

Keyser Manufacturing Travel Indicator



Owner's Manual and Quick Reference Guide



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Disclaimer

The information provided in this manual is to help ensure proper use of the Keyser Manufacturing Travel Indicator. Failure to follow the instructions within may result in damage to personal property or serious injury to the user. Keyser Manufacturing is not responsible for any property loss that is directly or indirectly caused by the use of the wheel load indicator or products related to it.

NOTE: Upon receipt, inspect unit for any damage that may have occurred during shipping. If any damage has occurred, document it with photos and contact a sales representative from Keyser Manufacturing for further assistance.

What's Included

- Travel Indicator Sensor (x 1)
- AC power adaptor (x 1)
- 72" USB cord (x 1)
- Nanuk 904 case (x 1)



Figure 1: Travel indicator unit and Nanuk 904 case



Figure 2: AC Power Adaptor (left) with 38 ½" USB power cord (middle) and 20 ¾" USB power cord (right)

- Owner's Manual

Travel Indicator Sensor Overview

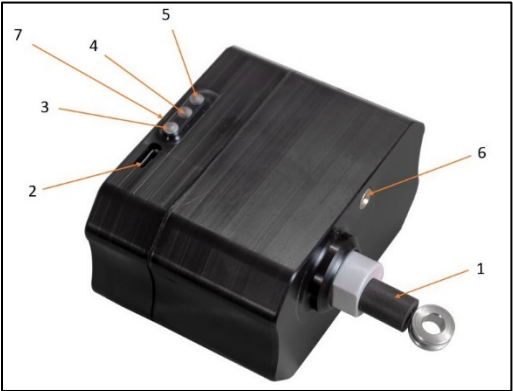


Figure 3: Shock travel indicator sensor

Item #	Description	Notes
1	String and ring connector	String automatically retracts when pulled on
2	Power Outlet	Micro USB connection, standard 9V Output
3	Charge Indicator Light	See Table 2
4	Connection Indicator Light	Lights blue when connected to phone/tablet
5	Recording Indicator Light	Lights red when recording session has been activated on phone/tablet
6	2X 6-32 Mounting Threaded Holes	Use to mount to a bracket clamped to shock (sold separately)
7	Bluetooth Reset Button	Located on top center, use to reset Bluetooth connection if there are issues linking sensor to phone or resetting pin #

Table 1: Shock travel indicator sensor features
















Indicator Light	Light Type	Meaning
  	Solid	Battery Power High
  	Solid	Battery Power Medium
  	Solid	Battery Power Low
  	Solid	Bluetooth Connected
  	Solid	Recording Session Active

Table 2: Shock travel indicator light chart

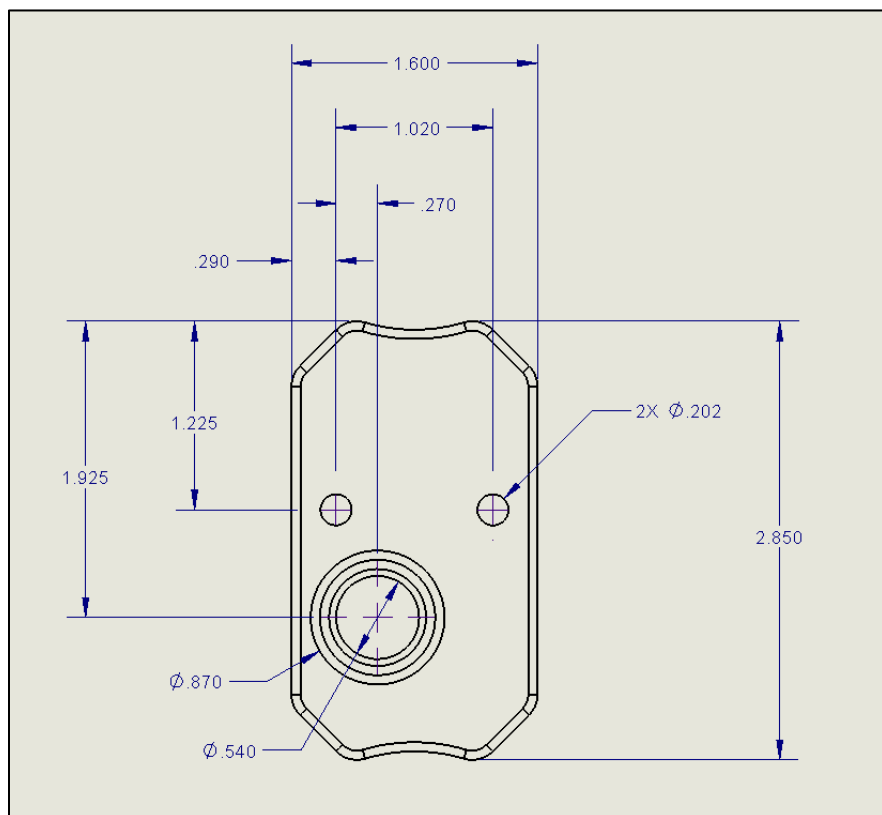


Figure 4: Bottom profile of sensor including dimensions in inches

Recommendations for Installation

- For “Keyser’s Data” app:
 - Be sure to have app installed on phone and/or tablet prior to installation of sensor on car.
 - NOTE: Strongly recommend going through the app and testing connection to sensor and functionality before installation.
- For in-car setup:
 - Try to keep string as straight and parallel as possible to travel path to ensure 100% accuracy
 - Make sure string and bottom ring connection are protected from possible debris.
 - Ensure sensor will not interfere with any other mechanisms to avoid damage.

Keyser's Data App Setup

- Upon receiving the Keyser Shock Travel Indicator Sensor, download the Keyser's Data App into your phone and/or tablet you plan to use to monitor data at the race track.
 - NOTE: A google account is required
 - Find the app in the Google Play Store



Figure 5: Icon to look for in app store

- Once app is successfully downloaded, open Keyser's Data App (you should see the screen in Figure 6 below).
 - Recommended that you make a shortcut for the app on your main screen on your phone/tablet.

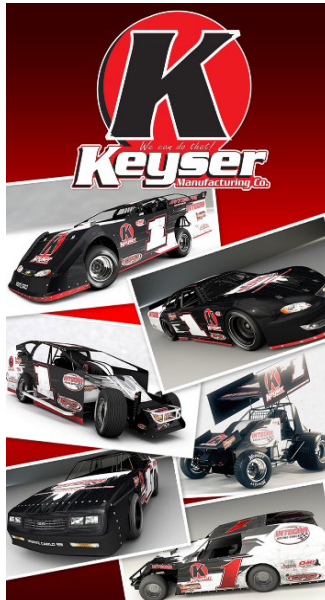


Figure 6: Opening screen for Keyser's Data App

- The screen in Figure 7 will show up on initial access to the app

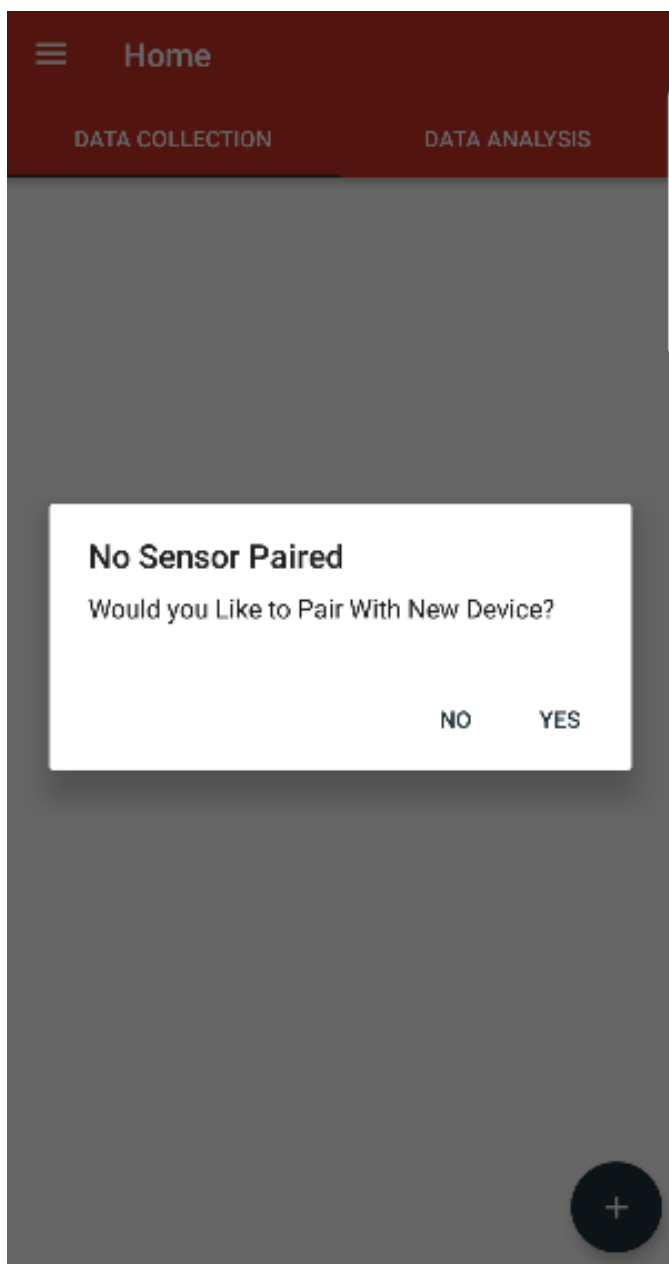


Figure 7: Pairing device

- Select “YES” and an “Available Sensors” menu will show on screen once a sensor(s) is found, shown below in Figure 8.

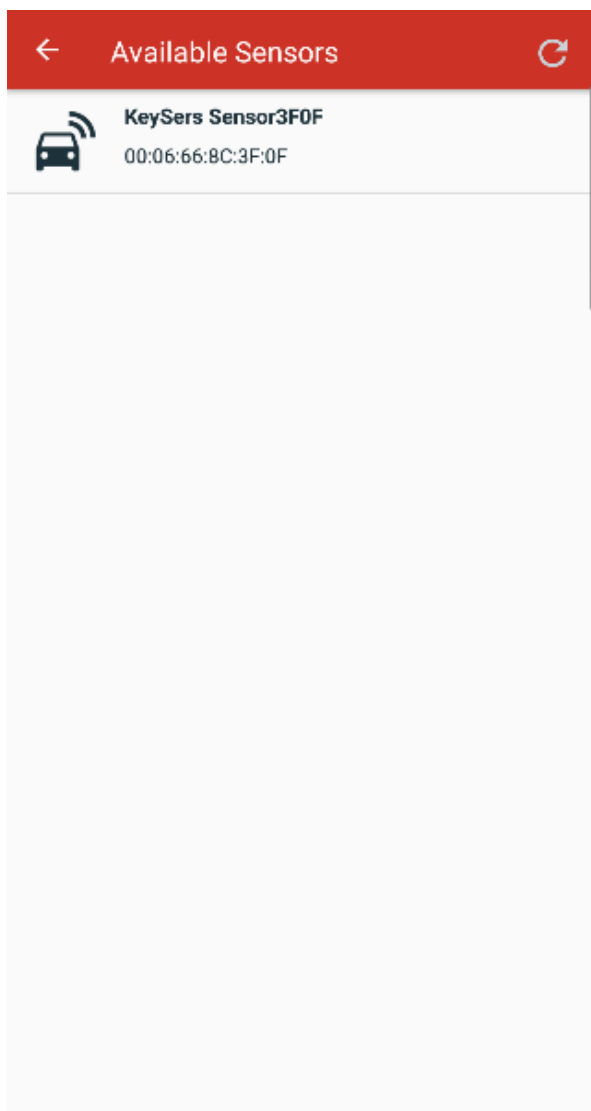


Figure 8: Available sensors menu

- Select the sensor in the menu which matches the serial number found on the sensor’s case.

- The pin or password will be requested in order to connect to the sensor:

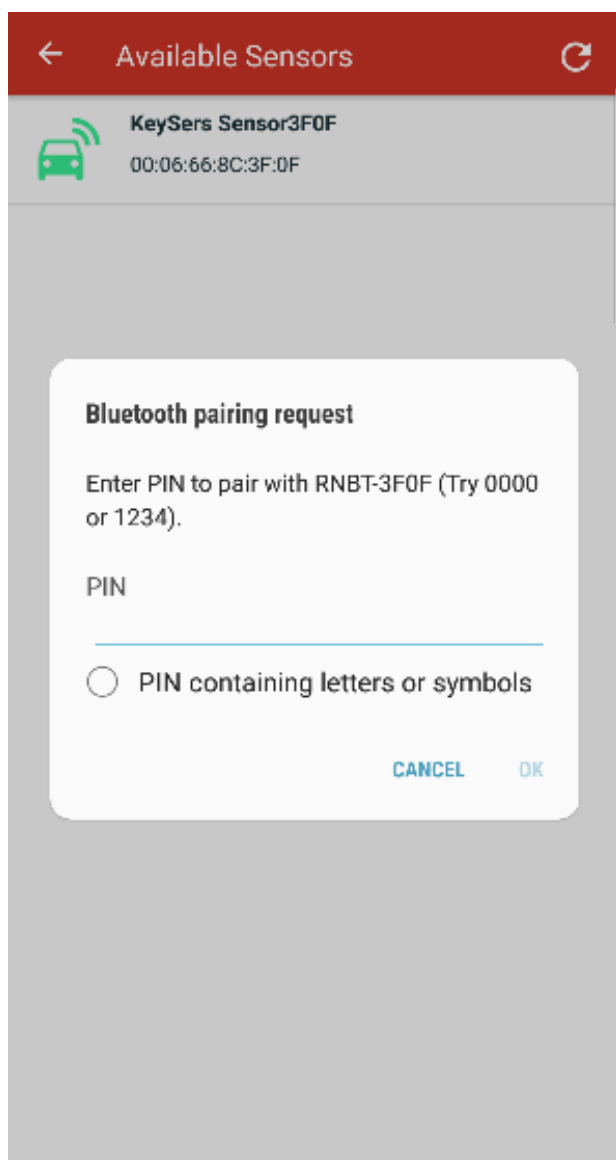


Figure 9: Bluetooth pairing menu

- The default pin is **1234**

- This pin can be manually changed for privacy by touching the upper right icon in the “Sensor Detail” menu found in Figure 10.

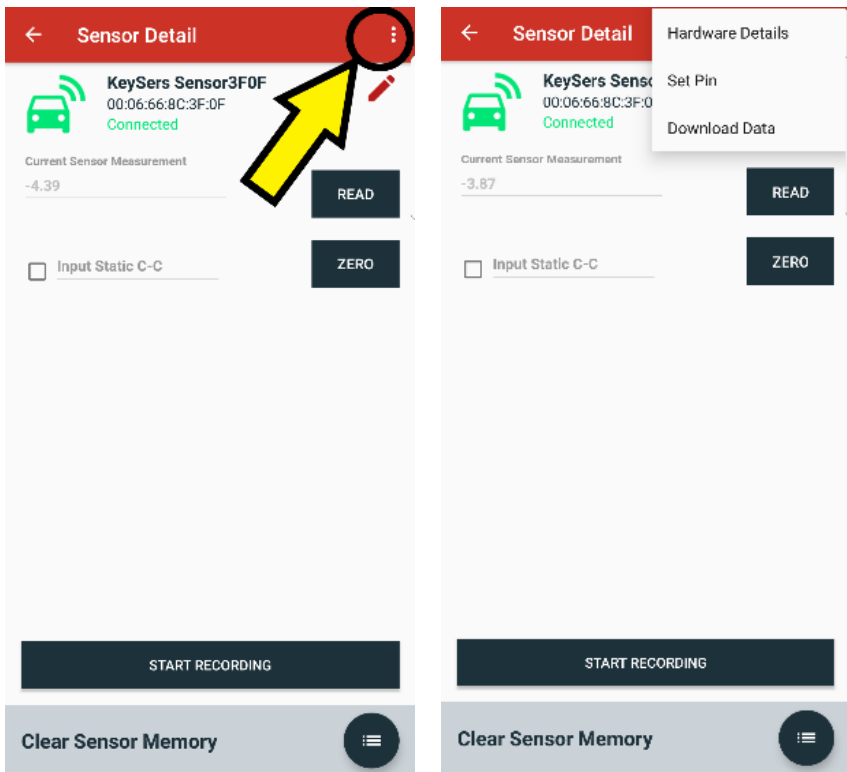


Figure 10: Upper right icon selection (Left), drop-down menu (Right)

- NOTE: when the car on the screen shows green and is connected to sensor the blue light on the sensor will turn on.
- The pin can be a minimum of 4 and max of 20 characters consisting of letters (capital and lowercase), numbers, and/or symbols
- The pin can be reset by holding the Bluetooth reset button for 10 seconds which will set it back to the default pin.

- Select “SET PIN” in the drop menu and you can type and re-enter new set pin code that will be used to connect to the sensor in its future use.

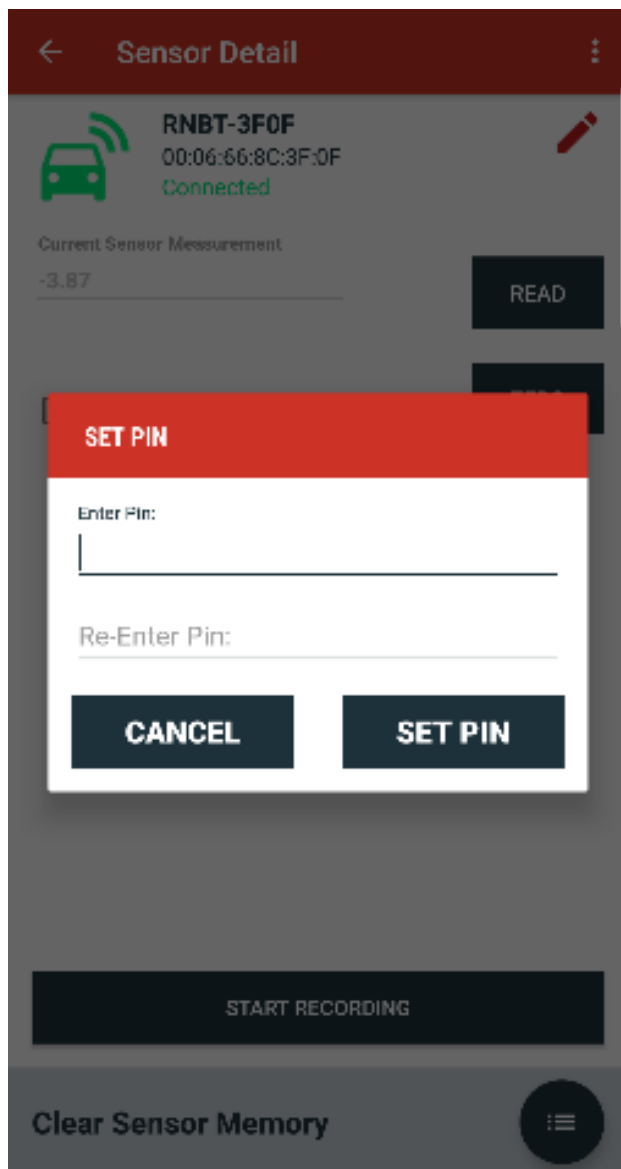


Figure 11: Set pin menu

- “Hardware Details” can also be selected in the drop-down menu from Figure 10 that provides details on the battery life of the sensor found in Figure 12.

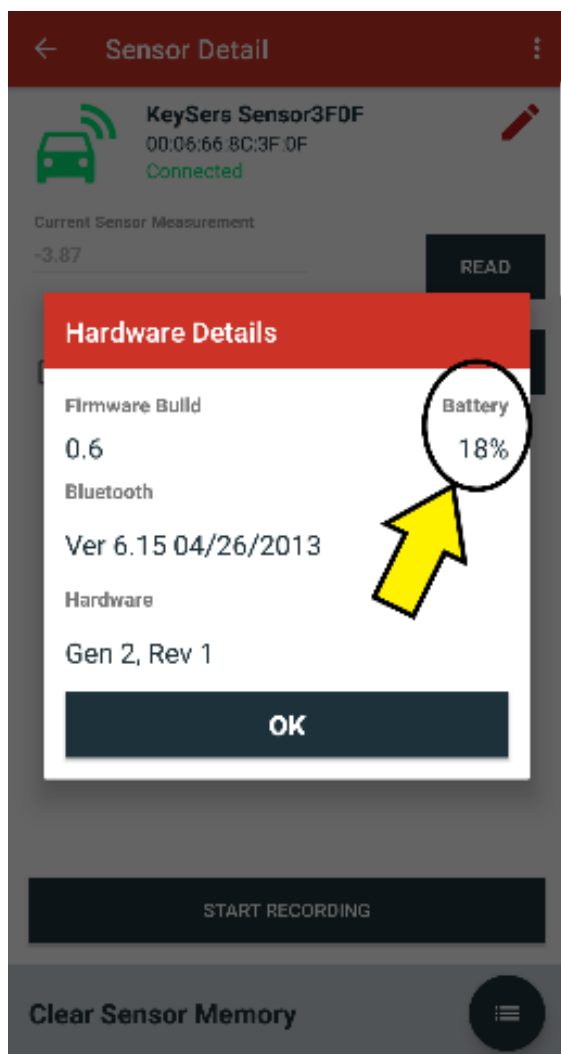


Figure 12: Hardware details menu

- NOTE: It is important to see in the Sensor Detail menu if the car icon is green or not. If car is green, the sensor is still connected to the phone/tablet and can access all of the features described.

- The sensor can be renamed for ease of connecting to the correct sensor. Select the “Pencil” icon on the upper right of the screen and a text bar will present itself to edit the name.

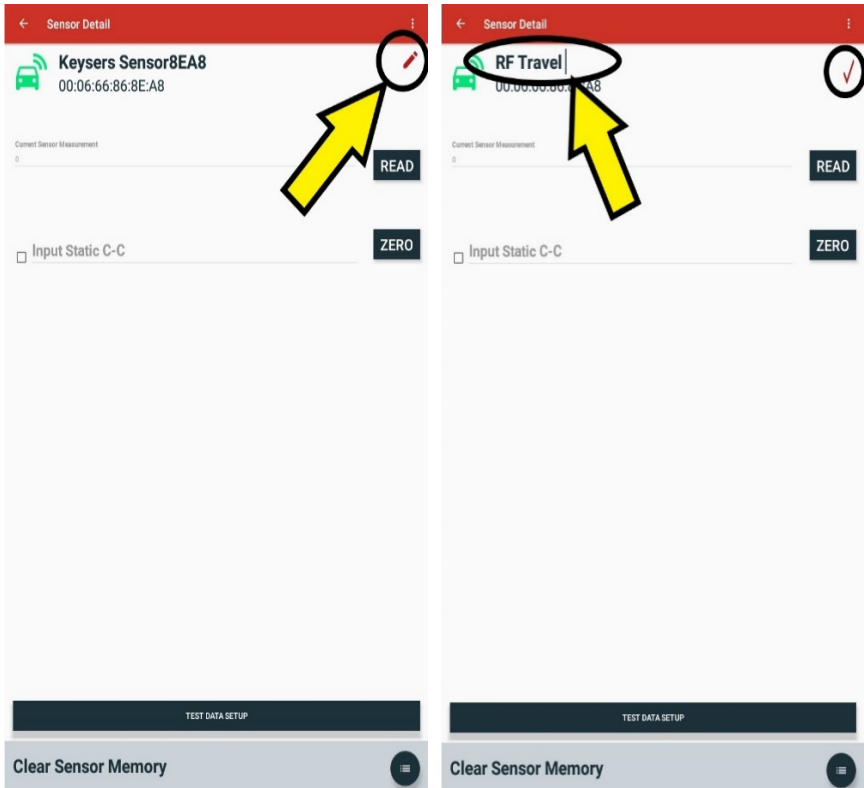


Figure 13: Edit Sensor Name Selection (Left), Name Edit and Confirmation (Right)

- Click on the “Checkmark” found on the right of the screen, shown in Figure 13 (Right), to confirm the name change.
- NOTE: the name will be saved to this phone or tablet ONLY, if paired to a new device, it will default to the “RNBT-” name.

- “Settings” can also be accessed in the upper left menu in the home screen found below:

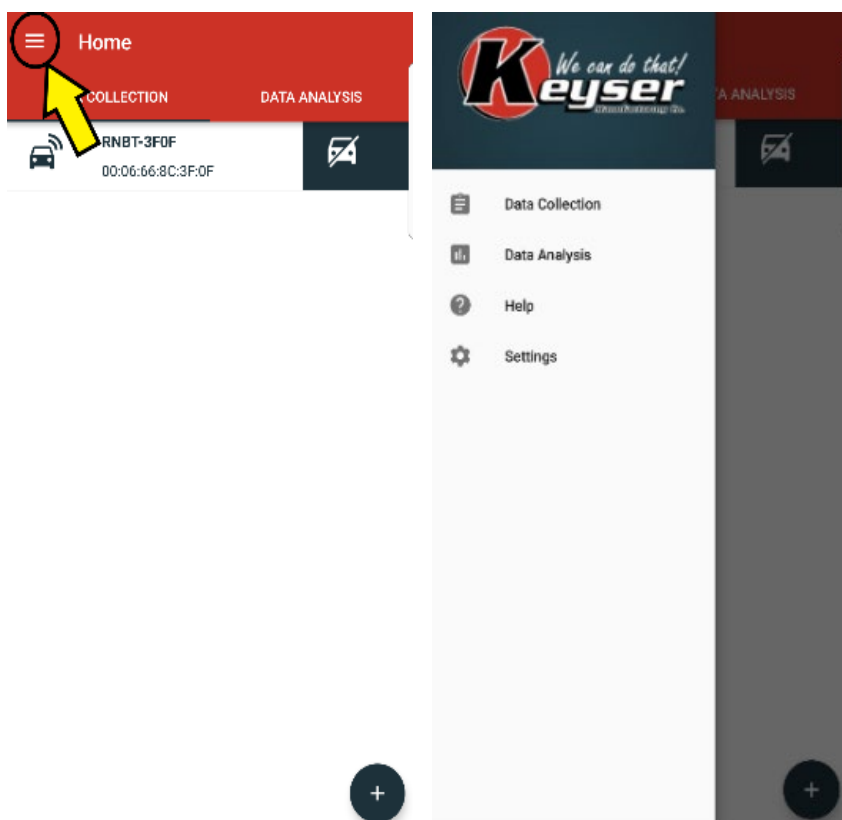


Figure 14: Home menu (Left), drop-down menu (Right)

- In “Settings” you can access the folder that all recorded data will be directed to in phone/tablet, and also edit the sample rate of the sensor’s recording.
 - Recommended sample rate: 200

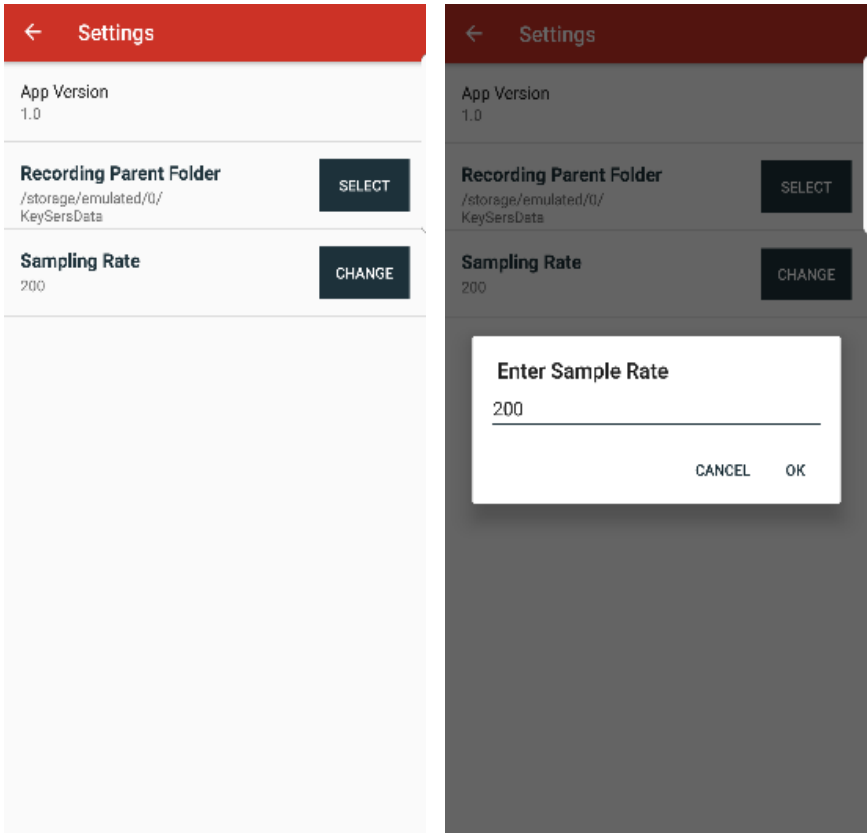


Figure 15: App settings (Left) and sample rate menu (Right)

- “Settings” displays the app version
 - This will help troubleshoot issues with different app versions.
- The “Recording Parent Folder” is the directory where the downloaded files go in your phone. The “Files” app in your phone will provide a KeySersData folder that has all of the downloaded data files in it.

Data Collection Procedures

1. In the home menu, you will find the “DATA COLLECTION” tab found in the upper left portion of the screen. Press that selection and the list of sensors to connect to will appear.

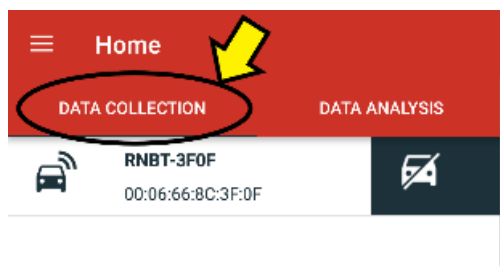


Figure 16: Data collection selection in home menu

- 2. The value of the string distance can be viewed in the Sensor Detail menu by pressing the “READ” button shown in Figure 17.

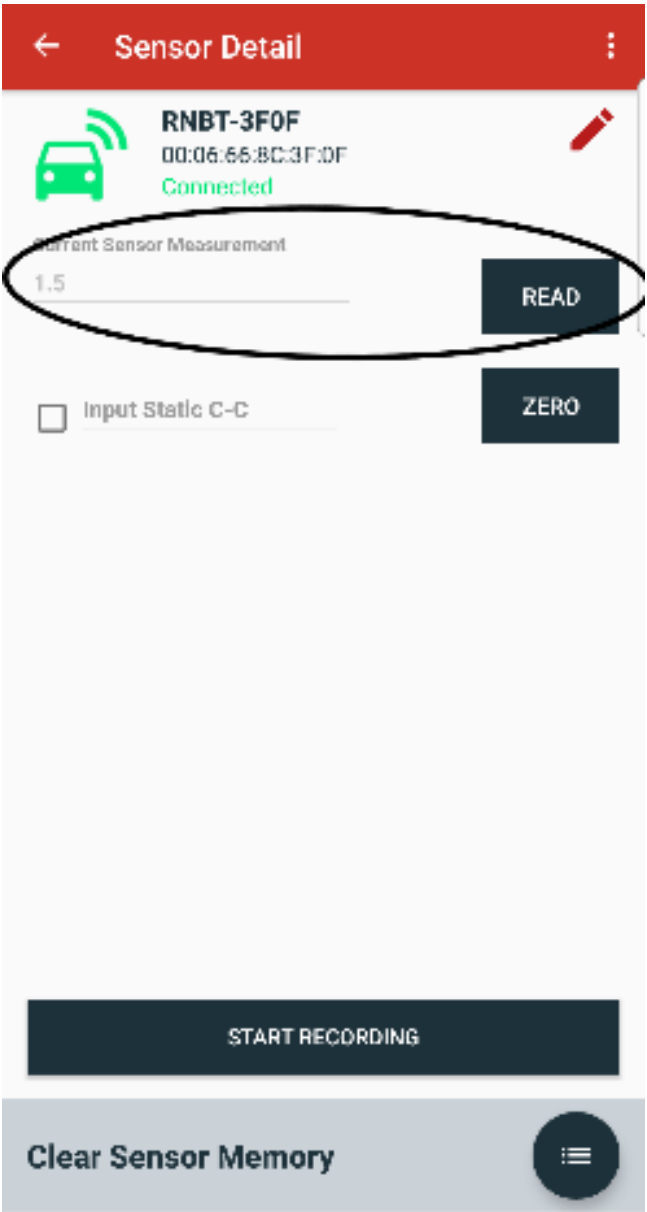


Figure 17: Read button and sensor measurement

3. Here you can choose to either set your static zero OR your static center-to-center distance:
 - a. For setting static zero, simply press the “ZERO” button found below “READ”. This will set the current state of sensor to zero.

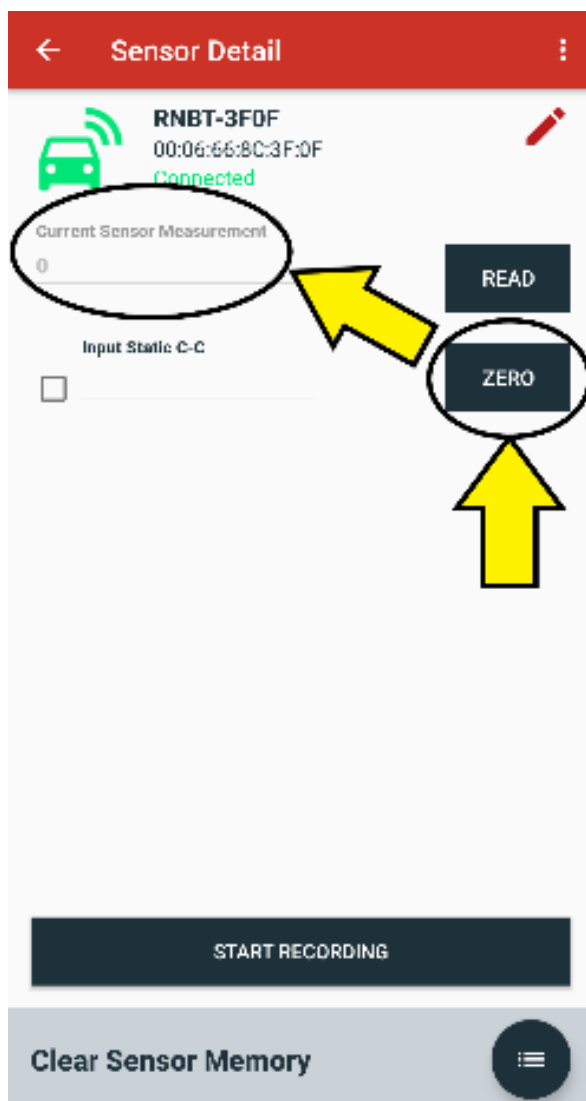


Figure 18: Setting zero value at static zero

- b. For setting static center to center distance, select the check box found below “Input Static C-C” and type in the measured distance.
 - i. Press the “ZERO” button and a “Sensor Successfully Zero” message should appear
 - ii. View the sensor measurement and it should present the value of the static input c-c.

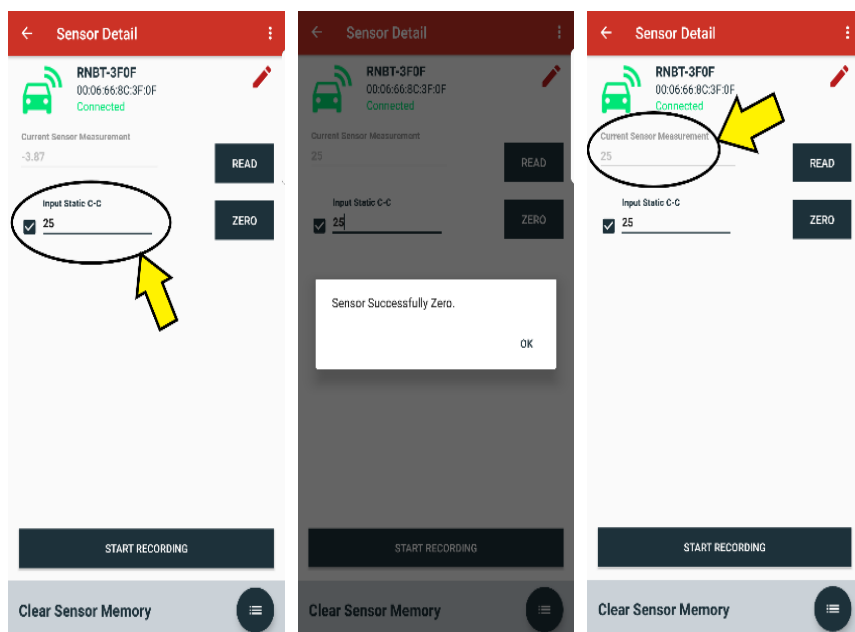


Figure 19: Entering measured center-to-center distance (Left), successful input message (Center), and resulting value (Right)

4. Be sure to stay connected to the sensor after the value is set, if not you will lose your set value and will need to do steps 1-5 again prior to the car going on to the race track.
5. If there is any doubt whether the value is still set correctly, you can verify this by going back into the sensor detail menu and checking the “Current Sensor Measurement” to see if it matches the “Input Static C-C”.

6. When the car is ready to leave the pits and go to the race track for an event (i.e. practice run, heat, or feature, etc.), you will need to activate the recording function on the sensor. Press the “START RECORDING” button, found in Figure 20.

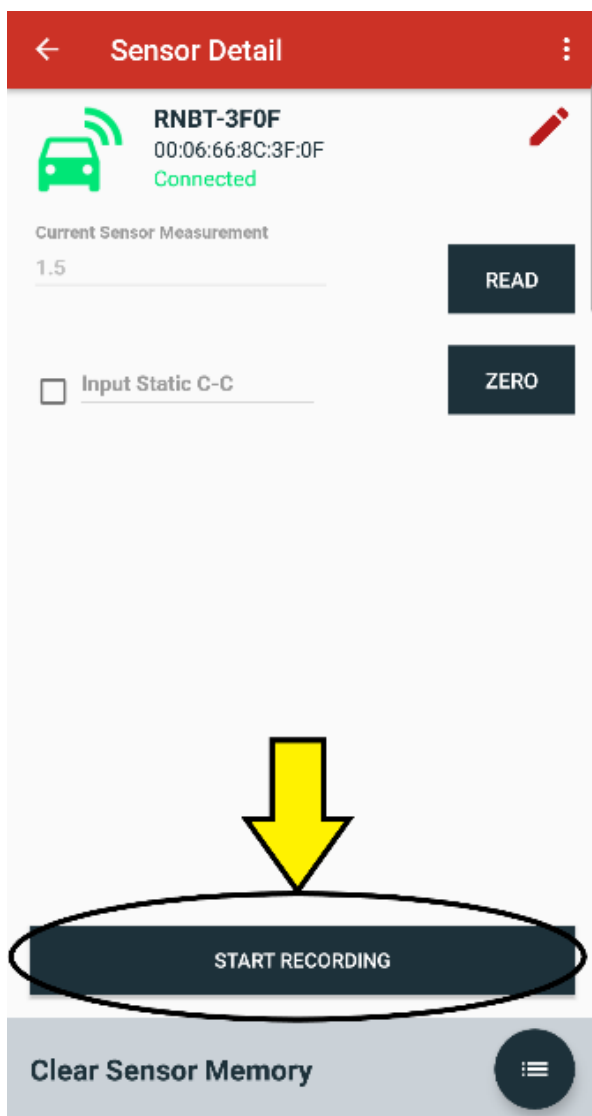


Figure 20: Start recording button

7. A screen, shown in Figure 21, may present itself if there have been other sessions recorded in the past. It will ask about clearing sensor memory due to there still being recorded data in the sensor. It is OK to select “CLEAR SENSOR MEMORY” as long as the previous data has been saved and accounted for.

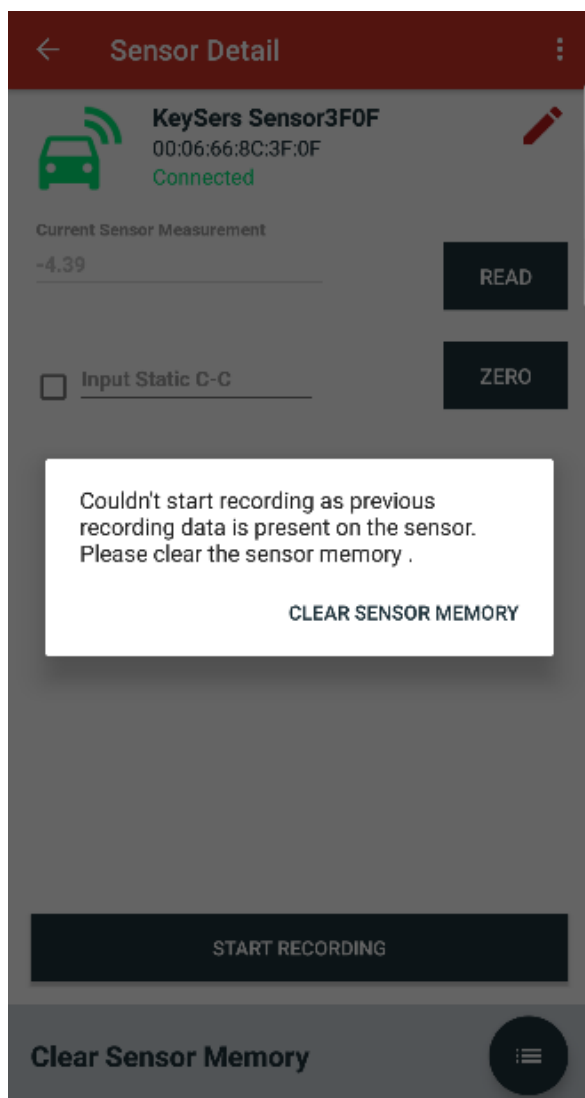


Figure 21: Clear search history notification

8. If it is the first time the sensor is recording data or the previous data has already been cleared previously, Figure 22 will show up and will ask for the track where the recording session is located. Type in the track information in the text line.

The screenshot shows the 'Sensor Detail' screen of an application. At the top, there is a red header bar with a back arrow and the title 'Sensor Detail'. Below the header, a green car icon with a signal wave is next to the text 'KeySers Sensor3F0F', '00:06:66:8C:3F:0F', and 'Connected'. A red pencil icon is in the top right corner. Below this, the text 'Current Sensor Measurement' is visible. A large red button labeled 'Start Recording' is prominent. Below it, a white dialog box is shown. Inside the dialog, the 'Track Name' field is highlighted with a black oval and contains the text 'Eldora Speedway'. Below the track name, there is a dropdown menu labeled '== Select Ra..' and a blue square button with a white plus sign. The 'Folder Name' field contains the text 'Eldora Speedway_20180309_KeySers Sensor3F0F'. Below that, the 'Race Data File' field is empty. At the bottom of the dialog is a dark blue button labeled 'OK'. Below the dialog, there is a large dark blue button labeled 'START RECORDING'. At the very bottom of the screen, there is a dark blue button labeled 'Clear Sensor Memory' and a circular menu icon with three horizontal lines.

Figure 22: Track name text line

9. It is also required to pick what type of session that is being recorded, to differentiate itself from other possible recording sessions. Press the down arrow next to “==Select Race Event==” and select from the drop-down menu shown in Figure 23.

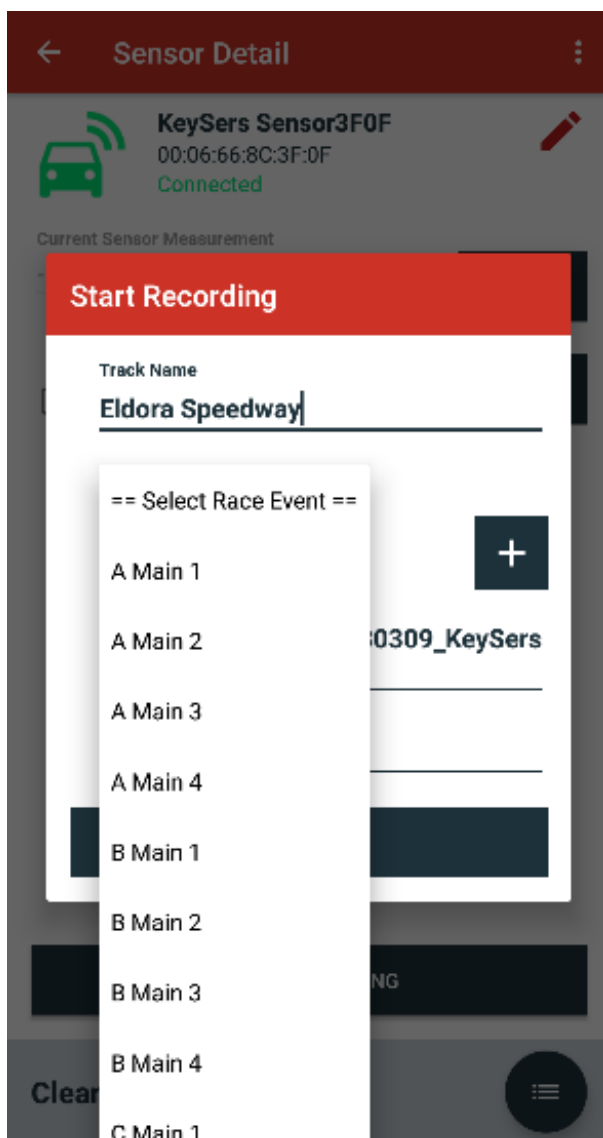


Figure 23: Select race event drop-down menu

10. If desired to add a new name to the “Select Race Event” selection, press the “Plus” button on the left of the screen, type in what the name of the session is desired to be, and press the “Checkmark” on the right of the screen.

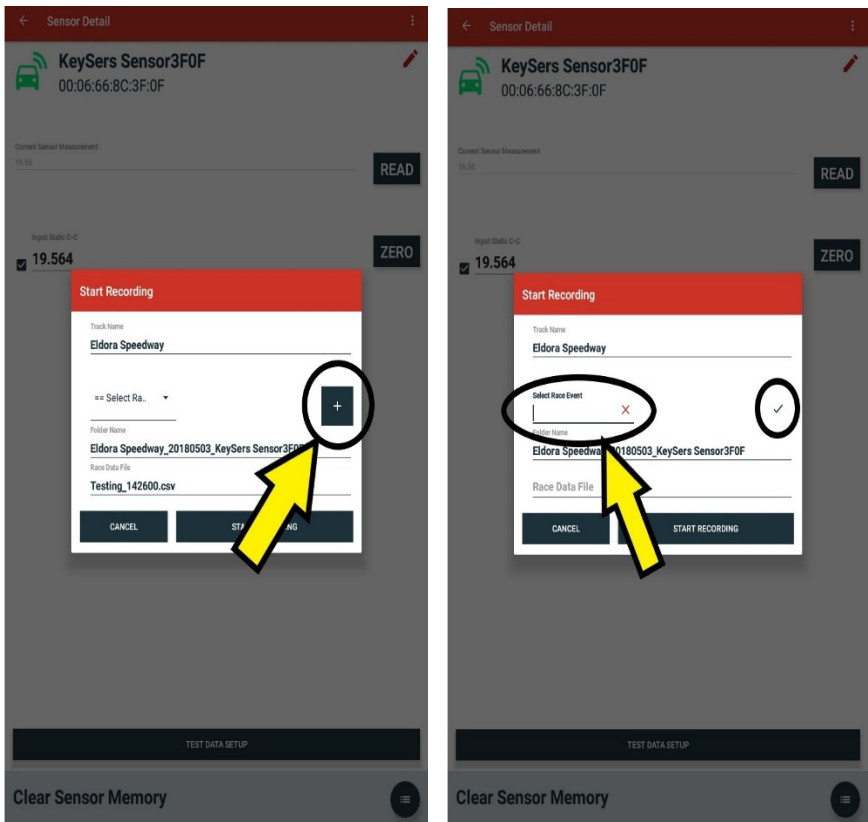


Figure 24: Edit Session Name Option (Left), Session Edit and Confirmation (Right)

11. With the parameters selected, the “START RECORDING” button can be pressed.

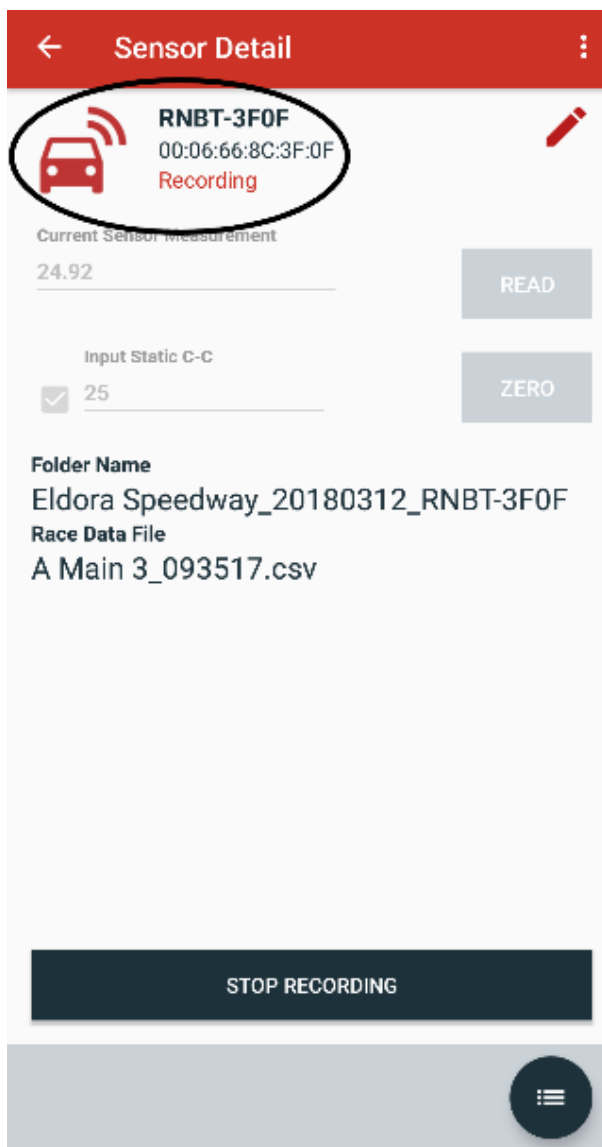


Figure 25: Recording icon

- Note that the green car on the upper left has now turned to red and has the words "Recording" next to it. This means the session is currently being recorded/logged. The red light on the sensor will also turn on to notify that it is recording.

13. When the car has finished its session and returns back to the pits, the “STOP RECORDING” button on the bottom of the screen can be pressed and will download all of the data the sensor logged in the time elapsed between the time the “START RECORDING” and “STOP RECORDING” buttons were pressed.

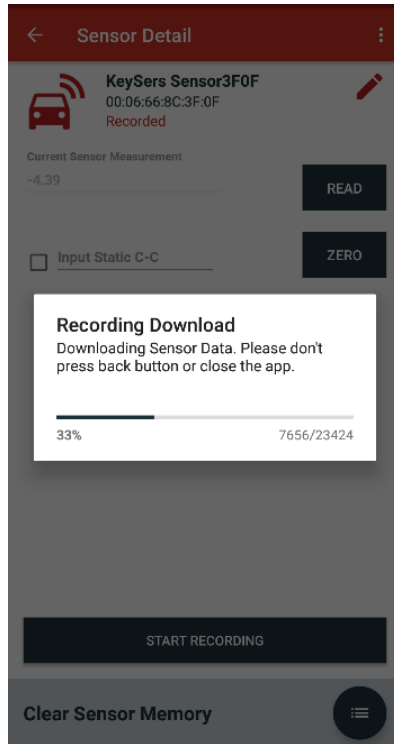


Figure 26: Recording download screen

14. When the percentage bar is completed to 100%, the file has finished downloading
15. Press the upper left arrow button on the screen to return to the home menu.
 - NOTE: The lower right corner “7656/23424” indicates the number of bytes of data. If the app does not receive the same count, it will retry the download.

Data Analysis Procedures

1. To analyze the data that the shock travel indicator sensor has provided, the “DATA ANALYSIS” selection on the home menu must be selected.

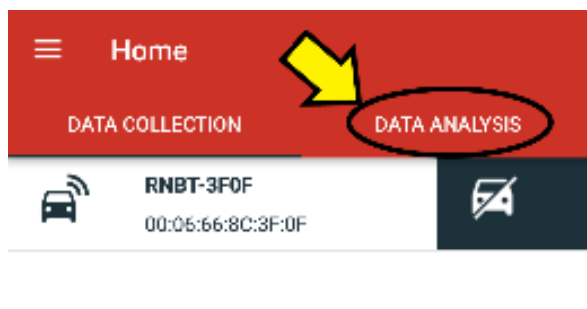


Figure 27: Data analysis selection in home menu

2. A list of event folders will be presented on the screen to which each folder name includes the race track name, year, month, day, and what sensor was used. Select the folder that applies to the data desired to be analyzed.

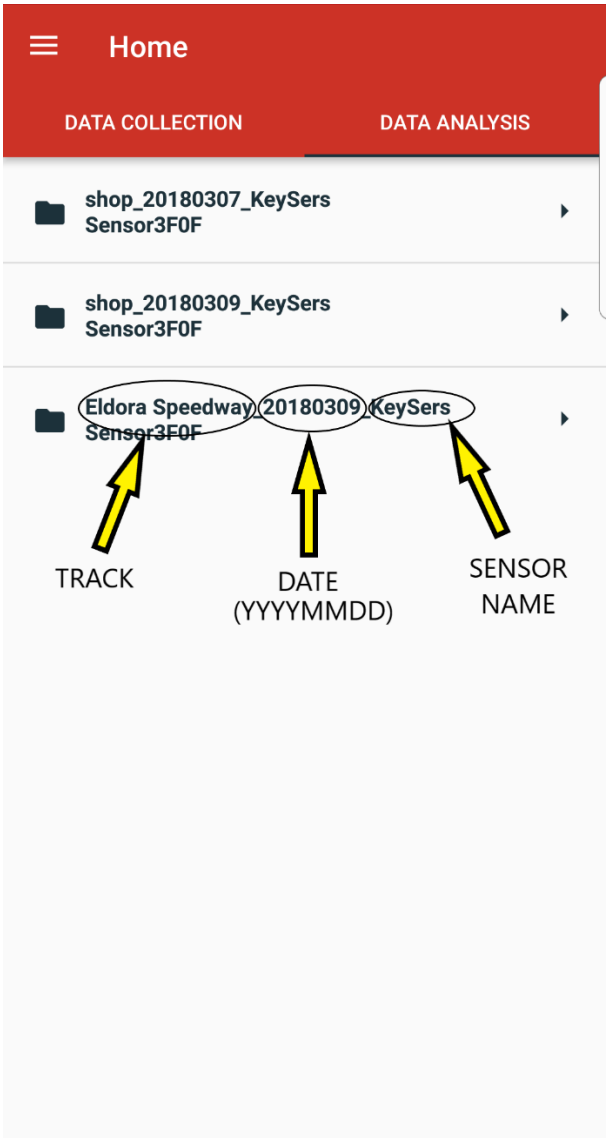


Figure 28: Folder selection screen

3. A list of files will be presented on the screen of all the recorded sessions from the track folder to which each file name includes the event selected from the drop-down menu, and time stamp of when the download started.
(Example: A Main 2_142042 refers to A Main 2 @ 2:20:42 PM)

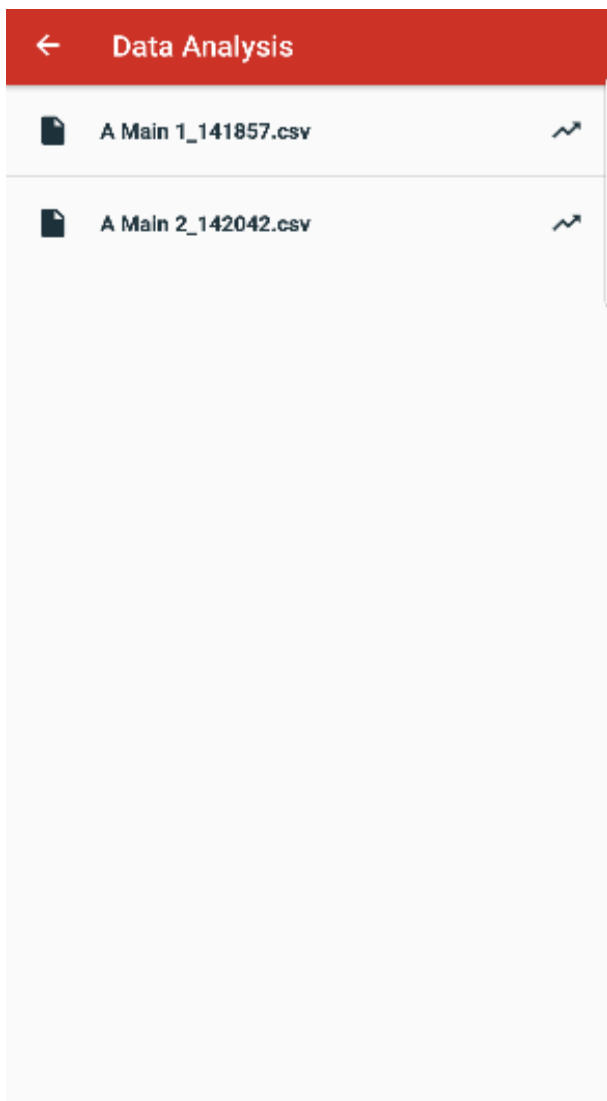


Figure 29: File selection screen

4. Upon selecting a file, a displacement chart of the data collected is presented, shown in Figure 30.

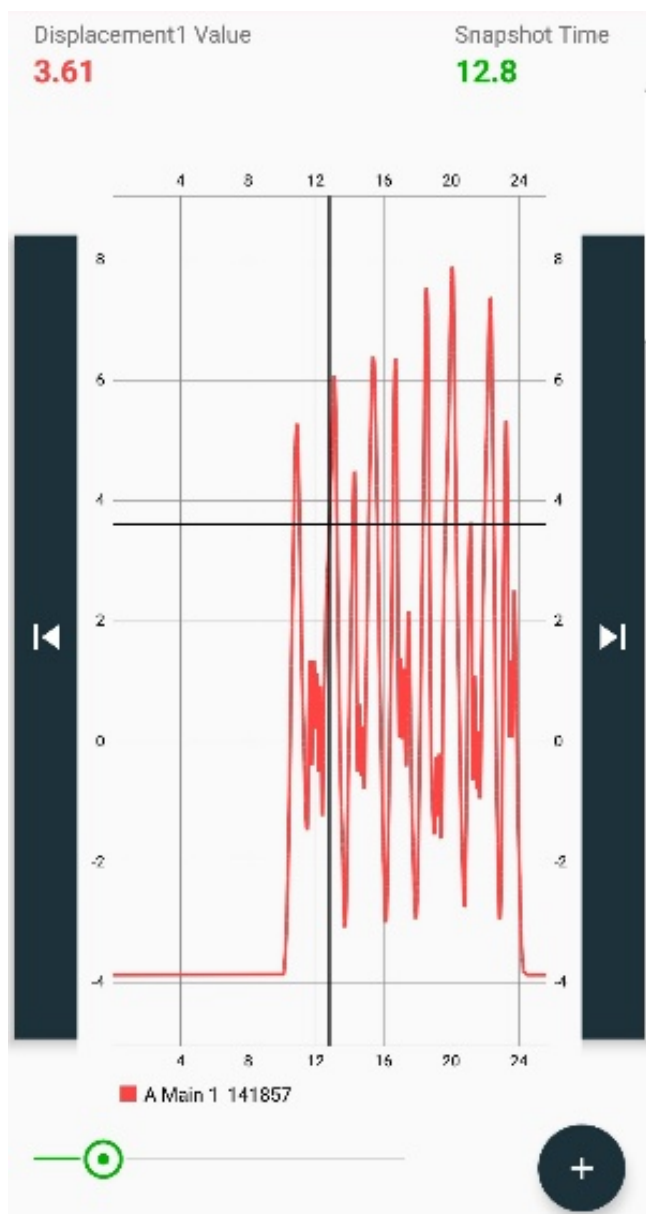


Figure 30: Data displacement chart

5. The chart shows the value of time in the X-axis (horizontal) and the shock measurement value in the Y-axis (vertical). The chart area can be touched with fingers and can perform tasks such as finding a certain value of displacement at a certain time by placing a cursor over that point, an example is in Figure 31.

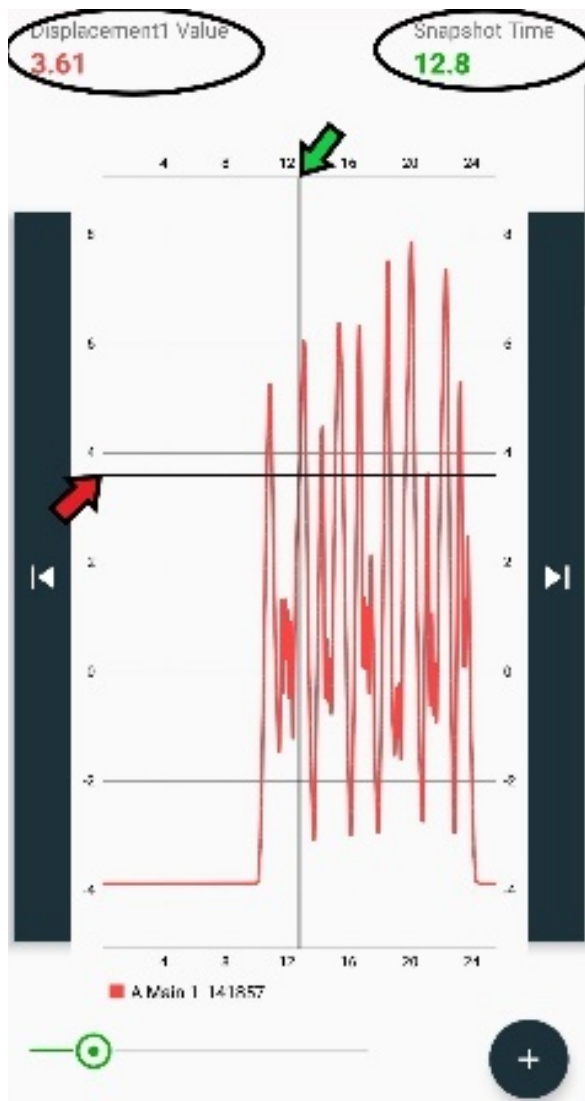


Figure 31: Cursor in displacement chart and resulting values

6. The cursor can be located by touch and also by pushing the buttons shown on both sides of the chart area. These buttons can cause the cursor to scroll across the chart area while following the trend line. The left button scrolls the cursor point by point slowly over the trend line to the left, while the right button scrolls it slowly to the right.

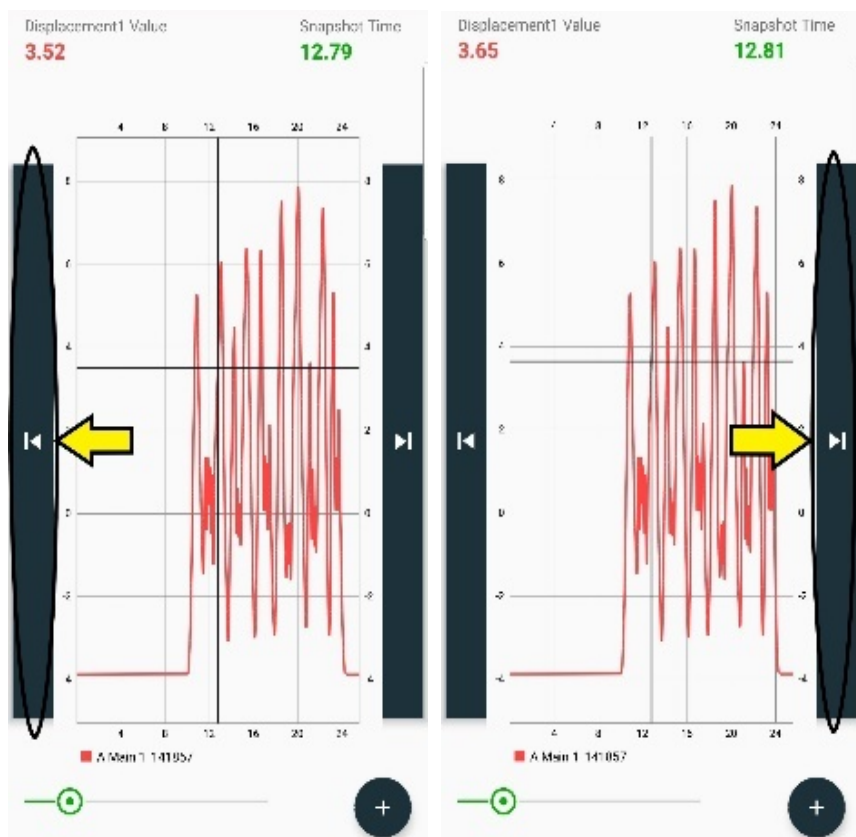


Figure 32: Scroll left button (Left) and scroll right button (Right)

- The bottom scroll button allows for quick motion for the cursor. Simply press on the green circle and slide to the left or right to move the cursor to the respective directions.

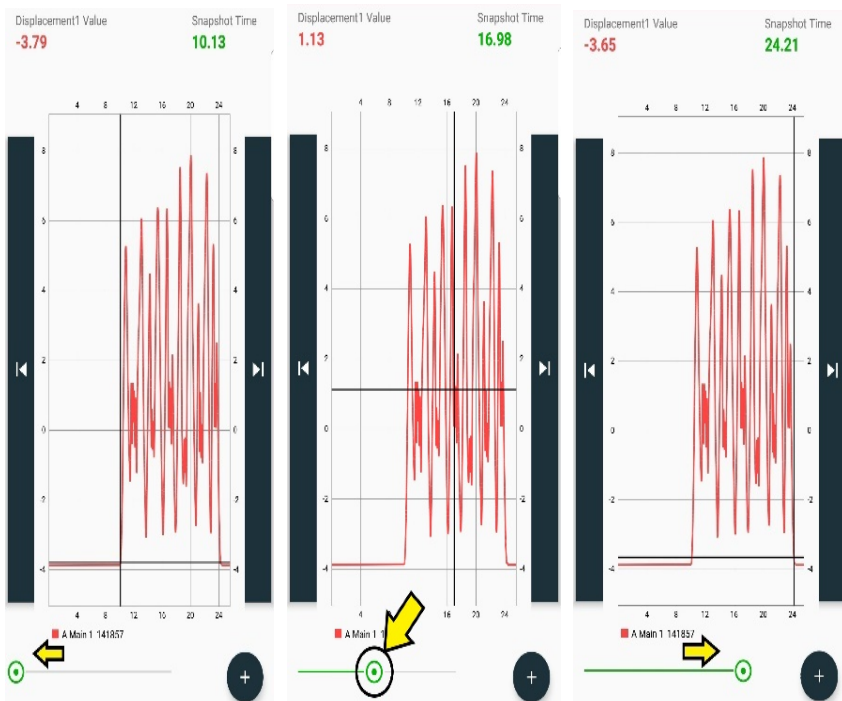


Figure 33: Bottom scroll button (Center), scrolled to left (Left), scrolled to right (Right)

8. The chart can also be zoomed in horizontally by placing your fingers on the chart and spreading them outward horizontally.
- NOTE: the scroll buttons can still be used with the zoomed view.

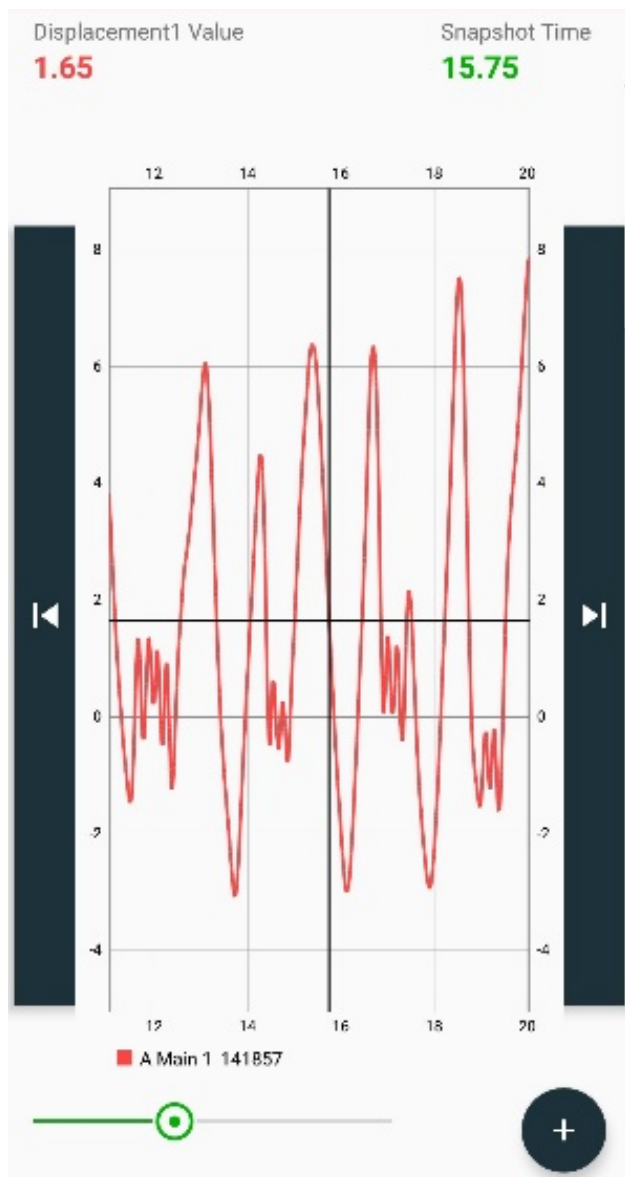


Figure 34: Horizontal zoom view of displacement chart

9. The chart can also be zoomed in vertically by placing your fingers on the chart and spreading them outward vertically.

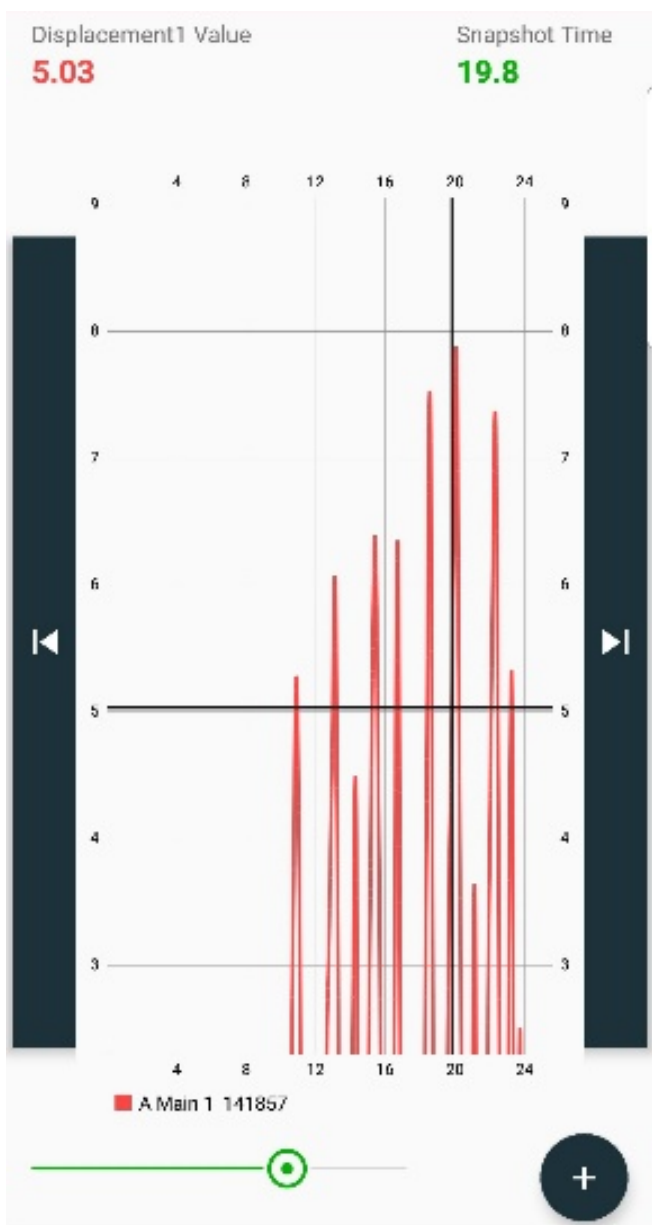


Figure 35: Vertical zoom view of displacement chart

10. Unwanted data can also be trimmed off the displacement chart by first placing the cursor at the edge of the data wanted to be eliminated and using the scissors icon located in the displacement chart menu. To have the menu shown on screen, simply press in the area that has the cursor position values.

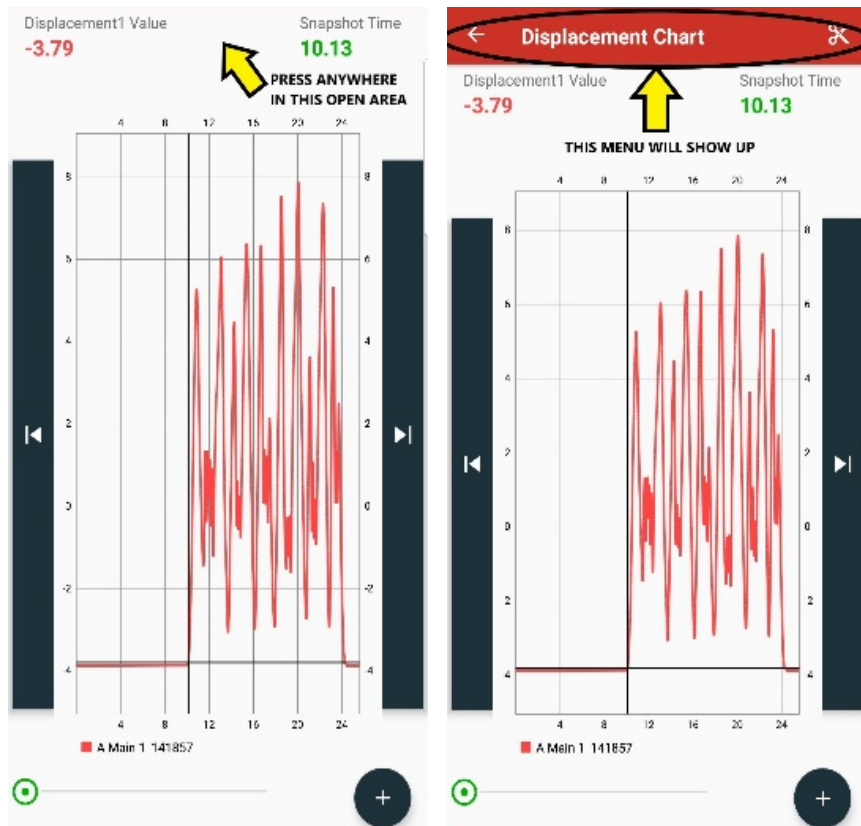


Figure 36: Pressing open area (Left) and displacement chart menu (Right)

- NOTE: the trimmed data is NOT deleted from the “raw” data, it is only removed from the chart for this “session”.

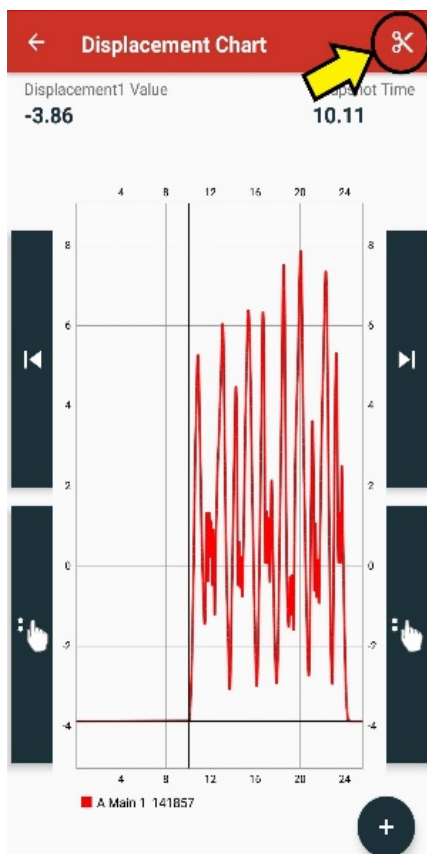
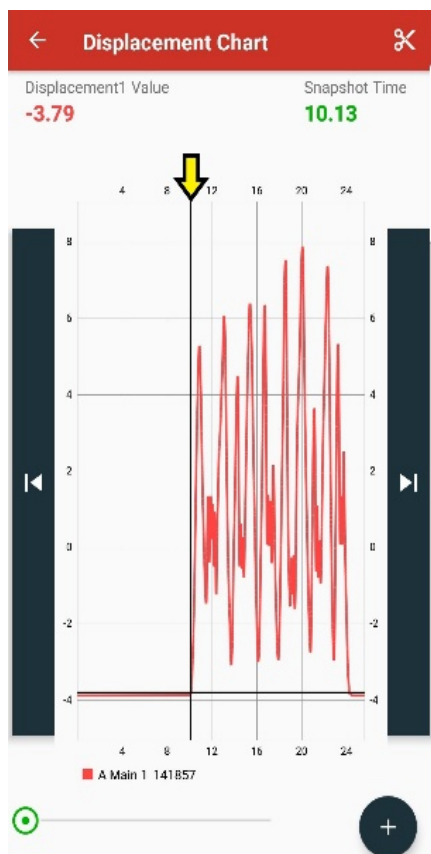


Figure 37: Cursor placed at edge of unwanted data (Left), scissors trimming icon (Right)

11. Once selected, the trimming option will show a menu asking for left trim or right trim, in the case of the example, the left trim is selected to rid of the unwanted data to the left of the cursor, the result of the trim is shown in Figure 38. NOTE: the right trim will trim the data to the right of the cursor with same procedures.

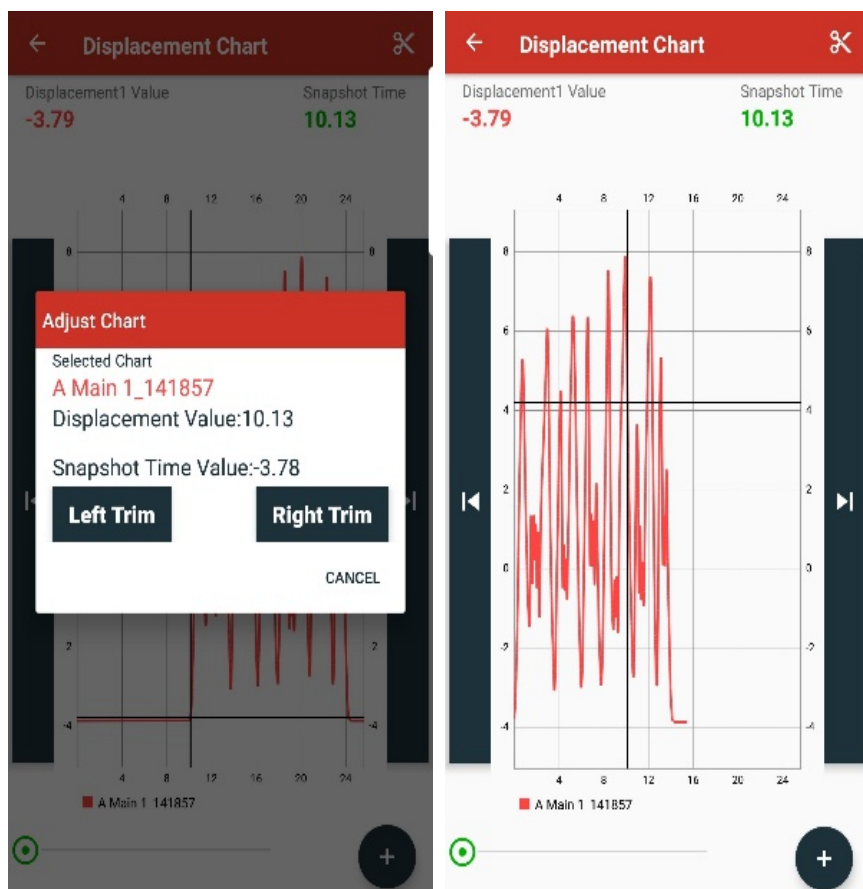


Figure 38: Adjust chart menu (Left), left trimmed chart (Right)

12. Observing multiple sets of data in the same displacement chart is also possible by selecting the “+” button in the lower right corner of the screen and going into the list of data sets and selecting the file that is desired to be compared with.

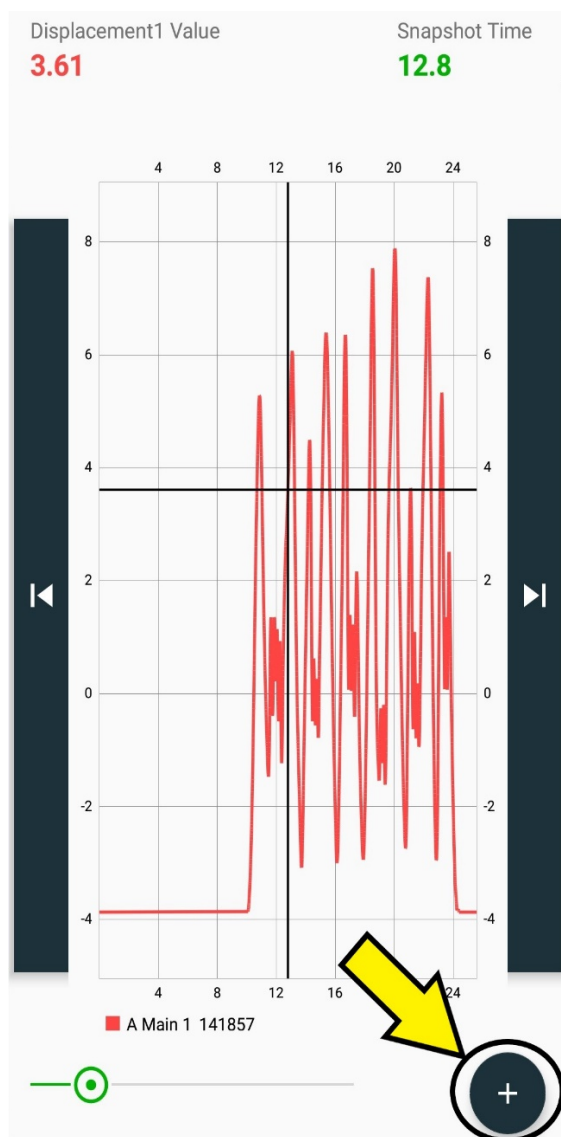


Figure 39: Select additional charts option

13. Select the desired comparing data set and the displacement chart will be presented with the two displacement charts. All functions (i.e. scrolling, zooming, and trimming) that were demonstrated with a singular data set can also be utilized.

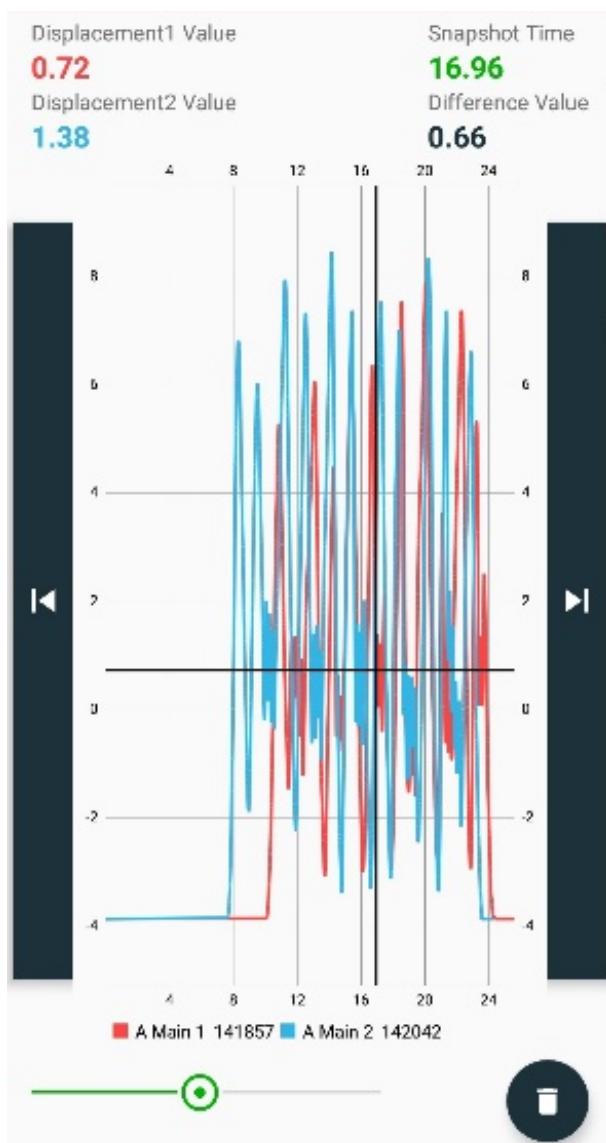


Figure 40: Comparison displacement chart between two data sets

14. The trim function can be used to line the data trend lines to align to a similar overlay. Press the trend line of the data set that you wish to trim first and then go through the same procedures as previously explained with a single data set for left trimming the line. Repeat sets for the comparing data set.

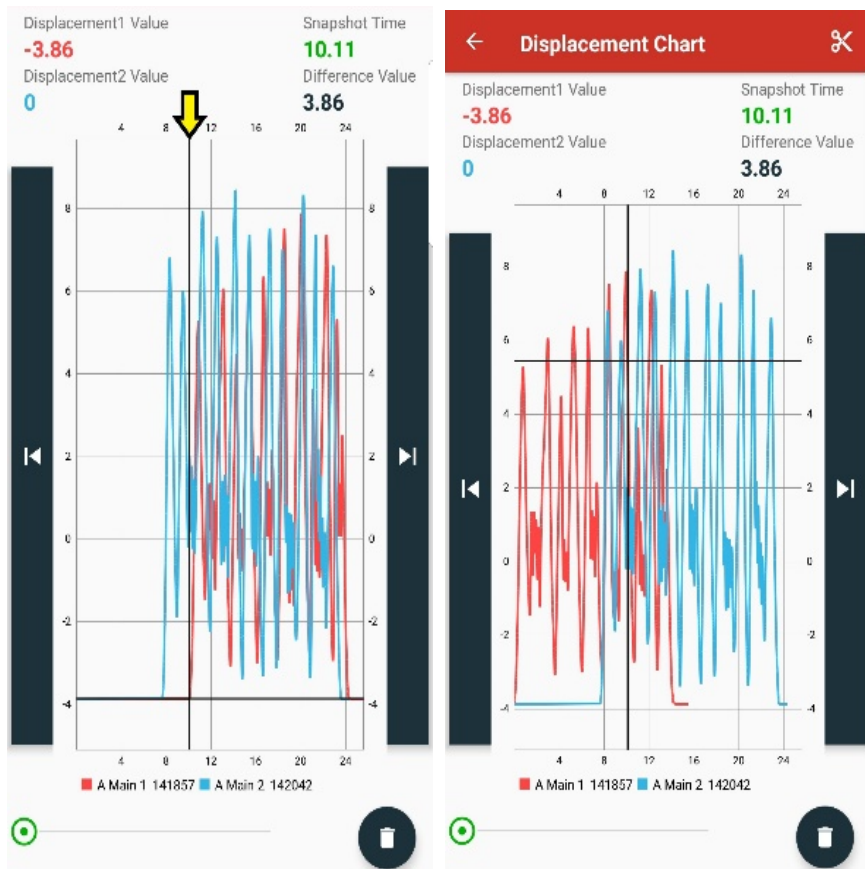


Figure 41: Cursor placed at edge of still data of data set 1 (Left) and data set 1 trimmed (Right)

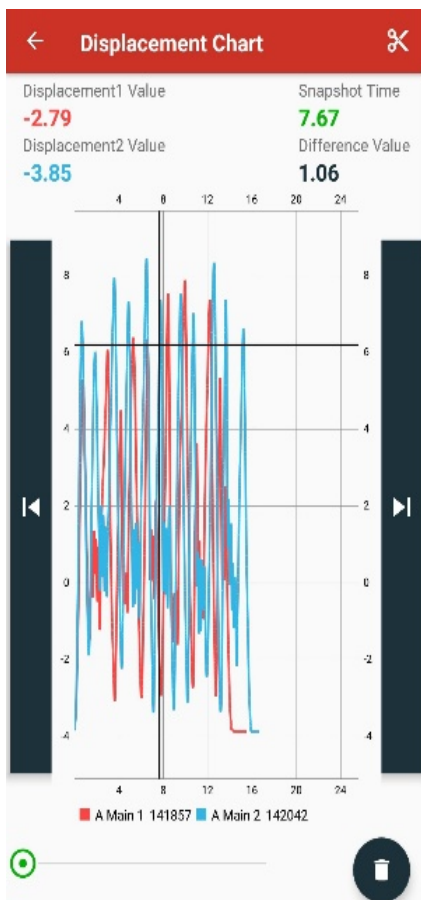
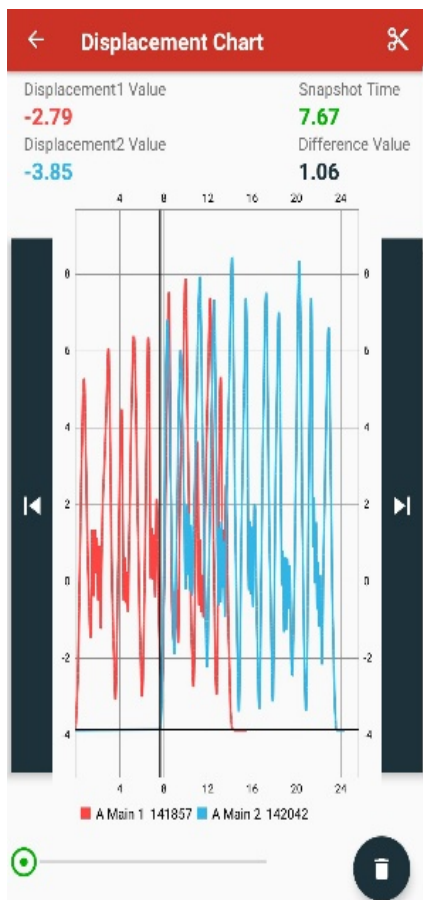


Figure 42: Cursor placed at edge of still data of data set 2 (Left) and data set 2 trimmed (Right)

15. In order to get rid of a data set in the displacement chart, the trash can icon can be selected and will present the data files in a menu.

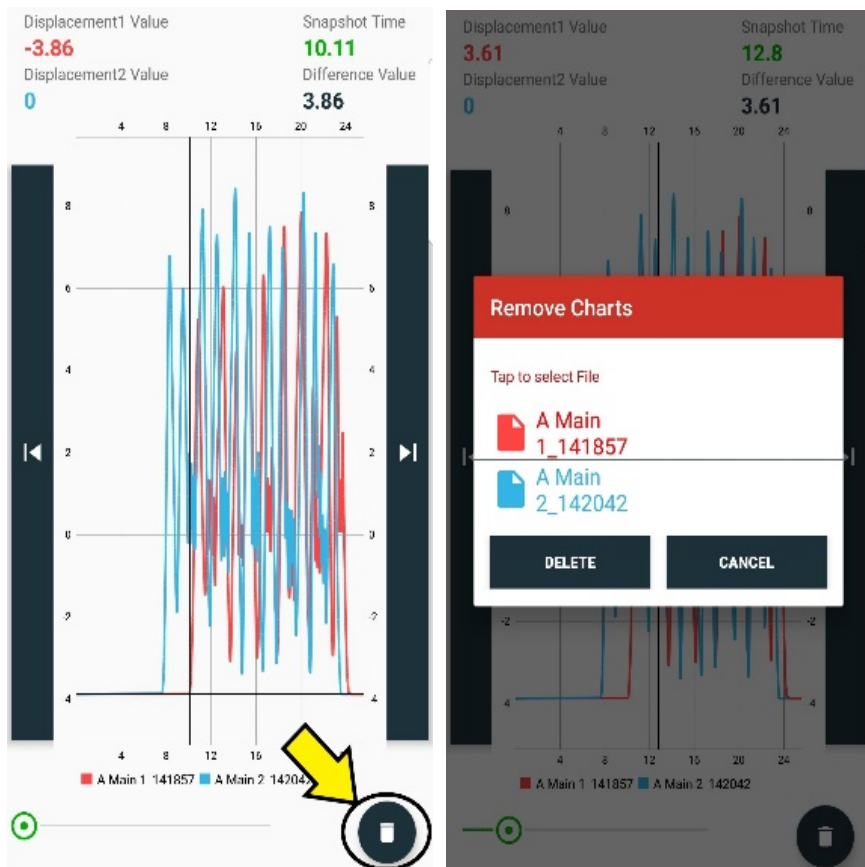


Figure 43: Trash can icon (Left) and “Remove Charts” menu (Right)

16. Select the data file that is wanted to be removed and then select the delete option.

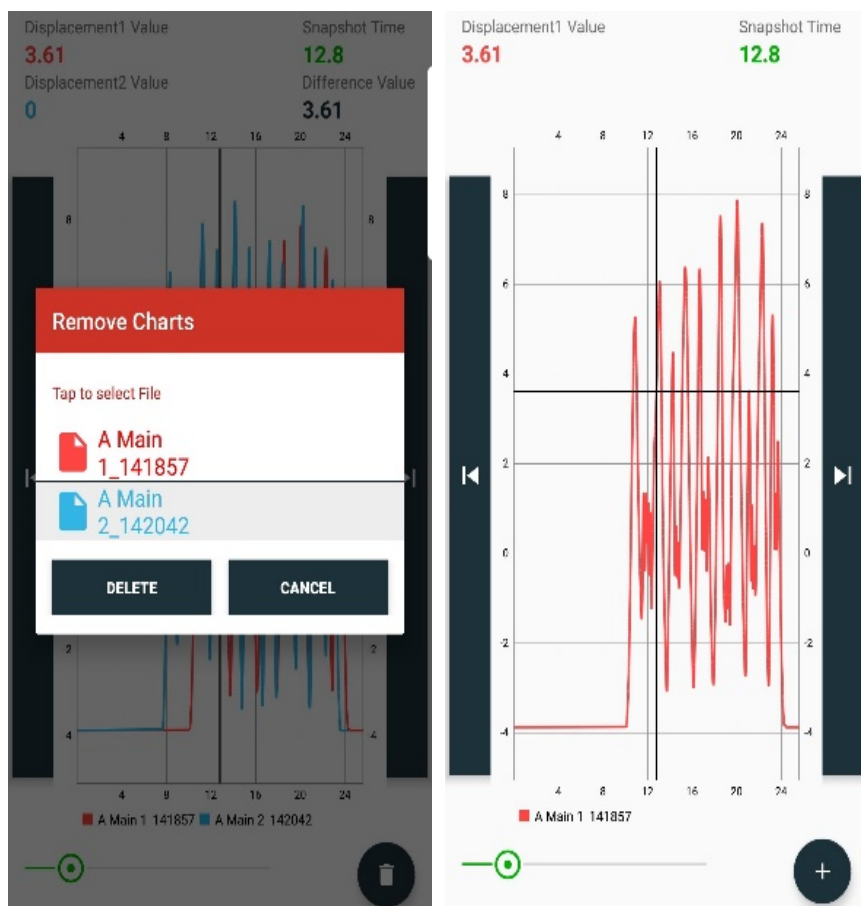


Figure 44: Remove chart selection (Left) and resulting chart after delete (Right)

NOTE: Any time that a chart is removed, the remaining chart will turn to the default red for its trend line, regardless of what color it was in the comparison. (Example: "A Main 2_142042" would turn to red if "A Main 1_141857" was deleted)

17. The screen can also be tilted horizontally by flipping your phone to the horizontal position. All activities and functions can be performed with this view as well.

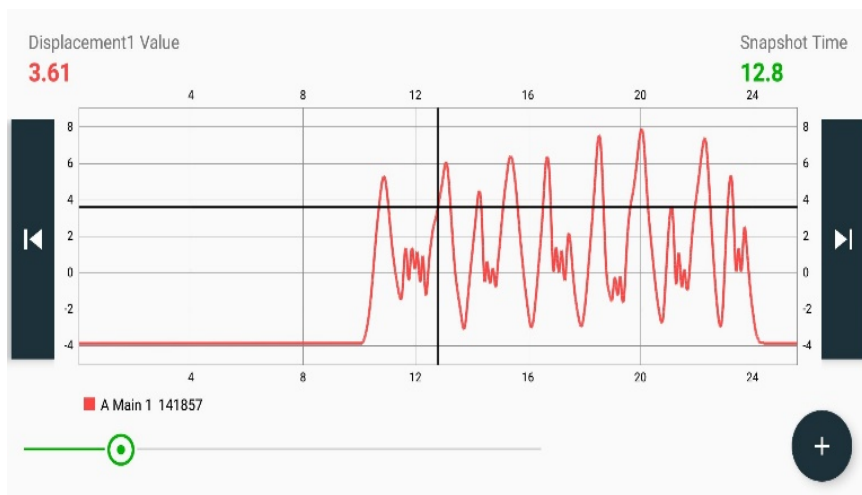


Figure 45: Horizontal screen view

18. To completely remove all charts, simply exit the Keyser's Data App.

Removing Track Folders/Data Sets

- Completely removing track folders and data sets CANNOT be done within the app. However, there are a small number of steps that can be taken to properly delete these files within your phone:
1. Access the “Files” folder in your phone
 2. Select “Internal Storage”
 3. Find the Keyser’s Data App Folder or folder specified in app settings, shown in Figure 46

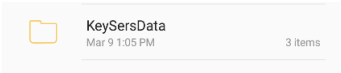


Figure 46: Keyser’s Data App folder titled “KeySersData”

4. Track folders are presented and can be completely deleted by pressing on the folder until it is checked and then selecting delete.

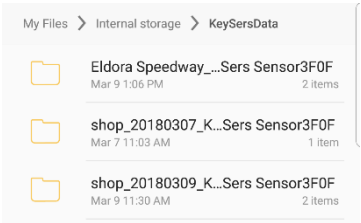


Figure 47: Track folder location

5. You can also select the track folder of the data file you want to delete and hold down on the file until it is checked and then selecting delete.

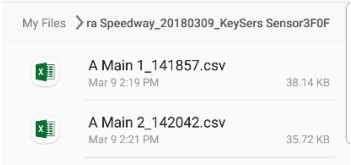


Figure 48: Data file location

Troubleshooting

Problem	Probable Reason	Possible Solution
Battery draining error shows up on screen	<ul style="list-style-type: none"> • There is no ON/OFF switch on sensor, thus it is always running. 	<ul style="list-style-type: none"> • Go into hardware settings and view the battery life % to double check if it's low • ALWAYS keep sensor charging while not installed in race car.
App is not connecting to sensor	<ul style="list-style-type: none"> • Battery has died on sensor • Bluetooth isn't activated on phone/tablet • Phone/tablet is out of sensor's range 	<ul style="list-style-type: none"> • Go into Bluetooth settings to double check if it's active • Move phone/tablet closer to sensor or wait for sensor to return in range then try to reconnect • ALWAYS keep sensor charging while not installed in race car. • Internal issues, contact technical support.
App has disconnected from sensor	<ul style="list-style-type: none"> • Battery has died • Phone/tablet is out of sensor's range 	<ul style="list-style-type: none"> • Move phone/tablet closer to sensor or wait for sensor to return in range then try to reconnect • ALWAYS keep sensor charging while not installed in race car. • Internal issues, contact technical support.

If ever in doubt when troubleshooting issues with the shock travel indicator and Keyser's Data App, call technical support at Port City Racing at (800)-472-2464 or e-mail keyserintegraengr@gmail.com. Knowledgeable staff will be happy to assist you.

FAQ's

- What happens if the sensor goes out of range of the phone/tablet while recording, will I lose the data set?
 - NO, most times the sensor will be out of range from the phone/tablet while on the race track. Once the car comes back to the pits in range, re-connect to the sensor and select "Stop Recording". You will receive the data file and be able to analyze.
- What can I use to clean the indicator?
 - The outside of the indicator can be cleaned with a fresh cloth that may be moistened with water and little amount of liquid soap.
 - Do NOT use abrasives, solvents, scouring cleaners, and alkaline cleaners.
- What is the expected battery life of the sensor?
 - Approximately 2 hours while continuously recording.