Romer-G LED Switch
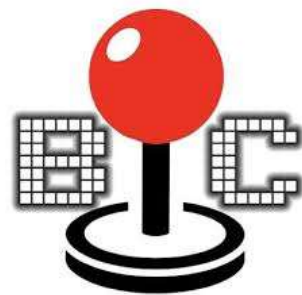
A collaborative project with Bit Bang Gaming & Buttercade.

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Overview

Product Description:

The Romer-G LED Switch provides an
easy way to replace switches for compatible arcade buttons, such as the Qanba Gravity series. This replacement LED switch does not require any kind of LED controller - only power, ground, and signal are needed! Connections are made with a standard 0.110 inch quick disconnect plugs.

By default, these switches are in a reactive mode (when the button is pushed, the LED lights up). To configure the lights to always stay on, you will need to remove and apply a small dab of solder on the switch's PCB.

Before attempting installation, please read the entire manual. It provides guidance on how many LEDs can be connected, how to wire it properly, switch replacement procedure, and other installation tips to watch out for. These buttons are not compatible with Zero Delay PCBs or any other PCB that does not have the buttons operate on common ground switching.

What's Included:

- (1) Romer-G LED Switch

How to Use

This Romer-G LED Switch uses an internal light pipe to shine white light through. We will need to take out the old switch and install our Romer-G LED Switch for this to work.
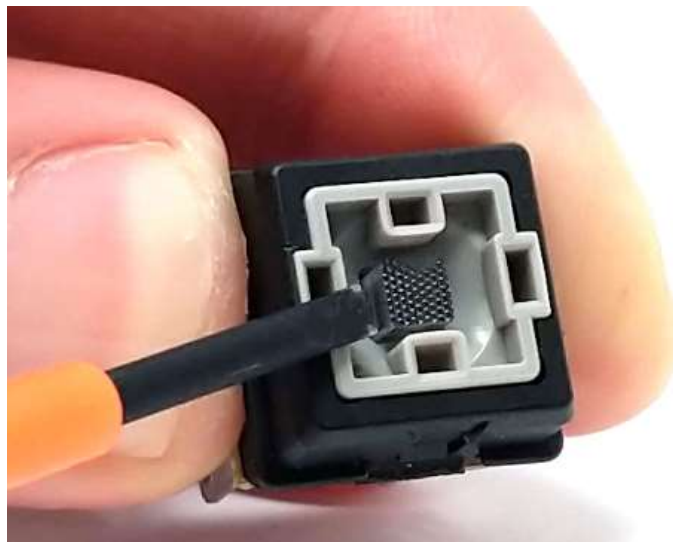
Removing Old Switch

This example procedure shows how this can be performed with a Qanba Gravity button.

Unscrew the white button nut. Next, remove the button cap by pushing on it from the bottom. This can be performed with a small flat head screwdriver on the sides of the button.
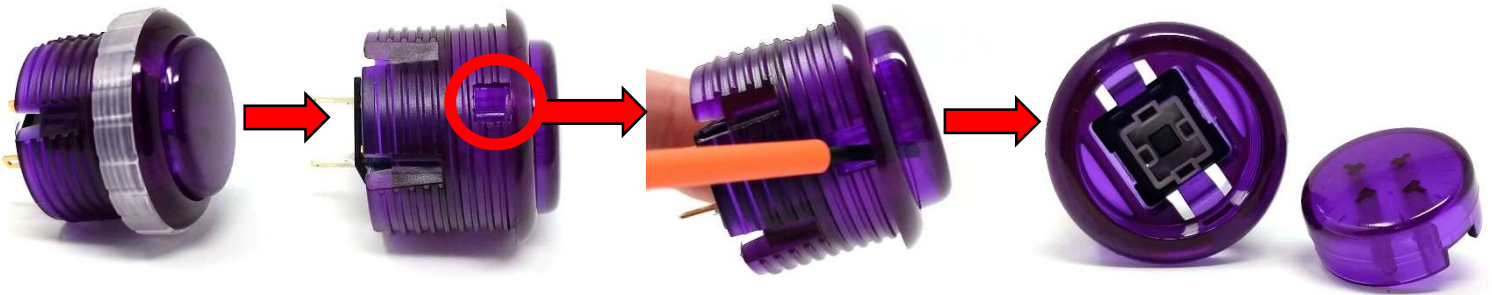

Next, we will need to push the old switch out. While pushing the old switch towards the open cap end, push outwards on the two retention clips from the button housing. This will relieve these clips from tension against the switch.
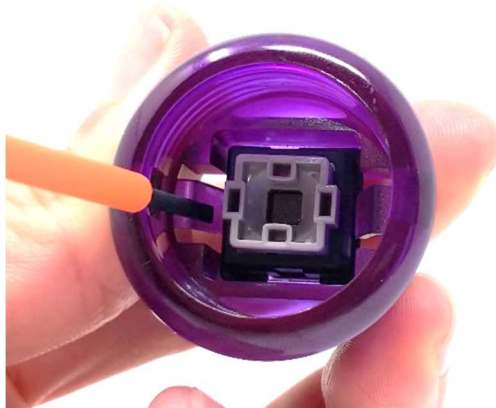
On the terminal side of the old switch, push the switch's retention clips inwards and downwards to relieve the tension from the button housing.

If performed correctly, the switch will pop out.
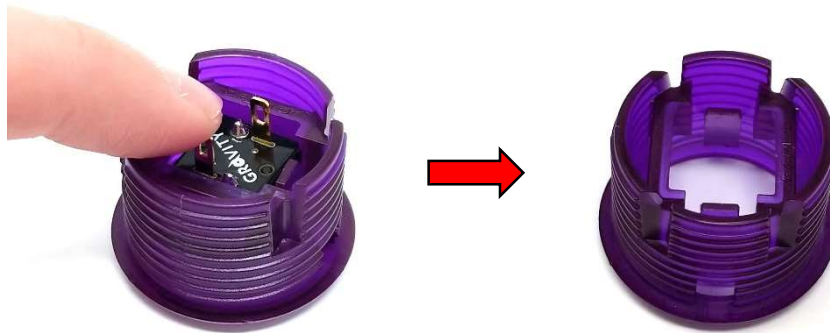
Installing New Switch

Take the new switch (in this case a Romer-G LED Switch) and assemble in the reverse order from which it was disassembled. **Make sure all retention clips are properly aligned.**

Electrical Current Draw Warning

It is important to note that each LED draws anywhere from 18mA to 20mA at +5V applied voltage. Though this may not sound like a lot, if the power source delivering the voltage cannot source enough current, damage may occur. For example, if installing the Romer-G LED Switch into an arcade controller meant for an older console, such as a Super Nintendo, it is unclear how much current the Super Nintendo can deliver and whether it can protect itself from providing too much current.

As another example, if installing the Romer-G LED Switch into an arcade controller meant for a PC (via the USB port), the USB port has some means of current protection (though it's not guaranteed from damage). **Do not** attempt this mod unless you are confident no damage will occur. While we cannot guarantee how much or little a power source can deliver or take responsibility if you damage your property. If something negative occurs, we can provide some general guidance:

1. In general, avoid powering off a retro console unless you have good reason to believe the amount of current you plan to draw is fine.

2. In general, USB ports will provide enough current when using 6 to 8 buttons (120mA to 180mA). Some unofficial testing has showed that USB ports on some consoles can provide as much as 900mA (though take this with a grain of salt!)

3. When in doubt, hook up 2 buttons at a time and give it a test run. If everything appears okay (no heat, no smoke, no missed inputs, etc.) add a few more and test again.

4. Leave the button in reactive mode (push to turn the LED on). This is because when nothing is pushed, no current is drawn. When playing a game, only a few will be on sporadically so the average current drawn is low and is much less likely to cause a problem. Configuring the button to be constantly on should be left to the experienced modder who understands the risks and precautions to take when drawing certain amount of current. For example, the experienced modder might add an internal battery to boost the amount of available current or might add an inline resistor to reduce the current at the expense of some brightness.

5. Never install with the power on. Install everything first, check, make sure everything is connected correctly, and then turn on power for testing. Especially make sure there are no shorts. For example, do no connect +V to GND on the Romer-G LED Switch PCB.

If you have any questions, on the above points or anything at all, please reach out to us! For those who have successfully installed the Romer-G LED Switch, please share your setup and power source so we can get data to share with everyone. As of now, these have been tested on a PC with 8 reactive configured buttons connected to power. Testing occurred for 2 hours with zero issues detected!

Wiring & Pinout

There are four terminals on the PCB, two for +V (they are electrically connected to each other), one for GND, and one for signal.
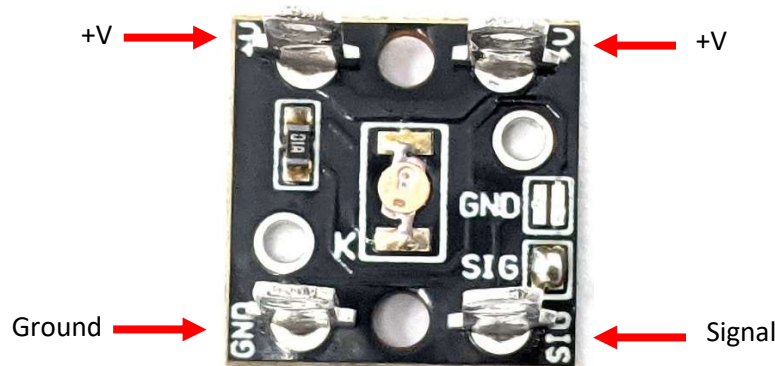
To light up the LED, +V and GND must be connect to +5V and Ground respectively. In a typical button setup, ground and signal are already available, so those can be connected to GND and SIG terminals respectively and easily. Just run a +5V wire from the controller's main power source and you are good to go! To connect to more than one button at a time, daisy chaining is a suggested and common technique. Be sure to use proper wiring gauges (this is heavily dependent on your setup). If you are not sure what wiring gauge to use, 22WAG is a safe bet. If the power source that is being drawn from does not have built in over-current protection (like USB protocol from a PC does), it is suggested to install an inline fuse or other means of over current protection.

...and so on...

From controller / control PCB
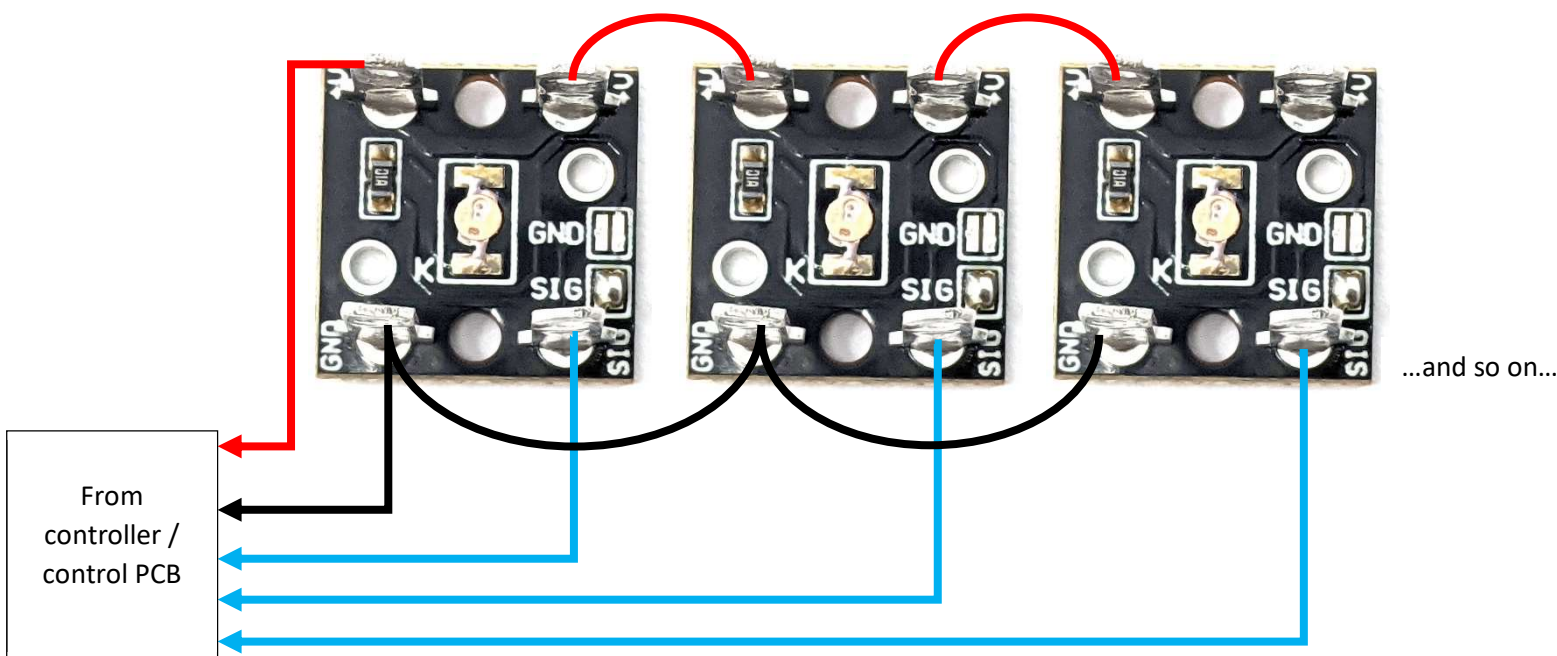
Questions?

If you have any questions, please connect via Twitter (@BitBangGaming) or email (bitbanggaming@gmail.com).

Revisions

Revision	Date	Description	Initials
A	10/3/2021	Initial release	JC & SD