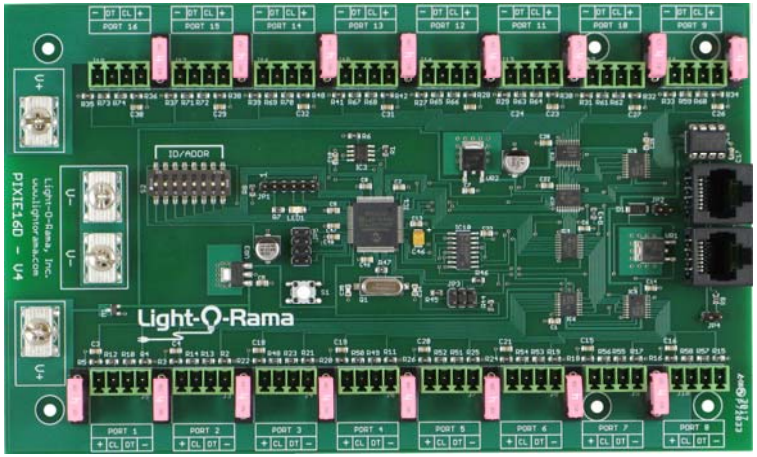



# *Pixie2D Pixie4D Pixie4DMX Pixie8D Pixie16D*

# Cosmic Color Pixie

User Manual
August 24, 2021
V1.07

## Table of Contents

# Introduction

The Light-O-Rama (LOR) Cosmic Color Pixies are low cost, high density RGB pixel controllers. They are available in 2, 4, 8 and 16 string versions. The maximum number of pixels on a string is 170. They support a variety of RGB pixel controller ICs.

Unlike most multi-string pixel controllers, the Pixies do not require Ethernet. The Pixies run on a LOR network in either normal or enhanced mode at speeds up to and including 1Mbit/sec. An enhanced network is required to properly utilize these controllers. Enhanced mode allows for a much higher pixel change rate than a normal network. Pixies may also be used with Ethernet E1.31 or Art-Net by connecting them to a PixieLink adapter, providing an upgrade path as your show grows.

When used with 50-pixel strings, the Pixies can emulate the older Cosmic Color Ribbon (CCR) or Cosmic Color Bulb/Pixel (CCB/CCP) controllers. This means, for example, that a Pixie16D can look like 16 CCRs or 16 50-pixel CCB/CCP strings. The Pixie controllers support LOR effects as well as the macro and color effects extensions provided by the first generation CCR/CCB/CCP controllers.

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.





# 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 4.4.0, you will not be able to configure the Pixie controller. The latest version of the Showtime software from this location: www.lightorama.com ► Support ► Download Software. This is a full ShowTime Software download that includes the latest Hardware Utility.

# Firmware Version

The initial firmware version was 1.01, unfortunately, controllers with this version have a bad bootloader. This means firmware upgrades are not possible. These boards must be returned to the factory to upgrade the bootloader. Version 1.02 is exactly the same as version 1.01 but has a working bootloader. This document reflects Pixie firmware version 1.07. The firmware version is determined by using the Refresh button in the Hardware Utility.

# Pixel Type (RGB IC)

Each pixel on a ribbon or string has a digital RGB driver. These may be separate ICs, or they may be integrated with the RGB LEDs. These are called RGB ICs. See the *Pixel Type* section for a list of supported RGB ICs.

# Pixel Strings

Pixel strings/ribbons compatible with these controllers are available from Light-O-Rama and other vendors. Strings can be 5vdc or 12vdc. All

strings on the controller must use the same RGB IC. Generally, 5vdc strings are usually limited to 50 pixels because of voltage drop due to the current draw. 12vdc pixel strings are good for 100 pixels. Low power 12vdc pixels are good to 150 per string.

## Important Considerations

When powered by 5vdc, the Pixie controllers cannot supply the voltage (9vdc) required by most LOR accessories.

LOR effects (fading, twinkling, shimmer) done by the controller require a lot of memory. The Pixie16D can perform these effects on the first 50 pixels of each string, the Pixie8D on 100, and the Pixie2D and Pixie4D on 170. If you are running the network in Enhanced mode, these effects will be done by the Show Director or PC, so the memory limitation does not apply, and LOR effects are available on 170 pixel strings for all controllers.

We recommend leaving the top-most jumper off when configuring the RJ45 network jack wiring for LOR network mode. This disables accessory power to the network jacks. There have been problems with incorrectly user-made cables which swap wires and short out the accessory power supplies. This becomes a problem with multiple controllers as significant current may be available.

### *First vs. Second Generation Boards*

First generation Pixies do not have Unit ID DIP switches and do not have reverse power protection circuitry. Reverse power protection only protects the controller; it does not protect the pixel strings.





For WS2811 (800KHz) and WS2801 pixels, the output networks on the pixel ports of first-generation boards allow up to 40’ between the controller and the first pixel. This is increased to 80’ for second generation boards. You may need to run heavier wire (18 gauge) to prevent voltage drop on the power leads to the first pixel, especially for 5v pixels. Voltage drop usually manifests itself as pixels appearing pink when white at full power is chosen.

### *Network Protocols and Speeds*

There are three network protocols currently in use: LOR Normal, LOR Enhanced, and PixieLink.

LOR normal is the protocol that has been used by LOR controllers from year 0. It is the only way to access the CCR/CCB/CCP compatibility mode resolution, color effects and macros channels.

LOR Enhanced protocol is a newer compressed data protocol designed specifically for high density pixel displays. It is pretty much required for even a moderately active display.

PixieLink protocol is used between a PixieLink E1.31/Art-Net adapter and Pixies. The PixieLink adapter allows Pixies and other LOR G3 controllers to be used with a standard Ethernet E1.31 source.

The Pixie controllers understand all protocols and automatically detect network speeds from 19.2Kbits per second up to 17Mbps. All delivered Pixies have at least 5Mbps comm chips and will always work with PixieLink at 4.25Mbps. They will usually work with PixieLink at 8.5Mbps. The 8-pin socketed chip near the RJ45 jack may need to be upgraded to a 10Mbps chip to use the 17Mbps PixieLink speed.

In general, users don't have to concern themselves with the network protocol unless they are running old devices. Some older devices will not understand Enhanced Protocol. Users will have to concern themselves with network speeds. At this time, only the PixCon and the Pixie controllers can handle 1Mbps Enhanced LOR, and only Pixies understand PixieLink protocol (4.25, 8.5, and 17Mbps).

The type of network (normal/enhanced) is selected in the Sequence Editor by clicking Edit ► Preferences ► Network Preferences.

Using the PixieLink adapter requires configuration of each pixel string as a DMX universe. When the pixel strings are defined in the Sequence Editor, each one will have to be assigned a DMX universe number. These DMX universes will be assigned to Ethernet address(es) in Network Preferences under the DMX tab.

# Pixie4DMX (iDMX1000 replacement)

The Pixie4DMX is a version of the Pixie4D which understands LOR network commands and converts those commands into four DMX512 RS485 universes instead of driving four pixel strings. It can be used to drive DMX512 pixel strings or as a replacement for the iDMX1000.

For a general discussion of DMX512 and experimenting with devices on DMX512 networks, see the iDMX1000 manual available at www.lightorama.com ► Support ► Documentation.

## *Pixie4DMX Comparison to iDMX1000*

Advantages over the iDMX1000:





- Works with LOR enhanced networks in addition to regular LOR networks
- Can run on 500K, 1M, & PixieLink networks
- Allows all channels to perform LOR lighting effects simultaneously
- Supports all Pixie configuration options

Disadvantages relative to iDMX1000

- DMX512 universes support 510 channels instead of 512
- Does not support the multiple unit ID mode of the iDMX1000 (legacy mode)
- Does not have pass-through XLR3 connections, so it must be at the end of the DMX512 network
- Does not have a polarity reversal switch

## *Pixie4DMX Configuration*

The out-of-the box configuration of the Pixie4DMX allows you to set the unit ID and use it as a replacement for the iDMX1000. Actually, it can replace 4 iDMX1000s because the Pixie4DMX will take 4 consecutive unit IDs starting at the assigned unit ID. Each of these unit IDs is equivalent to an iDMX1000.

The Hardware Utility can be used to configure it like any other Pixie controller. To operate as a replacement iDMX1000s, the number of pixels/string should be set to 170, the "Color order" should be set to RGB, the Resolution should be set to 50, and the RGB IC to "DMX".

The number of pixels per string sets the number of dimmers (channels) on the DMX networks. Each pixel is three dimmers. You should not set the

number of pixels to less than 40 (120 channels or dimmers) because some older DMX fixtures may have problems with the short DMX messages. The maximum number of pixels is 170 (510 dimmers).

In the Sequence Editor, you can use the “Insert device” feature to insert an iDMX1000 for one or more of the 4 DMX universes created by a Pixie4DMX. This will create a iDMX1000 with the number of channels (dimmers) you specify. You can combine some of these channels into RGB pixels if that is appropriate for the DMX fixtures on your network(s). When you manipulate a pixel or channel with Sequence Editor, SuperStar or Pixel Editor commands, these commands will be converted to intensities and output on the DMX universes.

### *Pixie4DMX High Speed USB adapter*

The Pixie4DMX includes a USB interface so that it can be directly connected to a PC. The USB interface is exactly the same as a LOR USB adapter. It runs up to 1Mbps and you can daisy chain other LOR controllers on this network by using the Pixie4DMX’s RJ45 LOR network connectors.

### *Pixie4DMX on Regular LOR Networks*

Some DMX fixtures require that you send certain intensity values to dimmers to control operation of the fixture. See the *LOR intensities to DMX Intensities* table for the mapping of LOR 0-100% intensities to DMX 0-255 intensities.





# Hardware Configuration

### *Assigning a Unit ID*

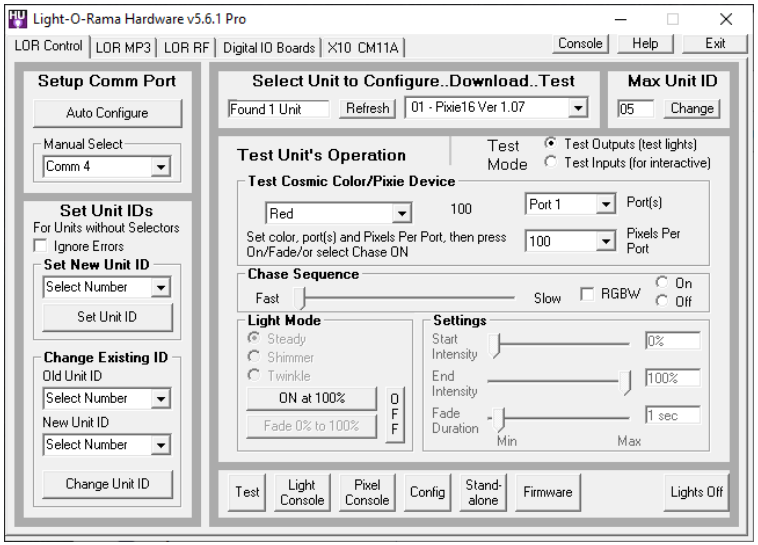
Second generation Pixies have a DIP switch with 8 positions. This is used to set the unit ID. If all DIP switches are set to ‘off’, then the unit ID as set by the Hardware Utility will be used (see below). Refer to the *LOR Unit ID DIP Switch Table* for the mapping of your desired LOR address to DIP switch settings.

First generation Pixies do not have unit ID switches, so the Unit ID must be assigned with the Hardware Utility as follows:

If you have not installed the Light O Rama Windows Showtime Software, do it now. The controller must be powered by a 5-12vdc power supply (Pixie4DMX requires 12vdc). You can use one of LOR’s USB RS485 adapters or you can plug a Pixie4DMX directly into a USB port. See the *Connecting the Pixie to a PC* section for more information.

Power up the controller. 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.

Start the Hardware Utility – click ***start ► Light-O-Rama ► Light-O-Rama Control Panel.*** There will be a light bulb with a red 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 this window:




Click the *Auto Configure* button in the *Setup Comm Port* section. The Hardware Utility will search for the COM port that your USB RS485 adapter (or Pixie4DMX) is plugged into and select it.

When assigning a unit ID, only one controller should be plugged into the USB RS485 adapter on the PC.

If you have a second-generation Pixie, the DIP switches must be set to 0 for the Unit ID to be set.

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 the Unit ID you want.





3. Click the *Change Unit ID* button to set your Pixie controller's base unit ID. You will see a *Unit ID Changed* box – click OK.

## *Setting the Configuration*

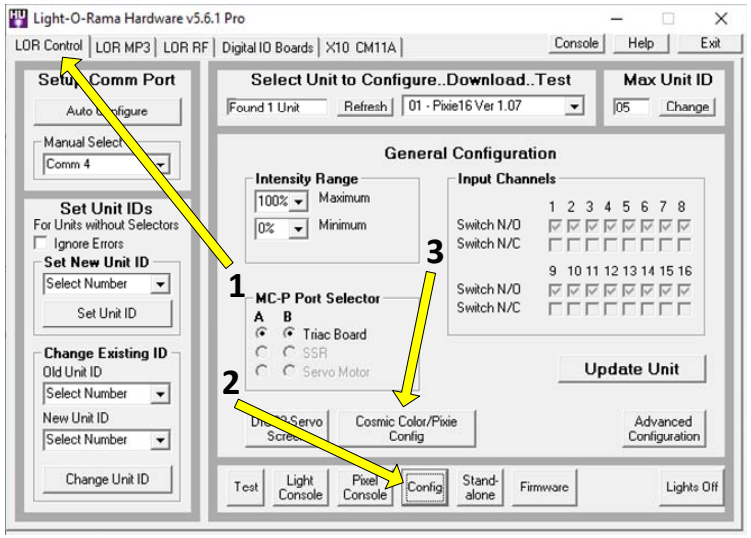
Your Pixie controller may have come with jumper(s) installed on JP5. These jumpers force a configuration that supports the type, color order and number of pixels you purchased with the Pixie controller. These jumpers will supersede those parameters settable by the Hardware Utility. Jumper 1 is nearest the JP5 labelled end.

| Jumper | What it does |
|---|---|
| J1 | WS28118, BRG, 50 pixels |
| J2 | WS2801, RGB, 50 pixels |
| J3 | WS28118, RGB, 100 pixels |

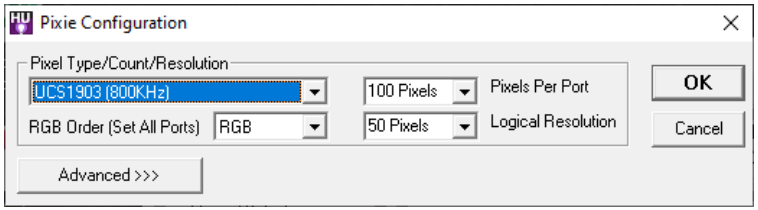
The Hardware Utility is used to set the power-up configuration of the controller. Of the parameters configured below, only the Logical Resolution/Flip-status can be changed on-the-fly in sequences, and only in CCR compatibility mode. All other parameters are set by and can only be changed by the Hardware Utility.

Click the Refresh button to find your controller. The controller must appear in the drop-down menu to the right of the Refresh button to continue.

The Cosmic Color Pixie controllers are configured via a pop-up window reachable from the *LOR Control tab*. First, click the *LOR Control* tab, then click the *Config* button at the bottom of the window you will see the following window:



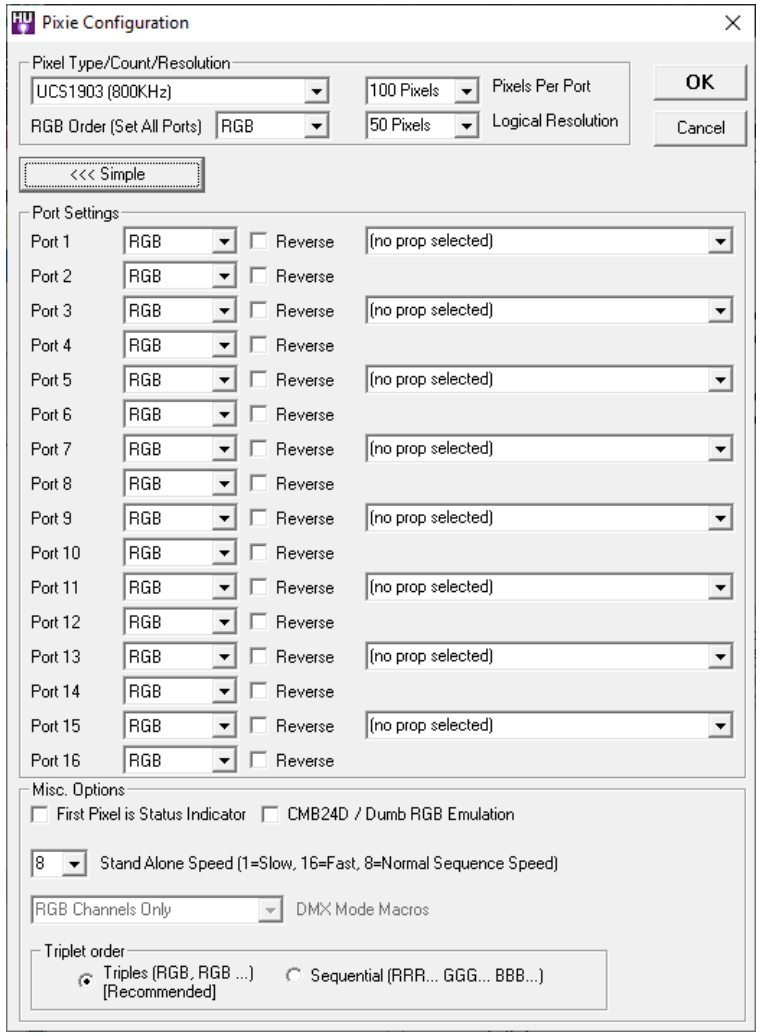

Click the *Cosmic Color/Pixie Config* button and the following window will appear. Use this simplified setup window to select the startup configuration. Remember to click the *OK* button to update the controller.




If you need to set advanced parameters, click the *Advanced* button to extend the setup window:







## Pixel Type (RGB Integrated Circuit)

This field selects the type of pixel control integrated circuit. The currently supported pixel drivers are:

1. WS2811 400KHz
2. WS2811 800KHz
3. WS2801
4. SM16716
5. LPD6803 (LPD1101, D705A)
6. TMI1803 (UCS1903 400KHz)
7. TMI1804
8. TMI1809
9. DMX (Used by Pixie4DMX)*
10. 943
11. 943-2**
12. GS8208 800KHz (WS2813)
13. APA102 (SK9822)
14. UCS1903 800KHz (WS2811)

There are also some “(Reserved IC x), …” slots. These are so additional RGB ICs can be added without requiring a software release.

* This type outputs intensity data in DMX512 format. Only the Pixie4DMX has RS485 outputs which will create DMX512 universes that can be connected to DMX512 fixtures. Other Pixies will accept this output type, but will still output 5v logic levels, not RS485.

** If an RGB IC type is followed by “-n” it means that ‘n’ adjacent pixels will be combined by the controller. E.g. if the ribbons have 100 pixels, the controller is configured for 50 pixels and the RGB IC is 943-2, then 2 adjacent pixels on the ribbon will react for each of the 50 configured pixels. It reduces the





number of pixels the ribbons appear to be by a factor of 2.

## RGB (Color) Order

Selects the order in which the red, green, and blue intensities are sent to the RGB ICs. If you do not know the color order of your pixels, choose RGB. Then press the test button. The test pattern always starts with red, then green, and finally blue. The actual order of colors you see is what you need to set the color order to.

## Pixels per Port

This sets the number of physical pixels on a port. Range is 1 to 170.

## Logical Resolution

If the number of Pixels Per Port is not 50, then the only resolutions possible are 1 (pixel strings react as one big pixel), and full resolution – the pixels per port (logical resolution should be set to 50).

Otherwise, old CCR compatibility mode is possible, and the following applies:

Logical resolution is the number of pixels that a bulb string appears as in the Sequence Editor. This must be set to 50 if you intend to use the Resolution, Macro & Color Effect channels (old CCR/CCB/CCP compatibility). You can always change the logical resolution on the fly using the Resolution channel.

A bulb string has 50 physical pixels (bulbs,) but to make programming less tedious, it can be set to a lower logical resolution. This means that adjacent physical pixels (bulbs) will be merged. E.g. If the

string is set to a logical resolution of 5 pixels, then 10 adjacent bulbs will respond as one – the string will appear to be 5 segments.

Note: The resolution, color effect and macro channels are only active for strings with 50 pixels in LOR network mode.

### Reverse Strings

The first pixel is the one nearest the controller. Checking the “Reverse” box reverses this making the pixel furthest from the controller the first pixel.

### First Pixel is Status Indicator

If this box is checked, the status LED will be mirrored in white on string one’s pixel nearest the controller. This occurs for 60 seconds after power up. This checkbox exists to save the effort of having to open up the controller box up; you can just unplug and plug in the controller to check its status.

### CMB24D/CMB16D Emulation

Checking this box causes a Pixie controller with smart strings to behave like a CMB16D or CMB24D with dumb strings. The first Unit ID of the Pixie2/4/8 will have 2/4/8 pixels which control the strings. A Pixie16 will use the first eight pixels of the first and second Unit IDs, so it will look like two CMB16D or CMB24D controllers. This feature exists because it is becoming impossible to purchase dumb RGB ribbons/pixels. This allows a Pixie to be a plug-in replacement in your sequences for CMB controllers.





### Stand Alone Speed

This selects the speed at which an internal stand-alone sequence is run. 8 runs the sequence with 1 second of sequence commands equaling one actual second. Use this option to fine tune the speed of the stand-alone sequence.

### DMX512 Input to Pixie2D & Pixie4D only

Set Pixie2 to 50 or 100 pixels/string. Set Pixie4 to 50 pixels/string. There is only one DMX mode:

| DMX addresses | Pixie2 | Pixie4 |
|---|---|---|
| 1-150 1st string | 50 pixels | 50 pixels |
| 151-300 2nd string | 50 Pixels | 50 pixels |
| 151-450 2nd string | 100 pixels | n/a |
| 301-450 3rd string | n/a | 50 pixels |

The RJ45 jacks on the Pixie2D have jumpers to allow for LOR or DMX (E1.27-2) network wiring. If the DMX device driving the Pixie controller has an XLR 3-pin connector, you will need the LOR *RJ-45 to XLR 3-pin Male* connector. It is available from the Web Store on the accessories page:

www.lightorama.com/ ► LOR Store ► Accessories ► RJ-45 to XLR 3-pin Male (this adapter converts to LOR network wiring, not DMX E1.27-2 wiring.

### Triplet Order

This is the order in which the pixel channels appear in the Sequence Editor. The number of channels depends upon the configured pixels per port when not in CCR compatibility mode, and the resolution when in compatibility mode.

*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. Sequential channel mode is only available on normal LOR networks, it does not work with Enhanced or PixieLink networks.

### Props

These dropdowns are used to select one of the LOR props (singing trees). A prop is two adjacent 100-pixel strings. The controller understands the arrangement of the pixels so that the user does not have to individually program the pixels to manipulate the prop. This allows for sequences to be written that will work with any of the singing trees. Selecting a 'prop' reduces the number of pixels to the first 8 pixels on the first pixel string of the prop. Here is the pixel assignment:

Pixel 1 – Outline of the tree
Pixel 2 – Tree topper
Pixel 3 – Eyes closed
Pixel 4 – Eyes open
Pixel 5 – Mouth closed
Pixel 6 – Mouth half open
Pixel 7 – Mouth full open
Pixel 8 – Mouth 'oh'

## Software Control

The Pixies appears in a LOR Network at the unit ID set by the DIP switches or Hardware Utility plus 1, 3,





7 or 15 additional sequential unit IDs. The first unit ID corresponds to the first string, the second unit ID corresponds to the second pixel string, …

A pixel string is configured in the Sequence Editor as up to 170 pixels.

If you configure the Pixie for 50 physical pixels, each string appears as 160 channels. The first 150 channels are the R, G, and B channels for the 50 physical pixels. These channels can be combined into Sequence Editor RGB channels cutting the 150 to 50. The next 10 channels are the resolution, macro, and color effect channels. These are for compatibility mode with the old CCR/CCB/CCP.

## Old CCR/CCB/CCP Compatibility

### *Resolution, Macro & Color Channels*

Because of the large number of controllable elements, the Pixie supports some legacy concepts designed to simplify programming the strings.

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
Channels 158-160 – Reserved

### *Logical Resolution*

Logical resolution works completely with 50 pixel strings. For strings other than 50 pixels, only full resolution, and resolution 1 are supported. A

resolution of ‘1’ means the string will only be one pixel – i.e. it will act like a dump RGB string.

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

In compatibility mode, a pixel string has a physical resolution of 1 to 50 pixels. This means the string can appear as up to 150 regular channels or 50 RGB channels. If the strings are configured to have 50 physical pixels and the resolution channel is set to one of the following intensities, adjacent bulbs may be combined to reduce the channel count:

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

Adding 50 to the resolution ‘flips’ the pixels. E.g. if the configured resolution is normal orientation 50, this means that the pixel string appears as 50 separate pixels and the pixel nearest the controller is pixel 1. If the resolution channel is set to 100 (50 + 50) then the pixel string will appear as 50 separate pixels, but pixel 1 will be the furthest pixel from the controller. Values other than the supported resolutions or the supported resolutions plus 50 will select the resolution configured with the Hardware Utility.

When the resolution channel is set to intensity ‘1,’ a single RGB channel (or 3 normal channels) will set the color/intensity of an entire bulb string. When set to ‘5,’ five RGB channels (or 15 normal channels) will set the color/intensity of the 5 equal segments of a string.





Note that resolutions 16 & 17 do not divide evenly into 50 pixels. In the case of 16, the logical pixels at the ends of a string 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. for string 1, 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*

This feature is only available when the controller is configured for 50 physical pixels/string.

There are two ways to manipulate the colors and/or intensities of the pixels. The most familiar way is to set or fade/twinkle/shimmer 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.

See the *Cosmic Color Pixel Manual* available here: www.lightorama.com ► Documentation ► Cosmic Color Pixel Manual

### *Macros*

This feature is only available when the controller is configured for 50 physical pixels/string.

Macros are effects that can be placed ‘on top’ of the RGB channels or a Color Effect. Macros can be thought of as masks that expose the underlying RGB pixels in interesting ways.

See the *Cosmic Color Pixel Manual* for a more detailed discussion of this legacy emulation mode.

http://www.lightorama.com ► Support ► Documentation ► Cosmic Color Pixel Manual

## Hardware Description

The pictures in this section are not to relative scale.

The Pixie2D is only available in a weatherproof plastic box with a universal power supply.

The Pixie4DMX is only available in a non-weatherproof plastic box.

The other Pixies are available as boards or in weatherproof boxes with a power supply.

The labelling of the on-board jumpers (JP2-JP5) is not consistent across Pixies. Be sure to consult the following pictures and descriptions for your board.

The second-generation Pixie boards have protection from reverse polarity power connection. This only protects the board logic, not the connected pixel strings. Connect the board power before attaching pixel strings. If the status LED flashes, then the power is correctly connected, and you can connect you pixel strings.

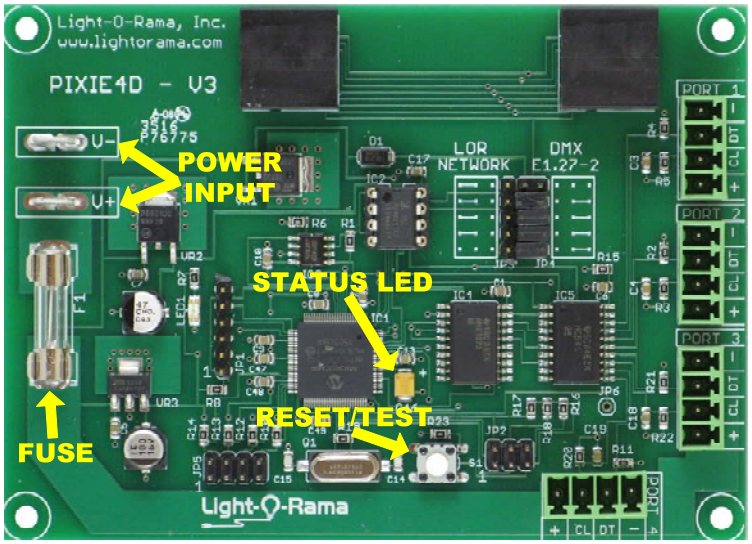




### *Pixie2D (White plastic box, 12 VDC)*


- JP2/JP3 jumpers select the network wiring on the RJ45 jacks (LOR or DMX). LOR network without accessory power enabled shown.
- JP4 install jumper to connect 120Ω termination resistor.
- JP5 is used to select some factory configurations and must be empty to allow Hardware Utility setting of RGB IC, pixels/string, and color order.
- DIP switches 1-8 select unit ID/DMX address unless they are all off; in which case the Hardware Utility is used to make the selection.
- The power supply is current limited, so no fuse on the pixel strings is required
- There is an AC power fuse in the AC plug.

## *Pixie4D (first generation)*

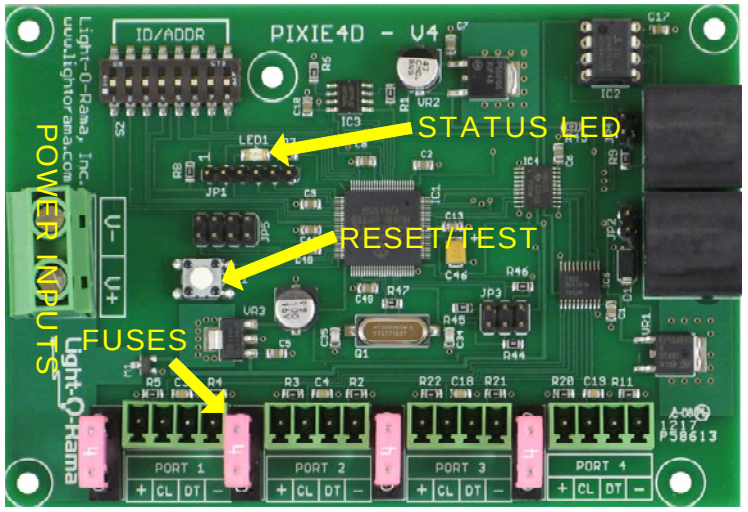



- JP2 is used to connect inputs (interactive show triggers) to the controller.
- JP3/JP4 jumpers select the network wiring on the RJ45 jacks (LOR or DMX). DMX network shown. It is recommended that you leave the top-most jumper off in LOR network mode. This will disable accessory power to the network jacks.
- JP5 is used to select some factory configurations and must be empty to allow Hardware Utility setting of RGB IC, pixels/string, and color order.
- The fuse limits current for all four strings.



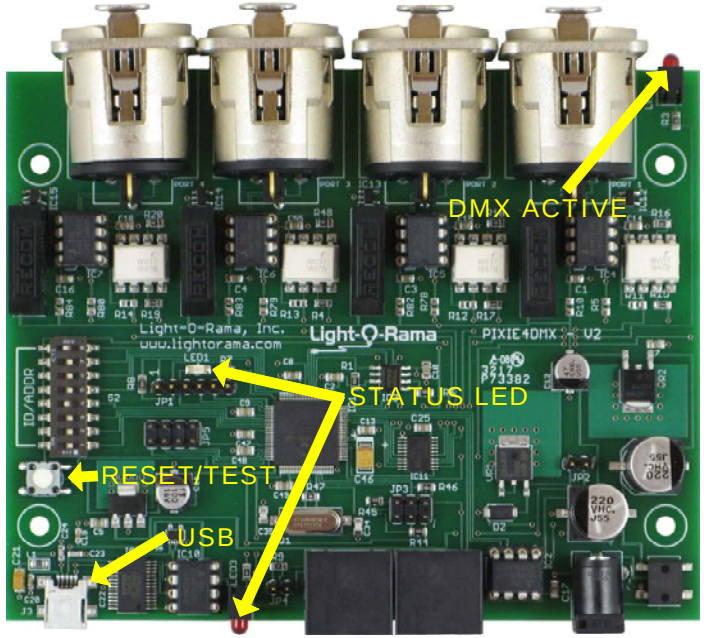


## *Pixie4D (second generation)*




- JP2 install jumper to connect accessory power to RJ45 jacks.
- JP3 is used to connect inputs (interactive show triggers) to the controller.
- JP4 install jumper to connect 120Ω termination resistor.
- JP5 is used to select some factory configurations and must be empty to allow proper operation of the Pixie4DMX and to allow the Hardware Utility setting of pixels/string and color order.
- The fuses limit current for individual strings.

## *Pixie4DMX Isolated with XLR3 Jacks*

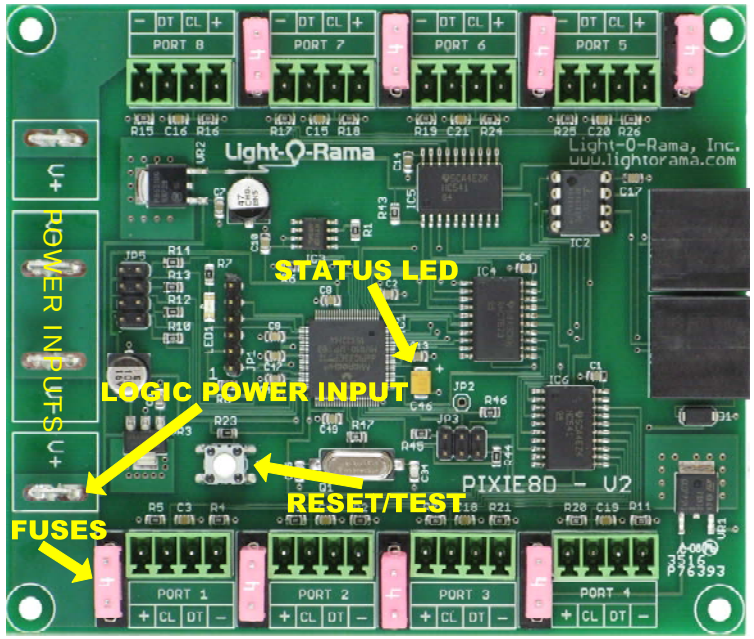



- JP3 is used to connect inputs (interactive show triggers) to the controller.
- JP4 jumper in place inserts a 120Ω termination resistor.
- JP5 is used to select some factory configurations and must be empty to allow proper operation of the Pixie4DMX and to allow the Hardware Utility setting of pixels/string and color order.
- The DMX512 universes on the XLR3 jacks are electrically isolated from the LOR network and from each other.



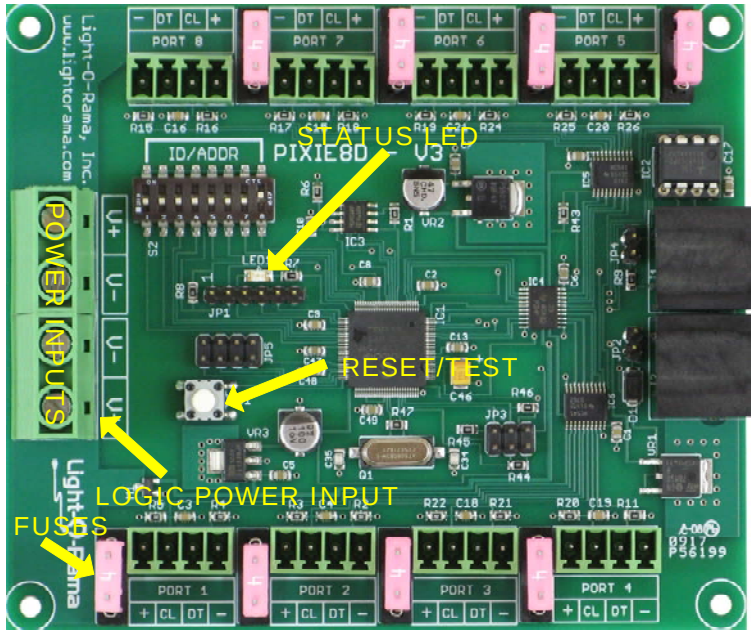


## *Pixie8D (first generation)*




- JP3 is used to connect inputs (interactive show triggers) to the controller.
- JP5 is used to select some factory configurations and must be empty to allow the Hardware Utility setting of pixels/string and color order.
- The fuses limit current for individual strings.
- Power must be connected to the “Logic Power Input” side of the controller for operation.

## *Pixie8D (second generation)*

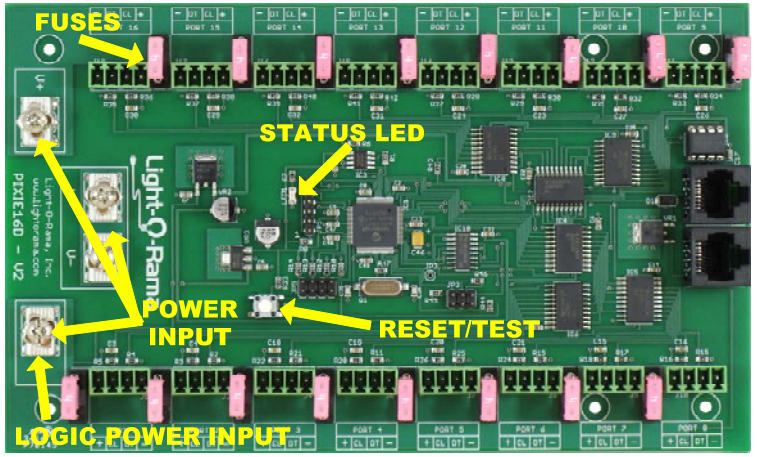



- JP2 install jumper to connect accessory power to RJ45 jacks.
- JP3 is used to connect inputs (interactive show triggers) to the controller.
- JP4 install jumper to connect 120Ω termination resistor.
- JP5 is used to select some factory configurations and must be empty to allow proper operation of the Pixie4DMX and to allow the Hardware Utility setting of pixels/string and color order.
- The fuses limit current for individual strings.
- Power must be connected to the “Logic Power Input” side of the controller for operation.



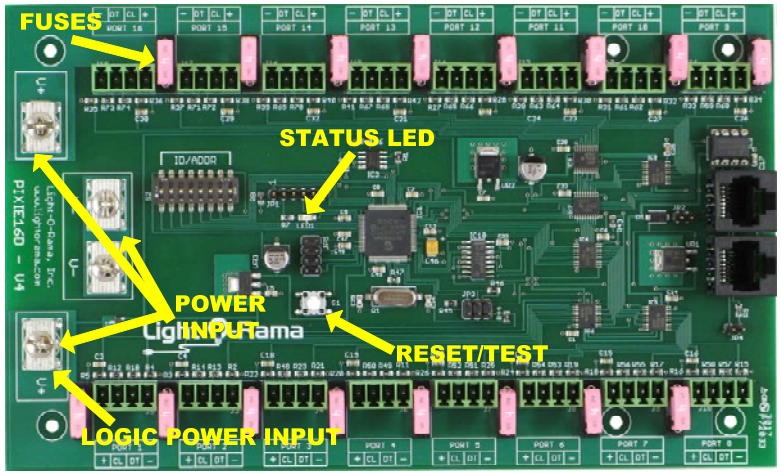


## *Pixie16D (first generation)*




- JP3 is used to connect inputs (interactive show triggers) to the controller.
- JP5 is used to select some factory the Hardware Utility setting of RGB IC, pixels/string and color order.
- The fuses limit current for individual strings.
- Power must be connected to the “Logic Power Input” side of the controller for operation.

## *Pixie16D (second generation)*




- JP2 install jumper to connect accessory power to RJ45 jacks.
- JP3 is used to connect inputs (interactive show triggers) to the controller.
- JP4 install jumper to connect 120Ω termination resistor.
- JP5 is used to select some factory the Hardware Utility setting of RGB IC, pixels/string and color order.
- The fuses limit current for individual strings.
- Power must be connected to the “Logic Power Input” side of the controller for operation.



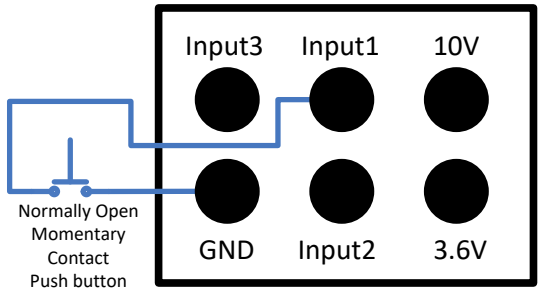


## *Status LED*

- Blinks twice per second if the controller has booted correctly but is not connected to an active network
- Solid on if the controller 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 Pixie Firmware* section to load firmware
- Flashing rapidly indicates resetting because you are holding the reset button during power up or while the controller is up and running.

## *Input Header (JP2 or JP3)*

The Input Header is used to provide interactive triggers for shows or to start a stand-alone sequence. It has 10vdc @ 300ma available for devices like motion detectors that might be used as triggers. The following diagram shows the connections on the header:



A 6-pin socket with a 2’ cable is available from LOR to simplify connections to the header.

Inputs 1 & 3 are for normally open switches. Input 2 is for a normally closed switch (security devices like motion sensors should use this input.)

## *Fuses*

See the *Hardware Description* section pictures.

## *Jumpers (JP5)*

These jumpers are used to force a configuration for the RGB IC, color order and pixels/string. If your board has a jumper, you can transfer the settings of this jumper into the configuration EEPROM by changing any parameter on the configuration page or by changing the unit ID. Once you have done this, you can remove the jumper and the Hardware Utility will be able to change any parameter.

See the section *Setting the Configuration* for a description of what the JP5 jumpers do.

## *Power Input(s)*

These connectors are used to power the Pixies and the attached pixel strings/ribbons. The Pixie8 and the Pixie16 have two banks; one bank’s power connector is used to supply logic power. This power input must be powered for the Pixie to work. The Pixies work with 5vdc or 12vdc pixels.

## *Reset/Test Button*

Press and hold this button when powering up the controller to reset it. When the status LED flashes quickly, the reset is complete. Release the button





and the controller will reboot. Resetting the controller at power up clears any standalone sequence and tests the stand alone EEPROM. A rapid flash indicates that everything is good; otherwise an error code will be flashed.

Press this button momentarily after the controller has booted to run a simple test pattern on the pixel strings. The test will run until you momentarily press the button again or five minutes go by. The test pattern runs red, then green, and then blue down all pixel strings and repeats.

Press and hold this button after the controller has booted until the status LED flashes rapidly to clear the standalone sequence. Release the button when the status LED flashes rapidly.

The controller disconnects from the network during reset or when the test pattern is running.

## *String Connectors*

The string connector plugs used on the Pixie4D, Pixie8D and Pixie16D allow ribbons or pixel strings to be easily connected to the controller. Simply pull the plug out of the controller and use its screw terminals to attach the string. Use the legend on the controller to determine where ground, clock, data

and power for the string go. The clock and data lines are always 5vdc logic levels. For three wire strings, connect the control wire to the data connection on the controller.

### *Network Jacks*

Two RJ45 jacks used to daisy chain this controller into a LOR network. The Pixie2D and Pixie4D will also work in DMX512 Networks. The Pixie2 has jumpers to select DMX (E1.27-2) wiring or LOR network wiring.

## Connecting the Controller to a PC

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

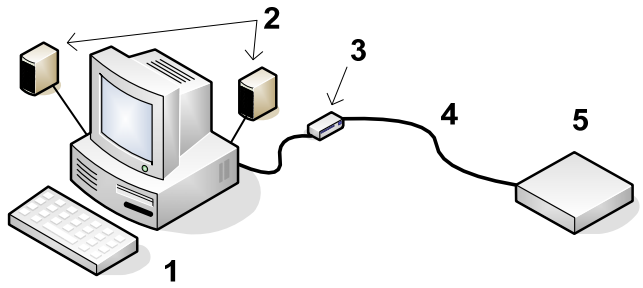
- Showtime Windows Software
- USB RS485 Adapter (or use the Pixie4DMX's built-in USB adapter)
- CAT5e LAN cable
- Your controller
- Windows Vista or 7, 8 or 10 PC.

The first three items are available in the LOR SPK-ST Generic Starter Package. www.lightorama.com ► *LOR Store* ► *Components*. You will have to choose an RS485 adapter type. Choose 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:








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. Pixie controller

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

You can use either jack on the Pixie controller.

## Connecting to a Show Director

You will need the following to connect your 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 Pixie controller
- Possibly a 9 to 10 vdc power supply for the mDM-MP3 or DC-MP3 Show Directors. Required if the Pixie is being used at 5vdc.

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

## Connecting to another Controller

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

## Updating the Pixie Firmware

You must have:

- Hardware Utility version 4.3.16 or later, see the section *Hardware Utility Version*
- The Pixie powered and connected to the PC via an RS485 adapter– Do not use wireless

Get the latest firmware. www.lightorama.com ► *Support* ► *Firmware* section. Click the **Firmware** button for the correct firmware (Pixie2D, Pixie4D, Pixie4DMX, Pixie8D or Pixie16D) and save the firmware file on your PC. Note where on your PC you have saved the firmware file.

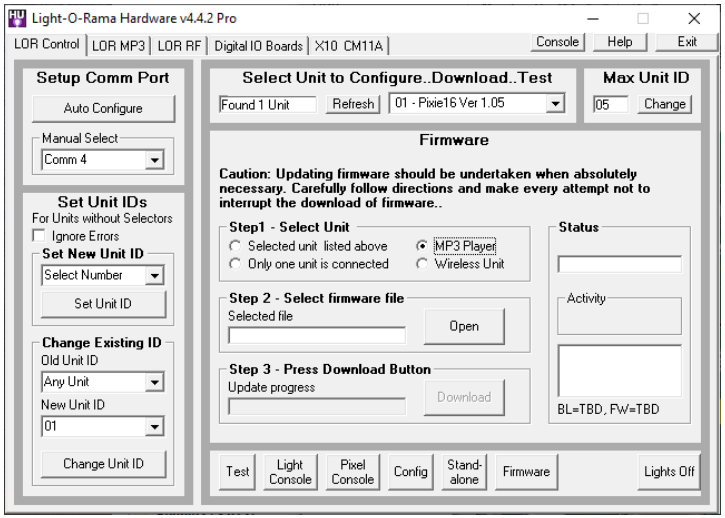
Start the LightORama Control Panel if it is not running by clicking ***start*** ► ***Light-O-Rama*** ► ***Light-O-Rama Control Panel***. The Light-O-Rama light bulb icon will appear in the system tray on the lower right of your screen.

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 and select the one you want to update.

Click the **Firmware** button in the **LOR Control** tab and you will see this window:

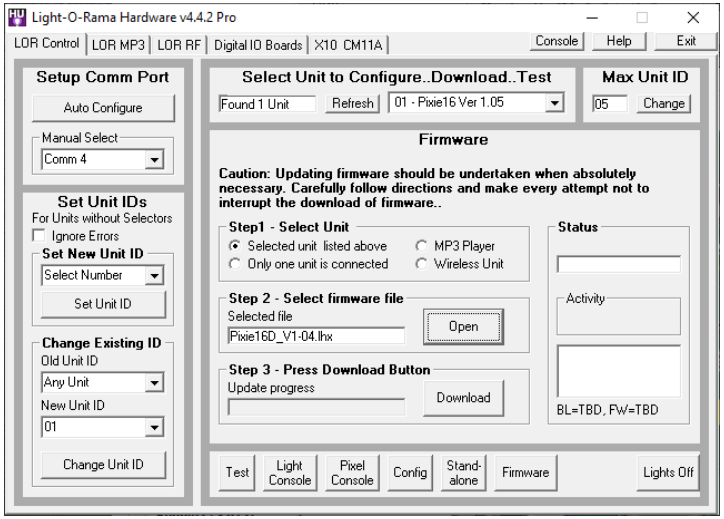







In **Step 1 – Select Unit**, Choose *Selected unit listed above* or *Only one unit is connected* as appropriate.

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. 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 Pixie controller will reboot.

## Setting the DMX512 Start Address

The DMX starting address is selected using the DIP switches. DMX512 input mode is only possible with the Pixie2D & Pixie4D. Refer to the *DMX Start Address DIP Switch Table* section, or use the following computation:

The start address is selected by turning on DIP switches so the total adds up to the address you want. The maximum DMX start address is 255.

Switch 1 has a value of 128. Switch 2 has a value of 64. Switch 3=32, Switch 4=16, Switch 5=8, Switch 6=4.Switch 7=2, Switch 8=1.

For a DMX start address of 129, switches 1-8 would be set to 1000 0001 where 1 represents ON and 0 represents off.





## LOR Unit ID DIP Switch Table

| LOR ID | Switches 1-8 | LOR ID | Switches 1-8 | LOR ID | Switches 1-8 |
|---|---|---|---|---|---|
| 01 | 0000 0001 | 29 | 0010 1001 | 51 | 0101 0001 |
| 02 | 0000 0010 | 2A | 0010 1010 | 52 | 0101 0010 |
| 03 | 0000 0011 | 2B | 0010 1011 | 53 | 0101 0011 |
| 04 | 0000 0100 | 2C | 0010 1100 | 54 | 0101 0100 |
| 05 | 0000 0101 | 2D | 0010 1101 | 55 | 0101 0101 |
| 06 | 0000 0110 | 2E | 0010 1110 | 56 | 0101 0110 |
| 07 | 0000 0111 | 2F | 0010 1111 | 57 | 0101 0111 |
| 08 | 0000 1000 | 30 | 0011 0000 | 58 | 0101 1000 |
| 09 | 0000 1001 | 31 | 0011 0001 | 59 | 0101 1001 |
| 0A | 0000 1010 | 32 | 0011 0010 | 5A | 0101 1010 |
| 0B | 0000 1011 | 33 | 0011 0011 | 5B | 0101 1011 |
| 0C | 0000 1100 | 34 | 0011 0100 | 5C | 0101 1100 |
| 0D | 0000 1101 | 35 | 0011 0101 | 5D | 0101 1101 |
| 0E | 0000 1110 | 36 | 0011 0110 | 5E | 0101 1110 |
| 0F | 0000 1111 | 37 | 0011 0111 | 5F | 0101 1111 |
| 10 | 0001 0000 | 38 | 0011 1000 | 60 | 0110 0000 |
| 11 | 0001 0001 | 39 | 0011 1001 | 61 | 0110 0001 |
| 12 | 0001 0010 | 3A | 0011 1010 | 62 | 0110 0010 |
| 13 | 0001 0011 | 3B | 0011 1011 | 63 | 0110 0011 |
| 14 | 0001 0100 | 3C | 0011 1100 | 64 | 0110 0100 |
| 15 | 0001 0101 | 3D | 0011 1101 | 65 | 0110 0101 |
| 16 | 0001 0110 | 3E | 0011 1110 | 66 | 0110 0110 |
| 17 | 0001 0111 | 3F | 0011 1111 | 67 | 0110 0111 |
| 18 | 0001 1000 | 40 | 0100 0000 | 68 | 0110 1000 |
| 19 | 0001 1001 | 41 | 0100 0001 | 69 | 0110 1001 |
| 1A | 0001 1010 | 42 | 0100 0010 | 6A | 0110 1010 |
| 1B | 0001 1011 | 43 | 0100 0011 | 6B | 0110 1011 |
| 1C | 0001 1100 | 44 | 0100 0100 | 6C | 0110 1100 |
| 1D | 0001 1101 | 45 | 0100 0101 | 6D | 0110 1101 |
| 1E | 0001 1110 | 46 | 0100 0110 | 6E | 0110 1110 |
| 1F | 0001 1111 | 47 | 0100 0111 | 6F | 0110 1111 |
| 20 | 0010 0000 | 48 | 0100 1000 | 70 | 0111 0000 |
| 21 | 0010 0001 | 49 | 0100 1001 | 71 | 0111 0001 |
| 22 | 0010 0010 | 4A | 0100 1010 | 72 | 0111 0010 |
| 23 | 0010 0011 | 4B | 0100 1011 | 73 | 0111 0011 |
| 24 | 0010 0100 | 4C | 0100 1100 | 74 | 0111 0100 |
| 25 | 0010 0101 | 4D | 0100 1101 | 75 | 0111 0101 |
| 26 | 0010 0110 | 4E | 0100 1110 | 76 | 0111 0110 |
| 27 | 0010 0111 | 4F | 0100 1111 | 77 | 0111 0111 |
| 28 | 0010 1000 | 50 | 0101 0000 | 78 | 0111 1000 |

## LOR Unit ID DIP Switch Table cont'd

| LOR ID | Switches 1-8 | | LOR ID | Switches 1-8 | | LOR ID | Switches 1-8 | |
|---|---|---|---|---|---|---|---|---|
| 79 | 0111 | 1001 | A1 | 1010 | 0001 | C9 | 1100 | 1001 |
| 7A | 0111 | 1010 | A2 | 1010 | 0010 | CA | 1100 | 1010 |
| 7B | 0111 | 1011 | A3 | 1010 | 0011 | CB | 1100 | 1011 |
| 7C | 0111 | 1100 | A4 | 1010 | 0100 | CC | 1100 | 1100 |
| 7D | 0111 | 1101 | A5 | 1010 | 0101 | CD | 1100 | 1101 |
| 7E | 0111 | 1110 | A6 | 1010 | 0110 | CE | 1100 | 1110 |
| 7F | 0111 | 1111 | A7 | 1010 | 0111 | CF | 1100 | 1111 |
| 80 | 1000 | 0000 | A8 | 1010 | 1000 | D0 | 1101 | 0000 |
| 81 | 1000 | 0001 | A9 | 1010 | 1001 | D1 | 1101 | 0001 |
| 82 | 1000 | 0010 | AA | 1010 | 1010 | D2 | 1101 | 0010 |
| 83 | 1000 | 0011 | AB | 1010 | 1011 | D3 | 1101 | 0011 |
| 84 | 1000 | 0100 | AC | 1010 | 1100 | D4 | 1101 | 0100 |
| 85 | 1000 | 0101 | AD | 1010 | 1101 | D5 | 1101 | 0101 |
| 86 | 1000 | 0110 | AE | 1010 | 1110 | D6 | 1101 | 0110 |
| 87 | 1000 | 0111 | AF | 1010 | 1111 | D7 | 1101 | 0111 |
| 88 | 1000 | 1000 | B0 | 1011 | 0000 | D8 | 1101 | 1000 |
| 89 | 1000 | 1001 | B1 | 1011 | 0001 | D9 | 1101 | 1001 |
| 8A | 1000 | 1010 | B2 | 1011 | 0010 | DA | 1101 | 1010 |
| 8B | 1000 | 1011 | B3 | 1011 | 0011 | DB | 1101 | 1011 |
| 8C | 1000 | 1100 | B4 | 1011 | 0100 | DC | 1101 | 1100 |
| 8D | 1000 | 1101 | B5 | 1011 | 0101 | DD | 1101 | 1101 |
| 8E | 1000 | 1110 | B6 | 1011 | 0110 | DE | 1101 | 1110 |
| 8F | 1000 | 1111 | B7 | 1011 | 0111 | DF | 1101 | 1111 |
| 90 | 1001 | 0000 | B8 | 1011 | 1000 | E0 | 1110 | 0000 |
| 91 | 1001 | 0001 | B9 | 1011 | 1001 | E1 | 1110 | 0001 |
| 92 | 1001 | 0010 | BA | 1011 | 1010 | E2 | 1110 | 0010 |
| 93 | 1001 | 0011 | BB | 1011 | 1011 | E3 | 1110 | 0011 |
| 94 | 1001 | 0100 | BC | 1011 | 1100 | E4 | 1110 | 0100 |
| 95 | 1001 | 0101 | BD | 1011 | 1101 | E5 | 1110 | 0101 |
| 96 | 1001 | 0110 | BE | 1011 | 1110 | E6 | 1110 | 0110 |
| 97 | 1001 | 0111 | BF | 1011 | 1111 | E7 | 1110 | 0111 |
| 98 | 1001 | 1000 | C0 | 1100 | 0000 | E8 | 1110 | 1000 |
| 99 | 1001 | 1001 | C1 | 1100 | 0001 | E9 | 1110 | 1001 |
| 9A | 1001 | 1010 | C2 | 1100 | 0010 | EA | 1110 | 1010 |
| 9B | 1001 | 1011 | C3 | 1100 | 0011 | EB | 1110 | 1011 |
| 9C | 1001 | 1100 | C4 | 1100 | 0100 | EC | 1110 | 1100 |
| 9D | 1001 | 1101 | C5 | 1100 | 0101 | ED | 1110 | 1101 |
| 9E | 1001 | 1110 | C6 | 1100 | 0110 | EE | 1110 | 1110 |
| 9F | 1001 | 1111 | C7 | 1100 | 0111 | EF | 1110 | 1111 |
| A0 | 1010 | 0000 | C8 | 1100 | 1000 | F0 | 1111 | 0000 |





# DMX Start Address DIP Switch Table

| Start | Switches 1-8 | | Start | Switches 1-8 | | Start | Switches 1-8 | |
|---|---|---|---|---|---|---|---|---|
| 1 | 0000 | 0001 | 41 | 0010 | 1001 | 81 | 0101 | 0001 |
| 2 | 0000 | 0010 | 42 | 0010 | 1010 | 82 | 0101 | 0010 |
| 3 | 0000 | 0011 | 43 | 0010 | 1011 | 83 | 0101 | 0011 |
| 4 | 0000 | 0100 | 44 | 0010 | 1100 | 84 | 0101 | 0100 |
| 5 | 0000 | 0101 | 45 | 0010 | 1101 | 85 | 0101 | 0101 |
| 6 | 0000 | 0110 | 46 | 0010 | 1110 | 86 | 0101 | 0110 |
| 7 | 0000 | 0111 | 47 | 0010 | 1111 | 87 | 0101 | 0111 |
| 8 | 0000 | 1000 | 48 | 0011 | 0000 | 88 | 0101 | 1000 |
| 9 | 0000 | 1001 | 49 | 0011 | 0001 | 89 | 0101 | 1001 |
| 10 | 0000 | 1010 | 50 | 0011 | 0010 | 90 | 0101 | 1010 |
| 11 | 0000 | 1011 | 51 | 0011 | 0011 | 91 | 0101 | 1011 |
| 12 | 0000 | 1100 | 52 | 0011 | 0100 | 92 | 0101 | 1100 |
| 13 | 0000 | 1101 | 53 | 0011 | 0101 | 93 | 0101 | 1101 |
| 14 | 0000 | 1110 | 54 | 0011 | 0110 | 94 | 0101 | 1110 |
| 15 | 0000 | 1111 | 55 | 0011 | 0111 | 95 | 0101 | 1111 |
| 16 | 0001 | 0000 | 56 | 0011 | 1000 | 96 | 0110 | 0000 |
| 17 | 0001 | 0001 | 57 | 0011 | 1001 | 97 | 0110 | 0001 |
| 18 | 0001 | 0010 | 58 | 0011 | 1010 | 98 | 0110 | 0010 |
| 19 | 0001 | 0011 | 59 | 0011 | 1011 | 99 | 0110 | 0011 |
| 20 | 0001 | 0100 | 60 | 0011 | 1100 | 100 | 0110 | 0100 |
| 21 | 0001 | 0101 | 61 | 0011 | 1101 | 101 | 0110 | 0101 |
| 22 | 0001 | 0110 | 62 | 0011 | 1110 | 102 | 0110 | 0110 |
| 23 | 0001 | 0111 | 63 | 0011 | 1111 | 103 | 0110 | 0111 |
| 24 | 0001 | 1000 | 64 | 0100 | 0000 | 104 | 0110 | 1000 |
| 25 | 0001 | 1001 | 65 | 0100 | 0001 | 105 | 0110 | 1001 |
| 26 | 0001 | 1010 | 66 | 0100 | 0010 | 106 | 0110 | 1010 |
| 27 | 0001 | 1011 | 67 | 0100 | 0011 | 107 | 0110 | 1011 |
| 28 | 0001 | 1100 | 68 | 0100 | 0100 | 108 | 0110 | 1100 |
| 29 | 0001 | 1101 | 69 | 0100 | 0101 | 109 | 0110 | 1101 |
| 30 | 0001 | 1110 | 70 | 0100 | 0110 | 110 | 0110 | 1110 |
| 31 | 0001 | 1111 | 71 | 0100 | 0111 | 111 | 0110 | 1111 |
| 32 | 0010 | 0000 | 72 | 0100 | 1000 | 112 | 0111 | 0000 |
| 33 | 0010 | 0001 | 73 | 0100 | 1001 | 113 | 0111 | 0001 |
| 34 | 0010 | 0010 | 74 | 0100 | 1010 | 114 | 0111 | 0010 |
| 35 | 0010 | 0011 | 75 | 0100 | 1011 | 115 | 0111 | 0011 |
| 36 | 0010 | 0100 | 76 | 0100 | 1100 | 116 | 0111 | 0100 |
| 37 | 0010 | 0101 | 77 | 0100 | 1101 | 117 | 0111 | 0101 |
| 38 | 0010 | 0110 | 78 | 0100 | 1110 | 118 | 0111 | 0110 |
| 39 | 0010 | 0111 | 79 | 0100 | 1111 | 119 | 0111 | 0111 |
| 40 | 0010 | 1000 | 80 | 0101 | 0000 | 120 | 0111 | 1000 |

DMX Start Address DIP Switch Table cont'd

| Start | Switches 1-8 | Start | Switches 1-8 | Start | Switches 1-8 |
|---|---|---|---|---|---|
| 121 | 0111 1001 | 161 | 1010 0001 | 201 | 1100 1001 |
| 122 | 0111 1010 | 162 | 1010 0010 | 202 | 1100 1010 |
| 123 | 0111 1011 | 163 | 1010 0011 | 203 | 1100 1011 |
| 124 | 0111 1100 | 164 | 1010 0100 | 204 | 1100 1100 |
| 125 | 0111 1101 | 165 | 1010 0101 | 205 | 1100 1101 |
| 126 | 0111 1110 | 166 | 1010 0110 | 206 | 1100 1110 |
| 127 | 0111 1111 | 167 | 1010 0111 | 207 | 1100 1111 |
| 128 | 1000 0000 | 168 | 1010 1000 | 208 | 1101 0000 |
| 129 | 1000 0001 | 169 | 1010 1001 | 209 | 1101 0001 |
| 130 | 1000 0010 | 170 | 1010 1010 | 210 | 1101 0010 |
| 131 | 1000 0011 | 171 | 1010 1011 | 211 | 1101 0011 |
| 132 | 1000 0100 | 172 | 1010 1100 | 212 | 1101 0100 |
| 133 | 1000 0101 | 173 | 1010 1101 | 213 | 1101 0101 |
| 134 | 1000 0110 | 174 | 1010 1110 | 214 | 1101 0110 |
| 135 | 1000 0111 | 175 | 1010 1111 | 215 | 1101 0111 |
| 136 | 1000 1000 | 176 | 1011 0000 | 216 | 1101 1000 |
| 137 | 1000 1001 | 177 | 1011 0001 | 217 | 1101 1001 |
| 138 | 1000 1010 | 178 | 1011 0010 | 218 | 1101 1010 |
| 139 | 1000 1011 | 179 | 1011 0011 | 219 | 1101 1011 |
| 140 | 1000 1100 | 180 | 1011 0100 | 220 | 1101 1100 |
| 141 | 1000 1101 | 181 | 1011 0101 | 221 | 1101 1101 |
| 142 | 1000 1110 | 182 | 1011 0110 | 222 | 1101 1110 |
| 143 | 1000 1111 | 183 | 1011 0111 | 223 | 1101 1111 |
| 144 | 1001 0000 | 184 | 1011 1000 | 224 | 1110 0000 |
| 145 | 1001 0001 | 185 | 1011 1001 | 225 | 1110 0001 |
| 146 | 1001 0010 | 186 | 1011 1010 | 226 | 1110 0010 |
| 147 | 1001 0011 | 187 | 1011 1011 | 227 | 1110 0011 |
| 148 | 1001 0100 | 188 | 1011 1100 | 228 | 1110 0100 |
| 149 | 1001 0101 | 189 | 1011 1101 | 229 | 1110 0101 |
| 150 | 1001 0110 | 190 | 1011 1110 | 230 | 1110 0110 |
| 151 | 1001 0111 | 191 | 1011 1111 | 231 | 1110 0111 |
| 152 | 1001 1000 | 192 | 1100 0000 | 232 | 1110 1000 |
| 153 | 1001 1001 | 193 | 1100 0001 | 233 | 1110 1001 |
| 154 | 1001 1010 | 194 | 1100 0010 | 234 | 1110 1010 |
| 155 | 1001 1011 | 195 | 1100 0011 | 235 | 1110 1011 |
| 156 | 1001 1100 | 196 | 1100 0100 | 236 | 1110 1100 |
| 157 | 1001 1101 | 197 | 1100 0101 | 237 | 1110 1101 |
| 158 | 1001 1110 | 198 | 1100 0110 | 238 | 1110 1110 |
| 159 | 1001 1111 | 199 | 1100 0111 | 239 | 1110 1111 |
| 160 | 1010 0000 | 200 | 1100 1000 | 240 | 1111 0000 |





DMX Start Address DIP Switch Table cont'd

| Start | Switches 1-8 | Start | Switches 1-8 | Start | Switches 1-8 |
|---|---|---|---|---|---|
| 241 | 0000 0001 | 246 | 0010 1001 | 251 | 0101 0001 |
| 242 | 0000 0010 | 247 | 0010 1010 | 252 | 0101 0010 |
| 243 | 0000 0011 | 248 | 0010 1011 | 253 | 0101 0011 |
| 244 | 0000 0100 | 249 | 0010 1100 | 254 | 0101 0100 |
| 245 | 0000 0101 | 250 | 0010 1101 | 255 | 0101 0101 |

# LOR %intensity to DMX Intensities

| LOR | DMX | LOR | DMX | LOR | DMX |
|---|---|---|---|---|---|
| 0 | 0 | 34 | 86 | 68 | 173 |
| 1 | 2 | 35 | 89 | 69 | 175 |
| 2 | 5 | 36 | 91 | 70 | 178 |
| 3 | 7 | 37 | 94 | 71 | 181 |
| 4 | 10 | 38 | 96 | 72 | 183 |
| 5 | 12 | 39 | 99 | 73 | 186 |
| 6 | 15 | 40 | 102 | 74 | 188 |
| 7 | 17 | 41 | 104 | 75 | 191 |
| 8 | 20 | 42 | 107 | 76 | 193 |
| 9 | 22 | 43 | 109 | 77 | 196 |
| 10 | 25 | 44 | 112 | 78 | 198 |
| 11 | 28 | 45 | 114 | 79 | 201 |
| 12 | 30 | 46 | 117 | 80 | 204 |
| 13 | 33 | 47 | 119 | 81 | 206 |
| 14 | 35 | 48 | 122 | 82 | 209 |
| 15 | 38 | 49 | 124 | 83 | 211 |
| 16 | 40 | 50 | 127 | 84 | 214 |
| 17 | 43 | 51 | 130 | 85 | 216 |
| 18 | 45 | 52 | 132 | 86 | 219 |
| 19 | 48 | 53 | 135 | 87 | 221 |
| 20 | 51 | 54 | 137 | 88 | 224 |
| 21 | 53 | 55 | 140 | 89 | 226 |
| 22 | 56 | 56 | 142 | 90 | 229 |
| 23 | 58 | 57 | 145 | 91 | 232 |
| 24 | 61 | 58 | 147 | 92 | 234 |
| 25 | 63 | 59 | 150 | 93 | 237 |
| 26 | 66 | 60 | 153 | 94 | 239 |
| 27 | 68 | 61 | 155 | 95 | 242 |
| 28 | 71 | 62 | 158 | 96 | 244 |
| 29 | 73 | 63 | 160 | 97 | 247 |
| 30 | 76 | 64 | 163 | 98 | 249 |
| 31 | 79 | 65 | 165 | 99 | 252 |
| 32 | 81 | 66 | 168 | 100 | 255 |
| 33 | 84 | 67 | 170 | | |

# Specifications

| | Pixie2D | Pixie4D | Pixie8D | Pixie16D |
|---|---|---|---|---|
| Strings | 2 | 4 | 8 | 16 |
| Pixels per string | 170 | 170 | 170 | 170 |
| LOR Effects Pixels | 170 | 170 | 100 | 50 |
| Strings per bank | n/a | n/a | 4 | 8 |
| Amps/bank | n/a | n/a | 16 | 32 |
| Total Amps | 10* | 16 | 32 | 64 |
| Voltage DC | 5-12* | 5-12 | 5-12 | 5-12 |
| Max LOR Net Speed | 1Mbps | 1Mbps | 1Mbps | 1Mbps |
| Operating Temp | -30º F to 140º F | -30º F to 140º F | -30º F to 140º F | -30º F to 140º F |
| Dimensions | 6½”L x 4⅞”W x 1⅛””H* | 4⅝L x 3⅜” W x 1”H | 4½”L x 3⅞”W x 1”H | 7⅞”L x 4¾” W x 1”H |

* The Pixie2 is currently only sold with a 5amp, 12vdc power supply in a weatherproof plastic box.

Circuit boards available for Pixie4, Pixie8 & Pixie16.

Pixie16 available in plastic box with power supply.

**Pixie4DMX:**

- Outputs four DMX universes (XLR3 jacks)
- Max pixels/universe is 170 (510 dimmers)
- LOR network speed to 1Mbps
- Operating temperature -30º F to 140º F
- Power barrel input 9 to 15vdc @ 800ma or greater

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