

# BRING PHYSICS TO LIFE

# SENSORS ALIVE

## WELCOME!

Welcome aboard the Calypso II, the interstellar spacecraft that will be your home for the duration of the mission. You were chosen to take part in this mission as a BioFormer so that you can populate distant worlds with genimals, which stands for genetically engineered neomorphic interspecific animals.

As a chosen BioFormer, you'll need to make yourself familiar with your new high-tech quantum zoology lab. In order to create a huge variety of genimals, you'll first have to master the sensor pods and base station. But don't worry — they're so easy to use that you're sure to get the hang of them quickly.



## GETTING STARTED

### CONTENTS



Base station

### SENSOR PODS:



Sound sensor



Light sensor



Temperature sensor

»»»»»»» Please note the safety information on the back of this information sheet at the bottom of the page! ««««««««

### INSERTING AND REMOVING BATTERIES: SENSORS

**A** Remove the screw on the battery compartment. Pull down the lid of the battery compartment.



**B** Open the battery compartment by lifting up the lid.



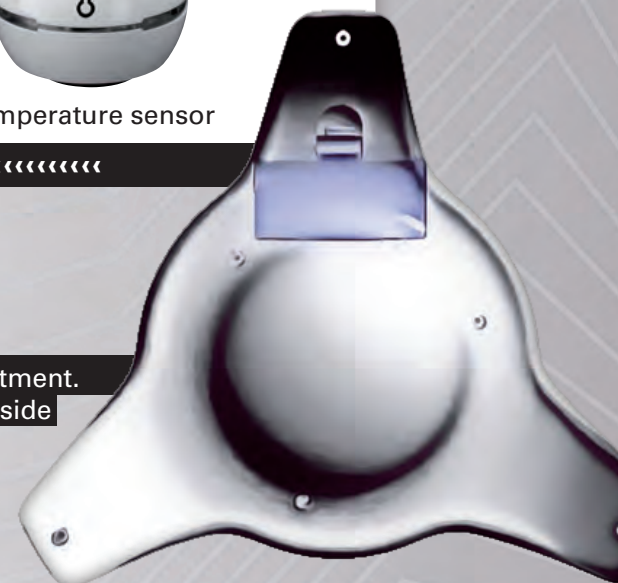
**C** Insert 2 AAA batteries. Make sure you put the batteries in correctly by matching the + and - polarity markings!



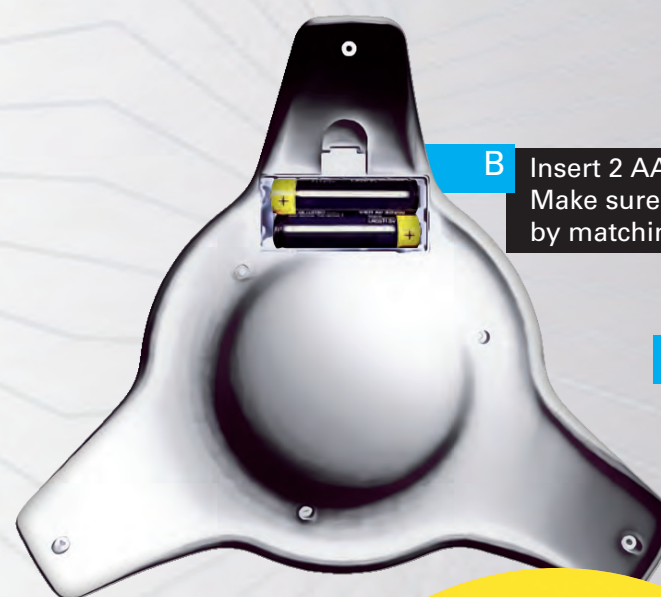
**D** Close the battery compartment. Put batteries in all of the sensor pods. Take note of the battery information on the back of this sheet at the bottom of the page.

### INSERTING AND REMOVING BATTERIES: BASE STATION

**A** Remove the screw on the battery compartment. The compartment is located on the underside of the base station. Open the lid of the battery compartment.



**B** Insert 2 AAA batteries. Make sure you put the batteries in correctly by matching the + and - polarity markings!



**C** Close the battery compartment.

## SETTING UP YOUR LAB

### 1. DOWNLOADING THE APP

To download and install the app, you need to search for it either in the App Store® or the Google Play Store, depending on the kind of device you're using. Simply enter the name "Sensors Alive" in the search bar.



### 2. TURNING ON THE BASE STATION

To turn on the base station, simply press the button. When the light on the base station comes on, the station is activated.



### 3. ACTIVATING BLUETOOTH

Activate Bluetooth on your tablet or smartphone. If you're not sure how to do this, ask your parents or check the user guide for your device.



### 4. CONNECTING THE BASE STATION

To connect your smartphone or tablet to the base station, Bluetooth needs to be activated on your device. Your device will automatically connect to the base station as soon as you open the app.

You don't need to manually connect to the station via the Bluetooth menu.

When the base station's LED turns blue, the connection is active. If it turns green, there is no active connection.



### 5. OPENING THE APP

Now you're ready to get started! Open the app and have your sensor pods and base station ready to go. Have fun!

**AND WE'RE OFF!**

## THE GAME

To help you understand how the game works, there's an introduction at the beginning. During the introduction, you'll get a step-by-step explanation of what you need to do to create your own world of fantastic creatures. Get ready to have some fun!

### THE CREATURES

Your mission in Sensors Alive is to generate lots of creatures from sensor data. You use the sensor pods to capture the data. It's tons of fun and super easy — thanks to your high-tech lab. First of all, you'll need a creature egg to send the sensor values to. Each individual value influences what your creature will look like when it hatches. In this way, there's an almost infinite number of possible creatures to create.

There is a variety of basic creature types. Each egg color represents a different basic type.

Experiment to find out what effects the sensor values have on your creature. With every new combination, you'll create a new, unique creature!



### MEASURING A VALUE

**HOW IT WORKS** To generate creatures, you'll be asked to measure values using the various sensor pods. It's very easy to do:

- Just press the button on the sensor pod. There will be a short countdown, with a flashing yellow light on the sensor pod, and then the sensor pod will begin taking the measurement. The sensor pod flashes green while it's taking the measurement. Once the light turns off again, the measurement has been taken.
- To send the measured value to the app, all you have to do is insert the sensor pod into the base station. The value will then be sent automatically.

**WHAT'S BEING MEASURED?** During the game, one value is sent to the app at a time. The sensor measures this value when the green light comes on.

The value that gets sent is always the maximum value recorded by the sensor while it's taking the measurement. For example, if you just want to record silence, you need to make sure there's total silence while the entire measurement is being taken. If a loud noise occurs during this time, then that value will be sent. The same applies for the light sensor. The temperature sensor works a little differently—it sends the average value.



**PRESS ONCE BRIEFLY**





## FREE MODE

In free mode, you can experiment with your sensors to your heart's content. You can use them to measure anything you can imagine. In free mode, you have the choice of three different options:

### MEASURING A SINGLE VALUE

If you only want to measure one value, it works the same way as in game mode: Press the button on the sensor pod, wait for the countdown to finish (sensor pod light turns yellow), and take your measurement once the sensor pod light turns green. To send the measured value, insert the sensor pod into the base station.

## THE SENSORS

As you most likely know already, values are always given in "units". One type of unit you're probably already familiar with is meters. Meters can be used to represent the length of something, or a distance. For example, you can measure your height in meters. To do this, all you need is a straight stick marked with the right units. The sensors that come with Sensors Alive are real high-tech sensors. They measure temperature, light intensity, and volume. In the next section, you'll learn which units are used to measure these things.

### SOUND

**WHAT IS A DECIBEL?** A decibel is the unit that's used to measure volume and is abbreviated as **dB**. Strictly speaking, it's the sound pressure that is being measured here, as sound is essentially compressed air that has reached our ears. The higher the sound pressure, the louder the noise we experience. Let's look at a few examples:

**10 dB:** The sound of gentle breathing  
**70 dB:** The sound of a car driving by



Because noises that are too loud can damage our hearing, your sensor will only measure up to a maximum of **100 dB**.

### EXTENDED MEASUREMENTS

With an extended measurement, you can measure a whole series of values over a longer period of time. All you need to do is press the sensor pod button for three seconds. After a short countdown, the sensor will start taking an extended measurement. It will measure as many values as it can until its memory is full, or until you stop the measurement process by pressing the sensor pod button again.

When you send the values to the app, it will take a little longer than it would with a single measurement — as there's a larger volume of data to be sent.



### LIVE MEASUREMENTS

When taking a live measurement, the sensor pod must already be sitting in the base station. Otherwise, the sensor will not be able to send its data back to the app. While the live measurement is being carried out, you can use the app to track what your sensor is measuring at any given moment.

To start a live measurement, quickly press the sensor pod button twice in a row. You then have five seconds to insert the sensor pod into the base station. This five-second countdown is indicated by a flashing yellow light.



### DO NOT THROW THE SENSORS.

Although the sensor pods are very sturdy, you should handle them carefully so they don't get damaged. However, if something does break, you can get a replacement from our Customer Service team.

### KEEP AWAY FROM WATER!

You might well be tempted to measure the temperature of water, but don't do it! The sensor pods are not waterproof so if they come in contact with water, they will no longer work.



### LIGHT

**WHAT IS LUX?** Light intensity is measured in lux. It is abbreviated as **Lx**. The word "lux" comes from Latin and means "light". Brightness can vary depending on the distance to the light source. This is why a candle always appears brighter when we're sitting directly in front of it, as opposed to a few feet away. Here are a few example measurements for light intensity:

**0.3 Lx:** Light emitted by a full moon on a cloudless night  
**100,000 Lx:** Light emitted on a bright, sunny day



Because bright sunlight can be harmful to our eyes, the maximum value that your sensor can measure is **100,000 Lx**.

### TEMPERATURE

**WHAT IS DEGREES CELSIUS?** Degrees Celsius is a very well-known unit of measure that was named after the physicist Anders Celsius. In the US, degrees Fahrenheit is often used as the unit of measure, but scientists worldwide use Celsius. The abbreviated form of degrees Celsius is indicated by this symbol: **°C**. This unit of measurement is based on the properties of water:

**The freezing point of water is 0 °C**  
**The boiling point of water is 100 °C**



Temperatures that are either too high or too low can be harmful to us. For this reason, the maximum value that the sensor can measure is **70 °C** and the minimum value is **-10 °C**.

**INFO:** The temperature sensor measures the temperature of the air around us, which changes relatively slowly. For example, if you wanted to measure the air temperature inside your refrigerator, it could take up to **10 minutes** for the sensor to display the correct temperature.

## THE DIFFERENT LIGHTS AND WHAT THEY MEAN

### SENSOR PODS

**FLASHING YELLOW LIGHT** Before each measurement is taken, your sensor pod will flash yellow for three seconds. It's a bit like a short countdown, so you have a few seconds more to get your sensor pod into position before the actual measurement is taken.

**FLASHING GREEN LIGHT** When the sensor pods start flashing green, it means they are taking a measurement. When the light turns off, it means the measurement has been taken.

**SOLID RED LIGHT** If a sensor pod light turns solid red, it means the batteries need to be replaced.

**FLASHING RED LIGHT** The sensor pod light will only flash red during live measurements. If the sensor pod light flashes red, it means the sensor pod hasn't been inserted into the base station in time.

### BASE STATION

**SOLID GREEN LED ON BASE STATION** When you press the button on the base station, the base station switches on. If the light is solid green, it means the base station is on and ready for use.

**FLASHING GREEN LED ON BASE STATION** If you insert a sensor pod into the base station and the LED flashes green, it means there is no Bluetooth connection between the base station and the app. In this case, you need to check the connection on your smartphone or tablet.

**SOLID BLUE LED ON BASE STATION** A solid blue LED indicates that the base station is connected to your smartphone or tablet via Bluetooth.

**FLASHING BLUE LED ON BASE STATION** A flashing blue LED indicates that the base station is sending data to the app. Do not remove the sensor pod from the base station until the light has stopped flashing.

**FLASHING RED LED ON BASE STATION** If the LED is flashing red, it means the batteries need to be replaced.

## SOME IDEAS FOR EXPERIMENTS WITH YOUR SENSORS

### HERE ARE SOME EXPERIMENTS YOU CAN CARRY OUT WITH YOUR SENSORS IN FREE MODE:

#### 1. STEALTH MISSION

You can use the sound sensor to find out which of your friends is the best at sneaking around. The challenge here is to sneak past the sensor pod as quietly as possible while it is taking a measurement.



To do this, start a live measurement and place the base station on the floor with the sound sensor pod in it. One by one, sneak past the sensor pod while the others check the app to see how quiet you are. What's important here, of course, is that you all keep as quiet as possible so that the value is not distorted. Ideally, the people checking the app should be in another room — just make sure there is a good Bluetooth connection between the base station and the app.

#### 2. CANDY SWIPER

Ever suspected that someone's been swiping candy from your drawer? Your light sensor will help you find out for sure: Start an extended measurement, then place the sensor pod inside the drawer and close it tight.



It's probably pretty dark inside the drawer now. Because the sensor measures brightness, it will be able to detect if the drawer is opened while you are away. You'll be able to tell by checking the measured values in the app. Remember though, you'll have to open the drawer yourself at the end too, in order to remove the sensor pod.

However, if any values measured before this indicate a change in brightness, it means that someone opened the drawer.

#### 3. AIR TRAP

This is an especially good experiment to carry out on a cold day. Along with your temperature sensor pod, you'll need a plastic lunch box with a lid that you can close.



Take your lunch box and your sensor pod outside. Place the sensor pod in the box and start an extended measurement. Close the lid on the box. You've now got cold air from the outside trapped in your lunch box along with your sensor pod. You can now go back inside and wait a little while.

When you read your sensor data, you'll be able to see how long it took for the air in the lunch box to warm up. Can you find a container that can keep the air cool for even longer? How fast does it take the air to warm up if, instead of closing the lid, you cover the box with a damp cloth?



#### Safety Information

**WARNING!** Not suitable for children under 3 years. Choking hazard — small parts may be swallowed or inhaled.

**WARNING!** Only for use by children aged 8 years and older. Instructions for parents or other supervising adults are included and have to be observed. Keep the packaging and instructions as they contain important information.

#### Safety Advice for Batteries

- The supply terminals are not to be short-circuited. A short circuit can cause the wires to overheat and the batteries to explode.
- Different types of batteries (e.g., rechargeable and standard) or new and used batteries are not to be mixed.
- Batteries are to be inserted with the correct polarity. Match the + and - polarity markings.
- Do not mix old and new batteries.
- Do not mix alkaline, standard (carbon-zinc), or rechargeable (nickel-cadmium) batteries.
- Non-rechargeable batteries are not to be recharged. They could explode!
- Rechargeable batteries are only to be charged under adult supervision.
- Rechargeable batteries are to be removed from the toy before being charged.
- Exhausted batteries are to be removed from the toy.
- Dispose of used batteries in accordance with environmental provisions, not in the household trash.
- Avoid deforming the batteries.

#### Disposal of Electrical and Electronic Components

This product's electronic parts are reusable and, for the sake of protecting the environment, they should not be thrown into the regular household trash at the end of their lifespan. Instead, they must be delivered to a collection location for electronic waste, as indicated by the following symbol:



#### Simplified EU Declaration of Conformity

Thames & Kosmos hereby declares that the Sensors Alive radio communication unit model 620486 conforms to Directive 2014/53/EU. The complete text of the EU declaration of conformity is available at the following Internet address: <http://thamesandkosmos.com/sensorsalive/declaration.pdf>

#### Supported Operating Systems

Compatible with Android 4.4.2 (KitKat) or later, and iOS 8.1 or later. The device must support the Bluetooth Low Energy standard (Bluetooth 4.0 or later).

Android, Google Play and the Google Play logo are trademarks of Google Inc. Apple and the Apple Logo are trademarks of Apple Inc., registered in the US and other countries. App Store is a service mark of Apple Inc., registered in the US and other countries.

#### FCC Part 15 Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

#### IC Statement

RSS-Gen & RSS-247 statement:

- This device complies with Industry Canada licence-exempt RSS standards).
- Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.
- Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence.
- L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

To comply with the FCC RF exposure guidelines when used with an accessory that contains no metal and that positions the device a minimum of 5 mm from the body. Use of other accessories may not ensure compliance with FCC RF exposure guidelines.

For body worn operation, this device has been tested and meets FCC RF exposure guidelines when used with an accessory that contains no metal and that positions the device a minimum of 5 mm from the body. Use of other accessories may not ensure compliance with FCC RF exposure guidelines.

E-Labeling: Go to "Settings" (gear symbol) and touch "Credits" in your app to view more information on certification for the product.

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