Passive Buzzer Module Experiment

Module Introduction

A passive buzzer is a buzzer without an internal oscillator. The internal oscillator will not buzz when it is powered on. It needs 2 ~ 5 kHz square wave drive, and then the different frequency waveform will drive the passive buzzer to send out the corresponding frequency sound. Some of our common greeting cards will bring a music box. After you open the card, it will play happy birthday and Christmas song. Playing these tunes is through the buzzer to achieve.

Difference between active buzzer and passive buzzer:

1. Different Shapes

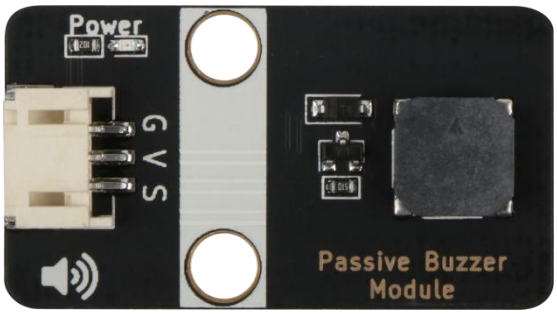
When the pins of the two kinds of buzzers are placed upward, it can be seen that the one with green circuit board is passive buzzer, and the one with black glue instead of circuit board is active buzzer.

2. Different Test Sound

Connect the black lead to the "+" pin of the buzzer, and the red lead touches the other pin back and forth. If a click or click is triggered and the resistance is only 8 Ω, it is a passive buzzer; If it can make continuous sound and the resistance is more than several hundred ohm, it is an active buzzer.

3. Different Vibration Frequency

Input the corresponding voltage with DC voltage (can be adjusted from small to large). The frequency is about 2.7KHZ. The active electromagnetic buzzer that can ring directly is the active electromagnetic buzzer. If it does not ring directly, it needs to be driven by square wave to ring the passive electromagnetic buzzer.



The buzzer is mainly divided into two types: piezoelectric buzzer and electromagnetic buzzer. The piezoelectric buzzer is mainly composed of multivibrator, piezoelectric buzzer, impedance matching device, resonant box and shell. The multivibrator is composed of transistors or integrated circuits. After switching on the power supply, the multivibrator vibrates and outputs 1.5 ~ 2.5KHz audio signal, and the impedance matching device pushes the beeps to make sounds. 2. The electromagnetic buzzer is composed of oscillator, electromagnetic wire cabinet, magnet, vibrating diaphragm and shell. After power on, the harsh signal current generated by the buzzer passes through the electromagnetic coil to generate magnetic field. The

vibrating diaphragm periodically vibrates and makes sound under the action of electromagnetic line diagram and glue iron.

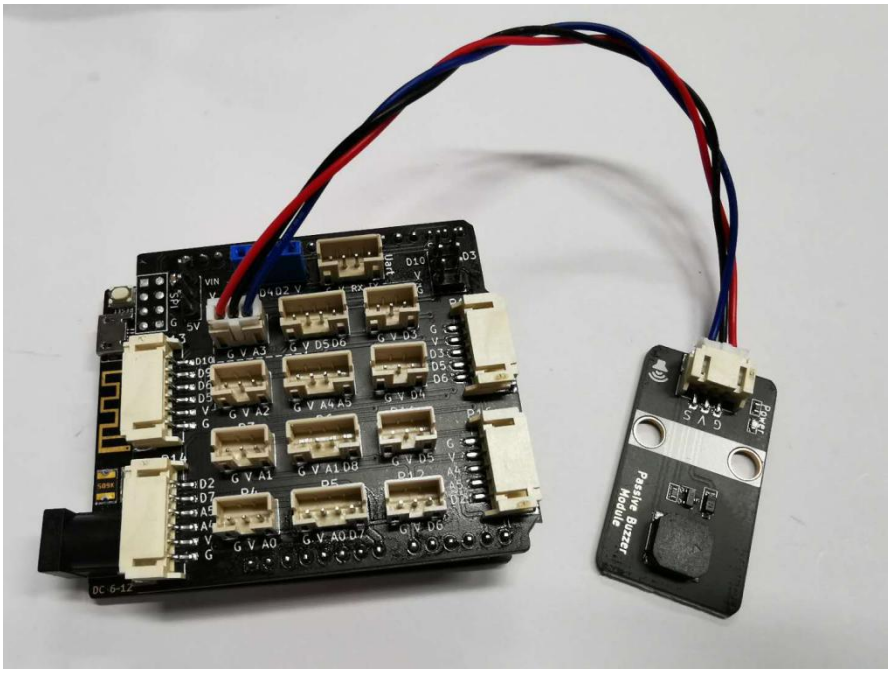
Purpose of the Experiment

Arduino can be used to create a lot of interactive work, the most common of which is the acousto-optic display. We've used LEDs in our experiments before, and now we've activated the buzzer to play two frequencies of sound. As long as the frequency matches the score, we can hear wonderful music.

Device List

- BLE-UNO Main Board: 1
- Expansion Board: 1
- USB Data Wire: 1
- Passive Buzzer Module: 1
- 3PIN Wire Jumper: 1

Physical Wiring Diagram



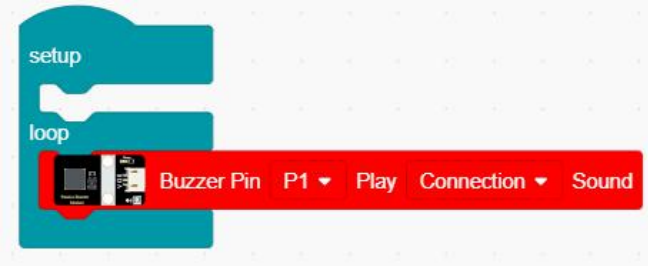
Program Code

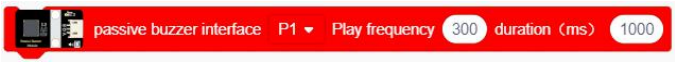
```
#define buzzer_pin A3    //Set the buzzer port to A3


void setup()
{
```

```
    pinMode(buzzer_pin, OUTPUT);    //Set the buzzer port to output mode
}
void loop()
{
    for(int i = 200; i <= 800; i++)      // 200HZ ~ 800HZ
    {
        tone(buzzer_pin,i);
    }
    delay(1000);                                //Max Frequency hold 1s
    for(int i= 800; i >= 200; i--)      // 800HZ ~ 200HZ
    {
        tone(buzzer_pin,i);
        delay(10);
    }
}
```

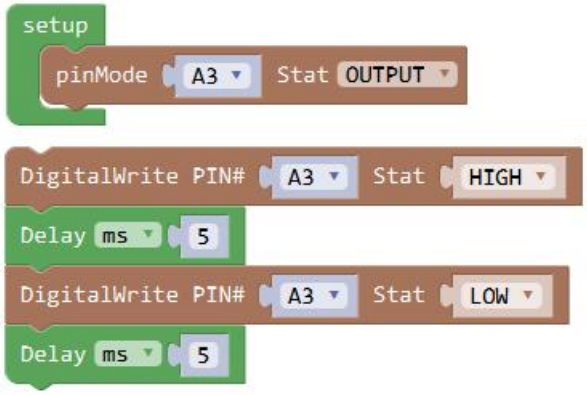
MagicBlock Program





Set the playing frequency and duration of the buzzer.

Mixly Program



Experimental Conclusion

After the device is wired, the above program is burned to the arduino UNO board, and the passive buzzer will sound at different frequencies.