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Controlling ELM w/ OSC and TouchOSC

Create a convenient, user-facing control surface for your ENTTEC Pixel systems

Introduction

In this guide we are going to learn how to use the OSC protocol and 3rd party application Touch OSC to create a simple control surface for your ELM pixel system. The goal is to make a user-facing control panel that we can pass to a non-technical end user so they can control their lighting rig, without needing to have a working knowledge of the ELM software.


1 - Sample TouchOSC Control Panel

This is a panel with 5 pre-set patterns, and a master intensity control. Using the following steps, you can create a custom control surface as simple or complex as you need.

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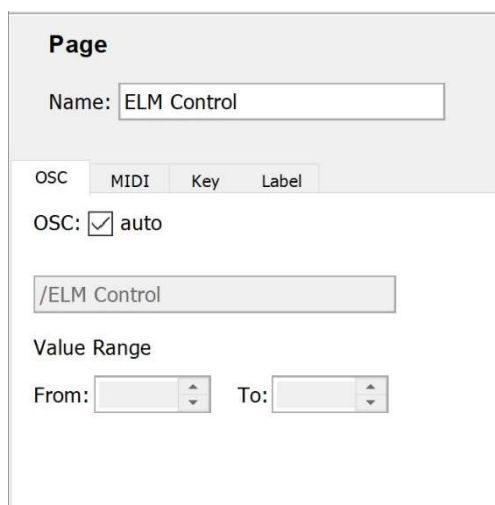
Creating the Touch OSC layout

For this part, you'll need TouchOSC Editor – which is available from the Hexler website. This app lets you design your control surface on a computer, and then transfer that over to your tablet/phone.

When you open the editor, you will see a blank black box representing your device screen. Begin by naming this screen and selecting the screen size.
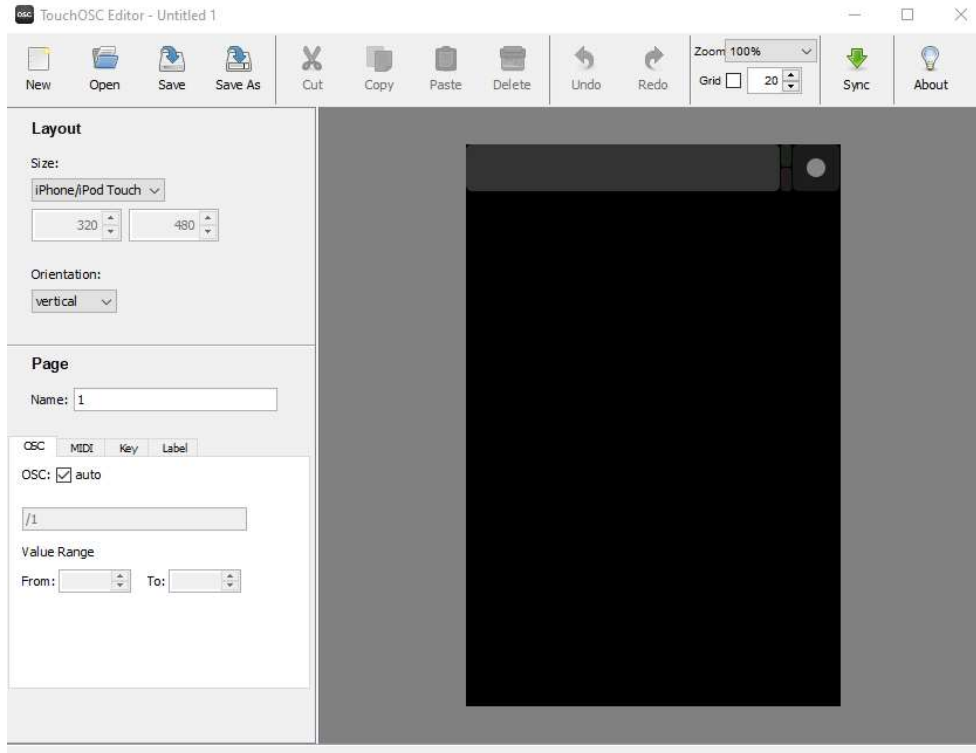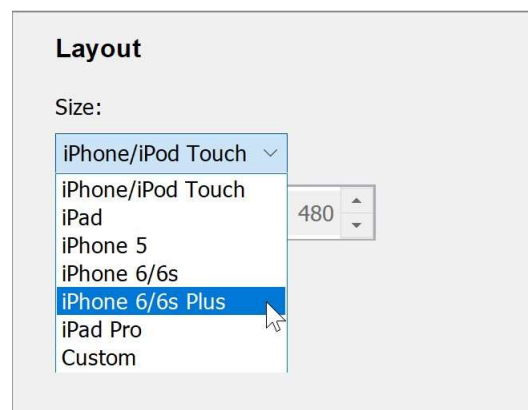

2 - TouchOSC Editor

TouchOSC editor has multiple pre-set sizes applicable for Apple devices, for many smart phones the iPhone 6 plus is a close match. Alternately you can enter your own custom values to match the screen resolution of your device.


*3 - TouchOSC Editor Screen Size Selector*

4 - TouchOSC Editor Screen Size Options

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Next, you will need to add a fader to control intensity in ELM. To do this right click anywhere on the black space of your layout. A drop-down list will appear with of all the elements you can add. In this case select a vertical Fader (Fader V).
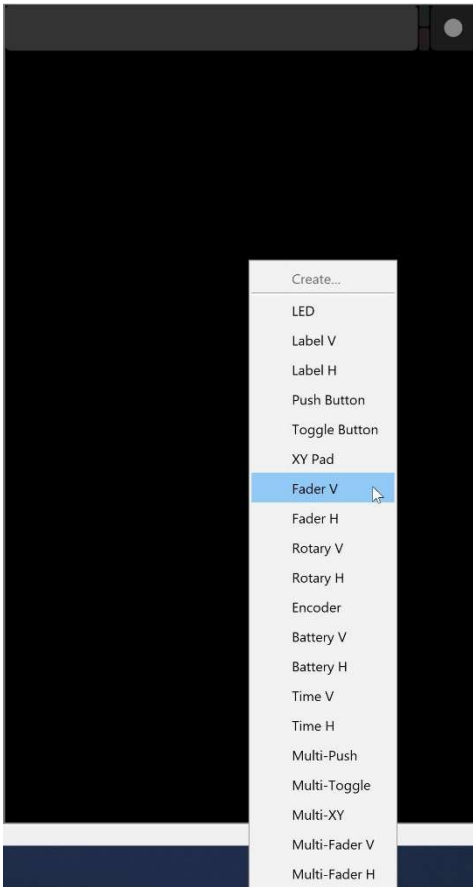

5- Add Element
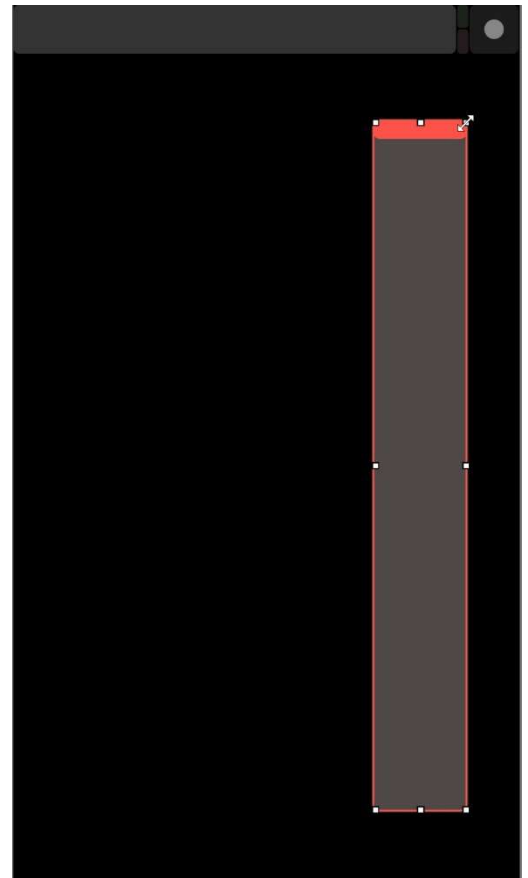
6 - Format Element

Now you can position it where you want and scale it with the re-size markers on the corners and sides.

You can also change the colour and name of your element, allowing for quick and easy identification. Be sure to check the inverted button to ensure your fader moves in the expected direction.

The layout builder always shows elements with the value of 0 so if the solid bar is at the top it will need to be inverted.
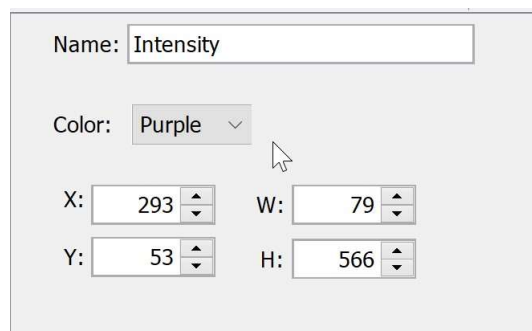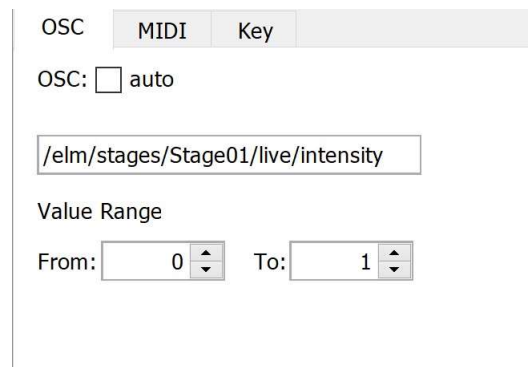


7 - Element Colour Change

Once you are happy with the position, you can now configure the OSC command string. Touch OSC tries to create default strings based on the item's name. You will need to uncheck this allowing you to enter

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your own string. Consult the ELM user manual or the convenient list in ELM under the OSC remote settings page.

For Intensity you will need to enter "/elm/stages/Stage01/live/intensity". Leave light and low values as they are.

8 - Configure Command String
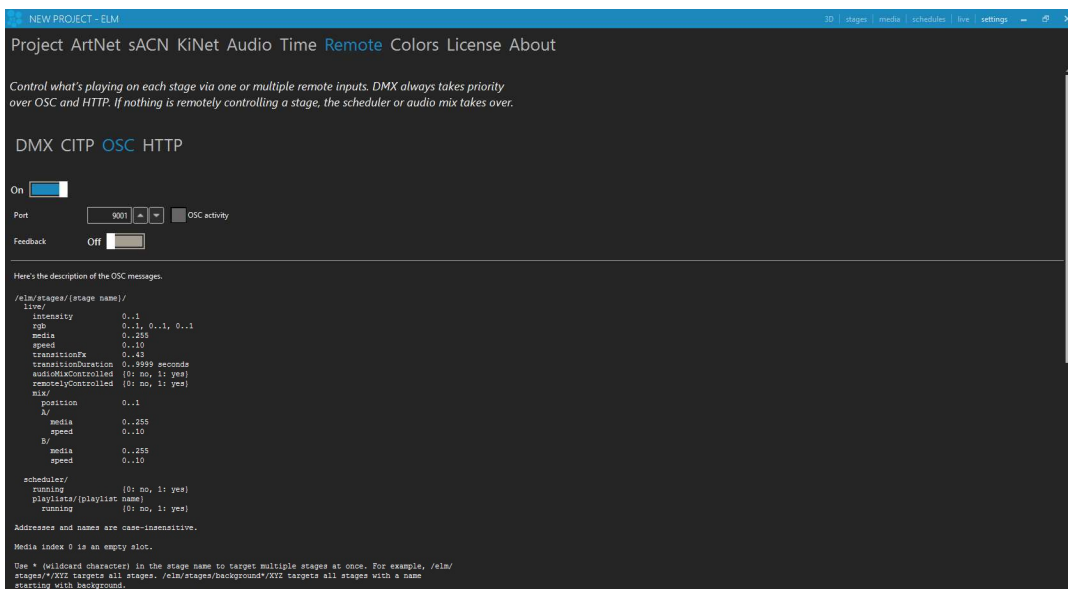
9 - ELM OSC Command Strings

*Note – the OSC string is caps sensitive*

Note – Stage01 refers to the stage you want to control. If you named your stage something different then you need to use that instead. You can also use * to refer to all stages this would look like "/elm/stages/*/live/intensity"

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Now that you have made your intensity fader, you can move on to making buttons to select the media you want to send. A push button is recommended for this. Select it from the same menu used for selecting your fader.

Re-size and move it to a suitable place on your control panel.
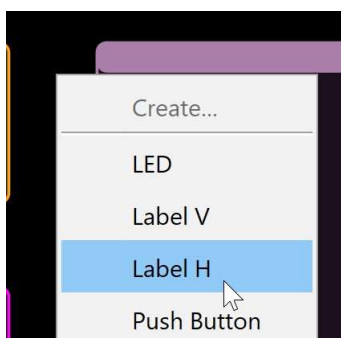

10 - Create Push Button Element
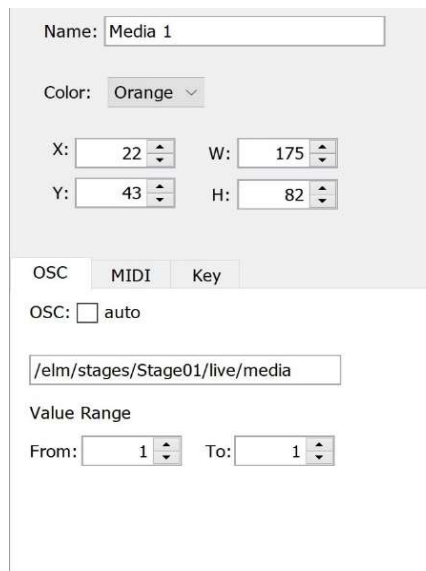
11 - Setting Command String on Media Button

As before you now need to set the OSC command for the new button This is like setting the intensity. Enter "elm/stages/Stage01/live/media" then in the value boxes set them both to be the same. This button will be selecting media slot 1 so set both the high and low values to be 1. If the low value is left at 0 it will act as a momentary switch, only activating the media while the button is held down

Next move on to the remaining 4 buttons. This can be done by repeating earlier steps, however, it is much faster to copy the button you have just made and paste it down. This also makes sure all your buttons are the same size and shape. Any copy and pasted buttons then just need their high and low valued updated to select a new piece of media so the second buttons high and low values should be set to 2, button 3 to 3 etc.

Adding labels is another useful way to keep track of what each element does. These are created in the same way as all other elements. Right click on the black space and select from the drop-down menu as needed.

The text and size can also be edited from the side menu just like other elements.
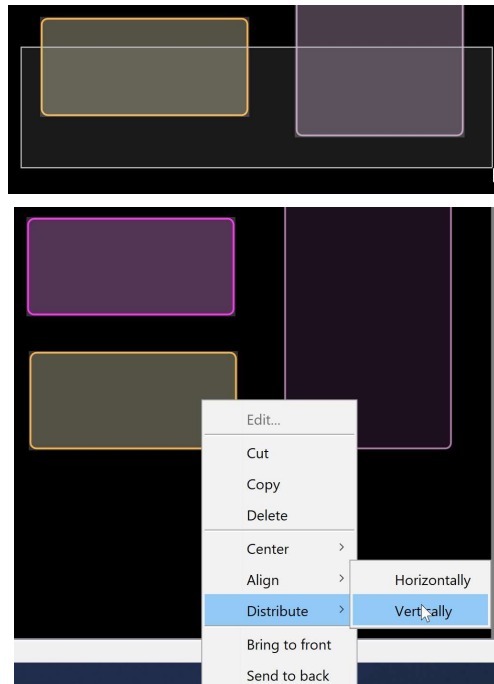

12 - Insert Label

13 - Adjust Label

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Finally tidy up your screen using the align and distribute tools. These are great for giving your space a clean, user-friendly look. Access these by selecting multiple elements, 'drag and draw' over the targets and then right clicking an element. You can then select the desired tools from the drop-down menu.

Once you are happy with your layout, save it and then transfer it over to your phone or tablet, so we can later set this as our layout screen. We'll also show you how to import this directly from your computer a bit later on.

14 - Align Elements

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Configuring ELM for an OSC Remote

You can now shift your attention to the ELM software to prepare it for receiving OSC commands. Open ELM and make your stage using the same name that you have specified in Touch OSC editor (remembering it is case sensitive).
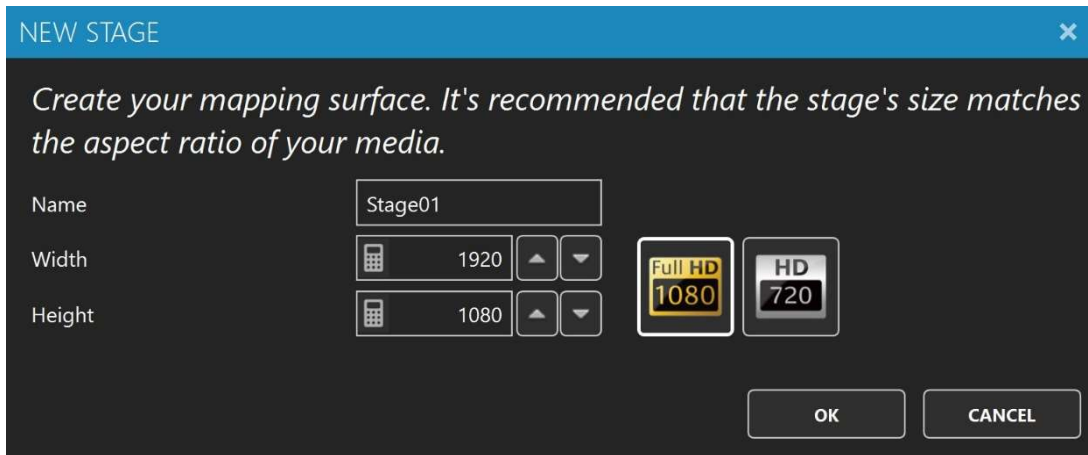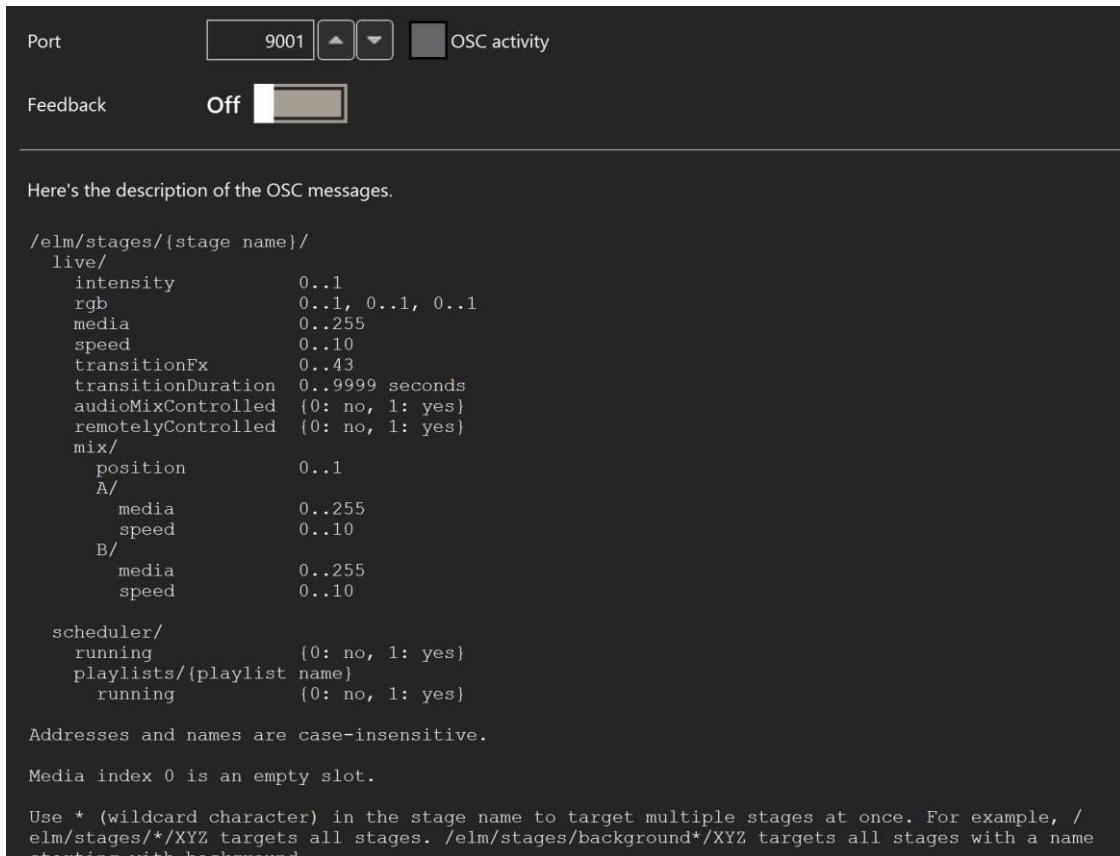

15 - ELM - Create Stage

Then navigate to the OSC remote settings. Path – Settings>Remote>OSC. Simply turn the switch to ON to allow ELM to receive OSC commands.

16 - ELM OSC Tab

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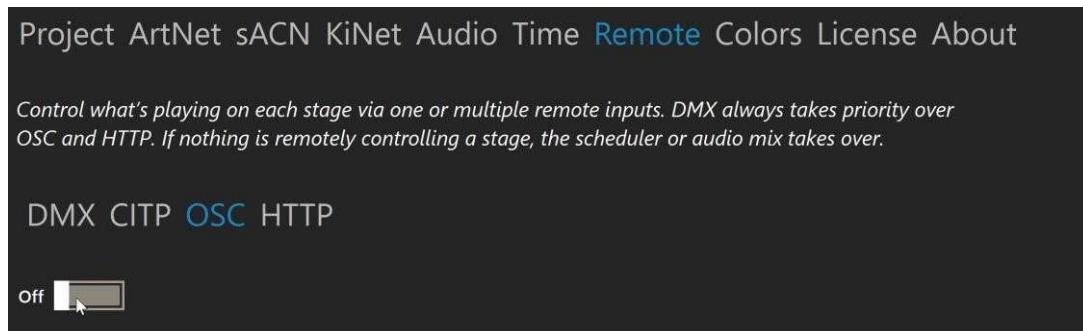
From here you just need note down the port that is being used. The default is 9001 but you can change it if desired. Feedback can be left off as it is not needed for this design.


```
Port              9001  ▲ ▼    ☐ OSC activity

Feedback         Off ▭▭▭

Here's the description of the OSC messages.

/elm/stages/{stage name}/
   live/
      intensity          0..1
      rgb                0..1, 0..1, 0..1
      media              0..255
      speed              0..10
      transitionFx       0..43
      transitionDuration 0..9999 seconds
      audioMixControlled {0: no, 1: yes}
      remotelyControlled {0: no, 1: yes}
      mix/
         position        0..1
         A/
            media        0..255
            speed        0..10
         B/
            media        0..255
            speed        0..10

   scheduler/
      running            {0: no, 1: yes}
      playlists/{playlist name}
         running         {0: no, 1: yes}

Addresses and names are case-insensitive.

Media index 0 is an empty slot.

Use * (wildcard character) in the stage name to target multiple stages at once. For example, /
elm/stages/*/XYZ targets all stages. /elm/stages/background*/XYZ targets all stages with a name
starting with background
```

17 - ELM OSC Settings

Note – the complete list of commands for controlling ELM is also listed here so you do not have to go searching through the user manual.

Lastly make sure your media is in the same slots used in your TouchOSC layouts buttons.
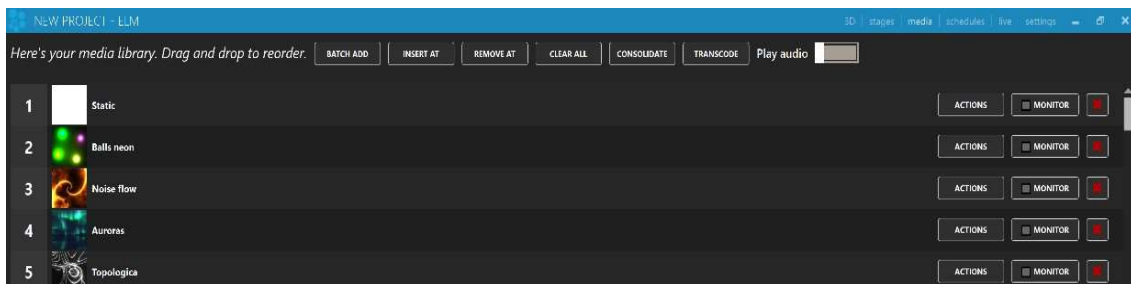
18 - ELM Media Slots

That's it, now ELM is set up ready to be able to receive OSC triggers from your phone or tablet.

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Connecting Your Phone/Tablet to Your Computer

To connect your computer to your phone, install and run TouchOSC bridge – available from the Hexler website - https://hexler.net/products/touchosc
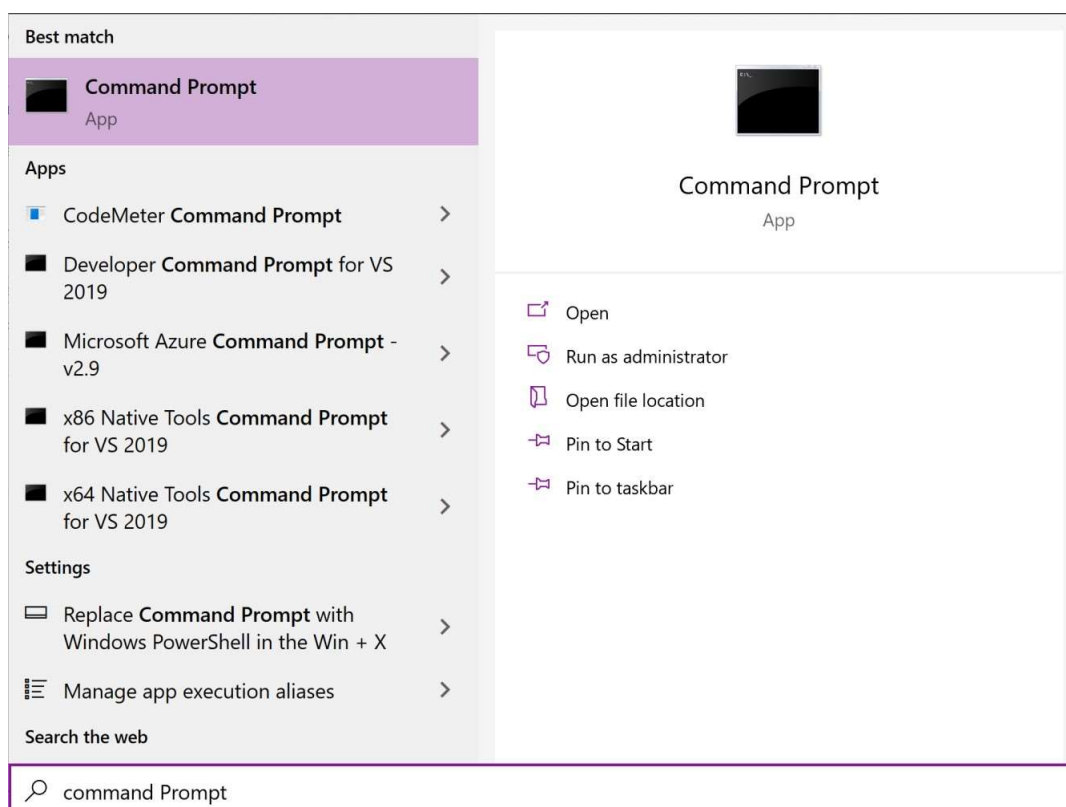This plugin runs in the background and acts as the link between your programs and the TouchOSC app.

You also need to know the IP address of the computer for later steps. There are many ways to do this. Depending on how your Pixels have been connected you can get the IP address from ELM by going to your output settings and seeing the IP address of the adapter you are using to send your Art-Net.

19 - ELM Output Settings

Another reliable way of getting the IP address of your computer is to open command prompt which can be done by pressing [start] and typing "command prompt"

20 - Command Prompt

Then simply type "ipconfig/all" and press [ENTER].

`>ipconfig/all`

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Then scroll up till you see the adapter you are using and look for the IPv4 settings.

```
Ethernet adapter Ethernet:

   Connection-specific DNS Suffix  . :
   Description . . . . . . . . . . . : Realtek PCIe GBE Family Controller
   Physical Address. . . . . . . . . : 2C-FD-A1-75-DC-9C
   DHCP Enabled. . . . . . . . . . . : Yes
   Autoconfiguration Enabled . . . . : Yes
   Link-local IPv6 Address . . . . . : fe80::386f:3d42:e97a:2512%2(Preferred)
   IPv4 Address. . . . . . . . . . . : 192.168.1.20(Preferred)
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
```

3 - IP Config Results

Now we need to open and configure TouchOSC. Open the TouchOSC app on your phone/tablet. When you first open TouchOSC it will show one of the many defaults loaded layouts. To change these settings, simply press the circle in the top right corner of the screen and go to *Layout* to select your own.

22 - Touch OSC Default Layout

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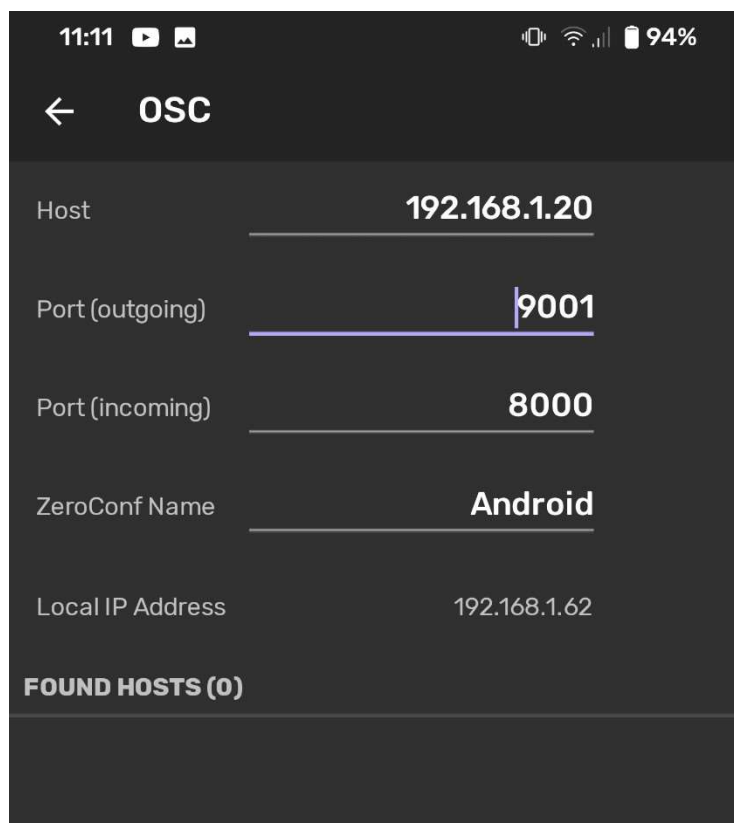For the latest version visit
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Click on the *OSC* tab, under Settings, from there enter the proper details into the different fields. Some devices will be recognized by the app and you can simply click on them for the app to auto fill the necessary settings. If not, enter the details manually

- **Host** - is the IP Address of your computer, which we previously determined to be 192.168.1.20
- **Port (outgoing) -** needs to match the port that ELM is expecting to receive on, which as we saw before, defaulted to 9001


23 - ELM OSC Port Setting

- **Port (incoming)** - since our control panel is not receiving any feedback, this setting is irrelevant
- **ZeroConf Name -** you can change this to give your device a unique name

24 - OSC App Settings

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Next the TouchOSC Bridge settings need to be configured. Enter the IP address of the computer in TouchOSC Bridge. As with the OSC tab this will auto discover some computers but if it does not then just enter the IP manually.
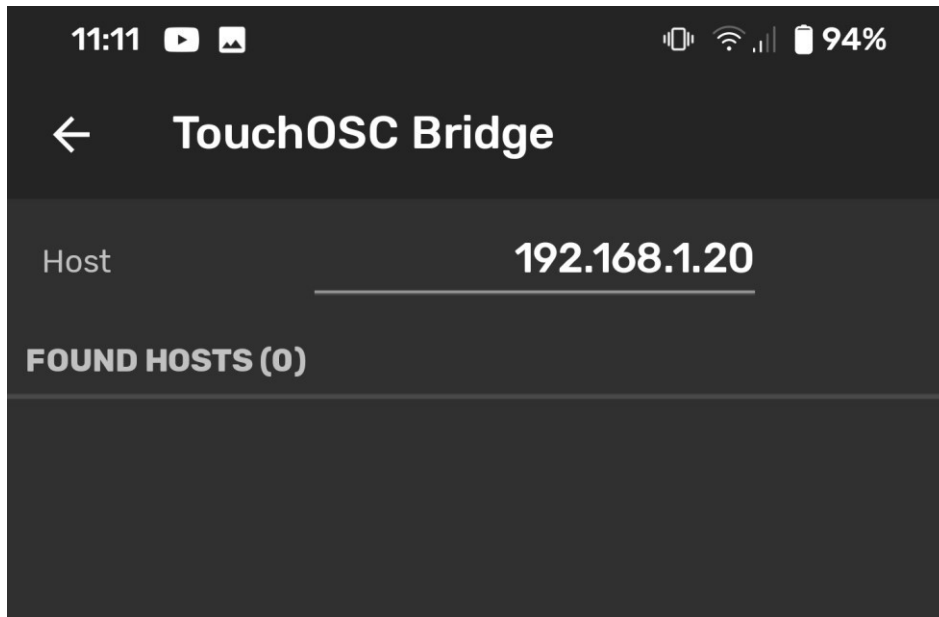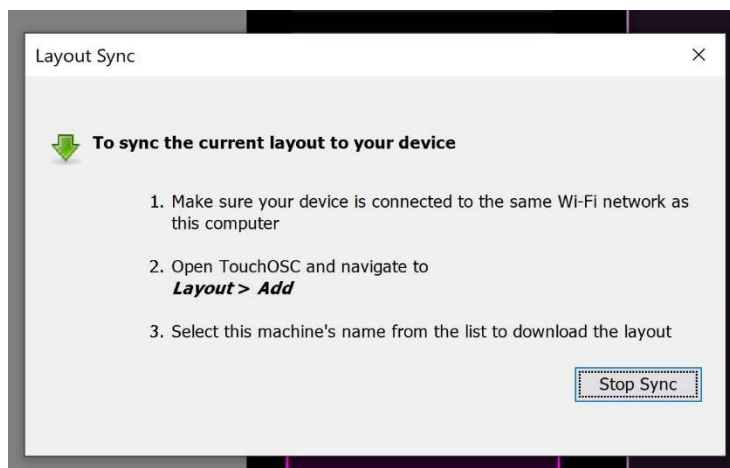

4 - TouchOSC Bridge Setting

Once those settings are configured, go back to your computer and TouchOSC editor.

Click the sync button and wait for the pop up to appear.
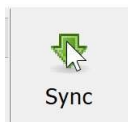
26 - TouchOSC Bridge Setting

Now that the editor is ready to synchronise, switch back to your device running the TouchOSC app, enter the layout menu and select "Add from Editor." Enter the IP address of the computer running the editor and press download. You can then scroll down the list to find the layout you imported and select it but tapping on it so that it is checked. This is another way to import your layout onto your phone/tablet, besides to just transfer the file across manually.
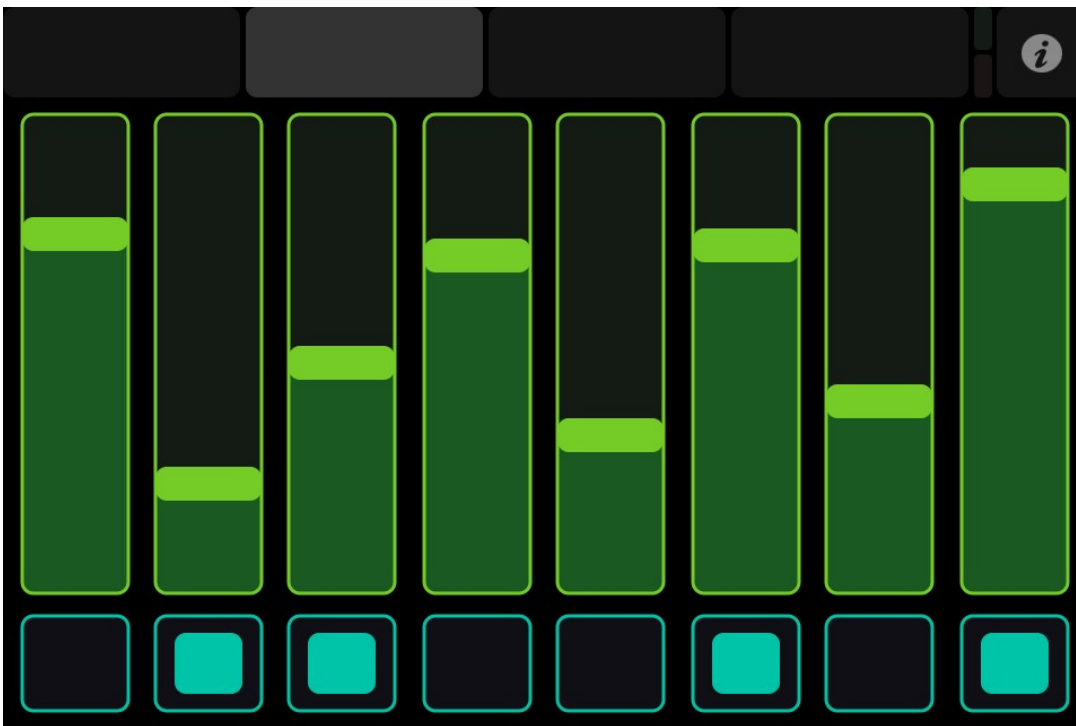

27 - TouchOSC Bridge Setting

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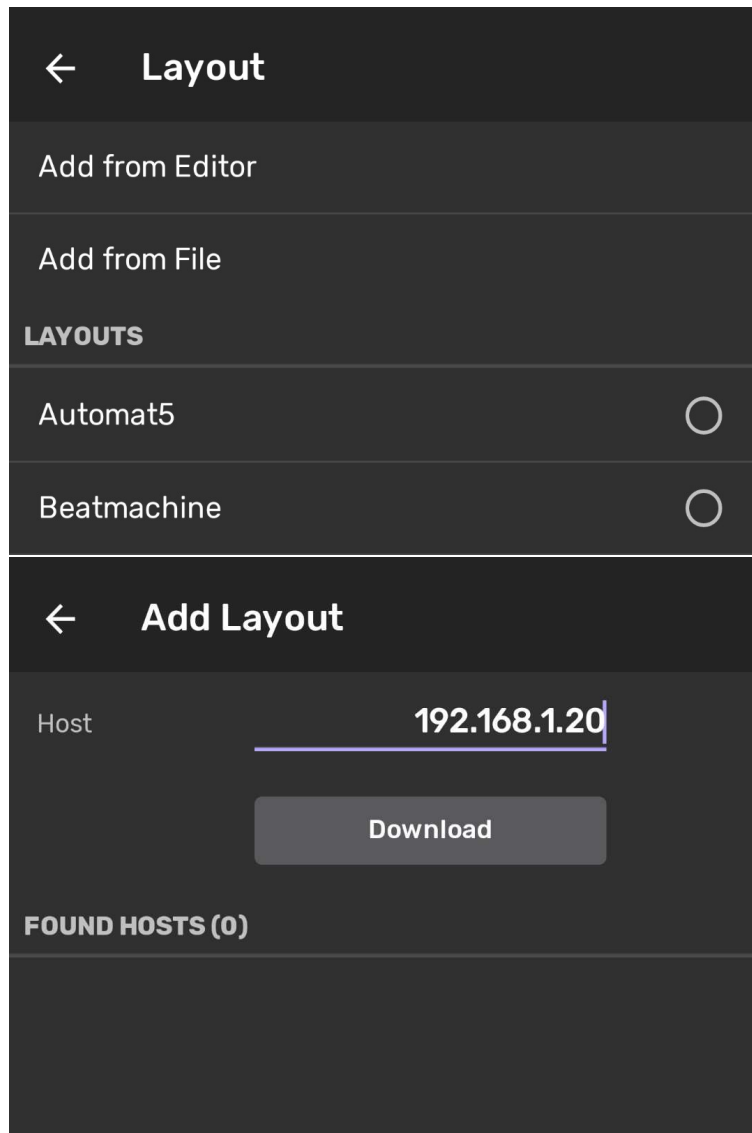
5 - Download Layout

Head back out of the settings on your phone/tablet by using the back arrow and pressing "Done." You should be able to see and use your layout. You can now freely move the fader, press the buttons, and have ELM respond and reflect your changes on its live tab. You can also check if ELM is receiving OSC by looking to see if the box has gone green in the OSC remote tab.

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That brings us to the end of this guide, by the end, you'll have a control panel on your phone or tablet to give you or your client a simple, yet professional control surface for manual control over their pixel mapped setup. And this is just the beginning. With a bit of time and ingenuity you can create even more sophisticated control panels.

Check out these sleek control surface examples from the Hexler website:

29 – TouchOSC Examples

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