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# LeDMX4 Interface



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## USER MANUAL

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## 1. INTRODUCTION

Thanks for purchasing a DMXking.com product. Our aim is to bring you high quality products with great features we know you'll appreciate. We ship only what's required which is why there's no CD or printed manual in the box, this is part of our commitment to minimizing environmental impact which also translates into end user savings.

The DMXking.com LeDMX4 is available with 5Vdc power input only. Please check carefully before applying power that you have the correct voltage and polarity!

## MAIN FEATURES

- OEM board for integration into your designs.
- DIN rail mount possible with DIN clip accessory.
- 4 Independent outputs each with 5A supply capability.
- Directly drives WS2811/2812, WS2801, LPD880x, LPD6803 and compatible LED strips.
- Selectable clock/data rate to suit long cables or fast output.
- Up to 340 RGB pixels per output spanning 2 DMX universes (1360 pixels / 8 universes per board).
- Automatic RGB order correction and additional pixel re-mapping features.
- Art-Net broadcast, Art-Net II & III unicast, sACN/E1.31 Multicast and sACN Unicast support.
- Fully compatible with **\*ALL\*** software and hardware that supports Art-Net, Art-Net II & III, and sACN/E1.31 protocols.
- Configuration utility with basic Art-Net output/input test functionality.
- Firmware updates can be performed by end user.
- Supported operating systems: Any with Ethernet networking support. Windows, Mac, Linux, iOS, Android.

## 2. CONNECTIONS

### LEDMX4

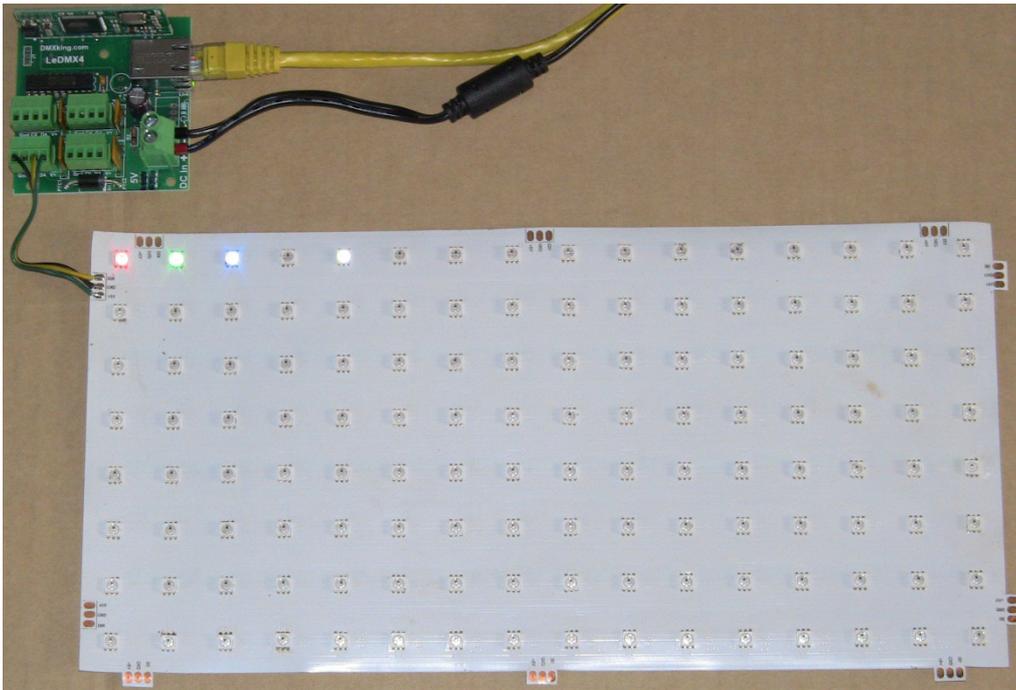


- DC Power Input 5Vdc – Supply polarity marked on board.
- Ethernet 10/100Mbps.
- 4x 4way pluggable terminal blocks for pixel strip outputs. GND, Clock [CK], Data [DA], V+
- Warning not all pixel strips use the same color code. Double check the signal names match.
- Insulated board carrier with optional DIN rail clips available.

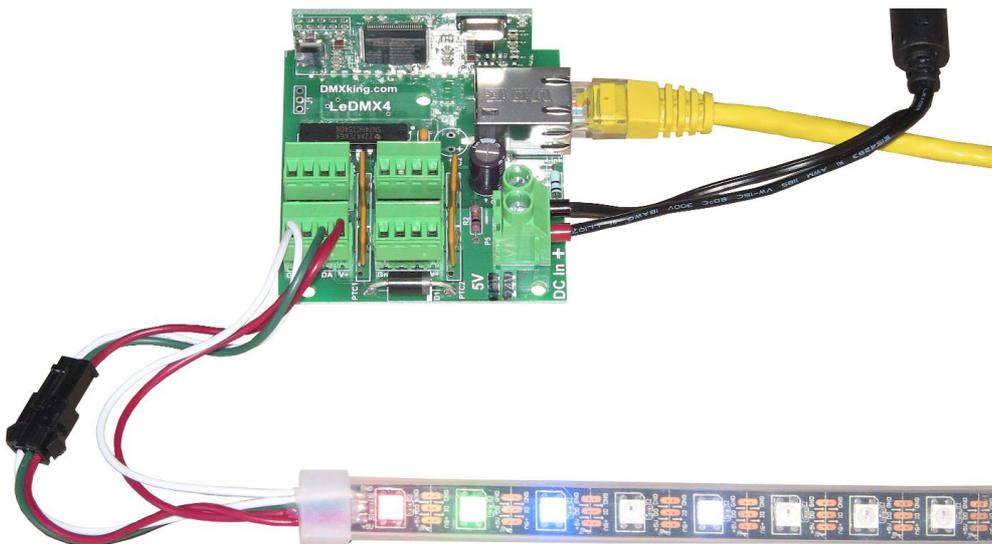
## STATUS LED TABLE

LED	Indication
Protocol	Protocol activity. Flash Yellow = Art-Net/sACN. Solid Yellow = Firmware Update mode.
Network	Network activity. Green = Link, Flash = Traffic

## TYPICAL APPLICATIONS



LED Pixel Array



LED Pixel Strip

There are many pixel types and form factors available. Please check carefully when designing for your application.

### 3. DEFAULT CONFIGURATION

All LeDMX4 units ship with default IP address settings. Please reconfigure for your local area network requirements before use.

Default configuration is for WS2811 pixel output with automatic RGB color order correction and 1 DMX universe per output.

#### **Network Tab**

Parameter	Default Setting
IP Address	192.168.0.113
Subnet Mask	255.255.255.0
Default Gateway	192.168.0.254

Pixel Output and Art-Net configuration parameters are configured with the following default values.

#### **Settings Tab**

Parameter	Default Setting
Update Rate	40Hz
Synchronization Mode	None
Pixel Mapping Mode	RGB 1 Universe
Incoming Universes	1 thru 16 (Art-Net 00:0:0 – 00:0:F)

Note LeDMX products consider Art-Net 00:0:0 to be Universe 1 (i.e. offset by 1) so there is an easy mapping between sACN/E1.31 and Art-Net.

#### **Port Tabs (1-4)**

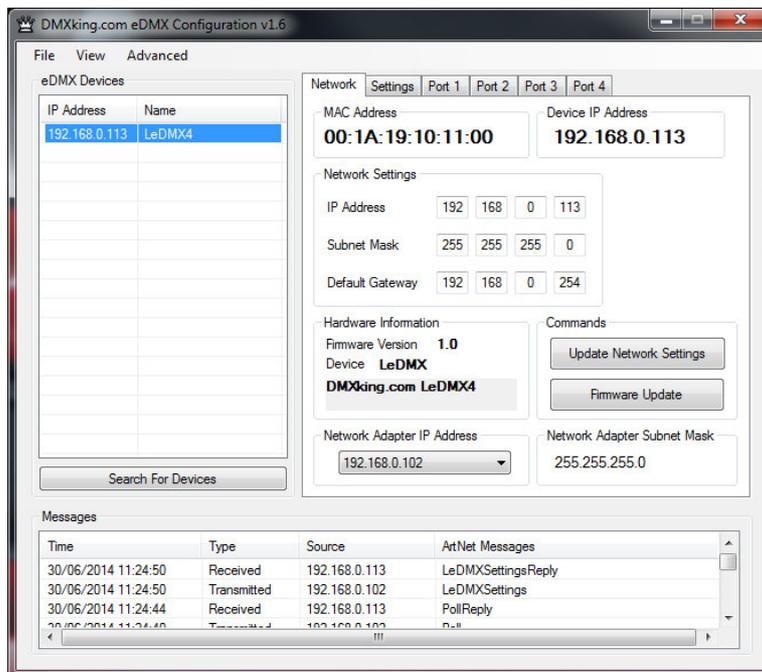
Parameter	Default Setting
Pixel Type	WS2811 – Fast (800kHz)
Pixel Count	170
Null Pixels	0
Color Order	GRB
Start Universe	1,2,3,4 (Outputs 1,2,3,4 respectively)
Start Channel	1
Pixel Group Size	1
ZigZag	0
Direction	Normal

## 4. CONFIGURATION UTILITY

The eDMX Configuration utility provides a simple interface to all device parameters. Typically these are set once during initial configuration and left untouched. If you are not confident in setting up network IP Address, Subnet Mask and Default Gateway parameters please get in touch with DMXking.com support and we'll walk you through the process.

Special note: Once you've finished configuring your eDMX product close the application before starting your lighting control application if it's running from the same computer. In general only 1 Art-Net application will function at a time.

### NETWORK TAB



Before starting eDMX Configuration utility please ensure your computer has a static IPv4 network setting, for example IP 192.168.0.100 Subnet 255.255.255.0 Gateway 192.168.0.254.

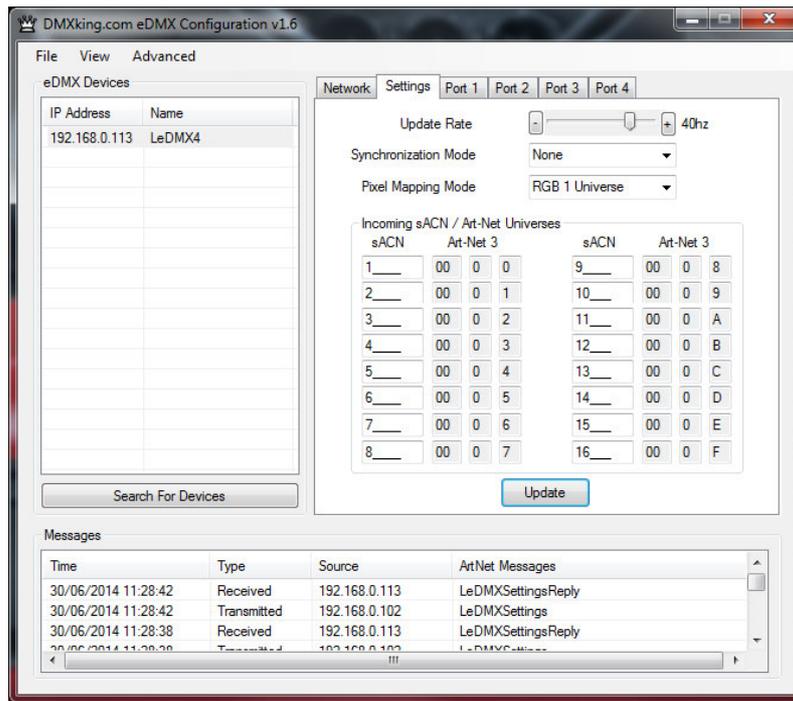
Upon startup eDMX devices are automatically detected and displayed by IP address. You can re-poll for new devices or just check the communications is okay by clicking "Search For Devices".

Click on the desired device's IP address in the list and all Settings will be retrieved. Note that if no response is received the settings will be greyed out. An activity box shows both transmitted and received messages to help with diagnosing communication issues. If your network configuration has multiple adapters and or multi-homing you need to select the same network range as the eDMX from the Network Adapter IP Address dropdown box and also ensure the subnet mask is appropriate.

Make changes to the applicable settings on the Network tab then click "Update Network Settings". The eDMX unit will reboot after network any settings changes.

Selecting "Firmware Update" will prompt for an appropriate firmware file and upload upon confirmation. A built in boot loader permits updating of the LeDMX firmware. Note only signed encrypted firmware files from DMXking.com can be successfully loaded to ensure you won't brick your device by accident. Future firmware releases for this product will be in the form 0094-500-VersionMajor.VersionMinor.enc

## SETTINGS TAB



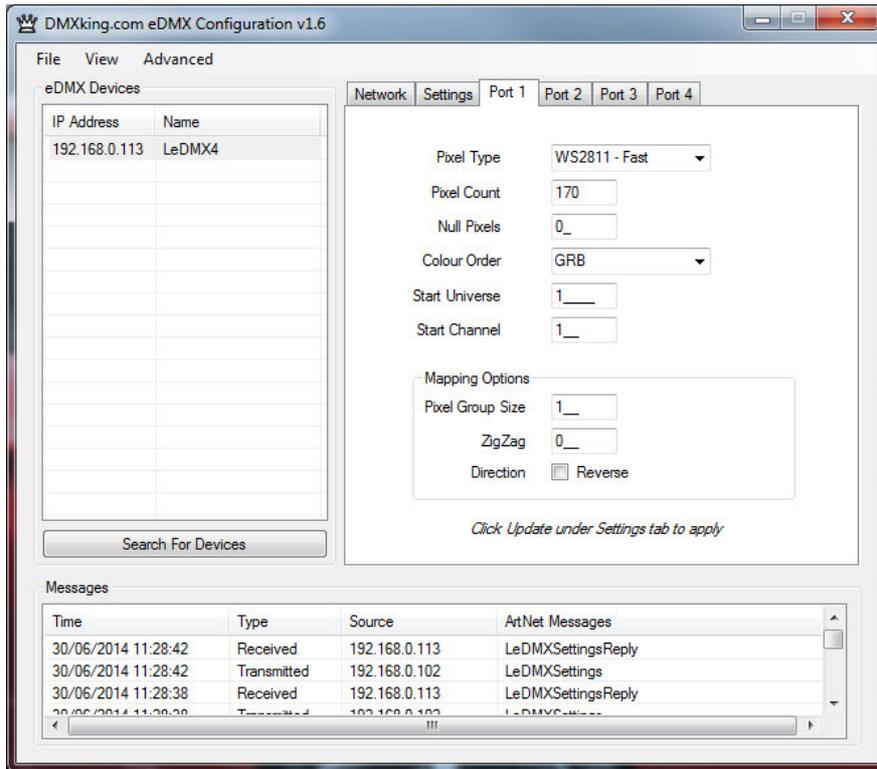
Make changes as required then click “Update” to save settings in your LeDMX unit.

The following table explains each of the settings parameters.

Parameter	Usage
Update Rate	Frequency LED strip receives updates from Incoming Universe data
Synchronization Mode	Method used to keep LED output in sync. None   Highest Universe received   *Madrix Sync
Pixel Mapping Mode	RGB pixel mapping to DMX512 data. Raw 1U   Raw 2U   RGB remap 1U   RGB remap 2U   Full mapping with group size, zigzag and direction.
Incoming Universes	These 16 universes are a filtering mechanism. All universes mapped to Ports must be included otherwise data won't be received. Note when sACN Universe > 32767 is specified Art-Net wraps back to universe 00:0:0 again.

Raw 1U/2U or RGB 1U/2U Pixel Mapping Modes are recommended unless your software package is not capable of re-mapping pixel locations. Most packages are now capable of this functionality.

\*Madrix Sync is not available in firmware release v1.0



Make changes as required then click “Update” in the Settings Tab to save settings in your LeDMX unit.

The following table explains each of the settings parameters.

Parameter	Usage
Pixel Type	Must match your connected Pixel type. WS2801, LPD880x, LPD6803, WS2811/2812. Fast mode recommended however normal speed may be appropriate for longer cable runs.
Pixel Count	Number of physical RGB pixels in the string (i.e. 1 pixel = R+G+B 3 channels). Maximum 340.
Null Pixels	Number of pixels to ignore at the start of the pixel strip. Minimum 0. Maximum 16. Commonly used to extend the drive distance from source to the first active pixel.
Color Order	DMX channel mapping to pixel RGB elements. RGB, RBG, GRB, GBR, BRG, BGR. This parameter is ignored when Raw 1U or Raw 2U mode is selected.
Start Universe	sACN/Art-Net Universe number pixels are mapped to. Note you must include this universe in your Incoming sACN/Art-Net universe table as well.
Start Channel	DMX512 channel number pixel data starts from. This parameter is ignored when Raw 1U, Raw2U, RGB 1U and RGB 2U mode is selected.
Pixel Group Size	Multiple sequential pixels can be mapped to an RBG DMX channel group. Only used with Full Mapping mode.
Zig Zag	Reverses pixel direction every N pixels. Only used with Full Mapping mode.
Direction	Reverse makes pixel 1 appear at the far end of the strip. Only used with Full Mapping mode.

Some examples of Full Mapping from source DMX512 data ch1 = Full (Pixel 1 Red), ch14 = Full (Pixel 5 Green). Port 1 configured with Pixel Count = 12, Null Pixels = 0, Start Universe = 1, Start Channel = 0.



Pixel Group Size = 1



Pixel Group Size = 2

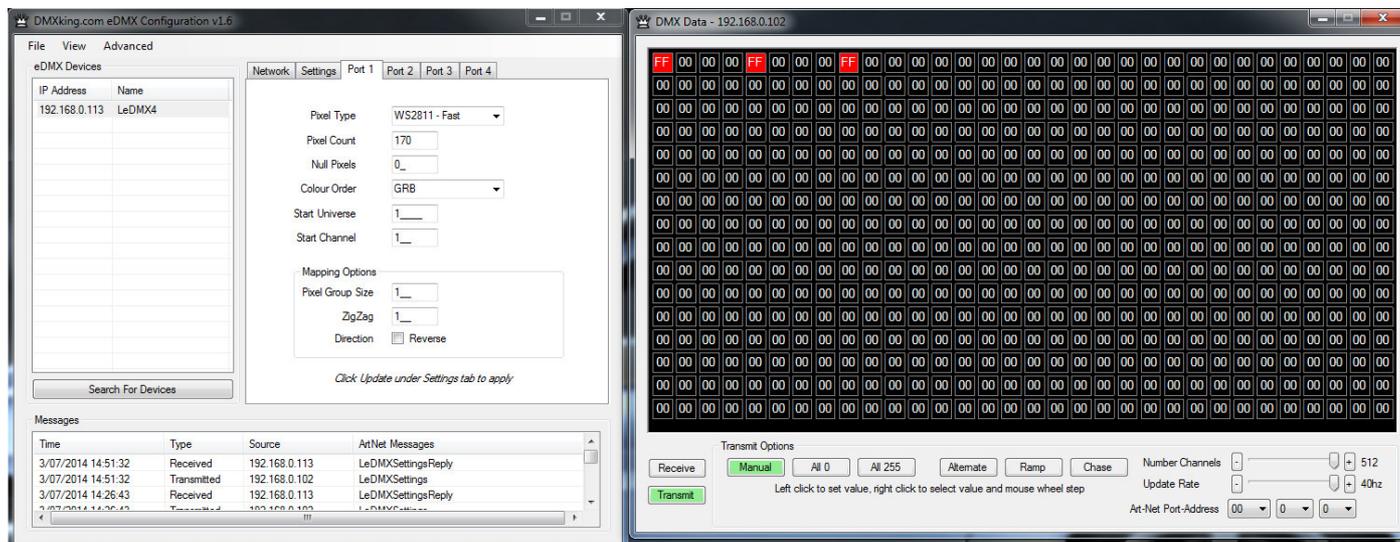


Reverse Order. Pixel Group Size = 1

## DMX DISPLAY FUNCTION

Select **View | DMX Display** for a simple DMX512 test utility. To generate an Art-Net output stream click Transmit then select one of the 6 Transmit Options and change Art-Net Universe as applicable. When in Manual mode you can click on any of the channels (represented by small boxes with hexadecimal channel level inside) to set ON level and double click to set zero. The mouse scroll wheel adjusts a channel by a defined increment. Channel number increases left to right, top to bottom and the roaming tool tip provides information about a specific channel.

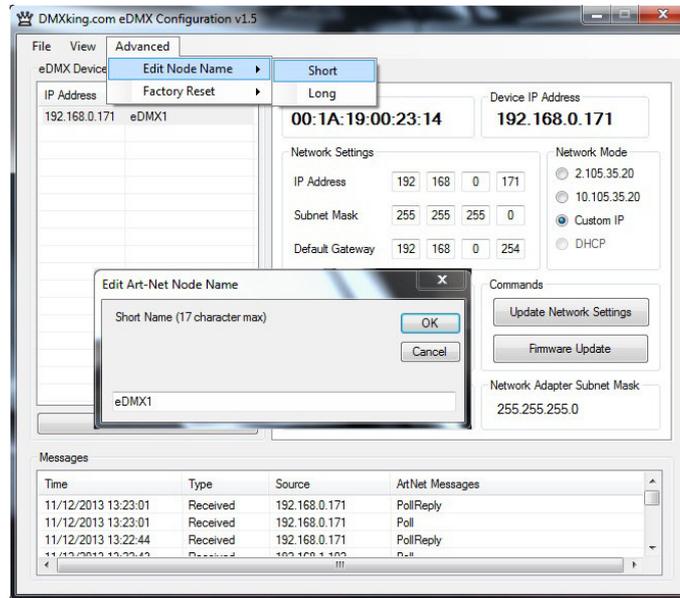
Both the ON level and mouse wheel step can be set by right clicking anywhere within the black display area. Number of channels transmitted and the refresh rate can be adjusted using the applicable sliders adjacent to transmit options.



The DMX Display utility works with any manufacturers Art-Net hardware and can be useful for diagnostics and simple testing of DMX512 fixtures.

## ART-NET NODE NAME

The Art-Net protocol supports device naming which can make larger installations more manageable. Both Short Name (17 characters) and Long Name (63 characters) for an LeDMX Device can be modified using the **Advanced | Edit Node Name** dialog.



## FACTORY RESET

This is a last resort option if for whatever reason incorrect or forgotten device network settings have rendered your device unusable. A word of warning – this function will factory reset **\*ALL\*** eDMX and LeDMX devices on your network so it's critical to separate off the device requiring reset. We recommend directly connecting a computer and LeDMX device using a crossover cable so there's no chance of additional eDMX and LeDMX devices accidentally being reset too.

Several warnings are presented before the command is sent.

## 5. COMPATIBLE SOFTWARE

Art-Net and DMX512 are the most commonly used lighting control protocols with roots in simple theatrical light dimming. These days almost any lighting or stage effect equipment may be controlled using DMX512 including LED pixels.

The DMXking.com LeDMX4 unit is a 4 output sACN/Art-Net device designed for use with computer based show control and effect software.

The following tables are by no means a definitive guide to Art-Net & sACN compatible software however it's a good starting point.

### CONTROLLERS

LightFactory	<a href="http://www.lifact.com/">http://www.lifact.com/</a>
MADRIX – LED Lighting Control	<a href="http://www.madrix.com/">http://www.madrix.com/</a>
FreeStyler	<a href="http://www.freestylerdmx.be/">http://www.freestylerdmx.be/</a>
MagicQ – ChamSys (Windows, Mac, Linux)	<a href="http://www.chamsys.co.uk/download">http://www.chamsys.co.uk/download</a>
PixelController (Java) *Free	<a href="http://pixelinvaders.ch/?page_id=160">http://pixelinvaders.ch/?page_id=160</a>
Lightjams – Live interactive control MIDI/TUIO Pixel Mapping	<a href="http://www.lightjams.com/">http://www.lightjams.com/</a>
Q Lighting Controller+ (Linux, Mac OS-X, Windows)	<a href="http://qlcplus.sourceforge.net/">http://qlcplus.sourceforge.net/</a>
LSC Clarity (Windows, Mac OS-X)	<a href="http://www.lslighting.com/products/clarity-control-system/clarity-for-pcmac">http://www.lslighting.com/products/clarity-control-system/clarity-for-pcmac</a>

Max – Cycling 74 (Windows, OS-X)	<a href="http://cycling74.com/products/maxmspjitte/">http://cycling74.com/products/maxmspjitte/</a>
White Cat Lighting Board	<a href="http://www.le-chat-noir-numerique.fr/">http://www.le-chat-noir-numerique.fr/</a>
TJShow	<a href="http://www.tjshow.com/">http://www.tjshow.com/</a>
LumiDMX	<a href="http://www.lumidmx.com/">http://www.lumidmx.com/</a>
DMXControl	<a href="http://www.dmxcontrol.org/">http://www.dmxcontrol.org/</a>
vvv – a multipurpose toolkit	<a href="http://vvv.org/">http://vvv.org/</a>
Enttec D-Pro	<a href="http://www.enttec.com/">http://www.enttec.com/</a>
D::Light	<a href="http://www.nicole-banana.com/">http://www.nicole-banana.com/</a>
Chameleon (Mac)	<a href="http://www.maclightingsoftware.com/">http://www.maclightingsoftware.com/</a>
Venue Magic	<a href="http://www.venuemagic.com/">http://www.venuemagic.com/</a>
StageSoft – CHROMA	<a href="http://www.stagesoft.com/chroma.html">http://www.stagesoft.com/chroma.html</a>
Martin M-PC Free Edition	<a href="http://www.martin.com/controllersupport/m-pc_software.html">http://www.martin.com/controllersupport/m-pc_software.html</a>
ShowMagic	<a href="http://www.showmagic.com/">http://www.showmagic.com/</a>
LX Series (Mac OS-X)	<a href="http://lx.claudeheintzdesign.com/">http://lx.claudeheintzdesign.com/</a>

## MEDIA SERVERS / VJ

ArKaos MediaMaster Pro, MediaMasterExpress, Media Server	<a href="http://www.arkaos.net/category/index.php?catid=2">http://www.arkaos.net/category/index.php?catid=2</a>
Resolume Avenue 3	<a href="http://www.resolume.com/">http://www.resolume.com/</a>
MXWendler FXServer	<a href="http://www.mxwendler.net/Product.4.0.html">http://www.mxwendler.net/Product.4.0.html</a>
Kineme Art-Net Tools for Quartz Composer	<a href="http://kineme.net/product/ArtNetTools">http://kineme.net/product/ArtNetTools</a>
TroikaTronix – Isadora	<a href="http://troikatronix.com/isadora.html">http://troikatronix.com/isadora.html</a>

## MOBILE APPS

Luminair (iPhone/iPad)	<a href="http://www.synthe-fx.com/products/luminair">http://www.synthe-fx.com/products/luminair</a>
LightingPad (iPhone/iPad)	<a href="http://www.alcorn.com/products/lightingpad/index.html">http://www.alcorn.com/products/lightingpad/index.html</a>
ArtNet DMX Remote (iOS)	<a href="http://lightning-dmxcontrol.com/">http://lightning-dmxcontrol.com/</a>
LED Remote (iOS)	<a href="http://arminarzani.com/en/">http://arminarzani.com/en/</a>

## 6. TECHNICAL SPECIFICATIONS

- Dimensions: 64x68x30mm (WxDxH).
- Weight: 80grams.
- Power input 5Vdc.
- Maximum continuous current per output 5A.
- Buffered 5V Clock and Data lines.
- WS2812, WS2811, WS2801\*, LPD880x\*, LPD6803\* pixel types and equivalents supported.
- Fast 800kHz and slow 400kHz data rates supported for WS2811.
- SPI pixels can be clocked at 500kHz, 1MHz and 2MHz.
- Up to 340 RGB pixels per output.
- IGMPv2 support.
- Ethernet 10/100BaseT.
- Art-Net, Art-Net II, Art-Net III and sACN/E1.31 support.
- IPv4 Addressing.

\*SPI pixel types on Port 4 are not functional under firmware v2.0 and we recommend the use of WS2811/2812 pixel types where all 4 output ports will be utilized.

## 7. WARRANTY

### DMXKING.COM HARDWARE LIMITED WARRANTY

#### What is covered

This warranty covers any defects in materials or workmanship with the exceptions stated below.

#### How long coverage lasts

This warranty runs for one year from the date of shipment from an authorized DMXking.com distributor.

#### What is not covered

Failure due to operator error or incorrect application of product. Opening the unit voids the warranty.

#### What DMXking.com will do

DMXking.com will repair or replace, at its sole discretion, the defective hardware. Return shipping costs from our service facility in New Zealand shall be free of charge.

#### How to obtain service

Contact DMXking.com directly by email [sales@dmxking.com](mailto:sales@dmxking.com)

## 8. DECLARATIONS (FCC & CE)

### FEDERAL COMMUNICATIONS COMMISSION (FCC) DECLARATION OF CONFORMITY

Responsible Party: JPK Systems Limited

PO Box 493  
Pukekohe 2340  
New Zealand

declares that the product LeDMX4 complies with Part 15 of the FCC rules.

Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

## EEC DECLARATION

We

JPK Systems Limited  
PO Box 493  
Pukekohe 2340  
New Zealand

declare under our sole responsibility that our product LeDMX4 conforms to the requirements of Council Directives 89/336/EEC and 73/23/EEC and therefore complies with the requirements of Council Directive 73/23/EEC, (The Low Voltage Directive) on the harmonization of the laws of Member States relating to electrical equipment designed for use within certain voltage limits as amended by Article 13 of Council Directive 93/68/EEC

- EN 55103-1
- EN 60065

Signed: Jason Kyle

Date: 4 August 2014

Position: Managing Director