# nexus

Nexus 1

Nexus 5 Rack Mount

Nexus 5 Truss Mount

# Ethernet / DMX Interface & NexLan Software
# User Manual

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# Contents

## 1    Introduction

### 1.1    Conventions used in this Manual

Throughout this manual, certain conventions have been used to make the meaning clearer.
- A word in **Bold** text represents a button
- Emphasis is indicated by underlining
- *Notes or Hints are displayed in italic fon*t

### 1.2    Overview

DMX is the industry standard for the transmission of digital control signals between lighting equipment. The DMX512 specification defines that it can convey 512 channels on a single cable. This is defined as 1 DMX Universe.

Many setups and installations require multiple universes so rather than running multiple cables (one for each universe), protocols have been developed that allow multiple universes to be transmitted over a standard Ethernet network. Two such protocols are:
- ArtNet.
- sACN (developed by ESTA)
- Shownet

The NEXUS range offers conversion between DMX512A and RDM signals to/from Ethernet and currently supports Art-Net, Streaming ACN (sACN) and Shownet ethernet protocols.

Much more than your standard converter, the NEXUS range of both 1 and 5 port interfaces allows many other options such as a protocol conversion tool for today's demanding shows.

The Nexus units are configured by the free NexLan software. The computer can also be used to monitor the network operation and to test lighting fixtures by sending DMX signals to the network for testing purposes.

### 1.3    Features

Using the free NexLan v2.1 software, any NEXUS DMX port can be configured to operate in a number of modes such as:
- Standard DMX512A/RDM output from a selected Art-Net, Shownet or sACN Universe.
- HTP merge of three (3) selected Art-Net, Shownet or sACN Universes.
- SoftPatch merge of three (3) selected Artnet, Shownet or sACN Universes. Select three (3) universes and merge individual slots using HTP, Priority, Control or Fade.
- Back-up. Assign an output to a Primary and a Secondary Universe. Auto switches from Primary to Secondary on loss of the Primary Universe.
- Resend. Any merged port can be resent as a new Art-Net/Shownet/sACN Universe.
- DMX input. Send a standard DMX port to an Art-Net/Shownet/sACN Universe.
- DMX Backup. A special input that is only activated if the selected Main Universe is not present.
- Full RDM control of a rig via Nexus Software or Art-Net RDM

This flexibility of configuration permits some very useful functionality such as:
- A simple Art-Net/Shownet/sACN to DMX512 converter.
- A Back-up switch for multiple Lighting Controllers.
- A DMX512 to Art-Net/Shownet/sACN converter.
- A DMX512/RDM Splitter.
- A DMX512 Backup.
- An Art-Net Backup.
- Merging of multiple universes on a channel by channel basis.

## 1.4   Nexus 1

Nexus 1 is an Ethernet (Art-Net/Shownet/sACN) / DMX, bidirectional interface with 1 Ethernet port and 1 DMX port. It is powered via "PoE" (Power over Ethernet).

## 1.5   Nexus 5

Nexus 5 is an Ethernet (Art-Net/Shownet/sACN) / DMX bi-directional interface with 2 Ethernet ports and 5 DMX ports (that can be configured as a DMX splitter). It is mains powered and is available in either rack mount or truss mount housings.

## 1.6   Nexlan Software

The NexLan software is used to configure and monitor the Nexus range of products.
The software is only necessary when you configure the Nexus products however you may also use it to monitor the system and to control and test lighting fixtures without the presence of a lighting console.

The software is a free download and is available on these platforms:
- Windows (XP and Vista).
- Apple Mac OS X (10.4 and up as universal binary).

The NexLan software and how to connect to the network is fully described in section 5 of this manual.

### 1.6.1       Version 2.1

Version 2 of Nexus is a major upgrade supporting many new features including "triple merge per port" and full sACN, and RDM support.
Version 2.1 includes support for Shownet and Vision.net. See the Strand lighting website for details on Shownet and Vision.net.

Nexus units will only operate on version 2 of the Nexlan software when the Nexus firmware is version 2. If you have any old Nexus units that are still using version 1 of the firmware you must upgrade them to version 2. There are separate firmware upgrades for the Nexus 1 and the Nexus 5. These firmware updates can be downloaded from www.lsccontrol.com.au

Updating the Nexus firmware is performed using the "Firmware Update.exe" software that is included in the Nexlan download.

*Note: Upgrading the Nexus firmware to version 2 will destroy the configuration inside the Nexus. Backup before installing the update.*

See section 8 for details on how to upgrade the firmware.

CONTROL SYSTEMS

## 2    Nexus Units

### 2.1   Nexus 1



DMX Port
DMX LED
Mode Button
Ethernet Port
Ethernet LED
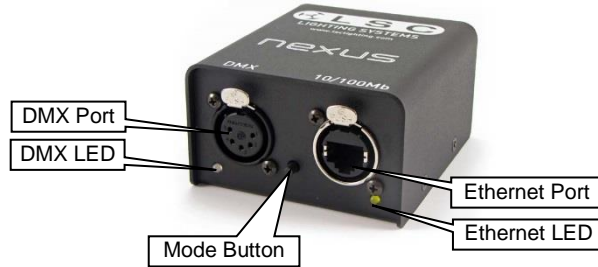
#### 2.1.1      Ethernet Port

The Ethernet port uses standard UTP network connections to an internal 10/100 Mbit Ethernet transceiver. The port has MDIX auto sensing which means that cross over cables are not required.

This connection must also supply PoE (Power over Ethernet) to the Nexus 1.

Both versions of PoE (data-pairs/spare-pairs) are supported. Devices (such as network switches) that provide PoE are available from most computer suppliers.

#### 2.1.2      Ethernet LED

Indicates data activity on the Ethernet port.

#### 2.1.3      DMX port

The XLR5 female DMX port is bidirectional (via programmable setup) with an internal terminator resistor and is RDM (Remote Device Management) ready.

| Pin | Description |
|-----|-------------|
| 1 | Ground/Screen |
| 2 | Data - |
| 3 | Data + |
| 4 | - |
| 5 | - |

#### 2.1.4      DMX LED

The DMX LED indicates data direction and activity on the DMX port as indicated below:

| LED Condition | DMX Data |
|---------------|----------|
| Off | No input or output DMX data |
| Green | The port is configured as an OUTPUT and is sending DMX data. |
| Orange | The port is configured as an INPUT and is receiving DMX data. |

#### 2.1.5      Mode Button

See section 2.3 for details.

### 2.2   Nexus 5



MODE Button & LED
Power LED
5 DMX Port LEDs
2 Ethernet Port LEDs
2 Ethernet Ports
5 DMX Ports
Truss Mount Nexus 5
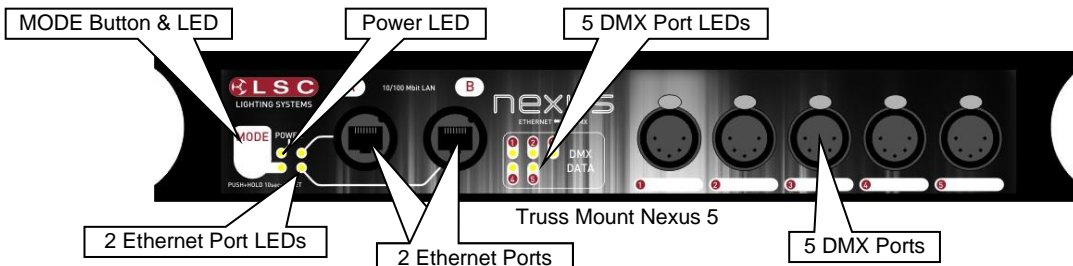
Rack Mount Nexus 5

### 2.2.1 Ethernet Ports

The two Ethernet ports use standard UTP network connections to an internal 10/100 Mbit Ethernet switch. The ports have MDIX auto sensing which means that cross over cables are not required.

### 2.2.2 Ethernet LEDs

Each LED indicates data activity on its Ethernet port.

### 2.2.3 DMX ports

The five XLR5 female DMX ports are <u>fully isolated</u> bidirectional (via programmable setup) and each have an internal terminator resistor. They are RDM (Remote Device Management) ready.

| Pin | Description |
|-----|-------------|
| 1 | Ground/Screen |
| 2 | Data - |
| 3 | Data + |
| 4 | - |
| 5 | - |

### 2.2.4 DMX LEDs

The DMX LEDs (1 to 5) indicate data <u>direction</u> and <u>activity</u> on their respective DMX ports (1 to 5) as indicated below:

| LED Condition | DMX Data |
|---------------|----------|
| Off | No input or output DMX data |
| Green | The port is configured as an OUTPUT and is sending DMX data. |
| Orange | The port is configured as an INPUT and is receiving DMX data. |

### 2.2.5 Mode Button

See section 2.3 for details.

### 2.2.6 Mode LED

The Mode LED indicates that the Nexus is performing internal operations.

### 2.2.7 Power

Power input is 85-264 VAC 47-440 Hz 10VA max. A mains input IEC connector is provided at the rear of the unit. The input is protected by a T0.5A Slow Blow fuse.

## 2.3 Mode Button

There is a single button on all Nexus models. This button has 3 functions:

### 2.3.1 Select

In setups where there are multiple Nexus units on the network you can use the button on the Nexus to identify that Nexus in the NexLan software.
A momentary press of the button will cause that Nexus to become the "selected" device in the NexLan software. This is most easily observed in the "Plan" window by a box appearing around the Nexus icon when its button is pressed.

See also the "Identify" function in the NexLan software which will flash the LED indicators of a Nexus to identify it.

### 2.3.2      Defaults

Press and hold the button on the Nexus for <u>10 seconds</u>. This will reset the Nexus to the default settings that are listed below:

<u>Nexus 1</u>

| DMX Port | Input/Output | Mode | Universe |
|---|---|---|---|
| 1 | Output | Single | 0.0 |

<u>Nexus 5</u>

| DMX Port | Input/Output | Mode | Universe |
|---|---|---|---|
| 1 | Output | Single | 0.0 |
| 2 | Output | Single | 0.1 |
| 3 | Output | Single | 0.2 |
| 4 | Output | Single | 0.3 |
| 5 | Output | Single | 0.4 |

<div style="background-color:#b22222; color:white;">

**3    Typical Applications**

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The Nexus products are highly configurable and can be used in a multitude of applications. Every port can be configured as either an input or an output and DMX universes can be merged in a variety of ways. When a DMX port is configured as an output you can assign either one, two or three ArtNet or sACN universes to it and merge them as you require. All configuration is performed via the NexLan software.

The following examples show some typical applications for Nexus 1 units and Nexus 5 units. You can also use combinations of Nexus 1 and Nexus 5 units to create you required configuration.

## 3.1  Typical Nexus 1 applications

### 3.1.1     ArtNet or sACN to DMX converter
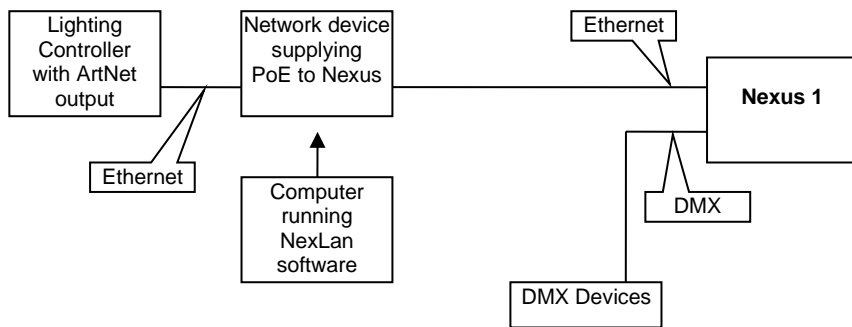
The lighting controller outputs ArtNet or sACN and the Nexus 1 outputs. The computer is only required for configuration of Nexus but can also be used to monitor the network if required.
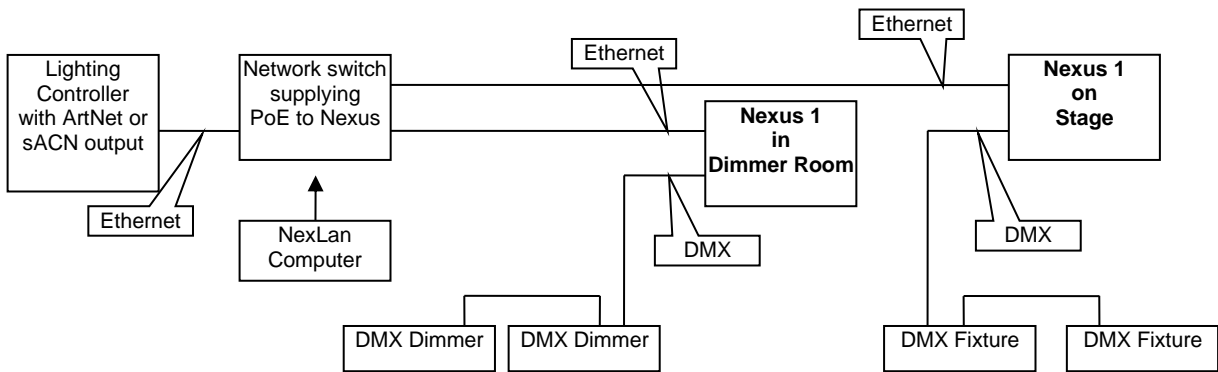
ArtNet or sACN distributed via Ethernet to multiple locations where Nexus 1 units provide DMX to operate lighting equipment.

### 3.1.2 Back-up switching of Lighting Controllers
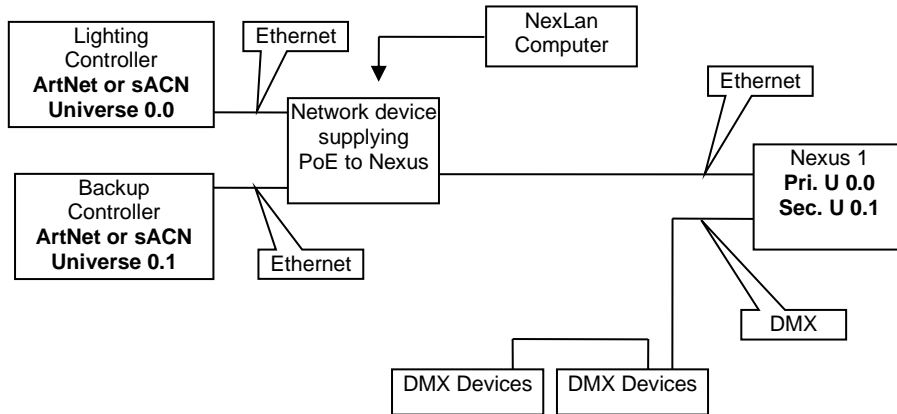


Main and backup lighting controllers have ArtNet, sACN or Shownet outputs on different universes. Nexus 1 receives both universes and the DMX output port is configured for Priority Mode which will auto changeover from primary to secondary on loss of the primary universe. Nexus can also accept a tertiary universe that can be configured as a third backup.

### 3.1.3 DMX to ArtNet or sACN converter
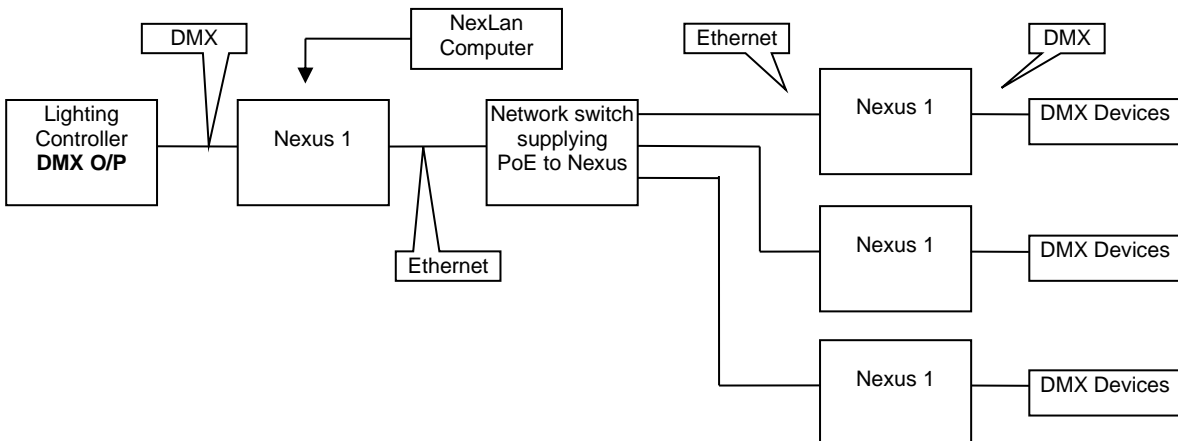


Nexus converts the DMX to the ArtNet or sACN or Shownet universe that you specify. ArtNet, sACN or Shownet is distributed throughout the facility using low cost Ethernet infrastructure. Multiple Nexus 1 units provide DMX to operate lighting equipment.

## 3.2   Typical Nexus 5 applications

### 3.2.1       ArtNet or sACN to DMX converter
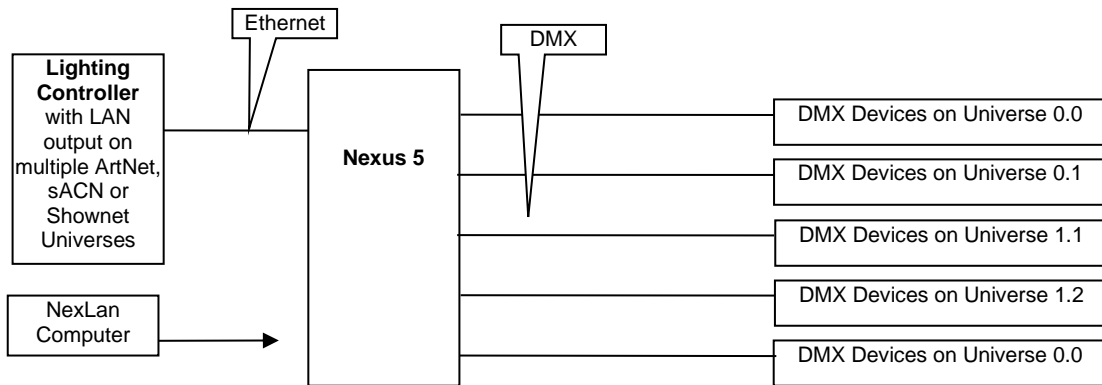


The lighting controller outputs multiple universes via Ethernet. Nexus provides 5 DMX outputs, each individually configurable to provide a DMX output of its specified universe.

### 3.2.2       DMX Splitter
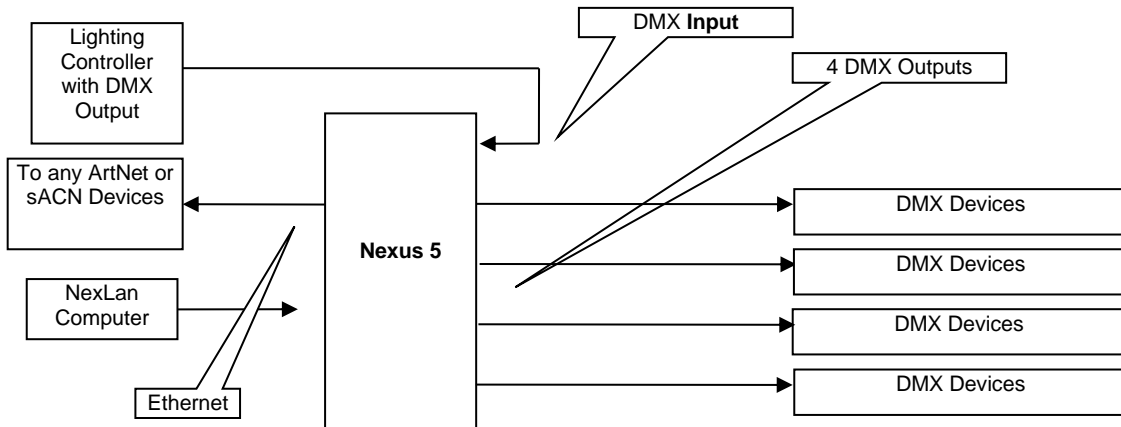


One DMX port is configured as an Input and assigned to a universe. The remaining 4 DMX ports are configured as outputs of the same universe. The LAN output also provides an ArtNet or sACN or Shownet output of the DMX input.

### 3.2.3     DMX Backup
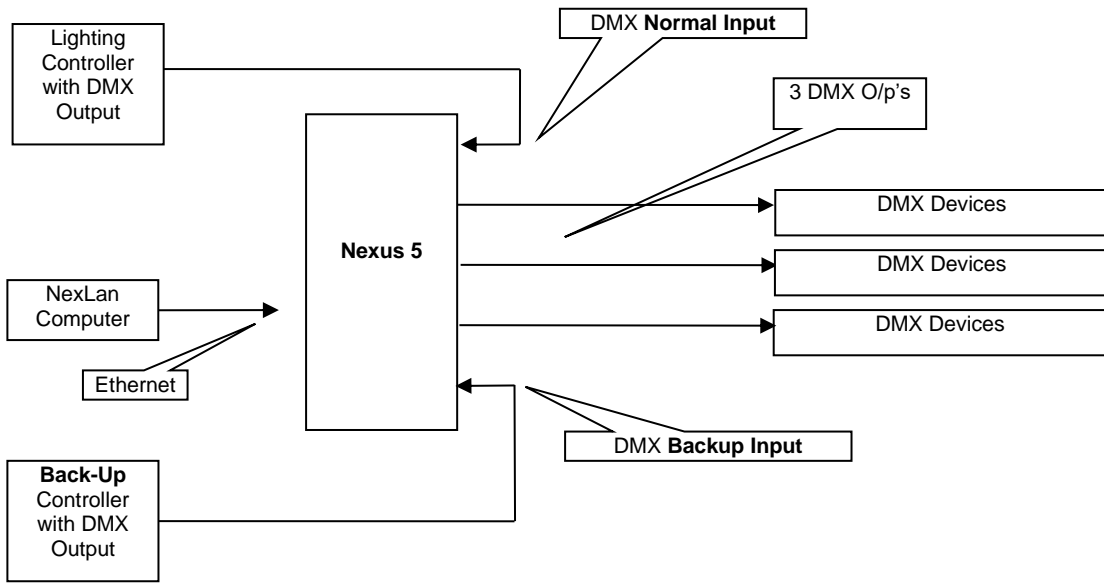


2 ports are configured as <u>inputs</u>. One is configured as a "normal" input and the other as a "backup" input. Both are on the same universe. The Nexus will only output the "normal" input but if the normal input is not present it will automatically output the "backup" input.

### 3.2.4     Ethernet Backup
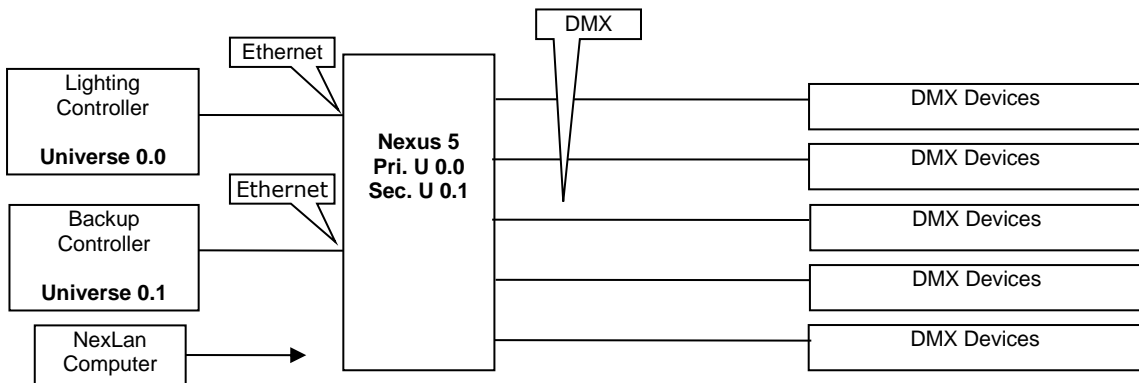


Main and backup lighting controllers have ArtNet, sACN or Shownet outputs on different universes. DMX output ports are configured for Priority Mode which will auto changeover to secondary on loss of the primary universe. Nexus can also accept a tertiary universe that can be configured as a third backup.

### 3.2.5 Automatic Control Switching
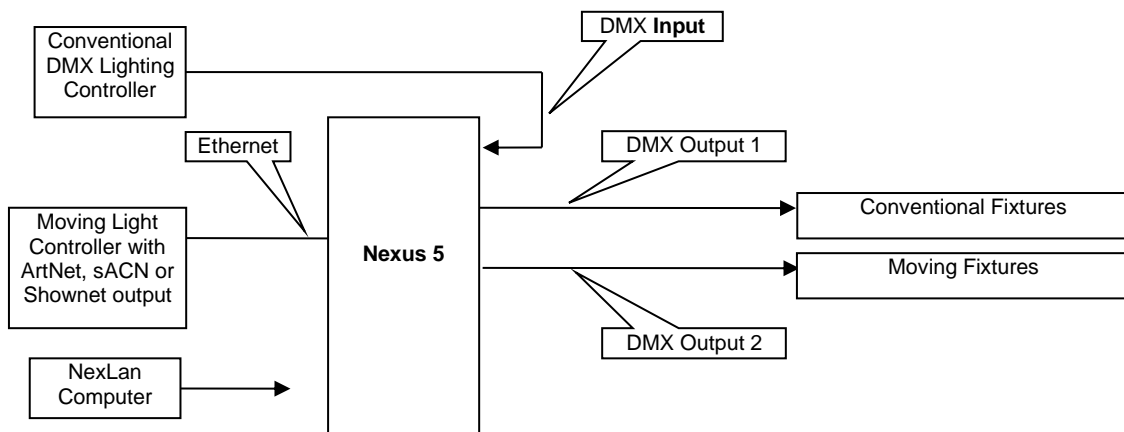


This setup allows a conventional lighting controller to control all fixtures. However, if a specialized "moving light" controller is connected it will automatically control the moving fixtures.
If the conventional controller is removed, the moving light controller will automatically control all fixtures.

The two DMX output ports on the Nexus 5 are configured in "Priority" mode and their "Primary" and "Secondary" universes are set as follows…

| DMX Output Ports | Primary source | Secondary source |
|---|---|---|
| DMX 1. Conventional Fixtures | Conventional Controller | Moving Light Controller |
| DMX 2. Moving Fixtures | Moving Light Controller | Conventional Controller |

The control system automatically operates as follows…
- o If only the Conventional Lighting Controller is present, it controls all fixtures.
- o If both controllers are present, the Conventional Lighting Controller controls the conventional fixtures and the Moving Light Controller controls the Moving fixtures.
- o If only the Moving Light Controller is present it, controls all fixtures.

### 3.2.6 HTP Merging
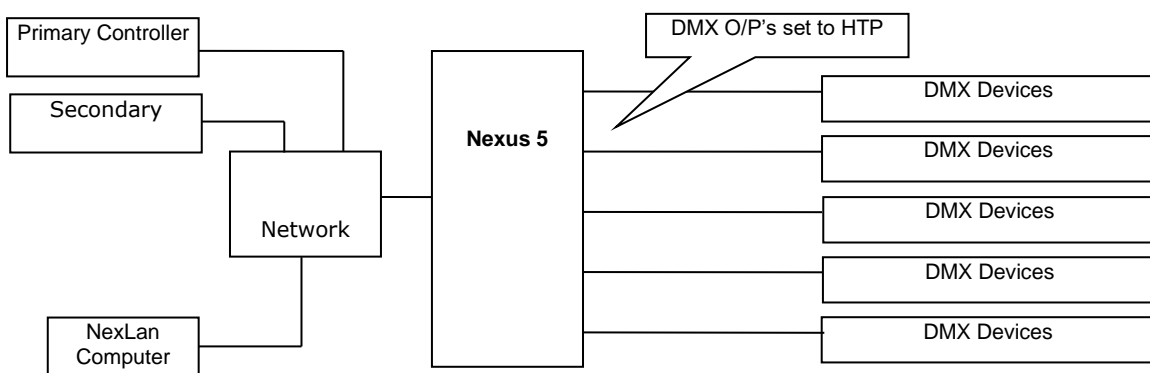


This setup merges the outputs of the two lighting controllers on a HTP (Highest Takes Precedence) basis. A tertiary controller can also be HTP merged.

### 3.2.7      Softpatch Merging
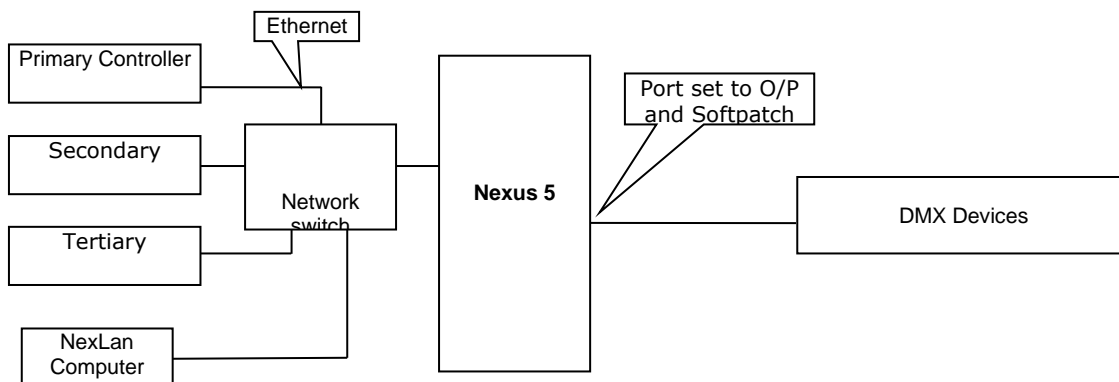


Softpatch merging is a very powerful tool. Use the Nexlan software to configure each Nexus port as an output and set its "Output Mode" to "Softpatch". In the "softpatch" you can specify different types of merges on a channel by channel basis. The DMX output for each channel can be either:

- "**Primary**", the channel will output the selected Primary input channel. For example, primary input channels 1 through 100 might be output on channels 101 to 200.
- "**Secondary**", the channel will output the selected Secondary input channel. For example, secondary input channels 1 through 100 might be output on channels 1 to 100.
- "**Tertiary**", the channel will output the selected Tertiary input channel. For example, tertiary input channels 1 through 100 might be output on channels 201 to 300.
- "**HTP**" (Highest Takes Precedence), the channel will output the highest value of the Primary, Secondary and Tertiary input channels.
- "**HTP Max**", the channel will output the highest value of the Primary and Secondary input channels with the Tertiary channel acting as a Grand Master setting the maximum output level.
- "**Control**", the channel will output the Primary input or the Secondary input or both (HTP) depending upon the value of the Tertiary (Control) Channel. Tertiary @ 0% = Primary, Tertiary @ 50% = Both (HTP) and Tertiary @ 100% = Secondary Channel. For example, you could use a DMX channel on your lighting console to switch the output of a Nexus DMX port between the lighting console output (on the primary universe) and a media server output (on the secondary universe).
- "**Fade**", the channel will crossfade between the Primary and Secondary channels with the Tertiary acting as a crossfade control channel.

## 4    DMX Port Options

### 4.1   Overview

The NexLan software allows you to configure the Nexus devices to your requirements. The software is fully described in section 5. You can configure each DMX port on a Nexus as Disabled, Output or Input.

### 4.2   DMX port as an Output

When a DMX port is configured as an <u>output</u>, you can select the working mode of that port and which universe(s) it will output. The modes are:

- **Disabled** - The DMX port is disabled.
- **Out Zero** – The DMX port sends a valid DMX signal with all values at 0 (useful as test signal).
- **Single** - The DMX port will send the selected (primary) universe. If the selected universe on the network fails, the DMX port will hold the last DMX signal (programmable hold time).
- **Priority** - Define a "Primary", a "Secondary" and optionally a "Tertiary" universe for the DMX output port. As long as the primary universe is active, then it will be on the output. If the primary fails, then the output will switch to the secondary universe. If the primary returns it will switch back. If both the primary and secondary universes are lost then the output will switch to the tertiary universe. This setting provides an <u>automatic backup</u> in the event of the Primary and or Secondary universes fails. If a higher priority universe returns it will switch back to it.
- **HTP** - The DMX port output is a HTP (Highest Takes Precedence) merge of 3 selected universes (Primary, Secondary and Tertiary).
- **Softpatch** -
  The DMX port output for <u>each channel</u> can be from any input or merged or set to a fixed value and/or cross patched to another channel.

**Resend** - Each DMX port can only merge 3 universes. If the "Resend" option is selected, this merged DMX output is sent back into the network as a new universe. This new (merged) universe can now be used to merge with another universe on another DMX port thus creating more merges".

**Rate** - The specified data rate for DMX is 44fps (frames per second) however equipment from some manufacturers will not operate reliably at this rate. If this is the case you can select a lower output rate for the DMX port which might provide more reliable operation.

**Hold** - If the DMX signal is lost, the DMX output port will hold the last values. The hold time for each port can be set.

### 4.3   DMX port as an Input

When a DMX port is set up as an <u>input</u>, you can select the working mode of that port and which universe to use. The modes are:

- **Disabled** - The DMX input is disabled.
- **Normal** - When the DMX port receives valid DMX data it will send the DMX data into the network using the universe that you specify.
- **Backup** – Specify a universe on which to input the DMX signal. If the specified universe is already present on the network, the Nexus will not send its data onto the network. If the specified universe is not present or fails for several seconds (and the input has valid DMX signal) the DMX port will send its DMX data onto the network on the specified universe. If the universe returns or another sender starts sending the same universe, the input will return to backup monitoring mode.

## 5   NexLan Software

### 5.1   Overview

NexLan" software is used to both configure and control the LSC Nexus 1 and LSC Nexus 5 units and to monitor the lighting network. It can also be used to test and control lighting fixtures. After the initial setup, the software is not required for the operation of the lighting network but can be used as a tool to monitor the network. The software is a free download from www.lsccontrol.com.au

This manual covers version 2.1 of the Nexlan software. Nexus units will only operate on version 2 (or higher) of the Nexlan software when the Nexus firmware (stored in each Nexus unit) is version 2. If you have any old Nexus units that are still using version 1 of the firmware you must upgrade them to version 2. There are separate firmware upgrades for the Nexus 1 and the Nexus 5. These firmware updates can be downloaded from www.lsccontrol.com.au. See section 8 for details on how to upgrade the firmware.

The screen shots used in this manual are from the Windows version of the software.

### 5.2   Software Setup

#### 5.2.1   Windows

Download the NexLan software for windows from the website (www.lsccontrol.com.au) and unzip the file. Run the setup.exe program and follow the instructions.

#### 5.2.2   Apple Mac OS X

Download the NexLan software for Mac from the website (www.lsccontrol.com.au) and unzip the file. Copy the NexLan folder to the Applications directory.

### 5.3   Network Settings On Your Computer

Configure your network for static IP addresses. The IP address of the computer running the NexLan software needs to be set to the ArtNet range:

- IP address 2.0.x.x (where x is a value between 1 and 254)
- Subnet mask 255.0.0.0

All other devices connected to the network must have the same Subnet mask but have a different (unique) IP address in the ArtNet range.

For example:

The computer running the NexLan software has an IP address of 2.0.0.1

Three Nexus units on the network have IP addresses of 2.0.0.2, 2.0.0.3 and 2.0.0.4

## 5.4   Basic Software Description

*Note: See section 7 for detailed descriptions of the software.*

The screen has a menu bar and 4 windows:
1.   Main window.
2.   Toolbar window.
3.   Properties window.
4.   Control window.
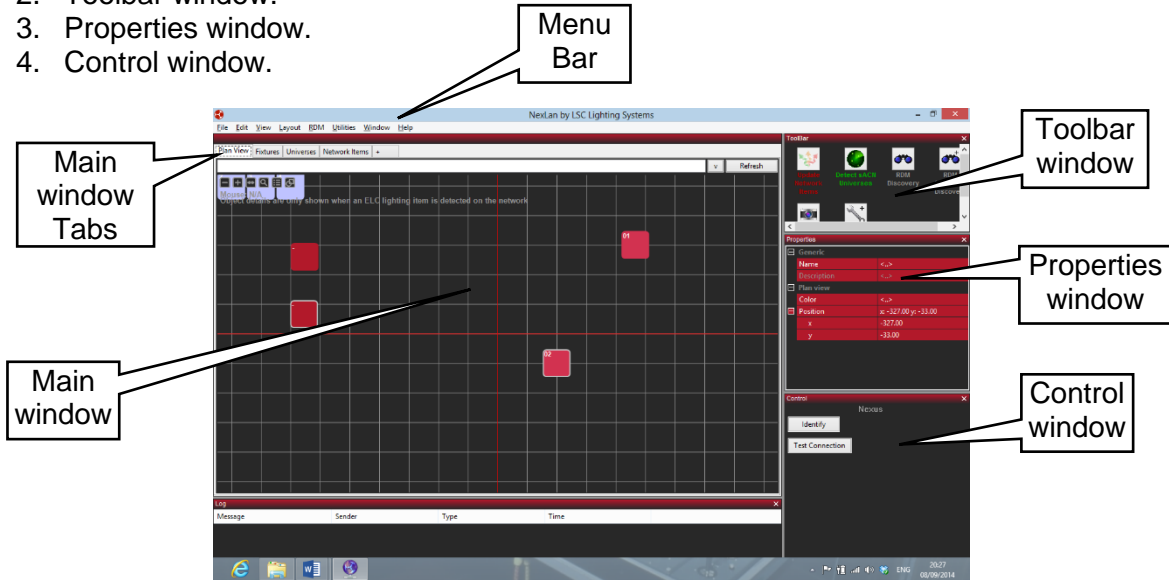


The "Main window" has tabs for "Plan View", "Fixtures", "Universes", "Network Items" plus you can add your own custom tabs. If you select (click on) any items in the Main window you can then use the "Property window" or the "Control window" to configure or control the selected item.

The Nexlan software can be use on-line or off-line.

### 5.4.1      On-line.

On-line is where Nexlan is connected to your lighting network together with all of your lighting devices (lighting controllers and Nexus units). When you open the Nexlan software it will automatically find any devices (lighting controllers and Nexus units) connected to the network plus all of the universes that are present and display them in the main window.

### 5.4.2      Off-line

Off-line is where you are pre-configuring your setup before connecting it to the network. Typically, this is performed off site when you are planning a lighting network. When you open the Nexlan software you need to manually add the Nexus units and the universes that will be present when you eventually connect to the network. You can then setup all of the configurations for each device and universe. Pre-configuring can save you programming time by having most of your settings configured, ready for when you arrive on site and connect to the network. See section 7 for details on how to manually add Nexus units and universes.

### 5.4.3      Fixtures

Fixtures can also be manually added and controlled from Nexlan. This is useful for testing the lighting rig without the need for a lighting controller. See section 7.13 for details on how to add fixtures and section 7.7.2 for details on how to control them.

# 6   Configuring a Nexus

When Nexus units are shown in the main screen they can be configured to your requirements. Nexus units are listed as "Network Items". You can see them in the "Network Items" tab and also in the "Plan View" tab.
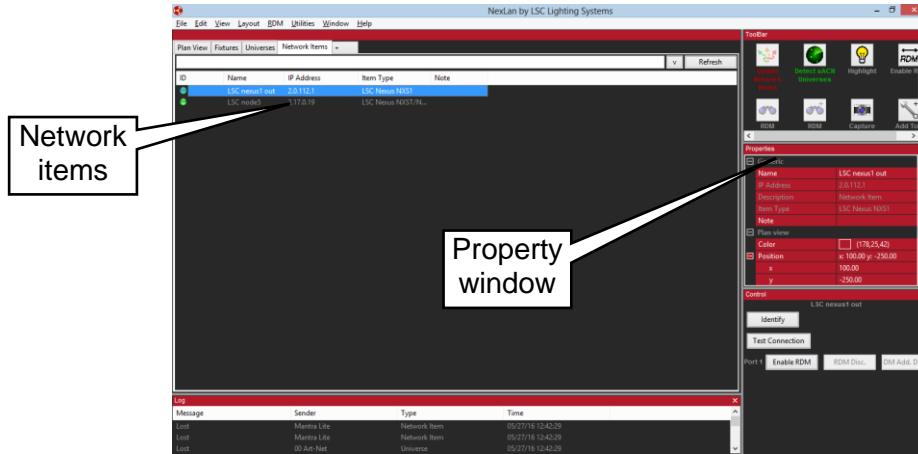


When you click on a network item (a Nexus unit), the "Property" window shows the settings for that device and allows you to change the device settings for your specific requirements. You can set each DMX connector to be either an input or an output and also set the universe for that connector. You can also set many other parameters as described below.
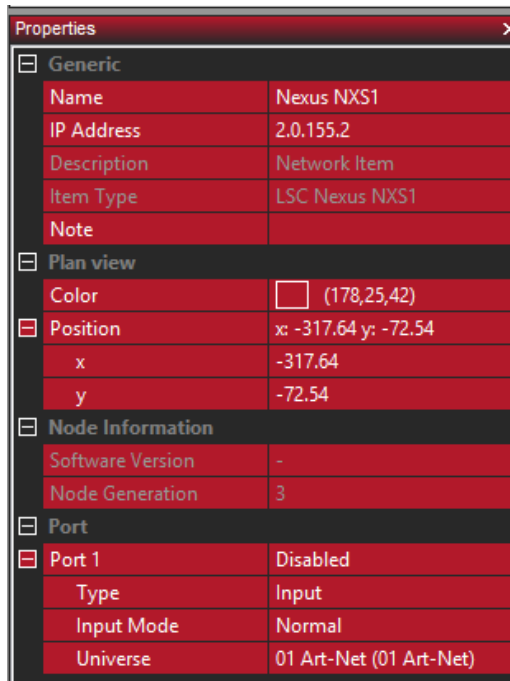


Properties of the selected Nexus unit

The property window has headings for the various properties of the selected device:
- Generic
- Plan View
- Node Information
- Port

Each heading can be expanded or contracted by clicking on its +/- button.

### 6.1.1    Generic

Each device can be given a meaningful name by clicking on the existing name and entering a new name.

### 6.1.2    Plan View

The icon colour (used in the Plan tab) can be changed by clicking on "Color" line and then on the three dots that appear and selecting a colour from the colour picker.

### 6.1.3    Port

If the selected device is a Nexus 1 or Nexus 5 then the Property window will display the DMX Port information for that device.

Clicking the [**+**] box beside each DMX port name expands the display to show the properties of that port. It shows the port number and its type. The settings and options below this will change depending upon the current settings in the "Type" field.

**Type** - Clicking in the Type area reveals a drop-down box from which you can select the DMX port to be either "Disabled", "Input" or "Output".
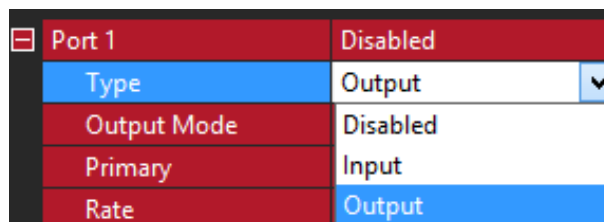


### 6.1.4    DMX Input Options

If the DMX port "Type" is set as an <u>Input</u>, then the following "Mode" options are available:

- **Disabled** - The port does nothing.

- **Normal** - When the DMX port receives valid DMX it will send the DMX data into the network using the "Universe" that you specify. Clicking in the "Universe" field reveals a drop down box from which you can select the universe.
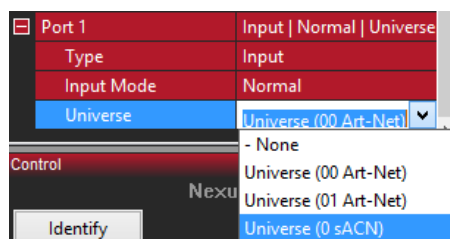


> *Note: If no universes are available or are already in use, you will need to <u>create</u> a new universe on which to "input" the data from the DMX port. To do this, right click in the DMX Universe window and select [**Add DMX Universe**] and assign an unused universe ID. When the new universe appears in the Universe Window, click on it to activate it. Now return to the Network window and click on the Nexus that you are programming. In the Property window, your new universe will now be available as a destination for your DMX port.*

- **Backup** – When "Backup" is selected, clicking in the "Universe" field reveals a drop down box from which you can select a universe. The DMX input will not send its data onto the network if the universe that you specify is already present on the network. If the specified universe is not present or fails for several seconds (and the input port has a valid DMX signal) this port will send its DMX data onto the network on the same

universe. If the universe returns or another sender starts sending the same universe, the input will return to backup monitoring mode.

### 6.1.5     DMX Output Options

If the DMX port "Type" is set as an <u>Output</u>, then the following "Mode" options are available:

- **Disabled** - The DMX output is silent; no DMX signal is outputted.

- **Out Zero** – The DMX output sends a valid DMX signal with all values at 0 (useful as test signal).

- **Single** - The DMX port will output the selected (primary) universe. Clicking in the "Primary" field reveals a drop down box from which you can select the Primary universe to be output on this DMX port.
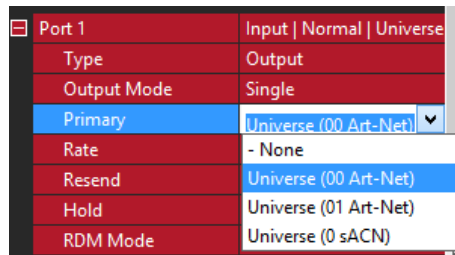
| Port 1 | Input \| Normal \| Universe |
|---|---|
| Type | Output |
| Output Mode | Single |
| Primary | Universe (00 Art-Net) ▾ |
| Rate | - None |
| Resend | Universe (00 Art-Net) |
| Hold | Universe (01 Art-Net) |
| RDM Mode | Universe (0 sACN) |

- **Priority** - Define a "Primary", a "Secondary" and optionally a "Tertiary" universe for the DMX output port. As long as the primary universe is active, then it will be on the output. If the primary fails, then the output will switch to the secondary universe. If the primary returns it will switch back. If both the primary and secondary universes are lost then the output will switch to the tertiary universe. This setting provides an <u>automatic backup</u> in the event of the Primary and or Secondary universes fails.

| Port 1 | Input \| Normal \| Universe |
|---|---|
| Type | Output |
| Output Mode | Priority |
| Primary | Universe (00 Art-Net) |
| Secondary | Universe (01 Art-Net) |
| Tertiary | - None |
| Rate | Sync |
| Resend | - None |
| Hold | Always |
| RDM Mode | Get Automatically |

Clicking in the "Primary" field reveals a drop down box from which you can select the Primary universe. Clicking in the "Secondary" field reveals a drop down box from which you can select the Secondary universe. Clicking in the "Tertiary" field reveals a drop down box from which you can select the Tertiary universe.

*Note: The DMX output will start sending DMX after it has detected any 1 of the 3 universes.*

- **HTP** - The DMX port output is a HTP (Highest Takes Precedence) merge of 3 selected universes (Primary, Secondary and Tertiary).
- **Softpatch** -
The DMX port output for <u>each channel</u> can be from any input or merged or set to a fixed value and/or cross patched to another channel.

When "Softpatch" is selected, the "Softpatch" field appears:
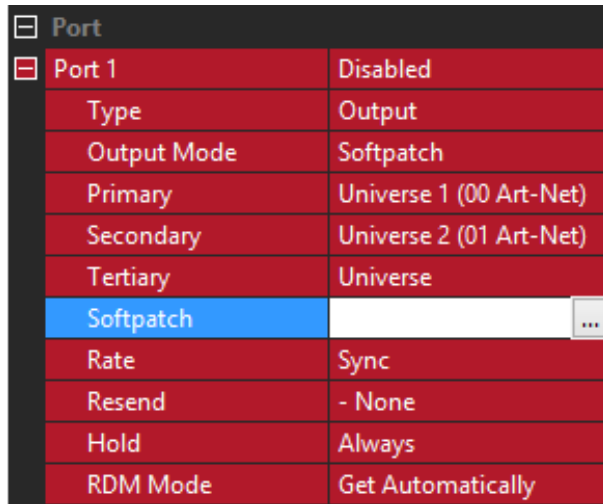
Click in the "Softpatch" field then click on the [...] button. This will open the "Softpatch" window:
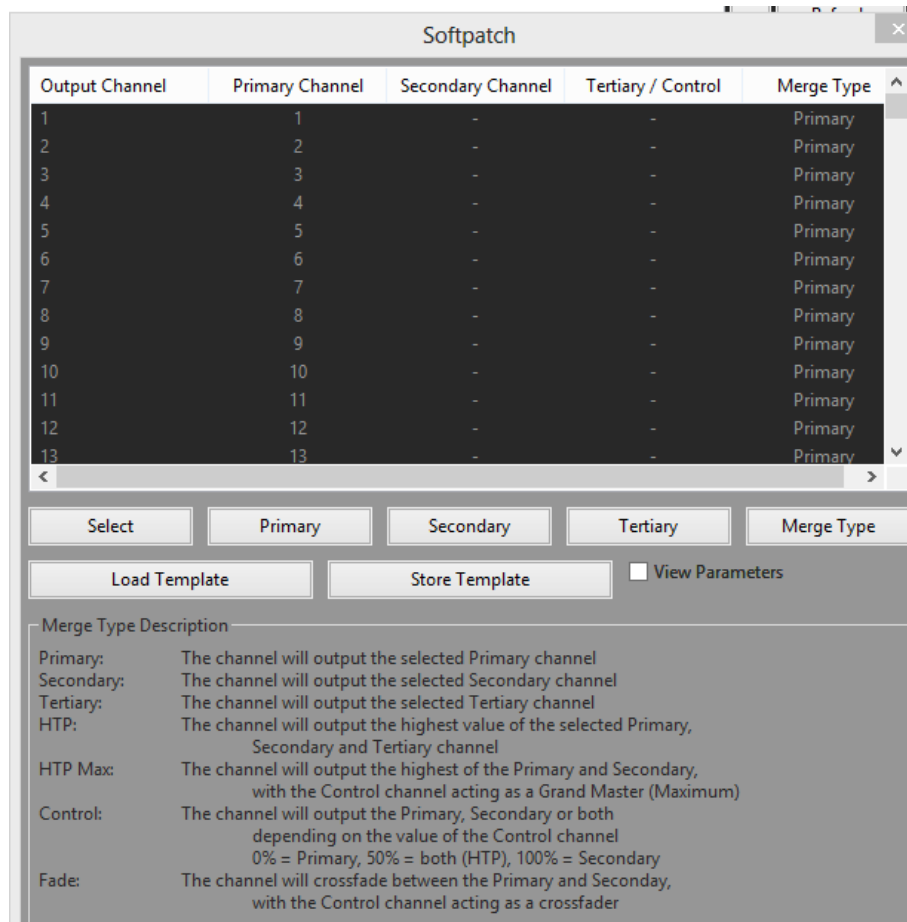


Click on an output channel to select it. To select multiple channels, hold [Ctrl] whilst selecting. To select a range of channels, hold [Shift] whilst selecting the first and last channels in the range. Clicking on "**Select**" allows you to select "All" channels or to "Clear" or "Invert" your selection.
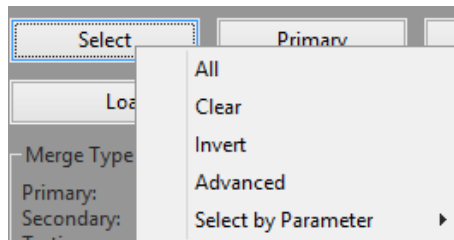
Clicking on "**Advanced**" allows you to select multiple channels multiple times with gaps and beginning and end limits…….
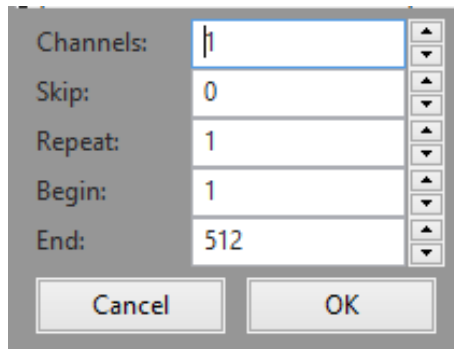


When you have selected a channel(s), set the merge for these channel(s) by clicking the "**Merge Type"** button. The DMX output for each channel can be either:

- "**Primary**", the channel will output the selected Primary channel.
- "**Secondary**", the channel will output the selected Secondary channel.
- "**Tertiary**", the channel will output the selected Tertiary channel.
- "**HTP**" (Highest Takes Precedence), the channel will output the highest value of the Primary, Secondary and Tertiary channel.
- "**HTP Max**", the channel will output the highest value of the Primary and Secondary channel with the Tertiary channel acting as a Grand Master setting the maximum output level.
- "**Control**", the channel will output the Primary or the Secondary or both (HTP) depending upon the value of the Tertiary (Control) Channel. Tertiary @ 0% = Primary, Tertiary @ 50% = Both (HTP) and Tertiary @ 100% = Secondary Channel. For example, you could use a DMX channel on your lighting console to switch the output of a Nexus DMX port between the lighting console output (on the primary universe) and a media server output (on the secondary universe).
- "**Fade**", the channel will crossfade between the Primary and Secondary channels with the Tertiary acting as a crossfade control channel.

When you have selected a channel(s), its output can be soft patched from any input channel of the universe(s) selected for that channel in the "Merge" column or it can be set to a fixed value.
- To patch the selected channel(s) to a channel in the Primary universe click "**Primary**".
- To patch the selected channel(s) to a channel in the Secondary universe click
- "**Secondary**".
- To patch the selected channel(s) to a channel in the Tertiary universe click "**Tertiary**".

The channel selector box opens………………
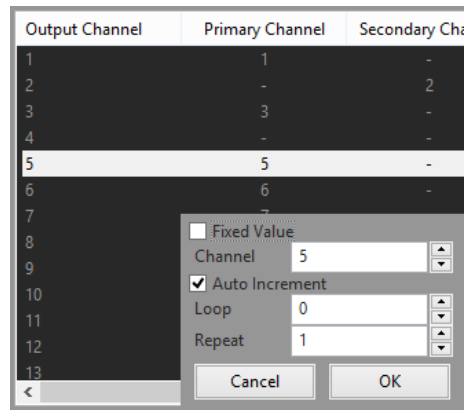
Set the "Channel" number of the input universe to which the selected output channel is to be patched and click "**OK**".

If a range of channels has been selected you can patch them in sequential order by setting the first "Channel" number and ticking the "Auto Increment" box (ticked by default).

If a range of channels has been selected you can patch them to a smaller quantity of input channels by setting a "Loop" value. For example, select 9 output channels, set the input channel to 1 and set "Loop" to 3. The output will be patched as 1, 2, 3, 1, 2, 3, 1, 2, 3.
You can also patch multiple channels to the same input channel by entering a quantity in the "Repeat" field. For example, select 9 output channels, set the input channel to 1 and set "Repeat" to 2 and "Loop" to 2. The output will be patched as 1, 1, 2, 2, 1, 1, 2, 2.

The [**Load Template**] and [**Store Template**] buttons can be used for storing and loading the patches for use in different nodes or on different shows.

### 6.1.6    Additional DMX Output Options

If the DMX port "Type" is set as an Output, then the following DMX options are also available:

- **Rate** - Clicking in the "Rate" field reveals a drop down box from which you can select the rate of DMX output Data. The choices are: Sync, 40fps, 33fps, 25fps, Safe and Safe Sync. Selecting "Sync" will match the data rate of the output to the input. The specification for DMX data is 44fps however equipment from some manufacturers will not operate reliably at this rate. If this is the case, select a lower rate to get reliable operation.

- **Resend** –Each output can merge 3 DMX universes. In some cases, you might need to merge more universes. This is achieved by first making a merge of 3 universes on a DMX output port then re-sending this merged data back into the network on a new universe. This new (merged) universe is then merged again with another universe on a different DMX output port.

    To do this you merge 3 universes on one port as described above then select [**Resend**].

    Select a new universe (for this "merged" universe) from the drop down box that appears. The (merged) DMX values that are output on the selected DMX port are now also re-sent back into the network as a new universe.

    *Note: You might need to create a new universe on which to "Resend" the merged universes. To do this, right click in the DMX Universe window and select "Add DMX Universe" prior to selecting Resend. Your new universe will now be available as a destination when you select "Resend".*

Now select another DMX output port and configure this for merging as described above. The primary and secondary universes of this DMX port will be your new "resent" merged universe and the universe to be merged.

- **DMX Hold** – In the event that DMX data is lost, you can choose to hold the last valid data for a selectable period of time. Clicking in the "DMX Hold" field reveals a drop down box from which you can select a hold time.

- **RDM Mode** – Reverse Device Management allows data to be sent from the destination device back to the source device for interrogation and control purposes. Clicking in the "RDM Mode" field reveals a drop down box from which you can select either: "Disabled", "Get on refresh" or "Get Automatically".

## 6.2  Identify Nexus

When you click on a "Nexus" unit in the Network window (or click on its icon), the "Control" window displays an "**Identify**" button. Clicking on the button will flash the "POWER" led of the selected LSC Nexus allowing you to easily identify that Nexus in a multiple Nexus setup.

## 6.3  DMX Universe window

All of the DMX Universes on the network are automatically shown and new universes can be added. Each universe in the list shows the following information about itself:

| ID | Name | Universe Type | Location | Sender | Info |
|----|------|---------------|----------|--------|------|
| ● 0 | Universe | sACN | | - | - |
| ● 00 | Universe 1 | Art-Net | FOH | 127.0.0.1 | 512 Channels, 28 Fps |

- **ID** - Active universes have a green light beside their ID. ArtNet or sACN uses 2 hexadecimal digits as an identifier or universe address. Hexadecimal means that each digit has 16 possibilities 0-9, A-F (unlike decimal that has only 10 possibilities, 0-9). With these two digits you can have a maximum of 256 (16 x 16) different DMX universes on the network. If more than one node or console on the network sends out a DMX universe with the same ID, then there will be a message in the log window. The Nexus will always only use one ID so that it does not switch continually between different DMX sources.

- **Name** – Each Universe can be given a meaningful name by selecting it then using the Property window.

- **Universe Type** – Either sACN (streaming ACN) Art-Net or Shownet.

- **Location** - Each Universe can be given a meaningful location by selecting it then using the Property window.

- **Sender** - indicates node "name" or the IP address of the source device.

- **Info** - indicates the quantity of DMX channels in the universe and the frame rate..

### 6.3.1      Manually Adding Universes

To manually add a single or multiple universes, from the menu bar, select [**Edit**], [**Add Universe**]. A wizard guides you through the process.

### 6.3.2 Universe Properties

By selecting a universe, you can use the Property window to change its properties.
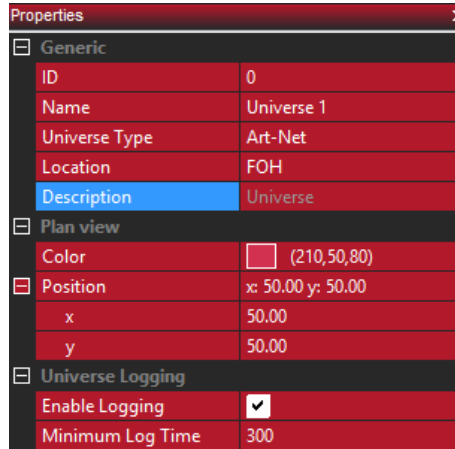


Each Universe can be given a meaningful name by clicking on the existing name and entering a new name. The icon color (used in the Plan window) can be changed by clicking on the "Color" line then on the three dots that appear and using the color picker.

### 6.3.3 Universe Control

You can use the Control window to overwrite DMX channels on the selected universe(s).
Select a universe by clicking on it in the DMX Universe window or by clicking on its icon. A keypad appears in the Control window.
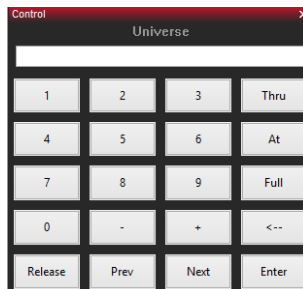


Use the on-screen keypad to enter a DMX channel number(s). You can use the + and – buttons to select or de-select multiple DMX channel numbers. Use the "Thru" button to select a range of channel numbers.

Set a level by either entering a value using the keypad and pressing [**Enter**] or using the [**Full**] without the need to press enter.

If no value is selected, pressing [**Enter**] will set the channel to 80%.

Pressing [**Next**] or [**Prev**] will set the next or previous channel to 80% and release all other channels.

To release the selected channel(s) from being overridden press [**Release**].
To release all channels from being overridden press [**->**], [**Release**].

## 6.4 Fixture Window

Lighting fixtures can be added and patched in the NexLan software. This gives the NexLan operator/rig-technician the ability to control any fixture in the rig from the NexLan software without having access to the lighting console.

Lighting fixtures can be added manually via the menu [**Edit**], [**Add Fixture**].
The Fixture window contains the info of the fixtures:

- **ID** – An identifying number. You should try to match it to the console's fixture IDs
- **Name** - Given name.
- **Location** – Enter a location name in the Properties window.
- **Note** – Enter a location name in the Properties window.
- **Manufacturer** – Manufacturer name of the fixture.
- **Type** - Type of the fixture.
- **Mode** – Operating mode of the fixture (if applicable).
- **Status** - the control status (- / controlled / locked) or current macro that is running (lamp on / reset).
- **Patch** - DMX and selected universe (or network node) to which the fixture is patched.

### 6.4.1 Fixture Groups

Selected fixtures can be saved and recalled as a Group.
To select multiple fixtures, hold [**Ctrl**] whilst selecting. To select a range of fixtures, hold [**Shift**] whilst selecting the first and last fixtures in the range.

- To store a group of selected fixtures, from the top menu press [**Edit**], [**Record Group**] or use the keyboard shortcut [**Ctrl+G**] or right click in the window. The pop up box allows you to number and name your groups.
- Groups are recalled from the "Groups" tab. To create a Groups tab, from the top menu press [**View**], [**Add Tab**]. Select **"List"** as the type of tab then select **"Group List"**. The wizard guides you through the rest of the process. To recall a group, click on the Groups tab then select you required group from the list.

## 6.5 Fixture Properties

When a fixture is selected, its properties are displayed in the Property window.

Each fixture can be given a meaningful name by clicking on the existing name and entering a new name.
The icon color (used in the Plan window) can be changed by clicking on the color box then on the three dots that appear and selecting a color from the color picker.

### 6.5.1 Patching a Fixture.

Each fixture must be patched in the NexLan software before it can be controlled by NexLan. To patch a fixture(s) select it by clicking on it.



Click on the "Patch Mode" cell and then click on the drop down box to select type of patch:

- **Unpatched** - The fixture is not patched so it cannot be controlled by the NexLan software.
- **Patch to Universe** - The fixture is patched to a universe and channel number. The NexLan software will calculate through all the soft patching and merging required to control the fixture.
  - o Click on the "Universe" cell then, from the drop down box, select the universe to which the fixture is connected.
  - o Click on the "Channel" cell and set the starting DMX address for the fixture using the up and down arrows that appear.
- **Patch to Node** - This patches the fixture directly to the DMX port on the Nexus that you specify. This is usually only required when a fixture is patched across two universes and you need to exactly specify the patching. Under normal circumstances it's easier to "patch to universe" (above) and let the software calculate where to send the data.
  - o Click on the "Node" cell then, from the drop down box, select the Nexus to which the fixture is connected.
  - o Click on the "Port" cell then, from the drop down box, select the DMX output port to which the fixture is connected.
  - o Click on the "Channel" cell and set the starting DMX address for the fixture using the up and down arrows that appear.

## 6.6  Fixture Control

When a fixture has been selected by clicking on it, the Control window allows all channels and macros of the fixture be accessed. When you alter a DMX channel the NexLan captures that channel and prevents it from being controlled by the signals on the network. When you have finished testing a fixture you must click [**Release**] to restore normal control.
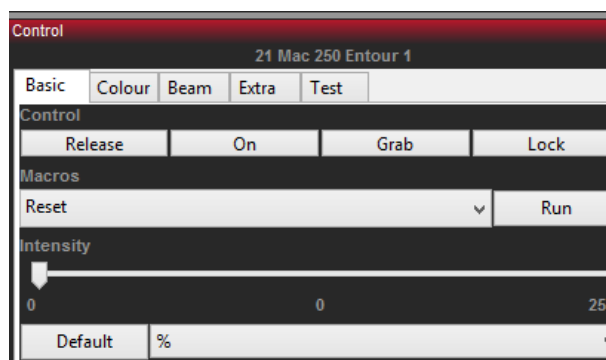


The Control window for fixtures has five tabs: "Basic", "Colour", "Beam", "Extra" and "Test".
Each tab has slider controls for each of the channels in its group. Each channel has a [**Default**] button to set the channel back to its default settings. When a parameter has been varied, the [**Default**] button becomes a [**Release**] button.

The "Basic" tab also has Control and Macro functions.
The four "Control" buttons are:
- **Release** - release the fixture back to the network.
- **On** - set the fixture to a default "on" state (intensity full, shutter open and pan/tilt to 50%).
- **Grab** – Grab the current values from the network.
- **Lock** - remove the fixture from the show (intensity 0%, shutter close and pan/tilt to 50%).

The **Macro** area can be used to run macros like lamp on / lamp off or reset by selecting them from the drop down box and clicking [**Run**]. When running a macro onto multiple fixtures, each macro will be time delayed to prevent a power surge.

The "Test" tab can be used to test each parameter of a fixture by cycling it continuously from minimum to maximum and back. Select a parameter to test from the drop down box and click [**Run**]. To stop the test, click [**Release**].

## 6.7  Scenes

The "Capture Scene" button in the "Toolbox" window captures the current output from the lighting desk.  If a fixture is being controlled by the Nexlan software then the scene contains those values. A scene can be played back and released with a fade time (see below).

To capture a scene, in the toolbar click on the "Capture Scene" icon which starts a wizard that guides you through the process.

To playback a scene you have to add a scene list. Click on the + button then select "List" then "Scene List".

| Plan View | Fixtures | Universes | Network Items | + |

+ button

A new "Scenes" tab appears:

| Plan View | Fixtures | Universes | Network Items | Scenes | + |
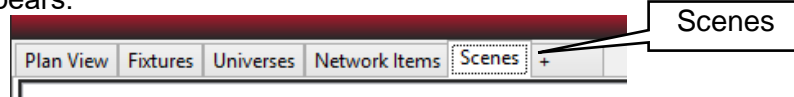
Scenes

Click on the "Scenes" tab to see a list of the recorded scenes then click on a scene name to reveal the controls to playback that scene. You can "Play" and "Release" the scene and set the fade time.

Click on the scene name to reveal its controls

Scene controls
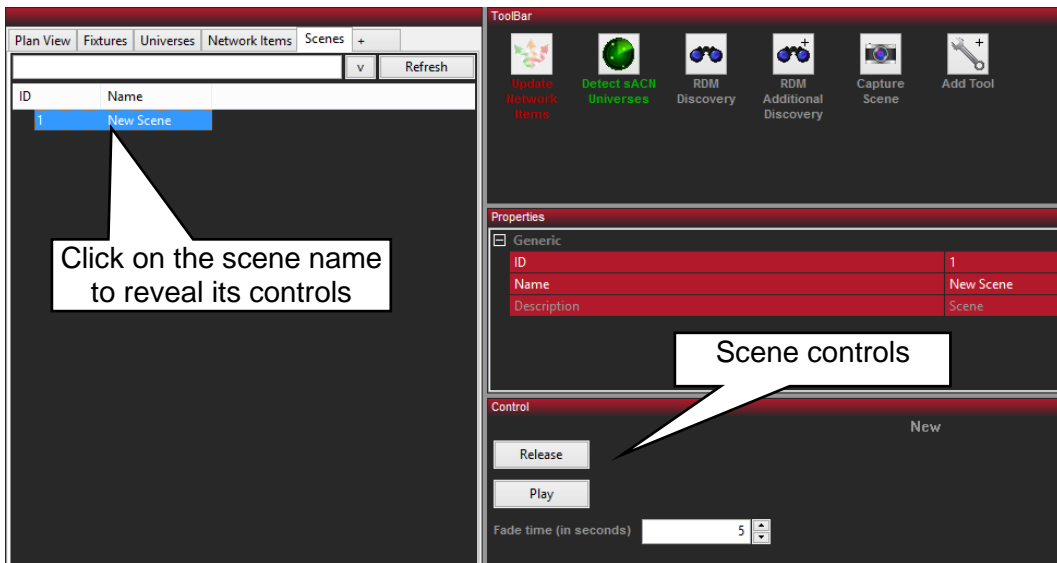
## 7   Detailed Software Descriptions

### 7.1   Main Window

The main window contains several Tabs. A Tab can be either a <u>list</u> or a <u>view</u>.

<u>Lists</u> have columns for each device that show information such as:
* **ID** - The ID is set in the device and is automatically loaded. A separate ID is required for each device.
* **Name** – Each node can be given a meaningful name by selecting it then using the Property window as described below.
* **IP Address** – The network address of the device.

<u>Views</u> show a geographical layout of the devices. You can arrange the devices in the view so that they represent their physical location in your setup.

* **Plan View Tab.** This tab automatically shows a view of icons for all network items (such as Nexus units) and universes found on the network. Fixtures can also be added to this view. Click on an icon to select it. When it is selected its properties are shown and can be edited in the "Properties" window and the device can be controlled by the "Control" window. See section below for more information on Plan View.

* **Fixture Tab.** Shows a list of lighting fixtures that you have manually added to the software. Fixtures are added by selecting **Edit/Add Fixture**. When a fixture has been added you can select it (or multiple fixtures) by clicking on them. This is the same as clicking on a fixture's icon in the Plan tab. When a fixture has been added and patched it can be controlled from the control window. This function is useful for testing fixtures.

* **Universes Tab.** Shows a list of all universes on network. Universes can be added by selecting **Edit/Add** Universe. Click on a universe to select it. This is the same as clicking on its icon in the Plan tab. If you right click on a Universe, you can view that universe in a new tab. See below for more details.

* **Network Items Tab.** Nodes and switches on the network are automatically shown in a list. You will see your Nexus devices as well as any device that is outputting ArtNet, sACN or Shownet such as your lighting console. Network nodes can also be added manually (**Edit/Add Network Item**) allowing them to be configured before you connect the computer to the network.

Tabs can be added by clicking the **+** in the last Tab on the right. A wizard will guide you through the available options. If you Right Mouse click in the Tab name you can:
* Change the name of the Tab
* Close the active Tab
* Move the Tab to the Left or Right
* Create a copy
* Move the Tab to another Window
* Change the Default Filter (If available)

Tabs also can be dragged to change their position in the window. If the Cmd-key (OSX) or the Ctrl-key (Windows) is pressed while dragging a tab, a copy of that tab will be created. If the tab is a list, double clicking the tab will select all items of the tab.

## 7.2 Property window.

The property window is <u>dynamic</u>. The properties of the item <u>selected</u> in the Main Window (network item, universe or fixture) are displayed here and can be changed to suit your requirements as described below.

## 7.3 Control window.

The control window is also <u>dynamic</u> and changes depending on the <u>selected</u> item. It provides controls for the item <u>selected</u> in the Main Window (network item, universe or fixture). Its functions are explained below.

## 7.4 Plan view

The Plan View shows information from the objects in a graphical way. Objects which can be shown in a view are:

- Fixtures
- Universes
- Network Items

Icons can be positioned in the window by dragging them. This allows you to layout your devices geographically to represent your physical configuration and setup. When your mouse cursor is in the Plan View window you can use the mouse wheel to zoom the display or double click on an object to zoom into that object. When an object is Double click again to zoom out.

The Plan View also features the Filter box for quick access to the objects and a predefined filter. See section 7.19 for more information on Filters.

The top left corner of Plan View has buttons for controlling the display.
The display can be Zoomed in and out by pressing the - or + button or by scrolling with the mouse or by pressing the Zoom button.
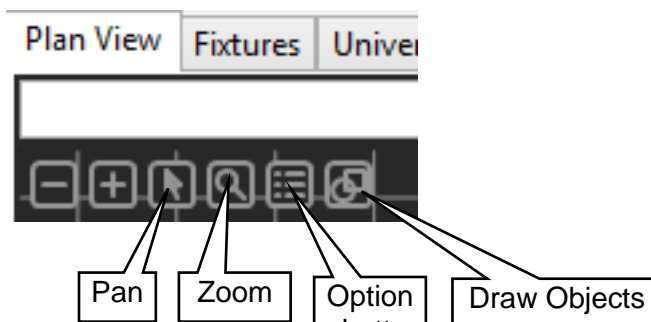


If there are objects selected, pressing the Zoom button will pan the canvas and adjust the zoom in a way that all the selected objects are visible. If there are no items selected, pressing the Zoom button will pan the canvas and zoom in a way that *all* objects are visible.

Clicking the Pan button changes the mouse into Pan Mode. By clicking and holding down the Right Mouse button, the canvas can be moved. To change back to Select Mode, click the Pan button again. The canvas also can be moved by clicking and holding down the Right Mouse button or by dragging while holding down the space bar.

The Option button contains several options:
- Grid On              Shows/Hides the grid (g)
- Snap To Grid On      Enables/Disables snapping to the grid (s)
- Drag Lock On         Enables/Disables objects to be dragged (l)

- Show Mouse Position        Shows/Hides the mouse position beneath the buttons (m)
- Show Connections        Shows/Hides the connections from Nodes to Universes (c)
- Show Details        Shows/Hides the details in the objects (d)
- Set Grid Size        Changes the grid size
- Arrange Selected ObjectsStarts the Object Arrange Wizard (a)
- Set Origin        Change the position of the (0,0) coordinate
- Rotate Plan View        Rotate the Plan View 90 Degrees Clockwise

The character between the () is a shortcut for this function when working in the Plan View.
The Draw Objects button contains the following functions:

- Add Draw Object                Starts the Draw Object Wizard (o)
- Disable Select Draw Object   Disables the possibility to select Draw Objects
- Show Draw Objects                Shows/Hides the Draw Objects

## 7.5  Universe View

In the "Universe" tab, if you right click on a Universe, you can view that universe in a new "Universe View" tab. The "Universe View" shows the last received values from all parameters of the universe and the controlled value. If the parameter is not controlled, a blue bar indicates the value and the value in the bottom shows the exact value. If the parameter is controlled by NEXLAN, a red bar indicates the controlled value. The value at the bottom is the last received value and the value just above that is the controlled value.

A thin red line groups the parameters which belong to a patched fixture. If a parameter has a thick red outline, there are more than one fixtures patched to this parameter.
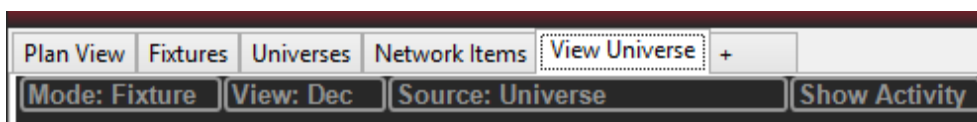


By clicking the **Mode:** button you can change the way you want to view this universe:

- Channel        View individual channels
- Fixture        View channels grouped per fixture
- History        View the history of the channels

The **View:** button contains options to view the values as Hexadecimal, Decimal or Percentage.

The **Source:** button allows you to change the universe you are viewing.

The **Show Activity** button switches the view to the activity view. Here you can easily see whether or not there is activity on the universe. You can reset it by pressing the Reset button and switch back to the normal view by pressing Hide Activity.

## 7.6  Fixture View

Fixture View is comparable to the Output screen of most Lighting Desks. Here all parameters of all fixtures can be monitored. It contains a filter and predefined filter for quick access. Values can be viewed as Hexadecimal, Decimal, Percentage or as Ranges defined in the Fixture Library.

## 7.7  Control Window

The control window adapts to the selected object(s). The Control window can be hidden by clicking the close button in the upper right corner and shown by the "View" menu in the menu bar.

### 7.7.1        Network Items

When Network Items are selected (in the main window) the Control window automatically provides "Identify" and "Test Connection" buttons for the selected item.

### 7.7.2        Fixture Control

If a Fixture is selected, the Control window automatically provides controls for the Fixture. There are tabs for "Basic", "Colour", "Beam", "Extra" and "Test".
The "Basic" tab has some generic control buttons:

| | |
|---|---|
| **Release** | Release all parameters of the selected fixtures |
| **On** | Set all parameter to their default value (usually Open White 50/50) |
| **Grab** | All sliders jump to the current received value |
| **Lock** | All sliders jump to the current received value and the fixture is controlled with these values |

If the **Release** and **On** button are pressed, the default fade time which is configured in the Preferences is applied. If the **Release** and **On** button are pressed when holding the **Cmd** (OSX) or **Ctrl** (Windows) button, no fade time is applied.

Also, on the "Basic" tab are the Intensity and Pan/Tilt parameters (if available).
The "Colour" tab contains all the colour parameters, the "Beam" tab contains all the beam parameters and the "Extra" tab contains the remaining parameters.
The "Test" tab features several test options.

| | |
|---|---|
| **Address Test** | Default the selected fixtures one by one. |
| **Parameter Test** | First set all the fixtures in their default position (if not already controlled), the tests all parameter one by one (if not skipped) |
| **Test** | Custom tests which apply to the selected fixtures if they have such parameters. These are defined in the test.txt file in the Fixture Library folder. |

In the list underneath the speed slider, parameters can be skipped or set to repeat.

If the Fixture is matched to a RDM Device, there is an extra "RDM" tab which holds the sensor values and other information obtained via RDM.

### 7.7.3        Universe Control

In the Universe Control window, the channels of the selected universe can be controlled by entering commands in the Control windows command line.
For example:

| | |
|---|---|
| 1 Thru 36 Enter | Set Channel 1 thru 36 at Full |
| -12 Thru 24 Enter | Release Channel 12 thru 24 |
| 8 @ 0 | Set Channel 8 at 0 |
| Next | Switches to Highlight mode. Select the first controlled channel and keep the value of this channel as highlight value. |
| Release | Release all channels |

### 7.7.4        Network Item Control

In the Network Item Control window, the selected network item can be controlled. Most items feature an **Identify** button to identify the item.

## 7.8   Toolbar Window

The toolbar contains a couple of standard Tools:

| | |
|---|---|
| • Update Network Items | Sends all changed to the Network Items |
| • Detect sACN Universes | Starts the Detect sACN Universes Wizard |
| • RDM Discovery | Starts the RDM Discovery Routine |
| • RDM Additional Discovery | Starts the RDM Additional Discovery Routine |
| • Capture Scene | Starts the Scene Wizard |
| • Add Tool | Starts the Tool Wizard |

Tools added via the Tool Wizard will appear in the Toolbar.

The ToolBar Window can be hidden by clicking the close button in the upper right corner and shown by the "View" menu in the menu bar.

## 7.9  Property Window

In the Property Window the properties of the selected objects can be edited.
If the selected objects have different value for a property, <..> is displayed. The Property Window can be hidden by clicking the close button in the upper right corner and shown by the "View" menu in the menu bar. Modifications are stored immediately for all items. To send the modifications to the Network Items, press the Update button in the Tool Bar.
The position property contains a distribute feature. A "/" indicates the spacing. If no spacing in given, the default spacing is used.

Assume the objects have a size of 50x50 in the next examples.

For example:

-100, 200/0         First object is placed at (-100,200), the next at (-50,200), (0,200) etc.
-100/20, 0          First object is placed at (-100,0), the next at (-80,50), (-60,100) etc.

## 7.10 LOG

In the Log, the recent activities are listed. The Property Window can be hidden by clicking the close button in the upper right corner and shown by the "View" menu in the menu bar.

## 7.11 Preference

Preferences can be accessed via the menu bar or with the shortcut Cmd+, (OSX) and Ctrl+, (Windows)

## 7.12 Universes

Universes can be added by the "edit" menu in the menu bar. The wizard guides you through the options.
NEXLAN V2 accepts Art-Net, sACN and Shownet. The default type can be set in the Preferences. Everywhere where a universe can be filled in the following holds:
For example:

    s1          sACN Universe 1
    a1          Depending on the preferences. Standard this is Art-Net 01
    1           Depending on the default universe type selected in the preferences.
                    If Art-Net & Hex Value, this is Art-Net 01
                    If Art-Net & Decimal Value, this is Art-Net 1 (which is HEX 00!)
                    If sACN, this is sACN Universe 1

## 7.13 Fixtures

Fixtures can be added from the "Edit" menu in the menu bar. The wizard guides you through the options.
Fixtures contain a Colour property which is visible in the Plan view and Fixture View. They also feature a Location property which can be filtered.
There are shortcuts to patch a fixture:
For example:

    s1.1        Starting at sACN Universe 1, Address 1, Default Align
    a1.1        Starting at Art-Net Universe 1, Address 1, Default Align
    3.101/40    Starting at Default Universe Type 3, Address 101, Align 40
    2           Starting at Default Universe Type 2, First available address, Default Align

If there are multiple patch entries, the patch commands can be divided with a "/".

## 7.14 Network Item

Network Items can be added by selecting the "Edit" menu in the menu bar. The wizard guides you through the options.

There are shortcuts to configure a port.
Examples for a bi-directional port:
| | |
|---|---|
| i,s1 | Input, Normal, sACN Universe 1 |
| i,1 | Input, Normal, Default Universe Type 1 |
| i, n, 1 | Input, Normal, Default Universe Type 1 |
| i, b, 1 | Input, Backup, Default Universe Type 1 |
| o, a1 | Output, Single, Art-Net Universe 01 |
| o, z | Output, Out Zero |
| o, s, s2 | Output, Single, sACN Universe 2 |
| o, p, s2 | Output, Priority, sACN Universe 2 |
| o, h, s1, s2 | Output, HTP, Primary = sACN Universe 1, Secondary = sACN Universe 2 |
| o, sp, s1, s2 | Output, Softpatch, Primary = sACN Universe 1, Secondary = sACN Universe 2 |

## 7.15 Groups

Groups of fixtures can be created by selecting the required fixtures and selecting the "Edit" menu in the menu bar then choosing "Record Group".
Groups can also be automatically generated by selecting the "Edit" menu in the menu bar then choosing "Auto Generate Groups". A wizard will guide you through the process allowing you to group fixtures by "Manufacturer/Type" and "Location".
A Group also can be recorded by selecting the fixtures then right mouse clicking and selecting "Create Group". In this menu you also can update and rename the group.

## 7.16 Layout

Layouts can be saved and loaded from "Layout" in the main menu bar.

## 7.17 Remote Control

### 7.17.1    Web Interface

NEXLAN v2 can be controlled via a web browser which uses the WebKit engine (for instance Chrome, Safari). In the address field of the browser type in the IP address of the computer running NEXLAN v2, followed by ":8080". Make sure your device is in the same IP range as the computer running NEXLAN v2.
For example:
        2.23.12.62:8080        NEXLAN v2 Running on a computer with IP address 2.23.12.62

With the web interface you can:
• View the status of Universes
• View the status of Network Items
• Control a Group or Fixture (Set Default, Release, Lock)
• Run Macros on a Group or Fixture
• Run Tests on a Group or Fixture

## 7.18 Customising the Software

### 7.18.1    Lists

The software contains several lists. Each has several columns, depending of the items in the list. You can sort each column with a left mouse click in that column header. You can enable each column with a right mouse click.

Each list features a filter, and a "Predefined Filter". The predefined filter is a filter which is applied at the background and is not visible in the filter box. This filter can be set in the List Wizard and modified by Right Clicking on the Tab Header.
Available lists:
- Fixture List
- Universe List
- Network Item List
- Group List
- Layout List
- RDM Device List
- Scene List
- Draw Objects List

## 7.19 Filters

You can show only certain items by filtering. Information is filtered by entering the filter information in the "filter line" on the screen.

### 7.19.1 Simple Filtering

For simple filtering just type in text in the "filter line" and the list or view will be filtered to only show items containing that text.

### 7.19.2 Advanced Filtering

For advanced filtering use the following format to show all items with the property containing the text:
> [propertyname] = <text>.

The = is the operator. Valid operators are:
| | |
|---|---|
| = | Contains the text |
| == | Text is equal |
| != | Not equal |
| > | Value higher |
| < | Value lower |

For example,
> Name=Stage

Shows all items where the Name property contains "Stage".

### 7.19.3 Multiple filters.

+ Shows multiple filters.
For example,
> FOH + Stage

Show all items containing FOH or Stage.

, A comma allows extra filtering.
For example,
> Stage, ID>10

Show all items containing Stage with an ID higher than 10.

Pressing [**enter**] will add the filter into the drop down list of previously used filters. The drop down list is displayed by clicking the "**V**" button at the right end of the filter line.

### 7.19.4 Autocomplete

The filter also features an autocomplete function.
For example, if you are in a Fixture List and you type in "m", a suggestion appears in grey to change it into "manufacturer". This suggestion can be accepted by pressing the right arrow key.

If you were not looking for "Manufacturer" but for "Mode", you can step through the suggestions by pressing the up and down arrows.
To select all current shown items, press alt+enter.


## 7.20 Shortcuts

| Action | OSX | Windows |
|---|---|---|
| Open Preferences | Cmd + | Ctrl + |
| New File | Cmd + n | Ctrl + n |
| Open File | Cmd + o | Ctrl + o |
| Save File | Cmd + s | Ctrl + s |
| Save File As | Shift + Cmd + s | Shift + Ctrl + s |
| Export | Cmd + e | Ctrl + e |
| Add Universe | Cmd + u | Ctrl + u |
| Add Fixture | Cmd + f | Ctrl + f |
| Add Network Item | Cmd + i | Ctrl + i |
| Add Tool | Alt + t | Alt + t |
| Capture Scene | Alt + s | Alt + s |
| Record Group | Cmd + g | Ctrl + g |
| Auto Generate Groups | Shift + Cmd + g | Shift + Ctrl + g |
| Update Modified Network Items | Alt + u | Alt + u |
| Undo | Cmd + z | Ctrl + z |
| Redo | Shift + Cmd + z | Shift + Ctrl +z |
| Add Window | Cmd + p | Ctrl + p |
| Add Tab | Cmd + t | Ctrl + t |
| Show Control Window | Shift + Cmd + c | Shift + Ctrl + c |
| Show Property Grid | Shift + Cmd + p | Shift + Ctrl + p |
| Show ToolBar | Shift + Cmd + t | Shift + Ctrl + t |
| Show Log | Shift + Cmd + l | Shift + Ctrl + l |
| Get File Information | Shift + Cmd + i | Shift + Ctrl + i |
| Save Layout | Cmd + l | Ctrl + l |
| Load Layout [0..9] | Cmd + [0..9] | Ctrl + [0..9] |
| Detect sACN Universes | Cmd + d | Ctrl + d |
| Select all in list (In filterlist) | Cmd + enter | Ctrl + enter |
| Create a new list using current filter (in filterlist) | Shift + enter | Shift + enter |
| The following shortcuts only apply when working in the Plan view: | | |
| Zoom | z | z |
| Grid On/Off | g | g |
| Snap to Grid On/Off | s | S |
| Drag Lock On/Off | l | l |
| Show/Hide Mouse Position | m | M |
| Show/Hide Connections | c | c |
| Show/Hide Details | d | D |
| Arrange Object Wizard | a | A |
| Add Draw Object | o | o |

## 8   Firmware Upgrade

To upgrade your Nexus firmware, carry out the following steps:

Download the firmware file from www.lsccontrol.com.au and save it to a known location on your computer.

There are separate firmware files for the Nexus 1 and Nexus 5.

- The Nexus 1 firmware is called NXS1.
- The Nexus 5 firmware is called NXSR/NXST.

On your computer, navigate to the directory where the Nexlan software is located. Here you will find a program called "FirmwareUpdate.exe". This program is also available from www.lsccontrol.com.au.

Run the "FirmwareUpdate.exe" program. It will find all of the Nexus devices on the network.
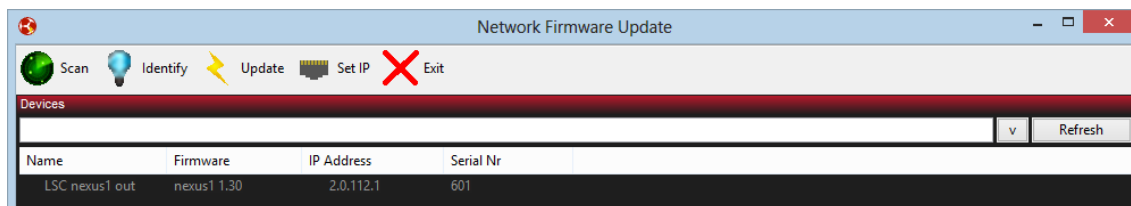


Click on the device that you want to update.
Click **Update**.
Navigate to the location where you downloaded the firmware file.
Open the nexus*****.dfu firmware file.
The upgrade process will start immediately.

AFTER UPDATING YOU MUST HOLD THE RESET BUTTON ON THE NEXUS FOR 10 SECONDS to reset the factory defaults. Failing to do this will result in the unit becoming unstable.

Close the Firmware Update program.

## 9 Fixture Library

The NexLan software contains a fixture library of popular fixture personalities. However, if you have a fixture that is not in the library you can use the Nexus "Fixture Editor" software to create your custom fixture file. This software is available for Windows and Mac operating systems and is a free download from www.lsccontrol.com.au

The library file is made up from a basic file "fixture.lib". This is a text file which can include sub text files. All files are found in the "Program Files\LSC\NexLan\Fixture Library" directory.

Example of the main fixture.lib file.

*fixture = Profile*
*image = profile*
*parameter = Intensity*

*fixture = Par*
*image = par*
*parameter = Intensity*

*fixture = Dimmer 12ch*
*parameter = Intensity*
*parameter = Intensity*
*parameter = Intensity*
*parameter = Intensity*
*parameter = Intensity*
*parameter = Intensity*
*parameter = Intensity*
*parameter = Intensity*
*parameter = Intensity*
*parameter = Intensity*
*parameter = Intensity*
*parameter = Intensity*

*#include = "martin.lib"*
*#include = "claypaky.lib"*
*#include = "highend.lib"*

To define a fixture first set its manufacturer, followed by the fixture type name. The image item sets the name of the icon type.

Example of the high end file - only one fixture shown (studio spot 250).

*manufacturer = High End*

*fixture = Studio Spot 250*
*head = yoke*
*image = yoke*

*parameter = Pan*
*default = 128*
*parameter = Pan, fine*
*parameter = Tilt*
*default = 128*

*parameter = Tilt, fine*

*parameter = Colour 1 Mode*
*parameter = Colour 1*
*parameter = Gobo 1 Mode*
*parameter = Gobo 1*
*parameter = Gobo 1 <>*
*parameter = Prism*
*parameter = Prism <>*
*parameter = Focus*
*parameter = Iris*
*parameter = Shutter*
*highlight = 255*
*default = 255*
*parameter = Intensity*
*highlight = 255*
*parameter = Speed 1*
*parameter = Macro*
*parameter = Control*

*macro = Reset*
*step = set, Shutter, 0*
*step = set, Control, 64*
*step = delay, 2*
*step = release, all*
*macro = Lamp On*
*step = set, Shutter, 0*
*step = set, Control, 84*
*step = delay, 2*
*step = release, all*
*macro = Lamp Off*
*step = set, Shutter, 0*
*step = set, Control, 94*
*step = delay, 2*
*step = release, all*
*macro = Display Off*
*step = set, Shutter, 0*
*step = set, Control, 24*
*step = delay, 2*
*step = release, all*
*macro = Display Dim*
*step = set, Shutter, 0*
*step = set, Control, 34*
*step = delay, 2*
*step = release, all*
*macro = Display On*
*step = set, Shutter, 0*
*step = set, Control, 44*
*step = delay, 2*
*step = release, all*
*macro = Shutdown*
*step = set, Shutter, 0*
*step = set, Control, 124*
*step = delay, 4*
*step = release, all*

Parameters are added in the DMX channel order. "fine" represents the fine channel of the parameter. Add break if the fixture has more than one DMX range, for example a VL5 has a separate dimmer.

*parameter = name [, fine] [, break]*

A default can be added (if the value is not 0), this value is used when disabling the fixture.

*default = value*

A value can be given to be used when highlighting the fixture.

*highlight = value*

after all parameters are done, macros can be added to the fixture.

*macro = name*

and then macro steps

*step = set, name_of_parameter, value*          *set a channel to the value*
*step = delay, seconds*                                     *delay for number of seconds*
*step = release, name_of _parameter or all*     *release a single parameter or all*

## 10 Specifications

| | | NXS1 | NXST(Truss) | NXSR(Rack) |
|---|---|---|---|---|
| Number of outputs | | 1 | 5 | 5 |
| Output connectors | | 5 Pin XLR standard | 5 Pin XLR standard - 3-pin XLR options available | |
| Ethernet Ports | | 1 | 2 | 2 |
| Second Ethernet Port ( hub or backup). | | ✖ | ✔ | ✔ |
| Artnet, Shownet and sACN data protocols | | ✔ | ✔ | ✔ |
| DMX512 data LED | | ✔ | ✔ | ✔ |
| All outputs isolated | | ✔ | ✔ | ✔ |
| Galvanic Isolation barrier | | 1500 Volts | | |
| Short circuit protected | | ✔ | ✔ | ✔ |
| DMX512A and RDM compatible | | ✔ | ✔ | ✔ |
| Input power supply | | PoE (Power over Ethernet) | 85-264 VAC 47-63Hz | |
| | | | | |
| Power supply on LED | | ✔ | ✔ | ✔ |
| Conformity | | CE, Ctick | | |
| PowerCon Input Power Connector option | | ✖ | ✔ | ✔ |
| Chassis style | | Stand Alone | Truss or stand alone | 1RU 19" Rack |
| Construction Style | | Folded metal chassis. | High strength ABS plastic material | 1RU Folded metal chassis. |
| Physical Dimensions | mm | 75 x 45 x 85 | 320 x 123 x 53 | 480 x 114 x 44 |
| | inches | 3" x 1.75" x 3.4" | 12.6" x 4.9" x 2.1" | 19" x 4.5" x 1.75" |
| Actual Weight | gm | 300gm | 650gm | 1.5kg |
| | lb | 0.66lb | 1.45lb | 3.3lb |
| Shipping Dimensions | mm | 170 x 85 x 100 | 515 x 190 x 65mm | |
| | inches | 6.7" x 3.4" x 4" | 20.2" x 7.5" x 2.6" | |
| Shipping Weight Australia | | 1 kg | 1.6kg | |
| Shipping Weight International | kg | 1 kg | 1.2kg | 2.0kg |
| | lb | 2.2 lb | 2.65lb | 4.4lb |

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## 11  Terminology

</div>

### 11.1 DMX 512

DMX512 is the industry standard for the transmission of digital control signals between lighting equipment. It utilizes just a single pair of wires on which is transmitted the level information for the control of up to 512 DMX slots. As the DMX512 signal contains the level information for all slots, each piece of equipment needs to be able to read the level(s) of the slots(s) that apply only to that piece of equipment. To enable this, each piece of DMX512 receiving equipment has an address that you can set. This address is set to the first slot number to which the equipment is to respond. The end of the DMX line is terminated (120 $\Omega$) to prevent the signal reflecting back up the line and causing possible errors.

### 11.2 DMX Universes

If more than 512 DMX slots are required, then more DMX outputs are used. The numbers on each DMX output are always 1 to 512. To differentiate between each DMX output they are called Universe1, Universe 2 etc. Each universe is carried on its own cable.

### 11.3 RDM

RDM stands for Remote Device Management.  It is an "extension" to DMX. Since the inception of DMX, it has always been a 'one way' control system. Data only ever flows in one direction, from the lighting controller outwards to whatever it may be connected to. RDM changes all that allowing the equipment to answer back!

RDM has been designed to work with existing DMX systems. It does this by interleaving its messages with the regular DMX signal over the same wires. There is no need to change any of your cables but because RDM messages now go in two directions, any in-line DMX processing you have needs to be changed for new RDM hardware. This will most commonly mean that DMX splitters and buffers will need to be upgraded to RDM capable devices.

### 11.4 ArtNet, sACN and Shownet

ArtNet, sACN and Shownet are Ethernet protocols that transmit DMX over a LAN (Local Area Network). Unlike a DMX cable that only carries 1 DMX universe, ArtNet or sACN supports multiple DMX universes on the one cable.

#### 11.4.1    Artnet

Artnet supports up to 256 universes. These are arranged in 16 sub-nets each containing 16 universes. 2 hexadecimal digits are used to specify the subnet / universe. Hexadecimal means that each digit has 16 possibilities 0-9, A-F (unlike decimal that has only 10 possibilities, 0-9). With these two digits you can have a maximum of 256 (16 x 16) different DMX universes on the network.

| ID | Sub-Net | Universe |
|----|---------|----------|
| 0 | 0 | 0 |
| 2 | 0 | 2 |
| 3 | 0 | 3 |
| ↓ | | |
| 10 | 0 | A |
| 11 | 0 | B |
| ↓ | | |
| 16 | 1 | 0 |
| 17 | 1 | 1 |
| ↓ | | |
| 200 | C | 8 |
| ↓ | | |
| 255 | F | F |

### 11.4.2    sACN

sACN (**s**treaming **A**rchitecture for **C**ontrol **N**etworks) is a protocol for sending DMX512 data over IP networks developed by ESTA (**E**ntertainment **S**ervices and **T**echnology **A**ssociation). It is also known as ANSI E1.31 (**A**merican **N**ational **S**tandards **I**nstitute).

It supports up to 63999 universes. It uses multicasting and is becoming the preferred method of sending DMX over Ethernet.

### 11.4.3    Shownet

Shownet is a DMX over IP protocol developed by Strand Lighting. See the Strand Lighting website for details.

## 12 Compliance Statements

The Nexus from LSC Control Systems Pty Ltd meets all required CE (European), RCM (Australian) and UKCA (United Kingdom) standards.

*European Committee for Electrotechnical Standardization (CENELEC).*

*Australian RCM (Regulatory Compliance Mark).*

*UK Conformity Assessed.*