Light-O-Rama

CR150D DMX

Cosmic Color Ribbon

includes Controller & Power Supply

User Manual
December 9, 2009
V1.3

Cover Image Note

The cover picture of the ribbon was taken on a bright white background, but because of the ribbon's brightness, the camera's light sensitivity had to be turned down to the point where the background appears to be black.

Table of Contents

Introduction

The Light-O-Rama (LOR) Cosmic Color Ribbon is a flexible ribbon that includes a controller and low voltage power supply. It understands and automatically detects both LOR and DMX protocols.

The ribbon has 150 super bright RGB LEDs spaced evenly along one side of a 197" flexible circuit board. The flexible circuit board is made weatherproof by sealing it in a rectangular UV resistant silicone tube.

The CR150D controller is enclosed in an aluminum box. The separate 12 VDC power supply is universal voltage capable. These two components must be housed in a weatherproof box for outside use.

The controller is daisy chained using Cat5e cables into a LOR network like any other LOR controller. The CR150D has an accessory power supply allowing it to be used with wireless units and/or one of the LOR Show Directors

The Windows Showtime software is used to design and build *Sequences* (controller commands that may be choreographed to audio/music.) These user created sequences and/or pre-programmed musical sequences available from LOR and other companies are then arranged into *Shows*. These shows are played by your PC or one of the LOR Show Directors.

What's in the Box

- 16.4' weatherproof color ribbon
- 157 channel controller in aluminum box
- Universal voltage power adapter
- Ten plastic mounting clips
- User manual

The only item needed to daisy chain the ribbon into your network is a Cat5e cable.

This manual is also available at www.lightorama.com ► Support ► CR150D User's Manual.

Hardware Utility Version

The version of the Hardware Utility appears in the title bar to the right of "Light-O-Rama Hardware." If the version number is less than 2.4.9, then you need a new Hardware Utility. Download the latest version of the Showtime software from this location: http://store.lightorama.com/software1.html. This is a full ShowTime Software download that includes the latest Hardware Utility.
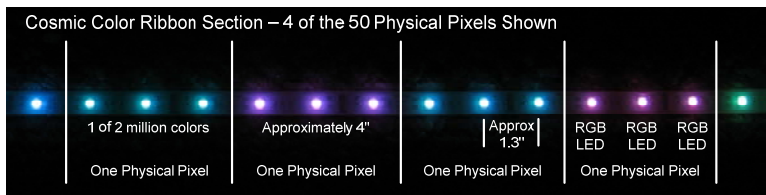
Firmware Version

This document reflects CR150D firmware version 1.04. The firmware version is determined by using the Refresh button in the Hardware Utility.

Detailed Ribbon Description

The ribbon is 197" long +/-1". The LEDs start about ⅞" from the ends. There are 150 surface mount, RGB, 5mm x 6mm LEDs. The LEDs have a 120º beam angle. The cable from the end of the ribbon to the controller is 6'. The cable terminates in a plug that fits into the controller.

There are 50 integrated circuits evenly spaced along the ribbon. Each of these ICs can be controlled independently. Each IC has three of the RGB LEDs connected to it. The combination of one IC and three RGB LEDs is one physical pixel. All three RGB LEDs are driven in parallel by their IC.

Cosmic Color Ribbon Section – 4 of the 50 Physical Pixels Shown

1 of 2 million colors | Approximately 4" | Approx 1.3" | RGB LED RGB LED RGB LED
One Physical Pixel | One Physical Pixel | One Physical Pixel | One Physical Pixel

Each IC has one red, one green and one blue channel. The following is a picture of one physical pixel on the ribbon:

One Physical Pixel, approximately 4"

RGB LED   RGB LED   RGB LED

Integrated Circuit Controller
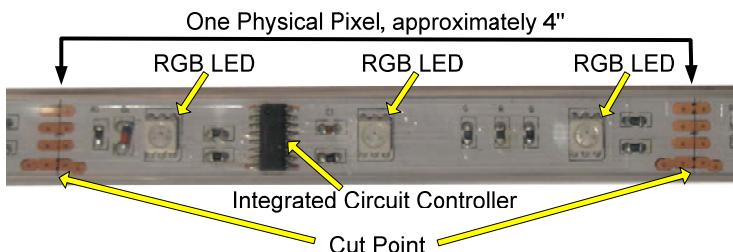
Cut Point

RGB LED – one of the three RGB LEDs that make up one physical pixel.

Integrated Circuit – The IC that controls these three RGB LEDs.

Cut Point – the ribbon can be cut at these points, but doing so voids the ribbon portion of the warranty.

Important Considerations

The ribbon's controller and power supply are not weather resistant and must be housed in a weatherproof box if placed outside. Water damage to controller or the power supply is not covered by the warranty.

The ribbon is a flexible circuit board with surface mount components on it. Do not crush or bend it sharply.

The ribbon can be made to conform to a 3' diameter arc in the plane of the ribbon, as opposed bending it in its long dimension. When bending the ribbon in its plane, there will be minor buckling and this is ok. Do not attempt to flatten the ribbon completely.

The ribbon can be wrapped around a 3" diameter pole.

Do not pull on or stretch the ribbon. The ribbon is not meant to be continuously flexed. It should be mounted and then left alone.

When tying the ribbon to a structure such as an arch, put the cable ties or clips at the 'cut points' – see the *Detailed Ribbon Description* section. There are no electronic components at these points. Tighten cable ties only enough to keep the ribbon from moving. Do not distort the rectangular silicone tube too much.

The ribbon and cable to the controller are UV resistant and designed for outdoor use.

You can cut the ribbon at it 'cut points.' You will have to solder a four-wire 22 gauge or large cable between the cut pieces. You will have to reseal the cut points with clear silicone seal.

Note also that LOR can not warranty a ribbon that has been cut. LOR does stock ribbon sections that can be purchased should you damage your ribbon when cutting it or by accidentally standing on it, etc.

Hardware Configuration

Assigning a Unit ID

If you have not installed the Light O Rama Windows Showtime Software, do it now. You will also need one of the RS485 adapters installed. See the *Connecting the CR150D to a PC* section for more information.

Plug the CR150D's power adapter into AC power and connect the power adapter to the DC power barrel on the CR150D. The Status LED will blink about twice/second. This means that the controller has booted and is waiting for the PC to talk to it.

Use a Cat5e LAN cable to connect your RS485 adapter to the CR150D.

Start the Hardware Utility – click **start ► All Programs ► LightORama ► Light-O-Rama Control Panel.** There will be a light bulb with a blue halo on the right side of the task bar at the bottom of the screen. Right-click the light bulb and select *Hardware Utility* from the menu. Make sure the

LOR Control tab is selected. You will see the window shown on the next page.
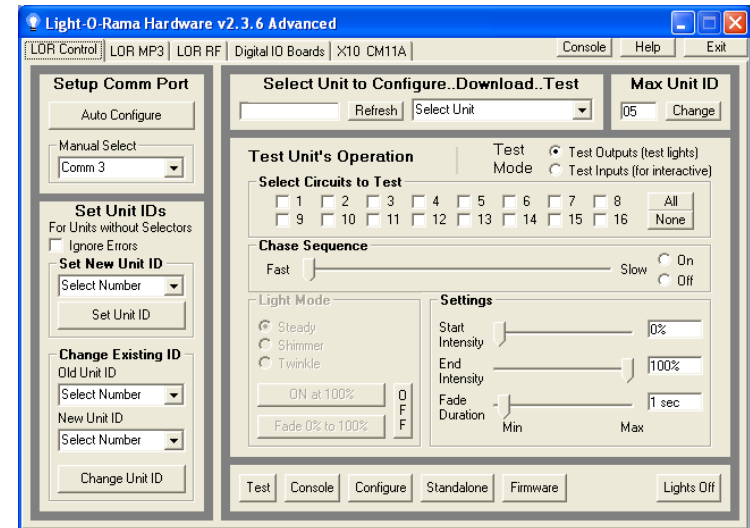
Click the *Auto Configure* button in the *Setup Comm Port* section. The Hardware Utility will search for the COM port that your RS485 adapter is plugged into and select it.

When assigning a unit ID, only one controller may be plugged into the RS485 adapter on the PC. Be sure you do not have more than one controller connected.

Steps to set/change unit ID:

1. In the *Change Existing ID* section, use the *Old Unit ID* drop-down menu to select *Any Unit*, then click *OK* in the warning box for changing all unit IDs, there should only be one unit attached.

2. Use the *New Unit ID* drop down menu to select "01" or whatever Unit ID you want.

3. Click the *Change Unit ID* button to set your CR150D unit ID. You will see a *Unit ID Changed* box – click OK.

Setting the Configuration

The Hardware Utility is used to set the power-up configuration of the ribbon's controller. Of the parameters configured below, only the Logical Resolution can be changed in sequences. All other parameters are set by and can only be changed by the Hardware Utility.

The Cosmic Color Ribbon is configured via a sub-screen reachable from the *LOR Control tab*. First, click the *LOR Control* tab, then click the *Configure* button at the bottom of the window and then you will see the window below:
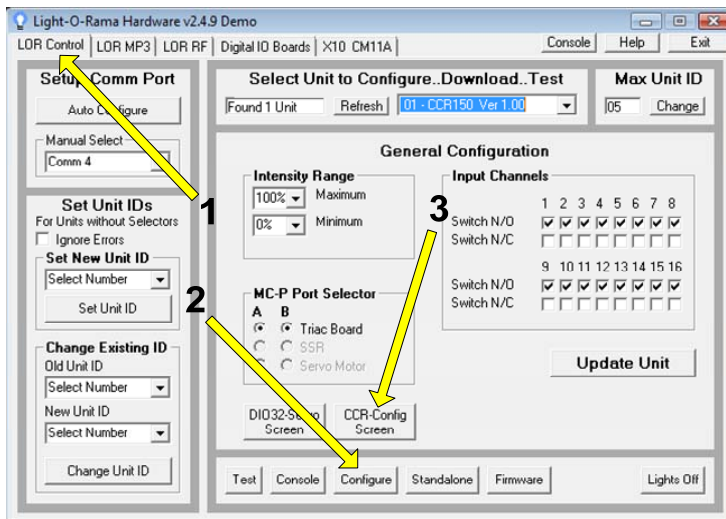
Click the *CCR-Config Screen* button and the following window will appear. Use this window to set select the startup configuration. Remember to

click the *Update Unit* button to send your configuration to the ribbon's controller.
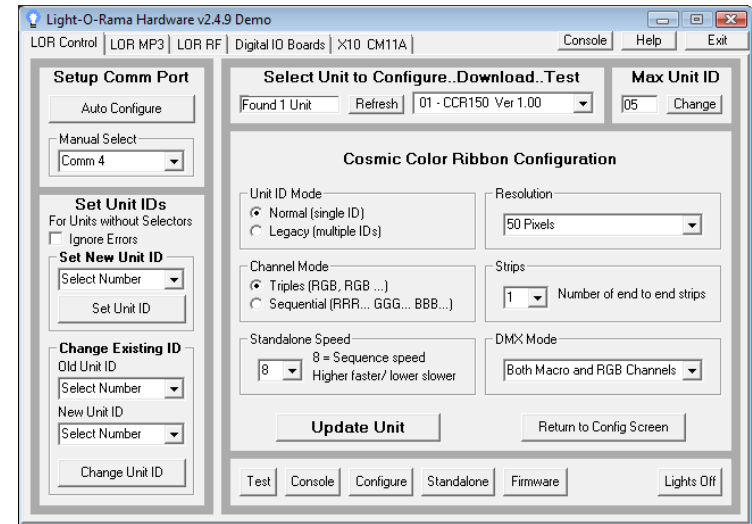
Unit ID Mode

Normal means one unit ID for all 157 channels.

Legacy means up to ten sequential unit IDs depending upon the configured logical resolution.

E.g. If the resolution is set to 16 in legacy mode, then the ribbon will need 48 channels, or 3 consecutive unit IDs.

Channel Mode

Channel Sequence is the order in which the pixel channels appear in the Sequence Editor. The number of channels depends upon the configured resolution.

Triples means the channels will appear as R (channel 1) G (channel 2), B (channel 3) for the first

pixel (the pixel nearest the controller,) then R (4), G (5), B (6) for the next pixel, etc.

Sequential means that all the Rs (channel 1, 2, 3, …) will come first, then all the Gs and finally all the Bs.

Standalone Speed

Sets the speed at which a standalone sequence runs. '8' is normal speed, meaning $1/10^{th}$ second in the sequence = $1/10^{th}$ real second. Use this parameter to adjust the speed of internally stored sequences.

Resolution

Logical resolution is the number of pixels that the ribbon appears as in the Sequence Editor. This must be set to 50 if you intend to use the Resolution, Macro & Color Effect channels. You can always change the logical resolution on the fly using the Resolution channel.

The Ribbon has 50 physical pixels but to make programming less tedious, it can be set to a lower logical resolution. This means that adjacent physical pixels will be merged. E.g. If the ribbon is set to a logical resolution of 5 pixels, then 10 adjacent physical pixels will respond as one – the ribbon will appear to be 5 segments.

Strips

Sets the number of end-to-end connected ribbons. Data bandwidth restrictions force the following restriction:

1 ribbon	128 intensities

2 ribbons	64 intensities
3 or more ribbons	32 intensities

Notes

1. Even though the ribbon supports fewer intensities as ribbons are connected end-to-end, you still use the full range of LOR intensities when programming.

2. The controller supports a maximum of 50 physical pixels. As ribbons are added end-to-end, adjacent pixels are combined to limit the number of pixels to 50. E.g. for two ribbons, a physical pixel becomes 6 adjacent RGB LEDs.

3. A 3 amp 12 vdc power supply is required for each 197" section of ribbon. This is because the linear circuit board has too much voltage drop to pass the necessary current to successive ribbons. Without these auxiliary power supplies, the LEDs further out become dim and/or the ribbon may be damaged.

4. Although the controller supports end-to-end ribbons, they will not be sold initially due to weatherproofing considerations. When we find a way to do this reasonably, extension ribbons and power supplies will be offered to use with your original ribbon.

5. The theoretical limit on the number of end-to-end connected ribbons is 20. I have only tried it with three and they work fine.

DMX Mode

Selects how the ribbon will appear in a DMX universe. The CR150D controller has RJ45 network connections. You will need the LOR *RJ-45 to XLR 3-pin Male* connector to connect the controller to a DMX universe. It is available from the Web Store on the accessories page:

http://store.lightorama.com/accessories.html

After the first LOR controller, you can use Cat5e LAN cables to daisy chain additional DMX capable LOR controllers.

Channels Only

Only the RGB channels will appear. The number of channels is dependent upon the logical resolution configured. The order of the channels is dependent upon the channel sequence mode configured.

Effects Only

Only the macros and color effect channels will appear. There will be 16 channels.

DMX Chan Offset from start address	Controls
0-4	Macro mode
5	Macro submode
6	Macro effect
7	Logical resolution
8-12	Color effect
13	Color speed

14	Color brightness
15	Reserved

See Appendix A for DMX values to functions for these channels.

Both Channels & Effects

The 16 macro/color effect channels will appear followed by the RGB channels.

Dmx Note

For more detailed information on DMX use of LOR controllers see:

http://lightorama.com/Documents/DMX-DOC.pdf

Software Control

The CR150D appears in a LOR Network at the address set by the Hardware Utility, or it can appear as up to 10 consecutive unit IDs when run in legacy mode. (see the *Unit ID Mode* section)

It is configured in the Sequence Editor as up to 157 channels.

The first 150 channels are the R, G & B channels for the 50 physical pixels. These channels can be combined into Sequence Editor RGB channels cutting the 150 to 50. (*See Detailed Ribbon Description* section)

Resolution, Macro & Color Channels

Because of the large number of controllable elements, the CR150D introduces some new

concepts designed to dramatically simplify programming the ribbon.

Channel 151 – Current logical resolution
Channel 152 – Macro mode
Channel 153 – Macro submode
Channel 154 – Macro effect control
Channel 155 – Color effect mode
Channel 156 – Color speed
Channel 157—Color intensity

Note well – the macro and color effects implemented are a first cut for the initial offering. There is lots of code space free in the controller to implement more effects and we will entertain requests not involving $E=mc^2$.

Logical Resolution

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

The ribbon has a physical resolution of 50 pixels. This means the ribbon can appear as up to150 regular channels or 50 RGB channels. If the resolution channel is set to one of the following intensities, adjacent physical pixels may be combined to reduce the channel count:

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

Any other value will select the resolution configured with the Hardware Utility.

When set to '1,' a single RGB channel (or 3 normal channels) will set the color/intensity of the entire ribbon. When set to '5,' five RGB channels (or 15

normal channels) will set the color/intensity of the 5 equal segments of the ribbon.

Note that resolutions 16 & 17 do not divide evenly into 50 pixels. In the case of 16, the logical pixels at the ends of the ribbon 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 others.

In Triples mode channel numbering, only as many RGB triples as are necessary to address the current resolution are used. I.e. the first five sets of RGB channels if the logical resolution is set to 5.

In Sequential mode, the number of channels used 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

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.

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

Twinkle Effects

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)

Dazzle Effects

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)

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

Channel 156 controls the speed of the color effect.

Channel 157 controls the overall intensity of the color effect.

Note that you can use the resolution channel to set the size of the segment of the ribbon that changes simultaneously during a color effect. If the resolution is set to 50, then each physical pixel changes independently. If your audience is far from the ribbon, you may want to lower the resolution of the ribbon so that one or more adjacent physical pixels change together to make the effect more noticeable.

Macro Mode

Channel 152 selects a Macro Effect that can be placed 'on top' of the RGB channels or Color Effect. For most macro effects, setting the Macro Mode channel (152) to a legal Macro Effect 'intensity' will cause the ribbon to go dark until you set the intensity of or fade the Macro Effect channel (154.)

Macro effects always run at the full 50 physical pixel resolution of the ribbon regardless of the current logical resolution setting. Logical resolution only affects the RGB or 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%.

Macro Mode 1 – Fill from Controller to End

As you fade the Macro Effect channel (154) from 0 to 99%, the pixels will come on from the controller end of the ribbon to the far end.

Setting the Macro Submode channel (153) to an intensity between 1 and 49 will move a segment of that many physical pixels from the controller to the far end as you fade the macro effect channel.

Macro Mode 2 – Fill from End to Controller

As you fade the Macro Effect channel (154) from 0 to 99%, the pixels will come on from the far end of the ribbon to the controller end.

Macro submode is not used.

Macro Mode 3 – Fill from Ends to Center

As you fade the Macro Effect channel (154) from 0 to 99%, the pixels will come on from ends of the ribbon to the center.

Setting the Macro Submode channel (153) 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 (154) from 0 to 99%, the pixels will come on from the center of the ribbon to ends.

Macro submode is not used.

Macro Mode 5 – Chase away from Controller

The Macro submode channel (153) 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.

The Macro effect channel (154) controls the speed of the chase.

Macro Mode 6 – Chase towards Controller

The Macro submode channel (153) 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.

The Macro effect channel (154) controls the speed of the chase.

Macro Mode 7 – Double Arch Fill Away

Double arch fill from controller and center of ribbon towards the far end of the ribbon. Submode and effect channel used as with macro mode 1.

Macro Mode 8 – Double Arch Fill Towards

Double arch fill from far end and center of ribbon towards the controller. Submode and effect channel used as with macro mode 2.

Macro Mode 9 – Beat Chase Away

The Macro submode channel (153) 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.

Each time the intensity changes on the Macro effect channel (154) the chase steps one pixel away from the controller.

Macro Mode 10 – Beat Chase Towards

The Macro submode channel (153) 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.

Each time the intensity changes on the Macro effect channel (154) the chase steps one pixel towards from the controller.

Example: Color Effect with Macro Effect

In this example we will create a vividly colored chase in full 50 pixel resolution by setting the intensity on only 7 channels.

1) Leave all RGB Channels off

2) Set the Resolution Channel (151) to intensity 50 – full resolution for the color effect

3) Set the Color Effect Channel (155) to intensity 17 – Dazzle in 7 color mode

4) Set the Color Effect Speed Channel (156) to intensity 90

5) Set the Color Effect Intensity Channel (157) to 100%

6) Set the Macro Effect Mode Channel (152) to intensity 5 – chase away from controller

7) Set the Macro Submode Channel (153) to intensity 44 – four pixels on, four pixels off

8) Set the Macro Effect Channel (154) to intensity 85 – the speed of the chase

Example: Leaping Arch in Blue

In this example we will cause an arch to leap from the controller to the far end, filling the arch in blue.

1) Set the Resolution Channel (151) to intensity 1 – entire ribbon controlled by one RGB channel

2) Set the Macro Channel (152) to 1 – arch leaps from controller to far end of ribbon

3) Set the B channel (3) to 100% -- entire ribbon is blue

4) Fade the Macro Effect channel (154) from 0 to 99% -- the ribbon fills from the controller end at full 50 pixel resolution in blue

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 one centisecond (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 but the RGB/Color effect has.

Hardware Description

The Ribbon Connector is on the lower left side and the LOR Network connectors are on the right side.

Aux LED

Currently indicates approximate microprocessor busy.

Status LED

- Blinks twice per second if the CR150D has booted correctly

- Solid on if the CR150D sees a network director – either a PC or Show Director

- Blinks one long on and a short off repeatedly if in the bootloader. This means that the firmware is not loaded or corrupted. See the *Updating the CR150D Firmware* section to load firmware

- Flashing rapidly indicates resetting because you are holding the reset button during power up

Triggers

A ⅛" stereo jack where the shield is the common, the tip is trigger 1 and the center band is trigger 2. The triggers are pulled to +5vdc with 10KΩ resistors and are designed for dry contact closure switches.

Reset Button

Press and hold this button when powering up the controller to reset it. After resetting, the controller will run a simple pattern on the ribbon.

Press this button after the controller has booted to activate trigger 3.

Ribbon Connector

The connector is pushed in with the latch tab up. Remember to press this tab to remove the ribbon connector from the controller..

LOR Network Jacks

Two RJ45 jacks used to daisy chain this controller into a LOR network. Auxiliary power is available for wireless connectivity or Show Directors.

12 VDC Power Input

12 VDC 3 amp power barrel, center positive. The supplied low voltage adapter provides 12 vdc @ 3 amps.

Connecting the CR150D to a PC

You will need the following to connect your CR150D controller to a PC:

- Showtime Windows Software
- RS485 Adapter
- CAT5e LAN cable
- Your CR150D controller
- Windows PC running 98 SE, 2000, ME, XP or Vista

The first three items are available in the LOR SPK-ST Generic Starter Package. www.lightorama.com ► *Web Store* ► *Showtime Products*. You will have to choose an RS485 adapter type. It's best to go with the USB485 if you have no intention of going wireless from your PC to the controller. If wireless is desired, get the USB485B.

The following diagram shows how the pieces fit together:
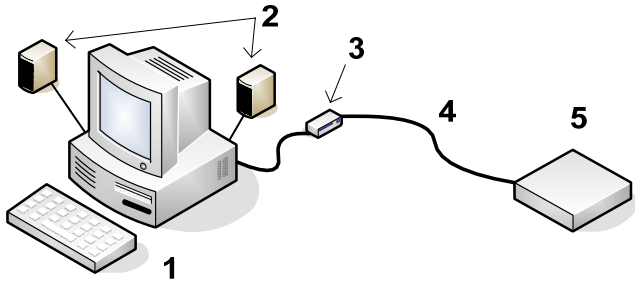
CR150D

1. Your PC running the Showtime Windows Software
2. Your PC speakers to play the music
3. RS485 Adapter to convert short distance USB to long distance RS485
4. CAT5e LAN cable
5. CR150D controller

If your USB adapter has more than one jack, you can use either.

You can use either jack on the CR150D.

Connecting to a Show Director

You will need the following to connect your CR150D controller to a Show Director:

- LOR1602MP3 Show-in-a-Box controller (has an internal DC-MP3 Show Director), mDM-MP3 Show Director or DC-MP3 Show Director
- CAT5e LAN cable
- Your CR150D controller

You can use either of the larger jacks on the show director and either jack on the CR150D.

CR150D

The cable connecting a show director to the controller should be 50' or less in length. Longer cables may result in a voltage drop causing erratic operation of the show director. This 50' limitation does not apply to the Show Director internal to the LOR1602MP3. It gets its power for the co-housed controller.

Connecting to another Controller

You can go from either large jack on one controller to either large jack on the other controller.

How to Connect Input Switches

The following diagram shows how to connect a couple of push button (momentary contact) switches to the ⅛" stereo jack for input triggers.
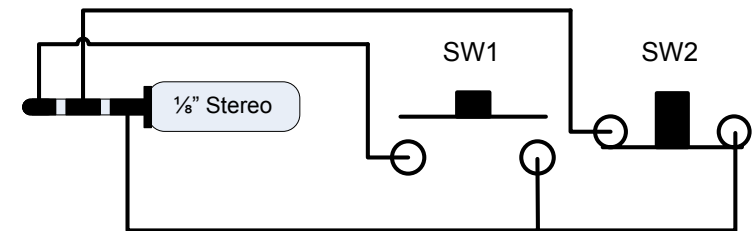
SW1 is a normally open (NO) switch, meaning it completes the circuit when pressed. SW2 is a normally closed (NC) switch that breaks the circuit when pressed. NO/NC are configured via the Hardware Utility in the CCR tab.

Most motion sensors have NC switches because they are designed to be used with alarm systems.

Stand Alone Operation

A stand alone animation sequence (sequence with no accompanying audio) can be downloaded into the flash memory of the CR150D controller.

Stand-alone memory is external to the microprocessor and does not use any of its code space.

Stand-alone sequence storage can hold approximately 10,000 commands. These commands can also be for controllers other than this controller, so this controller can direct a network of controllers. There are no restrictions on the types of LOR controllers in this network.

The sequence is designed and tested using the Showtime Software Sequence Editor. When you are happy with the sequence, save it and stop the Sequence Editor.

Start the Hardware Utility and click the *Refresh* button to find the CR150D. Use the drop down menu next to the *Refresh* button to select the controller.

Click the *Standalone* button at the bottom of the window. Select one of "Run when power is on," "Input (norm open switch)" or "Input (norm closed switch.)" Click the *Send Trigger info to Unit* button.

Finally, Use the *Open* button to browse to your sequence and click the *Download* button. If the last character in the sequence file name is a number between 1 and 8, the sequence is loaded a sequence n, otherwise it is loaded as sequence 1.

You also use this screen to remove downloaded standalone sequences. Note that all downloaded

sequences are removed. You can also remove standalone sequences by turning the controller off, and holding the reset button when powering it up.

Updating the CR150D Firmware

You must have:

- Hardware Utility version 2.3.6 or later, see the section *Hardware Utility Version*
- The CR150D powered and connected to the PC via one of the RS485 adapters – Do not use wireless

Get the latest firmware. www.lightorama.com ► *Support* ► *Using the Hardware – Documentation and Firmware* section. Click the **Firmware** button in the CR150D line and run the firmware installer program which will install the firmware file on your PC. Note the name of the firmware .lhx file. The normal location of firmware files is C:\Program Files\Light-O-Rama\Firmware.

Start the LightORama Control Panel if it is not running by clicking **start** ► **All Programs** ► **LightORama** ► **Light-O-Rama Control Panel**. The Light-O-Rama light bulb icon will appear in the system tray on the lower right of your screen.

Start the **Hardware Utility** by right-clicking the Light-O-Rama Control Panel light bulb and selecting **Hardware Utility** from the menu. You can click the **Refresh** button to search for connected controllers.

Click the **Firmware** button in the **LOR Control** tab and you will see this window:
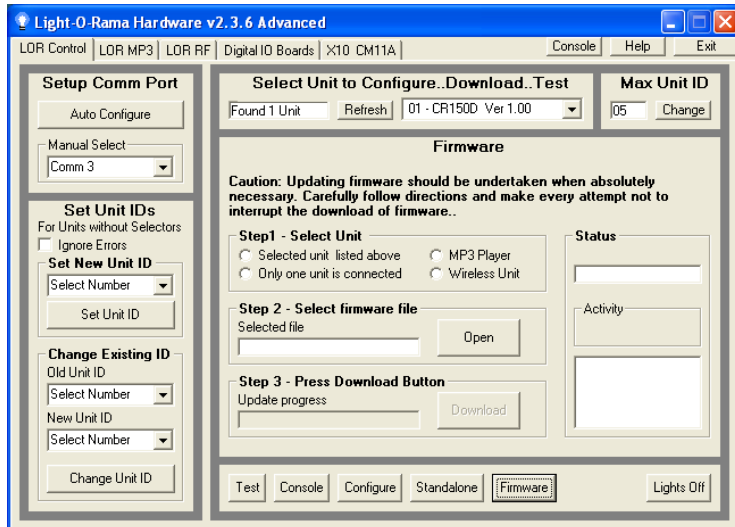
In **Step 1 – Select Unit**, Choose *Selected unit listed above* or *Only one unit is connected* as appropriate.

In **Step 2 – Select firmware file**, click the **Open** button. Use the *Open* file box to select the firmware file. This is the .lhx file you saved in the Firmware folder. Click the **Open** button. The window will look like this:
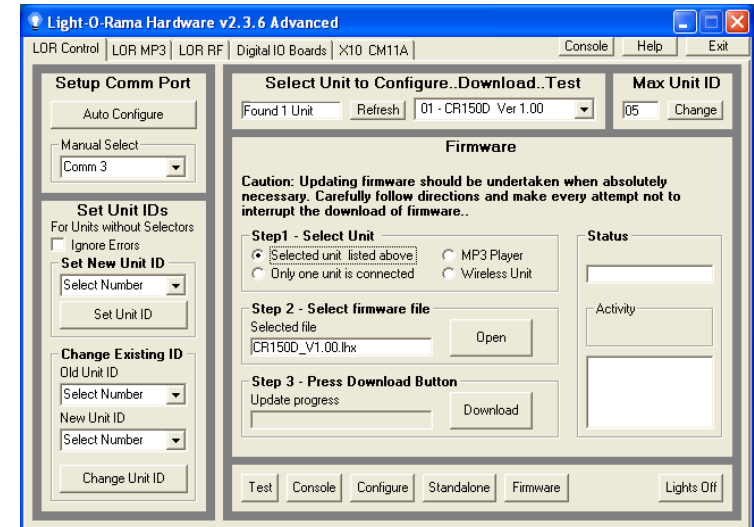
In **Step 3 – Press Download Button**, click the **Download** button – the firmware download will start automatically.

The *Update progress* bar will fill from left to right. When the new firmware is loaded, the *Status* will change to "Successful" and the CR150D will reboot.

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

Specifications

Configuration	150 x 5050 SMD RGB LEDs 120º beam angle
Control channels	150 = 50 * RGB or 150 = 50 * R, 50 *G, 50 *B Plus 7 Macro Effect Channels
Power	36 watts @ 12 VDC
Operating temperature	-20º F to 140º F
Operating environment	Outdoor, UV resistant ribbon and cable
Power adapter	100-240 VAC 0.3 amp @120 VAC 0.15 amp @240 VAC
Ribbon dimensions	197" +/- 1" L x 9/16" W x 3/16" H
Ribbon to controller cable	6'
Controller dimensions	5¼" L x 2¾" W x 1¼" H
Power supply dimensions	4½ L x 2" W x 1¼ H – Leave 3" more in L dimension for strain reliefs on cables (also, power supply dimensions may change)