

**ETREL**

# **ELECTRIC VEHICLE CHARGING STATION**

## **ETREL INCH DUO**

### **CONFIGURATION GUIDE**

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## 1

## GENERAL CONFIGURATION INFORMATION

Etrel Inch Duo charging station is configured using the web interface which can be accessed through the charging station IP. Additional settings can be adjusted using OCPP messages using the backend system.

Configurations cannot be made using the touch screen LCD as it is only used to show information what is happening with the charging station and offers to user basic controls of the charging session.

### SIGN IN

Web interface can be accessed by connecting to the charging station IP. For the connection, the username (email) and password are needed.

Depending on the charging station supplier's decision, the username and password are written on the sticker inside the side maintenance doors.

The type of access rights this username will have, is also decided by the supplier. It is possible to have admin rights or rights of an ordinary operator, which cannot change the configuration of charging station.

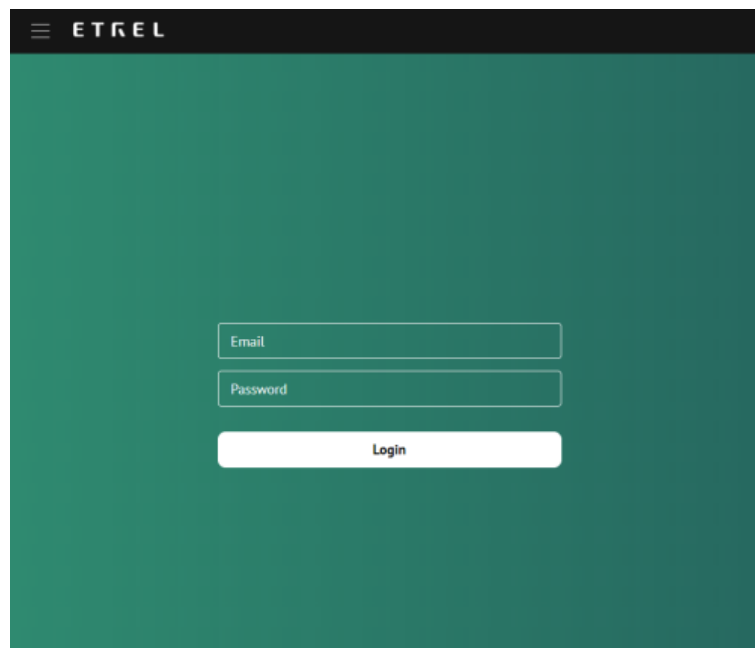


Figure 1: Sing In screen of the web interface

At the first sign in, when the configuration of charging station was not performed yet, the configuration module will be shown.

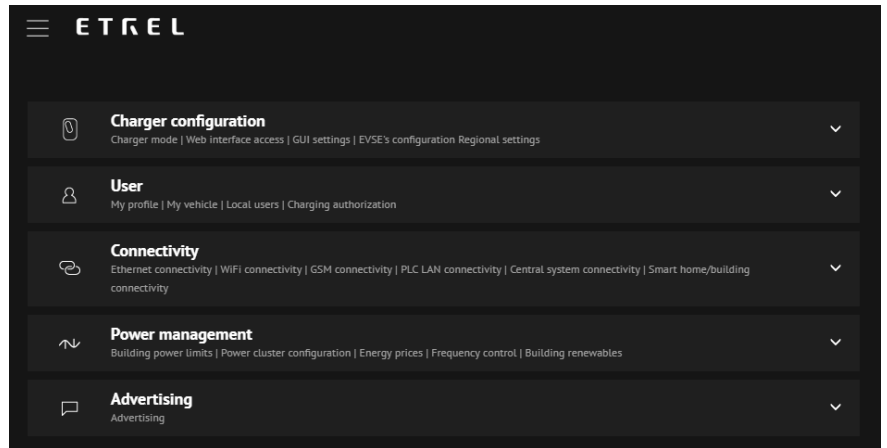


Figure 2: Configuration menu

For any subsequent sign in, the main dashboard window will be displayed where it is possible to see current power, cluster power if the charging station is part of the cluster, building power load, if the Load Guard unit is also installed, charging station availability and information about the last session.

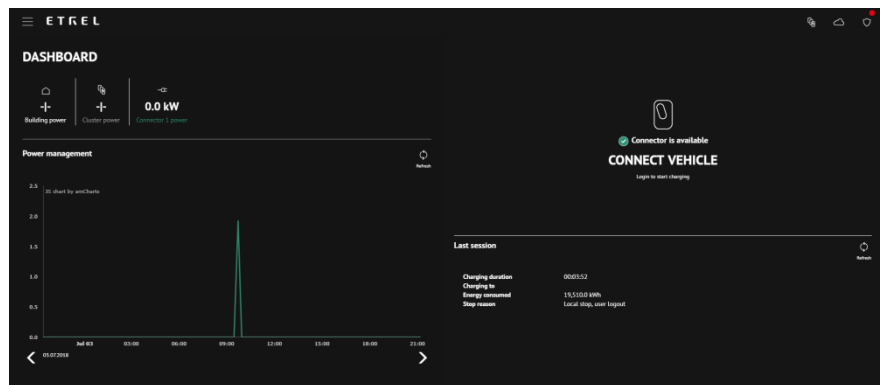


Figure 3: Main dashboard window

Last session status will be shown on the right side of the screen. If anything went wrong during the session, additional information can be acquired in the Diagnostics menu, accessed using the main menu (icon with three lines in the top left corner).

## CHANGE THE LANGUAGE

The language of the web interface can be changed to one of the languages supported by the web interface, by pressing the main menu icon and selecting the desired language.

Supported languages are set by admin user in the configuration menu.

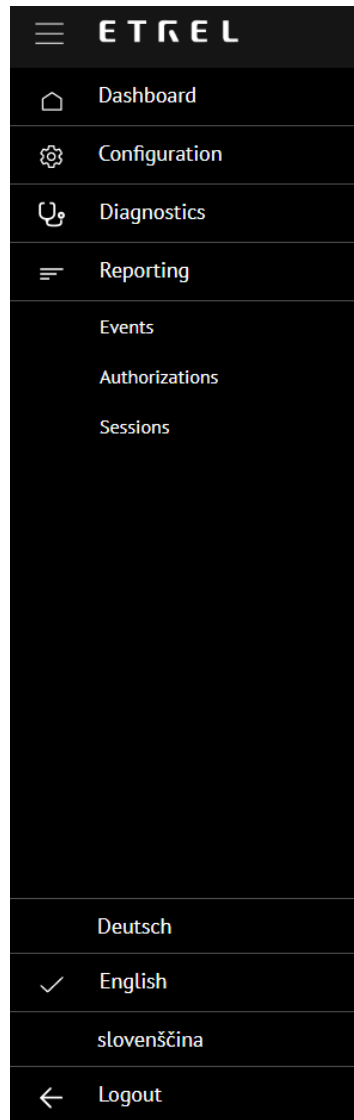


Figure 4: Changing the language

## 2

# CHARGING STATION CONFIGURATION

## USER RIGHTS

Charging station configuration possibilities differ depending on the Role of the user. Three roles exist: View, Operate and Admin.

Users with Admin role are the only ones that have full range of configuration possibilities. Operator has similar right than Admin but lacks Charger configuration options. Viewer can only check Dashboard where he can check what is currently happening with the charging station and data about sessions.

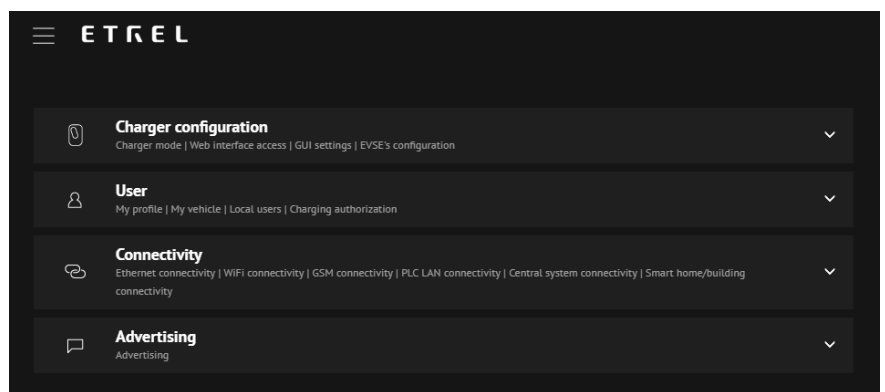


Figure 5: Full range of configuration possibilities

## CHANGE CHARGING STATION MODE SETTINGS

These options can be accessed only by users with Admin rights. Charger mode settings can be configured by pressing the “Charger configuration” and then “Charger mode” in the “Configuration” menu. The option is to choose between Home charger used by single user, Private/Public charger used by multiple users and Custom mode.

This will affect whether the charging station will be displayed on the frontend app if the CPO/EMSP you are connected to uses frontend app. Depending on the choice, additional mode settings will be available in the User section. More information is available in the chapter User. Custom charger mode represents the specific mode defined by the charging station reseller.

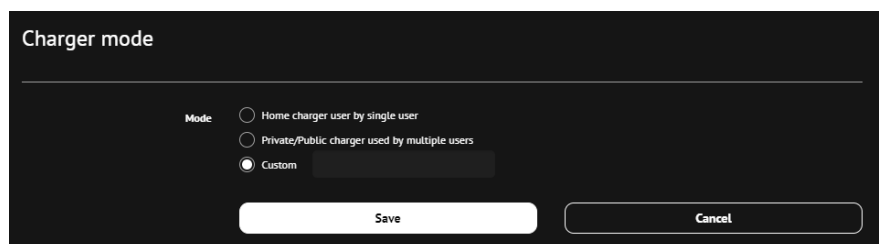


Figure 6: Setting the charger mode

## WEB INTERFACE ACCESS

By pressing “Charger configuration” and then “Web interface access” in “Configuration” menu it is possible to give certain users roles which will give them different access to the charging station’s settings and options.

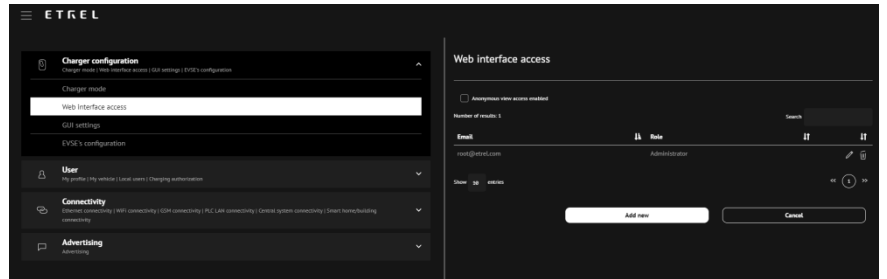


Figure 7: Accessing web interface access settings

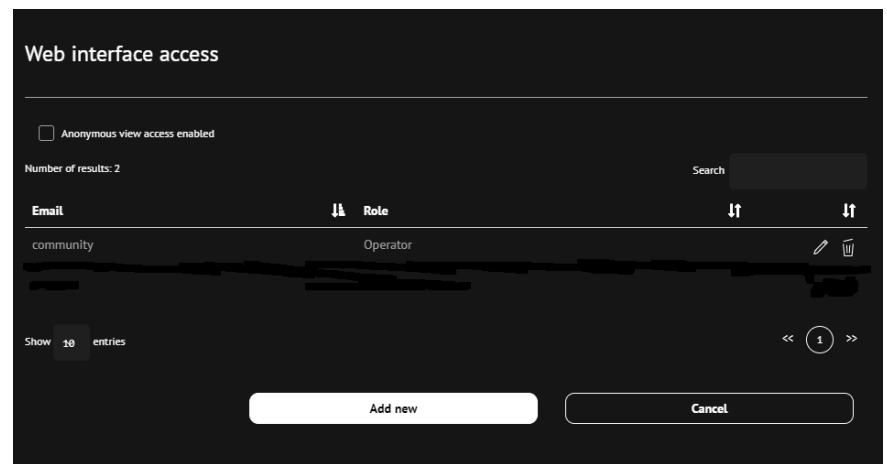


Figure 8: Web interface settings

New users can be added by pressing the “Add new”. New window will open where the user information need to be inserted (e-mail, password, and role). The same window can be used to Block access for particular user.

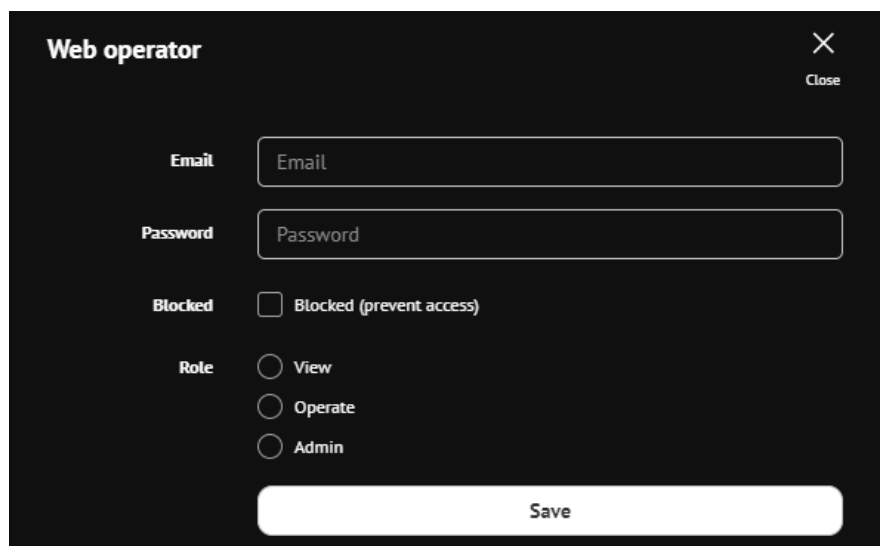


Figure 9: Adding the user information

Users and their roles can be edited by pressing the edit icon (marked on the figure with red circle) or deleted by pressing the trash can icon next to the edit icon.

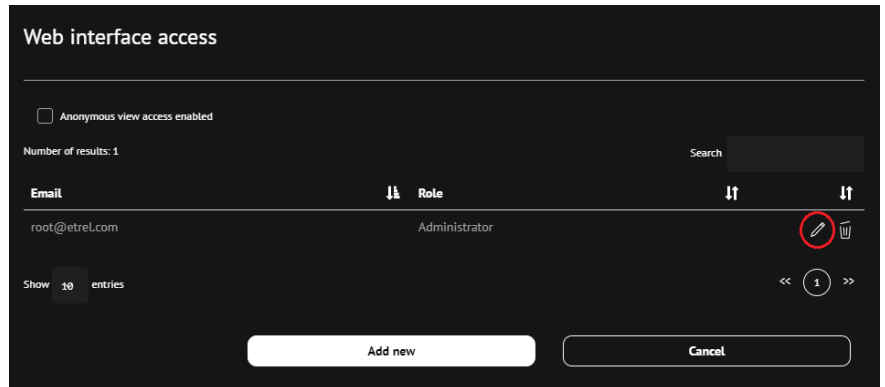


Figure 10: Edit the users and their roles

“Anonymous view access enabled” option allows unsigned users to see the dashboard and check charging session.

## CHANGE SUPPORTED LANGUAGES

Selection of languages that will be available on the charging station LCD screen can be changed with selection of “Charger configuration” and “Time and Regional settings” in “Configuration” menu.

Language that is put on the first spot is the default language used.

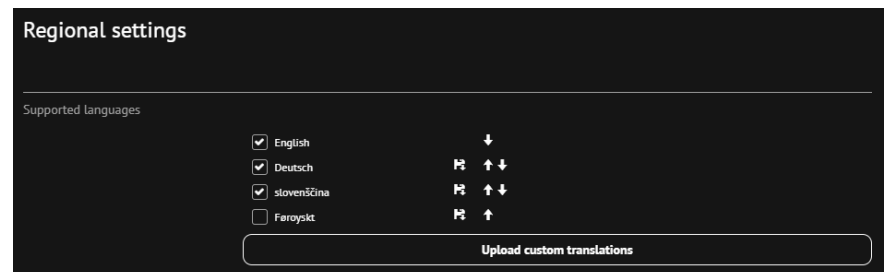


Figure 11: Selection of languages available in charging station

Custom translations of supported language are possible by pressing the “Upload custom translation” button.



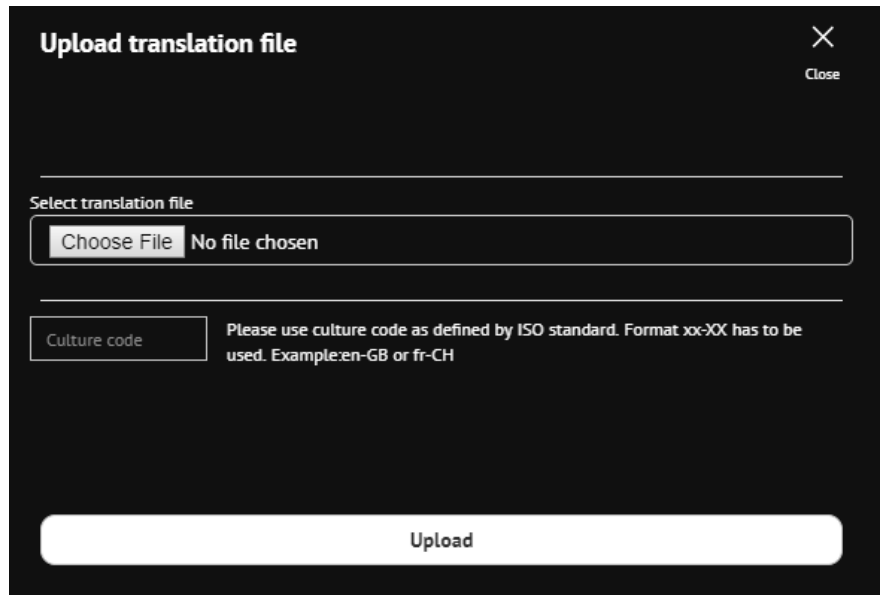


Figure 12: Adding custom translations

## TIME AND REGIONAL SETTINGS

Time settings of the charging station are set with selection of “Charger configuration” and then “Time and Regional settings”. The charging station time can be set. It can also be synchronized with the computer time by pressing the “Synchronize time” button. The time zone of the location where the charging station is located can also be selected.

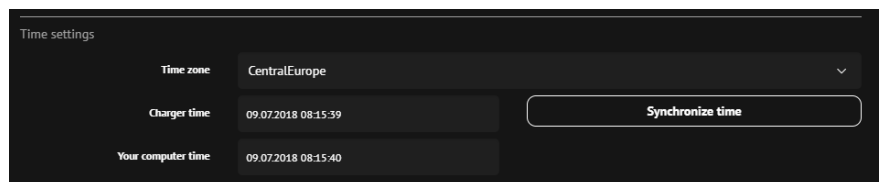


Figure 13: Time settings

## CURRENCY SETTINGS

In the “Time and Regional settings” in “Charger configuration” it is possible to choose the currency in which the energy prices will be displayed.

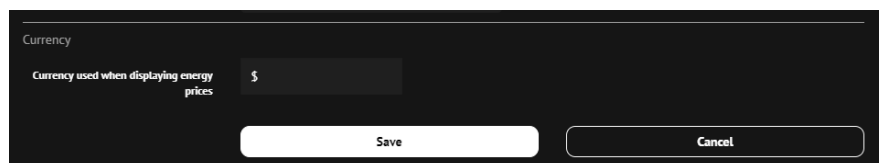


Figure 14: Currency settings

## **BEHAVIOUR BEFORE AND AT THE END OF CHARGING**

These options allow admin to enable certain functionalities before and at the end of charging. The following functionalities can be enabled:

- Allow users to enter departure time.
- Display charging prices if provided.
- Enable commercials.
  - Time how long the commercial will be shown.

Departure time is especially important information when the power management is running on the charging station. When this is the case this option should be enabled. This will improve power management algorithm as it will give charging station additional information about charging preferences. Departure time allows charging station to determine the flexibility of charging and to schedule the charging session.

Charging prices can be displayed on the LCD screen when second option is enabled.

To show commercials on the charging station’s LCD screen third option “Enable advertisement” should be enabled. How long the commercial will be shown on the screen of the charger can also be set.

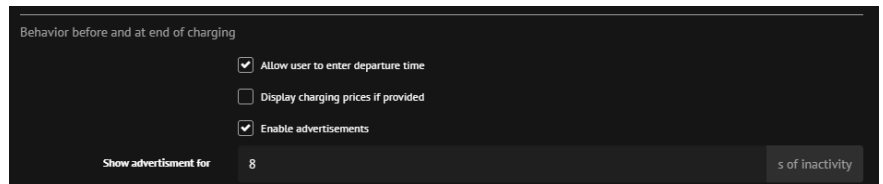


Figure 15: Setting behaviour before and at the end of charging

## **CHANGE SCREEN SAVER PARAMETERS**

How many seconds of inactivity are needed for charging station to go into screensaver mode can also be set by going into “Charger configuration” and then select “GUI settings” in “Configuration” menu.

Option for standby mode is to choose that screen either Blinks, or it is turned On or Off. Blinking screen is a good option for public charging station as the screen tells users from the distance that the charging station is on and in standby mode.

If the Steady On option is chosen, LCD screen will have higher possibility to malfunction as it will be turned on all the time. Charging station will also use more electricity. Steady Off option is best to use for private charging station or where blinking light will provide enough information about charging station status to users.

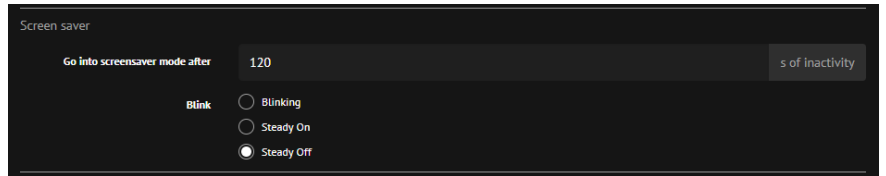


Figure 16: Screensaver settings

## CHANGE WAKE UP LOGO

Wake up logo can be changed in the “Charger configuration” and then “GUI settings” in “Configuration” menu. By default, Etrel logo will be shown. By pressing the “Change wake up logo”, custom logo can be selected.

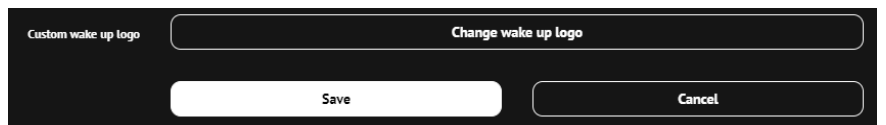


Figure 17: Selection of custom wake up logo

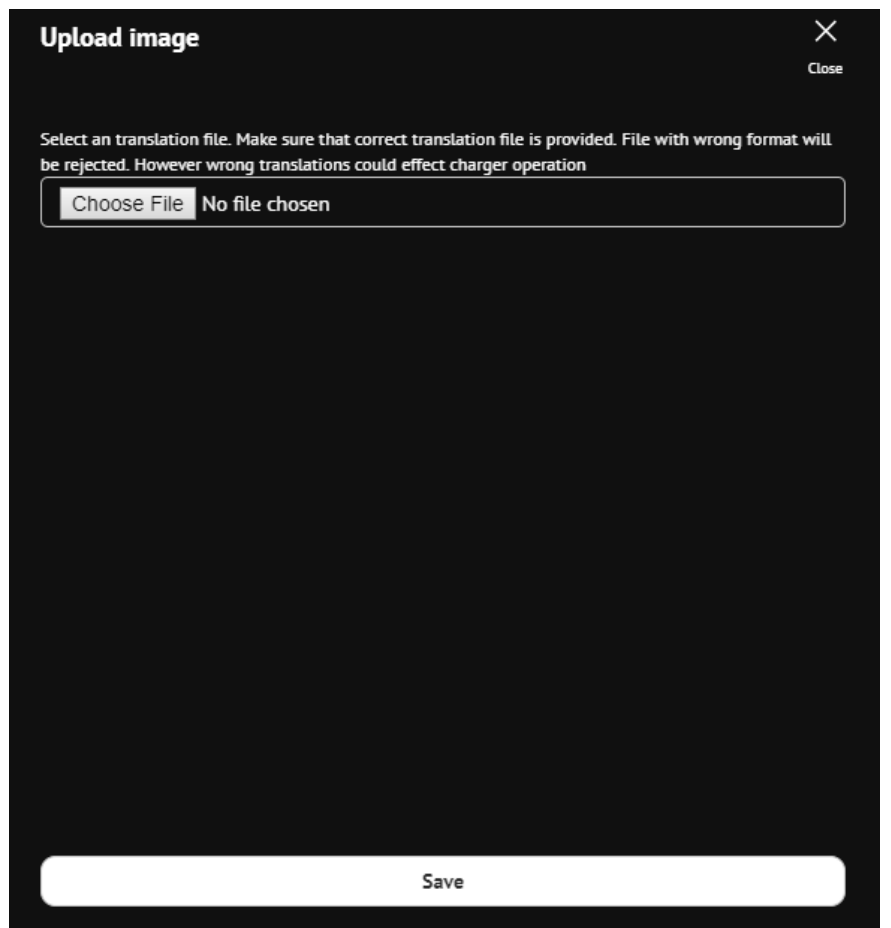


Figure 18: Uploading the image of custom wake up logo

## **CHANGE DISPLAY INFORMATION DURING CHARGING**

The display settings can be changed in “Configuration” menu by going into “Charger configuration” and then “GUI settings”. Various options what can be displayed are available. Multiple options can be selected, and the screen will switch every X seconds, based on the “Change screen settings” setting.

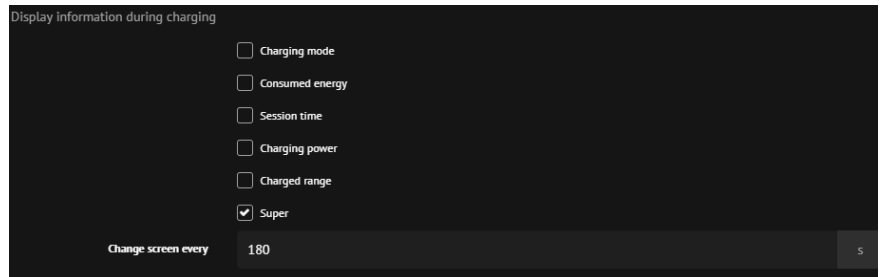


Figure 19: Display information during charging

“Super” option is a special option and displays all the information about range, charging mode and departure time on one screen.

## **EVSE’S CONFIGURATION**

Charging station EVSE’s configuration can be changed by going to “Configuration” in the main menu and then to “Charger configuration” and then to “EVSE’s configuration”. Various parameters of each EVSE can be changed:

- Friendly EVSE code.
- Enable pause charging.
- Number of phases.
- Which phase of charging station is connected to the installation phase L1?
- Max charging current per phase.
- Enable plug locking.

Especially important option is which phase of charging station is connected to the installation phase L1. The least loaded phase should be chosen if only one charging station is connected to the grid. If charging station is part of the cluster, the phases in separate chargers that charge single phase EVs, should vary to not overload one phase while others are underloaded.

The screenshot displays the 'EVSE's configuration' interface. It is divided into two main sections: 'EVSE 1' and 'Connector 1 - Type 2 plug'.

**EVSE 1 configuration:**

- Friendly EVSE code:** A text input field labeled 'Evse code'.
- Parking sensor type:** A dropdown menu set to 'None'.
- Enable pause charging:** Radio buttons for 'Yes' and 'No', with 'No' selected.
- Connector is connected to:** Radio buttons for 'Single phase' and 'Three phase', with 'Single phase' selected.
- Connector phase L1 is connected to installation phase:** A dropdown menu set to 'L1'.

**Connector 1 - Type 2 plug configuration:**

- Charging standard:** A dropdown menu set to 'Iec61851'.
- Max. charging current:** A text input field set to '32' with a unit selector 'A'.
- Enable plug locking:** Radio buttons for 'Yes' and 'No', with 'Yes' selected.

At the bottom of the form are two buttons: 'Save' and 'Cancel'.

Figure 20: EVSE's configuration

## LIMIT MAXIMUM CHARGING CURRENT

The charging station charging power can be limited by limiting the max current value. With the limitation the possibility of overloading the grid can be prevented. This option is available under the "Charger configuration" in the "EVSE's configuration" option under the "Configuration" menu.

## 3

**USER**

User settings have different options depending on the charger mode chosen.

If the “Home charger used by single user” is chosen in the “Charger configuration”, there are two options:

- My profile
- My vehicle

If the Private/Public charger used by multiple users is chosen there are options to change the following settings:

- Local users
- Charging authorization

**HOME CHARGER USED BY SINGLE USER MODE**

“My profile” option is used to write the first and last name of the user that will be using this charging station. The electric vehicle that the user is using can be added in the “My vehicle” options.

The screenshot shows a dark-themed interface titled "My profile". There are two input fields: "First name" containing "Davorin" and "Last name" containing "D". At the bottom, there are two buttons: "Save" and "Cancel".

Figure 21: Adding the user

The screenshot shows a dark-themed interface titled "My vehicle". It includes dropdown menus for "Brand" (Fiat), "Model" (500e), and "Version" (500e). Below these are "Vehicle characteristics" with input fields for "Battery capacity" (24 kWh) and "Vehicle average range" (135 km). Under "On board AC charger characteristics", there are radio buttons for "Number of phases" (Single selected), "Min current" (6 A), and "Max current" (26 A). There is also a "Preferred charging standard" dropdown and a checkbox for "Enable custom vehicle characteristics". At the bottom, there are "Save" and "Cancel" buttons.

Figure 22: Adding the electric vehicle information

## PRIVATE/PUBLIC CHARGER USED BY MULTIPLE USERS

The option to add multiple users is available only in the Private/Public charger used by multiple users. “Local users” option opens by pressing the “Add new” button and allows the creation of new users. First and last name of the users need to be inserted.

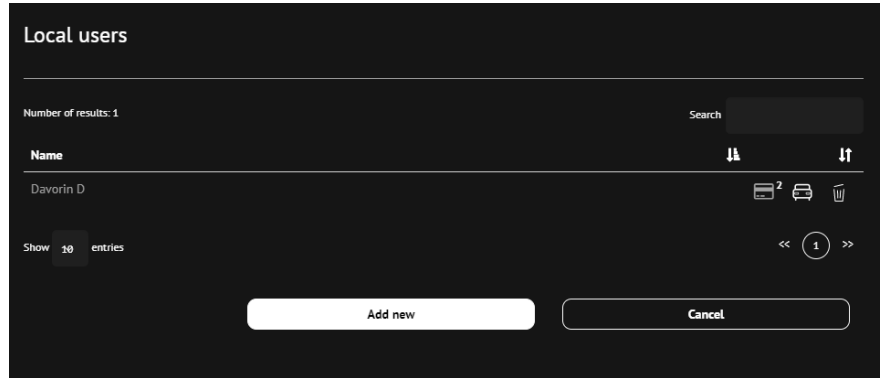


Figure 23: List of users and option to add new users

Each user can have one or multiple identification means. By pressing the RFID card icon option all the identification that are assigned to the user can be seen. Also, there is option to add new ones or edit and delete already assigned identification.

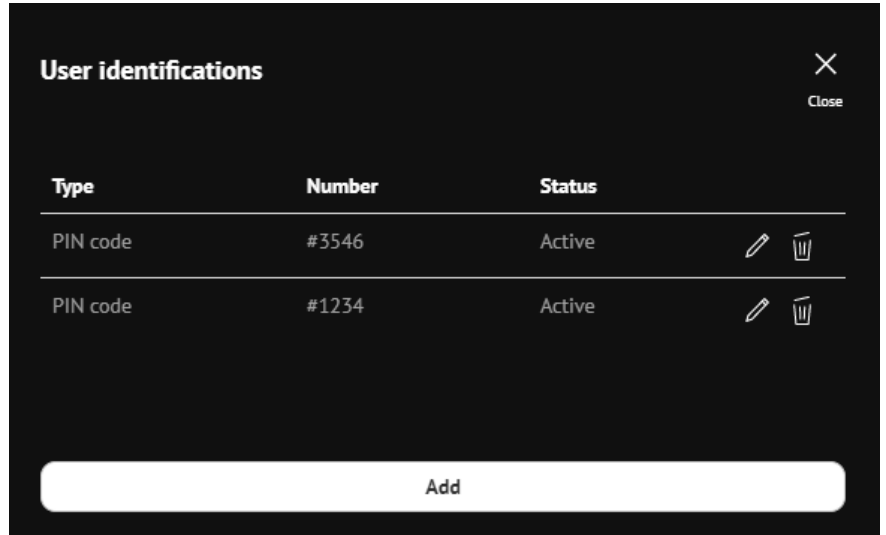


Figure 24: Setting user identification means

When adding new identification, already swiped RFID cards will be available, or the system will ask you to swipe the card and then it will add it to the system.

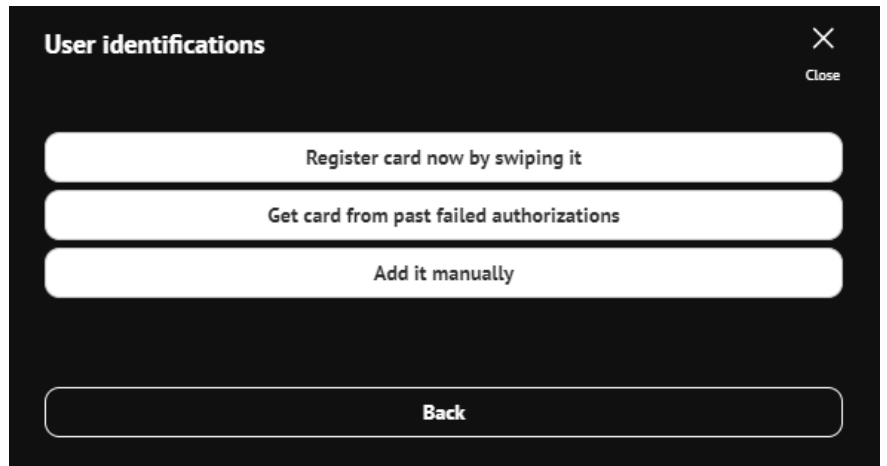


Figure 25: Adding new identification

If the option “Add it manually” is selected, it is possible to choose what type of identification will be added for this user. Selection between RFID, PIN, Vehicle ID (compliant with IEC 15118) and Remote identification (with mobile app) can be made.

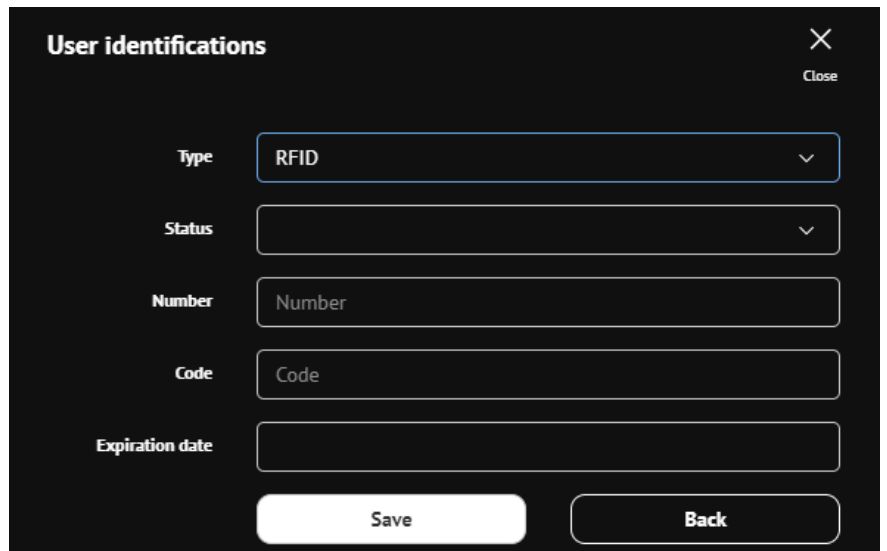


Figure 26: Selecting the type of identification

Settings:

- Status (Active, blocked, expired, invalid and unknown)
- Number – Number on the identification mean (RFID often has number written)
- Code – identification unique code
- Expiration date

The electric vehicle can be assigned to each user individually by pressing the EV icon. New window will open that gives the option to choose predefined EV or to define it yourself.



Figure 27: Information of electric vehicle

In the Charging authorization the selection of Authorization type can be made. This setting defines who is allowed to charge on the charging station:

- Plug and Charge (all users).
- Only charger white list users.
- Only central system users.
- Both central system users and white list users.

If the Authorization type is Plug and Charge, the Plug and charge tag id does not need to be set. This is the code that charging station sends to the backend when plug and charge mode is used.

Figure 28: Selection of charging authorization type

## **CHOOSE SUPPORTED IDENTIFICATIONS**

Identifications that are supported by the charging station are first dependent on the type of charging station and on which authorization modules are installed inside the charging station.

Depending on the installed authorization modules, selection which authorization means will be available for the users of the particular charging station can be set in the web interface. This is set in the “User”, “Charging authorization” window.

The authorization type can be enabled, and after that the settings can be set. For example, in the case of App authorization, the app download link and Start code need to be inserted.

Supported Identification Types	
PIN	Enabled <input checked="" type="checkbox"/>
APP	Enabled <input checked="" type="checkbox"/>
	Start code CH*REPE0001*13
	Download link http://tsadasda

Figure 29: Selection of supported identification types

## **SET CENTRAL SYSTEM BEHAVIOUR**

In the “User”, “Charging authorization” option menu it is possible to set Central system behaviour. Different modes of behaviour are supported. Options are:

- Allow charging when charger is offline and cannot authorize user at central system.
- Enable authorization from cache when charger is in offline mode. Cache is built from previous authorization attempts.
- Enable central system to upload white list of customers, to be used when charger is in offline mode.
- After remote start, authorize before starting charging.
- Start charging based on local authorization, even before remote authorization is checked.
- Also, setting of the cable disconnect timeout is possible to specify the time after which charger will notify central system that cable is still connected after charging has stopped.

Options that can be set, can be seen on the following figure.

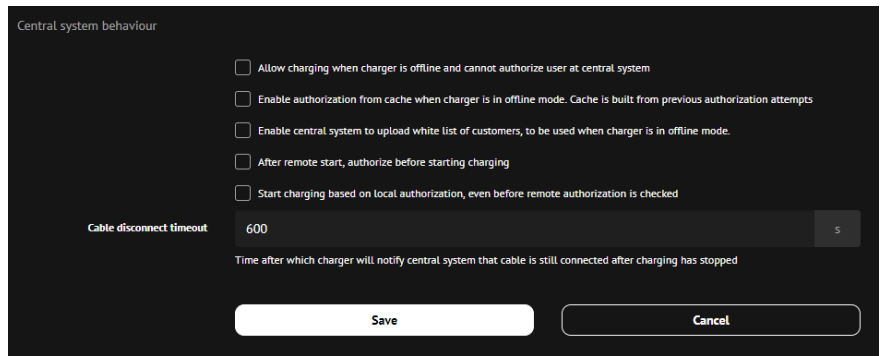


Figure 30: Settings of central system behaviour

## SETTING ADVERTISEMENTS ON THE LCD SCREEN

LCD screen advertisement can be set in the “Configuration”, “Advertising” option. It is possible to set on which days and at which hour particular picture/advertisement will be shown.

New advertisement can be added by pressing the “Add new advertisement” button. After the selection of right parameters, the advertisement can be uploaded to the charging station by pressing the “Upload” button. Advertisement is shown on the LCD of the charging station before the charging session start.

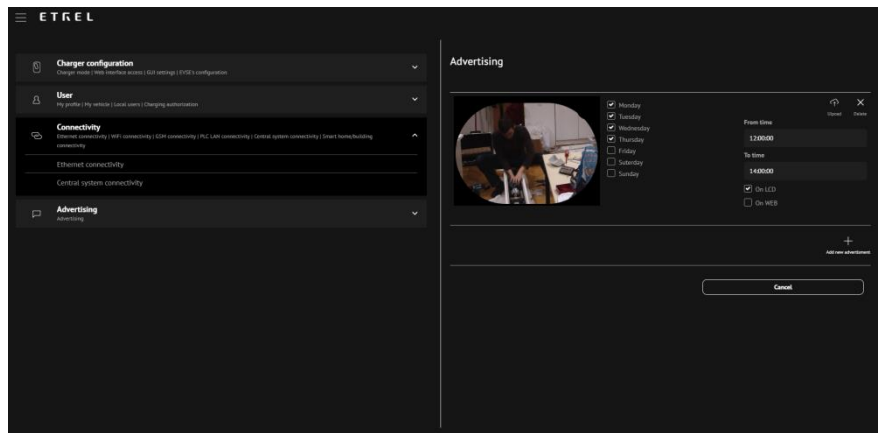


Figure 31: Advertising settings

To enable the advertisements on the charging station LCD screen, this option needs to be selected in the “Configuration”, “Charger configuration”, “GUI settings”. The advertisement duration in seconds can also be set.

## 4

## CONNECT TO THE COMMUNICATION NETWORK

Connectivity section of “Configuration” menu is especially important during the installation of charging station or if communication problems are occurring. Connectivity menu allows setting of parameters of connectivity that are available in your charging station. Depending on the charging station model, different connectivity options can be available.

The following connectivity options can be set:

- Ethernet
- Wi-Fi
- GSM
- Central system

### ETHERNET CONNECTIVITY

When setting up connection using the Ethernet, this needs to be specified in the Ethernet connectivity in the Connectivity section of the “Configuration” menu.

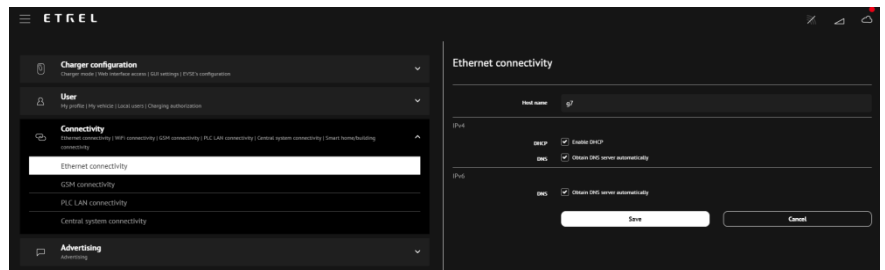


Figure 32: Settings of connectivity options

All the basic settings, e.g. host name, IP, net mask, gateway... can be manually set, or if it is supported by the network, automatic acquisition of settings can be enabled.

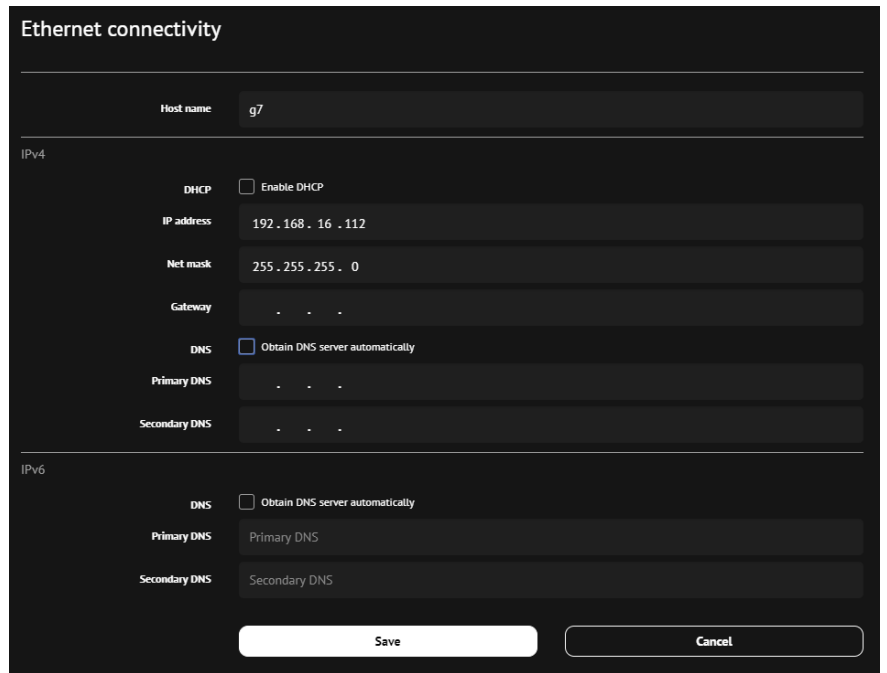


Figure 33: Ethernet connectivity settings

## WI-FI CONNECTIVITY

Connection using the Wi-Fi module is set in the Connectivity section of “Configuration” menu and in Wi-Fi connectivity.

By pressing the Wi-Fi connectivity option, the web interface will try to find all the networks that are available for connection.

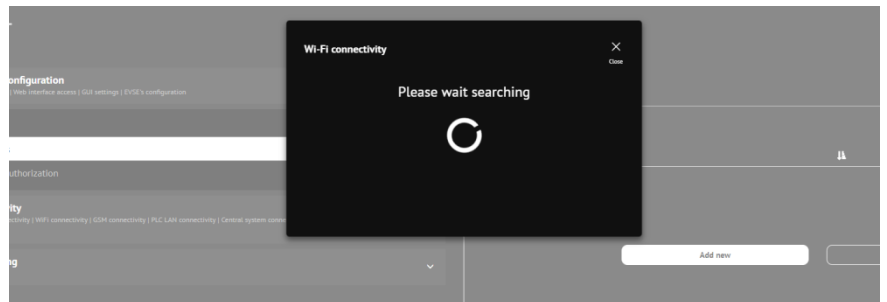


Figure 34: Scanning of Wi-Fi networks

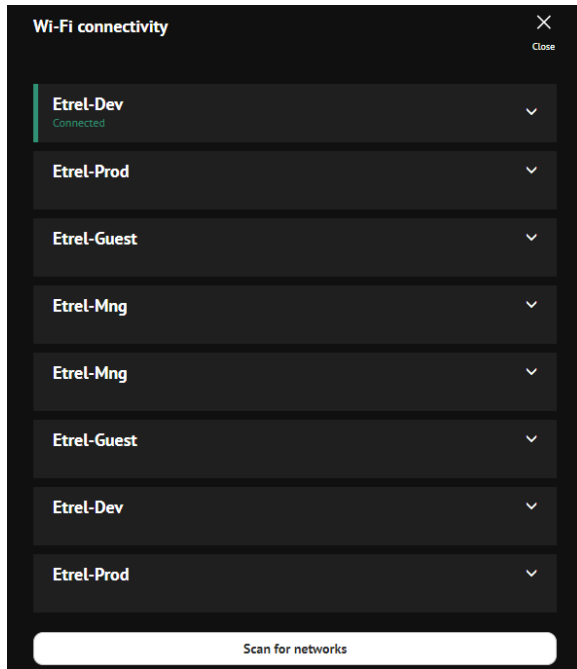


Figure 35: Example of list with found networks

The searching process can take significant time at the beginning. Once all the available networks are presented, the chosen can be selected. The connection is possible with all the necessary information inserted (password, authentication type, Encryption type).

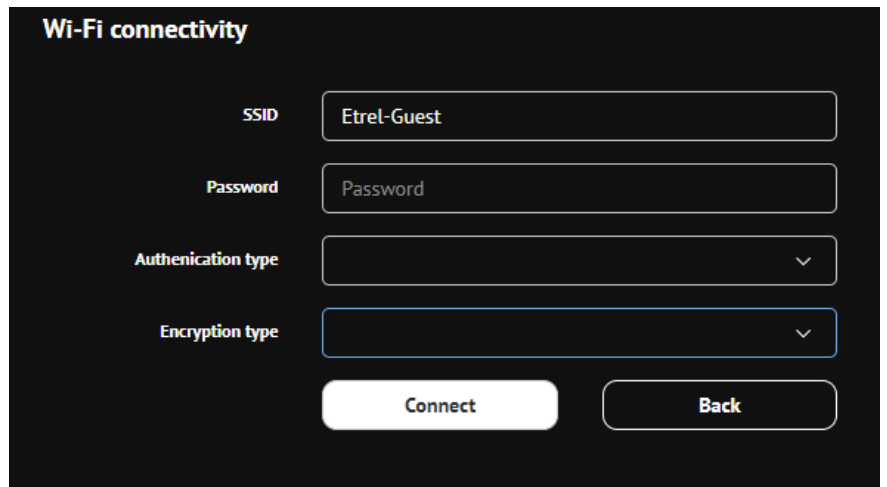


Figure 36: Wi-Fi network settings

After the connection to the Wi-Fi network, additional information about the network can be reviewed by clicking on it.

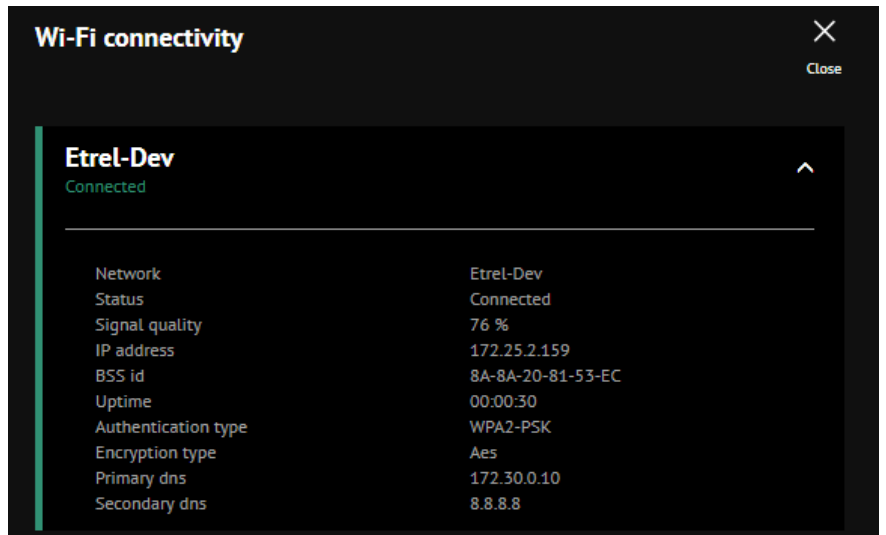


Figure 37: Additional information of the Wi-Fi network

Same process of identifying the available Wi-Fi networks and connecting to one, can be started by pressing the Wi-Fi icon in the top right corner.

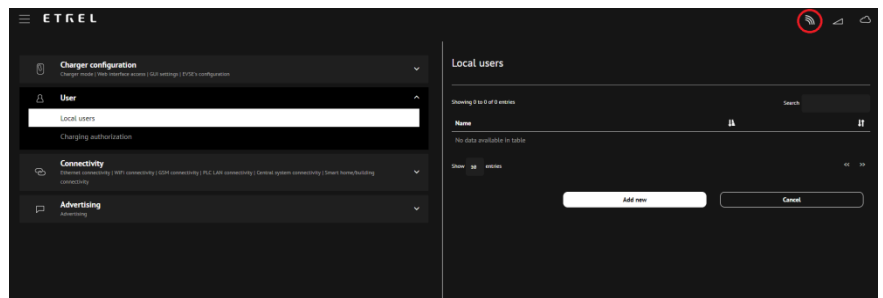


Figure 38: Wi-Fi icon

## GSM CONNECTIVITY

Setting up connection using the GSM module is set up in the GSM connectivity in the Connectivity section of “Configuration” menu. There it is possible to change multiple settings to properly set up GSM communication.

- APN settings
- Authentication
- Username
- Password
- PIN
- PING server
- PING interval
- Service mode

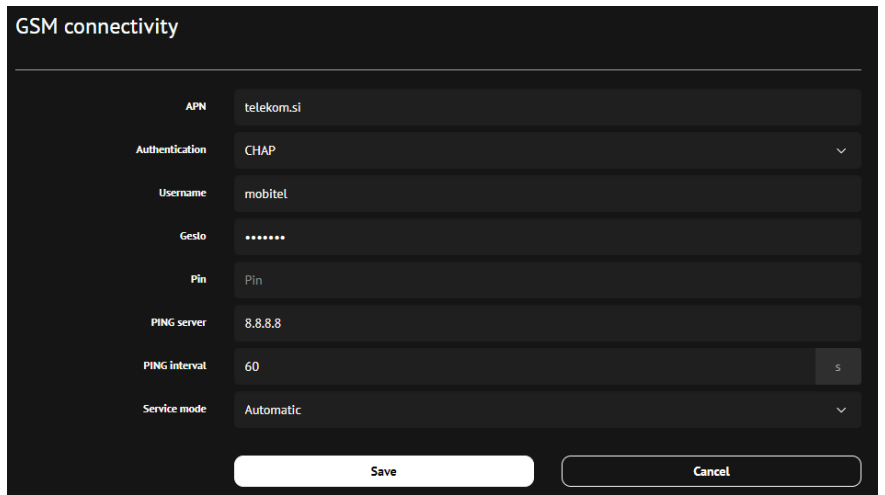


Figure 39: GSM connectivity settings

The status of GSM connection can be checked with pressing the GSM icon in the top right corner of the main web interface window.

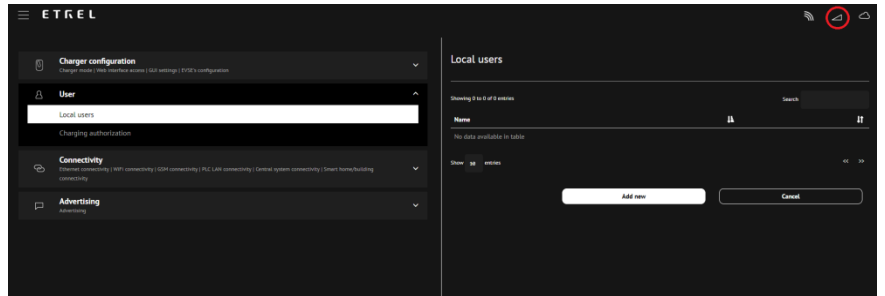


Figure 40: GSM icon

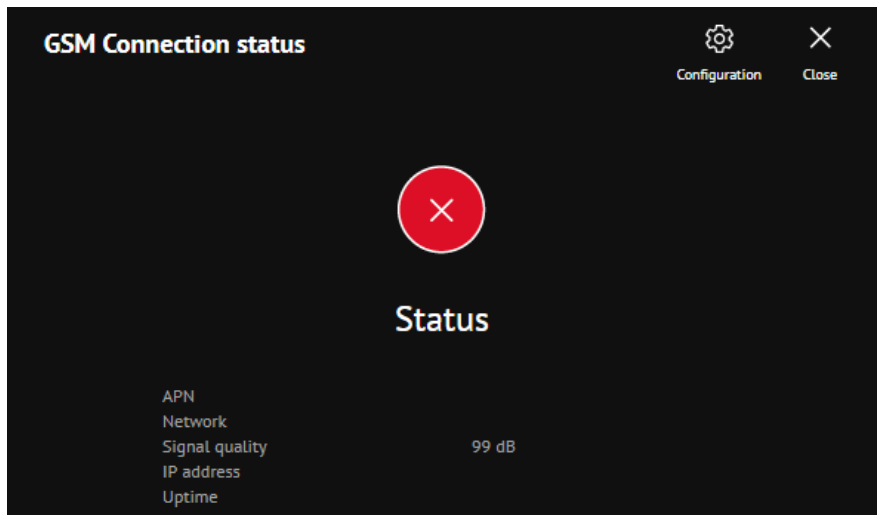


Figure 41: GSM connection status

By pressing the “Configuration” button, “GSM connectivity”, settings will open.



## CENTRAL SYSTEM CONNECTIVITY

To connect charging station to the central system, various settings in the “Central system connectivity” module need to be set. The communication with central system can be enabled by ticking the enable button.

In the settings the following can be defined:

- Charge point identity
- Protocol type
- Central system endpoint URL

By pressing the “Test connection” button it is possible to check whether the connection with the central system is established.

Pressing the “Limit access from certain IP’s” will give the possibility to limit certain IP to access the web interface.

Figure 42: Central system connectivity settings

By pressing the Central system connection icon in the top right corner, the check of the status of connection is performed and list of basic information of the connection is presented (endpoint, protocol, status and last received command).

“Configuration” icon in the top right corner will open the main options of “Central system connectivity” settings.

Figure 43: Configuration icon

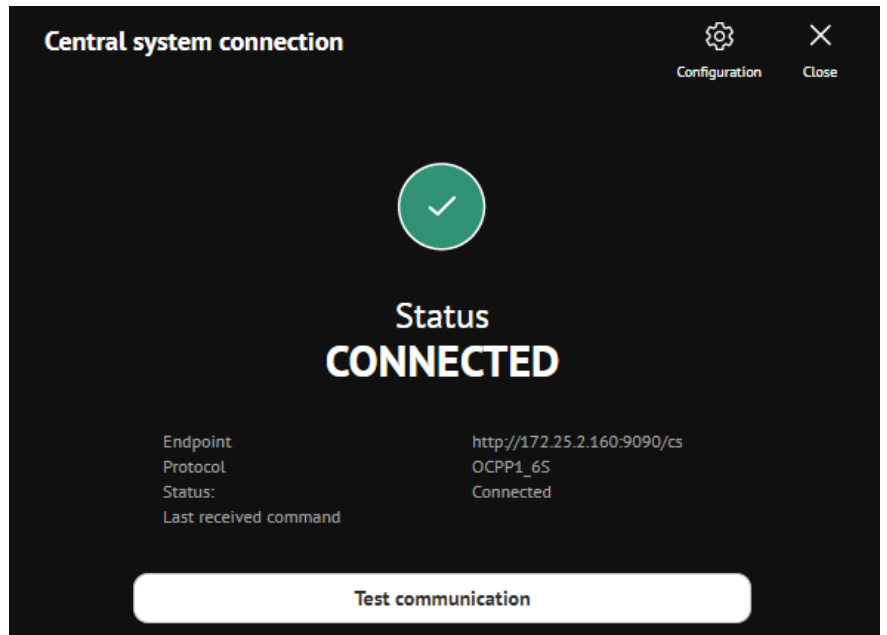


Figure 44: Status of central system connection

# 5

## POWER MANAGEMENT

Power management settings allow operators to set various aspects of power management functionalities and cluster settings. Settings are available for Power management configuration, to turn the power management on or off and to define if charging station is Master or Slave device. Other settings are Building power limits, Power cluster configuration, Energy prices and Frequency control.

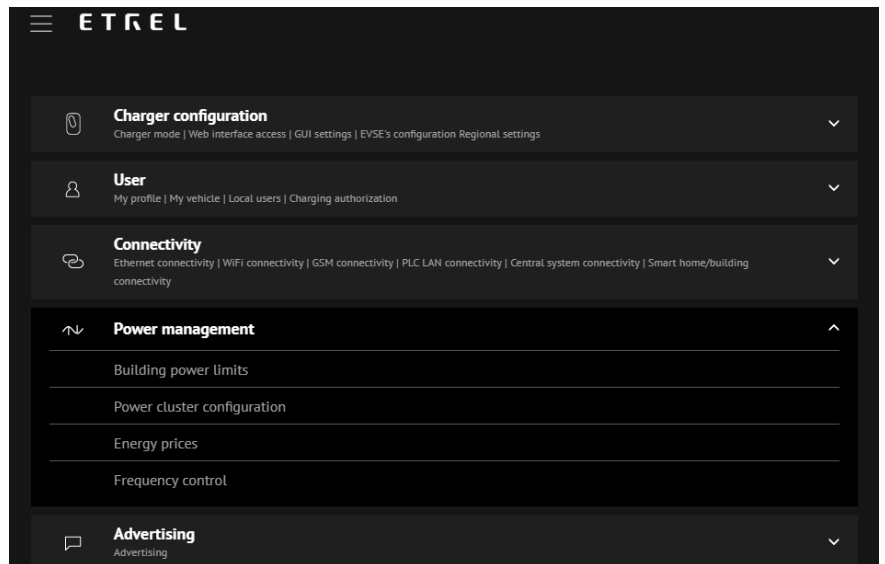


Figure 45: Power management settings

### POWER LIMITS AT THE LOCATION

Building power limits settings allows setting of current limitation for the complete consumption at the location (e.g. included consumption of the consumers of electricity of the household and the consumption of charging station). Charging station current limits are calculated for each phase separately to not exceed the household grid limits or limits of the fuses.

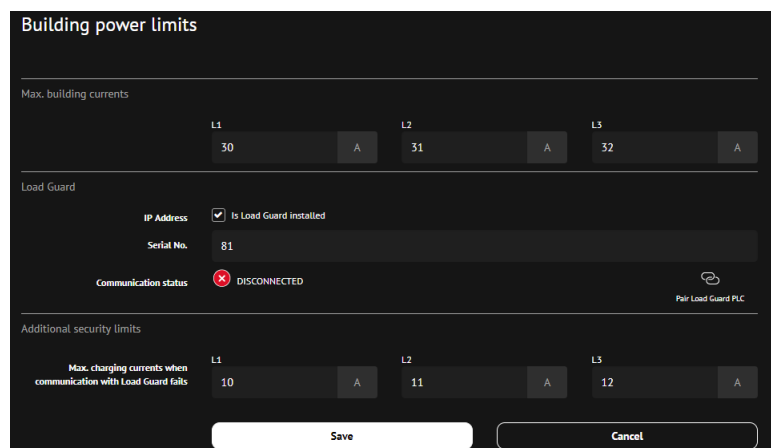


Figure 46: Building power limits settings

It is advisable to set the max current limits to avoid blowing the fuse or triggering other overcurrent device.

Additional security limits can also be set to reduce the maximal current of each phase in the event when the communication with the Load Guard is interrupted.

## LOAD GUARD SETTINGS

In the same options menu, it is possible to set the Load Guard device:

- IP address
- Serial no.

## LOAD GUARD CONFIGURATION

To configure the Load Guard, software developed by Etrel is used to do this. Download link can be found on the Etrel internet site (<https://etrelchargingsolutions.atlassian.net/wiki/spaces/Home/pages/258867203/Configuration+software>).

After opening the software, it will find all the Load Guards in the same network and display them on the screen as it is shown on the following figure.

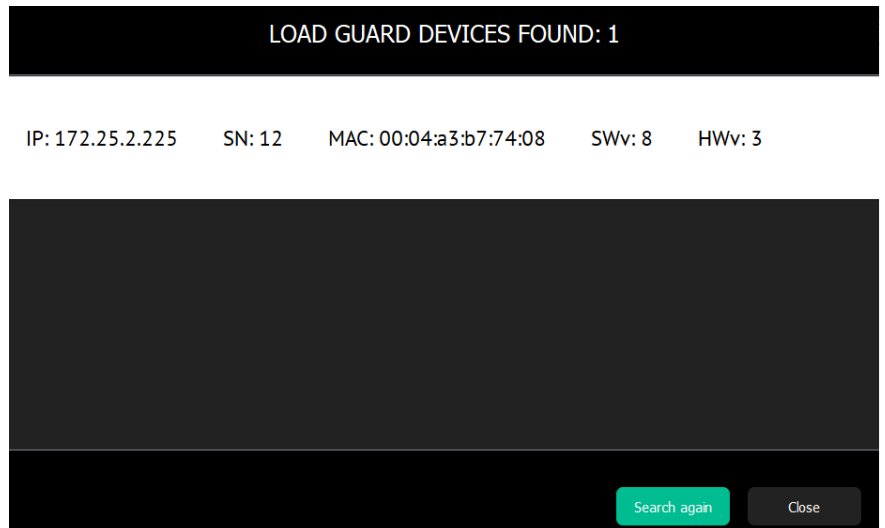


Figure 47: Load Guard Configurator

When particular Load Guard is selected, new screen will be shown with configuration options for Load Guard and all the measurement of each phase that Load Guard is currently measuring.

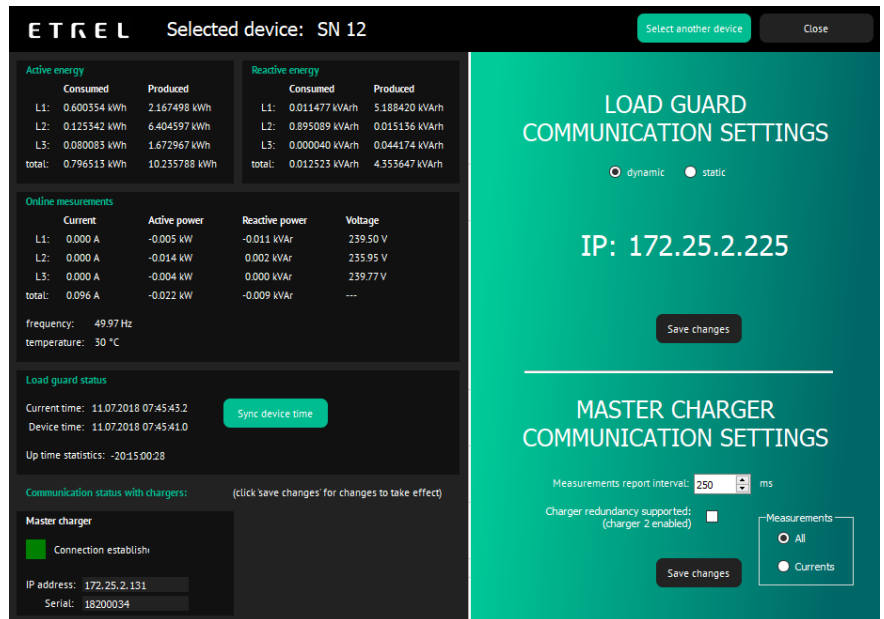


Figure 48: Load Guard Measurements

In case that the device time and actual time are not already synchronized, this can be done by pressing “Sync Device time” button.

Most important setting that may influence the Load Guard data received by the station, is the IP address of the charging station. IP will be set up in the production process, however if the IP of the charging station was changed, it needs to be changed also in the Load Guard software.

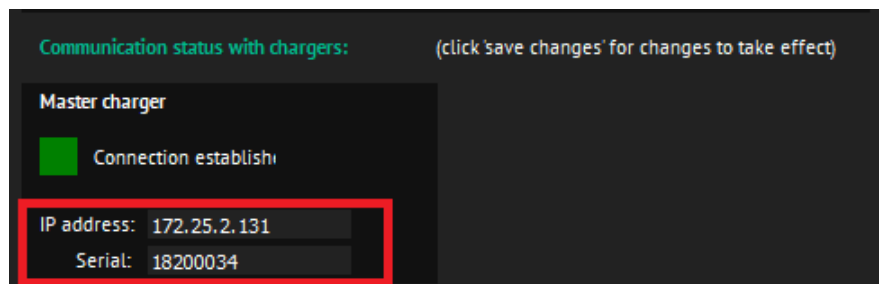


Figure 49: Communication status

Also, the Load Guard communication settings can be changed from dynamic IP to static IP address.

## POWER CLUSTER CONFIGURATION

Power cluster configuration options in the web interface allow you to define which charging stations are parts of the cluster, set IP of the primary and secondary master and set maximal current output if the communication with the cluster master is interrupted.

This is an important setting which can prevent blowing the fuse if the grid limitations change during the time of no communication.

Limitation of cluster currents can be also set on each phase separately.



Figure 50: Power cluster configuration settings

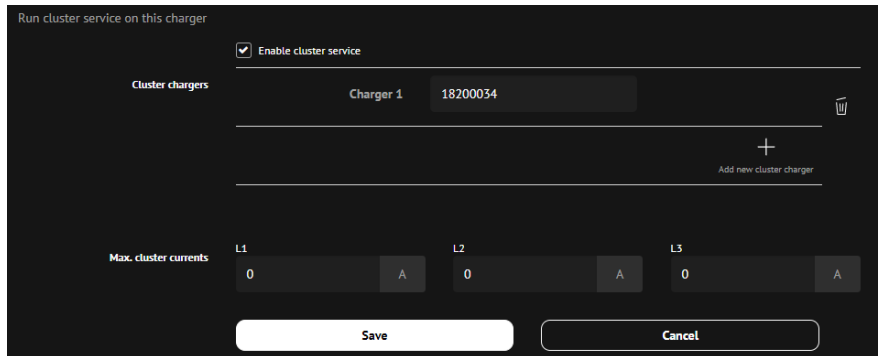


Figure 51: Setting max. cluster currents

## CLUSTER PRIMARY MASTER

To configure primary master, the option “Connect this charger to the cluster” needs to be enabled. Write in primary master address or acquire it simply by pressing the “Running on this charger”.

Maximal current in the event of failed communication with master can be set by writing the current value in “Max current output when communication with master fails” field.

After ticking the “Enable cluster service”, all the charging stations that are part of the cluster need to be inserted, including primary and secondary master.

Last option is “Max cluster currents”, which will define limit for all the phases for the whole cluster.

## SECONDARY MASTER

Secondary master is not mandatory, but it can provide redundancy in the case when primary master loses communication or if there is a fault. Setting up secondary master is almost the same as for the primary master.

Enabling the “Connect this charger to the cluster” and ticking “Enable also secondary master”. Secondary master IP can be acquired by pressing the “Running on this charger”. For the primary master, the primary master local IP needs to be inserted. That address can also be obtained with the button.

## CHARGING STATION PART OF THE CLUSTER

For all the charging station that are part of the cluster and are not primary or secondary master first the “Connect this charger to the cluster” option needs to be enabled and the address of primary and secondary master inserted (if they are used). Local IP address of the master can be obtained by pressing the “Running on this charger” button.

The value of “Max current output when communication with master fails” should also be inserted.

**WHEN CONFIGURING CHARGING STATIONS THAT ARE PART OF THE CLUSTER, MAKE SURE THAT PRIMARY MASTER IS LIVE, UP AND RUNNING.**

## CHECKING CLUSTER CONFIGURATION

Cluster configuration can be checked with clicking the icon in the top right corner.

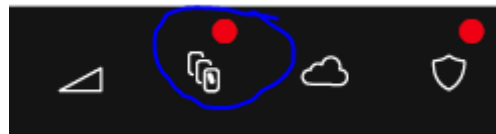


Figure 52: Cluster configuration icon

New window will open, showing which charging stations are connected to the cluster and whether they are online.

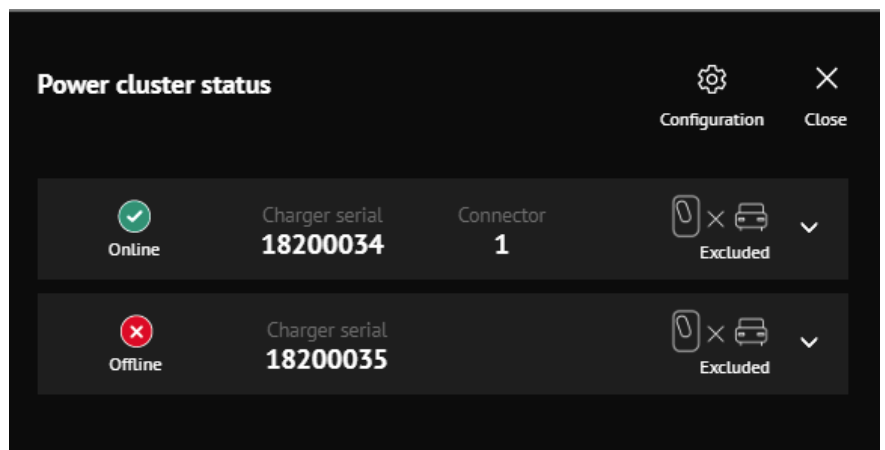


Figure 53: Charging stations of the cluster

## ELECTRICAL ENERGY PRICES

In the Energy prices menu, it is possible to define multiple electricity tariffs, which will allow electric vehicle charging using the economic

power management. This means that the charging station will be able to charge using the price signal and consequently reduce the cost of charging. When creating the tariff, it is also possible to define prices and times when the tariff is valid.

Figure 54: Energy prices settings

## FREQUENCY CONTROL

Etrel Inch Duo charging station is capable helping with the frequency regulation. In the Frequency control menu, the frequency parameters can be set. In case of under frequency the charging power of the charger is lowered, by the value needed and is kept at that value until the frequency is restored to the normal value.

Figure 55: Frequency power management settings



# 6

## REPORTING

Reporting section of the web interface can be accessed using the main menu (icon with three lines in the top left corner).

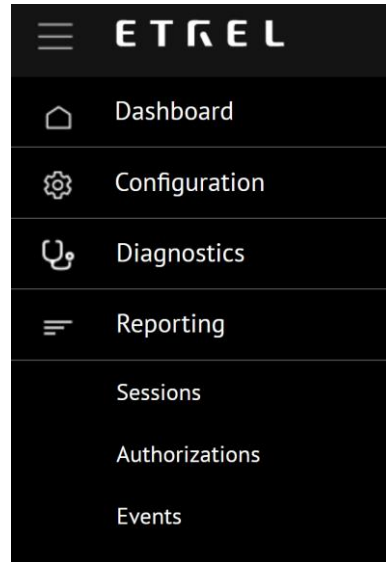


Figure 56: Reporting section

Reporting is split into three different reports:

- Sessions,
- Authorizations and
- Events.

### SESSIONS

In the session reports it is possible to check all the sessions that took place on the particular charging station during the chosen time frame. It is possible to filter the session based on the identification source, identification type, identification code, session stop reason and based on the selected user. If needed all the data can be exported by pressing the “Export to CSV” button.

Session ID	Session time	Connector	User / Identification	Energy and power	Status
Local 001	Started: 18.01.2018 06:02	Connector 1	Local whitelist	543,311.00 kWh	Preparing
Local 002	Started: 18.01.2018 06:08	Connector 1	Local whitelist	215,412.00 kWh	Preparing
Local 003	Started: 18.01.2018 07:42	Connector 1	Local whitelist	0 kWh	Preparing
Local 004	Started: 18.01.2018 07:05	Connector 1	Local whitelist	0.00 kWh	Preparing
Local 005	Started: 18.01.2018 07:31	Connector 1	Local whitelist	0.00 kWh	Preparing
Local 006	Started: 18.01.2018 15:07	Connector 1	Local whitelist	0 kWh	Preparing
Local 007	Started: 21.01.2018 06:01	Connector 1	Local whitelist	0 kWh	Preparing
Local 008	Started: 22.01.2018 12:04	Connector 1	Local whitelist	74,956.00 kWh	Preparing

Figure 57: Sessions report

## AUTHORIZATIONS

Authorization reports show all the authorizations that took place on the charging station. Search functionality can be used to search for a particular authorization.

Search can be performed for identifications, based on the identification source (local whitelist, whitelist sent from back-end or whitelist added from back-end authorization), based on identification type (RFID, remote, PIN code or vehicle id), and based on the authorization status.

Search for identification and for authorizations from specific user can be based on identification code and is performed by simply inputting the code in the specified field.

The event report can be exported to the CSV file.

Authorization ID	Authorization time	Connector	User / Identification	Status
1	18.05.2018 08:49	Connector 0	Local whitelist	
2	18.05.2018 06:50	Connector 0	Local whitelist	
3	18.05.2018 07:07	Connector 0	Local whitelist	
4	18.05.2018 07:22	Connector 0	Local whitelist	
5	18.05.2018 07:29	Connector 0	Local whitelist	
6	18.05.2018 07:51	Connector 0	Local whitelist	
7	18.05.2018 07:59	Connector 0	Local whitelist	
8	18.05.2018 14:10	Connector 0	Local whitelist	

Figure 58: Authorizations report

## EVENTS

Events report allows to see all the events that happened on the charging station in the chosen time frame. Application of various filters to find specific events is possible. Searches can base on the Priority, Category and Event type. All the data can be exported to CSV file.

Timestamp	Category	Event type	Connector	Priority
18.05.2018 08:49	Authorization state machine	User login with RFID		Info
18.05.2018 08:49	Authorization state machine	User login with RFID		Info
18.05.2018 08:49	Authorization state machine	User login with RFID		Info
18.05.2018 08:49	Authorization state machine	User login with RFID		Info
18.05.2018 06:50	Authorization state machine	User login with RFID		Info
18.05.2018 06:50	Authorization state machine	User login with RFID		Info
18.05.2018 06:50	Authorization state machine	User login with RFID		Info
18.05.2018 06:50	Authorization state machine	User login with RFID		Info
18.05.2018 06:50	Authorization state machine	User login with RFID		Info
18.05.2018 06:50	Authorization state machine	User login with RFID		Info

Figure 59: Overview of charging station events

## 7

## PROBLEMS DIAGNOSIS

If experiencing problems, the “Diagnostics” menu can be used to identify them. There it is possible to download logs, which can be sent to the operator to check what is wrong with charging station. Also, basic information about the charging station can be obtained there:

- Model
- Serial number
- Hardware version
- Software version
- CC hardware version
- CC driver version
- CC firmware version

“Diagnostics” can also be used to upgrade firmware, restore data and backup the charging session data and reset charging station remotely.

Backup configuration gives operator option to restore charging station to the same configuration, if something malfunctions with the system, and charging station needs to be restored to default settings.

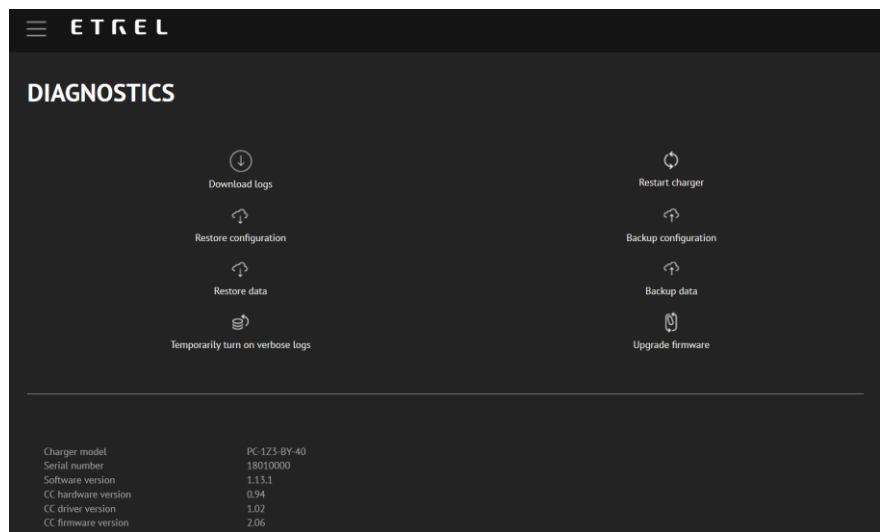


Figure 60: Diagnostics menu

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