



Ethernet - DMX2 Box

User Guide - V3.0.0



LUMINEX Lighting Control Equipment
Ethernet - DMX2 Box User Guide - V3.0.0
Document ethernet_dm2b_user_guide_v3

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Issued by:

Publications Department,
Luminex LCE,
Herent 42,
Neerpelt,
B-3910,
Belgium.

Documentation reviewed January 25, 2007, by Bart Swinnen.
Printed in the EU.

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Warranty information

Limited warranty

Unless otherwise stated, your product is covered by a two (2) year parts and labor limited warranty. It is the owner's responsibility to furnish receipts or invoices for verification of purchase, date, and dealer or distributor. If purchase date cannot be provided, date of manufacture will be used to determine warranty period.

Returning under warranty

Any Product unit or parts returned to Luminex LCE must be packaged in a suitable manner to ensure the protection of such Product unit or parts, and such package shall be clearly and prominently marked to indicate that the package contains returned Product units or parts. Accompany all returned Product units or parts with a written explanation of the alleged problem or malfunction.

Freight

All shipping will be paid by the purchaser. Items under warranty shall have return shipping paid by the manufacturer only in the European Union. Under no circumstances will freight collect shipments be accepted. Prepaid shipping does not include rush expediting such as air freight. Air freight can be sent customer collect in the European Union.

Warranty is void if the product is misused, damaged, modified in any way, or for unauthorized repairs or parts.

General

Packaging

- 1 x Ethernet – DMX2 Box
- 1 x User guide

Description

The Ethernet - DMX2 Box is an Ethernet node that serves 2 DMX512 outlets, compatible with the ArtNet protocol.

All 2 outlets are conform to RDM and can be used as input or output. The Ethernet link is a 10BaseT connection on a Neutrik RJ45 Ethercon connector.

All configuration can be done over Ethernet through a built in website, or by using the controls on the front end. 3 Hex encoder wheels and switches are provided to control the universe and direction settings.

this all comes in a half 19" unit high metal housing.

Specification

Model: Ethernet – DMX2 Box

Manufacturer: LUMINEX Lighting Control Equipment

• **Dimensions**

209,6 x 172 x 42 (mm)

8,25" x 7,01" x 1,65"

Package: 300 x 220 x 80 (mm)

• **Weight**

1 kg

• **Electrical**

Voltages: 90 – 260 VAC

Frequency: 47 – 63 Hz

Rated power: 20 W

Fuse : 125V – 250V, 1A, Slow blow only (5mm x 20mm)

• **Connectors**

1 x Neutrik RJ45 Ethercon connector

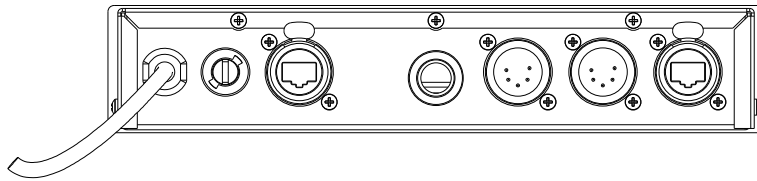
2 x Neutrik gold plated 5 pin XLR (female)

• **Environmental**

Operating temperature: 0 ~ 60°C (32 ~ 140°F)

Connectivity

Rear Panel



- **Mains**

The device operates with an AC voltage between 90V and 260V within a frequency range of 47Hz and 63Hz.

A fixed power lead with loose cable end is directly connected to the device (no plug/connector). Please use an authorized plug and connect the cores in the mains lead in accordance with the following scheme:

- Green / Yellow:** Earth
- Blue:** Neutral
- Brown:** Live

!!! This equipment must be earthed !!!

- **DMX input / output (Optional)**

2 Neutrik 5 pin gold plated male connectors are provided as DMX through.

Connector	Function
Pin 1	Signal common (0 volt)
Pin 2	Data complement (-)
Pin 3	Data true (+)
Pin 4	Not used
Pin 5	Not used

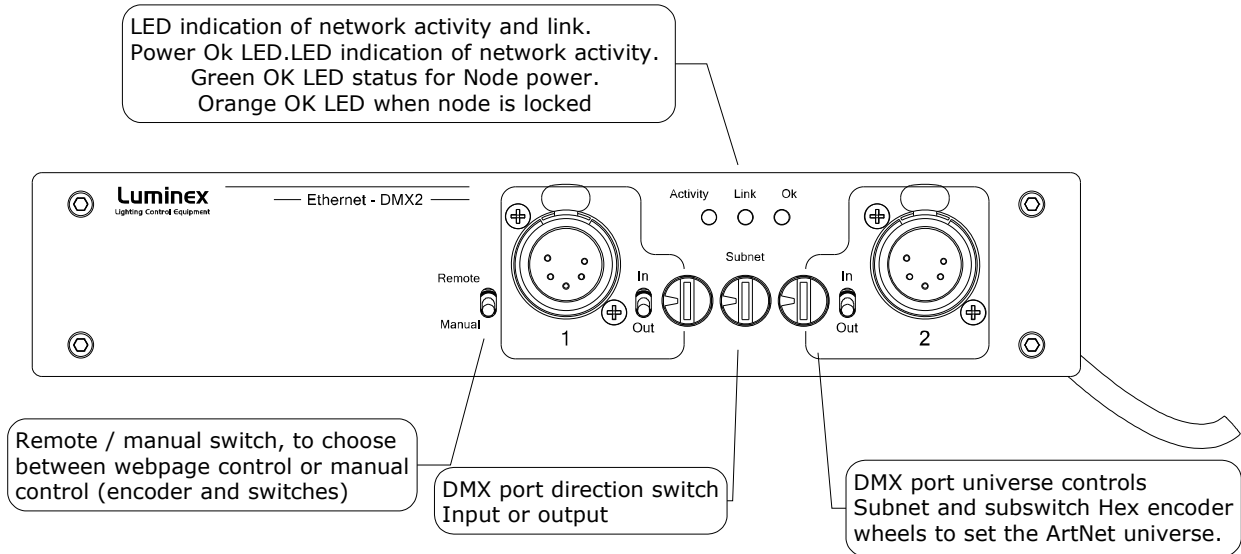
- **Ethernet**

1 Neutrik RJ45 Ethercon is provided as Ethernet link.

An additional Ethercon can be provided as an option together with the optional DMX male connectors.

Interface

Front panel



The front panel interface is provided with 3 Hexadecimal encoder wheels, 3 tiny switches and 3 indication LEDs.

Standard DMX port routing can be done from the front panel (Manual). Advanced features like merging, backup, etc has to be configured from the built in web interface (Remote).

• DMX input / output

2 Neutrik 5 pin gold plated female connectors are provided as outlet (input or output).

Connector	Function
Pin 1	Signal common (0 volt)
Pin 2	Data complement (-)
Pin 3	Data true (+)
Pin 4	Not used
Pin 5	Not used

All outlets are compliant with the DMX512-A timing specification and are terminated and rebiased.

- **DMX configuration**

Every DMX outlet can be configured separately as input or output. These inputs and outputs get a DMX line address on ArtNet. It is possible to distribute 256 different DMX lines over ArtNet.

The DMX line address (Universe) on ArtNet is a combination of the node's Subnet and the outlet's Subswitch. The Subnet divides the possible range of 256 addresses in groups of 16 addresses. Every node has one Subnet setting (from 0x0 - 0xF, 0- 15). And every outlet has a separate Subswitch (from 0x0 - 0xF, 0 - 15). Combined this gives the following result.

The Subnet is the high nibble of the complete address and the Subswitch is the low nibble of the address.

Node 1:

Subnet: 0x2

Outlet 1-> Subswitch: 0xC

Result address: 0x2C



In decimal this would be:

Result = (Subnet x 16) + Subswitch

Result address = (2 x 16) + 12 = 44

Status indication

3 LEDs are provided to indicate Network Activity, network Link and power Ok. The OK LED will turn to Orange if the node is locked through the Web interface or set with a password.

- **Unlock the node**

When the node is set in auto-lock mode or is password protected through the Web interface, it will automatically lock the front end after 2 min of inactivity of front end controls. If you try to change something with front end, the OK LED will blink between green and orange to indicate it is locked

To unlock the node with no password :

- Remote/Manual switch has to be changed to "Remote"
- Wait 2 seconds
- The OK LED will blink and go to green => the node is unlocked

To unlock the node set with a password :

- Remote/Manual switch has to be changed to "Remote"
- Password has to be set on the encoder wheels
- The OK LED will blink and go to green => the node is unlocked

- **Reset the node (Out of jail)**

This useful function makes it possible to bring the node in a factory default.

1. Power down the unit.
2. Put switch on "Remote", both outlets as "input" and all encoder wheels on "F"
3. Power on the node.
4. Wait until the OK LED will blink in orange
5. Power down the unit
6. Change all encoder wheels back to "0"
7. Power on the unit
8. The node is now in a factory default: IP: 2.0.0.1

Web interface

Status

The complete device can be configured from an intuitive web interface. You just have to browse to the IP address of the unit. If you do not know the IP address anymore, you can discover it by running Luminet Monitor (free downloadable tool), which shows all Luminex nodes on the network.

Make sure that the computer, you use to browse, is setup in the correct network address range (IP 2.x.x.x or 10.x.x.x and subnet 255.0.0.0).

When you're not using a complete network setup (Ethernet switches, hubs, routers, WLAN, ...), you can also use a cross Ethernet cable and a PoE injector to directly connect to one unit.

After all connections and setup on the computer are completed, open your favorite web browser (we recommend Firefox) and enter the IP address you want to reach in the URL field.

<http://2.0.0.1/>

The screenshot shows the Luminex web interface in Mozilla Firefox. The browser address bar shows <http://2.0.0.1/>. The page title is "Node - Status - Mozilla Firefox". The Luminex logo and "Lighting Control Equipment" are at the top left. A navigation bar on the left contains links: Status, Set up, node, global, Toolbox, profile manager, firmware upgrade, and Help. The main content area is titled "Status" and is divided into three sections:

- DMX Routing:** A table with columns: Direction, Universe, Mode, IP Merge, Legend, Unicast, Info. It lists two outlets: Outlet 1 (output, 016 (0x10), single, disabled, Outlet 1, NA) and Outlet 2 (output, 017 (0x11), single, disabled, Outlet 2, NA). A callout "Actual DMX routing" points to this table.
- Global Settings:** Shows ID No: 001, Trigger universe: Disabled, and DMX details: framerate: 40 Fps, break: 92 µS, MAB: 20 µS, output time: continuously. A callout "Actual Global settings" points to this section.
- Network Settings:** Shows IP: 2.0.0.1, Netmask: 255.0.0.0, Port: 0x1936, Short name: Node 1, and Long name: Eth-DMX2 Node 1. A callout "Actual Network settings" points to this section.

A callout "Navigation Bar" points to the left sidebar. The bottom right corner of the page has a copyright notice: © 2006 Luminex LCE.

You'll end up at the status page of the device. This page has a complete overview of the device its settings.

The overview shows the actual DMX and network setting / routing of the complete device.

Setup

Choose one of the items in the sub menu to setup the device.

Once in a setup page, help is available on almost every field title. Just click on the question mark next to the topic. A pop up frame will display the overall information of each term displayed on the Web interface.

- **Node**

To setup the node click on the appropriate sub menu item in the Setup navigation bar (Node).

The screenshot shows the 'Set Up: Node 1 (outlet 1 - 2)' configuration page in a Mozilla Firefox browser. The page is titled 'Luminex Lighting Control Equipment' and has a navigation menu on the left with options like 'Status', 'Set up', 'node', 'global', 'toolbox', 'profile manager', 'firmware upgrade', and 'Help'. The main content area is divided into three sections:

- DMX Routing**: A table for configuring two outlets. The table has columns for Direction, Universe, Mode, IP Merging, Legend, and Unicast. Outlet 1 is configured with Direction: Output, Universe: 16 (10), Mode: Single, IP Merging: Disabled, and Legend: Outlet 1. Outlet 2 is configured with Direction: Output, Universe: 17 (11), Mode: Single, IP Merging: Disabled, and Legend: Outlet 2. Below the table are 'Submit Changes' and 'Reset' buttons.
- Network Settings**: A section for IP Settings. It includes a checkbox for 'ArtNet compliant?' and input fields for 'IP: 2.0.0.1', 'Netmask: 255.0.0.0', 'Broadcast: 2.255.255.255', and 'Port (Hex): 1936'. Each field has a question mark icon for help. Below the fields are 'Submit Changes' and 'Reset' buttons.
- Node Identification**: A section for identifying the node. It includes input fields for 'Short name: Node 1' and 'Long name: Eth-DMX2 Node 1', each with a question mark icon. Below the fields are 'Submit Changes' and 'Reset' buttons.

The browser's status bar at the bottom shows 'Done'.

This is the main settings page. You can setup every single outlet of the node, as input or output. Select the outlet's direction, mode and universe. Here you can also change the IP address, Netmask, port and the ArtNet short and long name indication.

● DMX Routing

To better understand the use of all features, let's define each category of this menu:

Direction : Set the direction you need to the outlet, either Input or Output. Depending your selection, some features won't be available in the other categories.

Universe : Select the universe number. The left column number represents the decimal value, the right column number the Hexadecimal one. Setting the universe number through Web interface avoids the user to set Subnet and subswitch settings separately.

Mode : According to the direction you set on the outlet, this menu offers several mode :

Input : Disabled : Outlet is disabled, better for node performance.
 Normal : Outlet set as normal input
 Merge : Allow to merge 2 DMX streams.

When outlet 1 is configured as a merged input, the next outlet (2) will be automatically set as input as well.

Output : Disabled : Outlet is disabled, better for node performance.
 Zero : Send all channels with a zero value (for maintenance only)
 Single: Normal output.

IP Merging : This special feature allows you to merge 2 different DMX or Artnet streams through the network. The merging policy will be mainly applied on the Output, except for IP backup.

Legend : Set a legend to the outlet, useful to remind yourself what's connected to that outlet.

Unicast : Artnet is a broadcast protocol, which means that each packet sent from a single source will be received by all actives equipment on the network. Unicast provides you to cast you data to a selected IP address, resulting in a lower use of bandwidth.

All setting that are not applicable for the actual setting will be grayed out or marked as N/A (Not Applicable).

● **Merging Policies :**

The Ethernet-DMX 2 firmware offers enhanced merging policies that fits to all kind of setup, even the most complex one !

4 available merging policies can be applied on your DMX network, in 2 main setup categories :

Local merging : 2 different DMX streams are merged on the same physical device (Node). The merging policy will be mainly set on Inputs.

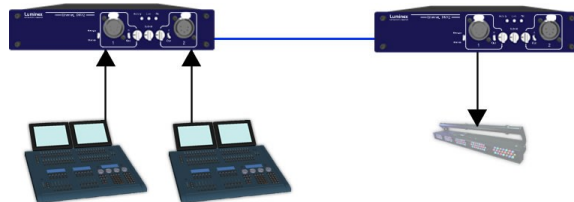


Illustration 1: Local DMX merging

IP Merging : This special feature allows you to merge 2 different DMX or Artnet streams through the network. The merging policy will be mainly applied on the Output, except for IP backup.

Available policies :

- HTP : Highest Take Precedence; Commonly used to merge dimmer channels
- LTP : Latest Take Precedence; Better suited when using moving lights
- Backup : set one of the 2 outlets as a backup input
- Custom : This is the most complete and efficient policy. This mode offers you to choose what policy to apply for each channel of each universe, and also to create a complete custom soft patch. By more, the merging policy can be remotely controlled triggered by DMX.

The available policies differs if you use either inputs or outputs :

Inputs (Local mode)

	Direction	Universe	Mode
Outlet 1	Input	0(00)	Merge
Outlet 2	Input	Ch1	HTP, LTP, Backup, Custom

In this example, the selected mode is "**Merge**". The second outlet will automatically be set as a merged input. You will not be able to configure a universe address for the second outlet, as the merged result will end at the universe address of the first outlet (primary input). Instead of universe you will be able to set the starting DMX channel address (1-512). This indicates from which channel address the second input has to be merged in. This offset is only available when using **HTP** or **LTP** policies.

Those rules will be applied on all channel of the universe.

If you choose “**Backup**”, a small blue icon will appears on the left side of “Outlet 2” label; then click on it, a pop up frame appears :

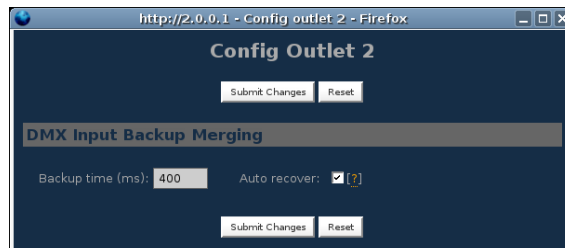


Illustration 2: DMX Input backup merging

This menu lets you choose the backup time (from 400 to 9999ms). This time represents the delay from which the node will automatically switch to the backup outlet when invalid or no DMX is received anymore on the primary outlet.

Tick the box if you want the node to auto-recover as soon as valid data is available again on primary connector.

If you tick off the box, you will have to enable the trigger universe and select a recover channel (page 20).

If you choose “**Custom**” policy, a small blue icon will also appear on the left side of “Outlet 2” label; then click on it, a new pop up frame appears :

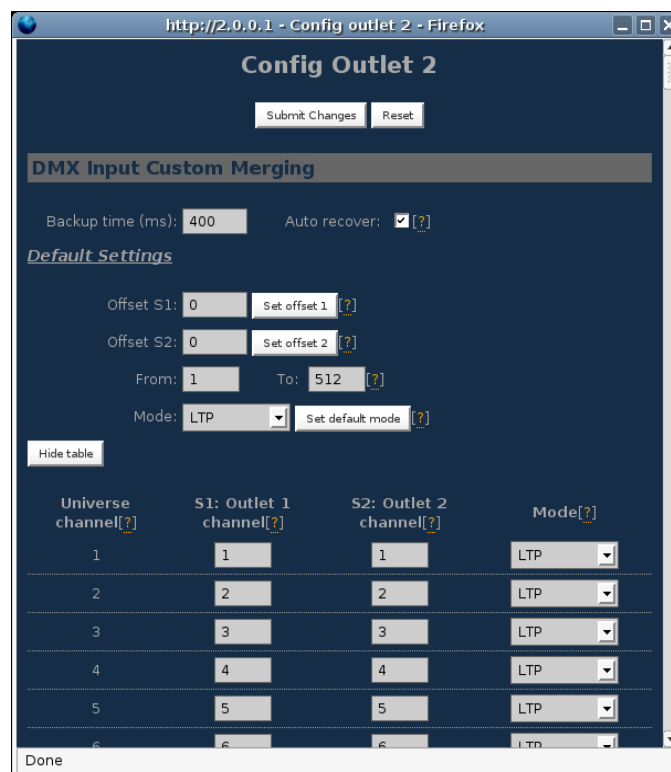


Illustration 3: Custom DMX input merging

Click on "**Show Table**" button to see the complete soft patch available for this outlet.

- **Offset S1 & S2** : Enter a value for the desired offset of the starting channel for outlets 1 or 2; example, for channels 1 to start on the third channel, enter 3.
- **From – To** : this range let you quickly set the policy you need on the channel range of your choice. example, if you need HTP policy on channels 23 to 145, enter 23 in the "**From**" field and "145" in the "**To**" field. Then select the HTP policy in the "**Mode**" drop down list, then press "**Set Default Mode**".
- Notice that following policies are available for each channel:
Zero, HTP, LTP, S1 only (Source 1 only), S2 only (Source 2 only); S1 as Backup (Source 1 as backup), S2 as Backup (Source 2 as Backup).

The left column represent the resulting universe channel number streamed to the network. S1 column represents Source 1 channels and S2 column source 2 channels. It's thus easy to understand that you can create your own soft patch by entering the channels of your choice in one of theses column.

Once your patch is created, click submit to close the window, then click submit again on the node page to record your settings.

Inputs (IP Merging)

	Direction	Universe	Mode	IP Merging
Outlet 1	Output	0(01)	Normal	Disabled
Outlet 2	Input	1(01)	Normal	Backup

This mode can be very useful in such an application.



Illustration 4: IP Merging

The right side lighting desk is used as a backup desk on stage. This means that the right side node will automatically switch to that outlet if no ArtNet packets are available on the selected universe (in that case universe 0). Select your backup time in the small pop up frame by clicking the left blue icon, then submit your changes.

Outputs (IP Merging)

	Direction	Universe	Mode	IP Merging
Outlet 1	Output		Single	HTP, LTP, Custom
Outlet 2	Input	1(01)	Disable	Disabled

This mode can be very useful in the case of 2 control sources located in different places in the network wants to control the same DMX device in the same time.

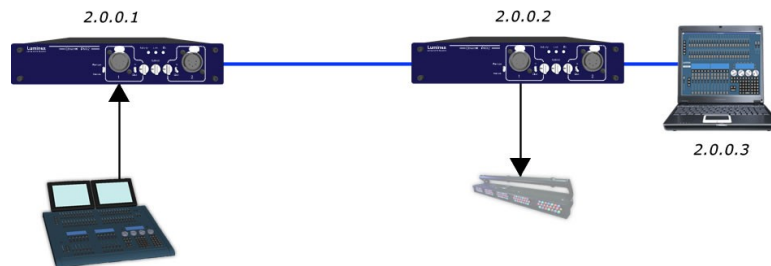


Illustration 5: Output IP merging

In this setup, the right lighting software (S2) is used in the same time as the left lighting desk (S1). Both streams are merged through the final output on the right node.

The IP Merging mode provides the following policies when an outlet is set as output:

- HTP, for all outlet channels
- LTP, for all outlet channels
- Custom, to create a complete soft patch, to set merging policy for every single channel by IP source and to use the enhanced trigger system.

If you choose "Custom", click on the blue icon left sided to the "Outlet" label. A pop up frame appears:

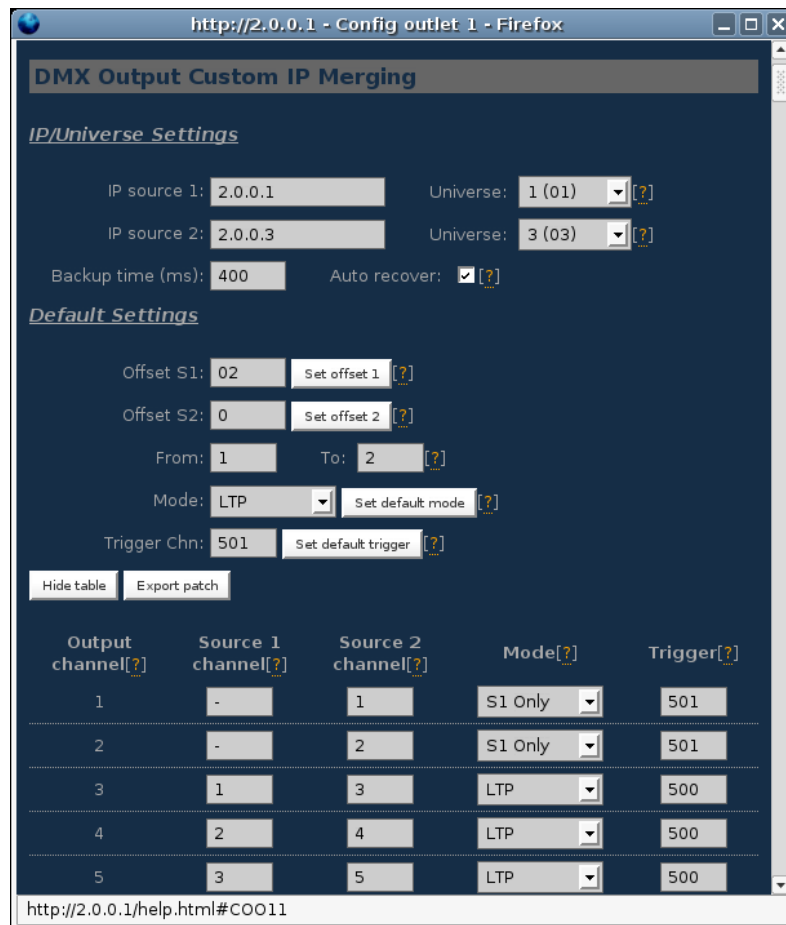


Illustration 6: DMX Output custom IP merging

You can find in this pop up frame similar features as when using the custom merging on outlets set as inputs (page 14).

The main difference is about the following points :

- **IP Source 1 & 2** : Here you can enter the 2 IP addresses assigned to your 2 control source. In case you don't know one of your source IP address, simply enter 0.0.0.0 in the address field.
- **Universe** : Here you can select the universes number streamed by your control source. This feature is very useful if the 2 sources don't use the same universe number.
- **Trigger channel**. This feature allows you to remotely change the merging policy of one or several dedicated channels through a single DMX value. From anywhere on the network, you can by example swap from a "LTP" merge to a "S2 only" policy simply by using a different DMX trigger channel value. Enter here the DMX channel you want to use to remotely takeover control of the merging rule. Once you've selected that channel, you'll need to reach the "Global" web page of the node to enable and select your Trigger universe. You'll also need to patch or assign a DMX trigger channel to your control source; here is the DMX chart of the Luminex DMX trigger channel :

0 - 7	Do nothing
8 - 15	Zero out
16 - 23	HTP merge
24 - 31	LTP merge
32 - 39	Source 1 only
40 - 47	Source 2 only
48 - 111	Reserved
112 - 119	Source 1 as backup
120 - 127	Source 2 as backup
128 - 255	Do nothing

Note :Never forget if you control the trigger channel from more than one source to press “Do nothing” once you've selected the desired value. Indeed, if you send 2 different values from 2 different sources for the trigger channel, the node won't stop swaping between those values, what results in a big slowing down of the node processing power.

Recover channel

If you have set one of a node outlet in IP backup mode, the node will swap automatically to this outlet in case of DMX failure from the primary source. Once the primary source is back again available, the node will automatically swap back to that source if set in Auto-recover mode. We all know that it can be useful to decide when to swap back to the primary source (booting time of the desk + loading the right cue in case of desk failure). Tick off the auto-recover box in the pop up window if you decide to work in manual recover mode. Then you'll have to enable the trigger universe in the “Global” Web page and choose a recover channel. You now have the opportunity to choose to recover either each outlet one by one or all outlet in one shot.

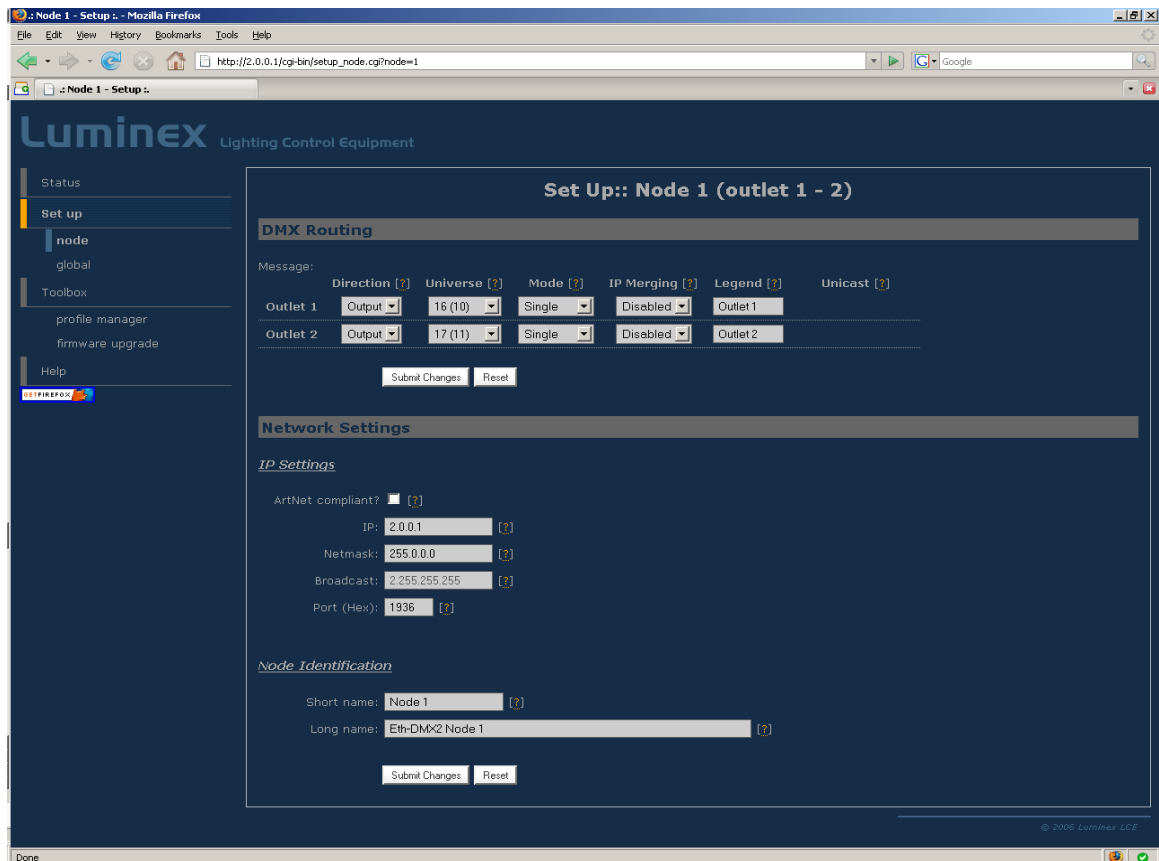
Here is the Luminex recover channel DMX chart :

0 - 7	Do nothing
8 - 15	Recover outlet 1
16 - 23	Recover outlet 2
24 - 31	Recover outlet 3
32 - 39	Recover outlet 4
40 - 47	Recover outlet 5
48 - 55	Recover outlet 6
56 - 63	Recover outlet 7
64 - 71	Recover outlet 8
72 - 79	Recover all outlets
80 - 255	Do nothing

Patch files :

All those soft patches can be recorded or loaded from or to the node by using “Load Patch” or “Export patch” buttons. Luminex node recognize .txt files. These are “TAB” seperated files which can be edited using spreadsheet software (Excel, OO Calc,...)

Network settings



IP Settings

You can enter here the desired ArtNet IP address and Netmask you want to use. If you're not confident with ArtNet IP setting, tick the "ArtNet compliant?" box for the node to warn you in case of mistake. ArtNet IP addresses usually look like 2.x.x.x or 10.x.x.x.

You're not obliged to work with ArtNet IP addresses. If you wish to work with usual IT IP addresses as 192.168.x.x, there's no problem for you to set such address on the node. Please remember that your node will thus not be visible on the network from devices set with conventional ArtNet IP addresses (2.x.x.x or 10.x.x.x).

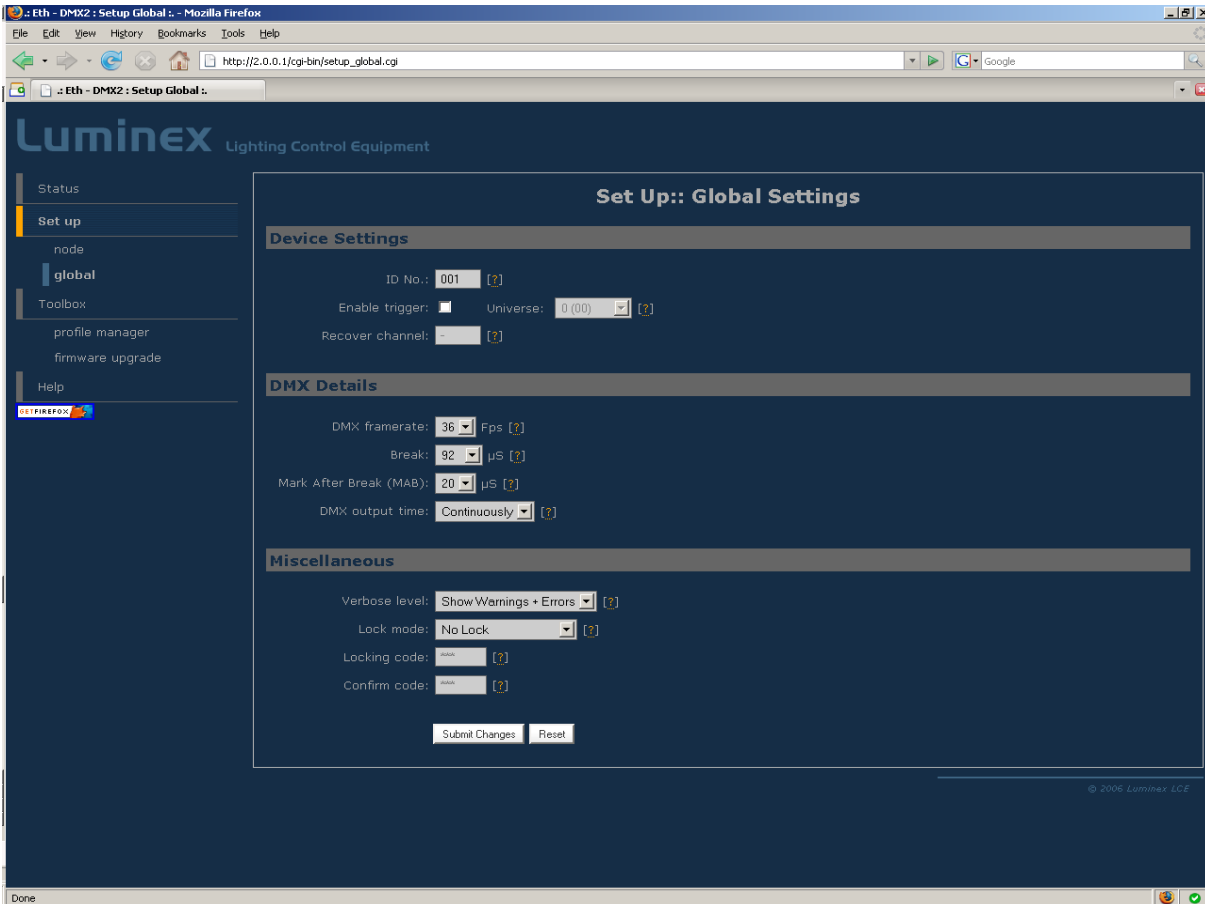
The Port field allows you to change the UDP port used on the network to transmit your UDP ArtNet packets. Luminex recommends not to change this value.

Node identification :

Enter here a small and long name to easily identify your node on the network through a Web interface, ArtNet compliant softwares or Luminex LumiNet monitor.

- **Global**

Some global settings can be altered by clicking Global in the Setup sub menu. Device Settings



Here you can change the device's ID number which is indicated on LumiNet monitor.

You can also enable the Trigger universe to remotely control your merging policy through any DMX source. The node will listen to the specified universe entered in the universe field.

You can set your Recover channel if you use the manual recovery mode (page 14, 18).

DMX details

The DMX frame rate setting for all outlets. This can be set from 20 to 44 frames per second.

DMX Break time can be set from 92 – 180 us

DMX Mark After Break (MAB) time can be set from 12-88 us

DMX Output time can be set to 1 – 10 minutes or continuously. This time sets how long an output remains outputting it's last DMX levels after no valid DMX packet came in for that particular universe on ArtNet.

Miscellaneous

This part is about security and warnings :

- **Verbose level** : Select if you want to see error messages on the front end OK LED.
- **Lock Mode**: select the security level you want to be applied on your Node 2 front end. Auto lock will force the Node to lock all wheels encoders and switches after 2 minutes of front end inactivity.

Password protected mode will guide you to set a password into the "locking code" field. Once the node is locked, you'll have to enter the 3 digit password through wheel encoders or through Web interface password field.

For these 2 lock modes, the OK LED will turn Orange to indicate the node is locked. Read the "Unlock the Node" chapter to see the complete procedure.

Toolbox

When clicking on Tools in the navigation bar, a sub menu appears. Choose one of the items in the sub menu.

- **Profile manager**

The profile manager is able to store 20 profiles. All profiles are stored on the device.

A preview of the complete configuration stored in a profile is shown when a profile is selected from the drop down list. When an empty profile is selected, no preview will be shown.

Once a profile is selected you can choose to recall it, to save actual settings as a profile, or to delete the profile.



When recalling a profile, an other page will appear to ask whether to recall your network settings as well or only the outlet routings.

When saving a profile a next page will ask you to fill in a profile name.

- **Firmware upgrade**

The firmware upgrade page allows you to select a downloaded firmware file and upload it to the device.

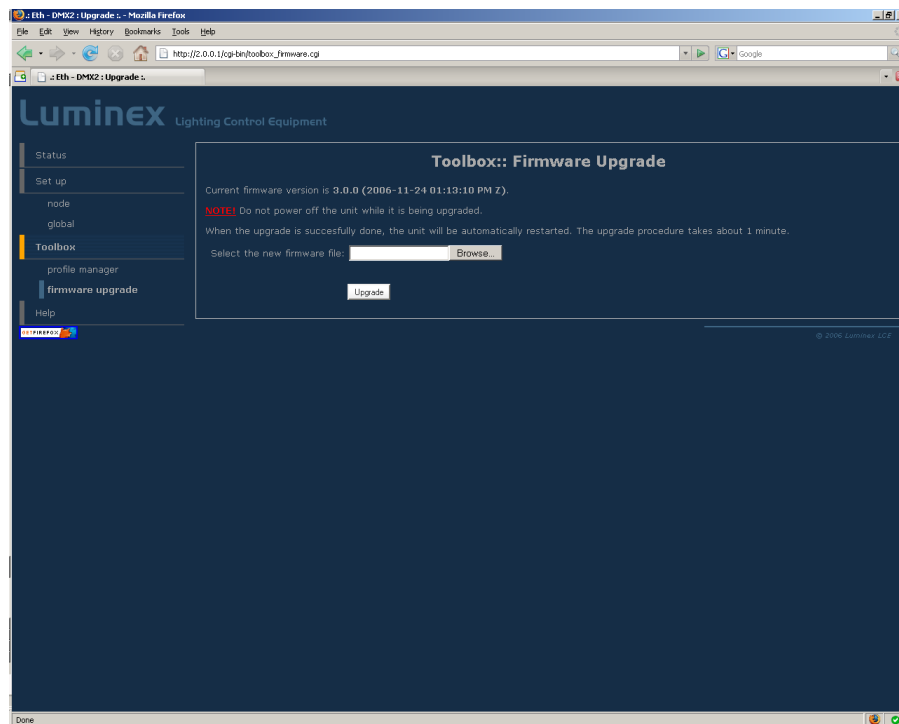
This page shows the actual firmware version running on the unit below the file upload field.

The latest firmware file can always be downloaded from the Luminex web pages.

[Http://www.luminex.be](http://www.luminex.be)

To install the firmware on the Ethernet-DMX2 follow these steps:

1. Download the .zip file and save it on your hard disk.
2. Extract the .zip file.
3. Please read the "ChangeNote.txt" for latest release changes.
4. Browse to the device its IP address with your favorite web browser.
5. Click Toolbox -> Firmware upgrade.



6. Browse to the extracted upgrade file on your hard disk (upgrade_eth_dm2.tgz).
7. Select the file and press on the "Upgrade" button.
8. The upgrade file will be sent to the device.
9. Wait until the device has rebooted.
10. Enter the IP number of the device in your browser and check at Toolbox -> Firmware upgrade if the current version is set to the right version number. If the number is the same as mentioned with the file than the upgrade has succeeded.

Additional Documentation

All additional documentation can be downloaded from our web pages in the support section.

[Http://www.luminex.be](http://www.luminex.be)

--> Support