

DMX Lighting for beginners.

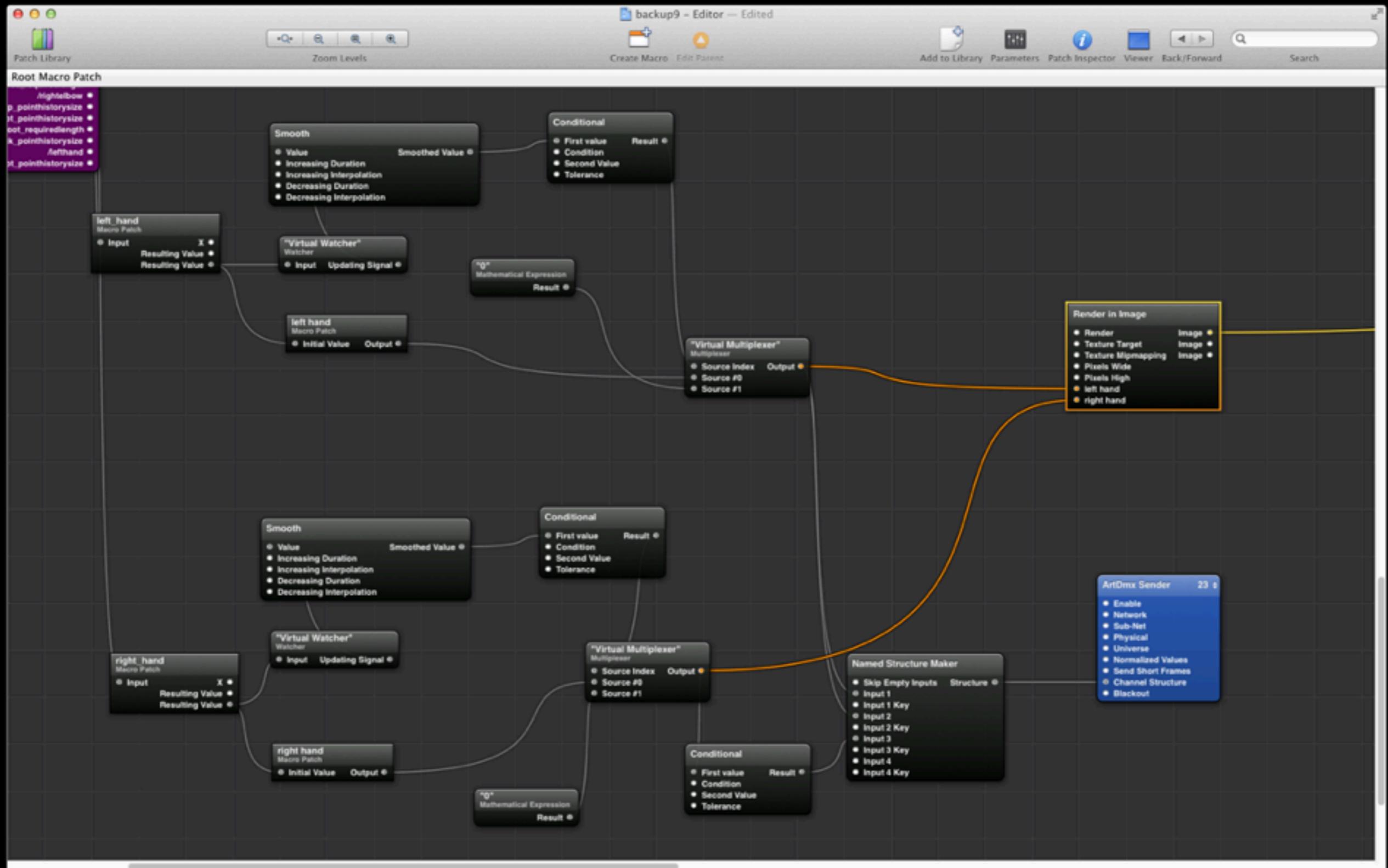
Workshop plan.

1. Slides + Examples.
2. Connecting to hardware from your machines.
3. Your own mini-projects. (As time permits)

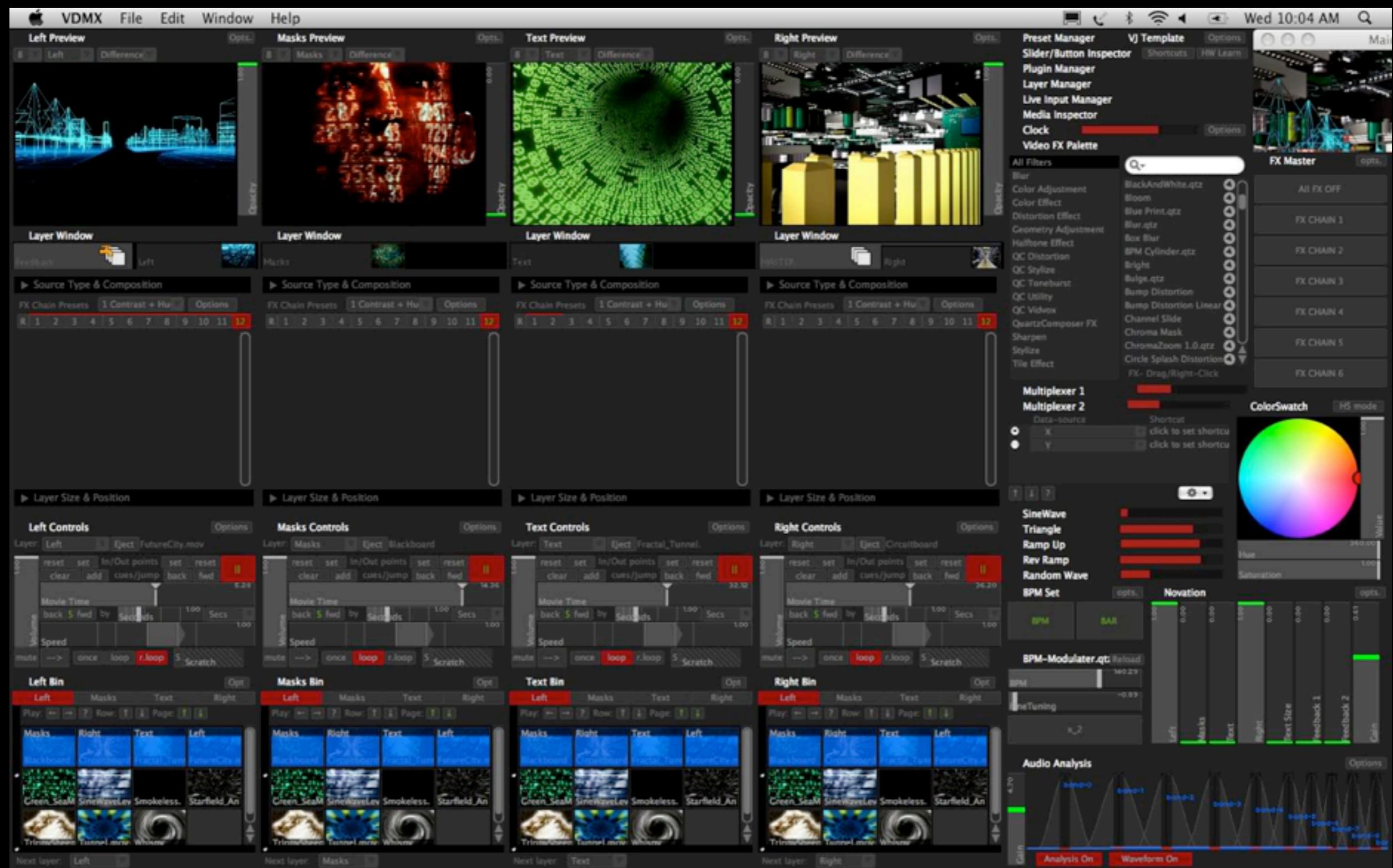
DMX Software.

Quartz Composer with Kineme ArtDMX plugin.

www.kineme.net



vDMX, www.vidvox.net/



DimmerPulse.xcodeproj — testApp.cpp

Finished running Dimmer Pulse : Dimmer Debug

Project 2

Editor View Organizer

ofxUI Sliders src testApp.cpp No Selection

Run Stop Scheme Breakpoints

ofxUI Sliders

1 target, OS X SDK 10.6

Project.xcconfig openFrameworks-Info.plist

src

Utils

DmxPro.cpp DmxPro.h

main.cpp testApp.h

testApp.cpp M

openFrameworks

addons

frameworks

Dimmer Pulse.app

```
1 #include "testApp.h"
2
3 //-
4 void testApp::setup()
5 {
6
7     // The maximum amount of lights + 1 as DMX channels start at address 1
8     dmxChannelAmount = 4 + 1;
9
10    // Allocate some space for the DMX packet
11    dmxPacket = new unsigned char[ dmxChannelAmount ];
12
13    // Make sure they start at 0
14    for( int i = 0; i < dmxChannelAmount; i++ ) { dmxPacket[i] = 0; }
15
16    // Set the address, depending on whether we are on OSX or Windows,
17    // this might be different on your machine!
18    #ifdef TARGET_WIN32
19        string serialPortAddress = "COM3";
20    #else
21        string serialPortAddress = "/dev/tty.usbserial-EN079717";
22    #endif
23
24
25    // Try to connect to that address, also give it the amount of channels we will be using
26    bool isConnected = dmxOut.connect(serialPortAddress, dmxChannelAmount );
27
28    // Output an error to the console if we fail
29    if( !isConnected )
30    {
31        ofLogError() << "We failed to connect to " << serialPortAddress << endl;
32    }
33
34
35 }
36
37 //-
38 void testApp::update()
39 {
40
41     // Fade a value between 0 and 255
42     int tmpValue = ((sin( ofGetElapsedTimef() ) + 1.0f) / 2.0f) * 255;
43
44     // Set the background to that greyscale value to give us some feedback
45     ofBackground(tmpValue, tmpValue, tmpValue);
46
47     // Set each of the channels to that value
48     for( int i = 0; i < dmxChannelAmount; i++ ) { dmxPacket[i] = tmpValue; }
49
50     // Send it to the DMX box
51     dmxOut.sendLevels( dmxPacket, dmxChannelAmount );
52 }
```

DMX Hardware.

A close-up photograph of a black DMX cable. The cable features two silver XLR connectors at the ends. The connector on the left is a male XLR plug, and the connector on the right is a female XLR socket. Both connectors have three pins labeled 1, 2, and 3. The cable itself is black with a textured, ribbed outer jacket.

DMX Cable.

A black XLR cable is shown from a top-down perspective, angled slightly. It features two male XLR connectors at the ends. The connectors are silver-colored with three pins each. The cable has a black braided mesh jacket. The text "XLR Cable. (Should not work)" is positioned to the right of the cable.

XLR Cable. (Should not work)





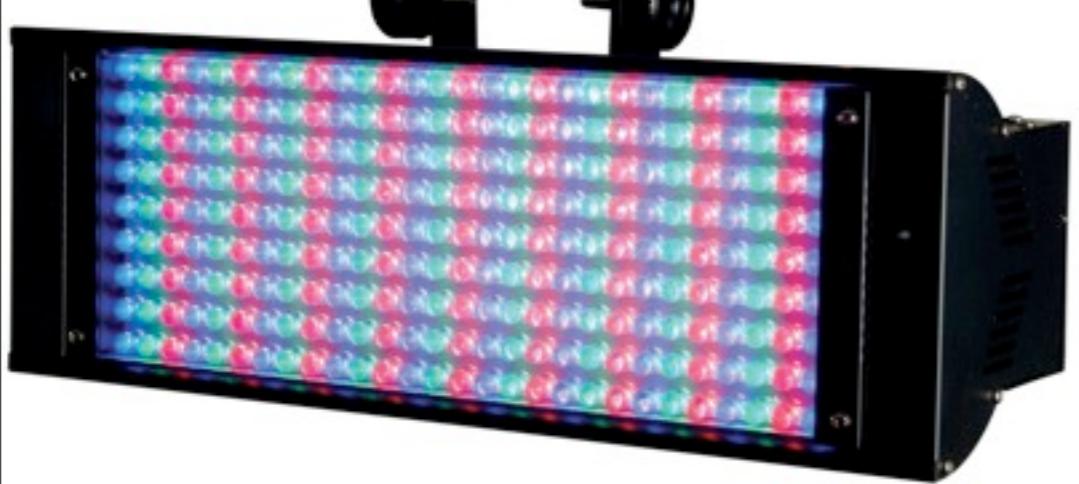
Serial/USB to DMX.



Ethernet to DMX. (Artnet)



Standalone device that
outputs DMX.
(Like an Arduino)









No pyro.



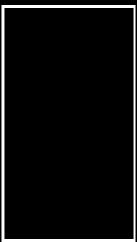


The DMX Protocol.

Bytes, bytes, bytes.

0-255

255

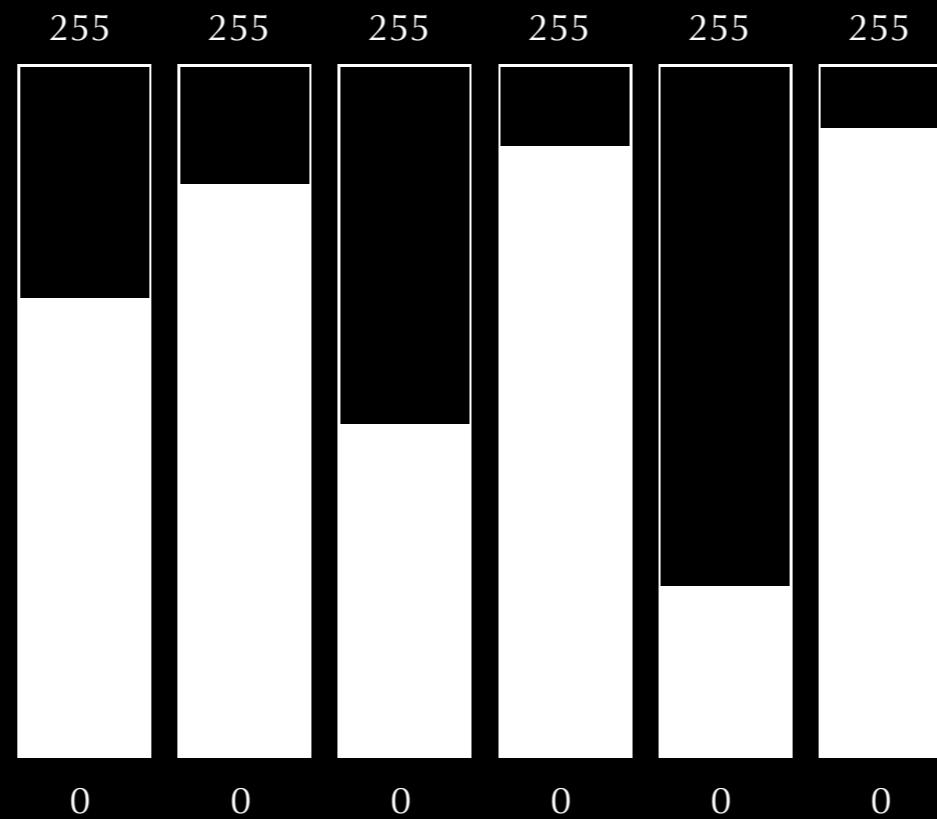


172

0

The DMX-512 protocol.

DMX packet



Etc, etc.

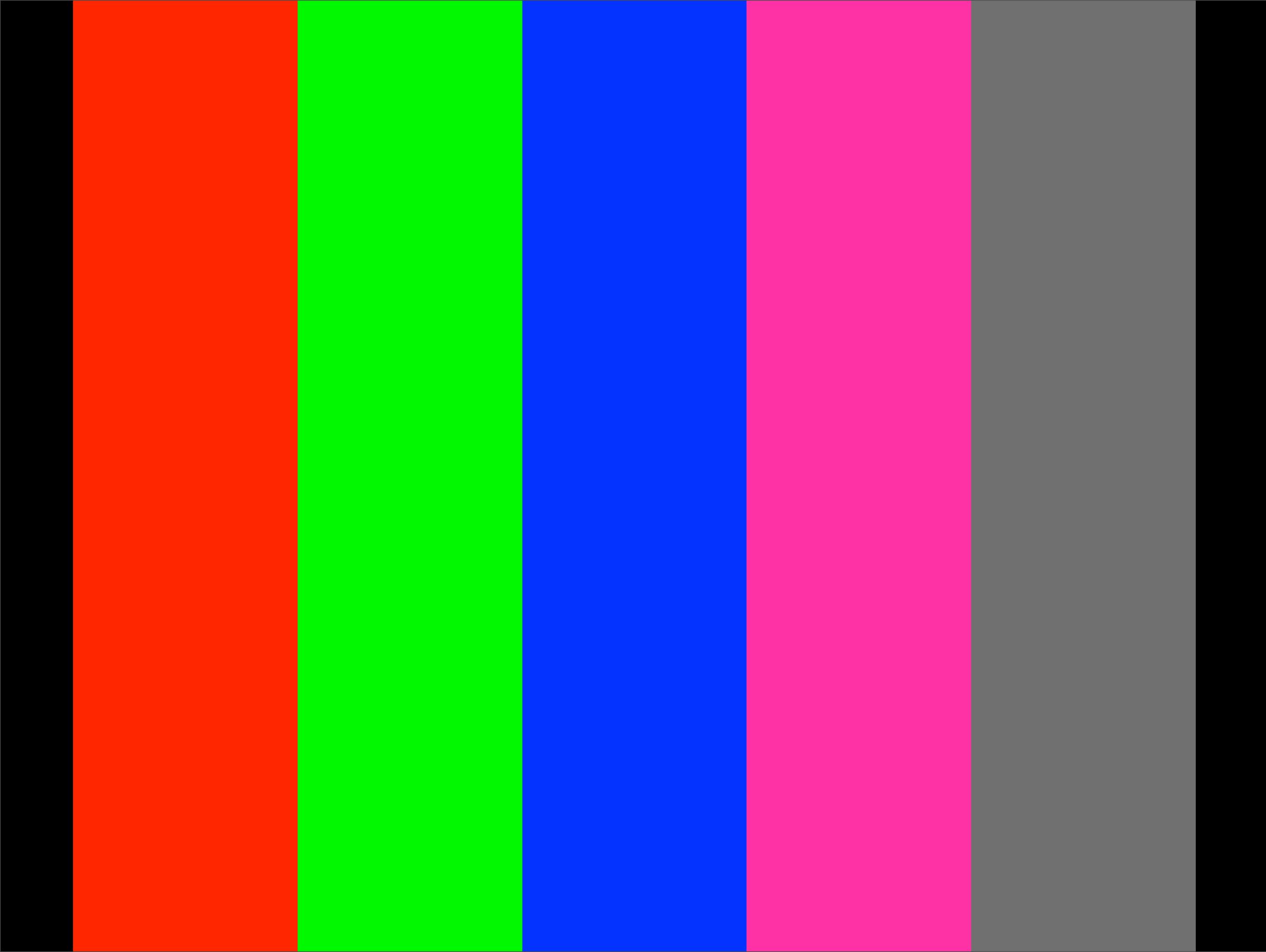
512 of them, but you can send fewer.

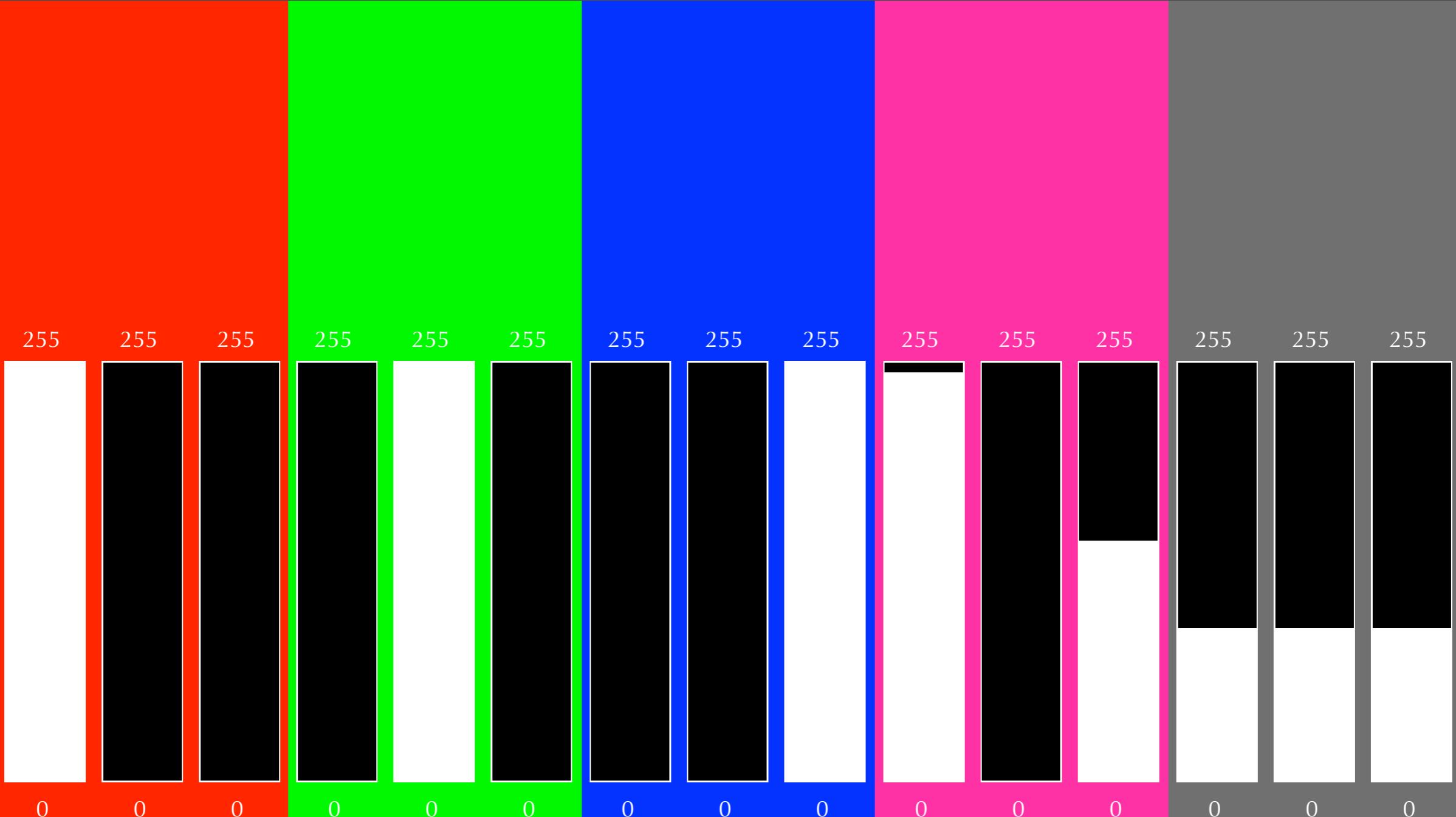
DMX packet

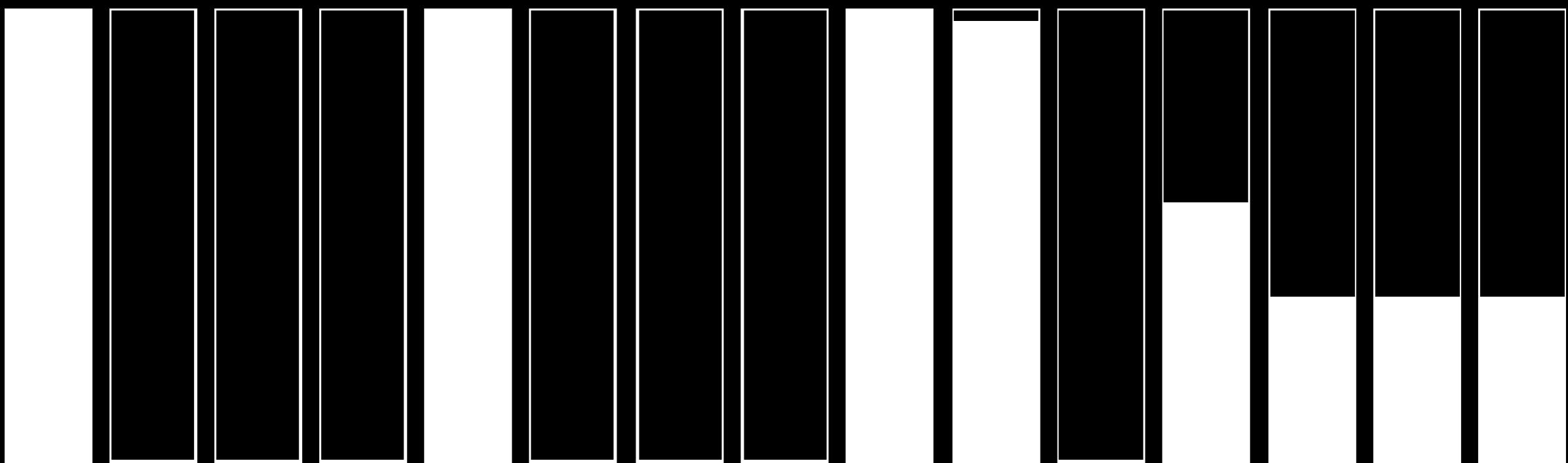
172 215 125 229 64 236 (Etc, etc)

512 of them, but you can send fewer.

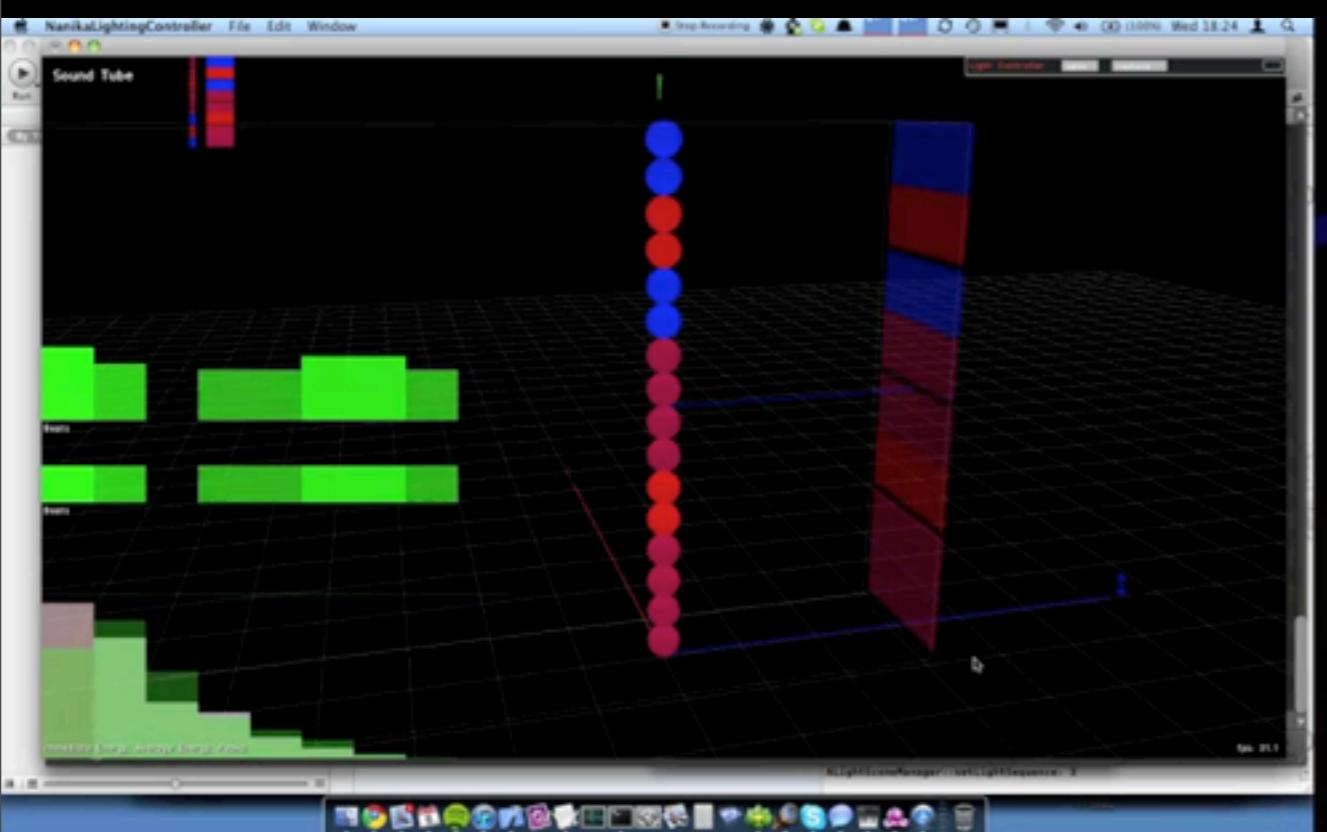
Color







255 0 0 0 255 0 0 0 255 253 0 149 94 94 94



Always check the manual for your fixture, it might have a channel for intensity, for blink-rate, etc.

In short, RTFM.

Daisy Chaining.

UTION

ELECTRIC SHOCK
DO NOT OPEN

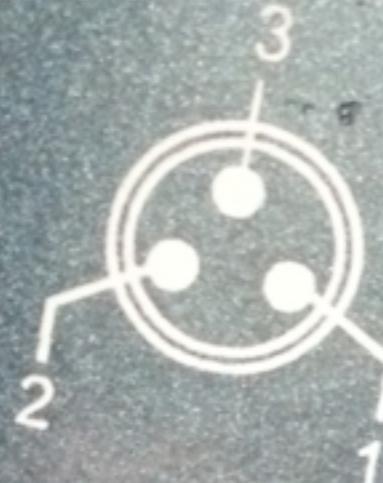
st not be continuously
me under 20A

APPARATUS MUST
NOT BE OPENED
JE NE DE
SÉRIQUE
MADE IN PRC

0A max

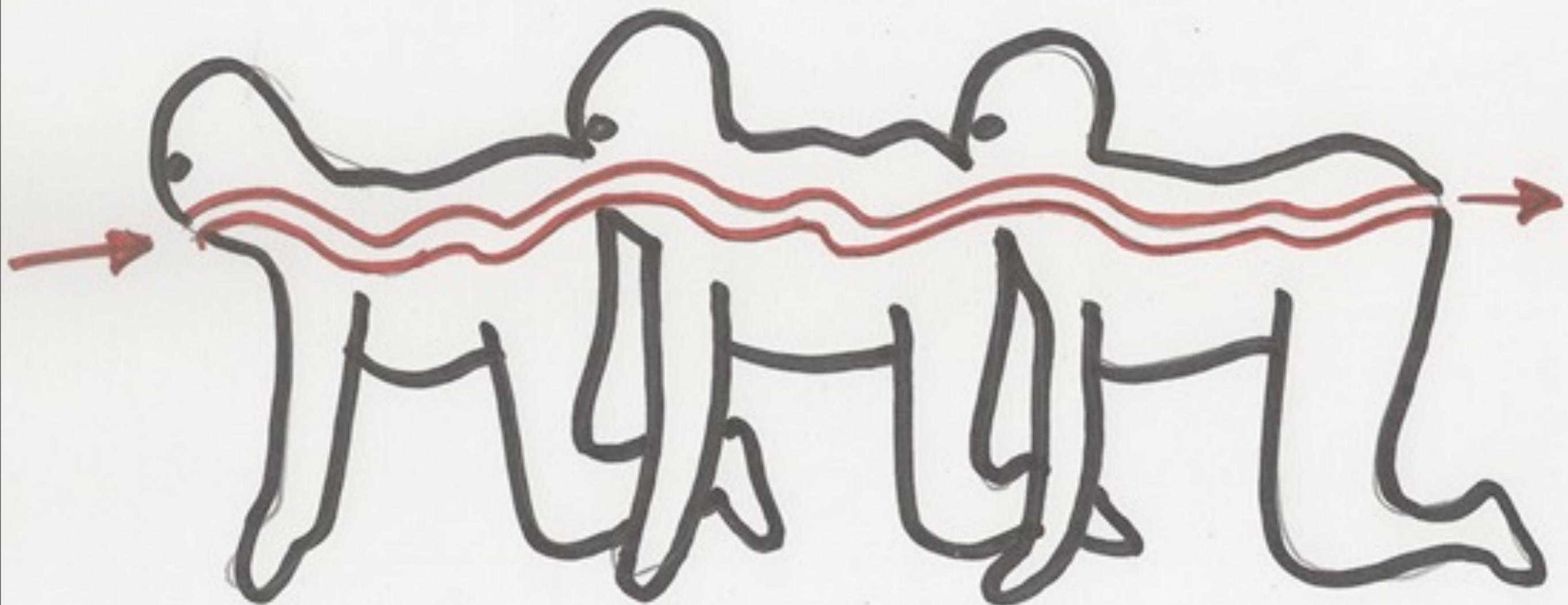
DMX IN

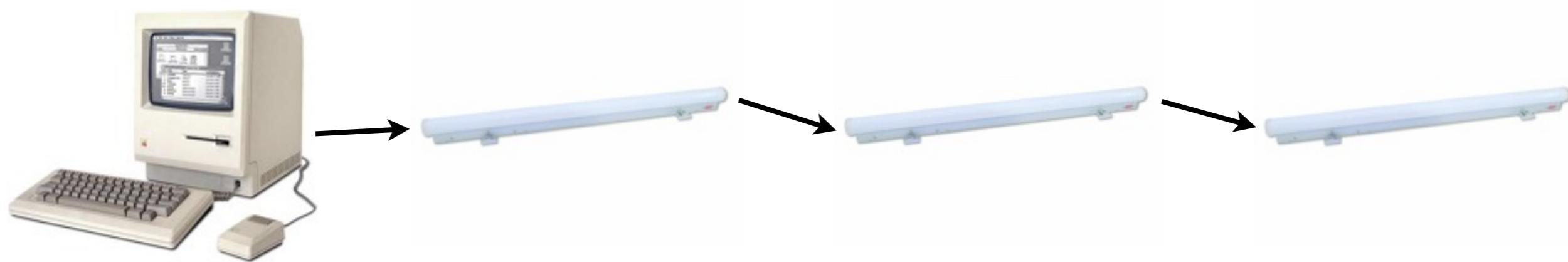
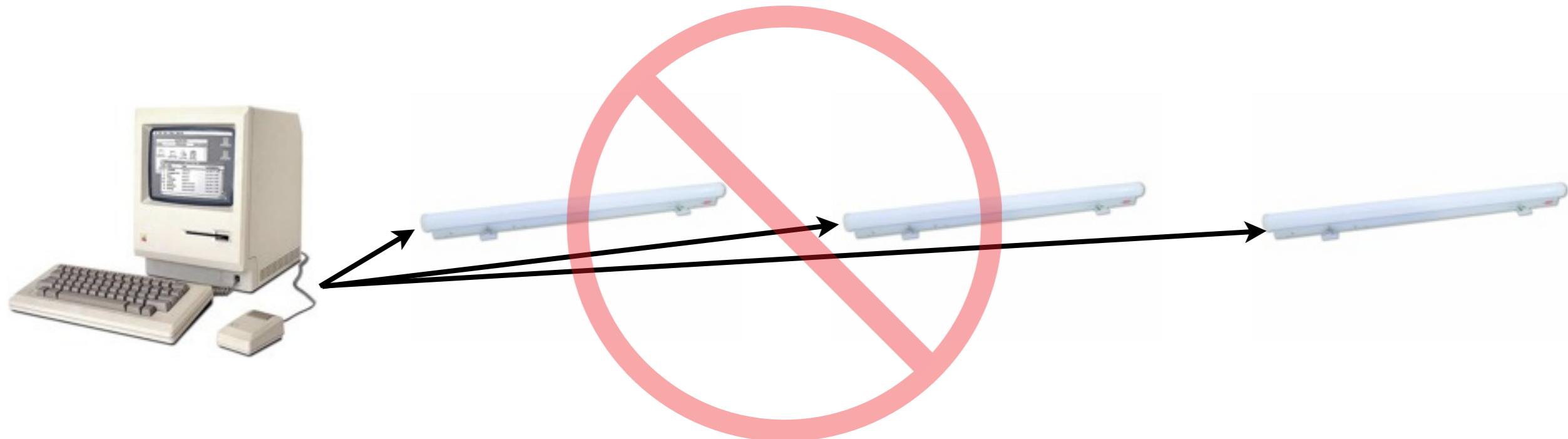
DMX OUT



1= Ground
2= Data"-"
3= Data"+



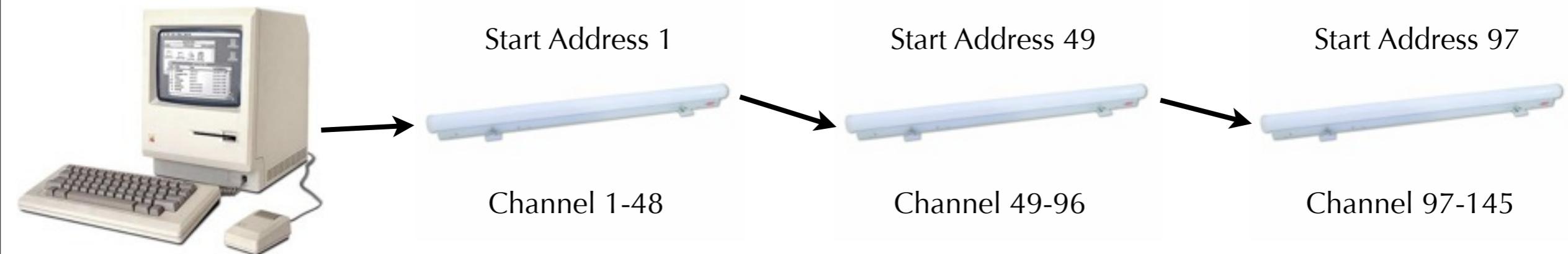




So how does each light know
which channel(s) to listen to?

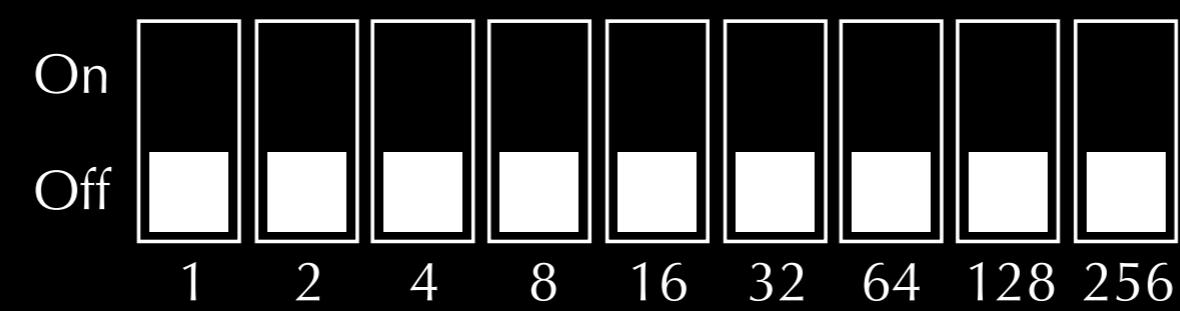
The DMX Start Address

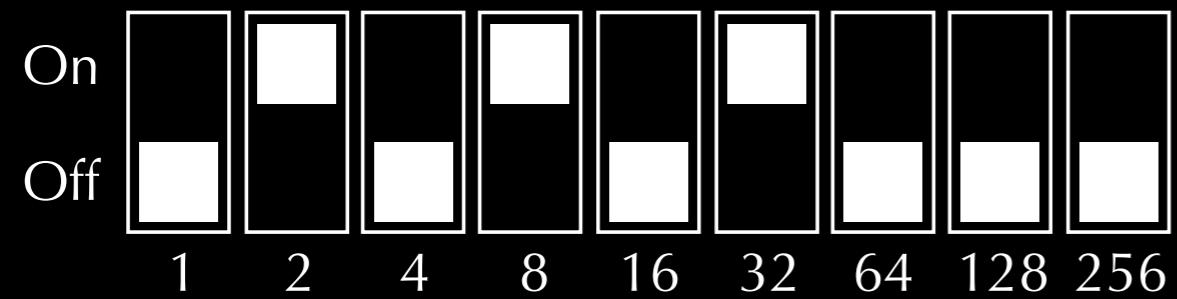
Each tube needs 48 channels.



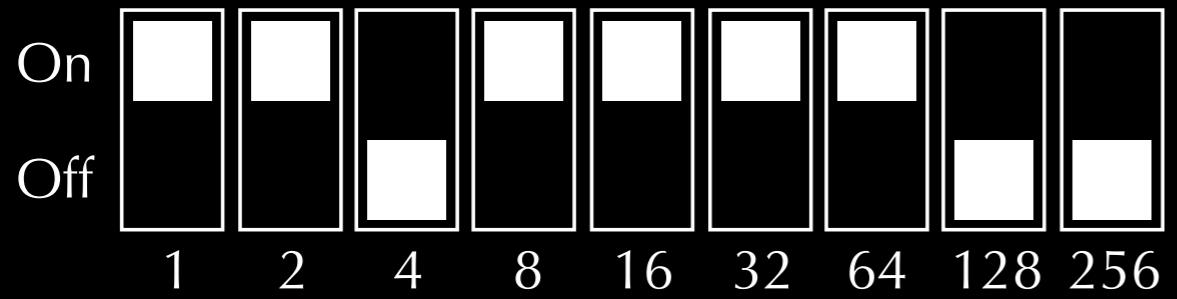
DMX ADDRESS



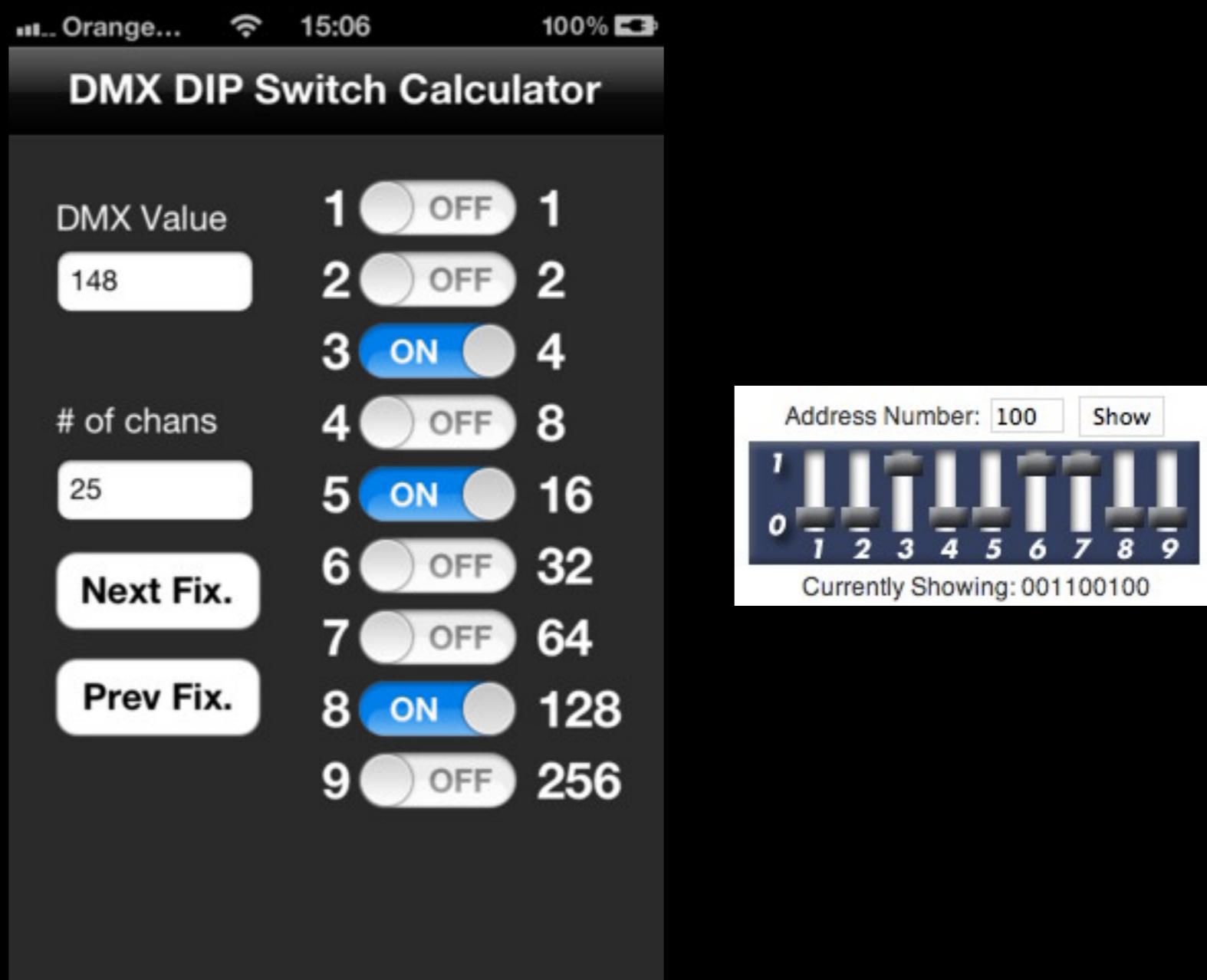




$$= 2 + 8 + 32 = 42$$

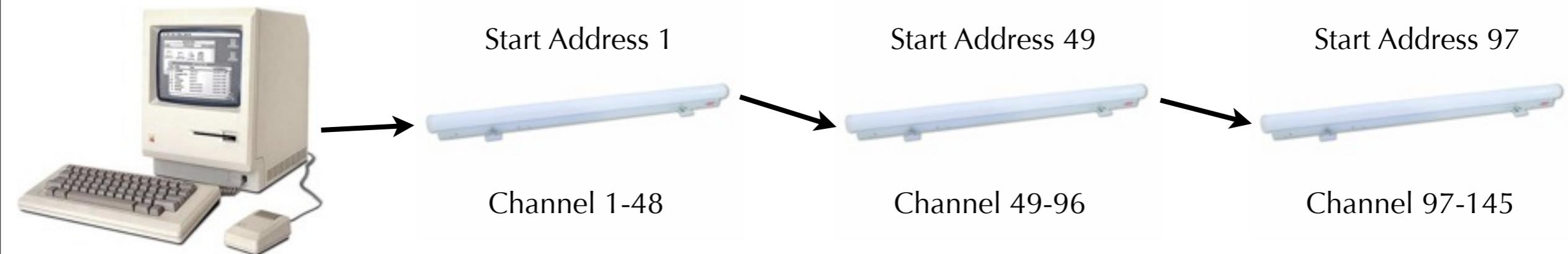


$$= 1 + 2 + 8 + 16 + 32 + 64 = 123$$



DMX Universes

Each tube needs 48 channels.





Each DMX-512 Universe has 512 channels. Think:
Universe == DMX output.



Dealing with multiple universes is usually done by using Artnet boxes.
(Ethernet to DMX)

If you have any questions at all:

email: andreas@nanikawa.com

twitter: [@nanikawa](https://twitter.com/nanikawa)

Code time.

<https://github.com/andreasmueller/>

DMX-Lighting-Workshop-Examples