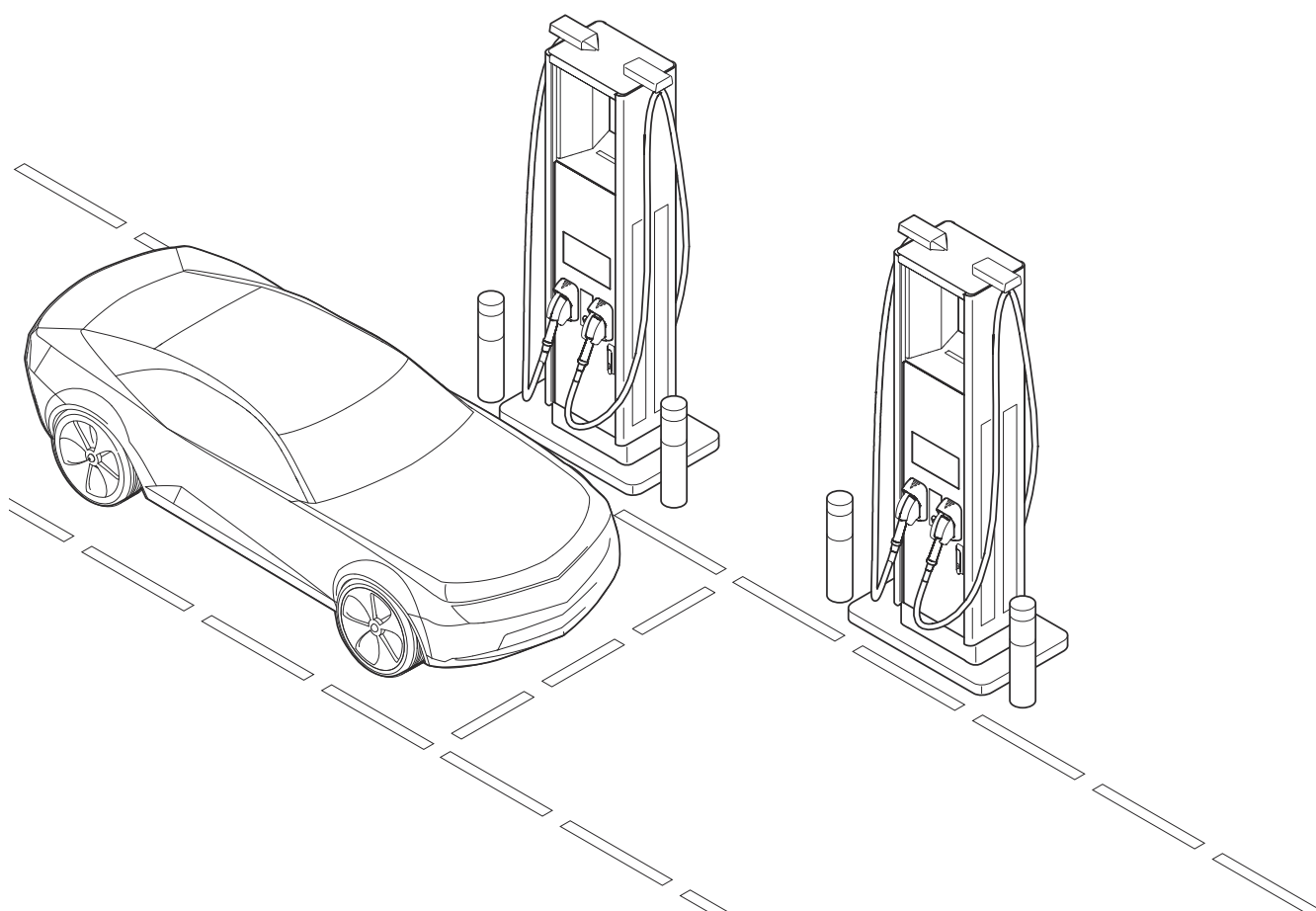


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# User manual

## Terra HP Generation 3 UL



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# 1 About this document

## 1.1 Function of this document

The document is only applicable for this EVSE: Terra HP Generation 3, including the variants and options listed in section 7.1.

The document gives the information that is necessary to do these tasks:

- Use the EVSE
- Do basic maintenance tasks

## 1.2 Target group

The document is intended for the owner of the EVSE.

For a description of the responsibilities of the owner, refer to section 2.3.

## 1.3 Revision history

Version	Date	Description
001	June 2021	Initial version
002	August 2021	Updates: <ul style="list-style-type: none"><li>• Procedures to energize and de-energize the EVSE</li><li>• Procedures to open and close the door of the power cabinet and the charge post</li><li>• Space requirements</li></ul>
003	November 2021	Update: <ul style="list-style-type: none"><li>• Heights of user operable elements</li></ul>
004	April 2022	Change of company name and address
005	December 2023	Updates

## 1.4 Language

The original instructions of this document are in English (EN-US). All other language versions are translations of the original instructions.

## 1.5 Illustrations

It is not always possible to show the configuration of your EVSE. The illustrations in this document show a typical setup. They are for instruction and description only.

## 1.6 Units of measurement

SI units of measurement (metric system) are used. If necessary, the document shows other units between parentheses () or in separate columns in tables.









## 1.7 Typographical conventions




The lists and steps in procedures have numbers (123) or letters (abc) if the sequence is important.

## 1.8 How to use this document

1. Make sure that you know the structure and contents of this document.
2. Read the safety section and make sure that you know all the instructions.
3. Do the steps in the procedures fully and in the correct sequence.
4. Keep the document in a safe location that you can easily access. This document is a part of the EVSE.

## 1.9 General symbols and signal words

Signal word	Description	Symbol
Danger	If you do not obey the instruction, this can cause injury or death.	Refer to section 1.10.
Warning	If you do not obey the instruction, this can cause injury.	Refer to section 1.10.
Caution	If you do not obey the instruction, this can cause damage to the EVSE or to property.	
Note	A note gives more data, to make it easier to do the steps, for example.	
-	Information about the condition of the EVSE before you start the procedure.	
-	Requirements for personnel for a procedure.	
-	General safety instructions for a procedure.	
-	Information about spare parts that are necessary for a procedure.	
-	Information about support equipment that is necessary for a procedure.	
-	Information about supplies (consumables) that are necessary for a procedure.	






Signal word	Description	Symbol
-	Make sure that the power supply to the EVSE is disconnected.	
-	Electrotechnical expertise is required, according to the local rules.	
-	Alternating current supply	



**Note:** It is possible that not all symbols or signal words are present in this document.

## 1.10

### Special symbols for warnings and dangers

Symbol	Risk type
	General risk
	Hazardous voltage that gives risk of electrocution
	Risk of pinching or crushing of body parts
	Rotating parts that can cause a risk of entrapment
	Hot surface that gives risk of burn injuries



**Note:** It is possible that not all symbols are present in this document.



## 1.11 Related documents

Document name	Target group
Product data sheet	All target groups
Installation manual	Qualified installation engineer
User manual	Owner
Service manual	Qualified service engineer
Declaration of conformity (CE)	All target groups

## 1.12 Manufacturer and contact data

### ABB E-mobility USA

ABB E-mobility Inc.  
950 W Elliott Rd  
Tempe AZ 85284 Suite 101  
United States of America  
Phone: 800-825-2556  
E-mail: US-evci@us.abb.com

### ABB E-mobility Canada

ABB E-mobility Inc.  
800 Boul. Hymus  
St-Laurent, Quebec H4S 0B5  
Canada  
Phone: 800-825-2556  
E-mail: CA-evci@us.abb.com

### Contact data

ABB E-Mobility B.V. in your country can give you support on the EVSE. You can find the contact data here: <https://new.abb.com/ev-charging>

## 1.13 Abbreviations

Abbreviation	Definition
AC	Alternating current
BESS	Battery energy storage system
CAN	Controller area network
CPU	Central processing unit
DC	Direct current
EMC	Electromagnetic compatibility
EV	Electric vehicle
EVSE	Electric vehicle supply equipment
EVSS	Electric vehicle site solutions
MID	Measuring Instruments Directive
NFC	Near field communication

Abbreviation	Definition
NoBo	Notified body
OCPP	Open charge point protocol
PE	Protective earth
PPE	Personal protective equipment
RFID	Radio-frequency identification
UPS	Uninterruptible power supply



**Note:** It is possible that not all abbreviations are present in this document.

## 1.14

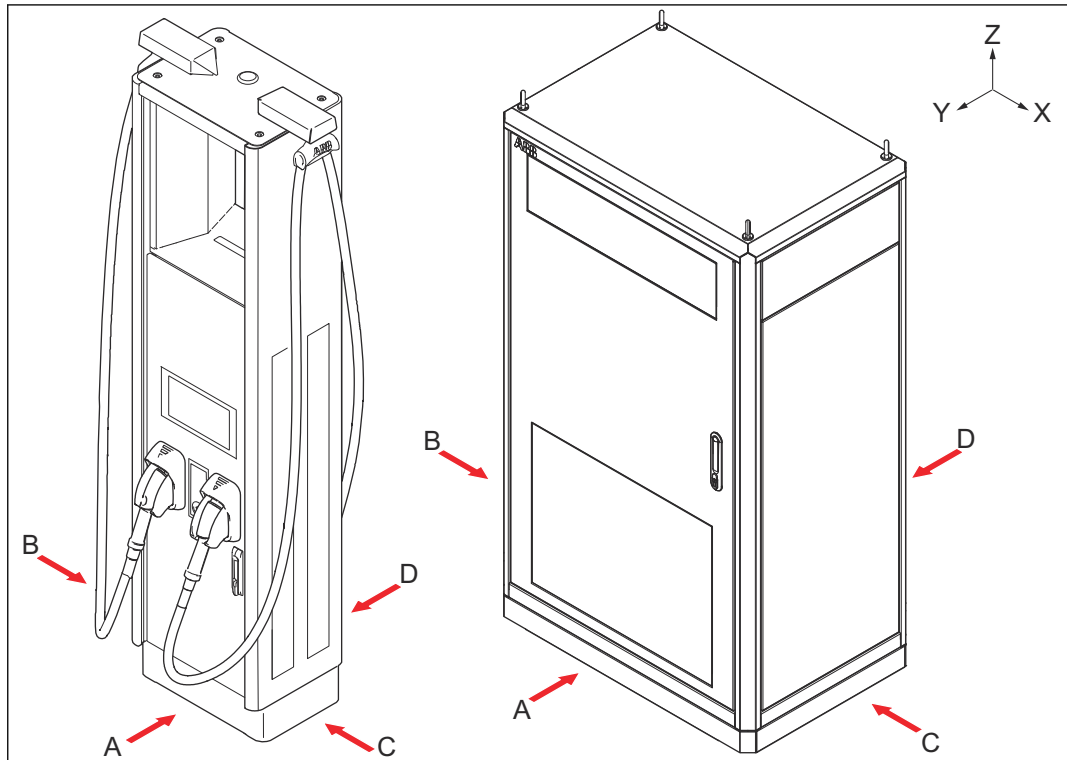
### Terminology

Term	Definition
Network operating center of ABB EV Infrastructure	Facility of the manufacturer to do a remote check on the correct operation of the EVSE
Cabinet	Enclosure of the EVSE, including the components on the inside
Cable slack	Extra length of cable from the top of the foundation so that the cable length is sufficient to connect to the correct terminal in the cabinet
CCS	Combined Charging System, a standard charging method for electric vehicles
CHAdeMO	Abbreviation of <i>CHArge de MOve</i> , a standard charging method for electric vehicles
Grid provider	Company that is responsible for the transport and distribution of electricity
Local rules	All rules that apply to the EVSE during the entire lifecycle of the EVSE. The local rules also include the national laws and regulations
Open charge point protocol	Open standard for communication with charge stations
Owner	Legal owner of the EVSE
Protective devices	Devices for the personal protection of individuals against the risk of injury or electrical shock when they do commissioning, operation and maintenance activities. Examples of protective devices are a door, the electrical parts covers, the latches, etc.
Site operator	Entity that is responsible for the day-to-day control of the EVSE. The site operator does not have to be the owner
User	Owner of an EV, who uses the EVSE to charge the EV



**Note:** It is possible that not all terms are present in this document.

## 1.15 Orientation agreements



- A Front side: face forward to the EVSE during normal use
- B Left side
- C Right side
- D Rear side

- X X-direction (positive is to the right)
- Y Y-direction (positive is rearward)
- Z Z-direction (positive is upward)

## 2 Safety

### 2.1 Liability

The manufacturer is not liable for damages, losses, costs or expenses incurred by any user of the EVSE (e.g. the qualified installation engineer or owner of the EVSE) if such damages, losses, costs or expenses result from a failure to comply with the applicable safety instructions given by the manufacturer, including, but not limited to, the following:

- Power outages or disruptions to the electrical supply to the EVSE.
- Accumulation of dirt or ingress of foreign substances within the EVSE.
- Corrosion of component parts.
- Upgrades enhancements or modifications to the equipment or its use.
- Damage to software or hardware due to any IT security problem, such as but not limited to a virus breakout or malicious hacking of the system.
- Damage or failure of equipment caused by vermin, insect infestations or the like.
- Damage or failure resulting from faults in some other equipment connected to the scope of work.
- Damage or loss caused by hazards such as fire, flood, storm or the like or spillage or leakage of chemicals or harmful substances onto the EVSE.
- Fault tracing caused by problems from a source external to the scope of work.
- Unprofessional or incorrect installation, installation not complying to standards, or installation not following the installation instructions contained in the product specific manual.
- Improper operation (in breach of the technical requirements or specifications or manuals of the product), negligence or repairs carried out by the Owner (or any third party not authorized by ABB).
- Non-compliance with the applicable safety regulations or other legal standards by other parties than ABB.
- Insufficient ventilation of the EVSE.
- Operation of the EVSE outside of its design conditions.
- Relocation of the EVSE from the original installation location or alteration of the overall system design.
- Only make changes to the EVSE if the manufacturer approves in writing of the changes.

### 2.2 General safety instructions

- Only perform the procedures as indicated in this document.
- Only perform service by a qualified installation engineer or use the EVSE when you are fully qualified to do so.
- Comply with the applicable laws and local rules in this manual.

If and to the extent permitted by law, in case of inconsistency between any requirements or procedure contained in this document and any such applicable laws and local rules, comply with the stricter applicable laws and local rules, requirements and procedures specified in this document.





## 2.3 Responsibilities for the owner



The owner is the person who runs the EVSE for commercial or business purposes for itself or leaves it to a third party for use. During operation the owner bears legal responsibility for the protection of the user, other employees or third parties. The owner has the responsibilities that follow:

- To know and implement the applicable laws and the local rules.
- To identify the hazards (in terms of a risk assessment), resulting from the working conditions on the site.
- To operate the EVSE with the protective devices installed.
- To make sure that all protective devices are installed after installation or maintenance work.
- To make an emergency plan that instructs people what to do in case of an emergency.
- To make sure that all employees and third parties are qualified according to the applicable laws and local rules to do the work.
- To make sure that there is sufficient space around the EVSE to safely do maintenance and installation work.
- To identify a site operator who is responsible for the safe operation of the EVSE and for the coordination of all work, if the owner does not do these tasks.

## 2.4 Personal protective equipment

Symbol	Description
	Protective clothing
	Safety gloves
	Safety shoes
	Safety glasses

## 2.5 Safety instructions for use

Do not use the EVSE and immediately get in contact with the manufacturer if the safety or the safe use of the EVSE is at risk. This includes, but is not limited to, these conditions:

- An enclosure has damage.

- An EV charge cable or connector has damage.
- Lightning struck the EVSE.
- There was an accident or a fire at or near the EVSE.
- Water entered the EVSE.

## 2.6 Safety instructions during cleaning or maintenance

### Preliminary requirements



- Keep unauthorized personnel at a safe distance during cleaning or maintenance.
- If for cleaning or maintenance it is necessary to remove safety devices, immediately install the safety devices after the work.
- Put on the correct personal protective equipment. Refer to section 2.4.




## 2.7 Safety instructions for earthing






### Preliminary requirements



- Make sure that the EVSE is connected to a grounded, metal, permanent wiring system. If that is not possible, then an equipment-grounding conductor must be run with the circuit conductors. The equipment-grounding conductor must be connected to the equipment grounding terminal or lead on the product.
- Make sure that the connections to the EVSE comply with all applicable local rules.

## 2.8 Signs on the EVSE

Symbol	Description
	General risk
	Hazardous voltage that gives risk of electrocution
	Risk of pinching or crushing of body parts

Symbol	Description
	Rotating parts that can cause a risk of entrapment
	Hot surface that gives risk of burn injuries
	Appliance class 1
	Sign that means that you must read the manual before you use or install the EVSE
	Waste from electrical and electronic equipment



**Note:** It is possible that not all symbols are present on the EVSE.

## 2.9

### Discard the EVSE or parts of the EVSE

Incorrect waste handling can have a negative effect on the environment and human health due to potential hazardous substances. With the correct disposal of this product, you contribute to reuse and recycling of materials and protection of the environment.

- Obey the applicable laws and local rules when you discard parts, packaging material or the EVSE.
- Discard electrical and electronic equipment separately in compliance with the WEEE - 2012/19/EU Directive on waste of electrical and electronic equipment.
- As the symbol of the crossed out wheeled-bin on your EVSE indicates, do not mix or dispose the EVSE with your household waste, at the end of use. Instead, hand the EVSE over to your local community waste collection point for recycling.
- For more information, contact the Government Waste-Disposal department in your country.

## 2.10

### Cyber security



**Note:** This topic is valid for a wired Ethernet connection.

This product is designed to be connected to and to communicate information and data via a network interface. It is the Owner's sole responsibility to provide and continuously ensure a secure connection between the product and Owner's network or any other network (as the case may be).

The Owner shall establish and maintain any appropriate measures (such as but not limited to the installation of firewalls, application of authentication measures, encryption of data, installation of anti-virus programs, etc) to protect the product, the network, its system and the interface against any kind of security breaches, unauthorized access, interference, intrusion, leakage and/or theft of data or information.

The manufacturer (ABB E-Mobility B.V.) and its affiliates are not liable for damages and/or losses related to such security breaches, any unauthorized access, interference, intrusion, leakage and/or theft of data or information.



## 3 Description

### 3.1 Intended use

The EVSE is intended for DC high power charging of EVs. The EVSE is intended for indoor or outdoor use.

- The properties of the electrical grid, the ambient conditions and the EV must comply with the technical data of the EVSE. Refer to chapter 7.
- Only use the EVSE with accessories that are approved by the manufacturer (ABB E-Mobility B.V.) and that obey the local rules.
- Do not use power cabinets from this EVSE with power cabinets from different EVSEs.

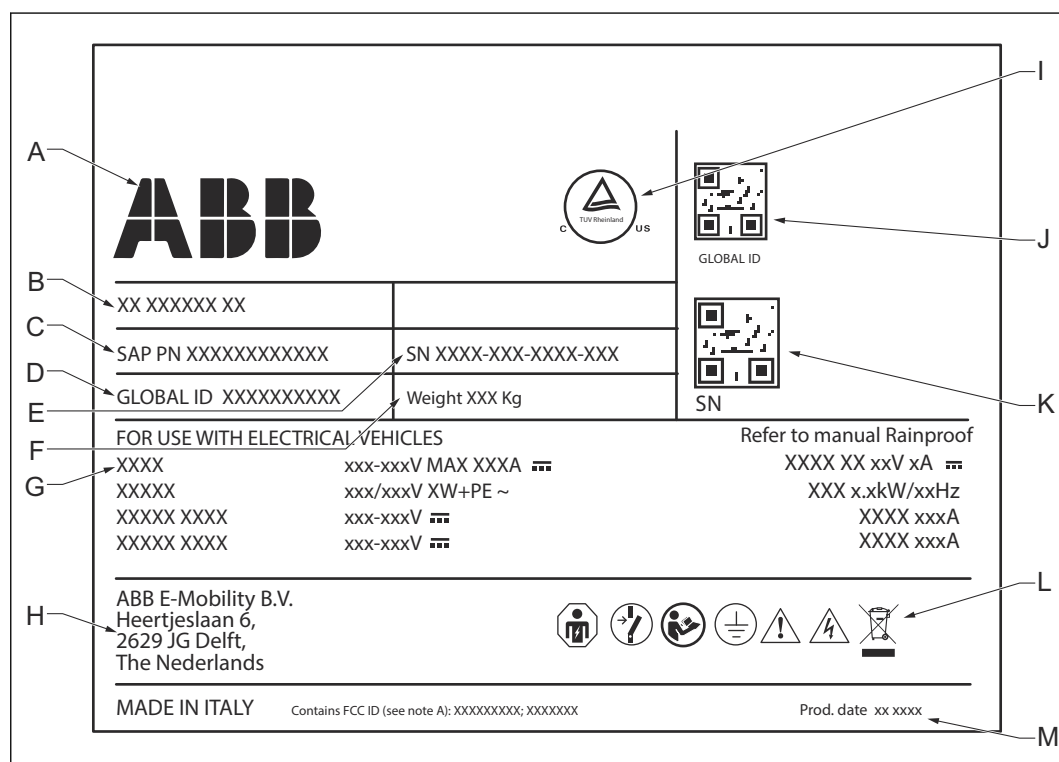
#### Danger:



#### General risk

- If you use the EVSE in any other way than described in the related documents, you can cause death, injury and damage.
- Use the EVSE only as intended.

### 3.2 Type plate



- A Manufacturer
- B Full EVSE type
- C Part number of the EVSE
- D Serial number
- E Internal product code (for the manufacturer)
- F EVSE mass
- G EVSE rating

- H Address of the manufacturer
- I UL mark
- J QR code with the internal product code (for the manufacturer)
- K QR code with the serial number of the EVSE
- L Additional EVSE rating data
- M Production date



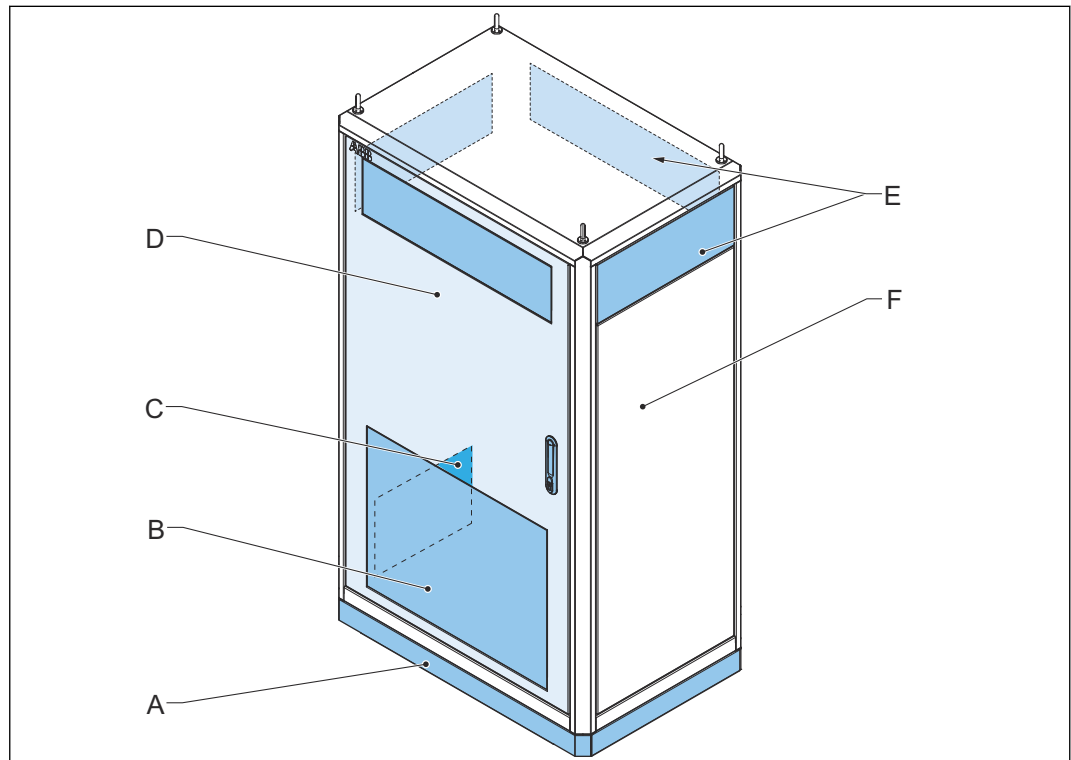
**Note:** The data in the illustration are only examples. Find the type plate on your EVSE to see the applicable data. Refer to section 3.3.3.

## 3.3

### Overview

#### 3.3.1

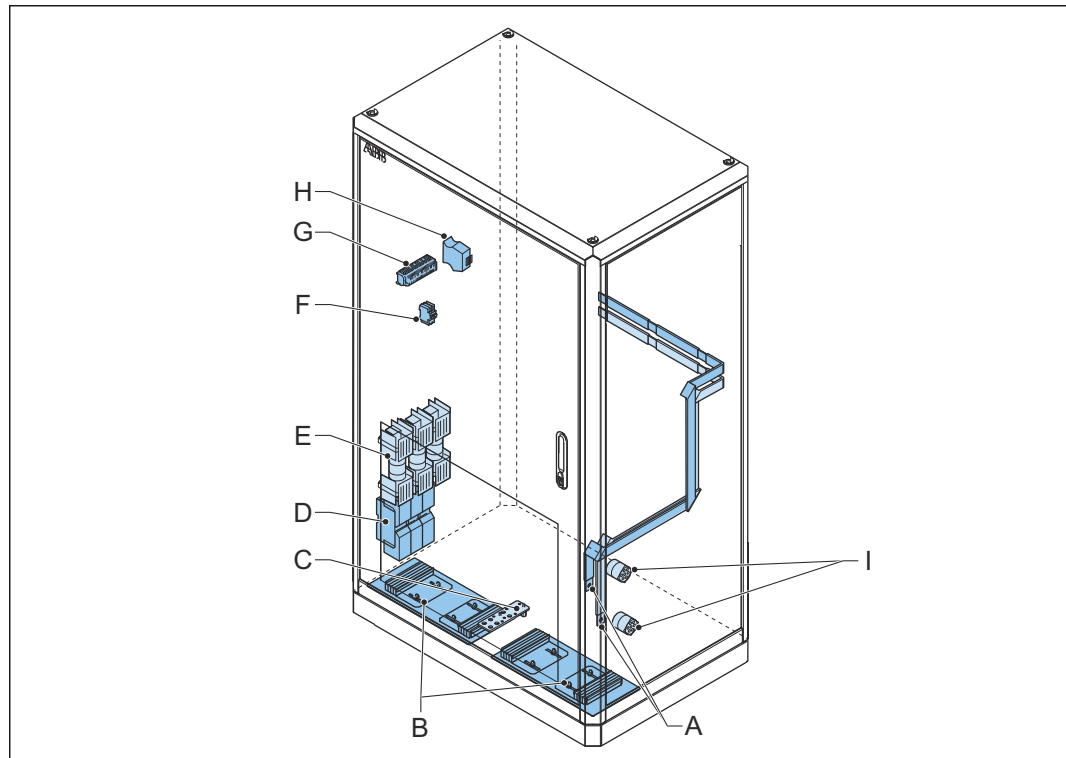
#### Power cabinet, outside



A Plinth cover  
B Air outlet  
C Type plate

D Door  
E Air inlet (4x)  
F Enclosure

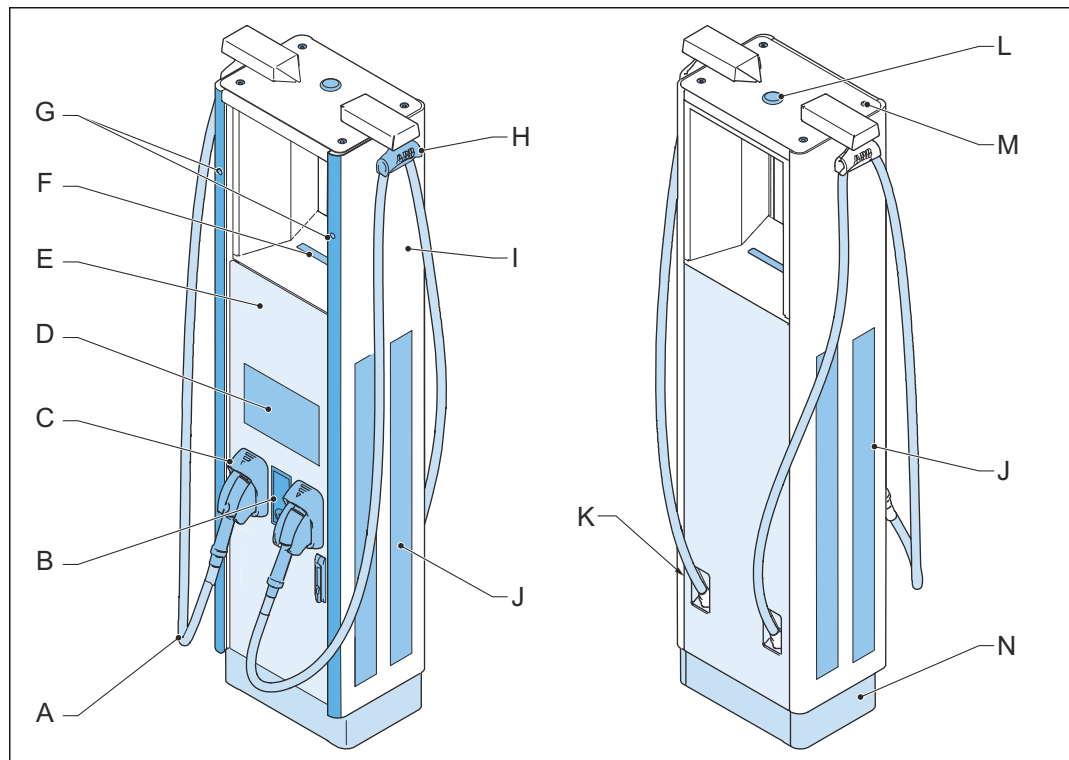
### 3.3.2 Power cabinet, inside



A	DC output busbars	F	X-10 terminal block
B	Cable inlets	G	X-8 terminal block
C	PE busbar	H	CAN2FIBER device
D	AC power connector	I	Relays
E	Fuse block		

Part	Function
DC output busbar	To connect the DC output power cables
Cable inlet	A plate with openings for cables
PE busbar	To connect PE cables
AC power connector	To connect to the AC input power cable
Fuse block	To protect the machine from overcurrent and prevent a short circuit of downstream components
X-10 terminal block	To connect to the AC auxiliary power cable
X-8 terminal block	To connect the interlock and DC guard cable
CAN2FIBER device	To connect the optical CAN cable
Relays	To control the power sharing between two cabinets. The relays are only applicable to a dynamic DC version.

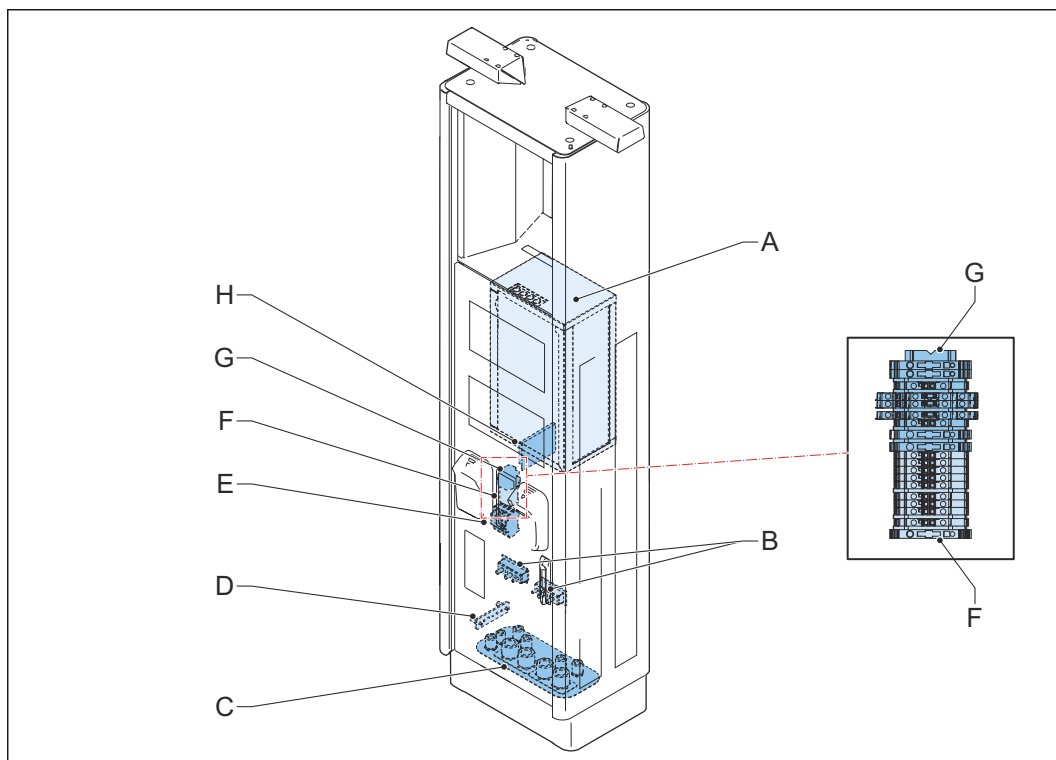
### 3.3.3 Charge post CP500 Generation 3, outside



- |   |   |   |                         |
|---|---|---|-------------------------|
| A | EV charge cable                               | H | Cable retraction system |
| B | RFID reader and the payment terminal (option) | I | Enclosure               |
| C | Connector holder                              | J | Air inlet and outlet    |
| D | Touchscreen                                   | K | Type plate              |
| E | Door  | L | Antenna                 |
| F | Top light                                     | M | Hoisting points         |
| G | Side LED strips                               | N | Plinth cover            |

## 3.3.4

## Charge post CP500 Generation 3, inside



A	Cooling unit	E	Q1 RCD
B	DC power busbars	F	X-10 terminal block
C	Cable gland plates	G	X-20 terminal block
D	PE busbar	H	CAN2FIBER device

Part	Function
Cooling unit	To decrease the temperature of the charge cables
DC power busbars	To connect the DC power cables
Cable gland plates	Glands for the cables to the charge post
PE busbar	To connect the PE wire
Q1 RCD	Residual current circuit breaker to connect or disconnect the AC auxiliary power to the charge post
X-10 terminal block	To connect the AC auxiliary power cable
X-20 terminal block	To connect the interlock and DC guard cable
CAN2FIBER device	To connect the optical CAN cable

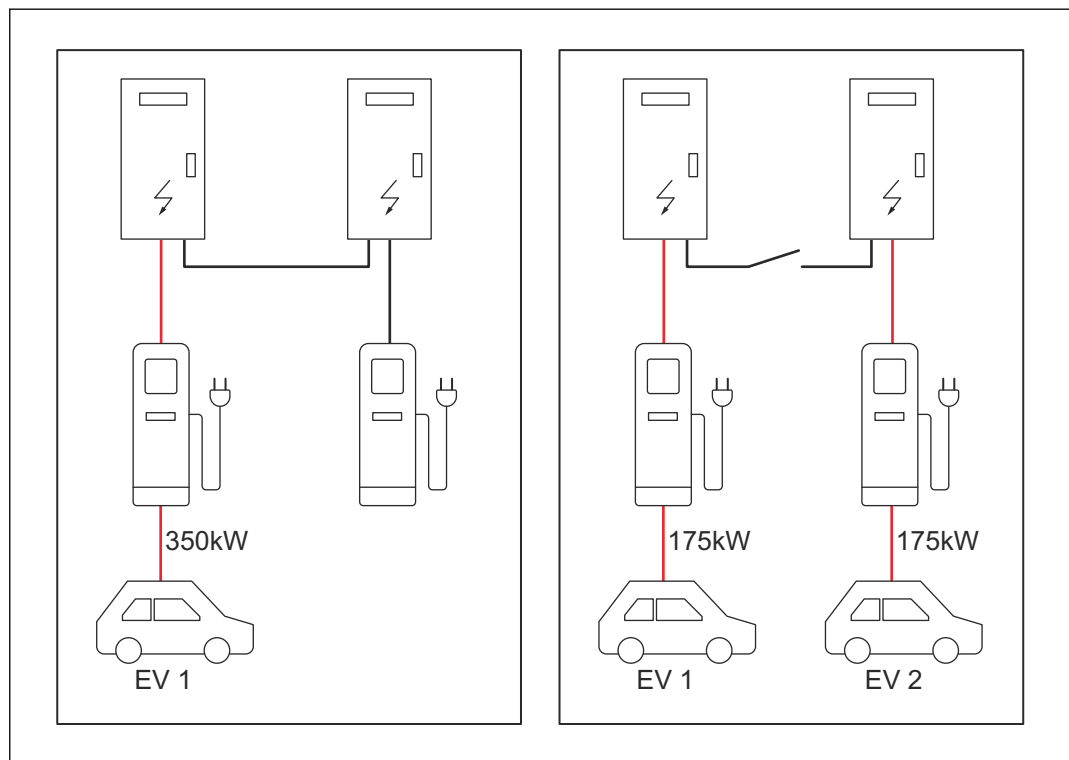
## 3.4

## Authorization to charge

It is possible to use the EVSE with or without authorization.

An authorization can be based on RFID, a personal identification number, or a mobile authentication method. Authorization requires a subscription to a back office. Authorization can be a standard solution from the manufacturer, or from an external company that offers authorization solutions via OCPP.

### 3.5 Dynamic DC operation modes

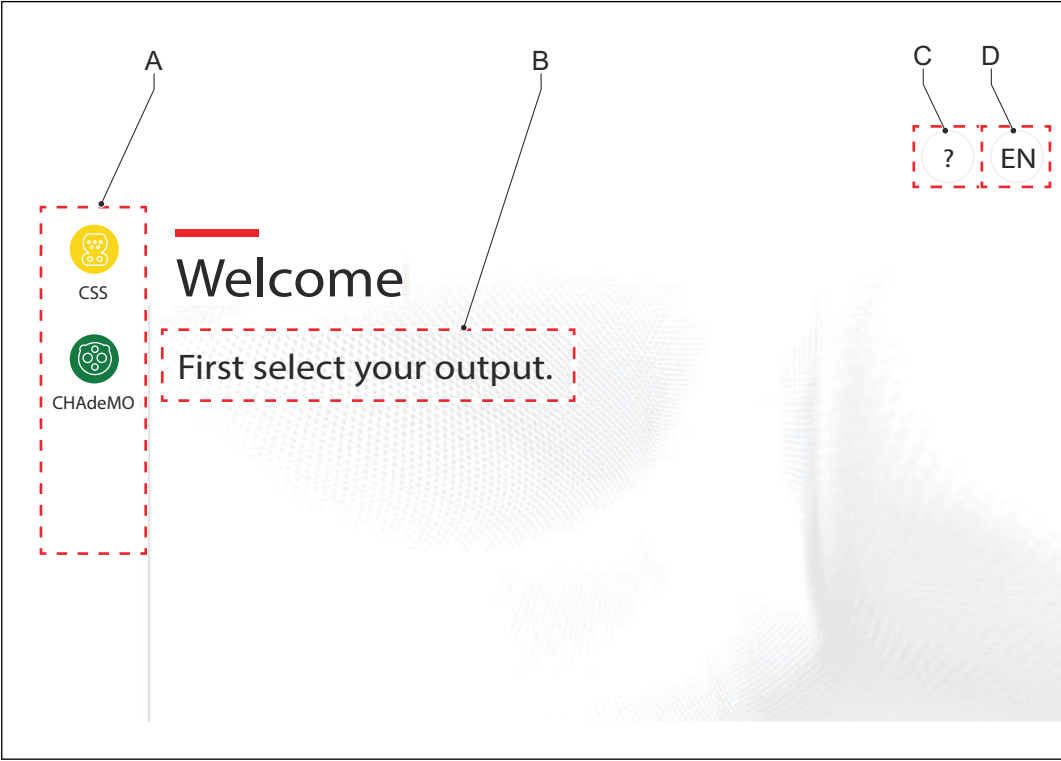


With the dynamic DC system the EVSE optimally uses the charge assets.

- **First In First Served**  
If EV-1 uses two power cabinets for the charge session, EV-2 has to wait.  
If EV-1 uses one power cabinet, EV-2 can start the charge session immediately.
- **Shared Power**  
If EV-1 uses two power cabinets when EV-2 arrives, a power cabinet becomes available when EV-2 connects to the EVSE. Each of the two EVs will charge up to 175kW and 375A.

3.6 Description of the touchscreen

3.6.1 General description of the layout








- A Field to select the connector type

B Instruction field
- C Information button

D Selected language

3.6.2 General description of the buttons

Button	Name	Description
	CCS	To select the CCS connector
	CHAdEMo	To select the CHAdEMo connector
	Language	To change the language on the touchscreen. The button shows the code of the selected language.
	Start	To start the charge session
	Stop	To stop the charge session

## 3.7 Options

### 3.7.1 Payment terminal

The touchscreen guides the user how to use the payment terminal.



**Note:**

- To use and adjust the settings of the payment terminal, you require the ABB Payment Web tool.



## 4 Operation

### 4.1 Prepare before use

1. Appoint a site operator and an installation engineer, if these are other persons than you.
2. Make sure that the EVSE is installed according to the instructions in the installation manual.
3. Make an emergency plan that instructs people what to do in case of an emergency.
4. Make sure that the manufacturer, or a third party that is certified by the manufacturer, commissions the EVSE. Contact the manufacturer or the third party when the EVSE is ready for commissioning. Refer to section 1.12.

**Danger:**



**General risk**

- Make sure that you have approval of the manufacturer to use the EVSE after commissioning. After approval, do not move the EVSE.
5. Make sure that the space around the EVSE cannot get blocked. Think of snow or other objects. Refer to the floor space requirements. Refer to section 7.12.
  6. Make sure that maintenance is done on the EVSE. Refer to section 4.5.1.
  7. Make sure that there is no condensation inside the cabinet.
    - Open the door to let the natural airflow remove the condensation. Refer to section 6.3.
    - Install a portable heater in the cabinet and set it to ON until the condensation is completely removed. The cabinet door stays closed.

**Caution:** Remove condensation before use, to prevent damage to the EVSE.



### 4.2 Charge session

#### 4.2.1 General procedure

1. Park the EV in the parking space. Make sure that the connector of the EV charge cable can reach the charging inlet on the EV.
2. De-energize the EV.
3. Start the charge session. Refer to section 4.2.2.
4. Stop the charge session. Refer to section 4.2.3.

#### 4.2.2 Start a charge session

1. On the touchscreen, select the applicable *connector* button.



**Note:** If you skip this step, the EVSE selects the correct connector automatically when you connect the EV charge cable to the EV.

2. Connect the EV charge cable to the connector on the EV.

3. On the touchscreen, select the *Start* button.
  - If authorization is disabled, the touchscreen shows the charge screen.
  - If authorization is enabled, select the payment method.
4. Do the instructions on the touchscreen to help the preparing phase.
  - If the preparing phase was successful, the EVSE charge session starts. The touchscreen shows information about the actual status of the charge session, session time, amount of energy that was delivered to the EV and the charge power in kW.
  - If authorization was successful, but preparation checks failed, the touchscreen shows a message. The payment through the payment terminal is stopped.
5. If the touchscreen shows a message to authorize the charge session, do the instructions that the touchscreen shows.

### 4.2.3

#### Stop a charge session

1. On the touchscreen, select *Your outlet* to get the detailed view.
2. Select the *Stop* button.



**Note:** When the battery is full, the charge session stops automatically.

If *Authorize for stop* is on, the touchscreen shows the authorization page.



**Note:** For sessions that use the payment terminal, authorize for stop is not possible.

3. Disconnect the EV charge cable from the EV.







**Note:** In some cases, the EV locks the connector to the EV. To unlock the connector, obey the instructions for the EV.

4. Install the EV charge cable on the connector holder on the EVSE.

## 4.3 Energize the EVSE

### Preliminary requirements

	<ul style="list-style-type: none"> <li>• </li> </ul>	 	<ul style="list-style-type: none"> <li>• Depending on the system configuration, the procedure applies to a different number of devices:             <ul style="list-style-type: none"> <li>• 175 kW Static DC system: one power cabinet, one charge post</li> <li>• 350 kW Static DC system: two power cabinets, one charge post</li> <li>• 350 kW Dynamic DC system: two power cabinets, two charge posts</li> </ul> </li> </ul>
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### Procedure

1. Make sure that the auxiliary circuit breakers and the residual current devices in the power cabinet(s) and charge post(s) are in the ON position. The red indicator must be visible.
2. Open the door of the power cabinet(s). Refer to section 6.1.
3. Set the upstream disconnecting means of the power cabinet(s) to the ON position (vertical).

### Warning:







### General hazard

- Be careful and use your two hands to turn the main switch. You need some force to turn the main switch.
4. Close the door of the power cabinet. Refer to section 6.2.
  5. Set the AC mains power from the distribution board to ON.  
The EVSE starts. When the EVSE is ready for operation, the touchscreen of the charge post(s) shows a message.

## 4.4 De-energize the EVSE

### 4.4.1 De-energize the EVSE

#### Preliminary requirements

	<ul style="list-style-type: none"> <li>The AC mains power from the distribution board is set to OFF.</li> </ul>		<ul style="list-style-type: none"> <li>Depending on the system configuration, the procedure applies to a different number of devices:             <ul style="list-style-type: none"> <li>175 kW Static DC system: one power cabinet, one charge post</li> <li>350 kW Static DC system: two power cabinets, one charge post</li> <li>350 kW Dynamic DC system: two power cabinets, two charge posts</li> </ul> </li> </ul>
	<ul style="list-style-type: none"> <li>  </li> </ul>		

#### Procedure

1. Open the door of the power cabinet(s). Refer to section 6.1.
2. Set the upstream disconnecting means of the power cabinet(s) to the OFF position (horizontal).

#### Warning:







#### General hazard

- Be careful and use both your hands to turn the main switch. You need some force to turn the main switch.
3. Wait until all the power modules are off:
    - All the LEDs of the power modules are off.
    - The fans stopped.
  4. Measure the AC voltage. Refer to section 4.4.2.
  5. Measure the DC voltage of the power cabinet(s):
    - For power cabinets that are configured for a Static DC system, refer to section 4.4.3.
    - For power cabinets that are configured for a Dynamic DC system, refer to section 4.4.4.

6. Close the doors of the power cabinet(s). Refer to section 6.2.
7. Do these steps for the charge post that is or the charge posts that are connected to the de-energized power cabinet(s):
  - a. Open the door of the charge post(s). Refer to section 6.3.
  - b. Measure the AC voltage. Refer to section 4.4.2.
  - c. Measure the DC voltage of the charge post(s). Refer to section 4.4.5.
  - d. Close the door of the charge post(s). Refer to section 6.4.

## 4.4.2 Measure the AC voltage

### Preliminary requirements

	<ul style="list-style-type: none"> <li></li> </ul>		<ul style="list-style-type: none"> <li>Only do this procedure if a different procedure refers to this procedure.</li> </ul>
	<ul style="list-style-type: none"> <li>Voltage tester</li> </ul>		

### Procedure

1. Measure the AC voltage between the terminals on the AC power connector of the power cabinet. For the location of the terminals, refer to section 3.3.4.
  - *R, S and T to Ground*
  - *R to S*
  - *R to T*
  - *S to T*

Use the voltage tester.

2. Do step 1 again to measure the AC voltage between the terminals on the surge protection device of the charge post. For the location of the terminals, refer to section 3.3.2.







**Note:** The surge protection device switch shows the indications *R, S, T* and *Ground*.

3. Make sure that all the measured voltages are 0 V.

## 4.4.3 Measure the DC voltage (power cabinet, Static DC system)

### Preliminary requirements

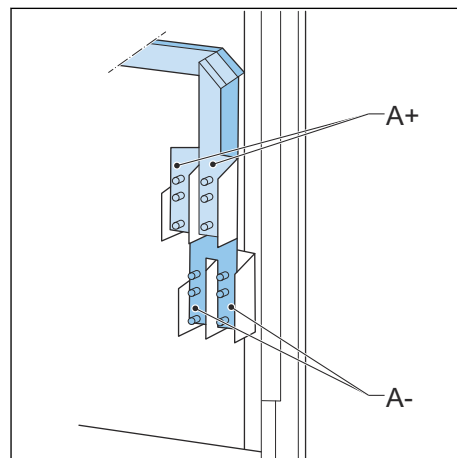
	<ul style="list-style-type: none"> <li></li> </ul>		<ul style="list-style-type: none"> <li>Only do this procedure if a different procedure refers to this procedure.</li> </ul>
	<ul style="list-style-type: none"> <li>Voltage tester</li> </ul>		

For the location of the terminals, refer to section 3.3.2.

#### Procedure

1. Measure the DC voltage between the output terminals:
  - A+ to A-
  - A+ to ground
  - A- to ground

Use the voltage tester.
2. Make sure that all the measured voltages are 0 V.



### 4.4.4 Measure the DC voltage (power cabinet, Dynamic DC system)

#### Preliminary requirements

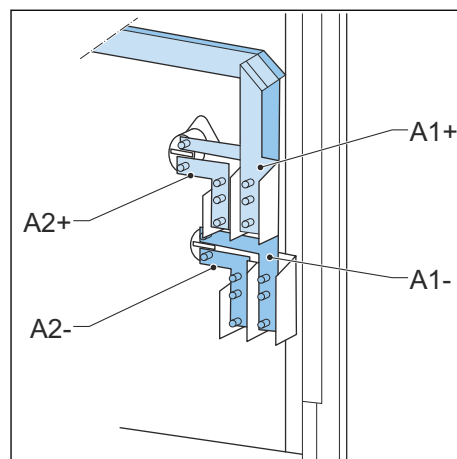
	<ul style="list-style-type: none"> <li> </li> </ul>		<ul style="list-style-type: none"> <li>Only do this procedure if a different procedure refers to this procedure.</li> </ul>
	<ul style="list-style-type: none"> <li>Voltage tester</li> </ul>		

For the location of the output terminals, refer to section 3.3.2.

#### Procedure

1. Measure the DC voltage between the output terminals:
  - A1+ to A1-
  - A2+ to A2-
  - A1+ to ground
  - A1- to /ground
  - A2+ to ground
  - A2- to ground


Use the voltage tester.
2. Make sure that all the measured voltages are 0 V.



### 4.4.5 Measure the DC voltage (charge post)

#### Preliminary requirements

	<ul style="list-style-type: none"> <li> </li> </ul>		<ul style="list-style-type: none"> <li>Only do this procedure if a different procedure refers to this procedure.</li> </ul>
--	---	--	---

	<ul style="list-style-type: none"> <li>• Voltage tester</li> </ul>		
---	--	--	--

For the location of the output terminals, refer to section 3.3.4.

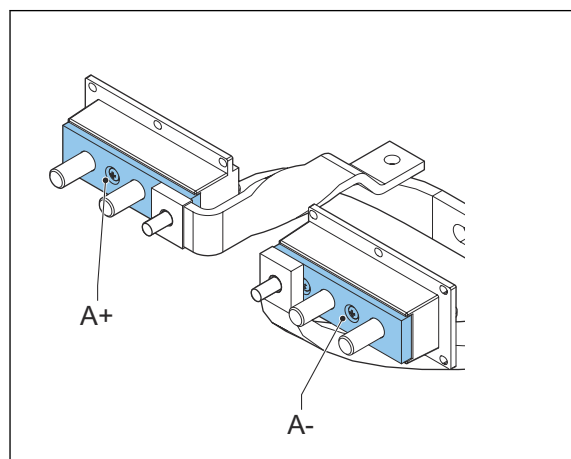
#### Procedure

1. Measure the DC voltage between the output terminals of the charge post:

- A + to A-
- A+ to ground
- A- to ground

Use the voltage tester.

2. Make sure that all the measured voltages are 0 V.





## 4.5 Maintenance and cleaning

### 4.5.1 Maintenance schedule

Task	Frequency	Procedure
Do a check for damage on the EV charge cables and the connectors.	3 months	Refer to section 4.5.4.
Do a check of the safety stickers for damage.	3 months	Do a visual check on the readability and presence of the safety stickers. If a safety sticker has damage, replace the safety sticker. Refer to sections 4.5.5 and 4.5.6.
Clean the power cabinet.	4 months	Refer to section 4.5.2.
Clean the charge post.	4 months	Refer to section 4.5.2.
Do a check for damage on the power cabinet.	6 months	Refer to section 4.5.3.
Do a check for damage on the charge post.	6 months	Refer to section 4.5.4.
Make sure that the manufacturer does maintenance on the EVSE.	1 year	Ask the manufacturer to do the task. Refer to section 1.12.

### 4.5.2 Clean the cabinet

#### Preliminary requirements

	<ul style="list-style-type: none"> <li>• Owner</li> </ul>		<ul style="list-style-type: none"> <li>• Cleaning agent and a non-abrasive tool. Refer to section 7.3.</li> </ul>
---	---	--	---



**Danger:**

**Hazardous voltage**

- Do not apply high-pressure water jets. Water can leak into the cabinet.



**Note:** When the EVSE is put in a corrosion sensitive environment, superficial rust is possible on welding points. This rust is only visual. There is no risk for the integrity of the cabinet. The procedure below removes the rust.

**Procedure**

1. Rinse with low-pressure tap water to remove rough dirt.
2. Apply a solution of cleaning agent to the cabinet and let it soak.
3. Manually remove dirt. Use the non-abrasive tool.



**Caution:** Do not use abrasive tools. There is a risk of damage to the finish of the EVSE, that can cause deep corrosion and structural damages.

4. Rinse with low-pressure tap water.
5. If necessary, apply wax on the front for extra protection and gloss.
6. If there was rust and you want it not to appear again, apply a rust-preventive primer. Ask the manufacturer for specifications and instructions.

### 4.5.3

#### Do a check on the power cabinet

1. Do a check for damage on these parts:

Part	Damage
Coating of the cabinet	Cracks or ruptures
Cabinet	Signs of rust that cause ingress of water

2. If you see damage, contact the manufacturer. Refer to section 1.12.

### 4.5.4

#### Do a visual check of the EVSE

**Preliminary requirements**



- Owner

**Procedure**

1. Do a visual check for damage on these parts:

Part	Damage
EV charge cables and connectors	Cracks or ruptures
	Internal wires of the cable are visible
Touchscreen	Cracks
	Touchscreen does not work
Coating of the cabinet	Cracks or ruptures
Cabinet	Signs of rust that cause ingress of water

2. If you see damage, contact the manufacturer. Refer to section 1.12.



### 4.5.5 Remove a sticker

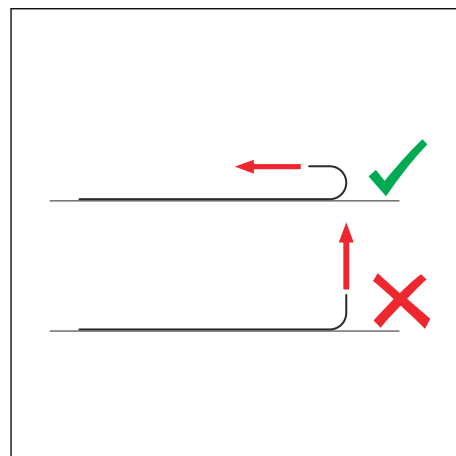
#### Preliminary requirements



- Lint-free cloth and non-aggressive cleaning agent

#### Procedure

1. Pull one flap of the sticker at a 180° angle.
2. Carefully remove the sticker.
3. Remove the contamination of the sticker and adhesive. Use lint-free cloth and non-aggressive cleaning agent.



### 4.5.6 Apply a sticker

#### Preliminary requirements



- Lint-free cloth and non-aggressive cleaning agent

#### Procedure

1. Determine the correct location for the sticker.

**Caution:** Do not cover the air vents.



2. Remove the contamination of the sticker and adhesive. Use lint-free cloth and non-aggressive cleaning agent.
3. Do the instructions that are on the sticker.
4. Put the sticker on the clean location.
5. Press the sticker with a spatula or a roller to the surface. Remove any air that is trapped below the sticker.
6. Obey these instructions in the first 48 hours:
  - Allow the adhesive of the sticker to dry.
  - Do not use water or cleaning agents.

## 5 Troubleshooting

### 5.1 Troubleshooting procedure

1. Try to find a solution for the problem with the aid of the information in this document.
2. If you cannot find a solution for the problem, contact the manufacturer or the local service unit. Refer to section 1.12.

### 5.2 Troubleshooting table

Problem	Possible cause	Possible solution
The touchscreen is black and it does not light up when you touch it.	There is a problem with the AC input power supply.	<ol style="list-style-type: none"> <li>1. De-energize the EVSE. Refer to section 4.4.</li> <li>2. Energize the EVSE. Refer to section 4.3.</li> </ol>
The touchscreen is white and it does not show any message.	The EVSE is in continuous operation for more than 24 hours.	<ol style="list-style-type: none"> <li>1. De-energize the EVSE. Refer to section 4.4.</li> <li>2. Energize the EVSE. Refer to section 4.3.</li> </ol>
The touchscreen shows this message: <i>Unable to lock the connector.</i>	The EV charge cable is not connected correctly to the EV.	Connect the EV charge cable to the EV correctly.
	You are not authorized for the charge session.	Make sure that you have authorization to charge the EV.
The touchscreen shows this message: <i>Unable to unlock the connector from car.</i>	A dangerous voltage is present on the EV charge cable.	<ol style="list-style-type: none"> <li>1. Wait 5 minutes.</li> <li>2. Start the charge session again. Refer to section 4.2.2.</li> </ol>
The touchscreen shows this message: <i>Insulation detection error.</i>	There is an insulation problem on the EV or the EVSE.	<ol style="list-style-type: none"> <li>1. Try another EVSE to charge the EV.</li> <li>2. Contact your local representative of the manufacturer. Refer to section 1.12.</li> </ol>
The touchscreen shows this message: <i>The vehicle misbehaved.</i>	There is a communication problem between the EV and the EVSE.	Contact your local representative of the manufacturer. Refer to section 1.12.

Problem	Possible cause	Possible solution
The EV crashed or is on fire.	A very dangerous situation has occurred.	<ol style="list-style-type: none"> <li>1. Do not use the EVSE.</li> <li>2. Disconnect the power supply.</li> <li>3. Make sure that all persons keep a safe distance. Obey the local rules.</li> <li>4. Contact your local representative of the manufacturer. Refer to section 1.12.</li> </ol>
The EVSE or the connector has visible damage.	A possible dangerous situation has occurred	<ol style="list-style-type: none"> <li>1. Do not use the EVSE.</li> <li>2. Contact your local representative of the manufacturer. Refer to section 1.12.</li> </ol>
The EVSE stops.	The sensors of the cooling unit detect a problem, for example an internal leakage of cooling fluid. The EVSE stops automatically.	<ol style="list-style-type: none"> <li>1. Tell a maintenance engineer to empty the overflow reservoir for cooling fluid.</li> <li>2. Schedule for the necessary maintenance or repairs.</li> <li>3. If it is necessary, contact your local representative of the manufacturer. Refer to section 1.12.</li> </ol>
Coolant fluid leaks from the cooled EV charge cable	The cooled EV charge cable has damage.	<ol style="list-style-type: none"> <li>1. Do not use the EVSE.</li> <li>2. Try to absorb the fluid with a liquid absorbing material, such as sand, diatomaceous soil or acid binding agent. Obey the rules for correct disposal. Refer to section 2.9.</li> <li>3. Contact your local representative of the manufacturer. Refer to section 1.12.</li> </ol>

## 6 Access to parts

### 6.1 Open the door of the power cabinet

#### Preliminary requirements



- Door key of the power cabinet



#### **Danger:**

##### **Hazardous voltage**

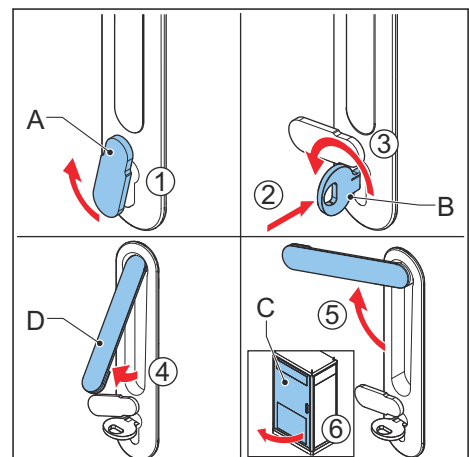
- Make sure that only qualified personnel has access to the door key.



**Note:** There is one unique door key for each power cabinet.

#### Procedure

1. Turn the cover plate (A).
2. Insert the door key (B).
3. Turn the door key counterclockwise to unlock the door (C).
4. Pull the handle (D).
5. Turn the handle clockwise.
6. Open the door.



### 6.2 Close the door of the power cabinet

#### Preliminary requirements



- Door key to the power cabinet.



#### **Danger:**

##### **Hazardous voltage**

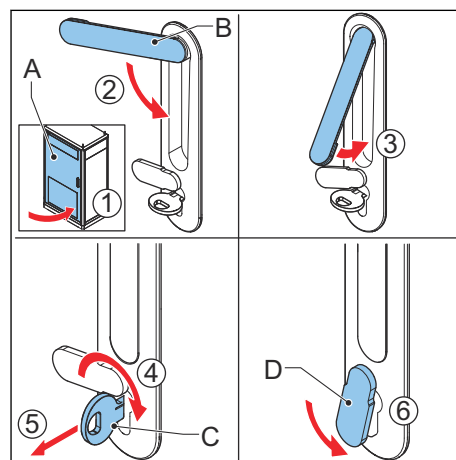
- Make sure that only qualified personnel has access to the door key.



**Note:** There is one unique door key for each cabinet.

## Procedure

1. Close the door (A).
2. Turn the handle (B) counterclockwise.
3. Push the handle.
4. Turn the door key (C) clockwise to lock the door.
5. Remove the door key (C).
6. Turn the cover plate (D) to cover the keyhole.



## 6.3

## Open the door of the charge post

## Preliminary requirements



- Door key of the charge post

**Danger:****Hazardous voltage**

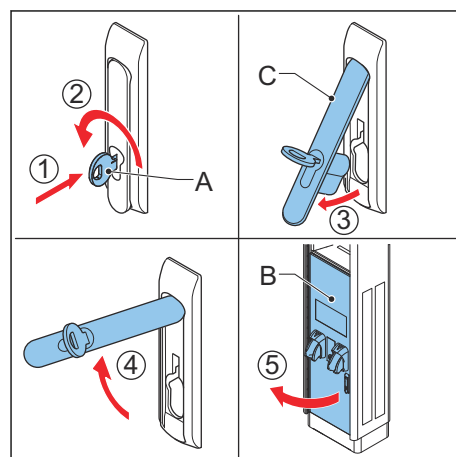
- Make sure that only qualified personnel has access to the door key.

**Note:**

- There is one unique door key for each charge post.
- The door of the charge post is under some pressure, to make sure that it closes watertight.

## Procedure

1. Insert the door key (A).
2. Turn the door key counterclockwise to unlock the door (B).
3. Pull the handle (C).
4. Turn the handle clockwise.
5. Open the door.



## 6.4 Close the door of the charge post

### Preliminary requirements



- Door key of the charge post



#### **Danger:**

##### **Hazardous voltage**

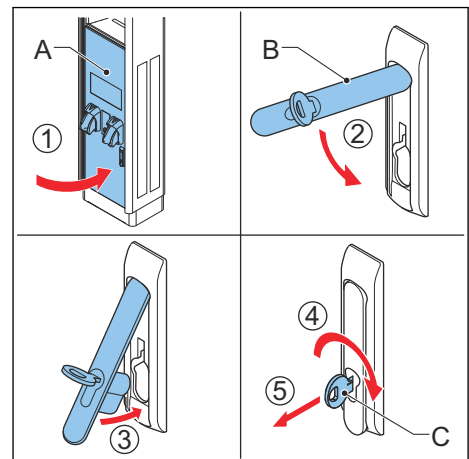
- Make sure that only qualified personnel has access to the door key.



**Note:** There is one unique door key for each charge post.

### Procedure

1. Close the door (A).
2. Turn the handle (B) counterclockwise.
3. Push the handle.
4. Turn the door key (C) clockwise to lock the door.
5. Remove the door key.



## 7 Technical data

### 7.1 EVSE type

The EVSE type is a code, mentioned on the type plate. Refer to section 3.2.

The code is made out of 3 parts: T U V

Code part	Description	Value	Meaning of the value
T	Model	HP	Terra high power
U	Part	CP500	Charge post, 500 A DC output
		-	Power cabinet
V	EV charge cable connection, in the case of a charge post	C	One CCS connection
		CC	Two CCS connections
		CJ	One CCS connection and one CHAdeMO connection
	Peak output power, in the case of a power cabinet	175	Peak output power [kW]

#### Examples

HP CP500 C:

- T = HP, Model = Terra high power
- U = CP500, Part = charge post 500 A DC output
- V = C, EV charge cable connection = one CCS connection

HP 175:

- T = HP, Model = Terra high power
- U = Part = power cabinet
- V = 175, peak output power is 175 kW

### 7.2 General specifications

Parameter	Specification
Compliance and safety	UL 2202 CSA STD C22.2 No. 107.1 FCC Part 15 Class A TuV certified
Ingress protection rating	The type plate shows the specification. Refer to section 3.2.

Parameter	Specification
EMC rating for the charge post	FCC part 15 Class B (residential)
EMC rating for the power cabinet	The power cabinet complies with Class A (industrial). If the power cabinet must comply with Class B (residential), install an external Schaffner type FN 3359HV-400-99 EMC filter.

### 7.3 Cleaning specifications

Parameter	Specification
Cleaning agent	pH value between 6 and 8
Non-abrasive tool	Non-woven nylon hand pad

### 7.4 Electrical installation specifications (North America)

Parameter	Specification
Upstream overcurrent protection device	Fuse (gG type) 300 A
Surge protection device within the upstream power distribution system	According to UL 1449
Power consumption of the power cabinet	In standby status: $\leq 80$ W
Power consumption of the charge post	In standby status: $\leq 70$ W With the LEDs on: $\leq 145$ W
Earthing rod (initial)	Maximum 10 $\Omega$
Earthing rod (additional)	0.9 $\Omega$
Input AC power connection	480/277 3W + PE
Input grounding system	wye Grounded system
Input voltage range	480 VAC +/- 10% (50 Hz or 60 Hz)
Nominal input current	231 A at 480 V AC
Power factor at full load	0.97
Efficiency	$\geq 94\%$ at $\geq 20\%$ load
Maximum AC inrush current	240 A for 20 ms at 480 VAC
Short circuit capacity	65 kA

### 7.5 Electrical installation specifications (Canada)

Parameter	Specification
Upstream overcurrent protection device	Fuse (gG type) 250 A AC
Surge protection device	Type 1 or Type 2, in accordance with UL 1449
Power consumption of the power cabinet	In standby status: $\leq 80$ W



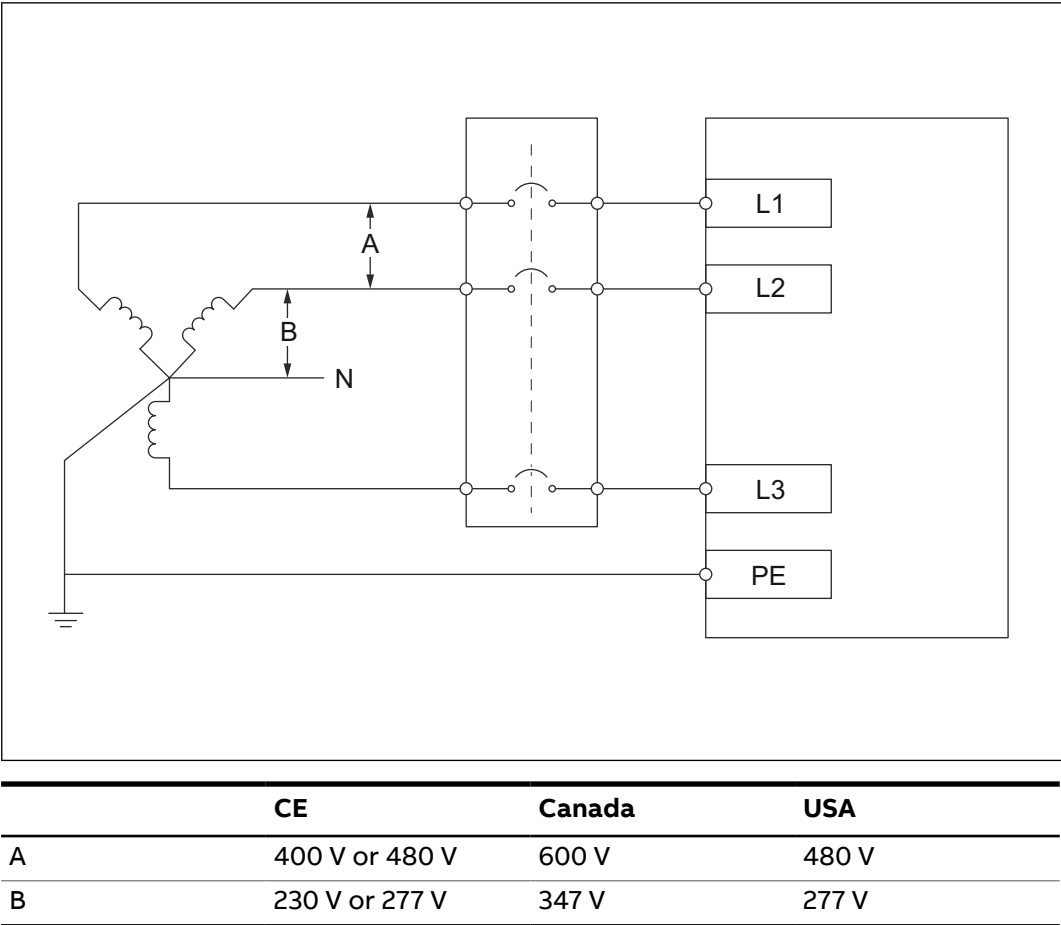
Parameter	Specification
Power consumption of the charge post	In standby status: $\leq 70\text{ W}$ With the LEDs on: $\leq 145\text{ W}$
Earthing rod (initial)	Maximum $10\ \Omega$
Earthing rod (additional)	$0.9\ \Omega$
Input AC power connection	600/347 3W + PE
Input grounding system	wye Grounded system
Input voltage range	600 VAC $\pm 10\%$ (50 Hz or 60 Hz)
Nominal input current	185 A at 600 VAC
Power factor at full load	0.97
Efficiency	$\geq 94\%$ at $\geq 20\%$ load
Short circuit capacity	65 kA

## 7.6

### DC output specifications

Parameter	Specification
Output voltage range	150 - 920 V DC
Maximum output current	375 A DC (one power cabinet) 500 A DC (two power cabinets)
Output power	175 kW up to $40\text{ }^{\circ}\text{C}$ ( $104\text{ }^{\circ}\text{F}$ ) - one power cabinet 350 kW up to $40\text{ }^{\circ}\text{C}$ ( $104\text{ }^{\circ}\text{F}$ ) - two power cabinets
DC output current	500 A CCS (liquid cooled) 200 A CHAdeMO

7.7 Expected wye input



7.8 Logic interfaces specifications

Parameter	Specification
RFID standard	Only use SIM cards that the manufacturer supplies ISO/IEC 14443A/B, ISO/IEC 15393
RFID supported applications	FeliCa™1, NFC, Mifare, Calypso
Network connection	4G, Ethernet

**Table 1: Minimum network specifications for a 4G network connection**

Parameter	Specification
Signal strength, measured with a cellular network signal meter, for example a Squid-4G or Sure Call device.	Performance types for RSSI: <ul style="list-style-type: none"> <li>• Excellent: &gt; -65 dbm</li> <li>• Good: between -65 and -75 dbm</li> <li>• Mid-range: between -75 dbm and -85 dbm</li> <li>• Edge of service: -85 dbm</li> </ul>
<ol style="list-style-type: none"> <li>1. Do not use a handheld mobile phone to measure the signal strength.</li> <li>2. Make sure that the cellular signal to the modem of the EVSE is of a serviceable quality. The Charger Connect service provides 4G connectivity via the Vodafone network. As a result, you must verify that one or more applicable bands at AT&amp;T or T-Mobile falls or fall within an acceptable category. Examples: <ul style="list-style-type: none"> <li>• 4G LTE bands 2 (1900 MHz)</li> <li>• 4 (1700/2100 MHz)</li> <li>• 12 (700 MHz)</li> </ul> </li> </ol>	
LTE Mobile band AT&T and T-Mobile must get access to the Vodafone 4G LTE wireless network	Minimum one of these bands: <ul style="list-style-type: none"> <li>• 2 (1900 MHz)</li> <li>• 4 (1700/2100 MHz)</li> <li>• 12 (700 MHz)</li> </ul>

## 7.9

### Ambient conditions

Parameter	Specification
Operation temperature	-35 °C to +55 °C (-31 °F to +131 °F) Derating applies
Storage	+5 °C to +40 °C (+41 °F to 104 °F) RH 5 to 85%
Environment	IP54, rainproof IK10 (screen: IK08)
Altitude	Maximum 2000 m (6562 ft) above the sea level

## 7.10

### Noise level

Noise level	Specification [dB(A)]
Charge post, 500 A continuous up to 35 °C	≤ 60 at 1 m (39.4 in)
Maximum noise level of the charge post	68 at 1 m (39.4 in)
Power cabinet	≤ 65 at 1 m (39.4 in)

## 7.11 Dimensions

### 7.11.1 Power cabinet

Parameter	Specification	
	[mm]	[in]
Width (X-dimension)	1170	46.1
Depth (Y-dimension)	770	30.3
Height (Z-dimension)	2030	30.3
Required cable slack for the AC input cable (measured from the top of the foundation)	1000	39.4
Required cable slack for the PE cable (measured from the top of the foundation)	2000	78.7
Required cable slack for the DC output cable (measured from the top of the foundation)	2000	78.7
Required cable slack for the AC auxiliary power cable (measured from the top of the foundation)	2000	78.7
Required cable slack for the interlock and DC guard, and CAN cables (measured from the top of the foundation)	2000	78.7

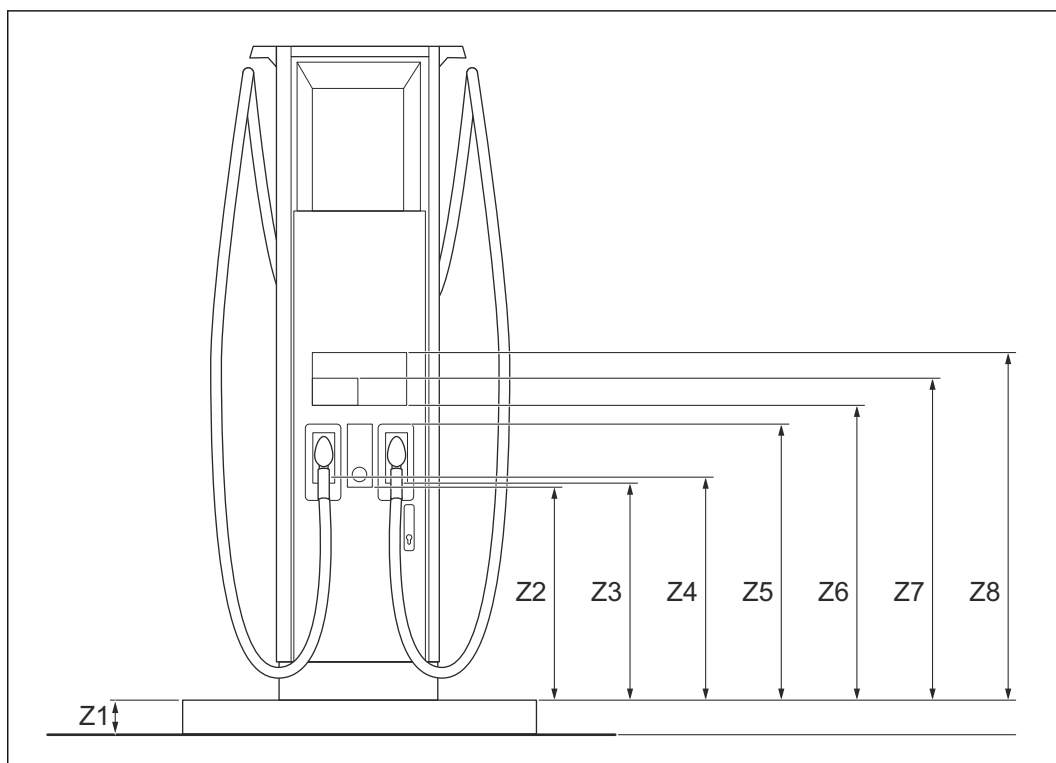
### 7.11.2 Charge post

Parameter	Specification	
	[mm]	[in]
Width of the charge post (X-dimension)	590	23.2
Depth of the charge post (Y-dimension)	425	16.7
Height of the charge post (Z-dimension)	2463	97.0
Required cable slack for the PE wire (measured from the top of the foundation)	700	27.6
Required cable slack for the DC power cables (measured from the top of the foundation)	700	27.6
Required cable slack for the AC auxiliary power cable (measured from the top of the foundation)	1200	47.2
Required cable slack for the interlock and DC guard cable (measured from the top of the foundation)	1200	47.2
Required cable slack for the CAN cable (measured from the top of the foundation)	1200	47.2

Parameter	Specification	
	[m]	[ft]
Length of the charge cable, with retraction system	5.3	17.4
Cable reach, approximately	3	9.8

### 7.11.3

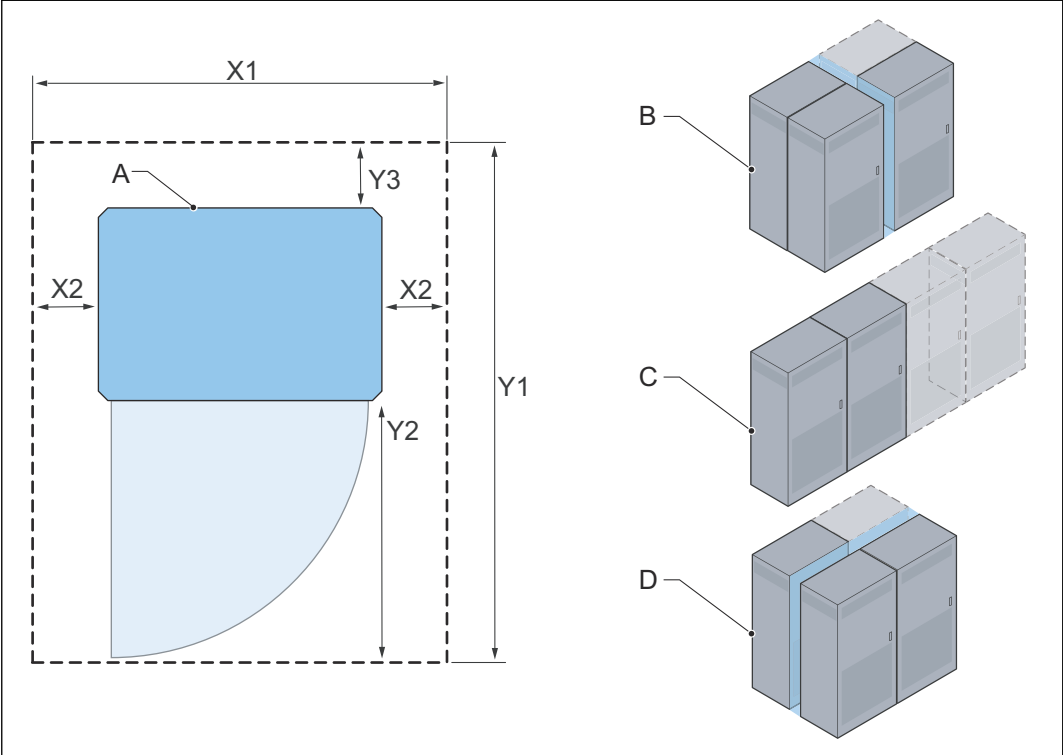
### Height of user operable elements



Parameter		Specification	
		[mm]	[in]
Z1	Advised maximum curb height	102	4
Z2	Bottom of the authentication cluster	750 or higher	29.5
Z3	CCS connector when holstered – center of grip	775	30.5
Z4	CHAdeMO connector when holstered – center of grip	790	31.1
Z5	Top of the authentication cluster	955	37.6
Z6	Bottom of the touch screen display	1026	40
Z7	Advised maximum height for user operable elements if the EVSE is placed on a curb. This requires HMI customization.	1118	44
Z8	Top of the touch screen display	1223	48.1

# 7.12 Space requirements

## 7.12.1 Power cabinet



- X1

Total width required for the power cabinet
- X2

Space for the foundation
- X3

Space to open the power cabinet door
- Y1

Total depth required for the power cabinet
- Y2

Space to open the power cabinet door
- Y3

Space for the rear air outlet
- A

Power cabinet
- B

Back to back configuration
- C

Side by side configuration
- D

Side by side and back to back configuration

Parameter	Specification for a single power cabinet	
	[mm]	[in]
X1	100 + 1170 + 100	3.9 + 46.1 + 3.9
X2	100	3.9
X3	650	25.6
Y1	1200 + 770 + 100	47.2 + 30.3 + 3.9
Y2	1200	47.2
Y3	100	3.9

Parameter	Specifications for configuration B	
	[mm]	[in]
X1	100 + 1170 + 100 + 1170 + 100	3.9 + 46.1 + 3.9 + 46.1 + 3.9
X2	100	3.9

Parameter	Specifications for configuration B	
	[mm]	[in]
X3	650	25.6
Y1	1200 + 770 + 770 + 1200	47.2 + 30.3 + 30.3 + 47.2
Y2	1200	47.2
Y3	0	0

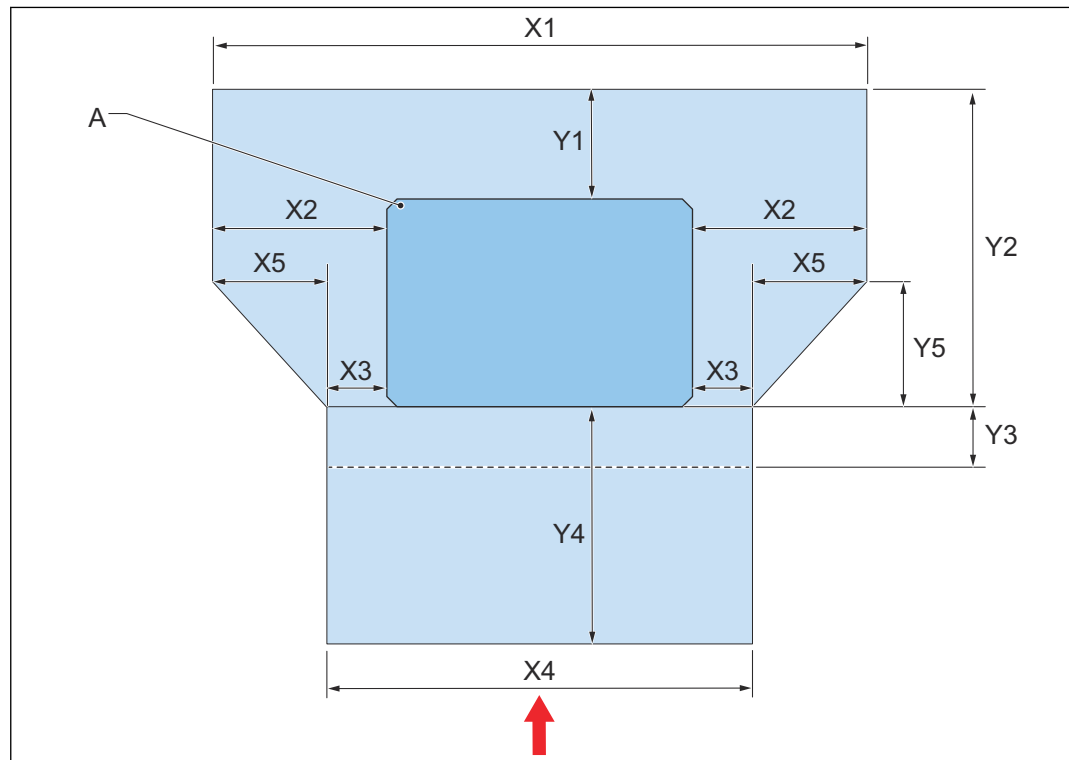
  

Parameter	Specifications for configuration C	
	[mm]	[in]
X1	100 + 1170 + 100	3.9 + 46.1 + 3.9
X2	0 100 on the outer sides	0 3.9 on the outer sides
X3	650	25.6
Y1	1200 + 770 + 100	47.2 + 30.3 + 3.9
Y2	1200	47.2
Y3	100	3.9

Parameter	Specifications for configuration D	
	[mm]	[in]
X1	100 + 1170 + 1170 + 100	3.9 + 46.1 + 46.1 + 3.9
X2	0 100 on the outer sides	0 3.9 on the outer sides
X3	650	25.6
Y1	1200 + 770 + 770 + 100	47.2 + 30.3 + 30.3 + 3.9
Y2	1200	47.2
Y3	100	3.9

## 7.12.2 Charge post



- |    |   |    |   |
|----|---|----|---|
| A  | Charge post   | Y1 | Space required for cable replacement          |
| X1 | Total required width for the charge post                    | Y2 | Total required depth for the charge post      |
| X2 | Space required for the air inlet and to open the side panel | Y3 | Maximum sideways reach of the wheelchair user |
| X3 | Space required at the sides to open the door                | Y4 | Space required to open the door               |
| X4 | Total required width to open the door                       | Y5 | Required depth to open the side panel         |
| X5 | Required width to open the side panel                       |    |   |

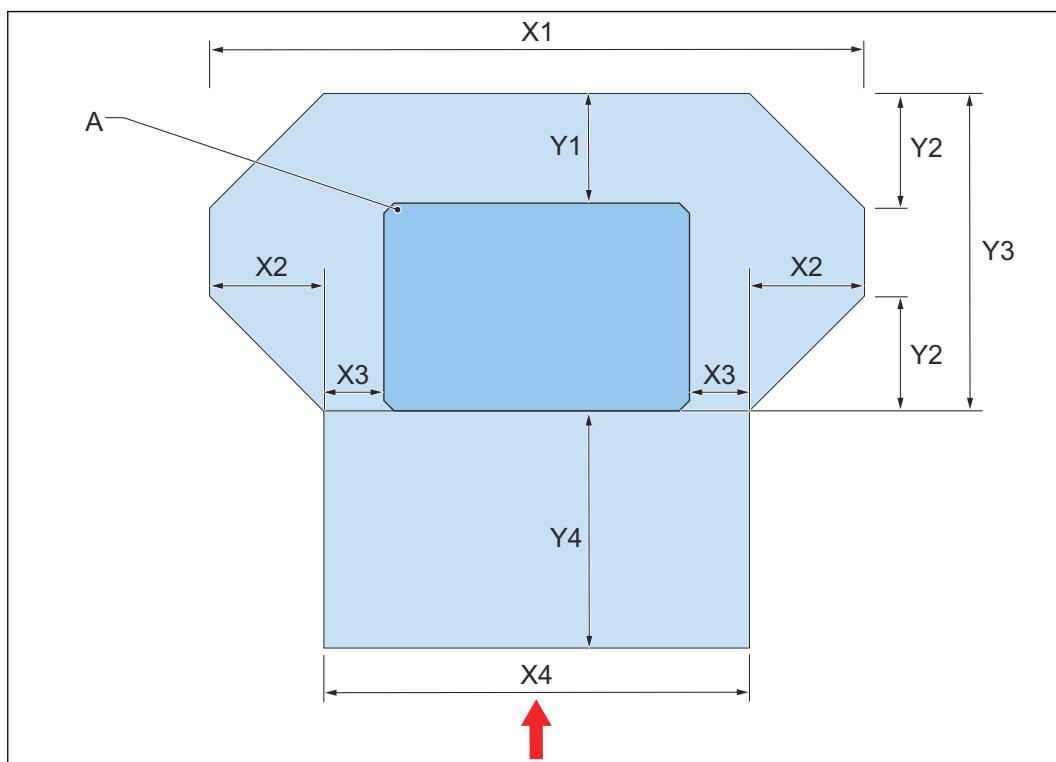
Parameter	Specification	
	[mm]	[in]
X1	1490	58.7
X2	450	17.7
X3	105	4.1
X4	800	31.5
X5	345	13.6
Y1	400	15.7
Y2	775	30.6
Y3	254	10
Y4	490	19.3
Y5	345	13.6



## 7.12.3

**Charge post: exceptions for bollards and other minor fixed obstacles****Note:**

The bollards or minor fixed obstacles must have a maximum diameter of 150 mm (6 in), to permit service or maintenance operations.



A	Charge post	Y1	Required depth to open the side panel
X1	Total width to open the side panels	Y2	Required depth to open the side panel
X2	Required width to open the side panel	Y3	Total required width to open side panels
X3	Space required at the sides to open the door	Y4	Space required to open the door
X4	Total required width to open the door		

Parameter	Specification	
	[mm]	[in]
X1	1190	46.8
X2	200	7.8
X3	105	4.1
X4	800	31.5
Y1	250	9.8
Y2	200	7.8
Y3	675	26.5
Y4	490	19.3

**7.12.4 Distance requirements between power cabinet and charge post**

Parameter	Specification	
	[m]	[ft]
Maximum distance between the power cabinet and the charge post	60	197



