Light-O-Rama

RGB, Macro & Color Effect Programming Guide for the

Cosmic Color Ribbon
CR150D

&

Cosmic Color Bulbs
CB100D

February 2, 2012
V1.1

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Introduction

This guide explains how to control the Light O Rama (LOR) Cosmic Color Ribbon (CCR) and Cosmic Color Bulbs (CCB). Manual control using the Hardware Utility and software control using the LOR Sequence Editor will be covered.

The CCR and CCB are multiple pixel LED devices. The color and intensity of the pixels can be individually controlled. The CCR controller has 150 intensity channels. These are the red, green and blue intensity channels for each of the 50 pixels. Normally the devices are configured in the Sequence Editor as 50 RGB channels to make control and color selection easier. The CCB controller has two sets of 150 intensity channels, one set for each bulb string.

Both devices also support Color Effect and Macro Effect programming. These are shortcuts that allow all the pixels to be manipulated with a small number of non-RGB channels.

There are two ways to set the color and intensity of pixels. One is to directly manipulate the RGB channels. The other is to use a Color Effect. There are three Color Effect control channels. These select the effect, the speed and the intensity of the effect. For example, a twinkle effect will cause all the pixels to twinkle. Instead of using the 50 RGB channels to affect each pixel individually, setting three channels will cause all the pixels to twinkle at a particular speed and intensity.

A Macro Effect is another shortcut that allows all the pixels to be controlled with three channels. A Macro Effect can be thought of as a pattern placed over the pixels that exposes the pixels in some interesting way. For example, you could set all the RGB channels to 75% brightness in blue and select the Fill-from-Controller-to-End Macro Effect. Selecting this effect causes all pixels on the device to go dark until you change the intensity of the macro effect channel to an intensity other than 0%. Varying the intensity of the macro effect channel from 0-99% by using a fade will cause the pixels to light from the controller to the far end depending upon how ‘bright’ the fade is at any moment.

This document only shows how to manipulate the first bulb string on a CCB controller. The first bulb string has exactly the same channel numbering scheme as a CCR. The channels which control the second bulb string start at 161, so to manipulate the second bulb string using any of the examples in this guide, add 160 to the first bulb string channel number.

Firmware Version

This document describes the capabilities of the Cosmic Color Ribbon (CR150D controller) with firmware version 1.07 or later and the capabilities of the Cosmic Color Bulbs (CB100D controller) with firmware version 1.09 or later.

Refer to the User Manual for your device to determine the firmware in your controller. If your firmware is older than specified above, refer to the Updating the Firmware section of your User Manual to download and update your controller’s firmware.

Hardware Configuration

This guide requires the following hardware configuration in your controller(s):

Unit ID: 01
Unit ID Mode: Normal
Channel Mode: Triples
Resolution: 50
Number of end-to-end ribbons/strings: 1

Refer to the Quick Start Guides to make sure the hardware is properly configured; otherwise the examples may not work. The guides are available here: www.lightorama.com ► User Manuals ►
Cosmic Color Ribbon Quick Start Guide
Cosmic Color Bulbs Quick Start Guide

Normal Unit ID Mode means the controller appears as one device on the LOR network with all channels on that one Unit ID.

Triples Channel Mode means that the RGB channels for a pixel will be adjacent. E.g., channels 1, 2 & 3 are the R, G & B channels for the pixel nearest the controller.

Resolution 50 means that each pixel on the device can be individually controlled.

Resolution, Macro & Color Channels

The first 50 RGB channels (150 raw channels) control the color/intensity of the pixels.

Channels above the first 150 are used to access the Color and Macro effects. These channels never move, they are always 151 to 157.

Channel 151 – Logical resolution

Channel 152 – Macro mode
Channel 153 – Macro submode
Channel 154 – Macro effect
Channel 155 – Color effect mode
Channel 156 – Color speed
Channel 157 – Color intensity

These channels must be set to the appropriate intensity (values listed below) in the Sequence Editor for the entire time the effect or resolution is desired.

Logical Resolution (channel 151)

This channel allows the logical resolution of the device to be changed on the fly. The logical resolution is the number of pixels the device appears as in the Sequence Editor or Hardware Utility.

The CCR ribbon and a CCB bulb string have a physical resolution of 50 pixels. There are 50 individually controllable physical pixels. This means the ribbon/string can appear as up to 150 regular channels or 50 RGB channels. If the logical resolution channel is set to one of the following intensities, adjacent physical pixels may be combined to reduce the number of logical pixels:

1, 2, 5, 10, 16, 17, 25 & 50

Any other value will select the resolution configured with the Hardware Utility, which should be 50.

When Logical Resolution channel is set to 1% intensity, a single RGB channel will set the color/intensity of the entire device. The entire device is one logical pixel. The Logical Resolution channel must be set to 1% intensity for the entire time you want this logical resolution to be in effect.

When the Logical Resolution channel is set to 5% intensity, five RGB channels will set the color/intensity of the five equal segments of the device. Each group of ten adjacent pixels (30 RGB LEDs for the CCR and 10 RGB LEDs for the CCB) will change as a unit.

Note that logical resolutions 16 & 17 do not divide evenly into 50 physical pixels. With a logical resolution of 16, the logical pixels at the ends of the device have one more physical pixel than the center logical pixels. In the case of 17, the center logical pixel has one fewer physical pixels than all the other logical pixels.

Since we are in Triples channel mode, only as many RGB channels as are necessary to address the current resolution are used. I.e. the first five RGB channels control the entire device if the logical resolution channel is set to 5% intensity.

In Sequential channel mode, the logical resolution selected causes the points where the G and B channels start to move. I.e. the first G channel will be 51 if the logical resolution is 50. The first G channel will be 6 if the logical resolution is 5. This was done for legacy support and DMX.

Color Effects (Channels – 155, 156, 157)

There are two ways to manipulate the colors and/or intensities of the logical pixels. The most familiar way is to set or fade the RGB channels. This permits great control but can be tedious. The second way is to use a Color Effect. When using a color effect, the RGB channels should be off.

If you use the RGB channels and a color effect at the same time, they will step on each other since they share the same internal variables in the controller.

Setting the intensity of Color Mode channel 155 to one of the following values selects the color effect:

Twinkle Effects Table

1 – Twinkle red
2 – Twinkle green
3 – Twinkle blue
4 – Twinkle red + green
5 – Twinkle red + blue
6 – Twinkle green + blue
7 – Twinkle white
8 – Twinkle random (red + green + blue)
9 – Twinkle random (2 million colors)
23 – Twinkle red or green
24 – Twinkle red or blue
25 – Twinkle green or blue
26 – Twinkle random (red or green or blue)

Dazzle Effects Table

10 – Dazzle red
11 – Dazzle green
12 – Dazzle blue
13 – Dazzle red + green
14 – Dazzle red + blue
15 – Dazzle green + blue
16 – Dazzle white
17 – Dazzle random (red + green + blue)
18 – Dazzle random (2 million color)
19 – Dazzle red or green
20 – Dazzle red or blue

21 – Dazzle green or blue
22 – Dazzle random (red or green or blue)

“Red + green” means an ‘on’ pixel will be red or green or yellow (red+green). “Red or green” means an ‘on’ pixel will be red or green.

Dazzle varies the intensity in a small range and can randomly select colors. It is like twinkle, but with no ‘off.’ Sort of a color shimmer.

During Twinkle or Dazzle effects, channel 156 controls the speed of the effect and channel 157 controls the overall intensity (brightness) of the effect.

You can use the resolution channel to set the size of the logical pixel that changes during a color effect. If the logical resolution is set to the physical resolution, then each physical pixel changes independently. If your audience is far from the device, you may want to lower the logical resolution so that one or more adjacent physical pixels change together to make the effect more noticeable.

Macro Effects (Channels – 152, 153, 154)

The Macro Mode channel 152 selects a macro effect that will be placed ‘on top’ of the RGB channels or Color Effect. The Macro Effect is a pattern placed over the pixels that exposes them in different ways.

For most macro effects, setting the Macro Mode channel 152 to a legal macro effect ‘intensity’ will cause the device to go dark until you set the intensity of or fade the Macro Effect channel 154.

Macro effects always run at the full physical pixel resolution of the device regardless of the current

logical resolution setting. Logical resolution only affects the RGB and Color Effect channels.

The Macro Effect channel responds to intensities up to 99% and fades to 99%. There is a discontinuity between 99% and 100% so to obtain smooth effects do not go above 99%. This restriction does not apply to strobe effects.

Macro Effects Table

1 – Fill from Controller to End
2 – Fill from End to Controller
3 – Fill from Ends to Center
4 – Fill from Center to Ends
5 – Chase away from Controller
6 – Chase towards Controller
7 – Double Arch Fill Away
8 – Double Arch Fill Towards
9 – Beat Chase Away
10 – Beat Chase Towards
11 – Strobe All
12 – Strobe Random

The Macro Mode channel is set to one of the intensities listed in the previous table for the duration of the effect. The Macro Submode channel 153 is usually set to an intensity for the duration of the effect.

Macro Mode 1 – Fill from Controller to End

As you fade the Macro Effect channel from 0 to 99%, the pixels will be exposed from the controller end to the far end. What you see depends upon the current state of the underlying RGB channels or Color Effect.

Setting the Macro Submode channel to an intensity between 1% and nn% will move a segment of that many physical pixels from the controller to the far end as you fade the macro effect channel. nn cannot be larger than one less than the physical number of pixels on the device.

Macro Mode 2 – Fill from End to Controller

As you fade the Macro Effect channel from 0 to 99%, the pixels will come on from the far end to the controller end. What you see depends upon the current state of the underlying RGB channels or Color Effect.

Macro submode is not used.

Macro Mode 3 – Fill from Ends to Center

As you fade the Macro Effect channel from 0 to 99%, the pixels will come on from ends to the center. What you see depends upon the current state of the underlying RGB channels or Color Effect.

Setting the Macro Submode channel to an intensity between 1% and 24% will move a segment of that many physical pixels from the ends to the center as you fade the Macro Effect channel.

Macro Mode 4 – Fill from Center to Ends

As you fade the Macro Effect channel from 0 to 99%, the pixels will come on from the center of the device to ends. What you see depends upon the current state of the underlying RGB channels or Color Effect.

Macro submode is not used.

Macro Mode 5 – Chase away from Controller

The Macro Submode channel sets th e number of pixels on and off in the chase. E.g. an intensity of 42% means 4 pixels on and 2 pixels off. What you see depends upon the current state of the underlying RGB channels or Color Effect.

The Macro Effect channel controls the speed of the chase.

Macro Mode 6 – Chase towards Controller

The Macro Submode channel sets the number of pixels on and off in the chase. E.g. an intensity of 16% means 1 pixel on and 6 pixels off. What you see depends upon the current state of the underlying RGB channels or Color Effect.

The Macro Effect channel controls the speed of the chase.

Macro Mode 7 – Double Arch Fill Away

Double arch fill from controller and center of device towards the far end. Submode and effect channels are used as with macro mode 1. What you see depends upon the current state of the underlying RGB channels or Color Effect.

Macro Mode 8 – Double Arch Fill Towards

Double arch fill from far end and center towards the controller. Submode and effect channels are used as with macro mode 2. What you see depends upon the current state of the underlying RGB channels or Color Effect.

Macro Mode 9 – Beat Chase Away

The Macro Submode channel sets the number of pixels on and off in the chase. E.g. an intensity of 42% means 4 pixels on and 2 pixels off. What you see depends upon the current state of the underlying RGB channels or Color Effect.

Each time the intensity changes on the Macro Effect channel the chase steps one pixel away from the controller.

Macro Mode 10 – Beat Chase Towards

The Macro Submode channel sets the number of pixels on and off in the chase. E.g. an intensity of 16% means 1 pixel on and 6 pixels off. What you see depends upon the current state of the underlying RGB channels or Color Effect.

Each time the intensity changes on the Macro Effect channel the chase steps one pixel towards from the controller.

Macro Mode 11 – Strobe All

This effect causes the all of the pixels to strobe simultaneously.

The Macro Submode channel selects the 'on' time of the pixels. If this channel is left at 0% the 'on' time is 25 ms. It can be changed from 8.33 ms to 833ms in 8.33 ms steps.

The Macro Effect channel controls the length of the strobe period (On time + Off time.) 0% is approximately 3 seconds and decreases to slightly longer than the 'on' time at 100%. The pixels will show the underlying RGB or Color Effect for a time

set by the Macro Submode channel and then go off for a time related to the Macro Effect channel's intensity.

If you want a short pulse of light, but don't want it to repeat, set the Macro Submode to the length of the pulse you want. Leave the Macro Effect channel at 0%. Wait a few hundredths of a second for these to be seen by the controller and then set the Macro Mode channel to 11 for a 10^{th} of a second and then back to 0%. This will emit one pulse because the effect is not on long enough to repeat.

Macro Mode 12 – Strobe Random

This effect causes the pixels to randomly strobe. It is similar to a twinkle color effect except that it exposes the underlying RGB or color effect rather than creating a color itself.

The 'on' time is controlled by the Macro Submode channel like Macro Mode 11. The Macro Effect channel controls the speed of the random strobe rather than the 'off' time.

Since channels strobe randomly, increasing the Macro Effect channel's intensity causes the lit pixels to be more prevalent. At 100%, the pixels will appear to be shimmering, unless the underlying RGB channels are not always on. In this case the strobe 'on' time may expose a pixel that is not 'on' because of what is happening on the RGB channels or what the current Color Effect is doing.

Caveats

Remember that the order in which the software sends LOR commands to controllers in a

centisecond is not predictable. This means that you should NOT set any upper channel commands (channels 151-157) in the same centisecond as you are changing the RGB channels. This can cause confusing results.

Likewise it is always better to configure a Macro Effect at least a few centiseconds (1/100 sec) before activating any underlying RGB or Color Effect. This guarantees no flash of the LEDs that might occur because the macro effect command has not yet been received by the controller, but the RGB/Color effect has.

Hardware and Software Set Up

If you have not set up the RS485 adapter on your PC, refer to the manual available here: http://lightorama.com/PDF/RS485_Adapters_Man_Web.pdf

If you have not set up the Light O Rama software on your PC, refer to this page: http://lightorama.com/SoftwareDownloadPage.html

If your configuration is different or you are not sure of the configuration, refer to the Quick Start manual: http://lightorama.com/Documents/QuickStartGuideForColorRibbon.pdf

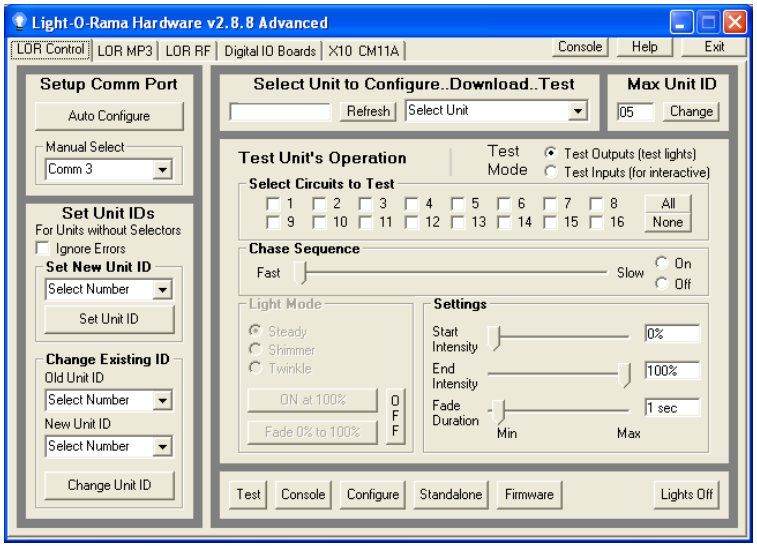
Using the Hardware Utility (HWU) to experiment

This section shows how to use the Hardware Utility to manipulate the Color Ribbon or Color Bulbs. Both Color Effects and Macro Effects will be covered.

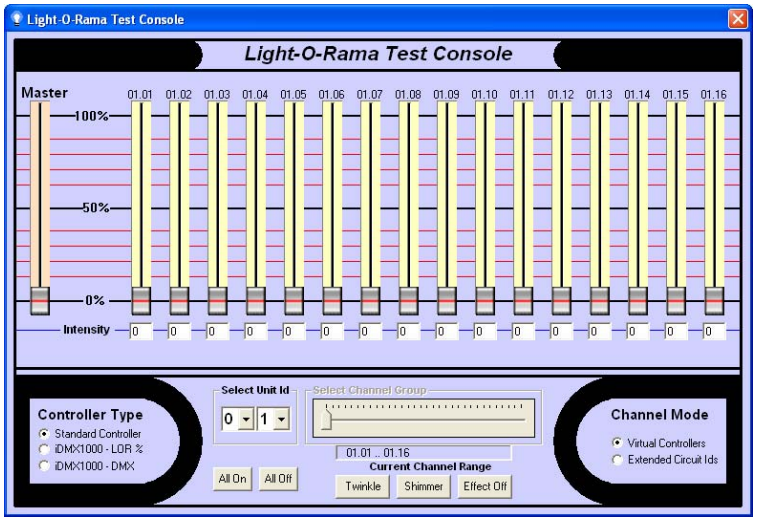
Your device should be configured as follows:

- Unit ID Mode: Normal
- Channel Mode: Triples (RGB, RGB,…)
- Standalone Speed: <does not matter>
- Resolution: 50 Pixel
- Strips: 1
- DMX Mode: <does not matter>

First, start the Hardware Utility. You should see this screen with no errors:



Click the Console button at the bottom of the window. The following window will pop up:



Use the Select Unit Id drop down menus to select the unit ID of your device.

Under Channel Mode (lower right) click the radio button for Extended Circuit Ids. The Select Channel Group slider (center bottom) will become available.

HWU –RGB Channels

Make sure the Select Channel Group slider is all the way left. Across the top of the intensity sliders, you will see your unit ID followed by 001 to 016. The sliders are set to affect the first 16 red, green and blue channels of the device.

Move the leftmost slider, the one with 001 above it. This affects the first (nearest the controller) pixel's red. The next slider, 002 affects the first pixel's green.

Move the Select Channel Group slider right until you can affect channels 145 to 160. Since the device has 50 RGB pixels, channels 148, 149 and 150 are

the red, green and blue channels of the last (farthest from the controller) pixel. Move these sliders to confirm that.

> *Note that the intensity sliders only send information to the device when they are moved. This means that when you move the Select Channel Group slider to a new group, the current positions of the intensity sliders are NOT sent to that group. You must move the intensity sliders to send data to the device after moving the Select Group Slider.*

Later, when we add the device to a sequence with the Sequence Editor, these first 150 separate red, green and blue channels will be combined into 50 RGB channels.

HWU –RGB Channels and Resolution

At their highest resolution, the CCR ribbon and a CCB bulb string have 50 pixels which correspond to 50 RGB channels or 150 separate color channels. For some applications this can be overkill and running the devices at lower resolutions will make programming easier.

Channel 151 (also called circuit id 151) can be used to change the number of logical pixels on the device. The devices always have 50 physical pixels. When you change the resolution, the controller firmware combines adjacent physical pixels into logical pixels.

To see how this works, move the Select Channel Group slider until the slider affect channels 145 to 160. Make sure all channels are set to 0% intensity. Move the slider for channel 151 (resolution) to some

non-zero value and then back to zero. This guarantees that the logical resolution is set to the default which should be 50 pixels. Move the slider for channel 152 (Macro Effect) to some non-zero value and then back to zero. This guarantees that no Macro Effect is selected. Move the slider for channel 154 (Color Effect) to some non-zero value and back to zero. This guarantees that no Color Effect is selected.

Slide channel 151 to 1%. This sets the number of logical pixels on the device to 1, meaning that the entire device is one logical pixel.

Leaving the 151 slider at 1%, move the Channel Group Slider back to the extreme left so you can affect channels 1 to 16. The slider for channel 1 now controls red for the entire device. Channel 2 controls green and channel 3 controls blue.

You can go back to channel 151 and change it to intensity 5% to set the number of logical pixels to 5. When you go back to channels 1 to 16, you will find that the first 15 channels control the entire device. Channel 1 controls the red for the first 10 physical pixels because the entire device is only 5 pixels now.

HWU – Macro Effects

A Macro Effect can be thought of as a pattern placed on top of the device that exposes the pixels in an interesting way.

HWU – Fill from Controller to End Example

This effect exposes the underlying RGB channels with full 50 pixel resolution regardless of the

selected logical resolution. The pixels will be exposed starting at the controller end and progressing to the far end. How many of the pixels are exposed depends upon the current intensity of the Macro Effect channel.

First, set channel 151 (resolution) to 1% so the ribbon or bulb set is one logical pixel. Use channels 1, 2 and 3 to select a color for the entire device.

Second, set channel 152 (Macro Mode) to 1% to select the “Fill from controller to End” effect. As soon as you do this the RGB pixels will go dark. This is because the color you selected in the previous paragraph is now ‘covered’ by the macro effect.

Third, move the intensity slider for channel 154 (Macro Effect). As you move the intensity from 0% to 99%, the color you selected will be exposed. To use this effect in your sequence, you would set the channels in your sequence exactly as you set the HWU sliders.

> *Note that the intensity varies from 0% to 99% for the Macro Effect channel (154.) 100% should not be used on the Macro Effect channel.*

HWU – Beat Chase Away Example

This effect exposed the underlying RGB channels as settable fixed segments. These segments can be marched away from the controller using the Macro Effect channel.

First, set channel 151 (resolution) to 1% so the ribbon or bulb set is one logical pixel. Use channels 1, 2 and 3 to select a color for the entire device.

Second, set channel 152 (Macro Mode) to 9% to select the “Beat Chase Away” effect. As soon as you do this the RGB pixels will go dark. This is because the color you selected in the previous paragraph is now ‘covered’ by the Macro Effect.

Third, set channel 153 (Macro Submode) to an intensity to set the appearance of the chase. E.g., if you want three pixels on and four off in your chase, set the intensity to 34%. The RGB device will now display the underlying RGB channels with this chase pattern on top. The chase will not be moving.

Fourth, move channel 154 (Macro Effect). Each time the intensity changes on channel 154, the chase will move one physical pixel away from the controller. In your sequence, you could turn the Macro Effect channel on and off with the beat to get the chase to move in time with your music.

HWU – Color Effects Example

Color Effects are used to set the RGB channels without having to manipulate 50 RGB channels or 150 separate color channels. You should not use the RGB channels (color channels) while using a Color Effect.

We will do a Twinkle Random (color effect number 8.)

First, use the Select Group slider to select channels 145 to 160. Make sure all channels are set to 0% intensity. Move the slider for channel 151 (resolution) to some non-zero value and then back to zero. This guarantees that the logical resolution is set to the default which should be 50 pixels. Move the slider for channel 152 (Macro Effect) to some

non-zero value and then back to zero. This guarantees that no Macro Effect is selected.

Second, move the slider for channel 155 (Color Effect) to 8% to select Twinkle Random.

Third, move the slider for channel 157 to 100% to select full intensity for the pixels. The pixels should be twinkling slowly.

Fourth, move the slider for channel 156 (Speed) to change the speed of the twinkle. Each pixel has a twinkle timer, the speed will take effect for a pixel the next time it completes a twinkle cycle.

HWU – Color Effect + Macro Effect Example

In this example, a color effect will be placed under a chase effect. The Dazzle Random color effect will be used with the Chase Towards Controller Macro effect.

1. Leave all RGB Channels off.
2. Set the Channel 151 (Resolution) to intensity 0% – this selects the configured resolution, which should be 50 pixels.
3. Set the Channel 152 (Macro Mode) to intensity 6 – chase towards controller.
4. Set the Channel 153 (Macro Submode) to intensity 34% – three pixels on, four pixels off.
5. Set the Channel 154 (Macro Effect) to intensity 65% – this selects the speed of the chase.
6. Set the Channel 155 (Color Effect) to intensity 17% – this selects Dazzle in 7 color mode.

7. Set the Channel 156 (Color Effect Speed) to intensity 90% – this selects pretty quickly changing colors.
8. Set the Channel 157 (Color Effect Intensity) to 100% – this sets the LED brightness to maximum.

There should be a bright, colorful chase towards the controller.

Using the Sequence Editor (SE)

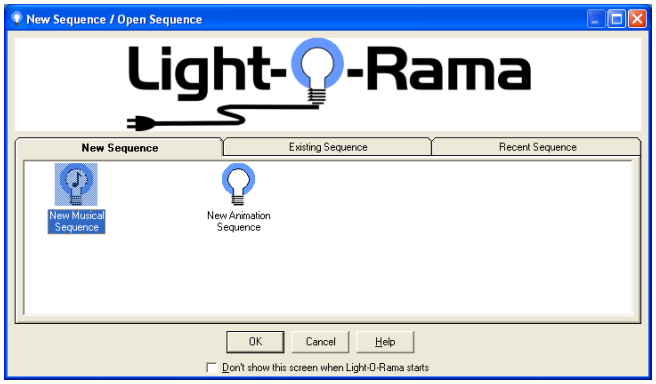
This section shows how to use the Color Ribbon or Color Bulbs in the Sequence Editor. RGB channels, Color Effects and Macro Effects will be covered.

Your device should be configured as follows:

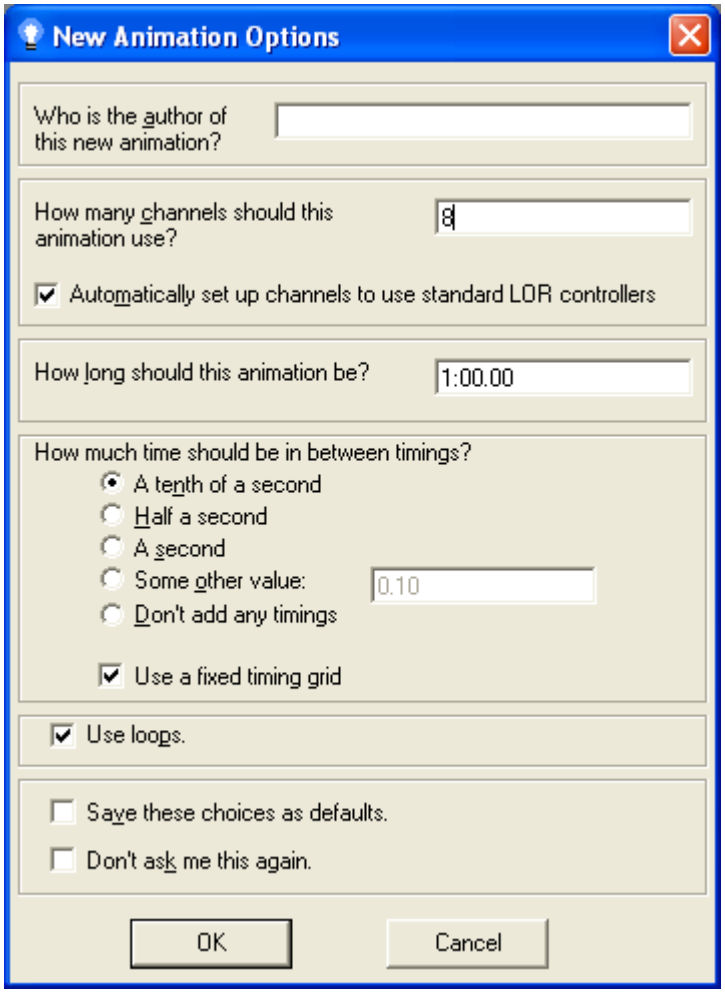
- Unit ID Mode: Normal
- Channel Mode: Triples (RGB, RGB,…)
- Standalone Speed: <does not matter>
- Resolution: 50 Pixels
- Strips: 1
- DMX Mode: <does not matter>

SE – Adding the CCR/CCB

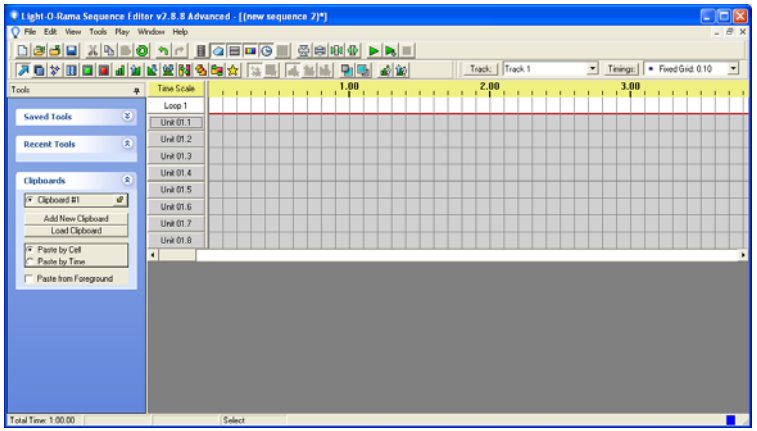
Start the Sequence Editor. If this box does not appear, click File -> New to get it:



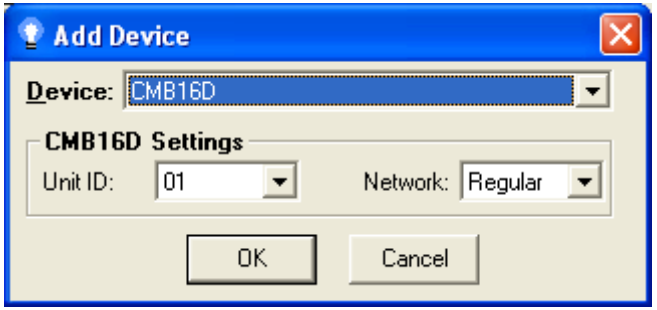
Select the “New Sequence” tab, click “New Animation Sequence” and click the OK button. You will see this window:



Click the OK button and you will see this window:

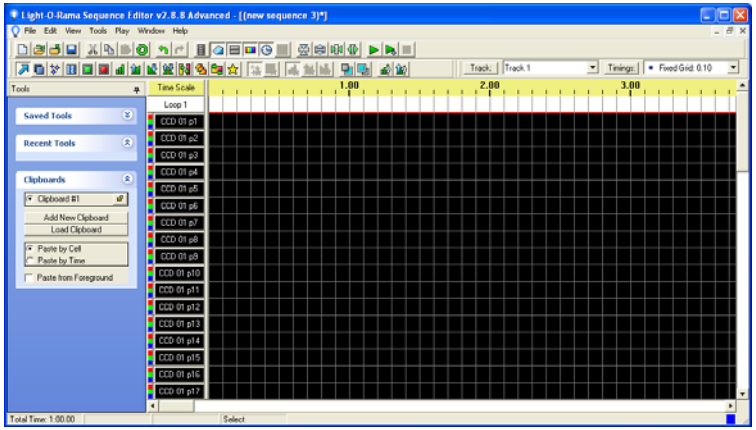


Right click the first channel button labeled “Unit 01.1” and select Insert Device -> Insert Device Above. The following window will be displayed:



Use the Device drop down to select Cosmic Color Device. Use the Unit ID drop down to select the unit ID of your CCR. Leave the Native Mode and Triples radio buttons selected. Click the OK button.

The Add Device tool will insert 50 RGB channels followed by the Resolution, Macro and Color Effect channels. The window will look like this:



Use the right scroll bar to scroll down to the channels after the 50 RGB channels and the 7 control channels. If you want to, you can delete the Unit 01.1, … channels by right clicking them and choosing Delete Channel.

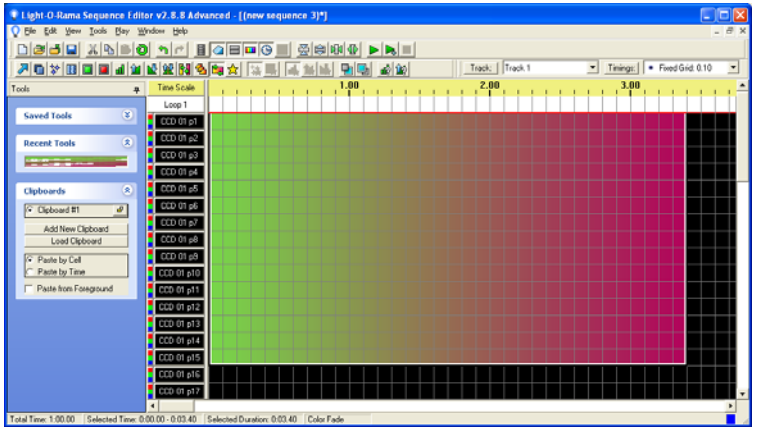
From the top menu, click Play -> Play Range -> Visible Screen. This will only play the visible screen when you click the green play triangle.

SE – Color Fade Example

Click the Color Fade button and you will see this window:

You can click the Random Buttons to get a color fade you like or use the Choose button to select a color for the beginning and end of your fade.

Once you have a color fade, click on the grid and while holding the left mouse button, move the mouse to place this fade on the CCR RGB channels. For example:

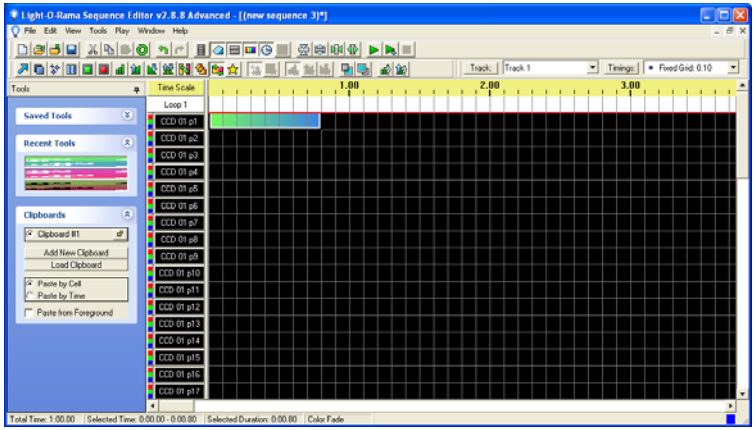


Clicking the play button will cause the first 15 pixels to fade from green to magenta.

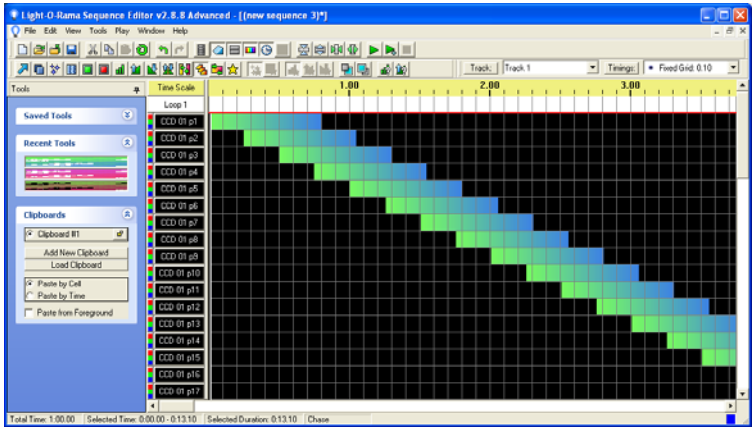
SE – Color Fade with Chase

If you are continuing from the previous example, type Control-Z a few times to clear the grid. In any event, clear the grid of all effects.

Click the Color Fade button and select an interesting fade. Click in the upper left of CCD P1 (the first pixel and select a few cells for that pixel. Your grid will look something like this:



Next, click the Chase tool  and click on the left cell of the fade you just inserted, then while holding the left mouse button move down and to the right to select all the RGB channels you want to chase. Your grid should look something like this:



When you click play  the device pixels will perform the fade on each pixel chasing away from the controller.

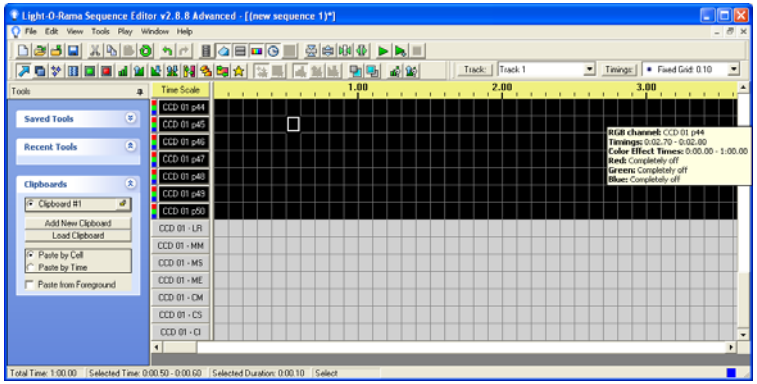
SE – Color Effect Example

If you are continuing from the previous example, type Control-Z a few times to clear the grid. In any event, clear the grid of all effects.

Scroll the SE grid down to the Cosmic Color device control channels:

- LR Logical Resolution
- MM Macro Mode
- MS Macro Submode
- ME Macro Effect
- CM Color Mode
- CS Color Speed
- CI Color Intensity

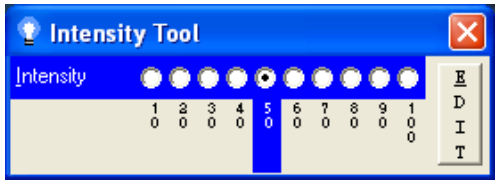
You should see something like this:



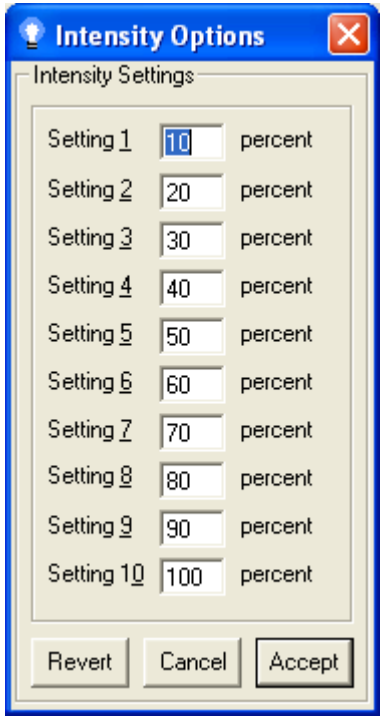
The channels following the RGB channels labeled LR, MM, MS, … are the control channels for Logical Resolution, Macro Effects and Color Effects.

We will be doing a Random Dazzle in Red + Green + Blue. This is Color Effect number 17. We will need

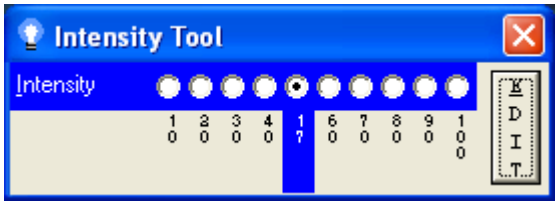
to set the Color Mode (CM) channel to 17% intensity for the entire time we want this effect to run. Click the Intensity Tool Setting/Options button  in the second row and this window will pop up:



Click the EDIT button on the Intensity tool and you will see this window:



Change setting 5 to 17 and click the Accept button. The Intensity Tool will look like this:



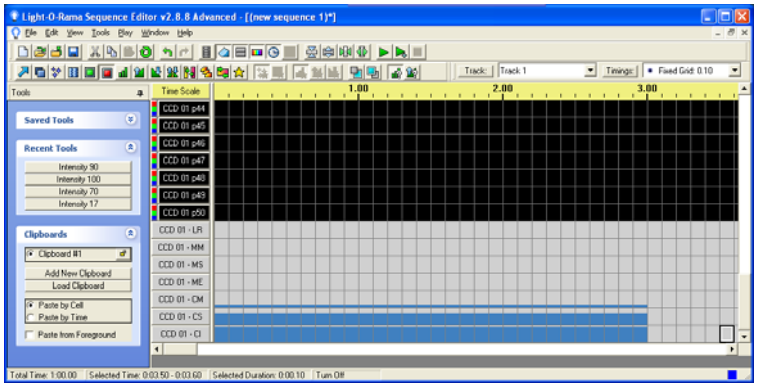
We now have a way to set part of the grid to 17% intensity to activate the color effect we want. Make sure the Radio button for 17% intensity is selected and click the Intensity Tool  in the second row.

Now go to the grid, click in the first cell of the Color Mode (CM) row and while holding the left mouse button fill this row for a few seconds.

Then select 70% from the Intensity Tool, click the first cell of the Color Speed (CS) row and while holding the left mouse button fill this row for a few seconds.

Finally, select 90% from the Intensity Tool, click the first cell of the Color Intensity (CI) row and while holding the left mouse button fill this row for a few seconds.

The grid will look like this:



We have set the Color Mode to 17% to select the Dazzle Effect. We have set the Color Speed to 70% to select how fast we want the dazzle colors to change and we have set the overall intensity of the RGB device to 90%.

Click the Play button to see this color effect in action.

SE – Macro Effect Example

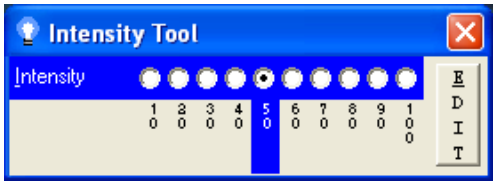
If you are continuing from the previous example, type Control-Z a few times to clear the grid. In any event, clear the grid of all effects.

In this example we will set the logical resolution of the ribbon or bulbs to one pixel. This will allow us to control the color of the entire RGB device with the first RGB channel.

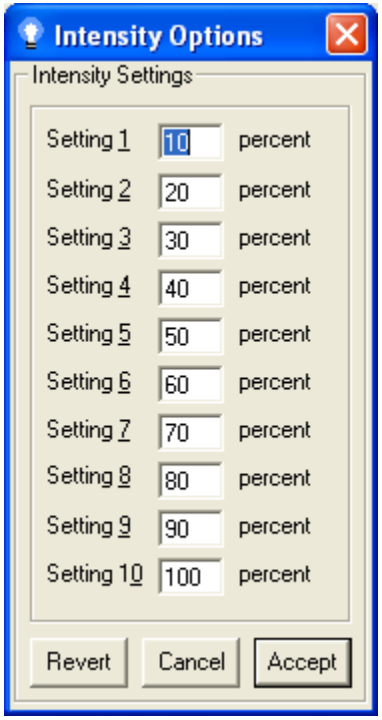
We will then set the first RGB channel to fade between two colors. During this fade we will use a macro effect to fill the ribbon or bulbs from the ends to the center and then back to the ends.

First, set up the Intensity Tool so that we can access intensities 1% and 3%. We need 1% to set the logical resolution of the ribbon or bulbs to 1 pixel and we need 3% to access the Macro Effect "Fill from Ends to Center."

Click the button in the second row to bring up the Intensity Tool. You will see this window:

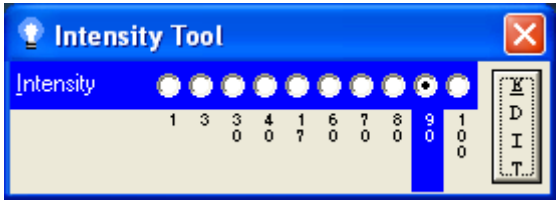


Click the Edit button so we can change the intensities. The following window will pop up:



Change Setting 1 to 1 percent, change Setting 2 to 3 percent and click Accept.

The Intensity Tool will look like this:



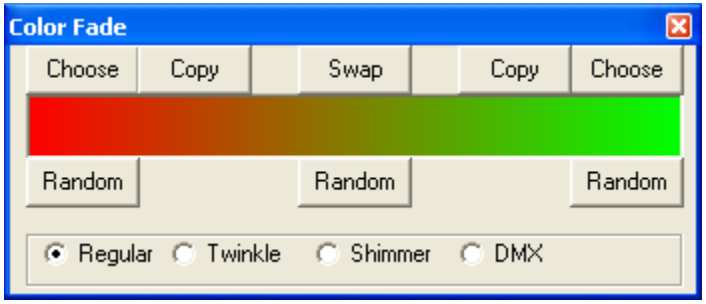
Now we can click the Radio Button for 1% and 3% intensity to set the control channels.

First set the Logical Resolution of the device to 1 pixel.

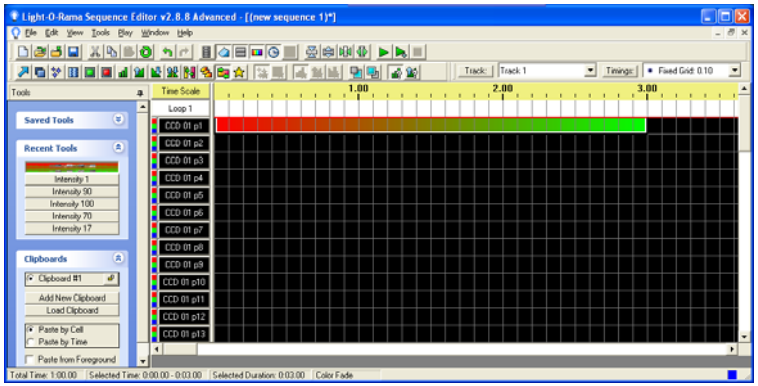
1. Click the Radio button for 1% intensity in the Intensity Tool window.
2. Click the Intensity Tool button  in the second row to select the Intensity Tool.
3. Scroll down to the 'LR' Channel in the grid.
4. Click the first cell and while holding the left mouse button drag the mouse across the 'LR' row from time 0 to 3 seconds. Release the left mouse button.
5. Because 1% intensity is so small, you will not be able to see this intensity in the grid. If you hover the mouse over any of the cells in the 'LR' row from 0 to 3 seconds, a window will pop up showing you what is set in that cell. It should say Intensity at 1%.

Second, scroll up to the first RGB channel at the top of the grid and create a color fade for the first 3 seconds as follows:

Click the Color Fade button  and this window will pop up:



You can adjust the fade by choosing a color or clicking the Random buttons until you get something you like. Once you have a color fade you like, click in the first cell of the first row and while holding the left mouse button, drag across the row to the 3 second mark. Your screen should look something like this:



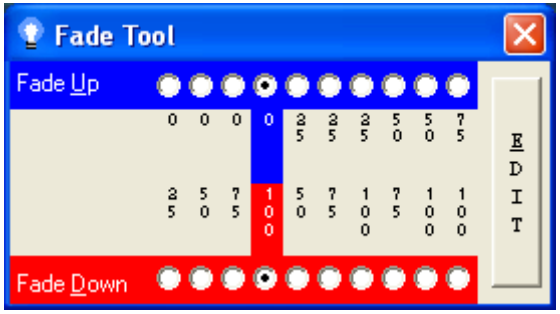
You can click the Play button  at this point and the entire ribbon should perform this fade. Because the logical resolution is set to one pixel, all pixels on the ribbon will fade from the color on the left to the color on the right.

Now scroll back down to the control channels.

Click the Radio button for 3% in the Intensity Tool window. Then click the Intensity Tool button to select the Intensity Tool.

Click the leftmost cell in the Macro Mode (MM) channel and while holding the left mouse button, drag across to the 3 second mark. Again, this intensity is too small to see, but if you hover over a cell it will display a window with the intensity.

Now click the Fade Tool Settings/Options button to bring up the following window:



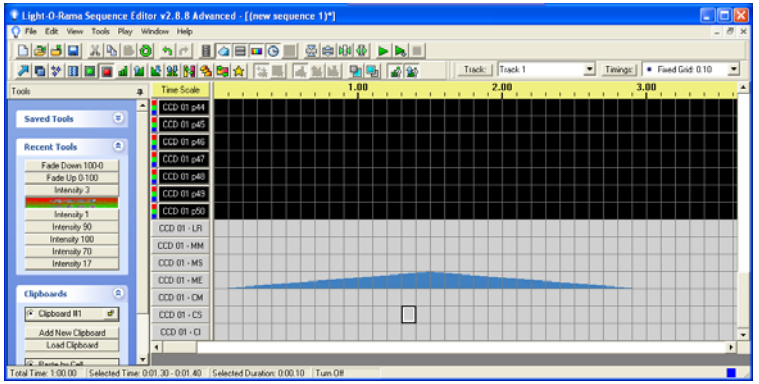
Click the Edit button and change one of the ranges to 0 to 99 and click Accept. Macro effects generally use 0-99% on the Macro Effect channel.

Click the Radio buttons on the Fade Tool for both Fade Up and Fade down for your 0-99% fade. The click the Fade Up Tool button to select the Fade Up tool.

Click the leftmost cell in the Macro Effect (ME) row and while holding the left mouse button, drag across to 1.5 seconds.

Now Click the Fade Down Tool button to select the Fade Down Tool. Click the cell just to the right of

the fade up you just did and while holding the left mouse button, drag across to 3 seconds. You screen should look like this:



Now click the Play button and the Fill macro effect should display on top of your color fade.

You may notice that the device flashes briefly before starting the macro fill effect. This happens because the RGB color fade is acted on by the controller before the macro fill effect is seen. See the *Caveats* section for preventing this behavior.

SE Color Effect with Macro Effect

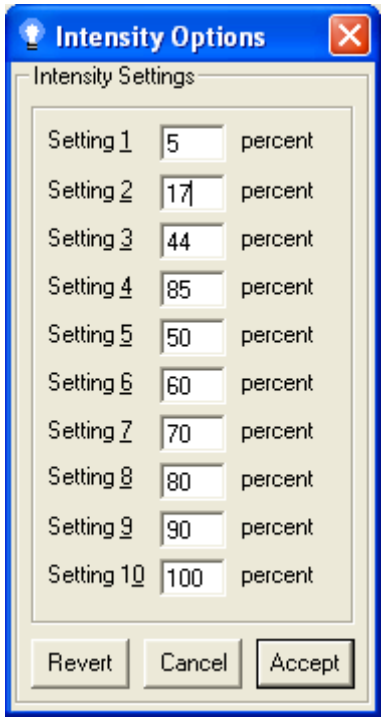
If you are continuing from the previous example, type Control-Z a few times to clear the grid. In any event, clear the grid of all effects.

In this example we will create a vividly colored chase in full 50 pixel resolution by setting the intensity on only 6 channels. Leave all RGB Channels and the LR (Logical Resolution) channel off

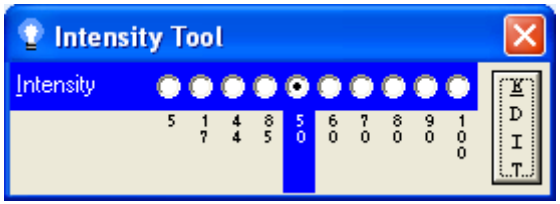
First we will set up the Intensity Tool so we can access the following intensities: 5%, 17%, 44%, 85%

and 90% – these intensities are needed to set the various Macro and Color Effect channels.

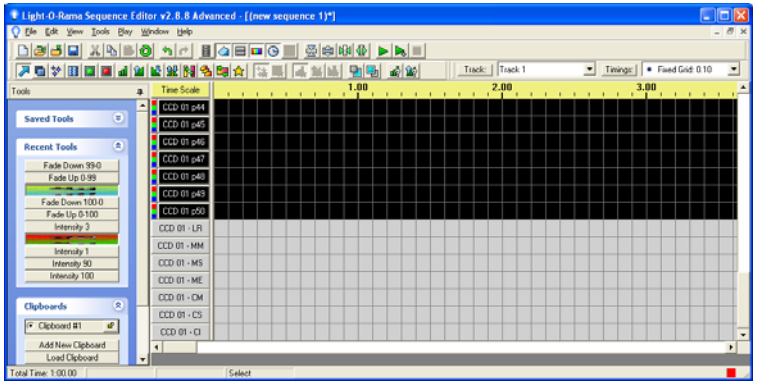
Click the  button in the second row to bring up the Intensity Tool. Then click the Edit button to bring up the Intensity Options window. Change the Percentages so you can access intensities 5%, 17%, 44%, 85% and 90%. The Intensity Options window should look something like this:



Click Accept and the Intensity Tool will now look like this:



Scroll down to the Macro Control and Color effect channels LR, MM, MS, ME, CM, CS and CI. The Sequence Editor will look like this:



Leave the LR (Logical Resolution) channel off so the device runs at full 50 pixel resolution.

First we will set the Macro Control channels up. This will prevent a flash of color that might result if we set up the Macro Control and Color Effect Channels at the same time.

Choose 5% intensity from the Intensity Tool window by clicking the first radio button. Click the Intensity Tool button  in the second row to select the Intensity Tool. Click the first cell in the MM (Macro Mode) channel and while holding the left mouse button, drag the mouse to the right for as long as you want this effect to happen. We have just

selected Macro Mode 5, which is Chase Away from Controller.

Click 44% intensity from the Intensity Tool window. Click the first Cell in the MS (Macro Submode) channel and while holding the left mouse button, drag the mouse to the right for as long as you did in the previous paragraph. Intensity 44 selects 4 pixels on and 4 pixels off in the chase.

Click 85% intensity from the Intensity Tool window. Click the first Cell in the ME (Macro Effect) channel and while holding the left mouse button, drag the mouse to the right for as long as you did in the previous paragraph. This selects the speed of the chase. Chase speed increases with increasing intensity.

The Chase Macro effect is now set up. Next we have to turn some RGB pixels on under the Macro Effect so we actually see something.

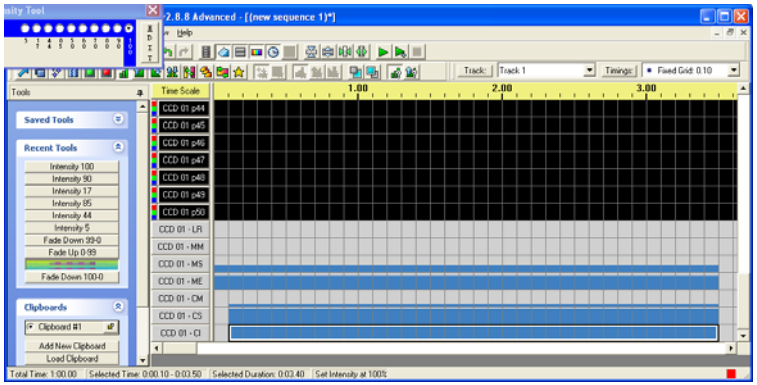
Click 17% intensity from the Intensity Tool window. Click the second cell in the CM (Color Mode) channel and while holding the left mouse button, drag the mouse to the right for as long as you did before. This selects a random Dazzle color effect in red + green + blue. We started this effect one tenth of a second later than the Macro effect so that there will not be a color flash because the controller received the Color Effect command before the Macro Effect command.

Click 90% intensity from the Intensity Tool window. Click the second cell in the CS (Color Speed) channel and while holding the left mouse button, drag the mouse to the right for as long as you did

before. This selects a fast speed for the color effect, meaning the colors will change quickly.

Finally, click 100% intensity from the Intensity Tool window. Click the second cell in the CI (Color Intensity) channel and while holding the left mouse button, drag the mouse to the right for as long as you did before. This selects full brightness for the color effect.

The Sequence Editor should look something like this:



The 5% intensity in the MM channel is to low to see, but if you hover over any cell in that row a window will pop up to show you the settings in that cell.

You can click the Play button  at this point and a colorful chase should happen for whatever time period you selected.

Appendix A

LOR Unit ID to DMX Address Table

The Hardware Utility is used to set the Unit ID of the controller. See the section *Assigning a Unit ID* for more information. The controller must be set to one of the LOR Unit IDs listed in the following table to recognize DMX protocol. E.g. setting the LOR Unit ID to “06” will result in the first DMX address for the controller being 81.

LOR Unit ID	DMX Address	LOR Unit ID	DMX Address
“01”	1	“11”	257
“02”	17	“12”	273
“03”	33	“13”	289
“04”	49	“14”	305
“05”	54	“15”	321
“06”	81	“16”	337
“07”	97	“17”	353
“08”	113	“18”	369
“09”	129	“19”	385
“0A”	145	“1A”	401
“0B”	161	“1B”	417
“0C”	177	“1C”	433
“0D”	193	“1D”	449
“0E”	209	“1E”	465
“0F”	225	“1F”	481

“10”	241	“20”	497

DMX Values for Resolution Selection

The Resolution channel can be used to change the logical resolution of the ribbon on the fly. The following table gives the mapping between DMX intensities and the resolution. See the *Logical Resolution* section for more information.

DMX Range	Resolution Selected
0	Configured
1-31	1
32-63	2
64-95	5
96-127	10
128-159	16
160-195	17
196-223	25
224-255	50

DMX Values for Macro & Color Effects

The following five tables show the conversion of a range of DMX intensities to a Macro or Color Effect number.

In order to use macro and color effects, the Hardware Utility must be used to configure the DMX Mode to permit this. See the *Hardware Configuration* section under *DMX Mode*.

Macro effects (macro modes) are selected with the first five DMX channels. Color effects (color modes) are selected with the five DMX channels starting at the ninth DMX channel. So, if the Unit ID was set to "08," then the controller would appear at DMX address 113, and the macro mode channels would be 113, 114, 115, 116 & 117 and the color mode channels would be 121, 122, 123, 124 & 125.

To use the following tables, lookup the macro/color effect number you want. E.g. 56 – Table 3 gives the DMX range for this effect number as 196-207 and the offset as 2. Using the example in the previous paragraph, to select color effect 56, DMX channel 123 (121 + offset 2) would be set to 196-207.

To select macro effect 5 (a chase,) Table 1 gives the DMX range for this effect as 64-75 and the offset as 0. Using the "08" Unit ID that resulted in a DMX base address of 113, this effect would be selected by setting DMX channel 113 (113 + offset 0) to 64-75.

Note Well: If any DMX color effect channel is non-zero, the RGB channels are disabled. If you set the color effect to an unimplemented effect number, the ribbon will be dark.

Effect Number	DMX Range	DMX Offset
0	0-15	0
1	16-27	0
2	28-39	0
3	40-51	0
4	52-63	0
5	64-75	0
6	76-87	0
7	88-99	0
8	100-111	0
9	112-123	0
10	124-135	0
11	136-147	0
12	148-159	0
13	160-171	0
14	172-183	0
15	184-195	0
16	196-207	0
17	208-219	0
18	220-231	0
19	232-243	0
20	244-255	0

Table 1

Effect Number	DMX Range	DMX Offset
0	0-15	1
21	16-27	1
22	28-39	1
23	40-51	1
24	52-63	1
25	64-75	1
26	76-87	1
27	88-99	1
28	100-111	1
29	112-123	1
30	124-135	1
31	136-147	1
32	148-159	1
33	160-171	1
34	172-183	1
35	184-195	1
36	196-207	1
37	208-219	1
38	220-231	1
39	232-243	1
40	244-255	1

Table 2

Effect Number	DMX Range	DMX Offset
0	0-15	2
41	16-27	2
42	28-39	2
43	40-51	2
44	52-63	2
45	64-75	2
46	76-87	2
47	88-99	2
48	100-111	2
49	112-123	2
50	124-135	2
51	136-147	2
52	148-159	2
53	160-171	2
54	172-183	2
55	184-195	2
56	196-207	2
57	208-219	2
58	220-231	2
59	232-243	2
60	244-255	2

Table 3

Effect Number	DMX Range	DMX Offset
0	0-15	3
61	16-27	3
62	28-39	3
63	40-51	3
64	52-63	3
65	64-75	3
66	76-87	3
67	88-99	3
68	100-111	3
69	112-123	3
70	124-135	3
71	136-147	3
72	148-159	3
73	160-171	3
74	172-183	3
75	184-195	3
76	196-207	3
77	208-219	3
78	220-231	3
79	232-243	3
80	244-255	3

Table 4

Effect Number	DMX Range	DMX Offset
0	0-15	4
81	16-27	4
82	28-39	4
83	40-51	4
84	52-63	4
85	64-75	4
86	76-87	4
87	88-99	4
88	100-111	4
89	112-123	4
90	124-135	4
91	136-147	4
92	148-159	4
93	160-171	4
94	172-183	4
95	184-195	4
96	196-207	4
97	208-219	4
98	220-231	4
19	232-243	4
100	244-255	4

Table 5

DMX Values for Chase Effects

For chase effects, the macro submode channel sets the number of pixels on/off in the chase. The following table lists the DMX intensity ranges and the corresponding chase format.

DMX Range	Pixels On/Off	DMX Range	Pixels On/Off
0-9	1,1	130-139	3,4
10-19	1,2	140-149	3,5
20-29	1,3	150-159	4,1
30-39	1,4	160-169	4,2
40-49	1,5	170-179	4,3
50-59	2,1	180-189	4,4
60-69	2,2	190-199	4,5
70-79	2,3	200-209	5,1
80-89	2,4	210-219	5,2
90-99	2,5	220-229	5,3
100-109	3,1	230-239	5,4
110-119	3,2	240-249	5,5
120-129	3,3	250-255	5,6

DMX Values for Fill Effects

Some macro fill effects take a number of pixels in the macro submode channel. The following table lists the DMX intensity ranges and the corresponding pixel count.

DMX Range	Pixels	DMX Range	Pixels
0-9	0	130-139	13
10-19	1	140-149	14
20-29	2	150-159	15
30-39	3	160-169	16
40-49	4	170-179	17
50-59	5	180-189	18
60-69	6	190-199	19
70-79	7	200-209	20
80-89	8	210-219	21
90-99	9	220-229	22
100-109	10	230-239	23
110-119	11	240-249	24
120-129	12	250-255	25

Light-O-Rama, Inc.
Tel: (518) 539-9000
Fax: (518) 538-0067
info@lightorama.com