

## NEULOG LOGGER SENSORS AND MODULES GENERAL GUIDE



### NeuLog logger sensors

Welcome to the new age of experimental data acquisition with plug and play smart logger sensors.

NeuLog logger sensors offer a myriad of didactic tools to meet your needs in the field of scientific studies.

The NeuLog system works as a set of independent computer based modules, complete with a data logger, flash memory and a sensor – all in each individual sensor.

Sensors plug into each other and have the ability to connect as a chain of sensors and then stream data to any computer system or smart device.

The NeuLog system needs are hardware and software agnostic as it can connect to nearly any computer platform or operating system (PC, MAC, iPad, Tablets, Android, smart phones, etc). All that is needed is a USB connection or wireless connectivity.

**Note:** NeuLog products are intended for educational use.

### NeuLog user guides

This is a general guide for all NeuLog sensors and modules instructing how to use them at the various operation modes. Specific user guides for each sensor and module can be found at [www.NeuLog.com](http://www.NeuLog.com); Choose "Products" on the main menu, Then choose the relevant sensor or module.

Each specific user guide contains the following sections:

- What is included with the sensor
- Sensor Specifications
- Videos and experiment examples
- Technical background
- Maintenance and storage
- Sensor offset (if needed)

**\*Note:**

There are some sensors (listed below) that due to the specific nature of the sensor require different instructions than the rest of the NeuLog sensors. For these sensors please make sure to reference [www.neulog.com](http://www.neulog.com) before use:

- NUL-209, Photo gate sensor
- NUL-243, GPS

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### Quick start procedure:

#### PC or Mac Computer – Wired Connection

##### Materials needed:

- NeuLog sensor or sensors
- USB-200 USB Module, or WIFI201 (using wifi as USB connection)
- USB to mini USB cable (included with the USB-200 module)

Your sensor needs to be connected to a USB-200 module. The USB-200 module then connects to a computer via USB (this can also be done with a WIFI201). Please note that you cannot plug the sensor directly to the computer.

The browser based application can be downloaded for free at [www.NeuLog.com](http://www.NeuLog.com) as well as a full application user guide.

Choose "Downloads" on the main menu and then choose "Software and Application".

##### Procedure:

1. Install the NeuLog application.
2. Connect the USB-200 module to the PC or Mac.
3. Connect the sensor or sensors to the USB-200 module (they directly plug together). Please note that there is no calibration required for NeuLog sensors. You should see the red LED on the sensor flash as you plug them in.
4. Open the NeuLog application by clicking on the shortcut on the screen.
5. The connected probes are automatically identified by the software, including disconnecting or connecting other probes.



6. Once a sensor module box appears on the left side of the screen, the sensor will give a live reading in its module box and on graph screen and you can begin experimentation.
7. Select one of the following function buttons and the program will guide you performing this function options:



- a. 'Run Experiment' with the same experiment parameters for all sensors or with each sensor parameters.
- b. 'Single Step' experiment.
- c. 'Visual' shows four display options one of the connected sensors values: Digital, Bar, Analog, gauge and Accumulated graph.
- d. 'Load Experiment' from the sensors' flash memory.
- e. 'Open Experiment' from a saved file.
- f. 'Tools' for changing the program settings or sensor ID.

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### Tablet, smart phone or any device with WIFI connectivity

#### Materials needed:

- NeuLog sensor or sensors
- WiFi Module (WIFI-201 or WIFI-202)
- BAT-200 Battery Module

Your sensor or sensors needs to be connected to a WiFi module. The WiFi module will create a closed NeuLog WiFi network which will stream the NeuLog data to the device of your choosing. Once your device is wirelessly connected to the NeuLog network, you can run experiments and collect data through a browser of your choosing.

#### Procedure:

1. Connect the sensor or sensors directly to the left side of a WiFi module (no wires required).
2. Connect a BAT-200 module to the right side of the WiFi module.
3. Although not required, we recommend plugging the BAT-200 to an outlet using a USB to mini USB charger (such as a typical cell phone charger). The WiFi module will run for 60-90 minutes (depending on the sensor) without being plugged in.
4. The WiFi module can be powered directly using a mini USB to USB cord and plugging it into your computer or a wall charger. Please note this function is only available on WiFi modules with the mini USB port.
5. For further WiFi module instructions or the WIFI-201 or WIFI-202 quick start guide please visit: [www.NeuLog.com](http://www.NeuLog.com); Choose "Products" on the main menu, then choose "WiFi Communication module".
6. The WiFi module indicator lights will flash; take no action until the LED turns blue; this can take up to one minute.
7. Take your tablet or smart phone, go to the WiFi settings and select the NeuLog network (NeuLog0184 for example) which matches the ID found on the back of the WiFi module (0184 for the example).
8. Give your device about 20 seconds to connect to the WiFi module.
9. Once the device is connected, go to your browser and type the website **wifi201.com** into the URL bar, then wait for 30-60 seconds.
10. The connected probes are automatically identified by the software including disconnecting or connecting other probes.
11. Once a sensor module box appears on the left side of the screen, the sensor will give a live reading in its module box and on graph screen and you can begin experimentation.
12. If you are not the first one to connect to this WiFi unit, you will enter into viewer mode and will view the screens of the user master who was the first to connect.
13. If you are the first one to connect (the Master), you can select one of the following function buttons and the program will guide you performing this function options:
  - a. 'Run Experiment' with the same experiment parameters for all sensors or with each sensor parameters.
  - b. 'Single Step' experiment.
  - c. 'Visual' shows four display options one of the connected sensors values: Digital, Bar, Analog, gauge and Accumulated graph.
  - d. 'Load Experiment' from the sensors' flash memory.
  - e. 'Open Experiment' from a saved file.
  - f. 'Tools' for changing the program settings or sensor ID.
14. You can click on the 'Release Master' button in the 'Tools' options and all the connected viewers will have a new 'Be Master' button. The first one to click becomes the 'Master'.
15. The 'Tools' also includes a 'WiFi Options' button that enables to connect the WiFi module as a client to the WiFi network and to connect to the module through this network. This option allows using the internet while using the NeuLog sensors.

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16. If you have a newer generation WIFI-201 module (with the USB icon on the cover) or a WIFI-202 module this can be used as a USB-200, meaning you can tether the probes directly to the computer using the WiFi module. To engage operation in this fashion, press 3 times on the panel button. Repeating this operation will return the module to WiFi mode.

### Operation with NeuLog Graphic Display Module (viewer)

#### **Materials needed:**

- NeuLog sensor or sensors
- VIEW-101 Graphic Display Module
- BAT-200 Battery Module

#### **Procedure:**

1. Connect the sensor or sensors to the left side of the viewer.
2. Connect the BAT-200 to the right side of the viewer.
3. The VIEW-101 will auto detect the sensor and you will see it appear on the left side of the screen.
4. Once the sensor appears it will be monitoring data in real time.
5. To run an experiment and collect data, press the run icon (little green person).

### Off-line experiments

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

#### **Materials needed:**

- NeuLog sensor or sensors
- BAT-200 Battery Module

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

- USB-200 Module, WiFi module (WIFI-201 or WIFI-202) or VIEW-101 Module
- USB to mini USB cable (included with the USB-200 module).

#### **Procedure:**

1. To determine the experiment settings, first connect to your chosen device (PC, Mac, tablet, smart device) and wait until the sensor search has ended.
2. Click on each sensor's module box, on the left side of the screen, and set the experiment parameters (Range, Duration, Rate and Trigger) for this sensor. The setting parameters will be saved in the sensor's flash memory.
3. Connect the sensor or sensors directly to the left side of a charged BAT-200 module.
4. When ready to collect data, press the "Start/Stop" button on the sensor; a red light will turn on for the duration of the experiment.
5. After the experiment has concluded (the "Start/Stop" button is pressed again or the data collection period ends) connect the sensor or sensors to your chosen device (you can find full instructions in each device's quick start procedure section).
6. Open the NeuLog application.
7. Click the 'Load experiment' icon.
8. Select which experimental data to upload (5 experimental runs can be stored at one time on the sensor).

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### Operation with NeuLog Digital Display Module (viewer)

#### **Materials needed:**

- NeuLog sensor or sensors
- VIEW-200 Digital Display Module
- BAT-200 Battery Module

Prior to data collection, it is recommended that you configure your sensors' settings to your specific experimental needs. Instructions for off-line experiments configuration procedure is found in the "Off-line experiments" section in the previous page.

If you are using the VIEW-200 only to take live readings without collecting data it is not required to configure your sensors' settings (unless, if needed, for changing the sensors' range).

#### **Procedure:**

1. Connect up to 5 NeuLog sensors of your choice together and into the left side of your viewer.
2. Connect a charged battery module into the right side of the viewer. The screen will automatically turn on.
3. The viewer will begin searching for sensors at this time – the screen will read "Search... %". This process should take roughly 25 seconds to complete.
4. **Note:** If no sensors are found: disconnect and reconnect the battery module.
5. Once the sensors have been detected, you can begin collecting data directly onto the internal memory of each sensor. To do this you simply need to press the "Start/Stop" button on the front of each sensor you wish to collect data with.
6. You can change which sensor data is displayed on the VIEW-200 by pressing the button on the front of the module.

### **Warranty:**

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 NeuLog!**



Flexible, simple, fast, forward thinking.

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V2015.6