

Hey! This is my document for a potential 2024 light show. My plan is to have a primary pi running FPP connected via ethernet to two WT32-ETH01 devices to run the show with 12v WS8211 lights (And maybe some others as well, time will tell!).

Thanks for taking a look at my work, and please let me know if you have questions, or if I did something wrong (Special thanks to anyone who points out a spelling mistake or fire hazard, both things I seem to be bad at avoiding unfortunately). Suggestion mode is on, so you can use that or just mention me on the forum, whatever you prefer. Thanks again!

- 12v Power Supply Specs and Capacity Notes -

Provides 30A max, 12v. (30x12) for 360 Watts

300 Watts per 500 pixels ($[500/300]*50=30$ Watts/50 pixels)

[Amazon](#) → Product information → Technical Details → 300 Watts

So Power Supply ($[360/30]*50$) Drives 600 Pixels MAX at full brightness

For the record ($[360/(.6*.8)]$) = 750 Lights at 80% Brightness

Where .6 is the wattage per light (300/500) and .8 is the brightness factor (80%)

Below, each system is noted with its required components. PCB components are noted in the next section.

- Windows (Running Windows 11 Pro) -

Sequence Created in xLights

Use FPP Connect to move show data from xLights to FPP

- Primary Player | Raspberry Pi 4b (Running FPP) -

Box Contents:

1x 3-port extension cable (From mains power)

1x Raspberry Pi 4b (With case, fan & power cable) - uses 1 mains power port

1x 12v Power Supply ([via Amazon](#)) - uses 1 mains power port

1x TP-Link TL-SG108 ([via Target](#)) - uses 1 mains power port

1x Custom RasbPi4bxMasLights PCB (Via JLCPCB)

Zx of 8A fuses (@ Power supply for WS2811 12v Power Output)

Cables though box:

1x extension cable (3-port) from mains power

2x ethernet CAT5 to extension boxes

2x CAT5 data carry to WS8211 (data/ground)

Zx of landscape cable for power (12v/ground) ([via Amazon](#))

Where Zx is equivalent to Zx in "Primary Player → Box Contents"

- Remote Player x2 (Running ESPIxelStick - WLED [Backup]) -

Box Contents:

1x 12v Power Supply - uses 1 mains power port

1x Custom WT32-ETH01xMasLights PCB (Via JLCPCB)

1x WT32-ETH01 board ([via Aliexpress](#))

Yx of 8A fuses (@ Power supply for WS8211 Power Output

1x DC-DC 12v to 5v 3A 15W Buck Converter (To power PCB) ([via Aliexpress](#))

Cables through box:

1x extension cable (1-port) from mains power

1x CAT5 cable (from primary box)

#x (Max 16) CAT5 to WS8211 (data/ground)

Yx of landscape cable for WS8211 power (12v/ground)

Where Yx is equivalent to Yx in "Remote Player → Box Contents"

- Data Line (24 gauge CAT5) Data / GND -

1x 2-Pin Connector (Female) ([via Aliexpress](#)) *Male end will replace JST connector on pixels*

- Power Line (14/2 Landscape Cable [[via Amazon](#)]) -

***ALL OUTSIDE CONNECTIONS MUST BE SOLDERED - DO NOT USE WATERPROOF CONNECTORS
POWER MUST BE PROVIDED EVERY 200 PIXELS - POWER MUST BE PROVIDED AT DATA ENTRY***

For a 12v line, power can cover 100 pixels in each direction. For 5v line, 50 pixels in each direction can be covered

Below, each PCB is noted with its required components

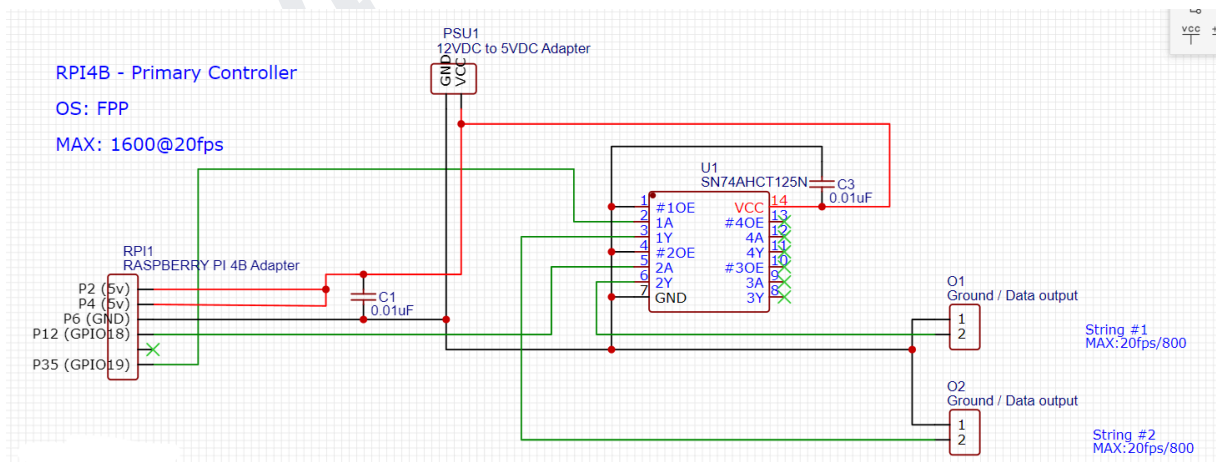
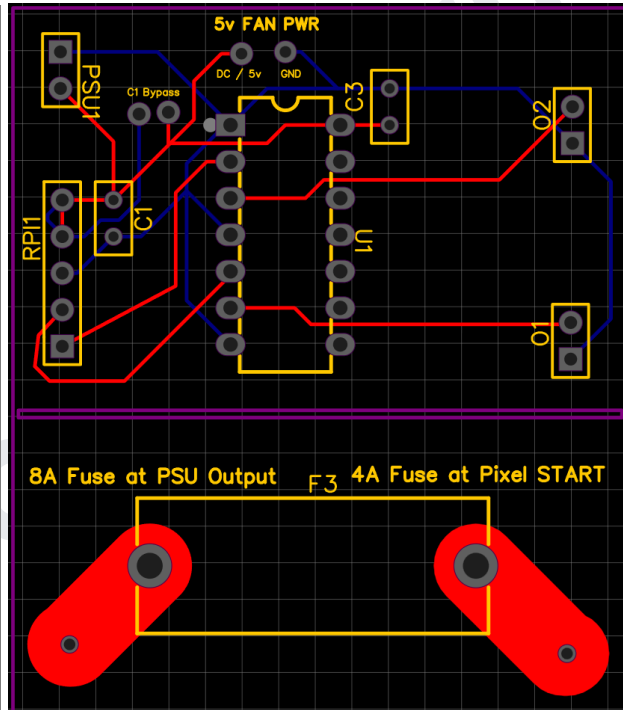
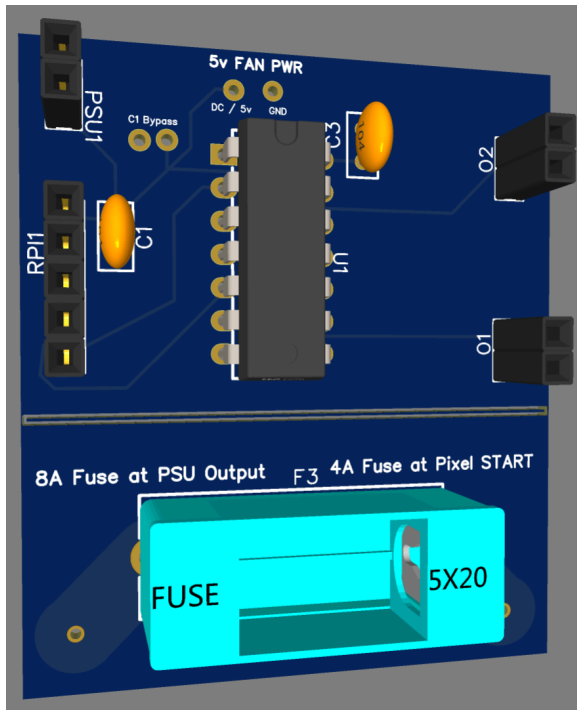
- Primary Pi PCB [x25]red] -

1x PCB

2x 103J .01uF capacitor ([via Aliexpress](#))

1x SN74AHCT125N ([via Aliexpress](#))

2x 2-Pin Terminal Block ([via Aliexpress](#)) CAT5 Data/GND line will use this



Orange Circles indicate Terminal Block Location.

Use C1 Bypass if powering RPi via USB as PSU1 power is not supplied

- Remote PCB (WT32-ETH01) [x5]red] -
- ([Flashing Note](#) | [Flashing software](#)) -

1x PCB

1x WT32-ETH01 board ([via Aliexpress](#))

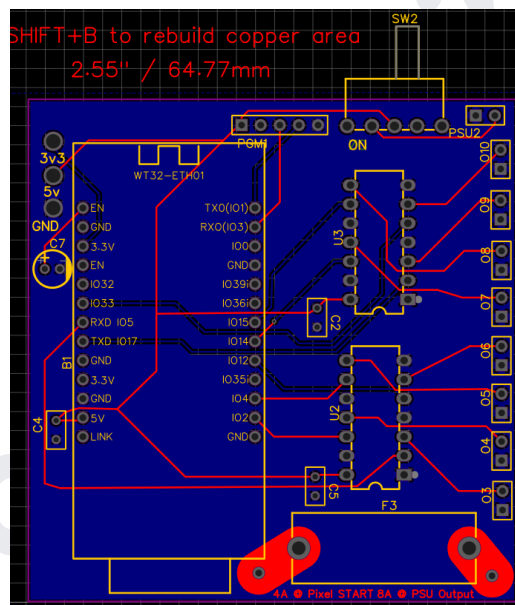
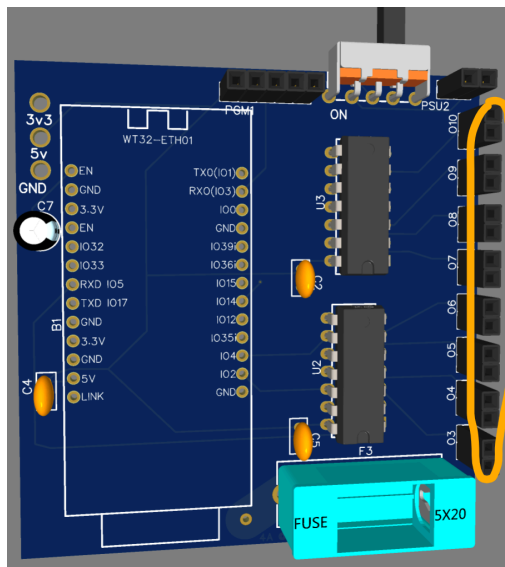
3x 103J .01uF capacitor ([via Aliexpress](#))

1x 100uF capacitor ([via Aliexpress](#))

2x SN74AHCT125N ([via Aliexpress](#))

8x 2-Pin Terminal Block ([via Aliexpress](#)) CAT5 Data/GND line will use this

1x 5-Pin Switch

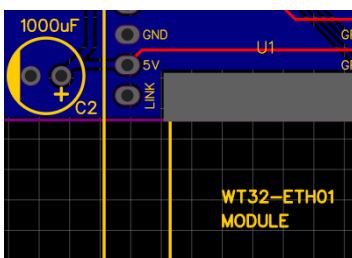
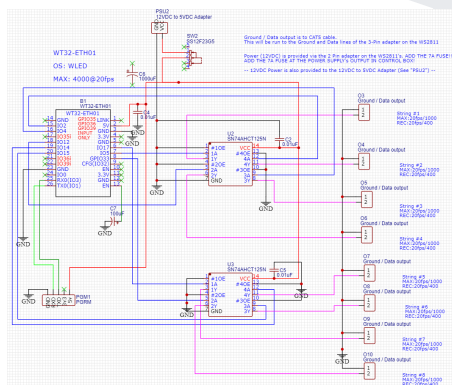


Note: The WT32-ETH01 board was moved to the right after the images were taken to allow for more space between it and the C7 capacitor

Orange Circles indicate Terminal Block Location.

PSU2 is used on this bord. PS2 input is 1x DC-DC 12v to 5v 3A 15W Buck Converter (To power PCB) ([via Aliexpress](#))

Will need flashing ([via Aliexpress](#))



QUESTION: Does my C4 (Currently a 103J .01uF Capacitor) need to be replaced with a 1000uF Capacitor, or is the .01uF enough? [Hoodlum](#) has 1000uF before his 5v-in (His C2) (potential 16v1000uF capacitor - [via Aliexpress](#))

- Fuse Boards [Including on all previous - breakable from Primary Pi board] -
1x Fuse Holder ([via Aliexpress](#))
1x Fuse [8A/4A] ([via Aliexpress](#) / [via Aliexpress](#))

*8A fuses are placed right after power supply for 12v lines leading to WS2811 pixels
4A fuses are placed where 12v line meets WS2811 pixels*

2024 xmas Planning