Grove - Mixer Pack

Introduction

Grove - Mixer Pack is a kind kit which is similar to package of electronic blocks, It contains of twenty small module. Three of these module are used for supply for power, some can achieve and、or、not gate etc logic functions and others are sensor and actuator. It is a perfect combination of informative、 entertaining and practicability. No need to upload program. By connecting different input and output module, they can be flexibly applied to a variety of control methods,such as the hand control, sound control, light control. You can easily learn the electronic knowledge, but also improve the practical ability through this kit. Let you quickly into the wonderful electronic information era in the entertainment.
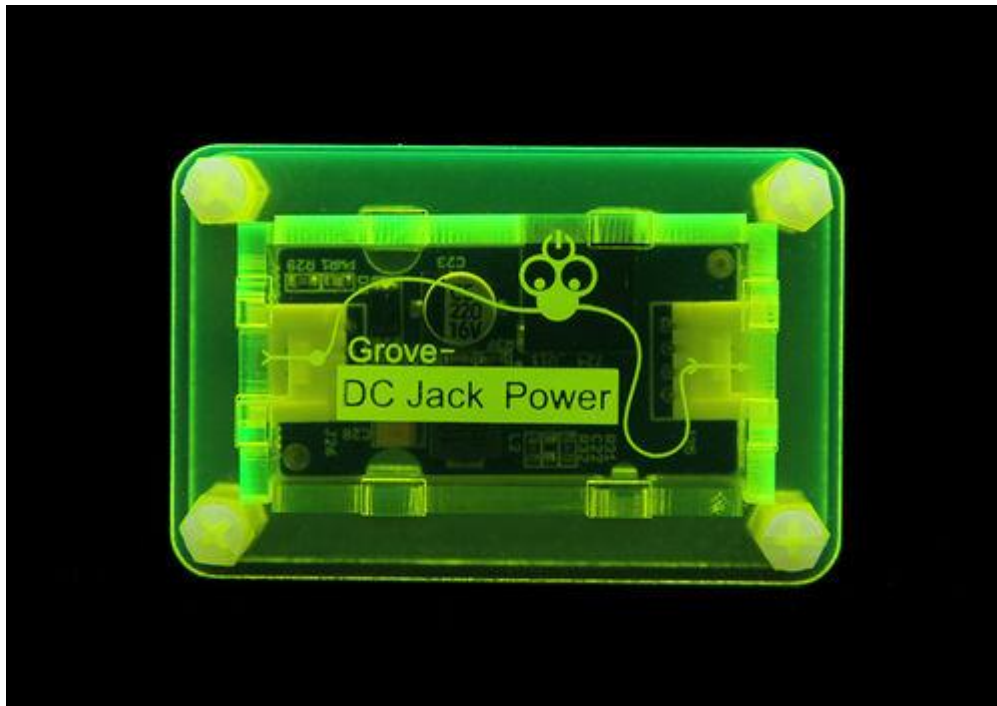
Features

- Flexibility
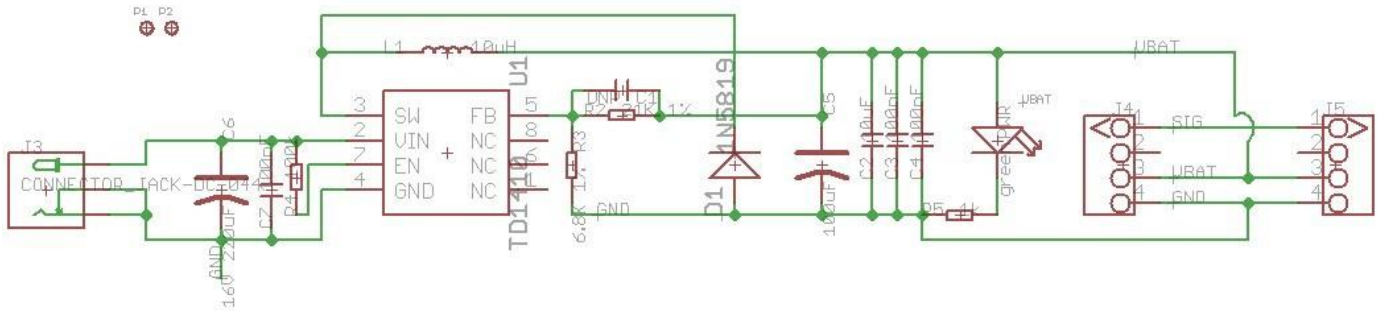- Grove Interface
- Use widely

Modules

Power Supply

There are three power supply modules in Mixer. They are DC Jack Power, USB Power and Coin Battery Power. All of them output 5V.

1. DC Jack Power
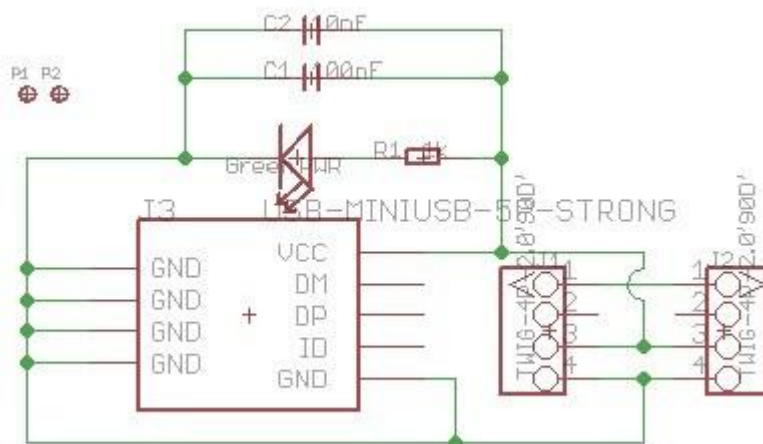

DC Jack Power Schematic

- DC Jack Power: Input Voltage range is 3.6V-20V. Power sources can be 9V battery or wall adapters.
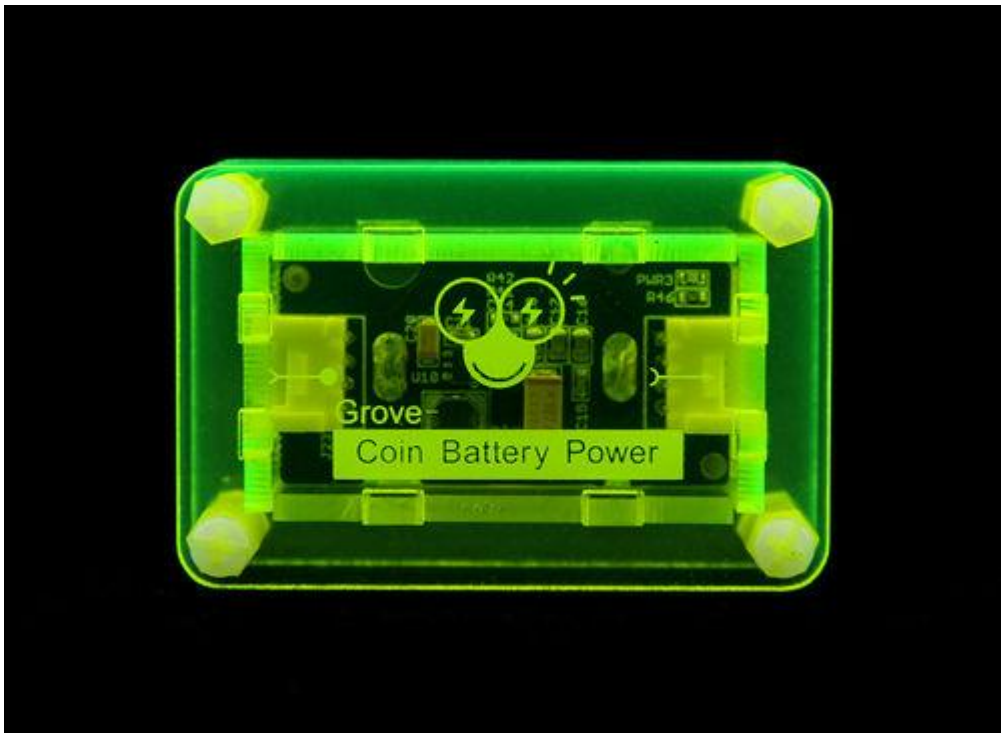
2. USB Power
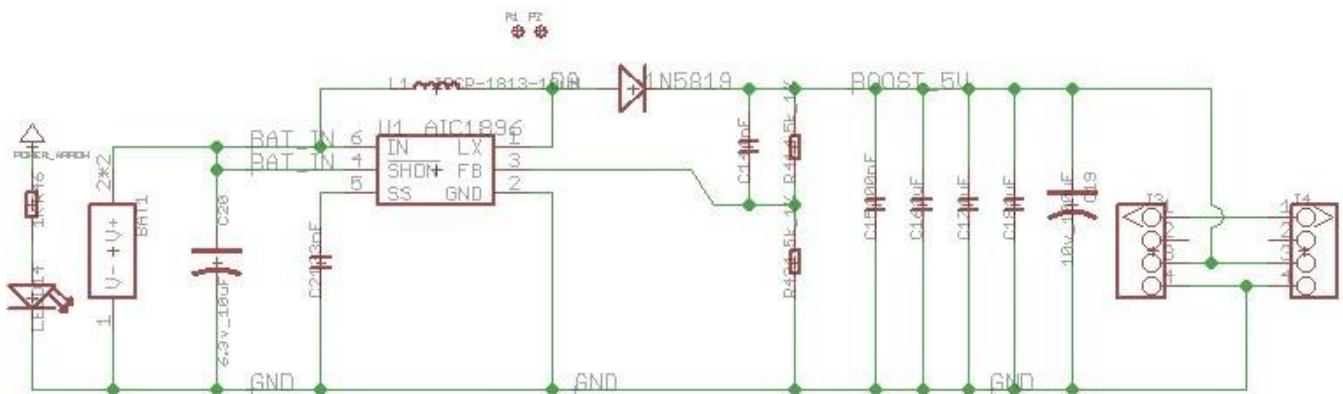

USB Power Schematic

- USB Power: Input Voltage is about 5v. Power sources can be computer via USB cable or power bank.

3. Coin Battery Power

Coin Battery Power Schematic

- Coin Battery Power: Input voltage is 3V or 3.3V of Lithium Battery.

You can select one of three to apply to your mixer system. Remember that power-supply module is indispensable, without it, your mixer system will not work.
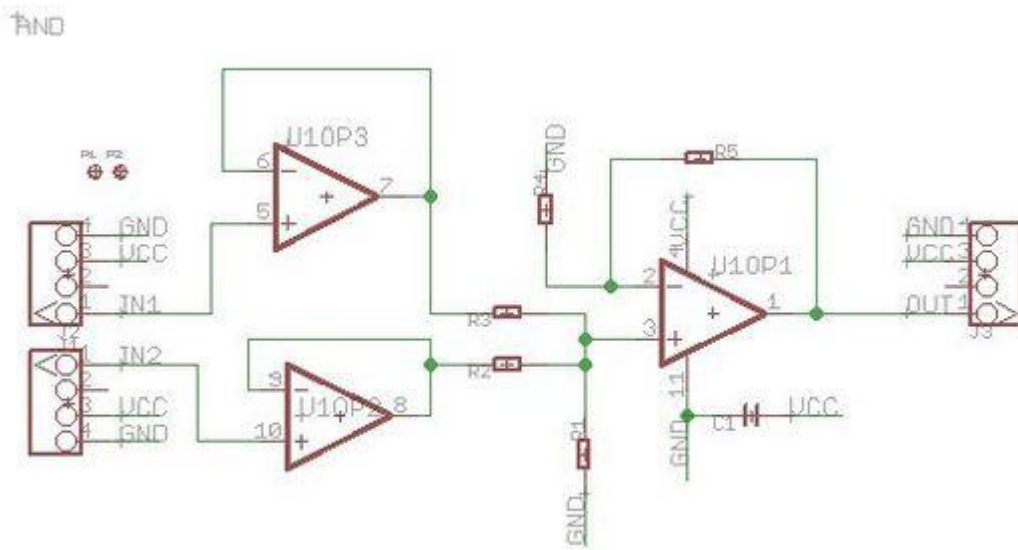
Logic

Grove – Mixer Pack need not to program, own to logic modules which can achieve functions instead of code. Logic Modules include Grove – AND、 Grove – OR、 Grove – NOT.
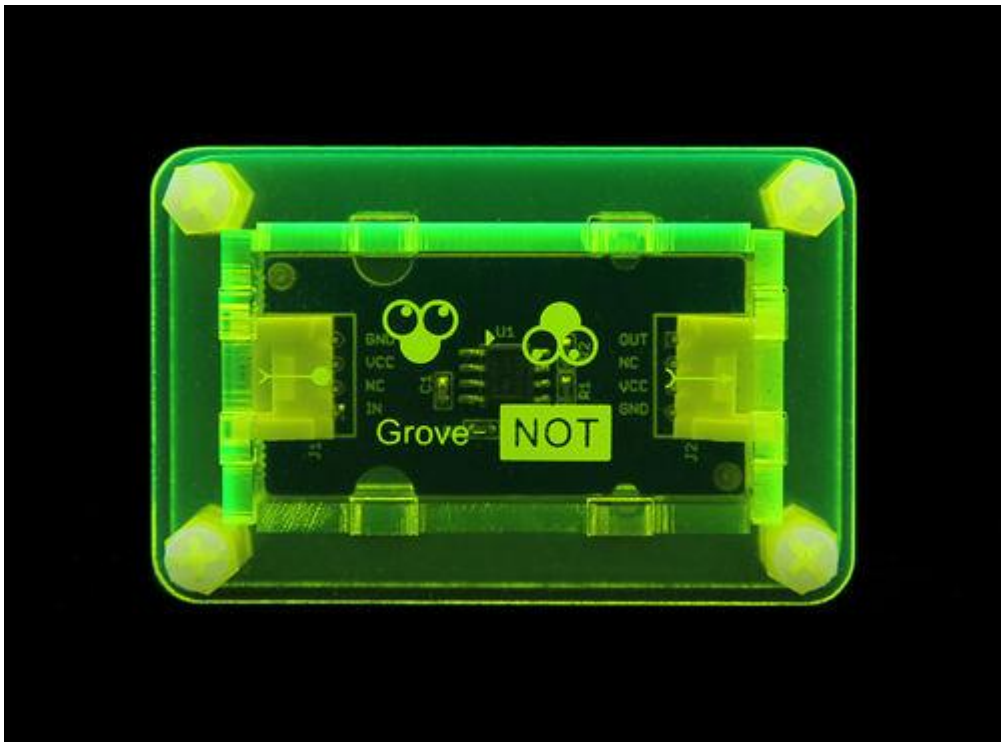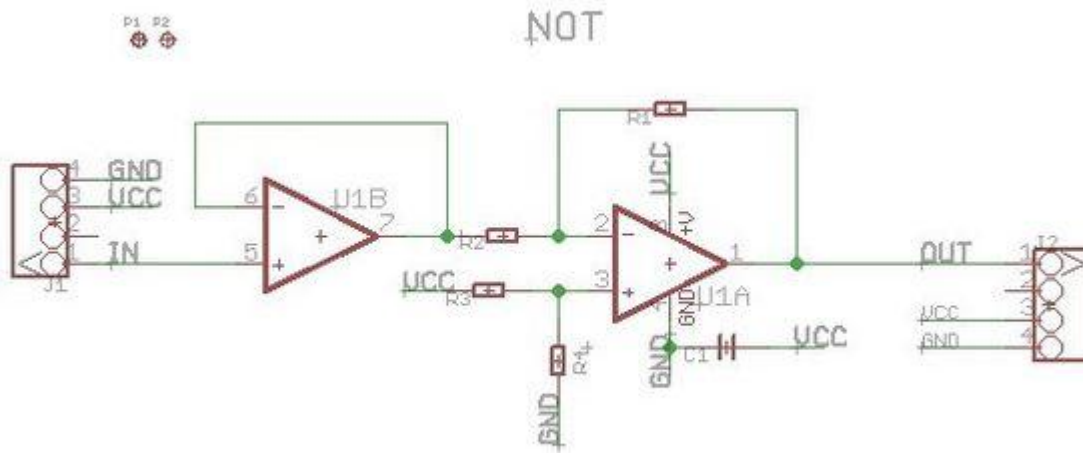
1. AND
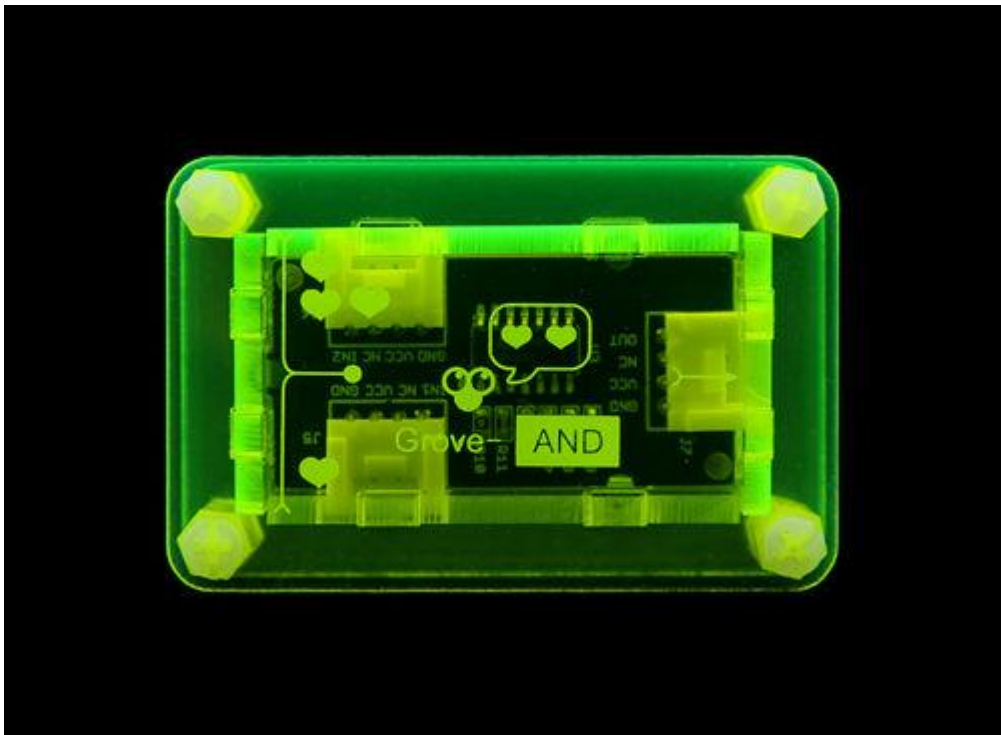
AND Schematic

AND has three Grove sockets. On the left are two input sockets for you to add sensors. On the right is the output socket for actuator. The logical relationship between them is: Vout=1/2(Vin1+Vin2).
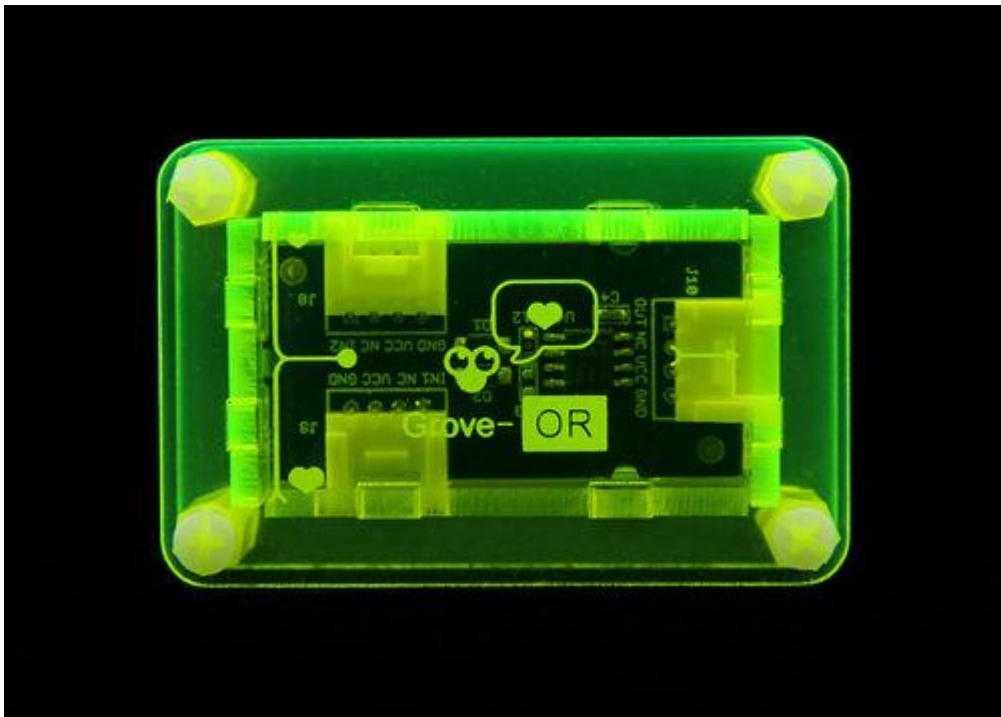
AND outputs the average value of two inputs.

2. NOT

NOT Schematic
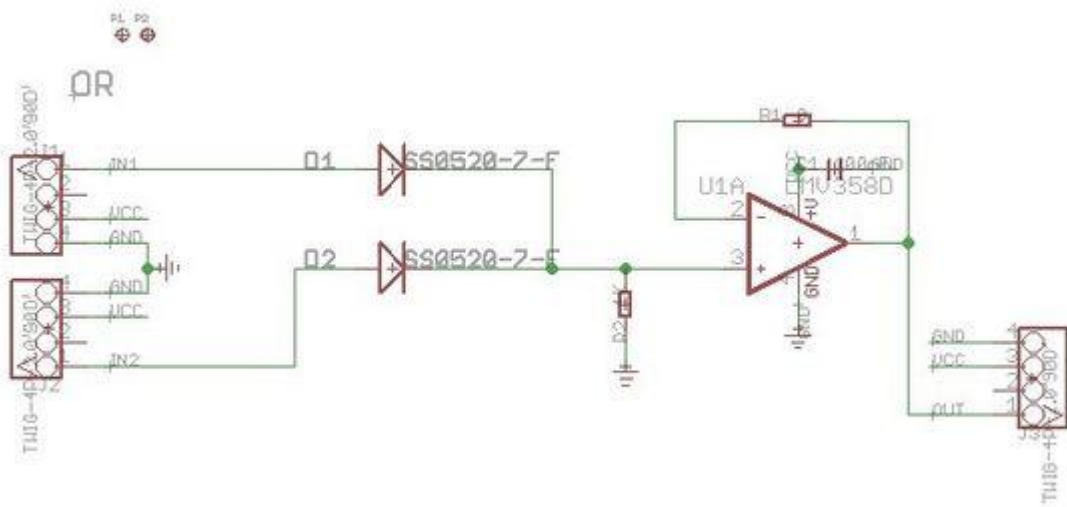

NOT has one input on the left and one output. The logical relationship of them is: Vout =~ Vin. It outputs a HIGH signal when it gets a LOW signal on the input end, and vice versa.

3. OR

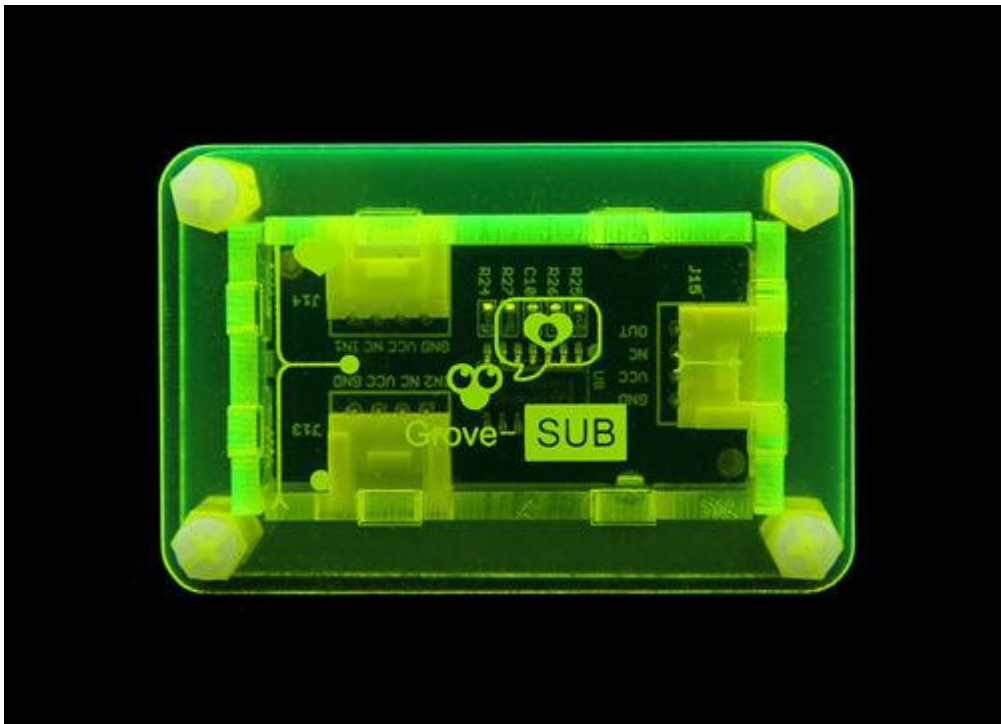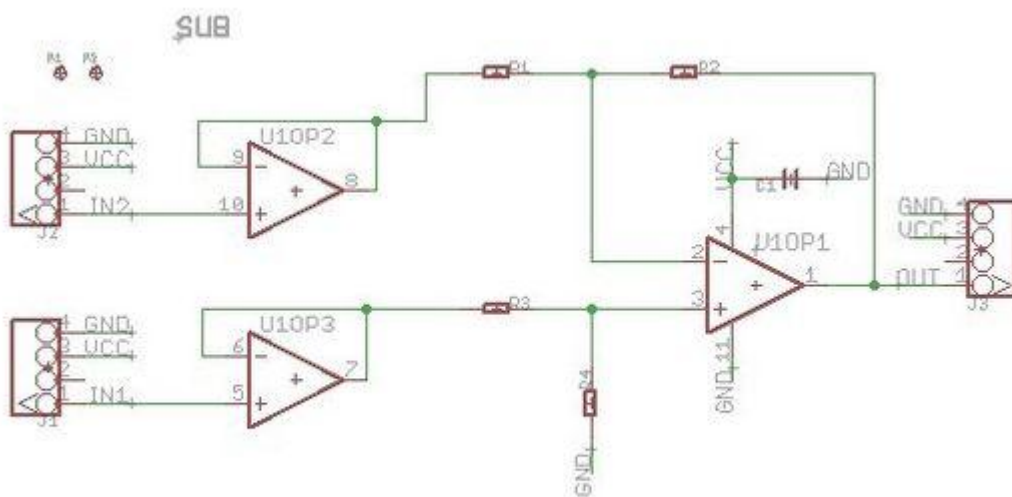*OR Schematic*

OR has two input sockets and one output socket. The logical relationship of them is: Vout= (Vin1) || (Vin2). It outputs HIGH as long as one of its input signals is HIGH.
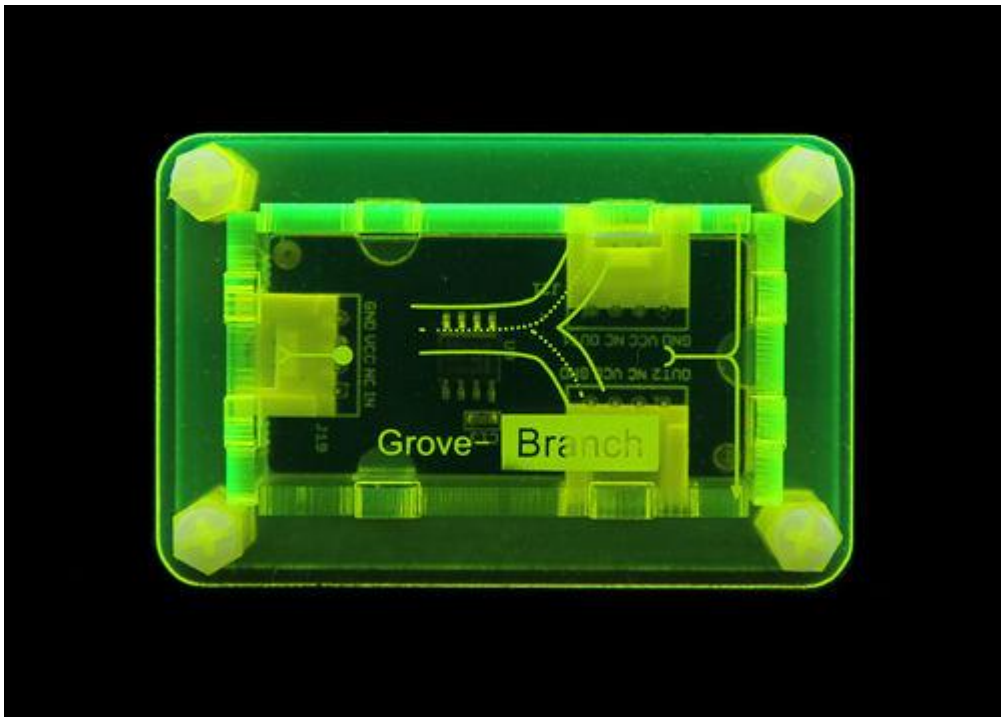
4. SUB

SUB Schematic

SUB has two different inputs and one output. The logical relationship of them is: Vout = (Vin1-Vin2).
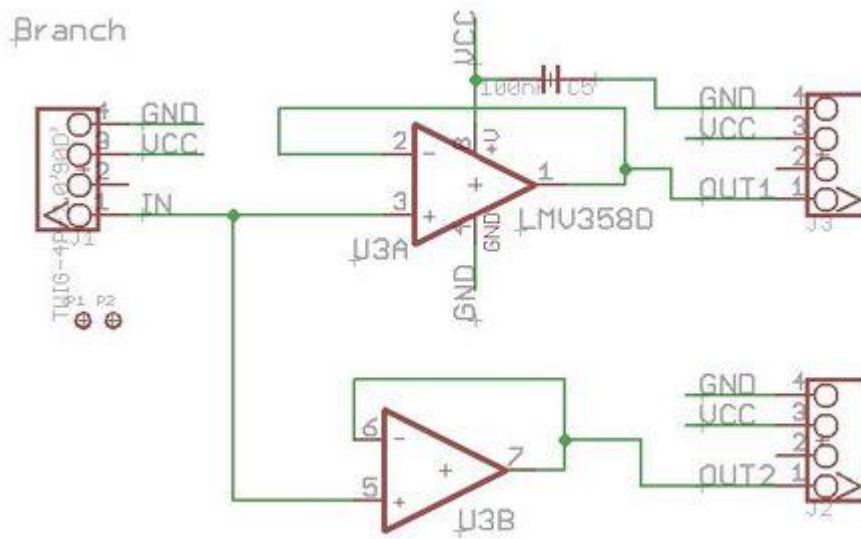
It only outputs positive voltage when Vin1 is bigger than Vin2. Otherwise, the output will be LOW.

Others

1. Branch

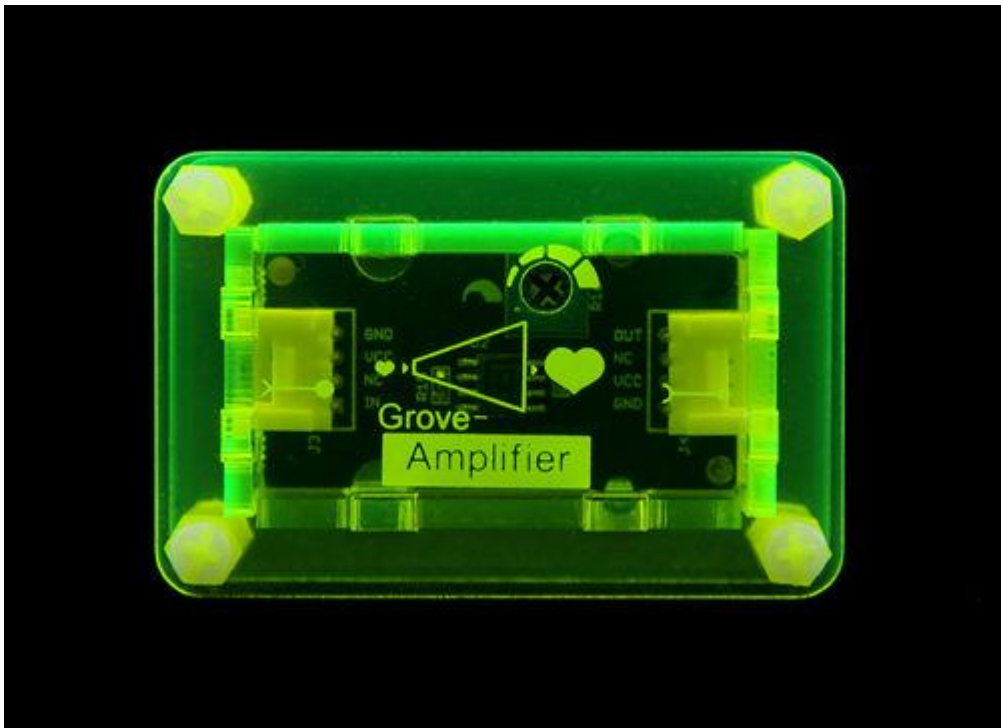*Branch Schematic*

Branch has one input and two outputs. The logical relationship of them is: Vout1=Vin; Vout2=Vin.

The output signals are just the same as the input.

2. Amplifier

Amplifie Schematic
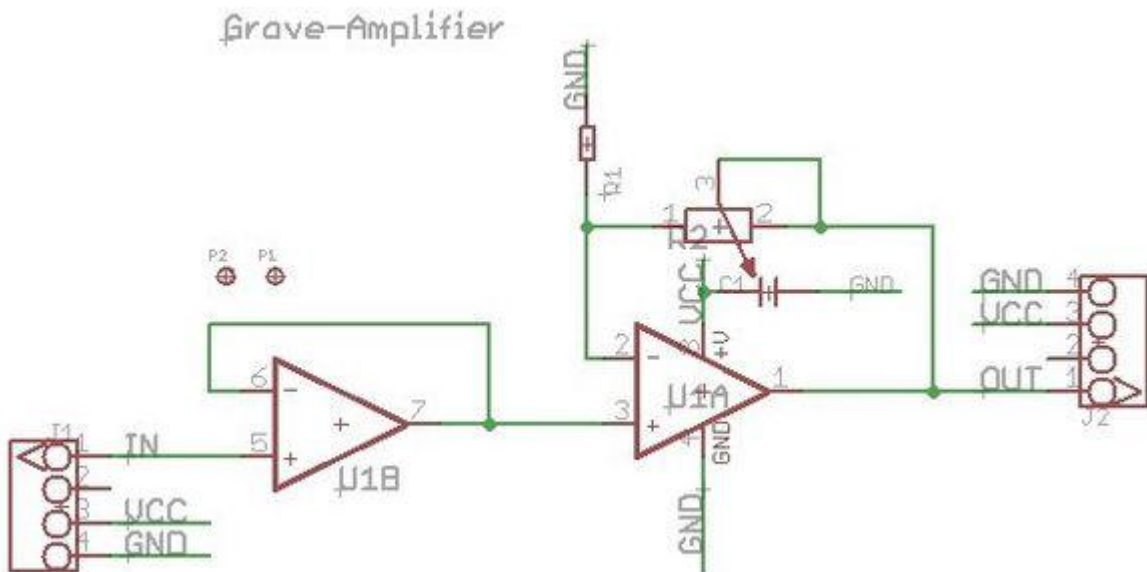
Amplifier is a gain adjustable module that gives you larger output. The logical relationship of its input and output is: Vout= Vin (1+R2). R2 (0~1k) refers to the pot on the board. This module can give you a comparable output signal to drive the actuator when input signal is weak.

3. Pulse

Pluse Schematic

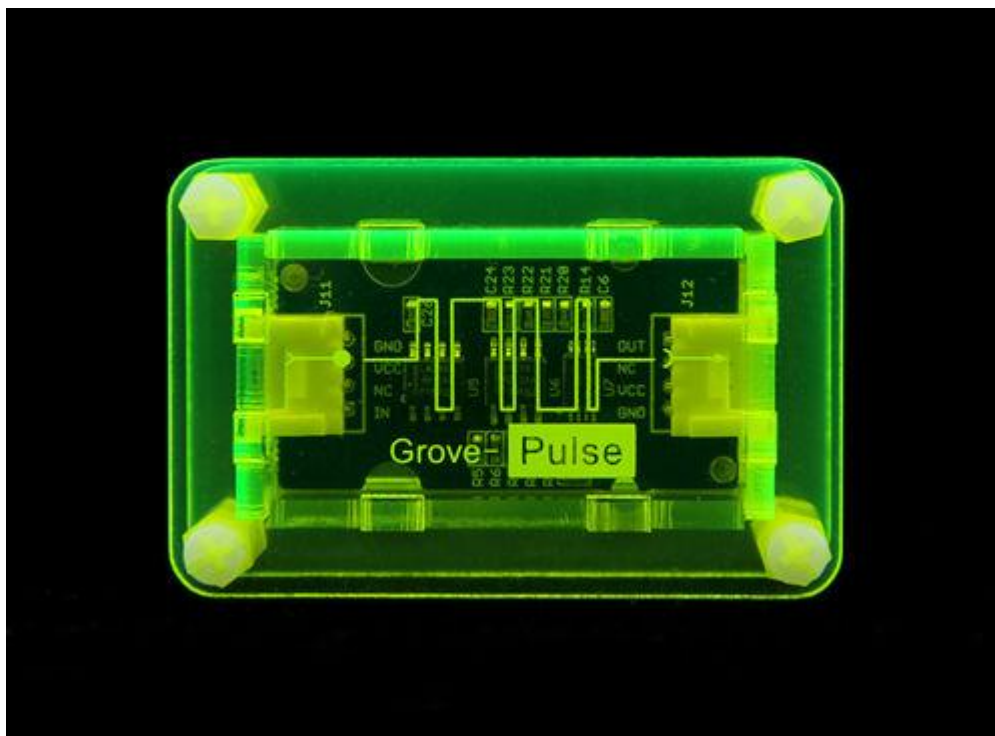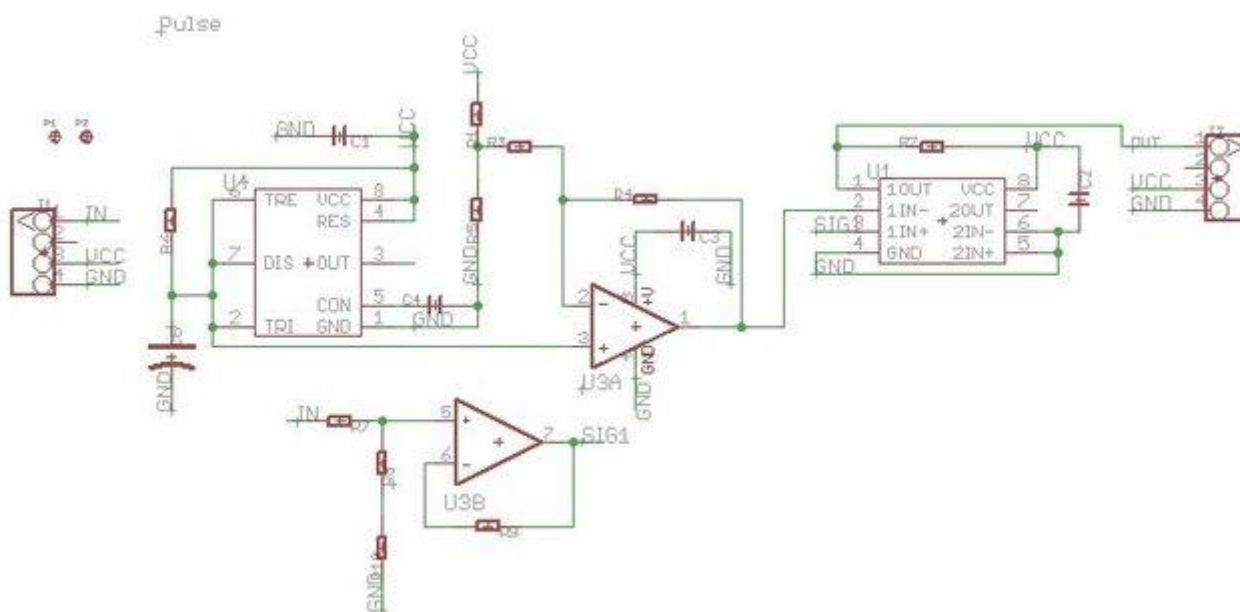The duty ratio of the output wave signal is positively proportional to the input signal. That means the larger the input signal, the larger the duty ratio.

Sensors

Sensors in Mixer are commonly used and easy to understand ones. They are:

Grove – Light Sensor, Grove - Slide Potentiometer, Grove – Button and Grove – Sound Sensor

▪ Grove – Light Sensor: detect light intensity. It outputs analog signal.

- Grove - Slide Potentiometer: a linear variable resistor with a total resistance of 10k, it outputs analog signal.

- Grove – Button: it normally outputs LOW and outputs HIGH when pressed.

- Grove – Sound Sensor: detect the sound strength of the environment. It outputs analog signal.

| Grove - Light Sensor | Grove - Slide Potentiometer | Grove - Button | Grove - Sound Sensor |

Actuators

Actuators in Mixer are all basic but essential ones. They are:

Grove – LED, Grove – Vibration Motor, and Grove – Buzzer are actuators

| Grove - LED Socket Kit | Grove - Vibration Motor | Grove - Buzzer |

Usage

Next we are going to show you some examples about how we construct a circuit. We will start at the simplest circuit and step by step enlarge it.

Hello World!

A meaningful circuit should include modules of three parts: sensor, power and actuator, as shown below.

| Input Device | Grove Cable | IN Power OUT | Grove Cable | Output Device |

| Grove – Button | USB Power | Grove – LED |
Grove – Light Sensor	DC Jack Power	Grove – Buzzer
Grove – Sound Sensor	Clio Battery Power	Grove – Vibration Motor
Grove - Slide Potentiometer		
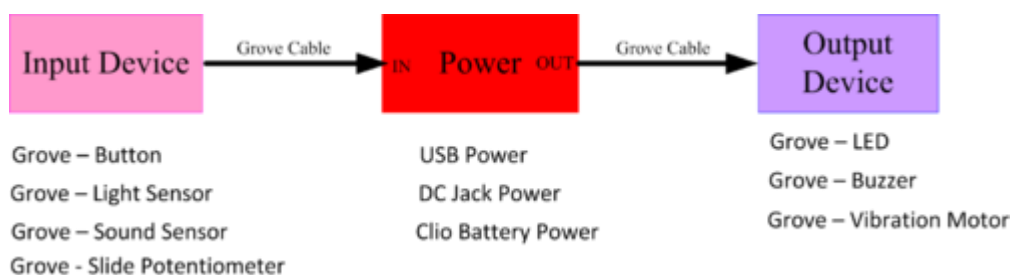
As a first circuit, we turn on/off an LED.
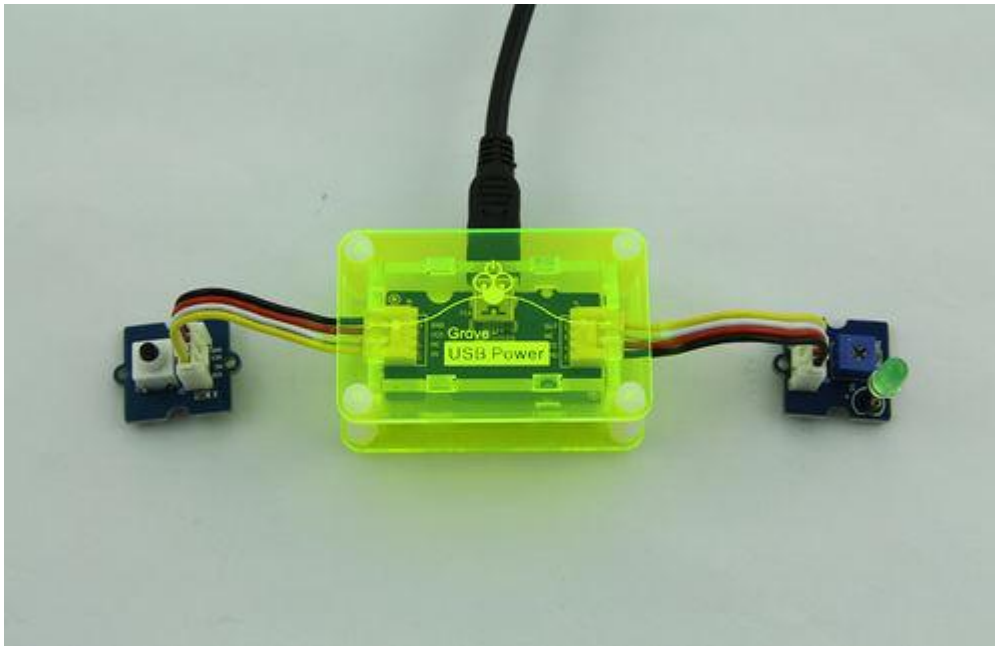
The LED will come on when the button gets pressed. The following diagram explains how signal travels through the circuit.
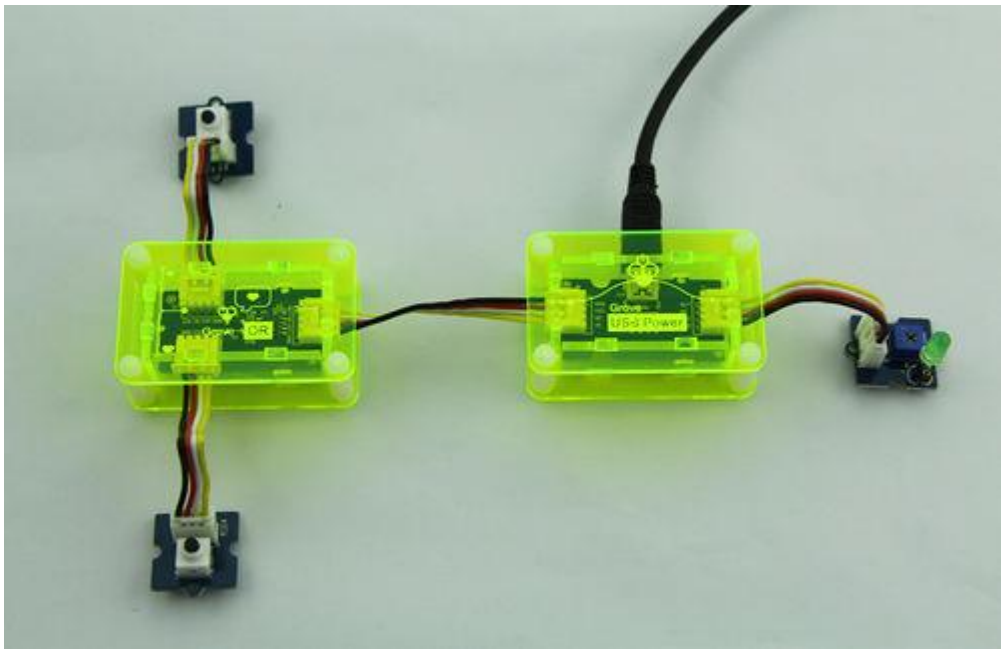

Add Some Logic & Make It More Vivid

Now let's move on to add some logic to our circuit. In the circuit below, the LED will come on when either of the button gets pressed.
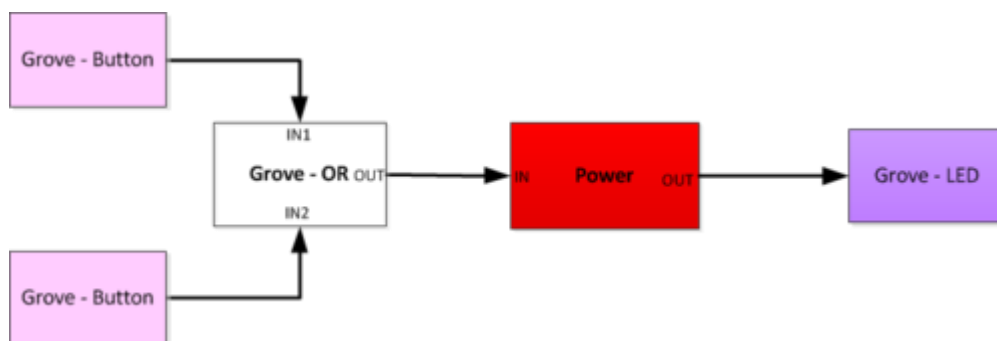
Try other sensors and actuators to see what happens.

1) Logic module can be connected between input modules and power module, or between output modules and power module. The above image is one of connecting ways for reference.

2) All modules are direction sensitive, read through the screen printed pattern on each one before connection.

If you want to control an led and a buzzer simultaneously, Grove – Branch can help. Based on the last circuit, add Grove – Branch and Grove - Buzzer to the circuit following the next diagram.
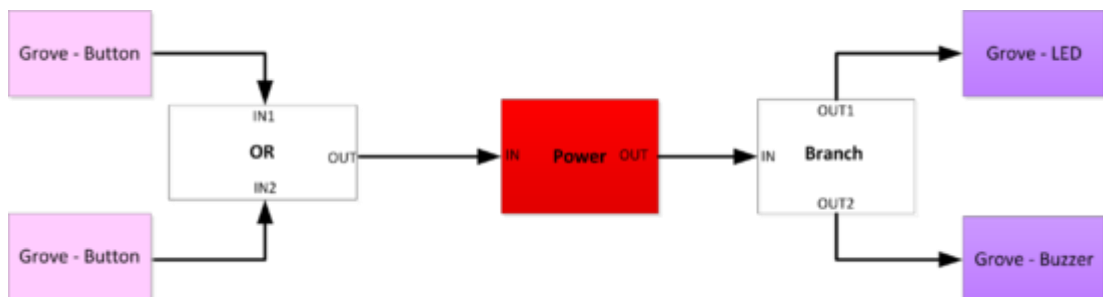
In this way, two actuators will work when the button gets pressed. How to make more actuators work? Add more branches!
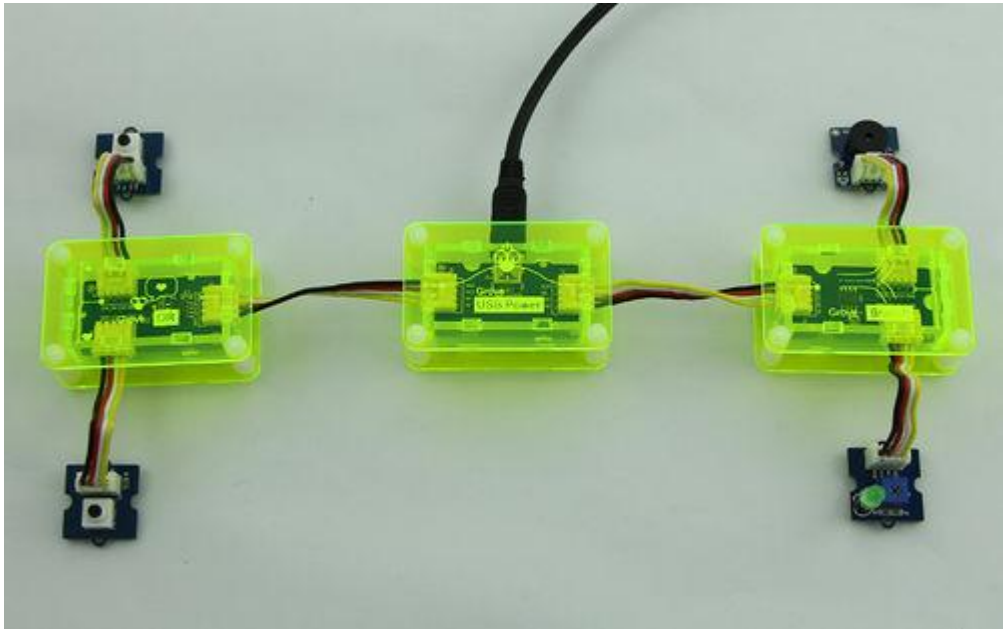
Grove - Pulse is an interesting module that gives your buzzer some groove. Just add it in front of the buzzer then you get BBBBBB...
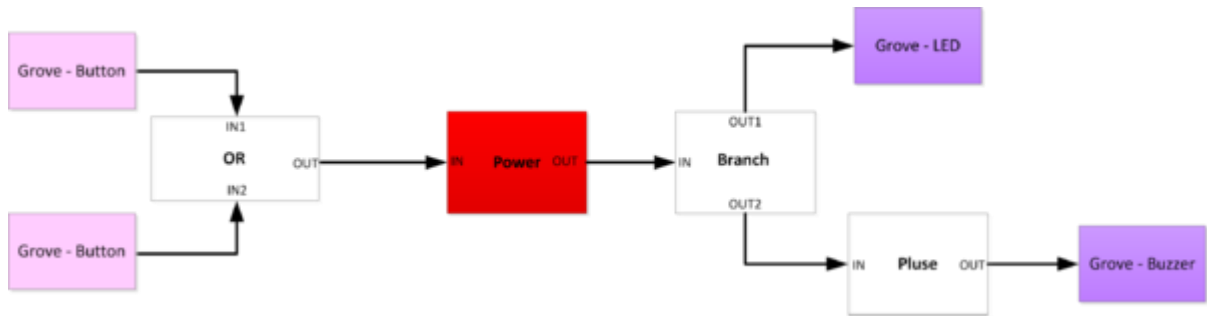
Not content with the endless beep, we can use Grove – Slide to give it some rise and fall. With an analog input, you can change the frequency of the sound or light.