Terra 124

All-In-One 120kW DC Fast Charger

Description

This Terra all-in-one DC fast chargers offer power up to 120kW, with convenient charging times The compact, modular design makes it perfect for retail, highway or fleet use, with power sharing to further optimize utilization. All Terra chargers feature connectivity for remote services and OCPP enablement.

Terra 124 equipped with cable refractors

Key Benefits and Features

- Voltage Output range can be tailored to your needs by selecting the appropriate model.
- User friendly control interface allows for PIN or RFID accessibility
- OCPP 1.6 standard supports integration into In-Control, In-Charge's EVSE management platform
- •LTE Modem and LAN
- •TUV Certified

Specifications

- Available with CCS1 or CCS2, Dual CCS1 or CCS2 and Dual CCS1 & CHAdeMO connectors
- DIN 70121, ISO 15118 protocols supported
- Dimensions (D x W x H): 34.6" x 22.2" x 74.8 " / 880mm x 565mm x 1900mm
- Weight: 365kg / 800lbs

Ordering Information

Configuration	SKU
Terra 124 Cable Retractor - Single CCS	ADC-120-200-C1
Terra 124 Cable Retractor - Dual CCS & CHAdeMO	ADC-120-200-C1CH

Technical Specifications

Configuration	SKU
Voltage	480 Vac +/- 10 %
AC Input Power Connection	3-phase: L1, L2, L3, GND
Frequency	60 Hz
Recommended breaker	200A
Max Current Draw	153A
Power factor	>0.96
THD - Current	< 5%
Output Parameters	**Value**
Voltage	150 - 920Vdc
Current - Max	200A
Power - Max	120kW
System Effciency - Max	>95
Controls and Interface	**Value**
Charging Connectors	CCS1, CHAdeMO
HMI	7” TFT LCD Display
Communication	OCPP 1.6J
Network Connection	GSM/3G/4G modem; 10/100 Base-T Ethernet
RFID	ISO/IEC 14443A/B, Mifare, Calypso
Language	English (others available on request)
Environment	**Value**
Temperature - Operating	-31 °F to +131 °F */ -35 °C to +55 °C
Temperature - Storage	14 °F to +158 °F / -10 °C to +70 °C
Humidity	5 - 95
Altitude - Operating	6560ft (2000 m)
Protection - Intrusion	IP54, NEMA 3R; indoor and outdoor rated
General	**Value**
Cable Length	19.6ft (6 m)
Safety and EMI	UL 2202, NEC Article 625, EN 61851, EN 62196

* Derating characteristics apply at extreme temperatures

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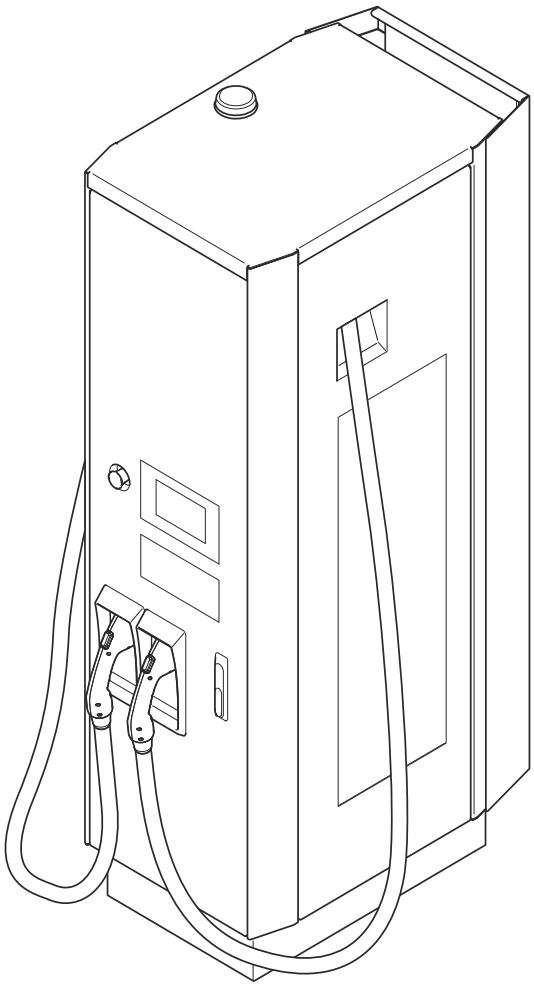
Operation and installation manual

Terra 94/104/124/184 North America



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Contents

1 About this document

1.1 Function of this document

The document is only applicable for this EVSE (Terra x4), including the variants and options listed in section 10.1.
The document gives the information that is necessary to do these tasks:

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

Note: "Terra x4": 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 instalaltion engineer, refer to section 2.4.

1.3 Revision history

Version	Date	Description
001	January 2022	Initial version

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

In this manual SI units of measurement (metric system) as well as North American units of measurement are used. The different units are 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
Operation and installation manual	Qualified installation engineer and owner
Service manual	Qualified service engineer
Declaration of conformity	All target groups

1.12 Manufacturer and contact data

ABB EV Infrastructure USA
ABB Inc.
950 E Elliott Rd
Tempe AZ 85284 Suite 100
United States of America
Phone: 800-435-7365
E-mail: US-evci@us.abb.com

ABB EV Infrastructure Canada
ABB Inc.
800 Hymus Boulevard
Saint-Laurent AZ 85284
Qc, H4S 0B5 Canada
Phone: 800-435-7365
E-mail: CA-evci@us.abb.com

Contact data
ABB EV Infrastructure 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

Abbreviation	Definition
PE	Protective earth
PPE	Personal protective equipment
RFID	Radio-frequency identification

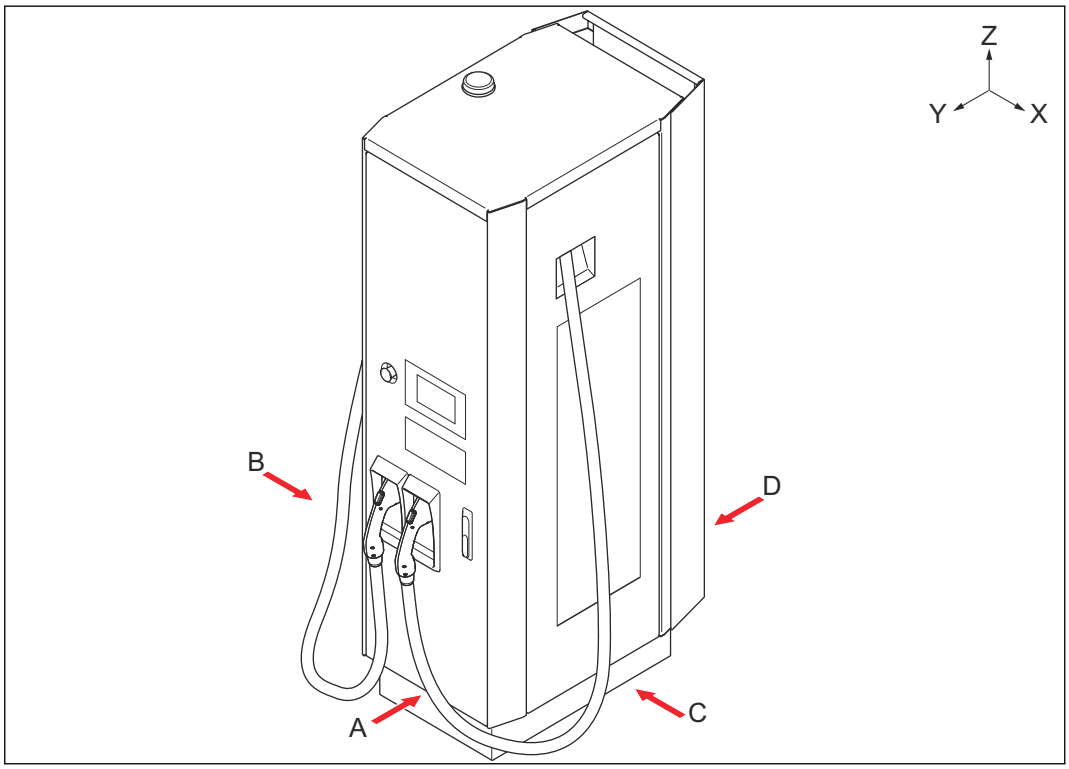
Note: It is possible that not all abbreviations are present in this document.

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
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 to the purchaser of the EVSE or to third parties for damages, losses, costs or expenses incurred by the purchaser or third parties if any target group mentioned in the related documents does not obey the rules below:

- Obey the instructions in the related documents. Refer to section 1.11.
- Do not misuse or abuse the EVSE.
- Only make changes to the EVSE, if the manufacturer approves in writing of the changes.

2.2 General safety instructions

- This document, the related documents and the warnings included do not replace your responsibility to use your common sense when you do work on the EVSE.
- Only do the procedures that the related documents show and that you are qualified for.
- Obey 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 rules, obey the stricter between the requirements and procedures specified in this document and the local rules.

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.

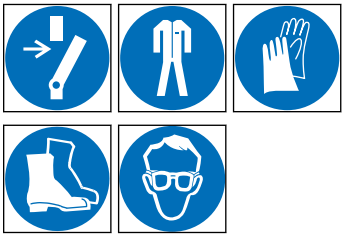
2.5 Personal protective equipment

Symbol	Description
	Protective clothing
	Safety gloves
	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 safety instructions that apply to the hoisting equipment or the forklift truck.
- 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

- In these situations, do not use the EVSE and immediately contact the manufacturer:
  - 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 has entered the EVSE.

2.10 Signs on the EVSE

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
	PE
	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 rules to 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.

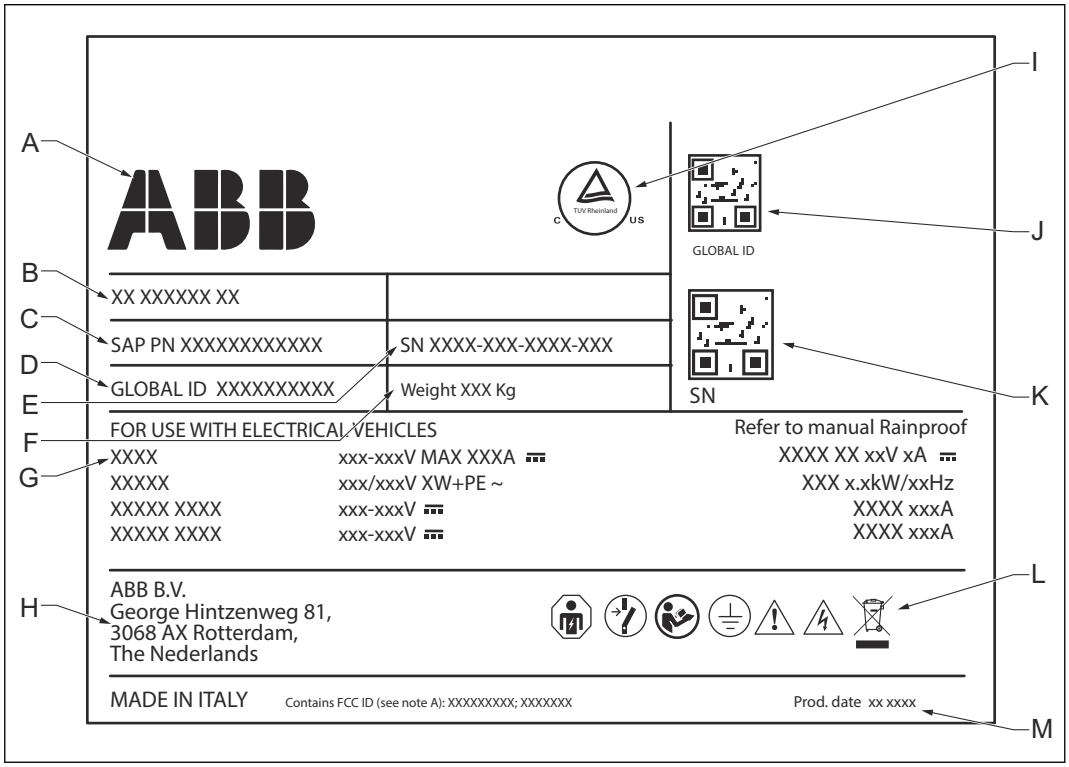
2.12 Cyber security

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.
ABB Ltd 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	Address of the manufacturer
B	Full EVSE type	I	Symbol of local certification
C	Part number of the EVSE	J	QR code with the internal product code (for the manufacturer)
D	Internal product code (for the manufacturer)	K	QR code with the serial number of the EVSE
E	Serial number	L	Additional EVSE rating data
F	EVSE mass	M	Production date
G	EVSE rating		

Note: The data in the illustration are only examples. Find the type plate on your EVSE to see the applicable data. Refer to section 3.4.2.

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 10.
Only use the EVSE with accessories that the manufacturer provides and that obey the local rules.

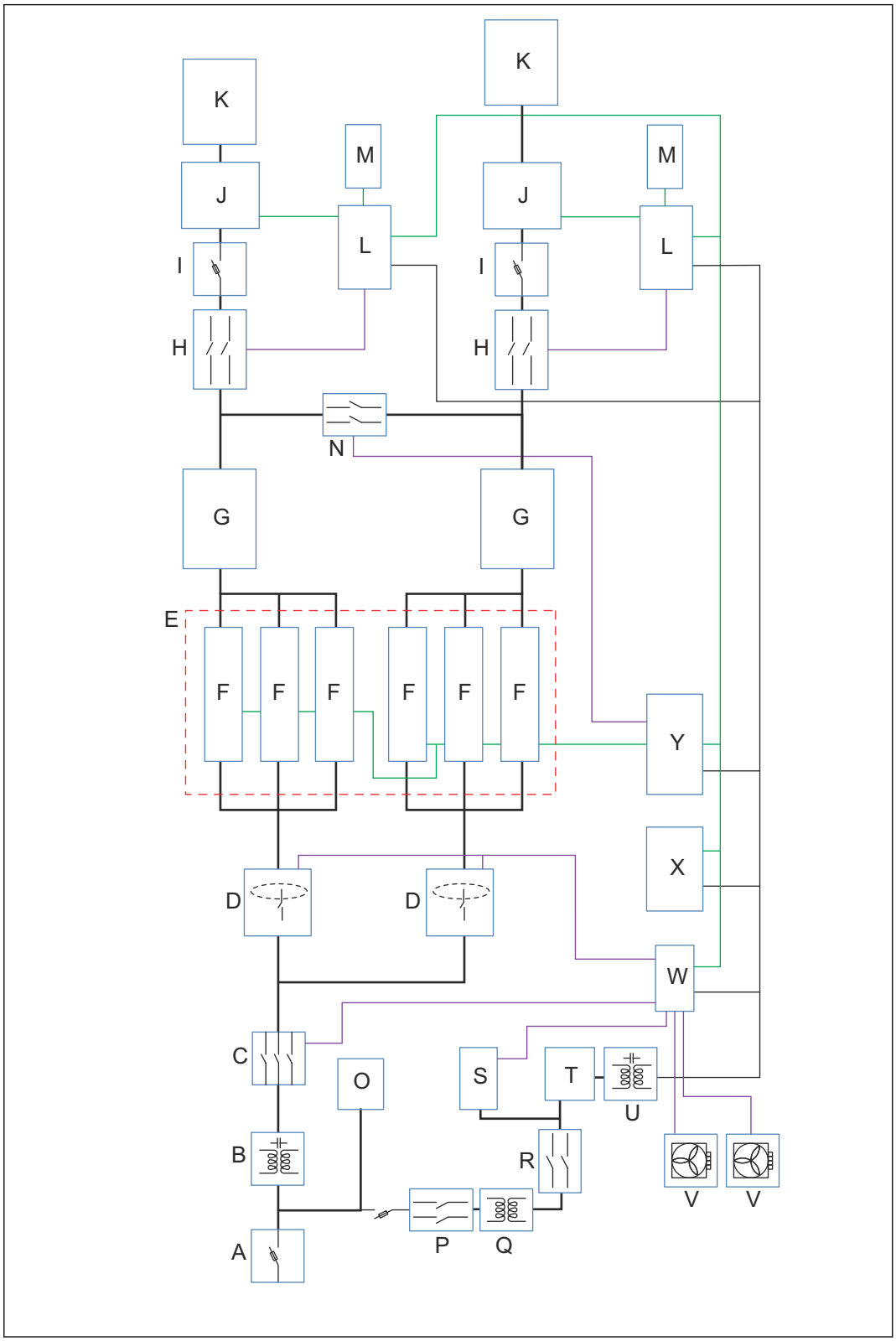
Danger:

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

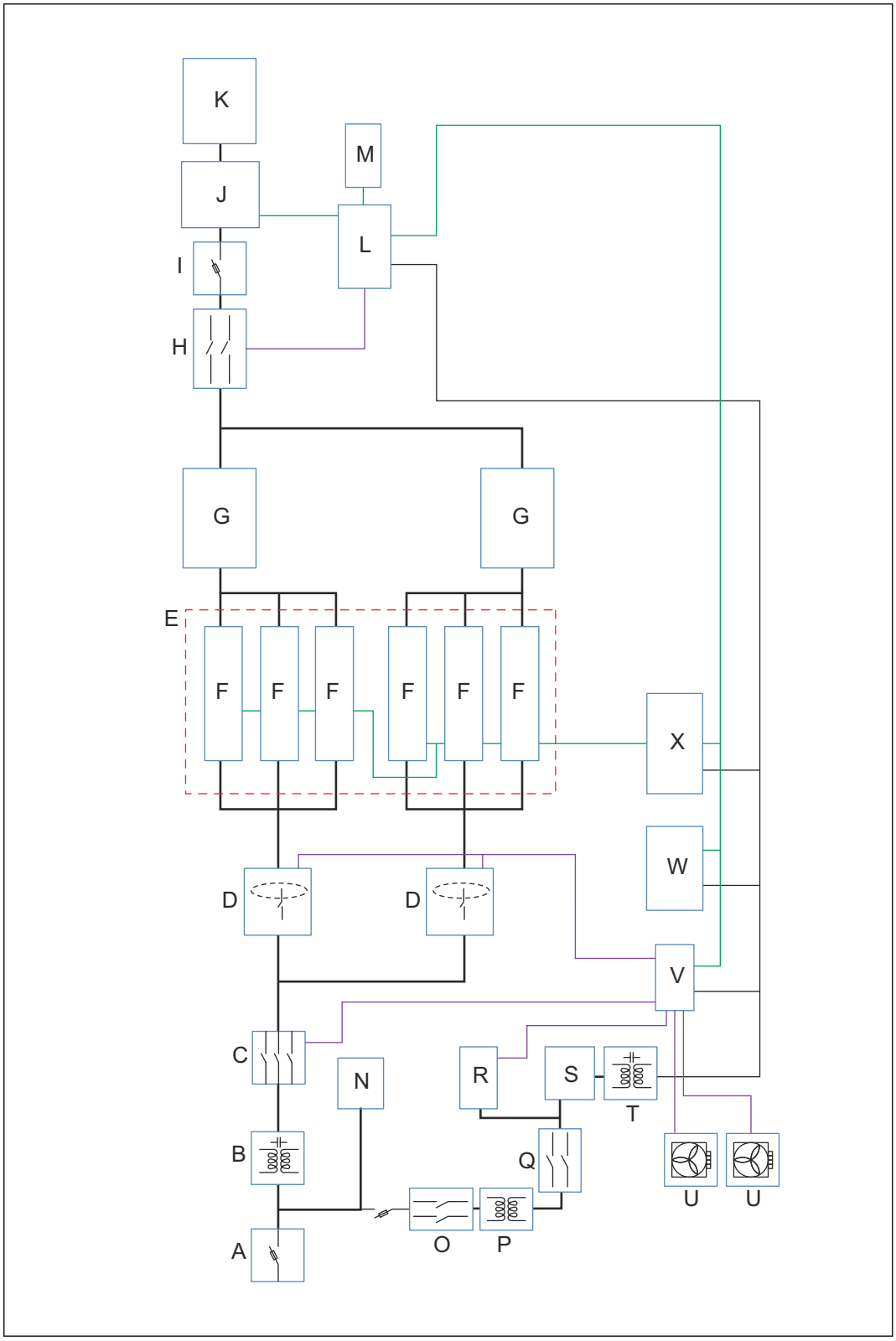
3.3.1 Terra x4 variants CC and CJ



A	Main fuse	N	Interlink contactor
B	AC EMC filter	O	AC SPD
C	AC contactor	P	RCD breaker
D	Residual current device	Q	Auxiliary transformer
E	Power module matrix	R	Auxiliary breaker
F	30kW power module	S	Heater
G	DC Filter	T	Power supply unit
H	DC relay	U	DC EMC filter
I	DC fuse	V	DC cooling fans
J	Overcurrent board	W	CCB board
K	EV	X	HMI
L	CPI board	Y	Power bridge board
M	IMI board		

- Black and bold lines: power connection
- Black and thin lines: auxiliary power connection
- Green lines: CAN bus
- Purple lines: control signal or monitoring signal

3.3.2 Terra x4 variant C



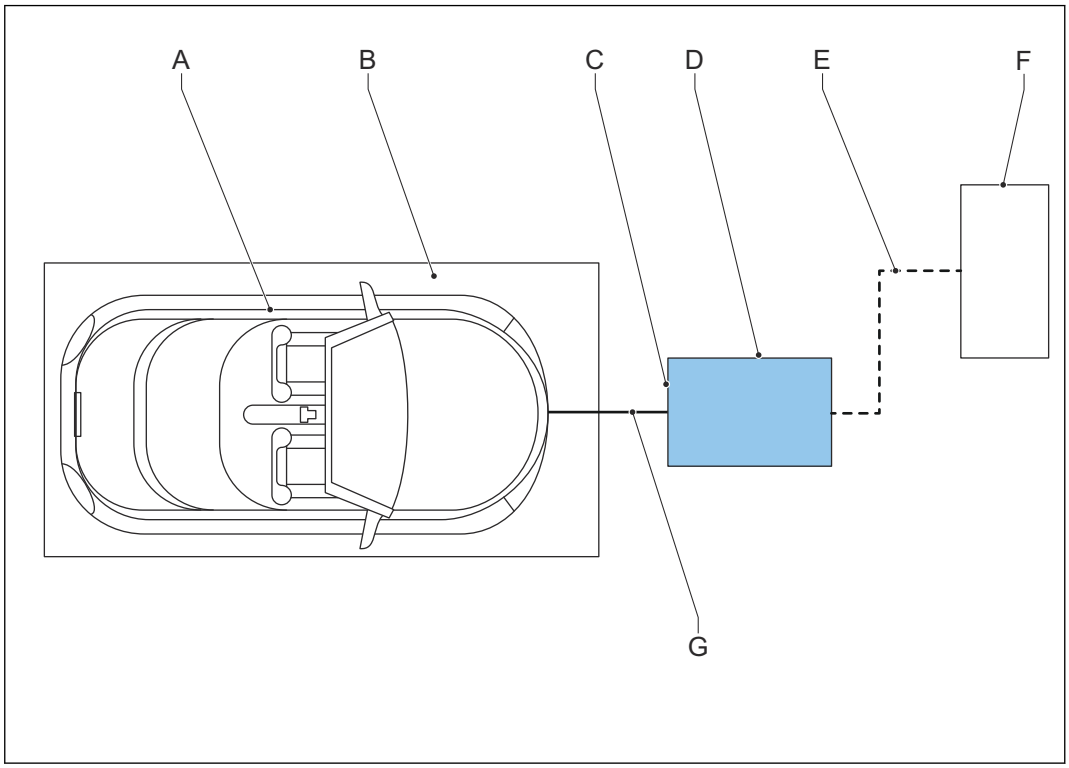
A	Main fuse	M	IMI board
B	AC EMC filter	N	AC SPD
C	AC contactor	O	RCD breaker
D	Residual current device	P	Auxiliary transformer
E	Power module matrix	Q	Auxiliary breaker
F	30kW power module	R	Heater
G	DC Filter	S	Power supply unit
H	DC relay	T	DC EMC filter
I	DC fuse	U	DC cooling fans
J	Overcurrent board	V	CCB board
K	EV	W	HMI
L	CPI board	X	Power bridge board

- Black and bold lines: power connection
- Black and thin lines: auxiliary power connection
- Green lines: CAN bus
- Purple lines: control signal or monitoring signal

Note: For Terra 94, the second array of three power modules is empty and it can perform only one DC charge session.

3.4 Overview

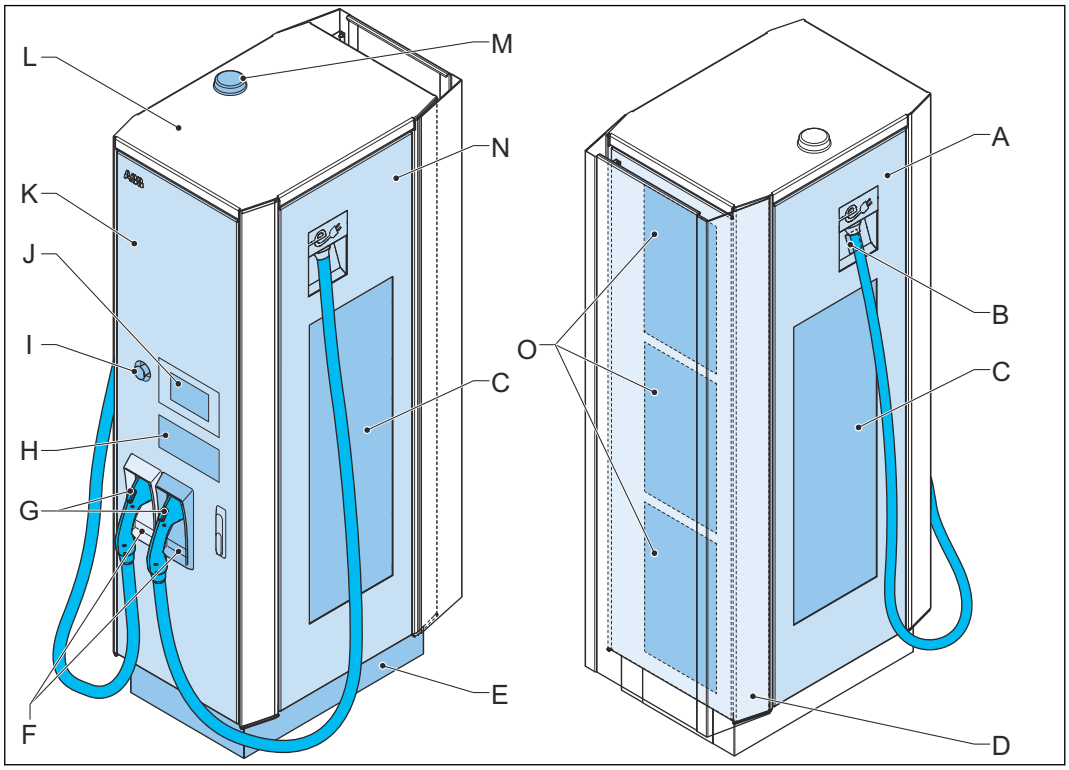
3.4.1 Overview of the system



A	EV	E	AC input cable
B	Parking space	F	Power distribution board
C	Front of the EVSE	G	EV charge cable
D	EVSE		

Part	Function
EV	The EV of which the batteries need to be charged
EVSE	Refer to section 10.1.
Parking space	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
EV charge cable	To conduct the charge from the EVSE to the EV

3.4.2 Overview of the EVSE, outside

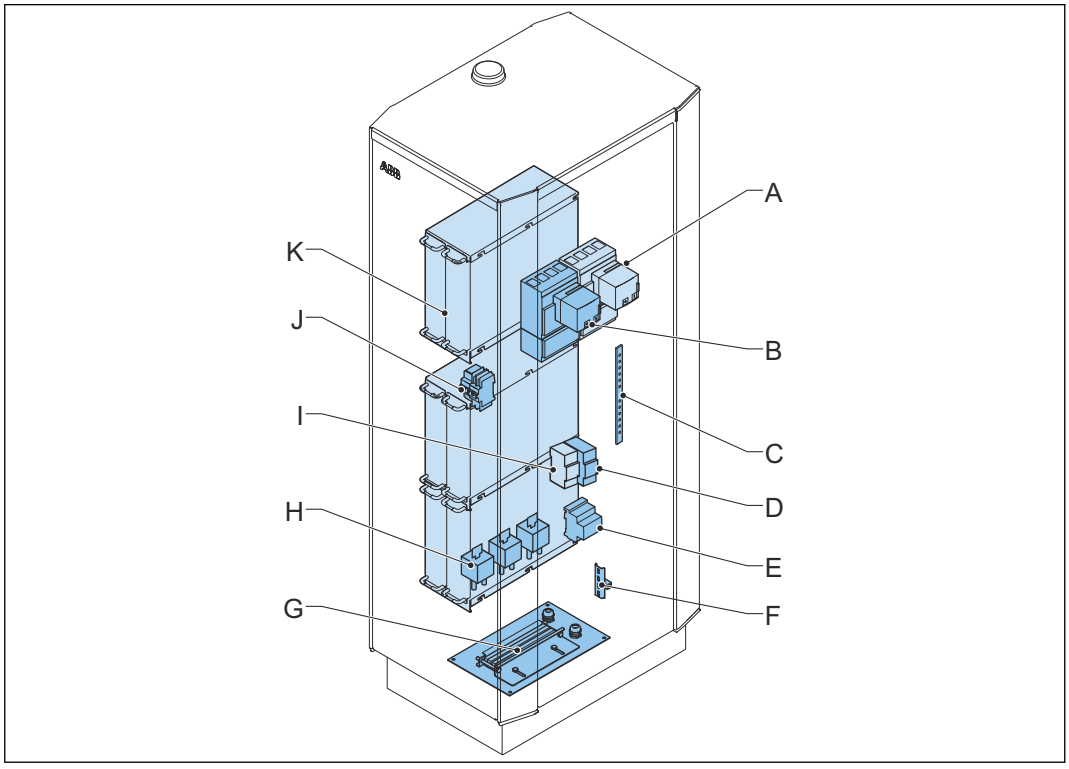


A	Left door	I	Emergency stop button
B	Type plate	J	Touchscreen
C	Air inlet	K	Right door
D	Cover on the air outlet	L	Enclosure
E	Border cover	M	Antenna
F	EV charge connector holder	N	Front door
G	Connector	O	Air outlet
H	Plate over the RFID reader and the integrated payment terminal		

Part	Function
Front, left and right door	To give authorized personnel access to the inside of the EVSE
Type plate	To show the identification data of the EVSE. Refer to section 3.1.
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.
Cover on the air outlet	To prevent a blockage of the air outlet

Part	Function
Border cover	To cover the lower part of the EVSE
EV charge cable outlet and holder	To connect and hold the EV charge cable. Refer to section 3.7.
RFID reader	To read the information from an RFID card
Payment terminal	To pay for the charge session
Emergency stop button	To stop the EVSE when there is an emergency
Touchscreen	To control and monitor the charge session
Enclosure	To reduce the accessibility of unqualified persons to the inside of the EVSE
Antenna	To send and receive wireless 3G and 4G signals

3.4.3 Overview of the EVSE, inside

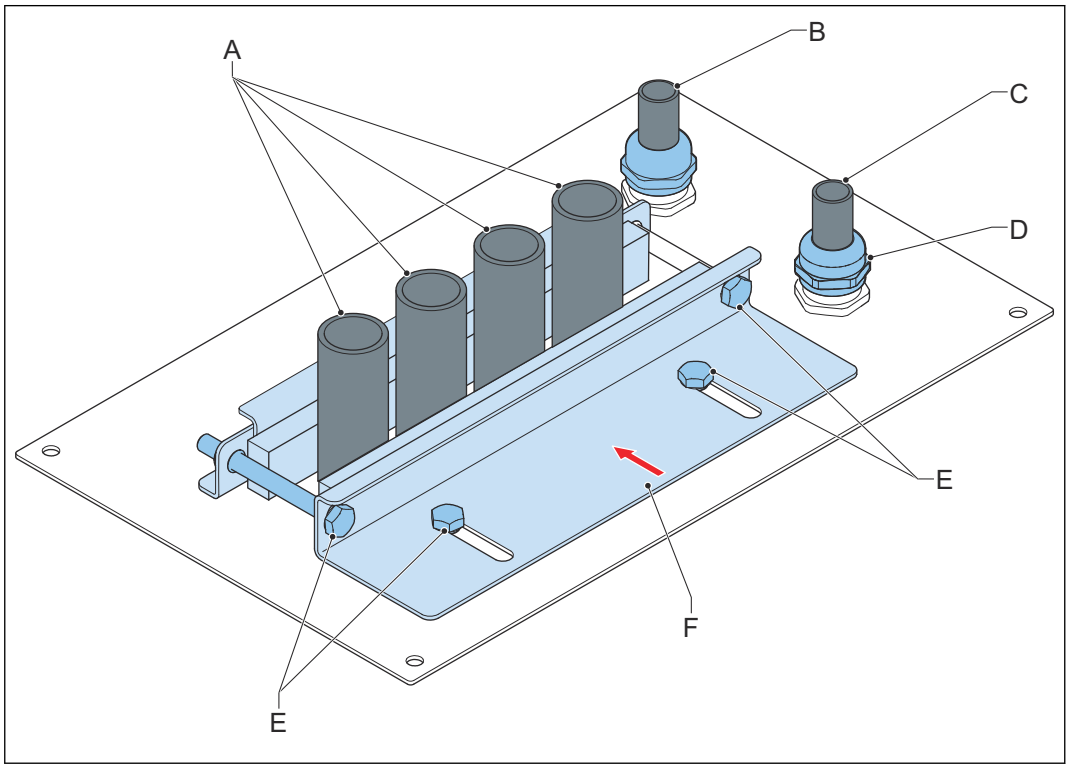


A Main breaker 2
B Main breaker 1
C PE busbar
D Auxiliary breaker
E Fused surge protection device
F Ethernet connection
G Cable gland plate
H AC input fuse
I Auxiliary AC fuse
J RCD breaker
K Power modules

Part	Function
Main breaker 2	To connect or disconnect the power modules group 2
Main breaker 1	To connect or disconnect the power modules group 1
PE busbar	To connect the PE cable
Fused surge protection device	Fuse to protect the surge protection device, that protects teh EVSE against overvoltage

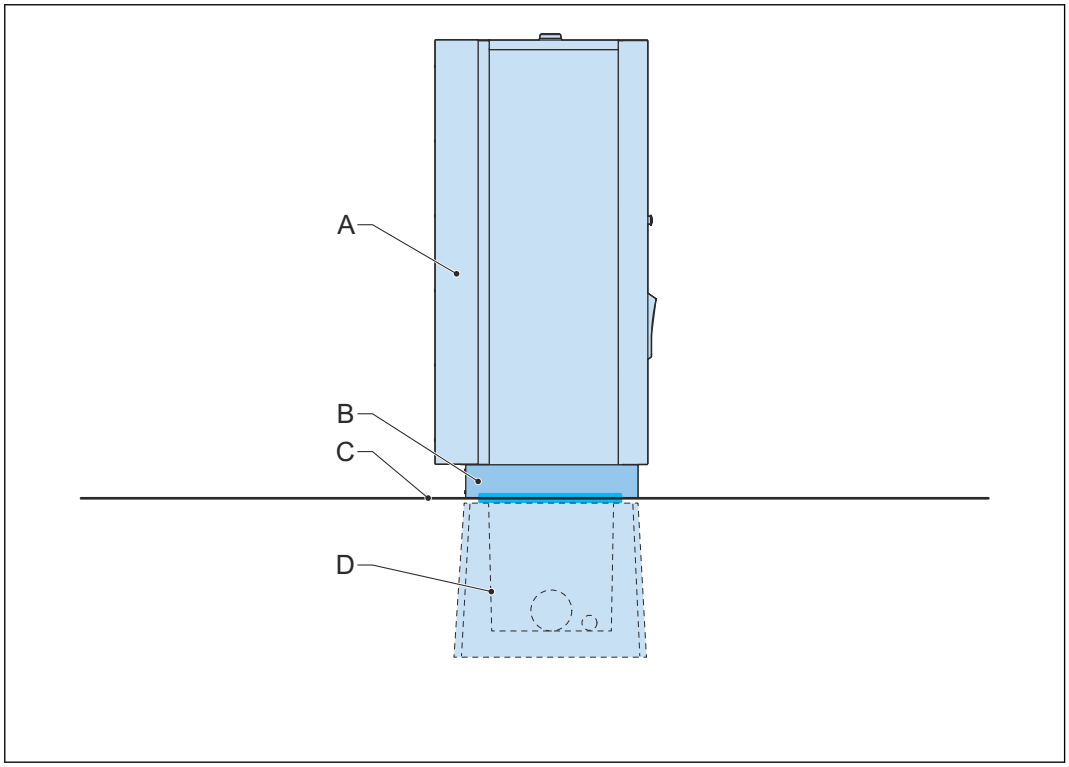
Part	Function
Cable gland plate	Plate with openings for the AC input cable and the control signal cables
Input AC fuse	To connect or disconnect the AC power input
Auxiliary AC fuse	To connect or disconnect the AC power input to the auxiliary power supply breaker 1
RCD breaker	To connect or disconnect the AC power input to or from the auxiliary power for the control circuit
Auxiliary breaker	To connect or disconnect the AC power input from the auxiliary AC fuse to the auxiliary transformer
Power modules	To provide the physical containment for various power components

3.4.4 Overview of the cable glands of the charge post



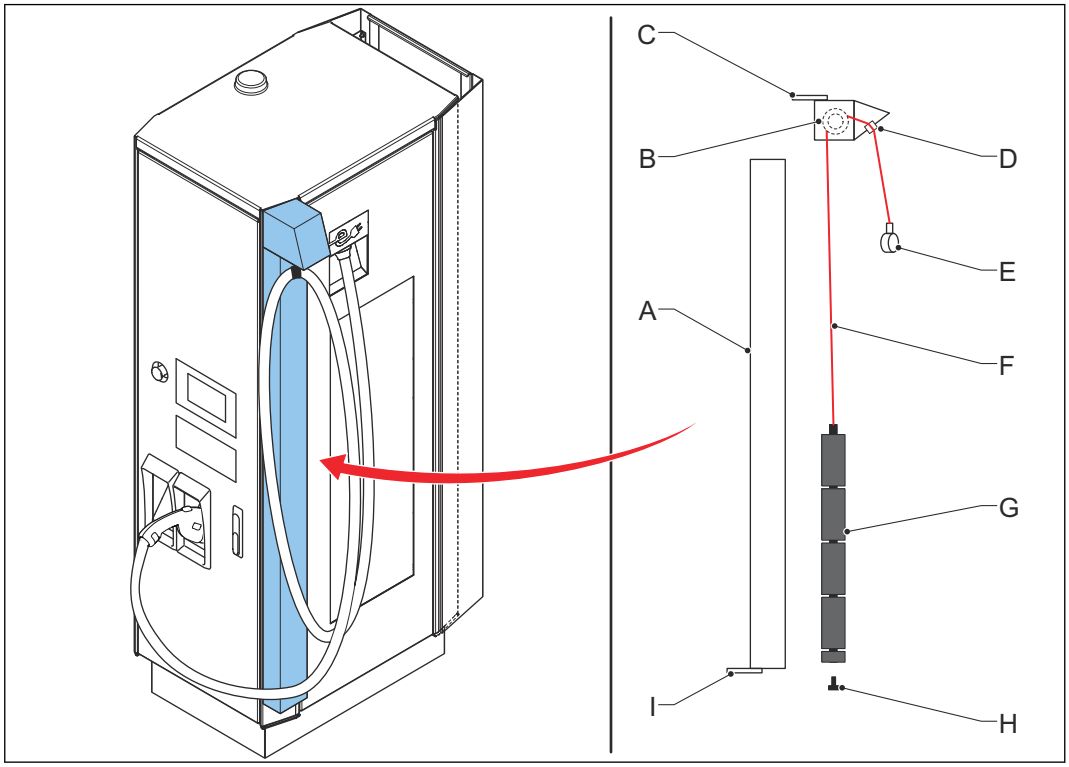
A	Wires of the AC input cable	D	Cable gland
B	Wire of the tilt sensor	E	Fasteners
C	Ethernet cable	F	Sliding plate

3.4.5 Overview of the installed EVSE



A	EVSE	C	Floor
B	Base	D	Foundation

3.4.6 Overview of the cable management system (option)



A	Duct	D	Gland
B	Wheel	E	Cable clamp
C	Top attachment point		

F	Wire	H	Travel bolt
G	Modular counterweight	I	Bottom attachment point

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 Payment terminal

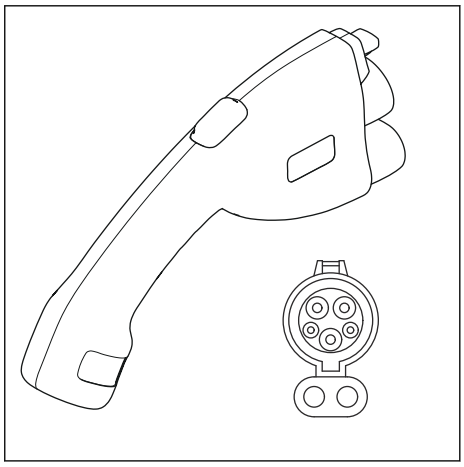
The touchscreen guides the user how to use the payment terminal.

Note:

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

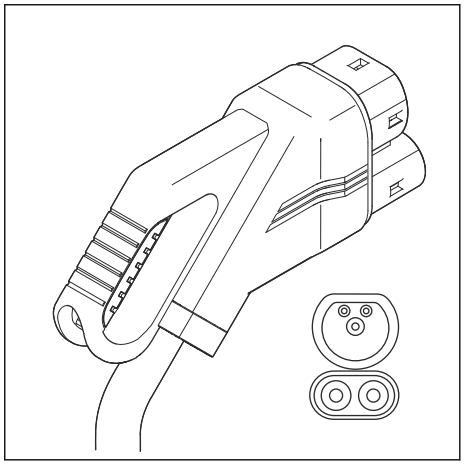
3.7 Options

3.7.1 EV charge cable, CCS 1



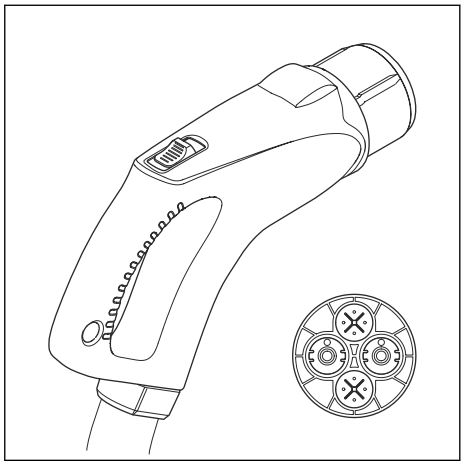
The manufacturer can deliver the EVSE with CCS 1 connectors on the EV charge cables.
For the current rating specifications, refer to section 10.14.
For the cable length specifications, refer to section 10.16.2.

3.7.2 EV charge cable, CCS 2



The manufacturer can deliver the EVSE with CCS 2 connectors on the EV charge cables.
For the current rating specifications, refer to section 10.2.
For the cable length specifications, refer to section 10.12.1.

3.7.3 EV charge cable, CHAdeMO



The manufacturer can deliver the EVSE with CHAdeMO connectors on the EV charge cables.
For the current rating specifications, refer to section 10.2.
For the cable length specifications, refer to section 10.12.1.

3.7.4 Integrated payment terminal

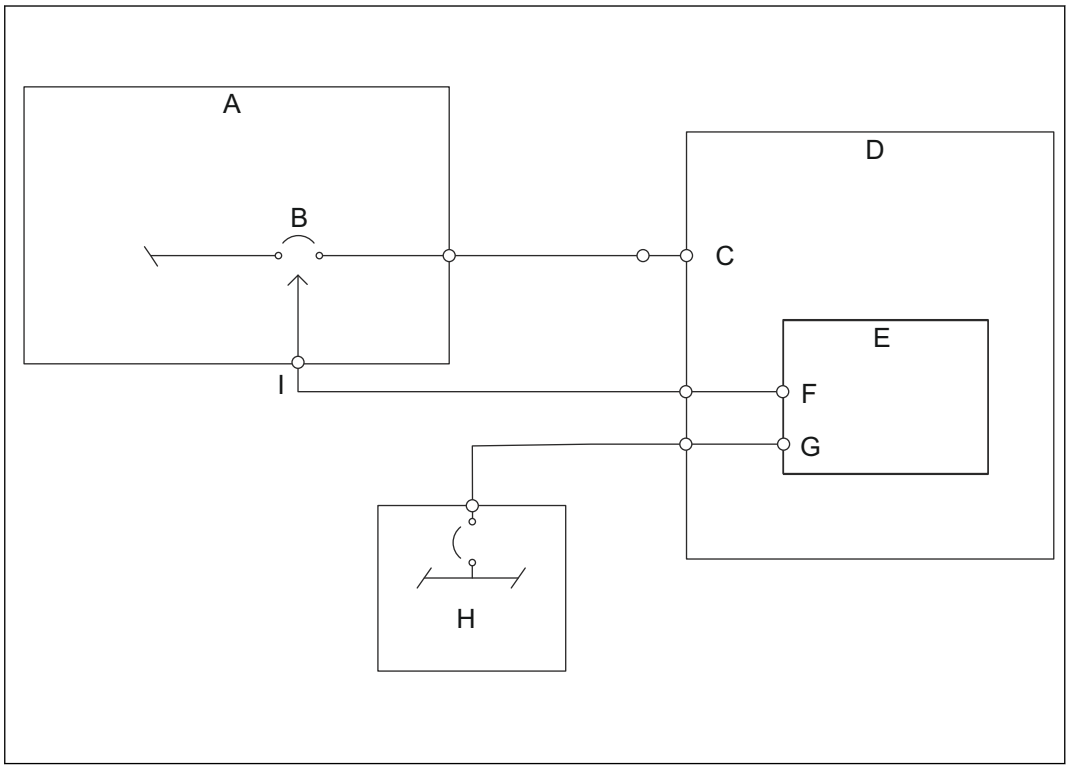
The manufacturer can deliver the EVSE with different payment terminals. The available options vary depending on the region and country where the EVSE is installed.
If you need more information about different options for payment terminals, ask the manufacturer.

3.7.5 Cable management system

The manufacturer can deliver the EVSE with an optional cable management system. This cable management system retracts the cables and holds the cables in position when the EVSE is not in use.
The cable management system is shipped separately from the EVSE and is installed during the commissioning of the charger.

3.7.6 Tilt sensors

The tilt sensor system disables the power from the incoming low voltage source when a tilt sensor detects a tilt of a cabinet of the EVSE in any direction. The tilt sensor is generally closed and opens when the tilt decreases 10° in any direction, for example if a vehicle impacts against the EVSE. In these situations, the undervoltage release in the branch circuit breaker that supplies power to the EVSE is de-energized and the branch circuit breaker opens.
The undervoltage release in the branch circuit breaker needs voltage input, to allow the closure of the branch circuit breaker. The manufacturer recommends to use and an uninterruptible power supply for the 24 V DC, to prevent tripping of the branch circuit breaker.
The illustration shows the tilt sensors interface with the power distribution system of the site. Please note that the shown branch circuit breaker, 24 V DC supply delivered from an UPS, and all other components are not within the scope of ABB E-Mobility, therefore are not provided in the EVSE.
The owner is responsible for considering a voltage drop on the 24 V DC circuit. The owner must make sure that the undervoltage release of the branch circuit breaker receives the correct input voltage according to the required specifications. Refer to section 10.10.1.



A	Power distribution board	F	Output
B	Branch circuit breaker	G	Input from the uninterruptible power supply
C	Power inlet	H	Uninterruptible power supply
D	EVSE	I	Undervoltage release[2]
E	Tilt sensor[1]		

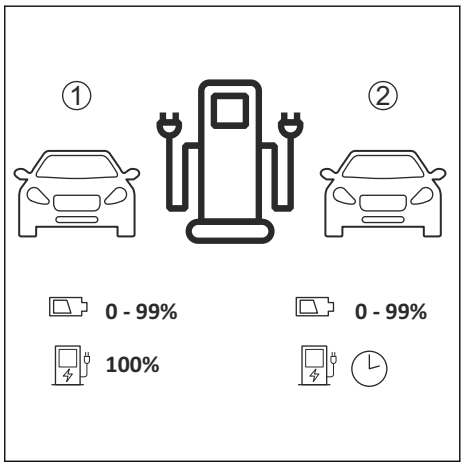
[1]) The tilt sensor has a contact that is closed when the tilt sensor is de-enenergized and there is no tilt detected. When the contact is closed, the output is 20-24 V DC. When the contact is open, the output is 0 V DC.
[2]) The breaker will trip in the event of loss of voltage to the undervoltage release (I) It is possible to install tilt sensors afterwards. Ask ABB EV Infrastructure. Refer to section 1.12.

3.8 Power allocation strategies

The EVSE can be configured to operate with different power allocation strategies. The configuration can be changed at any time through the EVSE configuration tools.
The configuration of the EVSE allows for these power allocation strategies:

Power allocation strategy	Available for EVSE models	Reference
Sequential	All models	Section 3.8.1
Concurrent	Models with more than one DC outlet, except for Terra 94	Section 3.8.2
Dynamic 'First In First Served'	Models with more than one DC outlet, except for Terra 94	Section 3.8.3
Dynamic 'Fair share'	Models with more than one DC outlet, except for Terra 94	Section 3.8.4

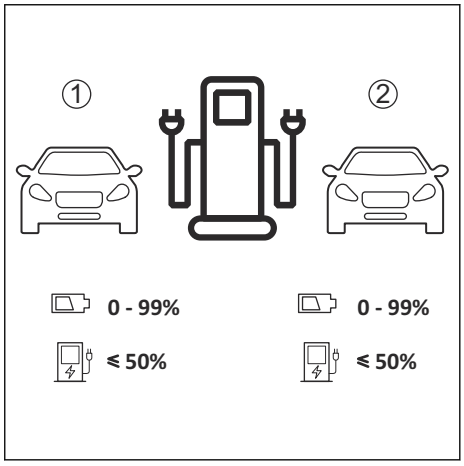
3.8.1 Sequential power allocation



When the EVSE is configured for sequential power allocation, it can serve one EV at a time with DC fast charging.
In this configuration the EV charging power is the maximum power available to the EVSE, the rated power output. Effectively the maximum power output can be less than the rated power output because of power constraints. For example, the power output can be permanently limited due to site current or power constraints, or temporarily limited by power management systems.
Only one DC charge session can be performed at a time. When a second EV is connected to the EVSE, the EVSE must first finalize the first charge session before a new charge session can start.

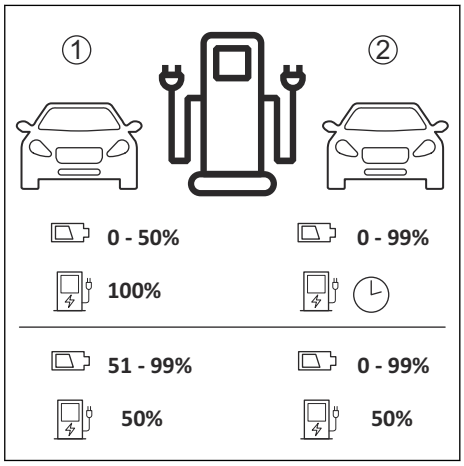
Note: EV charging with the use of the CCS standard can 'fall asleep' if the EVSE does not start the session within a few minutes. This is a common issue. It is recommended to connect a second EV only shortly before the first charge session ends.

3.8.2 Concurrent power allocation



When the EVSE is configured for concurrent power allocation, it can serve two EVs at a time with DC fast charging.
In this configuration the EV charging power delivered by each outlet is up to half of the maximum power available to the EVSE, a maximum of half of the rated power output of the station. Effectively the maximum power output can be less than the rated power output because of power constraints. For example, the power output can be permanently limited due to site current or power constraints, or temporarily limited by power management systems.
The EVSE can do two DC charging sessions at the same time. When one EV is connected to the EVSE, it will receive up to half of the maximum power available to the EVSE. When a second EV is connected to the EVSE, this second EV will also receive up to half of the maximum power available to the EVSE. When one of the charge sessions ends, this will not change the maximum amount of power that is delivered to the other charge session.

3.8.3 Dynamic allocation 'First In First Served'

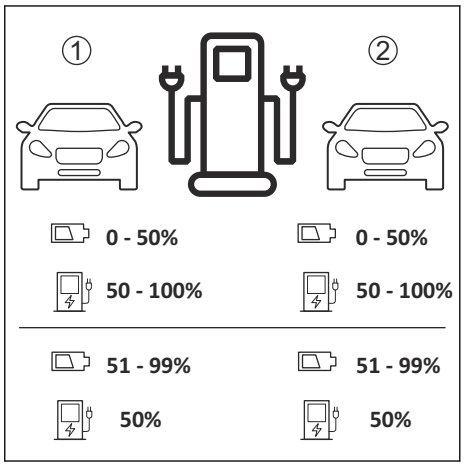


When the EVSE is configured for First In First Served (FIFO) power allocation, it can serve two EVs at a time with DC fast charging.
In this configuration the EV charging power can reach up to the maximum power available to the EVSE, up to the rated power output of the station. Effectively the maximum power output can be less than the rated power output because of power constraints. For example, the power output can be permanently limited due to site current or power constraints, or temporarily limited by power management systems.
Up to two DC charge session can be performed at a time. When one EV is connected to the EVSE, it will receive up to the maximum power available to the EVSE. When

a second EV is connected to the EVSE, the second session can start only if the first charge session requests less than half of the power available to the station. If the first charge session requests more, the second EV must wait until the charge session can start. When the second charge session starts, each EV will receive up to half of the maximum power available to the EVSE. As soon as one of the two charge sessions ends, the EVSE can charge the other EV up to the maximum amount of power available to the EVSE. Note that not all EVs are capable of increasing the charging speed when the EVSE can deliver more power.

Note: EV charging with the use of the CCS standard can 'fall asleep' if the EVSE does not start the session within few minutes. This is a common issue. It is recommended to connect a second EV only shortly before the first charge session ends.

3.8.4 Dynamic power allocation 'Fair Share'



When the EVSE is configured for Fair Share power allocation, it can serve two EVs at a time with DC fast charging.
In this configuration the EV charging power can reach up to the maximum power available to the EVSE, up to the rated power output of the station. Effectively the maximum power output can be less than the rated power output because of power constraints. For example, the power output can be permanently limited due to site current or power constraints, or temporarily limited by power management systems.
The EVSE can do two DC charge session at a time. When one EV is connected to the EVSE, it will receive up to the maximum power available to the EVSE. When a second EV is connected to the EVSE, the second session will start and each EV will receive up half of the maximum power available to the EVSE. The end of one of the charging sessions will not change the maximum amount of power delivered to the other session.

Note: In a future software update it will be possible to allocate the maximum amount of power to the ongoing charge session after the other session ends. Note that not all EVs are capable of increasing the charging speed when the EVSE can deliver more power.

3.9 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

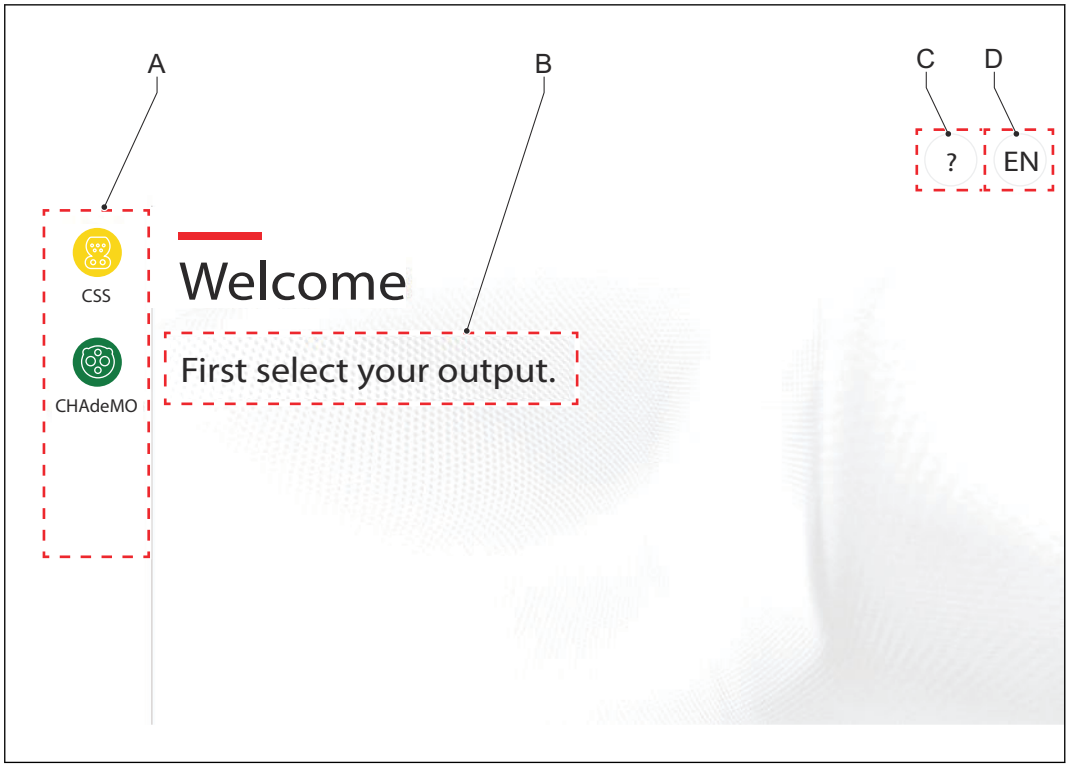
The amplitude of the current peaks can change. These factors are the source of the differences:

- 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 10.16 and 10.19.

3.10 Description of the touchscreen

3.10.1 General description of the layout



A	Field to select the connector type	C	Information button
B	Instruction field	D	Selected language

3.10.2 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

3.11 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 6.8.

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 6.8.2
OCPP settings screen	To set the following data : • OCPPJURL • OCPPJID • OCPPJPassword • Confirm password To set the OCPP parameters, refer to section 6.8.3

3.12 Cloud service portal

ABB EV Infrastructure provides a set of cloud-based tools to commission, monitor and troubleshoot the EVSE. Please refer to the manufacturer's e-Mobility representative for more information.

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 your responsibility.

- If you need to store the EVSE before installation, obey the ambient conditions for storage. Refer to section 10.8.

4.2 Unpacking

4.2.1 Unpacking procedure

Preliminary requirements

	• Installation engineer

Procedure

1. Do a check on the transport sensors. Refer to section 4.2.2.
2. Remove the packaging material.
3. Discard the packaging material. Refer to section 2.11.
4. Do a visual check for damage on the outside and inside of the EVSE.
5. Make sure that all parts are delivered according to the order. Refer to the order and section 10.3.
6. If you find damage or the parts are not according to the order, contact the local representative of the manufacturer.
7. Remove the border covers. Refer to section 8.3.
8. Remove the cabinet from the pallet. Refer to section 4.2.3.

4.2.2 Do a check on the transport sensors

Preliminary requirements

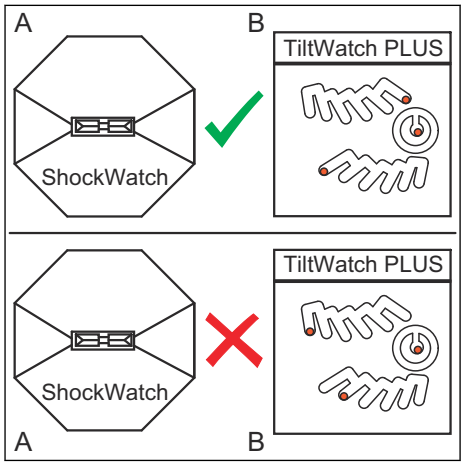
	• Installation engineer

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 10.4.

   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 cabinet, 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.



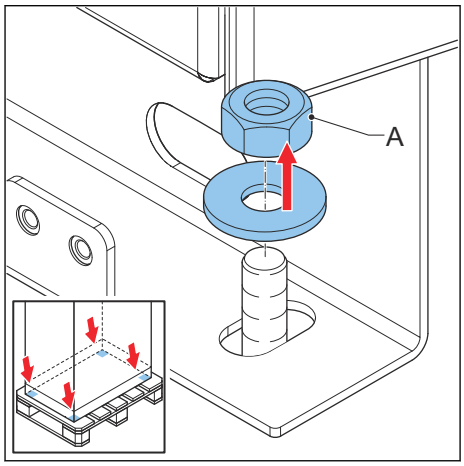
4.2.3 Remove the cabinet from the pallet

Preliminary requirements

	• Installation engineer		• Open spanner

Procedure

1. Remove the fasteners (A).
2. Discard the fasteners and the pallet. Refer to section 2.11.



4.3 Transport the EVSE on the site

4.3.1 Hoist the cabinet

Preliminary requirements

	• The cabinet is unpacked. Refer to section 4.2.		• Hoisting equipment. Refer to section 10.5.

	• Installation engineer		• Swivel eye bolts or bolts with lifting loops. Refer to section 10.6.

Warning:

Risk of pinching or crushing, the cabinet is heavy

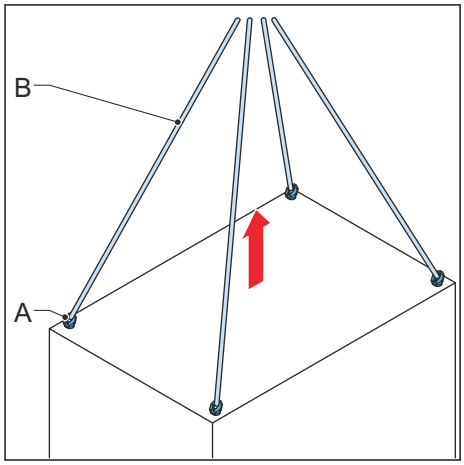
- Make sure that the hoisting equipment can lift the cabinet safely. Obey the safety instructions that apply to the hoisting equipment. Take into account the dimensions, the mass and the center of gravity of the EVSE. Refer to chapter 10.

Caution:

- Do not drop the cabinet.
- Do not tilt the cabinet more than allowed. Refer to section 10.4.
- Make sure there are no dynamic forces on 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.



4.3.2 Move the cabinet with a forklift truck

Preliminary requirements

	• The cabinet is unpacked. Refer to section 4.2.		• Forklift truck. Refer to section 10.5.
	• Installation engineer		

Warning:

Risk of pinching or crushing, the cabinet is heavy

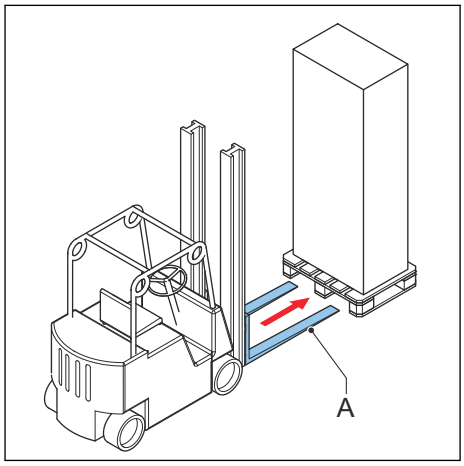
- Make sure that the forklift truck can lift the cabinet safely. Obey the safety instructions that apply to the forklift truck. Take into account the mass, the dimensions and the center of gravity of the EVSE. Refer to chapter 10.

Caution:

- Do not drop the cabinet.
- Do not tilt the cabinet more than allowed. Refer to section 10.4.

Procedure

1. Move the forks (A) of the forklift truck in the gaps at the side of the cabinet.
2. Move the cabinet to the correct location.



5 Installation

5.1 General installation procedure

Preliminary requirements

	• All required permits to obey the local rules are granted. • The AC input cable is available.		• Tools for installation. Refer to section 10.5.
	•  Installation engineer		• There is no voltage on the AC input cable during the complete installation procedure.

Procedure

1. Prepare for installation. Do these steps:
   a. Prepare the site. Refer to section 5.2.1.
   b. Unpack the EVSE. Refer to section 4.2.1.
   c. Move the cabinet to the correct location. Refer to section 4.3.
2. If a lower installation of the EVSE is required, for wheelchair accessibility, remove the base. Refer to section 10.10.4.
3. Do the mechanical installation. Refer to section 5.5.1.
4. Do the electrical installation. Refer to section 5.6.1.
5. If it is necessary, install these optional elements:
   - Tilt sensors. Refer to section 5.7.
   - Cable management system. Refer to section 5.8.
6. Prepare for commissioning. Refer to section 5.9.

5.2 Site preparation

5.2.1 Prepare the site

Preliminary requirements

	• Installation engineer

Procedure

1. Select a suitable site:
   a. Make sure that the space and the airflow around the cabinet is sufficient. Refer to section 5.2.2.
   b. Design the site so that the charge cables are of sufficient length for connection at the inlet for the EV charge cables on the EVs. For the length of the charge cables, refer to section 10.12.1.
   c. Make sure that the site complies with the relevant usability standards, such as ADA and DIN 18040:
      - Limit the curb heights.
      - Take into account the limited reach of a wheelchair user. Refer to section 10.12.10.
2. If the local rules require the installation of an external residual-current device, install an external residual-current device. Refer to section 3.9.
3. Prepare the cables:
   - AC input wire. Refer to section 10.16.
   - PE wire. The diameter depends on the length, method of installation and other factors. Make sure that the PE wire is in accordance with the safety instructions. Refer to section 2.8.
   - Ethernet cable, if no wireless 2G/3G/4G signal is available. Refer to section 10.13. Contact the manufacturer if you require a specific configuration. Refer to section 1.12.

   Note:
   - The cables enter the cabinet from the bottom.
   - Take into account the maximum opening of the cable inlet when you prepare the cables. Refer to section 10.12.1.
4. If you use an Ethernet cable, make sure that the internet connection is available for an approved service engineer and the network operating center of the manufacturer.
5. Make sure that the cable slack is sufficient to guide the cables in the cabinet. Refer to section 10.12.9.
6. Prepare the foundation for the cabinet. Refer to section 5.3.

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 10.12.5.
2. Make sure that the air flow inlet and outlet cannot get blocked. Think of snow or objects.

5.3 Prepare the foundation

5.3.1 Prepare the foundation - general procedure

Preliminary requirements

	• Installation engineer

Procedure

1. Select the correct foundation, based on the surface you install the cabinet on.
2. Embed the cables in the ground with or without a cable duct. Refer to the local rules.
3. Prepare the foundation.
   - For a casted foundation, refer to section 5.3.2.
   - For a standard prefabricated foundation, refer to section 5.3.3.
4. If it is necessary, replace the base with an alternative base. Refer to section 5.4.2.

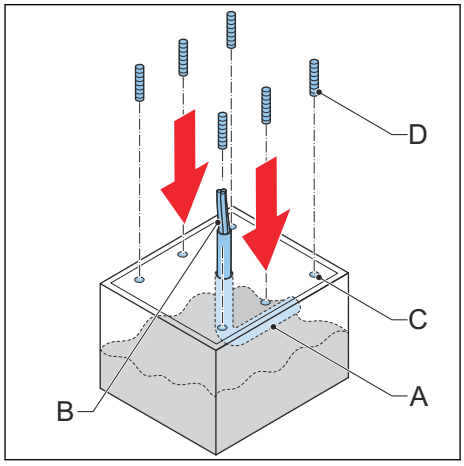
5.3.2 Prepare a casted foundation

Preliminary requirements

	• The cover of the removed.		• Concrete drill • Wire cutter
	• Installation engineer		• Concrete

Procedure

1. Dig the hole (A) for the casted foundation. For the specifications, refer to section 10.12.6.
2. Pour the concrete into the hole. Make sure that the cable duct/conduit(B) is in the correct position.
3. Let the concrete dry.
4. Pull the AC wires though the duct/ conduit. Apply the full cable slack.
5. Drill the fixing points (C).
6. Install the dowels (D).
7. Cut the wires to the correct lenght.



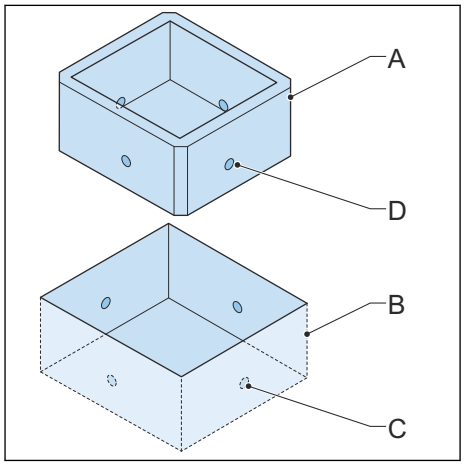
5.3.3 Prepare a standard prefabricated foundation

Preliminary requirements

	• Installation engineer		• Prefabricated foundation. Refer to section 10.12.7.

Procedure

1. Make the foundation (A). Do one of these steps:
   - Contact the manufacturer to order the foundation for your EVSE. Refer to section 1.12.
   - Make the foundation according to the specifications.
2. Dig the hole (B) for the foundation (C). For the specifications, refer to section 10.12.7.



Caution: Make sure that the top surface of the foundation is above the ground level, to prevent intrusion of water.

3. Prepare the site and the cable duct (D) to bring the AC wires to the location.
4. Install the foundation in the hole.
5. Pour concrete into the hole.
6. Wait until the concrete is hard.
7. Drill the concrete:
   - Drill space to enable the cable duct to pass.
   - Create fixation holes.

5.4 Replace the standard base with an alternative base

Preliminary requirements

	• The foundation is ready. Refer to section 5.3.		• Hoisting equipment

The manufacturer delivers the EVSE with a standard base. For specific requirements the owner can decide to replace this standard base with an alternative base.

Procedure

1. Unpack the EVSE, that stays on the pallet. Refer to section 4.2.1.
2. Lift the EVSE from the base. Use the hoisting equipment. Refer to section 5.4.1.
3. Install the alternative base on the prepared foundation:
   - For a base with side entrance, refer to section 5.4.2.
   - For a base with reduced height, refer to section 5.4.3.
4. Move the EVSE in the below steps. Use the hoisting equipment. Refer to section 4.3.1.
   a. Move the EVSE above the base.
   b. Lower the EVSE on the base.
5. Do these steps to finalize the installation:
   a. Do the mechanical installation of the EVSE. Refer to section 5.5.
   b. Do the electrical installation of the EVSE. Refer to section 5.6.
   c. Prepare for commissioning. Refer to section 5.9.

5.4.1 Remove the EVSE from the base

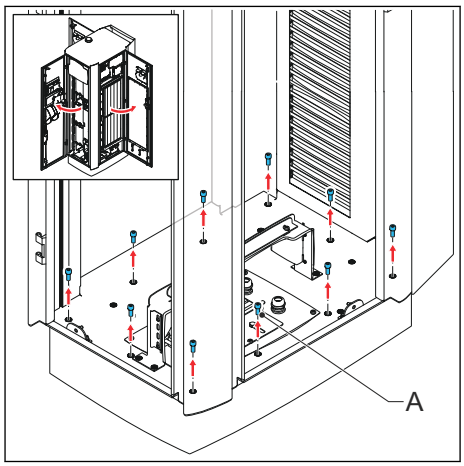
Generally the base replacement is done during the installation procedure, when the EVSE is still on the shipping pallet.

Preliminary requirements

	• Installation engineer or maintenance engineer		• Wrenches

Procedure

1. Open all doors of the EVSE. Refer to section 8.1.
2. Loosen the fasteners of the standard base at the front door, the right door and the left door. Remove the bolts.
3. Close the doors of the EVSE. Refer to section 8.2.
4. Lift the EVSE from the base and the pallet. Refer to section 4.3.1.



5.4.2 Install a base with side entrance

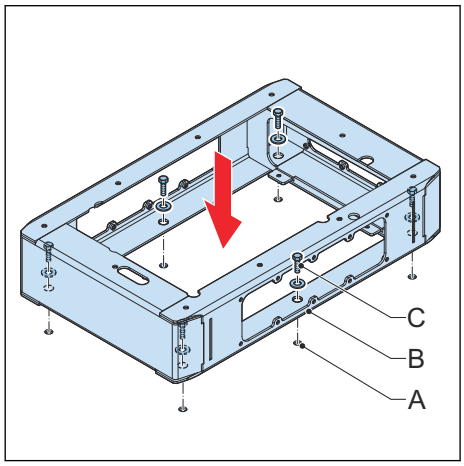
This procedure is relevant if it is not possible to pull the AC power cables through the concrete foundation. In that situation you can lay the power cables on the floor, guide them through a conduit and let them enter from the side of the EVSE.

Preliminary requirements

	• Drill with screw tap • Torque wrench		• Base with side entrance. If you have not included this base in the initial order, contact the manufacturer. Refer to section 1.12.

Procedure

1. Mark the position of the holes on the ground. For the specifications, refer to section 10.12.8.
2. Drill the fixing points (A).
3. Align the frame (B) with the threaded holes.
4. Install the fasteners (C).
5. Tighten the fasteners to the correct torque. For the specification, refer to section 10.7.
6. Cut the wires to the correct lenght.



5.4.3 Install a base with reduced height

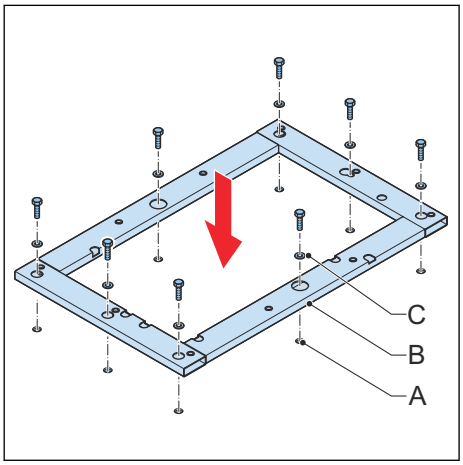
Preliminary requirements

	• Installation engineer or maintenance engineer		• Base with reduced height.
	• Wrenches		

This procedure is relevant if you want to obey the regulations for wheelchair accessibility and the combination of the location of the installation and the standard base does not allow for this. The solution is the base with reduced height, installed on a curb that has a height of maximum 10 cm (4 in). For more information and height specifications, refer to section 10.12.10.

Procedure

1. Mark the position of the holes on the ground. For the specifications, refer to section 10.10.4.
2. Drill and thread the holes (A).
   Do not make holes in not authorized locations, because this can compromise the structural integrity of the base with side entrance.
3. Guide the cables to the cable trays.
4. Align the frame (B) with the threaded holes.
5. Install the fasteners (C) with washers.
6. Tighten the fasteners to the correct torque. For the specification, refer to section 10.7.



5.5 Mechanical installation

5.5.1 Mechanical installation procedure

Preliminary requirements

	• The cabinet is above the foundation.		• Installation engineer

Procedure

1. Open the cable inlet and remove the cable gland. Refer to section 5.5.2.
2. Guide the cables through the openings in the cable guide plate. Refer to section 5.5.3.
3. Install the cabinet on the foundation.
   a. For the procedure, refer to section 5.5.4.
   b. For the overview of the installed EVSE, refer to section 3.4.5.
4. Install the border covers. Refer to section 8.4.

5.5.2 Open the cable inlet and remove the cable gland

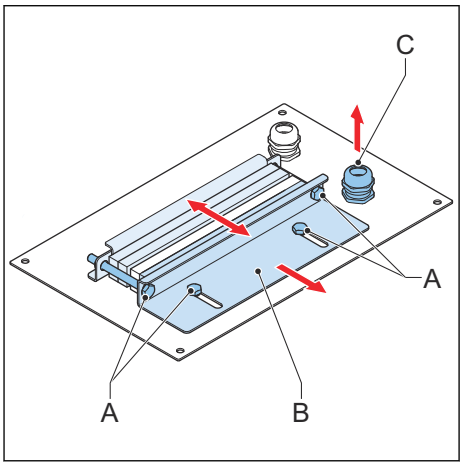
Preliminary requirements

	• Installation engineer		• Open spanner. Refer to section 10.5.

Procedure

1. Open the front and right doors. Refer to section 8.1.
2. Loosen the fasteners (A).
3. Move the sliding plate (B) to open the cable inlet.
4. If it is necessary, remove the cable gland (C) for the Ethernet cable.

Caution: If the cable gland for the Ethernet cable is not used, make sure that the cable gland is closed and sealed



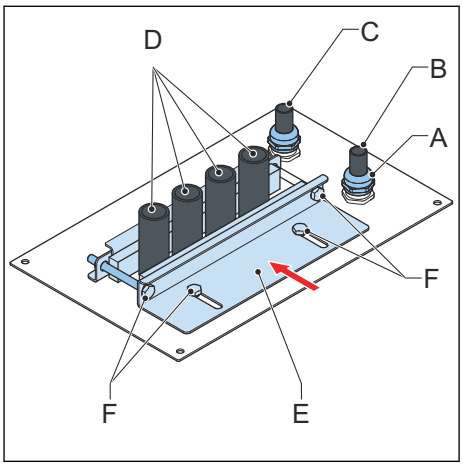
5.5.3 Guide the cables through the opening in the cable guide plate

Preliminary requirements

	• The front and right doors are open. • The cable inlet is open.		• Installation engineer

Procedure

1. If it is necessary, install the cable gland (A) over the Ethernet cable (B).
2. Guide the wire (C) of the tilt sensor through the cable inlet.
3. Guide the wires (D) of the AC input cable, the PE wire and the earthing conductor for the enclosure through the cable inlet.
4. Pull the wires and cable through the gland plate and the cable inlet. Apply the full cable slack.
5. Close the sliding plate (E).
6. Tighten the fasteners (F).
7. Close the doors. Refer to section 8.2.



5.5.4 Install the cabinet on the foundation

Preliminary requirements

	• Installation engineer		• Fasteners. Refer to section 10.6.

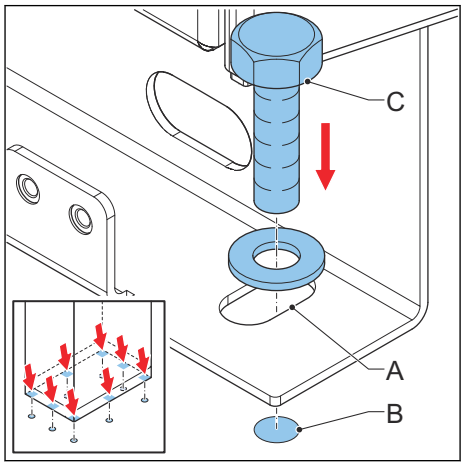
	• Open spanner. Refer to section 10.5.		

Procedure

1. Carefully lower the cabinet on the foundation. Refer to section 4.3. Make sure that the holes in the cabinet (A) and the foundation (B) are aligned.

   Caution: Make sure that there is no kink in the cables.

2. Install the fasteners (C).
3. Tighten the fasteners.



5.6 Electrical installation

5.6.1 Electrical installation procedure

Preliminary requirements

	• Installation engineer		•

Procedure

1. Open the front and right doors. Refer to section 8.1.
2. Connect the PE wire. Refer to section 5.6.2.
3. Connect the enclosure to the earth. Refer to section 5.6.3.
4. Connect the wires of the AC input cable. Refer to section 5.6.4.
5. If it is necessary, connect the Ethernet cable. Refer to section 5.6.5.
6. Close the doors. Refer to section 8.2.

5.6.2 Connect the PE wire

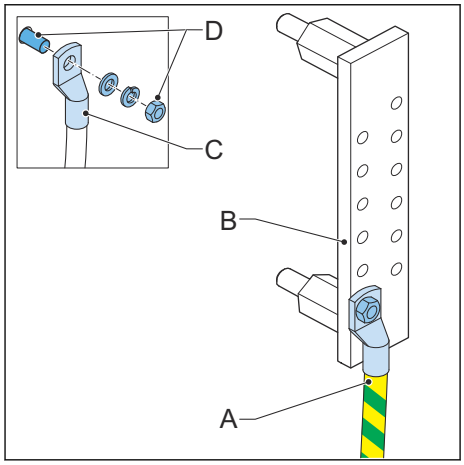
Preliminary requirements

	• The front and right doors are open.		• Cable lugs and fasteners. Refer to section 10.6.
	• Installation engineer		•

	• Wire stripper pliers, cable lug tool and torque socket wrench. Refer to section 10.5.		

Procedure

1. Prepare the wire:
   a. Cut the PE wire (A). Make sure that the length is sufficient for connection at the PE busbar (B).
   b. Strip the insulation from the end of the wire. Make sure that the strip length is compatible with the cable lug (C).
   c. Attach the cable lug to the end of the wire. Use the cable lug tool.
2. Attach the PE wire to the PE busbar.
   Use the fasteners (D).
3. Tighten the fasteners to the correct torque. For the specification, refer to section 10.7.



5.6.3 Connect the enclosure to the earth

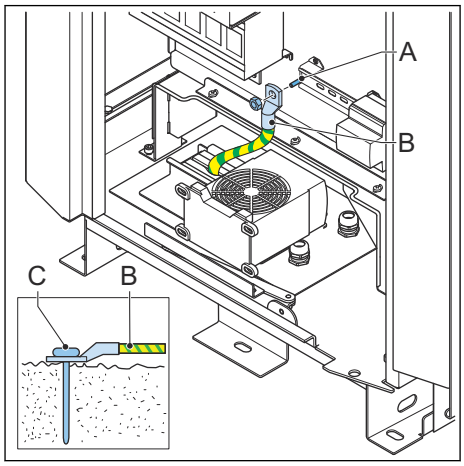
Preliminary requirements

	•  Installation engineer		•  • Make sure that the earthing connection is in accordance with with the standard IEC 60364-5-54.
	• Cable lugs and fasteners. Refer to section 10.6.		

Procedure

1. Connect the earthing conductor (B) to the pin (A) of the enclosure.
2. Connect the earthing conductor to the earthing electrode (C).

Note: It is possible to connect more that one EVSE to a single earthing electrode, if sized accordingly.



5.6.4 Connect the AC input wires

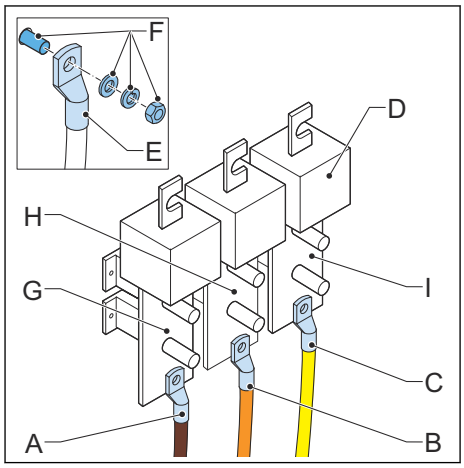
Preliminary requirements

	• The front and right doors are open.		• Cable lugs and fasteners. Refer to section 10.6.
	•  Installation engineer		• 
	• Wire stripper pliers, cable lug tool and torque socket wrench. Refer to section 10.5.		

Procedure

1. Prepare the wires:
   a. Cut the wires (A), (B) and (C). Make sure that the lenght is sufficient for connection at the connectors on the AC fuse (D).
   b. Strip the insulation from the end of the wires. Make sure that the strip length is compatible with the cable lugs (E).
   c. Attach the cable lugs to the end of the wires. Use the cable lug tool.
2. Attach the wires to the connectors:
   - L1 wire (A) to the connector (G)
   - L2 wire (B) to the connector (H)
   - L3 wire (C) to the connector (I)

   Use the fasteners (F) on each connection.
3. Tighten the fasteners to the correct torque. For the specification, refer to section 10.7.



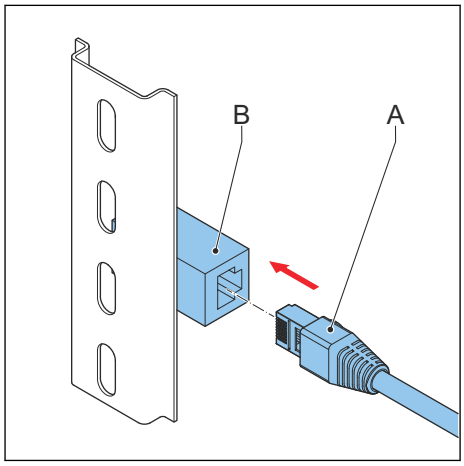
5.6.5 Connect the Ethernet cable

Preliminary requirements

	• The front and right doors are open.		•  Installation engineer

Procedure

1. Connect the Ethernet cable (A) to the Ethernet RJ45 socket (B).



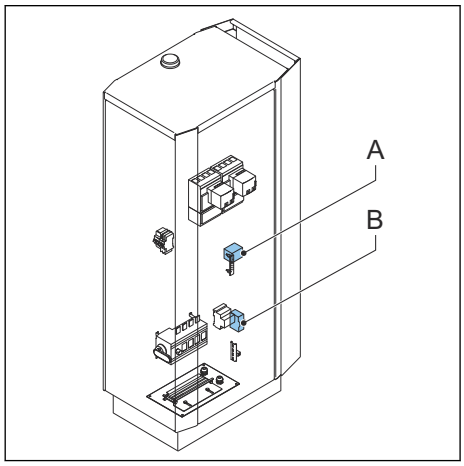
Note: Daisy chaining of Ethernet between the EVSEs or network points is not supported.

5.7 Tilt sensors installation (option)

5.7.1 General procedure

For all specifications of the tilt sensors, refer to section 10.10.

1. Install the bracket (A). Refer to section 5.7.2.
2. Install the tilt sensors (B). Refer to section 5.7.3.
3. Connect the tilt sensors. Refer to section 5.7.4.



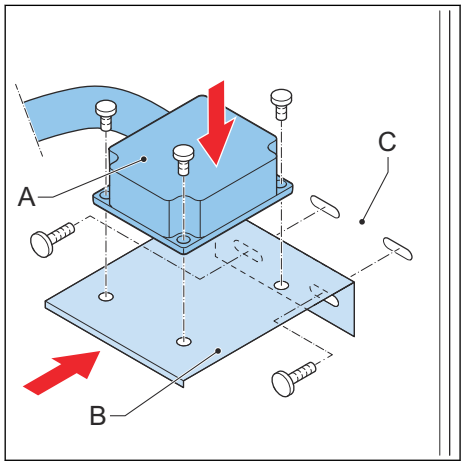
5.7.2 Install the bracket of the tilt sensors

Preliminary requirements

	• Installation engineer		• Tilt sensor lugged • Bracket • Alternative bracket
	• Screwdriver 3.5 mm • Cross screwdriver size 2		

Procedure

1. Install the tilt switch (A) on the bracket (B). Install the fasteners from the top downwards.
2. Install the bracket in the main plate (C). Install the fasteners.
3. If the main plate does not have fixing holes for the tilt sensor bracket, use a second temporary bracket and an UL fan mounting hole.



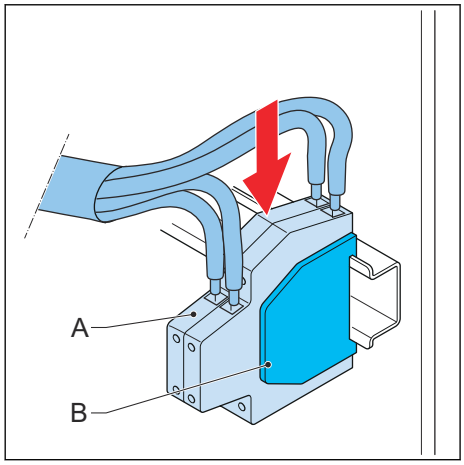
5.7.3 Install the tilt sensors

Preliminary requirements

	• Installation engineer		• Tilt sensor lugged • Alternative bracket • Terminal block (x2) • Plate for terminal block • Cable ties

Procedure

1. Connect these parts in the bottom DIN rail:
   - Terminal block (A)(x2)
   - Terminal plate for the terminal block (B)
2. Carefully guide the tilt sensor cable. Make sure that the tilt sensor cable does not touch the power wiring. Apply the full cable slack.
3. Tie the tilt sensor cable to the other cables that are on the main plate. Use cable ties.



5.7.4 Connect the tilt sensors

Preliminary requirements

	• Installation engineer		• Torque screw driver • Wire cutter • Wire stripper pliers • Crimp pliers

- For the specifications of the wires and the strip length, refer to section 10.10.2.
- For the wiring diagram, refer to section 10.10.3.

Procedure

1. Prepare the wires. Refer to section 5.7.5.
2. Loosen the screws of the terminal block.
3. Connect these wires. :
    1. V+ wire from the external customer interface, to the terminal V+.
    2. Ground wire from the external customer interface, to the terminal GND.
    3. First contact wire from the external customer interface, to the terminal NC.
    4. Second contact wire from the external customer interface, to the terminal COM.

    For the connection procedure, refer to section 5.7.6.
4. Tighten the screws to the correct torque. For the specifications, refer to 10.7.

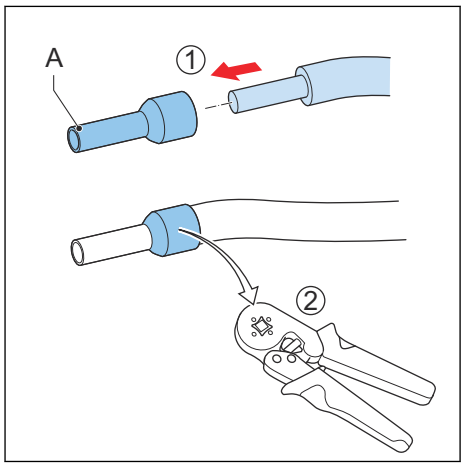
5.7.5 Install a ferrule on a wire

Preliminary requirements

	• Wire cutter • Wire stripper pliers • Crimp plier		• 
	• Ferrule		

Procedure

1. Make sure that the diameter of the ferrule is correct. The ferrule must be compatible with the wire. Obey the technical specifications set by the manufacturer. Refer to section 10.10.1.
2. Strip the insulation from the wire. The stripped length must be the same as the length of the cavity of the ferrule. For the specifications, refer to section 10.6.
3. Put the ferrule in the crimp plier.
4. Insert the wire into the cavity of the ferrule.
5. Install the ferrule on the wire. Use the crimp plier.



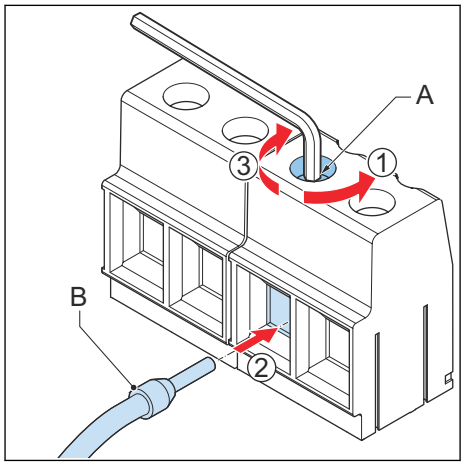
5.7.6 Connect a wire that has a ferrule

Preliminary requirements

	• 

Procedure

1. Loosen the screw of the connection on the terminal.
2. Install the ferrule in the connection of the terminal.
3. Tighten the screw to the correct torque. For the specifications, refer to section 10.7.
4. Make sure that unused wires are protected and cannot touch metal parts.



5.8 Cable management system installation (option)

5.8.1 Prepare the cable management system

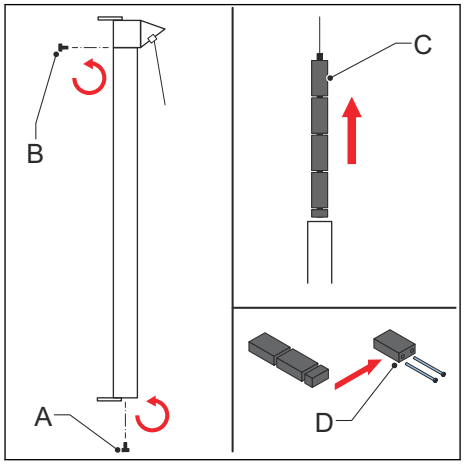
Preliminary requirements

	• The package material is removed.

For the torque specifications, refer to section 10.7.

Procedure

1. Clean these parts:
   - Floor around the EVSE to lay the cables
   - Eye-bolt holes on the top of the EVSE
   - EV charge cables
2. Put the cable management system horizontally.
3. Remove the travel bolt (A).
4. Do a check on the number of counterweights that are required for the EV charge cable. Refer to section 10.11.



   - If the number of required counterweights is 5, go to step 5.
   - If the number of required counterweights is more or less than 5, mount the clamp. Refer to section 5.8.2.
5. Remove the fasteners (B) on the back of the head.
6. Remove the modular counterweight (C).
7. If it is necessary, do these steps:
   a. Remove counterweights (D) to be compatible with the type, rating and length of the EV charge cable.
   b. Cut the wire of the cable management system to the correct length.
8. Insert the modular counterweight in the duct.

5.8.2 Mount the clamp

For the specifications for the cable management system, refer to section 10.11.

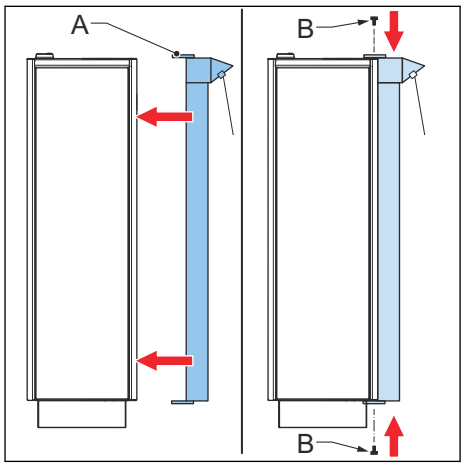
1. Pull the wire and hold it firmly. At the same time connect the clamp to the wire. Apply a knot.

   The correct location for mounting the clamp is at approximately half way on the EV charge cable.
2. Slowly release the wire.

   The EV charge cable folds with one loop, depending on the cable length.

5.8.3 Install the cable management system

1. Install the head (A) on the EVSE in the eyebolt hole.
2. Tighten the fasteners (B) first on the top part, then in the lower part.



5.9 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.
   - You are present during the commissioning, for assistance and to energize the power to the EVSE on the power distribution board.
   - Internet access is available, through 2G/3G/4G or through a wired Ethernet connection.
   - An EV must be available with a compatible connection. If the EVSE has more than one connection type, an EV of each type must be available.
   - The site operator or owner is available to receive instructions from the service engineer of the manufacturer.
3. 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 on one location, make sure that the coordinates are slightly different (at least 0.0001 degree) so that 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.
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 6.4.
4. The commissions the EVSE must be done by the manufacturer or a trained technician. Contact the manufacturer when the EVSE is ready for commissioning. Refer to section 1.12.

Danger:

General risk

- Make sure that you have approval of a trained technician, from the manufacturer or a third party, 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 10.12.5.
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 6.7.

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

6.2 Stop the EVSE if there is an emergency

Preliminary requirements

	• Owner

Procedure

1. If there is an emergency, push the *emergency stop* button.
   - The EVSE stops all charge sessions.
   - The touchscreen shows a message.

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 Charge session

6.4.1 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 6.4.2.
4. Stop the charge session. Refer to section 6.4.3.

6.4.2 Start a charge session

Preliminary requirements

	• Owner

Procedure

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.

6.4.3 Stop a charge session

Preliminary requirements

	• Owner

Procedure

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

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

2. If the touchscreen shows a message to authorize the charge session, do the instruction that the touchscreen shows.
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. Put the EV charge cable in the holder on the EVSE.

6.5 Energize the EVSE

Preliminary requirements

	• Owner

Procedure

1. Close the front door. Refer to section 8.2.
2. Set the upstream breaker that provide power to this EVSE to ON.

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

6.6 De-energize the EVSE

6.6.1 De-energize the EVSE - general procedure

Preliminary requirements

	• Owner		• Voltage tester. Refer to section 10.5.

Procedure

1. Set the upstream breaker which provide the power to this EVSE to OFF and lock it. Make sure that this breaker stays in the OFF position during the procedure.
2. Open the front door and the right door. Refer to section 8.1.
3. Measure the AC voltage. Refer to section 6.6.2.
4. Make sure that all the measured voltages are 0 V.
5. Measure the DC voltage. Refer to section 6.6.3.
6. Make sure that all the measured voltages are 0 V.
7. Close the doors. Refer to section 8.2.

6.6.2 Measure the AC voltage

Preliminary requirements

	•  Owner		• Only do this procedure if a different procedure refers to this procedure.
	• Voltage tester. Refer to section 10.5.		

Procedure

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

   Use the voltage tester.

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

6.6.3 Measure the DC voltage

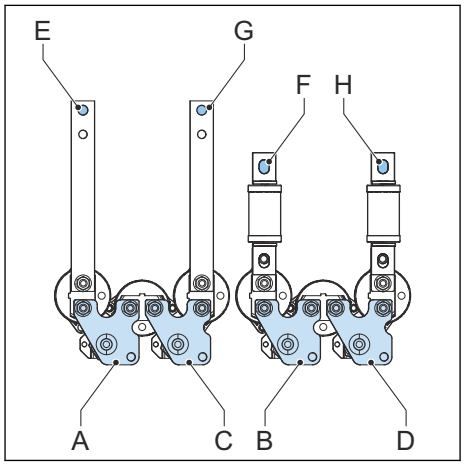
Preliminary requirements

	•  Owner		• Only do this procedure if a different procedure refers to this procedure.
	• Voltage tester. Refer to section 10.5.		

Procedure

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

   Use the voltage tester.



6.7 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 front and right doors. Refer to section 8.1.
2. Set the main breakers 1 and 2 to the off position:
   a. Set the main breakers from the *Auto* to the *Manual* position.
   b. Set the main breakers from the *Manual* to the *Off* position.
3. Energize the EVSE. Refer to section 6.6.
4. Close the doors. Refer to section 8.2.
5. Wait four hours.

   The internal heater of the cabinet heats the inside of the cabinet and lets the condensation evaporate.
6. Open the front and right doors. Refer to section 8.1.
7. Set the main breakers 1 and 2 to the on position.
   a. Set the main breakers from the *Off* to the *Manual* position.
   b. Set the main breakers from the *Manual* to the *Auto* position.
8. Close the doors. Refer to section 8.2.

6.8 Local service portal operations

6.8.1 Start the local service portal

Preliminary requirements

- The EVSE is ready for operation. No charge session is in progress.
- No charge session is in progress.

Procedure

1. Open the front door of the EVSE. Refer to section 8.1.

   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.
3. Select *Continue*.

6.8.2 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.

6.8.3 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.

6.8.4 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.

6.8.5 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	Refer to section 7.2.
Do a check for damage on the EV charge cables and the connectors.	3 months	Refer to section 7.3.
Do a check for damage on the cabinet.	6 months	Refer to section 7.3.
Replace the filters for the air inlets.	1 year	Refer to section 7.4.
Make sure that the manufacturer does maintenance on the EVSE.	1 year	Ask the manufacturer to do the task. Refer to section 1.12. For the complete maintenance schedule refer to section 7.1. For the required spare parts refer to section 10.22.
Replace the filters for the air outlets.	After the first year, then 2 years	Refer to section 7.5.

7.2 Clean the cabinet

Preliminary requirements

	• Owner		• Cleaning agent and a non-abrasive tool. Refer to section 10.21.

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.

7.3 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.

7.4 Replace the air inlet filter

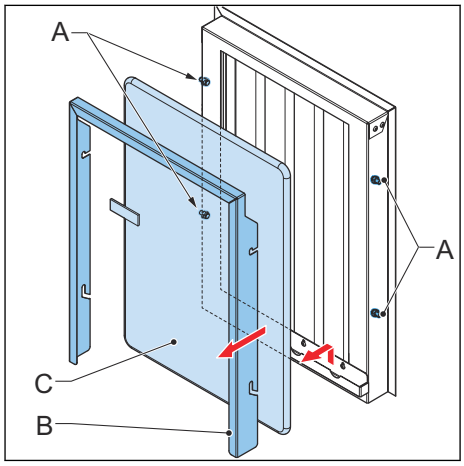
Preliminary requirements

	• Owner		• Air inlet filters. Refer to section 10.22.
	• Spanner		

Procedure

1. De-energize the EVSE. Refer to section 6.6.
2. Open the left and right doors. Refer to section 8.1.
3. Loosen the nuts (A).

   Use the spanner.
4. 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.

5. Install the new air inlet filter. Make sure that the air flow direction that is indicated on the air inlet filter corresponds with the air flow.
6. Install these parts:
   1. Clean air inlet filter
   2. Cover
7. Tighten the nuts.
8. Do the steps 3 to 7 again for the other air inlet filters.
9. Close the doors. Refer to section 8.2.

7.5 Replace the air outlet filter

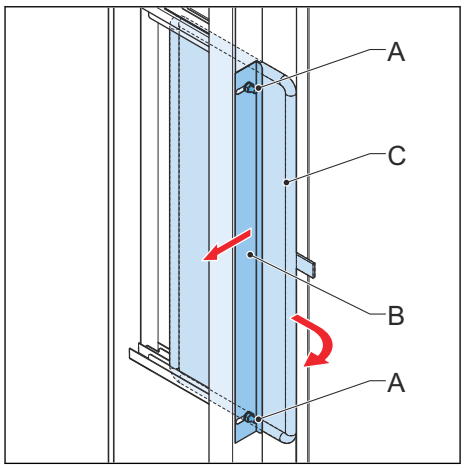
Preliminary requirements

	• Owner		• Air outlet filters. Refer to section 10.22.
	• Spanner		

Procedure

1. De-energize the EVSE. Refer to section 6.6.
2. Open the right door. Refer to section 8.1.
3. Loosen the nuts (A).

   Use the spanner.
4. Pull the cover (B) to the front.



5. Carefully pull and remove the outlet filter (C).

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

6. Install the new air outlet filter. Make sure that the air flow direction that is indicated on the air outlet filter corresponds with the air flow.
7. Push the cover to the rear.
8. Tighten the nuts.
9. Do the steps 3 to 8 again for the other air outlet filters.
10. Close the doors. Refer to section 8.2.

8 Access to parts

8.1 Open the doors

Preliminary requirements

	• Installation engineer •  Owner		• Door key

Danger:

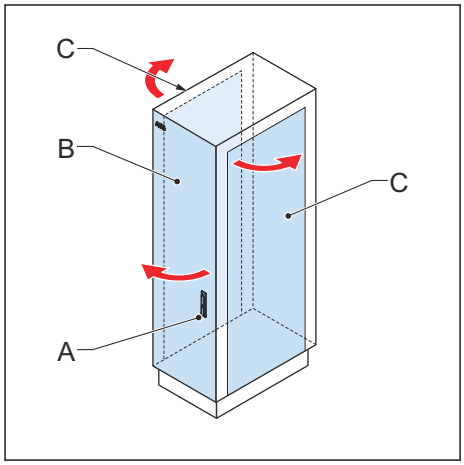
Hazardous voltage

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

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

Procedure

1. Unlock the lock (A) of the front door (B). Use the door key.
2. Open the front door.
3. If necessary, open the left or right doors (C) through the opening of the front door.



8.2 Close the doors

Preliminary requirements

	• Installation engineer •  Owner		• Door key

Danger:

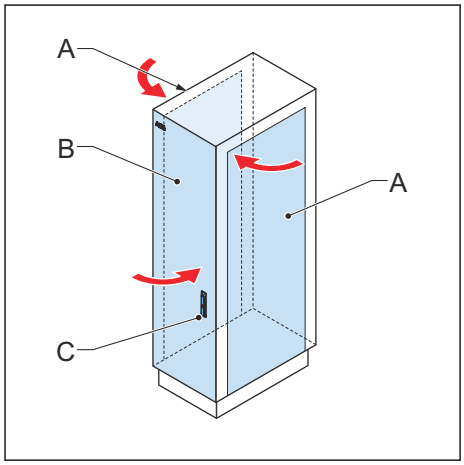
Hazardous voltage

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

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

Procedure

1. If the left or right doors (A) are open, close the doors through the opening of the front door.
2. Close the front door (B).
3. Lock the lock (C) of the front door. Use the door key.



8.3 Remove the border covers

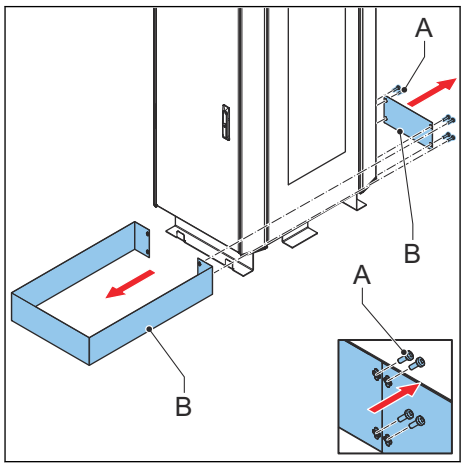
Preliminary requirements

	• Installation engineer		• Set of hex keys

Note:
This procedure is only valid for a standard base or a base with side entrance.

Procedure

1. Remove these parts:
   1. Fasteners (A)
   2. Border covers (B)



8.4 Install the border covers

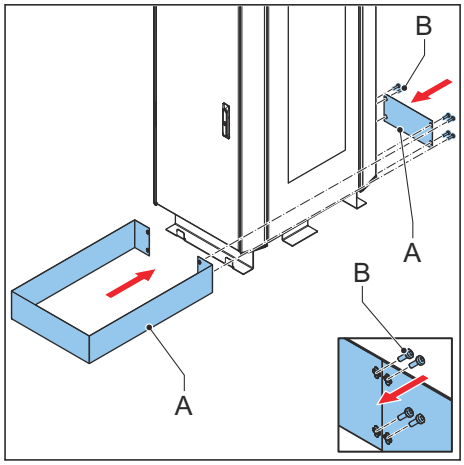
Preliminary requirements

	• Installation engineer		• Set of hex keys

Note:
This procedure is only valid for a standard base or a base with side entrance.

Procedure

1. Install these parts:
    1. Border covers (A)
    2. Fasteners (B)



9 Troubleshooting

9.1 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.

9.2 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 6.6. 2. Energize the EVSE. Refer to section 6.5.
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 6.6. 2. Energize the EVSE. Refer to section 6.5.
The touchscreen shows this message: *Unable to lock the connector*.	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: *Unable to unlock the connector from car*.	A dangerous voltage is present on the EV charge cable.	1. Wait 5 minutes. 2. Start the charge session again. Refer to section 6.4.2.
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 local representative of the manufacturer. Refer to section 1.12.
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. Refer to section 1.12.

10 Technical data

10.1 EVSE type

The EVSE type is a code that has 7 parts

Part description	Value	Meaning of the value
Brand	Terra	-
Model and design generation	94	Fourth generation charger, 90 kW DC output: 3 power modules installed
	104	Fourth generation charger, 100 kW DC output: 4 power modules installed
	124	Fourth generation charger, 120 kW DC output: 4 power modules installed
	184	Fourth generation charger, 180 kW DC output: 6 power modules installed
Certification	CE	IEC compliant
	UL	UL compliant
EV charger cable connection	C (C1)	CCS-1 connector
	C (C2)	CCS-2 connector
	J	CHAdeMO
EV charge cable length	4	4 m (13 ft)
	6	6 m (20 ft)
Connector type	A	Air cooled EV charge cable(s)
Power rating	1	Max 125/150 A current
	2	Max 200 A current
	4	Max 400 A current

Example

Terra 184 UL C 6A4:

- Brand = Terra
- 184 = Fourth generation charger, 180 kW DC output
- UL = Local certification for North America
- C = CCS connector
- 6 = The length of the EV charge cable(s) is 6 m (20 ft)
- A = Air cooled EV charge cable(s)
- 4 = Max 400 A current

10.2 General specifications

Parameter	Specification
Compliance and safety	UL 2202:2009 R2.18
	CSA STD C22.2 No 107.1-16

Parameter	Specification
	FCC Part 15 Class A
	FCC Part 22, FCC Part 27 RSS-132 Issue 3, RSS-139 Issue 3, RSS-199 Issue 6
	CHAdeMO 1.2
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
Short circuit current rating	65 kA
Electro Magnetic Compatibility (EMC) rating	FCC Directive Immunity: Class A Emissions: Class A

Parameter	Specification	
	CCS 1 and CCS 2	**CHAdeMO**
Voltage rating of the connectors on the EVSE	200 - 1000 V DC	150 - 500 V DC
Maximum voltage that the EVSE can deliver	920 V DC	500 V DC In Japan: 450 V DC
Power current rating (air-cooled cables)	150 A 200 A 400 A	125 A 200 A

10.3 Parts included in the delivery

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

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

10.4 Transport specifications

Parameter	Specification
Maximum tilt angle during transport	30°

10.5 Required tools for installation

Parameter	Specification	
	[mm]	[in]
Philips screwdriver	Size: PH2	Size: PH2
Slot screwdriver	Size: 2.5 and 4.5	Size: 0.1 and 0.18
Hex keys	Size: 5, 5.5 and 6	Size: 0.2, 0.22 and 0.24
Torx screwdriver	Size: 15, 20 and 25	Size: 0.59, 0.79 and 0.98
Torx angled or bit with ratchet	Size: 20	Size: 0.79
Open spanner	Size: M5 (8 mm), M6 (10 mm), M10 (15mm), M12 (19 mm) and M16 (24 mm)	Size: M5 (0.31 in), M6 (0.39 in), M10 (0.59 in), M12 (0.75 in) and M16 (0.94 in)
Torque socket wrench	5 to 20 Nm, size M8 (13 mm) and M6 (10 mm)	5 to 20 Nm, size M8 (0.51 in) and M6 (0.39 in)
Ratchet spanner with socket and extension	Size: M5 (8 mm) and M6 (10 mm)	Size: M5 (0.31 in) and M6 (0.39 in)
Voltage tester	Standard To make sure that the RCD works, press the test button on the RCD.	
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 different sections in this document.	
Wire stripper pliers	To strip the wires of the AC input cable	
Cable lug tool	Size: M10 (AC wires) Size: M11 (PE wire)	

10.6 Required parts for installation

Parameter	Specification
Swivel eye bolts or bolts with lifting loops, to use with the hoisting equipment	Thread M10
Cable lugs and fasteners	Size: M10 (AC wires) Size: M11 (PE wire)

10.7 Torque specifications

Parameter	Specification	
	[Nm]	[lb-in]
Fasteners for the PE wire	Between 33 and 44	Between 292 and 389
Fasteners for the L1, L2, L3 wires	Between 33 and 44	Between 292 and 389
Fasteners for an alternative base	Between 33 and 44	Between 292 and 389
Fasteners for the tilt sensors	1.3	11.5
Fasteners for the cable management system	Between 33 and 44	Between 292 and 389

10.8 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

10.9 Noise level

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

10.10 Tilt sensor specifications

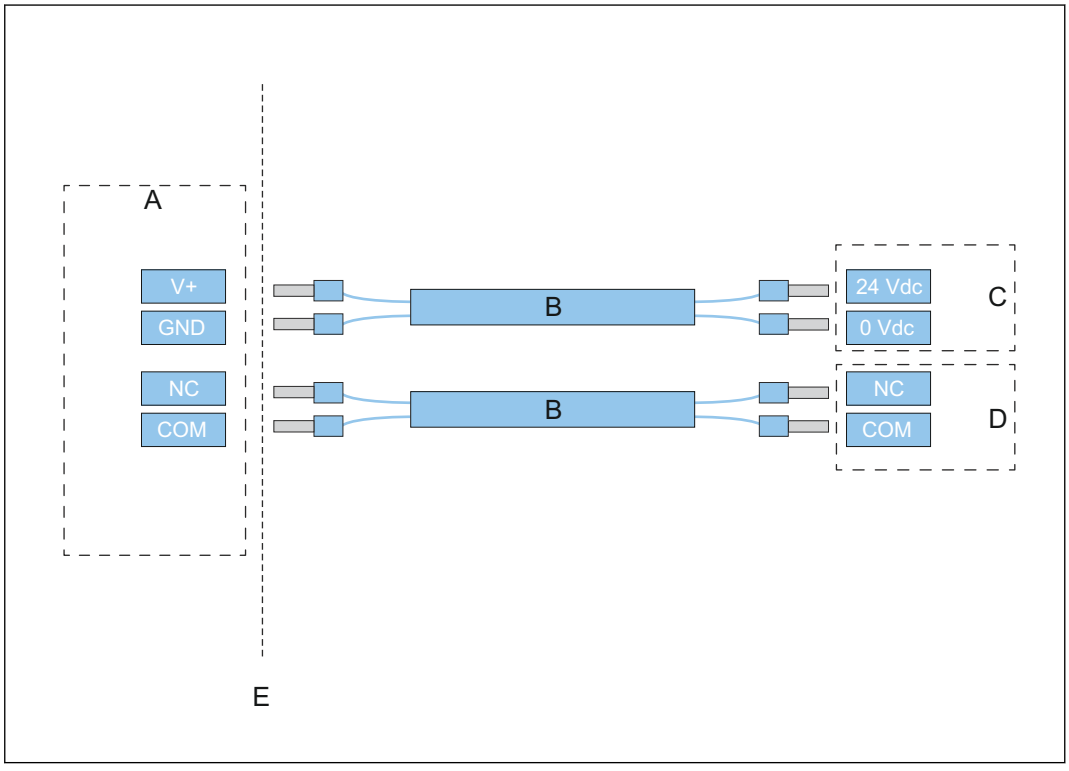
10.10.1 General specifications

Parameter	Specification
Voltage input	20..24 V DC
Power consumption	Maximum 30 mA
Reverse polarity protection	Yes
Isolation Rating	300 V

10.10.2 Wire specifications

Tilt sensor cables	Specifications
Number of cores	One twisted pair (total of two cores)
Diameter of cores	18 AWG
Diameter outside	5 to 10 mm (0.20 to 0.39 in)
Conductor	Fine strand copper wire
Insulation	PVC or other material that is serviceable for outdoor use and UV-protected
Minimum test	1.5 kV
Strip length	11 mm (0.43 in)
Voltage rating	600 V
Shielded wire	Not required

10.10.3 Wiring diagram for the tilt sensors

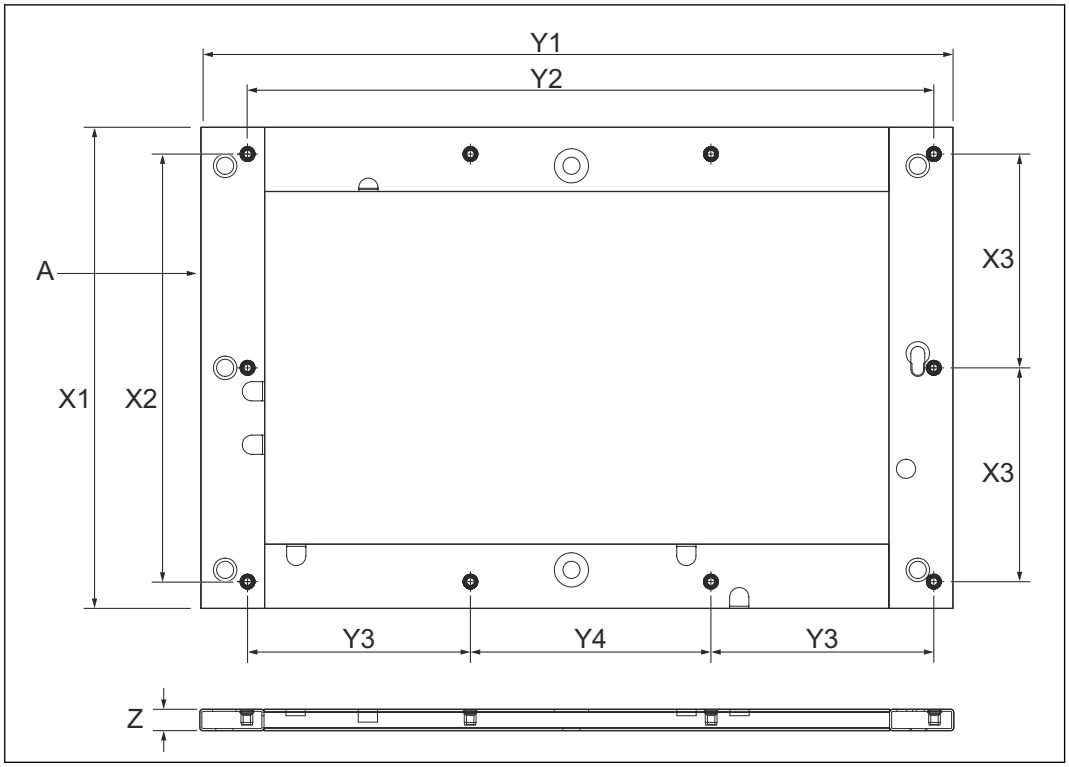


A EVSE
B Twisted wire
C External power supply
D Upstream breaker in the power distribution board
E Scope of supply by the manufacturer

Parameter	Specification	
	Signal description	TB label
White cable	24 V DC	V^+
Yellow cable	0 V DC	GND

Parameter	Specification	
	Signal description	**TB label**
Grey cable	Tilt switch NC contact	NC
Blue cable	Tilt switch COM contact	COM

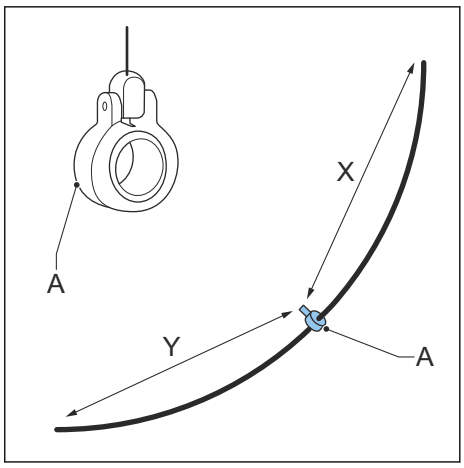
10.10.4 The alternative base with reduced height



A Front side of the base
X1 Width of the base
X2 Distance between the outer fixation holes
X3 Distance between 2 fixation holes
Y1 Depth of the base
Y2 Distance between the 4 fixation holes
Y3 Distance between the outer fixation holes
Y4 Distance between the middle fixation holes
Z Height of the base

Parameter	Specification	
	[mm]	**[in]**
X1	450	17.7
X2	400	15.7
X3	200	7.9
Y1	704	27.7
Y2	642	25.3
Y3	208.5	8.2
Y4	225	8.9
Z	20	0.8

10.11 Cable management system specifications



A Clamp

X Distance from the cable exit point

Y Distance from the connector

Cable type (A)	Length		Clamp model	Distance from the cable exit point (X)	Distance from the connector (Y)	Counter-weights
	[m]	[ft]				
CCS-1 200A	4	13	BP-1394-2 64A	50 %	50 %	3
CCS-1 200A	6	20	BP-1394-2 64A	30 %	70 %	4
CCS-1 200A	8	26	BP-1394-2 64A	See *		
CCS-1 400A	4	13	BP-1394-2 82A	50 %	50 %	4
CCS-1 400A	6	20	BP-1394-2 82A	30 %	70 %	5
CCS-1 400A	8	26	BP-1394-2 82A	See *		
CHAdeMO 200 A	4	13	BP-1394-3 55A	50 %	50 %	5
CHAdeMO 200 A	6	20	BP-1394-3 55A	30 %	70 %	5
CHAdeMO 200 A	8	26	BP-1394-3 55A	See *		

* The maximum cable length supported by the ABB cable retraction system is 6 m (20 ft). If the EVSE is equipped with a cable longer than 8 m (26 ft) the EVSE is not compliant with NEC 625.17. An external cable management system must be installed to comply with the standard.

10.12 Dimensions

10.12.1 General dimensions

Parameter	Specification	
	[mm]	[ft-in]
Width of the cabinet (X-dimension)	565	1' 10"
with cable management system	580	1' 11"
Depth of the cabinet (Y-dimension)	880	2' 10"
with cable management system	890	2' 11"
Height of the cabinet (Z-dimension)	1900	6' 3"
Maximum opening size of the cable inlet	206 x 30	8.11" x 1.2"

Parameter	Specification	
	[m]	[ft]
Length of the charge cable (air-cooled)[1]	4	13
	6	20
	8*	26

* The maximum cable length supported by the ABB cable retraction system is 6 m (20 ft). If the EVSE is equipped with a cable longer than 8 m (26 ft) the EVSE is not compliant with NEC 625.17. An external cable management system must be installed to comply with the standard.

10.12.2 Packaged product

The EVSE is mounted on a standard size wooden pallet (Europallet) and protected to prevent damages during transport.

- A road packaged EVSE is protected with a plastic wrapping.
- A wooden crate packaged EVSE is protected with a plastic wrapping and enclosed inside a wooden crate.

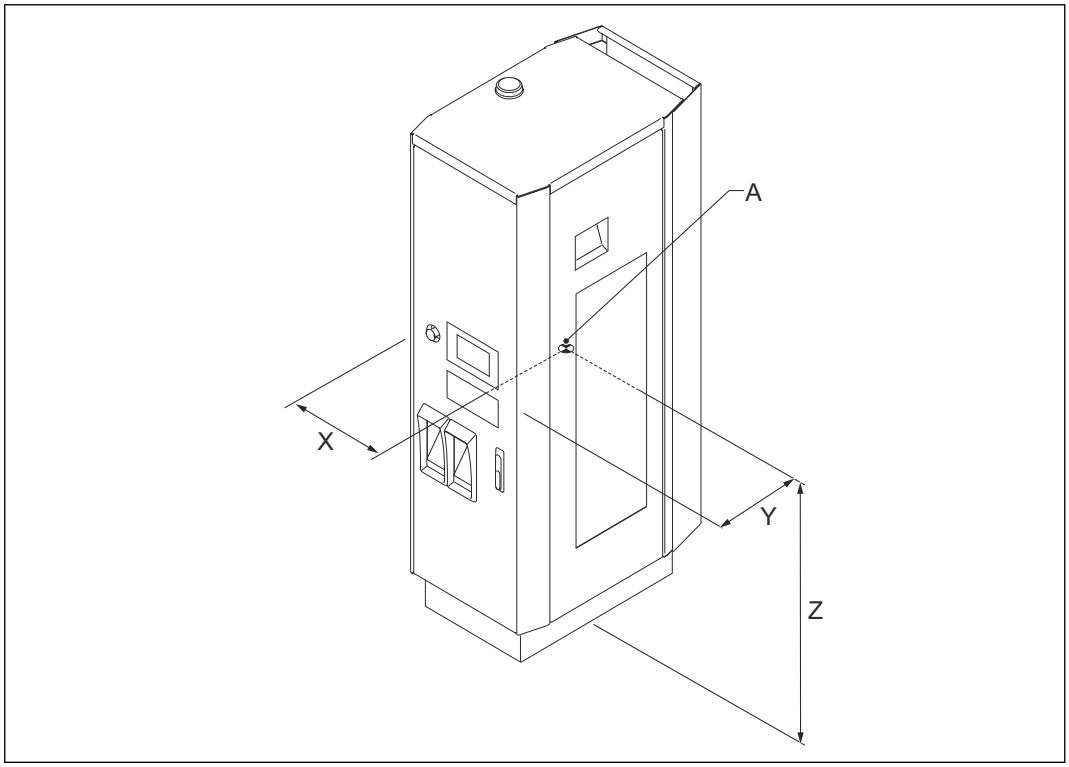
Parameter	Specification	
	[mm]	[imperial]
Width	1200	3’ 11”
Depth	800	2’ 7”
Heigth	2100	6’ 10”
Mass of a road packaged EVSE	EVSE weight + 35 kg	EVSE weight + 77 lb
Mass of a wooden crate packaged EVSE	EVSE weight + 75 kg	EVSE weight + 165 lb
Maximum tipping angle	15°	15°

[1] Different lengths possible

10.12.3 Mass of the EVSE (without packaging material)

Parameter	Specification	
	[kg]	[lb]
Terra 94	355	780
Terra 104, 124	370	815
Terra 184	400	880
Cable management system (optional) for one cable, no counterweight*	15	33
Cable management system (optional) for two cables, no counterweight*	30	66
Cable management system (optional), single counterweight*	3	6.6
* The number of counterweights depends on the cable installed on the EVSE. For the suggested number of counterweights, refer to section 10.11.		

10.12.4 Center of gravity



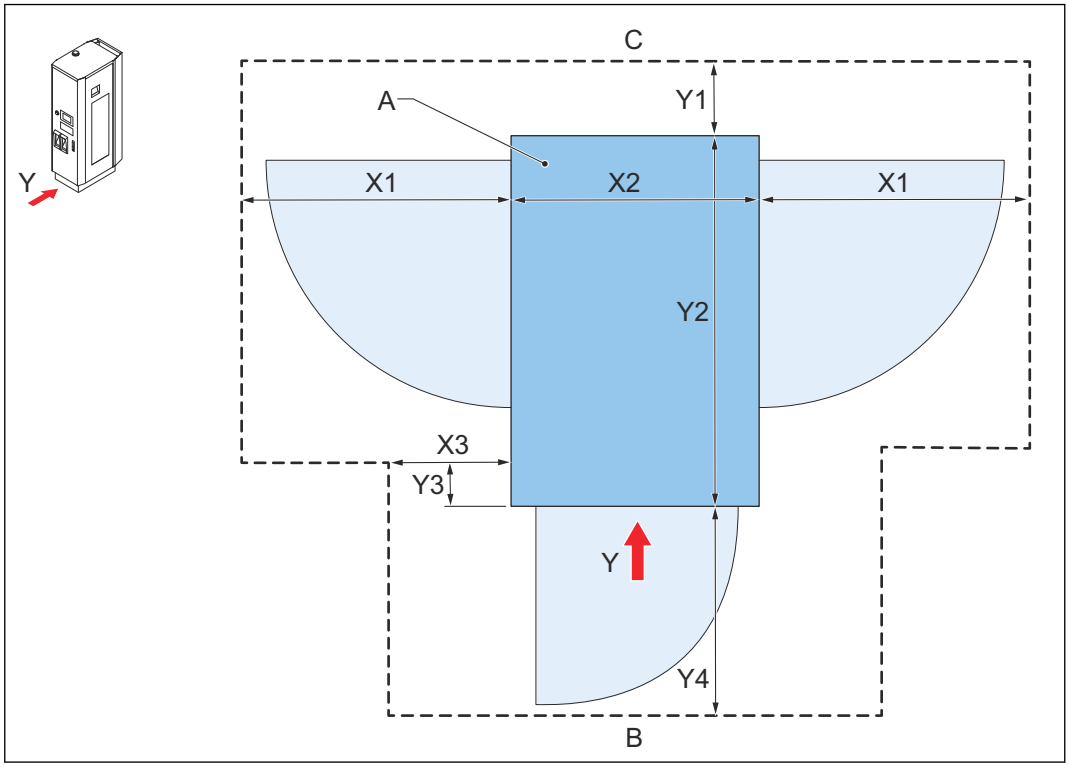
A Center of gravity
X Location of A in EVSE width
Y Location of A in EVSE depth
Z Location of A in EVSE height

Parameter	Specification [mm]			Specification [in]		
	X	Y	Z	X	Y	Z
Terra 94	256	415	1070	10.08	16.34	42.13
Terra 104/124	256	420	1073	10.43	16.54	42.24
Terra 184	261	423	1068	10.28	16.65	42.05

Note:

- The coordinates correspond with the agreements in section 1.15. 0,0,0 is the left bottom front side of the EVSE.
- The values for the center of gravity refer to an EVSE with a standard base.

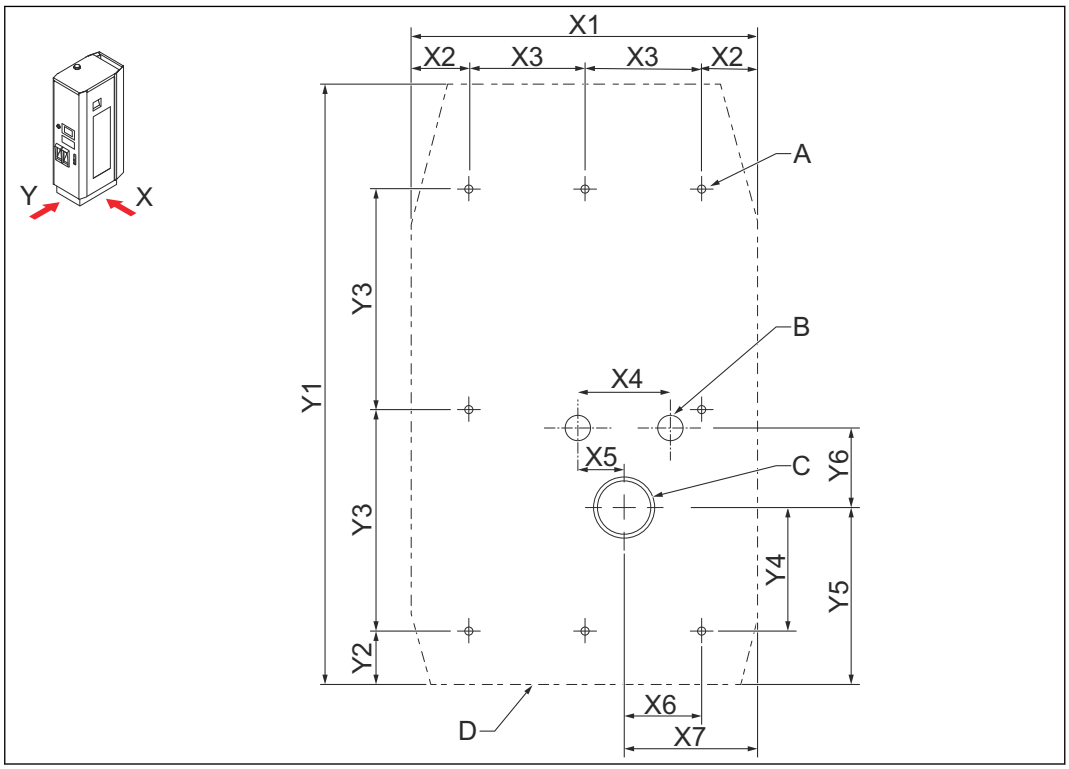
10.12.5 Floor space requirements



A	Cabinet	X3	Free space required on the sides of the EVSE
B	Area where the bollards can be installed	Y1	Free space required on the rear of the EVSE
C	Wall or other obstacles	Y2	Depth of the EVSE
X1	Free space required on the sides of the EVSE	Y3	Distance from the front of the EVSE
X2	Width of the EVSE	Y4	Free space required in front of the EVSE

Parameter	Specification	
	[mm]	[in]
X1	510	20
X2	880	36.6
X3	300	12
Y1	100	3.9
Y2	565	22.2
Y3	105	4.1
Y4	600	23.6

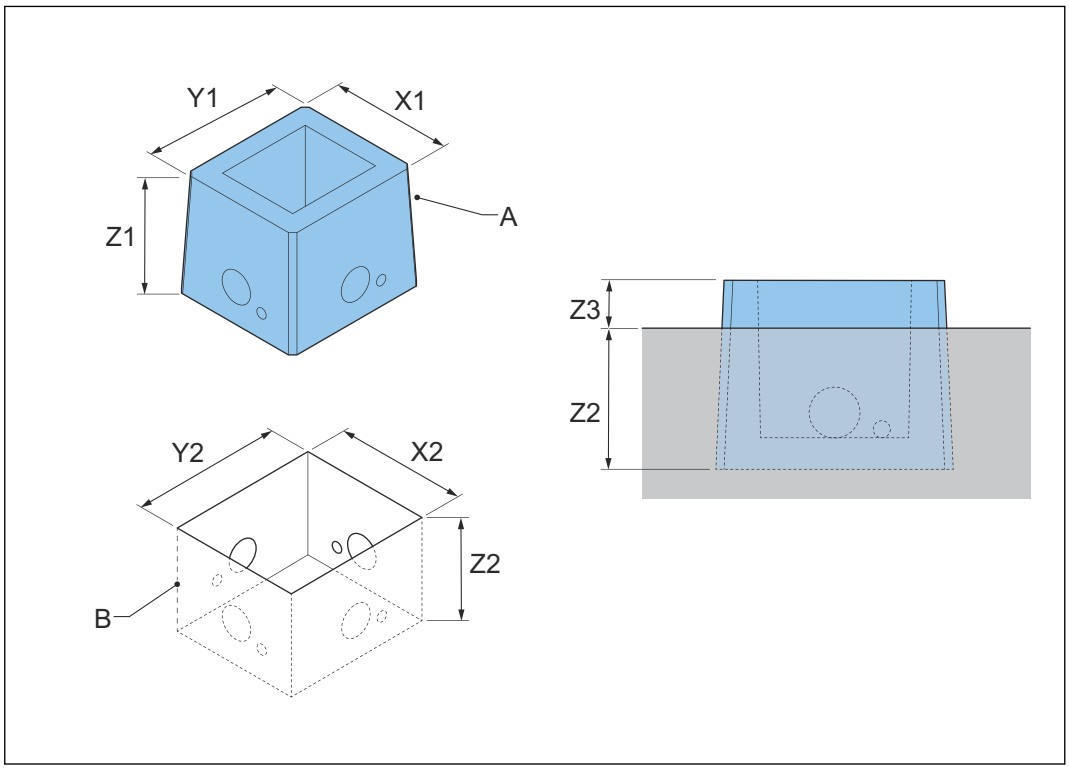
10.12.6 Casted foundation



A Holes to install the fasteners of the EVSE
B Conduit stub up
C Addtional holes
D Front of the EVSE

Parameter	Specification	
	[mm]	[in]
A	M10, depth 60	M10, depth 2.4
B	25-50	1-2
C	50-75	2-3
X1	565	22.2
X2	36.5	1.4
X3	189	7.4
X4	106	4.2
X5	53	2.1
Y1	880	34.6
Y2	125	4.9
Y3	324	12.8
Y6	160	6.3

10.12.7 Prefabricated foundation

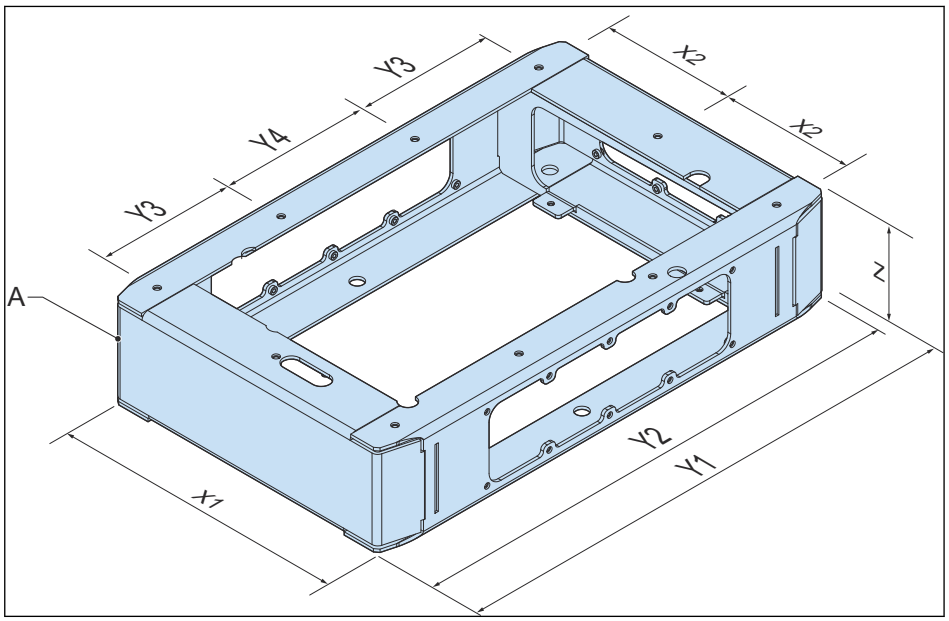


A	Prefabricated foundation	X2	Width of the hole
B	Hole for the foundation	Y2	Depth of the hole
X1	Width of the foundation	Z2	Height of the hole
Y1	Depth of the foundation	Z3	Distance of the foundation above the ground level
Z1	Height of the foundation		

Parameter	Specification	
	[mm]	[in]
X1	626	24.6
Y1	700	27.6
Z1	600	23.6
X2	680	26.8
Y2	754	29.7
Z2	580	22.8
Z3	20	0.8

Each side has a square hole XxY = 237 x 165 mm (9.3 x 6.5 in) to fit the conduits 1 x 160 mm (6.3 in) and 1 x 75 mm (3 in) diameters or different combinations.

10.12.8 Alternative base with side entrance



A Front side of the base
X1 Width of the base
X2 Distance between the outer fixation holes
X3 Distance between 2 fixation holes
Y1 Depth of the base
Y2 Depth of the base including the fasteners
Y3 Distance between the outer fixation holes
Y4 Distance between the middle fixation holes
Z Height of the base

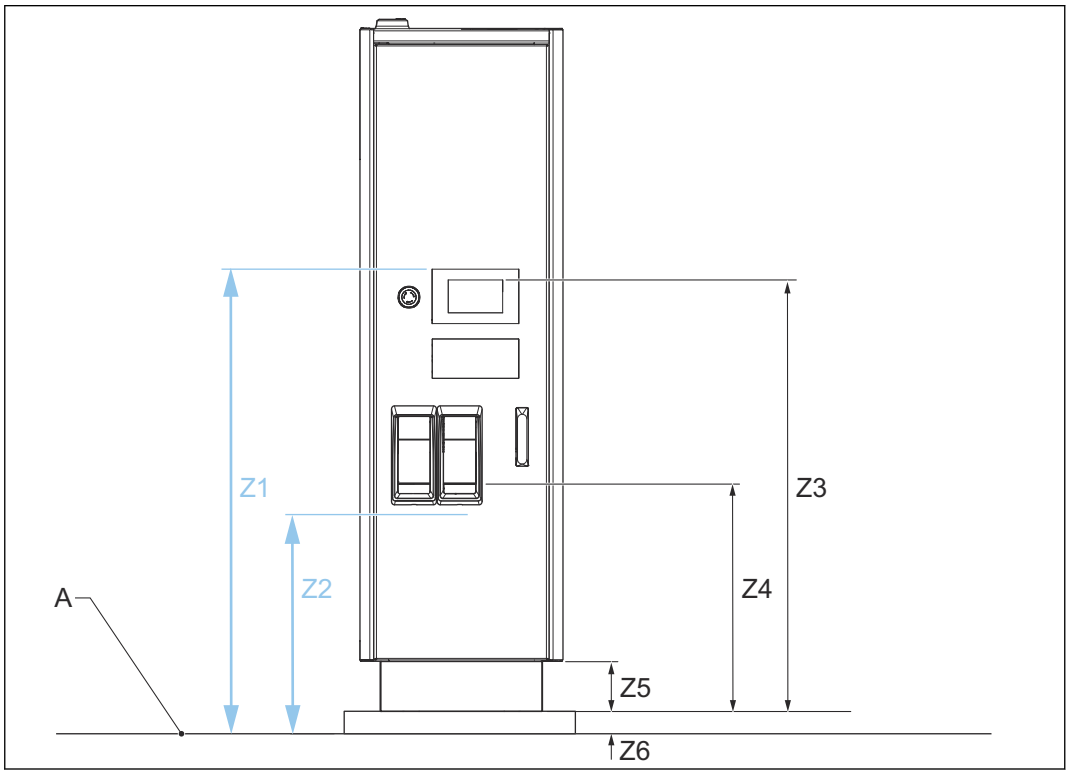
Parameter	Specification	
	[mm]	[in]
X1	450	17.7
X2	400	15.7
X3	200	7.9
Y1	760	30.0
Y2	752	29.6
Y3	208.5	8.2
Y4	225	8.9
Z	152.4	6

Note:
Guide the AC cables from the rear side of the EVSE to avoid obstacles and fall hazards.

10.12.9 Cable slack

Parameter	Specification	
	[mm]	[in]
Required cable slack for the Ethernet cable (measured from the top of the foundation)	500	20
Required cable slack for the AC input cable (measured from the top of the foundation)	350	14

10.12.10 Height of user operable elements



A Ground level
Z1 Maximum height of the user operable elements according to ADA
Z2 Lowest height of the user operable elements according to ADA
Z3 EVSE highest user operable element
Z4 EVSE lowest user operable element
Z5 EVSE base
Z6 Curb

Parameter		Specification			
		Standard		Base with reduced height	
		[mm]	[in]	[mm]	[in]
ADA recommendations	Z1	1212	48	1212	48
	Z2	381	15	381	15
EVSE	Z3	1212	48	1092	43

Parameter		Specification			
		Standard		Base with reduced height	
		[mm]	[in]	[mm]	[in]
	Z4	688	27	568	22
	Z5	190	7	20	1
	Z6	0	0	< 100	< 4

ADA compliance
According to ADA (Act of Disabled Americans) the height of user operable elements must be between specific limits:

- Maximum height is 1219 mm (44 in)
- Minimum height is 381 (15 in)

Make sure that the installed EVSE complies with ADA requirements. The distance from the base of the EVSE to the minimum and maximum height of the user operable elements must be accordance with the ADA recommendations.

Note:
It is the responsibility of the installer to make sure that the EVSE complies with ADA requirements.

10.13 Communication interface specifications

General specifications

Parameter	Specification
RFID standard	ISO 14443 A+ B to part 4 and ISO/IEC 15693
RFID-supported applications	Mifare, NFC, Calypso, Ultralight, PayPass, HID. For information about the options, contact the manufacturer.
Network connection	3G/4G modem 10/100 Base-T Ethernet

Ethernet cable

Parameter	Specification
Ethernet type	RJ45
Cable type	8P + PE, shielded
Example of a cable for distance of 75 m or less	HELUKAT 600E
Bandwidth, upload	Minimum 128 kbit/s
Bandwidth, download	Minimum 4 Mbit/s
Availability	99.9%

10.14 EVSE power rating

10.14.1 EVSE rating during normal duty operation

Normal duty operation applies for use in public applications with moderate traffic.

Parameter	Specification [kW]
Terra 94	90
Terra 104	100
Terra 124	120
Terra 184	180

10.14.2 EVSE derating during normal duty operation

The table shows the steady state rating of the EVSE at specific ambient temperatures.

Parameter		Specification	
Ambient temperature		Power Output [%]	De-rating [%]
[°C]	[°F]		
-35 ... + 35	-31 … +95	100	0
+ 36 … + 40	+96 …+104	90	10
+ 41 … + 45	+105 …+113	85	15
+ 46 … + 50	+114 …+122	75	25
+ 51 … + 55	+123 …+131	65	35

The output power of the EVSE can be limited by the temperature of the charge connector. This limitation can be caused by the connector model and rating, the EV socket rating and the ambient conditions.

10.14.3 EVSE rating in heavy duty operation

Heavy duty operation applies for use in public applications with heavy traffic or commercial/fleet applications.

Parameter	Specification [kW]
Terra 94	75
Terra 104	100
Terra 124	100
Terra 184	150

10.14.4 EVSE derating in heavy duty operation

The table shows the steady state rating of the EVSE at specific ambient temperatures.

Parameter		Specification	
Ambient temperature		**Power Output [%]**	**De-rating [%]**
[°C]	**[°F]**		
-35 ... + 35	-31 … +95	100	0
+ 36 … + 40	+96 …+104	100	0
+ 41 … + 45	+105 …+113	93	7
+ 46 … + 50	+114 …+122	80	20
+ 51 … + 55	+123 …+131	67	33

The output power of the EVSE can be limited by the temperature of the charge connector. This limitation can be caused by the connector model and rating, the EV socket rating and the ambient conditions.

10.15 Harmonics on the grid

10.15.1 Terra 184

Working point	Electric load	V_{thd} (L1/L2/L3)			I_{thd} (L1/L2/L3)		
900 V / 200 A	100 %	0.669 %	0.638 %	0.698 %	3017 %	3070 %	2984 %

Order	Phase L1		Phase L2		Phase L3	
	IRMS	HDF	IRMS	HDF	IRMS	HDF
	[A]	[%]	[A]	[%]	[A]	[%]
1	225.10	100.00	225.25	100.00	225.04	100.00
2	0.17	0.07	0.66	0.30	0.64	0.29
3	0.57	0.25	0.52	0.23	1.08	0.48
4	0.42	0.19	0.17	0.08	0.34	0.15
5	6.06	2.69	6.21	2.76	5.76	2.56
6	0.23	0.10	0.25	0.11	0.53	0.24
7	2.07	0.92	1.93	0.86	2.08	0.93
8	0.35	0.15	0.18	0.08	0.21	0.09
9	0.19	0.08	0.14	0.06	0.13	0.06
10	0.05	0.02	0.04	0.02	0.09	0.04
11	0.36	0.16	0.31	0.14	0.42	0.19
12	0.26	0.11	0.16	0.07	0.31	0.14
13	0.63	0.28	0.75	0.33	0.57	0.26
14	0.26	0.11	0.15	0.07	0.24	0.11
15	0.01	0.01	0.17	0.08	0.16	0.07
16	0.20	0.09	0.39	0.18	0.30	0.13
17	0.85	0.38	0.78	0.35	0.76	0.34
18	0.25	0.11	0.27	0.12	0.47	0.21

Order	Phase L1		Phase L2		Phase L3	
	IRMS	HDF	IRMS	HDF	IRMS	HDF
	[A]	[%]	[A]	[%]	[A]	[%]
19	0.73	0.32	0.88	0.39	0.78	0.35
20	0.23	0.10	0.19	0.09	0.16	0.07
21	0.08	0.03	0.05	0.02	0.16	0.07
22	0.15	0.07	0.22	0.10	0.25	0.11
23	0.67	0.30	0.60	0.27	0.75	0.33
24	0.18	0.08	0.20	0.09	0.36	0.16
25	0.52	0.23	0.70	0.31	0.62	0.28
26	0.20	0.09	0.17	0.08	0.26	0.11
27	0.11	0.05	0.03	0.01	0.11	0.05
28	0.18	0.08	0.17	0.08	0.24	0.11
29	0.59	0.26	0.52	0.23	0.62	0.28
30	0.08	0.03	0.13	0.06	0.30	0.13
31	0.50	0.22	0.49	0.22	0.51	0.23
32	0.09	0.04	0.16	0.07	0.23	0.10
33	0.04	0.02	0.07	0.03	0.09	0.04
34	0.12	0.06	0.18	0.08	0.14	0.06
35	0.50	0.22	0.50	0.22	0.57	0.25
36	0.14	0.06	0.08	0.03	0.18	0.08
37	0.46	0.21	0.41	0.18	0.51	0.23
38	0.15	0.07	0.07	0.03	0.23	0.10
39	0.09	0.04	0.03	0.01	0.06	0.02
40	0.07	0.03	0.03	0.01	0.10	0.04
41	0.31	0.14	0.30	0.13	0.41	0.18
42	0.04	0.02	0.08	0.04	0.08	0.03
43	0.30	0.13	0.31	0.14	0.35	0.16
44	0.15	0.07	0.07	0.03	0.18	0.08
45	0.13	0.06	0.04	0.02	0.07	0.03
46	0.07	0.03	0.03	0.01	0.14	0.06
47	0.25	0.11	0.20	0.09	0.23	0.10
48	0.06	0.03	0.06	0.03	0.07	0.03
49	0.23	0.10	0.25	0.11	0.25	0.11
50	0.13	0.06	0.03	0.01	0.14	0.06
Total	**225.38**	**3017%**	**225.42**	**3070%**	**225.29**	**2984%**

10.15.2 Terra 124 and 104

Working point	Electric load	V_{thd} (L1/L2/L3)			I_{thd} (L1/L2/L3)		
900 V / 133A	100 %	0.747 %	0.667 %	0.740 %	2837 %	2889 %	2838 %

Order	Phase L1		Phase L2		Phase L3	
	IRMS	HDF	IRMS	HDF	IRMS	HDF
	[A]	[%]	[A]	[%]	[A]	[%]
1	150.84	100.00	150.34	100.00	150.58	100.00
2	0.06	0.04	0.35	0.24	0.30	0.20
3	0.30	0.20	0.25	0.17	0.55	0.36
4	0.25	0.17	0.08	0.05	0.16	0.10
5	3.60	2.39	3.69	2.46	3.53	2.35
6	0.10	0.07	0.15	0.10	0.28	0.19
7	1.74	1.15	1.66	1.10	1.74	1.15
8	0.18	0.12	0.14	0.09	0.03	0.02
9	0.18	0.12	0.27	0.18	0.21	0.14
10	0.02	0.02	0.06	0.04	0.11	0.07
11	0.15	0.10	0.17	0.12	0.16	0.11
12	0.11	0.07	0.13	0.08	0.23	0.16
13	0.51	0.34	0.54	0.36	0.50	0.33
14	0.17	0.11	0.10	0.06	0.09	0.06
15	0.06	0.04	0.08	0.06	0.13	0.09
16	0.17	0.11	0.17	0.12	0.16	0.11
17	0.55	0.37	0.51	0.34	0.50	0.33
18	0.07	0.05	0.19	0.13	0.24	0.16
19	0.52	0.35	0.55	0.37	0.52	0.35
20	0.15	0.10	0.15	0.10	0.08	0.05
21	0.06	0.04	0.06	0.04	0.12	0.08
22	0.11	0.08	0.15	0.10	0.15	0.10
23	0.47	0.31	0.47	0.32	0.47	0.31
24	0.06	0.04	0.16	0.10	0.21	0.14
25	0.38	0.25	0.40	0.26	0.38	0.25
26	0.13	0.09	0.06	0.04	0.11	0.07
27	0.02	0.01	0.04	0.03	0.11	0.07
28	0.07	0.05	0.13	0.09	0.15	0.10
29	0.36	0.24	0.40	0.27	0.39	0.26
30	0.02	0.02	0.13	0.09	0.17	0.11
31	0.40	0.27	0.35	0.23	0.36	0.24
32	0.09	0.06	0.07	0.05	0.10	0.07

Order	Phase L1		Phase L2		Phase L3	
	IRMS	HDF	IRMS	HDF	IRMS	HDF
	[A]	[%]	[A]	[%]	[A]	[%]
33	0.04	0.03	0.03	0.02	0.11	0.07
34	0.04	0.03	0.08	0.06	0.09	0.06
35	0.33	0.22	0.36	0.24	0.38	0.25
36	0.07	0.05	0.09	0.06	0.15	0.10
37	0.34	0.23	0.31	0.21	0.33	0.22
38	0.06	0.04	0.03	0.02	0.06	0.04
39	0.05	0.04	0.04	0.03	0.03	0.02
40	0.03	0.02	0.05	0.03	0.05	0.04
41	0.21	0.14	0.23	0.16	0.24	0.16
42	0.05	0.03	0.02	0.01	0.06	0.04
43	0.25	0.17	0.21	0.14	0.16	0.10
44	0.06	0.04	0.04	0.03	0.07	0.04
45	0.04	0.03	0.04	0.03	0.01	0.01
46	0.03	0.02	0.04	0.03	0.01	0.01
47	0.18	0.12	0.16	0.11	0.14	0.09
48	0.10	0.06	0.06	0.04	0.13	0.09
49	0.18	0.12	0.14	0.09	0.11	0.08
50	0.06	0.04	0.02	0.02	0.04	0.02
Total	**151.24**	**2837%**	**150.86**	**2889%**	**151.02**	**2838%**

10.15.3 Terra 94

Working point	Electric load	V_{thd} (L1/L2/L3)			I_{thd} (L1/L2/L3)		
900 V / 100 A	100 %	0.655 %	0.742 %	0.701 %	2816 %	2976 %	2804 %

Order	Phase L1		Phase L2		Phase L3	
	IRMS	HDF	IRMS	HDF	IRMS	HDF
	[A]	[%]	[A]	[%]	[A]	[%]
1	112.64	100.00	112.31	100.00	112.48	100.00
2	0.05	0.04	0.23	0.21	0.23	0.20
3	0.34	0.30	0.21	0.19	0.39	0.35
4	0.20	0.18	0.13	0.12	0.05	0.05
5	2.54	2.25	2.63	2.34	2.48	2.21
6	0.11	0.10	0.08	0.07	0.16	0.14
7	1.51	1.35	1.67	1.49	1.47	1.31
8	0.14	0.13	0.14	0.13	0.06	0.06
9	0.16	0.15	0.13	0.12	0.20	0.18

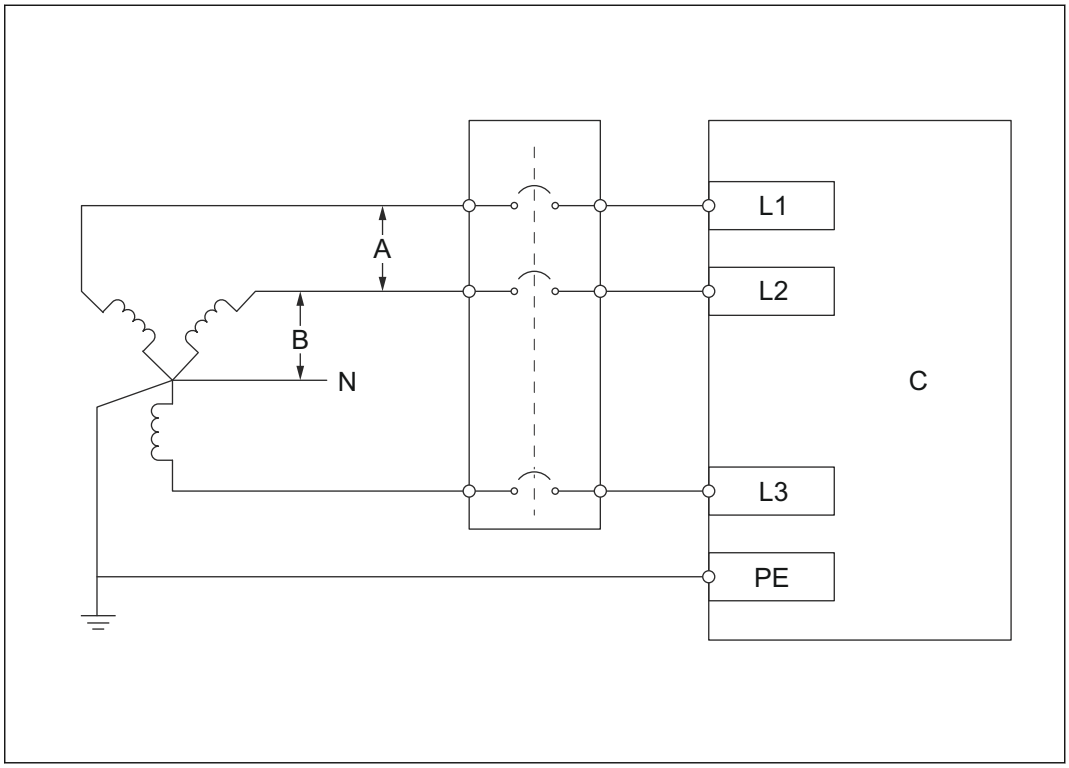
Order	Phase L1		Phase L2		Phase L3	
	IRMS	HDF	IRMS	HDF	IRMS	HDF
	[A]	[%]	[A]	[%]	[A]	[%]
10	0.06	0.06	0.05	0.05	0.03	0.03
11	0.16	0.14	0.16	0.14	0.14	0.12
12	0.07	0.07	0.13	0.11	0.18	0.16
13	0.34	0.30	0.43	0.39	0.41	0.36
14	0.12	0.10	0.10	0.09	0.06	0.06
15	0.07	0.06	0.02	0.02	0.10	0.09
16	0.08	0.08	0.13	0.12	0.11	0.10
17	0.43	0.38	0.42	0.37	0.43	0.38
18	0.06	0.05	0.13	0.12	0.20	0.18
19	0.35	0.31	0.41	0.37	0.37	0.33
20	0.09	0.08	0.06	0.05	0.08	0.07
21	0.02	0.02	0.05	0.05	0.07	0.06
22	0.11	0.10	0.12	0.11	0.12	0.11
23	0.33	0.29	0.34	0.30	0.31	0.27
24	0.04	0.03	0.15	0.13	0.17	0.15
25	0.28	0.25	0.34	0.30	0.31	0.27
26	0.10	0.09	0.06	0.06	0.09	0.08
27	0.02	0.02	0.04	0.04	0.06	0.06
28	0.10	0.09	0.07	0.07	0.14	0.13
29	0.26	0.23	0.25	0.22	0.30	0.26
30	0.04	0.04	0.09	0.08	0.13	0.12
31	0.29	0.26	0.29	0.26	0.24	0.21
32	0.09	0.08	0.05	0.05	0.08	0.07
33	0.04	0.04	0.05	0.04	0.09	0.08
34	0.07	0.06	0.11	0.09	0.13	0.11
35	0.26	0.23	0.21	0.19	0.25	0.22
36	0.05	0.04	0.11	0.10	0.19	0.17
37	0.23	0.21	0.24	0.22	0.21	0.18
38	0.06	0.05	0.09	0.08	0.08	0.07
39	0.06	0.05	0.02	0.02	0.06	0.05
40	0.07	0.06	0.05	0.05	0.08	0.07
41	0.16	0.15	0.16	0.14	0.16	0.14
42	0.02	0.02	0.06	0.05	0.07	0.06
43	0.15	0.13	0.13	0.12	0.09	0.08
44	0.06	0.05	0.03	0.03	0.05	0.04
45	0.10	0.09	0.04	0.03	0.07	0.07
46	0.06	0.06	0.07	0.07	0.09	0.08
47	0.12	0.10	0.10	0.09	0.11	0.10

Order	Phase L1		Phase L2		Phase L3	
	IRMS	HDF	IRMS	HDF	IRMS	HDF
	[A]	[%]	[A]	[%]	[A]	[%]
48	0.10	0.09	0.12	0.11	0.20	0.17
49	0.08	0.07	0.11	0.10	0.10	0.09
50	0.04	0.04	0.06	0.05	0.08	0.07
Total	**112.69**	**2816%**	**112.36**	**2976%**	**112.53**	**2804%**

10.16 AC input specifications

10.16.1 General AC input specifications

Parameter	Specification
Input AC power connection	3P + PE (WYE input)
Input voltage range	480 VAC +/- 10% (60 Hz)
Power factor at full load	> 0.96
Efficiency	> 94% at nominal output power
Total harmonic distortion (current)	< 5%



A Input voltage between phase and neutral
B Input voltage between two phases
C Upstream breaker in the power distribution board
D EVSE

Parameter	Specification
Input voltage A	480 V
Input voltage B	277 V

The EVSE must be wired with a WYE input, as shown in the diagram. Do not connect a neutral wire to the EVSE.

10.16.2 AC input wires

Parameter	Specification
Wire shielding (optional)	If the local rules require shielded wires, connect the wire shielding to the PE rail at both ends of the wire.
Diameter of the phase conductors	Refer to the local rules.
Diameter of the PE conductor	Refer to the local rules
Surface and diameter	Based on current rating of the EVSE and local regulations
Material	Copper and aluminium
Maximum temperature of the input wires	75 °C (167 °F)
Diameter of each AC wire, including shielding	34 to 45 mm (1.3 - 1.8 in)

10.16.3 Terra 94

Parameter	Specification
Maximum rated input current	115 A
Recommended input circuit breaker	150 A
Maximum power dissipation	95.7 kVA
Short circuit current rating	65 kA
Maximum size of the input wire	500 kcmil

Note: Power limiting is possible via software configuration.

10.16.4 Terra 104

Parameter	Specification
Maximum rated input current	130 A
Recommended input circuit breaker	175 A
Maximum power dissipation	106.3 kVA
Short circuit current rating	65 kA
Maximum size of the input wire	500 kcmil

Note: Power limiting is possible via software configuration.

10.16.5 Terra 124

Parameter	Specification
Maximum rated input current	153 A
Recommended input circuit breaker	200 A
Maximum power dissipation	127.2 kVA
Short circuit current rating	65 kA
Maximum size of the input wire	500 kcmil

Note: Power limiting is possible via software configuration.

10.16.6 Terra 184

Parameter	Specification
Maximum rated input current	230 A
Recommended input circuit breaker	300 A
Maximum power dissipation	191.3 kVA
Short circuit current rating	65 kA
Maximum size of the input wire	500 kcmil

Note: Power limiting is possible via software configuration.

10.17 DC output specifications

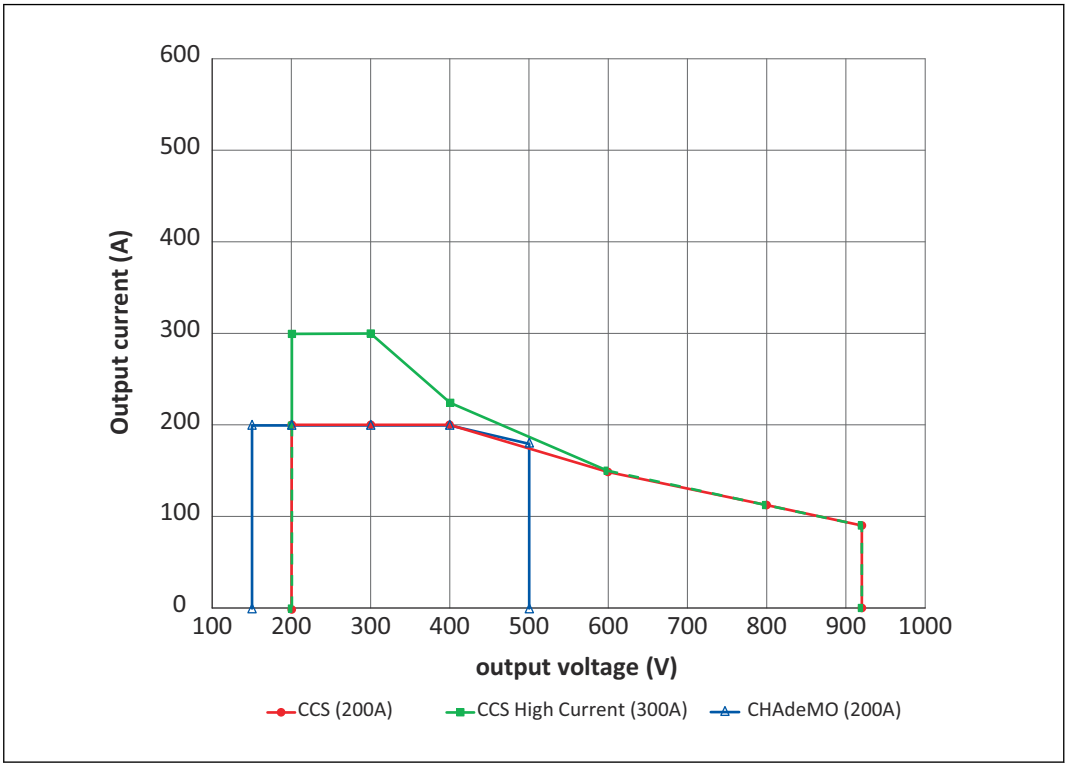
10.17.1 General specifications

Parameter	Specification
DC output voltage range, CCS	200-920 V DC
DC output voltage range, CHAdeMO	150-500 V DC (In Japan 150-450 V DC)
Minimum DC output current	15 A
Connection standard	CHAdeMO 1.2
	CCS (IEC 61851-23:2014 , IEC62196-1: 2014, IEC 62196-3: 2014)

10.17.2 Terra 94

Parameter	Specification
DC output power on one EV charge cable	Maximum 90 kW
Simultaneous DC on two outlets	No. One DC output operates at a time.
Maximum DC output current	CCS: 200 A or 300 A (high current model) CHAdeMO: 200 A

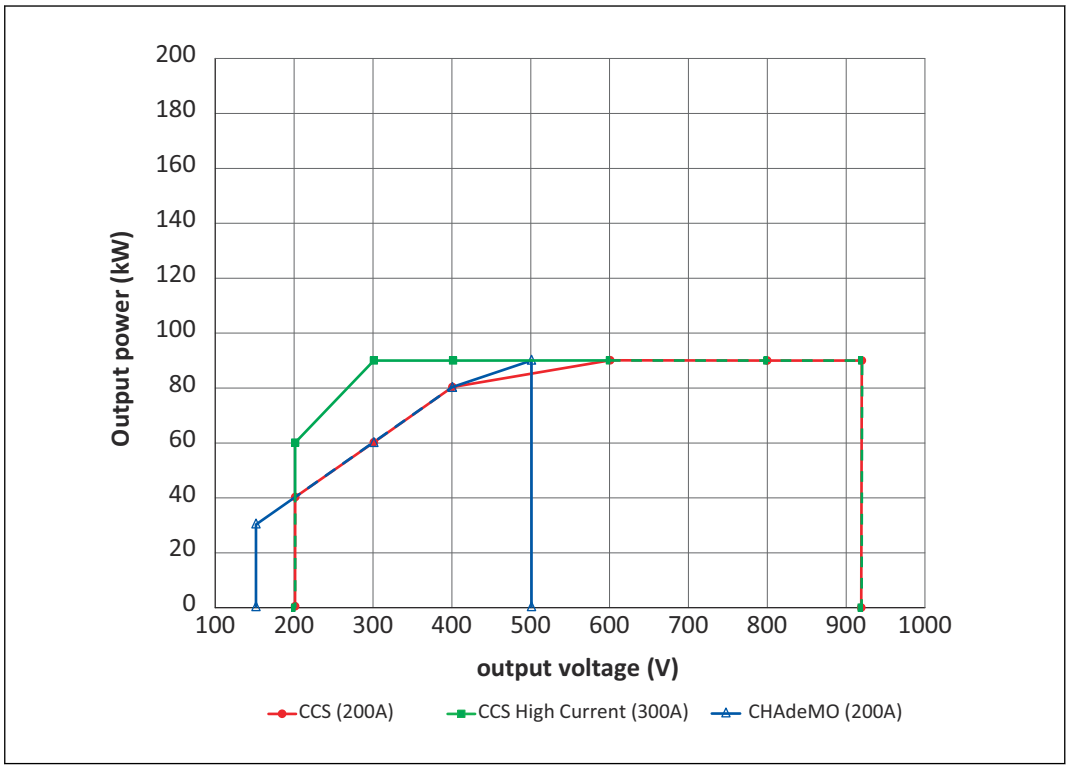
Output current in function of output voltage



Charger Capacity

Voltage [V]	Current [A]	Power [kW]
150	0	0
150	240	36
200	300	60
300	300	90
400	225	90
600	150	90
800	113	90
920	90	90

Output power in function of output voltage

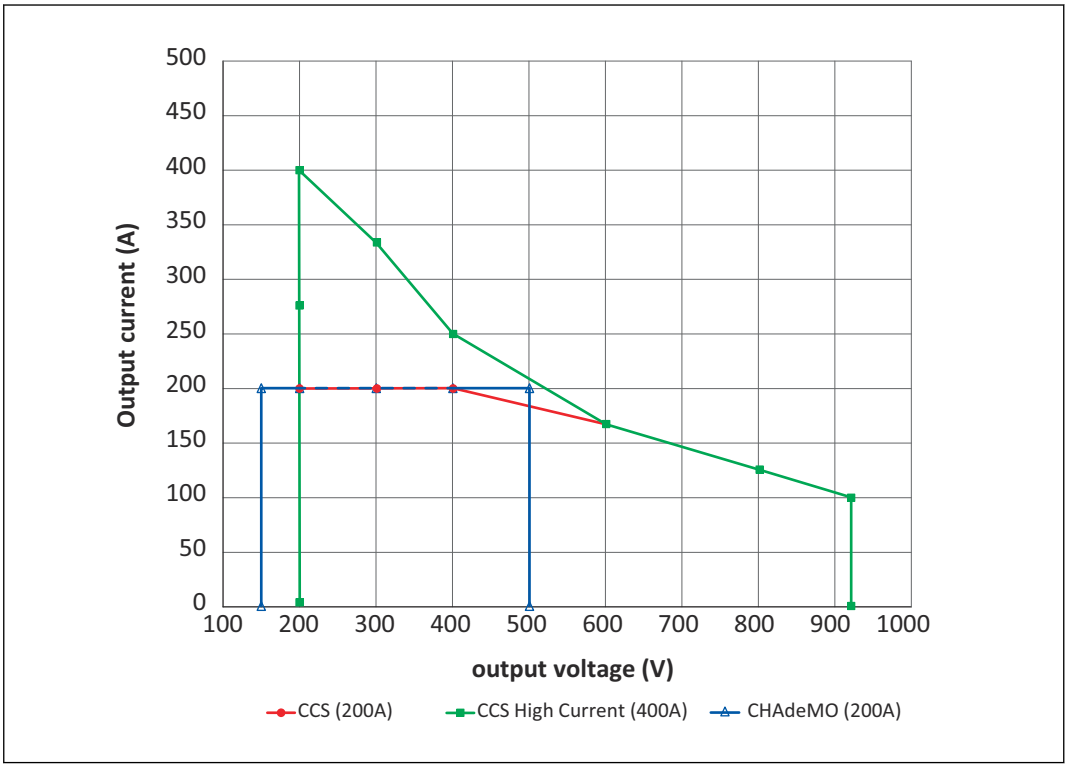


CHAdeMO		CCS			
200 A		**200 A**		**High Current 300 A**	
Current [A]	**Power [kW]**	**Current [A]**	**Power [kW]**	**Current [A]**	**Power [kW]**
0	0	0	0	0	0
200	30	200	40	300	60
200	40	200	60	300	90
200	60	200	80	225	90
200	80	150	90	150	90
180	90	113	90	113	90

10.17.3 Terra 104

Parameter	Specification
DC output power on one EV charge cable	Maximum 100 kW
DC output power two EV charge cables	Maximum 50 kW
Simultaneous DC on two outlets	Yes. Two DC outputs operate in parallel.
Maximum DC output current	CCS: 200 A or 400 A (high current model) CHAdeMO: 200 A

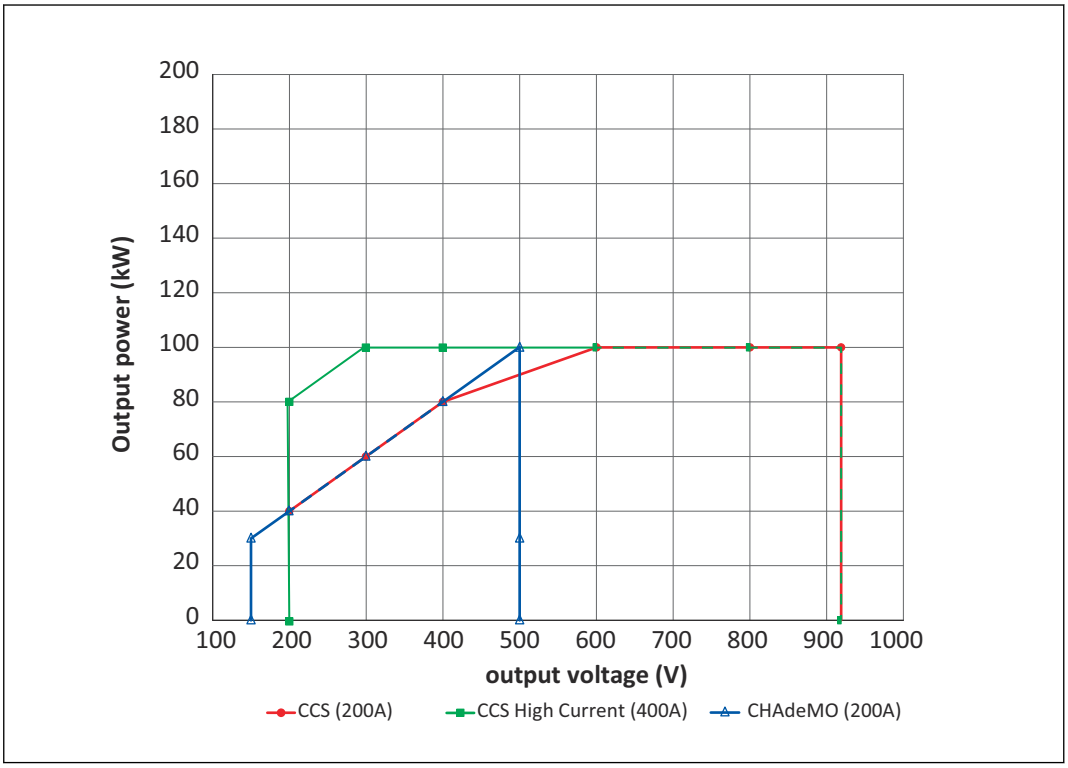
Output current in function of output voltage (one charge session)



Charger Capacity

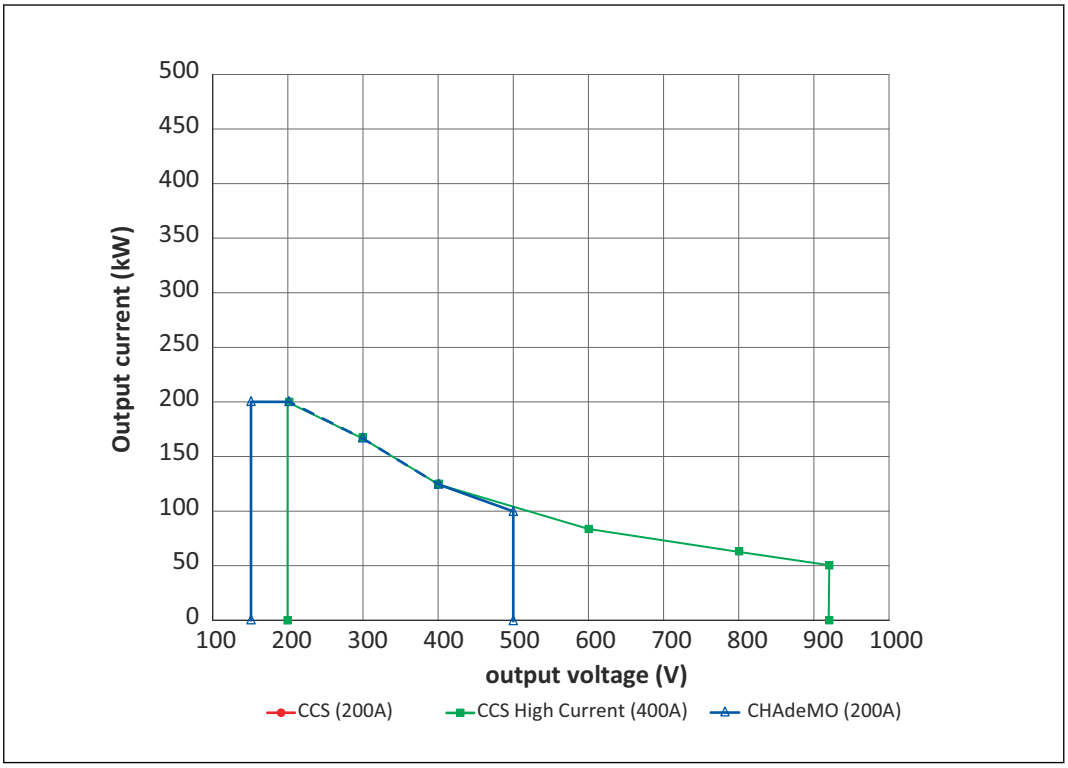
Voltage [V]	Current [A]	Power [kW]
150	0	0
150	320	48
200	400	80
300	333	100
400	250	100
600	167	100
800	125	100
920	109	100

Output power in function of output voltage (one charge session)



CHAdeMO		CCS			
200 A		**200 A**		**High Current 400 A**	
Current [A]	**Power [kW]**	**Current [A]**	**Power [kW]**	**Current [A]**	**Power [kW]**
0	0	0	0	0	0
200	30	200	40	400	80
200	40	200	60	333	100
200	60	200	80	250	100
200	80	167	100	167	100
200	100	125	100	125	100

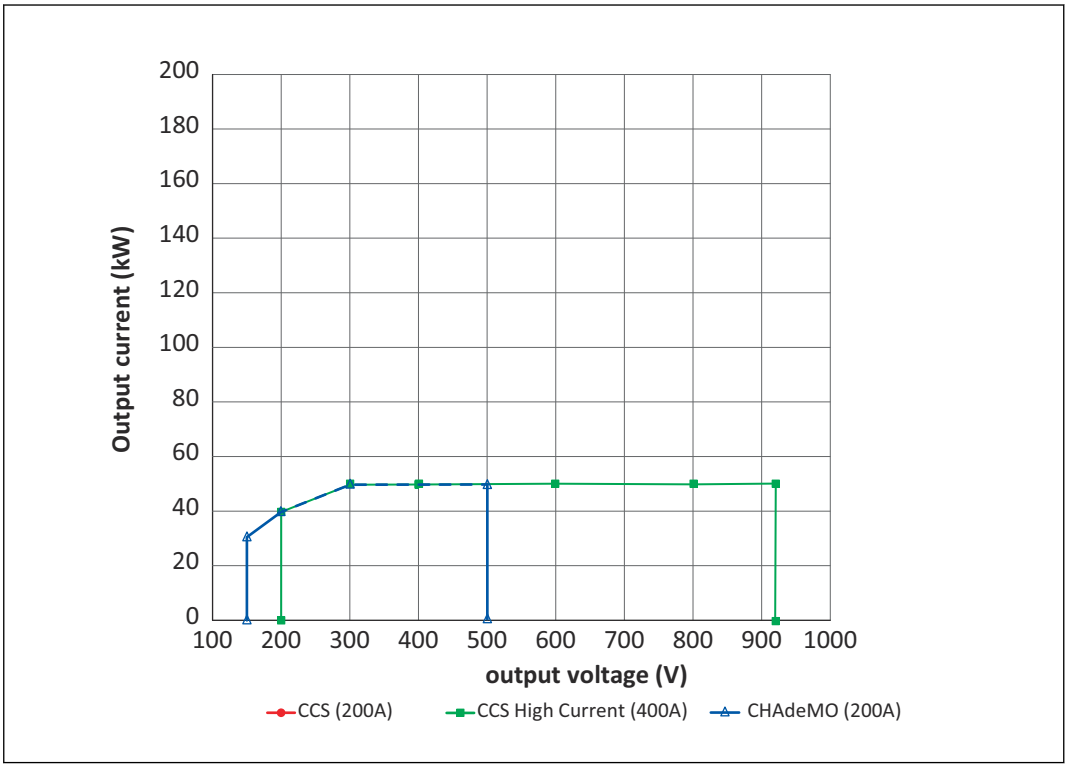
Output current in function of output voltage (two charge sessions)



Charger Capacity

Voltage [V]	Current [A]	Power [kW]
150	0	0
150	320	48
200	400	80
300	333	100
400	250	100
600	167	100
800	125	100
920	109	100

Output power in function of output voltage (two charge sessions)

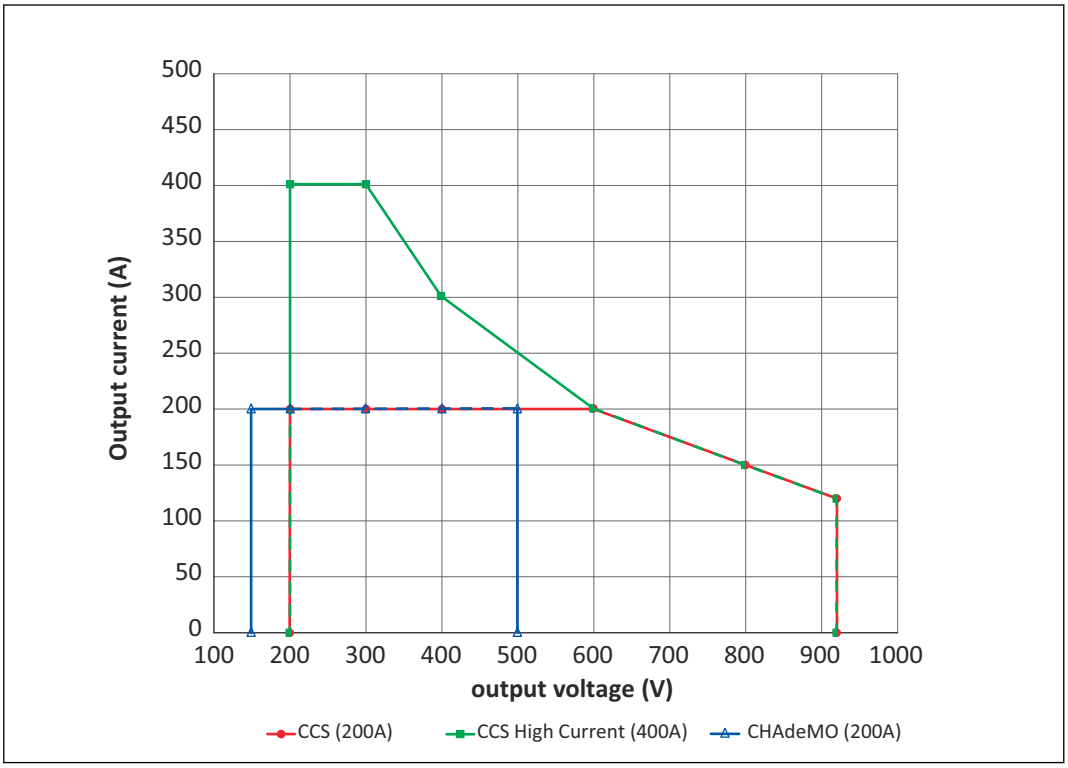


CHAdeMO		CCS			
200 A		**200 A**		**High Current 400 A**	
Current [A]	**Power [kW]**	**Current [A]**	**Power [kW]**	**Current [A]**	**Power [kW]**
0	0	0	0	0	0
200	30	200	40	200	40
200	40	167	50	167	50
167	50	125	50	125	50
125	50	83	50	83	50
100	50	63	50	63	50

10.17.4 Terra 124

Parameter	Specification
DC output power on one EV charge cable	Maximum 120 kW
DC output power two EV charge cables	Maximum 60 kW
Simultaneous DC on two outlets	Yes. Two DC outputs operate in parallel.
Maximum DC output current	CCS: 200 A or 400 A (high current model) CHAdeMO: 200 A

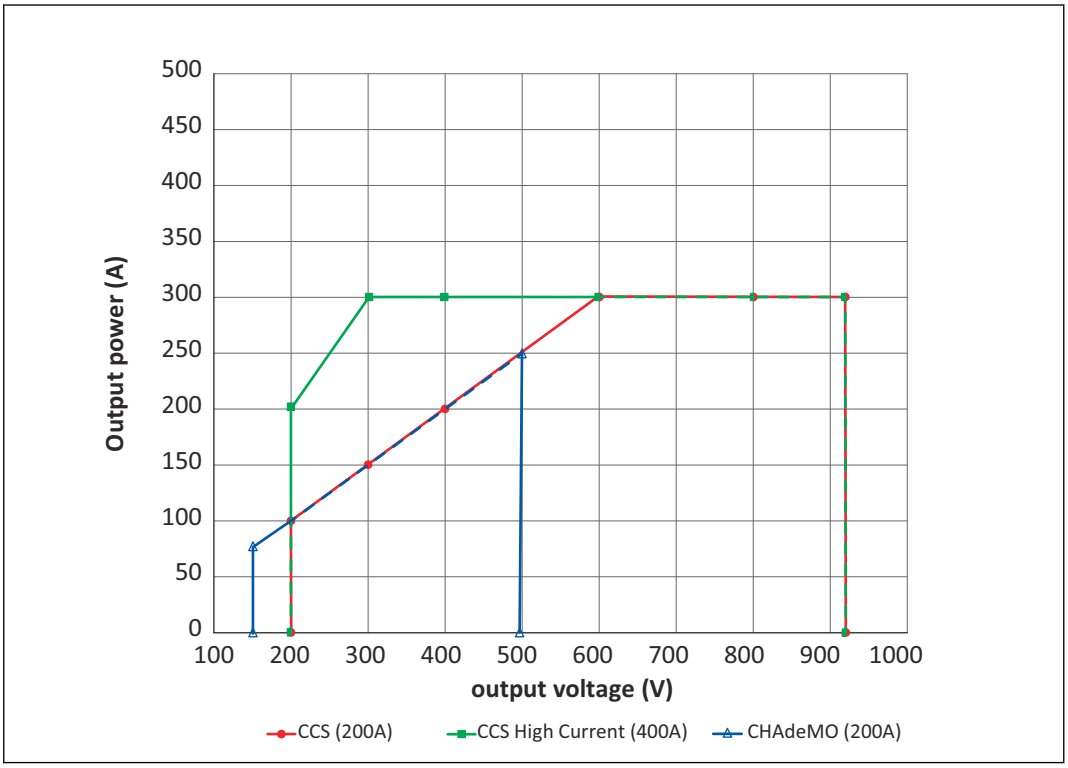
Output current in function of output voltage (one charge session)



Charger Capacity

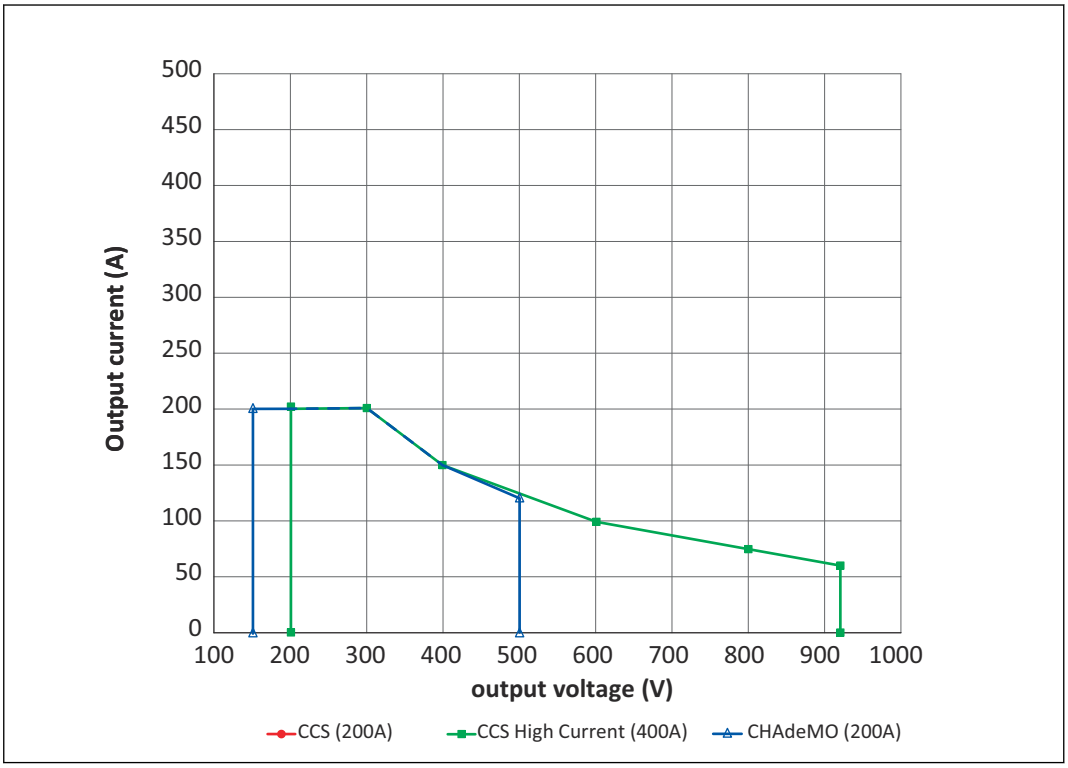
Voltage [V]	Current [A]	Power [kW]
150	0	0
150	320	48
200	400	80
300	400	120
400	300	120
600	200	120
800	150	120
920	120	120

Output power in function of output voltage (one charge session)



CHAdeMO		CCS			
200 A		**200 A**		**High Current 400 A**	
Current [A]	**Power [kW]**	**Current [A]**	**Power [kW]**	**Current [A]**	**Power [kW]**
0	0	0	0	0	0
200	30	200	40	400	80
200	40	200	60	400	120
200	60	200	80	300	120
200	80	200	120	200	120
200	100	150	120	150	120

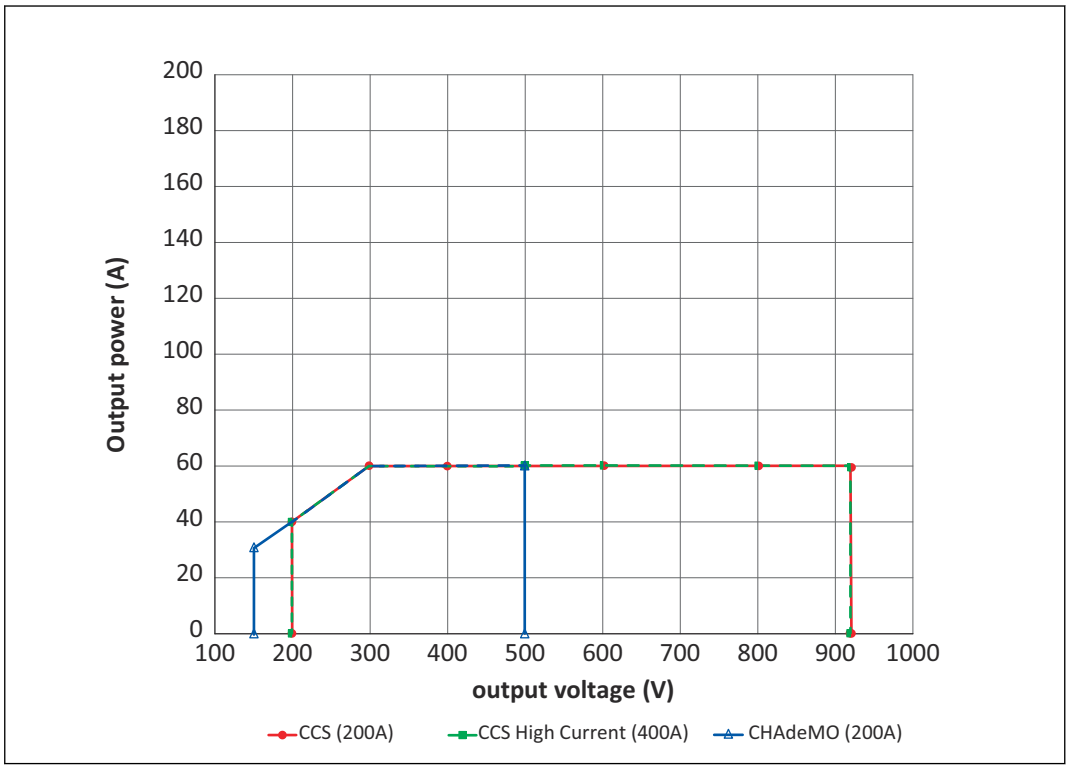
Output current in function of output voltage (two charge sessions)



Charger Capacity

Voltage [V]	Current [A]	P [kW]
50	0	0
150	320	48
200	400	80
300	400	120
400	300	120
600	200	120
800	150	120
920	120	120

Output power in function of output voltage (two charge sessions)

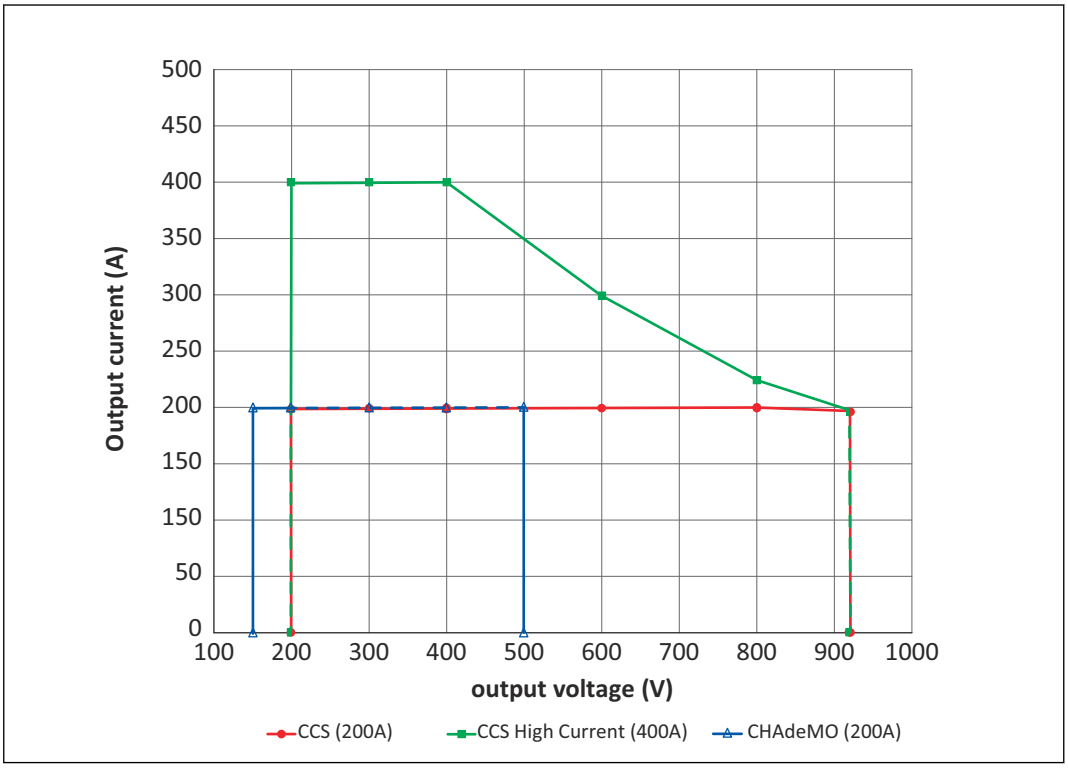


CHAdeMO		CCS			
200 A		**200 A**		**High Current 400 A**	
Current [A]	**Power [kW]**	**Current [A]**	**Power [kW]**	**Current [A]**	**Power [kW]**
0	0	0	0	0	0
200	30	200	40	200	40
200	40	200	60	200	60
200	60	150	60	150	60
150	60	100	60	100	60
120	60	75	60	75	60

10.17.5 Terra 184

Parameter	Specification
DC output power on one EV charge cable	Maximum 180 kW
DC output power on two EV charge cables	Maximum 90 kW
Simultaneous DC on 2 outlets	Yes. Two DC outputs operate in parallel.
Maximum DC output current	CCS: 200A or 400A (high current model) CHAdeMO: 200 A

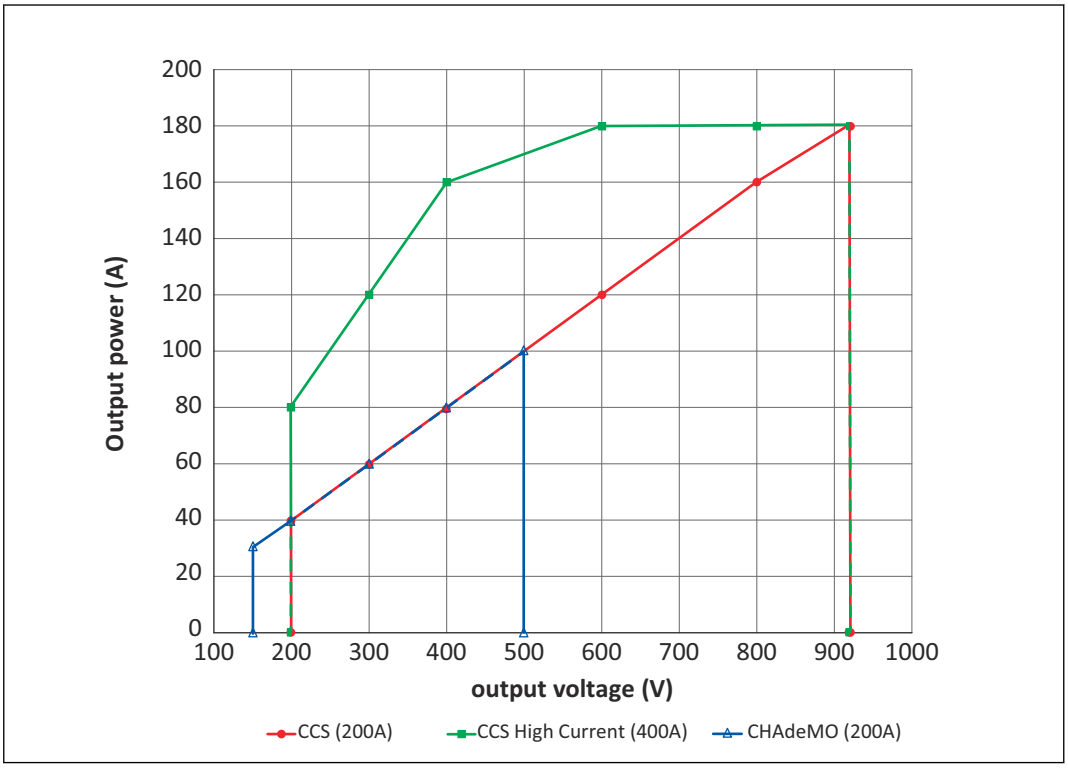
Output current in function of output voltage (one charge session)



Charger Capacity

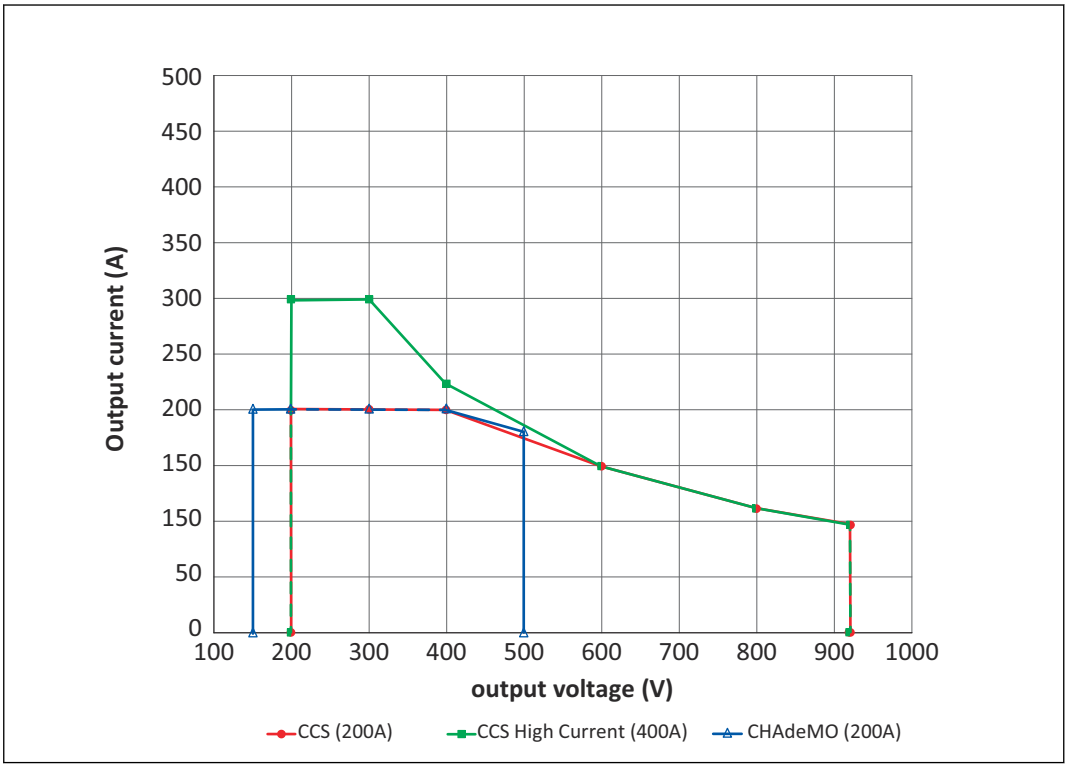
Voltage [V]	Current [A]	Power [kW]
150	0	0
150	480	72
200	600	120
300	600	180
400	450	180
600	300	180
800	225	180
920	196	180

Output power in function of output voltage (one charge session)



CHAdeMO		CCS			
200A		**200A**		**High Current 400A**	
Current [A]	**Power [kW]**	**Current [A]**	**Power [kW]**	**Current [A]**	**Power [kW]**
0	0	0	0	0	0
200	30	200	40	400	80
200	40	200	60	400	120
200	60	200	80	400	160
200	80	200	120	300	180
200	100	200	160	225	180

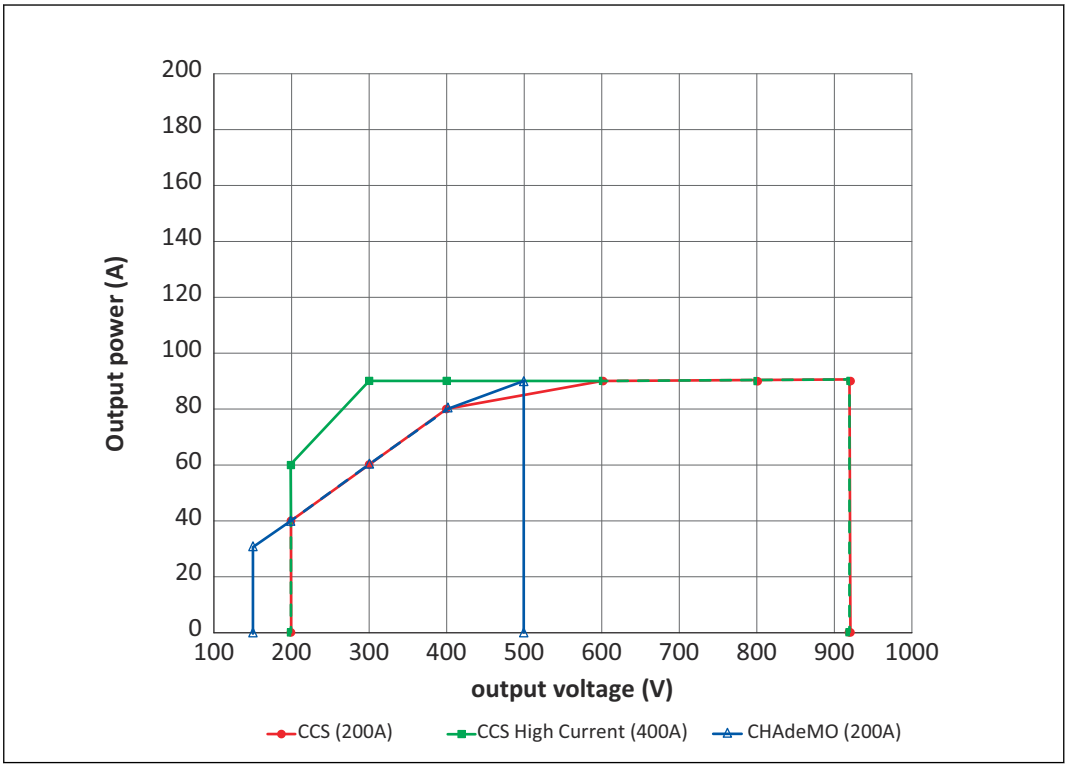
Output current in function of output voltage (two charge sessions)



Charger Capacity

Voltage [V]	Current [A]	Power [kW]
150	0	0
150	480	72
200	600	120
300	600	180
400	450	180
600	300	180
800	225	180
920	196	180

Output power in function of output voltage (two charge sessions)



CHAdeMO		CCS			
200A		**200A**		**High Current 400A**	
Current [A]	**Power [kW]**	**Current [A]**	**Power [kW]**	**Current [A]**	**Power [kW]**
CHAdeMO (200A)		CCS (200A)		CCS High Current (Peak 400A)	
Current (A)	Power (kW)	Current (A)	Power (kW)	Current (A)	Power (kW)
0	0	0	0	0	0
200	30	200	40	300	60
200	40	200	60	300	90
200	60	200	80	225	90
200	80	150	90	150	90
180	90	113	90	113	90

10.18 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.

10.19 In-rush current

Current peaks during the start of a charge session

Parameter	Specification [µs]
Duration of the current peaks on the AC input side	25

Maximum current peak (for 400V & 50 Hz and 480V & 60 Hz)

Parameter	Specification [A]
Terra 94	< 120
Terra 104/124	< 150
Terra 184	< 170

Rated peak withstand current [kA peak]

Parameter	Specification [kA]
Terra 94	6.625
Terra 104	6.625
Terra 124	6.625
Terra 184	6.625

Rated short-time withstand current [kA rms]

Parameter	Specification [kA]
Terra 94	2.65
Terra 104	2.65
Terra 124	2.65
Terra 184	2.65

10.20 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 200 A	-	I	I	I	I	R	I	I	I	I	R	I	I	I	I	R

Part name	Years after startup															
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
CPI Combo CCS	-	I	I	I	I	I	I	I	I	I	I	I	I	I	I	R
CPI CHAdeMO	-	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
CHAdeMO connector and cable	-	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I
Gun holders	-	I	I	I	I	I	I	I	I	I	I	I	I	I	I	I

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

10.21 Cleaning specifications

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

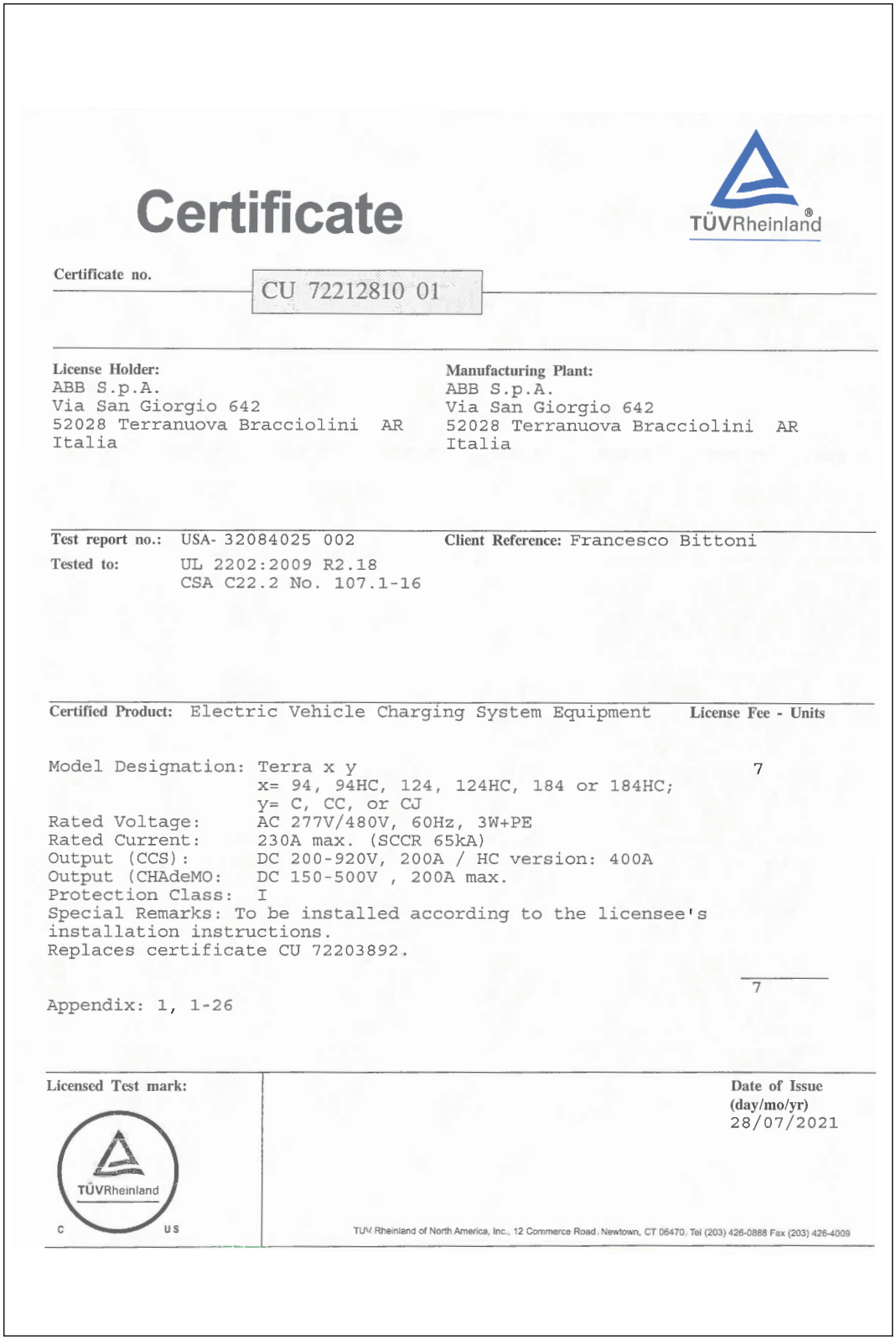
10.22 Spare parts

Part Name	Quantity
Air inlet filter	4
Air outlet filter	3
Cooling fan	2
Power module	3 x Terra 94 4 x Terra 104/124 6 x Terra 184
DC fuse 500 A DC fuse 600 A (for HC version)	1 x Terra x4 C 2 x Terra x4 CC/CJ/JJ
CPI Combo CCS	1 x Terra x4 C/CJ 2 x Terra x4 CC
CPI CHAdeMO	1 x Terra x4 CJ 2 x Terra x4 JJ
Touchscreen/CPU	1
DC outlet contactor	1 x Terra x4 C 2 x Terra x4 CC/CJ/JJ
Interlink contactor	2 x Terra x4 CC/CJ/JJ
Auxiliary power supply	1

Part Name	Quantity
CCS connector and cable	1 x Terra x4 C/CJ 2 x Terra x4 CC
CHAdeMO connector and cable	1 x Terra x4 CJ 2 x Terra x4 JJ
Gun holder	1 x for CCS type 1 UL connection
	1 x for CCS type 2 CE connection
	1 x for ChadeMo connection
Rain cap for the gun holder	1 x for CCS type 1 UL connection
	1 x for CCS type 2 CE connection
	1 x for ChadeMo connection

11 Appendix

11.1 Declaration of conformity



Certificate

TÜVRheinland®

Certificate no. CU 72212810 01

License Holder:
ABB S.p.A.
Via San Giorgio 642
52028 Terranuova Bracciolini AR
Italia

Manufacturing Plant:
ABB S.p.A.
Via San Giorgio 642
52028 Terranuova Bracciolini AR
Italia

Test report no.: USA- 32084025 002 **Client Reference:** Francesco Bittoni

Tested to: UL 2202:2009 R2.18
CSA C22.2 No. 107.1-16

Certified Product: Electric Vehicle Charging System Equipment **License Fee - Units**

Model Designation: Terra x y 7
x= 94, 94HC, 124, 124HC, 184 or 184HC;
y= C, CC, or CJ
Rated Voltage: AC 277V/480V, 60Hz, 3W+PE
Rated Current: 230A max. (SCCR 65kA)
Output (CCS): DC 200-920V, 200A / HC version: 400A
Output (CHAdeMO: DC 150-500V , 200A max.
Protection Class: I
Special Remarks: To be installed according to the licensee's installation instructions.
Replaces certificate CU 72203892.

7

Appendix: 1, 1-26

Licensed Test mark:

TÜVRheinland
C US

Date of Issue (day/mo/yr)
28/07/2021

TUV Rheinland of North America, Inc., 12 Commerce Road, Newtown, CT 06470, Tel (203) 426-0888 Fax (203) 426-4009