

## NEULOG FORCE PLATE LOGGER SENSOR GUIDE



### NeuLog force plate logger sensor NUL-225 Part# NL-2250

The NeuLog force plate sensor can be used for any science experiment which involves both constant and changing forces such as in the fields of Physics, Physiology, Mechanics, Biomechanics, etc.

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

The sensor can easily be reset to zero at any time.

Among hundreds of possible experimental subjects that can be performed with the NUL-225 sensor are: Newton's Laws of Motion, kinetic and potential energy, gravitational force strength, impulse, elastic and inelastic collisions, and many more.

This sensor measures force in both the push and pull directions.

The force sensor's measurement unit is:

Newton (N): The SI unit of force.

$$1 \text{ N} = 1 \text{ kg} \times \text{m/s}^2$$

### Reset to zero:

The force plate sensor comes pre-calibrated however, after use you may find that the sensor is slightly off or you may want to run an experiment that requires zeroing the sensor with a constant applied force to it.

### To zero the sensor:

1. Connect the NUL-225 force plate sensor to a computer/tablet/smart device following one of the guides below.
2. Open the NeuLog application.
3. When your sensor has been detected click on the force plate module box (on the left side of your screen).
4. Click on the 'Extra command' button.
5. Remove all weight from the sensor and click reset to zero your force plate sensor.
6. Your force plate sensor is now reset to zero.

**Note:** You can zero the scale with a constant force being applied to it to set that value as your new "zero". This is also used to eliminate the "Tare".

## NEULOG FORCE PLATE LOGGER SENSOR GUIDE



### Included with the sensor:

- NeuLog General Guide
- Force plate attached to the sensor by a durable rubber-coated wire.

### Sensor's specifications

Range and operation modes	-800 to +2000 N
ADC resolution	16 bit
Resolution	1 N
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
- Strong metal force plate attached to the sensor by a durable rubber-coated wire
- The force plate takes measurements in two directions for both pushing and pulling experiments

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

### Videos and experiment examples:

- Videos, literature and other probes can be found at [www.NeuLog.com](http://www.NeuLog.com).
- In order to access the force plate sensor's page, choose "Products" on the main menu and then "Force plate logger sensor".
- In order to access the force plate sensor's experiments, choose "Example Labs":
  - Impulse and Momentum (P-48)

### 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.

When a weight is applied to the force plate, it does not move and therefore, you can assume the normal force pushing up from the ground is equal to the force which is being applied to it. This is how the force plate sensor accurately and quickly measures applied forces. Several strain gauges inside the force plate's body take readings which are compared to one another to give a total force measurement.

## NEULOG FORCE PLATE LOGGER SENSOR GUIDE



### Maintenance and storage:

- Never submerge the NeuLog plastic body in any liquid.
- Do not allow liquid into either the sensor's or the force plate's body.
- After use, gently wipe away any foreign material from the force plate and sensor.
- Store in a box at room temperature out of direct sunlight.
- Avoid storing the force plate with direct weight on it.

### 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!

**NeuLog** 

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