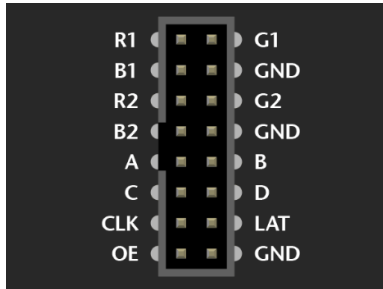How-To Guide For Led Matrix Connection

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1. Connect the Led Matrix with ribbon cable and use jumpers to connect ribbon cable to Beaglebone Green.
    This step is tricky because the pins on the Led Matrix are not all needed:

    This is the instruction of the pins. There are three ground pins but usually only one ground pin is needed and free pins on Beaglebone are limited, so you only need to connect one ground pins. This leads to the fact that you cannot choose an 8 * 2 block of free pins (there is no free 8 * 2 free pins blocked together) on Beaglebone and connect corresponding position from ribbon cable to Beaglebone. You also should pay attention to the ribbon cable.
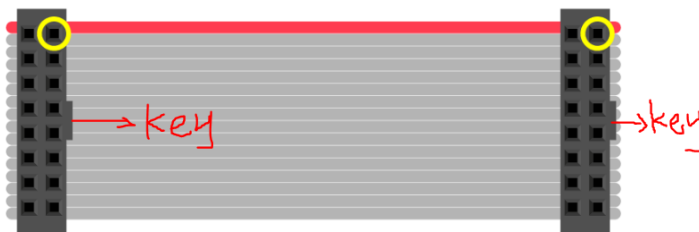
    If the key points to the same direction, pins are in the same direction at both ends. Users can use https://learn.adafruit.com/32x16-32x32-rgb-led-matrix/connecting-with-jumper-wires as a reference guide, but keep in mind that it is a guide for Arduino.

    Here is the description for each pin on the Led Matrix:

R1	Control the 4 bits red color for the top half matrix (0 - 7)

G1	Control the 4 bits green color for the top half matrix (0 - 7)
B1	Control the 4 bits blue color for the top half matrix (0 - 7)
R2	Control the 4 bits red color for the bottom half matrix (8 - 15)
G2	Control the 4 bits green color for the bottom half matrix (8 - 15)
B2	Control the 4 bits blue color for the bottom half matrix (8 - 15)
A	most significant bit of row selection
B	Middle bit of row selection
C	Least significant bit of row selection
D	Not used by 32*16 Led matrix
LAT	The end of a row of data
OE	Switches the Leds off when transitioning from one row to the next
CLK	Marks the arrival of each bit of data
GND	Ground

Here is suggested connection:

PIN	GPIO NUMBER	PIN ON LED MATRIX
P8 - 7	66	R1
P8 - 8	67	G1
P8 - 1	(no gpio for ground)	GND
P8 - 9	69	B1
P8 - 10	68	R2
P8 - 11	45	G2
P8 - 12	44	B2
P8 - 13	23	A
P8 - 14	26	B
P8 - 15	47	C

P8 - 16	46	D
P8 - 17	27	CLK
P8 - 18	65	LAT
P8 - 19	22	OE

Using corresponding colored wires help you to manage the connection!

2. Test Led Matrix

Finish connecting Led Matrix to Beaglebone, you should connect power supply to the Led Matrix. Led Metrix accepts 5V regulated power input, 2.5A max. Then it is good to test! You can find a test program from https://github.com/jmardjuki/LEDMatrixTest . Keep in mind that all the gpios defined in that program should be changed to our case. If there is a character V displayed on the Led Matrix when the program is running, congratulations! Led Matrix is correctly set, and it is good to design your own custom program!

Troubleshooting:

1. If the Led Matrix doesn't light on totally, check the connection between ribbon cable and Beaglebone. Make sure every pin of Led Matrix is connected correctly to the pin I showed in the table.

2. If the Led Matrix only displayed left half of the character V and it is really dark, this is the problem that power supply doesn't support Led Matrix and only Beaglebone powers it. Check the connection of the power supply will likely handle this problem.

3. When you make your custom code and LED doesn't light up, you can change the value of the color and retry. Although the product description shows that it can supports 4096 different colors (varies from 0x000 to 0xFFF), some colors cannot display!