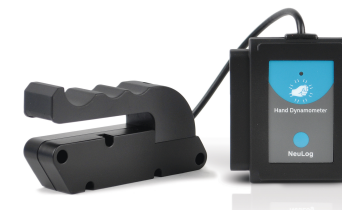


## NEULOG HAND DYNAMOMETER LOGGER SENSOR GUIDE



### NeuLog hand dynamometer logger sensor NUL-237 Part# NL-2370

The NeuLog hand dynamometer sensor is useful both as a stand-alone sensor and in conjunction with other NeuLog sensors to add a completely new dimension to experimental data. Scientific fields which can utilize the hand dynamometer are: Exercise science, Biology, Physiology, Psychology, 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-237 sensor are: Muscle fatigue, grip strength differences between dominant and non-dominant hands, physiological studies, psychological studies, and many more.

The hand dynamometer sensor's measurement units are:

Pound (lbs): The English system unit of mass

Kilogram (kg): The SI unit of mass

Newton (N): The SI unit of force.

### Reset to zero:

The hand dynamometer 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 you to zero it with a constant applied force.

### To zero the sensor:

1. Connect the NUL-237 hand dynamometer 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 hand dynamometer sensor module box (on the left side of your screen).
4. Remove all applied force from the sensor and click reset to zero your hand dynamometer sensor.
5. Your hand dynamometer sensor is now reset.

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

### Included with the sensor:

- NeuLog General Guide
- Hand dynamometer plastic grip attachment

Sensor's specifications			
	Newtons	Pounds	Kilograms
Range and operation modes	0 to 500 N	0 to 112 lb.	0 to 50 kg
ADC resolution	16 bit		
Resolution	0.1 N	0.02 lb.	0.01 kg
Max sample rate (S/sec)	100	100	100

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**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
- Internal strain gauges located in the grip attachment for accurate data readings

**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 hand dynamometer sensor's page, choose "Products" on the main menu and then "Hand dynamometer logger sensor".
- In order to access the hand dynamometer sensor's experiments, choose "Example Labs":
  - Muscle Strength (B-44)

### 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 (°C, °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.

The hand dynamometer sensor is based on a metal rod connected at both sides to the force sensor hooks in a special shape called 'S' shape. A strain gauge is attached to the metal rod and connected to a very sensitive operational amplifier.

When a force is applied to the strain gauge, minor bends and compressions add enough resistance to the current to be measured. Lastly, the change in resistance is converted into voltage inside the sensor's hardware, which is converted into force by the sensor's firmware.

### Maintenance and storage:

- Never submerge the NeuLog plastic body in any liquid.
- Do not allow liquid into the hand dynamometer sensor's body or grip attachment.
- After use, gently wipe away any foreign material from the hand dynamometer sensor.
- Store in a box at room temperature out of direct sunlight.
- Store with as little force being applied to the grip attachment as possible.

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### 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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