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CONTROL
Ethernet
DMX Node

LSC CONTROL Ethernet DMX Node User Manual

Contents

LSC CONTROL Ethernet DMX Node

FAQs

Q: Can I use the NEXEN Ethernet/DMX Node for indoor installations?

A: Yes, the NEXEN Ethernet/DMX Node can be used for indoor installations with appropriate mounting and power supply considerations.

Q: What should I do if I encounter issues with the product?

A: If you encounter any issues with the product, refer to the troubleshooting section in the user manual or contact LSC Control Systems Pty Ltd for support.

Q: Is it necessary to use only the recommended power supplies?

A: It is recommended to use the specified NEXEN power supplies to ensure optimal performance and to prevent any damage to the product.

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Product Description

Overview

The NEXEN family is a range of Ethernet/DMX convertors providing reliable conversion of protocols of the entertainment industry including Art-Net, sACN, DMX512-A, RDM, and ArtRDM. See section 1.3 for a list of supported protocols. DMX512 control devices (such as lighting controllers) can send lighting data over an Ethernet network to connected NEXEN nodes. The NEXEN nodes extract the DMX512 data and send it to connected devices such as intelligent lighting fixtures, LEDs dimmers, etcetera. Conversely, DMX512 data connected to the NEXEN can be converted to ethernet protocols. Four models of NEXEN are available, two DIN rail mount models and two portable models. On all models, each port is completely electrically isolated from the input and all other ports, ensuring that voltage differences and noise will not compromise your installation. LSC's free software product, HOUSTON X, is used to configure and monitor NEXEN. HOUSTON X also allows the NEXEN software to be updated via RDM. Therefore, once a NEXEN is installed, all operations can be performed remotely and there is no need to access the product again. RDM (Remote Device Management) is an extension to the existing DMX standard and allows controllers to configure and monitor DMX-based products. NEXEN supports RDM but also can individually disable RDM on any of its ports. This feature is provided because while many devices now offer RDM compatibility, there are still products available that do not perform correctly when RDM data is present, causing the DMX network to flicker or jam. Incompatible RDM devices will operate correctly if connected to a port(s) with RDM disabled. RDM can be used successfully on the remaining ports. See section 5.6.4

Features

- All models are powered by PoE (Power over Ethernet)
- DIN rail models can also be powered from a 9-24v DC supply
- The portable model can also be powered by USC-C
- Individually isolated DMX ports
- Each port can be individually configured to output any DMX Universe
- Each port can be individually configured as an Input or Output
- Each port configured as an Input can be set to generate sACN or ArtNet
- Each port can be individually configured with RDM enabled or disabled
- Each port can be labeled for greater clarity in more complex networks
- Status LEDs provide instant confirmation of port activity
- HTP (Highest Takes Precedence) merge per port
- Configurable via HOUSTON X or ArtNet
- Remote software upgrade via ethernet
- Fast boot time < 1.5s
- DHCP or static IP address modes
- LSC 2-year parts and labor warranty
- CE (European) and RCM (Australian) approved
- Designed and manufactured in Australia by LSC

Protocols

NEXEN supports the following protocols.

- Art-Net, Art-Net II, Art-Net II and Art-Net IV
- sACN (ANSI E1-31)
- DMX512 (1990), DMX-512A (ANSI E1-11)
- RDM (ANSI E1-20)
- ArtRDM

Models

NEXEN is available in the following models.

- DIN rail format
- Portable
- Portable IP65 (outdoor)

DIN Rail Models

The NEXEN DIN rail mount model is designed for permanent installations and is housed in a plastic enclosure designed to be fitted onto a standard TS-35 DIN rail as used extensively in the electrical industry to mount circuit breakers and industrial control equipment. It provides four individual DMX ports that can be individually configured as either DMX outputs or inputs. The two DIN rail models differ only in the type of DMX port connectors that are provided.

- NXD4/J. RJ45 sockets for the 4 DMX outputs/inputs where Cat-5 style cable is used for DMX512 reticulation
- NXD4/T. Push-fit terminals for the 4 DMX outputs/inputs where data cable is used for DMX512 reticulation
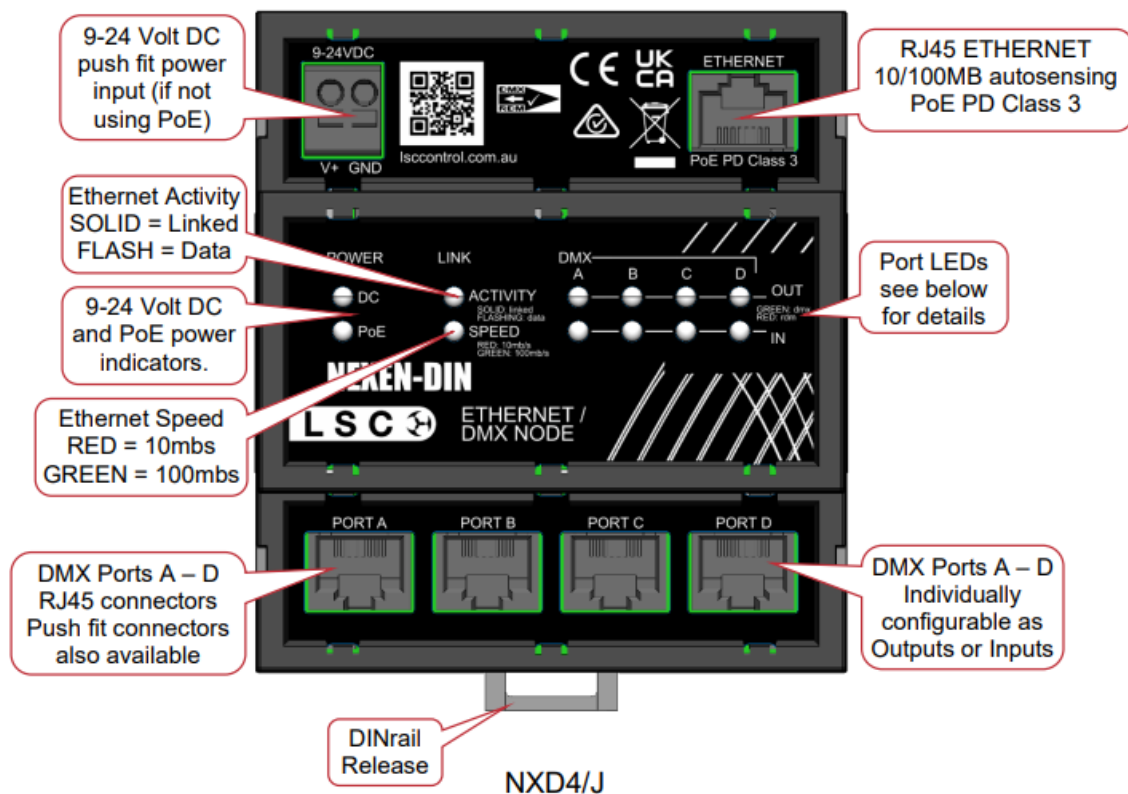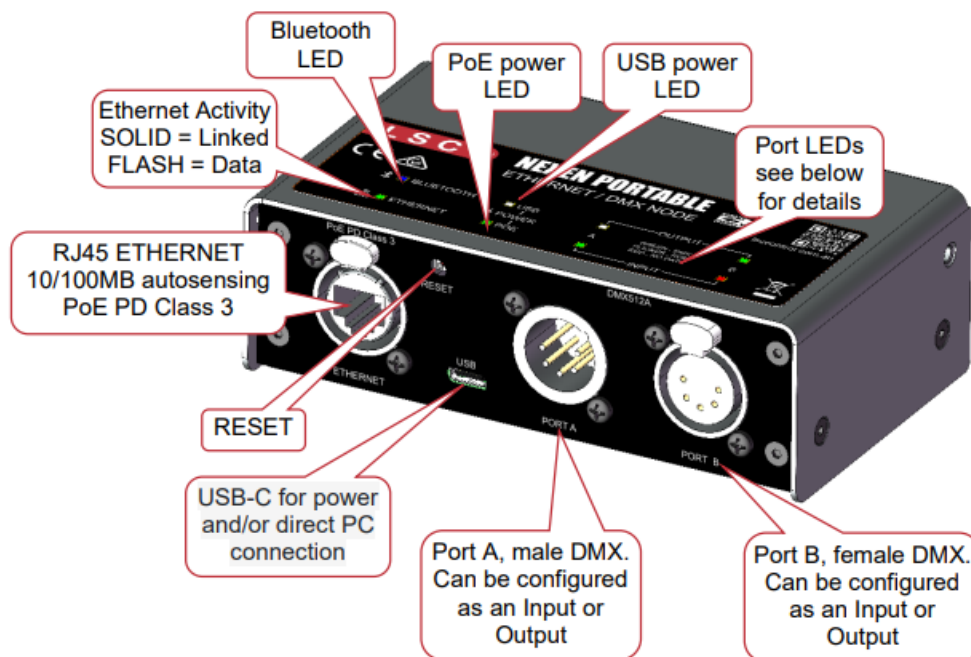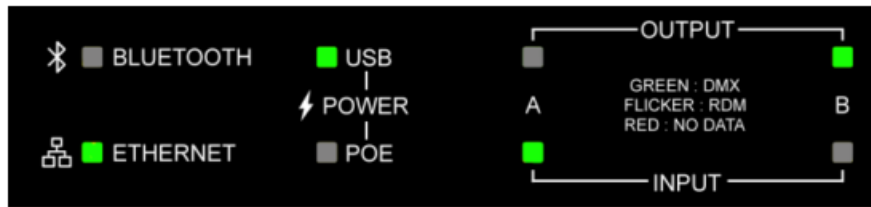

NEXEN DIN LEADS
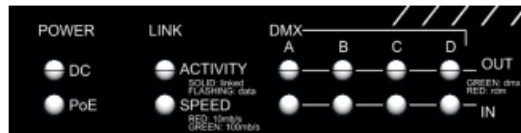
- When power is applied and NEXEN is booting up (<1.5 seconds), all LEDs (except Activity) flash red then green.
- DC Power LED.
  - Slow blinking (heartbeat) green = DC power is present and operation is normal.
  - PoE Power LED. Slow blinking (heartbeat) green = PoE power is present and operation is normal.
- DC Power AND PoE Power LED
  - Rapid alternate flashes between both LEDs = RDM Identify. See section 5.5
- LINK ACTIVITY LED
  - Green = Ethernet link established
  - Flashing green = Data on the link
- LINK SPEED LED
  - Red = 10mb/s
  - Green = 100mb/s (megabits per second)
- DMX Port LEDs. Each port has its own "IN" and "OUT" LED
  - Green = DMX data is present Flickering
  - green RDM data is present
  - Red No data

Portable Model

The NEXEN portable model is housed in a rugged full metal box with reverse printed polycarbonate labeling. It provides two DMX ports (one male 5-pin XLR and one female 5-pin XLR) that can be individually configured as either DMX outputs or inputs. It can be powered from either PoE (Power over Ethernet) or USB-C. An optional mounting bracket is available.


NEXEN PORTABLE PORT LEDS

- When power is applied and NEXEN is booting up (<1.5 seconds), all LEDs (except Ethernet) flash red and then green.
- USB Power LED. Slow blinking (heartbeat) green = USB power is present and operation is normal.
- POE Power LED. Slow blinking (heartbeat) green = PoE power is present and operation is normal.
- DC Power AND POE Power LED
- Rapid alternate flashes between both LEDs = RDM Identify. See section 5.5
  ETHERNET LED
    - Green = Ethernet link established
- Flashing green = Data on the link
- DMX Port LEDs. Each port has its own "IN" and "OUT" LED
    - Green = DMX data is present Flickering
    - green = RDM data is present
    - Red = No data
- Bluetooth LED. Future Feature

NEXEN PORTABLE RESET

- The portable model has a small hole located near the Ethernet connector. Inside there is a button that can be pressed with a small pin or paperclip.
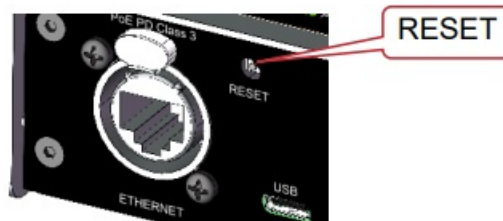

- Pushing the RESET button and releasing it will restart the NEXEN and all settings and configurations are retained.
- Pushing the RESET button and keeping it pushed for 10 seconds or more will reset the NEXEN to factory defaults. The default settings are:
    - Port A – input sACN universe 999
    - Port B – output sACN universe 999, RDM enabled
- **Note**: All models of NEXEN can be reset via HOUSTON X.

Portable IP65 (Outdoor) Model

The NEXEN IP65 model is designed for outdoor use (water resistant) and is housed in a rugged full metal box with IP65-rated connectors, rubber bumpers, and reverse-printed polycarbonate labeling. It provides two DMX ports (both female 5-pin XLR) that can be individually configured as either DMX outputs or inputs. It is powered by PoE (Power over Ethernet). An optional mounting bracket is available.
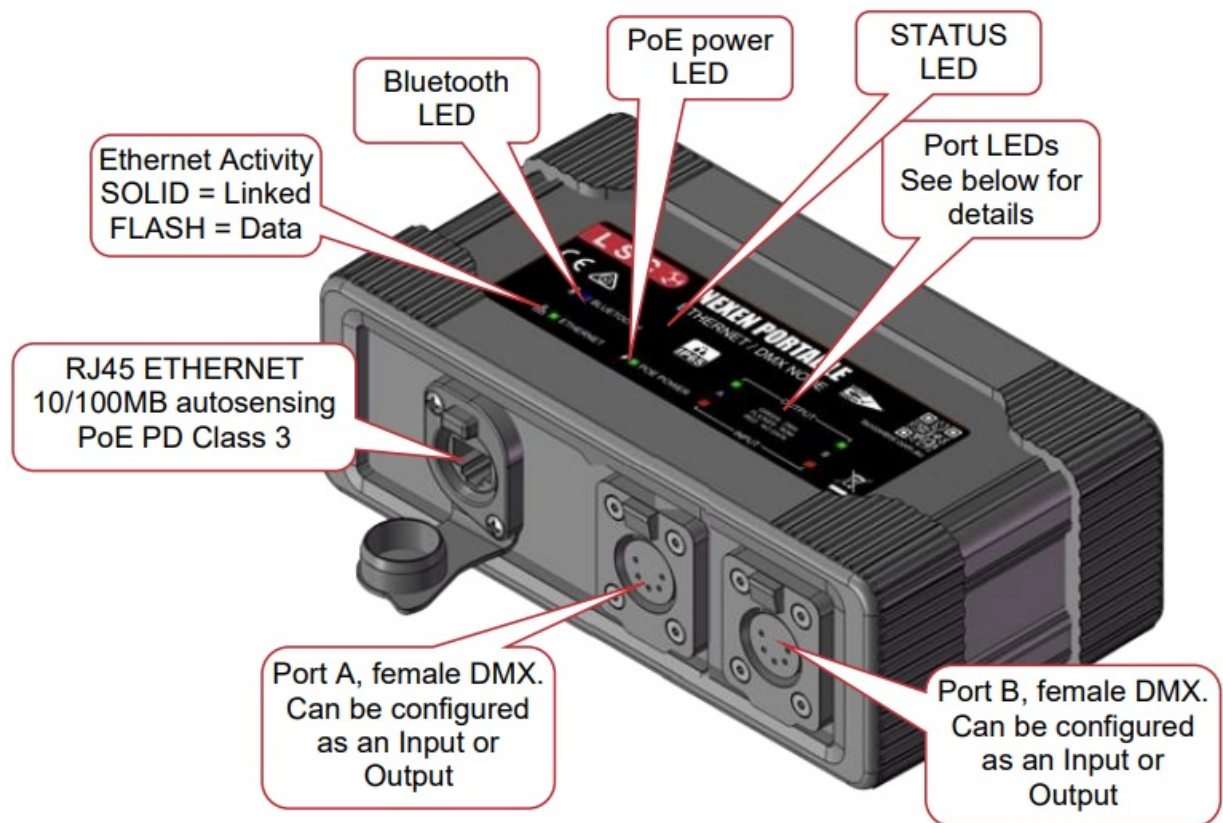
PORTABLE IP65 LEDS
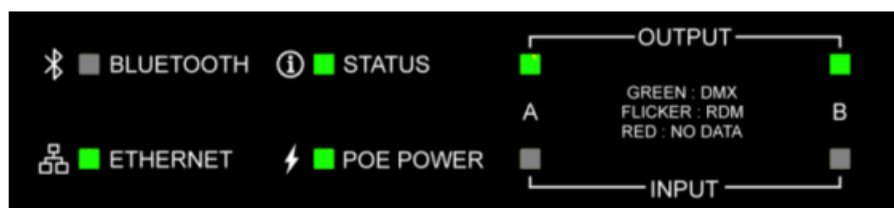
- When power is applied and NEXEN is booting up (<1.5 seconds), all LEDs (except Ethernet) flash red then green.
- STATUS LED. Slow blinking (heartbeat) green = normal operation. Solid red = not operating. Contact LSC for service.
- PoE Power LED. Green = PoE power is present.
- STATUS AND PoE Power LED
  - Rapid alternate flashes between both LEDs = RDM Identify. See section 5.5
- ETHERNET LED
  - Green = Ethernet link established
  - Flashing green = Data on link
- DMX Port LEDs. Each port has its own "IN" and "OUT" LED
  - Green = DMX data is present Flickering
  - green = RDM data is present
  - Red = No data
- Bluetooth LED. Future Feature

Mounting Brackets

DIN Rail Mounting

Mount the DIN rail model on a standard TS-35 DINrail (IEC/EN 60715).

- NEXEN DIN is 5 DIN modules wide
- Dimensions: 88mm (w) x 104mm (d) x 59mm (h)

Portable Model and IP65 Mounting Brackets

Optional mounting brackets are available for the portable and IP65 outdoor NEXENs.

Power Supply

NEXEN DIN Power Supply

- There are two possible power connections for DIN models. Both PoE and DC power can be connected simultaneously without damaging the NEXEN.
- PoE (Power over Ethernet), PD Class 3. PoE delivers power and data over a single CAT5/6 network cable. Connect the ETHERNET port to a suitable PoE network switch to provide power (and data) to the NEXEN.
- A 9-24Volt DC power supply connected to the push-fit terminals observes the correct polarity as labeled below the connector. See section 4.2 for wire sizes. LSC recommends using a power supply of at least 10 watts for reliable long-term operation.

NEXEN Portable Power Supply

- There are two possible power connections for the portable model. Only one type of power is required.
- PoE (Power over Ethernet). PD Class 3. PoE delivers power and data over a single CAT5/6 network cable. Connect the ETHERNET port to a suitable PoE network switch to provide power (and data) to the NEXEN.
- USB-C. Connect a power supply that can supply at least 10 watts.
- Both PoE and USB-C power can be connected simultaneously without damaging the NEXEN.

NEXEN Portable IP65 Power Supply

- The portable IP65 model is powered by PoE (Power over Ethernet), PD Class 3. PoE delivers power and data over a single CAT5/6 network cable. Connect the ETHERNET port to a suitable PoE network switch to provide power (and data) to the NEXEN.

DMX Connections

Cable Types

LSC recommends using Beldon 9842 (or equivalent). Cat 5 UTP (Unshielded Twisted Pair) and STP (Shielded Twisted Pair) cables are acceptable. Never use an audio cable. The data cable must conform to the EIA485 cable requirements by providing the following specifications:

- Low capacitance
- One or more twisted pairs
- Foil and braid shielded

- The impedance of 85-150 ohms, nominally 120 ohms
- 22AWG gauge for continuous lengths over 300 meters

In all cases, the end of the DMX line must be terminated (120 Ω) to prevent the signal from reflecting back up the line and causing possible errors.

DIN DMX Push-Fit Terminals
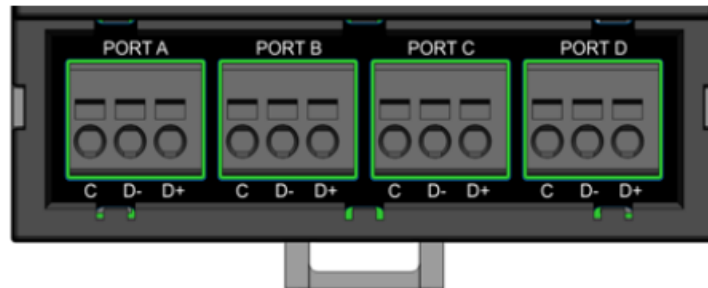
The following cables are suitable for use with the push-fit terminals:

- 2.5mm² stranded wire
- 4.0mm² solid wire

Stripping length is 8mm. Insert a small screwdriver into the slot adjacent to the cable hole. This releases the spring inside the connector. Insert the cable into the round hole then remove the screwdriver. Solid wires or wires fitted with ferrules can often be pushed directly into the connector without the use of a screwdriver. When connecting multiple cables to a single terminal the wires must be twisted together to ensure a good connection to both legs. Non insulated bootlace ferrules can also be used for stranded cables. Ferrules are not recommended for solid cables. Insulated bootlace ferrules can also be used allowing stranded cables to be easily inserted without the need of a tool to actuate the spring release. The maximum ferrule outer diameter is 4mm.

DIN DMX RJ45 Connectors

RJ45	
Pin Number	**Function**
1	+ Data
2	– Data
3	Not Used
4	Not Used
5	Not Used
6	Not Used
7	Ground
8	Ground

Portable/IP65 DMX XLR Pin Outs

5 pin XLR	
Pin Number	**Function**
1	Ground
2	– Data
3	+ Data
4	Not Used
5	Not Used

Some DMX-controlled equipment uses a 3-pin XLR for DMX. Use these pin-outs to make 5-pin to 3-pin adaptors.

3 Pin XLR	
Pin Number	**Function**
1	Ground
2	– Data
3	+ Data

NEXEN Configuration / HOUSTON X

- **Overview** NEXEN is configured using HOUSTON X, LSC's remote configuration and monitoring software. HOUSTON X is only required for configuration and (optionally) monitoring of NEXEN.
- **Note**: The descriptions in this manual refer to HOUSTON X version 1.07 or later.
- **Hint**: HOUSTON X also works with other LSC products such as APS, GEN VI, MDR-DIN, LED-CV4, UNITOUR, UNITY, and Mantra Mini.

HOUSTON X Download

The HOUSTON X software runs on Windows computers (MAC is a future release). HOUSTON X is available for free download from the LSC website. Open your browser then navigate to www.lsccontrol.com.au then click "Products" then "Control" then "Houston X". At the bottom of the screen click "Downloads" then click on "Installer for Windows". The software will download, however, your operating system might warn you that "HoustonX Installer is not commonly downloaded". If this message appears, hover your mouse over this message and 3 dots will appear. Click on the dots then click "Keep". When the next warning appears click "Show more" then click "Keep anyway". The downloaded file has the name "HoustonXInstaller-vx.xx.exe where x.xx is the version number. Open the file by clicking on it. You might be advised that "Windows protected your PC". Click "More Info" then click "Run Anyway". The "Houston X Setup Wizard" opens. Click "Next" then follow the prompts to install the software answering "Yes" to any permission requests. Houston X will be installed in a folder named Program Files/LSC/Houston X.
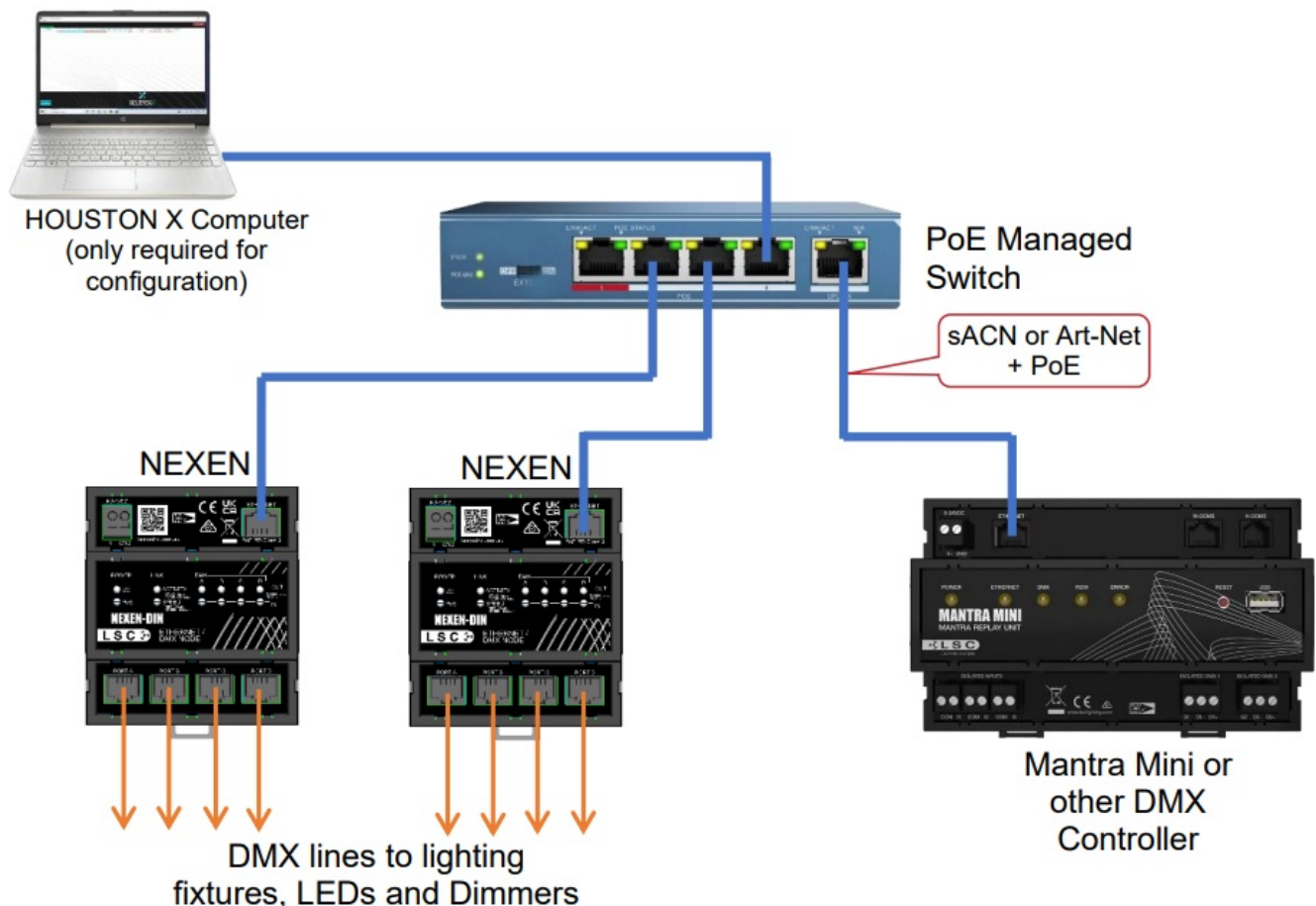
Network Connections

The computer running HOUSTON X and all NEXENs should be connected a managed network switch. Connect the NEXEN's "ETHERNET" port to the switch.

- **Hint**: When choosing a network switch, LSC recommends the use of "NETGEAR AV Line" switches. They provide a preconfigured "Lighting" profile that you can apply to the switch so that it easily connects with sACN(sACN) and Art-Net devices.
- **Hint**: If there is only one NEXEN in use, it can be connected directly to the HX computer without a switch. To run the program double click "HoustonX.exe".
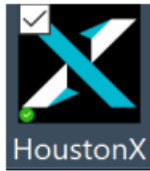
- The NEXEN is set in the factory to DHCP (Dynamic Host Configuration Protocol). This means that it will be automatically issued with an IP address by the DHCP server on the network.
- Most managed switches include a DHCP server. You can set NEXEN to a static IP.
- **Hint**: If NEXEN is set to DCHP, it will look for a DHCP server when it starts. If you apply power to NEXEN and the ethernet switch at the same time, NEXEN may boot up before the ethernet switch is transmitting the DHCP data.

  Modern ethernet switches can take 90-120 seconds to boot up. NEXEN waits 10 seconds for a response. If there is no response, it times out and sets an automatic IP address (169. x.y.z). This is as per the DHCP standard. Windows and Mac computers do thesame thing. However, LSC products resend the DHCP request every 10 seconds. If a DHCP server comes online later, NEXEN will then automatically change to a DHCP-assigned IP address. This feature applies to all LSC products with internal ethernet.


- If HOUSTON X detects more than one Network Interface Card (NIC) on the computer it will open the "Select Network Interface Card" window. Click the NIC that is being used to connect to your NEXEN.
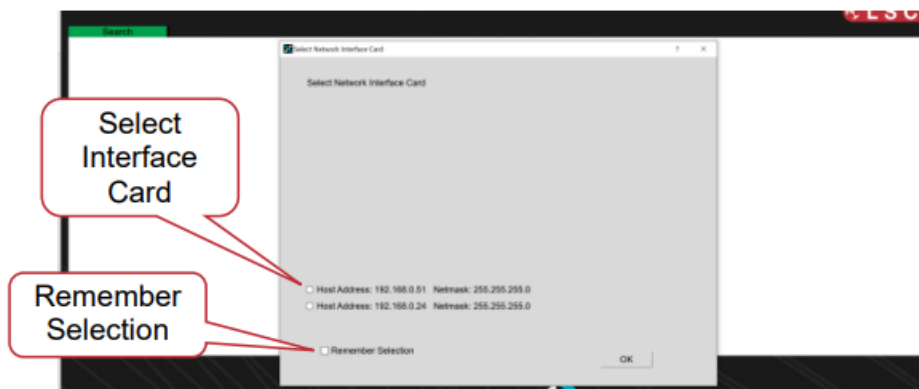
- If you click "Remember Selection", HOUSTON X will not ask you to select a card the next time you start the program.

Discovering NEXENs

- HOUSTON X will automatically discover all NEXENs (and other compatible LSC devices) that are on the same network. A NEXEN tab will appear at the top of the screen. Click on the NEXEN tab (its tab turns green) to see a summary the NEXENs on the network.
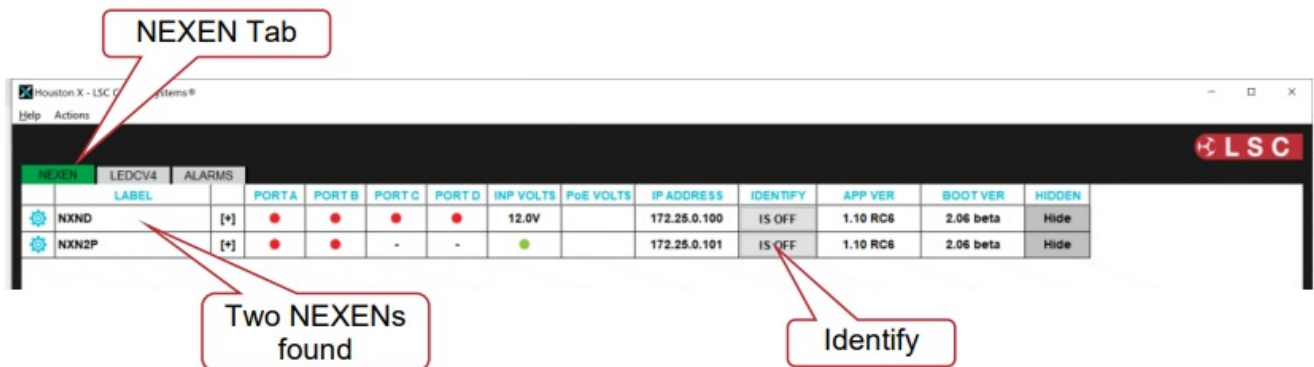
Use Old Ports

- Early units of NEXEN were configured to use a different "port number" to that used by current units. If HOUSTON X cannot find your NEXEN click Actions, Configuration then tick the "Use Old Ports" box.
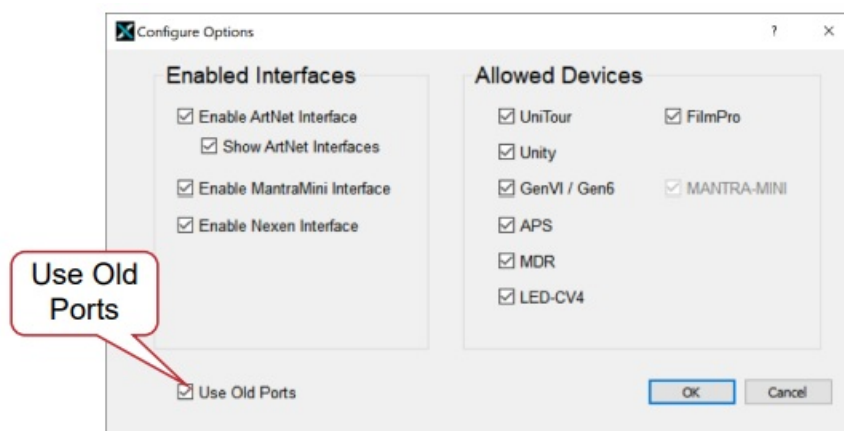
- Houston X can now find the NEXEN using the old port number. Now use HOUSTON X to install the latest version of the software in the NEXEN, see section 5.9. Installing the latest software changes the port number used by the NEXEN to the current port number. Next, un-tick the "Use Old Ports" box.

Identify

- You can use the IDENTIFY function on HOUSTON X to ensure that you are selecting the correct NEXEN. Clicking an IDENTIFY IS OFF button (it changes to IS ON) causes two LEDs of that NEXEN to rapidly alternately flash (as described in the table below), identifying the unit that you are controlling.

Model	DIN	Portable	Portable IP65
Flashing "Identify" LEDs	DC + PoE	USB + PoE	Status + PoE

Note: The LEDs will also rapidly flash alternately when the NEXEN receives an "Identify" request via any other RDM controller.

Configuring Ports

With a NEXEN tab selected, click the + button of each NEXEN to expand the view and see the settings of NEXEN's ports. You can now change port settings and name labels by clicking on their respective cell.

- Clicking a cell containing text or numbers will turn the text or number blue indicating that they are selected. Type your required text or number then press Enter (on your computer keyboard) or click in another cell.
- Clicking a Mode, RDM or Protocol cell will display a down arrow. Click on the arrow to see the available selections. Click on your required selection.
- Multiple cells of the same type can be selected and all can be changed with one data entry. For example, click and drag the "Universe" cells of several ports then enter the new universe number. It is applied to all selected ports.
- Whenever you change a setting, there is a small delay while the change is sent to the NEXEN and then the NEXEN responds by returning the new setting to HOUSTON X to confirm the change.

Labels

- Each NEXEN has a label and each port has a port label and a port name.

NEXEN	LEDCV4	AL~MS		NAME	MODE	RDM	PROTOCOL	UNIVERSE	PRIORITY	PORT A	PORT B	PORT C	PORT D
⚙	NXND		[-]							●	●	●	●
		NXND:P-A		Port D	OUTPUT	ON	sACN	1	-				
		NXND:P-B		Port D	OUTPUT	ON	sACN	1	-				
		NXND:P-C		Port D	OUTPUT	ON	sACN	1	-				
		NXND:P-D		Port D	OUTPUT	ON	sACN	1	-				

- The default "NEXEN Label" of a NEXEN DIN is "NXND" and a NEXEN Portable is NXN2P. You can change the label (by clicking in the cell and typing your required name as described above) to make it descriptive. This will assist you in identifying each NEXEN which is useful when more than one NEXEN is in use.

- The default "LABEL" of each Port is the NEXEN "Label" (above) followed by its port letter, A, B, C, or D. For example, the default label of Port A is NXND: P-A. However, if you changed the NEXEN label to say "Rack 6", then its port A would be automatically labeled "Rack 6:P-A".

Name

The default "NAME" of each port is, Port A, Port B, Port C, and Port D, but you can change the name (as described above) to something more descriptive. This will assist you to identify the purpose of each port.

Mode (Output or Input)

Each port can be individually configured as a DMX output, DMX input, or Off. Click on each port's "MODE" box to reveal a drop-down box that offers the available modes for that port.

- Off. The port is inactive.
- DMX Output. The port will output DMX from the selected "Protocol" and "Universe" as selected below in section 5.6.5. The protocol might be received on the Ethernet port or be generated internally by NEXUS from DMX received on a DMX port that is configured as an input. If multiple sources exist, they will be output on a HTP (Highest Takes Precedence) basis. See 5.6.9 for more details on merging.
- DMX Input. The port will accept DMX and convert it into its selected "Protocol" and "Universe" as selected below in section 5.6.5. It will output that protocol on the Ethernet port and also output DMX on any other port selected to output the same "Protocol" and "Universe". Click on the required mode then press Enter

RDM Disable

As mentioned in section 1.1, some DMX-controlled devices do not operate properly when RDM signals are present. You can turn off the RDM signal on each port so that these devices operate correctly. Click on each port's "RDM" box to reveal the choices.

- Off. RDM is not transmitted or received.
- On. RDM is transmitted and received.
- Click on the required choice then press Enter.
- **Note**: HOUSTON X or any other Art-Net controller will not see any devices that are connected to a port that has its RDM turned off.
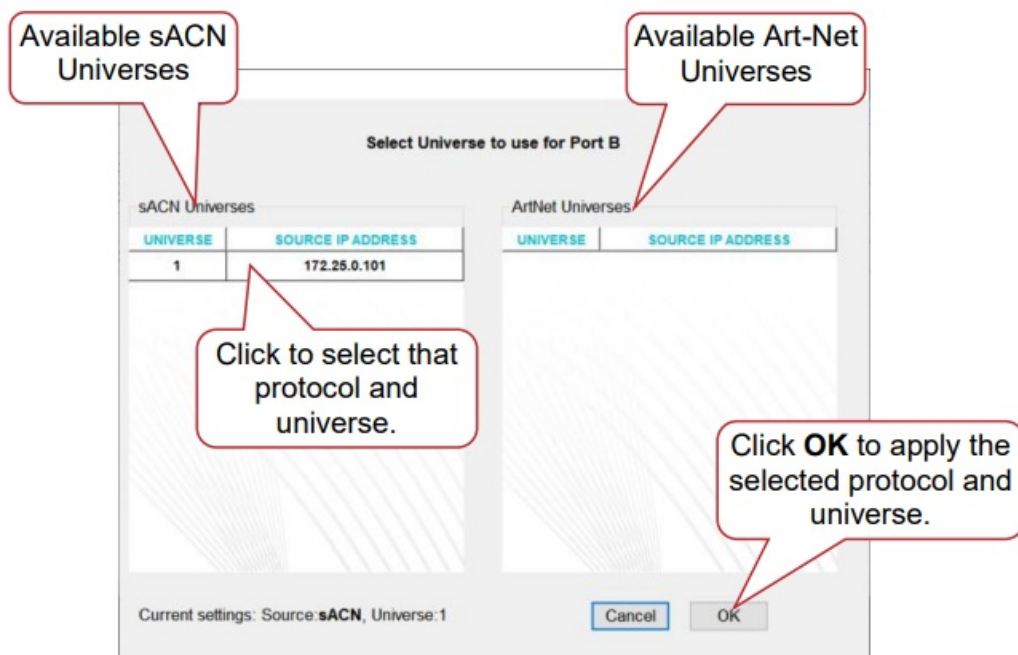
Available Universes

If the NEXEN is connected to a network that contains active sACN or Art-Net signals, HOUSTON X has a feature that allows you to see all those sACN or Art-Net universes currently on the network and then select the required signal/universe for each port. The port must be set as an "OUTPUT" for this feature to work. Click the dot below each Port to see all available universes and then make a selection for that port. For example, to assign a signal to Port B, click on Port B's dot.

Click a dot to see all available universes

Interfaces	NEXEN											
LABEL		NAME	MODE	RDM	PROTOCOL	UNIVERSE	PRIORITY	PORT A	PORT B	PORT C	PORT D
NEXEN-DIN 4 Ports	[-]							●	●	●	●
NEXEN-DIN 4 Ports:P-A		Port A	OUTPUT	ON	sACN	1	-				
NEXEN-DIN 4 Ports:P-B		Port B	OUTPUT	ON	sACN	1	-				
NEXEN-DIN 4 Ports:P-C		Port C	OUTPUT	ON	sACN	2	-				
NEXEN-DIN 4 Ports:P-D		Port D	OUTPUT	ON	sACN	3	-				

A pop-up box will open showing all the active sACN and Art-Net universes on the network. Click a protocol and universe to select it for that port.

Available sACN Universes

Available Art-Net Universes

Select Universe to use for Port B

sACN Universes

UNIVERSE	SOURCE IP ADDRESS
1	172.25.0.101

ArtNet Universes

UNIVERSE	SOURCE IP ADDRESS

Click to select that protocol and universe.

Click **OK** to apply the selected protocol and universe.

Current settings: Source:**sACN**, Universe:1   Cancel   OK

If the NEXEN is not connected to an active network you can still manually select the protocol and universe as described in the following sections.

Protocol

Click on each port's "PROTOCOL" box to reveal a drop-down box that offers the available protocols for that port.

- Off. The port does not process sACN or Art-Net. The port still passes RDM (if RDM is set to ON as described in section 5.6.4).

sACN.

- When the port is set to OUTPUT mode, it generates DMX from the sACN data received on the Ethernet port or from a DMX port that is configured as an "Input" and set to sACN. See also "Universe" below. If multiple sACN sources with the same universe and

- priority level are received they will be merged on an HTP (Highest Takes Precedence) basis. See section 5.6.8 for more details on "sACN priority".

- When the port is set to INPUT mode, it generates sACN from the DMX input on that port and outputs it on the Ethernet port. Any other port set to output DMX from the same sACN universe will also output that DMX. See also "Universe" below.

Art-Net

- When the port is set to OUTPUT mode, it generates DMX from the Art-Net data received on the Ethernet port or from a DMX port that is configured as an "Input" and set to Art-Net. See also "Universe" below.

- When the port is set to INPUT mode, it generates the Art-Net data from the DMX input on that port and outputs it on the Ethernet port. Any other port set to output DMX from the same Art-Net universe will also output that DMX. See also "Universe" below.
  - Click on the required choice then press Enter

Universe

The DMX Universe that is output or input on each port can be independently set. Click on each port's "Universe" cell type in the required universe number then press Enter. See also "Available Universes" above.

ArtNet Merging

If a NEXEN sees two Art-Net sources sending the same universe, it does an HTP (Highest Takes precedence) merge. For example, if one source has channel 1 at 70% and another source has channel 1 at 75%, the DMX output on channel 1 will be 75%.

sACN Priority / Merging

The sACN standard has two methods to deal with multiple sources, Priority and Merge.

sACN Transmit Priority

- Every sACN source can assign a priority to its sACN signal. If a DMX port on a NEXEN has its "Mode" set as a DMX "Input" and its "Protocol" is set to sACN, then it becomes a sACN source and hence you can set its "Priority" level. The range is 0 to 200 and the default level is 100.

sACN Receive Priority

- If a NEXEN receives more than one sACN signal (on the selected universe) it will only respond to the signal with the highest priority setting. If that source disappears, the NEXEN will wait for 10 seconds and then change to the source with the next highest priority level. If a new source appears with a higher priority level than the current source, then the NEXEN will immediately switch to the new source. Normally, priority is applied per universe (all 512 channels) but there is also an unratified "priority per channel" format for sACN where each

channel can have a different priority. The NEXEN fully supports this "priority per channel" format for any port set to an "Output" but does not support it for ports set as an Input.

sACN Merge

- If two or more sACN sources have the same priority then NEXEN will perform an HTP (Highest Takes precedence) merge per channel.

Restart / Reset / Restrict

- Click a NEXEN's "COG" icon to open the "NEXEN SETTING" menu for that NEXEN.
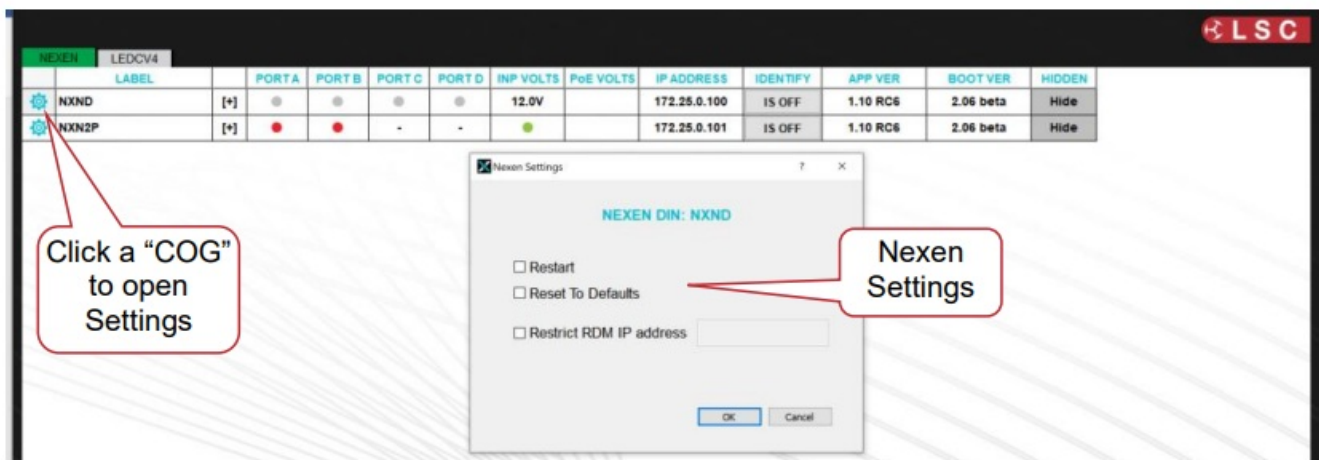
- There are three "Nexen Settings" choices;
- Restart
- Reset to defaults
- Restrict RDM IP address

Restart

- In the unlikely event that NEXEN fails to operate correctly, you can use HOUSTON X to restart NEXEN. Clicking COG, RESTART, OK then YES will reboot the NEXEN. All settings and configurations are retained.

Reset to Defaults

- Clicking COG, RESET TO DEFAULTS, OK then YES will erase all current settings and reset to defaults.
- The default settings for each model are:

NEXEN DIN

- Port A – Off
- Port B – Off
- Port C – Off
- Port D – Off

NEXEN Portable

- Port A – Input, sACN universe 999
- Port B – Output, sACN universe 999, RDM enabled

NEXEN Outdoor IP65

- Port A – Output, sACN universe 1, RDM enabled
- Port B – Output, sACN universe 2, RDM enabled

Restrict RDM IP Address

- HOUSTON X uses RDM (Reverse Device Management) to control connected devices, however other controllers on the network can also send RDM commands to control the same devices which might not be desirable. You can restrict control of a NEXEN so that it can only be controlled by the IP address of the computer running HOUSTON X. Click COG, Restrict RDM IP address, then enter the IP address of the computer that is running HOUSTON X

- Click OK. Now only this computer running HOUSTON X can control this NEXEN.

IP Address

- As mentioned in section 5.3, NEXEN is set in the factory to DHCP (Dynamic Host Configuration Protocol). This means that it will be automatically issued with an IP address by the DHCP server on the network. To set a static IP address, double-click on the IP address number.

Double Click the
IP number

- The "Set IP Address" window opens.

Set IP Address

Enter IP Details for NXND

Use DHCP: ☑

Un tick
"Use DHCP"

Ip Address:

Mask:

Gateway:

OK   Cancel

- Un-tick the "Use DHCP" box then enter the required "Ip Address" and "Mask" then click OK.

Software Update

- LSC Control Systems Pty Ltd has a corporate policy of continuous improvement, covering areas such as product design and documentation. To achieve this goal, we undertake to release software updates for all products on a regular basis. To update the software, download the latest software for the NEXEN from the LSC website, **www.lsccontrol.com.au**. Download the software and save it to a known location on your computer. The file name will be in the format, NEXENDin_vx.xxx.upd where xx.xxx is the version number. Open HOUSON X and click on the NEXEN tab. The "APP VER" cell shows you the current version number of the NEXEN software. To update the NEXEN software, double-click on the version number of the NEXEN that you wish to update.
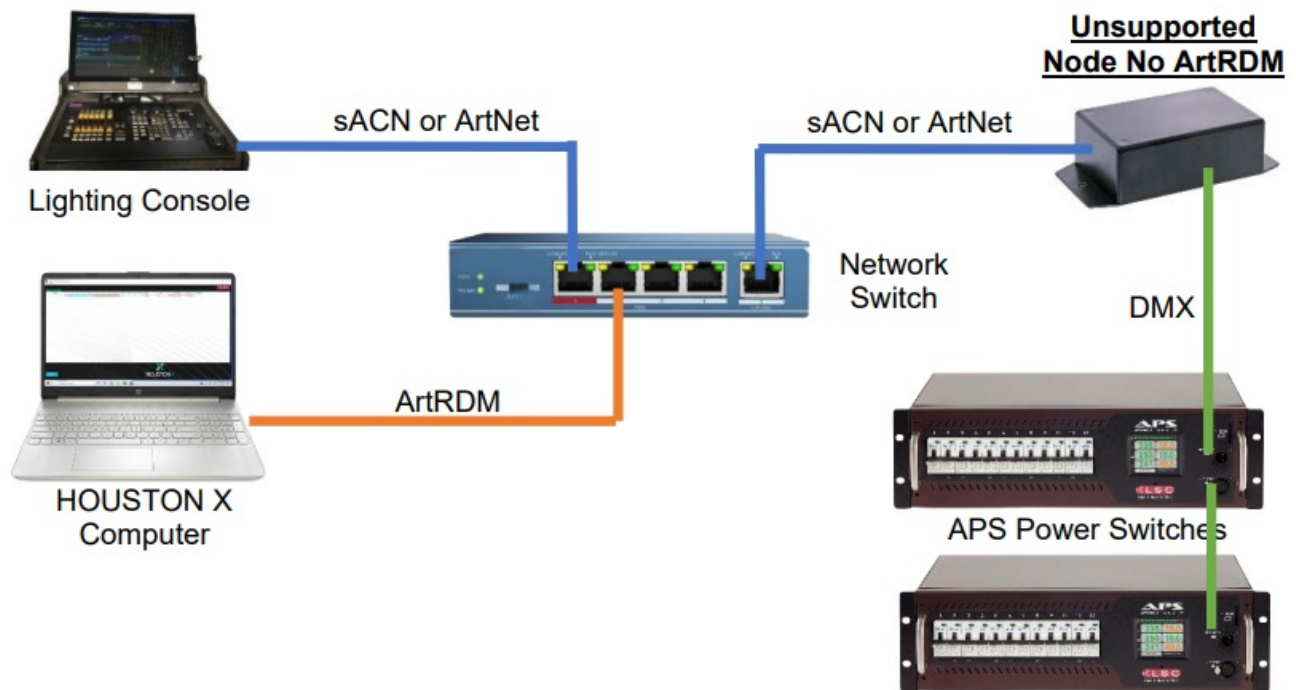

NEXEN Tab

APP VER

Double click on the "number

- A "Find Update File" window opens. Navigate to the location where you saved the downloaded software click on the file then click Open. Follow the on-screen instructions and the NEXEN software will be updated.

Use NEXEN to inject RDM into DMX.

- HOUSTON X uses ArtRDM to communicate with LSC devices (such as GenVI dimmers or APS power switches). Most (but not all) manufacturers of Ethernet (ArtNet or sACN) to DMX nodes support RDM communication over Ethernet by using the ArtRDM protocol provided by ArtNet. If your installation uses nodes that do not provide ArtRDM, HOUSTON X cannot communicate, monitor, or control any LSC devices that are connected to those nodes

- In the following example, the node does not support ArtRDM so it does not forward the RDM data from HOUSTON X in its DMX output to the APS Power Switches so HOUSTON X cannot communicate with them.

- You can overcome this problem by inserting a NEXEN into the DMX stream as shown below.

NEXEN inserts RDM.
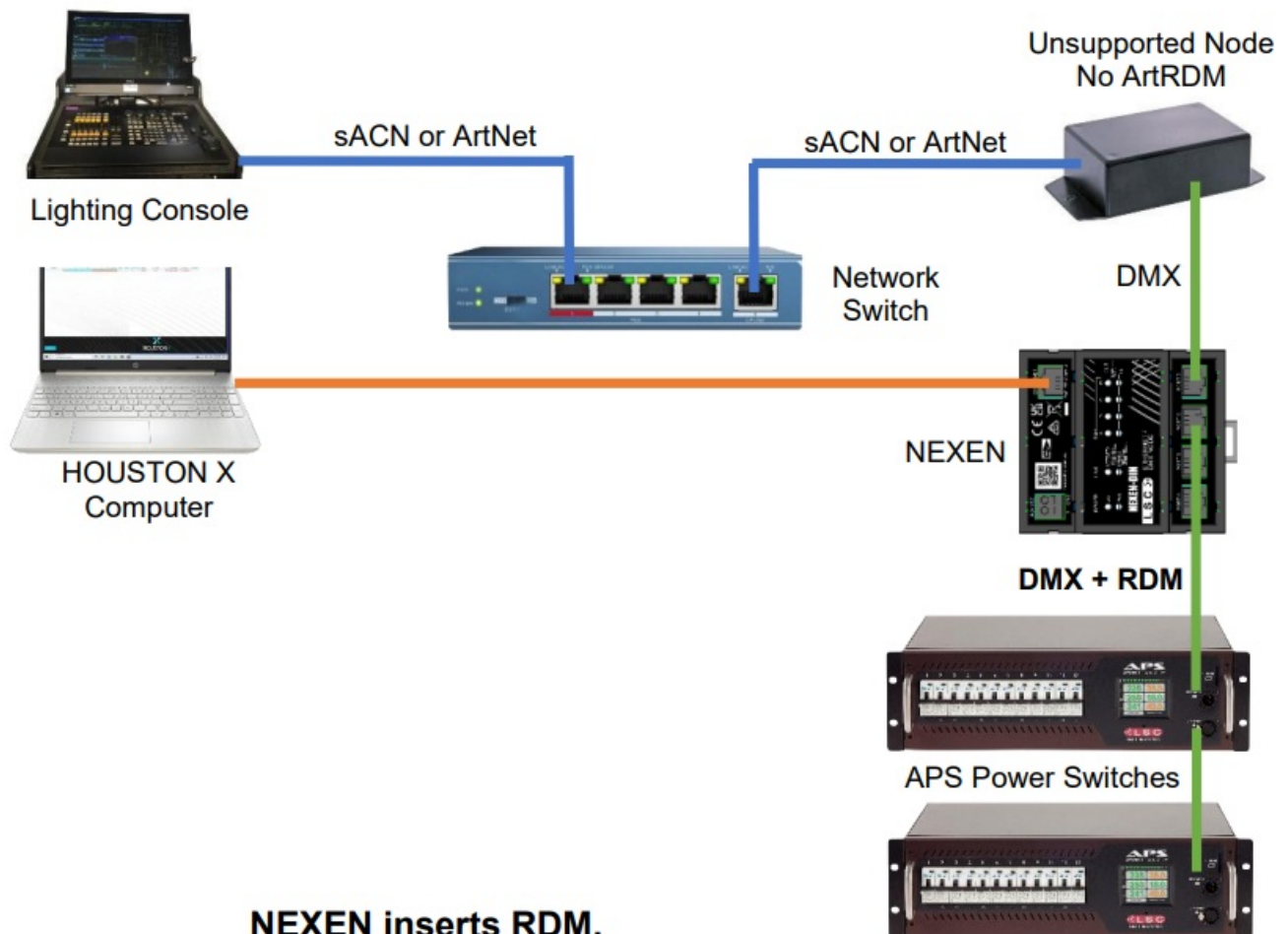
- The NEXEN takes the DMX output from the node and adds the RDM data from the NEXEN ethernet port then outputs the combined DMX/RDM to the connected devices. It also takes the returned RDM data from the connected devices and outputs this back to HOUSTON X. This allows HOUSTON X to communicate with the LSC devices whilst still allowing the devices to be controlled by the DMX from the non-ArtRDM compliant node.
- This configuration keeps the monitoring network traffic isolated from the lighting control network traffic. It allows the HOUSTON X computer to be located on an office network or directly connected to the NEXEN. The procedure to set up RDM injection using a NEXEN is…
- NEXEN Input. Connect the DMX output from the non-compliant node to a Port of the NEXEN. Set this port as an INPUT, the protocol to ArtNet or sACN, and choose a universe number. The protocol and universe number that you choose is irrelevant, provided that the Universe is not already in use on the same network to which HOUSTON X might be connected.
- NEXEN Output. Connect a Port of the NEXEN to the DMX input of the DMX-controlled equipment. Set this port as an OUTPUT and the protocol and the universe number to the same as used on the input port.

It is also possible to connect the HOUSTON X computer and the NEXEN to the lighting control network. Ensure that the protocol and universe selected on the NEXEN are not in use on the control network.

HOUSTON X Computer and NEXEN connected via the lighting control network
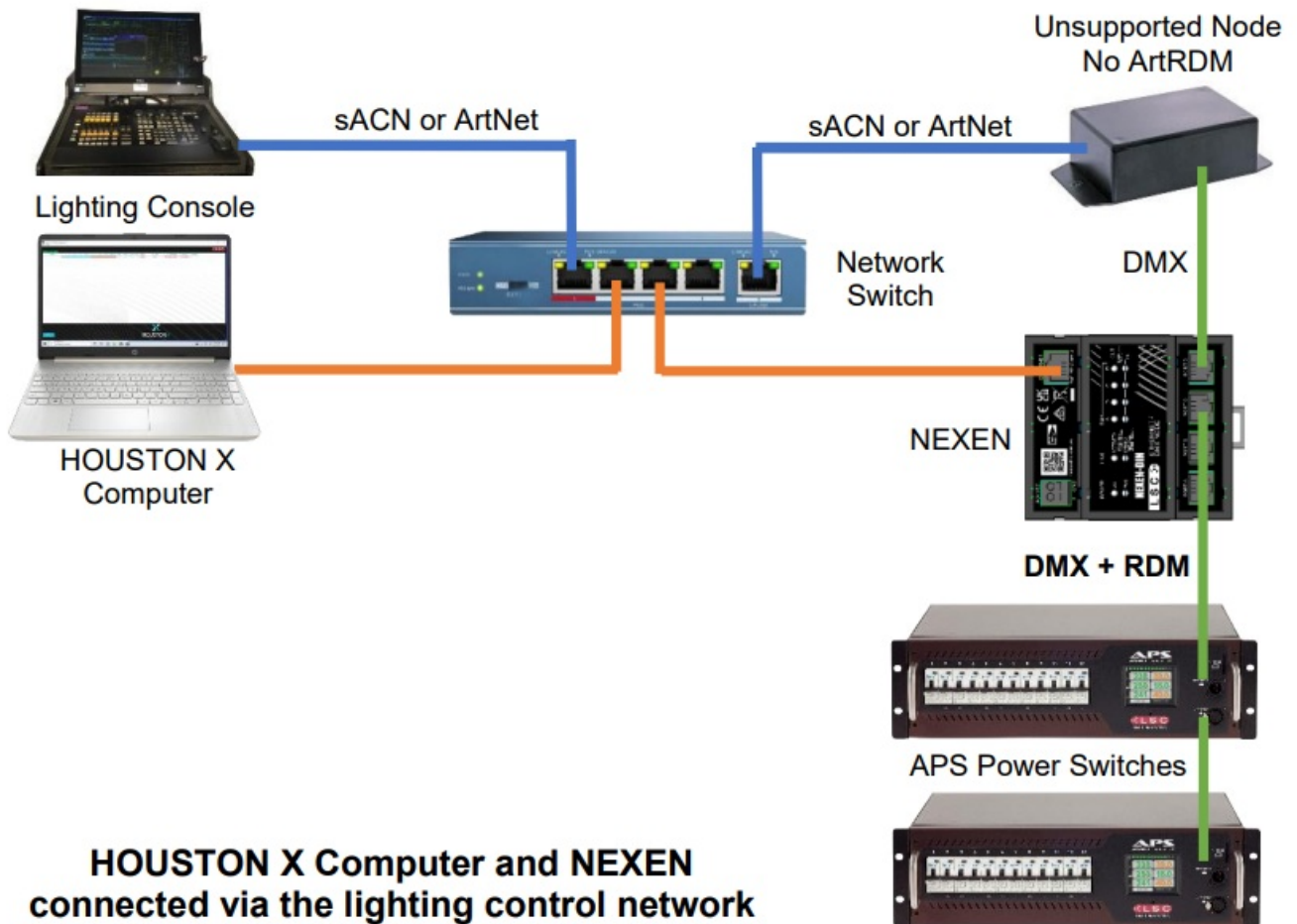
Terminology

DMX512A

DMX512A (commonly called DMX) is the industry standard for the transmission of digital control signals between lighting equipment. It utilises 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 is fitted with an address switch or screen. This address is set to the slot number to which the equipment is to respond.

DMX Universes

- If more than 512 DMX slots are required, then more DMX outputs are required. The slot numbers on each DMX output are always 1 to 512. To differentiate between each DMX output, they are called Universe1, Universe 2, etcetera.

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. The controller has no idea what it is connected to, or even if what it's connected to is working, switched on, or even there at all. RDM changes all that allowing the equipment to answer back! An RDM enabled moving light, for example, can tell you many useful things about its operation. The DMX address it is set to, the operating mode it is in, whether its pan or tilt is inverted and how many hours since the

lamp was last changed. But RDM can do more than that. It is not limited to just reporting back, it can change things as well. As its name suggests, it can remotely manage your device. 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.

ArtNet

ArtNet (designed by and copyright, Artistic Licence Holdings Ltd) is a streaming protocol to transport multiple DMX universes over a single Ethernet cable/network. NEXEN supports Art-Net v4. There are 128 Nets (0-127) each with 256 Universes divided into 16 Subnets (0-15), each containing 16 Universes (0-15).

ArtRdm

ArtRdm is a protocol that allows RDM (Remote Device Management) to be transmitted via Art-Net.

sACN

Streaming ACN (sACN) is an informal name for the E1.31 streaming protocol to transport multiple DMX universes over a single cat 5 Ethernet cable/network.

Troubleshooting

When choosing a network switch, LSC recommends the use of "NETGEAR AV Line" switches. They provide a preconfigured "Lighting" profile that you can apply to the switch so that it easily connects with sACN(sACN) and Art-Net devices. If HOUSTON X cannot find your NEXEN it might be looking at the wrong port number. See section 5.4.1 to resolve this problem. Devices connected to a NEXEN DMX port are not appearing on HOUSTON X. Ensure that the NEXEN DMX port is set to OUTPUT and the ports RDM is ON. If the NEXEN fails to operate, the POWER LED (for the connected power source) will light RED. Contact LSC or your LSC agent for service. **info@lsccontrol.com.au**

Feature History

The new features added to NEXEN in each software release are listed below: Release: v1.10 Date: 7-June-2024

- The software now supports the NEXEN Portable (NXNP/2X and NXNP/2XY) models
- It is now possible to restrict the RDM configuration of nodes to a specific IP address
- Universe information sent to HOUSTON X now includes the source name Release: v1.00 Date: 18-Aug-2023
- First public release

Specifications

NXND/4J	NXND/4T	NXNP/2X	NXNP/2XY
DIN RJ45	**DIN Terminals**	**Portable**	**Portable IP65**

Features			
Art-Net merging sACN priority by source and channel ArtRdm active with/without DMX ArtRdm on sACN ports RDM injector. Receive DMX on input, send DMX + RDM on output port			

Control			
Configure and monitor via HOUSTON X Enable/.disable RDM per port Art-Net, sACN, ArtRdm DMX512 (1990), DMX512-A (E1-11) and RDM (E1-20)			

Inputs/Outputs			
RJ45 ethernet connector		Ethercon RJ45 ethernet connection	IP65 rated Ethercon RJ45 connector
4 x DMX/RDM ports on RJ45 connectors		1 x DMX/RDM port on male XLR5 connector	2 x DMX/RDM ports on IP65 female XLR5 connectors
		1 x DMX/RDM port on female XLR5 connector USB-C for direct PC connection	

Power			
PoE via RJ45 ethernet connector			PoE via IP65 Ethercon RJ45 connector
9-24V DC 10 watts, reverse polarity protected power source via 2-pole push-fit terminals		USB-C	

Protection			
Full electrical isolation between ethernet input and DMX/RDM ports			
Full electrical isolation between individual DMX/RDM ports			
Reverse polarity protection on DC power input			

Mechanical			
UL94-VO rated ABS plastic 5-module wide DIN housing		Rugged full metal portable box with reverse printed polycarbonate labelling	Rugged IP65 full metal box with rubber bumpers. Reverse printed polycarbonate labelling
TS-35 Top Hat DINrail mount (IEC/EN 60715)		Optional mounting bracket with keyhole slots for wall-mounting and M10 thread for hanging	

Compliance Statements

The NEXEN from LSC Control Systems Pty Ltd meets all required CE (European) and RCM (Australian) standards.

- CENELEC (European Committee for Electrotechnical Standardization).
- Australian RCM (Regulatory Compliance Mark).
- WEEE (Waste Electrical and Electronic Equipment).

- The WEEE symbol indicates that the product should not be discarded as unsorted waste but must be sent to separate collection facilities for recovery and recycling.
- For more information about how to recycle your LSC product, contact the dealer where you purchased the product or contact LSC via email at **info@lsccontrol.com.au** You can also take any old electrical equipment to participating civic amenity sites (often known as 'household waste recycling centers') run by local councils. You can locate your closest participating recycling center using the following links.
- AUSTRALIA **http://www.dropzone.org.au**.
- NEW ZEALAND **http://ewaste.org.nz/welcome/main**
- NORTH AMERICA **http://1800recycling.com**
- UK **www.recycle-more.co.uk**.

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Documents / Resources

 LSC CONTROL Ethernet DMX Node [pdf] User Manual
DIN Rail Models, Portable Model, Portable IP65 Outdoor Model, Ethernet DMX Node, DMX Node, Node

References

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- **[User Manual](#)**