

Hookedup LED Lighting Kit

Installation Instructions

Overview

This document covers what is included in the LED Matrix Kit and basic setup instructions.

The kit includes the following (at a minimum):

LED Lights – pre-wired in strands of 50 with JP4 connectors.

Controller with up to 2 output connections.

Power supplies.

Setup Process

Step one is to test a single strand of LEDs to assure the controller and power are setup.

Step two is to setup a small test matrix and test the system.

Step three is – complete project.

Computer Setup

The following drivers will be needed when prompted for CDC drivers..

[http://www.ghielectronics.com/downloads/NETMF/Library%20Documentation/GHI
NETMF Interface with CDC.zip](http://www.ghielectronics.com/downloads/NETMF/Library%20Documentation/GHI%20NETMF%20Interface%20with%20CDC.zip)

When you insert the controller into the USB you will be prompted for a driver. Use the link above for the needed drivers.

Note: If prompted for other drivers and it says not found, try the below drivers. These are the base drivers for the development board.

If needed - download drivers here:

<http://www.tinyclr.com/support/>

Any issues – contact me.

Power

Overview

DC power is needed, so the A/C to D/C power transformers provide the DC power at 5v. Each supply is 60 watts - which can handle 200 LEDs.



The single wire is A/C and has three conductors – ground, neutral and live – details are documented on the power supply itself. This should be connected to the correct A/C power cord. Use whatever local standard is used to connect the 220 to the A/C side. Naturally be VERY careful working on the A/C side and you may want to get someone with local electrical knowledge to help with this connection.

The D/C side has two wires, each with two conductors. The D/C outputs are connected to the LEDs connectors. The DC output is 5 volts and is harmless.

Each of the DC outputs should be connected to 2 16g DC wires (or larger). Suggested wire is the standard 2-cat black DC wire generally used for outside landscape lighting. Each of the 16g wires should be connected to extra wires on the connector at the start of each LED string.

On the LED connectors - the vcc is red and ground is blue.

LED / Controller Testing

Use the power instructions to setup a single power supply.

Attach a 16g output wire to the power leads on a string of 50 LEDs.

Attach the controller closest to the USB port to the connection that fits on the LEDs.

Controller Configuration

Open or create a text file called **config.txt** on the SD card provided.

Update the contents (a single line) using the following format:

<speed>,<led count> ,< Use secondary ports (0/1 = no/yes)>

Examples:

For 200 LEDs running at 1000 speed using only the primary led connector:

1000,200,0

For 1000 LEDs running at 800 speed using both primary and secondary connectors:

800,1000,1

Unplug the controller USB, insert SD card and plug in the controller USB. When the controller loads it will read the information on the card.

Notes About Speed:

The speed setting controls how fast the LEDs are updated. The higher the number, the faster the LEDs are updated.

A range from 600 (slow) to 1200 (fast) should be used depending on LED count and other factors.

If the LEDs are updated too fast then they will flicker. The primary determining factor for speed will be the LED count - more LEDs equals slower speed. The distance and wire quality from the controller to the LEDs / matrix can effect maximum speed. The LEDs may not flicker when testing very basic and slow updating patterns such as (all red – delay – all white – delay - ...). When testing the LED for maximum speed, use a complex pattern and update the matrix at full speed in your application.

Test well with a pattern that updates the LEDs at the fastest rate you plan to use.

Recommended Speed Settings:

100 LEDs = 1200 200 LEDs = 1000

1000 LEDs dual controller = 800 (down to 600 depending on installation)

Controller Connectors

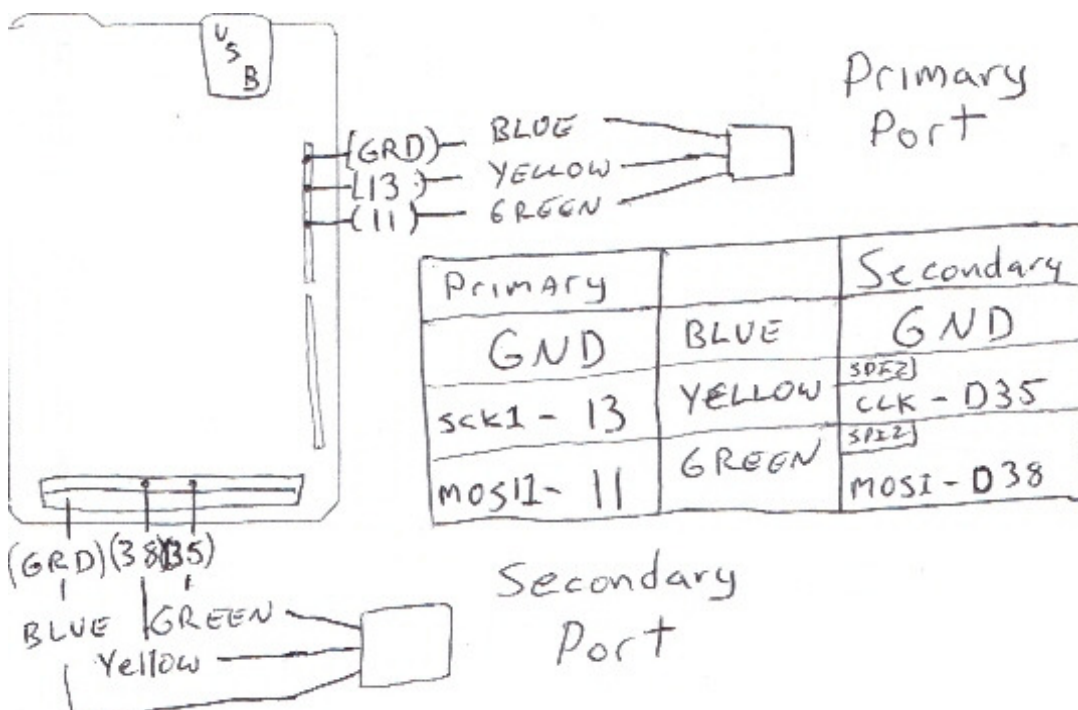
The controller can have up to 2 connectors – each controlling up to 500 LEDs. The first one is primary and the other is secondary and optional. If the setup calls for 200 or less LEDs then a single primary port is recommended. When steaming over 200 leds, the system can achieve a higher refresh rate by using both primary and secondary outputs.

The connectors from the controller to the LED strands are female JST connectors with male jumper wires with a single pin for each wire.



The JST connectors have four wires but the controller only utilizes only three of them, the blue, yellow and green wires. The red wire is not used due to the controller being powered by the USB port.

The following diagram shows how to connect the provided connector wires. If longer wires are needed – new ones can be created or existing ones extended. Note that extending the wires may result in a need to slow the controller down (if it flickers – slow it down).



Matrix Setup

Small single output matrix

For the test matrix – setup the lights starting in the upper left hand corner.

* Assure the starting point connects to the output on the controller.

String the lights along the top row to the right side of the matrix and then snake the leds down to the next row and run the them right to left. Do this until the lights reach the bottom of the matrix..

Connect the output closest to the USB port on the connector to the output on the matrix.

Full dual output matrix

Use the same instructions as the single matrix except ½ down the matrix keep the input connection disconnected. Then start the second ½ of leds here and continue to the bottom of the matrix.

Connect the output closest to the USB port on the connector to the first input on the matrix. Connect the other output to bottom ½ of the matrix.