A/75 A	Power Unit 1		Satellite 1	
			OUT 1	CT 1	CAB 1	CT A
2	22 (right)	125 A/75 A	Power Unit 1		Satellite 2	
			OUT 2	CT 2	CAB 1	CT A
3	32 (right)	125 A/75 A	Power Unit 1		Satellite 3	
			OUT 3	CT 3	CAB 1	CT A
4	42 (right)	125 A/75 A	Power Unit		Satellite 4	
			OUT 4	CT 4	CAB 1	CT A

10.10. Static (S4) – 2 double Satellites

Table 14. S4 connected to 2 double Satellites (4 x 125 A/75 A configuration output)

Config. output	ChargEye connector	Max. current	Terminals			
			DC output	Control cable	DC input	Control cable
1	12 (right)	125 A/75 A	Power Unit 1		Satellite 1	
			OUT 1	CT 1	CAB 1	CT A
2	11 (left)	125 A/75 A	Power Unit 1		Satellite 1	
			OUT 2	CT 2	CAB 2	CT B
3	22 (right)	125 A/75 A	Power Unit 1		Satellite 2	
			OUT 3	CT 3	CAB 1	CT A
4	21 (left)	125 A/75 A	Power Unit		Satellite	
			OUT 4	CT 4	CAB 2	CT B

10.11. Static (S8) – 8 single Satellites

Table 15. S8 connected to 8 single Satellites (8 x 62.5/37.5 A configuration output)

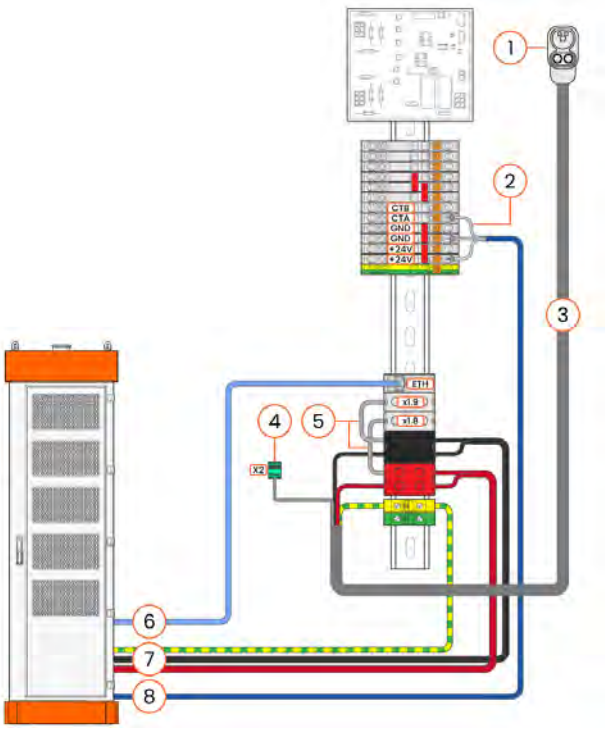
Config. output	ChargEye connector	Max. current	Terminals			
			DC output	Control cable	DC input	Control cable
1	12 (right)	62.5 A/37.5 A	Power Unit 1		Satellite 1	
			OUT 1	CT 1	CAB 1	CT A
2	22 (right)	62.5 A/37.5 A	Power Unit 1		Satellite 2	
			OUT 2	CT 2	CAB 1	CT A
3	32 (right)	62.5 A/37.5 A	Power Unit 1		Satellite 3	
			OUT 3	CT 3	CAB 1	CT A
4	42 (right)	62.5 A/37.5 A	Power Unit 1		Satellite 4	
			OUT 4	CT 4	CAB 1	CT A
5	52 (right)	62.5 A/37.5 A	Power Unit 1		Satellite 5	
			OUT 5	CT 5	CAB 1	CT A
6	62 (right)	62.5 A/37.5 A	Power Unit 1		Satellite 6	
			OUT 6	CT 6	CAB 1	CT A
7	72 (right)	62.5 A/37.5 A	Power Unit 1		Satellite 7	
			OUT 7	CT 7	CAB 1	CT A
8	82 (right)	62.5 A/37.5 A	Power Unit 1		Satellite 8	
			OUT 8	CT 8	CAB 1	CT A

11. EXAMPLES OF CONNECTING CABLES TO THE SATELLITES

11.1. Satellite Version 1 with one CCS vehicle connector

NOTE
Grounding of the Ethernet shield at one end only, charging power unit or Satellite.

Figure 62. Satellite Version 1 with one combined charging system (CCS) vehicle connector

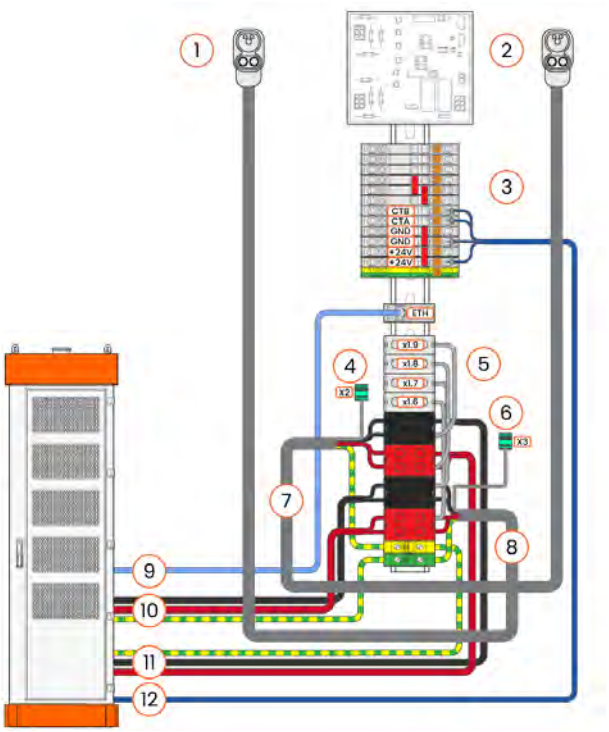


1	Configuration tag (right vehicle connector)	5	Voltage measurement wires
2	CT line signal wires	6	Communication cable
3	Charging cable	7	DC output power cables + PE
4	Vehicle connector signal wires	8	Control cable (CT line)

11.2. Satellite Version 1 with two CCS vehicle connectors

NOTE
Grounding of the Ethernet shield at one end only, charging power unit or Satellite.

Figure 63. Satellite Version 1 with two combined charging system (CCS) vehicle connectors

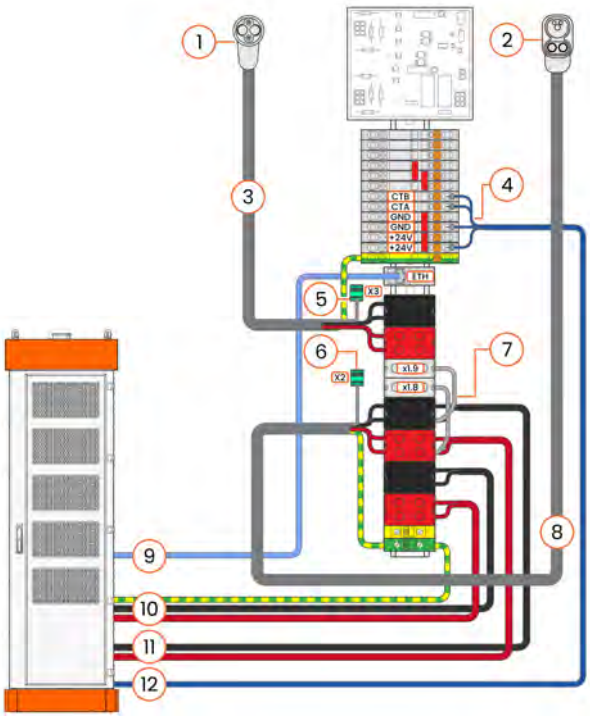


1	Configuration tag (left vehicle connector)	7	Charging cable (right)
2	Configuration tag (right vehicle connector)	8	Charging cable (left)
3	CT line signal wires	9	Communication cable
4	Vehicle connector signal wires (right)	10	DC output power cables + PE (left)
5	Voltage measurement wires	11	DC output power cables + PE (right)
6	Vehicle connector signal wires (left)	12	Control cable (CT line)

11.3. Satellite Version 1 with one CCS and one CHAdeMO vehicle connector

NOTE
Grounding of the Ethernet shield at one end only, charging power unit or Satellite.

Figure 64. Satellite Version 1 with one combined charging system (CCS) and one CHAdeMO vehicle connector

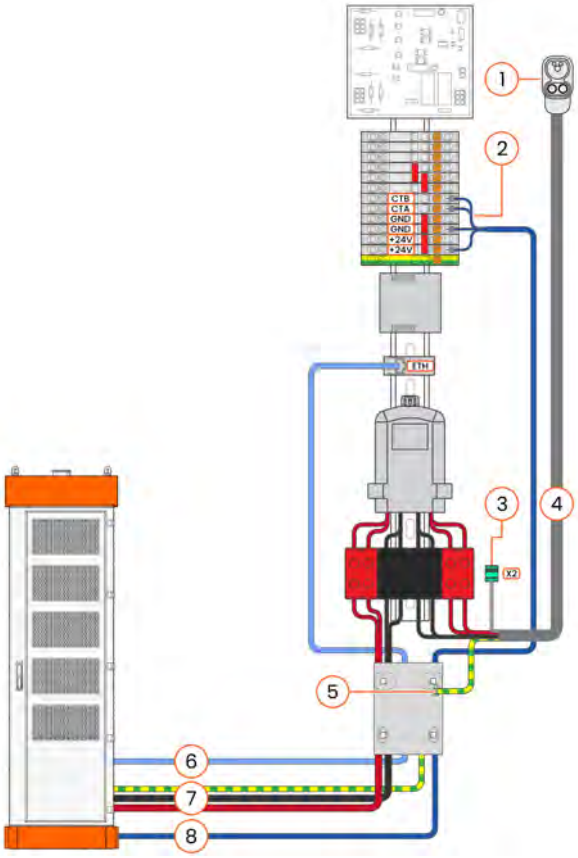


1	Configuration tag (left vehicle connector)	7	Voltage measurement wires
2	Configuration tag (right vehicle connector)	8	Charging cable (right)
3	Charging cable (left)	9	Communication cable
4	CT line signal wires	10	DC output power cables + PE (left)
5	Vehicle connector signal wires (left)	11	DC output power cables + PE (right)
6	Vehicle connector signal wires (right)	12	Control cable (CT line)

11.4. Satellite Version 2 with one CCS vehicle connector

NOTE
Grounding of the Ethernet shield at one end only, charging power unit or Satellite.

Figure 65. Satellite Version 2 with one combined charging system (CCS) vehicle connector

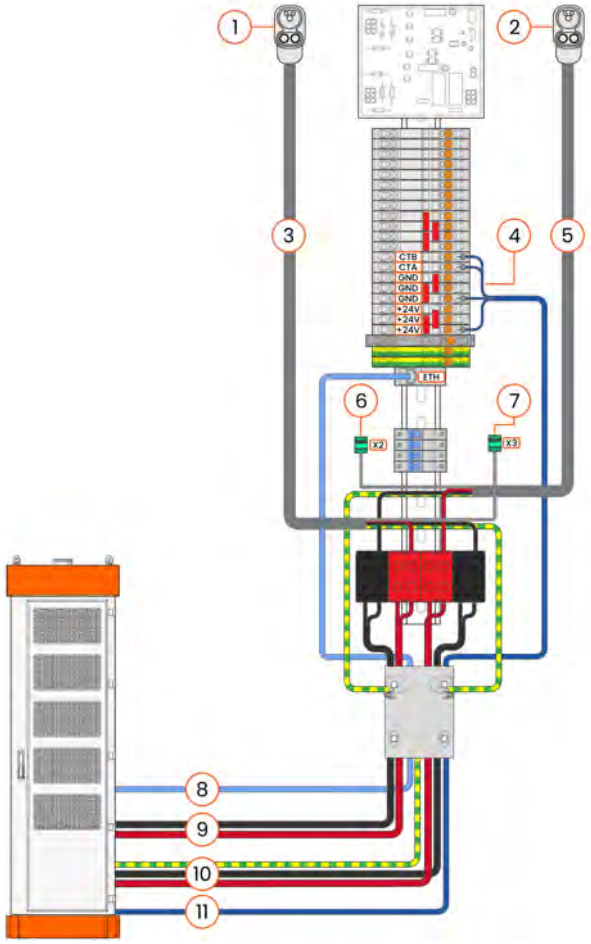


1	Configuration tag (right vehicle connector)	5	Connect PE wire to Satellite installation flange with wire clamp
2	CT A line signal wires (CT B not connected)	6	Communication cable
3	Vehicle connector signal wires	7	DC output power cables + PE
4	Charging cable	8	Control cable (CT line)

11.5. Satellite Version 2 with two CCS vehicle connectors

NOTE
Grounding of the Ethernet shield at one end only, charging power unit or Satellite.

Figure 66. Satellite Version 2 with two combined charging system (CCS) vehicle connectors

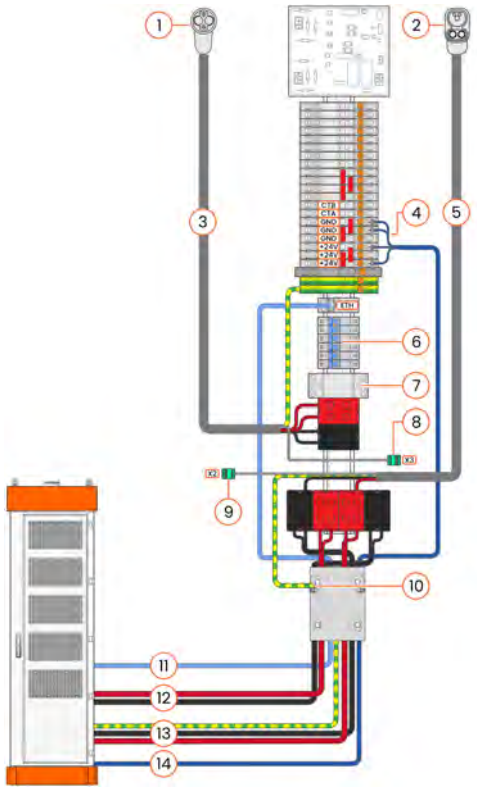


1	Configuration tag (left vehicle connector)	7	Vehicle connector signal wire (right)
2	Configuration tag (right vehicle connector)	8	Communication cable
3	Charging cable (left)	9	DC output power cables (left)
4	CT line signal wires	10	DC output power cables + PE (right)
5	Charging cable (right)	11	Control cable (CT line)
6	Vehicle connector signal wire (left)		

11.6. Satellite Version 2 with one CCS and one CHAdeMO vehicle connector

NOTE
Grounding of the Ethernet shield at one end only, charging power unit or Satellite.

Figure 67. Satellite Version 2 with one combined charging system (CCS) and one CHAdeMO vehicle connector

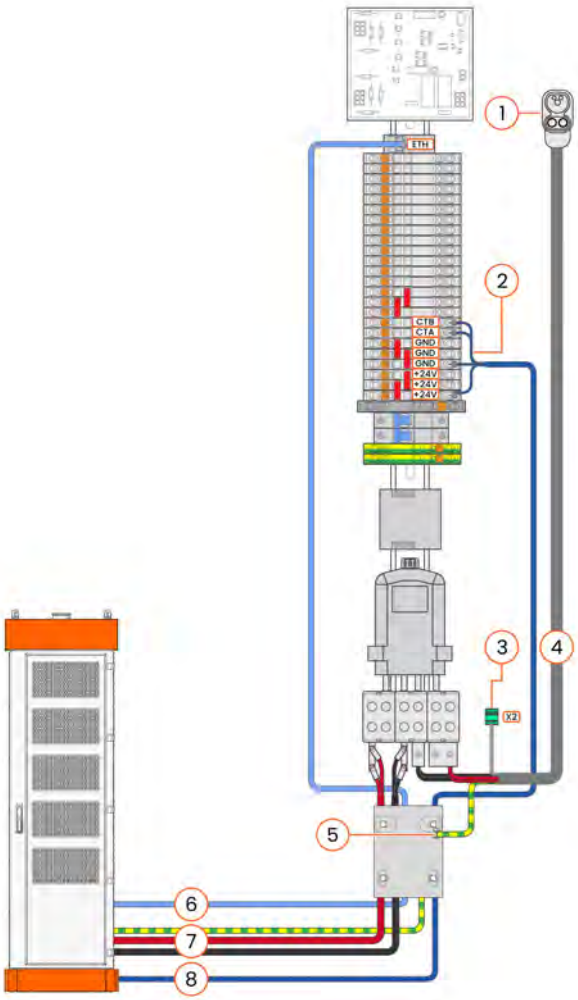


1	Configuration tag (left vehicle connector)	8	Vehicle connector signal wires (left)
2	Configuration tag (right vehicle connector)	9	Vehicle connector signal wire (right)
3	Charging cable (left)	10	Connect PE wire to Satellite installation flange with wire clamp
4	CT line signal wires	11	Communication cable
5	Charging cable (right)	12	DC output power cables (left)
6	Voltage measurement fuses	13	DC output power cables + PE (right)
7	Contactor for CHAdeMO	14	Control cable (CT line)

11.7. Liquid Cooled Satellite with one CCS vehicle connector

NOTE
Grounding of the Ethernet shield at one end only, charging power unit or Satellite.

Figure 68. Liquid Cooled Satellite with one combined charging system (CCS) vehicle connector

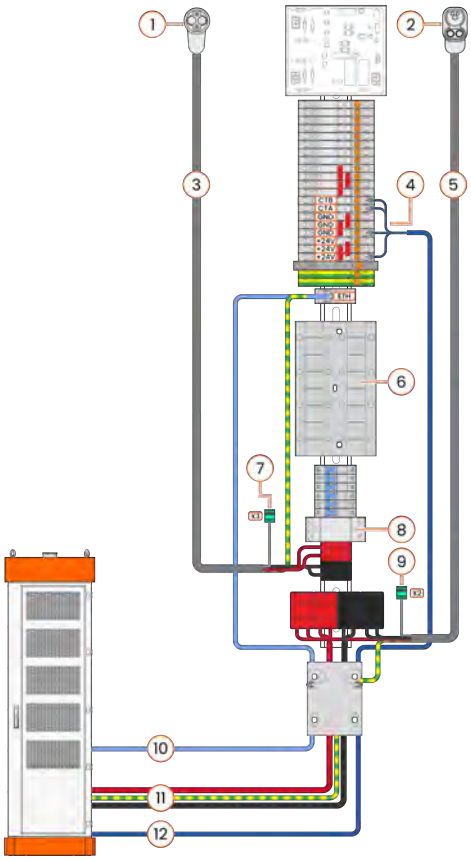


1	Configuration tag (right vehicle connector)	5	PE wire connected to installation flange with wire clamp
2	CT A line signal wires (CT B not connected)	6	Communication cable
3	Vehicle connector signal wires	7	DC output power cables + PE
4	Charging cable	8	Configuration tag (right vehicle connector)

11.8. X-Satellite with one CCS and one CHAdeMO vehicle connector

NOTE
Grounding of the Ethernet shield at one end only, charging power unit or Satellite.

Figure 69. X-Satellite with one combined charging system (CCS) and one CHAdeMO vehicle connector

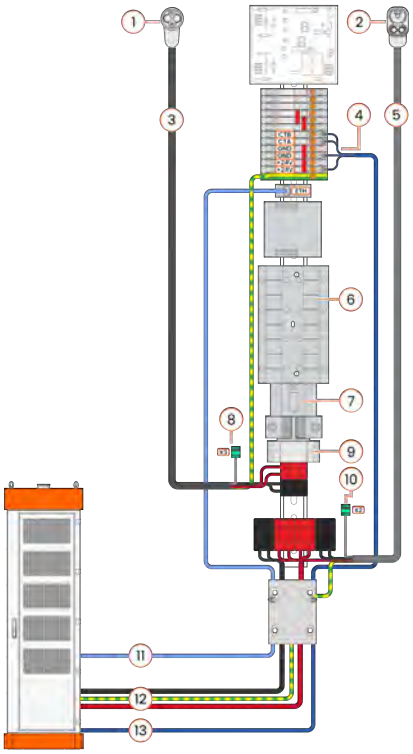


1	Configuration tag (left vehicle connector)	7	Vehicle connector signal wires (right)
2	Configuration tag (right vehicle connector)	8	Contactor for CHAdeMO
3	Charging cable (left)	9	Vehicle connector signal wires (left)
4	CT line signal wires	10	Communication cable
5	Charging cable (right)	11	DC output power cables + PE
6	Relay board	12	Control cable (CT line)

11.9. X-Satellite with one CCS, one CHAdeMO vehicle connector and a kWh meter

NOTE
Grounding of the Ethernet shield at one end only, charging power unit or Satellite.

Figure 70. X-Satellite with one combined charging system (CCS), one CHAdeMO vehicle connector and a kWh meter

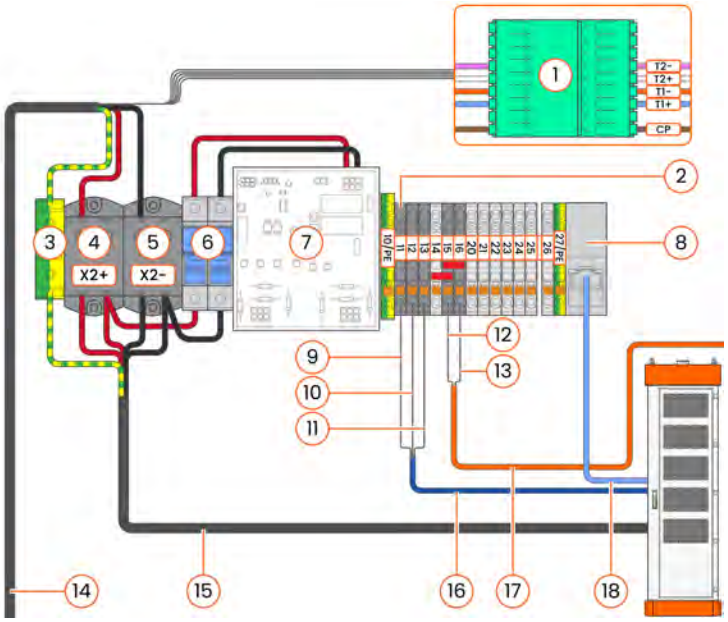


1	Configuration tag (left vehicle connector)	8	Vehicle connector signal wires (right)
2	Configuration tag (right vehicle connector)	9	Contactor for CHAdeMO
3	Charging cable (left)	10	Vehicle connector signal wires (left)
4	CT line signal wires	11	Communication cable
5	Charging cable (right)	12	DC output power cables + PE
6	Relay board	13	Control cable (CT line)
7	kWh meter		

11.10. Control Unit 200 A with one CCS vehicle connector

NOTE
Grounding of the Ethernet shield at one end only, charging power unit or Control Unit.

Figure 71. Control Unit 200 A with one combined charging system (CCS) vehicle connector



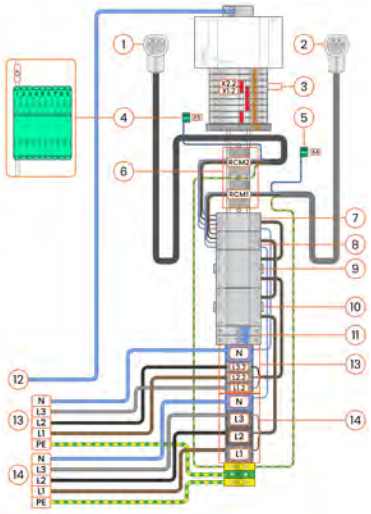
1	Terminal block for power cable PE	10	Control cable ground wire
2	Fuse terminal block (24 VDC, 2 A)	11	Control cable (CT A)
3	Charging cable Phoenix Connector	12	Equipment stop button
4	DC+ terminal (X2+)	13	Equipment stop button communication cable
5	DC- terminal (X2-)	14	DC power charging cable (vehicle connector)
6	DC Voltage measurement fuses (1000 VDC)	15	DC power cable from cabinet
7	Voltage and insulation monitor (A019)	16	Control cable
8	Ethernet terminal	17	Equipment stop button cable
9	Control cable auxiliary power wires (+24 V)	18	Communication cable

11.11. AC Satellite Version 2 with two vehicle connectors

NOTICE
The AC Satellite is not connected to the charging power unit. It requires only AC supply cables that are connected to the main AC supply.

NOTE
If the optional communication cable is used, ground the Ethernet shield at one end only: AC Satellite or network connection switch.

Figure 72. AC Satellite Version 2 with two vehicle connectors



1	Configuration tag (left vehicle connector)	8	Contactor (right)
2	Configuration tag (right vehicle connector)	9	kWh meter (left)
3	Connection for equipment stop (option)	10	kWh meter (right)
4	Socket signal wires (left)	11	Operating power circuit breaker
5	Socket signal wires (right)	12	Ethernet (public LAN) communication cable (option)
6	Residual current monitoring sensors	13	AC input 2[a]
7	Contactor (left)	14	AC input 1

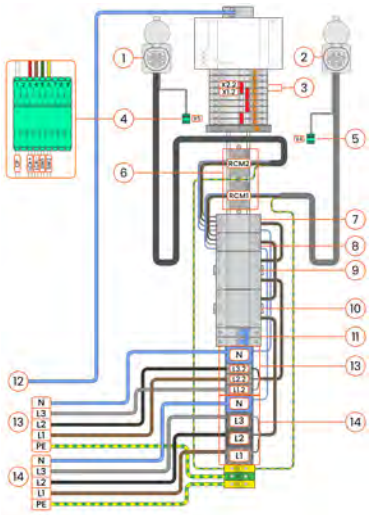
[a]*If the site has multiple AC Satellites, we recommend shifting the phase order L1→L2.2 | L2→L3.2 | L3→1.2 to balance the power consumption in the grid.*

11.12. AC Satellite Version 2 with two sockets

NOTICE
The AC Satellite is not connected to the charging power unit. It requires only AC supply cables that are connected to the main AC supply.

NOTE
If the optional communication cable is used, ground the Ethernet shield at one end only: AC Satellite or network connection switch.

Figure 73. AC Satellite Version 2 with two sockets or vehicle connectors



1	Configuration tag (left socket)	8	Contactor (right)
2	Configuration tag (right socket)	9	kWh meter (left)
3	Connection for equipment stop (option)	10	kWh meter (right)
4	Socket signal wires (left)	11	Operating power circuit breaker
5	Socket signal wires (right)	12	Ethernet (public LAN) communication cable (option)
6	Residual current monitoring sensors	13	AC input 2[a]
7	Contactor (left)	14	AC input 1

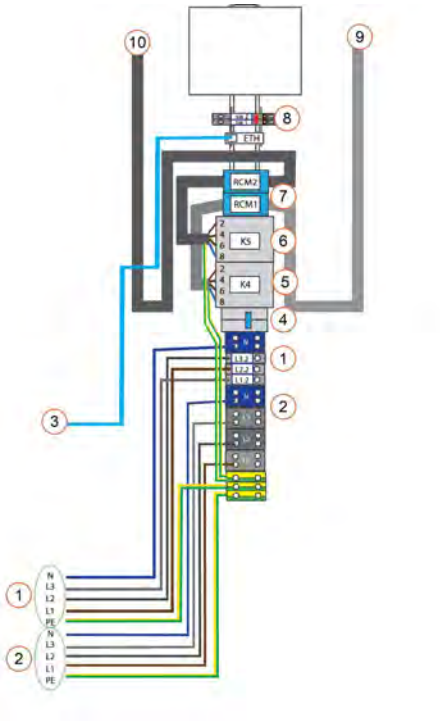
[a] *If the site has multiple AC Satellites, we recommend shifting the phase order L1→L2.2 | L2→L3.2 | L3→L1.2 to balance the power consumption in the grid.*

11.13. AC Satellite Version 2 with two sockets or vehicle connectors

NOTICE
The AC Satellite Version 2 is not connected to the charging power unit. It requires only AC supply cables that are connected to the main AC supply.

NOTE
If the optional communication cable is used, ground the Ethernet shield at one end only: AC Satellite Version 2 or network connection switch.

Figure 74. AC Satellite Version 2 with two sockets or vehicle connectors



1	AC input 2[a]	6	kWh meter (left)
2	AC input 1	7	Residual current monitoring sensors
3	Ethernet (public LAN) communication cable (option)	8	Connection for equipment stop (optional)
4	Operating power circuit breaker	9	Configuration tag (right)
5	kWh meter (right)	10	Configuration tag (left)

[a]*If the site has multiple AC Satellites, we recommend shifting the phase order L1→L2.2 | L2→L3.2 | L3→L1.2 to balance the power consumption in the grid.*

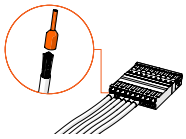
12. CONTROL SIGNAL WIRES OF THE CHARGING CABLE

The units have pre-installed wiring harnesses with mating connectors for the control signal wires of the charging cable. Before you connect the signal wires to the mating connector, terminate the signal wires with ferrules to protect the wires from corrosion.

12.1. CCS charging cables

NOTICE

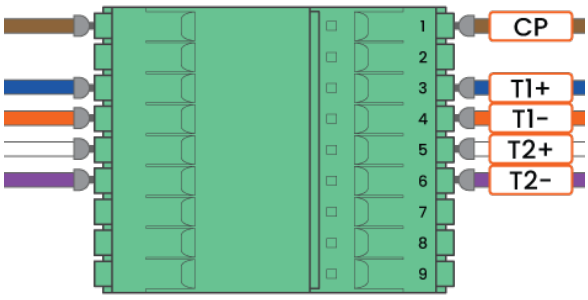
Before you connect the signal wires to the mating connector, terminate the signal wires with ferrules to protect the wires from corrosion.



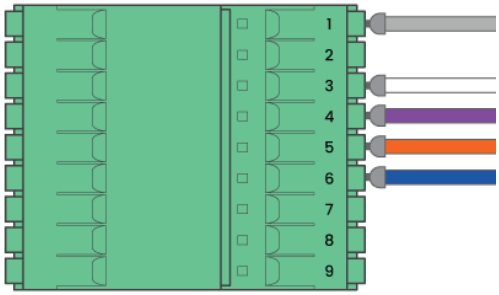
Connect the five control signal wires of the CCS charging cable to the mating connector:

- X2 for the charging cable on the right hand side
- X3 for the charging cable on the left hand side

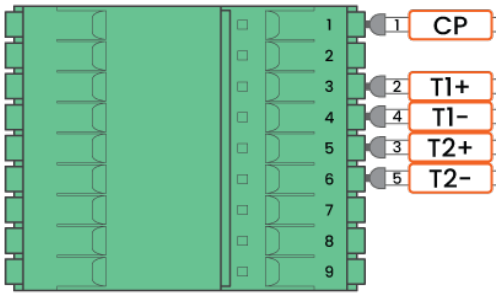
Unit wiring



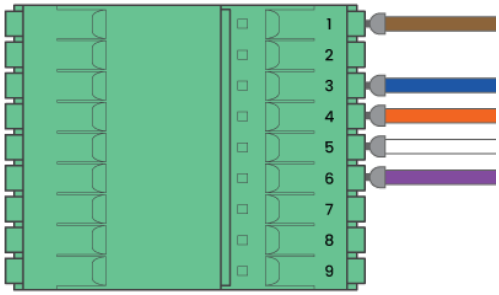
Amphenol charging cable



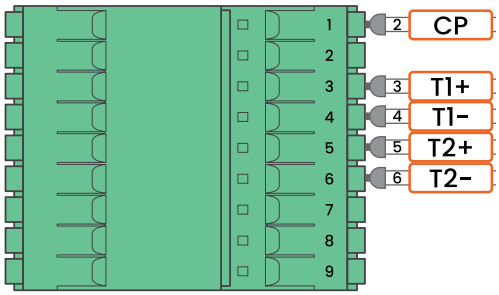
Amphenol charging cable (numbered wires)



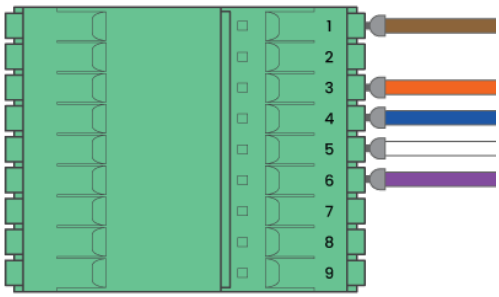
Brugg/Phoenix charging cable



Brugg charging cable (numbered wires)



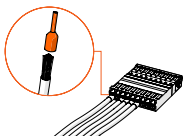
REMA charging cable



12.2. CHAdeMO charging cables

NOTICE

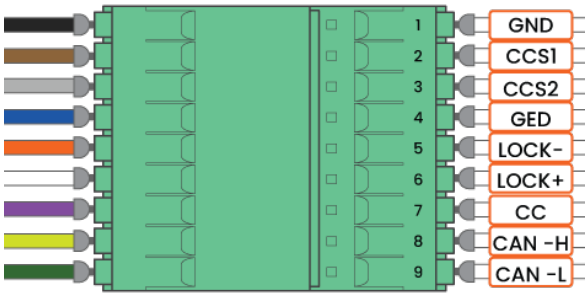
Before you connect the signal wires to the mating connector, terminate the signal wires with ferrules to protect the wires from corrosion.



Connect the nine control signal wires of the CHAdeMO charging cable to the mating connector:

- X2 for the charging cable on the right hand side
- X3 for the charging cable on the left hand side

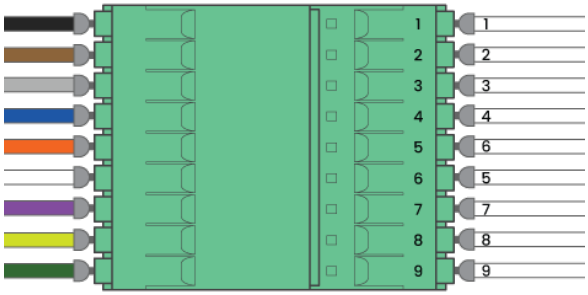
Unit wiring



CHAdeMO 40142

DC+ BROWN

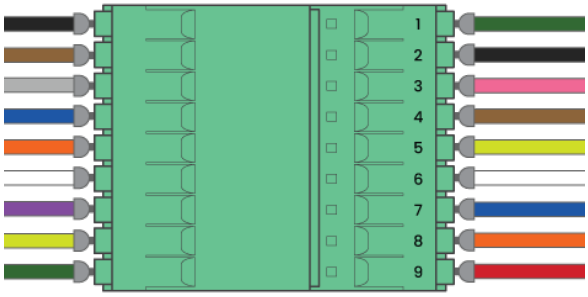
DC- BLUE



CHAdeMO 40147

DC+ WHITE

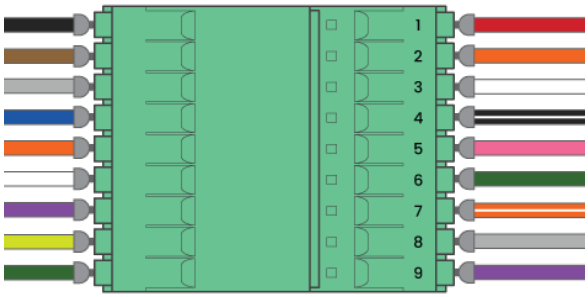
DC- BLACK



CHAdeMO 40222

DC+ BLACK

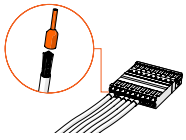
DC- BLUE



12.3. AC charging cables

NOTICE

Before you connect the signal wires to the mating connector, terminate the signal wires with ferrules to protect the wires from corrosion.



Connect only the CP signal wire of the AC charging cable to the mating connector:

- X4 for the charging cable on the right hand side
- X5 for the charging cable on the left hand side

L1 BROWN

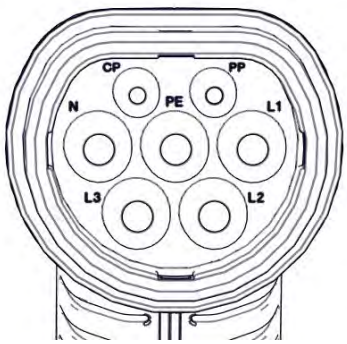
L2 BLACK

L3 GRAY

N BLUE

PE GREEN-YELLOW

CP BLACK-WHITE or WHITE



13. EXAMPLES OF CONCRETE FOUNDATIONS

NOTE
Concrete foundations are not supplied by Kempower.

Figure 75. Example of single, double, and triple cabinets on concrete foundations

Figure 76. Example of concrete foundation (triple cabinet)

14. INDICATIVE DIMENSIONS FOR CONCRETE FOUNDATIONS

NOTE
Concrete foundations are not supplied by Kempower.

Figure 77. Indicative drawing for cabinet's concrete foundation, side view (mm)

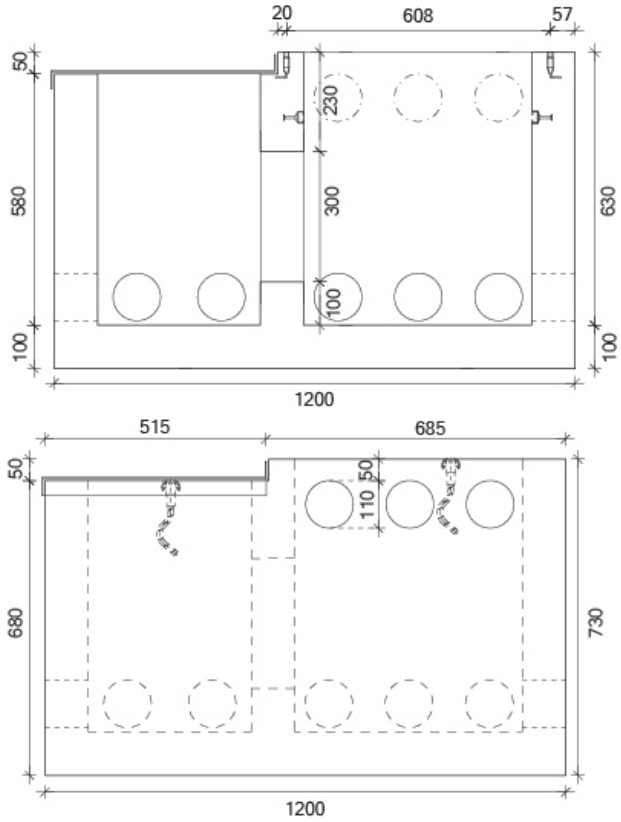


Figure 78. Indicative drawing for single cabinet's concrete foundation, top view (mm)

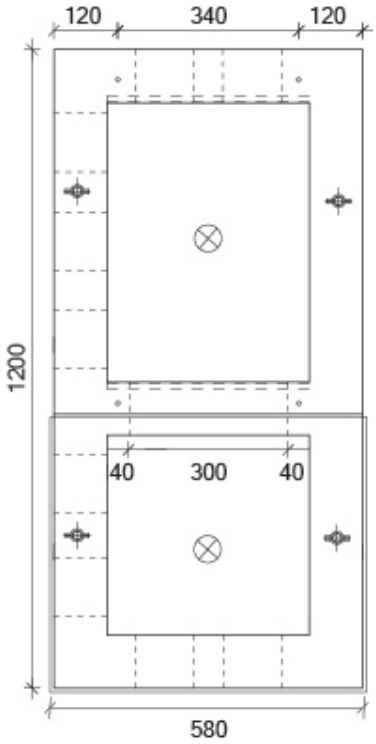


Figure 79. Indicative drawing for double cabinet's concrete foundation, top view (mm)

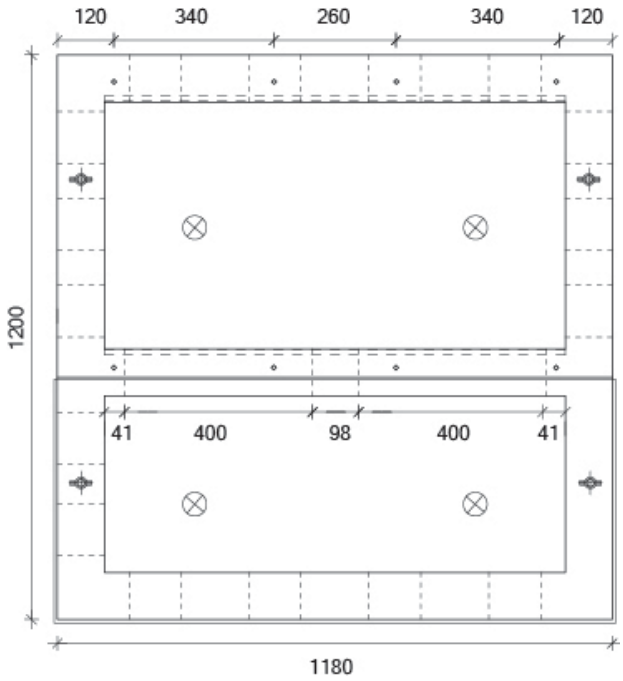


Figure 80. Indicative drawing for triple cabinet's concrete foundation, top view (mm)

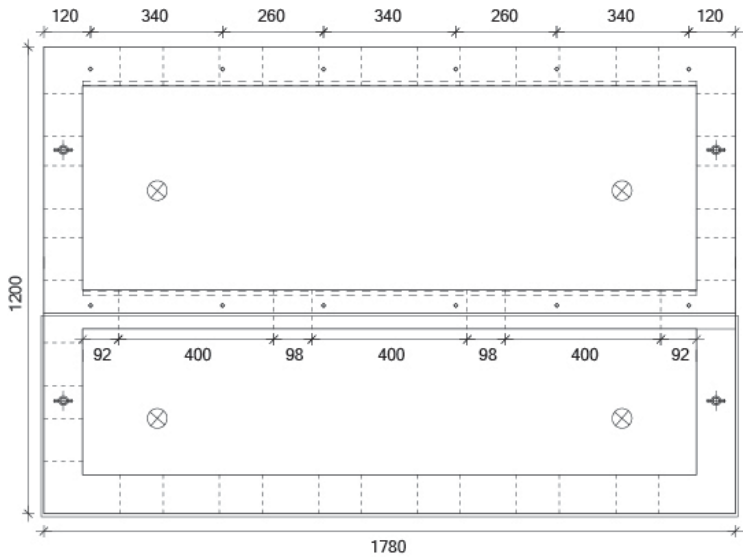
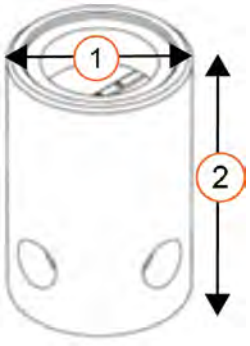


Figure 81. Indicative drawing for Satellite concrete foundation (standard installation flange)



1 Outer diameter 400 mm

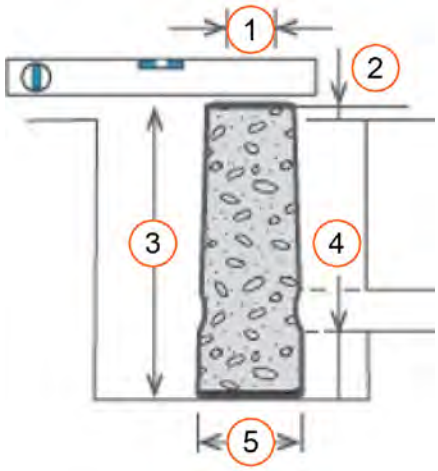
2 Height 600 mm

Top of foundation above ground 25–55 mm

Cable channel diameter approximately 150 mm

Weight approximately 100 kg

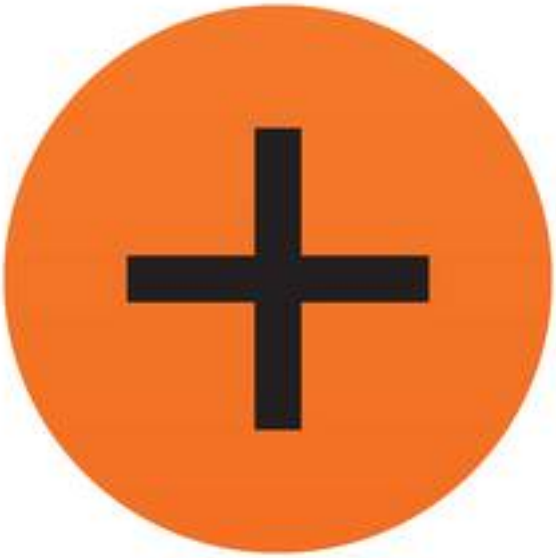
Figure 82. Indicative drawing for Satellite concrete foundation, typically used for e.g. lamp posts (requires optional mounting tube)



1 Inner diameter 127 mm
2 Top of foundation above ground 25–55 mm
3 Height 600 mm
4 Cable channel diameter 150 mm
5 Outer diameter 264 mm
Weight approximately 80 kg

15. CHANGE LOG

Charging equipment for electric vehicles Installation manual **REV 2.40 04-2024**	**Changes**
3: Kempower charging equipment for electric vehicles	Added Power Unit Version 3 Corrected AC Satellite description
3.3.3: Station Charger	Corrected Station Charger description
4.2.1: AC mains power cables to the charging power unit	Updated PE wire recommendation
4.2.2: Cabling between the charging power unit and DC charging points	Updates wire recommendation
5: Installing the charging equipment	Added Power Unit Version 3
5.2.8: Installing the AC mains power cables to the charging power unit	Updated PE wire recommendation
7: Finishing the installation	Added Power Unit Version 3
8: Commissioning	Added Power Unit Version 3
9: Unit footprints and clearances	Added clearance illustrations Converted measurements to mm



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