Diode Manager
Configuration Guide

V1.2

MOSS

WWW.MOSSLED.COM

Contents

Contents 1
1 – Introduction 2
2 – Diode Manager Requirements 2
3 – General Configuration 2
3.1 – Overview 2
3.2 – Network Adapter Selection 3
3.3 – Controllers with Invalid IP Settings 3
4 – Controller Configuration 4
4.1 – Basic Configuration 4
4.1.1 – Network 4
4.1.2 – Control 5
4.1.3 – LEDs 6
4.1.4 – Test 9
4.1.5 – Misc 10
4.2 – Advanced Configuration 12
4.2.1 – Overview 12
4.2.2 – Channel Output Configuration 13
4.2.3 – Null Pixels 13
4.2.4 – Zig Zag 14
4.2.5 – Grouping 15
4.2.6 – Intensity 15
4.2.7 – Reversing 15
5 – Further Information and Support 15

 © Moss LED Inc 2017

1 – Introduction

The Diode Manager allows for easy and powerful configuration of your PixlArt controller. Features such as the single discovery table allow the user to search for multiple controllers on the network and have them all appear in one place for easy monitoring and configuration. This also means there is no need to have to remember the individual IP addresses of any controllers which is ideal in larger setups.

Current versions of the Diode Manager and PixlArt controller firmware even allow detection of controllers on totally different network ranges that have incorrect IP configuration. The controllers can then have their network settings updated to ones that are in the correct range to talk to your computer, with ease.

New advanced features like 'auto-complete' now also make channel configuration easier than ever before.

Important: The contents of this guide assume you are using the latest version of firmware on the PixlArt device. Some settings and options shown here may be missing if you are not up to date. The latest version of the firmware is available from https://www.mossled.com/products/pixlart-416.

2 – Diode Manager Requirements

The latest version of the DM (available from https://www.mossled.com/products/pixlart-416) needs to be installed on your machine. The DM will operate on Windows (PC) based platforms. OS X MAC version coming soon.

You should always make sure you use the latest firmware and the latest Diode Manager for compatibility reasons.

3 – General Configuration

3.1 – Overview

Once all controllers are connected and powered on, open the Diode Manager. By default it will open the "Network Devices" tab shown in figure 1.

Clicking on the "Search" button will then discover any PixlArt controllers currently connected to the LAN. Each controller will appear on its own row in the main discovery window showing the following information: Model, IP Address, Nickname, Firmware Version and Current Temperature. Double clicking on a controller in the list will then bring up a separate configuration window allowing you to configure that specific controller.

To sort the list of controllers you can click on the heading above any column. For example clicking on the "Nickname" heading will sort the list in alphabetical order based on the nickname you configure for each device.

 © Moss LED Inc 2017

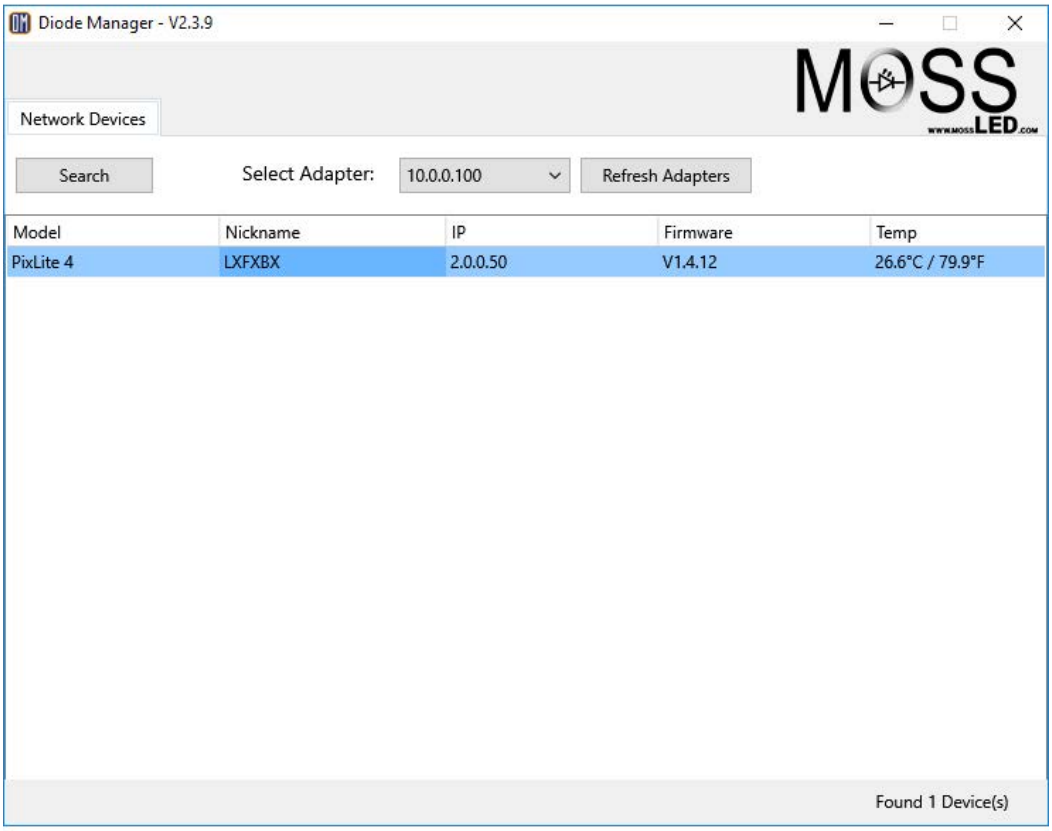

Figure 1

3.2 – Network Adapter Selection

At the top of the network devices tab you will see a drop down box showing one or more IP addresses. If there are none, it means an active network adapter was not detected on your PC. You must have one or more active cards to search for network devices.

If you have multiple network cards in your PC, such as a wireless card for your normal network and a wired card for your lighting network, you can select the one to search on here. Pressing the “Refresh Adapters” button will regenerate that list. This can be used if a network card is enabled/disabled or its IP settings are changed while the Manager is running.

If multiple adapters are shown and you aren’t sure which one your PixlArt is connected to, you can safely try them all.

3.3 – Controllers with Invalid IP Settings

Sometimes a PixlArt controller may be connected to your network and have invalid IP settings. This is common when moving a controller to another network or using the controller for the first time, or you may have just forgotten the IP address.

© Moss LED Inc 2017

The Diode Manager will still detect these controllers and add them to your controller list. You can see an example of this in figure 1. In this example our PC is set to 10.0.0.100 as shown in the adapter box and there's an already configured PixlArt at 2.0.0.50. A brand new PixlArt 416 has been connected to the network switch. As there is no router with DHCP capabilities on the network, the controller has used its default IP of 192.168.0.50 which will prevent us from properly operating the device. However if we double click on the new controller a message pops up as shown in figure 2.

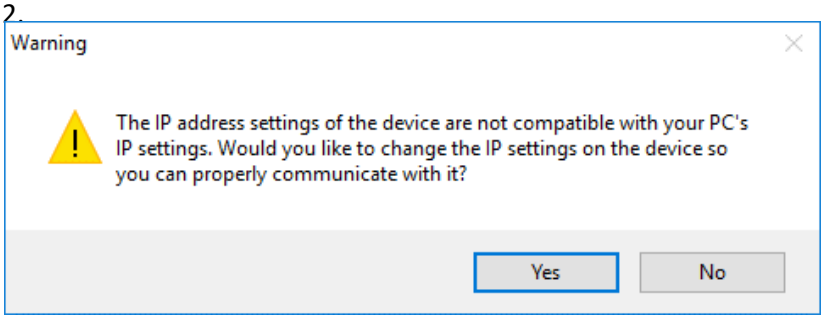

Figure 2

If we click yes to this we can now change the controller's IP settings to something in our network range without ever needing to change our computer's IP settings.

4 – Controller Configuration

4.1 – Basic Configuration

4.1.1 – Network

In this tab the user can specify the static IP address and subnet mask that the controller will operate on as well as the type of IP connection. If you wish to use the IP address that you manually type in, make sure to select the 'Static' button.

If you wish to let the controller be assigned an IP automatically by a router, select the 'DHCP' button. DHCP is the default mode of operation and will allow the controller to connect instantly to most home or corporate networks that have a router.

If you are connecting your controller directly to your PC or via a basic network switch on a network without a router, you will need to use a Static IP address.

© Moss LED Inc 2017

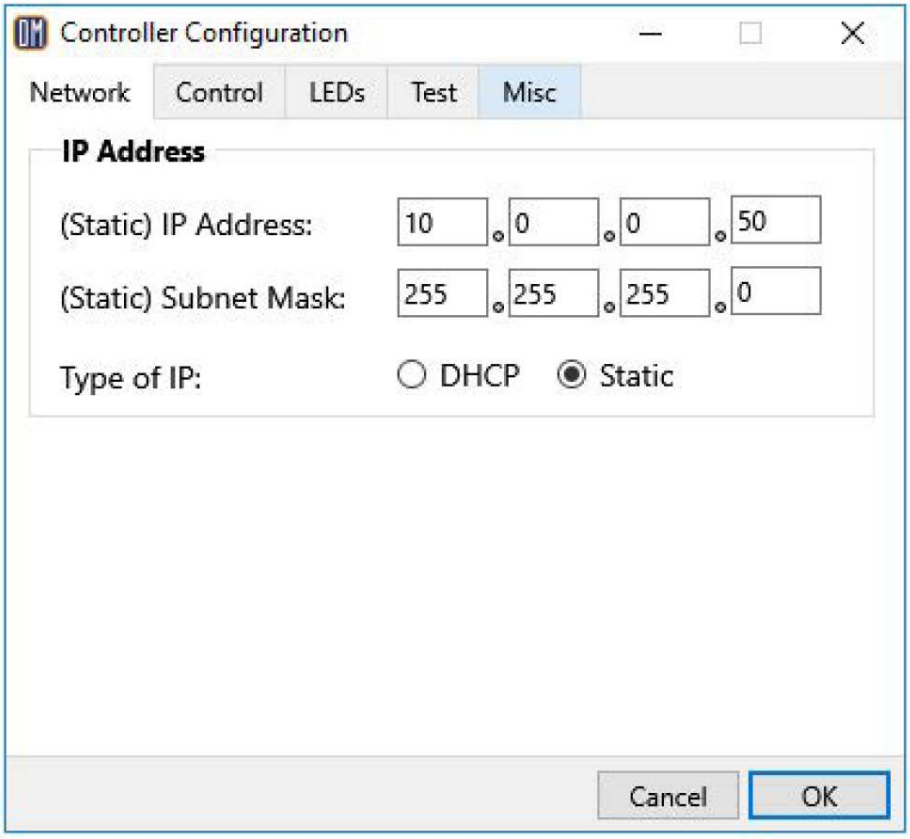

Figure 3

4.1.2 – Control

This tab allows you to automatically setup your pixel fixture very quickly by simply specifying the start universe, start channel and the number of pixels per output. The Diode Manager then automatically allocates the correct sequential universe addressing for all the pixels on all the outputs for you. This is very useful if your fixture has the same number of pixels on each of the outputs. If more specific control is needed for your application, the “Advanced” checkbox can be selected. Refer to section 4.2 of this guide for information on advanced settings.

The ‘Hold Last Frame’ checkbox allows you to tell the controller that it should continue to hold the last received data frame on all outputs if the controller stops receiving input data. Leaving it unchecked (default) will result in the controller timing out and blanking all outputs after a few seconds of not receiving any valid input data.

Lastly, the DMX512 outputs are also configured from this tab. Each of the four outputs can be turned on or off using the slider and the sACN universe of each DMX512 output can be specified.

© Moss LED Inc 2017

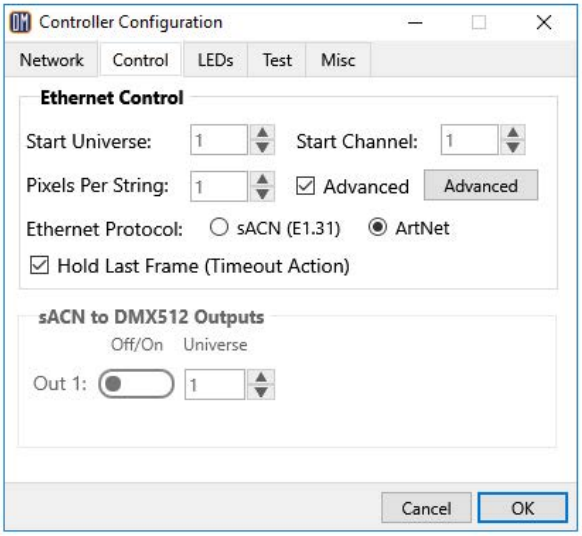

Figure 4

4.1.3 – LEDs

This tab allows you to select the type of pixel IC you wish to control, set the RGB color order and specify any gamma correction.

Chip Type

You can only operate a single pixel chip protocol from a single controller (eg. you can't run the WS2811 protocol on strings 1-8 and SM16716 on strings 9-16).

Driver Speed

Some pixels that don't have a clock line can operate at multiple speeds. Usually there are two speeds available, a slow and a fast option. If this is possible you will see this selection appear next to the Pixel IC box.

Clock Speed

Depending on the controller's features, there may be an adjustable clock speed setting (for pixels that use a clock line). This allows you to change the frequency of the clocked signal. Faster signals give a better refresh rate but slower clock speeds work better over longer distances.

© Moss LED Inc 2017

LED Type

Some pixel drivers can operate RGB or RGBW LEDs. In this case, an option will be shown to select the type you are using. RGB LEDs use 3 channels and RGBW LEDs use 4 channels per pixel.

RGB Order

Under this tab you can also change the RGB color order of all the outputs simultaneously, or change it for individual outputs separately. This is useful if the lights you are using are not physically wired in the standard red, green, blue order. To change the order of all outputs at once simply select the order from the dropdown box. To change specific outputs only click the 'Advanced' checkbox and then click the 'Advanced' button to bring up the RGB configuration window for individual outputs.

Gamma Correction

Gamma correction is the method used for correcting the output of the LEDs so that they respond in a much more linear fashion when viewed by the human eye (the spectral response of the human eye is non-linear). This is particularly important when the LEDs are being faded, and also provides more accurate and vivid color representation. It can only be applied to pixels that have greater than 8-bit resolution, E.G. TLS3001. The Diode Manager provides a very easy to use slider system enabling you to easily set the gamma correction value for each RGB color. Typically, a gamma-corrected value of 2.0 is a good place to start.

© Moss LED Inc 2017

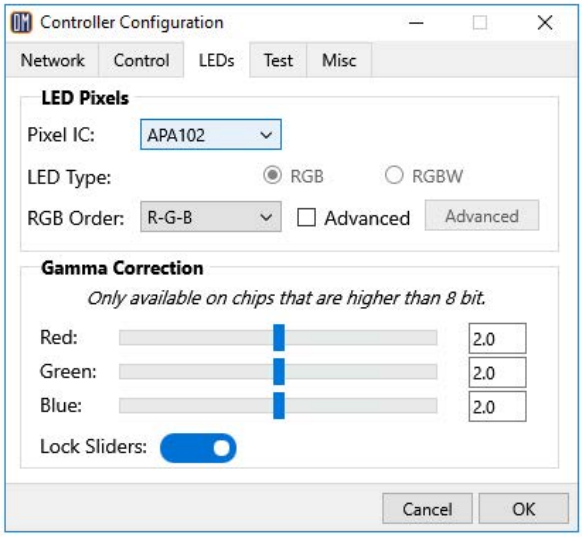

Figure 5

© Moss LED Inc 2017

4.1.4 – Test

This tab allows you to remotely select a number of different hardware test modes on the controller that can help to determine if your pixels are connected correctly and are working as they should. Simply select the test you wish to run from the drop-down box and then press “set” to turn it on. Note: Before running the tests the pixel type and outputs should be configured correctly or it will not work.

The test modes are listed below:

None (Live Data):

Test mode is not running and the pixels will be responding to live sACN (E1.31) or Art-Net data.

RGBW Cycle:

This will automatically cycle all pixel outputs through red, green, blue and white in sequence.

Individual Colors:

This will allow you to select a solid color of red, blue, green or white and will turn all pixels on to that color.

Custom Color:

This will allow you to select a custom color from the vertical bar and then hover over the shade palette for that color; all pixels will respond in real time to the changes.

Color Fade:

This test will automatically perform a continual colour fade on all pixels through the entire colour range.

 © Moss LED Inc 2017

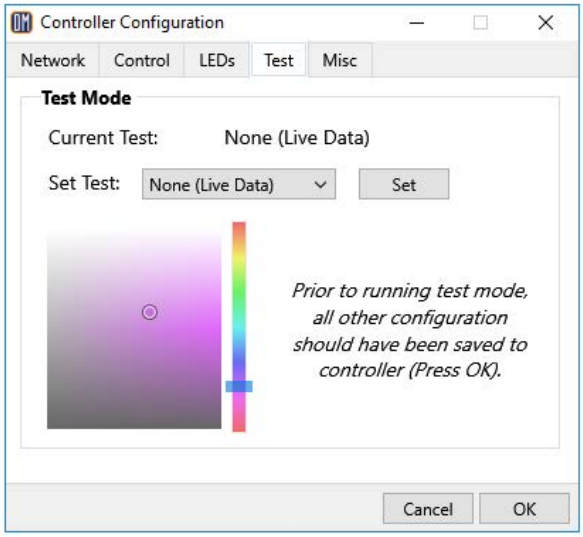

Figure 6

4.1.5 – Misc

This allows the user to assign a custom nickname to the controller, perform a firmware update and also displays the current bank voltage of each of the power bank(s).

It also allows the user to set the enclosure target temperature **if a fan is connected** to the auxiliary output on a PixlArt controller (for future use). This is only available on some versions of the controller. For more information on how this feature works please refer to your specific PixlArt version's user manual. If the user manual does not talk about the auxiliary fan output then your controller does not support this feature.

For more information about how to perform a firmware update, please refer to the relevant section in the controller's user manual. If you can see the button below you will just have to click it and then browse for the downloaded firmware update '.hex' file.

© Moss LED Inc 2017

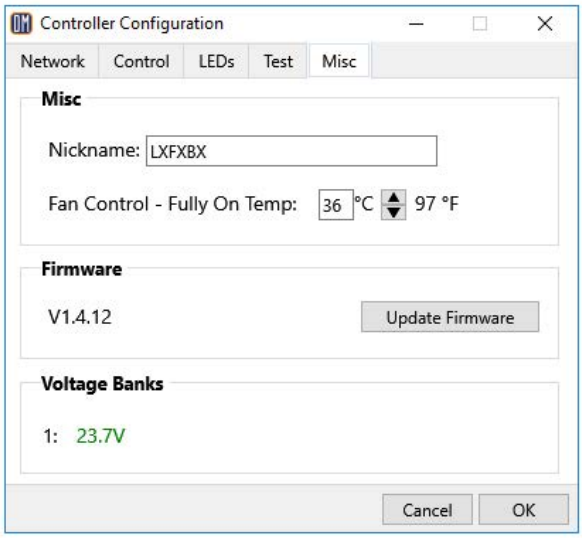

Figure 7

© Moss LED Inc 2017

4.2 – Advanced Configuration

4.2.1 – Overview

Clicking on ‘Advanced’ checkbox and then the ‘Advanced’ button in the Control tab allows for advanced configuration of the individual outputs. Each output can have advanced parameters individually configured.

There are some automatic features that will help with understanding the channel usage range and with sequential addressing.

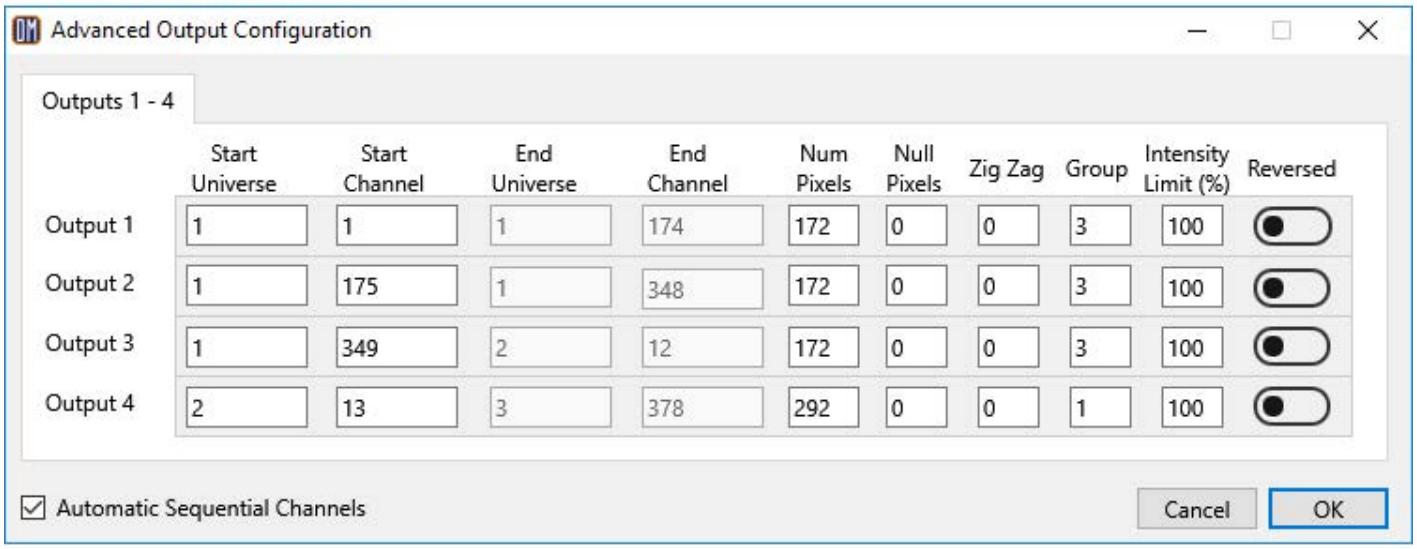

Figure 8

© Moss LED Inc 2017

4.2.2 – Channel Output Configuration

The advanced configuration permits an extremely flexible channel setup. The controller is capable of "connecting" the beginning of an output to any channel within any universe. Outputs can be connected to the same universe data as each other, be sequential to each other, or even be separated by hundreds of universes if required. **The key is to correctly match the universe outputs of your lighting software to the channel outputs you have configured for your PixlArt controller**.

It should be noted that the PixlArt controller only uses 510 channels out of a possible 512 in any Universe when using RGB pixels. It does this to avoid splitting a single pixel (3 channels) over 2 Universes which is bad practice (some software control programs do this as well.) If using RGBW pixels however, it uses the full 512 channels per Universe and should be configured as such in your lighting software.

The Diode Manager will show the last universe and channel that it uses for each output based on other entered parameters for that output like the number of pixels and grouping. This helps show you exactly what range of channels the output is using for your reference.

The user may also click on the 'Automatic Sequential Channels' checkbox at the bottom of the configuration window to enable auto-calculation of the start universes and channels for outputs 2 onwards. This feature is intended to help the user configure all their output channels even faster by automatically working out those fields based on other parameters already provided by the user.

4.2.3 – Null Pixels

Null pixels allow the controller to ignore or skip a specified number of pixels at the beginning of an output. This is useful when you want to extend the distance between controller and your actual lights, as the data signals used by pixel chips are not designed to travel over long distances.

Sometimes the signal between controller and first pixel gets degraded and causes problems such as flickering lights. In these cases inserting a "fake" (null) pixel between controller and first real pixel can help as they reproduce the signal on their output; remember that they will not actually light up as they are ignored by the controller.

Typical distances a signal will travel before requiring null pixels will depend on several factors including the type of pixel used, voltage and wire gauge. Typically it is a process of trial and error to determine how far you can go between pixels in a specific setup.

The PixlArt treats null pixels as an entirely different parameter to normal pixels. So for example if you had 50 pixels in your pixel fixture and needed to insert 2 null pixels before the start, the 'Null Pixels' field for that output would need to be set to 2 and the 'Num Pixels' field would remain at 50 (even though there are 52 physical pixels in total on that output).

 © Moss LED Inc 2017

4.2.4 – Zig Zag

The zig zag feature allows for a simpler physical connection of pixels in certain circumstances where the pixels connect in alternating directions. For example the below matrix has 6 rows with 5 pixels in each. The simplest way to connect the data wires between rows is shown in figure 9. Unfortunately this results in every second row lighting up in reverse order as shown by the numbers which indicate the order pixels will light up in.

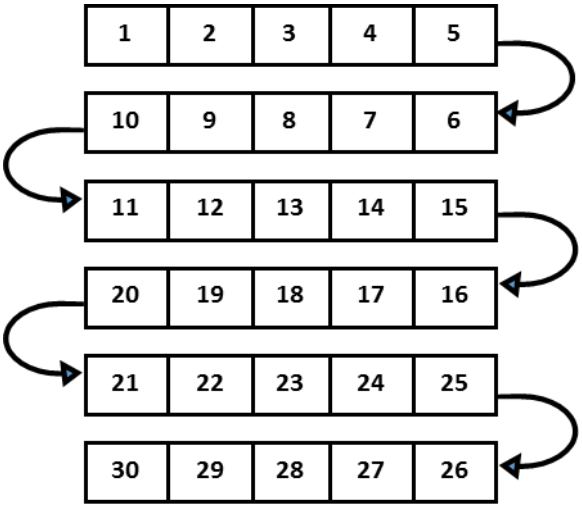

Figure 9

The zig zag feature of the PixLite allows this physical wiring to be *virtually* changed to the equivalent of wiring the pixels like figure 10. In this example, you would set the zig zag on the output to ‘5’ to achieve this effect.

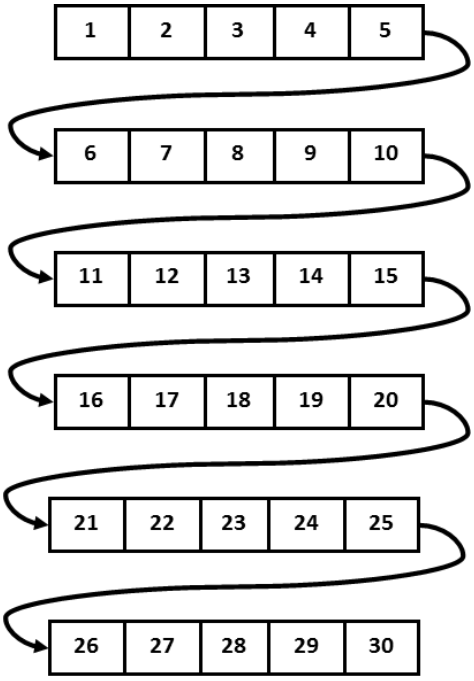

Figure 10

 © Moss LED Inc 2017

This feature is typically used in elements such as a matrix of pixels (like the example).

4.2.5 – Grouping

Grouping allows the user to specify how many physical pixels are grouped together and treated as one single pixel to the outside world. For example, if you had a pixel strip with physical 150 pixels on an output and entered 10 in the grouping field for that output, it would effectively turn that strip of 150 individual pixels into a strip of 15 individual 'pixels'. Each 'pixel' would now actually consist of a group of 10 physical pixels all grouped together as one single 'pixel' as far as your lighting control software or console is concerned.

4.2.6 – Intensity

This allows the user to specify a value between 0 and 100% for the brightness level of the pixels on a given output. Note that the brightness output is scaled based on the input level provided to the controller. This is used in circumstances where the lights are too bright for your application. If you set the Intensity limit to 50% for example, the PixlArt would halve all incoming data values.

4.2.7 – Reversing

Turning on the reversed option tells the controller to light up the pixels in reverse order to the way that they are physically connected. This means the first pixel to light will actually be the last physical pixel on that output instead of the first physical pixel.

5 – Further Information and Support

You can contact us toll free at 1.800.924.1585 ext.101 for tech support.

You can send an e-mail to technical@mossled.com.

© Moss LED Inc 2017