

DMXking.com

eDMX1 PRO



USER MANUAL

TABLE OF CONTENTS

1. Introduction	3
Hardware And Firmware Versions	3
Main Features	4
2. Exterior View	4
Front View	4
Rear View	4
Status LED Table.....	5
3. Default Configuration.....	5
4. Configuration Utility.....	6
Network Tab	6
Port Tab.....	7
DMX Display Function	8
Node Report.....	9
Advanced Options	9
Art-Net Node Name	10
Factory Reset	10
5. Ports, Merging, Priority And DMX Input	11
Ports and merging.....	11
Supported merging combinations	11
sACN / E1.31 Priority.....	11
sACN / E1.31 Priority – DMX Receive.....	11
DMX512 In – Unicast / Broadcast / Multicast.....	11
6. Compatible Software	12
7. Technical Specifications	12
8. Warranty	12
DMXking.com Hardware Limited Warranty.....	12
9. Declarations (FCC & CE)	13
Federal Communications Commission (FCC) Declaration of Conformity	13
EEC Declaration.....	13

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 eDMX1 PRO product is a robust single universe bi-directional DMX512 interface communicating with the host computer over Ethernet. Support for the widely used Art-Net, E1.20 RDM over Art-Net and sACN E1.31 protocols is included by default.

This user manual covers features up to v3.3 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.

MAIN FEATURES

- Static IP or DHCP network addressing.
- Supported operating systems: Any with Ethernet networking support. Windows, Mac, Linux, iOS, Android.
- DMX512 **Out** or DMX512 **In** functionality.
- Art-Net I 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
- E1.20 RDM over Art-Net support.
- User configuration of Art-Net Node short and long names.
- Tough metal enclosure.
- Available with 3 pin or 5 pin XLR socket, no adapter purchase required.
- External 5Vdc power input USB type B socket. Can be powered from computer USB port or USB charger / supply.
- 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



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

Parameter	Default Setting
IP Address	192.168.0.111
Subnet Mask	255.255.255.0
Default Gateway	192.168.0.254

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

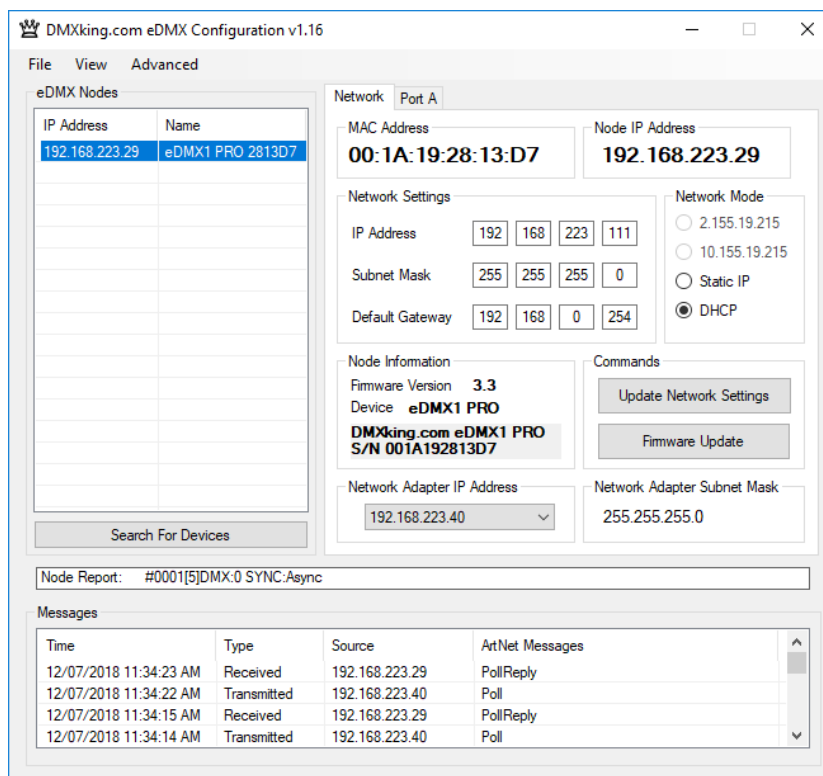
Parameter	Default Setting
Network Mode	DHCP
Operation Mode	DMX Out
Fixed IP	0.0.0.0 [Only for DMX IN – Unicast to 1 IP address only]
DMX Universe	1 [Net 00, Subnet 0, Universe 0]. Note sACN Universe 1 = Art-Net 00:0:0
Merge Mode/Timeout all sources	HTP, Timeout <i>unchecked</i>
DMX512 Update Rate	40 [DMX512 frames per second]. Universe Sync will override.
RDM Packet Spacing	1/20s
RDM Discovery Period (TX mode) / sACN Priority (RX mode)	0s [RDM Disabled]
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.
Recall DMX Snapshot at startup	Recall <i>unchecked</i>

4. CONFIGURATION UTILITY

The eDMX Configuration utility provides a simple interface to all device parameters. Only version 1.12 and above is compatible with eDMX1 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 supported from firmware v2.14 onwards.

IMPORTANT: Once you've finished configuring your eDMX product close it 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 the eDMX Configuration utility please ensure your computer has appropriate IPv4 network settings. Earlier eDMX1 PRO units were shipped with Static IP so an appropriate network adapter setting would be IP 192.168.0.100 Subnet 255.255.255.0 Gateway 192.168.0.254. From early 2017 all eDMX1 PRO units were shipped with DHCP enabled by default so setting up your network adapter for DHCP/Automatic IP would be correct. Often a wireless router will be part of your network and this is likely to provide DHCP services to manage IP allocations to devices on your network.

Upon startup eDMX devices are automatically detected and displayed by IP address including those on different subnets. You can re-poll for new devices or just check the communications is okay by clicking "Search For Devices". From v1.16 polling is automatic every 8 seconds but can be disabled through the Advanced | Auto Device Poll menu option.

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".

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 0108-500-VersionMajor.VersionMinor.enc

PORT TAB

The screenshot shows the 'Port A' configuration window. Under 'ArtNet Settings', 'Update Rate' is at 40hz and 'Broadcast Threshold' is at 10. 'Merge Mode' has 'Highest Takes Priority (HTP)' selected. 'Operation Mode' has 'DMX Out' selected. 'RDM Settings' shows 'Discovery Period' at 0s and 'Packet Spacing' at 1 1/20s. There is a checkbox for 'Recall DMX snapshot at startup' and a 'Snapshot DMX' button. At the bottom, 'Universe' is set to 1 and 'Art-Net Port-Address' is 00 0 0. An 'Update' button is present.

Operation Mode: DMX Out

The screenshot shows the 'Port A' configuration window. Under 'ArtNet Settings', 'Async Update Rate' is at 40hz and 'Broadcast Threshold' is at 10. 'Merge Mode' has 'Highest Takes Priority (HTP)' selected. 'Operation Mode' has 'DMX In sACN' selected, with a 'Fixed IP' field containing '0.0.0.0'. 'RDM Settings' shows 'sACN Priority' at 100 and 'Packet Spacing' at 1 1/20s. There is a checkbox for 'Recall DMX snapshot at startup' and a 'Snapshot DMX' button. At the bottom, 'Universe' is set to 1 and 'Art-Net Port-Address' is 00 0 0. An 'Update' button is present.

Operation Mode: DMX In sACN with sACN Priority 100

DMX512 ports can be 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 Fixed IP address destination may be specified but in the majority of applications leaving this field at 0.0.0.0 is appropriate.

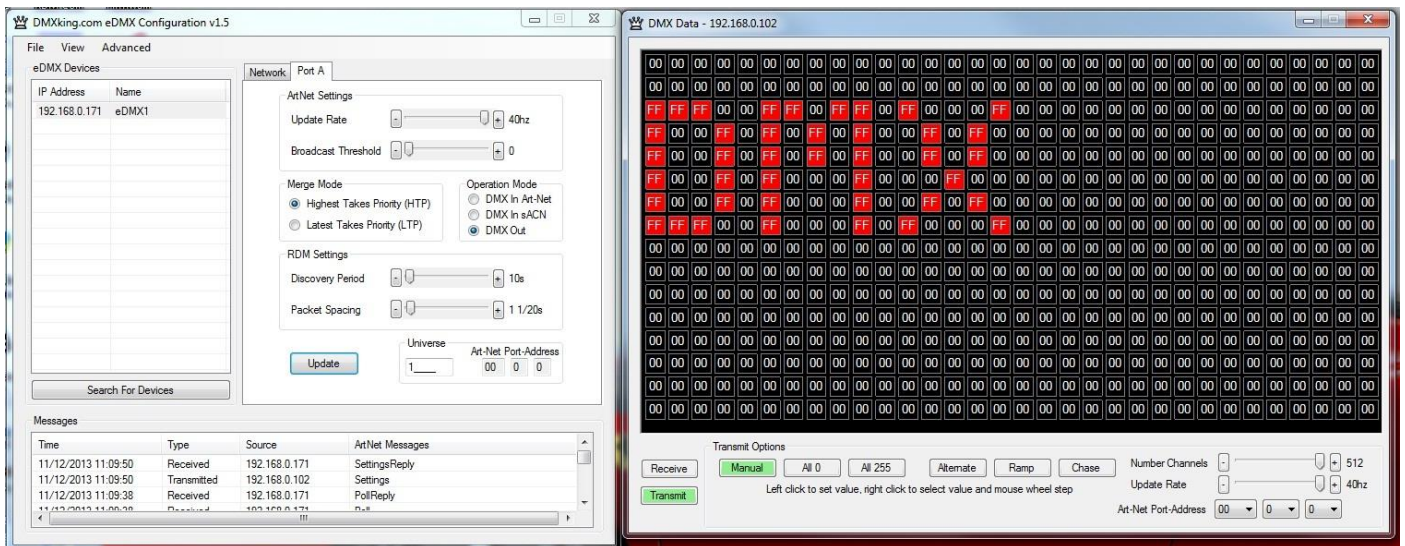
Make changes to the applicable Port settings then click “Update”.

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	DHCP or Static IP
Operation Mode	DMX IN Art-Net, DMX IN sACN, DMX OUT (both Art-Net and sACN are 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 unicast to 1 IP only.
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. Universe Sync takes precedence.
RDM Packet Spacing	Number of 1/20sec intervals enforced minimum between RDM messages on DMX line
RDM Discovery Period (TX) / sACN Priority (DMX IN mode)	Number of seconds between internally initiated RDM Discovery attempt. Setting Discovery Period = 0s will disable RDM which is the default. In DMX IN mode – sACN Priority 0 – 200.
Broadcast Threshold	0 = Force Art-Net broadcast mode, > 0 Art-Net II/3/4 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.

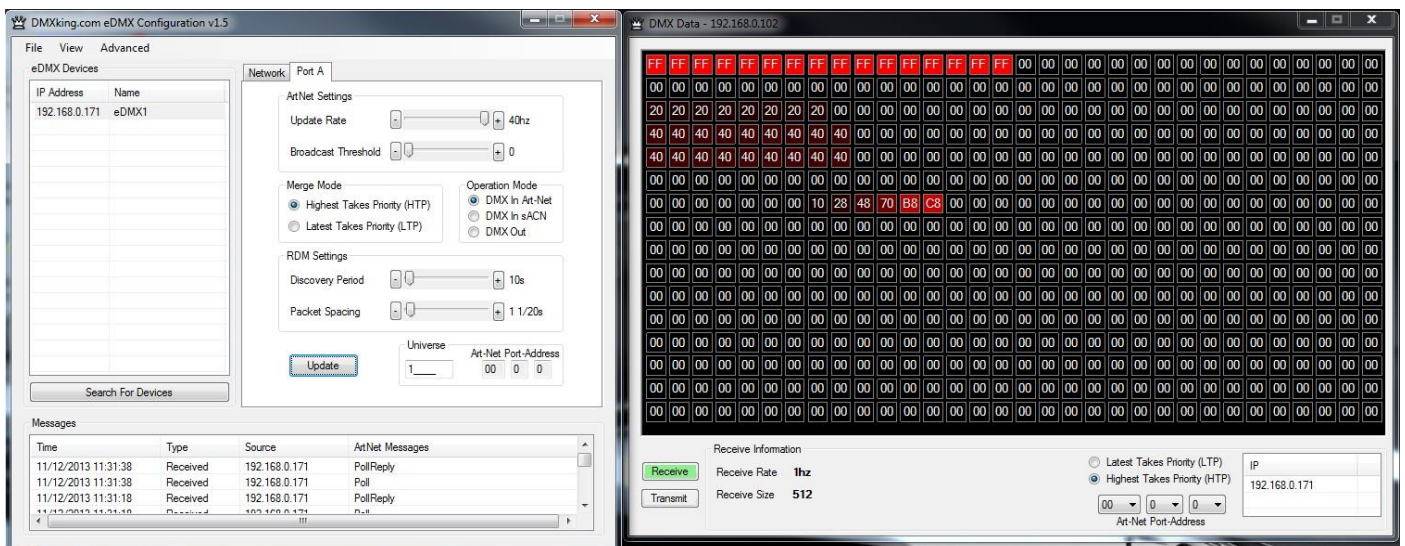
DMX DISPLAY FUNCTION

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.

NODE REPORT

Node Report: #0001[74]DMX:40 SYNC:Async

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

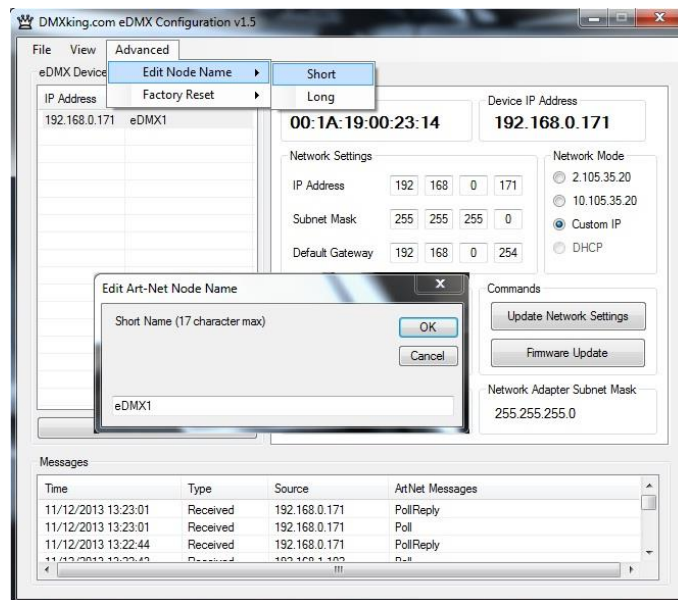
Above an eDMX1 PRO reports Port A at 40fps with no synchronization present (Async mode).

ADVANCED OPTIONS

IGMP Unsolicited Period can be configured where an IGMP Querier is not always active in a multicast (sACN) network. We highly recommend ensuring your network infrastructure manages IGMP Requests appropriately however setting the IGMP Unsolicited Period from 5 – 255 seconds permits multicast traffic to function correctly even when the IGMP Querier is off-line. Set to 0s to disable (default). This is only available in firmware 3.0+ and can be accessed using the **Advanced | IGMP Unsolicited Period** dialog.

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. 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+.

5. PORTS, MERGING, PRIORITY AND DMX INPUT

PORTS AND MERGING

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, 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 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 IN 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 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 RDM compliant line biasing 120Ω termination.
- 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
- 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