

INSTRUCTION & INSTALLATION MANUAL

MODELS: CCL-eHOME-Plus T1C16 CCL-eHOME-Plus T1C32 CCL-eHOME-Plus T2C16 CCL-eHOME-Plus T2C32

WALLBOX eHOME-PLUS





WALLBOX eHOME-Plus Instruction and Installation manual

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CONTENTS

1	1 INTRODUCTION		
1	.1	IMPORTANT SAFETY INFORMATION	3
1	.2	SHORT DESCRIPTION	4
2	MAI	IN FEATURES	4
3	FIRI	MWARE VERSION	4
4	OPE	ERATING INSTRUCTIONS	5
4	.1	CHARGING PROCEDURE	5
4	.2	STATUS LED BAR ERROR SEQUENCES	7
	4.2.	.1 VENTILATION REQUIRED ERROR (D STATUS)*	8
	4.2.	.2 PILOT ERROR (E STATUS)*	8
	4.2.	.3 PROXIMITY ERROR	9
	4.2.	.4 NEGATIVE PWM VOLTAGE ERROR	9
	4.2.	.5 MAXIMUM OUTPUT CURRENT MINIDIPS ERROR	. 10
	4.2.	.6 TEMPERATURE ERROR	. 10
5	INS	STALLATION GUIDELINES	. 11
5	5.1	PREFACE	. 11
5	.2	ELECTRICAL WIRING CONSIDERATIONS	. 12
5	.3	SPACE REQUIREMENTS	. 13
6	PRC	ODUCT DIMENSIONS	. 14
7	FRC	ONT PRODUCT VIEW	. 15
8	INS	SIDE PRODUCT VIEW	. 16
8	5.1	MODEL EHOME-PLUS RCD TYPE A	. 16
8	.2	MODEL EHOME-PLUS RCD TYPE A + METER	. 17
8	.3	MODEL EHOME-PLUS RCD TYPE B	. 18
9	INS	STALLATION	. 19
9).1	SUPPLIED MATERIAL	. 19
9	.2	OPENING THE UNIT	
9	.3	POWER SUPPLY LINE CABLE INSERTION	. 25
	9.3.	.1 USING THE REAR CABLE INSERTION OPENING	. 26
	9.3.	.2 USING THE BOTTOM CABLE INSERTION OPENING	27
9	.4	WALL FIXATION PROCEDURE	. 28
	9.4.	.1 NEEDED MATERIAL	. 28
	9.4.	.2 CONSIDERATIONS	. 28



	9.4.3	INSTALLATION	
ę	9.5 ELE	ECTRICAL INSTALLATION	
	9.5.1	POWER SUPPLY LINE PROTECTIONS	
	9.5.2	POWER SUPPLY LINE CONNECTION	32
10	CURRE	NT LIMIT SELECTOR	
11	REMOT	E CONTROL INPUT	
	1.1 EL	ECTRICAL HAZARD	
	11.1.1	RESIDUAL-CURRENT	
	11.1.2	MAINTENANCE OF RESIDUAL-CURRENT DEVICE (RCD)	
	11.1.3	ENERGY METER	
	1.2 CL	OSING THE UNIT	
12	CHECK	NG THE UNIT STATUS	40
13	EHOME	BEON (OPTIONAL)	41
	13.1 CO	NNNECTIONS OF EHOME BEON	42
14	TECHNI	CAL DATA	43
15	NOTES		



1 INTRODUCTION

This manual contains all the necessary information for the safe use of the **Wallbox eHOME-Plus** Electrical Vehicle (EV) charging system and it will help you to get the best performance results from the system.

This equipment incorporates the latest technology and offers a successful service in the EV charging market.

1.1 IMPORTANT SAFETY INFORMATION



Read carefully all the instructions before starting, to ensure the proper installation of the charging point.

The charging point is designed for installation in indoor and outdoor areas. Whatever is the case, the unit must be installed safely and with the adequate electrical protections.

- The charging point must not be installed in areas where there is a potential risk of explosions.
- Do not install the charging point where falling objects may damage the equipment.
- The wall surface where the charging point is placed must withstand the mechanical forces.
- Do not use this unit for anything other than electric vehicle charging modes which are expected in the standard IEC 61851.
- Do not modify this unit. If modified, CIRCONTROL will reject all responsibility and the warranty will be void.
- Comply strictly with electrical safety regulations.
- Do not make repairs or manipulations with the unit energised.
- Only trained and qualified personnel should have access to the electrical parts inside the device.
- Check the installation annually by qualified technician.
- Remove from service any item that has a fault that could be dangerous for users (broken plugs, caps that don't close...).
- Use only Circontrol supplied spare parts.



• Do not use this product if the enclosure or the EV connector is broken, cracked, open, or shows any other indication of damage.

1.2 SHORT DESCRIPTION

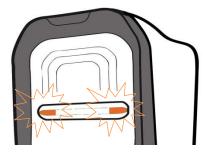
The **Wallbox eHOME-Plus** charging system is specially designed to be easily installed both; in outdoor and indoor private car parks. Similarly, the EV charging system is designed in order to charge all the EV brands of the market in MODE 3 (according to European standard IEC 61851-1), by just connecting either its tethered cable with a type 1 or type 2 connector.

2 MAIN FEATURES

- **Remote control input:** It allows to start / stop the EV charge by means of a dedicated logic input.
- Plug & Play: It is possible to start the charging process, just plugging the Wallbox eHOME-Plus connector into the car.
- **Current limitation:** The maximum current delivered by the unit is setup by the on-board rotate dipswitch.
- Status RGB LED bar: It shows the status of the unit when it is either available or charging. Also some specific blinking error sequences are shown when there is a faulty operation.
- Housing: Designed for outdoor and indoor operation.

3 FIRMWARE VERSION

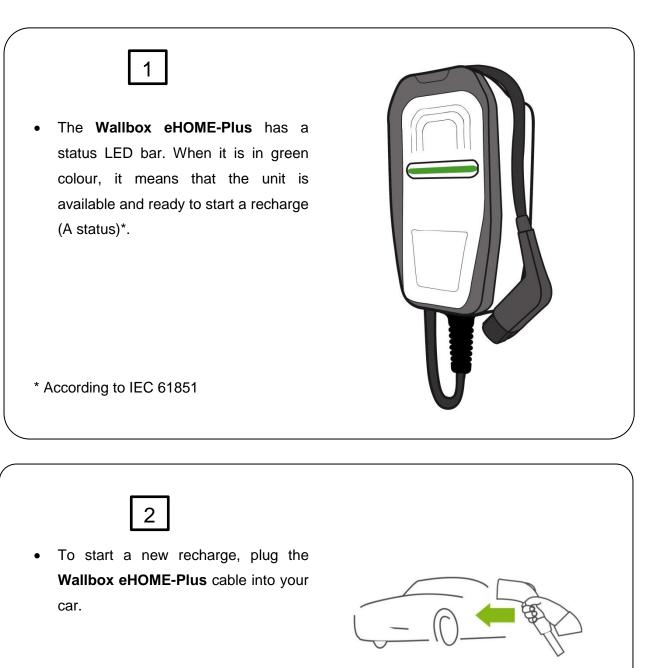
When the unit is booting, the LED bar will show the firmware version in orange. The first digit of the version will be shown as a certain number of blinking of the first LED (left side), as many times as the digit indicates, and the second digit will be displayed by the last LED (right side) blinking accordingly to what the second digit indicates (i.e. for version 1.6, you will see one blink at the first LED and six at the last LED).





4 OPERATING INSTRUCTIONS

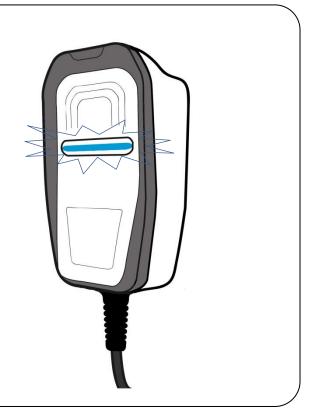
4.1 CHARGING PROCEDURE



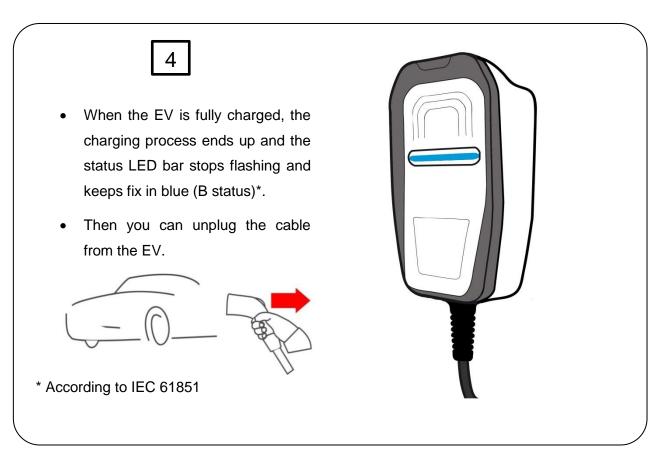




- The status LED bar turns into blue.
- The WallBox eHOME-Plus starts the charging process.
- While charging the EV, the LED bar will be flashing continuously (status C)*.



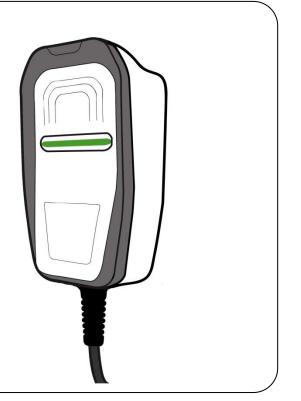
* According to IEC 61851







- Once the cable is disconnected from the EV, the LED status bar turns back into green (A status)*.
- In this status, the unit is available to start a new charging process, whenever it is required.



* According to IEC 61851

4.2 STATUS LED BAR ERROR SEQUENCES

The Wallbox eHOME-Plus is capable to detect the following operating errors:

- Ventilation required error
- Pilot error
- Proximity error
- Negative PWM error
- Maximum output current MiniDips error
- Temperature error

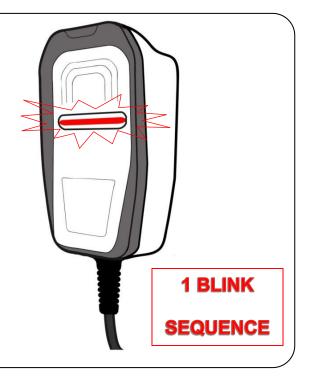
Whatever the error case is, the unit will stop charging and technical assistance will be required, except from the temperature error. In this last case, the unit starts charging when the operating temperature is reached again.

In the following sections it will be explained how the **Wallbox eHOME-Plus** shows the above mentioned errors and the actions taken by the unit.



4.2.1 VENTILATION REQUIRED ERROR (D STATUS)*

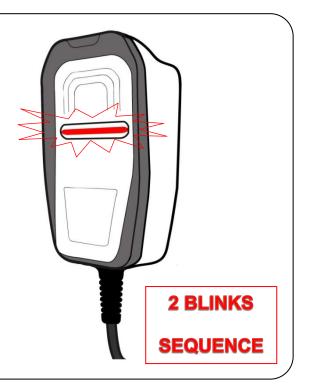
- In some old EVs are some gases coming out from the batteries. In this case, it is needed a ventilation system in the car park.
- If this is the case, the status LED bar would turn into red and keep flashing permanently.



* According to IEC 61851

4.2.2 PILOT ERROR (E STATUS)*

- In case of having a short-circuit between the Pilot and earth connection due to poor contact.
- Then, the status LED bar turns into red and flashes in a sequence of two blinks.



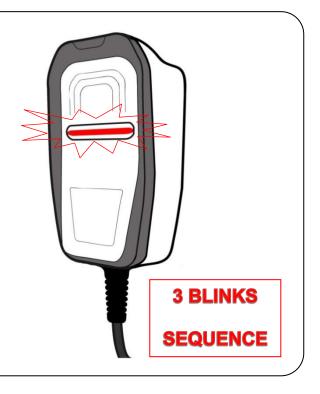
CIRCONTROL

Mobility & eMobility

* According to IEC 61851

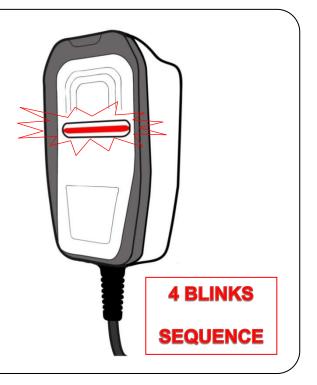
4.2.3 PROXIMITY ERROR

- In case of having a short-circuit between the Proximity and earth connection due to poor contact.
- Then, the status LED bar turns into red and flashes in a sequence of three blinks.



4.2.4 NEGATIVE PWM VOLTAGE ERROR

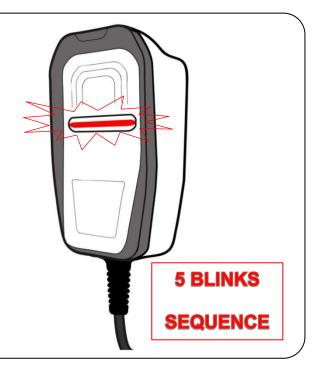
- When the unit is connected to the EV, the PWM signal, used to communicate the unit with the EV, can be negative.
- In consequence, the status LED bar turns into red and flashes in a sequence of four blinks.





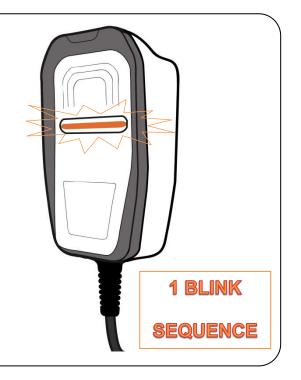
4.2.5 MAXIMUM OUTPUT CURRENT MINIDIPS ERROR

- If the on-board current limit selection is not setup according to the hardware features, the unit detects it and shows this error.
- In this case, the status LED bar turns into red and flashes in a sequence of five blinks.



4.2.6 TEMPERATURE ERROR

- When the temperature into the unit is below a certain value, it is detected by the unit.
- In this situation, the status LED bar turns into orange and keeps fix.
- In the meantime, if the unit is supplied with heater (optional), it starts heating the inside components until the operating temperature is reached. After that, the unit starts charging again.





5 INSTALLATION GUIDELINES

5.1 PREFACE

THE FOLLOWING SYMBOLS ARE USED FOR IMPORTANT SAFETY INFORMATION IN THIS DOCUMENT				
	ELECTRIC RISK!			
A	Take precautions to make the electrical connections inside the unit.			
	The unit must be disconnected from any power supply during the commissioning.			
•	ATTENTION!			
Ŵ	Damage in the unit can occur if appropiate precautions are not taken.			

This section provides the commissioning information for **Wallbox eHOME-Plus** series, where it is described the electrical components inside the charging station and a step-by-step installation procedure.

Standards & directives

- Complies with IEC 61851, Electric vehicle conductive charging system (IEC 61851-1, IEC 61851-22).
- Complies with IEC 62196, Plugs, socket-outlets, vehicle couplers and vehicle inlets (IEC 62196-1 and IEC 62196-2).
- Directives: 2014/35/EU, LVD; 2014/35/EU, EMC.



5.2 ELECTRICAL WIRING CONSIDERATIONS



Before starting with the wiring connection of the charging station, you must take into consideration this section.

1. Charging point power supply

The charging point includes elements for electrical protection in terms of Residual-Current type A and B.

The power supply line which comes from the distribution board to the charging point, must meet the electrical safety standards, according to your country regulations. The minimum safety required protections are as follows:

- RCD: Type A. I_{∆N}=0.03A.
- MCB: Its gauge must be chosen depending on the maximum output current of the charging point.

NOTE: For further information, please refer to the TECHNICAL DATA section.

2. Power supply - Line dimensioning

The dimensioning of the charging station power line must be checked by a qualified electrician. Note that various factors, such as the cable length between the distribution board and the unit, its maximum output current or ambient temperature, may have influence of the selected cable.

So, it is important to select the appropriate cable cross-section and type in agreement with the local regulations and the feature of the power line.

3. Charging point maximum output current

If the installed charging point power supply is less than the maximum output current of the charge point, an adjustment to a lower nominal current must be performed using the onboard rotate dipswitch.

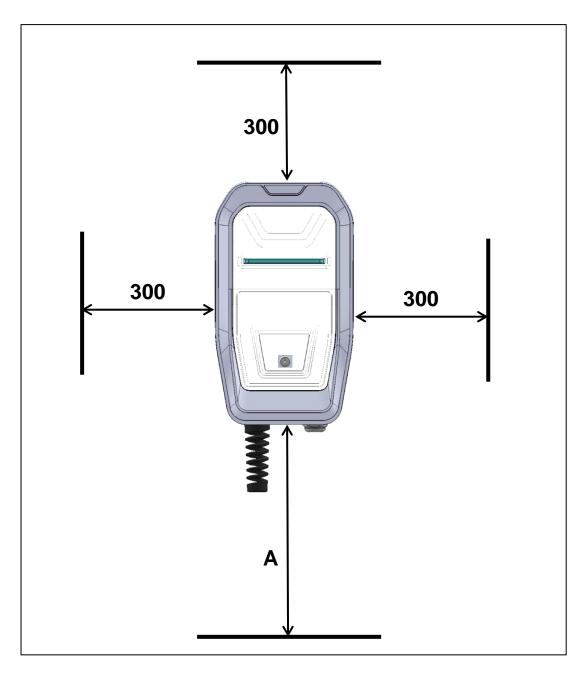
NOTE: Please refer to the CURRENT LIMIT SELECTOR section in order to know how to change this value.



5.3 SPACE REQUIREMENTS

When installing the unit it is necessary to respect some minimum distances for maintenance and safety reasons.

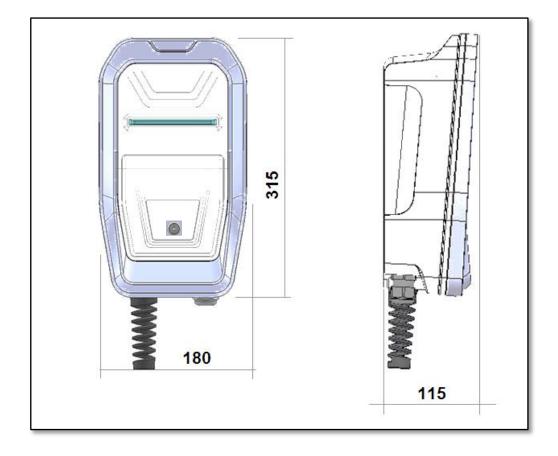
The recommended value for the **A** height, it is minimum 600 mm, and maximum 1200 mm Please comply accordingly to your country specifications.



Units specified in mm



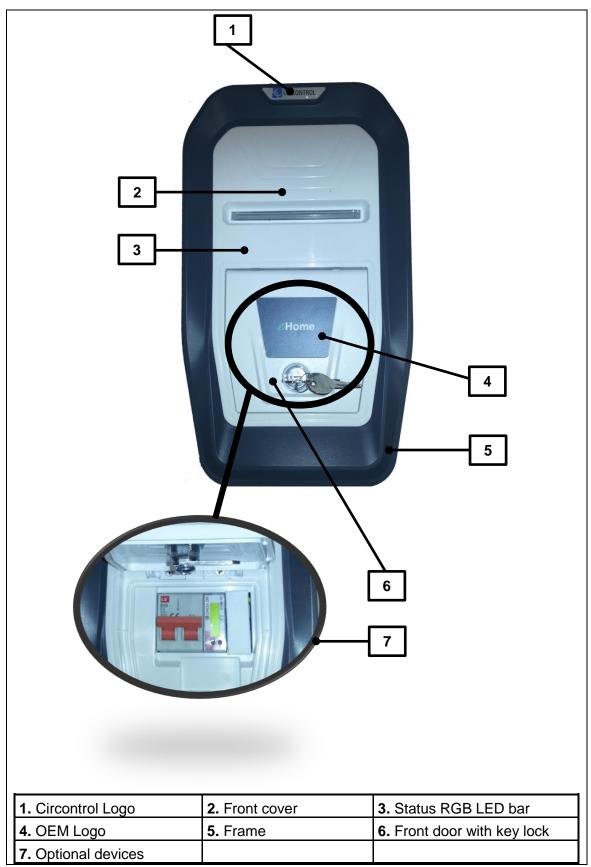
6 **PRODUCT DIMENSIONS**



Units specified in mm



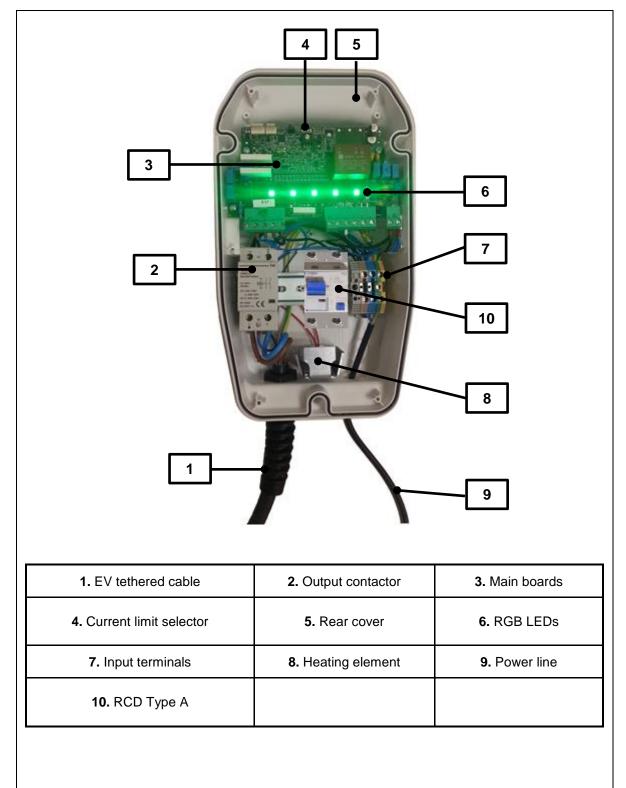
7 FRONT PRODUCT VIEW



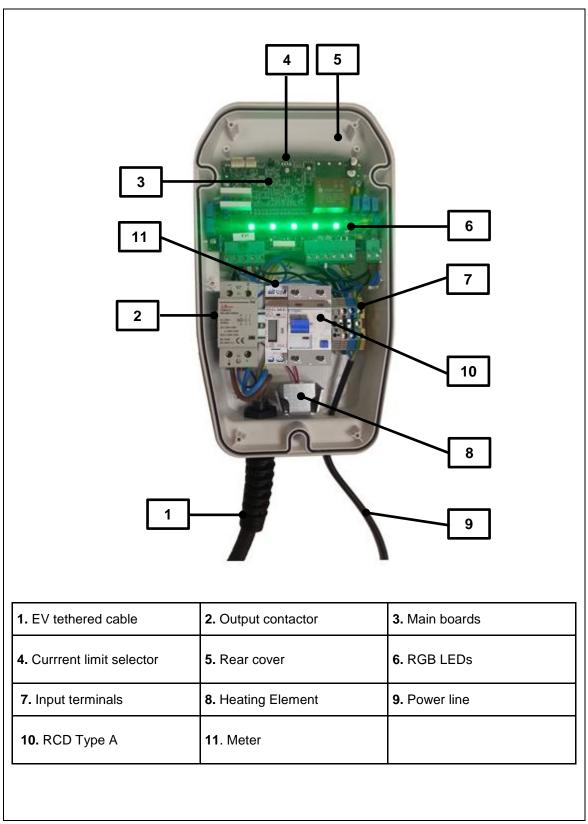


8 INSIDE PRODUCT VIEW

8.1 MODEL eHOME-PLUS RCD Type A







8.2 MODEL eHOME-PLUS RCD Type A + Meter



4 5 3 6 10 7 2 8 9 1 1. EV tethered cable 2. Output contactor 3. Main board 4. Current limit selector 5. Power cover 6. RGB LEDs 9. Power line 7. Input terminals 8. Heating element 10. RCD Type B

8.3 MODEL eHOME-PLUS RCD Type B



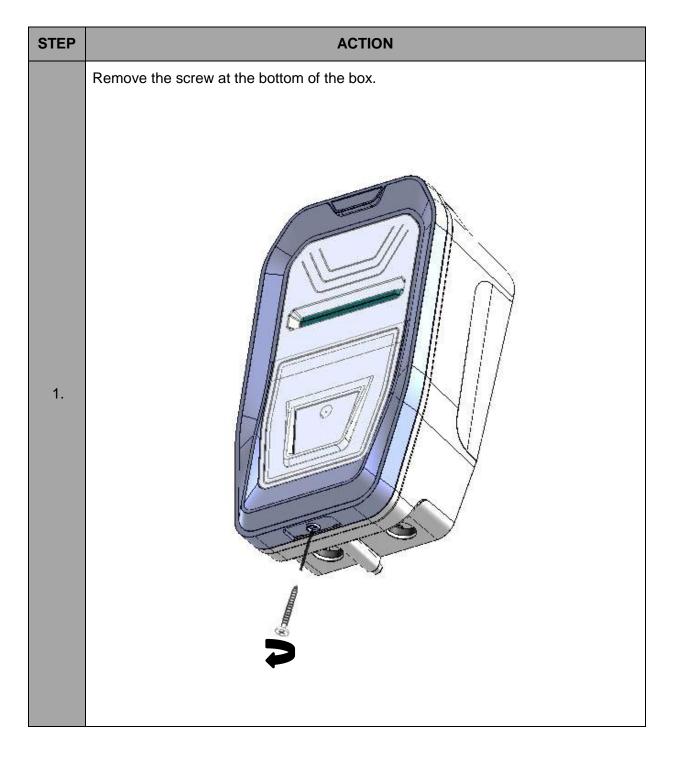
9 INSTALLATION

9.1 SUPPLIED MATERIAL

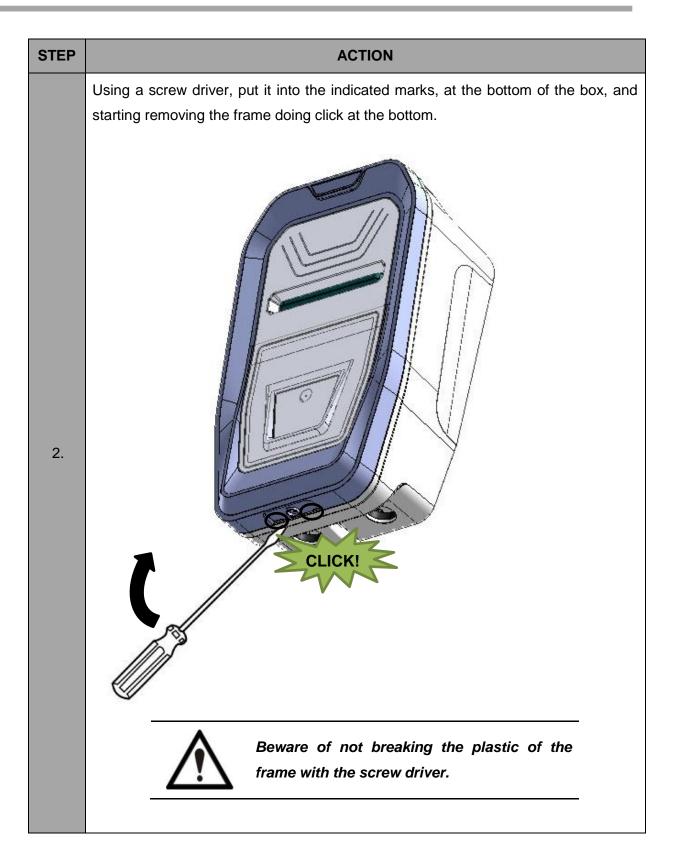
MATERIAL	Qty
Wallbox eHOME-Plus charging point	1
User manual	1
Cable gland M25x1.5	1
Safety key	2



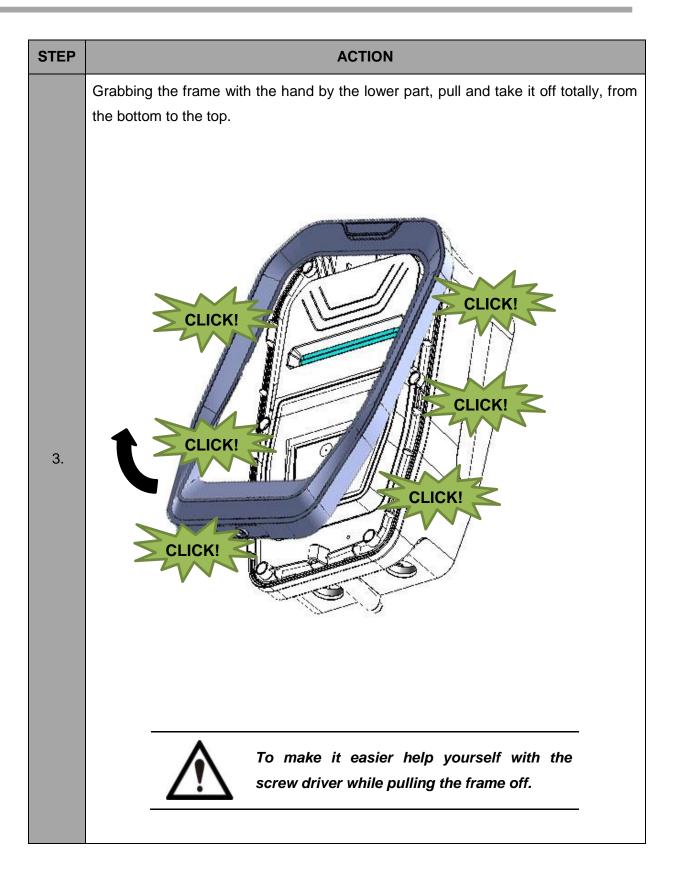
9.2 OPENING THE UNIT

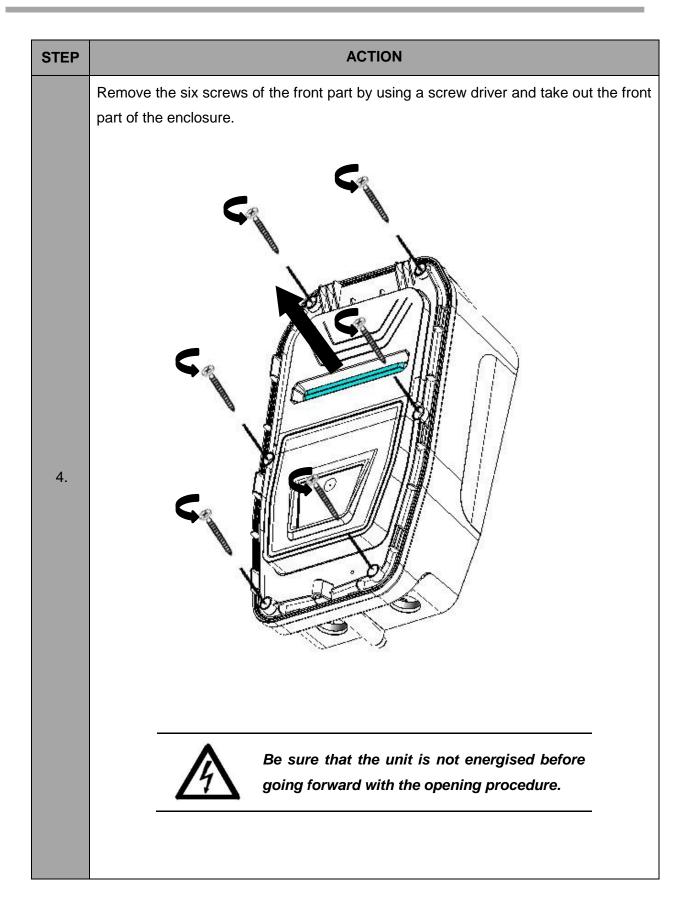




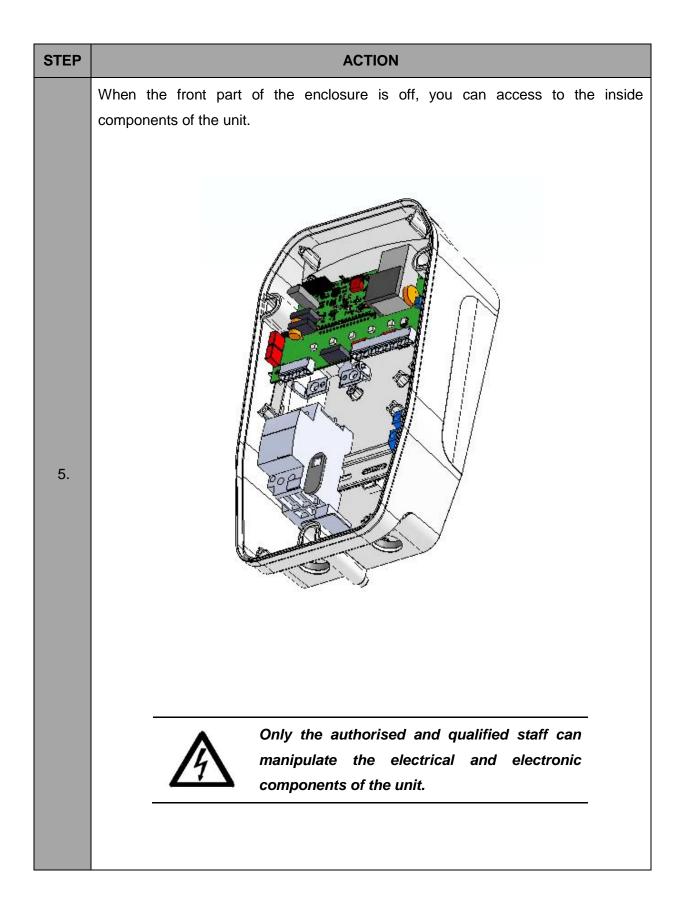










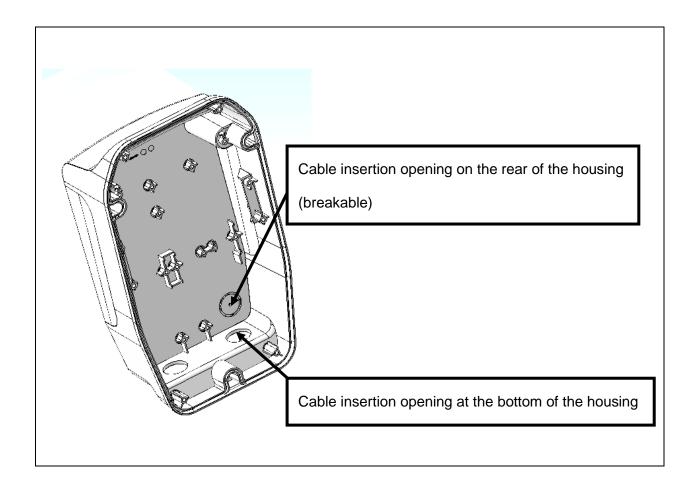


9.3 POWER SUPPLY LINE CABLE INSERTION

There are two possibilities to insert the electric wires or electric pipe:

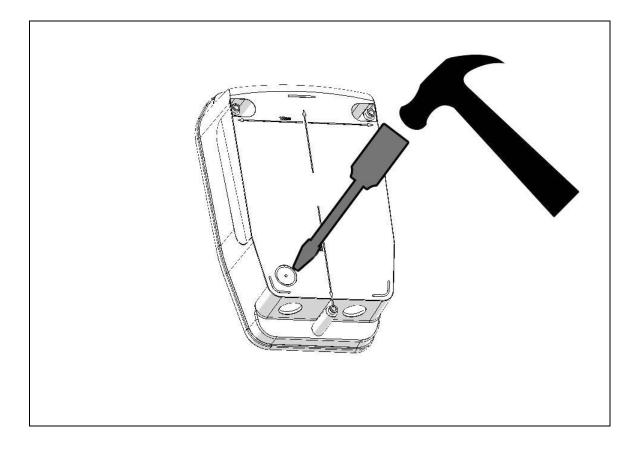
- a) Breaking out the cable insertion opening on the rear of the housing.
- b) Using the cable insertion opening at the bottom of the housing.

In all cases it is required to install a cable gland to ensure properly installation and preserve the IP of the unit.



9.3.1 USING THE REAR CABLE INSERTION OPENING

Use a hammer and a flathead screwdriver carefully in order to break out the cable insertion opening, as shown in the picture below.



Do not make any other holes on the enclosure. <u>Use</u> <u>only the marked cable insertion openings</u> to install the required electric pipes.

Install always double membrane seals to ensure IP protection of the charging point.



Be careful of not damaging any of the inside components when breaking out the rear cable insertion opening.

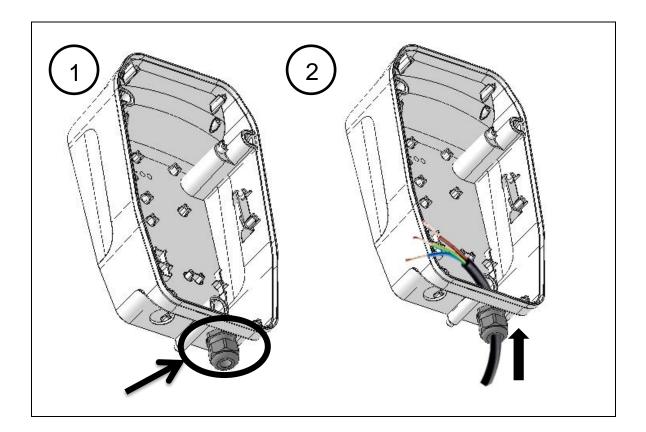


9.3.2 USING THE BOTTOM CABLE INSERTION OPENING

Please follow these steps to use this opening:

 Introduce the cable through the opening and fix it properly by means of the supplied M25 cable gland.

NOTE: The power supply cable must be 3x4mm² (for the 16 A models) and 3x6mm² (for the 32 A models) to meet the supplied cable gland.



Do not make any other holes on the enclosure. <u>Use</u> <u>only the named cable insertion opening</u> to install the required electric pipes.

<u>Install always either cable glands or double</u> <u>membrane seals</u> to ensure IP protection of the charging point.



9.4 WALL FIXATION PROCEDURE

9.4.1 NEEDED MATERIAL

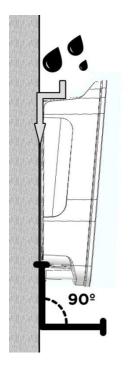
Below, it is shown the list of materials (**<u>not included</u>**) that are necessary to fix the unit on the wall:

MATERIAL	Qty	PICTURE	DIMENSIONS
Wall plug	3		Ø 6mm
Screws	3	Wummin,	3x45mm



All materials shown in the above table may vary depending on the wall surface type.

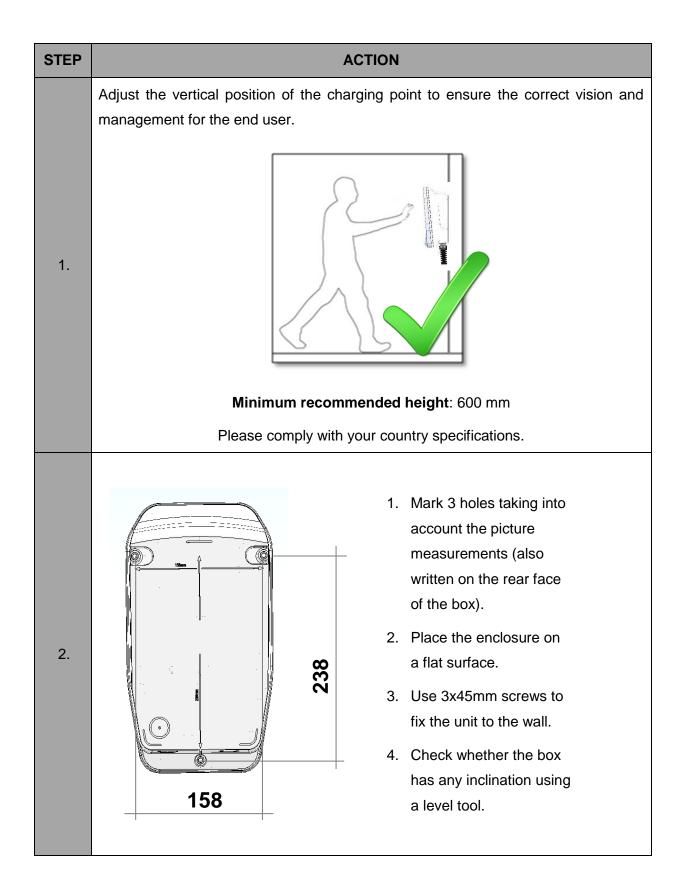
9.4.2 CONSIDERATIONS



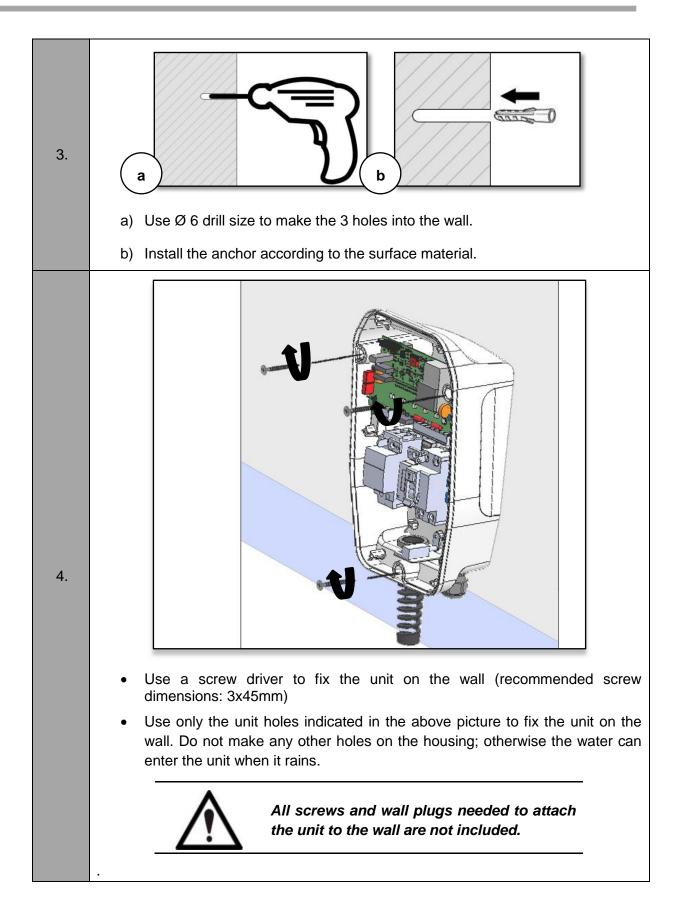
- The unit is designed to drain the water properly from the upper side down.
- The charging point must be installed vertically (use a level tool to ensure its installation at an angle of 90°)
- Please ensure that the installation surface is flat.



9.4.3 INSTALLATION







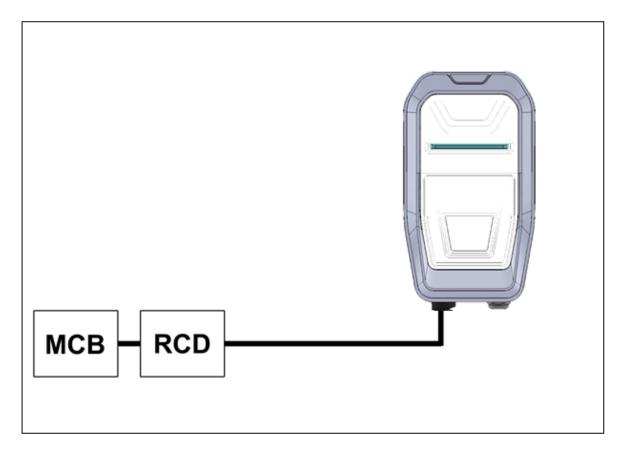


9.5 ELECTRICAL INSTALLATION

9.5.1 POWER SUPPLY LINE PROTECTIONS

On these series, the **Wallbox eHOME-Plus** includes a Residual-current Device (RCD).

For protecting the power line, it is necessary to install a Miniature Circuit Breaker (MCB) and a Residual Current Device (RCD) externally.



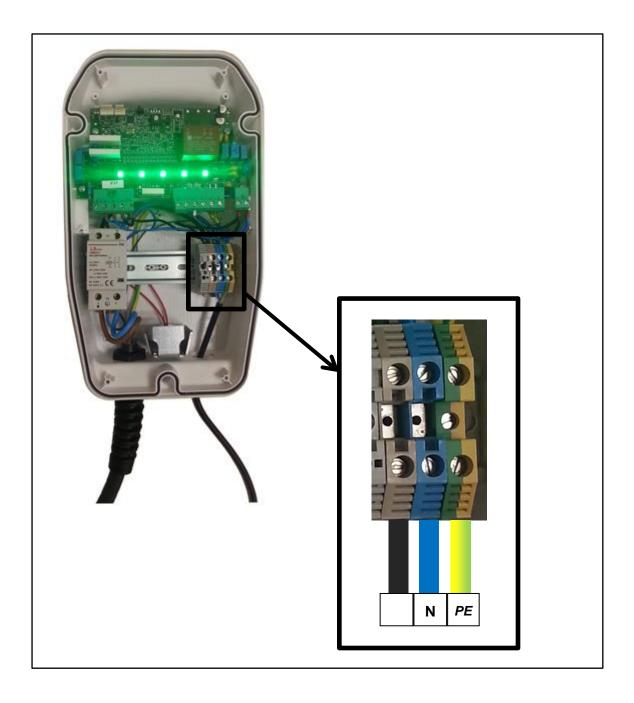


The charging point is set to 16A / 32A, depending on the model, from factory default settings.



9.5.2 POWER SUPPLY LINE CONNECTION

- Perform the **<u>230 VAC Single-phase</u>** connections as shown in the picture below.
- Do not forget to connect the ground cable (PE) to its corresponding terminal.





10 CURRENT LIMIT SELECTOR

The unit has an on-board rotate dipswitch to configure the limit current of the unit, which has to be set up according to the model of **Wallbox eHOME-Plus** which is going to install. The dipswitch must be adjusted considering the maximum current available in the power supply. Please, check the maximum current which allows the circuit breaker of the EV power supply, which is installed in the distribution board.

The default setting of the unit is the maximum current which allows the unit power supply cable.



Be sure that the position of the current limit selector is setup according to the output current of your unit.





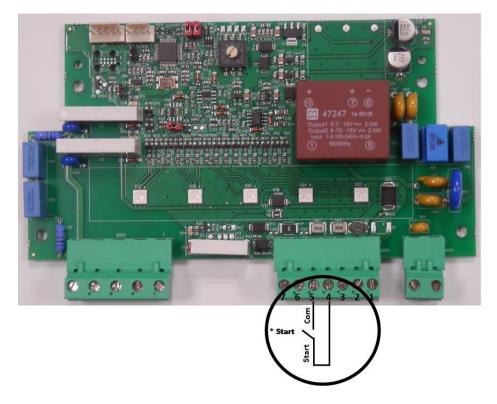
On the following table is shown the different values available for this current limit selector:

POSITION	LIMIT CURRENT
0	NOT USED
1	6 A
2	10 A
3	13 A
4	16 A
5	20 A
6	32 A
7	NOT USED
8	NOT USED
9	NOT USED



11 REMOTE CONTROL INPUT

The **Wallbox eHOME-Plus** offer the possibility of enabling the charging process by connecting an external free-of-potential contact to a dedicated on-board input (pins 4 & 5).



By this way, when the contact START is closed, if the EV is connected to the unit, it will start the recharge straight away.

This remote control input is enabled by default, by means of a jumper (as shown in the picture below). You must remove the jumper to use the input 4-5.





Be sure that the jumper is connected, otherwise the charging process cannot start.



11.1 ELECTRICAL HAZARD

11.1.1 RESIDUAL-CURRENT

The Residual-Current Device (RCD) installed in the different **Wallbox eHOME-Plus** models must be reset in case of actuation.

To reset the Residual-Current Device (RCD), previously, it is needed to check the possible electrical risk for the user.

- 1. Beware the unit is disconnected to the power line. And similarly, the unit must be disconnected by the Miniature Circuit Breaker (MCB) of the power line.
- 2. Beware the Vehicle is not connected to the unit.
- 3. Check the status of the cable and the plug of the unit.
- 4. Check that there is no any damage in the cable and/or in the plug of the unit.
- 5. Check the plug, not being in contact with wet surface of directly with water.
- 6. After checking the possible damages of the cable and the plug of the unit with its possible contact with water. It is necessary to check that the cable and the plug have no suffered any damage of overcurrent.



During the RCD reset operations, it must be checked the properly status of the cable and plug, not being dirty or damaged, and likewise, not having wet surfaces close to the unit.

7. After the properly checked of the previous points, it is possible to make the reset in the RCD.



On the left side, the view of the RCD type B used in the Wallbox eHOME-Plus. On the right side, the view of the RCD type A used in the Wallbox eHOME-Plus



8. Once it has been made the properly checked of the points exposed before, and it is not possible to reset the RCD. It will be necessary to disconnect the unit and call for a correct trained, qualified and authorized technician.

11.1.2 MAINTENANCE OF RESIDUAL-CURRENT DEVICE (RCD)

For the properly performance of the RCD in the different models of **Wallbox eHOME-Plus**, the RCD must be checked once a month. For making this operation, it is necessary to push the Test button (indicated as a "T" in the same RCD). By this way, it will be feasible to see if the RCD is working properly. If there is no any action by the RCD after pressing the button, the RCD is NOT working properly, and in consequence it is necessary to replace the RCD. For the properly performance of the RCD and in consequence, for the safety of the people who is around the electrical installation, this check process will be done once a month.



Indication in the blue square of the Test button (T) in the RCD.

11.1.3 ENERGY METER

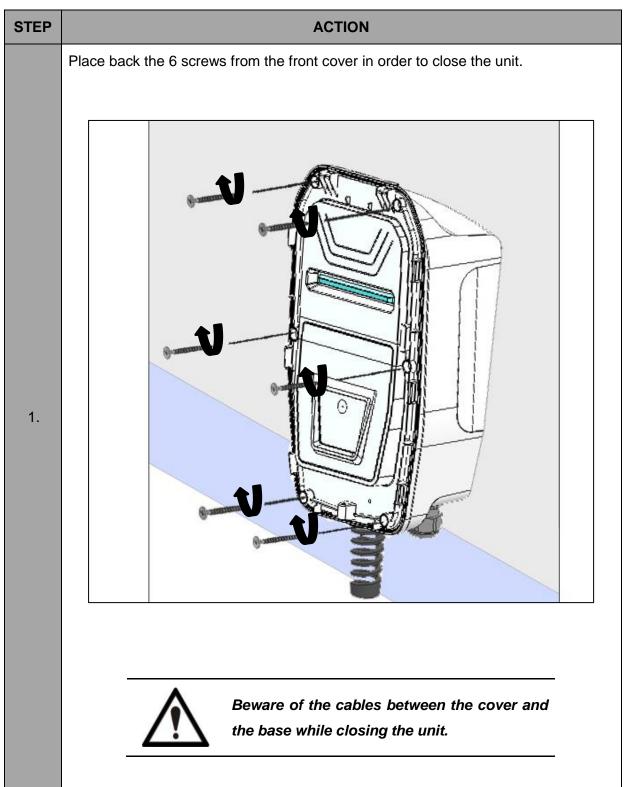
The energy meter counts the total energy consumed incrementally from the point of commissioning. Therefore, it shows the value during the total lifetime of the meter.



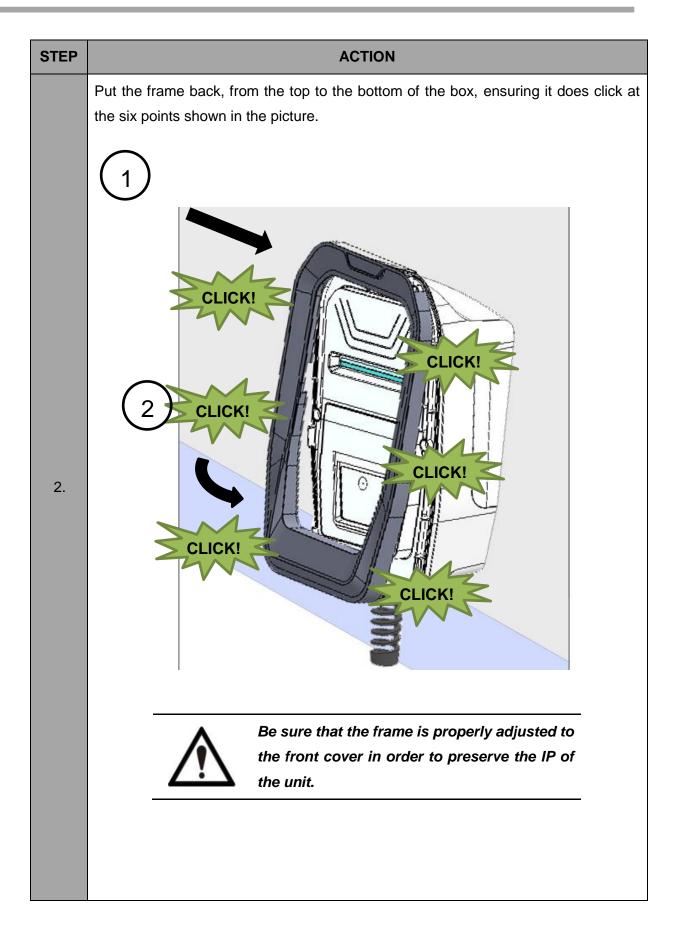
View of meter



11.2 CLOSING THE UNIT









12 CHECKING THE UNIT STATUS

Once all installation procedure has been performed, check the following points:

- 1. Check that the EV tethered cable and its connector are in proper conditions before starting the charging operation.
- 2. Check that no abnormal noise appears while the unit is charging.
- 3. Check the status LED bar to know the present operating status of the unit. Below you can see the table with the four possible LED bar operating colors:

PLUG STATE	LED BAR COLOR	
Available	Green	
Charging	Blue (flashing)	
Charged	Blue	
Fault	Red (flashing)	
Heating	Orange	

NOTE: For further information about the different status led bar sequences, please refer to **OPERATING INSTRUCTIONS** section.



13 eHOME BeON (optional)

The eHOME **BeON** is an optional device that can optimize the Electric Vehicle (EV) Charger. It is the responsible to analyze the total current consumption in the residential, and to manage the remaining current for the EV Charger, avoiding any tripping the Main Circuit Breaker (MCB) for overconsumption.

BeON product range: 20 A for 4,6* kW, 25 A for 5,75* kW / 30 A for 6,9* kW / 35 A for 8,05* kW / 40 A for 9,2* kW / 50 A for 11,5* kW / 63 A for 14,49* kW.

*Values for single-phase

The device eHOME BeON is connected downstream of the main power switch and upstream of the main loads

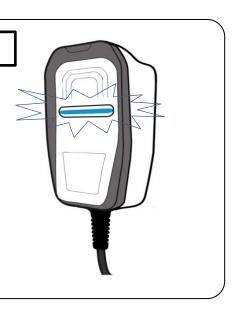


Only the authorised and qualified staff can manipulate the electrical and electronic components.

- Comply strictly with electrical safety regulations according to your country.
- Do not make repairs or manipulations with the unit energised.
- Only trained and qualified personnel should have access to low-voltage electrical parts inside the device.
- Remove from service any item that has a fault that could be dangerous for users (broken plugs, caps that don't close...).
- Use only Circontrol supplied spare parts.

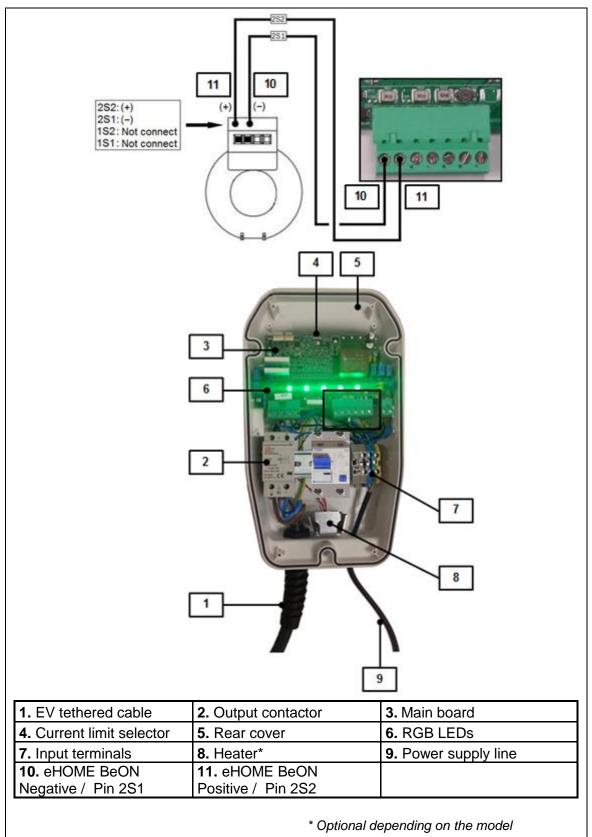
LED BAR STATUS CONSIDERATION

• All the LEDs of the status LED bar turns into blue flashing when there is no enough current to charge the EV, when there is enough current, the system is reestablishing the charging process automatically











14 TECHNICAL DATA

Wallbox eHOME-Plus			
AC INPUT			
AC Power supply	1P + N + PE		
AC Voltage	230V _{AC} +/- 10%		
Nominal input current	16 A / 32 A*		
Nominal input power	3,7 kW / 7,4 kW*		
Frequency	50 / 60 Hz		
OUTPUT			
Charge system	Mode 3		
Sockets/ Plugs	Type 1 / Type 2 tethered cable*		
Cable length	5m		
Lock system	No		
Maximum output power	3,7 kW / 7,4 kW*		
Maximum output current	16 A / 32 A*		
Output voltage range	230V _{AC} (1P + N + PE)		
GENERAL			
Enclosure rating	IP54 / IK10		
Enclosure material	ABS-PCV0		
Operating temperature	-30°C+50°C (with heater included)		
Operating humidity	To 95% RH Non-condensing		
Net weight	4Kg		
OPTIONAL FEATURES			
RCD A	30mA 40A earth-leakage protection type A		
RCD B	30mA 40A earth-leakage protection type B		
Energy meter	Class B Active Energy / Class 2 Reactive Energy		

eHOME BeON*		
PRODUCT SPECIFICATION		
Type Current Transformer	Ring Core Current Transformer	
Material	Polyester	
Dimensions	30 x 15 mm	
Rated Insulation Level	0.72 / 3 /- kV	
Connection	2S1 (-) / 2S2 (+)	
Relation	20 / 0.05 A, 25 / 0.05 A, 30 / 0.05 A, 35 / 0.05 A, 40 / 0.05 A, 50 / 0.05 A, 63 / 0.05 A	
Accuracy	Class I	
Maximum cable length	200 m	
Cable cross-section	1mm ²	

* Depending on the model



15 NOTES







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