DynaPredict - Application
DESCRIPTIVE MANUAL

DynaLogger - Bluetooth Low Energy (BLE)

DynaPredict Application Descriptive Manual - Version 3.0 (16/04/2021)
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Contents

1 Introduction

This document provides a guide for using the **DynaPredict App**, an application developed to interact and communicate with **DynaLoggers**.

A **DynaLogger** is an idustrial data logger that monitors the health of a machine by storing temperature and vibration data in its internal memory.

The application allows users to perform the initial registration and configuration of the DynaLoggers, as well as readings and manual data collection via Bluetooth. The data can then be sent to the Dynamox Web Platform via an internet connection (3G, 4G or Wi-Fi).

Initially, this document describes the installation of the **DynaPredict App** and, later, details of the different displays and general functionality.

Body-worn Operation
This device was tested for typical body-worn operations. To comply with RF exposure requirements, a minimum separation distance of 20mm must be maintained between the user's body and the handset, including the antenna. Third-party belt-clips, holsters, and similar accessories used by this device should not contain any metallic components. Body-worn accessories that do not meet these requirements may not comply with RF exposure requirements and should be avoided. Use only the supplied or an approved antenna.

2 Installation

The **DynaPredict** app is available to download from the Google Play Store and is compatible with all devices running Android 5.0 or higher and Bluetooth technology.

A basic version of the app is also available for iOS devices and can be downloaded from the Apple Store.

3 Screens

The following sections describe in detail the different screens and functionality of the DynaPredict application.

3.1 Login

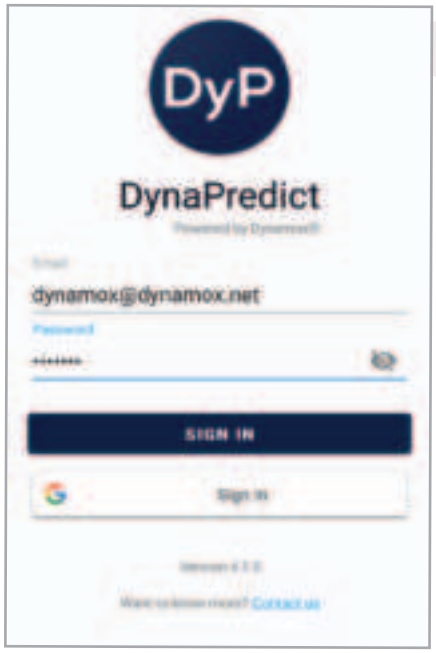

Figure 1 - App login screen

When the app is first accessed, or after user logout, the login screen will be shown (Figure 1). The fields shown in Figure 1 should be filled in with the previously obtained user credentials (e-mail and password).

New users can obtain credentials by contacting our Technical Support team via e-mail: support@dynamox.net.

When logging into the app, the user should choose the workspace for desired access.

The list of available workspaces takes into account the permissions previously assigned to the user on the Web Platform. For more details, please consult the Web Platform Manual.

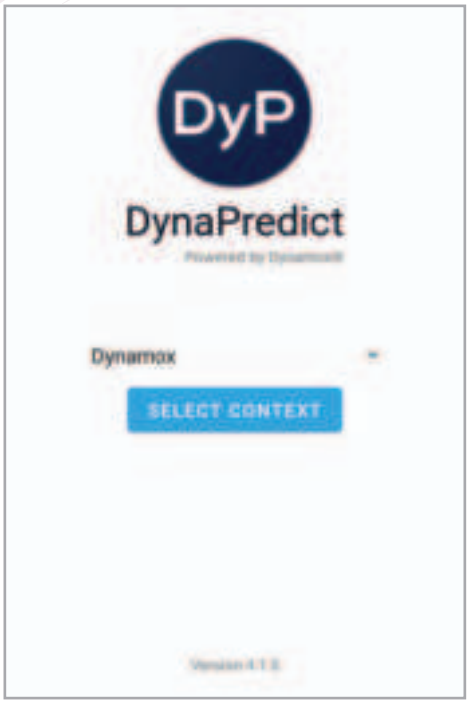

Figure 2 - Workspace selection

3.2 Initial Screen

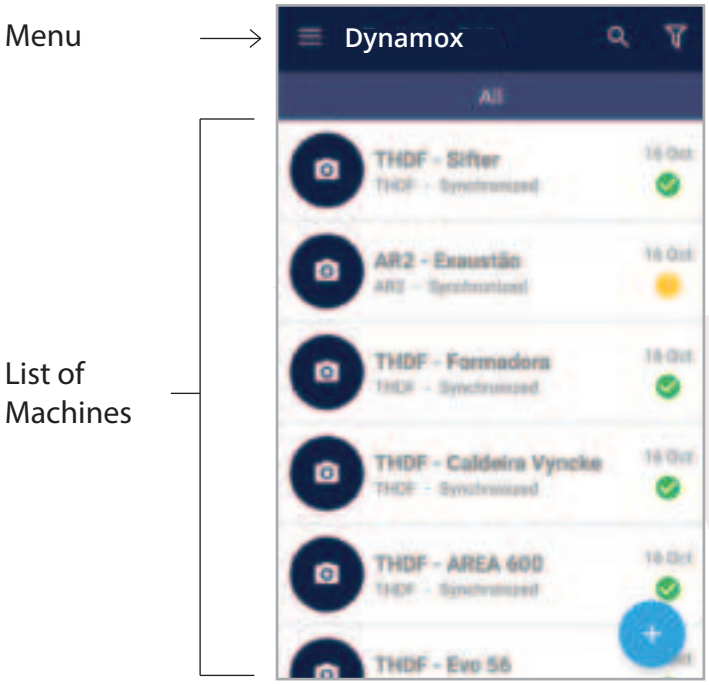

Figure 3 - Initial Screen

After logging in, a list of machines registered to the company will be shown on the initial screen (Figure 3) and it will be possible to access the side menu by touching the icon ( ).

Both features will be explained in the following sections.

3.2.1 Side Menu

Once the icon ( ) has been selected, the side menu will expand (Figure 4) and the user will have access to 5 functions within the app, described below:

• **Scan Spots:** search for DynaLoggers that are already registered and are within the Bluetooth range of the app.

• **Synchronize:** Initiate the synchronization process of the data collected from the DynaLoggers via the app, sending the data to the Dynamox Web Platform. Internet access is necessary to perform this operation.

• **Settings:** allows the user to change the settings of the app.

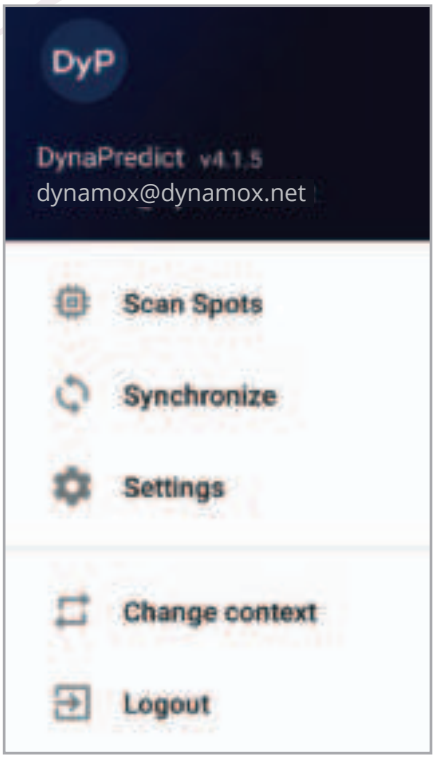

Figure 4 - Side Menu

• **Change context:** allow changes to the workspace.

• **Logout:** disconnect the user from the current session and return to the login screen.

3.2.2 Machine List

This screen, shown in Figure 5, displays the registered machines available to the user.

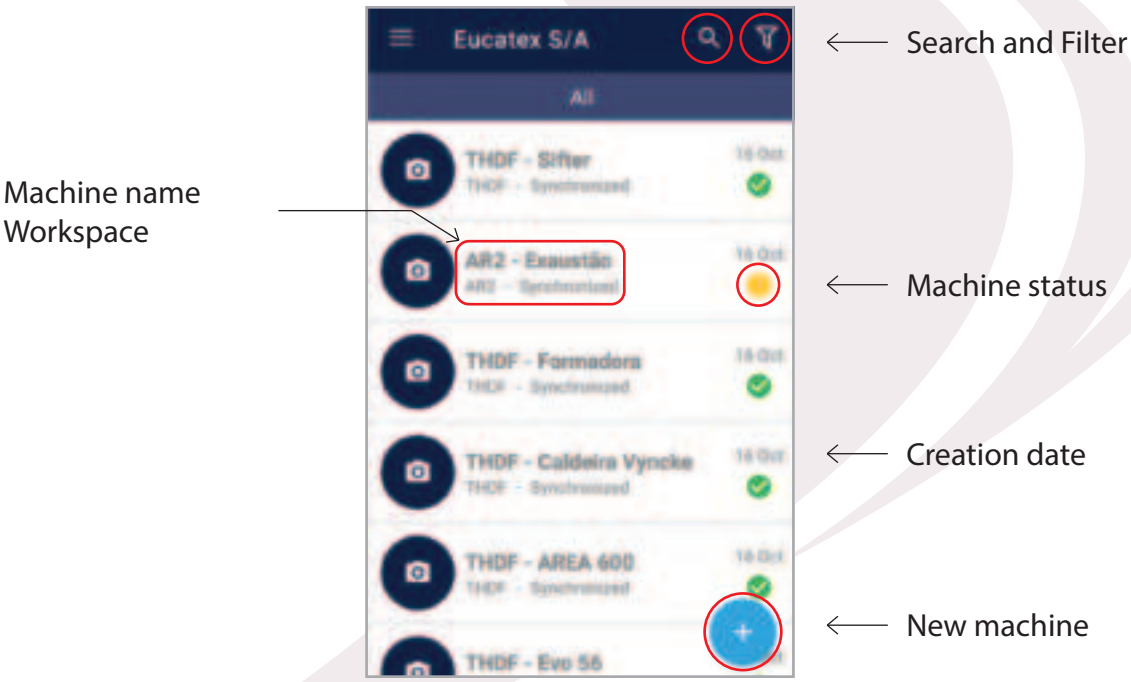

Figure 5 - Machine list

New machines can be created using the icon (⊕), located in the bottom right corner of the screen. Machine creation will be covered in the next section.

This screen shows the names of the machines and their respective creation dates, as well as the workspace to which they belong. In addition, there is an icon showing the machine status.

The user is able to search for a specific machine or even filter according to the machine status, as described in the following table:

Category	Definition
All	Display all registered machines.
Active	Displays machines whose DynaLoggers are actively monitoring. No action required.
Critical	Displays machines with DynaLoggers whose internal memory has exceeded 50% of the total capacity. Data colletion is recommended.
Pending	Displays machines with DynaLoggers that have pending action. User must connect with DynaLogger.

3.3 New Machine

Figure 6 - New machine

By touching the icon (), the screen on Figure 6 will be displayed. On this screen, it is possible to register a new machine.

To do this, fill in the following fields:

- **Name:** used to identify the machine;
- **Details:** information such as format, position, function, etc;
- **Workspace:** Definition of the workspace in which the machine will be created, according to the asset tree defined in the Web Platform;
- **Address:** location in which the machine is installed. It's possible to use Google Maps.
- **Power:** power of the machine in kW;
- **RPM:** number of revolutions per minute of the machine.

In addition to this information, a photograph of the machine can be added by pressing the icon (), located at the top of the screen.

To complete the registration, simply touch “NEXT”, located in the top right-hand corner of the screen. The app will create the machine and direct the user to a list of monitoring points (spots), where it will be possible to register a new spot.

3.4 Spot List

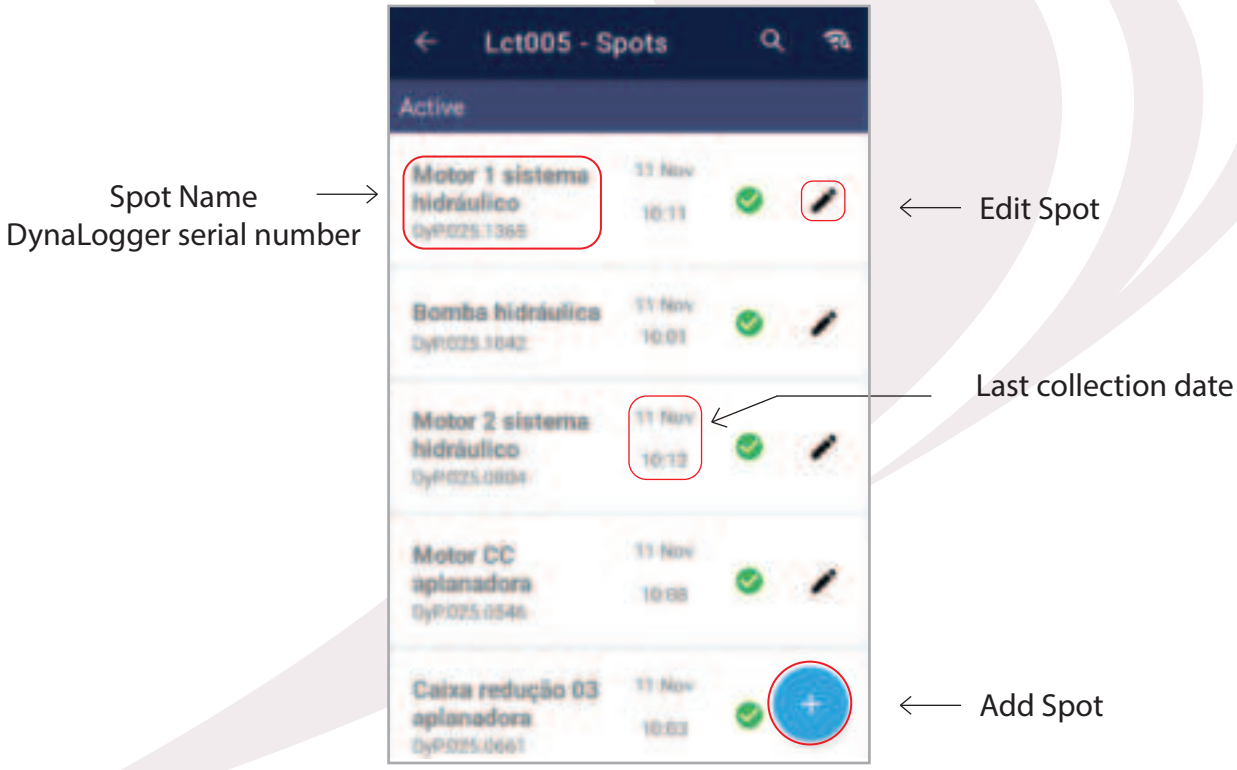

Figure 7 -Spot list

By selecting a specific machine, the Spot list associated with that machine is displayed (Figure 7). The names of the spots, serial numbers of the associated DynaLoggers and the dates of the latest collection are shown.

By pressing the icon () in the bottom right-hand corner of the screen, new spots can be created. Creating and configuring spots is explained in the following section.

3.4.1 New Spot

By pressing the icon ( ) the registration form for a new spot is displayed. On this screen it is possible to associate and configure all of the monitoring parameters of the DynaLogger.

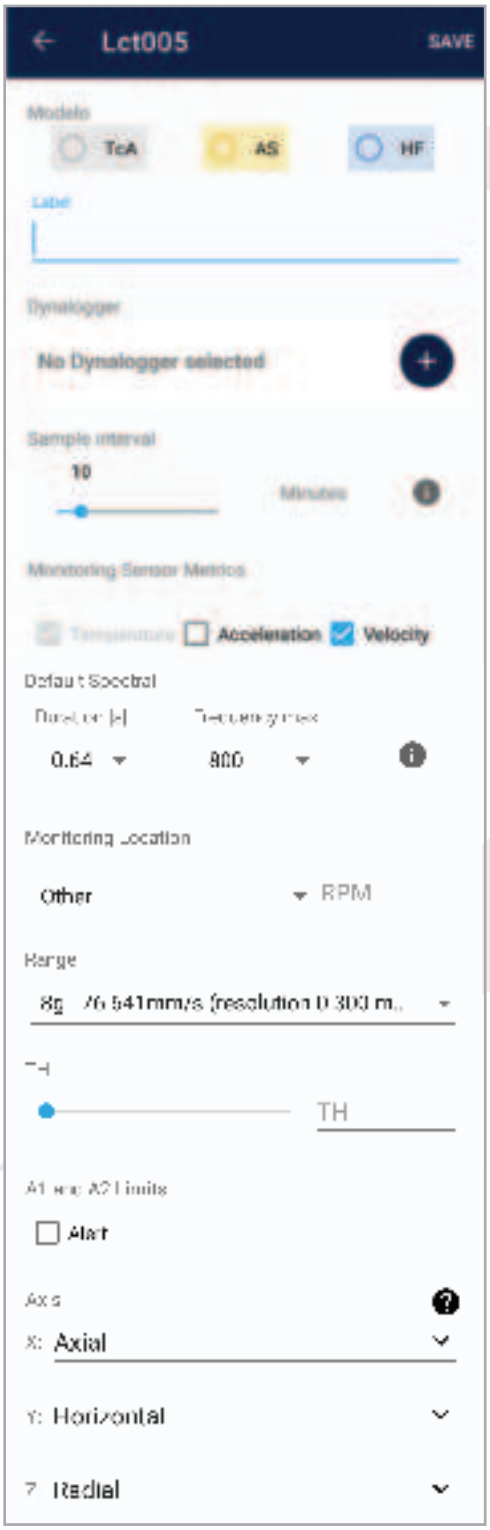

Figure 9 - New Spot

First, choose the DynaLogger model to be registered (TcA, AS or HF) and then add the identification of the monitoring point.

To associate the DynaLogger with the spot in question, touch the icon ( ) in the “DynaLogger” section.

A screen will appear showing DynaLoggers within the Bluetooth range of the device.

Once the desired DynaLogger has been selected, the following parameters must be set in order to complete the spot settings.

• **Sample interval:** the value that defines the frequency of data collection, that is, time delay between measurements.

• **Sensors for monitoring:** defines which parameters will be collected by the associated DynaLogger.

• **Default Spectrum:** defines the duration and maximum frequency characteristics of the standard spectrum. This information is important for spots that will be collected by the Dynamox Gateway (automatic collection).

• **Monitoring Location and RPM:** type of component to which the DynaLogger is attached and the revolutions per minute of the rotating component;

• **Range:** Range of acceleration/velocity, that is, the maximum values that the DynaLogger will be able to collect. This choice impacts the graphics resolution.

• **TH:** defines the trigger point for asynchronous measurements in [g], i.e. the value to which, if exceeded, the DynaLogger will "wake up" and collect global vibration and temperature data. The value must be between 0 and the maximum range value.
*Available for DynaLogger AS only.

• **Alerts:** thresholds for which an LED alert will be triggered in case of transgression. There are two levels: A1 and A2, with A2 being the most critical. The Dynalogger LED flashes green every 5 seconds. If A1 is transgressed, the color becomes red. In case the same happens to A2, the alert remains red, but blinks twice in a row. These limits can be configured for temperature, velocity and, for devices that are supported, acceleration.

• **Axes:** Positioning configuration of the installed DynaLogger. By clicking on the question mark, an image will be displayed showing the DynaLogger X, Y and Z axes orientation. This orientation is also displayed on the device label. Based on this, the user can select the actual positioning given to the DynaLogger on the machine for each of the three axes.

Once the spot settings have been completed, the changes can be saved by clicking "SAVE" located in the top right-hand corner. A summary of the settings will then be shown for confirmation.

3.4.2 Spot Data

When selecting a spot from the Spot List, the app will attempt to connect to the associated DynaLogger, downloading the data from the device's internal memory if it is within Bluetooth range (60m in open field).

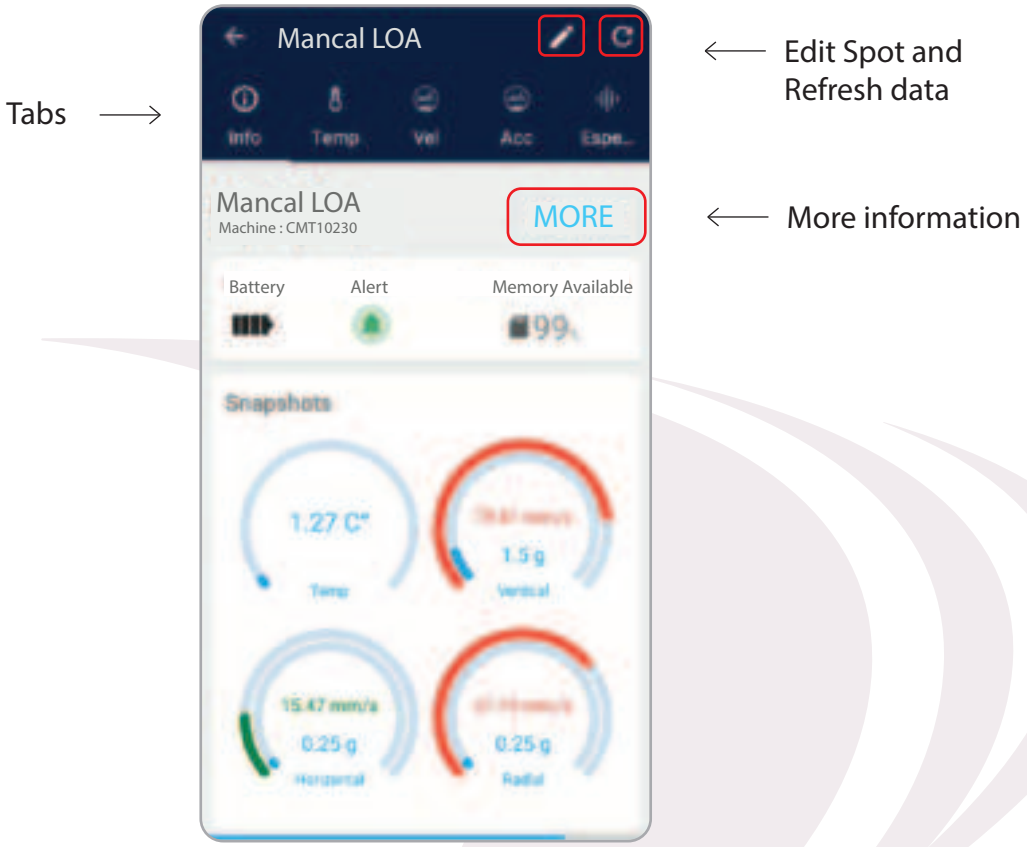

Figure 10 - Instant reading

The first screen the user will have access to is the “Instant reading” (Figure 10) where temperature and vibration values are shown in the 3 axes in real time. The default fill of these graphs is blue. However, for parameters with thresholds defined in the spot configurations, the color of the graph will change if the limits are exceeded. If no limit is exceeded, the graph color is green. If the A1 limit is exceeded, the graph color will change to yellow. If the A2 limit is exceeded, the color will change to red.

There is also information about the battery life, alert level and available memory on the device. Additional information can also be accessed from the associated DynaLogger, such as serial number, sample interval, and more.

In addition, the spot collection settings can also be edited from this screen as well as requesting spectral analysis through the ‘Spectral’ tab, which will be explained in the next section.

3.4.2.1 Temp, Vel e Acc

In the Temp, Vel and Acc tabs, it is possible to view the graphs with the latest temperature, RMS velocity and RMS acceleration data (when available) collected by the DynaLogger since the last collection.

Figure 11 - Temperature, Velocity and Acceleration tabs

It is important to emphasize that the data collection of the DynaLogger erases* data from the device's memory so that the device continually collects data normally.

*Exception: Users with a reader profile can view/read data on a smartphone screen, but this operation does not clear the DynaLogger's memory. More information on permission levels can be found in the Web Platform Manual.

3.4.2.2 Spectrum

The “Spectrum” tab (Figure 12), allows the user to request a spectrum from the DynaLogger. This spectrum can be performed on a specific axis or on all three axes simultaneously.

Figure 12 - Spectral Analysis

It is possible to request a spectrum by pressing the icon ( ). The user will be asked to select the axis on which to perform the spectrum. On the HF and AS devices, the user will also be asked for the duration and maximum frequency of the spectrum.

After requesting a spectrum, two graphs will be displayed: one in the time domain (waveform) and the other in relation to frequency.

In addition to acceleration graphs, it is also possible to view velocity graphs. To do this, simply touch the selection button ( ) and select the desired graphic.

It is also possible to show or hide the axes to be viewed and access details of the spectrum by touching the icon ( ).

4 Settings

The application settings can be accessed via the side menu (Figure 13). On this screen, the following settings can be changed:

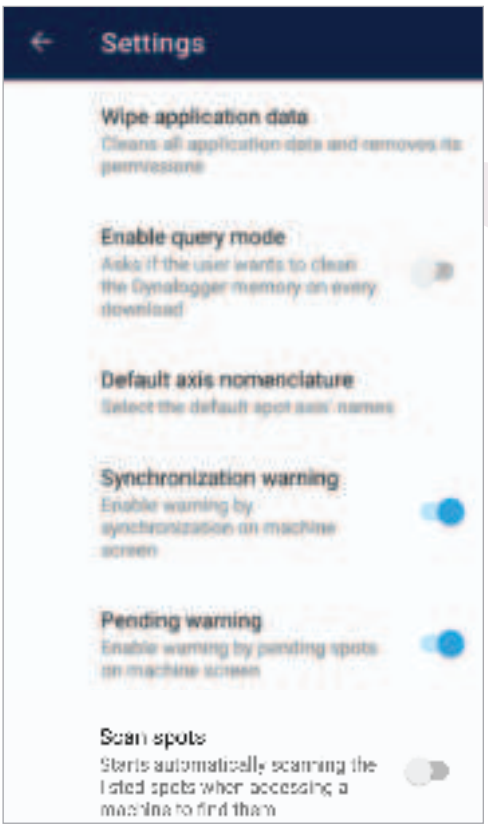

Figure 13 - Settings

• **Wipe application data:** erases all data from the app and removes all permissions.

• **Enable query mode:** Changes the DynaLogger memory cleaning function. By default, whenever data is collected from the DynaLogger, it is reset for storage of new data collection. By enabling query mode, whenever a collection is performed the user will be asked to decide whether or not to clear the DynaLogger's memory.

• **Default axis nomenclature:** defines the default orientation of the X, Y and Z axes of the DynaLogger.

• **Synchronization warning:** Enables the notification bar for pending synchronization (red);

• **Pending warning:** Enables the notification bar for spots with pending status;

• **Scan spots:** Enables automatic searching for associated spots when opening a machine.

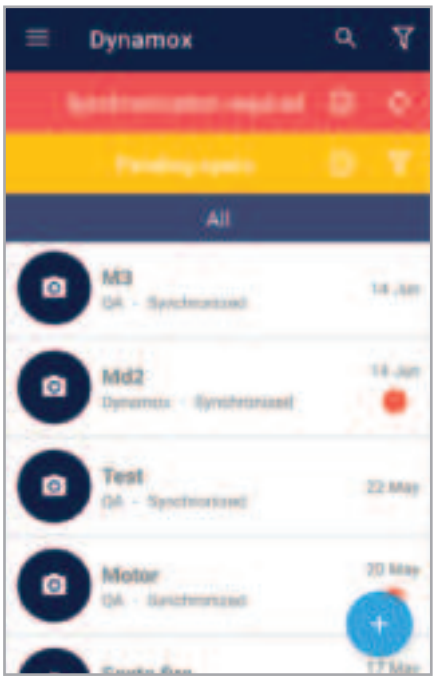

Figure 14 - Warnings

5 Synchronization

Once the data has been collected from the app, we recommend that users synchronize the data. This way, the data will be uploaded to the Web Platform and will be added to the historic data for the respective spot.

Synchronization is performed via the Synchronization option from the side menu (Figure 4), or via the red notification bar “Synchronization Required” (Figure 14).

FCC STATEMENT

1. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference.

(2) This device must accept any interference received, including interference that may cause undesired operation.

2. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: Reorient or relocate the receiving antenna.

Increase the separation between the equipment and receiver.

Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

Body-worn Operation

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

IC STATEMENT

This device complies with Industry Canada licence-exempt RSS standard(s)

Operation is subject to the following two conditions:

(1) This device may not cause interference, and

(2) This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d' Innovation, Science et Développement économique Canada applicables aux appareils radio exempts de licence.

L'exploitation est autorisée aux deux conditions suivantes:

(1) l'appareil ne doit pas produire de brouillage, et

(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20cm from all persons and must not be collocated or operating in conjunction with any other antenna or transmitter, End-Users must be provided with transmitter operation conditions for satisfying RF exposure compliance.Les antennes utilisées pour cet émetteur doivent être installées de façon à offrir une distance de séparation d'au moins 20cm entre toutes les personnes et ne doivent pas être colocalisées ou fonctionner conjointement avec d'autres antennes ou transmetteurs. pour satisfaire la conformité à l'exposition RF.

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