

# ENSTO

## Ensto One Home

EVH161-HC000

EVH321-HC000

EVH161-HCR00

EVH321-HCR00



ENG

Installation Guide

User Guide

CE

RAK131\_ENG  
15.4.2020  
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# Installation Guide

## 1. Safety instructions



Electrically skilled person

- The installation must only be done by an electrician with the appropriate qualifications.
- Read this Installation and User Guide carefully before starting the installation work.
- Follow the instructions in this Installation and User Guide, and make sure that the installation complies with national safety regulations, installation methods and restrictions.
- The information provided in this Installation and User Guide in no way exempts the installer or user from responsibility to follow all applicable safety regulations.
- This Installation and User Guide is a part of the product and must be stored in a safe location so that it is available for future installation and service.



**WARNING**

*Danger of electric shock! Risk of fire!*

- *Improper installation can cause personal injury and property damage.*
- *Do not switch on the power supply before the installation work is completed.*

## 2. Delivery contents

- EVH Charger
- Cable gland M32/M25 (depending on the model)
- Installation and User Guide in English, other languages please see [www.ensto.com](http://www.ensto.com).
- Multilingual Quick Guide



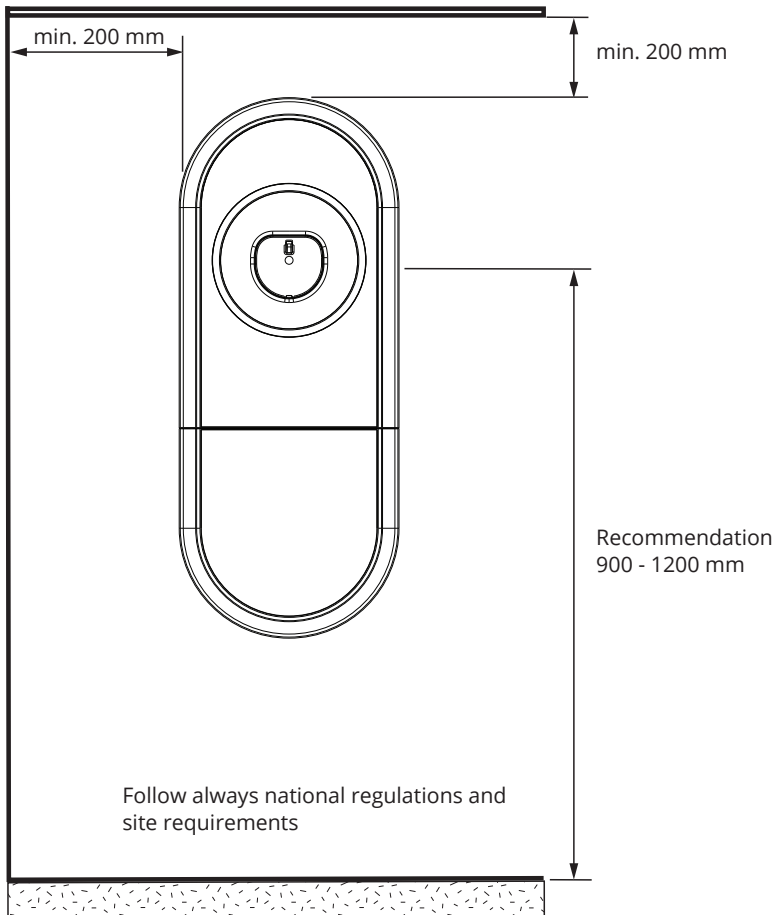
### 3. Mounting instructions

#### 3.1. Before installation

Remove the charger from its package. Do not scratch the surface of the charger after removal from the package.

When selecting installation site, take into account the following:

- The charger is suitable for indoor and outdoor use.
- In order to ensure the optimal charging performance, the charger should not be exposed to direct sunlight.
- The minimum space needed for operating and maintenance.



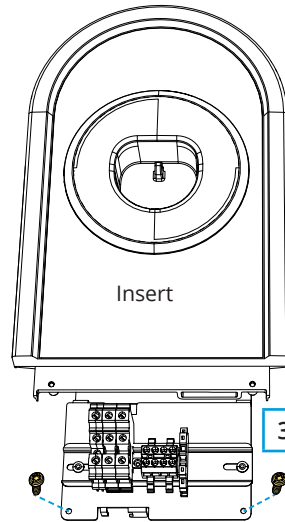
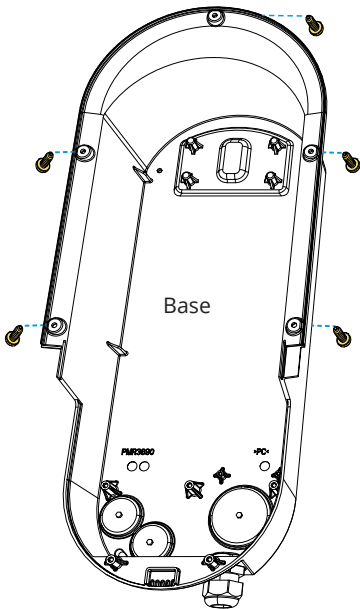
### 3.2. Cable entries

- Take the cable routing into consideration when planning the installation. The supply cable can be routed into the enclosure from the rear or bottom. Default cable routing is from the bottom.
- The M32 cable gland for the supply cable is pre-assembled on the bottom of the charger.
- If you need to open additional cable entries, you have to disassemble the charger.

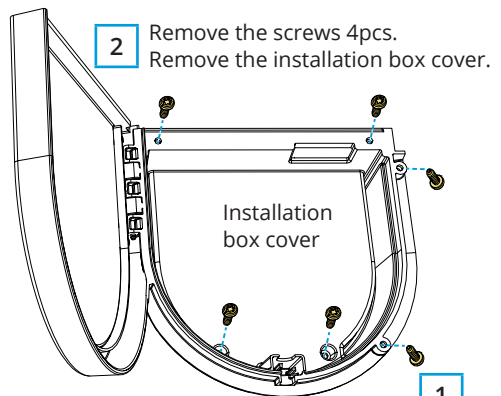
#### Installation steps when cable routing is from alternative cable entries

1. Disassemble the charger.

- 4 Remove the screws 5pcs.  
Remove the insert from the base.



- 3 Remove the screws 2pcs.

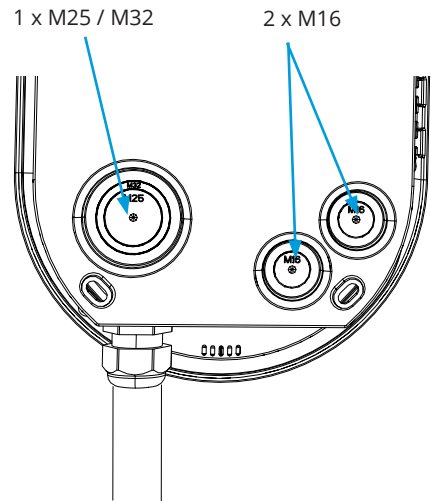
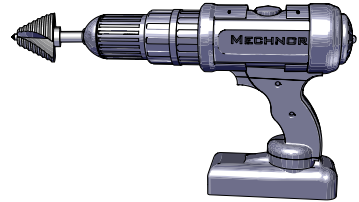
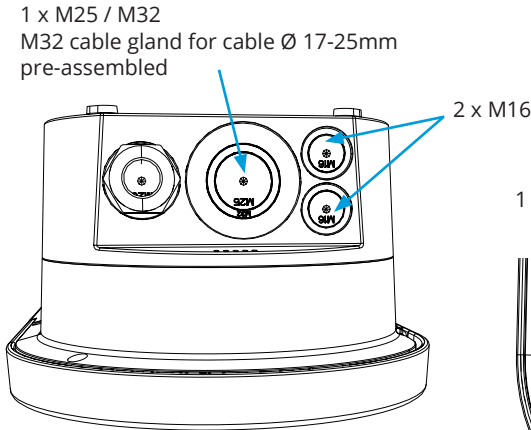


- 2 Remove the screws 4pcs.  
Remove the installation box cover.



Screw fixing: Remove the screws 2pcs.  
Mechanical lock: Unlock the hatch with a coin or suchlike.

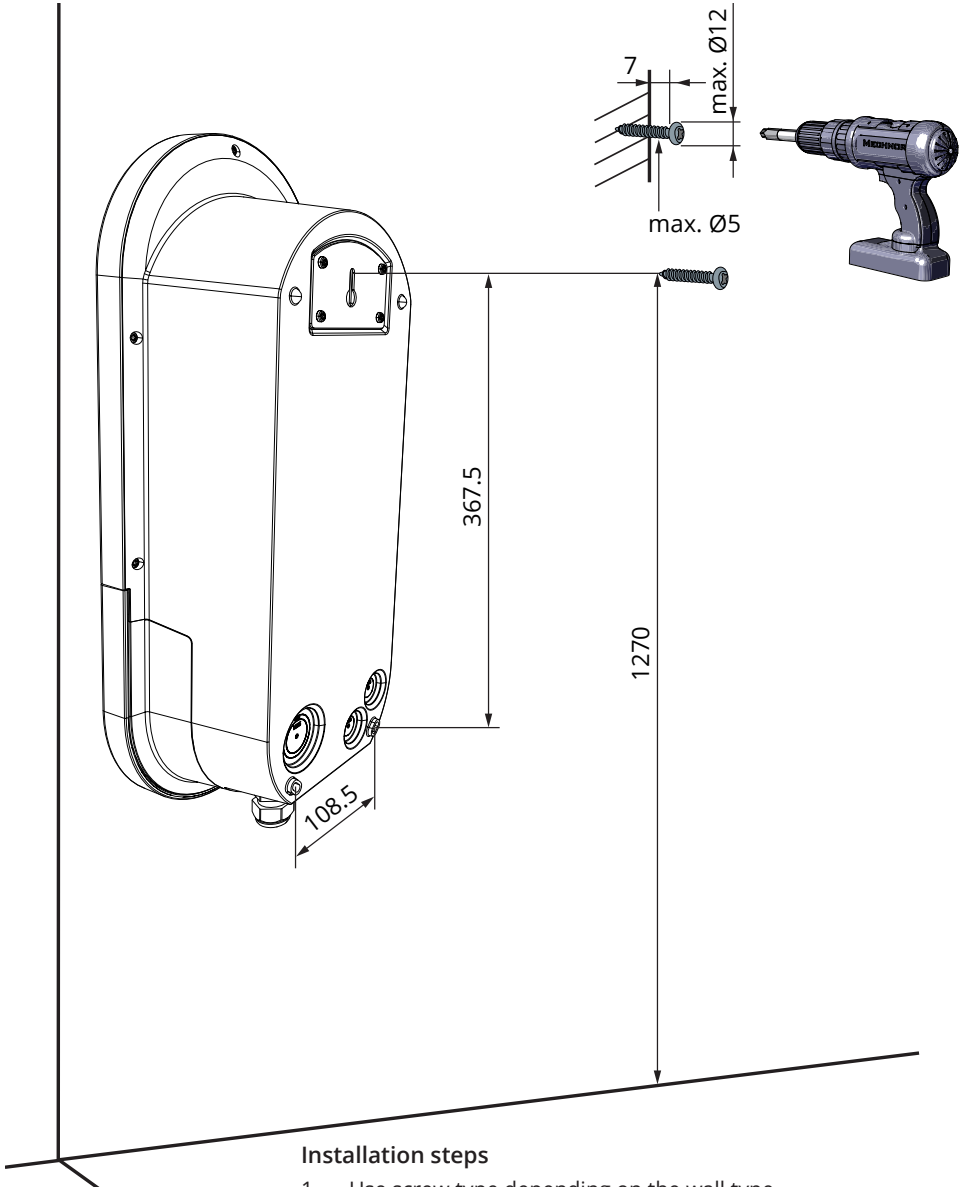
2. Open the needed cable entries with a step drill bit.
3. Prepare the cable entries with suitable accessories.
4. Remove the included cable gland from the bottom and close the cable entry with a cover plug, PMR1217.32B (accessory).
5. Assemble the base and insert.
6. Assemble also the installation box cover, if electrical cables are installed in a separate session.



Accessories		
Part number	Description	Note
PMR1217.32B	Black cover plug for M32 opening	
KTM24.25/BLACK	M25 cable gland for cable Ø 10 - 16mm	EVH161-HC000/EVH161-HCR00: included 1pc
PMR1219.3225B	Black reduction nipple, M32 => M25	EVH161-HC000/EVH161-HCR00: included 1pc
RGM16B	Membrane gasket for cable Ø 5 - 9mm	
RMM25B	Membrane gasket for cable Ø 8 - 17mm	
RMM32B	Membrane gasket for cable Ø 12 - 24mm	

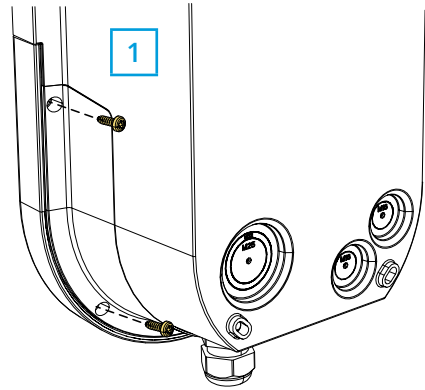
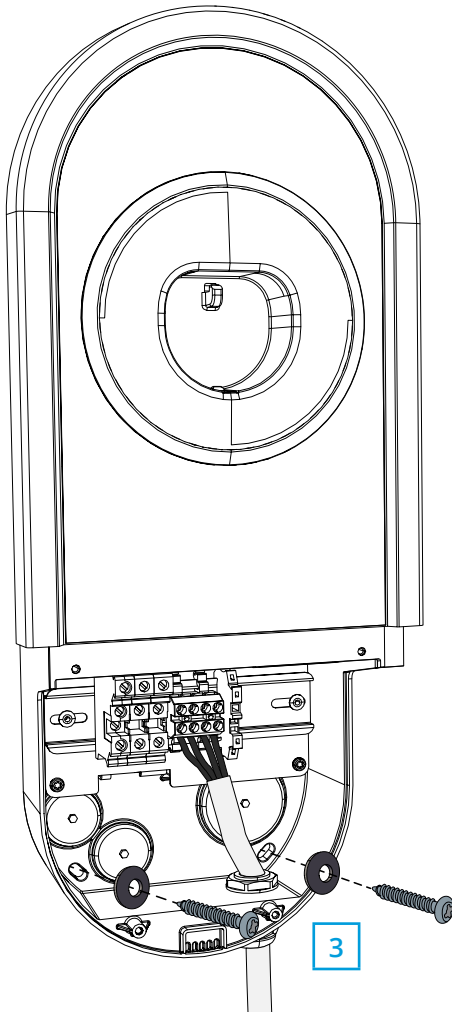
### 3.3. Wall mounting

- When selecting the installation location, make sure that the wall material is suitable and robust. The mounting surface should be flat and vertical.

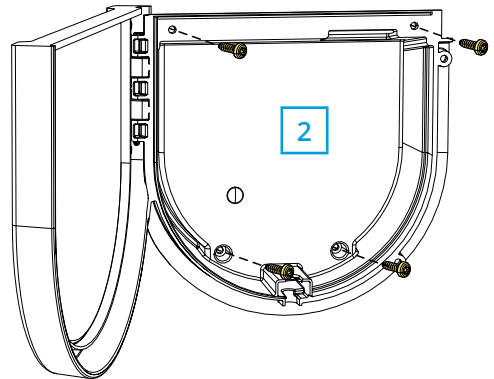


#### Installation steps

1. Use screw type depending on the wall type.
2. Fasten the upper screw 1270 mm measured from the ground surface. The plug holder will be at a height of 1200 mm.



TX20  
Tightening torque 1,5 Nm



3. Open the installation box hatch by removing the fastening screws (2 pcs) / unlocking the hatch lock [1].
4. Remove the entire installation box cover by unscrewing the fastening screws (4 pcs) [2].
5. Hang the charger on the screw you attached to the wall.
6. Secure the charger on wall with two washers and fastening screws (not included) [3].  
**Do not damage the charging cable!**
7. Pull the electrical cables approx. 150mm through the cable glands.
8. Cut the supply cable leads in suitable lengths. Leave the ground lead long enough so that if a fault occurs it is the last one that comes loose.
9. Strip the leads 11 mm and connect to the supply connectors.
10. Put the installation box cover back in right position and secure with the screws you removed.
11. Close the installation box hatch.

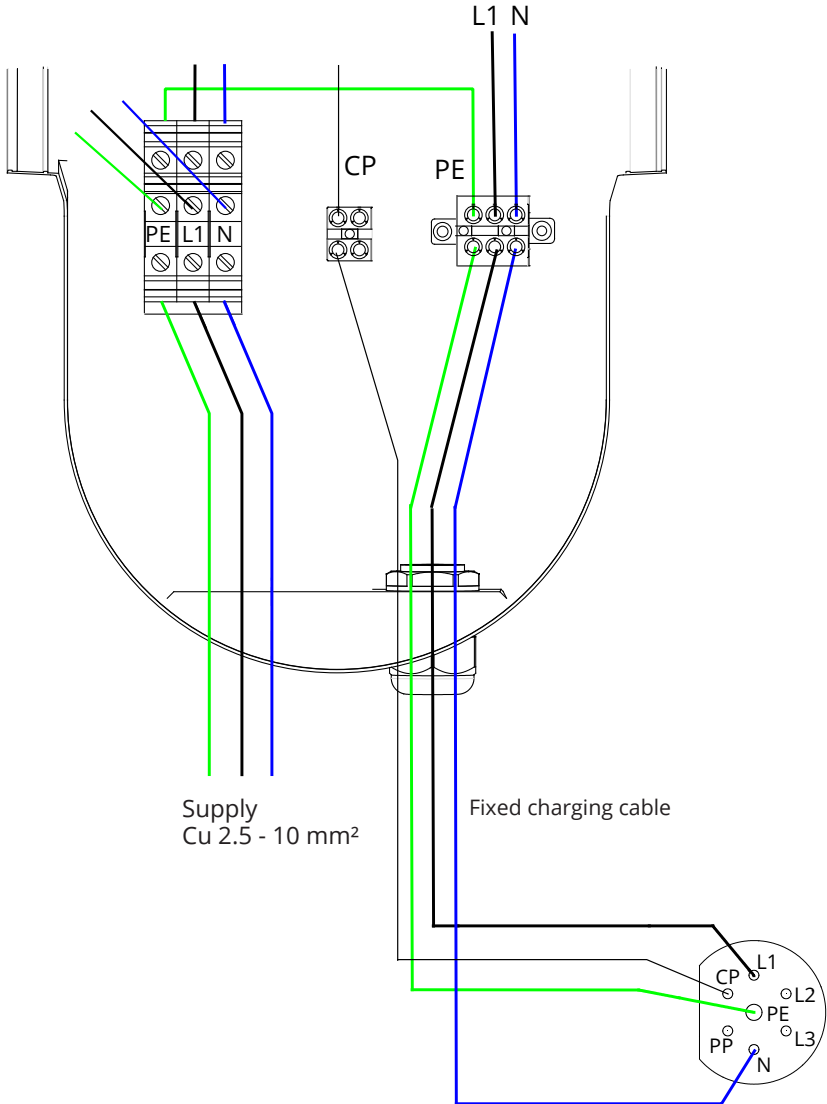


## 4. Power supply

The voltage and current ratings including cable sizes must comply with national regulations. The system dimensioning must be done by a qualified electrical designer.

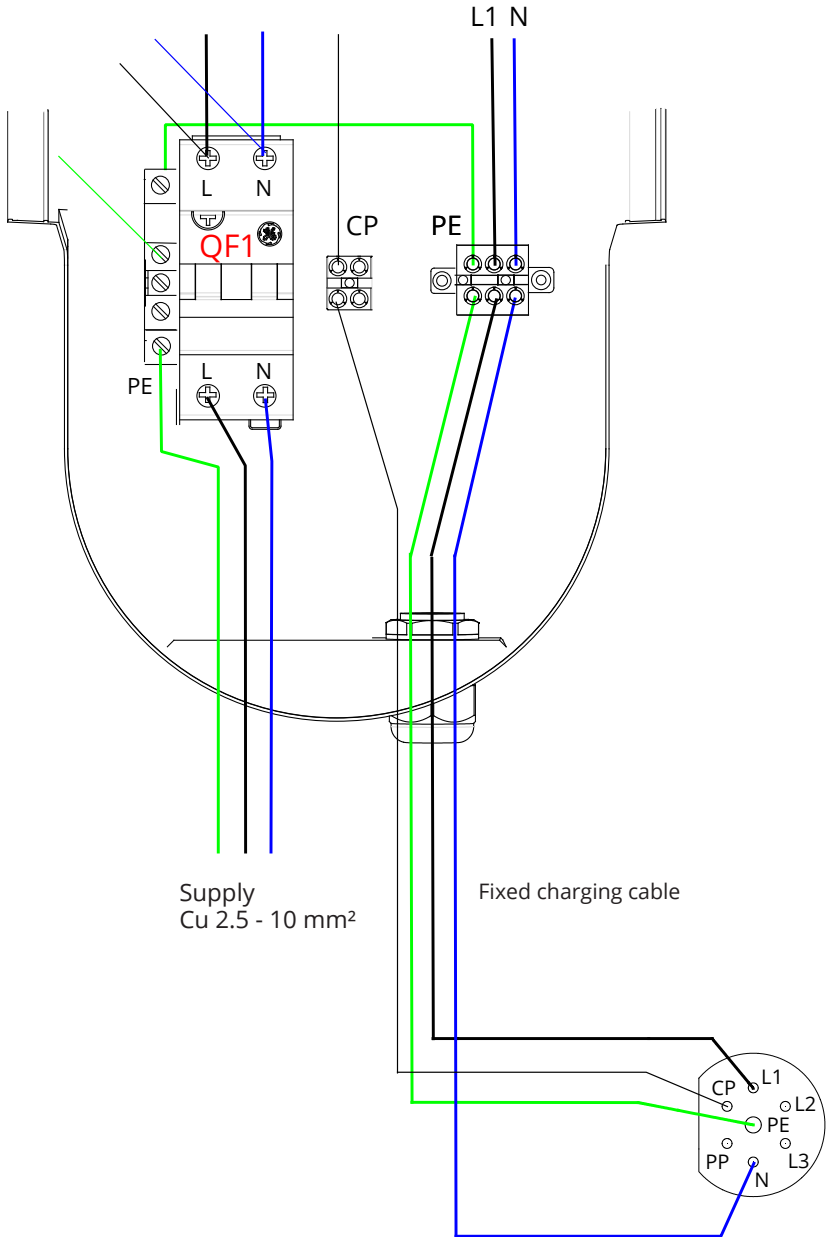
### *EVH161-HC000 / EVH321-HC000:*

- Install a residual current device (RCD type A, 30mA) and a circuit breaker (MCB max. 16A or max. 32A depending on charger model) to the supply line. In addition follow local regulations for the power supply line.



**EVH161-HCR00 / EVH321-HCR00:**

- A combined device with residual current circuit breaker and over current protection (RCBO) is integrated.
- A label set of RCBO testing instructions is included in the delivery. Attach a language specific label on the installation box hatch.



## 5. Commissioning

The charger is ready to use after the installation is completed. The charger is in **“Free charging”** operating mode.

If you need to change the operating mode to **“Authorized”** or make other changes to the charger, please download the Ensto Charger Control Application. You can download the application from Google Play or App Store.

Please see instructions in chapter **22. Ensto Charger Control Application** on pages 22 - 27.

### 5.1. Installer menu in the Ensto Charger Control Application



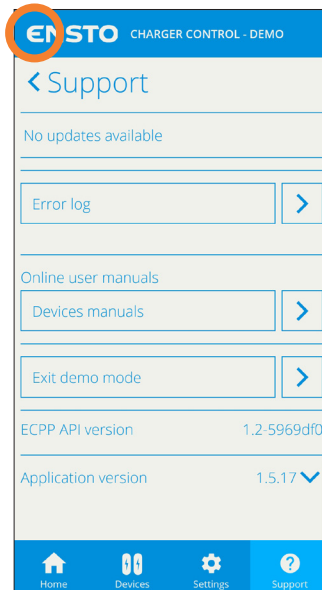
**WARNING**

***Danger of electric shock! Risk of fire!***

- ***Settings described in this chapter must only be done by an electrically skilled person.***

If the electric system dimensioning on the installation site requires a lower charging current than the charger’s nominal value, you can change the setting with the Ensto Charger Control application.

- Go to **“Support”**.
- Press the letter **E** on the **ENSTO** logo for a long time.
- Go to **“Max charging current”**.
- Select the desired maximum charging current value.
- Confirm your setting with **“OK”**.
- The new maximum charging current is now set.



## 6. Technical information

Electrical Connections	EVH161-HC000	EVH321-HC000	EVH161-HCR00	EVH321-HCR00
Nominal supply voltage	1-ph, 230 VAC			
Nominal frequency	AC 50 Hz			
Charging current max.	1x16A	1x32A	1x16A	1x32A
Charging power max.	3600W	7400W	3600W	7400W
Supply connections and terminals	L1, N, PE Cu 2.5–10 mm <sup>2</sup> / Tightening torque: 1.5 - 1.8 Nm			

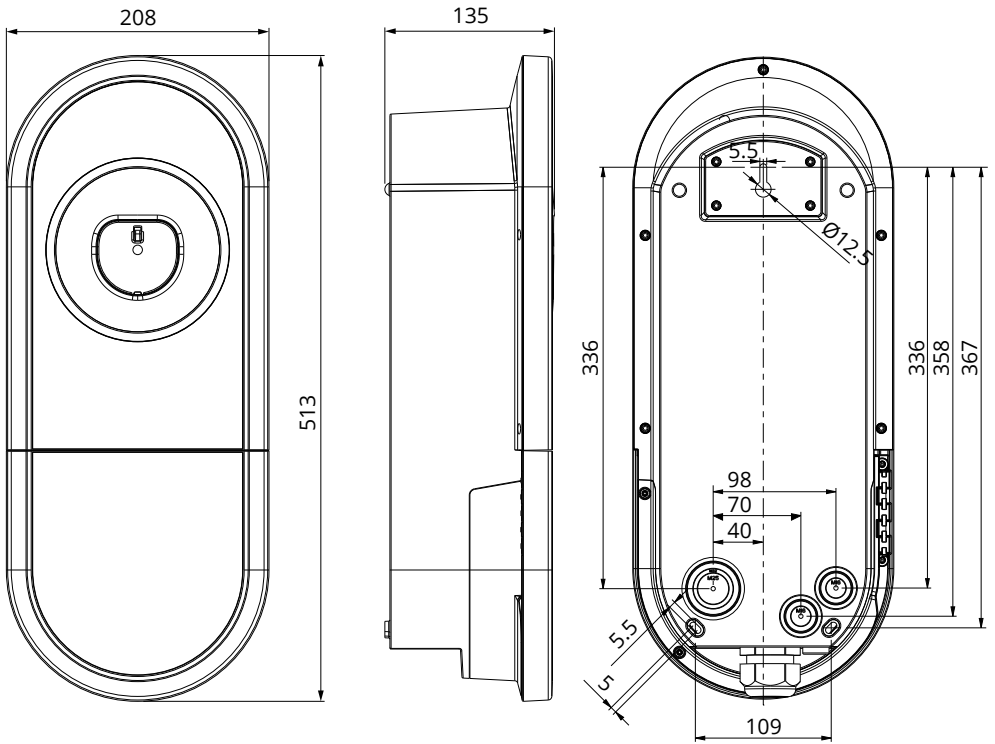
Design and Mechanics	EVH161-HC000	EVH321-HC000	EVH161-HCR00	EVH321-HCR00
Material	Polycarbonate			
Color	Frame: RAL7021 dark grey Cover: Silver			
Installation box	Screw fixing		Mechanical hatch lock	
Weight	5,4 kg			
Enclosure class	IP54			
Impact resistance rating	IK10			
Operating temperature	-40 °C ... +50 °C			
Mounting	Wall		Wall	

User Interface	EVH161-HC000	EVH321-HC000	EVH161-HCR00	EVH321-HCR00
Connection to vehicle	Fixed cable			
Charging status indication	4-color LED: Green = Ready / Blue = Charging / Red = Error / Yellow = SW update			
Use access	Free access / Mobile application			

Safety Features	EVH161-HC000	EVH321-HC000	EVH161-HCR00	EVH321-HCR00
RCD	RDC-DD Type A 30mA must be installed in distribution board		RDC-DD RCBO integrated	
MCB	Max. 16A must be installed in distribution board	Max. 32A must be installed in distribution board		

Control and Communication	EVH161-HC000	EVH321-HC000	EVH161-HCR00	EVH321-HCR00
Operation mode	Standalone			
Wireless	Bluetooth (the charger can be paired with only one mobile at a time )			

## 7. Dimension drawing



## 8. Installation / Commissioning checklist

### Introduction

Check the mechanical and electrical installation according this checklist in order to make sure that the charger is properly installed.

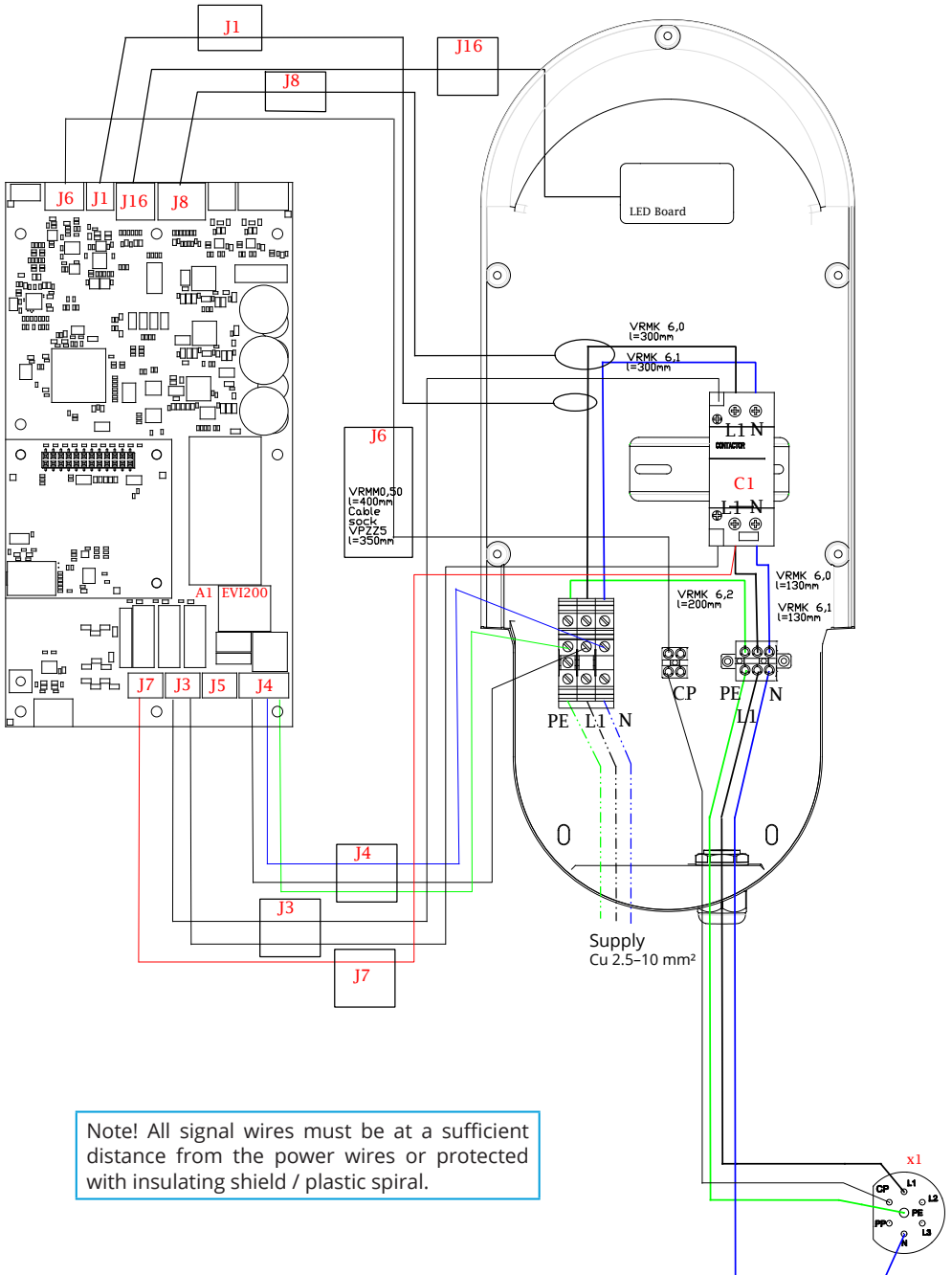
### Checking the Installation



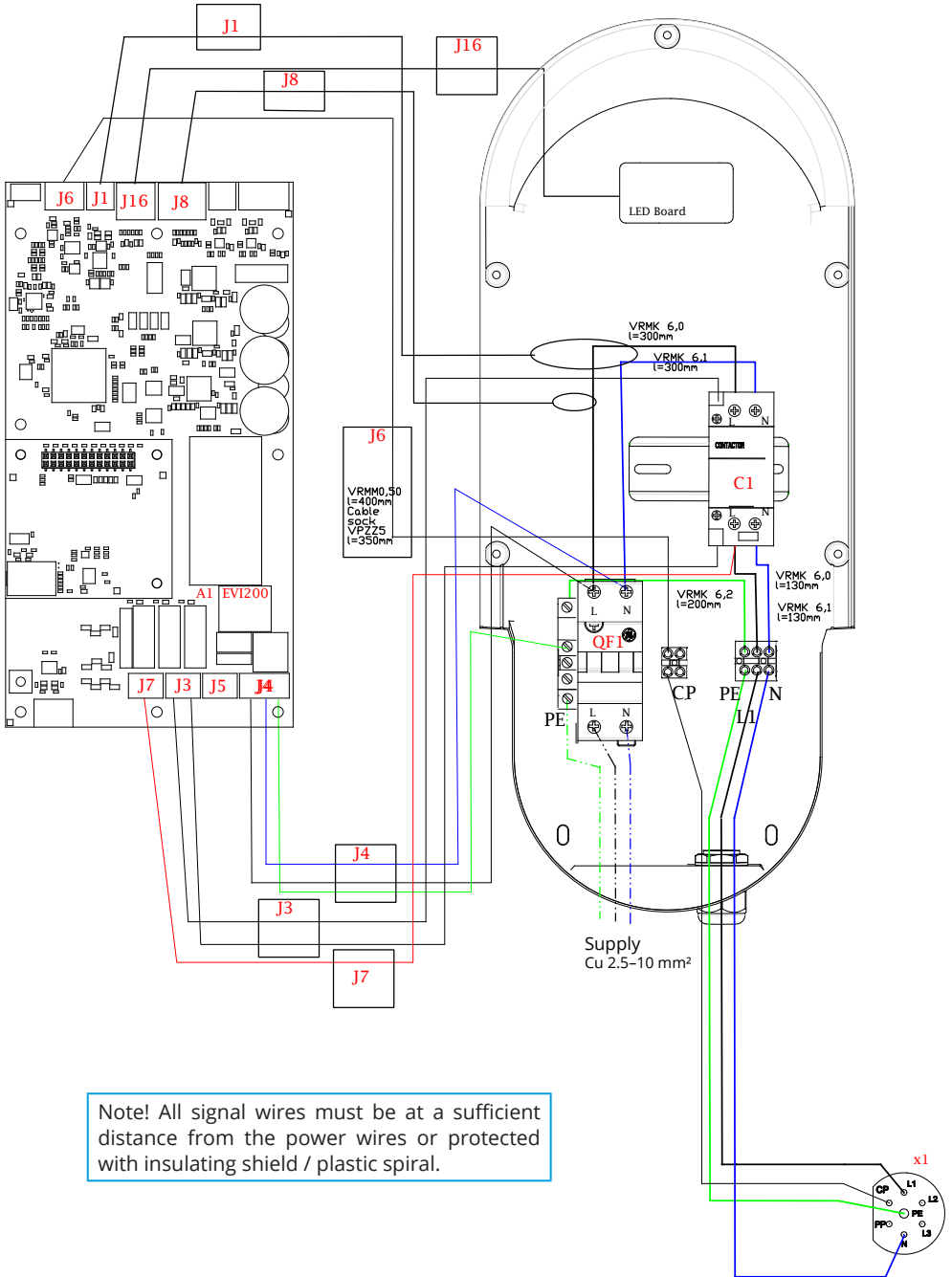
*Go through the visual, mechanical and electrical installation when the charger is un-powered.*

CATEGORY	X	ITEM
Overall look		You have received the ordered material.
		You do not see any scratches or damages.
Mechanical installation		The charger is fixed properly on installation site.
Electrical installation		Charger's power supply capacity meets electrical planning (cable size, MCB...). Review the local electrical design plan.
		The the PE-cable screw is tight.
		The power supply cables (L, N and PE) are properly connected.
		The insulation of power supply cables is intact (L, N and PE).
		The voltage between PE and N is less than 10 V.
		The PE conductor resistance is less than 3 $\Omega$ .
	Test the functionality of the residual current device.	
Operational check		All the LED states / color (green, blue, red) are functioning. <ul style="list-style-type: none"><li>• Use a car simulator.</li><li>• Create fail and charge.</li><li>• Red at bootup, green at idle and blue while charging.</li></ul>
Ready for use		The latest software is in use.

## 9. EVH161-HC000 / EVH321-HC000 internal circuit example



# 10. EVH161-HCR00 / EVH321-HCR00 internal circuit example





## 11. Troubleshooting

### *Charging station is off, no lights on*

<b>Issue</b>	<b>Corrective action</b>
Mains voltage does not exist in supply connector L.	Ensure proper power supply.
The circuit breaker QF1 is off (EVH161-HCR00 and EVH321-HCR00).	Turn the QF1 on.

# User Guide

## 12. Introduction

This Installation and User Guide is for the Ensto One Home Charger family. Even if the features and appearance of the different charger versions varies, the installation and usage of the product always follow the principles described in this guide.

Available features depend on the charger model.



## 13. Safety instructions for User



### WARNING

***Danger of electric shock! Risk of fire!***

- ***People who are not able to operate according to the instructions must not use this charger.***
- ***Do not use this charger if the charger itself or the charging cable appears to be damaged.***

## 14. Intended use








- The charger is intended for charging electric vehicles, both plug-in hybrids and full battery electric vehicles.
- Do not connect to the charger other devices, such as power tools.

## 15. User interfaces

The charger has two operating modes “**Free charging**” and “**Authorized**”. The default operating mode is “**Free charging**”. You can change the operating mode with the Ensto Charger Control application.

You can download the application from Google Play or App Store. Please see instructions in chapter **22. Ensto Charger Control Application** on pages 22 - 27.

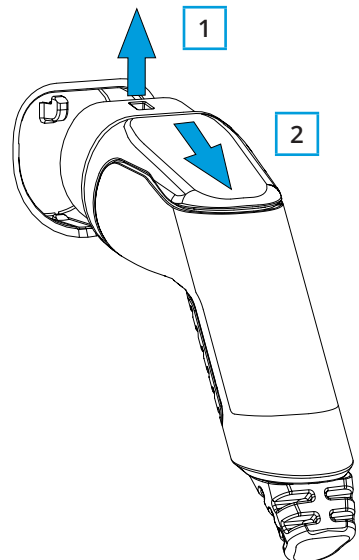
LED indicator lights show the status of the charger as described below:

Charger status	LED light	LED operation
The charger is free and ready to use	Green	Stable 
While you connect the charging cable	Green	Flashing twice 
Your vehicle is connected, charging has not started	Green	Waving 
Your vehicle is connected, charging starts	Blue	Waving 
Charging is ongoing	Blue	Stable 
Error state	Red	Stable 
Software update is ongoing. <i>Do not switch off the power or use the charger during the update.</i>	Yellow	Stable 

## 16. Charging in “Free charging” mode

### Start charging

- Remove the plug from the holder. First lift upwards so that the plug is released from the hook inside the holder and then pull outwards.
- Connect the plug to your vehicle’s receptacle.



### Stop charging

- Remove the plug from your vehicle.
- Put the plug back into the holder.

## 17. Maintenance / Preventive maintenance instructions

Do maintenance actions once a year or as needed.

With well-done maintenance you can ensure a long lifetime of the charger and keep the warranty valid.

X	MAINTENANCE ACTION
	Clean possible dirt and dust from the charger surface. Wipe carefully with a damp cloth.
	Examine the charging plug and the charging cable for wear out or mechanical damage. <i>Damaged parts must be replaced by an electrically skilled person.</i>
	Examine the sealings for wear out. <i>Damaged parts must be replaced by an electrically skilled person.</i>
	Software update, if necessary. The software update takes up to 8 minutes. <i>Do not switch off the power or use the charger during the update.</i>
	Test the electric protective device. <i>Comply local requirements for testing interval, but test the device at least once every six months.</i>

## 18. The electric protective device testing instructions

### EVH161-HC000 / EVH321-HC000:

Test the residual current device (RCD) at the supply line.

### EVH161-HCR00 / EVH321-HCR00:

- The combined device with residual current circuit breaker and over current protection (RCBO) is located in the installation box.
- Open the installation box hatch.
- Press the **TEST** button.
- The rocker turns to **0** position.
- Turn the rocker back to **I** position.
- If a fault occurs, contact an electrician.

## 19. Disposal



*Do not dispose of electrical and electronic devices including their accessories in the household waste.*

- When the charger is at the end of its life cycle, it must be disposed of properly according to local recycling guidelines.
- The charger's cardboard packing is suitable for recycling.
- Dispose of the plastic wrap with the household waste.

## 20. Warranty

Warranty conditions, see the product card on [www.ensto.com](http://www.ensto.com).

## 21. Declaration of Conformity

Hereby, Ensto Chago Oy declares that the Ensto One Home chargers are in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet address: [www.ensto.com](http://www.ensto.com).

## 22. Ensto Charger Control Application

- With the Ensto Charger Control Application you can control your charger and change the settings of your charger.
- Bluetooth technology is used for the wireless connection.
- You can pair your mobile to several chargers, but you can be connected only to one charger at a time.
- The range in free space is approximately 5m.

### 22.1. Commissioning the application

- Download the Ensto Charger Control application from Apple Store or Google Play.
- Open the application. In **"DEMO"** mode you can practice using the application.



Android version 5.0 and above  
iOS version 8.0 and above



Ensto Charger Control



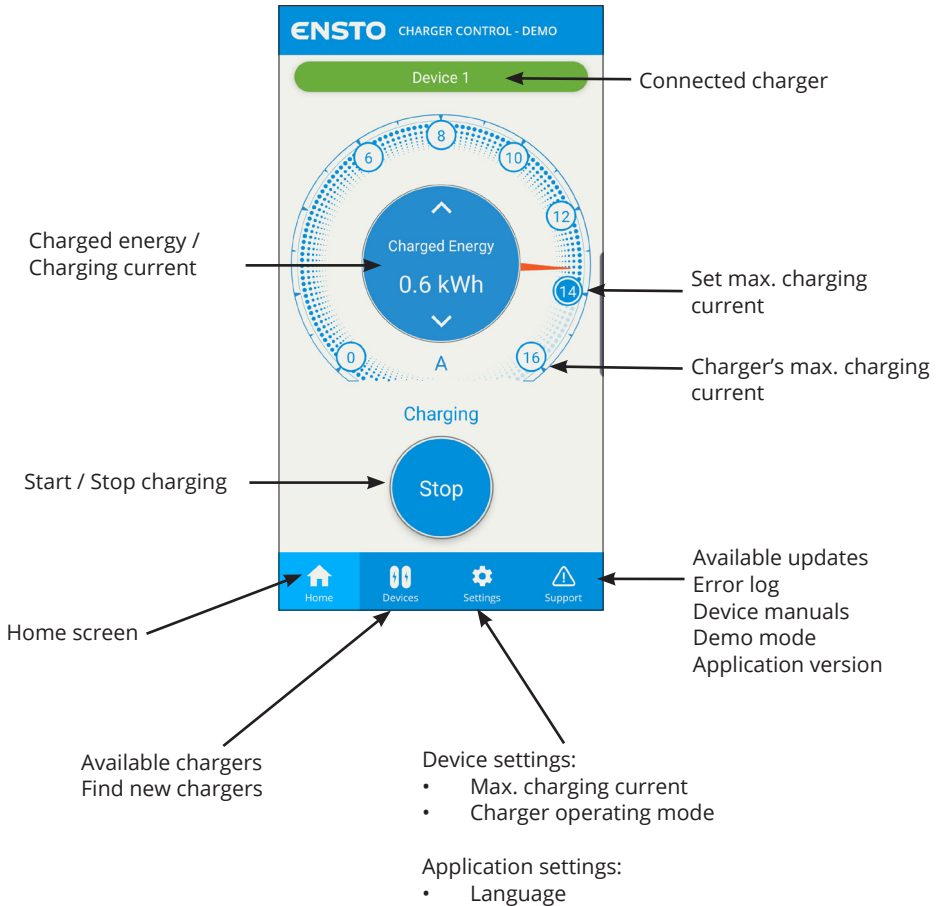
## 22.2. Pairing the charger with your mobile device



1. First switch off the charger from the main switch and then switch it on again.
2. Start the pairing procedure within 3 minutes.
3. Open the application.
4. Go to **"Devices"**.
5. Select from **"Available Devices"** the charger you want to pair with your mobile.
6. If the pairing fails the first time, try again starting from step 1.
7. When the pairing is completed, you can find your charger in **"My Devices"**.

If you want to control the charger with another mobile device, follow the pairing steps above,  
**Note! The charger can be paired only to one mobile device at a time.**

## 22.3. Application user interface



### Changing the maximum charging current

- The maximum charging current depends on the charger type
  - EVH161-HC000 and EVH161-HCR00: 16A
  - EVH132-HC000 and EVH132-HCR00: 32A
- If your installer has set the maximum charging current to a lower value, it is due to restrictions on the installation site.
- You can charge your vehicle at a lower current than the set maximum value. Notice that in that case it takes longer to charge your vehicle fully.
- You can set the charging current from "**Home Screen**" or "**Settings / Max charging current**".



## Changing the operating mode

- The default setting for the charger is **"Free charging"**.
- You can change the operating mode to **"Authorized"** in **"Settings / Charger operating mode"**.
- In the **"Authorized"** mode you start and stop charging with the application.

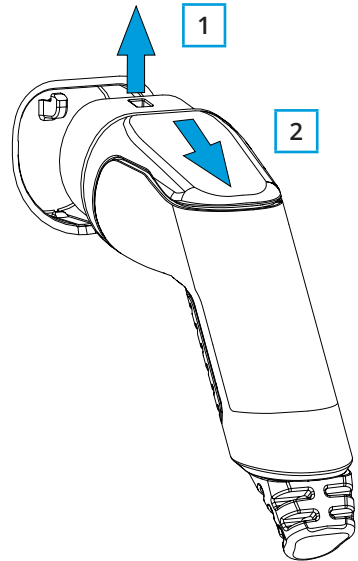
## 22.4. Charging in "Authorized" mode

### Start charging

- Remove the plug from the holder. First lift upwards so that the plug is released from the hook inside the holder and then pull outwards.
- Connect the plug to your vehicle's receptacle.
- Open the Ensto Charger Control application on your mobile device.
- Press **"Start"** on the application.

### Stop charging

- Open the Ensto Charger Control application on your mobile device.
- Press **"Stop"** on the application.
- Remove the plug from your vehicle.
- Put the plug back into the holder.



## 22.5. Error messages

At error state, an error code appears on the screen of your mobile device. See the table below for the cause and corrective actions.

Error code	Cause	Corrective action
E01	The charger has received incorrect information from the vehicle.	Switch off the charger from the main switch and then switch it on again. If the error occurs again, contact service.
E02	The fault current detection sensor is defective.	Contact service.
E03	The charger has an internal malfunction.	Contact service.
E04	The charger has an internal malfunction.	Contact service.
E05	The charger has detected fault current in the charging circuit.	Switch off the charger from the main switch and then switch it on again. If the error occurs again, contact service.
E06	A fault in the charge contactor has tripped the system's protection device RCD / RCBO.	Turn on the protection device RCD / RCBO. If the error occurs again, contact service.
E07	The charger was unable to identify the current-carrying capacity of the charging cable.	The charging cable may be defective. Restart the charger. If the error occurs again, try charging with another charging cable.
E08	The charger has detected a malfunction in the vehicle.	Switch off the charger from the main switch and then switch it on again. If the error occurs again, take your vehicle to service. If possible, try charging another vehicle.
E09	The charger is overheated.	Let the charger cool down and try again. If the charger is in an exceptionally warm environment, try lowering the ambient temperature.
E10	The vehicle has exceeded the permitted charging current.	Switch off the charger from the main switch and then switch it on again. If the error occurs again, take your vehicle to service. If possible, try charging another vehicle.
E11	The charger has a malfunction.	Contact service.
E12	The charger has detected a software error.	Contact service.
E15	The charger has an internal malfunction.	Switch off the charger from the main switch and then switch it on again. If the error occurs again, contact service.

E18	A fault in the charge contactor has tripped the system's protection device RCD / RCBO.	Turn on the protection device RCD / RCBO. If the error occurs again, contact service.
E19	The vehicle has performed an operation that is not supported by the charger.	The charger and the vehicle are incompatible with certain features. The charger can partially charge the vehicle. The incompatibility will not damage the charger or the vehicle.
E21	The control circuit on the charge contactor has a malfunction.	Switch off the charger from the main switch and then switch it on again. If the error occurs again, contact service.

If you need to contact Ensto related to faulty operation of the charger, go first to “**Support / Error log**”. Save the error log information before contacting. This information helps the technical support and maintenance to resolve the issue.

*Note! In some situations the charger automatically returns to normal operation within approximately 5 minutes after disconnecting the charging cable.*



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