

arKaos



User Guide (English)

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## Introduction

The ArKaos PRO MediaMaster software has been created to offer an intuitive solution for the control of video media, animations, and live picture inputs.

It is a media server software that offers playback and real-time manipulation of clips, images, and live feeds as well as flash text animations and real-time visual effect generators.

The MediaMaster environment runs on both Windows and macOS platforms and integrates with your system hardware to offer a professional performance solution customised to your needs.

## Installing the Software - PC

To install the MediaMaster software, insert the MediaMaster installation CD into your computer's CD-ROM drive. Double-click on the MediaMaster installation file, located in the root directory of the CD. This will launch the Nullsoft installer.

Follow the on-screen instructions.

**Note:** The installation program will scan the available video player components on your computer prior to installing the software. If there are any components that are not up to date, please install them by clicking on their corresponding button before proceeding with the installation.

Once the installation is complete, click "Finish". The MediaMaster software is now ready to be used.

Start MediaMaster by going to Start -> ArKaos PRO MediaMaster -> MediaMaster.

To activate your copy, follow the registration process described in [Activating Your Software](#).

## Installing the Software - Mac

To install the MediaMaster software:

1. Insert the MediaMaster installation CD into your computer's CD-ROM drive.
2. Click on the MediaMaster installer package located in the root directory of the CD. This will launch the Installer Wizard.
3. Follow the on-screen instructions. The installer will add a shortcut to MediaMaster App on your desktop. The application will be installed in your Applications/ArKaos PRO MediaMaster folder.
4. Start MediaMaster by double clicking the shortcut.

To activate your copy, follow the registration process described in the section [Activating Your Software](#).

## About Your License

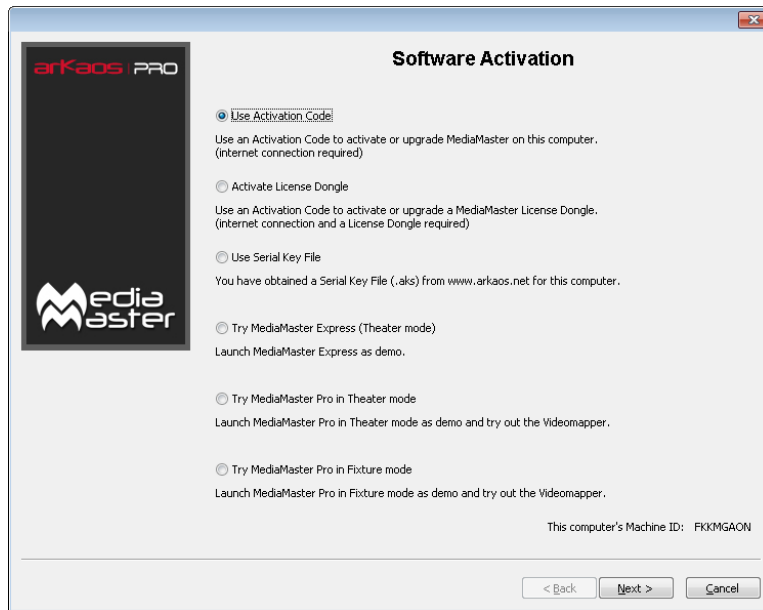
Your software box comes with an Activation Code inside. It is very important that you keep this code in a safe place since it is the proof that you own a license, and it might be needed in the future to re-install the software or to obtain upgrades.

The Activation Code, however, is not the final serial number that will activate the software on your computer. To be able to run the software without limitations, you will need to create a serial number by following the instructions here after.

## Activating Your Software

### Software Activation Dialog

When you launch the application for the first time, it will display a “Software Activation” dialog.



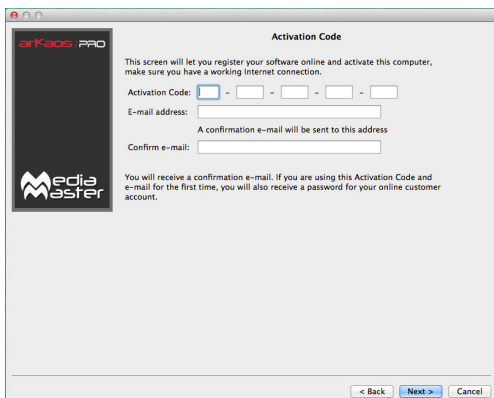
### About the Demo Mode

Note that, from the “Software Activation” dialog you can also choose to run the software in demo mode. If you do so, the software will still be fully functional, but a ‘demo’ banner will be displayed randomly above the output.

**Note:** If you are not sure of your hardware setup and / or computer performance and you wish to make tests to decide whether you will use MediaMaster on a computer or not, we recommend doing so in demo mode since the software is fully functional in this mode. The demo mode also allows you to understand the differences between the Pro and the Express edition by letting you test the Theater mode interface or the Fixture interface.

### Use Activation Code

To use this activation option, you need a working Internet connection, a valid mail address, and the activation code.



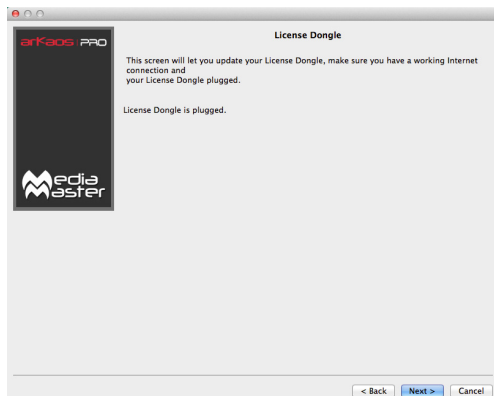
Fill in the activation code and your mail address and click “Next”. You will get a confirmation screen when the system is activated. You will also receive a confirmation mail and if you are using the activation code for the first time, you will also receive a password for your online customer account.



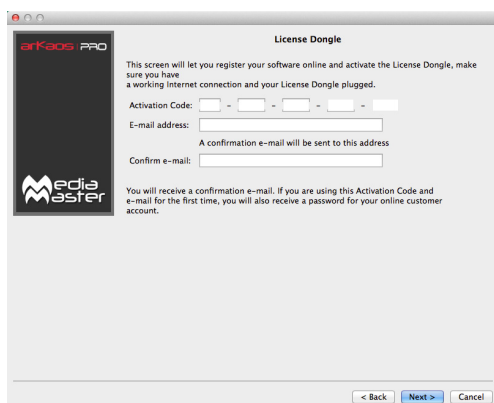
## Activate License Dongle

To use this activation option, you need a working Internet connection, a valid mail address, the activation code and a License Dongle.

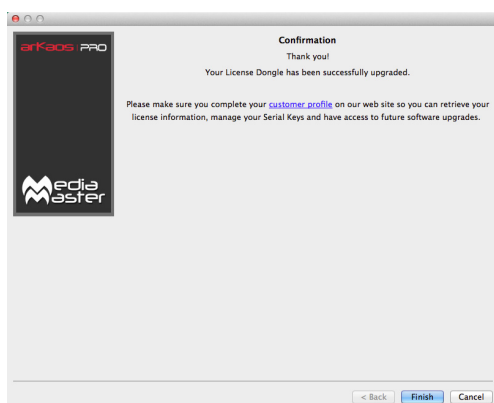
If no License Dongle is detected or multiple License Dongles are detected, you will not be able to click “Next”.



If your License Dongle is not yet activated, you will have to enter your activation code and mail address. You will get a confirmation screen when the system is activated. You will also receive a confirmation mail and if you are using the activation code for the first time, you will also receive a password for your online customer account.

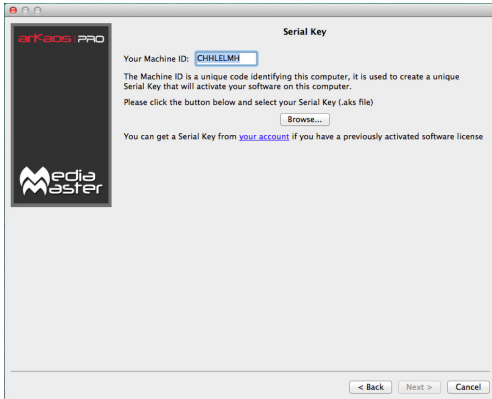


If your License Dongle is already activated, you will get the following confirmation screen.



## Use Serial Key File

To use this activation option, you need a serial key file (.aks) from [pro.arkaos.com](http://pro.arkaos.com) for this computer.



## Introduction to the Software

MediaMaster is a unique media server and visual effects software solution, which allows you to quickly create dynamic visual presentations.

ArKaos PRO has long been established as a leading software developer for media control and the MediaMaster software has been designed to be as comprehensive in its functionality as possible and as such offers the perfect solution for the seamless real time integration of video into live performance, theatre, concerts and presentations.

## Control Concepts

### Theater Mode Interface

The Theater mode interface of MediaMaster marks a new phase in software development allowing you to make use of the latest dynamic visual effects combined with an efficient and intuitive library management system and with Theater front end control via DMX, MIDI or even a computer keyboard.

There are numerous attributes that must be defined to allow control of visuals in media servers – including content selection, playback speed, effects, size and position, keystoneing etc. When these are directly controlled by a lighting console, such as with MediaMaster Pro’s Fixture interface, they can require a substantial number of control channels.

MediaMaster’ Theater Mode interface allows you to make these decisions in the software itself and then simply take control of these visual presets using a few channels on your lighting desk or notes on a MIDI controller.

Controlling the playback in the Theater Mode interface is much the same as using a dimmer to control a conventional fixture: think of rigging a profile light for a show – you decide first where to hang it, what color it should be, if you need a gobo or other effect’s device such as a scroller or animation disc. Once the fixture is rigged, prepared and focused you then only need to change the level of its dimmer as and when you require it in the show.

Using the Theater Mode is the same – on the software you create the visual combination you want – define the content, any effects, playback speed etc. and then with your external controller simply fade it in an out as required during your show.

Just like with a lighting system you can have multiple instruments – or in this case layers - to build your final show from.

As such the Theater Mode gives you the same flexibility and control over your media as with a fixture-based control solution but with an unprecedented ease of use.

## Fixture Mode Interface

MediaMaster Pro adds a fixture-based operation mode and as such acts as a traditional Media Server for professional lighting consoles such as ChamSys, Avolites, LSC, ETC, GrandMA, Martin, Compulite, etc.

The fixture profiles allow total control of every MediaMaster parameter straight from the DMX console.

To be able to send DMX commands to the server, you will need to set it up so it can communicate with your console. MediaMaster supports two different type of DMX connectivity: either using ArtNet or using a DMX USB widget.

## Features Summary

### Outputs

MediaMaster is designed to work best with a minimum of a dual output computer system where the main screen shows the user interface and an output preview and the second screen (or screens) show the full resolution output image – this would normally be connected to a projector, screen, video mixer or LED display device.

In MediaMaster, there are three types of output:

Display outputs: “Displays” are the devices that are connected to the computer graphical card(s) using DVI, HDMI, DisplayPort or VGA connectors.

In Instant mode, there’s a single output called “Full screen Display” that correspond to the full screen display (or multiple displays) that’s selected directly in the preferences.

In VideoMapper mode, there are as many outputs as surfaces that are defined using the “VideoMapper” application.

LEDMapper output: a set of LED devices controlled by the DMX protocol. The output mapping is defined using the “LEDMapper” application.

Kling-Net output: a set of LED devices controlled by ArKaos PRO Kling-Net protocol. The output mapping is defined using the “Kling-Net Mapper” application.

You can switch between Instant and VideoMapper Display modes, and activate LEDMapper and Kling-Net outputs in the Output tab of the Preferences window.

MediaMaster can assign visuals to layers, and each layer can be assigned to a single output or a group of outputs that are defined within the application.

You can create groups using the dedicated “Output” dialog that’s accessible in the “Outputs Management” menu item (CTRL + O / Cmd + O).

There are numerous ways to configure your outputs, which are discussed later in this manual.

## Visual Presets – Theater Mode Interface

In the Theater Mode interface, the choice of playback visuals is organized into patches and you can create up to 124 patches with up to 128 visual presets in each patch – that’s 15872 possible visual presets for each media library.

## Media Management (Express and Pro)

As its name suggests MediaMaster can handle numerous different types of media sources – including video, flash, quartz compositions, images, external cameras, and sources and even audio when attached to a video file.

These media files are organized into library folders in exactly the same way that you would create and manage files on the computer. There are 256 library folders, and each folder can have up to 255 individual pieces of media (one media file is always kept as a blank slot by the software).

Some of the library folders in ArKaos PRO are pre-defined for specific duties – such as camera feeds or text effects - and these will be covered in a later section of this manual. It is also possible to have more than one library and this is also covered later.

**Note:** Think of the media management as a set of filing cabinets – you have a total of 256 drawers and each draw can store 256 files in it. By creating a good filing practice, you can quickly and easily find the content you need.

For example, you can group clips by type or project into a specific folder so folder 001 has cloud animations, folder 002 has computer game visuals, folder 003 has slides for a specific event and so on and so forth.

With a possible media library of over 60,000 clips, it can be really helpful to organise clips in this manner and make the recall of clips even more efficient.

In the Theater Mode your set-up configuration and show information is automatically saved into the library folder as it is created so the next time you boot the software you will have the exact set-up you last created. No need to keep saving – ArKaos PRO stores it all for you alongside your media library.

In the Fixture Mode your set-up configuration and preferences are saved with the software but as the show will be controlled driven via DMX your show settings would be stored on the lighting console or controller you use with the software.

## Layers – Theater Mode

MediaMaster Express is capable of running 24 layers of media playback simultaneously and uses a LTP (last takes precedence) rule when more than 24 visual presets are selected.

The LTP rule means that the software automatically moves visual presets when layers become empty so that any new cues always jump to the highest (top) layer available.

For example, if you activate visual presets 1 through 12 in sequence so that each one is running on a different layer simultaneously and then activate visual preset 13 the first visual preset you selected (which was allocated to layer 1) will be removed and all of the visual presets move up a layer – so the visual preset on layer 2 moves to layer 1 and so on.

If you fade out one layer – for example the visual preset on layer 4 – then the layers automatically move up – so the visual preset on layer 5 moves to layer 4 and so on.

It will work the same way when running MediaMaster Pro in Theater Mode except that you will have access to 48 layers.

The resolution of the video content is limited only by what your computer hardware can handle so with the right hardware 48 layers of High Definition (or greater) video is more than possible.

# Software Interface Overview

## Theater Mode Interface

The software comprises one main patch and preview window, which displays the main information needed during configuration and performance. The output of each of the running layers is shown along with a master preview (a reflection of what is sent to the full screen output). The window also displays the visual patches from the selected patch and a master control panel to define characteristics of the master output.



### Key Features

- New rendering engine (Windows only)
- 48 layers (Pro edition) or 24 layers (Express edition) of simultaneous video playback.
- 64 Visual presets patches, each containing 128 visual presets.
- Direct access to visual presets and global controls via DMX, MIDI, or Keyboard.
- Master section allowing to control the following parameters:
  - Brightness and contrast
  - Keystoning
  - Soft edge parameters
  - Audio output volume
- Each visual preset can be fully configured with the following parameters:
  - Visual selected
  - Playback mode
  - Movie Speed
  - Loop start and end frame
  - Effect and effect control parameters
  - Trigger for control (Keyboard, DMX, Midi)
  - Controller configuration for live effect control
  - Position and size of the layer output
  - Mixing style with other layers including:
    - Maximum transparency
    - Red / Green / Blue / Hue / Saturation / Lightness Levels
    - Copy Mode
    - Mask Mode
    - Default Fade Time
    - Tiling

## Fixture Mode Interface – MediaMaster Pro

The Fixture Mode interface available in MediaMaster Pro is organized along one main window that displays most of the information needed during a performance. It shows the 48 individual layer outputs as well as the master preview (the reflection of what is sent to the full screen output) and a parameter panel allowing accessing and modifying the settings for each layer.

Parameters can be either modified through the user interface or from the DMX console. If you modify a parameter on the user interface, it will keep its value unless a change happens in DMX values. It then re-syncs to the value sent by the console.

In order to drive MediaMaster from a DMX console, you will need to select in your console a fixture that is compatible with the software. Within MediaMaster there are couple of different fixture types in order to allow control of the software from small to high-end consoles with a different set of parameter controls available with each fixture type. An extensive description of the fixture types can be seen in the section [Fixtures DMX Chart – Pro Version](#).

### Key Features

The software provides for up to 48 layers of video. Each layer can run one visual and now two effects (under MediaMaster 6), and gives DMX control over the following parameters:

- Visual selected (a visual is either a video, an image, a text, or an input from a camera or an acquisition board...)
- Text (selectable text displayed in text animations)
- Layer transparency (dimmer)
- Effect and parameters
- Full cropping features (to transform your media server into a full-on, live video mixer)
- Position and size of the layer output
- Copy mode to blend with underlying layer
- Playback mode and Movie Speed
- Chrominance and Luminance Keying
- Movie start and end frame
- Tiling
- Mapping on 3D objects (plane, sphere, cylinder)
- 3D Object rotation
- Color control
- Output selection and edition

Additionally, after all layers have been composed, there is a master section allowing to control the overall brightness and contrast, keystoneing, soft-edge and volume parameters.

## Full Screen Output

By default, when you start the software, the full screen output is not enabled. If you want to activate the full screen either by selecting the menu Display > Toggle Full screen or by pressing CTRL+F on Windows / Cmd+F on Mac.

The full screen output can be launched automatically when the application is started by setting this as default in the preferences.

If you don't have a dual output setup configured, then the full screen will be activated on the main screen and the main interface will disappear. To exit the full screen mode, press CTRL+F / Cmd+F again.

For more information on setting up a dual output system, see the [Preferences Dialog](#) and the [Wide-Screen & Multi-Screen Presentation](#) sections.

## Connecting an External Controller

### Setting up DMX Control

To be able to control MediaMaster via DMX, you'll need to set it up so it can receive information from your console. MediaMaster supports two different types of DMX connectivity: either using ArtNet or using a DMX USB widget.

#### Using ArtNet

If your console supports ArtNet, you simply have to connect an Ethernet cable from the console to the computer running the MediaMaster software.

On Mac computers the hardware is usually auto sensing so a standard network cable may be used. On Windows computers you may need a crossover cable if linking directly between the console and the computer running MediaMaster.

MediaMaster presents itself as an ArtNet Node that receives all incoming DMX data on a selected range of DMX universes. For your computer to appear on the ArtNet network, you need to set its IP address within the range of the network – this is usually something like 2.X.X.X with an IP mask of 255.0.0.0 (this can be done in the control panel on Windows or System Preferences on macOS)

If you decide to use MediaMaster using the ArtNet protocol, go in the Preferences Dialog and, in the DMX tab, select 'ArtNet' as DMX Interface and set the subnet and universes you want to be listening to.

**Note:** Like any lighting fixture or dimmer MediaMaster will “listen” to all channels on the selected universe but only respond to the channels it is addressed to. It is quite feasible therefore to have other fixtures using different addresses on the same universe in much the same way as you could use a variety of moving lights, dimmers, and LED's all on the same universe.

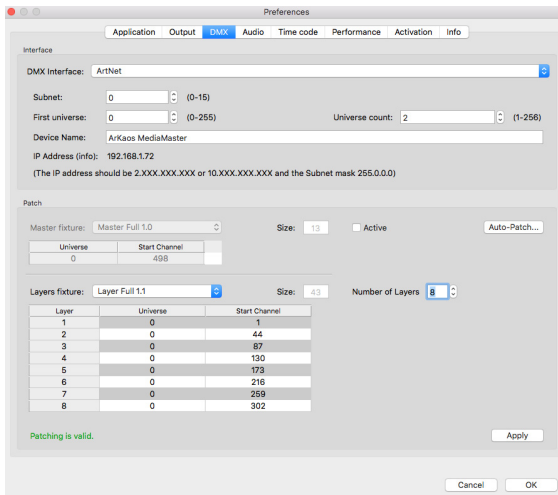
For more information about ArtNet network configuration, check out the Artistic License web site at [artisticlicence.com](http://artisticlicence.com).

### MSEX Implementation (Pro Edition Only)

MSEX stands for Media Server Extension and is an extension of the CITP protocol (Controller Interface Transport Protocol) that runs DMX, fixture selection, and patch over Ethernet. This allows for information on specific items to be passed from MediaMaster to the console. This includes media (images and video); effects; cues; crossfades; masks; blend presets; effects presets; and image presets. MediaMaster's MSEX implementation is compatible with most of the lighting consoles, like ChamSys and Compulite. MediaMaster complies with the MSEX version 1.1 specifications, including thumbnails and live preview for visuals.

## Support for GrandMA MA-Net (Windows Only)

MediaMaster can be directly driven from grandMA consoles supporting the MA-Net protocol. To activate MA-Net, go to the DMX tab in the Preferences Dialog and select “MA-Net” from the DMX Interface drop down box:



You will need to specify the session number and universe you want to work with as well as the IP address of the interface you will receive MA-Net from.

### Using an Enttec DMX USB Pro device

The DMX USB device is a small DMX input adaptor that can be connected to the computer through a USB port. To be able to use the device, you will need to follow a Theater installation procedure.

### Setting up an Enttec DMX USB Pro device on a PC

The Enttec DMX USB Pro will ONLY work with the D2XX drivers and not the VCOM drivers.

This is a change from version 1.0 where MediaMaster was using the VCOM drivers. If you already installed the VCOM drivers this is not a problem because both can coexist on the same machine.

If you're setting up MediaMaster on a new Windows system you will not have to install the VCOM drivers separately, just install MediaMaster and it will work.

To use the device, start MediaMaster and select the Enttec DMX USB Pro in the DMX tab of the preference window.

If the Enttec DMX USB Pro device installation was not successful or if the device is not correctly connected to the computer, the interface won't be listed in the selection of DMX Interfaces.

### Setting up an Enttec DMX USB Pro device on a macOS

The Enttec DMX USB Pro will ONLY work with the D2XX drivers and not the VCOM drivers.

Under macOS if the VCOM driver is installed it will prevent MediaMaster to work with the D2XX interface.

To avoid this, you can delete the VCOM driver by opening a terminal window and typing:

```
sudo rm -rf /System/Library/Extensions/FTDIUSBSerialDriver.kext
```

You can also open the /System/Library/Extensions folder and delete the file FTDIUSBSerialDriver.kext if present

You will need to have Administrator privileges on the system to do this. You will also need to reboot the computer after you have deleted the file.

If you're setting up MediaMaster on a new macOS system you will not have to install the VCOM drivers separately, just install MediaMaster, and it will work.

If the Enttec DMX USB Pro device installation was not successful or if the device is not properly connected to the computer, the interface won't be listed in the selection of DMX Interfaces available in the Preferences dialog.



## Setting up MIDI Control

The control of MediaMaster via MIDI requires a MIDI device connected and properly installed on your system before starting the application. MIDI control is only available in Theater mode since the Fixture mode is designed for DMX control.

Then, from the MIDI tab in the Preferences dialog you can check the device availability and define how the software will respond to the MIDI signals from your controller.

The assignment of MIDI controls to the software feature is done in the Control Bindings dialog that is available through the Edit menu or via the “Controls...” button in the main interface in Theater mode.

## Using the Software – Theater Mode

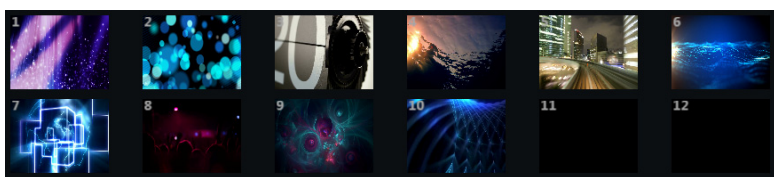
### Main Window

The main software window has been designed to include all the principal configuration information in a single window allowing for intuitive and efficient live operation.



The main window is arranged in three main areas:

### Layer Previews

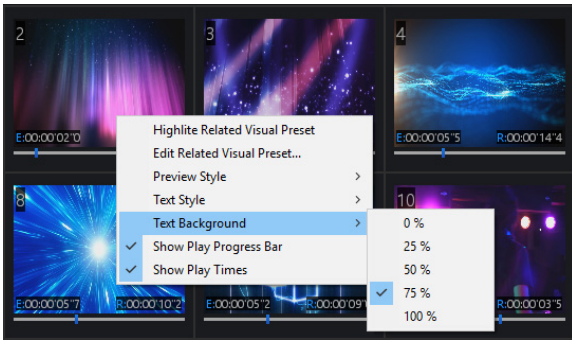


On the top left of the window are 24 (in MediaMaster Express) or 48 (in MediaMaster Pro) layer previews showing the content of each layer.

Content is allocated to each layer on an LTP basis during playback of the visual presets. As such if you are running content of layers 1 thru 4 and then fade out the content on layer 3, the content on layer 4 will move to layer 3 automatically and if you then activate another preset visual this will appear on layer 4.

## Layer Preview Customization

By right clicking on the layers, a contextual menu offers a set of options to customize the display of Layer Preview.



Preview Style tells whether previews should be turned off, playback the visual source, or show the visual with all effects applied.

Text Style modifies the font used to display Elapsed and Remaining Times.

Text Background sets whether a transparent or opaque black background should be displayed below the overlaid text for better readability.

Show Play Progress Bar shows the playback cursor in the visual.

Show Play Times shows Elapsed and Remaining times of the visual playback.

Arrangement of the layers will automatically adjust based on the size available in the interface.

Highlight Related Visual Preset allows to quickly identify the Visual Preset that is being previewed.

Edit Related Visual Preset is a shortcut to directly enter in the Edit dialog of the Visual Preset previewed.

## Master Output

To the right-hand side of the software window is the master output section.

At the top of this is a preview of the output to your external display coupled with an output selector. This preview shows the result of the composition of all the active layers on the selected output.

This allows you to see what is being sent to your external device and also to prepare and preview your show without the need to connect an external output.

### Master Output Controls

Under the output preview are the master parameter controls. Below is a quick description of each control you can see in the picture on the left, in the next pages we'll describe how to use these settings in more detail.

- **Master brightness and contrast:** These global settings can be controlled either by mouse control or by defining remote DMX or MIDI channels for Brightness and Contrast from the “SHOW” dialogue box which can be opened using the button at the top of the visuals patch window.
- **Blackout button:** If the blackout button is selected then the external output will go to BLACK – but the preview window will still show the layer composition preview.
- **Mask selection (Instant mode only):** Use it to recall a master mask from the library to overlay on the output.
- **Master Keystone Settings for X and Y (Instant mode only):** These allow precise global keystone settings to be defined in order to digitally calibrate the output to ensure the best position of the visuals onto the screen or display unit.
- **Width and Curve settings for Soft-Edging (Instant mode only):** When using a multi screen output these controls allow you to configure the blending zone between the two projectors – the width sets the size of the overlapping strip, and the curve defines how strong the soft edge blending should be to ensure you can calibrate the overlap to a seamless image with even brightness.
- **Master Volume:** The “Volume” controls the volume of the output when your visuals contain some audio tracks. This way you can make sure that the audio plays in a proper way even when it has been recorded at different levels.



**Note:** The aspect ratio of the layer preview is 4:3 ratio and therefore if you are working with an output of a different aspect ratio (for example 16:9 or a custom widescreen) the output will be shown “squashed to fit” within the preview window.

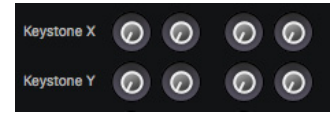
### Masks (Instant mode only)

When a new media library is created, the Masks folder is set as folder 255. Masks consists of black and white or grayscale jpeg images. When a mask file is recalled from this folder using the Mask selection in the master control the white is automatically removed and the black is left intact to create a mask over the top of the output layers content.

**Note:** In addition to providing some interesting and unique shapes the mask function is particularly useful when working with circular or irregular shaped screens. By recalling a mask shape, you can quickly and easily ensure that all content is masked to fit the screen.

## Keystoning (Instant mode only)

You can alter the master keystone settings for the output using the virtual encoders on the master section of the main software window. This feature is not available if multiple output devices are selected in the output preferences.



The Keystone functions on MediaMaster allow you to digitally keystone BOTH the Vertical and Horizontal sides of the image. The power and control offered by MediaMaster gives you far greater range and precision than that offered in the built-in settings of most projectors.

Keystoning allows you to digitally alter the image in order to help fit the output to the screen. For example, if the projector is mounted slightly off axis to the screen, then you may choose to adjust the keystoning to give the impression of a flat image.

The keystone settings on MediaMaster allow you to modify the position of each of the four corners of the image within the output window by changing the X/Y coordinates of each corner.

**Note:** Unlike shutters on a profile light, Keystoning does not cut or mask any of the image. Instead, the action of Keystoning moves these corners but all pixels of output remain the same – they are just in different positions on the screen. MediaMaster automatically adjusts the pixel composition to fit within the new keystone parameters.

Keystoning only shows on the output window as it is directly related to the output display you are using. It is a global setting across the full width of the output display so for example if you are using two projectors side by side to make a single wide image then the keystone function will manipulate the top right and bottom right of one projector and the top left and bottom left of the other.

## Status Indicators

These give a summary of the current operational statistics including the FPS (frames per second) of the graphics processing unit (GPU) and the central processing unit (CPU) of the computer. The two FPS bars give performance information about the engine.

The first line (GPU) shows indication of the current frame rate. It is active only when in full screen. The value on the right shows the average frame rate of the engine.

The second line (CPU) shows an indication of the activity from the CPU. The CPU is mostly used to decode video frames. Note that this value does not reflect the overall system CPU activity; it only reflects the CPU activity caused by MediaMaster.

**Note:** If the CPU value drops down a lot (and most likely the GPU will too in that case), it means MediaMaster's bottleneck is decoding frames. Either your video files are too heavy (check your compression settings) or you are hitting a hard drive bottleneck. In that latter case, you can try to upgrade to faster disks, use a RAID1 or reduce the bitrate of your video compression.

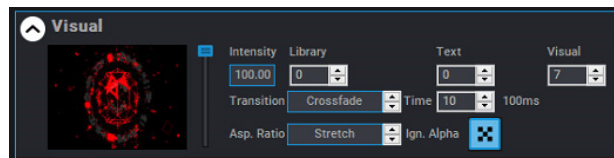
The status summary also indicates if DMX, MSEX, LEDMapper, Kling-Net Mapper and VideoMapper are currently in use and are shown as six small “virtual LED’s” which “light up” when active. The License “LED” will light up blue if the software is activated and red when an empty dongle or a dongle with the wrong version is plugged. More details are shown in the Preferences Activation tab.

For the LEDMapper, if the LED is Orange, it indicates that the LEDMapper application is open and outputting. If the LED is Red, it could be that the LEDMapper outputs on the same universe used to control MediaMaster from a lighting desk. More information is shown in the DMX tab in the Preferences. The symbol between square brackets indicates if the DMX Merger is ON, the blend mode and whether LEDMapper output is muted.

The TC field shows if a valid timecode has been received. Otherwise hovering on the small warning sign indicates some troubleshooting information to receive timecode values.

## Visual Preset and Preset Patch

The main portion of the software interface is used to display visual presets. Each preset visual may comprise the selection of a piece of media, text or real-time generator, the overlay of an effect, add cut or crossfade transitions, adjust the transition time, ignore the alpha transparency, and adjust the aspect ratio of how the visual should be displayed on the output screen.



At the top of the visual preset window is the patch selection, show settings and latch toggle functions. In Fixture Mode you can also find there the output function that holds the video mapper settings.

**Note:** The visual preset is displayed as a vertical strip and this can be thought of in much the same way as the channel strip on an analogue audio console – input at the top and output at the bottom after-effects, sends, and other parameters are defined.

At the top of each Visual Preset strip is the “input” visual – which you have selected from your library. If you have selected a Flash Text animation then you will also see a text box below the library and clip selection, which allows you to select a text string from your text’s library.

Once you have selected the “input” media you can then use the effect box to apply an effect to it. You can also define the media position on the output screen (this will be detailed further in this document under [Position Parameters](#)). Then you can select the mixing preset that determines how the layer will compose with the other layers below.

With the output function you can select the outputs on which the layer will be rendered to, and you can control the output intensity of the preset visual either with the fader at the bottom of the preset visual strip or via DMX, MIDI or keyboard control.

Finally, you will find an EDIT button at the top of the visual strip, this will open a dialog where you can define in much greater detail the parameters of the visual preset (see “Edit Parameters for Visual Presets” on page 26).

**Note:** When a visual preset is active, the background of the visual preset strip is highlighted in blue.

### Patch Selection



Each MediaMaster library can have up to 64 patches with 128 preset visuals in each patch. You can select the patch either by changing the number in the patch box – or by using a master patch selection channel via DMX or MIDI which can be defined in the show settings pop-up window.

### Latch Toggle

The “Latch” toggle function means that the selection of a Visual Preset will automatically latch until the selection button or MIDI key is pressed again when it will be released. You can also define latch as a controller option specific to a visual preset using the MIDI, keyboard and DMX options “latched” in the Show Settings dialog.

**Note:** While the latch toggle is perhaps most clearly relevant when using a computer keyboard, it can also be of benefit when using an external controller with buttons rather than faders – such as a MIDI pad or DMX button wing – you are able to toggle layers on and off rather than having to keep the button pressed for the duration you require that Visual preset to be active. As you can define fade times for individual visual presets you will still be able to achieve smooth cross fades where required.

### Managing Patch and Visual presets (Copy, Paste, Edit,..)

You can right click in the interface to bring a contextual menu. Depending on where you right click in the interface this menu will allow you to copy paste a patch or copy paste a visual preset. Other options in the contextual menu will allow you to clear a patch and open the visual preset editing window.

## Control Bindings for MIDI, DMX, and Keyboard

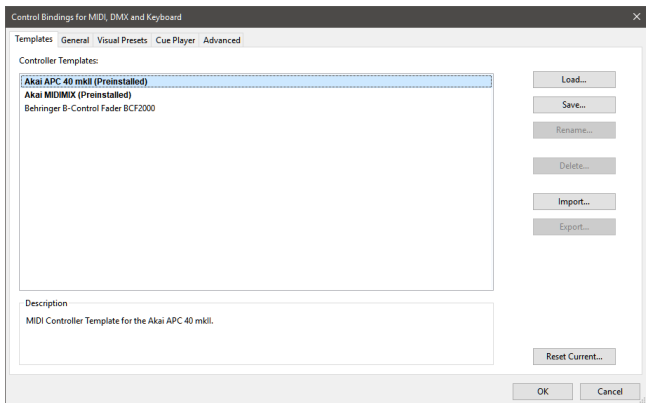


Clicking on the “CONTROLS...” button opens a pop-up window where you can define MIDI, DMX and Keyboard settings for the active Show.

## Controller Templates

MediaMaster allows to manage a set of Controller Templates to provide control through some MIDI, DMX or keyboard controllers. A Controller Template can represent a single physical controller or a combination of multiple controllers.

Controller Template management can be found in the “Control Bindings” dialog and under the tab Templates.



Each update of MediaMaster will come with a set of preinstalled controller templates listed in bold which you can't modify. Nevertheless, they can be loaded, modified, and saved under another name to customize any controller to your specific needs.

Here is the list of operations that can be done with Controller Templates:

Load	Load the selected controller template and replace current MIDI, DMX or Keyboard controls, when some are defined in the template.
Save	Save the current MIDI, DMX or Keyboard controls to a new or existing template.
Rename	Change the name of the selected template or the description.
Delete	Remove the selected templates and delete it from disk.
Import	Import a set of templates by browsing for a MediaMaster Template List (.mmtl) file.
Export	Export the set of selected templates to a MediaMaster Template List (.mmtl) file for sharing to other computers or users.
Reset Current	Reset the current controls mapped through either MIDI, DMX or keyboard for the active Show.

Most of those operations let you select which type of controls should be affected by the operation such as MIDI, DMX, keyboard or even Parameters. This last “Parameters” option concerns the assignment of Parameters to the three slots programmable on each Visual Preset and visible next to the Intensity sliders.

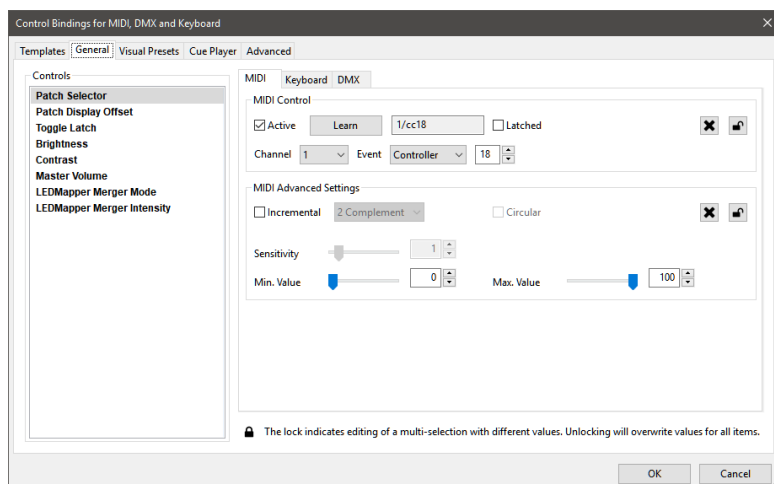
## MIDI, Keyboard, and DMX Controls

MediaMaster exposes a list of controls that you can bind through either MIDI, keyboard or DMX controls on a physical controller. There are grouped in the three following categories: General, Visual Presets and Cue Player and reachable through three tabs in the Control Bindings dialog.

- “**General**” contains overall controls of MediaMaster.
- “**Visual Presets**” contains controls to influence one or more Visual Presets.
- “**Cue Player**” contains controls specifically targeted to the Cue Player.

All Controls are not necessarily available for MIDI, keyboard and DMX because of the range of data. For example keyboard can only be used to turn Controls on and off, or eventually go directly from 0% to 100%. When one of the tabs is selected between MIDI, Keyboard and DMX, Controls are filtered, and compatible ones are displayed in bold in the list.

### MIDI Settings



A MIDI tab appears with advanced options to configure how a Control should be bound to a MIDI controller:

- **Active** indicates whether the Control should be bound through MIDI.
- When using **Learn** button, the Control will automatically and intuitively be bound to the MIDI control that gets used next.
- The **Latched** checkbox sets if the Control should be toggled on and off each time the user presses the physical MIDI control.
- **Incremental** toggle specifies that the controller is sending incremental values. There are a couple of variants in the MIDI specification so you will have to choose the type of incremental controller: (2 complement, Signed bit, Signed bit 2, Bin Offset)
- **Circular** toggle specifies you want the mapping to work in a wrap-around way. For example, if you go lower than the minimum value it goes back to the maximum value and vice versa.
- **Sensitivity** is a factor to scale the increment steps. A sensitivity of two means the value increments twice faster.
- **Min. & Max. Values** remaps the range of the MIDI control between those min and max values. If you put a maximum value lower than the minimum value, the control mapping will be inverted.

**Note:** The software supports MIDI input as long as the correct drivers are installed for your MIDI hardware. As such MIDI control surfaces, buttons, faders and keys with direct USB connection can also be used to provide a compact control surface. Also make sure that the MIDI controllers are activated in the MIDI tab of the Preferences.

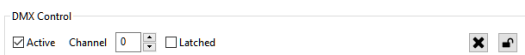
## Keyboard Settings



A Keyboard tab lets you bind controls through a Key Learn mechanism:

- **Active** indicates whether the Control should be bound to a Key.
- When **Learn** button is used, the Control will automatically and intuitively be bound to the next key pressed.
- The **Latched** checkbox sets if the Control should be toggled on and off each time the user presses the key.

## DMX Settings



A DMX tab lets you bind controls to a DMX channel:

- **Active** indicates whether the Control should be bound to a DMX channel.
- The **Latched** checkbox sets if the Control should be toggled on and off each time the user presses the key.

The Universe listened for incoming DMX data is configured through the DMX tab in the preferences.

## Controls

### General

Patch Selector	Change the active Patch.
Patch Display Offset	Select the index of the first visual preset to display in the patch by scrolling through the visual presets.
Toggle Latch	Toggle whether visuals are triggered in Latch mode or not.
Brightness	Change the master brightness influencing all outputs.
Contrast	Change the master contrast influencing all outputs.
Master Volume	Change the master audio volume.
LEDMapper Merger Mode	Indicate in which blend mode the LEDMapper is operating. See LEDMapper documentation for more details.
LEDMapper Merger Intensity	Indicate the intensity of the LEDMapper output through the DMX Merger. See LEDMapper documentation for more details.



## Visual Presets

You need to specify to which Visual Presets each binding applies. You can select to use the binding for either one or all Visual Presets and either for one or all Patches.



This flexibility allows you to change the bindings between patches. One use case could be to trigger, with the same input control, different groups of visual presets when switching to different patches.

Trigger	Start and stop playback of Visual Presets and change intensity.
Pause	Pause and resume playback of the Visual Presets.
Parameter 1-3	Control the values of the three parameters exposed per Visual Preset. See Visual Preset Parameters for more details.



Whenever you apply your control binding to a multi-selection, you need first to click the Lock button and unlock to accept that all values of the selection will be overwritten.

A Summary of the trigger controls are given in the bottom-left corner of the Visual Preset. As a shortcut, you can click on this frame to directly reach the controls for that specific Visual Preset. An alternative way is to right click on a Visual Preset and select the entry “Edit Control Bindings...” in the popup menu.

## Cue Player

**Note:** Cue Player tab is explained in the [Cue Player](#) section of the documentation.

## Advanced Parameters

The Advanced tab contains overall parameters to better control how Controls are bound to controllers. In most of the cases they can remain unchanged.

Patch Selector Control Range	Indicate over which range the Patch Selector Control should be mapped. *
------------------------------	--

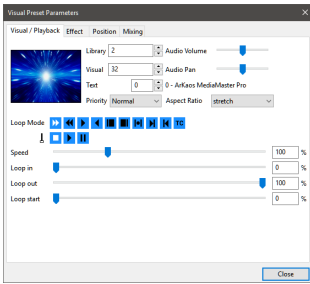
\* MIDI knobs or sliders with 128 values would often be too imprecise to select between 64 patches, so it is better to restrict the range to a lower value if MIDI control is used.

## Edit Parameters for Visual Presets

At the top of each visual preset strip is an EDIT button. Clicking on this opens a dialog allowing detailed configuration of each of the parameters for that particular visual preset.



## Visual / Playback



Here you can define the library and visual numbers in the same way as on the visual preset strip, but you can also specify the priority, audio volume and pan, loop mode, speed and “in”, “out” and “start” settings of the video playback. You can also set the aspect ratio for the preset. You can choose between: Stretch, auto, 4:3, 16:9, 16:10, 5:4, 1:1, fit width, and fit height pixel mapping.

When the clip has an audio track, the speed settings will affect the audio playback also.

### Loop Mode



The ‘Loop’ setting controls the way the video plays and loops. The available settings are:

- Loop Forward
- Loop Backward
- Once Forward (the video is played once then stops)
- Once Backward (the video is played backward once then stops)
- First Frame
- Last Frame
- Ping-pong (the video plays back and forth)
- Once and Freeze Forward (the video is played once then stops on its last frame)
- Once and Freeze Backward (the video is played backward once then stops on its first frame)
- Timecode (the video follows the Timecode received)

### Intensity at Zero Submode



This submode defines the behavior of a Visual Preset when the intensity is pushed to zero.

- Stop (stops the visual and will be restarted when intensity is raised again)
- Play (continue playing when intensity is at zero)
- Pause (pause the video and will continue when intensity is raised again)

When the intensity of a Visual Preset is at zero, the Pause button is replaced by a Stop button to be able to stop the visual even if the submodes Play or Pause at Zero Intensity are active.

## Transparent at the End Submode



- Black (Visual Preset will output black at the end of the visual)
- Transparent (Visual Preset will output transparent at the end of the visual)

## Speed/Timecode

Defines the speed of the clip playback between 0% and 400%. You can change it with the slider or by entering a value (this will also affect the audio speed, if the clip has audio).

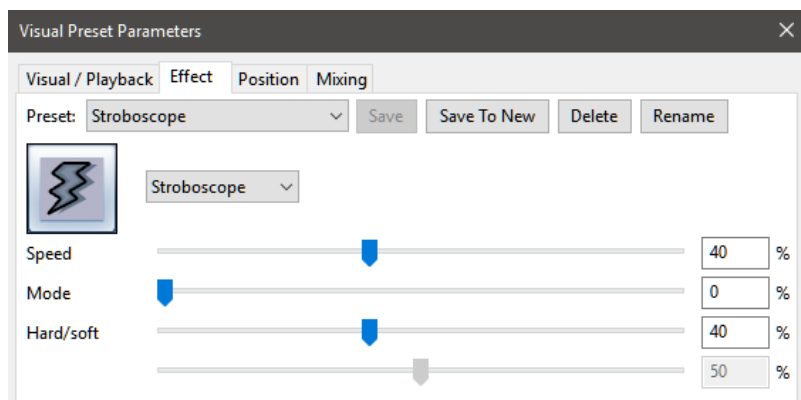
When Timecode is selected the slider doesn't change the speed, but the frame offset or index for the Timecode offset.

## Loop In / Loop Out / Start Point

The first two sliders let you configure the start and end points of the loop. This is expressed as a percentage. You can change it with the slider or by entering a value.

With the third slider you can set the point from where the video has to start.

## Effect Configuration



MediaMaster offers a large number of built-in effects. On a computer running macOS you can also use the Quartz Composer Effects which are a part of the operating system.

These effects include 3D mapping, motion blur, color cycles, artistic graphic styles and many more. Each effect can be added to individual visual presets or defined on its own visual preset where it will overlay and effect across the complete output when recalled.

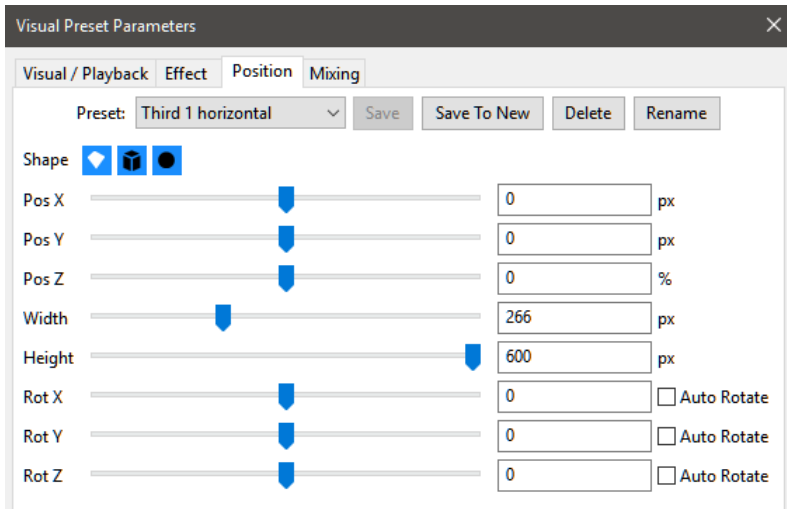
Each effect has up to four modifier parameters (i.e. speed, motion, intensity etc.) which can be defined in every instance of its use.

Once you have customized an effect and its parameters you can store this as a new preset effect (using the "Save to New" button), so you can build your own custom library of effects with parameters adjusted to your needs.

Once you have created your custom library of effects, they can be quickly accessed in the effect section of the visual preset strip using either the drop-down list menu or the tall arrow buttons to each side of the effect icon window.

## Position Parameters

Within each Visual Preset you can define a comprehensive set of position parameters. These parameters can be defined for each visual preset but can also be saved (using “Save to New”) in order to recall them for different preset visuals at a later stage.



**Note:** The “Save to New” function can also be thought of as storing a palette on a lighting console - for example if you have a set up using multiple screens or pixel mapping and want to define specific position co-ordinates to ensure that certain content is sent to a specific screen area or pixel mapped area you can position one piece of content and store this position preset and then apply the same position preset to other pieces of content.

If at a later stage you need to adjust the preset you can recall it, edit the data and then Save again. This will overwrite the previous preset and update this information in all presets that use it – the same as updating a position palette for a piece of automated lighting.

### Presets

The application comes shipped with a set of common position presets.

### Shapes



The position can be defined in three shape types by selecting the appropriate icon at the top of the position display: Flat Plane, 3D Cube, or Sphere.

For each of these types, the following attributes can be adjusted:

- **Pos X:** Defines the top-left corner position of the image on the X axis – so for an image 800 pixels across with an 800-pixel wide output screen then a Pos X of 400 pixels places this image centrally to the output.
- **Pos Y:** Defines the top-left corner position of the image on the Y axis – so for an image 600 pixels high with a 600-pixel high output screen then a Pos Y off 300 pixels places this image centrally to the output.
- **Pos Z:** Expressed as a percentage the Z position moves the visual on a 3D plane – at 50% is the default and the middle of the plane. Increasing this percentage moves the image towards the viewer (zoom in) and decreasing moves it away from the viewer (zoom out).
- **Width & Height:** The maximum width and height of the visual content is the same as the maximum screen size of output – so if you are working with an 800x600 pixel screen you cannot have an image size larger than this.
- **Rot X:** Rotation X
- **Rot Y:** Rotation Y
- **Rot Z:** Rotation Z

### Auto Rotate

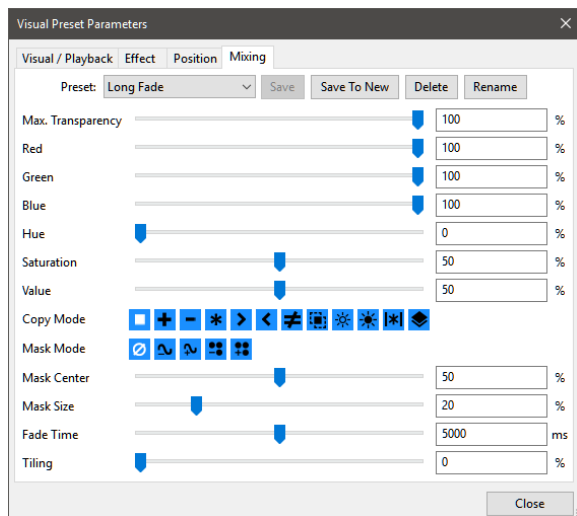
If you want the shape to rotate automatically without using a controller that changes value continuously, you must use the auto rotate function; it will change the behavior of the parameter to control the rotation speed.

The video output frame rate of a computer can go up to 60 frames per second and most consoles will not send that many controller values per second, so you will have a smoother result when using auto rotate.

## Mixing Parameters

The mixing parameters allow you to configure the way in which the visual preset interacts with other active visual presets (this can also be described as how the output is composed).

There are a number of standard presets for this, but you can also create new presets (Save to new) to suit your needs.



### Max. Transparency

This defines the maximum level of the preset visual and is the same as creating a “top set” on a lighting console.

For example, if you set the Max. Transparency to 80% then even if you fade the visual into the top of its fader (full) you will still be able to see through it to the layer below.

### Color Levels (Red/Green/Blue)

The three-color sliders allow you to adjust the amount of each color to be represented in the image. With all sliders at full (100%) then it is possible to achieve a white output. Once you reduce any of these sliders then you limit the color tone of the image – this can be very useful in adjusting clips to suit a particular color scheme or mood. It can also be helpful when creating visuals for projection onto colored surfaces where adjusting the color balance can help to ensure the original image is best represented against a tinted background.

### Hue

Much used for color correction, hue lets you slide a virtual color wheel before your output.

### Saturation

This defines how saturated the output will be.

### Lightness

Lightness is often confused with brightness because they both make the output brighter, but the big difference is that where brightness adds light to everything (black becomes grey) Lightness only adds light to the light areas so black remains black.

## Copy Mode

The copy mode defines the basic composition between the current layer and previous layers. MediaMaster supports the following options:



- **Replace:** In this mode, the pixels of the Visual Preset are written on top of the previous active layers. This is the default mode.
- **Addition:** In this mode, the pixel values of the current layer are added to the ones of the previous layers. This means that “dark” pixels in the current layer image won’t alter the pixels that are underneath while “light” pixel will saturate the image underneath.
- **Subtraction:** In this mode, the pixel values of the current layer are subtracted from the pixel value in the underlying layers. Dark pixel from the current layer won’t alter the pixel of the layers underneath while light pixel will darken them.
- **Multiplication:** In this mode, the pixels from the current layer will be multiplied by the pixels of the underlying layers. For a pixel to appear bright in the output, the equivalent pixel of the current layer and the underlying layer needs to be bright. If any of the layers has a dark pixel, the result will be dark.
- **Maximum:** This mode takes the pixel that is the brightest between the current layer and the layer underneath.
- **Minimum:** This mode takes the pixel that is the darkest between the current layer and the layer underneath.
- **Difference:** In this mode, the pixel takes as value the absolute difference between the current layer and underlying layers. Black on the current layer won’t alter the pixel of the layers underneath while white pixel will invert them.
- **Exclusion:** This mode is very similar to Difference but with lower contrast.
- **Lighten:** In this mode, the result pixel will retain the maximum of each RGB component between the current layer and the underlying layers.
- **Darken:** In this mode, the result pixel will retain the minimum of each RGB component between the current layer and the underlying layers.
- **Screen:** In this mode, the pixels from the current layer and pixels of the underlying layers are inverted, multiplied, and then inverted again. The result is a brighter picture.
- **Overlay:** This mode combines Multiply and Screen blend modes. The parts of the current layer where the underlying layer is light become lighter, the parts where the current layer is dark become darker. Areas where the current layer are mid grey are unaffected.

## Mask Mode – Chroma / Luminance Key

There are 5 basic mask modes for content. These affects how the content interacts with other running content.



Keying is a technique where some pixels are made transparent depending on their characteristics. Creating a Key is simply defining this interaction depending on the color or brightness of a pixel.

Chrominance Keying (or Chromakey) – ‘removes’ pixels based on their colors – for example the “blue screen” technique. Luminance Keying – ‘removes’ pixels based on their brightness level.

The masking mode switches allow you to select, from left to right:

- no keying
- luminance keying (band reject)
- luminance keying (band pass)
- chrominance keying (band reject)
- chrominance keying (band pass)

Band reject means that the selected luminance/color band will disappear while band pass will let the selection through.

### Mask Centre

The center of the mask defines midpoint tolerance of the mixing mode – varying this amount will change the number of pixels that can be seen based on the type of mask used.

### Mask Size

This defines the range of the mask algorithm – generally speaking the higher the mask size the more pixels can be seen from the layers underneath.

### Fade Time

This function allows you to predefine the fade time for the Visual Preset when activated. The default fade time is 0 milliseconds (ms). When a new fade time is set which can be anywhere between 0 and 10,000 milliseconds (0-10seconds) the fade down timing is also taken from this parameter setting.

The fade time is set as a complete fade from 0 – 100%, if you choose to fade the layer from 0-50% it will take half of the preset fade time.

### Tiling

The Tiling Function allows you to tile the output of that visual preset. At 0% the visual preset takes up the whole screen – as you increase the percentage the visual preset is tiled numerous times to fill the screen area with each tile presented at the same aspect ratio as the full screen output.

## Cue Player

### Overview

The Cue Player automates playback of visual presets and allows you to play a predefined sequence of visuals during a show or an event.

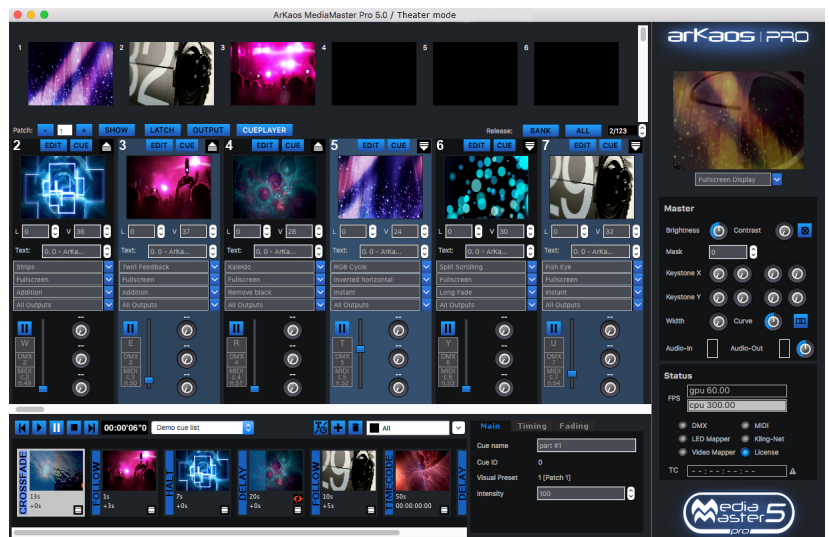
The many synchronization options give precise control over the timing to trigger different visuals sequentially or in parallel. The playback of cue lists can be triggered by DMX, MIDI, timecode or with a keyboard.

With a few clicks the Cue Player can help you create a sequence of videos with cross-fading. But possibilities are endless to help you prepare a complete show with the full mixing capabilities offered by MediaMaster.

### Getting Started

To get started, let's create a very basic cue list and play it back through four easy steps:

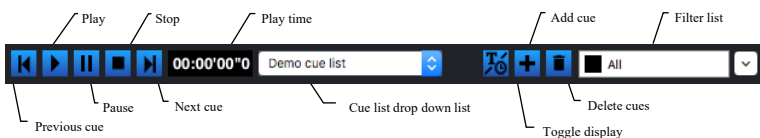
1. In the Theater Mode interface, click on the "Cue Player" toggle button to open the Cue Player panel at the bottom of the interface. Locate the Cue Player toolbar with some playback buttons on the top of the Cue Player panel.
2. In the "cue list" drop down list, select "New" to create a new cue list. A cue list is a sequence of successive or parallel cues to be played during a show.
3. To add a first cue, press the "Cue" button on top of the visual preset you want to play in your cue list. A "cue" represents a visual that has been prepared to be displayed at a precise moment in a show.
4. Press the "Play" button in the Cue Player toolbar.



Your cue list with a unique cue should play back. These steps covered the very basics. The next sections will explain further the interface and all features.

### Cue Player Interface

#### The Toolbar



The play time is displayed in HH:MM'SS'T (hours, minutes, seconds, tenth of seconds).

The cue list drop-down list is used to switch to another cue list or to add, erase or remove a cue list.

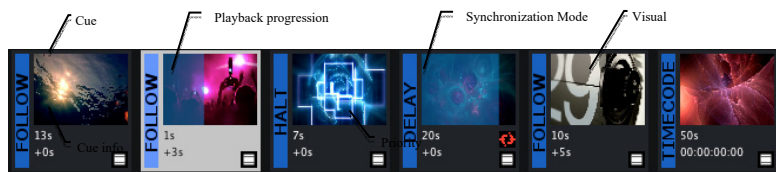
The filter drop-down list is used to show only cues with a given priority or free-run cues. It is sometimes more convenient to focus on the sequence of cues for a given priority, and for some other tasks to see cues of all priorities interleaved.

Toggle display switches from displaying the cue name and ID to the duration and time offset.



## Cue List

A cue list is a horizontal sequence of cues. A scroll bar allows to display and change the visible section of the full cue list.



## Cue Selection

Cues can be selected to edit their properties. Shift, Ctrl or Cmd keys can be used for multi selection to delete or move multiple Cues at once. Only one cue can be edited at a time. Cues can be dragged along the Cue List to change their order.

## Adding a Cue

There are three ways to add a Cue:

- If no Cue is selected, clicking on the '+' button will add an empty Cue at the end.
- If a Cue is selected, clicking on the '+' button will insert an empty Cue before the selected Cue.
- Pressing the 'Cue' button at the top of a visual preset will add a cue at the end.

If some cues were selected, their visual presets will get replaced instead.

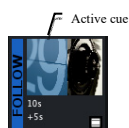
Each cue must be linked to a visual preset. Any later change to a visual preset will automatically affect all cues linked to it.

Double-clicking on a cue visual thumbnail will highlight the corresponding visual preset.

## Cue List Playback

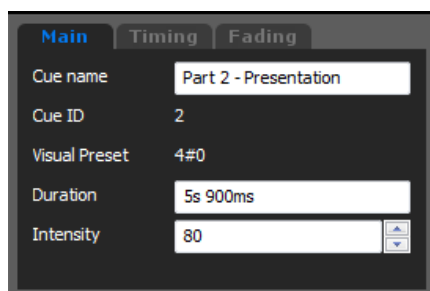
To start playing cues, press either the Play button or double-click on a cue outside its visual thumbnail. Pressing Alt key while double-clicking will start playing the cue without stopping any cues that are already running.

An active cue is one that is currently playing. It is displayed with a transparent filling bar on top of the thumbnail to show the playback progression.



While playing, the cue list will automatically scroll to show the active cues on screen.

## Properties Panel



Properties reflect either the selected cue or the cue list itself if no cue is selected. They are grouped in multiple tabs.

## Cue Properties

### Main Tab

Cue name	Name or free reference to identify the cue.
Cue ID	Unique ID number to identify the cue [read only].
Visual preset	Index of the visual preset in the specified patch [read only].
Intensity	Percentage of intensity to playback to cue.

### Timing Tab

Sync mode	Synchronization mode of the cue.
Time offset	Time [1] offset to start cue in Follow or Delay mode.
Timecode	Time [1] that the timecode signal should pass to trigger the cue.
Reference cue	To synchronize against another cue than the default previous one.
Hold	Indicates to hold the cue playing until next Halt cue starts.

### Fading Tab

Fade in	Indicates to fade in the visual.
Fade in duration	Fade in duration <sup>[1]</sup> .
Fade out	Indicates to fade out the visual.
Fade out duration	Fade out duration <sup>[1]</sup> .

## Cue List Properties

### Cue List Tab

Name	Name of the cue list.
Loop at end	Restart the cue list when the end is reached.
Timecode offset	Applies an offset to all timecode defined in the cue list.

[1] Times, offsets or durations can be defined with any hour, minute, second or millisecond specification like in the following examples: "1h 23m 15s 900ms", "1h 23s", "50m 15ms"

## Synchronization Modes

A cue has one of the following Synchronization modes:

Halt	The operator needs to press explicitly the Play button or send a DMX or MIDI trigger to play the cue.
Follow	Play the cue after a given time offset when the previous or reference cue ends.
Delay	Play the cue after a given time offset when the previous or reference cue starts.
Timecode	Play the cue when the timecode has passed the given time.
Crossfade	Play Cues to follow each other with a small overlap to perform a crossfading.

The Synchronization mode can be changed either by right-clicking on a Cue or by editing the cue properties.

## Priority Layers

Introduced by the visual presets, each cue is associated to a priority layer to determine if the visual should be played as background, normal or foreground.

The priority filter dropdown list allows to focus on one priority layer at the time. Each cue is synchronized by default to the previous cue on the same priority layer. In other words, background, normal and foreground cues run by default in parallel.

By using filters, it becomes easier to handle the sequence and the transitions of cues to be played for each priority layer successively. That means focusing on background sequence first, then adding normal priority content and finally adding visuals on foreground.

## Halt Cues

Halt cues interrupt the show until the user asks to continue. They interrupt cues and are visible on all priority layers. A Halt cue activates when all cues before and with any priority have finished. If a cue has the property Hold, then it will continue to play until the show continues again.

Cues of any priority placed after a Halt will only play once the Halt event has been passed. Also, a cue can't reference another cue if separated by a Halt. Only freerun Cues can reference any Cue.

## Demo Cue List


A demo cue list is deployed when a new library is created. If you currently use an existing library, you can still create a new library to see the demo cue list. In the Library Management dialog, click the button "Set Root folder..." and specify the location where the new Library should be deployed.

## Advanced Topics

### Reference Cue

By default, the synchronization of a cue is done relative to the previous cue on the same priority layer. But each cue can also specify explicitly another cue to be used as the reference cue or “origin” to refer to the start of the cue list.

By setting an explicit reference cue ID, for instance multiple cues can be synchronized to the same cue or cues can be synchronized between multiple priority layers.

A Cue will display a link icon  to show that an explicit reference cue has been specified.

### Freerun Cue

Freerun cues run independently of the main flow of the cue list, can reference any cue and are not interrupted by Halt cues. They can be triggered by timecode at any moment.

Freerun cues allow the Cue Player to provide a convincing solution to trigger visual presets by timecode with fade-in and fade-out at the end. They also provide a good option to prepare visual patterns that can be triggered at any moment in a show.

To create freerun cues, select a freerun filter in the filter drop-down list and add cues to it.

Cues or freerun cues can't reference a cue with a bigger ID (further on the right when displayed with “all” priority filter). An exception are freerun cues which can reference any non-freerun cue. Also cues can never reference a freerun cue.

### Mixing of Multiple Cues

The Cue Player is used to automate the playback of different visual presets. But in the end, the rules of the Theater mode still apply to mix together the multiple active visual presets.

All visual preset parameters (playback, looping, effect, positioning, priority, mixing and output) can be used to leverage the full mixing capability of MediaMaster through the Cue Player.

Delay synchronization mode, priority layers and freerun cues give various solutions to play multiple cues simultaneously. In addition, other visual presets can still be driven by DMX, MIDI or mouse and keyboard and mixed together while the Cue Player is running.

## Cue Player DMX, MIDI, and Keyboard Controls

### DMX Chart Extension

Chan. Name	Def. Chan.	Ranges	Def. Val.	Loc. Val.	Snap/Instant	Category
Cue List <sup>[1]</sup>	30	0-255	0	0	YES	BEAM
Cue <sup>[1]</sup>	31	0-255	0	0	YES	BEAM
Cue Control <sup>[2]</sup> Player	32	0-7 None 8-15 Play 16-23 Pause 24-31 Stop 32-39 Previous Cue 40-47 Next Cue 48-55 Toggle Play/Pause 56-63 Change Cue List 64-71 Jump to Cue	0	8	YES	BEAM
Cue Play Player	33	0-127 Trigger off 128-255 Trigger on <sup>[3]</sup>	0	0	YES	BEAM
Cue Pause Player	34	0-127 Trigger off 128-255 Trigger on <sup>[3]</sup>	0	0	YES	BEAM
Cue Stop Player	35	0-127 Trigger off 128-255 Trigger on <sup>[3]</sup>	0	0	YES	BEAM
Cue Previous Cue Player	36	0-127 Trigger off 128-255 Trigger on <sup>[3]</sup>	0	0	YES	BEAM
Cue Next Cue Player	37	0-127 Trigger off 128-255 Trigger on <sup>[3]</sup>	0	0	YES	BEAM
Cue Toggle Play/Pause Player	38	0-127 Trigger off 128-255 Trigger on <sup>[3]</sup>	0	0	YES	BEAM
Cue Change Cue List <sup>[1]</sup> Player	39	0-127 Trigger off 128-255 Trigger on <sup>[3]</sup>	0	0	YES	BEAM
Cue Jump to Cue <sup>[1]</sup> Player	40	0-127 Trigger off 128-255 Trigger on <sup>[3]</sup>	0	0	YES	BEAM

[1] Cue and Cue List can be changed by first selecting their indices and then triggering either Change Cue List or Jump to Cue.

[2] Actions triggers the first time a value in a new action range is received.

[3] Action triggers when the DMX value changes from below 128 to above or equal 128.

## MIDI Chart Extension

Controllers / Notes	Def. ID	Def. Channel
Cue List Controller	100	OMNI
Cue Controller	101	OMNI
Play Note	102	OMNI
Pause Note	103	OMNI
Stop Note	104	OMNI
Previous Cue Note	105	OMNI
Next Cue Note	106	OMNI
Toggle Play/Pause Note	107	OMNI

## Keyboard Shortcuts

Action
Cue Player Play
Cue Player Pause
Cue Player Stop
Cue Player Previous Cue
Cue Player Next Cue
Cue Player Toggle Play/Pause

**Note:** All keyboard, MIDI and DMX controls can be tweaked in the Show Settings dialog.

# Using the Software – Fixture Mode

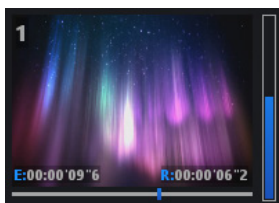
## Main Window



The Fixture Mode interface of the software has been laid out to provide a maximum number of information in a single window. Although the software has been conceived primarily to be used with DMX control, all functionalities are also available through the software interface.

The main window is organized around three main areas:

## Previews Area



The top left part of the main window shows the visuals selected on each of the 12 layers. We refer to those as the “layer preview”. Next to each layer preview is a vertical gauge that shows the mixing level (or transparency, or dimmer) of the layer.

If the level is set to zero, no output is shown. As you drag the Intensity slider up, the layer will become brighter, and the layer underneath will disappear.

The numbers show the elapsed time (E) and remaining time (R) of the visual.

## Master Output Area

The Master Output is the same as seen in Theater Mode.

## Status Indicators

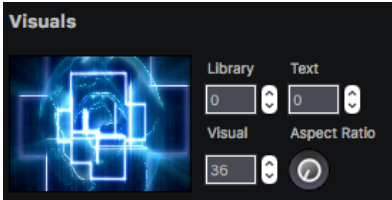
The Status Indicators are the same as seen in Theater Mode.

## Layer Parameter Area

Under the layer previews, you find the layer parameter area. This area displays all the settings for the ‘current’ layer. The current layer is the one whose mixing slider is blue, as show in the picture above. To select another layer, either click in its preview window or on its mixing slider.

The settings of the current layer reflect all the control parameters accessible for that layer and will follow any DMX control sent from the console.

### Visuals



This zone shows the visual currently selected on the layer. Visuals are organized in libraries for easier access. There are 256 libraries each containing up to 255 visuals (one visual slot is reserved as a blank image).

Some libraries are also reserved for special usage (flash texts, acquisitions input and masking) but most of them are user configurable through the visual library management dialog.

To manually change the visual selected on the current layer, simply change the values under “Library” and “Visual”. The layer preview should show you the visual running. If it doesn’t, make sure the mixing slider for the layer is not set to zero.

MediaMaster comes with some pre-installed visuals. To set up your own set of visuals, refer to the [Library Management](#) section.

The value under “Texts” lets you choose from the 255 different texts strings to use with the Flash Texts included with MediaMaster. Flash Texts are Flash animations created with a special text statement that is dynamically replaced by the text string you select here.

The aspect ratio button enables you to change the aspect ratio for this layer.

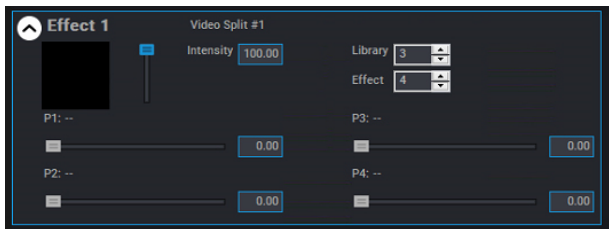
### Effects



This zone displays the effect setting for the current layer. Effects are also organized in libraries for easier grouping. Each effect can have up to four parameters that are displayed on the right side of the panel. Adjust the intensity of the effect and also fade in/out the effect into the layer.

Selecting an effect is done by modifying the values into the “Library” / “Effect” fields, then use the rotary button to modify the effect parameters. The range of effect available is depending on the fixture selected. For more information on effects availability, refer to the [Fixtures DMX Chart – Pro Version](#) section.

**Note:** For performance reasons, effects are by default NOT applied on the preview of the layer. You will see the full composition, including effects on the master preview but not on the individual layer preview windows. If you have a very powerful graphics card, you can change this setting, in the Preference Dialog. Refer to the [Preferences Dialog](#) section for more information.



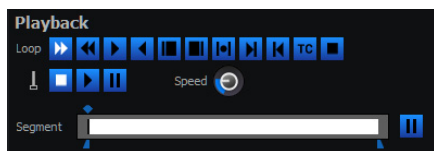
Effects can do many things like alter color or deform a visual, but some can also be useful to apply more “subtle” modifications to your visuals when you can’t alter them and re-encode them.

For example, the cropping effect can be particularly useful to get rid of unwanted content in the frame, when doing live camera acquisition. For that purpose, we have made available four pre-set cropping settings in Effect Library 3 (Effects 32/33/34/35) and one fully parametric in Effect Library 8 (Effect 10).

Note that this is just an example, and that cropping can be done more efficiently using the cropping zone.



## Playback



These are the controls affecting the way your visuals (mainly videos) are played.

“Loop” controls how the video plays and loops. The available settings are, in order:

- Loop Forward
- Loop Backward
- Play Once Forward (the video is played once then stops)
- Play Once Backward (the video is played once then stops)
- First Frame (useful when setting the segment start)
- Last Frame (useful when setting the segment end)
- Ping-pong (the video plays back and forth)
- Play Once Forward and Freeze (the video is played once then stops on its last frame)
- Play Once Backward and Freeze (the video is played once then stops on its last frame)
- Timecode (the video follows the Timecode received)
- Stop (stops video particularly for pause or continue at intensity 0 sub-modes)

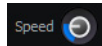
## Playback Submodes



Indicates whether the movie should Stop, Continue playback, or Pause when the intensity slider is brought down to zero. In Stop mode, the visual would restart from the beginning when the intensity slider is raised again. In Continue mode, the corresponding layer with the movie continues playback even if it's not outputting. The pause mode is interesting to continue the movie where it faded out to zero intensity.



Indicates if the layer should become transparent or black once the end of the movie is reached.



The movie speed rotary control allows to speed-up or slow down the movie playback. If set to zero, the movie will stop (freeze frame).



When Timecode playback mode is selected the rotary sets a time offset in frames or an index from the Timecode offsets table (Edit menu → Timecode offsets).

Under the loop setting is the “Segment” zone where you define the portion of the movie you wish to play by selecting the first and the last frame.

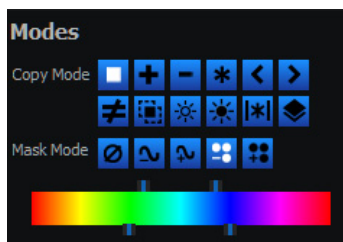
When setting the first and last frame, it is recommended to use the “Display first/last frame” playback mode described above so that the frame you are adjusting is continuously displayed in the preview.

You can also set the start point. This is the frame from which your visual has to start playing.

Once started this point is ignored and the whole chosen segment of the visual will play.

## Composition Modes

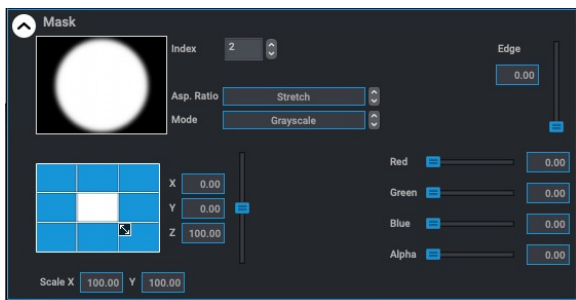
The “Modes” define how the current layer will be ‘composed’ with the previous layer.



“**Copy Mode**” is the basic composition between the current layer and previous layers. MediaMaster supports the following options:

- **Copy:** In this mode, the layer’s pixels are written on top of the previous layers. This is the default mode. The slider next to the layer preview acts as a transparency control for the layer.
- **Addition:** In this mode, the pixel values of the current layer are added to the ones of the previous layers. This means that “dark” pixels in the current layer image won’t alter the pixels that are underneath while “light” pixel will saturate the image underneath.
- **Subtraction:** In this mode, the pixel values of the current layer are subtracted from the pixel value in the underlying layers. Dark pixel from the current layer won’t alter the pixel of the layers underneath while light pixel will darken them.
- **Multiplication:** In this mode, the pixels from the current layer will be multiplied by the pixels of the underlying layers. For a pixel to appear bright in the output, the equivalent pixel of the current layer and the underlying layer needs to be bright. If any of the layers has a dark pixel, the result will be dark.
- **Minimum:** This mode takes the pixel that is the darkest between the current layer and the layer underneath
- **Maximum:** This mode takes the pixel that is the brightest between the current layer and the layer underneath.
- **Difference:** In this mode, the pixel takes as value the absolute difference between the current layer and underlying layers. Black on the current layer won’t alter the pixel of the layers underneath while white pixel will invert them.
- **Exclusion:** This mode is very similar to Difference but with lower contrast.
- **Lighten:** In this mode, the result pixel will retain the maximum of each RGB component between the current layer and the underlying layers.
- **Darken:** In this mode, the result pixel will retain the minimum of each RGB component between the current layer and the underlying layers.
- **Screen:** In this mode, the pixels from the current layer and pixels of the underlying layers are inverted, multiplied, and then inverted again. The result is a brighter picture.
- **Overlay:** This mode combines Multiply and Screen blend modes. The parts of the current layer where the underlying layer is light become lighter, the parts where the current layer is dark become darker. Areas where the current layer are mid grey are unaffected.

## Mask Engine

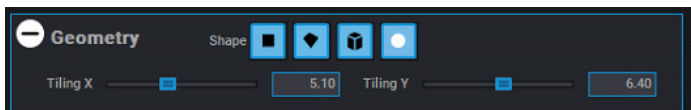


You can now load a mask in each layer independently. This will help you to mask a specific part of your content or in a more advanced use to have a cut and fill effect of each of your layers. The masks are picked from your library folder 255. Into that folder you can drop your own masks. Either black and white PNG or jpeg, or alpha based masks. You can use colour masks as well. Select your mask in the mask index. We have a visual running on layer one and in layer two we load a separate visual with a mask onto it. We use a black and white mask. You can now see in the result in the output that we have layer one playing in the background and a masked layer two playing on top of it. You can see in the layer preview that the black part of the mask is now transparent. The different mask modes are: “Grayscale”, “Invert Grayscale”, “Colour Mask” and if you have an alpha mask, “Alpha” and “Invert Alpha”.

The alpha control gives you control of the opacity of the alpha channel of the mask. For each mask there is also an RGB control which allows you to fill the black part with a specific colour. Those colours can be sent from the desk within the 3 dedicated RGB colours.

The other controls off the mask are the controls of the position of your mask, so you can move and size your mask. In the output you can see that we are not moving the content but only the mask. You can make your mask bigger and smaller, and you can use the Edge control to smooth the edges of the mask.

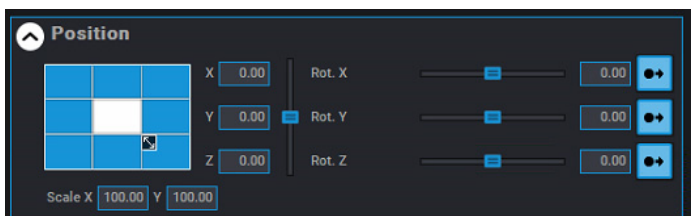
## Geometry



The geometry setting allows projecting the visual and the effect on a 3D object. You can choose between a plane (this is the default mode), a cube and a sphere. When mapped, the video becomes a texture projected on the object.

You can also change the tiling (number of times the visual is repeated on the object) in the X coordinates and Y coordinates separately.

## Position



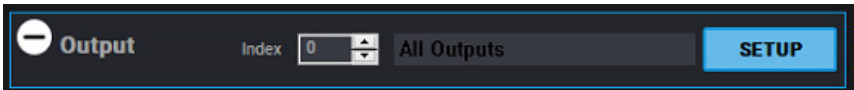
The position panel allows you to control the position of the layer’s output in a 2D or 3D space.

The square position widget allows setting up both the layer’s position and size.

You can use this feature if you want to display the layer output in the top left corner for example.

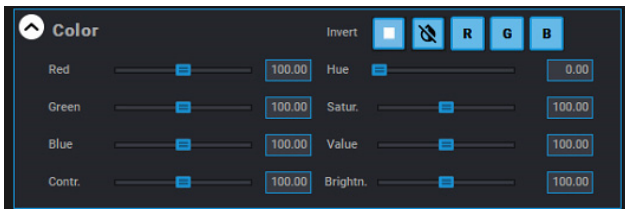
The slider next to it allows zooming in/out by specifying a Z (depth) offset. The three rotaries on the right side specify 3 rotation angles in the 3D space. Note that next to each rotary is a switch that allows the rotary to act either as an absolute angle setting or as a rotation speed.

## Output



The output panel let you select the outputs on which you want to display the layer. From here, you can also open the “Output management” dialog.

## Color



The color panel let you modify the hue, saturation, lightness, and color of the layer. These settings are extremely useful for color correction.

Hue is like a color wheel that you hold before your visual.

Saturation let you select how saturated you want your layer to be.

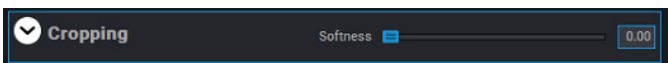
Invert lets you reverse all the colors of the layer or a specific Red, Green, or Blue color.

Lightness brings some more light into the layer without affecting the black values.

Red, Green, and Blue let you modify the red, green and blue values.

Brightness and Contrast can be adapted for each layer separately.

## Cropping



The cropping panel let you crop the layer so you can show exactly what you want. You can even select the softness of the edges. This is very useful when working with live camera input.

## Sound



The sound panel let you select the volume and pan for each layer.

## Media Types

### Video

MediaMaster can playback a large number of video files through its native decoder, which is based on FFMPEG and the new ArKaos Saga video codec. The compression codec that we have found to give the best overall performances is MPEG-2.

This said, the software has been designed to make best use of your computer system and therefore should be able to play files encoded with most of the video codecs you have installed on your system. However, by using a codec that is not native to MediaMaster you will increase the drain on your system resources and therefore you may encounter performance issues depending on your hardware profile.

With a MultiCore CPU, MediaMaster will use all CPU's when necessary, so the basic rule if you intend to play high-definition content would be to have a system with at least the same number of cores as the number of high-definition layers you want to play.

**Note:** The compression codec, file size and type can have an effect on the reliability and quality of playback depending on your hardware configuration and show type. For example, a show which uses 8 layers of HD video simultaneously will require much more processing power than one using low resolution video or stills to drive LED pixel mapping.

### SAGA Video Codec

The SAGA proprietary codec supports key frames, alpha channel, HDR, and audio. SAGA is the most optimal video format to be used with MediaMaster6.

SAGA exists in these 4 profiles:

- Fast (.sagaF)

This profile is optimized for the fastest decompression with a color profile of 8 bits 4:4:0. This gives the best decoding performance even on a low spec computer, using the lowest disk space. Audio and alpha channels are available.

- Balanced (.sagaB)

This is a balanced version of the codec using medium disk space with a color profile of 8 bits 4:4:4. Since it is not using chroma subsampling, this gives a great result with your color gradient. Audio and alpha channels are available.

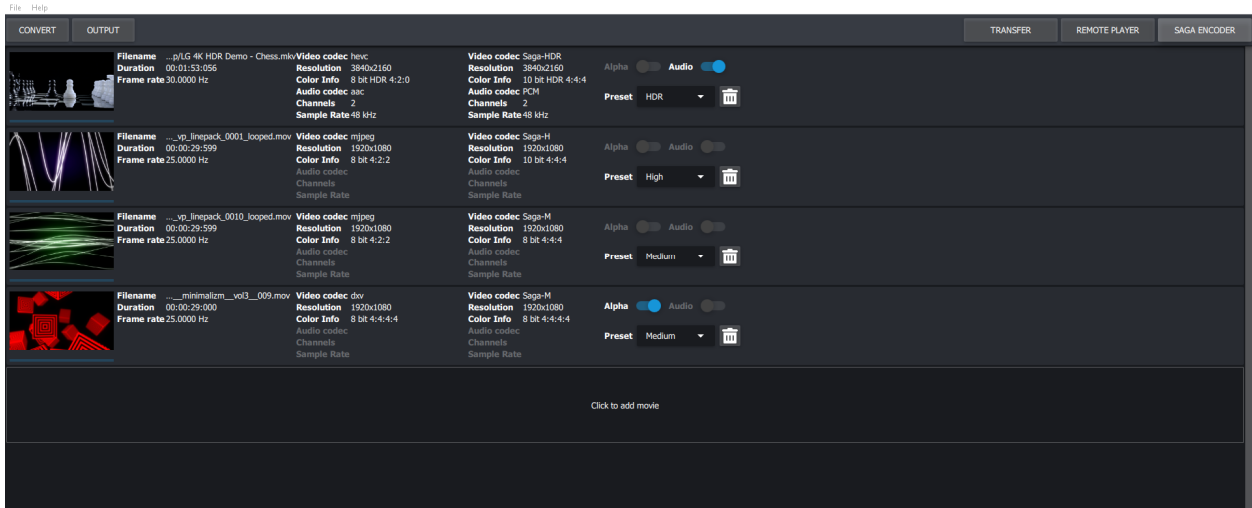
- Quality (.sagaQ)

This is the highest quality codec with a color profile of 10 bits 4:4:4. With its "lossless" capabilities, this is the best choice when quality matters. Audio and alpha channels are available.

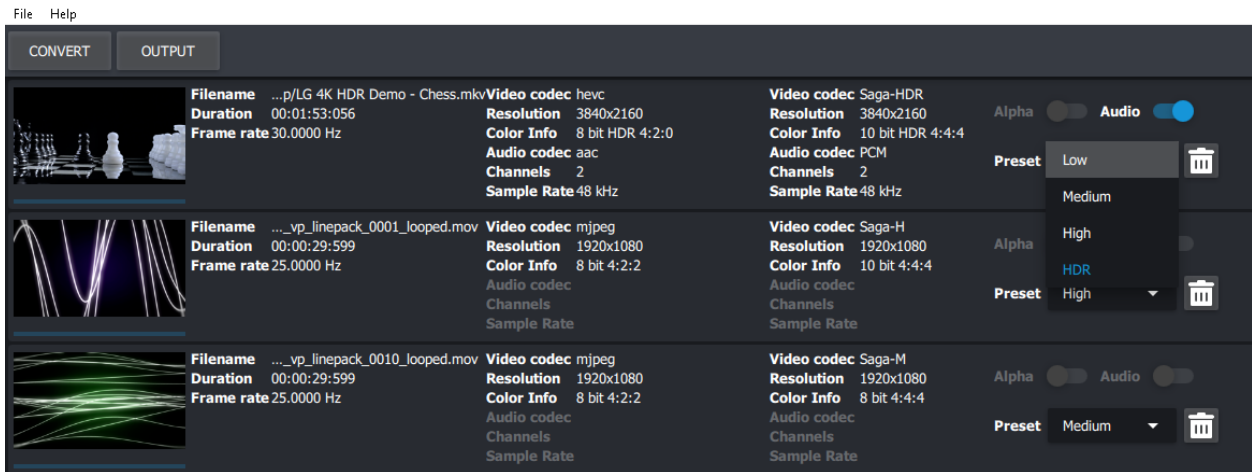
- HDR (.sagaH)

This profile is based on the Quality profile and is the highest codec to select for all your HDR applications and a color profile of 10 bits 4:4:4. Audio and alpha channels are available.

MediaMaster 6 offers a built-in SAGA converter. The Saga converter can be found in the Arkaos HUB. The Hub can be used on any computer and does not require a license.



Open the Hub and select the SAGA encoder. You can click to add clips or by drag and dropping one or multiple files directly in the main interface to encode them. The encoder will automatically select the best profile for your movie, but you can also select another profile if needed. You can also remove the alpha or audio for each clip.



Click on the **Output** button to select the output destination for the converted clips. Start the conversion by clicking the **Convert** button. The Resolution and Sample Rate are kept identical as the source file. Once the conversion is finished, you can copy the visuals to the MediaMaster library using the usual methods, via the HUB file transfer or locally on the server through the library management.

**Note:** The Saga encoder can work in the background while you are using the Remote Player or transferring files to servers.

## Alpha Source Support



If you import images or videos with an alpha channel (for example as a result of green keying), the transparency of the media will be used in the mixing.

When setting the preview style to “Full” (see the [Performances Tab](#) section for more info) you will see the transparent areas in the layer preview, no matter if it comes from the original media or from applying luminance / chrominance inside the software.

## Images

MediaMaster will accept the following file types into the library for still images:

JPG, BMP, GIF and PNG

You can import images that are bigger than the output resolution but for performance reason you images should never be bigger than the output resolution used. When using specific effects, you may need to import images that are bigger than the resolution used in MediaMaster.

## Audio

When an audio loops has a video track it will be played. For performance reason you may not want to play the audio, this can be done by going in the preferences in the Audio tab; there you can select the output devices and set it to “No Audio”.

The best synchronization between audio and video is achieved by selecting “System Clock” in the Display preference panel under “Timing Reference”.

## Generators

Those are music visualizers that react to the sound of the audio input of your system. Some generators are GPU accelerated effects while others are SWF Flash files. You can create custom generators with Flash, the ArKaos PRO Blog has tutorial articles to get you started.

## Effects

Under macOS, MediaMaster allows to use Quartz Composer .qtz files directly, both as sources and effects. The compositions are rendered natively through the fastest available interface.

You can import .qtz files as sources simply by adding them to your media library, just like you import any standard movie.

Adding Quartz compositions as effects is a little bit trickier because it involves modifying the default fixture to be able to control your effects. It is however possible to achieve this and if you would like to go that way, please contact us and we'll help you.

## Cameras / External Sources

MediaMaster will accept as source any live input that is connected to your computer, as long as it is natively recognized by your system (i.e. without the need to install proprietary drivers or software). Your acquisition device must be compatible with QuickTime under macOS and Direct X under Windows.

# Libraries

The following settings and preferences are accessed from the “Edit” menu at the top of the software window in Windows OS or on the application menu bar at the top of the screen in macOS.

## Library Management

### Overview and Library Concept

MediaMaster uses a library system of folders and files to help organize your content and allow for quick selection of media as required. The Library is made up of 256 folders, each of which can contain up to 256 media clips or visual effects.

No matter what library folder you are in, the visual number 0 is blank – meaning that if you select 0 then no visual is displayed.

#### Root Folder

At first launch, MediaMaster will ask you to define the root folder for you media library. When you do that, MediaMaster will automatically generate a series of specific folders for pre-installed media content and effects.

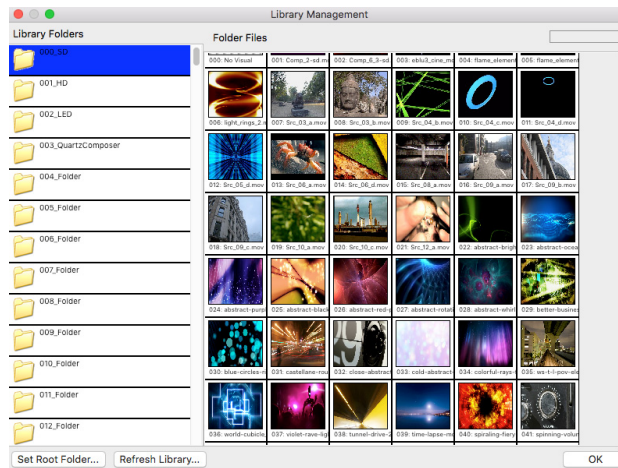
#### Media Folders and Naming Conventions

Within this root folder each media folder needs to be named with a three-digit number (001 – 255) followed by an underscore and then the name of the folder. You can name the folder as you wish but spaces are not allowed. For example, if you wanted folder 1 to be called assorted clouds the naming convention would be “001\_assorted\_clouds”.

**Note:** If the name of the folder or files doesn't match this format then it will simply be ignored by MediaMaster.

You can also change the name of the folder within the Library Management window by right clicking on the folder and selecting “Rename...” from the pop-up menu.

#### Library Window



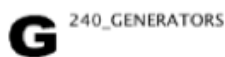
The left pane of the window shows the 256 library folders with the selected folder highlighted in blue. You can scroll through the list and select any of the folders by clicking on its icon. HDR content will be seen with an HDR label.

The right pane displays the thumbnails of the visuals contained within the selected folder. There are 255 visuals per folder (the first one is always considered as an empty slot) and where content doesn't exist then the thumbnail will display “empty”. You can scroll through the content using the scroll bar on the right side of the window. If you put the mouse pointer over an existing visual, you will see its full filename as well as its resolution. All regular content folders are indicated by a folder icon, and display the library number as well as its name.





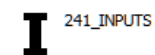
You can add, remove, and duplicate your content inside those folders as you wish either using the computers own filing system or through the library management window in MediaMaster.



The default libraries that are used for specific purposes are at the top end of the library structure (folders 240 onwards) and have different icons relating to their content and purpose.

Folder 240 is reserved for Generators. Generators are modules that react to the audio input to generate visuals in much the same way as the visualizer is employed in iTunes or Windows Media Player.

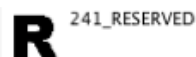
These generators are pixel / particle based and can be great for integration with a live DJ or music set. The sound input from your computer is used to feed these – be it microphone (default) or line input and this is selected in the main software preferences.



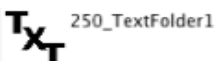
Folder 241 is a virtual folder (in the sense that it doesn't refer to anything on the file system) that will list the first four Syphon, Spout, or NDI inputs available.



Folder 242 is reserved for Audio Reactive Flash animations. These are Flash animations that reacts to the audio input (with ActionScript) in the same way as the pixel / particle generators in folder 240 but with flash (vector) graphics. You can load your own flash generators into this folder in addition to the supplied files.

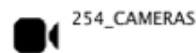


Folders 243 to 248 are reserved for future development and cannot be used. This is to make sure that future developments will not clash with existing customer configurations.



Folders from 249 to 253 are reserved for Flash Text animations in which you can dynamically change the text string. Selection of the text string is based on the pre-defined text you create in the text library.

The default library contains a good set of example files, the folder 250 provides improved Flash Text animations where the text area is adjusted depending on the string length while the folder 251 provides lots of useful text animations. Folder 249 is specialized for subtitles or lyrics display.



This library is a virtual folder (in the sense that it doesn't refer to anything on the file system) that will list all available video inputs found on the machine when the software loads.

Video input is seen here in a very broad sense; it can be an acquisition board, a USB web cam, a FireWire cam or any other video inputs seen be the system.

**Note:** The number of live video inputs is limited only by your computer system, so by using multiple USB video inputs such as webcams you can arrange a large number of video feeds all of which can be triggered or mixed within the software.

The live video input can also use the same effects processing as the standard media files.



The last library is the 'mask' library. Its content is used to provide the master output mask as described earlier in the 'master output area'. Masks are more likely to be black and white images as they are multiplied with the image resulting of the composition of all layers. With that respect, the mask acts as a transparency film where a white is fully transparent, and a black pixel is fully opaque.

## Building Your Libraries

Managing the content is fairly easy. You can add, remove, and rename medias directly with the user interface.

In order to try and achieve the fastest playback and quickest response, MediaMaster preloads all the media content contained within the library at startup until it reaches available memory (RAM) limit. At this point, it starts unloading movies. Starting a movie that has been unloaded (to free memory) will take a little more time depending on the movie format (check recommended movie formats in the [Movie Compression](#) section).

If you need to work on several shows, it is probably better to build several dedicated libraries rather than filling one with all the content. The application will start faster and there is less chance of movies being unloaded due to ram requirements.

If you are continually running large shows with a lot of media – especially if the media is high resolution, then ensuring you have the maximum amount of RAM installed in your computer will help the performance of the software.

## Adding Visuals to the Library

To add content to any of the folders in the library, you have several options:

A) Drag and drop files from the explorer/finder window on the library folder where you want them to be. By doing so, the files you drag and drop will be copied in the first empty slots available in the folder.

B) Drag and drop files to a specific slot in the folder content. This allows you to specifically set the starting slot of the file or to overwrite existing files. If you drop the files to an empty slot, the files will be set in all empty slots starting with the one where files were dropped. If you drop the file to a slot containing already a visual, you will be asked if you want to overwrite the existing file(s) or start at the first empty slot after the one you dropped the files on.

C) Right click on a slot and select 'Import/Replace Visual...' from the context menu to import a single file to a give location.

When you delete or overwrite files in the media library, the files will be physically **erased** from the hard drive. Make sure you always have a copy of your original files somewhere else. Also, if you drag files from the explorer to the media library, the files will be **copied** from their original location to the media library, preserving the original files.

## Removing Visuals from the Library

To delete content from the library, right-click/Cmd-click a slot with the visual you would like to delete and select 'Remove Visual...' from the context menu. *Again, be warned that removing the visual will physically erase it from the hard drive.*

## Moving Visuals in the Library

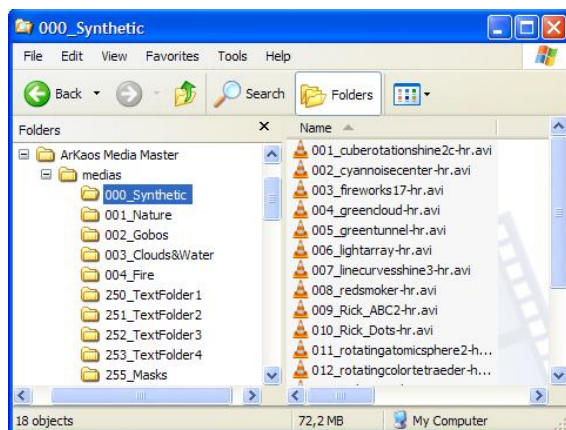
To move a visual inside the library, simply drag and drop it within the folder. To move the visual to another library folder, simply drag and drop it from its slot to one of the folders in the left pane. The visual will be assigned to the first free slot in the target folder.

## Renaming Folders

To rename a folder, simply right-click / CTRL + click the folder and select 'Rename...' from the context menu.

## File System

The library structure is reflected on the hard drive where all files for the library are stored. The whole library is contained within a special folder called the 'root folder'. If you look at the installation folders, you will see the default root folder called media.



Inside the root folder is a collection of folders each starting with a 3-digit number followed by an underscore and a name. Each folder following this convention represents a library folder (as seen in the left pane of the media management dialog) and the 3-digit number represents the id of the folder. Because of this, you can't have folders without the 3-digit number scheme. Neither is it possible to have two folders starting with the same three numbers (one of them will be ignored).

Inside each folder is the collection of media that the library folder holds. The media also follow the 3-digit conventions with the digits representing the visual number inside the library. Note that for visuals the digit starts at 001\_ since visual 0 is always considered as being empty.

If you wish, you can organize your libraries by modifying the files on your hard drive directly. However, the changes you do there are not updated automatically in the software while it's running. If you want the software to take into account changes done on the file system, go in the media management dialog and click on the 'refresh library' button at the bottom of the window.

## Changing the Root Folder

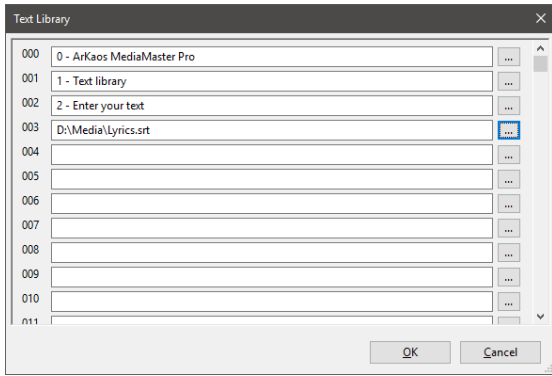
As seen earlier, MediaMaster loads all the visuals in the library at startup to ensure a smooth startup of medias when triggered. Because of that, and depending on the capacity of your hardware, having a huge library can have a very big impact on startup time and memory usage.

If you are doing several shows using MediaMaster, we recommend building several library structures so you don't hog the memory with files you won't need. To switch between different libraries, you simply need to specify a new 'root folder' using the button at the bottom of the media management dialog.

When specifying a new root folder, the current library content will be unloaded and the content in the new root folder will be loaded instead.

**Note:** For the library to be properly loaded, it is mandatory that the folders and files located under the root folder follow the 3 digits convention as explained in the previous paragraph. If you don't see a folder or file in the library, it is most likely you didn't follow the proper file naming.

## Text Library



The text library is a dialog used to enter text that can later be combined with special media files called ‘flash texts’. These medias are by default present in the library numbers 250 (improved animations), 251 (Theater animations) and 252 (audio reactive animations).

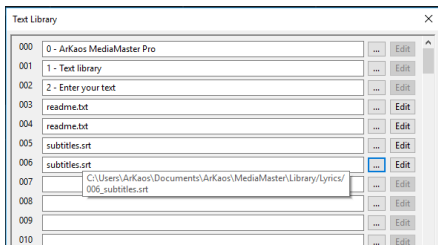
When selecting one of these media, you can use the text parameter of the layer to change the displayed text by one of the strings defined in the text library.

The content of the text library can be edited using a special dialog that can be recalled by selecting the menu Edit > Text management or, alternatively, by pressing CTRL+T / Cmd+T.

The dialog lists the 255 text entries of the library that can be edited by simply replacing the text item next to the item number.

When pressing ‘OK’ in the dialog, the text library will be updated and the new text item can be selected.

## Lyrics Player

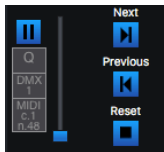


In MediaMaster, the text engine supports Lyrics. The 255 slots of the Text Library can specify a text, a .txt file or a .srt subtitle file with timing information.

You can select the files directly from the Text Library window, by clicking on the ‘...’ button:

Text or subtitle files get automatically imported in the library. The Edit button lets you open and edit the file in your default associated editor.

In Theater mode, when a text file or subtitle file is chosen, and when you select a text visual from folders 249 to 253, then you automatically get three buttons exposed on the right of the intensity slider, to respectively go to **Next** line, **Previous** line and to **Reset** to the first line of the file.



If some controllers were already mapped for the visual preset, then those will be maintained. But you can always select manually the lyrics controllers afterwards. Like any controller, those actions can be triggered via MIDI or DMX.

If you have a visual file and subtitles associated, you need to play the visual and the subtitles on two separate visual presets.

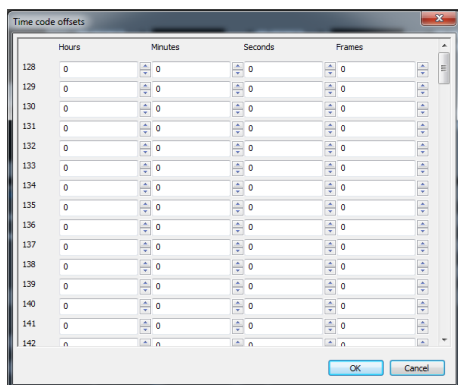
A set of specially designed Flash Text Animations are provided for subtitles and lyrics in folder 249 & 250 (visuals 4, 5, 17).

Subtitle files ‘.srt’ are standard for subtitles and they can easily be found on internet.

## Real-Time Reload

If texts or subtitle files get directly modified on disk, then texts will automatically be reloaded, and the new text will be displayed in MediaMaster.

## Timecode Offsets



The Timecode offsets is a dialog used to enter times that can later be used for offsetting Timecode driven videos.

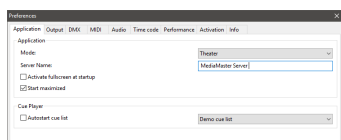
The content of the Timecode offsets can be edited using a special dialog that can be recalled by selecting the menu Edit > Timecode offsets or, alternatively, by pressing CTRL+O / Cmd+O.

Values 0 to 127 are mapped to offset -64 to 63. Values 128 to 255 are mapped to the Timecode offsets index.

## Preferences Dialog

The Preferences dialog is where you configure all the main user options in MediaMaster. It is organized with a series of header tabs and clicking on each of these will display the relevant information.

### Application Tab



The Application Tab contains some general settings for the application.

### Mode (MediaMaster Pro only)

This is where you can switch the software interface to either Theater Mode or Fixture Mode (see the section [Control Concepts](#) for more details), you will have to quit and restart the software for the changes to take effect.

### Server Name

This is a unique name you give to your instance of MediaMaster running, so that it can be recognized over a network.

### Activate Fullscreen at Startup

For most temporary or touring applications this is unlikely to be needed but for installations in venues where you want the system online as quickly as possible and the same output is being used every time, enabling this ensures that the output appears as soon as the software is loaded.

### Start Maximized

Starts MediaMaster in a maximized window taking the whole screen.

### Enable Crash Report Upload

Presents the option to upload any crash report to ArKaos servers.

### Autostart Cue List

Tells Cue Player to directly start playing the selected cue list after the software is loaded.

## MediaHub Server IP

Indicates explicitly the network IP to be used for the communication with the MediaHub.

MediaHub  
 MediaHub Server IP ALL ▾

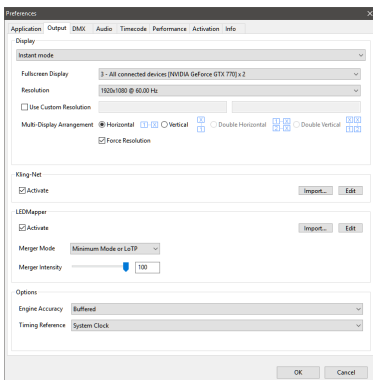
## Output Tab

The Output tab contains the settings related to the software's outputs, which can be Display outputs, LEDMapper output and Kling-Net output.

In the Display panel, you can choose between two different modes:

- Using the 'Instant mode', you can directly output visuals full screen to a set of similar displays using a single resolution for all. MediaMaster considers this set as a single output.
- In the 'VideoMapper mode', you will define a set of surfaces on the different displays that are connected to your computer using the VideoMapper application. In this mode, each display can have its own resolution, and each surface created on a display is considered as a separate output by MediaMaster, meaning that each surface can display a different set of visuals.

## Instant Mode



The Display panel contains the setup related to the full screen or output mode of the software. As previously stated MediaMaster is designed to be used with at least a two-display set-up where displays starting from the 2<sup>nd</sup> carry the full screen output from the software.

As such the first video output is used to display the main interface containing all the previews and parameters while the second video output is used to send the full screen image to a projection hardware.

This dialog is used to specify the characteristics of the adapter used for the full screen.

## Full-Screen Display

This specifies on which adapter the full screen will be displayed. Normally the select box should contain at least two entries. If it does not, it means the system doesn't think you have two-output setup. To correct this, go into the system properties and make sure the display settings are such as you have two displays recognized by the system. Make also sure your displays are setup to provide dual-mode and not cloning. For more discussions on screen setup, see the section [Widescreen & Multiscreen Presentation](#).

## Resolution

This setting specifies the resolution at which the graphical engine should run. The lower it is, the faster the engine can go and the better the frame rate gets but the lower the quality of the result is. The list of resolutions shown in the drop-down menu is dependent on the output device – for example if you are connected to a projector with a maximum resolution of 1024x768 pixels then this will be the maximum you can configure in this box.

Use Custom Resolution: use this option if you want to specify manually the internal engine speed to a resolution that is not a display resolution. In the case this option is selected, the 'Force Resolution' option will automatically be disabled.

Force Resolution: if this option is enabled (default) the software will resize the display output to the engine resolution when going to full screen. Unless specific case, it is often better and more efficient to leave it on.

- When "Force Resolution" is checked, the output will be displayed full screen. This mode guaranties the best performances and screen synchronization.
- When "Force Resolution" is unchecked, the output will be displayed within a top-left aligned window.

## Multi-Display Arrangement (Windows Only)

It is possible to display the output of MediaMaster across all the displays connected to a graphic card without using the "spanning" feature that is only available under windows XP.

It can be used to avoid going through Matrox DualHead2Go or TrippleHead2Go interfaces if your video card has 2, 3 or more outputs.

This feature is available under Windows XP, Vista, and Seven.

The "Resolution" pop-up menu now proposes multiple-display setups (i.e. "1024x768x2" for a 2048x768 horizontal setup or 1024x1536 vertical setup) in addition to the standard single-display resolutions.

The "Multi-Display Arrangement" is there for you to choose the way you want to arrange your monitors. MediaMaster uses this information in combination with the actual Windows display arrangement to determine a correct output.

**Note:** Under macOS it is also possible to span the output of MediaMaster over several displays by simply select the display on the top-left and use a custom resolution that will cover the multi-screen setup area.

## HDR Output (Windows 10 Only)

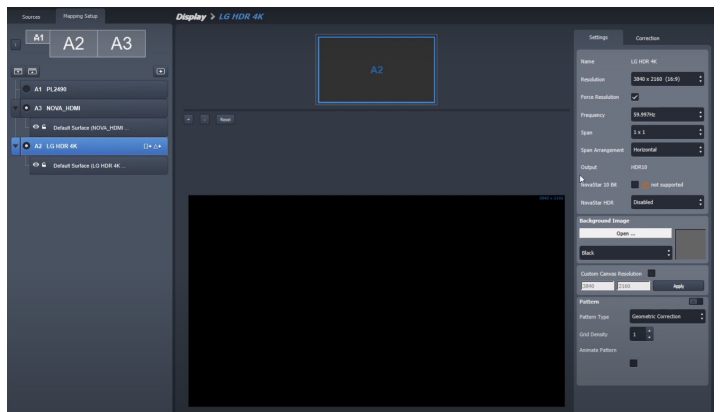
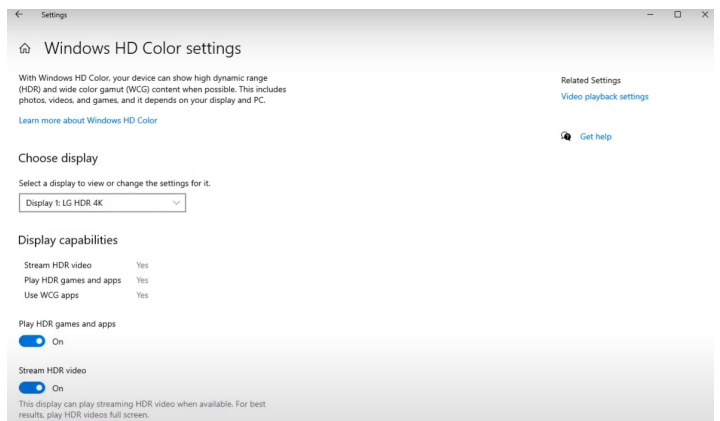
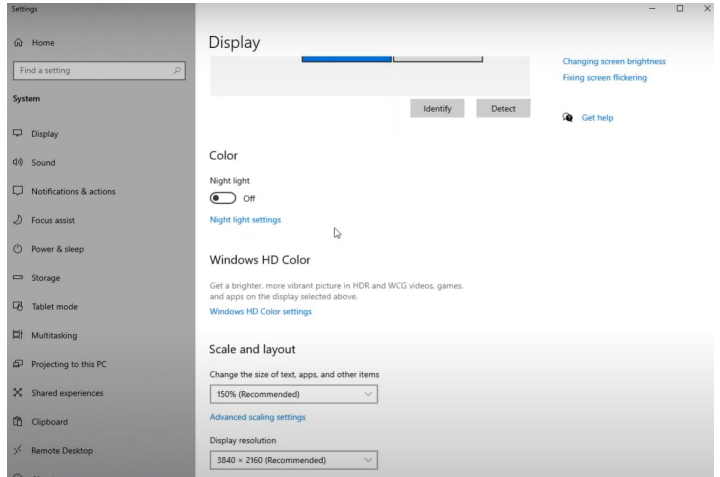
In order to use HDR, you will need to have a full chain, which is comprised of having a graphic card which is compatible with HDR, HDR-compatible player, HDR-encoded content, and an HDR-compatible display screen.

**Note:** In order to use HDR output, an HDR-supported AMD or Nvidia GPU needs to be used.

1. Check to ensure that your HDR display is recognized by your HDR graphics card. Windows HD Color will appear if your display screen is compatible with HDR.
2. In the Windows HD Color settings, select your HDR compatible screen. The Display capabilities will show whether streaming of HDR video is supported. Make sure to have the Stream HDR video option enabled.
3. Open the MediaMaster software. In the status display, the HDR LED will be lit to confirm you have an HDR chain setup.
4. In VideoMapper, you can also confirm that your output is in HDR.

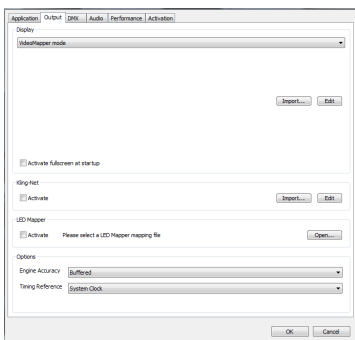
**Note:** If you are using a NovaStar MCRT4K monitor, the Windows Display settings may not immediately recognize it. You can force enable NovaStar HDR in the VideoMapper display settings and select the type of HDR you will be using, HDR10 or HLG. Note that the NovaStar MCRT4K monitor only supports HDR when using an HDMI 2.0 connection.

5. In MediaMaster's Library Management folder window, click on a folder with the HDR label applied to select from your HDR labeled content.





## VideoMapper Mode (MediaMaster Pro)



In VideoMapper mode, the configuration of the displays is done in the external VideoMapper application.

Clicking on the "Import..." button will let you choose a VideoMapper file that you have previously created in the VideoMapper application.

Clicking on the "Edit" button open the selected mapping file in the VideoMapper so you can edit it.

**Note:** NovaStar SmartLCT mapping files can now be directly imported into the VideoMapper to create surfaces. Once the setup of the video wall is completed in SmartLCT, the information can be imported into MediaMaster 6's VideoMapper, saving precious time during show prep and programming intervals when time is short and pressured.

### Importing a NovaStar SmartLCT mapping file into VideoMapper

1. Start your NovaStar Smart LCT software.
2. Open your Nova Star mapping file and save it as a .srcx file type.
3. Open VideoMapper and go to File > Import Smart LCT Project to import your .srcx file.
4. The Import dialog box will ask you to select what **Output** is mapped to which **Screen**.
5. Under the Nova\_HDMI Output, select your display screen.

### Hide Mouse Cursor in Fullscreen (Mac Only)

With this box selected the mouse will not be visible in full screen mode. This can be useful when you use the system entirely by external DMX or MIDI control but if you want to be able to edit in the main software window during a live show then you should leave it unchecked.

### Kling-Net

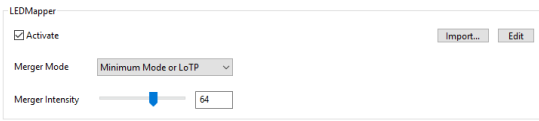
The Kling-Net panel allows you to activate the Kling-Net output module of the software.

**Activate:** When enabled, it triggers the Kling-Net output module of the software. When activated, the video engine will be restarted, and the Kling-Net broadcast will be started.

Clicking on the "Import..." button will let you choose a Kling-Net mapping file you have previously created in the Kling-Net Mapper application. Clicking on the "Edit" button will launch the Kling-Net Mapper application and open the selected mapping file so you can edit it.

## LEDMapper

The LEDMapper panel allows you to activate the LEDMapper output module of the software.



**Activate:** When activated, the video engine will be restarted and the LEDMapper will start sending DMX frames.

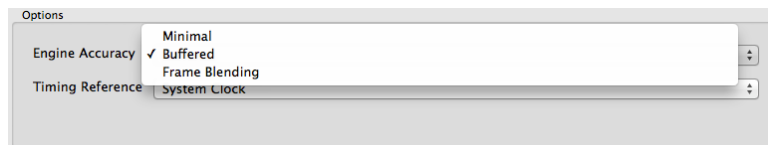
**Merger Mode:** Indicates in which mode the DMX Merger should operate. This is either a blending mode for the merger or the LEDMapper can be totally muted.

**Merger Intensity:** Indicates a percentage of the output of the LEDMapper that should be sent out. A value of 0% would mean that the Art-Net Input received by the DMX Merger will be output. A value of 100% means that the result of the Merger is fully output. Any intermediate value allows a smooth transition between the output of a lighting console and the output of the Merger.

The "Import..." button opens a file browser so that a mapping file can directly be loaded without the need to open the LEDMapper application. Clicking on the "Edit" button will launch the LEDMapper and open the active mapping file for editing.

## Engine Accuracy

There are three settings for the engine accuracy as shown below.



- **Minimal** is more suited for less powerful hardware.
- **Buffered** is the default mode and ensures frame pre-buffering to achieve display synchronization.
- **Frame Blending:** activates the Frame Blending.

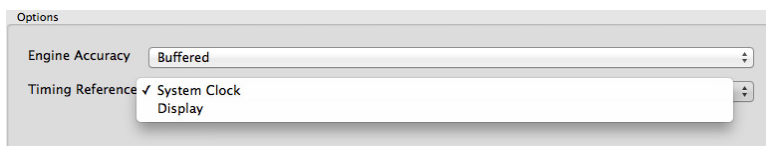
**Note:** *Frame Blending* is a technique that allows the engine to interpolate between movie frames whenever it needs to. It's very useful when slowing down videos a lot, since instead of producing a steppy frame display, the engine will continuously mix from one frame to the other making the transition a lot smoother. It's also useful when you display movies that have a frame rate that is not 'coherent' with your output display.

For example, when using a 60 hz display output, you should ideally use only 60/30 fps movies to avoid desynchronisation between the movie frame and when the monitor can display frames. MediaMaster won't prevent you to play a 25 fps movie, but you might end up with some jitter in the display. Activating Frame Blending will dramatically improve the output quality of the movie in this scenario.

## Timing Reference

In order to get the smoothest display possible, MediaMaster defaults to using the main display output as timing reference. This ensures that frames are delivered in timely fashion, synchronized to the display's vertical blank.

However, the timing of graphic cards is not always truly accurate: they might advertise 60Hz while actually running slightly over/under that frequency. In most cases this is not really an issue but if you need the movie playback to be perfectly in time (if you synchronize it with some external audio for example, or use movies with audio) you need to be able to use the more accurate time reference of the System clock instead. The selection of the time reference is done through the Combo box under the engine accuracy:



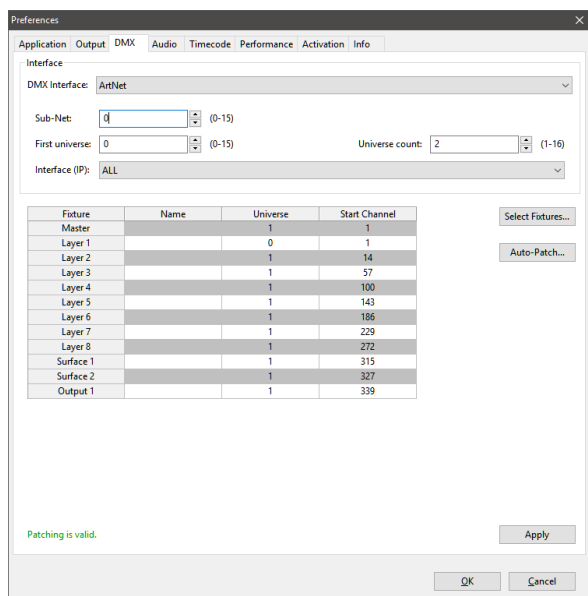
Choose "Display" for a smoother image when exact timing isn't mandatory or "System Clock" when the video playback speed is critical.

**Note:** Display Time Reference privileges video smoothness over audio / video synchronization.

For the audio and video to properly synchronize, it is very important that the timing reference (in display preferences) is set to "System clock" as the inaccurate display frequency reported by the system might cause the audio to drift.

## DMX Tab

The DMX tab gives all the information to patch and control MediaMaster by DMX. It allows patching master, layers, surfaces and output fixtures on several DMX universes.



**Note:** The DMX tab allows you to define the incoming DMX type – over Art-Net or USB – and the universe that you want MediaMaster to respond to.

In Theater mode, the DMX channels that the software will respond to are defined in the Control Bindings dialog that can be accessed from the "Controls..." button in the main software window.

## DMX Interface

Select which interface you would like to use for communicating with your console. MediaMaster supports Art-Net, MA-Net and ENTTEC device for DMX over USB. The later one will only be displayed if it is properly detected by the system. If you have one and don't see it listed, refer to the section [Setting up DMX Control](#).

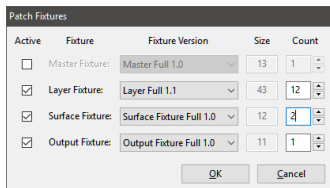
If you use the Art-Net protocol, you have to select the subnet and universe you want MediaMaster to be listening to.

The IP address of the computer is also shown for reference. If you need to change the IP address to suit the range of your Art-Net installation, you have to do it from the Control Panel in Windows or the System preferences in macOS.

"Universe Count" represents the universes range you want to use for MediaMaster.

For example: with Universe set to 0 and Universe Count set to 3, you can use universe 0 for the first 8 Layer fixtures, universe 1 for the 4 remaining Layer fixtures and finally universe 2 for the Master fixture.

## Select Fixtures (Fixture Mode Only)



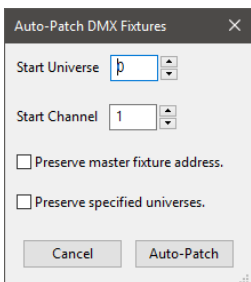
The first step to control MediaMaster through DMX is to select which fixtures should be exposed and patched in the DMX universes.

You can optionally select a Master fixture and one or more Layer fixtures, Surface fixtures and Output fixtures. For each of those fixtures, you select the version of the fixture to be used and the number of fixtures of this kind to be patched.

When you press Ok, the grid for patching automatically adjust to show one raw for each fixture to patch.

A status line indicates if the patching is valid or the first error found in the patching.

## Auto-Patch (Fixture Mode Only)



To make the patching process easier, an auto-patch tool is provided:

Start Universe and Channel specify starting from where fixtures can be patch.

Preserve Master Fixture address indicates that the Master Fixture location should be preserved, and Layer fixture patching won't overlap with this reserved range of channels.

Preserve specified universes indicates that the auto-patching should respect the first column specify in which universe each fixture should be located.

To illustrate how to setup the default MediaMaster 4.x patching please set:

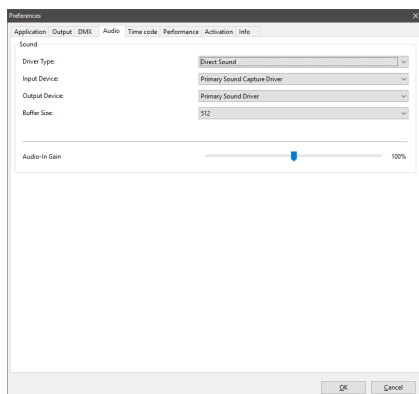
- 1 Master fixture as "Master Full 1.0", Active, Universe 0 and Start Channel 450.
- 12 Layers "Layer Full 1.1", Active.
- Deactivate Surface and Output fixtures.
- Set the 8 first layers to Universe 0. Ignore the Start Channel.
- Set the last four layers to Universe 1. Ignore the Start Channel.
- Click on "Auto-Patch..." button.
- Set Start Universe to 0, Start Channel to 1, Preserve master fixture address and Preserve specified universes.
- Click Auto-Patch button and then Apply.

## MIDI Tab (Theater Mode Only)

The MIDI tab allows you to select which MIDI devices will be enabled for use with the application.

**Note:** All data from enabled MIDI devices are merged, so it doesn't matter from which interface it comes, a "Note On" message on channel 1 will have the same effect.

## Audio Tab



The Audio tab allows you to configure how audio is implemented in the software when media clips with audio are used.

The master output volume of MediaMaster can be controlled from the Master control panel on the main software window.

The Audio-In Gain changes the amplifying gain of your audio input. This is important for instance to make sure your timecode signal has a correct amplitude or to adjust the input of audio-reactive visual generators. An Audio-In volume gauge in the Master control panel lets you control the amplitude of the Audio-In signal.

## Driver Type

This where MediaMaster detects your system's audio and let you select which sound card you wish to use.

## Input Device

MediaMaster will use the sound from the selected input device to feed audio-reactive Flash animations or Pixel Generators. The default Input Device is usually the on-board microphone of the system. When working in high volume environments you might want to configure it to a line-in feed – for example the audio feed from a DJ or if you wish to be even more specific even a single instrument such as a bass drum when working with live musicians.

You can set the audio input to No Audio to deactivate it.

## Output Device

Select the audio output device where MediaMaster will send the sound from any clip you play that has an audio track.

You can set the audio output to No Audio to deactivate it. You can also find a global volume control for output on the master section of the main software window, and this can be set to zero also.

## Buffer Size

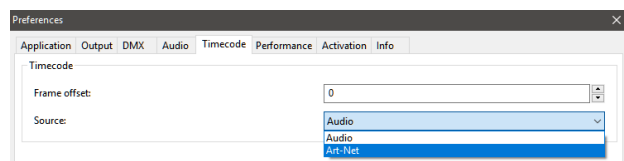
Here you can define the size of the audio buffer in Kilobytes (K). The default setting is 1024k (or 1 megabyte) but this can be reduced to 256k or increased to 2048k as required. Bigger values will lead to more stable output but may cause latency with the video playback. This parameter is ignored with Windows Core Audio API.

## Hardware Setup (Windows Only)

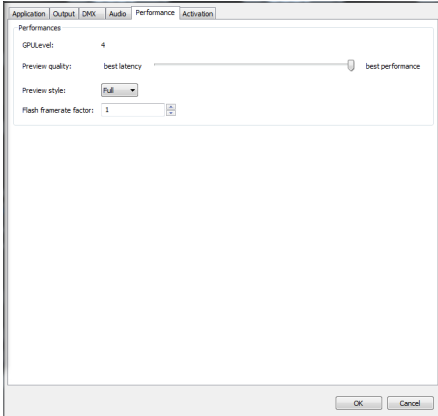
This recalls the ASIO control panel for configuration under Windows OS.

## Timecode Tab

The Timecode tab allows to select the source of the timecode signal and specify a timecode offset in frames. Both Audio and Art-Net sources are supported for timecode.



## Performances Tab



The Performances tab shows various settings allowing you to fine tune the performance of the software with respect to your hardware set-up.

The first field shows the GPU level of the machine as assessed by the MediaMaster software. This is an indication of the power of your graphic card and ranges between 0 and 5. If your level is anywhere below 3, you might have some features and effects that are disabled as the graphic card doesn't support all of the software's features.

Although MediaMaster will run on machine with a GPU level of 0, we strongly recommend the use of a graphic card that provides at least a rating of 3 on this scale.

## Preview Quality

This slider defines the quality of the master preview shown in the main software window. Lowering the master preview quality will speed up the processing and may increase the quality of the full screen output but will result in a pixelated preview.

If you set the preview quality to zero (all the way to the left) the master preview will be turned off.

## Preview Style

This setting control the way layer previews are shown. Displaying layer preview involves quite a bit of processing and the style of the preview used can influence greatly the average frame rate of the software.

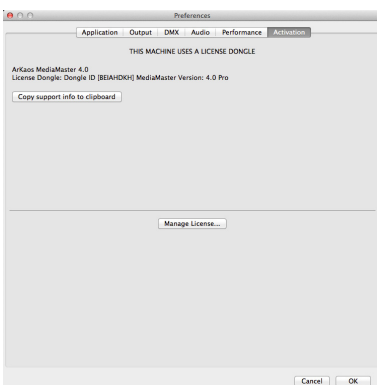
- **Media:** Media preview only displays the current frame of the visual playing.
- **Full:** Full preview displays both the visual and the effect applied on it.

## Flash Frame Rate Factor

Generating Flash effects is a CPU intensive process. If you have a weak CPU then this setting allows you to divide the frame rate of generating flash content by a preset factor.

If you set the rate factor to 2 the software will render one flash frame for every two frames of output. This can lower CPU usage but at the cost of losing fluidity of the flash effect generated. However, in this scenario changing the rate factor may help to achieve a constant frame rate on the software.

## Activation Tab



The activation tab displays your license information and a button to copy support information to the clipboard. This support information contains the version of MediaMaster you are using, your Machine ID code and how the software is activated.

The Machine ID is generated by the software and can't be changed; it is displayed only for information purpose (you will need this information to obtain your serial number from the ArKaos website or if you wish to contact ArKaos support about your license).

If you have activated your machine without a license dongle the deactivate option will be available.

## Application Menus

### File

The “File” menu is only available on a PC. It lets you access to the Preferences dialog and Quit the software. On a Mac, those menus are located in the “MediaMaster” menu.

**Note:** To prevent any accidental exit, you can't exit the software when running in full screen mode.

### Edit

#### Resync to DMX

As we've seen earlier, even when you slave the server to the DMX console, you can still use the user interface to modify parameters of layers or the master controls. If you do so, the parameter will keep the modified value until this particular parameter is modified from the DMX (i.e. the DMX channel value for that parameter changes). If you wish all parameters to be re-synchronized automatically to the current DMX values, select this entry.

- **Library Management:** Brings the media library dialog as discussed in the ‘Media Management’ section earlier in this document.
- **Text Management:** Brings the text library dialog as discussed in the ‘Text Library’ section earlier in this document.
- **Timecode Offsets:** Opens a dialog to edit a set of predefined timecode offsets.
- **Output Management:** Brings the Output dialog as discussed in the ‘Output Management’ section earlier in this document.
- **Control Bindings (Theater mode only):** Brings the Control Bindings dialog to set MIDI, DMX and Keyboard bindings.
- **VideoMapper:** Opens the VideoMapper application.
- **LEDMapper:** Opens the LEDMapper application.
- **Kling-Net Mapper:** Opens the Kling-Net Mapper application.
- **MediaHUB:** Opens the MediaHUB application.
- **Cue Player (Theater mode only):** Toggle the Cue Player panel visible or invisible.
- **Release Patch (Theater mode only)**
- **Release All (Theater mode only)**
- **Clear Patch (Theater mode only)**
- **Clear Show (Theater mode only)**

### Display

#### Toggle Fullscreen

This turns on or off the full screen display output. If no external display is connected, then the full screen display will be shown on the primary display – replacing the main software window.

### Help

- **Documentation:** Opens the PDF version of this document.
- **Release Notes:** Opens the Release Notes for the current software version.
- **Export Diagnostic Reports:** Zip all files that are important for ArKaos support to diagnostic an error or a crash.
- **Manage License:** Opens the software activation wizard.
- **ArKaos Website:** Opens your default Web browser on the ArKaos Home page.
- **About:** Opens the ‘About’ dialog.

## Wide-Screen & Multi-Screen Presentation

### Introduction

For the most common of MediaMaster setups, a computer with two video outputs is generally used: one output for the desktop monitor (to display the interface and control the software) and another output which receives the result of the visual mix. That second output is generally connected to a video projector, a large screen or a hardware video mixer.

**Note:** It is important to not that for this set-up to be effective your computer must be able to drive two independent graphics output and “mirroring” needs to be turned off in your display preferences.



In this case, you will be using the single second output to send your final mix and, after having defined the adapter to use and its resolution, you are ready to go.

MediaMaster, however, offers custom output resolution possibilities. This allows creating multi-screen or wide screen setups controlled through a single computer running MediaMaster. In this chapter, we'll investigate those specific setups.

Wide screen or multi-screen setups require to output in a high resolution and therefore a recent / powerful graphic card is necessary; a setup including 2 screens each in 1024x768 will require MediaMaster to output in 2048x768, which will use a lot of CPU and GPU resources.

### Definitions

#### Wide Screen

A wide screen setup consists of one large visual mix spanning across several screens placed next to the other.

This is achieved by generating a single MediaMaster projection in a large resolution, which spans across several video adapters.

If you plan to use projectors as outputs devices, you can use the Soft-Edge option to seamless edge blending between the two projectors.





## Multi-Screen

The multi-screen setup is the same concept as the wide screen in the sense that it drives several adapters, but in this case, you end with different visual mixes displayed on each output.



The way it works is that you use the position capabilities of MediaMaster to assign layers to part of the screen, which is divided across the various adapters.

## Setup Examples

In order to explain the different steps to setup MediaMaster to produce a wide screen or multi-screen projection with several displays, let's examine some common hardware configurations.

### Example 1: Dual Head Graphic Card

If you only have a dual head graphic card and would like to achieve multiple outputs, you will need to use both adapters and, since you have no more monitor available left, you will lose the display the interface. If you programmed your show in your DMX console and don't need visual feedback from the program, this is an option.

### Example 2: Dual Head Graphic Card + Single Head Graphic Card

Adding a supplementary graphic card to the setup described above will allow you to use it with your desktop monitor in order to display the MediaMaster interface and control the software while you use the dual head graphic card and its two outputs for the wide screen or multi-screen.

**Note:** At this stage, this option is only available on PC. The Mac version does not support accessing more than one graphic adapter.

### Example 3: Dual Head Graphic Card + Additional Hardware

Using an external hardware such as the Matrox DualHead2Go, TripleHead2Go or Datapath x4 allows splitting one video output into two, three or four separate signals. (These adaptors are small external devices, which are USB powered and have a single DVI or VGA input and 2 or 3 outputs on DVI or VGA)

This system allows computers with a dual head graphic card to use one of the graphic card output for the software interface and its second output to send the visuals that will be split across two or three different screens. This very affordable solution will also fit perfectly with most modern laptops.

The Matrox Dual or Triple Cards do not provide additional graphics processing so the graphics card in the system needs to be capable of dealing with the larger screen resolutions offered with this solution.

Other possible combinations:

- Dual head graphic card with each output split in two with a DualHead2Go; you would have a 4 screens setup.
- Using the Matrox TripleHead2Go multi-display upgrade allows you to split a single display adapter across 3 different screens. This can lead to up to 6 screens if you are using a dedicated two-heads display adapter for the output (PC only).

MediaMaster 6 now supports the Brompton Tessera SX40 and Tessera S8 4K LED video processors (Windows only).

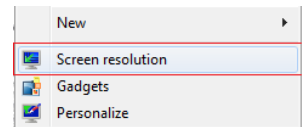
### Wide-Screen Or Multi-Screen Projection – Setup

Earlier in this document, we’ve seen how to choose and setup a second monitor to display the MediaMaster visual mix. To do wide screen or multi-screen, the principle is the same in the sense that MediaMaster will continue to output one large visual mix, but the visual is going to span across the multiple heads of an adapter.

The way to execute the span across adapters is very different for Mac and PC’s so we’ll examine them separately.

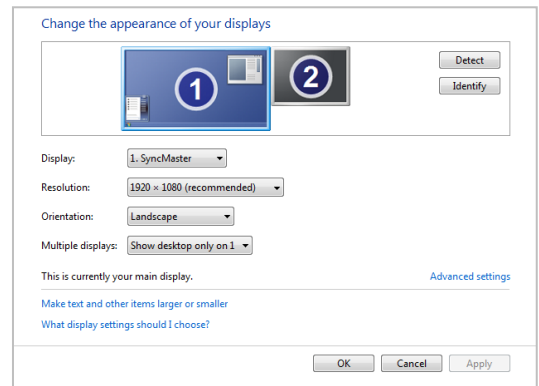
### Monitor Setup Under Windows

1. Right click on your desktop and select “Screen resolution” in the contextual menu.



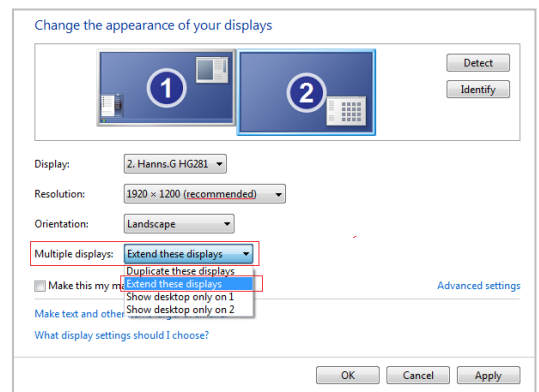
A window will open with the following options:

Make sure that there are at least 2 screens displayed under “Change the appearance of your display”. If not, click the “Detect” button. If you still don’t see 2 screens, then windows doesn’t detect the second monitor connected to your computer.



2. Now click on the drop-down menu next to “Multiple displays”. Then select “Extend these displays”. The second screen gets activated and now you can select the resolution for the screen. For the best image quality and correct aspect-ratio, always select the native resolution of the screen.

**Note:** Windows 7 doesn’t allow one to make a horizontal or vertical span like explained here. The maximum number of screens that can be controlled at the same time in Windows 7 is: one for the GUI and three for the output, through a Matrox TripleHead2Go.



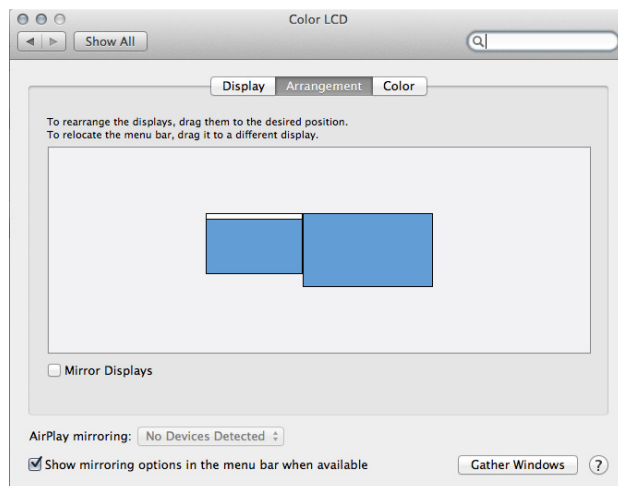
## Monitors Setup Under macOS

1. From the Apple menu, open the System Preferences and select “Displays”, once in the Displays window, go to the tab “Arrangement”.

It is very important here to ensure that your monitors are represented in the same position as they are positioned physically; you may need to drag the monitors around with your mouse to place them correctly.

In this case, the primary monitor is placed to the left of the secondary monitor.

**Note:** You will later need to specify manually the resolution corresponding to the sum of your two monitors. Make sure to take note of it at this stage. For example, if you have two monitors of resolution 1024x768 placed side by side, your total resolution will be 2048x768.



You can now close the System Preferences Displays window and launch MediaMaster.

2. In MediaMaster, go to the Preference Dialog and select the display tab. First, select as output monitor the monitor that is positioned at the top left of the full display. Then select the custom resolution setting and enter the resolution corresponding to the sum of the two monitors (2048x768 in our example).
3. Start the full screen and the window will be created across the two monitors.

To have it correctly spanned across your two monitors it is important that they have been positioned as they should at step 1 and that your MediaMaster resolution corresponds to the addition of the resolution from each of your two monitors.

## VideoMapper

### Important:

The ArKaos VideoMapper is an extension included with both GrandVJ XT and MediaMaster Pro products. It is important to run the VideoMapper application that has been installed together with your ArKaos product so that the two applications can communicate. It is encouraged to start the VideoMapper from within your application, through the menu entry “VideoMapper” or the toolbar.

For a practical introduction to Video Mapping in GrandVJ XT, please refer to the VideoMapper Quickstart document located in the software installation folder, in the “Documentation” directory. No similar document exists for MediaMaster, but this documentation contains all information to get started.

This section of the documentation is common for GrandVJ XT and MediaMaster Pro. These two are referred to as the “ArKaos software”.

## Concept

The VideoMapper is an extension that allows easy mapping of video onto irregularly shaped surfaces and through multiple outputs. Designed to let you setup mapping projects in a very short time, it makes it incredibly simple to flow visuals around complex objects with just a few clicks.

Once you launch the extension, the ArKaos software will send the output from each layer to virtual “surfaces” that can be scaled, deformed, and assigned to any physical output. One output can display a full screen visual or a composition of several mapped visuals; output to a video projector and you can map the surfaces to any physical volume like objects or buildings.

## Hardware Setup

ArKaos VideoMapper is designed to output video content on any display connected to the computer’s graphical cards.

It is advised to connect all the displays to the computer before turning it on.

The VideoMapper application will detect the connected displays and let you configure their resolution and refresh frequency individually. This is a great tool to set up multiple outputs with different resolutions.

## Mapping Workflow Overview

The VideoMapper application is designed to communicate with the ArKaos software. They can run at the same time on the same computer, so that you can edit the mapping directly with the video content running in the application. The VideoMapper application is only needed for the edition of the video mapping itself, and can be closed once the mapping setup is finished. The mapping will be automatically imported in the ArKaos software.

The typical workflow is:

- Connect the displays to the graphics card then turn on the computer.
- Launch the ArKaos software and switch to the “VideoMapper mode” in the Output preferences. The Application will restart in order to apply the new mode.
- Launch VideoMapper application. You can also launch it by clicking the “Edit” button in the Application Output preferences.
- Create a mapping and test it directly with your video content playing in the ArKaos software or by using a test image.
- Once the mapping is finished, simply close the VideoMapper and the ArKaos software will take over to output to the full screen displays.

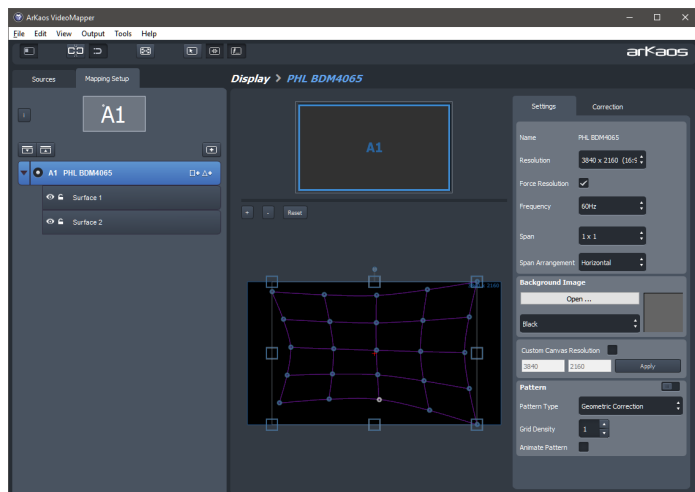
**Important:** The video rendering occurs on your graphics card. If you would create surfaces on a display that is plugged to another graphics card, be aware that you may experience reduced performances due to memory transfers, between the different graphics cards, going through the main memory.

If possible, it’s advised to use the same graphics card to drive all the displays, eventually using a video splitter device. If you absolutely need to use several graphics cards, then you should connect the displays with the biggest resolution to the main graphics card.

## VideoMapper Application

The VideoMapper application allows you to manage your displays and create or edit surfaces that will be used by the ArKaos software to display its layers when in VideoMapper Mode.

## Interface Overview



### Toolbar

The toolbar on top of the window contains various controls to adjust the user interface, editing options and the information displayed in the output.

### Mapping setup and sources

The left side of the application shows the Mapping setup, with a graphical representation of the connected displays and the Display browser. Each display in the browser will list its surfaces, which can be added, deleted or copied directly in the browser.

### Sources

The Sources tab contains the visual sources that are used by the VideoMapper, it can be an image or the feed from the ArKaos software running in “VideoMapper Mode”.








### Surface Editor

The “surface editor”, in the central panel, shows the surfaces of the selected displays. It is a preview of the result you will obtain on the related display in full screen. For each surface it shows both the shape that will be sampled from the input visual source and the shape it will be warped to in the output. Input and Output panels can be collapsed and extended based on the editing needs.

### Inspectors

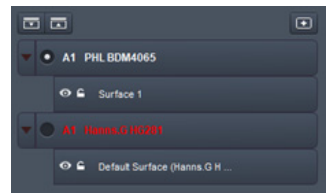
The right panel is an inspector that shows parameters of the selected surface (tab “Surface”), the selected display (tab “Display”) or the selected group of displays (tab “Group”).

## Toolbar Options

-  **Show / hide left panel:** shows or hide the left panel with the display browser so you can have more room to edit your surfaces.
-  **Link grid points:** links points between the grid on the crop zone and the grid on the output zone so that moving a point on one will make the corresponding point move on the other also.
-  **Snap surfaces:** surface borders will snap with each other and with the borders of the surface editor.
-  **Enable / disable full screen:** goes full screen on the active outputs.
-  **Show cursor on full screen:** show the cursor position on the full screen displays.
-  **Surface selection flash:** the active display will flash each time you select a surface.
-  **Surface info on full screen:** show the surface edition objects (surface borders, handles, center and name) on the full screen display.

## Setting Up Displays

Each connected display (as detected by your operating system) is listed in the display browser. Disconnected displays are shown in red. Below each display item appears the list of surfaces (click on the arrow on the left to expand the display item).



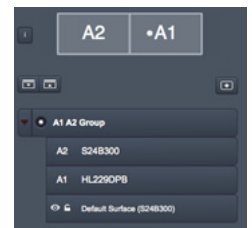
Each display can be enabled or disabled by clicking on the left check box. Disabled displays won't go full screen when the global full screen button is activated (the display showing the VideoMapper interface is disabled by default).

**Note:** The first letter of identification before the display name (**A1**, **A2**, **B1**, etc..) represents the GPU to which the display is connected. Two displays named A1 and A2 means that they are connected to the same graphics card.

### Grouping

Displays can be grouped together to form one big display, by dragging and dropping one display on another display.

There are two ways to ungroup displays: by selecting a display and clicking the eject button on the right side or by selecting the group, right clicking and selecting ungroup.



### Draft Displays

You can create a “draft display” by clicking the “add draft display” button above the display browser on the right. Draft displays can be used when the display you want to use in your final setup is not connected. Create your mapping on a draft display and, later, copy/paste the surfaces to the final display. The draft display can be deleted once the job is done (right-click on the draft display item and choose “delete”).



### Full Screen

To activate the full screen, press CTRL+F (Command+F on Mac) or click on the full screen button in the toolbar. The VideoMapper keeps the full screen state in memory. So, when you start the VideoMapper, the full screen will automatically be enabled if it was enabled the last time you closed the application.



## Editing Display Properties

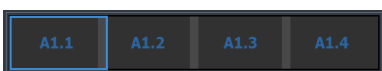
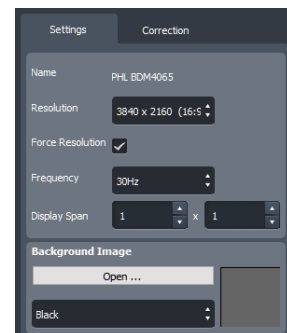
When you click on a display item in the display editor, or when you click on the display tab in the right inspector, the properties related to the display are shown. You can choose the resolution of the display and its frequency.

The “Force Resolution” option will change the resolution of the display to match the resolution in the “Resolution” combo box. If the option is not set, a “Custom Resolution” can be specified, and the output will be displayed only on the partial top-left display to cover the specified resolution.

The option “Span” allows to virtually split the display as a matrix of X columns and Y rows.

The “Span Arrangement” option indicates how those Spans should be rearranged to form a large continuous display for visual playback.

E.g., a typical use would be to take a 4k output to drive four Full-HD projectors installed in a row. In this case, you would Span by 2x2 and pick a Horizontal Span Arrangement. The VideoMapper would automatically set a large 7680x1080 pixel canvas.

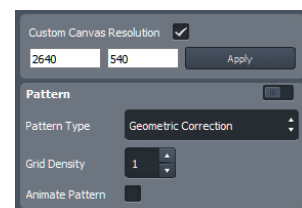


## Background Image

The background of the display can be set to black, grey, or bitmap image (you can choose the image file by clicking on the “open button”).

## Custom Canvas Size

By default, rendering is done on a canvas at the resolution set for the display. From that canvas, an area is cropped and mapped on each surface. In some situations, magnifying a small-cropped area requires higher resolution or a lower resolution might be enough if a surface covers a smaller part of the output area. The option “Custom Canvas Size” gives you explicit control over the canvas size used for the intermediate rendering.

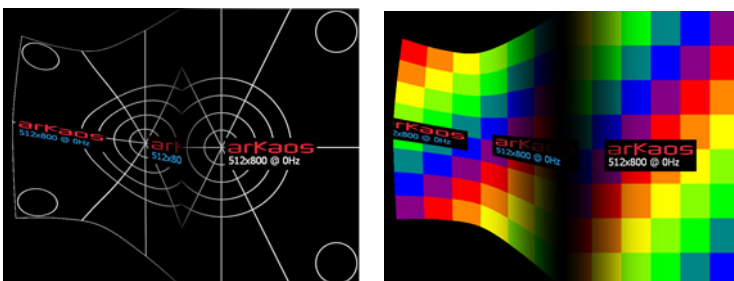


## Pattern

This option lets you display a pattern over the displays or the spans to help with the setup or the corrections. The “Pattern Type” is used to select what type of pattern should be displayed: some are designed to setup geometric correction, to setup displays or to tweak color correction.

The “Grid Density” defines how many sub-divisions should be used when generating procedural patterns.

The option “Animate Pattern” scrolls the pattern over the display area to bring out some geometrical deformation issues in some area of the display.



The left pattern “Geometric Correction” is mainly for geometric correction and soft-edge. The right pattern “Color Correction” is more for per display color adjustments and to tweak colors and curves for soft-edge.

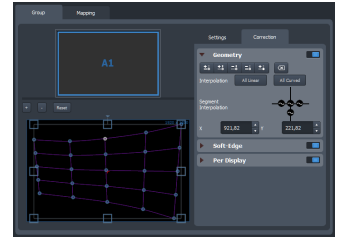
## Display Corrections

### Geometric Correction

Geometric correction lets you remap the whole output of a display or a span, including all surfaces, by editing a grid and each of its control point. This allows to compensate some pan, tilt or any deformation due to some projection on arbitrary surfaces.

To use Geometric Correction, first toggle the feature on with the top-right switch.

Each segment can either be set to Linear or Curved. The coordinates of each control point can be specified explicitly.



To add or remove control points, use the following buttons:

- Add control points that will divide the grid horizontally.
- Add control points that will divide the grid vertically.
- Remove control points that will divide the grid horizontally.
- Remove control points that will divide the grid vertically.
- Add a control point by clicking anywhere in the grid.
- Reset the grid; remove all the control points.

The buttons “All Linear” or “All Curved” transform all segments to linear or curved. But each segment can also be set explicitly to linear or curved by selecting a control point and using the interpolation editor below:



It represents the control point with its four adjacent segments. Each segment can be set to linear or curve. The middle round control will toggle the four adjacent segments between linear and curved.

The position of the selected corner box or the selected control point can be moved with the arrow keys of the keyboard. By pressing Alt key modifier, the movement is amplified by a factor of 10x. By pressing Ctrl or Cmd more precise adjustments can be done by a factor of 1/10th. Tab key can be used to select the next control point and Shift + Tab to select the previous control point.

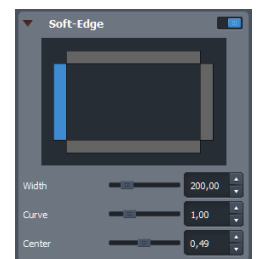
### Soft-Edge

The Soft-Edge defines a band over which the projection of two beamers will overlap to create a larger continuous output without any visible discontinuity. It can be performed between two displays or two spans. To use Soft-Edge, use the top-right switch to toggle the feature on.

The top representation lets you select the upper, lower, left or right border of the current display or current span.

The “Width” parameters sets the width in pixel of the overlapping area.

The “Curve” defines how the blending is performed along the overlap area. A value of 1.0 is linear. A higher value gives a smooth ease-in and ease-out on the left and right sides of the overlap area.



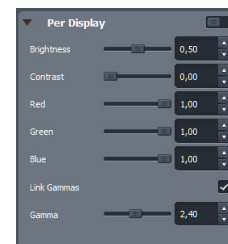
A “Center Value” above 0.5 makes for a lighter middle band in the overlap area. A value below 0.5 makes for a darker middle band.

Soft-Edge is always applied on a matrix of displays or spans. A different behavior is applied on any outer edge on the boundary of the matrix compared to inner edge between two adjacent displays. For inner-edges, soft-edge is active by default. For outer-edges the soft-edge is disabled by default by having a width of zero. For special setups with multiple media servers or 360° projections, the width can be explicitly set to activate the soft-edge on the outer edge.




## Per Display Corrections

The brightness, contrast, RGB and gamma can be adjusted per display. If the option “Link Gammas” is not set, then the red, green and blue component of the gamma can be tweaked separately. Displaying the “Color Correction” pattern is helpful to adjust the colors. Red, Green, Blue behave as multipliers. A value of 0,8 would mean outputting only 80% of the red component of the color. To use Display Corrections, first toggle the feature on with the top-right switch.



## Setting Up Surfaces

### Creating a Surface

 To create a new surface, click on the rectangle or triangle that appears on the right when the display item is selected.

The list of surfaces on a display is like a stack of layers from top to bottom. The first surface will be displayed on top of the others. You can change the order of the surfaces by dragging them around in the list.

### Editing Surface Properties

When you select a surface, its properties are displayed in the inspector on the right. You can modify geometrical parameters by editing the surface directly in the graphical editor (for example modify the width or the height of a rectangle by dragging the middle handles of the rectangle) or by enter numerical values in the inspector.

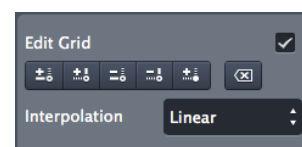
- **The X and Y parameters** are the coordinates of the surface. This position is by default the top-left corner for rectangles and the center for triangles. If the option “Display Top Left Coordinates” is unchecked in the view menu, the position of the rectangles will be centered.
- **The R parameter** is the rotation of the surface. The rotation can also be modified by dragging the rotation handle in the graphical editor.



The other parameters depend on which surface you are editing:







- **Triangles:** You can edit the position of the three corners of the triangle (parameter X-Y in the inspector).
- **Rectangles:** You can modify the width and the height of the rectangle (parameter W-H in the inspector).

The rectangle can also be deformed using a grid pattern. To enable the grid, check the option “Edit Grid” in the inspector.

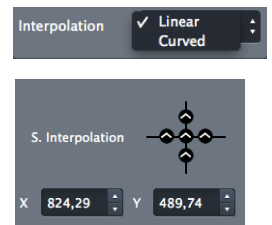


When the grid is enabled, each control point of the grid can then be dragged separately.

To add or remove control points, use the buttons just below the edit grid option:

-  Add a point vertically.
-  Add a point horizontally.
-  Delete a point horizontally.
-  Delete a point horizontally.
-  Add a point anywhere then click with your mouse in the
-  Reset the grid and delete all the points.

The interpolation combo box lets you set the interpolation for all the control points of the grid, it can be set to linear or curved. To set the interpolation separately for each control point, first click a control point in the graphical editor, then the interpolation editor appears. It represents the selected control point with its four adjacent segments. The interpolation for each segment can be set to linear or curved.



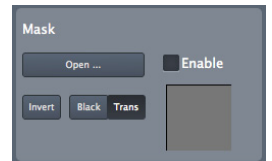
The position of the selected corner box or the selected control point can also be edited with the arrow keys of the keyboard.

- **To move the point of 20 pixels**, press Alt while moving the point.
- **To move the point of 0.05 pixels**, press Ctrl (Cmd on macOS) while moving the point.

### Image Masks

Any image file can be used as mask that can be applied on a surface. The average of the RGB colors will be used if the source is a color image.

In the Mask properties editor, click on the “Open” button to load an image. Make sure that the “Enable” button is checked.



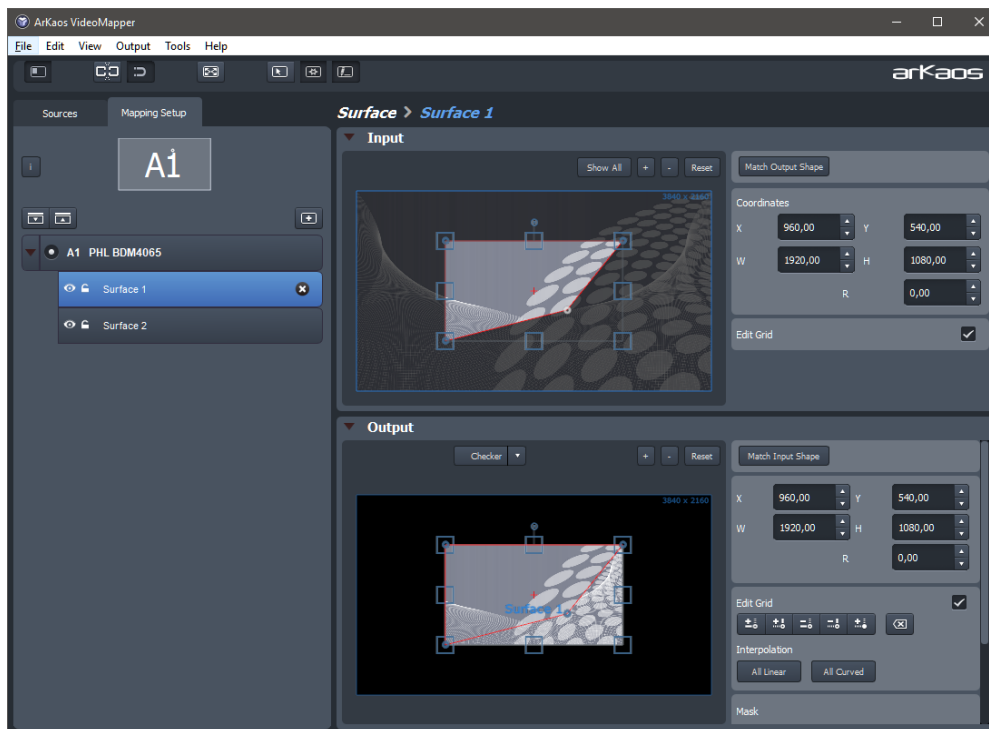
The following options are available to modify the mask:

- **Invert:** invert the greyscale source image before applying the mask.
- **Black:** the masked part of the image is black.
- **Trans:** the masked part of the image is transparent.

### Mapping of Surfaces

For each surface, a shape in the input visual source can be warped to a different shape to the output. Both Input and Output panels can be expanded or collapsed depending on your editing needs. This technique can be used for instance to crop or magnify some visuals, to remap visuals on complex shapes or align them on some 3D objects.

The four corners of rectangular surfaces can be moved separately if you check the option “Edit Grid”.



Match Output Shape

**Match Output Shape:** copies the shape that is currently selected in the output panel to the input panel.

Match Input Shape

**Match Input Shape:** copies the shape selected in the input panel to the output panel.

The Match Input and Output Shape buttons are very handy if you want to keep your final image without any stretching of pixels. Another technique to avoid any distortion when editing grid of a rectangular surface, is to activate “Link Grid Points” option in the toolbar so that your changes are automatically reflected in both Input and Output panels.

Show All

The **Show All** button allows seeing the input shapes corresponding to all the surfaces of the display. This option is useful if you want “cut” a visual into several surfaces.

## Visual Sources

The visual sources of the VideoMapper can be found under the “Sources” tab in the left pane, next to the Mapping setup.

Visual sources can be an image or the feed from the ArKaos software running in “VideoMapper Mode”. If the Application is running, the source will automatically switch to use its feed.


To add an image to the list of sources, click on the “Load Image” button above the list. Double click on an item of the list to select that source.

## Exporting and Importing Mapping Files


The VideoMapper constantly saves the mapping file internally. You can export your mapping using the “Export” option in the “File” menu. The exported file (.vmp file) contains the configuration of the output groups of GrandVJ XT as well. You can import external mappings using the “Import” option in the “File” menu.

## Key Bindings

### Surface editor shortcut keys

- Middle Mouse Button : Pan View
- Scroll Wheel : Zoom View in/out
- Shift + Left Mouse Click : Multiple selection
- Shift + Surface Rescale : Aspect-ratio rescale
- arrow keys : Move selected Surface (1 pixel)
- Alt + arrow keys : Move selected Surface (10 pixels)
- Ctrl + arrow keys on Windows / Cmd + arrow keys on Mac : Move selected Surface (0.1 pixel)
- Ctrl + I / Cmd + I: Hide all Surfaces except the selected one
- Ctrl + Shift + I / Cmd + Shift + I: Show all Surfaces 

### Grid surface shortcut keys

- R : Reset Grid
- F1 : Add Horizontal Control Points
- F2 : Remove Horizontal Control Points
- F3 : Add Vertical Control Points
- F4 : Remove Vertical Control Points
- F5 : Add a control point anywhere
- F6 : Change Grid Interpolation Type
- F7 : Toggle Control Point Interpolation Type
- TAB + arrow keys : Change Control Point Selection
- Right-click inside grid: Selection Box Around Control Points 

**Application shortcut keys**

- Ctrl + I / Cmd + I: Move the VideoMapper Window To Cursor Position
- Ctrl + G / Cmd + G: Surface Snap
- Ctrl + E / Cmd + E: Show crop panel
- Ctrl + F / Cmd + F: Go Fullscreen
- Ctrl + N / Cmd + N: New Mapping
- Ctrl + O / Cmd + O: Import a Mapping file
- Ctrl + Shift + S / Cmd + Shift + S: Export a Mapping file
- Ctrl + P / Cmd + P: Open the Preferences dialog
- Ctrl + Q / Cmd + Q: Quit the Application

**Output Management**

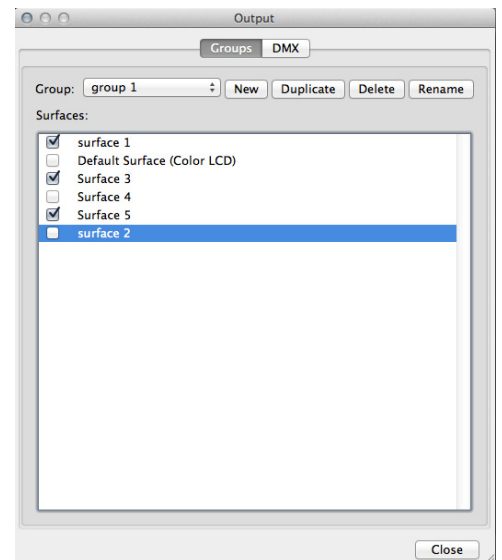
In the ArKaos software you can create groups of outputs so you can display a layer on several outputs at once.

**Output Groups**

**GrandVJ XT:** The Output Groups dialog is accessible through the transition parameter panels.

**MediaMaster Pro:** The Output Management dialog is accessible through the Edit menu or can be called by pressing CTRL+O (Windows) / Cmd+O (Mac).

This dialog lets you create new groups, select and edit an existing group, rename it or duplicate it.

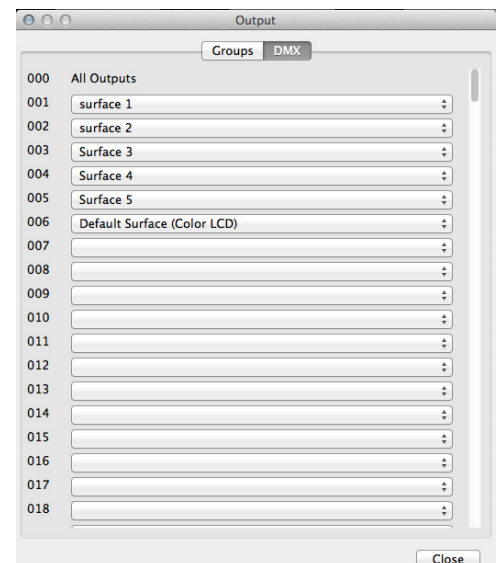


**DMX Output Group Mapping (This feature is only available in MediaMaster Pro Fixture Mode)**

MediaMaster assigns the VideoMapper Surfaces, Full screen Display and Output Groups to a specific DMX value depending on the following ranges and on what's already assigned in the list:

- “All” outputs is assigned to 0
- VideoMapper Surfaces and Full screen Display (Instant mode) outputs are assigned between 1 and 199
- Output Groups are assigned between 200 and 249
- LEDMapper output is assigned to 250
- Kling-Net output is assigned to 251
- Values between 252 and 255 are reserved for further versions

You can reassign an output by selecting it at the new target DMX value, within its respective range. If there's already an output assigned at this DMX value, it will be swapped with the newly assigned one.



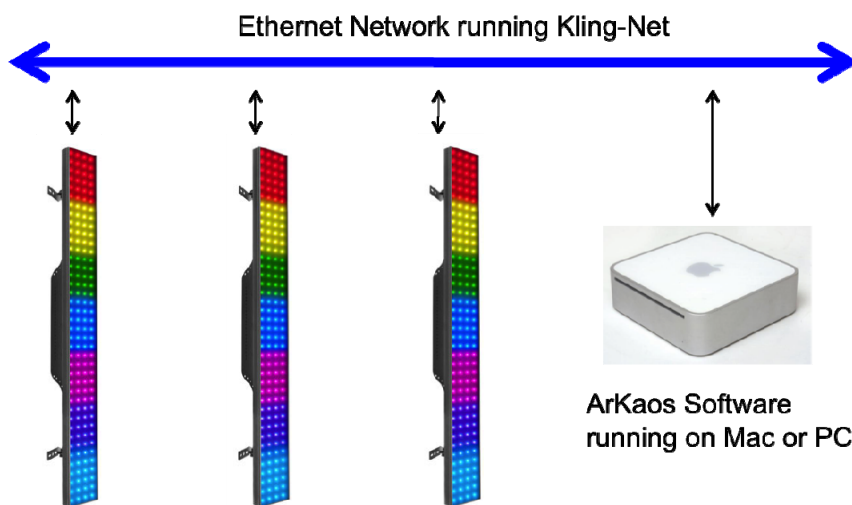
## Kling-Net Mapper

**Important:** The ArKaos Kling-Net Mapper is an extension included with both GrandVJ XT and MediaMaster products. It is important to run the Kling-Net Mapper application that has been installed together with your ArKaos product so that the two applications can communicate. It is encouraged to start the Kling-Net Mapper from within your application, through the menu entry “Kling-Net Mapper” or the toolbar.

This section of the documentation is common for GrandVJ XT and MediaMaster. These two are further referred as the “ArKaos software”.

## Concepts

Kling-Net is a protocol designed to simplify the setup and operation of display devices such as LED devices. Those LED devices are connected to a computer through a standard Ethernet network.



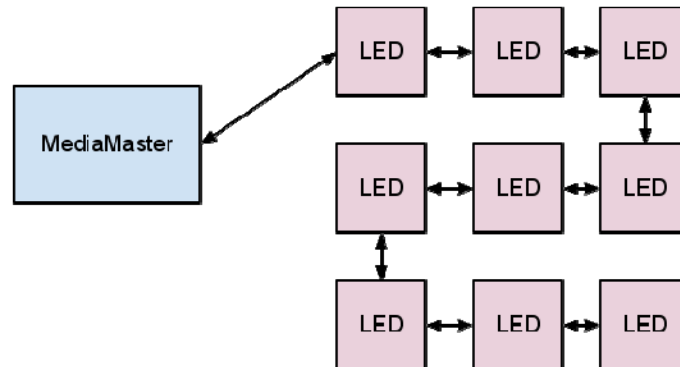
The purpose of Kling-Net is:

- To allow the connection of display devices to a computer through an automatic configuration.
- To dynamically configure the network by assigning IP numbers to the LED devices.
- To ensure a perfect time synchronization of many display devices.
- To avoid using expensive hardware video converters usually needed to send video to display devices.
- To allow creating a heterogeneous network of display devices made by different manufacturer and controlled by a Theater computer.
- To add some intelligence into display devices in order to allow device auto configuration.
- With Kling-Net, display devices and network installations become straightforward to setup. Kling-Net is independent of DMX, Art-Net or E1.31 (also called Streaming ACN) protocols.

## Hardware Setup

Kling-Net is designed to make the best use of your Ethernet network.

To make your network as Theater as possible, you can connect the devices directly to your server:



Kling-Net requires a Gigabit compatible Ethernet card (1000 Mbps), if you use a 100 Mbps network Kling-Net will run fine but the number of devices that can be used will be limited.

Kling-Net offers a lot of flexibility concerning the IP addresses you can use.

The address of the server should be in the range of local IP addresses:

- 2.255.255.255
- 10.0.0.0 to 10.255.255.255
- 172.16.0.0 to 172.31.255.255
- 192.168.0.0 to 192.168.255.255

**Note:** Kling-Net attributes IP addresses to the LED devices when they power up. If you change the IP address of the server you must power down/up the LED devices and restart the ArKaos software.

## Mapping Workflow Overview

This Kling-Net Mapper is designed to communicate with the ArKaos software; both can run at the same time on the same machine or different machines on the same network. You can select who is sending video to the LEDs through the output dropdown in the toolbar.

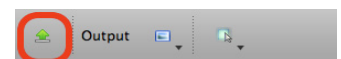
The typical workflow is:

1. Launch ArKaos, go to the Preferences window, and activate Kling-Net.
2. Launch the Kling-Net Mapper application (you can launch it from the Preferences window in the Application).
3. Set the output to “Test pattern” in the Kling-Net Mapper application.
4. Create the mapping and test it on your devices to make sure that it looks fine.
5. Send the mapping to the Application by clicking the **Send** button from the top left.
6. Select the Application as output in the Output Menu.

If you need to re-edit the mapping, you can restart the workflow from step 3.

You can save the mapping file just in case you need to use it again later, but once you sent the mapping to the Application via the send button, it will automatically be saved for the Application.

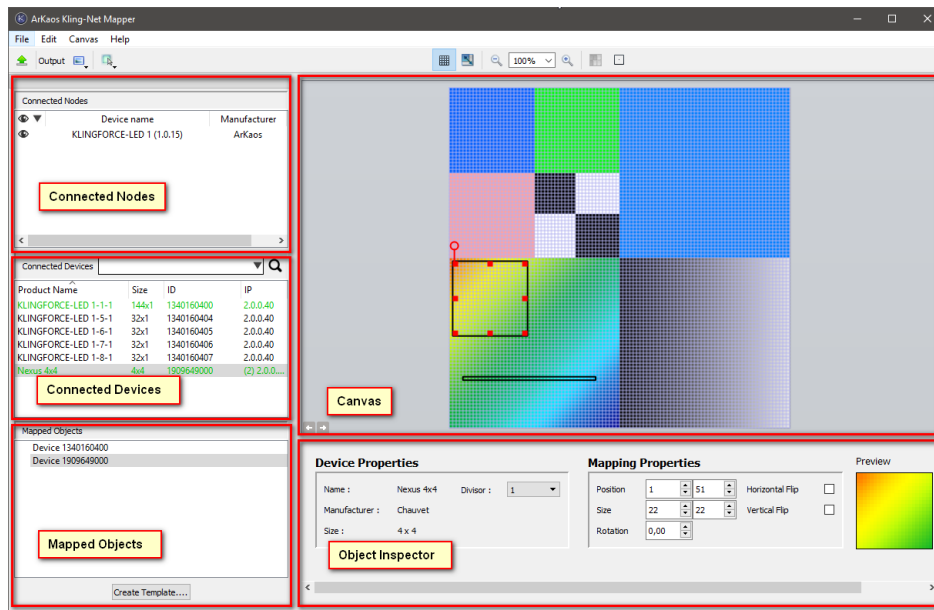
The send button is on the top left in the Kling-Net Mapper application.



## Kling-Net Mapper Application

### Overview

The Kling-Net Mapper application is where you define areas of the video output that will be sent to the LED devices.



The video output is represented by the mapper canvas. The connected devices are listed in the left panel. To add a device in the setup, simply drag and drop a device on the canvas. It will automatically create a “mapping rectangle”. The area included in the rectangle will be grabbed and sent to the corresponding device.

The application has been designed to be simple and easy to use. Each manipulation of device mapping are immediately reflected on the real LED device. This is very handy because some setups can be very complex and driving many devices. It also makes the mapping process in Kling-Net Mapper as seamless as possible.

The mapper should primarily be used for calibration, so background images used in the canvas are still test pattern images. You can also use a screen grabber to preview the result on moving images.

Once you’ve created your mapping, the ArKaos software will use it to feed the LEDs with video streams, movies, text, effects, or generated content.

### Connected Nodes

The “Connected Nodes” panel shows the list of Kling-Net Nodes like the Kling-Force products. The toggle with the eye icon tells if the devices connected on that node should appear in the list of connected devices. For Kling-Force products, the three-part number between round brackets indicates the Firmware version. If Kling-Net Mapper embeds a more recent version of the Firmware, the Kling-Force device will be automatically updated.

## Connected Devices

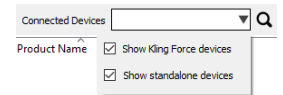
This panel shows the list of the devices that are currently connected to the mapper or that were connected in the past. Information like product name, size, device ID and IP address is displayed here.

Devices that are already mapped on the canvas are shown in green while unmapped devices appear in black. Disconnected devices will be shown in red.

Product Name	Size	ID	IP
KLINGFORCE-LED 1-1-1	20x1	1340160400	2.0.0.40
KLINGFORCE-LED 1-1-2	124x1	1340160400	2.0.0.40
KLINGFORCE-LED 1-2-1	32x1	1340160401	2.0.0.40
KLINGFORCE-LED 1-3-1	32x1	1340160402	2.0.0.40
KLINGFORCE-LED 1-4-1	32x1	1340160403	2.0.0.40
Nexus 4x4	4x4	1909649000	0.0.0.0

← Mapped devices  
← Unmapped devices  
← Disconnected

To map a device, simply drag and drop the item in the list onto the canvas. This will create a mapping rectangle on the canvas, representing the area that will be sent to the device.



The device ID for each mapped item will also appear in the “Mapped Objects” list.

The dropdown lets you enter a string to filter out devices with corresponding occurrences and to filter out Kling-Force or standalone devices.

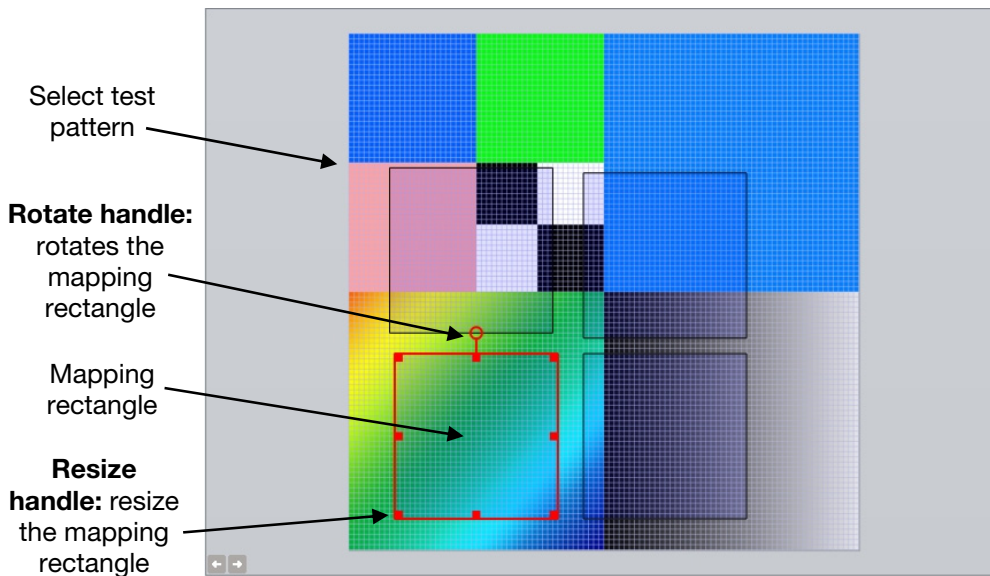
## Mapped Objects

This panel shows the list of objects that are already mapped in the canvas with their IDs.

## The Canvas

The canvas represents the entire output from which some areas will be grabbed and sent to the LED devices.

You can change the test pattern by clicking on the left and right arrows at the bottom-left corner of the panel. You can also choose your own image or image directory with the “Choose Test Image” and “Choose test image directory” menu entries from the “File” menu.





The size of the canvas is the size that will be used to render animation clips in the ArKaos software. You can change it by using the “Canvas Size” menu entry in the “Canvas” menu. You can also automatically adjust the canvas size to the selected devices by using the “Crop To Selection” menu entry.

To edit mapping properties for devices, click on a mapping rectangle on the canvas. Properties will appear in the object inspector, at the bottom of the screen.

To zoom in the canvas, use the mouse wheel on PC or Cmd + mouse scroll on Mac.

To pan, press the middle mouse button and move the mouse on PC or use vertical and horizontal mouse scroll on Mac.

## Dividing and Splitting

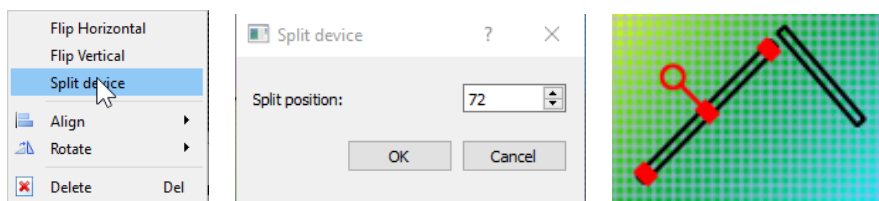
Kling-Net devices can be divided or split in the Kling-Net Mapper. Each part can then be mapped independently even if they are connected through only one Kling-Net connection.

### Dividing

A typical use case would be for a set of LED strips that are exposed as one rectangular Kling-Net device. By using the divisor field in the device properties and entering the number of LED Strips, each individual LED strip can be mapped with the correct LED resolution.

### Splitting

Each individual strip can also be split after any number of LEDs to create multi-segment strips.



To split a device, right click on the device in the canvas, select “Split device” in the popup menu, enter a split position in the next dialog and press the OK button. The initial device is split in two devices that can be mapped separately on the canvas.

## Output Selection

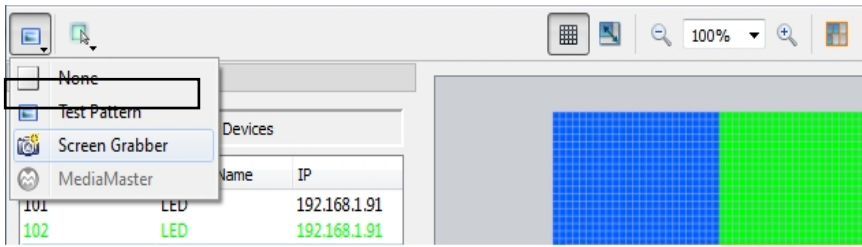
### Test Pattern

The pattern displayed in the canvas will be output to the Kling-Net fixtures. As the default output is “None”, it is important to select an output to verify if anything is sent to the LED fixtures.

To iterate over the available test patterns, use the left and right arrows at the bottom left of the canvas.

## Screen Grabber

The screen grabber allows grabbing any part of the screen and sending it to the mapped devices. To activate it, click on the output icon in the toolbar (the first one on the left), and select “screen-grabber” in the drop-down menu.

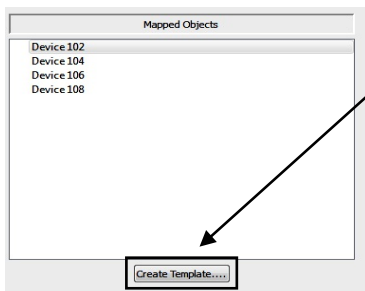


A red rectangle will appear, representing the background images that will be sent to the devices. The rectangle has the same resolution as the canvas size. You can drag it to choose the capture zone on your screen.

## Application

The “Kling-Net Mapper” output of the ArKaos software will be sent to the LED fixtures. A specific instance of the Application can be selected in the sub-menu.

## Templates



Templates are the easiest way to map several devices of the same size in a grid.

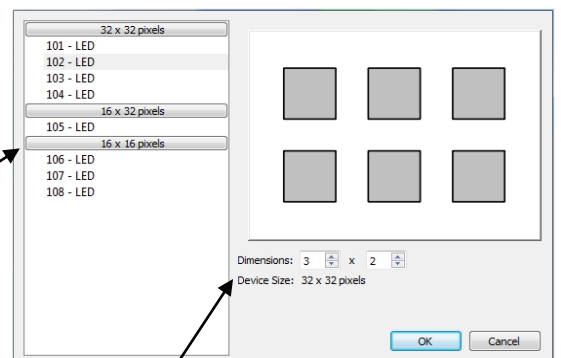
To create a template, click on the “Create Template” button at the bottom of the mapped devices list.

This will open the Template Creation dialog box.

The Template Creation dialog box shows a list of available sizes on the left. Chose the size of the devices you want to map in the list. The dimensions parameter modifies the number of devices you can map on the template.

To map devices on the template, double click on it or click on the template map mode icon in the toolbar. When the map mode is activated, everything is frozen in the graphical editor, the only thing you can do is drag and drop devices on the template.

Select a device size



Select the template size

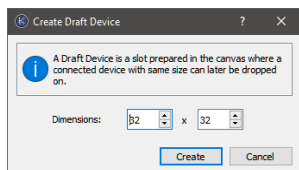
You can only drag and drop devices with the right size, as defined in the template creation dialog. When you’re ready with the mapping, double click out of the template to come back to the normal mode.

Devices mapped into a template are “attached” to it. Therefore, it is easy to edit a set of devices, which belong to a template.

A supplementary parameter is available for templates in the object inspector: “interspaces”. It allows you to define interspaces between each device in the template.

## Draft Devices

The button “Create Draft Device...” in the main window lets the user create a Draft Device in the canvas and place it precisely. When later the real Kling-Net devices get connected, the user can drag-and-drop them on the Draft Device slots for quick and precise placement. Draft Devices are displayed in gray, both in the device list and in the canvas.



## Preferences

“Use Bilinear Filtering” indicates that any sampling done between two pixels in the canvas will be interpolated using bilinear interpolation.

If “Use Center for Position” is set, then the displayed and edited position of a fixture corresponds to the center of the fixture rectangle. Also, rotations are done around the center which might feel more natural.

If “Use Center for Position” is not set, then the displayed and edited position of a fixture corresponds to the first LED on the top left corner of the fixture rectangle. Also rotations are done around this first LED which is more appropriate to set vertical fixtures to some precise (x,y) coordinates. This mode is better to setup pixel perfect mapping because for even pixel dimensions, the center would be in the middle of two pixels.

## Pixel Perfect Mappings

For pixel perfect mappings, unset options “Use Bilinear Filtering” and “Use Center for Position” in the preferences. Make sure your devices are mapped with their genuine size. Only use whole numbers for positions and only multiple of 90° for rotations.

## How to Display LED Mappings from the Application

The ArKaos software uses a unique mapping file that is stored to a precise location in the Library folder or in the settings location. If you use the New, Open, Save or Save As file operations in the Kling-Net Mapper, the current mapping will not automatically get used by the Application.

Below are the different ways to tell the Application to use the new edited mapping.

### While the Kling-Net Mapper is running

If you have created and edited a mapping and want to use it in the Application, you must do two actions:

1. Send the mapping to the Application.

To do this you can simply use the send button on the top left of the interface. Another way is to archive your mapping by saving it to disk and from the preference of the Application import the mapping file. Using the send button is the fastest way.

2. The send button is top left in the Kling-Net Mapper application.



3. Switch the output to the Application.

From the output menu, switch the video output back to the Application.

While the output is set to the Application you can continue to edit your mapping and use the “Send” button to update the output in the Application.

**GrandVJ XT:** You can read the section “Display” in the Preferences of GrandVJ to get more details about the configuration of Kling-Net in GrandVJ.

**MediaMaster:** You can read the section “Output Tab” in the Preferences of MediaMaster to get more details about the configuration of Kling-Net in MediaMaster.

### **While Kling-Net Mapper is not running**

If no Kling-Net Mapper is running, then when the Application starts it will send output to the Kling-Net devices if Kling-Net is activated.

If you already loaded the mapping in a previous session, GrandVJ will restore the mapping automatically. Similarly, MediaMaster will automatically restore the mapping previously saved in the active Library.

If you want to load a new mapping file you must use the Kling-Net import button in the Preferences of the Application.

## Remote Player

### Introduction

The remote cue player is designed to drive a network of media servers having a variety of display devices:

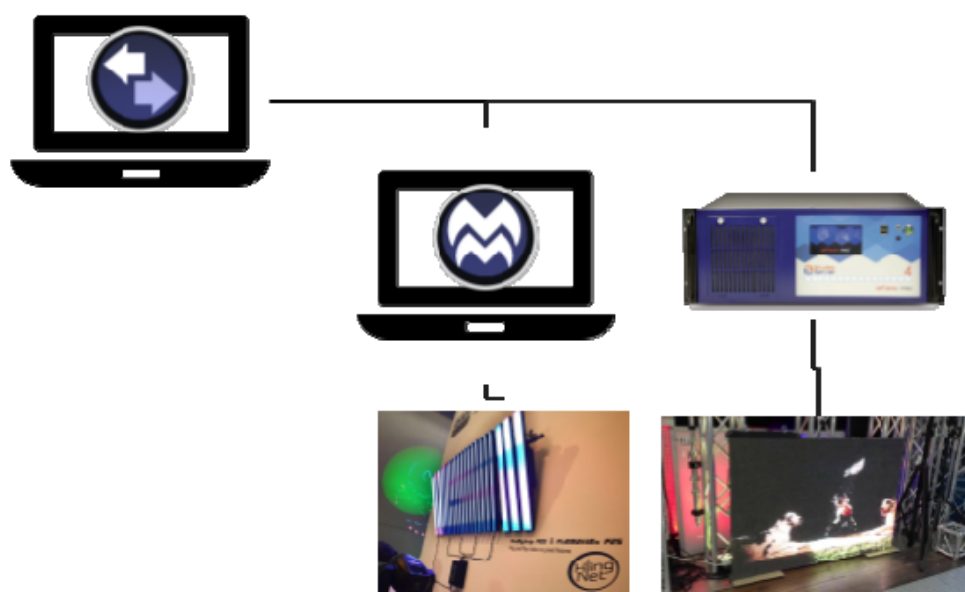
- LED screens with support for HDR
- Projectors with video mapping
- Art-Net / Kling-Net devices

It is integrated into the MediaHub to allow the management of content and the cue programming of a network of servers from one application.

The cue player is intended to be used in those situations:

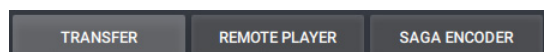
- Museum installations
- Retail store installations
- Clubs
- Corporate presentations

While the cue player inside the MediaHub can run on the same system as MediaMaster, it's designed to run on a network. Here is an example with one laptop programming a studio server driving an LED wall and a laptop driving some Kling-Net devices:



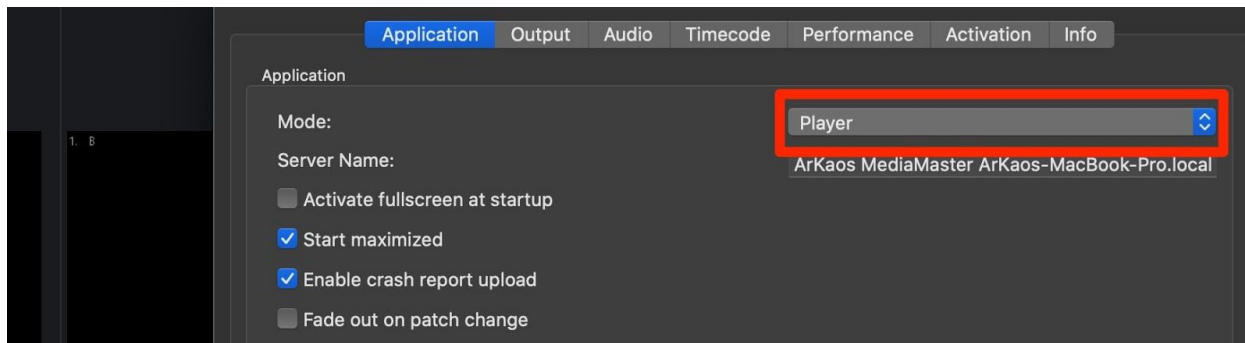
### Integration in the “Hub”

The MediaHub now has several interfaces that can be quickly switched between. To allow this, there are three icons on the top right of window:

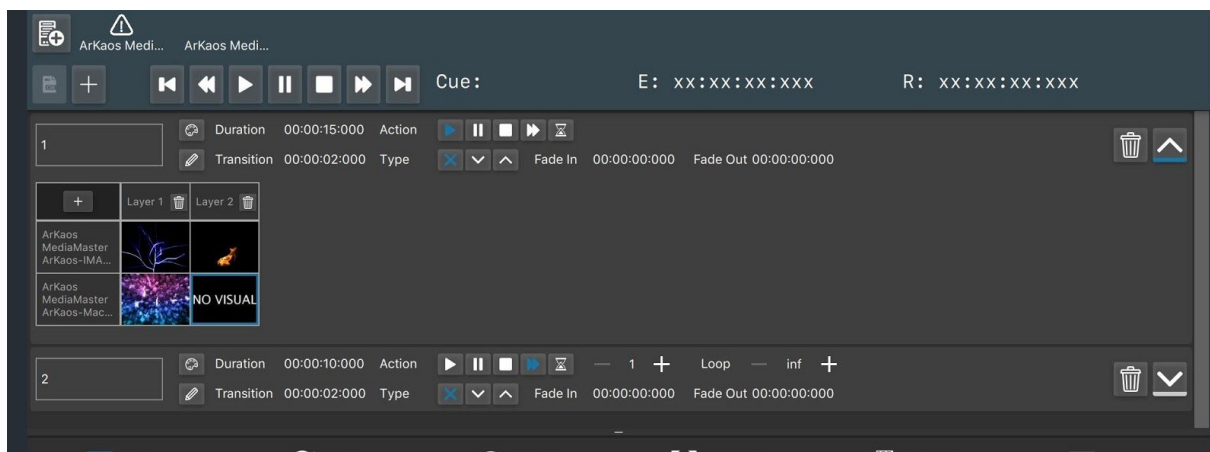


## Basic Interaction with the Player

To start you have to set Mediamaster in 'Player' mode in the preference menu. The player can be the same machine on which you run the Remote cue player or an extra machine running on the network.



The remote player has a top menu bar with transport controls (play, next, ...), a list of cues, and at the bottom the two important commands: upload and add cue:



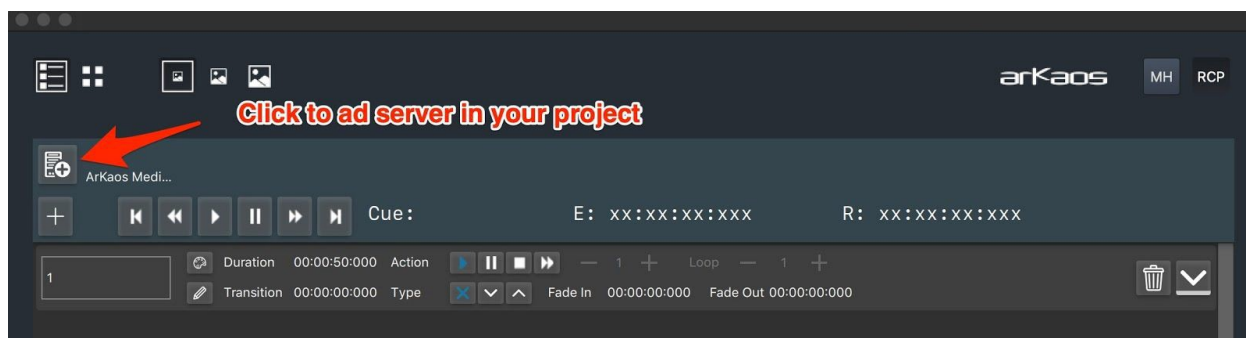
The number associated with each cue is also a button that can be used to trigger it manually. External control is now supported in player mode from MIDI, ArtNet, Telnet / TCP, and UDP commands.

## Synchronizing the Network of Servers

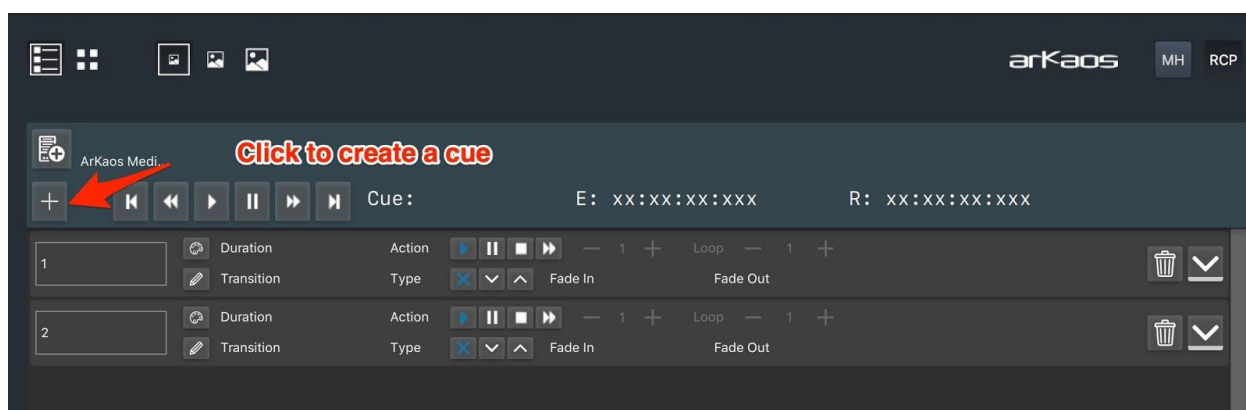
When editing cues, the programming is local to the system running the MediaHub. The MediaHub will automatically update the player once the cue is created.

## Creating a Cue

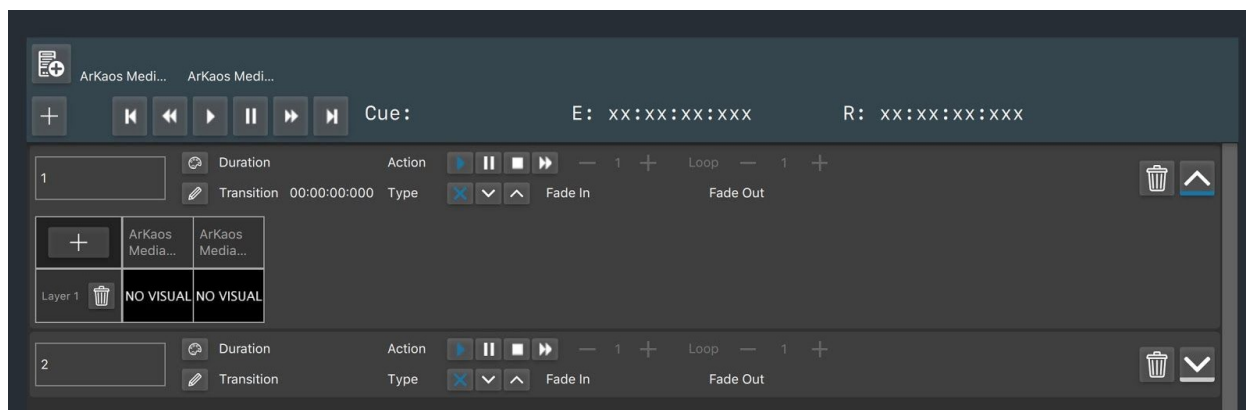
First you have to add servers to your project. Click on the + icon to add a connected server.



To create a cue, click on the + icon next to the cue list controller.



More than one server can be programmed in a cue. Here 2 servers are driven by a cue: Once a server is added to a first cue, it will be present in all other created cues.



## Cue Editing

Cue editing is based on expanding and collapsing cue tabs. Where available, those collapses expand icons are on the right of the interface:

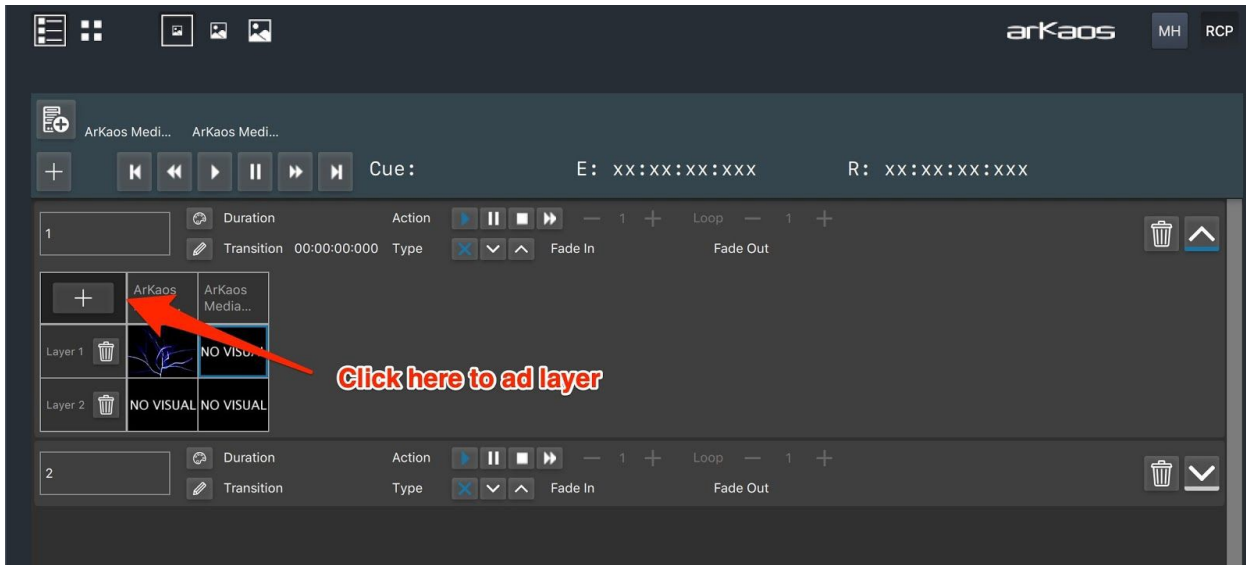


The panels can also be expanded and collapsed by double-clicking in the background of the bars:



## Adding a Layer to a Cue

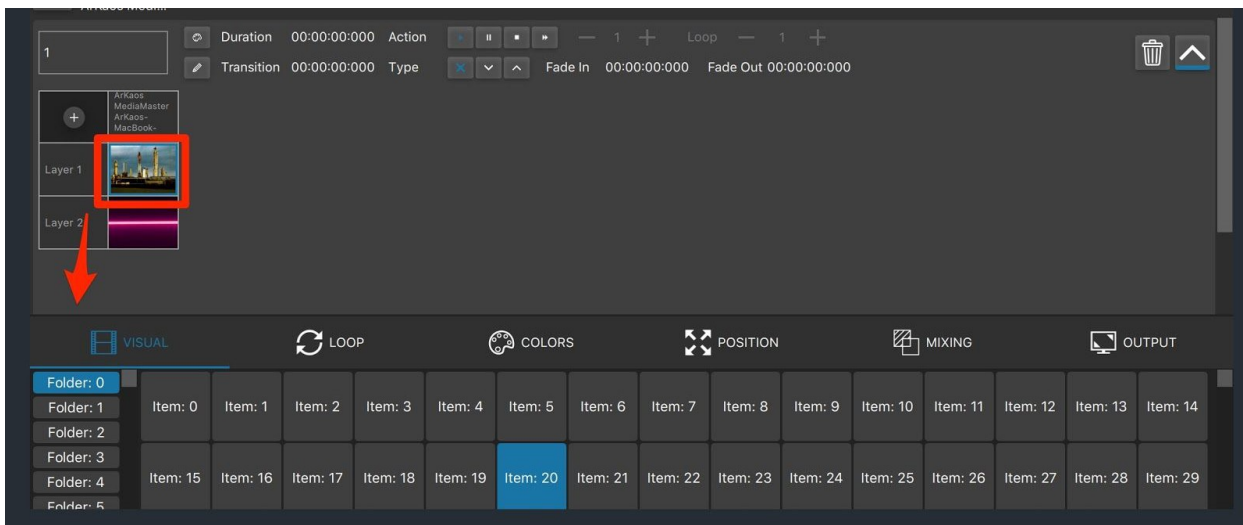
A cue can have several layers. A layer is added to a server by using the + icon in the server bar:





## Editing the Visuals of a Cue

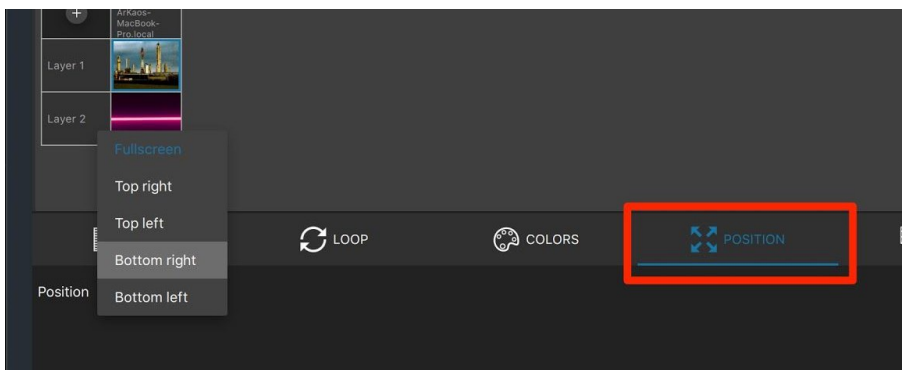
To set the visual of a cue, select the layer from a server, then select the visual from the bottom properties window in the Tab “Visual”.



The visuals are the ones available from the MediaMaster Library. If a visual to be played is not yet in the library, the media management of the media hub needs to be used to add it first.

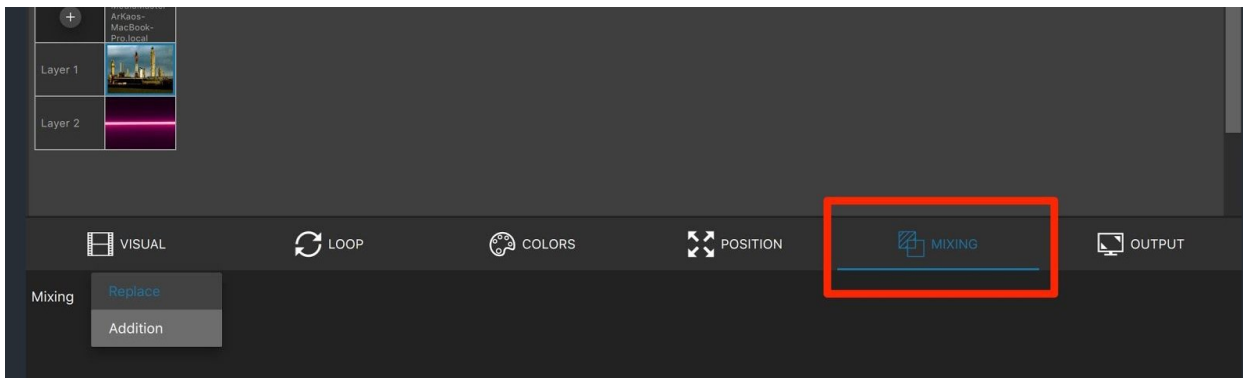
## Editing the Position of a Visual

To edit the position of a visual the tab needs to be selected from here:



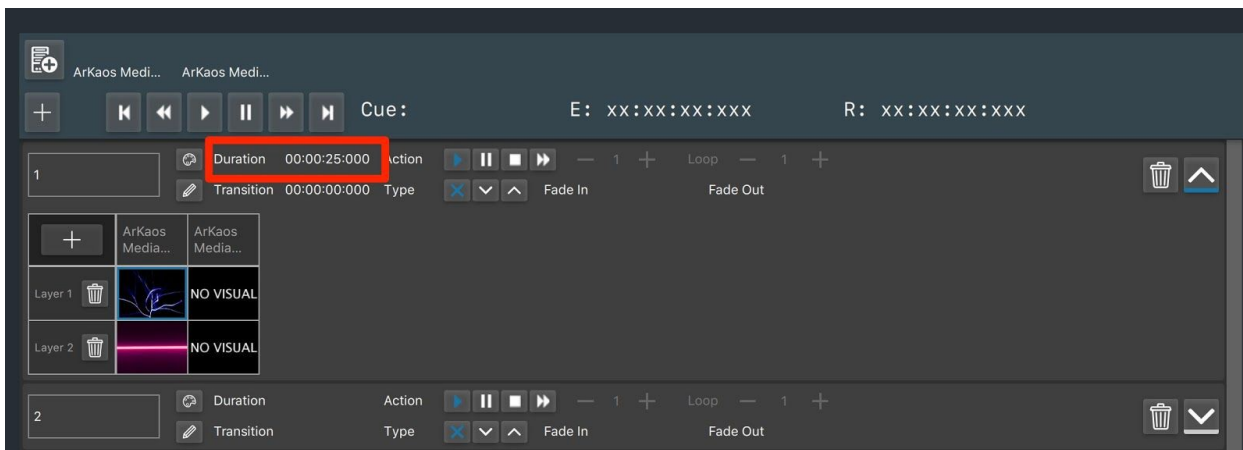
## Editing Mixing Between Layers

To edit mixing between layers you first select the mixing tab and then use the available options:



## Cue Duration

A Cue can have a simple manual duration time such as 25 seconds.



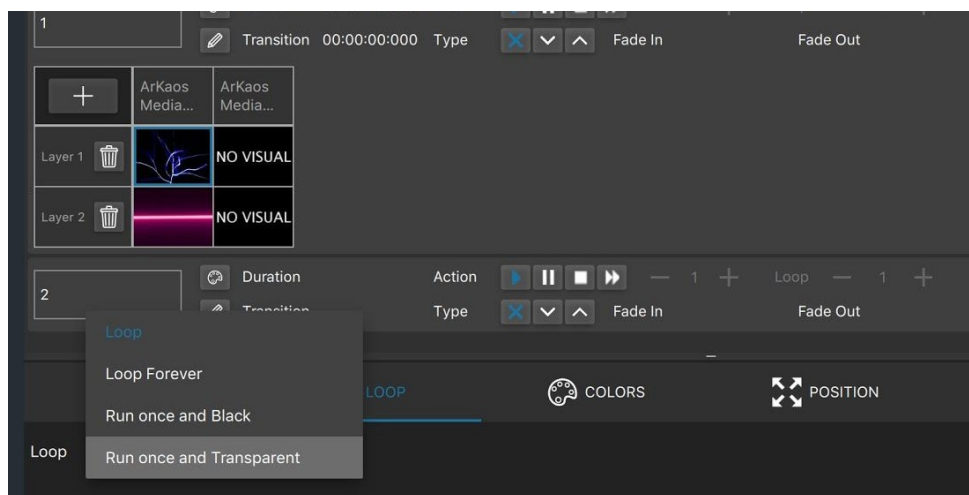
## Media Duration

“Longest Media” will use the duration of the longest movie after comparing the length of all movies triggered by that cue. For example, if a looping background loop is triggered on layer 1 with a duration of 5 seconds and a product presentation movie is played on layer 2 with a duration of one minute, the longest media will be of one minute.

In “Free Run” the layers triggered by the cue will never stop and the next/previous/cue number buttons must be used to switch between cues.

How long a layer will run is a combination of the cue’s duration setting and each layer’s loop setting.

A cue can trigger many layers, and each layer can have a different duration or behavior. The length of each layer triggered by a cue is defined in the visual tab of the layer:



“Loop” will run the media while the cue is active, when switching cue, the media will stop.

“Loop Forever” will keep the media running after switching to the next cue. This option is used to keep the media in free-run mode.

To stop a media on a layer in the free-run mode you can replace it with another media or just an empty layer in the following cue.

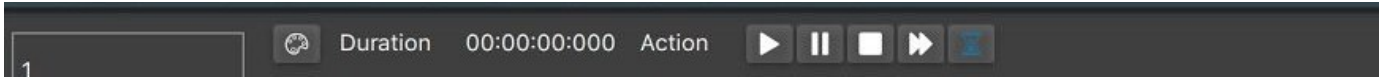
## Transitions

There are three transitions you can use: crossfade, fade down and fade up. On top of that you have a fade in and fade out parameter. You can specify the duration of the transition and fade parameter individually.



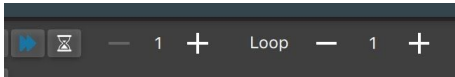
Crossfade will fade the current running visual out while fading the next visual in. Fade down will fade the current running visual to black. Fade in will fade the following visual in while the current visual stays running.

## Cue Action



In the Action cue panel set the playback behaviour at the end of the cue. The different actions are:

- **Follow:** At the end of the cue the next cue will be triggered automatically.
- **Pause:** At the end of the cue the movie playback and the cue list will pause. Hit play again to go the the next cue.
- **Stop:** At the end of the cue the cue list will stop.
- **Jump to Cue:** Set the cue ID to jump to a cue and set the number of times it will loop.



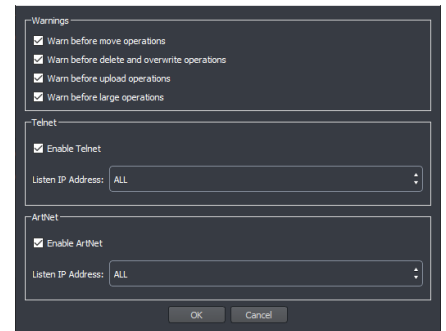
- **Hold:** At the end of the cue list the cue will hold to wait for the next trigger.

## Control Mapping

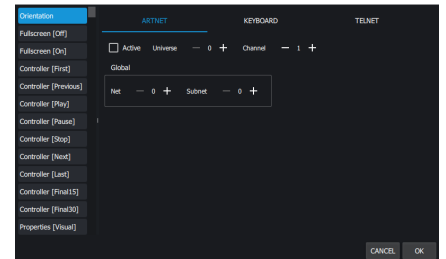
You can connect controls of the remote player with external triggers.

With the control mapping function you can map all mappable controls from the remote player to ArtNet, your keyboard, or Telnet commands.

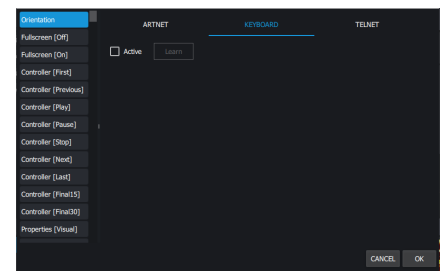
To control the remote player using Telnet or ArtNet, you'll need to configure the Remote Command Service in the **File > Preferences** window. You'll also need to enable the service by marking the Enable Telnet checkbox or Enable ArtNet checkbox and selecting the correct IP Address to listen to.



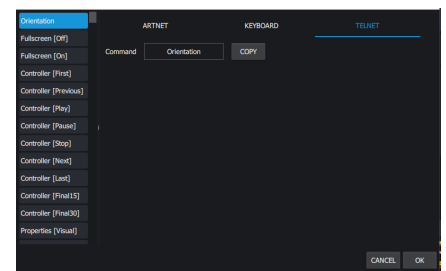
To control the remote player through ArtNet, in the ARTNET tab set the correct universe and channel here and then activate it by checking the **Active** checkbox.



To map a control to a keyboard button, in the KEYBOARD tab first select the control you want to map from the list in the left column. Then click the **Learn** button and press a button on your keyboard. The character of your keyboard will be displayed, and the mapping will be activated. To deactivate the mapping, uncheck the **Active** checkbox.



To control the remote player through Telnet, in the TELNET tab select the control and then click the command that is shown to copy it to the clipboard. You can then paste it into your Telnet application. If you are an Elgato Stream Deck user, you can find a dedicated Companion plugin on the Companion website, <https://bitfocus.io/companion>, or on the ArKaos download page.



## LEDMapper

**Important:** The ArKaos LEDMapper is an extension included with both GrandVJ XT and MediaMaster products. It is important to run the LEDMapper application that has been installed together with your ArKaos product so that the two applications can communicate. It is encouraged to start LEDMapper from within your application, through the menu entry “LEDMapper” or the toolbar.

This section of the documentation is common for GrandVJ XT and MediaMaster. These two are further referred as the “ArKaos software”.

The ArKaos software can also be used to drive LED, dimmers or other color changing devices over DMX in addition to sending high resolution video content to conventional projection or display devices with DVI, VGA or S-Video input.

In order to use the pixel mapping output over DMX you must first build a “mapping file”. This is created using the ArKaos LEDMapper software. It allows you to configure what type of LED fixtures you are using, their DMX addresses and what pixels of your output screen they are related to.

The LED mapping samples the video output buffer and as such full screen output must be enabled for pixel mapping to work.

The LEDMapper has no software limitation. You can control as many LED fixtures as you want within the limit of the 256 DMX universes.

We will explain here how to create the mapping file that describes your network of LED devices.

With the mapping file created and loaded into the Application, the software will output DMX values for each pixel that has been mapped based on the color and intensity of that pixel in your master video output.



This output of DMX can be done simultaneously with the main video output – allowing you to use DMX controlled color mixing fixtures alongside your display devices.

For example, you may have a central projection display in the middle of the stage and surround it with LED color mixing tubes which would also respond to the same content and be controlled via the ArKaos software.

The LEDMapper software includes profiles for many of the leading LED fixtures currently on the market.

**Note:** By default, the LEDMapper is not activated, for more information on how to activate LED Output in the Application, read the Preferences Dialog section and the part about the LEDMapper.

## LEDMapper 3 Introduction

### Overview of the New Features

LEDMapper 3 is a major upgrade from the LEDMapper that was included with the previous version of the Application, the main new features are:

- Support of unicast to optimize your network.
- Auto-discovery of Art-Net nodes for an easier setup.
- LEDMapper and the Application can run simultaneously.
- Reworked toolbar with new network selector and activity LEDs.
- Support to explicitly output to a given network interface.

## Concepts

The LED output in the ArKaos software aims at driving LED fixtures through DMX addressing. Since there's a lot of different panel vendors, LED fixtures have very different properties when it comes to resolution, pixel type, channel mapping, etc.

The LEDMapper has been designed to handle most of the fixtures on the market as long as they are driven through DMX.

To drive those fixtures, ArKaos uses the Art-Net protocol (DMX over Ethernet). If some of your panels don't directly support Art-Net, it can be easily converted into a classic DMX signal using so-called Ethernet nodes. Art-Net gives provision for up to 256 DMX universes, which allows handling a lot of elements.

The principle of the LEDMapper is very simple: Using the LEDMapper application, you describe which area of the video output will be sent to each LED devices along with their DMX addressing (universe and base channel). Once the configuration for a particular show has been defined, it is saved in a 'mapping' file that will be used by the ArKaos software to push the right pixels to the right LED Panels.

## The Integration of the LEDMapper with GrandVJ

To start sending DMX values to your fixtures you need to activate the LEDMapper from the "Display Tab" of the preferences Dialog.



Once it's done you will see the LEDMapper activated in the toolbar of the GrandVJ interface.

The mapping file used by GrandVJ is stored automatically in a reserved folder.

When you activate the LEDMapper for the first time you will not see any activity on your fixtures because none are mapped.

You should open the LEDMapper from the Options menu of GrandVJ or from the Kling-Net button in the toolbar, so you are sure that you will edit the mapping file used by GrandVJ.

New with LEDMapper 3, both GrandVJ and the LEDMapper can stay open simultaneously.

Each time you save your mapping file, GrandVJ will reload it automatically.

## The Integration of the LEDMapper with MediaMaster

To start sending DMX values to your fixtures you need to activate the LEDMapper from the “Output Tab” of the preferences Dialog. Once it’s done you will see the LEDMapper activated on the bottom right of the MediaMaster interface.



The mapping file used by MediaMaster is stored automatically in the active library. This has the advantage of making it easy to move or backup a show because the library will have both the content and the mapping used by MediaMaster.

When you activate the LEDMapper for the first time you will not see any activity on your fixtures because none are mapped.

It is recommended to open the LEDMapper from the Edit menu of MediaMaster. Doing so guarantees that you run the LEDMapper application provided together with MediaMaster and that both applications share a same Library where the mapping file is stored. Each time you save your mapping file, MediaMaster will reload it automatically.

MediaMaster and the LEDMapper are now better integrated. Both can stay open simultaneously. Closing and reopening the mapper will not cut the Art-Net connection.

### Hardware and Network Setup with Art-Net Protocol

The LEDMapper output aims at driving LED fixtures with a DMX input. The ArKaos software will always send DMX information over Art-Net on a single Ethernet adapter. Depending on the type of fixture, it might need to be converted into a DMX signal with Ethernet nodes.

Most Ethernet nodes are Art-Net compatible, and a lot of them are dedicated to Art-Net protocol. The Art-Net protocol can transfer up to 256 DMX universes, allowing to control up to 131.072 DMX channels.

DMX universes in Art-Net are specified by means of two parameters: subnet and universe: there are 16 subnet and 16 universes (both ranging from 0 to 15). On each Ethernet nodes, you must select which subnet / universe they will be listening to transfer the signal onto their DMX output.

## Fixture Node Discovery with ArtPoll and ArtReply

Art-Net specification includes a mechanism to automatically discover DMX devices connected to the network. The “Fixture Nodes” list monitor the active network interface and will display the IP address, the subnet and universe assigned to each detected node.

When available, the name of the node will be displayed. If not, the IP address will be used as the name.

A node that disappears from the network will be displayed in red. The list also displays the number of LED fixtures assigned to each node in the current mapping. It’s the number in the “Nb” column.

Name	IP	Nb	Sub	Univ
2.0.0.1	2.0.0.1	1	0	0
2.0.0.15	2.0.0.15	1	0	0
2.0.0.4	2.0.0.4	1	0	0
2.0.0.43	2.0.0.43	1	0	0
2.0.0.52	2.0.0.52	1	0	0
EZK456	2.183.60.24	1	0	0
Nexus 4x4	2.34.30.64	1	0	0
Nexus 4x4	2.34.99.170	1	0	0
dmXLAN node6	2.0.39.38	4	0	0

## LEDMapper 3 Interface

### The Main LEDMapper Interface

The LEDMapper is the application where you describe which parts of the video image (screen) should be sent to the different fixtures.

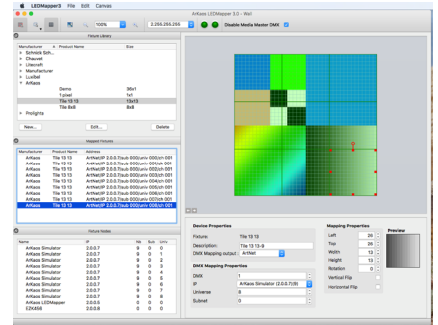
The application has been designed to be simple and easy to use. In order to monitor your work, the software sends Art-Net output, which allows you to see the result of your work when creating the mapping in a WYSIWYG fashion. This is very handy for very complex setups with many fixtures. It also makes sure the process of using the mapping in the ArKaos software is as seamless as possible.

Also new LEDMapper 3, you can decide whether LEDMapper or the Application is sending DMX to the fixtures.

The mapping application is just using a fixed image to sample colors and does not support fancy movie playback and effects. It's solely targeted at getting an accurate mapping definition, not as a performance tool. Once you've created your mapping, the Application will use it and feed the LEDs with camera, movies, text using effects or any other visuals.

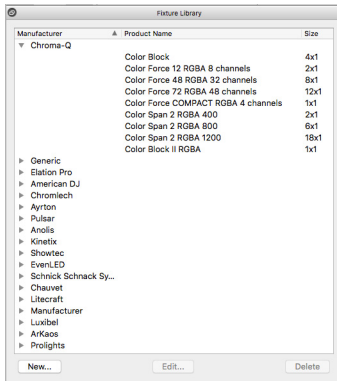
Using the icons on the bottom left of the canvas you can change the background visual.

To add a new image for the mapping of fixtures, go in the File menu and select the item "Choose Test Image..." to choose any image residing on the computer's hard drive. You can also use the "Choose Test Image Directory..." to select a directory that will contain several test images that are needed during the mapping process.





## The Fixture Library



The mapping software is based on the concept of using a fixture library. This library contains the definition for various Fixtures, storing their intrinsic parameters such as the number of pixels they cover, the channel offset for each of pixel and so on.

Once you have defined the library elements, you are free to use them as many times as you wish in a given mapping setup. Each fixture element used for a particular configuration becomes a 'mapping element' that you can arrange interactively, specifying for each of them the universe and start channel to be used.

In the list you find all the fixtures available in the Fixture Library.

Fixtures are sorted by manufacturers.

Each fixture definition contains the following parameters:

**Resolution** (for instance 8x8 pixels)

The resolution specifies the width and the height of the pixel matrix.

### Pixel Type

The pixel type specifies the color and luminance capacity of the pixels.

Most often, the pixel type will be RGB, meaning 3 DMX channels define each pixel; giving respectively the red, green, and blue levels.

Some devices have additional channel for luminance information and are of type RGLB. This is generally provided to make them easier to control from a lighting desk but is not useful when controlled from the ArKaos software. However, it is important to choose the right pixel type or the values sent will not correspond to what the device is expecting. In the case of the RGLB pixel type, the ArKaos software will output a constant luminance set in .xml or simply fill the "L" channel with a 100% value by default.

For pixel type "L" (Luminance only), the Application will compute each of the pixel's luminosity and send it to the fixture. In this case each pixel uses only one DMX channel.

The CMY and YMC are alternative color models used to control some fixtures such as moving lights.

Amber is a color between yellow and orange. They are represented by a separate LED on some fixtures.

Pixel Type	Detail or Formula
RGB	Red, Green, Blue
RBG	Red, Blue, Green
GRB	Green, Red, Blue
GBR	Green, Blue, Red
BRG	Blue, Red, Green
BGR	Blue, Green, Red
RGBL	Red, Green, Blue, Intensity Channel*
RGBA	Red, Green, Blue, Alpha = 0
RGBW+	Red, Green, Blue, Additive White = (Red + Green * 1.5 + 0.5 * Blue) / 3
RGBW-	Red-W, Green-W, Blue-W, W = Min(Red, Green, Blue)
L	Luminance = (Red + Green * 1.5 + Blue * 0.5) / 3;
CMY	255 - Red, 255 - Green, 255 - Blue
YMC	255 - Blue, 255 - Green; 255 - Red
RGBXXX RrGgBb	Red, Green, Blue, 0, 0, 0
RGBAmber	Red, Red, Green, Green, Blue, Blue
RGBWAmber	Red, Green, Blue, Min (Red, Green)
	Red, Green, Blue, Intensity Channel*, Min (Red, Green)
RB	Red, Blue
R	Red
G	Green
B	Blue
*Intensity Channel is a constant value set per fixture in the xml and parameter name is intensity channel with a default value of 255.	

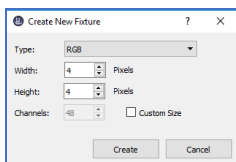
**Pixel addressing** (DMX channel assigned for each pixel)

In order to drive each pixel inside the matrix, we need to define the channel offset of each pixel inside the fixture. Many fixtures maps pixels from left to right and from top to bottom, but this is not always the case. In order to cope with all situations, the software allows pixels to be addressed freely or using an auto-map feature covering most of the cases.

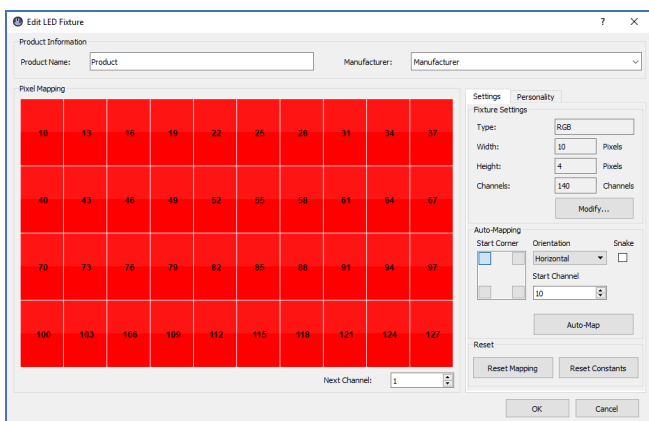
## Creating or Modifying an LED Fixture

To edit an existing fixture, select it in the fixture library list and press the “Edit” button at the bottom of the list. To create a new fixture, press the “New” button below the fixture list.

When creating a new fixture, a first dialog lets you select the pixel type, the width and height of the fixture in pixels, the number of DMX channels used in the personality of the LED fixture. By default it is deduced from the pixel information but a custom size can be specified.



Then in both cases it will open the Edit LED Fixture dialog box:



This dialog allows you to define the manufacturer and product name of the fixture and choose its pixel type, resolution and channel count. Pixels can be mapped on channels either manually or by using the Auto-Mapping feature. The red squares indicate all pixels from the Fixture’s matrix. If they have a number in them, it represents their DMX channels. The number is the channel offset to be used to address that particular pixel. Pixels without numbers are not addressed, no pixel information will be sent to them.

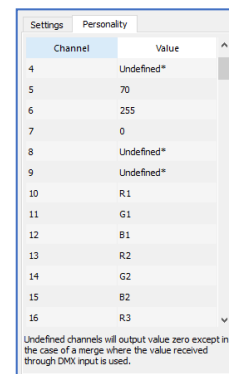
Auto-Mapping gives a simple way to define an addressing that follows a row/column pattern. Simply specify the rule and the start channel to fill out the matrix by clicking ‘Auto-Map’ button. You will see the resulting addressing displayed inside the pixels. If the fixture doesn’t have enough channels, the Auto-Map button will be disabled. The range of the Start channel is constrained so that there are enough channels left for the full pixel mapping.

To map pixel addresses manually, you need to click red squares one at a time or holding mouse button down in the correct order. Each time you click a pixel not yet patched, it will be given the next DMX channel. You can specify the Next Channel to be used by setting another value in the Next Channel field. You can always use the “Reset mapping” button to clear completely the mapping.

In this new version you get a finer control over the fixture personality by setting some constants for some channels or keep some channel Undefined. This is done in the Personality tab. It allows the Application to support new fixtures that require some channels, such as Intensity or Shutter, to be set in order to operate.

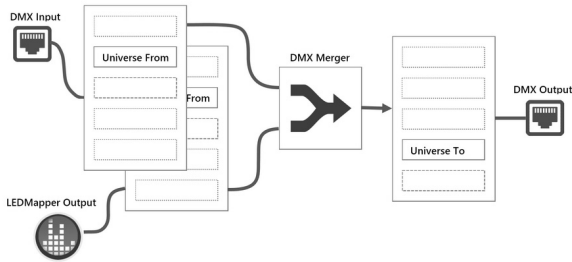
An Undefined channel will output value zero except in the DMX Merger is used. In this last case, the value received through DMX input will be output. In other words, undefined channels are not controlled by the LEDMapper but only passed through the Merger.

The Reset Constants button in the Settings lets you clear all those constants.



## The DMX Merger

The new DMX Merger allows to control advanced fixtures from both a lighting console and the ArKaos software. For instance, a Moving Head Pan & Tilt channels can be controlled from a lighting console while the Application sends video content to the LEDs.

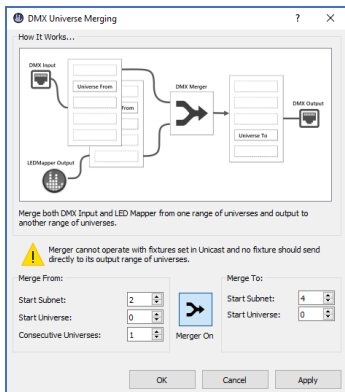


Both the lighting console output and the LEDMapper fixtures to be merged should be set on a same set of consecutive universes. The DMX Merger will then merge both data and output the result to another non-overlapping set of consecutive universes. The merge will be done based on the configured personality of the fixture in LEDMapper. Undefined channel will take the value from the DMX Input while Constant channel will overwrite the DMX Input values. Pixel information will be merged following the LEDMapper merger mode defined by DMX in two Master Fixture channels.

In the LEDMapper toolbar the following two buttons are respectively to toggle the DMX Merger on/off and to setup the DMX Merger by opening the DMX Universe Merging dialog.



The setup dialog lets the user specify the input and output ranges of universes by specifying a Start Subnet, a Start Universe and the number of Consecutive Universes to be merged. When using consecutive Universes, please note that the next Universe after 15 is the Universe 0 of the next Subnet.



The button with the Merger symbol must be pushed to activate the Merger. This is similar to toggling on the Merger on the main toolbar.

Here are a few rules to follow to setup the DMX Merger properly:

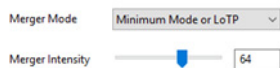
- Both the lighting console output and the LEDMapper fixtures to merge should be setup on the same channels in the input range of universes of the DMX Merger.
- Merger cannot operate with fixtures set in Unicast mode.
- No fixture should be set to output in the range of universes used for the Merger output.
- Input and output universe ranges of the DMX Merger should not overlap.
- The physical light fixtures to be controlled by the merger should be setup on the output range of universes of the DMX Merger.

In the dialog above, the lighting console and the LEDMapper fixtures should be configured on Universe 0 Subnet 2 and the physical lighting fixture should be set up on Universe 0 Subnet 4.

**Note:** For now, merging can only be done on pixel format where blending can be done separately per component and DMX channel. Merger does not support yet 16 bits or LEDs with more than RGB channels where components or channels are correlated.

### Parameters

Two parameters are available in the Output tab of the preferences to set the Blend Mode of the DMX Merger and the Intensity. In the Status panel of MediaMaster, a letter between square brackets indicates the status and the mode of the DMX Merger.



The Merger takes DMX input and LEDMapper output and apply the selected blend mode to produce a Merger output. On top of that the Intensity determines how much the Merger should influence the result. With an Intensity of 0%, the DMX input is passed through. With an Intensity or 100% the Merger result is output. Intensity parameter can be used as a cross-fade parameter between DMX Input coming from a lighting console and Merger Output coming from LEDMapper.

To be controlled from a lighting console, those two parameters are also available through DMX, and described in the DMX Chart of the Master Fixture.

### The Mapped Fixtures List

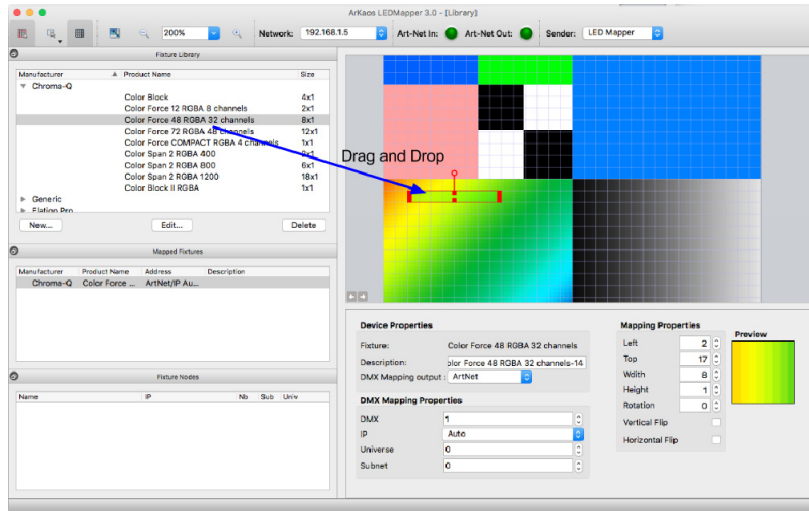
The “Mapped Fixtures List” contains all the mapped elements that have been already included into the current project.

The address column provides the subnet, channel and universe used by the fixture.

Manufacturer	Product Name	Address
ArKaos	Title 13 13	ArtNet/IP 2.0.0.7/sub 000/univ 000/ch 001
ArKaos	Title 13 13	ArtNet/IP 2.0.0.7/sub 000/univ 001/ch 001
ArKaos	Title 13 13	ArtNet/IP 2.0.0.7/sub 000/univ 002/ch 001
ArKaos	Title 13 13	ArtNet/IP 2.0.0.7/sub 000/univ 003/ch 001
ArKaos	Title 13 13	ArtNet/IP 2.0.0.7/sub 000/univ 004/ch 001
ArKaos	Title 13 13	ArtNet/IP 2.0.0.7/sub 000/univ 005/ch 001
ArKaos	Title 13 13	ArtNet/IP 2.0.0.7/sub 000/univ 006/ch 001
ArKaos	Title 13 13	ArtNet/IP 2.0.0.7/sub 000/univ 007/ch 001
ArKaos	Title 13 13	ArtNet/IP 2.0.0.7/sub 000/univ 008/ch 001

## Creating the LED Mapping

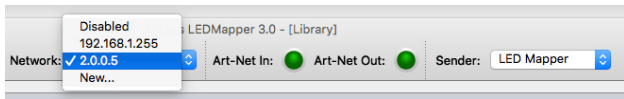
When your set of fixtures is ready, you can start building a specific mapping, which can combine several fixtures into a mapping. To add a fixture, simply drag & drop it from the library onto the mapping area located on the right side of the screen. It will automatically create a ‘mapped fixture’ (an instance of a fixture in the mapping) and display the available parameters in the “Device Properties”, “DMX Mapping Properties” and “Mapping Properties” panes:



At this point, the LEDMapper will start sending DMX to the fixture. If your panels are properly connected, they should display the part of the image held inside the element’s area. If the panel doesn’t show any image, check the fixture definition, the DMX patching of the element as well as your hardware connections. The images sent for this particular element is also displayed in the “Preview” pane located under the mapping area.

## Selecting the Network Interface and the Sender Application

The toolbar on the top of the mapping allows you to select the network interface where you want the Art-Net traffic to be sent:

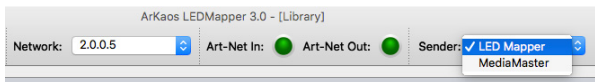


If you want to create a mapping for a network not connected to your system you can select new and enter an address compatible with the system where the mapping will be used. If you are not sure of the complete IP address of the interface on that system you can by example simply use 2.x.x.x to allow selecting any interface that start by 2.

Two LEDs are monitoring if packets are received or sent by the LEDMapper. Packets received by the LEDMapper are mainly Art-Net pool replies sent back by LED fixtures on the network.

LEDMapper 3 supports any IP addresses including office network ranges like 192.168.x.x and more standard ranges 10.x.x.x and 2.x.x.x as defined by the protocol.

LEDMapper 3 can run side by side with the ArKaos software. A sender selector toggles which application will output DMX to the fixtures:



This allows to quickly visualize the result of the mapping with the output of the Application.

The Application will immediately reload the mapping each time you save the file.

Setting the Sender to LEDMapper means the LEDMapper should output Art-Net data instead of the Application.

**GrandVJ XT:** The GrandVJ toolbar the “KLING-NET” will illuminate in orange. When GrandVJ can send out Art-Net data, the “KLING-NET” will illuminate in blue again.

**MediaMaster:** In MediaMaster the LED will turn orange. When MediaMaster can send out Art-Net data, the LED turns blue again.

## Editing the Device and DMX properties

The description in the device properties pane is a helper to identify your devices in the mapped fixtures list.

The DMX properties give the address of the first DMX channel in the device.

If IP address is set to “Auto” the LEDMapper will send the DMX channels to every device on the network. This makes the mapping easier to create, but can put a heavy load on every fixture in the network.

Universe and Subnet are in range 0-15. A Subnet of 1 and Universe 0 is also equivalent to a Universe of 16 when referencing to the alternate convention of 256 Universes in Art-Net 2 and 32768 in Art-Net 3. In the current version only the first 256 Universes can be addressed.

New in LEDMapper 3, you can set explicitly the IP address of a device. To assist you while setting the IP address, the IP menu is automatically populated with the fixtures nodes discovered on the network.

Here you see all the devices discovered on the network and the LEDMapper will send the DMX channels to the “dmXLAN node6”.

Each entry of the menu is the concatenation of this information:

- The node name (dmXLAN node6)
- The IP address (2.0.39.38)
- The number of devices assigned to that IP address (1)

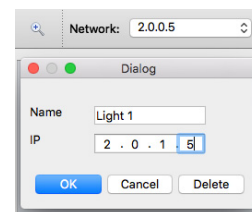
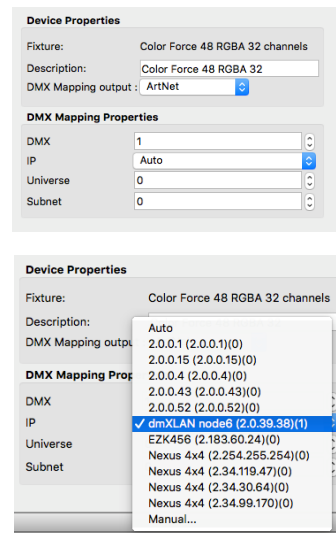
This avoids the need to enter IP addresses manually in most cases.

Only when you are creating a mapping file offline and you don't have the devices on your network you need to enter the IP address manually and you must create a “Manual” IP address.

When you create a manual address, the dialog is using the information of the current active network.

If your main network is on 2.x.x.x you will only be able to enter the last 3 numbers of the IP address.

The LEDMapper allows you to enter a manual network address. This allows creating a mapping file using IP addresses for devices, even if you are not yet connected to the network where the mapping will be used.



## Unicast Versus Broadcast

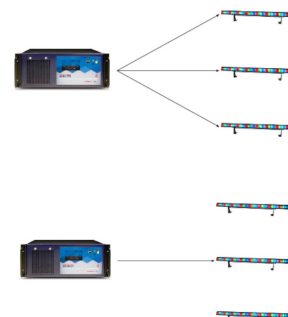
LEDMapper version 3 now supports the unicast transfer mode where packets of data can be sent directly to the addressed fixtures and not to the entire network.

For backward compatibility, LEDMapper can still use broadcasting to send all data to every LED fixture.

In the Broadcast example here, each of the three fixtures would also receive data addressed to the other two fixtures. This would put three times more load on the network and the fixtures would be processing three times more data.

The unicast transfer mode is more efficient because every packet of data is sent exclusively to the addressed fixture, as illustrated below. However, unicast requires specifying the IP address of each fixture.

Fixtures are still mapped in Broadcast mode by default as long as the IP address stays on “Auto”.



To assist you while optimizing your network, fixtures in Broadcast mode are displayed in orange in the “Mapped Fixtures” list:

Manufacturer	Product Name	Address	Description
ArKaos	Tile 13 13	ArtNet/IP 2.0.0.7/sub 000/univ 000/ch 001	
ArKaos	Tile 13 13	ArtNet/IP 2.0.0.7/sub 000/univ 001/ch 001	
ArKaos	Tile 13 13	ArtNet/IP Auto/sub 000/univ 002/ch 001	
ArKaos	Tile 13 13	ArtNet/IP Auto/sub 000/univ 003/ch 001	

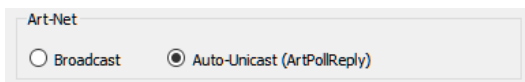
Using unicast is not mandatory and most of the time broadcasting should work just fine with modern fixtures. You should consider using unicast with a large number of fixtures and if you want to optimize your network by sending the minimum data packets to your fixtures.

If you have a mixed setup with both unicast and broadcast, you will still put some pressure on every device on the network. Unicast works best when every fixture have been assigned an IP address.

### Auto-Unicast

Auto-unicast will automatically optimize the network traffic by sending Art-Net data only to the devices concerned. There is no extra setup because that information is automatically shared through ArtPollReply and part of the Art-Net specifications. Devices should be left on Auto IP.

LEDMapper exposes a new option in the preferences to turn on this optimization.



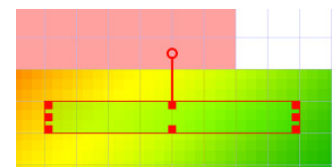
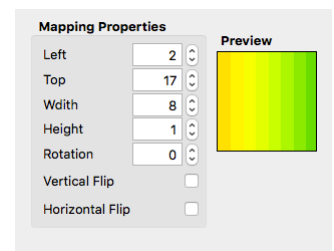
### Editing the Mapping Properties

Left and Top are the positions in pixel of the top left corner of the device.

Width and Height are the number of pixels of the screen area that will feed this element. If you want a pixel perfect mapping, this value should match the exact size of the Fixture pixel matrix. This is the default setting after adding element. If the element size differs from the fixture size, the ArKaos software will perform averaging on the screen area to compute the pixel color information sent to the fixture.

- Rotation rotates the element of the specified number of degrees.
- Horizontal flip allows flipping the element upside/down
- Vertical flip allows flipping the element left/right

The element’s position, size and rotation can also be edited graphically. If you press the left mouse button inside the device’s area, dragging the mouse will move the element. Clicking on every corner of the element will modify the element’s size while the top handle allows changing the rotation.





## Deleting a Device from the Mapping

To delete an element, select it and press the “Delete” key, you can use “undo” if you made a mistake. Alternatively, you can right click on the element, and select the “Remove” entry in the contextual menu.

You can also delete a device from the “Mapped Fixtures” list. Select the element there in the list and press the “Delete” key.

## Mapped Devices Contextual Menu

Once a device is selected you can right click on it to see the contextual menu. The mapping properties such as Flip Horizontal and Vertical are available in the menu. The Align and Rotate options are designed to work on a group of devices.

Those are the options of the Align and Rotate entries:

To save time when creating a big setup with many similar fixtures (for instance 16x10 = 160 fixtures), it is possible to duplicate elements. To duplicate an element, right click on it and select “Duplicate Element...” from the contextual menu.

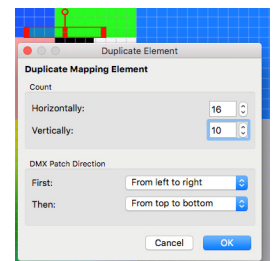
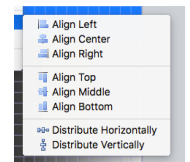
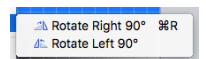
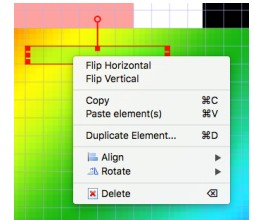
The following dialog will be shown:

In most cases, the elements will be organized according to a matrix. For example, using 16 elements in a 4x4 grid. Using this dialog, you can specify the width and height of the grid you would like to create, specifying the number of elements you want horizontally and vertically. If you want to create a grid of 4x4 elements, you will enter these parameters.

The Patch direction will define where the new elements will be added and in which order. The order is important because the software has an intelligent DMX patching algorithm explained below. The direction is also important: if you select to patch first “From left to right” then “From top to bottom”, the element you are duplicating will be the top left element of the grid. The new element will be added to the right and to the bottom of the original one.

Since all the resulting elements need to be assigned to an Art-Net universe and DMX channel, the software will pre-patch the duplicated element using the most logical way: if there is enough channels left in the current Art-Net universe, it will set the start channel to the next unused channel in the universe. If there is not enough space left it will patch the duplicated element on the first channel of the next universe.

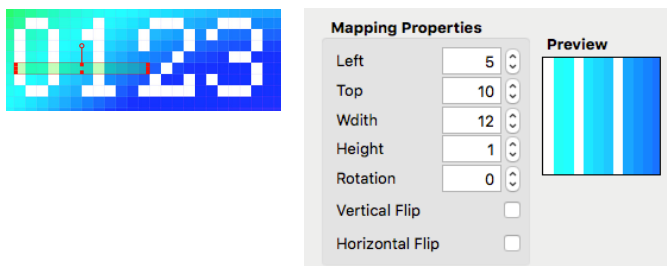
To verify or modify the pre-patching of the duplicated elements once you’ve created them, you can select them individually and inspect their properties in the “DMX Mapping Properties” pane.



## Mapping Resolution and Pixel Perfect Sampling

When positioning the mapping elements, everything is done with respect to a pixel grid. The grid resolution is per default 100x100 but can be changed to any resolution, up to 4096x4096.

The LEDMapper can be used to send pixel perfect values. To do so you must avoid resizing the mapped device. In this example we have a bar of 12 LEDs mapped in a 64 by 64 canvas area, the device properties are 12 by 1 and no resize occurs, the Preview shows that the colors are exact and not blurred:



## Mapping Files

After having mapped all the fixtures for your show, you need to save the mapping file before leaving the application. The File menu offers all common entries to create a new empty mapping, to save your mapping or save your mapping under another file name.

The file extension “.Imp” stands for LEDMapper Project. It includes the mapping (mapped elements and their properties) as well as the fixtures used in the mapping, so that you can open the file on another computer even if the fixtures are not available on that computer’s fixture library.

By default, LEDMapper 3 saves the mapping file in a reserved folder used by GrandVJ.

### Mapping Files

Mapping files with extension “.Imp” are used to save both the mapping of fixtures on the canvas, their properties and also the definition of fixtures so that the file can be used on another computer.

**GrandVJ XT:** An active “mapping.Imp” file is stored in a LEDMapper subfolder beside the GrandVJ preferences. The mapping is not saved within the GrandVJ project.

**MediaMaster:** In MediaMaster each Library contains one “mapping.Imp” file in the LEDMapper subfolder. When switching Library, both MediaMaster and LEDMapper will switch to the mapping contained in this Library. Switching Library while any mapper is open is discouraged.

The save command in the file menu directly writes to that active mapping file and notifies the ArKaos software to immediately reload and apply the new mapping file. The Import or Export are used to load and save a mapping from or to a different file location.

New...	Creates a new mapping file and discard the current one.
Save	Saves the mapping and notifies the ArKaos software.
Import...	Imports a mapping from a file location.
Export...	Exports the mapping to a file location.

## Import Fixtures

The option “Import Fixtures” in the File menu loads and merges a library of fixtures from a file, within the current definition of fixtures used by LEDMapper.

# MediaHub

## Concept

MediaMaster uses a tool, the MediaHub, to make synchronization of content as simple as possible between multiple servers. Typical use cases are:

- Deploying new content on a set of Media servers.
- Doing a backup of all the content of a server.
- Synchronizing latest content from a laptop to a server just before a show.
- Remotely updating content on a server that is hard to reach.
- Comparing content of multiple servers and making sure they are in sync.
- Remotely checking the status of a set of servers.

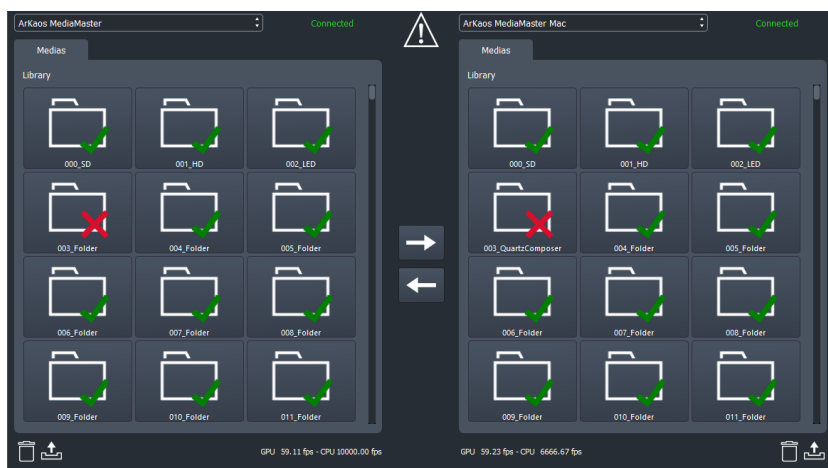
## Getting Started

MediaHub is an application that can run on a PC or on a Mac, and communicates over a wired or wireless network to one or more running instances of MediaMaster 6.

MediaHub can communicate with MediaMaster running on the same computer, but installing MediaMaster on a computer is not mandatory to start MediaHub.

To get started, MediaMaster should be started on one or more computers or servers and reachable over a network. Then you should start the MediaHub application. Then select two servers you want to interact with through the dropdown above the left and the right panels.

Then select directories or files that you want to synchronize in the left panel. Click the right arrow in the middle of the screen to start the synchronization to the other server.



## User Interface

### Main View

The main view shows:

- A toolbar
- A left and a right panel showing the content of two servers
- Synchronization arrows buttons and a synchronization status
- Actions to perform on each server

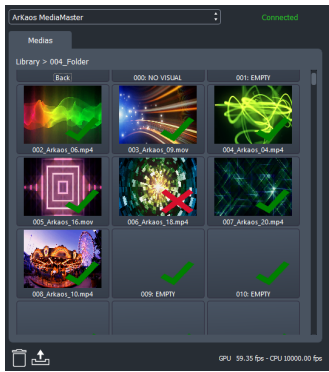
### Toolbar

Toggle between a list view and a grid view to display the content.

Toggle between small, medium and big thumbnails.


**TRANSFER** **REMOTE PLAYER** **SAGA ENCODER** Toggle between the 3 interfaces.

## Left and Right Server Panels






This panel displays the name of the selected server, its connection state, the path and the content of the current folder or all folders in the library and some status information about the GPU and CPU framerate.

- A green check indicates a visual is similar on both servers.
- A red cross indicates visuals are different on both servers.

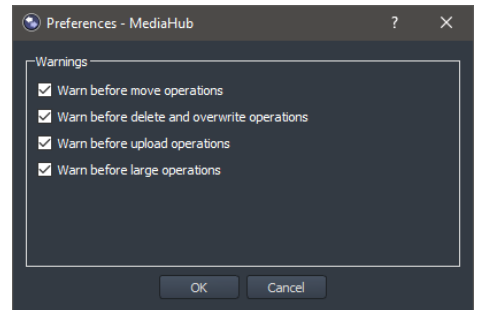
 The trashcan and upload buttons allow to remotely delete or upload a media on the server.

## Synchronization Buttons

-  Clicking the right arrow synchronizes the selected content of the server on the left to the server on the right. By default, if no content is selected then the whole directory or the whole server is synchronized.
- 
-  This icon indicates that the two servers are not fully in sync

## Preferences

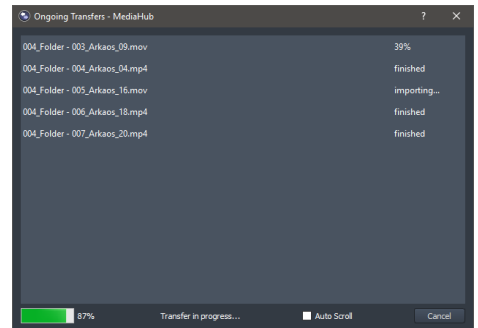
The level of warnings can be adjusted, depending on if you prefer being alerted before risky operations, or if you are confident about your operations and accept the risks.



## Transfers

MediaHub makes synchronization tasks as short as possible by using the full network bandwidth to run a set of file transfers in parallel. This can be observed in the Ongoing Transfers dialog where the status of each individual files is tracked, as well as a global progress bar.

Transfers happen directly between the two instances of MediaMaster and do not transit through the MediaHub for efficiency. Only uploads happen between the computer running MediaHub and the server running MediaMaster.



## Installer

The MediaHub is automatically installed with MediaMaster, but can also be installed through a standalone installer on a computer without MediaMaster. No separate license is needed for the computer running only MediaHub.

## Troubleshooting

### Firewall

MediaHub needs to open some rights to communicate properly through the network. It is mandatory to run the installer and to check the installer option “Port opening for MediaHub”.

### Software Compatibility Issues

MediaHub will not work with some security software like Bitdefender Internet Security 2016 that provide very custom firewall or totally replace the network stack.

### Communication between Media Servers

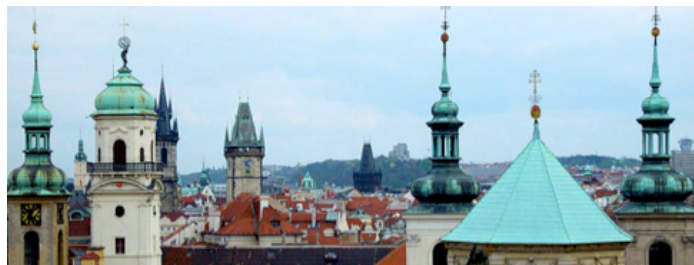
For any transfer to happen between two different computers running MediaMaster, they have to be on a same network and configured properly so that those two computers can have a direct network communication.

## Soft-Edge

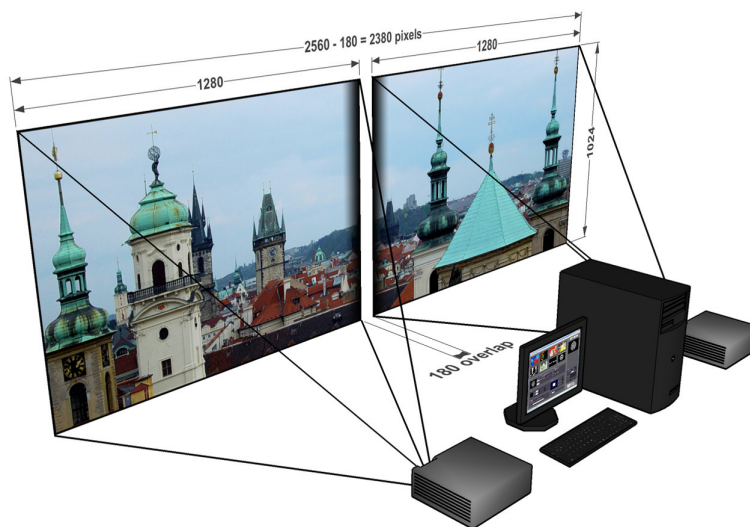
### Introduction

To create a large screen by combining several video projectors it is important to be able to seamlessly blend the edges between each projection. This can be achieved through the use of the Soft-Edge option as it creates an overlapped area on the border of each screen with a fade on the edge that can be overlapped with the next image.

Here is an original image (a nice view of Prague's skyline):



And here's an example of what would be displayed with a two beamers setup:



The areas to blend are represented with a gradient in the middle of the projection, positioning the beamers so that these two areas are superposed will re-create the original picture without any visible separation in the middle of the projection.

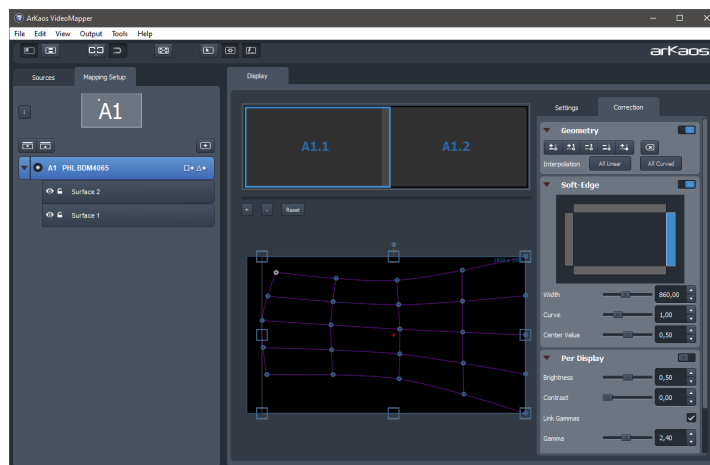
Of course, it's highly recommended to use two identical projectors.

**Note:** When setting up soft-edge, you have to be absolutely sure that all gamma/exposure of the graphic card & beamers are off. Otherwise, you might have an imbalance between the two outputs and not be able to connect the projectors.

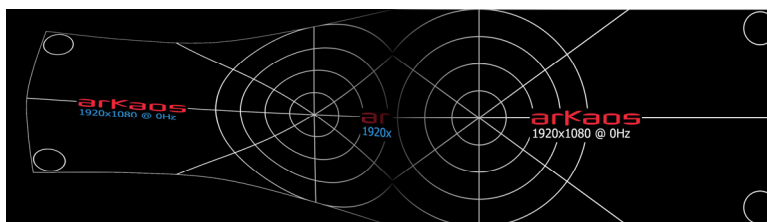
Soft-Edge is available through the VideoMapper in MediaMaster Pro.

## How to Setup Soft-Edge in VideoMapper

When using MediaMaster Pro in VideoMapper Mode, Soft-Edge can be setup between multiple displays and multiple spans directly from within the VideoMapper with all the extra strength offered by the mapper.



When you select a display or a group of display, you can enable Soft-Edge in the tab Correction, as well as Per Display color corrections. In the settings tab you can also turn-on the display of a pattern to help for the precise setup.



## Calibration Steps

Below are the common steps to setup and calibrate a wide screen with Soft-Edge in MediaMaster with the VideoMapper.

- Launch MediaMaster in VideoMapper Mode and run the VideoMapper.
- Select the display or select a group of displays and setup the resolution and the number of spans.
- Activate the Pattern “Geometric Correction” for the setup.
- Launch the full screen mode CTRL+F / Cmd+F of the VideoMapper.
- Place the beamers correctly so that the edges that blend the seamless area are superposed.
- Turn on Geometric Correction feature and do corrections if needed.
- Eventually calibrate each display with the Per Display color corrections.
- Turn on Soft-Edge feature and set the overlap width for each edge requiring Soft-Edge.
- Adjust the Curve for each edge to make for a smooth transition if needed.
- Adjust the Center Value to obtain the desired luminosity on the overlapping area.

## Syphon, Spout, & NDI®



MediaMaster can be used together with other software, specialized in content or effect generation or output mapping, thanks to some different compatible interop technologies like Syphon, Spout and NDI®.

### Inputs

#### Syphon Input

<b>Type</b>	Input from a Syphon sender running on the same computer.
<b>Transfer</b>	Efficient transfer through GPU texture sharing.
<b>Platform</b>	Mac Only
<b>Website</b>	<a href="http://syphon.v002.info">syphon.v002.info</a>

Syphon inputs are visible in the Folder 241 of the Library.

#### Spout Input

<b>Type</b>	Input from a Spout sender running on the same computer.
<b>Transfer</b>	Efficient transfer through GPU texture sharing.
<b>Platform</b>	Windows Only
<b>Website</b>	<a href="http://spout.zeal.co">spout.zeal.co</a>

Spout inputs are visible in the Folder 241 of the Library.

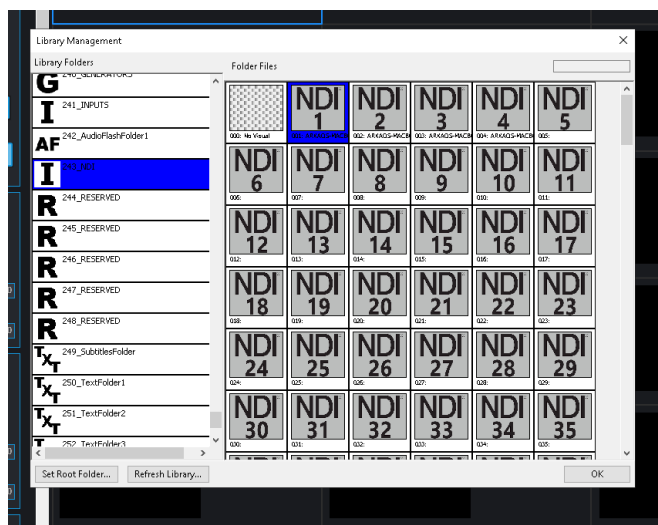
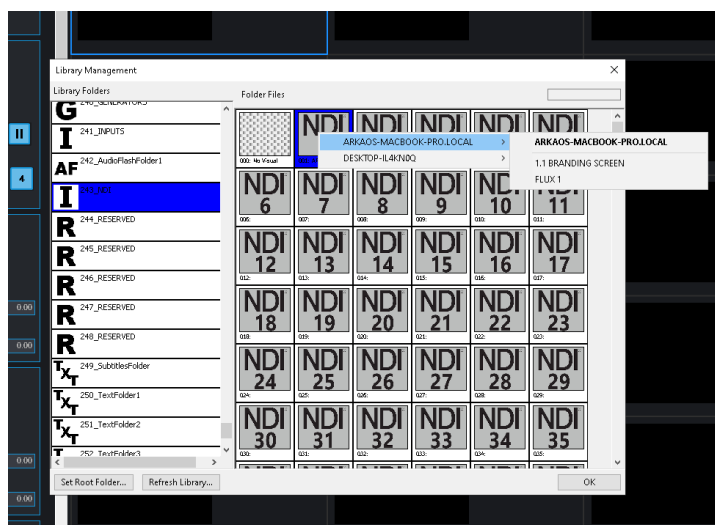


## NDI Input

<b>Type</b>	Input from an NDI sender running on the same computer.
<b>Transfer</b>	Transfer over network.
<b>Platform</b>	Mac and Windows
<b>Website</b>	<a href="http://ndi.tv">ndi.tv</a>

1. Find NDI source from folder 243 in the library.
2. Right click on the slot to select an NDI source to assign.

The NDI Source will be automatically discovered on the network and will show in the list under the NDI server.



## Outputs

### Syphon Output

Type	Output to a Syphon receiver running on the same computer.
Transfer	Efficient transfer through GPU texture sharing.
Platform	Mac Only
Website	<a href="http://syphon.v002.info">syphon.v002.info</a>

Syphon outputs are always exposed and become active when a Syphon receiver is subscribing.

### Spout Output

Type	Output to a Spout sender running on the same computer.
Transfer	Efficient transfer through GPU texture sharing.
Platform	Windows Only
Website	<a href="http://spout.zeal.co">spout.zeal.co</a>

Spout outputs are always exposed and become active when a Spout receiver is subscribing.

### NDI Output

Type	Output to an NDI receiver running on another computer.
Transfer	Transfer over network.
Platform	Mac and Windows
Website	<a href="http://ndi.tv">ndi.tv</a>

NDI outputs are always exposed and become active when an NDI receiver is subscribing.

### Legal Notices

Syphon is a technology copyrighted by Tom Butterworth and Anton Marini.

Spout is a technology copyrighted by Tom Illumina, Inc.

NDI is a registered trademark of NewTek, Inc.

## Performance Tips

Achieving the very best performance with video depends on a lot of different hardware factors so is dependent on the system you chose to run the ArKaos PRO software.

- CPU speed
- Disk speed
- RAM access speed
- Video hardware & video bus speed
- Movie compression

In MediaMaster, most of the graphic processing is done in the graphic chip of the video hardware, so the more powerful it is, the better performance you are going to get. The CPU is mainly used to decompress movie frames from the disk and send them to the video card. The faster your drives are, the faster frames will be loaded in the memory and the faster your CPU is, the faster it will decompress the frames.

There are two main ways, which can help in achieving a good frame rate with your hardware:

1. Adapt the resolution of the internal computation. See (Preferences / Display)
2. Use a source material that is adapted to your hardware. If you have a slow disk or older generation of hardware, try working with smaller video sources to minimize the impact of loading and decompressing the movie. Since all calculations are done inside the graphic card, the automatic filtering applied when the images are scaled to the final resolution will minimize aliasing effects.

## Monitor Rate Versus Movie Rate

If you want your movies to be really smooth, you need them to be in accordance with the monitor frequency to ensure that each time there is a frame to show, you have a monitor refresh.

If your movies are 30 FPS, the monitor needs to be at 60 Hz and if they are at 25 FPS, you need to use either 50 Hz or 75 Hz.

Be also careful that depending on your chosen resolution, the choice of frequencies might change so it's important that once your setup is done, you put MediaMaster in Full Screen and get the monitor reading from the status panel.

## Hardware Dependencies

If you do spans across the two outputs of a graphic card, there's no guarantee the two outputs will run at the exact same frequency, which can also produce jitter. It is sometimes more efficient to make a wide output from one head using Matrox's DualHead2Go / TripleHead2Go than to do a span across the two outputs.

## OS Dependencies

Some performance issues are only valid with respect to the operating system.

### Windows OS

Make sure is that you run the software in Exclusive mode since it's the only mode that will ensure correct locking to vertical blanks. To turn on Exclusive mode, activate the option "Force Resolution" (in Preferences/Display).

### macOS

On macOS, if you display the full screen on one monitor, all system drawings on the other monitor can cause the full screen to glitch. *No matter what application.*

We have adapted the way the MediaMaster interface updates itself so that it won't be interfering with the output but any other program updating its GUI will most likely be a problem.

For this reason, in order to achieve the most fluid display under macOS, we recommend to either quit or hide other visible window. For example, even the refresh of the clock in the menu bar can lead to one frame skipping.

## Movie Compression

Besides size, the movie compression used has a huge impact both on the fluidity of the display and the movie playability. The software is using internally FFMPEG to decode most codecs and doesn't need to use QuickTime or another decoder, which takes up more hardware resources to complete.

MPEG-2 is the compression codec that we have found to give the best performances in most configurations, if playing the movie forward at a reasonable speed.

**Note:** The more complex or heavier the compression used, the more work the processor will have to do to decompress the video for playback and this can result in reduced performance.

In addition to the compression method itself, there's the issue of key frames. Most widely spread compression mechanism work using incremental methods, which means they construct a frame by storing the difference between a frame and the previous one (temporal compression).

In order to keep the process from deriving too much from the original material, they store an original frame every now and then, and start again coding incremental information from that frame on. These original frames are called 'key frames'.

Using sparse key frames will mean that for MediaMaster to access a given frame, it will have to find the previous key frame and process all the intermediate frame differences until it reaches the desired one.

This is not a problem until you play your movie with special loop modes (such as ping-pong) or when increasing playback speed (changing movie speed channel).

The bitrate of the movie will define how much data is stored per second of video. Increasing the bitrate increases quality, and necessary hard disk bandwidth and CPU load for decompression.

The bitrate must be high depending on the movie resolution. For instance for a full HD movie (1080p = 1920x1080), the recommended bitrate is between 15 Mbps and 40 Mbps (Mega bit per second). To play multiple movies in high resolution at the same time, it is recommended to use a multi-core CPU and multiple hard drives in a RAID array.

If you are not satisfied with MPEG-2 quality, or if you need to play your movies with various playback modes (backward etc.) it is recommended to use a movie without temporal compression.

The most adapted for MediaMaster is the QuickTime PhotoJPEG codec. It will be handled directly by the application without using QuickTime (through the internal FFMPEG player). Setting the quality between 60% and 80% is generally enough.

## Quicktime and 64 Bits

All applications are now in 64 bits. Apple does not provide QuickTime in 64 bits, so MediaMaster relies now only on FFmpeg to read all QuickTime codecs.

## Fixtures DMX Chart – Pro Version

The fixture types are available in the preferences settings for MediaMaster Pro.

From MediaMaster 6.1 the following DMX fixtures became obsolete: Mini 1.0, Tiny 1.0, Full 1.0, Extended 1.0, Extended 1.1 and Master Full 1.0 and 1.1.

### Layer Tiny 1.1 (20 Channels)

Fixture ID: 5ef890e7-8532-455a-9c2c-02bce50df0ca

	Channels	Ranges	Snap/ Instant	Def. Value	Locate Value	Category
1	Dimmer	0-100%	No	0	255	DIMMER
2	Visual Library	0 User Folder 0	Yes	0	0	BEAM
		1 User Folder 1				
		...				
		239 User Folder 239				
		240 Generators				
		242 Audio Flash				
		250 FlashTexts 1				
		251 FlashTexts 2				
		252 FlashTexts 3				
		253 FlashTexts 4				
		254 Cameras				
		255 Masks				
3	File	0 Prev. Layer	Yes	0	1	BEAM
		1-255 File 1-255				
4	Effect Library	0-15 3D	Yes	0	0	BEAM
		16-31 Color				
		32-47 Blur				
		48-63 Split				
		64-79 Artistic				
		80-95 Quart				
5	Effect	0 No Effect	Yes	0	0	BEAM
		1-255 Effect 1-255				
6	Effect Parameter	0-100%	No	128	128	BEAM
7	Red level	0-100%	No	255	255	COLOR
8	Green level	0-100%	No	255	255	COLOR
9	Blue level	0-100%	No	255	255	COLOR
10	Scale X	0-100%	No	255	255	POS
11	Scale X - fine			255	255	
12	Scale Y	0-100%	No	255	255	POS
13	Scale Y - fine			255	255	
14	Pan/Position X	0-100%	No	128	128	POS
15	Pan/Position X - fine			0	0	
16	Tilt/Position Y	0-100%	No	128	128	POS
17	Tilt/Position Y - fine			0	0	
18	Position Z	0-100%	No	128	128	POS
19	Position Z - fine			0	0	
20	Text	0-255 Text 0-255	Yes	0	0	BEAM

**Layer Full 1.1 (43 Channels)**

Fixture ID: 92ec9313-fd3a-48e3-ad4a-23a18247c3d4

	Channels	Ranges	Snap/ Instant	Def. Value	Locate Value	Category
1	Dimmer	0-100%	No	0	255	DIMMER
2	Visual Library	0 User Folder 0	Yes	0	0	BEAM
		1 User Folder 1				
		...				
		239 User Folder 239				
		240 Generators				
		242 Audio Flash				
		250 FlashTexts 1				
		251 FlashTexts 2				
		252 FlashTexts 3				
		253 FlashTexts 4				
		254 Cameras				
		255 Masks				
3	File	0 Prev. Layer	Yes	0	1	BEAM
		1-255 File 1-255				
4	Effect Library	0-15 3D Presets	Yes	0	0	BEAM
		16-31 Color Presets				
		32-47 Blur Presets				
		48-63 Split Presets				
		64-79 Artistic Presets				
		80-95 3D (Custom)				
		96-111 Color (Custom)				
		112-127 Blur (Custom)				
		128-143 Split (Custom)				
		144-159 Artistic (Custom)				
		160-175 Quartz-Composer				
5	Effect	0 No Effect	Yes	0	0	BEAM
		1-255 Effect 1-255				
6	FX Parameter 1	0-100%	No	128	128	BEAM
7	FX Parameter 2	0-100%	No	128	128	BEAM
8	FX Parameter 3	0-100%	No	128	128	BEAM
9	FX Parameter 4	0-100%	No	128	128	BEAM
10	Text	0-255 Text 0-255	Yes	0	0	BEAM
11	Shape	0-31 Plane	Yes	0	0	POS
		32-63 Cube				

	Channels	Ranges	Snap/ Instant	Def. Value	Locate Value	Category
		64-95 Sphere				
12	Tiling	0-100%	No	0	0	POS
13	Blending Mode	0-31 Copy	Yes	0	0	COLOR
		32-63 Add				
		64-95 Subtract				
		96-127 Multiply				
		128-159 Minimum				
		160-191 Maximum				
		192-195 Difference				
		196-199 Exclusion				
		200-203 Darken				
		204-207 Lighten				
		208-211 Screen				
		212-215 Overlay				
14	Mask Mode	0-31 None	Yes	0	0	COLOR
		32-63 LumaKey BR				
		64-95 LumaKey BP				
		96-127 ChromaKey BR				
		128-159 ChromaKey BP				
15	Mask center	0-100%	No	0	0	COLOR
16	Mask width	0-100%	No	50	50	COLOR
17	Mask Smooth	0-100%	No	20	20	COLOR
18	Speed/Timecode offset	0-100% Speed	No	64	64	BEAM
		0-127 TC frame offset -64 to 63				
		128-255 TC offset table index				
19	Loop Mode	0-31 Loop Forward	Yes	0	0	BEAM
		32-63 Loop Backward				
		64-79 Once and Black Forward				
		80-95 Once and Transparent Forward				
		96-111 Once and Black Backward				
		112-127 Once and Transparent Backward				
		128-159 Ping pong				
		160-191 First Frame				
		192-223 Last Frame				
		224-227 Once and Freeze Forward				
		228-231 Once and Freeze Backward				
		232-235 Timecode				
		236-255 Reserved				
20	Loop In	0-100%	No	0	0	BEAM
21	Loop In - fine			0	0	

	<b>Channels</b>	<b>Ranges</b>	<b>Snap/ Instant</b>	<b>Def. Value</b>	<b>Locate Value</b>	<b>Category</b>
22	Loop Out	0-100%	No	255	255	BEAM
23	Loop Out - fine			255	255	
24	Red level	0-100%	No	255	255	COLOR
25	Green level	0-100%	No	255	255	COLOR
26	Blue level	0-100%	No	255	255	COLOR
27	Scale X	0-100%	No	255	255	POS
28	Scale X - fine			255	255	
29	Scale Y	0-100%	No	255	255	POS
30	Scale Y - fine			255	255	
31	Rotation X	0-100%	No	128	128	POS
32	Rotation X - fine			0	0	
33	Rotation Y	0-100%	No	128	128	POS
34	Rotation Y - fine			0	0	
35	Rotation Z	0-100%	No	128	128	POS
36	Rotation Z - fine			0	0	
37	Pan/Position X	0-100%	No	128	128	POS
38	Pan/Position X - fine			0	0	
39	Tilt/Position Y	0-100%	No	128	128	POS
40	Tilt/Position Y - fine			0	0	
41	Position Z	0-100%	No	128	128	POS
42	Position Z - fine			0	0	
43	Output	0 All outputs	Yes	0	0	BEAM
		1-199 Display outputs				
		200-249 Output Groups				
		250 LEDMapper output				
		251 Kling-Net output				



**Layer Full 1.2 (43 Channels)**

Layer Full 1.2 is similar to Layer Full 1.1 except the definition of new ranges for the Loop Mode channel.

Fixture ID: 10f02675-61f4-4f66-93e2-fba82c12a044

	Channels	Ranges	Snap/ Instant	Def. Value	Locate Value	Category
19	Loop Mode	<b>Loop Forward</b>	Yes	0	0	BEAM
		0-3 Stop at Intensity 0				
		4-7 Continue...				
		8-11 Pause...				
		<b>Loop Backward</b>				
		12-15 Stop at Intensity 0				
		16-19 Continue...				
		20-23 Pause...				
		<b>Once Forward Black</b>				
		24-27 Stop at Intensity 0				
		28-31 Continue...				
		32-35 Pause...				
		<b>Once Forward Transparent</b>				
		36-39 Stop at Intensity 0				
		40-43 Continue...				
		44-47 Pause...				
		<b>Once Backward Black</b>				
		48-51 Stop at Intensity 0				
		52-55 Continue...				
		56-59 Pause...				
		<b>Once Backward Transparent</b>				
		60-63 Stop at Intensity 0				
		64-67 Continue...				
		68-71 Pause...				
		<b>Ping Pong</b>				
		72-75 Stop at Intensity 0				
		76-79 Continue...				
		80-83 Pause...				
		<b>First Frame</b>				
		84-87 Stop at Intensity 0				
		<b>Last Frame</b>				
		88-91 Stop at Intensity 0				
		<b>Once and Freeze Forward</b>				
		92-95 Stop at Intensity 0				
		96-99 Continue...				
		100-103 Pause...				
		<b>Once and Freeze Backward</b>				
		104-107 Stop at Intensity 0				
		108-111 Continue...				
		112-115 Pause...				
		<b>Timecode</b>				
		116-119 Stop at Intensity 0				

	Channels	Ranges	Snap/ Instant	Def. Value	Locate Value	Category
		<b>Reserved</b>				
		120-251				
		<b>Stop</b>				
		252-255 Stop Stops visual even in Continue and Pause at Intensity 0.				

**Layer Full 2.0 (68 Channels)**

Fixture ID: 8D0D54A1-52F7-4895-8092-14838FC63D22

	Channels	Ranges	Snap/Instant	Def. Value	Locate Value	Category
1	Dimmer	0-100%	No	0	255	DIMMER
2	Visual Library	0 User Folder 0	Yes	0	0	BEAM
		1 User Folder 1				
		...				
		239 User Folder 239				
		240 Generators				
		242 Audio Flashes				
		250 FlashTexts 1				
		251 FlashTexts 2				
		252 FlashTexts 3				
		253 FlashTexts 4				
		254 Cameras				
		255 Masks				
3	File	0 Prev. Layer	Yes	0	1	BEAM
4	Transition	0-7 CUT	Yes	0	0	
		8-15 cross fade				
5	Transition Time		Yes			
6	Transition Time fine			0	0	
7	Effect Library 1	0-15 3D Presets	Yes	0	0	BEAM
		16-31 Color Presets				
		32-47 Blur Presets				
		48-63 Split Presets				
		64-79 Artistic Presets				
		80-95 3D (Custom)				
		96-111 Color (Custom)				
		112-127 Blur (Custom)				
		128-143 Split (Custom)				
		144-159 Artistic (Custom)				
		160-175 Quartz-Composer				
8	Effect 1	0 No Effect	Yes	0	0	BEAM
		1-255 Effect 1-255				
9	FX1 Parameter 1	0-100%	No	128	128	BEAM
10	FX1 Parameter 2	0-100%	No	128	128	BEAM
11	FX1 Parameter 3	0-100%	No	128	128	BEAM
12	FX1 Parameter 4	0-100%	No	128	128	BEAM
13	FX 1 Intensity	0-100%	No	255	255	BEAM
14	Effect Library 2	0-15 3D Presets	Yes	0	0	BEAM
		16-31 Color Presets				
		32-47 Blur Presets				
		48-63 Split Presets				
		64-79 Artistic Presets				
		80-95 3D (Custom)				
		96-111 Color (Custom)				
		112-127 Blur (Custom)				
		128-143 Split (Custom)				

	Channels	Ranges	Snap/ Instant	Def. Value	Locate Value	Category
		144-159 Artistic (Custom)				
		160-175 Quartz-Composer				
15	Effect 2	0 No Effect	Yes	0	0	BEAM
		1-255 Effect 1-255				
16	FX2 Parameter 1	0-100%	No	128	128	BEAM
17	FX2 Parameter 2	0-100%	No	128	128	BEAM
18	FX2 Parameter 3	0-100%	No	128	128	BEAM
19	FX2 Parameter 4	0-100%	No	128	128	BEAM
20	FX 2 Intensity	0-100%	No	255	255	BEAM
21	Text	Text 0-230	0-230	0	Yes	BEAM
		Track Name	231			
		Artist Name	232			
		Album Name	233			
		Track – Artist Name	234			
		Track – Artist – Album Name	235			
		Reserved	236-255			
22	Shape	0-31 No shape	Yes	0	0	POS
		32-63 Plane	Yes			POS
		64-95 Cube				
		96-127 Sphere				
23	Tiling X	0-100%	No	0	0	POS
24	Tiling Y	0-100%	No	0	0	POS
25	Blending Mode	0-31 Copy	Yes	0	0	COLOR
		32-63 Add				
		64-95 Subtract				
		96-127 Multiply				
		128-159 Minimum				
		160-191 Maximum				
		192-195 Difference				
		196-199 Exclusion				
		200-203 Darken				
		204-207 Lighten				
		208-211 Screen				
		212-215 Overlay				
26	Mask Type	0-31 None	Yes	0	0	COLOR
		32-63 LumaKey BR				
		64-95 LumaKey BP				
		96-127 ChromaKey BR				
		128-159 ChromaKey BP				
27	Mask Center	0-100%	No	0	0	COLOR
28	Mask Width	0-100%	No	50	50	COLOR
29	Mask Smooth	0-100%	No	20	20	COLOR
30	Speed/Timecode Offset	0-100% Speed	No	64	64	BEAM
		0-127 TC frame offset -64 to 63				
		128-255 TC offset table index				
31	Loop Mode	<b>Loop Forward</b>	Yes	0	0	BEAM
		0-3 Stop at Intensity 0				
		4-7 Continue...				
		8-11 Pause...				

	Channels	Ranges	Snap/Instant	Def. Value	Locate Value	Category
		<b>Loop Backward</b>				
		12-15 Stop at Intensity 0				
		16-19 Continue...				
		20-23 Pause...				
		<b>Once Forward Black</b>				
		24-27 Stop at Intensity 0				
		28-31 Continue...				
		32-35 Pause...				
		<b>Once Forward Transparent</b>				
		36-39 Stop at Intensity 0				
		40-43 Continue...				
		44-47 Pause...				
		<b>Once Backward Black</b>				
		48-51 Stop at Intensity 0				
		52-55 Continue...				
		56-59 Pause...				
		<b>Once Backward Transparent</b>				
		60-63 Stop at Intensity 0				
		64-67 Continue...				
		68-71 Pause...				
		<b>Ping Pong</b>				
		72-75 Stop at Intensity 0				
		76-79 Continue...				
		80-83 Pause...				
		<b>First Frame</b>				
		84-87 Stop at Intensity 0				
		Last Frame				
		88-91 Stop at Intensity 0				
		<b>Once and Freeze Forward</b>				
		92-95 Stop at Intensity 0				
		96-99 Continue...				
		100-103 Pause...				
		<b>Once and Freeze Backward</b>				
		104-107 Stop at Intensity 0				
		108-111 Continue...				
		112-115 Pause...				
		<b>Timecode</b>				
		116-119 Stop at Intensity 0				
		120-123 Sync Mode Beat 1				
		124-127 Sync Mode Beat 2				
		128-131 Sync Mode Beat 4				
		132-135 Sync Mode Beat 8				
		136-139 Sync Mode Beat 16				
		140-143 Sync Mode Beat 32				
		144-251 Reserved				
		Stop				
		252-255 Stop Stops visual even in Continue and Pause at Intensity 0.				
32	Deck selector	0-7 auto	No	0	0	

	Channels	Ranges	Snap/Instant	Def. Value	Locate Value	Category
		8-15 master				BEAM
		24-31 deck 2				
		32-39 deck 3				
		40-47 deck 4				
		47-255 reserved				
33	Loop In	0-100%	No	0	0	BEAM
34	Loop In fine			0	0	
35	Loop Out	0-100%	No	255	255	BEAM
36	Loop Out fine			255	255	
37	Red level	0-200%	No	128	128	COLOR
38	Green level	0-200%	No	128	128	COLOR
39	Blue level	0-200%	No	128	128	COLOR
40	Scale X	0-200%	No	128	128	POS
41	Scale X fine			0	0	
42	Scale Y	0-200%	No	128	128	POS
43	Scale Y fine			0	0	
44	Rotation X	0-100%	No	128	128	POS
45	Rotation X fine			0	0	
46	Rotation Y	0-100%	No	128	128	POS
47	Rotation Y fine			0	0	
48	Rotation Z	0-100%	No	128	128	POS
49	Rotation Z fine			0	0	
50	Pan	0-100%	No	128	128	POS
51	Pan fine			0	0	
52	Tilt	0-100%	No	128	128	POS
53	Tilt fine			0	0	
54	Position Z	0-100%	No	128	128	POS
55	Position Z fine			0	0	
56	Mask Type		Yes	0	0	
		0-7 grayscale				
		8-15 grayscale inverted				
		16-23 alpha				
		24-31 alpha inverted				
		32-39 color				
		40-47 color inverted				
57	Mask red		Yes	0	0	
58	Mask green					
59	Mask blue					
60	Mask Alpha/Tolerance	Alpha in Alpha/Gray, Tolerance in Color Type			0	
61	Mask Index	0 = disabled	Yes	0	0	
62	Reserved	(FUTURE USE: FOLDER SELECT)		255	255	
63	Mask Position X	0-100%	No	128	128	
64	Mask Position Y	0-100%	No	128	255	
65	Scale/Zoom	0-100%	No	128	128	
66	Mask Rotation Z	0-255	No	128	128	

	<b>Channels</b>	<b>Ranges</b>	<b>Snap/Instant</b>	<b>Def. Value</b>	<b>Locate Value</b>	<b>Category</b>
<b>67</b>	Mask Softness	0-100%	No	0	0	
<b>68</b>	Output	0 All Outputs	Yes	0	0	BEAM
		1-199 Display Outputs				
		200-249 Output Groups				
		250 LEDMapper Output				
		251 Kling-Net Output				

**Layer Extended 2.0 (112 Channels)**

Fixture ID: 8D515D61-D42B-4E3A-A8C6-EFA2D3B190F8

	Channels	Description	Range	Snap/ Instant	Default Value	Locate/ Highlight Value	Category	Behavior/ Comment
1	Dimmer	0-100%	0-255	No	0	255	DIMMER	
2	Visual Library	0 User Folder 0	0	Yes	0	0	BEAM	
		1 User Folder 1	1					
		...	...					
		239 User Folder 239	239					
		240 Generators	240					
		242 Audio Flashes	242					
		250 FlashTexts 1	250					
		251 FlashTexts 2	251					
		252 FlashTexts 3	252					
		253 FlashTexts 4	253					
		254 Cameras	254					
		255 Masks	255					
3	File	0 Prev. Layer	0	Yes	0	1	BEAM	
		File 1-255	1-255					
4	RESERVED	(RESERVED FOR INTENSITY MODE)			0			
5	Ignore Alpha / Interlace	Off	0-127	Yes	0	0		
		On	128-255					
6	Transition	Cut	0-7	Yes	0	0		
		Crossfade	8-15					
		Reserved	16-255					
7	Transition Time	0 > 6553.5 sec	0-65535	Yes	0	0		



	Channels	Description	Range	Snap/ Instant	Default Value	Locate/ Highlight Value	Category	Behavior/ Comment
8	Transition Time Fine							
9	Volume		0-255	No	128	128	BEAM	
10	Volume Pan	Left	0	No	128	128	BEAM	
		Left > Center	1-127					
		Center	128					
		Center > Right	129-254					
		Right	255					
11	Aspect Ratio	Stretch	0-31	Yes	0	0	BEAM	
		Auto detect	32-63					
		4:3	64-95					
		16:9	96-127					
		16:10	128-159					
		5:4	160-191					
		1:1 Pixel Mapping	192-223					
		Fit Width	224-232					
		Fit Height	233-240					
		Reserved	241-255					
12	Effect Library 1	3D Presets	0-15	Yes	0	0	BEAM	
		Color Presets	16-31					
		Blur Presets	32-47					
		Split Presets	48-63					
		Artistic Presets	64-79					
		3D (Custom)	80-95					
		Color (Custom)	96-111					
		Blur (Custom)	112-127					
		Split (Custom)	128-143					

	Channels	Description	Range	Snap/ Instant	Default Value	Locate/ Hightlight Value	Category	Behavior/ Comment
		Artistic (Custom)	144-159					
		Quartz- Composer	160-175					
		Reserved	176-255					
<b>13</b>	Effect 1	No Effect	0	Yes	0	0	BEAM	
		Effect 1-255	1-255					
<b>14</b>	FX1 Parameter 1	0-100%	1-255	No	128	128	BEAM	
<b>15</b>	FX1 Parameter 2	0-100%	1-255	No	128	128	BEAM	
<b>16</b>	FX1 Parameter 3	0-100%	1-255	No	128	128	BEAM	
<b>17</b>	FX1 Parameter 4	0-100%	1-255	No	128	128	BEAM	
<b>18</b>	FX 1 Intensity	0-100%		No	255	255	BEAM	
<b>19</b>	Effect Library 2	3D Presets	0-15	Yes	0	0	BEAM	
		Color Presets	16-31					
		Blur Presets	32-47					
		Split Presets	48-63					
		Artistic Presets	64-79					
		3D (Custom)	80-95					
		Color (Custom)	96-111					
		Blur (Custom)	112-127					
		Split (Custom)	128-143					
		Artistic (Custom)	144-159					
		Quartz- Composer	160-175					
		Reserved	176-255					
<b>20</b>	Effect 2	No Effect	0	Yes	0	0	BEAM	
		Effect 1-255	1-255					
<b>21</b>	FX2 Parameter 1		0-255	No	128	128	BEAM	
<b>22</b>	FX2 Parameter 2		0-255	No	128	128	BEAM	

	Channels	Description	Range	Snap/ Instant	Default Value	Locate/ Highlight Value	Category	Behavior/ Comment
23	FX2 Parameter 3		0-255	No	128	128	BEAM	
24	FX2 Parameter 4		0-255	No	128	128	BEAM	
25	FX 2 Intensity		0-255	No	255	255	BEAM	
26	Text	Text 0-230	0-230	Yes	0	0	BEAM	
		Track Name	231					Controlled by Desk Selector Channel 37
		Artist Name	232					Controlled by Desk Selector Channel 37
		Album Name	233					Controlled by Desk Selector Channel 37
		Track - Artist Name	234					Controlled by Desk Selector Channel 37
		Track - Artist - Album Name	235					Controlled by Desk Selector Channel 37
		Reserved	236-255					
27	Shape	No shape	0-31	Yes	0	0	POS	
		Plane	32-63				POS	
		Cube	64-95					
		Sphere	96-127					
28	Tiling X		0-255	No	0	0	POS	
29	Tiling Y		0-255	No	0	0	POS	
30	Blending Mode	Copy	0-31	Yes	0	0	COLOR	
		Add	32-63					
		Subtract	64-95					
		Multiply	96-127					
		Minimum	128-159					
		Maximum	160-191					
		Difference	192-195					
		Exclusion	196-199					
		Darken	200-203					
		Lighten	204-207					
		Screen	208-211					

	Channels	Description	Range	Snap/ Instant	Default Value	Locate/ Hightlight Value	Category	Behavior/ Comment
		Overlay	212- 215					
<b>31</b>	Key Mode	None	0-31	Yes	0	0	COLOR	
		LumaKey BR	32-63					
		LumaKey BP	64-95					
		ChromaKey BR	96- 127					
		ChromaKey BP	128- 159					
<b>32</b>	Mask Key Center		0-255	No	0	0	COLOR	
<b>33</b>	Mask Key Width		0-255	No	50	50	COLOR	
<b>34</b>	Mask Key Smooth		0-255	No	20	20	COLOR	
<b>35</b>	Speed/Timecode Offset	Speed Mode						
		0%	0	No	64	64	BEAM	
		1.0% > 400%	1-255					
		TimeCode Loop Mode						
		TC frame offset -64 to 63	0-127					
		TC offset table index	128- 255					
<b>36</b>	Loop Mode	<b>Loop Forward</b>						
		Stop at Intensity 0	0-3	Yes	0	0	BEAM	
		Continue...	4-7					
		Pause...	8-11					
		<b>Loop Backward</b>						
		Stop at Intensity 0	12-15					
		Continue...	16-19					
		Pause...	20-23					
		<b>Once Forward Black</b>						
		Stop at Intensity 0	24-27					
		Continue...	28-31					
		Pause...	32-35					
		<b>Once Forward Transparent</b>						
		Stop at Intensity 0	36-39					
		Continue...	40-43					

	Channels	Description	Range	Snap/ Instant	Default Value	Locate/ Highlight Value	Category	Behavior/ Comment
		Pause...	44-47					
		<b>Once Backward Black</b>						
		Stop at Intensity 0	48-51					
		Continue...	52-55					
		Pause...	56-59					
		<b>Once Backward Transparent</b>						
		Stop at Intensity 0	60-63					
		Continue...	64-67					
		Pause...	68-71					
		<b>Ping Pong</b>						
		Stop at Intensity 0	72-75					
		Continue...	76-79					
		Pause...	80-83					
		<b>First Frame</b>						
		Stop at Intensity 0	84--87					
		<b>Last Frame</b>						
		Stop at Intensity 0	88-91					
		<b>Once and Freeze Forward</b>						
		Stop at Intensity 0	92-95					
		Continue...	96-99					
		Pause...	100-103					
		<b>Once and Freeze Backward</b>						
		Stop at Intensity 0	104-107					
		Continue...	108-111					
		Pause...	112-115					
		Timecode Loop Mode	116-119					
		<b>Sync Mode Beat 1</b>	120-123					
		<b>Sync Mode Beat 2</b>	124-127					
		<b>Sync Mode Beat 4</b>	128-131					

	Channels	Description	Range	Snap/ Instant	Default Value	Locate/ Highlight Value	Category	Behavior/ Comment
		<b>Sync Mode Beat 8</b>	132-135					
		<b>Sync Mode Beat 16</b>	136-139					
		<b>Sync Mode Beat 32</b>	140-143					
		<b>Reserved</b>	144-251					
		Stop	252-255					
<b>37</b>	Deck Selector	Auto detect	0-7	No	0	0	BEAM	
		Master	8-15					
		Deck 1	16-23					
		Deck 2	24-31					
		Deck 3	32-39					
		Deck 4	40-47					
		Reserved	48-255					
<b>38</b>	Loop In	0-100%	0-65535	No	0	0	BEAM	
<b>39</b>	Loop In Fine				0	0		
<b>40</b>	Loop Out	0-100%	0-65535	No	255	255	BEAM	
<b>41</b>	Loop Out Fine				255	255		
<b>42</b>	Start Point	0-100%	0-65535	No	0	0	BEAM	
<b>43</b>	Start Point Fine				0	0		
<b>44</b>	Media Pause	Play	0-127	Yes	0	0	BEAM	
		Pause	128-255					
<b>45</b>	Red Level		0-65535	No	128	128	COLOR	
<b>46</b>	Red Fine			No	0		COLOR	
<b>47</b>	Green Level		0-65535	No	128	128	COLOR	
<b>48</b>	Green Fine			No	0		COLOR	
<b>49</b>	Blue Level		0-65535	No	128	128	COLOR	

	Channels	Description	Range	Snap/ Instant	Default Value	Locate/ Highlight Value	Category	Behavior/ Comment
50	Blue Fine			No	0		COLOR	
51	Hue Shift		0-255	No	128	128	COLOR	
52	Saturation		0-255	No	128	128	COLOR	0 = Grayscale
53	Lightness		0-255	No	128	128	COLOR	
54	Color Invert	OFF	0-7	Yes	0		COLOR	
		ALL	8-15		0			
		RED	16-23					
		GREEN	24-31					
		BLUE	32-39					
55	Contrast		0-65535	No	128		COLOR	
56	Contrast Fine			No	0		COLOR	
57	Brightness		0-65535	No	128	128	COLOR	
58	Brightness Fine			No	0		COLOR	
59	Scale X		0-65535	No	128		POS	
60	Scale X Fine				0			
61	Scale Y		0-65535	No	128		POS	
62	Scale Y Fine				0			
63	Rotation X		0-65535	No	128	128	POS	
64	Rotation X Fine				0	0		
65	Rotation Y		0-65535	No	128	128	POS	
66	Rotation Y Fine				0	0		
67	Rotation Z		0-65535	No	128	128	POS	
68	Rotation Z Fine				0	0		
69	Position X		0-65535	No	128	128	POS	
70	Position X Fine				0	0		
71	Position Y		0-65535	No	128	128	POS	
72	Position Y Fine				0	0		

	Channels	Description	Range	Snap/ Instant	Default Value	Locate/ Hightlight Value	Category	Behavior/ Comment
73	Position Z		0-65535	No	128	128	POS	
74	Position Z Fine				0	0		
75	Cropping top left x	-100 - 100	0-65535	No	128		POS	
76	Cropping top left x fine				0			
77	Cropping top left y	-100 - 100	0-65535	No	128		POS	
78	Cropping top left y fine				0			
79	Cropping top right x	-100 - 100	0-65535	No	128		POS	
80	Cropping top right x fine				0			
81	Cropping top right y	-100 - 100	0-65535	No	128		POS	
82	Cropping top right y fine				0			
83	Cropping bottom left x	-100 - 100	0-65535	No	128		POS	
84	Cropping bottom left x fine				0			
85	Cropping bottom left y	-100 - 100	0-65535	No	128		POS	
86	Cropping bottom left y fine				0			
87	Cropping bottom right x		0-65535	No	128		POS	
88	Cropping bottom right x fine				0			
89	Cropping bottom right y		0-65535	No	128		POS	
90	Cropping bottom right y fine				0			
91	Cropping soft edge		0-255	No	0		POS	
92	Mask Mode			Yes	0			



	Channels	Description	Range	Snap/ Instant	Default Value	Locate/ Hightlight Value	Category	Behavior/ Comment
		grayscale	0-7					
		grayscale inverted	8-15					
		alpha	16-23					
		alpha inverted	24-31					
		color	32-39					
		color inverted	40-47					
93	Mask red		0-255	No	0			
94	Mask green		0-255	No	0			
95	Mask blue		0-255	No	0			
96	Mask Alpha/Tolerance	Alpha in Alpha/Gray, Tolerance in Color Type	0-255	No	0			
97	Mask File	0 Prev. Layer	0	Yes	0			
		File 1-255	1-255					
98	Reserved (Mask Folder)				255			
99	Mask Ratio	Stretch	0-31	Yes	0			
		Auto detect	32-63					
		4:3	64-95					
		16:9	96-127					
		16:10	128-159					
		5:4	160-191					
100	Mask Position X		0-65535	No	128			
101	Mask Position X Fine					0		
102	Mask Position Y		0-65535	No	128			
103	Mask Position Y Fine					0		
104	Mask Position Z		0-65535	No	128			
105	Mask Position Z Fine					0		
106	Mask Scale X		0-65535	No	128			
107	Mask Scale X Fine					0		
108	Mask Scale Y		0-65535	No	128			

	<b>Channels</b>	<b>Description</b>	<b>Range</b>	<b>Snap/ Instant</b>	<b>Default Value</b>	<b>Locate/ Hightlight Value</b>	<b>Category</b>	<b>Behavior/ Comment</b>
<b>109</b>	Mask Scale Y Fine					0		
<b>110</b>	Mask Rotation Z		0-255	No	128			
<b>111</b>	Mask Softness		0-255	No	0			
<b>112</b>	Output	All outputs	0	Yes	0	0	BEAM	
	Display outputs		1-199					
	Output Groups		200-249					
	LEDMapper output		250					
	Kling-Net output		251					

## Layer Extended 3.0 (119 Channels)

Fixture ID: 3EED76F5-6195-43F3-A6D0-F30D1F314C0A

	Channels	Description	Range	Snap/ Instant	Default Value	Locate/ Hightlight Value	Category	Behavior/ Comment
1	Dimmer	0-100%	0-255	No	0	255	DIMMER	
2	Visual Library	0 User Folder 0	0	Yes	0	0	BEAM	
		1 User Folder 1	1					
		...	...					
		239 User Folder 239	239					
		240 Generators	240					
		242 Audio Flashes	242					
		250 FlashTexts 1	250					
		251 FlashTexts 2	251					
		252 FlashTexts 3	252					
		253 FlashTexts 4	253					
		254 Cameras	254					
		255 Masks	255					
3	File	0 Prev. Layer	0	Yes	0	1	BEAM	
		File 1-255	1-255	Yes	0	1	BEAM	
4	RESERVED	(RESERVED FOR INTENSITY MODE)						
5	Ignore Alpha / Interlace	Off	0-127	Yes	0	0	BEAM	
		On	128-255	Yes	0	0		
6	Transition	Cut	0-7	Yes	0	0	BEAM	
		Crossfade	8-15	Yes	0	0		
		Reserved	16-255	Yes	0	0		
7	Transition Time	0 > 6553.5 sec	0-65535	Yes	0	0		
8	Transition Time Fine							
9	Volume	0-200%	0-255	No	128	128	BEAM	
10	Volume Pan	Left	0	No	128	128	BEAM	
		Left > Center	1-127	No	128	128	BEAM	

	Channels	Description	Range	Snap/ Instant	Default Value	Locate/ Highlight Value	Category	Behavior/ Comment
		Center	128	No	128	128	BEAM	
		Center > Right	129-254	No	128	128	BEAM	
		Right	255	No	128	128	BEAM	
<b>11</b>	Aspect Ratio	Stretch	0-31	Yes	0	0	BEAM	
		Auto detect	32-63	Yes	0	0	BEAM	
		4:3	64-95	Yes	0	0	BEAM	
		16:9	96-127	Yes	0	0	BEAM	
		16:10	128-159	Yes	0	0	BEAM	
		5:4	160-191	Yes	0	0	BEAM	
		1:1 Pixel Mapping	192-223	Yes	0	0	BEAM	
		Fit Width	224-232	Yes	0	0	BEAM	
		Fit Height	233-240	Yes	0	0	BEAM	
		Reserved	241-255	Yes	0	0	BEAM	
<b>12</b>	Effect Library 1	3D Presets	0-15	Yes	0	0	BEAM	
		Color Presets	16-31	Yes	0	0	BEAM	
		Blur Presets	32-47	Yes	0	0	BEAM	
		Split Presets	48-63	Yes	0	0	BEAM	
		Artistic Presets	64-79	Yes	0	0	BEAM	
		3D (Custom)	80-95	Yes	0	0	BEAM	
		Color (Custom)	96-111	Yes	0	0	BEAM	
		Blur (Custom)	112-127	Yes	0	0	BEAM	
		Split (Custom)	128-143	Yes	0	0	BEAM	
		Artistic (Custom)	144-159	Yes	0	0	BEAM	
		Quartz- Composer	160-175	Yes	0	0	BEAM	
		Reserved	176-255	Yes	0	0	BEAM	
<b>13</b>	Effect 1	No Effect	0	Yes	0	0	BEAM	
		Effect 1-255	1-255	Yes	0	0	BEAM	
<b>14</b>	FX1 Parameter 1	0-100%	0-255	No	128	128	BEAM	
<b>15</b>	FX1 Parameter 2	0-100%	0-255	No	128	128	BEAM	
<b>16</b>	FX1 Parameter 3	0-100%	0-255	No	128	128	BEAM	
<b>17</b>	FX1 Parameter 4	0-100%	0-255	No	128	128	BEAM	

	Channels	Description	Range	Snap/ Instant	Default Value	Locate/ Highlight Value	Category	Behavior/ Comment
18	FX 1 Intensity	0-100%	0-255	No	255	255	BEAM	
19	Effect Library 2	3D Presets	0-15	Yes	0	0	BEAM	
		Color Presets	16-31	Yes	0	0	BEAM	
		Blur Presets	32-47	Yes	0	0	BEAM	
		Split Presets	48-63	Yes	0	0	BEAM	
		Artistic Presets	64-79	Yes	0	0	BEAM	
		3D (Custom)	80-95	Yes	0	0	BEAM	
		Color (Custom)	96-111	Yes	0	0	BEAM	
		Blur (Custom)	112-127	Yes	0	0	BEAM	
		Split (Custom)	128-143	Yes	0	0	BEAM	
		Artistic (Custom)	144-159	Yes	0	0	BEAM	
		Quartz- Composer	160-175	Yes	0	0	BEAM	
		Reserved	176-255	Yes	0	0	BEAM	
20	Effect 2	No Effect	0	Yes	0	0	BEAM	
		Effect 1-255	1-255	Yes	0	0	BEAM	
21	FX2 Parameter 1		0-255	No	128	128	BEAM	
22	FX2 Parameter 2		0-255	No	128	128	BEAM	
23	FX2 Parameter 3		0-255	No	128	128	BEAM	
24	FX2 Parameter 4		0-255	No	128	128	BEAM	
25	FX 2 Intensity		0-255	No	255	255	BEAM	
26	Text	Text 0-230	0-230	Yes	0	0	BEAM	
		Track Name	231					
		Artist Name	232					
		Album Name	233					
		Track - Artist Name	234					
		Track - Artist - Album Name	235					
		Reserved	236-255					
27	Shape	No shape	0-31	Yes	0	0	POS	

	Channels	Description	Range	Snap/ Instant	Default Value	Locate/ Hightlight Value	Category	Behavior/ Comment
		Plane	32-63				POS	
		Cube	64-95					
		Sphere	96-127					
<b>28</b>	Tiling X		0-255	No	0	0	POS	1.0 > 11.0
<b>29</b>	Tiling Y		0-255	No	0	0	POS	1.0 > 11.0
<b>30</b>	Blending Mode	Copy	0-31	Yes	0	0	COLOR	
		Add	32-63					
		Subtract	64-95					
		Multiply	96-127					
		Minimum	128-159					
		Maximum	160-191					
		Difference	192-195					
		Exclusion	196-199					
		Darken	200-203					
		Lighten	204-207					
		Screen	208-211					
		Overlay	212-215					
<b>31</b>	Key Mode	None	0-31	Yes	0	0	COLOR	
		LumaKey BR	32-63					
		LumaKey BP	64-95					
		ChromaKey BR	96-127					
		ChromaKey BP	128-159					
<b>32</b>	Mask Key Center		0-255	No	0	0	COLOR	-180->180
<b>33</b>	Mask Key Width		0-255	No	50	50	COLOR	0-100%
<b>34</b>	Mask Key Smooth		0-255	No	20	20	COLOR	0-100%
<b>35</b>	Speed	0% 1.0% > 400%	0 1-255	No 1.0% > 400%	64	64	BEAM	
<b>36</b>	TimeCode Offset	TC frame offset - 128 to 127	0-255	No	128	128	BEAM	-128 to 127
<b>37</b>	TimeCode Start Times	TC start times table index	0-127	Yes	0	0	BEAM	
<b>38</b>	BPM Divisor	1	0-15		0	0	BEAM	no 1/2 beat
		2	16-31		0	0	BEAM	

	Channels	Description	Range	Snap/ Instant	Default Value	Locate/ Hightlight Value	Category	Behavior/ Comment
		4	32-47		0	0	BEAM	
		8	48-63		0	0	BEAM	
		16	64-71		0	0	BEAM	
		32	72-91		0	0	BEAM	
<b>39</b>	Playback Mode	Loop Forward	0-3		0		BEAM	
		Loop Backward	4-7		0		BEAM	
		Once Forward	8-11		0		BEAM	
		Once Backward	12-15		0		BEAM	
		Ping Pong	16-19		0		BEAM	
		First Frame	20-23		0		BEAM	
		Last Frame	24-27		0		BEAM	
		TimeCode Mode	28-31		0		BEAM	
		Sync Mode Beat	32-35		0		BEAM	
		Reserved	36-251		0		BEAM	
		Stop	252-255		0		BEAM	
<b>40</b>	Playback 0 Intensity behavior	Stop at Intensity 0	0-3		0	0	BEAM	
		Continue...	4-7					
		Pause...	8-11					
		Reserved	12-255					
<b>41</b>	Playback end behavior	Hold Last frame	0-3		5	5	BEAM	
		Transparent	4-7					
		Black	8-11					
		Start Point	12-15					
		First Video Frame	16-19					
		Last Video Frame	20-23					
		First Loop Frame	24-27					
		Last Loop Frame	28-31					
		Reserved	21-255					
<b>42</b>	TimeCode Source Selector	Disabled	0	No	0	0	BEAM	

	Channels	Description	Range	Snap/ Instant	Default Value	Locate/ Highlight Value	Category	Behavior/ Comment
		Select from Table	1-250					
		Pioneer TcNet	251					
		Artnet	252					
		MIDI	253					
		Audio SMPTE	254					
		StageLinQ	255					
<b>43</b>	BPM Source Selector	Disabled	0		0	0	BEAM	
		Select from Table (Window)	1-250					
		Ableton Link	251					
		Automatic	252					
		Manual	253					
		StageLinQ	254					
		Pioneer TcNet	255					
<b>44</b>	Loop In	0-100%	0-65535	No	0	0	BEAM	
<b>45</b>	Loop In fine				0	0		
<b>46</b>	Loop Out	0-100%	0-65535	No	255	255	BEAM	
<b>47</b>	Loop Out fine				255	255		
<b>48</b>	Start Point	0-100%	0-65535	No	0	0	BEAM	
<b>49</b>	Start Point Fine				0	0		
<b>50</b>	Media Pause	Play	0-127	Yes	0	0	BEAM	
		Pause	128-255					
<b>51</b>	Red Level		0-65535	No	128	128	COLOR	0-200%
<b>52</b>	Red Fine			No	0		COLOR	
<b>53</b>	Green Level		0-65535	No	128	128	COLOR	0-200%
<b>54</b>	Green Fine			No	0		COLOR	
<b>55</b>	Blue Level		0-65535	No	128	128	COLOR	0-200%
<b>56</b>	Blue Fine			No	0		COLOR	
<b>57</b>	Hue Shift		0-255	No	128	128	COLOR	-180 > +180
<b>58</b>	Saturation		0-255	No	128	128	COLOR	0-200%
<b>59</b>	Lightness		0-255	No	128	128	COLOR	0-200%
<b>60</b>	Color Invert	Off	0-7	Yes	0		COLOR	



	Channels	Description	Range	Snap/ Instant	Default Value	Locate/ Highlight Value	Category	Behavior/ Comment
		All	8-15		0			
		Red	16-23					
		Green	24-31					
		Blue	32-39					
		Reserved	40-255					
<b>61</b>	Contrast		0-65535	No	128		COLOR	0-200%
<b>62</b>	Contrast Fine			No	0		COLOR	
<b>63</b>	Brightness		0-65535	No	128	128	COLOR	0-200%
<b>64</b>	Brightness Fine			No	0		COLOR	
<b>65</b>	Scale X		0-65535	No	128		POS	0-200%
<b>66</b>	Scale X Fine				0			
<b>67</b>	Scale Y		0-65535	No	128		POS	0-200%
<b>68</b>	Scale Y Fine				0			
<b>69</b>	Rotation X		0-65535	No	128	128	POS	-180 > +180
<b>70</b>	Rotation X Fine				0	0		
<b>71</b>	Rotation Y		0-65535	No	128	128	POS	-180 > +180
<b>72</b>	Rotation Y Fine				0	0		
<b>73</b>	Rotation Z		0-65535	No	128	128	POS	-180 > +180
<b>74</b>	Rotation Z Fine				0	0		
<b>75</b>	Position X		0-65535	No	128	128	POS	-100 > +100
<b>76</b>	Position X Fine				0	0		
<b>77</b>	Position Y		0-65535	No	128	128	POS	-100 > +100
<b>78</b>	Position Y Fine				0	0		
<b>79</b>	Position Z		0-65535	No	128	128	POS	-100 > +100
<b>80</b>	Position Z Fine				0	0		

	Channels	Description	Range	Snap/ Instant	Default Value	Locate/ Hightlight Value	Category	Behavior/ Comment
81	Cropping top left x	-100 - 100	0-65535	No	128		POS	-100 > +100
82	Cropping top left x fine				0			
83	Cropping top left y	-100 - 100	0-65535	No	128		POS	-100 > +100
84	Cropping top left y fine				0			
85	Cropping top right x	-100 - 100	0-65535	No	128		POS	-100 > +100
86	Cropping top right x fine				0			
87	Cropping top right y	-100 - 100	0-65535	No	128		POS	-100 > +100
88	Cropping top right y fine				0			
89	Cropping bottom left x	-100 - 100	0-65535	No	128		POS	-100 > +100
90	Cropping bottom left x fine				0			
91	Cropping bottom left y	-100 - 100	0-65535	No	128		POS	-100 > +100
92	Cropping bottom left y fine				0			
93	Cropping bottom right x		0-65535	No	128		POS	-100 > +100
94	Cropping bottom right x fine				0			
95	Cropping bottom right y		0-65535	No	128		POS	-100 > +100
96	Cropping bottom right y fine				0			
97	Cropping soft edge		0-255	No	0		POS	0-100%
98	Mask Mode			Yes	0			
		Grayscale	0-7	Yes	0			
		Grayscale inverted	8-15					
		Alpha	16-23					
		Alpha inverted	24-31					

	Channels	Description	Range	Snap/ Instant	Default Value	Locate/ Highlight Value	Category	Behavior/ Comment
		Color	32-39					
		Color inverted	40-47					
		Reserved						
<b>99</b>	Mask red		0-255	No	0		BEAM	0-100
<b>100</b>	Mask green		0-255	No	0		BEAM	0-100
<b>101</b>	Mask blue		0-255	No	0		BEAM	0-100
		File 1-255	1-255					
<b>102</b>	Mask Alpha/Tolerance	Alpha in Alpha/Gray, Tolerance in Color Type	0-255	No	0		BEAM	0-100
<b>103</b>	Mask File	0 Prev. Layer	0	Yes	0	0		
<b>104</b>	Reserved (Mask Folder)				255		BEAM	
<b>105</b>	Mask Ratio	Stretch	0-31	Yes	0		BEAM	
		Auto detect	32-63					
		4:3	64-95					
		16:9	96-127					
		16:10	128-159					
		5:4	160-191					
		Reserved	192-255					
<b>106</b>	Mask Position X		0-65535	No	128		BEAM	0-100%
<b>107</b>	Mask Position X Fine					0	BEAM	
<b>108</b>	Mask Position Y		0-65535	No	128		BEAM	0-100%
<b>109</b>	Mask Position Y Fine					0		
<b>110</b>	Mask Position Z		0-65535	No	128		Scale/Zoom	0-100%
<b>111</b>	Mask Position Z Fine					0		
<b>112</b>	Mask Scale X		0-65535	No	128			0-200%
<b>113</b>	Mask Scale X Fine					0		
<b>114</b>	Mask Scale Y		0-65535	No	128			0-200%
<b>115</b>	Mask Scale Y Fine					0		

	<b>Channels</b>	<b>Description</b>	<b>Range</b>	<b>Snap/ Instant</b>	<b>Default Value</b>	<b>Locate/ Hightlight Value</b>	<b>Category</b>	<b>Behavior/ Comment</b>
<b>116</b>	Mask Rotation Z		0-255	No	128			-180 > 180
<b>117</b>	Mask Softness		0-255	No	0			0-100%
<b>118</b>	Output	All outputs	0	Yes	0	0	BEAM	
		Display outputs	1-199					
		Output Groups	200-249					
		LEDMapper output	250					
		Kling-Net output	251					
		Reserved	252-255					
<b>119</b>	Audio Output	Reserved	0-255		0	0	BEAM	

**Master Full 1.2 (18 Channels)**

Fixture ID: 3ab3dc8b-07cb-42ec-b2d4-450f175cd5f7

	<b>Channels</b>	<b>Ranges</b>	<b>Snap/ Instant</b>	<b>Def. Value</b>	<b>Locate Value</b>	<b>Category</b>
1	Brightness	0-100%	No	128	128	BEAM
2	Contrast	0-100%	No	0	0	BEAM
3	Mask	0 No Mask 1-255 Mask 1-255	Yes	0	0	BEAM
4	KeystoneX1	0-100%	No	0	0	POS
5	KeystoneY1	0-100%	No	0	0	POS
6	KeystoneX2	0-100%	No	0	0	POS
7	KeystoneY2	0-100%	No	0	0	POS
8	KeystoneX3	0-100%	No	0	0	POS
9	KeystoneY3	0-100%	No	0	0	POS
10	KeystoneX4	0-100%	No	0	0	POS
11	KeystoneY4	0-100%	No	0	0	POS
12	SoftEdge width	0-100%	No	0	0	BEAM
13	SoftEdge curve	0-100%	No	0	0	BEAM
14	Layer Select	0-100%	No	0	0	
15	Master volume	0-100%	No	0	0	
16	Master blackout	0-250 Normal 251-255 Blackout	Yes	0	0	BEAM
17	LEDMapper Mode	0-15 Replace Mode 16-31 Maximum Mode or HTP 32-47 Minimum Mode or LoTP 48-63 Reserved 64-79 Multiply Mode 80-95 Addition Mode 96-111 Subtraction Mode 112-127 Reversed Subtraction Mode 128-239 Reserved 240-255 LEDMapper Muted	Yes	0	0	BEAM
18	Merger Intensity	0-100%	No	255	255	BEAM
		0 DMX Input Pixels 255 LEDMapper Pixels				

**Master Full 1.3 (22 Channels)**

Fixture ID: 3ab3dc8b-07cb-42ec-b2d4-450f175cd5f8

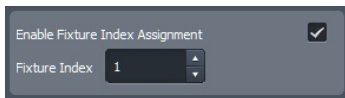
	Channels	Ranges	Snap/ Instant	Def. Value	Locate Value	Category
1	Brightness	0-100%	No	128	128	BEAM
2	Contrast	0-100%	No	0	0	BEAM
3	Mask	0 No Mask	Yes	0	0	BEAM
		1-255 Mask 1-255				
4	KeystoneX1	0-100%	No	0	0	POS
5	KeystoneY1	0-100%	No	0	0	POS
6	KeystoneX2	0-100%	No	0	0	POS
7	KeystoneY2	0-100%	No	0	0	POS
8	KeystoneX3	0-100%	No	0	0	POS
9	KeystoneY3	0-100%	No	0	0	POS
10	KeystoneX4	0-100%	No	0	0	POS
11	KeystoneY4	0-100%	No	0	0	POS
12	SoftEdge width	0-100%	No	0	0	BEAM
13	SoftEdge curve	0-100%	No	0	0	BEAM
14	Layer Select	0-100%	No	0	0	
15	Master volume	0-100%	No	0	0	
16	Master blackout	0-250 Normal	Yes	0	0	BEAM
		251-255 Blackout				
17	LEDMapper Mode	0-15 Replace Mode	Yes	0	0	BEAM
		16-31 Maximum Mode or HTP				
		32-47 Minimum Mode or LoTP				
		48-63 Reserved				
		64-79 Multiply Mode				
		80-95 Addition Mode				
		96-111 Subtraction Mode				
		112-127 Reversed Subtraction Mode				
		128-239 Reserved				
		240-255 LEDMapper Muted				
18	Merger Intensity	0-100%	No	255	255	BEAM
		0 DMX Input Pixels				
		255 LEDMapper Pixels				
19	Control	0-9 None	Yes	0	0	BEAM
		10-19 Resync to DMX				
		20-249 Reserved				
		250-255 None				
20	Reserved					
21	Reserved					
22	Reserved					

## Surface and Output Control by DMX

Each VideoMapper Surface or Output can be patched and controlled from a lighting desk or another DMX controller. To expose a Surface or Output for DMX patching, a Fixture Index must first be assigned within the VideoMapper.

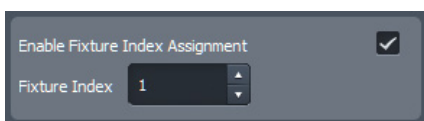
### Exposing a Surface for DMX Patching

Select a Surface and at the bottom right of the Output panel, you will see an option labeled “Enable Fixture Index Assignment”. Check it and set a fixture index. This will be the index in the group of Surface Fixtures patched in MediaMaster.



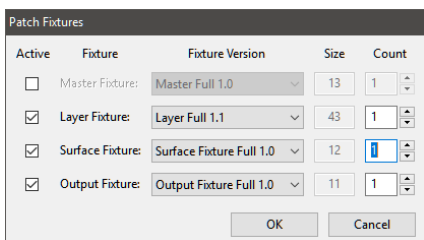
### Exposing an Output for DMX Patching

Select an Output and at the bottom right of the Correction panel, you will see an option labeled “Enable Fixture Index Assignment”. Check it and set a fixture index. This will be the index in the group of Output Fixtures patched in MediaMaster.



### Patching Surface and Output in MediaMaster

In the DMX Preferences of MediaMaster you can patch Surface and Output fixtures.



**Surface Full 1.0 (12 Channels)**

This Surface fixture gives control over the surface rendering process. Channels control three successive stages of the rendering of surfaces. Having in mind those rendering stages helps understanding the influence of each channel.

**Stage 1 - Surface Effect** (Channels 1 to 5)

Applies an effect to the surface and set up to four effect parameters.

**Stage 2 - Surface Color** (Channels 6 to 10)

Blends the pixel colors of the surface with a solid color. This allows to do highlighting effects, color correction or color replacement.

**Stage 3 - Surface Composition** (Channels 11 to 12)

Blends the surface on top of all surfaces underneath to render the output composition. This allows similar effects than with image editing software and control over the transparency of the surface.

Fixture ID: f1fe4353-4acc-435e-a842-862f66a14cee

	Channels	Ranges	Snap/Instant	Def. Value	Locate Value	Category
1	Effect	0 No Effect	Yes	0	0	BEAM
		1 HSV Change				
		2-255 Reserved				
2	FX Parameter 1	0-100%	No	0	0	BEAM
		Effect1 - Hue		0	0	
3	FX Parameter 2	0-100%	No	0	0	BEAM
		Effect1 - Saturation		128	128	
4	FX Parameter 3	0-100%	No	0	0	BEAM
		Effect1 - Value		128	128	
5	FX Parameter 4	0-100%	No	0	0	BEAM
		Effect1 - Unused				
6	Red	0-100%	No	0	0	COLOR
7	Green	0-100%	No	0	0	COLOR
8	Blue	0-100%	No	0	0	COLOR
9	ColorBlendMode	0-9 Add	Yes	0	0	BEAM
		10-19 Subtract				
		20-29 Reverse Subtract				
		30-39 Multiply				
		40-49 Screen				
		50-59 Mask				
		60-69 Replace				
		70-79 Fill				
		80-255 Reserved				
10	ColorBlendIntensity	0% - 100%	No	255	255	BEAM
		0% - Unchanged				
		100% - Full effect				
11	SurfaceBlendMode	0-9 Blend	Yes	0	0	BEAM
		10-19 Add				
		20-29 Subtract				
		30-39 Reverse Subtract				
		40-49 Replace				



	<b>Channels</b>	<b>Ranges</b>	<b>Snap/Instant</b>	<b>Def. Value</b>	<b>Locate Value</b>	<b>Category</b>
		50-255 Reserved				
12	SurfaceBlendIntensity	0-100%	No	255	255	DIMMER
		0% - Transparent or black (in replace)				
		100% - Full intensity				

## Output Full 1.0 (11 Channels)

This fixture gives DMX control over the color correction of an Output. Parameters are similar to the one exposed in the Color Correction panel of the VideoMapper.

Fixture ID: f1fe4353-4acc-435e-a842-862f66a14cee

	Channels	Ranges	Snap/Instant	Def. Value	Locate Value	Category
1	Brightness	0-100%	No	128	128	BEAM
2	Contrast	0-100%	No	0	0	BEAM
3	Red	0-100%	No	255	255	COLOR
4	Green	0-100%	No	255	255	COLOR
5	Blue	0-100%	No	255	255	COLOR
6	Gamma Red	0 - Gamma 1.0	No	128	128	BEAM
		128 - Gamma 2.4				
		255 - Gamma 4.0				
7	Gamma Green	0 - Gamma 1.0	No	128	128	BEAM
		128 - Gamma 2.4				
		255 - Gamma 4.0				
8	Gamma Blue	0 - Gamma 1.0	No	128	128	BEAM
		128 - Gamma 2.4				
		255 - Gamma 4.0				
9	Reserved					
10	Reserved					
11	Reserved					

## Effects

### List of Effects in Theater Mode

The list of Effects available in Theater Mode is visible in the Edit dialog of the Visual Presets.

A detailed list is provided through the following URLs:

[https://cdn.inmusicbrands.com/arkaos/downloads/ArKaos\\_MediaMaster\\_Effects.xlsx](https://cdn.inmusicbrands.com/arkaos/downloads/ArKaos_MediaMaster_Effects.xlsx)

[https://cdn.inmusicbrands.com/arkaos/downloads/ArKaos\\_MediaMaster\\_Theater\\_Effects.pdf](https://cdn.inmusicbrands.com/arkaos/downloads/ArKaos_MediaMaster_Theater_Effects.pdf)

**Note:** Quartz effects are only available on Mac.

## List of Effects in Fixture Mode

This list details the effects that can be triggered through DMX and is valid for the Layer Full and the Layer Extended fixtures.

Effect Library	DMX	Effect Name
<b>0 – 3D Presets</b>	1	RotoZoom #1
DMX Range: 0-15	2	RotoZoom #2
	3	RotoZoom #3
	4	RotoZoom #4
	5	RotoZoom #5
	6	RotoZoom #6
	7	Plane #1
	8	Plane #2
	9	Plane #3
	10	Plane #4
	11	Plane #5
	12	Tunnel #1
	13	Tunnel #2
	14	Tunnel #3
	15	Tunnel #4
	16	Tunnel #5
	17	Tunnel #6
	18	Plane Rotation #1
	19	Plane Rotation #2
	20	Plane Rotation #3
	21	Ripple #1
	22	Ripple #2
	23	Ripple #3
	24	Cube Inside #1
	25	Cube Inside #2
	26	Cube Inside #3
	27	Cube Inside #4
	28	Sphere Inside #1
	29	Sphere Inside #2
	30	Tunnel 2
	31	Zoom Out
<b>1 – Color Presets</b>	1	Contrast #1
DMX Range: 16-31	2	Contrast #2
	3	Greyscale
	4	Invert
	5	Sepiatone
	6	Solarization
	7	Solarization Inv
	8	Posterization #1
	9	Posterization #2
	10	Hue Effect #1
	11	Hue Effect #2
	12	Hue Effect #3
	13	Hue Effect #4
	14	Hue Effect #5
	15	Hue Effect #6
	16	RGB Cycle #1
	17	RGB Cycle #2
	18	RGB Cycle #3
	19	RGB Cycle #4
	20	RGB Cycle #5
	21	RGB Cycle #6

	22	Threshold
	23	Color Distortion
	24	Color Correction
	25	Color Cycle Hue
	26	Color Cycle Luminance
	27	Hue Masking
	28	Color Pass
<b>2 – Blur Presets</b>	1	Gaussian Blur #1
DMX Range: 32-47	2	Gaussian Blur #2
	3	Gaussian Blur #3
	4	Horizontal Blur #1
	5	Horizontal Blur #2
	6	Vertical Blur #1
	7	Vertical Blur #2
	8	Radial Blur #1
	9	Radial Blur #2
	10	Radial Blur #3
	11	Motion Blur #1
	12	Motion Blur #2
	13	Motion Blur #3
<b>3 – Split Presets</b>	1	Mirror #1
DMX Range: 48-63	2	Mirror #2
	3	Mirror #3
	4	Video Split #1
	5	Video Split #2
	6	Video Split #3
	7	Video Split #4
	8	Video Split #5
	9	Video Split #6
	10	Scroll #1
	11	Scroll #2
	12	Scroll #3
	13	Scroll #4
	14	Scroll #5
	15	Scroll #6
	16	Scroll #7
	17	Scroll #8
	18	Scroll #9
	19	Split Scrolling #1
	20	Split Scrolling #2
	21	Split Scrolling #3
	22	Split Scrolling #4
	23	Split Scrolling #5
	24	Split Scrolling #6
	25	Split Scrolling #7
	26	Split Scrolling #8
	27	Kaleido #1
	28	Kaleido #2
	29	Kaleido #3
	30	Checker #1
	31	Checker #2
	32	Cropping 1%
	33	Cropping 2%
	34	Cropping 5%
	35	Cropping 10%
	36	Cropping Output 1%
	37	Cropping Output 2%

	38	Cropping Output 5%
	39	Cropping Output 10%
	40	Splitter
	41	Tiling
<b>4 - Artistic Presets</b>	1	Larsen #1
DMX Range: 64-79	2	Larsen #2
	3	Larsen #3
	4	Larsen Presets #1
	5	Larsen Presets #2
	6	Larsen Presets #3
	7	Larsen Presets #4
	8	Edge Detect #1
	9	Cartoon #1
	10	Cartoon #2
	11	Cartoon #3
	12	Strips #1
	13	Strips #2
	14	Strips #3
	15	Strips #4
	16	Strips #5
	17	Strips #6
	18	Strips #7
	19	Strips #8
	20	Strips #9
	21	Strips #10
	22	Strips #11
	23	Strips #12
	24	Comic Slow
	25	Comic Fast
	26	Strobo Black-Sin Slow
	27	Strobo Black-Sin Fast
	28	Strobo Black-Sq Slow
	29	Strobo Black-Sq Fast
	30	Strobo White-Sin Slow
	31	Strobo White-Sin Fast
	32	Strobo White-Sq Slow
	33	Strobo White-Sq Fast
	34	Strobo Invert-Sin Slow
	35	Strobo Invert-Sin Fast
	36	Strobo Invert-Sq Slow
	37	Strobo Invert-Sq Fast
	38	Irisation #1
	39	Irisation #2
	40	Irisation #3
	41	Twirl Feedback #1
	42	Twirl Feedback #2
	43	Edge Filter #1
	44	Edge Filter #2
	45	EarthQuake Slow
	46	EarthQuake Fast
	47	AsciiArt Ascii-BW Big
	48	AsciiArt Ascii-BW Small
	49	AsciiArt Squares-BW Big
	50	AsciiArt Squares-BW Small
	51	AsciiArt Pixels-BW Big
	52	AsciiArt Pixels-BW Small
	53	AsciiArt Bubbles-BW Big
	54	AsciiArt Bubbles-BW Small

	55	AsciiArt Bubbles-Color Big
	56	AsciiArt Bubbles-Color Small
	57	AsciiArt Squares-Color Big
	58	AsciiArt Squares-Color Small
	59	AsciiArt Bubbles Handmade Big
	60	AsciiArt Bubbles Handmade Small
	61	AsciiArt Japanese Big
	62	AsciiArt Japanese Small
	63	Popart #1
	64	Popart #2
	65	Digital Noiz Color
	66	Digital Noiz BW
	67	Bumpy Surface
	68	Bass Zoom Out
	69	Bass Zoom In
	70	Old Movie #1
	71	Old Movie #2
	72	Old Movie #3
	73	Iris Border
	74	Iris Center
	75	Beat Glow
	76	Color Masks
	77	Earthquake 2
	78	Edge Glow
	79	Glow
	80	Godrays
	81	Sharpness
	82	Stroboscope 2
	83	TV Pixelation
	84	Video Distortion
	85	Fish Eye
<b>5 - 3D Custom</b>	1	RotoZoom
DMX Range: 80-95	2	Plane
	3	Tunnel
	4	Plane Rotation
	5	Ripple
	6	Cube Inside
	7	Sphere Inside
	8	Cylindrical Correction
	9	Tunnel 2
	10	Zoom Out
<b>6 - Color Custom</b>	1	Contrast
DMX Range: 96-111	2	Greyscale
	3	Invert
	4	Sepiatone
	5	Solarization
	6	Solarization Inv
	7	Posterization
	8	Hue Effect
	9	RGB Cycle
	10	Threshold
	11	RGB Shift
	12	RGB Saturate
	13	Color Distortion
	14	Color Correction
	15	Color Cycle Hue
	16	Color Cycle Luminance

	17	Hue Masking
	18	Color Pass
<b>7 – Blur Custom</b>	1	Gaussian Blur
DMX Range: 112-127	2	Horizontal Blur
	3	Vertical Blur
	4	Directional Blur
	5	Radial Blur
	6	Motion Blur
	7	Motion Blur (Burn)
<b>8 – Split Custom</b>	1	Mirror
DMX Range: 128-143	2	Video Split
	3	Scroller
	4	Split Scrolling #1
	5	Split Scrolling #2
	6	Split Scrolling #3
	7	Split Scrolling #4
	8	Kaleido
	9	Checker
	10	Cropping
	11	Cropping Output
	12	Splitter
	13	Tiling
<b>9 – Artistic Custom</b>	1	Larsen
DMX Range: 144-159	2	Larsen Presets
	3	Edge Detect
	4	Cartoon
	5	Strips #1
	6	Strips #2
	7	Strips #3
	8	Strips #4
	9	Comic
	10	Strobo Black-Sin
	11	Strobo Black-Sq
	12	Strobo White-Sin
	13	Strobo White-Sq
	14	Strobo Invert-Sin
	15	Strobo Invert-Sq
	16	Irisation H
	17	Irisation
	18	Twirl Feedback
	19	Edge Filter
	20	EarthQuake
	21	AsciiArt Ascii-BW
	22	AsciiArt Squares-BW
	23	AsciiArt Pixels-BW
	24	AsciiArt Bubbles-BW
	25	AsciiArt Bubbles-Color
	26	AsciiArt Squares-Color
	27	AsciiArt Bubbles Handmade
	28	AsciiArt Japanese
	29	Popart #1
	30	Popart #2
	31	Digital Noiz Color
	32	Digital Noiz BW
	33	Bumpy Surface
	34	Bass Zoom Out



	35	Bass Zoom In
	36	Old Movie
	37	Iris
	38	Beat Glow
	39	Color Masks
	40	Earthquake 2
	41	Edge Glow
	42	Glow
	43	Godrays
	44	Sharpness
	45	Stroboscope 2
	46	TV Pixelation
	47	Video Distortion
	48	Fish Eye
<b>10 – Quartz Composer</b>	1	ASCII Art QTZ
DMX Range: 160-175	2	BlackAndWhite QTZ
Effects on Mac only	3	Blue Print QTZ
	4	Blur QTZ
	5	Bulge QTZ
	6	City Lights QTZ
	7	Color Controls QTZ
	8	Color Invert QTZ
	9	ColorPencil QTZ
	10	ComicBook QTZ
	11	Concert QTZ
	12	Crystallize QTZ
	13	Dent QTZ
	14	Dot Screen QTZ
	15	Exposure Adjust QTZ
	16	False Color QTZ
	17	Film Stock QTZ
	18	FishEye QTZ
	19	Flip-Flop QTZ
	20	Gamma Adjust QTZ
	21	Image Hose QTZ
	22	LightTunnel QTZ
	23	Line Overlay QTZ
	24	Line Screen QTZ
	25	Mirror QTZ
	26	Monochrome QTZ
	27	Neon QTZ
	28	Pinch QTZ
	29	Pixellate QTZ
	30	Pointillize QTZ
	31	PopArt QTZ
	32	Sepia QTZ
	33	Sharpen QTZ
	34	Squeeze QTZ
	35	Stretch QTZ
	36	ThermalCamera QTZ
	37	Tracer QTZ
	38	Twirl QTZ
	39	Xray QTZ
	40	Zoom Blur QTZ

A detailed list with all parameters and default values is provided through the following URLs:

[https://cdn.inmusicbrands.com/arkaos/downloads/ArKaos\\_MediaMaster\\_Effects.xlsx](https://cdn.inmusicbrands.com/arkaos/downloads/ArKaos_MediaMaster_Effects.xlsx)

[https://cdn.inmusicbrands.com/arkaos/downloads/ArKaos\\_MediaMaster\\_Theater\\_Effects.pdf](https://cdn.inmusicbrands.com/arkaos/downloads/ArKaos_MediaMaster_Theater_Effects.pdf)

## Terminology / Glossary of Terms

- **Art-Net:** An open ethernet lighting protocol created by Artistic License Holdings Ltd., now often recognized as an industry standard, for the broadcast of DMX data over a standard Ethernet network.
- **DMX:** A digital multiplexed data stream used for control of lighting and video devices.
- **Fixture:** For operation of the software from a lighting console the multiple attributes for each layer as well as global commands are arranged into a fixture profile – in exactly the same way as if you were to control an automated lighting instrument from a console where you would have multiple parameters for each light – such as pan, tilt, color, intensity etc.
- **Keystoning:** The process of Keystoning allows you to digitally alter the proportions of the image in order to help fit the output to the screen.
- **Layer:** This describes one complete element of video composition including media, effects, and parameter definition. These layers of video are blended or mixed together to create the final output.
- **LTP:** This stands for Last Takes Precedence and is a lighting term used to describe how data is managed where the last value of data sent – be it lower or higher than the previous data – is regarded as having priority.
- **MA-Net:** This is the data protocol proprietary to MA Lighting International GmbH that allows fast communication between all Ma-Net compatible devices.
- **Mask:** A 2D image of which certain sections are transparent which is used over the top of other video data to hide or mask out certain areas of the output image. The digital equivalent of putting a piece of black card with a shape cut out of it in front of your TV.
- **MSEX:** MSEX stands for Media Server Extension and is an extension of the CIP protocol (Controller Interface Transport Protocol) that runs DMX, fixture selection, and patch over Ethernet.
- **Display:** A Display is a device that's connected to the computer graphical card using DVI, HDMI, DisplayPort, or VGA connectors. A computer monitor, a television screen, a video projector are different kind of displays.
- **Output:** An output is the destination of the video content coming from a combination of layers. The Full screen Display in Instant mode, Kling-Net, the LEDMapper or all the VideoMapper Surfaces are different outputs – It's possible to create groups of outputs using the dedicated Output management dialog.
- **Surface:** A Surface is a shape that's created on a specific Display using the VideoMapper application. Each Surface is a separated output in MediaMaster.
- **Parameter:** A specific function of the software which has a fixed range and the setting of which will affect the output. For example, the playback speed of a piece of video is a parameter.
- **Patch (Theater Mode interface only):** A collection Visual presets (see below) contained within a master group number. The Theater Mode has 64 patches.
- **Quartz Composer:** Quartz Composer is a node-based visual programming language by Apple Inc. for processing and rendering graphical data.
- **Surface:** Deformable shape attached to a display, created in the VideoMapper. Each surface is considered as a separate output by MediaMaster, meaning that each can display a different set of visuals.
- **Virtual Encoder:** The same as a rotary dial on a physical console, a virtual encoder allows you to change the setting of a specific parameter. To use the virtual encoders, click and hold on the encoder graphic and then move the mouse up or down the screen to increase or decrease the encoder value: this is shown with a series of white bars around the encoder.
- **Visual:** In ArKaos PRO a visual refers to a video, an image, a text display or input from a camera or acquisition board.
- **Visual Preset (Theater Mode interface Only):** Similar to a submaster or cue on a lighting console a visual preset in the Theater Mode is a pre-selected media clip along with specific parameter settings including effects, position and mixing type which can be directly recalled by DMX, MIDI or Keyboard using a single fader, note or button press. There are 64 visual presets per patch and thus 4096 visual presets per media library in Theater Mode interface.

## Troubleshooting

### Issues Running MediaMaster

If you encounter a problem while starting or running the software, please follow those first advices. If the problem remains, please contact our support.

### Resetting Preferences

If the application doesn't start, in many case the issue can be solved by resetting the preferences or settings of the application.

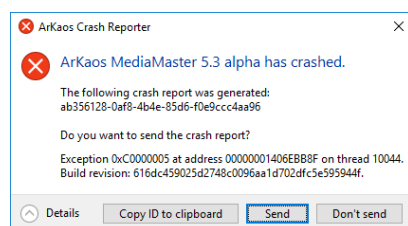
[support.arkaos.com/index.php/kb/article/87-](https://support.arkaos.com/index.php/kb/article/87-) PC How can I reset the software to default preferences

[support.arkaos.com/index.php/kb/article/32-](https://support.arkaos.com/index.php/kb/article/32-) Mac How can I reset the software to default preferences

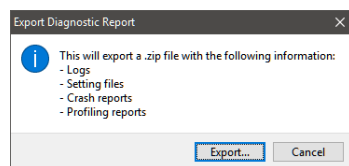
You will be asked to select the Library folder. Selecting first a new folder will deploy a clean new Library to test if the issue comes from the Library content.

### Sending a Diagnostic Report

If the application would crash it would help our engineers to investigate the issue if they can access your Crash Report. If the following dialog appears and you have an internet connection, you can press the Send button and reference to that crash by copying the ID in an email to our support.



In other cases where the software would not function as expected or if you don't have an online connection, it would still help if you could use the "Export Diagnostic Report" feature available in the Help menu of MediaMaster. This will let you export a .zip that you can later share with our support team.



### Issues While Loading the Library and the Content

In some cases, it could be that the software does not manage to read all the content of the library. In this case the application would stall or crash while displaying the splash screen of MediaMaster.

A solution would be to make a copy of the library and progressively empty some folders to see what folder or what file was causing the issue.

### User Interface Does Not Show Properly

Some dialogs, controls or texts appear wrongly cut - DPI Scaling.

A frequent reason is that the OS has some DPI scaling settings different from 100%. DPI scaling is not yet supported by MediaMaster.

This option is found in the Display Settings. Depending on the OS it is named as Scaling options or Text Scaling or Custom Scaling and values should be put to 100%.

## Issues with LEDMapper

### Troubleshooting LED in MediaMaster

It is recommended to watch for the LED color of the LEDMapper in the status panel of MediaMaster. If it is Orange or Red, hovering on the LED will indicate the reason why LEDMapper could not be working optimally.

### Only one Art-Net application can run with full Art-Net compatibility

If multiple Art-Net applications run on a same computer, only the first one will be assigned the official Art-Net port and get full Art-Net compliance. Otherwise you might experience the following restrictions:

- Not being able to control some fixtures which require packets to be sent only from the port as stated in the Art-Net specifications (0x1936).
- Not receiving some ArtPollReply used for Node discovery.
- Auto-Unicast would not work because it relies on Node discovery.

This would be indicated by an Orange LED in the status panel of MediaMaster. In this case closing other Art-Net applications and restarting MediaMaster should solve the issue.

## Support, Information and Contact

ArKaos PRO has created a number of support channels for users to ensure you get the most direct and efficient answers to any questions or support requests you may have.

ArKaos PRO Support Centre: <a href="https://support.arkaos.com">support.arkaos.com</a>	ArKaos PRO Users Forum: <a href="https://arkaos.com/forum">arkaos.com/forum</a>
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## Solutions

As always, our support team is ready to help you if you should encounter any problem upgrading to the new version.

### ArKaos PRO Users Forum

If you just want to discuss with other ArKaos PRO software users, share tips and experiences about our products or third-party software / hardware etc. Our Users Forum is the place to be! (This is not the place to request for help, see below).

### Knowledgebase Articles

Our online Support Centre features a FAQ / Knowledgebase where a solution to the most common registration / configuration problems has been posted.

### Trouble Ticket System

Our online Support Centre also features a Trouble Ticket System, which allows our team to receive your support requests and follow up the resolution of your problem as well as eventual future issues.

We strongly recommend that you register for an ArKaos PRO Support Account (free) on our Support Centre in order to be able to check the status of your trouble tickets, post replies to our team or create new trouble tickets directly from our web interface.

Our support team answers your requests during office hours (CET) on weekdays.

## Distributors and Resellers

Our distributors and resellers are also at your service if you would like to request information in your language, advice on additional hardware or software, solutions or quotes for a particular configuration etc.

A complete list of distributors and resellers for VJ/DJ or Show/lighting products can be found on our web site at:

<https://pro.arkaos.com/dealers>

Thank you very much for your interest in our products, we hope you will enjoy using this version as much as we enjoyed creating it!

The ArKaos PRO Team



# ArKaos