

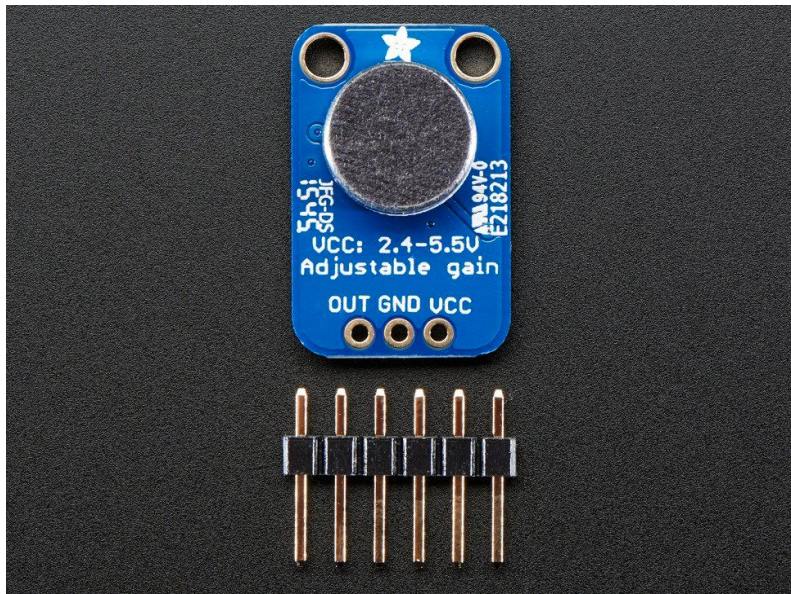
Electret Microphone Amplifier - MAX4466

Product Details and Data Sheet	2
Installation	2
Reading Value	4
Troubleshooting	4

Permission of copyright:

Dr. Brian Fraser has full rights to publish this document for future CMPT 433 classes.

Product Details and Data Sheet



(Source: <https://www.adafruit.com/product/1063>)

Data sheet: <https://cdn-shop.adafruit.com/datasheets/MAX4465-MAX4469.pdf>

This part needs 2.4 - 5.5V to power up. The output (through OUT pin) will be $VCC/2$ and can range up to 5V_{pp} (loud sound).

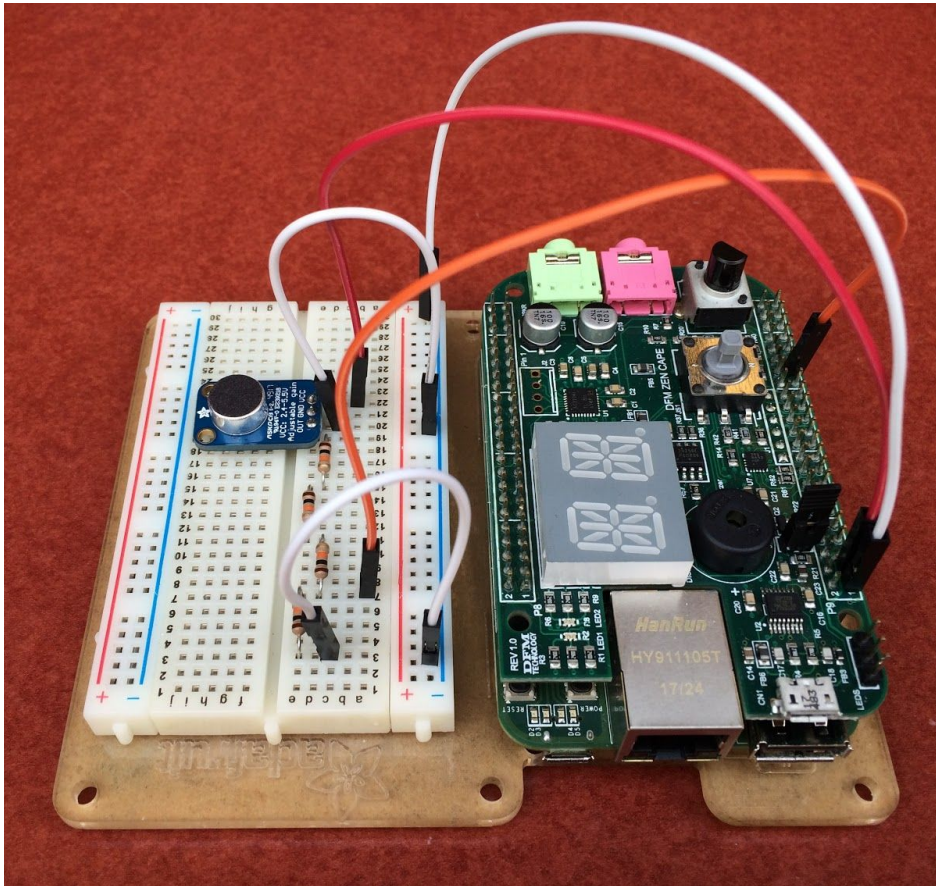
Installation

This guide will guide you through the installation of the MAX4466 microphone amplifier onto the breadboard, which connects with the BeagleBone Green. By the end of this guide, you will be able to read the value from the part via the Analog-to-Digital converter.

1. Solder the pins to the OUT, GND, and VCC ports.



2. Wire the microphone amplifier as described by the “detailed wiring steps” below:



Detailed wiring steps:

- Insert the part's pin headers to the breadboard, across three consecutive rows.
- Connect four 10k Ohm resistors in series, as shown in the photo: the first resistor will be connected to the OUT pin.
- Connect 3 white wires to the negative rail on the breadboard:
 - 1st white wire is connected to the GND pin.
 - 2nd white wire is connected to the 4th resistor.
 - 3rd white wire connects the negative rail to P9.1 on BeagleBone (DGND).
- Connect the VCC pin to P9.3 on BeagleBone (VDD_3_3) via the red wire.
- Insert one end of the orange wire into the row shared by the 3rd and 4th resistor, and insert the other end into the P9.33 pin on the BeagleBone (AIN4).

Reading Value

1. Enable A2D on the ADC virtual cape on the BeagleBone:

```
# echo BB-ADC > /sys/devices/platform/bone_capemgr/slots
```

2. Change to sysfs directory:

```
# cd /sys/bus/iio/devices/iio\:device0
```

3. Read the value a single time:

```
# cat in_voltage4_raw
```

Alternatively, run this line to continuously poll the value in real-time.

```
# for (;;); do cat in_voltage4_raw; done;
```

Troubleshooting

1. Reading value from the sensor via ADC does not change with different sound levels
 - Ensure that you solder all pins properly as shown in the first step of installation.
2. Reading value from the sensor via ADC is unusually high (~4000)
 - Ensure that the sensor is grounded properly
 - Both the GND pin of the sensor, and the last resistor in the set of pull down resistors should be connected to the negative rail, which is connected to ground (P9.1)
3. The sound sensor is unusually hot
 - Ensure that you solder all pins properly as shown in the first step of installation.
4. Reading value from the sensor is unstable when you make a loud noise near the sensor
 - Make sure that you set a proper debounce (100ms) if you just want to filter the high value.