Commissioning Process

Wi-Fi Web Application

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Change Record

Rev. No.	Date	Details	Revised By	Approved By
0	09/07/2024	Initial Release	Rajkumar Patel	Samir Bhatt
1	23/04/2025	Legal Entity Conversion: LLP to PVT LTD	Rajkumar Patel	Samir Bhatt
2	05/05/2026	Revised Email Address	Rajkumar Patel	Samir Bhatt

Table of Contents

1. Intended Use

Bacancy Systems designed and developed the Wi-Fi-based Web application for commissioning AC charger controllers. It allows for the configuration of charger parameters, which is the initial setup of the charger to obtain optimum efficiency. The application has a minimal user interface, providing a seamless user experience during the commissioning process.

This commissioning process supports AC charger controllers such as:

- AC Hybrid Charger Controller
- AC Type-2 Dual Gun Charger Controller (7.4 kW)
- Bharat AC Single Socket Charger Controller
- Bharat AC Three Socket Charger Controller

Furthermore, the user can contact our team to resolve their issue by using the contact information provided on the last page.

WARNING!	**Risk caused by inappropriate use!**
	Any unconventional use and/or different operation of the product can lead to hazardous situations. • Only use the Product in a conventional manner.

1.1 Limitation

The product is intended for usage in an operational environment. It should not be utilised in hostile or explosive conditions.

The operator should consult local safety authorities and safety representatives before performing tasks in hazardous areas, or in similar circumstances.

1.2 Alteration and Restoration of the Product / System

To prevent risks and make sure optimal performance, no alterations, attachments, or restoration of the product are permitted without explicit authorization of Bacancy Systems PVT LTD.

2. Getting Started

To commission an EV charger, the user should initially configure the charger's controller from the web application. This process occurs when the charger's controller connects with the laptop using Wi-Fi communication.

– **Pre-requisite:**

No.	Tool / Equipment	Specification
1.	Laptop	Windows 10/11 64-bit
2.	Controller	AC Charger Controller
3.	Patch Wi-Fi Antenna	Micro-Coaxial RF Connector

2.1 Connection with EV Charger

Follow the instructions to enable the commissioning mode.

1. Turn off the charger and then turn it on again.
2. Open the Wi-Fi menu from the Connect to SSID name, which follows this pattern:

SSID Name: BAC_223ce6		
No.	**SSID Name**	**Meaning**
1.	BAC	Company Name
2.	_	Underscore
3.	223ce6	MAC address (Last 6 digits)

3. Enter the password 123456789 (1 to 9 digits).
4. If a laptop is connected to a Wi-Fi network, it is set to begin the commissioning procedure.

NOTE!	**Connect within a Timeout Session**
	Initially, the user should connect to the Wi-Fi network within 45 seconds; otherwise, the Wi-Fi network will disappear, and commissioning mode will be disabled; thus, the user should repeat the connection procedures.

3. Configuration

3.1 Network

The network configuration page offers Wi-Fi, GSM, and Ethernet settings, which the user can configure according to their requirements, and there is a network switching option to enable automatic network switching.

– Open the network setup page by URL or insert a URL into the web browser. http://192.168.4.1/network

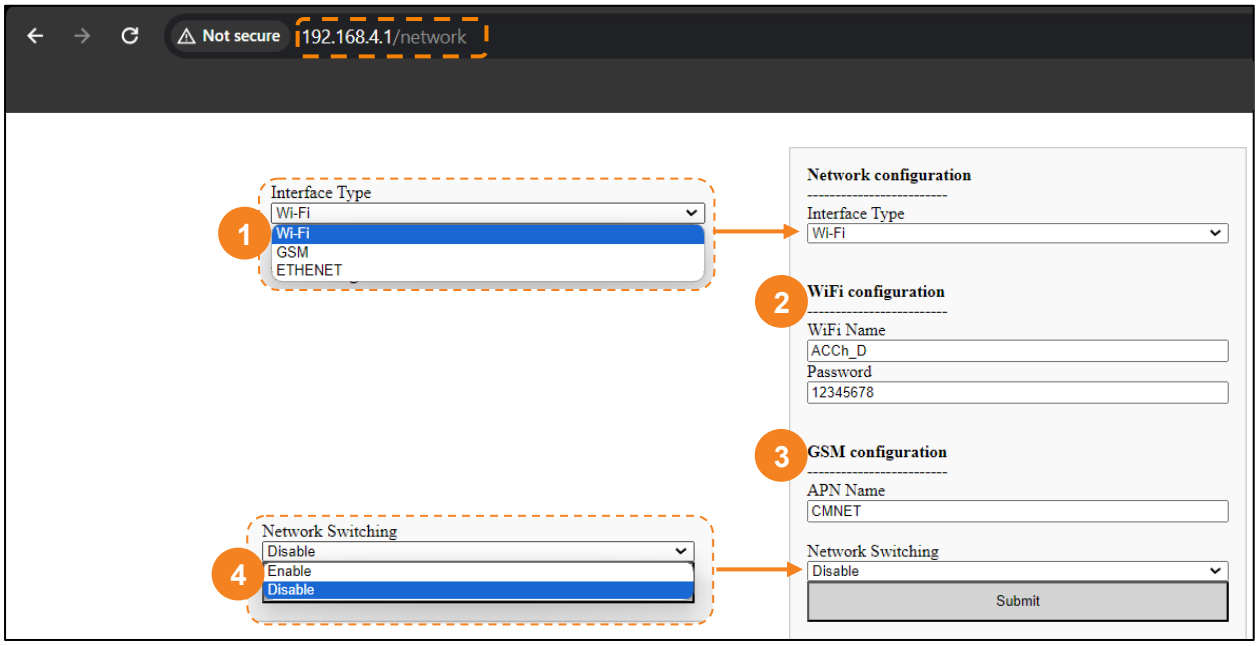


Figure 1 Network Configuration Page.

1. **Interface Type Selection**

   The user can select the current interface type from the dropdown list.

2. **Wi-Fi Configuration**

   The user can enter the Wi-Fi name (SSID) and password for the accessible Wi-Fi network.

3. **GSM Configuration**

   The user can specify the SIM operator's APN name here.

MANDATORY	GSM Module Position and Activated Internet Pack
	Before GSM configuration, place the GSM module on top of the EV charger and insert a SIM card with an active internet pack.

4. Network Switching

This network switching configuration will enable switching the network automatically from Wi-Fi to GSM or GSM to Wi-Fi if the internet is not received from the current interface type.

NOTE!	Network Switching Time Session
	– If the Wi-Fi interface does not get internet for a continuous one minute, it will switch to the GSM network interface. – If the GSM interface does not get internet for more than three minutes, it will switch to the Wi-Fi network interface.

– Click the submit 

button to save the network configuration.

3.2 Charging Point

The Charging point setup page allows the user to configure the initial charging configuration, voltage, current, time, and temperature limits.

- Open the charging point page via URL or enter a URL in a web browser. http://192.168.4.1/chargingpoint

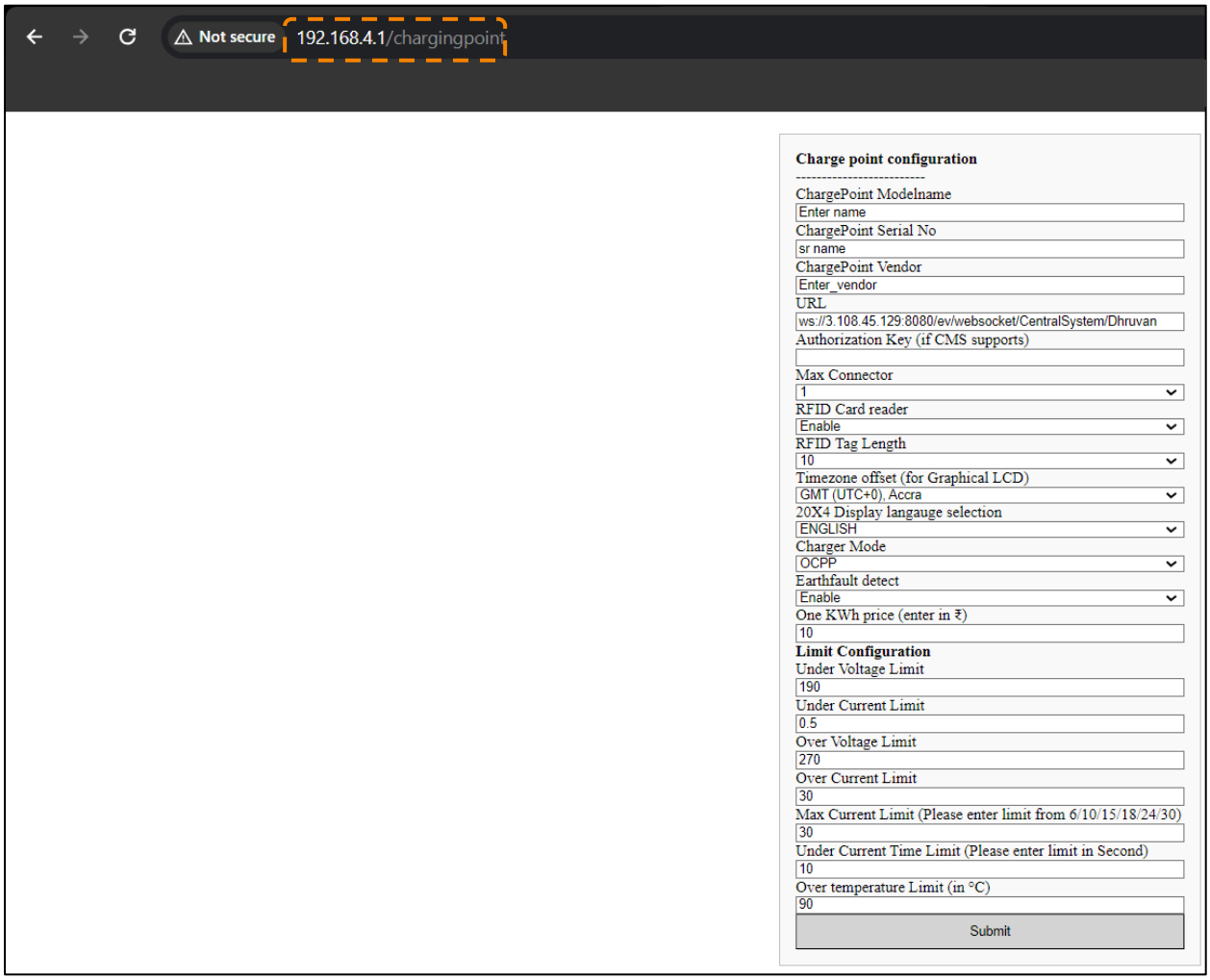


Figure 2 Charging Point Page.

– **Charge Point Configuration**

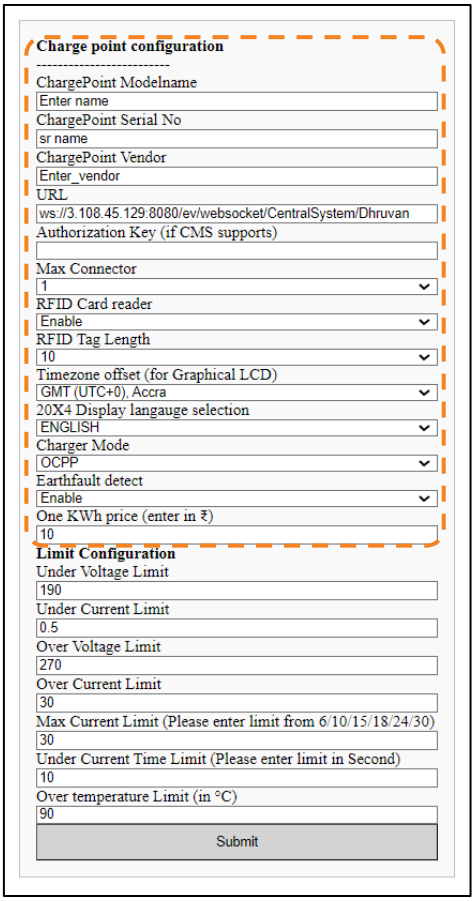


Figure 3 Charging Point Configuration.

1. Enter the ChargePoint model name.
2. Enter the ChargePoint serial number.
3. Enter the ChargePoint vendor name.

NOTE!	Vendor Name on Display
	The user should provide the relevant ChargePoint vendor name, which will appear on the display during the charging session.

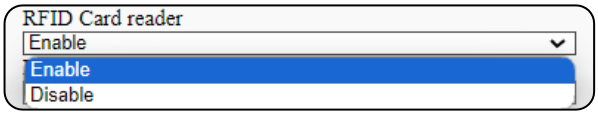
4. Add the URL link.

NOTE!	URL Connect with the OCPP server
	The user should ensure that while adding a URL with the ws / wss protocol, otherwise it will not connect with the OCPP server.

5. If the user gets CMS server support, input the authorisation key; otherwise, do not enter the key.

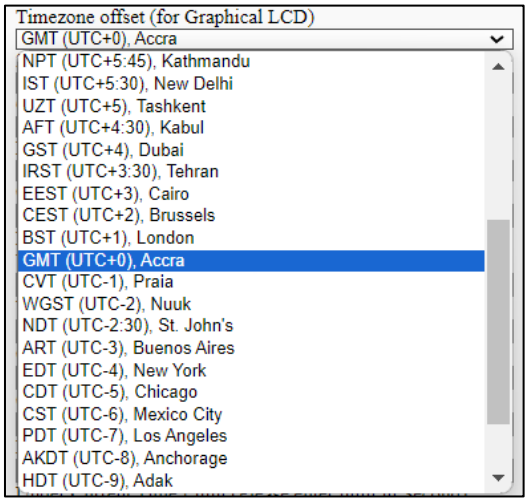
6. Select the maximum connector from the dropdown list.

7. The RFID card reader should be enabled for RFID local authentication to work properly.

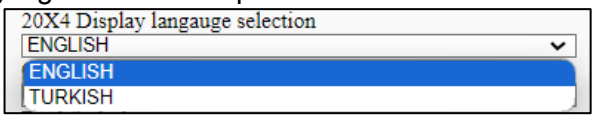


8. Select the time zone.

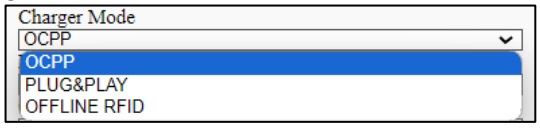
NOTE!	Display Time
	The user should attach a graphical LCD to the controller so that it can show the time. However, this selected time zone will not alter server time.



9. Select a language from the dropdown list.



10. Select the charger mode from the dropdown list.



- **OCPP Mode:** It is an internet connection-based mode for an OCPP-compliant server.
- **Plug and Play Mode:** It is just a plug-in charging gun in the electric vehicle, and charging will start.
- **Offline RFID Mode:** It is a standalone mode with RFID ID authentication, and it will begin charging.

NOTE!	Registered RFID Card
	The user should register the RFID card on the RFID commissioning page; otherwise, offline RFID mode will not operate.

11. Enable or disable earth fault detection.

12. Enter the desired kWh price in Indian rupees.

NOTE!	Unit price in 20 X 4 display
	If the user enters zero, the vendor's name will appear on the 20 X 4 display; otherwise, the configured unit price will be displayed.

– **Limit Configuration**

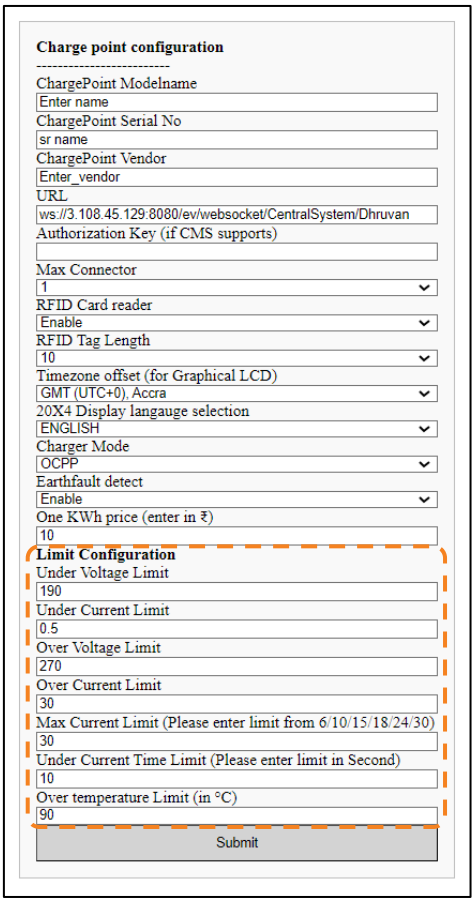


Figure 4 Limit Configuration.

1. Enter limit configuration as per the requirement.

2. Click the submit  button to save the ChargePoint configuration.

3.3 Connector

The connector configuration page supports a maximum of three connectors with one charger, where the user can set the status and type in each of the three connectors according to the requirements.

– Open the connector configuration page via URL or enter a URL in a web browser. http://192.168.4.1/chargconnector

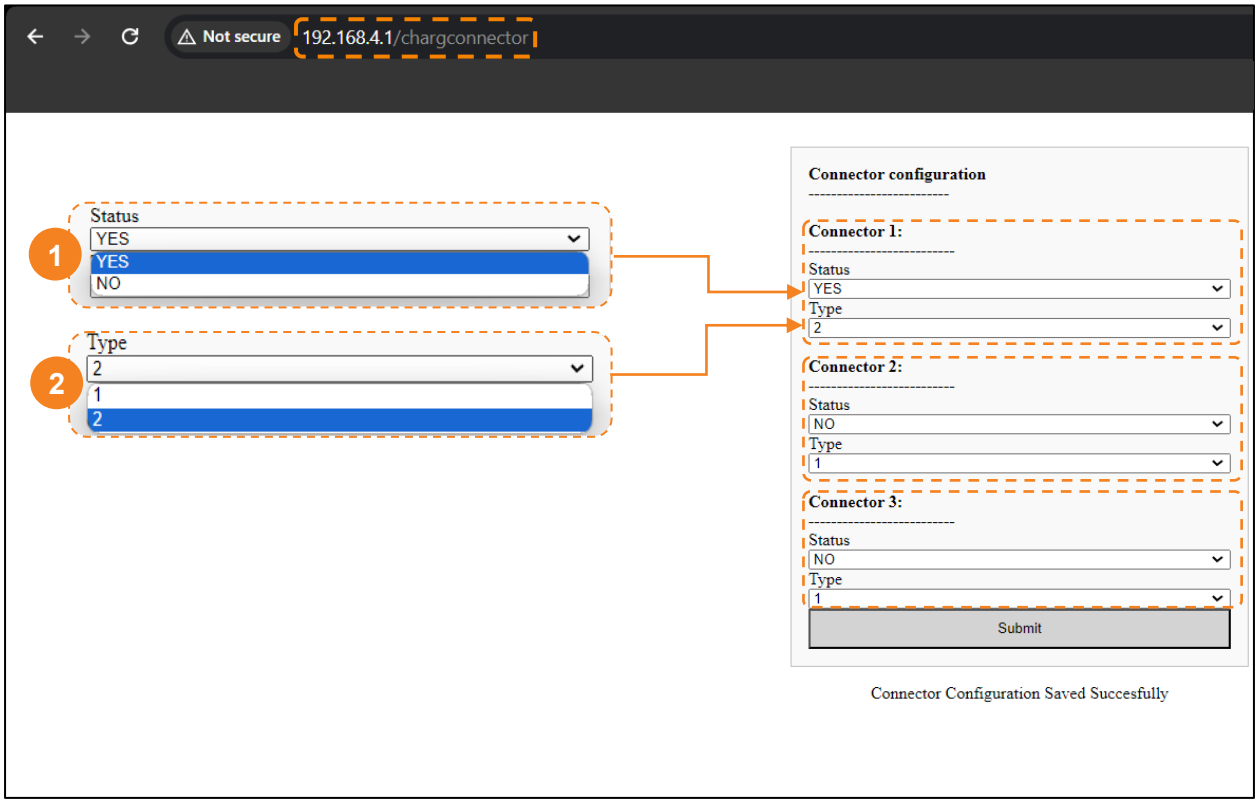


Figure 5 Connector Configuration Page.

1. **The status dropdown menu contains two options, “YES” and “NO”, where:**
   – The "YES” indicates that the connector is available after commissioning and can give charge to the EV.
   – The "NO" indicates that the connection is out of service or has a malfunction after commissioning and is unable to transmit charge to the electric vehicle.
2. **The type dropdown menu contains two options, “1” and “2”, where:**
   – The "1" indicates the Bharat AC GUN connector.
   – The "2" indicates a Type-2 GUN connection.

– Click the submit [Submit] button to save the connector configuration.

3.4 FOTA

The FOTA configuration page allows you to upgrade the AC charger controller's firmware.

- Open the FOTA configuration page via URL or enter a URL in a web browser. http://192.168.4.1/fota

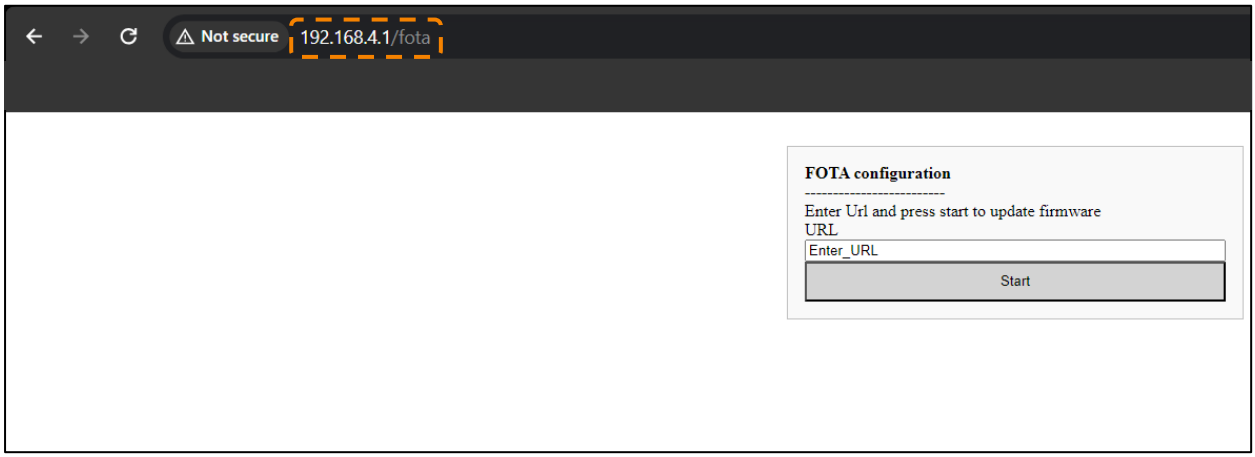


Figure 6 FOTA Configuration Page.

NOTE!	Network Switching
	Before proceeding with firmware upgrades, the user should ensure that the charger's network is correctly configured to switch between GSM and Wi-Fi interfaces.

1. Paste or enter the FOTA link provided by the Bacancy Technical Support Team.
2. To begin the firmware update procedure, click the Start button.
3. The charger will restart when the firmware upgrade is completed.

MANDATORY	Stable Power Supply
	While updating the firmware, the user should ensure that the controller gets a consistent and continuous power supply; otherwise, the charge controller may malfunction.

3.5 RFID

The RFID configuration page enables the user to assign up to five RFID tags.

– Open the RFID configuration page via URL or enter a URL in a web browser.
http://192.168.4.1/rfid

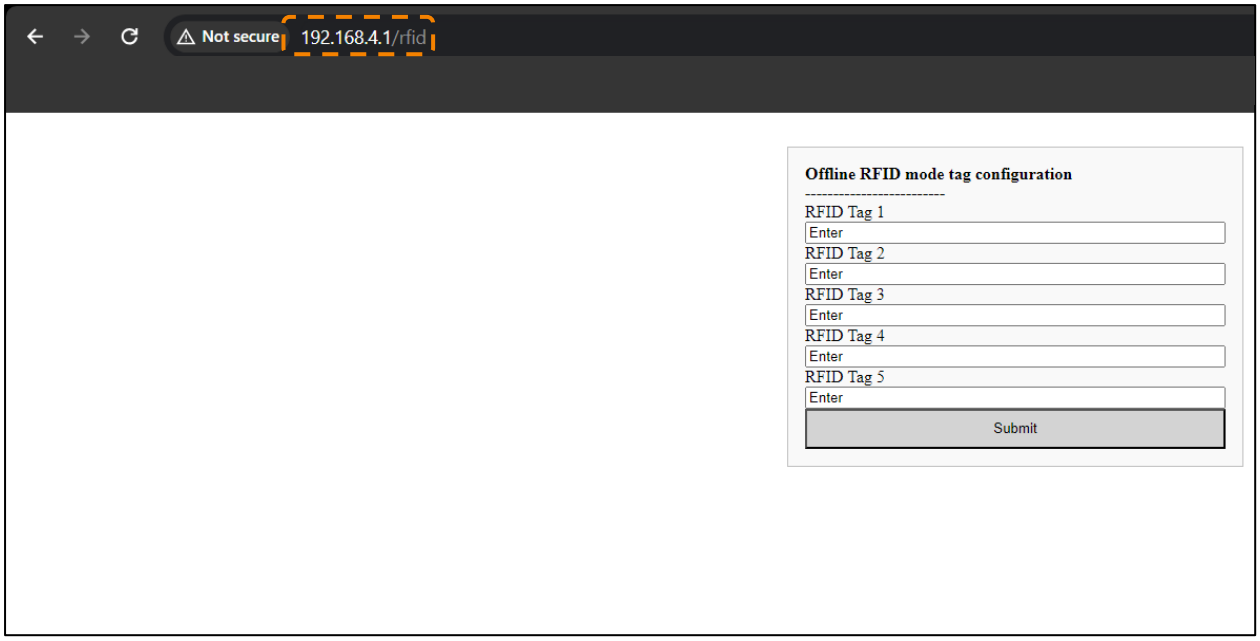


Figure 7 RFID Tag Configuration Page.

– To get the RFID reader number, download the Android app from the Google Play Store.
https://play.google.com/store/apps/details?id=com.nxp.taginfolite

NOTE!	Use of Offline RFID Mode Tag
	To utilise an RFID tag in offline mode, the user must specify the RFID mode in the ChargePoint configuration page; otherwise, it will not function.

– Click the submit Submit button to save the RFID mode tag configuration.

3.6 WSS Certificate

NOTE!	Only for Secure WebSocket Connection
	WSS configuration is only supported if the user demands a secure WebSocket (WSS) connection to an OCPP-compliant server.

WSS configuration page, where the user can add WSS certification for secure WebSocket connections with an OCPP-compliant server.

- Open the WSS certificate configuration page via URL or enter a URL in a web browser.
  http://192.168.4.1/wsscert

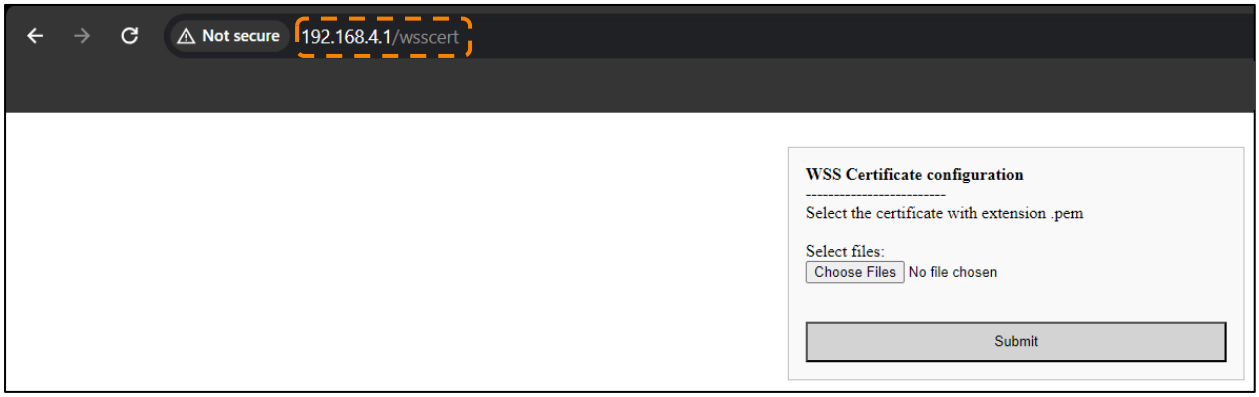


Figure 8 WSS Certification Configuration Page.

- Click the “Choose File” button.
- Select and open the “.pem” file from the laptop.

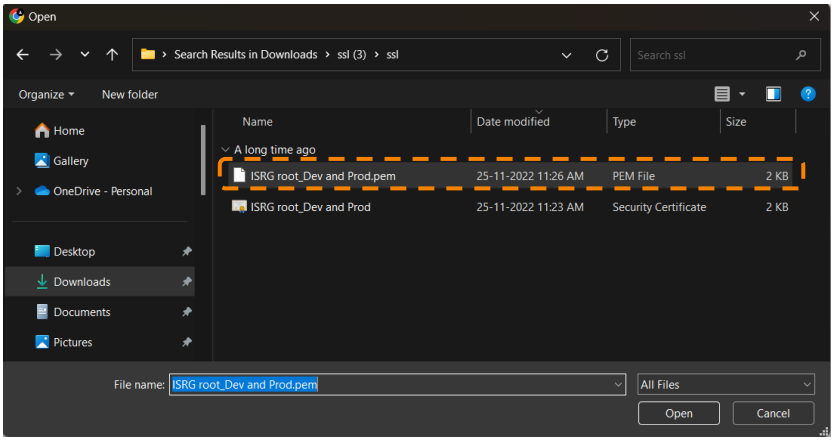


Figure 9 Select and Open the “.pem” File from the Laptop.

- Click the submit Submit button to upload the WSS certificate configuration.

3.7 LED

LED configuration page, where the user can set up a steady or blinking LED colour configuration (RGB) for charging statuses based on their requirements.

– Open the LED configuration page via URL or enter a URL in a web browser. http://192.168.4.1/ledconf

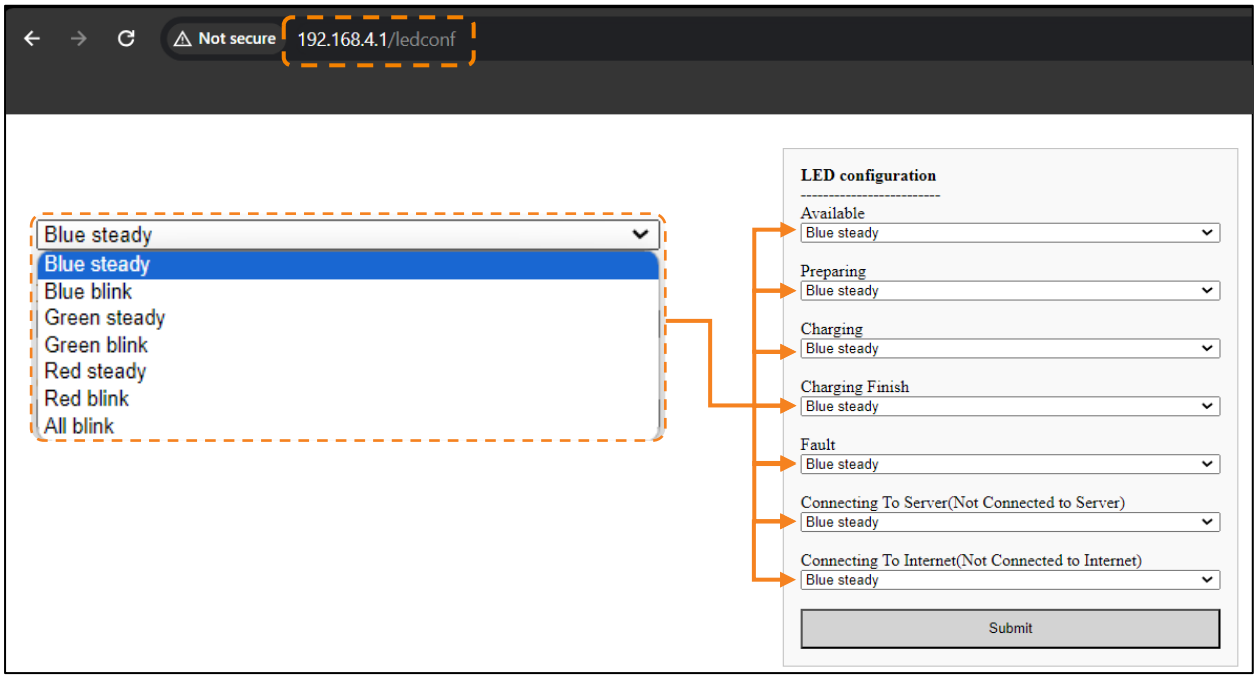


Figure 10 LED Configuration Page.

NOTE!	All Blink RGB LEDs
	If the user sets all of the RGB blinks at the same time, the button LED may only illuminate in red colour.

– Click the submit Submit button to save the LED configuration.

3.8 Dynamic Load Balancing

NOTE!	AC Charger Controller for the Dynamic Load Balancing
	The dynamic load balancing configuration is only applicable to the AC Type-2 dual gun charger controller (7.4 kW).

The dynamic load balancing setup page allows the user to enable or disable dynamic load balancing, set sanctioned load, set high and low total power register bytes, meter slave id, and baud rate.

- Open the dynamic load balancing configuration page via URL or enter an URL in web browser.
  http://192.168.4.1/dynamicloadbalancing

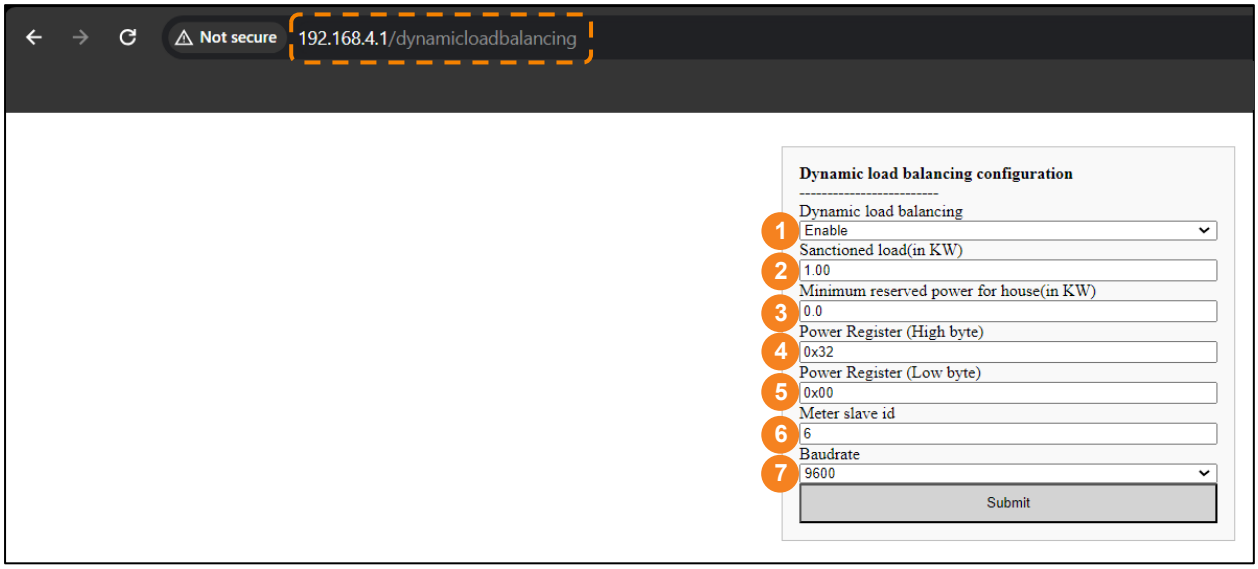


Figure 11 Dynamic Load Balancing Configuration Page.

1. Enable or disable the dynamic load balancing function.
2. Enter the total sanction load power specified by the external meter's threshold limit (kW).
3. Enter the minimum reserve power for the house (kW).
4. Enter the high byte of the power register as specified on the external meter in hex format.
5. Enter the lower byte of the power register as specified on the external meter in hex format.
6. Enter the meter slave ID as mentioned on the external meter.
7. Select the baud rate as mentioned on the external meter.
   - Click the submit Submit button to save the dynamic load balancing configuration.

3.8.1 Test Case

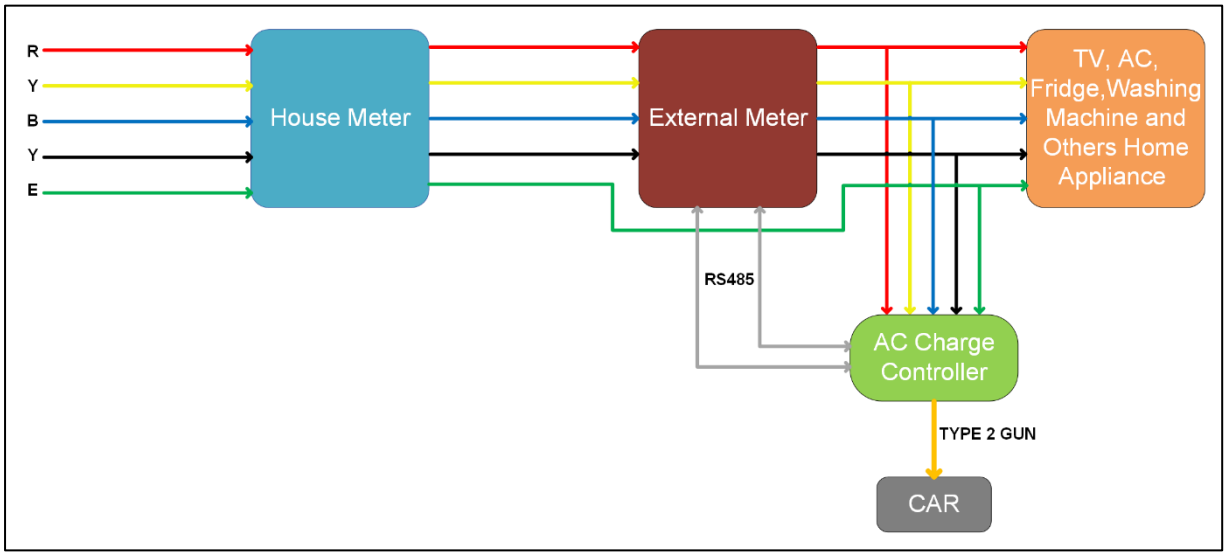


Figure 12 Recommended Setup for Testing

– **Test Case Scenarios**

1. On the Charge Point configuration page, set the maximum current limit to 6 amps.
2. In the dynamic load balancing page, set house meter power in kW.

MANDATORY	Household Electronics / Electrical Appliances
	While performing test cases, the user should turn off devices such as the TV, air conditioner, fridge, washing machine, etc.

3. Now, plug the charging gun into an electric vehicle to start the charging session.
4. Subsequently, the electrical vehicle charging current will increase if the consumed power is less than the set power limit.

NOTE!	Example
	While the user sets the 6 kW during the commissioning process, the car's current gradually increases from 6 amps. to 24 amps.

5. Now, turn on the household electronics / electrical appliances. These appliances will consume power, and subsequently, the electric vehicle's charging current will decrease.
6. If the total power consumption (including charging) exceeds the sanctioned load, then the charging will stop, and the AC controller will notify the overpower fault on the server.

4. Appendix

4.1 Abbreviations and Glossary

AC	*Alternating current, a type of electrical current in which the current repeatedly changes direction.*
APN	*An Access Point Name (APN) is the name of a gateway between a mobile network and another computer network, frequently the public Internet.*
CMS	*A CMS, or Charging Management System, is a software platform that is designed to manage electric vehicle (EV) charging stations*
FOTA	*Firmware over-the-air update is an updated that is downloaded by the device over the internet.*
GSM	*GSM (Global System for Mobile communication) is a digital mobile network that is widely used by mobile phone users in Europe and other parts of the world.*
kW	*KW is a kilowatt. KW is used to represent the actual power that carries out the work.*
kWh	*A kilowatt-hour is a non-SI unit of energy equal to 3.6 megajoules in SI units which is the energy delivered by one kilowatt of power for one hour. Kilowatt-hours are a common billing unit for electrical energy supplied by electric utilities.*
LCD	*A liquid-crystal display (LCD) is a flat-panel display or other electronically modulated optical device that uses the light-modulating properties of liquid crystals combined with polarizers*
LED	*A light-emitting diode (LED) is a semiconductor device that emits light when current flows through it.*
MAC	*A MAC address (short for medium access control address) is a unique identifier assigned to a network interface controller (NIC) for use as a network address in communications within a network segment.*
OCPP	*the OCPP (Open Charge Point Protocol) enables the integration between equipment from different manufacturers.*
RFID	*Radio-frequency identification (RFID) uses electromagnetic fields to automatically identify, and track tags attached to objects.*
RGB	*Red, Green, Blue*

RS-485	*RS-485 is an industrial specification that defines the electrical interface and physical layer for point-to-point communication of electrical devices. The RS-485 standard allows for long cabling distances in electrically noisy environments and can support multiple devices on the same bus.*
SIM	*A SIM (Subscriber Identity Module) card is an integrated circuit (IC) intended to securely store an international mobile subscriber identity (IMSI) number and its related key, which are used to identify and authenticate subscribers on mobile telephone devices.*
SSID	*SSID is an abbreviation for service set identifier, which is an important identifier for wireless networks.*
Type-2 Connector	*The IEC 62196 Type 2 connector is used for charging electric vehicles, mainly within Europe, as it was declared standard by the EU.*
URL	*A URL (Uniform Resource Locator) is a unique identifier used to locate a resource on the Internet. It is also referred to as a web address.*
Wi-Fi	*Wi-Fi is a family of wireless network protocols based on the IEEE 802.11 family of standards, which are commonly used for local area networking of devices and Internet access, allowing nearby digital devices to exchange data by radio waves.*
WSS	*The WebSocket protocol specification defines wss (WebSocket Secure) as new uniform resource identifier (URI) scheme that is used for encrypted connections.*

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