



**Edu-Logger GPS  
Logger Sensor Guide  
900-261**



## **Edu-Logger GPS logger sensor 900-261**

The Edu-Logger GPS (Global Positioning System) sensor can be used for any science experiment which utilizes sensor readings with relation to the location of each reading. It is mostly used in the fields of Biology and Environmental science.

The sensor comes pre-calibrated so you can start experimentation right out of the box using this guide.

Some of the hundreds of possible experimental subjects that can be performed with the 900-261 sensor are: Environmental monitoring (weather, soil quality, water quality, and temperature), fitness testing, and more!

The Global Positioning System (GPS) is a space-based satellite navigation system that provides location and time information in all weather conditions, anywhere on or near the Earth where there is an unobstructed line of sight to four or more GPS satellites.

The GPS sensor's measurement units are:  
Location in latitude and longitude data.  
Altitude in m.

Besides that, the sensor is used as a USB module and can be connected directly to the PC for configuring it and the sensors connected to it.

The data from the sensors can be uploaded into the Edu-Logger software.

The Edu-Logger software enables to analyze data from the sensors connected to the GPS sensor. The software can also export the GPS data to Google Earth so the measurements and their locations can be displayed together.

The Edu-Logger software is used after an experiment is executed at off-line mode.

### **Off-line experiments**

(Off-line experiments are when you do not have a sensor connected directly to a computer, tablet, smartphone, or Edu-Logger viewer).

#### **Materials needed:**

- 900-261 GPS Sensor
- 900-215 Battery Module
- Any Edu-Logger sensor besides NUL-209 (photo gate sensor)

#### **Materials needed to configure your offline experiment:**

- USB to mini USB cable (included with the 900-213 module)

#### **Procedure:**

1. Go outside where the GPS sensor could receive the satellites' signals.
2. Connect the GPS sensor to a charged battery module and (optional) to any other sensor(s).
3. When connecting the battery, the GPS sensor will flash once with a red LED and three times with a blue LED. Any connected sensors' red LED will flash three times.

4. After three seconds the red LED on the GPS module will flash three times. This means that the GPS sensor is OK and ready for use.
5. Press the GPS sensor for roughly one half of a second.
6. The red LED indicator light will turn on until connection with the satellites is made, this can take a few minutes.
7. When there is no satellite reception, the red LED on the GPS sensor will remain on constantly.
8. If there is satellite reception, the red LED on the GPS sensor will flash every second.
9. After the GPS sensor has been synchronized with the satellites, the GPS sensor and any other connected sensor will take measurements every 10 seconds.
10. When you are done collecting data, press the blue “start/stop” button on the front of the GPS module for half a second to end measurements.
11. If the GPS sensor’s red LED changes from blinking every second to being constantly on, this means that the GPS sensor has lost satellite reception. Any other connected Edu-Logger sensors will continue taking measurements. The GPS sensor will continue to try and resynchronize with the satellites.
12. If the red LED on the GPS sensor and the sensors starts blinking very rapidly, it means that the battery is low on power and will soon shut off (but store all data on the internal memory).
13. In this case the Experiment (if was one) is no longer measuring.

## Quick start procedure:

### PC Computer

#### **Materials needed:**

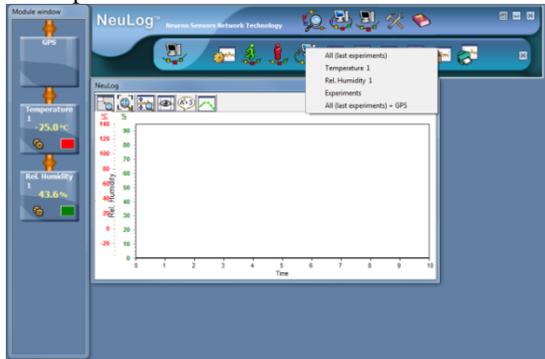
- 900-261 GPS Sensor
- USB to mini USB cable (included with the GPS-243 module)

Resident PC software application can be downloaded for free at [www.edulab.com](http://www.edulab.com) as well as a full software user guide.

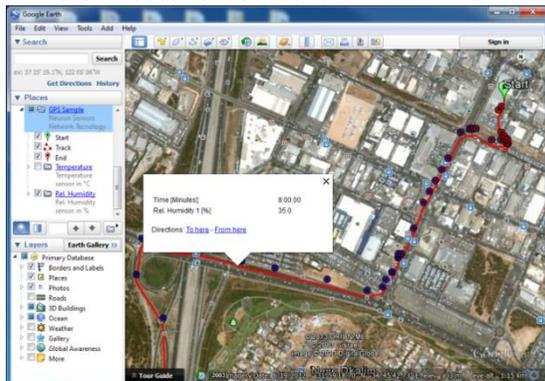
#### **Procedure:**

1. Install the Edu-Logger software.
2. Connect the GPS module to the computer through USB cable.
3. (The GPS sensor function as a USB module so make sure not to connect the GPS sensor to a USB module).
4. Make sure that the most current version of the Google Earth software is installed on your computer.
5. You can download it from here: <http://www.google.com/earth/download/ge/agree.html>
6. Run the Edu-Logger software.
7. Make sure that you are running version 3.63 or later.
8. After searching for sensors, make sure that you see an icon for all of your connected Edu-Logger sensors on the module window bar on the left side of the screen (including the GPS sensor).
9. On the main bar press the “Off-Line Experiment” button.
10. On the secondary bar press the “Load data from sensors” button.

11. A pop-up menu will open.
12. Click on the “All (last experiment) + GPS” option.



13. The Edu-Logger software will upload the collected data from any connected Edu-Logger sensor first.
14. Then it will upload the GPS data.
15. When finished uploading the GPS data, the software will ask you to save it as a “KML” file (Google Earth type).
16. The saved file will automatically open with Google Earth.
17. After running the Google Earth program, look for the “Places” bar on the left.



18. There, you should find the file which you saved in the Edu-Logger Program (GPS Sample).
19. Expand the file
20. You should find:
  - a. Start position
  - b. Track
  - c. End position
  - d. Measures for every sensor that been connected when upload.
21. The sensor's measurements are shown as circles.
22. The color of the circle is changed from blue (for low value measurement) to red (for high value measurement).
23. Clicking on a circle (at the map or at the bar on the left) will open a balloon with the time (from the beginning of experiment) and the sensor's measurement at that point.

<b>Included with sensor:</b>
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- Edu-Logger 900-261 GPS Sensor Guide (this document).

<b>Sensor specifications</b>	
<b>Position accuracy</b>	10 m, 2D RMS 5 m, 2D RMS with WAAS enabled
<b>Velocity accuracy</b>	0.1 m/s
<b>Maximum sample rate</b>	1 Hz
<b>Time to first fix (average)</b>	42 s, cold start 38 s, warm start 1 s, hot start
<b>Channels</b>	20

<b>Maintenance and storage:</b>
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- Never submerge the Edu-Logger plastic body in any liquid.
- Do not allow liquid into the GPS sensor's body.
- After use, gently wipe away any foreign material from the sensor.
- Store in a box at room temperature out of direct sunlight.

<b>Warranty:</b>
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We promise to deliver our sensor free of defects in materials and workmanship. The warranty is for a period of 3 years from the date of purchase and does not cover damage of the product caused by improper use, abuse, or incorrect storage. Sensors with a shelf life such as ion selective probes have a warranty of 1 year. Should you need to act upon the warranty, please contact your distributor. Your sensor will be repaired or replaced.

**Thank you for using Edu-Logger!**

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