MiLAB

Version

User Manual

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Introduction

MiLAB™

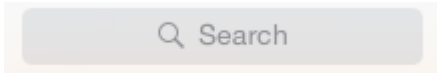
MiLAB is a powerful software tool which, paired with einstein™ brand sensors, lets you collect, display and analyze data, turning any Android device into a true *Digital Lab*.

MiLAB's flexible and comprehensive features let you:

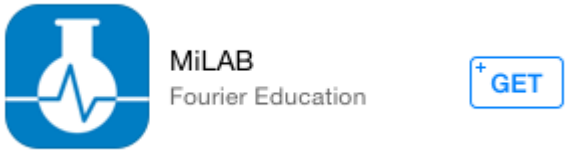
1. Collect and display data in real-time.
2. Display data in graphs, tables, and meters.
3. Analyze data.
4. Export data as .csv or .mlb files.
5. And much more!

Installing the Software on an iOS device

- Select the **App Store** application () from the Main Menu
- Within the App Store, tap the **Search box**.



- Type **"MiLAB"** into the search box and then tap **Done**
- Once the MiLAB software is listed, tap Get to download the application



- The MiLAB software will begin downloading and installing automatically. When the installation is complete, a **MiLAB** () icon will show up on your home screen. You may need to enter your Apple ID and password to install the software

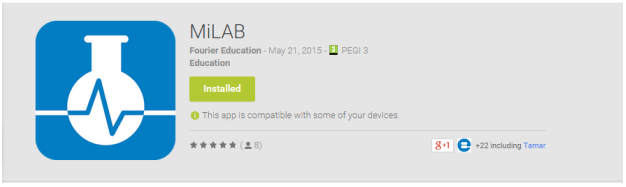
NOTE: MiLAB is a free application.

Installing the Software on an Android device

- Select the **Play Store** application ( ) from the Android Main Menu.

- Within the Google Play Store, tap the **Search** ( ) icon to open the search window.

- Type **"MiLAB"** into the search box and then tap **Done**.
- Once the MiLAB software is listed, tap on the application to see more details.



- Tap the **Download** button, then **Accept & Download**.

NOTE: MiLAB is a free application.

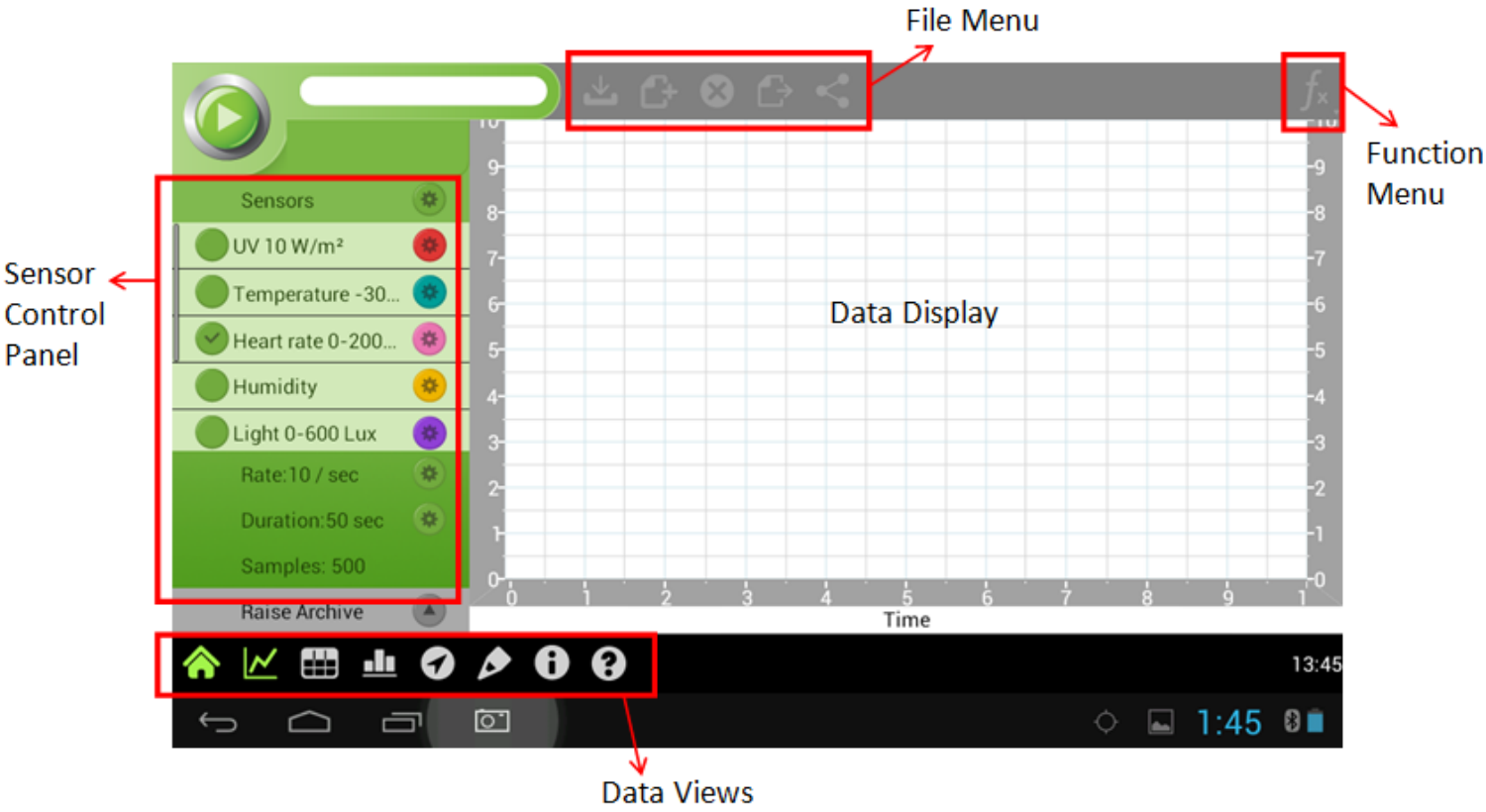
- The MiLAB software will begin downloading and installing on your Android device. When the installation is complete, a **MiLAB** ( ) icon will show up on your home screen.

Multilingual MiLAB

MiLAB is available in the following languages: English, Polish, Czech, Slovak, German, Hebrew, Chinese (Simplified), Russian, French, Ukrainian, Spanish, Japanese, Portuguese and Italian.

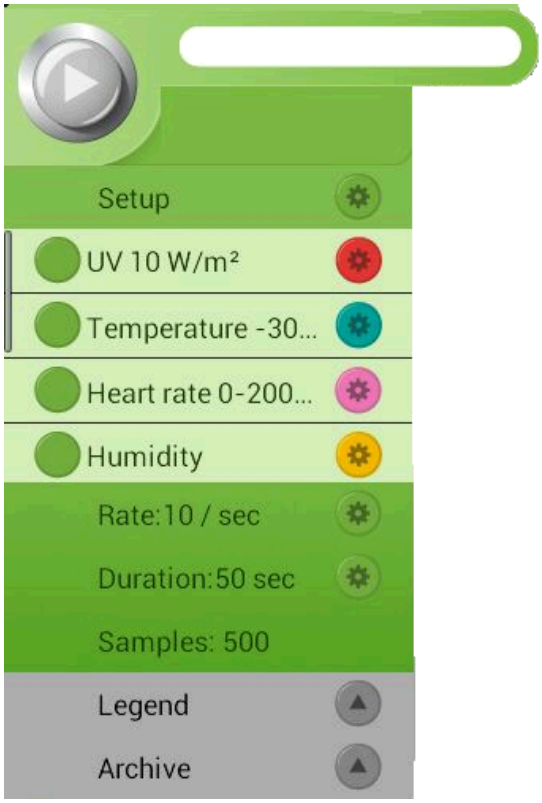
The Main Screen

The MiLAB main screen is divided into 5 main sections:



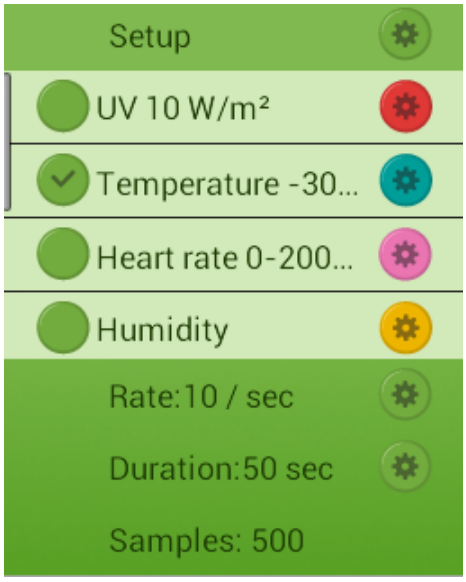
The Sensor Control Panel

The Sensor Control Panel lets you run and name experiments, control sensors and access previous experiments:

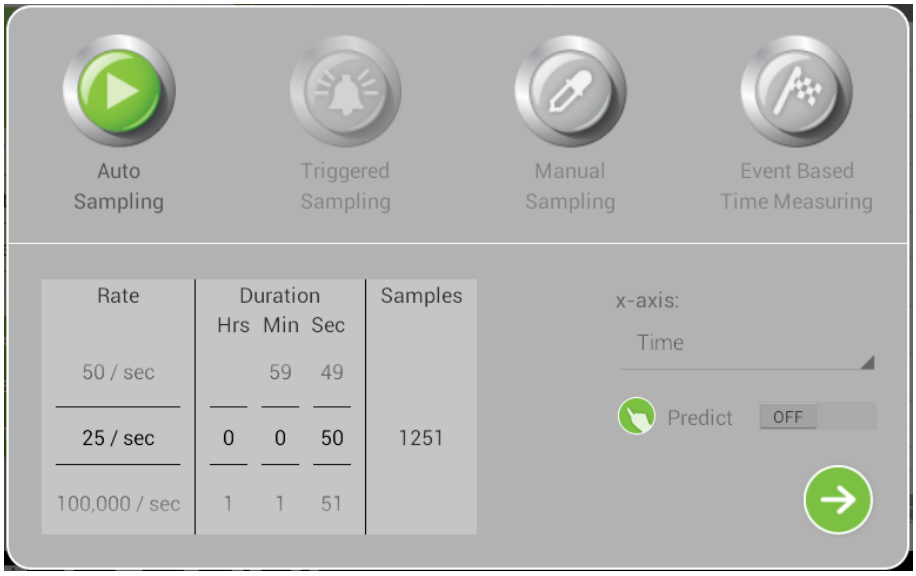


Running an Experiment

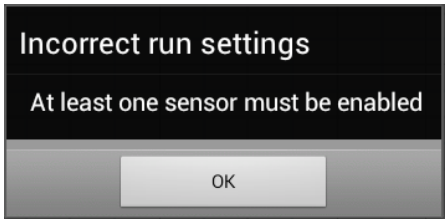
- Tap **Sensor Select** ( ) to select the desired sensors.
- A checkmark will appear by the selected sensors ( ).



- Select the desired **Sample Rate** and **Duration**.

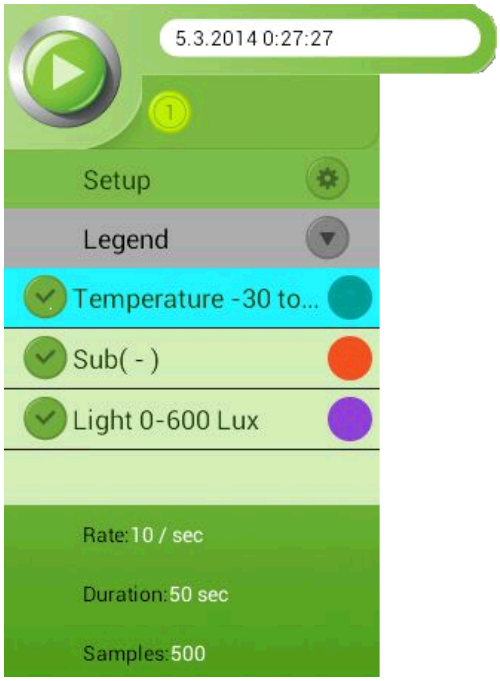


- Tap the **Run** button ( ) to begin an experiment. As soon as it is tapped, MiLAB will begin recording data from all selected sensors. It will continue collecting data until the selected **Duration** is reached.
- Tap **Save** ( ) on the **File Menu** to save your experiment.
- **Note**: After the **Run** button is selected it will turn into a **Stop** button ( ). Tapping **Stop** will stop the experiment before the **Duration** is reached.
- Note: You must have at least one sensor selected to run an experiment. If no sensors are selected you will receive the following error message:



Legend View

After running an experiment, the Sensor Control Panel will switch to the Legend View:



Legend View gives you access to:

- Data from the sensors used in the experiment.
- The **Duration**, **Rate**, and number of **Samples** involved in the experiment.
- Any Functions used to analyze the data (see Working with Functions for more details).

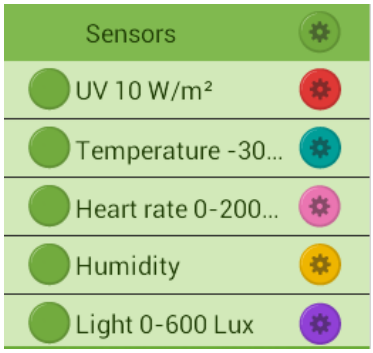
Select the ( ) icon to turn the plot lines of the different sensors or Functions on and off.

Select the ( )icon to turn the Legend View on and off.

The **Experiment Name** text box contains the name of the current experiment. By default the experiment will be named after the date and time it took place. You can change the name of the experiment by tapping the **Experiment Name** text box. This will bring up the keyboard and allow you to type in the name of your choice. Tap **Done** when you've finished.

Sensor List

The **Sensor List** lists the available sensors. You may have to scroll down to view all available sensors.



Selecting a Sensor

- Tap **Sensor Select** ( ) to select or deselect a sensor. A checkmark ( ) will indicate which sensor(s) is active.
- **Note:** The color of the **Sensor Setup** button indicates the color of that sensor's plot line on a graph.

While the einstein™ Tablet+ and the einstein™ LabMate™+ are equipped with built-in sensors, MiLAB is compatible with over 65 different external einstein™ sensors. See Connecting an External Sensor for details.

Tap the **Settings** ( ) icon next to the sensor's name to view details about the sensor and, for some sensors, change the settings.

For a detailed example of how to set up a sensor, see Accelerometer.

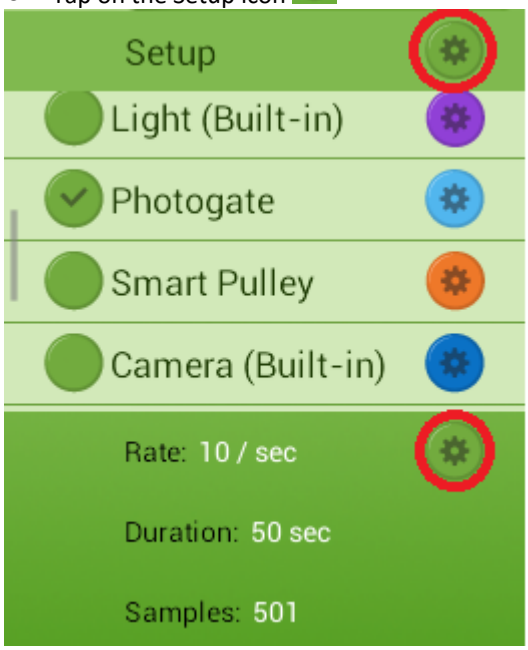
The Setup Menu

The Setup Menu controls:

- The Duration of an experiment
- The Sample Rate of an experiment
- The type of Measurement (Auto, Triggered, Manual or Event-Based)
- The x-axis
- Prediction Mode

To access the Setup menu:

- Tap on the Setup icon



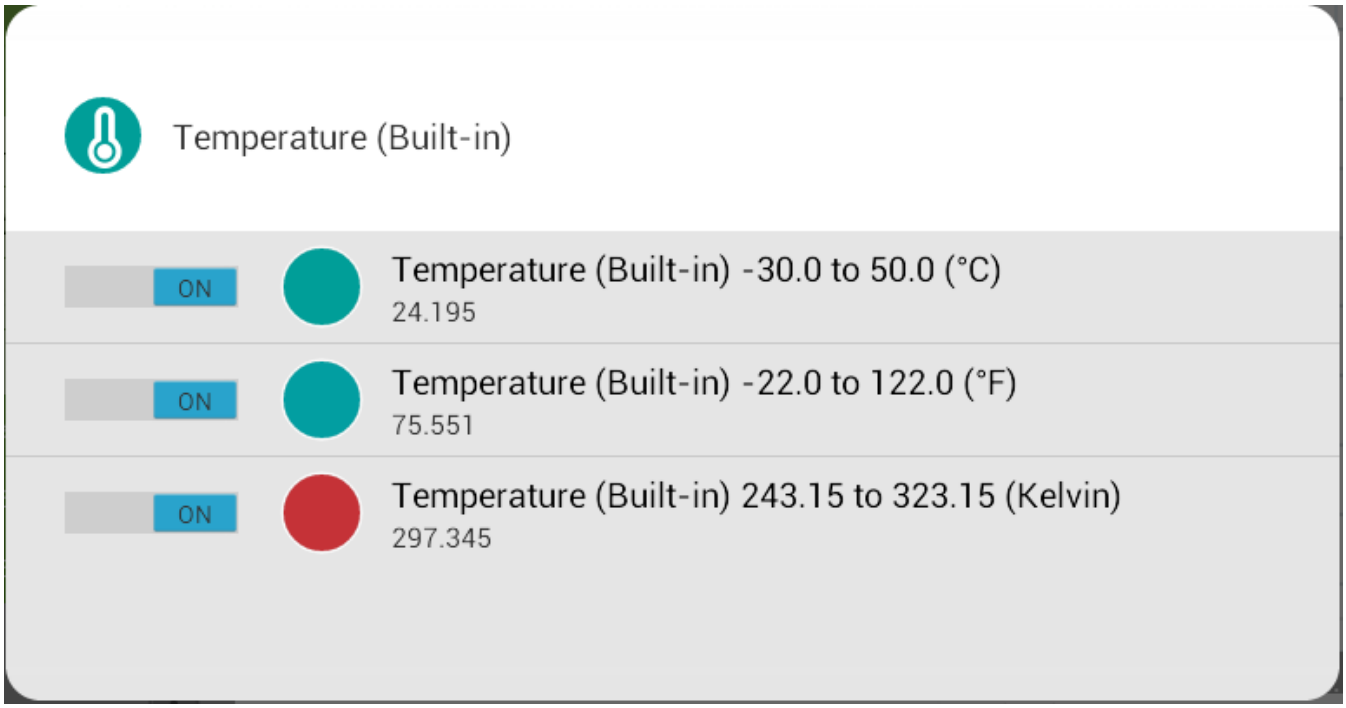
Sensor Setup

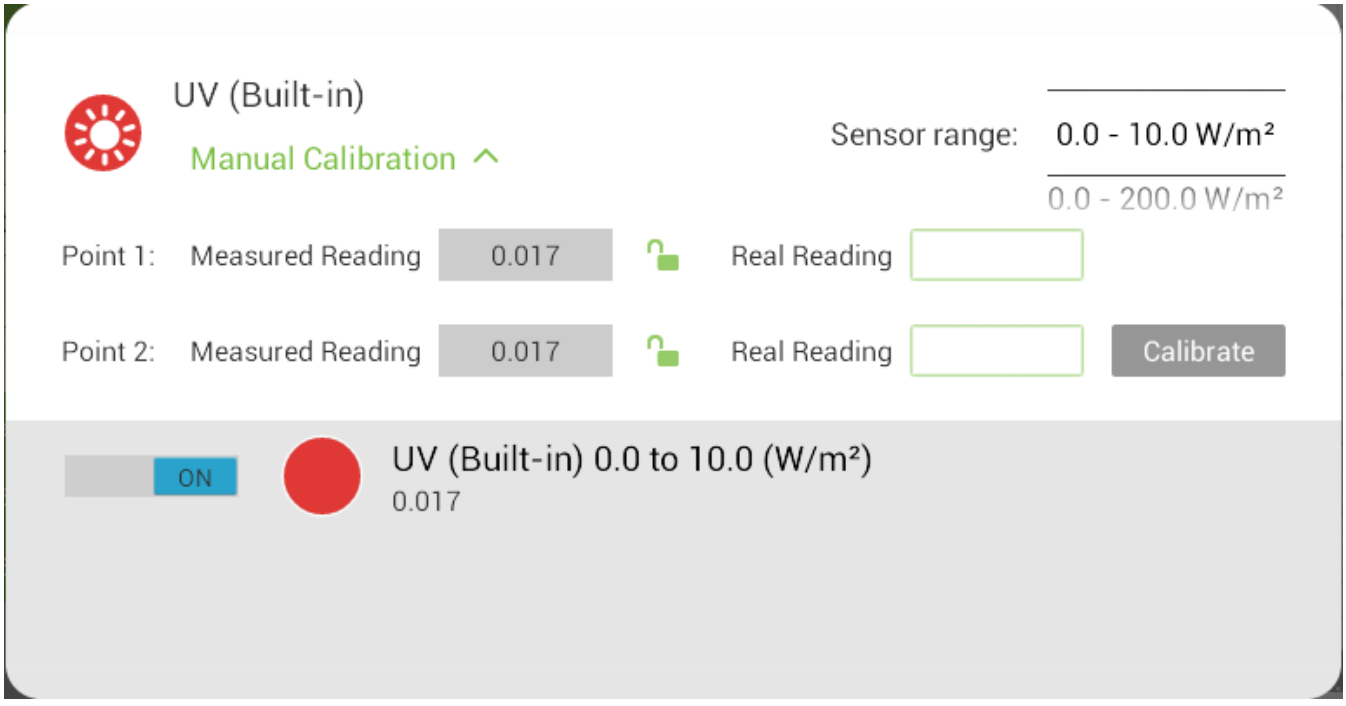
Use the Sensor Setup button to access a number of options for individual sensors including setting the range, units and calibration (depending on the sensor).

To access Sensor Setup:

- Tap the Sensor Setup button

This will bring up the Sensor Setup Window. Different sensors will offer you different options;

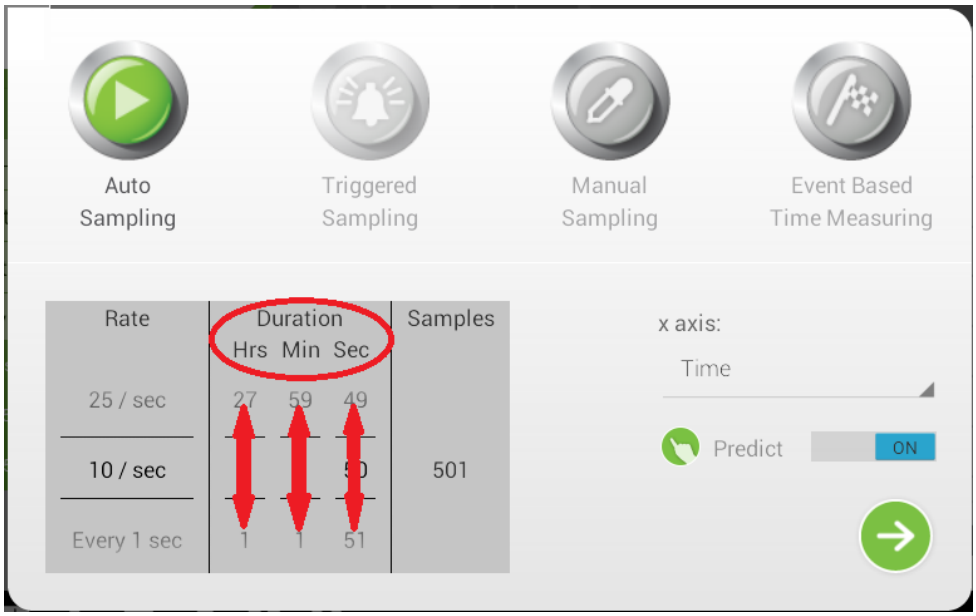




Duration

To set the experiment's Duration:

- Select the sensors to be used in the experiment
- Tap the Setup icon 
- Flick the three scrolling wheels (Hours, Minutes, Seconds) to scroll to the desired time

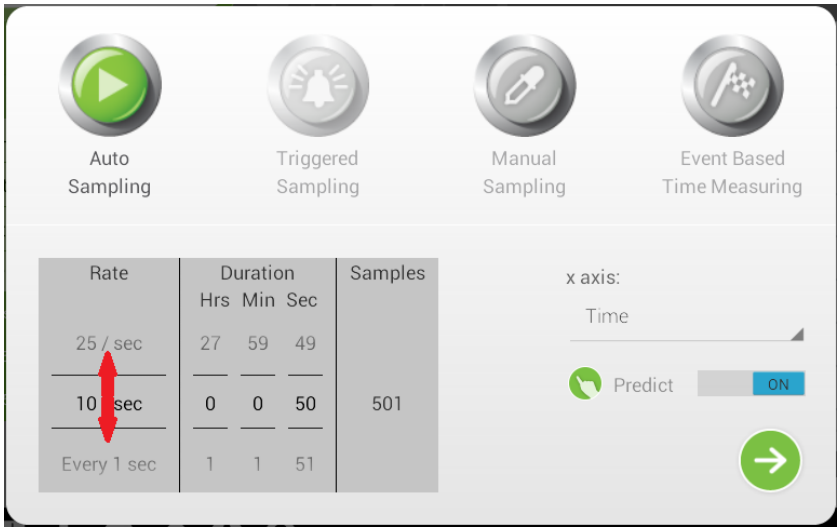


- Tap the Proceed icon 

Sample Rate

To set the experiment's Sample Rate:

- Select the sensors to be used in the experiment
- Tap on the Setup icon 
- Flick the Rate scrolling wheels to set the desired Sample Rate (between 100,000 samples per second and once per hour)



- Tap the Proceed icon 

Auto Sampling

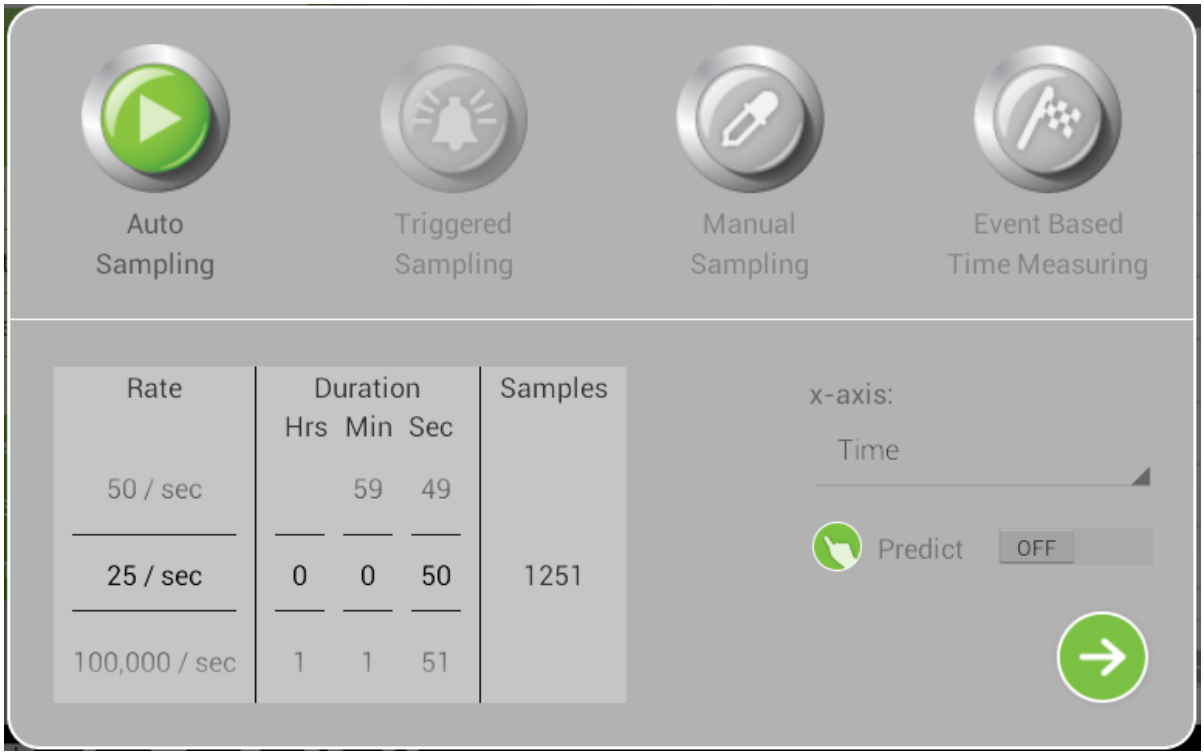
Auto Sampling is the default measurement type. To use Auto Sampling:

- Select the sensors to be used in the experiment
- (Optional) Tap the Setup icon  (if you want to change the default Duration or Sampling Rate)
- (Optional) Tap the Proceed icon  (if you used the Setting menu)
- Tap the Run button 

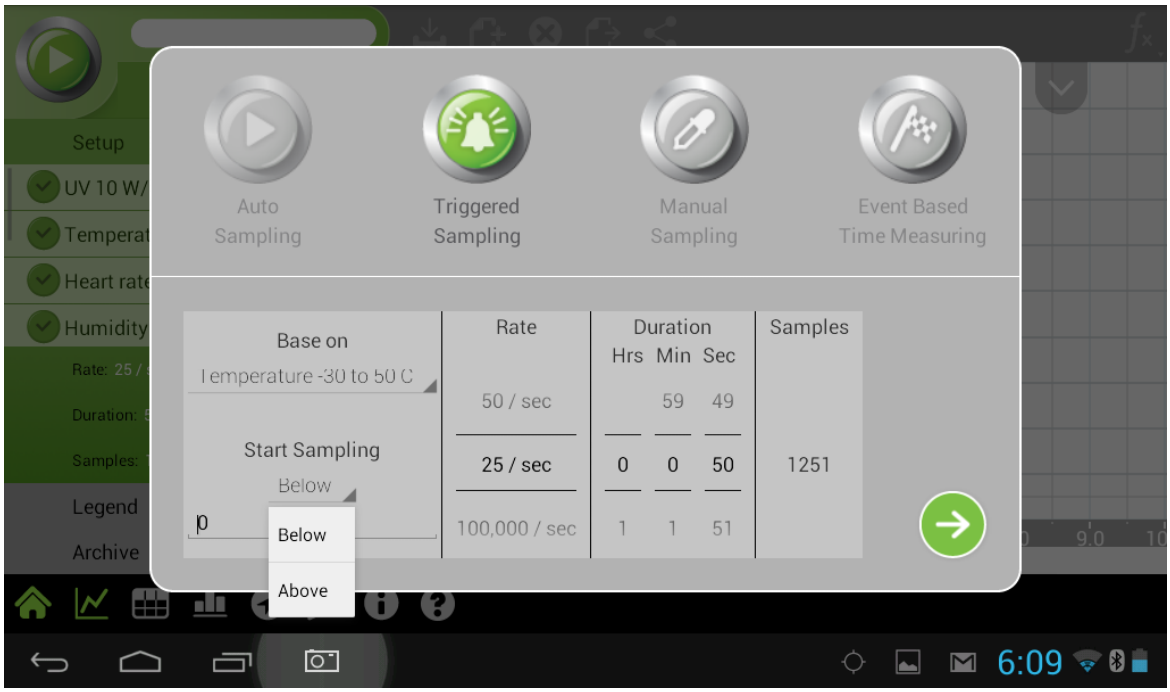
Triggered Sampling

Sometimes you will only want to start an experiment when a certain condition is met, for example when a solution reaches a certain temperature. This is called a Trigger.
To set a Trigger:

- Select the sensors to be used in the experiment
- Tap the Setup icon ()
- This will bring up the **Trigger** menu:



- Tap the **Trigger Sampling** button 



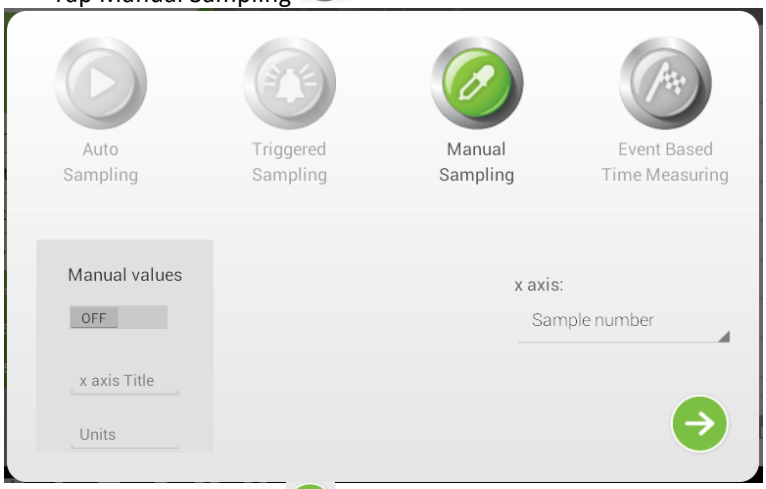
- Select which sensor to base the Trigger on (e.g. Temperature)
- Set the trigger to either Above or Below a value
- Use the numeric keyboard to enter a value (e.g. Temperature above 80 °C)

- Tap Proceed 
- Now data will only be recorded when the conditions are met.

Manual Sampling

For some experiments you will want to manually determine when to take a measurement.
To conduct Manual Sampling:

- Select the sensors to be used in the experiment
- Tap the Setup icon 
- Tap Manual Sampling 



- Tap the Proceed icon  (if you used the Setting menu)
- Note that the icon on the Run button has bee replaced with the Manual Sampling icon 
- Whenever you want to take a measurement tap the Run button
- When you are finished measuring, tap and hold the Run button. Note that a red circle will begin forming around the Run button. When it is finished the measurements will stop

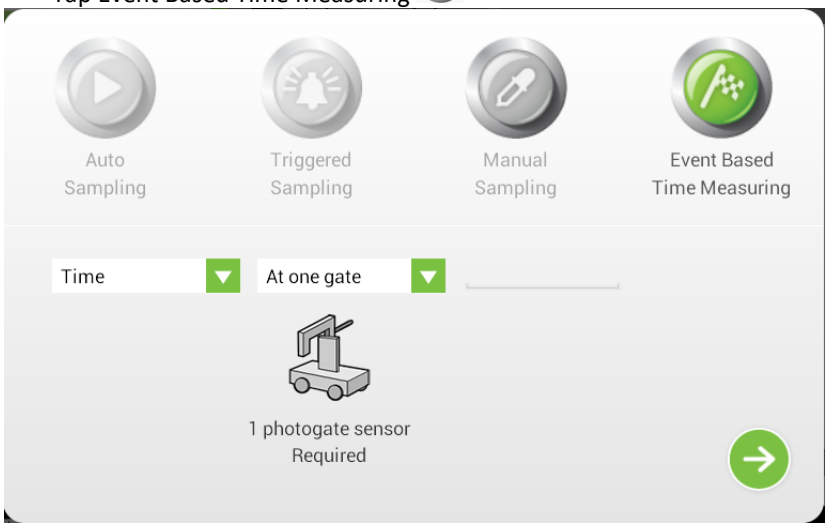
See Plot Styles for different ways to display the results of your graph.

Event Based Time Measuring

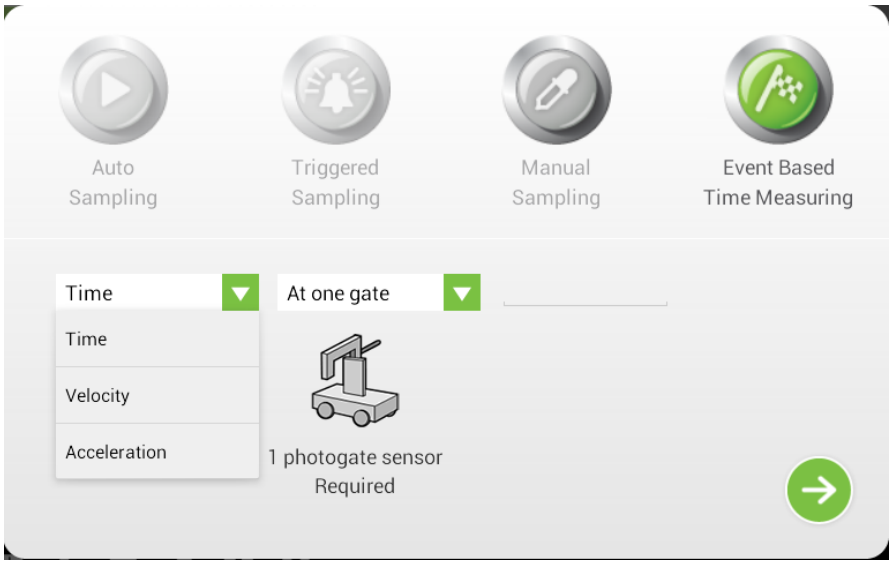
Event Based Time Measuring is used with the Photogate sensor.

To use Event Based Time Measuring:

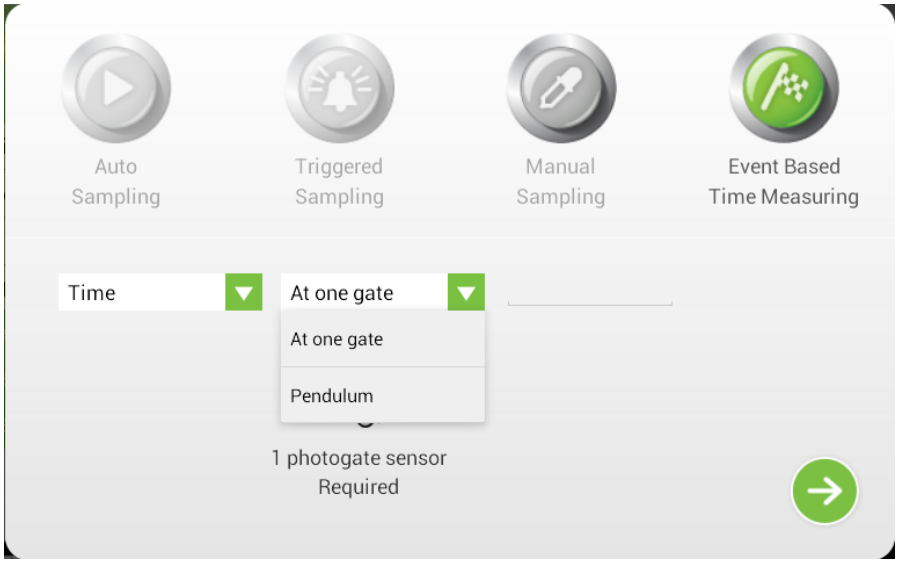
- Select the Photogate sensor to be used in the experiment - Usually the Photogate and/or the Smart Pulley
- Tap the Setup icon
- Tap Event Based Time Measuring



- From the **Measurement** dropdown choose either **Time**, **Volume** or **Acceleration** (see details below)



- Then choose to measure **At One Gate** or **Between Gates** or as **Pendulum** (see details below)



- You may have to enter additional information (see details below)
- Tap the Proceed icon
- Note that the icon on the Run button has bee replaced with the Event Based Time Measuring icon
- Tap the Run button to begin measuring - Note that measurements will be recorded whenever the specified event takes place

See Plot Styles for different ways to display the results of your graph.

There are various methods of analyzing the different measurements. In some measurements you will be asked to enter the dimension of the moving body, or the distance between two Photogates to allow for the calculation of velocity and acceleration.
The methods depend on the selected **Measurement**.

These sensors often use flags for more accurate measurements. After choosing some methods, you will be able to enter the **Width** of the flag. By default MiLAB assumes you are working with 3 cm flags.

Time
At one gate
Measures the time it takes the body to cross the Photogate (e.g. between blocking and unblocking the infrared beam).

Between gates
Measures the time it takes the body to move from one Photogate to the second Photogate (e.g. between blocking the first and blocking the second infrared beams).

Pendulum
Measures the time period of an oscillating body (e.g. the time interval between blocking the beam the first and third times).

Velocity
At one gate
Measures the time it takes the body to cross the Photogate (e.g. between blocking and unblocking the infrared beam) and returns the velocity.
You should enter the body's width.

Between gates
Measures the time it takes the body to move from one Photogate to the second Photogate (e.g. between blocking the first and blocking the second infrared beams) and returns the average velocity.
You should enter the distance between gates.

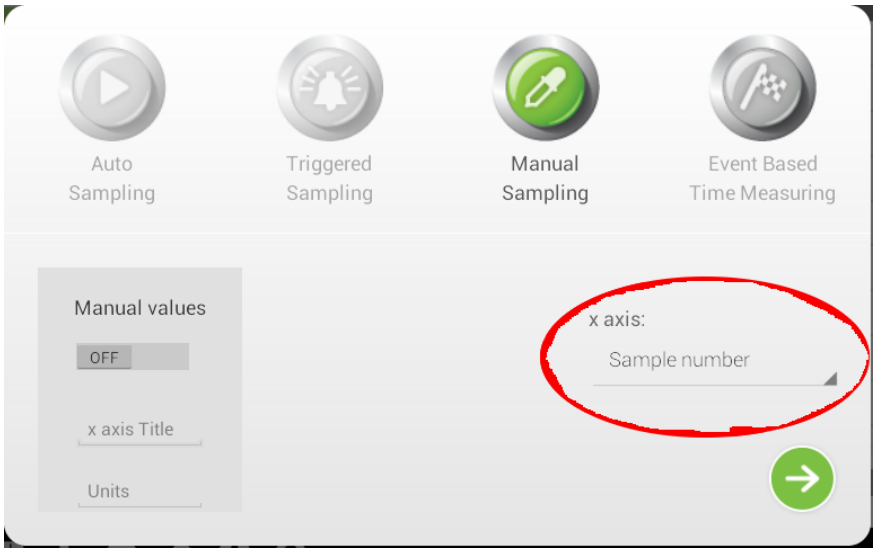
Acceleration
At one gate
A card with two flags must be attached to the moving body. The Timing Wizard measures the crossing time intervals of the two flags and returns the acceleration.
You should enter the flag's width.

Between gates
Measures the crossing time at the first gate, the time it takes the body to move from one gate to the second gate and the crossing time at the second gate and returns the average acceleration.
You should enter the distance between the gates.

Customizing the x-axis

By default MiLAB uses Time for its x-axis. To change the x-axis:

- Select the sensors to be used in the experiment
- Tap on the Setup icon 
- Tap the x-axis field and select a sensor from the dropdown menu

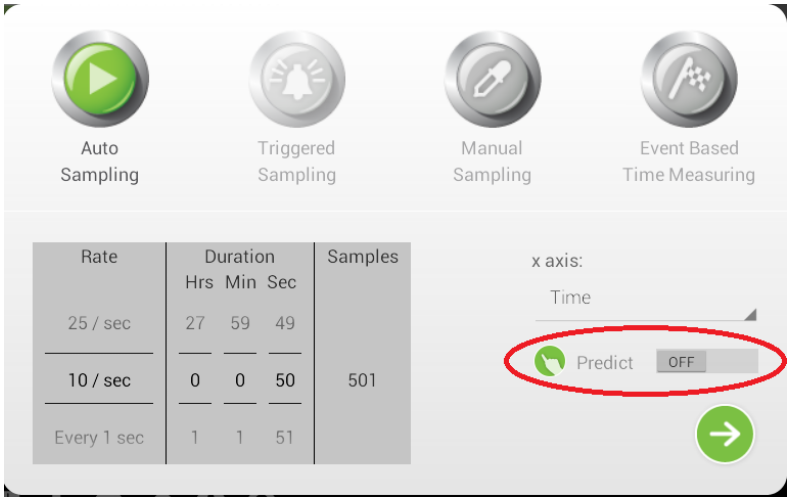


- Tap the Proceed icon 

Predict Tool

An important step in many experiments is predicting the outcome before running the experiment. In order to use the prediction tool:

- Select the sensors to be used in the experiment
- Tap the Setup icon 
- Flick the Predict switch to On

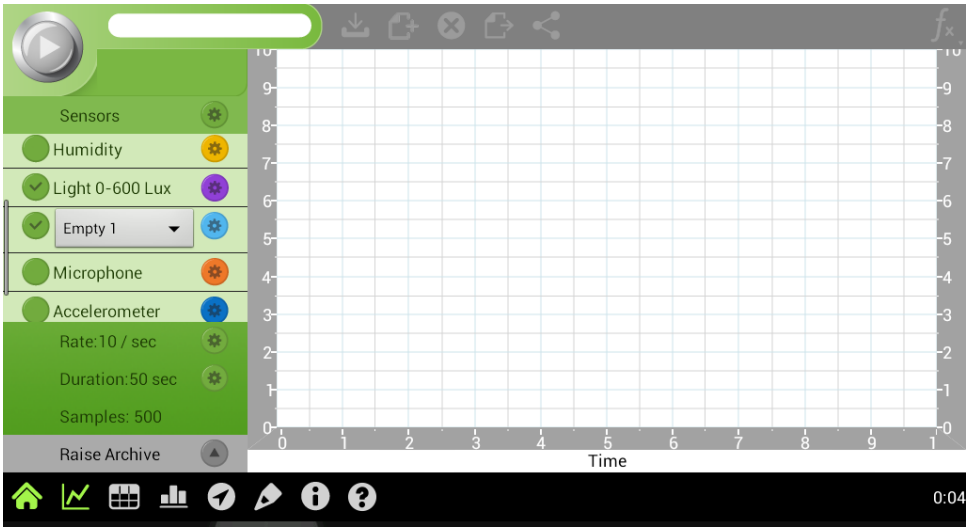


- Tap the Proceed icon 
- Note the Run icon has been replaced with the Predict icon 
- Tap the Run button
- Use your finger to draw your prediction on the graph. Remember you can scroll the graph if you need a more space for your prediction.
- Tap the Run button again to begin measuring

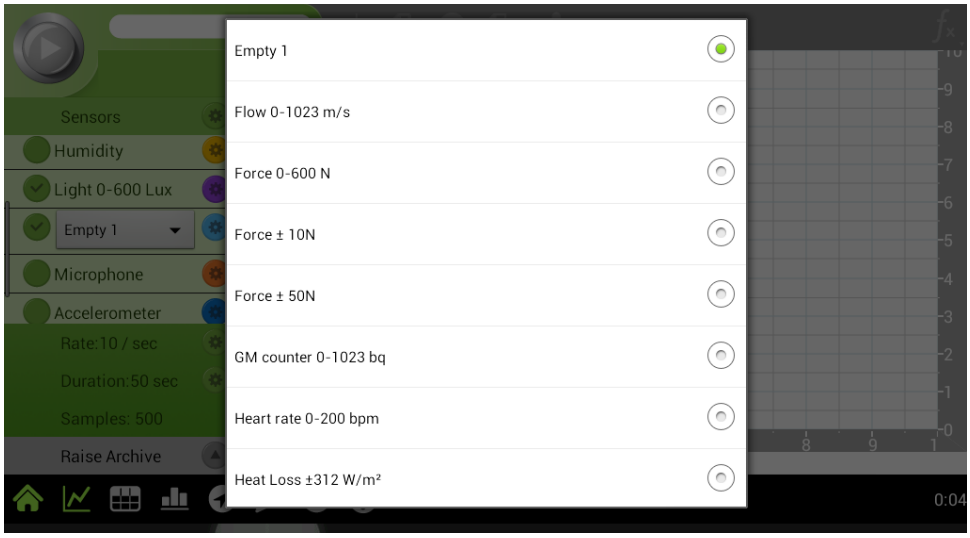
Connecting an External Sensor

The einstein™ Tablet+ and einstein™ LabMate+ not only contain built-in sensors but can accommodate over 65 different external sensors. To connect an external sensor:

- Plug one end of the mini-USB cable into the sensor and the other into one of the 4 ports labeled 1, 2 3, 4 on your einstein™ device.
- The sensor should appear in the sensor list in the **Sensor Control Panel**. It can then be selected or unselected just like the built-in sensors.
- In some cases, an external sensor may need to be identified manually. In these cases the external sensor will appear in the list as “Empty 1”:



- Tap the Empty 1 box and a list of sensors will appear:



- Tap the Radio button next to the correct sensor and then tap outside the menu to return to the main screen.

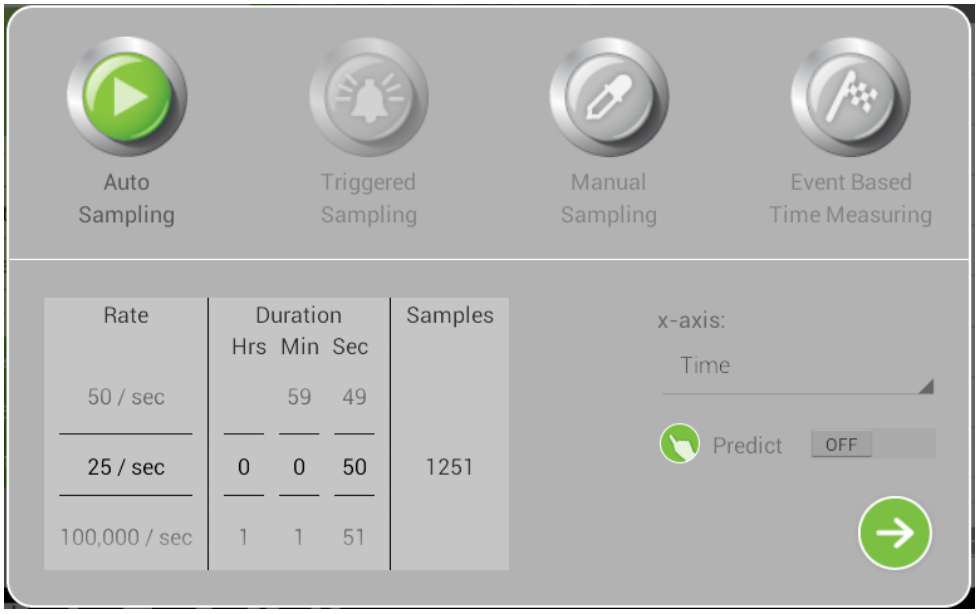
Note: Some older sensors may require an adaptor to connect to the einstein™ device.

Setting the Duration and Sample Rate for an Experiment

Experiment Setting lists the sampling **Rate**, **Duration** and number of **Samples** for the experiment.

To change the Sensor Setup:

- Tap the **Setup** button ( ) next to the **Sampling Rate**. This will open the **Setup** menu:



- Use the **Rate** dial to adjust the sampling rate.
- Use the **Duration** dials (hours, minutes, seconds) to adjust the Duration of the experiment.

Sampling

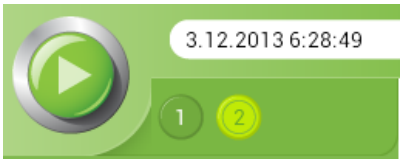
The **Sampling Rate** should be determined by the frequency of the phenomenon being sampled. For example, sound recordings should be sampled at the highest sampling rate possible, but changes in room temperature may be measured at slower rates such as once per second or even slower, depending on the speed of the expected changes.

If the phenomenon is periodic, sample at a rate of at least twice the expected frequency.
There is no such thing as over-sampling. For extremely smooth graphs, the **Sampling Rate** should be about 20 times the expected frequency.

Note: Sampling at a rate slower than the expected rate can cause frequency aliasing. In such a case, the graph will show a frequency much lower than expected.

Accessing Previously Run Experiments

Once you have run an experiment numbered buttons will appear on the Sensor Control Panel:



Tap one of the numbered buttons to access the data from that experiment
These buttons only provide access to the data from experiments run during the current session.
See the Archive section to access data from previous sessions.

Calibration

There are three methods of calibrating sensors within MiLAB - Set Zero Calibration, One Point Calibration and Two

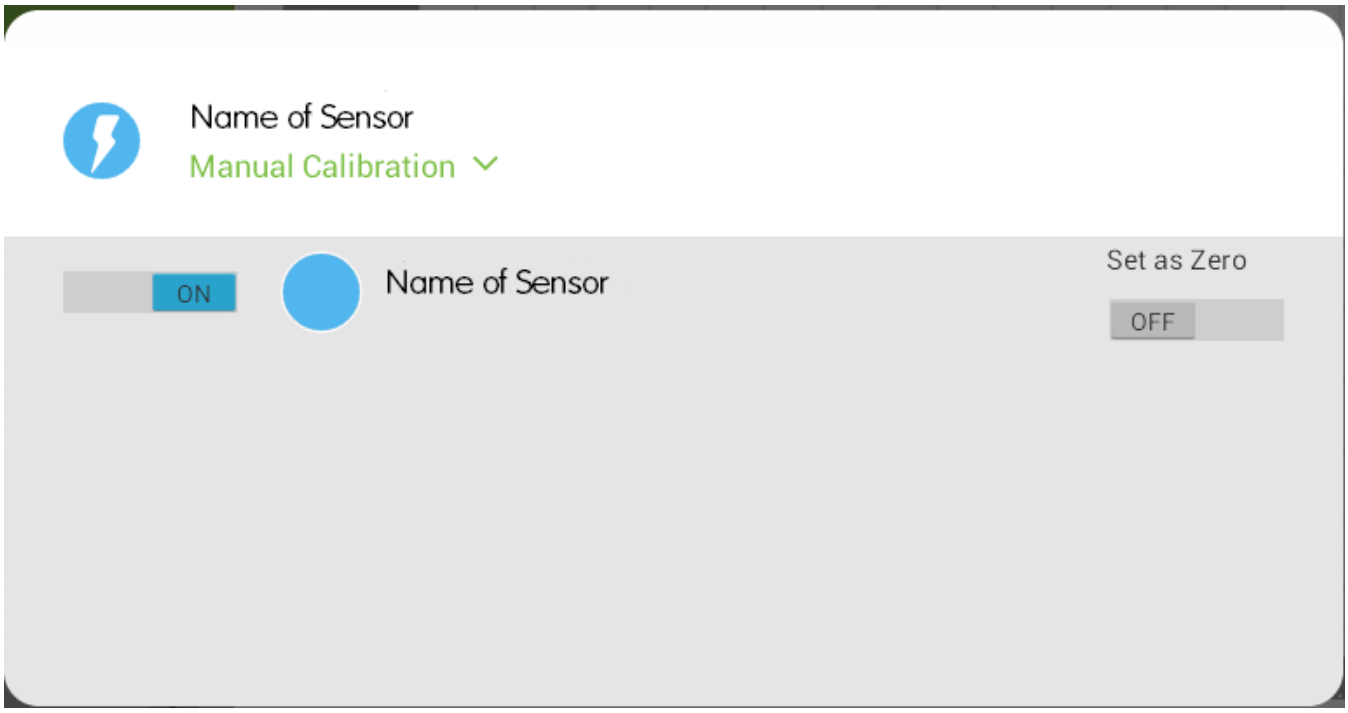
Point Calibration.

Some sensors can use Set Zero Calibration in addition to either One or Two Point Calibration

Set Zero Calibration

- Tap the Settings button next to the sensor's name

- This will bring up the Sensor Setup menu

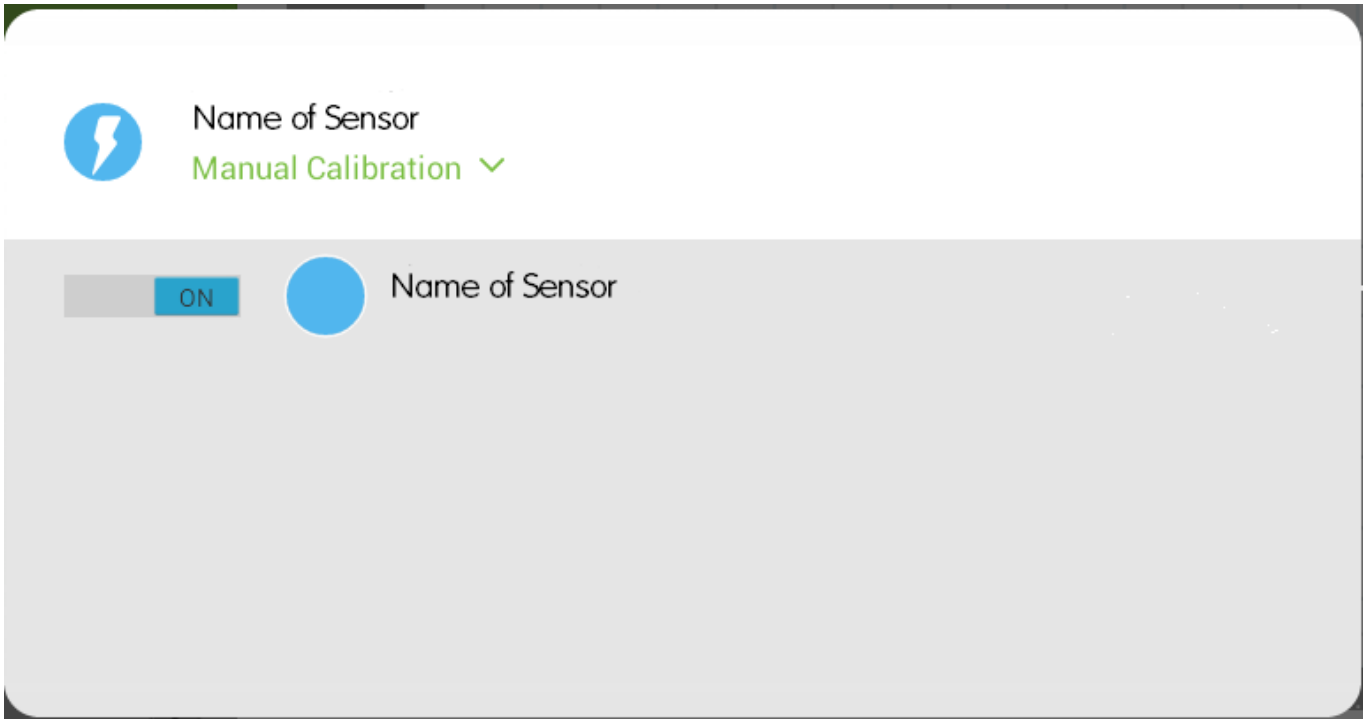


- Flip the Set As Zero switch to set the current value as the zero or base value.

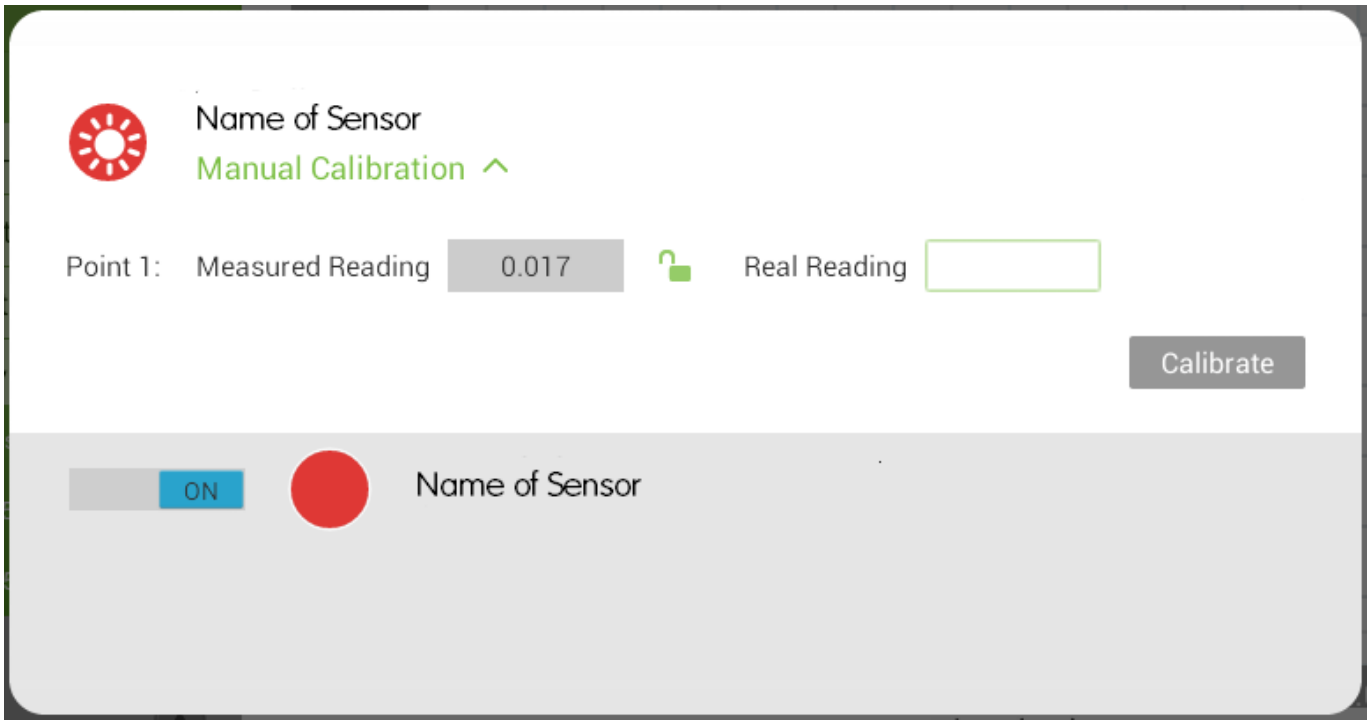
One Point Calibration

- Tap the Settings button next to the sensor's name

- This will bring up the Sensor Setup menu



- Tap Manual Calibration to bring up the Calibration menu

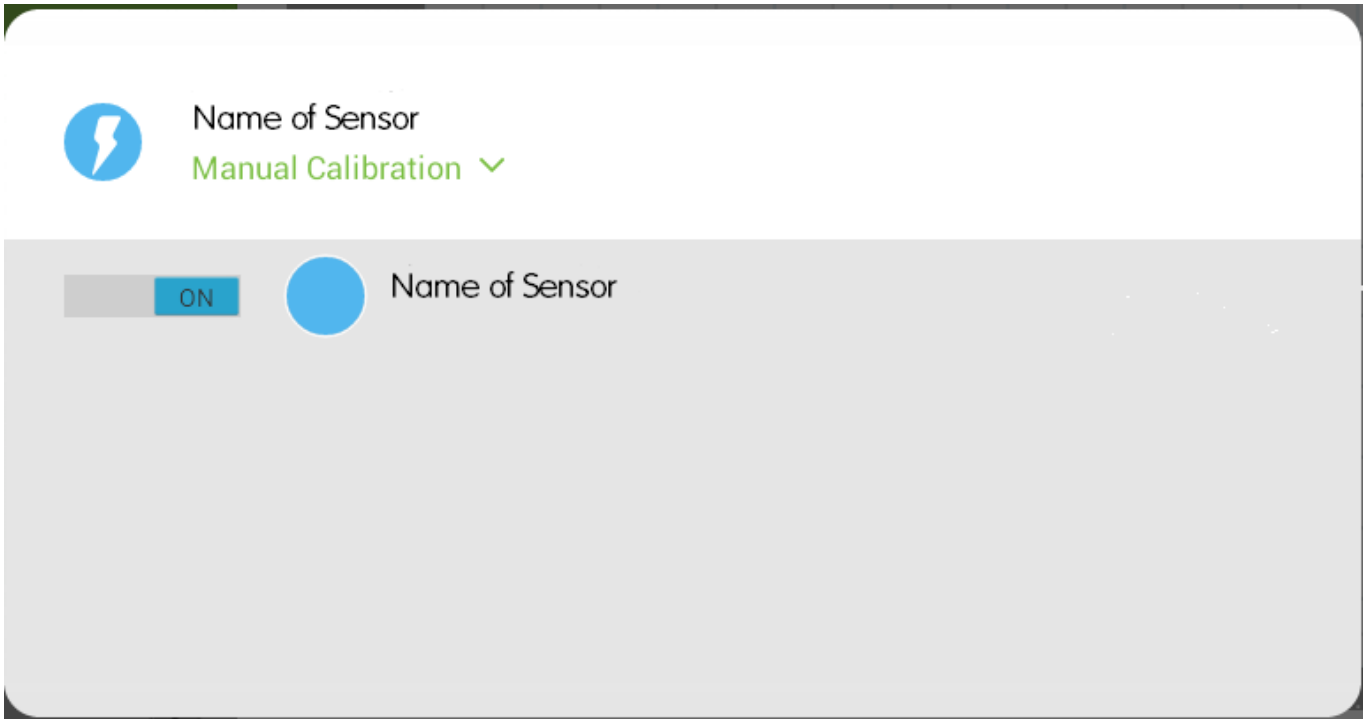


- Prepare to measure something that has a known value (e.g. a solution with a known pH of 7). Tap the box marked Point 1 Real Reading field and enter the known value
- Measure the substance and wait for the readings to stabilize
- Tap the lock button 
- Tap Calibrate

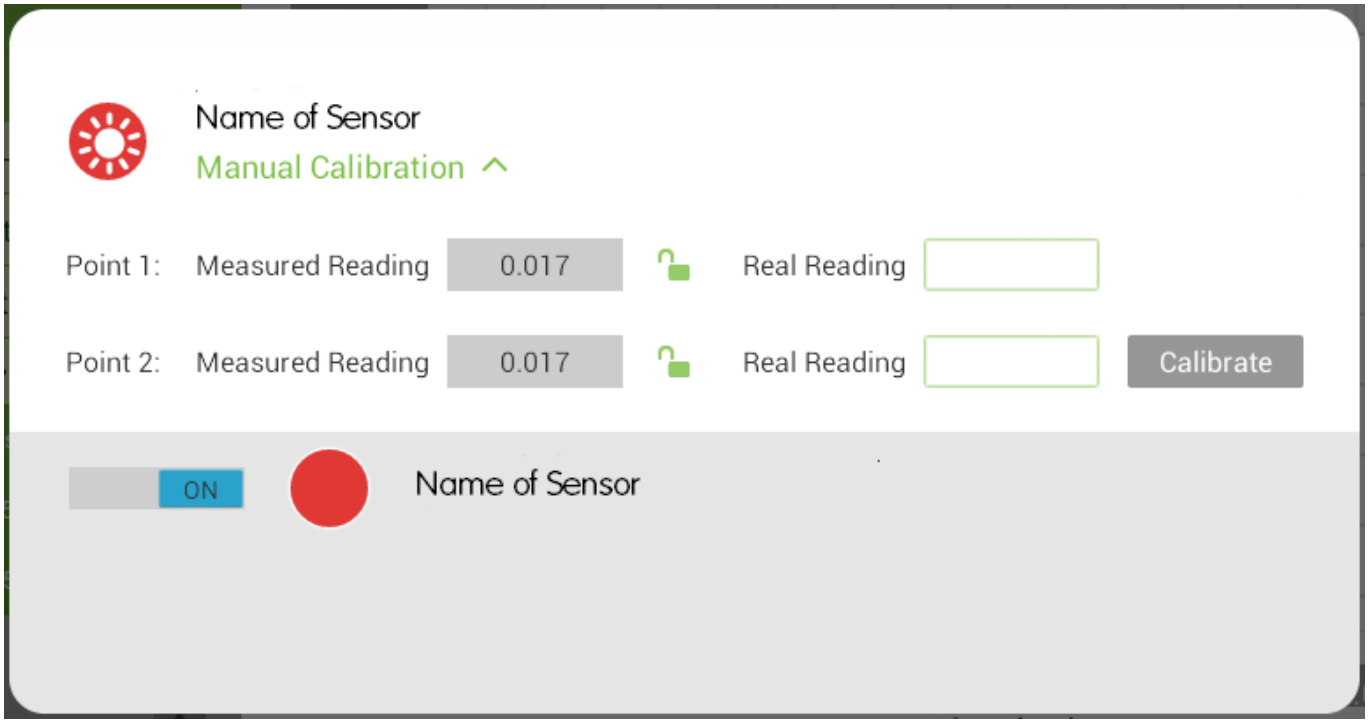
Two Point Calibration

- Tap the Settings button next to the sensor's name

- This will bring up the Sensor Setup menu



- Tap Manual Calibration to bring up the Calibration menu



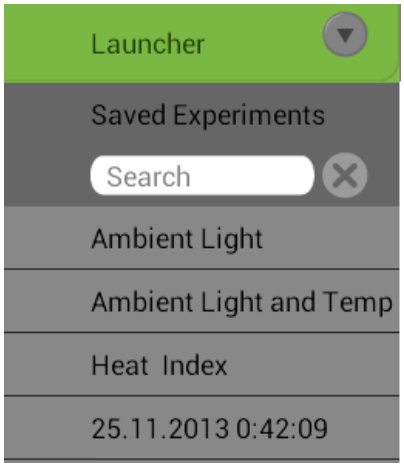
- Prepare something that has a known value (e.g. a solution with a known pH of 7). Enter this known value in the Point 1, Real Reading field
- Measure the substance and wait for the readings to stabilize
- Tap the lock button
- Prepare something else that has a known value. Enter this known value in the Point 2, Real Reading field
- Measure the substance and wait for the readings to stabilize
- Tap the lock button
- Tap Calibrate

The Archive

To access the Archive:

- Tap the **Raise Archive** button:

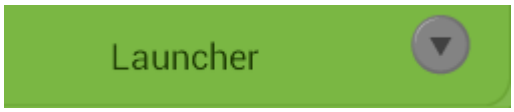
- This will open the list of saved experiments:



- Tap the experiment you would like to access and its data will be shown in the Data Display.

Closing the Archive

To close the Archive, tap **Launcher:**



This will return you to the **Main** menu.

Searching the Archive

To search the Archive**:**

- Tap the **Search** box. This will bring up the keyboard.
- Enter the name you are looking for and tap **Done**.
- The results will appear in the Archive list.
- Tapping an experiment name will give you access to that experiment, its graphs, tables, meters and other details.

Data Views Toolbar

The Data Views Toolbar gives lets you open new graphs, tables, meters, maps and notes:

Note: There must be one view open at all times.

Returning to the Main Screen

Tap **Home** () to return to the main screen.

Viewing Graphs

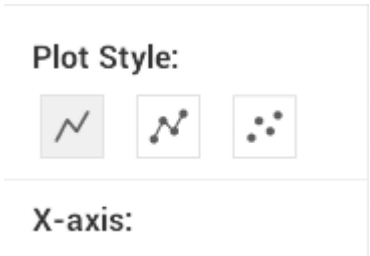
Graphs are the most common method of recording and analyzing data from sensors. By default, experiments are run in Graph view.

Tap **Graph** ( ) to toggle a graph on and off in the Data Display
(See Working with Graphs for more details)

Plot Styles

Graphs can be displayed in one of three styles: Line, Plot Points, Line and Plot Points. By default graphs are displayed as a Line. To change this:

- Tap the Plot Style tab
- This will bring down the Plot Style menu
- Tap on the desired plot style



Viewing Tables

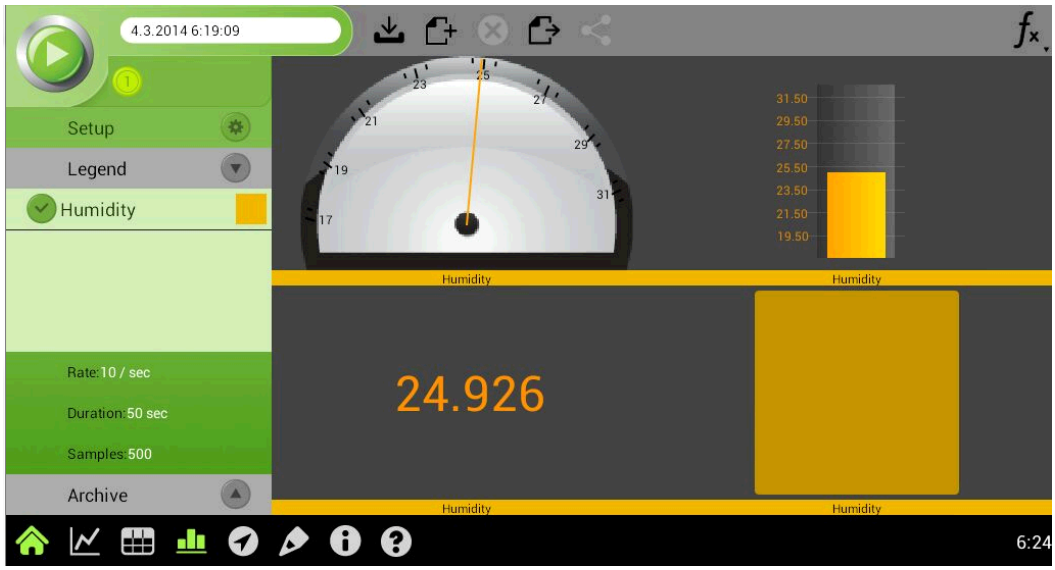
Table view displays a data in the format of a table.

Tap **Table** ( ) to toggle a table on and off in the Data Display.

Viewing Meters

Meters are a simple, effective way to view data.

Tap **Meters** ( ) to toggle the meters on and off in the Data Display.

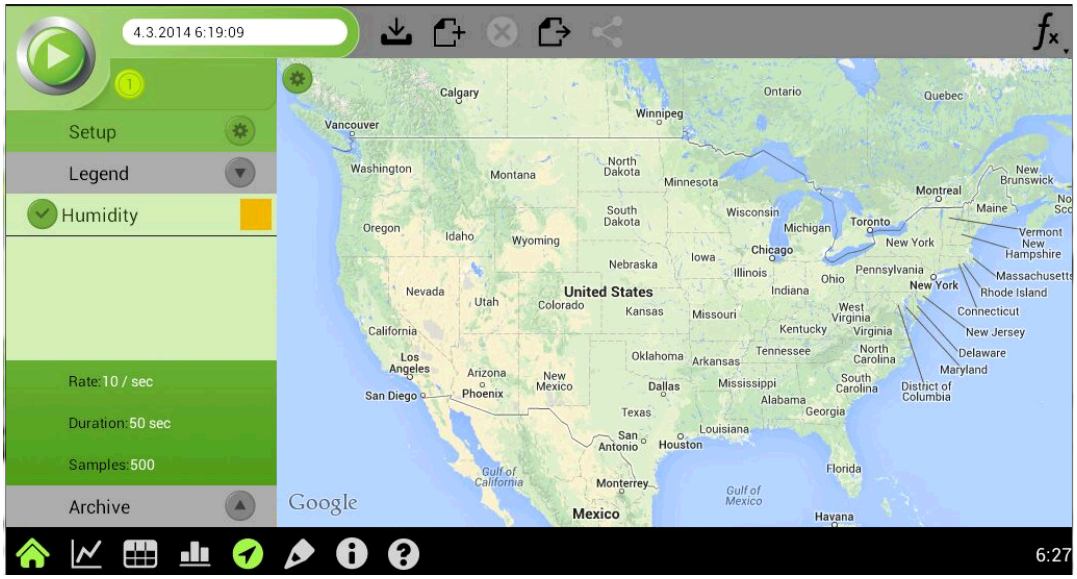


Accessing Location Services

For some experiments or other projects it's important to note your location. **Location Services** also puts a high quality atlas at your fingertips.

Tap **Location Services** ( ) to toggle a world map on and off in the Data Display.

Note: Location Services only applies to tablet computers equipped with a GPSnot to LabMate or LabMate+.

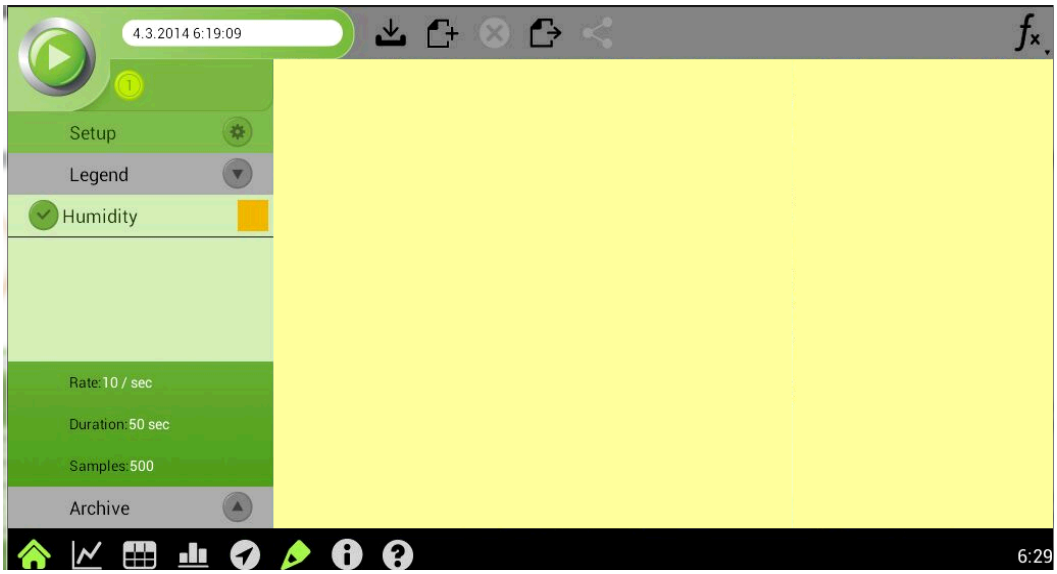


See Working with the Location View for more information.

Taking Notes

It's often useful to take notes while running or analyzing an experiment. These notes can later be used in reaching conclusions and writing up lab reports.

To write a note, tap **Notes** ( ). This will bring up a blank note:



Tap again on the blank note to bring up the keyboard. Tap the **Close** icon ( ) on the keyboard when you have finished writing.
Note that when you save your experiment, your notes will be saved as part of that experiment.

Information Icon

Tap the **Info** ( ) icon to toggle the version information on and off in the Data Display.

Tap **Help** ( ) to toggle the help menus on and off:

Tap one of the highlighted areas for more information on the functions in those areas.

Working with Multiple Views

One of MiLAB's most powerful features is the ability to view data in multiple views at the same time. You can, in fact, simultaneously view a graph, a table, meters, a note and a map.

To view data in multiple formats:

- Tap the desired icons one at a time.
- Tap the appropriate icon again to close that view.
- When multiple views are open there will be one main view and up to 4 views in the right-hand pane.
- To move a view, tap the desired view and hold until the frame turns red. Then drag that view to the desired location.

Note: One view must be active at all times.

Working with Graphs

In general, graphs in MiLAB represent the data from one or more sensors along the y (or vertical) axis vs. time along the x (horizontal) axis. By default, graphs in MiLAB auto scale which means you can see the entire graph displayed.

To zoom in on one part of the graph, touch the screen and spread 2 fingers. To zoom back out pinch two fingers together.

Pinch to Zoom out

Spread to Zoom in

Note: You can also spread and pinch along the x or y-axis to zoom in or out on these axes.

Double tap on the graph to return to the original auto scale graph.
You can also move the graph or axes by touching and dragging them.

Analyzing a Graph

Analyzing the information contained in a graph is one of MiLAB's most important and powerful functions. To analyze a graph:

- Run an Experiment.
- After running an experiment, the **Function** menu will become active. See Working with Functions for more details.
- In order to use MiLAB's analysis functions you must select at least one point on the graph – this is known as a cursor. Many Functions require two cursors.

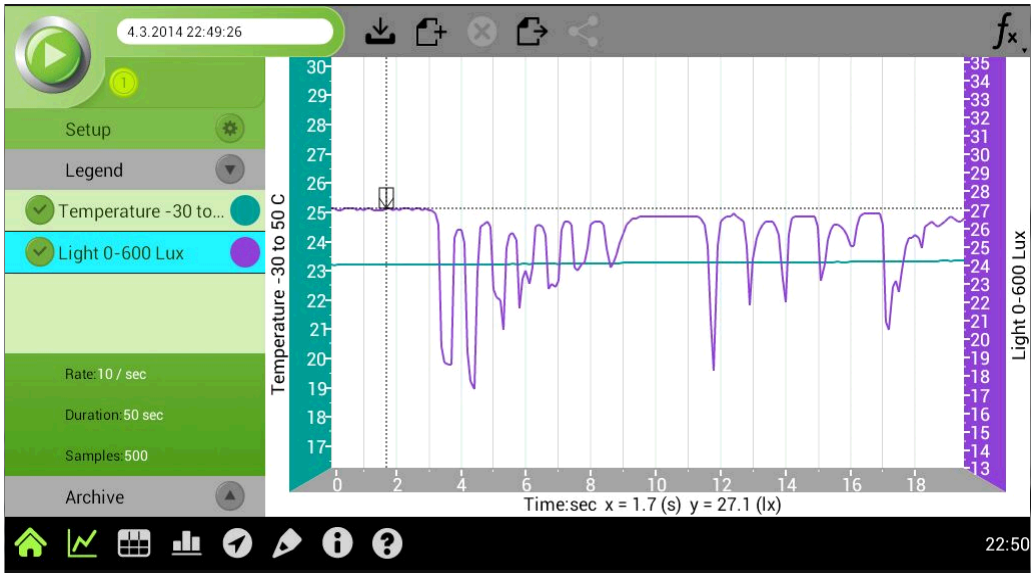
Note: If you are using more than one sensor, both cursors must be on the same sensor's plot line.

Working with Cursors

You can display up to two cursors on the graph simultaneously.

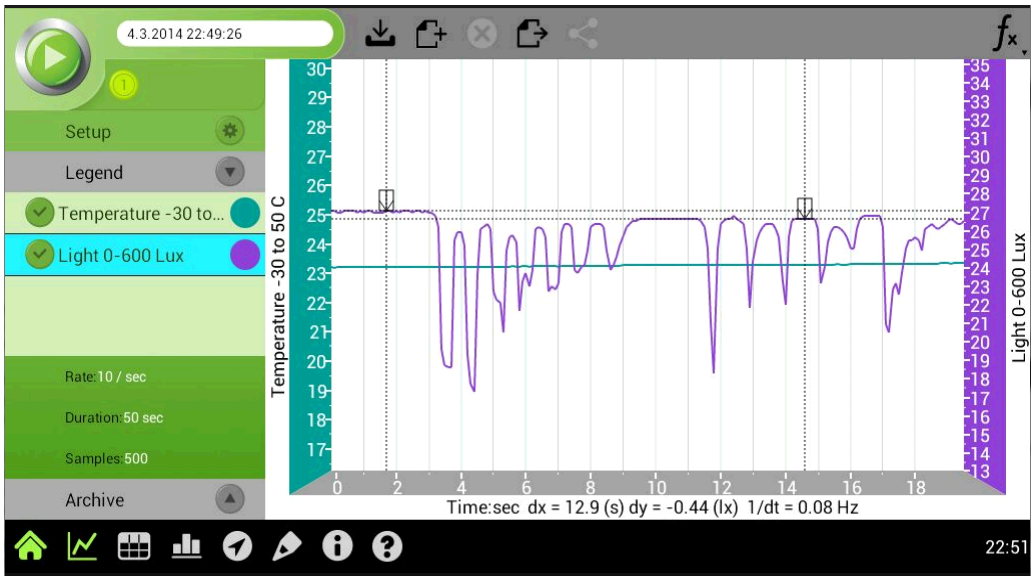
Use one cursor to display the data at one plot point, to select a plot line or reveal a hidden y-axis.
Use two cursors to analyze the data in the graph.

To display the first cursor:
In Graph view, tap any point on a plot line. MiLAB will now display the coordinate values.



To display the second cursor:

Once the first cursor is placed, tap any point on the same plot line.



When there are 2 data points selected; the differences between the 2 points will appear at the bottom of the graph window.

- dX refers to the value between the X axis of the 2 points.
- dY refers to the value between the Y axis of the 2 points.

Moving cursors:

- Touch and hold a cursor then drag it left and right on a single plot line
- Tap the plot line of a different sensor to move the cursor to that plot line.

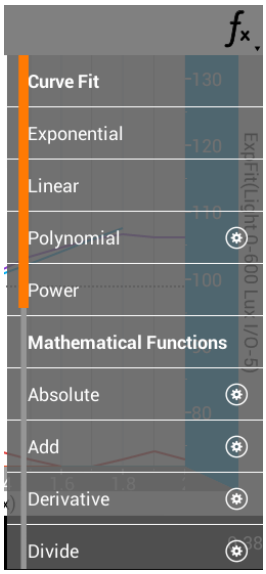
Removing cursors:

- Touch and hold a cursor, flick it quickly off the screen in any direction.
- The cursor will disappear from the plot line

Working with Functions

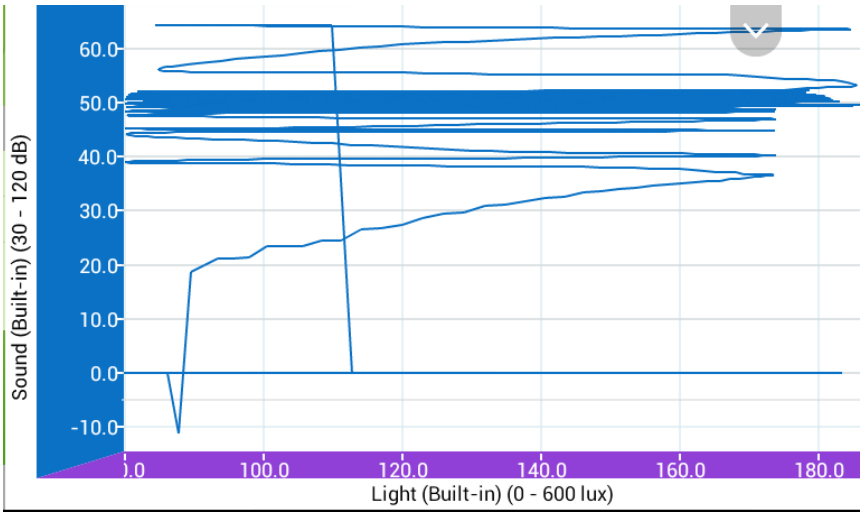
Once you have selected a cursor, this will activate the **Functions** menu.

Tap **Functions** (f_x) to access the list of Functions available to you.

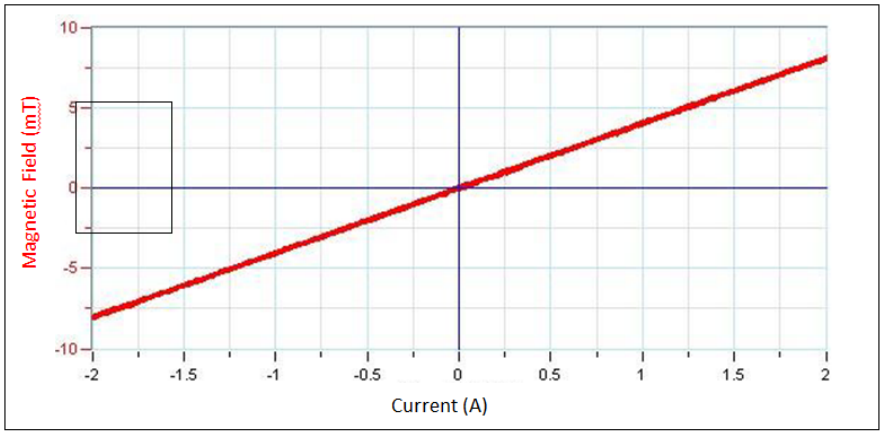


Touch one of these to apply the Function.

Note: In order to run a Function on a data set, the x-axis must show progression. In any experiment where the x-axis represents time this is not an issue but in certain cases the x-axis displays fluctuating data and in these cases you won't be able to run functions on the data.



In the Sound v. Light graph the light levels on the x-axis fluctuate up and down so functions cannot be run on the data.



In the Magnetic Field v. Current graph the current level progresses along the x-axis so functions can be run on the data.

List of Functions

In the formulas below, G_1 and G_2 represent selected data sets or time series, and A, B and C are constants that you can enter.

Curve Fit:	Shows a curve fit line based on the graph and two selected points. Can be exponential, linear, polynomial or power
Absolute:	$y = A\lvert BG_1\rvert$ Draws a line of the absolute values of a data set.
Add:	$y = AG_1 + BG_2$ Draws a line of the addition of two data sets.
Derivative:	$y_n = \frac{y_{n+1} - y_{n-1}}{2\Delta t}, \Delta t = \frac{1}{sampling\ rate}$ Draws a line of the slopes of every three consecutive points of a data set. For high recording rates and a small Δt, this line may be very noisy, which is why smoothing the data set is recommended before applying the derivative function.
Divide:	$y = \frac{AG_1}{BG_2}$ Draws a line of the division of two data sets
Exp.:	$y = Ae^{BG_1} + C$ Draws a line of e raised to the power of a data set.
Integral:	$y = A + B\sum G_1\,\Delta t$ Draws a line in which each point is the discrete integral of all the preceding points in a data set.
Linear:	$y = AG_1 + B$ Draws a line of linear displacement of a data set. This function is useful when you want to change the point of origin of a data set.
Ln:	$y = A1n(BG_1)$ Draws a line of the natural logarithm of a data set. The argument BG_1 must be positive.

Log 10:	$y = A\log_{10}(BG_1)$ Draws a line of the logarithm of a data set to base 10. The argument BG_1 must be positive.
Multiply:	$y = AG_1 \cdot BG_2$ Draws a line of the multiplication of two data sets
Subtract:	$y = AG_1 - BG_2$ Draws a line the subtraction of two data sets.
Square (X^2):	$y = A(BG_1)^2$ Draws a line of the squares of a data set.
Square root:	$y = A\sqrt{BG_1 + C}$ Draws a line of the square root values of a data set: The argument C_2G_1 must be greater than or equal to zero.
Reciprocal (1/X):	$y = \frac{A}{G_1 + B} + C$ Draws a line of the reciprocal values of a data set.

After you select a Function, a new plot line will appear on the graph displaying the results.

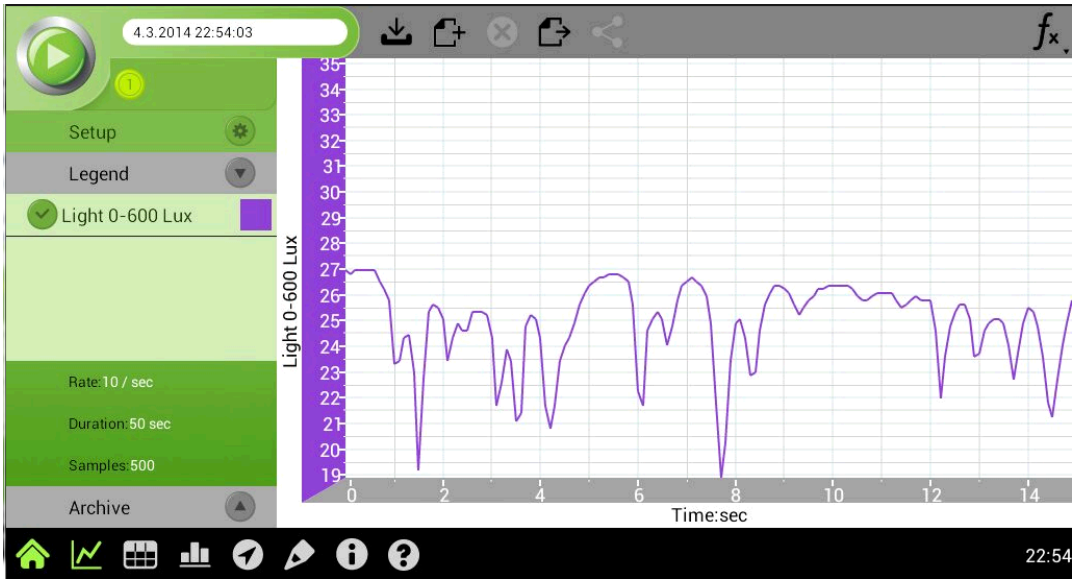
Some functions, such as **Subtract**, require you to compare 2 plot lines. To compare two plot lines:

- Place two cursors on one of the plot lines.
- Tap **Function** (f_x).
- Touch the **Setup** button next to the desired function.
- In the Setup menu G1 will be the plot line you selected.
- Use the G2 dropdown menu to select the plot line you would like to compare it to.
- Touch **Okay**.
- A new plot line will appear on the graph displaying the results.

Working with Multiple sensors

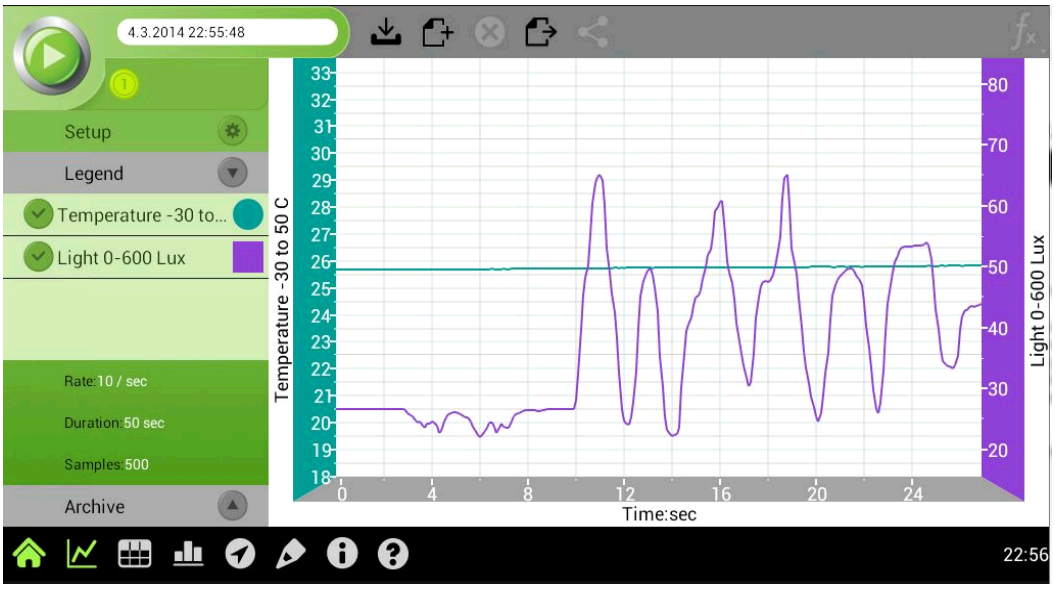
MiLAB can work with multiple sensors in order to create sophisticated experiments.

If there is only 1 sensor selected, you will see the y-axis on the left hand side listing the units for the one active sensor:



Two Sensors

If there are 2 sensors selected, you will see 2 y-axes, one on the left and one on the right.
The y-axis on the left represents the 1st sensor, and the y-axis on the right represents the 2nd sensor.

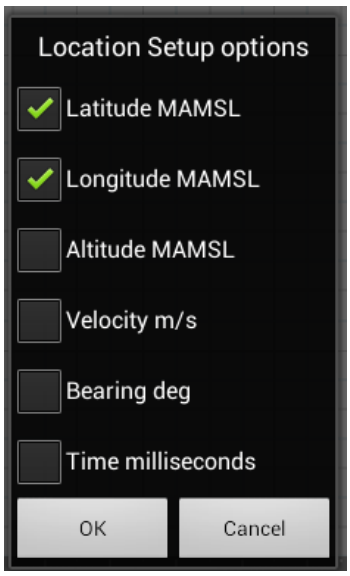


Three or more sensors

If there are 3 or more sensors selected you will see 2 y-axes, one on the left and one on the right.
The y-axis on the left represents the 1st sensor, and the y-axis on the right represents a 2nd sensor.
To change the sensor displayed on the y-axis tap the plot line of the desired sensor and that sensor's name and measurement units will be displayed on one of the y-axes.

Working with Location View

Most tablet computers contain a Global Positioning System (GPS) device which MiLAB can use as a location sensor. The Location sensor allows you to record data such as Latitude, Longitude, Altitude, Velocity, Bearing and Time.



Note: Location view only applies to tablet computers containing a GPS not to LabMate or LabMate+

Note: You must have your Tablet's GPS active and accessible to MiLAB in order to use the Location sensor. You must also be in a location where your device is in contact with a GPS satellite.

Checking or unchecking the box next to the sensor, will enable or disable the location sensors:

Sensor is enabled

Sensor is disabled

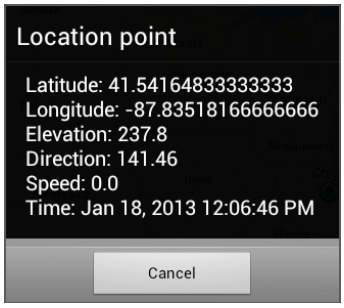
When you tap the Setup icon ( ), the Location Setup window will appear.
Here you can enable or disable **Latitude**, **Longitude**, **Altitude**, **Velocity**, **Bearing** and **Time** measurements.

Use the boxes to enable or disable each option.

Enabled

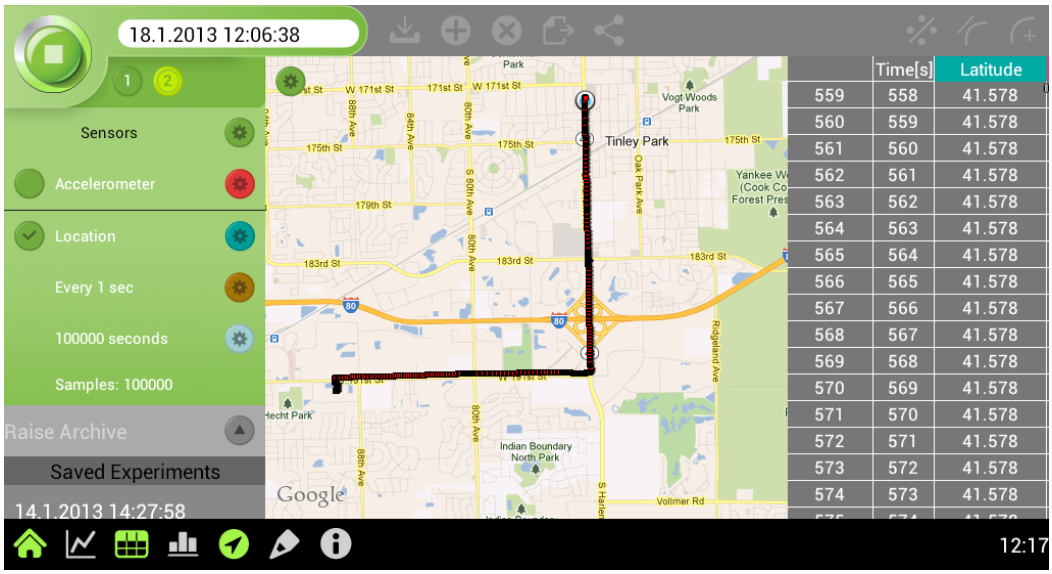
Disabled

When the Location sensor is enabled, a location icon ( ) will appear on the map showing your current location. Tapping on the location icon will display the Location point window:



To view the Location sensor data on a map, tap the **Location Services** icon ( ).
Tap the Sensor Setup icon on the map to center on either your current location or to center on the route associated with the current experiment. This menu will also allow you to switch between a satellite map and a regular (road) map.

Run an experiment with the Location sensor active and map view on to display your route.



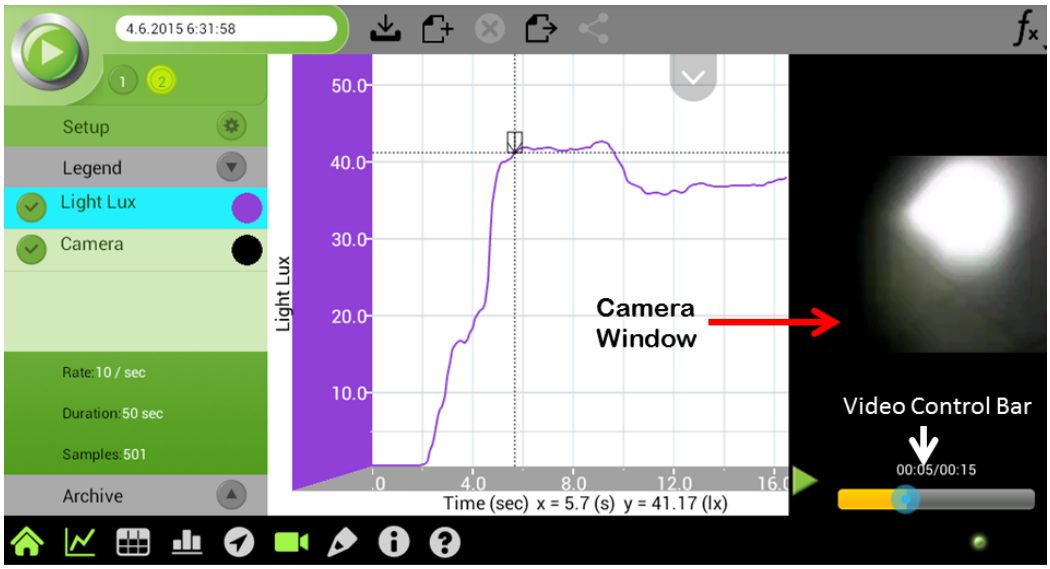
Working With Video Sync

Video Sync is a flexible tool allowing you to add video elements to your experiments and even sync them to your results. This would allow you to film an introduction to an experiment and then sync a recording of yourself conducting the experiment. Syncing the recording allows you to compare what was happening to your experiment when certain results were achieved. For example, in an experiment to find the boiling point of a liquid, you can take a video recording of the liquid while measuring the temperature and then afterwards go back and click on the graph to observe the liquid at different temperatures.

To Video Sync:

- Select **Camera** as one of the sensors.

- This will automatically open the Camera window showing you what you're filming.
- Tap **Run** to begin the experiment, the camera will start filming.
- Tap **Stop** or wait for the **Duration** to expire. The camera will stop recording automatically.
- Tap anywhere on the graph to set a plot point, the camera window will automatically sync to that point in the video.
- You can also drag the Video Control Bar to any point in the video and a cursor will automatically be placed there.



File Menu

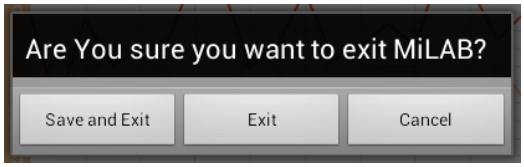
The File Menu lets you **Save**, **Delete**, **Export** and **Share** your experiments.

Saving an Experiment

- Run an Experiment.
- Tap **Run** ( ) to run the experiment.
- Let the experiment run its full duration or tap **Stop** ( ) to stop the experiment.
- Tap the Experiment Name text box. This will bring up the keyboard. Name the experiment using the keyboard and then tap **Done**.
- Tap **Save** ( ) to save your experiment.

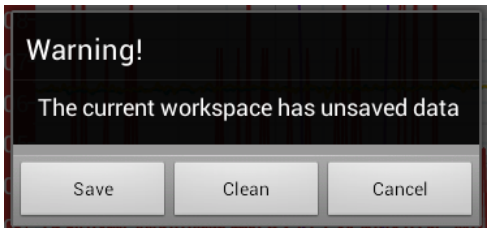
Note: If you do not name the experiment it will be saved and named after the time and date it was run but this will make it difficult to identify afterwards.

- In addition, when you exit MiLAB you will be prompted to save your work:



Starting a New Experiment

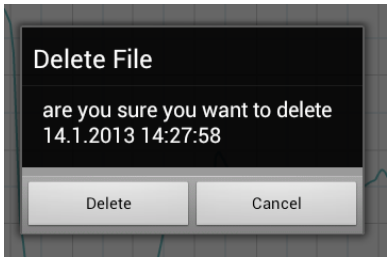
- Tap **New Experiment** ( ).
- You will be prompted to either **Save**, **Clean** or **Cancel**:



- Tap **Save** to save your current experiment.
- Tap **Clean** to remove the current results.
- Tap **Cancel** to cancel starting a new experiment.

Deleting an Experiment

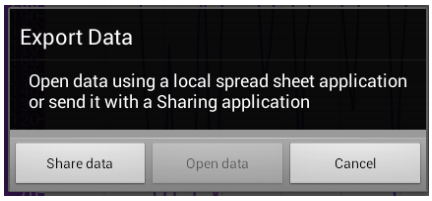
- Run an experiment or Open an experiment from the Archive.
- Tap **Delete** ( ).
- You will be asked to confirm the deletion:



- Tap **Delete** to confirm the deletion
- Tap **Cancel** to cancel the deletion.

Exporting an Experiment

- Run and Save experiment or Open an experiment from the Archive
- Tap the **Export** button ( ).
- You will be prompted to either **Share the Data, Open the Data** or **Cancel**:



- Tap **Share the Data** to transfer the data in .csv format to another Bluetooth device or to email it in .csv format.
- Tap **Open the Data** to view the data in .csv format on your tablet.
- Tap **Cancel** to cancel exporting the data.

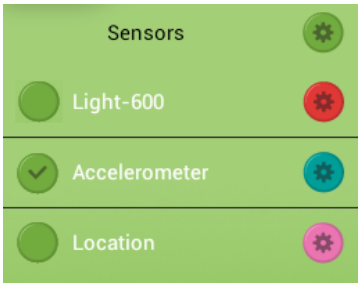
Sharing an Experiment

- Run and Save an experiment or Open an experiment from the Archive
- Tap the **Share** button ( ).
- You can choose to **Share** the data from the experiment with another Bluetooth enabled device or email the data in .mlb (MiLAB) format.

Accelerometer

Most tablet computers are equipped with a built-in Accelerometer which MiLAB treats as a sensor. The Accelerometer measures the movement of a tablet along three axes – up and down, right and left, and back and forth.

Note: Accelerometer only applies to tablet computers not to LabMate or LabMate+



Checking or unchecking the box next to the sensor, will enable or disable the sensor

Sensor is enabled

Sensor is disabled

When you tap the **Setup** icon next to the sensor's name ( ), the Accelerometer setup options will appear:

Here you can select which of the Accelerometer axes to record data from.

Used the check boxes to enable or disable each axis.

Enabled

Disabled

Tap **OK** to exit Accelerometer setup options and confirm the changes or **Cancel** to cancel the changes.

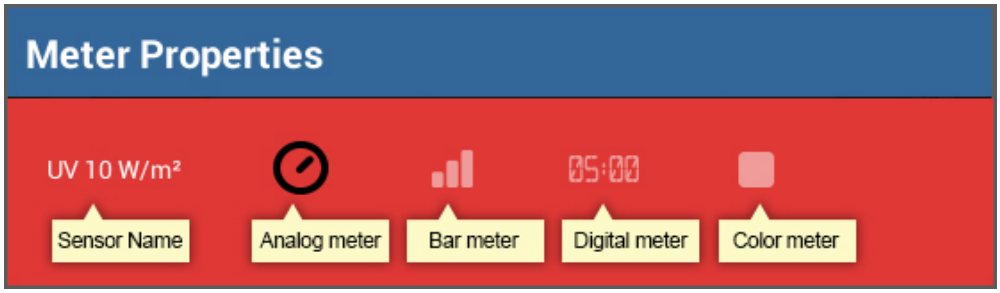
Meter View

Meters make data easier to understand by allowing you to view real-time readings from the active sensors. Tap **Meter View** ( ) to display the data in this format. There are four types of meters available in MiLAB – Analog, Bar, Digital and Color.

Changing Meter Types

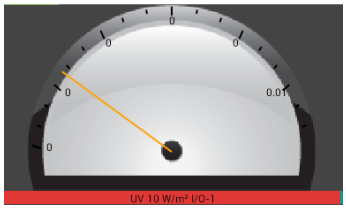
To change the type of meter:

- Tap the meter and the Meter Properties menu will appear:

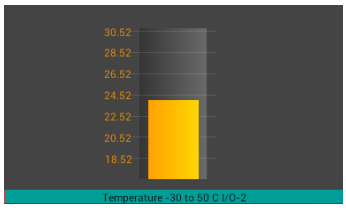


- Tap the icon of a meter type and MiLAB will display the data in that type of meter.

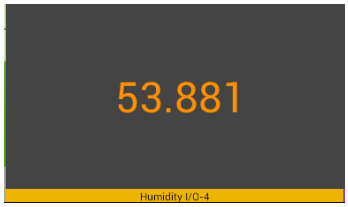
Analog Meter:



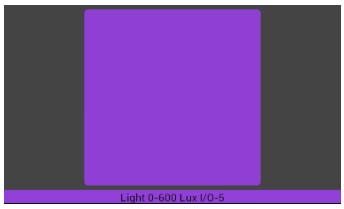
Bar Meter:



Digital Meter:



Color Meter:



MiLAB can display up to four meters simultaneously.

Technical Support

For technical support, you can contact our technical support team at:
Web: www.einsteinworld.com/support
Email: support@einsteinworld.com
Phone (in the US): (877) 266-4066
Phone (International): +972-3-901-4849 x232