



LeDMX4 MAX



USER MANUAL

TABLE OF CONTENTS

1. Introduction	1
Hardware and Firmware versions	1
Main Features	2
2. Connections.....	3
LeDMX2 MAX	3
Status LED Table.....	3
3. Default Configuration.....	3
4. Configuration Utility.....	5
Network Tab	6
Settings Tab.....	8
Port Tab – Pixel Outputs	9
Port Tab – DMX512 Port	11
Recorder Tab.....	13
DMX Display Function	14
Node Report.....	14
Art-Net Node Name	15
Factory Reset	15
Summary of settings	16
5. Ports, Merging, Priority And DMX Input	17
DMX512 Port A and merging	17
Pixel Ports and merging	17
Supported merging combinations	17
sACN / E1.31 Priority.....	18
sACN / E1.31 Priority – DMX Receive.....	18
DMX512 In – Unicast / Broadcast / Multicast.....	18
6. Compatible Software	19
7. Technical Specifications	20
8. Where Do I Buy LED Pixels?.....	20
9. Frequently Asked Questions	20

10. Warranty.....	22
DMXking.com Hardware Limited Warranty.....	22

1. INTRODUCTION

Thanks for purchasing a DMXking product. Our aim is to bring you high quality products with great features we know you'll appreciate.

In many LED pixel installations, especially where the majority of pixels may be running simultaneously at full brightness, it is necessary to inject DC power at various points along the pixel strip/string/array. Although the LeDMX4 MAX can only provide up to 8A per output port terminal block this is not a limitation since currents higher than that will require power injection along the strip anyhow.

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 LeDMX4 MAX product variants. Check the product label for P/N details.

Part Number	Feature addition
0129-1.0	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
V4.0	Initial release. RDM support disabled.

MAIN FEATURES

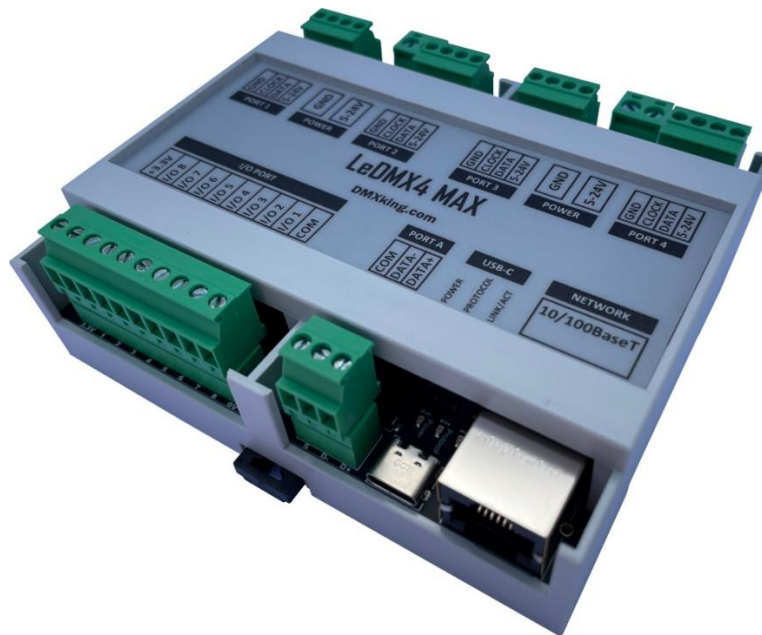
- Wide input power range 5-24Vdc.
- Power from USB-C (pixel power outputs excluded)
- OEM board available for integration into your custom LED designs
- DIN rail and wall mount using built in clips
- Static or DHCP IPv4 network addressing
- Supported operating systems: Windows, MacOS, Linux, iOS, Android
- 4 Independent pixel output ports each with 8A supply capability
- 2 Independent DC power inputs
- 1x DMX512 IN/OUT port
- Directly drives WS2811, WS2812, WS2812B, WS2813, WS2815, WS2822S UCS1903, UCS2903, UCS2912, UCS8903, UCS8904, PL9823, TM1934, APA101, SK9822, APA102, APA104, APA106, APA107, NS107, INK1002, INK1003, SM16703, SK6812, WS2801, LPD6803, LPD8806, DMX512-P and many more compatible LED strips
- Selectable clock/data rate to suit long cables or fast output
- Up to 680 RGB pixels or 512 RGBW pixels per output spanning 4 DMX universes (2720 RGB pixels / 16 universes per board)
- Up to 340 16bit RGB pixels or 256 16bit RGBW pixels per output
- Automatic RGB, RGBW color order correction or raw mapping options
- Per pixel intensity control for APA102/SK9822 utilizing the 5bit current pre-regulator
- Master Level control independent of incoming universe streams
- Flexible Full Mapping option for outputs permitting any start address and zig-zag corrections of RGB, RGB16, RGBW and RGBW16 pixel types
- Alternate Full Mapping and Master Level changeover with sACN Priority threshold
- Null pixel support for longer runs to first active pixel
- Art-Net broadcast, Art-Net II,3 & 4 unicast, sACN/E1.31 Multicast and sACN Unicast support
- HTP Merging of 2 Art-Net or sACN sources in any combination
- Merge 2 streams of Art-Net/sACN or DMX input -> Pixel universe output
- DMX512 Input Port -> Pixel universe output
- sACN Priority takeover for multi-tier controller arrangements
- Mix and match ArtNet with sACN merge/priority sources
- User configuration of Art-Net Node short and long names
- 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
- Recording and playback to microSD card (not included). See eDMX MAX Record / Playback manual
- Standalone show playback without computer or network connection
- Internal clock with optional battery backup for timed playback. NTP time sync.
- Configuration utility with basic Art-Net output/input test functionality

IMPORTANT: In many LED pixel installations, especially where the majority of pixels may be running simultaneously at full brightness, it is necessary to inject DC power at various points along the pixel strip or string. Although the LeDMX4 MAX can only provide up to 8A per output port terminal block this is not a limitation since currents higher than that would require power injection along the strip anyhow. Contact DMXking technical support for additional advice.

eDMX MAX translates Art-Net 00:0:0 to Universe 1 (i.e. offset by 1) so there is an easy mapping between sACN/E1.31 and Art-Net.

2. CONNECTIONS

LEDMX2 MAX



- DC Power Input x2 – Supply polarity marked on board. Note supply voltage is marked. Pay careful attention!
- Ethernet 10/100Mbps RJ45 socket
- 4x 4way 3.5mm pitch pluggable terminal blocks for pixel strip outputs. GND, Clock [CK], Data [DA], V+
- 1x 3way 3.5mm pitch pluggable terminal block for DMX512 port.
- Warning not all pixel strips/products use the same wire color code. Double check the signal names match wire colors.

STATUS LED TABLE

LED	Indication
Protocol	Protocol activity. Flash Red = Art-Net/sACN. Solid Red = Bootloader mode
Link/Act	Network activity. Green = Link, Flash = Traffic
Port 1	Pixel port 1 activity
Port 2	Pixel port 2 activity
Port 3	Pixel port 3 activity
Port 4	Pixel port 4 activity

3. DEFAULT CONFIGURATION

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

Default configuration is for WS2811/2812 pixel output with automatic RGB color order correction and 1 DMX universe mapping to 170 RGB pixels per output.

Network Tab

Parameter	Default Setting
Network Mode	Static IP
IP Address	192.168.0.113
Subnet Mask	255.255.255.0
Default Gateway	192.168.0.254
IGMPv2 Unsolicited Report	<i>Unchecked</i>

Settings Tab

Parameter	Default Setting
Update Rate	30Hz - Universe Sync will override.
Master Level	255 – Full output intensity.
Alternate Master Level	255 – Full output intensity.
Alt. mapping priority threshold	0 – Alternate Mapping Disabled.

Port Tabs (1-4)

Parameter	Default Setting
Pixel Type	WS2811
Pixel Count	170
Null Pixels	0
Color Order	GRB
Primary Start Universe	1,2,3,4 (Ports 1,2,3,4 respectively)
Primary Start Channel	1
Primary Pixel Group Size	1
Primary ZigZag	0
Primary Direction	Normal (unticked)
Alternate Start Universe	1,2,3,4 (Ports 1,2,3,4 respectively)

Alternate Start Channel	1
Alternate Pixel Group Size	1
Alternate ZigZag	0
Alternate Direction	Normal (unticked)

Port Tab A (DMX512 port)

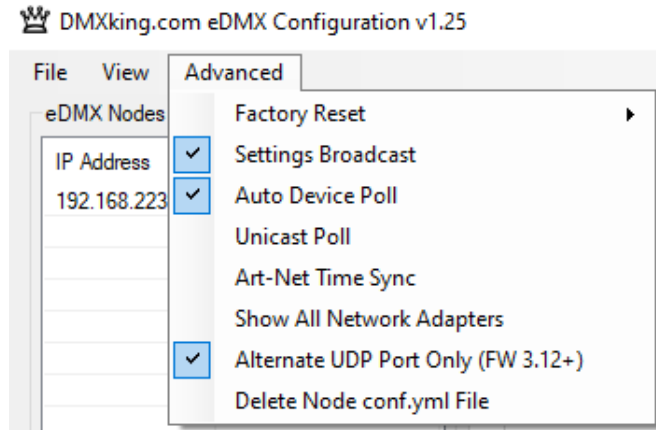
Parameter	Default Setting
Async Update Rate	40 [DMX512 frames per second]. Universe Sync will override.
Port Operation Mode	DMX-OUT
Timeout all sources	<i>Unchecked</i>
Channel Offset	0
Fixed IP	0.0.0.0 [Only for DMX IN – Unicast to 1 IP address only]
Merge Mode	HTP
Full DMX Frame	<i>Unchecked</i>
Broadcast 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 [Net 00, Subnet 0, Universe 0] 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.

eDMX Configuration functions with primary Art-Net UDP 6454 and an alternate UDP 16454 port 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.



eDMX Node configuration can be saved/loaded from a simple Key:Value YML file. Select the node and perform Load/Save accessible in the File menu. Configuration files can be loaded from a file named “conf.yml” on the SD card however updates made to configuration are not currently saved by the node back to the conf.yml file. This is intended as a deployment mechanism where complete device configuration and show content can be prepared externally on an SD card.

NETWORK TAB

DMXking.com eDMX Configuration v1.26

File View **Advanced**

eDMX Nodes

IP Address	Short Name
192.168.0.113	LeDMX2 MAX 320000

Search ArtPoll Broadcast Mute Responses

Network Port A Settings Port 1 Port 2 Recorder

Node MAC Address: **00:1A:19:32:00:00** Current IP Address: **192.168.0.113** Port: **6454**

Network Settings

IP Address: 192 168 0 113
 Subnet Mask: 255 255 255 0
 Default Gateway: 192 168 0 254

Network Mode

2.48.0.0
 10.48.0.0
 Static IP
 DHCP

IGMPv2 Unsolicited Report

IN OUT

Node Information

Hardware: **LeDMX2 MAX** Firmware Version: **4.0**
 Short Name: **LeDMX2 MAX 320000** Update Name
 Long Name: **DMXking.com LeDMX2 MAX S/N 001A19320000**

Commands

Update Network Settings
 Firmware Update

Computer Network Adapter IP Address / Subnet Mask

192.168.223.5 / 255.255.255.0 Intel(R) I210 Gigabit Network Connection #2

Node Report: #0001[4]DMX:0 PIX:0 SYNC:Async SHOW:000 REC:No SD

Messages

Time	Type	Source	ArtNet Messages
9/09/2022 3:21:13 PM	Received	192.168.0.113	PollReply
9/09/2022 3:21:13 PM	Received	192.168.0.113	PollReply
9/09/2022 3:21:13 PM	Received	192.168.0.113	PollReply
9/09/2022 3:21:11 PM	Transmitted	192.168.223.5	Poll

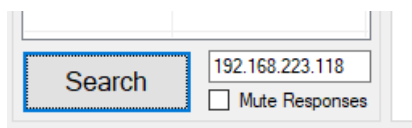
eDMX Configuration can find and configure eDMX MAX hardware on different IP subnets from the computer network adapter. There are some functions such as the Recorder that require both devices on the same IP subnet range e.g., Computer IP 192.168.0.100 Subnet 255.255.255.0 Gateway 192.168.0.254 when eDMX MAX is on default IP.

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**. 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.

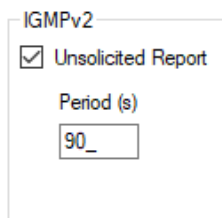
Click on the desired node's entry and all Settings will be retrieved. Note that if no response is received the settings will be greyed out and no additional tabs visible. An activity box shows both transmitted and received messages to help with diagnosing communication issues. If your network configuration 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.

Settings Broadcast is supported by eDMX MAX which allows node settings to be updated regardless of the network adapter subnet range.

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.



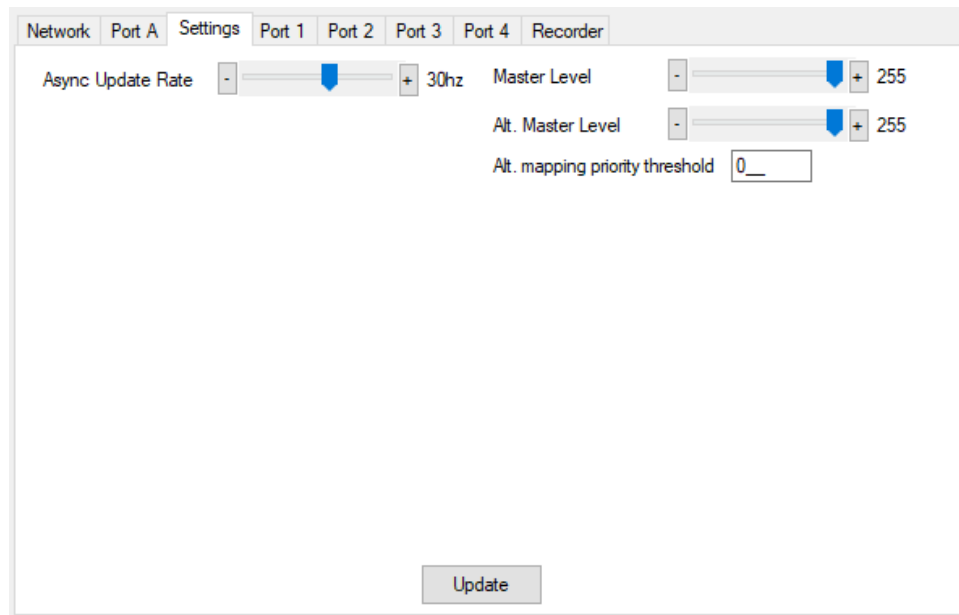
eDMX MAX nodes provide IGMPv2 Reports necessary to participate in a multicast environment as necessary for sACN/E1.31 protocol. Sometimes due to network infrastructure issues an IGMP querier is not present and in these situations, you can opt to have the node generate ongoing unsolicited IGMPv2 Reports.



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 0128-500-VersionMajor.VersionMinor.enc

SETTINGS TAB



Make changes as required then click “Update” to save settings in your LeDMX4 PRO unit.

The following table explains each of the settings parameters.

Parameter	Usage
Update Rate	Frequency LED strip receives updates from Incoming Universe data. Universe Sync takes precedence.
Master Level	Pixel output master level control for all outputs. Has no effect for Raw Colour Order modes and is overridden by Playback Universe Master Level (see Recorder Manual).
Alternate Master Level	Pixel output master level control for all outputs when Alternate Mapping is in effect. Has no effect for Raw Colour Order modes.
Alternate mapping priority threshold	sACN Priority below which Alternate Mapping parameters are used if no higher Priority sACN stream is present. Threshold is assessed on the Start Universe only.

Alternate mapping priority threshold. When incoming stream priority is > threshold then Primary mapping applies. Priority <= threshold Alternate mapping applies. For Primary source 100 Priority and Alternate source 50 set threshold between 50 and 99 for example. Note only first universe mapped to pixel port is used to determine priority.

Port tab – v3.6 firmware and earlier

Port tab

Make changes as required then click “Update” in the Settings Tab to save settings in your LeDMX MAX unit. The Disable Full Mapping button returns Start Channel, Pixel Group Size, ZigZag and Direction to defaults that ensure Full Mapping mode is not automatically activated.

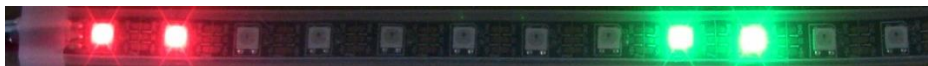
Parameter	Usage
Pixel Type	Must match your connected Pixel type. There are clock speed options for many pixel types and we recommended slower rates for longer cable runs.

Pixel Count	Number of physical pixels in the string. Maximum depends on number of channels per pixel which depends on the Color Order setting. RGB = 680, RGBW = 512, 2ch = 1024, 1ch = 2048, Raw I+3ch = 512, RGB 16bit = 340, RGBW 16bit = 256.
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 elements. RGB, RBG, GRB, GBR, BRG, BGR, raw 1/2/3/4/5ch, 2ch swapped, RGBW, WRGB, WRBG, GRBW, Raw I+3ch, Raw 3ch 16bit, Raw 4ch 16bit, RGB 16bit, RGBW 16bit.
Primary Start Universe	sACN/Art-Net Universe number pixels are mapped to.
Primary Start Channel	DMX512 channel number pixel data starts from.
Primary Pixel Group Size	Multiple sequential pixels can be mapped to a channel group. Set to 255 for ALL pixels regardless of actual Pixel Count.
Primary Zig Zag	Reverses pixel direction every N pixels.
Primary Direction	Reverse makes pixel 1 appear at the far end of the strip.
Alternate Start Universe	Alternate sACN/Art-Net Universe number pixels are mapped to.
Alternate Start Channel	Alternate DMX512 channel number pixel data starts from.
Alternate Pixel Group Size	Alternate map. Multiple sequential pixels can be mapped to a channel group. Set to 255 for ALL pixels regardless of actual Pixel Count.
Alternate Zig Zag	Alternate Reverses pixel direction every N pixels.
Alternate Direction	Alternate map. Reverse makes pixel 1 appear at the far end of the strip.

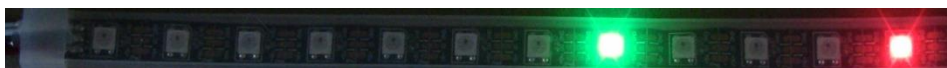
Some examples of Full Mapping from source DMX512 data ch1 = Full (Pixel 1 Red), ch14 = Full (Pixel 5 Green). Port 1 configured with Pixel Count = 12, Null Pixels = 0, Start Universe = 1, Start Channel = 0.



Pixel Group Size = 1



Pixel Group Size = 2



Reverse Order. Pixel Group Size = 1

Network Port A Settings Port 1 Port 2 Port 3 Port 4 Recorder

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

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 [33] Art-Net Port-Address [00] [2] [0]
 Update

Port Operation Mode: DMX-OUT

Network Port A Settings Port 1 Port 2 Port 3 Port 4 Recorder

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

DMX-IN Options
 Broadcast Threshold - [Slider] + 10 Full DMX Frame
 Unicast IP [0.0.0.0]

DMX-IN sACN Priority
 sACN Priority - [Slider] + 100

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

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

DMX512 Universe [33] Art-Net Port-Address [00] [2] [0]
 Update

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.

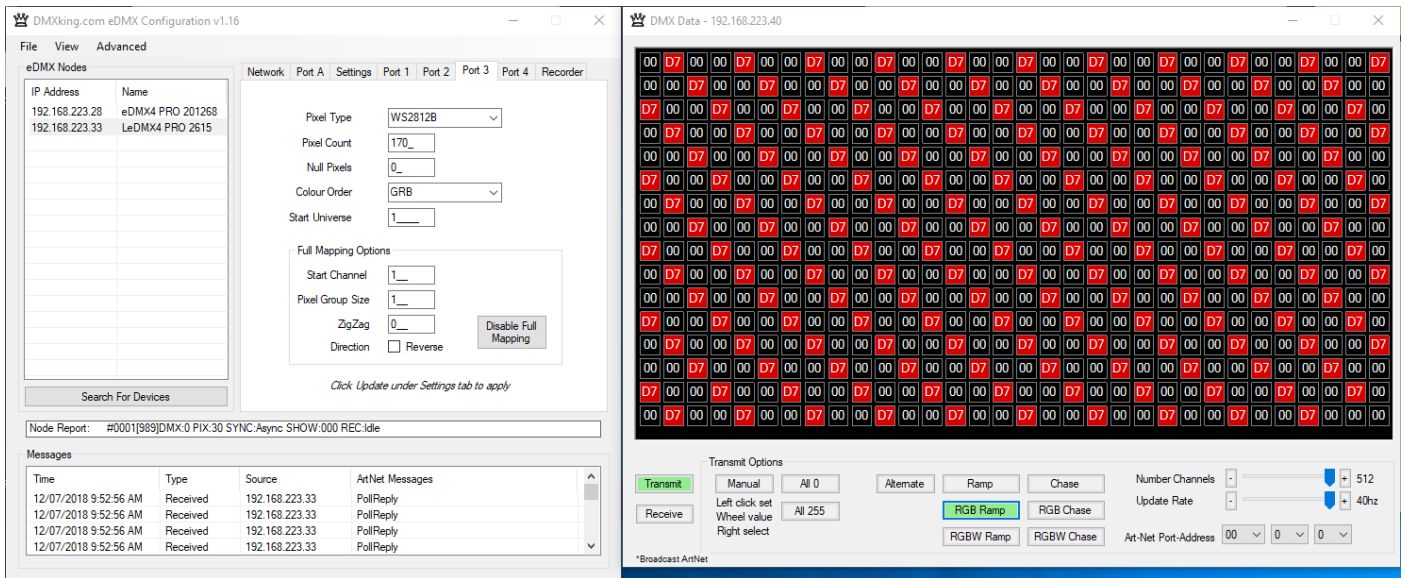
Network	Port A	Port B	Port C	Port D	Recorder
<div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <p>Recorder Settings</p> <p><input checked="" type="checkbox"/> Playback Enable</p> <p><input checked="" type="checkbox"/> Record Enable</p> <p><input type="checkbox"/> Playback Merge</p> <p><input type="checkbox"/> Record Monitor</p> <p><input type="checkbox"/> Network Playback</p> <hr/> <p>Show Settings</p> <p><input type="checkbox"/> B/O Show After Stop</p> <p><input type="checkbox"/> Hold Last Scene</p> <p><input type="checkbox"/> Last Show Recall</p> <hr/> <p>TFTP</p> <p><input checked="" type="checkbox"/> Read Access</p> <p><input checked="" type="checkbox"/> Write Access</p> <p>Restricted Client IP 0.0.0.0</p> </div> <div style="width: 35%;"> <p>Time</p> <p>NTP Server IP <input type="text" value="202.46.177.18"/></p> <p>NTP Poll Interval <input type="text" value="1"/> Hours</p> <p>Time Zone <input type="text" value="UTC +12:00"/></p> <p><input type="checkbox"/> US Date Format <input type="checkbox"/> CRON wait</p> <hr/> <p>Daylight Savings</p> <p><input checked="" type="checkbox"/> DST Enabled</p> <p><input type="radio"/> Specified <input checked="" type="radio"/> Recurring</p> <p>DST Begin DST End</p> <p>Month <input type="text" value="September"/></p> <p>Week Num <input type="text" value="Last"/></p> <p>Week Day <input type="text" value="Sunday"/></p> <p>Hour <input type="text" value="2"/></p> </div> <div style="width: 30%;"> <p>Show Triggering</p> <p><input type="checkbox"/> eDMX Trigger <input type="checkbox"/> Up/Down/Go</p> <p><input type="checkbox"/> eDMX Control <input type="checkbox"/> Skip Script</p> <p><input type="checkbox"/> Playback Trigger Universe</p> <p>Universe <input type="text" value="1"/> <input type="text" value="00"/> <input type="text" value="0"/> <input type="text" value="0"/></p> <p>Playback Group <input type="text" value="0"/></p> <p><input type="checkbox"/> Playback Master Level</p> <p>DMX Channel <input type="text" value="1"/></p> <p><input type="checkbox"/> Show Run Until Complete</p> <p><input type="checkbox"/> Broadcast Triggers</p> <p><input type="checkbox"/> Record Trigger Universe</p> <p>Universe <input type="text" value="1"/> <input type="text" value="00"/> <input type="text" value="0"/> <input type="text" value="0"/></p> <p>DMX Channel <input type="text" value="1"/></p> <p style="text-align: right;"><input type="button" value="Update Settings"/></p> </div> </div>					

Please refer to the eDMX MAX Recorder manual for more information. This functionality is common to all eDMX MAX and LeDMX MAX that include an SD card socket. Backup battery replacement procedure can also be located in that document.

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 10 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. In Receive mode only Art-Net I broadcast traffic is supported. To display channel data from an eDMX/LeDMX DMX-In port you must configure Broadcast Threshold to 0 otherwise Art-Net messages will be unicast.

NODE REPORT

Node Report: #0001[989]DMX:0 PIX:30 SYNC:Async SHOW:000 REC:Idle

Node provides a brief status report indicating DMX frame rates, PIXel output rate, SYNC status, SHOW playback selection and REcorder status.

Above an LeDMX2 MAX reports Port A at 0fps, Pixel output at 30fps with no synchronization present (Async mode) and the recorder state Idle.

Node Report: #0001[7]DMX:0,0,0,0 SYNC:Async SHOW:000 REC:No SD

In the example above the recorder status indicates there is No SD card present.

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	LeDMX2 MAX Firmware Version 4.0
Short Name	LeDMX2 MAX 320000 <input type="button" value="Update Name"/>
Long Name	DMXking.com LeDMX2 MAX S/N 001A19320000

FACTORY RESET

Factory Reset should only be used when all communication is lost over network and that is typically caused by incorrect network setup rather than a problem with the LeDMX MAX node.

- **Level 1:** Factory Reset LeDMX MAX configuration. With the device powered on press and hold FACTORY RESET button for 10 seconds.
- **Level 2:** Factory Reset to Bootloader and no firmware. With the device powered off press and hold FACTORY RESET button whilst powering on. Follow procedure to manually load firmware to default IP address or use Find My eDMX application.
- **Level 3:** Force ROM Bootloader. Contact support.

eDMX Configuration Factory Reset (Legacy devices) menu is not relevant to LeDMX MAX devices and will not have any effect.

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

DMX512 PORT A AND MERGING

eDMX Products are capable of several advanced merging and stream selection functions. Support for both HTP (Highest Takes Precedence) and LTP (Latest Takes Precedence) merging of 2 sources producing a single DMX512/pixel universe 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.

PIXEL PORTS AND MERGING

LeDMX MAX supports HTP merging of 2 sources producing a single pixel universe 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. 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.
DMX-IN Art-Net	Configure DMX-IN port universe to match a DMX-OUT port universe. Priority is locked to 100 since Art-Net does not have a Priority value.
DMX-IN sACN	Configure DMX-IN port universe to match a DMX-OUT port universe. Priority is defined by the port configuration sACN Priority.

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.
DMX-IN	Art-Net	Merge external DMX512 source with incoming Art-Net stream.
DMX-IN	sACN / E1.31	Merge external DMX512 source with incoming sACN stream.

SACN / E1.31 PRIORITY

At any time if a higher priority sACN stream is received it will take over control a DMX Out channel / Pixel Universe regardless of other incoming streams or merging. When an sACN stream is stopped gracefully via a stream terminate message the eDMX port / Pixel Universe will immediately revert to whatever other sources are present, otherwise the default stream timeout of 3 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 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 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 including LED pixels.

The DMXking LeDMX4 MAX unit is a 4 Pixel Output + 1 DMX512 sACN/Art-Net device designed for use with computer-based show control and effect software.

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

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

7. TECHNICAL SPECIFICATIONS

- Dimensions: 106mm x 90mm x 32mm (WxDxH).
- Weight: 75grams.
- Power input 5-24Vdc
- UCB-C power input – for control electronics only, no USB-C power routed to pixel ports.
- Control electronics power simultaneously sourced from USB-C, pixel port 1&2 power input, pixel port 3&4 power input.
- Control electronics power requirements: 5Vdc @ 200mA, 12Vdc @ 100mA.
- Maximum continuous current per output 8A
- Buffered 5V Clock and Data lines with over voltage fault protection
- WS2811, WS2812, WS2812B, WS2813, UCS1903, UCS2903, UCS2912, UCS8903, UCS8904, PL9823, TM1934, APA101, APA102, SK9822, APA104, APA106, APA107, INK1002, INK1003, SM16703, SK6812, WS2801, LPD6803, LPD8806, DMX512-P, P9813, GS8208, TM1814, TM1914A, TLS3001 pixel types and equivalents supported. Note many pixels are actually the exact same protocol timing as those listed. Check with DMXking support
- Fast 800kHz and slow 400kHz data rates supported for WS2811 / APA104
- SPI pixels can be clocked at 500kHz, 1MHz, 2MHz and 4MHz
- Up to 680 RGB pixels / 4 DMX universes per output
- Ethernet 10/100Mbps Auto MDI-X port
- Art-Net, Art-Net II, Art-Net 3, Art-Net 4 and sACN/E1.31 support.
- Universe Sync Art-Net, sACN and Madrix Post Sync.
- Both HTP and LTP merging of 2 Art-Net/sACN streams on Port A
- HTP merging of 2 Art-Net/sACN streams on Pixel ports
- sACN Priority
- IPv4 Addressing
- IGMPv2 for multicast network management
- Operating temperature -10°C to 50°C non-condensing dry environment

8. WHERE DO I BUY LED PIXELS?

There are *many* sources for LED pixels in strip and other formats. Pretty much all of it comes out of China and it can be more cost effective to source through sites such as Aliexpress which provide individual item sales without much effort.

Try these Aliexpress stores or direct from a manufacturer:

- <https://kinggreen.aliexpress.com/store/713947>
- <https://www.aliexpress.com/store/701799>
- <http://www.shiji-led.com/Index/index.html>

9. FREQUENTLY ASKED QUESTIONS

Q: Does DMXking recommend any particular type of pixels or control ICs?

A: We highly recommend APA102/SK9822 pixels because they have a higher clocking rate and an additional 5bit master current control. This really helps with smooth fades at reduced Master Level.

Q: What is DMX512P? Is this DMX512?

A: Yes and No. Actually, more No than Yes. Someone thought it would be a good idea to use DMX512 signaling for pixel control but it really makes no sense and creates confusion because it's not a differential signal like real DMX512. Connect DMX512P pixels to the Pixel Ports only so the signal levels are appropriate.

Q: How big should my power supply be?

A: It depends on the pixel count, output intensity, and how many pixels will be lit simultaneously. Often power supplies are oversized when calculations are done assuming all pixels might be on at full intensity. There is no straight answer and per pixel current consumption should be ascertained from the product datasheet.

Q: Why do my pixels start going pink instead of white further along the strip?

A: What's happening is the power supply voltage is dropping and generally blue LEDs will drop in current first since they have the highest forward voltage. This is simply $V=IR$ and different strips will exhibit different results because their conductor resistance might be higher/lower. By injecting power again (from the same power supply or another power supply) along the strip at intervals it is possible to mitigate the voltage drop effects. Higher voltage strips/pixels (12V or 24V) are usually less susceptible to color fade issues.

Q: What happened to the 5V and 12-24V LeDMX4 PRO versions?

A: These have been merged together in the new eDMX MAX product so there is no longer a supply option that works from 5V up to 24Vdc.

Q: Is it possible to control pixel outputs from DMX512 rather than Art-Net/sACN over the network?

A: Yes but there's only 1 DMX512 port and thus 1 DMX Universe available so you're constrained in how many pixels can be controlled. Of course using Full Mapping mode with >1 Pixel Group size it's possible to stretch that 1 universe a little further. Just configure Port A as DMX-In sACN on the same universe you've configured a pixel output.

Q: I'm use WS2813 pixels with dual signal wires. What should I connect to the LeDMX4 PRO pixel port?

A: Only the DATA IN wire from the pixel strip should be connect to DA on the LeDMX4 PRO. Do not connect the DATA OUT return wire to anything.

Q: The power supply I purchased has exposed AC input terminals. Is this safe?

A: No. Unless you are suitably qualified please defer all AC mains wiring to applicable professionals. Safety first.

Q: My question doesn't appear here.

A: Ask your distributor for technical support. Maybe it'll appear in the next user manual too.

10. 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 two years from the date of shipment from an authorized DMXking distributor.

What is not covered

Failure due to operator error or incorrect application of product.

What DMXking will do

DMXking will repair or replace, at its sole discretion, the defective hardware.

How to obtain service

Contact your local distributor or visit <https://www.dmxking.com>