

# Seeed Studio Ultrathin 16x32 RGB Matrix Guide

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## 1. Introduction

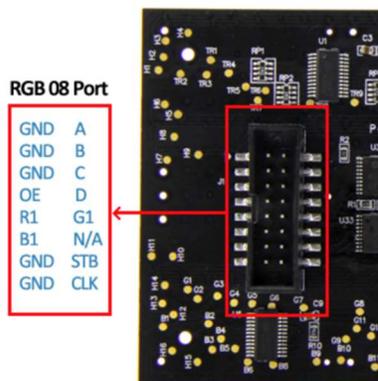
This LED Guide is for Ultrathin 16x32 RGB LED Matrix Panel from Seeed Studio connected to BeagleBone Green. The following site shows the details of the LED Matrix: <https://www.seeedstudio.com/Ultrathin-16x32-RGB-LED-Matrix-Panel-p-1926.html>. The LED Matrix works really similar to the Adafruit's 16x32 LED Matrix. The following link is the existing online guide for Adafruit's LED Matrix: <http://janetmardjuki.com/doc/projects/howToGuide.pdf>. Since there is no pre-existing guide for Seeed Ultrathin 16x32 RGB LED Matrix and the pin configuration is slightly different from Adafruit's LED Matrix, this guide will be useful for the first time LED user who bought the Seeed Ultrathin 16x32 RGB LED.

## 2. Setup

### 2.1 Wiring

Seeed product will come with the matrix and the jumper wires. Please take a look at this website to learn about the jumper wire: <https://learn.adafruit.com/32x16-32x32-rgb-led-matrix/connecting-with-jumper-wires>. The website above is for Adafruit's LED Matrix but the jumper wire acts the same way in the Seeed Matrix.

The pin configuration in Seeed Matrix is different from Adafruit's Matrix so you should not follow the pin configuration instruction in the link above. The pin configuration of the Seeed Matrix looks like:



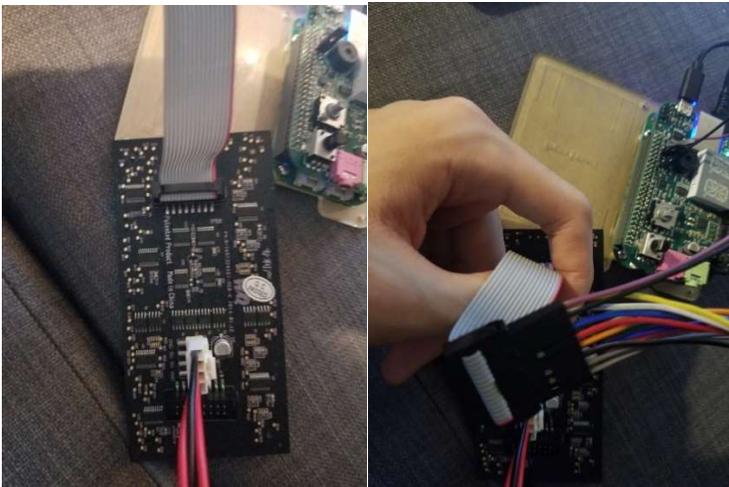
The following table below explains the purpose of each pin:

Pin	Explanation
GND	Signal to ground
A	The left-most bit of the row number
B	The second left-most bit of the row number
C	The second right-most bit of the row number
D	The right-most bit of the row number
R1	Red colour signal
B1	Blue colour signal
G1	Green colour signal
OE	LED on/off
STB	Ends of row data
CLK	Ends of each bit of the data

More explanation on the A/B/C/D pins:

This is for the people who need more explanation on the A/B/C/D pins. Since the LED matrix has 16 rows, it requires 4 different bits to represent numbers from 0~15 and A/B/C/D pins will be those bits. For example if you want to control Row 12, since  $12 = 1100$ , set  $A = 0$   $B = 0$   $C = 1$  and  $D = 1$ .

Connect the jumper wires in the picture above and put the wires for the corresponding pin. Try to use a different colour for each pin so that it does not confuse you. When you are done, it should look like this:



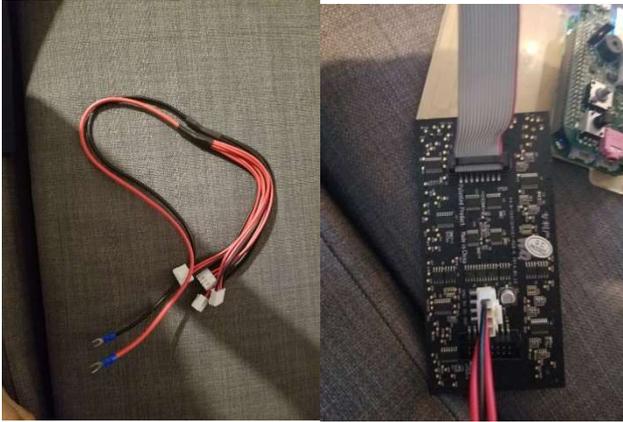
Make sure you put the pins in the correct jumper wire or your matrix will not work later.

Next, connect wires to the BeagleBone. The following link shows the GPIO pins of the BeagleBone Green: [http://wiki.seeedstudio.com/BeagleBone\\_Green/](http://wiki.seeedstudio.com/BeagleBone_Green/). Please read it through and put the wires in the available GPIO pins. The following table shows the GPIO pins that the author used for their project (square brackets “[ ]” indicate the pin numbers). You will have to memorize these pins and change them to the correct ones when testing on the LED Matrix.

A [78]	R1 [79]
B [76]	B1 [77]
C [74]	G1 [75]
D [72]	STB [73]
OE [70]	CLK [71]

## 2.2 Power

You must have this wire in the picture on the left when you buy the matrix.



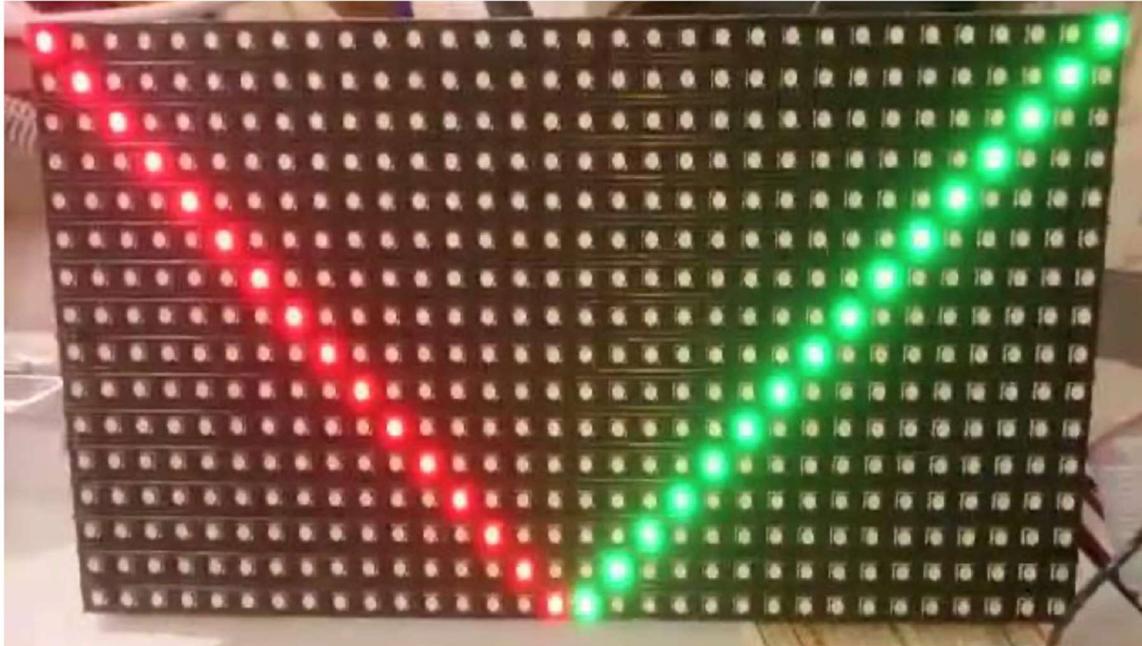
You must connect that wire to the matrix like the picture on the right.

On the backside of the LED Matrix, you have to find a way to connect it to power. The following is what the author did: connecting the wire to another barrel plug converter which then can be plugged into the wall like the picture shown below. Note that a 5V 3A power supply will be sufficient for this specific LED matrix.



### 3. Testing Your Matrix

Try to compile the provided code, namely `sample.c`, and run it on your BealBone Green. You must be able to see a V on your matrix which looks like:



The sample code is an adjustment of the code which Janet Mardjuki wrote. I have changed the code so that it works for Seeed Matrix not Adafruit Matrix. Take a look at the code in order to see how the LED Matrix works.

### 4. Troubleshooting

If the shape of the LED Matrix is incorrect, it is most likely your pin configuration is wrong.

Please take a look at your pin configuration and make sure change the pin value in the code to your pin configuration

If you experience flickering, try decreasing the delay value (the value inside the sleep function in refreshing function). If this does not fix the problem, try to implement it in PRU or kernel code.

If the shape is correct but not all LED is showing or LED is dim, the power is most likely connected wrong. Please check your power.