

# 32x Isolated LED Phidget

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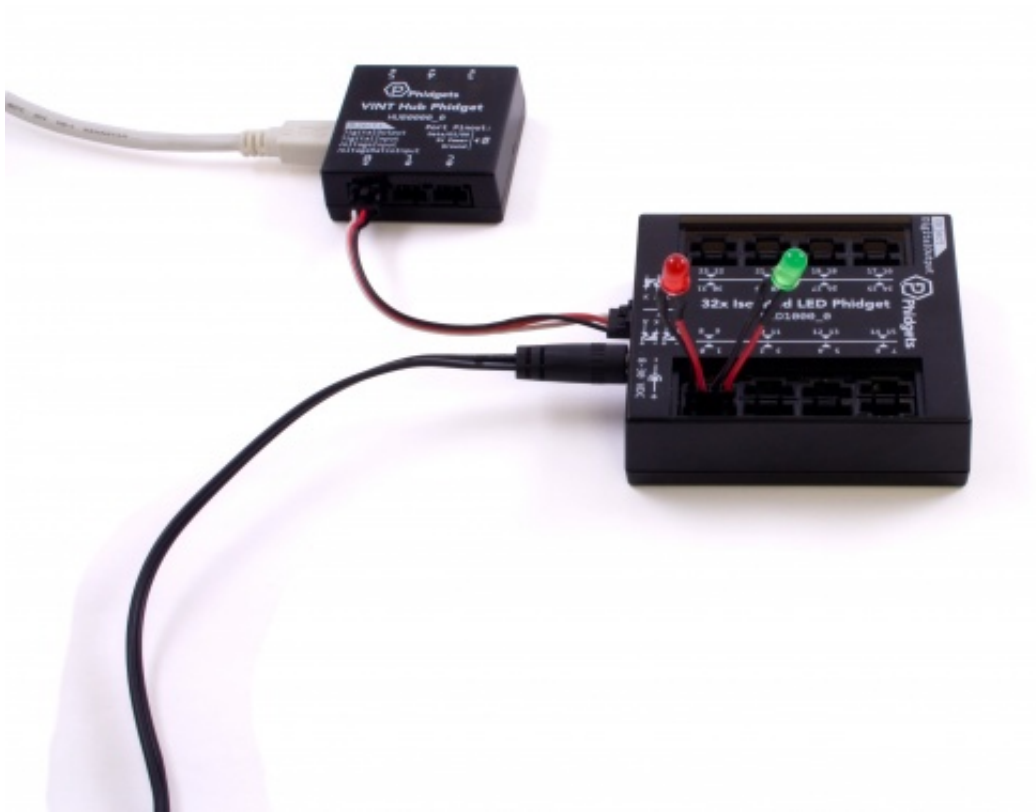
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## Getting Started

Welcome to the LED1000 user guide! In order to get started, make sure you have the following hardware on hand:

- LED1000 - 32x Isolated LED Phidget
- VINT Hub
- Phidget cable
- USB cable and computer
- LEDs and cables

Next, you will need to connect the pieces:



TO  
TOP

1. Connect the LED1000 to the VINT Hub using the Phidget cable.
2. Connect some LEDs to the LED Phidget's ports.
3. Connect the VINT Hub to your computer with a USB cable.

Now that you have everything together, let's start using the LED1000!

## Using the LED1000

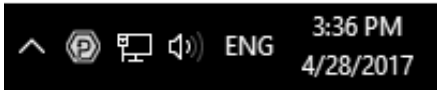
### Phidget Control Panel

In order to demonstrate the functionality of the LED1000, 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.

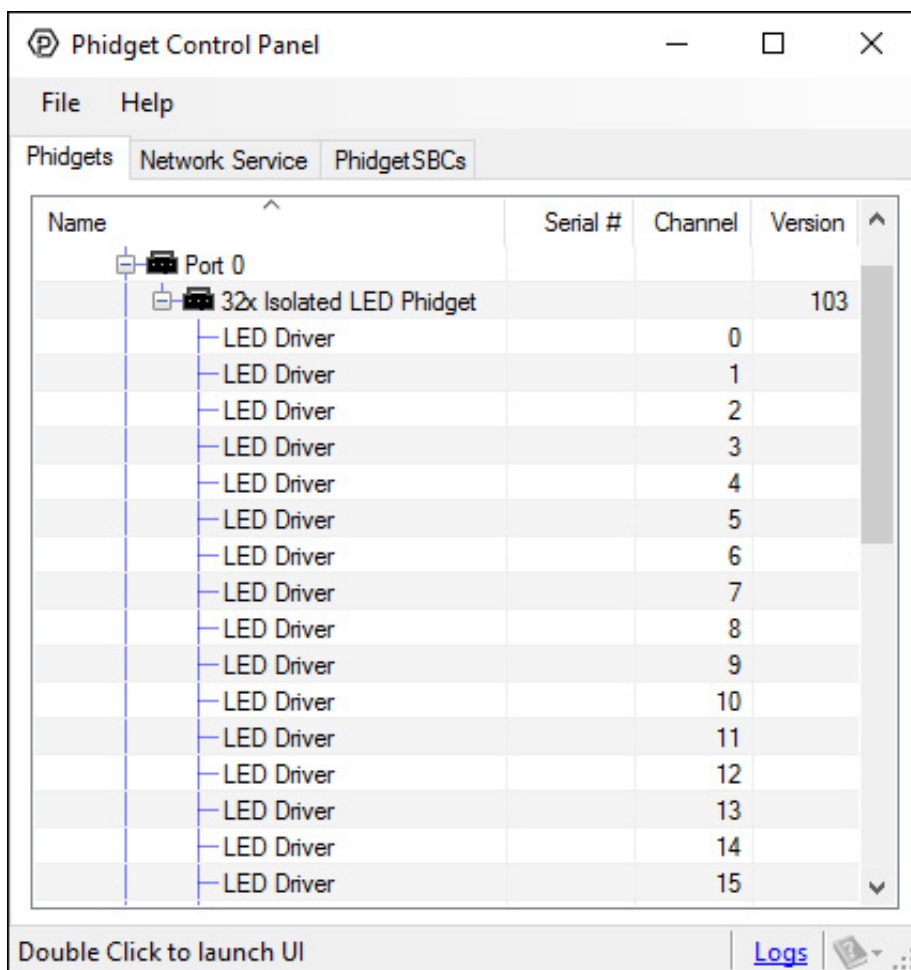
For more information, take a look at the getting started guide for your operating system:

- 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 LED1000.

# First Look

After plugging the LED1000 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:

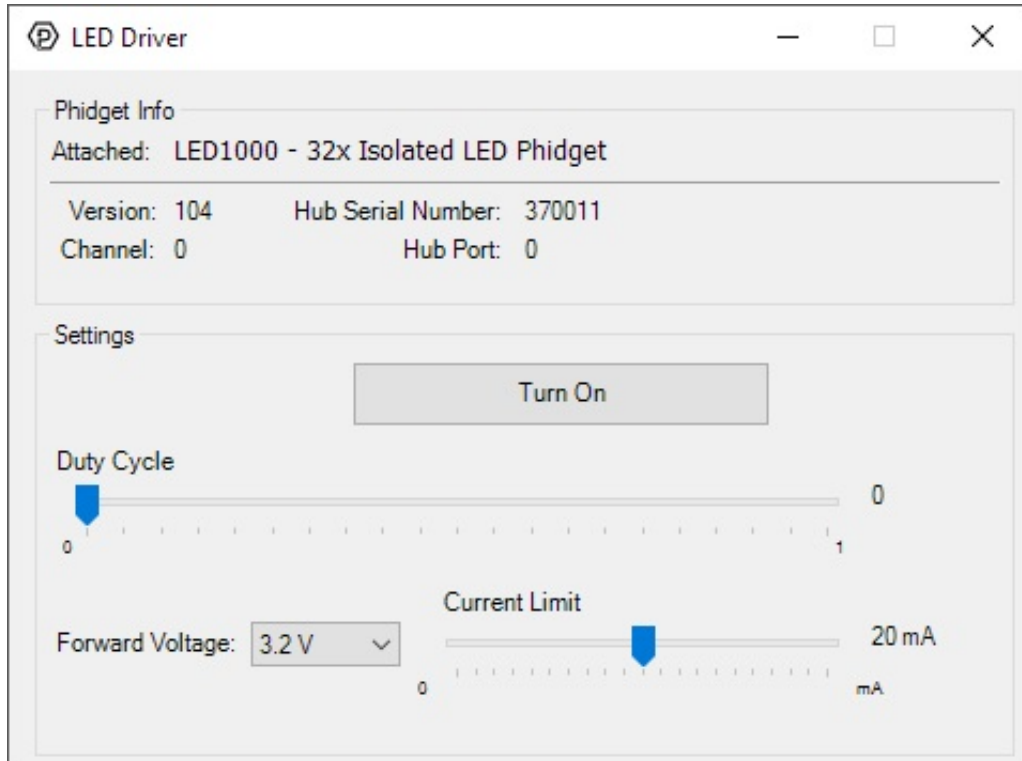
- **Serial number:** allows you to differentiate between similar Phidgets.

- **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.

## Digital Output (LED)

Double-click on a Digital Output object, labelled LED Driver, 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:

- From the Forward Voltage drop-down menu, select the appropriate voltage for your LED. It is recommended to set the forward voltage to the first setting above the maximum voltage specified by your LED's datasheet.
- Use the Current Limit slider to set an appropriate limit for your LED. The current limit will be specified in your LED's datasheet.
- Use the large button to toggle power to the LED.
- Use the Duty Cycle slider to precisely control the amount of power supplied to the LED.

## Technical Details

### General

The LED1000 uses two controller chips that allow you to vary the current and voltage supplied to each channel. It uses pulse-width modulation to vary the brightness of each LED.

### Multiple LEDs on a Single Channel

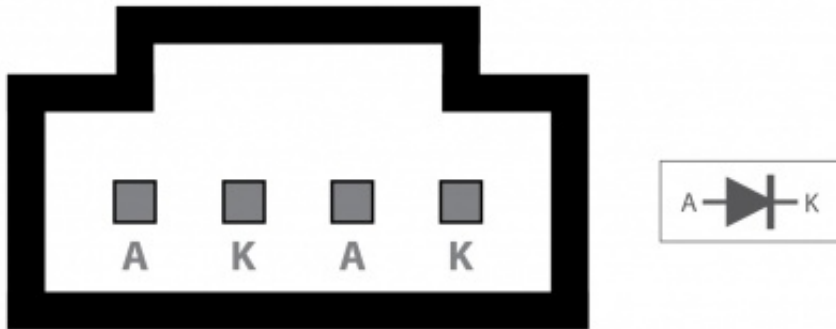
You can have multiple LEDs hooked up to a single channel on the LED1000, (for example, a short string of LEDs) to reduce the amount of wiring, although keep in mind that you won't be able to control the lights individually. When using multiple LEDs on a single channel, you may need to increase the voltage limit for that channel. If the LEDs are too dim at the maximum voltage, you should spread them out to other channels.

### High-Current Considerations

If you're using high-current LEDs, you should spread your load evenly across the board to avoid having one of the controller chips overheat. There are two controller chips, each controlling the channels on one half of the board.

| Controller | Channels   |
|------------|--|
| 1          | 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15           |
| 2          | 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31 |

## Board Connector Diagram



The connector used on the LED1000 is a Molex 70543-0003. The mating connector used on our LED cables is the Molex 50-57-9404.

## Further Reading

For more information, take a look at the LED Primer.

## 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.