einstein™


# Welcome to einstein™ LabMateII™

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www.einsteinworld.com

Congratulations on receiving your **einstein**™LabmateII™, designed to turn any tablet or PC into a tool for advanced science investigation.

In this booklet you'll find quick experiments you can run using your **einstein**™LabmateII right away. These are fun science investigations you can enjoy with just your **einstein**™Labmate, a tablet or PC and some stuff you have lying around the house.

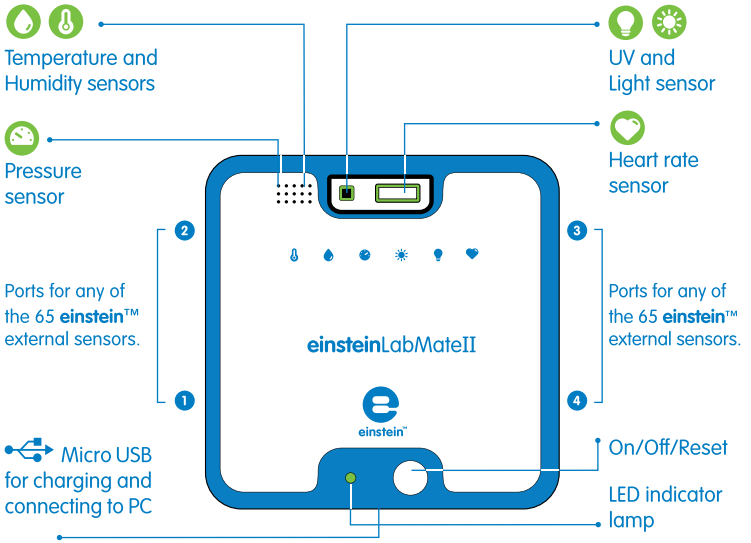
Also included is a guide to the **einstein**™LabMateII's features and technical specifications so you can get to know the **einstein**™LabmateII better.

This, of course, is just a start; soon you'll be setting up bigger, better challenges and expanding your universe.

So pick up your **einstein**™LabmateII and start exploring!

Have fun,
**einstein**™ team

# einstein™LabMateII ports and sensors






How to read the LED indicator lamp:

Steady light - idle and charging

Slowly blinking - connected and idle

Rapidly blinking - running an experiment

- USB connected - green light
- Bluetoth connected - blue light
- Color also reflects battery status

Get more info at **einstein**world.com

# General operation

**Charge the battery:**

- There are two ways to charge the **einstein**™LabMateII:
  1. Connect the **einstein**™LabMateII to a PC using the USB cable
  2. Connect the **einstein**™LabMateII to a wall socket with a USB power cable
- **einstein**™LabMateII battery may not be fully charged upon first use.
- The **einstein**™LabMateII may become warm when charging.

**Power on einstein**™LabMateII:

- Press and hold the Power button for several seconds. The LED next to the Power button will begin flashing green.

**Pairing the einstein**™LabMateII **For Tablets:**

- Make sure the **einstein**™LabMateII is turned on (the LED should be flashing green)
- Activate the MiLab application.
- Select the LabMatell to connect it to Tablet.



**Pairing the einstein**™LabMateII **For PCs**:

- Make sure the **einstein**™LabMateII is turned on (the LED should be flashing green)
- Consult your computer manual for details on pairing with Bluetooth devices

**Resetting the einstein**™LabMateII:

- Reset the **einstein**™LabMateII by holding the power button down for 4 seconds.

**Download data collection and analysis software:**

- **MultiLab**™
- **MiLAB**™
- **einstein**™World

**Download Free:** www.**einstein**world.com

GET IT ON Google play | Available on the App Store

**Upgrading the einstein**™LabMateII **Firmware:** As new technologies come out, we may upgrade the **einstein**™LabMateII firmware to enhance its performance. For further details and instructions go to www.**einstein**.com/product/labmate

## **Quick Experiment:** Measuring UV

Ultraviolet (UV) radiation is the section of the electromagnetic spectrum between x-rays and visible light. Biology students need to study the effects of this phenomenon as it has significant impact on our health. While we need UV radiation to synthesize vitamin D it can also cause health problems including damage to eyesight.
Using the **einstein**™LabMateII children can learn about UV radiation and test their own sunglasses to see if they got their money's worth.

1. Pair your **einstein**™LabMateII with your tablet or PC and open either MiLAB™ or MultiLab™4.
2. Make sure only the UV sensor is selected.
3. Leave the Rate and Duration at their default settings.
4. Click the **Run** button ( ) while aiming the sensor toward the sun for ten seconds, Then click Stop.
5. Now place your sunglasses over the sensor and click the Run button again while aiming the sensor towards the sun. After ten seconds select Stop ( ).

**Note** the difference between the two measurements. Significant changes are an opportunity to discuss the damage UV radiation can do to eyesight and why. Insignificant changes can show children how science can help them be better consumers.

## **Quick Experiment:** Transparency

Transparency is a measure of how much light can penetrate a material. Materials can be divided into 3 types:

- **Transparent:** Light penetrates easily through the material
- **Translucent:** Light has difficulty penetrating the material
- **Opaque:** Light cannot penetrate the material.

Prepare one piece of aluminum foil, one piece of wax paper and one piece of plastic wrap.

1. Pair your **einstein**™LabMate II with your tablet or PC and open either **MiLAB** or **MultiLab4**.
2. Make sure only the light sensor is selected.
3. Leave the Rate and Duration at their default settings.
4. Aim the light sensor toward a light source.
5. Click **Run** (  ).
6. Hold the piece of aluminum foil over the sensor for ten seconds and remove.
7. Hold the piece of wax paper over the light sensor for ten seconds and remove.
8. Hold the piece of plastic wrap over the light sensor for ten seconds and remove.
9. Select **Stop** (  ).

**Note** the difference in the measurements. The more light a material lets through the more transparent or see-through it is.

## **Quick Experiment:** Measuring Heart Rate

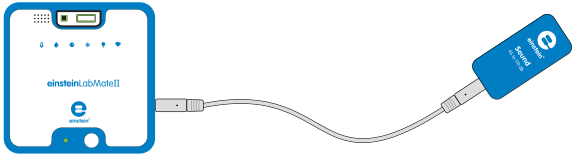
Understanding how the heart works is basic to all biology studies and is one of the first experiments any science student should learn to perform. **einstein**™LabMateII makes these first steps fun and easy. This simple experiment shows the effect of exertion on our hearts.

1. Connect the heart rate sensor to your **einstein**™LabMateII.
2. Pair your **einstein**™LabMateII with your tablet or PC and open either **MiLAB**™ or **MultiLab4**™.
3. Make sure only the heart rate sensor is selected.
4. Leave the Rate and Duration at their default settings.
5. Connect the heart rate sensor to your finger.
6. Click the **Run** button ( ); at about 8 seconds the heart rate BPM will display.
7. Remove the heart rate sensor from your finger, run in place for 30 seconds and reattach the heart rate sensor.
8. Click the **Run** button ( ); at about 8 seconds the heart rate BPM will display.

**Note** the difference between the two readings and how activity ramps up our heart rate.

## Connecting external sensors

- External sensors can be added by connecting a sensor cable to **einstein**™LabMateII. Insert the sensor cable into one of **einstein**™LabMateII's 4 sensor ports, then, connect the other end of the sensor cable to the sensor. Up to 8 external sensors can be added by adding a splitter to each port.
  Please note the position of the sensor's USB connector.
  When properly positioned, the sensor should glide in smoothly.




- **einstein**™LabMateII supports all 65 of Fourier Education's sensors, though some sensors may require an additional cable or adapter.
  For a complete list of sensors, please visit our website. www.**einstein**world.com



## Specifications:

| **Data Logging** | |
|---|---|
| Sampling Rate | Up to 100 ksps |
| Internal memory capacity | Up to 1000k samples |
| **Power Source** | |
| Battery (Lithium polymer; 500mAh) | Rechargeable via USB |
| Run mode | up to 24 hours |
| Standby mode | up to 450 hours |
| Charge time | 3 hours |
| **Standards Compliance** | |
| CE & FCC | |

## Internal sensors

- **Light:** 0-124 klux
- **Heart Rate:** 0-200 bpm
- **Relative Humidity:** Range: 0-100%
- **Temperature:** -30°C to 50°C
- **UV index:** 0-12
- **Pressure:** 260 to 1260 hPa

Frequency Range:
Bluetooth: 2402-2480 MHz
Input:5V ⎓ 2A

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

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.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular



installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

—Reorient or relocate the receiving antenna.

—Increase the separation between the equipment and receiver.

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

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

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 5mm between the radiator & your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

einstein™
by Fourier Education

## Get more Information

Please visit our website,
for updates about the **einstein™**
Science Learning Platform.
**www.einsteinworld.com**

## Technical support

**Fourier help desk: support@einsteinworld.com**

**Contact information: 1-866-771-6682**
(toll-free from within USA only) **1-708-478-5333**

**Hours of operation: Monday - Friday,**
**9AM to 5PM** (UTC -06:00)