CONNECTING ENERGY
SINCE 1952

Cabur COMPACT EV Smart Chargers

Installation and operating manual

Contents

Markings

CE

UKCA

Point of contact under Directive 2014/35/EU:
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1 Revision history

Version	Release date	Authors	Notes
0.1	07/07/2021	Initial version	Fistr draft derived from the EV EASY manual
1.0	14/07/2021	Preliminary version	New name: Cabur_EV_COMPACT_Installation_Instruction_Manual
1.1	19/07/2021	Cabur Technical Office	Updated cover Chapters 2,3,4 revised
1.2	03/08/2021	Cabur Technical Office	Updated web app
1.3	20/11/2021	Cabur Technical Office	Details for SSID connection updated Installation instructions updated
1.4	18/02/2022	Cabur Technical Office	RCD identification note fixed

2 Introduction

This manual introduces the Cabur EV COMPACT Charging Line products for EV battery charging and provides all the necessary information about their installation process and their usage.

Important: Please read carefully this manual before installing and using the charger.

Important: All the installation operations must be performed by qualified personnel.

2.1 General information

2.1.1 About this manual

- The present manual must be available to all the persons who take care of the charger installation and usage
- The installation and commissioning of the charger must be performed by authorized and qualified personnel only in compliance to all the safety related regulations and laws
- The charger producer is not responsible for any damage due to an incorrect or missing application of the rules contained in the present manual
- Due to the continuous improvement process, the charger producer has the right to apply changes to the product whenever needed
- The reproduction of this manual is not allowed without the written authorization by Cabur s.r.l.

2.1.2 About safety

The product conforms with the state of the art and the applicable safety and health regulations.

Nevertheless, the following risks can be caused by incorrect operations or misuse:

- Hazards to life and limb of the user or third parties
- Perils to the product and other material assets of the operator
- Risks for the efficient use of the product

It is mandatory to apply the following rules:

- The input voltage must be disconnected before any maintenance operation on the charger.
- Please be sure the input voltage is not present by means of dedicated measures with appropriate tools
- Before switching on the charger, the earth cable connection must be checked
- The input cable, the plugs and all the necessary accessories for the installation must be carefully selected in compliancy with the current regulations and laws (see paragraph 6.5)
- An MGT protection device must be installed to protect the charger input (see paragraph 6.3)
- No cable adapter or patch or cord set extension is allowed for the charger cord set

- The EV must be blocked before connecting for charging
- It is prohibited to remove, modify, bridge or bypass any protective, safety or monitoring equipment and, in general, it is prohibited to apply modifications to the charger
- It is prohibited to reconfigure or modify the product
- The product may only be operated in perfect conditions

2.1.3 About maintenance

- Do not open the charger
- Do not touch the electronic parts/boards
- Do not install or use the charger if it is damaged
- The charger must be repaired by authorized personnel only
- Use a soft cloth with neutral detergent liquid, suitable for plastic surfaces, to clean the charger

3 Warranty and liability

The warranty period of the charging station is specified by the official Cabur's selling conditions.

This operating manual serves to ensure fault-free and safe use of the product; compliance with its content is a prerequisite for the fulfilment of any warranty claims.

Excluded from the warranty are such defects that result from any arrangement and assembly not effected by the producer, insufficient equipment, failure to observe the installation requirements and conditions of use, excessive load on the components beyond the capacities specified by the seller, negligent or incorrect handling and use of unsuitable operating materials.

This also applies to defects that are attributable to material provided by the user.

In particular, claims for damages expire in the event of:

- Inappropriate use
- Modifications or additions
- Repairs carried out improperly
- Disasters, foreign body impact and force majeure

The producer is also not liable for damage caused by the actions of third parties, atmospheric discharges, overvoltage and events related to chemical influences.

The warranty does not apply to the replacement of parts that are subject to natural wear and tear.

4 Limits of use

This charger is an electrical equipment designed for charging battery electric vehicles (BEV).

The plug and the socket compliant to EN 62196 (alternating current charging, MODE 3) are used for charging BEVs.

The charger is suitable for indoor and outdoor usage. The product is built according to the state of the art and the generally accepted safety regulations. Nevertheless, during its use hazards to life and limb of the operator or third parties may occur or the product and other material assets may be negatively affected. Intended use includes observing the operating manual and compliance with the maintenance requirements.

Only use the product if it is in technically perfect condition. Use the product as intended and in a safe way.

In case of malfunctions or damages that could impact safety please contact a qualified technician and inform the producer.

 The charging station must be mounted on a wall and installed in a stable way. It is not allowed to operate the charging station in a loose state (not steadily mounted) because this would not comply with the ratings.

 Unmounting, tampering with or deactivating the safety devices is forbidden.

 No technical changes may be made to the product without consulting the manufacturer Furthermore, liability and warranty claims are excluded in case of non-compliance with the intended use.

 The product may only be operated under the operating conditions specified in the documentation

 This documentation is mandatorily to be read by qualified personnel for installation and initial operation, as well as by the user for the Installation and Instruction Manual of the product.

 For what concerns users, unattended operation of the product is only allowed if they

- have read and understood this Installation and Instruction Manual
- have read and understood all the safety instructions

 For what concerns the qualified personnel (electrical engineering/technician specialist), only qualified personnel are allowed to perform installation, initial operation, inspection and configuration work. The qualified personnel must have read and understood this manual.

5 Technical data

Product Information	
	
Model	**EVCOMP7S**
Power	3.5-7.4kW
Charging Mode	MODE 3 CASE B (with socket)
Connector standard	--
Socket	Type 2
Dimensions (W x H x D)	160x126x210mm
Weight	2.3kg
Enclosure Material	PC+ASA (UL94-V0)
Cooling system	Free air
Mounting	Wall
Electrical Data	
Mains Voltage	230 V±15% (single phase)
Mains Frequency	50/60Hz self-adjustable
Network Configuration	TN/TT/IT(1P+N+PE or 2P+PE) (1-phase)
Efficiency	＞99%
Earth Leakage Protection	DC Leak (6ma)

Start Charging	Automatic Plug & Charge
Indicators	LED Light belt (red, blue, green)
Connectivity	Wifi (AP) Hotspot
Background Functions	WIFI system upgrade
Reports	Charge reports Fault reports
Protection Function	Overcurrent protection Overvoltage protection Undervoltage protection Relay over temperature protection; Socket or plug over temperature protection; CP fault protection; Relay adhesion protection;
IP Degree	IP54
Ambient Temperature	-25°C to +50°C
Operating Humidity	≤95%RH
Certificates	
Standards	IEC 61851-1: 2017 (RED WiFi 2.4GHz----RF: EN 300 328 RF-EMC: EN 301 489-1&-17 Health (MPE): EN 62311)
CE Certificate	CE from TUV

The integrated protections are not automatically or remotely reclosed as prescribed by the IEC 61851-1.

6 Installation

The following paragraphs describe the charger installation process.


The installation must be performed by qualified personnel only.

6.1 Installation conditions / Environmental requirements

The charger can be used outdoors. Pay attention to the operating environment to meet the equipment operation, otherwise it will affect the service life of the equipment. The following conditions are mandatory for a correct installation of the device (see also paragraph 4 “Technical data”):

- Operation temperature must be within the range -25 ℃ up to 50 ℃
- Operation humidity must be ≤ 95%
- Avoid installation places affected by strong vibrations and mechanical shocks
- Keep away the charger from explosives or dangerous materials, conductive media and harmful gases, all of them can damage the electrical insulation
- The use environment should be kept clean, no mold is allowed, and it should be kept away from moisture, dust, flammable gas, flammable liquid, etc., away from heat sources and corrosive environments
- The altitude of the installation site must be ≤ 2000 m

6.2 Installation accessories

The following accessories are needed for the charger installation process:

- This manual
- The certificate of conformity
- The expansion screws (4 pieces, provided with the charger), to fix the charger to the wall
- The mounting template (provided with the charger), to identify the correct position of the mounting holes on the wall

6.3 Installation of the protection against short circuit

The charger itself has an overcurrent protection integrated function. Nevertheless, a short-circuit protection device shall be installed at the upper level, for example in the control panel, for short-circuit protection purpose.
If the short-circuit protection device is not installed the charger cannot be used.

The rated current of the supply circuit short-circuit protection device must be in line with the current used by the charger.
If the charger is used at full load, the rated current should be 40A, otherwise the charger will not work properly.

 It is mandatory to install a circuit breaker with C or B curve, 40A, before the charger input. If there are uncertainties about how to choose the appropriate short-circuit protection device, please contact the manufacturer.

6.4 Installation of the protection against residual current

In compliancy with the IEC 61851-1 standard, the charger contains an appropriate circuit that ensures the disconnection of the supply in case of DC fault current above 6mA (DC Leak protection circuit).

No external installation of any type B RCD is prescribed.

 **An external type A RCD, with supply disconnection in case of fault current above 30mA shall be installed in the upstream side.**

 The protection device selection and installation must be performed by qualified personnel only.

6.5 Overvoltage protection

The charger is compliant to the Overvoltage Category III

6.6 Installation cables

The cable for connecting the mains supply to the charger must have a section in the following range 6-10 mm2.

 The cable selection must be done by the qualified personnel involved in the installation process, taking into account the national regulations for the safety and the state of the art of the electrical installations.

6.7 Supported power supply systems

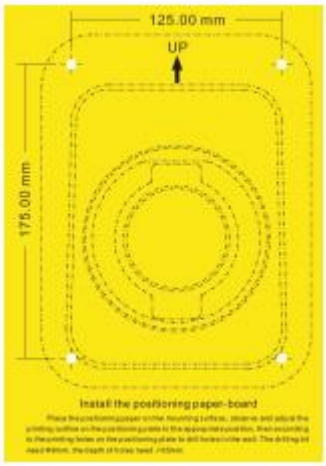
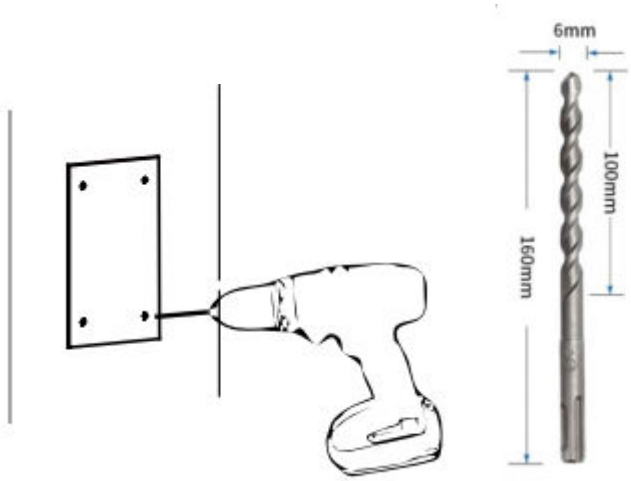
Both single-phase and three-phase chargers support the following power supply systems.

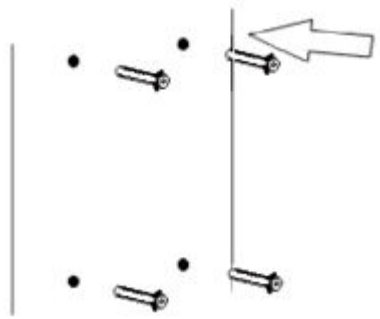
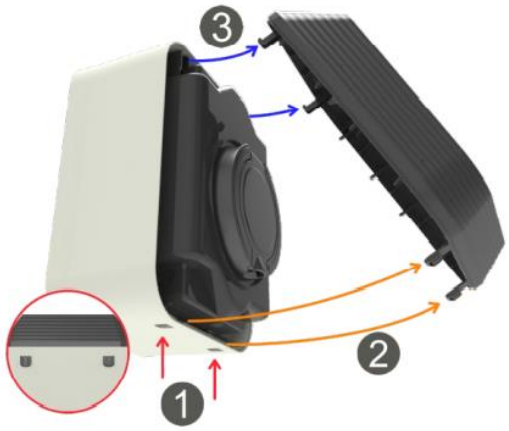
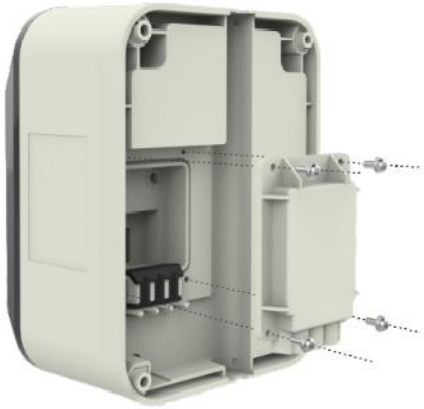
- TN-S
- TN-C
- TN-C-S
- TT
- IT (only single-phase products are supported)

For single-phase charger, in a power supply system with a neutral line, the voltage between the phase line and the neutral line cannot be higher than the rated voltage requirement (240VAC).

6.8 Installation steps

In the following all the steps to perform for a correct installation of the wallbox:

Step No.	Description	Picture
1	Open the package which contains the charger and its accessories. Package content: ▪ the charger ▪ four expansion screws ▪ a mounting template ▪ a mounting metal bracket (already attached to the charger rear side) ▪ one rubber gland for the input cable	
2	Lean the mounting template against the wall. This will help to identify the correct positions of the screw holes on the wall. The height from the centre of the template to the ground should be determined according to your ideal height (1500mm is recommended). Check the template is fully horizontally aligned. Mark the expansion screw holes positions on the wall. Create the screw holes with a tool. The holes must be X4, with depth equal to 65mm.	 

Step No.	Description	Picture
3	Insert the four expansion bolts into the four holes and just push them manually or, in case of resistance, by means of an hammer	
4	Open the front side removing the front cover. The front cover can be removed just pressing the plastic blocks as in the picture.	
5	Turn the charger on the back side and remove the four screws of the wiring back cover	

<table>
<tr><th>Step No.</th><th>Description</th><th>Picture</th></tr>
<tr><td>6</td><td>Adjust the current value to set the maximum output power of the charger.
The output current configurations are as in the following list

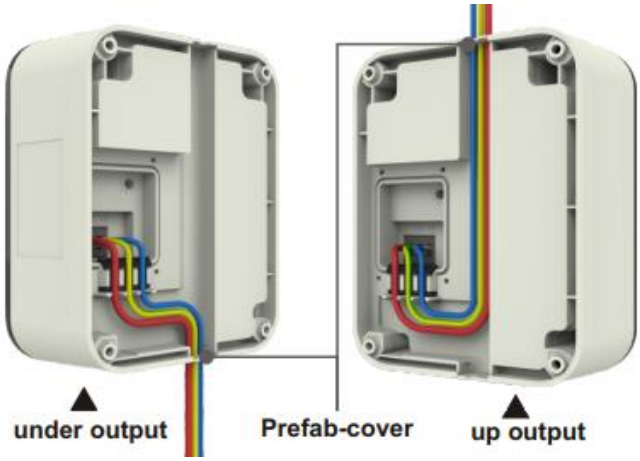
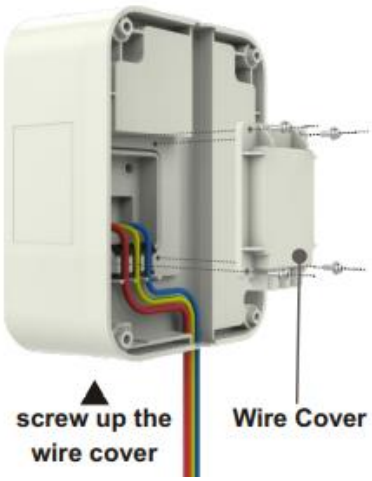
<table><tr><th>Switch position</th><th>Setting</th></tr><tr><td>0</td><td>Wi-Fi configurability</td></tr><tr><td>1</td><td>6A</td></tr><tr><td>2</td><td>10A</td></tr><tr><td>3</td><td>13A</td></tr><tr><td>4</td><td>16A</td></tr><tr><td>5</td><td>20A</td></tr><tr><td>6</td><td>23A</td></tr><tr><td>7</td><td>25A</td></tr><tr><td>8</td><td>30A</td></tr><tr><td>9</td><td>32A</td></tr></table>
If the rotating switch is set to 0, the output current configuration can be done through the web app using the Wi-Fi AP connection.

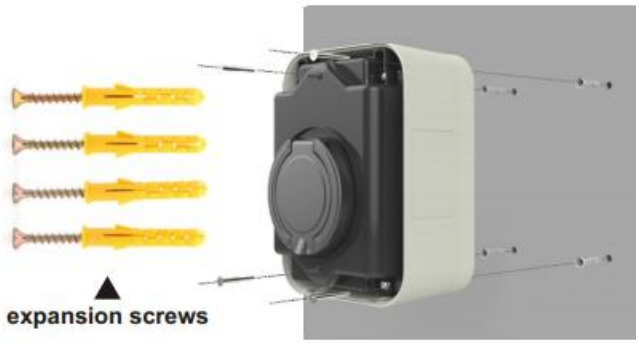
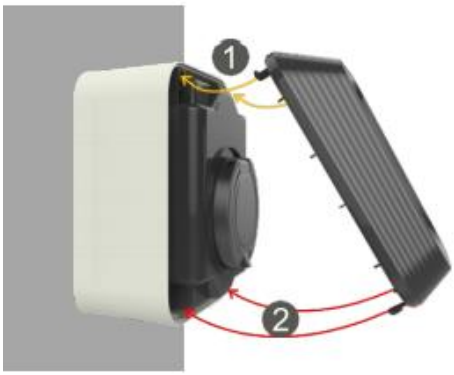
In the other cases the configuration is fixed and cannot be adjusted through the web app interface.</td><td>  </td></tr>
<tr><td>7</td><td>  Make sure the input cable is not powered.

Prepare the supply input cables.

The rub stopper is not needed in case of 10mm^2 cables.

The usage of cord-end cable accessories is recommended.</td><td>  </td></tr>
</table>

Step No.	Description	Picture
8	Connect the input cables to the input terminal block. The terminal block is push-in type: to insert the supply cable while pushing the orange button with a flat screw driver. The cable section must be $6mm^2$ or $10mm^2$ depending on the power value.	
9	The input cables can arrive from the upside or from the bottom side depending on the user's need.	
10	Close the wire cover ⚠ Make sure the cover is fixed before switching the charger on	

Step No.	Description	Picture
11	Mount the charger to the wall by using the four provided screws	
12	Mount the front cover. ⚠ Make sure the cover is fixed before switching the charger on	
13	The charger is installed and can be switched on	

7 Operation

After the charger is installed, it is ready for charging the EVs. The following describes the operating elements and the display/indicators elements of the charger.

7.1 Operating elements

8.1.1 Display Areas

The charger has one display area AREA1, on its front side.

A LED light belt is placed all around the charger socket and assumes different colours to indicate the current status

Display Area	Type	Function description
AREA1	LED light belt	 Different colours indicate the current status of the charger (see table below.

Colour	Blinking mode	Status
White	No blinking	Power on self test: the charger is switching on and performing the power on tests
Green	Blinking slowly	Stand-By mode: the charger is on, available for charging
Blue	Fast blinking	Pause during the charging process
Blue	No blinking	Charging mode setup: the charger is preparing to start the charging process
Blue	Blinking slowly	Charging mode: the charging process is ongoing
Red		Error mode: errors are detected by the internal protections. The table indicates the possible error cause and the way to recover

Colour	Blinking mode	Description	How to recover
Red	5 sec. period blinks	CP Error: control pilot error	Pull out the plug
Red	2.5 period blinks	PE error: earth protection fault	Turn the charger off
Red	Constant light, no blinking	General fault	Pull out the plug

8 System connectivity

The charger is equipped with one type of connection interfaces:

- the WiFi Access Point interface: used for configuration and monitoring purpose

8.1 WiFi interface

The WiFi AP (Access Point) mode is available to let the person in charge of the installation or the user connecting to the charger.

The WiFi AP mode is the only one provided.

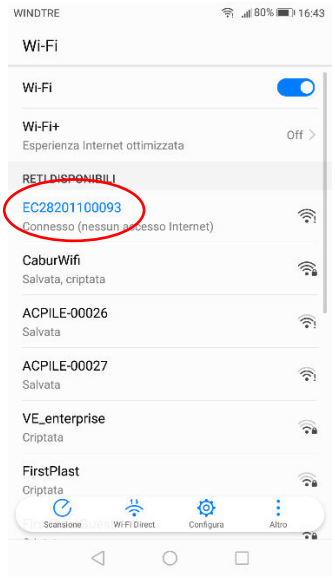
9.1.1 WiFi AP mode

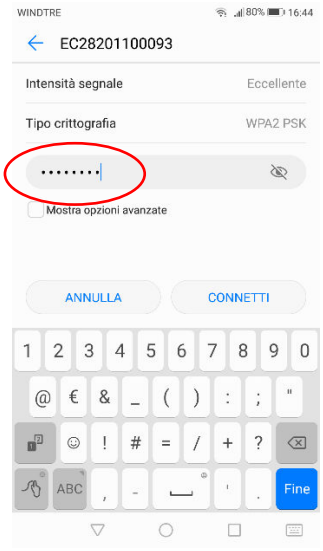
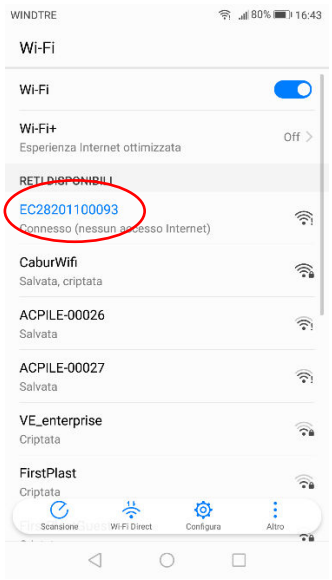
The WiFi AP (Access Point) mode (also referred as “Hot Spot”) is mainly used for configuration and monitoring purposes.

In this mode, the charger creates a WiFi network with a specified SSID and the user can connect to that network, based on a point-to-point approach, to apply all the necessary configurations or to monitor the charger parameters.

The connection to the charger can be established by a PC, tablet or smartphone.

The following steps are necessary to setup the connection between the user device (PC, tablet, smartphone) and the charger:

Step No.	Description	Picture
1	Scan for available WiFi networks with the connecting device utility	

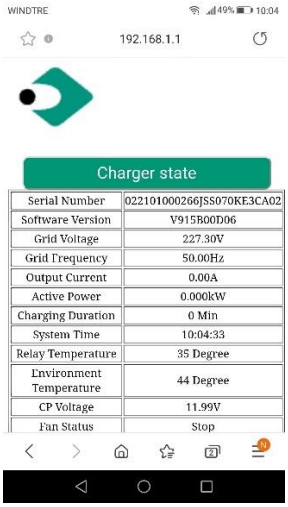
Step No.	Description	Picture
2	Connect the device (PC, Tablet, Smartphone) to the WiFi network generated by the charger (it should have an SSID name similar to ECxxxxxx-xxxxxx) **Important note**: in case a login password is requested, the default password is equal to the name of the SSID (ECxxxxxx-xxxxxx)	 
5	**Note:** only one device can be connected, to the AP, at a time	

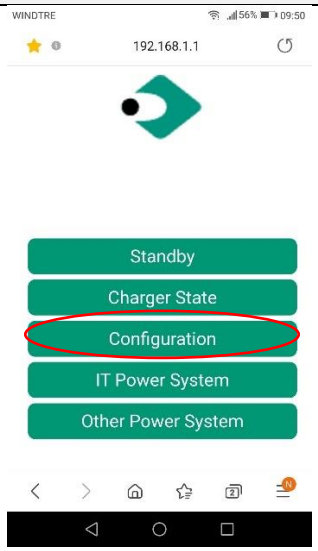
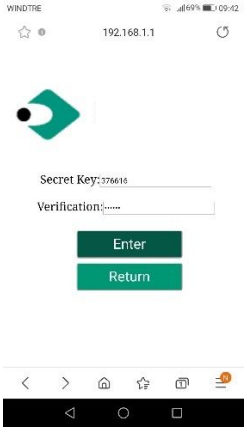
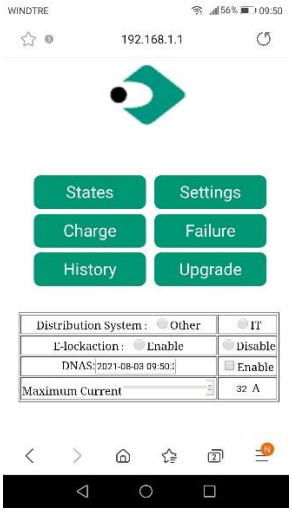
9.1.2 Configurations through WiFi AP mode

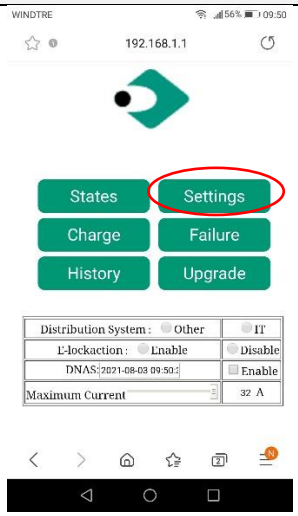
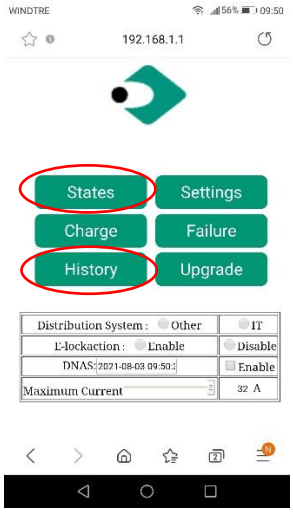
When connected through the AP, the user can configure the charger parameters. The configuration is performed by means of a web app which connects to the charger internal web server.

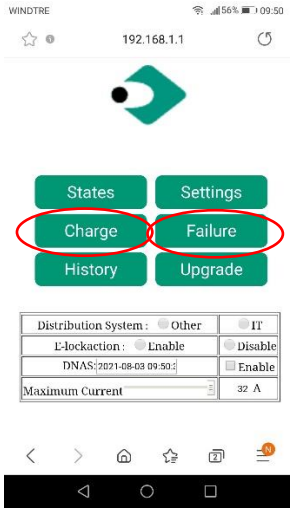
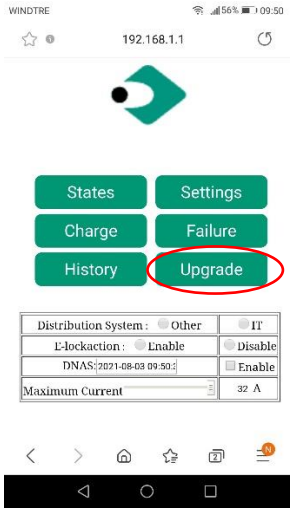
Please consider the following instructions to properly use the app for configuration.

Step No.	Description	Picture
1	The connecting device (PC, tablet, smartphone) is connected to the charger WiFi AP. Open the internet browser. Connect to the following URL: http://192.168..1.1 The home page of the web app is shown.	
2	Standby button  This button indicates the status of the charging process with its label: • *Standby* means the charger is not charging • *Stop charging* means the charger is charging and you can press the button to stop the charging process	

Step No.	Description	Picture
3	Charger state button  Pressing this button, the user can access the charger state page to monitor all the parameters of the charger and their status. The user can return back to the home page just clicking on the “return” button at the end of the page	 

Step No.	Description	Picture
4	Configuration button  Pressing this button, the user can access the charger configuration pages to set all the parameters of the charger. After clicking on the configuration button, a login window will appear. **Important note**: to enter into the configuration pages the user must insert a password. The default password is "123456". It must be entered into the "Verification" field. The user is now allowed to see the configuration main pages. From this page the user can access other pages by clicking the 5 buttons at the top of the page. These buttons will be explained later in the document. System parameter settings In this page the main system parameters can be set: • *Distribution system:* set the power distribution system the charger is connected to • *E-Lock*: enables or disables the mechanical automatic interlock • *DNAS*: enables the time synchronization between the connecting device and the charger • *Max Current*: set the maximum charge current value (accepted range 6 – 32 A) **Important note**: these parameters shall be configured by qualified personnel only	  

Step No.	Description	Picture
5	Clicking on the "Setting" button Setting the current page is displayed with refresh **Important note**: these parameters shall be configured by qualified personnel only	
6	Clicking on the "States" States button the user can access the page with the current status of the system parameters Clicking on the "History" History button the user can access the historical logs of the device	 

Step No.	Description	Picture
7	Clicking on the "Charge" or "Failure" Charge Failure buttons the user can respectively access the charge report and the failure report of the device	
8	Clicking on the "Upgrade" button Upgrade the user can upgrade the system (see chapter 10 for details) ⚠ **Important note**: these parameters shall be configured by qualified personnel only	
10	IT Power system IT Power System this button enables the charger to be supplied by IT power network systems Other Power systems Other Power System this button enables the charger to be supplied by TT or TN power network systems ⚠ The selected power system is indicated by the different colour of the button after the selection ⚠ **Important note**: these parameters shall be configured by qualified personnel only	

9 Charging process

Before starting the charging process the user must be sure the plug is correctly connected to the EV.

The charger is **CASE B** mode (without integrated cable): connect the cable to the EV and then to the charger on the other side.

The charging process starts automatically after connecting to the charger socket.

When the charging process starts, the LED belt light changes from steady blue to blinking blue.

The plug cannot be disconnected when the charging process is running.

The charging process can be stopped by the web app button (see paragraph 9.1.2, point 1.a) or directly by the car controls.

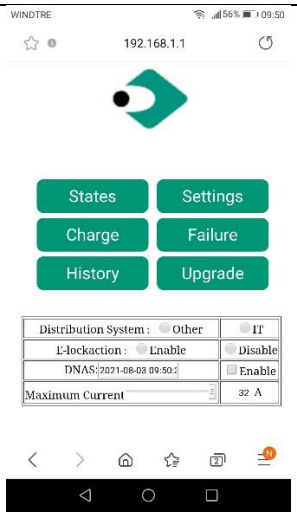
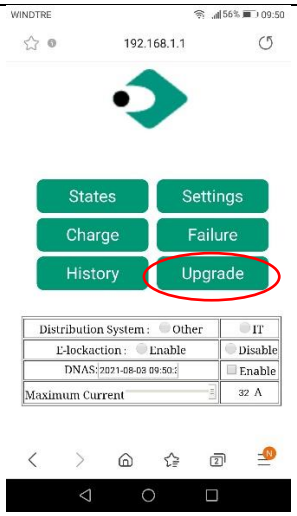
The connector can be unplugged only after the charging process stops.

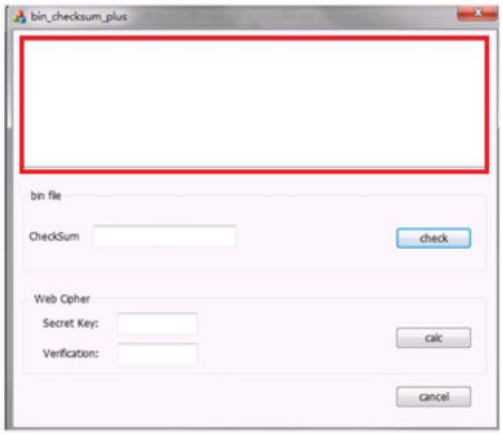
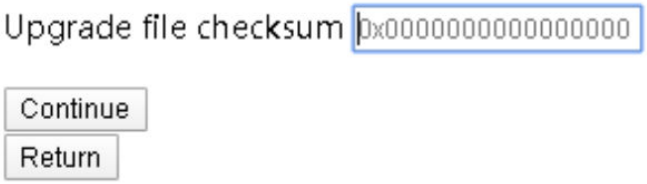
Important note: for the CASE B mode (without the integrated cable), there is an electronic lock inside the charger to keep the electrical connection stable during the charging process. When charging is completed or a fault occurs, the electronic lock will automatically unlock, please do not pull it forcibly otherwise.

10 System upgrade

The following steps illustrate how to proceed to upgrade the system firmware

Step No.	Description	Picture
1	The connecting device (PC, tablet, smartphone) is connected to the charger WiFi AP. Open the internet browser. Connect to the following URL: http://192.168..1.1 The home page of the web app is shown.	

2	Clicking on the “Configuration” button a new setting page is presented, as in the attached picture **<u>Important note</u>**: these parameters shall be configured by qualified personnel only	
3	The upgrade process is initiated by clicking on the “Upgrade” button After entering the system upgrade page, the user must follow all the indications provided by the page itself, to avoid failures in the process and make it complete in a successful way. **<u>Important note</u>**: these parameters shall be configured by qualified personnel only. **<u>Important note:</u>** Make sure not to disconnect during the upgrade process	
4	Identify and select the upgrade file provided by the manufacturer (it is typically a file named as ***<name_of_the_upgrade_file>.bin***). This file can be eventually downloaded directly from the manufacturer website or requested directly to the manufacturer customer care office.	

5	Open the check_sum_tool provided by the manufacturer. This tool is a software application, which runs on PCs, used to generate the verification code for login and to automatically generate the MD5 checksum to validate the upgrade file integrity. Drag and drop the upgrade file <name_of_the_upgrade_file>.bin into the red check box in the check_sum_tool interface. Then click the “check” button.	
6	A check sum MD5 value will automatically appear in the “Checksum” box. **the verification code generation is not necessary if the user already has the MD5 code, provide by the manufacturer (in this case the point 5 can be skipped)** The user shall now copy the value in the “Checksum” box.	
7	Now the user must be back to the system upgrade page in the web app. The checksum value generated by the check_sum_tool shall be copied in the “Upgrade file checksum” field. The “Continue” button shall be clicked after that.	

<table>
<tr>
<td>8</td>
<td>The upgrade process starts and will last more or less 15 sec.

At the end of the process a message could be presented on the charger display, indicating the result of the upgrade process.
In case of no message the charger is completely restarted if the welcome message appears.

  <u>Important note:</u> The system is able to restart only if the status message is “100 UP”, which means successful upgrade.
Do not restart the system otherwise and contact the manufacturer.</td>
<td>
<table>
<tr><td>LED display</td><td>Meaning</td><td>Remarks</td></tr>
<tr><td>100 UP</td><td>Upgrade success</td><td>Wait for the device to restart automatically</td></tr>
<tr><td>E01 UP</td><td>Upgrade failed</td><td>Failed to write flash</td></tr>
<tr><td>E02 UP</td><td>Checksum error</td><td>Checksum not match</td></tr>
<tr><td>E03 UP</td><td>Upgrade timeout</td><td>No valid data received within 15s</td></tr>
<tr><td>E04 UP</td><td>Bin File Mismatch</td><td>Upgrade file does not match the AC Charger</td></tr>
</table>
</td>
</tr>
</table>

11 Language configuration

The charger is configured with its factory default language. Other languages can be configured for the web-app interface, by a system upgrade operation with the same process illustrated in chapter 10.

This system upgrade operation will not affect the system functionalities but will only change the language.

The user can upload the system upgrade file which contains his own language, for example it is possible to have:

<name_of_the_upgrade_file>_**IT**.bin (IT = italian language)
<name_of_the_upgrade_file>_**EN**.bin (EN = english language)
<name_of_the_upgrade_file>_**DE**.bin (DE = german language)
<name_of_the_upgrade_file>_**ES**.bin (ES = spanish language)
<name_of_the_upgrade_file>_**FR**.bin (FR = french language)

……

Repeating the system upgrade procedure, as described in chapter 12, will upload the charger firmware file with the selected language. This makes the app interface pages displayed in the language preferred by the user.

 **Important notes:** these parameters shall be configured only by qualified personnel