

Light Sensor

(Order Code LS-BTA)



The Light Sensor can be used for measurements of light intensity in a variety of situations.

- Perform inverse square light intensity experiments using a point source of light.
- Conduct polarized filter studies.
- Demonstrate the flicker of fluorescent lamps and other lamps.
- Carry out solar energy studies.
- Perform reflectivity studies.
- Study light intensity in various parts of a house or school.
- Use it as part of a study of plant growth to measure light intensity.

Note: Vernier products are designed for educational use. Our products are not designed nor are they recommended for any industrial, medical, or commercial process such as life support, patient diagnosis, control of a manufacturing process, or industrial testing of any kind.

Compatible Software and Interfaces

See www.vernier.com/manuals/ls-bta for a list of interfaces and software compatible with the Light Sensor.

Getting Started

1. Connect the sensor to the interface (LabQuest Mini, LabQuest 2, etc.).
2. Start the appropriate data-collection software (Logger Pro, Logger Lite, LabQuest App) if not already running, and choose New from File menu.

The software will identify the sensor and load a default data-collection setup. You are now ready to collect data.

If you are collecting data using a Chromebook™, mobile device such as iPad® or Android™ tablet, or a Vernier wireless sensor or interface, please see the following link for up-to-date connection information:

www.vernier.com/start/ls-bta

Using the Product

Connect the sensor following the steps in the Getting Started section of this user manual.

The switch on the box is used to select the range. If the reading from the sensor reaches the maximum for the selected ranges, you need to switch to a less sensitive range. If the reading is very small or 0, you need to select a more sensitive range.

- The 0–600 lux range is the most sensitive range. It is useful for low levels of illumination.
- The 0–6000 lux range is a good general purpose range for indoor light levels.
- The 0–150,000 lux range is used mainly for measurements in sunlight.

Videos

View videos related to this product at www.vernier.com/ls-bta

Calibration

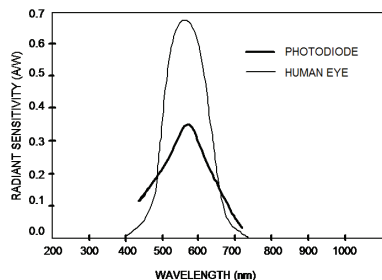
You should not have to perform a new calibration when using the Light Sensor in the classroom. We have set the sensor to match our stored calibration before shipping it. If you have a calibrated light meter and would like to calibrate the Light Sensor to match it, you can find instructions at www.vernier.com/tit/3615

Specifications

13-bit resolution	0–600 lux: 0.1 lux 0–6000 lux: 1 lux 0–150000 lux: 25 lux
12-bit resolution	0–600 lux: 0.2 lux 0–6000 lux: 2 lux 0–150000 lux: 50 lux
10-bit resolution	0–600 lux: 0.3 lux 0–6000 lux: 8 lux 0–150000 lux: 200 lux
Default calibration values	0–600 lux slope: 154 lux/V intercept: 0 lux 0–6000 lux slope: 1692 lux/V intercept: 0 lux 0–150000 lux slope: 38424 lux/V intercept: 0 lux

How the Sensor Works

The sensor uses a silicon photodiode. It produces a voltage that is proportional to light intensity. The spectral response approximates the response of the human eye, as shown in this diagram.



Troubleshooting

The Light Sensor is sensitive enough to pick up the 60 or 120 Hz flicker of overhead fluorescent lamps, which may interfere with light experiments. If you think such interference may be occurring, try the following:

- First, eliminate all artificial light sources (except battery-powered flashlights) and try your experiment again.
- Next, test the Light Sensor positioned as you plan to use it. Set the sampling at 1000 points/second for 0.1 second. If the flicker is the problem, you will see a drastic variation in the light intensity with a period of 60 or 120 Hz (50 or 100 Hz outside of North America).
- If the overhead flicker is an issue, set the sampling rate to a number that is not a factor of 60. For example, using 30, 20, or 10 samples/s is worse than using 17, 23, 27 samples/s.

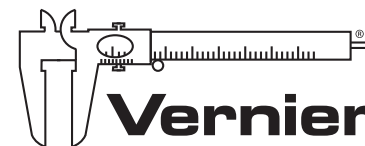
For further troubleshooting tips and FAQs, see www.vernier.com/til/1419

Repair Information

If you have watched the related product video(s), followed the troubleshooting steps, and are still having trouble with your Light Sensor, contact Vernier Technical Support at support@vernier.com or call 888-837-6437. Support specialists will work with you to determine if the unit needs to be sent in for repair. At that time, a Return Merchandise Authorization (RMA) number will be issued and instructions will be communicated on how to return the unit for repair.

Warranty

Vernier warrants this product to be free from defects in materials and workmanship for a period of five years from the date of shipment to the customer. This warranty does not cover damage to the product caused by abuse or improper use. This warranty covers educational institutions only.



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