

DMXking.com

eDMX1 PRO



USER MANUAL

TABLE OF CONTENTS

1. Introduction	3
Hardware And Firmware Versions	3
Main Features	5
2. Exterior View	6
Front View	6
Rear View	6
Status LED Table.....	6
3. Default Configuration.....	7
4. Configuration Utility.....	8
Network Tab	9
Port Tab.....	10
DMX Display Function	12
Node Report.....	13
Art-Net Node Name	13
Factory Reset	13
Summary of settings	14
5. Ports, Merging, Priority And DMX Input	15
Ports and merging.....	15
Supported merging combinations	15
sACN / E1.31 Priority.....	15
sACN / E1.31 Priority – DMX Receive.....	15
DMX512 In – Unicast / Broadcast / Multicast.....	15
6. Compatible Software	16
7. Technical Specifications	16
8. Warranty	16
DMXking.com Hardware Limited Warranty.....	16
9. Declarations (FCC & CE)	17
Federal Communications Commission (FCC) Declaration of Conformity	17
EEC Declaration.....	18

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.

The eDMX1 PRO product is a robust single universe bi-directional DMX512 interface communicating with the host computer over Ethernet supporting the widely used Art-Net and sACN E1.31 protocols.

This user manual covers features up to v3.13 firmware. Some functionality may not be available with earlier firmware versions.

HARDWARE AND FIRMWARE VERSIONS

From time to time minor hardware changes occur in our products usually small feature additions or unseen optimizations. The table below lists eDMX1 PRO product variants. Check the product label for P/N details.

Part Number	Feature addition
0108-1.0	Initial product release

Firmware updates are released on a semi-regular basis. We recommend updating to the latest available firmware version so all product features are available. Please take note the user manual reflects latest firmware version features unless otherwise noted.

Firmware Version	Comments
v2.10	Initial release
v2.14	ArtNet 4 support, DHCP + AutoIP, Merge engine improvements, RDM performance enhancements.
v3.0	Record playback added, RDM enhancements, Universe Sync, IGMP report when universe change + unsolicited option, DMX IN Single IP. *Update to v3.1 is highly recommend.
v3.1	ArtNet 4 NodeReport messages with BindIndex, NodeReport status messages, Dynamic IGMP reporting based on current port configurations.
v3.3	Record/playback enhancements.
v3.5	Version consistency.
v3.7	DMXworkshop excess ArtPoll bytes accepted, Full frame DMX512 option DMX-IN & DMX-OUT, ArtPollReply includes UID report, ArtNet fail safe modes, DMX-IN & DMX-OUT re-mapping channel offset, Timeout all sources for DMX-IN, sACN CID fix for multiple DMX-IN ports on same universe, sACN Universe Sync enhancements, Default Gateway added to ArtIpProg.
V3.8	ArtPollReply message excess byte trimmed.
V3.9	Version consistency update.
V3.10	ArtPoll handling fix for Madrix.
V3.11	Alternate ArtNet port added. DMX-OUT Channel offset with Full Frame option now correctly handled. RDM Discovery message PortID corrected. RDM message length error corrected.
V3.12	ArtNet universe data accepted from alternate ArtNet port alongside standard ArtNet port.

MAIN FEATURES

- Static IP or DHCP network addressing.
- Supported operating systems: Any with Ethernet networking support. Windows, MAC OS, Linux, iOS, Android...
- eDMX1 PRO - 1x DMX512 Out or DMX512 In with Art-Net, sACN E1.31 and E1.20 RDM support
- Art-Net broadcast, Art-Net II,3 & 4 unicast, sACN/E1.31 Multicast and sACN Unicast support
- Merge 2 incoming Art-Net/sACN streams per output channel with both HTP and LTP options
- sACN Priority takeover for multi-tier controller arrangements
- Mix and match ArtNet with sACN merge/priority sources
- DMX-IN and DMX-OUT channel offset re-mapping
- User configuration of Art-Net Node short and long names
- Tough metal enclosure
- Available with 3 pin or 5 pin XLR socket options
- Fully compatible with all software and hardware that supports Art-Net I, II, 3 & 4 and sACN protocols
- Works with your existing console if Art-Net or sACN external nodes are supported
- Universe Sync Art-Net, sACN and Madrix Post Sync
- Configuration utility with basic Art-Net output/input test functionality
- Firmware updates can be performed by end user

eDMX1 PRO 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.

2. EXTERIOR VIEW

FRONT VIEW



One 3pin or 5pin XLR connector for either DMX512-A **input** or **output** function. An XLR male to male gender changer may be required in some DMX512 Input situations depending on your cabling configuration.

REAR VIEW



USB type B power socket + Ethernet RJ45 socket

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

3. DEFAULT CONFIGURATION

All eDMX1 PRO units ship with DHCP network mode enabled. Please reconfigure network settings as required before use.

Parameter	Default Setting
IP Address	192.168.0.111
Subnet Mask	255.255.255.0
Default Gateway	192.168.0.254
IGMPv2 Unsolicited Report	<i>Unchecked</i>
Network Mode	DHCP

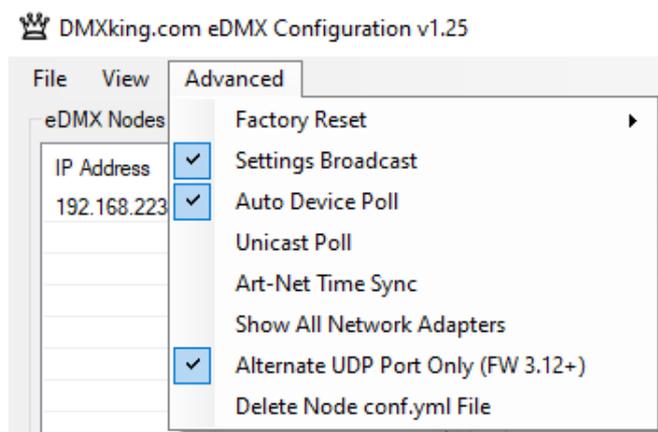
DMX512 Port configuration parameter defaults.

Parameter	Default Setting
Async Update Rate	40 [DMX512 frames per second]. Universe Sync will override.
Port Operation Mode	DMX-OUT
Timeout all sources	<i>Unchecked</i>
Channel Offset	0
Fixed IP	0.0.0.0 [Only for DMX IN – Unicast to 1 IP address only]
Merge Mode	HTP
Full DMX Frame	<i>Unchecked</i>
Broadcast Threshold	10 [Art-Net II/3/4 unicasting up to 10 nodes]. Set to 0 for Art-Net I broadcast on DMX IN ports.
Unicast IP [DMX-IN]	0.0.0.0
sACN Priority [DMX-IN]	100
RDM Discovery Period [DMX-OUT]	0s / RDM Disabled
RDM Packet Spacing [DMX-OUT]	1/20s
DMX-OUT Failsafe Mode	Hold Last
Recall DMX Snapshot at startup	<i>Unchecked</i>
DMX512 Universe	1-4 [Net 00, Subnet 0, Universe 0-3] Note: sACN Universe 1 = Art-Net 00:0:0

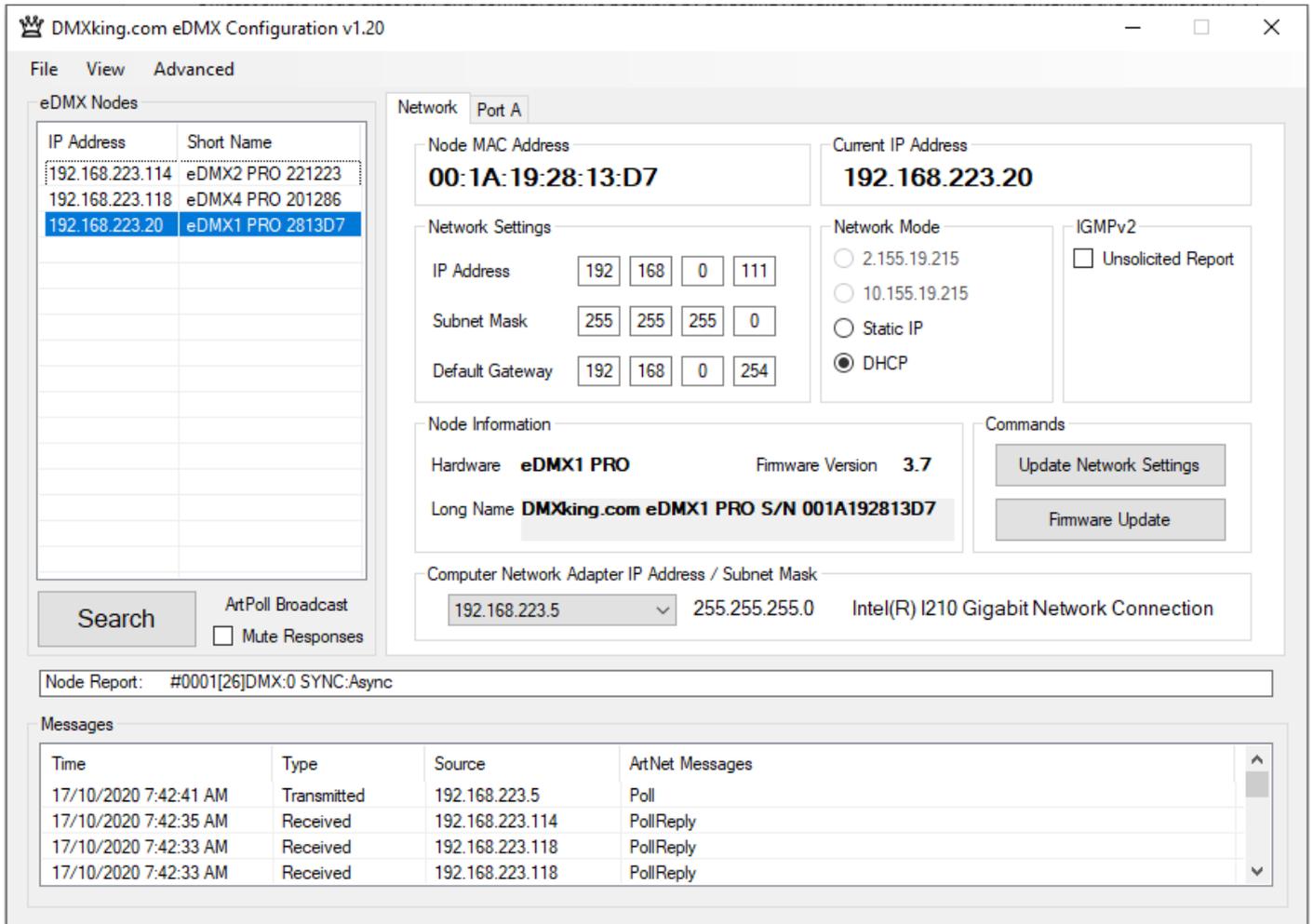
4. CONFIGURATION UTILITY

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 your distributor. DHCP is supported from firmware v2.14 onwards.

From firmware v3.12+ and eDMX Configuration v1.23+ primary Art-Net UDP 6454 and an alternate UDP 16454 port may be used for device configuration. This is helpful when simultaneously running eDMX Configuration and a lighting control application. Automatic selection of alternate port is performed upon utility startup if the primary Art-Net port is unavailable. It is also possible to lock eDMX Configuration to the alternate port via the Advanced menu. Note that DMXking nodes are always listening on both primary and alternate ports so there is no device configuration required to change.



IMPORTANT: Firmware v3.11 and older. Once you've finished configuring your eDMX product close the configuration utility before starting your lighting control application if it's running from the same computer.



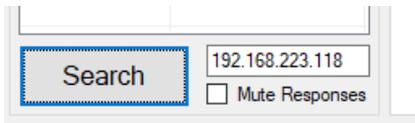
Before starting the eDMX Configuration utility please ensure your computer has appropriate IPv4 network settings. It's highly likely the computer is configured for DHCP addressing and no change necessary since eDMX1 PRO is also DHCP by default.

Upon startup eDMX nodes are automatically detected and displayed by IP address. To poll for new devices or just check the communications is okay by clicking **Search**. From v1.16 polling is automatic every 8 seconds but can be disabled through the **Advanced | Auto Device Poll** menu option. **Mute Responses** option prevents any new nodes from being listed regardless of their status on the network. With large node counts this can be helpful.

Click on the desired node's entry and all Settings will be retrieved. Note that if no response is received the settings will be greyed out and no additional tabs visible. 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 should select the same network range as the eDMX from the **Network Adapter IP Address** dropdown box and also ensure the subnet mask is appropriate.

Utility v1.20 uses **Settings Broadcast** by default which allows node settings to be updated regardless of the network adapter subnet range. This only works if all detected nodes are firmware v3.0+ and is automatically disabled otherwise.

Unicast single node discovery and configuration is possible by selecting **Advanced | Unicast Poll** and entering the destination IPv4 address then click Search. This will function over routed networks provided a **Default Gateway** has been specified in the node Network Settings.



All eDMX/LeDMX/ultraDMX PRO nodes provide IGMPv2 Reports necessary to participate in a multicast environment as necessary for sACN/E1.31 protocol. Sometimes due to network infrastructure issues an IGMP querier is not present and in these situations, you can opt to have the node generate ongoing unsolicited IGMPv2 Reports.

IGMPv2
 Unsolicited Report
Period (s)
90_

To change the node Network Settings make applicable changes then click **Update Network Settings**.

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. We do not recommend performing firmware updates over routed networks. 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 0108-500-VersionMajor.VersionMinor.enc

PORT TAB

Network Port A

DMX-OUT Options
Async Update Rate - [Slider] + 40hz
Merge Mode
 Highest Takes Priority (HTP) Full DMX Frame
 Latest Takes Priority (LTP)

DMX-IN Options
Broadcast Threshold - [Slider] + 10
 Full DMX Frame

DMX-OUT RDM Settings
Discovery Period - [Slider] + 0s
Packet Spacing - [Slider] + 1 1/20s

Port Operation Mode
 DMX-IN Art-Net
 DMX-IN sACN
 DMX-OUT Channel Offset [0_]
 Timeout all sources

DMX-OUT Failsafe Mode
 Hold Last Snapshot Scene
 Outputs Zero Outputs Full
 Recall DMX snapshot at startup
[Snapshot DMX]

DMX512 Universe [1_] Art-Net Port-Address [00][0][0]
[Update]

Port Operation Mode: DMX-OUT

Port Operation Mode: DMX-IN sACN with sACN Priority 100

DMX512 ports can be individually configured as either DMX-OUT, with automatic dual sACN/Art-Net protocol support, or DMX-IN, with manually selected sACN or Art-Net protocol. When configured as DMX-IN a single **Unicast IP** address destination may be specified but in the majority of applications leaving this field at 0.0.0.0 is appropriate.

Timeout all sources can be used to override default ArtNet defined behavior of holding the last sent or received frame forever.

- DMX-OUT mode: Whenever 2 sources are present and being merged together a 2nd source will always timeout when the stream stops. In DMX-OUT mode if **Timeout all sources** is unchecked and Hold Last mode selected the output will hold last frame forever. **Timeout all sources** checked and Failsafe Mode other than Hold Last selected will cause the output to change to Zero, Full or Snapshot Scene.
- DMX-IN mode: An ArtNet or sACN stream is generated upon receiving DMX512 on the port. **Timeout all sources** checked will cause this stream to end a few seconds after the DMX512 signal stops.

Channel Offset provides simple re-mapping for both DMX-OUT and DMX-IN port configurations. Set to 0 for no re-mapping.

- DMX-OUT mode: Incoming ArtNet or sACN stream(s) are re-mapped so channel 1 is pushed up to channel 1+N. When channel 1+N exceeds 512 the incoming stream channels are ignored/lost.
- DMX-IN mode: Incoming DMX512 is re-mapped so channel 1 is pushed up to channel 1+N on the outgoing ArtNet or sACN stream. When incoming DMX512 channel 1+N exceeds 512 to channels are ignored/lost.

Make changes to the applicable Port settings then click **Update**. Changes on all port tabs are updated regardless of which tab the **Update** button is clicked.

NODE REPORT

From firmware v3.3+ each node provides a brief status report indicating DMX frame rate and SYNC status.

```
Node Report: #0001[82]DMX:40 SYNC:Async
```

Above an eDMX1 PRO reports Port A at 40fps with no synchronization present (Async mode).

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 edited in the Node Information box.

Node Information	
Hardware	eDMX4 PRO Firmware Version 3.13
Short Name	eDMX4 PRO 201286 <input type="button" value="Update Name"/>
Long Name	DMXking.com eDMX4 PRO S/N 001A19201286

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 network cable so there's no chance of additional eDMX devices accidentally being reset too.

Several warnings are presented before the command is sent. This function is not intended for use with eDMX/LeDMX PRO and ultraDMX2 PRO devices and will not have any effect in firmware 3.0+.

SUMMARY OF SETTINGS

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	DHCP or Static IPv4
IGMPv2 Unsolicited Report	IGMPv2 Report messages sent at 5-255 second intervals
Port Operation Mode	DMX-IN Art-Net, DMX-IN sACN, DMX OUT (both Art-Net and sACN are always enabled). Fixed IP is 0.0.0.0 by default which equates to multicast sACN or automatic unicast/broadcast Art-Net. Setting a Fixed IP forces DMX-IN ArtNet or sACN unicast to 1 IP only.
Timeout all sources	Last Art-Net or sACN stream source if lost will timeout DMX-OUT. Loss of DMX-IN signal will timeout outgoing ArtNet or sACN stream.
Channel Offset	Re-mapping for DMX-OUT or DMX-IN streams
Async Update Rate	DMX512 output frame rate/frequency. Universe Sync takes precedence.
Merge Mode	HTP (Highest Takes Precedence - dimmers), LTP (Last Takes Precedence – moving lights)
Full DMX Frame	Force DMX-OUT or DMX-IN to full 512 channel frames with zero levels filling gaps
Broadcast Threshold	0 = Force Art-Net broadcast mode, > 0 Art-Net II/3/4 unicast until threshold (DMX-IN)
Unicast IP	Single IPv4 destination for unicast ArtNet or sACN from DMX-IN
sACN Priority	DMX-IN sACN Priority value assigned to sACN stream. 0 – 200, default 100
RDM Discovery Period	Number of seconds between internally initiated RDM Discovery attempt. Setting Discovery Period = 0s will disable RDM
RDM Packet Spacing	Number of 1/20sec intervals enforced minimum between RDM messages on DMX line
DMX-OUT Failsafe Mode	ArtNet failsafe mode selection. Timeout All Sources must be checked for all options other than Hold Last.
Recall DMX snapshot at startup	Recall snapshot scene at power on and output until Art-Net or sACN stream received. Snapshot DMX button records current DMX output to snapshot memory.
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)

5. PORTS, MERGING, PRIORITY AND DMX INPUT

PORTS AND MERGING

eDMX PRO nodes are capable of several advanced merging and stream selection functions usually only found on higher 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 simultaneously operate on 1 lighting rig. To achieve DMX stream merging simply send 2 Art-Net or sACN streams on the same Universe and configure the applicable DMX OUT port merge scheme HTP or LTP. If the number of sources exceeds 2 only the first 2 will be processed and all new streams that appear are simply dropped. Possible merging sources are:

Source	Notes
Art-Net I, II, 3 or 4	Priority 100 is assigned to permit Art-Net + sACN merge/priority functionality.
sACN / E1.31	Only sACN sources of the same Priority will be HTP or LTP merged.

SUPPORTED MERGING COMBINATIONS

Source 1	Source 2	Notes
Art-Net	Art-Net	Sources are timed out 3 seconds after last received frame.
sACN / E1.31	sACN / E1.31	Sources will end immediately upon sACN stream termination flag, otherwise 3 second timeout after last received frame.
Art-Net	sACN / E1.31	Art-Net source timed out 3 seconds after last received frame, sACN stream termination flag otherwise 3 second timeout after last received frame.

SACN / E1.31 PRIORITY

At any time if a higher priority sACN stream, on the same Universe, is received it will take over control a DMX-OUT port 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 3 seconds applies. If you want to HTP/LTP merge two sACN streams together they must be of the same priority.

SACN / E1.31 PRIORITY – DMX RECEIVE

When a port is configured for DMX-IN sACN operation the sACN Priority can be set. This permits DMX Inputs to generate sACN multicast or unicast 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/3/4 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/3/4 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/3/4 devices are "subscribed" to that universe the frame is broadcast on the subnet.

5. If Fixed IP is not 0.0.0.0 the frame is only unicast to the specified IPv4 address.

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/3/4 device networks but still permit unicast only when Art-Net II/3/4 devices are used exclusively.

For **DMX IN sACN** multicast frames will be generated when Fixed IP is 0.0.0.0 otherwise frames are unicast to the specified destination.

6. COMPATIBLE SOFTWARE

Art-Net/sACN 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/sACN device designed for use with computer based show control software or expansion of lighting console outputs. 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.

Check the following page for a short list of compatible software:

<http://dmxking.com/control-software>

7. TECHNICAL SPECIFICATIONS

- Dimensions: 40x36x78mm (WxHxD)
- Weight: 0.15kg
- DMX512 connector: 3 or 5 pin XLR Female.
- Internal DMX512-A line biasing termination as per ANSI E1.20 RDM requirements.
- DMX512 port is NOT isolated
- Ethernet 10/100Mbps Auto MDI-X port.
- Power connector: USB type B socket. 5Vdc @ 200mA max.
- Art-Net, Art-Net II, Art-Net 3, Art-Net 4 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
- sACN Priority
- IPv4 Addressing
- IGMPv2 for multicast network management
- DMX512 Frame Rate: Adjustable

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

Responsible Party: JPK Systems Limited
PO Box 493
Pukekohe 2340
New Zealand

declares that the product eDMX1 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 eDMX1 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: 6 January 2016

Position: Managing Director