

ETREL INCH

USER MANUAL

Document version: 0.1



Etel INCH charging station has been designed and tested in accordance with up-to-date international standards. The charging station is compliant with IEC 61851-1 international standard which defines conductive AC electric vehicle charging (Part 1, Part 21 and Part 23) and supports Mode 3 charging for safe recharging of any standard electric vehicle.

Use the charging station exclusively for the purpose intended.

Preparation of charging station installation site and installation of Etel INCH are described in separate documents. In this document it is predisposed that charging station is installed properly and working.

INTENDED USE

Etel INCH charging station is intended only for charging of electric vehicles and should not be used to charge any other appliances or devices or for any other purposes. The manufacturer accepts no responsibility for damage or injuries resulting from incorrect installation or inappropriate use of the product.

Maintenance

- Charging station can be maintained and repaired by qualified personnel only.
- Charging station's power supply should always be switched off during the maintenance and repair.
- Avoid hazardous risks. Only the manufacturer, an authorized service technician, or technically qualified personnel may replace damaged charging station or its components.

Operation



- Do not operate your charging station if there is visible damage to the unit or charging cable. Call manufacturer's or reseller's support department for advice how to proceed.
- Do not put fingers into the charging connector.
- Do not operate the charging station with wet hands.
- The charging station manufacturer cannot be made liable for damage or injury caused by improper handling, installation, or use of the product.
- Any usage of the product not covered in this document is not allowed and could cause injury or death.

2 | ETREL INCH DESCRIPTION

Etrel INCH is a smart charging station that can predict your EV charging habits and help you charge the car by the time you need it, at the lowest possible cost. Charging station comes with the LCD screen that guides you through the charging process and provides important charging information. Charging station comes with several connectivity options (including PLC, WIFI, GSM and Ethernet) and open protocol support and can be seamlessly integrated in your smart home.

To connect your EV Etrel INCH charging station either comes with the socket or cable. Depending on the type of charging station.



Figure 1: Etrel INCH GUI



Figure 2: Etrel INCH with socket



Figure 3: Etrel INCH with cable

1. LCD screen
2. Status light
3. Settings button
4. Confirmation button
5. Socket
6. Maintenance doors
7. Charging cable

3 | IDENTIFY YOUR PRODUCT VARIANT

Etrel INCH has multiple variants that differ based on connector type and connectivity option. In order to identify your charging station, you have two possibilities. Either look on the manufacturer sticker or on the Web interface in Diagnostics menu. Model number is located on all stickers. Identification of your charging station is sometimes needed by the support, so they can identify potential issue, if you are experiencing some problems with charging station.

Charging station or its packaging has 3 stickers. Sticker with basic information is located on the delivery package, one at the back of the charging station has all the technical information and last one is located inside the side maintenance doors, containing information about connectivity. Regular user will get all the needed information on the sticker located on the inside of maintenance doors.



Figure 4: Sticker located on the charging station packaging

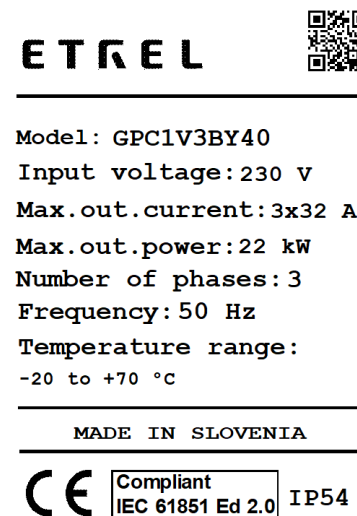


Figure 5: Sticker with electrical information located at the back of the charging station

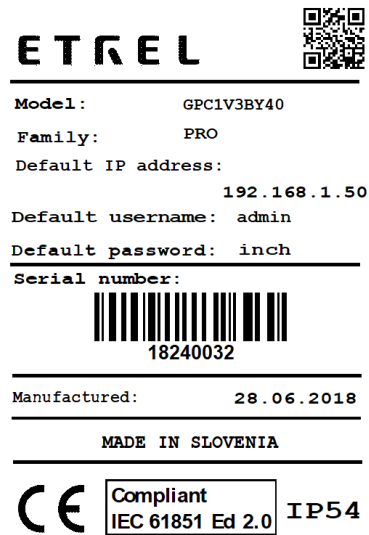
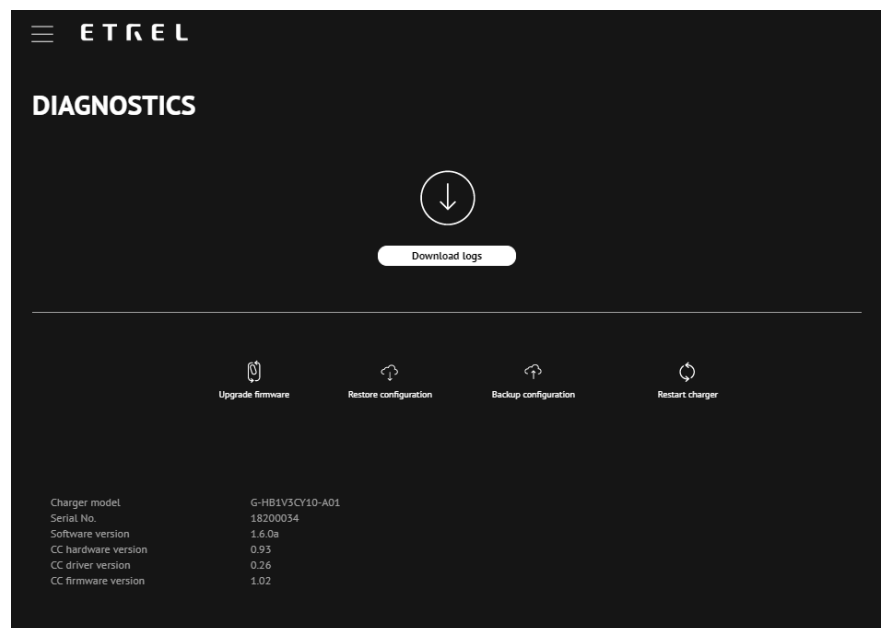


Figure 6: Sticker with connectivity information located inside the maintenance doors

On the web interface you can obtain Etrel INCH charging station information about charger model, serial number, software version and version of cc hardware, cc driver and cc firm ware. How to connect to web interface is described below in the chapter 4 Web interface.



4

OPERATION OF CHARGING STATION AND CHARGING PROCEDURE

FIRST CHARGING STATION POWER UP

When you power up the charging station for the first time it can take several minutes for station to get ready to start using it to charge EV. Charging station is powered up automatically when it is connected to the electricity. In the table below, you can see all the possible events that can occur when you start the station and what should you do in case something is wrong.

| STATUS LIGHT | NORMAL OPERATION | PROBLEM | SOLUTION |
|-----------------------------|---|--|--|
| Fast blinking green light | Charging station's backup batteries are charging. At the first power, up it can take up to 10 min. If backup battery is full green light will blink slowly. | If the light is blinking fast more than 10 min there might be a problem with the backup battery. | Inform the support about the status of your charging station. |
| Slowly blinking green light | LCD screen is preparing to turn on. Heating system is trying to heat the LCD before it is turned ON. | If the green light is blinking slowly for more than 10 minutes and the LCD hasn't been turned on, there might be a problem with the LCD. | You should call the support. |
| Steady glowing green light | Charging station is ready to be used. | / | / |
| No lights | / | If charging station is not responding after it is powered up, something might be wrong with connection. | Check the protection elements if either RCD or overcurrent protection has been tripped. Activate the protection. If nothing helps call the support or installer. |

| | | | |
|-------------------------|--|---|--|
| Green light is blinking | <p>LCD is turned on and charging station is ready to be used.</p> <p>When the LCD starts the logo will be first displayed and after that you can start using the charging station.</p> | LCD is turned on but freezes and is unresponsive. | <p>Try resetting the charging station. If the problem repeats there might be a problem with the software. You should call the support.</p> <p>You can read the resetting procedure in chapter 6 Troubleshooting.</p> |
|-------------------------|--|---|--|

YOUR FIRST CHARGING SESSION

When the charging station is ready to be used you can simply follow the procedures described on the Etrele INCH's LCD screen. You can choose between two charging modes:

- Fast charging (default)
- Interactive charging

Charging modes are chosen during the charging session.

During the fast charging your EV will be charged with the max available charging power as fast as possible. Max power is set by the installer based on the grid capabilities where charging station is installed.

When Interactive charging is chosen charging schedule will be modified based on the inserted departure time or if it is not inserted based on historic session data. Historic data is used from the first charging session onward. More charging session means more accurate session prognosis and schedules. Charging schedule will be created based on electricity prices, other loads and PV production to make sure EV is charged in appropriate time while taking in consideration other constraints.

Charging procedure

Step1: WAKE

When you come to the charging station its LCD screen will likely be in the screen saver mode. You can wake it up by simply tapping the screen.



Figure 7: Screen saver

Screen saver mode can be chosen in the charging station's web interface. Three options exist: turned on all the time, it can be blinking or turned off until touched. Description how to change this setting can be found in the Etrel INCH configuration guide.

Step2: AUTHORISATION

Depending on the charging station authentication mode chosen different screens will be shown that will need different actions from user in order to continue with the charging session. What authorization is allowed to be used can be setup in the charging station's web interface Configuration menu. Procedure is described in the document Etrel INCH configuration guide.

Plug and charge mode

In the plug and charge mode user will see message to insert the cable and start the charging session.

Needed authentication

If authentication is needed you can simply press the authentication you will use to authorize and continue with the charging session.

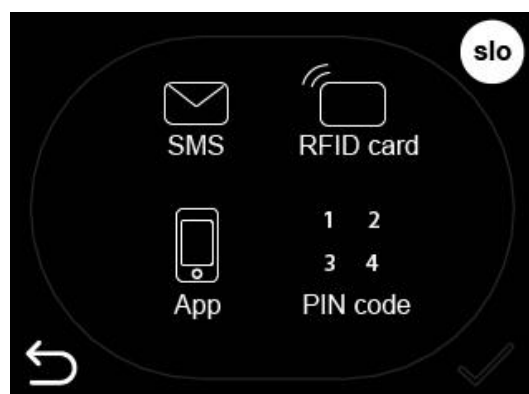


Figure 8: Chose authorisation method

- a. Insert pin

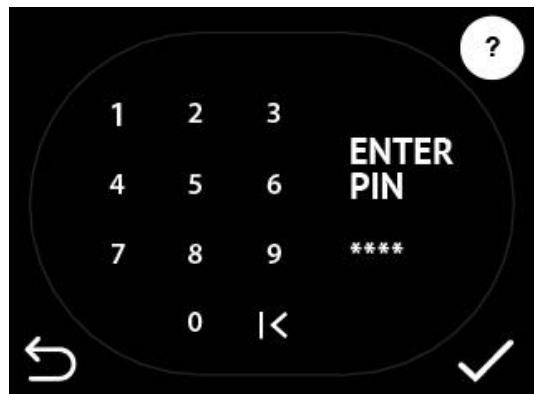


Figure 9: Insert PIN code

- b. Use mobile app to authenticate

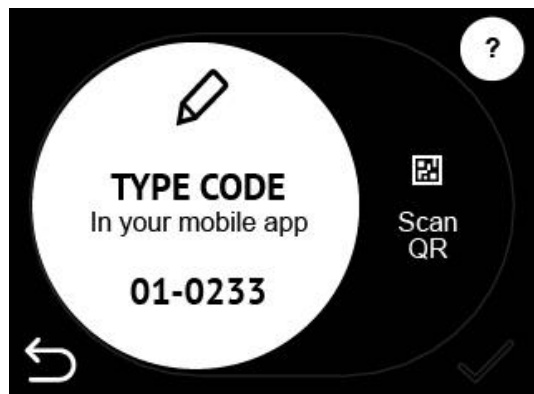


Figure 10: Insert charging station's EVSE code



Figure 11: Scan QR code

You can either type the code of the station to your mobile app or scan QR code with mobile.

c. Swipe RFID card

By simply swiping the RFID card below the LCD touch screen where the RFID module is installed you can authorize on the charging station and begin the charging session

Step3: CONNECTING THE CABLE

After the successful authorization you are going to see the screen with the description to connect the cable.

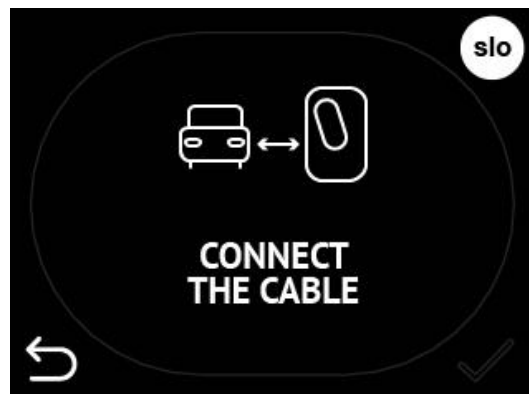


Figure 12: Connect the cable to charging station and EV

If the cable is connected before the authorisation this screen will be left out and after the authorisation next screen "Waiting for vehicle to respond" will be shown.

When the cable is connected charging station will start charging as soon as EV responds.



Figure 13: Charging station is waiting for EV to responds and starts charging

Step4: DEPARTURE TIME INPUT

As soon as the charging session begins you will be presented with the screen to input your departure time. Departure time presented is the one calculated by the charging station based on you previous charging habits. You can change the presented departure time to make sure you EV is charged.

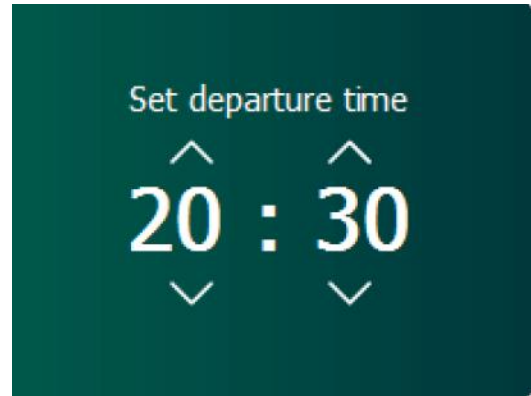


Figure 14: Set the departure time

When the departure time is set or default setting is let through charging data will be shown to you. What charging information is shown to you depends on the settings in the configuration of Web interface. Operator chooses which screens will be displayed.



Figure 15: Example of shown energy on the Etreel INCH LCD screen

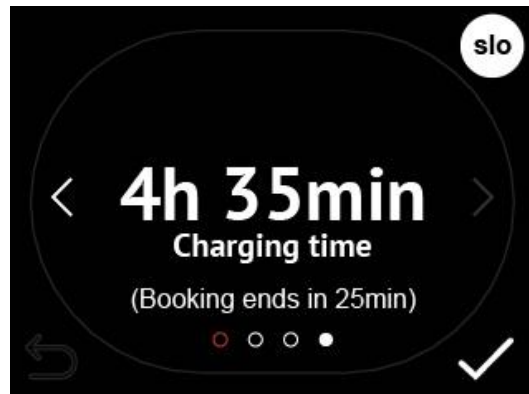


Figure 16: Display of charging time

Check status of the charging station

In the web interface you can check information of the current session. You can change the departure time using web interface by pressing the »Interactive mode« button. Procedure how to access this screen is described in the chapter 4 Web interface.

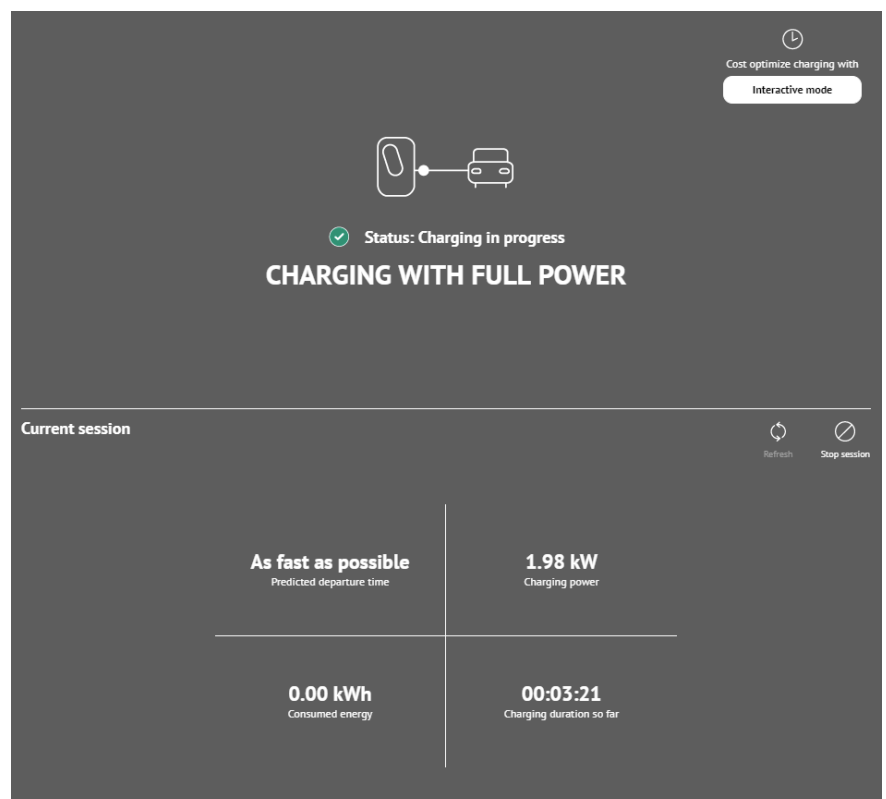


Figure 17: Current session information displayed in the web interface

Stop the charging session

You are able to stop the charging station locally or remotely.

Locally

When you are next to charging station, you can simply end the charging session directly in your car and by disconnecting the charging cable.

Remotely

If you want to do this remotely you can use Web interface. On the picture above, you can see the button “Stop session” in the middle on the right side. When pressing this button new window will pop up to confirm the action. After that the session will stop. In similar fashion you can stop the charging using app on the mobile phone.

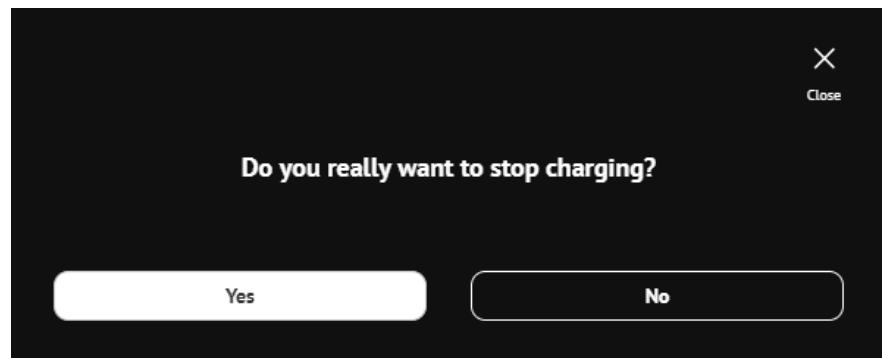


Figure 18: Confirmation window to stop the charging session using web interface

5 | WEB INTERFACE

Charging station’s web interface allows you to connect to the charging station platform to configure its settings as well as check the charging session and station data, check the connectivity status and errors description when they occur.

CONNECT TO WEB INTERFACE

Users can connect to the charging station web interface using the charging station IP address. Default IP address can be found on the information sticker on the inner part of the maintenance doors. IP of the charging station can be manually changed. If you did this and forgot the new created IP you can always revert back to the default IP by resetting the charging station to the manufacturer settings (procedure is described in chapter 6 Troubleshooting).

When IP address is written in the internet browser and the computer is in the same local network you will be connected to the web interface.



Figure 19: Insert the default IP into the browser to connect to web interface

Ping charging station from computer in same network

Windows

To determine if your computer is in the same network as charging station ping the station using the CMD command ping with the IP of the station. You can change computer network in the network settings.

To ping the station, connect to Command Prompt by searching for it in windows search functionality.

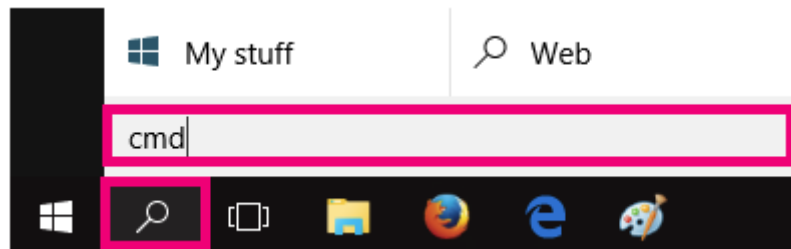


Figure 20: Search for CMD using windows search functionality

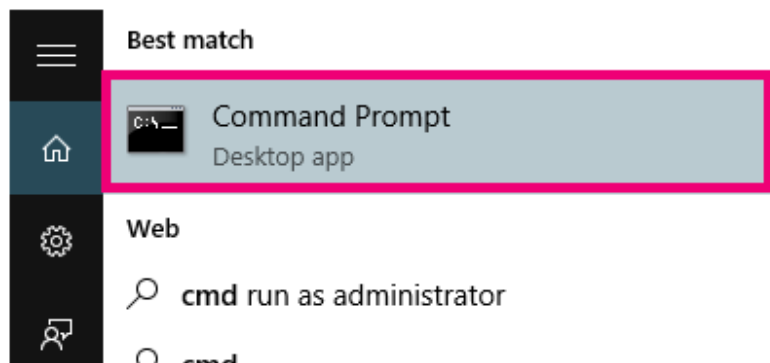


Figure 21: Open Command Prompt

In the Command Prompt write ping and IP address you would like to ping (eg. ping 192.168.1.190).

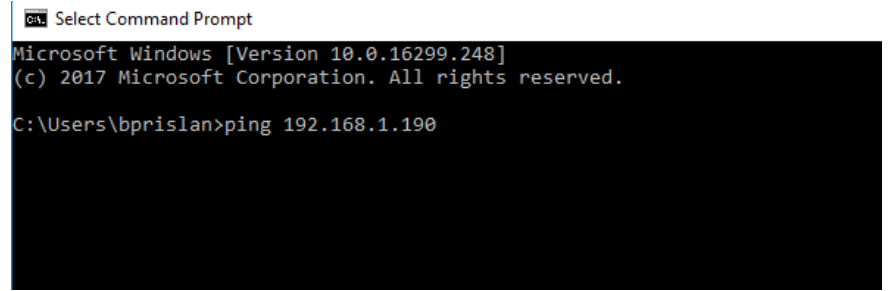


Figure 22: Ping the charging station IP address

If the ping is not successful your computer might be in different network segment and you can change the segment in network settings to the one of the charging station.

Apple computer

If you are using apple computers you can ping the station using Terminal. You can access it by going to the "Applications" where you select "Utilities".

Search for "Terminal" and run it.

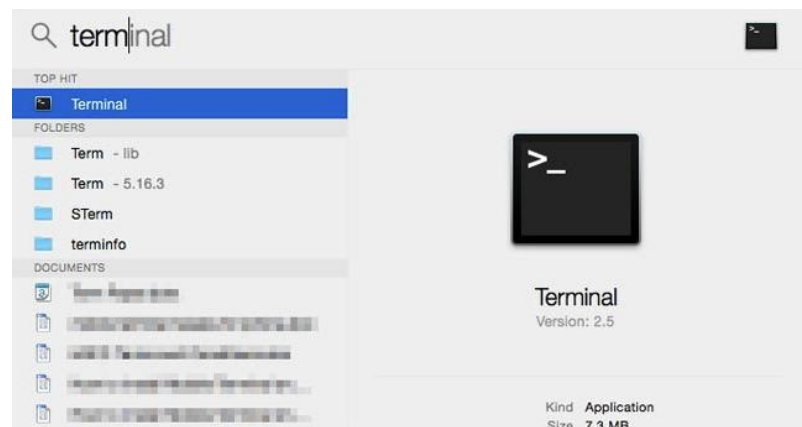
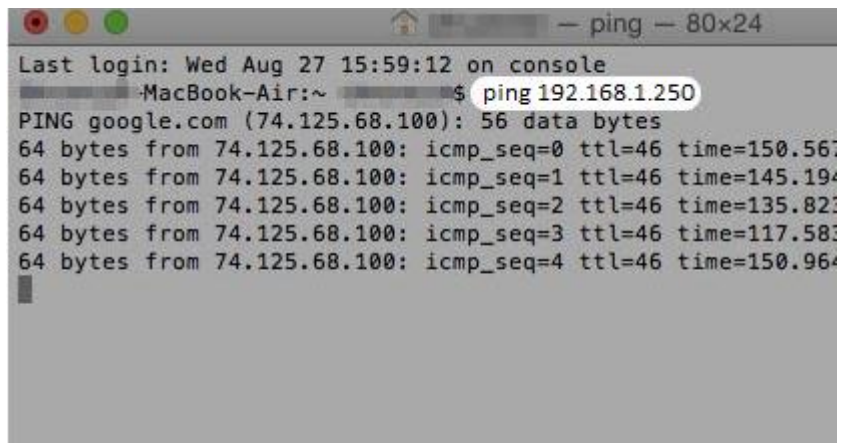


Figure 23: Run Terminal software

When Terminal is running write ping and IP (eg. ping 192.168.1.250).



```

Last login: Wed Aug 27 15:59:12 on console
MacBook-Air:~ $ ping 192.168.1.250
PING google.com (74.125.68.100): 56 data bytes
64 bytes from 74.125.68.100: icmp_seq=0 ttl=46 time=150.563 ms
64 bytes from 74.125.68.100: icmp_seq=1 ttl=46 time=145.194 ms
64 bytes from 74.125.68.100: icmp_seq=2 ttl=46 time=135.823 ms
64 bytes from 74.125.68.100: icmp_seq=3 ttl=46 time=117.583 ms
64 bytes from 74.125.68.100: icmp_seq=4 ttl=46 time=150.964 ms

```

Figure 24: Ping charging station by writing ping and charging station's IP

Change the computer network settings

If you can't ping charging station using your computer you won't be able to connect to the charging station's web interface. You will have to change your computer's IP and network settings in order to configure the charging station.

Windows

In order to change the network of your computer in Windows OS you should locate your network settings. They are located in the Control panel. How to locate the settings is shown below in the figure.

Once you find the Internet protocol Version 4 (TCP/IPv4) press "Properties" this will show you a new window where you can type new IP address of the computer that is in the same network segment as the station's IP.

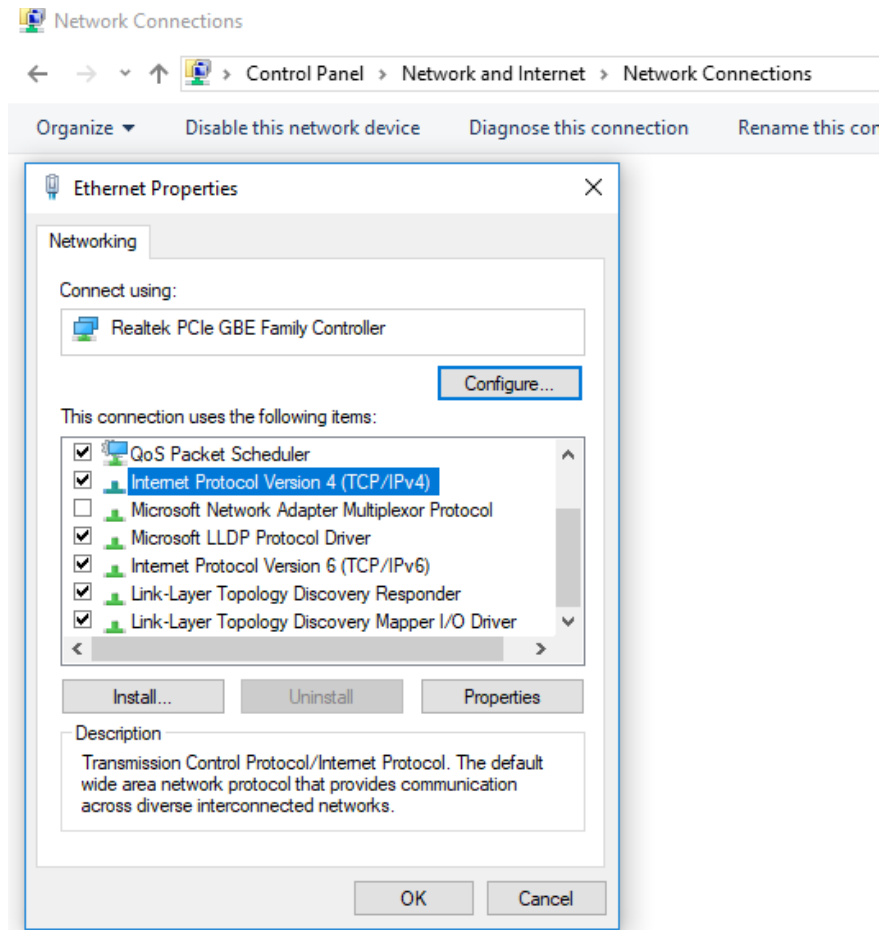


Figure 25: Locate Internet Protocol Version 4(TCP/IPv4) in network properties

If the station default IP is 192.168.1.250 you should change IP address to 192.168.1.1. Last bolded number can be random as long as it is not used by some other appliance in the network. For the subnet mask you should write 255.255.255.0. You will now be able to ping the station as it is shown above.

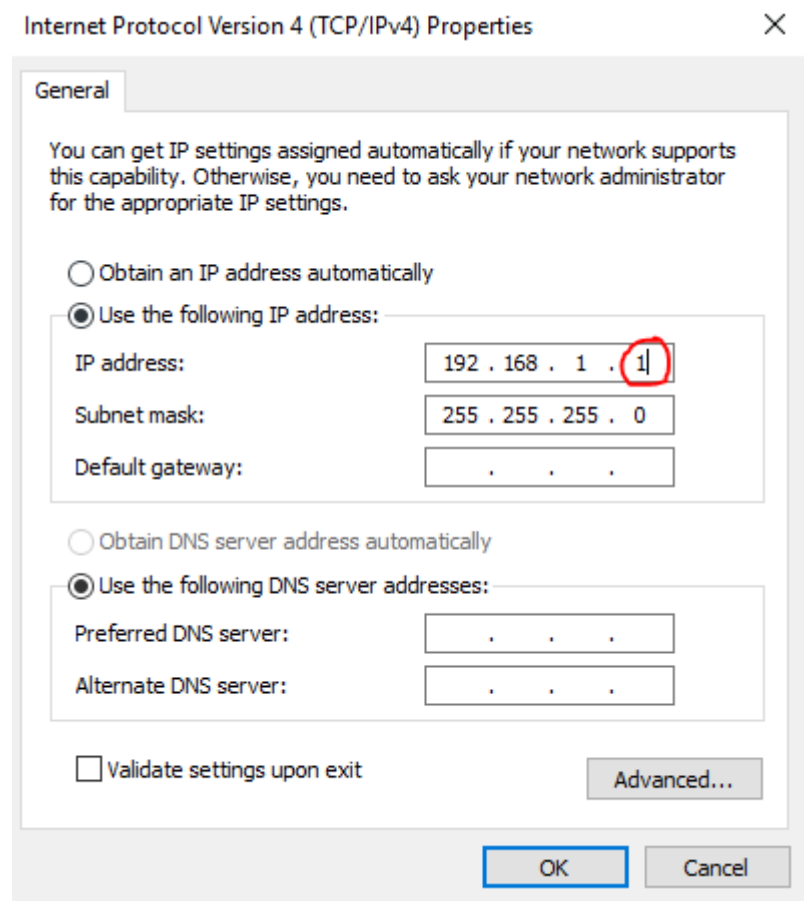


Figure 26: Change the IP of your computer and subnet mask

Apple Computer

To change the IP settings of your Apple computer press »Apple« button and go to »System preferences«



Figure 27: Locate System Preferences

Click on the Network icon.



Figure 28: Click Network icon

Click on the Wi-Fi or Ethernet connection (Depends on which one is used) and press Advanced button in the bottom right.

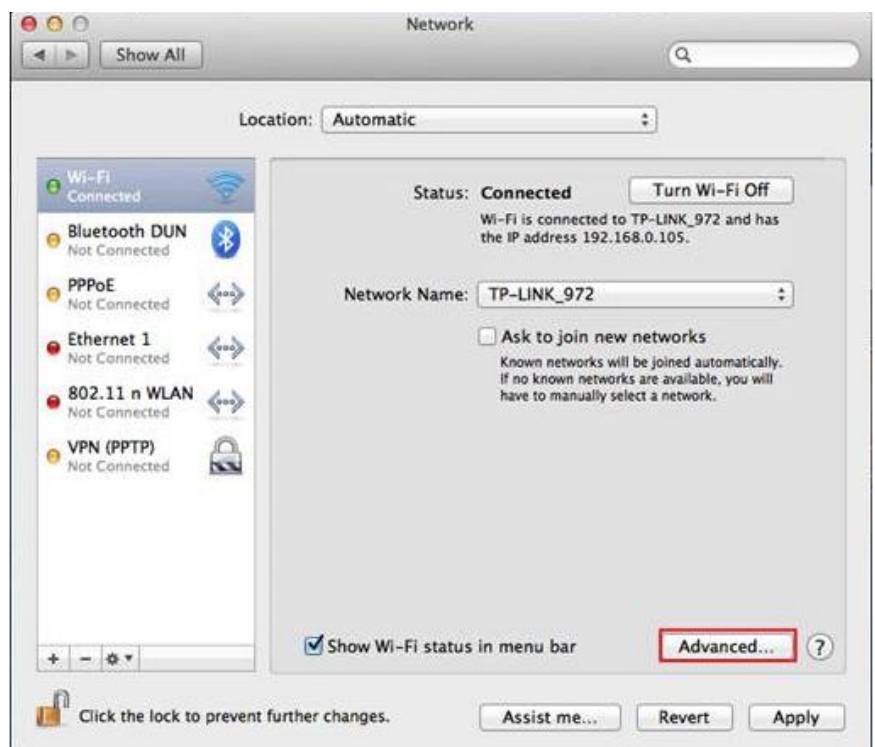


Figure 29: Go to advanced settings of internet connection you are using

Choose TCP/IP. In the Configure IPv4 option choose Manual and change IPv4 Address to 192.168.1.1, where last bolded number can be a random number as long as it is different than 250 (used by station) and is not used by any other appliance in the network. Set subnet mask to 255.255.255.0

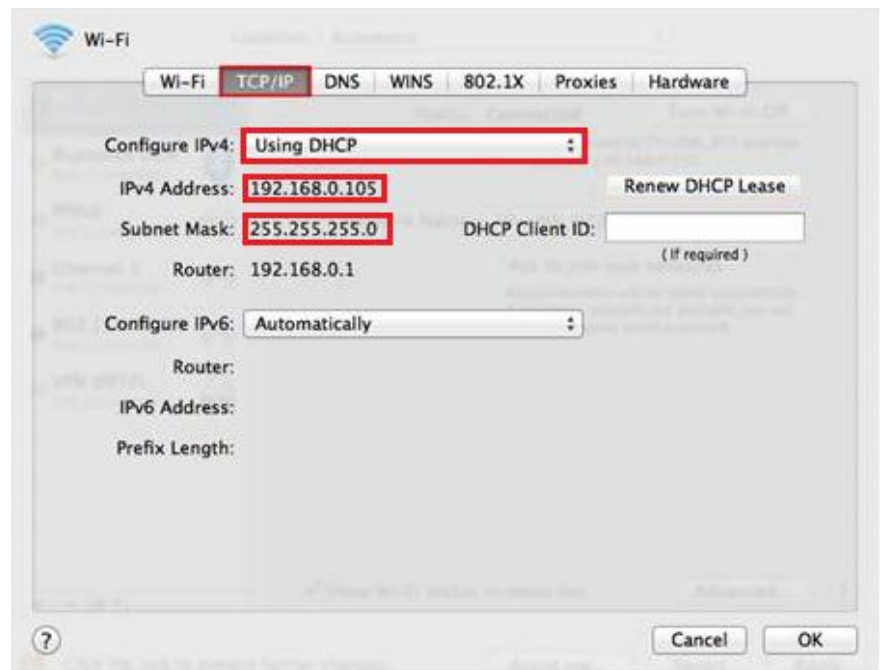


Figure 30: Set network settings

Using DHCP for connection

If the charging station uses DHCP (Dynamic Host Configuration Protocol) this will be written on the sticker located on the inside of the side maintenance doors. When DHCP is used router automatically assigns IP address to the charging station connected to it. To acquire DHCP address you will have to hold the charging station reset button for 4 s until the first beep sound is heard. Address will be displayed on the LCD screen. (detailed procedure described in chapter 6).

USING WEB INTERFACE

In the web interface each type of user has different rights what he can see and edit in the web interface. Operators will have biggest rights in order to set up all the configuration and connectivity settings. As a regular home user, you will have only basic rights that will allow you to see Dashboard and Diagnostics module.

Configuration of charging station using web interface and more detailed description of web interface is available in document Etrel INCH configuration guide.

Main dashboard

Main dashboard window allows you to see current power, cluster power if the charging station is part of the cluster, building power load, charging station availability and information about the last session.

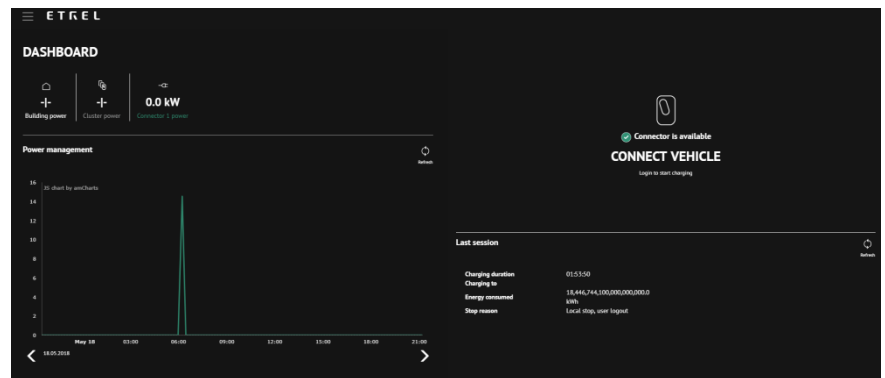


Figure 31: Web interface main Dashboard view

Last session status will be shown on the right screen. If anything went wrong during the session additional information can be acquired in the Diagnostics menu accessed using the burger menu.

Diagnostics

If you are experiencing problems you can go to the “Diagnostic” menu where you are going to be able to download logs, which can be sent to the operator to check what is wrong with charging station. You will also get basic information about the charging station:

- Model,
- Serial number,
- Hardware version,
- Software version,
- CC hardware version,
- CC driver version and
- CC firmware version.

“Diagnostic” module can also be used to upgrade firmware, restore data and backup your 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.

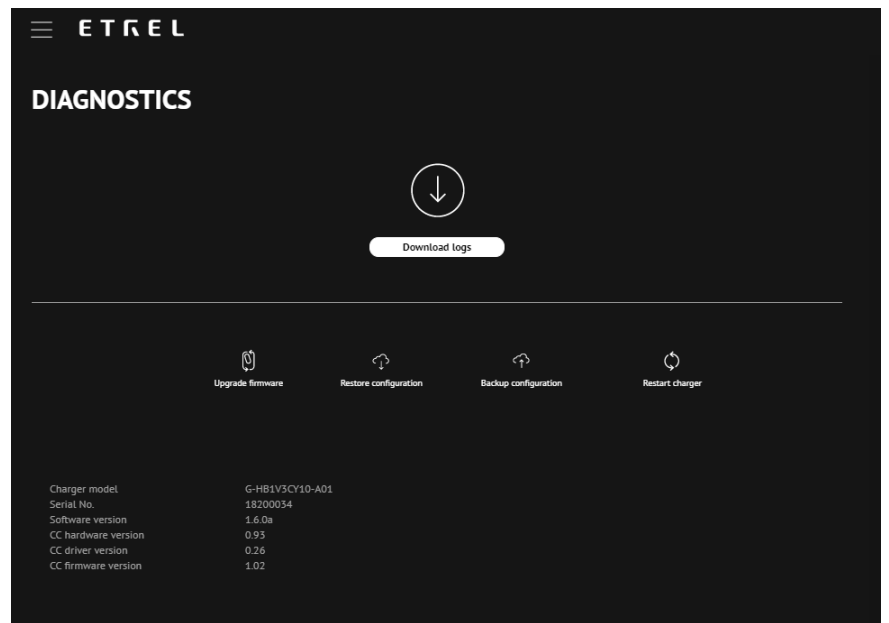


Figure 32: Diagnostics web interface module

Change the Web interface language

You are able to change the language of web interface by pressing the burger menu and selecting the language at the bottom left corner. Only languages supported by web interface are available.

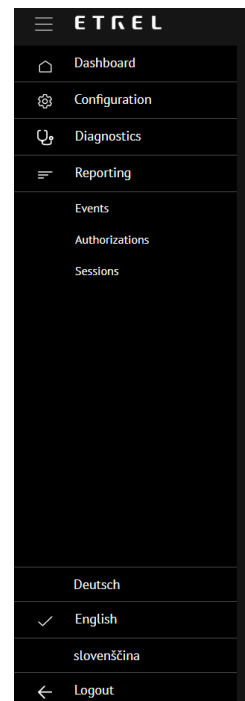


Figure 33: Burger menu with the language choices

6 | TROUBLESHOOTING

Etel INCH charging station provides you quick access to the side maintenance area to execute basic troubleshooting and to reset the charging station in case there are some problems. You are also able to reset the charging station straight from the web interface.

ACCESS TO THE SIDE MAINTENANCE AREA

Side maintenance area is protected by the maintenance doors. Depending on the type of Etel INCH charging station you are using, two different doors are available. One with the regular key lock and one with hex screw (2.5 mm). To access the area, you will need either key or a hex screw driver.

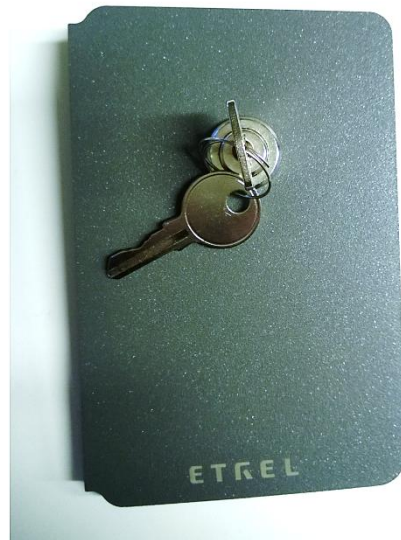


Figure 34: Maintenance doors with regular key lock



Figure 35: Maintenance doors with hex screw

On the inside of maintenance doors, you will find sticker with technical information including basic charging station information, model type and serial number. When support is contacted it is important that you know the charging station model type so the support can quickly help you solve the issue. This information can be gathered on the web interface in the Diagnostics menu.

RESETTING THE CHARGING STATION

Charging station can be reset by opening the side maintenance doors and pressing the button inside the maintenance opening.

If you hold the button 4 s the charging station will respond with the beep after which you will have options on the screen to check the IP address of the station or to reset the station. You can do the basic reset and factory reset, which will restore charging station's factory settings (username, password, default IP and other settings).



Figure 36: Reset button inside the maintenance opening

RESET AND TEST THE PROTECTION ELEMENTS

Important: RCD and Ocervurrent protection element needs to be tested and reset by pressing the button on the device at least once per month. By doing this, appropriate operation of RCD and Overcurrent are ensured. If this is not done the protected device can be dangerous to users and potential malfunction can be life-threatening.

One protection element can be installed inside the charging station. In order to ensure that the element is working properly you need to test it. This should only be done if RCD or overcurrent protection is installed inside the charging station.

RCD

The test button on the RCD unit allows user to verify the correct operation of the device by passing a small current through the RCD unit. This simulates a fault by creating an imbalance in the sense coil. If the RCD does not trip when this button is pressed, then the device must be replaced. You have to change the device also when

the fid was tripped but you can't move the switch back into active position. To change the RCD please call the support number.

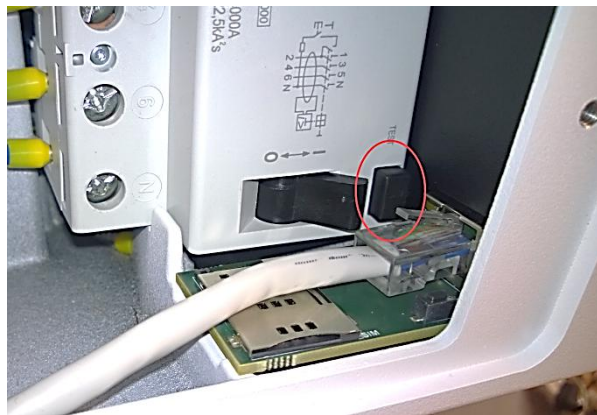


Figure 37: RCD test button

Overcurrent protection

Check the overcurrent protection (if installed) once a year for any visible damages on the surface. If the overcurrent protection is tripped and the switches can't return to the active position something is wrong with the protection and needs to be changed by maintenance crew.

USING WEB INTERFACE FOR TROUBLESHOOTING

You can also use web interface for trouble shooting like it is described in the diagnostics section of chapter 4 Web interface.

For more extensive troubleshooting you should read the Troubleshooting document for users named: Etrel INCH Troubleshooting user.