
User manual

Terra AC

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Contents

1	About this document.....	6
1.1	Function of this document.....	6
1.2	Target group.....	6
1.3	Revision history.....	6
1.4	Language.....	6
1.5	Illustrations.....	6
1.6	Units of measurement.....	6
1.7	Typographical conventions.....	6
1.8	How to use this document.....	6
1.9	General symbols and signal words.....	7
1.10	Special symbols for warnings and dangers.....	8
1.11	Related documents.....	8
1.12	Manufacturer and contact data.....	9
1.13	Abbreviations.....	9
1.14	Terminology.....	9
1.15	Orientation agreements.....	10
2	Description.....	11
2.1	Short description.....	11
2.2	Intended use.....	11
2.3	Product label (IEC portfolio).....	11
2.4	Product label (UL portfolio).....	12
2.5	Overview.....	13
2.5.1	Overview of the system.....	13
2.5.2	Overview of the EVSE, outside.....	13
2.5.3	Overview of the EVSE, inside (CE model).....	15
2.5.4	Overview of the EVSE, inside (MID model).....	16
2.5.5	Overview of the EVSE, inside (UL model).....	17
2.5.6	Overview of the EVSE, inside (UL model with display).....	18
2.6	Options.....	19
2.6.1	Display.....	19
2.6.2	EV charge cable, Type 2.....	19
2.6.3	Socket, Type 2.....	19
2.6.4	EV charge cable, Type 1 (UL portfolio).....	20
2.6.5	Load management	20
2.7	Control elements.....	21
2.7.1	LED indicators.....	21
2.8	Description of the ChargerSync app for the EVSE	22
2.8.1	General description of the lay-out of the ChargerSync app.....	23
2.8.2	General description of the buttons and colors.....	23

2.8.3	Overview of the menus.....	24
2.8.4	Errors.....	25
2.9	Description of the display screens (option).....	25
2.9.1	Boot screen.....	25
2.9.2	Standby/Idle screen.....	25
2.9.3	Authorization screen.....	26
2.9.4	Preparing to charge screen.....	26
2.9.5	Charging screen.....	26
2.9.6	Charging completed screen.....	27
2.9.7	Fault detected display messages.....	27
3	Safety.....	29
3.1	Liability.....	29
3.2	Responsibilities for the owner.....	29
3.3	Personal protective equipment.....	30
3.4	FCC compliance statement.....	30
3.5	Industry Canada compliance statement.....	30
3.6	General safety instructions.....	31
3.7	Safety instructions for use.....	31
3.8	Safety instructions during cleaning or maintenance.....	31
3.9	Signs on the EVSE.....	32
3.10	Discard the EVSE or parts of the EVSE.....	32
3.11	Special safety instructions (UL portfolio).....	33
3.11.1	Important safety instructions (UL portfolio).....	33
4	Operation.....	34
4.1	Prepare before use.....	34
4.2	Energize the EVSE.....	34
4.3	Connect the EVSE with the ChargerSync app.....	34
4.4	Start a charge session.....	35
4.4.1	EVSE with an EV charge cable.....	35
4.4.2	EVSE with a socket.....	35
4.5	Wake up the EV when it is unavailable.....	35
4.5.1	Wake up the EV (EVSE without display).....	35
4.5.2	Wake up the EV (EVSE with display).....	36
4.6	Stop a charge session.....	36
4.6.1	EVSE with an EV charge cable.....	36
4.6.2	EVSE with a socket.....	36
4.7	Wrap the EV charge cable around the enclosure.....	37
5	Maintenance and cleaning.....	38
5.1	Maintenance schedule.....	38
5.2	Clean the cabinet.....	38

5.3	Do a check on the cabinet.....	39
6	Troubleshooting.....	40
6.1	Troubleshooting procedure.....	40
6.2	Troubleshooting table (IEC portfolio).....	40
6.3	Troubleshooting table (UL portfolio).....	43
6.4	De-energize the EVSE.....	46
7	Technical data.....	47
7.1	EVSE Type.....	47
7.2	General specifications.....	48
7.3	Meter specifications for a MID certified EVSE (IEC portfolio).....	49
7.4	Ambient conditions.....	49
7.5	Noise level.....	49
7.6	Dimensions.....	50
	7.6.1 AC input with socket, cable Type 2.....	50
	7.6.2 AC input with EV charge cable.....	51
	7.6.3 Space requirements for installation.....	51
7.7	AC input specifications.....	52
	7.7.1 General specifications.....	52
	7.7.2 AC input specifications (IEC portfolio).....	52
	7.7.3 AC input specifications (UL portfolio).....	53
7.8	AC output specifications.....	53
	7.8.1 AC output specifications (IEC portfolio).....	53
	7.8.2 AC output specifications (UL portfolio).....	53
7.9	Cleaning specifications.....	53

1 About this document

1.1 Function of this document

The document is only applicable for this EVSE (Terra AC), including the variants and options listed in section 7.1.

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

- Use the EVSE
- Do basic maintenance tasks

1.2 Target group

The document is intended for the owner of the EVSE.

For a description of the responsibilities of the owner, refer to section 3.2.

1.3 Revision history

Version	Date	Description
001	March 2020	Initial version
002	April 2021	Complete document over-haul

1.4 Language

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

1.5 Illustrations

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

1.6 Units of measurement

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

1.7 Typographical conventions

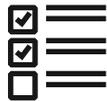
The lists and steps in procedures have numbers (123) or letters (abc) if the sequence is important.

1.8 How to use this document

1. Make sure that you know the structure and contents of this document.
2. Read the safety chapter and make sure that you know all the instructions.

3. Do the steps in the procedures fully and in the correct sequence.
4. Keep the document in a safe location that you can easily access. This document is a part of the EVSE.

1.9 General symbols and signal words

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

Signal word	Description	Symbol
-	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



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

1.11

Related documents

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

You can find all related documents here: <https://new.abb.com/ev-charging/terra-ac-wallbox>.

1.12 Manufacturer and contact data

Manufacturer

ABB EV Infrastructure
George Hintzenweg 81
3068 AX, Rotterdam
The Netherlands

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
CAN	Controller area network
CPU	Central processing unit
DC	Direct current
EMC	Electromagnetic compatibility
EV	Electric vehicle
EVSE	Electric vehicle supply equipment
MID	Measuring Instruments Directive
NFC	Near field communication
NoBo	Notified body
OCPP	Open charge point protocol
PE	Protective earth
PPE	Personal protective equipment
RFID	Radio-frequency identification



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

1.14 Terminology

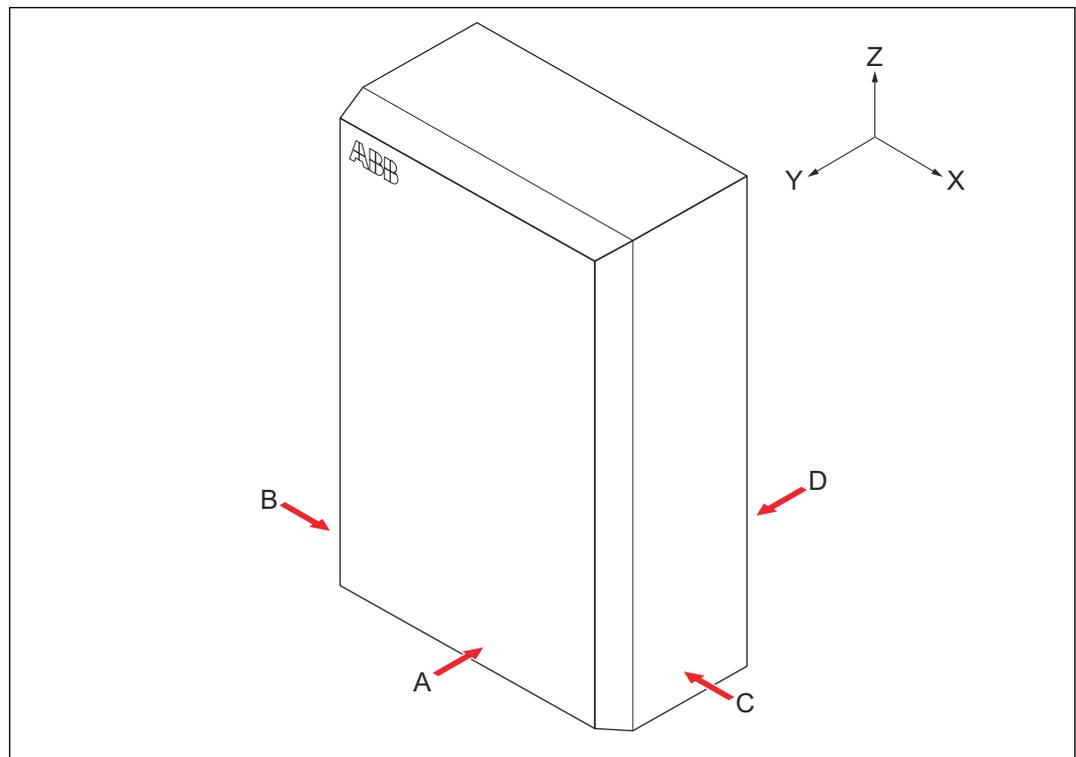
Term	Definition
Network operating center of the manufacturer	Facility of the manufacturer to do a remote check on the correct operation of the EVSE
Cabinet	Enclosure of the EVSE, including the components on the inside
Contractor	Third party that the owner or site operator hires to do engineering, civil and electrical installation work

Term	Definition
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 Description

2.1 Short description

The EVSE (Terra AC) is an AC charging station that you can use to supply electricity to an EV. The Terra AC offers tailor-made, intelligent and network charging solutions for your company or home. The EVSE can connect to the internet via GSM, WiFi or LAN.

2.2 Intended use

The EVSE is intended for the AC charging of EVs. The EVSE is intended for indoor or outdoor use.

The technical data of the EVSE must comply with the properties of the electrical grid, the ambient conditions and the EV. Refer to chapter 7.

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

The EVSE AC input is intended for a hardwired installation that complies with the applicable national regulations.

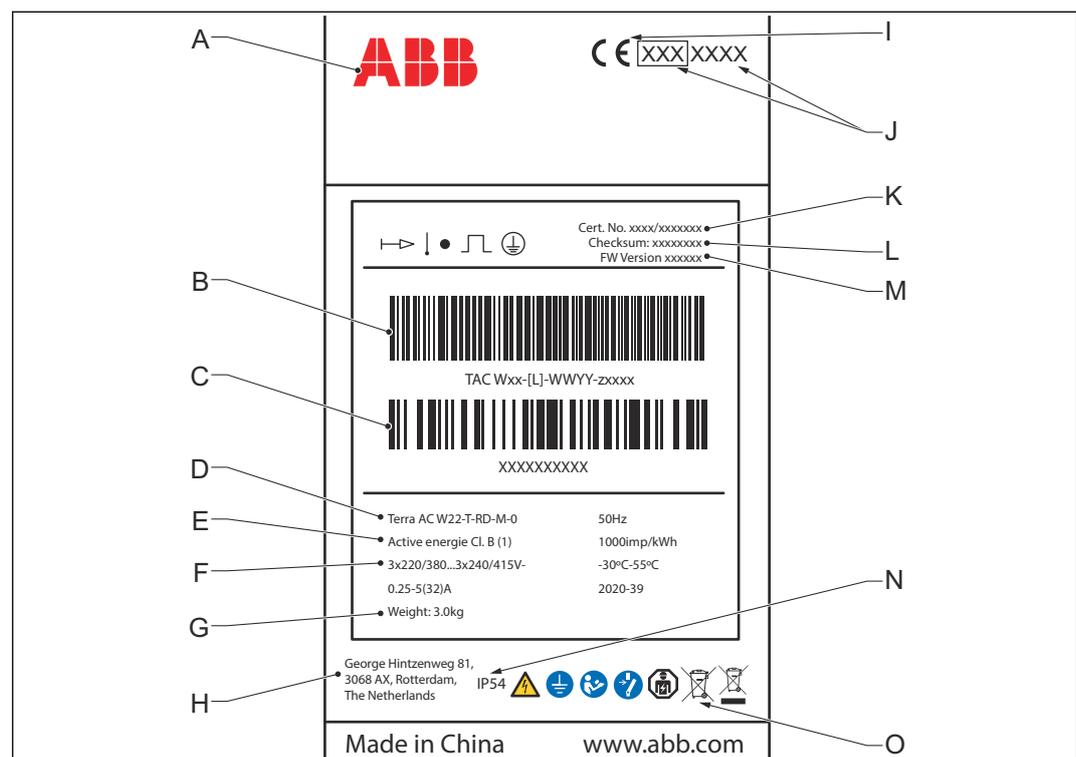


Danger:

General risk

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

2.3 Product label (IEC portfolio)



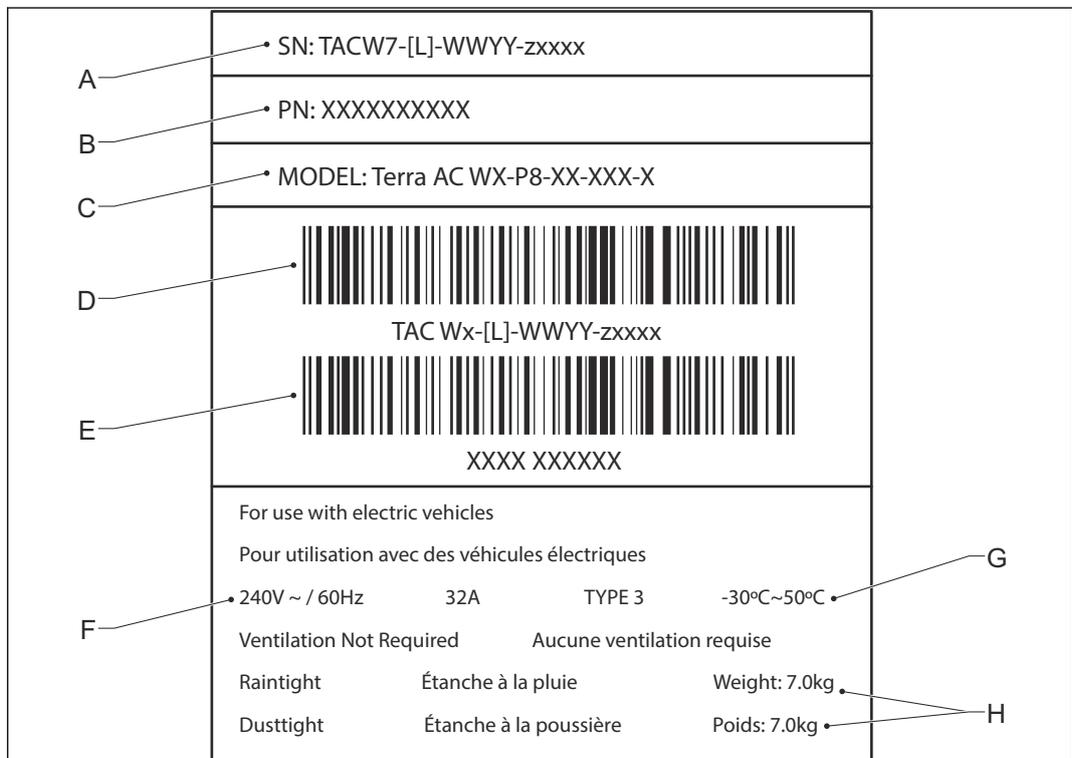
Description

A	Brand	I	CE mark
B	Barcode with the serial number	J	MID mark and notified body number
C	Barcode with the part number of the EVSE	K	MID certificate number
D	Product model number	L	MID software checksum
E	MID accuracy class	M	MID FW version
F	EVSE rating	N	Ingress protection rating
G	Mass of the EVSE	O	Reference to the manual
H	Address of the manufacturer		



Note: The data in the illustration is only an example. Find the product label on your EVSE to see the applicable data. Refer to section 2.5.2.

2.4 Product label (UL portfolio)



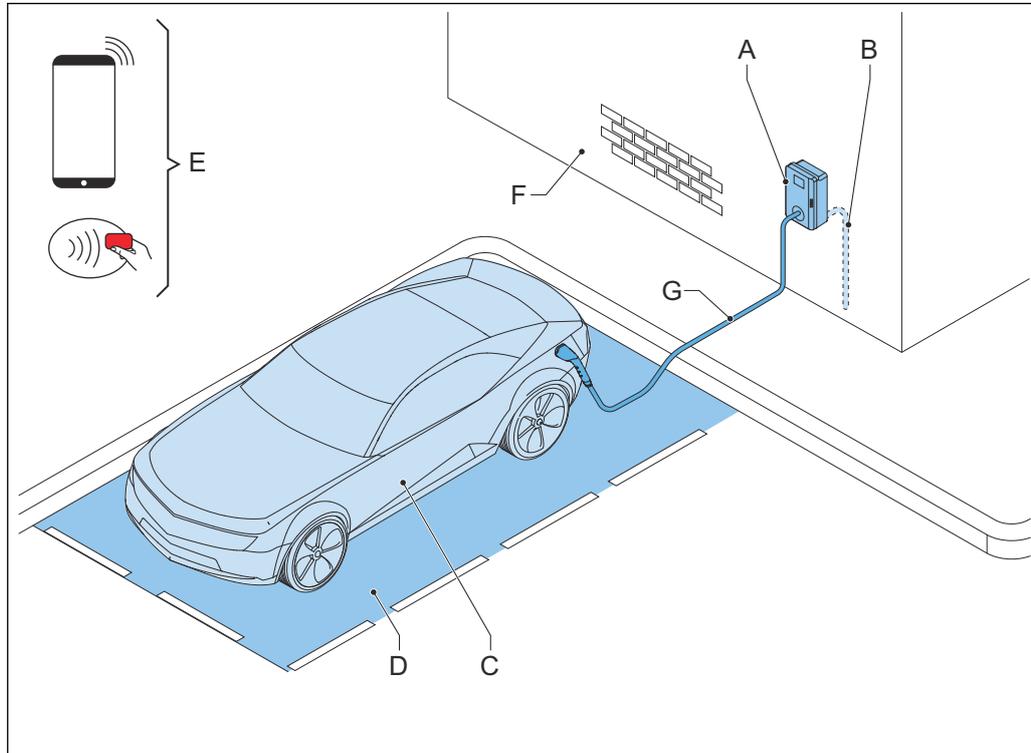
A	Serial number	E	Barcode with the part number of the EVSE
B	Part number of the EVSE	F	Power rating of the EVSE
C	Product model number	G	Ambient temperature
D	Barcode with the serial number of the EVSE	H	Mass of the EVSE



Note: The data in the illustration is only an example. Find the product label on your EVSE to see the applicable data. Refer to section 2.5.2.

2.5 Overview

2.5.1 Overview of the system



A	EVSE	E	RFID card or smartphone
B	AC grid input	F	Structure to install the EVSE on
C	EV	G	EV charge cable
D	Parking space		

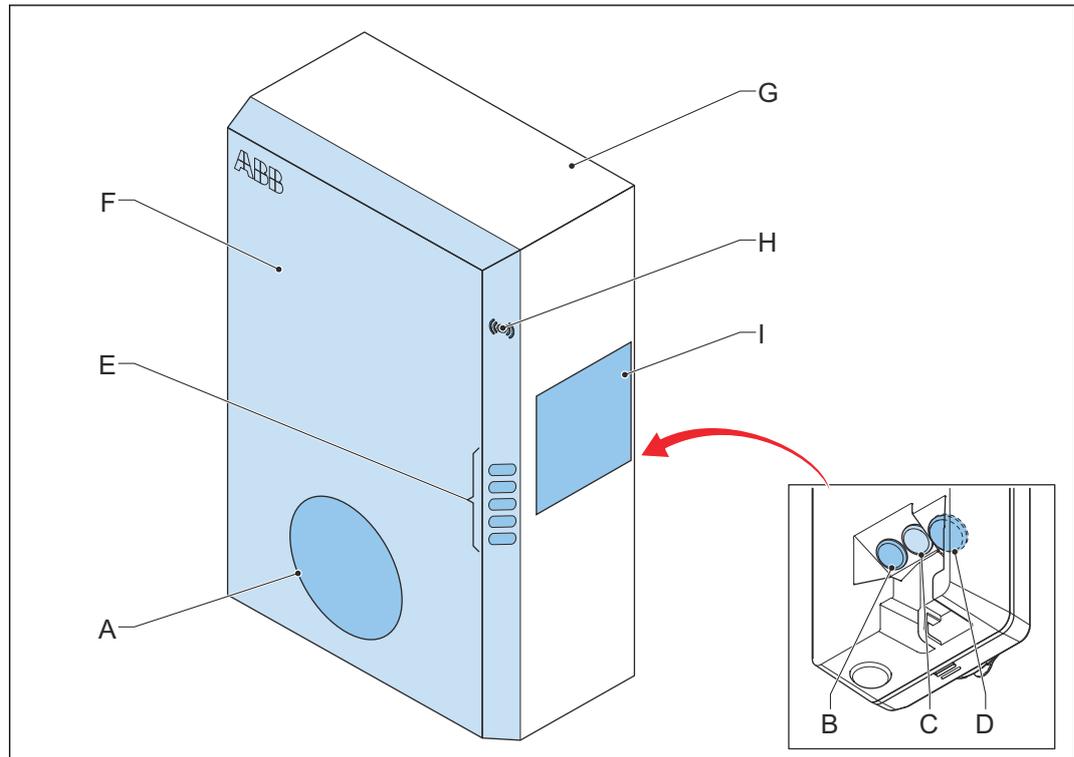
Part	Function
EVSE	Refer to section 2.2.
Structure	To install the EVSE on and to keep the EVSE in position.
AC grid input	To supply the electricity to the EVSE
EV charge cable	To conduct the current from the EVSE to the EV
EV	The EV of which the batteries need to be charged
Parking space	Location for the EV during the charge session
RFID card or smartphone	To authorize the user to use the EVSE

2.5.2 Overview of the EVSE, outside



Note: The illustration shows the EVSE model without a display.

Description

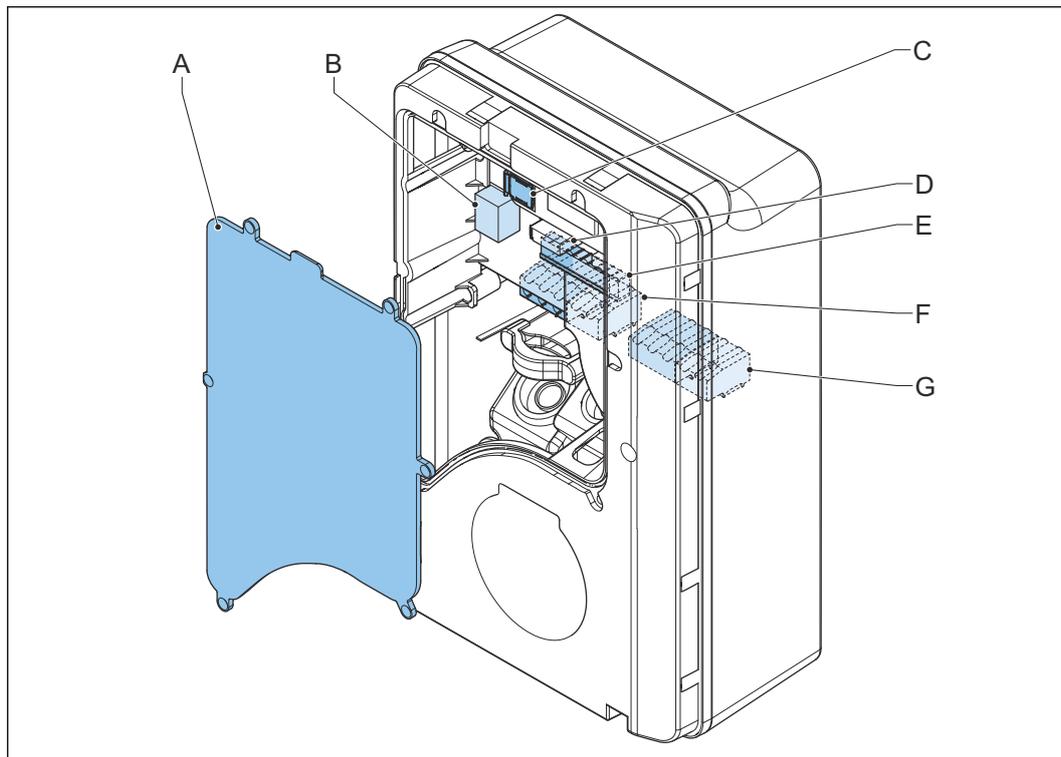


- | | | | |
|---|------------------------------------------|---|---------------|
| A | Connection for the EV charge cable | F | Cabinet cover |
| B | Openings for the smart meter connections | G | Enclosure |
| C | Opening for the Ethernet cable | H | RFID reader |
| D | Opening for the AC input cable | I | Product label |
| E | LED indicators | | |

Part	Function
Connection for the EV charge cable	To connect the EV charge cable
Openings	Openings for the cables that go into the EVSE
LED indicators	To show the status of the EVSE and the charge session. Refer to section 2.7.1.
Cabinet cover	To prevent a user to access the installation and maintenance parts of the EVSE
Enclosure	To reduce the accessibility of unqualified persons to the inside of the EVSE
RFID reader	To authorize the start or stop of a charging session with an RFID card
Product label	To show the identification data of the EVSE. Refer to section 2.3.

2.5.3

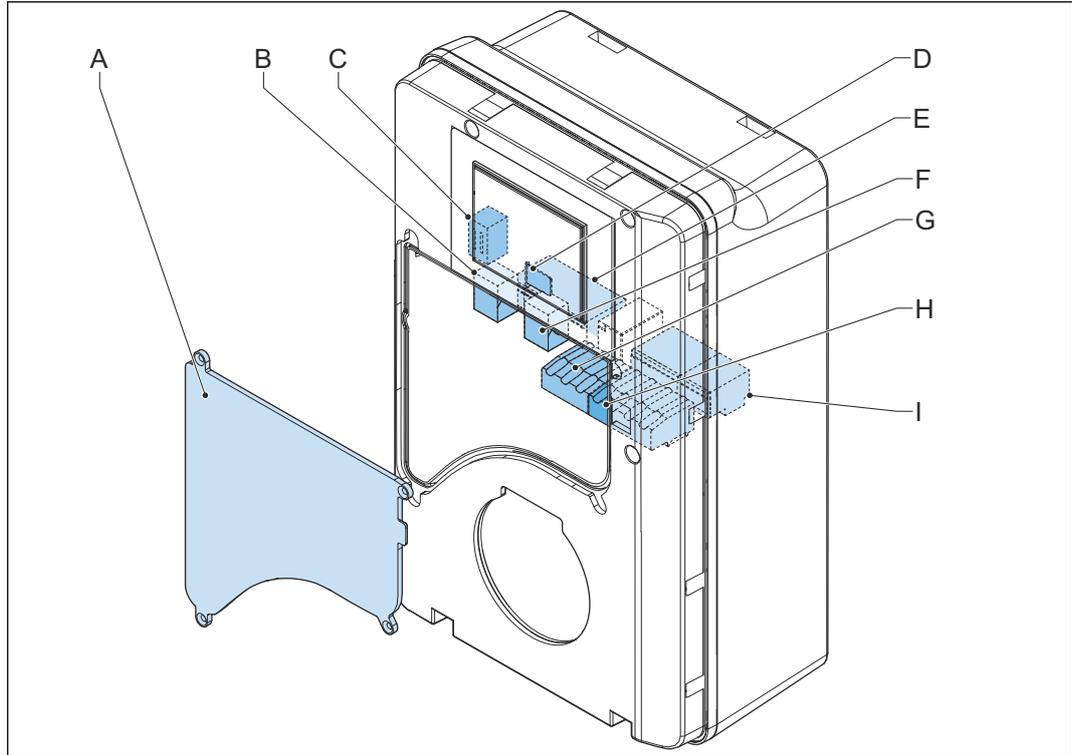
Overview of the EVSE, inside (CE model)



A	Maintenance cover	E	Terminal block for dry contacts input and output
B	Primary Ethernet connection	F	Terminal block for the AC input
C	Socket for a Nano-M2M SIM card	G	Terminal block for the EV charge cable or the socket
D	Smart meter connection		

Part	Function
Maintenance cover	To prevent access to the electrical components of the EVSE
Primary Ethernet connection	To connect the Ethernet cable
Socket for a Nano-M2M SIM card	To connect the EVSE to the internet 4G
Smart meter connection	To connect the cables for Modbus RTU - RS485
Terminal block for dry contacts input and output	Not used
Terminal block for the AC input	To connect the AC input cable from the grid
Terminal block for the EV charge cable	To connect the EV charge cable or the socket outlet

2.5.4 Overview of the EVSE, inside (MID model)

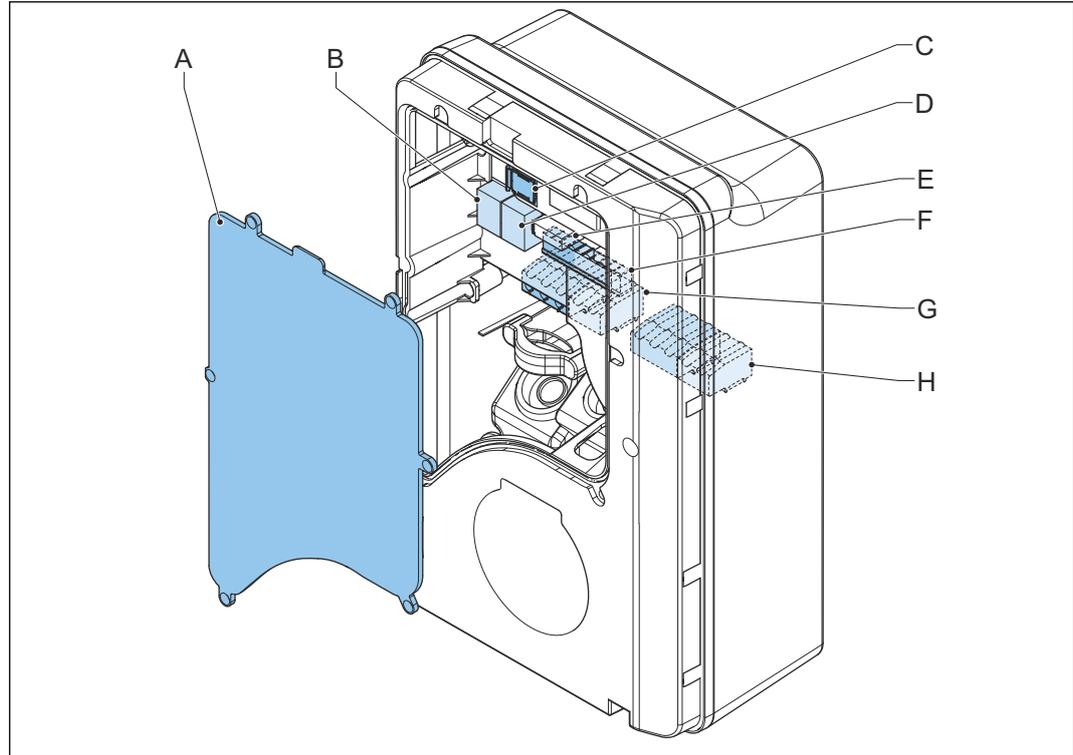


- | | | | |
|---|---------------------------------|---|------------------------------------------------------|
| A | Maintenance cover | F | Secondary Ethernet connection |
| B | Primary Ethernet connection | G | Smart meter connection |
| C | Electrical pulse connector | H | Terminal block for dry contacts input and output |
| D | Socket for a Nano-M2M SIM card | I | Terminal block for the EV charge cable or the socket |
| E | Terminal block for the AC input | | |

Part	Function
Maintenance cover	To prevent access to the electrical components of the EVSE
Primary Ethernet connection	To connect the Ethernet cable
Electrical pulse connector	Use for manufacturer only. Do not change or connect cables to this input yourself.
Socket for a Nano-M2M SIM card	To connect the EVSE to the internet 4G
Terminal block for the AC input	To connect the AC input cable from the grid
Secondary Ethernet connection	To use one Ethernet cable connection for multiple EVSEs. There is no communication between the EVSEs.
Smart meter connection	To connect the cables for Modbus RTU - RS485
Terminal block for dry contacts input and output	Not used
Terminal block for the EV charge cable	To connect the EV charge cable or the socket outlet

2.5.5

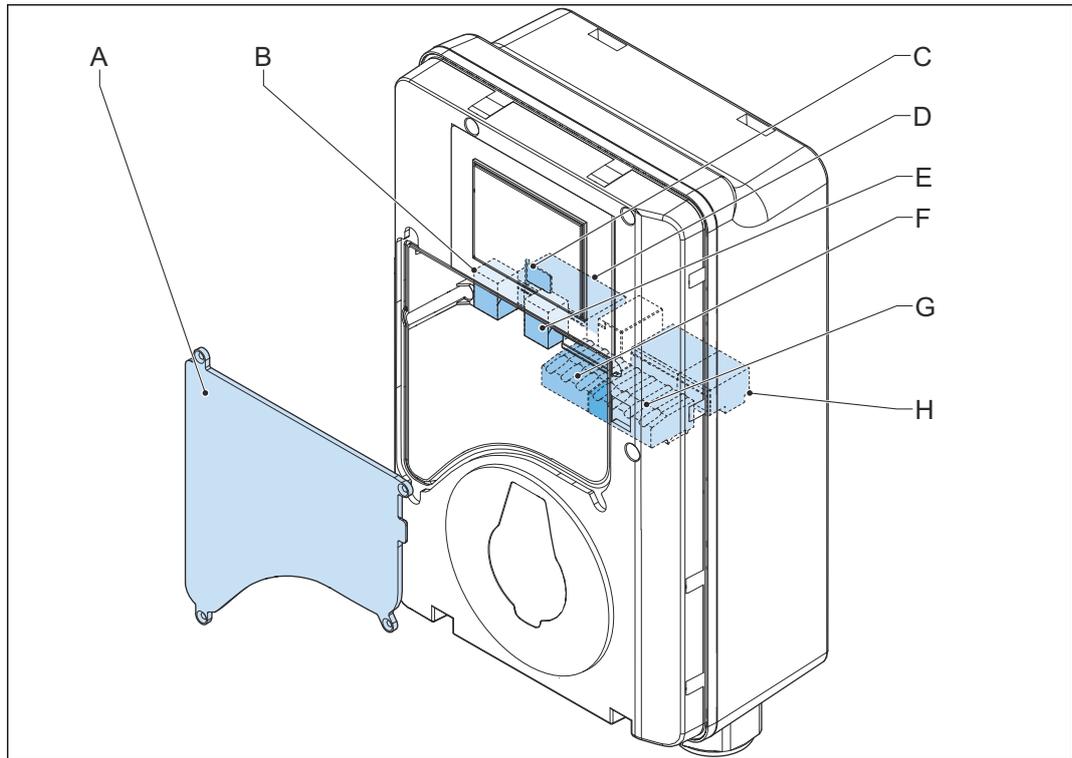
Overview of the EVSE, inside (UL model)



A	Maintenance cover	E	Smart meter connection
B	Primary Ethernet connection	F	Terminal block for dry contacts input and output
C	Socket for a Nano-M2M SIM card	G	Terminal block for the AC input
D	Secondary Ethernet connection	H	Terminal block for the EV charge cable or the socket

Part	Function
Maintenance cover	To prevent access to the electrical components of the EVSE
Primary Ethernet connection	To connect the Ethernet cable
Socket for a Nano-M2M SIM card	To connect the EVSE to the internet 4G
Secondary Ethernet connection	To use one Ethernet cable connection for multiple EVSEs. There is no communication between the EVSEs.
Smart meter connection	To connect the cables for Modbus RTU - RS485
Terminal block for dry contacts input and output	Not used
Terminal block for the AC input	To connect the AC input cable from the grid
Terminal block for the EV charge cable or the socket	To connect the EV charge cable or the socket outlet

2.5.6 Overview of the EVSE, inside (UL model with display)

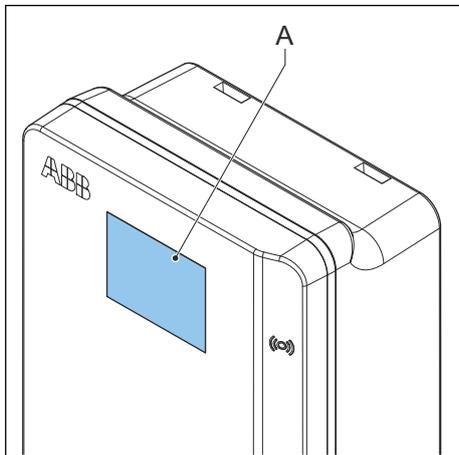


- | | | | |
|---|---------------------------------|---|------------------------------------------------------|
| A | Maintenance cover | E | Secondary Ethernet connection |
| B | Primary Ethernet connection | F | Smart meter connection |
| C | Socket for a Nano-M2M SIM card | G | Terminal block for dry contacts input and output |
| D | Terminal block for the AC input | H | Terminal block for the EV charge cable or the socket |

Part	Function
Maintenance cover	To prevent access to the electrical components of the EVSE
Primary Ethernet connection	To connect the Ethernet cable
Socket for a Nano-M2M SIM card	To connect the EVSE to the internet 4G
Terminal block for the AC input	To connect the AC input cable from the grid
Secondary Ethernet connection	To use one Ethernet cable connection for multiple EVSEs. There is no communication between the EVSEs.
Smart meter connection	To connect the cables for Modbus RTU - RS485
Terminal block for dry contacts input and output	Not used
Terminal block for the EV charge cable or the socket	To connect the EV charge cable or the socket outlet

2.6 Options

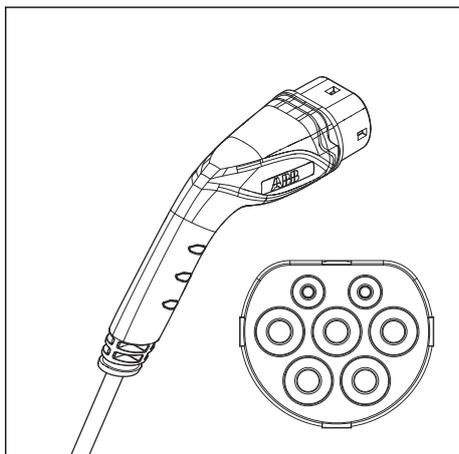
2.6.1 Display



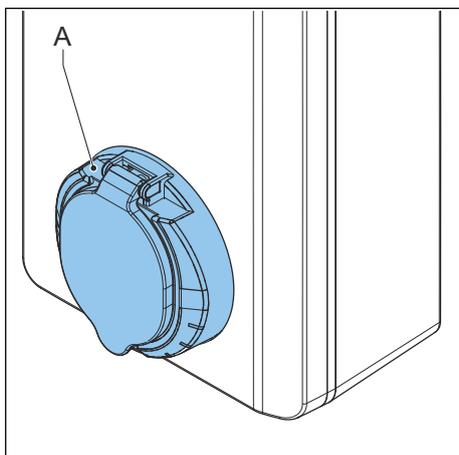
A Display

For more data about the display, refer to section 2.9.

2.6.2 EV charge cable, Type 2



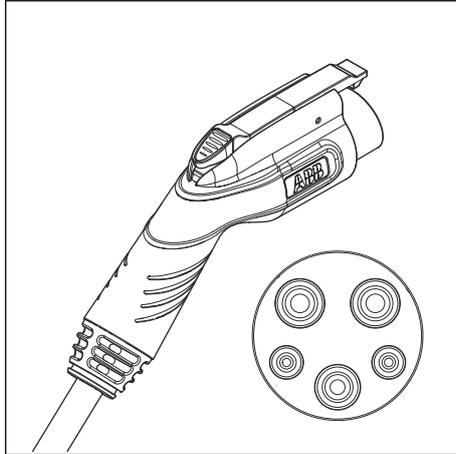
2.6.3 Socket, Type 2



A Socket

The socket for an EV charge cable Type 2 is available with or without a shutter.

2.6.4 EV charge cable, Type 1 (UL portfolio)



2.6.5 Load management

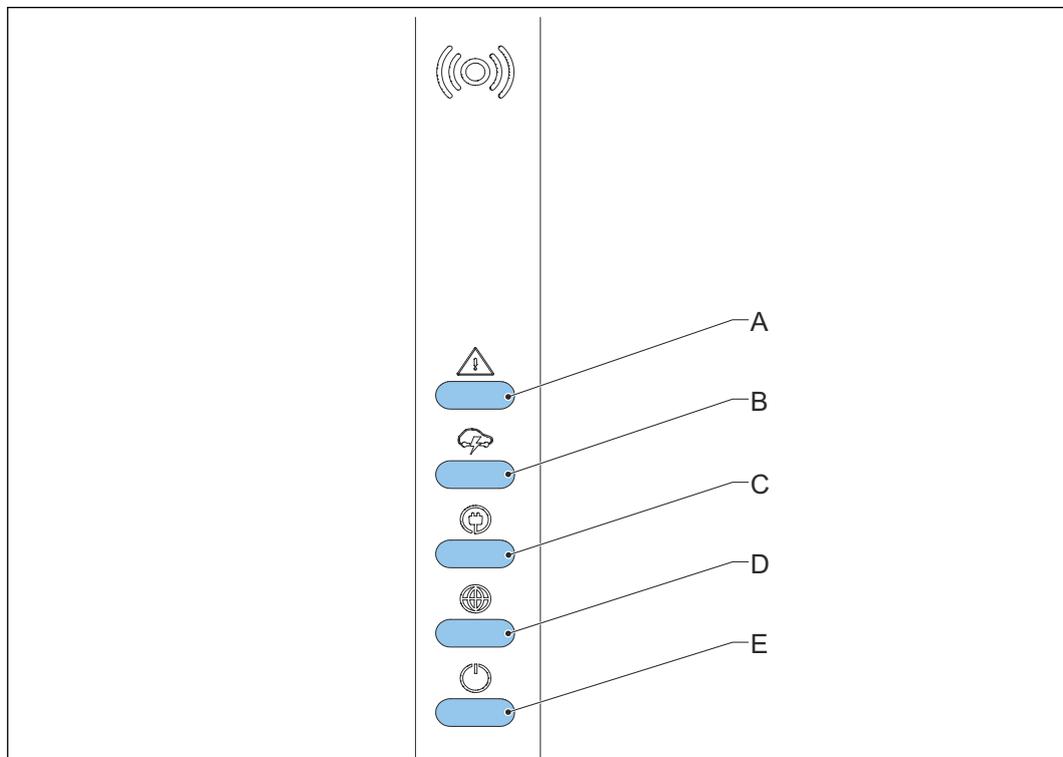
Load management makes sure that the available electrical capacity of the building or home is not exceeded. A number of devices share a grid connection, that has a maximum capacity. The total power demand of the devices that use the grid connection must not exceed the grid capacity.

The load management feature prevents that the system exceeds the grid capacity and prevents damage of the fuses. At times when the current demand is high, the EVSE decreases the output of current. The current will increase again when there is availability on the grid.

Also, the load management feature makes sure that the available load is optimally shared.

2.7 Control elements

2.7.1 LED indicators



- A Error LED
- B Charging LED
- C Cable and EV detection, and EV authorization LED
- D Internet connection LED
- E EVSE on/off LED

Table 1: Error LED

Status of the LED	Status of the EVSE
On	Error
Off	No error

Table 2: Charging LED

Status of the LED	Status of the EVSE
On	EV is fully charged or has stopped charging
Off	Not charging
Flashing	Charging

Table 3: Cable and EV detection, and EV authorization LED

Status of the LED	Status of the EVSE
On	An EV is connected. The connection is authorized.
Off	No EV connected
Flashing	A EV is connected, waiting for authorization

Table 4: Internet connection LED

Status of the LED	Status of the EVSE
On	Connected to the internet
Off	Not connected to the internet
Flashing	In progress to establish internet connection

Table 5: EVSE on/off LED

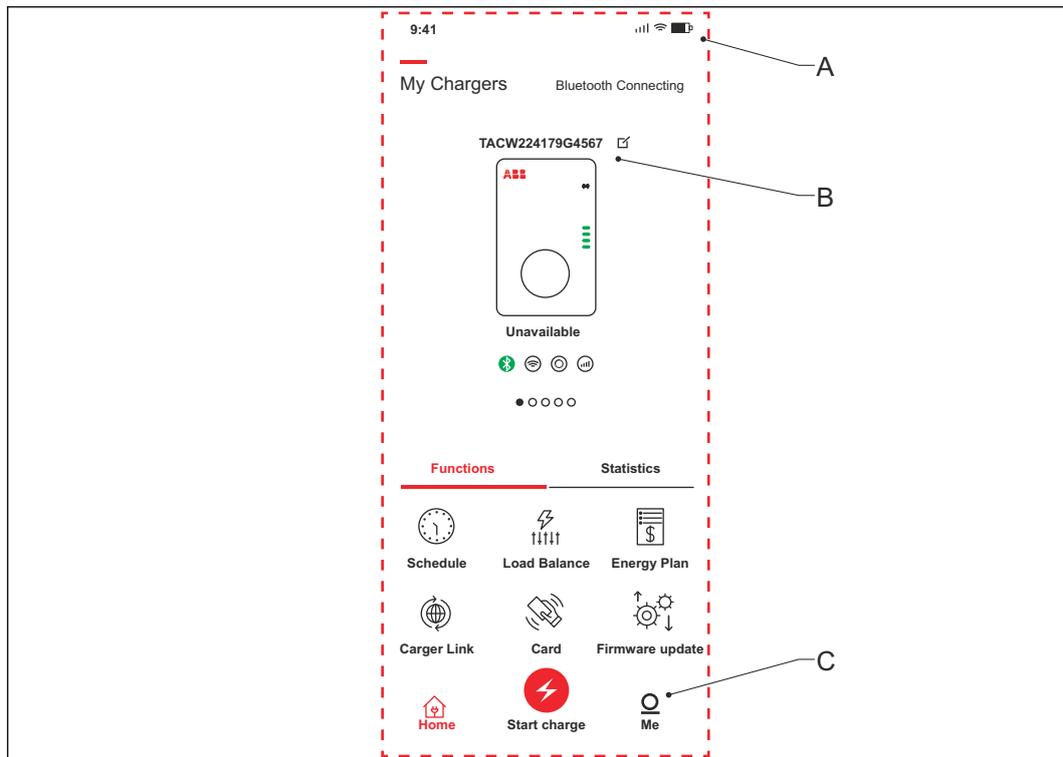
Status of the LED	Status of the EVSE
On	The EVSE is on
Off	The EVSE is off
Flashing	The EVSE is in setup

2.8

Description of the ChargerSync app for the EVSE

The *ChargerSync* app is available on the *Apple Store* and on the *Google Play Store*.

2.8.1 General description of the lay-out of the ChargerSync app



- A Menu title
- B Main screen area
- C Navigation bars

Screen part	Description
Menu title	This area shows the current menu.
Main screen area	This area shows information about the status of the EVSE, the charge sessions and the available menus.
Navigation bars	To navigate through the menus of the app and to use the functions. For a description of the buttons, refer to section 2.8.2.

2.8.2 General description of the buttons and colors

Button	Name / color	Description
	Home	To go to the main menu
	Start button	To start the charge session
	Account button	To go to the account menu, that has the personal preferences and settings

Button	Name / color	Description
	Schedule	To go to the schedule menu
	Energy plan	To go to the energy plan menu
	Load balance	To go to the load balance menu
	Firmware upgrade	To go to the firmware upgrade menu
	Charger link	To go to the charger link connectivity menu
	Previous	To go to a previous page
	Add or delete card	To add or delete RFID cards
	Next	To go to a next page

2.8.3

Overview of the menus

Menu	Description
Login menu	Shows the fields to log in.
Account menu	Shows the personal preferences and settings
Setup menu	Shows the screens to set up the EVSE
Main menu	Shows: <ul style="list-style-type: none"> • Navigation buttons • Buttons to manage the charge session • Information about the current charge session
Schedule menu	To create a schedule for a charge session
Energy plan menu	To select an energy plan for the charge session
Load balance menu	To adjust the settings of load management
Firmware upgrade menu	Shows available firmware versions and the possibility to start a product firmware update ¹ .

Menu	Description
Charger link connectivity menu	To connect your EVSE to a network
Add or delete card menu	To add or delete RFID cards

2.8.4

Errors

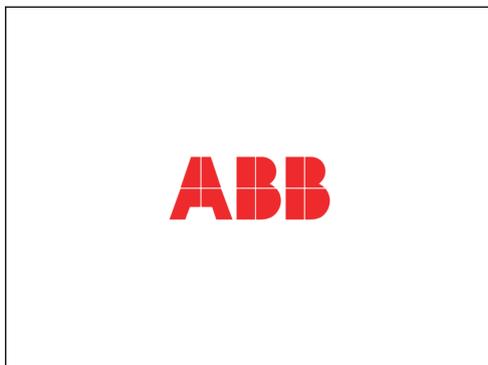
If the EVSE detects a problem, the error LED comes on. The *ChargerSync* app shows the error description. For the possible causes and the possible solutions, refer to section 6.2.

2.9

Description of the display screens (option)

2.9.1

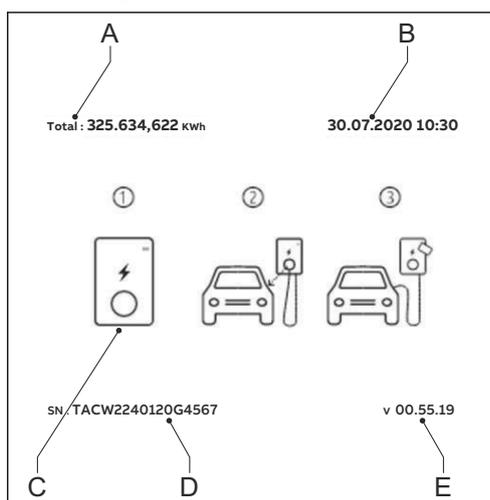
Boot screen



During the start up of the EVSE, the display shows the Boot screen.

2.9.2

Standby/Idle screen



A Total delivered energy
 B Date
 C Guide

D Serial number
 E Firmware version (MID certified)

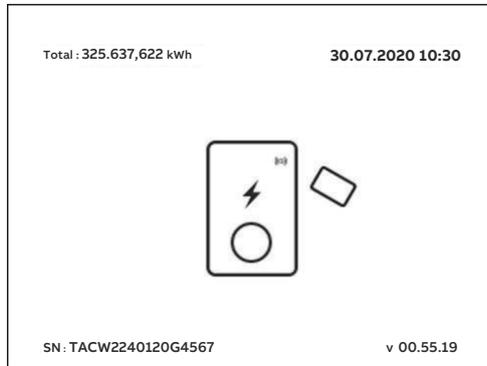
The display shows the Standby/Idle screen when the EVSE is in idle status. Then, the EVSE is available for a charge session.

¹ It can be necessary to update in multiple steps, until the app does not detect newer firmware. The app updates one firmware version at a time.

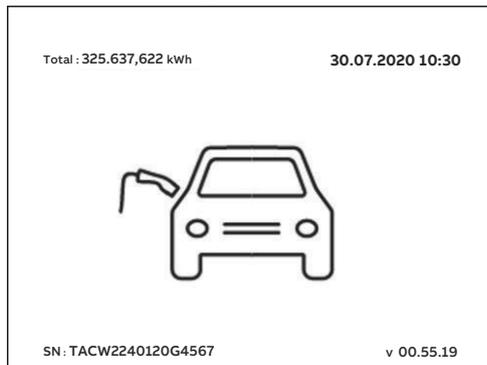
2.9.3 Authorization screen

The display shows different Authorization screens, dependent on the situation.

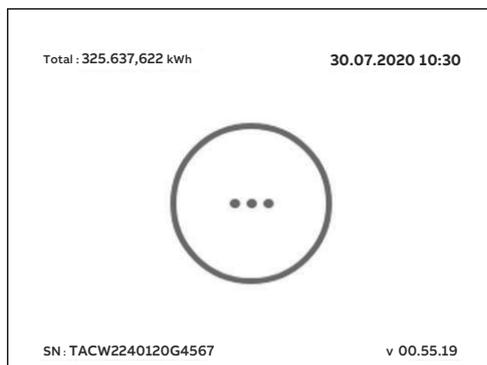
The display shows this Authorization screen when the EV charge cable is connected to the EV but the charge session is not authorized:



The display shows this Authorization screen when the charge session is authorized but the EV charge cable is not connected to the EV:



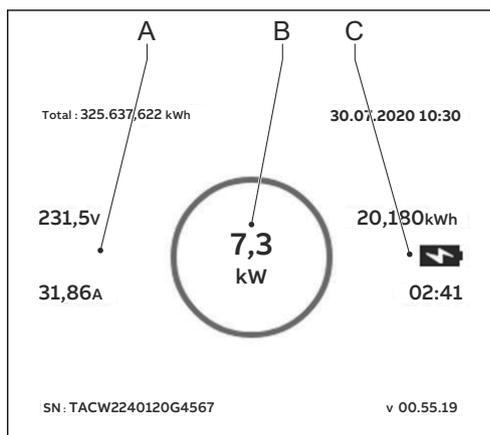
2.9.4 Preparing to charge screen



2.9.5 Charging screen

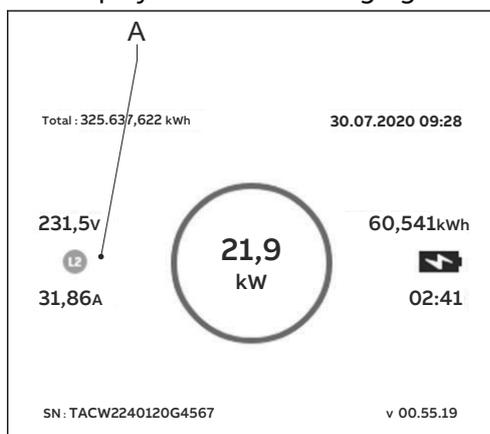
The display shows the Charging screen during the charge session.

The display shows this Charging screen for a single phase EVSE:



- A Real-time voltage and current
- B Real-time active power
- C Energy delivered and duration of the charge session

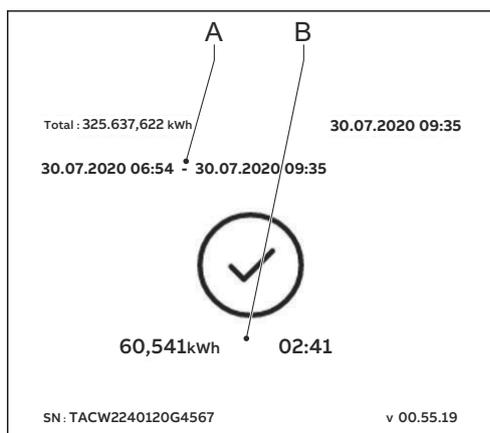
The display shows this Charging screen for a 3 phase EVSE:



- A Real-time voltage and current per phase

2.9.6

Charging completed screen



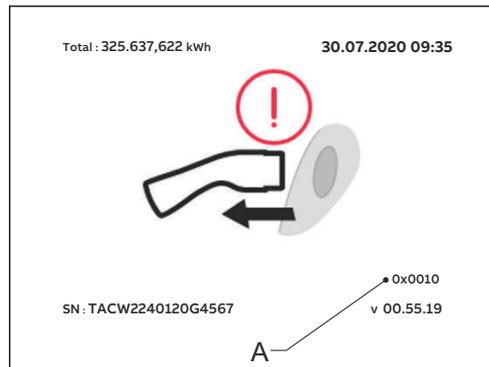
- A Start and end time
- B Energy delivered and duration of the charge session

2.9.7

Fault detected display messages

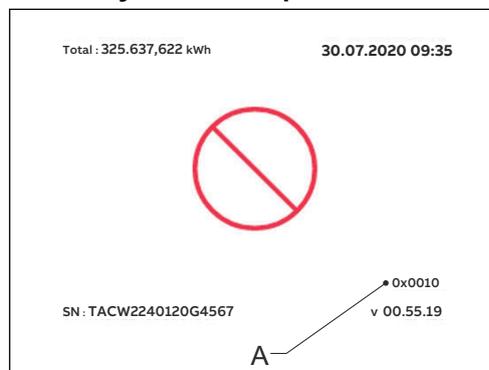
The display shows different fault detected images, dependent on the type of fault.

Disconnect the charge cable and connect it again:



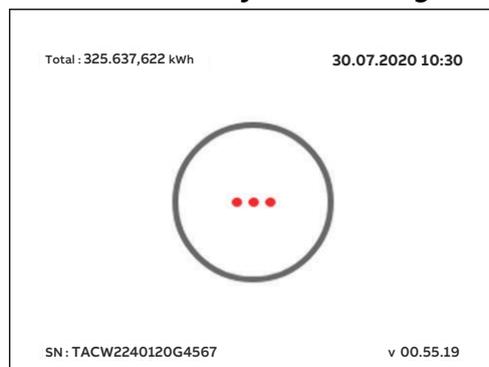
A Error code

Contact your service provider:



A Error code

The EV is not ready for the charge session:



3 Safety

3.1 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.

This EVSE is designed to be connected to and to communicate information and data via a network interface. It is the sole responsibility of the owner to provide and continuously ensure a secure connection between the EVSE and the network of the owner or any other network.

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 and installation of anti-virus programs) to protect the EVSE, the network, its system and the interface against any kind of security breaches, unauthorized access, interference, intrusion, leakage and/or theft of data or information.

The manufacturer is 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.

3.2 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

3.3 Personal protective equipment

Symbol	Description
	Protective clothing
	Safety gloves
	Safety shoes
	Safety glasses

3.4 FCC compliance statement



Caution: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.



Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

3.5 Industry Canada compliance statement

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

- This device may not cause interference.
- This device must accept any interference, including interference that may cause undesired operation of the device.

RF exposure statement

This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.

3.6 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.

3.7 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.

3.8 Safety instructions during cleaning or maintenance

Preliminary requirements



- Keep unauthorized personnel at a safe distance during cleaning or maintenance.
- If for cleaning or maintenance it is necessary to remove safety devices, immediately install the safety devices after the work.
- Put on the correct personal protective equipment. Refer to section 3.3.

3.9 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 can cause a risk of entrapment
	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.

3.10 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.

3.11 Special safety instructions (UL portfolio)

3.11.1 Important safety instructions (UL portfolio)



Warning: Obey the basic precautions for electric products, including the instructions in this section.



Caution: To reduce the risk of fire, connect this EVSE only to a circuit provided with 40 A maximum branch circuit overcurrent protection in accordance with the National Electrical Code, ANSI/NFPA 70.

- Read all the instructions before you use this EVSE.
- Make sure that adults supervise this EVSE when it is used around children.
- Do not put fingers into the EV connector.
- Do not use this product if the flexible power cord or EV charge cable is frayed, has broken insulation, or any other signs of damage.
- Do not use this EVSE if the enclosure or the EV connector is broken, cracked, open, or shows any other indication of damage.
- Install an insulated grounding conductor that is identical in size, insulation material, and thickness to the grounded and ungrounded branch-circuit supply conductors, except that it is green with or without one or more yellow stripes, as part of the branch circuit that supplies the EVSE.
- Connect the grounding connector of the previous bullet point to earth at the EVSE or, when supplied by a separately derived system, at the supply transformer.

Closing requirements

1. **SAVE THESE INSTRUCTIONS**

4 Operation

4.1 Prepare before use

1. Appoint a site operator and an installation engineer, if these are other persons than you.
2. Make sure that the equipment is installed and commissioned according to the instructions in the installation manual.
3. Make an emergency plan that instructs people what to do in case of an emergency.
4. Make sure that the space around the equipment cannot get blocked. Think of snow or other objects. Refer to the space requirements. Refer to section 7.6.3.
5. Make sure that maintenance is done on the equipment. Refer to section 5.

4.2 Energize the EVSE

1. Close the breaker that supplies the power to the EVSE.



Warning:

Hazardous voltage

- Be careful when you work with electricity.
- The power supply comes on.
- A series of self-checks start, to make sure that the EVSE works correctly and safely.
- If the EVSE detects a problem, the error LED comes on. The *ChargerSync* app shows the description of the error.

4.3 Connect the EVSE with the ChargerSync app

Preliminary requirements

	<ul style="list-style-type: none">• Mobile device with the <i>ChargerSync</i> app
-------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------

Procedure

1. Find your pin code in the package with the RFID card.
 - The pin code has 8 characters.
 - The letters are case-sensitive.
2. Download the *ChargerSync* App from the *Google Play Store* or *App Store*.
3. Start the *ChargerSync* app.
4. Do the instructions that the *ChargerSync* app shows.

4.4 Start a charge session

4.4.1 EVSE with an EV charge cable



Caution: During the charge session, do not disconnect the EV charge cable from the connection on the EV. There is a risk of damage of the connector of the EV.



Note: The LEDs show the status of the charge session.

1. Take the EV charge cable from the enclosure.
2. Use your RFID card or *ChargerSync* app to authorize the use of the EVSE.
The authorization of the connection to the EV starts.
3. Connect the EV charge cable to connector of the EV.
The EVSE charges the EV.

4.4.2 EVSE with a socket



Caution: During the charge session, do not disconnect the EV charge cable. There is a risk of damage of the socket of the EVSE or the connector of the EV.



Note: The LEDs show the status of the charge session.

1. Connect your EV charge cable to the connection on your EV.
2. Use your RFID card or *ChargerSync* app to authorize for use of the EVSE.
The authorization of the connection to the EV starts.
3. Connect the EV charge cable to the socket of the EVSE.
The EVSE charges the EV.

4.5 Wake up the EV when it is unavailable

4.5.1 Wake up the EV (EVSE without display)

Preliminary requirements

<input checked="" type="checkbox"/>  <input checked="" type="checkbox"/>  <input type="checkbox"/> 	1. The <i>ChargerSync</i> app shows 'waiting for EV'.
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------

Procedure

1. Disconnect the EV charge cable from the EV.
2. Connect the EV charge cable to the EV again.

4.5.2 Wake up the EV (EVSE with display)

Preliminary requirements

	1. The display shows that the EV is not ready for the charge session.
-----------------------------------------------------------------------------------	-----------------------------------------------------------------------

Procedure

1. Disconnect the EV charge cable from the EV.
2. Connect the EV charge cable to the EV again.

4.6 Stop a charge session

4.6.1 EVSE with an EV charge cable



Caution: During the charge session, do not disconnect the EV charge cable from the connector on the EV. There is a risk of damage of the connector of the EV.



Note: If you disconnect the EV charge cable during the charge session, the EVSE automatically disconnects the power supply. This stops all charging operations.

1. Select one of the two ways to end the charge session.
 - Wait until the charge session is completed.
 - The *ChargerSync* app shows that the charge session is completed.
 - The charging LED is on.
 - If your EVSE has a display, the display shows that the charge session is completed.

When the charge session is completed, the EVSE disconnects the power supply automatically.

 - Authorize the ending of the use of the EVSE with your RFID card or the *ChargerSync* app. The authorization of the disconnection to the EV starts.
2. Disconnect the EV charge cable from the EV.
3. Wrap the EV charge cable around the enclosure. Refer to section 4.7.

4.6.2 EVSE with a socket



Caution: During the charge session, do not disconnect the EV charge cable. There is a risk of damage of the socket of the EVSE or the connector of the EV.



Note: If you disconnect the EV charge cable during the charge session, the EVSE automatically disconnects the power supply. This stops all charging operations.

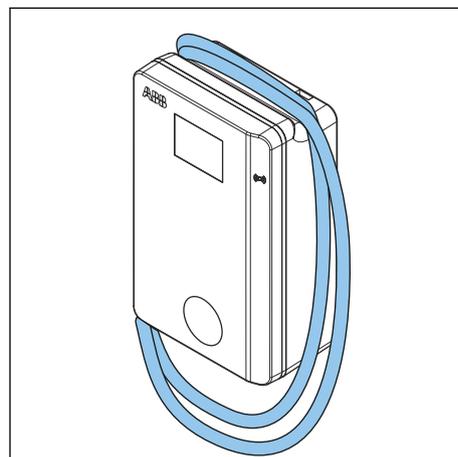
1. Select one of the two ways to end the charge session.
 - Wait until the charge session is completed.
 - The *ChargerSync* app shows that the charge session is completed
 - The charging LED is on.
 - If your EVSE has a display, the display shows that the charge session is completed.

When the charge session is completed, the EVSE disconnects the power supply automatically.

 - Authorize the ending of the use of the EVSE with your RFID card or the *ChargerSync* app. The authorization of the disconnection to the EV starts.
2. Disconnect the EV charge cable from the socket of the EVSE.
3. Disconnect the EV charge cable from the connector on the EV.

4.7 Wrap the EV charge cable around the enclosure

1. Wrap the EV charge cable around the enclosure.



5 Maintenance and cleaning

5.1 Maintenance schedule

Task	Frequency	Procedure
Clean the cabinet cover and the enclosure of the EVSE.	4 months	Refer to section 7.9.
Do a visual check for damage on the cabinet.	Before each use	Refer to section 5.3.
Do a visual check for damage on the EV charge cables or outlet and the connectors.	Before each use	Refer to section 5.3.

5.2 Clean the cabinet

Preliminary requirements

	<ul style="list-style-type: none"> • Cleaning agent. Refer to section 7.9. • Non-abrasive tool. Refer to section 7.9.
-------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------



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.

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.

5.3 Do a check on the cabinet

1. Do a check for damage on these parts:

Part	Damage
Charge cables, outlets and connectors	Cracks or ruptures
	Internal wires of the cable are visible
Display	Cracks
Coating of the cabinet	Cracks or ruptures

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

6 Troubleshooting

6.1 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.

6.2 Troubleshooting table (IEC portfolio)

Problem (error code)	Possible cause	Possible solution
Residual current detected (0x0002)	There is residual current (30mA AC or 6mA DC) in the charge circuit. Current leaks into the ground.	<ol style="list-style-type: none"> 1. De-energize the EVSE. Refer to section 6.4. 2. Contact your local representative of the manufacturer or a qualified electrical contractor. Refer to section 1.12.
PE missing or swap neutral and phase (0x0004)	The EVSE is not earthed correctly or neutral and phase wires are swapped.	Contact your local representative of the manufacturer or a qualified electrical contractor. Refer to section 1.12.
Over voltage (0x0008)	The maximum voltage on the power input is too high.	Contact your local representative of the manufacturer or a qualified electrical contractor. Refer to section 1.12.
Under voltage (0x0010)	The voltage on the power input is not sufficient.	Contact your local representative of the manufacturer or a qualified electrical contractor. Refer to section 1.12.
Over current (0x0020)	There is an overload on the EV side.	Contact your local representative of the manufacturer or a qualified electrical contractor. Refer to section 1.12.
Severe over current (0x0040)	There is an overload on the EV side.	Contact your local representative of the manufacturer or a qualified electrical contractor. Refer to section 1.12.

Problem (error code)	Possible cause	Possible solution
Over temperature (0x0080)	The internal temperature is too high.	<ol style="list-style-type: none"> 1. Do a check of the operation temperature on the product label. If the ambient temperature is too high, the EVSE will decrease the output current automatically. 2. If it is necessary, install the EVSE in an environment with a lower ambient temperature. 3. Do the procedure that is described for the problem 'the AC input voltage is too high'. 4. If you can not solve the problem, do not use the EVSE. Contact your local company representative or a qualified electrical contractor. Refer to section 1.12.
Power relay fault (0x0400)	The relay contact is detected in wrong state or has damage.	<ol style="list-style-type: none"> 1. Examine the relay contact. 2. If necessary, contact your local representative of the manufacturer or a qualified electrical contractor. Refer to section 1.12.
Internal communication failure (0x0800)	The internal boards of the EVSE fail to communicate with each other.	<ol style="list-style-type: none"> 1. Connect the EVSE to the internet. 2. Do a check of the WiFi signal at the site 3. Do a check of the Nano-SIM card connection and the 4G signal strength at the site.
E-Lock failure (0x1000)	Error to lock / unlock the charge connector.	<ol style="list-style-type: none"> 1. Examine the connection of the EV charge cable. 2. If necessary, contact your local representative of the manufacturer or a qualified electrical contractor. Refer to section 1.12.
Missing phase (0x2000)	B and C phase are missing or one of these phases is missing.	Contact your local representative of the manufacturer or a qualified electrical contractor. Refer to section 1.12.
Modbus communication lost (0x4000)	The Modbus communication is lost.	Contact your local representative of the manufacturer or a qualified electrical contractor. Refer to section 1.12.

Problem (error code)	Possible cause	Possible solution
The display shows that the EV is not ready for the charge session or the <i>ChargerSync</i> app shows 'waiting for EV'	The EV is in unavailable	Wake up the EV. Refer to section 4.5.
The EV is not charged	There is a problem with the EVSE	<ol style="list-style-type: none"> 1. Make sure that the power supply to the EVSE is on. 2. Examine the EVSE to find if is working correctly. 3. Examine the <i>ChargerSync</i> app and the charge LED to make sure that the charging session is authorized. 4. Start the charging session.
	The EV charge cable is defective.	<ol style="list-style-type: none"> 1. Examine the EV charge cable. 2. If the EV charge cable is defective, contact your local representative of the manufacturer or a qualified electrical contractor. Refer to section 1.12.
The EV connection or authorization process fails	The EV charge cable is defective.	<ol style="list-style-type: none"> 1. Examine the EV charge cable. 2. If the EV charge cable is defective, contact your local representative of the manufacturer or a qualified electrical contractor. Refer to section 1.12.

Problem (error code)	Possible cause	Possible solution
	The EV charge cable is not connected correctly.	<ol style="list-style-type: none"> 1. Examine the connection of the EV charge cable. 2. If necessary, contact your local representative of the manufacturer or a qualified electrical contractor. Refer to section 1.12.
	There is a problem with the <i>ChargerSync</i> app or the RFID card.	<ol style="list-style-type: none"> 1. Make sure that you have registered in the <i>ChargerSync</i> app. 2. Make sure that you use a RFID card that the manufacturer provided. 3. Make sure that the RFID card is added on the <i>ChargerSync</i> app. 4. Start the <i>ChargerSync</i> app. 5. Start the authorization process.

6.3

Troubleshooting table (UL portfolio)

Problem (error code)	Possible cause	Possible solution
Residual current detected (0x0002)	There is residual current (20mA AC) in the charge circuit. Current leaks into the ground.	<ol style="list-style-type: none"> 1. De-energize the EVSE. Refer to section 6.4. 2. Contact your local representative of the manufacturer or a qualified electrical contractor. Refer to section 1.12.
PE missing or swap neutral and phase (0x0004)	The EVSE is not earthed correctly or neutral and phase wires are swapped.	Contact your local representative of the manufacturer or a qualified electrical contractor. Refer to section 1.12.
Over voltage (0x0008)	The maximum voltage on the power input is too high.	Contact your local representative of the manufacturer or a qualified electrical contractor. Refer to section 1.12.
Under voltage (0x0010)	The voltage on the power input is not sufficient.	Contact your local representative of the manufacturer or a qualified electrical contractor. Refer to section 1.12.
Over current (0x0020)	There is an overload on the EV side.	Contact your local representative of the manufacturer or a qualified electrical contractor. Refer to section 1.12.

Problem (error code)	Possible cause	Possible solution
Severe over current (0x0040)	There is an overload on the EV side.	Contact your local representative of the manufacturer or a qualified electrical contractor. Refer to section 1.12.
Over temperature (0x0080)	The internal temperature is too high.	<ol style="list-style-type: none"> 1. Do a check of the operation temperature on the product label. If the ambient temperature is too high, the EVSE will decrease the output current automatically. 2. If it is necessary, install the EVSE in an environment with a lower ambient temperature. 3. Do the procedure that is described for the problem 'the AC input voltage is too high'. 4. If you can not solve the problem, do not use the EVSE. Contact your local company representative or a qualified electrical contractor. Refer to section 1.12.
Power relay fault (0x0400)	The relay contact is detected in wrong state or has damage.	<ol style="list-style-type: none"> 1. Examine the relay contact. 2. If necessary, contact your local representative of the manufacturer or a qualified electrical contractor. Refer to section 1.12.
Internal communication failure (0x0800)	The internal boards of the EVSE fail to communicate with each other.	<ol style="list-style-type: none"> 1. Connect the EVSE to the internet. 2. Do a check of the WiFi signal at the site 3. Do a check of the Nano-SIM card connection and the 4G signal strength at the site.
E-Lock failure (0x1000)	Error to lock / unlock the charge connector.	<ol style="list-style-type: none"> 1. Examine the connection of the EV charge cable. 2. If necessary, contact your local representative of the manufacturer or a qualified electrical contractor. Refer to section 1.12.
Missing phase (0x2000)	B and C phase are missing or one of these phases is missing.	Contact your local representative of the manufacturer or a qualified electrical contractor. Refer to section 1.12.

Problem (error code)	Possible cause	Possible solution
Modbus communication lost (0x4000)	The Modbus communication is lost.	Contact your local representative of the manufacturer or a qualified electrical contractor. Refer to section 1.12.
The display shows that the EV is not ready for the charge session or the <i>ChargerSync</i> app shows 'waiting for EV'	The EV is unavailable	Wake up the EV. Refer to section 4.5.
The EV is not charged	There is a problem with the EVSE	<ol style="list-style-type: none"> 1. Make sure that the power supply to the EVSE is on. 2. Examine the EVSE to find if is working correctly. 3. Examine the <i>ChargerSync</i> app and the charge LED to make sure that the charging session is authorized. 4. Start the charging session.
	The EV charge cable is defective.	<ol style="list-style-type: none"> 1. Examine the EV charge cable. 2. If the EV charge cable is defective, contact your local representative of the manufacturer or a qualified electrical contractor. Refer to section 1.12.
The EV connection or authorization process fails	The EV charge cable is defective.	<ol style="list-style-type: none"> 1. Examine the EV charge cable. 2. If the EV charge cable is defective, contact your local representative of the manufacturer or a qualified electrical contractor. Refer to section 1.12.

Problem (error code)	Possible cause	Possible solution
	The EV charge cable is not connected correctly.	<ol style="list-style-type: none"> 1. Examine the connection of the EV charge cable. 2. If necessary, contact your local representative of the manufacturer or a qualified electrical contractor. Refer to section 1.12.
	There is a problem with the <i>ChargerSync</i> app or the RFID card.	<ol style="list-style-type: none"> 1. Make sure that you have registered in the <i>ChargerSync</i> app. 2. Make sure that you use a RFID card that the manufacturer provided. 3. Make sure that the RFID card is added on the <i>ChargerSync</i> app. 4. Start the <i>ChargerSync</i> app. 5. Start the authorization process.

6.4 De-energize the EVSE

1. Open the breaker that supplies the power to the EVSE.
2. Wait for minimum 1 minute.

7 Technical data

7.1 EVSE Type

The EVSE type is a code.
The code has 10 parts: A1 - A10.

Code part	Description	Value	Meaning of the value
A1	Brand name	Terra AC	-
A2	Type	W	Wallbox
		C	Column
A3	Power output	4	3.7 kW
		7	7.4 kW
		9	9 kW
		11	11 kW
		19	19 kW
		22	22 kW
A4	Cable type or socket	P	Type 1 cable
		G	Type 2 cable
		T	Type 2 socket
		S	Type 2 socket with shutter
A5	Cable length	-	No cable
		5	5 m
		8	8 m
A6	Authorization	R	RFID enabled
		-	No RFID
A7	Display	D	Yes
		-	No
A8	Metering	M	Certified for MID (only with display)
		-	Not certified for MID
A9	SIM slot	C	Yes
		-	No
A10	Ethernet	-	Single
		D	Daisy-chain

Example

Terra AC W7-P8-RD-MCD-0

- A1 = Brand name = Terra AC
- A2 = Type = wallbox
- A3 = 7, Power output = 7.4 kW

- A4 = Cable type, cable = Type 1
- A5 = 8 m
- A6 = authorization = RFID enabled
- A7 = Display = yes
- A8 = metering = certified for MID
- A9 = SIM slot = applicable
- A10 = ethernet = daisy-chain
- The '0' is an empty field.

7.2 General specifications

Parameter	Specification
Safety standards	<ul style="list-style-type: none"> • IEC/EN 61851-1, IEC/EN 62311, IEC/EN 62479, IEC/EN 62955 • UL 2594, UL 2231-1, UL 2231-2, UL 1998 • NMX-J-667-ANCE • CSA C22.2. NO.280
Certification	<p>IEC portfolio:</p> <ul style="list-style-type: none"> • Single phase • Single phase with display and MID certificate • Three phase • Three phase with display and MID certificate <hr/> <p>UL portfolio:</p> <ul style="list-style-type: none"> • Single phase • Single phase with display
IP or NEMA rating	The product label shows the specification. Refer to section 2.3.
IK rating according to IEC 62262 (enclosure and display)	IK10 IK8+ for an operation temperature between -35 and -30 °C
Codes and standards	IEC 61851-21-2, EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4, EN 61000-3-2, EN 61000-3-3, EN 61000-3-11, EN 61000-3-12 CE RED- WLAN / RFID / E-UTRA: EN 300 328 V2.1.1, EN 300 330 V2.1.1, EN 301 908-1 V11.1.2, EN 301 908-13 EN 50470-1, EN 50470-3 FCC Part 15 Class B

Parameter	Specification
	FCC Part 15 Class B ENERGY STAR
Power consumption	In stand-by mode:
<ul style="list-style-type: none"> • CE model • MID model • UL model • UL model with display 	<ul style="list-style-type: none"> • 4 W • 4.6 W • 3.6 W (ENERGY STAR compliant) • 4.6 W

7.3 Meter specifications for a MID certified EVSE (IEC portfolio)

Parameter in 2014/32/EU directive	Specification
Mechanical environment	M1 Shock and vibrations of low significance
Electromagnetic environment	E2

7.4 Ambient conditions

Parameter	Specification
Operation temperature	-35°C ² to +50°C
Operation temperature for MID certified models	-30°C to +55C
Storage temperature	-40°C to +80°C
Storage conditions	Indoor, dry
Relative humidity	<95%, non-condensing

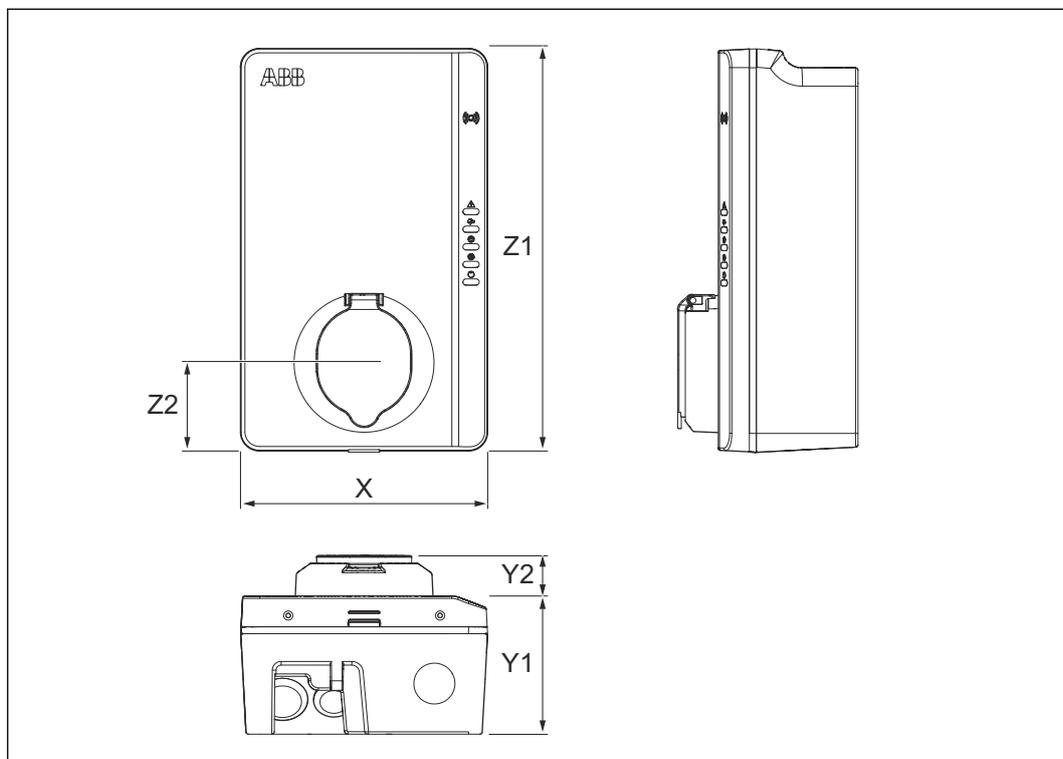
7.5 Noise level

Parameter	Specification
Noise level	Less than 35 dB(A)

² Based on manufacturer test results

7.6 Dimensions

7.6.1 AC input with socket, cable Type 2



X Width of the EVSE
 Y1 Depth of the EVSE
 Y2 Depth of the socket

Z1 Height of the EVSE
 Z2 Distance from the bottom of the EVSE to the center of the socket.

Parameter	Specification [mm]
X	195
Y1	110
Y2	33
Z1	320
Z2	70

Parameter	Specification	
	[mm]	[in]
Z1	> 200	> 8
Z2 (indoor use)	450 to 1200	18 to 48
Z2 (outdoor use)	600 to 1200	24 to 48

7.7 AC input specifications

7.7.1 General specifications

Parameter	Specification
Earthing systems	IT
	TT
	TN-S
	TN-C-S
Frequency	50 Hz or 60 Hz
Overvoltage category	Category III
Protection	Overcurrent
	Overvoltage
	Undervoltage
	Earth fault, including DC leakage protection ³
	Integrated surge protection

7.7.2 AC input specifications (IEC portfolio)

Parameter	Specification
Input AC power connection	1 phase or 3 phase
Input voltage (1 phase)	230 V AC
Input voltage (3 phase)	400 V AC
Standby power consumption	4.6 W
Earth (ground) fault protection	30mA AC, 6 mA DC
Maximum input power (1 phase)	3.7 kW (16 A)
	7.4 kW (32 A)
Maximum input power (3 phase)	11 kW (16 A)
	22 kW (32 A)
	0.25-5 (32) A for MID certified models

³ Only for EVSEs in the IEC portfolio

7.7.3 AC input specifications (UL portfolio)

Parameter	Specification
Input AC power connection	240 V AC
Standby power consumption	3.6 W
Earth (ground) fault protection	internal 20 mA AC CCID

7.8 AC output specifications

7.8.1 AC output specifications (IEC portfolio)

Parameter	Specification
AC output voltage range (1 phase)	230 V AC
AC output voltage range (3 phase)	400 V AC
Connection standard	<ul style="list-style-type: none"> • Type 2 cable • Type 2 socket • Type 2 socket with shutter According to IEC 62196-1, IEC 62196-2
Current for MID certified models	0.25-5(32) A

7.8.2 AC output specifications (UL portfolio)

Parameter	Specification
AC output voltage range	240 V AC (1 phase)
Connection standard	Type 1 cable according to SAE J1772

7.9 Cleaning specifications

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

