Smart DMX merger

v.1.17

Ordercode 10091

CONTENT

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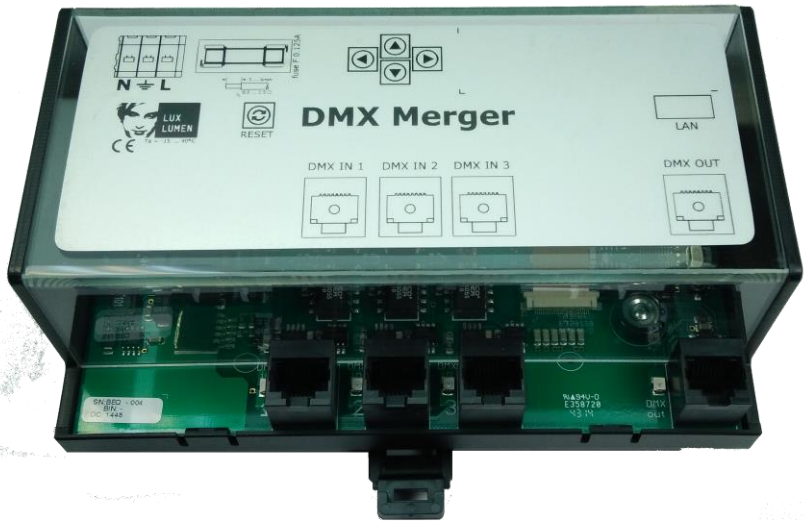
1 Picture

1.1 General

1.2 Top



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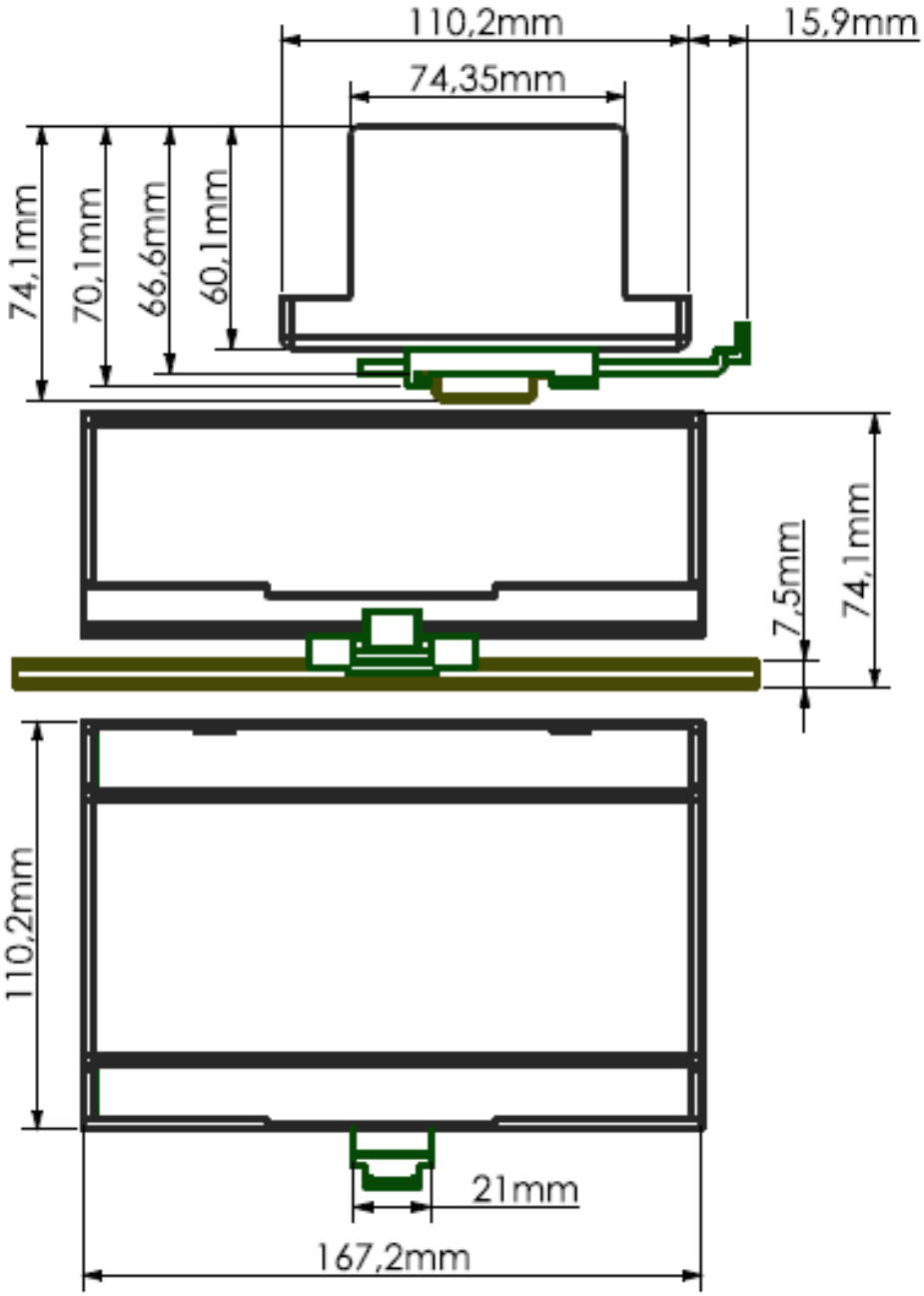
2 Dimensions



Please note, dimensions given are din-rail included.

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3 Safety information

Before installing, powering up, or servicing this smart DMX merger card it his highly recommended that you read this manual and ensure yourself that you completely understand its content. Observe the safety precautions in this manual. Install and operate the smart DMX merger only as described in this manual and in conformity with local regulations. If you have any questions how to operate this product safely please contact your point of sale.

3.1 Symbols

Following symbols are used to identify important safety information on the product and in this manual.

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3.2 Protection from electric shock

This smart DMX merger card is connected with live power so take all precautions to prevent injuries or electrical shocks. Shut down the power of the complete installation before carrying out any installation or maintenance work.

Please note that all metal parts used in the enclosure where this card is used are firmly grounded.

If any cable, seal or housing is damaged, cracked or reformed, disconnect the power of the installation immediately.

The smart DMX card is only to be used in a proper housing conform to local regulations.

For any additional servicing, not described in this manual, please contact your point of sale.

3.3 Protections from fire and burns

Do not operate this smart DMX merger card if ambient temperatures, inside its enclosure, is above 45 °C (113 °F). Please ensure yourself that sufficient ventilation around the card is possible.

Do not modify the card in a way not described in this manual.

Never bypass the fuse or change the fuse with another type or value as is rated in this manual.

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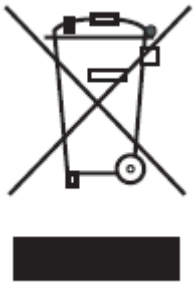
3.4 Protection from injury

Ensure yourself that all components, covers are securely fastened. Verify that the card is firmly clicked on a standard din-rail.

3.5 Disposing of this product



This smart DMX merger card is manufactured in compliance with directive of the European community: waste electrical and electronically equipment. Please help to preserve our environment and ensure that this product will be recycled properly at the end of its life.

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Physical installation

Thank you for selecting this smart DMX merger card as best solution in your setup.

Warning! Read the safety precautions in this manual before integrating this card into your installation.

Installation must be carried out by qualified professionals only.

Assure yourself that there is sufficient and unrestricted air flow around the smart DMX merger card.

4.1 Unpacking

The following items are included in your package:

- Smart DMX merger card
- UTP patch cable 50cm
- CD-ROM with smart DMX merger software
- Carton box package
- Short form manual

4.2 Location and orientation

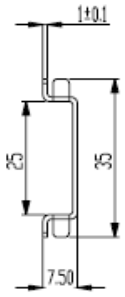
This smart DMX merger card cannot be used without additional protective housing. The housing protects the user against electrical shocks and it is protecting the card against climatologically influences.

Please assure yourself that the cabinet which houses the smart DMX merger card is according to local regulations and laws of the country of installation.

It is advised to install the card in horizontal position on the din-rail.

4.3 Mounting

The smart DMX merger can be mounted on a standard 35mm top hat din-rail. A typical section of this din-rail can be found here:



Note: Use end blocking clamps if necessary in your application.

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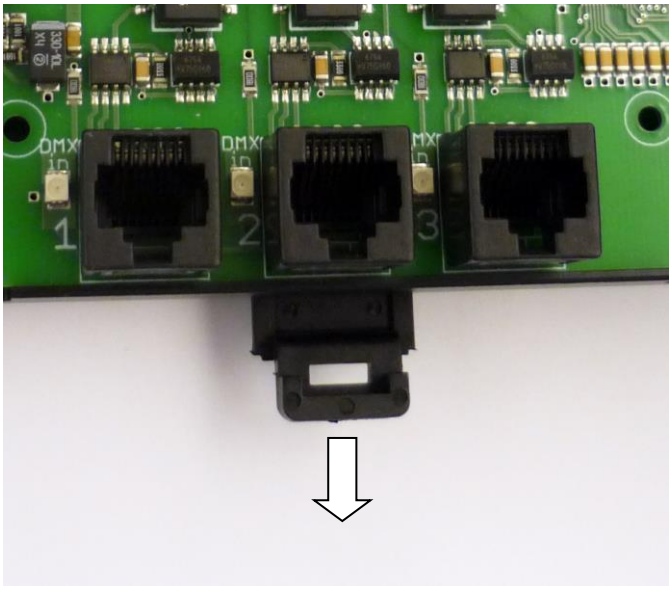
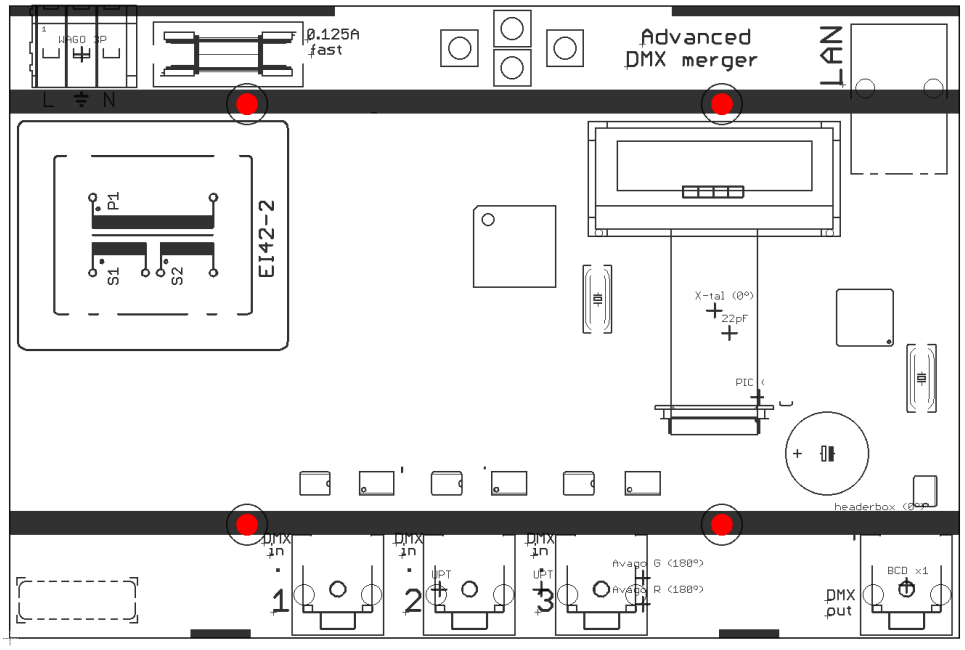
The smart DMX merger card is designed for architectural purposes in fixed installation. To remove the card from the din-rail, gently move the mounting clip like indicated here:



If the product is used in a situation where heavy mechanical shocks can be expected, we advise to remove the plastic din-rail enclosure and bolt the smart DMX merger PCB directly on a metal base. Use bolts and nuts M3 to attach the PCB. Use proper spacers to avoid electrical contact between solder pads and the metal parts of the housing.

Assure yourself that no metal parts of screws or bolts make contact with the electrical circuits on the printed circuit board.

The four mounting holes can be found below in the red color:



In case of problems or doubts, please contact your point of sale.

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External connections

5.1 AC power input

Safety precautions

Please take all necessary precautions to prevent electrical shocks since this card uses live power feed.

Specifications of the power input

The card operates fully functional:

- in the voltage range 220-240 Volt AC
- in the frequency range 50-60 Hz.
- Maximum power consumption is 125mA for the complete card depending on the loads of the outputs.

In case of doubts, please contact your point of sale.

Physical connections

The cable section of power feeding cable must be in the range like given in the table below:

Connection technology	Cage Clamp®
Conductor size: solid	0.08-2.5mm²
Conductor size: fine-stranded	0.08-2.5mm²
Conductor size: fine-stranded	0.25-1.5mm² (with insulated ferule)
Conductor size: fine-stranded	0.25-1.5mm² (with un-insulated ferule)
AWG	28-12
Strip length	5-6 mm/0.20-0.24 in
Conductor entry angle	0° to PCB

Note: Cage clamp® is a trade mark of Wago contact technology.

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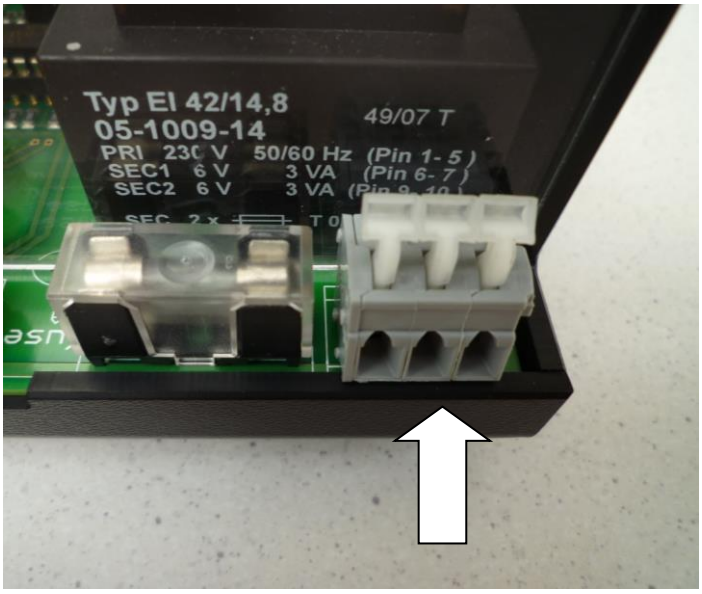
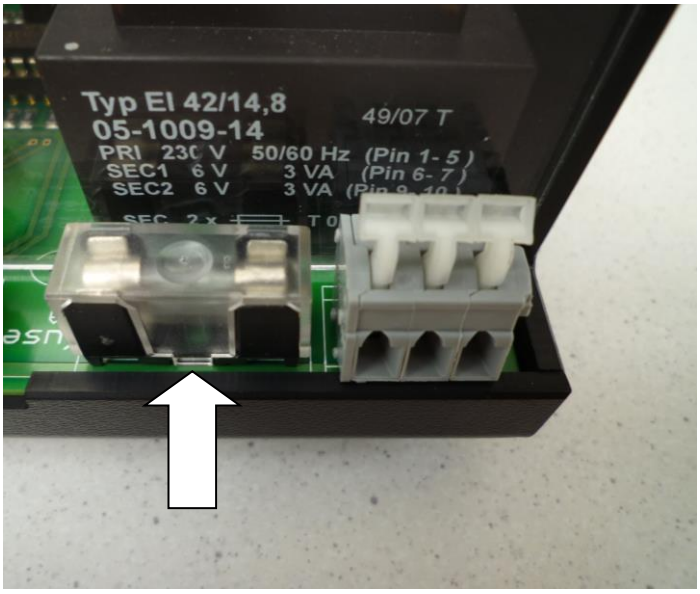
Location of power input-clamps

The power input can be found below:



Fuse located on board

A fuse to protect the card from overload or short circuit can be found beside the input clamp.



Only replace the fuse with 0,125 A rated, F type.

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5.2 *DMX in and output*

Precautions

Never connect other devices as a DMX transmitter or receiver to this inputs and output.

In case of doubts, please contact your point of sale.

Specifications

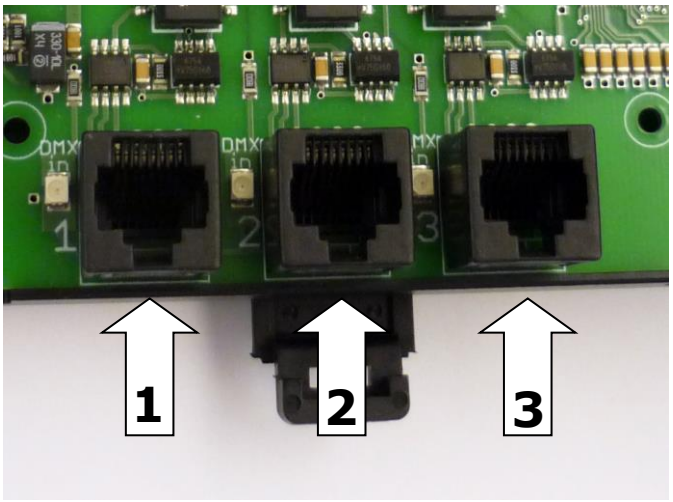
The card has three inputs and one output. The three DMX inputs can be configured in a smart way to the DMX output. This configuration is done with the dedicated software (included on the CD-ROM). More information of the smart DMX merger configuration in section 8 of this manual.

Physical DMX connections

The DMX inputs and DMX output are on RJ-45.

Location of the DMX inputs

The DMX inputs can be found below:



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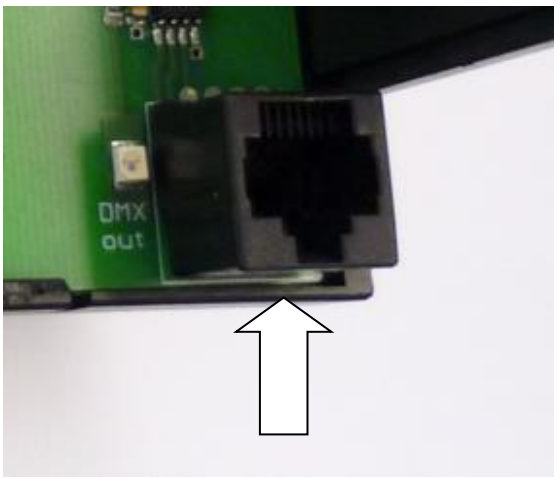
Location of the DMX output-clamps

The DMX outputs can be found below:



Specifications cabling

The use of Cat.5 or Cat.6 cable with according connectors is conformal the DMX 2004 by USITT in fixed installations. For more detailed information: www.usitt.org

The benefits are:

- Low cost of connectors
- Low cost of cabling
- Worldwide availability
- Fast application on site
- Very well known by electrical contractors
- Reliable connections

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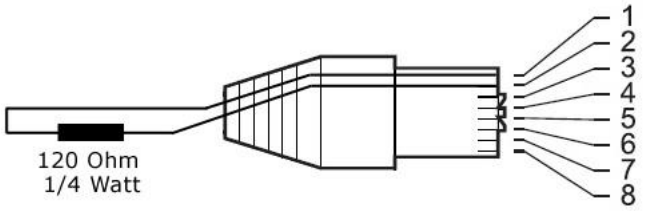
Suitable cable for transmission of the DMX-signal

Name of cable	Shielded or not shielded	Remarks regarding shielding	Max run length	Termination above run length
CAT 5E UTP	Not	No ground connection at output terminals	250 m	100 m
CAT 5E FTP or STP	Yes	Connection of shielding to PE clamp of output terminals	250 m	100 m
CAT 6 UTP	Not	No ground connection at output terminals	250 m	100 m
CAT 6 FTP or STP	Yes	Connection of shielding to PE clamp of output terminals	250 m	100 m

Termination of the DMX signal

To avoid disturbance of the DMX-signal it is recommended to terminate the DMX-line at the last open 'through' connector at each physical DMX-line. This is done with an 'end plug'. This end plug consists of a 0,25 watt resistor of 120 ohm between pins 1 and 2 of the connector.

Typical schematic of the end plug can be found below:



Tap on RJ45 connectors facing away from observer

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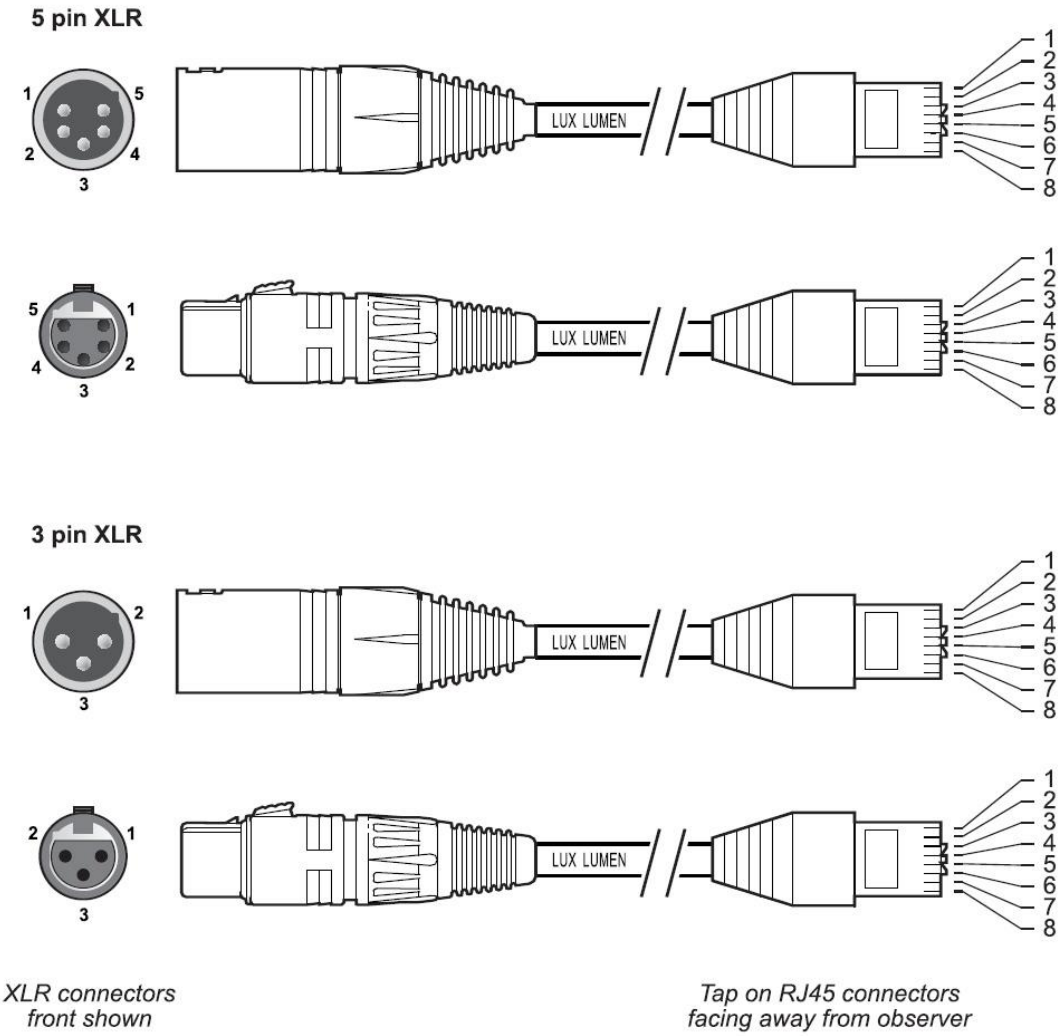
Pin layout of UTP to XLR connectors

XLR pin 1 wired to UTP contacts 7 and 8. UTP wire color usually brown and brown/white for schielding.

XLR pin 2 wired to UTP contact 2. UTP wire color usually orange for data negative connection.

XLR pin 3 wired to UTP contact 1. UTP wire color usually orange/white for data positive connection.



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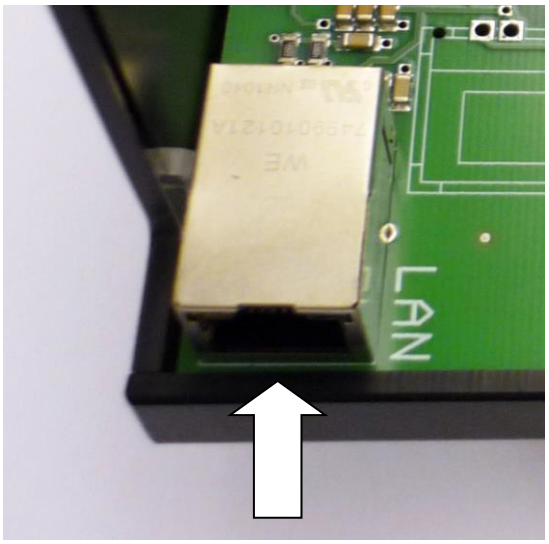
5.3 *LAN port*

RJ-45 port to connect the smart DMX merger to a computer or network device (switch, router). The port is designed to connect to a device with a bandwidth of 10Mbps or 100Mbps.



The led's indicate the status of the port like shown below:

Color led	Yellow	Green
Name led	Data	Link/Act
Position led	Left side RJ-45	Right side RJ-45
Status led = ON	NA	A device is connected
Status led= OFF	NA	No device is connected
Status led= BLINKING	Data is transmitted or received	NA

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6 EMC and safety requirements

The smart DMX merger card is fully compliant to the LVD and EMC directive of the European council, if used in a properly designed setup.

EMC requirements of the power supply:

The smart DMX merger card is only intended to be used in lighting applications, and as such, the complete assembly of led unit and power supply needs to be fully compliant with the harmonized standards.

Immunity according to:

- EN 61547:2009 (General EMC immunity requirements lighting eq.)
- EN 61000-4-1:2006 (General immunity testing techniques)
- EN 61000-4-2:2008 (ESD immunity test)
- EN 61000-4-3:2006 + A1:2007 (Radiated immunity test)
- EN 61000-4-4:2004 (Fast transients and burst immunity)
- EN 61000-4-5:2005 (Surge immunity test)
- EN 61000-4-6:2008 (Conducted immunity test)
- EN 61000-4-8:1993 (Magnetic field immunity test)
- EN 61000-4-11:2004 (Voltage variations immunity test)
- EN 61000-6-1:2005 (Generic standards for immunity)

Emission according to:

- EN 61000-3-2:2005+A1:2008+A2:2009 (Harmonics emission test<16A)
- EN 61000-3-3:2008 (Flicker+ voltage changes limits< 16A)
- EN 55015:2006+A2:2009 (Conducted + radiated emission lighting equipment)

To achieve this compliance, a proper power supply must be supplied. In case of doubts, contact your point of sale.

LVD requirements of the power supply:

The smart DMX merger card is only intended to be used in lighting applications, and as such, the complete assembly of led unit and power supply needs to be fully compliant with following harmonized standards:

- EN 60598: general requirements of lighting equipment.

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7

Installation setup

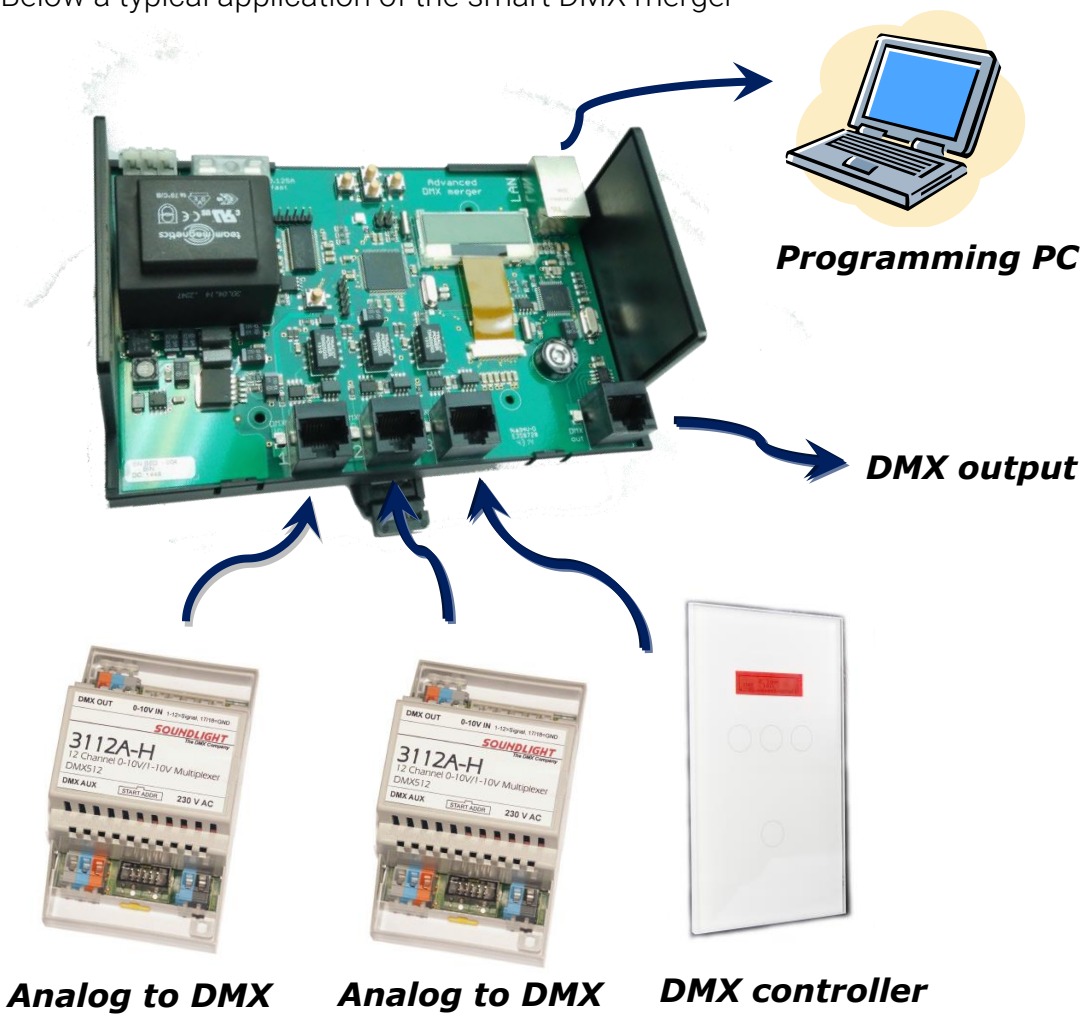
7.1 General description

The smart DMX merger card gives the opportunity to manipulate and merging three different DMX input streams to one DMX output. The configuration of the smart DMX merger is done with an external computer thru the onboard LAN port. The DMX merger software works with logical blocks to make a customized DMX routing.

The smart DMX merger has also a build-in mehregan controller. The controller can be triggered and manipulated by DMX channels from the DMX inputs. The scenario's of the mehregan controller are programmed with the DMX merger software.

7.2 Typical layout

Below a typical application of the smart DMX merger



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9 Card configuration

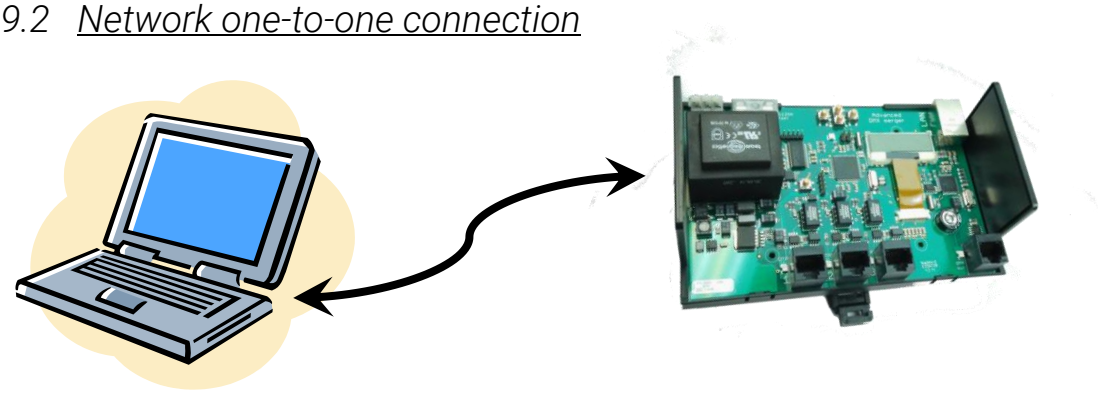
9.1 Introduction

The DMX merger card must be programmed with dedicated software from Lux Lumen. The software package is available for the following operating systems: Windows Vista and above, Mac OS X and linux.

The software is free available on the Lux Lumen website: www.lux-lumen.com

The computer is only necessary for the configuration of the smart DMX merger. After configuration the computer can be disconnected and the smart DMX merger works completely stand alone.

9.2 Network one-to-one connection



For configuration purposes, a computer may be directly connected to a merger with a network cable. To get your computer onto the same network as the merger, it must be assigned to a static IP address in the same subnet.

The default merger IP setting of the DMX merger:

- IP address: 192.168.1.200
- IP subnet mask: 255.255.255.0

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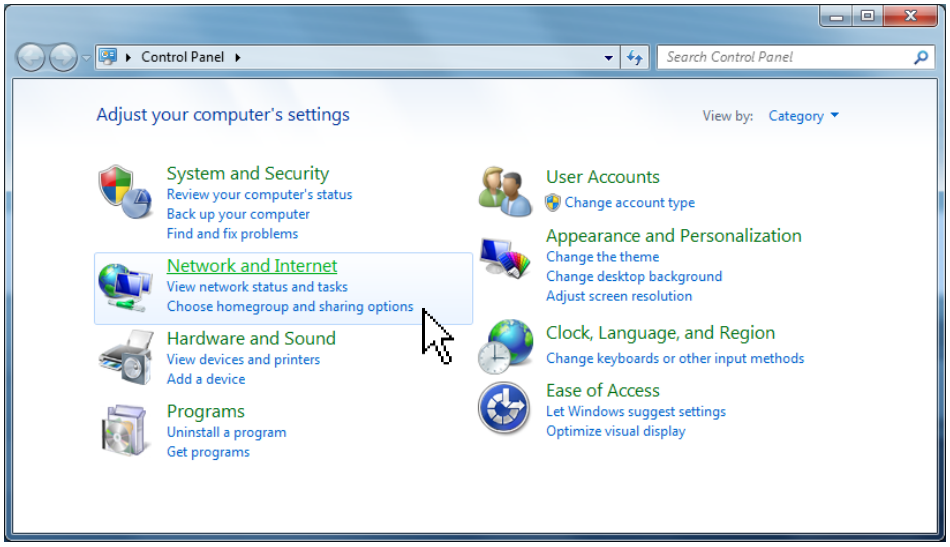
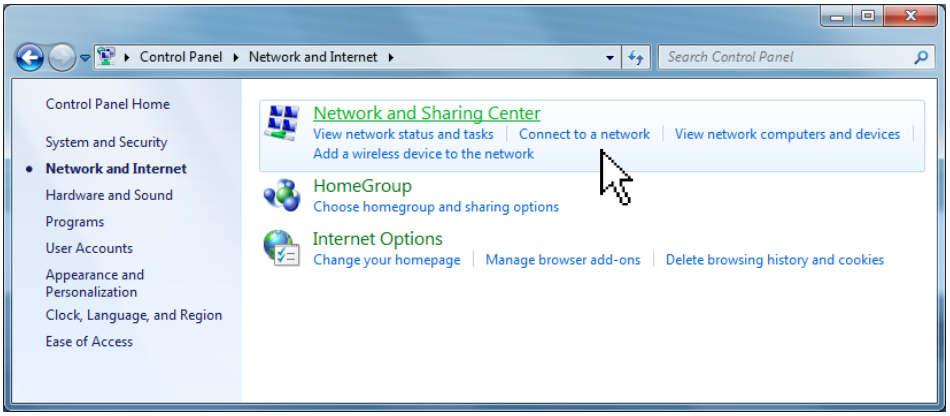
Windows

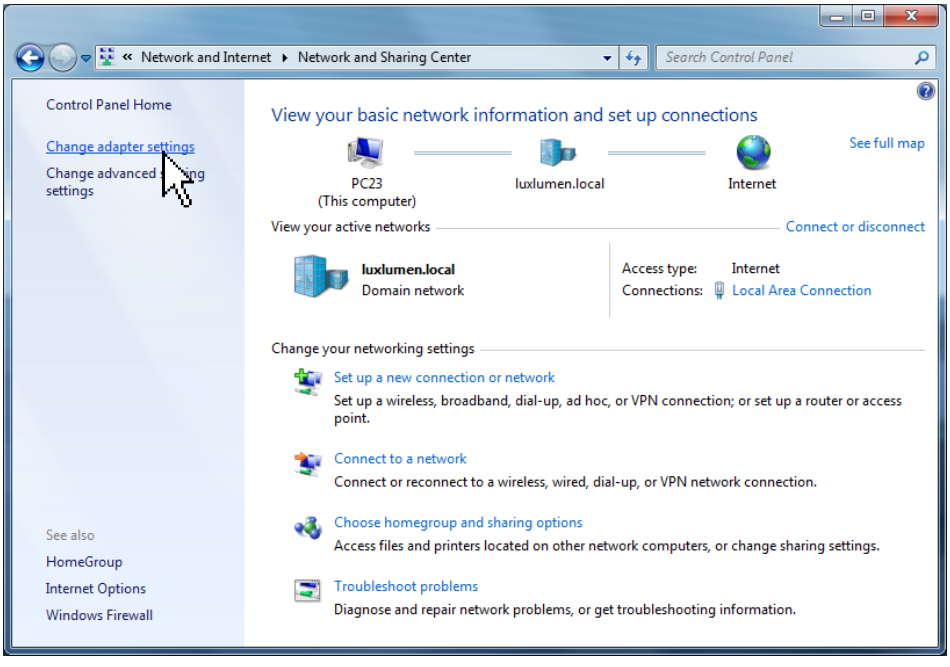
- Go to the Control Panel of windows



- Go to the Network and Sharing Center



- Change adapter settings



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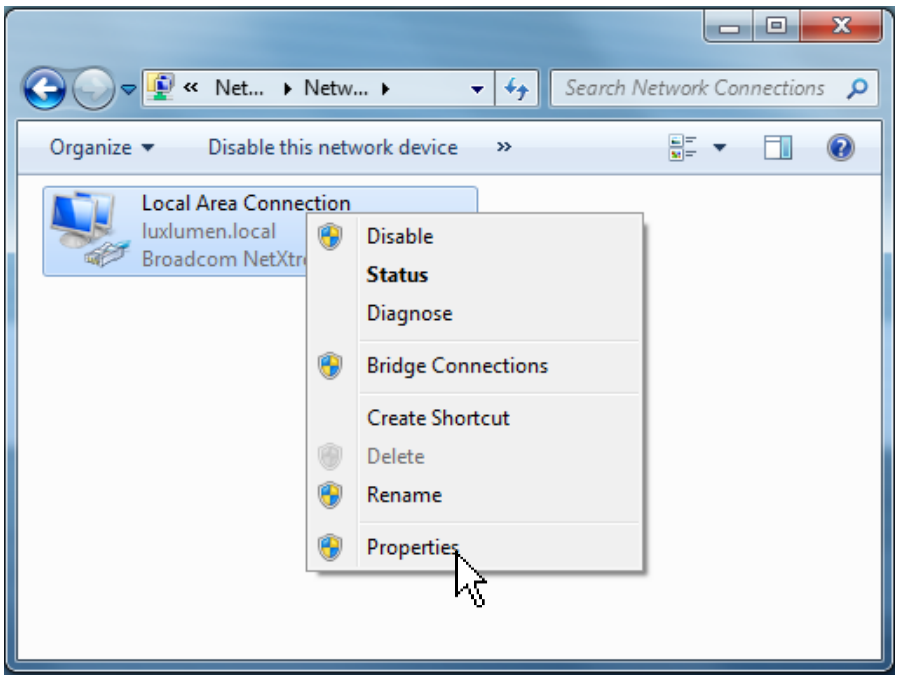
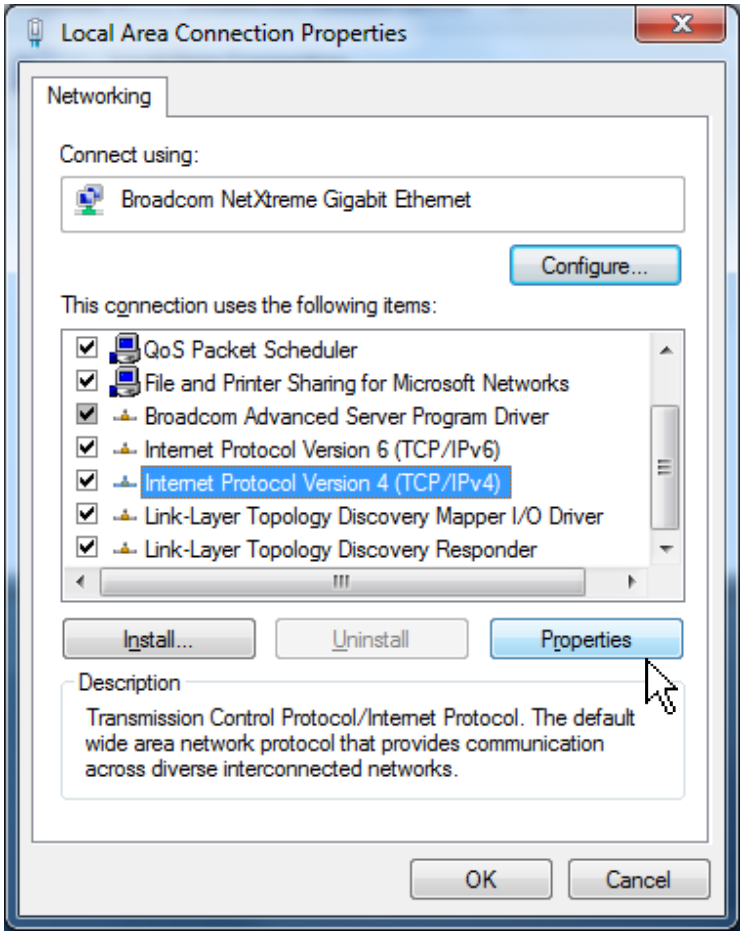
- Right-click on the used LAN interface and choose “Properties”



- Select “Internet Protocol Version 4 (TCP/IPv4)” and click the button “Properties”.



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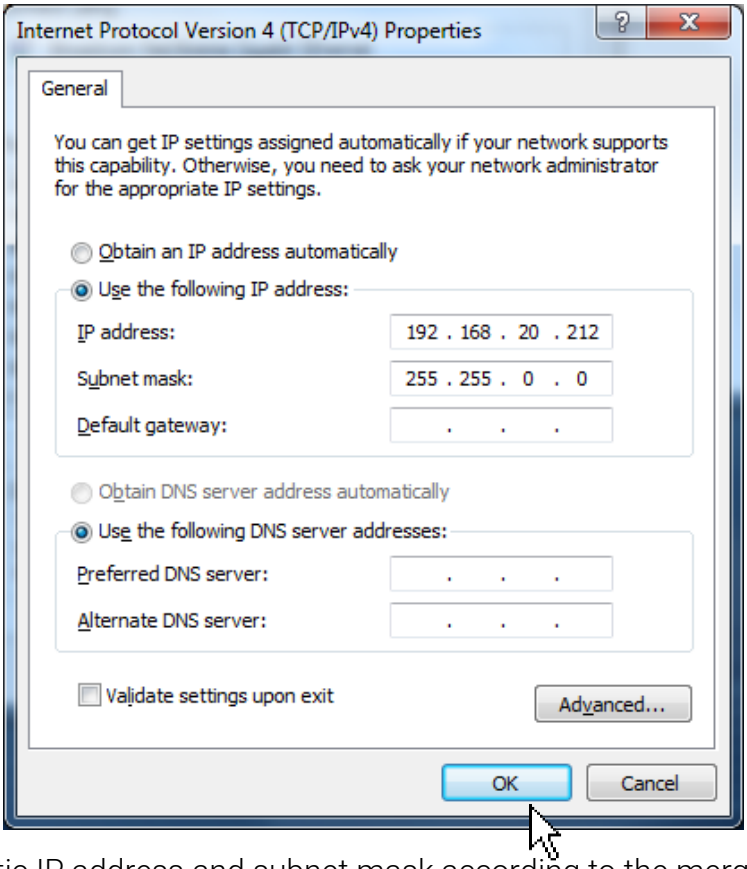

Enter a static IP address and subnet mask according to the merger's IP settings. Apply the settings by clicking "OK". It may be necessary to restart both computer and merger before setting up a connection in the Merger Editor software.

Note: Don't use the same IP address as the DMX merger

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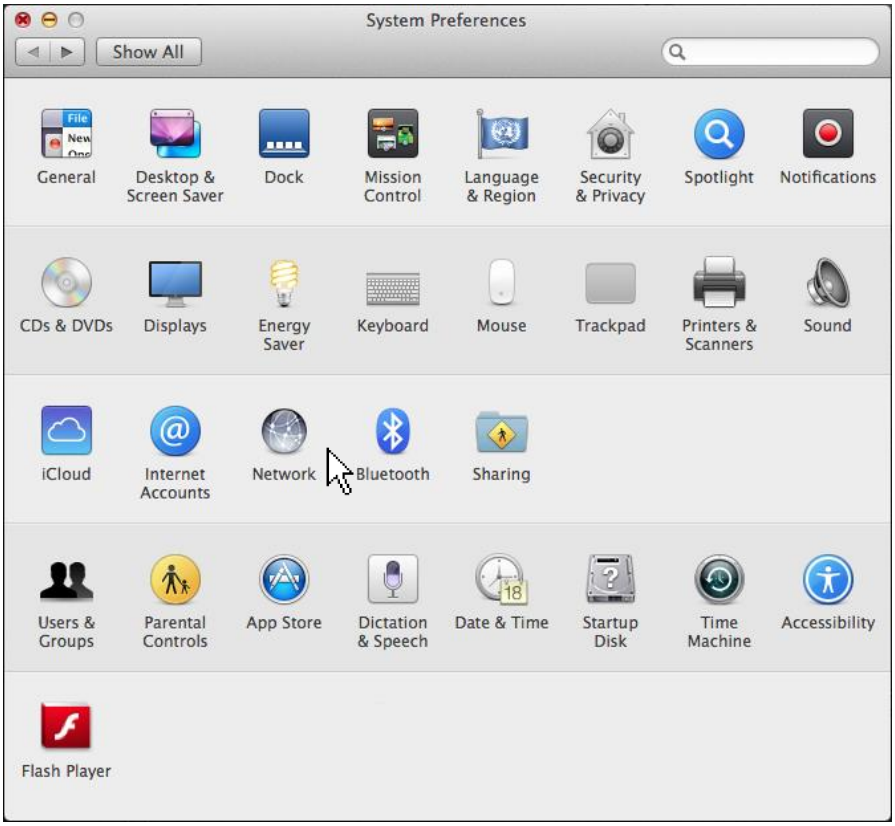
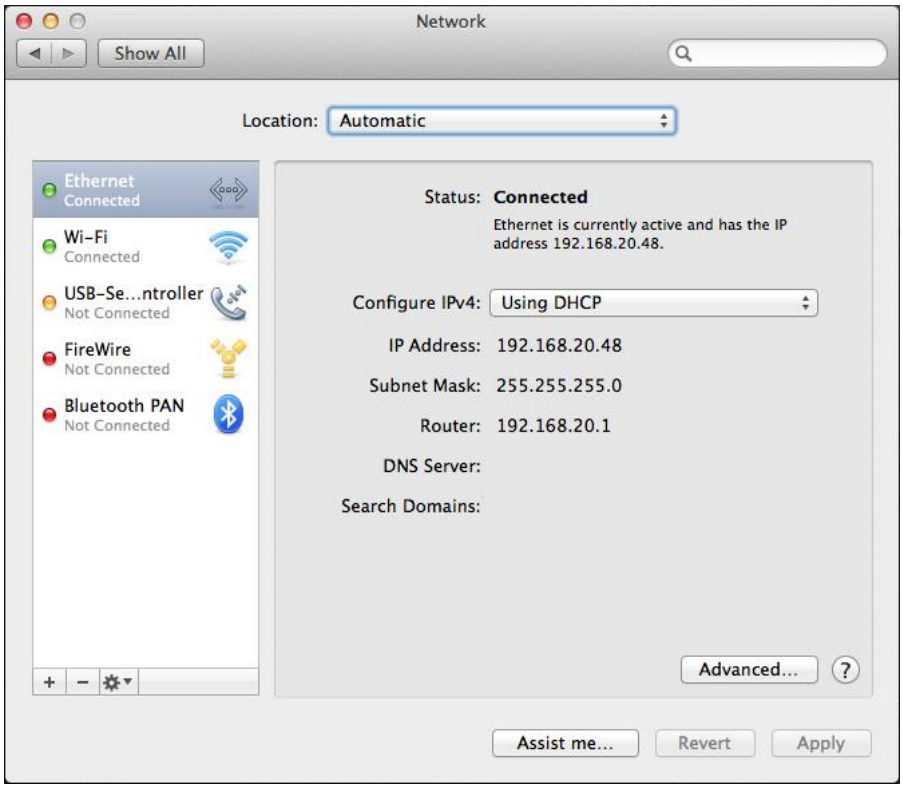
Mac OS X

➢ Go to the System Preferences of Mac OS X



➢ Go to the network properties and Select the Ethernet connection



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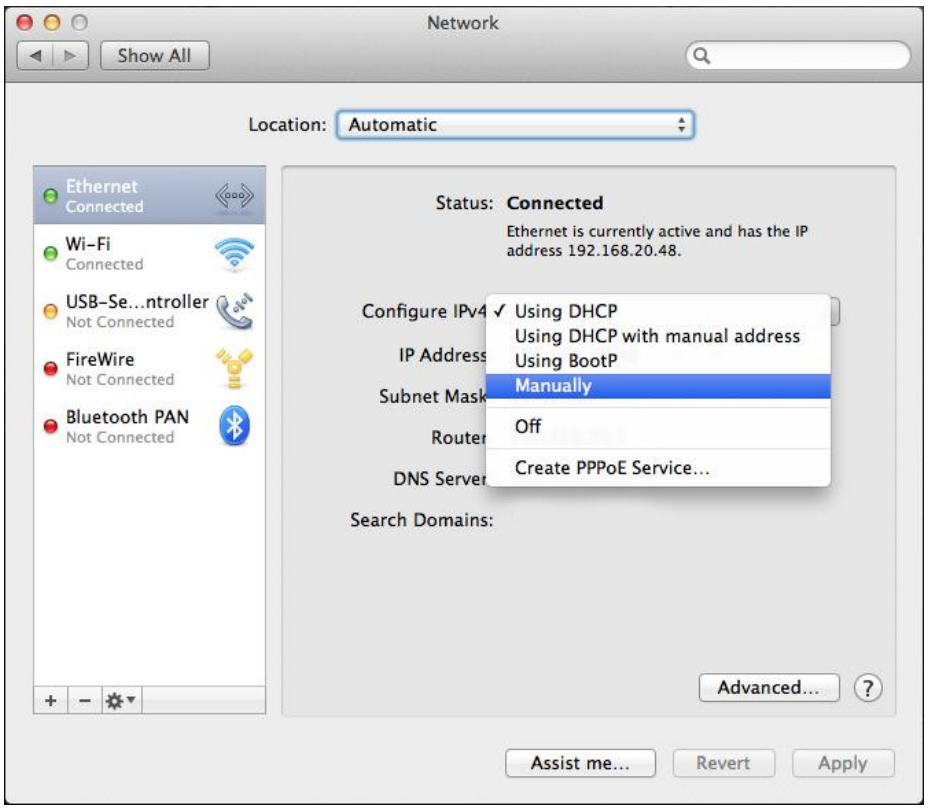
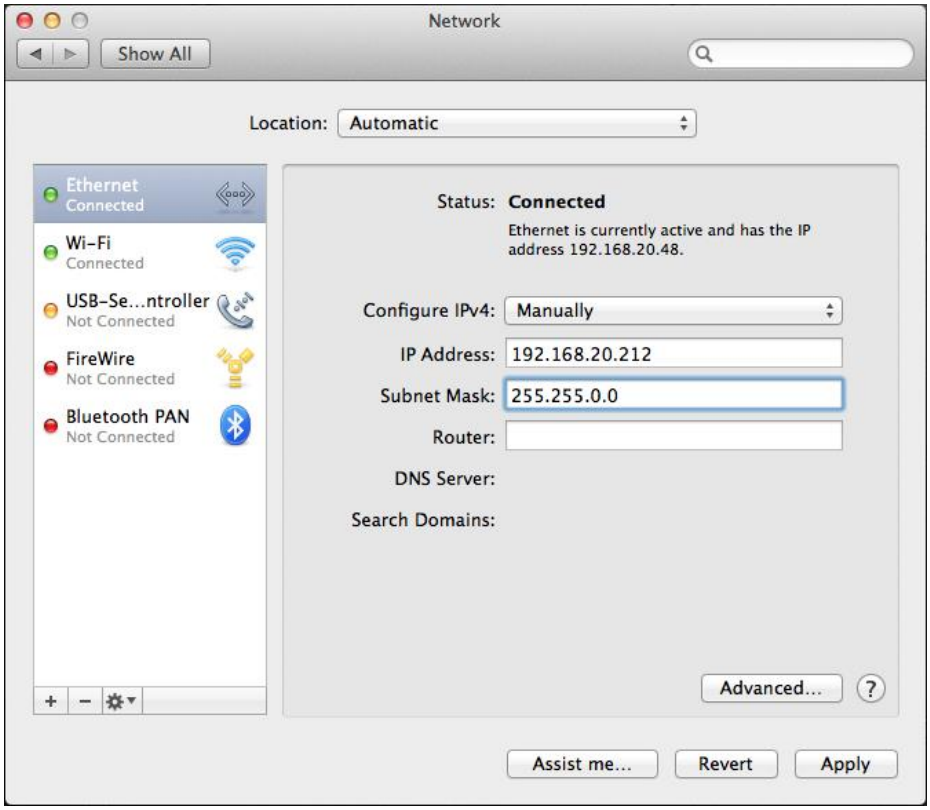
➢ Select “Manually” from the “Configure IPv4” drop down menu





Enter a static IP address and subnet mask according to the merger’s IP settings. Apply the settings by clicking “Apply”. It may be necessary to restart both computer and merger before setting up a connection in the Merger Editor software.

<u>Note:</u> Don’t use the same IP address as the DMX merger

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9.3 Software installation

Windows

Double-click the installer file (Merger Editor-x.xx.msi), and confirm the install process. When finished, a new start menu entry is created (Lux Lumen > Merger Editor), as well as a desktop icon.

Mac OS X

Double-click the installer file (Merger Editor-x.xx.dmg), and confirm the install process. When finished, a new entry is made in the Application folder.

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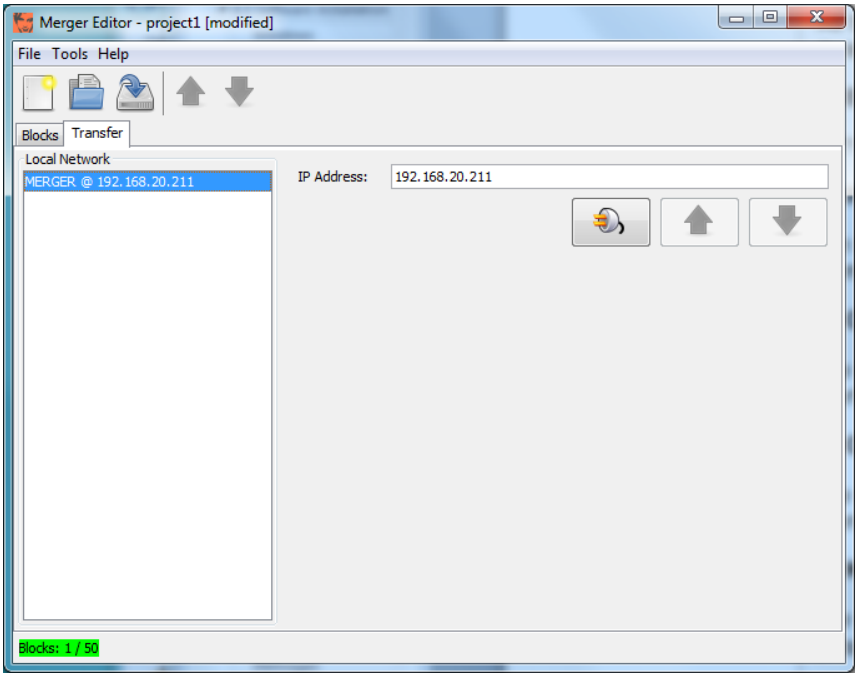
9.4 Software guide

Merger connection

In the Merger Editor, on the **Transfer** tab, enter the IP address of the merger you want to connect to. Alternatively, select a merger found on the local network from the list on the left. Then select **Connect**.

At this point, extra menu items and buttons will become available (upload & download project, configure IP, set clock…).



Placing logical blocks

On the **Blocks** tab at the left side, the block library list can be found. It contains all types of basic building blocks from which the project behavior is built up. Currently, a project may contain up to 50 blocks, and most block types may be added more than once. Your current block count is displayed in the colored status label on the bottom left of the editor.

You can add a block to the project by dragging it from the library onto the empty workspace in the center. A block can be dragged around with the left mouse button. The center mouse button is used to pan the workspace or zoom it in and out.

Note: The output block must be added to the project before it can be installed onto a merger.

Connection between logical blocks

Blocks have (gray) inputs and/or (green) outputs. Outputs may remain unconnected, but inputs must be connected before the project can be installed onto a merger. You can create a connection between blocks by

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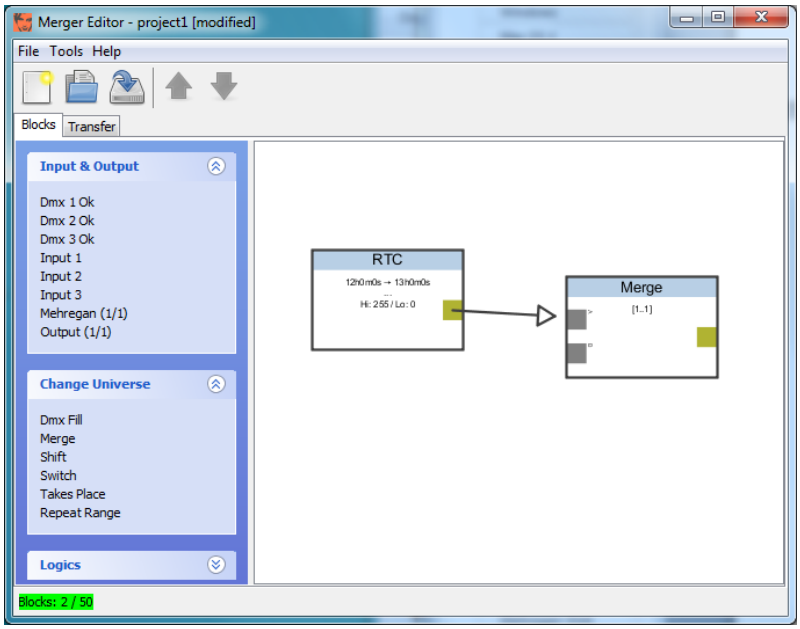
dragging an arrow from a block output to a block input. An input can receive only 1 connection, while multiple connections can originate from an output.



On execution of such setup, a block will process incoming dmx values and pass it to the next blocks. By advancing through a string of blocks, the original dmx values may thus be changed, copied, monitored or processed in another block-specific manner.

Changing parameters of logical Block

Every block type can perform a specific operation on the dmx values it receives. This operation can be tuned by setting block-specific parameters: by double-clicking a block, an editor window is opened by which these parameters can be updated. A description of these parameters for each block type can be found in the following chapter, *8.5 Logical blocks*.

Mehregan configuration

A single Mehregan block can be used in any project: this is a block that generates a dmx output, based on the lighting scenes programmed into it. Moreover, the scenes can be controlled (scene level, speed and activation) with block inputs.

When editing the Mehregan block, the incoming scene controls can be mapped on the first tab (**Control Channels**); on the **Fixtures** tab a dmx patch list can be made. Next, behaviors of the defined fixtures can be recorded into lighting scenes on the **Scenes** tab. For a more elaborate description of the Mehregan functionality, we refer to the Mehregan manual.

Note: if you're connected to a merger and then open the Mehregan editing window, you'll be asked for credentials. Authentication as the merger **admin** *will allow you to send a live scene preview stream from the* **Scenes** *tab to the connected device.*

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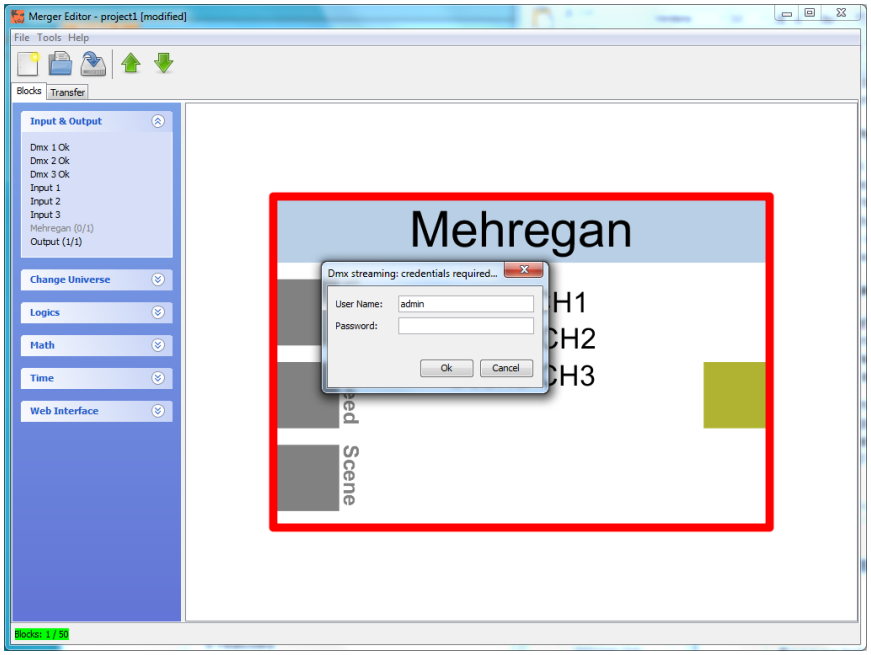
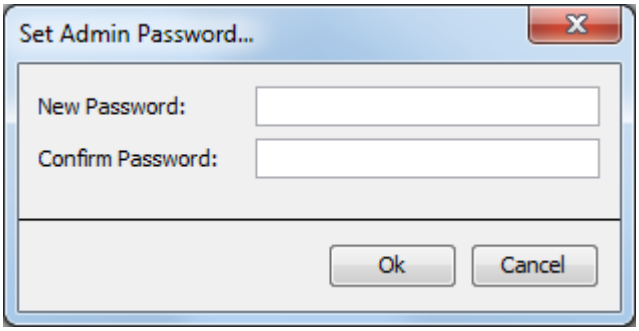


 Set password

A merger controller has 2 accounts for authentication: **admin** and **user**. By default, these passwords are **blank** (i.e., empty passwords), but they can be changed in the Merger Editor via **Tools > Set Password...**



On the secured pages of the web interface, the **user** or **admin** accounts can be used. For merger parameter reconfiguration via the Merger Editor, the **admin** credentials are required.

 Upload project

The merger project currently edited can be installed onto a merger with the **Upload to Merger** button. Make sure to connect to a merger first, via the **Transfer** tab. Requires **admin** authentication.

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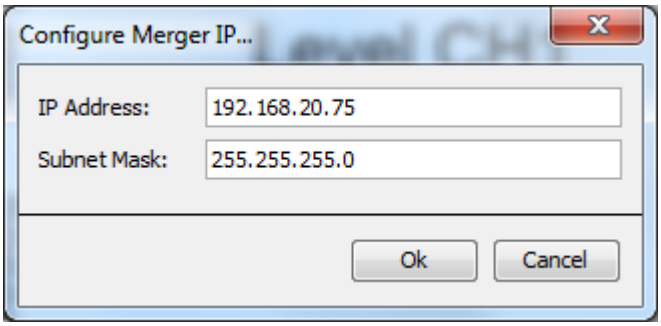
Download project

When connected to a merger, the project installed on the device can be downloaded into the editor application with the **Download from Merger** button. Requires **admin** authentication.

Configure Merger IP

When connected to a merger, it's possible to change the device's static IP address via **Tools > Configure Merger IP** in the menu. Note that changing a merger IP address and subnet mask requires **admin** authentication, and will reboot the updated merger.



Set Clock

When the RTC block is used in a project, the merger's internal clock should be set appropriately. You can do this by connecting to the device in the editor, and selecting **Tools > Set Clock**. This synchronizes the merger's clock with your computer's. Requires **admin** authentication.

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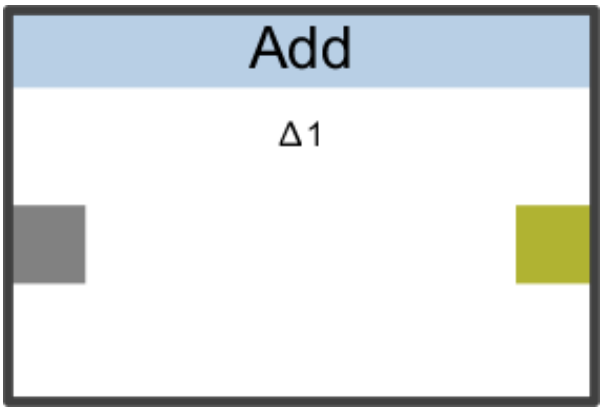
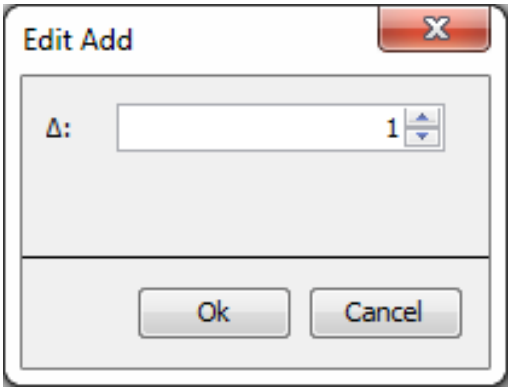
9.5 Logical blocks

Add



- *Inputs:* 512ch
- *Function:* add or subtract a fixed value to each channel. The sum will be limited so it will not go below 0 or above 255.



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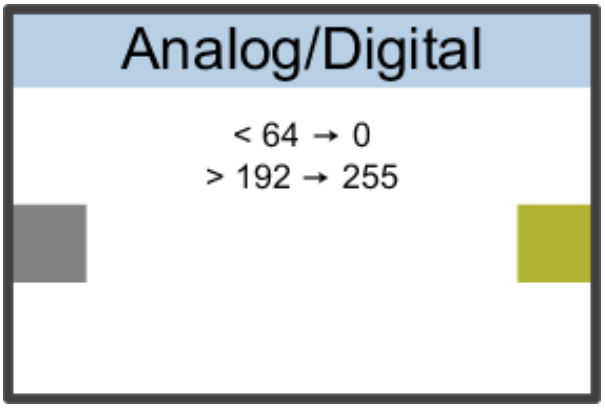
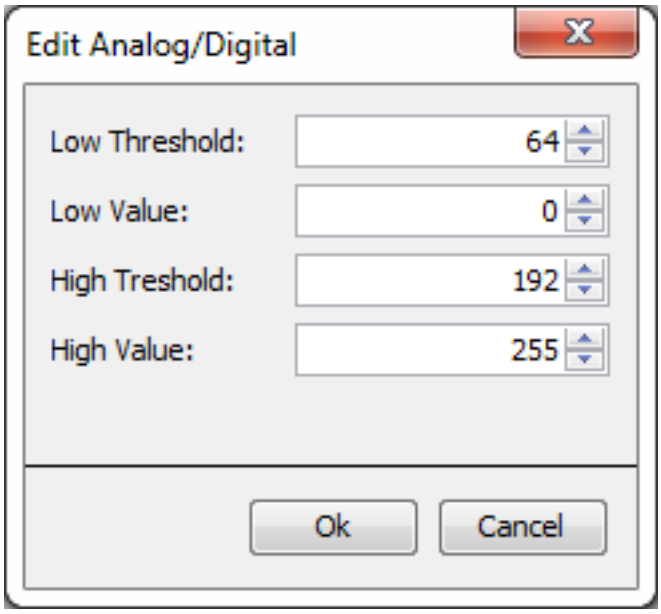
Analog/Digital



- *Inputs:* 512ch
- *Function:* converts each channel to a high or low value. The high and low threshold value can be changed independently. The high and low output value can also be changed. If the channel value is below the threshold low value, the output will be the low value, if the channel value becomes higher than the threshold high value then the output will be the high value.



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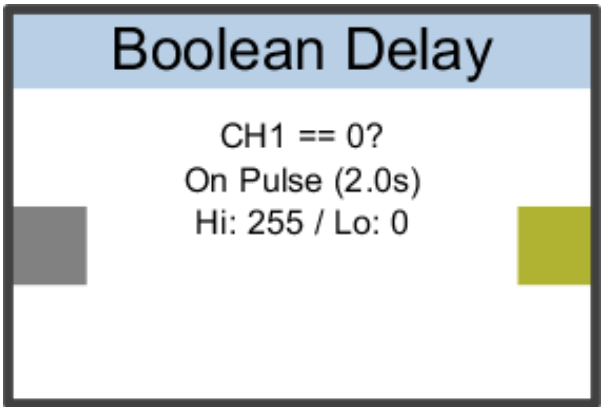
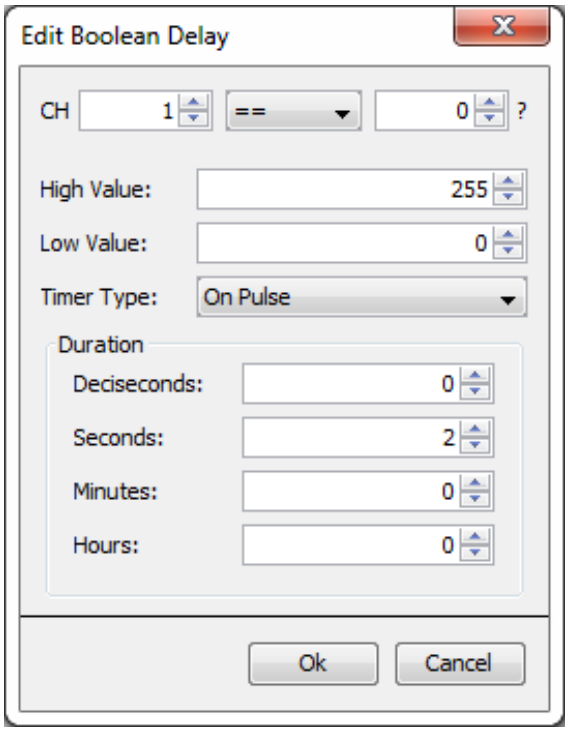
Boolean Delay



- *Inputs:* 1ch
- *Function "on pulse":* if the equation becomes true then the output will be high for the chosen time. When the time has passed, the output will go low again.
- *Function "resettable on pulse":* when the equation becomes true again before the timer has elapsed then the timer will be reset en the output stays high until the timer elapses.
- *Function "stoppable on pulse":* when the equation becomes false before the timer has elapsed then the output goes low.
- The high and low output value can be changed.



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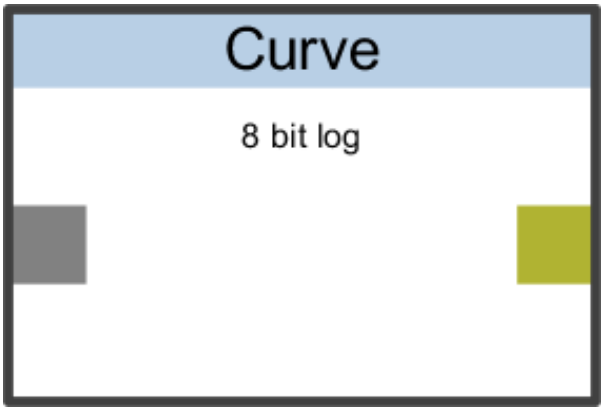
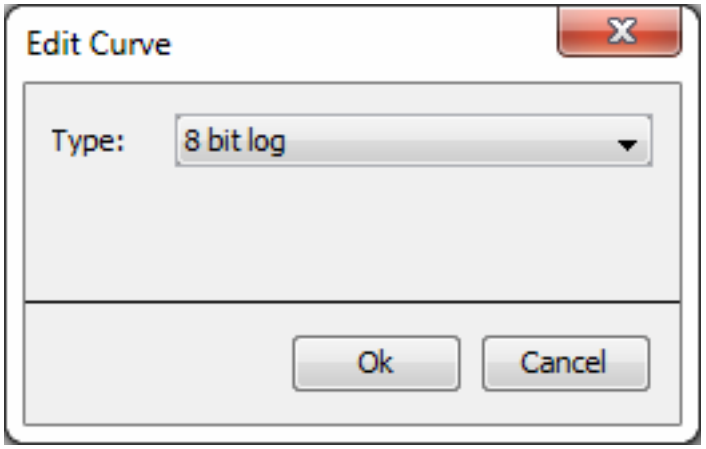
Curve



- *Inputs:* 512ch
- *Function:* the input value will be converted to the corresponding output value.



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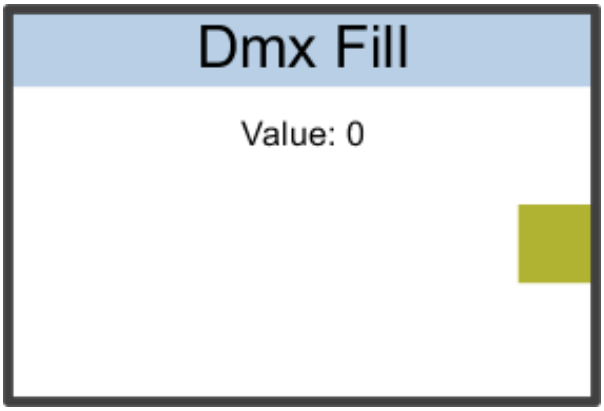
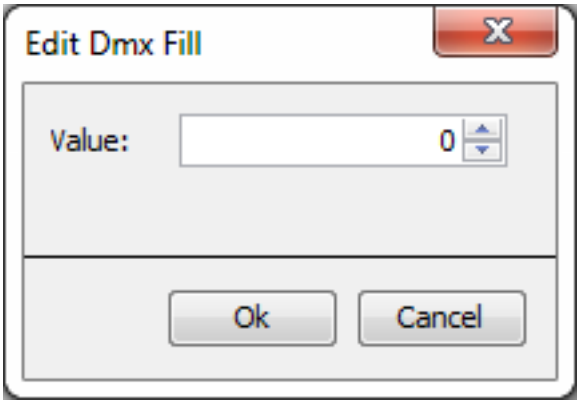
DMX Fill



- *No input*
- *Function:* the output will be 512ch with the selected value



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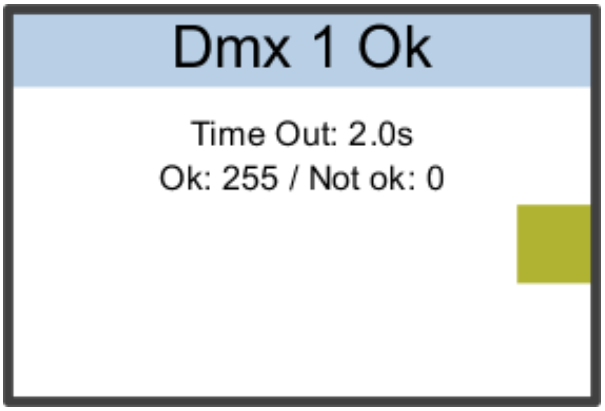
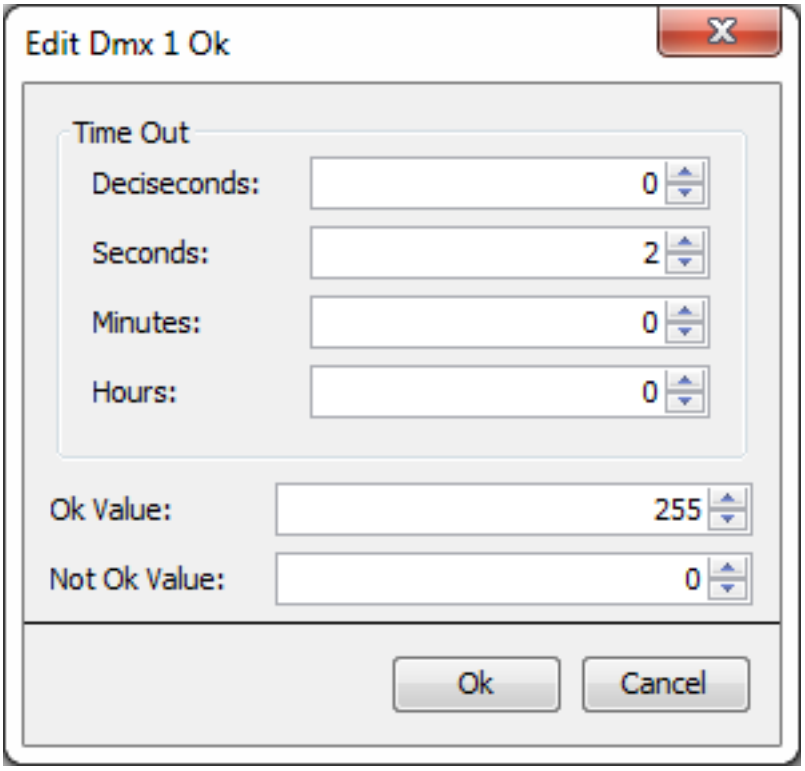
DMX 1/2/3 OK



- *No input*
- *Function:* If the DMX 1 input is valid for the selected time then the output will be high. Else the output will be low. The high and low output value can be changed.



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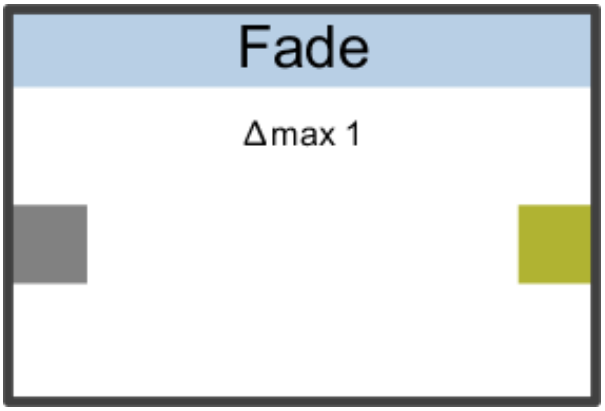
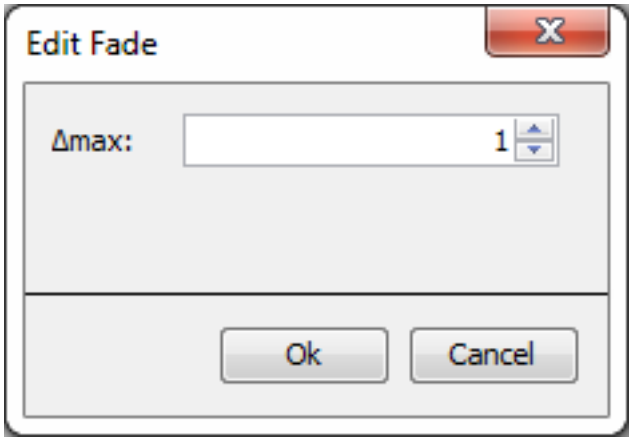
Fade



- *Inputs:* 512ch
- *Function:* The output can only change in small steps. The maximum step size can be selected.



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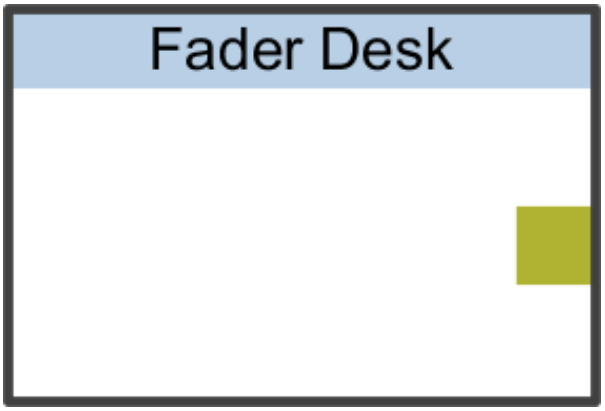
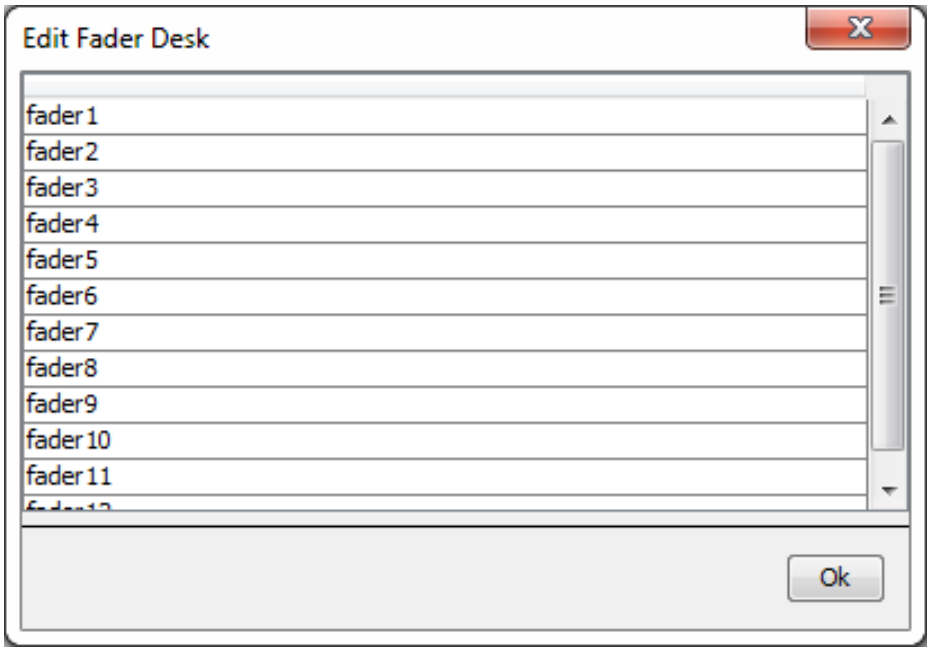
Fader Desk



- *No input*
- *Function:* The fader web interface has 12 faders on the fader desk page.
- All faders can have a label, truncated to 15 characters.
- You need to log in to access the on-line fader desk page.



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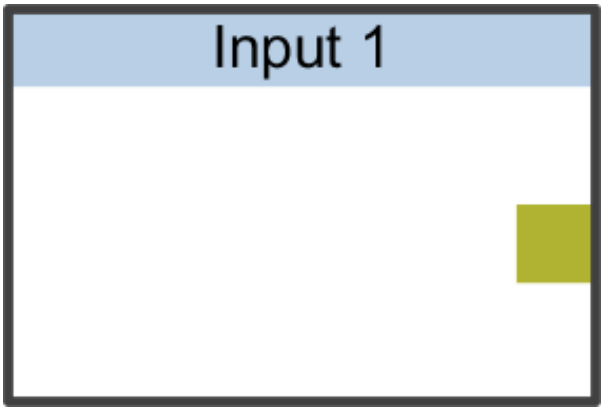
Input 1/2/3



- *No input*
- *Function:* values from DMX input 1

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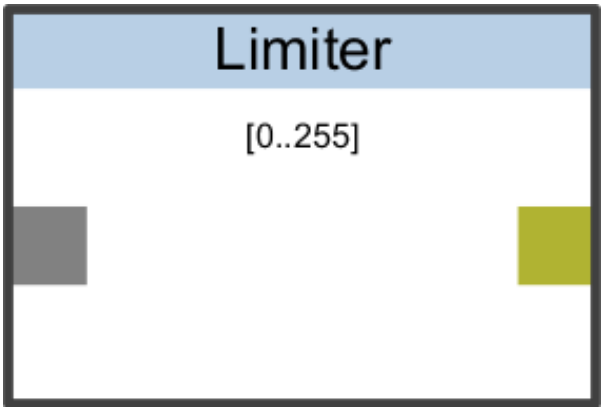
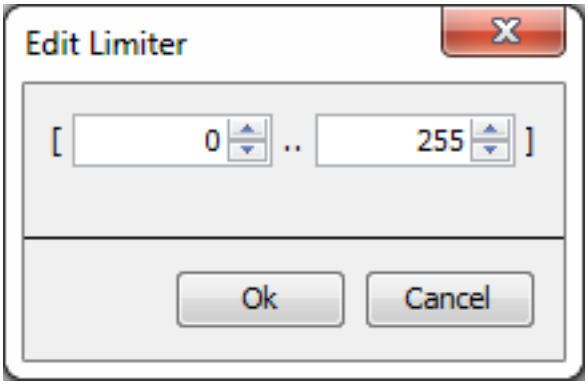
Limiter



- *Input:* 512ch
- *Function:* Limits the value of each channel so it will not be higher than the upper value or lower than the lower value.



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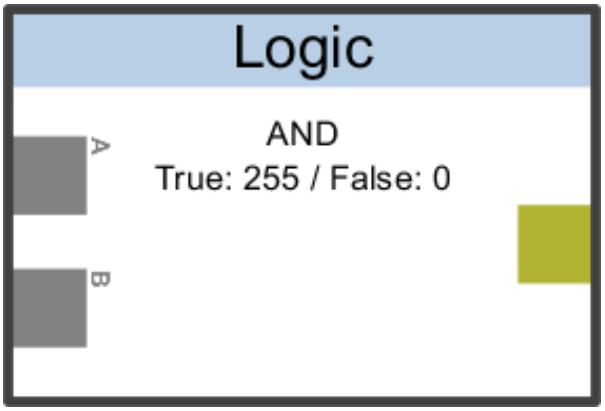
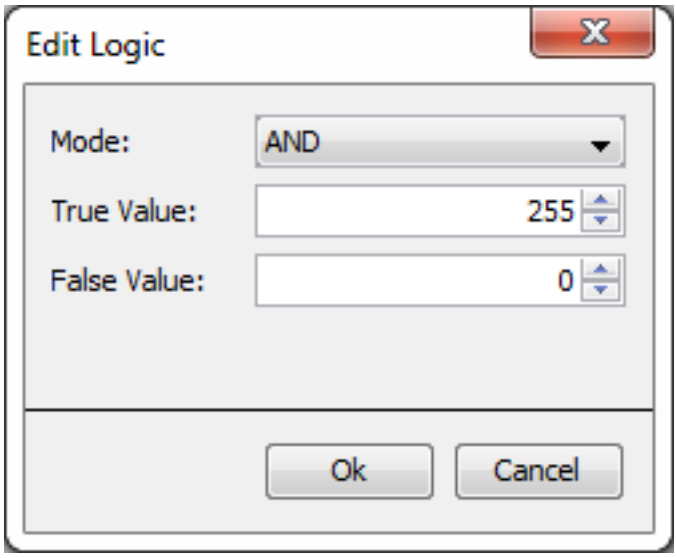
Logic



- *Inputs:* 2 x 512ch
- *Function:* add logic functions to the schematics. Input values in the range [0 .. 127] translate to FALSE, while [128 .. 255] yields true. If the output is false then the output is standard the value 0. The TRUE and FALSE value can be changed. The possible logic functions are AND, OR and XOR.



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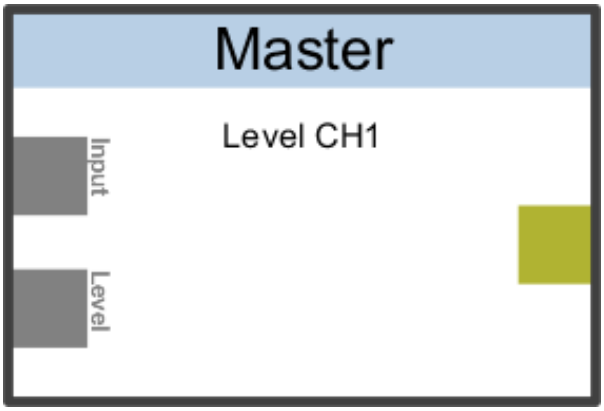
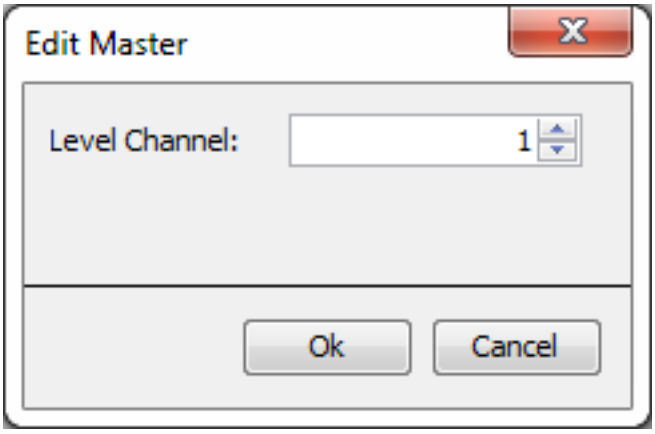
Master



- *Input:* 512ch + 1ch
- *Function:* The value from the level input is the grandmaster for the 512 channels on the input connection. Each channel on the input connection is multiplied with the level input and divided by 255.



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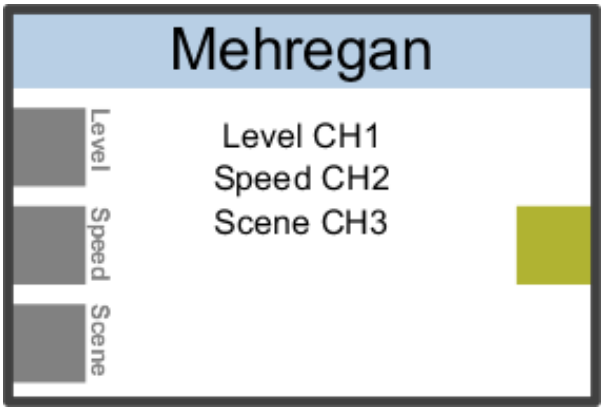
Mehregan



- *Input:* 3ch
- *Function:* You can have this block only once in your design. It can generate dynamic DMX streams of 128 channels. You can control the level from 0 to 100%. The speed can go from 0% to 200%. DMX value 128 (50%) will play the scene at normal speed. The active scene is controlled by a third DMX value. DMX value 0 till 10 activates scene 1, value 11 till 20 activates scene 2. DMX values above 80 will not change the scene.
- For the programmation of the Mehregan module we refer to the Mehregan software guide.

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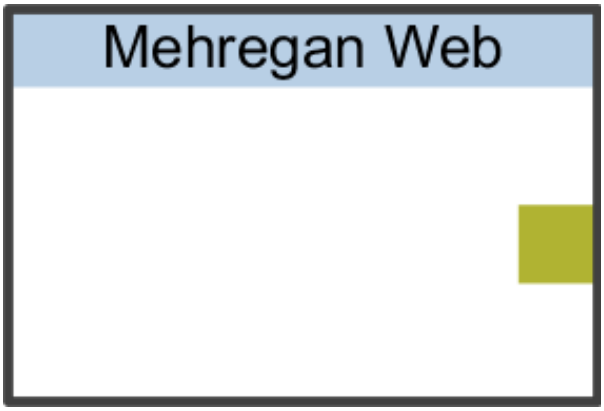
Mehregan Web



- *No input*
- *Function:* The Mehregan web page has the interface to interact with the Mehregan hardware module. It has 8 buttons to start the 8 first scenes. It also has a level and speed fader. The web interface will show the scene names programmed in the Mehregan module.
- You need to log in to access the on-line Mehregan page.

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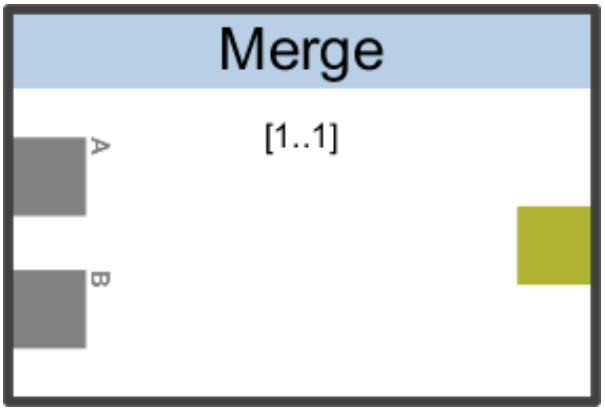
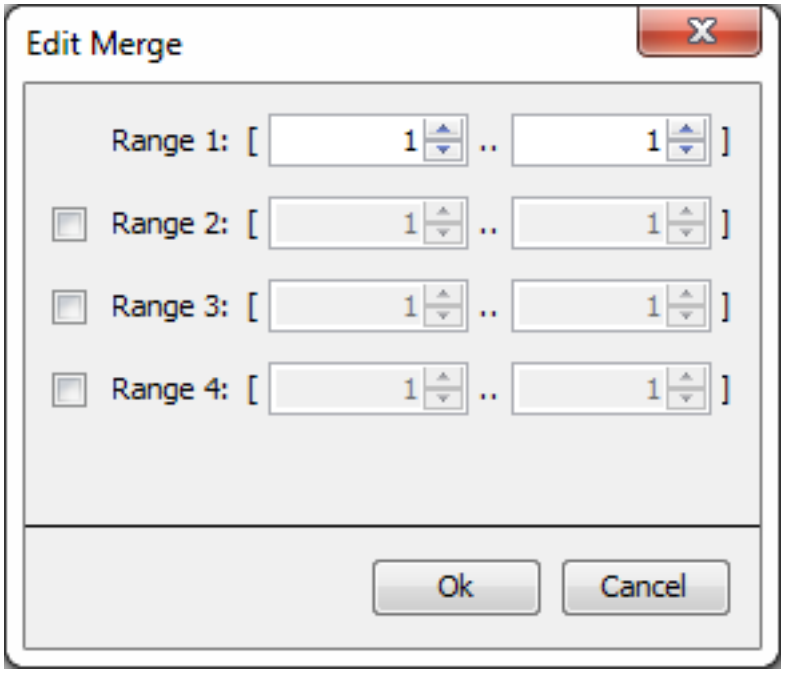
Merge



- *Inputs:* 2 x 512ch
- *Function:* Merges two DMX universes A and B. Standard all values from input A are send to the output. For the selected range the values from input B are send to the output.
- Up to four ranges are possible with one merge block.



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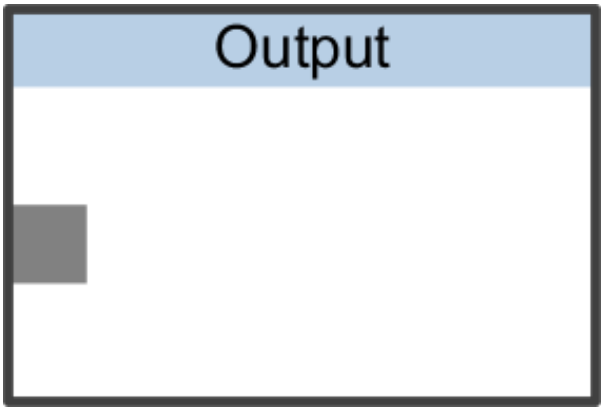
Output



- *Inputs:* 512ch
- *Function:* This block is mandatory. The values on the input are send out on the physical DMX output connector.

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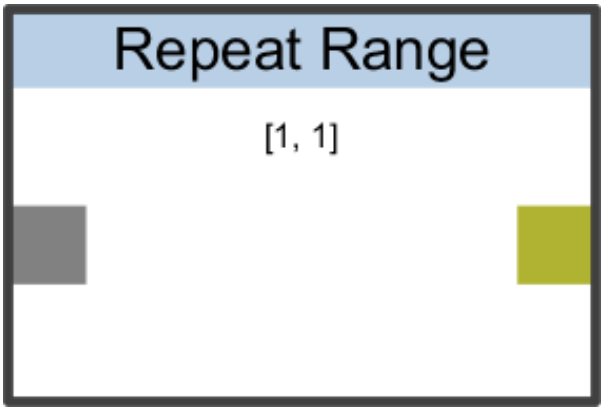
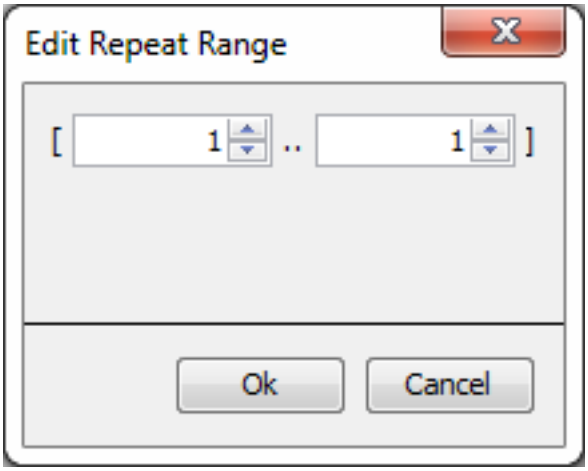
Repeat Range



- *Inputs:* 512ch
- *Function:* The selected range on the input will be send to the output starting from the first channel. The values from the range are repeated until all 512 channels are filled.



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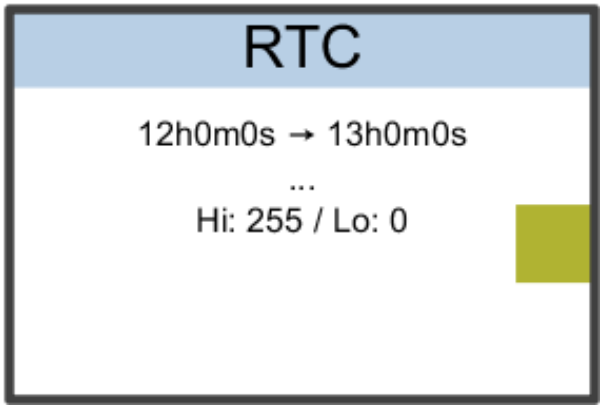
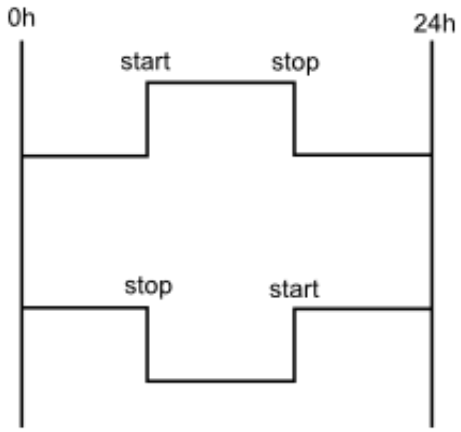
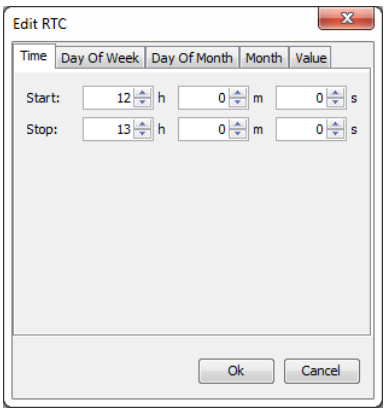
RTC

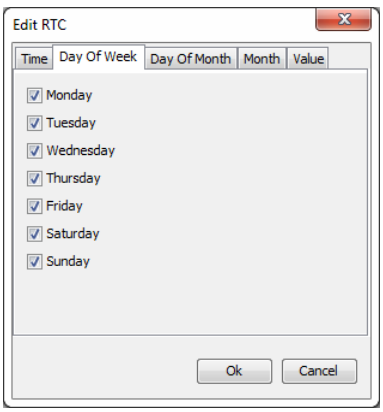


- *No input*
- *Function:* If the current merger time is in the interval [start .. stop], the Hi value is outputted. Else the Low value is outputted. Note that the stop time may be set before the start time.



Furthermore, filters can be defined for the day of week, day of month and month: the block will not change state on the unchecked filter options.





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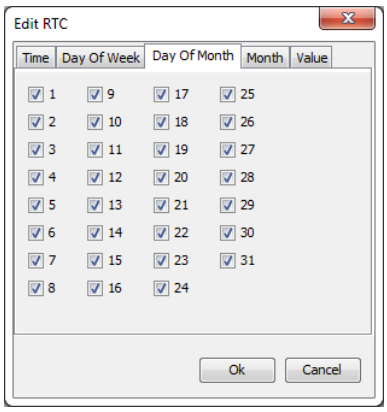

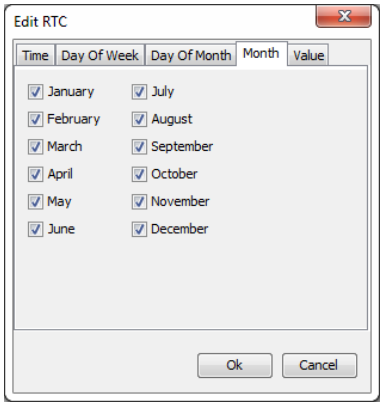

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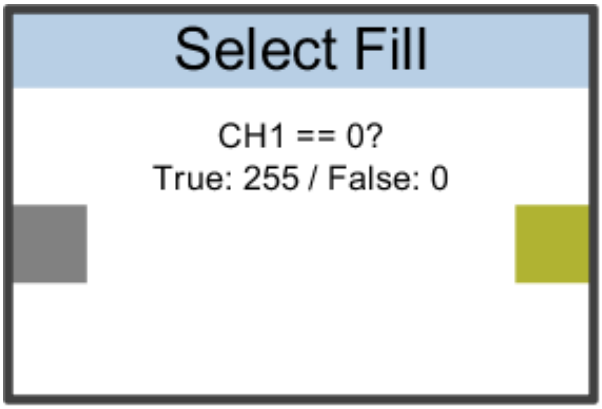
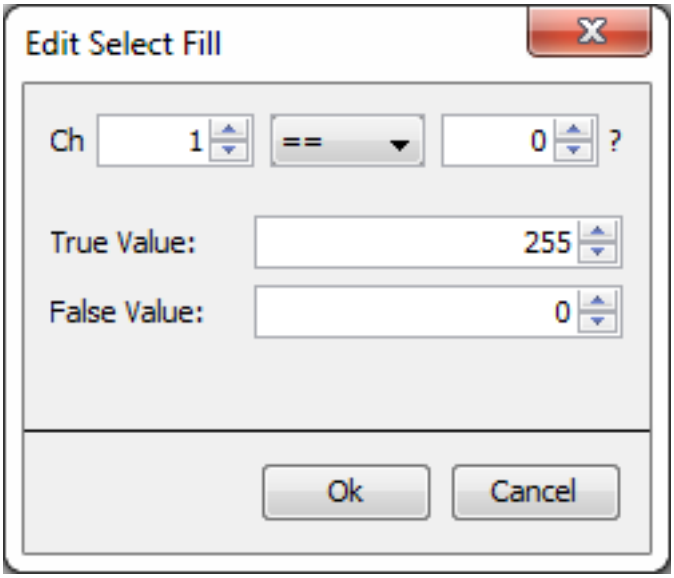
Select Fill



- *Inputs:* 1ch
- *Function:* If the equation is true, the output will be 512ch with the true value. Otherwise the output will be 512ch with the false value. The TRUE and FALSE value can be changed.



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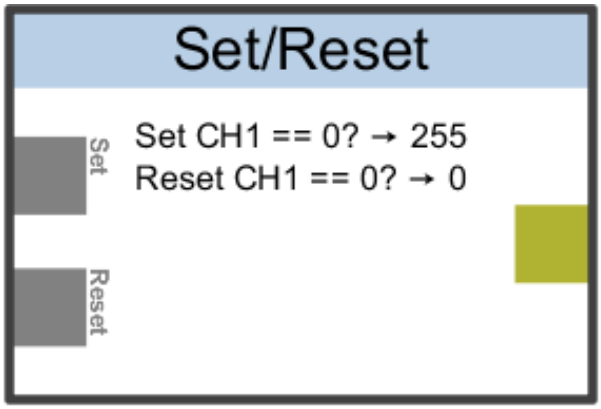
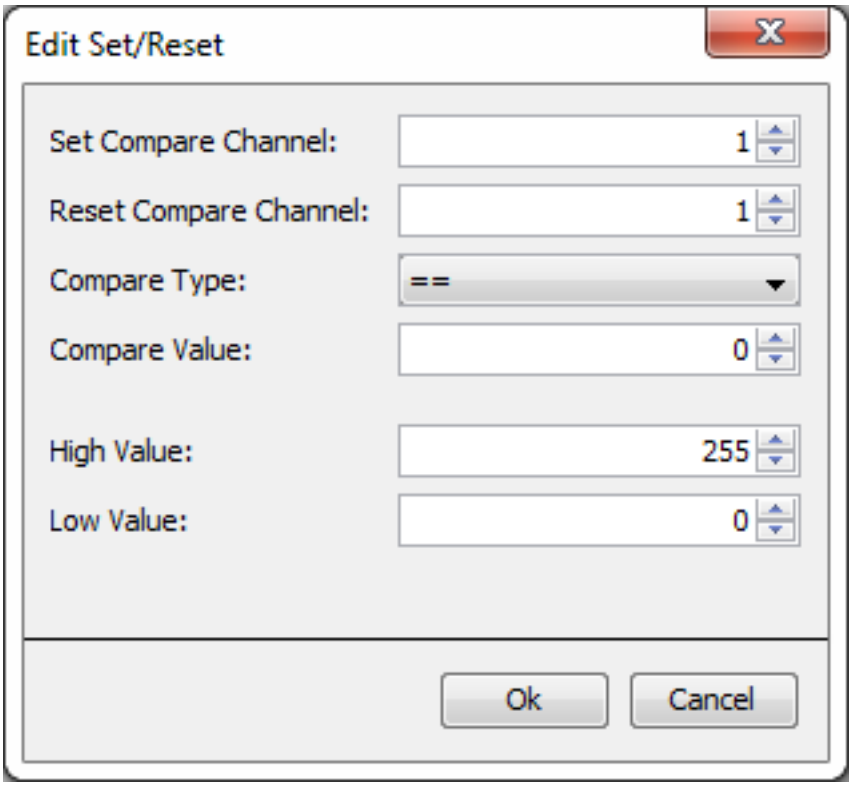
Set/Reset



- *Inputs:* 2ch
- *Function:* If the reset equation is true, the output will always be the low value. The output stays low until the reset equation is false and the set equation is true. Then the high value will be send to the output. The output stays high as long as the reset equation is false. The HIGH and LOW value can be changed.



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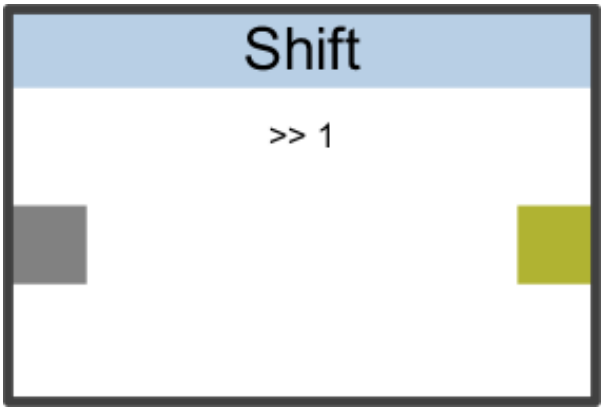
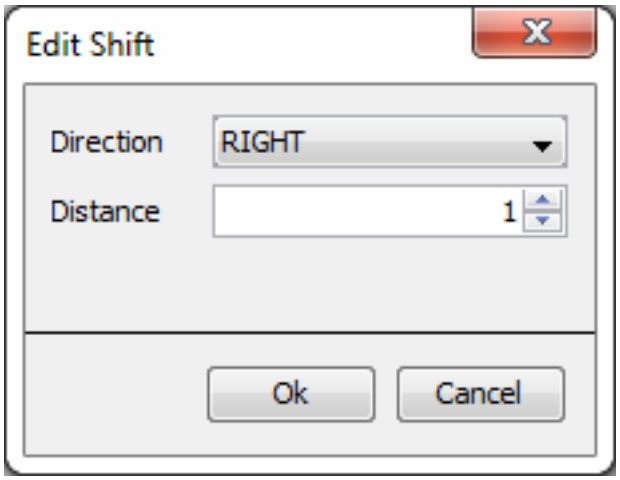
Shift



- *Inputs:* 512ch
- *Function:* All value's in the DMX stream can be moved to the left or right. When they are moved to the right, the first empty channels will be filled with value 0. The DMX stream on the output will always stop after the 512th channel. When the DMX stream is moved to the left, you will lose the first data bytes. The empty bytes at the end will be filled with value 0.



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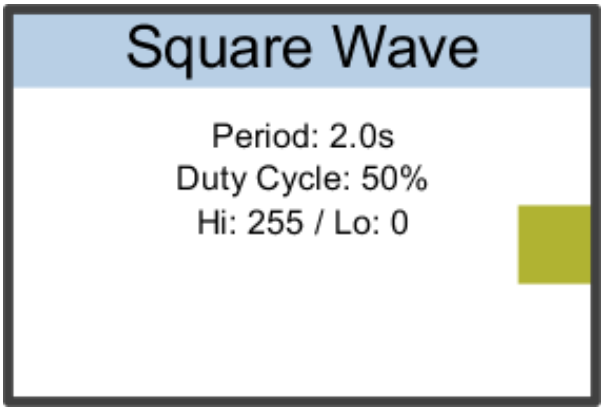
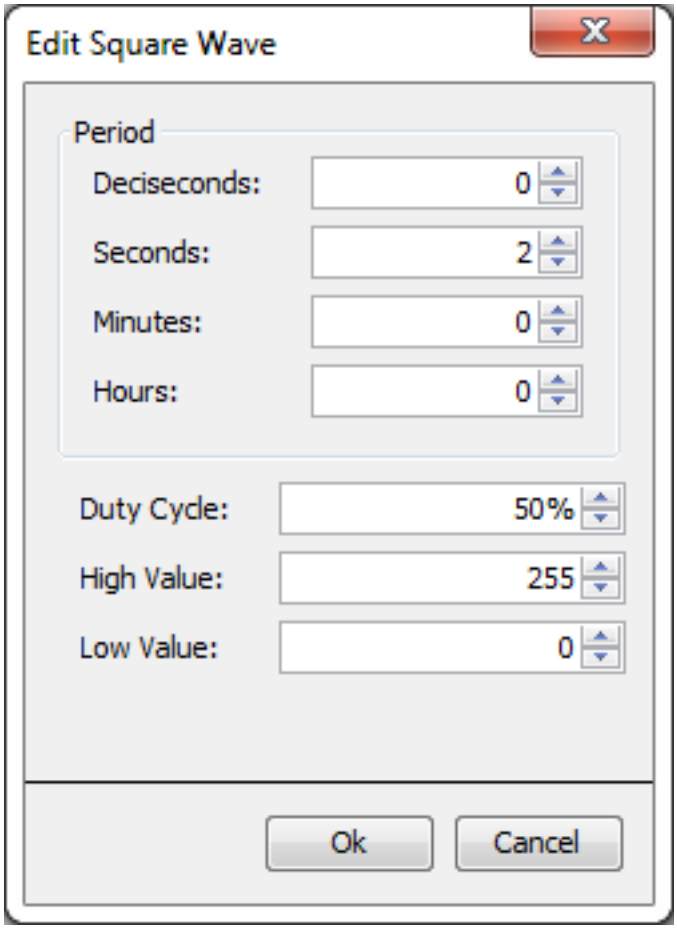
Square Wave



- *No input*
- *Function:* The output will be filled alternating with the low or high value.
- You can chose the period (time from one to the next low to high change) and you can chose the duty cycle (high time proportion). The HIGH and LOW value can be changed.



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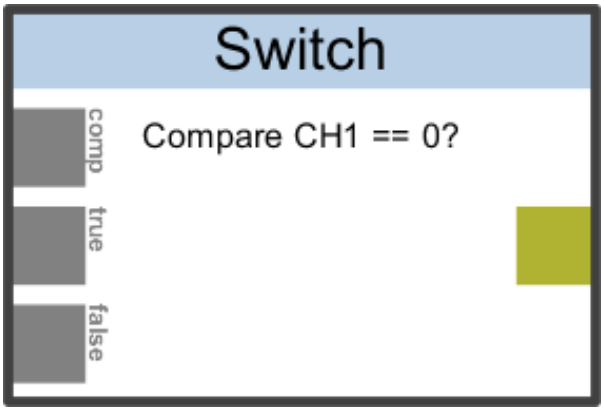
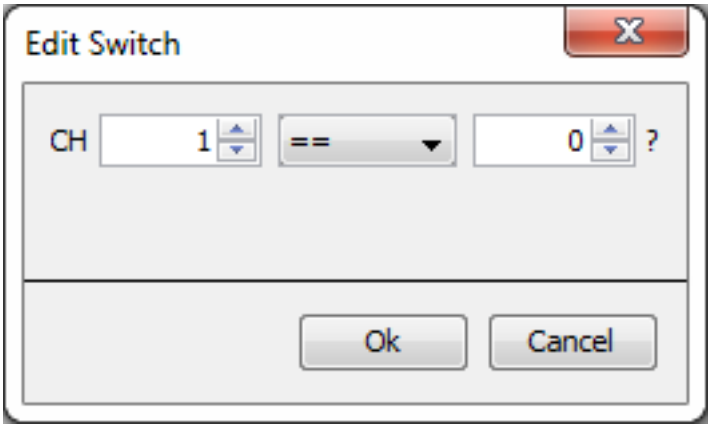
Switch



- *Inputs:* 2x 512ch + 1ch
- *Function:* If the equation is true, the output will be a copy of the true input. If the equation is false, the output will be a copy of the false input



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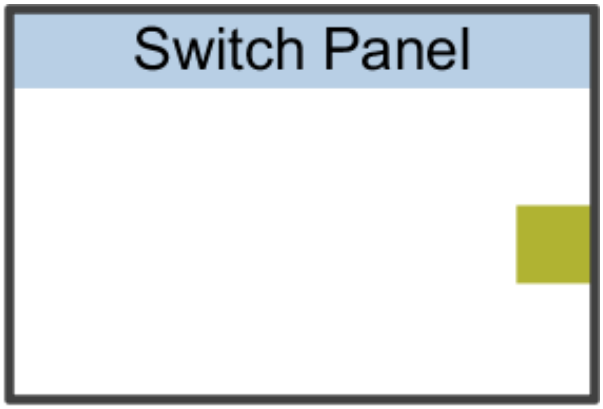
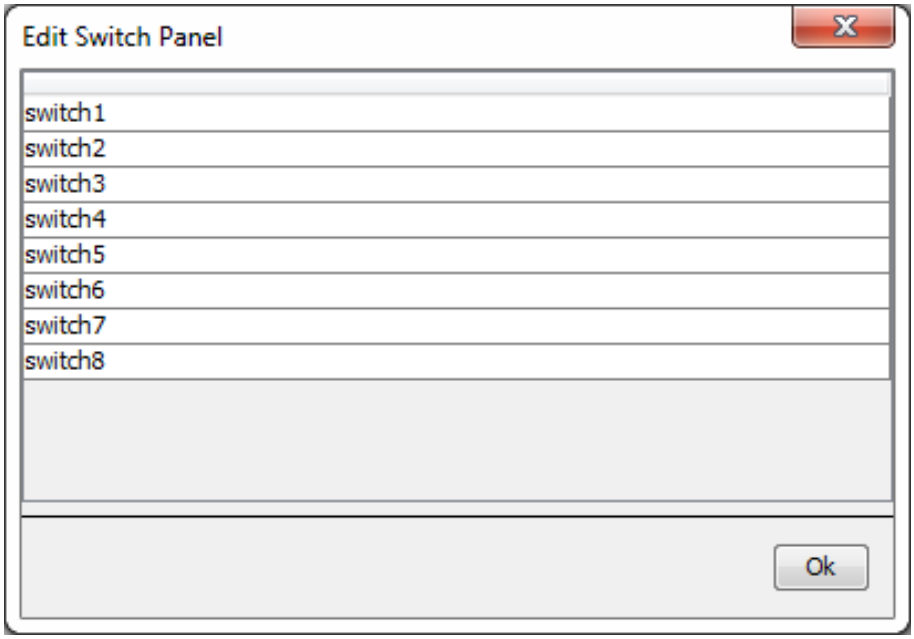
Switch Panel



- *No input*
- *Function:* The web interface has 8 switch buttons on the switch page. All switches can have a label with maximum 16 characters. You need to log in to access the on-line switch page.



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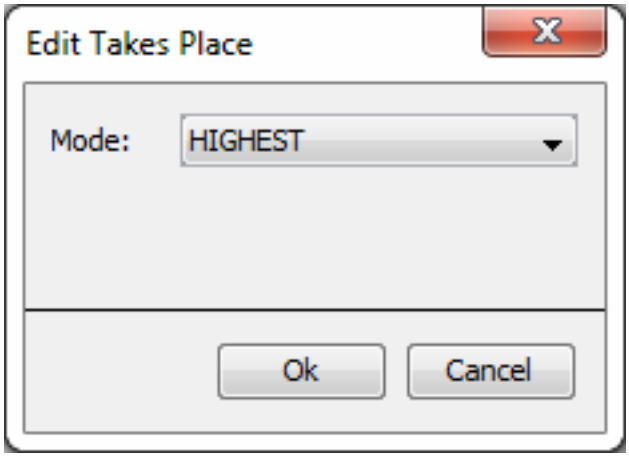
Takes Place

- *Inputs:* 512ch
- *Function "HIGHEST takes place":* each channel from both inputs are compared to each other. The highest from both is send on the output.
- *Function "LOWEST takes place":* each channel from both inputs are compared to each other. The lowest from both is send on the output.
- *Function "LATEST takes place":* each channel from both inputs are compared to the previous received value. If a value has changed, it will be send on the output. If both inputs are changed, then the input from A is sent on the output.



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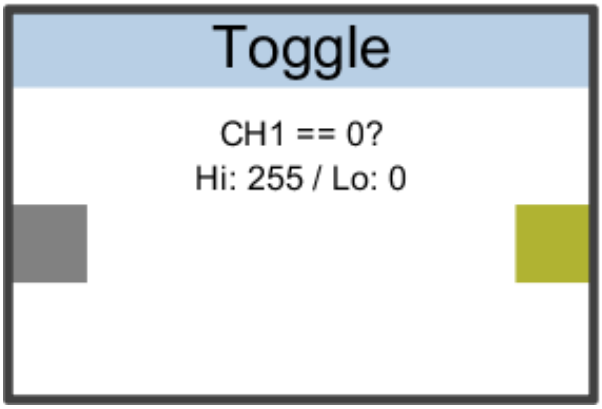
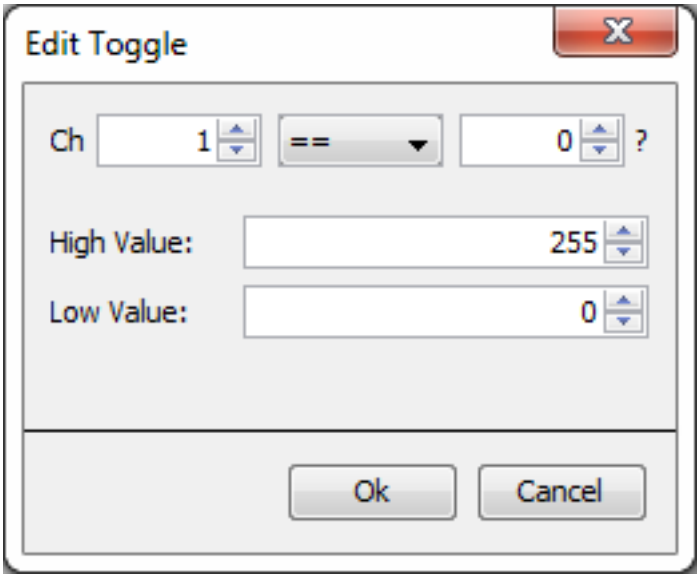
Toggle



- *Inputs:* 512ch
- *Function:* Every time the equation becomes true, the output will change. This can be from low to high or from high to low. The HIGH and LOW value can be changed.



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Service and maintenance

10.1 Safety precautions

Read carefully the safety information in this manual. Lock out the power on the entire system and allow all electronic devices to discharge, and cool down, before executing any service or maintenance.

10.2 Cleaning

Smart DMX merger card itself

Extensive dirt and particle build-up degrades performance and may cause overheating. This can result in a damaged board. Damage by inadequate cleaning or maintenance is not covered by the product warranty.

Never use solvents to clean the outer housing of the card.

Never use water or wet cloth.

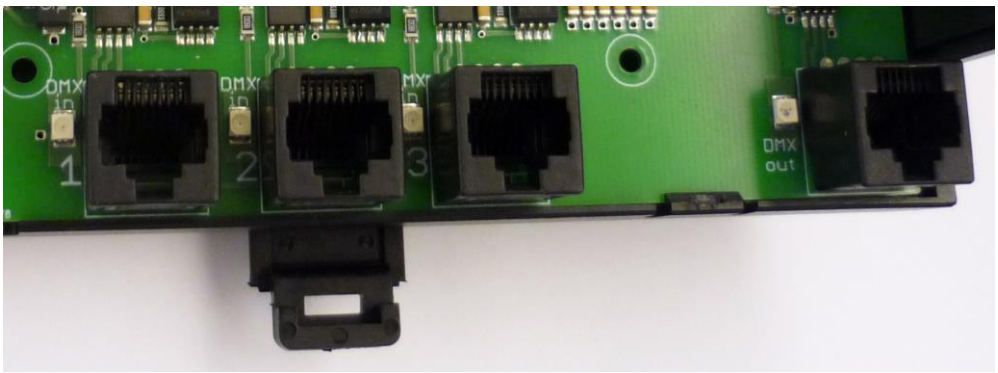
Enclosure in which the card is integrated

Best is to use compressed air to remove dust or soft cloth to remove the dust in the cabinet. When using compressed air, care must be taken not to damage the fans in the enclosure. Never use solvents to clean the outer housing of the enclosure.

10.3 Monitoring

Inputs and output

One red indication led on each of the three inputs and one red indication led on the output. The indication leds are located at left side of each RJ-45 connector.



Display

The smart DMX merger has a back lighted OLED display for system information.

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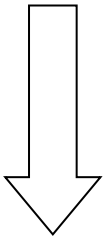
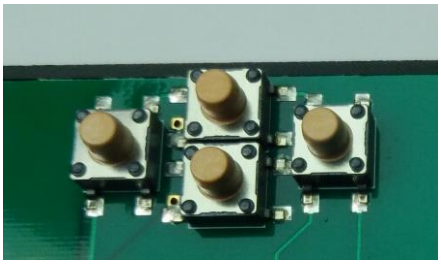
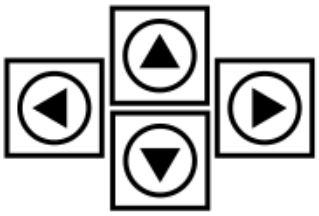
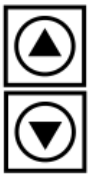


The system information can be recalled with the system buttons. Use these buttons to go through menu and settings.





Use Left and right to go through the menu.



Use Up and Down to set values.

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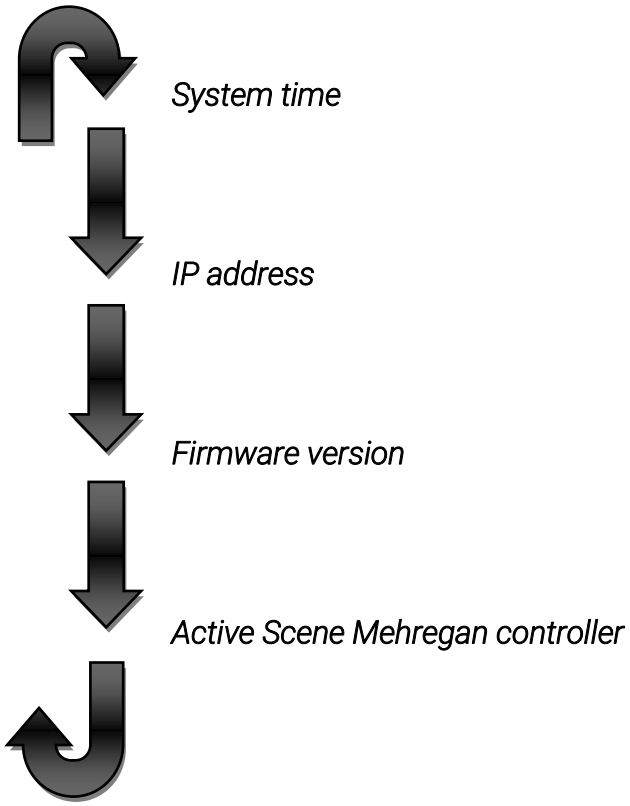
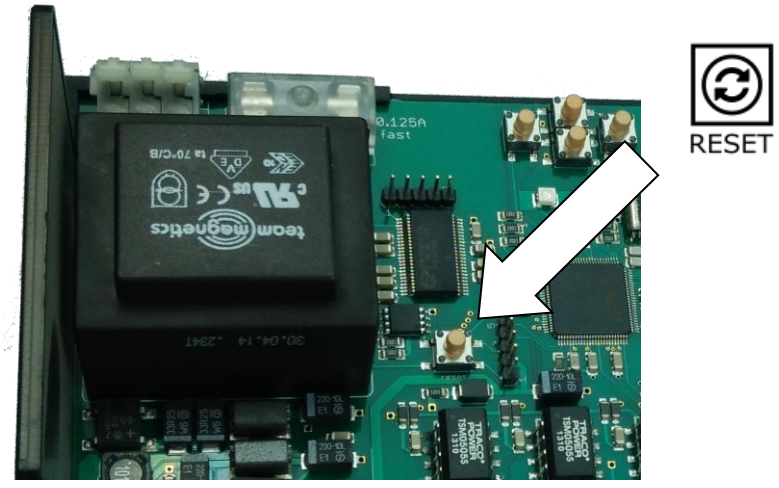
System information menu:



Druk op de reset-button om de module te resetten.



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10.4 Software updates

Availability of software updates

At the moment of publishing this manual, September 2014, the latest available firmware version = v1.16

Date	Soft version	Changes
December 2014	1.17	None

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11 Specifications

11.1 Electrical

Inputs

- 220-240 volt AC
- Power input on Cage clamp®
- 3 DMX inputs on RJ-45 connectors
- Status led for each DMX input
- 1 LAN port on RJ-45 connector

Outputs

- 1 DMX output on RJ-45 connector
- Stand-alone mode possible without DMX inputs

11.2 Environmental

- IP rating: IP 20
- Humidity: 30% to 95%
- Ta (max) : +40 °C (104 °F)
- Ta (min): -15 °C (+5 °F)
- Tc (max): +55 °C (131 °F)

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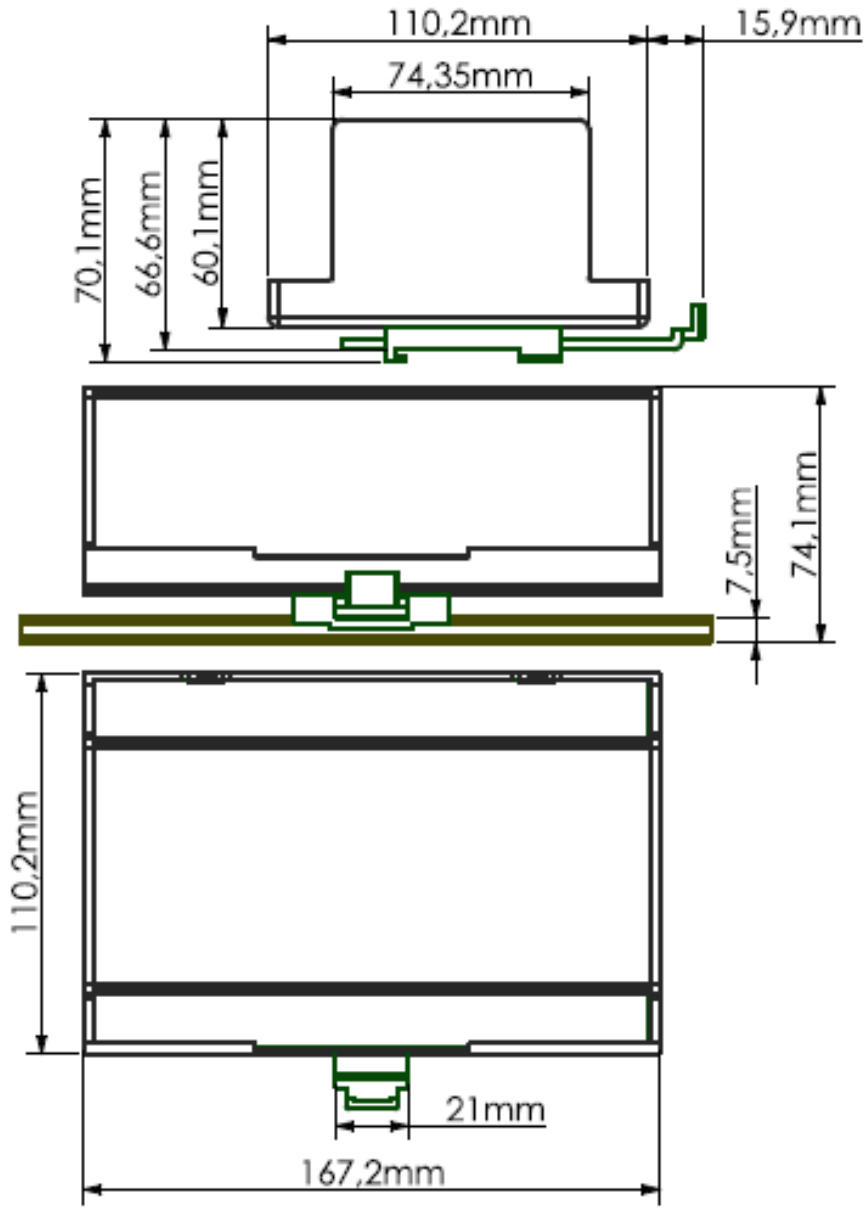
11.3 Mechanical

Physical dimensions of the card below:

Dimensions merger card	167x 110 x 70	mm
Dimensions packaging	230 x 230 x 130	mm
Weight merger card	500	gr
Weight packaging	700	gr



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Warranty

12.1 Application of warranty

Warranty period

Warranty service is valid for one year from the date of purchase by the consumer, as evidenced by invoice date given out by your point of sale.

Warranty service

Service under warranty can only be done by Lux Lumen.

Coördinaties:

Lux Lumen
Kernenergiestraat 53 A
2610 Wilrijk
Belgium

Any cost of secure transportation of the product to and from Lux Lumen service department, will be borne by the customer.

Limitations

Lux Lumen will not warrant the following:

- Periodic check-ups, maintenance and repair or replacement of parts due to normal wear and tear.
- Consumables
- Any software
- Defects caused by modifications carried out without Lux Lumen's approval.
- Damage resulting from the fact that a product is not conforming to country specific standards or specifications in another country that the country of purchase.

Costs incurred by Lux Lumen's service center in making any adoptions or modifications of a product necessary for country specific technical or safety standards or specifications, or any other cost to adjust the product as a result of any specifications which have changed since the delivery of the product.

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Warranty service is excluded if damage or defects have been caused by:

Improper use, extensive use, handling or operation of the product as referred to in the user manual or operator manual and/or relevant user documents, including without limitation, incorrect storage, dropping, excessive shocks, corrosions, dirt, water, or sand damage, if the product is not rated to be used in severe conditions, indicated by its IP and IK degree, mentioned in the product specifications in this manual.

Repairs, modifications or cleaning carried out by a non Lux Lumen service centre.

Use of spare parts, software or consumables, which are not compatible with the product.

Connecting the product to equipment not intended to be used with this product.

Defects caused by improper condition of the power supply network.

Inadequate packaging of the product when returning it under the RMA procedure.

Accidents or disasters or any cause beyond the control of Lux Lumen, including but not limited to lightning, water, fire, public disturbances, improper ventilation, and acts of god.

Others

It is the responsibility of the customer to backup and save any software files and programs before repair and to restore the same after such repair.

This warranty does not affect the consumer's statutory rights under applicable national legislation in force, nor the consumer's rights against the retailer arising from the sales/purchase contract. In the absence of applicable national legislation, this warranty will be the consumer's sole and exclusive remedy, and Lux Lumen cannot be liable for any incidental or consequential damages for breach of any express or implied warranty of this product.

For full details of the warranty offered on this product, please contact Lux Lumen's service center.

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12.2 RMA procedure

To send material back to Lux Lumen, you need a RMA (Return Material Authorization) document that you will receive from Lux Lumen.

Without the RMA document, we cannot accept the material.

The procedure to obtain a RMA:

Step1:

Customer contacts Lux Lumen about warranty, defects if material has to be returned.

Step2:

Lux Lumen sends the customer a filled out RMA document (using a unique RMA number)

Step3:

Customer sends material (include a copy of the RMA document with the material)

Step 4:

Lux Lumen evaluates the problem, and informs the client if repair is done under warranty, or makes an offer to the client for repair.

Step 5:

The procedure related to lux lumen quality procedures, according ISO 9001 is started up.

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Used list of abbreviations

- DMX: digital multiplexed data signal to according to USITT
- PCB: printed circuit board
- PWM: Pulse width modulation
- CAT 5: category 5 cable
- CAT 6: category 6 cable
- U_f: Forward voltage of the LED junction
- AC: Alternating current
- DC: Direct current
- °F: Temperature in degrees Fahrenheit
- °C: Temperature in degrees Celsius
- din-rail: rail used in electrical installation according to 'Deutsche Industry Norm' specifications
- LED: Light Emitting Diode
- LAN : Local Area Network

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