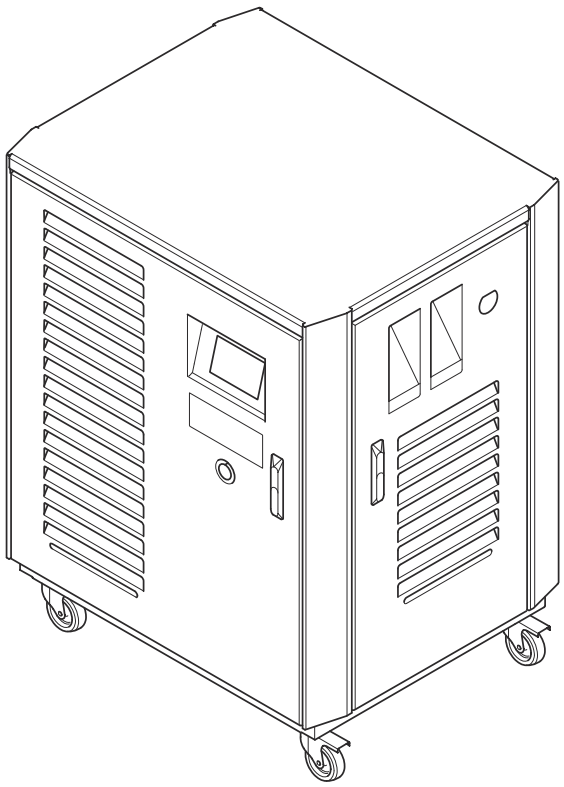
Operation and installation manual

Terra Mobile 44HV / 54HV CE



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Contents

1 About this document

1.1 Function of this document

The document is only applicable for this EVSE (Terra Mobile 44HV / 54HV), including the variants and options listed in section 11.1.
The document gives the information that is necessary to safely do these tasks:

- Install the EVSE
- Use the EVSE
- Do basic maintenance tasks

Note: "Terra Mobile 44HV / 54HV": This is a generic name for the EVSE to address the main types of the EVSE.

1.2 Target group

The document is intended for these groups:

- Owner of the EVSE
- Installation engineer

For a description of the responsibilities of the owner, refer to section 2.3.
For the required qualifications for the installation engineer, refer to section 2.4.

1.3 Revision history

Version	Date	Description
001	November 2021	Initial version
002	January 2023	Textual 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 chapter 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
Service manual	Qualified service engineer
Declaration of conformity (CE)	All target groups

1.12 Manufacturer and contact data

Manufacturer
ABB E-mobility B.V.
Heertjeslaan 6
2629 JG Delft
The Netherlands

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
MID	Measuring Instruments Directive
NFC	Near field communication
NoBo	Notified body
OCPP	Open charge point protocol
PE	Protective earth
PPE	Personal protective equipment
RFID	Radio-frequency identification

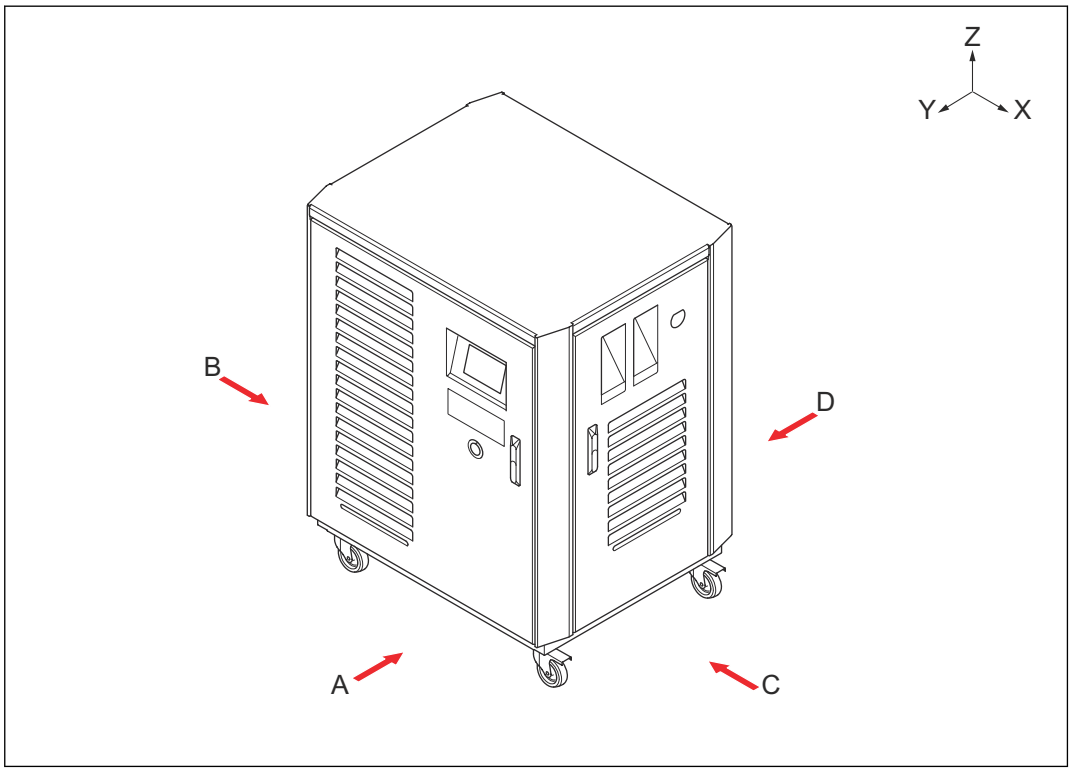
Note: It is possible that not all abbreviations are present in this document.

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 *CHArge de MOve*, a standard charging method for electric vehicles
Contractor	Third party that the owner or site operator hires to do engineering, civil and electrical installation work
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 electrcial 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	X	X-direction (positive is to the right)
B	Left side	Y	Y-direction (positive is rearward)
C	Right side	Z	Z-direction (positive is upward)
D	Rear side		

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 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 any services as installation engineer or use the EVSE when you are fully qualified to do so.
- Comply with the local rules and the instructions in this manual. If the local rules contradict the instructions in this manual, the local rules will apply.

  If and to the extent permitted by law, in case of inconsistency or contradiction, between any requirements or procedure contained in this document and any such local laws and/or rules, comply with the stricter laws and/or 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 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 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 Required qualifications for the installation engineer

- The qualified installation engineer fully knows the EVSE and its safe installation.
- The installation engineer is qualified according to the applicable local rules to do the work.
- The qualified installation engineer obeys all local rules and the instructions in the installation manual.
- It is the responsibility of the owner of the EVSE to make sure that all qualified installation engineers obey the local rules, the installation instructions, and the specifications of the EVSE.

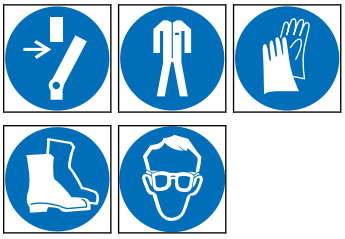
2.5 Personal protective equipment

Symbol	Description
	Protective clothing
	Safety gloves

Symbol	Description
	Safety shoes
	Safety glasses

2.6 Safety instructions during installation

Preliminary requirements

	•  Installation engineer		• 

- Make sure that there is no voltage on the AC input cables during the complete installation procedure.
- Keep unqualified personnel at a safe distance during installation.
- Only use electrical wires of sufficient gauge and insulation to handle the rated current and voltage demand.
- Make sure that the load capacity of the grid is in accordance with the EVSE.
- Earth the EVSE correctly. Refer to section 2.8.
- Make sure that the wiring inside the EVSE is protected from damage and cannot get trapped when you open or close the cabinet.
- Make sure that water cannot enter the cabinet.
- Protect the EVSE with safety devices and measures that the local rules specify.
- If 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 2.5.

2.7 Safety instructions during transport

Preliminary requirements

	• Installation engineer		• 

- Make sure that the hoisting equipment or forklift truck can lift the EVSE safely. Take into account the mass and the center of gravity of the EVSE.

- Obey the applicable safety instructions for the hoisting equipment or for the forklift truck. For example, the instructions specified on the related shipment label that is applied to the EVSE packaging.
- Put on the correct personal protective equipment. Refer to section 2.5.

2.8 Safety instructions for earthing

Preliminary requirements

- Make sure that the EVSE is connected to a grounded, metal, permanent wiring system, or an equipment-grounding conductor must be run with the circuit conductors and 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.

2.9 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.

2.10 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 install the EVSE
	Waste from electrical and electronic equipment

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

2.11 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 local law and 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.

2.12 Cyber security

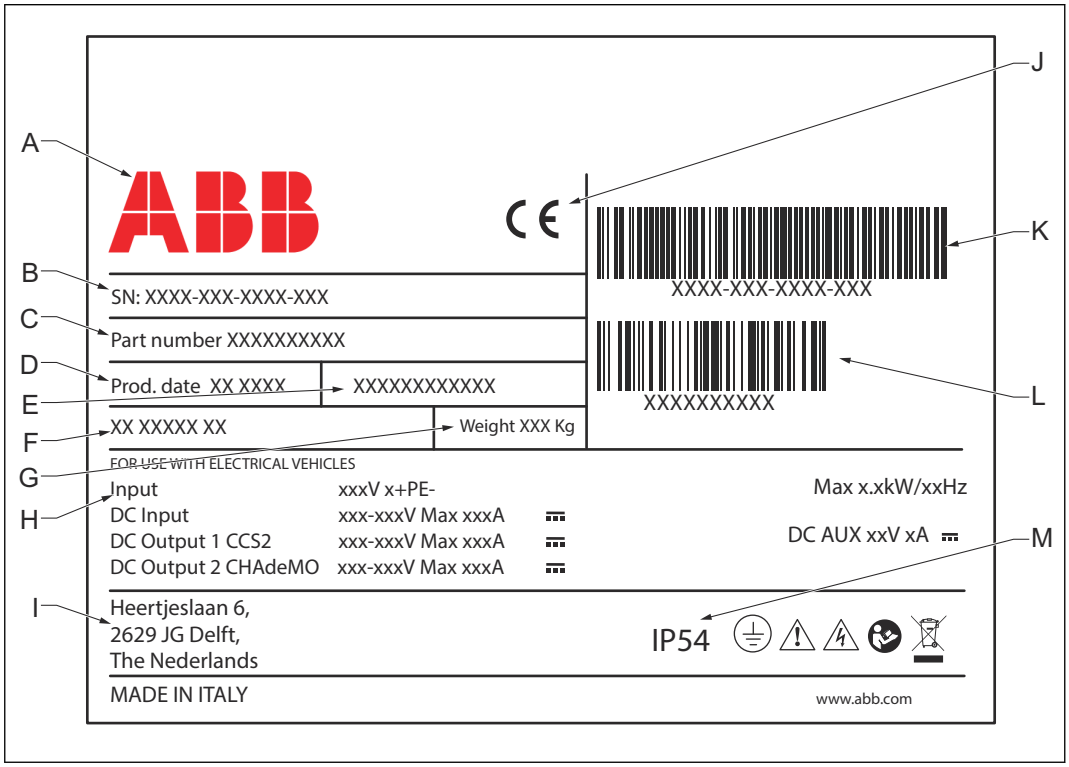
Note: This topic is valid for a wired Ethernet connection.

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 Type plate



A	Manufacturer	H	EVSE rating
B	Serial number	I	Address of the manufacturer
C	Part number of the EVSE	J	CE mark
D	Production date	K	Barcode with the serial number of the EVSE
E	Internal product code (for the manufacturer)	L	Barcode with the part number of the EVSE
F	Full EVSE type	M	Additional EVSE rating data
G	EVSE mass		

Note: Find the type plate on your EVSE to see the applicable data. Refer to section 3.4.2.

3.2 Intended use

The EVSE is intended for the DC 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 11.
Only use the EVSE with accessories that the manufacturer provides and that obey the local rules.

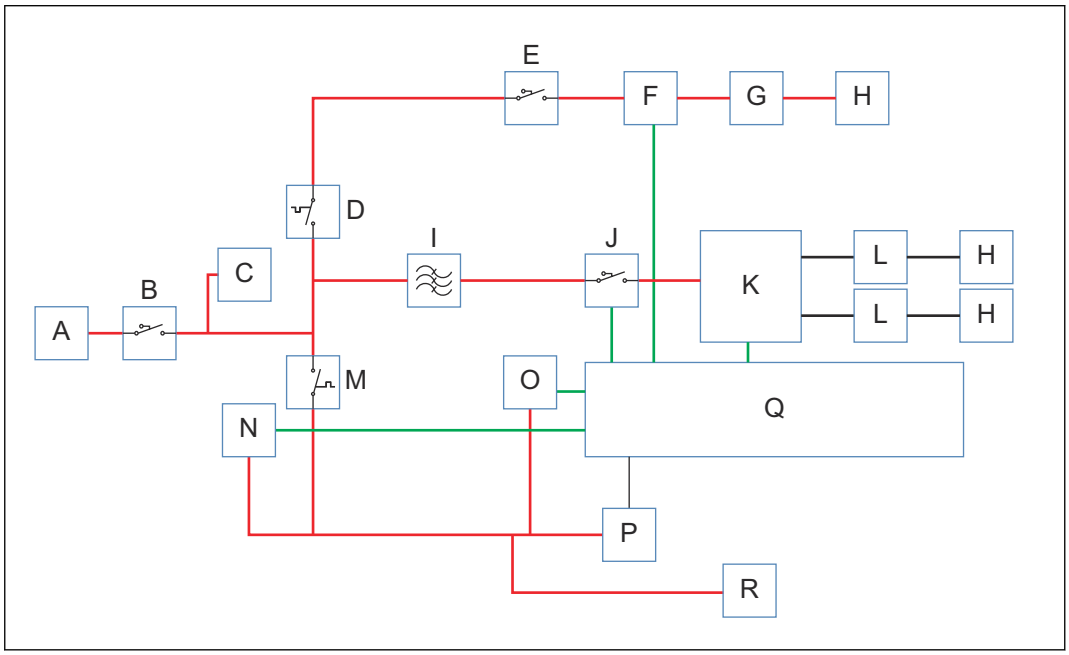
Danger:

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.

3.3 Working principles

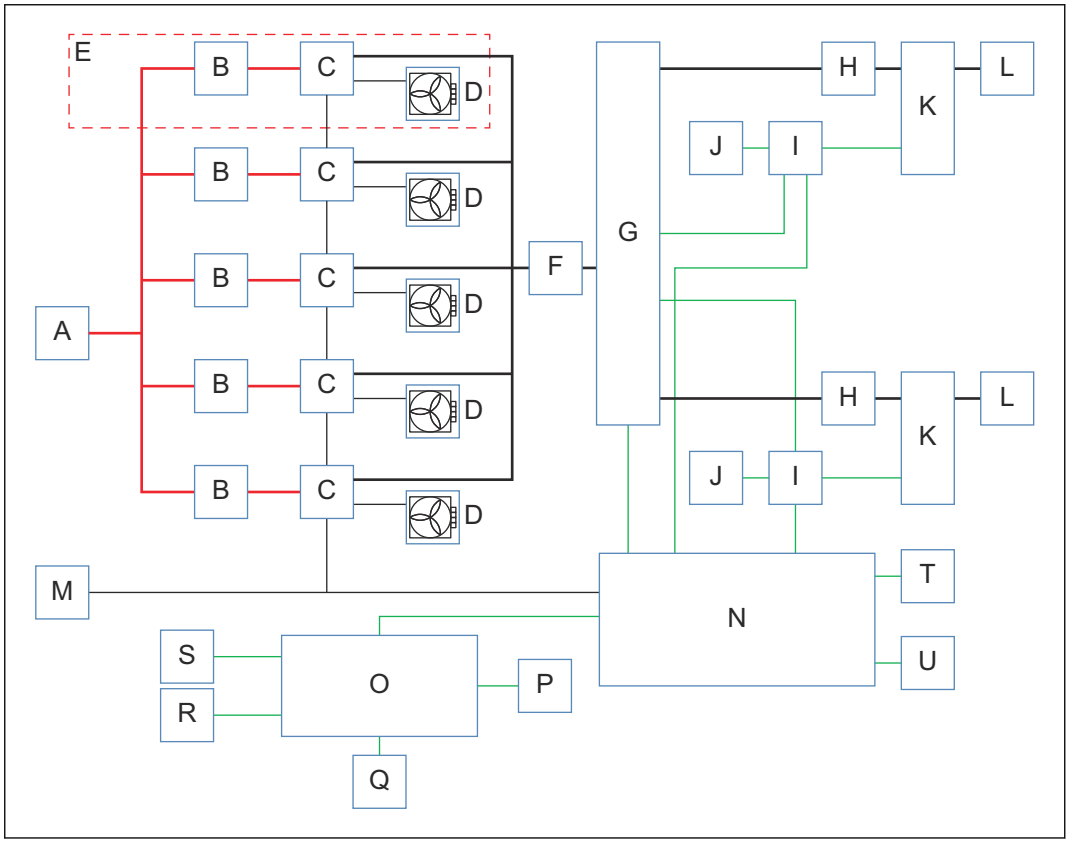
3.3.1 General working principle



A	Power grid	J	Residual-current device
B	Main switch	K	DC charging module
C	AC surge protection device	L	DC charge cable
D	AC residual-current circuit breaker	M	Residual-current circuit breaker for the auxiliary AC circuit
E	Miniature circuit breaker	N	Auxiliary surge protection device
F	AC 22 kW socket	O	Auxiliary AC residual-current device
G	AC charge cable	P	Auxiliary power supply
H	EV	Q	Control unit
I	AC filter	R	Heater

- Red and bold lines: AC power connection
- Black and bold lines: DC power connection
- Black and thin lines: auxiliary power connection
- Green lines: control signal or monitoring signal

3.3.2 Working principle of the DC charging unit and the control unit

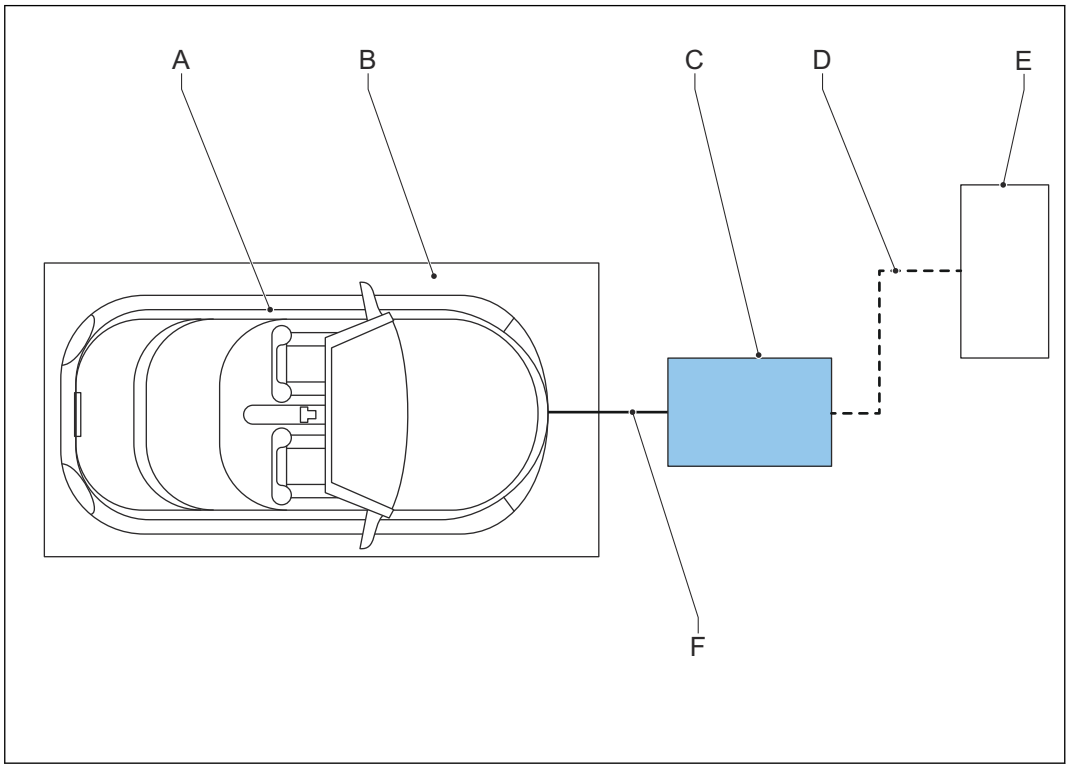


A	AC power input	L	EV
B	Power module circuit breaker	M	Auxiliary power supply
C	Power module	N	CCB board
D	Fan	O	Main control board
E	Optional power module group (Terra Mobile 54HV)	P	Touchscreen
		Q	RFID
F	DC filter	R	RS485 source
G	DC switch matrix	S	Ethernet connection source
H	DC fuse	T	Emergency stop button
I	CPI board	U	Auxiliary residual-current device
J	IMI board		
K	DC charge cable		

- Red and bold lines: AC power connection
- Black and bold lines: DC power connection
- Black and thin lines: auxiliary power connection
- Green lines: control signal or monitoring signal
- Dashed lines: group of system components

3.4 Overview

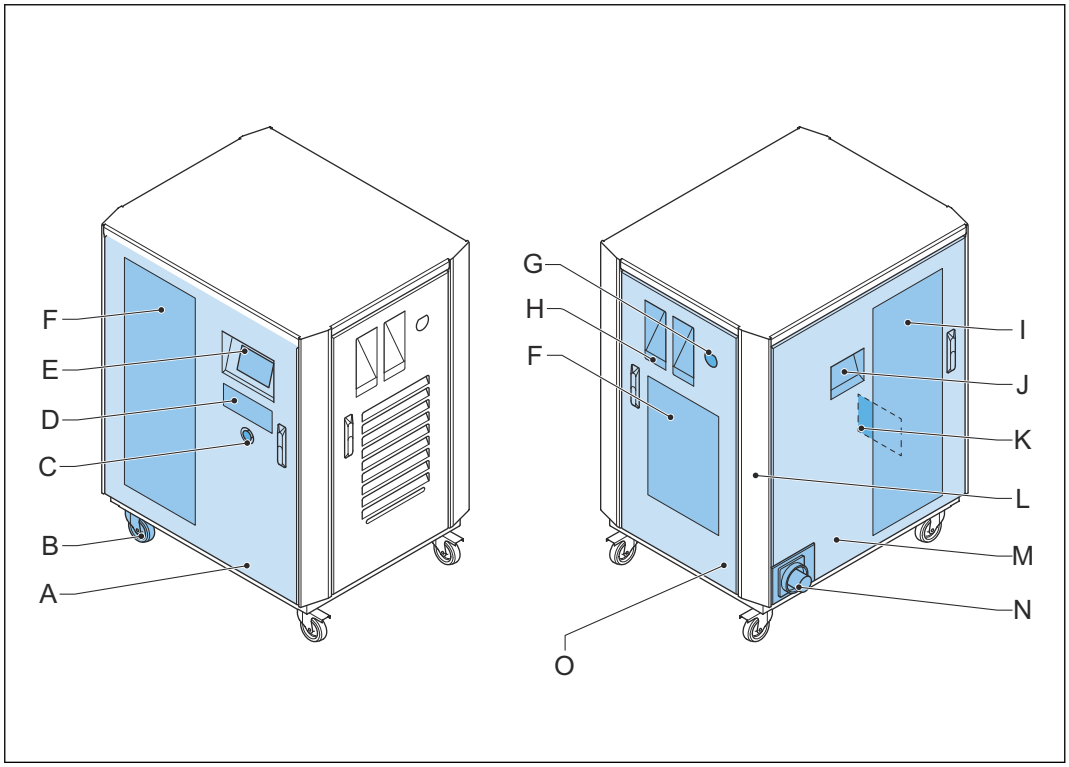
3.4.1 Overview of the system



A EV
B Charging area
C EVSE
D AC input cable
E Power distribution board
F AC or DC charge cable

Part	Function
EV	The EV of which the batteries need to be charged
EVSE	Refer to section 11.1.
Charging area	Location for the EV during the charge session
AC input cable	To supply the electrical energy to the EVSE
Power distribution board	To connect the EVSE to the AC grid input
AC or DC charge cable	To conduct the charge from the EVSE to the EV

3.4.2 Overview of the EVSE, outside

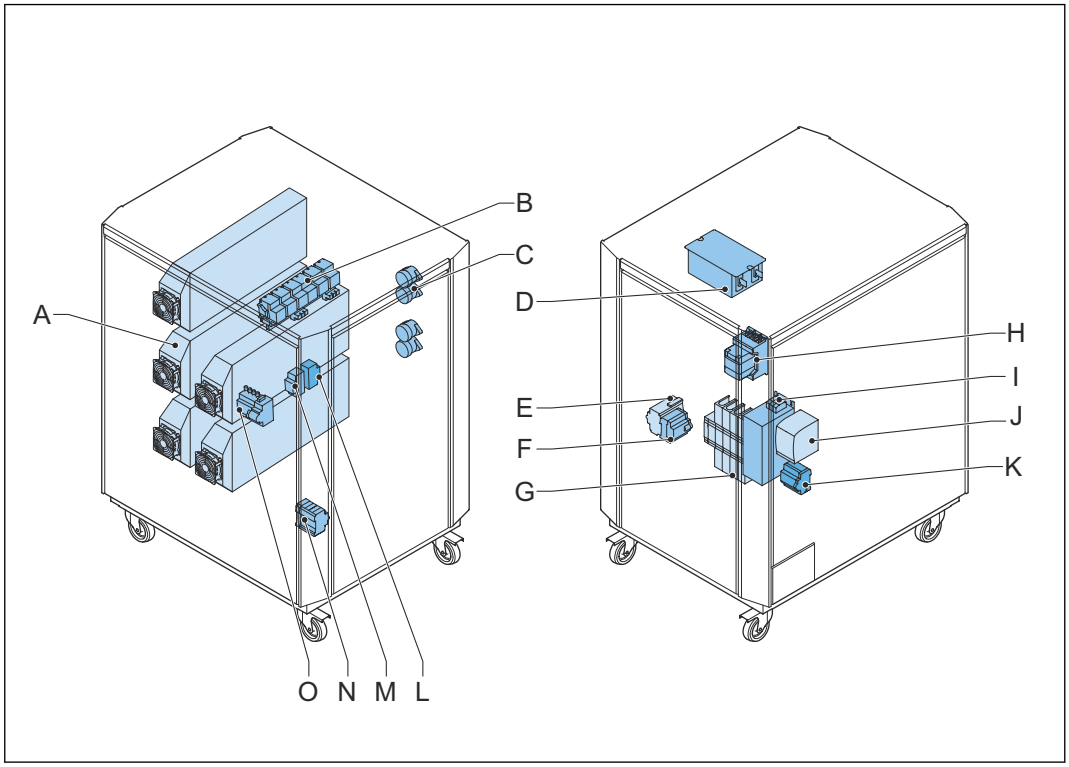


A	Front door	I	Air outlet
B	Wheel with brakes or floor lock	J	DC charge cable outlet
C	Emergency stop button	K	Type plate
D	Plate over the RFID reader and payment terminal	L	Enclosure
		M	Rear door
E	Touchscreen	N	AC input terminal
F	Air intlet	O	Right door
G	Socket for the AC charge cable		
H	DC charge cable holder (1x or 2x)		

Part	Function
Front, right and rear door	To give authorized personnel access to the inside of the EVSE
Wheels with brakes or floor locks	To move the EVSE to the site and secure the EVSE on the site
Emergency stop button	To stop the EVSE when there is an emergency
RFID reader	To read the information from an RFID card
Payment terminal	To pay for the charge session
Touchscreen	To control and monitor the charge session
Air inlet and outlet	To let cooling air in and out. The airflow makes sure that the parts on the inside of the EVSE do not become too hot.
Socket for the AC charge cable	To connect the AC charge cable
EV charge cable holder	To hold the EV charge cable
EV charge cable outlet	To connect the EV charge cable

Part	Function
Type plate	To show the identification data of the EVSE. Refer to section 3.1.
Enclosure	To reduce the accessibility of unqualified persons to the inside of the EVSE
AC input terminal	To connect the AC input cable

3.4.3 Overview of the EVSE, inside



A	Power modules with fans	I	AC filter
B	Power module circuit breakers	J	Auxiliary power supply
C	DC contactors	K	AC output contactor
D	DC filter	L	DC residual-current circuit braker
E	AC surge protection device	M	DC surge protection device
F	AC output residual-current device	N	Miniature circuit breaker of the AC output
G	Main switch	O	Residual-current device
H	AC contactor		

Part	Function
Fans	To circulate air in the enclosure
Power modules	To convert the AC input power to the DC output power
Main power module breakers	To connect or disconnect the AC power input to the power modules
AC and DC contactor	To connect the AC and DC power
DC filters	To process the DC current
AC and DC surge protection device	To protect the AC and DC power circuits from overvoltage
AC and DC residual-current device	To protect the user of the EVSE

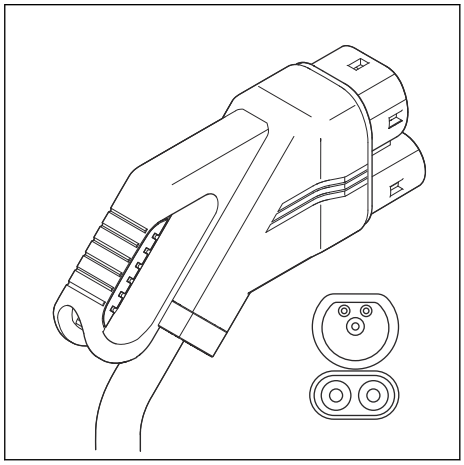
Part	Function
Main switch	To connect or disconnect the AC power input
AC filter	To process the AC current
Auxiliary power supply	To supply the components with auxiliary power
Auxiliary AC filter	To process the auxiliary AC current
Miniature circuit breaker of the AC output	To protect the AC output power circuit from overvoltage

3.5 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.

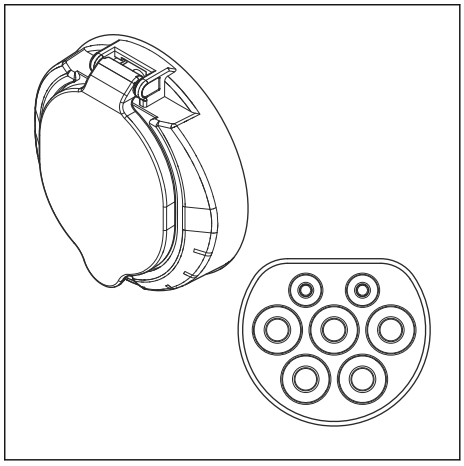
3.6 Options

3.6.1 EV charge cable, CCS 2



The manufacturer delivers the EVSE with CCS 2 connectors on the EV charge cables.
For the current rating specifications, refer to section 11.16.2.
For the cable length specifications, refer to section 11.1.

3.6.2 Socket, Type 2



The manufacturer can deliver the EVSE with a socket for an AC charge cable Type 2. For the current rating specifications, refer to section 11.1.

3.7 Power allocation strategy

The charger is equipped with an AC Type-2 socket. The AC outlet acts independently from the DC outlets, however all outlets are affected by the AC grid current limitation. DC charging has priority over AC charging in the power budget allocation. When an EV is plugged into the AC socket, the charger looks at the actual power usage of the EVs charging DC, and the residual power is allocated to the AC outlet. The residual power available depends on the site limitations, such as on the AC grid fuse that has been used.

Maximum station power: specified by the AC input limit
Remaining power = Maximum station power – DC charging power

The AC charging session can start when the remaining power is more than 50% of the maximum output of the AC socket: for the 22kW outlet, the remaining power must be more than 11 kW (> 30 A @ 400 V).
If the input current can not be more than (3x) 100A, the charge session on the 22kW outlet can start the charge session when the remaining power is more than 16,5 kW (> 43 A @ 400 V).
The message “Waiting for power to be available” is shown on the screen when the remaining power is less than the limits given above. The charge session is kept on idle until more power becomes available.

3.8 External residual-current device

The manufacturer does not supply an external residual-current device. If an external residual-current device is required because of local rules, this section helps you to select the correct device.

Situation: the local rules require an immunity for short current peaks over PE during the EV charging process
At the start of the EV charge cycle, a relay switches and engages the AC input power to the power modules. Incidental current peaks can occur.
A combination of these factors is the source of these current peaks:

- Asynchronous engagement of the phases in the relay
- The electrical capacity of the AC input power part of the EVSE

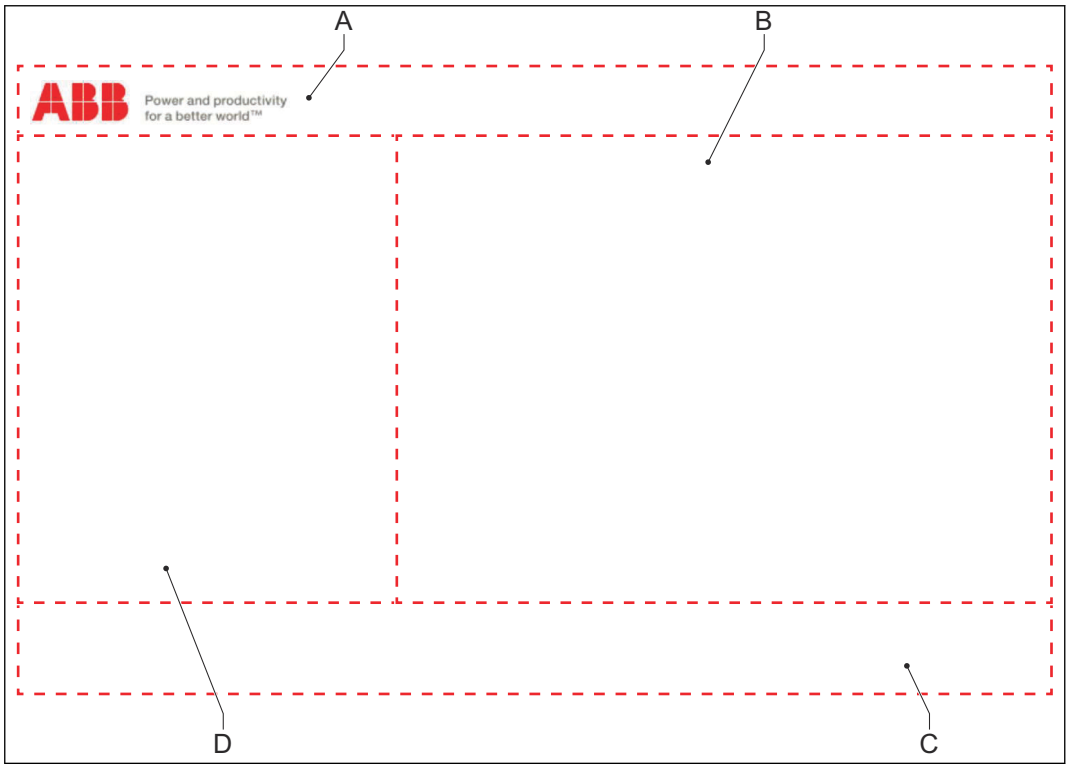
The amplitude of the current peaks can change. These factors are the source of the differences:

- The location of the EVSE
- The power grid
- The earth impedance

For the specifications of the residual-current device and the incidental current peaks, refer to sections 11.15 and 11.19.

3.9 Description of the touchscreen

3.9.1 General description of the layout



A Company logo
B Main display area
C Touchscreen control bar
D Available connectors on the EVSE

3.9.2 General description of the buttons

Button	Name	Description
	*Connector*	To select the connector. • X = Charge power • Y = Connector location • Z = Type of connector
	*Information*	To show more information about the EVSE

Button	Name	Description
	*Help*	To show help information on the current status of the EVSE
	*Language*	To change the language on the touchscreen
	*Start*	To start the charge session
	*Stop*	To stop the charge session

3.10 Local service portal

3.10.1 Local Service Portal

The Local Service Portal is a service tool available on the EVSE for these purposes:

- provide information about the EVSE
- allow for the configuration of the key parameters during commissioning
- enable diagnostic on site

For the operation procedures, refer to section 6.7.

Screen name	Function
Status screen	To give information about the EVSE: • EVSE serial number • EVSE release number • Number of power modules To give a status overview of the key components in the EVSE, providing information such as: • Type: the name of the component • Status: the health status • Details: if available, the reason for an error
Hardware screen	To give detailed information about the key components of the EVSE: • Name • Serial number • Software version • Node-id • Position The hardware page has two buttons: • Navigation button: to go to the Hardware test screen • Action button *Trigger discovery*: to install new software
Hardware test screen	To navigate to various hardware tests
Configuration main screen	To set the following data : • Authorization on or off • Maximum AC input current To set the configuration parameters, refer to section 6.7.2
OCPP settings screen	To set the following data : • OCPPJURL • OCPPJID • OCPPJPassword • Confirm password To set the OCPP parameters, refer to section 6.7.3

3.10.2 General description of the buttons

Button	Description
Continue	To enter the local service portal after login
Exit	To go to a different screen
Back	To go back to the status screen
Test	To go to the hardware screen

Button	Description
Trigger discovery	To find new hardware • The search for new hardware can take up to 15 minutes. • During the search, the local service portal is closed. The user interface shows *Out of order*. • When the search is finished, the local service portal starts. The user interface is in idle mode.
Hardware	To see details about the different boards
Configuration	To set parameters for the configure settings on the EVSE
Toggle	To select an option
Set OCPP parameters	To confirm the parameters for the configuration settings that you entered

4 Inspection and transport

4.1 Transport the EVSE to the site

A transport company delivers the EVSE close to the site. The movement of the EVSE to its final location is his responsibility.
If you need to store the EVSE before installation, obey the ambient conditionsfor storage. Refer to section 11.6.

Caution: YOU ARE PROHIBITED FROM TRANSPORTING OR HANDLING THE EV CHARGER UNLESS YOU ARE AUTHORISED TO HANDLE THE CHARGER AND YOU COMPLY WITH THE FOLLOWING SAFETY MEASURES!

Warning: Please follow these steps to comply with the applicable Safety measures applicable to the working area including Instructions for safe handling of the EV Charger

- Check the weight on the transport document before moving the load. Make sure that the offloading equipment used can handle this specific weight.
- Check that the forklift truck or hoisting equipment for loading/unloading is suitable and is able to move the EV Charger based on weight, and that the forks of the forklift truck is fully able to move into the pallet to provide full support. Fork lift operators must comply to all local regulations.
- Handling personnel must wear all appropriate and applicable personal protective equipment (PPE) and follow all the applicable Health and Safety measures applicable to the working area.
- Check the position of the center of gravity before lifting the EV Charger – the higher the position of center of gravity, the more care is required to handle the EV Charger to avoid overturning.
- Check that the pallet is not damaged. Otherwise please contact the responsible Health and Safety manager for the site to get instructed on how to unload the EV Charger and move it in a safe way.
- Check that the working place conditions are safe before handling the load (such as obstacle-free unloading area, proper flooring, safe path and other conditions).
- Ensure that the area is not accessible to unauthorized personnel and the personnel involved in handling the EV Charger are fully aware of the safety measures to apply when handling the EV Charger and keep sufficient distance away from moving EV Charger.

ABB is not liable for any damages resulting from the improper handling and transportation of the Electrical Vehicle Charger, in particular resulting from non-compliance with these instructions and other applicable regualtions and standards (e.g. transport, occupational health and other safety standards).

4.2 Unpacking

4.2.1 Unpacking procedure

Preliminary requirements

	• Installation engineer

Procedure

1. Unpack the EVSE. Refer to section 4.2.2.
2. Do a check on the transport sensors. Refer to section 4.2.3.
3. Do a visual check for damage on the outside and inside of the EVSE.
4. Make sure that all parts are delivered. Refer to the section 11.2.
5. If you find damage or the parts are not according to the order, contact the on-site representative of the manufacturer.

4.2.2 Unpack the EVSE

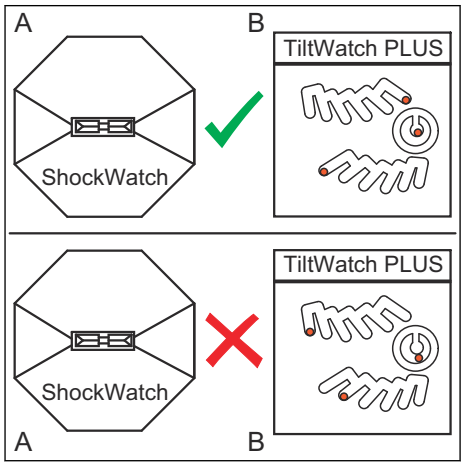
1. Remove the packaging material.
2. Discard the packaging material. Refer to section 2.11.
3. Remove the EVSE from the pallet.

4.2.3 Do a check on the transport sensors

Preliminary requirements

	• Installation engineer

Procedure



1. Do a check on the sensors (A) that record the shocks during transport.
2. Do a check on the sensors (B) that record the maximum tilt during transport.
3. If the sensors (A) show a red indication or the sensors (B) show a tilt that is too high, do these steps:

   For the transport specifications, refer to section 11.12.

   a. Refuse the delivery of the EVSE.
   b. Make a note on the delivery receipt.
   c. Within three days of the delivery, ask the transport company for an inspection.
   d. If you see damage on the EVSE, through the packaging material, do not unpack the EVSE.
   e. Contact the manufacturer and give details of the delivery problems. Refer to section 1.12.

4.3 Packing

4.3.1 Pack the EVSE

Preliminary requirements

	• The EVSE is disconnected. Refer to section 8.		• Installation engineer

Procedure

1. Make sure the doors are closed. Refer to section 9.2.
2. Put the EVSE on the pallet.
3. Attach the EVSE to the pallet.
4. Wind stretch foil around the EVSE.

4.4 Transport the EVSE on the site

4.4.1 Move the EVSE with a forklift truck

Preliminary requirements

	• The EVSE is on the pallet.		• Forklift truck. Refer to section 11.4.
	• Installation engineer		

Warning:

Risk of pinching or crushing, the EVSE is heavy

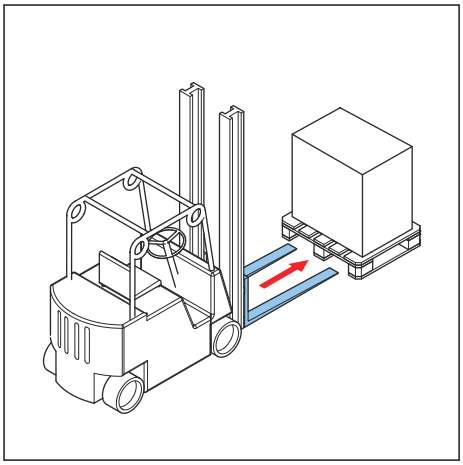
- Make sure that the forklift truck can lift the EVSE safely. Obey the safety instructions that apply to the forklift truck. Take into account the mass, the dimensions and the center of gravity of the EVSE. Refer to chapter 11.

Caution:

- Do not drop the EVSE.
- Do not tilt the EVSE more than allowed. Refer to section 11.12.

Procedure

1. Move the forks (A) of the forklift truck in the gaps of the pallet.
2. Move the EVSE to the correct location.



4.4.2 Hoist the EVSE

Preliminary requirements

	• The EVSE is unpacked. Refer to section 4.2.1.		• Hoisting equipment, including cables (not chains), swivel eye bolts or bolts with lifting loops. Refer to section 11.4.

Warning:

Risk of pinching or crushing, the EVSE is heavy

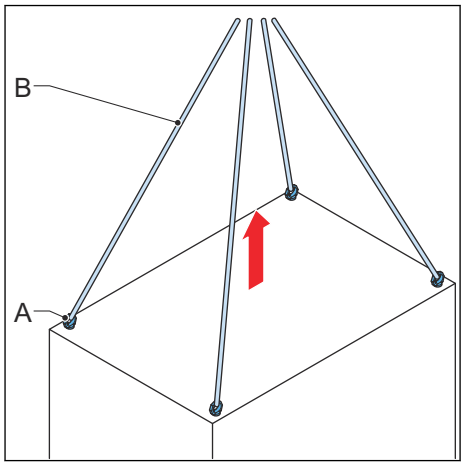
- Make sure that the hoisting equipment can lift the EVSE safely. Obey the safety instructions that apply to the hoisting equipment. Take into account the dimensions, the mass and the center of gravity of the EVSE. Refer to sections 11.13 and 11.8.

Caution:

- Do not drop the EVSE.
- Make sure that there are no dynamic forces on the hoisting points.
- Make sure that the weight is equally distributed between the hoisting points.

Procedure

1. Install the swivel eye bolts or bolts with lifting loops (A).
2. Connect the cables (B) of the hoisting equipment to the swivel eye bolts or bolts with lifting loops.
3. Move the cabinet to the correct location.
4. Remove the swivel eye bolts or bolts with lifting loops (A).
5. Install the plastic cover on the threaded location.



5 Installation

5.1 General installation procedure

Preliminary requirements

	• All required permits to agree with the local rules, are granted. • The AC input cable is available. • The EVSE is unpacked.		• Tools for installation. Refer to section 11.4.
	•  Installation engineer		• There is no voltage on the AC input cable during the complete installation procedure. • The main switch of the EVSE is set to "0".

Procedure

1. Prepare the site. Refer to section 5.2.
2. Move the cabinet to the correct location. Refer to section 4.4.
3. Do the electrical installation. Refer to section 5.3.
4. Prepare for commissioning. Refer to section 5.4.

5.2 Site preparation

5.2.1 Prepare the site

Preliminary requirements

	• Installation engineer

Procedure

1. Make sure that the space and the airflow around the EVSE is sufficient. Refer to section 11.13.2.
2. If the local rules require the installation of an external residual-current device, install an external residual-current device. Refer to section 3.8.
3. Design the site so that the charge cables can get to the inlet for the charge cables on the EVs. For the length of the charge cables, refer to section 11.1.
4. Prepare the AC input cable with the required connector. Refer to section 11.15.

5.2.2 Control the space and airflow around the cabinet

Preliminary requirements

	• Installation engineer

Procedure

1. Make sure that the floor space is in accordance with the requirements. Refer to section 11.13.2.
2. Make sure that the air flow inlet and outlet cannot get blocked. Think of snow or objects.

5.3 Electrical installation

5.3.1 Connect the AC input cable

Preliminary requirements

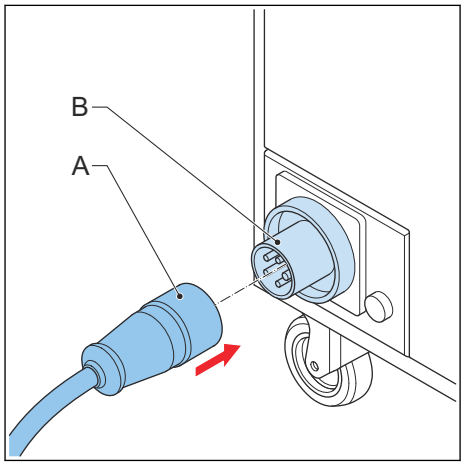
	•  Installation engineer

Preliminary requirements

	• The AC cable has the required connector installed. For the specification, refer to section 11.15.4.		• 

Procedure

1. Connect the AC input cable (A) to the AC input terminal (B).



5.4 Prepare for commissioning

Preliminary requirements

	•  Installation engineer

Danger:

Hazardous voltage

- Do not commission the EVSE. Only a service engineer of the manufacturer is qualified to commission the EVSE.

Procedure

1. Tell the owner that the EVSE is ready for commissioning.
2. Make sure that the site complies with these requirements:
   - The EVSE is installed.
   - AC input power is available from the grid provider.
   - The AC input cable has the minimum required cross-section. For the specifications, refer to section 11.15.4 .
   - You are present during the commissioning, for assistance and to switch on the power on the distribution board.
   - Internet access is available, through 3G/4G or Ethernet connection.
   - An EV must be available with a compatible connection.
   - The site operator or owner is available to receive instructions from the service engineer of the manufacturer.
3. Make sure that these requirements are met:
   - You are present during the commissioning, for assistance and to energize the power to the EVSE on the power distribution board.
   - An EV is available with a compatible connection.
   - The site operator or owner is available to receive instructions from the service engineer of the manufacturer.
4. Make sure that this data is available:
   - Contact data of the contact person on site.
   - Address of the EVSE.
   - Site name.
   - Exact location of the EVSE: longitude and latitude. If there are more EVSEs at one location, make sure that the coordinates are slightly different (at least 0.0001 degree). This way the EVSEs are not at the same location on the map.
   - Specification of the external fuse at the power distribution board.
   - Date that the installation is done.
   - Special remarks, for example to decline the authorization for the service engineer of the manufacturer to take photos.
   - Photo of the surroundings of the EVSE.

6 Operation

6.1 Prepare before use

Preliminary requirements

	• Owner

Procedure

1. Make sure that:
   - The EVSE is installed according to the instructions in this manual.
   - The wheel brakes of the EVSE are locked.
   - If the floor locks are present, the floor locks are locked.
2. Make an emergency plan that instructs people what to do in case of an emergency.
3. Give these instructions to each end user:
   - Emergency stop. Refer to section 6.2.
   - Charge session. Refer to section 6.5.1.
4. Make sure that the manufacturer commissions the EVSE. Contact the manufacturer when the EVSE is ready for commissioning. Refer to section 5.4.

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 11.13.2.
6. Make sure that maintenance is done on the EVSE. Refer to section 7.1.
7. If the EVSE is de-energized for more than two hours, activate the internal heater to remove condensation from the cabinet. Refer to section 7.2.1.

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

6.2 Stop the EVSE if there is an emergency

1. If there is an emergency, push the *emergency stop* button.
   - The EVSE stops all charge sessions.
   - The touchscreen shows a message.
2. Do not start the EVSE until the situation is safe.

6.3 Reset the EVSE after an emergency

Preliminary requirements

	• Owner

Procedure

1. Make sure that the situation is safe again.
2. Turn the emergency button clockwise to release it.
   - The EVSE starts.
   - The message disappears from the touchscreen.
   - The EVSE resumes the normal operation.

6.4 Energize the EVSE

Preliminary requirements

	•  Owner • Installation engineer

Procedure

1. Open the front door. Refer to section 9.1.
2. Set the main switch to the *1* position (vertical).

Warning:

General hazard

- Be careful and use both your hands to turn the main switch. You need some force to turn the switch.

3. Close the front door. Refer to section 9.2.

   The EVSE starts. The display shows a message when the EVSE is ready for operation.

6.5 Charge session

6.5.1 Charge an EV

Preliminary requirements

	• Owner

Procedure

1. Park an EV in the parking space. Make sure that the connector of the EV charge cable can reach the connector on the EV.
2. Energize the EV.
3. Start the charge session. Refer to section 6.5.2.
4. Stop the charge session. Refer to section 6.5.3.

6.5.2 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. Remove the EV charge cable from the EVSE.
3. Connect the EV charge cable to the connector on the EV.
4. On the touchscreen, press the *Start* button.
5. If the touchscreen shows a message to authorize the charge session, do the instruction that the touchscreen shows.
   - The EVSE charges the EV and shows the progress on the touchscreen.
   - The status panel shows the status of the EVSE.

6.5.3 Stop a charge session

1. On the touchscreen, press the *stop* button.

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

2. 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.

6.6 Remove condensation from the cabinet

Preliminary requirements

	• Owner

Note: If the EVSE is off for more than two hours, condensation can occur.

Procedure

1. Open the right door. Refer to section 9.1.
2. Set the power module breakers to the off position:
   a. Set the power module breakers from the *Auto* to the *Manual* position.
   b. Set the power module breakers from the *Manual* to the *Off* position.
3. Energize the EVSE. Refer to section 6.4.

4. Close the right door. Refer to section 9.2.
5. Wait four hours.

   The internal heater of the cabinet heats the inside of the cabinet and lets the condensation evaporate.
6. Open the right door. Refer to section 9.1.
7. Set the power module breakers to the on position.
   a. Set the power module breakers from the *Off* to the *Manual* position.
   b. Set the power module breakers from the *Manual* to the *Auto* position.
8. Close the right door. Refer to section 9.2.

6.7 Local service portal operations

6.7.1 Start the local service portal

Preliminary requirements

	• The EVSE is ready for operation. No charge session is in progress.		•  Installation engineer

Procedure

1. Open the front door of the EVSE. Refer to section 9.1.

   The HMI starts the local service portal application. The outside HMI goes into idle mode. On the inside HMI, the authorization screen shows.
2. Enter the pin code.

   The PIN code is an alphanumeric code "1234WWYYSSS". The meaning of the letters and numbers is:

   - 1234: fixed code
   - WW: production week
   - YY: production year
   - SSS: serial number
3. Select *Continue*.

6.7.2 Set the configuration parameters

1. Go to the configuration screen.
2. Wait for the system to load the data. This can take a few seconds.
3. Set *Authorization* to ON or OFF. Use the toggle button.
4. Set the maximum AC input current in amperes.

   The AC input current field has no maximum value. The correct AC input value is the responsibility of the service engineer.
5. Save your changes.

6.7.3 Set the OCPP parameters

1. Go to the OCPP settings screen.
2. Wait for the system to load the data. This can take a few seconds.

3. Select and enter the data for these subjects:
   - OCPPJID
   - OCPPJURL
   - OCPPJPassword
   - Confirm password
4. Make sure that you type the URL or ID correctly and without spaces.
5. Obey the maximum number of allowed characters for URL and ID, that is 40.
6. Select *Set OCPP parameters* to confirm the configuration parameters that you entered.
7. Select *Save* to save your changes.

6.7.4 Install new software

1. On the hardware screen, select *Trigger discovery*.

   The screen gives feedback if the trigger discovery has been started or failed. The system tries to discover new hardware, installs software on the hardware and assigns node IDs. During this discovery, the local service portal is closed. The screen shows the message *Out of order*.
2. Do not turn off the EVSE during the discovery process.
3. Wait until the discovery process is finalized.

   The discovery of new hardware can take up to 15 minutes. At the end of the discovery process, the new software is installed. The system starts the processes again in the background and the screen goes into idle mode.

6.7.5 Close the local service portal

1. On the touchscreen, select *Exit*.
2. Select *Confirm* in the dialog box.

   The HMI will switch to the user application. After 5 minutes of touch inactivity on the screen, the local service portal will close. The HMI will switch to the regular EVSE application.
3. If the local service does not close automatically, select the *Trigger Discovery* button.

7 Maintenance and cleaning

7.1 Maintenance schedule

Task	Frequency	Procedure
Clean the cabinet.	4 months or after each transport	Refer to section 7.3.
Do a check for damage on the EV charge cables, connectors and terminals.	3 months or after each transport	Refer to section 7.3.
Do a check for damage on the AC input terminals.	3 months or after each transport	Refer to section 7.3.
Do a check for damage on the cabinet.	6 months or after each transport	Refer to section 7.3.
Replace the filters for the air inlets.	1 year or if needed due to harsh ambient conditions	Refer to section 7.5.
Make sure that the manufacturer does maintenance on the EVSE.	1 year	Ask the manufacturer to do the task. Refer to section 1.12. For the complete maintenance schedule refer to section 11.5. For the required spare parts refer to section 11.10.
Replace the filters for the air outlets.	After the first year, then 2 years	Refer to section 7.6.

7.2 De-energize the EVSE

7.2.1 De-energize the EVSE - general procedure

Preliminary requirements

	• The DC charge cable is not connected to an EV • The AC charge cable is disconnected from the EVSE		• AC and DC tester
	•  Owner		

Procedure

1. Open the front door. Refer to section 9.1.
2. Set the main switch to the *0* position (horizontal).

Warning:

General hazard

- Be careful and use both your hands to turn the manual switch. The manual switch turns quite arduous.

3. Make sure all the power modules are off:
   - Wait until the last LED on the power modules goes off
   - Wait until the fans stop
4. Measure the AC voltage. Refer to section 7.2.2.
5. Make sure that all the measured voltages are 0 V.
6. Measure the DC voltage. Refer to section 7.2.3.
7. Make sure that all the measured voltages are 0 V.
8. Close the front and the right door. Refer to section 9.2.

7.2.2 Measure the AC voltage

Preliminary requirements

	• Installation engineer •  Owner		• Only do this procedure if a different procedure refers to this procedure.
	• AC and DC tester		

Procedure

1. Measure the AC voltage between the terminals on the surge protection device switch:
   - *L1, L2* and *L3* to *N*
   - *L1* to *L2*
   - *L1* to *L2*
   - *L2* to *L3*

   Use the voltage tester.

Note: The surge protection device switch shows the indications *L1, L2, L3* and *N*.

7.2.3 Measure the DC voltage

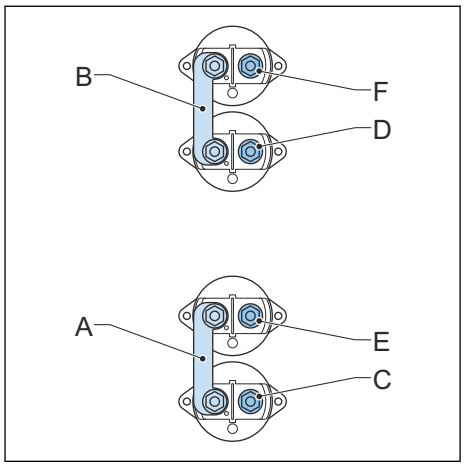
Preliminary requirements

	• Installation engineer •  Owner		• Only do this procedure if a different procedure refers to this procedure.
	• Voltage tester. Refer to section 11.4.		

Procedure

1. Measure the DC voltage between the output terminals:
   - Power module group output + (A) to power module group output - (B)
   - DC charge cable 1 output + (C) to DC charge cable 1 output - (D)
   - DC charge cable 2 output + (E) to DC charge cable 2 output - (F)

   Use the voltage tester.



7.3 Clean the cabinet

Preliminary requirements

	• Owner		• Cleaning agent and a non-abrasive tool. Refer to section 11.11.

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.

7.4 Do a check for damage on the EVSE

Preliminary requirements

	• Owner

Procedure

1. Do a check for damage on these parts:

Part	Damage
EV charge cables, connectors and terminals	Cracks or ruptures
	Internal wires of the cable are visible
AC input terminals	Cracks or ruptures
Touchscreen	Cracks
	Touchscreen does not work
Coating of the cabinet	Cracks or ruptures
Cabinet	Signs of rust that are caused by water that went into the cabinet
	Loose fasteners at the bottom of the EVSE

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

7.5 Replace the air inlet filters

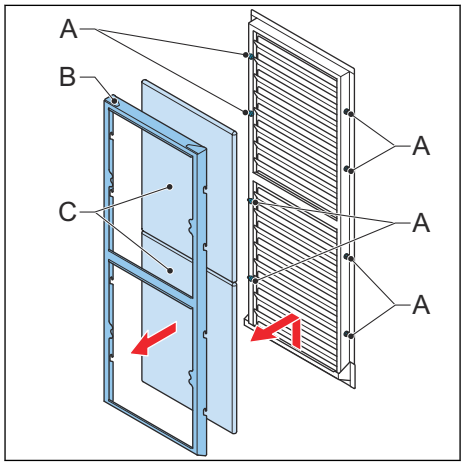
7.5.1 Replace the air inlet filter on the front

Preliminary requirements

	• The EVSE is de-energized. Refer to section 7.2.		• Spanner
	• Owner		• Air inlet filters. Refer to section 11.10.

Procedure

1. Open the the front door. Refer to section 9.1.
2. Remove the nuts (A).
   Use the spanner.
3. Carefully remove theses parts:
   1. Cover (B)
   2. Air inlet filter (C)



Caution:
Prevent contamination of other parts of the EVSE. Make sure that contamination on the filter does not come off.

4. Install these parts:
   1. Clean air inlet filters
   2. Cover (B)
5. Install the nuts.
6. Close the front door. Refer to section 9.2.

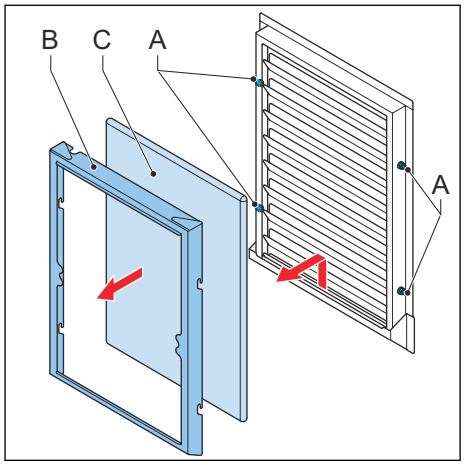
7.5.2 Replace the air inlet filter on the side

Preliminary requirements

• The EVSE is de-energized. Refer to section 7.2.		• Spanner	
• Owner		• Air inlet filters. Refer to section 11.10.	

Procedure

1. Open the the right door. Refer to section 9.1.
2. Remove the nuts (A).
   Use the spanner.
3. Carefully remove theses parts:
   1. Cover (B)
   2. Air inlet filter (C)



Caution:
Prevent contamination of other parts of the EVSE. Make sure that contamination on the filter does not come off
.

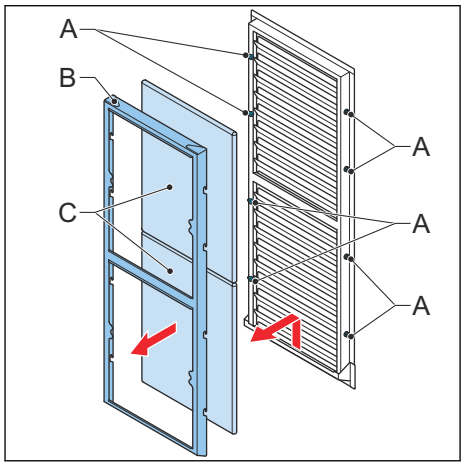
4. Install these parts:
   1. Clean air inlet filters
   2. Cover (B)
5. Install the nuts.
6. Close the right door. Refer to section 9.2.

7.6 Replace the air outlet filter

Preliminary requirements

	• The EVSE is de-energized. Refer to section 7.2.		• Spanner
	• Owner		• Air outlet filters. Refer to section 11.10.

Procedure



1. Open the the rear door. Refer to section 9.1.
2. Remove the nuts (A).

   Use the spanner.
3. Carefully remove theses parts:
   1. Cover (B)
   2. Air outlet filter (C)

Caution:
Prevent contamination of other parts of the EVSE. Make sure that contamination on the filter does not come off.

4. Install these parts:
   1. Clean air outlet filters
   2. Cover (B)
5. Install the nuts.
6. Close the rear door. Refer to section 9.2.

8 Disconnect

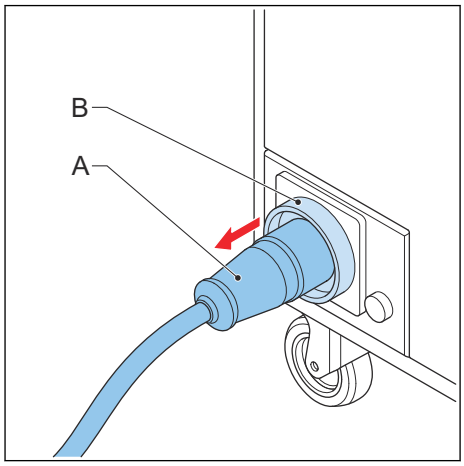
8.1 Remove the AC input cable

Preliminary requirements

	• Installation engineer		•

Procedure

1. Remove the cable (A) from the AC input terminal (B).



9 Access to parts

9.1 Open the doors

Preliminary requirements

	• Installation engineer •  Owner		• Door key

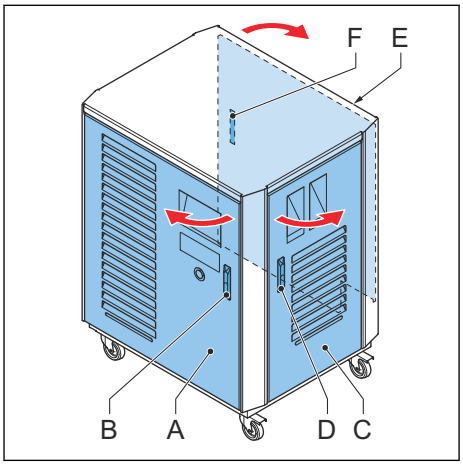
Danger:

Hazardous voltage

- Make sure that only qualified persons have access to the door key.

Procedure

1. To open the front door (A), unlock the lock (B). Use the door key.
2. To open the right door (C), unlock the lock (D). Use the door key.
3. To open the rear door (E), unlock the lock (F). Use the door key.



9.2 Close the doors

Preliminary requirements

	• Installation engineer • Service engineer •  Owner		• Door key

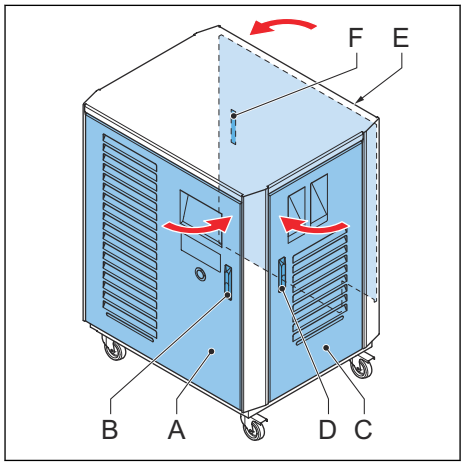
Danger:

Hazardous voltage

- Make sure that only qualified persons have access to the door key.

Procedure

1. For the front door:
   a. Close the front door (A)
   b. Lock the front door. Use the lock (B) and the door key.
2. For the right door:
   a. Close the right door (C)
   b. Lock the right door. Use the lock (D) and the door key.
3. For the rear door:
   a. Close the rear door (E)
   b. Lock the rear door. Use the lock (F) and the door key.



10 Troubleshooting

10.1 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 your local representative of the manufacturer. Refer to section 1.12.

10.2 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.	1. De-energize the EVSE. Refer to section 7.2. 2. Energize the EVSE. Refer to section 6.4.
The touchscreen is white and it does not show any message.	The EVSE is in continuous operation for more than 24 hours.	1. De-energize the EVSE. Refer to section 7.2. 2. Energize the EVSE. Refer to section 6.4.
The touchscreen shows this message: *Unable to lock the connector*.	The EV charge cable is not connected correctly to the EV.	Connect the DC charge cable to the EV correctly.
The touchscreen shows this message: *Unable to unlock the connector from car*.	A dangerous voltage is present on the DC charge cable.	1. Wait 5 minutes. 2. Start the charge session again. Refer to section 6.5.2.
The touchscreen shows this message: *Insulation detection error*.	There is an insulation problem on the EV or the EVSE.	1. Try another EVSE to charge the EV. 2. Contact your on-site representative of the manufacturer.
The touchscreen shows this message: *The vehicle misbehaved*.	There is a communication problem between the EV and the EVSE.	Contact your local representative of the manufacturer and the EV manufacturer.
The LED indicators show that the EVSE is unavailable.	The DC charge cables are not connected correctly to the EVSE	1. Make sure the DC charge cables are connected correctly to the EVSE. 2. Contact your local representative of the manufacturer.

Problem	Possible cause	Possible solution
	The AC input cables are not connected correctly	1. Make sure the AC input cables is installed correctly. Refer to section 5.3.1. 2. Contact your on-site representative of the manufacturer.
	One of the doors is open	1. Make sure the doors are closed. Refer to section 9.2. 2. Contact your local representative of the manufacturer.

11 Technical data

11.1 EVSE type

The EVSE type is a code.
The code is made out of 7 parts: P Q R S T U V W

Code part	Description	Value	Meaning of the value
P	Brand	Terra	-
Q	Power rating	44	Fourth generation charger, 40 kW DC output, 22 kW AC output
		54	Fourth generation charger, 50 kW DC output, up to 43 kW AC output
R	EV charge cable connection	C	CCS 1 or CCS 2 connection
		CC	CCS 1 and CCS 2 connection
		G	Type 2 AC power over a connected cable up to 43 kW and 3 phases
		T	Type 2 AC power over a socket up to 22 kW and 3 phases
S	EV charge cable length	3	3 m
T		A	Air cooled EV charge cable(s)
U	Power rating	2	Max 200 A current
V	Product line	Cube	-
W	Certification	CE	IEC compliant

11.2 Parts included in the delivery

Parameter	Specification
EVSE	Refer to the type plate. Refer to section 3.1.
Door key	Door key for the cabinet

Note: It is possible that more parts are required in the delivery. Refer to the order.

11.3 General specifications

Parameter	Specification
Compliance and safety	CE
IP rating	The type plate shows the specification. Refer to section 3.1.
IK rating according to IEC 62262: enclosure	IK10
IK rating according to IEC 62262: touchscreen	IK08
EMC rating	Class A

11.4 Required tools for installation

Parameter	Specification
Voltage tester	To switch 200 mA of test current
Digital multimeter	Standard
Hoisting equipment or forklift truck	Capable to lift the EVSE safely. Take into account the dimensions, the mass, the center of gravity and the maximum tilt angle. Refer to sections 11.13, 11.7, 11.8 and 11.12.

11.5 Maintenance schedule for the service engineer

Part name	Years after startup															
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Filter inlet kit	-	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
Filter outlet kit	-	R	I	R	I	R	I	R	I	R	I	R	I	R	I	R
Fan cabinet	-	I	I	I	I	R	I	I	I	I	R	I	I	I	I	R
Power module	-	I	I	I	I	I	I	I	I	I	R	I	I	I	I	I
DC fuse	-	I	I	I	I	R	I	I	I	I	R	I	I	I	I	R
CPI Combo CCS	-	I	I	I	I	I	I	I	I	I	I	I	I	I	I	R
Touchscreen/ CPU	-	I	I	I	I	I	I	I	I	I	I	I	I	I	I	R
DC outlet contactor	-	I	I	I	I	I	I	I	I	I	I	I	I	I	I	R
Power supply	-	I	I	I	I	R	I	I	I	I	R	I	I	I	I	R
CCS connector and cable	-	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I

- 'I' = Inspection or other procedure
- 'R' = Replacement

11.6 Operating conditions

Parameter	Specification	
	SI units	Imperial units
Environment, general	Indoor and outdoor	
Storage temperature	-40°C to +70°C	-40°F to +158°F
Operation temperature range	-35°C to +50°C	-31°F to +122°F
Maximum altitude above sea level	2000 m	6500 ft

Note: Operation of the EVSE outside the operating temperature ranges and above the maximum altitude is not allowed and voids the product warranty. The owner of the EVSE is responsible to ensure that the unit is used within its operation range

11.7 Mass

Parameter	Specification [kg]
Mass (with packaging and DC cables)	360 kg

11.8 Center of gravity location

Parameter	Specification [mm]			Specification [in]		
	X	Y	Z	X	Y	Z
Unpacked EVSE	450	900	380	17.7	35.4	15

Note: The coordinates correspond with the agreements in section 1.15. 0,0,0 is the left bottom front side of the EVSE.

11.9 Noise level

Noise level	Specification
Maximum noise level at a distance of 1 m (3.2 ft)	< 62 dB(A)

11.10 Spare parts

Part Name	Quantity
Air filter	5
Cooling fan	5
Power module	5
DC fuse	2
CPI Combo CCS	2

Part Name	Quantity
Touchscreen/CPU	1
DC outlet contactor	4
Auxiliary power supply	1
CCS 2 connector and cable	1
CCS 1 connector and cable	1

11.11 Cleaning specifications

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

11.12 Transport specifications

Parameter	Specification
Maximum tilt angle during transport	30°

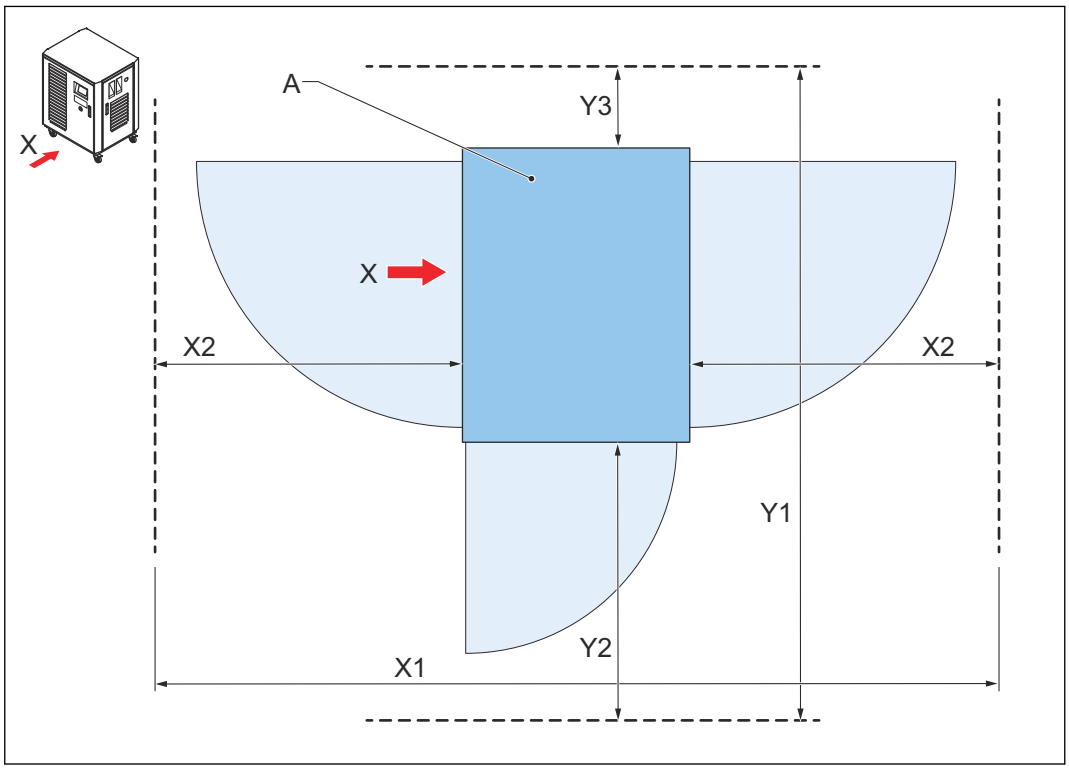
11.13 Dimensions

11.13.1 General dimensions

Parameter	Specification	
	[mm]	[in]
Width of the cabinet (X-dimension)	925	36.4
Depth of the cabinet (Y-dimension	1250	49.2
Height of the cabinet (Z-dimension)	1290	50.8

Parameter	Specification	
	[m]	[ft]
Length of the charge cable (air-cooled)	3	9.84

11.13.2 Floor space requirements



A	EVSE	Y1	Total depth
X1	Total width	Y2	Space to open the right door
X2	Space for air inlet and to open the front and rear doors	Y3	Space on the left side

Parameter	Specification	
	[mm]	[in]
X1	2600	102.4
X2	900	35.4
Y1	1550	61
Y2	600	21.7
Y3	0	0

11.14 Communication interface specifications

Parameter	Specification
RFID standard	ISO 14443 A+ B to part 4 and ISO/IEC 15693
RFID-supported applications	Mifare, NFC, Calypso, Ultralight, Pay-Pass, HID. For information about the options, contact the manufacturer.
Network connection	3G/4G modem

11.15 AC input specifications

11.15.1 General AC input specifications

Parameter	Specification
Input AC power connection	3P + N + PE
Earthing systems	TN
Input voltage range	400 VAC +/- 10% (50 Hz)
Power factor at full load	>0.96
Efficiency	>94% at nominal output power
Total harmonic distortion (current)	<5%
Short circuit current rating	65 kA

11.15.2 AC input specifications (Terra Mobile 44HV)

Parameter	Specification
Maximum rated input current	62 A
Recommended input circuit breaker	63 A
Maximum power dissipation	43 kVA

11.15.3 AC input specifications (Terra Mobile 54HV)

Parameter	Specification
Maximum rated input current	78 A
Recommended input circuit breaker	80 A
Maximum power dissipation	54 kVA

11.15.4 General AC input cable specifications

Parameter	Specification
Surface and diameter	Based on current rating of the EVSE and local regulations
Material	Copper
Maximum temperature of the input cables	75 °C (167 °F)
Minium length	n + 1 m, where n is the distance between the power source and the EVSE

11.15.5 AC input cable specifications (Terra Mobile 44HV)

Parameter	Specification
Cross section of the phase conductors	5x16 mm^2
Cross section of the PE conductor	16 mm^2
Diameter of AC cable, including shielding	14.5 - 36 mm
Suggested single phase wire cross-section	16 mm^2

11.15.6 AC input cable specifications (Terra Mobile 54HV)

Parameter	Specification
Cross section of the phase conductors	5x35 mm²
Cross section of the PE conductor	35 mm²
Diameter of AC cable, including shielding	22.5 - 50 mm
Suggested single phase wire cross-section	35 mm²

11.15.7 Connector types for the AC input cable

Connector type for the AC input cable (Terra Mobile 44HV)

Parameter	Specification
Connector type on the cable	IEC 60309 3P+N+PE 63 A female plug

Connector type for the AC input cable (Terra Mobile 54HV)

Parameter	Specification
Connector type on the cable	IEC 60309 3P+N+PE 125 A female plug

11.16 DC output specifications

11.16.1 DC output specifications (Terra Mobile 44HV)

Parameter	Specification
DC output voltage range	200-920 V
Minimum DC output current	43 A
Connection standard	CCS (IEC 61851-23:2014 , IEC62196-1: 2014, IEC 62196-3: 2014)
DC output power on one EV charge cable	Maximum 40 kW
DC output power on two EV charge cables	Maximum 40 kW
Simultaneous DC on 2 outlets	No. Only subsequent operation of the outputs available.
Maximum DC output current	125 A

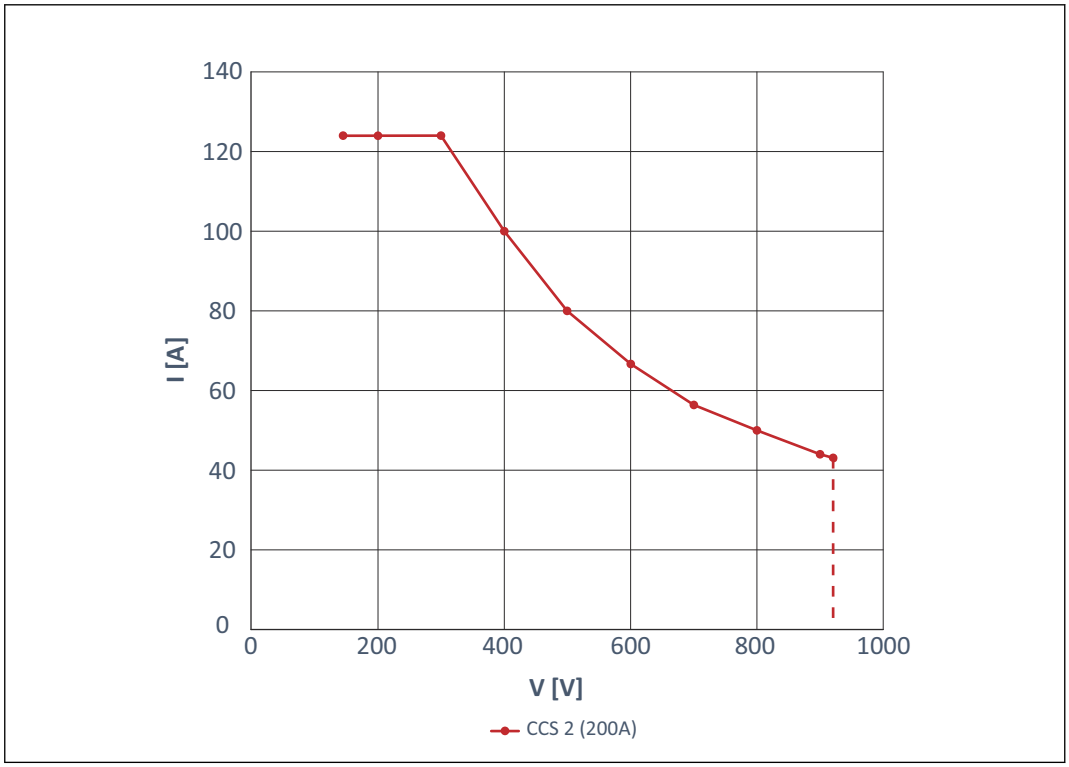
Charger Capacity

Voltage [V]	Current [A]	Power [kW]
150	125	19
200	125	25
300	125	38
400	100	40
500	80	40
600	67	40
700	57	40

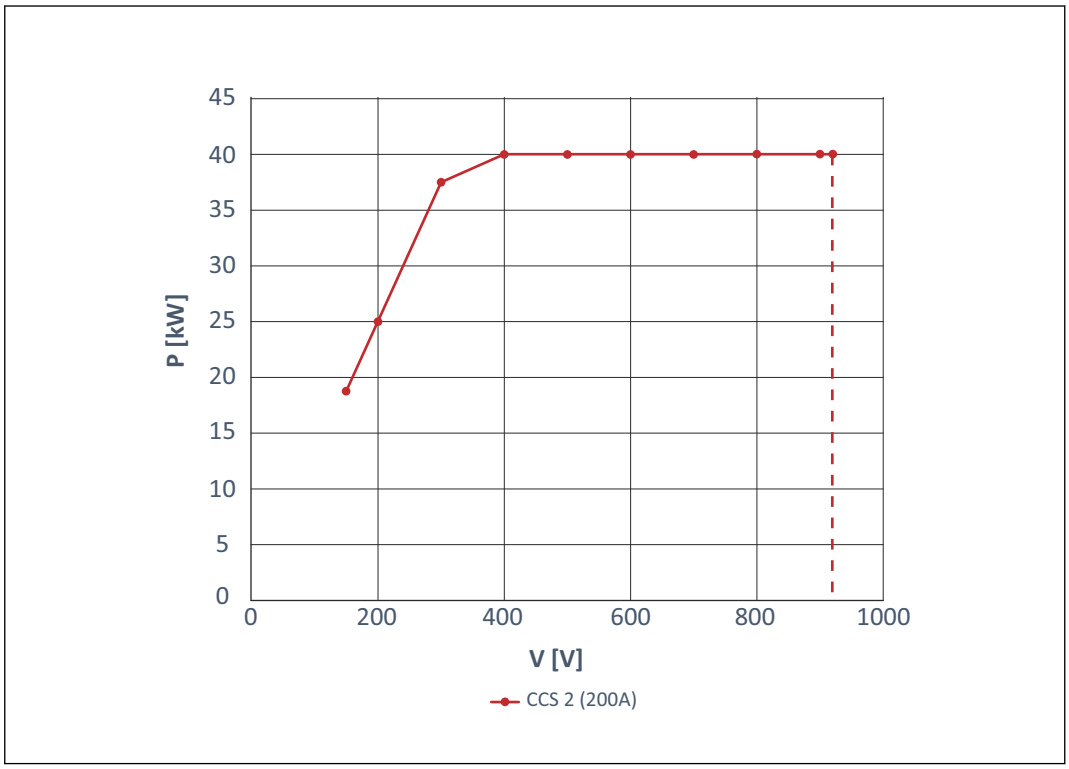
Charger Capacity

Voltage [V]	Current [A]	Power [kW]
800	50	40
900	44	40
920	43	40

Output current in function of output voltage



Output power in function of output voltage



11.16.2 DC output specifications (Terra Mobile 54HV)

Parameter	Specification
DC output voltage range	200-920 V
Minimum DC output current	54 A
Connection standard	CCS (IEC 61851-23:2014 , IEC62196-1: 2014, IEC 62196-3: 2014)
DC output power on one EV charge cable	Maximum 50 kW
DC output power on two EV charge cables	Maximum 50 kW
Simultaneous DC on 2 outlets	No. Only subsequent operation of the outputs available.
Maximum DC output current	125 A

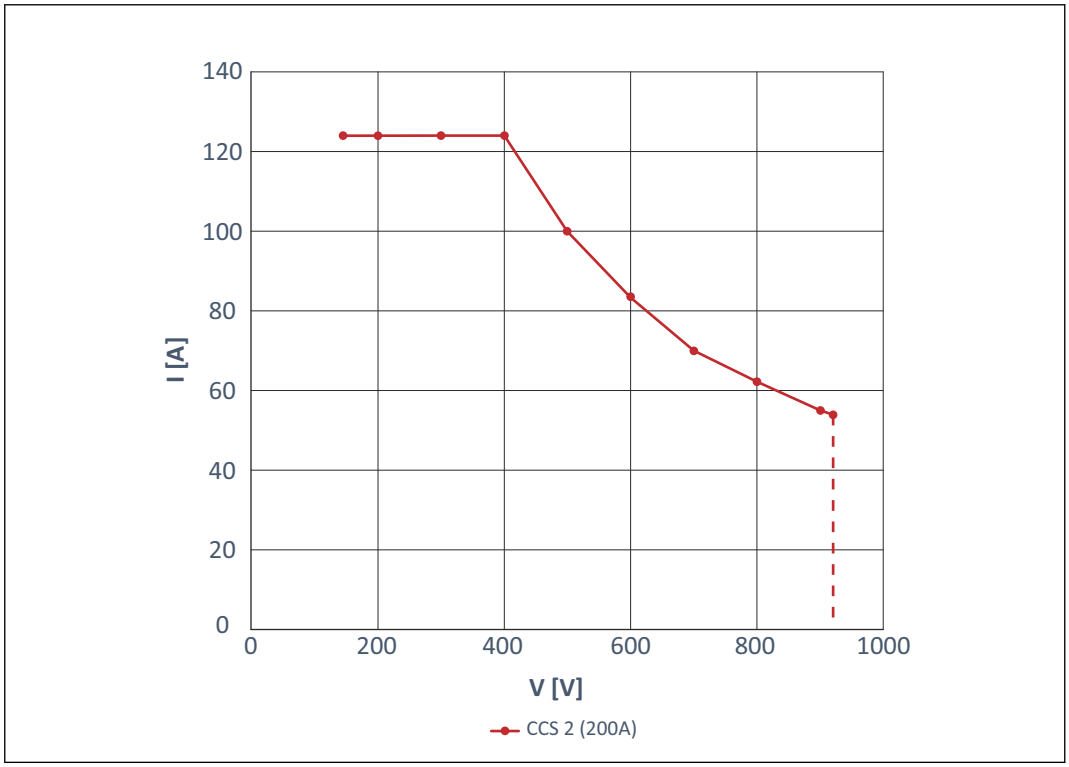
Charger Capacity

Voltage [V]	Current [A]	Power [kW]
150	125	19
200	125	25
300	125	38
400	125	50
500	100	50
600	83	50
700	71	50
800	63	50

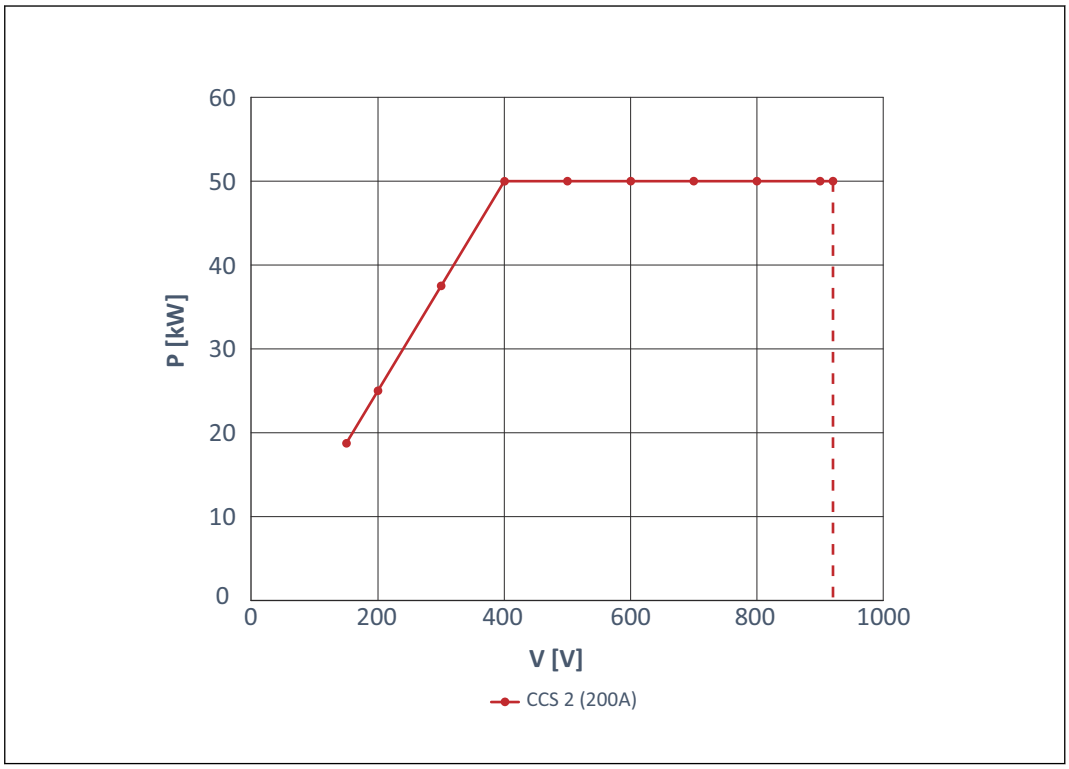
Charger Capacity

Voltage [V]	Current [A]	Power [kW]
900	56	50
920	54	50

Output current in function of output voltage



Output power in function of output voltage



11.17 AC output specifications

Parameter	Specification
AC output voltage range (3 phase)	380-415V AC
Connection standard	Type 2 socket

11.18 Power consumption

Power consumption during stand-by

Parameter	Specification [kVA]
Stand-by power (heater off)	0.08
Stand-by power (heater on)	0.98

Note: The heater will operate daily when the outside air reaches the dew point, to avoid condensation inside the cabinet. When the heater operates, the heater will use most of the required standby power.

Power consumption during operation

Parameter	Specification [kVA]
Power consumption	43 (Terra Mobile 44HV)
	54 (Terra Mobile 54HV)

11.19 In-rush current

Current peaks during the start of a charge session

Parameter	Specification [µs]
Duration of the current peaks	25

Maximum current peak (400V & 50 Hz)

Parameter	Specification [A]
Maximum current peak	< 440