eDMX4 PRO

Interface

USER MANUAL

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.

MAIN FEATURES

- Supported operating systems: Any with Ethernet networking support. Windows, Mac, Linux, iOS, Android.
- DMX512 **Out** or DMX512 **In** functionality selectable on each port.
- Art-Net broadcast, Art-Net II & III unicast, sACN/E1.31 Multicast and sACN Unicast support.
- E1.20 RDM over Art-Net support.
- User configuration of Art-Net Node short and long names.
- Compact tough metal enclosure with multiple mounting options including 19" rack adapter.
- Available with 3 pin or 5 pin XLR sockets.
- Compliant with 802.3af PoE power over Ethernet. Send power through the Ethernet cable up to 100m distance.
- ANSI E1.11 Higher Protection Level "DMX512-A Protected" device.
- Fully compatible with ***ALL*** software and hardware that supports Art-Net, Art-Net II & III, and sACN protocols.
- Fully compatible with lighting consoles capable of generating Art-Net or sACN protocol.
- Configuration utility with basic Art-Net output/input test functionality.
- Firmware updates can be performed by end user.

2. EXTERIOR VIEW

FRONT VIEW

Ethercon connector for power/network using 802.3af PoE switch or power injector. Higher power 802.3at switches/injectors will also work. Four female 3pin or 5pin XLR connectors for DMX512-A *input* or *output* function on each port.

Important Note: eDMX4 PRO requires either an 802.3af / 802.3at compliant network switch or power injector. See DMXking.com product accessories.

LED	Indication
Data	Protocol activity. Red = RX, Green = TX, Orange = Boot loader mode
Network	Network activity. Green = Link, Flash = Traffic
A	DMX512 Port A. Green = TX, Red = RX
B	DMX512 Port B. Green = TX, Red = RX
C	DMX512 Port C. Green = TX, Red = RX
D	DMX512 Port D. Green = TX, Red = RX

3. DEFAULT CONFIGURATION

All eDMX4 units ship with default IP address settings. Please reconfigure for your requirements before use.

Parameter	Default Setting
IP Address	192.168.0.112
Subnet Mask	255.255.255.0
Default Gateway	192.168.0.254

DMX512 and Art-Net configuration parameters are also configured with default values.

| Parameter	Default Setting
Network Mode	Custom IP address
*Operation Mode	DMX Out
*DMX Universe	1-4 [Net 00, Subnet 0, Universe 0-3] Note sACN Universe 1 = Art-Net 00:0:0
*Merge Mode/Timeout all sources	HTP, Timeout *unchecked*
*DMX512 Update Rate	40 [DMX512 frames per second]
*RDM Packet Spacing	1/20s
*RDM Discovery Period (TX mode) / sACN Priority (RX mode)	0s [RDM Disabled]
*Broadcast Threshold	0 [Force Art-Net broadcast]. Don't change this unless you want Art-Net II/III unicast on DMX In ports.
*Recall DMX Snapshot at startup	Recall *unchecked*

*These parameters are per port.

4. CONFIGURATION UTILITY

The eDMX Configuration utility provides a simple interface to all device parameters. Only version 1.9 and above is compatible with eDMX4 PRO devices. 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. DHCP is not currently supported.

Special note: Once you've finished configuring your eDMX product close the application before starting your lighting control application if it's run from the same computer.

NETWORK TAB
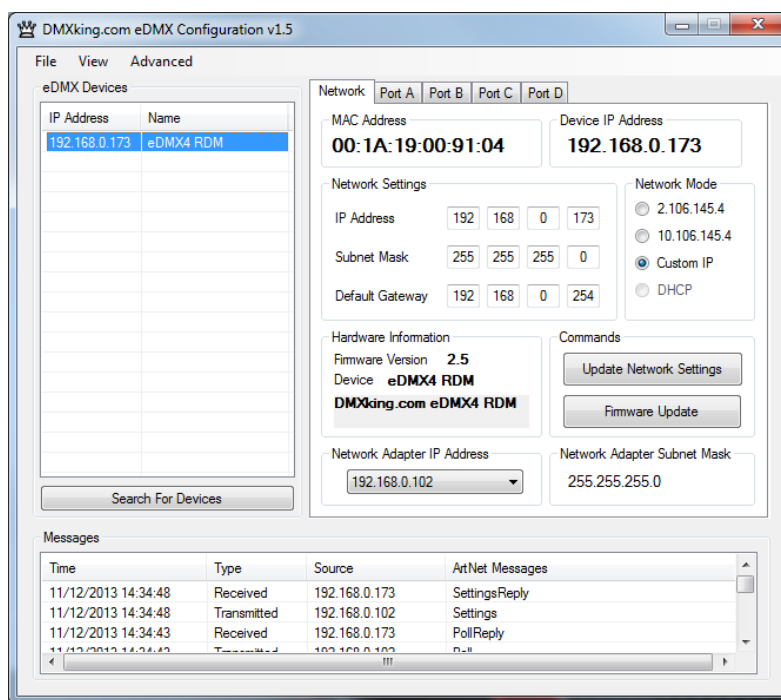
Before starting the eDMX Configuration utility please ensure your computer has appropriate IPv4 network settings, for example IP 192.168.0.100 Subnet 255.255.255.0 Gateway 192.168.0.254.

Upon startup eDMX devices on the same subnet 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 IP addresses 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". If you select the Art-Net 2.x.y.z or 10.x.y.z addressing scheme please note the custom IP address will still be valid during initial boot stages (i.e. firmware updates are always on the Network Settings address, not 2.x.y.z or 10.x.y.z) 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 eDMX 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 0104-500-VersionMajor.VersionMinor.enc

The Port A - D tabs provide access to the DMX512 port parameters.
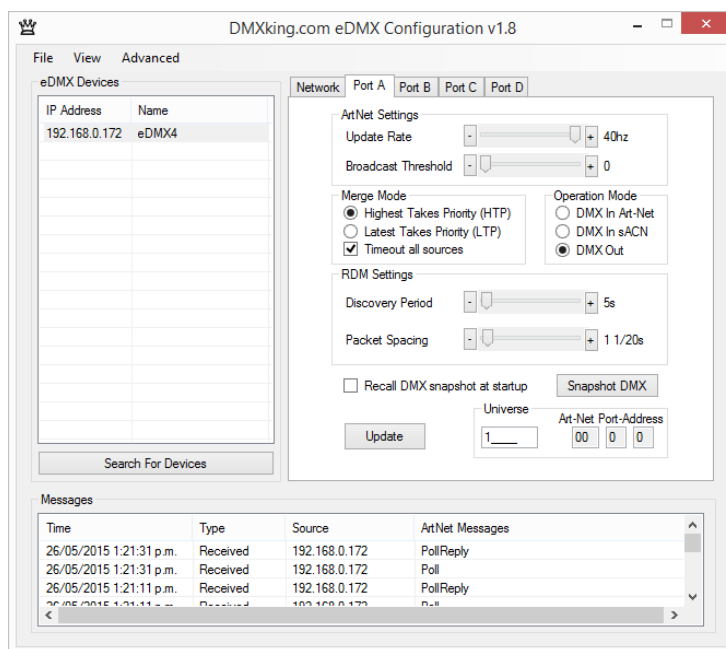
Make changes to the applicable Port settings then click "Update".

| Parameter	Usage
MAC Address	Factory programmed Ethernet MAC address
IP Address	IPv4 network address
Subnet Mask	Subnet mask, typically 255.0.0.0, 255.255.0.0 or 255.255.255.0 for class A,B & C respectively
Default Gateway	Address of network gateway (router) for communications beyond local subnet
Network Mode	Custom IP, Art-Net 2.x.y.z , Art-Net 10.x.y.z
Operation Mode	DMX In Art-Net, DMX In sACN (multicast only), DMX Out (both Art-Net and sACN simultaneously). eDMX4 TX models only support DMX Out.
DMX Universe	sACN 1-63999 which is translated to an Art-Net Port-Address (Net:Sub:Uni). Setting DMX Universe = 1 results in sACN Universe = 1 and Art-Net 00:0:0 (Universe 1 = Art-Net Universe 0)
Merge Mode	HTP (Highest Takes Precedence - dimmers), LTP (Last Takes Precedence – moving lights). Timeout all sources: Last Art-Net or sACN stream source if lost will timeout DMX output.
Update Rate	DMX512 output frame rate/frequency
RDM Packet Spacing	Number of 1/20sec intervals enforced minimum between RDM messages on DMX line
RDM Discovery Period (TX) / sACN Priority (RX mode)	Number of seconds between internally initiated RDM Discovery attempt. Setting Discovery Period = 0s will *disable RDM* which is the default. In receive mode – sACN Priority 0 – 200.
Broadcast Threshold	0 = Force Art-Net broadcast mode, > 0 Art-Net II/III unicast.
Recall DMX snapshot at startup	Recall snapshot scene at power on and output until Art-Net or sACN source received. Snapshot DMX button records current DMX output to snapshot memory.

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.
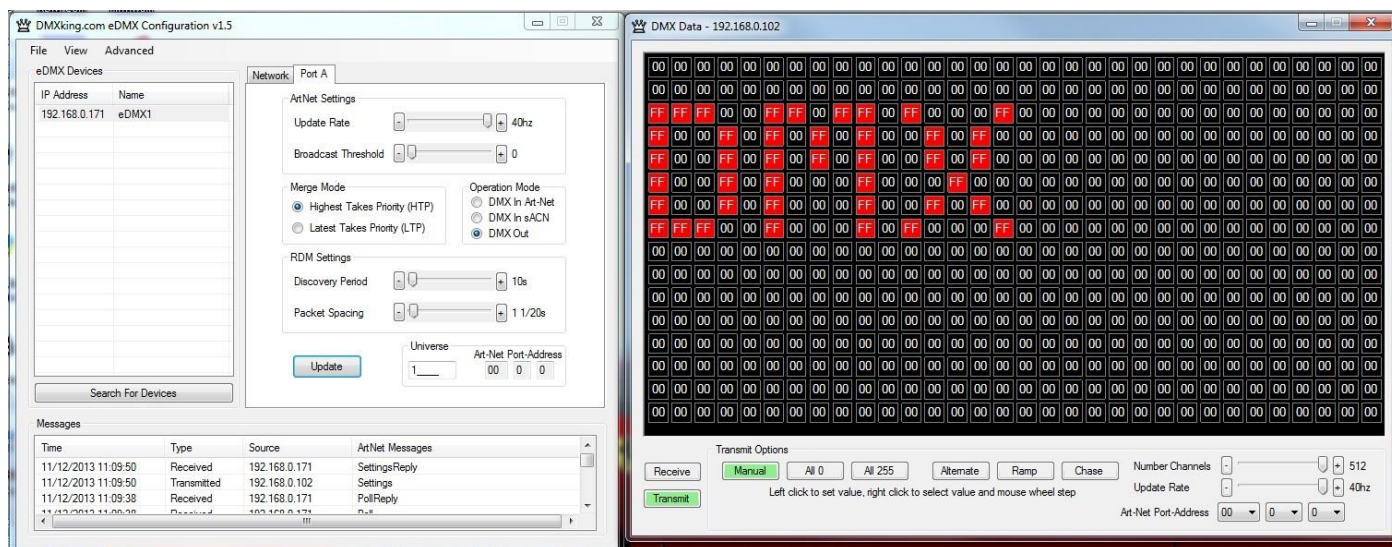

Changing to Receive mode will display the selected Art-Net universe number with merged streams if more than 1 is present. Note Art-Net II unicast is not supported meaning only Art-Net broadcast streams are displayed.
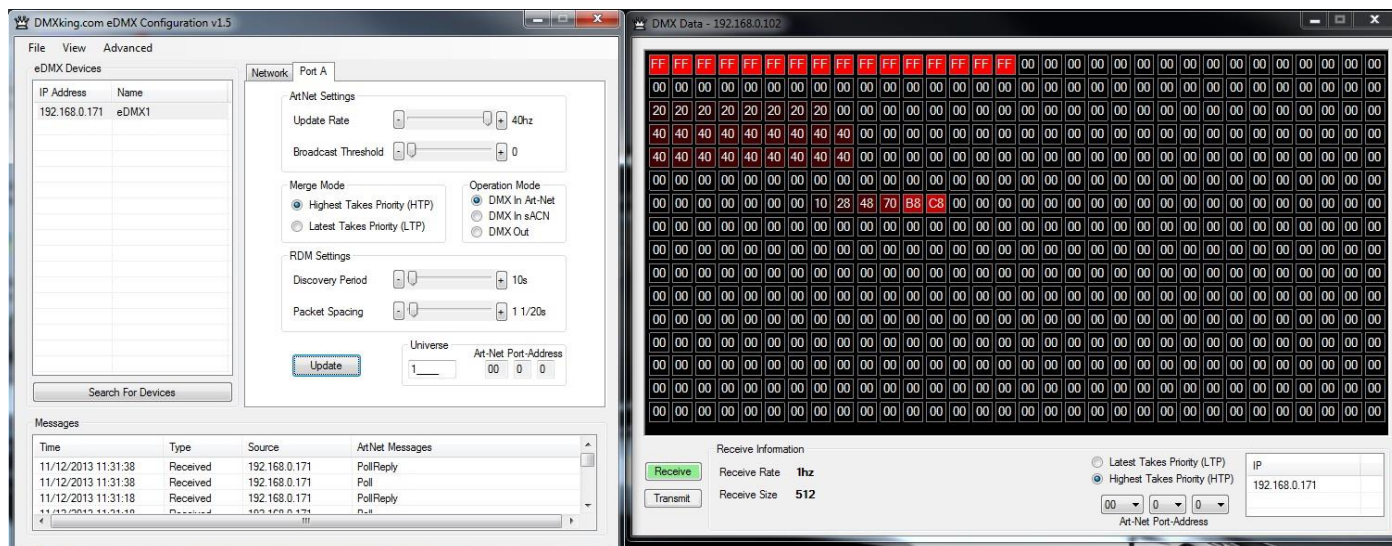
The DMX Display utility works with any manufacturers Art-Net hardware and can be useful for diagnostics and simple testing of DMX512 fixtures.

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 eDMX Device can be modified using the **Advanced | Edit Node Name** dialog.
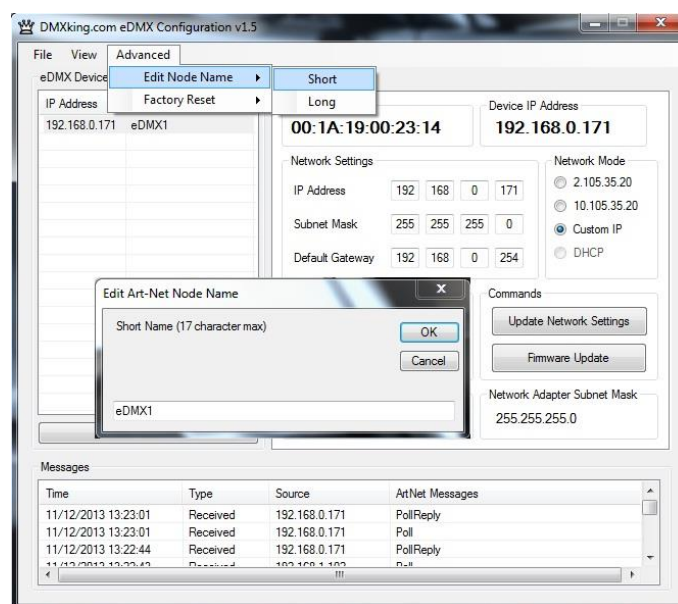
FACTORY RESET

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 devices on your network so it's critical to separate off the device requiring reset. We recommend directly connecting a computer and eDMX device using a crossover cable so there's no chance of additional eDMX devices accidentally being reset too.

Several warnings are presented before the command is sent.

5. PORTS, MERGING, PRIORITY AND DMX INPUT

PORTS AND MERGING

Each DMX Port is fully independent which allows for configurations including setting multiple ports to the same universe. A commonly used configuration for eDMX4 PRO is 4x isolated DMX512 outputs of the same universe, thus turning the eDMX4 into a 1 universe Art-Net/sACN node + 4 port isolated splitter in one.

eDMX Products are capable of several advanced merging and stream selection functions usually only found on high priced equipment. Support for both HTP (Highest Takes Precedence) and LTP (Latest Takes Precedence) merging of 2 sources producing a single DMX512 output thus permitting 2 controllers to co-exist for 1 lighting rig. To achieve DMX stream merging simply send 2 Art-Net or sACN streams with the same Universe ID and configure the applicable merge scheme HTP or LTP. If the number of sources exceeds 2 only the first 2 will be processed and all others are dropped. Possible merging sources are:

Source	Notes
Art-Net I, II or 3	
sACN / E1.31	Only sACN sources of the same Priority will be HTP or LTP merged.
DMX In (eDMX4 RDM only)	Configure DMX In port universe to the same as DMX Out port universe

SUPPORTED MERGING COMBINATIONS

Source 1	Source 2	Notes
Art-Net	Art-Net	Sources are timed out 10 seconds after last received frame.
sACN / E1.31	sACN / E1.31	Sources will end immediately upon sACN stream termination flag, otherwise 10 second timeout after last received frame.
Art-Net	sACN / E1.31	Art-Net source timed out 10 seconds after last received frame, sACN stream termination flag otherwise 10 second timeout after last received frame.
DMX In	Art-Net	Merge external DMX512 source (i.e. console) with incoming Art-Net stream.
DMX In	sACN / E1.31	Merge external DMX512 source (i.e. console) with incoming sACN stream.
DMX In (1)	DMX In (2)	Merge 2 external DMX512 sources.

SACN / E1.31 PRIORITY

At any time if a higher priority sACN stream is received it will take over control a DMX Out channel regardless of other incoming streams or merging. When an sACN stream is stopped gracefully via a stream terminate message the eDMX port will immediately revert to whatever other sources are present, otherwise the default stream timeout of 10 seconds applies. If you want to merge 2 sACN streams together they must be of the same priority.

SACN / E1.31 PRIORITY – DMX RECEIVE

When a port is configured for DMX Receive sACN operation the RDM Discovery Period parameter doubles up as sACN Priority since it is otherwise unused. This permits DMX Inputs to generate sACN multicast streams with a specific priority.

DMX512 IN – UNICAST / BROADCAST / MULTICAST

When you feed a DMX512 signal into an eDMX Port configured as *DMX In Art-Net* the following will determine Art-Net unicast or broadcast:

1. If Broadcast Threshold = 0 the frame is always broadcast on the IP subnet.
2. If Broadcast Threshold > 0 and number of detected Art-Net II/3 devices "subscribed" to that universe is less than the threshold the frame is unicast to each device.
3. If Broadcast Threshold > 0 and the number of detected Art-Net II/3 devices "subscribed" to that universe is greater than the threshold the frame is broadcast on the subnet.
4. If Broadcast Threshold > 0 and zero Art-Net II/3 devices are "subscribed" to that universe the frame is broadcast on the subnet.

So as you can see there are multiple ways broadcast could occur. The implementation is done like this to ensure compatibility with mixed Art-Net I/II/3 device networks but still permit unicast only when Art-Net II/III devices are used exclusively.

For *DMX In sACN* at present only multicast frames will be generated owing to a lack of sACN device discovery standard.

6. 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 (with explicit exclusion of anything involving potentially dangerous operations such as pyrotechnics) including moving lights, LED screens, fog machines and laser displays.

The DMXking.com eDMX4 unit is a 4 universe Art-Net device designed for use with computer based show control software. It replaces an entire lighting console allowing the user to perform sophisticated shows with little more than a laptop. There are many free and commercial software packages available and by selecting Art-Net as your DMX device compatibility is guaranteed.

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	http://www.lifact.com/
Venue Magic	http://www.venuemagic.com/
FreeStyler	http://www.freestylerdmx.be/
MagicQ – ChamSys (Windows, Mac, Linux)	http://www.chamsys.co.uk/download
LumiDMX	http://www.lumidmx.com/
LX Series (Mac OS-X)	http://lx.claudeheintzdesign.com/
Q Lighting Controller+ (Linux, Mac OS-X, Windows)	http://qlcplus.sourceforge.net/
LSC Clarity (Windows, Mac OS-X)	http://www.lsclighting.com/products/clarity-control-system/clarity-for-pcmac
Max – Cycling 74 (Windows, OS-X)	http://cycling74.com/products/maxmspjitter/
White Cat Lighting Board	http://www.le-chat-noir-numerique.fr/
TJShow	http://www.tjshow.com/
MADRIX – LED Lighting Control	http://www.madrix.com/
DMXControl	http://www.dmxcontrol.org/
vvvv – a multipurpose toolkit	http://vvvv.org/
Enttec D-Pro	http://www.enttec.com/
D::Light	http://www.nicole-banana.com/
Chameleon (Mac)	http://www.maclightingsoftware.com/
Lightjams – Live interactive control MIDI / TUIO	http://www.lightjams.com/
StageSoft – CHROMA	http://www.stagesoft.com/chroma.html
Martin M-PC Free Mode	http://www.martin.com/en-US/Products/Product-Details/M-PC
ShowMagic	http://www.showmagic.com/

MEDIA SERVERS / VJ

ArKaos MediaMaster Pro, MediaMasterExpress, Media Server	http://www.arkaos.net/category/index.php?catid=2
Resolume Avenue 3	http://www.resolume.com/

MXWendler FXServer	http://www.mxwendler.net/Product.4.0.html
Kineme Art-Net Tools for Quartz Composer	http://kineme.net/product/ArtNetTools
TroikaTronix – Isadora	http://troikatronix.com/isadora.html

VISUALIZERS

Capture	http://www.capturesweden.com/
WYSIWYG	http://www.cast-soft.com/
ESP Vision	http://www.espvision.com/
SoftPlot	http://www.stageresearch.com/products/SoftPlot9/SoftPlot9.aspx
LD Assistant	http://www.ldassistant.com/

MOBILE APPS

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

7. TECHNICAL SPECIFICATIONS

- Dimensions: 250x44x60mm (WxHxD)
- Weight: 0.49kg
- DMX512 connector: 3 or 5 pin XLR Female per port
- Internal DMX512-A line biasing termination as per ANSI E1.20 RDM requirements.
- 1500V isolation on each port.
- Power input: 802.3af Power over Ethernet
- Art-Net, Art-Net II, Art-Net III and sACN/E1.31 support.
- ANSI E1.20 RDM compliant with RDM over Art-Net.
- Both HTP and LTP merging of 2 Art-Net/sACN streams per port
- Internal merging capability with DMX In and DMX Out ports on same Universe.
- IPv4 Addressing
- DMX512 Frame Rate: Adjustable per port
- DMX512 Port Protection: DMX512-A Protected as per E1.11-2008

8. 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

9. DECLARATIONS (FCC & CE)

FEDERAL COMMUNICATIONS COMMISSION (FCC) DECLARATION OF CONFORMITY

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Responsible Party:      JPK Systems Limited
                        PO Box 493
                        Pukekohe 2340
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declares that the product eDMX4 PRO 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 eDMX4 PRO 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 harmonisation 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 55103-2
- EN 60065

Signed: Jason Kyle

Date: 22 October 2015

Position: Managing Director