

## Introduction

NetPixel-ONE will drive up to 32 ArtNet Pixel universes (5440 RGB Pixels/4096 RGBW Pixels), or 28 sACN/E1.31 Pixel universes (4760 RGB Pixels/3584 RGBW Pixels) from data sent over a wired Ethernet network. Device IP, and ArtNet/sACN Universe settings are adjustable directly from your web browser interface. A 10-way plug in connector is provided which allows connection of 8 outputs, plus ground, and 5-24V power input. Optionally there is a 5.5x2.1mm barrel plug input for 5-24V power. Operational mode is indicated by a simple green 7 segment display.

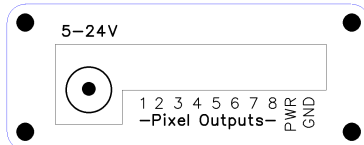
## Specifications

- IEEE 802.3 compatible 10/100 Ethernet MAC and PHY embedded
- Browser configuration server and UDP Client modes
- Isolated RJ45 Ethernet connection
- Up to 32 universe ArtNet II & III / 28 universe sACN/E1.31 decoding NRZ data at 25fps typical
- Power Input : 5-24V centre positive, or 5-24V external power applied to RED wire of 10-way Connector

## Parts Supplied

- NetPixel-ONE Interface
- 10-way 200mm connector cable harness

## Product & Pixel LED Connection



Pixel data output connections (1-8 or A-H) are made via the rear connector, and cable harness.

The **Black/GND** wire is a common for ALL the pixel outputs, and should be commoned with ALL power supplies feeding the pixels, it is also commoned with the power supply section of the NetPixel-ONE.

## Powering Options

The NetPixel-ONE can be powered from 5-24V, applied either from the 5.5x2.1 barrel plug (centre +), or via the Red/Black (PWR/GND) wires of the cable harness, this is very useful if you want to take the power from the Pixel Strip supply rather than supplying an additional one.

## LAN Ethernet Connection

The NetPixel-ONE can be configured for almost any IP setting, although a default IP of 192.168.1.200 is supplied with the unit and can be connected directly to one of your router LAN Ports, or directly to the output of your PC/Laptop. It is important that the device's subnet-IP and the network subnet-IP match for a successful connection. For example if the devices' IP is 192.168.1.200, it will happily connect to a 192.168.1.x network, but will not connect with a 192.168.0.x network. If you find you have this incompatibility, then you may need to temporarily change your network subnet IP to match that of the NetPixel-ONE (see 'Private Wired Network Connection' below). Once connection is made you can use the WebBrowser interface to make further changes, always remembering to stay within the scope of Network Subnet.

## Browser Configuration Mode

To access the Web Browser configuration page, the NetPixel-ONE must be put into configuration mode, to do this press and hold the 'Config' button until 'C' is shown, the IP address will also be flashed on the display in the following format : '192-168-001-200' and this is the IP address you need to put in to the URL bar of your Web Browser, and press return. As long as the PC and the NetPixel-ONE are connected to the same network, and on the same subnet IP, the configuration interface should appear as follows:

## Network Settings

**IP Address** : It is possible to set the IP address of the NetPixel-ONE to almost any value, (many ArtNet devices will use standard IP addresses of 10.x.x.x or 2.x.x.x) only values of 0-254 can be used, 255 is not allowed.

**SubNetMask**: Normally this should be left at 255.255.255.0, which will cover most applications.

**MAC Address**: This is not adjustable and is a unique number assigned to the ethernet controller.

**[SAVE]** Saving the configuration will write the Device IP and SubNetMask values to the NetPixel-ONE's internal memory, any IP number changes will happen immediately.

## Protocol Set-Up

**DMX Protocol**: Select either Art-Net or sACN (E1.31) to match the DMX Data Protocol coming from the host application

**Start Universe**: These values can be configured to match the requirements of your system.

**Net(Art-Net Only)**: any value in the range 0-127

**Sub(Art-Net Only)**: any value in the range 0-15

**Uni(Universe)**: Art-Net : any value in the range 0-15. sACN : any value in the range 1-63999

**[SAVE]**: New Art-Net/sACN settings will take immediate effect after they are saved.

## Universe Sizes

If your application is unable to set the size of the Universes, then each universe size can be entered into the boxes, one for each of the 4 universes 1/2/3/4, on each of the 8 outputs A-H

## Pixel LED Test

Buttons have been provided for testing connected Pixel-LEDs, all output connections are tested at the same time. Pressing **RGB-[1], [2]** or **[3]** will test individual RGB channels. Pressing **RGBW-[1],[2],[3]** or **[4]** will test individual RGBW channels. Pressing **[OFF]** will clear all colour channels.

## Pixel Type

There are two pixel timings available : **WS/SK** and **UCS** and this should cover the timings of most current pixel types

## DMX Mode

If enabled, this will allow the NetPixel-ONE to drive Pixel outputs as if they were dumb RGB leds. Each output's colour will be driven from 3 channels from the first Universe, starting at the 'start channel'. For example output 1 = chan 1-3, output B = chan 4-6 etc

## REBOOT

Pressing [REBOOT] will restart the NetPixel-ONE interface

## Private Wired Network Connection

It is highly recommended that you move the NetPixel-ONE away from your home network and onto a private wired network connected directly between your PC and the NetPixel-ONE device. Generally your home network (192.168.1.x) could have lots of traffic that could affect the consistency of Art-Net/sACN data, and may cause visual disturbances.

To move NetPixel-ONE to a direct-wired network follow these instructions (MS Windows):

Go to Control Panel, select Network and Internet, then select Network and Sharing Centre

In the left hand column, click on 'Change Adapter Settings'

'Local Area Connection' should be shown, double click on it

Under the 'Networking' tab, select the line that says 'Internet Protocol Version 4 (TCP/IPv4)', then click 'Properties'

Click the radio button beside 'Use the following IP address'

Enter your required IP address (e.g. 192.168.1.1) & Subnet mask (e.g. 255.255.255.0) in the fields provided

**NOTE :** The IP Address entered here MUST match the NetPixel-ONE's subnet IP address for communications to work  
Leave the DNS Settings blank, click OK then click Close  
Plug in the NetPixel-ONE (if you haven't already done so)

## **Lets Animate !**

Open your LED animation application, we suggest Jinx as a good starting point, this can be downloaded from <http://www.live-leds.de/>

1. Configure Jinx to use your NetPixel-ONE device, by selecting it as an 'ArtNet' device type from the 'Setup>OutputDevices' menu
2. Ensure the Broadcast check box is not checked
3. Enter the IP number of your NetPixel-ONE interface (as you have set in NetPixel-ONE config)
4. Select 510 channels, and set Net/SubNet=0 and starting universe (as you have set in NetPixel-ONE config)
5. Click OK to save changes
6. For the second and subsequent output universes, add another device (as above) but with the NEXT universe value. (the second Universe assumes it is one after the first universe)
7. It is also possible to press SCAN in the output devices window, Jinx will communicate with the NetPixel-ONE and create 32 devices/universes automatically, but you may need to edit each one to your individual needs
8. Design your matrix size and shape within 'Setup>MatrixOptions'
9. Patch your matrix to the NetPixel-ONE universes within 'Setup>OutputPatch'. Be careful to select the correct colour order for your LEDs (WS2812 are GRB, and NOT RGB) starting at channel zero.
10. Ensure ALL universes are patched to different parts of the Matrix
11. 'Setup>StartOutput' to start the show.
12. Ensure your LED strip/matrix is connected to the device outputs, following the correct connections of GREEN=DataOut, WHITE=GROUND/0V (The Red connection is not used)
13. Once good ArtNet data is being received the LED display will flash 'A', and will stop flashing when streaming stops.
14. Select the effect you want to see from Jinx's channel effects and have fun !

## **Universe Manager**

Unlike other multi-output pixel drivers, NetPixel-ONE has the ability to deal with many different sized universes. Therefore any universe can be any length and NetPixel-ONE will work out the best way to output the data. All you need to do is set the number of channels per universe in the hosting software (channels=3\*pixels for RGB pixels), or from within the Web Browser configuration page. Each output has its own universe numbers assigned to it : A=Uni1-4, B=Uni5-8, C=Uni9-12, D=13-16, E=17-20, F=21-24, G=25-28, H=29-32. You don't have to send all universes to a particular output, and it is possible to skip universes, but you must ALWAYS send Universe ONE. See example below:

```
OutputA : [Uni-1...] [Uni-2.....] [Uni-3] [Uni-4.....]
OutputB : [Uni-5.....] [Uni-7.....]
OutputC : [Uni-9.....] [Uni-10.....] [Uni-11] [Uni-12..]
OutputD : [Uni-13] [Uni-14.....] [Uni-16..]
OutputE : [Uni-17.....] [Uni-18.....] [Uni-20.....]
OutputF : [Uni-21.....] [Uni-22.....]
OutputG : [Uni-25.....] [Uni-26.....] [Uni-27.....] [Uni-28.....]
OutputH : [Uni-29] [Uni-31.....] [Uni-32.....]
```

## **Multiple Device Connections**

If required you can add several NetPixel-ONE to your network and have them controlled from the same application. Each NetPixel-ONE would need to have a different IP address (x.x.x.1, x.x.x.2, x.x.x.3 etc) and be added to your application as a new device and patched accordingly into its own area of the matrix. Your Ethernet connection can be split into several outputs using a simple and inexpensive Ethernet 4 or 8 way unmanaged switch.

## **Using RGBW (4-colour) LEDs**

The NetPixel-ONE is able to output data to either RGB or RGBW LEDs (depending on your host application). RGB LEDs use 3 DMX channels per pixel, whereas RGBW LEDs use 4 DMX channels per pixel, so you should check that your application is able to send data in that format if required.

## **Resetting the Device to Factory defaults**

If you need to do a full reset, press and hold the config button until you see 'A'(or 'S') → 'C' → '\_' → '=' → 'E', then release config button. Factory defaults are : IP=192.168.1.200, SubnetMask=255.255.255.0, Protocol=ArtNet 0:0:0, Universe Sizes=---, PixelType=WS  
Note : A brief press of the config button will only restart the device, a one second hold will enter config mode, with a short press to exit.

## **ArtNet/sACN Unicast, Multicast & Broadcast mode**

It is recommended that Unicast mode is used when sending ArtNet/sACN data to NetPixel ONE.

## **ArtNet Device Discovery & DHCP**

There is the ability to discover IP addressing and device Information using ArtNetPoll, if unavailable, addressing can be done manually as described above. There is no DHCP function as IP addressing is Static, utilising client port 6454 for ArtNet and 5568 for sACN.

## **Pixel-LEDs that can be driven from the NetPixel-ONE**

WS281x, SK6812, UCS19xx, UCS2903, TM180x, INK1003

## **Dimensions**

Length : 87mm (plus cable harness) – Width 50mm – Height 20mm

## **Software Compatibility**

NetPixel-ONE works with all free and commercial Art-Net/sACN compatible software. For free software, Jinx is highly recommended, visit <http://www.live-leds.de/> for more information.

## **Firmware Upgrades**

At this time, for NetPixel-ONE, we only provide a back-to-base service for firmware upgrades

## **Technical Support**

email : [sales@smartshow.lighting](mailto:sales@smartshow.lighting)