



dataLynx II

User Guide

General information

Safety Information

PLEASE READ THESE INSTRUCTIONS BEFORE USING THE PRODUCT

CAUTION



TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, do not allow this product to be exposed to rain or moisture. Do not allow liquid to penetrate the product.

CAUTION



Unless directed in the instructions, there are no user serviceable parts inside. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

Compliance

European Community Compliance Statement

All products manufactured or sold by Artistic Licence Engineering Ltd are fully compliant with the appropriate CE, UKCA, and RoHS regulations. Product specific information is available on request

FCC Compliance Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received; including interference that may cause undesired operation.



DO NOT MODIFY THIS UNIT!

This product, when installed as indicated in the instructions contained in this manual, meets FCC requirements. Modifications may void your authority, granted by the FCC, to use the product.

This Equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Warranty

Unless otherwise stated this product is covered by a 5-year limited warranty. The first 2 years include both parts and labour. Warranty is return-to-base, meaning the product must be returned to Artistic Licence Engineering Ltd for repair. Customers are responsible for all shipping costs associated with returning the product.

Please note that the warranty is void if the product is misused, damaged due to improper handling, or modified in any way.

For full details, please refer to our comprehensive warranty policy at www.artisticlicence.com

Returns under warranty

To discuss a fault please contact support@artisticlicence.com, if it is ascertained that a fault requiring further investigation or repair is necessary an RMA (Return Merchandise Authorisation) number will be provided. This number must be clearly marked on the outside of the box containing the product being returned.

Shipping

To ensure safe transit, all products must be securely packaged using the original packaging or equivalent protective materials. Improper packaging may result in additional repair costs or void the warranty.

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Overview

The *dataLynx II* is a 19" rack mounted bidirectional gateway.

The *dataLynx II* converts Art-Net (supports all versions up to Art-Net 4) or sACN ethernet into DMX512/RDM. The product also supports DMX to Art-Net/sACN conversion.

The gateways are configurable via their internal web interface or by using DMX-Workshop (free software tool available from Artistic Licence).

The *dataLynx II* offers high levels of electrical protection. All outputs are protected against mains electrocution (international voltages including UK 3-phase) and are self-healing.

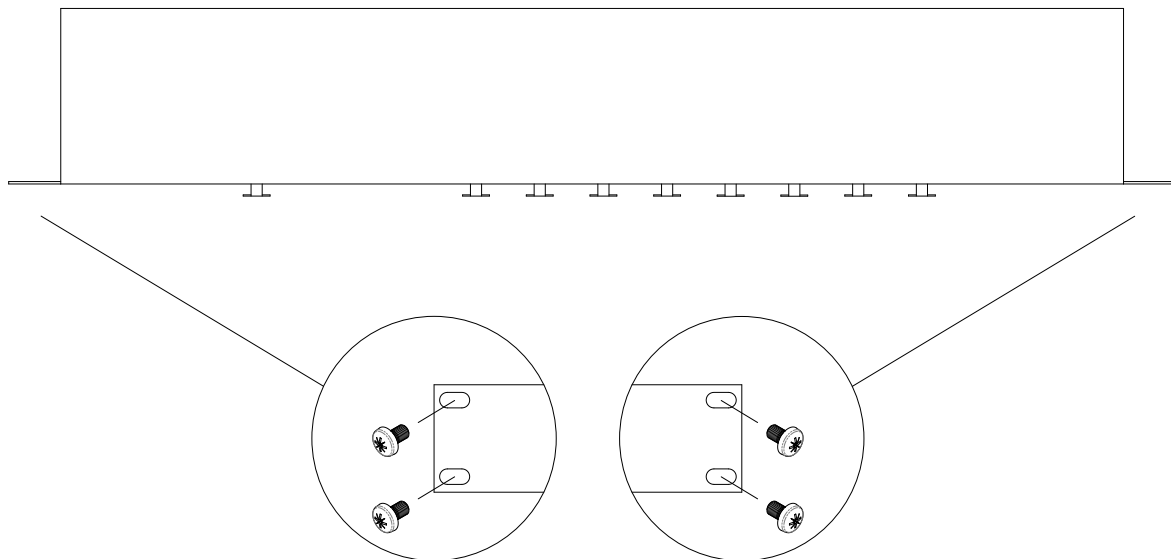
Installation

19" Rack Mounting

dataLynx II devices are designed to be installed inside a standard 19" rack mounted enclosure. The device occupies 1U of space and

- Step 1. Insert the device in to the 19" rack enclosure
- Step 2. Using four appropriate rack screws secure the device in place

Fig.1



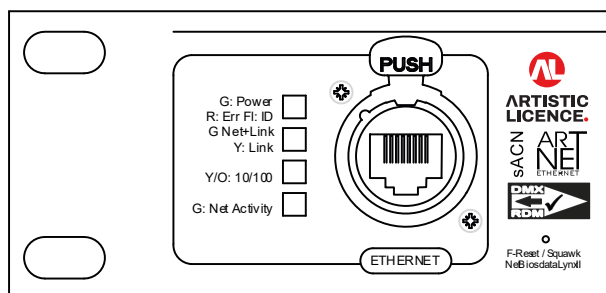
These products have been designed for professional use only. They should only be installed by a suitably qualified person and in accordance with the electrical regulations in the country of use.

LED indicators

dataLynx II gateways have several LED indicators, each providing information to the installer or user as to its status.

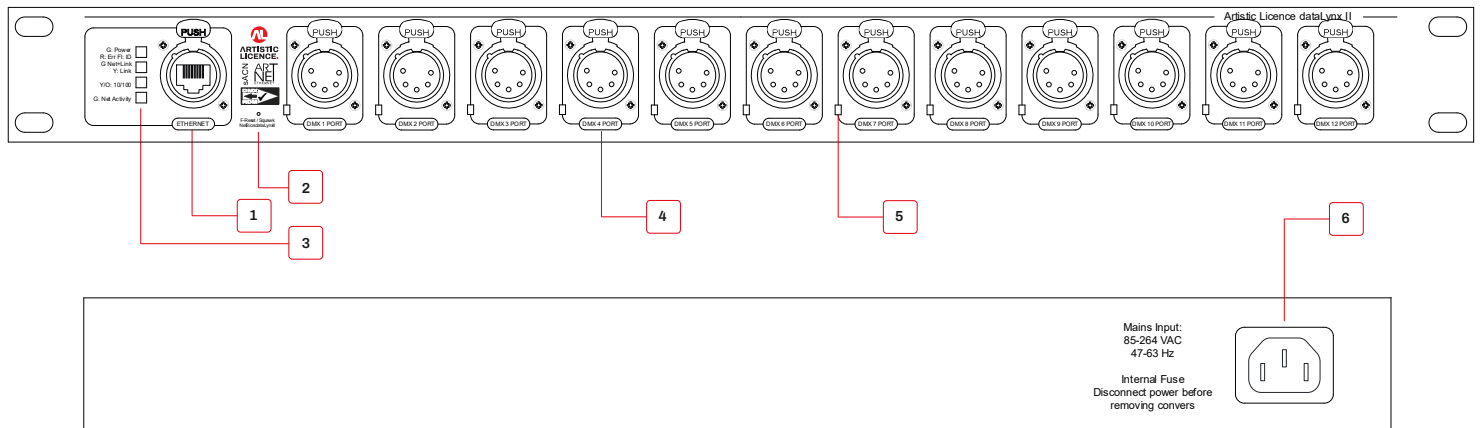
INDICATOR	COLOUR	STATE	MEANING
DURING BOOT	Green	Flashing (1Hz)	Device booting normally
	Red/Green	Flashing (1Hz)	Factory start (settings cleared)
DURING OPERATION			
POWER	Green	On	Powered, normal operation
	Green	Flashing (5Hz)	Identify
	Green	Flash	Remote programming command received
NET & LINK	Red	On	Fault condition
	Red/Green	Flashing (5Hz)	Fault – return to service
	Yellow	On	network link established (but no lighting data)
10/100BaseT	Green	On	Art-Net or sACN detected
	Yellow		Ethernet link – 10BaseT
	Orange		Ethernet link – 100BaseT
Net Activity	Green	On	No network data
	Green	Flash	Network data

Fig.2 – LED indicators



Connections

Fig .2 Identification



REFERENCE	DESCRIPTION
1	Ethernet Port
2	Reset/Squawk
3	Status LEDs
4	DMX port terminals
5	DMX port LEDs
6	Mains Power Inlet

Internal Earth and Isolation

The table below summarises the internal Earth interconnection and isolation.

REFERENCE	DESCRIPTION	
Chassis	Bonded to Earth-Ground	
DMX512 Ports	Type	Ground Referenced
	Pin 1:	Connects to Internal Logic Ground
	Shell:	The connector shell is connected to chassis
Ethernet	Type	Transformer Isolated
	Screen	Connects to Earth-Ground Screen Internal Logic Ground via 75 Ohm resistance & 100 pF capacitance, as specified in IEEE standard
Internal Logic Ground	Connects to Earth-Ground via 10 Ohm resistance	

(Please note that we use the term Earth Ground to avoid international confusions. In Europe Earth-Ground is called Earth; in the USA Earth-Ground is called Ground)

Powering the device

dataLynx II gateways are mains powered. The internal power supply requires an input in the range 90-250 VAC with an Earth connection. The mains fuse should only be replaced with a 3.15A slow blow fuse.

1. To power the device, first connect the IEC supply, only energise the device once all connections are made.
2. To power off the device simply de-energise the power supply.

Device protection

All dataLynx II gateway variants have ESD protection of up to 15kV on all outputs, as well as electrocution protection against continuous connection to 425VAC; this is self-healing on removal of the fault.

Connection to Ethernet Network

All dataLynx II gateway variants have a single Ethernet port for connection to a network. They support 10BaseT and 100BaseT networks connections and require Cat 5 cable or better.

Connect the Ethernet port of the product directly to a computer or port of a network switch.

Protocol support

The following protocols are supported:

Network

- **Art-Net I/II/3/4**
 - The products will receive all versions of Art-Net but transmit Art-Net 4.
- **sACN (E1.31 – 2009 / 2016 / 2018)**
 - Both multicast and unicast reception is supported.
- **sACN Per-Slot-Priority (E1.31-1 2025)**
 - Both multicast and unicast reception is supported.
- **RDMnet RPT (E1.33 – 2019)**
 - This is the RDM over RDMnet protocol.
- **RDMnet LLRP (E1.33 – 2019)**
 - Low Level Recovery Protocol is used to recover lost settings and perform basic configuration.
- **mDNS**
 - mDNS is used to locate the RDMnet broker on the network. Static and dynamic is supported.
- **DHCP**
 - Dynamic Host Configuration Protocol is used to configure IP addresses.
- **IGMPv2**
 - sACN uses IGMP (Inter Gateway Management Protocol) to efficiently route data. Two versions of IGMP exist: IGMPv2 and IGMPv3. IGMPv2 is the most widely supported by ethernet switch manufacturers.
 - Artistic Licence products containing firmware version v3.39 and higher support IGMPv2. Earlier firmware supports IGMPv3. The firmware version can be viewed in the information section of the web interface.

RS485

- **DMX512 (1990)**
- **DMX512-A (E1.11 – 2004 / 2008 / 2024)**
- **RDM Remote Device Management (E1.20 – 2006 / 2010 / 2024) Network protocol support**

Connections to DMX

XLR PINS (CONVENTION)	FUNCTION	COLOUR
1	Ground	Black
2	Data -	Blue
3	Data +	Red
RJ45 PINS	FUNCTION	COLOUR
7&8	Ground	Brown/White Brown
2	Data -	Orange
1	Data +	White/Orange

Recommended output wiring is Cat5 ethernet cable or greater and RS485/ DMX 110ohm cable.

DMX Output

All dataLynx II gateway variants have DMX outputs provided via 5-pin XLR female output connector. The RJ45 variants are fitted with Neutrik Ethercon RJ45 Connectors. In all cases each output port will support 32 devices.

It is not necessary to terminate any outputs that are not connected. However, a line containing one or more devices a terminator must be connected to the final DMX device.

Configuration

Universe Addressing

The universe (Port Address) is used to uniquely identify the DMX data on the network.

- Art-Net allows universe numbers in the range 0-32767.
- sACN allows universe numbers in the range 1-65535.

For the avoidance of cross-protocol confusion, users are advised to number universes from 1.

DMX Inputs

Any of the DMX ports can be set to receive DMX and generate either Art-Net or sACN. Configuration is achieved with either the internal web server or via DMX-Workshop.

When receiving DMX, the LED port indicator illuminates to show that data is being received.

Device Setup

Configuration is achieved via the internal web server or via DMX-Workshop

Web Server

To configure a dataLynx II via the internal web interface either type in the IP address of the product or, if your web-browser supports NetBios, then enter the name:

- <http://dataLynx II>

To find the IP address, use DMX-Workshop.

**ARTISTIC LICENCE.**

Artistic Licence
dataLynx II
(dataLynx II)

IP Settings

Edit

IP Address Mode Default Static Address

IP 2.139.85.86

Subnet Mask 255.0.0.0

Gateway 255.255.255.255

Save Cancel

Node Settings

Node Name

Status

Online

Power

Net

Port Settings

Port	Input	DMX Delta	Universe	Rate	Protocol	Merge	RDM	Background RDM Queue Policy	Background Discovery	Label
1	☐	☐	☐	1	Fast	Art-Net	HTP	☒ 1 - STATUS_ADVISORY 1000ms / 5000ms	☒	Port 1
2	☐	☐	☐	2	Fast	Art-Net	HTP	☒ 1 - STATUS_ADVISORY 1000ms / 5000ms	☒	Port 2
3	☐	☒	☐	3	Fast	Art-Net	HTP	☒ 1 - STATUS_ADVISORY 1000ms / 5000ms	☒	Port 3
4	☐	☐	☐	4	Fast	Art-Net	HTP	☒ 1 - STATUS_ADVISORY 1000ms / 5000ms	☒	Port 4
5	☐	☐	☐	5	Fast	Art-Net	HTP	☒ 1 - STATUS_ADVISORY 1000ms / 5000ms	☒	Port 5
6	☐	☐	☐	6	Fast	Art-Net	HTP	☒ 1 - STATUS_ADVISORY 1000ms / 5000ms	☒	Port 6
7	☐	☐	☐	7	Fast	Art-Net	HTP	☒ 1 - STATUS_ADVISORY 1000ms / 5000ms	☒	Port 7
8	☐	☐	☐	8	Fast	Art-Net	HTP	☒ 1 - STATUS_ADVISORY 1000ms / 5000ms	☒	Port 8
9	☐	☐	☐	9	Fast	Art-Net	HTP	☒ 1 - STATUS_ADVISORY 1000ms / 5000ms	☒	Port 9
10	☐	☐	☐	10	Fast	Art-Net	HTP	☒ 1 - STATUS_ADVISORY 1000ms / 5000ms	☒	Port 10
11	☐	☐	☐	11	Fast	Art-Net	HTP	☒ 1 - STATUS_ADVISORY 1000ms / 5000ms	☒	Port 11
12	☐	☐	☐	12	Fast	Art-Net	HTP	☒ 1 - STATUS_ADVISORY 1000ms / 5000ms	☒	Port 12

RDMnet Settings

Edit

Scope

Broker IP Mode mDNS Lookup

Search Domain

Save Cancel

Information

Firmware Version Revision 4.74

MAC Address 00:06:a6:01:55:56

CID 6D5252E9-CB4F-F834-900E-1C52DA18E83F

Management UID 414c:c9015556

Current Broker IP 0.0.0.0

Current Broker Scope default

Last Diagnostic Message NV store initiated

Node Report #0012 [949] Port direction changed.

Integrity index N/A

ArtisticLicence.com
Art-Net.info

Artistic Licence Engineering Ltd
The Mould Making Workshop
Soby Mews, Bovey Tracey
TQ13 9JG
United Kingdom

IP Settings

The IP settings for the product are displayed in the top section of the screen.

To set the IP address press 'Edit'. The user is presented with three options:

- **Default Static Address**
 - IP address in the 2-range – default allocation during production
- **Static IP Address**
 - IP
 - Subnet Mask
 - Gateway
- **DHCP**
 - IP address – dynamically assigned by a DHCP server/router

Node Settings

The Node (Gateway) Name can be edited. This name is displayed by Art-Net and RDMnet controllers.

Status Indicators

The indicator meaning is as follows:

- **Online:**
 - Green: live connection between browser & product
 - Red: connection lost
- **Power:**
 - Green: powered
 - Flashing green: Identify
 - Red: Fault
 - Red/Green flash during boot: Factory reset occurring
 - Red/Green flash continuous: System fault – service needed
- **Net:**
 - Yellow: Network Link active
 - Green: Art-Net or sACN activity

Port Settings

- **Port:** The DMX port number
- **Input:** Tick to set as DMX input
- **DMX:** Green shows changing data is being output on this port
- **Delta:** Tick to enable delta transmission (DMX frames are only sent every 900mS or when network data changes)
- **Universe:** Set the universe (port address) for this output
- **Rate:** Sets the DMX refresh rate
 - Fast = 24ms frame time (44Hz)

- Compatibility = 40ms frame time (24Hz)
- Protocol: Select either Art-Net or sACN control over this output port
- Merge: Select HTP or LTP merge when 2 controllers send data to this port (for more information, see 'Merging' section below)
- Label: Editable field for port name

Port Settings - RDM

- RDM: Tick to enable RDM. This is the master RDM control and overrides Background RDM Queue Policy and Background Discovery
- Background RDM Queue Policy: All the gateways have the ability to check for new RDM Status Messages and push them to the controller, using both Art-Net and RDMnet. RDMnet requires this, for Art-Net it is optional. The rate at which RDM data is pushed is configurable:

Policy Number	Type of Status Message	Time delay between checking each consecutive RDM device for a status message.	Time to wait after last RDM device is checked, before starting again.
0	STATUS_NONE	1000ms	5000ms
1	STATUS_ADVISORY	1000ms	5000ms
2	STATUS_WARNING	1000ms	5000ms
3	STATUS_ERROR	1000ms	5000ms
4	Disabled		
5	STATUS_NONE	250ms	2000ms
6	STATUS_ADVISORY	250ms	2000ms
7	STATUS_WARNING	250ms	2000ms
8	STATUS_ERROR	250ms	2000ms
9	STATUS_NONE	100ms	2000ms

- Background Discovery: Tick to enable Background Discovery (aka Ongoing Discovery). When enabled, this allows RDM devices that are connected or disconnected, to be reported over the network.

RDMnet settings

In order to use RDMnet RPT for RDM communication, the gateway must be connected to an RDMnet broker. There are 4 critical items required to configure broker communication:

- **Scope:** This identifies the devices that are grouped onto one RDMnet interface. A theatre with multiple stages could use different scope names to identify each stage
- **IP Address:** This is the IPv4 address of the machine running the broker
- **Port Address:** The port address of the broker network interface. At the time of writing, two broker vendor exist. ETC default port is 59500. Robe default port is 1
- **Search domain:** The network domain that mDNS will search

The IP Address and Port address can be set statically, or set to be found using multicast DNS (mDNS). (Configure using the Broker IP Mode combo-box).

The factory default static settings are: Broker IP = 2.222.222.222 and port = 59500.

Information

The information section of the web interface provides the user with the following:

- The firmware version
- The device MAC address
- The device CID
- Management UID
- Current Broker IP
- Current Broker Scope
- Last Diagnostic Message
- Node Report
- Integrity Index

These field are non-editable and are provided for the purpose of aiding in system setup and diagnostics.

Gateway Merging

The Artistic Licence range of gateways can merge multiple data streams. Those with selectable DMX input mode (artLynx, netLynx, dataLynx etc) can also merge DMX.

Merging operates in one of four styles:

- HTP (highest takes precedence), the levels of each channel in the two streams are compared and the highest value is used.
- LTP (latest takes precedence), the levels of each channel in the two streams is compared to the output; if there is a change, that level is output.
- Universe Priority, the sACN Priority field defines which universe will be output.
- Per-Slot-Priority, the E1.31-1 sACN packet defines which slot (channel) will be output.

Art-Net merge

If two streams from different IP addresses are directed to the same Port-Address, merging will occur. If more streams are directed to the same Port-Address, they will be ignored.

sACN merge

Merging can operate with both unicast and multicast data. If two streams with different CIDs are directed to the same universe, they are processed as follows:

Priority	Condition	Action
1	Per-Slot-Priority data has been received in previous 1.5s	The slot with the highest priority is output,
2	Per-Slot-Priority data has not been received in previous 1.5s	The universe with the highest priority is output.
3	If either universe or slot priority is equal.	Merging will occur in either HTP or LTP.

If additional stream(s) are directed to the same universe they are ignored until such time as one of the two active streams stops transmitting.

All merge operations require an active ethernet connection.

For more information on merging lighting control data and a range of application examples please refer to Application Notes **AP130 Gateway Merging**.

Port Settings - Inputs

Setting a port as an input presents the user with the following view:

Fig.4

Port Settings											
Port	Input	DMX Delta	Universe	Rate	Protocol	Merge	Priority	RDM	Background RDM Queue Policy	Background Discovery	Label
1	☒	☐	101		Art-Net						Port 1
2	☒	☐	102		sACN		100				Port 2

- **Universe:** Set the universe (port address) for this input
- **Priority** (*active if Input & sACN are selected*): Set the Priority number (1-200) that is used when converting DMX to sACN

Reset

In order to restore the product to its factory default state, hold down the reset button (as indicated - under the front panel) and cycle the power.

DMX Workshop & Advanced Configuration

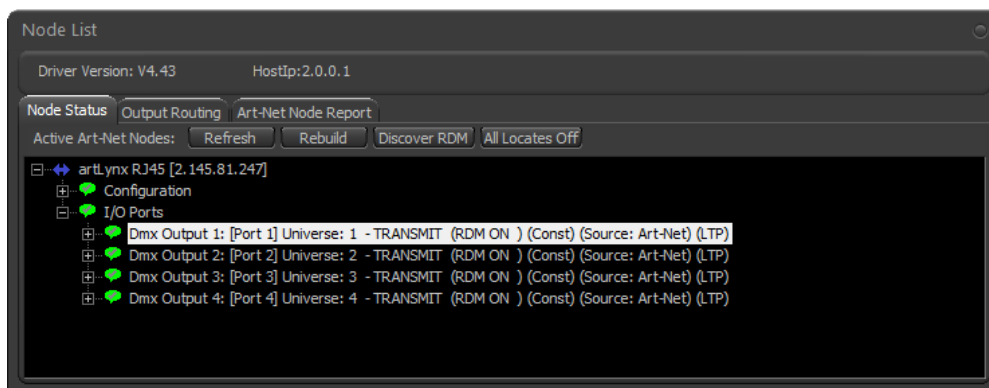
To configure advanced features of a dataLynx II gateway DMX workshop is required.

DMX-Workshop™ is a network management, analysis, configuration and diagnostics tool for lighting networks.

You can download the free software from www.artisticlicence.com.

When an dataLynx II gateway is connected to a computer running DMX-Workshop, it should be detected and displayed as an Art-Net node (click the 'Node List' tab to verify this). The node can be expanded to show the configuration and DMX output information.

Fig.5

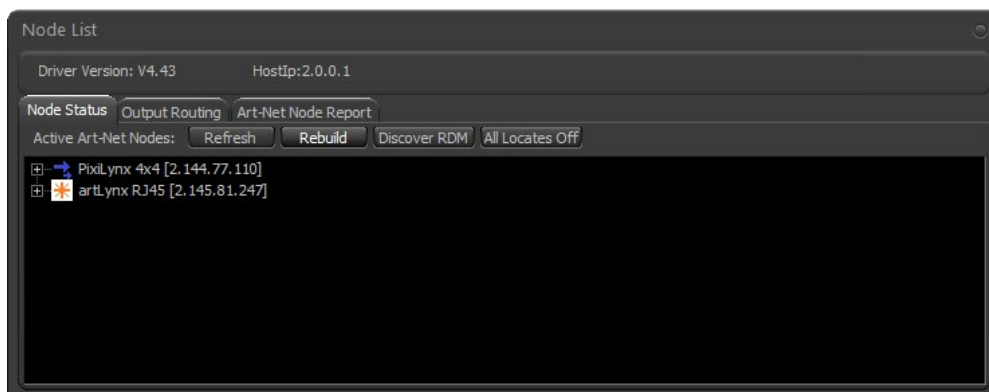


The IP address of each connected gateway is visible in the Node list. The example here is an artLynx quad however all gateways present in the same way.

Squawk

On a complicated network it is not always easy to relate what is showing on screen to the physical location of the nodes. A single press of the factory reset button on dataLynx II quad causes the product to send a message over the network to a console or DMX-Workshop to enable simple identification.

Fig.6



Failsafe Mode

Failsafe mode allows the user to define what the DMX outputs will do in the event that network data or connectivity is lost.

Failsafe mode triggers after loss of either network data for 7 seconds or loss of ethernet link.

The options are:

- Do nothing, i.e. hold last state
- Output all channels at zero
- Output all channels at full
- Output a recorded failsafe scene

Failsafe mode also operates at boot up, if the gateways power on and there is no controller, they will execute failsafe.

To access failsafe mode settings: right click the dataLynx II gateway in the node list → click 'Configure'.

To save a failsafe scene. Send your required failsafe DMX values to fixtures connected via the dataLynx II. When the outputs are at the desired levels click 'record failsafe'. For reasons of safety we do not recommend setting pan, tilt or auto movement modes for fixtures that support this, as part of a failsafe scene.

LED Indicators

The default behaviour of the dataLynx II gateways LED indicators is detailed above. However there are additional advanced settings available via DMX-Workshop.

The options are:

- Normal, i.e. as per the descriptions above
- Identify – the Power LED will flash until instructed to do otherwise
- Mute – all device LEDs will be extinguished, including the output indicators.

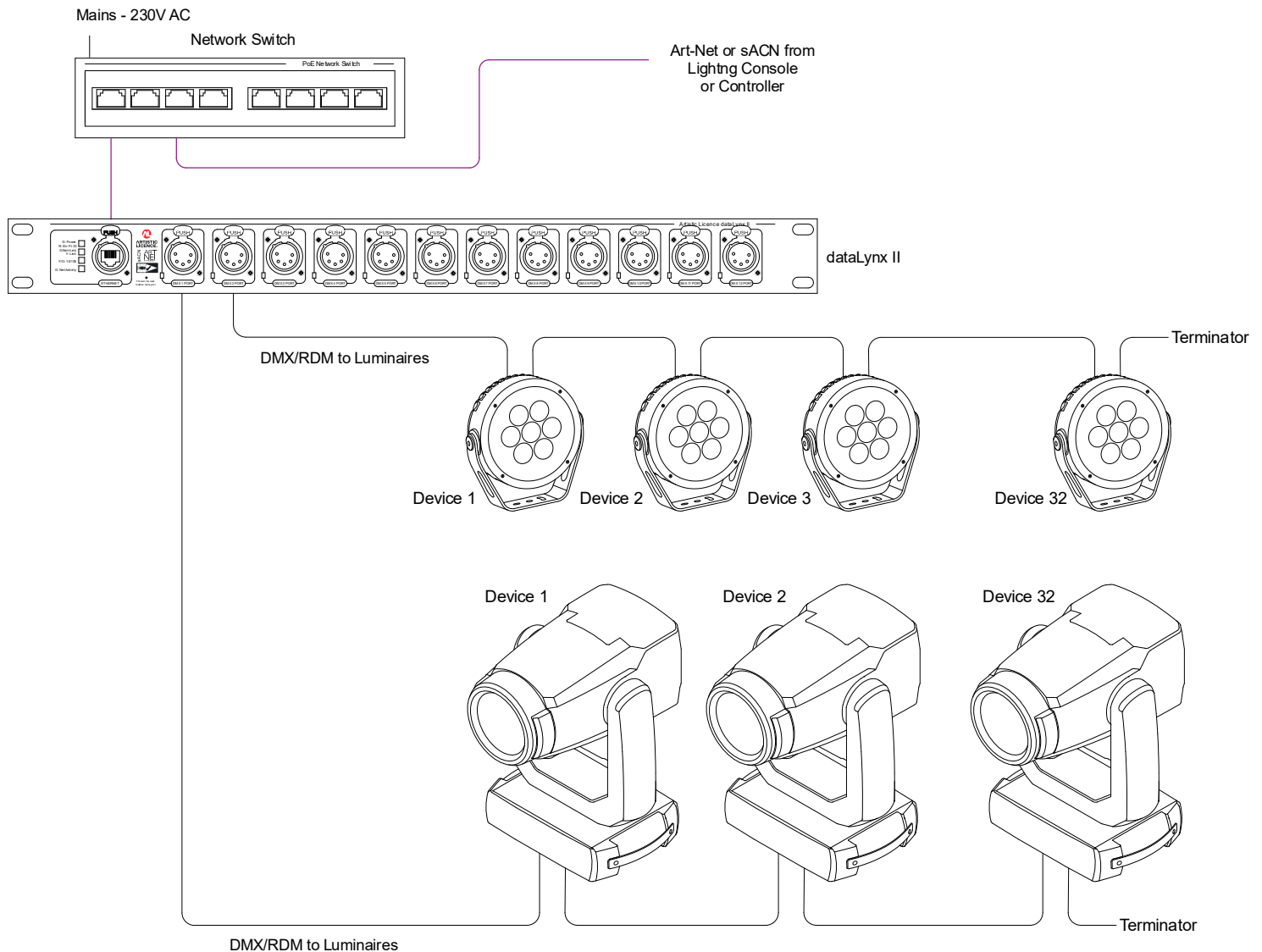
To access LED indicator settings: right click the dataLynx II gateway in the node list → click 'Indicators'.

Application Diagram

The diagrams below shows a typical applications for a dataLynx II Gateway. For more information or support for specific applications please contact Artistic Licence support or refer to our application and solution guides.

Fig.7

dataLynx II acts as a gateway for one or more universes of Art-Net or sACN from a production console or architectural controller, converting to DMX512.



Troubleshooting

OBSERVATION	DESCRIPTION
Power LED is not illuminated	Check the power supply to the unit is within the specified voltage range and is energised.
	Check the polarity of the connected supply. The device is polarity sensitive.
	If powered via PoE check that the network switch is energised and the port is providing PoE power.
Power LED Red	The power LED should be static Green unless the device is being identified (green flash). If the power LED is Red there is an issue with the supply. See Power LED is not illuminated.
Issue connecting to the device via web server	If NetBIOS is not working on windows you may need to enable NetBIOS in windows network adaptor settings under IPV4 Configuration.
There is no DMX output from a port	<i>Check the port is set to an output, not an input</i>
	Check the source of the Art-Net or sACN and ensure it is providing an active stream. If there is an active stream for the selected universe the green port indicator should be illuminated.
	Check that the universe number is correct. Some controllers/ software may for example, display universe 1 when it is actually outputting on universe 0.
	Check the port settings, that Art-Net or sACN is correctly selected.
Unresponsive DMX devices	Check the source of the Art-Net or sACN and ensure it is providing an active stream. If there is an active stream for the selected universe the green port indicator should be illuminated.
	The dataLynx II should display a green status LED when an active stream of Art-Net or sACN is being received. If this indicator shows yellow then a link to the network has been made, but there may be some other network configuration issue.
	Flashing, strobing or undesired operation from non RDM compatible fixtures - disable RDM on the connected output port.
	DMX devices not operating as expected - try switching DMX refresh rate to compatibility 24Hz.
	RDM data unable to be received, but DMX signals reaching fixtures. Check the DMX cabling ground connection. All 3 cores are required for RDM to operate correctly.

	Check the DMX wiring for shorts or breaks
	Check the DMX line is correctly terminated

For additional support please visit www.artisticlicence.com or contact support@artisticlicence.com