



# DMX512-A 2.10 HUB

*User Guide - v4*



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## Warranty information

### ***Limited warranty***

Unless otherwise stated, your product is covered by a two (2) years 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.

### **Packaging**

- 1 x DMX 512-A 2.10 HUB
- 1 x Instruction manual

### **Description**

The DMX512-A 2.10 HUB is a full bidirectional isolated DMX splitter or booster with 2 dedicated input connectors and 10 configurable output connectors. All in- and outputs conform to the DMX512-A standard. This allows half-duplex data transport, such as RDM, on a normal single pair DMX connection. The hub is also compatible with DMX512 and DMX512 (1990).

The hub has 2 separate DMX zones (input zone A and input zone B). On every output you can select to which zone it has to be connected. This allows you to distribute 2 separate DMX lines (1024 channels) in any possible output configuration.

All outputs can receive data as well and retransmit it on its selected zone. In this way RDM data (and other bidirectional data) will be send on all outputs and input of the same zone.

### **Specification**

Model: DMX512-A 2.10 HUB

Manufacturer: LUMINEX Lighting Control Equipment

#### • **Dimensions**

482 x 182 x 44 (mm)

19" x 7,16" x 1,75"

Package: 520 x 235 x 50 (mm)

#### • **Weight**

2,2 kg

#### • **Electrical**

Voltages: 90 – 260 VAC

Frequency: 47 – 63 Hz

Rated power: 20 W

Fuses: 125V, 1A, Slow blow only (5mm x 20mm)

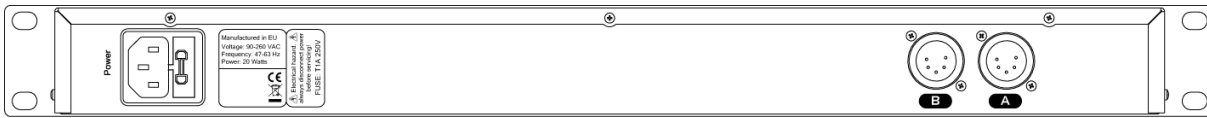
250V, 1mA, Slow blow only (5mm x 20mm)

#### • **Environmental**

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

# Connectivity

## Rear panel



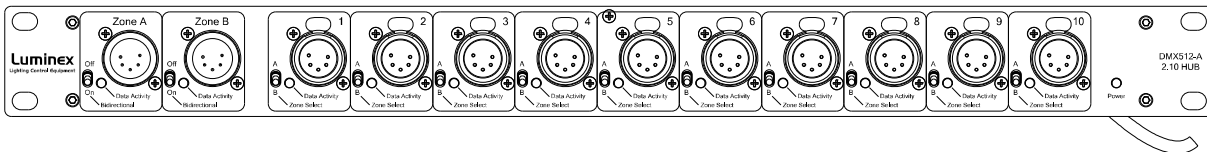
### • Mains

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

An IEC socket is located at the rear of the unit. Please use an IEC plug compliant cable to feed power to the unit.

Luminex recommend the use of a power cable, fitted with an IEC-Lock™ plug. The IEC-Lock™ system offers a reliable way to connect the power cable to the unit. The equipment must be earthed !

## Front panel

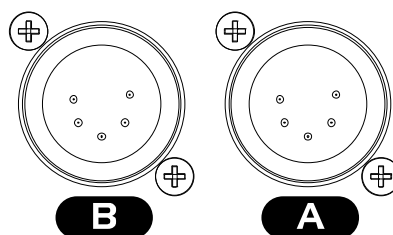


### • DMX input

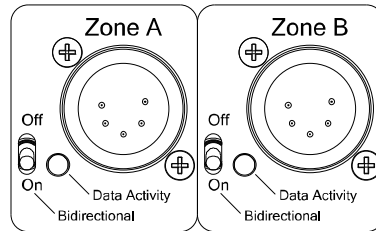
Two Neutrik 5 pin gold plated male connectors are provided as zone A and zone B input.

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

Both inputs are compliant with the DMX512-A specification and are terminated and biased. The 2 inputs are separately optical and galvanic isolated from the outputs and from each other.



Zone A and Zone B input connectors are also provided at the rear of the



device. These inputs are straight through connections of the inputs on the front and allow input cabling at the back or inside a rack. All 5 pins are connected to the front inputs and can serve as a real non isolated through.

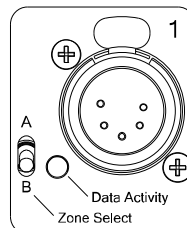
On the front panel, a small switch at each input is provided to disable the bidirectional functionality of each zone independently. This is can be switched off when legacy DMX equipment is used, that causes reflections on the DMX lines.

- **DMX output**

Ten Neutrik 5 pin gold plated female connectors are provided as output.

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

All outputs are compliant with the DMX512-A specification and are terminated. The outputs are separately optical and galvanic isolated from the inputs and from each other.



A tiny switch is provided with every output to choose between Zone A and Zone B. In this way you can make any combination of splitter, configuring as many outputs you need to transmit DMX from Zone A and the rest from zone B.

When the bidirectional functionality of the selected zone is active, all received data on these outputs will be retransmitted on all the outputs of this zone and on the input connector of this zone.

- **Connection type**

The DMX512-A 2.10 Hub can be ordered with all 5 pin, 3 pin, EtherCon or any mix of the above.

The unit can also be custom configured in any Enhanced Function topology EF (1-4), as described in BSR E1.11, the USITT DMX-512-A standard. Contact Luminex LCE for more detail.

Following tables show you the connection details.



| <b>Pin #</b> | <b>DMX512 3-Pin</b>  |
|--------------|----------------------|
| 1            | Data common (0 volt) |
| 2            | Data complement (-)  |
| 3            | Data true (+)        |



| <b>Pin #</b> | <b>DMX512 5-Pin</b>     |
|--------------|-------------------------|
| 1            | Data common (0 volt)    |
| 2            | Data complement (-)     |
| 3            | Data true (+)           |
| 4            | Not used (through rear) |
| 5            | Not used (through rear) |



| <b>Pin #</b> | <b>EtherCon (DMX 5-pin)</b> |
|--------------|-----------------------------|
| 1            | Data 1+ (3)                 |
| 2            | Data 1- (2)                 |
| 3            | Data 2+ (5)                 |
| 6            | Data 2- (4)                 |
| 4            | Not used                    |
| 5            | Not used                    |
| 7            | Data link common 1 (1)      |
| 8            | Data link common 2 (1)      |



## Features

### ***Isolation***

- **Individual outlet protection**

All ten outputs feature individual isolation and protection. This means that if a fault occurs on a piece of equipment connected to one output, fixtures on the other outputs are totally protected. In addition the input connectors have their own protection, this gives a double barrier between fixtures and the console and protects the console against a fault on the mains supply to the buffer itself (i.e. if the buffer unit was inadvertently connected across two phases).

- **1000 Volts optical isolation barrier**

Each outlet has an optical isolator that is capable of withstanding voltages of up to 1000V. Each isolator has its own power supply eliminating any direct electrical connection between outputs.

Self-healing technology makes sure that the outlets can resist up to 530V over its data pairs. This means that after such a fault the outlet works fine again with normal DMX signals.

- **Short circuit protection**

Each outlet is protected against short circuits, or incorrectly wired connectors.

- **Modular isolation**

All the components that provide the opto-isolation are built into a single plug-in module for each channel making servicing ultra-simple. In addition each module is completely interchangeable with other channels including the input module.

- **Line voltage protection**

Not only does the Hub protect your various pieces of equipment from inadvertent DMX-to-mains connection it also protects itself. Each individual output is protected so that no damage will occur to the buffer even if they are connected directly to 230V by mistake.

Even a built-in rechargeable battery backups the complete isolation functionality when a mains failure occurs (see "Power fail management").

## ***Bidirectional and RDM***

Bidirectional means that the splitter can work in Half-duplex over data pin 2 and 3.

All outlets are able to receive data. When an outlet receives data, then this data will be retransmitted on all remaining outlets configured to the same zone. So all output and input connectors of the same zone will get all data send on that zone.

This allows bidirectional manufacturer dependent data to be transmitted between fixtures and controllers. The Hub is protocol independent and supports in this way communication from different manufacturers such as High End Systems, Martin Professional, Coemar,...

RDM or Remote Device Management is also supported this way. The change over time in data direction is conform to the RDM and DMX512-A specification. The Hub is a non proxy RDM device with no built in RDM management controlling logic. This allows us to assure a maximum data delay between incoming data and outgoing data of 1 micro second.

## ***Power fail management***

An integrated power management circuit assure optimal power conditions and fail prove operation.

- **Backup battery**

A built-in rechargeable backup battery assures the complete operation (included isolation) of the unit during power failure. When the unit is connected to mains and switched on, the battery get automatically loaded. This allows complete functionality for 20 minutes with a full loaded battery.

The Hub will detect a mains failure and automatically switch over to internal battery backup.

Once the unit is disconnected from mains, the battery will be discharged until a safety level, in order not to damage the battery itself

Note: We recommend to change the battery pack every 3 years. The battery can easily be replaced. No soldering is needed. The battery pack can be ordered separately at Luminex LCE.

- **Power status**

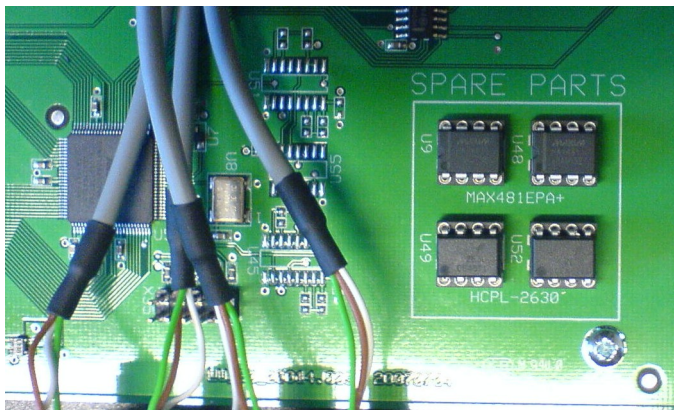
The status of the mains and battery are shown on a tri-coloured LED on the front panel next to the power switch.

| <b>LED status</b> | <b>Power status</b>  |
|-------------------|--|
| Green             | Working on external mains supply.  |
| Orange            | No external mains supply.<br>Working on battery power.<br>Battery status ok.   |
| Red               | No external mains supply.<br>Working on battery power.<br>Battery status bad.  |
| OUT               | No external mains supply.<br>Battery dead (empty).<br>Or unit is switched off. |

## **Support**

- **Spare part area**

Since serial LUM0060111 and upwards, a spare part area is provided on the board layout. Here the most critical parts are already provided to help you out in the field.



2 DMX transceivers and 2 optical couplers are provided to replace the ICs of a permanently broken DMX outlet.