

ENSTO

Ensto One Home

EVH161-HC000

EVH321-HC000

EVH161-HCR00

EVH321-HCR00



ENG

Installation Guide

User Guide

CE

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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.
- Multilingual Quick Guide



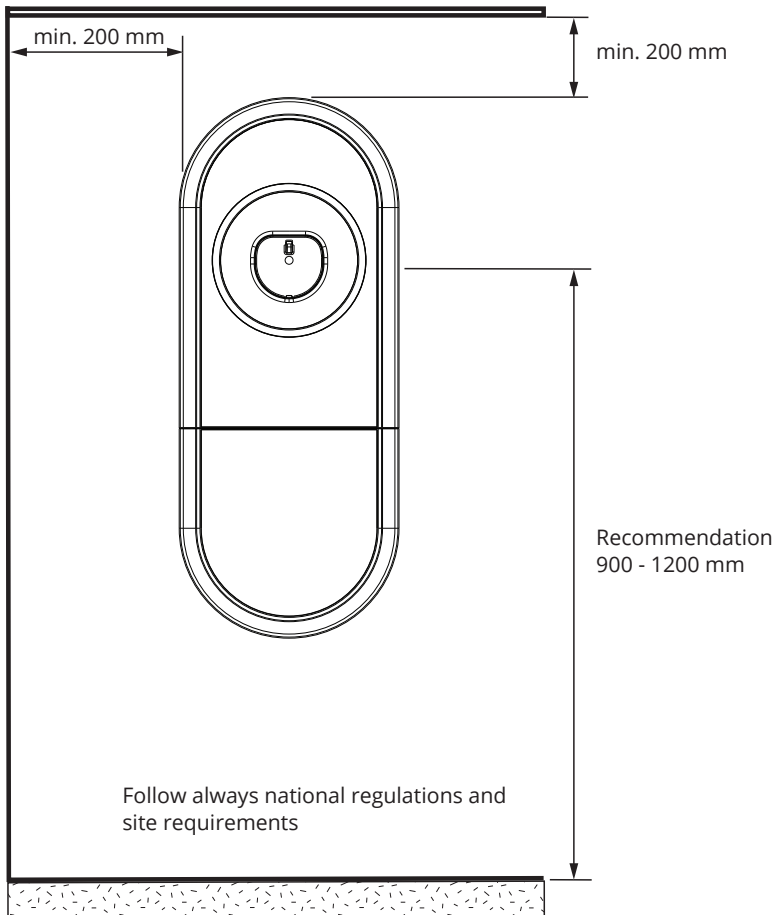
3. Mounting instructions

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.



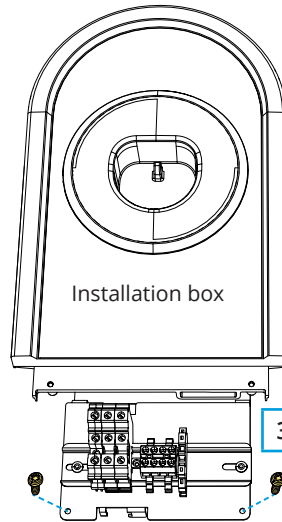
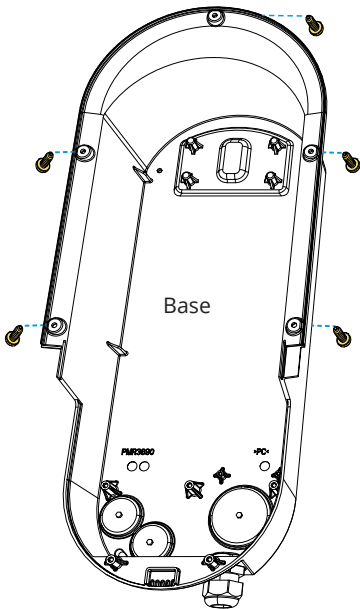
3.2. Cable entries

- 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.

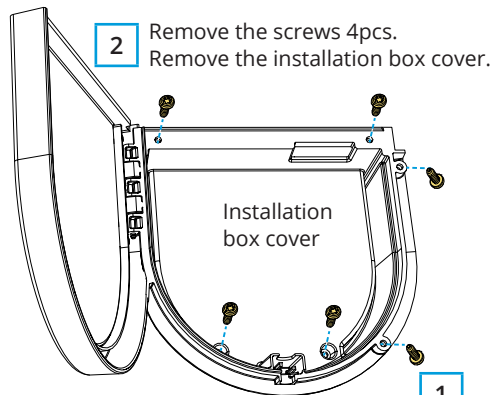
Installation steps when cable routing is from alternative cable entries

1. Disassemble the charger.

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



- 3** Remove the screws 2pcs.



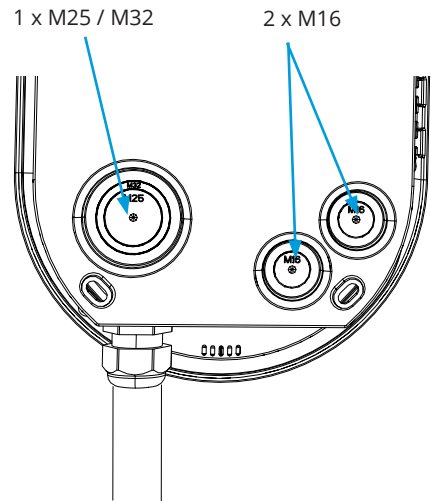
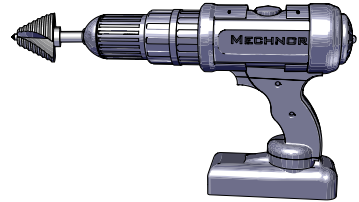
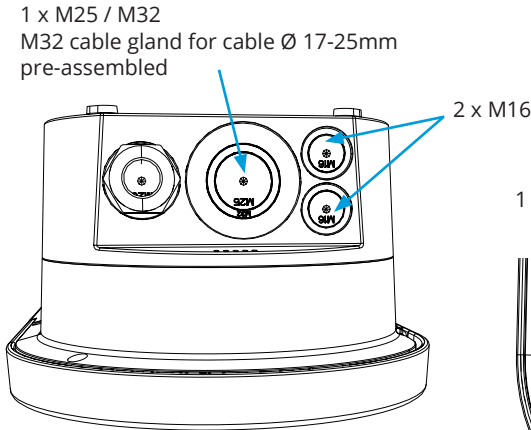
- 2** Remove the screws 4pcs.
Remove the installation box cover.

1

Screw fixing: Remove the screws 2pcs.

Mechanical lock: Unlock the hatch with a coin or suchlike.

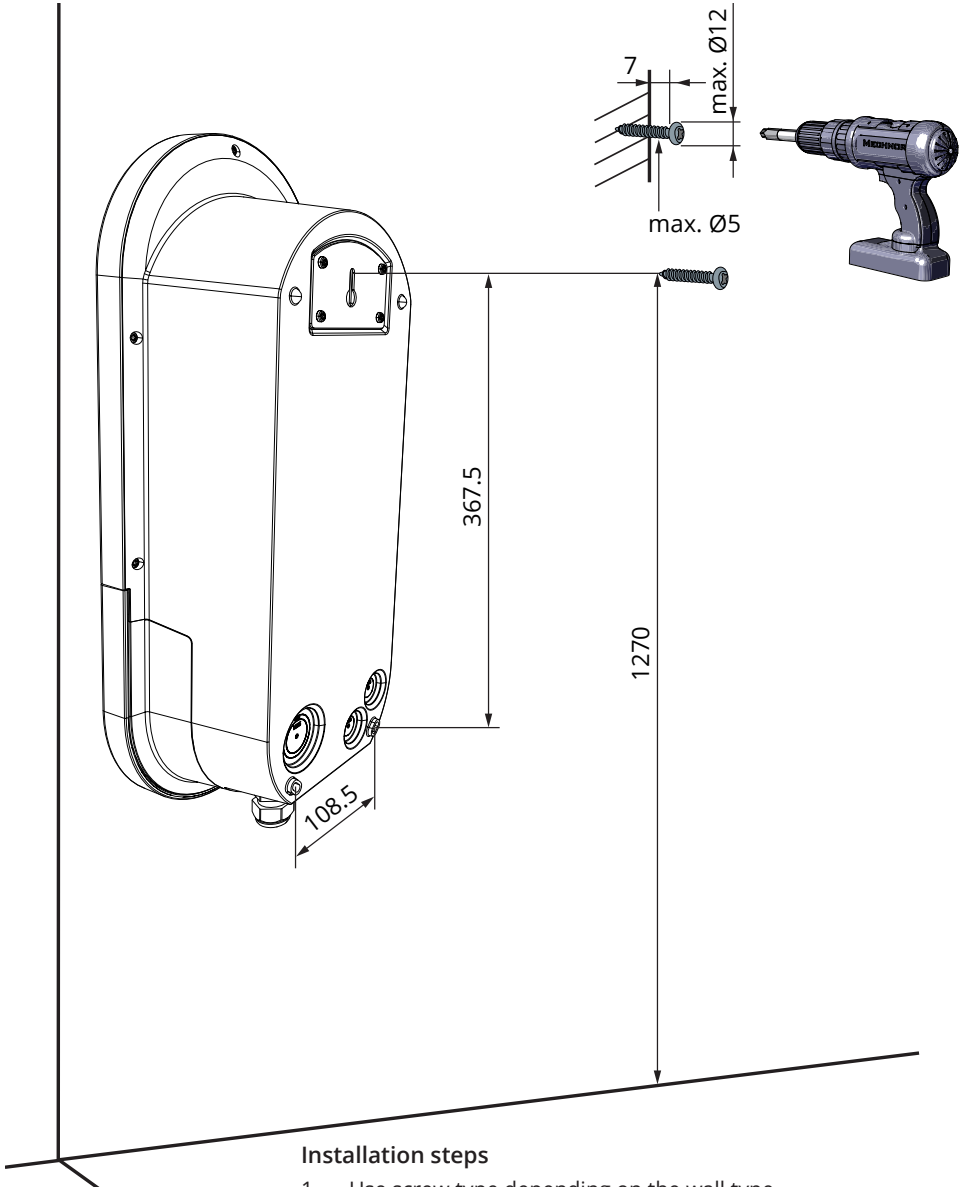
2. Open the needed cable entries with a step drill bit.
3. Prepare the cable entries with suitable accessories.
4. Remove the included cable gland from the bottom and close the cable entry with a cover plug, PMR1217.32B (accessory).
5. Assemble the base and insert.
6. Assemble also the installation box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

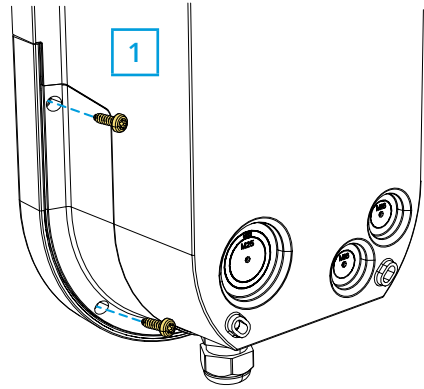
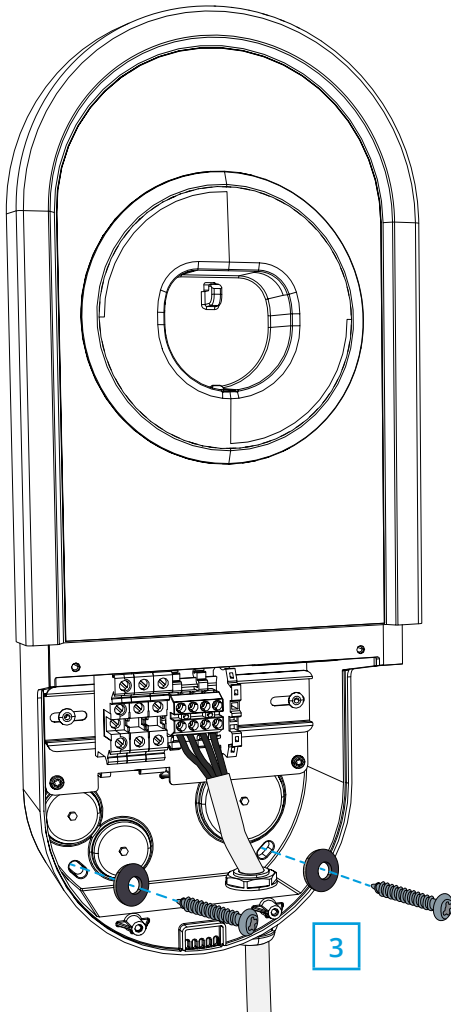
3.3. Wall mounting

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

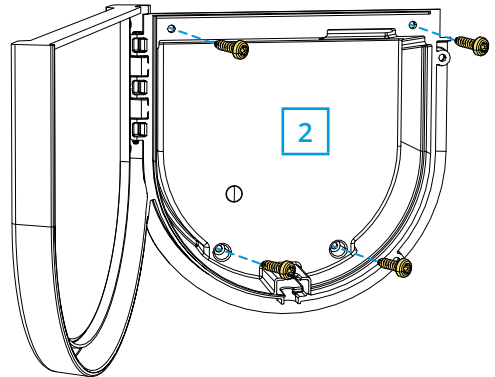


Installation steps

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



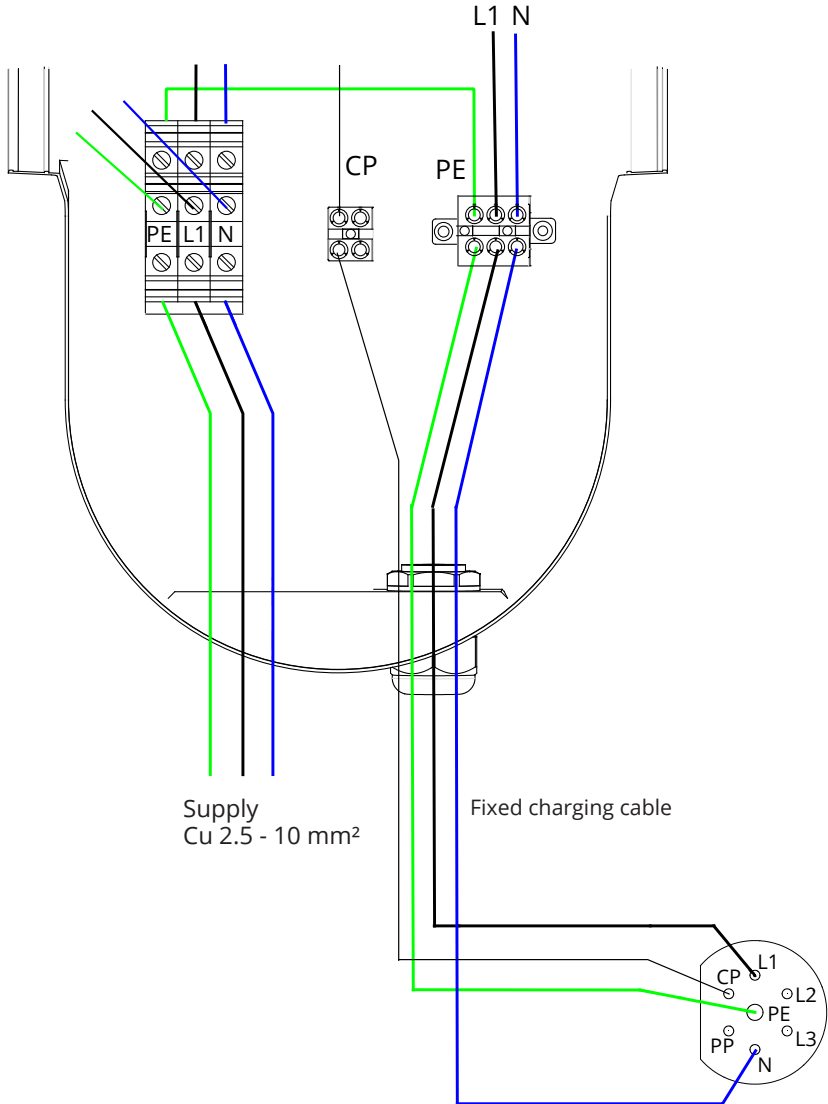
3. Open the installation box hatch by removing the fastening screws (2 pcs) / unlocking the hatch lock [1].
4. Remove the entire installation box cover by unscrewing the fastening screws (4 pcs) [2].
5. Hang the charger on the screw you attached to the wall.
6. Secure the charger on wall with two washers 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.

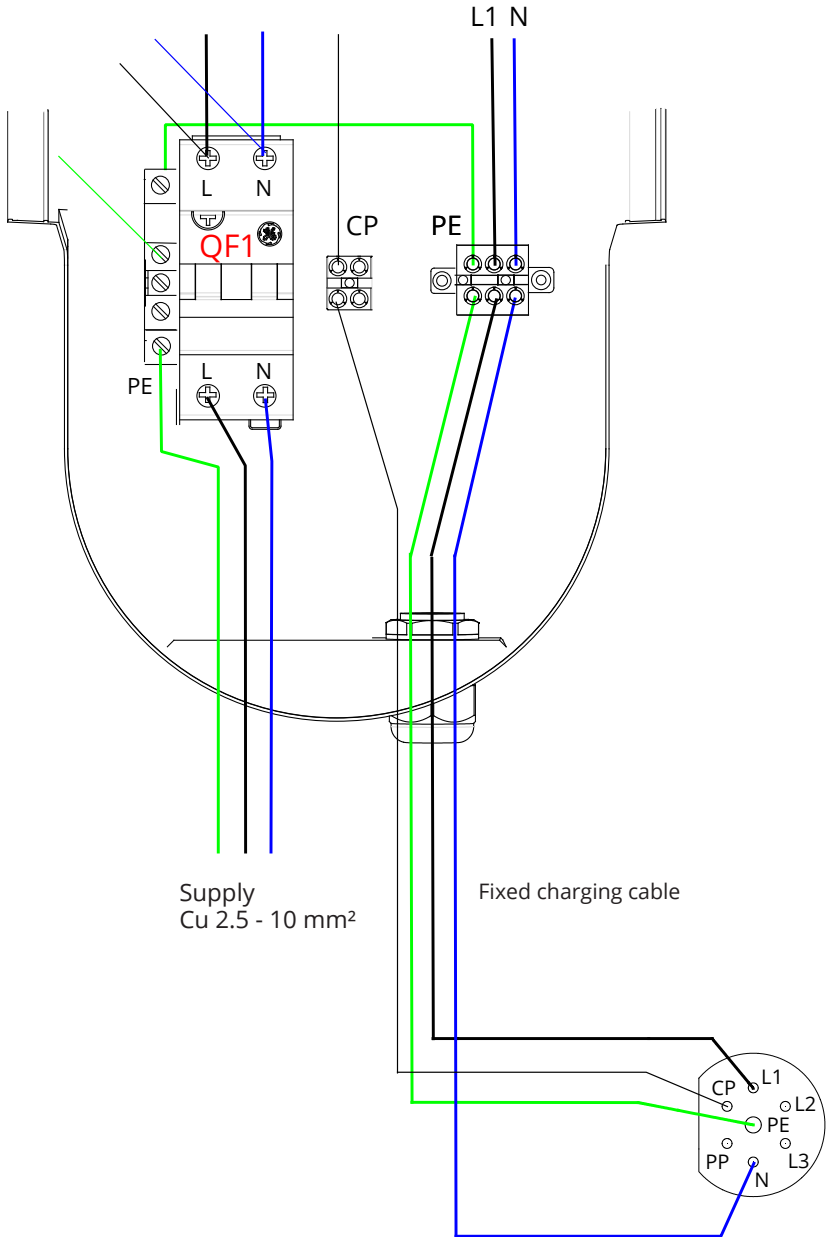
EVH161-HC000 / EVH321-HC000:

- 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



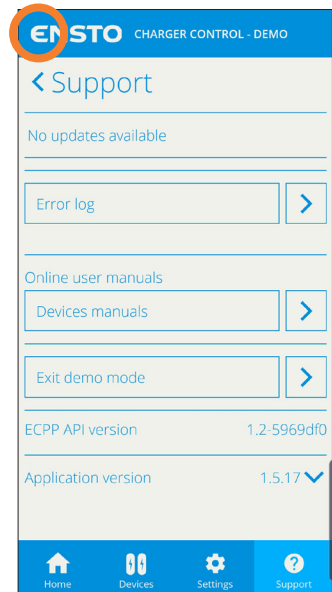
WARNING

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.

- 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.



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 ² / Tightening torque: 1.5 - 1.8 Nm | | | |

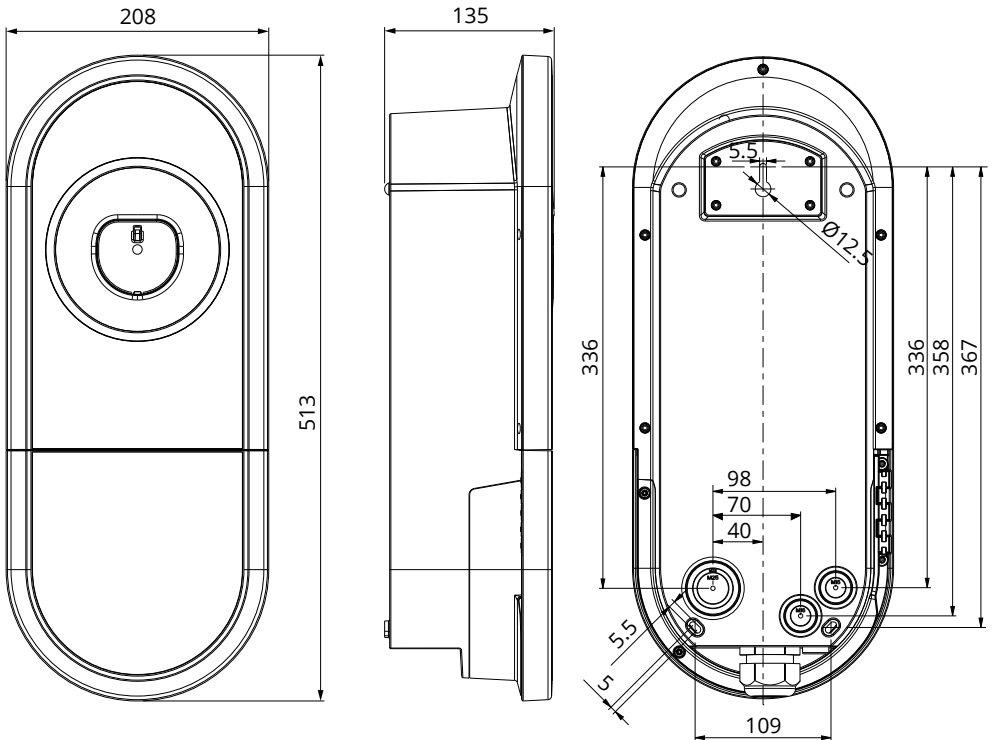
| Design and Mechanics | EVH161-HC000 | EVH321-HC000 | EVH161-HCR00 | EVH321-HCR00 |
|--------------------------|---|--------------|-----------------------|--------------|
| Material | Polycarbonate | | | |
| Color | Frame: RAL7021 dark grey Cover: Silver | | | |
| Installation box | Screw fixing | |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

| User Interface | EVH161-HC000 | EVH321-HC000 | EVH161-HCR00 | EVH321-HCR00 |
|----------------------------|--|--------------|--------------|--------------|
| Connection to vehicle | Fixed cable, length 5m | | | |
| 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) | | | |
| 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. | | | |

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.

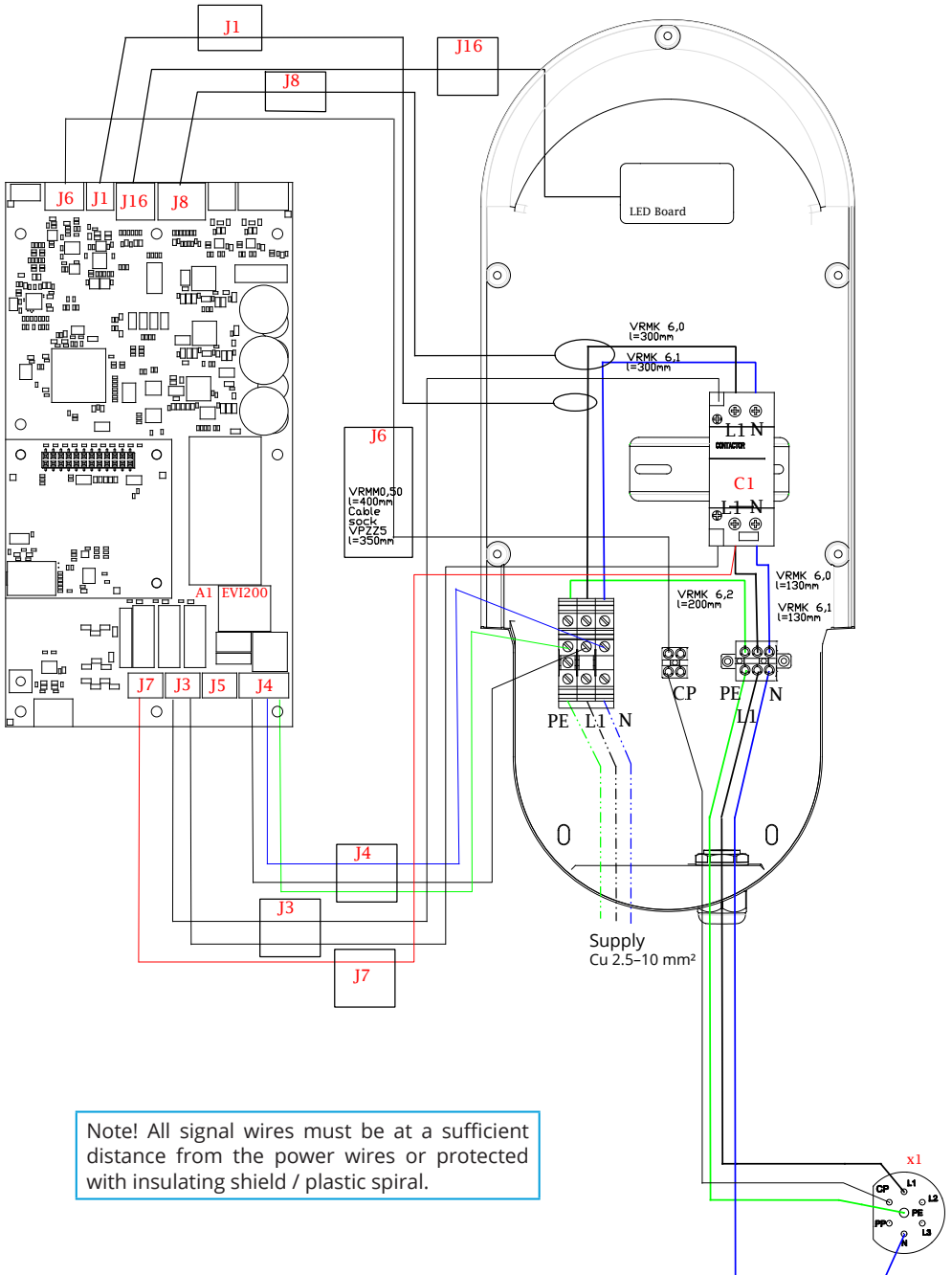
Checking the Installation



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

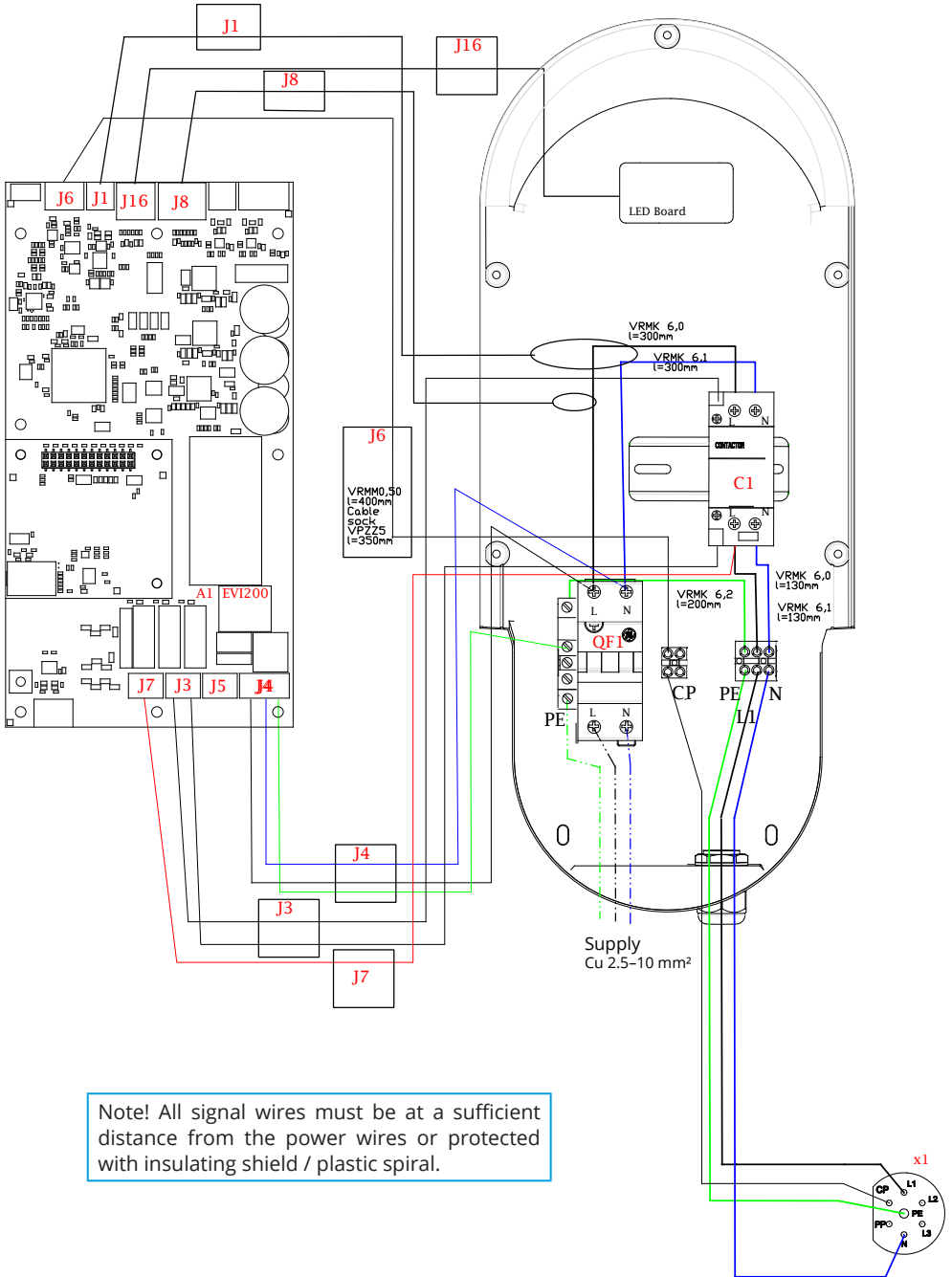
| CATEGORY | X | ITEM |
|-------------------------|--|---|
| Overall look | | You have received the ordered material. |
| | | You do not see any scratches or damages. |
| Mechanical installation | | The charger is fixed properly on installation site. |
| Electrical installation | | Charger's power supply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

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



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

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



11. Troubleshooting

Charging station is off, no lights on

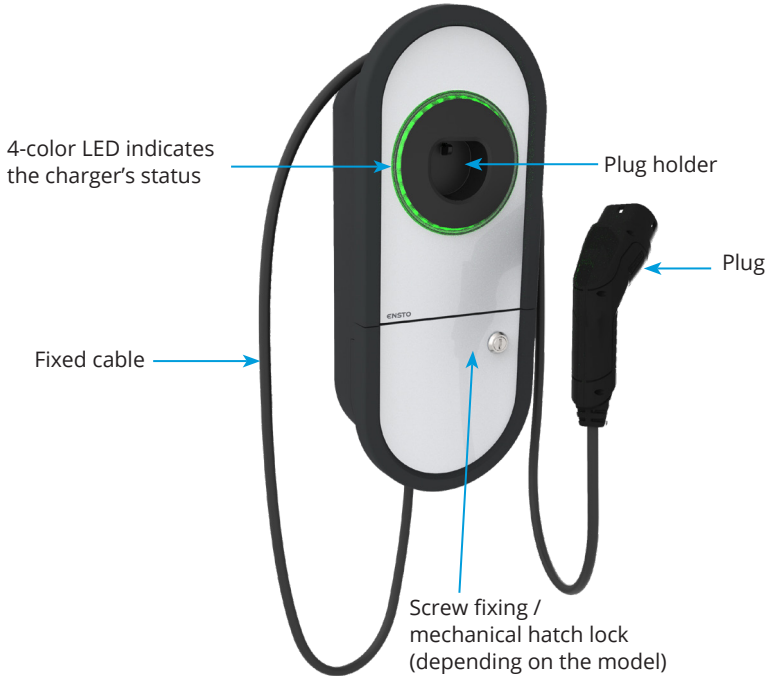
| Issue | Corrective action |
|---|-----------------------------|
| Mains voltage does not exist in supply connector L. | Ensure proper power supply. |
| The circuit breaker QF1 is off (EVH161-HCR00 and EVH321-HCR00). | Turn the QF1 on. |

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.

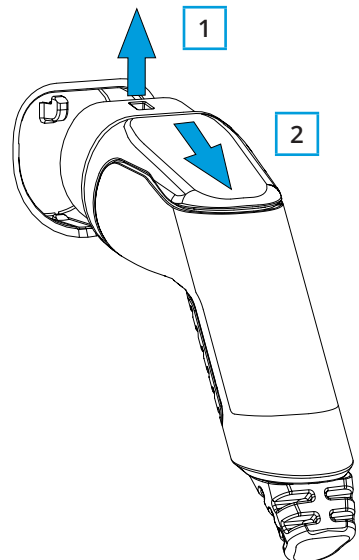
LED indicator lights show the status of the charger as described below:

| 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 and 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. Testing instructions for the electric protective device

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 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.

20. Warranty

Warranty conditions, see the product card on 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.

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.



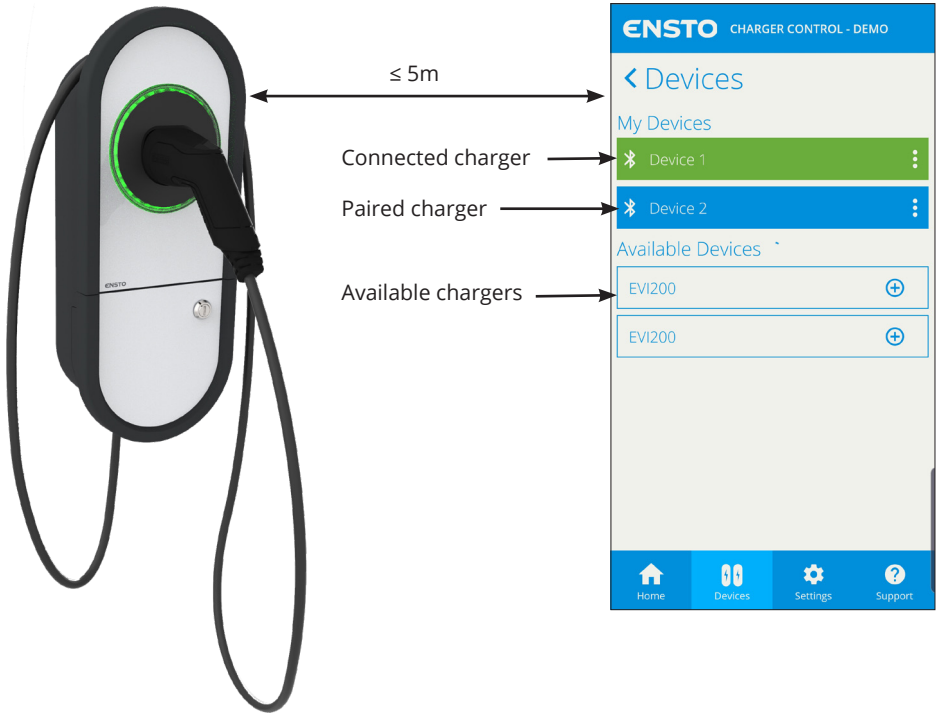
Android version 5.0 and above
iOS version 8.0 and above



Ensto Charger Control



22.2. Pairing the charger with your mobile device

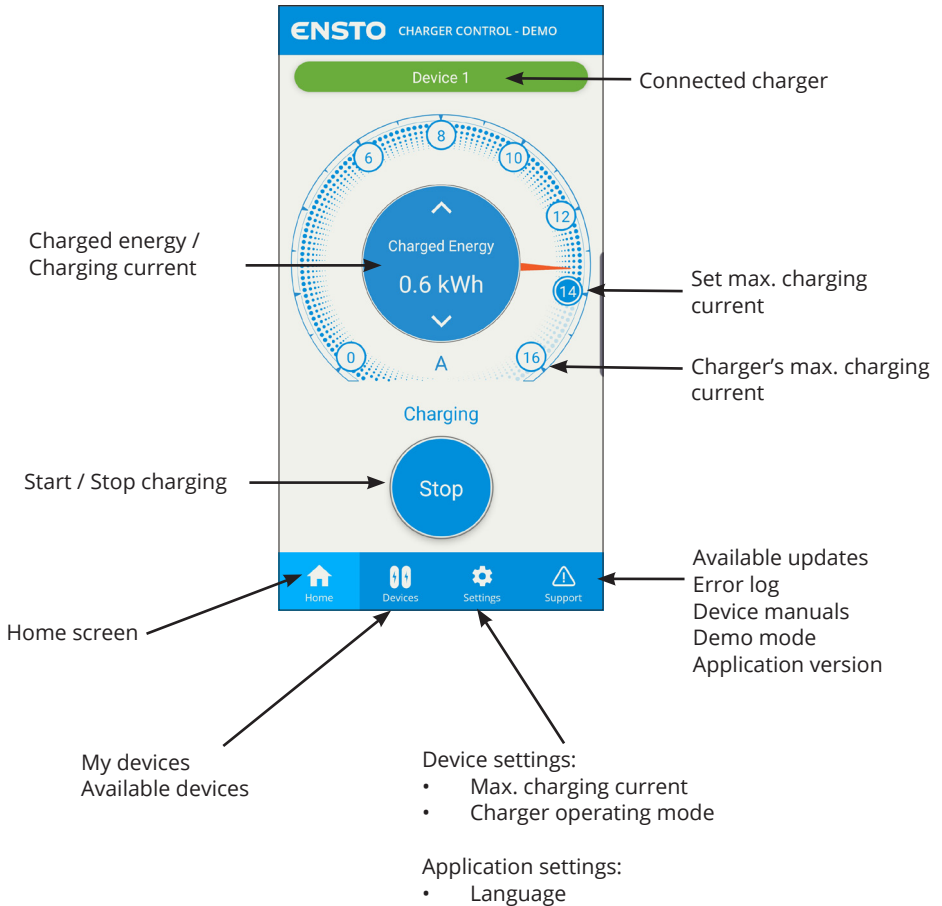


1. First switch off the charger from the main switch and then switch it on again.
2. Start the pairing procedure within 3 minutes.
3. Open the application.
4. Go to **"Devices"**.
5. Select from **"Available Devices"** the charger you want to pair with your mobile.
6. If the pairing fails the first time,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

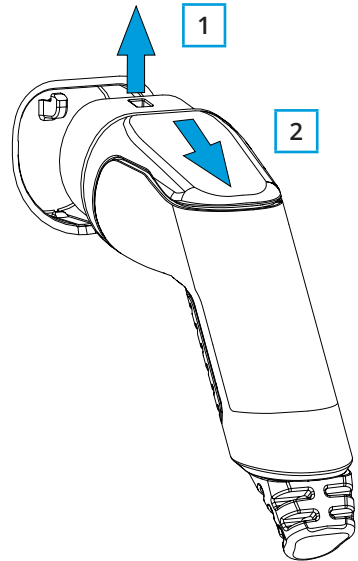
22.4. Charging in **"Authorized"** mode

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. |
| 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. |

| | | |
|-----|--|---|
| 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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