Artec Logger

Instruction Manual

iPad

Published 2021/10/22

The contents of this manual are subject to revision at any time.

Version History

Date	Content
2021/10/22	First version

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1. Getting Started

This manual details how to use the Artec Logger software on iPad.

Download the latest version of this instruction manual by using the link below:

https://www.artec-kk.co.jp/dl/arteclogger/en/02software.php

★ Windows, Mac OS X, Android, or Chromebook users can follow this link to download a separate manual for use with their device.

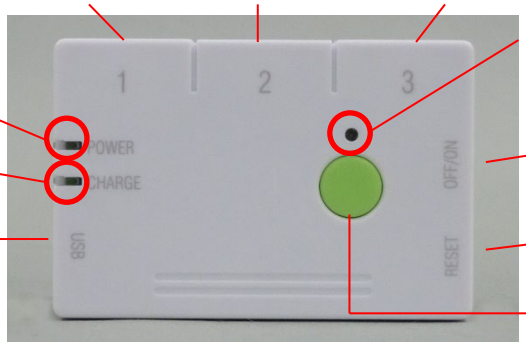
★ This manual is currently in beta. As this manual may be revised due to changes in product specifications, always use this URL to download the latest version after an official software release.

2. System Requirements

Version
iPadOS 13.0 or higher
Hardware Requirements
Minimum OS requirements

3. Artec Logger Features

Front



Back

① **Power Indicator**

This lights up in green when the Artec Logger is on.

② **Charge Indicator**

This lights up in red while the Artec Logger is charging and turns blue once it's fully charged.

③ **USB Port (Micro B)**

Plug your cable in here in order to power your Artec Logger via USB.

④ **Status Indicator**

This lights up or blinks when in Logging Mode.

⑤ **Power Switch**

Turn the Artec Logger on or off.

⑥ **Button**

Use this button in Logging Mode.

⑦ **Reset Button**

This button resets your Artec Logger.

⑧ **Port 1**

This port supports Climate and Current Sensors.

⑨ **Port 2**

This port supports the Voltage Sensor.

⑩ **Port 3**

This port supports Oxygen, Voltage, Water Temperature, and Ultrasonic (Distance) Sensors.

⑪ **Artec Logger ID**

Use these six alphanumeric characters to identify your Artec Logger when pairing.

4. Sensors and Features

4.1. Climate Sensor

This sensor can simultaneously measure temperature, atmospheric pressure, and humidity.

Plug it into **port 1** on your Artec Logger.

	Temperature	Humidity	Atmospheric Pressure
Measurement Range	-40-85℃	0-100%	300-1100 hPa
Accuracy	±1℃	±3%	±1 hPa
Resolution	0.1℃	0.1%	0.1 hPa

4.2. Current Sensor

This sensor measures electrical current.

Plug it into **port 1** on your Artec Logger.

Cable Length	20 cm (including alligator clips)
Measurement Range	±5 A (DC)
Resolution	1 mA
Accuracy	1%

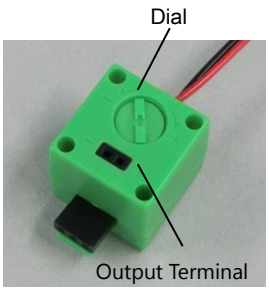
4.3. Oxygen Sensor

This sensor measures oxygen concentration. It's powered by zinc-air batteries. You can use a tester to measure oxygen concentration by plugging it into the tester output terminal on the back of the sensor and adjusting the calibration dial to 20.9 mV.

Plug it into **port 3** on your Artec Logger.

Cable Length	80 cm
Measurement Range	5-50%
Resolution	0.1%

Usage time depends on the type of zinc-air batteries and your testing environment.



See **6. Using the Oxygen Sensor** on page **29** for more details.

4.4. Ultrasonic (Distance) Sensor

The Ultrasonic Sensor uses the reflection of ultrasonic sound waves to measure distance.

Plug it into **port 3** on your Artec Logger.

Measurement Distance	2-250 cm
Angle	< 15° (approx.)
Frequency	40 kHz

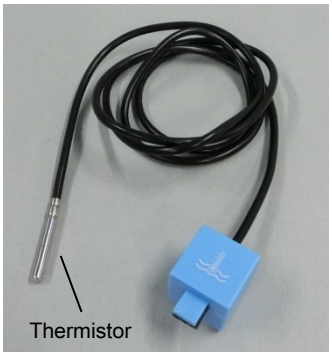
★ Requires sensor connecting cable to use.

4.5. Water Temperature Sensor

This sensor measures water temperature.

You can touch the metal tip of the thermistor to an object to measure its temperature.

Plug it into **port 3** on your Artec Logger.



Measurement Range	-40-105℃
Resolution	0.1%
Accuracy	±1%

4.6. Voltage Sensor

This sensor measures electrical voltage.

Plug it into **port 2** or **port 3** on your Artec Logger.

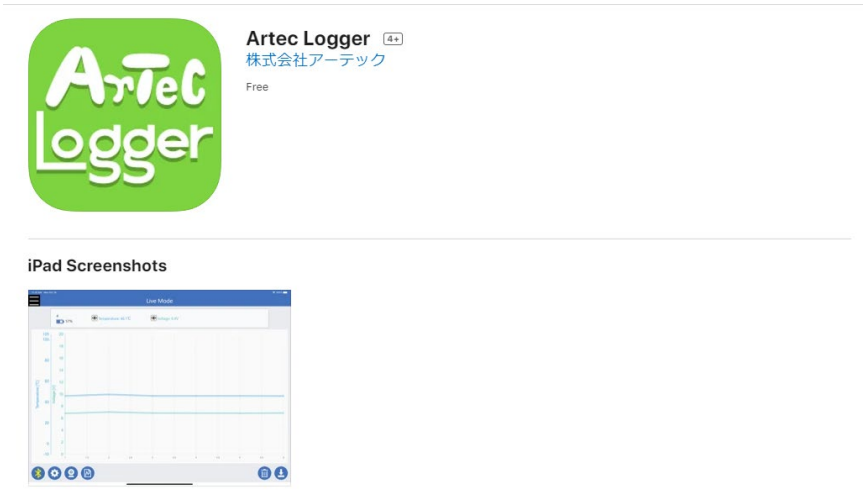
Measurement Range	±25 V A (DC)
Resolution	0.01 V
Accuracy	0.1V

5. Using the Application

5.1. Installation

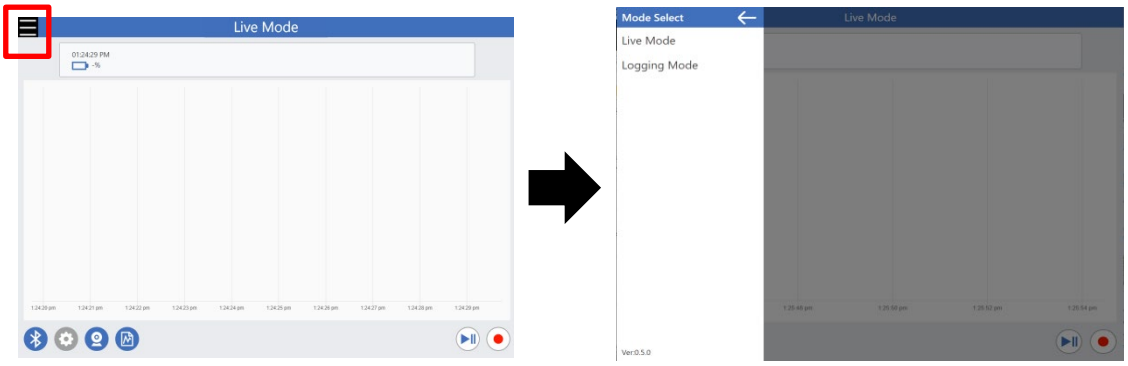
Search for Artec Logger on the App Store or follow the URL below to install the software:

https://www.artec-kk.co.jp/dl/arteclogger/en/02software.php



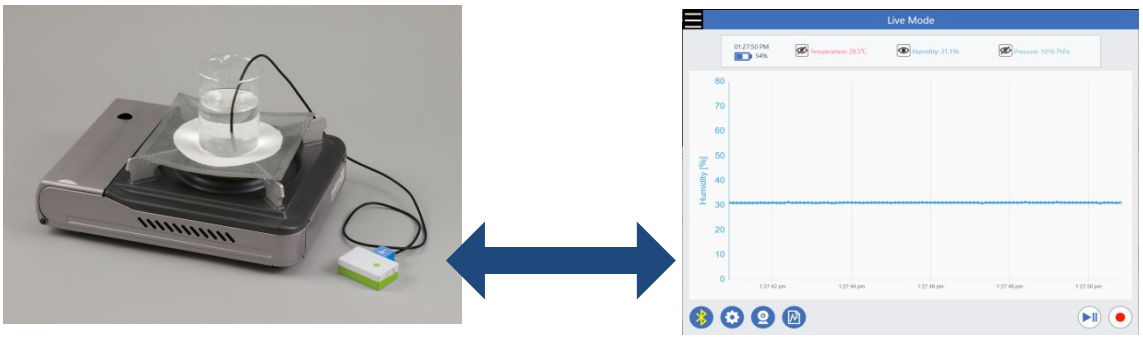
5.2. Switching Modes

Tap the menu at the top left to open the mode selection panel.



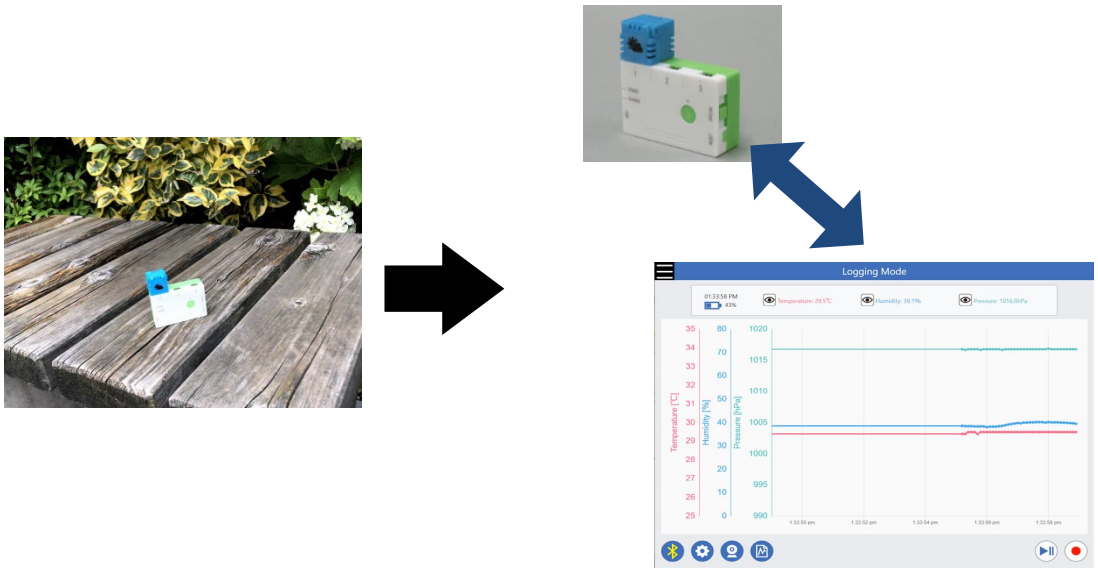
- Live Mode

Live Mode opens a connection between the Artec Logger and your device as you experiment, allowing you to view the results on the graph in real time.



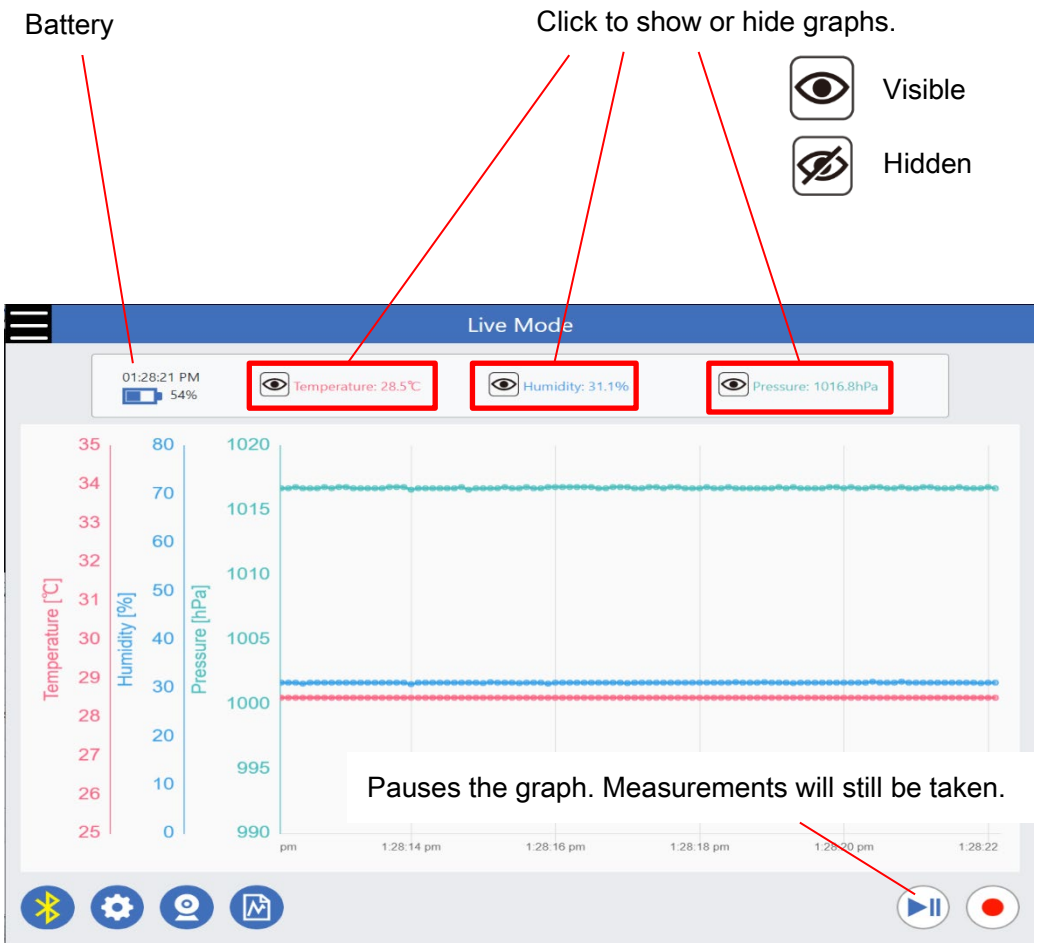
- Logging Mode

Logging Mode stores data on the Artec Logger, allowing you to save it on your device once the experiment is over.



5.3. Live Mode

5.3.1. Features



Saves a JPEG of the current graph.

Opens the camera on your device.

Opens the Settings dialog.

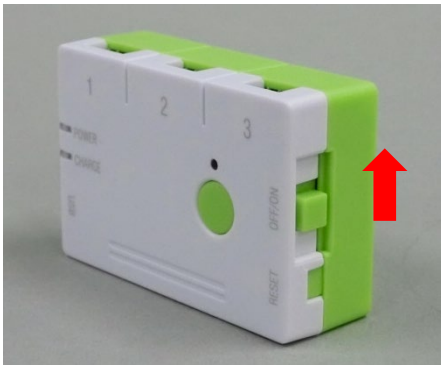
See **5.3.3. Setting Parameters (page 11), 5.3.4. Adjusting the Axis (page 13), and 5.3.5. Measurement Interval (page 14)** for details.

Connect or disconnect.

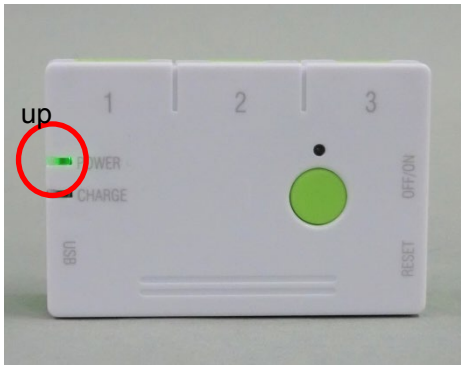
See **5.3.2. Connecting on page 9** for more details.

5.3.2. Connecting

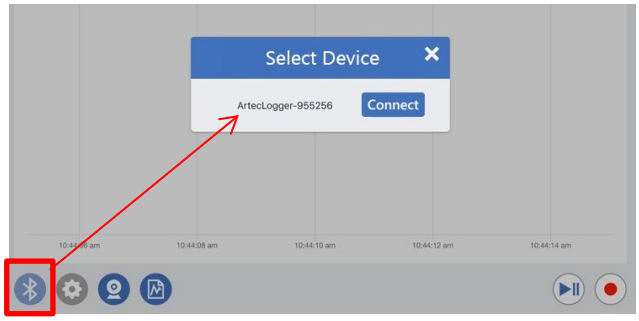
① Slide the switch on your Artec Logger to turn it on.



Lights up



② Tap the Bluetooth logo on the bottom left to open a list of available Artec Logger units.



③ Choose the unit which matches the ID written on the back of your Artec Logger and tap **Connect**.

Back View

④ The Artec Logger has connected once the Bluetooth logo has turned yellow.

Disconnected

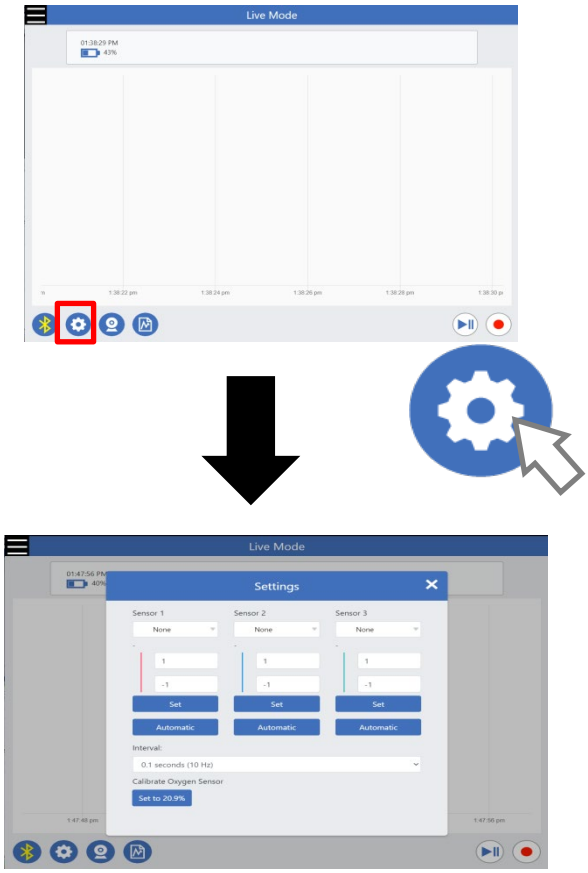
Connected

⑤ Tap the button again when you want to disconnect from your Artec Logger.

5.3.3. Setting Parameters

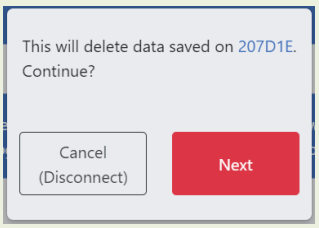
① Plug the sensors you wish to use into your Artec Logger.

② Click the **Settings** button on the bottom left to open the Settings dialog.



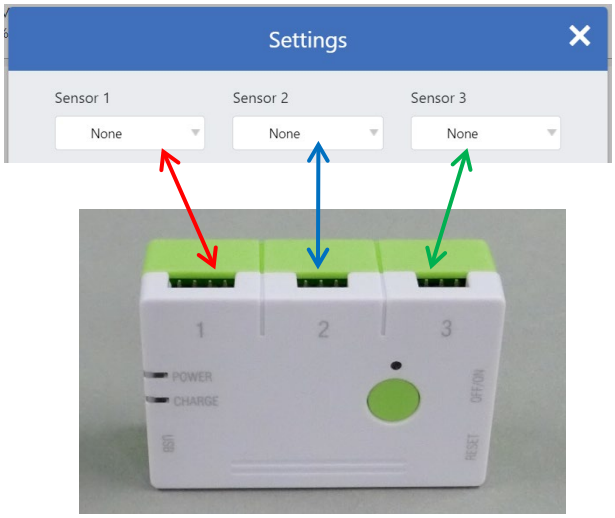
You'll see the window below if there's data stored on the Artec Logger from Logging Mode.

Click **Next** if you wish to delete the data, or click **Back** if you want to review the data in Logging Mode.

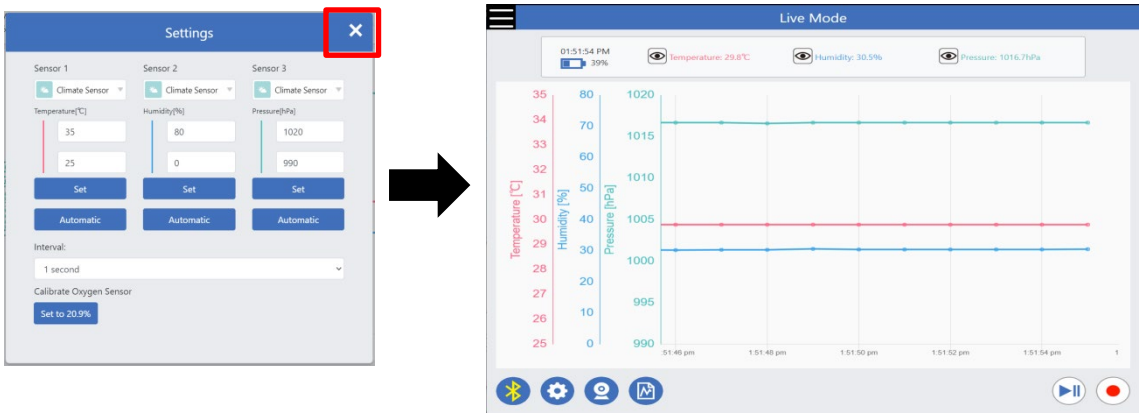


③ Choose your sensors.

The sensor number matches the port number on your Artec Logger.



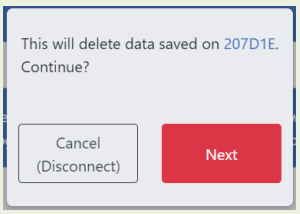
④ Close the dialog and you'll see the graph update in real time.



5.3.4. Adjusting the Axis

The Settings dialog also allows you to set upper and lower values for each vertical axis. You can change these before, after, or even during logging.

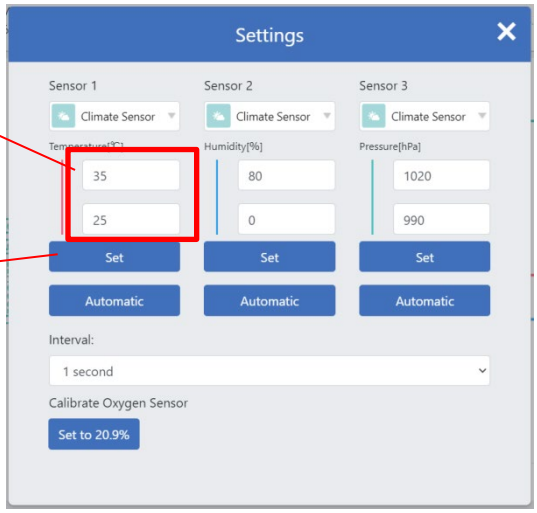
You'll see the window below if there's data stored on the Artec Logger from Logging Mode.



○ Setting Limits

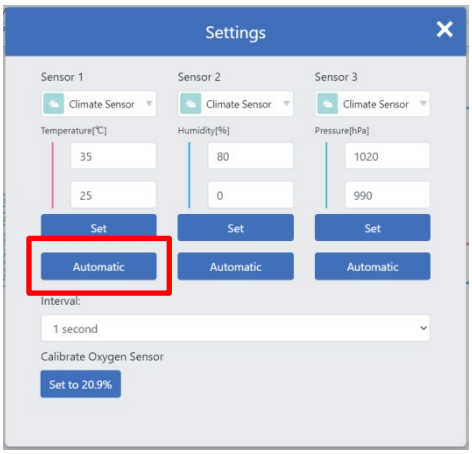
Type the upper and lower values for each axis.

Click the **Set** button to apply your chosen values.



○ Set Automatically

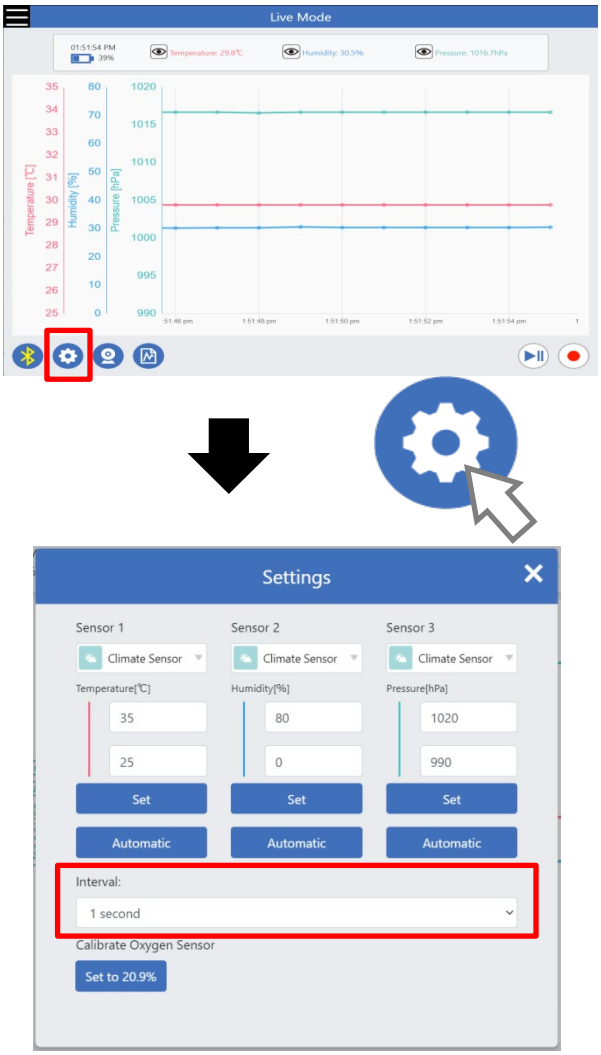
Tapping **Automatic** will keep the current range and set upper and lower values based on the average measurements so far. This average value will be set as the center of the graph.



5.3.5. Measurement Interval

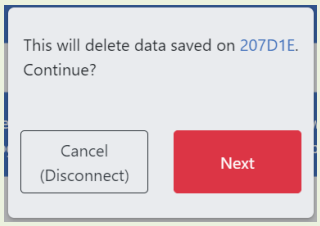
Change the measurement interval based on your experiment.

Remember to do this before taking measurements as this can't be changed while logging.



You'll see the window below if there's data stored on the Artec Logger from Logging Mode.

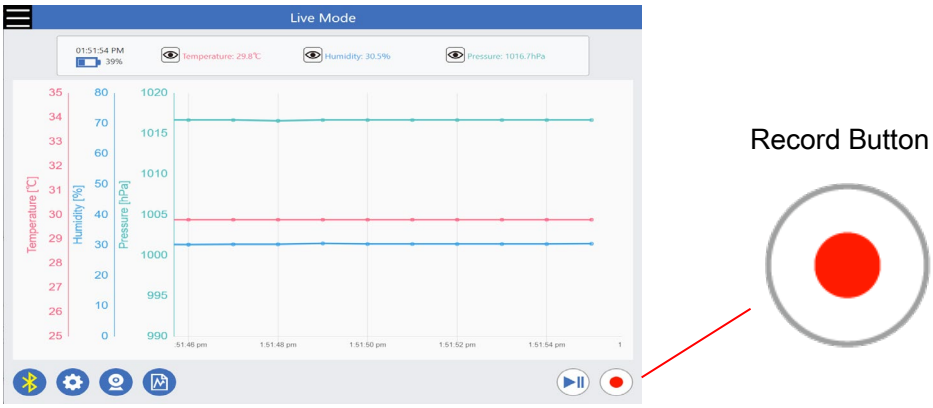
Click **Next** if you wish to delete the data, or click **Back** if you want to review the data in Logging Mode.



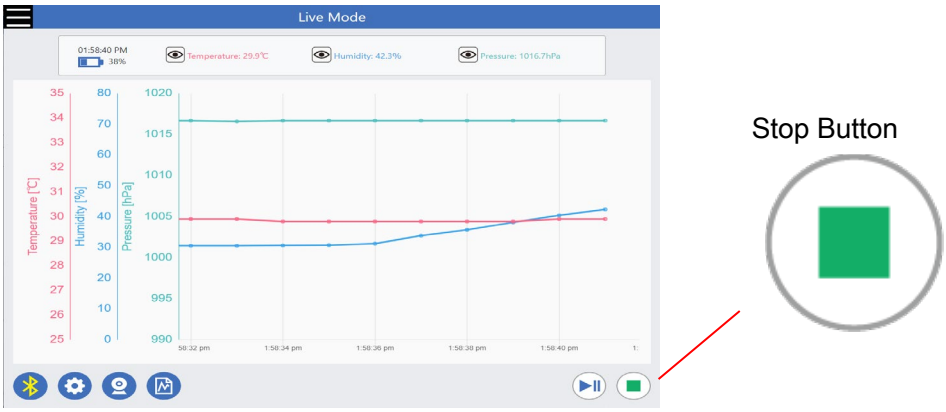
5.3.6. Logging

The Artec Logger will begin logging once your parameters are set.

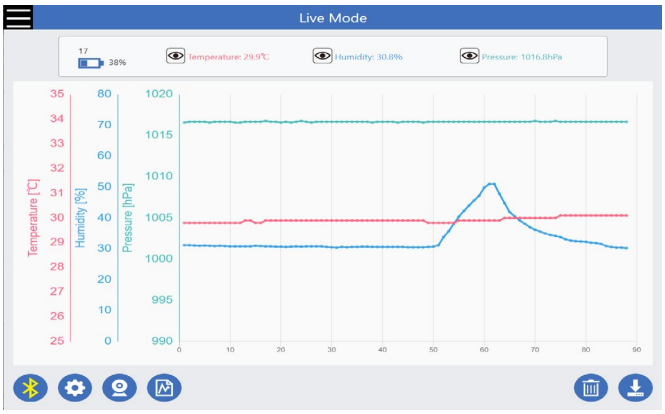
① Tap the **Record** button at the bottom right to start logging.



② The Record button will turn into a green **Stop** button once logging begins.



③ Tapping the **Stop** button will stop the measurement and show the complete results.



5.3.7. Checking Results

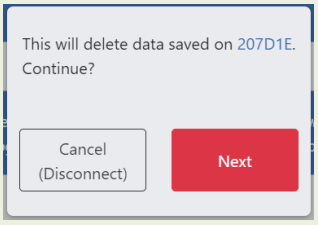
○ Hovering your mouse over any point in the graph will show the sensor value along with the time and elapsed time at which the value was logged.

○ Use the Settings dialog to change how the horizontal axes are shown.

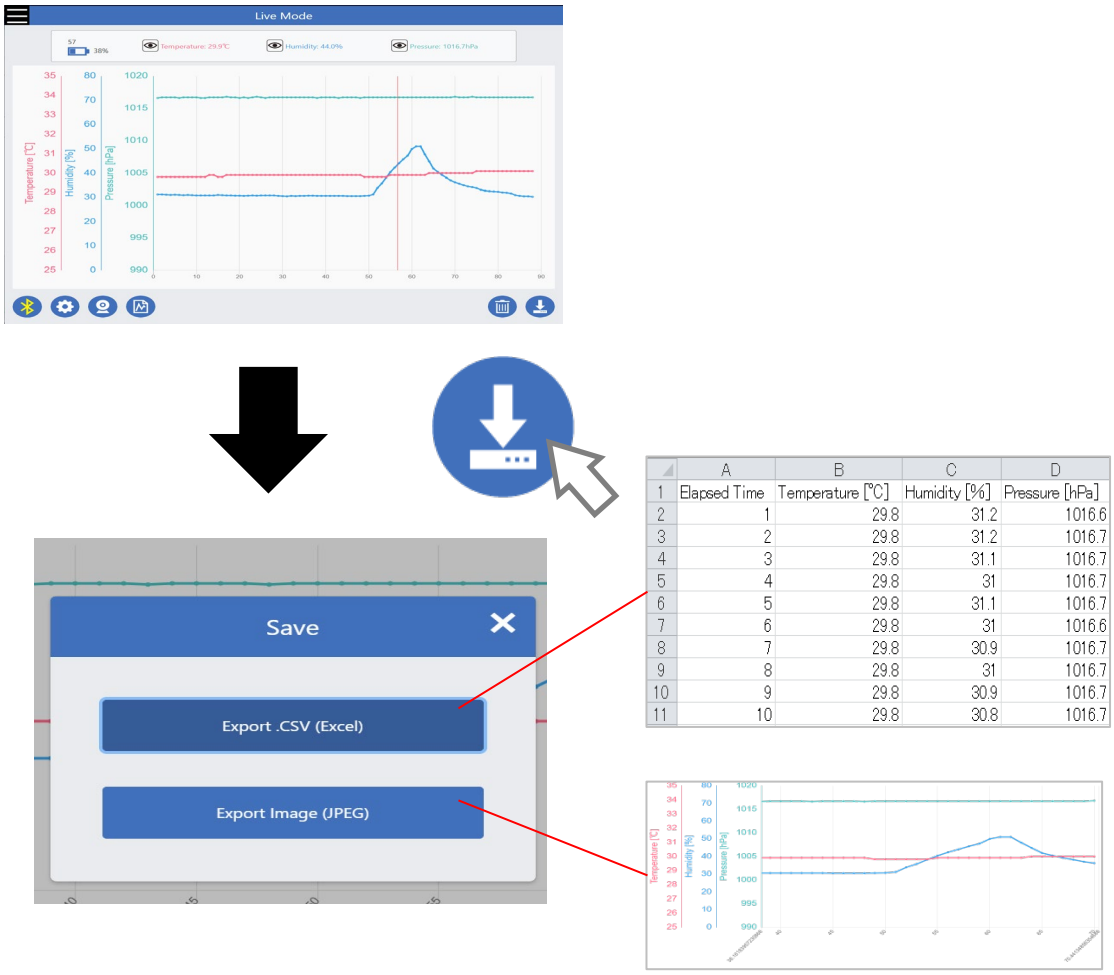
★ These can't be changed before or during logging.

You'll see the window below if there's data stored on the Artec Logger from Logging Mode.

Click **Next** if you wish to delete the data, or click **Back** if you want to review the data in Logging Mode.



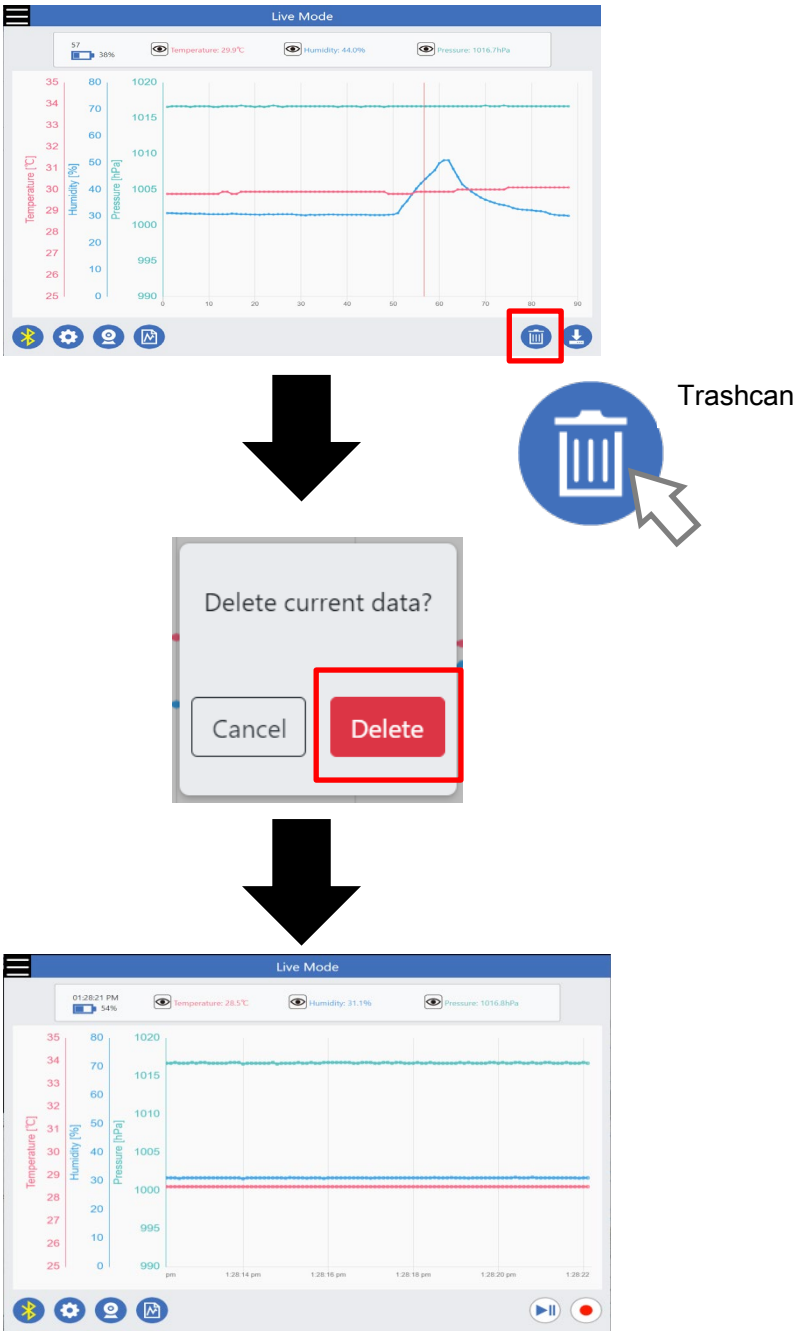
○ Tap the **Download** button to the bottom right to export your results. You can choose to download the data as a CSV or a JPEG image.



	A	B	C	D
1	Elapsed Time	Temperature [℃]	Humidity [%]	Pressure [hPa]
2	1	29.8	31.2	1016.6
3	2	29.8	31.2	1016.7
4	3	29.8	31.1	1016.7
5	4	29.8	31	1016.7
6	5	29.8	31.1	1016.7
7	6	29.8	31	1016.6
8	7	29.8	30.9	1016.7
9	8	29.8	31	1016.7
10	9	29.8	30.9	1016.7
11	10	29.8	30.8	1016.7

5.3.8. Deleting Results

If you want to delete your results to log new data, tap the **Trashcan** at the bottom right to delete the currently displayed data.

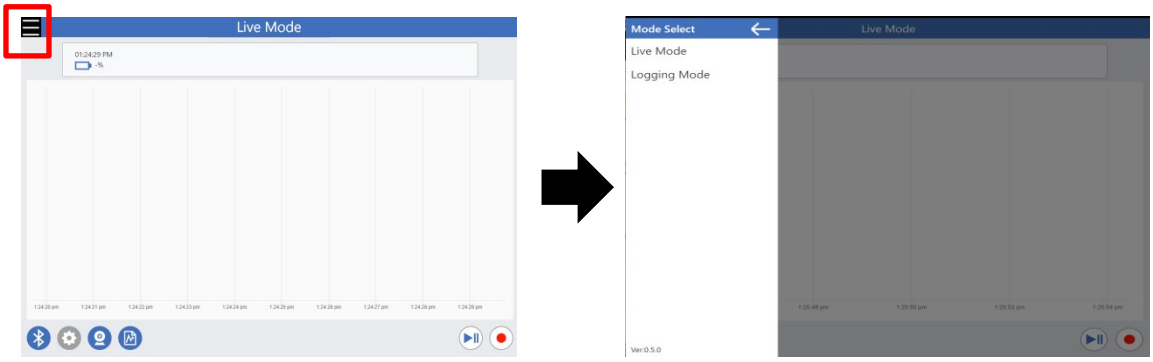


5.4. Logging Mode

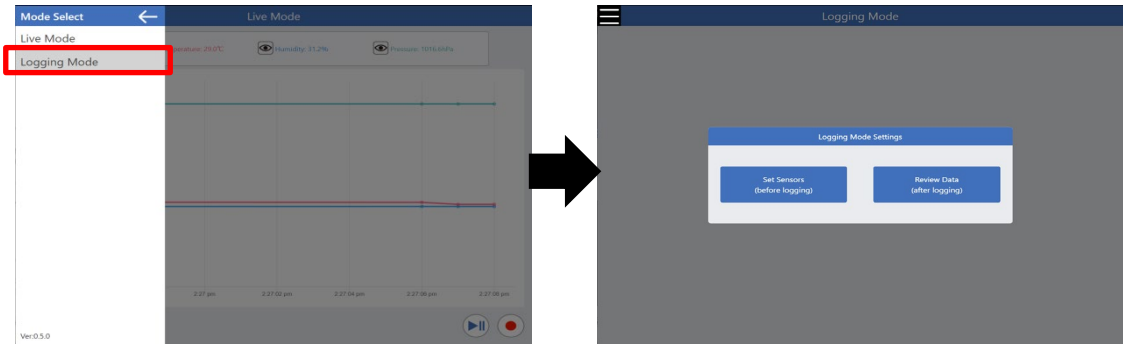
5.4.1. Setting Parameters (before logging)

Set your sensors, logging time, logging interval, and other parameters before you experiment.

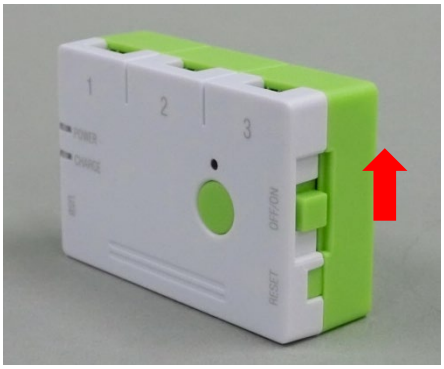
① Tap the menu at the top left to open the mode selection panel.

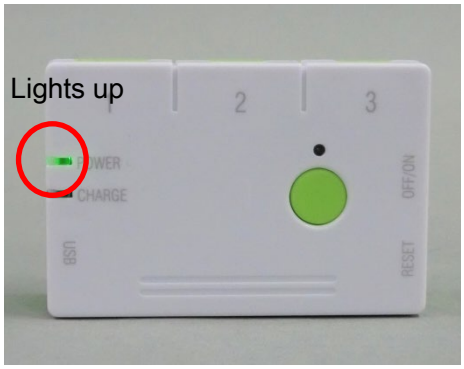


② Choose **Logging Mode**.

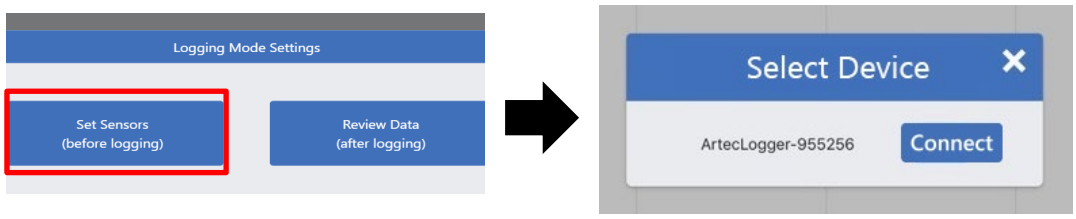


③ Slide the switch on your Artec Logger to turn it on.

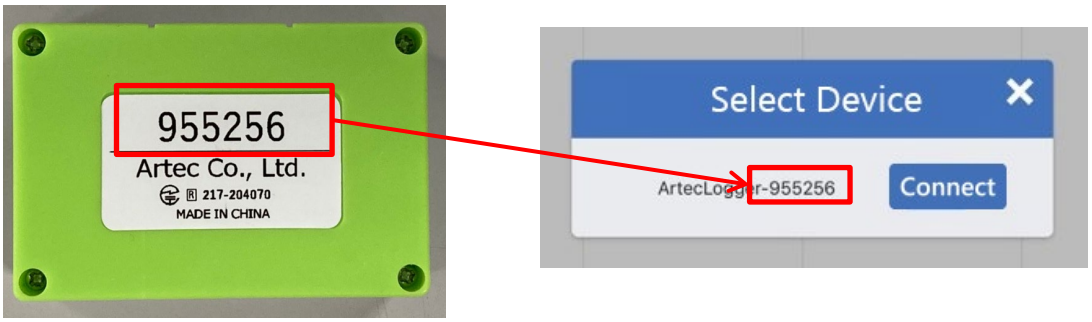




④ Tap **Set Sensors** to open a list of available Artec Logger units.



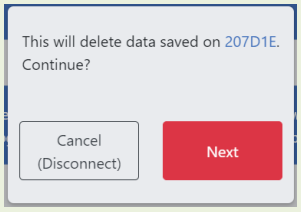
⑤ Choose the unit which matches the ID written on the back of your Artec Logger.



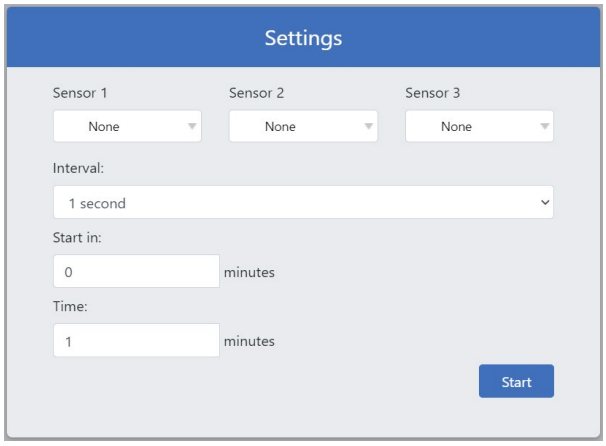
Back View

You'll see the window below if there's data stored on the Artec Logger from Logging Mode.

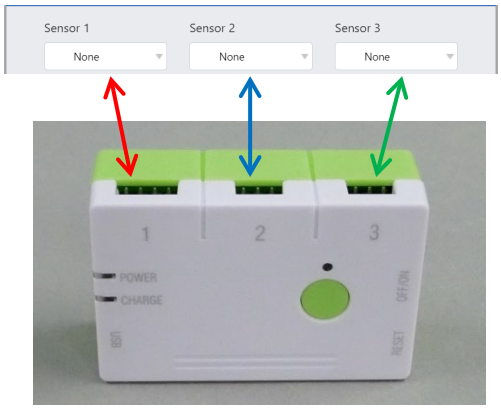
Click **Next** if you wish to delete the data, or click **Back** and choose **Review Data** to view your data.



⑦ The Settings dialog will open once connected. Set your parameters here.



The sensor number matches the port number on your Artec Logger.



Measurement Interval:

Set the interval between each measurement for your experiment.

Start in:

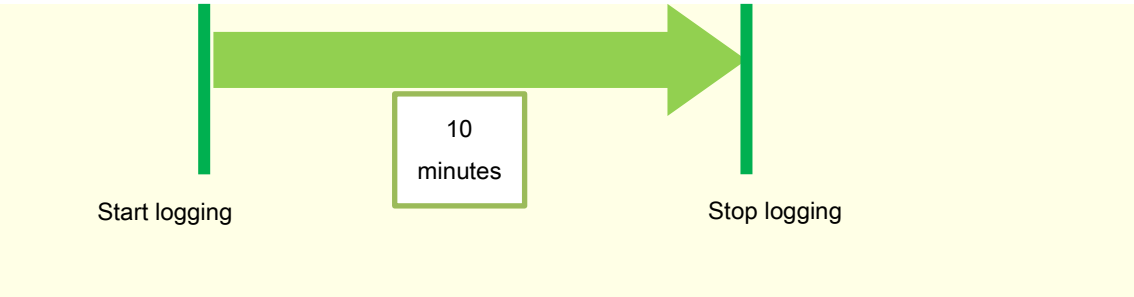
Once Logging Mode has started, the Artec Logger will wait this amount of time before taking measurements. Set this to 0 if you want it to start immediately.

Time:

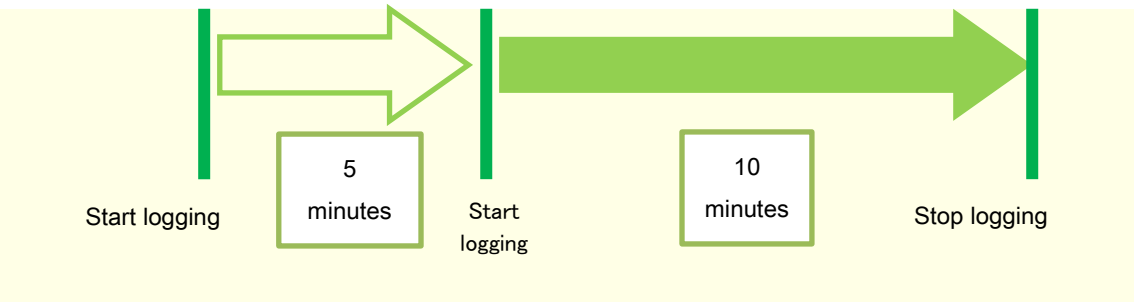
Measurements are taken for this amount of time.

Example

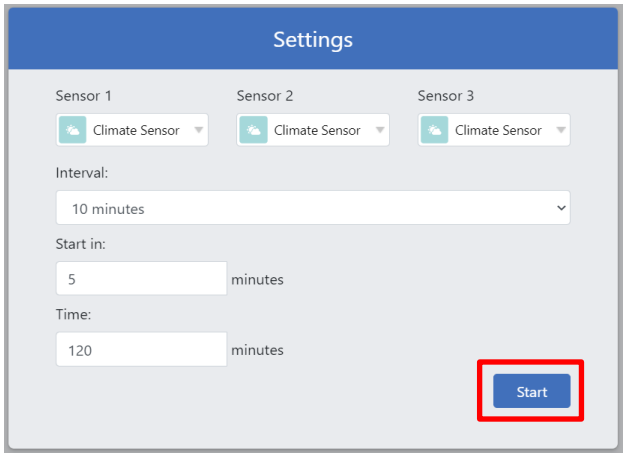
- Start in: 0 minutes / Time: 10 minutes



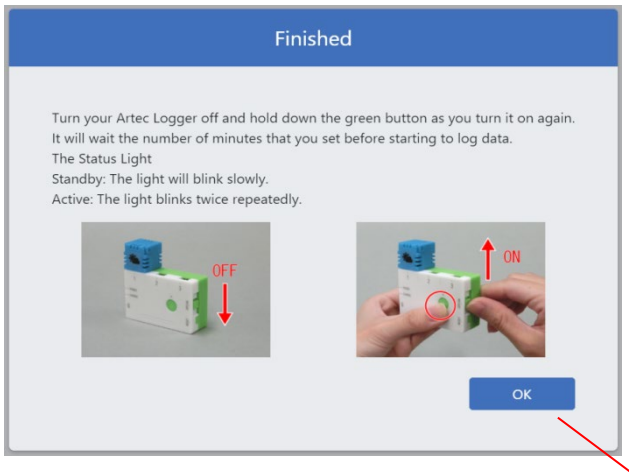
- Start in: 5 minutes / Time: 10 minutes



⑦ Tap the **Start** button to apply your settings.



⑧ Follow the steps in the dialog to start Logging Mode.



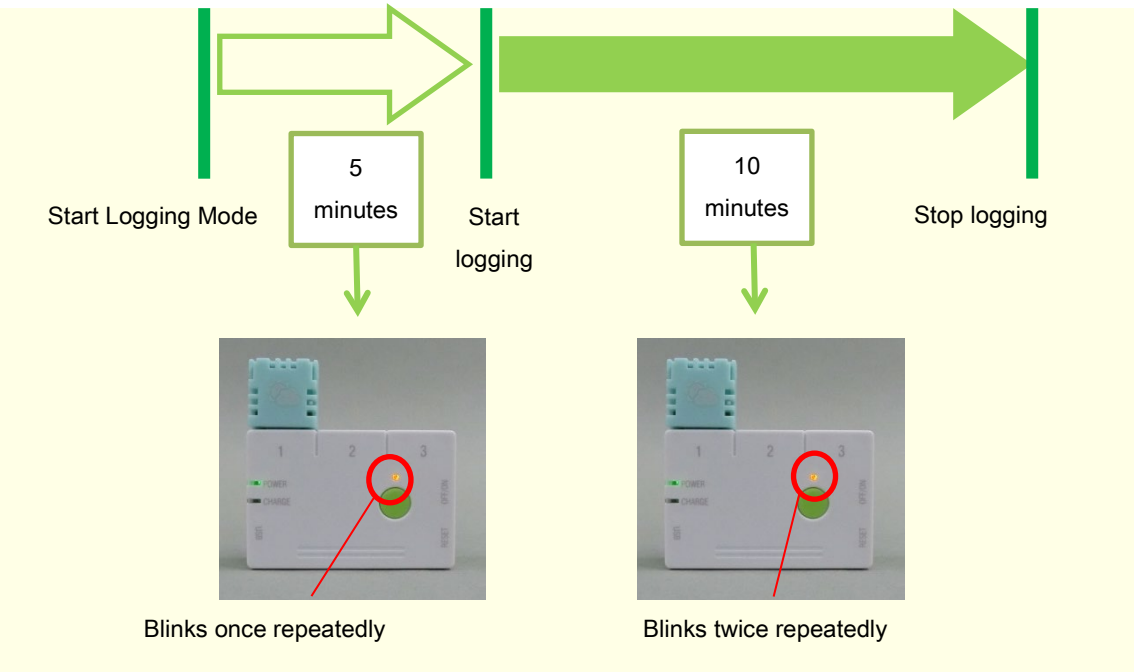
Click **OK** to close the window and open the default Live Mode screen. This will disconnect your Artec Logger.

5.4.2. Notes on Logging Mode

○ You can close the application at any time during logging. The data will be stored on your Artec Logger.

○ The Artec Logger's status indicator will blink twice repeatedly while logging.
The indicator blinking once repeatedly means that Logging Mode has started and your Artec Logger is on standby.

・ Start in: 5 minutes / Time: 10 minutes



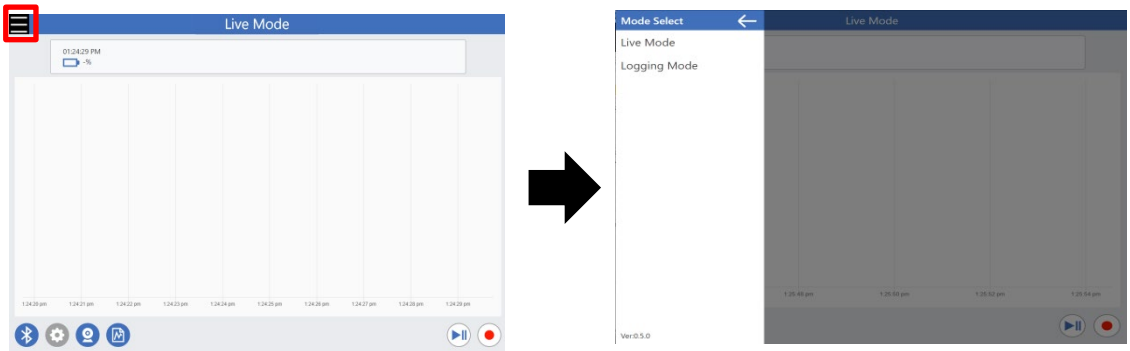
○ The Artec Logger will stop taking measurements if its batteries run out while in Logging Mode. Any measurements taken so far will be saved.

○ If you'd like to take measurements again, turn your Artec Logger off and hold the button before turning it on again. The Artec Logger will wait for the set time before taking measurements. Each dataset is stored separately, so be sure to pick the right one when reviewing your results.

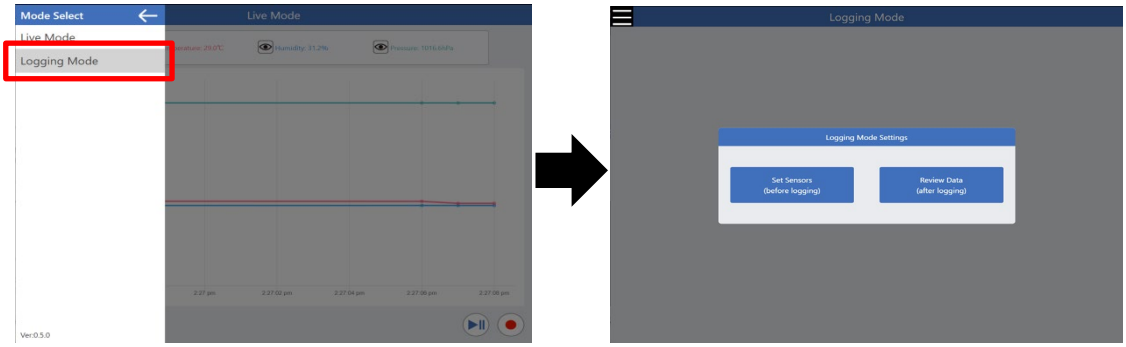
5.4.3. Review Data (after logging)

Use the application to review your data.

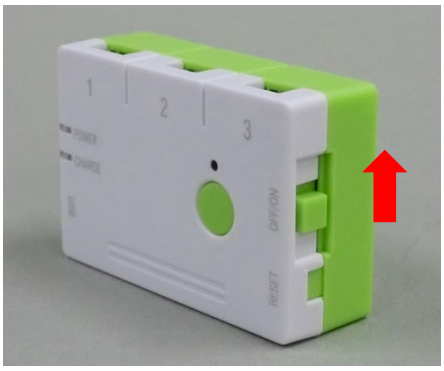
① Tap the menu at the top left to open the mode selection panel.

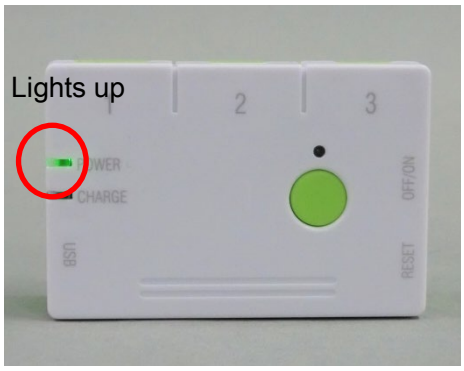


② Choose **Logging Mode**.

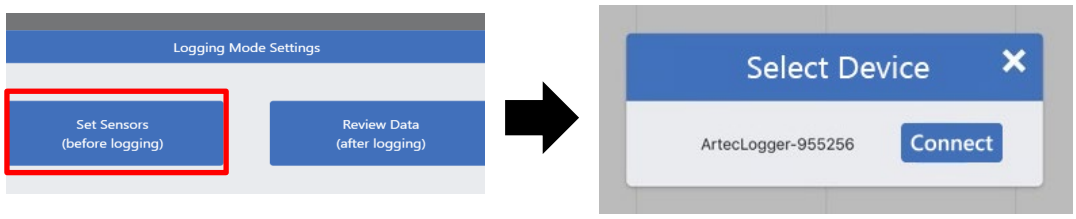


③ Slide the switch on your Artec Logger to turn it on.

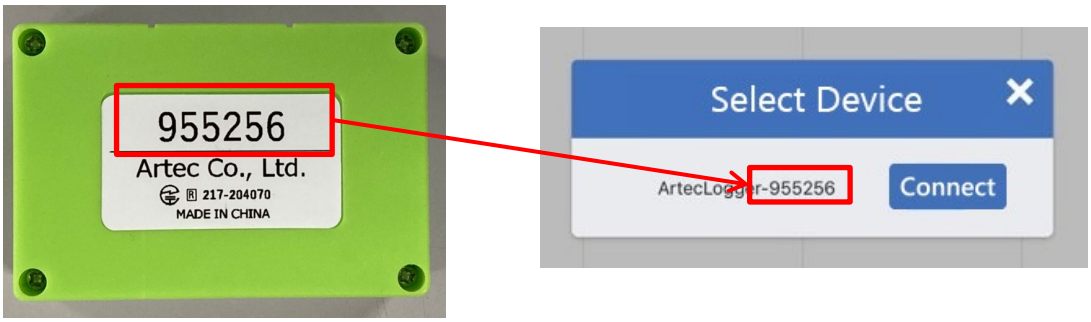




④ Tap **Set Sensors** to open a list of available Artec Logger units.

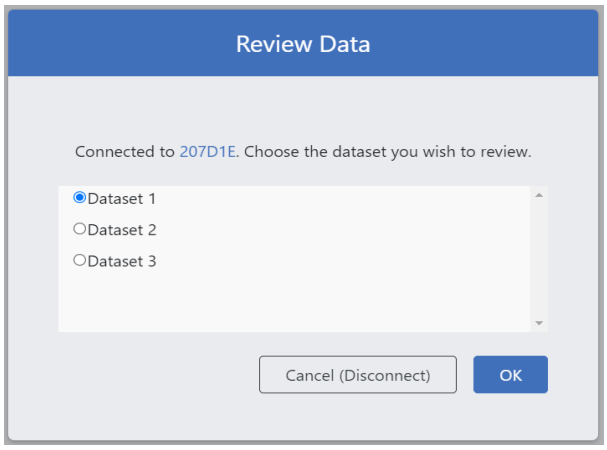


⑤ Choose the unit which matches the ID written on the back of your Artec Logger.

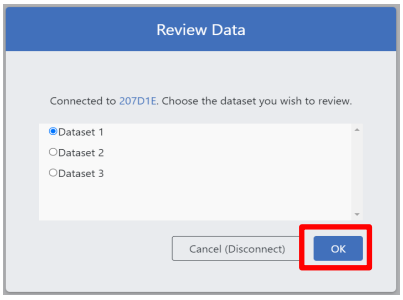


Back View

⑦ Once connected, choose the dataset you wish to review from the list.



⑧ Tap the **OK** button to show the data.

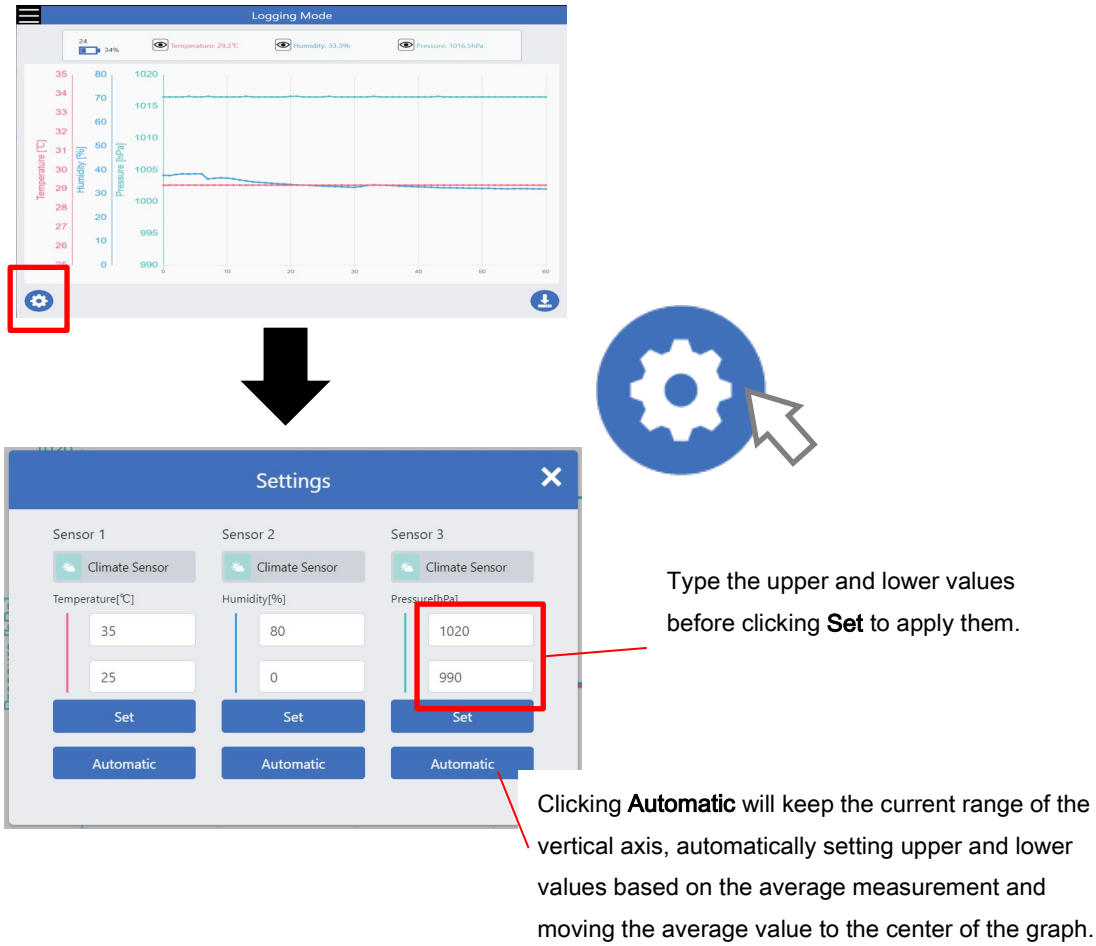


⑨ Read below to learn about each feature:

○ Hovering your mouse over any point in the graph will show the sensor value along with the elapsed time at which the value was logged.

○ You can drag over any portion of the graph to zoom in.

○ Use the settings dialog to adjust the vertical axes. You can tap the Settings button at the lower left to open it.



○ Tap on the eye next to each value to show or hide the graph.

○ Tap the **Download** button to the bottom right to export your results. You can choose to download the data as a CSV or a JPEG image.

6. Using the Oxygen Sensor

The Oxygen Sensor measures oxygen concentration. It's powered by zinc-air batteries. The positive terminal of the battery reacts with oxygen in the air to generate electricity, and the sensor interprets the voltage it receives from calibrating output current and variable resistance as the approximate oxygen concentration.

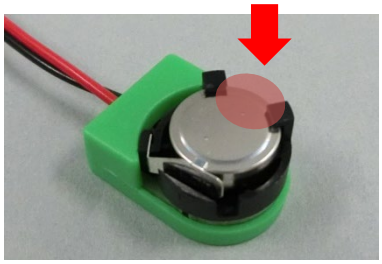
Calibrating the Sensor

Calibrate the sensor in normal air (oxygen concentration of 20.9%) prior to experimenting. Keep in mind that different brands of zinc-air batteries may vary in characteristics and specifications.

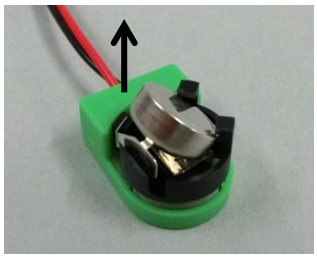
① Remove the sticker from the battery.

② Install the battery in the Oxygen Sensor's battery holder.

★ To remove the battery, press down on the battery between the black tabs. The battery will pop up, allowing you to take it out.

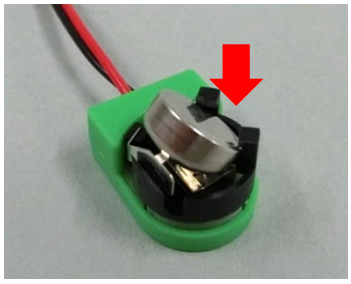


Press down between the tabs...

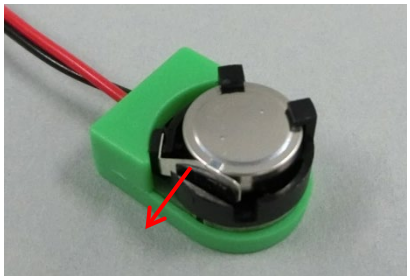


And the battery pops out!

★ When installing the battery, make sure the positive side is facing up. Place the edge under the tabs and slowly push the metal band outward to install the battery.



Slide the edge under the tabs...



And press it down to push out the band!

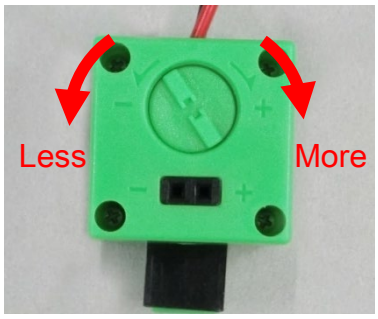
③ Let it sit for about <u>10 minutes</u>.

★ A zinc-air battery needs to have a certain amount of electrical discharge to use it as an oxygen sensor. Wait 10 minutes to ensure that the battery is at a normal level. The time required may vary based on your brand of battery.

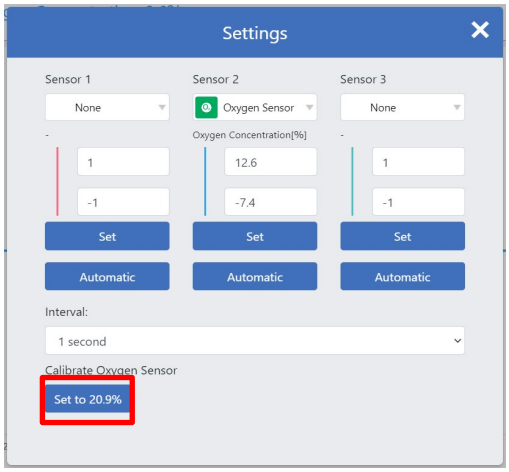
④ Connect the sensor to your Artec Logger to bring up a graph of the oxygen concentration in Live Mode.

⑤ Turn the Oxygen Sensor's dial until the oxygen concentration at the top of the graph is around 20%.

★ If you can't get to 20% by turning the dial, try breathing on the battery. If the oxygen concentration still doesn't change, your battery is out of power and needs to be replaced.



⑥ Right before you start your experiment, open the settings dialog and tap **Calibrate**.

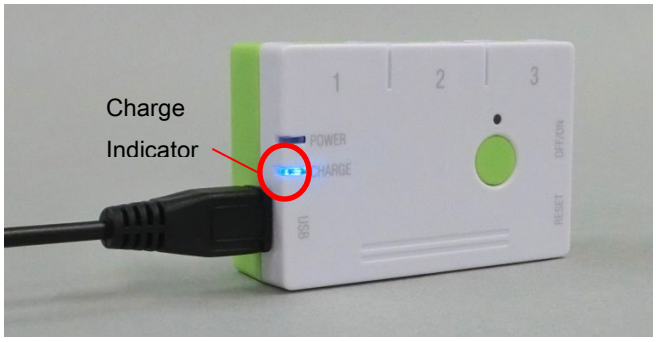


7. Charging the Artec Logger

You can charge your Artec Logger by plugging a USB Micro B cable into its USB port.

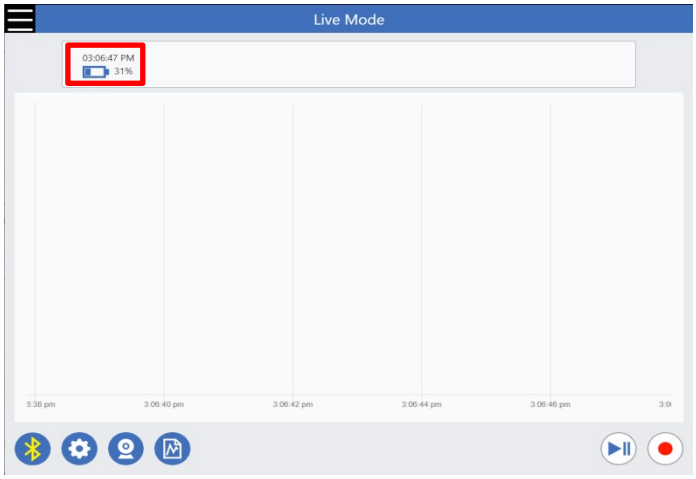
The charge indicator lights up red while the Artec Logger is charging and turns blue once it's fully charged.

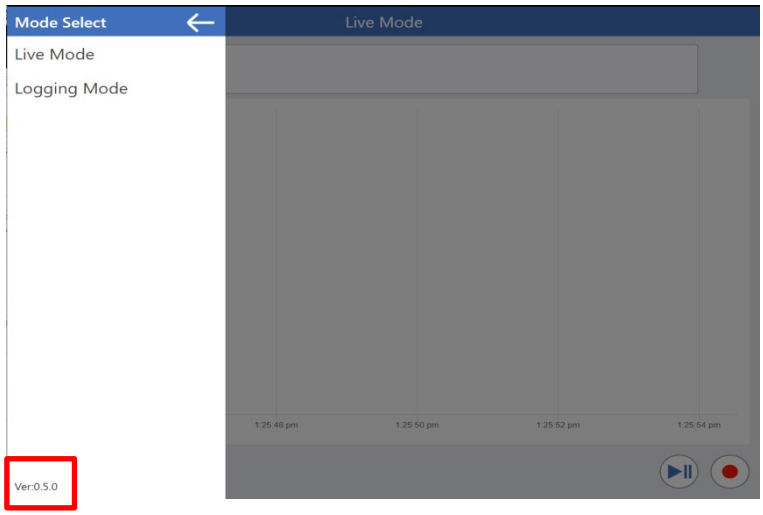
The Artec Logger takes about four hours to fully charge from 0%.



The Artec Logger's usage time depends on how often it communicates with the application, but it lasts for around six hours at 25 times per second and 12 hours at once per second.

You can check the battery level when connected to the application.



8. Application Version

Tap the menu and you'll see the current application version at the bottom of the mode selection panel.