

NEULOG SPIROMETER LOGGER SENSOR GUIDE



NeuLog spirometer logger sensor NUL-216

The NeuLog spirometer sensor can be used for any science experiment which is based on lung capacity such as in the fields of Psychology, Biology, Exercise Science, etc.

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

Among hundreds of possible experimental subjects that can be studied with the NUL-216 sensor are: lung function, lung physiology, exercise experiments, gas flow rates and gas flow laws, and many more.

The spirometer sensor's measurement unit is:
Liters per second (L/s): The volume of gas which passes through the sensor tube per second.

Reset to zero:

Even though the NeuLog spirometer sensor does not need to be calibrated prior to each use, it is recommended to reset its probe.

To zero the sensor:

1. Connect the spirometer sensor to a voltage source (USB-200 or BAT-200 module).
2. Press and hold the spirometer sensor's push button for 3 seconds. You should see a zero reading on the sensor's module box.

Using the spirometer sensor:

The NeuLog spirometer sensor comes with laminated paper for use.

Prior to experimentation, roll a single piece of laminated paper into a tube and then place it inside the side with the wider internal opening of the sensor. The paper should stick out from the metal sensor tube about one inch. Blowing into the paper instead of directly into the metal tube is more hygienic for later uses of the sensor. Using the software's "area" function, you can determine the total volume of your lungs easily.

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Included with the sensor:

- NeuLog General Guide
- One package of laminated paper for testing.

Sensor's specifications

Range and operation modes	±10 L/s
ADC resolution	15 bit
Resolution	0.2 L/s
Max sample rate (S/sec)	100

Experiment Duration: 1 second to 31 days.

Sensor's features:

- Fully digital data
- Rugged plastic ergonomic case
- Push button switch for Start/Stop experiments in off line mode
- LED indicator of experiment status (blinks while collecting data)
- Pre-calibrated sensing equipment
- Metal sensor tube attached by means of 2 durable rubber-coated wires
- Two pressure sensors connected to the metal tube to accurately determine airflow speed

Note: NeuLog products are intended for educational use.

Videos and experiment examples:

- Videos, literature and other probes can be found at www.NeuLog.com.
- In order to access the spirometer sensor's page, choose "Products" on the main menu and then "Spirometer logger sensor".
- In order to access the spirometer sensor's experiments, choose "Example Labs":
 - The Lungs and Spirometry Parameters (B-41)

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Technical background:

The philosophy behind NeuLog's plug and play technology is based on each sensor's ability to store its own data due to an internal flash memory chip and micro-controller in each plastic NeuLog body. This technology allows the sensor to collect and then store the digital data in the correct scientific units ($^{\circ}\text{C}$, $^{\circ}\text{F}$, Lux, %, ppm, for example).

The sensor is pre-calibrated at the factory. The built-in software in the logger can be upgraded for free at any time using the provided firmware update.

Inside the NeuLog spirometer sensor's metal tube attachment there is a funnel which creates a difference of air pressures before and after the funneling piece according to the airflow speed. A pressure differential sensor is connected to both sides of the funneling piece.

The sensor's controller calculates accurately the air flow speed according to this pressure difference.

Using the NeuLog software, you can easily determine the area under or above the curve with the integral function to calculate lung volumes and capacities.

Maintenance and storage:

- Never submerge the NeuLog plastic body in any liquid.
- Do not allow liquid into the spirometer sensor's body.
- After use, gently wipe away any foreign material from the spirometer sensor.
- Store in a box at room temperature out of direct sunlight.

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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