

Light Phidget

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Getting Started

Welcome to the LUX1000 user guide! In order to get started, make sure you have the following hardware on hand:

- LUX1000 - Light Phidget
- VINT Hub
- Phidget cable
- USB cable and computer

Next, you will need to connect the pieces:



TO
TOP

1. Connect the LUX1000 to the VINT Hub using the Phidget cable.
2. Connect the VINT Hub to your computer with a USB cable.

Now that you have everything together, let's start using the LUX1000!

Using the LUX1000

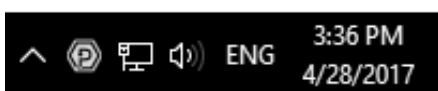
Phidget Control Panel

In order to demonstrate the functionality of the LUX1000, the Phidget Control Panel running on a Windows machine will be used.


The Phidget Control Panel is available for use on both macOS and Windows machines.

Windows

To open the Phidget Control Panel on Windows, find the  icon in the taskbar. If it is not there, open up the start menu and search for Phidget Control Panel



macOS

To open the Phidget Control Panel on macOS, open Finder and navigate to the Phidget Control Panel in the Applications list. Double click on the  icon to bring up the Phidget Control Panel.

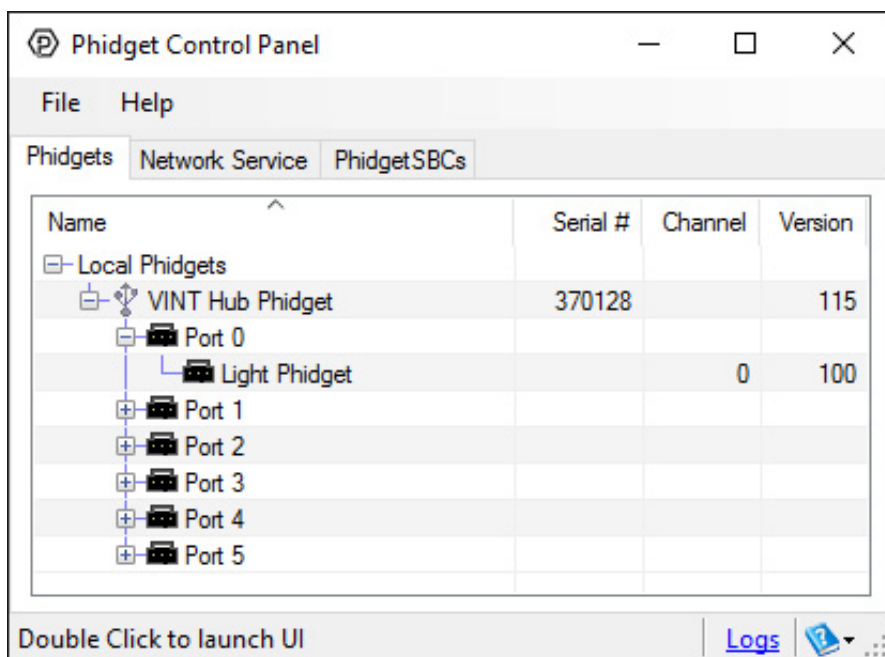
For more information, take a look at the getting started guide for your operating system:

- Getting started with Windows
- Getting started with macOS

Linux users can follow the getting started with Linux guide and continue reading here for more information about the LUX1000.

First Look

After plugging the LUX1000 into your computer and opening the Phidget Control Panel, you will see something like this:



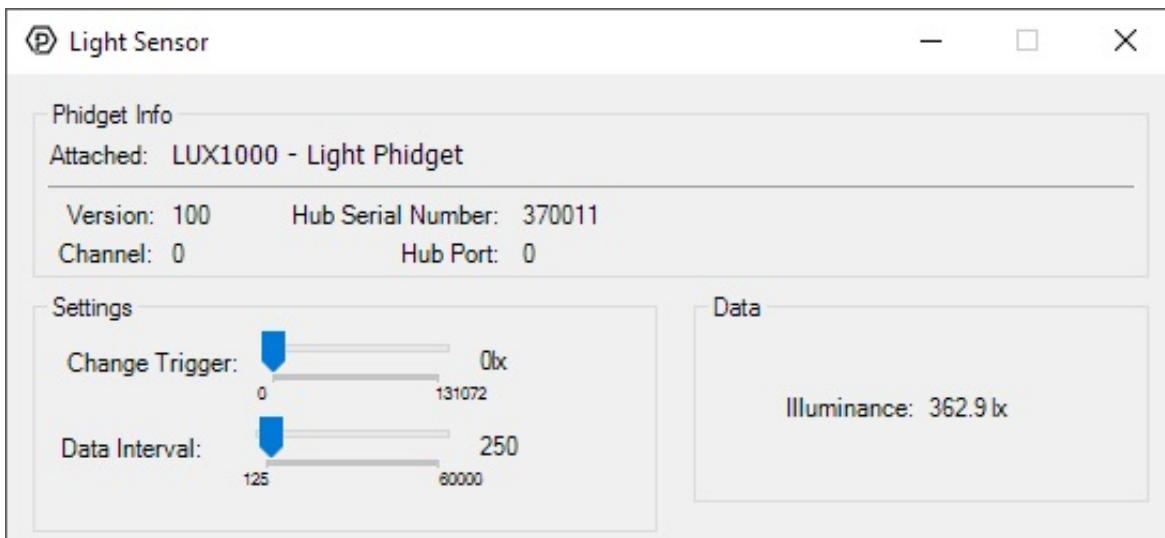
The Phidget Control Panel will list all connected Phidgets and associated objects, as well as the following information:

- **Serial number:** allows you to differentiate between similar Phidgets.
- **Channel:** allows you to differentiate between similar objects on a Phidget.
- **Version number:** corresponds to the firmware version your Phidget is running. If your Phidget is listed in red, your firmware is out of date. Update the firmware by double-clicking the entry.

The Phidget Control Panel can also be used to test your device. Double-clicking on an object will open an example.

Light Sensor

Double-click on the Light Sensor object, labelled Light Phidget, in order to run the example:



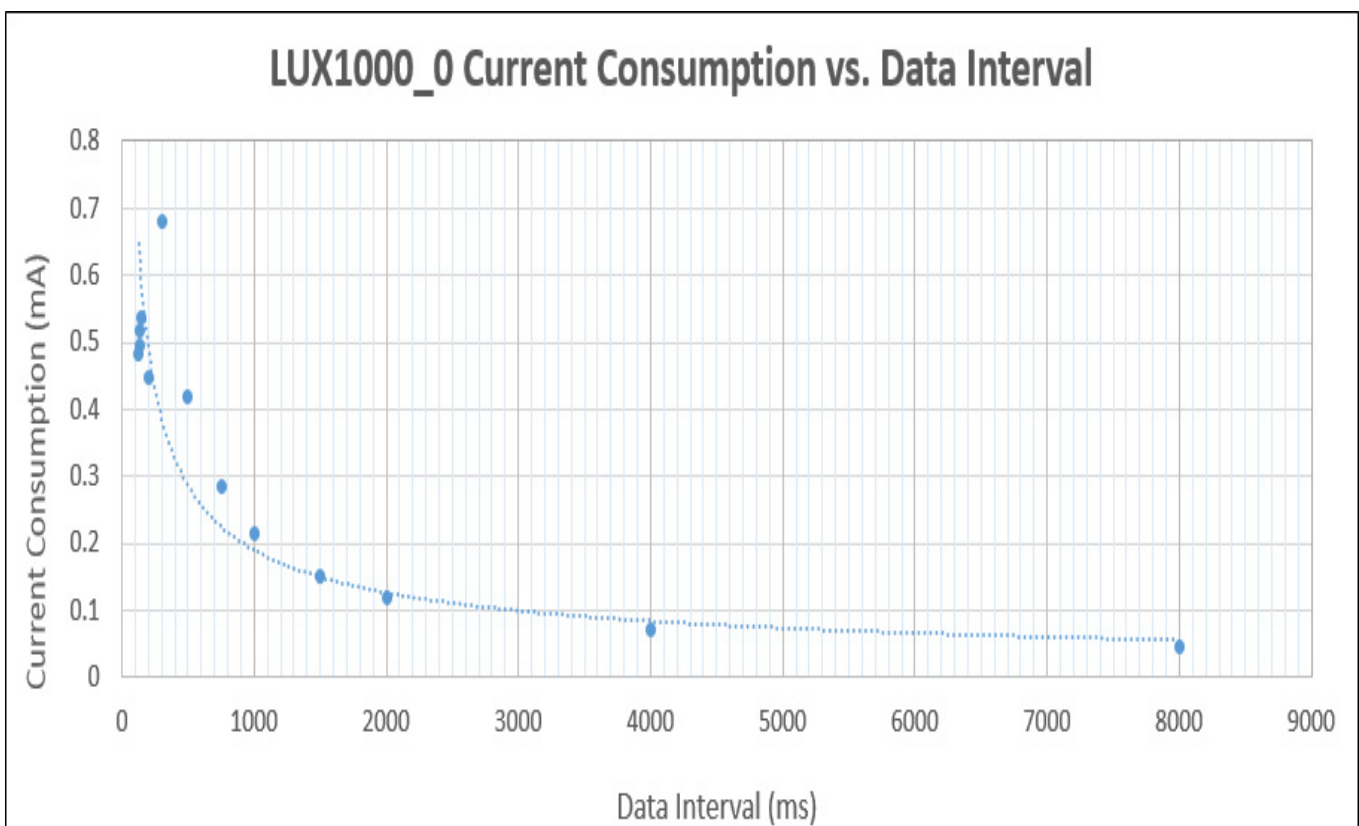
General information about the selected object will be displayed at the top of the window. You can also experiment with the following functionality:

- Modify the change trigger and/or data interval value by dragging the sliders. For more information on these settings, see the data interval/change trigger page.

Technical Details

Current Consumption

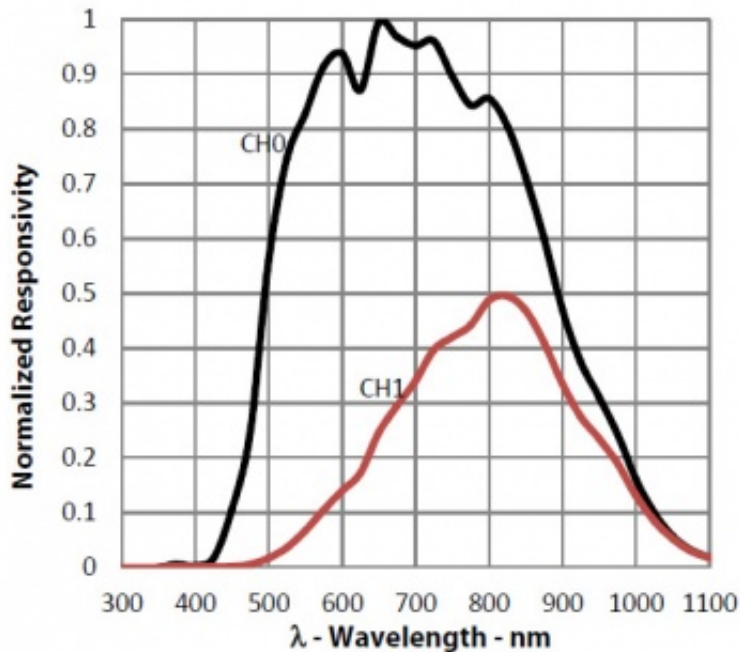
Current consumption on the LUX1000 is dependent on the sampling interval you choose. More current is used for frequent samples.



Dynamic Gain and Sampling

The LUX1000 is able to measure the intensity of light in the impressive range of $188\mu\text{lx}$ to 220klx . It's able to work in such a wide range is due to its ability to dynamically change the gain value on its measurements, in addition to changing the amount of integration time taken per measurement. Changing the gain coarsely affects the range, while

changing the integration time finely affects the range



The response of the photodiodes depending on the wavelength of the incoming light.

Because of these dynamic ranges, you may see momentary saturation when trying to measure large changes in light intensity in short periods of time (for example, a strobe light). Once the light level stabilizes though, the sensor should be able to settle back into optimal range settings.

Spectral Response

The light sensor on the LUX1000 is designed to sense light in a way that emulates the response of the human eye. However, digital light sensors work very differently than our eyes do. Using the photoelectric effect, the photodiodes in the sensor will generate current when struck by incoming photons. The problem is that the range of wavelengths that these photodiodes respond to vary depending on what materials they're made of, and none of them have the same response as the human eye.

The solution offered by the chip used in the LUX1000 is to take readings from two different photodiodes; one that detects only IR light (which is invisible to the human eye) and one that detects both visible and IR light. Once it has these measurements, it weights them with coefficients based on calibration testing, and then subtracts the IR component from the diode that detects both IR and visible light. The result is a workable approximation of brightness as seen by a human eye.

What to do Next

- Software Overview - Find your preferred programming language here to learn how to write your own code with Phidgets!
- General Phidget Programming - Read this general guide to the various aspects of programming with Phidgets. Learn how to log data into a spreadsheet, use Phidgets over the network, and much more.
- Phidget22 API - The API is a universal library of all functions and definitions for programming with Phidgets. Just select your language and device and it'll give you a complete list of all properties, methods, events, and enumerations that are at your disposal.