Dealer APP

ATOM

Dealer APP

Distributors Operations

Dealer APP

Diagnostic APP for distributors

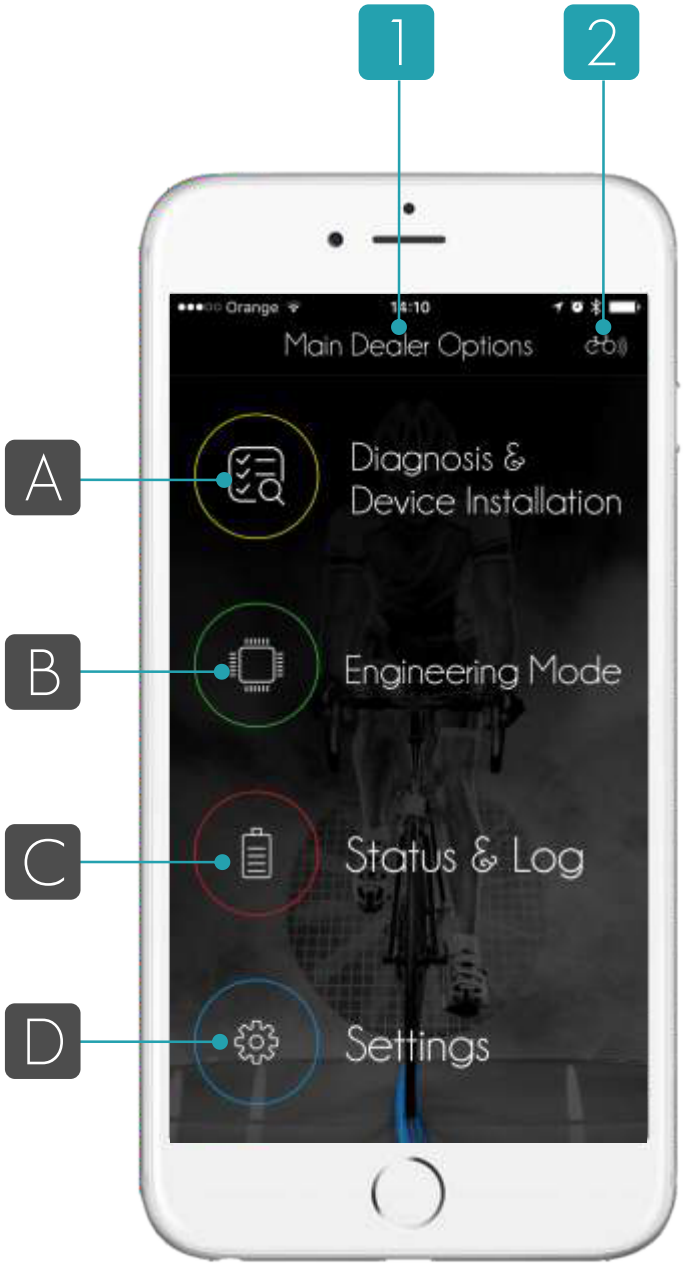
Version 1.0 - April 2017
English version

Index

1. ilustrations

1.1 Dealer App Main Diagram

MAIN SCREEN



1 - Application Menu:
The application menu has a hierarchical structure; the user can first view main options and later browse through the sub-options displayed by the system. The active option always appears in the upper part.

2 - Access the eBike tab:
The tab displays the eBike state, kilometers travelled, battery charging cycles and errors. A white light means that the eBike is connected.

A - Access Diagnosis and Installation of Devices:
Display of eBike components and error list.

B - Access the Engineering Mode:
Display of general parameters of the eBike and the issuing of reports.

C - eBike Mode
The mode of the eBike can be changed from TRANSPORT to DEMO, ACTIVATED or SOLD.

D - Settings
Access the pairing menu and change of the active user.

2. Safety warnings

Read all instructions carefully before using the system

- Keep all safety instructions and warnings for future reference.

- Not adhering to the instructions provided may result in electric shock, fire and/or serious injury.

- The term "battery pack" used in these operating instructions, irrespective of model, refers both to standard battery packs (battery packs with holder on the bike frame) and spare-type battery packs (removable battery packs with holder in the rear rack/carrier or on the bike frame).

- Make sure you do not get distracted by the display of the on-board computer, remote information and Smartphone while cycling. Not focusing exclusively on traffic can be the cause of an accident.

- Read and follow the safety warnings and operating instructions of the eBike system

- The electronic components and casings are designed to work under the standards of the IP54 code against dust and water. Although, the electronic parts of the remote have received conformal coating for extra protection and sealing grommets are used to increase the waterproof features, this does not mean they can withstand extreme climatic conditions or large volumes of water and caution should be taken to protect the eBike elements from such conditions.

An e-bike is similar to a conventional bicycle, however, it includes some electronic devices such as the electric motor, the battery and HMI (remotes and displays etc.) There are some norms that should be followed in order to prolong the life span of an electric bicycle and the durability of its electronic components:

IMPORTANT

- Do not immerse electronic components in water and do not wash them using washing machines. If you use water pressure systems it is important that you take out the battery (if removable) and control devices, such as remotes and displays; these should not be washed with water pressure under any circumstance.

- Do not leave the eBike parked outside in Winter in extreme weather conditions. The remote is designed to prevent water ingress in its internal structure, but this design can be endangered if we subject it to poor weather conditions or low temperatures during long periods of time.

- Do not leave the control systems or the remote control in rain or snow for long periods of time.

- Withdraw and protect remotes, displays and batteries if you transport the electric bicycle by attaching it to the exterior of the car. Failing to do so, especially in poor weather conditions, could increase the risk of breaking its protection from water.

-Maintain the buttons and points of contact clean from dust and dirt. If one of the components breaks, ask your supplier to replace it with another original part. The suppliers of the bicycle manufacturers who have the components are the only persons authorized to install the components and activate them through the Dealer APP.

- You should not insert any types of metallic contact in the places of battery connection, it can cause a power cut.

- The battery should not hit any surface. If the outside cover of the battery breaks you should contact the technical service of its brand in order to change the casing.

- After 500 charging cycles the capacity of the battery can drop by around 20%

- The lithium doesn´t have memory, for this reason it can be charged when battery level drops to 50%. Remember that the batteries should be charged once every two months.

3. Product Description

3.1 Intended Use of APP

DEALER APP is a smartphone application designed especially for stores of electric bicycles. The function of this application is to connect the eBike to the user´s mobile phone and the technical service, in order to directly carry out procedures such as diagnosis, reparation, set-up and updating or the replacement of components in case of a malfunction.

The diagnosis can be carried out on the devices manufactured as well as compatible technologies from other electric bicycle manufacturing brands, due to the lack of third party diagnostic tools, the application is frequently opted for by other brands. A store should have a Dealer User Account that is authorized by BH Bikes, enabling it to operate the application. The user account must be created by BH Bikes which will provide the user with login information.

This application is public and free, it can be downloaded from the cloud by any user, however, its use is restrained by the stores who manage the users and valid passwords.
Any procedures carried out on compliant eBikes are saved on the cloud for future reference.

3.2 Required Smartphone Features

- Minimum 512MB RAM (1 GB)
- 80 MB free space in the ROM
- 1 GHz Processor or greater
- Android 4.3 or upper
- Bluetooth® BLE or 4.0
- Apple iPhone 4S or greater (iOS 7.1.2 / 8 or greater)

Recommended iPhone 5 or 6 updated to the last iOS version
Recommended Android phones is 1G of RAM
3G connection is recommended but the app can also work offline (some features will be not be available)*Most values are limited to the Bluetooth® BLE electronic components

3.3 Functionality

The Dealer APP enables stores to activate components, detect errors and diagnose and solve problems. The most important functions of the application are outlined below:

- The application displays a list of the components installed and their status

- eBike's battery status, serial number and the distance travelled

- Status of eBike components and error list.

- Access to technical documentation and solving failures depending on the eBike model, component and error.

- Details on the hardware and software version of the installed components.

- Assignment of a serial number.

- Assignment of the eBike serial number when new components are installed.

- Codification of a new component to adapt its behaviour to the eBike model.

- Automatic updating of eBike software.

- Automatic reading of device coding and its correction.

- Changing the serial number if the eBike frame is being replaced or if the number on the frame or the eBike cannot be read.

- Issuing of reports on the eBike status, to be used as a reference by manufacturer or the technical staff.

- In the Engineering Mode, access to real time eBike values (Current, Voltage, RPM, Device Temperature, etc.)

4. User and Access

When you start the APP you will see the user LOGIN system where you will find the following options:

- LOGIN: If you have previously registered as an user.
- LOGIN: STORES registered with the APP.
- LOGIN: STORES registered with Facebook®
- Password Recovery

Remember that the DEALER APP users are privileged users of the END USER APP, who as a STORE have a special profile in the application.

VERY IMPORTANT

Only BH Bikes can create this type of profile for its users.

As the system user you can select or Facebook® to login into your account.

VERY IMPORTANT

To create an end user account use the WEB DASHBOARD or the END USER APP.

Login Screen
Dealer App

4.1 Register as new user

From the mobile application or user website

1. Press "Register". You will be asked to complete a form, fill in the required information and again choose the option "Register".

2. The Server will send you an email with a link. Click on the link to activate your account.

3.The Server will confirm that the registration process has been completed.

4. From now on, you will use your USERNAME and PASSWORD to login into the APP.

If you do not receive the email, it means that there has been a problem in APP Email Server or that you have entered an incorrect email. Please try to register again or contact our support centre.

4.2 Register with facebook

If you want to login using your Facebook® account, press on the blue icon "Log in with Facebook". The APP will use different processes for iOS and Android.

- With the iPhone, the APP will open a special window where you will introduce your Facebook® user and password.

- With Android you must have the Facebook® APP installed on your smartphone, if you are logged in as a user the APP will automatically use your Facebook account.

4.3 Password Recovery

If you are using an USER ACCOUNT (not Facebook®), you will be able to easily recover your username and password. On the user login page of the Dealer application, press the option "Recover Password". The system will take you directly to a recovery form that you will have to fill in, in order to receive your data by e-mail.

5. eBike Pairing and Connection

Both APPs cannot be connected at the same time to the same bicycle. You should check how to close your APPs, this depends on your smartphone and OS version.
The DEALER APP is free and you can download it from any APP store with compatible platforms (Apple Store or Google Play), by searching "Ebikemotion Dealer". The following steps are to help you with the installation process:

The eBike pairing process is required to use the APP when you are using a compatible eBike. Before start prepare the following:
In order to carry out the pairing process through Bluetooth® between the APP and an eBike compatible system you need the following:
- An compatible eBike with Bluetooth® connectivity
-Reliable internet connection (WIFI or 4G)
- Your smartphone with the DEALER APP installed

1. Install the APP on your smartphone and complete the Registration or Login process
2. Switch on the POWER button of the Remote Control

a) When the APP detects an unpaired compatible eBike, it will pair up with it and a notice will inform you that the pairing process has been carried out correctly.
I. In addition, the SETTINGs menu will show display the option "EBM Pairing Status" Connected
ii. You will see a lit up eBike icon in the top right corner to show its connection status
iii. Finally, the LED on the remote will light in BLUE for a few seconds to inform that connection is done.
b) If the compatible eBike is not paired, perhaps the bike is paired with another Smartphone. In this case check your remote manual to see the Bluetooth® reset process on your remote. (In the section 7.2 you have some information about this process). To reset the smartphones paired follow this process:
I. Switch off the eBike
ii. To switch on keep the button pressed for 4 seconds or more.
iii. The LED will blink in BLUE colour for a few seconds to inform you that the last smartphone has been deleted and that it is waiting for pairing anew one (a section)

When an eBike is paired you will see a GREEN NOTICE in the top of the screen with the message "bike pairing – pairing with the eBike done". From that moment onwards your compatible eBike and your Smartphone will be paired and it will not be necessary to pair again. The compatible eBike will be paired with your last paired smartphone and will not be visible to other Smartphones.
Each time that you switch-off your compatible eBike, you will receive in the APP an alert in the top of the screen with the message: "bike pairing – connection with the bike lost".

NOTE

Remember that you must close the END USER APP before opening the DEALER APP.
Remember that the end user needs to pair his phone again before leaving the store. It is very important that once you finish any process in the shop, you delete the eBike off your smartphone, leaving it free for the new user pairing process

5.1 Force the BT Connection

There is a way to force your mobile to delete any link to the eBike that has been connected previously so that it looks for a new connection. Please select SETTINGS in the main menu and later in the BIKE options tap on "Pair with a new EBM bike", the actual Bluetooth® connection will be refused and the system will try to find a free eBike through Bluetooth®.

Force the Bluetooth® connection

6. Diagnosis and Device Installation

Diagnosis is the main process before any other operation with the DEALER APP. A diagnosis is done each time the Dealer has any interaction with the eBike. Unlike the END USER APP that only shows the error code and a short description to look for possible solutions in the manual, the DEALER APP can show additional documentation (Technical PDF) to extend the information on the error and possible solutions. Each ERROR in the eBike model includes technical documentation to help the dealer solve the problems, the relation is one PDF file per ERROR per MODEL of the eBIKE. At the same time the diagnostic process also is designed to update the eBike STATUS in the Cloud.

This part of the manual will show you how to see the eBike basic information, serial number, when it was manufactured, the history of actions, actual battery status and other extra information because each data is archiving as time goes by for each user and dealer connection. Also we will explain the process that the dealer needs to follow if the frame is replaced or if an additional component is added to the system, or if the eBike Bluetooth® connection is not possible.

eBike card - Connection

6.1 The eBike File

The eBike File is the starting point of the system and usually is the first point that we must check and get a clear idea about the eBike status. The following, is the main information that we can check:

- eBike Serial Number (e-SN)
- Model of eBike
- Manufacturing Date
- Distance travelled with the eBike
- Time of use
- Battery charging cycles
- Battery Status
- Additional information

eBike confirmation connected

6.1.1 The Serial Number

Once you are paired with the eBike, you will see an icon in the top corner of the APP with the connection symbol, if it lights up in WHITE it means the eBike is connected, in GREY it means that there is no connection. Check the previous chapter in order to learn more about the Bluetooth® pairing process.

If there is connection, TAP on the top right icon. The APP will show you the eBike Serial number, names "e-SN" or eBike Serial Number.

BH 1234567890ABCDE

6.1.2 eBike General Status

The eBike general status provides the store with a lot of interesting and useful information when an eBike arrives at the shop. The most important information is:

- Manufacturing time and date
Reports on when the eBike was created and updated at the factory after its complete assembly. This information is received after the production diagnosis process.

- Total Distance travelled: It is the distance the eBike travelled with the electric system on. It is not the total distance, because it may have been cycled with the electrical system off

- Use Time:
It is the time of all archived activities. It also includes the total time cycled with the electric system on.

- Battery cycles:
Number of charging cycles that have been made since purchase

- Date of Last Battery Charging:
Time at which the last complete charge of the battery was made.

- Battery status:
Health status of the battery cells (100% maximum, for example). This data is calculated by comparing factory nominal maximum capacity to the current nominal maximum capacity.

eBike information

NOTE

The charging capacity of the battery cells degrades over time and with the number of charging cycles, so it is important to know two things:

- The date from the last full charging, which if supported by the system should be displayed in the status tab. More than 2 or 3 months is an excessive time that can affect the operation of the battery.
- The total number of charging. The number of charges reduces the maximum load capacity of the cells that compose it. Depending on the material of the cell, within 500 charging cycles we could reduce the maximum charge level of the battery between 80 and 70%. 2 years is what it takes to complete 500 cycles if used intensively at 100% discharge. The usual battery life span is around five years.

6.2 Assigning the Serial Number "e-SN"

It is necessary to use the DEALER APP to assign the e-SN, in these two situations:

- Changing of the Frame

- Changing any component

To carry out the e-SN assignment you need to follow this process:

1- Pair with eBike

2- Click on the Main Diagnosis and Device Installation option

3- If there is an error, the system will inform you of it

4- You will see an icon with the letters e-SN in the upper bar area. Click on the icon

5- It will look like a dialog box where you should perform the following steps:

- Indicate BH Bikes (The system will only allow you to indicate brands that you are authorized to use)

- Enter the SERIAL NUMBER, WITHOUT BH PREFIX. The BH prefix is entered automatically by the system, based on the mark indicated in the previous step

- The e-SN is sent to all eBike devices. Check that the e-SN of all the devices has changed in the list of devices.

processo e-SN

e-SN - Diagnosis selection

e-SN - BH selection

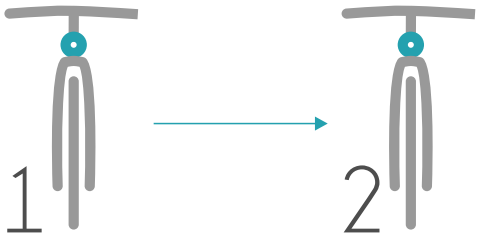
e-SN - Components List

e-SN - Enter Serial number

6.2.1 Replacing the Frame

If you have to change all the components from one frame to another, the components must be given the serial number of the frame on which they are mounted so that the whole operation is registered in the system.

To change the components, follow the process described in the previous point.



The same components with at different frame

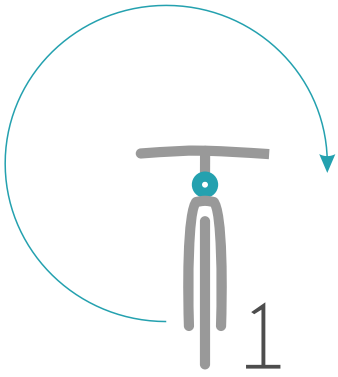
6.2.2 Changing Components

Due to many circumstances the components may have to be changed, this occurs most commonly when:

- A component is broken
- The user wants another component to be assigned to the eBike, for example another remote backup, another battery

- The Bluetooth® device is faulty and you need to connect another remote to test the eBike and diagnose it

The process in any case is exactly the same as that described in the previous point. Make the connection, select diagnosis and select the top e-SN option to assign BH Bikes and serial number to all components.



Only componets change

IMPORTANT NOTE

Remember that when there are components in the eBike with different e-SN the system generates ERROR 25, component protection error. This error will DISABLE THE FUNCTIONING OF THE EBIKE SYSTEM. You must make the e-SN assignment process so that all components have the same e-SN.

6.3 Diagnosis and Errors

6.3.1 Introduction to Diagnosis

Diagnosis is one of the most important services. Through a simple Bluetooth® connection between our mobile phone and the eBike, this system allows you to:

- View installed components
- View the serial number of the components
- See the e-SN assigned to each component (they must all be the same on one eBike)
- Know the status of each of the components and their errors
- View the firmware version of each component
- Change the coding of a component (Change the behaviour of the component)
- View the error and PDF document associated with the error and its repair
- Change and associate new devices with eBike
- See details of power, current, etc. And generate a report while the eBike is being cycled.

It is very important that any eBike store that has equipment knows the Dealer APP and the basic operations, such as the start-up and activation of the eBike which are needed for it to function properly, as well as the changing of any component, so the Store plays a fundamental part in the supply chain of parts and accessories that cannot be purchased and installed outside the network of establishments authorized by each BH Bikes.

Diagnosis &
Device Installation

6.3.2 Device List

In order to see the list of the devices that are installed in the system, press the Diagnosis option (YELLOW button). The application will wait to have a paired eBike and will show you the devices that have been detected and that are connected to the system. The connection is made by Bluetooth® between your mobile terminal and the eBike so it is essential that you have previously paired with it. Refer to the previous sections describing this process and deleting other previously paired phones.

Once the list of devices is displayed, we can access the most important operations:

- View the details of a device including its photo
- Assign the e-SN to a device
- View the error of a device
- Update the firmware of a device
- Coding a device

Diagnosis - device list

6.3.3 Details of the devices

Once we have access to the list of devices with photos, we can easily identify them and view their details; the type of the equipment together with its serial number and the serial number assigned to the eBike, also the firmware version and errors. To access to the file with information of the device you must click on the image of the device.

When you tap on the image, it gives access to a page that gives more detail on the characteristics of the device. There are three important points in the device description:

- Firmware:
This option displays the current firmware version of the device. If it appears in red, it indicates that the firmware of the device must be updated with the latest version available. This process can be done through a more advanced diagnostic tool or via Bluetooth® if the device allows.

- Status:
This option can display either: NO ERROR or a CONCRETE ERROR. In case the system shows an error, an icon will appear in the upper area with the abbreviations PDF. The PDF is a technical documentation file that is associated to each of the possible errors of each of the bike models that the system has. This information is very useful for solving problems since it contains concrete guides to support the repairing.

- Coding:
This function allows to change the BEHAVIOR of the EBIKE, the coding is an encrypted field for each model that is generated by the manufacturer and that makes the same device work in one way or another, for example, whether the lights are on when starting the eBike, The position of the remote, levels of attendance, etc.

Diagnosis - Component information

IMPORTANT NOTE

Coding values should not be modified if they are not known. The value should be provided by the manufacturer and be associated with the model of the bike.

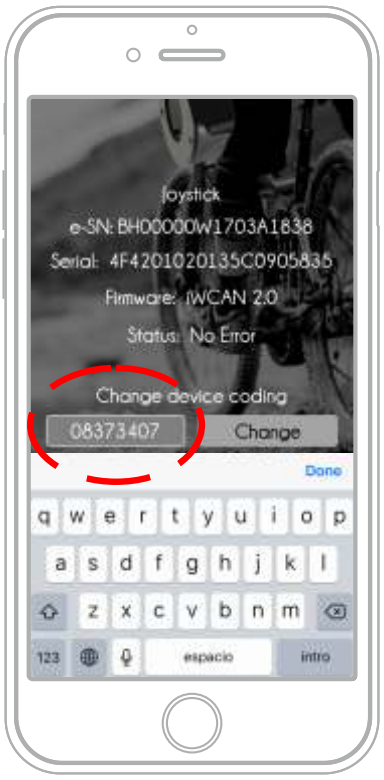
6.3.4 Coding Devices

Device coding controls the operation or behaviour of each of the devices

6.3.4.1 Different types *of Coding*

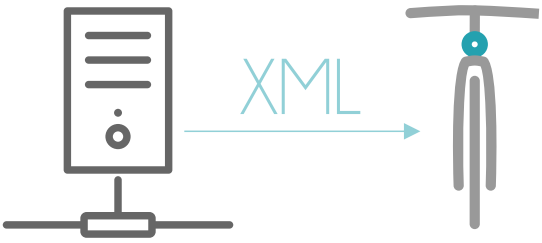
In the system there are two types of coding that define behaviour.

- Simple coding:
This type of coding is associated with devices whose behaviour is simple, such as a remote, where we can modify parameters associated with simple concepts. For example, define what level the system starts at, how many levels it has, whether it is to the right or left, if it starts with the lights on, etc. The coding based on simple definitions is based on a short alphanumeric code of type 37671592



Diagnosis - Simple encoding

- Complex Coding
When the information that we have to send to define the behaviour is much more extensive, complex and detailed, an XML file is used, since it contains all the data. This type of files cannot be sent manually and the system is responsible for retrieving it from the database and uploading it to the device. It is a security measure so that behaviour cannot be unduly modified. This tool is used on devices such as Engine Control or Location System.



Diagnosis - Automatic full coding

6.3.4.2 Circumstances requiring coding

There are three circumstances in which the store may need to modify the CODING:

- If a part of the system is replaced:
In this case the store must follow the following procedure:
1- Assemble the equipment
2- Enter diagnosis mode in the APP after pairing with eBike
3- Enter the eBike e-SN
The system will automatically retrieve the coding and send it to the device, whether simple or complex.

- If the manufacturer sends a code to change the behaviour based on a simple coding:
In this case, the store will enter the tab of the device and change the code manually. Only simple coding is supported. Click on the coding field and insert the code that you want to modify. Once the code has the correct values, press the button to save the changes.

- If a firmware update occurs:
In this case, the update may have associated simple or complex coding that the system downloads and sends after loading the new firmware.

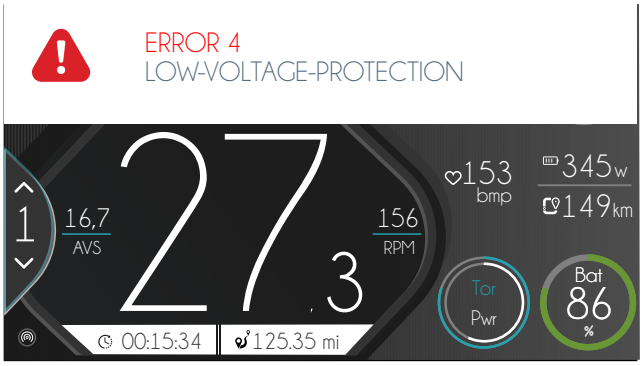
Remember that next to the coding value you have the option of recovering factory settings.

6.3.5 Error in the Device

Errors in the devices can occur for several reasons; loss of the waterproof shield, failure of an electronic component, failure of a cable that generates an incorrect signal. The same error can occur for a number of different reasons, which can originate from different parts. For example, if the system tells us of an error in the motor phase, the origin can be in a sensor of the motor phase or in the wiring of a motor or in the intermediate or final connector. Where is the error and what must we do to solve it? The answer is not easy in most cases. To help installers solve these types of problems the system shows an error and a possible solution.

Commonly, when an error occurs in the system, this process takes place:

1- STEP 1:
The system visually informs the user that an error has occurred. It can be, for example, through a red light that flashes on the remote or an icon on the display or in the end user application.



App alert

2- STEP 2:
When we have a display, the error can be represented with a code and a short description. This code and this description are fundamental to solving the problem. You will have to go to the user manual to check what this error means. Usually, the steps taken to resolve the problem at the user level are: Visual inspection, connector review, cleaning and restarting the system.

3- STEP 3:
If the malfunction cannot be resolved by the user, the eBike has to arrive to the store where it will be connected to the DEALER APP to find out what is the source of the eBike´s problem. A diagnosis will be made and the errors marked it its list will be checked. Here we can apply our experience to solve the problem

4- STEP 4:
If none of these work, our last resource is to access the online technical documentation of the error for the particular eBike model. If the manufacturer has uploaded this information, we will be provided with hints on how to solve the problem. A button in the upper area of the diagnostic tab will enable us to access the technical PDF.

6.3.5.1 Technical PDF

The technical PDF is a document that the manufacturer of the eBike can upload to the system to offer us additional help in finding solutions based on descriptions and photographs. The system can offer a TECHNICAL PDF FOR EBIKE MODEL ERROR CODE. It can be an ideal resource for finding solutions to failures, for example, in the PAS sensor. This document can even describe what connector it is, how to access it, and how to replace the sensor if necessary.

Access to technical PDF

7. Engineering Mode

7.1 What is the Engineering Mode?

The Engineering Mode is an option that enables you to see the technical information of the eBike during its operation (motor and battery in terms of voltage, current and power). Being able to make diagnosis on the basis of this information is very interesting. Having a clear idea of the values that are being obtained by the eBike enables us to make appropriate adjustments or detect the origin of a problem. The engineering mode basically includes:

- An Information Panel, which shows us the values
- A system that takes marks malfunctions
-A System that generates reports on these malfunctions

The Engineering mode is available in the Dealer APP and in the End User APP, although in the End User APP the report function is not available.

Engineering Mode - Access

7.2 Information Panel

The information panel shows the main values of the eBike system in a table:

- MAIN SUMMARY
- Support Level
- Speed
- Autonomy
- The identifier
- The e-SN

- BATTERY DATA
  - Voltage
  - Battery Level
  - The temperature
  - Current
  - Capacity in Wh

- MOTOR DATA
  - The RPM (Cadence)
  - The torque
  - Temperature
  - Current

The display updates the values at the same rate as they are updated in the system via Bluetooth®. The Dealer user can start a tour and send a status report to the bicycle manufacturer for further analysis, as explained below.

Engineering Mode - Information Panel

7.3 Engineering Mode Report

Engineering Mode Report is a CSV FORMAT document that is generated by the application based on the values received via the Bluetooth® system. The report stores 10 values per second and for each of the values the following information is stored. The system behaves differently on Android and iOS because of how the systems are built:

- iOS:

Recording is cyclic and 50,000 records can be stored. Recording starts from the first second the application connects to the eBike. Each record shows a moment in time in a sequential manner with the values of all fields sorted in a table which can be imported to third-party tools for further analysis.

The estimated maximum time is 1 hour.

- Android

On Android you must start the recording process, stop it and send it, for this this, you have 3 buttons in the upper area- Play-, -Stop-, and Send Report. Once a process has been started by pressing the Play button, the data will be saved until Stop is pressed. The created report can be sent by pressing the Send Report button.

In the report you can mark malfunctions to identify points where a specific behaviour occurs, this can be done using the button in the engineering mode or the remote control as we explain in the following points

Engineering Mode - Report Control Options

7.3.1 Engineering Mode Report

Marking malfunctions in the report is used to identify the malfunction while the system is saving file information. To mark a malfunction, the user must click on the mark malfunction option in the upper part of the screen in the Engineering Mode, or press shortly on the central button in the same mode or enter the remote control MODE. This way you can search the text file for the marks to see the values at the malfunction point.

The name that receives a label inside the report file is: XXXXXX

7.3.2 Sending reports by email

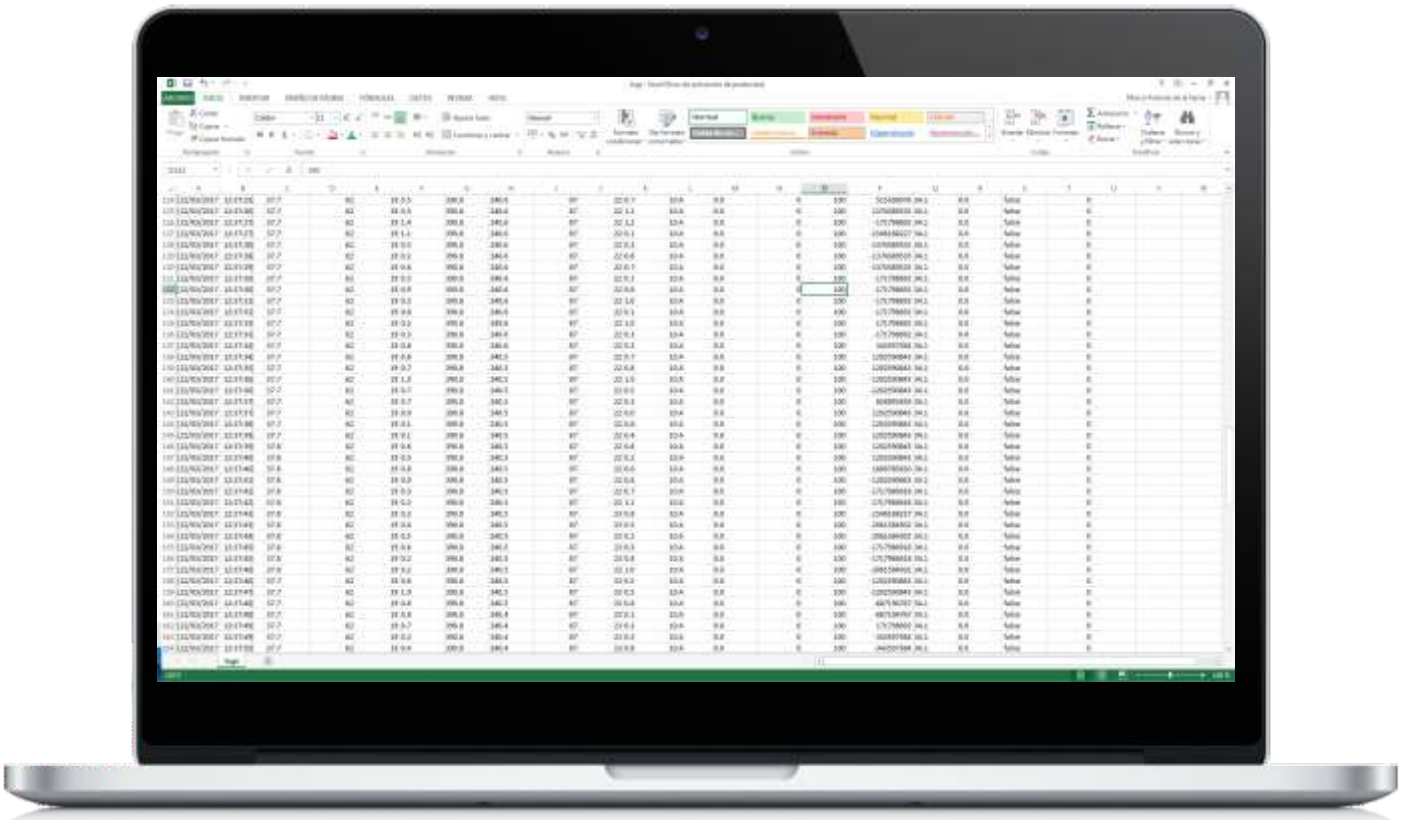
Once the report is finished, it is time to send it. You can send it to anyone and even yourself. Reports in the Engineering Mode should be short and last no longer than 5 or 10 minutes because the amount of data stored in the phone's memory may be too large. Moreover, a large file can be difficult to send by email. For these reasons, 5/10 minutes is considered a reasonable time.

Engineering Mode - Generating report

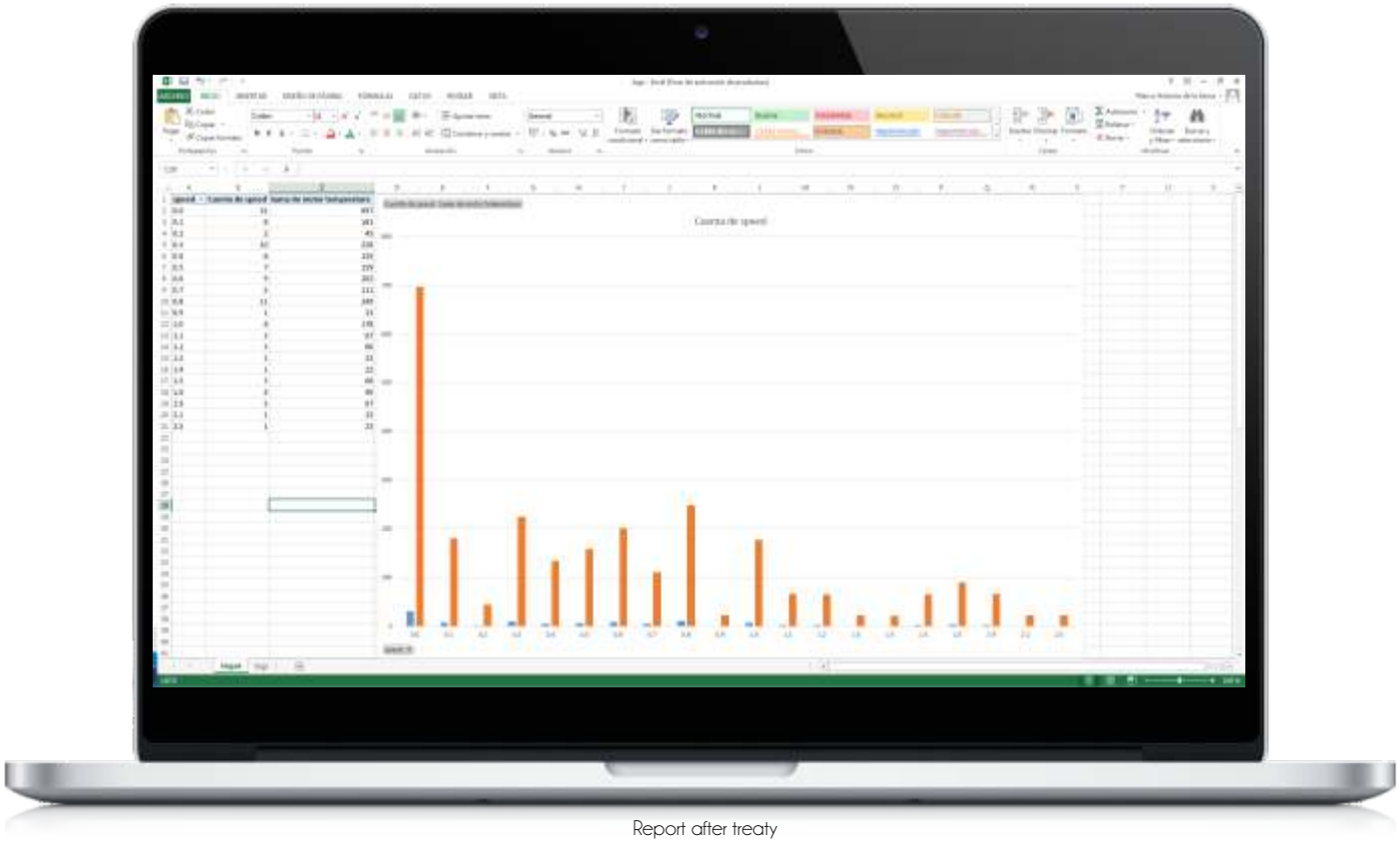
Once you press the report generation button the system compiles the report into a CSV file that is attached to an email. The mobile phone's e-mail user opens and the file is inserted. In this process the user is asked what name he wants to give to the report and the people he wants to share the report with.

7.3.3 Report Management

Having a report in CSV format will allow you to open the report in EXCEL and create your own graphs. Reading the speed and power on a graph in a very simple way and the marks indicate anomalous behaviour.



Untreated report



Report after treaty

8. eBike Modes

8.1 Mode of the eBike

An eBike can go through different stages; from the time its parts are manufactured to when it is assembled as a bicycle, sent to the store and delivered to the customer. The bike is delivered to the shop already ACTIVATED.

eBike Status - Access

Available states & enabled state

8.1.1 Safety against burglary

If a User has his bike stolen, he can access to the website (bh.ebikemotion.com) and change the status of the bike to STOLEN.

At this point, if that bike is delivered to a shop, this dealer can check the status and see it's a stolen bike, and contact with the owner.