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www.einsteinworld.com

Welcome to
einstein™ LabMateII™



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

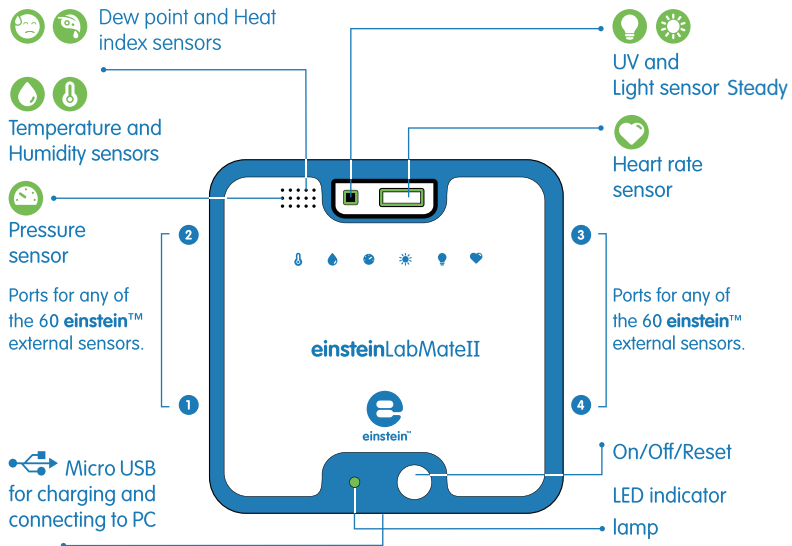
Also included is a guide to the **einstein™LabMateII's** features and technical specifications so you can get to know the **einstein™LabmateII** better.

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 interpret the LED light indicator?

Color	Light mode	Interpretation	Remarks
Green	Steady	Idle and Charging	
	Slowly blinking	Connected and idle	USB cable connected
	Fast blinking	Running an experiment	Bluetooth not connected
Blue	Slowly blinking	Connected and idle	Bluetooth connected
	Fast blinking	Running an experiment	Bluetooth connected
Yellow	Same as above but Battery capacity is about 50%		
Red	Same as above but Battery capacity is less than 10%		

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 LabMateII 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:

- **MiLAB Desktop**
- **MiLAB™**
- **einstein™World**
- **MiLABex**

Download Free: www.einsteinworld.com



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 MiLAB™/ MiLABEx / MiLAB Desktop
- 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™**LabMateII with your tablet or PC and open MiLAB™/MiLABEx / MiLAB Desktop
- 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: Rate My Heart

Understanding how the heart rate works is basic to understanding the human body and is one of the first experiments any science student should learn to perform. The einstein™ LabMate II makes these first steps fun and easy.

- ① Turn on your new einstein™ LabMate II
- ② Choose the MiLAB™/MiLABEx / MiLAB Desktop App from the screen device you are using
- ③ In the list of internal sensors choose heart rate (camera)
- ④ Tap on run button to start collecting data
- ⑤ The green LED flash will light
- ⑥ Put your index finger on the LED and the camera (see on the right) and start measuring your Heartbeat



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 60 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.einsteinworld.com
- In a long experiment, the **einstein™LabMateII** should be connected to a power supply.

Specifications:

Data Logging

Sampling Rate	Up to 100 ksp/s
Internal memory capacity	Up to 750k samples

Power Source

Battery (Lithium polymer; 1000mAh)	Rechargeable via USB
Run mode	up to 36 hours
Standby mode	up to 450 hours
Charge time	3 hours

Standards Compliance









CE & FCC

Frequency Range:

Bluetooth: 2402-2480 MHz

Transmit Power BLE:-4.75dBm

Internal sensors

-  **Light:** 0-124 klux
-  **Heart Rate:** 0-200 bpm
-  **Relative Humidity:** Range: 0-100%
-  **Temperature:** -30°C to 50°C
-  **UV index:** 0-13
-  **Pressure:** 260 to 1260 hPa
-  **Heat index**
-  **Dew Point**

The FCC warnings:

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.



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**

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