

# DMX-Dongle I I



## User Guide



**Artistic Licence Engineering Ltd.**

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# I N T R O D U C T I O N

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## **Quick Start**

Welcome to the DMX-Dongle User Guide. The guide is split into two Sections:

- Section 1: Installing the Dongle and Software applications
- Section 2: DOS Software

Please refer to the DMX-Dongle Developer's Guide for additional technical information. The Developer's Guide is available free of charge from the Artistic Licence web site.

The DMX-Dongle II is supplied with a sophisticated DMX512 analysis package called DMX-Workshop. This software is also compatible with the Artistic Licence range of Art-Net Ethernet products. Please see the DMX-Workshop User Guide for further details.

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## **Features**

The DMX-Dongle provides the following features:

- DMX512 transmission of 512 channel data.
- Programmable transmit Break, Mark after Break and Header Code
- DMX512 receive with programmable base address
- Receive 512 channels @ 8 bit resolution and full bandwidth
- Programmable Merge and Loop Through
- Programmable receive Header Code

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## INSTALLATION

The DMX-Dongle II is compatible with all recent Windows platforms including Windows 95, 98, ME, 2000, NT4 and XP. It is also compatible with MS-DOS and PC-DOS. Linux is not currently supported but is in development.

For Windows operation, you must install DMX-Workshop. This installs the device drivers, applications, DOS software and software development kit.

If you wish to use the DMX-Dongle on a DOS machine, you must install the software on a Windows machine and then copy the DOS applications to the MS-DOS machine. To do this, make a copy of all files in the folder:

*C:\Program Files\Artistic Licence\DMX-Workshop\DOS*

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### Windows 2000, NT & XP Users

The Windows 2000, Windows NT and Windows XP operating systems provide the concept of User Rights. This allows different users to be granted different access rights to the computer.

The highest level of access rights is called 'Administrator'. DMX-Workshop will NOT install correctly unless you are logged onto the computer with Administrator rights.

If your computer is part of a network, you must ask your system administrator to set the computer for Administrator rights.

If you are a single user, the following sequence shows how to change the settings:

Administrator  
Rights

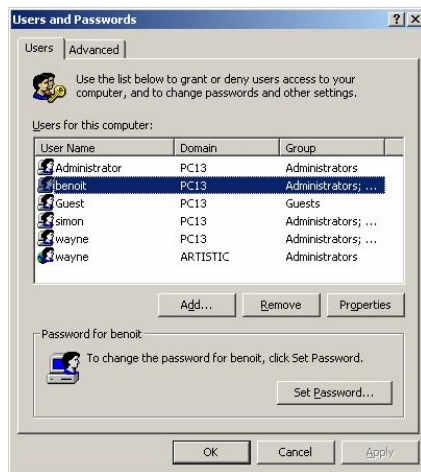
Administrator rights are set in the Windows Users & Passwords section:

To access this, select the Start Menu - Settings - Control Panel menu.



In the Control Panel, double click on the Users & Passwords icon. The following dialogue will be displayed:

Select the user who will install DMX-Workshop. In this example, it is Benoit. Then press the Properties button.

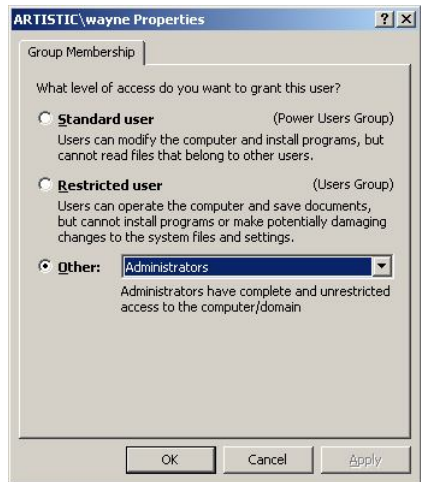


The following dialogue will then be displayed:

Select the 'Other' checkbox.

Select 'Administrators' from the pull down list.

Press OK. You should now restart Windows and then log on as the user name that you have edited.



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## Software

Installation DMX-Workshop is supplied on CD. To install use the following procedure:

If you are upgrading, first uninstall the existing copy of DMX-Workshop.

- Shutdown any applications running on your computer
- Insert the CD in drive.
- Wait for CD to start, then select 'Enter CD'.
- Select the 'Software' button.
- Select the 'DMX-Workshop' button.
- Install Shield will then guide you through the remainder of the procedure.

It is not important whether you install the software before or after connecting the DMX-Dongle II to your computer.

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## DMX-Dongle Installation

The DMX-Dongle must only be connected to your computer when it is switched off.

The Dongle connects to the parallel port (Printer port) of your PC. Most computers have a female DB25 connector for this purpose.

The following steps show how to correctly install the Dongle:

- Switch off the PC
- Disconnect your existing printer from the parallel port
- Plug the DMX-Dongle into the parallel port
- Disconnect your keyboard cable
- Plug the male Din connector of the Dongle into the PC keyboard connection
- Plug your keyboard into the DMX-Dongle.
- Ensure that the male DIN or MiniDin which is not used has the plastic cover connected
- Switch your computer back on

If you are using a laptop computer, there is no external keyboard to be reconnected.

The DMX-Dongle must be connected to the PC keyboard port for its power connection. It does not affect the operation of the keyboard nor does it disable the internal keyboard of a laptop.

You can connect to either the Keyboard or Mouse port.

If your PC does not have a PS2 port available, you can use a USB to PS2 adapter. This allows the DMX-Dongle II to be powered via the USB port. Such adapters are available from most computer shops or can be ordered from Artistic Licence.

In the unlikely event that your PC does not have a keyboard port, please contact Artistic Licence for details of external power supply options.

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## Quick Start

The DMX-Analysis software is a DOS program, which provides a comprehensive range of test facilities for receiving and transmitting DMX512 and DMX512-A. The feature set is comparable with the Artistic Licence Micro-Scope.

Whilst MS-DOS is now considered a very old operating system, it is worth considering this option. Almost any speed of computer running MS-DOS combined with the DMX-Dongle II will provide a very powerful test system.

The DOS software will run in a DOS window under Windows 95, 98 & ME but not on Windows 2000, NT or XP.

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## Running DMX-Analysis

The program is called DMX.EXE. To execute type the following:

**C:\DONGLE\ANALYSIS\DMX**

The directory can be added to your PATH statement, which will allow the program to execute from any directory. To do this add the following to the end of the PATH statement in your AUTOEXEC.BAT file:

**C:\DONGLE\ANALYSIS**

The program is now executed by typing:

**DMX**

If the Check program returned a different IO address you should add this as a command line extension. For example:

**DMX 0x278**

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## Receiving DMX512

The DMX program starts in receive mode.

The screen is split into two sections. The upper section shows the levels of 64 channels of received data. The lower section shows all the DMX512 timing and error information.

In receive mode the following keyboard controls are used:

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## Keyboard Commands

### HOME

Sets the channel display range to 1 - 64.

### END

Sets the channel display range to 449 - 512.

### PGDN

Selects the next channel display range. If the current range is 1 - 64 the next range will be 65 - 128.

### PGUP

Selects the previous channel display range. If the current range is 65 - 128 the previous range will be 1 - 64.

### F2 - Start

Selects a new receive start code. Only DMX512 frames with a matching start code will be displayed. Any frames which do not match are counted and displayed in the status window

### F3 - Base

Cycles through the available display bases for the channel levels.

These are decimal, hexadecimal and binary.

### F4 - Reset Counters

Clears to zero the Frame and Error counters in the status window.

### F5 - Transmit

Selects DMX512 transmit mode.

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**F7 - Mode**

This key cycles through the six available receive display modes:

- Receive: Displays numeric data for the selected start code.
- Min: Displays the lowest values received.
- Max: Displays the highest values received.
- Text: Displays DMX512-A text messages.
- SIP: Displays DMX512-A System Information Packets.
- RDM: Displays Remote Device Management Messages.

**F8 - Loop**

This key cycles through the three available loop modes:

- Off: DMX output is generated by the PC.
- On: The DMX output connects to the DMX Input.
- Mge: The PC output and the DMX input are HTP merged to the output.

**F10 - Exit**

Exit to Dos.

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## Status Window

The Status window provides the following information:

### Chan

The number of channels received in the last DMX frame. This number may vary from 1 - 512 depending on the transmitting console. It should however remain stable at a particular value

### Period

The repeat time of the last two consecutive DMX frames. This value shows how fast the console is transmitting information. As the value increases beyond 50mS you will start to notice lamp fades become 'lumpy'. The actual value will depend on the console but should be about 25-30mS.

### Refresh

The refresh rate is the reciprocal of the period. It is measured in Hz and therefore shows the number of DMX frames received per second. It should be in the range 30Hz to 40Hz.

### Break

The length of the break signal. The break signal is used to synchronise frames of DMX data. The specification requires this value to be greater than 88uS. The actual value is console dependent but usually in the range 100uS to 300uS. A value of less than 88uS shows that a problem exists with the transmitting console.

### MaB

The Mark after Break length. The MaB is the time delay between the end of the break signal and transmission of the header code. The specification requires this value to be greater than 8uS. The actual value is console dependant but usually about 20uS. Prior to the 1990 upgrade to the DMX512 specification a MaB time of 4uS was allowed. This was changed because it put an unnecessarily onerous demand on the receive electronics. Modern receivers may not receive DMX with a MaB time of less than 8uS.

### Start

The Header code is in theory used to identify the type of data contained in the DMX512 frame. In practice almost all manufacturers use a zero header code irrelevant of the intended destination of the DMX signal.

The Header code can be programmed with the F3 key. DMX-Analysis will only display data with a matching header code.

If your DMX signal contains data with different header codes, you can investigate the data using this field and also the Bad Header count in the Error Log.

**Packet Count**

The Packet count shows how many DMX frames with a matching Start Code have been received since the last Reset Counters (F4) command. When good DMX is being received, this field should be incrementing.

**Other Start**

The Packet count shows how many DMX frames with a non-matching Start Code have been received since the last Reset Counters (F4) command.

**Error Log - Framing**

The Framing count shows how many DMX frames with a framing error, have been received since the last Reset Counters (F4) command. In normal operation this field will display zero. If framing errors are being received it is almost always due to bad cable or incorrectly terminated DMX512 lines.

**Error Log - Overrun**

The Framing count shows how many DMX frames with an overrun error, have been received since the last Reset Counters (F4) command. In normal operation this field will display zero. If overrun errors are being received it is almost always due to bad cable or incorrectly terminated DMX512 lines.

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## **Transmitting DMX512**

The DMX transmit mode is selected with the F5 key. Transmit mode allows 50 memories to be programmed. Each memory contains level information for all 512 channels plus a legend to describe the purpose of each memory. The memories can be saved to your hard disc in order that commonly used patterns may be retained.

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## **Keyboard Commands**

### **CURSOR keys**

Move the cursor to select a new edit channel.

### **HOME**

Sets the channel display range to 1 - 64.

### **END**

Sets the channel display range to 449 - 512.

### **PGDN**

Selects the next channel display range. If the current range is 1 - 64 the next range will be 65 - 128.

### **PGUP**

Selects the previous channel display range. If the current range is 65 - 128 the previous range will be 1 - 64.

### **0-9**

Enter a new level for the cursor channel. The new level is transmitted to the DMX output as it is entered.

### **F3 - Base**

Cycles through the available display bases for the channel levels. These are decimal, hexadecimal and binary.

### **F6 - Receive**

Selects DMX512 receive mode.

### **F8 - Save**

Saves all memories to a specified file. DMX-Analysis automatically adds the .dmx extension to your filename.

### **F9 - Load**

Load all memories from a specified file. DMX-Analysis automatically adds the .dmx extension to your filename.

<

Select the previous memory number and output to DMX.

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>

Select the next memory number and output to DMX.

**M**

Enter a memory number in the range 1 to 50.

**L**

Select the legend entry window to enter a name for current memory.

**F10 - Exit**

Exit to Dos.

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## Artistic Licence

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24 Forward Drive  
Christchurch Avenue  
Harrow  
Middlesex  
England  
HA3 8NT

Tel: +44 (0)20 88 63 45 15

Fax: +44 (0)20 84 26 05 51

Email: [Sales@ArtisticLicence.com](mailto:Sales@ArtisticLicence.com)



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