ultraDMX Pro

Interface

USER MANUAL

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1. INTRODUCTION

The DMXking.com ultraDMX Pro product is a robust 3 universe bi-directional DMX512 interface communicating with the host computer over USB. An onboard Atmel microcontroller ensures complete timing accuracy and no flickering effects no matter what your computer is doing. Device communication using FTDI virtual COM port (VCP) or direct (D2XX) drivers allows use of any mainstream OS.

Operation in 3 universe mode (1 in, 2 out) requires compatible software. Enhanced mode is disabled automatically when standard (Enttec USB Pro) commands are received and only 1 universe operation can be achieved however all outputs are available essentially making this device a USB Pro + DMX Splitter in one.

A standalone mode is also available for DMX512 splitter functionality making the ultraDMX Pro product truly universal. New in firmware v1.2 is DMX RX Throttling and DMX TX Maximum Compatibility mode which extends DMX512 timing. These features bring the same functionality as a DMX Decelerator into your ultraDMX device at zero additional cost.

ultraDMX Pro operating modes:

MODE 1 (default)	Compatibility mode 1 Universe IN *or* 1 Universe OUT	Device behaves just like ENTTEC USB Pro so works with large existing software base. Provides 4 isolated DMX outputs all of the same universe.
MODE 2 (enhanced)	Enhanced mode 1 Universe IN *and* 2 Universes OUT (total 3 universes)	Equivalent to having 3x USB DMX units rolled into 1 enclosure and USB connection. Simultaneous 1 universe IN and 2 universes OUT with dual isolated output connectors.
MODE 3 (splitter)	Standalone DMX512 Splitter – computer not required. Configure as DMX Decelerator using DMX TX and DMX RX settings.	No USB connection to computer needed. Provide 5Vdc power and the DMX512 input is re-sent on all 4 output connectors. Standalone USB 5Vdc power supply or computer USB port for power.

Switching between MODE 1 and MODE 2 is fully automatic and determined by your lighting control software. If enhanced mode DMX output commands are sent to the ultraDMX Pro it enters enhanced mode and conversely when standard DMX output commands are sent compatibility mode is triggered.
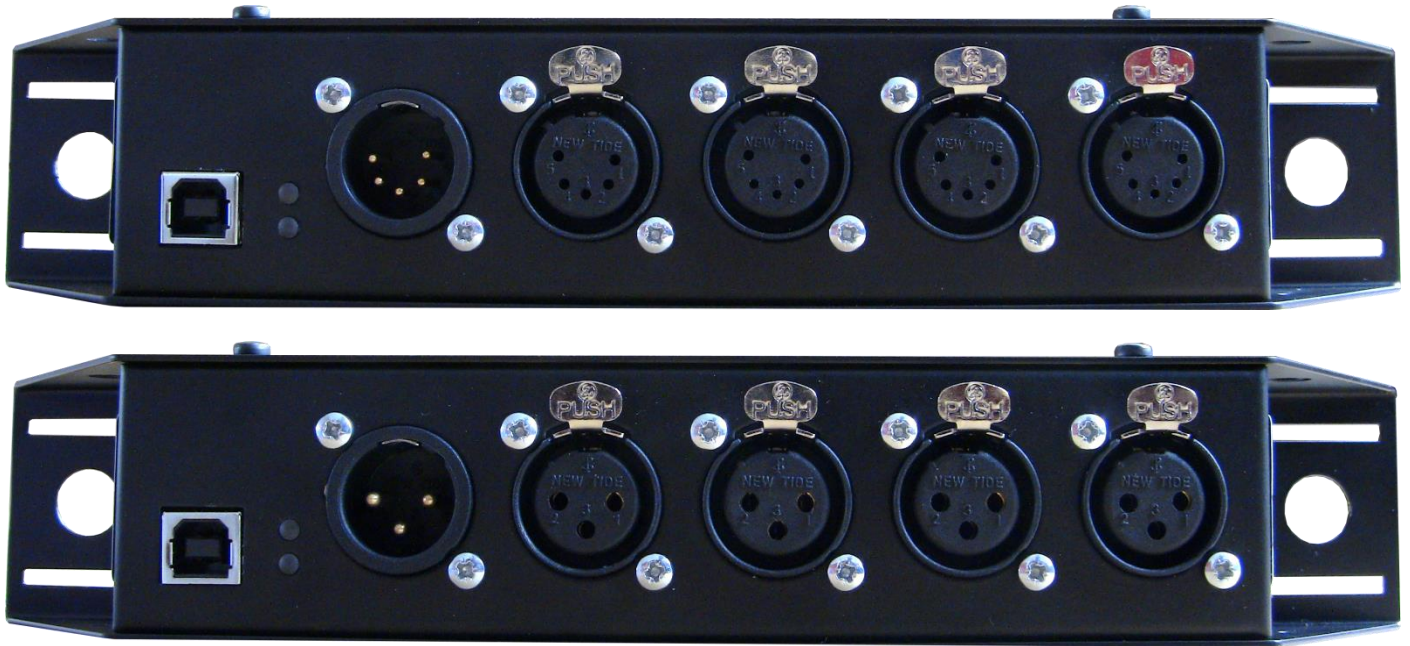
MODE 3 standalone splitter can only be enabled and disabled using the ultraDMX Configuration Utility. Note DMXking.com also manufactures a dedicated 4 port splitter, the ultraDMX Split.

MAIN FEATURES

- Fully isolated between all XLR connectors and USB interface
- DMX transmit timing adjustment settings to "fix" issues with non-compliant DMX lighting gear
- DMX receive rate throttling option to ensure receiving software isn't overloaded with too many frames per second
- Supported operating systems: Windows, Mac OS, Linux
- DMX512 Transmitter and Receiver (OUT and IN)
- Tough metal enclosure with multiple mounting options
- Available with 3 pin or 5 pin XLR connectors, no adapter purchase required.
- ANSI E1.11-2008 compliant (DMX512-A).
- E1.11 Higher Protection Level "DMX512-A Protected" device.
- Internal double buffered DMX512 streams resulting in zero lost frames.
- Fully compatible with software suitable for ENTTEC USB Pro (except D-Pro sorry, use our Art-Net devices instead)
- Standalone DMX512 Splitter mode. Power with 5V USB supply.
- Configuration utility (Windows .NET 3.5 – OS X version available Q3 2013).

2. EXTERIOR VIEW

FRONT VIEW

One 5pin or 3pin XLR male connector for DMX512 *input* and 4x 5pin or 4x 3pin or 2x 5pin+3pin XLR female connectors for DMX512 *output* grouped as 2 pairs. USB B connector for host interface.

STATUS LED TABLE – USB DMX MODE

Lower LED	Indication
Slow FLASH *Green*	Power ON indication.
Fast FLASH *Green*	Universe 1 Transmit. DMX512 stream received from computer. Flash rate = DMX rate.
ON *Green*	Firmware update mode initiated.
Very Fast FLASH *Green*	Firmware CRC check failed. Contact DMXking support.

Upper LED	Indication
FLASH *Red*	Universe 3 Receive. DMX512 stream detected. Flash rate = DMX update rate.
Fast FLASH *Green*	Universe 2 Transmit. DMX512 stream received from computer. Flash rate = DMX rate.
FLASH *Orange*	Simultaneous Universe 3 Receive + Universe 2 Transmit.

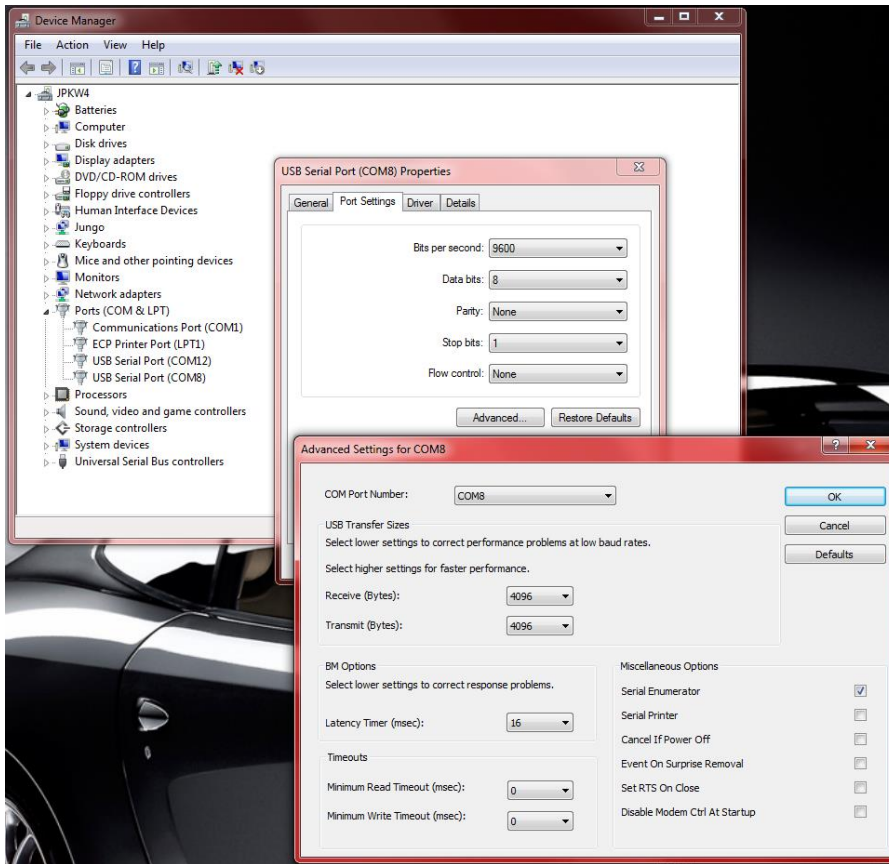| Lower LED	Indication
Slow FLASH *Green*	Power ON indication.
Fast FLASH *Green*	Transmit DMX512. Flash rate = DMX rate.
ON *Green*	Firmware update mode initiated.
Very Fast FLASH *Green*	Firmware CRC check failed. Contact DMXking support.

Upper LED	Indication
Slow FLASH *Red*	Power ON indication.
Fast FLASH *Red*	Receive. DMX512 stream received at IN connector. Flash rate = DMX rate.

3. INSTALLING THE FTDI DRIVER

To maximize compatibility with existing software an FTDI (www.ftdichip.com) FT245RL device provides USB 2.0 Full Speed interfacing for the ultraDMX unit. Drivers are available directly from FTDI and in most cases the VCP (Virtual COM Port) driver should be used although both D2XX and VCP are installed by default on Windows OS. The latest drivers are available from www.ftdichip.com/Drivers/VCP.htm
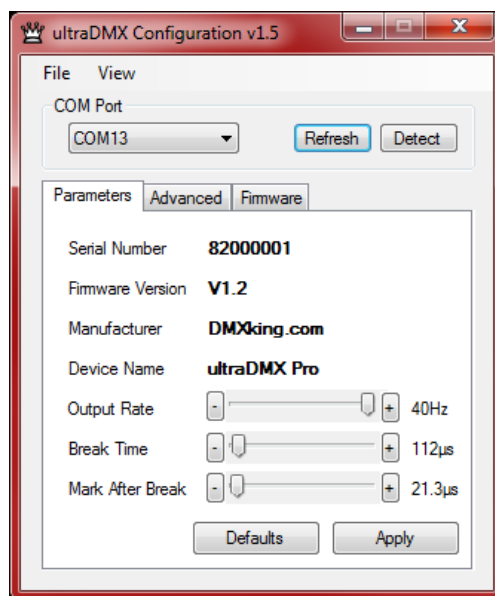
Please refer to the installation guides at www.ftdichip.com/Documents/InstallGuides.htm and note the process involved installs 2 devices, a USB serial device followed by USB virtual COM port. All required files are included in the driver installation file.

On occasion you may wish to change the COM port number an ultraDMX unit has been assigned by Windows. This can be done through the Device Manager applet by right clicking on the USB Serial Port of interest (unplug/re-plug the unit and observe device manager COM port list if unsure which one is your ultraDMX) then select properties, Port Settings tab, Advanced button and finally choose the desired COM Port Number.

4. CONFIGURATION UTILITY

The ultraDMX Configuration utility provides access to DMX512 timing and other advanced parameters along with a simple DMX display control providing output/transmit and input/receive operation testing without any additional software.

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0080-700-1.1

The Advanced tab facilitates adjustment of some more specialized parameters. You can alter what the ultraDMX Pro unit reports when queried with a Label 3 command. This can be useful when software detects functionality based on the Label 3 'FW major' variable. Default settings are **Label 3 FW major** = 1, **Label 3 FW minor** = 44 (report ENTTEC USB Pro non-RDM firmware).
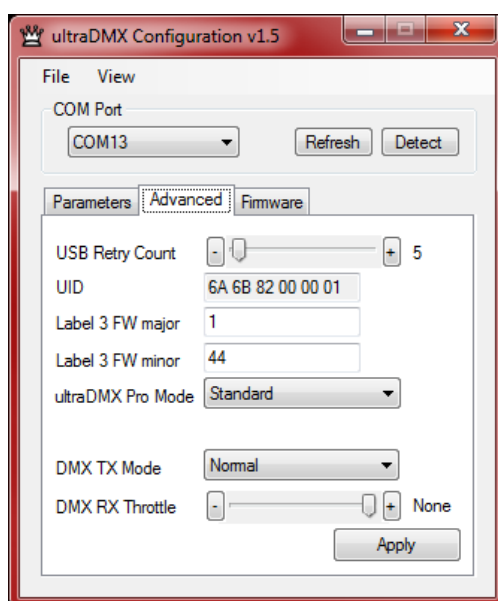
Device **UID** cannot be altered and **USB Retry Count** should be left at 5 unless advised by DMXking.com support.

Choose between **ultraDMX Pro Mode** Standard or Splitter. The later forces the unit to ignore any DMX data sent over USB and instead just receive DMX512 on the male XLR and re-transmit on all 4 female XLRs. Note the Break and Mark After Break times are re-generated and not the same as the received DMX512 data stream and in conjunction with **DMX TX Mode** and **DMX RX Throttle** the ultraDMX Pro can re-time DMX streams just like a DFD DMX Decelerator.

Options for **DMX TX Mode** will override parameters set by your lighting software resulting in guaranteed longer Break and MAB times along with slower DMX transmit rates and even extra delays between channel characters which some fixtures like the Chauvet ColorStrip need in order to function correctly.
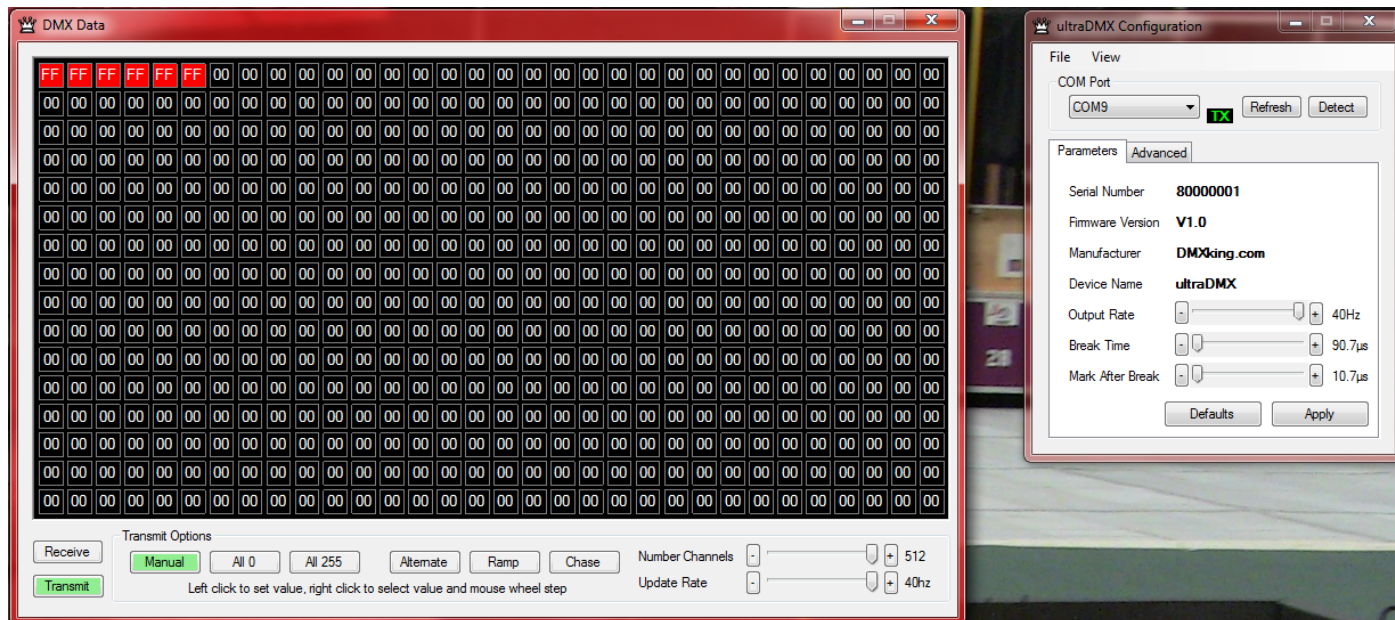
Normal	DMX Output is as per settings on Parameters tab
Maximum Compatibility (DMX Decelerator)	Half speed, extended Break/MAB and extra 44us inter-channel delay
Extended Break/MAB	DMX Break and MAB settings in Parameters are ignored
Half Output Rate	DMX Output rate from Parameters is halved
Half Output Rate + Extended Break/MAB	Combination of the 2 options above
2x Output Rate	DMX Output rate is 2x Parameters value but only if channel count allows
Ultra-Fast Update	DMX Output rate is dependent on channel count and can exceed 400 fps

DMX RX Throttle setting will selectively drop incoming DMX frames to produce the indicated frame rate being forwarded (over USB in Standard mode or sent direct to DMX output ports in Splitter mode). When set to None the full DMX RX rate is forwarded however some software applications may have issues handling high rates, Laser Show Designer QuickShow is known for this problem. This is also useful to for re-timing a DMX stream when in Splitter mode.

Select **View | DMX Display** for the simple DMX512 test control. To generate a DMX512 output stream click Transmit then select one of the 6 Transmit Options. 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.

5. COMPATIBLE SOFTWARE

DMX512 is the most commonly used lighting control protocol 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 ultraDMX Pro unit is 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 either ultraDMX Pro or, if unavailable, Enttec USB Pro as your DMX device full compatibility is guaranteed.

CONTROLLERS

LightFactory ** Supports 3 universe enhanced mode	http://www.lifact.com/
Chameleon Lighting Software (Mac) ** Supports 3U mode	http://www.maclightingsoftware.com/
QLC+ (Linux, Mac OS-X, Windows) *free* ** Supports 3U mode	http://qlcplus.sourceforge.net/
Martin M-PC Free Edition	http://www.martin.com/controllersupport/m-pc_software.html
Laser Show Designer QuickShow – Pangolin	http://www.pangolin.com/QS/
Lightjams	http://www.lightjams.com/

Venue Magic	http://www.venuemagic.com/
FreeStyler *free*	http://www.freestylerdmx.be/
MagicQ – ChamSys (Windows, Mac, Linux) *free*	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) *free*	http://qlc.sourceforge.net/
ChromaKinetics StageConsole & tools	http://www.chromakinetics.com/DMX/
Visual Show Automation (VSA – Brookshire Software)	http://www.brookshiresoftware.com/
InGenius mLight – OSF Solutions	http://www.osfsolutions.com/
External for Max – Cycling 74 (Windows, OS-X)	http://www.nullmedium.de/dev/dmxusbpro/
ShowMagic	http://www.showmagic.com/
White Cat Lighting Board	http://www.le-chat-noir-numerique.fr/
TJShow	http://www.tjshow.com/
LightsOn Framework (Mac OS-X)	http://www.usbdmx.com/LightsOn/
MADRIX – LED Lighting Control	http://www.madrix.com/
DMXControl	http://www.dmxcontrol.org/
vvvv – a multipurpose toolkit	http://vvvv.org/

MEDIA SERVERS / VJ

ArKaos MediaMaster Pro, MediaMasterExpress, Media Server	http://www.arkaos.net/category/index.php?catid=2
Modul8 (Mac OS-X)	http://www.modul8.us/
Resolume Avenue 3	http://www.resolume.com/
MXWendler FXServer	http://www.mxwendler.net/Product.4.0.html

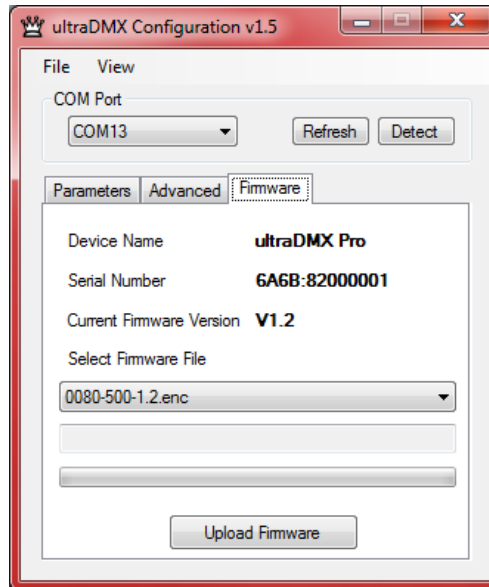## VISUALIZERS

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/

6. UPDATING FIRMWARE

A built in boot loader permits updating of the ultraDMX Pro firmware. Note only signed encrypted firmware files from DMXking.com can be successfully loaded to ensure you won't brick your device by accident.

FIRMWARE UPDATER

The ultraDMX Configuration utility includes a firmware updater function and the latest version contains all ultraDMX variant firmware files.

1. Close any applications that may be using the ultraDMX Pro unit.
2. Start the ultraDMX Configuration application.
3. Select the applicable COM port, you may have more than one ultraDMX unit connected however only one may be updated at a time.
4. In the Firmware tab the device Serial Number is displayed. Check this matches the device you planned to update.
5. Select the Firmware File – usually the most recent file which should automatically be displayed first.
6. Click the Upload Firmware button and observe progress bar. Programming takes around 15 seconds, be sure not to disconnect the ultraDMX unit during this process.

Future firmware releases for this product will be in the form 0080-500-VersionMajor.VersionMinor.enc

7. TECHNICAL SPECIFICATIONS

- Dimensions: 250x60x44mm (WxHxD)
- Weight: 0.45kg
- DMX512 connector: 5 or 3 pin XLR male and female.
- Internal DMX512 line termination on IN connector.
- USB connector: USB-B socket
- DMX512 Frame Rate and Break Timing: Adjustable
- 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 or telephone +64(9)3794836 (UTC+12)

9. COMMUNICATIONS PROTOCOL

The ultraDMX Pro uses ENTTEC's DMX USB Pro Widget API Specification 1.44 (as used for ENTTEC DMX USB Pro).

DMXking has added several extensions to cater for additional output universes and other product identification data.

Label = 100 Output Only Send DMX Packet Request Universe 1 on outputs 1 & 2 (same format as label 6)

Label = 101 Output Only Send DMX Packet Request Universe 2 on outputs 3 & 4 (same format as label 6)

When Label 6 data is received the ultraDMX Pro reverts back to standard mode and outputs 1 universe data on outputs 1,2,3&4.

All DMXking.com USB DMX units also support Device Manufacture and Device Name extensions as detailed here: http://www.opendmx.net/index.php/USB_Protocol_Extensions

10. DECLARATIONS (FCC & CE)

FEDERAL COMMUNICATIONS COMMISSION (FCC) DECLARATION OF CONFORMITY

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Responsible Party:      JPK Systems Limited
                        PO Box 493
                        Pukekohe 2340
                        New Zealand
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declares that the product ultraDMX 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

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        JPK Systems Limited
        PO Box 493
        Pukekohe 2340
        New Zealand
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declare under our sole responsibility that our product ultraDMX 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: 9 September 2011

Position: Managing Director