

## Ensto One Apartment



EVH161-ACRM0

EVH321-ACRM0

EVH161-A2RM0

EVH321-A2RM0

EVH161-A2RMD



Installation Guide

User Guide



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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. Charger features

Available features depend on the charger model.

#### EVH...-ACRM0



#### EVH...-A2RM0 / EVH161-A2RMD



Separate charging cable, not included



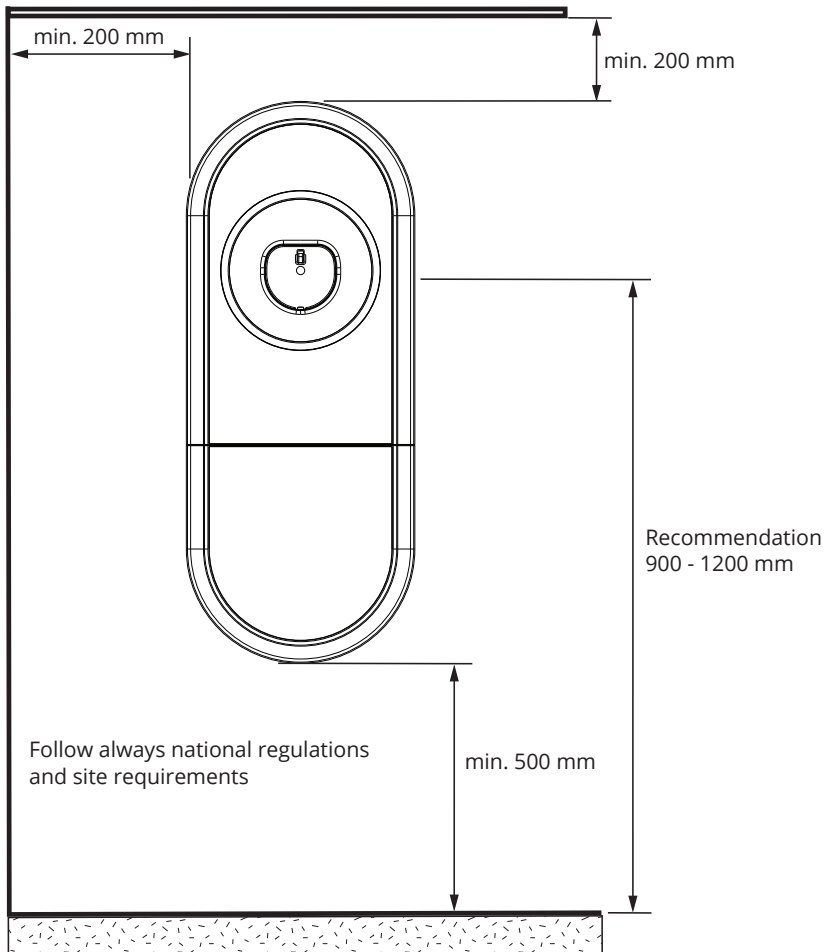
## 4. Mounting instructions

### 4.1. 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.



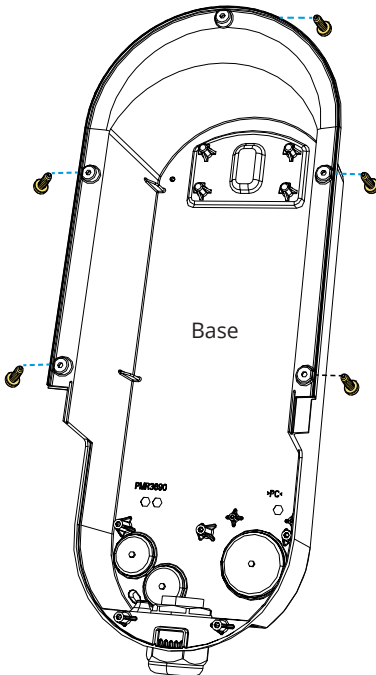
## 4.2. Cable entries

- 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.

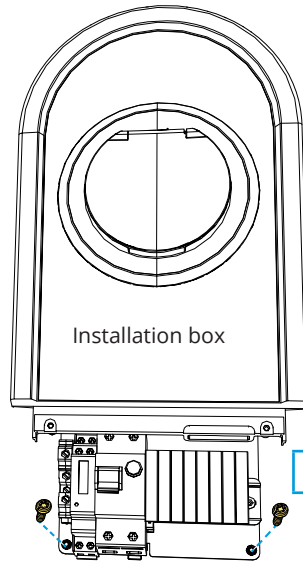
### Installation steps when cable routing is from alternative cable entries

1. Disassemble the charger.

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

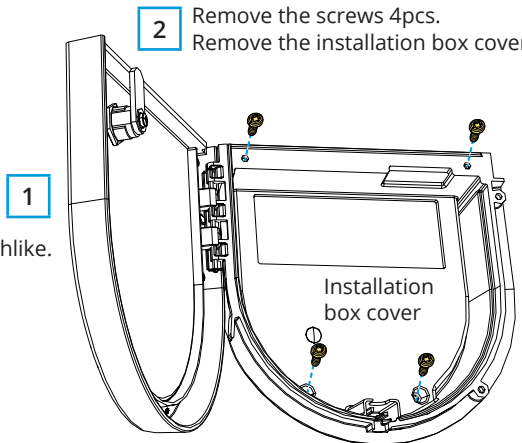


Unlock the hatch with a coin or suchlike.



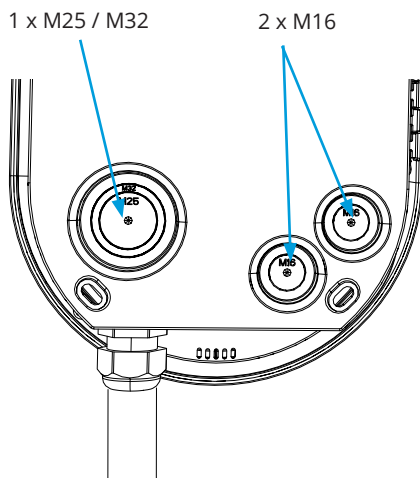
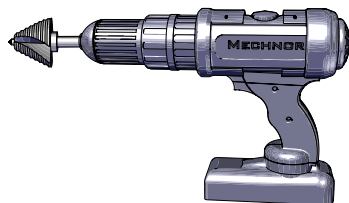
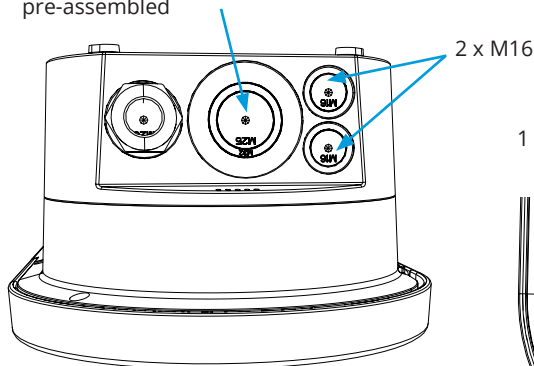
- 3** Remove the screws 2pcs.

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



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.

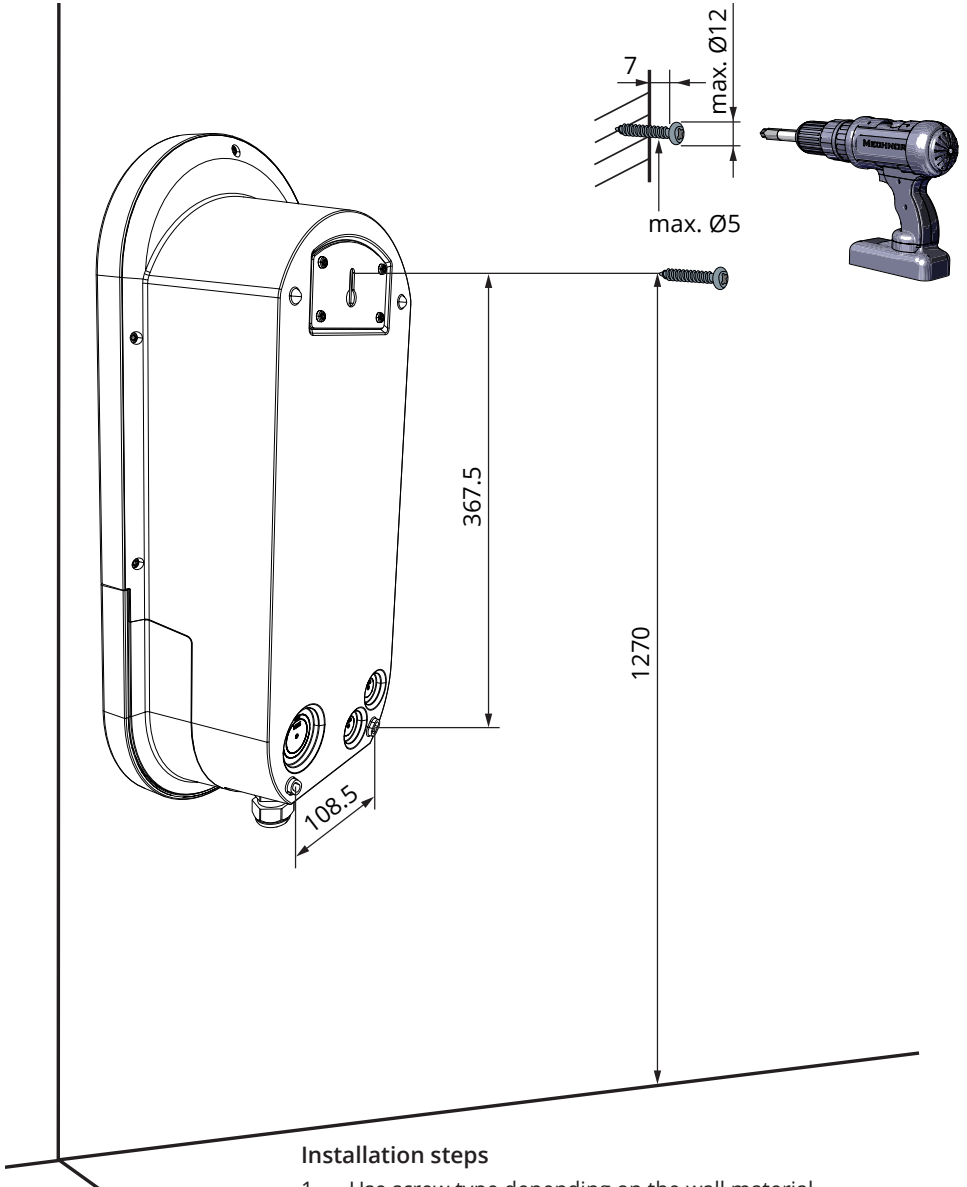
1 x M25 / M32  
M32 cable gland for cable Ø 17-25mm  
pre-assembled



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-ACRM0 / EVH161-A2RM0 / EVH161-A2RMD: included 1pc
PMR1219.3225B	Black reduction nipple, M32 => M25	EVH161-ACRM0 / EVH161-A2RM0 / EVH161-A2RMD: 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	

### 4.3. Wall mounting

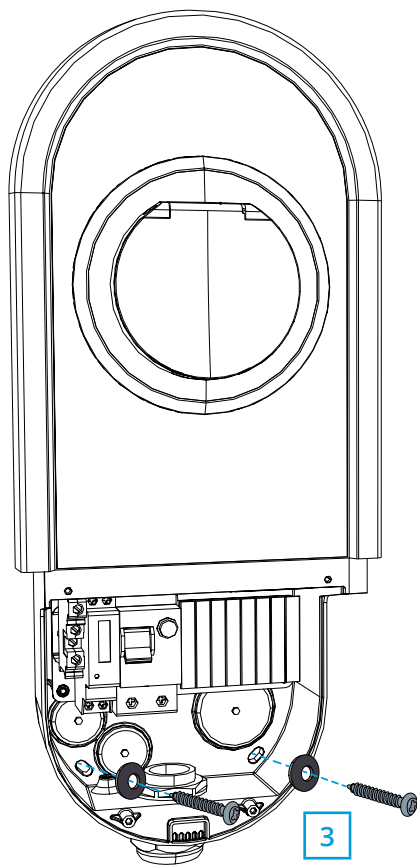
- When selecting the installation location, make sure that the wall material is suitable and robust. The mounting surface should be flat and vertical.



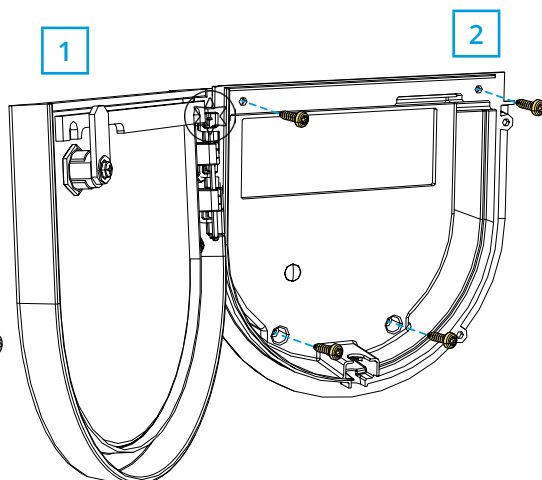
#### Installation steps

1. Use screw type depending on the wall material.
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 unlocking the hatch lock with a coin or suchlike [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].  
***EVH161-ACRMO / EVH321-ACRMO: Be careful not to damage the fixed 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.

## 5. 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.

*A combined device with residual current circuit breaker and over current protection (RCBO) is integrated.*

### EVH...-ACRM0

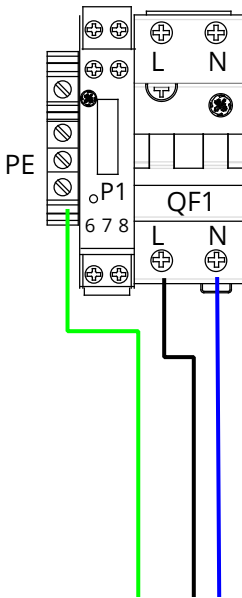
- Fixed charging cable

### EVH...-A2RM0

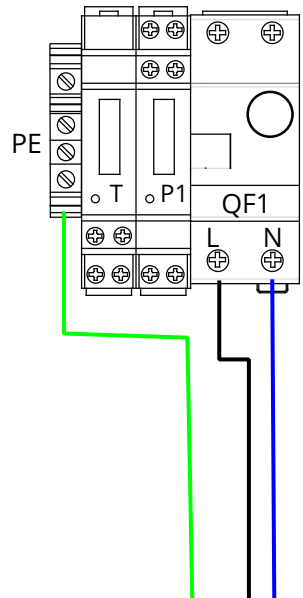
- Separate charging cable

### EVH161-A2RMD

- Separate charging cable
- Domestic socket



Supply  
Cu 2.5 - 10 mm<sup>2</sup>



Supply  
Cu 2.5 - 10 mm<sup>2</sup>

A label set of RCBO testing instructions is included in the delivery. Attach a language specific label on the installation box hatch.

## 6. Commissioning the charger

The charger is ready to use after the installation is completed. The charger is in **“Free charging”** operating mode. You can configure charger’s settings in EV Manager. Please see the EV Manager User Manual <https://ewiki.ensto.technology/display/CHWI/EV+Manager>.

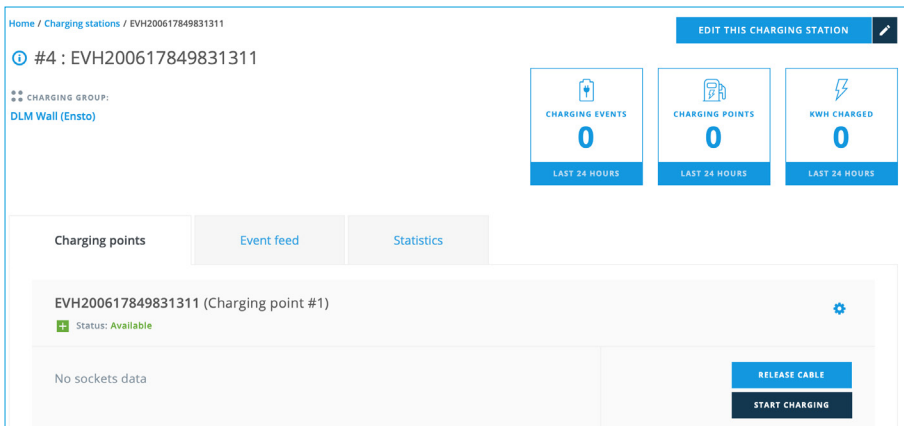
You can also make changes to the settings with Ensto Charger Control Application. You can download the application from Google Play or App Store. Please see instructions in chapter **19. Ensto Charger Control Application** on pages 20 - 24.

### 6.1. Change the operating mode to **“Authorized”**

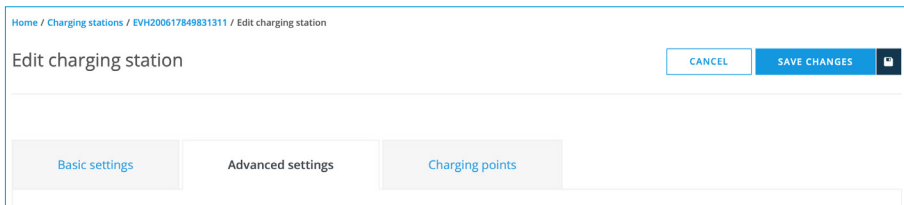
Change the operating mode to **“Authorized”** in EV Manager.

#### Installation steps

1. Open your EV Manager in a web browser (Google Chrome or Firefox).
2. Select the charger you want to change to **“Authorized”** operating mode. Note! The charger must have connection to the internet.
3. Select **“Edit this charging station”**.



4. Select the tab **“Advanced settings”**



5. Refresh configuration.
6. Change the value **“EVSE.FREECHARGIN”** from **“1”** to **“0”**.
7. Save the changes.

## 7. Technical information

Electrical Connections	EVH161-ACRM0	EVH321-ACRM0	EVH161-A2RM0	EVH321-A2RM0	EVH161-A2RMD
Nominal supply voltage	1-ph, 230 VAC				
Nominal frequency	AC 50 Hz				
Charging current max.	1x16A	1x32A	1x16A	1x32A	1x16A + domestic socket
Charging power max.	3600W	7400W	3600W	7400W	3600W
Supply connections and terminals	L, N, PE Cu 2.5–10 mm <sup>2</sup> L and N tightening torque: 2 - 2.4 Nm / PE tightening torque: 1.5 - 1.8 Nm				

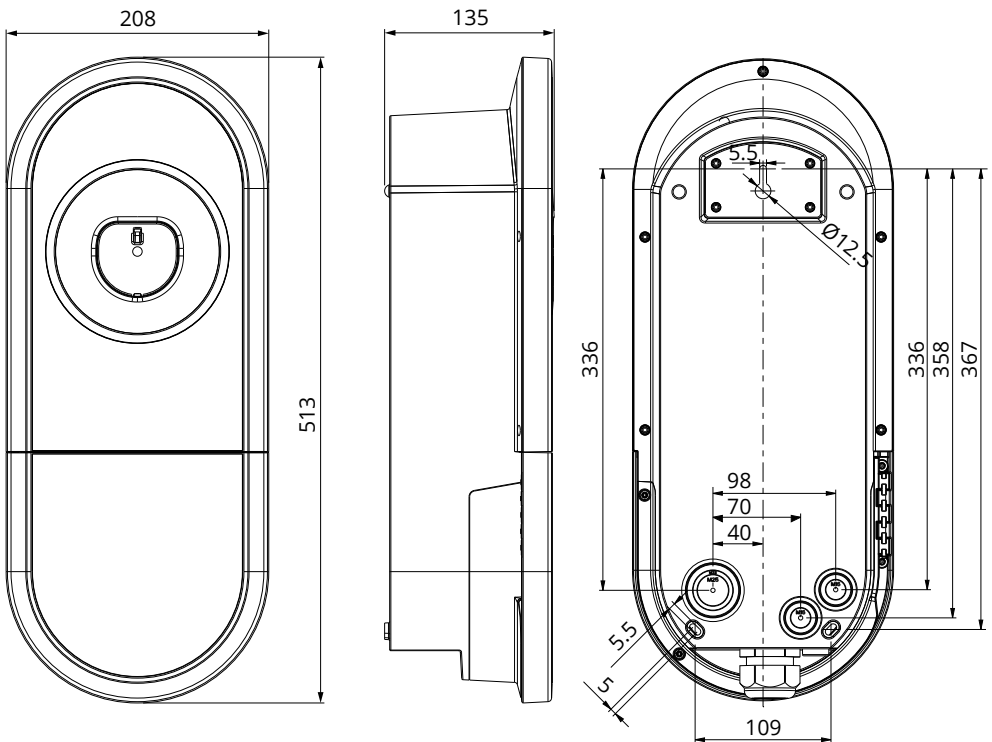
Design and Mechanics	EVH161-ACRM0	EVH321-ACRM0	EVH161-A2RM0	EVH321-A2RM0	EVH161-A2RMD
Material	Polycarbonate				
Color	Frame: RAL7021 dark grey Cover: Silver				
Installation box	Mechanical hatch lock				
Weight	5,4 kg				
Ingress Protection	IP54				
Impact Resistance	IK10				
Operating temperature	-40 °C ... +50 °C				
Mounting	Wall / Ground				

User Interface	EVH161-ACRM0	EVH321-ACRM0	EVH161-A2RM0	EVH321-A2RM0	EVH161-A2RMD
Connection to vehicle	Fixed cable, length 5m		Mode3, Type 2 socket *		Mode3, Type 2 socket + Domestic socket *
Charging status indication	4-color LED: Green = Ready / Blue = Charging / Red = Error / Yellow = SW update				
Use access	Free access RFID (ISO/IEC 14443A, ISO/IEC 15693) Mobile application				
Current measurement	MID class kWh meter				

\*The charging cable is not included.

Control and Communication	EVH161-ACRM0	EVH321-ACRM0	EVH161-A2RM0	EVH321-A2RM0	EVH161-A2RMD
Operation mode	Standalone / Online				
Wireless	Bluetooth				
Wired	Ethernet				
Charging control system	"Simplified control pilot" functionality, specified in EN IEC 61851-1:2019, Annex A.2.3 is not supported. ZEReady 1.2b and EVReady 1.4b are not supported.				

## 8. Dimension drawing



## 9. 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 the installation site.
Electrical installation		Charger's power supply capacity meets electrical planning (cable size, protective devices...).
		Review local electrical design plan.
		The PE-cable screw is tight.
		The power supply conductors (L, N and PE) are properly connected.
		The insulation of power supply cable and conductors (L, N and PE) is intact.
		The voltage between PE and N is less than 10 V
Operational check		The PE conductor resistance is less than 3 $\Omega$
		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>
		Available electricity at the sockets. Use a Mode 3 tester.
		Verify that when the indicator LED is green, there is no power at the socket contact.
		Test the function of Mode 3 (from green to blue). Use a Mode 3 tester.
		Test the functionality of the residual current protection device.
Ready for use		Correct software is in use.
		Correct operating mode.

## 10. 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.



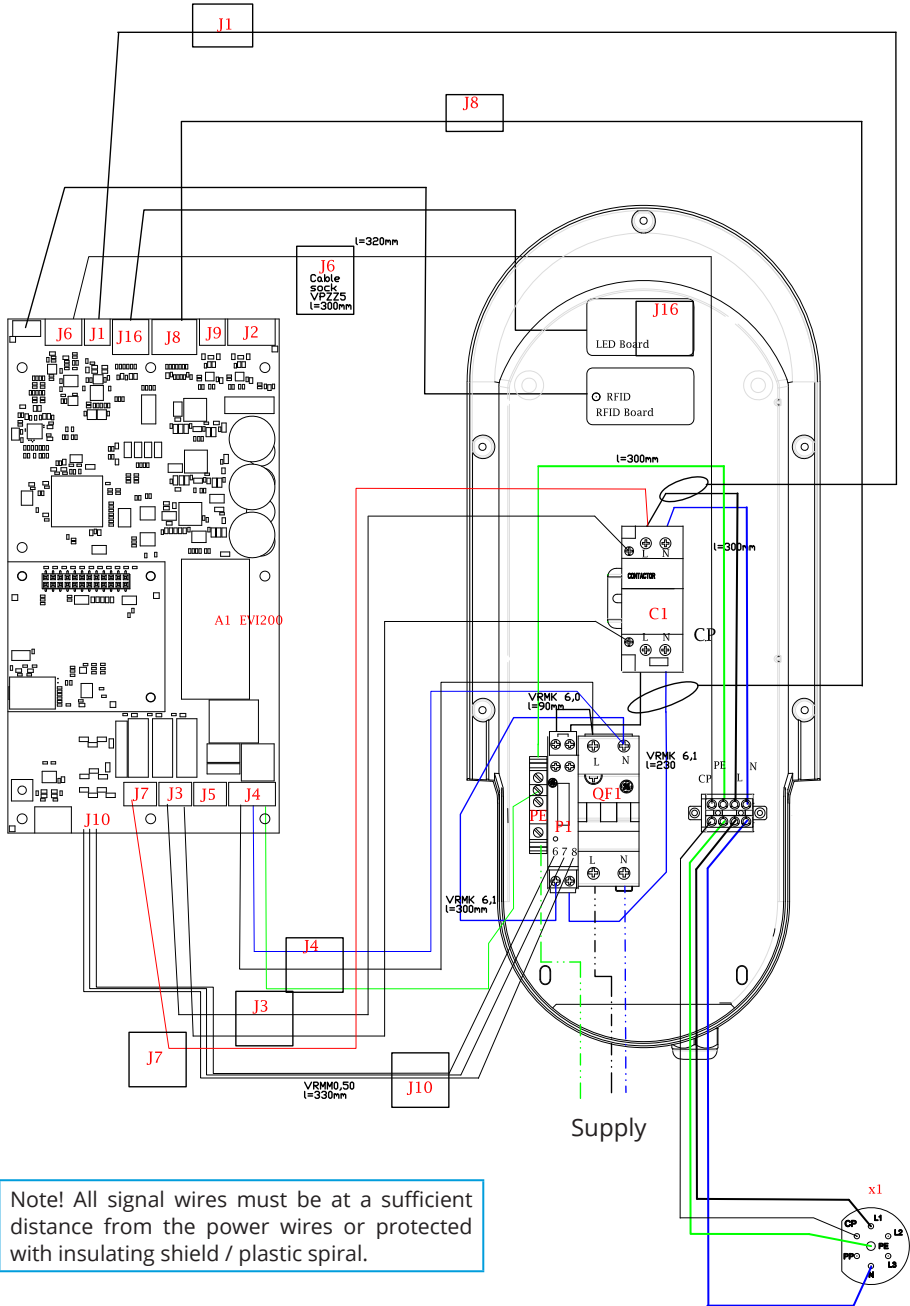
**WARNING! Danger of electrical shock or injury.**  
**Disconnect power before working inside the device or removing any components.**

X	MAINTENANCE ACTION
	Clean possible dirt and dust from the charger surface. Wipe carefully with a damp cloth.
	Retighten all screws on electric components.
	Examine the socket for burn or damaged parts. If necessary, replace the socket (socket cost is not under warranty).
	Examine the charging cable for wear out and mechanical damage. If necessary, replace the charging cable.
	Examine the sealings for wear out. If necessary, replace the sealings.
	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>
	Available electricity at the sockets. Use a Mode 3 tester.
	Test the function of Mode 3 (from green to blue). Use a Mode 3 tester.
	Make sure the PE-cable screw is tight.
	Test that the voltage between PE and N is less than 10 V.
	Test that the PE conductor resistance is less than 3 Ω.
	Software update, if necessary. The software update takes at least 10 minutes. <b>Do not switch off the power or use the charger during the update.</b>
	Restart the charger from QF1. Ensure it will restart properly.
	Test the residual current protection device. Comply local requirements for testing interval, but test the device at least once every six months.

## 11. Testing instructions for the electric protective device

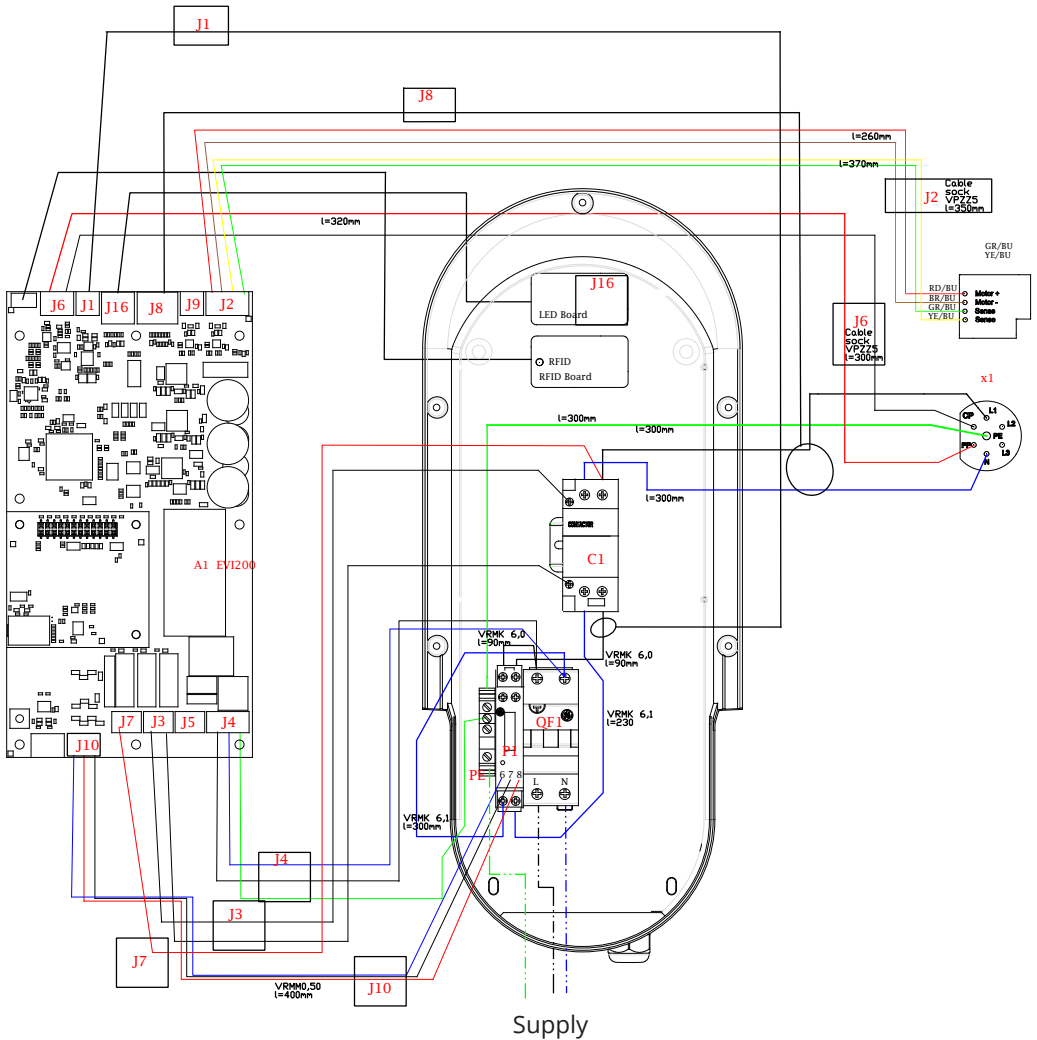
- The combined device with residual current circuit breaker and over current protection (RCBO) is located in the installation box.
- Open the installation box hatch.
- Press the **TEST** button.
- The rocker turns to the **0** position.
- Turn the rocker back to the **I** position.
- If a fault occurs,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

## 12. EVH161-ACRM0 / EVH321-ACRM0 internal circuit example



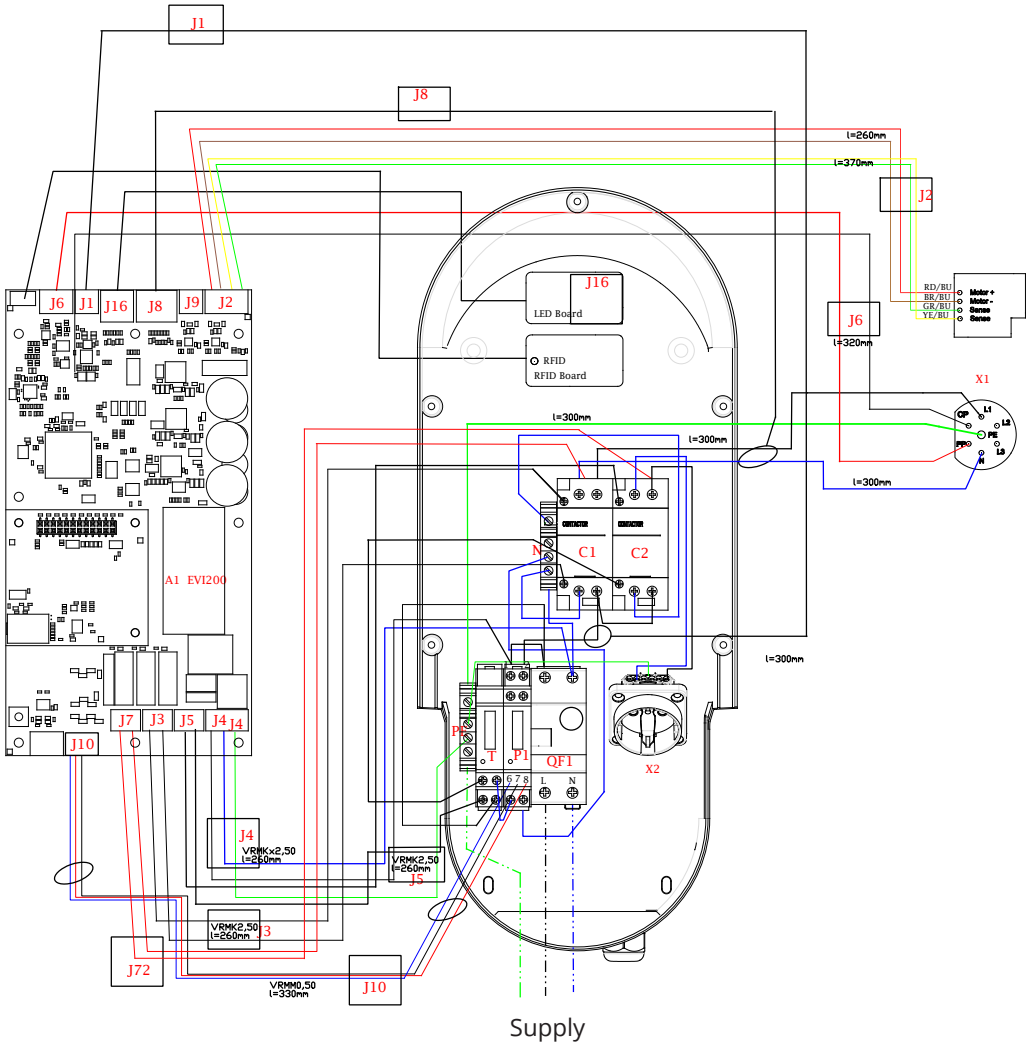


### 13. EVH161-A2RM0 / EVH321-A2RM0 internal circuit example



Note! All signal wires must be at a sufficient distance from the power wires or protected with insulating shield / plastic spiral.

# 14. EVH161-A2RMD internal circuit example



Note! All signal wires must be at a sufficient distance from the power wires or protected with insulating shield / plastic spiral.

## 15. Troubleshooting

*Charging station is off, no lights on*

Issue	Corrective action
Mains voltage does not exist in supply connector L.	Ensure proper power supply.
The circuit breaker QF1 is off.	Turn the QF1 on.

## 16. Disposal



*Do not dispose of electrical and electronic devices including their accessories with 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 or according to local recycling guidelines.

## 17. Warranty

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

## 18. Declaration of Conformity

Hereby, Ensto Chago Oy declares that the Ensto One 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).

## 19. Ensto Charger Control Application

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

### 19.1. Installing 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.



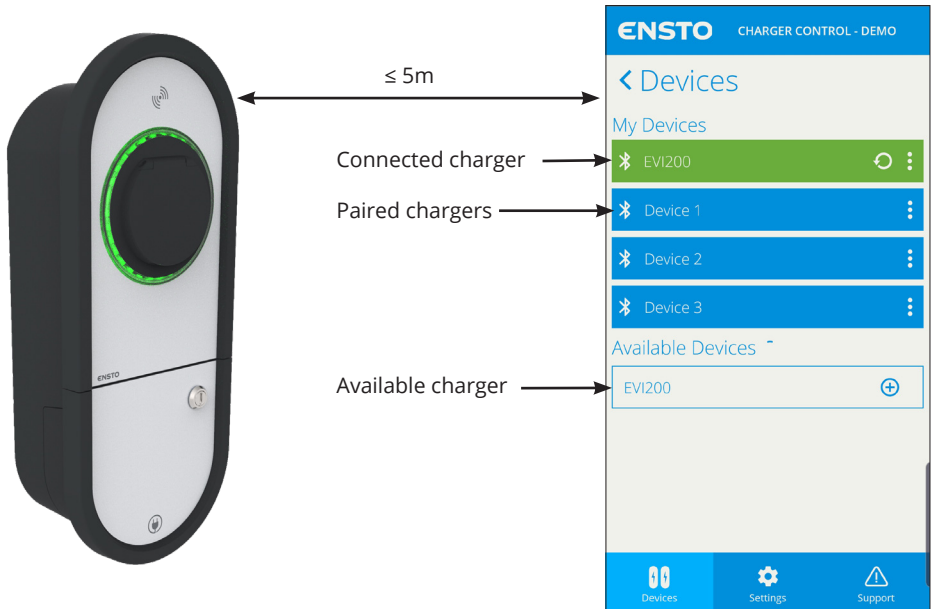
Android version 5.0 and above  
iOS version 8.0 and above



Ensto Charger Control



## 19.2. 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.**

### 19.3. Changing the maximum charging current



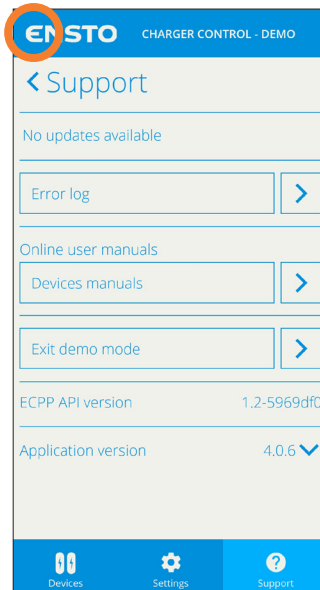
#### WARNING

*Danger of electric shock! Risk of fire!*

- *The setting of the maximum charging current must comply with the system dimensioning.*
- The maximum charging current depends on the charger type  
EVH161-ACRM0 / EVH161-A2RM0 / EVH161-A2RMD : 16A  
EVH132-ACRM0 / EVH132-A2RM0: 32A

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.

- Open the Ensto Charger Control on your mobile device.
- 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.



## 19.4. 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	Issue	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.
E13	The charger has detected a short circuit in the charging cable.	The charging cable may be defective. Switch off the charger from the main switch and then switch it on again. If the error occurs again, try charging with another charging cable.

E14	A failure occurred while locking or unlocking the charging cable.	Make sure there is no tension on the charging cable. Push the plug deeper into the plug holder and try again. If the error occurs again, 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.
E16	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.
E17	The charger cannot connect to the back-office.	This error may not be due to the charger itself. The problem may be with your network service provider.
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.
E20	The energy meter does not communicate with the charger.	Contact service.
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.
E22	Software certificate on the charger is missing or corrupted.	Contact service.
E23	Charger's RFID reader is defective.	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.***



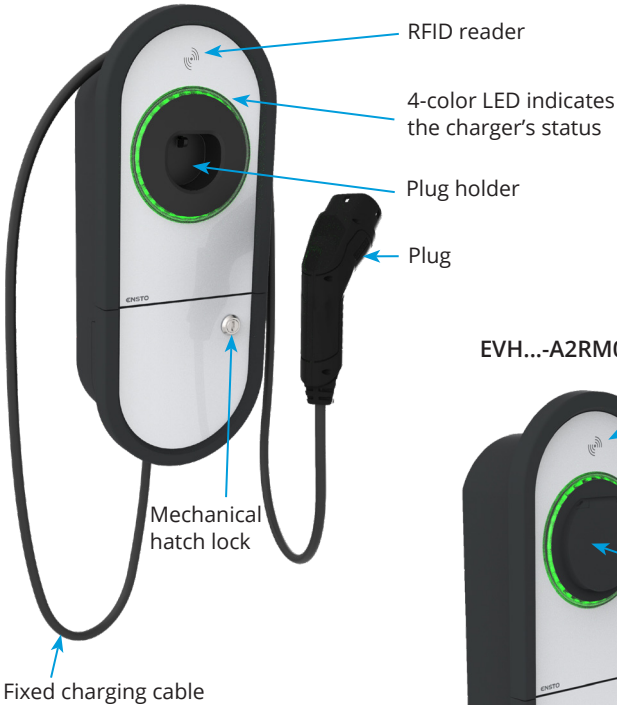
# User Guide

## 20. Introduction

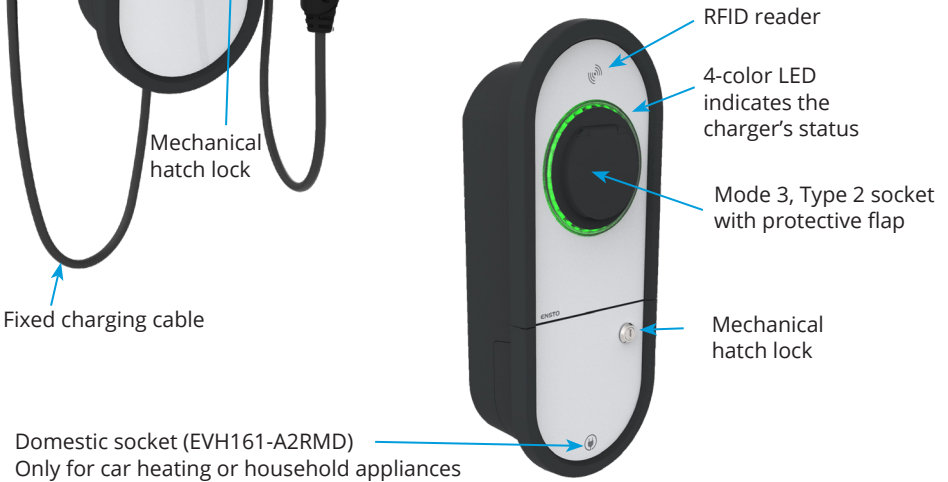
This User Guide is for the Ensto One Apartment Charger family. Even if the features and appearance of the different charger versions varies, the usage of the product always follow the principles described in this guide. Available features depend on the charger model.

Ensto collects data from the charging stations connected to the Internet. This anonymized data may be used to develop new digital services and improve user experience and Ensto's offering.

### EVH...-ACRMO



### EVH...-A2RM0 / EVH161-A2RMD



Separate charging cable, not included



## 21. 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.*
- *Do not use the domestic socket to charge an electric vehicle.*

## 22. 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.
- Use the domestic socket only for car heating or household appliances (e.g. vacuum cleaner).

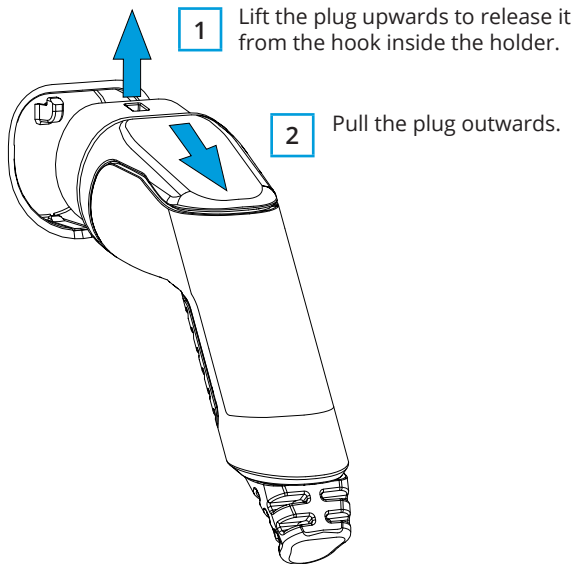
## 23. User Interfaces

LED indicator lights will 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 
RFID read, authorization ongoing	Green	Flashing 
Charging authorization rejected	Red	Flashing 
Authorization accepted, charging allowed	Green	Waving 
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 ongoing	Blue	Stable 
Error state	Red	Stable 
Software update ongoing. <i>Do not switch off the power or use the charger during the update.</i>	Yellow	Stable 

## 24. Charging

EVH161-ACRM0 and EVH132-ACRM0 are equipped with a fixed charging cable.



### 24.1. Free Charging

#### Start charging

- When the charger is free and the LED indicator shows green, you can start a charging event
- Plug in your electric vehicle.
- The LED indicator turns to stable blue.

#### Stop charging

- Unplug your electric vehicle.
- After you have unplugged the charger is free for the next user.

## 24.2. Charging with RFID

You need an RFID tag which has a permission to access the charger.

### Start Charging with RFID

When the charger is free and the LED indicator shows green, you can start a charging event.

- Plug the charging cable to the electric vehicle.
- Plug the charging cable to the charger (EVH...-A2RM0 / EVH161-A2RMD).
- Show the RFID tag to the RFID reading area.

While the RFID tag is read, the LED indicator flashes green and verifies the user permission to charge. If the user authorization is rejected, the LED indicator flashes red. If the user authorization is accepted, the indicator light turns to waving green.

- Charging starts.  
The LED indicator turns to stable blue.

### Stop Charging with RFID

- Show the RFID tag to the RFID reading area.
- Charging event is ended.  
The LED indicator turns to waving green.
- Unplug the charging cable from the charger (EVH...-A2RM0 / EVH161-A2RMD).
- Unplug the charging cable from the electric vehicle.  
The charger is free for the next user.



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