

NEULOG LIGHT LOGGER SENSOR GUIDE



NeuLog light logger sensor NUL-204 Part# NL-2040

The Light Sensor can be used for any science experiment where light intensity measurements are required for Chemistry, Physics, Biology, Environmental Science, etc.

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

This sensor can be used to take light measurements in low, medium and high light intensity environments such as in classrooms and in open sunlight. The sensor can be used to measure both fast light changes such as those produced by light bulbs connected to an AC supply, as well as the light intensity of the bulb or near steady levels outside on a sunny day.

Among hundreds of possible experiments that can be performed with the NUL-204 sensor are: Monitoring daily light levels in ecological systems, studying photosynthesis, and light intensity with varying distances and mediums. The measurement unit for all three data collection ranges (low, medium, high) is the lux. Lux (lx, or lux): The SI unit of light intensity

Included with sensor:

- NeuLog General Guide

Sensor specifications:

| Range and operation modes (in lx) | ADC resolution | Resolution | Max sample rate (S/sec) |
|-----------------------------------|----------------|------------|-------------------------|
| 0 to 1,000 | 16 bit | 1 lx | 3000 |
| 0 to 6,000 | | 1 lx | |
| 0 to 150,000 | | 6 lx | |

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 and LED indicator of experiment status (blinks while collecting data)
- Pre-calibrated sensing equipment

Note: NeuLog products are intended for educational use.

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Videos and experiment examples:

- Videos, literature and other probes can be found at www.NeuLog.com.
- In order to access the light sensor's page, choose "Products" on the main menu and then "Light logger sensor".
- In order to access the light sensor's experiments, choose "Example Labs":
 - How Incandescent Light Bulbs Work? (P-11)
 - Colors of Light (P-40)
 - Light and Shadow (P-41)
 - Light and Dark Colors (P-42)
 - Rayleigh Scattering (E-6)

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 hard plastic casing, lies a photodiode which reacts with photons to release free electrons (photoelectrons). The amount of light striking the sensor is directly proportional to the voltage generated by the photoelectrons released. The sensor measures the general voltage released and thus calculates the light intensity.

If the light readout is very low, try changing the sensor's mode to a higher sensitivity.

Maintenance and storage:

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

NeuLog 

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