

Light-O-Rama S5

Controlling A Moving Head Light

Version 1.00

July 2021



This document will show you how to control moving head lights using Light-O-Rama S5 software.

There are many moving head lights on the market; however, most share some common features:

- they can be controlled via DMX (more on DMX in the next section)
- they use a block of DMX channels to control the light fixture. Typically, this will be somewhere between 7 and 22 channels.

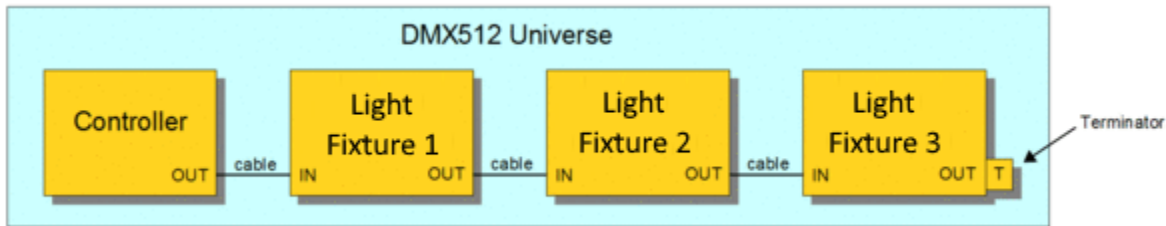
There are several ways to physically link DMX fixtures to the rest of your Light-O-Rama network. 5 different approaches are documented here. If you already know which approach you want to take, there is no need to read the entire document, just go straight to the relevant section. Screen shots are taken from version 5.6.2 of the Light-O-Rama software suite. The screens may look a little different in earlier versions.

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DMX Overview

DMX512 is a standard for digital communication networks that are commonly used to control stage lighting and effects. It was initially developed by the US Institute of Theater Technology in 1986.

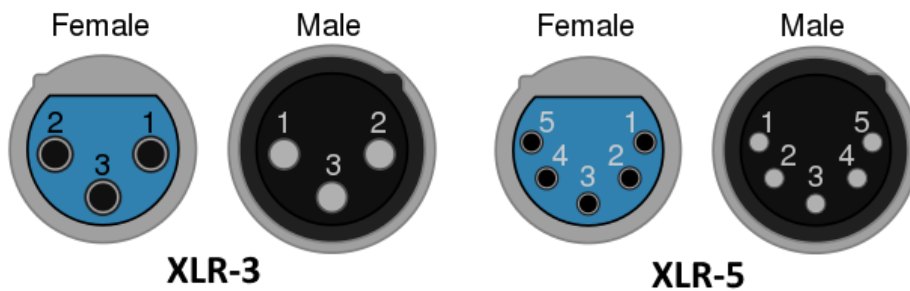


A network consists of a single DMX512 controller – which is the master of the network – and one or more light fixtures, fog machines, or other DMX devices. A DMX512 network is called a "DMX universe". Each OUT connector on a DMX512 controller can control a single universe. Each universe operates up to 512 channels, and each channel can have a value between 0 and 255. A lighting controller simply changes the value of the channels. How the channel value is used is up to the DMX fixture. It could be the actual intensity of the light, or it could be that 0 means 'all the way to the left' and 255 means 'all the way to the right' for a lighting device with a moving head.

DMX Cabling

The maximum length of all cables in a DMX512 network is between 1,000 and 1,500 feet, depending upon the number of DMX fixtures daisy chained. The maximum number of 'loads' (usually fixtures) in a daisy chain is 32. It is important to use good quality cables and make sure the network is terminated. The specification requires a 'terminator' to be connected to the final OUT or THRU connector of the last fixture on the daisy chain, which would otherwise be unconnected. A terminator is a stand-alone male connector with an integral 120 Ω resistor connected across the primary data signal pair.

DMX Connectors



The DMX512 specification calls for the use of 5-wire cables using XLR-5 connectors. These cables tend to be very expensive and two wires in the cable are almost never used. It is also inconvenient for theaters to keep separate sets of cables for DMX and audio. For these reasons, most DMX512 fixtures you will see use 3-pin XLR microphone connectors. Adapters that convert between XLR-3 and XLR-5 are readily available. Microphone cables without termination will work in environments with short (100' or so) cable lengths.

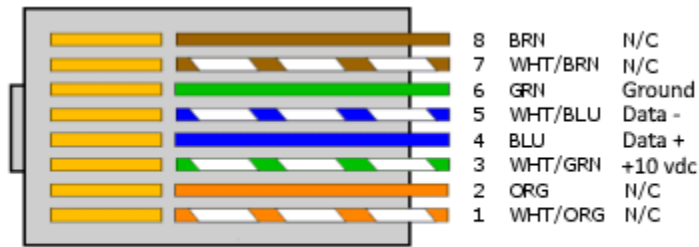
It is also possible to send DMX over Cat-5 cables. For example, the Light-O-Rama PixCon16 controller has 4 RJ-45 jacks, each of which can control a DMX universe. Some Light-O-Rama controllers can also receive DMX on their RJ-45 jack – acting as a DMX fixture (for more information see Appendix 1).

There are 2 different pinouts in use on Cat-5 cables used for DMX:

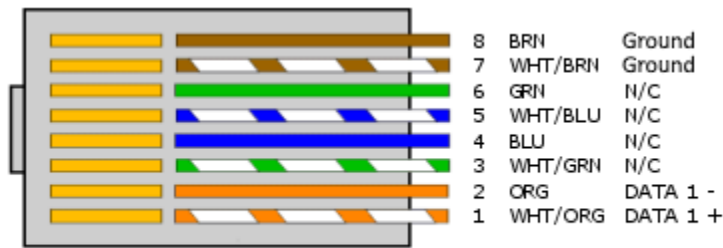
- Light-O-Rama sends data on pins 4 and 5

- The DMX standard (also known as ESTA) sends data on pins 1 and 2

The PixCon16 has jumpers on the board allowing you to configure the connectors for either standard. You can find RJ-45 to XLR-3 adapters in the Accessories section of the Light-O-Rama store.



Light-O-Rama Standard



ESTA Standard

Channel Assignment

DMX fixtures usually have several channels assigned to them. You generally set the base address (channel number) of the fixture, and then that address and perhaps the next 8 are also assigned to the fixture. Consult the documentation for your DMX light fixture on how to set the base address, the number of channels used, and the meaning of each channel.

Some moving head lights can be configured with 2 different channel counts:

- A lower channel count in which pan and tilt are each assigned a single channel
- A higher channel count in which pan and tilt are each assigned 2 channels for finer grained control of movement



Choosing the lower channel count option will make it easier to use the fixture with Light-O-Rama software.

Example Fixture

In the setup examples that follow, we will configure a moving head light that has 9 and 14 channel modes. We will utilize the 9-channel mode – which is set via the switches on the front panel. This product is available from Amazon using this link:

<https://www.amazon.com/Lixada-Lighting-Professional-Channels-100-240V/dp/B01DXK33FC>

There is a helpful YouTube video demonstrating how to use these lights with a DMX console:

https://www.youtube.com/watch?v=X-vSXeuWwA&ab_channel=LearnLizard

Light-O-Rama does not endorse this product. We are simply using it as an example.

The channels for this fixture are as follows (yours will probably be different):

Channel	Description	Values	Function
1	X Axis	0-255	Pan
2	Y Axis	0-255	Tilt
3	Master Control	0-8	Light off
		8-135	Dimming (8=low, 135=high)
		136-240	Strobe (136=slow, 240=fast)
		241-255	Full on
4	R LED Dimming	0-255	Dimming dark to bright
5	G LED Dimming	0-255	Dimming dark to bright
6	B LED Dimming	0-255	Dimming dark to bright
7	W LED Dimming	0-255	Dimming dark to bright
8	Speed	0-255	XY motor speed
9	Reset	150-200	

This fixture, like many others, has a sound-reactive mode, along with several other modes. However, when it detects a DMX signal on the input port, it will automatically switch to DMX mode. So, there is no need to set the mode from the fixture's control panel.

Gobo

While the example fixture does not contain a gobo, some moving head lights do. A gobo wheel is used to project a pattern of light. For fixtures that have them, there will typically be several patterns to choose from, and a DMX channel will be dedicated to selecting the desired pattern.



Physically linking to DMX-512

There are several ways to generate a DMX signal from your computer, thus creating a DMX universe. Some of these approaches are shown here:

<https://www1.lightorama.com/dmx-controllers/>

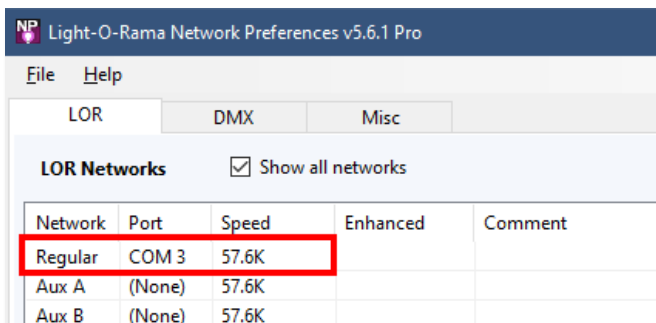
Light-O-Rama iDMX-1000



A Light-O-Rama iDMX-1000 controller attaches to your LOR network and translates LOR commands to DMX commands. In the diagram below, (3) is a Light-O-Rama USB adapter, and (6) is the iDMX-1000. In this scenario, your DMX fixtures (7) would be set up in your S5 preview as LOR devices with a unit id and circuit.



In Network Preferences, only the Regular LOR network needs to be configured (assuming the iDMX-1000 is connected to your first LOR USB adapter).

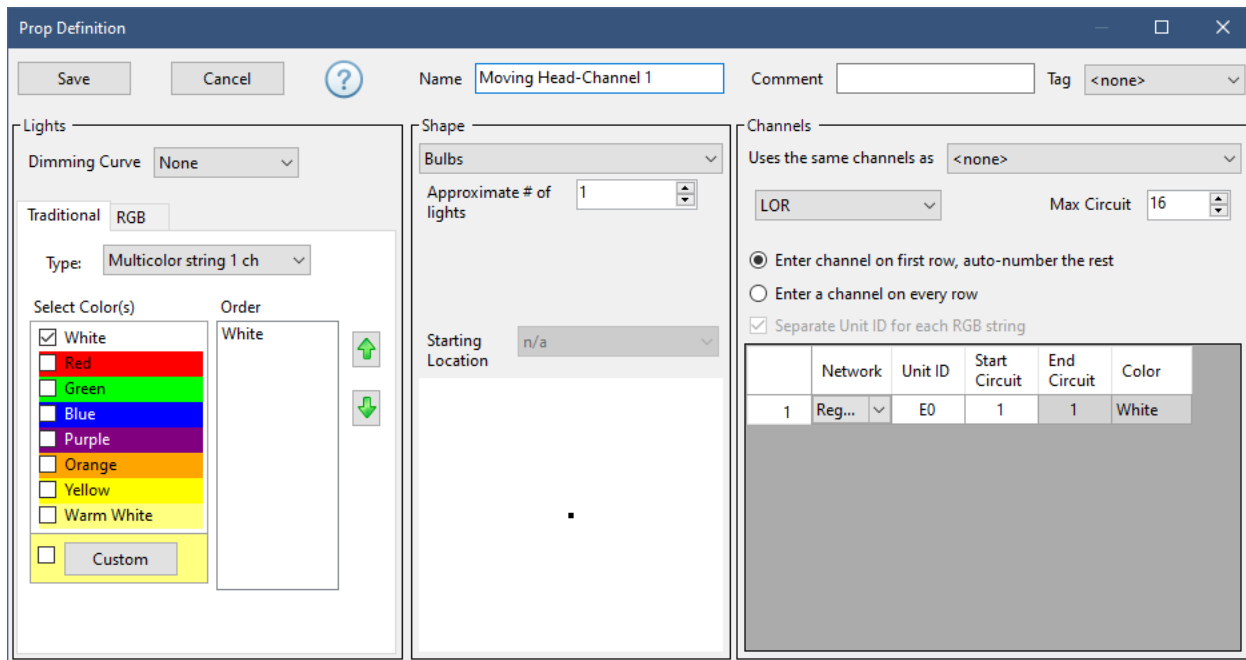


In your preview, configure a prop for each channel. Use the Bulb shape (with a single bulb) if you want to see when the channel is on during preview playback, otherwise use the Hidden shape. The fastest way is to create a prop for the first channel, then use the copy function to create the other channels.

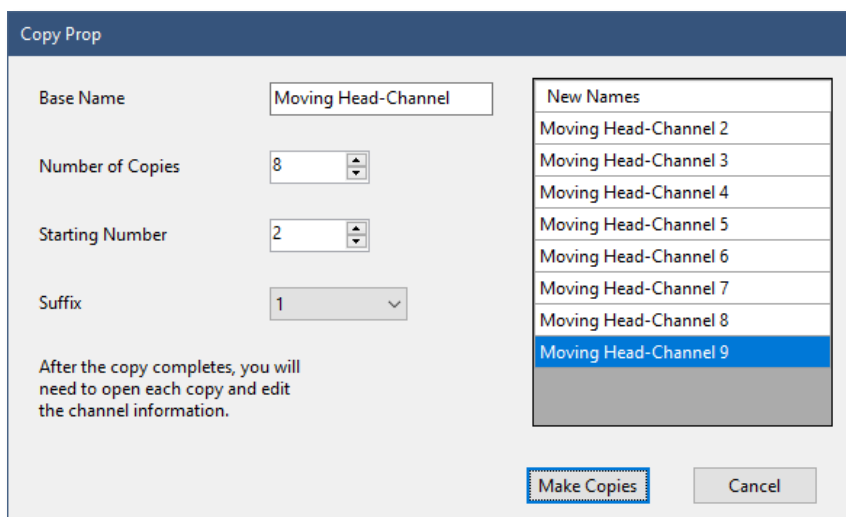
As shipped from the factory, the iDMX-1000 is set to unit id E0. In this configuration, it actually utilizes 16 unit ids -- E0 through EF -- to control DMX channels 1-256. A complete mapping is in the back of the iDMX-1000 manual; however, the following table shows how the first 64 channels are mapped:

Unit Id	Circuit															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
E0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
E1	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
E2	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
E3	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64

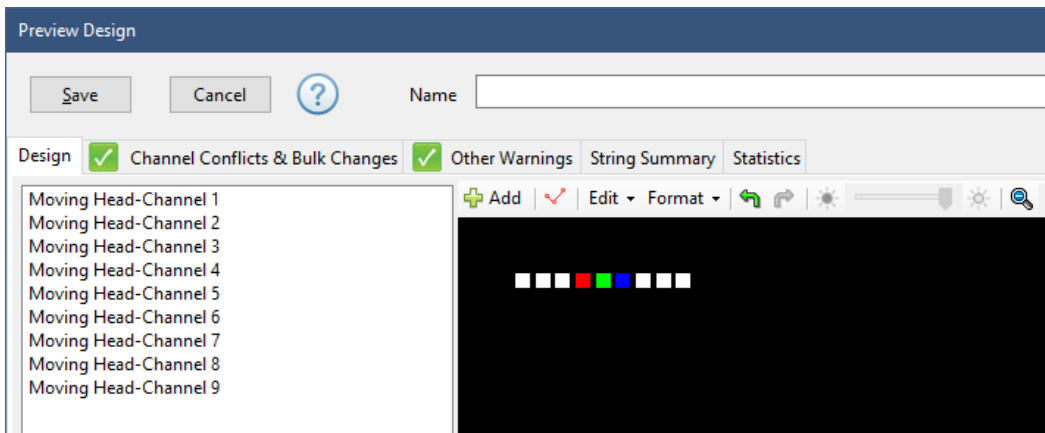
For our 9-channel example fixture, DMX channel 1 corresponds to unit id E0, circuit 1 on the iDMX-1000 controller.



Now use the Copy function to create the other 8 channels:



Now modify channels 4, 5, and 6 so that the colors are red, green and blue respectively – so that they match the fixture (red, green, and blue may be on different channels in your fixture – check the documentation). Your preview should now look something like the following:



And the String Summary tab shows:

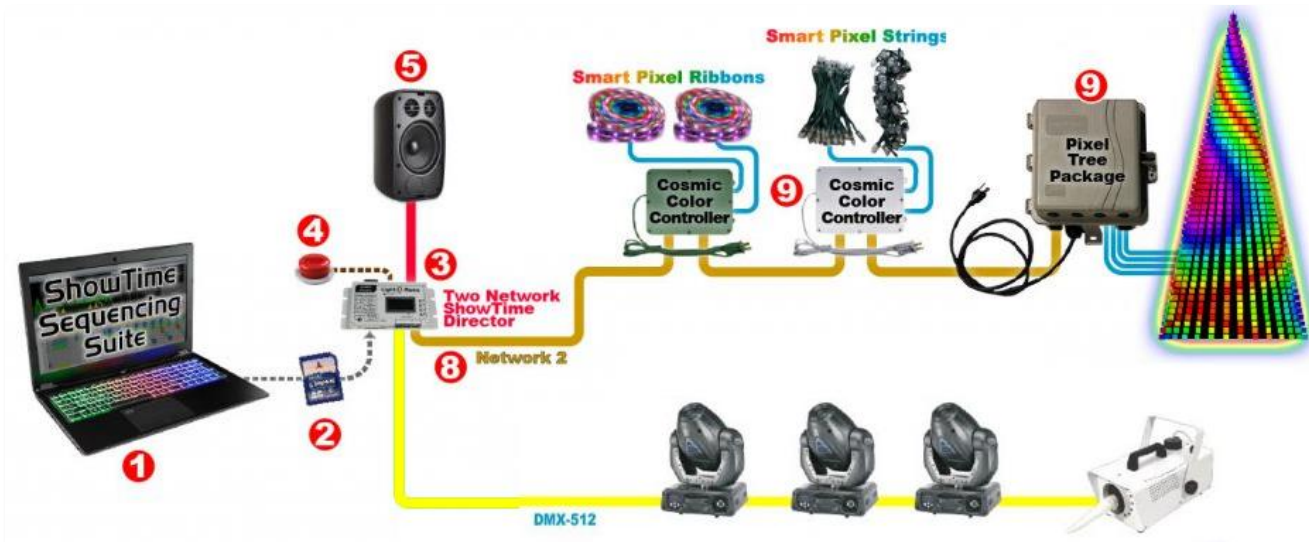
The screenshot shows the 'String Summary' tab in the 'Preview Design' window. It displays a table with the following columns: Prop, Item #, Lights, Bulb Shape, Dimming Curve, Device Type, Network, Unit, Start Circuit, End Circuit, Carryover, String Color, and Mass. The table contains 9 rows of data for Moving Head-Channels 1 through 9.

Prop	Item #	Lights	Bulb Shape	Dimming Curve	Device Type	Network	Unit	Start Circuit	End Circuit	Carryover	String Color	Mass
Moving Head-Channel 1	1	Multicolor string 1 ...	Square	None	LOR	Regular	E0	1	1		White	
Moving Head-Channel 2	1	Multicolor string 1 ...	Square	None	LOR	Regular	E0	2	2		White	
Moving Head-Channel 3	1	Multicolor string 1 ...	Square	None	LOR	Regular	E0	3	3		White	
Moving Head-Channel 4	1	Multicolor string 1 ...	Square	None	LOR	Regular	E0	4	4		Red	
Moving Head-Channel 5	1	Multicolor string 1 ...	Square	None	LOR	Regular	E0	5	5		Green	
Moving Head-Channel 6	1	Multicolor string 1 ...	Square	None	LOR	Regular	E0	6	6		Blue	
Moving Head-Channel 7	1	Multicolor string 1 ...	Square	None	LOR	Regular	E0	7	7		White	
Moving Head-Channel 8	1	Multicolor string 1 ...	Square	None	LOR	Regular	E0	8	8		White	
Moving Head-Channel 9	1	Multicolor string 1 ...	Square	None	LOR	Regular	E0	9	9		White	

Light-O-Rama MP3 Director

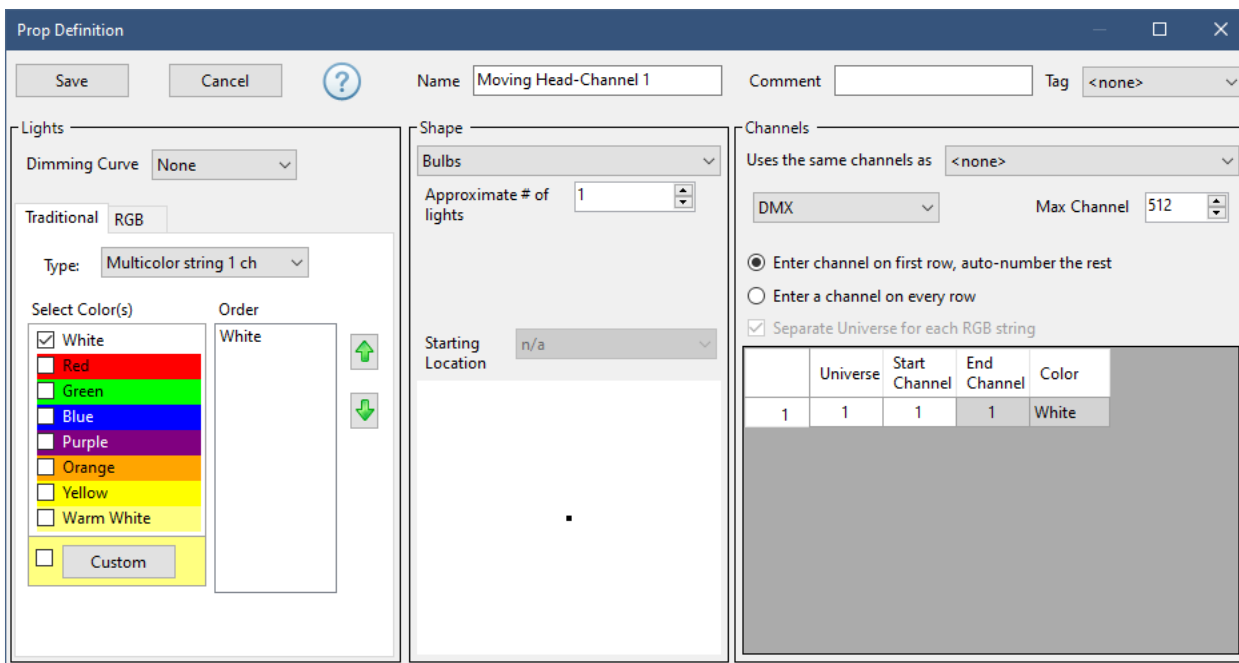


You can use one of the ports of a Light-O-Rama MP3 Director to output DMX. With a multi-port Director, the other ports can still be used to control LOR devices. In this scenario, your DMX fixtures would be set up in your S5 preview as DMX devices with universe 1, and channels set to match your fixture. When you create your SD card, Hub will detect that your sequences use a DMX universe and ask you which Director port it should be on. Since the Director ports are RJ-45 jacks, you will probably need an RJ-45 to XLR-3 adapter, which is available for purchase in the Light-O-Rama store.

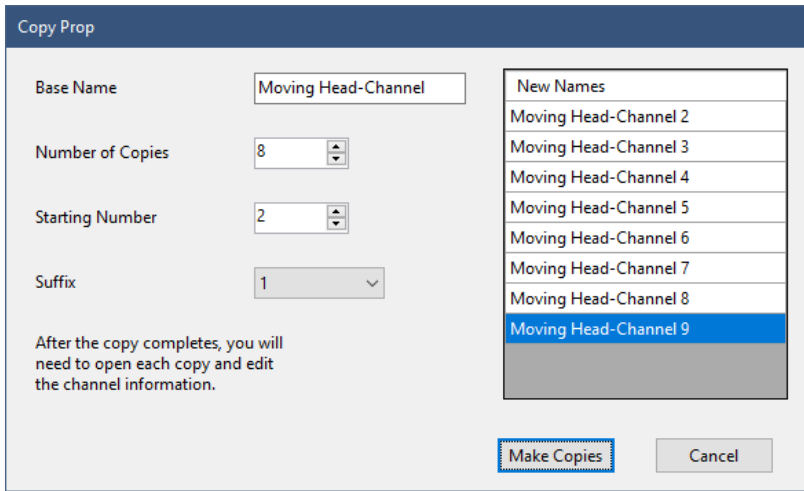


In your preview, configure a prop for each channel. Use the Bulb shape (with a single bulb) if you want to see when the channel is on during preview playback, otherwise use the Hidden shape. The fastest way is to create a prop for the first channel, then use the copy function to create the other channels.

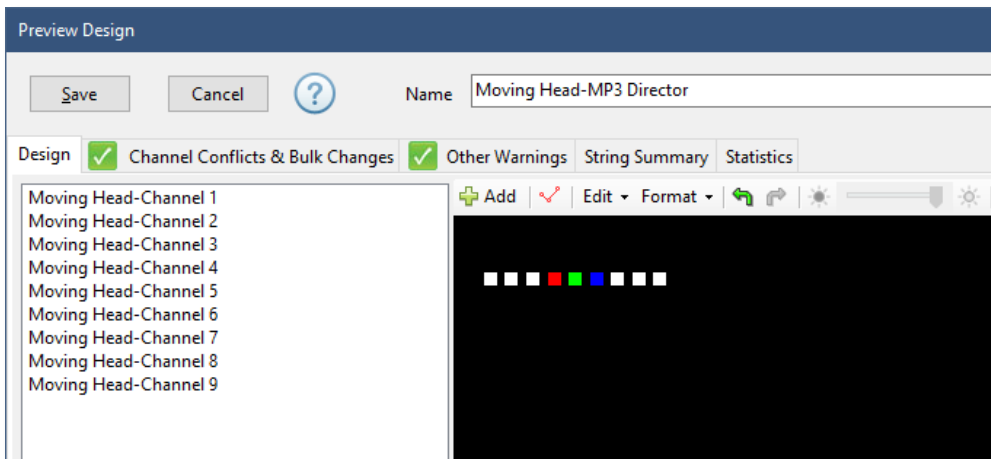
For our 9-channel example fixture, we will start at DMX universe 1, channel 1.



Now use the Copy function to create the other 8 channels:



Now modify channels 4, 5, and 6 so that the colors are red, green and blue respectively – so that they match the fixture (red, green, and blue may be on different channels in your fixture – check the documentation). Your preview should now look something like the following:

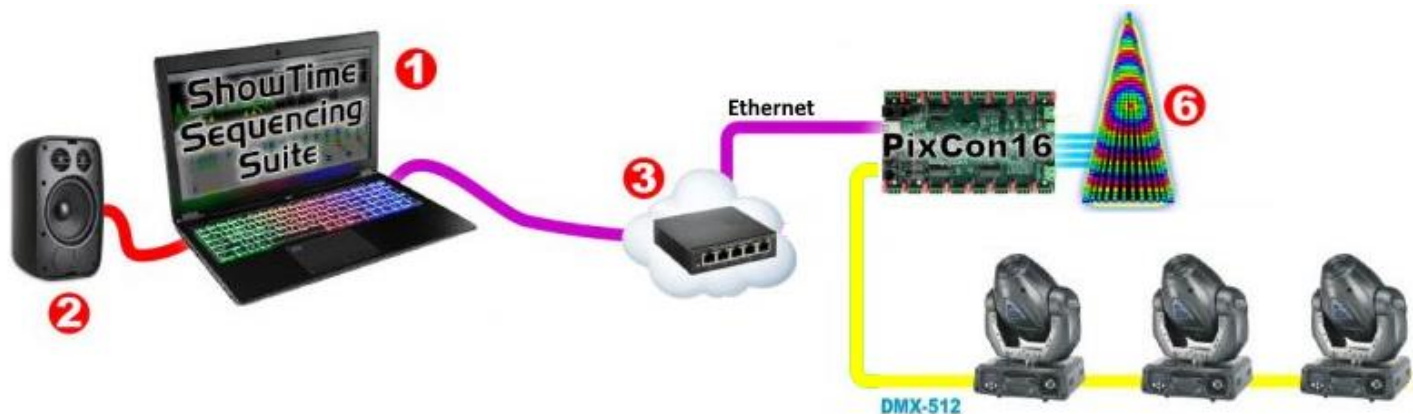


And the String Summary tab shows:

Prop	Item #	Lights	Bulb Shape	Dimming Curve	Device Type	Network	Unit	Start Circuit	End Circuit	Carryover	String Color	Max
Moving Head-Channel 1	1	Multicolor string 1 ...	Square	None	DMX	Univ 1		1	1		White	
Moving Head-Channel 2	1	Multicolor string 1 ...	Square	None	DMX	Univ 1		2	2		White	
Moving Head-Channel 3	1	Multicolor string 1 ...	Square	None	DMX	Univ 1		3	3		White	
Moving Head-Channel 4	1	Multicolor string 1 ...	Square	None	DMX	Univ 1		4	4		Red	
Moving Head-Channel 5	1	Multicolor string 1 ...	Square	None	DMX	Univ 1		5	5		Green	
Moving Head-Channel 6	1	Multicolor string 1 ...	Square	None	DMX	Univ 1		6	6		Blue	
Moving Head-Channel 7	1	Multicolor string 1 ...	Square	None	DMX	Univ 1		7	7		White	
Moving Head-Channel 8	1	Multicolor string 1 ...	Square	None	DMX	Univ 1		8	8		White	
Moving Head-Channel 9	1	Multicolor string 1 ...	Square	None	DMX	Univ 1		9	9		White	

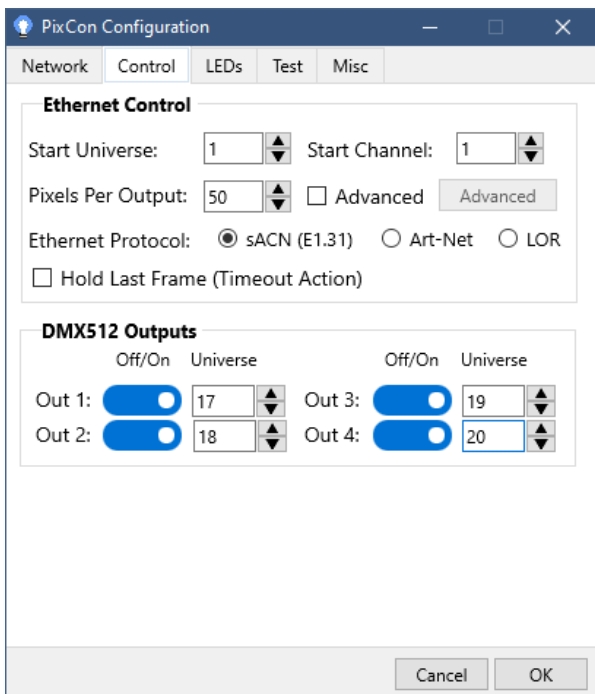
Light-O-Rama PixCon16

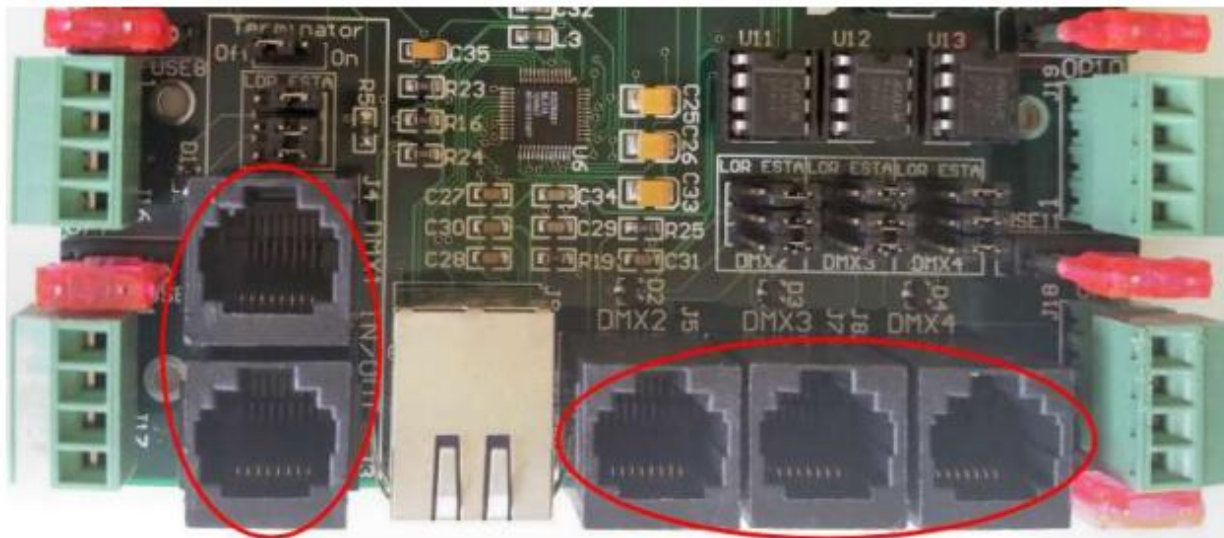
If you are using a PixCon16 in Ethernet mode, then the black plastic RJ-45 jacks on the board are available as DMX outputs. Please note this setup requires at least the Advanced level of our Sequencing Suite software.



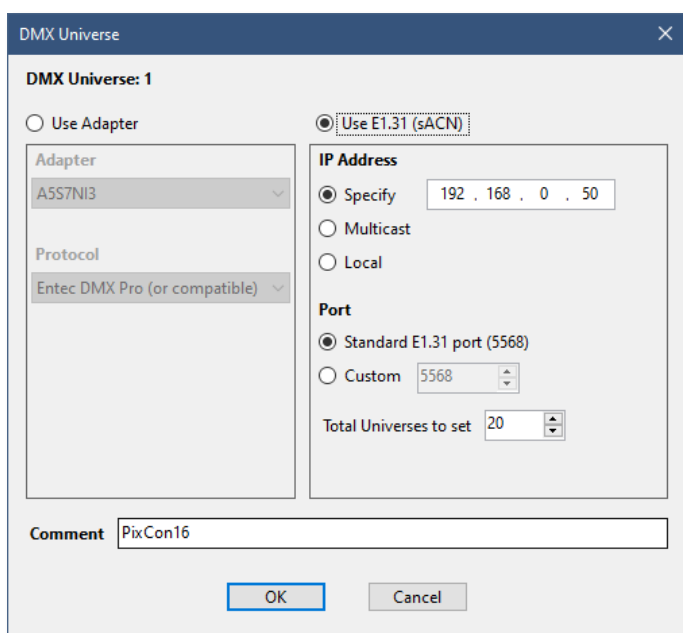
Clicking the “Find/Configure PixCon16” button in Network Preferences will allow you to configure the PixCon16. The screen shown below is from version 5.6.2; earlier versions will look different but allow the same options. In the configuration shown:

- universes 1-16 will control the 16 pixel output ports
- universe 17 will be sent out the 2 jacks labelled “DMX 1 IN/OUT”
- universe 18 will be sent out the “DMX2” jack
- universe 19 will be sent out the “DMX3” jack
- universe 20 will be sent out the “DMX4” jack





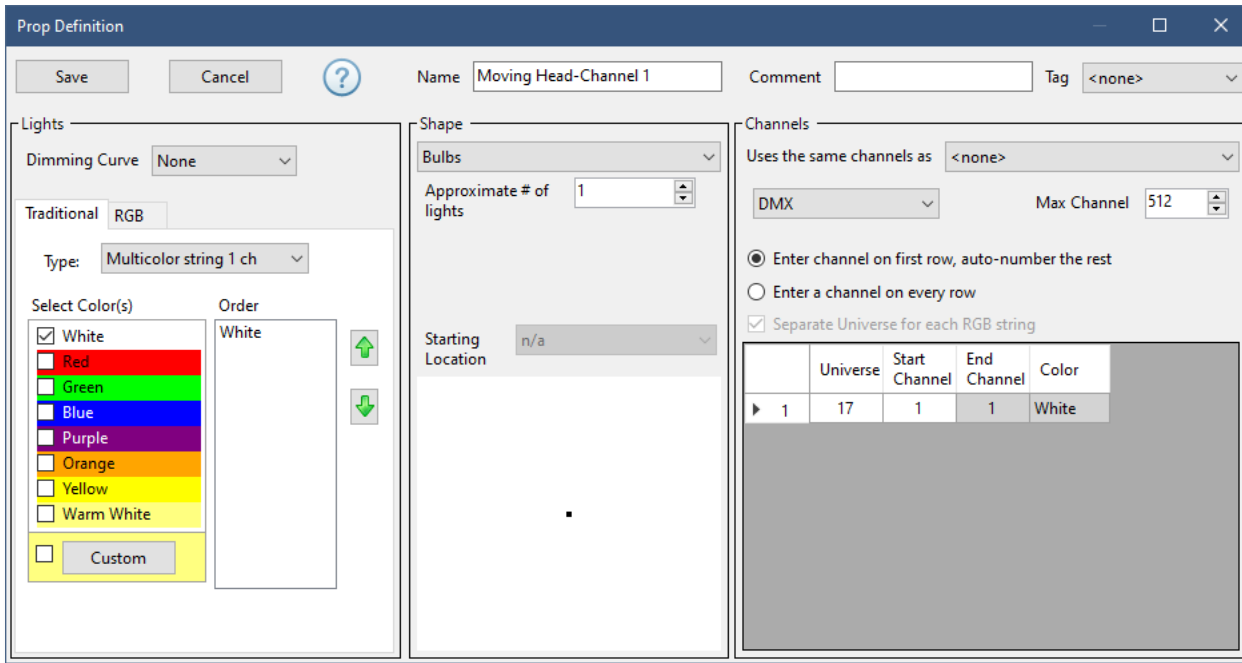
In Network Preferences, we will need to set up the universes assigned to the PixCon16 as E1.31 (universes 1-20 in our example). On the DMX tab, click on the row for the first universe assigned to the controller (1 in our example). You will then see the following dialog, which should be filled out as shown (your IP address may be different). “Total Universes to set” is 20: 16 for the pixel ports, plus 4 for the DMX outputs.



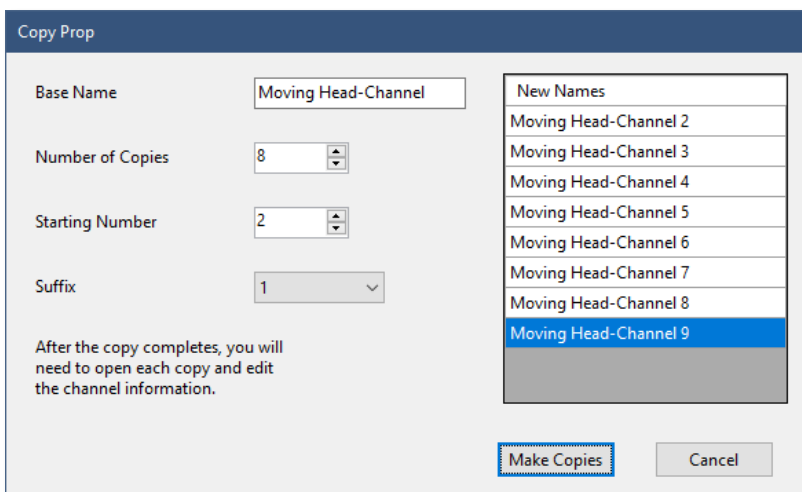
Let’s connect our moving head to “DMX 1 IN/OUT”, which we have set up for universe 17. Assuming your moving head light fixture has XLR-3 connectors, you will need an RJ-45 to XLR-3 adapter cable to connect from the PixCon16 RJ-45 jack to your moving head light. These adapters are available for purchase in the Light-O-Rama store. If you use the Light-O-Rama adapter cable, then you will need to set the 3 jumpers for “DMX 1 IN/OUT” to the LOR position. If you use a third-party adapter, you will probably need to set the jumpers to the ESTA position.

In your preview, configure a prop for each channel. Use the Bulb shape (with a single bulb) if you want to see when the channel is on during preview playback, otherwise use the Hidden shape. The fastest way is to create a prop for the first channel, then use the copy function to create the other channels.

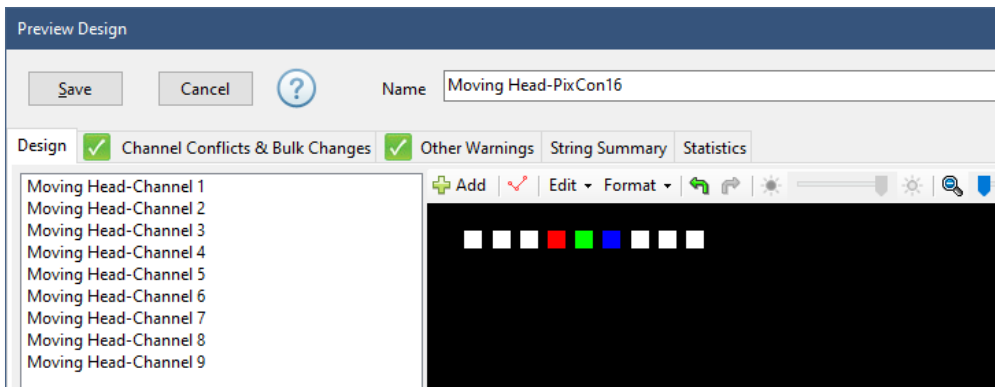
For our 9-channel example fixture, we will start at DMX universe 17, channel 1.



Now use the Copy function to create the other 8 channels:



Now modify channels 4, 5, and 6 so that the colors are red, green and blue respectively – so that they match the fixture (red, green, and blue may be on different channels in your fixture – check the documentation). Your preview should now look something like the following:



And the String Summary tab shows:

The screenshot shows the 'String Summary' tab in the 'Preview Design' window. The table below lists the properties for each channel in the 'Moving Head-PixCon16' project.

Prop	Item #	Lights	Bulb Shape	Dimming Curve	Device Type	Network	Unit	Start Circuit	End Circuit	Carryover	String Color	Max
Moving Head-Channel 1	1	Multicolor string 1 ...	Square	None	DMX	Univ 17		1	1		White	
Moving Head-Channel 2	1	Multicolor string 1 ...	Square	None	DMX	Univ 17		2	2		White	
Moving Head-Channel 3	1	Multicolor string 1 ...	Square	None	DMX	Univ 17		3	3		White	
Moving Head-Channel 4	1	Multicolor string 1 ...	Square	None	DMX	Univ 17		4	4		Red	
Moving Head-Channel 5	1	Multicolor string 1 ...	Square	None	DMX	Univ 17		5	5		Green	
Moving Head-Channel 6	1	Multicolor string 1 ...	Square	None	DMX	Univ 17		6	6		Blue	
Moving Head-Channel 7	1	Multicolor string 1 ...	Square	None	DMX	Univ 17		7	7		White	
Moving Head-Channel 8	1	Multicolor string 1 ...	Square	None	DMX	Univ 17		8	8		White	
Moving Head-Channel 9	1	Multicolor string 1 ...	Square	None	DMX	Univ 17		9	9		White	

Light-O-Rama USB Adapter, ENTTEC Adapter, or ENTTEC compatible adapter



LOR USB485

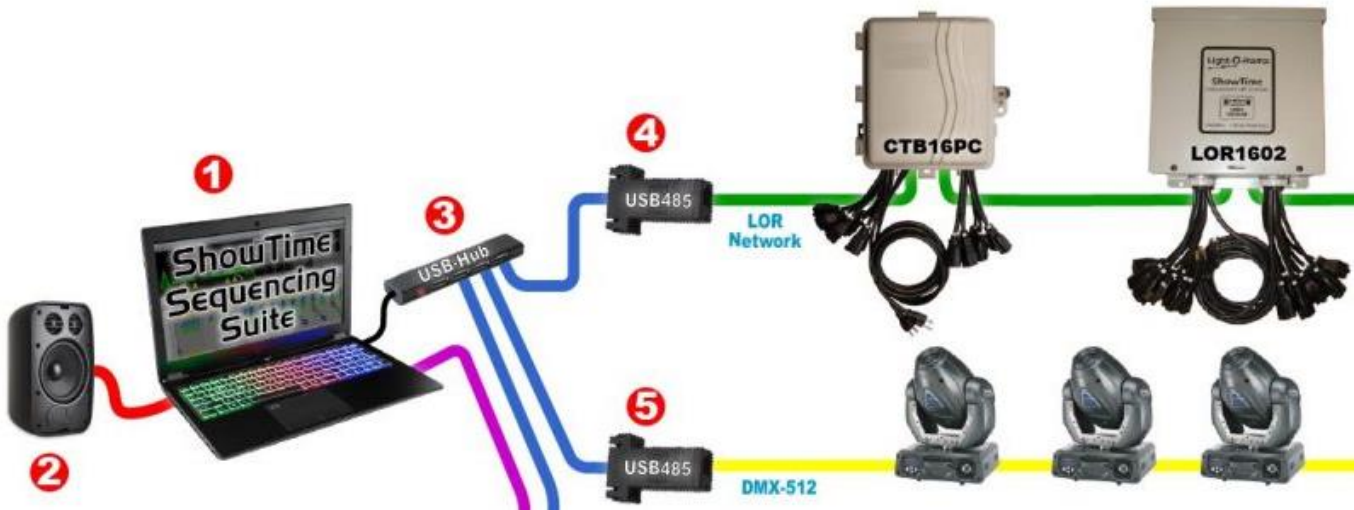


ENTTEC Open DMX USB



ENTTEC DMX USB PRO

In the diagram below, we show a regular Light-O-Rama USB485 adapter (number 5 connected to the yellow line) to create a dedicated DMX-512 universe; but in its place you could also use an ENTTEC DMX USB Pro, ENTTEC Open DMX USB, DMXking UltraDMX, or other ENTTEC compatible adapter. The adapter provides one DMX-512 universe. Please note this setup requires at least the Advanced level of our Sequencing Suite software.

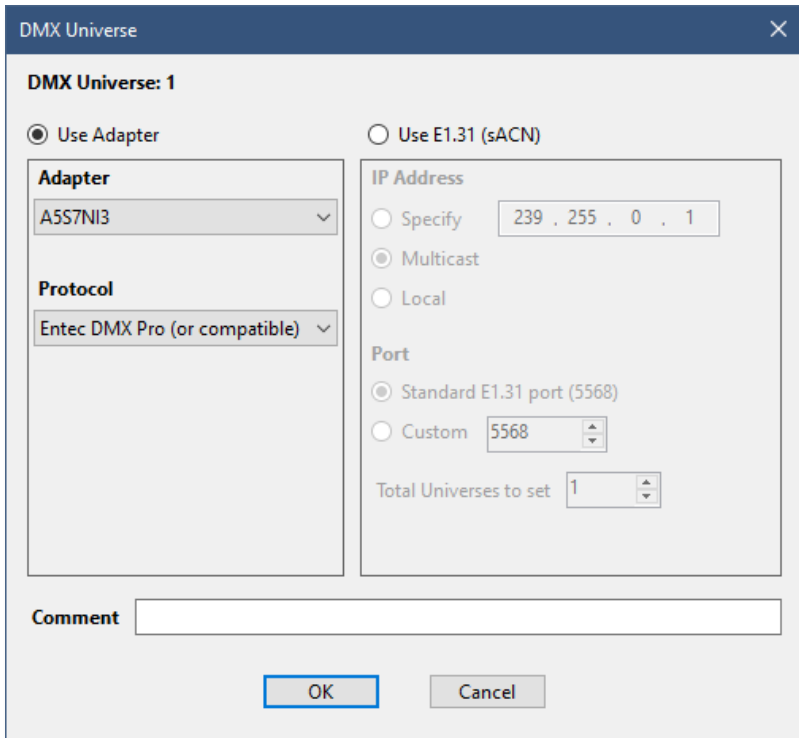


The ENTTEC DMX USB Pro (and compatibles) buffer the DMX data coming out of the computer and provide a more stable signal to your DMX fixtures (as compared to a Light-O-Rama USB485 or ENTTEC Open DMX). The Pro version is more expensive, but may be worth it in situations where reliability is important.

Assuming your moving head light fixture has XLR-3 connectors:

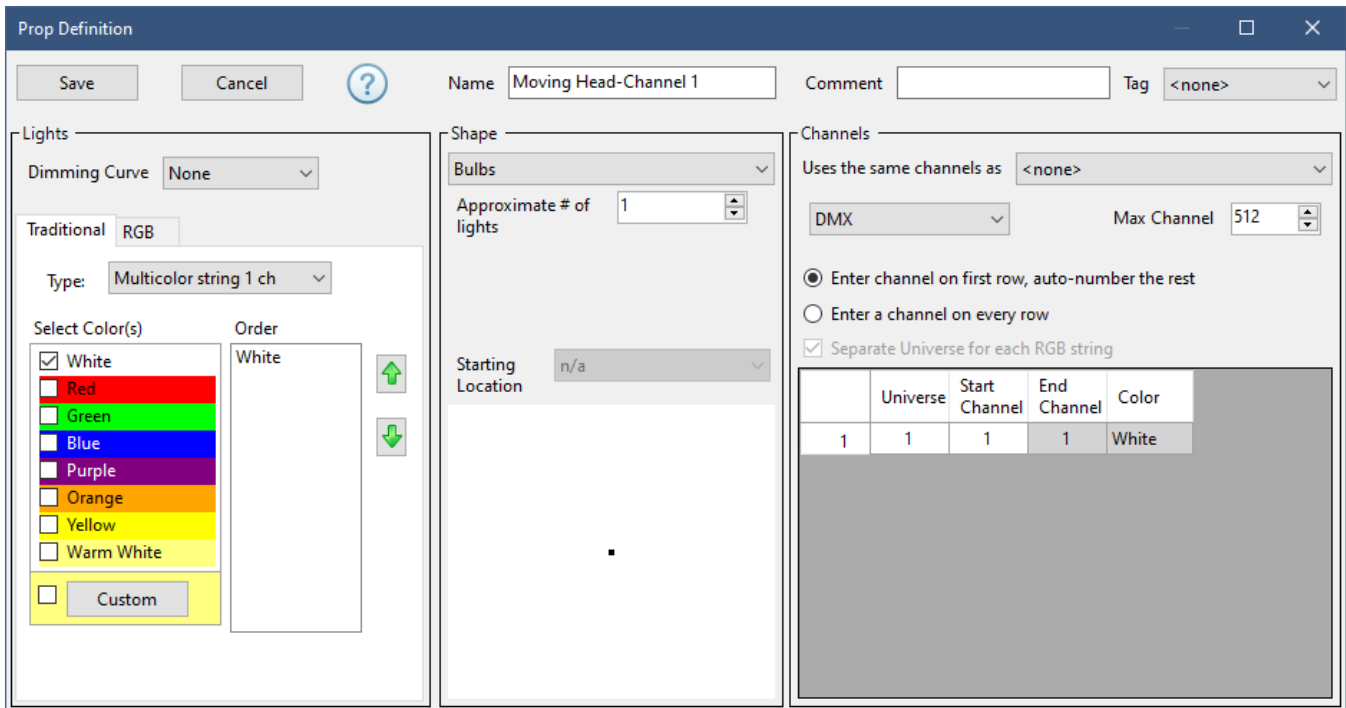
- If using a Light-O-Rama USB485 adapter, you will need an RJ-45 to XLR-3 adapter cable to go from adapter to moving head light. You can find RJ-45 to XLR-3 adapter cables in the Accessories section of the Light-O-Rama store.
- If using an ENTTEC adapter (Open or Pro), you will need an XLR-5 to XLR-3 adapter. These are readily available from third parties.
- The output connector on other ENTTEC compatible adapters will vary. Read the specs and purchase the appropriate adapter cable, if needed.

In Network Preferences, LOR adapters for LOR networks are setup on the LOR tab. Adapters used for DMX are set up on the DMX tab. On the DMX tab, click on the row for universe 1. This will open a dialog window as shown below. Click the “Use Adapter” radio button. Select your adapter from the drop-down box. If you have multiple adapters plugged into your system, it can be difficult to tell which adapter is the correct one. To make this easier, we recommend removing all USB adapters except the one you are currently setting up before opening Network Preferences. Once setup is complete, you can plug in the other adapters.

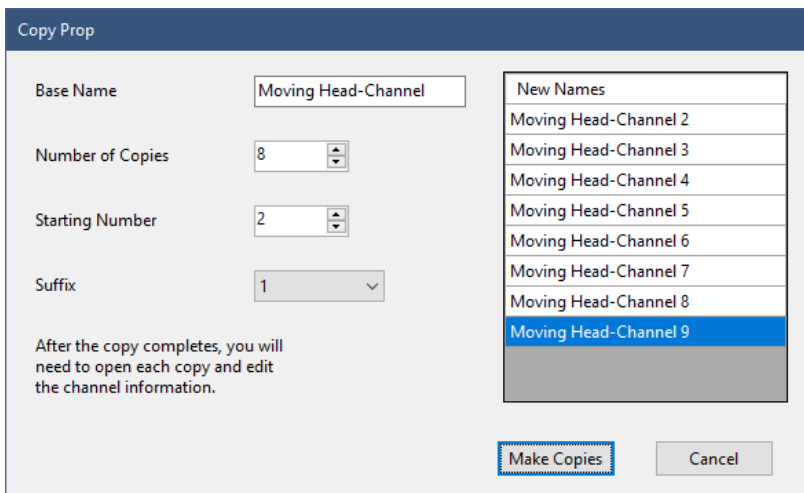


In your preview, configure a prop for each channel. Use the Bulb shape (with a single bulb) if you want to see when the channel is on during preview playback, otherwise use the Hidden shape. The fastest way is to create a prop for the first channel, then use the copy function to create the other channels.

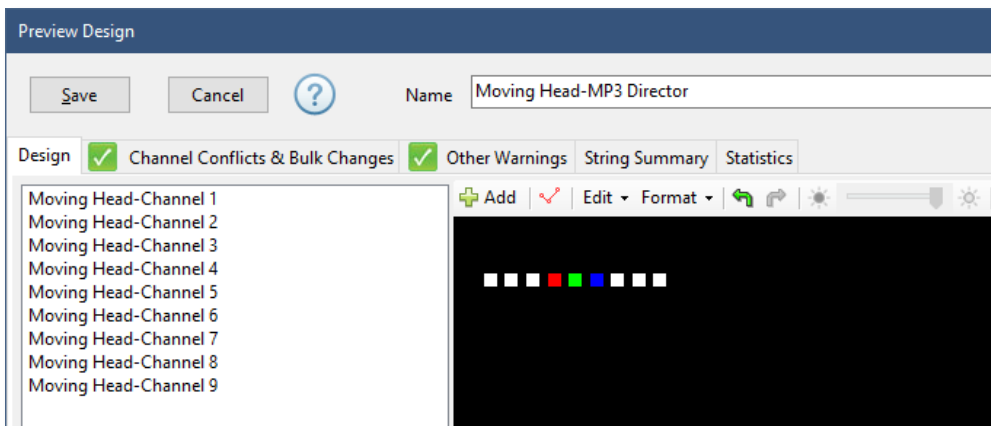
For our 9-channel example fixture, we will start at DMX universe 1, channel 1.



Now use the Copy function to create the other 8 channels:



Now modify channels 4, 5, and 6 so that the colors are red, green and blue respectively – so that they match the fixture (red, green, and blue may be on different channels in your fixture – check the documentation). Your preview should now look something like the following:



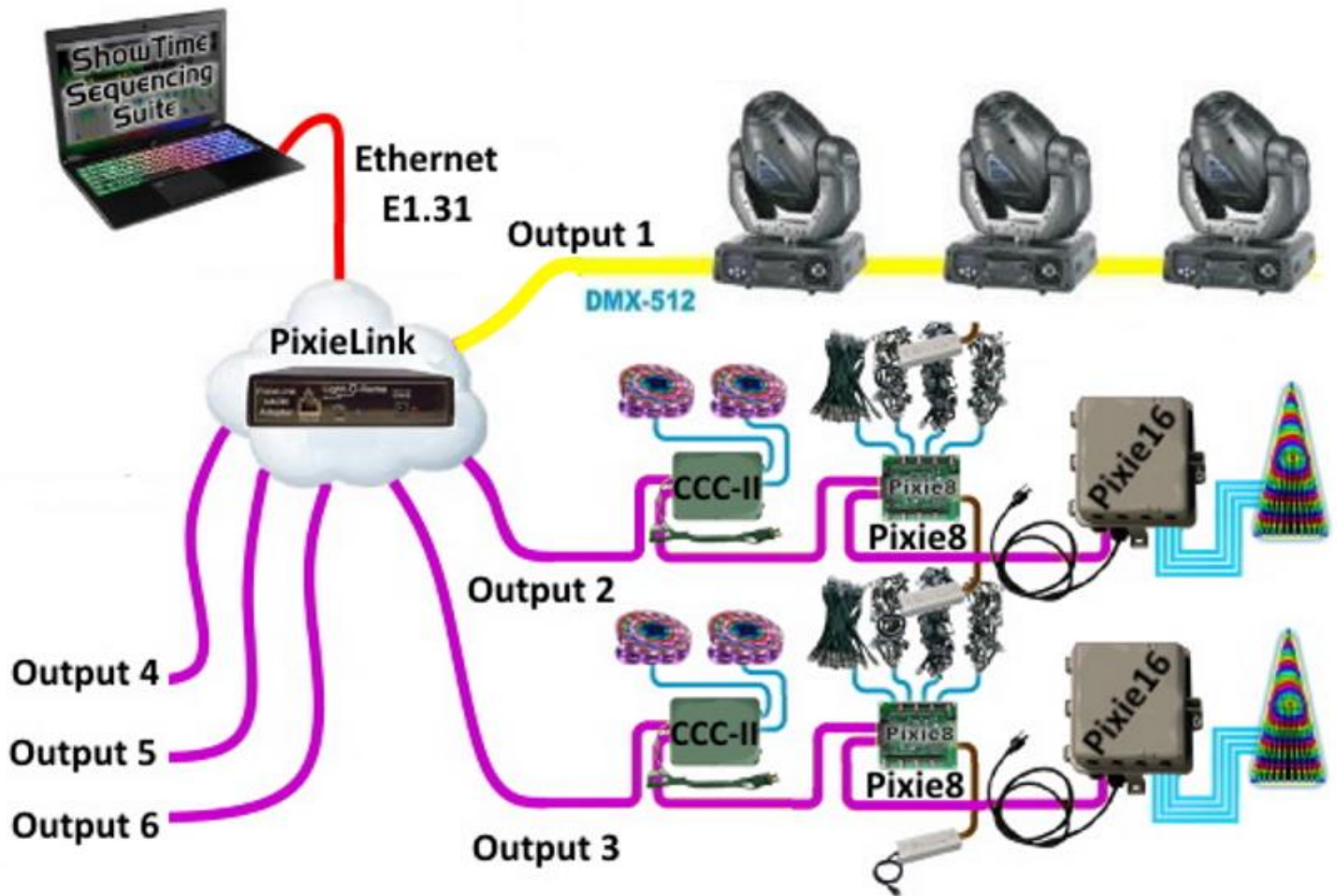
And the String Summary tab shows:

Prop	Item #	Lights	Bulb Shape	Dimming Curve	Device Type	Network	Unit	Start Circuit	End Circuit	Carryover	String Color	Ma
Moving Head-Channel 1	1	Multicolor string 1 ...	Square	None	DMX	Univ 1		1	1		White	
Moving Head-Channel 2	1	Multicolor string 1 ...	Square	None	DMX	Univ 1		2	2		White	
Moving Head-Channel 3	1	Multicolor string 1 ...	Square	None	DMX	Univ 1		3	3		White	
Moving Head-Channel 4	1	Multicolor string 1 ...	Square	None	DMX	Univ 1		4	4		Red	
Moving Head-Channel 5	1	Multicolor string 1 ...	Square	None	DMX	Univ 1		5	5		Green	
Moving Head-Channel 6	1	Multicolor string 1 ...	Square	None	DMX	Univ 1		6	6		Blue	
Moving Head-Channel 7	1	Multicolor string 1 ...	Square	None	DMX	Univ 1		7	7		White	
Moving Head-Channel 8	1	Multicolor string 1 ...	Square	None	DMX	Univ 1		8	8		White	
Moving Head-Channel 9	1	Multicolor string 1 ...	Square	None	DMX	Univ 1		9	9		White	

Light-O-Rama PixieLink sACN Adapter



Any of the PixieLink's 6 output ports can be configured to output a DMX universe. Please note this setup requires at least the Advanced level of our Sequencing Suite software. Assuming your moving head light fixture has XLR-3 connectors, you will need an RJ-45 to XLR-3 adapter cable to connect the PixieLink to the moving head light. These can be found in the Accessories section of the Light-O-Rama store.



Configuration is done by pointing your web browser to the PixieLink's IP address.

On the "Network Config" screen, make sure the "Standard sACN/E1.31 port (5568)" radio button is selected.

Light-Rama PixieLink

Status Network Config Port Config

Network Device Name: PixieLink1

Enable DHCP:

Fixed IP Address: 192.168.1.206

Fixed IP Mask: 255.255.255.0

Server Port:

- Standard sACN/E1.31 port (5568)
- Standard Art-Net port (6454)
- Custom port

Save Configuration Load Configuration

Then go to the "Port Config" section and set one of the ports to "DMX". In the box labelled "1" below it, enter the universe number you want assigned to this port. In our example, we have set Port 1 to be universe 1.

← → ↻ 🏠 ⚠ Not secure | 192.168.10.5

Your IP address will probably be different

Light-Rama PixieLink

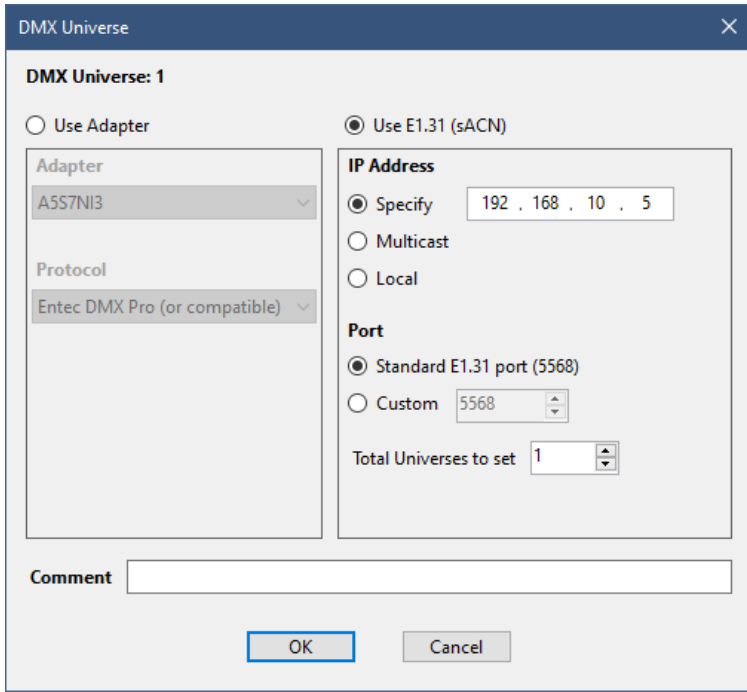
Status Network Config Port Config

Clear or set a universe slot, then hit [a, s, d, f] to clear or populate the next [3, 7, 15, 31] slots

Port 1:	Port 2:	Port 3:	Port 4:
DMX	PixieLink	PixieLink	
Pixels: 1	Pixels: 60	Pixels: 60	Pixels:
1: 1	1: 33	1: 33	1: 1
2: 2	2: 34	2: 34	2: 2
3: 3	3: 35	3: 35	3: 3
4: 4	4: 36	4: 36	4: 4
5: 5	5: 20	5: 37	5: 5
	5: 21		

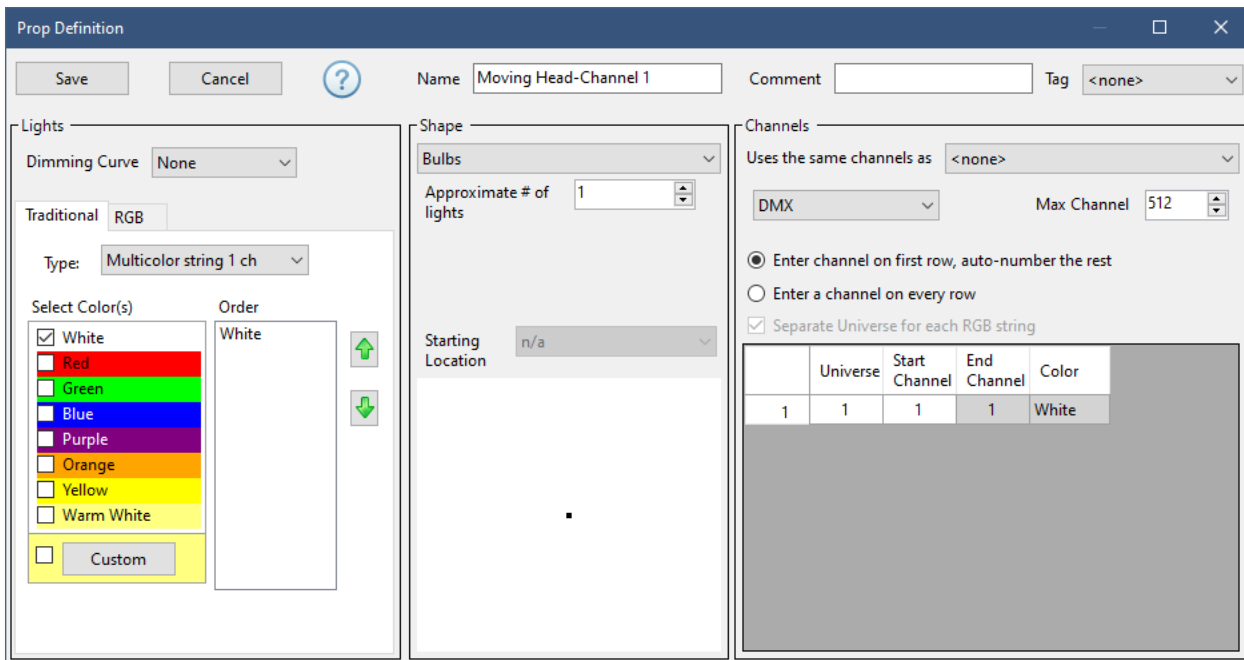
This is the universe assigned to Port 1

Next, we need to set Network Preferences to match the PixieLink configuration. On the DMX tab, click on the row corresponding to the universe you set in PixieLink configuration (universe 1 in this example). This will open a dialog window as shown below. Click the "Use E1.31 (sACN)" radio button. Next to "Specify" enter the IP address of your PixieLink (your IP address will probably be different from the one shown here).

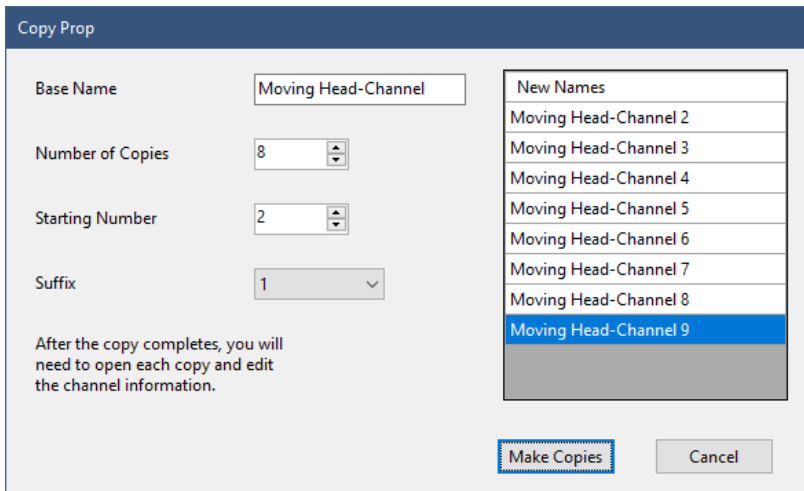


In your preview, configure a prop for each channel. Use the Bulb shape (with a single bulb) if you want to see when the channel is on during preview playback, otherwise use the Hidden shape. The fastest way is to create a prop for the first channel, then use the copy function to create the other channels.

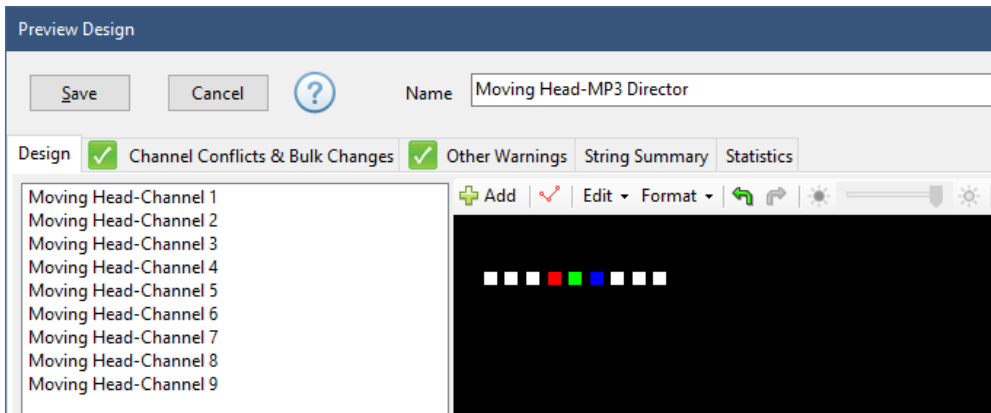
For our 9-channel example fixture, we will start at DMX universe 1, channel 1.



Now use the Copy function to create the other 8 channels:



Now modify channels 4, 5, and 6 so that the colors are red, green and blue respectively – so that they match the fixture (red, green, and blue may be on different channels in your fixture – check the documentation). Your preview should now look something like the following:



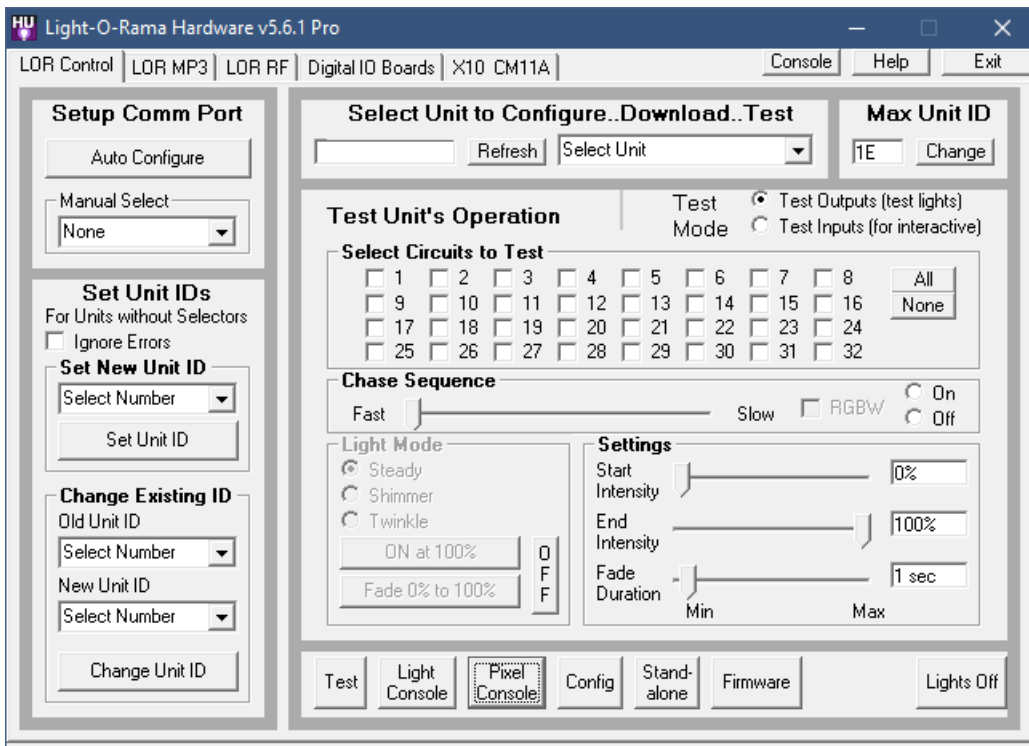
And the String Summary tab shows:

Prop	Item #	Lights	Bulb Shape	Dimming Curve	Device Type	Network	Unit	Start Circuit	End Circuit	Carryover	String Color	Ma
Moving Head-Channel 1	1	Multicolor string 1 ...	Square	None	DMX	Univ 1		1	1		White	
Moving Head-Channel 2	1	Multicolor string 1 ...	Square	None	DMX	Univ 1		2	2		White	
Moving Head-Channel 3	1	Multicolor string 1 ...	Square	None	DMX	Univ 1		3	3		White	
Moving Head-Channel 4	1	Multicolor string 1 ...	Square	None	DMX	Univ 1		4	4		Red	
Moving Head-Channel 5	1	Multicolor string 1 ...	Square	None	DMX	Univ 1		5	5		Green	
Moving Head-Channel 6	1	Multicolor string 1 ...	Square	None	DMX	Univ 1		6	6		Blue	
Moving Head-Channel 7	1	Multicolor string 1 ...	Square	None	DMX	Univ 1		7	7		White	
Moving Head-Channel 8	1	Multicolor string 1 ...	Square	None	DMX	Univ 1		8	8		White	
Moving Head-Channel 9	1	Multicolor string 1 ...	Square	None	DMX	Univ 1		9	9		White	

Testing your moving head fixture with the Hardware Utility

This section explains how to use the Light-O-Rama Hardware Utility on your PC to test your moving head light fixture. You can use the Hardware Utility to experiment with different intensities to determine how the fixture reacts. Depending upon the DMX channel referenced and the capabilities of the DMX fixture, the intensity may select the lamp's brightness, the color of the light, a gobo, the horizontal or vertical position, etc. You can also experiment to determine starting & ending fade percentages and fade rates to determine what fade will move the light beam from the starting position you want to the ending position you want in the time you want. If one DMX channel controls pan and another controls tilt, in the Sequencer you can simultaneously fade both channels to get the light to move in both directions at once.

To begin testing, complete the instructions for one of the 5 configurations listed above. Turn on power to your moving head light and open the Hardware Utility. You should see a screen like this one:



Test Console for iDMX-1000

If you are using the iDMX-1000 configuration, click the **Light Console** button at the bottom of the Hardware Utility. Set the Controller Type to "iDMX1000 - LOR %". Set the unit id to match your iDMX-1000 (E0 if you are using the factory default). The DMX line above the vertical sliders indicates which DMX channel this slider controls. The LOR line just below indicates the LOR Unit ID and circuit number that you would use in the Sequencer to affect this DMX channel. If you are using DMX channels above 16, move the "Select Channel Group" slider until your channels appear at the top. Under the intensity sliders there are boxes showing the current LOR light intensity as a percentage (0 to 100%) and the equivalent DMX intensity as a value between 0 and 255. The LOR intensity value is what is set by regular channel commands in the Sequencer. DMX values can be set using the DMX intensity command in the Sequencer.

Light-O-Rama Test Console

DMX	001	002	003	004	005	006	007	008	009	010	011	012	013	014	015	016
LOR	E0.01	E0.02	E0.03	E0.04	E0.05	E0.06	E0.07	E0.08	E0.09	E0.10	E0.11	E0.12	E0.13	E0.14	E0.15	E0.16
LOR Intensity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DMX Value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Controller Type

- Standard Controller
- iDMX1000 - LOR %
- iDMX1000 - DMX

Select Unit Id:

Select Channel Group:

Current Channel Range:

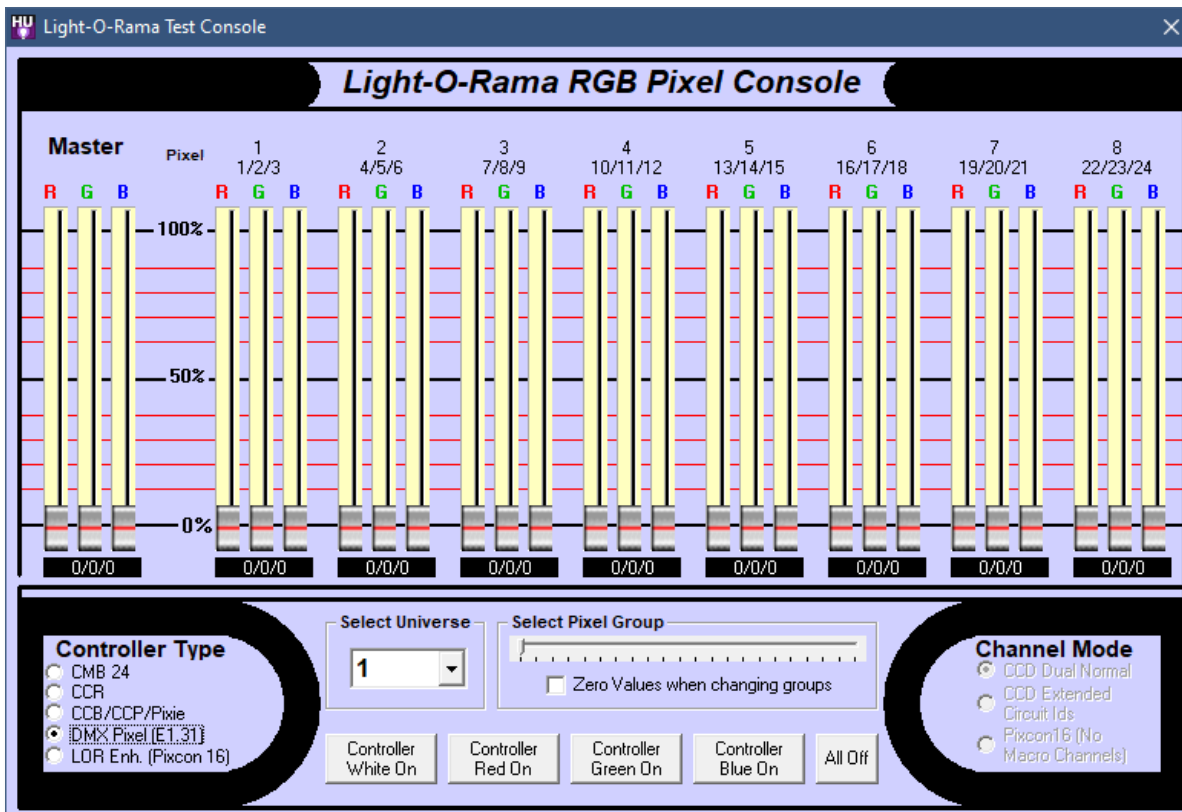
Channel Mode

- Virtual Controllers
- Extended Circuit Ids

All On All Off Twinkle Shimmer Effect Off

Test Console for Other Configurations

For all other configurations, make sure the Light-O-Rama Control Panel and Comm Listener are running. Click the **Pixel Console** button at the bottom of the Hardware Utility. On the screen that opens, set the Controller Type to “DMX/Pixel (E1.31)”. Then set the universe to match your configuration. If you are using DMX channels above 24, move the “Select Pixel Group” slider until your channels appear at the top.



Test the Moving Head

Now we are ready to test the moving head light fixture!

DMX channel 1 on our example fixture controls pan movement. Moving the channel 1 slider will cause the fixture to pan. If the fixture doesn't react, check your power, connections, and configuration.

DMX channel 3 on our example fixture is the Master Control. It needs to be set to 241 or higher for light to be emitted, so move the slider all the way to the top for now. Nothing noticeable will happen on the fixture, but this sets us up for the next step.

DMX channels 4, 5, 6, and 7 on our example fixture control red, green, blue, and white light output respectively. You should be able to move these sliders and see the light change color.

With the light at a particular color, go back and try different values on the Master Control channel (3). You should cycle through the various dimming and strobe settings.

Now that your light is on, go back to the pan and tilt channels to point your light in various directions.

Controlling the Light Fixture in the Sequencer

The 5 sections in “Physically linking to DMX-512” go through how to set up a preview for each scenario. At the end of every scenario, you end up with 9 channels named “Moving Head-Channel 1” through “Moving Head-Channel 9”. It doesn’t matter scenario you chose, the sequencing at this point will be the same. Note that in the screen shots that follow, the channel names have been adjusted to include the channel function.

Close the Hardware Utility if it is still open. If you are using a configuration other than iDMX-1000, make sure the Control Panel and Comm Listener are running. Now open the Sequencer.

To get started, click on “New Animation Sequence” on the Sequencer’s Start Page. If you don’t see the Start Page, select Window > Reset Window Layout.

The New Animation Sequence window will appear. Set the “Existing Preview” field to the preview you created in the “Physically linking to DMX-512” section, which will contain your moving head light.

New Animation Sequence

Sequence Author (cannot be changed later):
Light-O-Rama

Select Preview
A preview defines all of the display elements and channels in your sequence
Existing Preview Quick Preview
Moving Head-MP3 Director

Length of animation (not including loops):
1:00.00 1 minute
 Use Loops

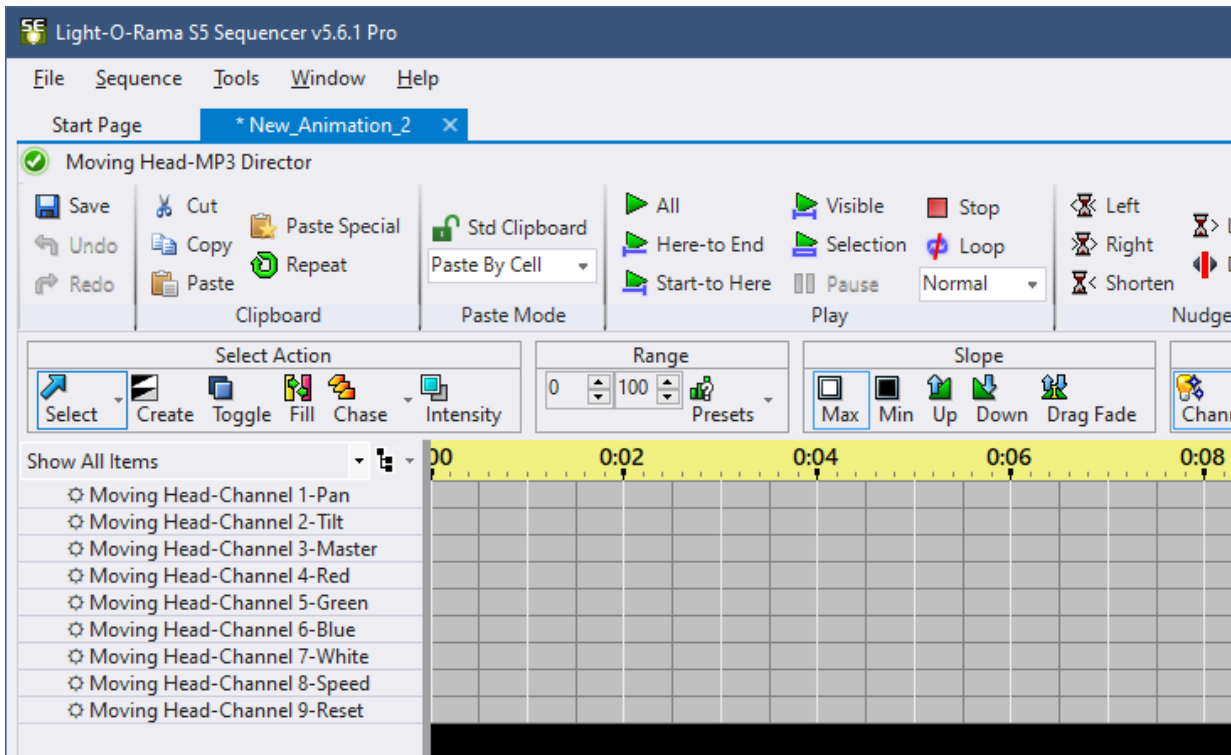
Initial Timing
 Tenth second intervals
 Half second intervals
 One second intervals
 Custom interval
0.05
 Create an empty freeform timing grid

Number of motion effect rows for pixel props without defaults set in the preview (requires PRO license) 1

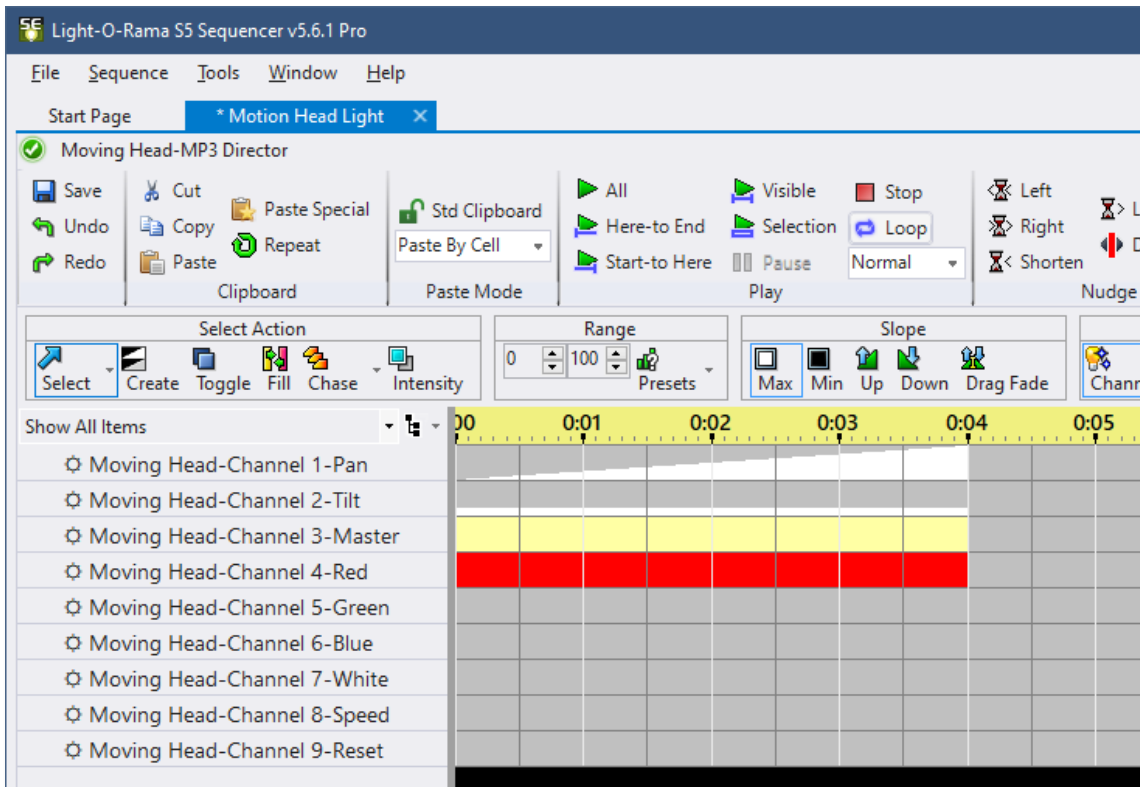
Save these choices as defaults

Create Cancel

After clicking the Create button, the sequence window will open.



The next figure shows a simple sequence that will pan from left to right, tilted at 45 degrees, in red for the first 4 seconds and then turn off.



A 0 to 100% fade has been used in the PAN channel to cause the fixture to move from its extreme left to its extreme right. The fade will cause the fixture to see numeric values between 0 and 255 as the fade proceeds. An intensity of 25%

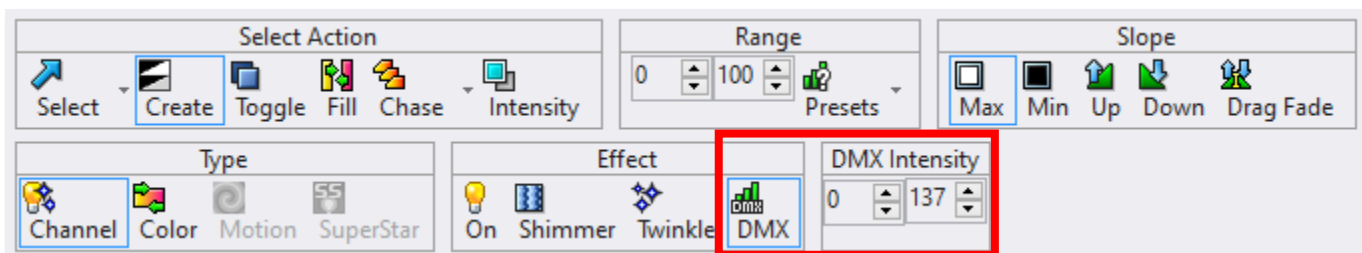
has been set in the TILT channel (a DMX value of 63). This will result in tilting the head to 45%. The Master Channel is set to 100%, enabling full brightness. The Red channel is set to 100%. Since no other colors are on, the resulting color is red.

Pan and Tilt can be combined to point your moving head fixture in any direction. Keep in mind that they don't move instantaneously – give your light fixture enough time to move to the desired position.

The color channels (red, green, blue, and white in the fixture we used as an example) can be combined to produce virtually any color.

DMX Intensity Effect

In some situations, you might need to set a specific value on a DMX channel. To do this, set the Channel Effect to “DMX”. A “DMX Intensity” box will appear. This functions like the boxes in the Intensity Range section, except that the values in the DMX boxes range from 0 to 255. In the screen shot below, the maximum DMX intensity has been manually set to 137. The Action is set to “Create” and the Slope is set to “Max”. So now if you drag your cursor over some cells in the sequence grid, a DMX effect at intensity 137 will be inserted. Using this technique, you can insert any arbitrary DMX value into your sequence.



Appendix 1: Attaching Light-O-Rama Controllers to Your DMX Network

Once you create a DMX network for your moving head light, you might also want to connect some of your Light-O-Rama controllers to the same DMX network. Maybe you want to run all your lights on DMX networks?

Many Light-O-Rama (LOR) products will operate in a DMX universe as well as a LOR network! LOR's dimmer packs provide a great cost per channel and the ShowTime Units are UL 508 certified for outdoor use! LOR Units (dimmer packs) automatically detect the network type (LOR or DMX) on which they are currently installed. No special settings or changes are required to convert a Unit from one network type to another. This ability to switch from one network to another is very important. In "DMX mode" the Unit is a "dumb" dimmer pack and only reacts to DMX intensities. When a Unit is connected to a LOR network, you can use the LOR, PC based Hardware Utility to upgrade firmware and set the unit id (DMX start address).

For a complete list of controllers that support DMX, refer to the DMX512 column on this page:

<https://www1.lightorama.com/network-speeds/>

DMX Cabling

As mentioned in the section on DMX Connectors, there are 2 standards for sending DMX data on a Cat-5 cable: the Light-O-Rama standard and the ESTA standard. Light-O-Rama equipment expects data on pins 4 and 5. This includes DMX transmitters like the MP3 Director, as well as DMX receivers such as the CTB16PCg3. DMX data can be sent from one Light-O-Rama device to another with a simple Cat-5 cable – no adapter required. To convert from RJ-45 connectors on the Light-O-Rama equipment to XLR-3 connectors used on many DMX fixtures, use the adapters in the Accessories section of the Light-O-Rama store.

If you use 3rd party hardware with Cat-5 DMX connections, you will need to pay careful attention to the wiring standard employed at each RJ-45 jack and utilize converters/adapters when there is a mismatch.

DMX Start Address

LOR Unit ID	DMX Address
01	1
02	17
03	33
04	49
05	65
06	81
07	97
08	113
09	129
0A	145
0B	161
0C	177
0D	193
0E	209
0F	225
10	241
11	257
12	273
13	289
14	305
15	321
16	337
17	353
18	369
19	385
1A	401
1B	417
1C	433
1D	449
1E	465
1F	481
20	497

The addressing used in a LOR network is a little different than the addressing scheme used in DMX; however, they are close enough that the LOR paradigm can be extended to DMX addressing. In a LOR network, regardless of the number of outputs (channels) a Unit has, it is assigned a single Unit ID (address). Refer a device's manual for instructions to set the Unit ID.

When used in a DMX network, the controller's Unit ID is used to map to the starting DMX address for the controller's Circuits. The addresses for the circuits on a controller will be assigned sequentially based on the starting address. For example, if a 16 channel Unit has the Unit ID "01" then the DMX addresses for that Unit's channels are 1 thru 16. With Unit ID "02" the DMX address are 17 thru 32. See the table to the left.