ΕΤΓΕΓ

ELECTRIC VEHICLE CHARGING STATION

ETREL INCH

CONFIGURATION GUIDE

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1

GENERAL CONFIGURATION INFORMATION

Etrel Inch 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.

<u>SIGN IN</u>

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.

Ξ ΕΤΓΕΙ		
	Email	
	Password	
	Login	

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.

≡ E	ΤΓΕΙ	
Ø	Charger configuration Charger mode Web interface access GUI settings EVSE's configuration Regional settings	~
8	User My profile My vehicle Local users Charging authorization	~
୍	Connectivity Ethernet connectivity WiFi connectivity GSM connectivity PLC LAN connectivity Central system connectivity Smart home/building connectivity	~
\overleftrightarrow	Power management Building power limits Power cluster configuration Energy prices Frequency control Building renewables	~
	Advertising Advertising	~

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.

\equiv	ETREL
$\widehat{}$	Dashboard
තු	Configuration
Q,	Diagnostics
=	Reporting
	Events
	Authorizations
	Sessions
	Deutsch
\checkmark	English
	slovenščina
\leftarrow	Logout

Figure 4	Changing	the	language
inguic in	0.00.00.00		i anguage

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.

≡	Ε.	ΤΓΕΓ	
	Ø	Charger configuration Charger mode Web Interface access GUI settings EVSE's configuration	~
	ප	User My profile My vehicle Local users Charging authorization	~
	ଡ	Connectivity Ethernet connectivity WiFi connectivity GSM connectivity PLC LAN connectivity Central system connectivity Smart home/building connectivity	~
		Advertising Advertising	~

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.

Charger mode			
	Mode	Home charger user by single user Private/Public charger used by multiple users Custom	
		Save	Cancel

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.





Web interface access		
Anonymous view access enabled		
Number of results: 2		Search
Email	🕌 Role	11 It
community	Operator	1 W
Show 10 entries		« (1) »
	Add new	Cancel

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.

Web operator	Close
Email	Email
Password	Password
Blocked	Blocked (prevent access)
Role	◯ View
	Operate
	Admin
	Save

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.

Web interface access		
Anonymous view access enabled		
Number of results: 1		Search
Email	↓ ≟ Role	11 It
root@etrel.com	Administrator	0 Ú
Show 10 entries		« (1) »
	Add new	Cancel

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.

Regional settings			
Supported languages			
	 English 		+
	Deutsch	R	++
	✓ slovenščina	R	+ +
	Føroyskt	R.	†
			Upload custom translations

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.

Upload translat	tion file	\times
		Close
elect translation file		
Choose File No	file chosen	
Culture code	Please use culture code as defined by ISO standard. Format xx-XX has to be used. Example:en-GB or fr-CH	
	Upload	

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.

Time settings		
Time zone	CentralEurope	
Charger time	09.07.2018 08:15:39	Synchronize time
Your computer time	09.07.2018 08:15:40	

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.

Currency			
Currency used when displaying energy prices	\$		
	Save	Cancel	\neg

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.

Behavior before and at end of charging		
	Allow user to enter departure time	
	Display charging prices if provided	
	Enable advertisements	
Show advertisment for	8	s of inactivity

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.

EVSE's configuration		
EVSE 1		
Friendly EVSE code		
Parking sensor type	None	
Enable pause charging	🔿 Yes 🔘 No	
Connector is connected to	Single phase Three phase	
Connector phase L1 is connected to installation phase	L1	
Connector 1 - Type 2 plug		
Charging standard	lec61851	
Max. charging current	32	
Enable plug locking	🔘 Yes 🔵 No	
	Save	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.

My profile				
	rst name	Davorin		
La	ast name	D		
		Save) (Cancel





Figure 21: Adding the user

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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.

Local users			
Number of results: 1		Search	
Name		1	1t It
Davorin D			🖃 🖨 🔟
Show <u>10</u> entries			« (1) »
	Add new	Cancel	

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.

User identifications					X Close
Туре	Number		Status		
PIN code	#3546		Active	1	Ŵ
PIN code	#1234		Active	ľ	Ŵ
		Add			

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.

User identifications	X Close
Register card now by swiping it	
Get card from past failed authorizations	
Add it manually	
Back	

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.

User identifications		
		Close
Туре	RFID	~
Status		~
Number	Number	
Code	Code	
Expiration date		
	Save Back	

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.

My vehicle		×
		Close
Brand	ВМЖ	~
Model	i 3	~
Version	 [i3	~
Vehicle characteristics		
Battery capacity	22	kWh
Vehicle average range	130	km
On board AC charger characteri	istics	
Max charging power AC	Max charging power AC	km
Number of phases	Single ○ Three	
Min current	6	A
Max current	32	A
Preffered charging standard		~
	Enable custom vehicle characteristics	
	Save	

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.

Charging authorization		
Authorization Type	Plug And Charge	
Plug and charge tag id	0000000	
Authorization timeout	30	
	Time in which charger expects that user will begin with charging after authorization	
	Save	

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 identifie	upported identification Types		
PIN	Enabled		
	Enabled		
APP	Start code	CH*REPE0001*13	
	Download link	http://dsadasda	
	' <u> </u>		

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.

Central system behaviour		
	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	
Cable disconnect timeout	600	
	Time after which charger will notify central system that cable is still connected after charging has stopped	
	Save	

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.

ΞE	TREL		
	Charger configuration Cwarger model (1968) Interface Incents (GUI sectrops (EVSE's configuration	Advertising	
	User Hy profile (Hy website (Locat users) Changing eutomations	Manday	rip X Upost Date
	Connectivity Dimensional Connectivity SUFF connectivity PLC LAN connectivity Central system connectivity Smart home,building connectivity	© Necureday © Thursday © Thursday	From time 120000
	Ethemet connectivity	Storday	
	Central system rangertivity	Santa State	14:00:00
			C On LCD
	Advertising Advertising		
			+ Actions abortioned
			Canoil

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.

≡	E	ΤΓΕΙ		1				X	⊿ ∆
0		Charger configuration Charger mole 1984 interfere accare (520 settings 1952's configuration			Ethernet connectivity				
		User Hy genflie (Hy vehicle) Lacat users (Changing authorization			Hest mane				
ę		Connectivity Ethernic connectivity VMF connectivity GDM connectivity P.C. UAII connectivity Central system connectivity Smart homobuliding connectivity			IPv4 DHKP	Chandle DHCP			
		Ethernet connectivity			015	Citizin DHS server autometically			
		GSM connectivity				Anna and an anna and an and an and an			
					86	Country and an and a sumation of the			
						Save	Can	sel	
p	2	Advertising Advertising	Ŷ						

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.

Ethernet connectivity	
Host name	g7
IPv4	
DHCP	Enable DHCP
IP address	192.168.16.112
Net mask	255.255.255.0
Gateway	
DNS	Obtain DNS server automatically
Primary DNS	
Secondary DNS	
IPv6	
DNS	Obtain DNS server automatically
Primary DNS	
Secondary DNS	
	Save Cancel

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

Wi-Fi connectivity	Close
Etrel-Dev Connected	~
Etrel-Prod	~
Etrel-Guest	~
Etrel-Mng	~
Etrel-Mng	~
Etrel-Guest	~
Etrel-Dev	~
Etrel-Prod	~
Scan for 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).

Wi-Fi connectivity	
SSID	Etrel-Guest
Password	Password
Authenication type	· · ·
Encryption type	~
	Connect Back

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.

Wi-Fi connectivity		X Close
Etrel-Dev Connected		^
Network Status Signal quality IP address BSS id Uptime Authentication type Encryption type Primary dns	Etrel-Dev Connected 76 % 172.25.2.159 8A-8A-20-81-53-EC 00:00:30 WPA2-PSK Aes 172.30.0.10	

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.

≡E	TREL						
	Charger configuration Charger mode Web Instriker accom GUI setting: 1952's configuration		Local users				
8	User	Ŷ	Showing 0 to 0 of 0 entries				
	Local users		Name		4		1t
			No data available in table				
	Connectivity Provide Interactional (NV) connectivity (ICM connectivity (IVC LAM connectivity Connect system connectivity) Smart homotholding Connectivity						
	Advertising Advertising			Add new		Cancel	

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

GSM connectivity		
APN	telekom.si	
Authentication	СНАР	
Username	mobitel	
Gesto		
Pin		
PING server	8.8.8.8	
PING interval	60	
Service mode	Automatic	
	Save	



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

≡ E	ΤΓΕΓ		I			Ŵ	
	Charger configuration Charger mole (Inits instrince access) (24) settings (15%3's configuration		Local users				
8	User	Ŷ	Showing 0 to 0 of 0 entries				
	Local users		Name		н		11
			No data available in table				
	Connectivity Entered connectivity (WH connectivity (GDH connectivity / PLC LAN connectivity (Central system connectivity (Smart home/huilding connectivity						
	Advertising			Adé new		Cancel	





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.

Central system connectivity							
	Communication with central sytem enabled						
Charge point identity	67009						
Primary central system							
Protocol type	OCPP 1.6 50AP ~						
Central system endpoint url	http://17225.2.160.9090/cs						
	Test connection						
	Add auxiliary central system						
Charger OCPP SOAP services							
	Use SSL						
	Limit access from certain IP's						
Additional settings	•						
	Save Cancel						

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.

≡	E	ΤΓΕΓ	
ľ	Ø	Charger configuration Charger mode Web Interface access GUI settings EVSE's configuration Regional settings	~
٤	ይ	User My profile My vehicle Local users Charging authorization	~
ç	ව	Connectivity Ethernet connectivity WiFi connectivity GSM connectivity PLC LAN connectivity Central system connectivity Smart home/building connectivity	*
7	R∕-	Power management	^
		Building power limits	
		Power cluster configuration	
		Energy prices	
		Frequency control	
L		Advertising Advertising	~

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.

Building power limits						
Max. building currents						
	L1 30					
Load Guard						
IP Address	✓ Is Load Guard installed					
Serial No.	81					
Communication status					Pair Load G	Silvard PLC
Additional security limits						
Max. charging currents when communication with Load Guard fails	L1 10					
	2	ave		Cancel		

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/2 58867203/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.

ETREL Se	lected device: SN 12	Select another device Close
Active energy Produced L1: 0.600354 kWh 2.167490 L2: 0.125342 kWh 6.404597 L3: 0.080083 kWh 1.672967 total: 0.796513 kWh 10.25578	Produced KVh L1: 0.011477 KVrh 5188420 KVrh KVh L2: 0.09908 VVrh 0.011516 KVrh KWh L3: 0.000040 KVrh 0.044174 KVrh KWh L3: 0.000040 KVrh 0.044174 KVrh 8 KWh total: 0.012523 KVrh 4.553647 KVrh	LOAD GUARD COMMUNICATION SETTINGS © dynamic ● static
Address Address Current Address L1: 0.000 A -0.005 K L2: 0.000 A -0.014 K L3: 0.000 A -0.022 K frequency: 49.97 Hz temperature: 30 °C	wer Readlive power Voltage W -0.011 KWAr 239 50 V V 0.002 KVAr 235 95 V V 0.000 KWAr 239 77 V V -0.009 KWAr	IP: 172.25.2.225
Current time: 11.07.2018 07:45:45.2 Device time: 11.07.2018 07:45:41.0 Up time statistics: -2015:00:28	Sync device time	MASTER CHARGER COMMUNICATION SETTINGS
Communication status with chargers: Master charger Connection establish IP address: 172.25.2.131 Serial: 18200034	(cilick save changes for changes to take effect)	Measurements report interval: 250 💽 ms Charger redundancy supported: (charger 2 enabled) Save changes Currents

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.

Master charger Connection establish	Communication status with chargers:	(click 'save changes' for changes to take effect)
IP address: 172.25.2.131	Master charger	
IP address: 172.25.2.131	Connection establish	
E-si-ly dependent	IP address: 172.25.2.131	
Serial: 18200034	Serial: 18200034	

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.

Power cluster configura	Power cluster configuration						
Configure this charger to be a part of the	ie cluster						
	Connect this charger to the cluster						
Primary master address	127.0.0.1						
Secondary master address	127.0.0.1						
Max current output when communication with master fails							





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 writting 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.

Energy prices					
Tariff title					Ú
Period in year limit	Valid whole year	From day in	year	To day in year	
Weekdays limit	Valid all week days	From week	day ~	To week day	
Hours limit	Valid whole day	From time		To time To time	
Energy prices	Consumed energy price Consumed energy price		Produced energy price Produced energy price		
					Add new tariff
				Cancel	

Figure 54: Energy prices settings

FREQUENCY CONTROL

Etrel Inch 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.

Frequency power management			
Enable frequency power management			
Start when frequency under		Decrease output current to	Ŵ
			A
Delay start (when persistently under)		Delay end (when persistently above)	
			+
			Add new frequency limit
	Save	Cancel	

Figure 55: Frequency power management settings

REP

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.

SESSIONS Charging from 06.07.200	18 Ourging Io 10.072018					<u>↓</u> bopertu CiV	→ Apply films
Identification source $$	identification type \lor Stop reasons \lor		Select user				× Case tites
Number of results: 15							
Session ID	Session time	17 Connector	1 User / identification	Energy and power	Status		
	Started: 22.05.2018 12:24	Connector: 1	Local whitelist	74,896.00 kWh			

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.

AUTHORIZATIONS					
Charging from 06.072018 Charging to	80673018				⊥ → Deports CN ⁴ Apply Rises
identification source $$	Authorization status v Identification code	Select user			× Cuer Ner
Number of results: 74					
Authorization ID	Authorization time	11 Connector	11 User / identification	Status	41

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.

E Ε Τ ΓΓ Ε L EVENTS Ονικήα δια Ολαλήση Το Ονικήση Το	1687508			Q ₀ △ ○ Logica to CV Hore series Apply Bars
Number of results: 3771				
Timestamp	Category	Event type	Connector	Priority
18.05.2018 08:49	Authorization state machine	User login with RFID		into
18.05.2018 08:49	Authorization state machine	User login with RFID		into
18.05.2018 08:49	Authorization state machine	User login with RFID		info
18.03.2018 08:49	Authorization state machine	User login with RFID		into
18.03.2018 06:50	Authorization state machine	User login with RFID		into
18.05.2018 06:50	Authorization state machine	User login with RFID		info
18.03.2018 06:50	Authorization state machine	User login with RFID		into
18.05.2018 06:50	Authorization state machine	User login with RFID		into
18.05.2018 06:50	Authorization state machine	User login with RFID		Info

Figure 59: Overview of charging station events

DIAGNOSTICS

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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.

E ετκει		
DIAGNOSTICS		
D Rest Temporari	(U) owntoad logs cf cf cr cr cr cr cr cr cr cr cr cr cr cr cr	ی Restart charger ج Backup configuration ج Backup data گ Upgrade firmware
Charger model Serial number Software version CC hardware version CC driver version CC firmware version	P⊂1Z3-BY-40 18010000 1.13.1 0.94 1.02 2.06	

Figure 60: Diagnostics menu

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