1032 User Guide

Go to this device's product page [1]

Getting Started

Checking the Contents

You should have received:

- A PhidgetLED-64 Advanced board
- A 12VDC 2 Amps power supply
- 16 4-wire cables (for LEDs)
- A Mini-USB Cable

In order to test your new Phidget you will also need:

- Some LEDs

Connecting the Pieces

1. Connect the power supply to the PhidgetLED using the barrel connector or the power terminal block.
2. Cut one of the 4-wire cables to an appropriate length. Strip the wire ends and solder on 2 LEDs. The longer lead of the LED (the anode) is connected to the red wire, and the shorter lead of the LED (the cathode, also marked with a notch in the base of the plastic case) is connected to the black wire. Insert the end of the 4-wire LED cable into the board connector.
3. Connect the PhidgetLED to your computer using the MiniUSB cable.

Testing Using Windows 2000 / XP / Vista / 7

Make sure you have the current version of the Phidget library installed on your PC. If you don't, follow these steps:

1. Go to the Quick Downloads section on the Windows page
2. Download and run the Phidget21 Installer (32-bit, or 64-bit, depending on your system)
3. You should see the 🅿️ icon on the right hand corner of the Task Bar.

Running Phidgets Sample Program

Double clicking on the 🅿️ icon loads the Phidget Control Panel; we will use this program to ensure that your new Phidget works properly.

The source code for the **LED-full** sample program can be found in the quick downloads section on the C# Language Page. If you'd like to see examples in other languages, you can visit our Languages page.

Updating Device Firmware

If an entry in this list is red, it means the firmware for that device is out of date. Double click on the entry to be given the option of updating the firmware. If you choose not to update the firmware, you can still run the example for that device after refusing.

Double Click on the ![Ph] icon to activate the Phidget Control Panel and make sure that the **Phidget LED 64 Advanced** is properly attached to your PC.
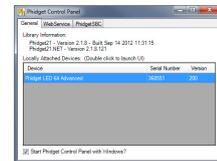
1. Double Click on Phidget LED 64 Advanced in the Phidget Control Panel to bring up LED-full and check that the box labelled Attached contains the word True.
2. Select the LED Index. If you connected your LEDs at the same position as the ones in the picture above, select 18, 19, 22 or 23.
3. Use the LED Brightness slider to increase or decrease the LED brightness using pulse-width modulation.
4. Select from the drop-down menu an appropriate anode voltage: 1.7V, 2.75V, 3.9V, or 5V.
5. Use the current limit slider to choose an appropriate current limit up to a maximum of 80mA.

Note: Using the current slider could cause false temperature warnings and errors to be reported. To avoid seeing these warnings, set the current limit once and use the brightness slider to change the brightness of the LEDs rather than changing the current limit.
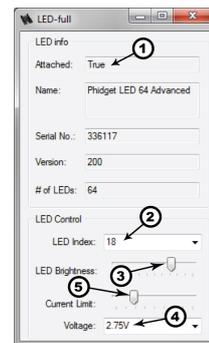
Testing Using Mac OS X

1. Go to the Quick Downloads section on the Mac OS X page
2. Download and run the Phidget OS X Installer
3. Click on System Preferences >> Phidgets (under Other) to activate the Preference Pane
4. Make sure that the Phidget LED 64 Advanced is properly attached.
5. Double Click on Phidget LED 64 Advanced in the Phidget Preference Pane to bring up the LED-full Sample program. This program will function in a similar way as the Windows version.

Using Linux

For a step-by-step guide on getting Phidgets running on Linux, check the Linux page.

Using Windows Mobile / CE 5.0 / CE 6.0

For a step-by-step guide on getting Phidgets running on Windows CE, check the Windows CE page.

Technical Details

The 1032 uses four 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 1032, (for example, a short string of LEDs) to reduce the amount of wiring, although keep in mind that you'll lose control of the individual lights, and can only toggle or dim the entire string. When using multiple LEDs on a single channel, you'll 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 four controller chips, each controlling the channels on a quarter of the board.

Controller 1: 0, 1, 2, 3, 4, 5, 6, 7, 24, 25, 26, 27, 28, 29, 30, 31

Controller 2: 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23

Controller 3: 32, 33, 34, 35, 36, 37, 38, 39, 56, 57, 58, 59, 60, 61, 62, 63

Controller 4: 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55

Board Connector Diagram
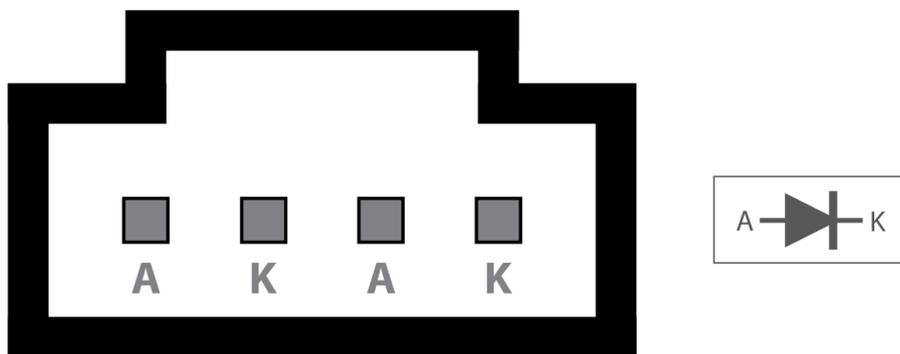
The connector used on the 1032 LED board is a Molex 70543-0003. The mating connector used on our LED cables is the Molex 50-57-9404.

Heat Dissipation and Thermal Protection

Projects that require a high supply voltage, or have a lot of heat being produced from over voltage settings, will have over-temperature problems. This can be mitigated somewhat by understanding how channels are grouped and how the heat is distributed around the controller. On the 1032 channels are split into four groups: (0-7,24-31), (8-23), (32-39, 56-63) and (40-55); each controlled by their own individual IC. Evenly distributing the LEDs that may produce a lot of heat across these groups will balance the load on the ICs and reduce the risk of thermal overload. When thermal overload occurs, the integrated circuit (IC) controlling the involved LEDs will disable the output of all the channels it controls. For example, if an over-temperature occurs due to channel 12, all of the channels 8 through 23 will be disabled by the IC until the temperature back within the operating range. Thermal protection is activated when the die of the IC reaches approximately 160 degrees Celsius. Once the over-temperature fault has been corrected (ie, the IC has cooled down), the output channels will be re-enabled with the same settings as before the thermal shutdown. An error message will be produced during an over-temperature.

Further Reading

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

API

We document API Calls specific to this product in this section. Functions common to all Phidgets and functions not applicable to this device are not covered here. This section is deliberately generic. For calling conventions under a specific language, refer to the associated API manual in the Quick Downloads section for that language. For exact values, refer to the device specifications.

Functions

int LEDCount() [get] : Constant

Returns the number of LEDs that this board can drive. This may not correspond to the actual number of LEDs attached.

double Brightness(int LEDIndex) [get,set]

Sets/Gets the brightness of an LED. Valid values are 0-100, with 0 being off and 100 being the brightest. This 0-100 value is converted internally to an 12-bit value (0-4095).

int CurrentLimitIndexed(int LEDIndex) [get,set]

Sets/Gets the current limit of an LED. Valid current limits range from 0 to 80mA. The default current limit is 20mA.

int Voltage() [get,set]

Sets/Gets the output voltage. Valid voltages are 1.7V, 2.75V, 3.9V and 5V, these will generally be delimited with an enumerator where possible, or an integer where not. The default voltage is 2.75V.

Events

Error(String errorDescription, int errorCode) [event]

1032 uses the generic error event to stream back fault conditions. The fault can be identified by the errorDescriptionstring. The only fault currently reported is Thermal Shutdown (TSD).

Product History

The 1032 - PhidgetLED-64 replaced our previous LED controller, the 1031 - PhidgetLED-64 [2].

Date	Board Revision	Device Version	Comment
January 2013	0	200	Product Release

References

[1] http://www.phidgets.com/products.php?product_id=1032

[2] http://www.phidgets.com/products.php?product_id=1031

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