Circutor

# Master-Slave


# INSTRUCTION MANUAL

**(M247B01-03-19B)**

CE

# Disclaimer

**CIRCUTOR, SA** reserves the right to make modifications to the device or the unit specifications set out in this instruction manual without prior notice.

**CIRCUTOR, SA** on its web site, supplies its customers with the latest versions of the device specifications and the most updated manuals.

**www.circutor.com**

# Revision log

| Date | Revision | Description |
|---|---|---|
| 02/19 | M247B01-03-19A | Initial Version |
| 07/19 | M247B01-03-19B | Change of Logo and corporate colors |

# Here's your guide to use and configure URBAN.

# 1

This manual provides information about the usability and configuration of the **Master-Slave**, which has been designed and tested to allow electric vehicle charging, specified in IEC 61851.

It contains all the necessary information for safe use and help to get the best performance from it with step-by-step configuration instructions.

**THE FOLLOWING SYMBOLS ARE USED FOR IMPORTANT SAFETY INFORMATION IN THIS DOCUMENT**

**ATTENTION!**
Indicates that the damage to property can occur if appropiate precautions are not taken.

- Complies with IEC 61851, Electric vehicle conductive charging system (IEC 61851-1 and IEC 61851-22)
- Complies with IEC 62196, Plugs, socket-outlets, vehicle couplers and vehicle inlets (IEC 62196-1 and IEC 62196-2).
- Standards: 2014/35/UE, LVD;2014/30/UE, EMC.
- RFID complies with ISO 14443A/B

# So, hello!

## IMPORTANT SAFETY INFORMATION

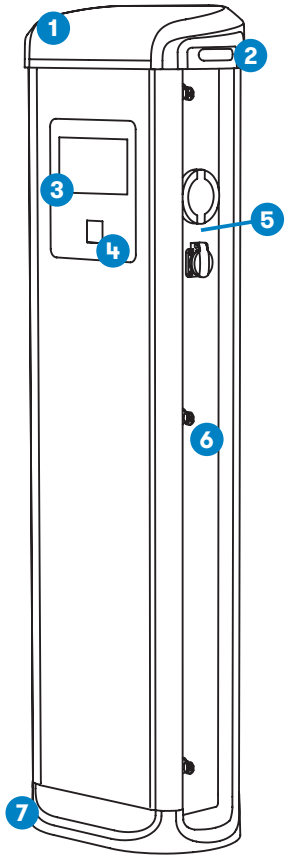
Read carefully all the instructions before manipulating the unit.

The Charge Point may not include elements of electrical protection.

- Read all the instructions before using and configurating this product.
- Do not use this unit for anything other than electric vehicle charging.
- Do not modify this unit. If modified, **CIRCUTOR** will reject all responsibility and the warranty will be void.
- 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 electrical parts inside the device.
- Check the installation annually by a 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 **CIRCUTOR** 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.

2

# Master



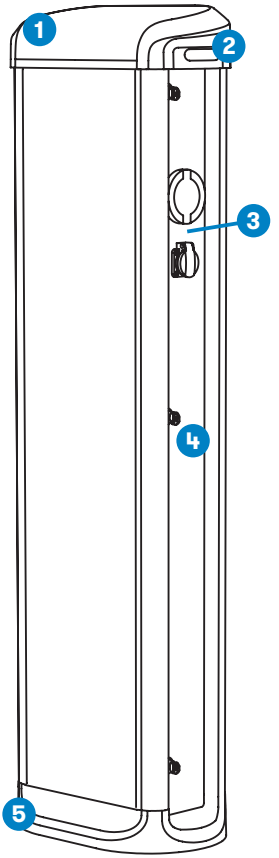

**1 - Hat**
**2 - LED Beacons**
**3 - Touch screen**
**4 - RFID Reader**
**5 - Plugs[1]**
**6 - Key lock**
**7 - Base**

[1] Plugs may vary depending on the model

- **HMI:** 8'' colour touch screen as the interface between the Charge Point and the user. Provides detailed information about ongoing charge transactions and the instructions of how to interact with the Charge Point.
- **Connector Lock:** Type 2 connector has a lock system to avoid disconnection of EV meanwhile is charging.
- **Light beacon:** Three colour led indicates the status of the connectors.
- **RFID:** User authentication.
- **Ethernet:** TCP/IP communication for remote supervision and configuration.
- **4G Modem (optional):** For those places where wired communications are not sufficient.
- **Energy metering:** Integrated meter built is measuring power and energy consumed by the EV during a charge transaction.
- **Remote access:** For supervision and control from everywhere.
- **Charge transaction historics:** Charge Point is capable of storing information about the charge transactions.
- **OCPP:** Open standard communication protocol, allows communication between the Charge Point and the Central System.

# Features

## Slave




- **Connector Lock:** Type 2 connector has a lock system to avoid disconnection of EV meanwhile is charging.
- **Light beacon:** Three colour led indicates the status of the connectors.
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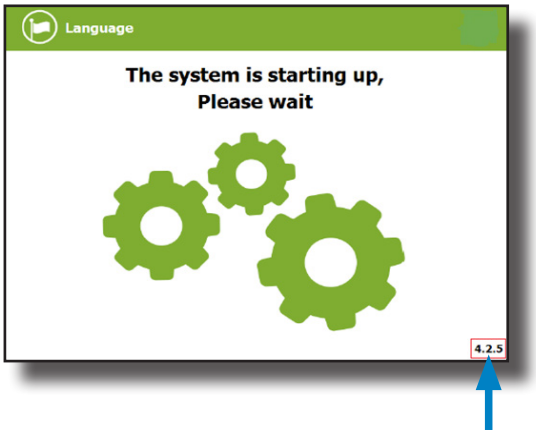
**1 - Hat**
**2 - LED Beacons**
**3 - Plugs[2]**
**4 - Key lock**
**5 - Base**

[2] Plugs may vary depending on the model

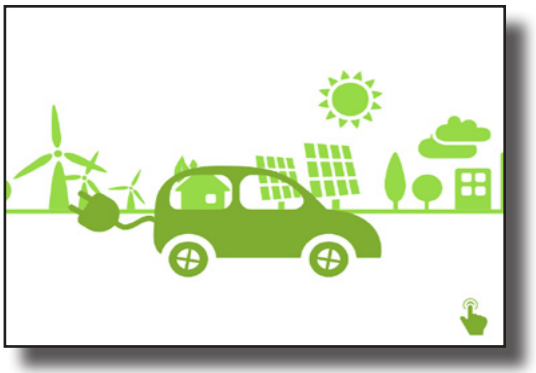
# 3

## A General

The first time the Charge Point is powered on, the system will take around 10 seconds to start up, the screen will show next image:

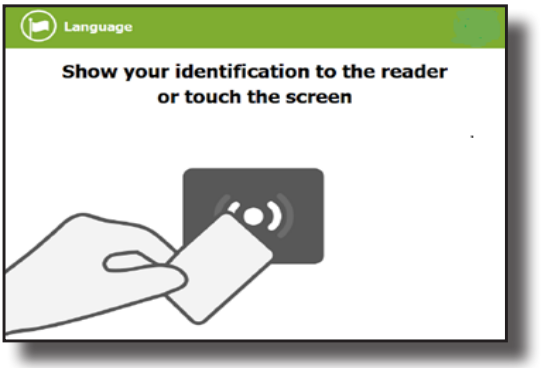



In the lower right corner, the firmware version is shown. After 10 seconds, the first screen that appears is the screensaver.



# How to use it?

When tapping on the screen, the HMI will skip to the next one:



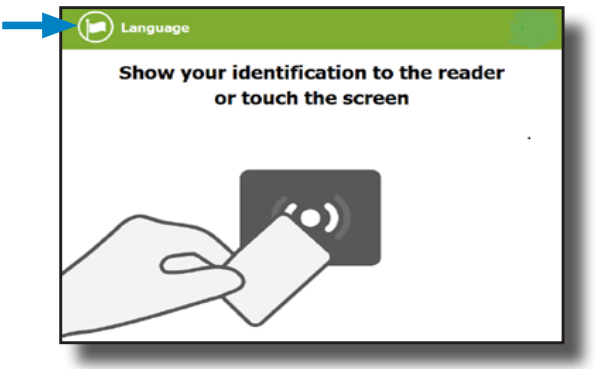

Here the Charge Point is asking to show the identification card or touch the screen.

The first option, show the identification card, is the option that will allow to start a 'Charging session' or to stop an ongoing 'Charging session'.

The second option, touch the screen, is meant to get information about the connectors status and the charging process so as to know the Charge Point availability. However, a 'Charging session' cannot be started or do any action over the currently charging session unless an authorized identification card is shown.

# B Language

During all the process is possible to change language, pressing on the top of the screen over the **'Flag'** touch symbol:



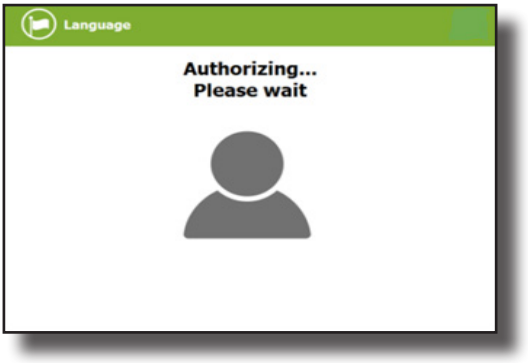

The language can be chosen by tapping on the corresponding flag.


The availability of the different languages is subject to the firmware version.

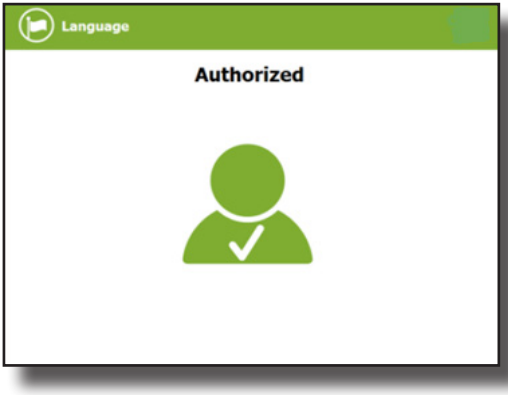
In case of doubt, please consult your local supplier.

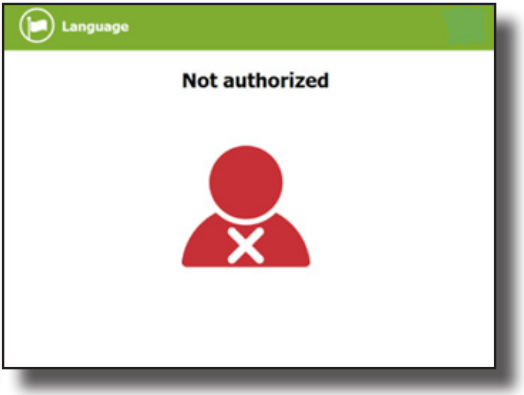
# Start charging

Once the identification card is shown, it may take a few seconds to authorise the access.

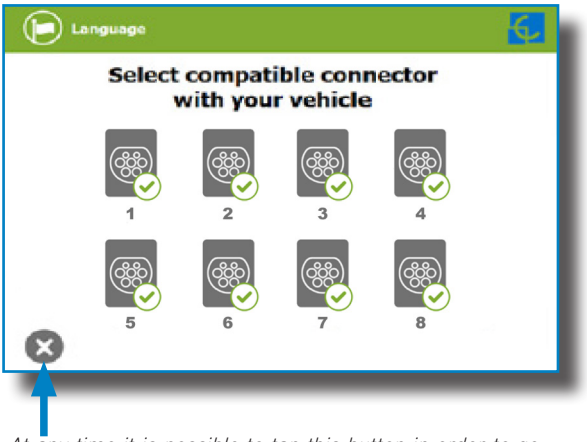



The HMI informs if the access is granted or not.



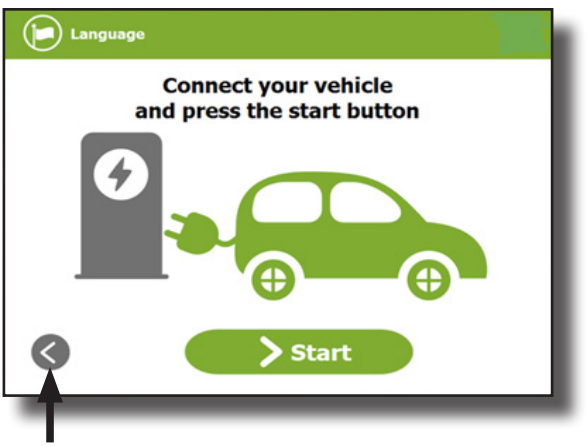
If the user is authorised, the connector can be chosen.




*At any time it is possible to tap this button in order to go back to the "identification screen".*

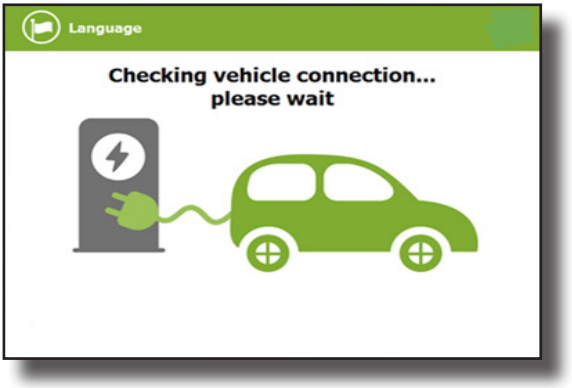
Once the connector is chosen, instruction screens will appear successively.

**1- Connect your vehicle and press the 'Start' button**

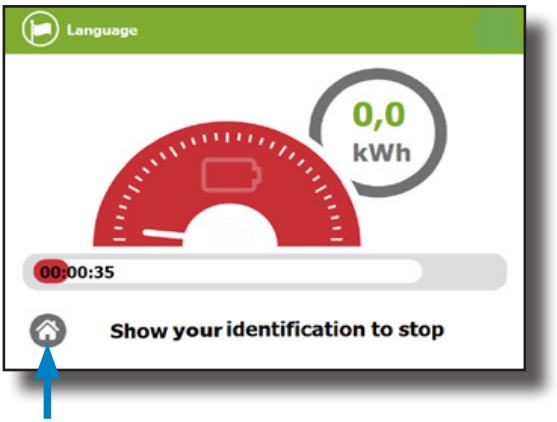



*At any time is possible to tap this button in order to go back to the previous screen.*

### 2- Checking vehicle connection... Please wait

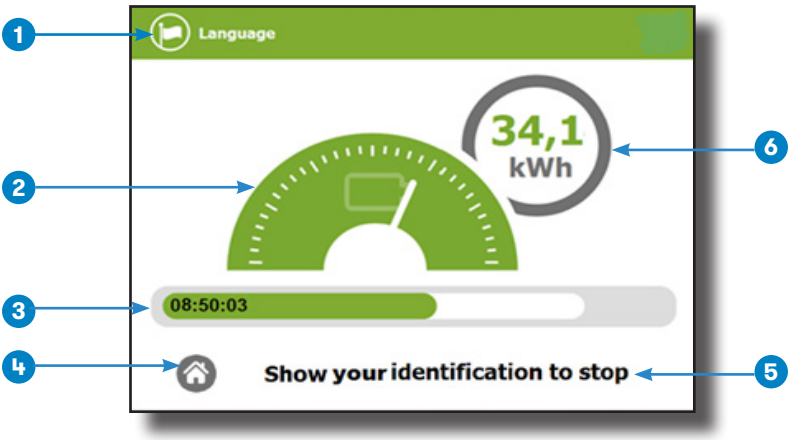



In a few seconds, the charging session will start and the HMI will show the charging process.




*Tap this button in order to go back to the "identification screen".*

# D Charge information




**1- Language button:** pressing over this button it is possible to change the HMI language.

**2- Analog process indicator:** at first moment it is red, as the vehicle is charging it will change to green, passing before for orange.

**3- Charge time with status bar:** charging time elapsed so far.

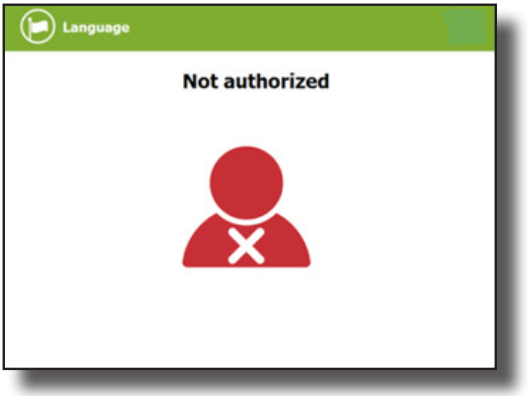
**4- House touch button:** it goes back to the "identification screen".

**5- Additional information:** instructions, current status, etc.

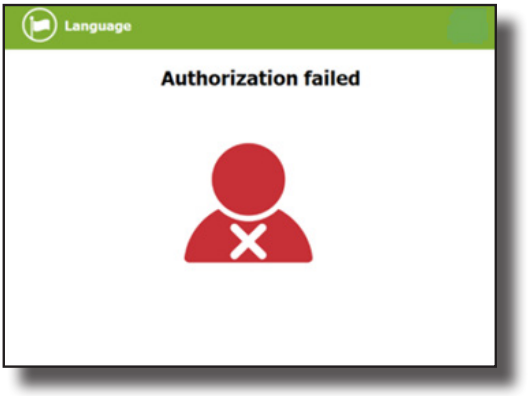
**6- Energy charged:** energy supplied to the vehicle so far.

# E Special events start charging

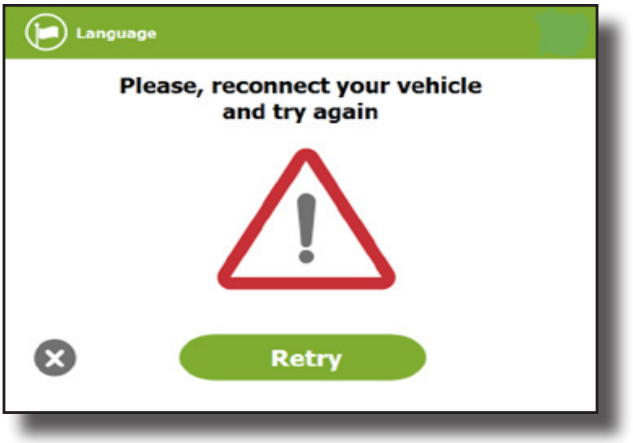
**"Not authorized"**: some Charge Points could be working under the supervision of a main management system. If the user is not authorized, the HMI will show the following message:




**"Authorization failed"**: the authorization could not be completed due to some communication problem with the Back Office.

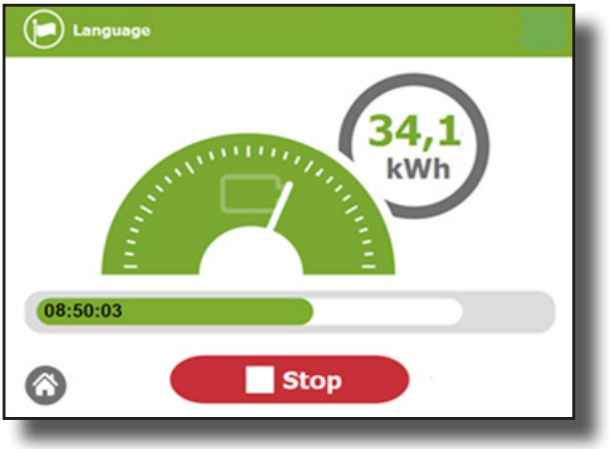


It is possible that the Charge Session could not be started due to some unexpected reason. The HMI will show next screen, press **'Retry'** button and try again.

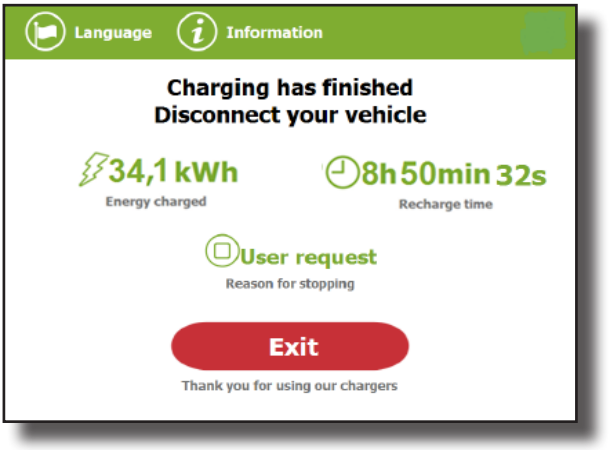


# F Stop charging

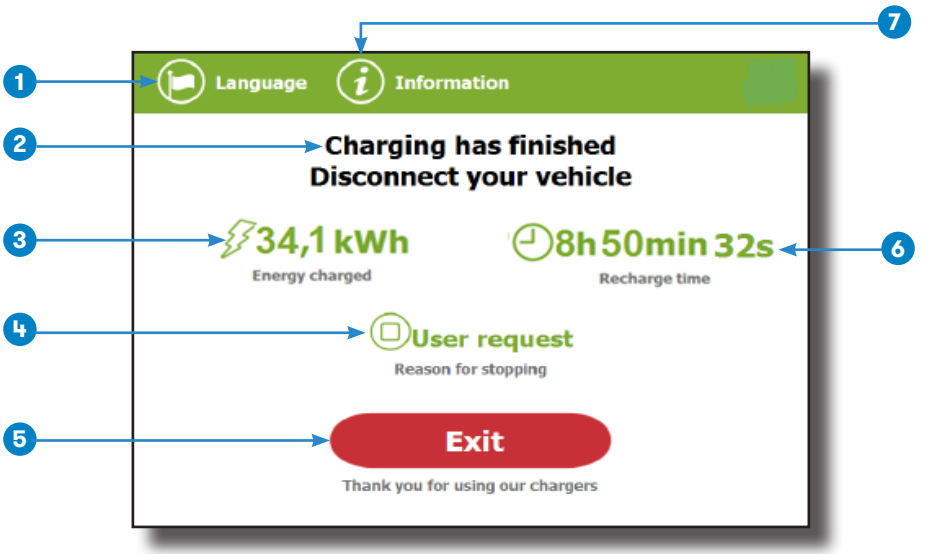
After showing the same identification card that started the Charging Session, the Charge Point will automatically allow to stop the charging session, press over the **'Stop'** button:




Once the charging session is stopped, the HMI shows the summary screen. Press over the **'Exit'** touch button and disconnect the vehicle:



# Charge summary




**1- Language button**: pressing over this button it is possible to change the HMI language.

**2- Process instructions:** different instructions can be displayed.

**3- Energy charged:** total energy charged at the end of the charging session.

**4- Stop reason:** It shows why the charging session has been stopped.

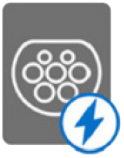
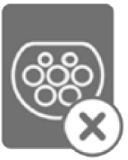
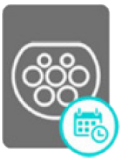
**5- Exit button:** It has to be pressed in order to finish the charging session. After pressing, the HMI screen will go back to the "identification screen".

**6- Recharge time:** total recharging time at the end of the charging session.

**7- Information button:** pressing over this button you can get information about the charging session, per example the "reason for stopping" or another one.

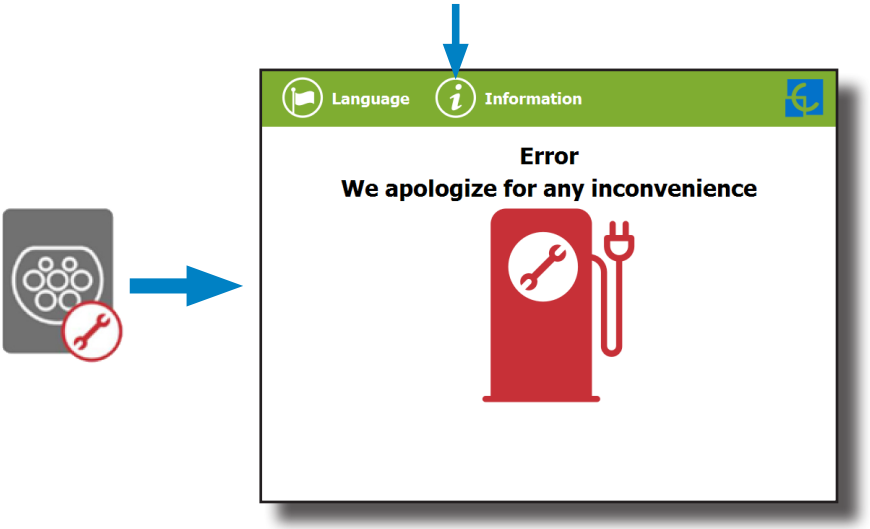
# H Connector status

The HMI screen shows a different symbols over the connector pictures, as you can see below:

| | |
|---|---|
|  | Connector available, a Charging Session can be starded. |
|  | Connector charging, a Charging Session cannot be starded because it is already in use. |
|  | Connector disabled, a Charging Session cannot be starded because it is under maintenance or because the Back office has decided to stop it. |
|  | Connector out of service, a Charging Session cannot be starded due to some error.<br><br>Tap on the '**Information**' button in order to get more information about it. |
|  | Connector reserved, a Charging Session can only be starded using the IdTag assigned to the reservation. |

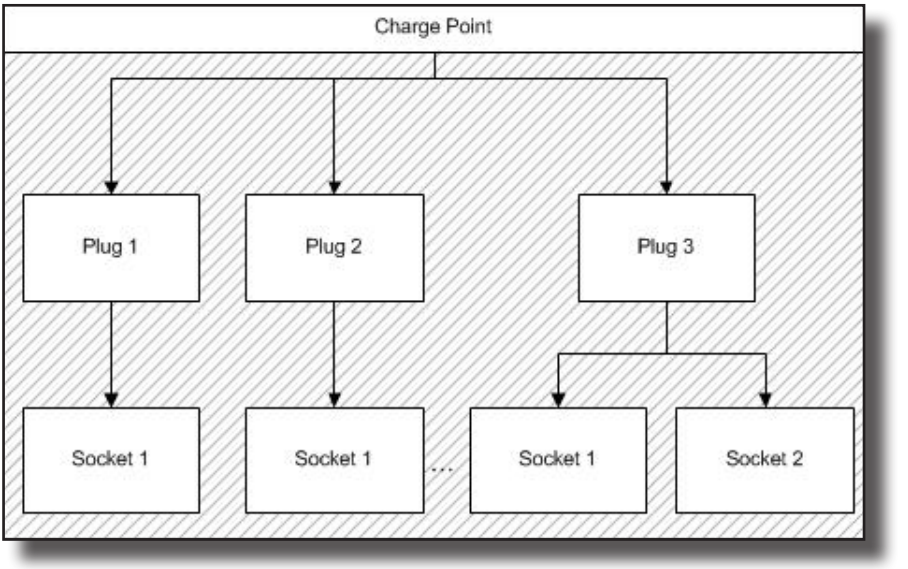
# Errors

The Charge Point can report about different sort of errors, it can be from different parts or devices from it.




When the **'Error screen'** appears, the **'Information'** touch button has to be pressed in order to see the error message, as you can see below:

**Logical levels:**



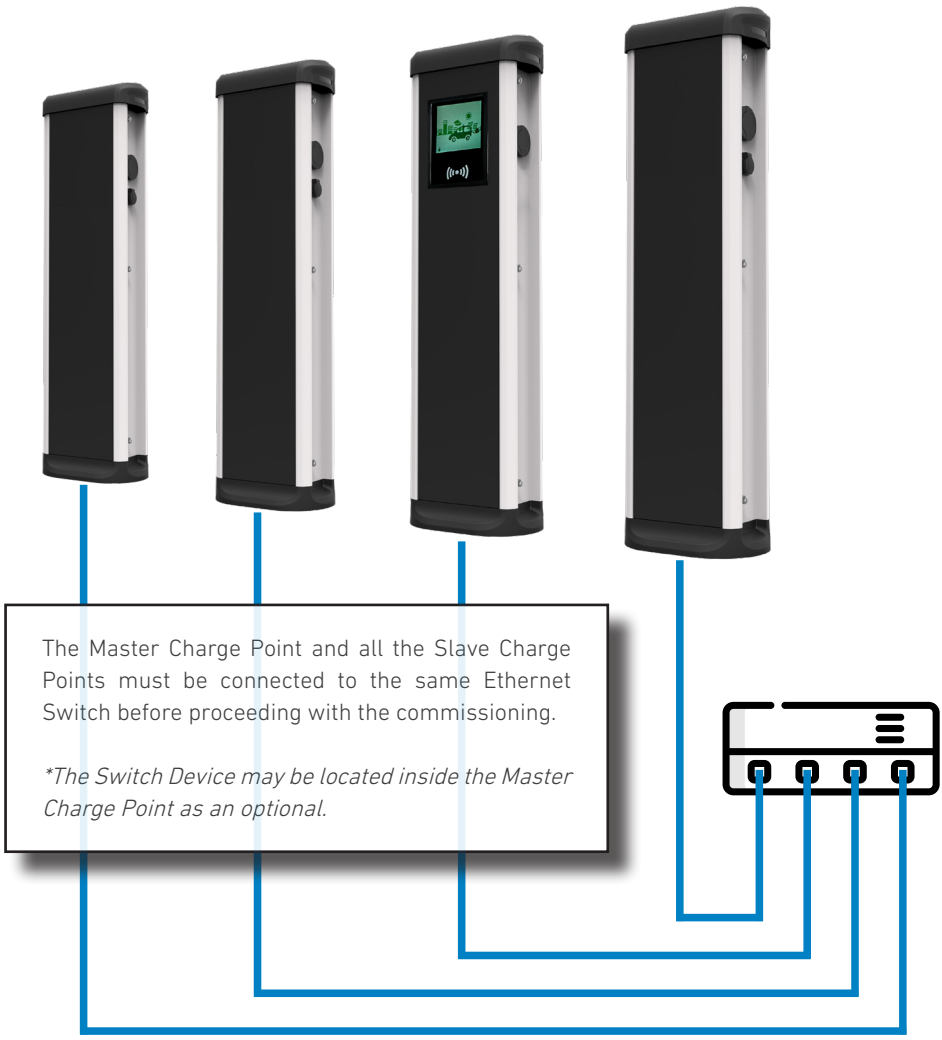

**Charge point:** General errors affecting the whole charge Point (E.g.: RFID error).

**Plug:** Error affecting one plug. All sockets are in error state. Plug is inoperative.

**Socket:** One plug may have more than one socket. Error can affect one socket and plug still being available.

# 4

## A Network topology

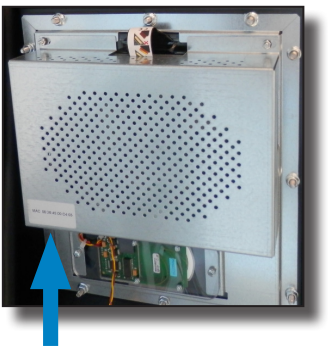


The Master Charge Point and all the Slave Charge Points must be connected to the same Ethernet Switch before proceeding with the commissioning.

**The Switch Device may be located inside the Master Charge Point as an optional.*

# How to connect it?

## B Introduction

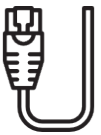


*The Ethernet port of the Master Charge Point is located at the bottom left side of the rear part of the HMI screen.*

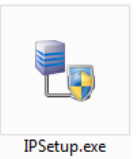

*There is only one Ethernet port on the Slave Charge Point and it is located on the TCP1RS. The location of this device may vary depending on the model, for more information please contact* ***CIRCUTOR*** *Post-Sales Department.*

Before proceeding , make sure all the following is ready:

Computer running at least Microsoft Windows XP.



UTP Cable (at least one for each Charge Point)

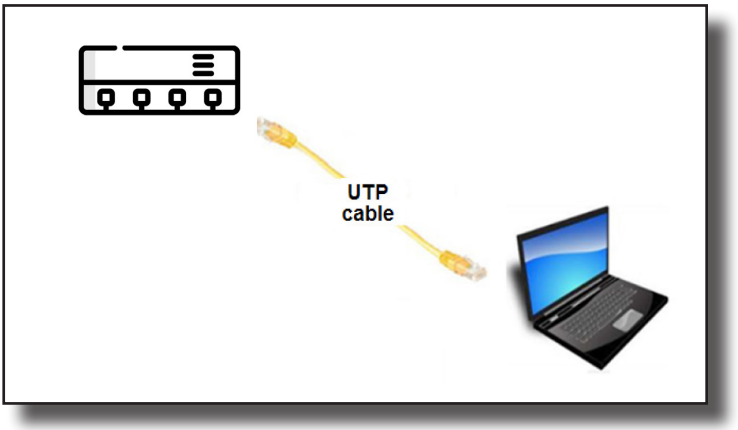



IPSetup.exe (*Can be downloaded for free from* ***CIRCUTOR*** *Expert Area)*

# IPSetup

**1 -** Connect the UTP Cable to the Computer (running Microsoft Windows, at least Windows XP) and the Ethernet Switch.

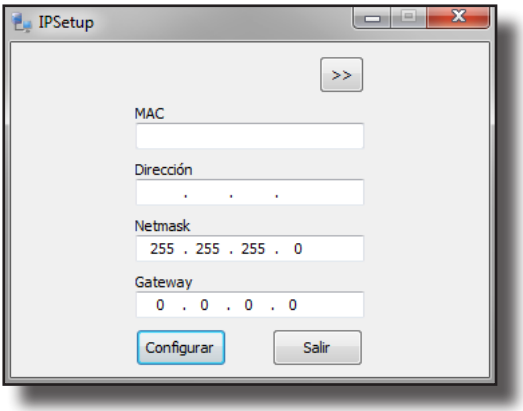
The Computer and the Charge Point must be in the same network and in the same range.




**2 -** Execute **IPSetup.exe** on the Computer.

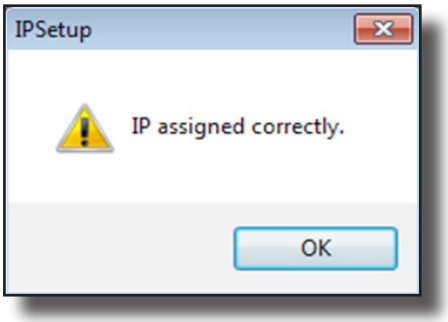
**3 -** Enter the following parameters and click on **'Configure'**

- MAC of the Charge Point (see label on the side of the Charge Point)
- IP address
- Netmask
- Gateway: leave default settings




**4 -** Wait 30 seconds approximately until the process is complete.


**5 -** The process will complete when the following message appears, by click ing on '**OK**' the setup webpage will open.



# 5

Setup webpage allows managing networking setup, upgrading devices and other options.

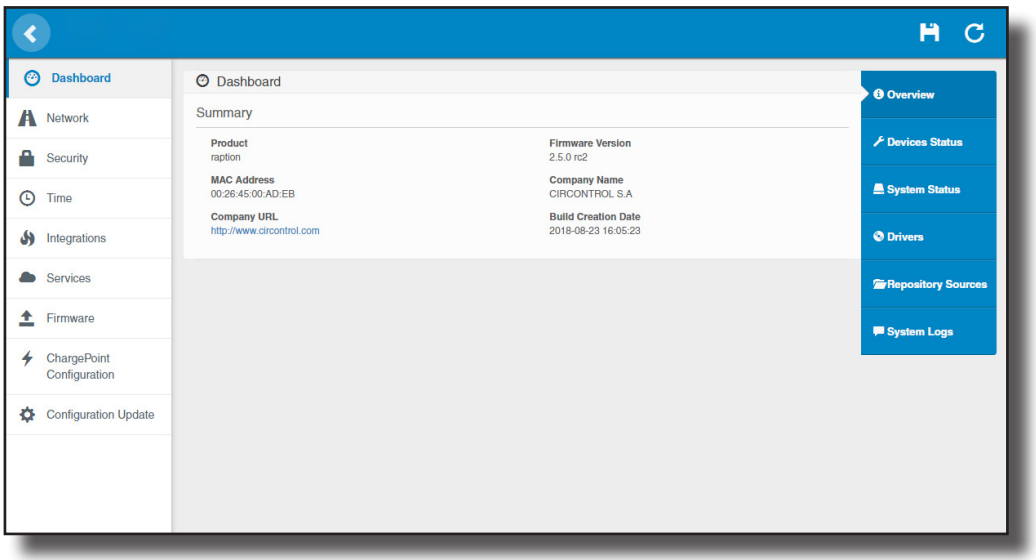
To access the setup web page, open a web browser and enter the IP address previously configured.

## A Dashboard

### Overview

As a relevant information, the **'Summary'** shows:

- Firmware version: Version of the firmware currently working in the Charge Point
- MAC Address: Identifier of the network card of the Charge Point

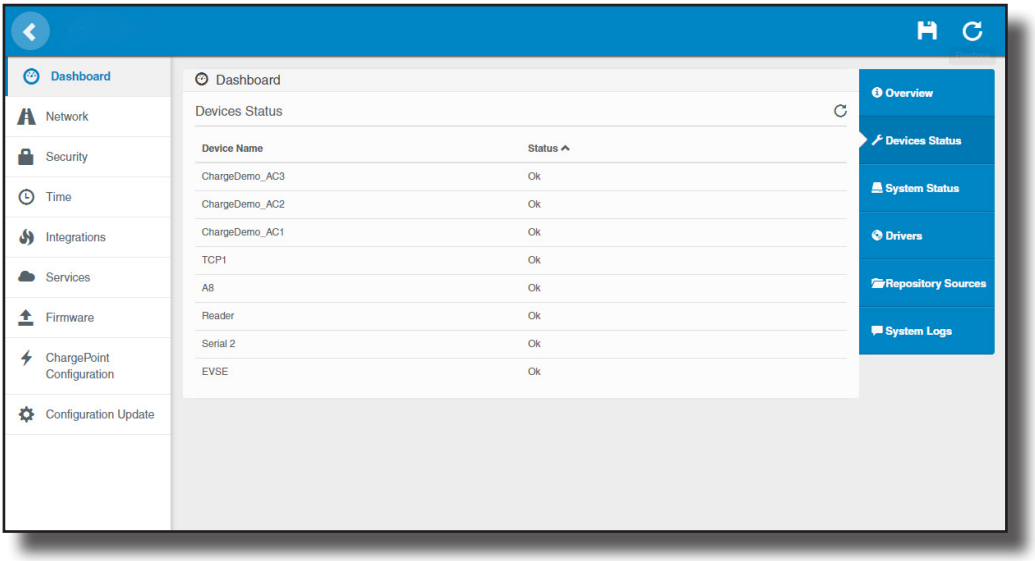


# Setup Webpage

### Devices Status

As a relevant information, the **'Devices Status'** shows:

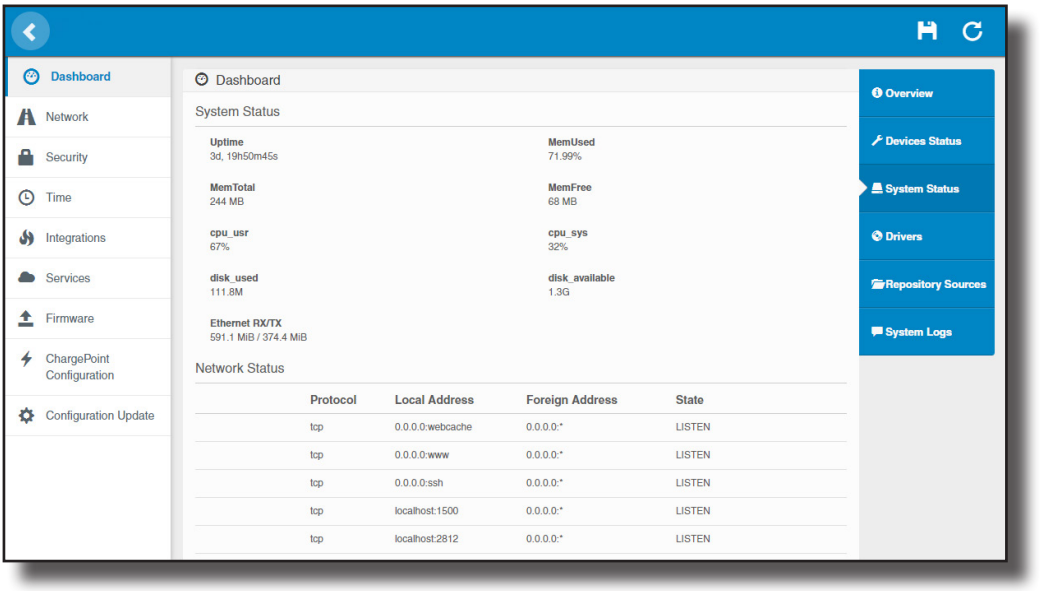
- Device name: Name of the devices inside the Charge Point
- Status: **OK** (online) / **NOT OK** (offline)



### System Status

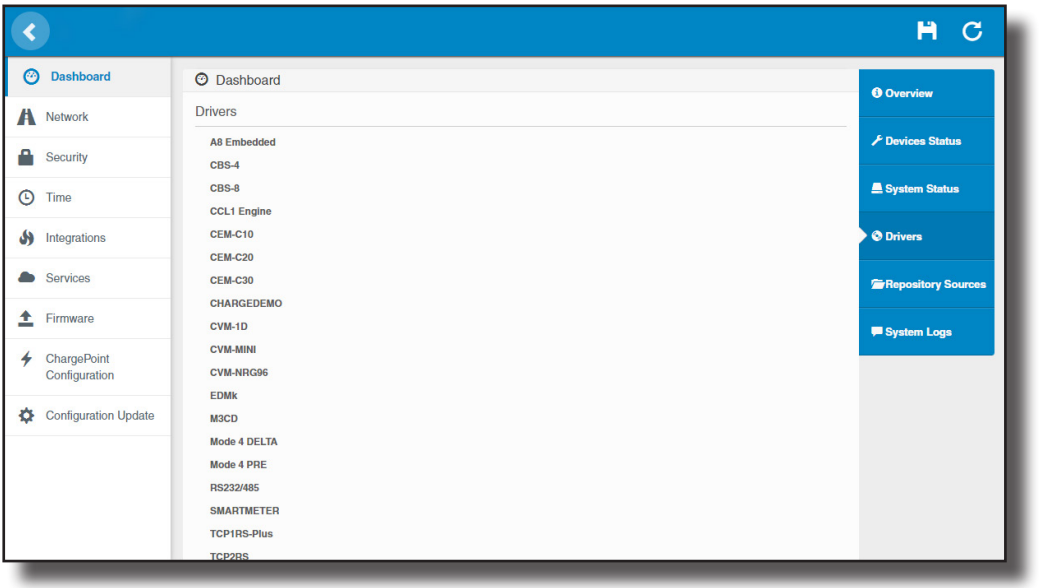
The information shown in this section is basically relative to the state of the Control Board of the Charge Point

This is necessary for the technical service staff but does not show any information regarding the external connection of the Charge Point or the charging session.



## Drivers

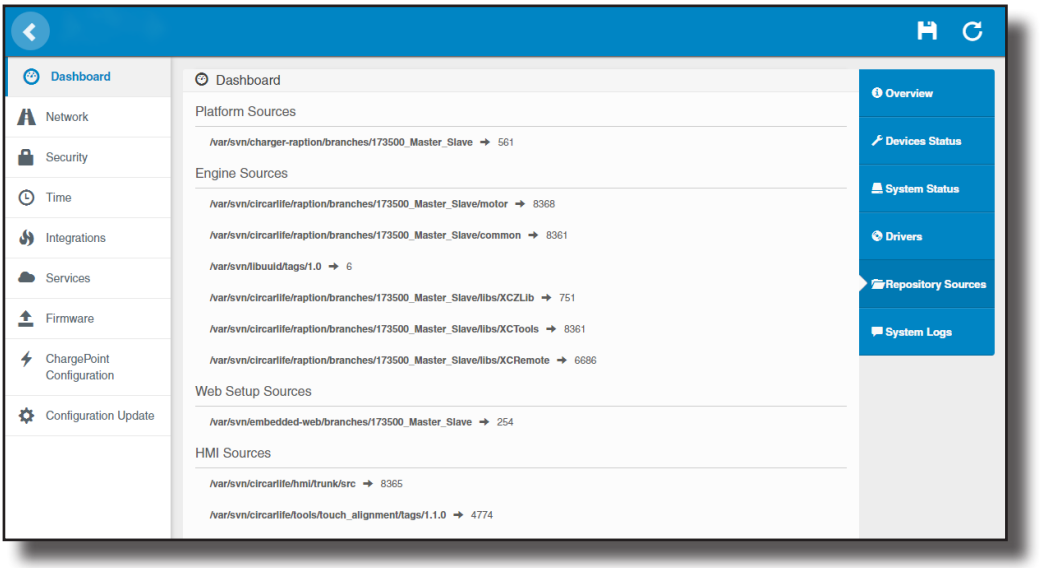
The information shown in this section is regard to the drivers that the Charge Point needs in order to recognize the different devices inside the Charge Point, such as the meters, the Mode 3 controller, the RFID reader, etc.



### Repository Sources

The information shown in this section is basically related to the internal behavior of the Charge Point.

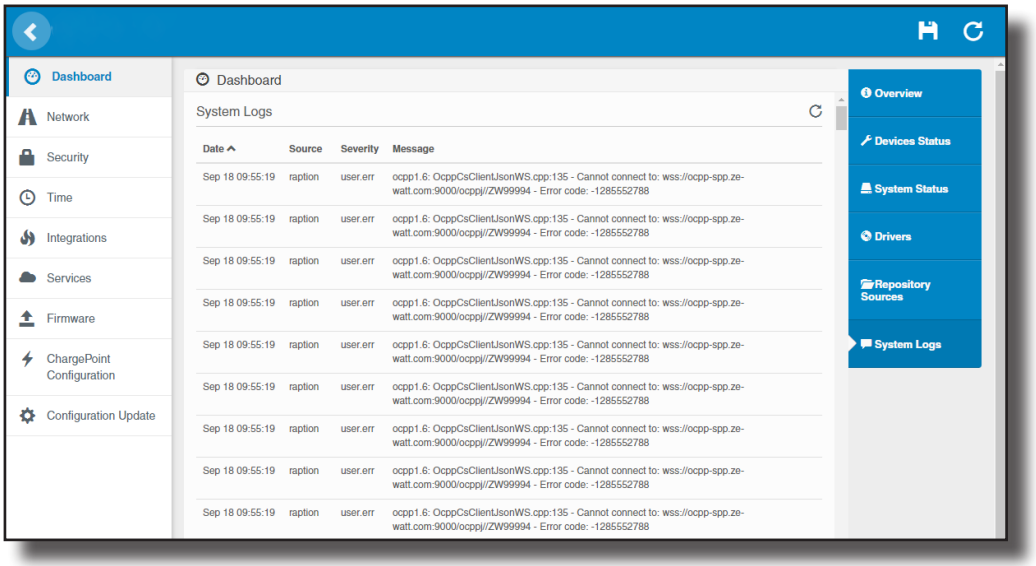
This is necessary for the technical service staff but does not show any information regarding the external connection of the Charge Point or the charging session.



## System Logs

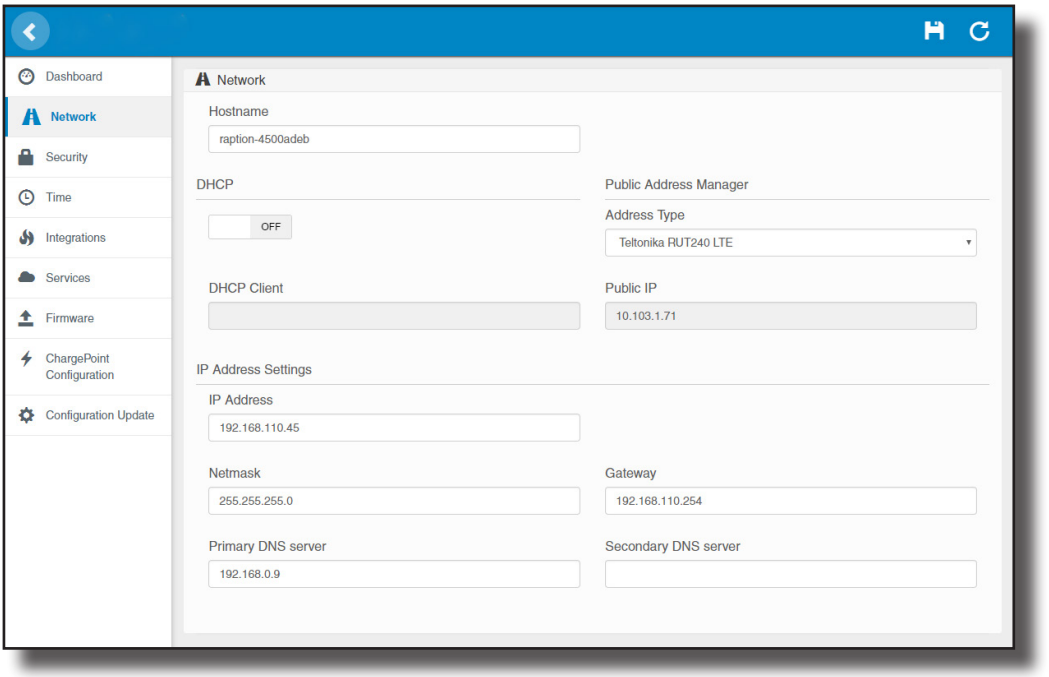
The logs shown in this section are automatically produced by the Charge Point, it is a detailed list of the charging sessions, system performance, or user activities.

This logs are created since Charge Point is powered On. Even if Charge Point is restarted the logs are saved.



# B Network

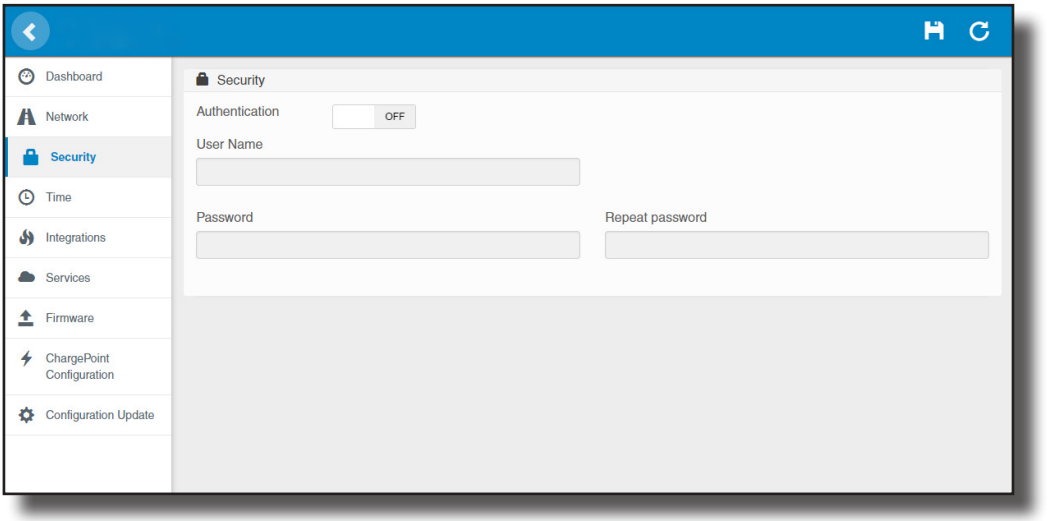
This section provides basic configuration of the network parameters. Clicking over the **'Network'** tab, next image will appear.



| Value | Description |
|---|---|
| **Hostname** | Name of the Charge Point on the network |
| **Address Type** | •**Local address:** select this option if the OCPP central system is connected to the same private network than the Charge Point is already connected. It is assigned to the Ethernet Port.<br><br>•**Static address:** select this option if the external modem/router is different than listed below. It must have static public IP address, check it with your SIM provider.<br><br>***NOTE**: Public IP address must be entered manually in the "Public IP" text box.*<br><br>•**SIERRA Wireless Raven XE H2295EW:** select this option only when SIERRA Wireless RAVEN XE cellular router is connected to the charge point.<br><br>•**SIERRA Wireless AirLink LS300:** select this option only when SIERRA Wireless AirLink LS300 cellular router is connected to the charge point.<br><br>•**Circutor SGE-3G/GPRS:** Select this option only when **CIRCUTOR** SGE-3G/GPRS cellular router is connected to the charge point.<br><br>•**Teltonika RUT240 LTE:** Select this option only when Teltonika RUT240 LTE cellular router is connected to the charge point. |
| **DHCP Client ID** | Client ID associated to the DHCP server (if available) |
| **Public IP** | Static public IP address to write if provided by the SIM provider |
| **IP Address** | IP Address assigned to the Charge Point |
| **Netmask** | Netmask of the network |
| **Gateway** | Gateway of the network |

# Security

This section provides basic configuration of the security parameters. Avoiding unauthorised access to the Setup Webpage. All parameters are disabled from factory settings.

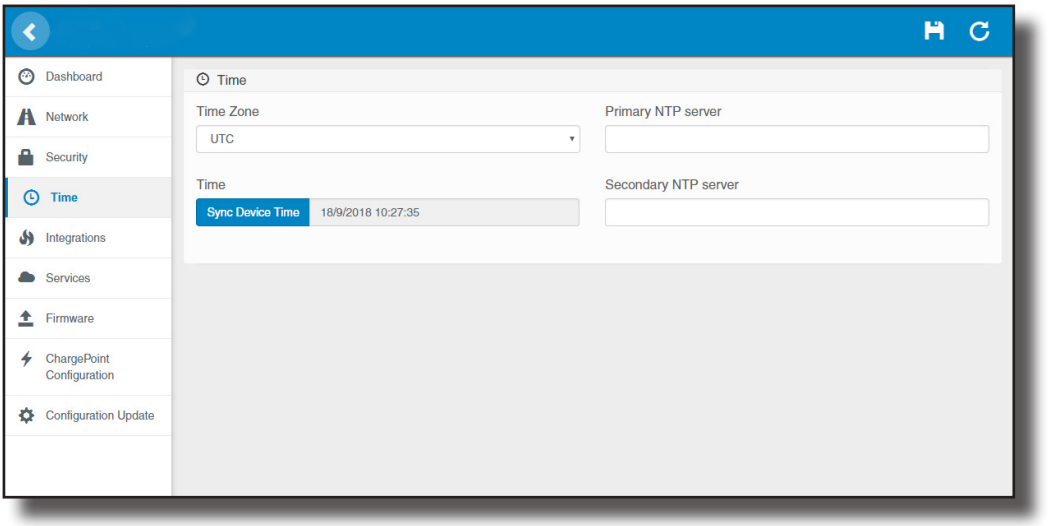



| Value | Description |
|---|---|
| **Authentication** | **ON:** authentication enableb / **OFF:** authentication disabled |
| **User Name** | Username and Password authentication for Setup web page |
| **Password** | |
| **Repeat password** | |

Do not forget the credentials. There is no way to restart the Charge Point to default factory settings.

# D Time

This section allows setting the time and region time for the Charge Point.

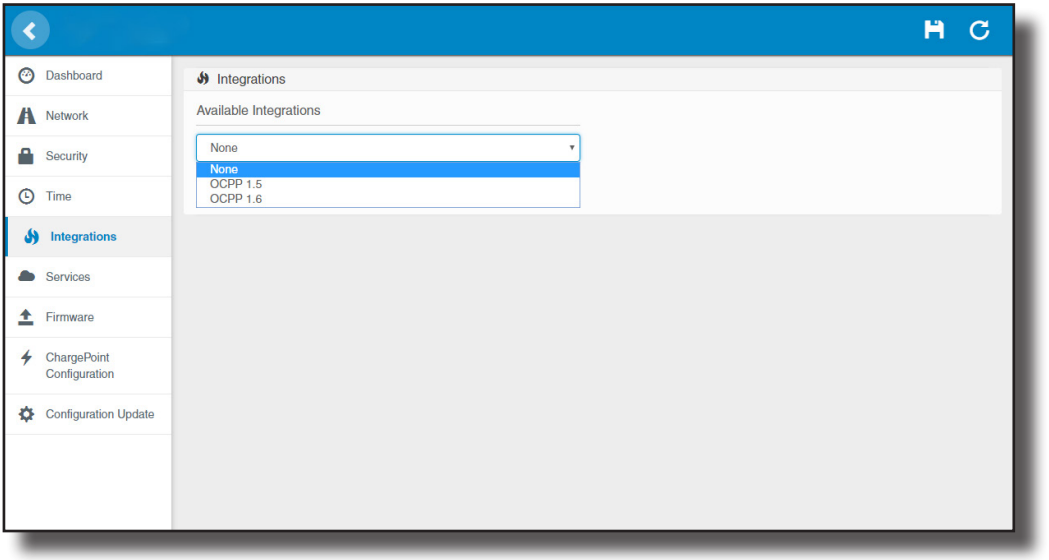



| Value | Description |
|---|---|
| **Time Zone** | Select the regional time for the Charge Point according to the location |
| **Time** | Current date and time of the Charge Point |
| **Primary NTP Server** | Synchronize the time through internet automatically |
| **Secondary NTP Server** | |

# E Integrations

This section allows to enable and disable OCPP service of the Charge Point.

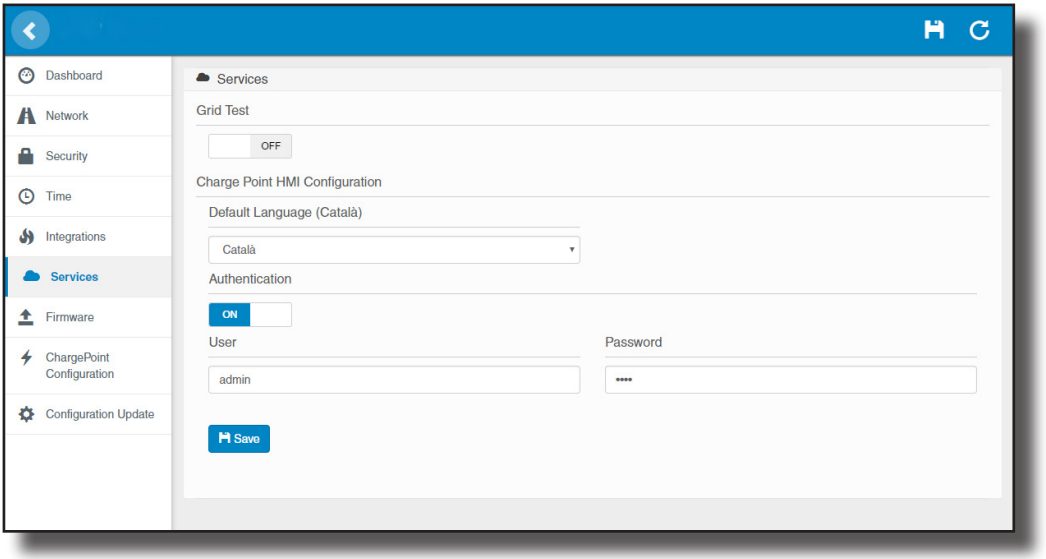
Both OCPP 1.5 and OCPP 1.6 are available on the last firmware version.




For more information about the parameters and configuration, please refer to **'OCPP 1.5'** or **'OCPP 1.6'** chapters of this manual.

# F Services

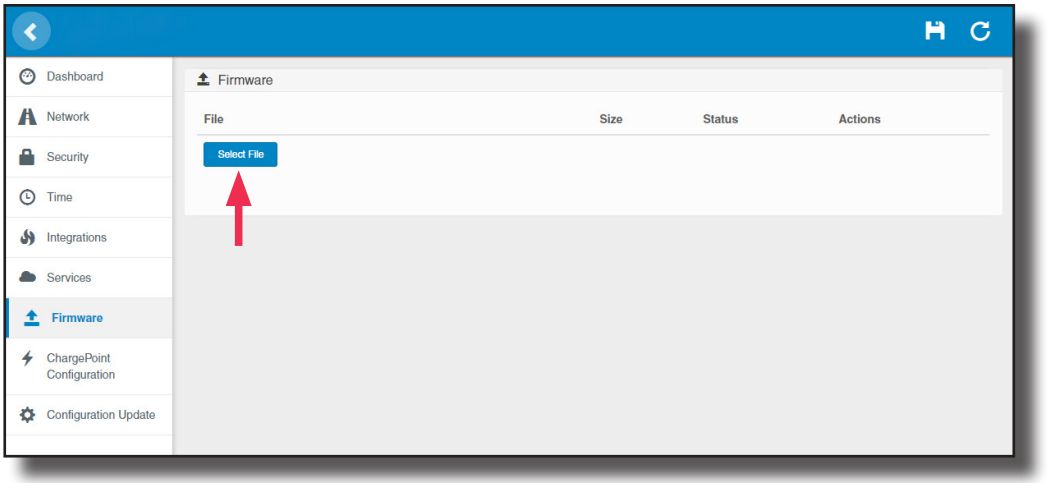
This section allows to change the HMI language, make a Grid test as well as setting a password.



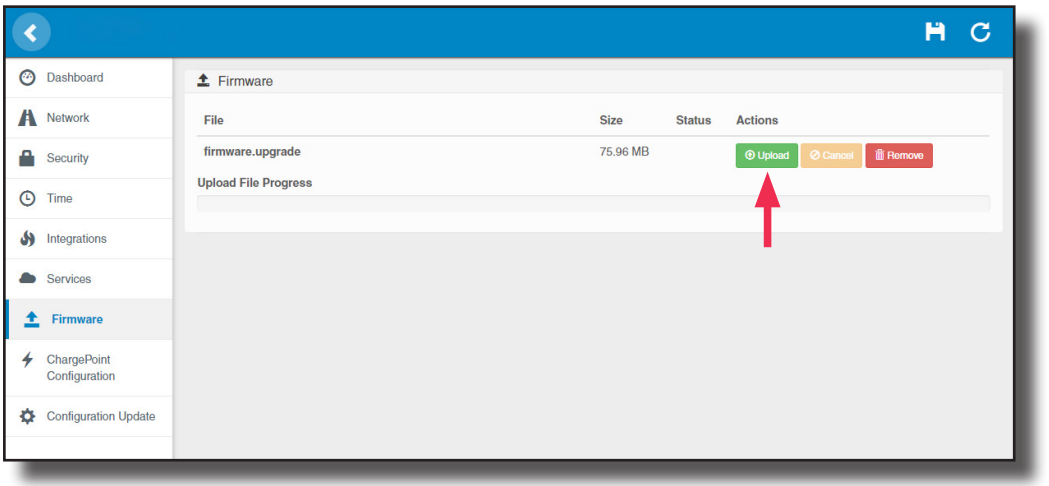

| Value | Description |
|---|---|
| **Grid Test** | The Charge Point makes a calibration test on the HMI screen |
| **Default language** | It is possible to choose the default language for the HMI screen |
| **Authentication** | It can be set an authentication to avoid changes in this page |

# Firmware

The Charge Point firmware can be upgraded remotely by clicking on the **'Select File'** button.



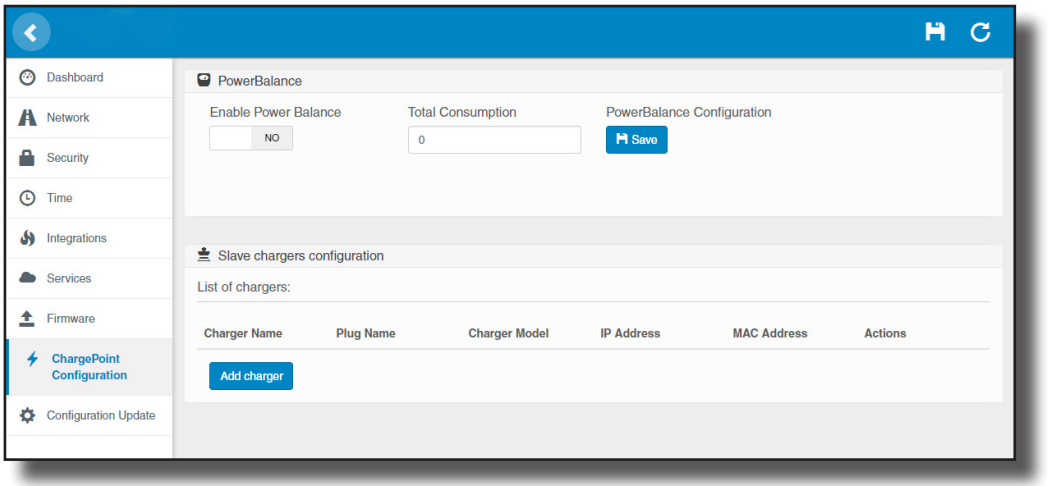

A window will pop up in order to choose the file, then click on '**upload'.**




To obtain the latest firmware version please contact **CIRCUTOR** Post Sales Department. More information in '**Need help?**' chapter.

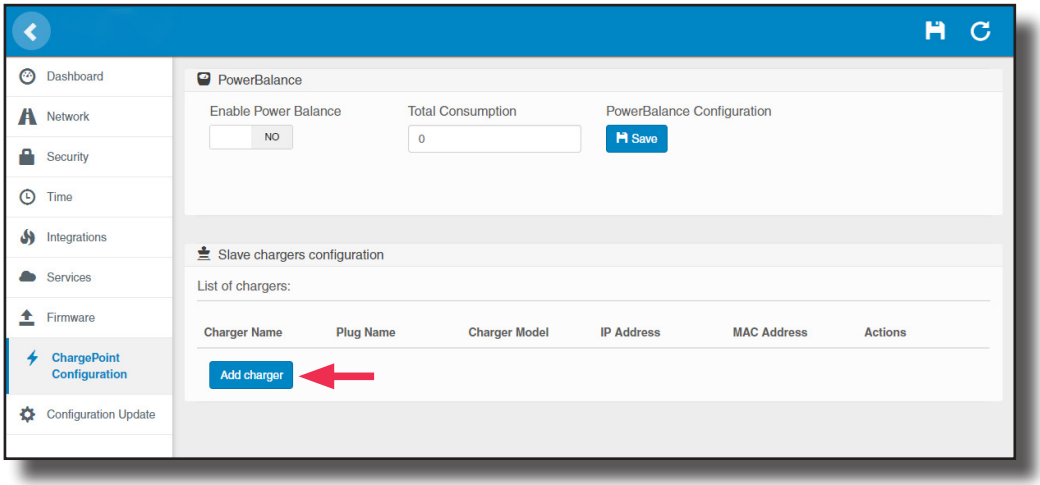
# H Charge Point Configuration

The Charge Point is capable of balancing the available power based on the number of outlets in use.

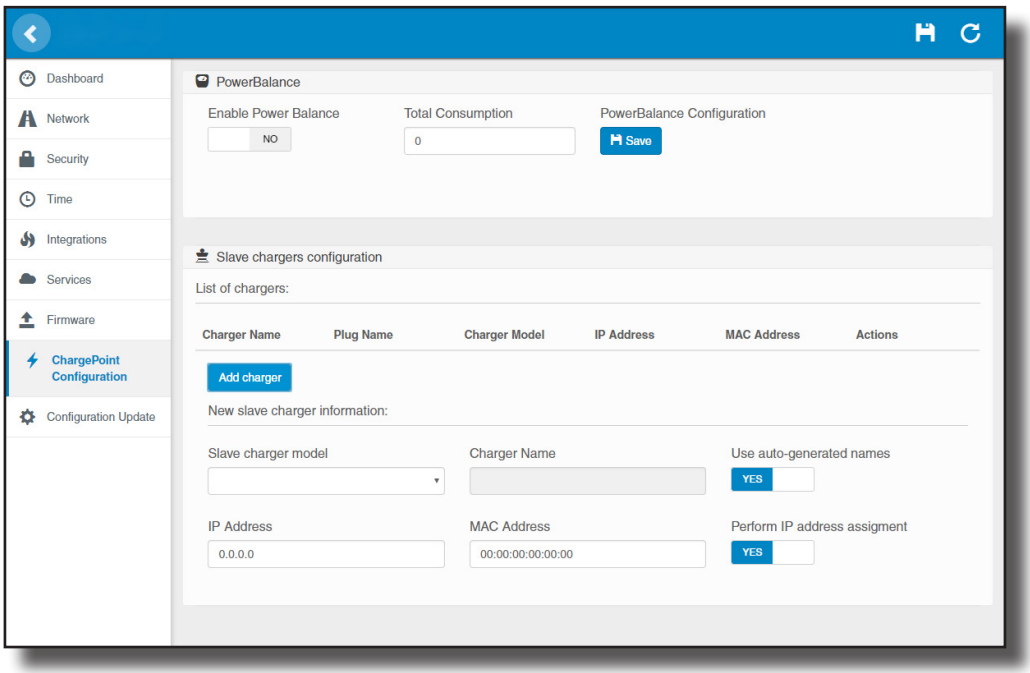



| Value | Description |
|---|---|
| **Enable Power Balance** | **YES:** the Charge Point shares equally the power delivered to each ongoing Charge Transaction without exceeding the limit configured.<br><br>**NO:** the Charge Point does not take in consideration any limit, giving the maximum power for each connector. |
| **Total Consumption** | Maximum current value offered by the Charge Point that shares between the ongoing Charge Transactions.<br><br>***NOTE:*** *This value must be equal or higher than 6A multiplied by the number of outlets. Meaning that it must be equal or higher than the sum of current delivered when all outlets are charging at the minimum.* |

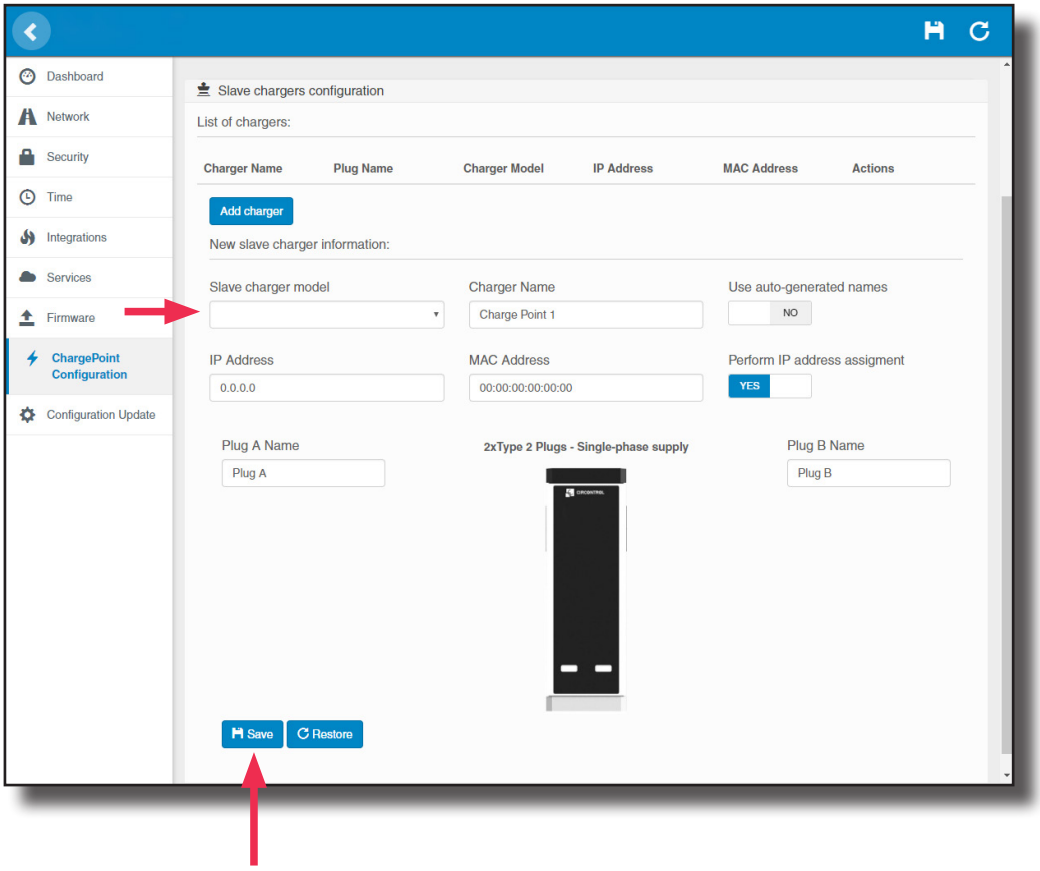
The Master Charge Point is able to manage numerous Slave Charge Points, in order to add them click on '**Add charger**'.




A new menu will show up in order to add new Slave Charge Points.



More fields are shown when selecting a 'Slave charger model'.

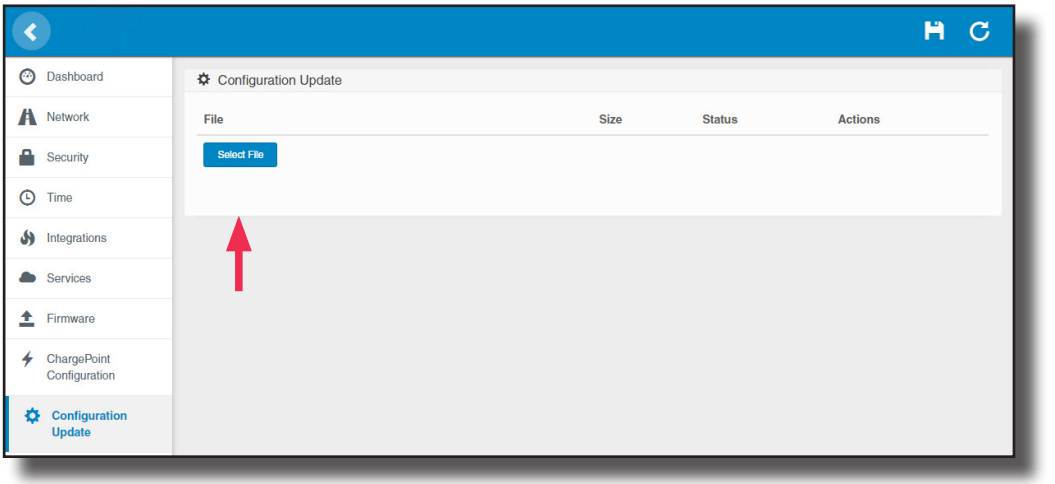



By clicking the **'Save'** button, all the configuration inside the '**Slave chargers configuration'** is applied. Before doing so, make sure all fields are properly filled.

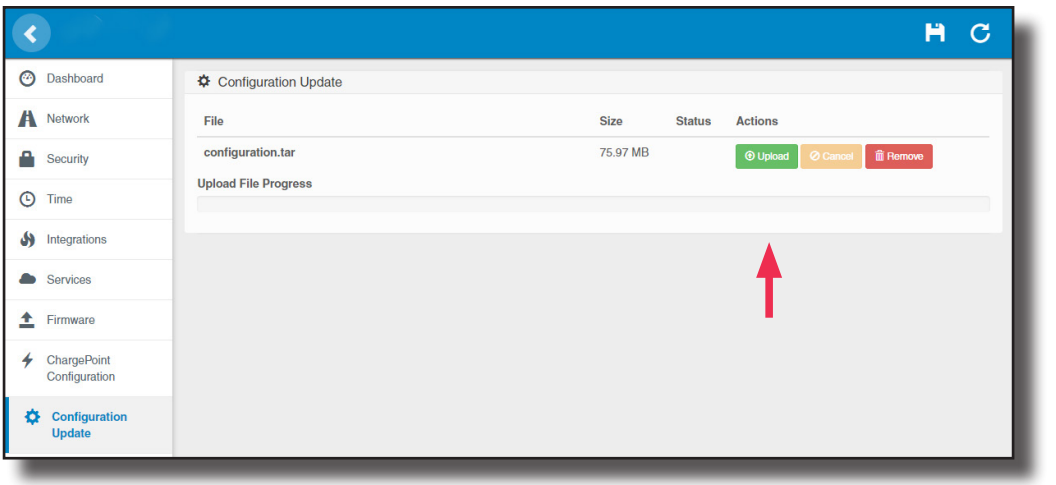
| Value | Description |
|---|---|
| **Slave charger model** | List of Slave Charge Point models.<br><br>***NOTE:*** *Select it carefully according to the model described on the label.* |
| **Charger Name** | Allows to specify the name of the charger.<br><br>***NOTE:*** *this name only serves as a label, it does not affect the correct operation of the equipment.* |
| **Use auto-generated names** | **YES:** 'Charger Name' assigned by default.<br><br>**NO:** 'Charger Name' can be edited manually. |
| **IP Address** | IP address of the Slave Charge Point |
| **MAC Address** | MAC address of the Slave Charge Point |
| **Perform IP address assigment** | **YES:** when clicking the **'Save'** button on the bottom of the web-page, the desired IP address is assigned to the Slave Charge Point with the MAC address specified.<br><br>**NO:** when clicking the **'Save'** button on the bottom of the webpage, the Slave Charge Point with the IP address specified is added to the list ignoring the MAC address field. |
| **Plug A Name** | Plug A name can be edited manually.<br><br>***NOTE:*** *this name is shown on the Master Charge Point screen* |
| **Plug B Name** | Plug B name can be edited manually.<br><br>***NOTE:*** *this name is shown on the Master Charge Point screen* |

# Configuration Update

The Charge Point configuration can be updated remotely by clicking on the **'Select File'** button. Intended ONLY for Service Staff to restore the Charge Point to default factory settings.




A window will pop up in order to choose the file, then click on '**upload'.**




To obtain the appropriate configuration file please contact **CIRCUTOR** Post Sales Department. More information in **'Need help?'** chapter.

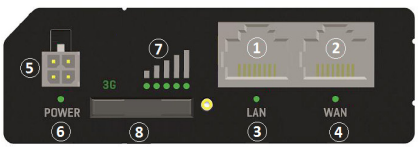
# 6

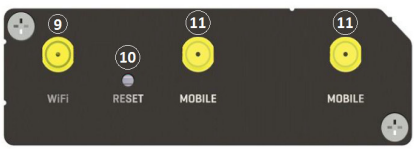
## A Modem overview

The 4G modem installed by default is:

**Teltonika RUT240**


This device allows to the Charge Point connect over 4G networks to remotely view or manage the Charge Point status. RUT240 is part of the RUT2xx series of compact mobile routers with high speed wireless and Ethernet connections.




| | | | |
|---|---|---|---|
| **1** | LAN Ethernet port | **7** | Signal strength indication LEDs |
| **2** | WAN Ethernet port | **8** | SIM card holder |
| **3** | LAN Led indicator | **9** | WiFi antenna connector |
| **4** | WAN Led indicator | **10** | Reset button |
| **5** | Power connector | **11** | LTE antenna connectors |
| **6** | Power LED | | |

# Teltonika RUT 240

## B Connection status LED

Explanation of connection status LED indication:

**1.** Signal strength status LED's turned on: router is turning on

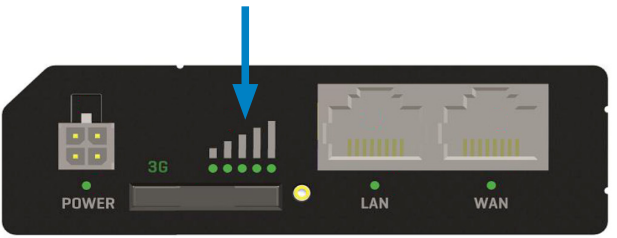
**2.** 2G and 3G LED's constant blinking every 1 sec: no SIM or bad PIN

**3.** 2G/3G LED's blinking every 1 sec: connected 2G/3G, but no data session established

**4.** Blinking from 2G LED to 3G LED repeatedly: SIM holder not inserted

**5.** 2G/3G LED turned on: connected 2G/3G with data session

**6.** 2G/3G LED blinking rapidly: connected 2G/3G with data session and data is being transferred.



# SIM card installation

Insert SIM card which was given by your ISP (Internet Service Provider). Correct SIM card orientation is shown in the picture.


**1.** Push the SIM holder extract button

**2.** Pull out the SIM holder

**3.** Insert the SIM card

**4.** Push in the SIM holder

After installing the SIM card, check out that the 4G antenna (mobile), Wi-Fi antenna and the power connector are properly attached.

SIM card NOT provided by **CIRCUTOR.**

# D Logging in

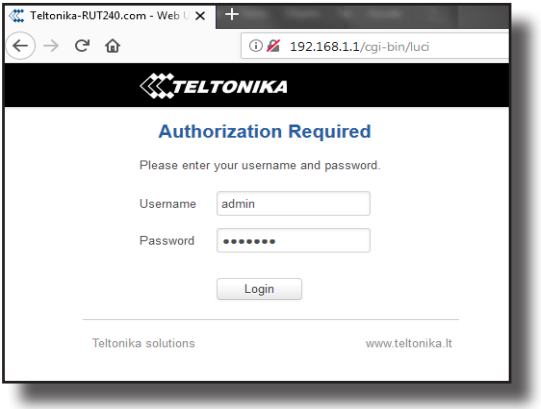
When the set up is done as described in the previous section, the modem is accessible via Wi-Fi or Ethernet.

**1.**Using a Computer look for a Wi-Fi access point named RUT240_xxxxxxxxxxx and connect on it, no password needed. If connecting via Ethernet, skip this step.

**2.**Open a web browser and type ***http://192.168.1.1***

**3.**Use the following parameters when prompted for authentication:

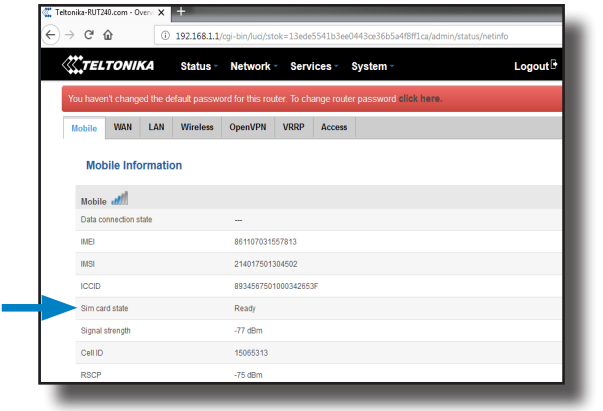
User name: **admim**
Password: **admin01**



# E Configuration

The **Configuration Wizard** will start after logging in. It is necessary to complete Configuration Wizard to setup the modem correctly.

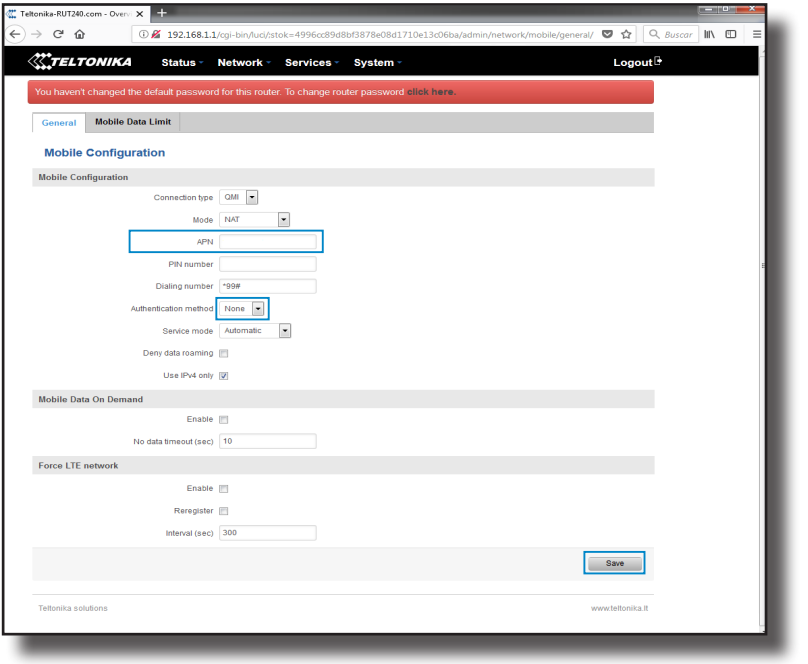
Go to **Status** > **Network** > **Mobile** and pay attention to 'Sim card state' field, it has to be '*Ready*'.




When using OCPP, do not change the default password. Charge Point needs to obtain a public IP address.

Go to **Network** > **Mobile** > **General >** *Mobile Configuration.*

Type the APN from your SIM provider and click on the **'Save**' button.

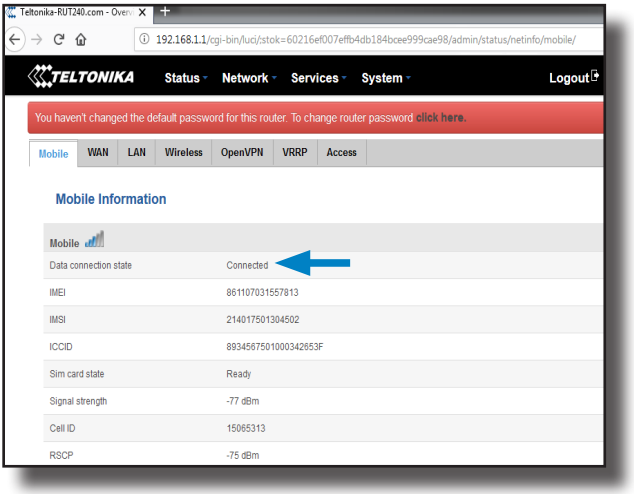



If the SIM provider requires any authentication, PAP or CHAP, select it on 'Authentication method' field and introduce a password and username.

Before doing any customisation over the modem configuration, ask **CIRCUTOR** Post Sales Department in order to get the Teltonika modem manual.

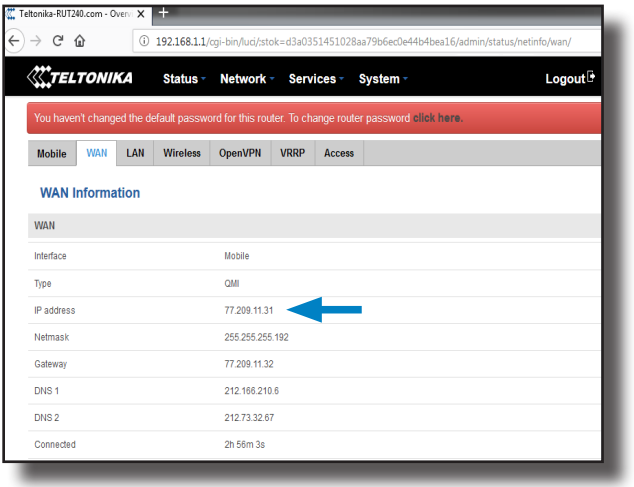
Go to **Status** > **Network** > **Mobile**.

If the connection has been done properly *'Data connection state'* has to be *'Connected'*.



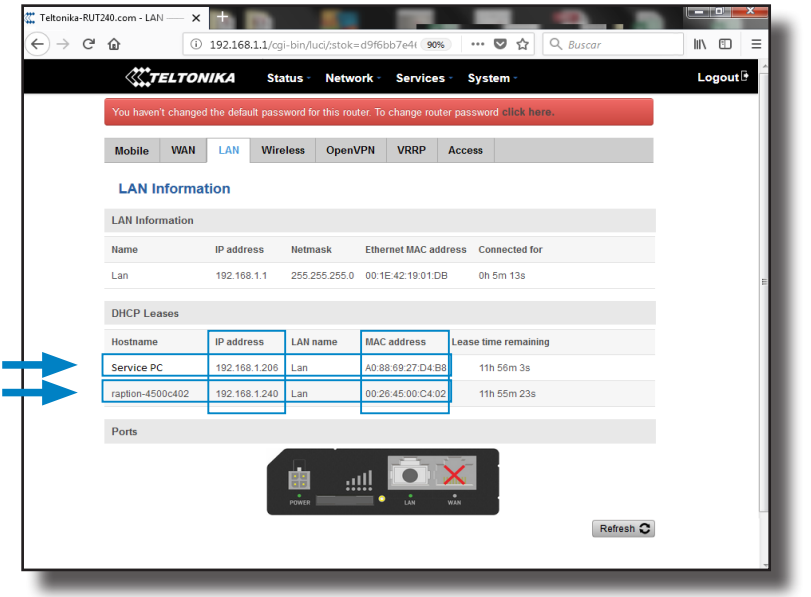

Go to **Status** > **Network** > **WAN**.

The *modem* must have found a public IP address.



Go to **Status** > **Network** > **LAN** > *DHCP Leases*

At **'DHCP Leases'** check that the modem has detected the automatic IP address and MAC number for both, the Computer connected and the Charge Point.




If the modem has not detected the automatic IP address, switch off the Charge Point, wait for 10 seconds and switch it on again. Connect the Computer to the access point named RUT240_xxxxxxxxxxxx and try again.

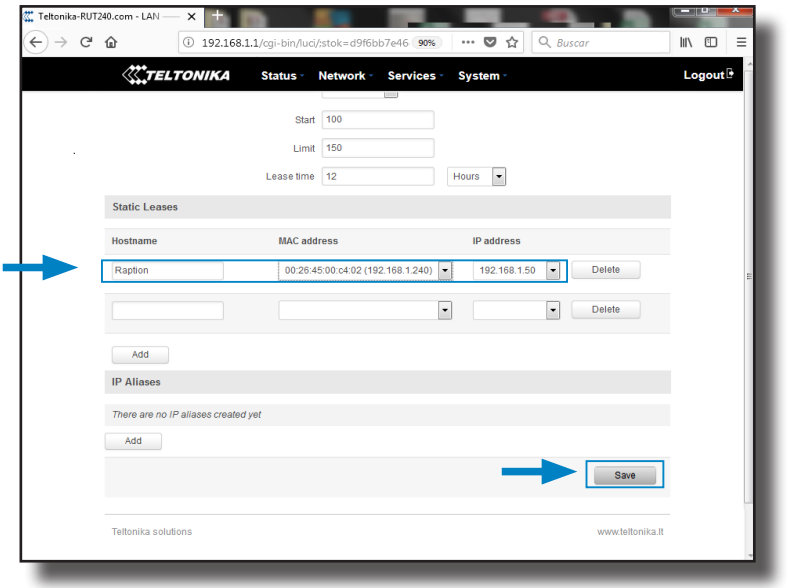
Go to **Network** > **LAN >** *Static Leases*

Complete the fields with the following information:

**Hostname -** It can be written the name wanted for the Charge Point

**MAC address -** It will be the MAC number found on the label behind the HMI screen

**IP address - 192.168.1.50**




After filling the fields, click on the **'Save'** button.

Switch off the Charge Point, wait for 10 seconds and switch it on again.

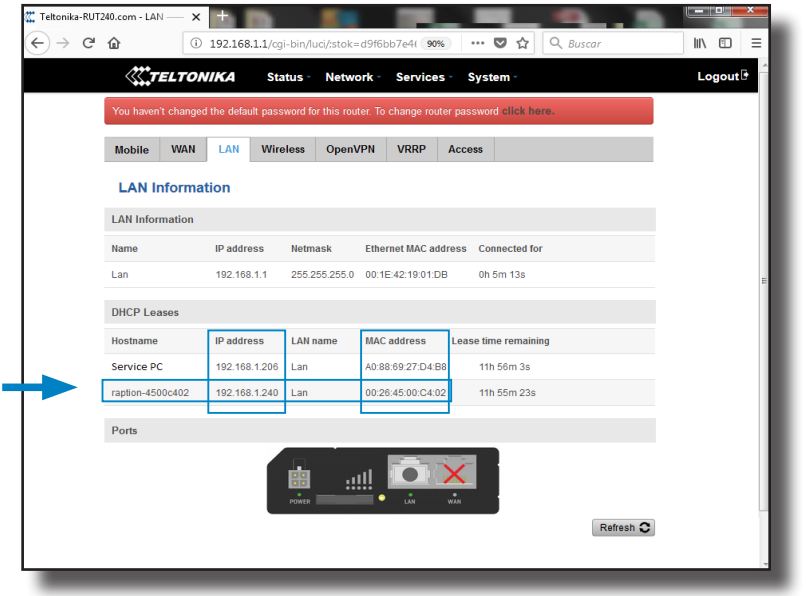
Go to **Status** > **Network** > **LAN** > *DHCP Leases*

Confirm that the information previously entered has been successfully saved:

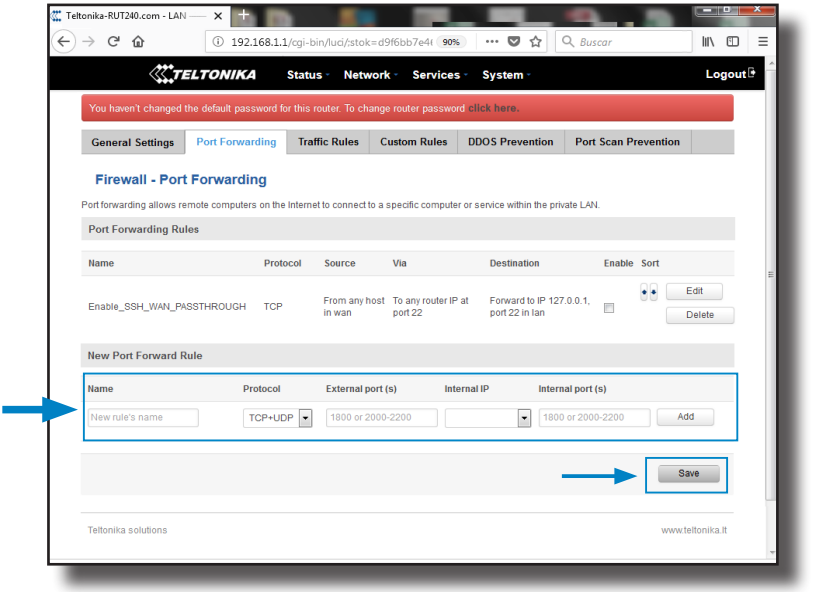
**Hostname -** the name given to Charge Point

**MAC address -** the MAC of the Charge Point

**IP address - 192.168.1.50**



Go to **Network** > **Firewall** > **Port Forwarding** > *New Port Forward Rule*

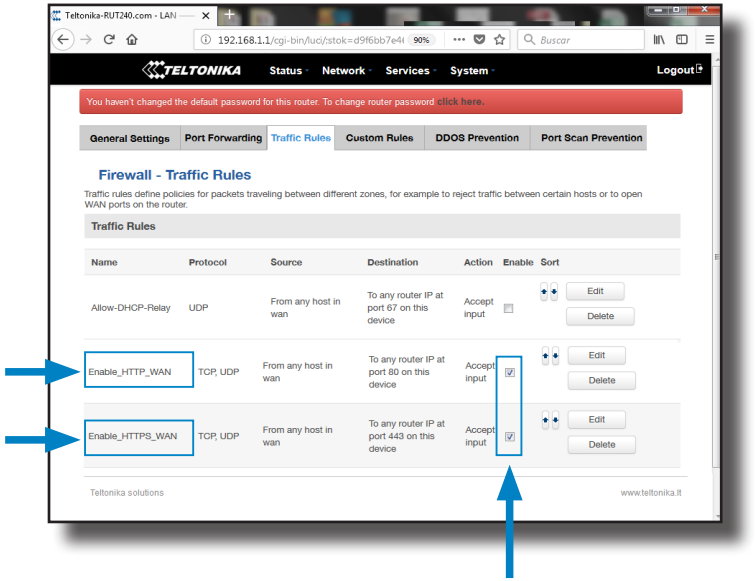



Introduce the ports as in the table below:

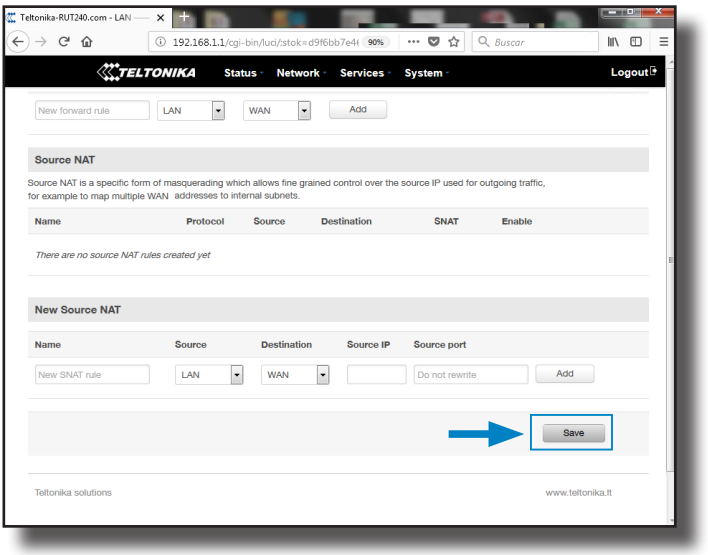
| Name | Protocol | External port (S) | Internal IP | Internal port (S) |
|---|---|---|---|---|
| 80 | TCP | 80 | 192.168.1.50 | 80 |
| 8080 | TCP | 8080 | 192.168.1.50 | 8080 |
| 50000 | TCP | 50000 | 192.168.1.50 | 50000 |
| 9191 | TCP | 9191 | 192.168.1.1 | 80 |

After noting down the ports, click on **'Save'** button and check that all of them have been successfully introduced.

Go to **Network** > **Firewall** > **Traffic Rules**



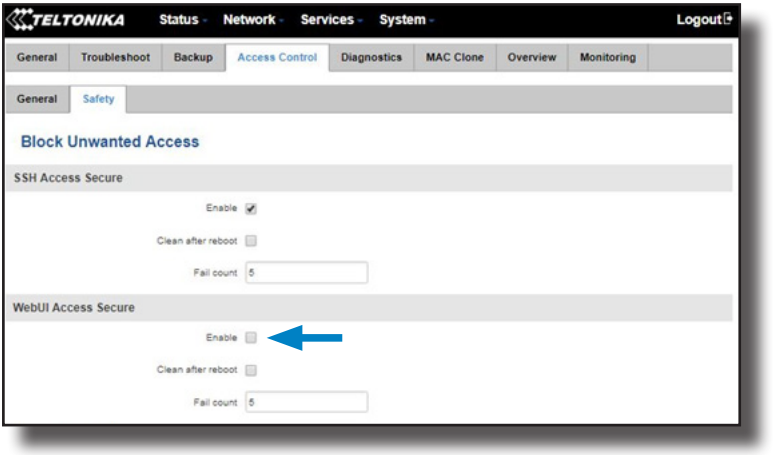

Look for *'Enable_HTTP_WAN'* and *'Enable_HTTPS_WAN'* fields and enable them.




Click on **'Save'** button.

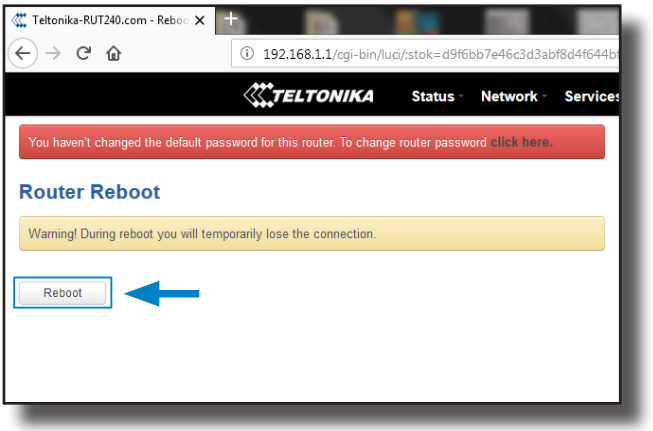
Go to **System** > **Access Control** > **Safety**

Uncheck 'WebUI Access Secure' as shown on the



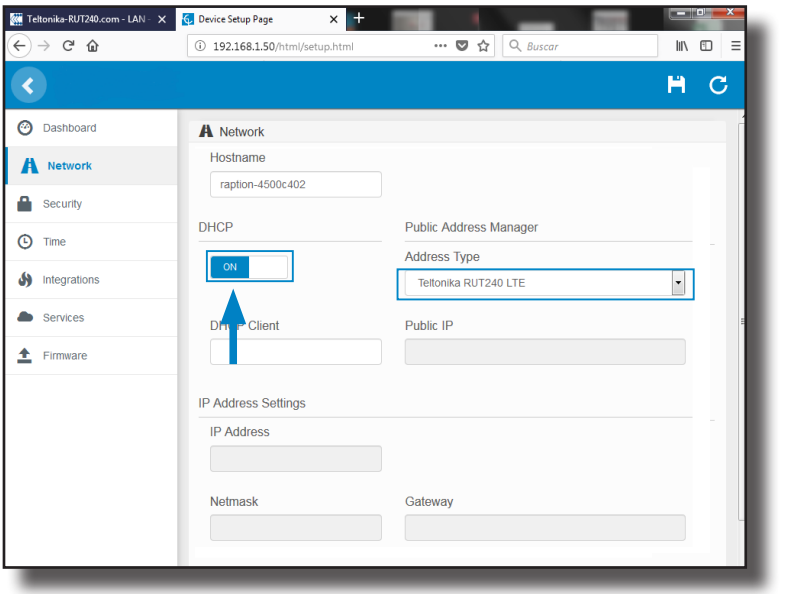

To end the modem configuration it is necessary to reboot it.

Go to **System** > **Reboot** and click on the **'Reboot'** button.



Finally, it is necessary to check that the Teltonika RUT240 LTE modem option is chosen and DHCP is ON at Charge Point's setup webpage:

Make sure that the Computer is still connected to the Charge point via Wi-Fi, open a web browser and type 192.168.1.50, next screen will appear:




**DCHP:** ON

**Address Type:** Teltonika RUT240 LTE

Click over the **'Disk' symbol** button in order to save.

# 7

## A Introduction

The goal of the Open Charge Point Protocol (OCPP) is to offer a uniform solution for the communication between Charge Point and a Central System. With this open protocol it is possible to connect any Central System with any Charge Point, regardless of the vendor.

Follow next steps in order to configure OCPP 1.5 in the **CIRCUTOR** Charge Points.

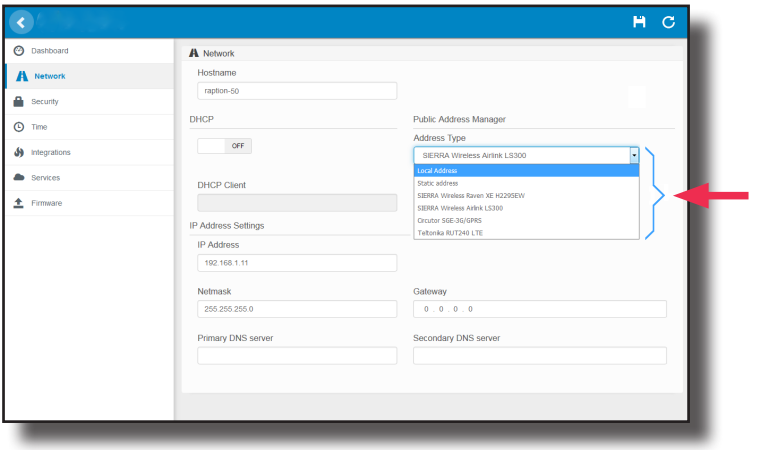
# OCPP 1.5

## B Before starting

Check following steps in order to ensure the correct function of OCPP 1.5:

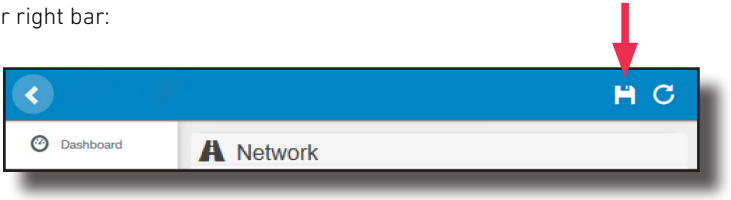
Go to the **Setup Webpage** > **'Network'** tab

Public Address Manager establishes where the Charge Point must obtain the public IP address in order to send it later to the backend. Different values can be selected in the **'Address Type'** section:




Choose the option selected under **'Address Type'** according to your network topology.

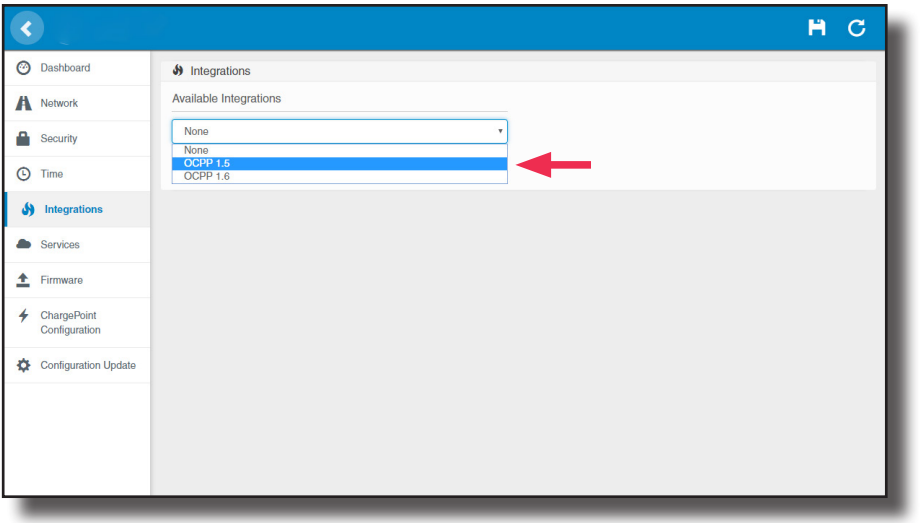
When done, please do not forget to save changes using **'Save'** button in the upper right bar:



Go to the **Setup Webpage** > **'Integrations'** tab

Charge Point supports different versions of OCPP but only one can be enabled at the same time.

Go back to setup web page and click on the **'Integrations'** tab, choose the option selected under **'Available integrations'** according to your backend policies as shown in the picture:



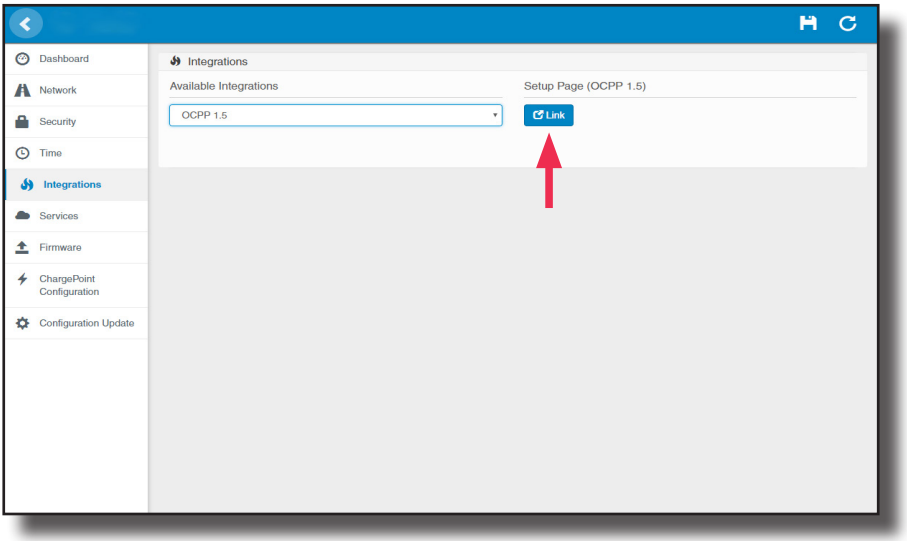

***NOTE**: Charge Point is working as stand-alone if **'none'** option is selected. All ID cards are authorized to start/stop a new charge transaction and no requests are sent to the backend.*

# Configuration

Go to the **Setup Webpage** > **'Integrations'** tab

Once OCPP 1.5 option is selected, a link appears allowing access to the OCPP configuration.

Please, click on the link button as shown in the picture:



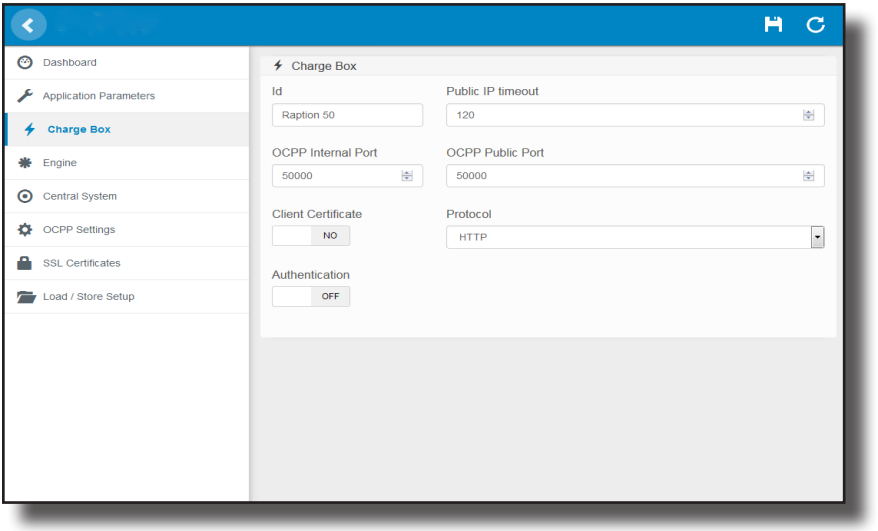

New webpage is opened to show OCPP Settings. It can also be accessed directly typing: http://<IP>:8080/html/setup.html

First time is running the integration selected on the Charge Point, it starts as configuration mode and all fields are empty.

Settings are always stored even when the Charge Point is powered off or even the integration is disabled/stopped.

On the OCPP webpage, go to '**Charge Box'** tab

Check Charge Box Identity and the incoming ports according to the backend policies, please contact to the Central System to get the configuration parameters:

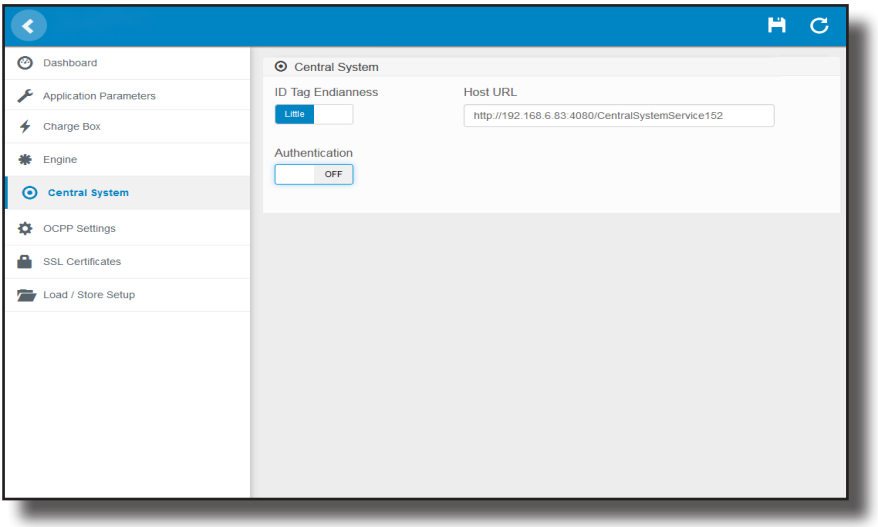



| Value | Description |
|---|---|
| **ID** | Charge Point identifier |
| **Public IP timeout** | Maximum waiting time to obtain the public IP address of the 3G modem |
| **OCPP Internal port** | Incoming listening port for remote request (internal) |
| **OCPP Public port** | Incoming listening port for remote request (public) |
| **Client Certificate** | Provided by the Central System |
| **Protocol** | If HTTPS is selected, make sure to have CS Server CA certificate |
| **Authentication** | Set an authentication if is required |

Go to **'Central system**' tab

Allows the Charge Point to know where the central system is hosted to notify all the requests.

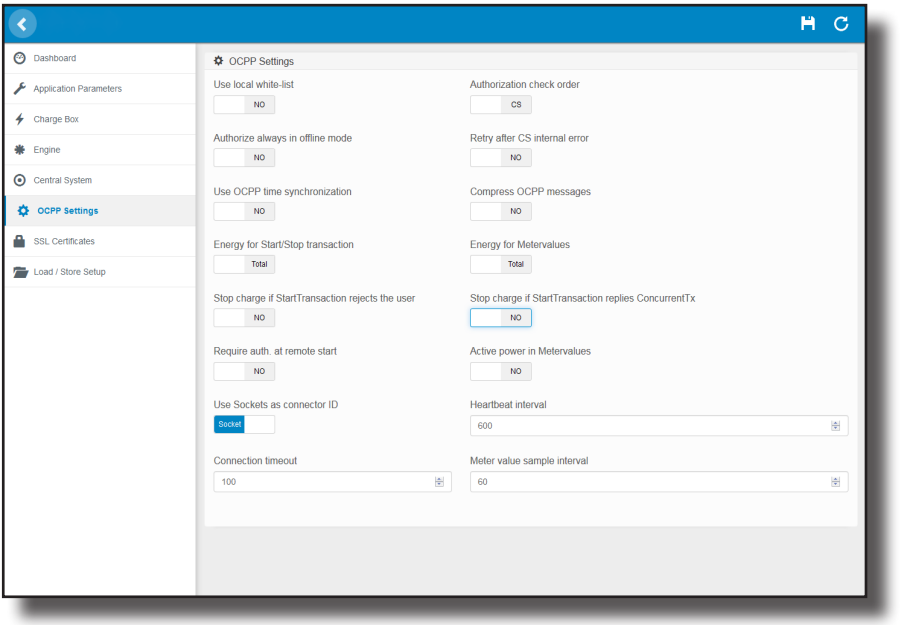
Check Central System URL according to the backend policies, please contact to the Central System to get the configuration parameters:




| Value | Description |
|---|---|
| **ID Tag Endianness** | Storage type for system data |
| **Host URL** | URL address of the central system |
| **Authentication** | It can be set an authentication for avoinding changes in this page |

Go to **'OCPP Settings'** tab

Check OCPP Settings according to the backend policies, please contact to the Central System to get the configuration parameters:



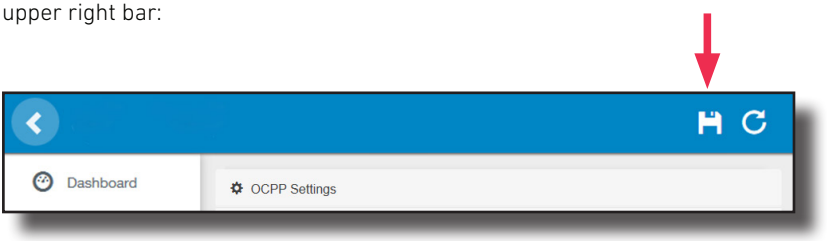

Before making any changes read following table and set each option according to your backend provider.

| Value | Description |
|---|---|
| **Use local white-list** | **YES:** local list of authorized users -> Enabled<br><br>**NO:** local list of authorized users -> Disabled |
| **Authorization check order** | **LOCAL:** ID authorization has first place on the local white-list. If the user does not exist locally, then in second place backend is asked to obtain the authorization.<br><br>**CS:** ID authorization is always asked to the backend.<br><br>***NOTE:*** *This setting only applies when Charge Point is on-line; otherwise the authorization is only locally.* |
| **Authorize always in offline mode** | **YES:** If user is not present locally in the local white-list and charge point cannot ask to the backend, user is allowed to start a new charge transaction.<br><br>**NO:** If user is not present locally in the local white-list and charge point cannot ask to the backend, the user is not allowed to start a new charge transaction. |
| **Retry after CS internal error** | **YES:** Enabled. If StatusNotification, StartNotification or StopNotification are not received correctly by the backend, charge point retries again to send those requests until it is received correctly.<br><br>**NO:** Disabled.<br><br>***NOTE:*** *Special development must be done in backend in order to retry the messages by charge point.* |

| Value | Description |
|---|---|
| **Use OCPP time synchronization** | **YES:** Synchronization of date and time -> Enabled.<br><br>**NO:** Synchronization of date and time -> Disabled.<br><br>***NOTE:** Date and Time is sent from backend on each heart-beat response.* |
| **Compress OCPP messages** | **YES:** Compress messages between Charge point and back-end -> Enabled.<br><br>**NO:** Compress messages between Charge point and backend -> Disabled.<br><br>***NOTE:** Before enabling this option consult to your backend administrator if central system allows this function.* |
| **Energy for Start/Stop transaction** | **PARTIAL:** Consumed value of energy by the vehicle sent between start and stop.<br><br>**TOTAL:** actual count of the total accumulated energy meter sent between start and stop. |
| **Energy for MeterValues** | **PARTIAL:** Sends partial energy consumption while vehicle is charging.<br><br>**TOTAL:** sends the actual count of the total accumulated energy meter. |
| **Stop charge if Start-Transaction rejects the user** | **YES:** Stop existing charge transaction after response from backend (StartTransaction.conf) when user is blocked, expired or Invalid.<br><br>**NO**: Charge transaction does not stops even if backend rejects the user. (StartTransaction.conf)<br><br>***NOTE:** Set this option according to your backend system.* |

| Value | Description |
|---|---|
| **Stop charge if StartTransaction replies ConcurrentTx** | **YES:** Stop existing charge transaction after response from backend (StartTransaction.conf) when user has already involved in another transaction.<br><br>**NO:** Charge transaction does not stops even if backend rejects the user. (StartTransaction.conf)<br><br>***NOTE:** Set this option according to your backend system.* |
| **Require auth. At remote Start** | **YES:** Charge point sends an authorization request before starting a new remote charge transaction request.<br><br>**NO:** Charge point starts a new remote charge transaction without authorization request. |
| **Active Power in MeterValues** | **YES:** Send power (Power.Active.Import) and energy (Energy.Active.Import.Register) consumed by the vehicle within meter values requests.<br><br>**NO:** Only energy consumed is sent within meter values request. |
| **Heartbeat interval** | Heartbeat send interval (in seconds) for the back-end system. |
| **Connection timeout** | Timeout (in seconds) before connecting to the central system. |
| **Meter value sample interval** | Meter value sample send interval (in seconds) during charge transaction.<br><br>***NOTE:** Meter values are disabled if 0 seconds is set* |

Once done, please do not forget to save changes using **'Save'** button in the upper right bar:



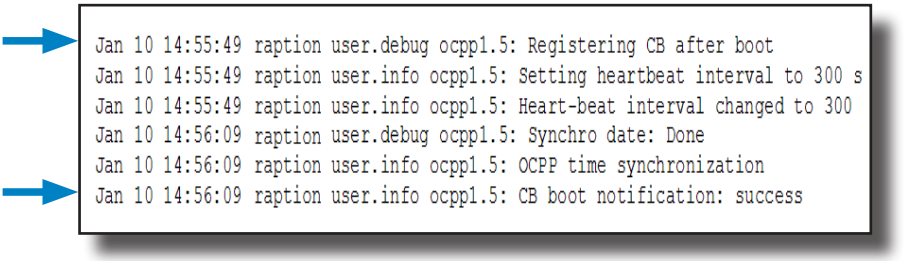

Please, wait until the new configuration is being applied to the Charge Point. A message is displayed informing the progress:

# D Checkup

After applying new settings, please go to next URL from Charge Point in order to check properly connection from the integration chosen:

http://<IP>/services/cpi/log?app=ocpp1.5

Look especially for the following messages:




If '**CB boot notification: success'** appears then Charge Point is properly connected to the back-end.

Otherwise, if the message shown is **'Registering CB in the CS: failed'** then check following items:

- Backend URL. Case sensitive. Check all the URL is correct.

- Charge Point ID. Case sensitive. Check if the name entered is same as backend expects to receive.

- Connectivity. Check if modem is power up and connected to the HMI screen. Ask to the backend provider if any request has been received from the charge point (BootNotification, StatusNotification or HeartBeat) after upgrading.

# 8

## A Introduction

The goal of the Open Charge Point Protocol (OCPP) is to offer a uniform solution for the communication between Charge Point and a Central System. With this open protocol it is possible to connect any Central System with any Charge Point, regardless of the vendor.

Follow next steps in order to configure OCPP 1.6 in the **CIRCUTOR** Charge Points.

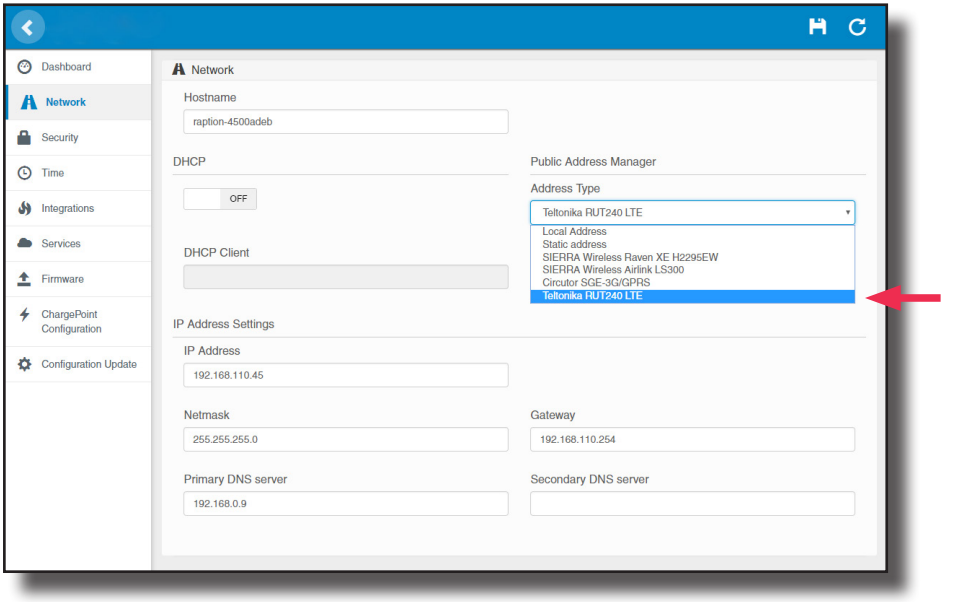
# OCPP 1.6

## B Before starting

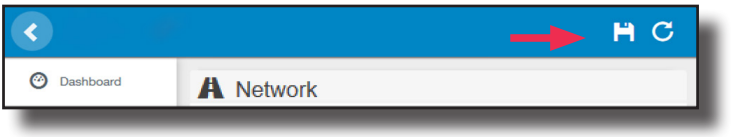
Check following steps in order to ensure the correct function of OCPP 1.6:

Go to the **Setup Webpage** > **'Network'** tab

Public Address Manager establishes where the Charge Point must obtain the public IP address in order to send it later to the backend. Different values can be selected in the **'Address Type'** section:



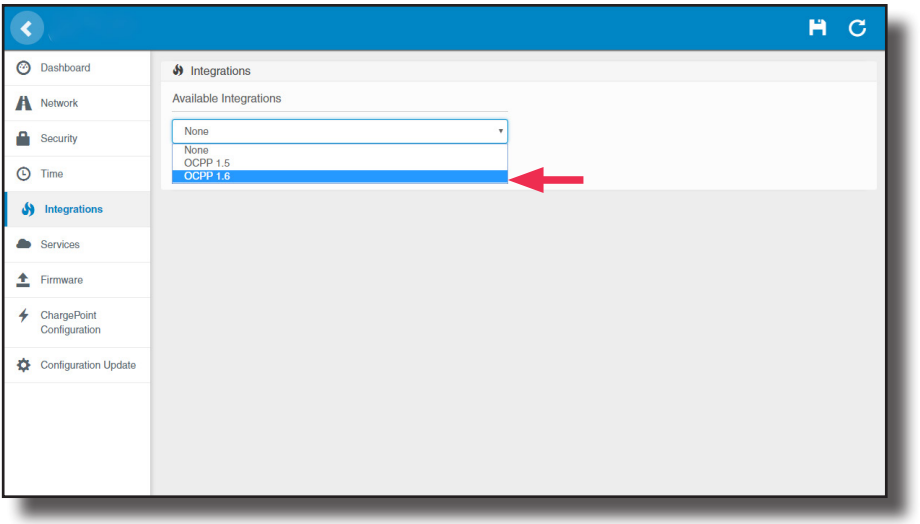

Choose the option selected under **'Address Type'** according to your network topology. When done, please do not forget to save changes using **'Save'** button in the upper right bar:



Go to the **Setup Webpage** > **'Integrations'** tab

Charge Point supports different versions of OCPP but only one can be enabled at the same time.

Go back to setup web page and click on the **'Integrations'** tab, choose the option selected under **'Available integrations'** according to your backend policies as shown in the picture:

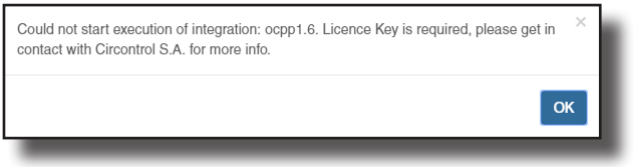



***NOTE:*** *Charge Point is working as stand-alone if* ***'none'*** *option is selected. All ID cards are authorized to start/stop a new charge transaction and no requests are sent to the backend.*

License required, refer to the next chapter for more information about the activation.

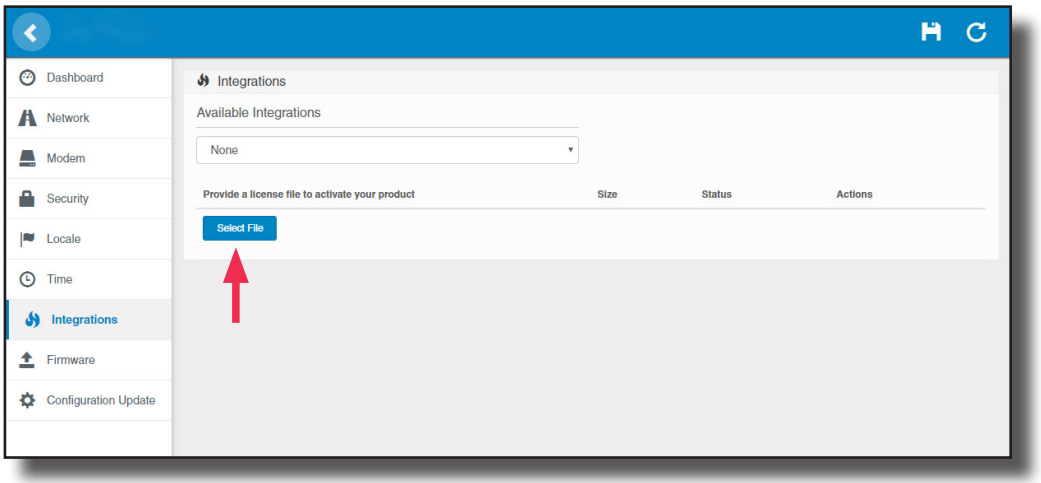
# License activation

If the Charge Point does not have the license applied, the following message pops up:

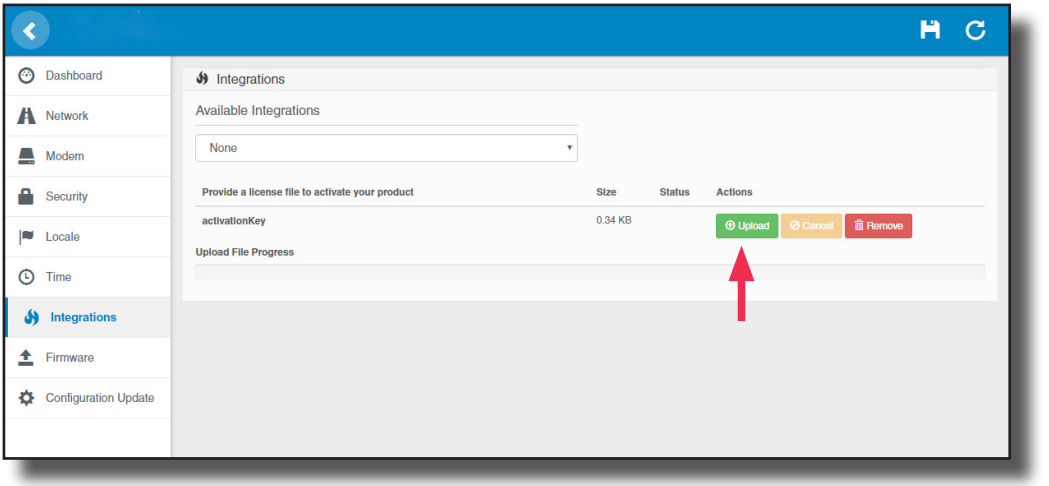



To obtain the license file please contact **CIRCUTOR** Post Sales Department. More information in **'Need help?'** chapter.

The license can be applied by clicking on the **'Select File'** button.



A window will pop up in order to choose the file, then click on **'upload'.**

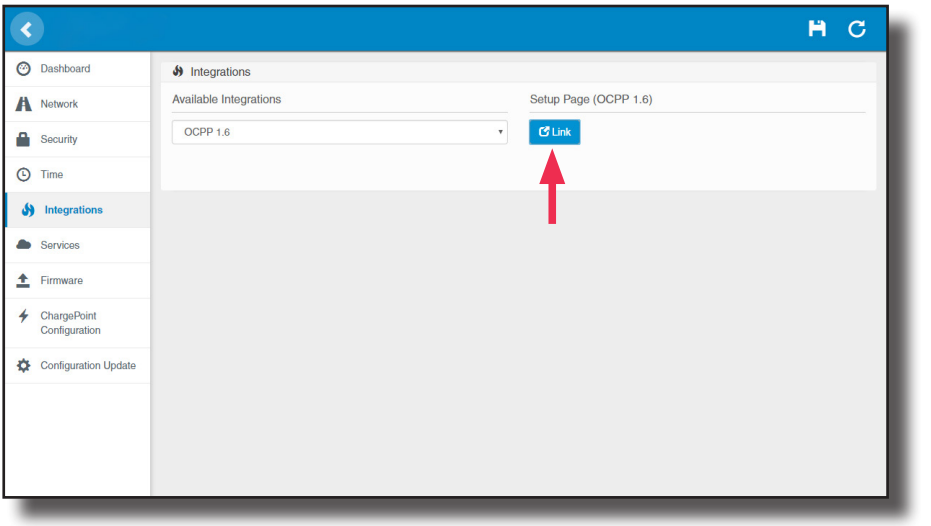


# D Configuration

Go to the **Setup Webpage** > **'Integrations**' tab

Once OCPP 1.6 option is selected, a link appears allowing access to the OCPP configuration.

Please, click on the link button as shown in the picture:



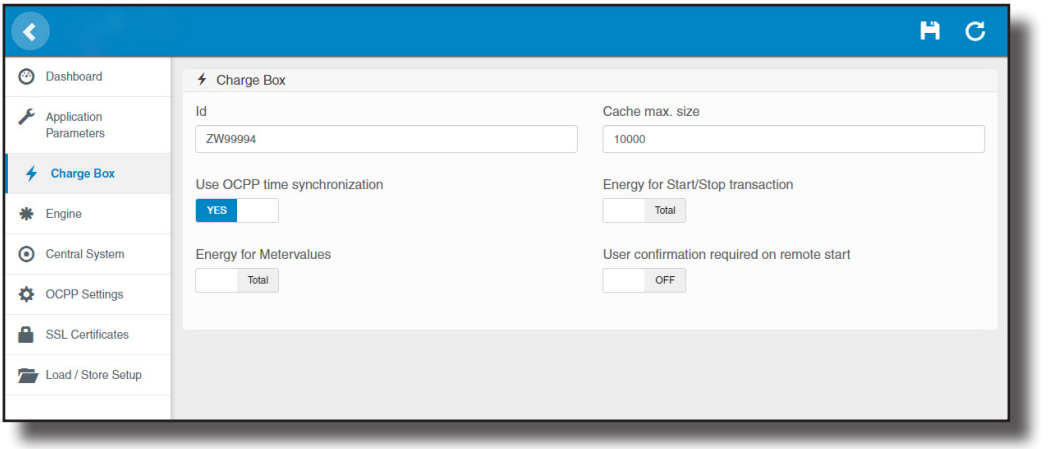

New tabs are opened to show OCPP Settings. It can also be accessed directly typing: http://<IP>:8080/html/setup.html

First time is running the integration selected on the Charge Point, it starts as configuration mode and all fields are empty.

Settings are always stored even when the Charge Point is powered off or even the integration is disabled/stopped.

On the OCPP webpage, go to **'Charge Box'** tab

Check Charge Box Identity and the incoming ports according to the backend policies, please contact to the Central System to get the configuration parameters:

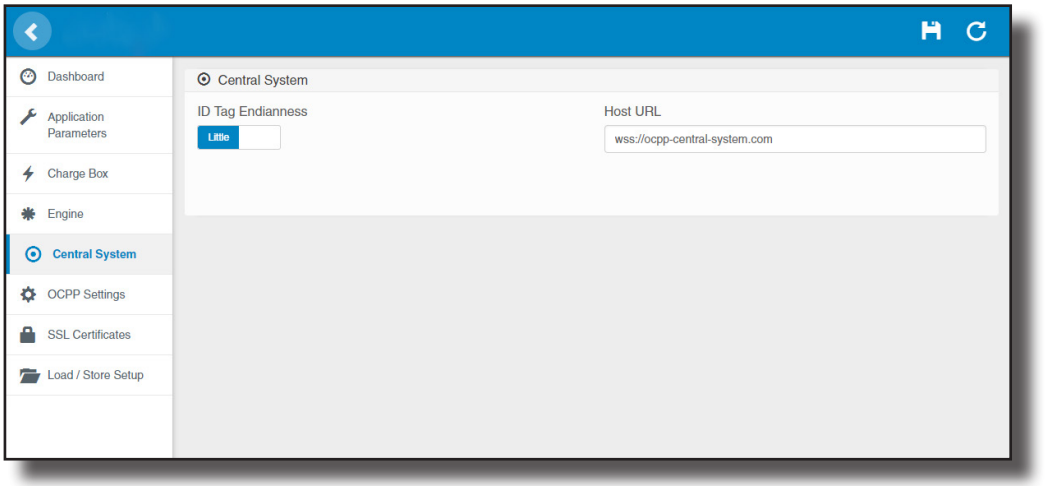


| Value | Description |
|---|---|
| **ID** | Charge Point identifier |
| **Cache max. size** | Maximum size of the *Authorization Cache*, that autonomously maintains a record of previously presented identifiers that have been successfully authorized by the Central System.<br><br>It can be viewed accessing to the following URL:<br>http://<IP>:8080/services/cmd/dump_cache.xml |
| **Use OCPP time synchronization** | **YES:** Synchronization of date and time -> Enabled.<br><br>**NO:** Synchronization of date and time -> Disabled.<br><br>***NOTE:** Date and Time is sent from backend on each heartbeat response.* |
| **Energy for Start/ Stop transaction** | **PARTIAL:** Consumed value of energy by the vehicle sent between start and stop.<br><br>**TOTAL:** actual count of the total accumulated energy meter sent between start and stop. |
| **Energy for MeterValues** | **PARTIAL:** Sends partial energy consumption while vehicle is charging.<br><br>**TOTAL:** sends the actual count of the total accumulated energy meter. |
| **User confirmation required on remote start** | **ON:** user confirmation needed to proceed with a remote start (i.e. touch the screen)<br><br>**OFF:** user confirmation NOT needed to proceed with a remote start |

Go to **'Central system'** tab

Allows the Charge Point to know where the central system is hosted to notify all the requests.

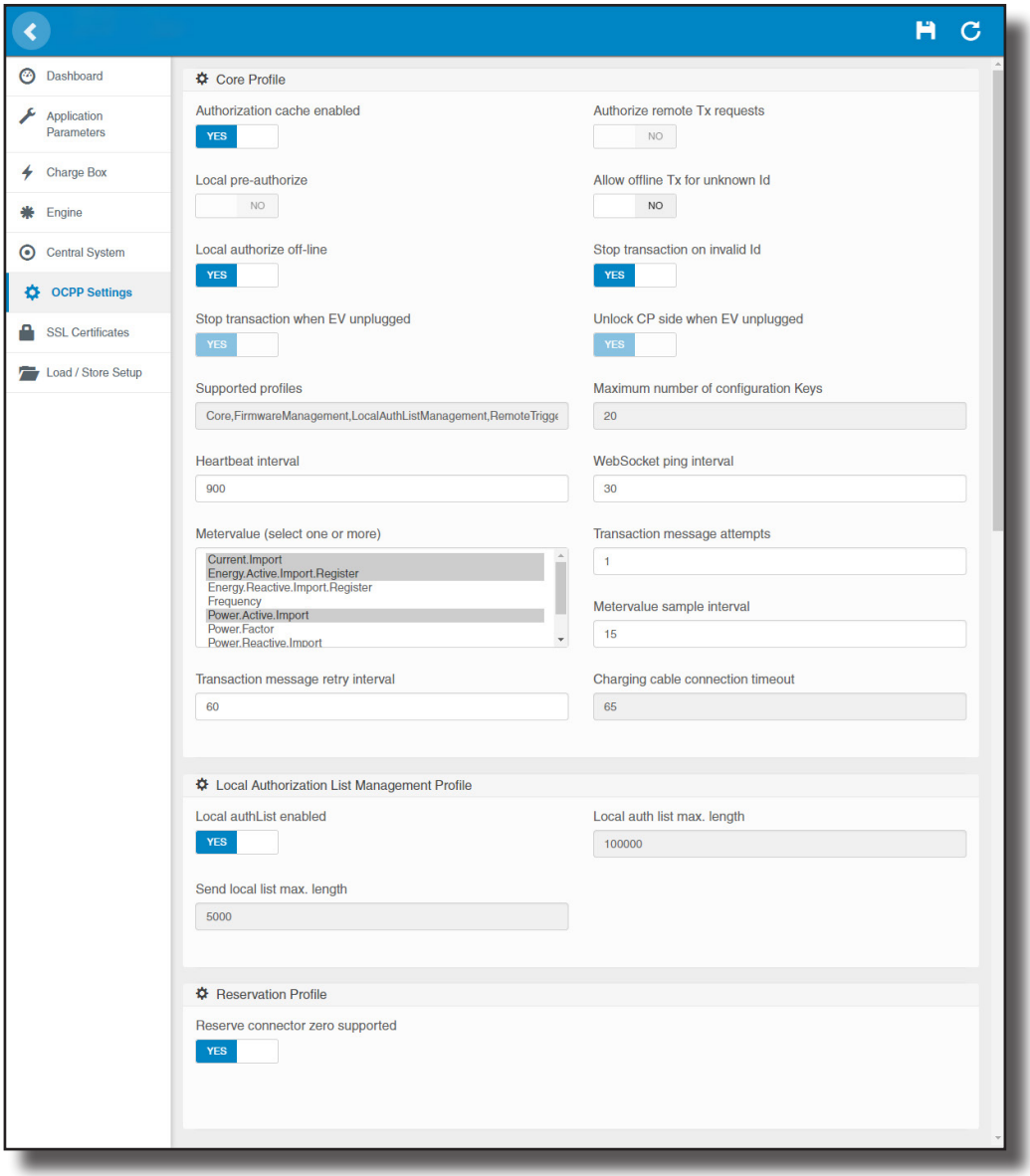
Check Central System URL according to the backend policies, please contact to the Central System to get the configuration parameters:




| Value | Description |
|---|---|
| **ID Tag Endianness** | Storage type for system data |
| **Host URL** | URL address of the central system |

Go to **'OCPP Settings'** tab

Check OCPP Settings according to the backend policies, please contact to the Central System to get the configuration parameters:

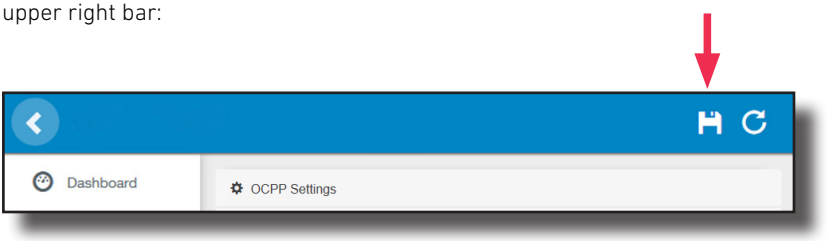


| Value | Description |
|---|---|
| **Authorization cache enabled** | **YES:** maintain a local list of all presented identifiers that have been successfully authorized by the Central System.<br><br>**NO:** authorization for presented identifiers is requested directly to the Central System |
| **Authorize remote Tx requests** | **YES**: the Charge Point asks for authorization when the Central System sends a remote start<br><br>**NO:** the Charge Point starts the Charge Transaction when the Central System sends a remote start |
| **Local pre--authorize** | **YES:** Charge Point looks for locally-authorized identifiers without waiting for the Central System authorization.<br><br>**NO:** Charge Point requests authorization for presented identifiers to the Central System. |
| **Allow offline Tx for unknown Id** | **YES:** during offline period unknown identifiers are allowed to start charging<br><br>**NO:** during offline period unknown identifiers are NOT allowed to start charging |
| **Local authorize off-line** | **YES:** during offline period locally-authorized identifiers are allowed to start charging<br><br>**NO:** during offline period locally-authorized identifiers are NOT allowed to start charging |
| **Stop transaction on invalid Id** | **YES:** stop existing Charge Transaction after response from Central System when user is blocked, expired or invalid.<br><br>**NO**: Charge Transaction does not stop even if backend rejects the user. |

| Value | Description |
|---|---|
| **Stop transaction when EV unplugged** | **YES:** Charge Transaction stops when the cable is disconnected from the EV<br><br>**NO:** Charge Transaction does not stop when the cable is disconnected from the EV; furthermore, if it is reconnected energy transfer is allowed again. It is required for the user to present the identifier in order to stop the Charge Transaction. |
| **Unlock CP side when EV unplugged** | **YES:** Charge Point unlocks the connector when the cable is disconnected from the EV<br><br>**NO:** Charge Point keeps the connector locked when the cable is disconnected from the EV, it is required for the user to present the identifier in order to unlock the connector |
| **Supported profiles** | List of supported profiles on the Charge Point<br><br>***NOTE:** this field is for information purposes, it cannot be modified.* |
| **Maximum number of configuration Keys** | Maximum number of requested configuration keys that can be requested by the Central System.<br><br>***NOTE:** this field is for information purposes, it cannot be modified.* |
| **Heartbeat interval** | Number of seconds between Heartbeats.<br><br>***NOTE:** setting this value to 0 disables the Heartbeat.* |
| **WebSocket ping interval** | Number of seconds between Pings.<br><br>***NOTE:** setting this value to 0 disables the Websocket Ping/Pong.* |
| **Metervalue (select one or more)** | List of supported values used in the MeterValue.<br><br>***NOTE:** hold 'Ctrl' key in order to select more than one Measurand.* |
| **Transaction message attempts** | How many times the Charge Point should try to send a request to the Central System. |

| Value | Description |
|---|---|
| **Metervalue sample interval** | Number of seconds between MeterValue during an ongoing Charge Transaction.<br><br>***NOTE:** setting this value to 0 disables the MeterValue.* |
| **Transaction message retry interval** | Number of seconds between transaction message attempts.<br><br>***NOTE**: setting this value to 0 disables the attempts.* |
| **Charging cable connection timeout** | Number of seconds the Charge Point must wait for the user to plug/unplug the cable.<br><br>***NOTE:** this field is for information purposes, it cannot be modified.* |
| **Local authList enabled** | **YES:** Local Authorization List enabled<br><br>**NO**: Local Authorization List disabled |
| **Local auth list max. length** | Maximum size of the *Local Authorization List*, a list of identifiers that can be synchronized with the Central System.<br><br>It can be viewed accessing to the following URL:<br>http://<IP>:8080/services/cmd/dump_localList.xml<br><br>***NOTE:** this field is for information purposes, it cannot be modified.* |
| **Send local list max. length** | Maximum number of identifications that can be send in a single request from the Central System.<br><br>***NOTE:** this field is for information purposes, it cannot be modified.* |
| **Reserve connector zero supported** | **Yes:** Charge Point supports reservations on connector 0. That reservation is not done on a specific connector, one connector remains available for the reserved idTag.<br><br>**NO**: Charge Point does NOT support reservations on connector 0. |

Once done, please do not forget to save changes using **'Save'** button in the upper right bar:




# E Checkup

After applying new settings, please go to next URL from Charge Point in order to check properly connection from the integration chosen:

http://<IP>/services/cpi/log?app=ocpp1.6

If **'CB boot notification: success'** appears then Charge Point is properly connected to the back-end.

Otherwise, if the message shown is **'Registering CB in the CS: failed'** then check following items:

- Backend URL. Case sensitive. Check all the URL is correct.

- Charge Point ID. Case sensitive. Check if the name entered is same as backend expects to receive.

- Connectivity. Check if modem is power up and connected to the HMI screen. Ask to the backend provider if any request has been received from the charge point (BootNotification, StatusNotification or HeartBeat) after upgrading.

9

# SCADA Client

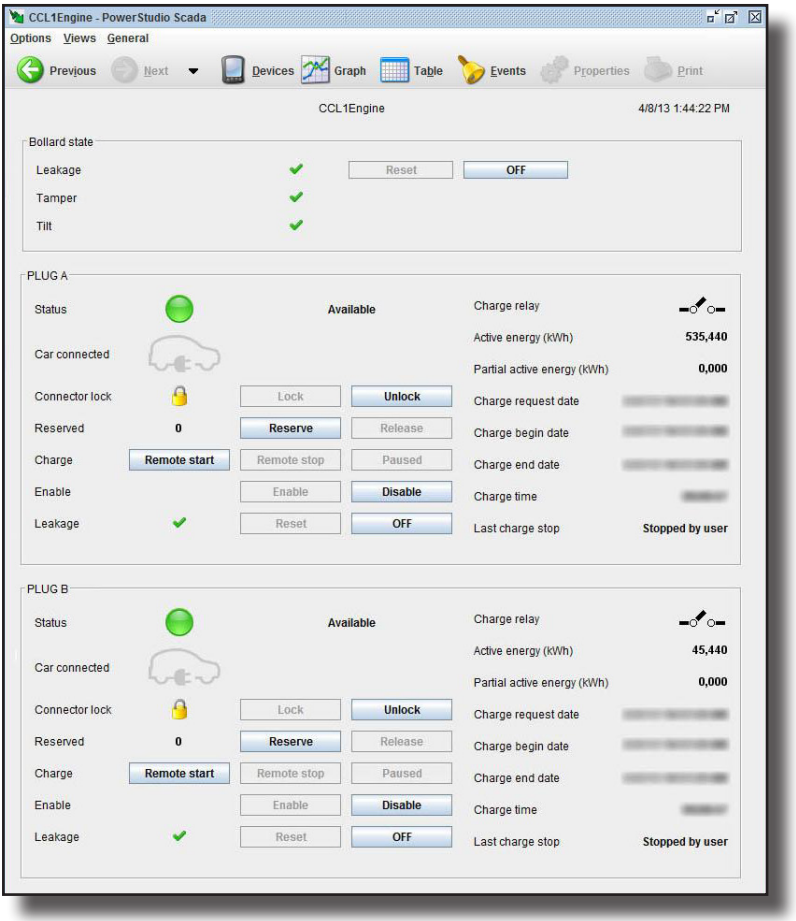
The IP address assigned previously, is useful to connect with the Charge Point in order to monitor the real-time status.

The main way to connect is using the **PowerStudio client software** (Supplied by **CIRCUTOR**) or you can download it from **CIRCUTOR** Webpage.

***NOTE:*** *Java software needs to be installed on your computer in order to run the client software, please, download last version from: www.java.com*

In remote connections, where is required communicate via 3G/4G data with the Charge point in order to monitor its parameters, it should be noted that there will be a HIGH consumption of data.

# Monitoring


CCL1Engine - PowerStudio Scada
Options Views General
Previous Next Devices Graph Table Events Properties Print
CCL1Engine
4/8/13 1:44:22 PM
Bollard state
Leakage
Tamper
Tilt
Reset
OFF
PLUG A
Status
Available
Car connected
Connector lock
Reserved
Charge
Enable
Leakage
Lock
Unlock
Reserve
Release
Remote start
Remote stop
Paused
Enable
Disable
Reset
OFF
Charge relay
Active energy (kWh)
535,440
Partial active energy (kWh)
0,000
Charge request date
Charge begin date
Charge end date
Charge time
Last charge stop
Stopped by user
PLUG B
Status
Available
Car connected
Connector lock
Reserved
Charge
Enable
Leakage
Charge relay
Active energy (kWh)
45,440
Partial active energy (kWh)
0,000
Charge request date
Charge begin date
Charge end date
Charge time
Last charge stop
Stopped by user

| ELECTRICAL DATA | | | | |
|---|---|---|---|---|
| **MODEL : URBAN MASTER** | | | | |
| | **M2** | **T2** | **M2-C1** | **T2-C2** |
| **Power supply** | 1P+N+PE | 3P+N+PE | 1P+N+PE | 3P+N+PE |
| **Input voltage** | 230V~±10% | 400V~±10% | 230V~±10% | 400V~±10% |
| **Frequency** | 50Hz / 60Hz | | | |
| **Number of sockets** | 2 | | | |
| **Socket Power** | 7.4 kW | 22 kW | 7.4 kW | 22 kW |
| **Socket current** | 32 A | | | |
| **Connectors type** | Type 2 Socket | | Type 1 Cable | Type 2 Cable |
| **Min. cable cross-section[4]** | 25 $mm^2$ | | | |
| **MODEL : URBAN SLAVE** | | | | |
| | **M2** | **T2** | **M2-C1** | **T2-C2** |
| **Power supply** | 1P+N+PE | 3P+N+PE | 1P+N+PE | 3P+N+PE |
| **Input voltage** | 230V~±10% | 400V~±10% | 230V~±10% | 400V~±10% |
| **Frequency** | 50Hz / 60Hz | | | |
| **Number of sockets** | 2 | | | |
| **Socket Power** | 7.4 kW | 22 kW | 7.4 kW | 22 kW |
| **Socket current** | 32 A | | | |
| **Connectors type** | Type 2 Socket | | Type 1 Cable | Type 2 Cable |
| **Min. cable cross-section[4]** | 25 $mm^2$ | | | |
| **MODEL :** | **URBAN-WB MASTER** | | **URBAN-WB SLAVE** | |
| | **M** | **T** | **M2** | **T2** |
| **Power supply** | 1P+N+PE | 3P+N+PE | 1P+N+PE | 3P+N+PE |
| **Input voltage** | 230V~±10% | 400V~±10% | 230V~±10% | 400V~±10% |
| **Frequency** | 50Hz / 60Hz | | | |
| **Number of sockets** | 1 | 1 | 2 | 2 |
| **Socket Power** | 7.4 kW | 22 kW | 7.4 kW | 22 kW |
| **Socket current** | 32 A | | | |
| **Connectors type** | Type 2 Socket | | | |

# Technical Data

| ELECTRICAL DATA | | |
|---|---|---|
| **MODEL :** | **URBAN-WB MASTER** | **URBAN-WB SLAVE** |
| **Min. cable cross-section[4]** | 10 $mm^2$ | 25 $mm^2$ |
| **URBAN MASTER - URBAN SLAVE - URBAN-WB MASTER - URBAN-WB SLAVE** | | |
| **Meter** | MID Class 1 - EN50470-3 | |
| **Overcurrent protection** | MCB 40A (Curve C) | |
| **Safety protection** | RCD Type A (30 mA) / Type B [3] | |
| **Overvoltage protection[3]** | Transient surge protector IEC 61643-1 (Class II) | |
| **URBAN MASTER - URBAN-WB MASTER** | | |
| **Display** | Touch screen 8" | |
| **RFID reader** | ISO / IEC 14443A/B, MIFARE Classic/Desfire EV1, ISO 18092 / ECMA-340, NFC 13.56MHz | |
| **Ethernet** | 10/100BaseTX (TCP-IP) | |
| **Cellular (optional)** | Modem 4G LTE/WiFi Hotspot/GRPS/GSM | |
| **Interface protocol** | OCPP | |
| **ENVIRONMENTAL CONDITIONS** | | |
| **Operating temperature** | -5ºC ... +45ºC | |
| **Operating temperature with Low temperature kit [3]** | | -30ºC ... +45ºC |
| **Storage temperature** | -20ºC ... +60ºC | |
| **Operating humidity** | 5% ... 95% Non-condensing | |
| **MECHANICAL DATA** | | |
| **Light beacon** | RGB Colour indicator | |
| **Enclosure rating** | IP54 / IK10 | |
| **Enclosure material** | Aluminium & ABS | |
| **Enclosure door** | Frontal key locked door | |
| **Net weight** | **URBAN MASTER URBAN SLAVE** | **URBAN-WB MASTER URBAN-WB SLAVE** |
| | 55 Kg | 30 Kg (25Kg) [5] |
| **Dimensions (W x H x D)** | 450 x 290 x 1550 mm | 382 x 928(628) [5] x 222 mm |
| **Connectors [3]** | Shutter Type 2 Socket, Type 1 Cable, Type 2 Cable | |

[3] Optional

[4] This is the minimum cable section recommended for the maximum AC input current, the final section must be calculated by a qualified technician taking into account the specific conditions of installation

[5] Version without integrated protections.

# Need help?

In case of any query in relation to unit operation or malfunction, please contact the **CIRCUTOR**, SA Technical Support Service.

**Technical Assistance Service**
Vial Sant Jordi, s/n, 08232 - Viladecavalls (Barcelona)
Tel: 902 449 459 (Spain) / +34 937 452 919 (outside of Spain)
email: sat@circutor.com

# Guarantee

**CIRCUTOR** guarantees its products against any manufacturing defect for two years after the delivery of the units.

**CIRCUTOR** will repair or replace any defective factory product returned during the guarantee period.

• No returns will be accepted and no unit will be repaired or replaced if it is not accompanied by a report indicating the defect detected or the reason for the return.
•The guarantee will be void if the units has been improperly used or the storage, installation and maintenance instructions listed in this manual have not been followed. "Improper usage" is defined as any operating or storage condition contrary to the national electrical code or that surpasses the limits indicated in the technical and environmental features of this manual.
• **CIRCUTOR** accepts no liability due to the possible damage to the unit or other parts of the installation, nor will it cover any possible sanctions derived from a possible failure, improper installation or "improper usage" of the unit. Consequently, this guarantee does not apply to failures occurring in the following cases:
- Overvoltages and/or electrical disturbances in the supply;
- Water, if the product does not have the appropriate IP classification;
- Poor ventilation and/or excessive temperatures;
- Improper installation and/or lack of maintenance;
- Buyer repairs or modifications without the manufacturer's authorisation.

**CIRCUTOR, SA.**
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