

## NEULOG MAGNETIC FIELD LOGGER SENSOR GUIDE



### NeuLog magnetic field logger sensor NUL-214

The NeuLog magnetic field sensor can be used for any science experiment which involves magnetic fields such as in the areas of Physics, Mechanics, Environmental Science, Earth Science, etc.

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

Magnetic fields are areas surrounding a magnetic element where any other magnet is affected. Generally, magnetic fields are focused along two poles, north and south. Electrical currents create magnetic fields by traveling in uniform motions through a conductor and thus, without an electric current there is no magnetic field.

Among hundreds of possible experimental subjects that can be studied with the NUL-214 sensor are: Earth's magnetic field, electromagnetic fields, magnetic field strength over distance, explore bird migration, explore energy and forces, circuits, and many more. The magnetic field sensor's measurement unit is the Milli Tesla (mT): The SI unit of magnetic flux density (magnetic field).

### Included with the sensor:

- NeuLog General Guide

### Sensor specifications

<b>Range and operation modes</b>	±10 mT
<b>ADC resolution</b>	16 bit
<b>Accuracy</b>	+/-4%
<b>Resolution</b>	0.001 mT
<b>Max sample rate (S/sec)</b>	3000

**Experiment Duration:** 50 milliseconds 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

**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 magnetic field sensor's page, choose "Products" on the main menu and then "Magnetic field logger sensor".
- In order to access the magnetic field sensor's experiments, choose "Example Labs":
  - Magnetic Field Strength (P-17)

## NEULOG MAGNETIC FIELD LOGGER SENSOR GUIDE



### 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.

The magnetic field sensor utilizes the Hall Effect to generate a voltage relative to the magnetic field. The Hall Effect is a natural phenomenon where a magnetic field exerts a force on charge carriers if an electrical current flows through the magnetic field. The charge differential is measured and can easily be converted into the magnetic field strength because of the direct relationship.

The sensor itself is located behind the hole in front of the sensor's box.

### Maintenance and storage:

- Never submerge the NeuLog plastic body in any liquid.
- Do not allow liquid into the magnetic field sensor's body.
- After use, gently wipe away any foreign material from the magnetic field 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.

W: [www.neulog.com](http://www.neulog.com)

E: [info@neulog.com](mailto:info@neulog.com)

A: 850 St Paul Street, Suite 15, Rochester, NY 14605

P: 1.866.553.8536