



# MXWENDLER 6.0

## User Manual

Realtime Video Software for artists,  
VJs, theatres and performances

**User Manual**  
**MXWENDLER 6.0**  
**Realtime Video Software for artists,**  
**VJs, theatres and performances**

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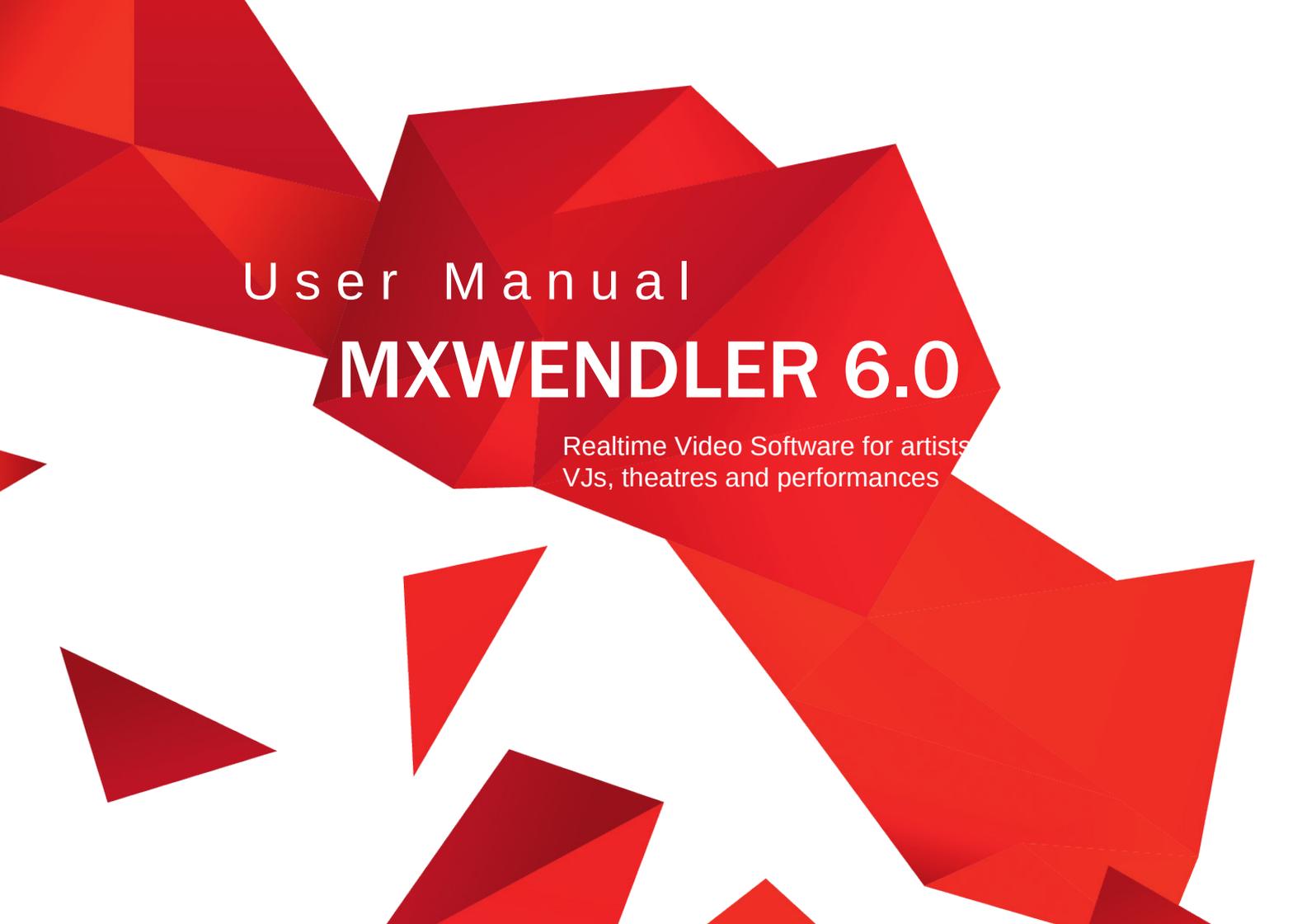
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The background consists of several overlapping, semi-transparent red polygons of various shapes and sizes, creating a dynamic, abstract composition. The colors range from a deep, dark red to a bright, vibrant red. The text is overlaid on these shapes.

User Manual

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VJs, theatres and performances

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# Introduction

Thank you for choosing MXWendler video software.

MXWendler is the perfect solution for video art, club visuals, theatre, facade projections, architecture, and LED lighting.

MXWendler video software places a strong emphasis on the composition and positioning of the output, because the projection is just as important as the content - no space, stage or scene is like another.

MXWendler is professional real-time video software, which works quickly, securely and robustly. The clearly laid-out interface makes it easy to use and easy to learn.

With MXWendler, the only limit is the user's imagination. This manual is designed to teach users to learn the software quickly, and the tutorials give guidance in simple and clear steps. Before long, you'll be able to let your imagination run wild, and put your ideas directly into action.

MXWendler can be used to play back all kinds of different media, to create playlists, set up panoramas, and perform live VJ sets.

## Typographic conventions

The following typographic conventions are used to represent this manual clearly for the user:

Capitals: ..... Used for designation of directories, datas, options, buttons and menu items as commonly used in MXWendler, e.g. Preload.

Bullets: ..... The bullets mark single steps and connect the text with the images of the software. In the text they are represented in bold and capital, on the pictures is the counterpart situated in a red circle. e.g -> **(A)**

## About this manual

This manual shall facilitate the handling of the MXWENDLER Software for beginners and professionals. For beginners it is worth it to work the manual through from beginning to the end. At the beginning the basics and the individual user interfaces will be introduced. On the basis of the tutorials the most important possibilities of the software are explained with simple examples and therefore can be learned quickly and comprehensible.

Important Informations about Hard- and Software can be found in the chapter Media Tips, which is equally interesting for beginners, advanced learners and professionals. Furthermore we regularly propose training days for learning and training needs. (<http://www.mxwendler.net/support/training.html>)

Familiarize yourself with the used terms. With this vocabulary you can ask precise and easy to answer questions to the support team and in the forum. <http://www.mxwendler.net/support/forum.html>)

# User Interface V6

Output Pipeline: chain of modules through which the signal is composited and directed to the output. **(A)**

Preload: loaded and edited media, for later use and further process. **(B)**

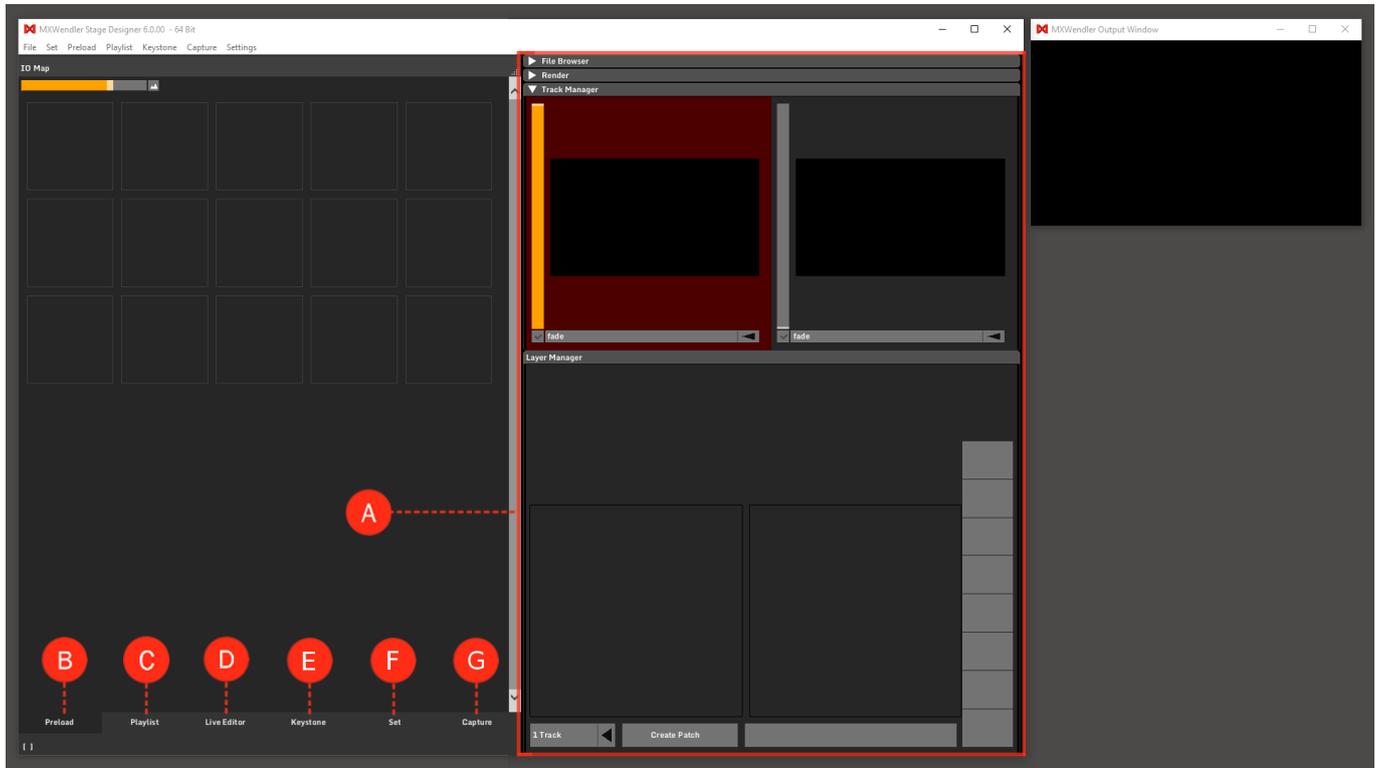
Playlist: cue-based list to organize the preloaded media **(C)**

Live Editor: edit running media **(D)**

Keystone: output warping, masking and animation **(E)**

Set: compositions of layers for later recall. **(F)**

Capture: tab available when an image sequence is being encoded. **(G)**



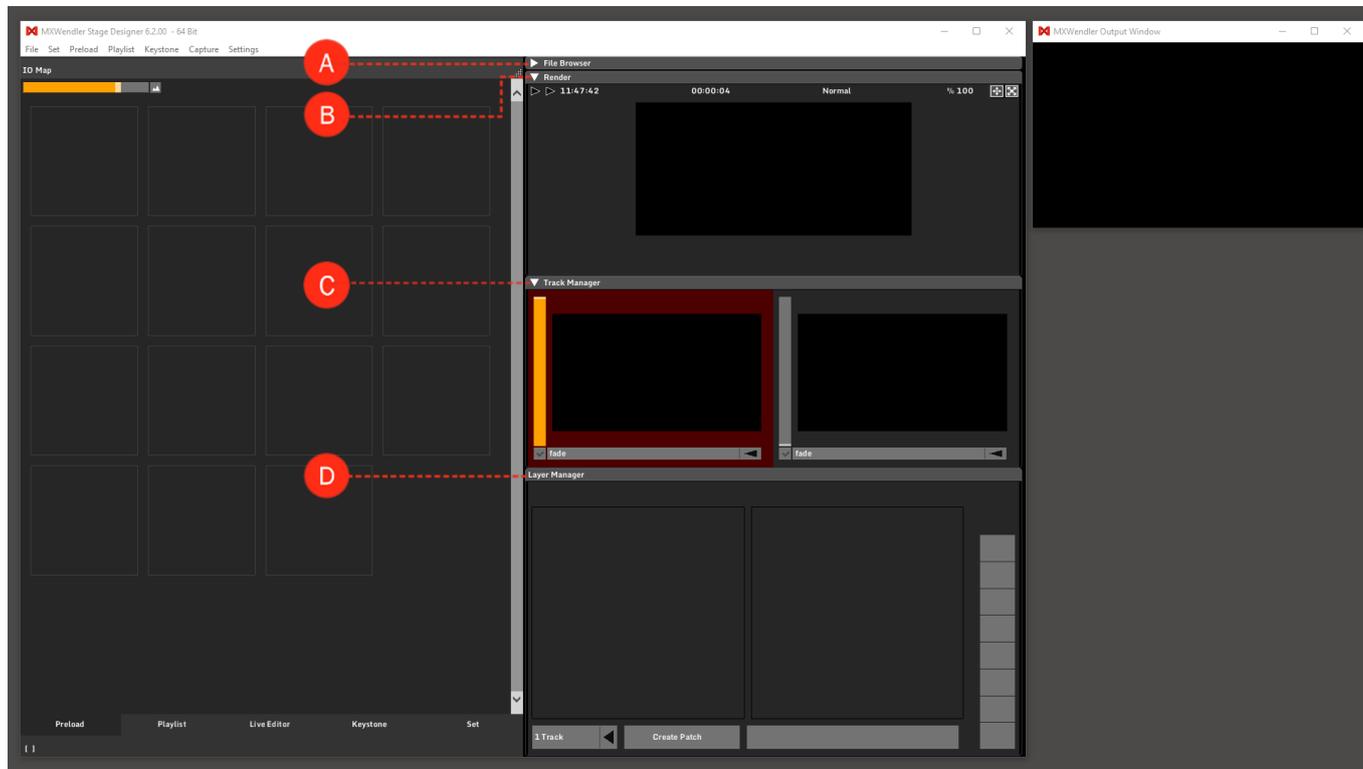
# Output Pipeline

File Browser: access media files on your system. **(A)**

Render Preview: control and transform the final composition. **(B)**

Track Manager: monitor the output of the layers. Mix together the different tracks**(C)**

Layer Manager: layer-based processing of video media. Composite together individual image components in a stack. **(D)**



# File Browser

File Browser gives access to the media on the system. One or multiple media (shift-click to multi-select) can be dragged & dropped in Preload, Live Editor, Playlist or Layer Manager.

'Internal File Browser' is placed by default on the top right corner of the user interface. It can be opened by clicking on the triangle. **(A)**

Move, Resize and Docking: the File Browser can be moved from its default position by simply clicking & dragging the window, and can be resized by clicking & dragging the blue triangle at the bottom right of the item.

Docking Checkbox: when selected, the browser will be automatically docked back to the default position when minimized. If not selected the File Browser will keep its position even after software new-start. **(B)**

This PC: goes to the root folder of the hard disk, where the drives of the system are. **(C)**

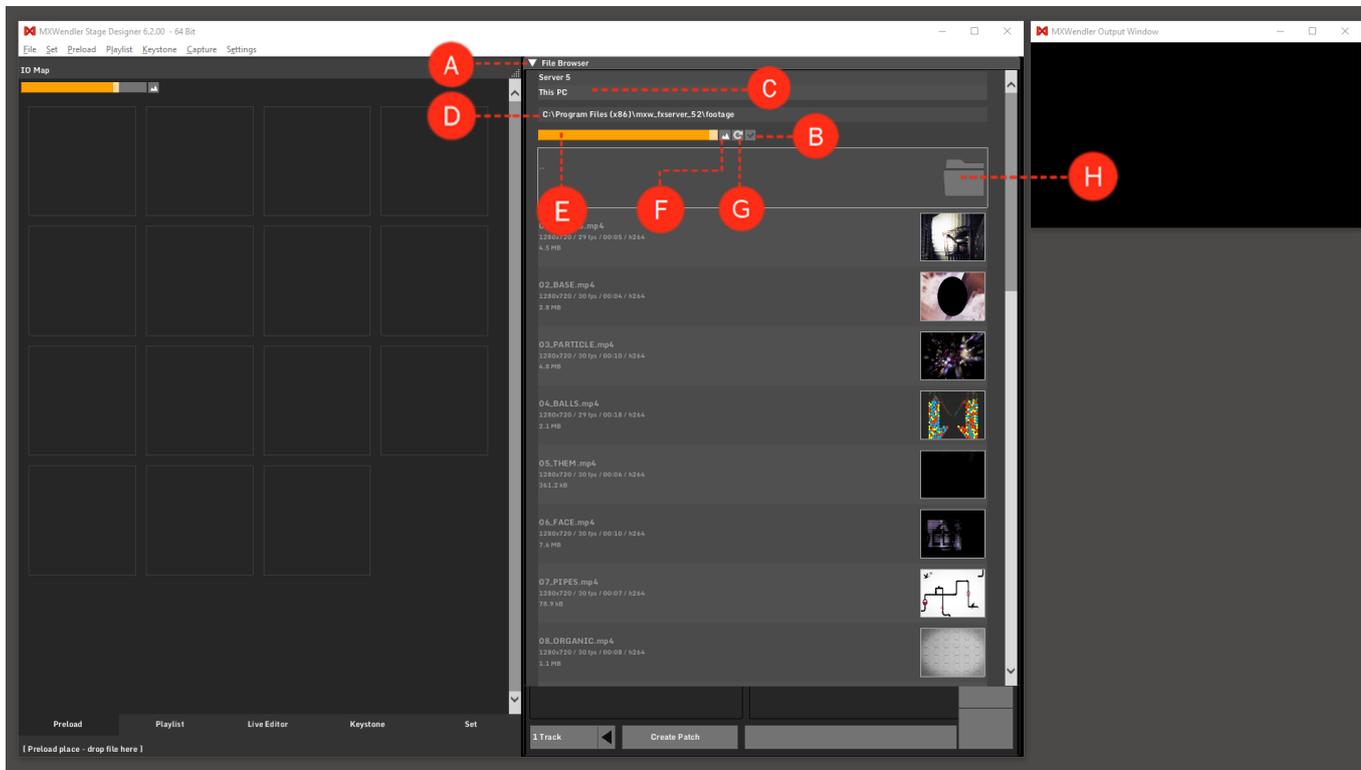
Address Bar: the address of the current folder. Double-click on the bar to type the desired address. **(D)**

Zoom: zoom in or out in the folder to see thumbnails or just file names and details. Can be changed either by mouse-wheel or by clicking & dragging it. **(E)**

Reset Zoom: resets the zoom to its default amount. **(F)**

Reload Directory: updates the changes to the files in the directory. **(G)**

One Up: moves to the parent folder of your current position. **(H)**



# Render Preview

Output Preview: the render output is monitored in the Output Preview. **(A)**

Final Transforms: editable values to transform the size and shape of the render output. **(B)**

Final Effects: a final effect can be applied to the render output. **(C)**

Clock: time reference, synched with Windows clock. **(D)**

Runtime Counter: the Runtime Counter shows the time since the start of the session. The counter can be set back to zero with a simple double-click on the counter itself. **(E)**

Preview Mode: the mode of the Output Preview can be set to: **(F)**

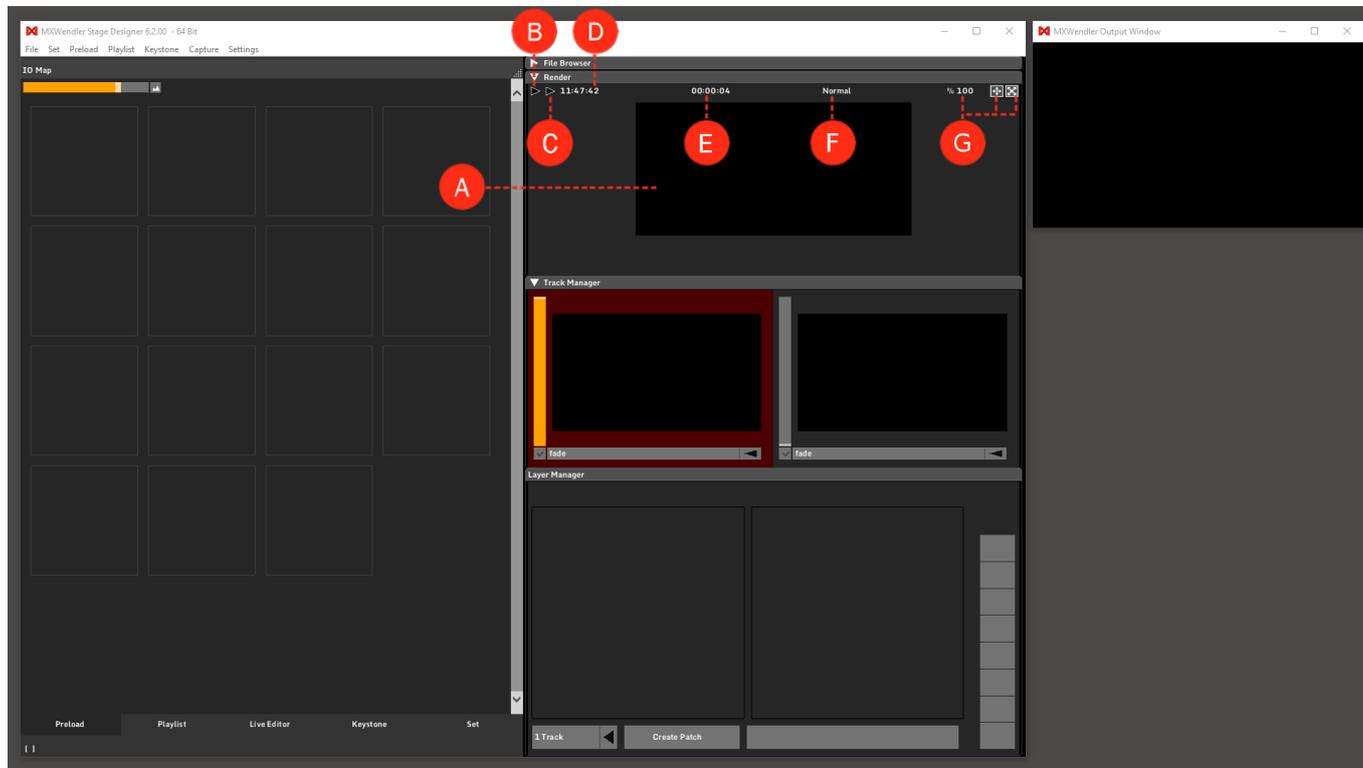
Normal: the Output Preview is shown before the Keystone. (output correction)

Keystone: the Output Preview is shown after the Keystone. (output correction)

Zoom & Pan: the Output Preview can be zoomed and moved with the two buttons on the upper right corner of the user interface or with the 100% increment field.

Size and position of the window can be changed by clicking & dragging one of these elements. Double-click to reset, or to type the desired zoom value. **(G)**

*Tip: the Render Preview window can be dragged and positioned anywhere on the software's user interface. Minimizing the window (clicking on the triangle) will bring the window to its default position.*



# Transforms

Slider values used to customize a preload clip, a layer or the render output. This menu can be found in Preload Preview, Layer Manager and Render Preview. **(A)**

Opacity: is the measure of how "Nontransparent" the layer is. The lower the Opacity the more transparent the layer will be. The standard value is 1. (full opacity)

TranslationX: position of the layer on the X Axis. The standard value is 0. (Centered)

TranslationY: position of the layer on the Y Axis. The standard value is 0. (Centered)

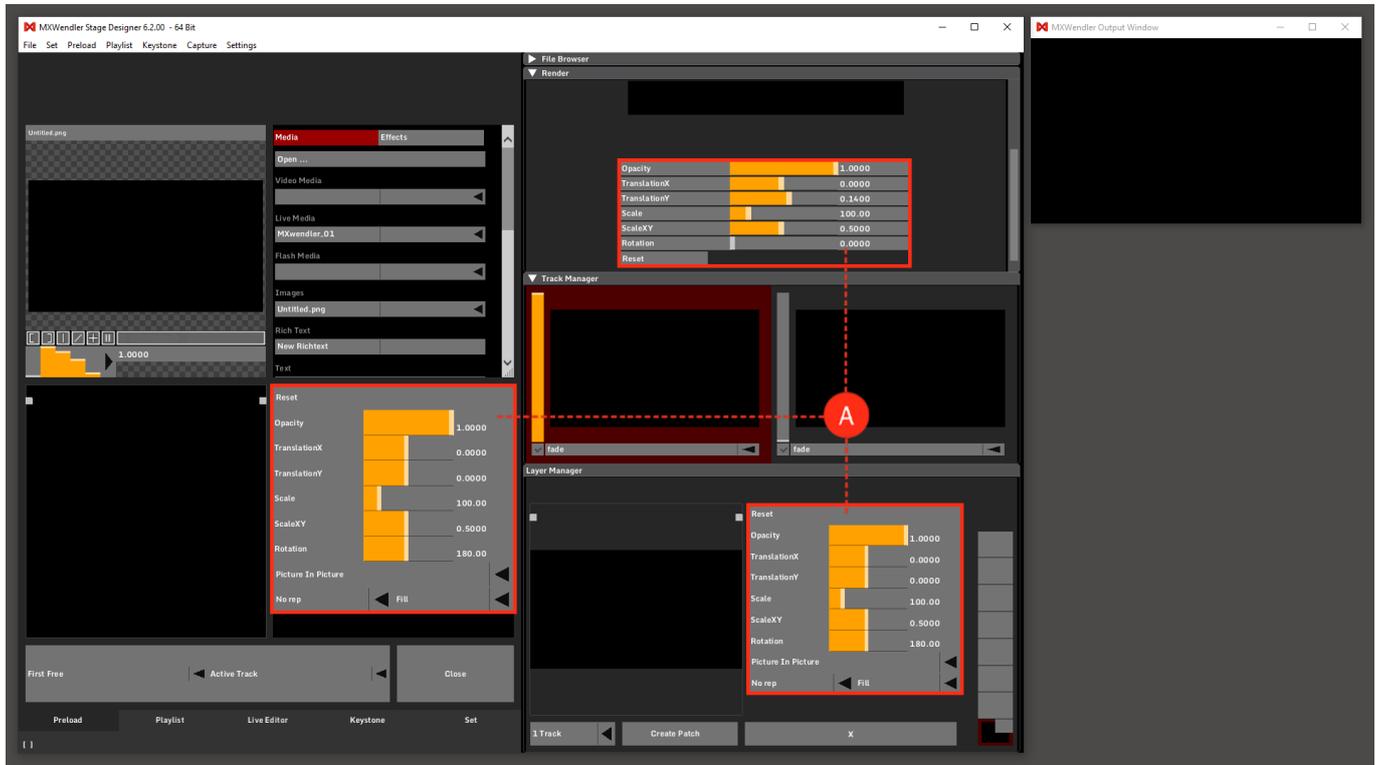
Scale: size of the layer. The standard value is 100. (original size)

ScaleXY: size of the layer inversely proportional for X and Y Axis. The standard value is 0.5. (X and Y have the same size)

Rotation: rotation of the whole layer. It goes from 0 to 360. The standard value is 180. (original position)

Reset: sets all the values to default.

*Tip: single values can be reset to default with a double-click on the slider or can be typed with a double-click on the relative numeric value.*



Mode: the available modes are:

Picture in Picture, Add, Strong Add, Subtract, Multiply, Luminance, Strong Luminance, Darken, Lighten, Difference Black/White. **(B)**

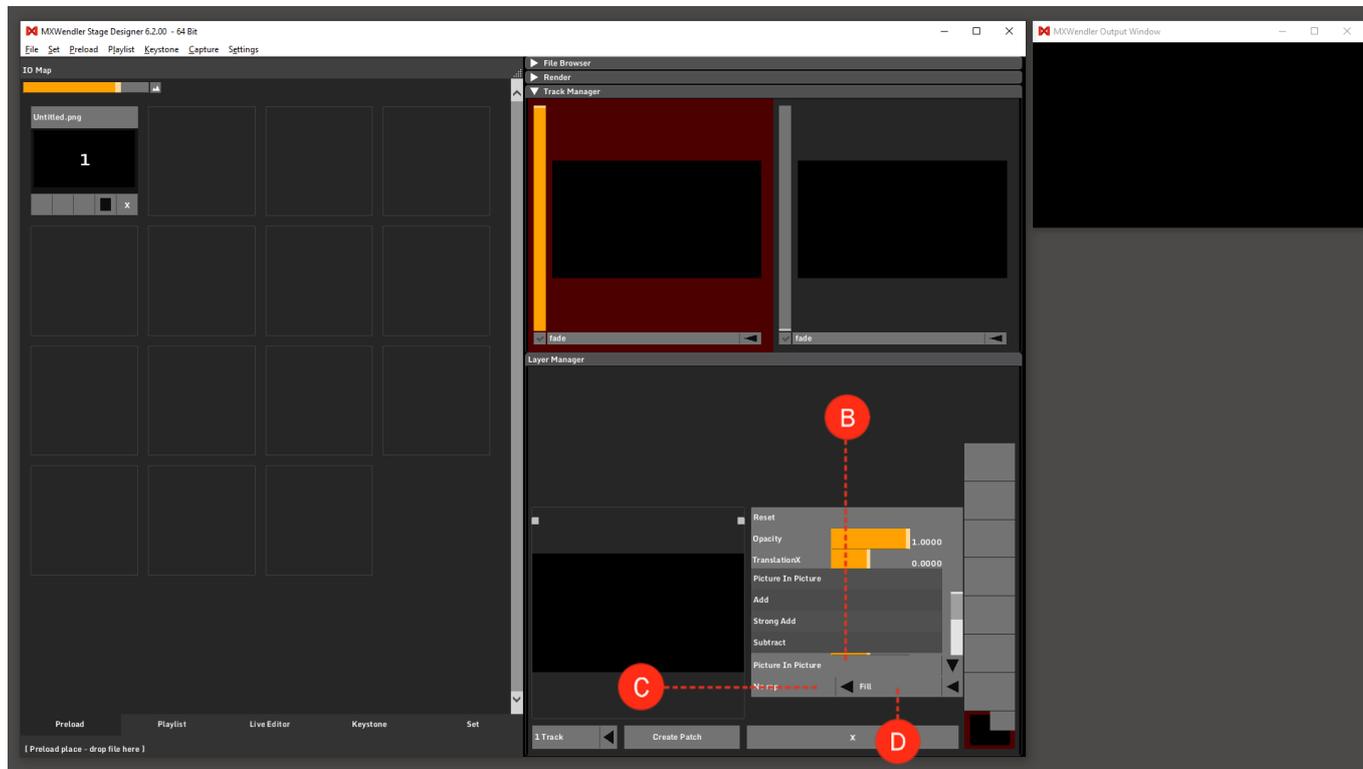
Aspect Mode: the available Aspect Modes are:

Fill, Aspect, 1:1, Pixelwise, Predefined Positions. **(C)**

Tiling: the layer can be repeated:

No repetition, X repetition, Y repetition, XY repetition. **(C)**

Each drop-down menu can be accessed by clicking on the triangle next to it.

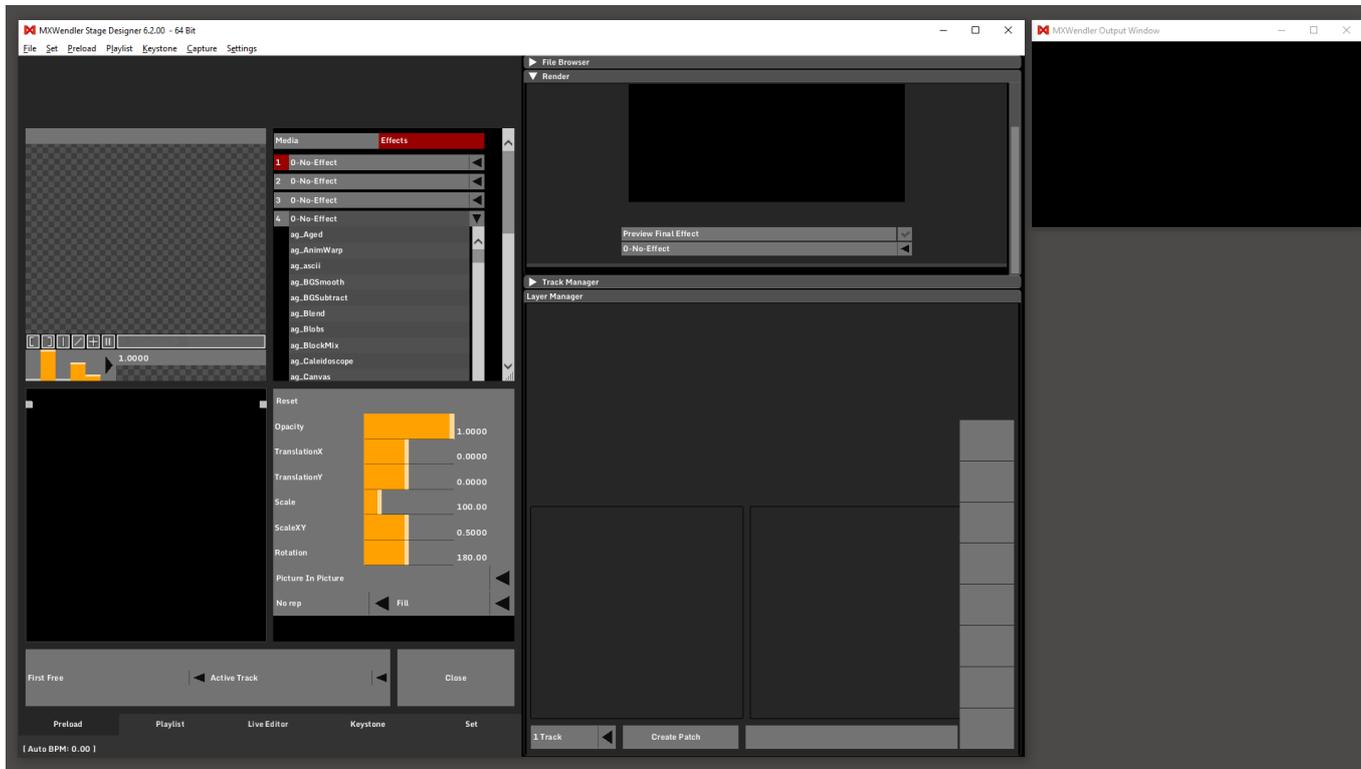


# Effects

Effects can be applied to the layer or the output in different stages of the software: in Preload Preview, in Live Editor and on the Render Output.

There are over 130 effects available in MXWendler and they include Color Corrections, Animations, Blurs, Transformations and so on. In StageDesigner up to 4 effects can be applied on each layer, and on FXServer up to 8 per layer. A final effect can be applied on the render output.

Effects can be influenced and automated by Expressions.  
See also: Tutorial Coupling Video with Effects and Audio Signals



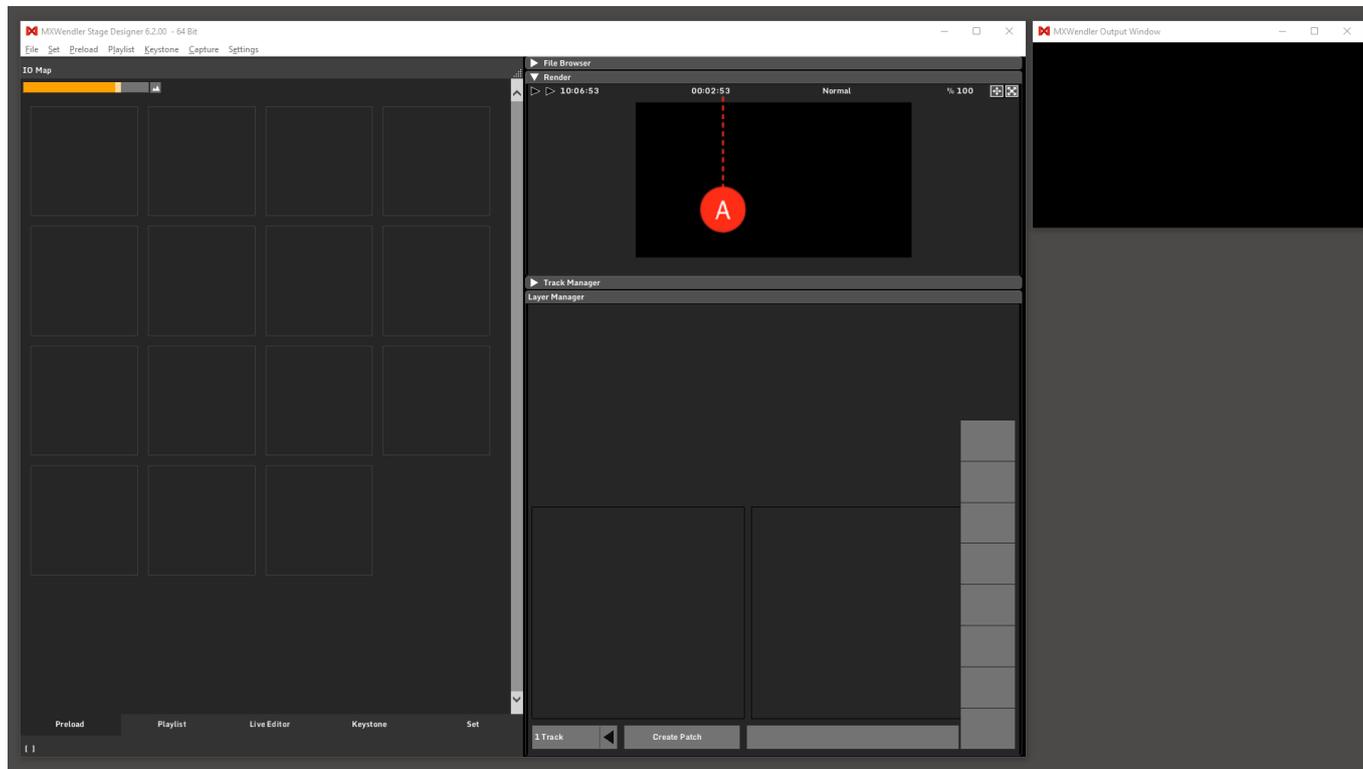
# Resettable Runtime Counter

The Runtime Counter shows the time since the start of the session.

The counter can be set back to zero with a simple double-click on the counter itself or by creating an IO event and selecting '/mxw/render/runtime' as receiver (the event can be activated, for instance, at the start of a playlist). **(A)**

See also:

Tutorial Resetting Runtime Counter with IO Commands in Playlist.



# Track Manager

The Track is the result of the compositing of the Layer Manager. By default there are two tracks and in each track 8 layers to use in your workspace.

There are different output tracks. The red-colored track is active for editing; corresponding layers are visible for processing.

The maximum number of tracks in MXWendler is 4 and each can host up to 16 layers.

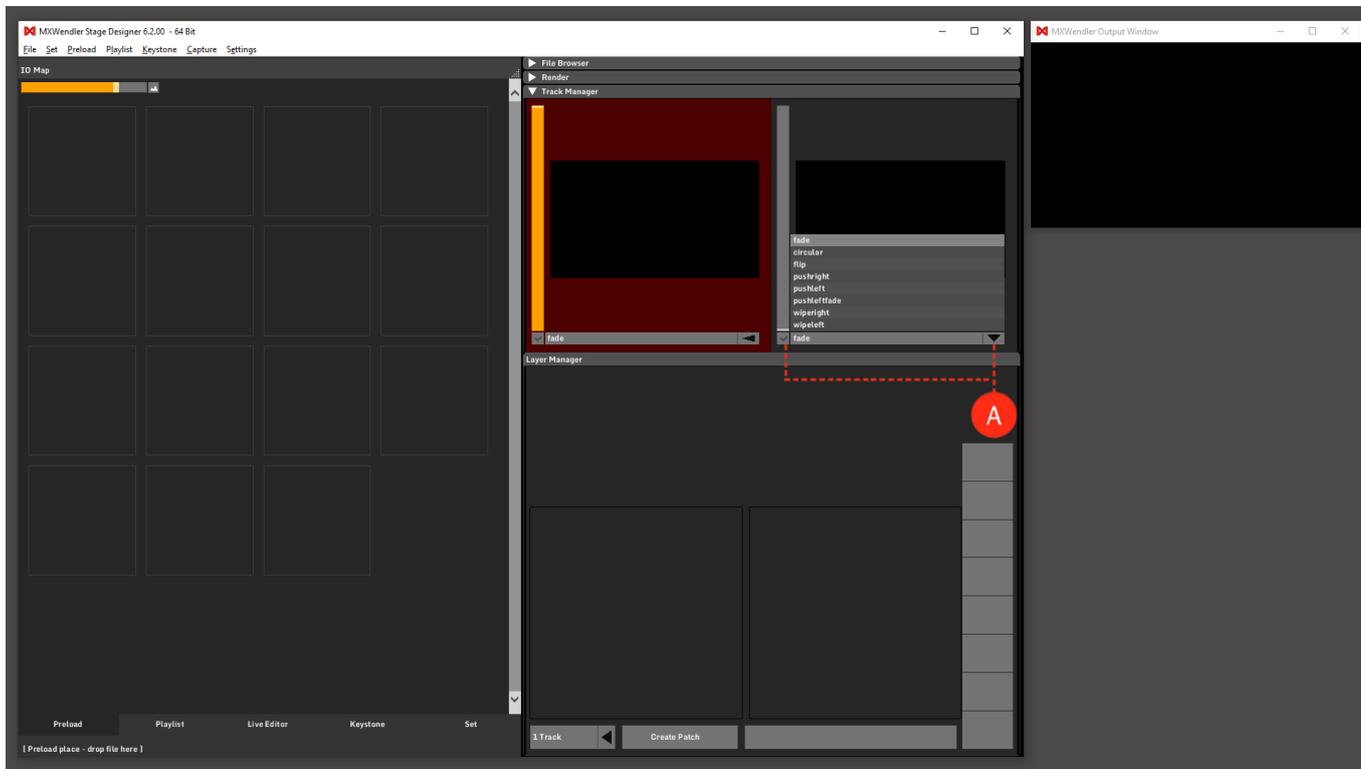
These settings can be changed in the Settings menu under:

**Settings → Windows → Misc.**

By selecting the checkbox under each track a Crossfade can be activated. **(A)**

The transition mode can be chosen from the menu on the side of the checkbox.

*Tip: the Track Manager panel can be dragged and positioned anywhere on the software's user interface. Minimizing the window (clicking on the triangle) will bring the window to its default position.*



# Layer Manager

The Layer Manager enables the layer-based processing of video media, a procedure well known in image processing. Individual image components are composed together in a stack, from bottom to top. The Layer Manager is the origin of the Output Pipeline, where the compositing for the track happens.

By default it contains a number of 8 layers (per Track). **(A)**

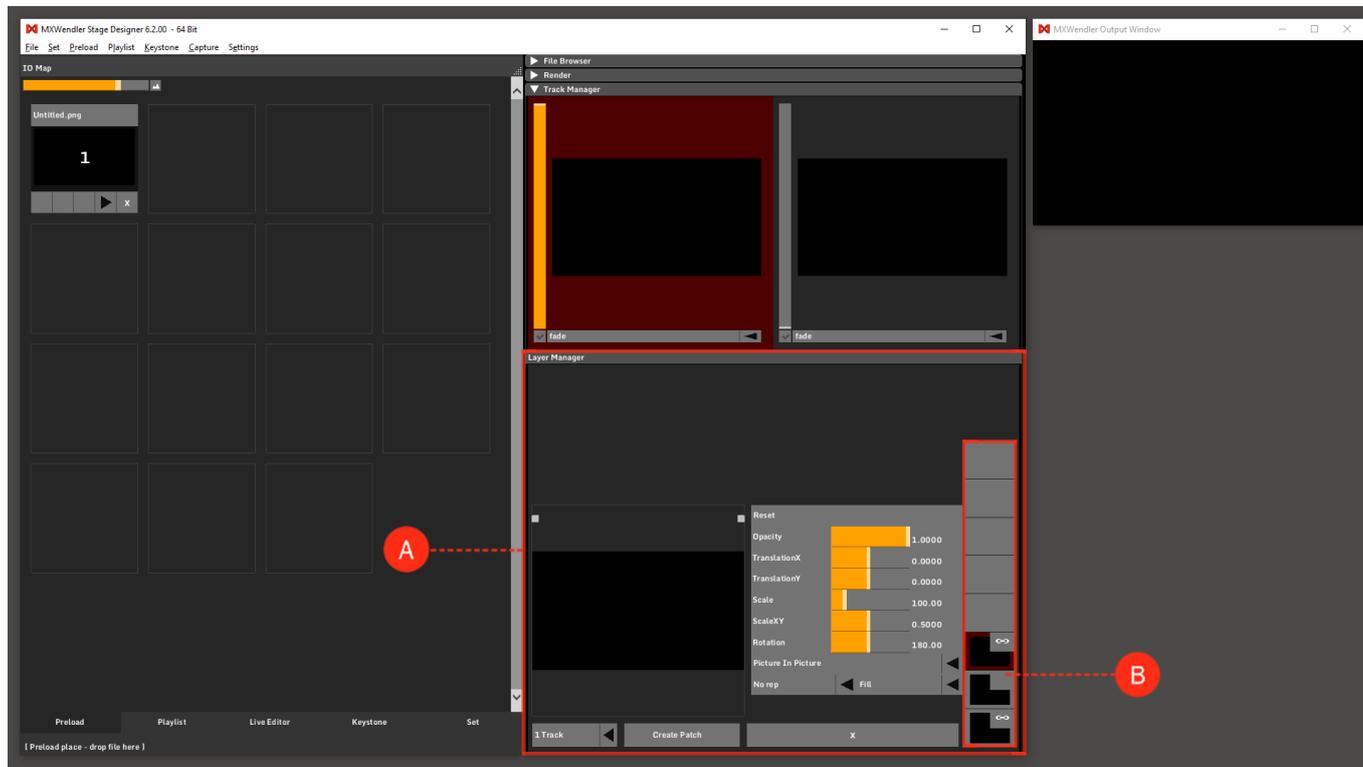
The settings can be changed in the Settings menu under:

**Settings → Windows → Misc.**

A Maximum of 16 layers can be used in each Track.

Layers: media in playback, is shown here. **(B)**

- The layers work in a bottom to top structure, the higher layer is on top of the output.
- The layers can be linked with each other through the chain symbol on the top-right corner of each layer.
- Each modification applied to a linked layer will be applied also to the other linked layers.
- By editing a linked layer while holding the Modifier Key (Windows: CTRL), only the selected layer is modified.



Layer Preview: shows a preview of the selected layer. **(C)**

- A clip from Preload, File Browser or Live Editor can be dragged&dropped here and it will be played in the first free layer from bottom.
- The position of layer in output, can be edited here by drag&drop and can be scaled using the two pivots on top of the Layer Preview.

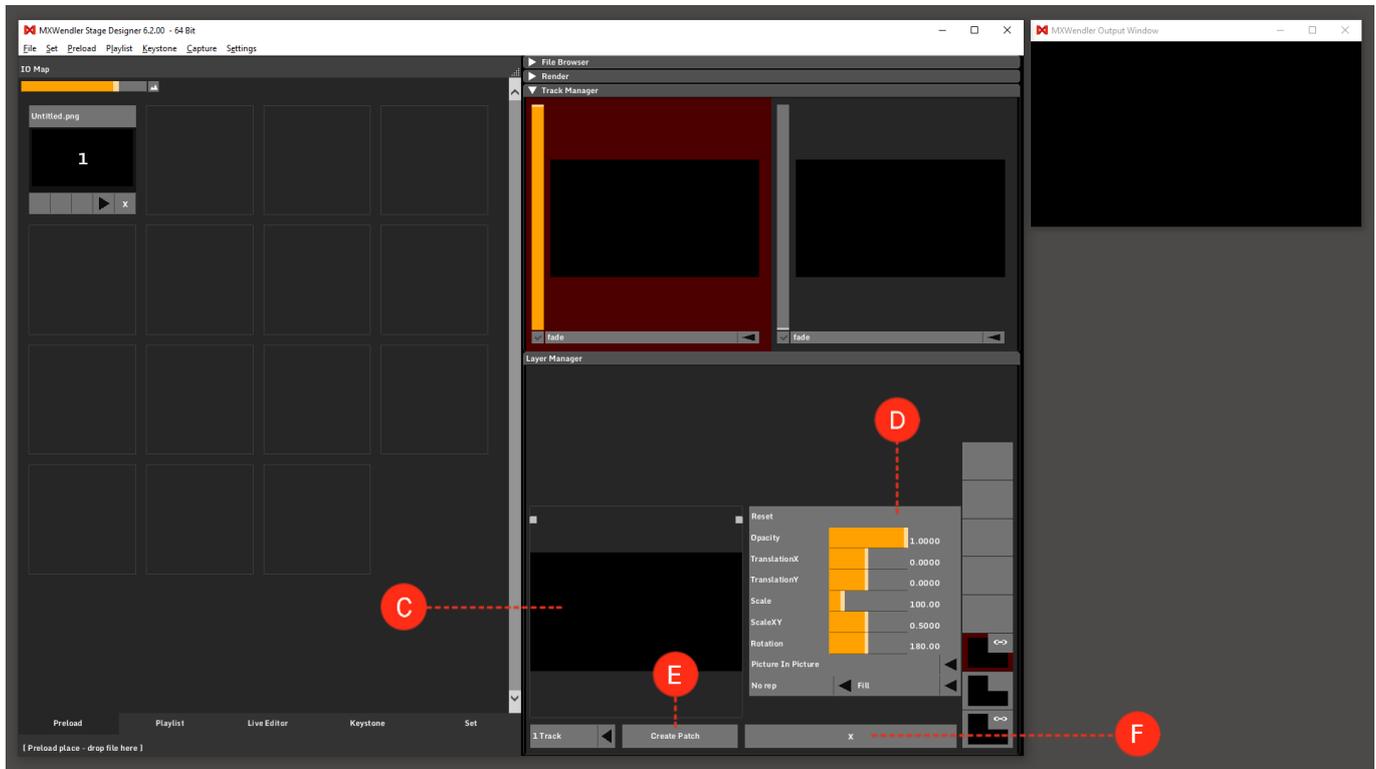
Transforms: editable values to transform the size and shape of the selected layer. **(D)**

Create Patch: creates a Patch, namely saves the composition in Set to be recalled in a later moment.

- A Patch can be made from the selected track or, simultaneously from more tracks. See also Set. **(E)**

Delete: the Delete Layer button is marked with an 'X'. By clicking it, the selected layer will be deleted. **(F)**

- Clicking X while holding the Modifier Key (Windows: CTRL), deletes all the layers of the track at once.
- *Tip: deleting a layer saves the changes in the original Preload of the layer.*



# Preload

Media are stored in Preload places for later playback, one media file for each tile.

The software can store media files in its memory. Through effects and transformations the media can be edited and prepared to be placed in output.

Each Preload is given a unique index and can be triggered for playback by the Playlist, or directly using IO commands. **(A)**

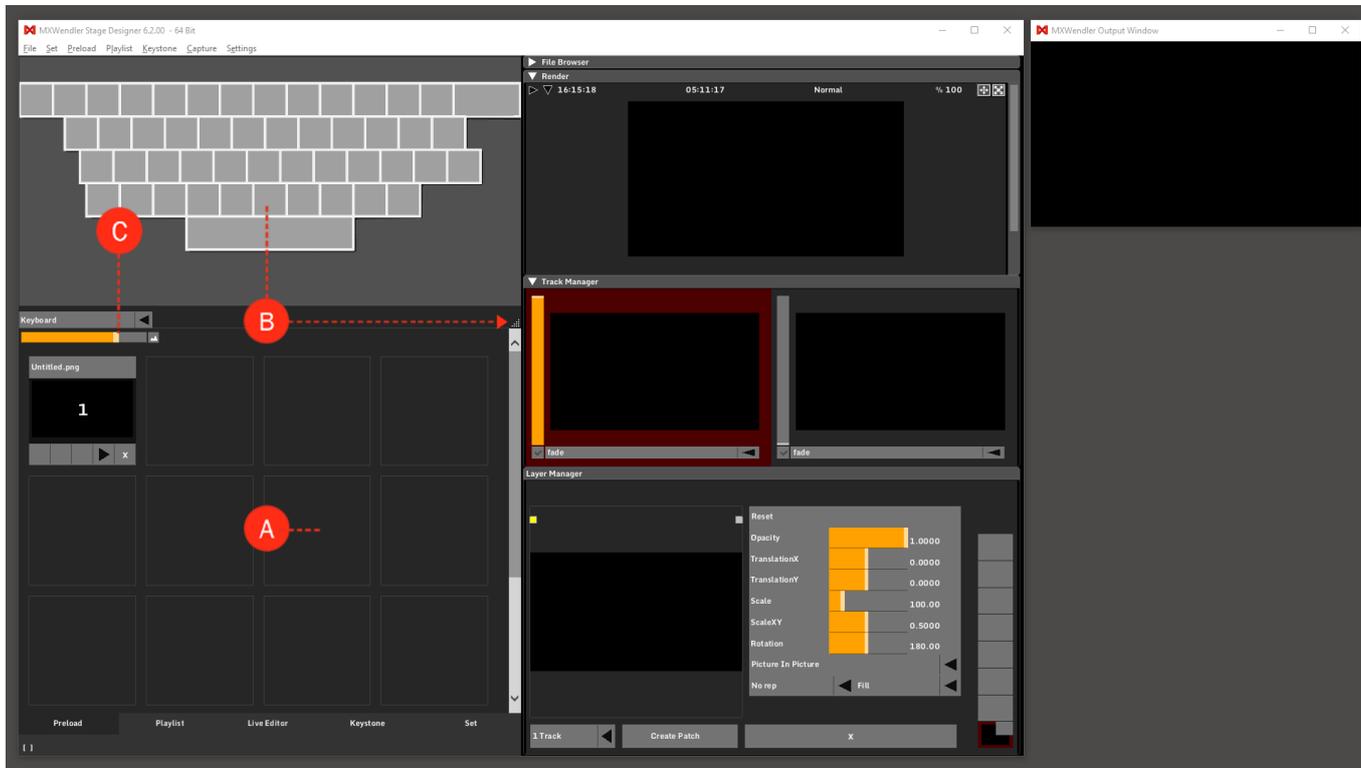
By clicking on a Preload the Preload Preview will be opened.

IO Map: it is used to playback media directly and to program different events, with Keyboard, Midi and DMX. It can be accessed by pulling down the triangle on the bottom right corner of the IO Map bar (see arrow) and can be set via drag&drop. **(B)**

Zoom Slider: to zoom in or out of the Preload list. Double-clicking on the slider, or clicking on Reset Zoom button, brings it back to it's default state. **(C)**

See also:

- Tutorial Opening Different Media
- Tutorial Creating and Playing an RTF Text File



# Preload Preview

The Preload Preview gives access to the settings of the preload.  
Click on a Preload to open the Preload Preview.

Load different kind of media in the preload and switch between loaded media, load and create text layers. **(A)**  
Apply effects to the chosen media. **(B)**

Modify the clip length and play mode through the sliders under the clip preview: KeyIn, KeyOut, Progress, Speed, Play Mode. **(C)**

*Tip: the speed slider value goes from 0 to 1 for video clips and from -5 to +5 for image sequences and Hap Clips.*

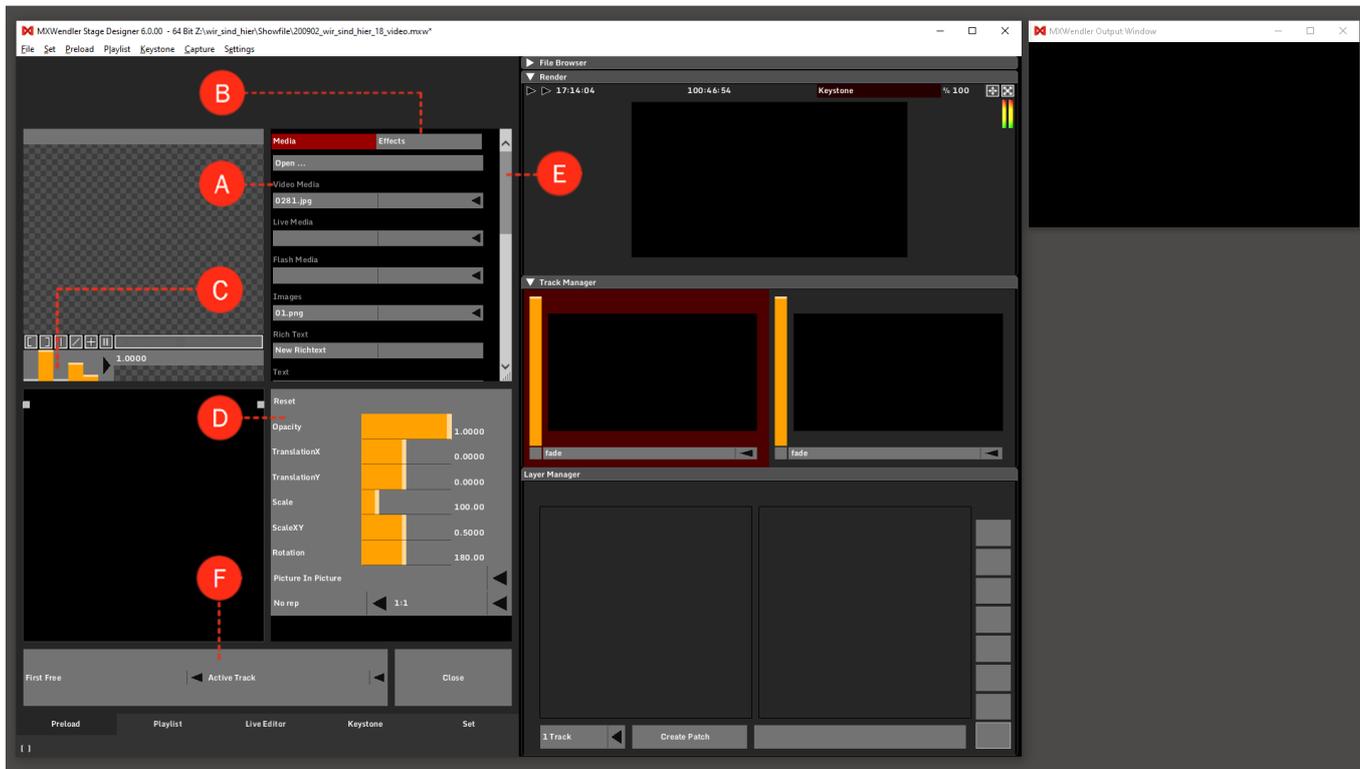
*Tip: Random, Jitter and Bounce play modes are aimed to work with Image sequences, not with video material.*

Apply layer transformations. **(D)**

*Tip: Changes in layer opacity cannot be seen properly without a background to the layer, that's why the opacity transformation will affect the layer composition but not the preview."*

Check all the most important information about the selected media by scrolling down on the menu. **(E)**  
Assign a preferred layer and track position to the layer. **(F)**

*Tip: changes to this option for the text layer will not be saved in Preload because it is controlled by the Supertitle Text settings in: **Menu → Settings → Media.***



# Playlist

## Introduction

Playlists can be created and edited from preloaded media, external media or text files. There are multiple commands, options, and settings available to create the desired playlist.

## Features

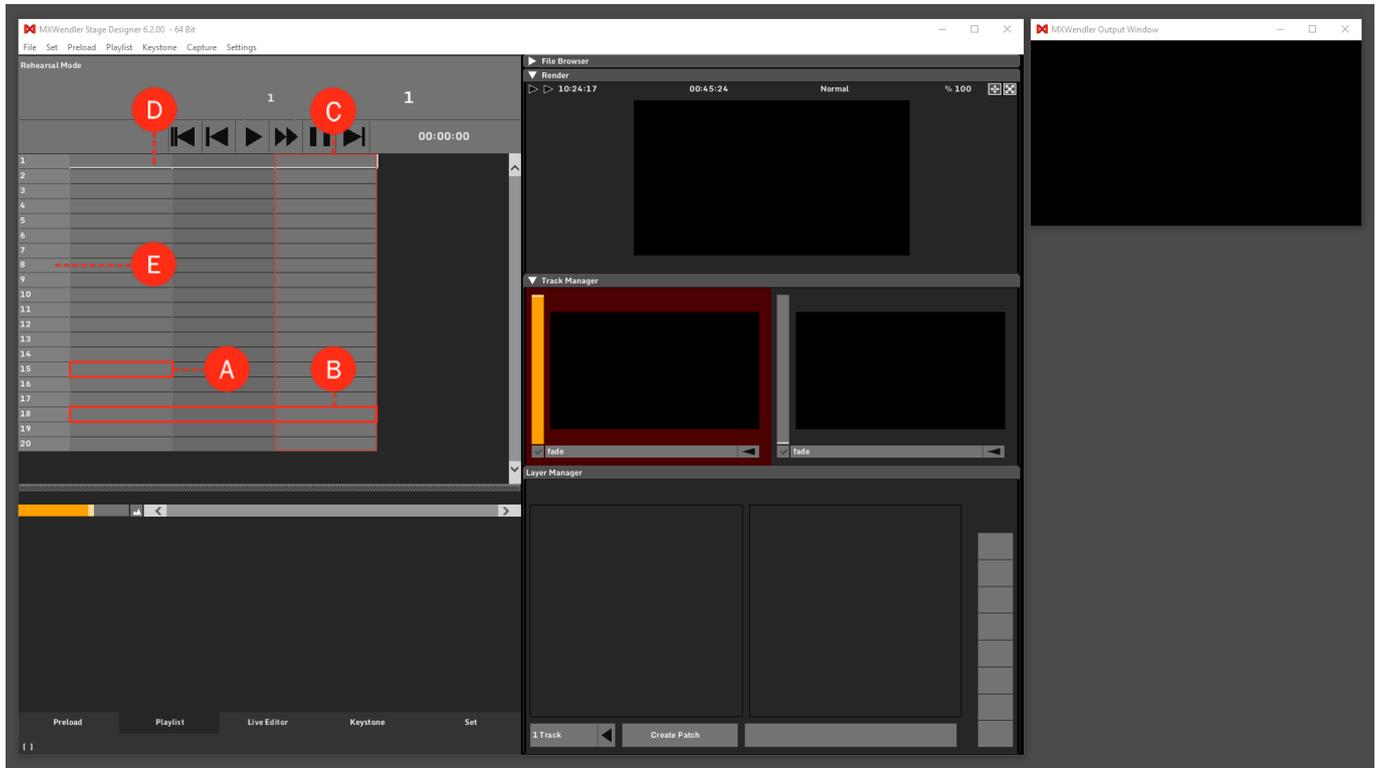
**Cells:** playlists are made out of different Cells. Cells are where the media indexes and Playlist commands are stored to be triggered for playback or execution. It can be inserted/removed to the Playlist by right-clicking on any Cell. Cells can be colored and labeled by right-clicking and choosing Color/Label. **(A)**

**Cues:** each row of Cells in a playlist is defined as a Cue. Each Cue has an index. Indexes can be changed by double-clicking on the index names/number. All the Cells in a Cue are triggered simultaneously. Cues can be inserted/removed by right-clicking on any Cell. Multiple Cues cannot be triggered/activated simultaneously. **(B)**

**Columns:** Each vertical line of cues is defined as a Column. Only one Cell in each column can be active at any given time. Columns can be added/removed by right-clicking on any Cell. **(C)**

**Next Cue:** the white frame around the cues shows the Cue which will be triggered next. **(D)**

**Comment Column:** by double-clicking, a user-defined comment can be entered. **(E)**



Current Cue Title & Duration: shows the title and duration of the current Cue which is in play. **(F)**

Next Cue Index: shows the index of the next Cue. By double-clicking on it, you can enter the number or name of the Cue you wish to jump to. **(G)**

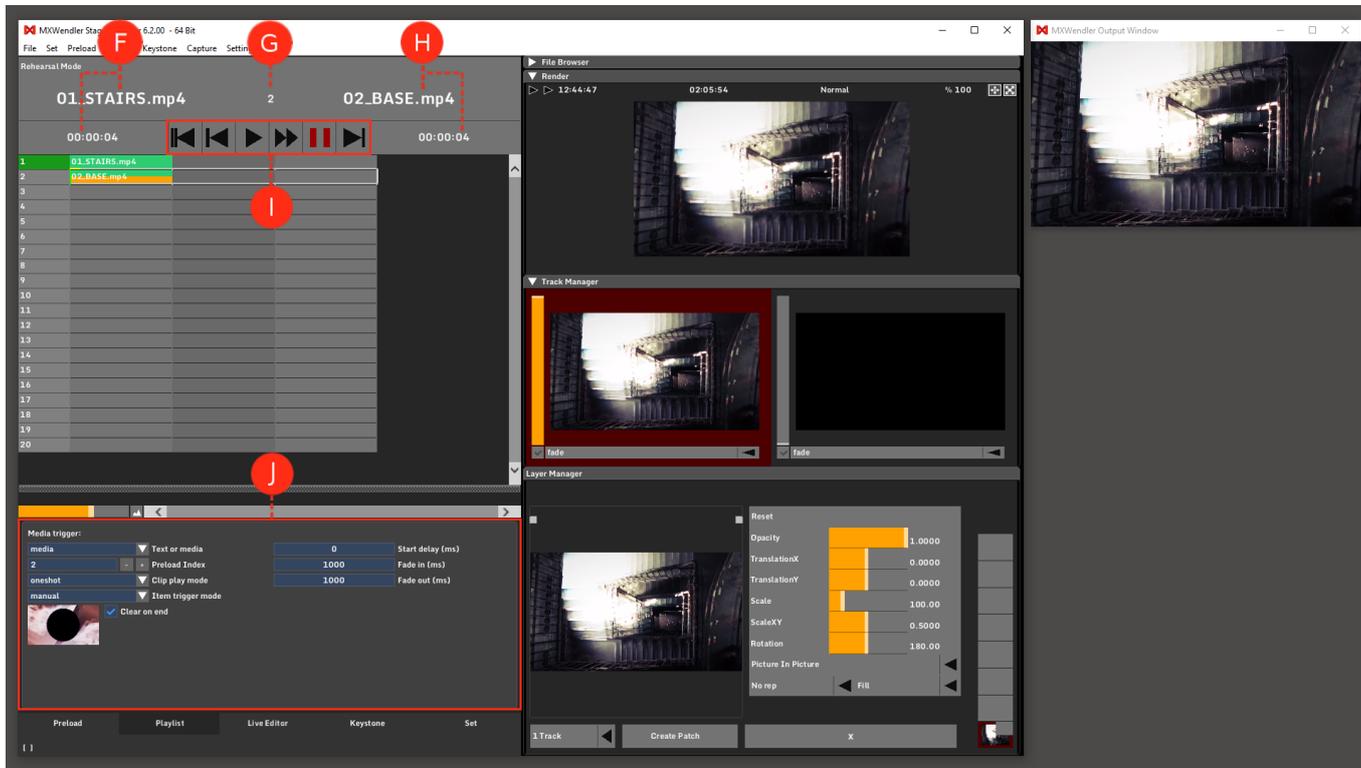
Next Cue Title & Duration: shows the title and duration of the next Cue. **(H)**

Playlist Buttons: from left to right: **(I)**

skip back to the beginning | skip one step back | play | seek forward | pause | skip one step forward

Cue Settings: the detail settings for the cues. **(J)**

*Tip: the size of the Playlist can be customized through the draggable window-splitter at its bottom, the zoom slider and by using ctrl-mousewheel on the playlist area*



# Live Editor

A clip can be edited while in play only in Live Editor. In this section, effects and expressions can be applied on the running clips.

Spectrum Analyzer: audio and beat slider for the animation of visuals. **(A)**

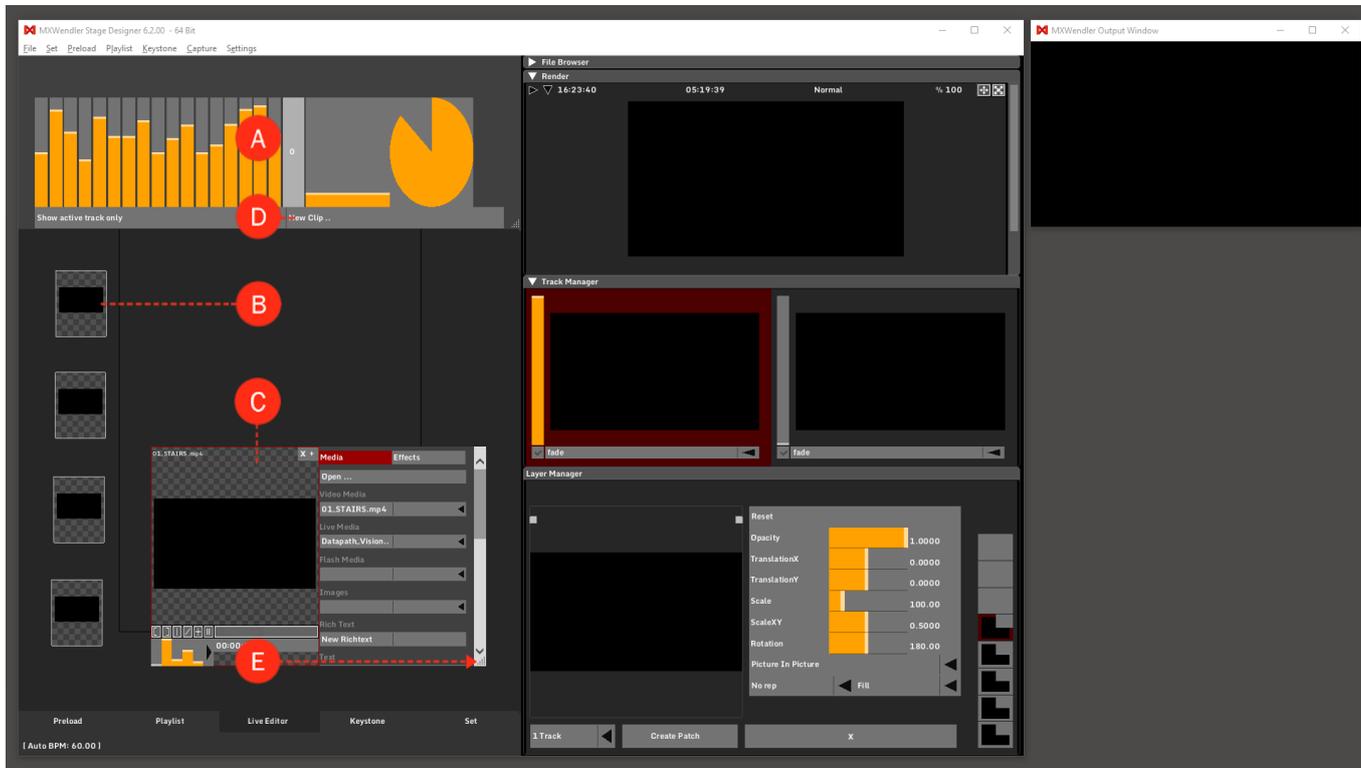
Storage Area: minimize a clip by dragging it to the exterior area. **(B)**

Work Area: maximize a clip for processing by dragging it to the center area. **(C)**

*Tip: with a double-click in this area, an Open Media window will open to select a file to load.*

New Clip: a new clip will be created. The new clip has the standard footage as selected in the Windows settings under Standard Clip/Timer. **(D)**

Clip: an open clip in the work area. Open the clip settings by dragging the lower right corner (see arrow). Create a layer (send the clip to the Layermanger) by dragging the clip to the Layermanager, or by clicking on the 'Plus' sign. **(E)**



Expression: hold Shift and drag any moving fader (e.g. Spectrum Analyzer or Clip Progress) to any visible parameter (e.g. Layer or Effect parameters) to connect the two values through an Expression. **(A)**

The movement of the first bar is going to influence the value of the second one.

Expression Route: double-click on the red part of one of the selected bars to see the Expression Route. To minimize it click on the triangle. Click on Close to close the panel, Delete to delete the Expression, Pause to pause it for editing, and Edit, to open the Expression Editor. **(B)**

Expression Editor: the user can modify the mathematical properties of the relation between the two connected values. Base and Range can be used to calibrate the responsivity of the Scale to the frequencies of a sound. **(C)**

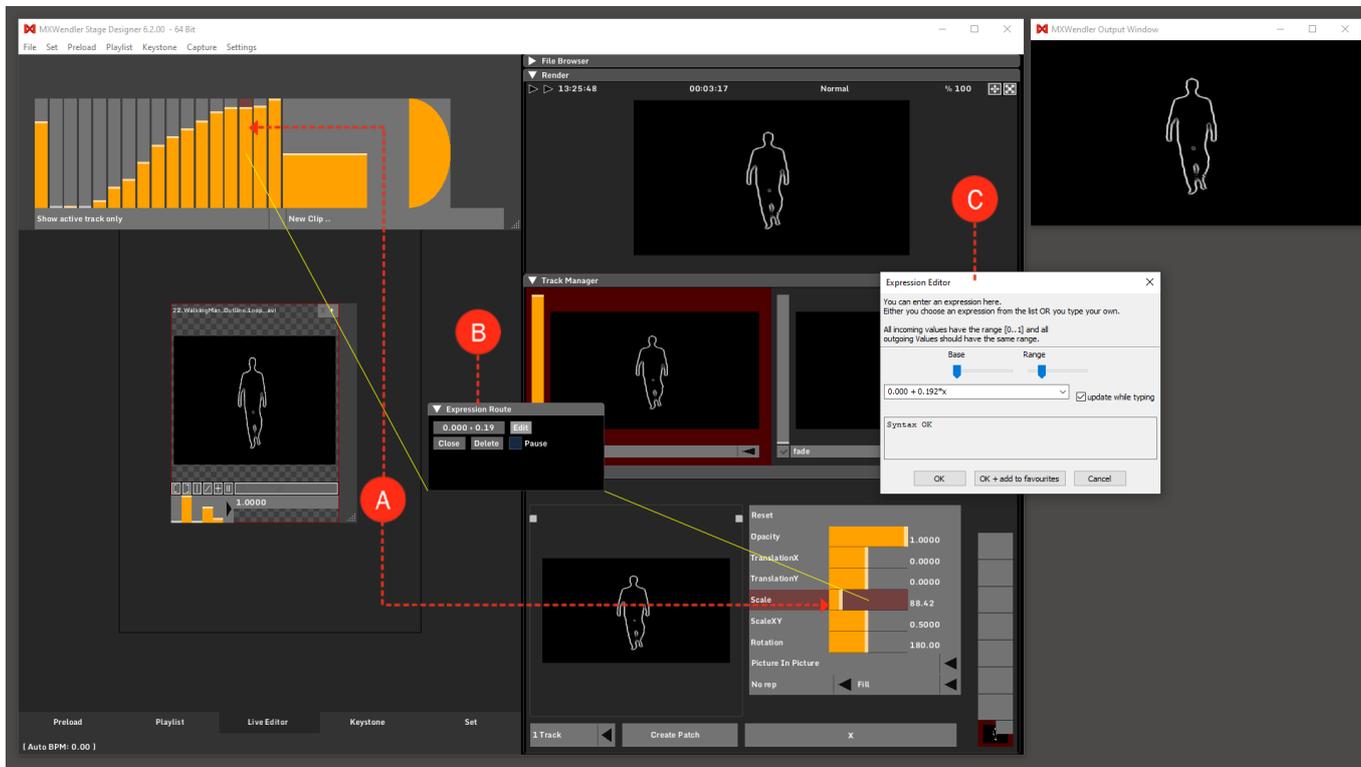
Example of sound to light calibration:

1. Play a video and connect with shift+drag&drop, a moving channel of the Spektrum Analyzer to Scale.
2. Open the Expression Editor, bring Range to 0 and move Base until you get close to the target default value (Scale:100).
3. Now, moving the Range up should increase the influence of the sound on the video Scale.

*Tip: an expression can be stored and recalled in a Patch, it can be paused. It can be used in chain and also to connect different parts of the software!*

See also:

- Tutorial Coupling Video with Effects and Audio Signals
- Tutorial Feedback



# Keystone

Output corrections, masking, and animations can be done in Keystone.

UV View: above the draggable window-splitter is the UV View. **(A)**

It defines which area of the Render output has to be shown in the keystone elements.

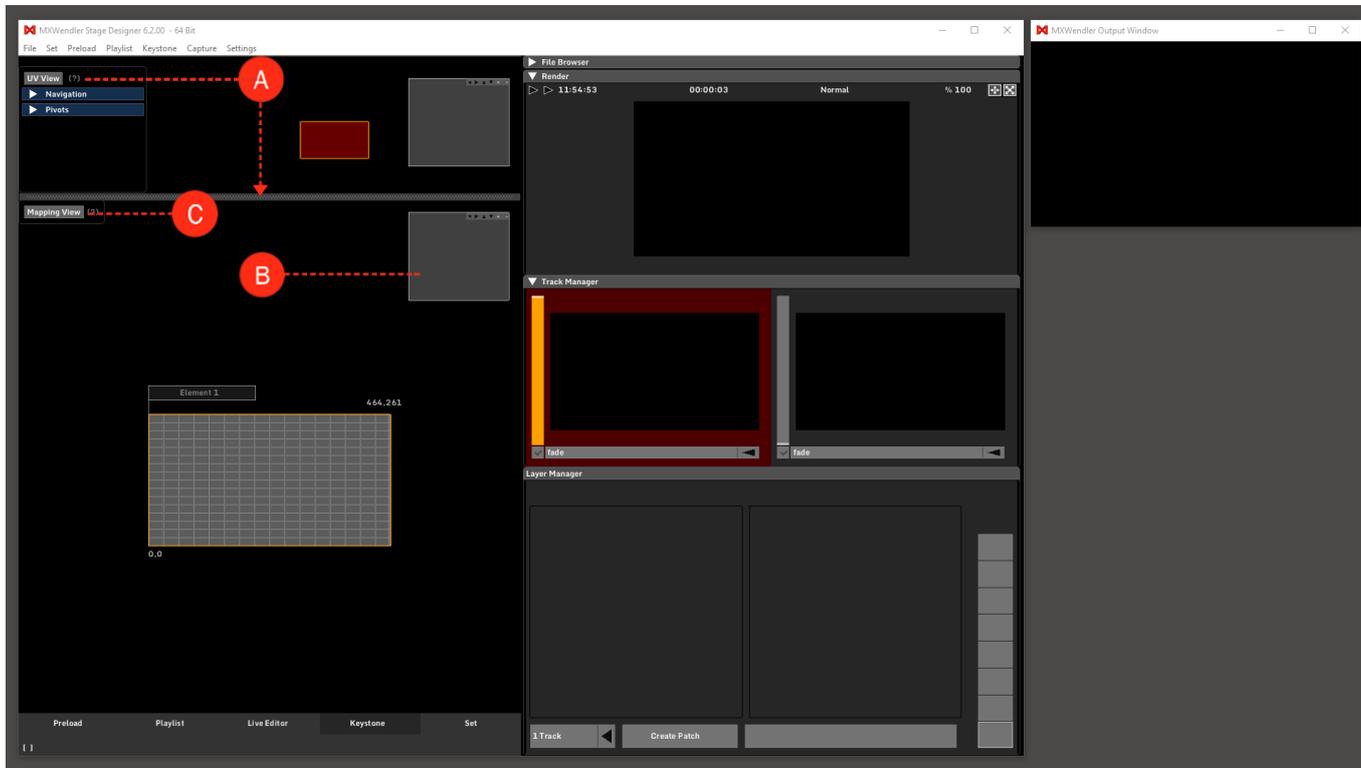
Keystone Navigator: for navigating and changing the view position of the keystone elements. **(B)**

- Click&drag / mousewheel / + and - to zoom

- Click&drag the blue square / buttons to navigate

- Double-click to reset view

Mapping View: to open the Mapping View (Keystone Menu), click on the Mapping View button on the upper-left corner of the window. **(C)**



Navigation: resets the position of the view and activates / deactivates the Keystone Navigator. **(D)**

Create: creates different kinds of elements. **(E)**

- Grid: is a wizard to create a complex keystone setup. Mostly used for panorama setups.

Select the number of columns and rows to configure a grid of keystone elements.

By checking the Softedges box, softedges will be automatically added between the elements.

Please notice that when Softedges is activated every element of the grid will have a 10% (default) extra content in UV to allow the correct edge blending.

By checking the Blacklevel box, blacklevel elements will be automatically added between the elements.

- Single Element: adds a new element.

Keystone: standard mapping element, warps content.

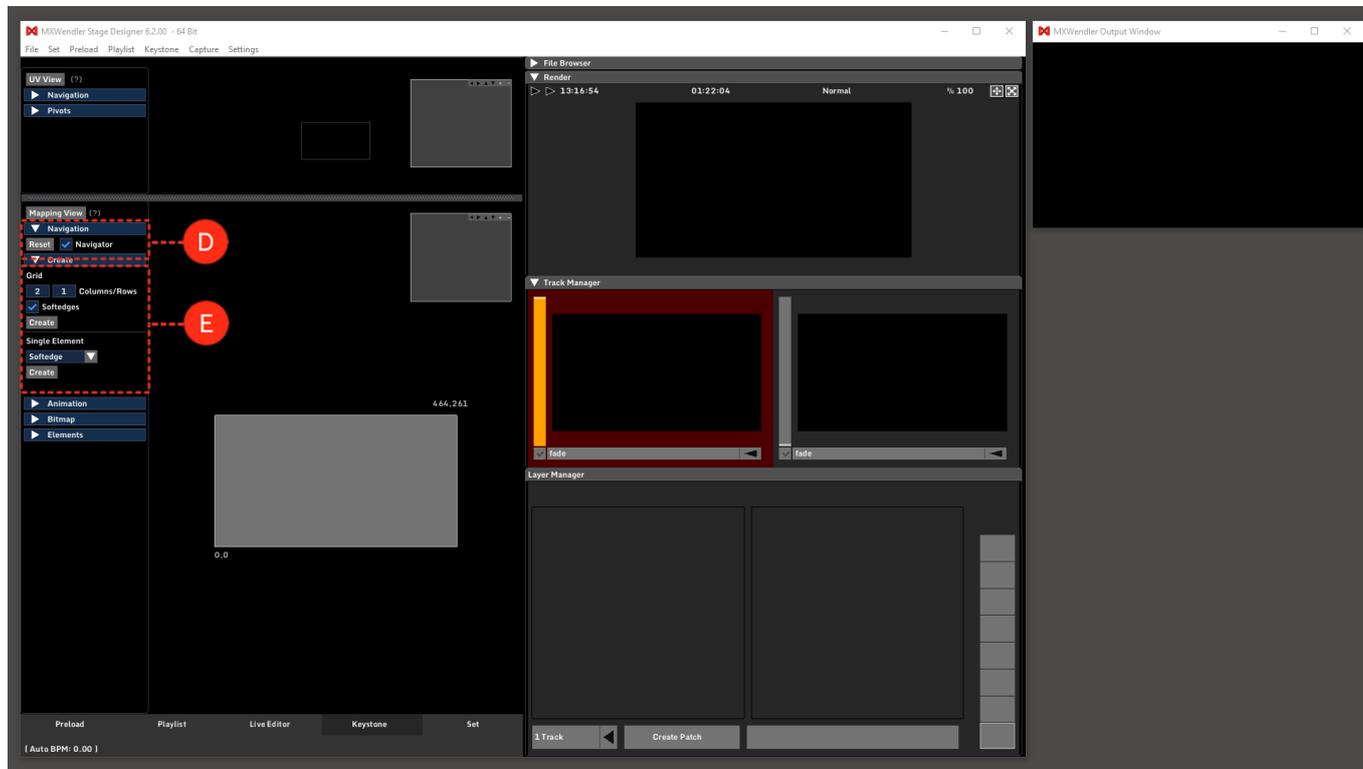
Keystone 3D: warps content, based on a 3D model.

Softedge: a gradient element (black to transparent) for blending two projectors.

Blacklevel: a dark element used to adjust the level of brightness around an overlap when no image is played.

DMX Grabber: sends color values to DMX

Art-Net Grabber: sends color values to Art-Net



Animation: moves back and forth between two stored states of the keystone pivots. **(F)**

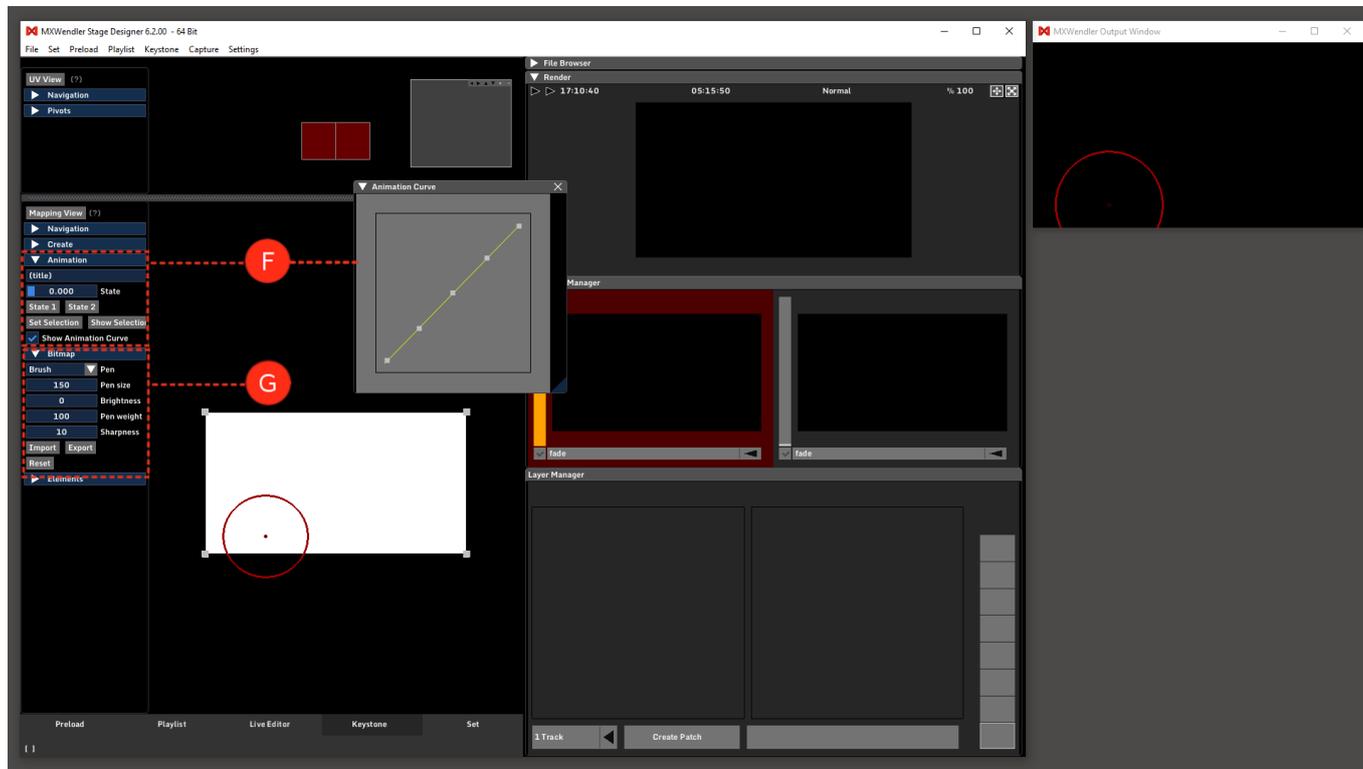
See also:

- Tutorial Colored Output with Animations.

Bitmap: a mask on top of the output, used for output corrections. **(G)**

See also:

- Tutorial Masked Output



Elements: select, activate and modify the keystone elements. **(H)**

- Editor Settings: select visible and editable elements in the editor and in output.
- Elements:

Lock: the element is locked, can't be moved or modified.

Object Mode: the element can be moved by drag&drop.

Pivot Mode: the pivots are shown in the editor, they can be moved by drag&drop.

*Tip: these three modes can be activated also by double-clicking or right-clicking on the element.*

Helpers: rasters, grids, white, black and transparent pictures in different resolutions to be used as a tool for mapping. Checking the Use Element UV box cuts the helper accordingly with the element UV.

Content: a specific track or layer can be assigned as an element content source.

Geometry: sets the properties of the element.

Rotation: rotates the whole element. A value of 9000 means 90 degrees of rotation.

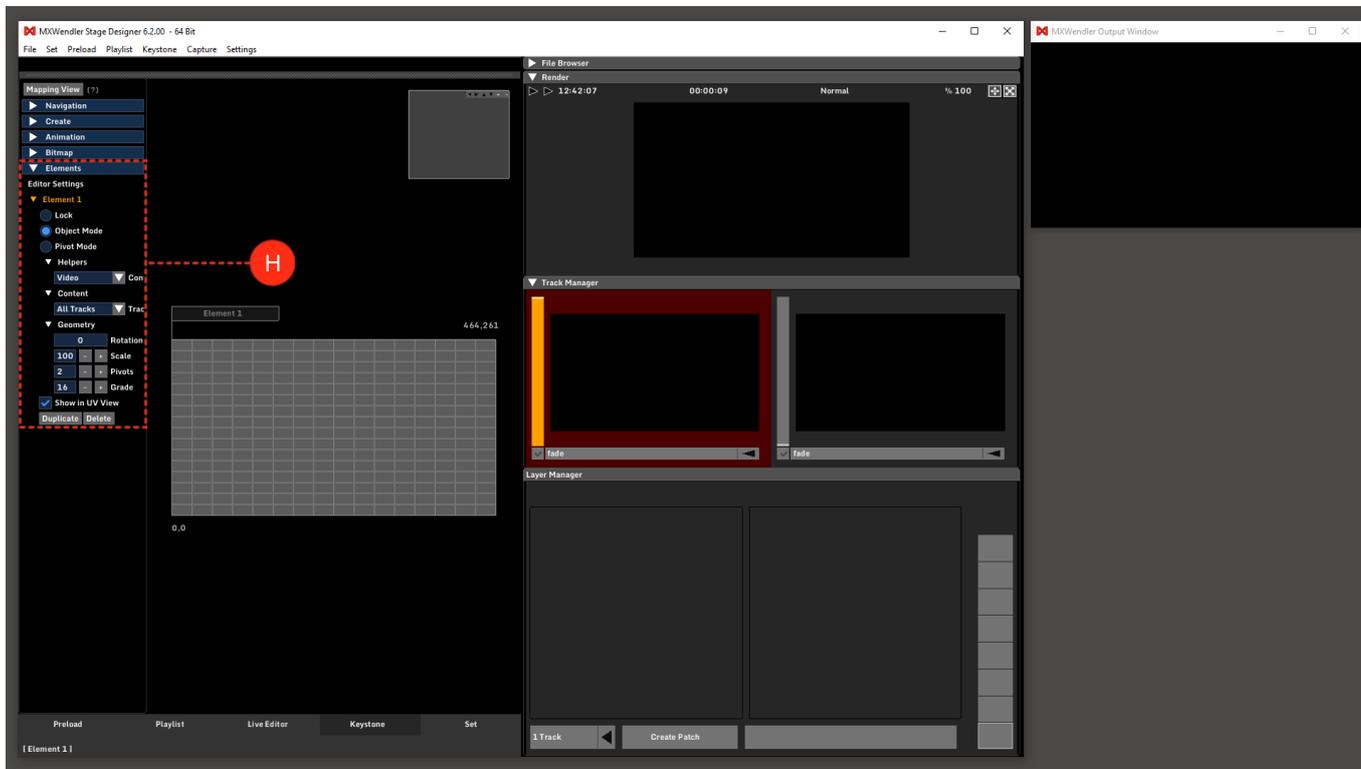
Pivots: number of pivots per side of the element

Grade: a higher grade means higher tassellation, smoother curves but more resources needed.

Pivot: when a pivot is selected the element menu disappears and the pivot menu becomes available. Position, UV values and color of the selected pivot (or the shared values if more are selected) can be modified.

See also:

- Tutorial Simultaneous Playback of two Videos with two Video Projectors
- Tutorial Capture Output Sections with Artnet DMX and Network Grabbers
- Tutorial SVG Mapping with the MXWendler Automatic Calibration



# Set

Patches can be saved from the Layer Manager in a Set and can be retrieved individually, or as a sequence. Complete compositions with multiple layers, as well as all parameters and media information can be stored in Set in different Patches. Please notice for latency-free output that Patches are just 'lightweight', only the references but not the media itself will be loaded. **(A)**

Clicking on a Patch opens it for editing the DMX Value, title, Fade In time and Type. **(B)**  
Patches can be played, stopped and paused. **(C)**

Set Buttons: Patches can be played sequentially. From left to right: **(D)**

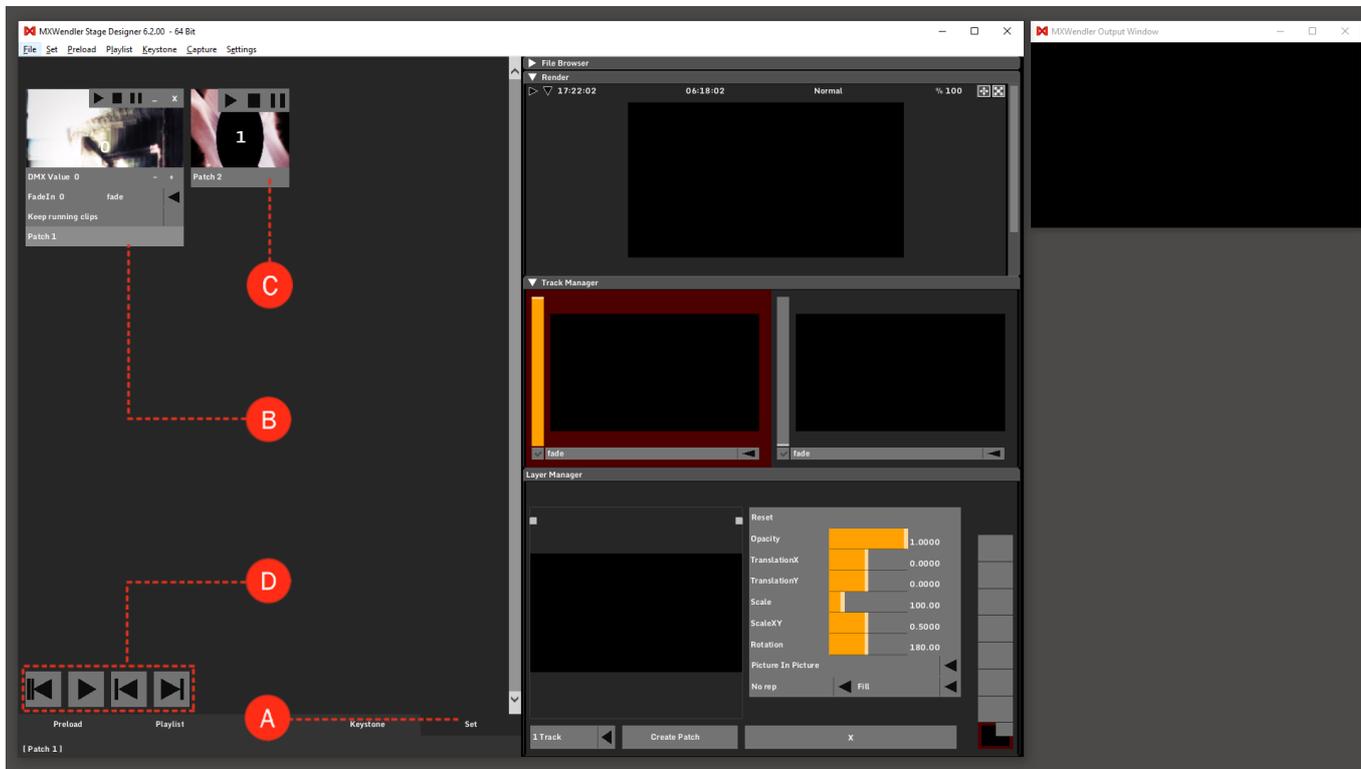
Back to the beginning, play, one step back, one step forward

IO Index: a patch can be triggered via a script, keyboard, DMX or Midi. Values and functions can be set in:

**Settings → Input and Output → DMX/MIDI/Keyboard**

See also:

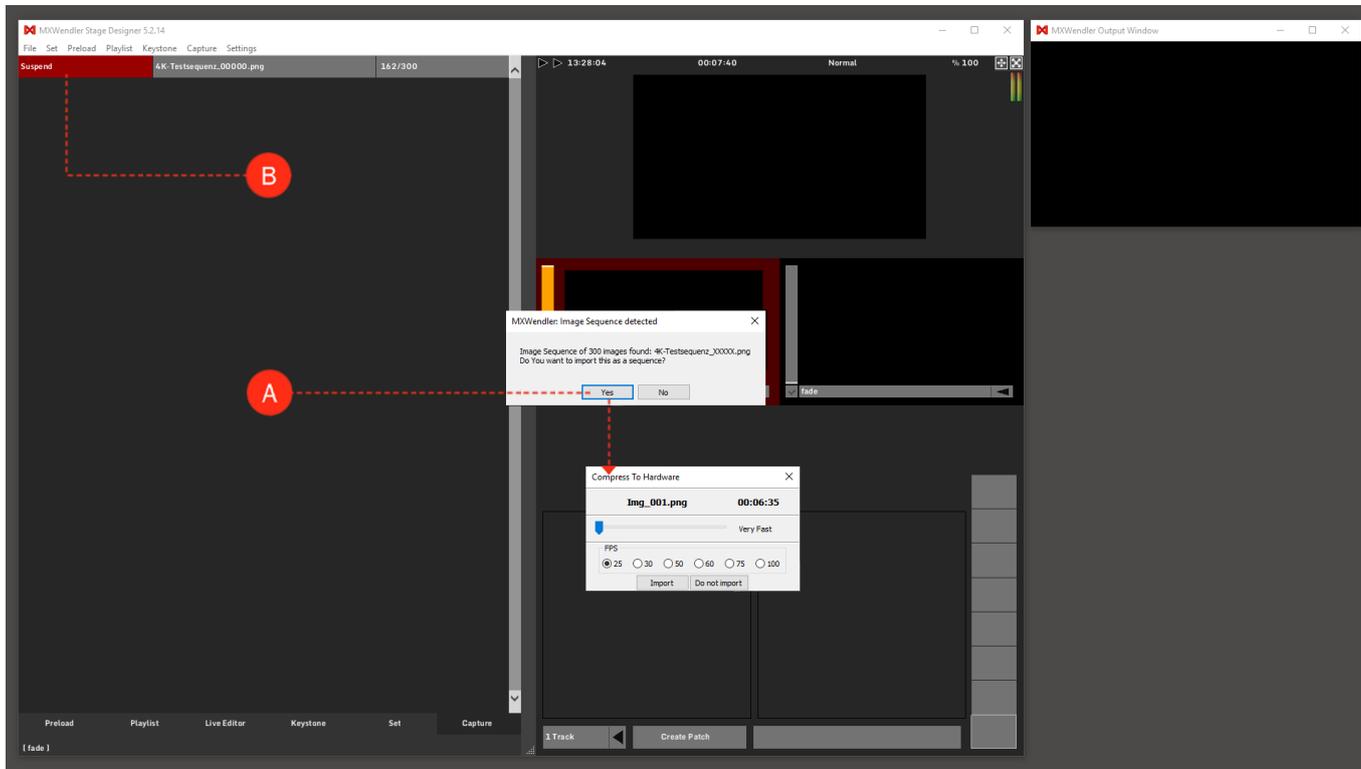
- Tutorial Creating an I/O Event
- Tutorial Creating Compositions (Sets and Patches)
- Tutorial Creating Multiple Compositions and Patches



# Capture

Compress to Hardware: This dialogue appears when an image sequence or a video clip gets converted into the internal codec. **(A)**

Suspend: The compression is paused. **(B)**



# Usage Tips

## General Usage

The MODIFIER key is 'Ctrl' on Windows and 'Alt' on Apple systems.

Press 'Shift' + MODIFIER key to recall the settings windows to the position of the mouse pointer.

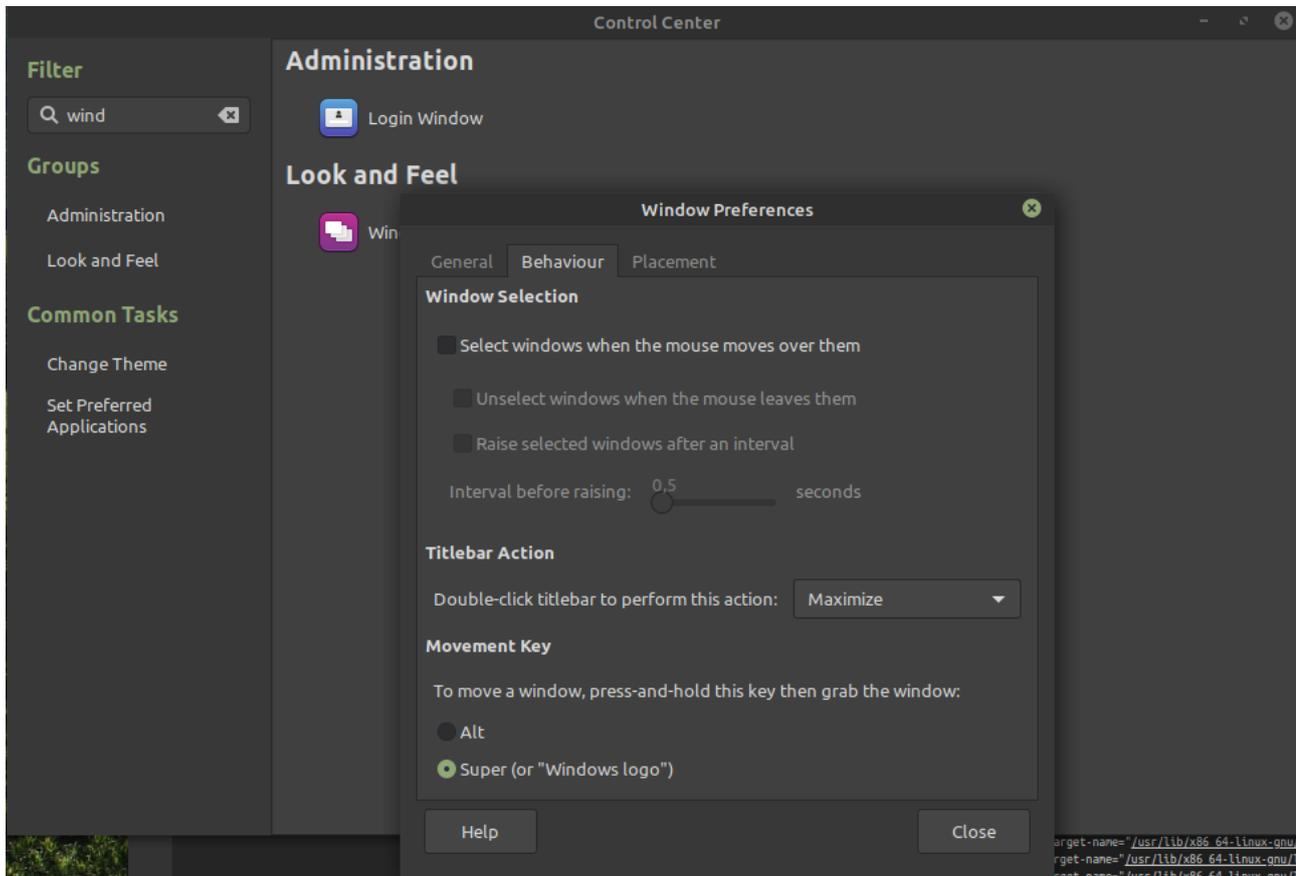
Moving the Keystone view:

To move the keystone view instead of the elements hit the 'Alt' button.

The mouse cursor gets the shape of a hand, now the keystone view can be moved just by drag and drop.

To exit this "drag and drop" mode the 'Alt' button must be pressed again (inside the keystone area).

*Tip: Linux Mint users will need to change the Movement Button from the 'windows start button' to 'Alt'.*



## Preload Tab

Create a layer by dragging preload clip to the layer manager.  
Change media of the running layer by dragging preload clip on the layer.  
Connect preload buttons to IO devices by dragging the buttons to IO keys.  
Copy media by dragging from preload to preload,

Press shift to copy media but not layer positioning.

Naming: The name of a preload box can be changed by double clicking on it and typing a new one. This changes also the name displayed in the playlist.

## Live Editor Tab

Open a media file dialog by double-clicking on the background.  
Create a layer by dragging a clip to the layer manager.  
Remove running clip by dragging it to the deletion area.  
A clip cannot be closed while being used in a layer.

## Layer Manager Tab

Change layer order by dragging thumbnails onto each other.  
Remove layer by dragging it to the deletion area.  
Press shift to avoid removing the clip.  
Remove all layers at once by clicking MODIFIER + click on 'X' button (v5.0.10+).  
Holding MODIFIER allows editing just the selected layer when it is connected to other layers through the "chain" function. (v5.0.10+)

## Playlist Tab

For triggering an IO Keyboard Command, enter Keyboard+Key (e.g. Keyboard a).  
Some Keys (special keys) are using brackets (e.g. Keyboard (space)),

You can see if you have to type brackets in the IO device settings.

Color/Label: each playlist cell, empty or already containing an item, can be personalized.

Right-click on a playlist cell to select Color/Label at the bottom of the context menu.

The box Color/Label box opens directly from the context menu and allows changing color and text of the cell.

Up to 16 personalized colors can be saved for later use by dragging and dropping the chosen color on the free slots directly under it.

By right clicking on a cue-number cell, the Color/Label box will directly open.

A playlist cell can be renamed through the use of the label.

By changing the Display Name of a clip through Trigger Clip options, the name will be changed in the options, in the cue and also on the Preload box.

## Keystone Tab

Dis-/Enable element modification by double-clicking the centered element pivot.

Mark a pivot by clicking on it.

Mark multiple pivots by dragging a box around them.

Mark multiple pivots by holding the MODIFIER key.

Move pivot marking with Ctrl+arrow keys.

Move an activated pivot by dragging it with the mouse or using the keyboard arrow keys,

Hold Shift while using the arrow keys for larger pivot steps.  
Hold MODIFIER while dragging to limit the movement to horizontal or vertical.

Navigation control ( bottom right in keystone ) usage:

Zoom into the keystone area by dragging an area inside the control.  
Pan view by dragging the marked area.  
Zoom to full view by double-clicking inside the control.  
Buttons top right: small zoom/pan steps.  
Buttons top left: zoom view history.

## **Demo / Free Version**

StageDesigner can be downloaded on the MXWendler website:  
<https://www.mxwendler.net/en/product/downloads.html>  
If not licensed the software can be used under certain limitations:

The Output Window may not exceed the resolution of 800x600,  
A maximum of 5 Playlist cues,  
One Keystone element with a maximum of 4 Pivots,  
No Bitmap,  
The Virtual camera may not be larger than 320 pixels,  
No usage of CIP or DMX.

As soon as any of these conditions are not respected, the MXWendler logo will start blinking shortly on the output and the software will still run for one hour with its full set of features.

*Tip: remember to save your progress before the one hour is gone!*

## **Standalone Encoder / Video Batch Encoder Usage**

Set Cachefolder Location in MXW **Settings** → **Filecache**

Uncheck Prefer External Codecs in FXServer **Settings** → **Media**

Set Cachefolder Location in Standalone Encoder

Open a movie in Standalone Encoder and choose wanted quality

Load cached movie in MXW.

# Tutorial Opening Different Media

This tutorial applies to all different OS and MXWendler versions.

## Supported Media Sources

### Video Formats

All the standard video formats, commonly known as container formats, such as **.avi**, **.mov**, **.vob** or **.mpg** can be used in the software. Inside these containers are media in the form of so-called codecs for video and audio. MXWendler can read and process all standard codecs, differentiating thereby between 'internal' and 'external' processing.

In internal processing, media are transferred - aided by system codecs - into an own format specifically developed for real-time compositing with high-resolution video streams: the CPU in the computer is no longer required to unpack the converted media and can concentrate instead on the graphics. This method enables the 5-times forwards/backwards warping controls, excellent latency at keypoints, frame blending slow motion, and the processing of image sequences. However, to do this, the video material must first be imported. For the direct processing of video material, MXWendler uses an FFMpeg-based decoder that can play performance-optimized videos of up to 4K, and supports multi-channel audio (also via ASIO).

## Live Video

MXWendler supports nearly all industry-standard grabber- and live input hardware components through Quicktime and DirectShow interfaces. Grabbers for BNC, DVI and SDI video are possible. Latency can be reduced to a minimum, down to under 0,08 seconds, by overclocking the system. Webcams and NDI can be used as live video sources as well. See also: Tutorial NDI Tools.

## Flash

MXWendler can read and process Adobe Flash files (.swf). These Flash media can also be interactive. In MS Windows, the file is processed by the native Flash interpreter, meaning that all formats are supported. In OS X, a performance-optimized OpenGL Flash interpreter is used, which supports Action Script up to version 1.0.

## Images

All standard image formats are supported (**.jpg**, **.png**, **.psd**, etc.).

## PDF

PDF files are supported in MXWendler version 6 and above and can be used as a media source. A PDF file will be played back as an image sequence. Each page of the PDF will be played as one frame. The playback speed can be changed to acquire the desired tempo of the playback. The playback of each frame can be also triggered through the Playlist function, Frame Step. See also: Tutorial Playlists with PDF and Frame Step

## Opening Different Media

Different media can be opened/imported in MXWendler by:

The file browser in Output Pipeline, in Preload box, or Live Editor.

Drag&dropping from explorer to a Preload Clip, a Playlist Cell, in Live Editor, or Layer Manager.

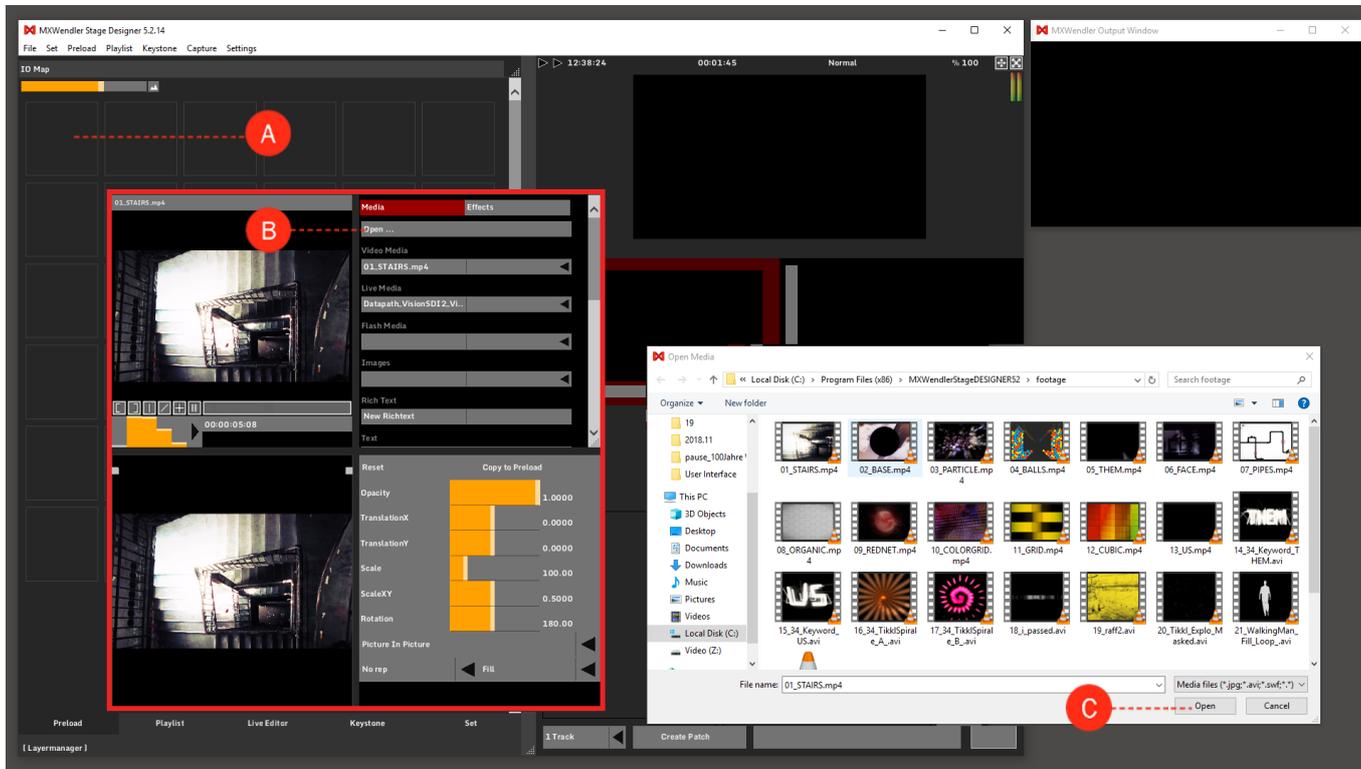
Import Multiple Clips through Preload's function Menu.

### Opening Video & Image Files

1. Click on the first Preload. The Preload Preview opens (red box). **(A)**
2. Left-click on Open to search for the desired file. **(B)**
3. Select and open the file. **(C)**

The file is now in preload and is ready for use.

*Tip: Alternatively, you can also drag&drop the file into the Preload from a file browser, or allocate media to a number of Preloads with Multi Clip Import.*



## Opening PDF Files

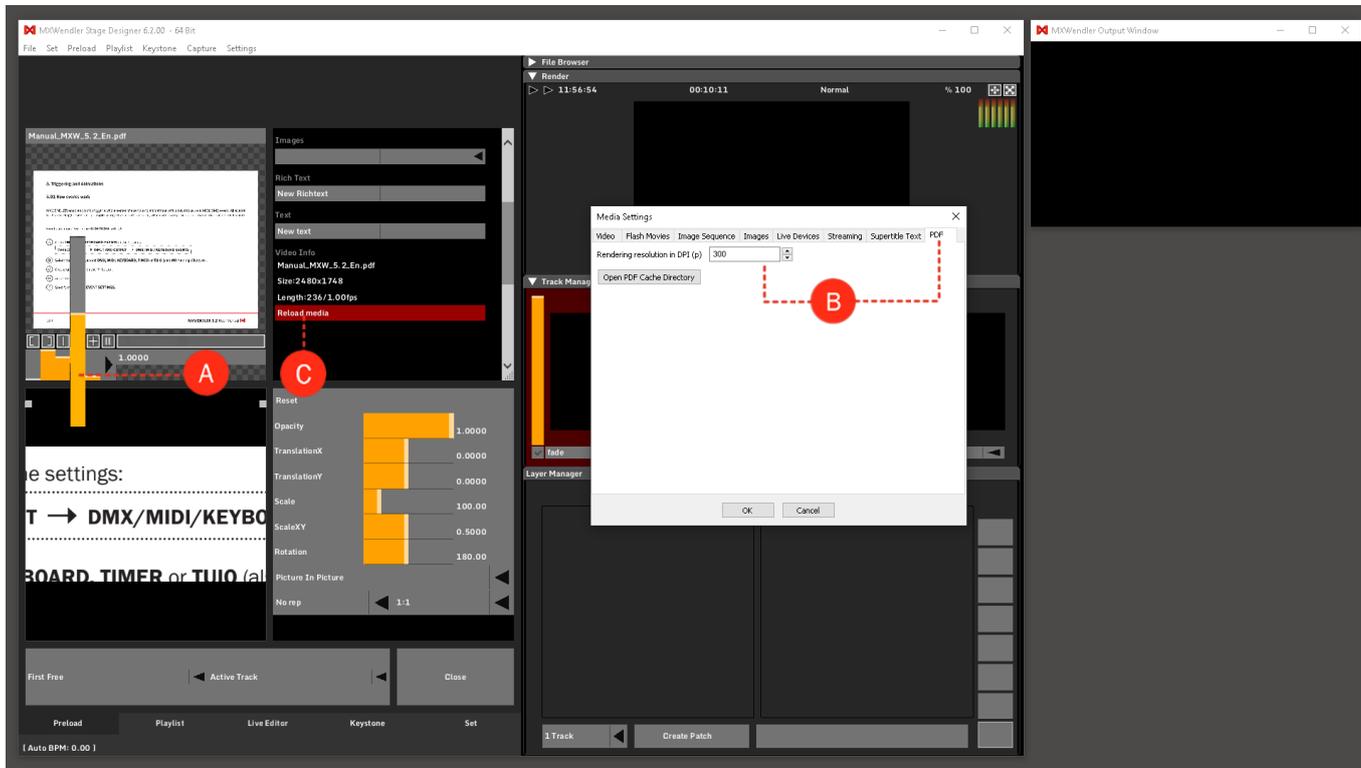
1. Click on an empty Preload cell to open it.
2. Left-click on Open to search for the desired PDF file.
3. Select and open the file.

The PDF file will be played as an image sequence frame by frame.

4. You can change the playback speed by choosing Speed amounts from 0.0 to 5.0. **(A)**
5. You can change the dpi settings (for the resolution of each frame) in settings. **(B)**

**Settings → Media - Clips, Live, Virtual → PDF**

6. In the Preload Preview, click on Reload Media to make the dpi changes effective. **(C)**



## Opening a Live Video

1. Connect the camera to the computer; you may need to restart the software.
2. The Live-Camera must first be activated in MXWendler. **(A)**

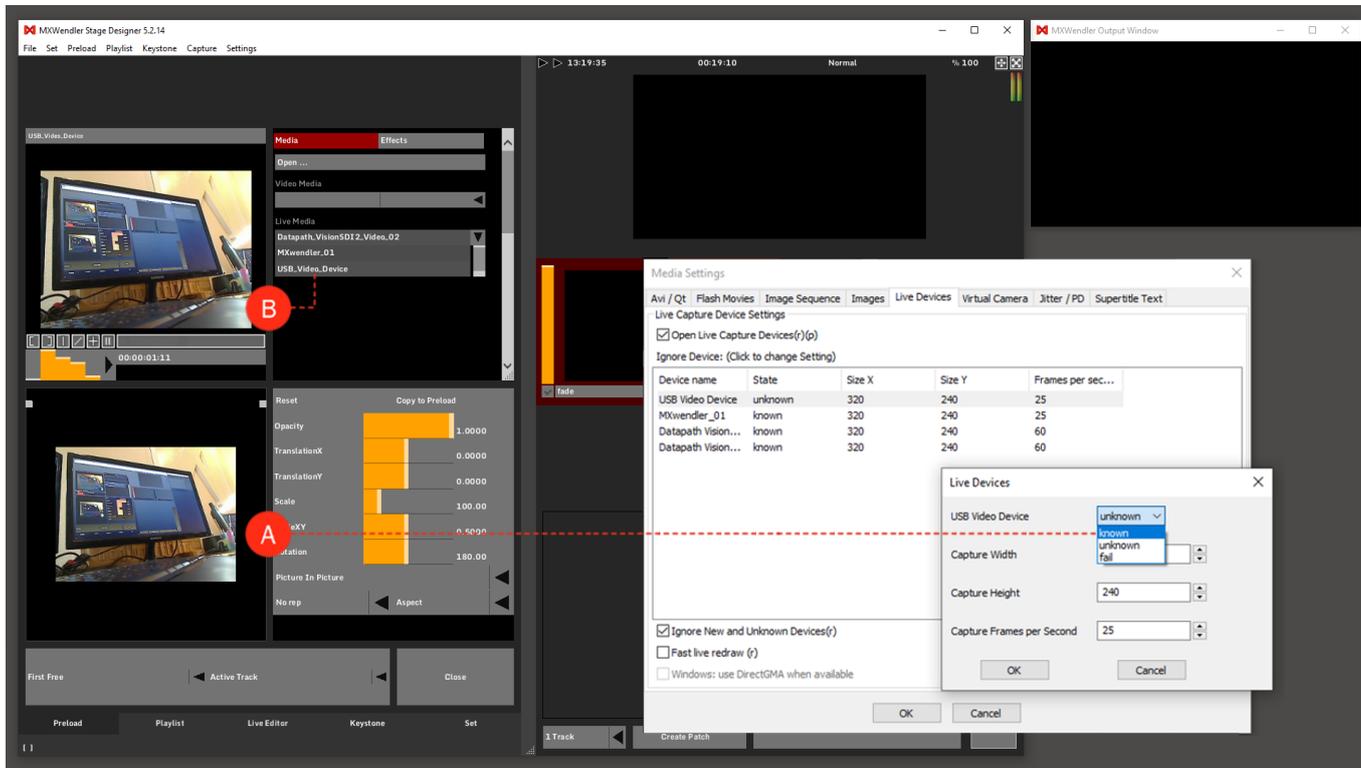
**Settings → Media → Live devices → Double-click 'unknown' → 'known'**

The camera can now be loaded into the Preload.

3. Open the next Preload. Select the camera in the preview menu under Live Media. **(B)**

The live video is now in Preload and is ready for use.

*Tip: The camera only needs to be activated a single time. For improved performance, cameras can also be temporarily disabled in the same manner. Please refer to the chapter 'Media Tips' for more advanced camera settings.*



## Opening and Creating Image Sequences

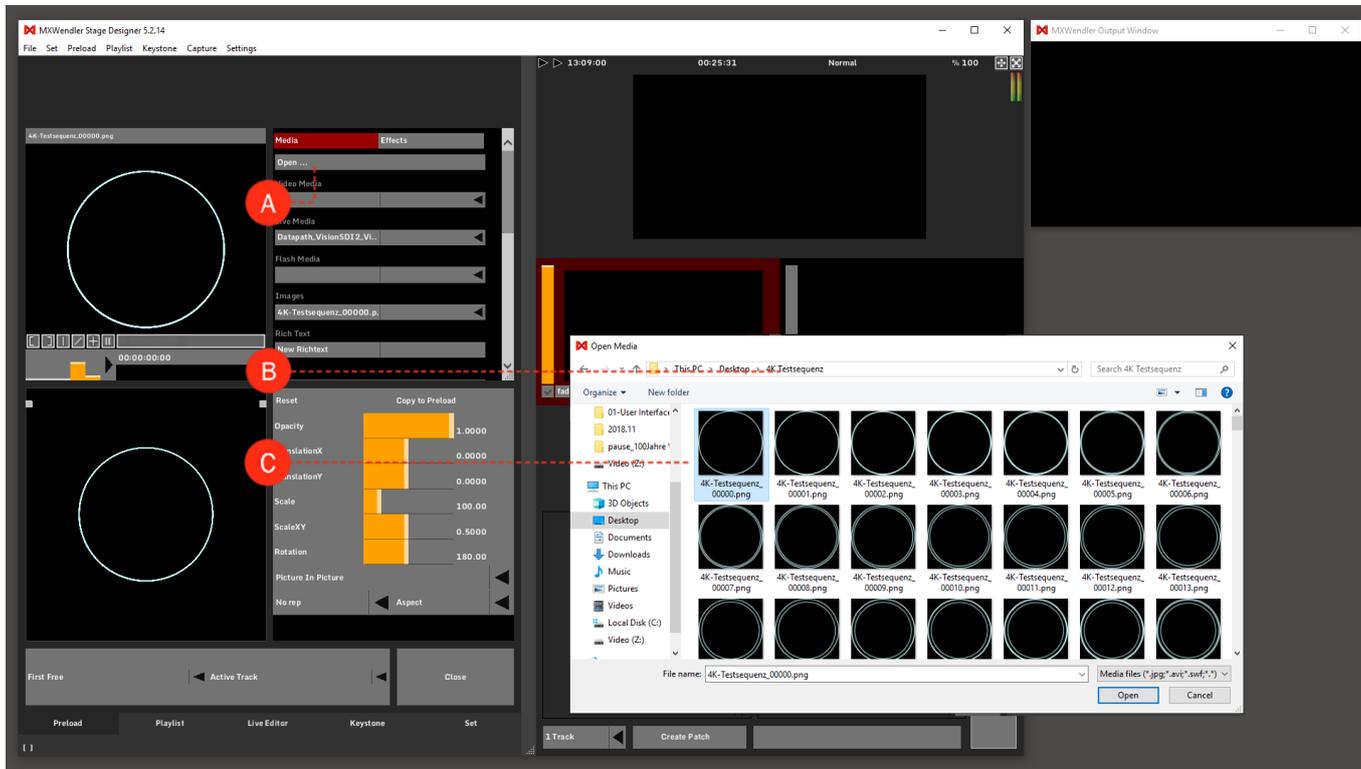
Two things must be considered before the images can be loaded into the Preload:

The images should be stored in a separate folder, and must contain sequential numbering: e.g. Clip\_001.png, Clip\_002.png...

1. Open the next Preload. **(A)**
2. Click on Open to open the folder containing the images. **(B)**
3. Open the first image in the folder. Confirm with Yes to import as a sequence, and set the desired compression quality. **(C)**

The sequence is now in Preload and is ready for use.

*Tip: Please refer to the chapter 'Media Tips' for the proper creation of image sequences.*



# Tutorial Triggering Four Media with the Keyboard

This tutorial applies to all different OS and MXWendler versions.

At the bottom of each Preload are four grey buttons: **(A)**

Add: creates a new layer with the clip.

Once: plays the clip once in a new layer.

Trigger: plays the clip in a new layer as long as the key is active.

FlipFlop: first keypress creates a new layer with the clip, the second keypress removes the layer again.

To associate a Preload with a specific key:

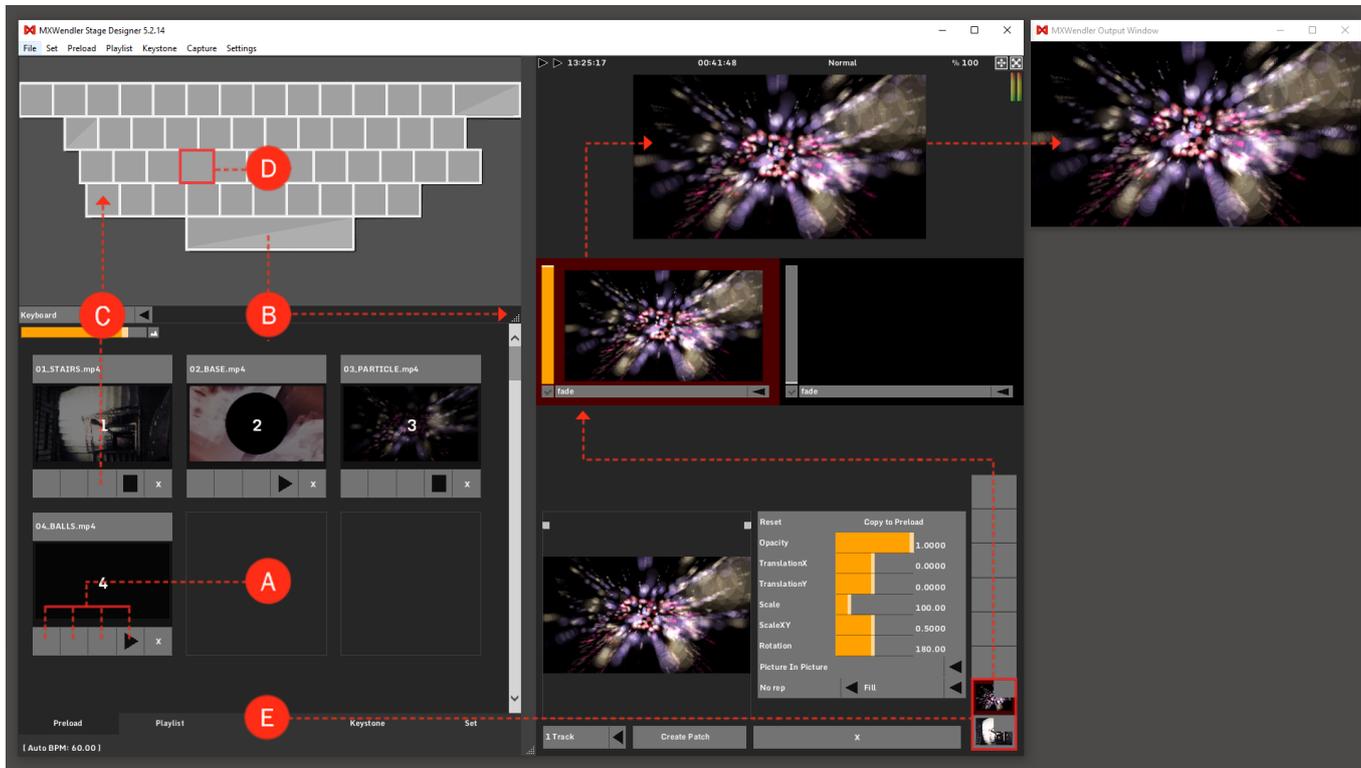
1. Grab the Action Pad on its right bottom corner and open it by dragging it down. **(B)**
2. Each Preload is assigned to a desired key by using drag&drop: **(C)**

**Left-click → trigger (avi file) → drag&drop → y (Keyboard)**

Assign the three other medias as well to random keys.

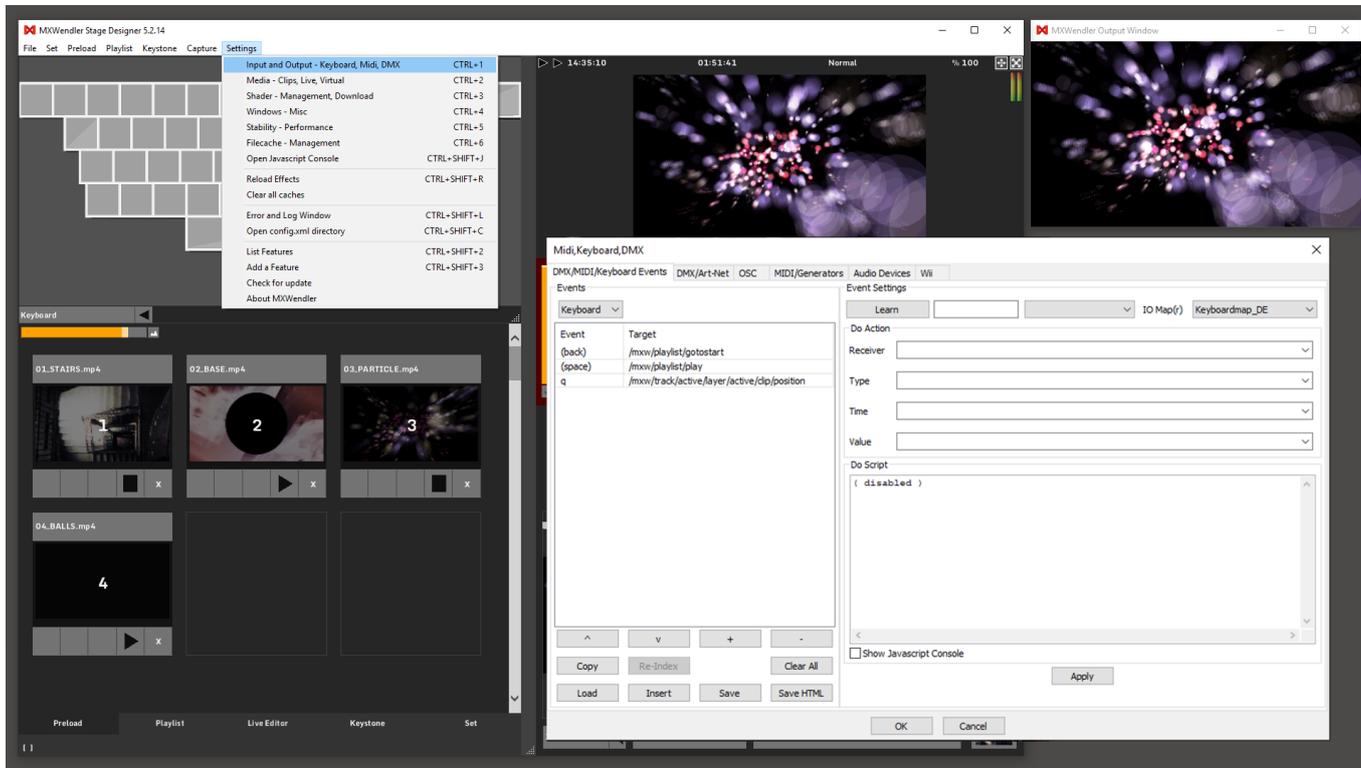
The four media can now be triggered from the keyboard. **(D)**

Pressing two keys at the same time triggers both assigned media, they are played back simultaneously in the output window. **(E)**



In the Keyboard Event Settings definitions can be changed or deleted:

**Settings → Input and Output → DMX/MIDI/Keyboard Events → Keyboard**



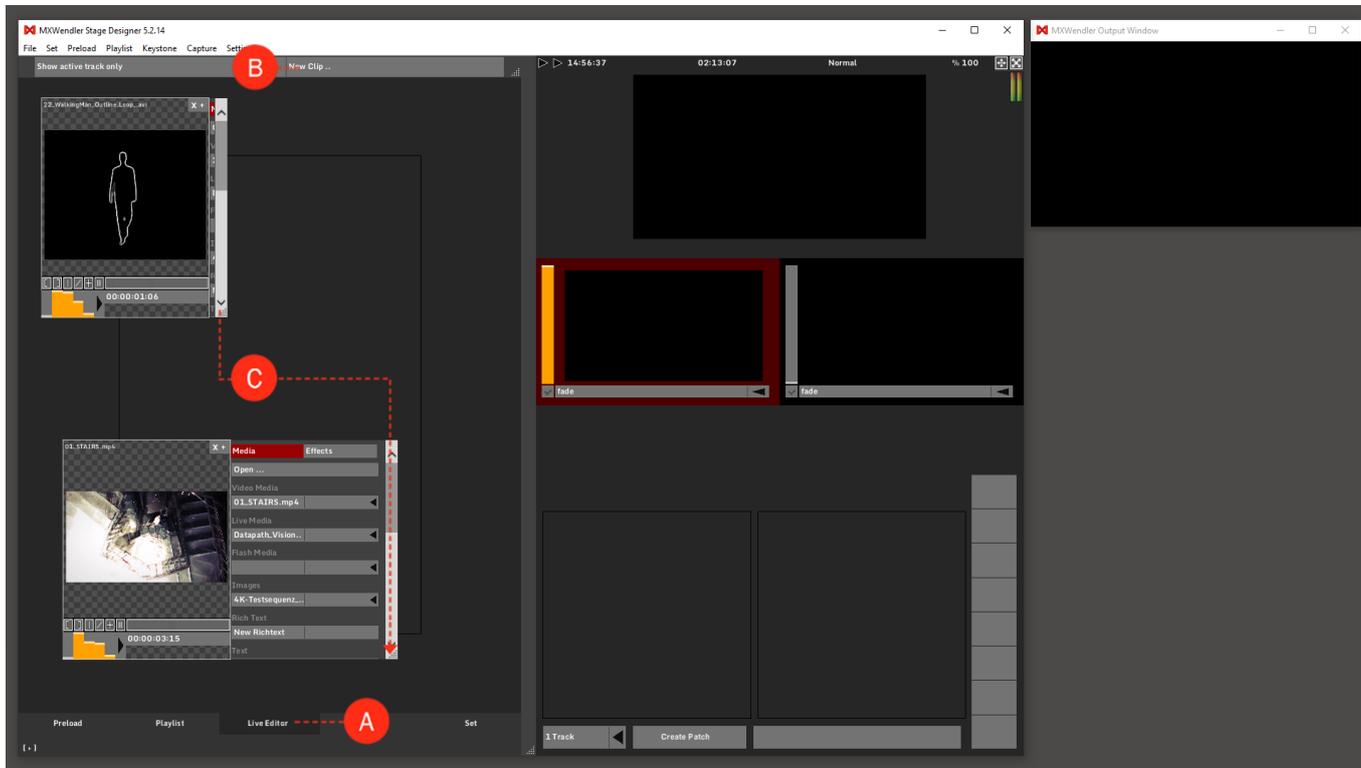
# Tutorial Coupling Video with Effects and Audio Signals

This tutorial applies to all different OS and MXWendler versions.

In this tutorial, a video is overlaid with an effect. An effect parameter is then associated with a live audio signal via the Spectrum Analyzer. In this case, a live audio signal will control the opacity of the corresponding layer (level).

1. Go to Live Editor. **(A)**
2. Left-click on 'New Clip' to open a media file. **(B)**
3. Open the Clip Menu by dragging the bottom corner to the right (see arrow). **(C)**

*Tip: Media files can be opened with Ctrl+O or by double-clicking the background of the Live Editor. Media files can also be dragged and dropped onto the Preload or the Live Editor from any normal Finder / Explorer window. A (pre-defined) standard clip is opened using 'Open Clip', which can also be used to find and select live cameras - if available.*



4. Select the Dotgrid effect from the menu. **(D)**

**Effects → Dotgrid**

The number of 'dots' can be set from 000 to 100 in Scale.

5. Open the Spectrum Analyzer by dragging it down. **(E)**

6. Link 'Scale' with a channel of the Spectrum Analyzer: **(F)**

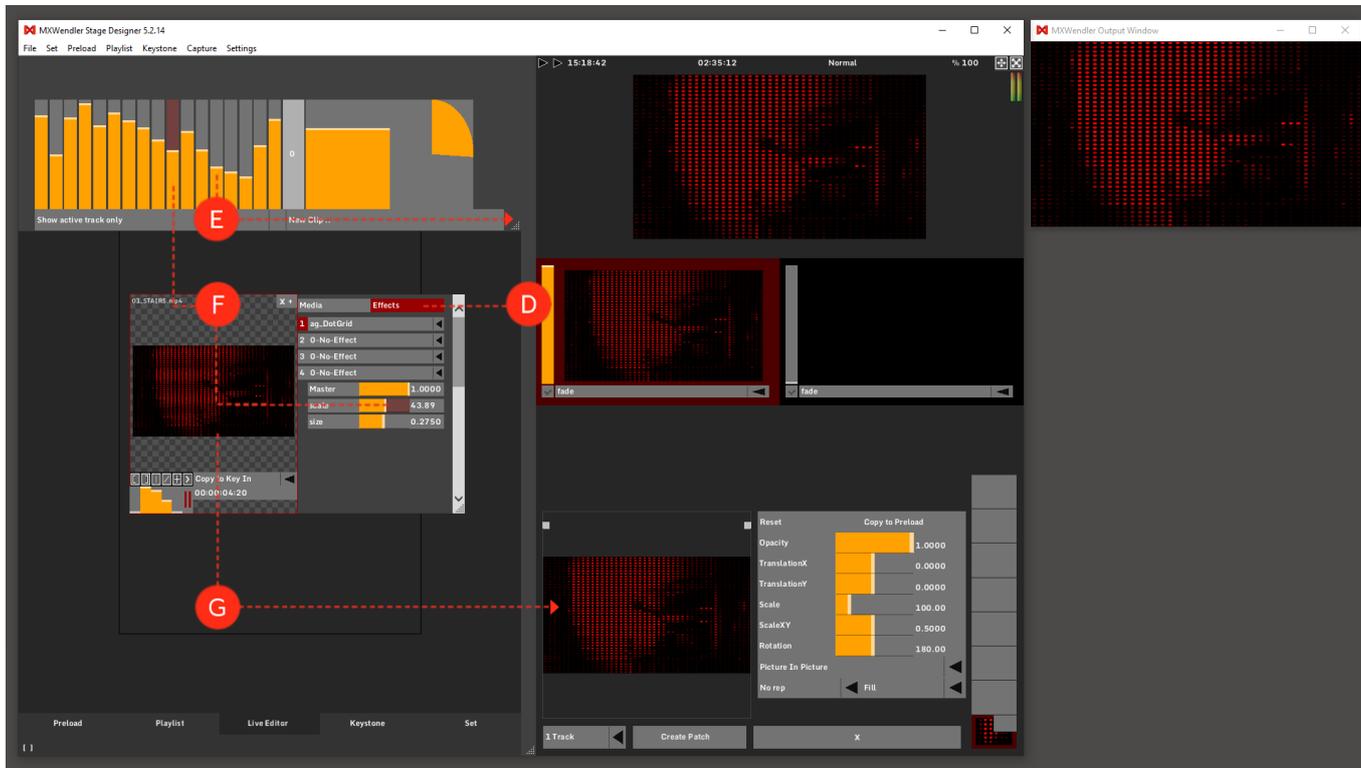
**Shift + left-click → Spectrum Analyzer (one channel) → drag&drop → Scale**

The two controllers are highlighted red, indicating that the two are associated with each other.

7. Drag&drop the video from the Live Editor into the Layermanager. **(G)**

The video is now in the Layermanager and is running on Track 1, in the Output Preview and in the Output Window.

*Tip: You can create this kind of link - as well as chained links - between any kind of sliders.*



Settings can be specified for any layer in the Layermanager.

8. Opacity is now associated with the audio signal. **(H)**

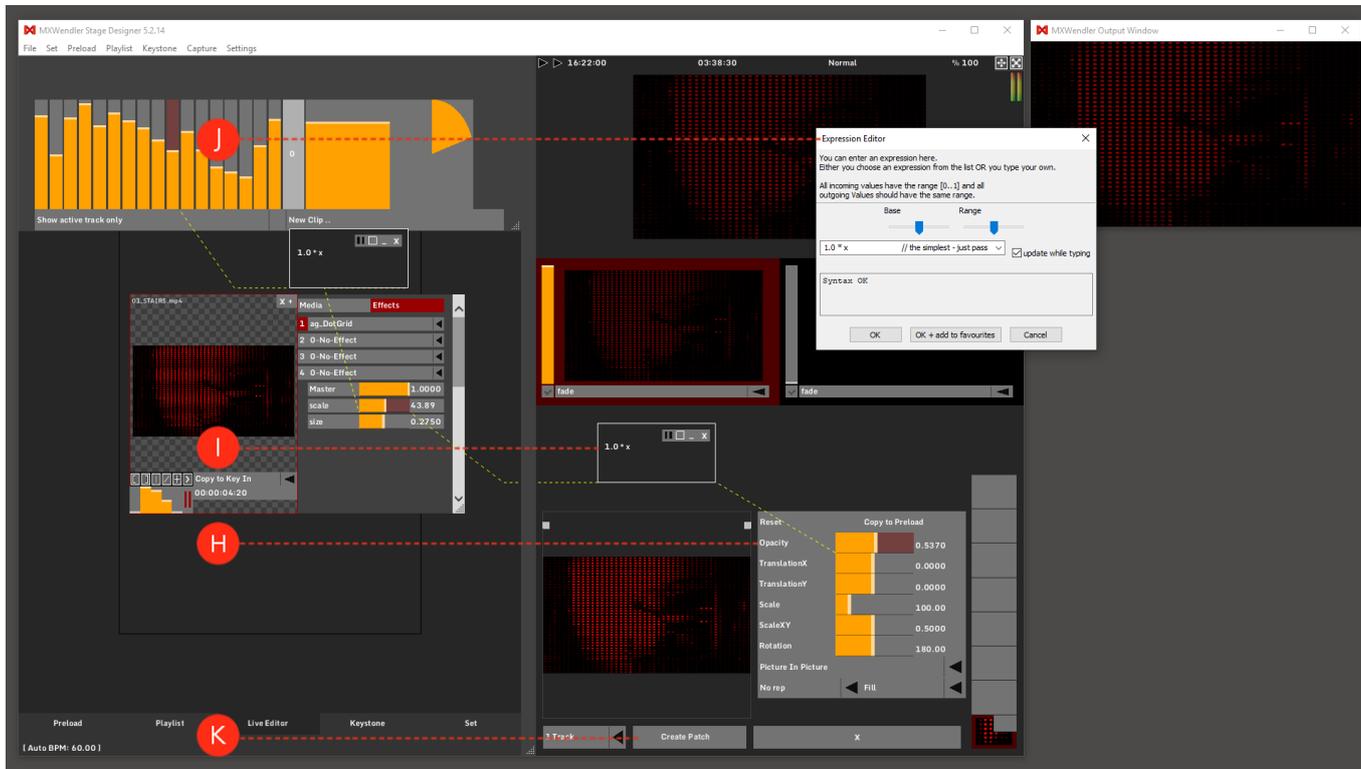
**Shift + left-click → Scale → drag&drop → Opacity**

9. Double-click on the respective controller to open the Expression Route. **(I)**

10. Double-click on the Expression Route for the Expression Editor. **(J)**

11. To save the scene, a patch is created via the button Create Patch. You can find the created patch in the Set Tab. **(K)**

*Tip: A patch is a snapshot of the currently active scene. All media information and relationships between controllers are stored in a patch. The file path, which of course must remain valid, is stored for the respective clip.*



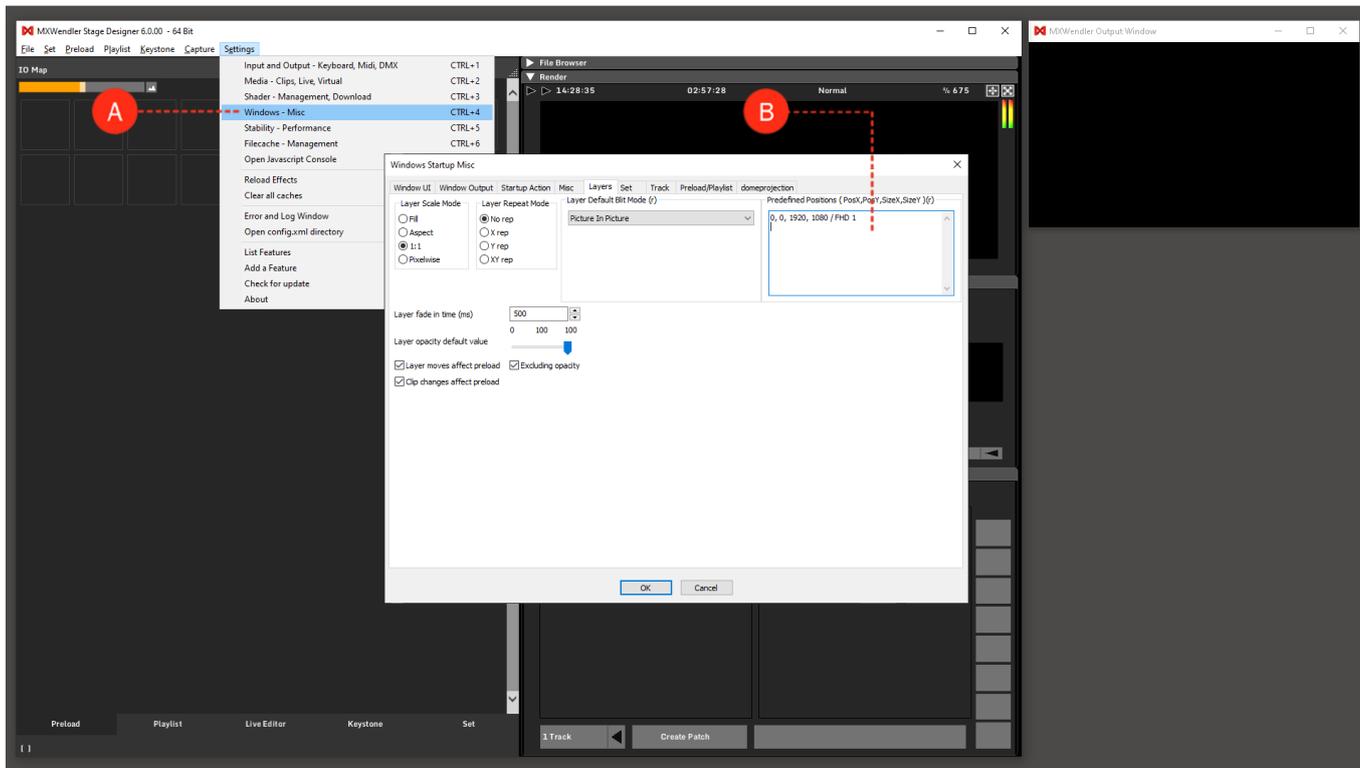
# Tutorial Creating Predefined Layer Position

This tutorial applies to all different OS and MXWendler versions.

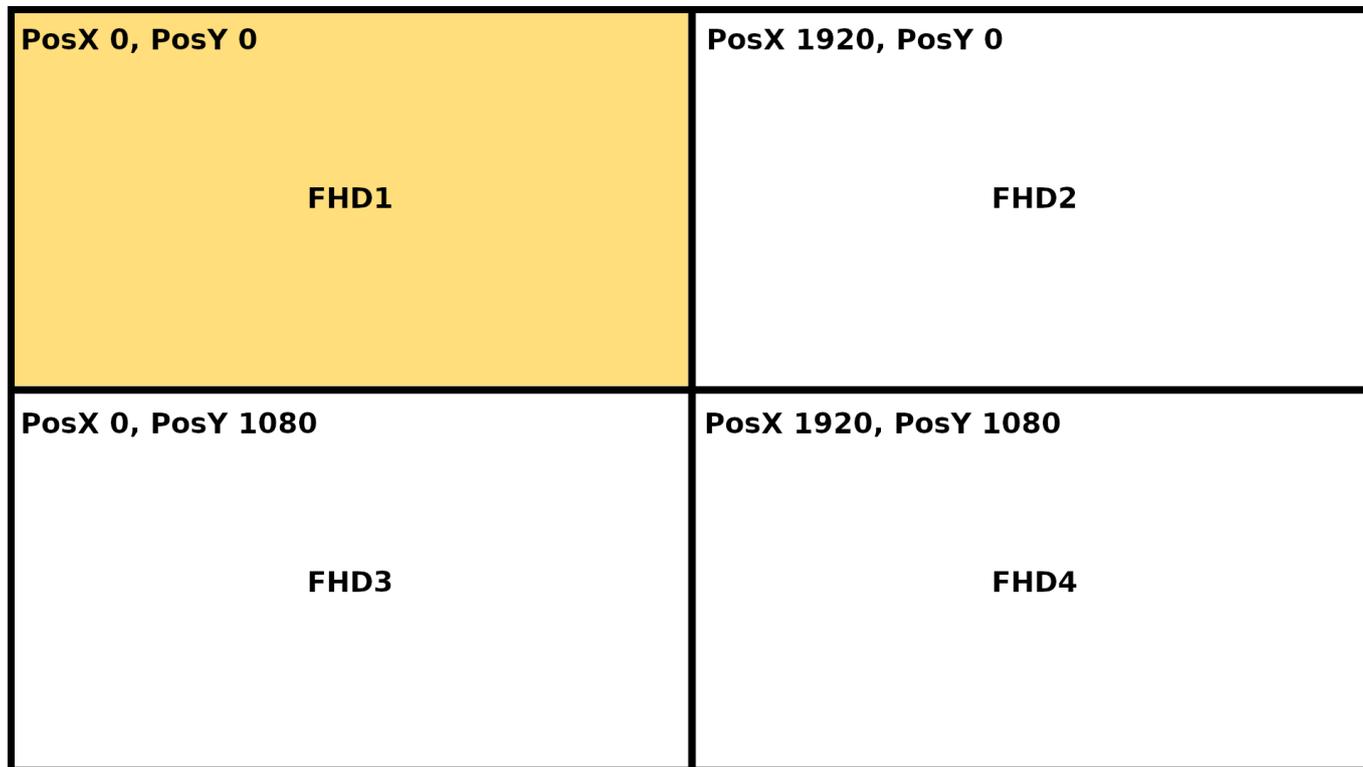
The Predefined Layer Positions are settings that can be retrieved directly under the layer transformations. They allow to set a layer in a specific portion of the output with just one click.

For this tutorial, we are going to use a standard UHD Output (**3840x2160**) as an example and create four custom Predefined Layer Position (FHD) as if the outputs were splitted in four FHD projectors.

1. Go to: **Menu → Settings → Windows-Misc** and select the Layers tab. **(A)**
2. On the top right side of the settings window there is Predefined Positions Box. **(B)**



3. The values in this box are pixel positions, offsets inside the rendering area: **(PosX, PosY, SizeX, SizeY)**



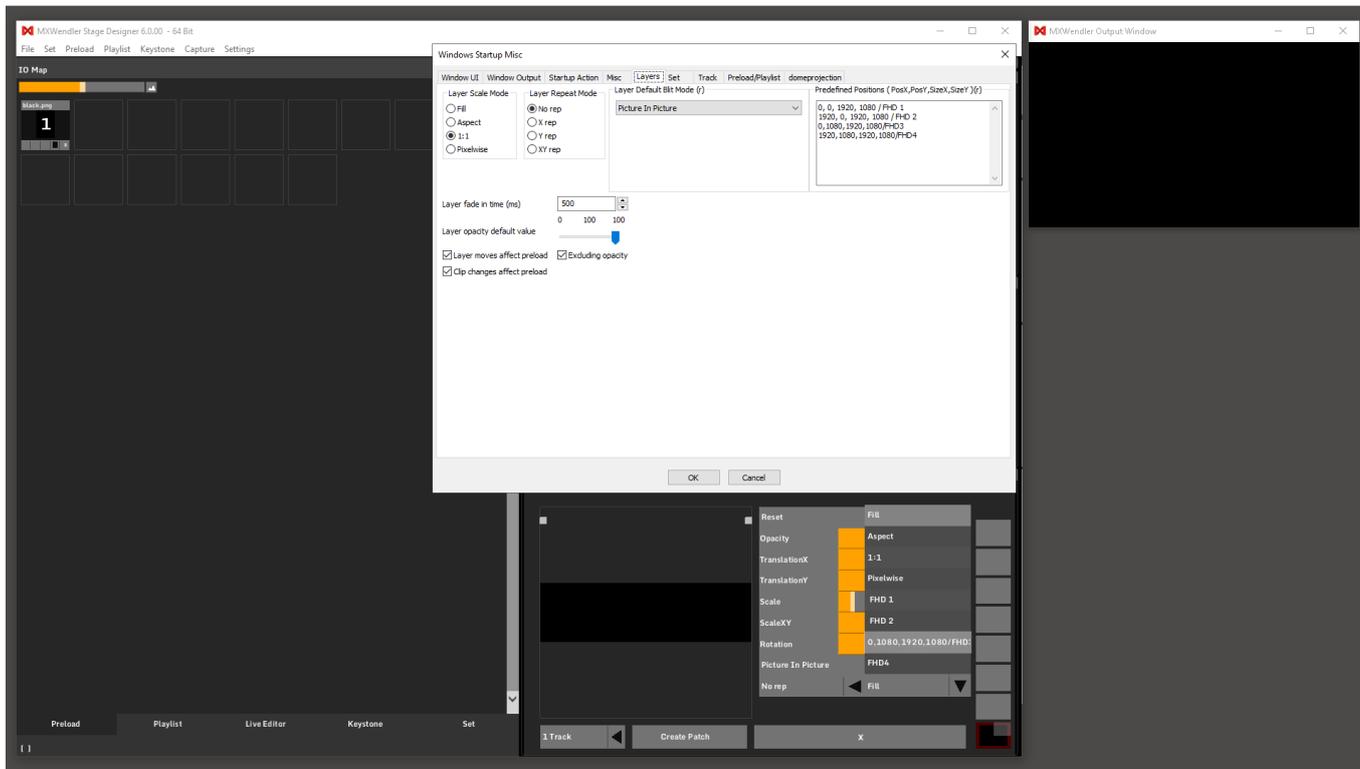
4. To create the first Layer as a FHD in the top left corner of our output we would have to write:

- **0,0,1920,1080** followed by a short description E.g. **/FHD1**

5. The other layer position will then be:

- **1920,0,1920,1080/FHD2**
- **0,1080,1920,1080/FHD3**
- **1920,1080,1920,1080/FHD4**

6. As it is marked (r) by the software, to activate the changes, please restart Stage Designer.



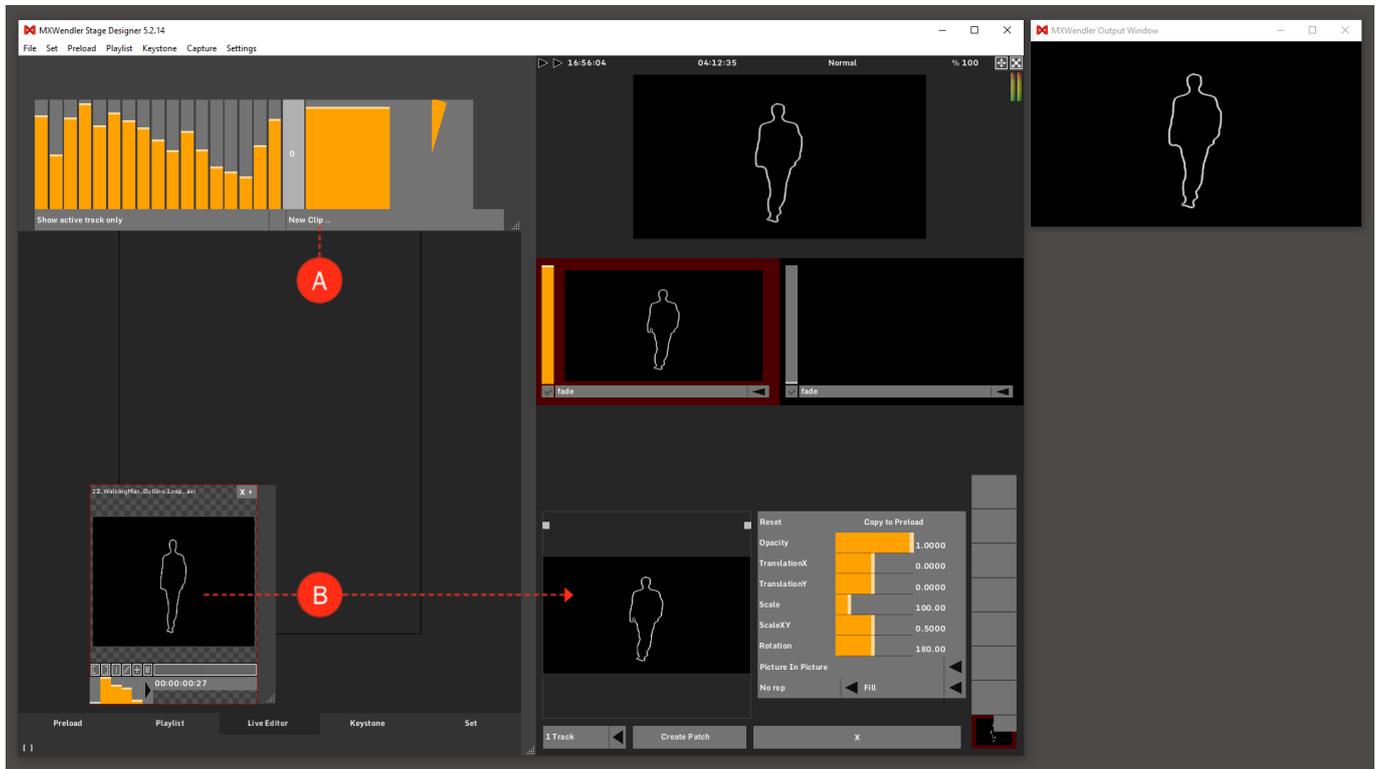
# Tutorial Feedback

This tutorial applies to all different OS and MXWendler versions.

In this tutorial, an optical feedback is created. Feedback is used for example as an effect for club visuals and is associated with an audio signal.

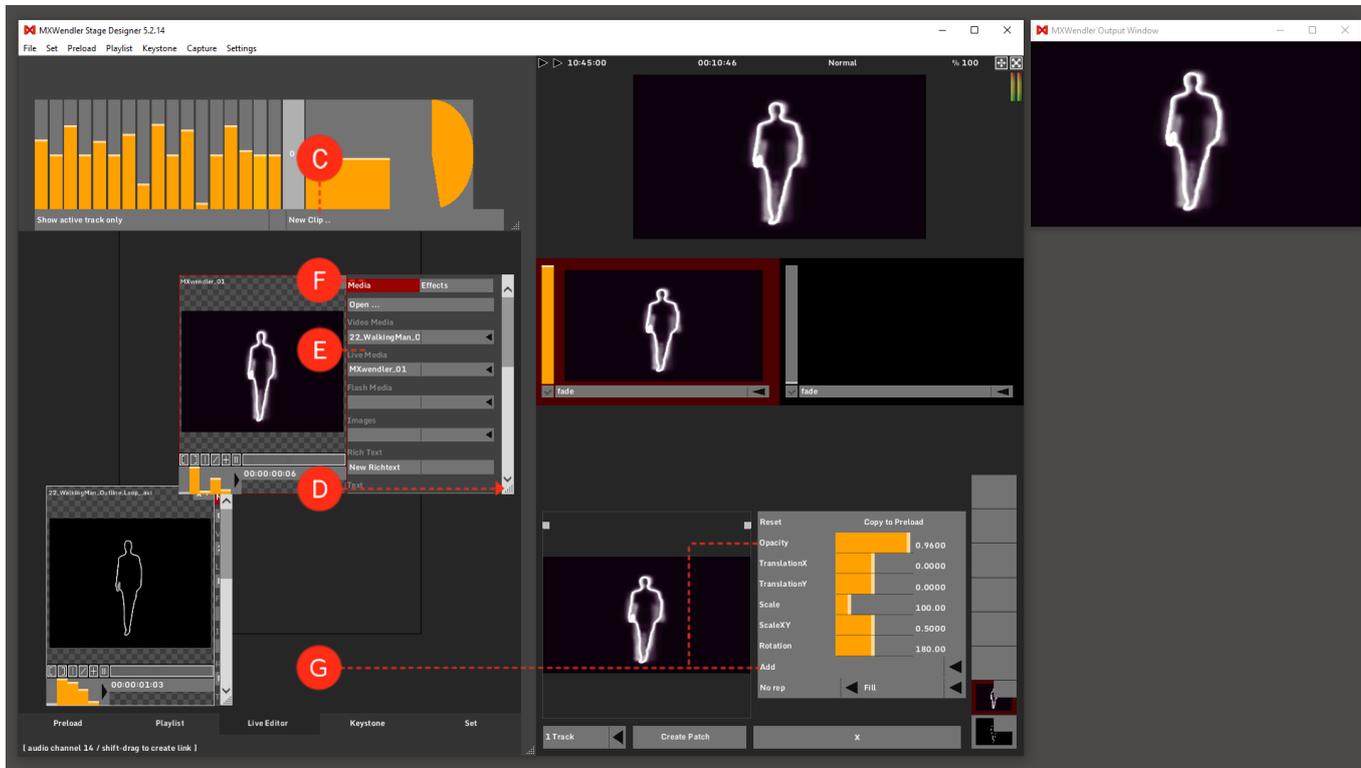
1. Open the desired clip in Live Editor. **(A)**
2. Pull the video via drag&drop from the Live Editor into the Layermanager. **(B)**

*Tip: Feedbacks loop Live Video streams back into the compositing, and are therefore extremely dynamic. With Feedback, image and video material can be handled in an extremely generative and interactive manner. Feedback can quickly lead to extreme results that are either completely black or completely white, which can be distracting, especially when using LEDs. A special LED\_WALL\_Equalizer effect can help as 'Final Effect' to prevent excessive output.*



3. Open the same clip again in the Live Editor. **(C)**
4. Open the Clip Menu by dragging the bottom corner to the right (see arrow). **(D)**
5. Select 'MXWendler\_01' under Live Media to activate the feedback. **(E)**
6. Load the video in the Layermanager with '+'. The Feedback can be seen in the Output Window. **(F)**
7. Switch the layer mode from 'Picture in Picture' to 'Add' and bring the Opacity a little bit down **(G)**

*Tip: A layer is created by default in the 'Picture in Picture' and 'Fill' mode. Other modes can be preset in the settings.*



8. Associate a channel of the Spectrum Analyzer with 'Opacity'. **(H)**

**Shift + left-click → Spectrum Analyzer (one channel) → drag&drop → Opacity**

*The left controller of the Spectrum Analyzer controls the decay, and is thus not animated.*

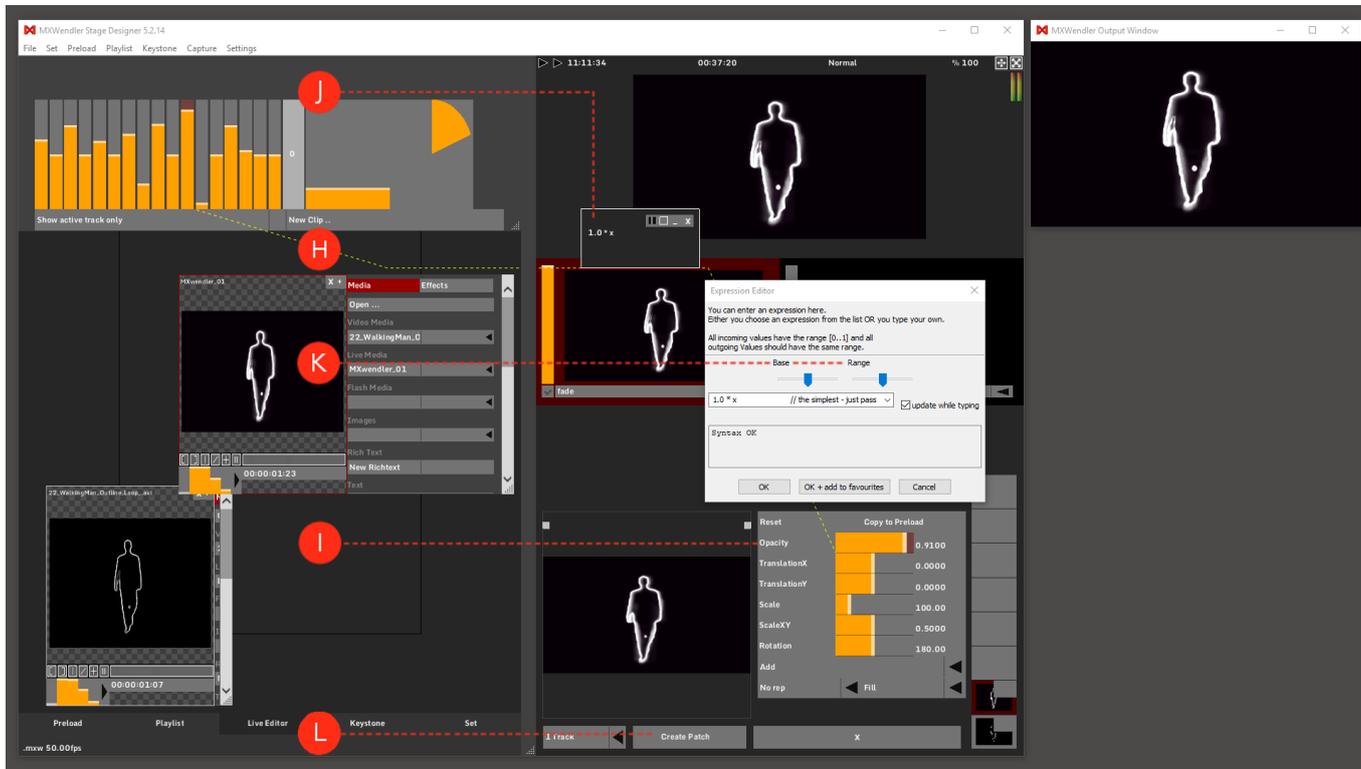
9. Double-click on 'Opacity' to open the 'Expression Route'. **(I)**

10. Double-click on the Expression Route to open the Expression Editor. **(J)**

11. Move Base to the right and Range to the left for ideal use of feedback with the audio signal. **(K)**

12. Select Create Patch to save the settings in a Patch. **(L)**

*Tip: Patches can also be triggered. In addition, a patch can be assigned to a button on the Action Pad with drag&drop.*



# Tutorial Creating an I/O Event

This tutorial applies to all different OS and MXWendler versions.

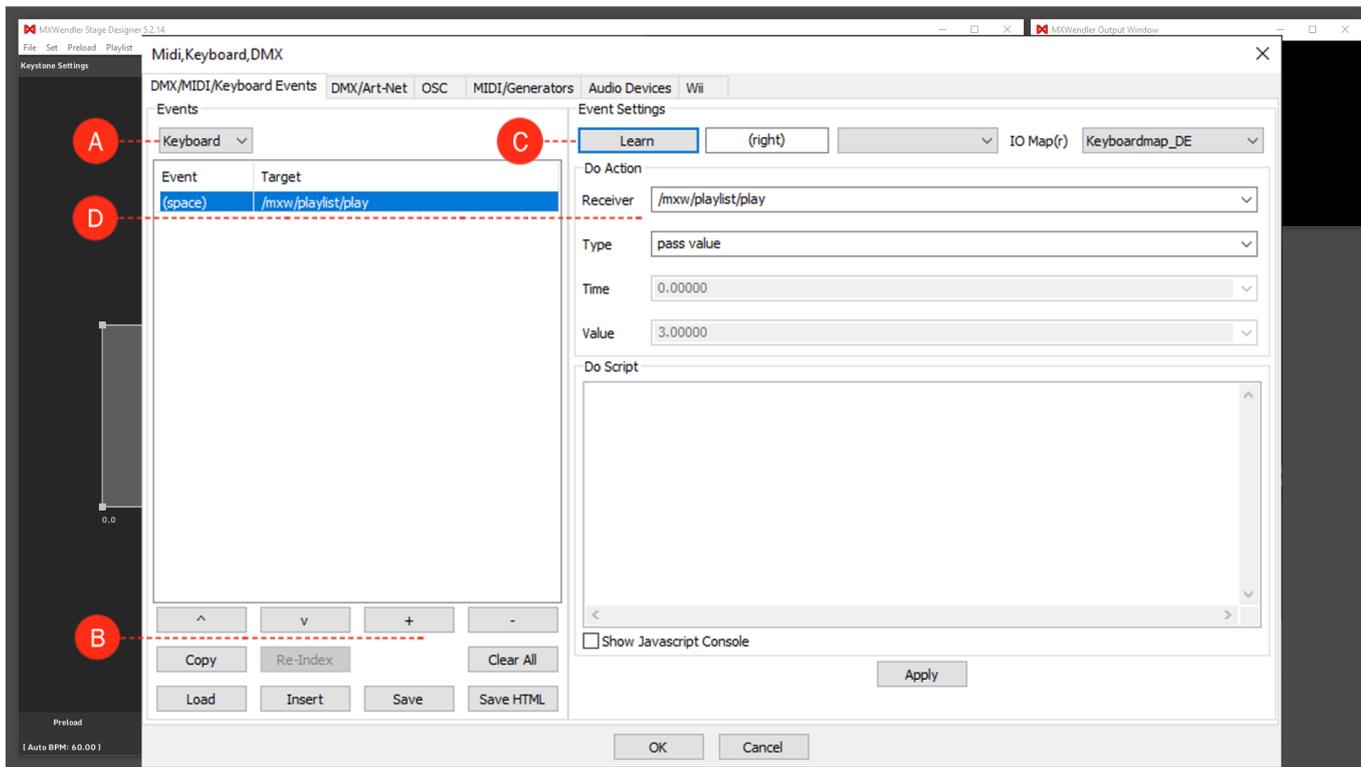
IO Events are basically connections between a message from an input device and a reaction of the software. The input device can be something common as a computer keyboard or for instance an OSC or Art-net control surface.

In this tutorial we are going to cover a very basic example: how to connect the space bar with the Playlist play button.

Before starting, load some footage in Preload and build a simple one column Playlist with the clips you just loaded.

1. Go to: **Menu - Settings - IO - DMX/MIDI/Keyboard Events** and in the top left corner select Keyboard **(A)**
2. Create a new event by clicking the '+' button at the bottom of the events list and select the event **(B)**
3. Click on the Learn button at the top left of the Event Setting area and hit the space bar **(C)**
4. Open the 'Receiver' drop-down menu, search and select '/mxw/playlist/play' **(D)**
5. Leave the other fields as they are and confirm the created Event by clicking on 'Apply' and then Ok.
6. The software will ask you if you want to use the changes you just programmed.
7. Confirm with 'Yes'.

The event is created!

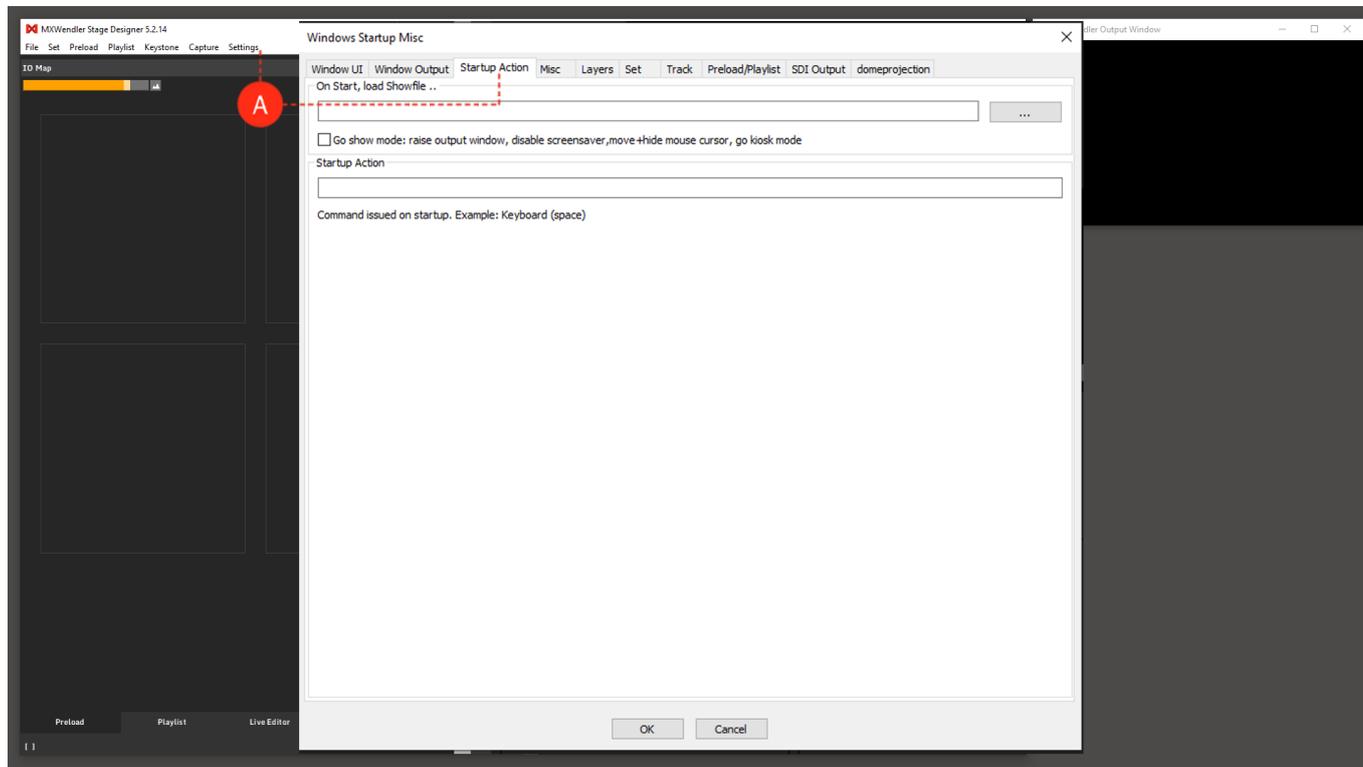


# Tutorial Creating an Autostart Showfile

This tutorial applies to all different OS and MXWendler versions.

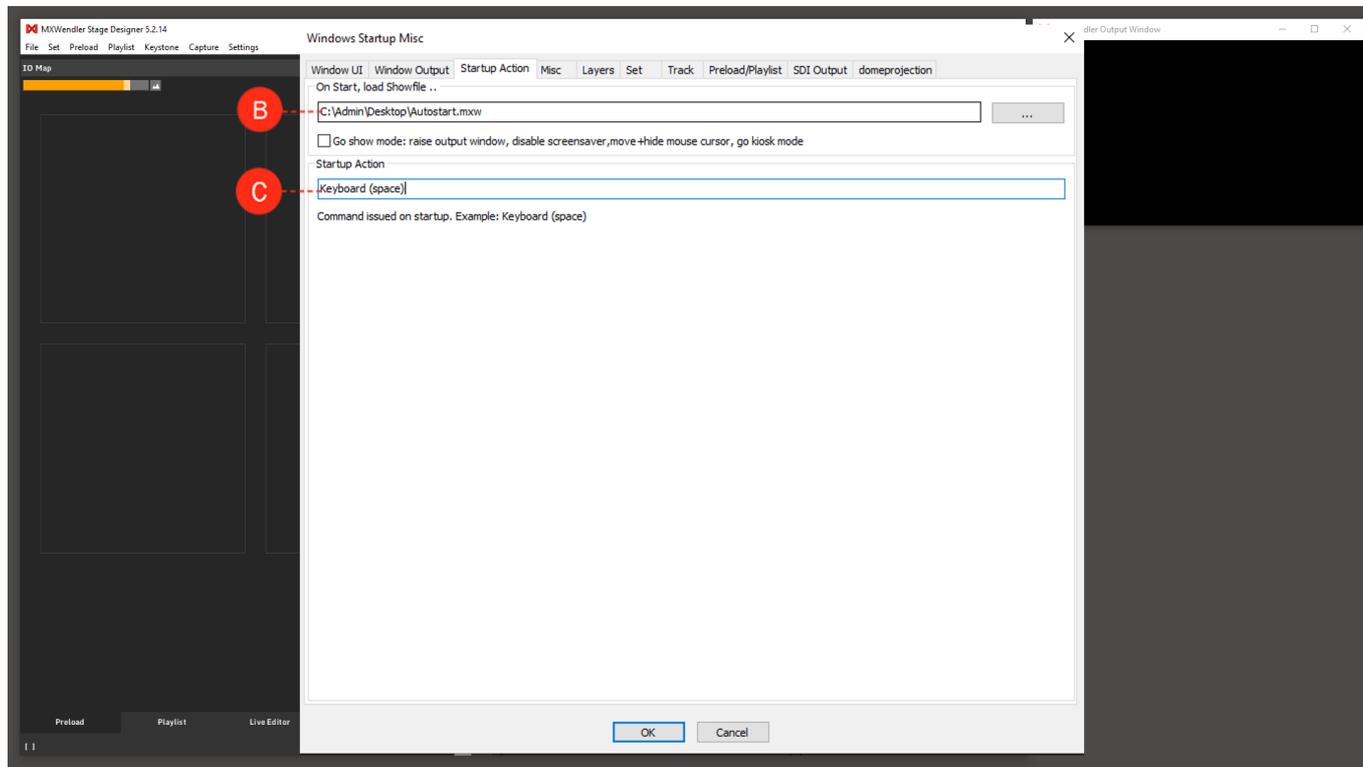
In this tutorial, an autostart showfile is created that opens MXWendler and launches a specific MXWendler project and triggers a video for playback automatically.

1. Load some Media into Preload and create a Playlist from the Preloads.
2. Setup the Output Correction.
3. Setup Keyboard/DMX/Midi Input and Output.
4. Go to File/Save as.. in Menubar and select a name and destination.
5. Go to Settings/Windows Misc.
6. Go to Startup Actions. **(A)**



7. Select file “On Start, load Showfile..”
8. Browse to any .mxw file. **(B)**
9. Type in any Command that is triggering/starting your playlist. **(C)**

*Tip: You can start Stagedesigner/FXServer and run your Show directly by double-clicking .mxw file from within your Finder/Explorer.*



# Tutorial Creating Compositions (Sets and Patches)

This tutorial applies to all different OS and MXWendler versions.

In this tutorial, a composition with multiple layers is saved as a patch in the set.

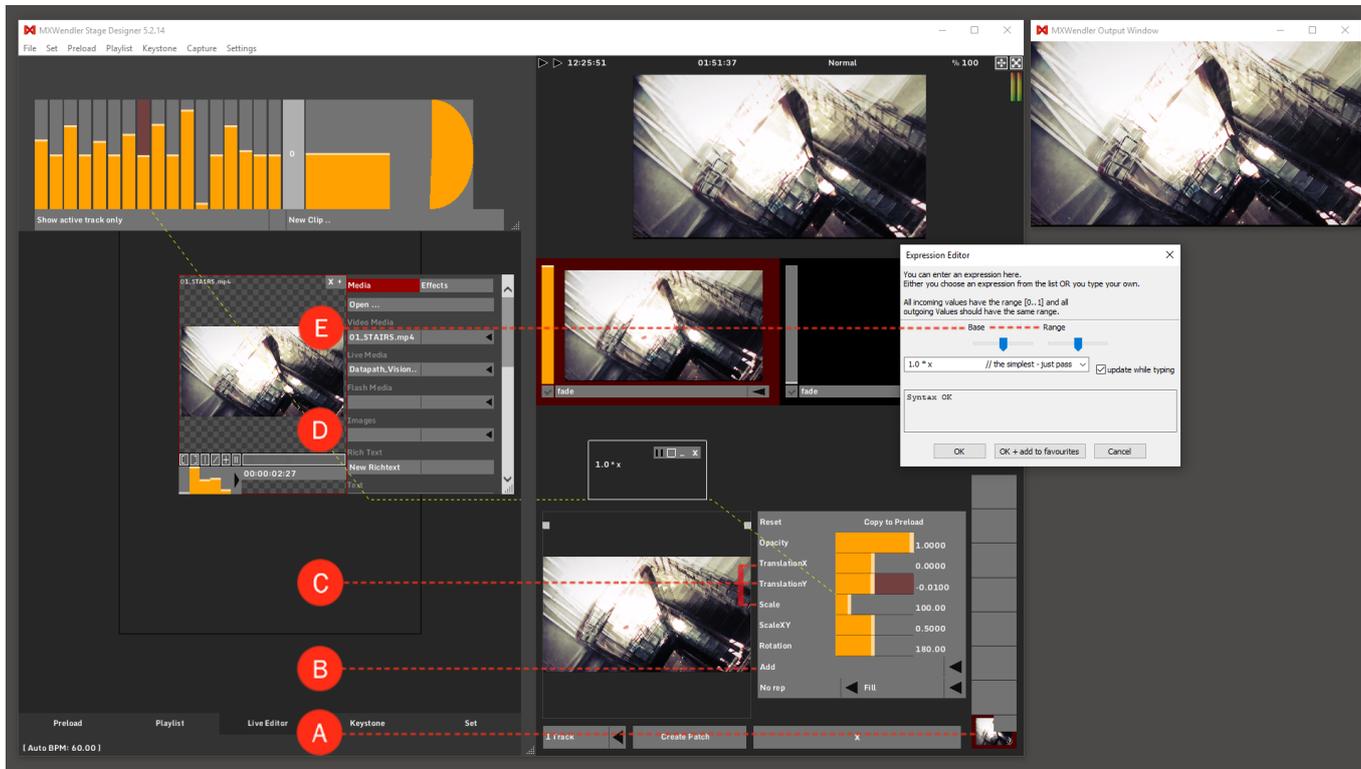
1. First, load the media for the composition into the Preload.
2. Activate the first layer in the Layermanager Preview. **(A)**
3. Switch the layer mode from Picture in Picture to Add. **(B)**
4. Set Scale to the desired size and position the layer. **(C)**
5. Associate a channel of the Spectrum Analyzer with TranslationY. **(D)**

**Shift + left-click → Spectrum Analyzer (one channel) → drag&drop → TranslationY**

6. Choose the Base and Range settings in the Expression Editor. **(E)**

Double-click on TranslationY to open the Expression Route.

Double-click on the Expression Route to open the Expression Editor.



7. Select the second layer and switch the layer mode from Picture in Picture to Difference b/w. **(F)**
8. Select the third layer and switch the layer mode from Picture in Picture to Add. Before positioning, set the desired size using Scale. **(G)**
9. Associate a channel of the Spectrum Analyzer with Scale: **(H)**

**Shift + left-click → Spectrum Analyzer (one channel) → drag&drop → Scale**

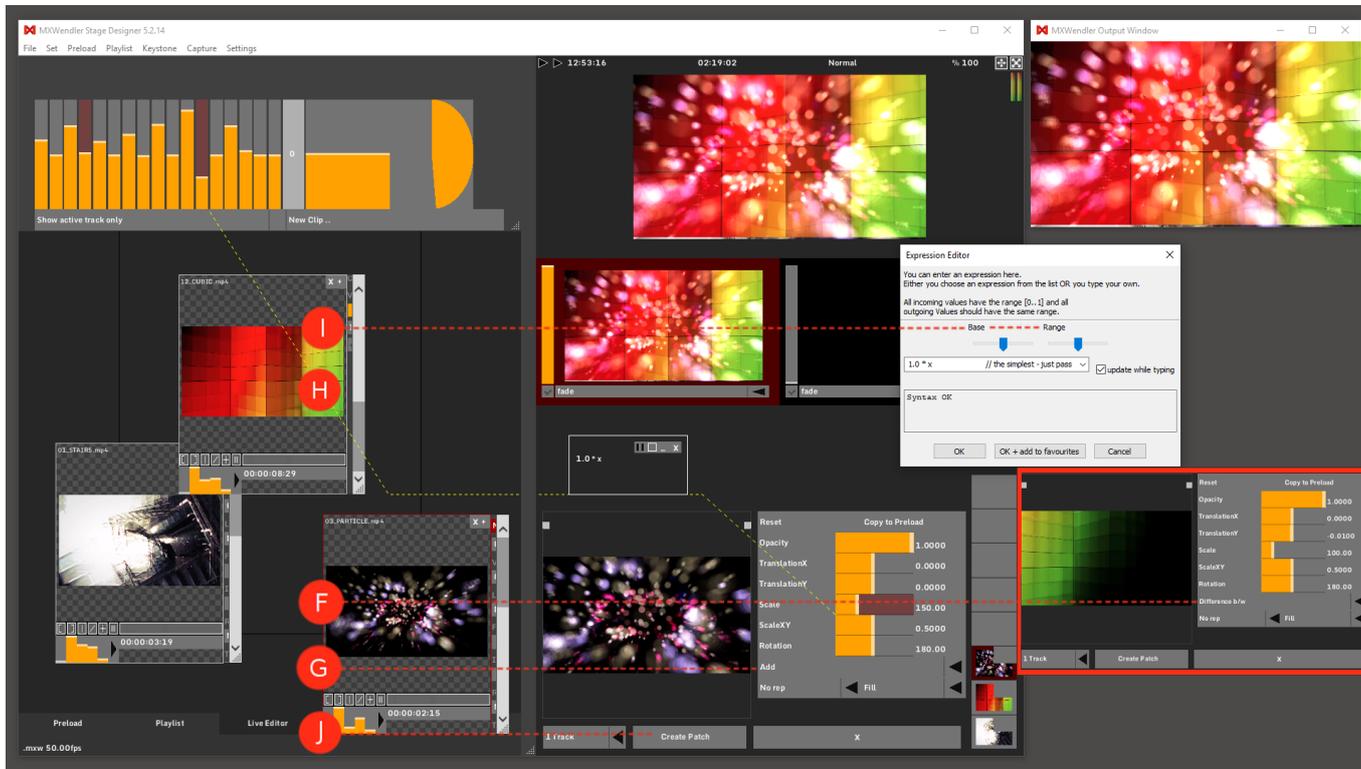
10. Choose the Base and Range settings in the Expression Editor. **(I)**

Double-click on Scale to open the Expression Route.

Double-click on the Expression Route to open the Expression Editor.

11. Select Create Patch to save the composition. You can find the saved patch in the Set tab. **(J)**

*Tip: Create Patch can also save a number of tracks in one go. To do this, select the desired quantity. The loading process will then begin from the active track when the patch is activated.*



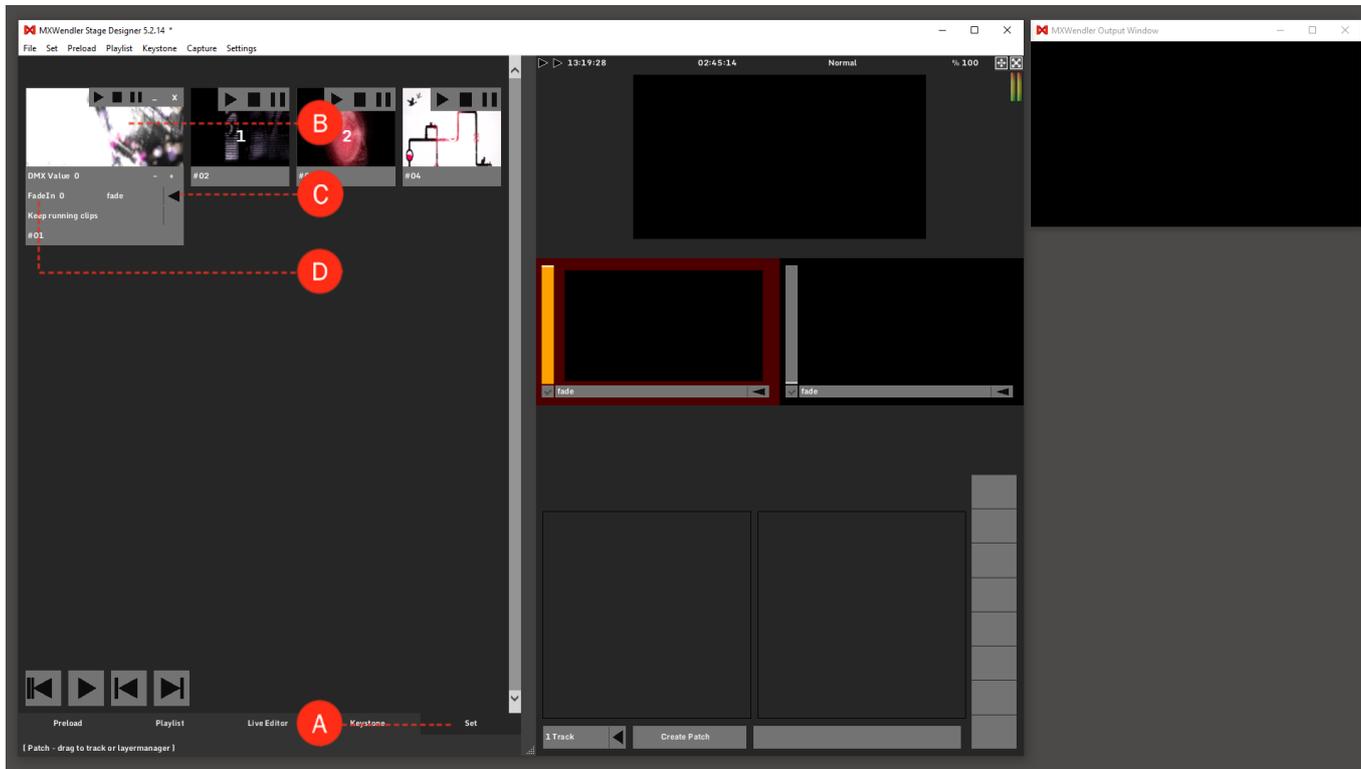
# Tutorial Creating Multiple Compositions and Patches

This tutorial applies to all different OS and MXWendler versions.

Patches created with 'Create Patch' can now be played individually or consecutively. Capture options can be set individually for each patch:

1. Go to the Set tab. **(A)**
2. Click on the image area of the patch, which will then magnify and open for editing. **(B)**
3. Open the pulldown menu for the patch, and select 'Flip'. **(C)**
4. Set the 'Fade In' time in milliseconds. **(D)**

*Tip: Patches can be played sequentially as in a playlist by using the 'Play' button at the bottom of the screen in the Set. Thereby, the other track is alternately activated and crossfaded.*



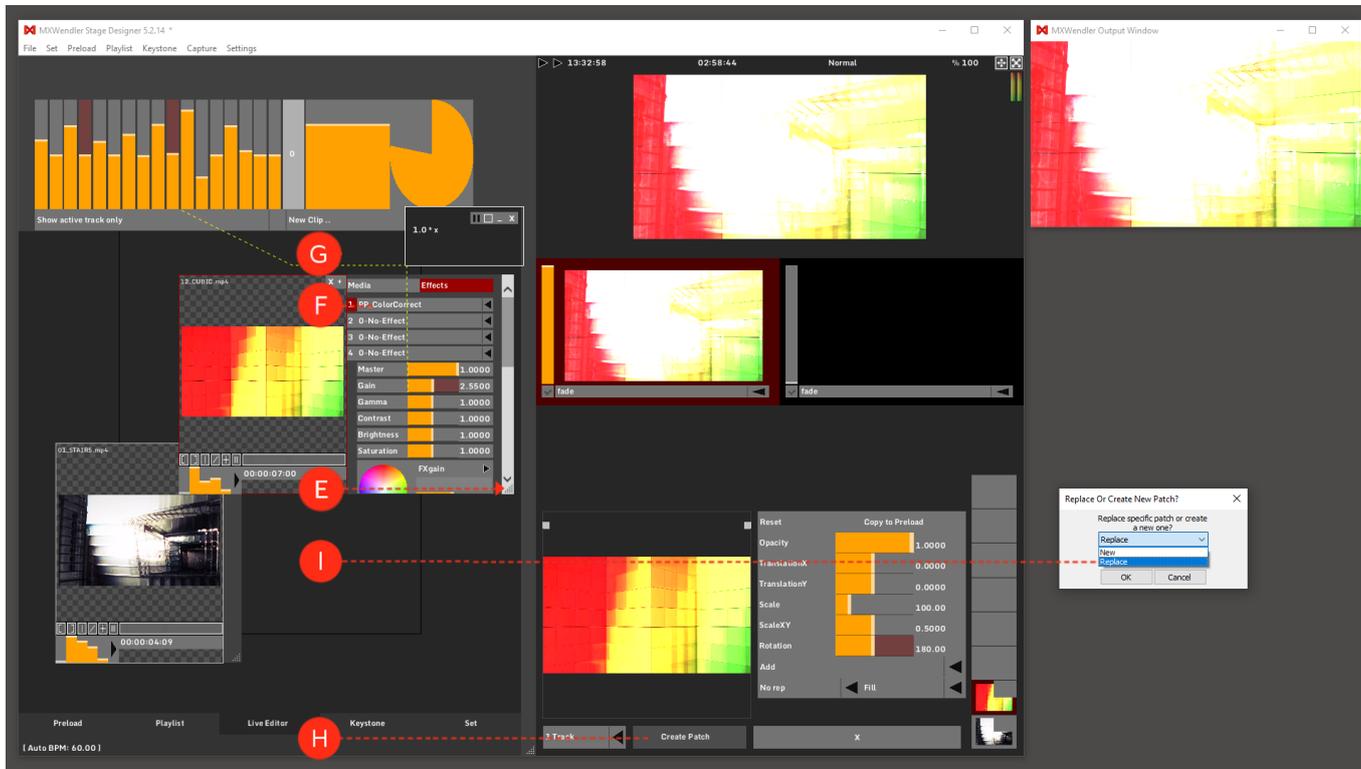
An existing patch can be opened and edited in the Live Editor. When you open the Live Editor, all media used in the patch are initially shown in the order in which they were saved. These must first be separated.

1. Select the desired video and open the clip menu. **(E)**
2. Select the effect 'PP\_ColourCorrect'. **(F)**
3. Associate the one channel of the Spectrum Analyzer with 'Gain'. **(G)**

**Shift + Left-Click → SPECTRUM ANALYZER (one channel) → Drag&Drop → GAIN**

4. Select 'Create Patch', so that the changes are retrievable as a new patch. **(H)**
5. In the dialogue 'Replace or Create New Patch' confirm 'Replace'. **(I)**

*Tip: It is possible to load or change footage by dragging and dropping an item from Finder / Explorer directly onto the current clip.*



# Tutorial Creating and Playing an RTF Text File

This tutorial applies to all different OS and MXWendler versions.

In this tutorial, an internal text editor is used to compose and format a text file, to play in MXWendler without the use of any external application.

## Opening the Rich Text Editor

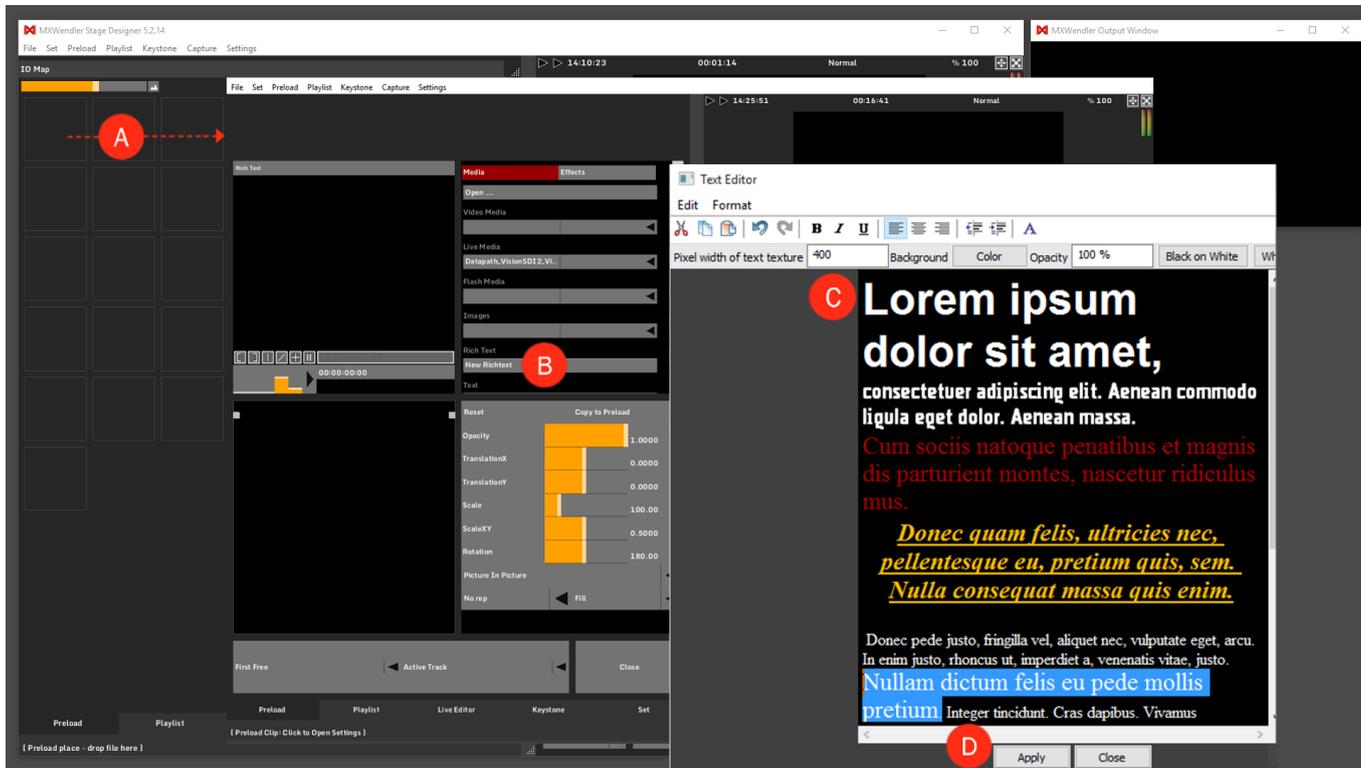
1. Open the Preload Preview by clicking on one of the preload boxes. **(A)**
2. Select 'New Richtext' in the media menu. **(B)**

A Text Editor should be opening.

3. Create or paste and edit the desired text. **(C)**
4. When ready, click 'Apply' at the bottom of the text editor. **(D)**
5. The text is loaded and ready to be played. Close the Preload Preview and play the preload.

The text is now in play in the Output Window and can be handled as any other media content on MXWendler. It can be edited in every moment by opening the Preload Preview and clicking on Edit Richtext.

*Tip: A big text made with the RTF Editor requires better hardware resources. A text that is bigger than 4k (Pixel width of text texture) will require a strong hardware.*



# Tutorial Licensing New Features

This tutorial applies to all different OS and MXWendler versions.

In this tutorial we will see, step by step, how to request the activation of specific features in MXWendler.

## Licenses

Two kinds of license key can be used in MXWendler products:

- **The Dongle** : Is a hardware key, a USB flash drive.

If you have an MXWendler USB Dongle Key you just need to insert it in one of your computer's USB ports before starting the software.

You can use your dongle in any computer you like. There is no limitation on the number of machines you can use with your license.

Note: FXServer versions can be activated only with a Dongle.

- **The Soft Key** : It's also possible to activate a licensing packet or a feature with a soft-key;

It can be requested from the software menu with the following procedure.

Note: soft keys are only applicable in Stage Designer versions.

# Features

## List Features:

1. Once the software is started, go to:

**Menu → Settings → List Features (A)**

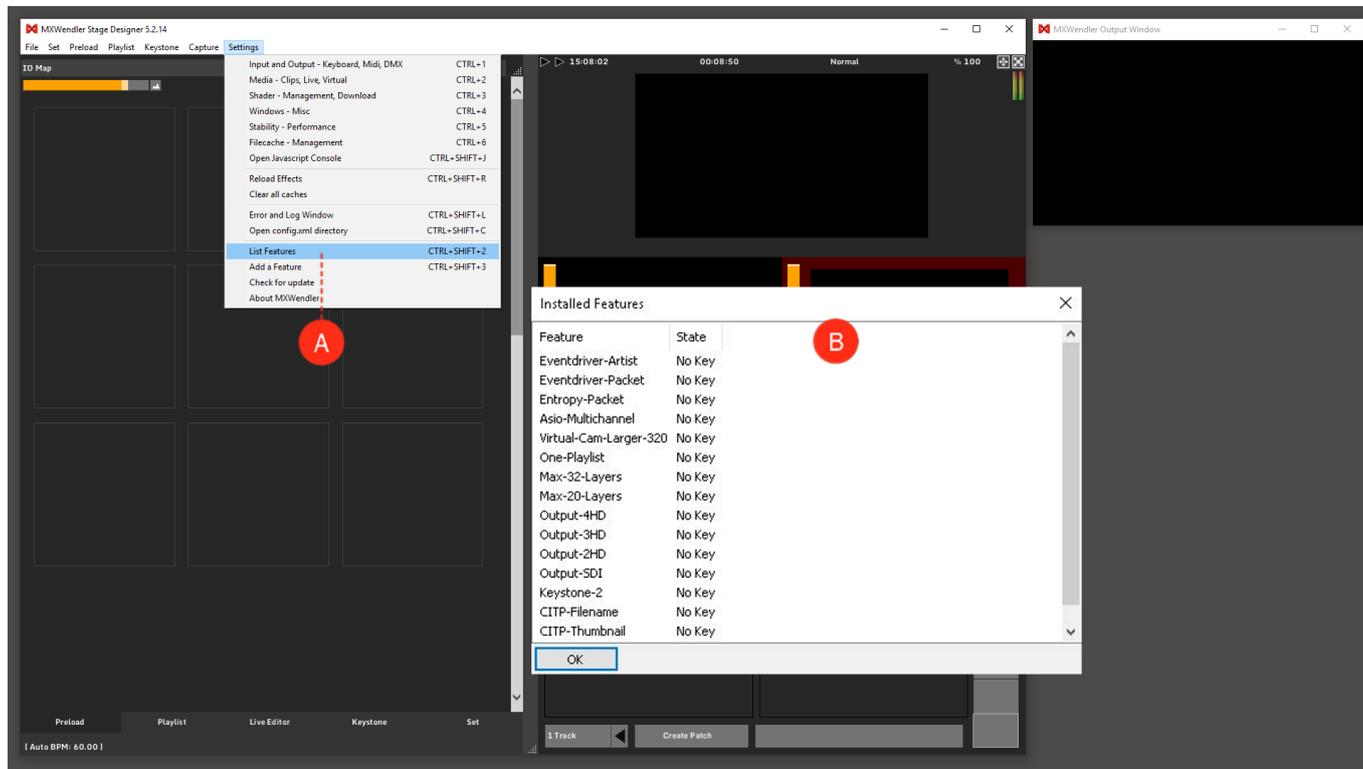
2. This will open a dialog box that lists all the software features. **(B)**

From this box, it will be possible to see which features are already available and which ones need a license to be activated.

**Features:** You can build your system on your needs. With a wide list of features, you can choose to activate a packet or just add some Outputs or Layers.

The selectable Features in MXW are:

- Eventdriver-Artist
- Eventdriver-Packet
- Entropy-Packet
- Asio-Multichannel
- Virtual-Cam-Larger-320
- One-Playlist
- Max-32-Layers
- Max-20-Layers
- Output-3HD
- Output-2HD
- Output-SDI
- Keystone-2
- CITP-Filename
- CITP-Thumbnail
- DMX\_Support



# Activating Features

In Stage Designer versions, features can be activated using the following method. FXServer users can activate the features, only with a Dongle.

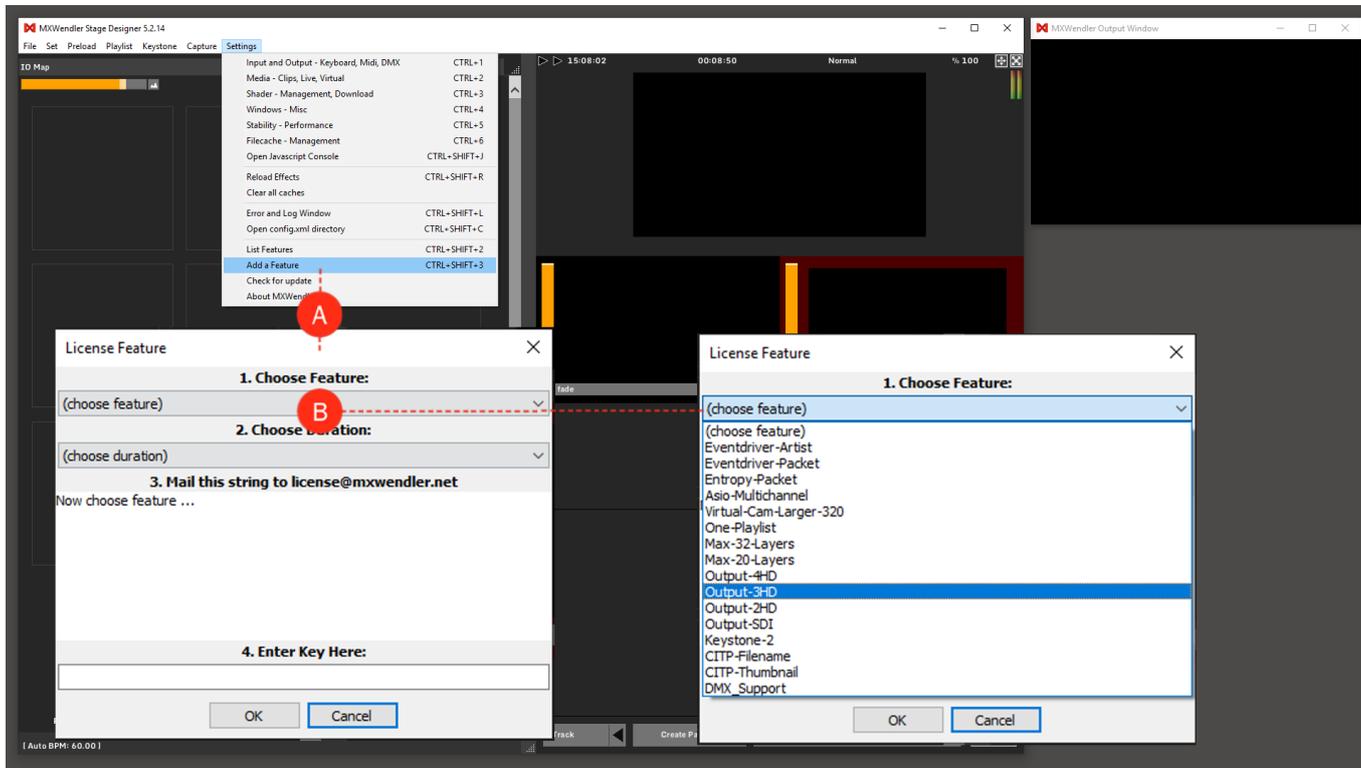
## Add a Feature

1. To add a feature, go to:

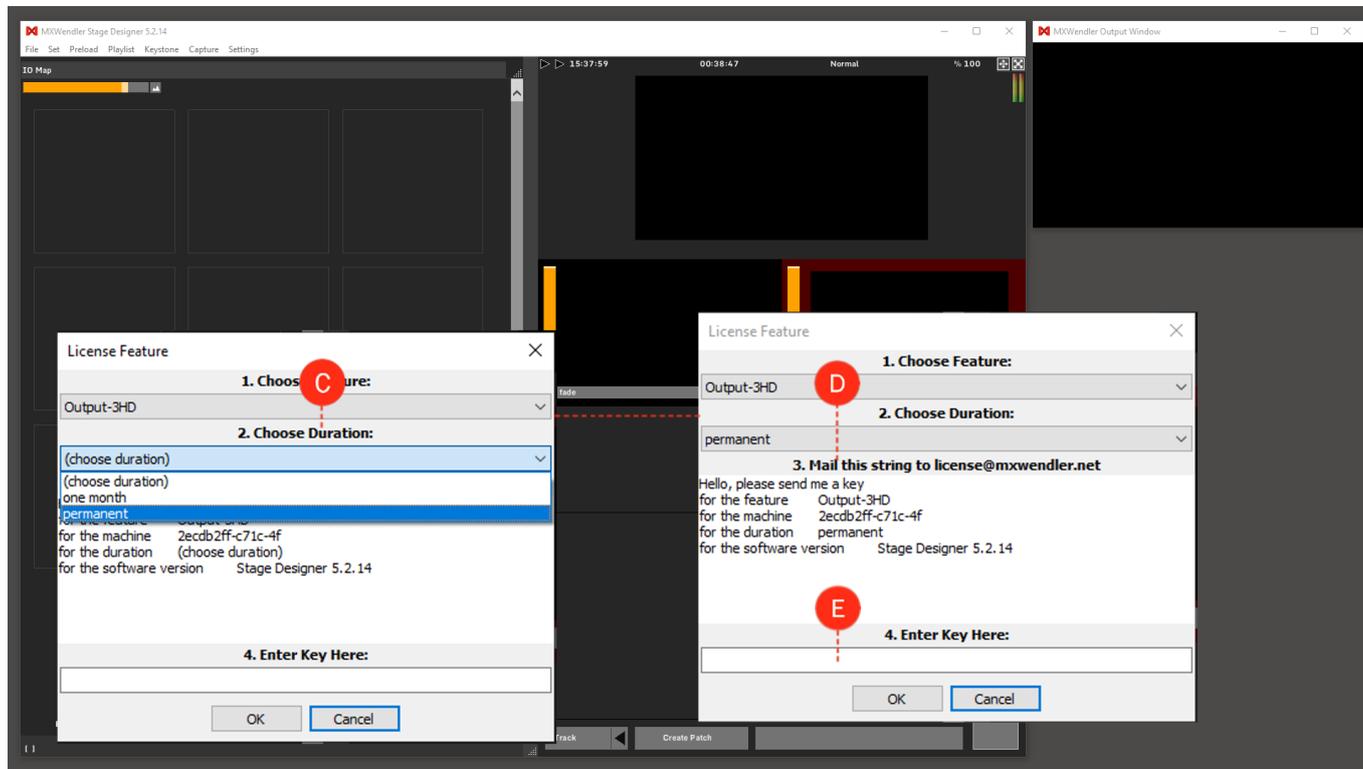
**Menu → Settings → Add a Feature**

This will open a dialog box that will allow you to request a packet or a specific feature. **(A)**

2. Choose Feature: From the first drop-down menu, choose the feature you would like to add to the software. **(B)**



3. Choose Duration: From the second drop-down menu, choose for how long you would like to use this feature. **(C)**
4. Mail This String to license@mxwendler.net: Once Feature and Duration are selected, a description of your request will appear in the dialog box. Select the text by clicking and dragging the mouse on it, copy the text and paste it in your mail-browser. Send the mail to license@mxwendler.net and we will contact you back! **(D)**
5. Enter Key Here: once you received your soft key you just need to copy it from the e-mail, insert it in the dialog box and click on **OK. (E)**
6. Restart the MXWendler software and go straight to check the list of the installed features!



# Tutorial Loading and Using JavaScripts in MXWendler

This tutorial requires MXWendler version 5 or above.

## Pre-requisites

- JavaScript Command Reference:\*

Download the latest version of our JavaScript reference from:

<https://www.mxwendler.net/product/downloads.html>

## Content of the JavaScript Command Reference

Once the MXWendler JavaScript Command Reference is downloaded:

1. Go to the folder where the compressed folder has been downloaded.
2. Extract the content of the compressed folder to a path of your choice.

The content of the folder will be the following:

1. **js\_demo.mxw**. This is the demo file, all the JavaScript and the commands we are going to use are saved here.
2. **README\_JavaScript\_demo.txt**. Step by step explanation of how to launch and use the JavaScript demo. (You won't probably need it if you are reading this document).
3. **Reference\_JavaScript\_2.5.pdf**. A handbook to understand the usage of JavaScripts in MXWendler. There are many examples that can be pasted and tried in the software in order to understand how to take advantage of JavaScript in your video-workflow.
4. **WalkingMan\_Outline\_Loop\_.avi**. A sample clip to demonstrate the effect of the scripts.



js-demo.mxw

Type: MXWendler Show File



README\_Javascript\_demo.txt



Reference\_Javascript\_2.5.pdf



Tutorial\_Javascript.pdf



WalkingMan\_Outline\_Loop\_.avi

Length: 00:00:01

Frame height: 240

Frame width: 320

## Loading and Using the Demo Scripts

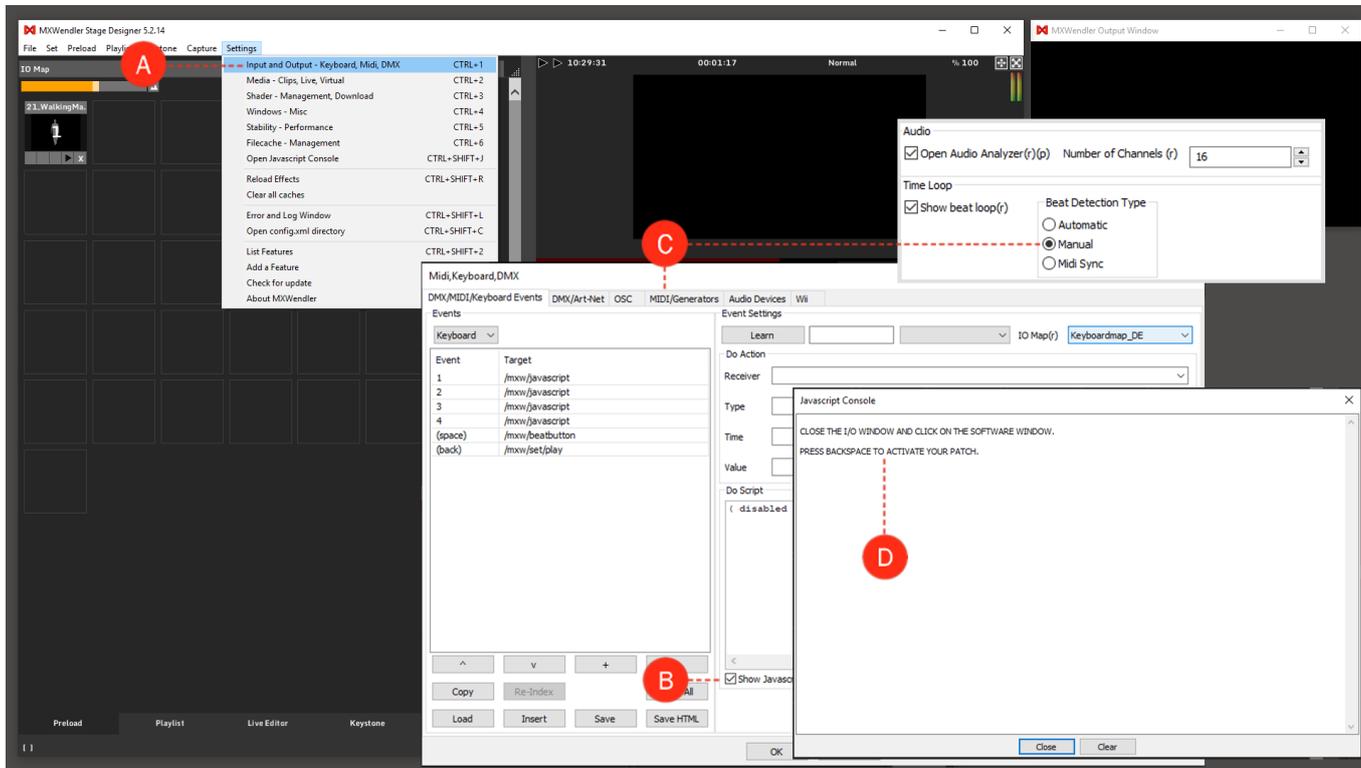
1. Double click on the **js\_demo\_2.5.mwx** file.

The software will start with all the scripts and I/O commands already loaded and ready to be used.

2. Open the I/O Window

**CTRL+1 or Menu → Settings → I/O Midi → DMX/MIDI/Keyboard (A)**

3. Click on 'Show JavaScript Console', lower right of the I/O window. **(B)**
4. Select the 'Midi Generators' tab and set the 'Beat Detection' to Manual. **(C)**
5. Now just follow the instructions on the JavaScript console. **(D)**



# Scripts content

## 1. "Backspace"

Key: **back**

Receiver: **/mxw/set/play**

Type: **pass value**

```
function on_trigger( triggervalue ){  
    if(triggervalue==1){  
        print_console(  
            "PATCH ACTIVATED. HIT SPACE BAR FOR TAP TEMPO or 1-2-3 TO SET THE OPACITY LEVEL \n" );  
        }  
}
```

Backspace starts a patch in which the clip's scale is associated with the software's BPM. The Javascript prints a comment on the console.

## 2. "Space Bar"

Key: **space bar**

Receiver: **/mxw/beatbutton**

Type: **pass value**

```
function on_trigger( triggervalue ){  
    if(triggervalue==1){  
        print_console(  
            "INCOMING TAP TEMPO \n" );  
        }  
    }  
}
```

The space bar controls the Beat Button. Hit 6 times to set a Tap Tempo. The JavaScript is responding with a text anytime the beat button is activated.

### 3. "1"

Key: **1**

Receiver: **/mxw/javascript**

Type: **pass value**

```
function on_trigger(triggervalue){  
  if(triggervalue==1){ // access widgets and control and get/set values  
  print_console("access opacity control of main render output " + mxw.widget("/mxw/render/opacity") );  
  print_console("main render opacity value is " + mxw.widget("/mxw/render/opacity").getValue() );  
  print_console("main render opacity: set 0.0 value");  
  mxw.widget("/mxw/render/opacity").setValue(0.0);  
  print_console(" ");  
  }  
}
```

The Javascript sets render opacity to 0 and writes the information on the console.

## 4. "2"

Key: **2**

Receiver: **/mxw/javascript**

Type: **pass value**

```
function on_trigger(triggervalue){
  if(triggervalue==1){ // access widgets and control and get/set values
    print_console("access opacity control of main render output " + mxw.widget("/mxw/render/opacity") );
    print_console("main render opacity value is " + mxw.widget("/mxw/render/opacity").getValue() );
    print_console("main render opacity: set 0.5 value");
    mxw.widget("/mxw/render/opacity").setValue(0.5);
    print_console(" ");
  }
}
```

The Javascript sets render opacity to 50% and writes the information on the console.

## 5. "3"

Key: **3**

Receiver: **/mxw/javascript**

Type: **pass value**

```
function on_trigger(triggervalue){  
    if(triggervalue==1){ // access widgets and control and get/set values  
        print_console("access opacity control of main render output " + mxw.widget("/mxw/render/opacity") );  
        print_console("main render opacity value is " + mxw.widget("/mxw/render/opacity").getValue());  
        print_console("main render opacity: set 1 value");  
        mxw.widget("/mxw/render/opacity").setValue(1);  
        print_console(" ");  
    }  
}
```

The Javascript sets render opacity to 100% and writes the information on the console.

## 6. "4"

Key: **4**

Receiver: **/mxw/javascript**

Type: **pass value**

```
function on_trigger(triggervalue){
  if(triggervalue==1){
    print_console("current time " + mxw.millis ); // print various states
    print_console("current frame width " + mxw.width );
    print_console("current frame height " + mxw.height );
    print_console("current output width " + mxw.outwidth );
    print_console("current output height " + mxw.outheight );
    print_console("current framecounter " + mxw.framecounter );// read-access to IO devices
    print_console("current dmx value at channel 413 " + mxw.dmx(413));
    print_console("current midi value device 1 channel 10 " + mxw.midi(1,10));
    print_console("current keyboard value for (shift)+(space) " + mxw.keyboard(1,32));
    print_console("on_trigger called with " + triggervalue);
    print_console("SCREENSHOT SAVED IN C:/screen/ ");
    mxw.makescreenshot("C:/screen/s.png");
  }
}
```

The Javascript prints various states regarding the output on the console and saves a screenshot of the output in the selected folder. (The folder has to be created!)

The Receiver: **/mxw/javascript** is not going to produce any effect on his own. It has been created to trigger the JavaScript without selecting any other software function.

# Tutorial Configuring a Virtual Camera

This tutorial applies to all different OS and MXWendler versions.

By default, in any MXWendler version, Virtual Devices are set and ready to use under the name MXWendler-01, but in case of any changed settings or troubles, follow the steps below to set them up again.

1. Once the software is started, go to:

**Menu → Settings → Media-Clips, Live, Virtual (A)**

2. From the dialog go to Virtual Camera tab. **(B)**

3. Here you can set the Virtual Camera settings: **(C)**

Select the 'Start and Register MXWendler Virtual Capture and Feedback Devices'.

Set your desired capture height and width.

Select 'Strict Internal Feedback'.

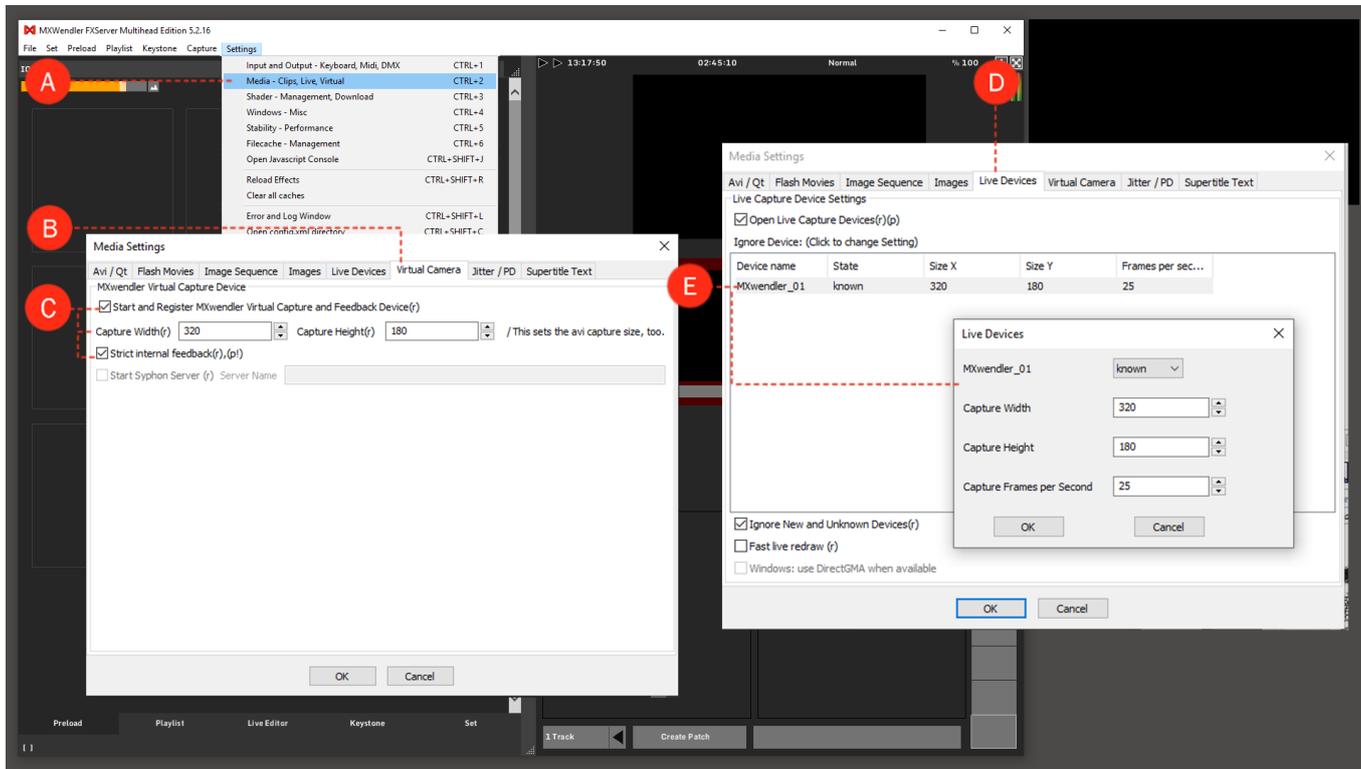
4. Click Ok and restart MXWendler.

5. Open the Media-Clips, Live, Virtual dialog again.

6. From the dialog select the 'Live Devices Tab'. **(D)**

Here you must be able to see the Virtual Live Device that you set up before under the name MXwendler-01.

7. Select the device and double click on it to open the settings dialog. **(E)**



Change from Unknown to Known.

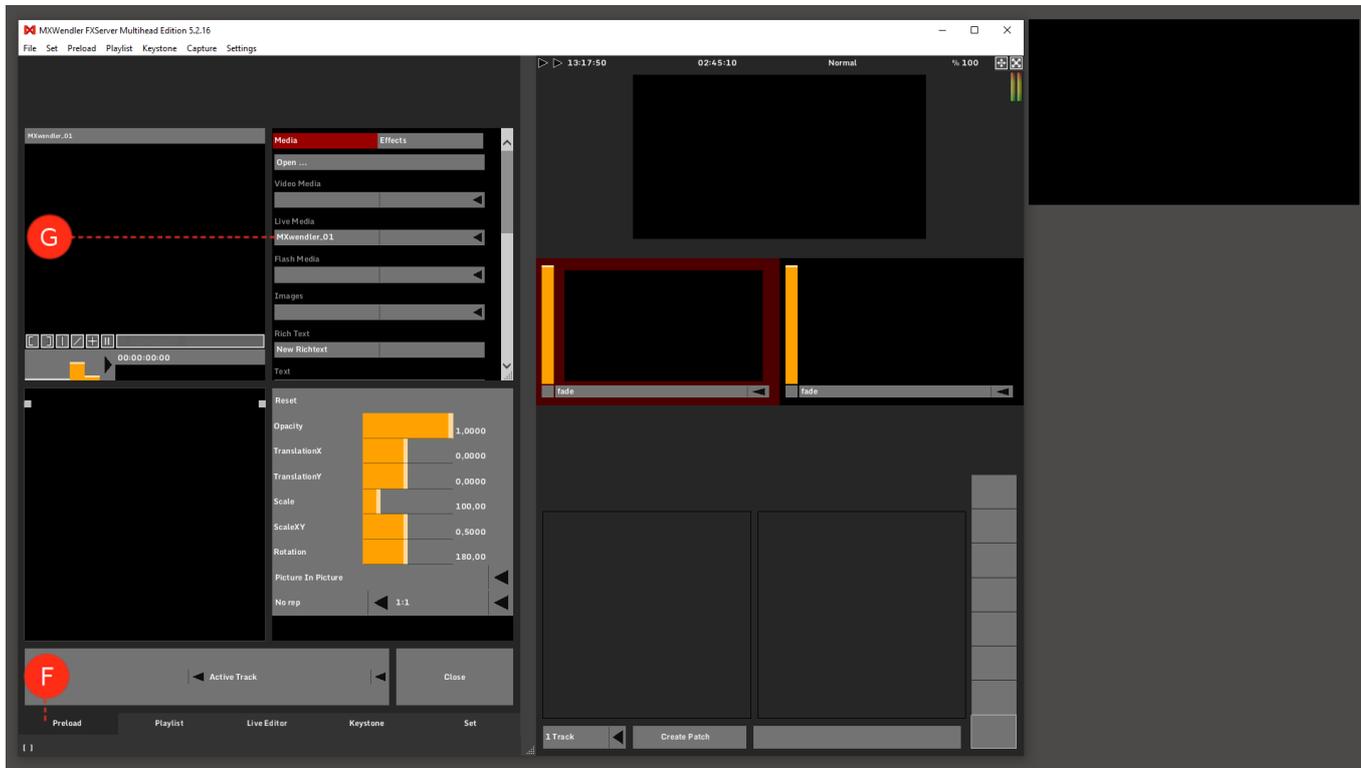
If you want you can change the Width and Height and the frames per second settings.

8. Click Ok and restart MXWendler

9. Go to Preload Tab and click on an empty Preload to open the Preload preview. **(F)**

10. Click on Live Media and select the MXWendler-01 device that you just configured. **(G)**

This will send your output signal to a virtual device as input which can be used in different projects and with different ideas. See Tutorial Feedback.



# Tutorial Creating Playlists (Cue Lists)

This tutorial applies to all different OS and MXWendler versions. Please note that the screenshots are made with Version 5 User Interface. Version 6 users please consider the differences in Version 6 Playlist.

## Creating Playlists

In this tutorial, we will create a playlist using a number of different videos. Numerous videos can be played back simultaneously, and with a variety of options.

1. Load the videos into the Preload. **(A)**

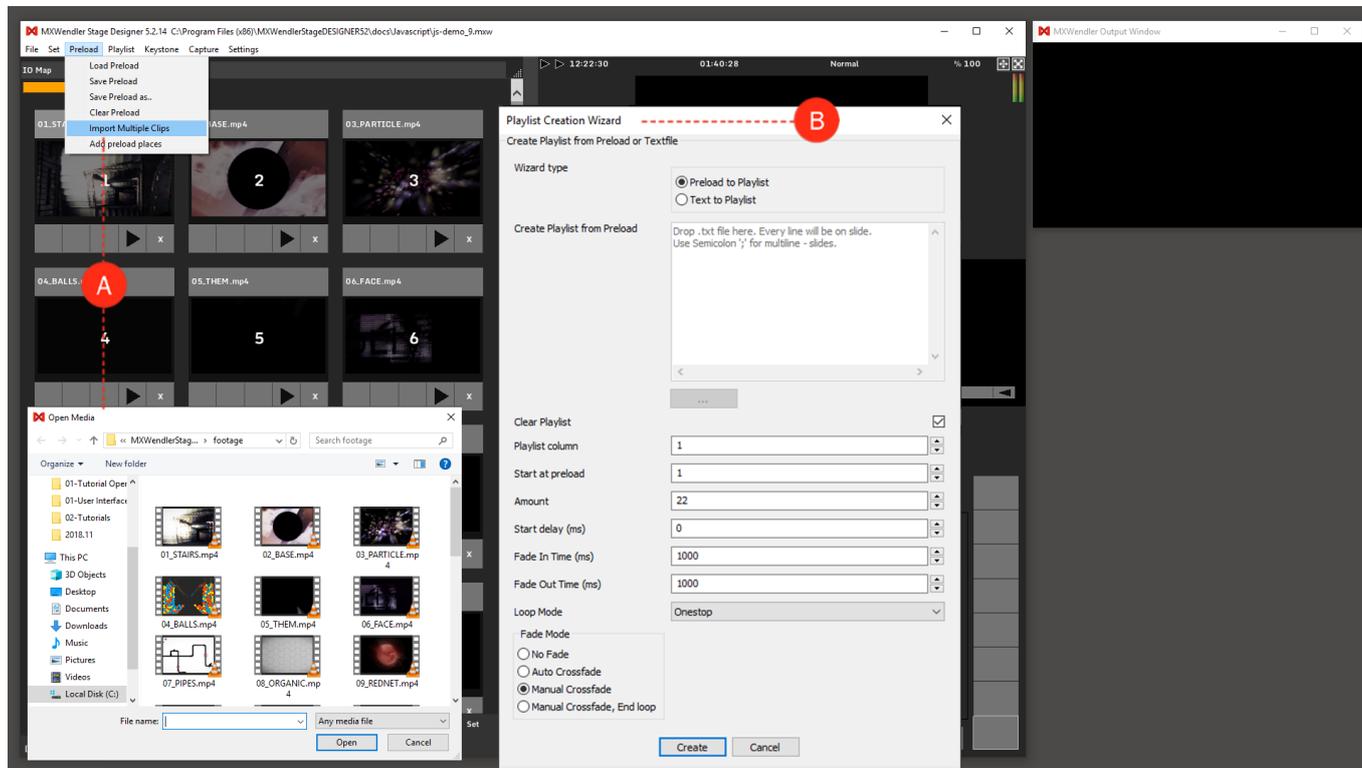
**Menu: Preload → Preload Multi-Clip Import → select clips**

2. Create a simple stage show with the help of the Playlist Creation Wizard: **(B)**

**Menu: Playlist → Playlist Wizard.. → Create Playlist from Preload**

In the Playlist Creation Wizard you can determine which - as well as how - videos are loaded into the playlist.

*Tip: The Playlist - Wizard copies base settings into all current clips. These settings can be changed individually in each clip at a later time.*



### 3. Switch to the Playlist Tab. **(C)**

The playlist is complete. All clips are now loaded into the playlist one after the other. **(D)**

### 4. Playback the playlist with the ► Play button. The following row/clip will playback each time the ► Play button is pushed. **(E)**

The current clip is half highlighted orange. The yellow bar indicates the progress of the clip, the fade as well as the progress of the cue. **(F)**

*Tip: MXWendler distinguishes between Preload and Playlist; the media names are distinct from their chronological sequence. This means that the media can be simply replaced or moved. Preloads are - as the name suggests - preloaded, and can thus be played back with reduced latency.*

The screenshot displays the MXWender Stage Designer software interface in Rehearsal Mode. The main window is titled "MXWender Stage Designer 5.2.14" and shows a rehearsal timeline for two video tracks: "09\_REDNET.mp4" and "10\_COLORGRID.mp4". The timeline includes a playhead at 00:00:00 and a duration of 00:00:07. A red circle labeled 'E' is positioned above the playhead, and another red circle labeled 'F' is positioned above the 09\_REDNET.mp4 track. A red circle labeled 'D' is positioned below the 14\_34\_Keyword.THEM.avi track. A red circle labeled 'C' is positioned above the "Playlist" button in the bottom left corner.

The interface includes a "Text or media" panel on the left with settings for "Preload Index" (9), "Start delay (ms)" (0), "Fade in (ms)" (1000), and "Fade out (ms)" (1000). The "Item trigger mode" is set to "manual" and "Clip play mode" is set to "oneshot". A "Reset" panel on the right shows settings for "Opacity" (1.0000), "TranslationX" (0.0000), "TranslationY" (0.0000), "Scale" (100.00), "ScaleX" (0.5000), and "Rotation" (180.00). The "Picture In Picture" mode is set to "Fill".

The main preview area shows a 3D visualization of a red, glowing, organic structure. A smaller preview window below it shows a "fade" effect. The "MXWender Output Window" on the right shows a similar 3D visualization.

## Simultaneously Launching two Cues

This chapter deals with creating a playlist in which two clips are played back simultaneously.

1. Arrange the clips in the playlist via drag&drop. **(A)**
2. For creating an order and composition, delete empty rows with a right-click into an empty cell, then select 'Remove Cue'. **(B)**

At the moment the two played back clips are overlapping, therefore the size and position of the videos or the layer mode have to be adjusted (e.g. 'Add' instead of 'Picture in Picture').

Adjusting the size of the videos in the Layermanager:

1. Activate the desired video over the corresponding layer. **(C)**
2. Scale and position the videos using the yellow pivots **(D)**

The screenshot displays the MXWendler Stage Designer software interface. The main window is titled "09\_REDNET.mp4" and shows a playlist editor with a timeline from 00:00:08 to 00:00:00. The playlist contains 17 rows of clips, with the 9th row highlighted in green. A red circle labeled 'A' is positioned over the 9th row. Below the playlist, a context menu is open, listing actions such as "Trigger a preload clip", "Start fade", "Stop clips in this column", "Make auto step", "Timeline", "Stop timeline", "Clear this cell", "Copy", "Paste", "IO Command", "Conditions", "Change playlist", "Color", and "Change Text". A red circle labeled 'B' is positioned over the "Change playlist" option. A red circle labeled 'C' is positioned over the "Change playlist" option. A red circle labeled 'D' is positioned over the "Change playlist" option. The main preview window shows a 3D scene with the letters "XUS" in a stylized font, rendered in white and red. The output window shows the same scene. The interface includes a "Preload" button, a "Playlist" button, a "Live Editor" button, a "Keystone" button, and a "Set" button. The bottom status bar shows "Auto BPM: 60.00".

## Setting the Timeout of a Cue

The timeout can be set individually for each clip.

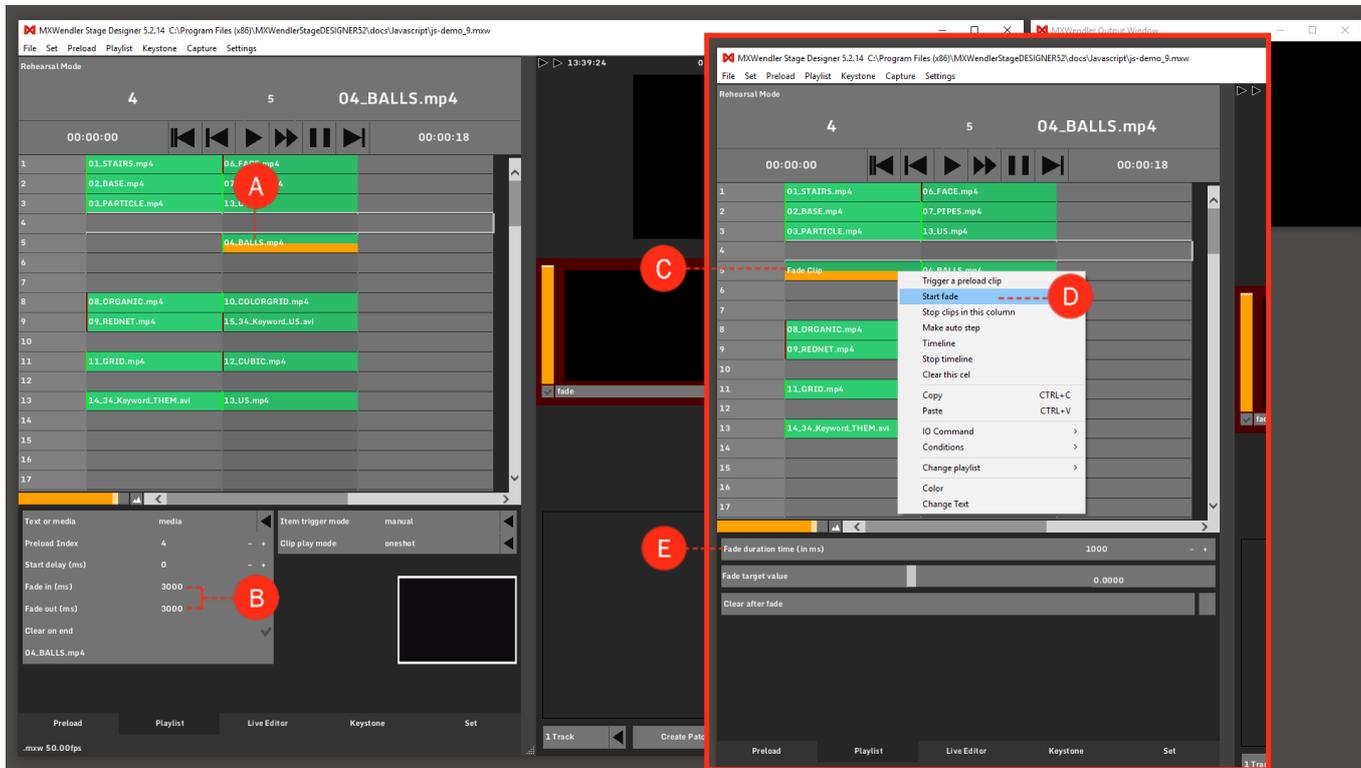
1. Activate a cell with a Left-Click. **(A)**
2. Set the Fade In / Fade Out time in milliseconds. **(B)**

Fade In and Fade Out options can be incorporated as individual cues in the playlist.

1. Define the composition of the Cues. **(C)**
2. Insert Fade In / Fade Out **(D)**

**Right-click → Fade In / Fade Out**

3. Set times in milliseconds in the window below. **(E)**



## Manually Inserting Cues

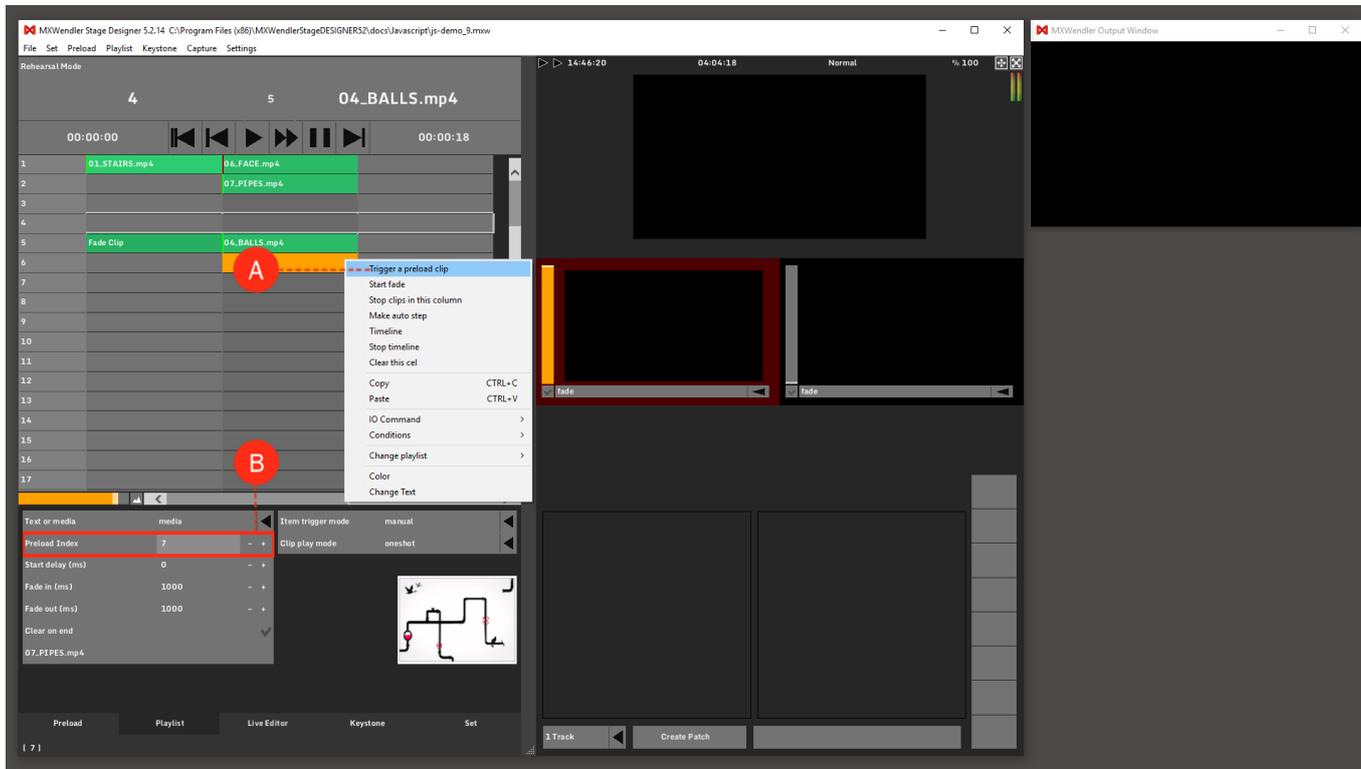
After the Preload has been created, go to the Playlist Tab.

1. Load the cues (clips) from the Preload before positioning. **(A)**

**Right-click into empty cell → Trigger Preload Clip**

2. The clip is selected via the Preload Index. Clips can be changed or adjusted via the Preload Index using '+' or the arrow symbols. **(B)**

Files must first be loaded on a Preload before completely new media files can be imported.



# Tutorial Playlists with Images and Keystone Correction

This tutorial applies to all different OS and MXWendler versions. Please note that the screenshots are made with Version 5 User Interface. Version 6 users please consider the differences in Version 6 Playlist.

In this tutorial, a playlist with images and changing of the keystone is created.

1. Load the Preload with all the images for the desired playlist. **(A)**
2. Open the Playlist Creation Wizard. **(B)**
3. Set Fade In and Fade Out as desired, in milliseconds. **(C)**
4. Set Loop Mode from 'Oneshot' to 'Loop'. **(D)**
5. Set Fade Mode to 'Manual Crossfade'. **(E)**

*Tip: Much like live media, images represent a special case for the Playlist because they have no defined duration. However just like film clips, they are nevertheless given a frame length, meaning that 'Loop' mode must be activated in the playlist.*

The screenshot displays the MWendler Stage Designer 5.2.14 interface. On the left, a grid of slides is visible, with red circles labeled A through E highlighting specific elements: A is on slide 5, B is on slide 1, C is on slide 7, D is on slide 7, and E is on slide 7. The main stage area shows a slide with a 'fade' indicator. On the right, the 'Playlist Creation Wizard' dialog is open, showing options for 'Preload to Playlist' and 'Text to Playlist'. The 'Preload to Playlist' option is selected. The dialog includes fields for 'Playlist column' (1), 'Start at preload' (1), 'Amount' (8), 'Start delay (ms)' (0), 'Fade In Time (ms)' (1000), 'Fade Out Time (ms)' (1000), and 'Loop Mode' (Onestop). The 'Fade Mode' section has 'Manual Crossfade' selected. The 'Create' button is highlighted in blue.

MWendler Stage Designer 5.2.14

File Set Preload Playlist Keystone Capture Settings

ID Map

0110\_4b53.jpeg 0264\_67he\_500.jpeg 0929\_4e4a\_500.jpeg

1 2 3

3404\_2943\_500.jpeg 3490\_e48c\_500.png 4676\_1915.png

4 5 6

6702\_7b63.jpeg 7606\_c674.jpeg

7

Preload Playlist Live Editor Keystone Set

[Normal]

15:01

Playlist Creation Wizard

Create Playlist from Preload or Textfile

Wizard type

Preload to Playlist

Text to Playlist

Create Playlist from Preload

Drop .txt file here. Every line will be on slide.  
Use Semicolon ';' for multiline - slides.

Clear Playlist

Playlist column 1

Start at preload 1

Amount 8

Start delay (ms) 0

Fade In Time (ms) 1000

Fade Out Time (ms) 1000

Loop Mode Onestop

Fade Mode

No Fade

Auto Crossfade

Manual Crossfade

Manual Crossfade, End loop

Create Cancel

6. Open the Playlist Tab. Position and configure the clips. **(F)**
7. The next image or clip can be played back with the ► Play button, with ►► SkipToNext the after next clip will be played back. The current clip is highlighted orange. **(G)**
8. Fade In and Fade Out can be set individually for each image in the menu below. **(H)**

*Tip: Images and live media can also be positioned in the Preloads, as well as assigned effects.*

The screenshot displays the MWendler Stage Designer 5.2.14 interface. The main window is titled "MWendler Stage Designer 5.2.14" and includes a menu bar with "File", "Set", "Preload", "Playlist", "Keystone", "Capture", and "Settings". The interface is in "Rehearsal Mode".

**Playlist:** A table with 17 rows. The first 7 rows are highlighted in green. The 8th row is highlighted in orange and contains the file "7606\_c674.jpeg". A red box highlights the play button in the timeline controls above the playlist.

Row	File Name
1	0110_4651.jpeg
2	0264_67be_500.jpeg
3	0929_e06a_500.jpeg
4	3404_2943_500.jpeg
5	3490_e48c_500.png
6	4676_1915.png
7	6702_7b53.jpeg
8	7606_c674.jpeg
9	
10	
11	
12	
13	
14	
15	
16	
17	

**Preview Window:** The top right window shows a preview of the stage scene. Below it, a smaller preview window shows a "fade" effect. The bottom right window shows a "Copy to Preload" settings panel with the following values:

Property	Value
Opacity	0.5000
TranslationX	0.0000
TranslationY	0.0000
Scale	100.00
ScaleX	0.5000
Rotation	180.00

**Settings Panel:** The bottom left panel is titled "Text or media" and "Item trigger mode". It includes fields for "Preload Index" (8), "Start delay (ms)" (0), "Fade in (ms)" (1000), and "Fade out (ms)" (1000). A red box highlights the "Fade in (ms)" and "Fade out (ms)" fields. The "Item trigger mode" is set to "manual" and "Clip play mode" is set to "loop".

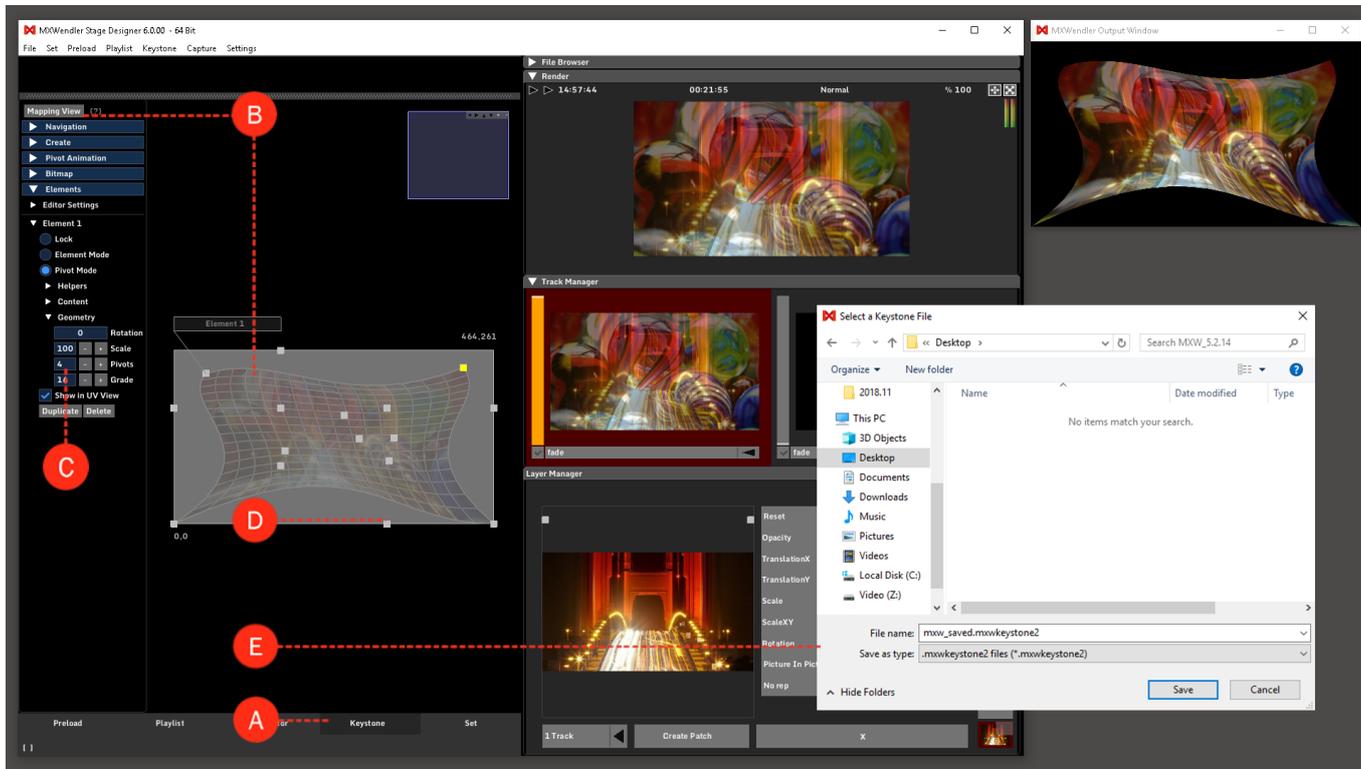
**Timeline:** The bottom of the interface shows a timeline with "Preload", "Playlist", "Keystone", and "Set" buttons. A red box highlights the "Playlist" button.

## Inserting Keystones

1. Open the Keystone Tab. **(A)**
2. Open the Keystone Element Tab. To reach this tab a Keystone element has to be activated (double-click on the Element till the Pivots are visible). **(B)**
3. The number of pivots can be set in the Element Tab. **(C)**
4. Use the pivots to adjust the output to the desired format. **(D)**
5. Save the keystone file: **(E)**

**Menu: Keystone → Save Keystone as..**

*Tip: A loading process begins when the keystone files are activated. A new file must be loaded to deactivate the loaded keystone file.*



6. Select and activate in the playlist a row/column for the keystone. **(F)**

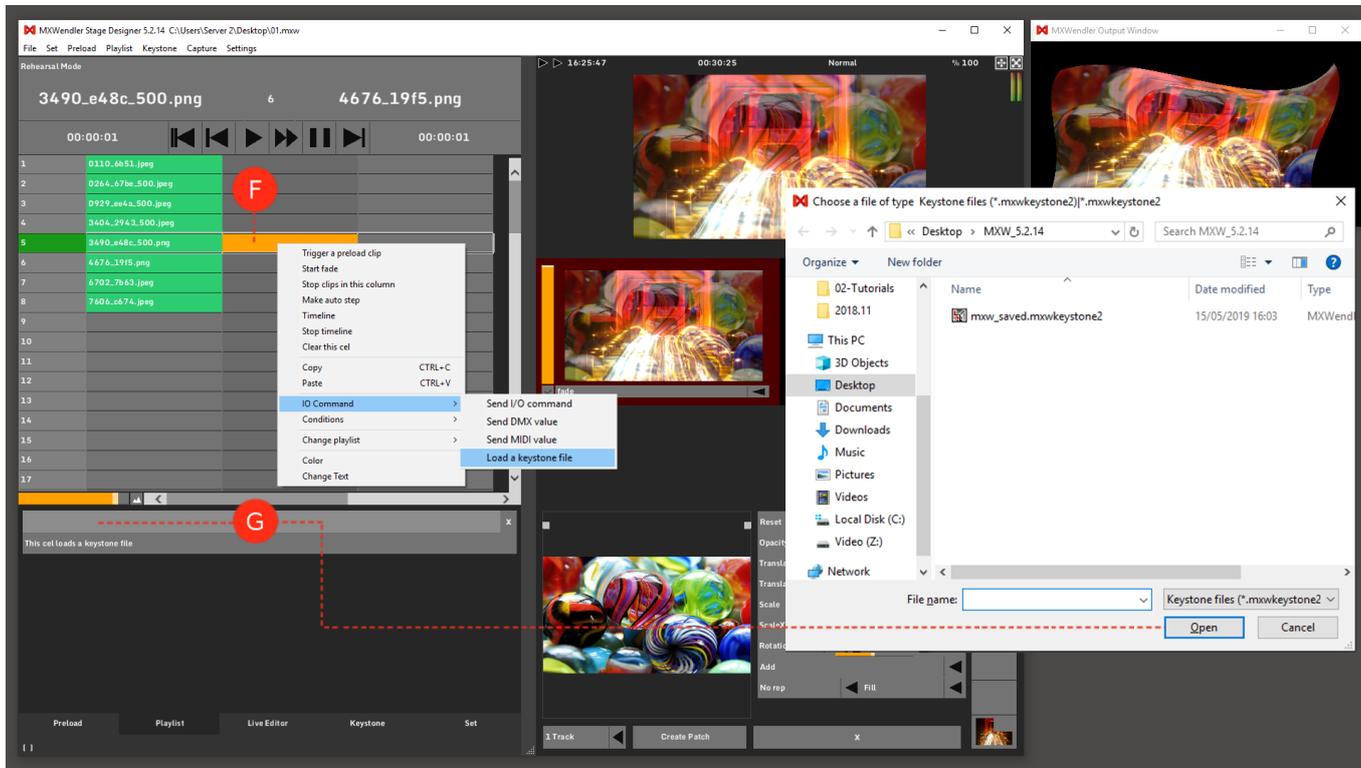
**Right-Click into an empty cell → IO Commands → Load a Keystone File**

7. Select and load the saved Keystone File: **(G)**

**Double-Click on the top bar in the settings at the bottom of the screen → Open the saved Keystone File**

*The correspondingly named keystone file will be loaded when the associated cue is activated.*

*Tip: To delete the entry, open the file-selection dialog and press 'Escape'.*



# Tutorial Playlists with Timeline

This tutorial applies to all different OS and MXWendler versions. Please note that the screenshots are made with Version 5 User Interface. Version 6 users please consider the differences in Version 6 Playlist.

In this tutorial, a playlist is created in which the clip characteristics can be controlled over a timeline. First, load the desired media files into the Preload and create a Playlist.

1. Insert a 'Timeline' into an empty cell next to the desired clip. **(A)**
2. Define the 'Receiver' of the timeline, e.g. the clip characteristic 'Scale'. **(B)**
3. Define the 'Duration' of the timeline characteristic with '+' / '-'. Double-click on the value to type it in numerically. **(C)**

*Tip: The addressing of the receiver is always carried out over the track and the corresponding layer. Therefore it is necessary to observe, on which track and layer the clip is located when the complete playlist is played back. Layers might disappear when connected to the Timeline Receiver because the modulator is set to 0 (starting point of the timeline).*

The screenshot displays the MWendler Stage Designer 5.2.14 interface. The main window is titled "reza\_ali\_audio\_visual\_ar..." and shows a timeline with various clips. A context menu is open over a clip, listing actions such as "Trigger a preload clip", "Start fade", "Stop clips in this column", "Make auto step", "Timeline", "Stop timeline", "Clear this cell", "Copy", "Paste", "IO Command", "Conditions", "Change playlist", "Color", and "Change Text".

Below the timeline, a parameter editor for a track is visible, showing a graph of a parameter over time. The graph has a red dashed line indicating a specific point. The parameter editor includes fields for "Duration" (10000), "Timeline loop", "Stop behaviour" (jump to end), and "Loop behaviour" (keep). The graph shows a yellow line starting at 0 and rising to 80 at the end of the clip.

On the right side, there is a "MWendler Output Window" showing a video preview of a fractal-like pattern. Below the preview, a "Reset" and "Copy to Preload" section is visible, with sliders for "Opacity" (1.0000), "TranslationX" (0.0000), "TranslationY" (0.0000), "Scale" (107.16), "ScaleX" (0.5000), and "Rotation" (180.00). There is also a "Fill" button and a "No rep" checkbox.

At the bottom of the interface, there are buttons for "Preload", "Playlist", "Live Editor", "Keystone", and "Set". The status bar at the bottom left shows "[ Auto BPM: 60.00 ]".

4. Select the 'Curve Type' of the timeline, e.g. 'Set Akima'. **(D)**

**Right-Click onto the curve → Curve Type → Set Akima**

5. Modify the Curve by dragging the pivots. The pivot turns yellow when activated. Double-Click onto the curve to add more pivots. **(E)**

6. Right-Click onto the curve to 'Delete selected Pivots', 'Set Pivot Values' or 'Reset Curve'. **(F)**

The modifications become active as soon as the cue/the playlist is played back again.

The screenshot displays the MWendler Stage Designer 5.2.14 interface in Rehearsal Mode. The main window is titled "reza\_ali\_audio\_visual\_ar..." and shows a timeline with 17 tracks. Track 4 is selected, showing a video file "reza\_ali\_audio\_visual\_arf1.j...". The timeline includes a playhead at 00:00:00 and a duration of 00:00:01. A preview window on the right shows a fractal-like visual with a yellow star in the center. Below the timeline, a control panel for the selected track shows a graph with a yellow curve. A context menu is open over the graph, listing options: "Insert pivot here", "Remove selected pivots", "Set pivot values", "Reset curve", "Curve type" (expanded), "Set akima", "Set bezier", "Set catmull", "Set linear", and "Set flat". The "Curve type" menu is expanded, showing "Set akima" selected. The control panel also includes a "Reset" button and a "Copy to Preload" section with sliders for Opacity, TranslationX, TranslationY, Scale, ScaleX, and Rotation. The bottom of the interface shows a "Preload" button and a "Live Editor" tab.

Timeline tracks:

Track	File Name
1	9221_f412.grf
2	Bild-Berlin-bei-Nacht-von-att...
3	0929_re6a-500.jpeg
4	reza_ali_audio_visual_arf1.j...
5	Bild-Die-Augen-der-Sonne-von...
6	
7	
8	07_PIPES.mp4
9	05_THEM.mp4
10	
11	
12	
13	
14	
15	
16	
17	

Control Panel Settings:

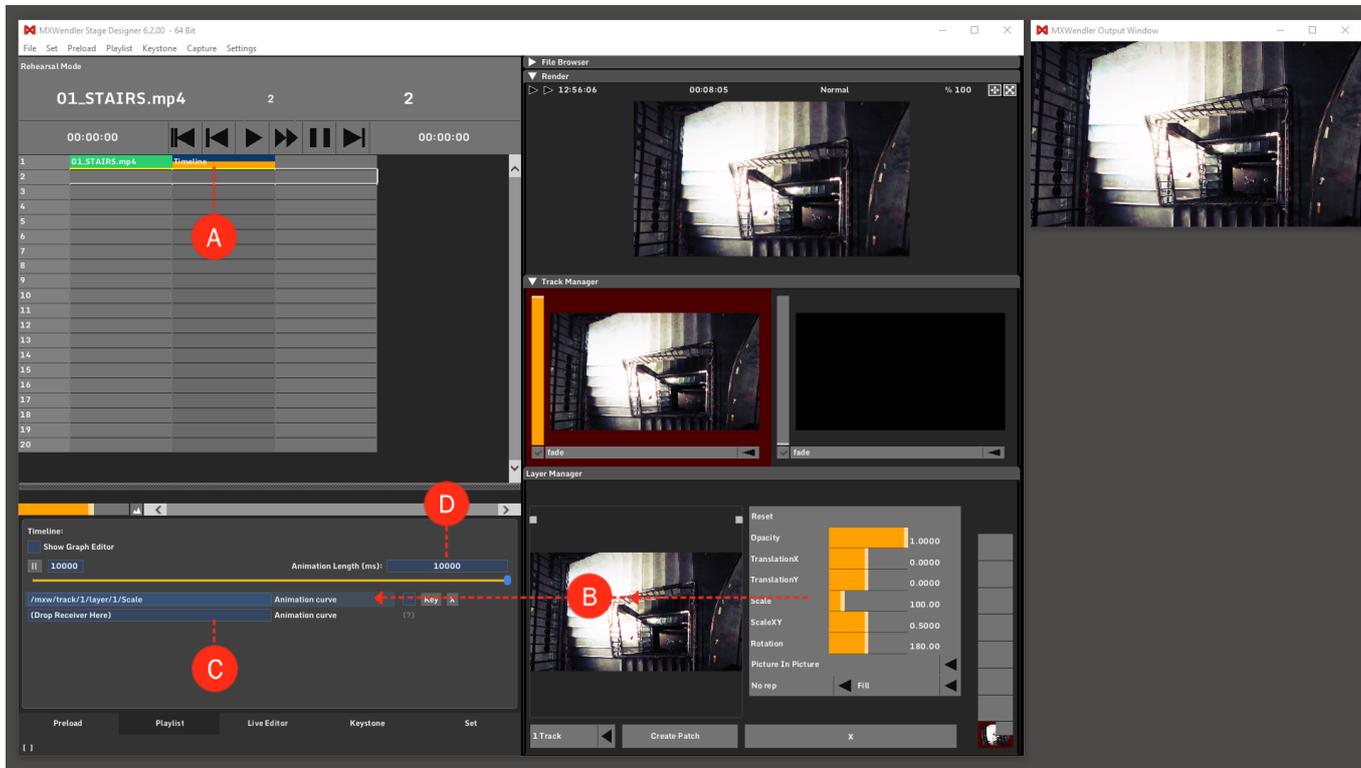
Property	Value
Opacity	1.0000
TranslationX	0.0000
TranslationY	0.0000
Scale	109.54
ScaleX	0.5000
Rotation	180.00

# Tutorial Playlists with Multi-Timeline

This tutorial applies to all different OS and MXWendler versions 6.0 and above.

In this tutorial, several values of a layer are controlled through a playlist timeline.

1. Load a clip into a preload place and insert it in the first cell of the Playlist.
2. Insert a Timeline into an empty cell next to the desired clip. **(A)**
3. Play the Playlist once, so the clip can take its place in Layer Manager.
4. Select the Timeline and define the receiver, e.g. the clip's characteristic, Scale. To choose Scale as a parameter for the Timeline, just connect the Scale slider to the textbox in the Timeline settings via drag&drop. **(B)**
5. Each time a receiver is dropped on the Timeline a new receiver slot becomes available. Drag another receiver from layer manager, e.g. TranslationX, to control more parameters at the same time. **(C)**
6. Define the duration of the Timeline in the Animation Length numeric field. Double-click on the value to type in numerically or click and drag the mouse to the right or to the left to increase/decrease the value. **(D)**



7. In the Graph Editor, the looping behavior of the timeline can be edited. To define the curve, check Show Graph Editor and then click on Animation curve to select the animation to edit: right-click in the Graph Editor to insert/remove pivots and change the kind of curve. **(E)**

8. The Graph editor and the Timeline options have a progress bar. Move one of them to navigate the length of the timeline. **(F)**

Clicking the Key button will insert a pivot at the position of the progress bar, whether or not the playlist is playing. **(G)**

9. A single animation can be deleted by clicking on the X button at the end of the relative row in the Timeline settings. **(H)**

10. If the Auto Keyframe box is checked, every movement of the connected Receiver will be registered with a new pivot. **(I)**

*Tips: work with Linear curves to use this function and get better results.*

*The addressing of the receiver is always carried out over the track and the corresponding layer. Therefore it is necessary to observe, on which track and layer the clip is located when the complete playlist is played back. Layers might disappear when connected to the Timeline Receiver because the modulator is set to 0 (starting point of the timeline).*



# Tutorial Playlists with Time and Date Conditions

This tutorial applies to all different OS and MXWendler versions. Please note that the screenshots are made with Version 5 User Interface. Version 6 users please consider the differences in Version 6 Playlist.

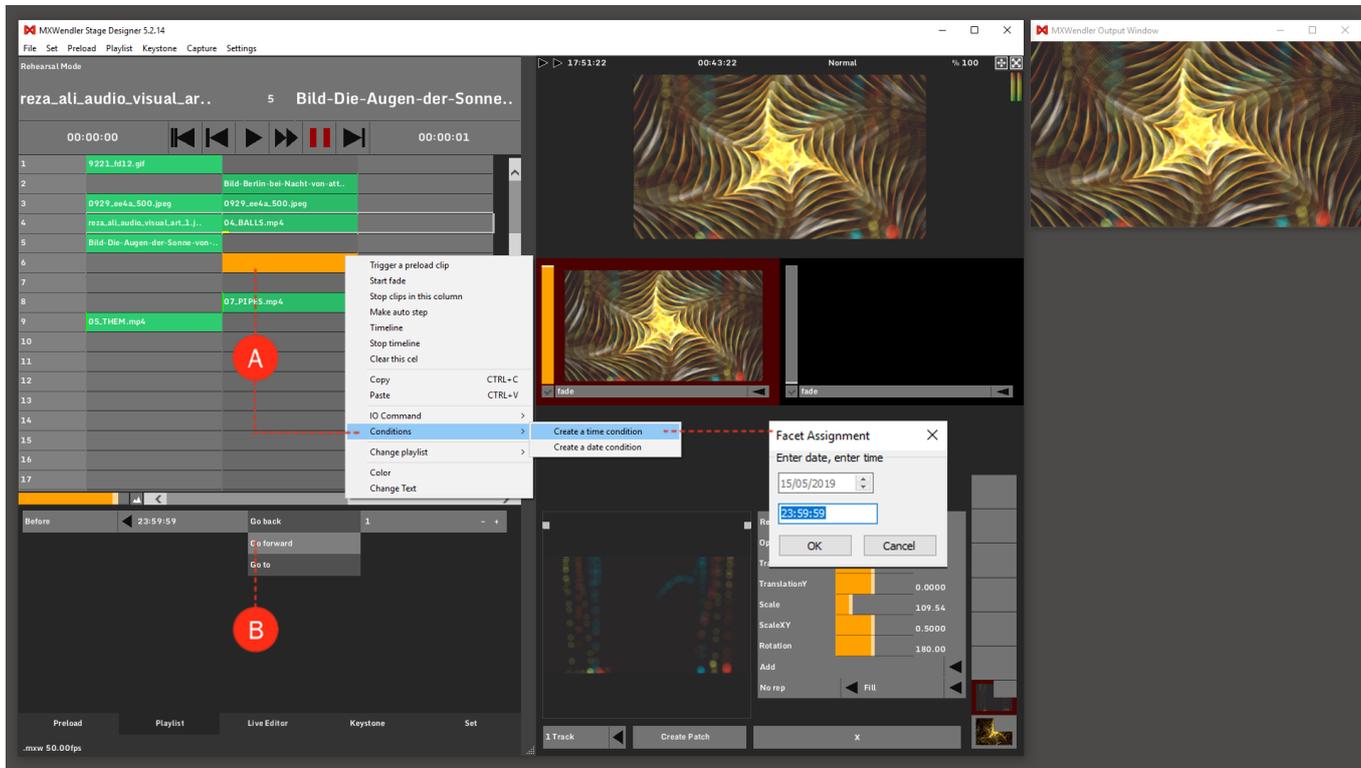
In this tutorial, a playlist with time or date conditions is created.

1. First, create a playlist with multiple media files. (See Tutorial Creating Playlists)
2. Create a Time/Date condition: **(A)**

**Right-Click into an empty cell → Conditions → Time/Date Condition**

Below the table you can setup the condition behaviour, like 'Before/After' a chosen 'Time/Date' jump to cue by 'Go forward/Go back/Go to'. **(B)**

*Tip: You can use Time Conditions to create looping Playlists and for jumping to defined cues in large Playlists.*



# Tutorial Playlists with Timecode

This tutorial applies to all different OS and MXWendler versions. Please note that the screenshots are made with Version 5 User Interface. Version 6 users please consider the differences in Version 6 Playlist.

You can adapt the playlist to listen to timecode.

## Activating Timecode

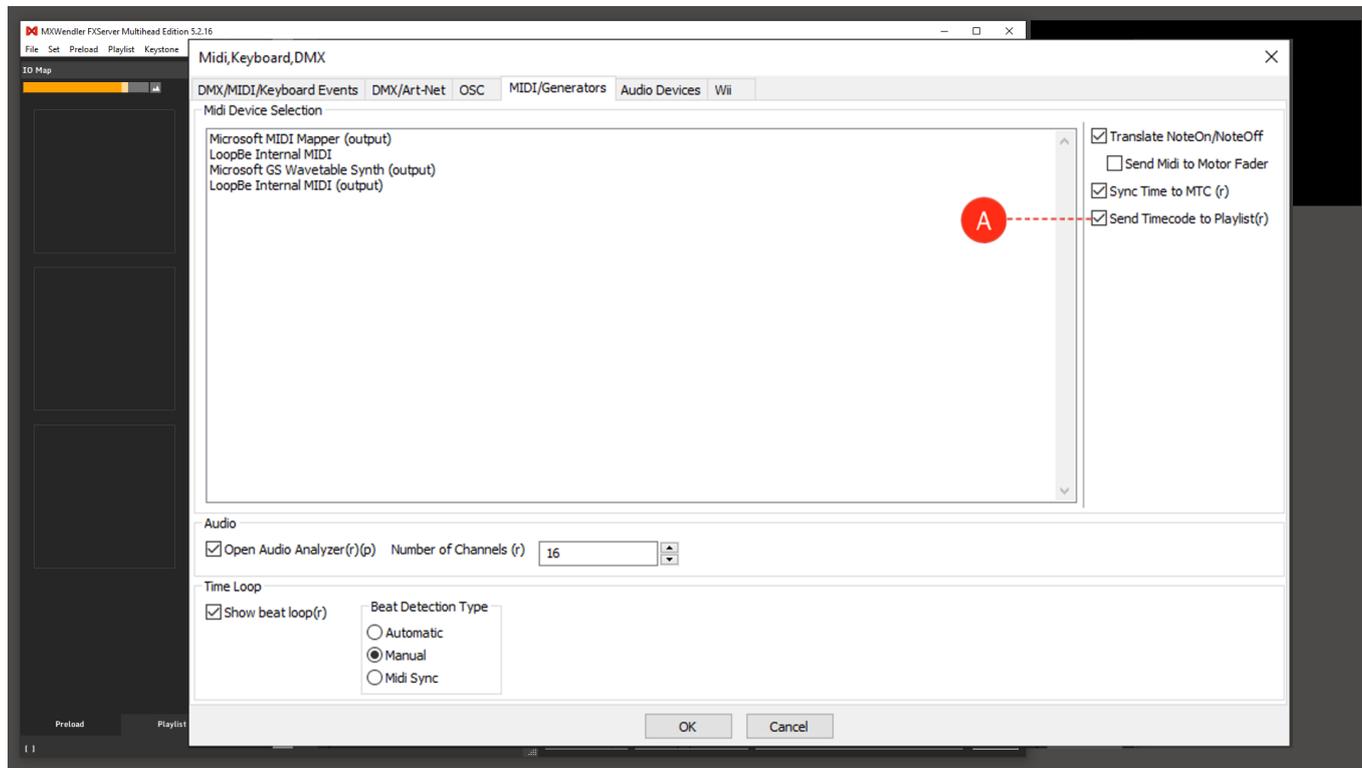
To make MXWendler listen to a timecode, you must first activate MTC Listening first **(A)**:

1. Enable a Midi Device:

**Settings → IO → Midi General → Devices → restart**

2. Enable MTC Listening:

**Settings → IO → Midi General → MTC → restart** (Sync Time to MTC is not required for this function)



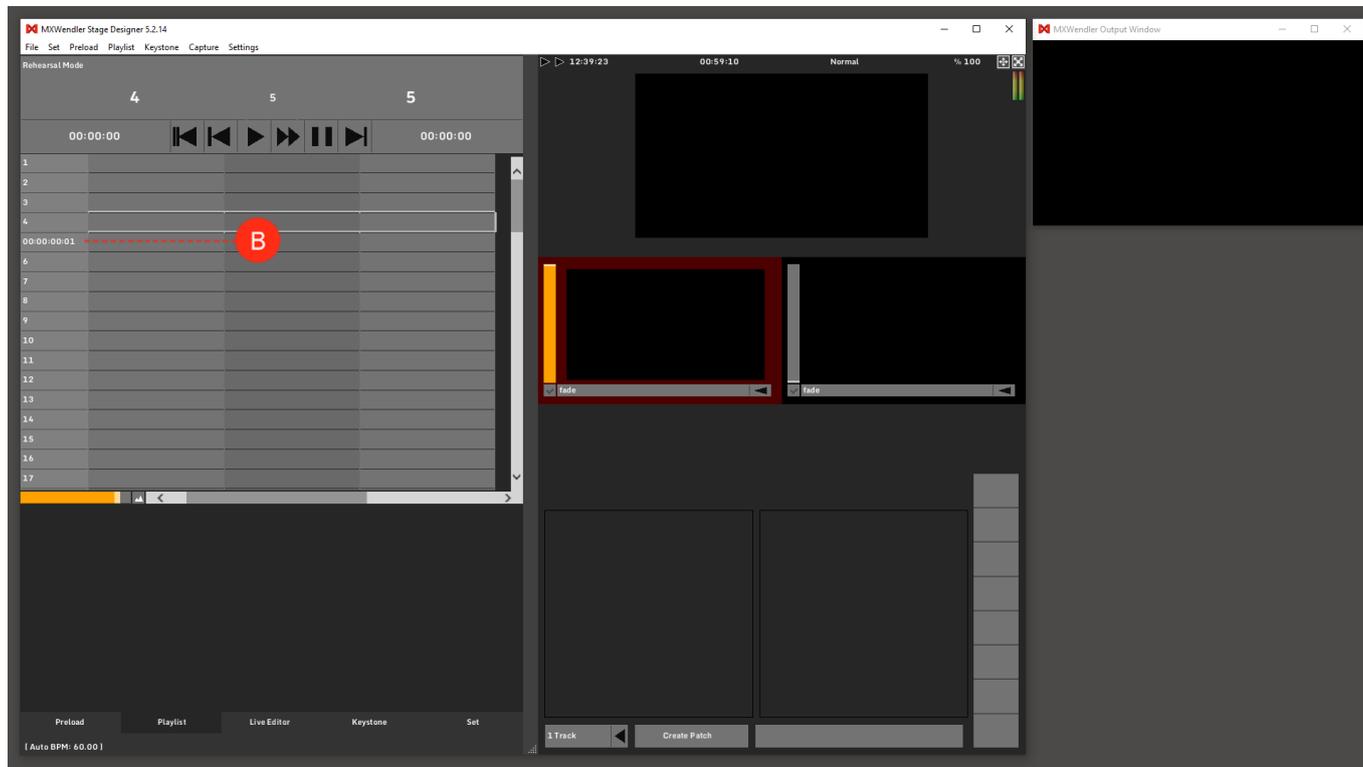
## Using Timecode

MXWendler now receives MTC timecode. To use the timecode in the playlist, you must enter the timecodes in the playlist.

1. Open the Playlist Tab.
2. Double-click on the left-most column, the 'Comment Column'.
3. Enter a timecode such as 00:00:00:01 (hh:mm:ss:frame). **(B)**

The playlist now responds to MTC. Follow these rules when using MTC:

- You do not have to enter MTC in each playlist row
- You can freely mix timecodes, meaning that earlier times can appear later in the playlist



# Tutorial Playlists with Supertitles

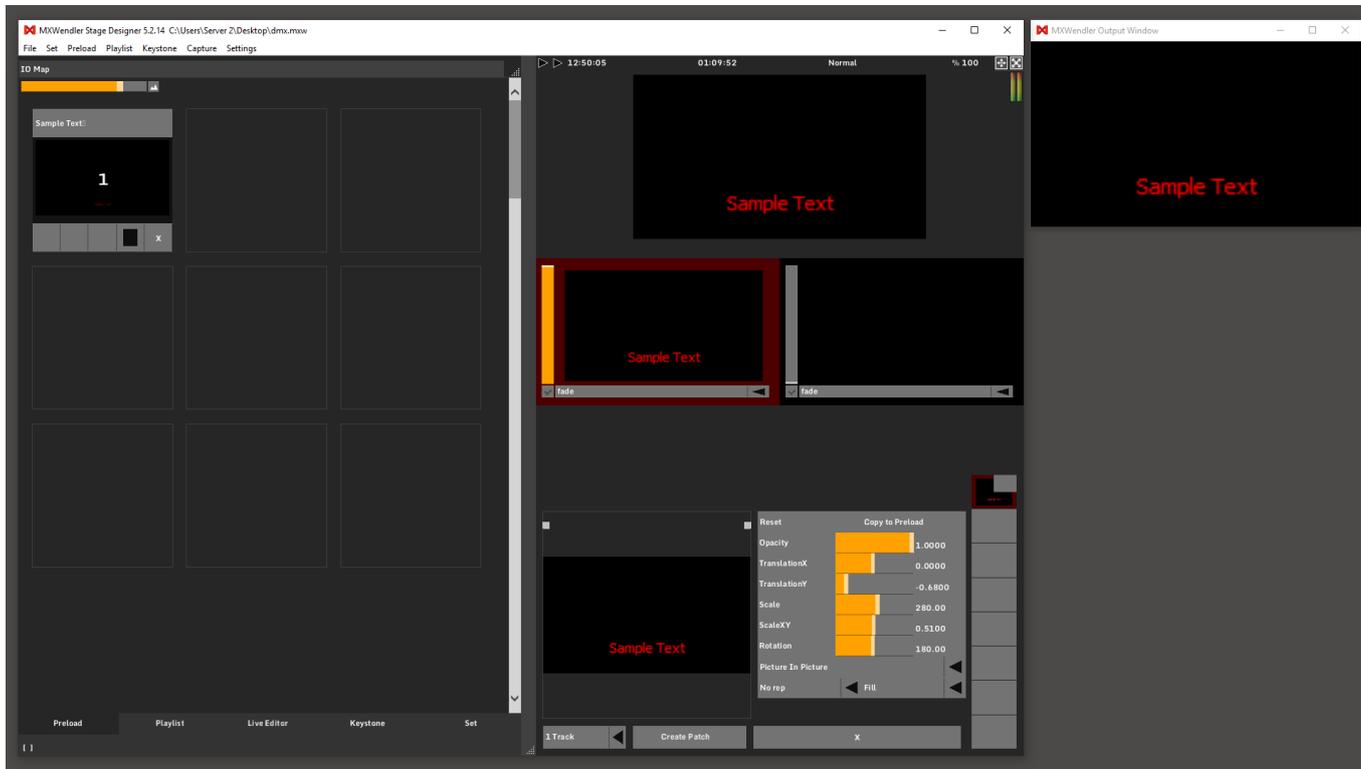
This tutorial applies to all different OS and MXWendler versions. Please note that the screenshots are made with Version 5 User Interface. Version 6 users please consider the differences in Version 6 Playlist.

In this tutorial, a composition with supertitles is created. Supertitles are an important feature for theatres and operas, e.g. to display text translations to the audience. Another appliance is to display song lyrics, for example, a chorus.

## Supertitle Specifics

Literally, thousands of supertitles can apply to a single playlist, making it inefficient to store each playlist-controlled Supertitle in its own preload location. For efficiency, MXWendler creates one internal preload for all the playlist supertitles in one individual show. As a technological consequence, supertitles have some characteristics:

- The size, font and colour of such supertitles can only be set once in the media settings.
- Playlist-triggered supertitles have no own effects and translations as e.g. scaling, rotation.
- Preload-triggered supertitles can have their own effects and translations.



1. Open 'Supertitle Text' in the Media Settings. **(A)**

**Menu: Settings → Media → Supertitles Text**

2. Choose 'Font', 'Font Size', 'Text Color' and 'Text Background Color'. **(B)**

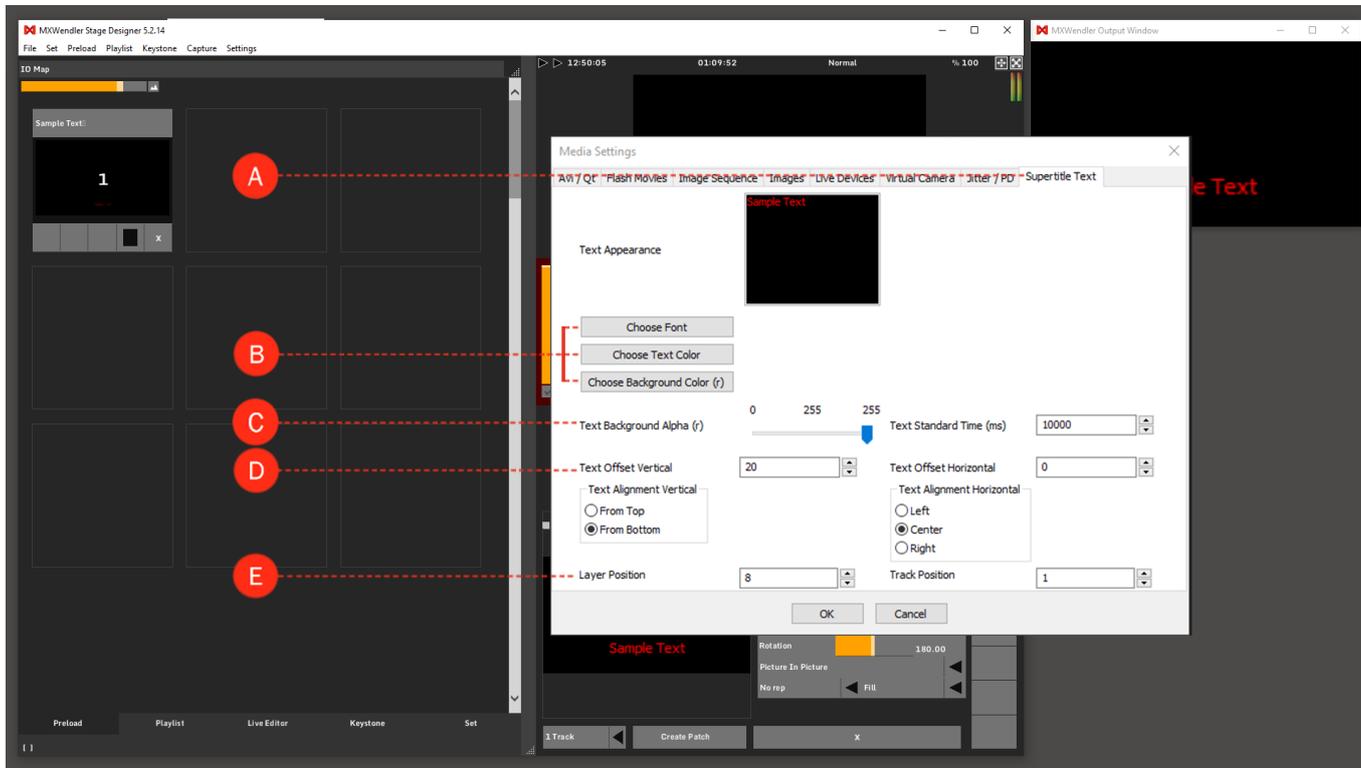
Changing the background colour requires an application restart.

3. Adjust the 'Text Background Transparency' (Alpha). (0 = completely transparent). **(C)**

4. Define the 'Text Alignment' (from top, from bottom, left, center, right). **(D)**

5. Define the 'Layer Position' and 'Track Position'. Usually, the text is located on the top layer (layer 8). **(E)**

To apply the settings, restart the Playlist.

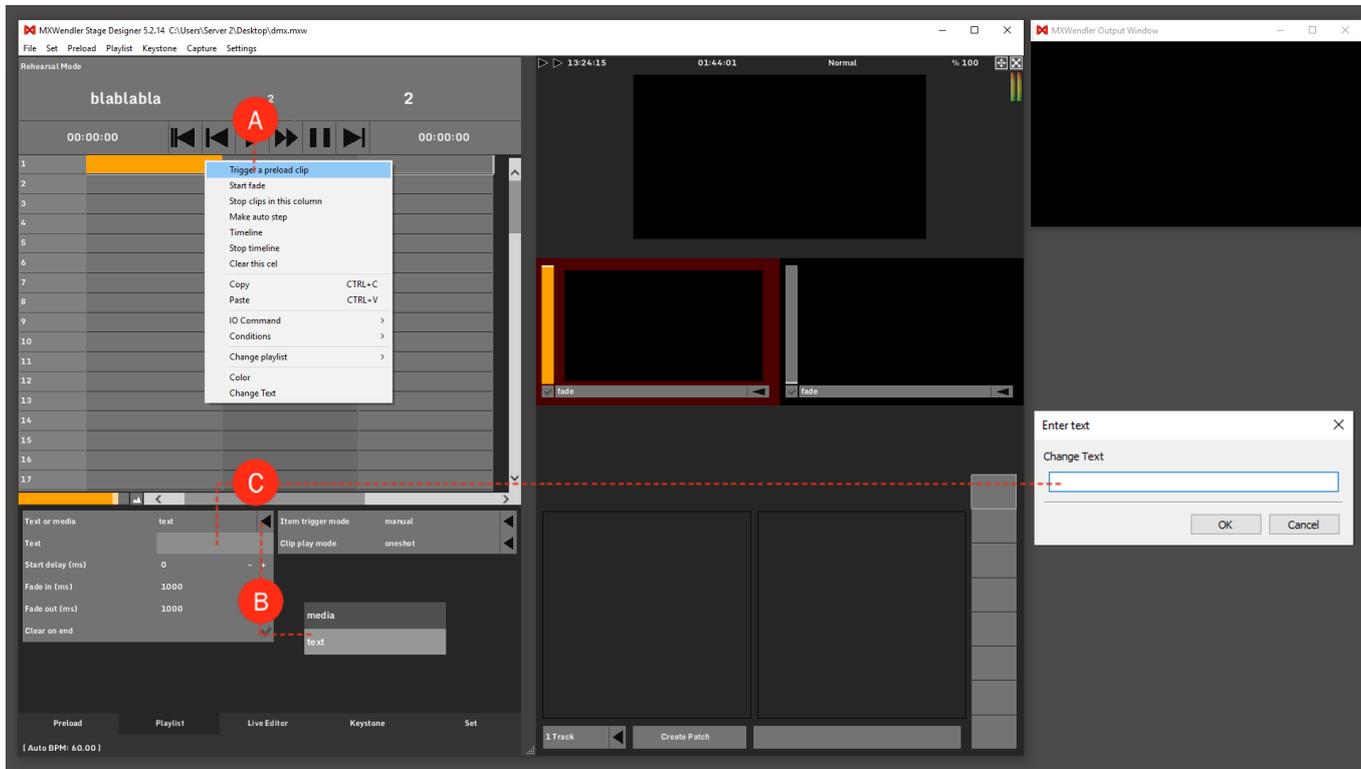


## Manually Creating Supertitles in the Playlist

Simply select a playlist item, insert a preload element and choose 'text':

1. Right-click on a Playlist Cell and select 'Trigger a Preload Clip'. **(A)**
2. Select cell.
3. In the cell properties Text or Media, select 'Text'. **(B)**
4. Double-click the text preview box below type choice and enter a text. **(C)**

The text will be displayed as a Supertitle in the chosen playlist cue.



## Creating Supertitles Using a Wizard

In cases that you might have hundreds of text lines, it is sometimes easier to create a text file first and then insert it into the playlist using a wizard. The text file is simple to create, but it should follow specific rules.

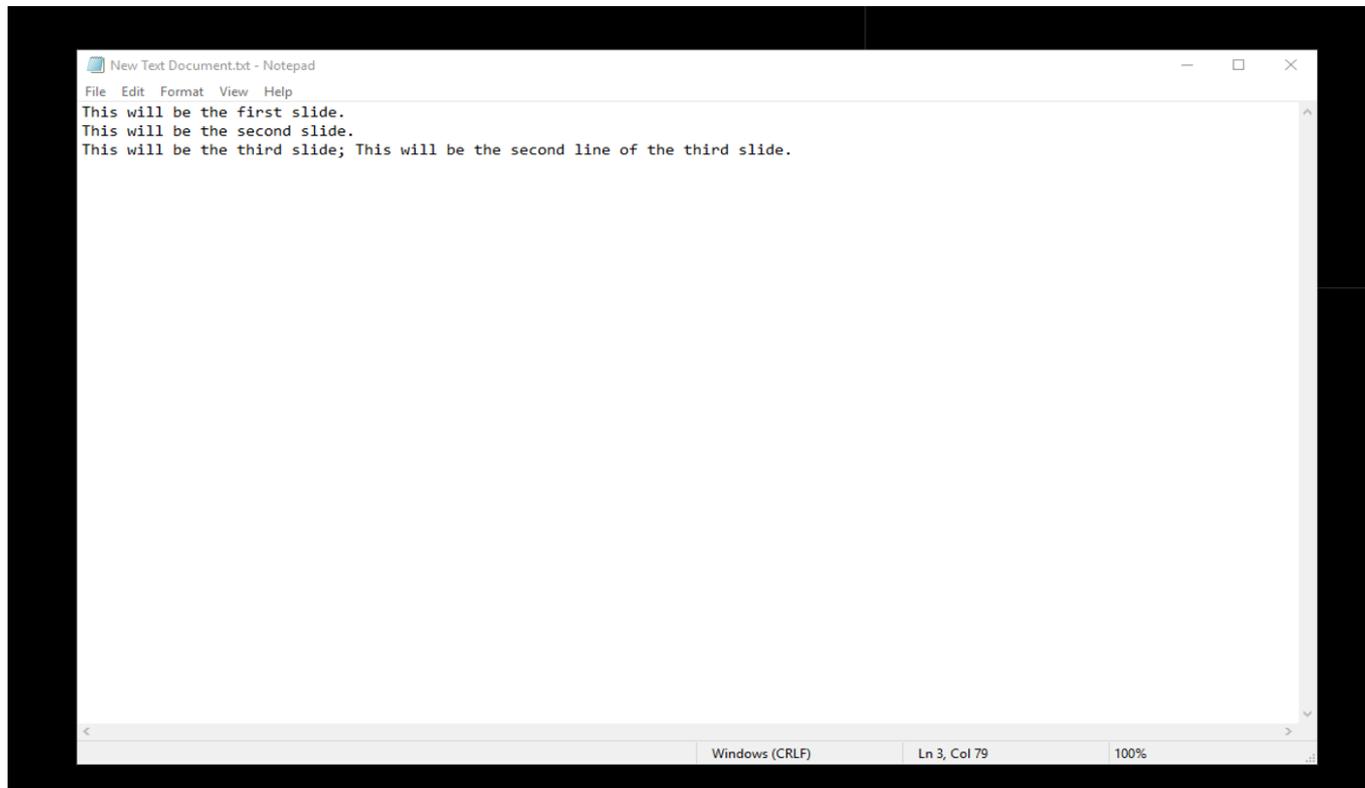
- Each line in the text file will create one text slide.
- If the text file line contains a semicolon, it will insert a new line in the text slide.

Example text file:

*This will be the first slide.*

*This will be the second slide.*

*This will be the third slide; This will be the second line of the third slide.*



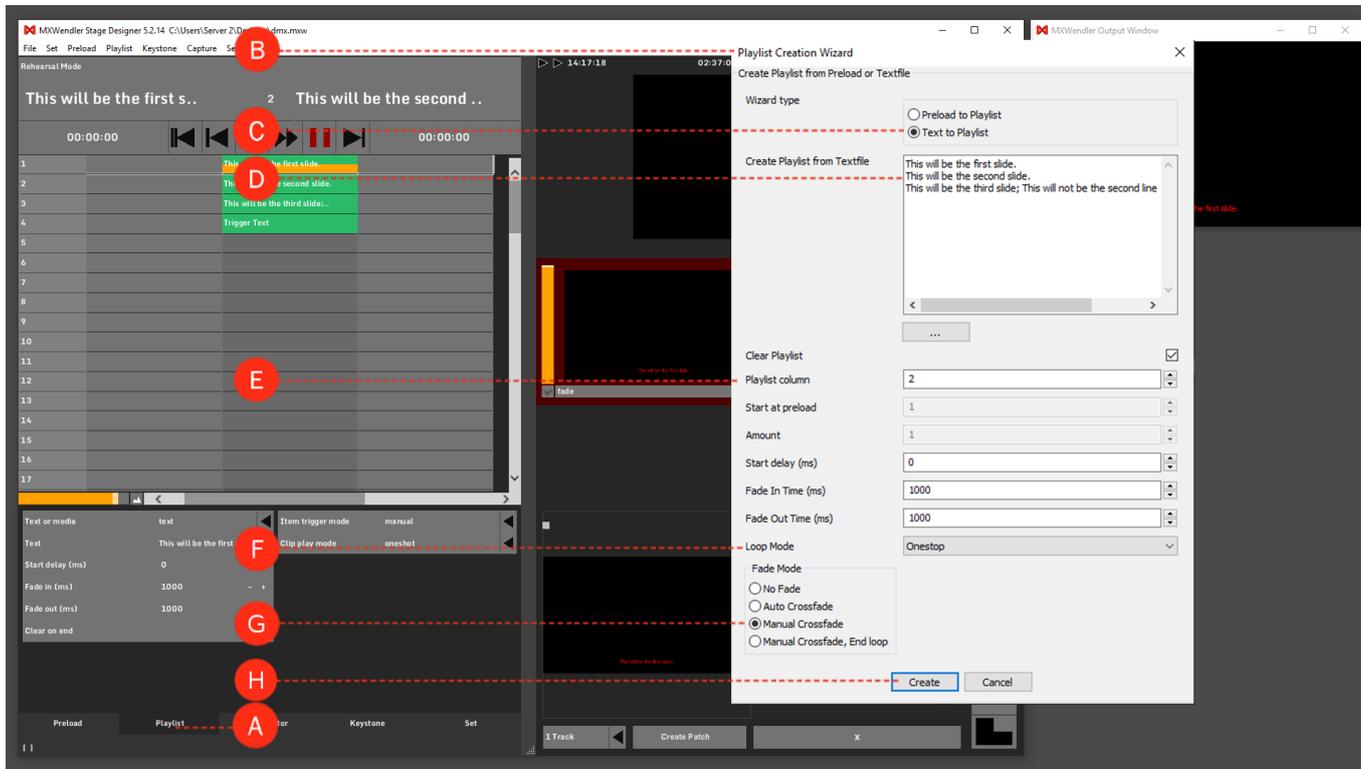
Once you have created such a text file, you can import it using the Playlist Wizard.

1. Switch to the Playlist Tab. **(A)**
2. Open the 'Playlist Wizard'. **(B)**

**Menu: Playlist → Playlist Wizard**

3. Set the Wizard Type to 'Text to Playlist'. **(C)**
4. Copy the created text file into the text area or type it in manually. Every line will be on one slide. Use Semicolon ';' for multiline-slides. **(D)**
5. Define the 'Playlist Column' in which the text should appear. **(E)**
6. Set the Loop Mode to 'Oneshot'. **(F)**
7. Set the Fade Mode to 'Manual Crossfade'. **(G)**
8. Click on 'Create' to apply the settings. **(H)**

The Slides are now in the Playlist and can be played back with ► Play.



# Tutorial Playlists with Subtitles

This tutorial applies to all different OS and MXWendler versions 6 and above.

There are multiple ways in MXWendler to insert text (subtitles) into your video composition:

- Richtext and Text in Preload;
- Using the Playlist Wizard;
- Trigger Subtitle function in Playlist functions.

In this tutorial, we will create subtitles in a playlist using the Trigger Subtitle function.

1. Go to Playlist, right-click on an empty cell, and choose Trigger Subtitle. **(A)**
2. Enter your text with the desired format and click Ok. The possible formatting options are: **(B)**

Italic: use two apostrophes ' for *italic*. (e.g. sample "text")

Bold: use three apostrophes ''' for **bold**. (e.g. sample "text''')

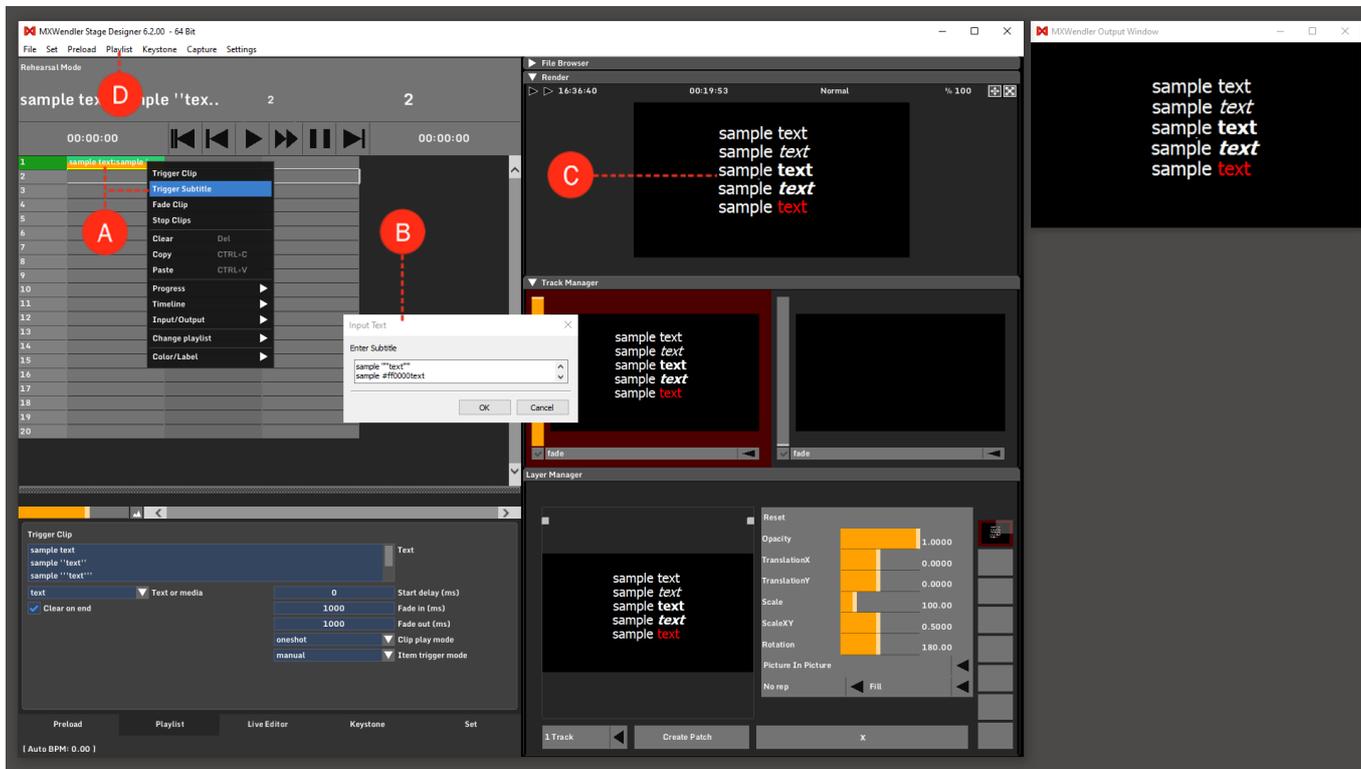
Bold & Italic: use five apostrophes ''''' for ***bold & italic***. (e.g sample '''''text''''')

Colors: use html color codes before any word to **color** it. (e.g. sample #FF0000text)

Lines: use semicolon ; or press Enter to go to the next line.

3. Play the cue with the Subtitle inside to send the subtitle for playback. **(C)**

*Tip: you can export the subtitle as a .csv file, open it in a simple text editor, work on it further, and import it again in your playlist. You can do this in Playlist Menu, through Export/Import Subtitle to/from .csv. **(D)***



# Subtitle Settings

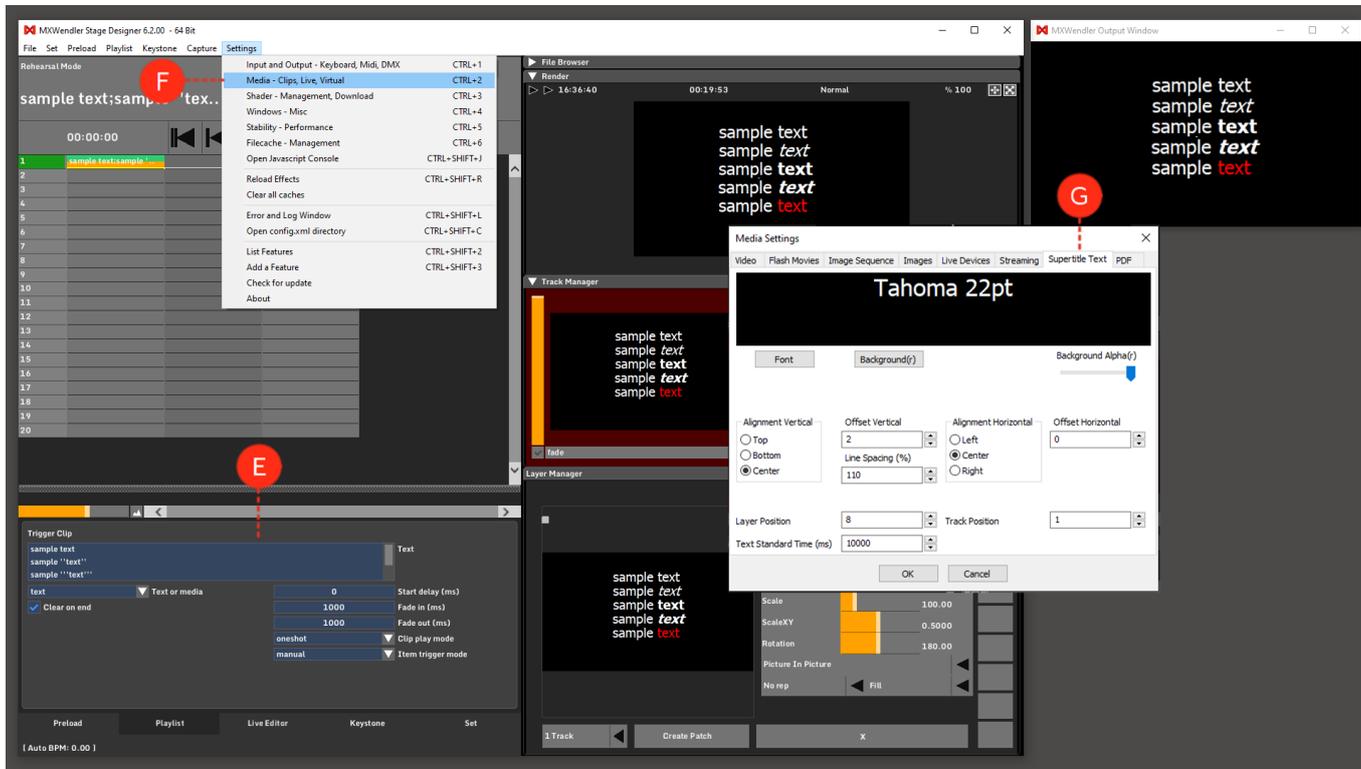
By clicking on the subtitle cell you can edit its settings. Just like a normal Trigger cell, you have the options to change the Fade in and out times, Play Mode and .... **(E)**

You can change the general settings of texts in MXWendler, including the Subtitles in Supertitle Settings:

## **Settings → Media - Clips, Live, Virtual → Supertitle Text (F)**

The settings are: **(G)**

- Font: to change the font, type, size, color, ... of the texts.
- Background: to change the color of the background of the texts. This setting needs a software restart.
- Background Alpha: to change the opacity of the text background. This setting needs a software restart.
- Vertical and Horizontal Alignment: different alignment options.
- Vertical & Horizontal Offset: the offset position of the text vertically and horizontally.
- Line Spacing: the vertical space between each line.
- Layer & Track Position: when hit play, which Track and Layer will the text be sent to.
- Text Standard Time: the default playback duration of the subtitle.



# Tutorial Playlists with IO - Commands

This tutorial applies to all different OS and MXWendler versions. Please note that the screenshots are made with Version 5 User Interface. Version 6 users please consider the differences in Version 6 Playlist.

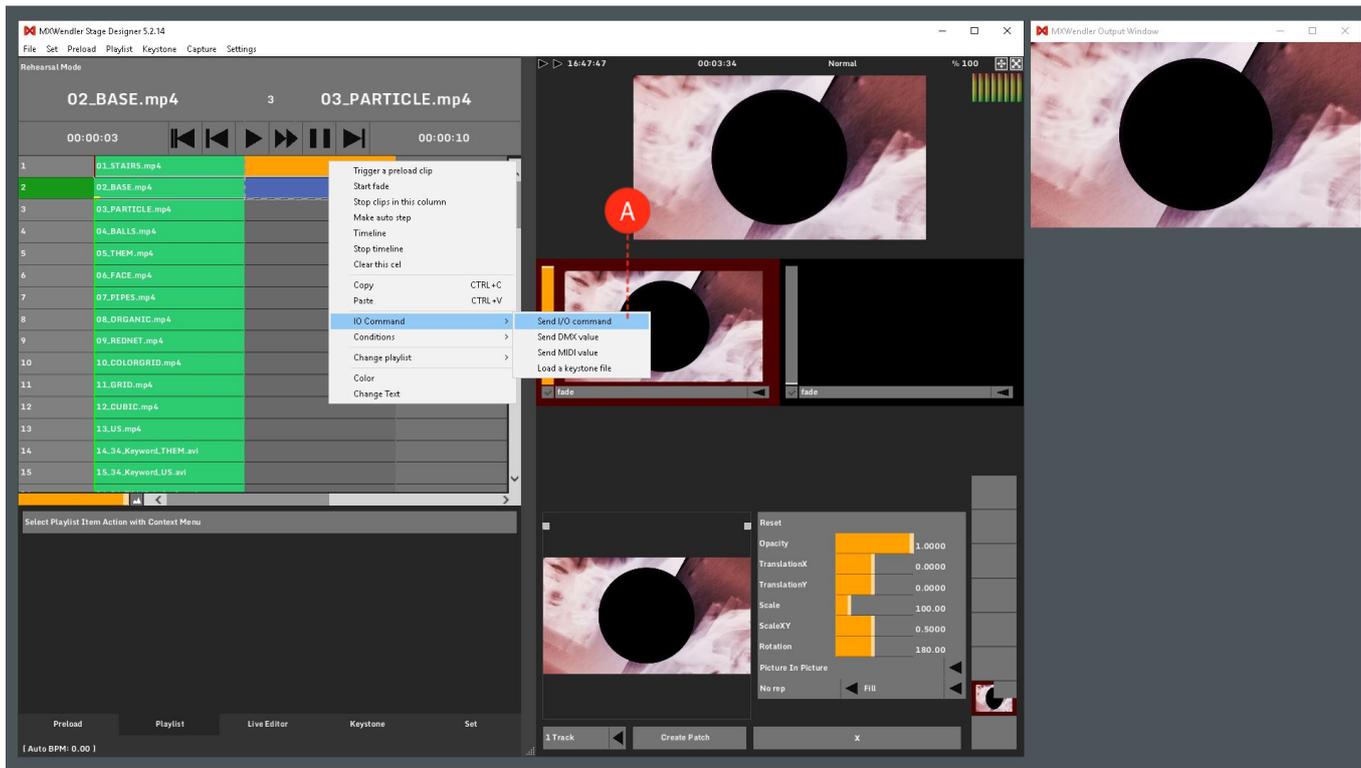
In this tutorial, a playlist will be controlled through the keyboard using the IO-Commands.

1. First, create a playlist with multiple media files. (See Tutorial Creating playlists)
2. On the second column, create a couple of IO-Commands:

Right-click into an empty cell, select Input/Output and then I/O Command. **(A)**

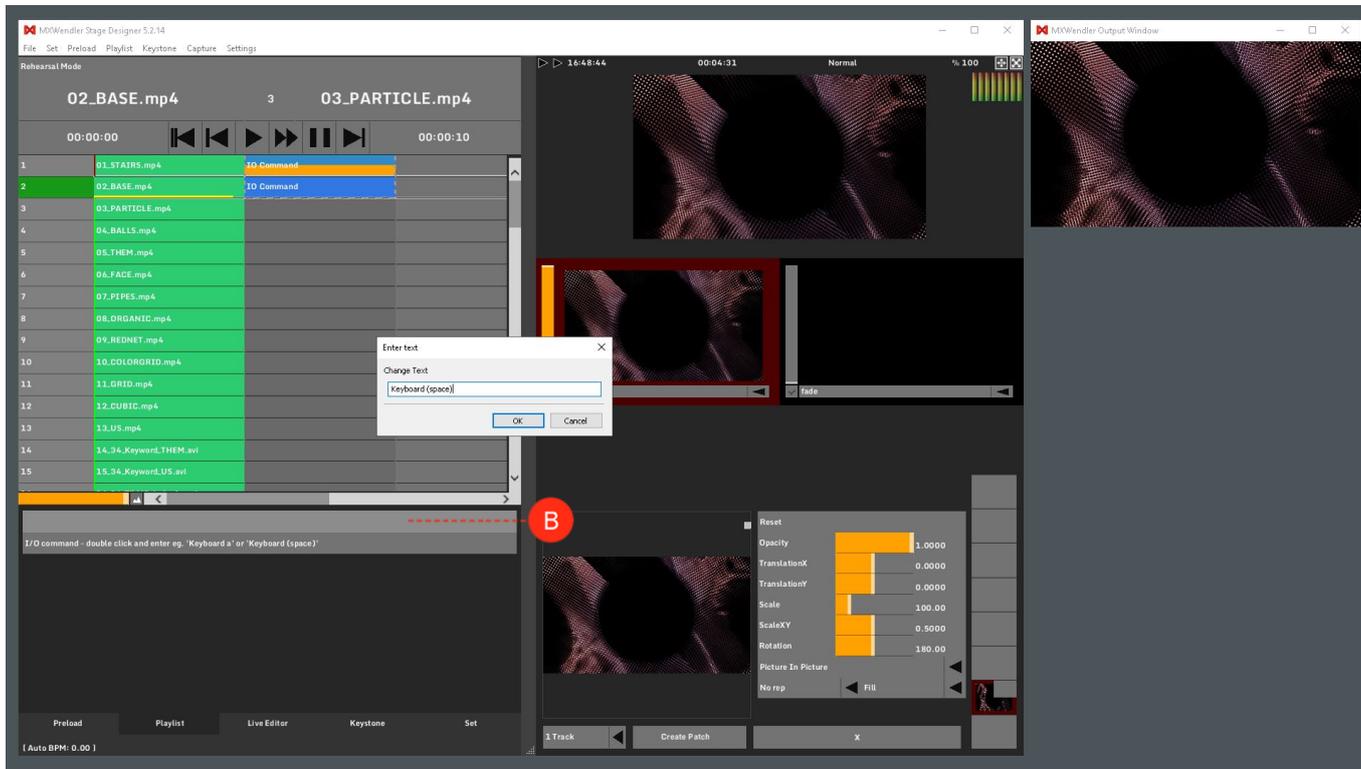
3. To be able to define the IO Commands later, create now two Keyboard Events.

For instance: mxw/playlist/play and mxw/playlist/gotostart  
(See the About Events section of this wiki)



4. Once the two Keyboard Events are created, go back to the playlist and select one of the IO-commands.

Once the command is selected, it can be configured through the line that appears just under the playlist: double click over the description and type the name of the desired key, for example, *Keyboard (space)* or *Keyboard A. (B)*

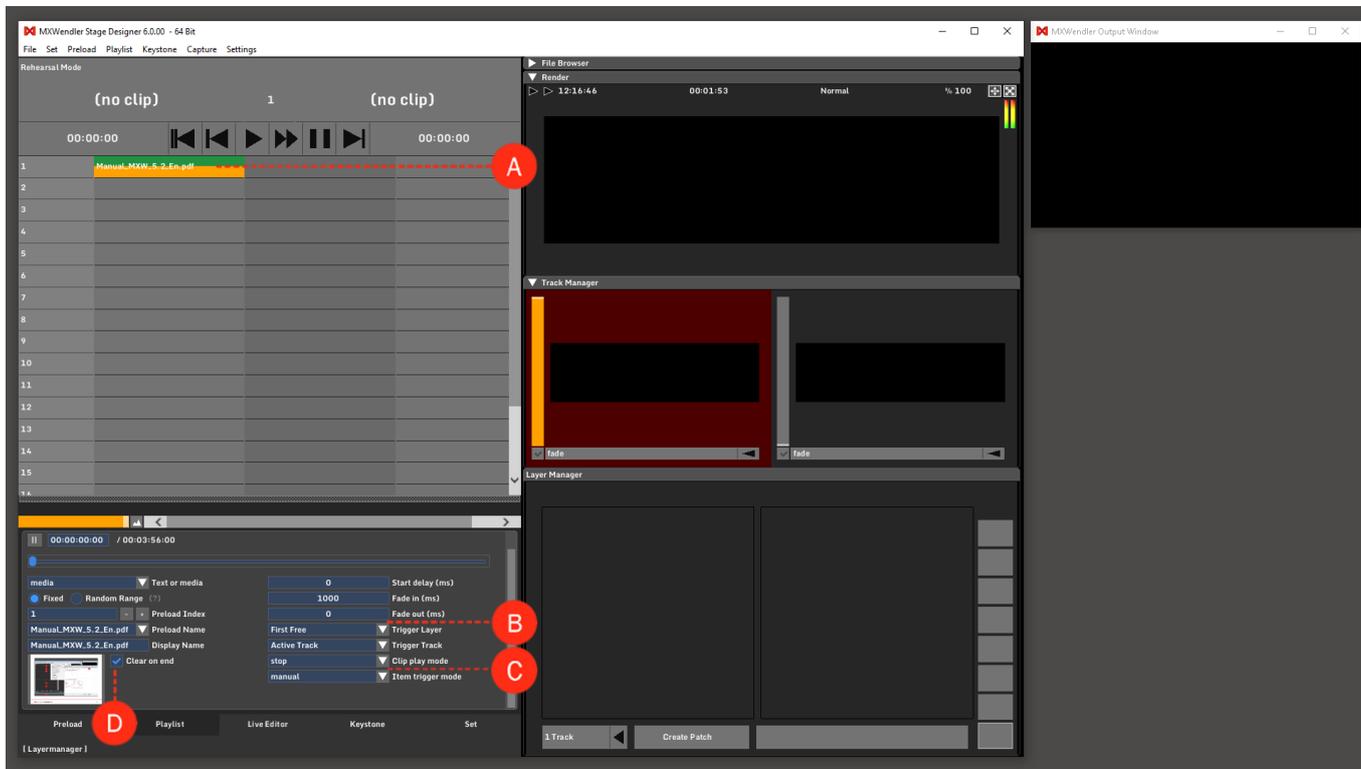


# Tutorial Playlists with PDF and Frame Step

This tutorial applies to all different OS and MXWendler versions 6.0 and above.

In this tutorial, a PDF file will be played page after page through the MXWendler Playlist.

1. Load a PDF (of at least 10 pages) into a preload place and insert it in the first cell of the Playlist.
2. Select the cell to view the settings. **(A)**
3. Set the Fade out to 0(ms). **(B)**
4. Set the Clip Play Mode to: stop and deselect the option to Clear on End. **(C)**
5. Deselect the option Clear on End. **(D)**

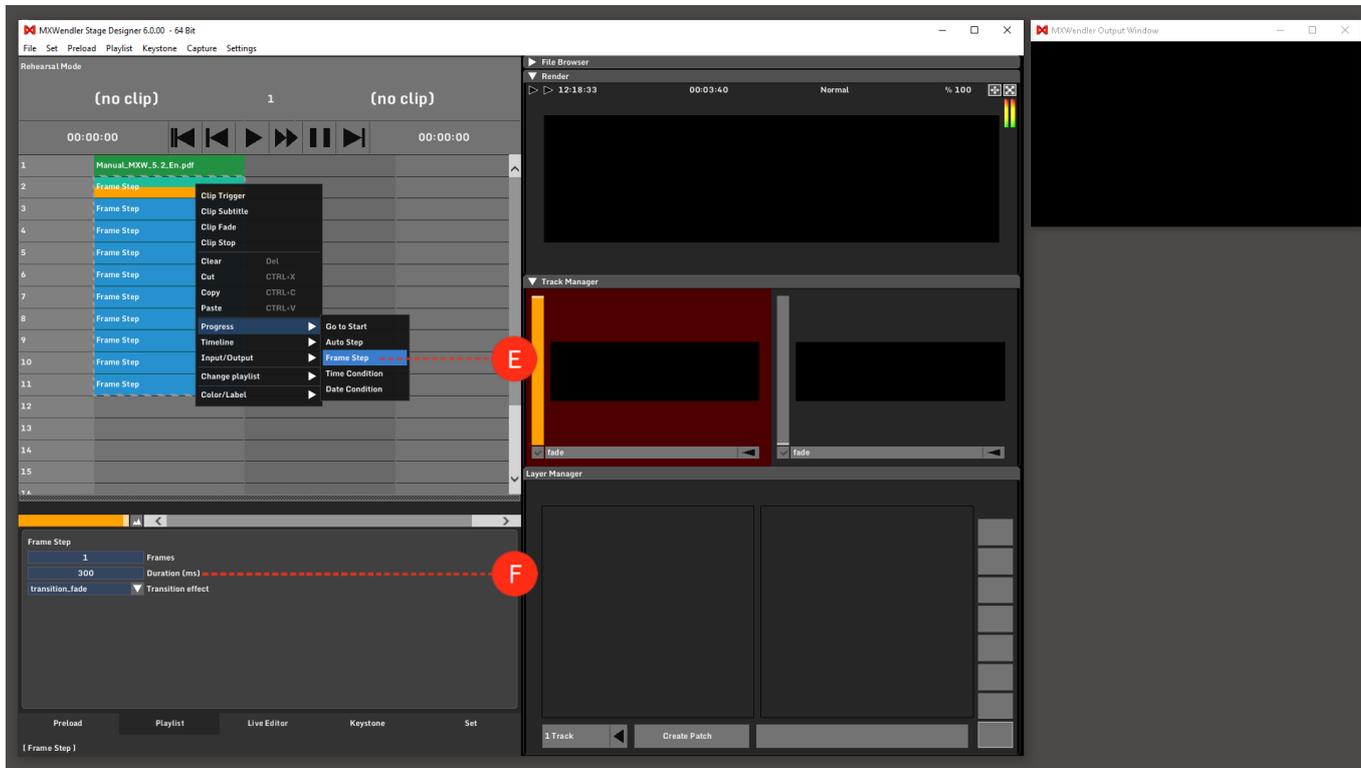


6. Select (Shift+Click) 10 cells under the first trigger, right-click and chose **Progress - Frame Step. (E)**
7. Select all the created frame steps and chose the desired transition and its duration. **(F)**
8. Play trough the playlist to switch pages.

*Tips: select the pdf and the frame steps and move them to the second column (right), then place auto steps for the length of the desired playlist to automate the progress.*

*Playlist Play and Pause buttons can be remotely controlled with several protocols, trough a simple TouchOSC interface a smartphone could become the perfect remote control for a presentation.*

*Frame Steps work with other intra-frame media like image sequences, HAP and h264 (with GOP set to 1) as well.*



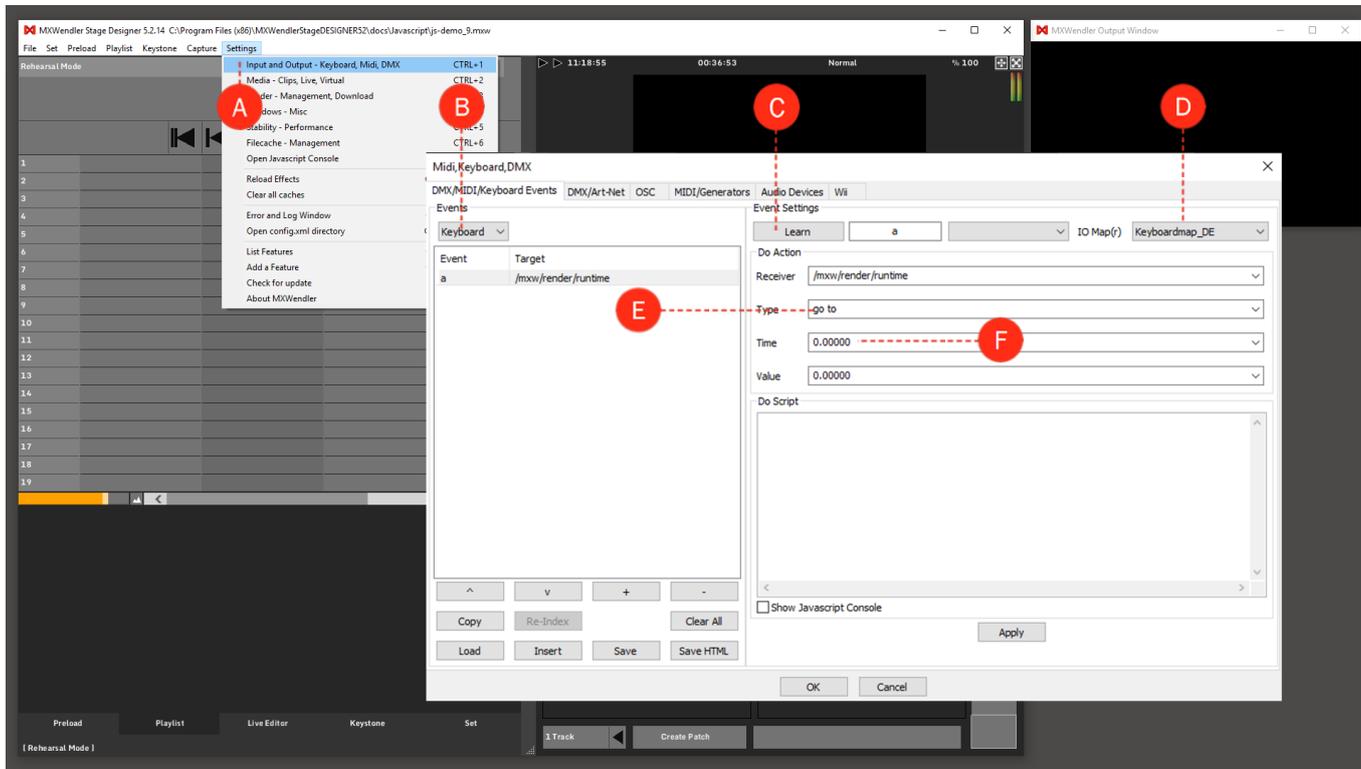
# Tutorial Resetting Runtime Counter with IO Commands in Playlist

This tutorial applies to all different OS and MXWendler versions. Please note that the screenshots are made with Version 5 User Interface. Version 6 users please consider the differences in Version 6 Playlist.

In this tutorial, we'll reset the Runtime Counter at the end of a playlist using IO Commands.

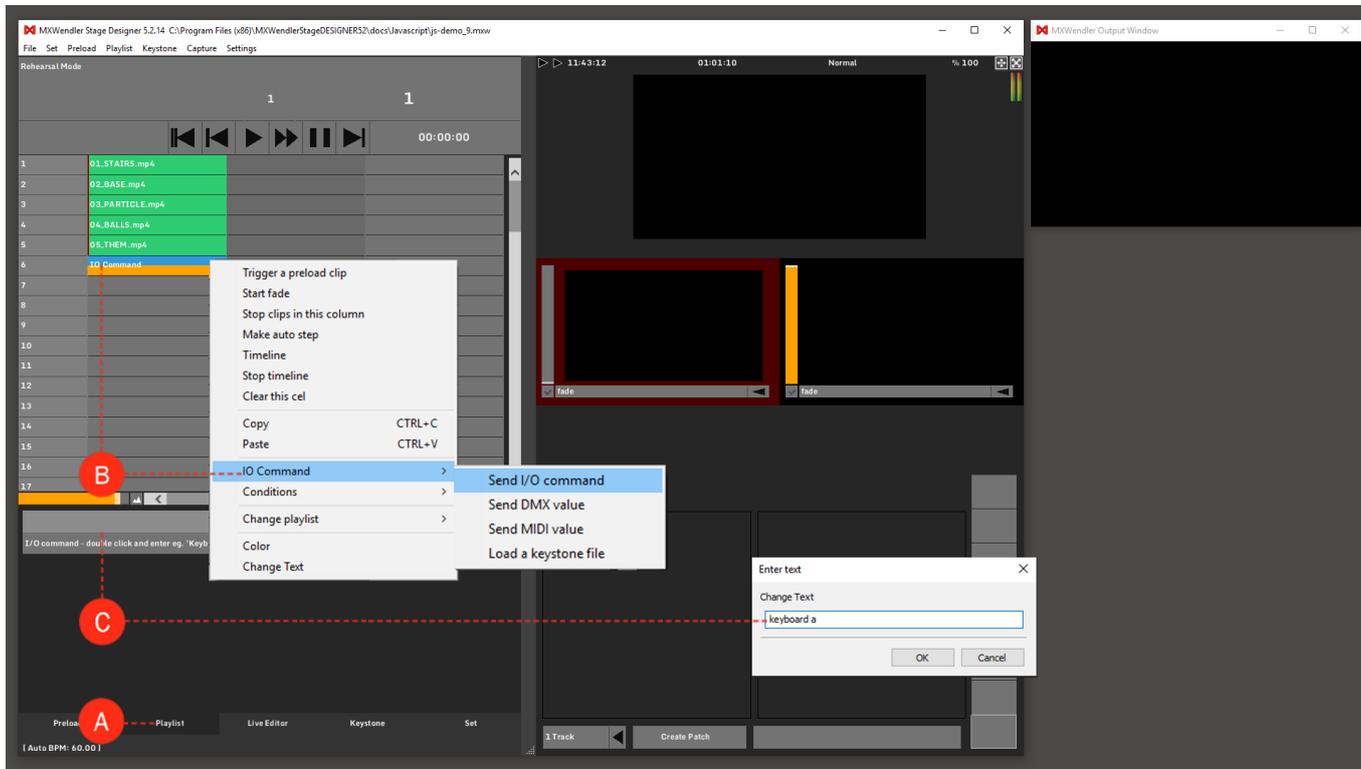
## IO Mapping

1. Go to **Settings** → **Input and Output - Keyboard,MIDI,DMX** → **DMX/MIDI/Keyboard Events (A)**
2. From the drop-down menu of Events select Keyboard. **(B)**
3. Click 'Add(+)' and then click 'Learn' and press a key on the keyboard (e.g. 'A'). **(C)**
4. From the drop-down menu of Receiver select '/mxw/render/runtime'. **(D)**
5. From the drop-down menu of Type select 'Go To'. **(E)**
6. Set the time to 0 and the Value to 0. **(F)**
7. Click Apply and Ok.



## Triggering in Playlist

1. Go to Preload Tab and load a number of videos to Preload.
2. Go to Playlist Tab and create a playlist from the videos in Preload. **(A)**
3. Right-click on the cell after the last video in your playlist and select 'IO Command' and 'Send IO Command'.  
**(B)**
4. Click on the cell where the IO Command is and in the edit box down, double-click on the empty box and write down 'Keyboard a'. **(C)**
5. Play through the Playlist. When you play the IO Command, the keyboard 'a' would be triggered causing the Runtime Counter to restart.

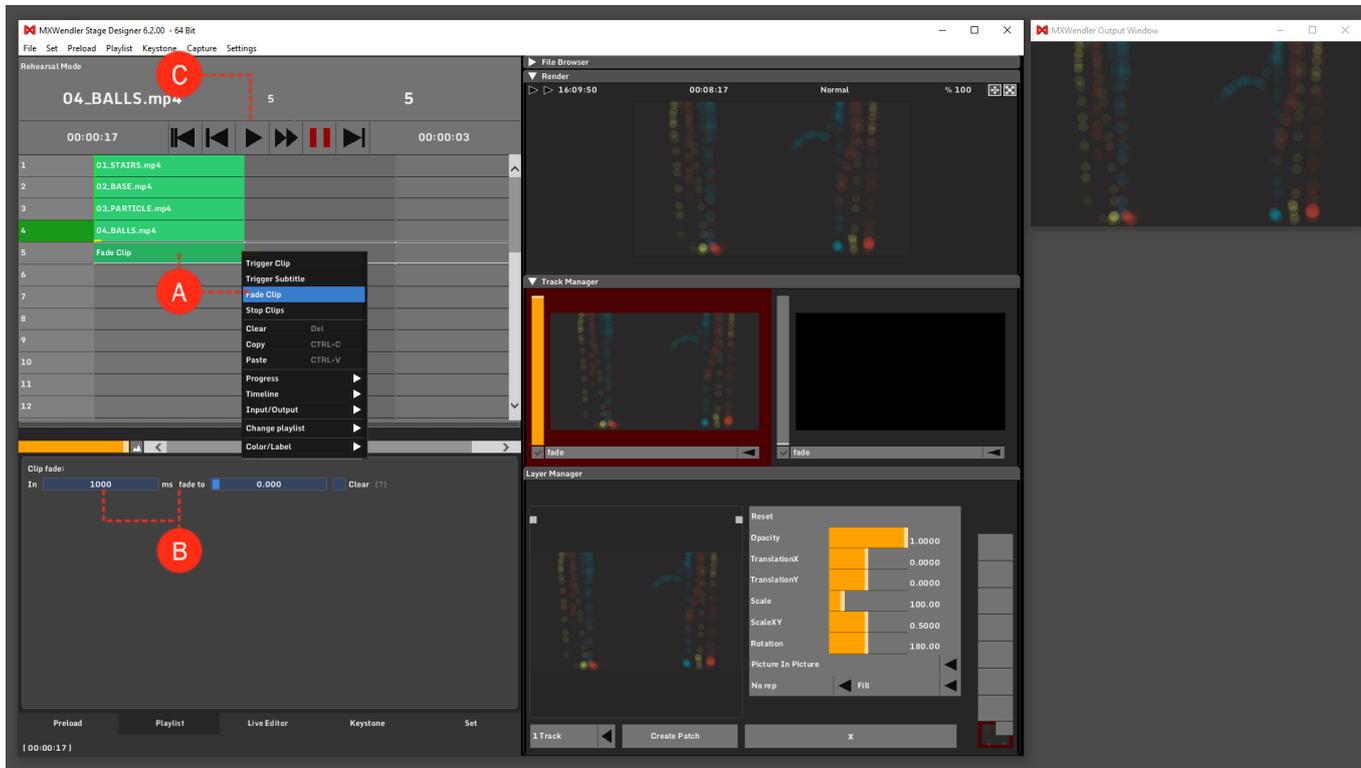


# Tutorial Playlists with Fade Clip

This tutorial applies to all different OS and MXWendler versions.

In this tutorial, a playlist is created in which the clip can be faded through the Fade Clip element. The Fade Clip function in MXWendler version below 6 is called Start Fade, but it has the same functionality.

1. Load the desired media files into the Preload and create a Playlist.
1. Insert a Fade Clip into an empty cell under the desired clip.  
right-click and select Fade Clip. **(A)**
2. Select the Fade Clip and set the duration and quantity of fade in the options tab under the playlist. **(B)**
3. Play through the Playlist until the Fade Clip cell is activated and the clip from the previous Cue starts fading. **(C)**



# Tutorial Playlists with Auto Step

This tutorial applies to all different OS and MXWendler versions.

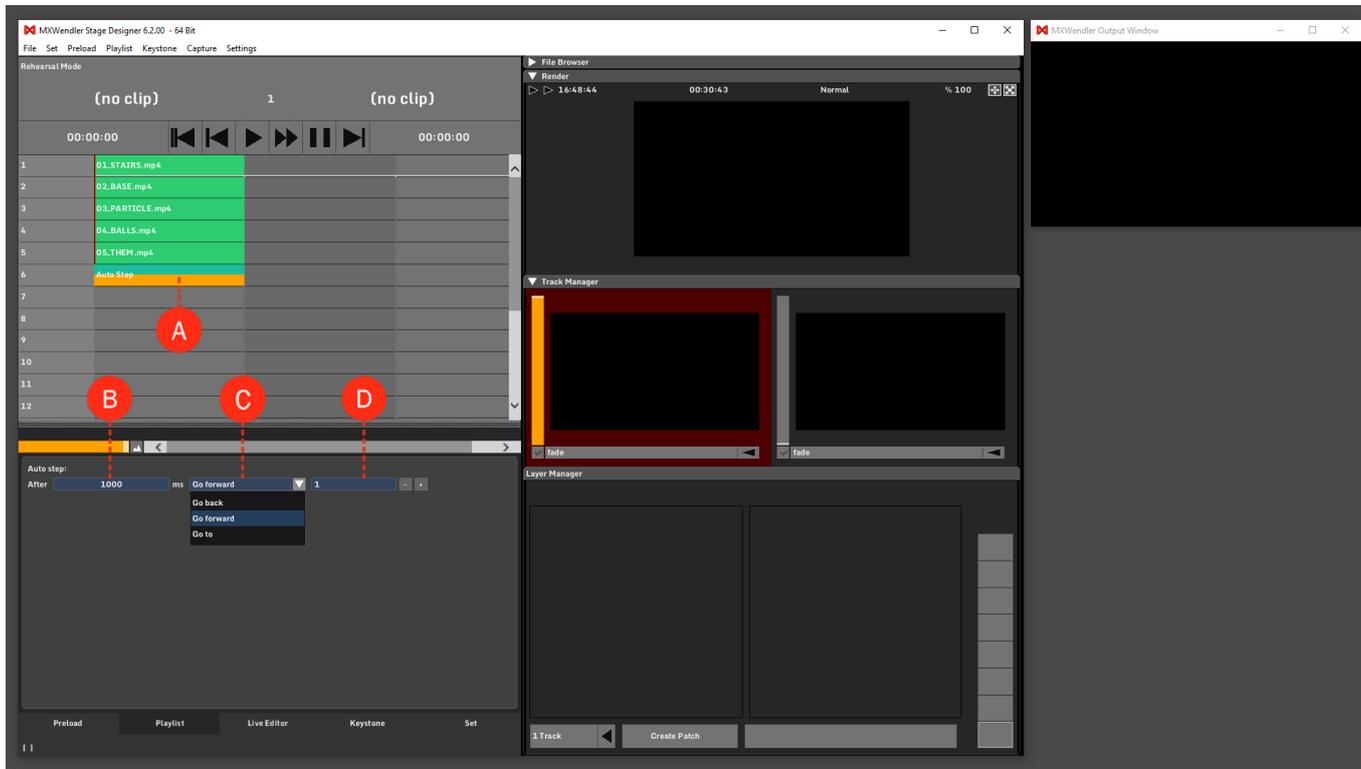
In this tutorial, a playlist with Auto Steps is created. The Auto Step is an automation that defines a specific Cue of the Playlist and plays it after a specific amount of time.

1. First, create a playlist with multiple media files.
2. Create an Auto Step: right-click on an empty cell and from the Progress sub-menu, select Auto Step. **(A)**

Select the Auto Step cell and edit the options according to your wish:

- After: time the auto step needs to be activated, **(B)**
- Go forward / Go back / Go to: the direction, **(C)**
- Numeric field: insert the number of cues to skip forward or back to, or the title of the cue you wish to go to. **(D)**

*Tip: You can use Auto Steps to create looping playlists and for jumping to defined Cues in large Playlists.*



# Tutorial Playlists with Reset Counter

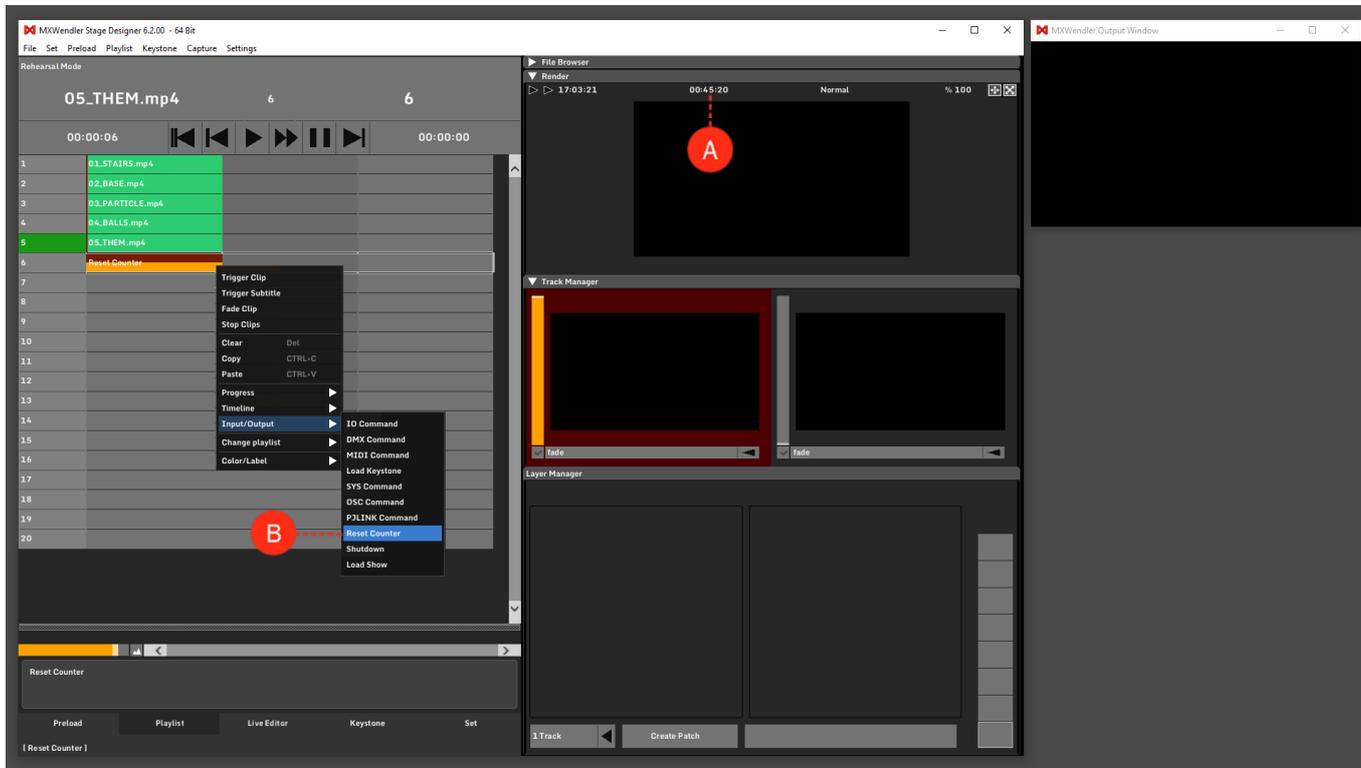
This tutorial applies to all different OS and MXWendler versions 6.0 and above.

The Runtime Counter helps to keep track of the length of a show or of a part of it. **(A)**

It is possible to reset the counter automatically from the playlist, using the Reset Counter function.

1. Go to Playlist and right-click on an empty cell to open the context menu.
2. Select Reset Counter from the Input/Output sub-menu. **(B)**
3. Play through the playlist until the Reset Counter is activated.

Check the Runtime Counter on top of the Render window, it should be set to 0 when the cue is activated.



# Tutorial Playlists with Shutdown

This tutorial applies to all different OS and MXWendler versions 6.0 and above.

Through the Shutdown function, MXWendler and the computer can be set to Shutdown at a certain point of a Playlist e.g. the end of a daily show.

1. Go to Playlist.
2. Right-click on an empty cell to open the Context Menu and select Shutdown from the sub-menu of Input/Output. **(A)**
3. Select the created Shutdown cell to access the options under the playlist.

Set up the desired time (in milliseconds) after which the software should shut down. **(B)**

Checking the second box will shut down the computer as well. **(C)**

4. Play through the playlist until the Shutdown cell is activated to turn off the software or both the software and the computer.

The screenshot displays the MWendler Stage Designer 6.2.00 interface in Rehearsal Mode. The main window shows a rehearsal timeline for a play titled "05\_THEM.mp4". The timeline is divided into 20 rows, with the first five rows containing video clips: 01\_STAIRS.mp4, 02\_BASE.mp4, 03\_PARTICLE.mp4, 04\_BALLS.mp4, and 05\_THEM.mp4. A "Shutdown" clip is highlighted in red at the end of the fifth row. A context menu is open over the "Shutdown" clip, listing various actions such as "Trigger Clip", "Fade Clip", "Copy", "Paste", "Progress", "Timeline", "Input/Output", "Change playlist", "Color/Label", "IO Command", "DMX Command", "MIDI Command", "Load Keystone", "SYS Command", "OSC Command", "PJLINK Command", "Reset Counter", "Shutdown", and "Load Show". A red circle labeled "A" points to the "Input/Output" option, and another red circle labeled "B" points to the "Shutdown" option. A third red circle labeled "C" points to the "Shutdown" checkbox in the "Shutdown:" panel at the bottom left, which is currently checked and set to 5000 ms. The "Shutdown:" panel also includes a "System Shutdown" checkbox. The interface includes a "File Browser" window on the right, a "Track Manager" window, and a "Layer Manager" window. The bottom status bar shows "Auto BPM: 0.00".

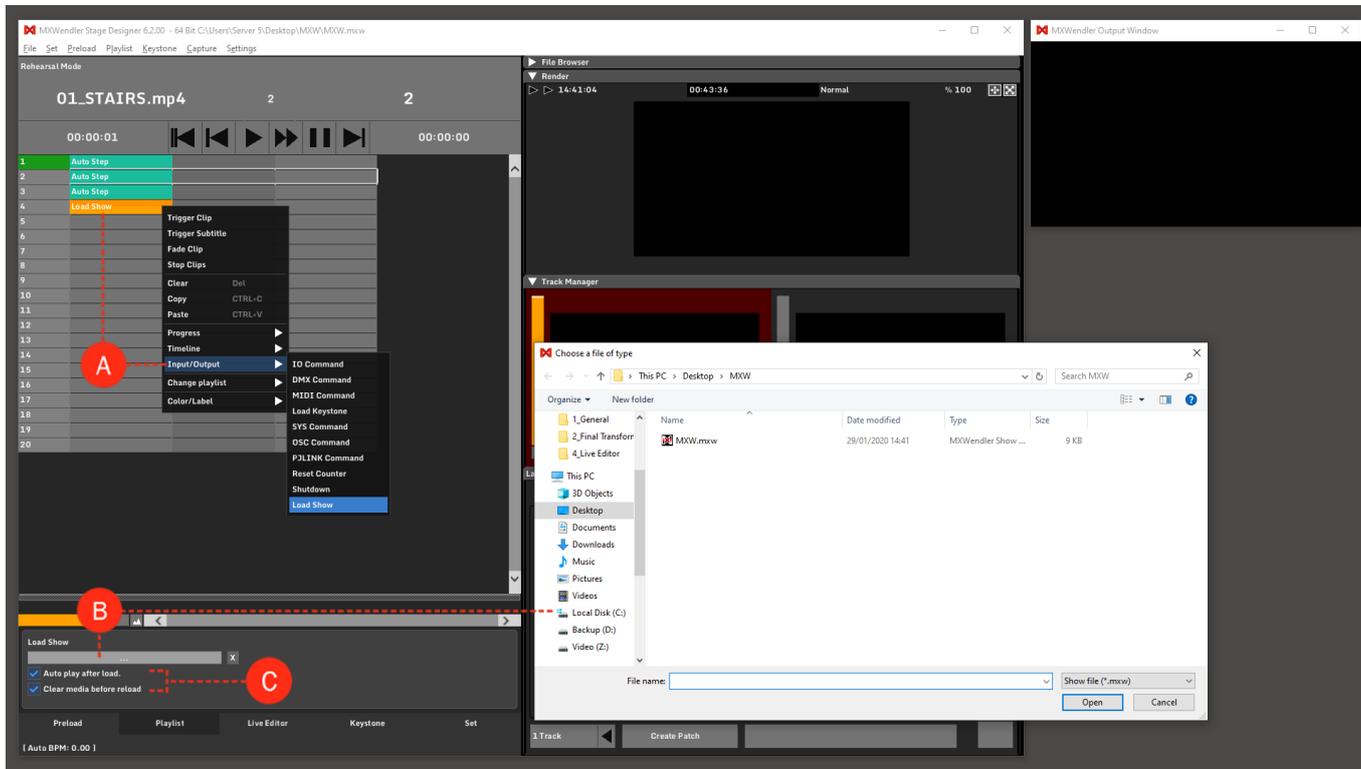
# Tutorial Playlists with Load Show

This tutorial applies to all different OS and MXWendler versions 6.0 and above.

In this tutorial, we are going to load an MXWendler show file automatically from the playlist.

1. Prepare a simple show with some clips in the playlist, set the Item Trigger Mode on Auto, save the show and then start again from a new, empty show.
2. Go to Playlist, load some Auto Steps in the first three cues then right-click on an empty cell in the forth cue to open the Context Menu and select Load Show from the Input/Output sub-menu. **(A)**
4. Click on the Load Show cell that you have just created to open the settings under the playlist.
5. Click on the three dots button to select the showfile you have created before. **(B)**
6. Leave the two boxes for Auto Play After Load and Clear Media Before Reload checked. **(C)**
7. Play your playlist once and the previously saved show will be automatically loaded.

*Tip: by working with Time and Date Conditions, the Load Show feature can allow the user to build complex weekly or even yearly plans for showrooms or museums. The exposition could change automatically every day of the week.*



# Tutorial Playlists with OSC Command

This tutorial applies to all different OS and MXWendler versions 6.0 and above.

In this tutorial we are going to send an OSC Command to another device through the playlist.

1. Enable the OSC send from the Settings:

**Settings → Input and Output → OSC (A)**

Check Send OSC. **(B)**.

Set the right IP adress and port of the receiving device and confirm by clicking OK. **(C)**

2. Go to Playlist.

3. Right-click on an empty cell and go to Input/Output, then select Send OSC **(D)**

4. The Send OSC settings are at the bottom of the Playlist, once the Send OSC cell is selected. **(E)**

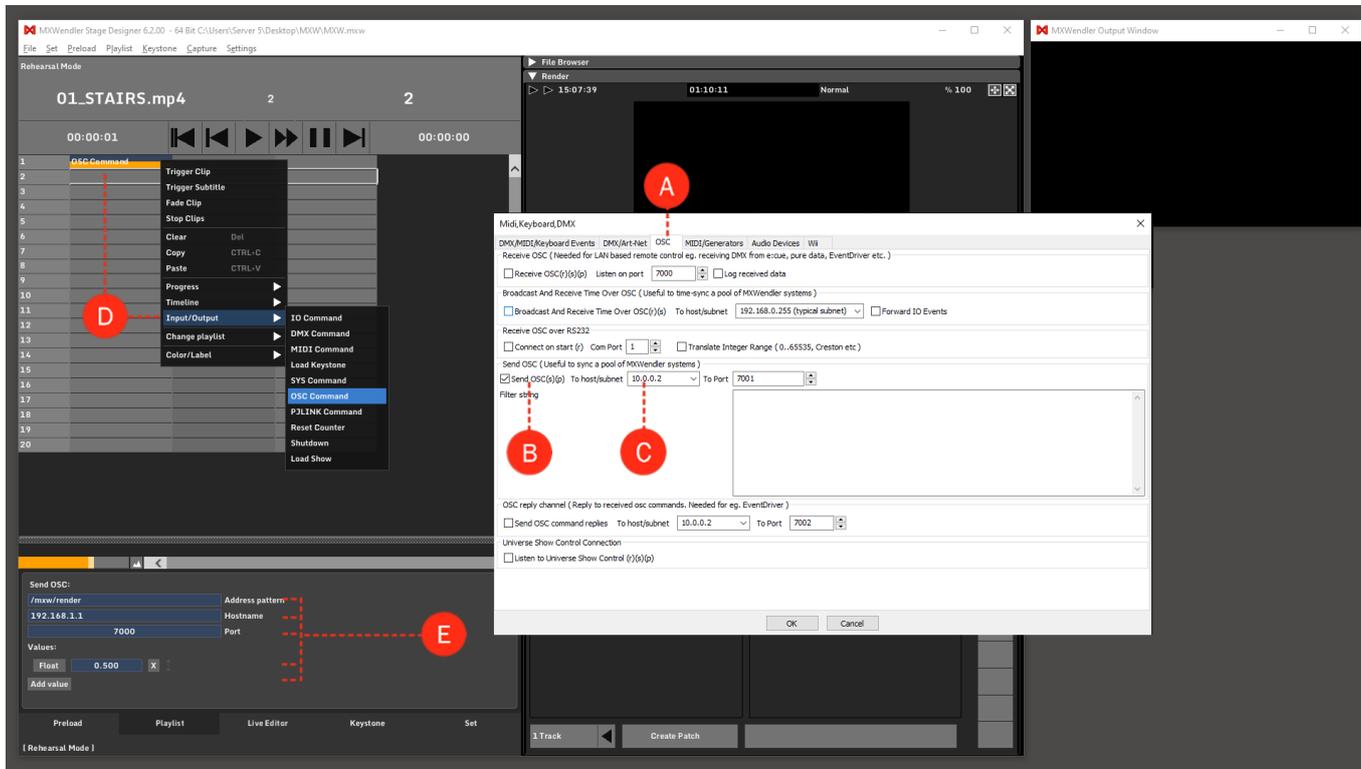
Set your command by assigning an Address pattern: (E.g. /mxw/render)

Set the IP address of the target device under Hostname.

Set the port you want to use to communicate with the target device under Port.

You can add multiple values to the message, Float, Int and String values can be sent.

5. The Send OSC IO Command can be activated by the playlist play as any other playlist item.



# Tutorial Playlists with Sys Command

This tutorial applies to all different OS and MXWendler versions 6.0 and above.

In this tutorial, we will start a Windows application using the playlist.

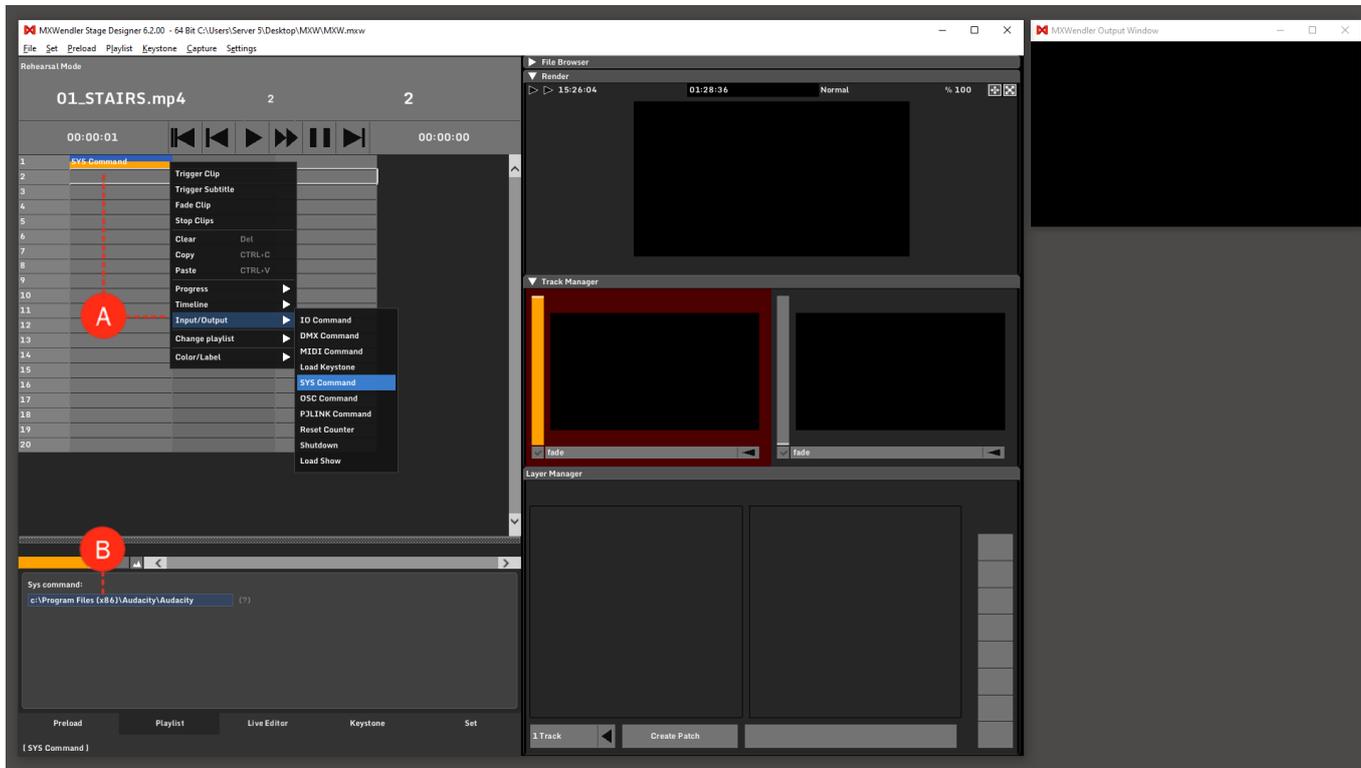
1. Go to Playlist.
2. Right-click on an empty cell and select SYS Command from Input/Output in the Context Menu.

## **Context Menu → Input/Output → SYS Command (A)**

3. Select the new SYS Command cell to access the options, write your command in the box under the playlist and press Enter to confirm. **(B)**

(The file path should be entered here, e.g.: C:\Program Files (x86)\Audacity\Audacity)

4. Play through the playlist until the SYS Command cell is activated to execute the application.



# Tutorial Playlists with PJlink Command

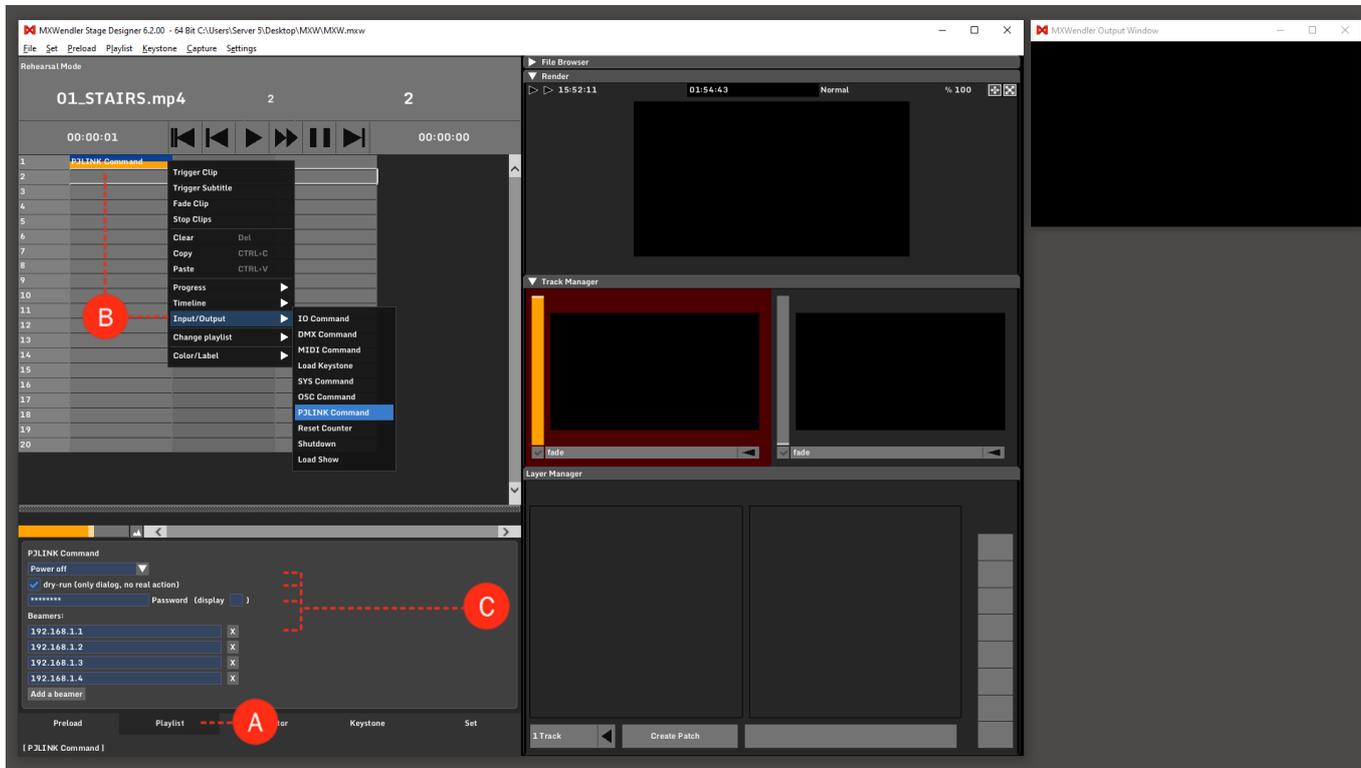
This tutorial applies to all different OS and MXWendler versions 6.0 and above.

In this tutorial, we will turn a projector on using the PJlink Command in playlist.

1. Go to Playlist. **(A)**
2. Right-click on an empty cell and select PJLink Command from the Context Menu.

**Context Menu → Input/Output → PJLink Command (B)**

3. Click on the PJLink Command cell, the settings will be opened under the playlist.
4. In the settings tab: **(C)**
  - set the command on Power on (Video on/off, controls the shutter of the projector),
  - uncheck the dry run box so your action will take effect,
  - set the password to access the projectors (the default PJLink password can be usually found in the user manual of the projector and can be changed by the user),
  - set the IP address to every projector connected to the network that you want to control.
6. Play the Playlist to send the PJlink Command to the projectors.



# Tutorial Playlists in Rehearsal Mode

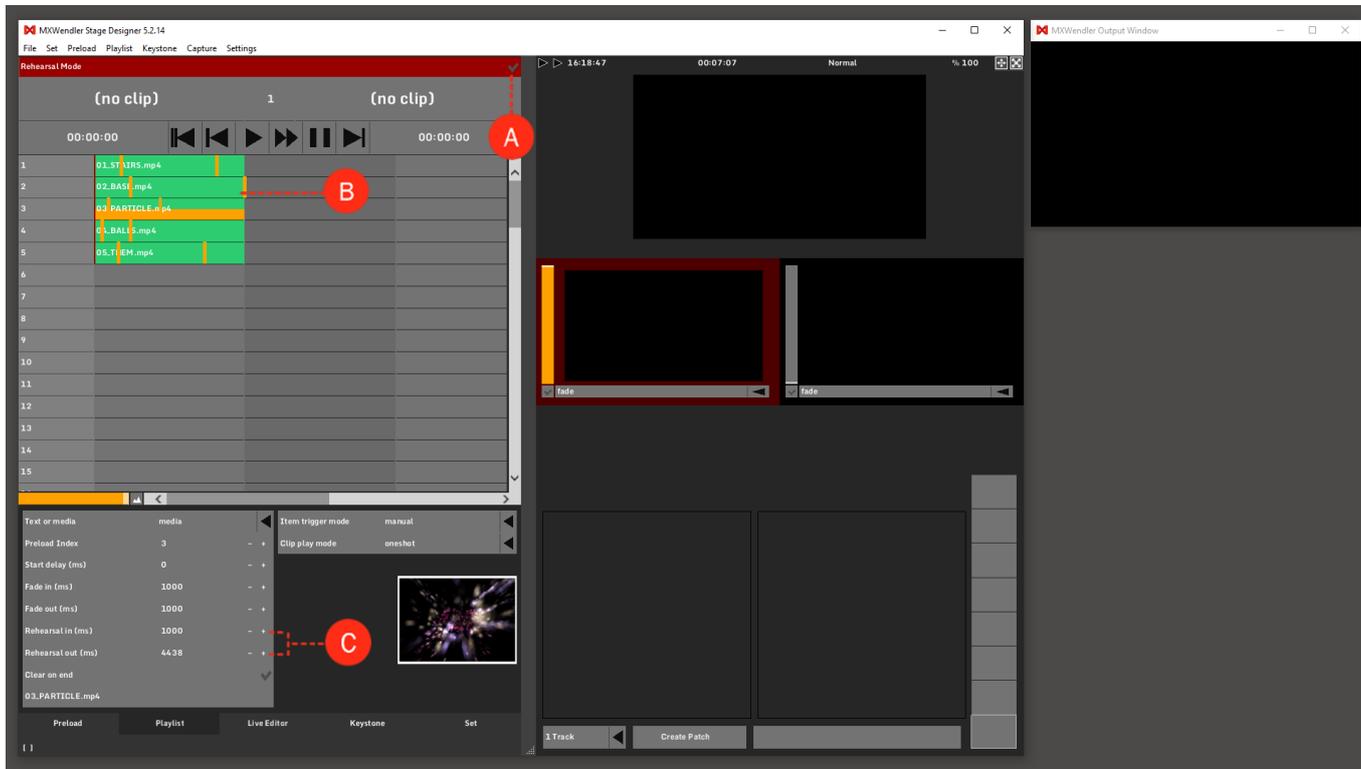
This tutorial applies to all different OS and MXWendler versions. Please note that the screenshots are made with Version 5 User Interface. Version 6 users please consider the differences in Version 6 Playlist.

For long clips, new key in and key out points can be set in the rehearsal mode. This is especially useful in theatres, where only single scenes have to be practiced again and again.

1. First, load the desired media files into the Preload and create a playlist.
2. Go to Playlist and activate the 'Rehearsal Mode' with a left-click. **(A)**
3. The Rehearsal In and Rehearsal Out positions are represented in the cells as yellow bars. **(B)**
4. Define Rehearsal In and Rehearsal Out with '+' / '-'. Double-click on the value to type it numerically. **(C)**

The modifications become active in the rehearsal mode as soon as the cue/the playlist is played back again.

*Tip: when switching between the two modes the playback has to be stopped. Otherwise, it can happen that the rehearsal modifications will be taken over into the playlist.*



# Tutorial Creating an Automated Show with Daily Event and Playlist Conditions

This tutorial applies to Windows computers with MXWendler version 6.0 and following.

In this tutorial, a simple automated show is created through a daily trigger and some time conditions. The installation, used here as example, consists in a two FHD outputs projection on a facade. The video must be played in loop, every day from 20:30 to 00:00.

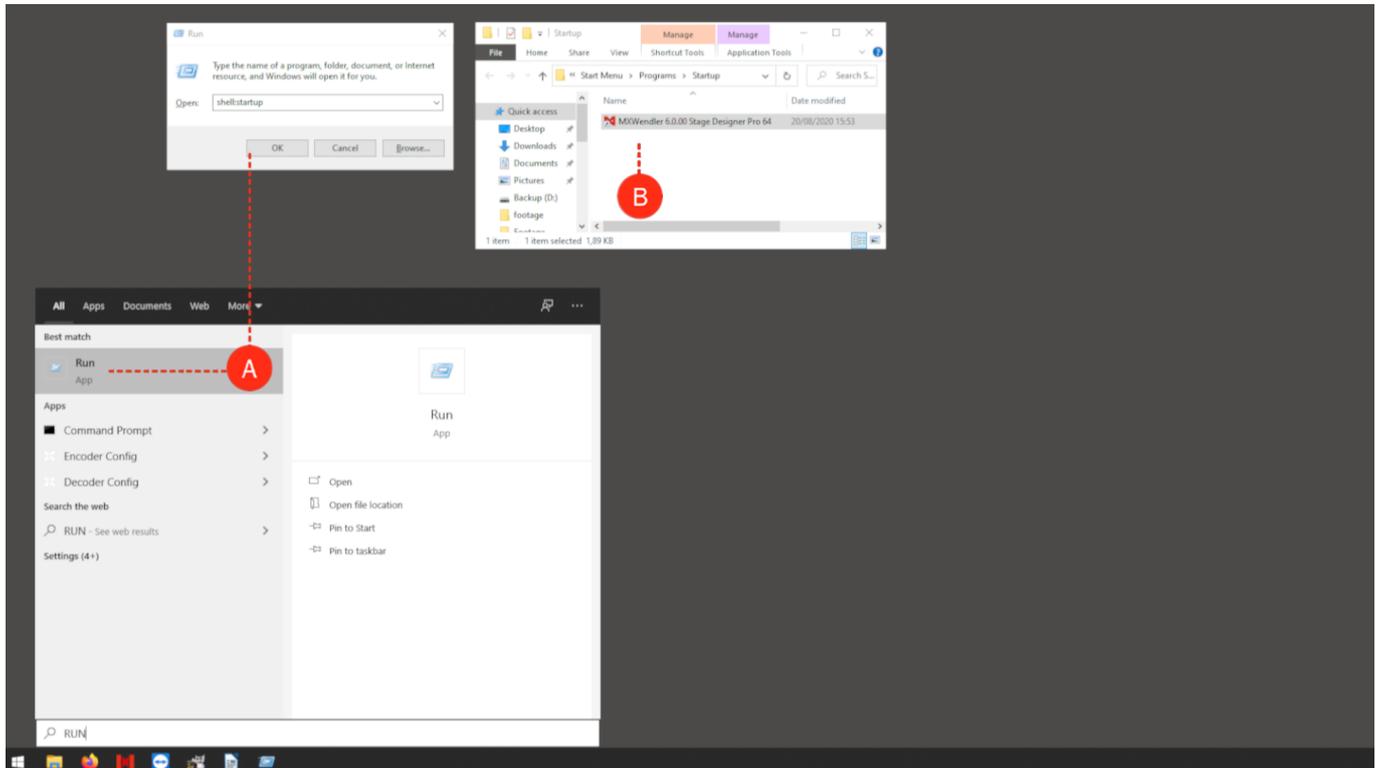
1. Set Windows to start StageDesigner or FXServer at the computer startup.

Hit the Windows button on the keyboard, write “Run” and press enter. **(A)**

In the Run window, digit: “shell:startup” and press enter. (the start up folder will open).

Copy a shortcut to StageDesigner or FXServer in the startup folder. **(B)**

at the OS start, the chosen MXWendler product will be automatically started.

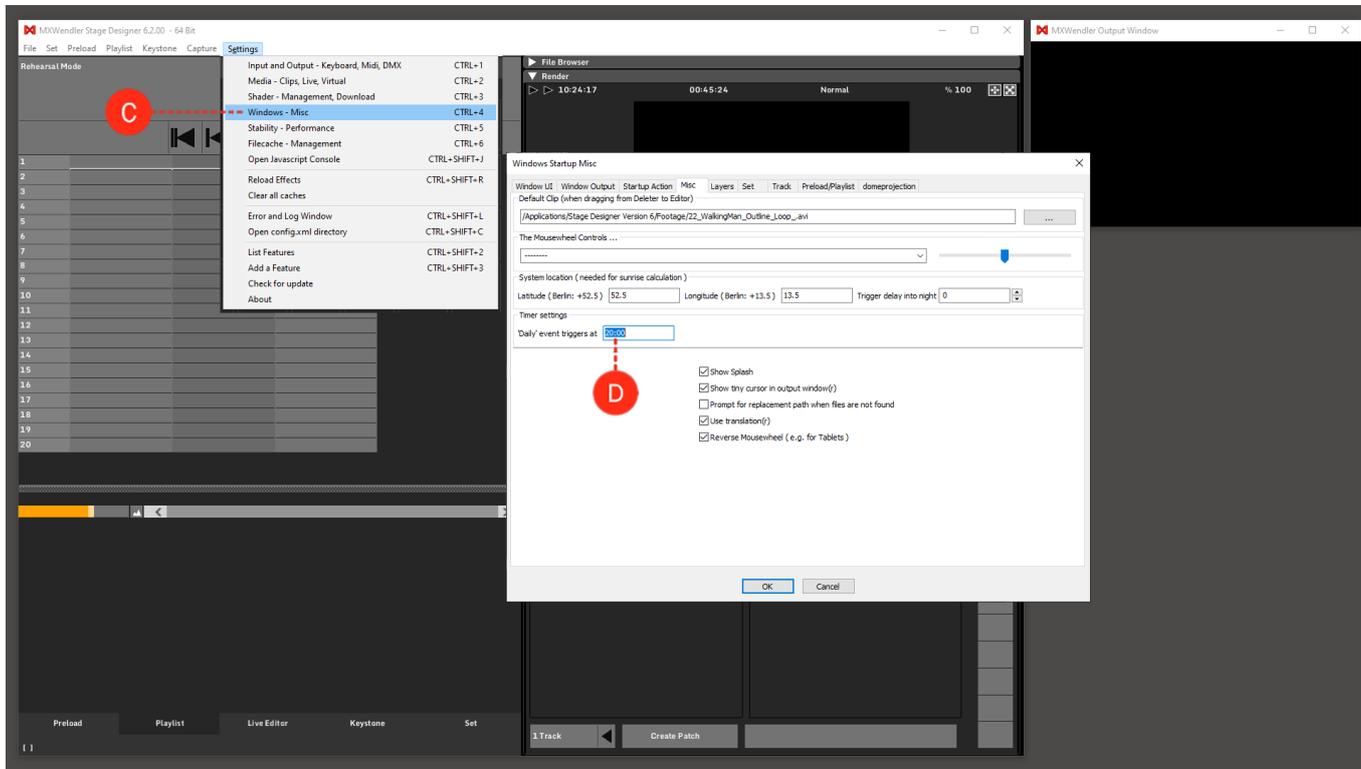


2. Define the time you want your daily event to start the playlist.

We are going to use the playlist to turn on and off the projectors, so we will set our daily event at 20:00 and use two PJLink Commands[link] to turn on the Projectors.

**Go to: Menu → Settings → Windows Misc → Misc (C)**

Type 20:00 in the daily event field and confirm by clicking Ok. **(D)**



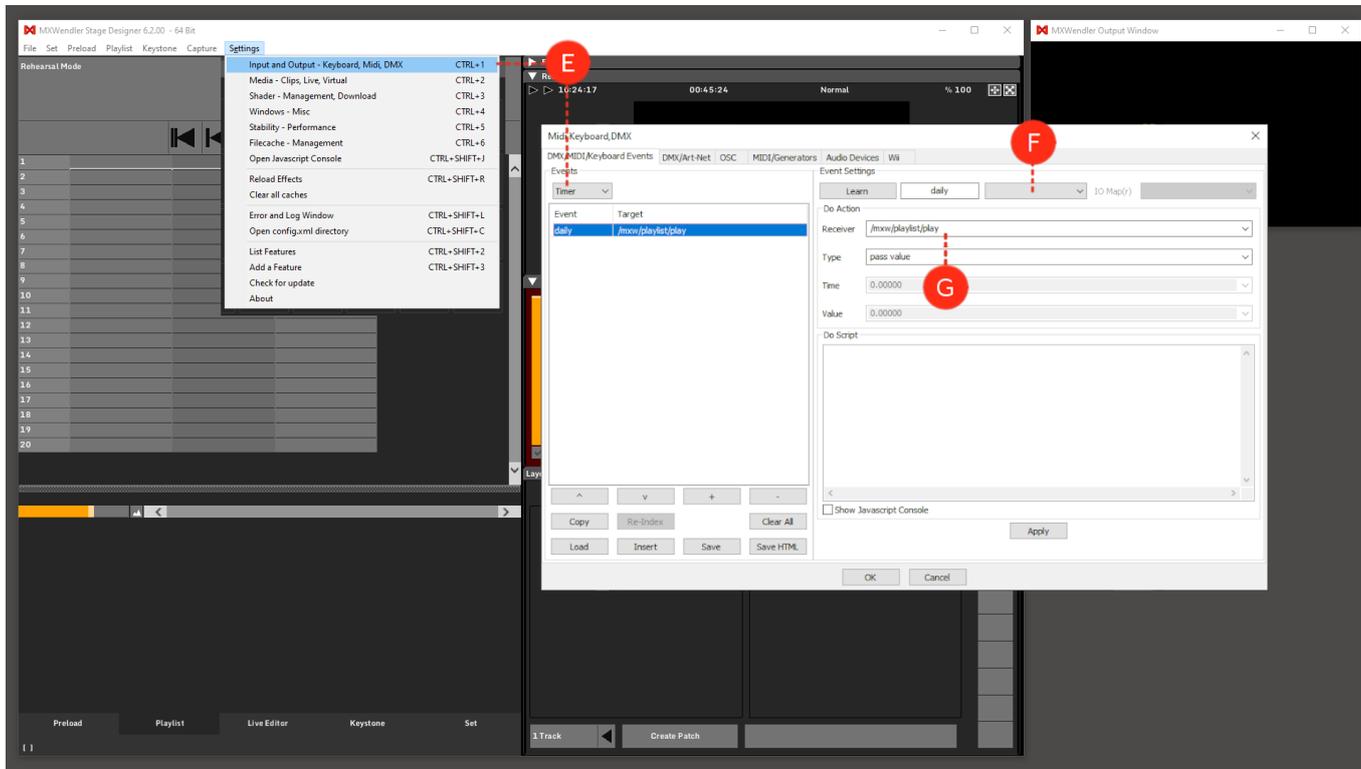
3. Create an I/O event to be daily triggered:

**Go to: Menu → Settings → Input and Output** and select Timer in the Events field. **(E)**

Create a new IO Event[link], click on the event selection menu and choose daily. **(F)**

As Receiver select /mxw/playlist/play and click Apply **(G)**

at 20:00 a playlist/play command will be executed by the system.



4. Now an automated playlist can be built as follows:

1	Auto Step	PJLINK Command	
2	Auto Step	PJLINK Command	
3	Auto Step		
4	Auto Step	Time Condition	
5	Auto Step		
6		200915_60fps.mov	
7	Auto Step	Clip Fade	Rathaus-BauzaunCCAufkleberScr..
8	Auto Step	Clear Clips	Clip Fade
9	Auto Step	Time Condition	Clear Clips
10	Auto Step	PJLINK Command	
11	Auto Step	PJLINK Command	
12	Go to Start		

Cue			
1	Autostep (2000ms) next	PJLink ON (Projector 1)	
2	Autostep (2000ms) next	PJLink ON (Projector 2)	
3	Autostep (1000ms) next		
4	Autostep (5000ms) next	TimeCondition (Before 20:29:53 go to 3)	
5	Autostep (1000ms) next		
6		Clip (OneShot, Auto 00:09:21)	
7	Autostep (8000ms) next	Clip Fade (5000ms)	Logo
8	Autostep (5000ms) next	Clear Clips	Clip Fade (5000ms)
9	Autostep (5000ms) go to 5	TimeCondition (After 23:50:00 go forward 1)	Clear Clips
10	Autostep (1000ms) next	PJLink OFF (Projector 1)	
11	Autostep (1000ms) next	PJLink OFF (Projector 2)	
12	Go to Start (no play)		

Cue 1-2: two PJLink commands in the first two cues will turn ON the Projectors

Cue 4: the time condition will put the playlist in a waiting-loop until 20:30 (show start)

Cue 6: the main clip will be triggered, the video will play to its end and jump to the next clip

Cue 7: the main clip will be faded out, a logo will be played

Cue 8: the logo will be faded out

Cue 9: until the time condition is not “True” (23:50) the Autostep will keep the playlist in loop (cue 5 to 9)

*Tip: the end of the show will be at midnight, the clip lasts 09:21 minutes so the time condition HAS to be set around 23:50 to be sure that the last playback ends before midnight.*

*(if the last playback would end after midnight, the time condition would be reached at “new day”.*

*00:00 counts as BEFORE 23:50 and the playlist would continue looping from cue 5 to 9)*

Cue :10-11: two PLink commands in the last two cues will turn OFF the Projectors

Cue 12: Go to Start: stops the playlist and goes back to start, waiting for the next daily event at 20:00

5. save the showfile and set it in Start Action

**go to: Menu → File** and click on Save as.. to save the show

**go to: Menu → Settings → Windows Misc → Startup Action**, select the showfile to load on start and click ok. **(H)**

**go to: Menu → File** and click on Save to overwrite the last change.

*Tip: most of the new PC systems have a setting in Bios to restart automatically after a power loss. This, in conjunction to a remote control service like Team Viewer would allow a great control over a long time installation.*



# Tutorial Simultaneous Playback of two Videos with two Video Projectors

This tutorial applies to all different OS and MXWendler versions.

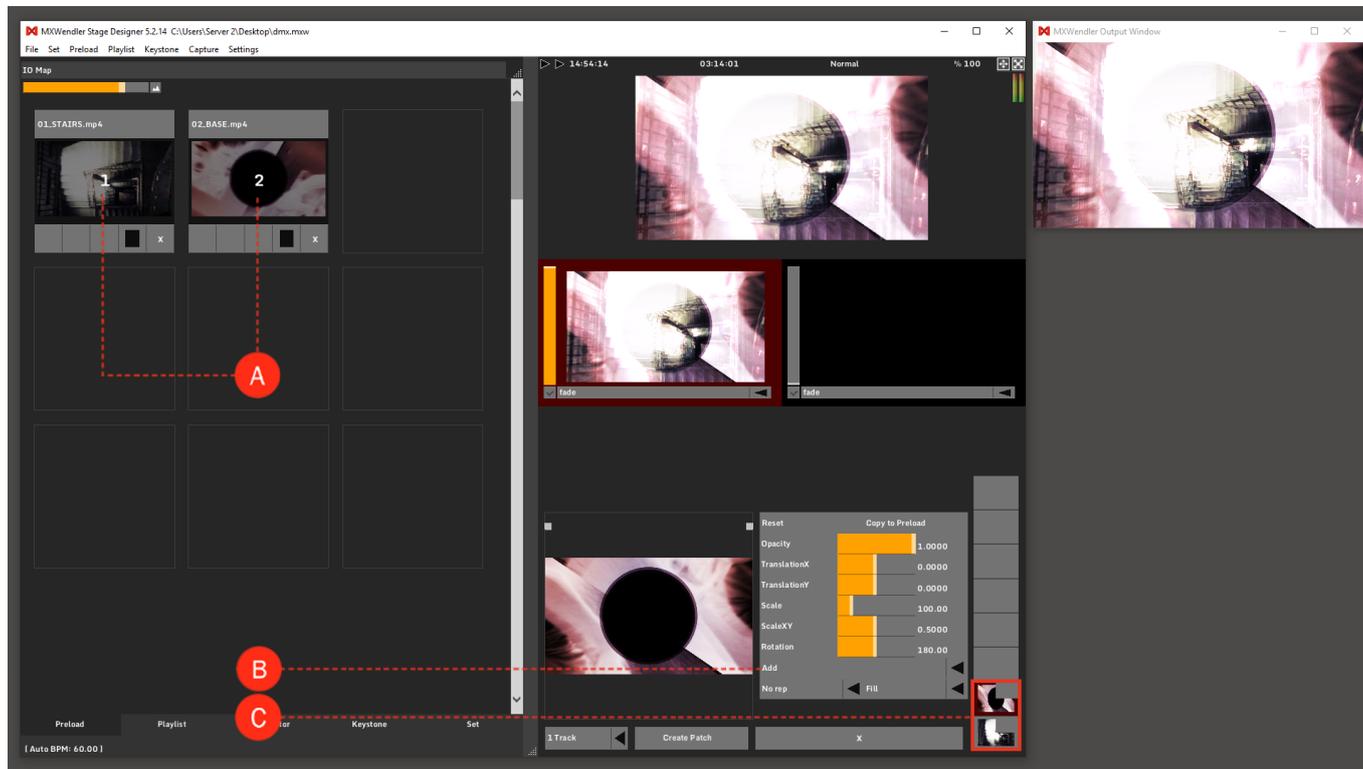
In this tutorial, two videos are played back simultaneously with two video projectors.

## Load Videos

1. The two videos must first be loaded into the Preload. **(A)**
2. Load the two videos into the Layermanager with 'Add'. **(B)**

The two videos are shown one on top of each other in Layermanager. **(C)**

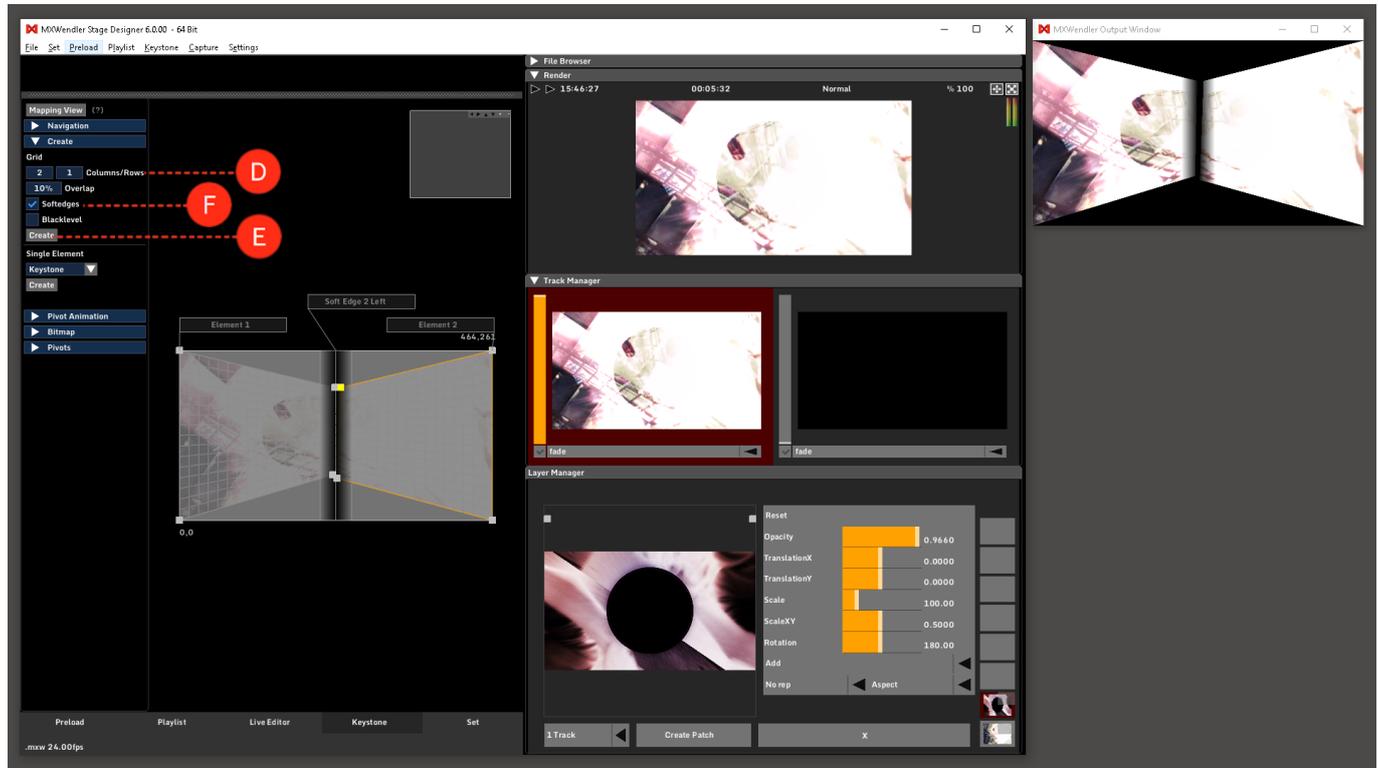
*Tip: The actual number of projectors or displays behind the output window is ultimately not important for the software. This tutorial is assuming that the output at the event is stretched over two XGA projectors. This behaviour can also be simulated using a small output.*



## Set the Keystone

1. Two video projectors will translate into two Elements. This can be set up in the Keystone's submenu 'Create'. To create the Elements set the numbers of the Columns and Rows you need. **(D)**
2. Click on 'Create' to create the Elements. **(E)**
3. By (de-)activating 'Softedges' and 'Blacklevel', you can select if you want to add Softedge and Blacklevel elements to your Keystone as well. **(F)**

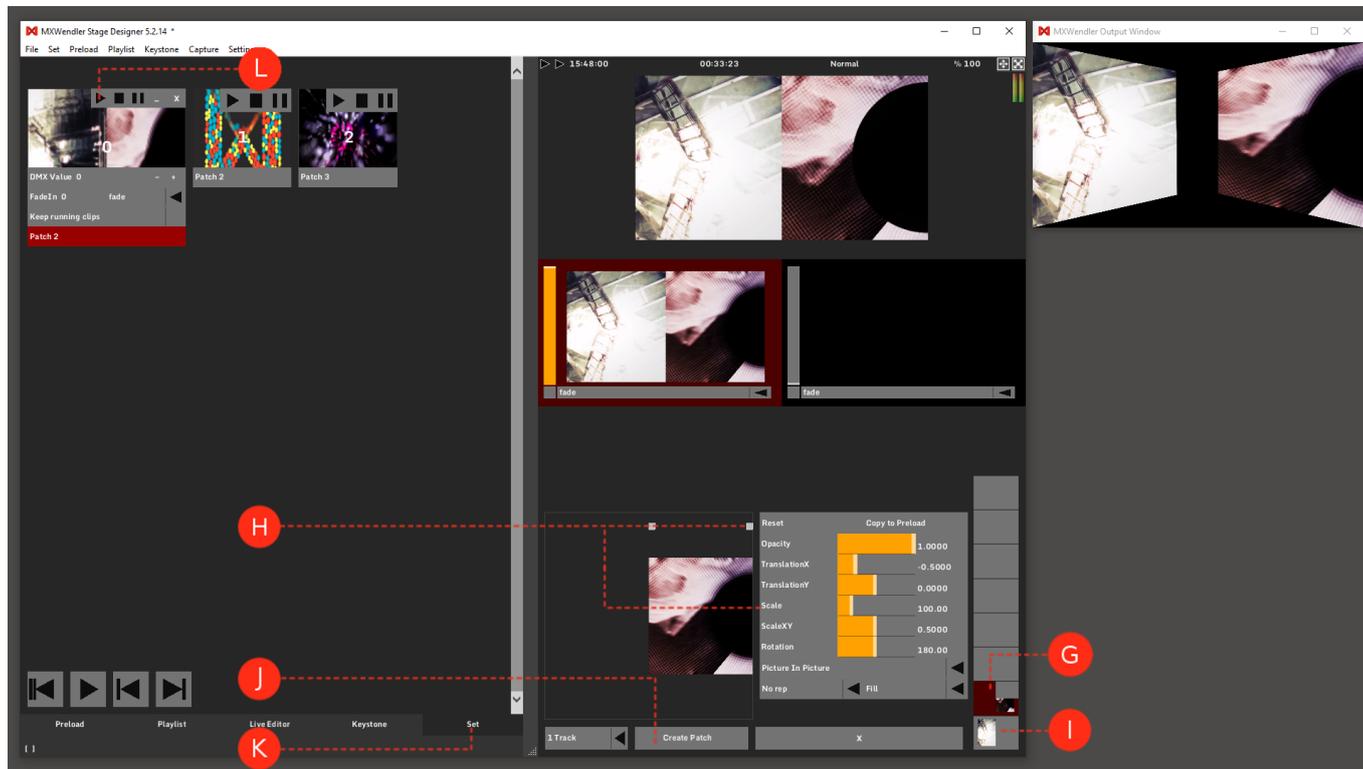
*Tip: Add Softedges creates an overlapping area in which image outputs from the projectors are physically superimposed. The doubled brightness in this area is overlaid with Softedges.*



## Save and Play as Patches

1. Activate the top layer. **(G)**
2. Scale the video with the help of the yellow dots or using numeric input. **(H)**
3. Repeat step 6 and 7 with the lower layer. **(I)**
4. 'Create Patch' to save the defined settings and to prepare the two videos for simultaneous launching. **(J)**
5. Open the Set Tab. **(K)**

If the patch 'Play' button is pressed, the two videos will be played back simultaneously on both projectors. **(L)**



# Tutorial Mapping with UV View

This tutorial applies to all different OS and MXWendler versions 6.0 and above.

In this tutorial, two videos are played back simultaneously and the content is mapped and edited, through two different Elements using UV View.

1. Load two videos in Preload and add them to the Layermanager.  
The two videos are shown on top of each other in Layermanager. **(A)**
2. Go to Keystone tab and open the Create menu, and choose two Elements to be created. **(B)**

**Position View → Create → Grid: 2 x 1 Columns/Rows → Create**

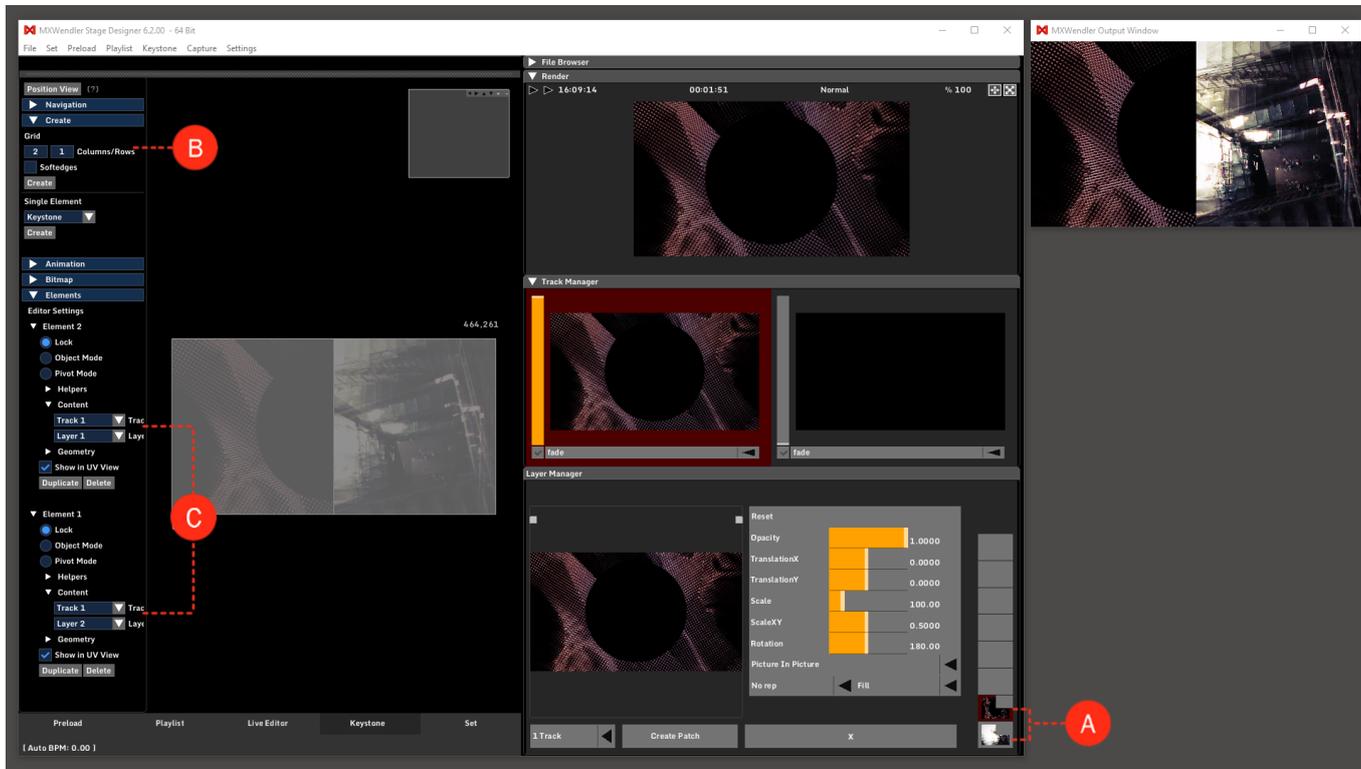
*Tip: Softedges create an overlapping area in which image outputs from the projectors are physically superimposed. The doubled brightness in this area is overlaid with Softedges.*

3. Choose the right source for each of the Elements. i.e the desired Track and Layer of the videos for each Element. **(C)**

**Element Menu → Element 1 → Content → Track 1 → Layer 1**

**Element Menu → Element 2 → Content → Track 1 → Layer 2**

Now the two videos are played back in the two different Elements.



4. Double-click on each Element two times to activate the Pivot Mode. Alternatively in the Elements menu open the sub-menu of Element 1 and 2 and select Pivot Mode. **(D)**

5. By selecting and dragging the Pivots around, you can edit the projection on the output, i.e the parts on the output which the content should be projected on. Alternatively, you can do this by selecting a pivot and editing the values in the Pivot menu on the left side. **(E)**

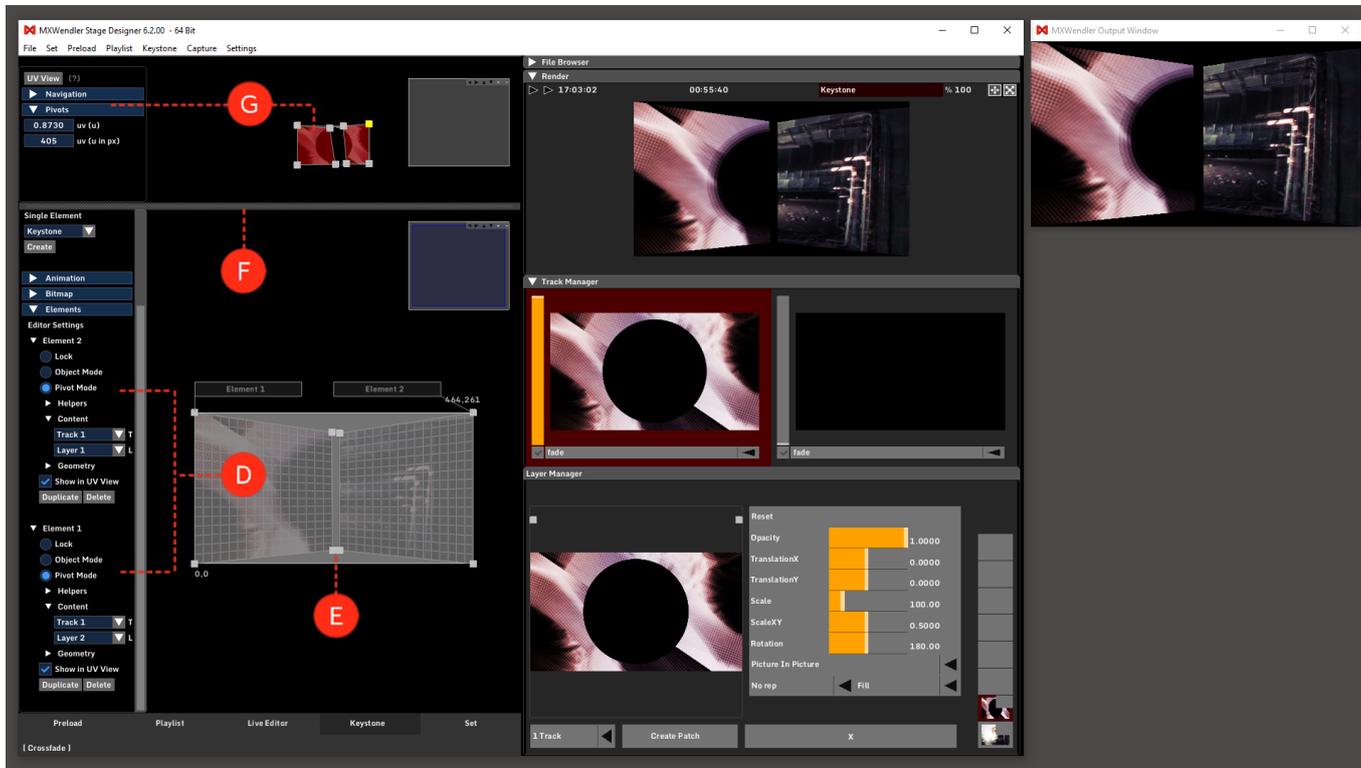
*Tip: if you click on Preview Mode in Render Preview you can switch from a Normal view to Keystone view to better monitor the changes made in the output.*

6. Click and drag the bar above the Position View to open the UV View. **(F)**

7. If the elements are in Pivot mode you should be able to edit the Pivots. You can do this either by drag&dropping the Pivot points or by selecting them and changing the values in the Pivots menu on the left side of the panel. **(G)**

*Tip: UV mapping allows you to set the portions of the content to be projected on an Element. The whole video in UV goes from 0 to 1, zero being the first pixel of the video and 1 being the last. U represents the horizontal Pixels and V the vertical. e.g if you choose the two Pivots on the right side of an Element and change the value to 0.5, that means the video will start from its first pixel but will be stretched to fit half of its content on the Element. So an U value of 0.5 to 1, means the Element will be projecting only the second horizontal-half of the video.'*

8. Change the UV values by drag&drop or by giving numbers in the Pivot menu to reach your desired mapped video.



# Tutorial Masked Output

This tutorial applies to all different OS and MXWendler versions.

In this tutorial, an output mask will be created for a defined setup with a video projector. An image editing program (e.g. Photoshop / Gimp) must be used here.

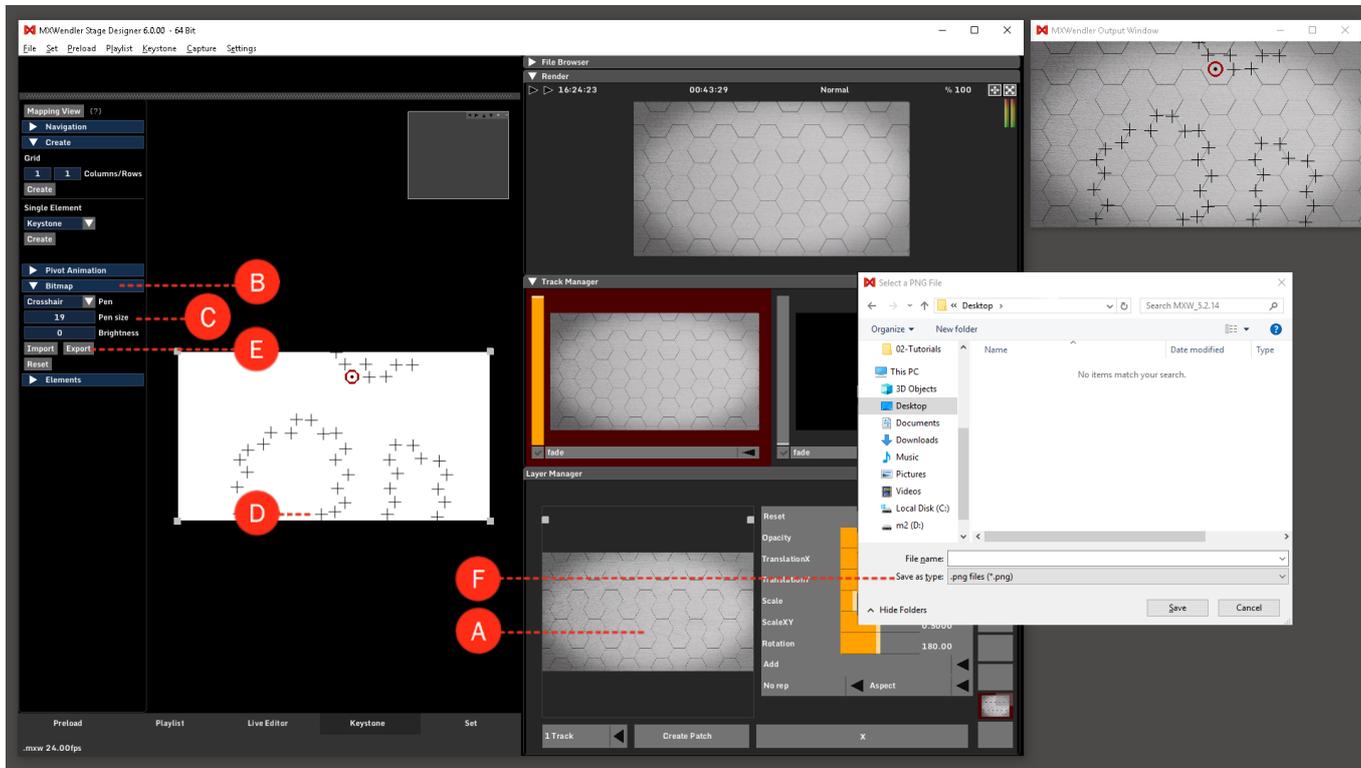
1. The selected video is loaded into the 'Preload' and active in the Layermanager. **(A)**
2. Go to the 'Bitmap' Submenu in the Keystone Tab. **(B)**
3. Select 'Crosshair' in the 'Brush' settings. The size of the Crosshair can be adjusted in the Brush Size settings. **(C)**
4. Specific selected points can be marked with Crosshair. **(D)**

With 'Export to Picture' the resulting graphic can be exported as an image. **(E)**

The graphic is stored as .png file on the desktop for the next step - processing into a mask in an image editor. **(F)**

*Tip: Masked outputs are an extremely effective tool for difficult projection projects.*

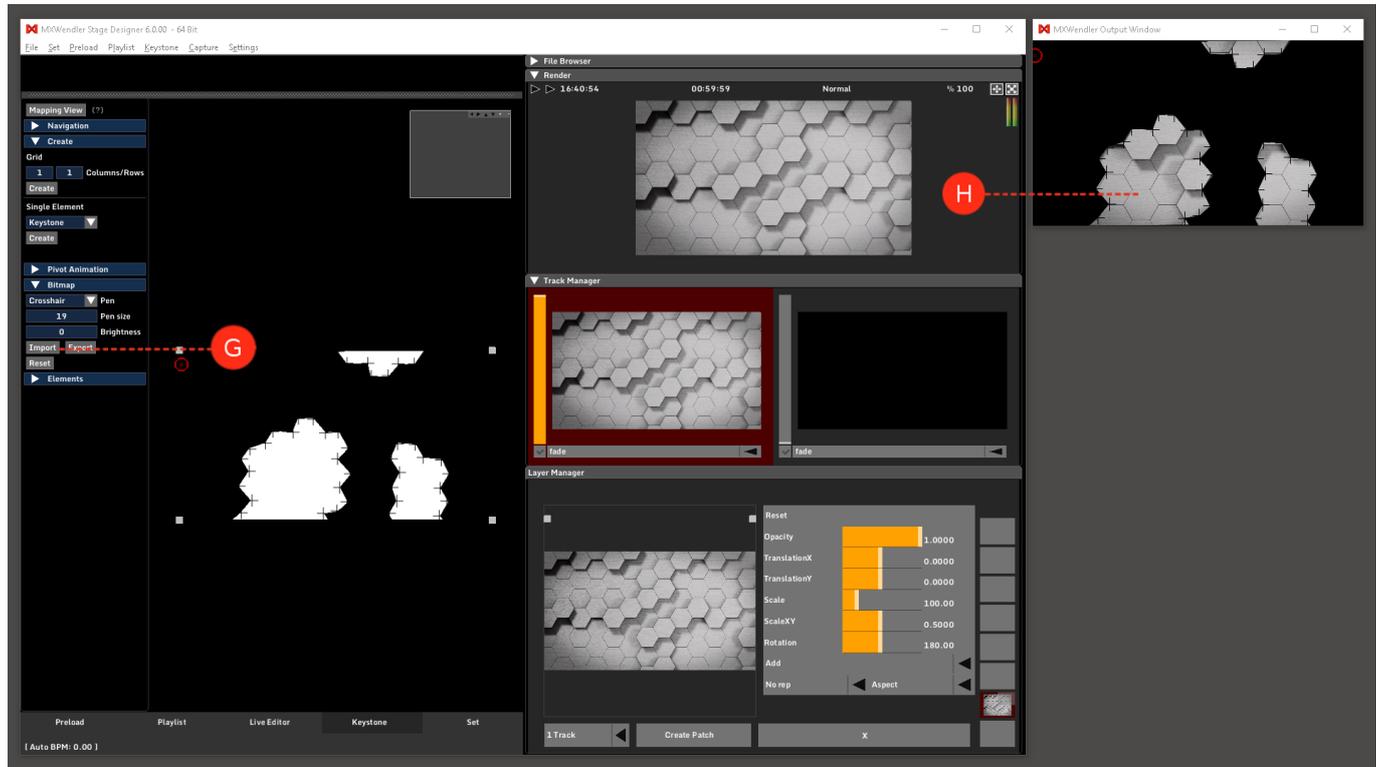
*Of course, masks can also contain colour values and grey values. The mask is multiplied on the final output.*



5. The finished mask is opened again after it is saved. Select 'Import from Picture' to load the mask. **(G)**

The mask is now active in the output window. **(H)**

*Tip: PNG is used as a storage format as it contains alpha information and is lossless. The mask is exactly the same size as the display for the output window.*



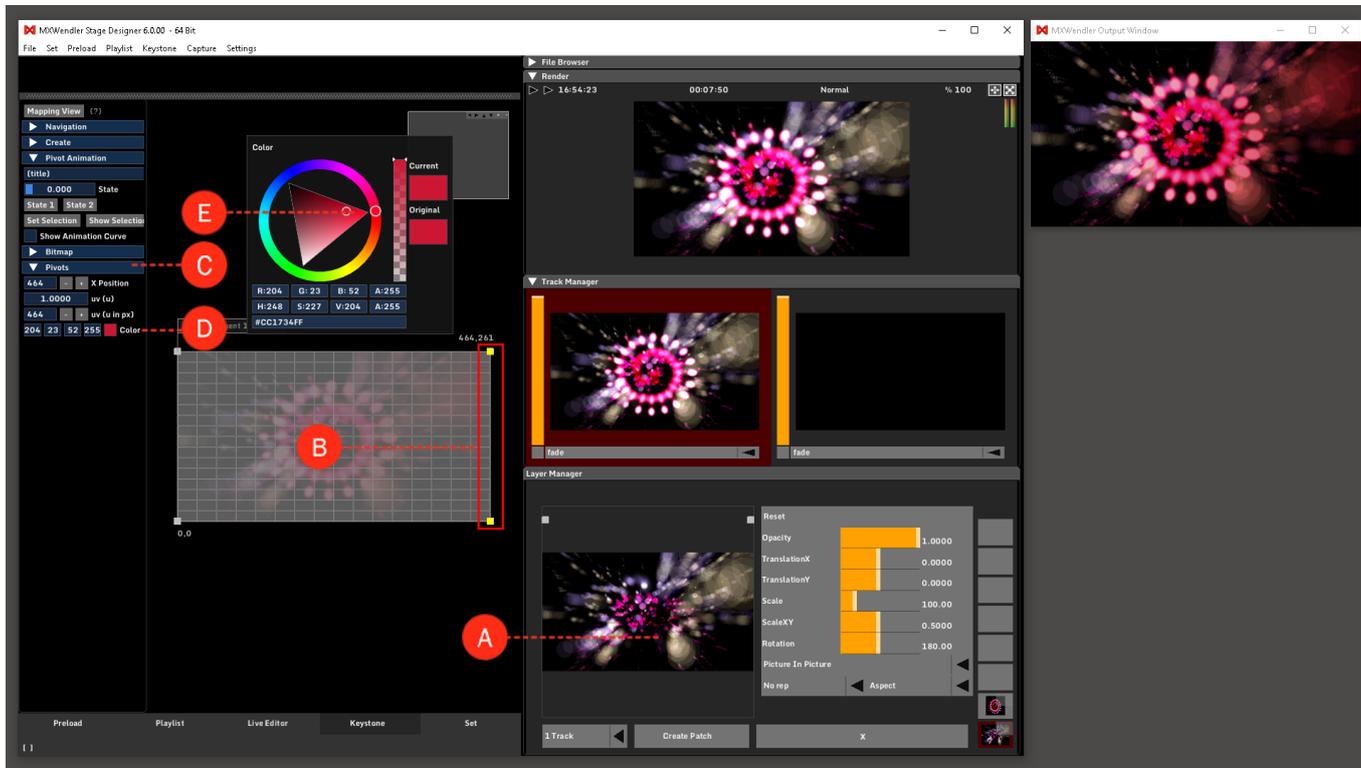
# Tutorial Colored Output with Animations

This tutorial applies to all different OS and MXWendler versions.

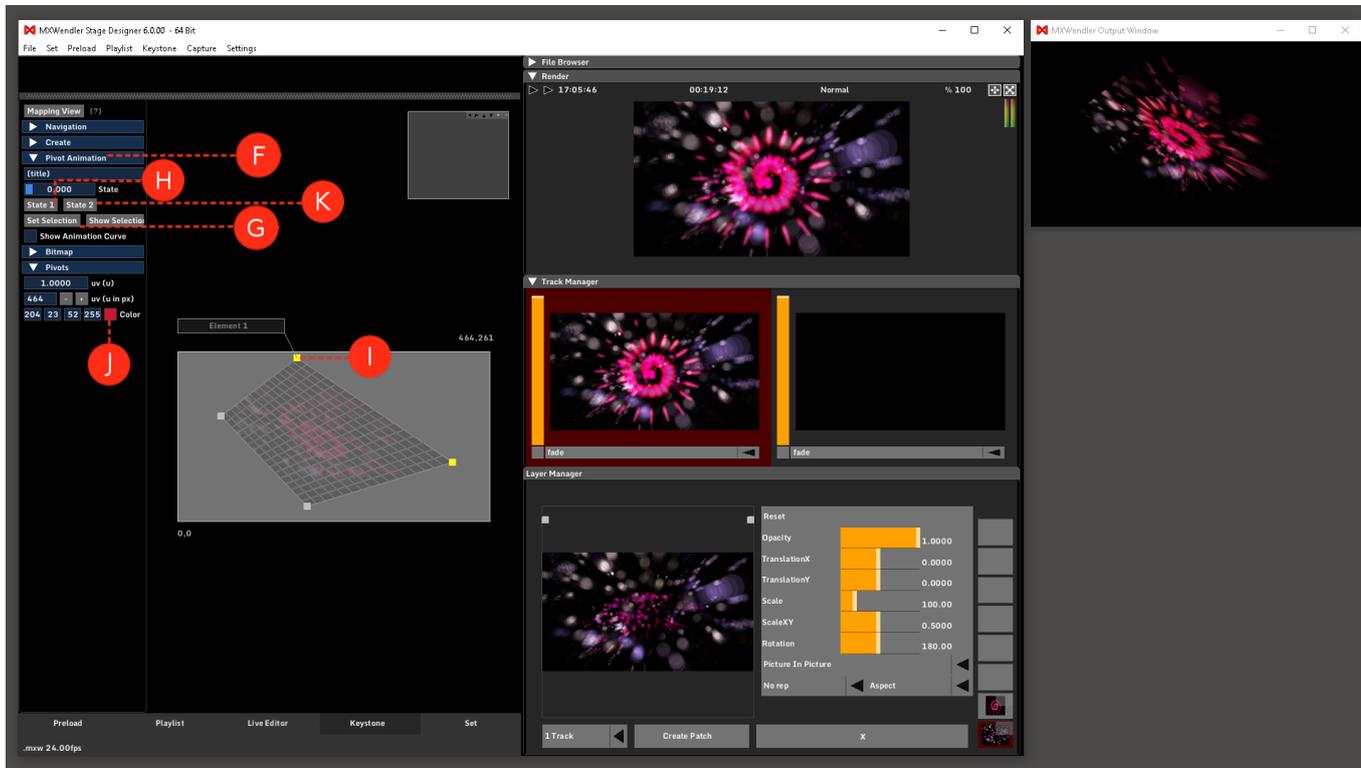
In this tutorial, a colored output is created in the keystone tab and the output correction is animated.

1. Open the desired video in the Layermanager. **(A)**
2. Switch to the Keystone tab. Mark the two pivots on the right. **(B)**
3. Open the submenu 'Pivot'. **(C)**
4. Click on 'Color' to open the Color Wheel. **(D)**
5. Set your color using the wheel or by giving the digit values of the color you want . **(E)**

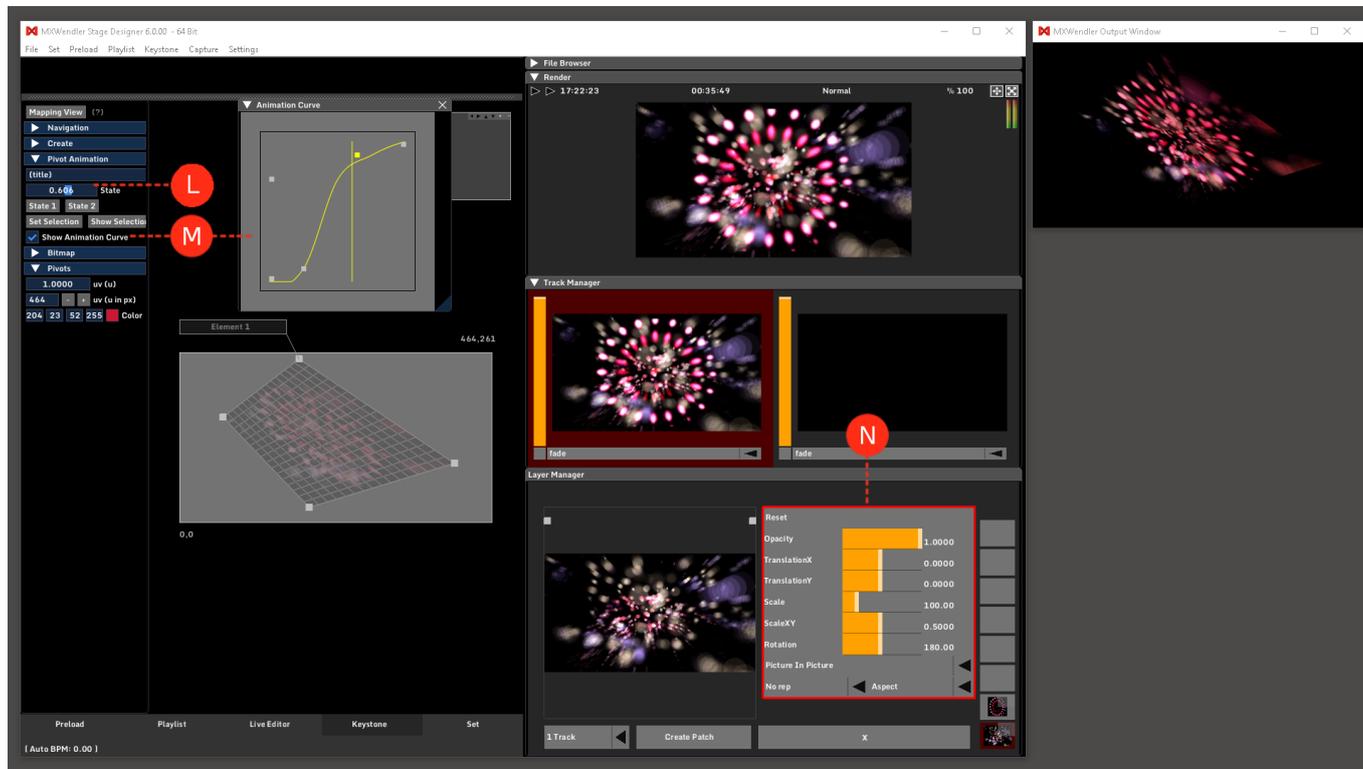
Coloring can be carried out with one or more markers. Different areas can also be colored with different colors.



6. Open the Submenu 'Pivot Animation'. **(F)**
7. Click 'Set Selection' to activate the highlighted pivots. Bring the marked pivots to the start position of the animation. **(G)**
8. Click 'State 1' to determine the start position for the animation. **(H)**
9. Bring the marked pivots to the end position of the animation. **(I)**
10. Switch to the Submenu 'Pivot' and this time colorize differently. **(J)**
11. Switch back to the Submenu 'Animation', click State 2 to determine the end position of the animation. **(K)**



12. The animation can be retrieved with the slide control in the Keystone Submenu 'Animation'. **(L)**
13. Select 'Show Animation Curve' open the Animation editor. Use the yellow Animation Curve to alter the algorithm of the attack curve. **(M)**
14. Changes can be made at any time in 'Layermanager'. The final position of the animation can also be changed. **(N)**



# Tutorial Capture Output Sections with Artnet DMX and Network Grabbers

This tutorial applies to all different OS and MXWendler versions.

## About Grabber

The keystone engine offers so-called grabbers. These grabbers are placed on top of the compositing result and then grab the pixel data that they cover and convert it to data that is processed by external applications.

There are three different grabbers available:

- DMX Grabber
- Artnet Grabber
- Network Grabber

The basic creation and usage of these grabbers is the same regardless of the different grabber type:

- Create a grabber
- Place a grabber
- Edit grabber properties

All grabbers share color correction and color damping as a common feature:

**Color correction** can emphasize or reduce certain color channels.

**Color damping** slows color changing and thus reduces color flickering on output fixtures.

**Damp Up:** Time needed (ms) for full close to full open per color channel

**Damp Down:** Time needed (ms) for full open to full close per color channel

**Brightness:** Color multiplier across RGB range

**Red Curve:** Color multiplier across R range

**Green Curve:** Color multiplier across G range

**Blue Curve:** Color multiplier across B range

When e.g. 'Damp Up' is set to 1000 ms, a rendered output pixel must remain for at least one second to allow the grabber to follow fully. Thus a short flicker will be mostly ignored. This functionality helps to prevent flickering room illumination. By default, the 'Brightness' curve is flat and in the center the middle by default. Lowering the whole curve results in an overall lower output brightness, and lowering the middle part results in reduced brightness in the middle tones. The curve value range is from 0.0 to 2.0; these values will be multiplied onto the color value.

# Creating a Grabber

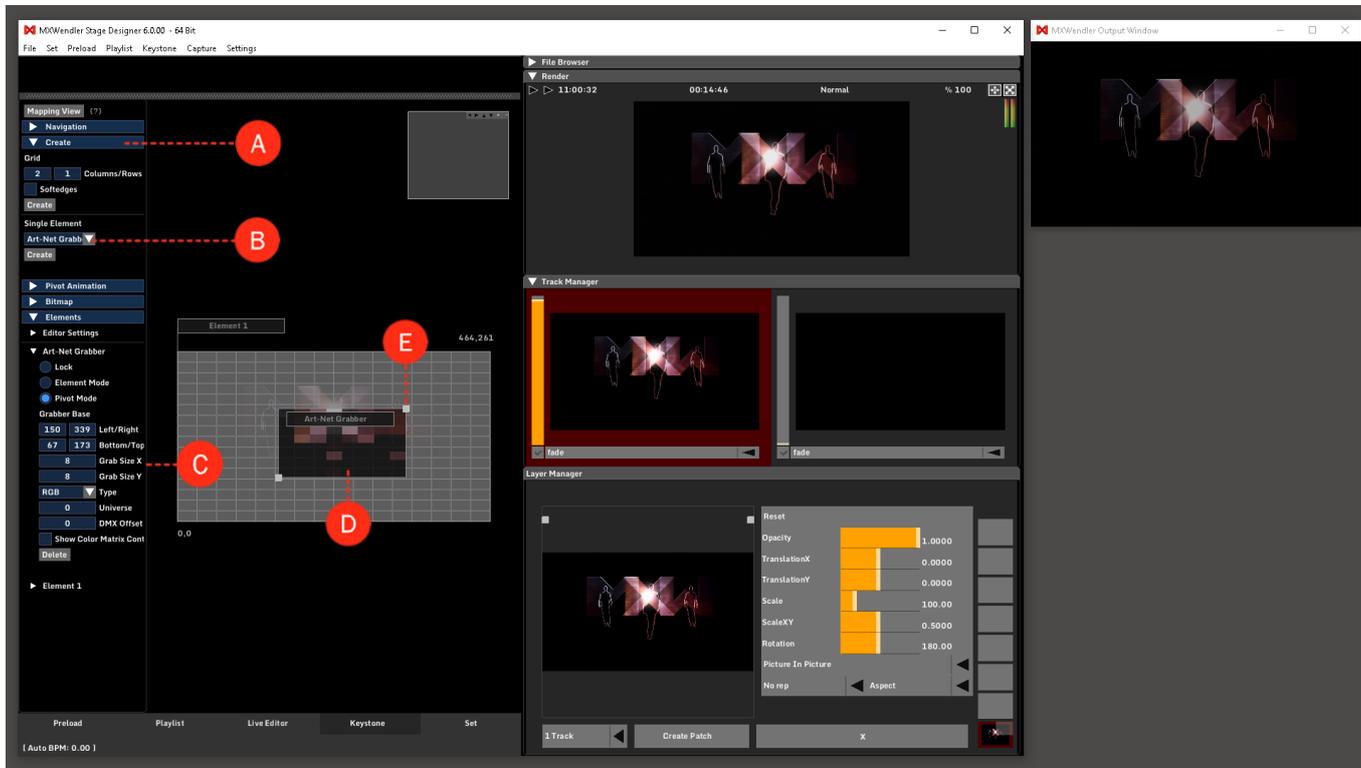
## Creating an Artnet Grabber

1. Go to the Keystone tab and from the Mapping View menu, open the Create menu. **(A)**
2. Choose 'Art-net Grabber' and click on 'Create'. **(B)**
3. Open the Art-Net Grabber menu from the Elements menu, and set the 'Grab Size', e.g. 8/8. **(C)**

The grabber will be placed at a default position in the keystone area. Grabbers are always rectangular in shape, therefore their shape can only be edited with the lower right pivot or the upper left pivot.

4. Unlock the grabber by double-clicking two times on the Element (until the Pivots become active). Move the grabber by dragging the base pivot. **(D)**
5. Change the grabber size by dragging the upper left or lower right pivot. **(E)**

*Tip: You can also select the base pivot by dragging a field across the whole grabber.*



# Using the Various Grabbers

## Using an Artnet Grabber

1. Open DMX/Artnet in the IO Settings: **(A)**

**Menu: SETTINGS → IO DEVICES → DMX/ARTNET**

2. Activate 'Open Artnet'. **(B)**

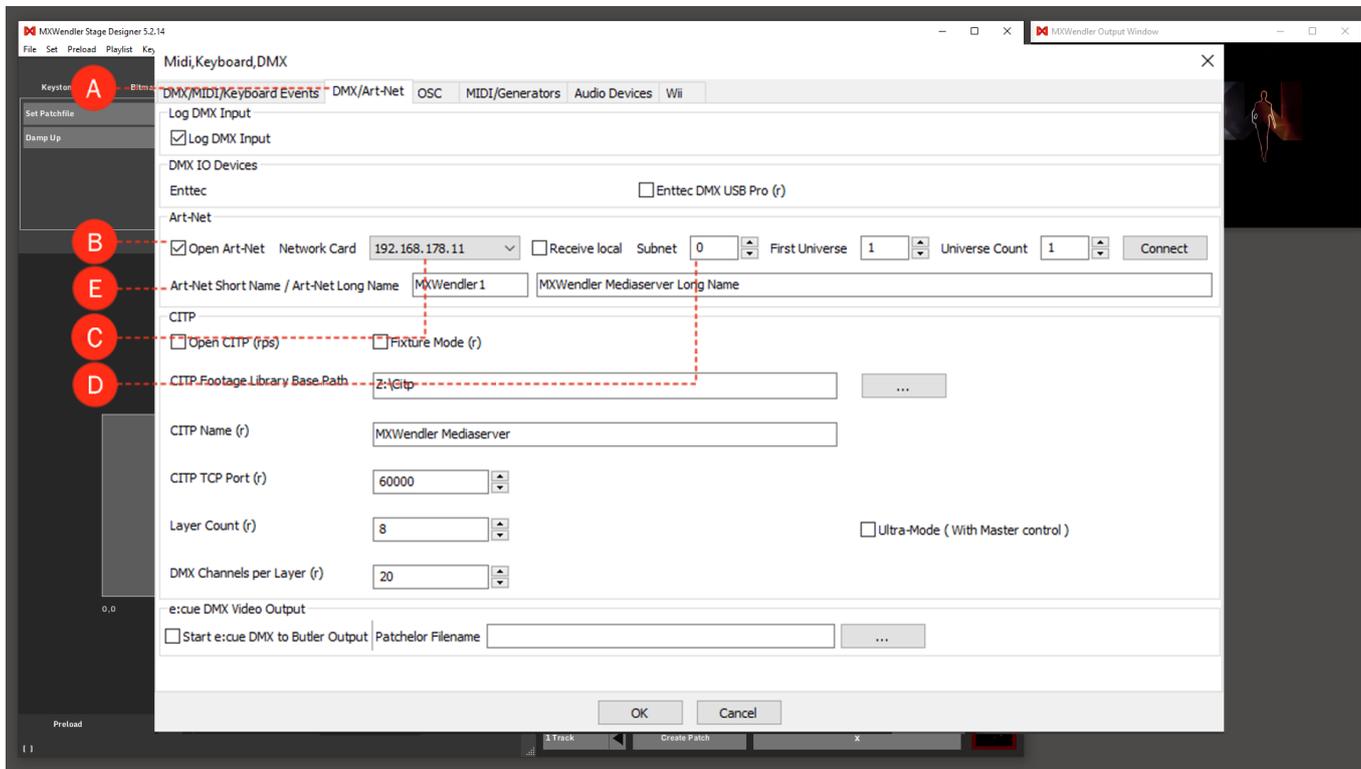
3. Type in the IP address of the system's network interface you want to use. **(C)**

4. (optional) type in ports and subnets. **(D)**

5. (optional) type in descriptive names. **(E)**

Close the dialog, restart, open the keystone tab and create an Artnet Grabber as described above.

The Artnet Grabber will send the pixel data beginning from the bottom left pixel in RGBRGBRGB values 0...255. When an Artnet universe is full, the data will be written into the next Artnet universe.



## Using a DMX Grabber

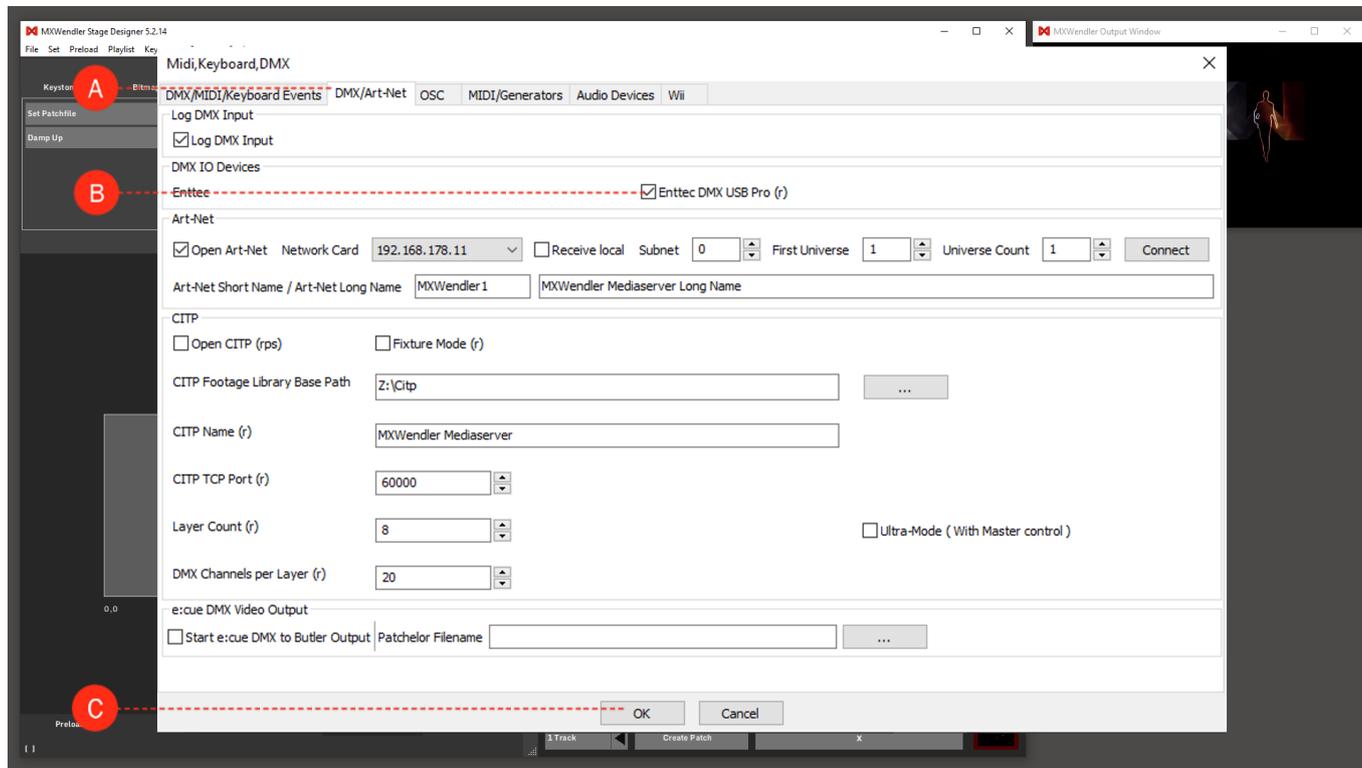
1. Open DMX/Artnet in the IO Settings: **(A)**

**Menu: SETTINGS → IO DEVICES → DMX/ARTNET**

2. Connect an Enttec DMX USB Pro to the computer. Activate Enttec DMX USB Pro in the DMX/Artnet settings. **(B)**

3. Confirm the dialog with OK and restart MXWENDLER. **(C)**

Open the Keystone Tab and create a DMX Grabber (same procedure as with the Artnet Grabber).



4. From the Elements menu, open the DMX Grabber submenu and click on Define Fixture to reach the DMX Grabber window. **(D)**

→ **Define the fixture according to its properties:**

5. The grabber pixel size is defined by 'Size in Pixels (X/Y)'. **(E)**

6. Grabbed pixel data will be written into the DMX array beginning at the 'DMX Start Channel' with the lower left pixel first. **(F)**

7. Pixels are always sent as RGB triplets, RGB values or RGB sums. Each pixel triplet will be preceded by 'DMX channels before RGB'... **(G)**

8. ...and continued with 'DMX channels after RGB'. **(H)**

Currently there is at maximum one DMX universe allowed with Enttec DMX Pro. Multiple grabbers can write into this universe with their offsets. For more universes Artnet Grabbers are available.



# Tutorial SVG Mapping with the MXWendler Automatic Calibration

This tutorial applies to all different OS and MXWendler versions 5.2 and above.

The new MXWendler mapping capabilities allow the user to precisely map an item in a matter of minutes.

In this tutorial we will map an object by taking a picture of it, manually tracking a vector of the contour and using the resulting SVG file to calibrate our mapping onto the object.

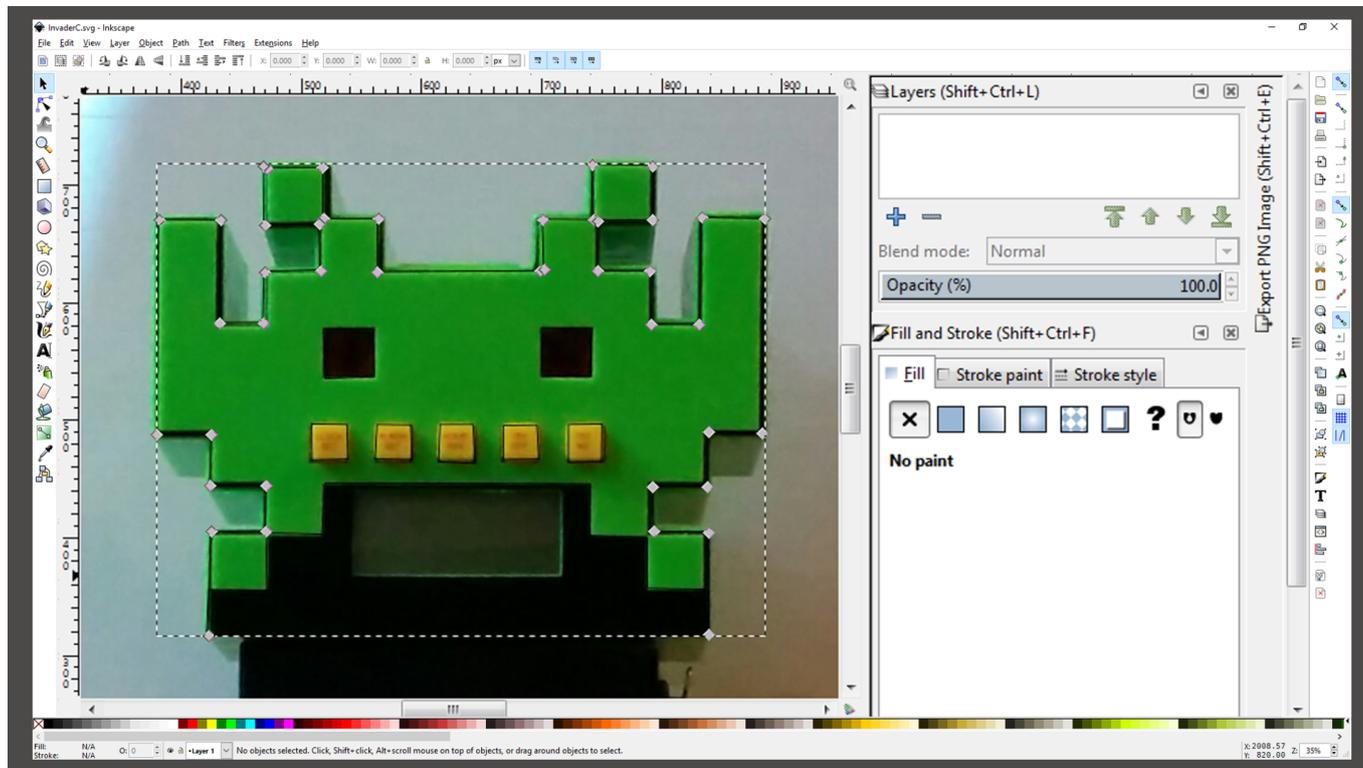
## This Tutorial Requires

- A video projector.
- A camera (a smartphone camera will do perfectly).
- A software capable of vector graphics and .svg export.

(Inkscape is a freeware software that can be downloaded at:<https://inkscape.org>)

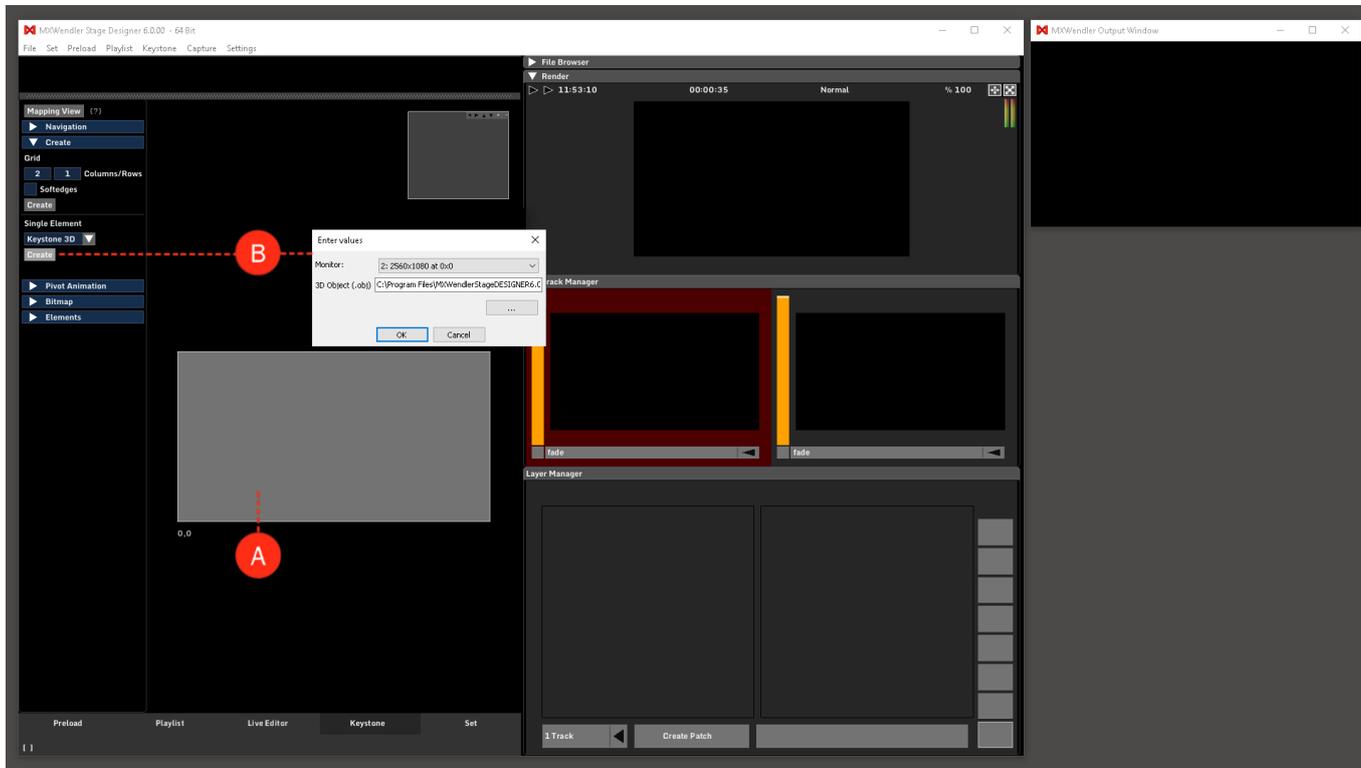
## Preparing the SVG Vector File

1. Choose an object with a regular shape (will be easier to map) and put it in front of the projector.
2. Play an MXW Raster\_White on the output to have an idea of the size of your projection.
3. Take a picture as close as possible to the beamer's lens position, crop the picture and send it to the computer you are going to use.
4. Open the picture with a vector graphics software, track the outline and save it as SVG file.



## Mapping the Projection Through the .svg Model

1. Open MXWendler.
2. Go to the Keystone tab and delete the Keystone Element. **(A)**
3. In the Mapping View menu, go to Create and select Keystone 3D click on 'Create'. **(B)**  
Select your projector as output and the .svg as model in the dialog.



## Setting the Mapping With the 3D Mode

As projector and model are confirmed the keystone interface will open in 3D Mode, to use this interface the following commands are needed:

Click + Drag = Rotate

Mouse Wheel = Zoom

Ctrl + Click + Drag = Move

Right Click = Menu

The 3D Mode will be used to match picture and 3D object.

1. Load the picture (not the .svg) in the Layer Manager. **(C)**
2. Right-click on the Keystone interface and select:

Preview source texture - 'Render Output' and 'Use UV from Texture Mapping Object' **(D)**

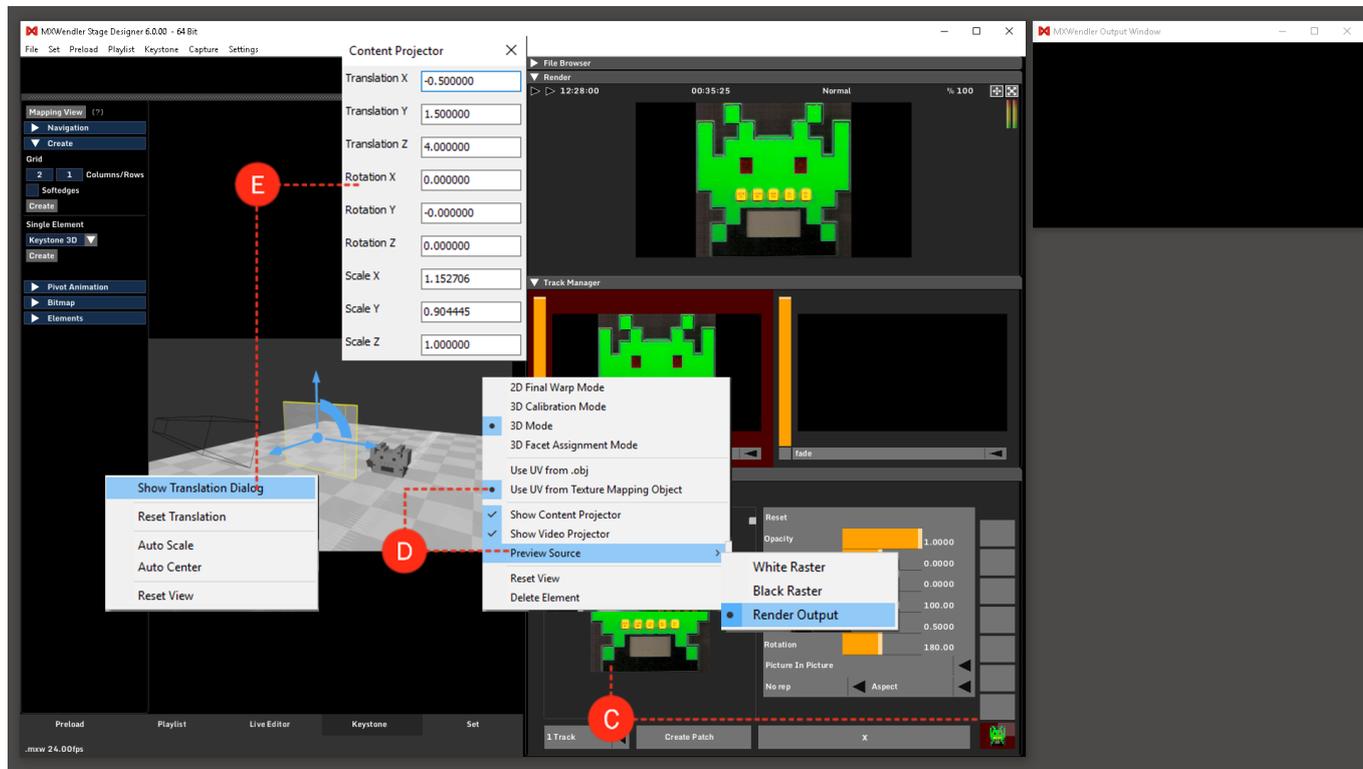
Now we can work with the 'Transformation Dialogs'. In the 3D Mode, we have three items.

The .svg object, the Camera/Projector, and the UV Map Projector, and each one has it's own transformation dialog. They allow an accurate manipulation of the item's characteristics.

To open one of them, right-click on the relative object and select: 'Show Transformation Dialog'.

3. Open the UV Map Projector's dialog (yellow rectangle). **(E)**

Set the values to make the image fit your object.



## 3D Calibration Mode

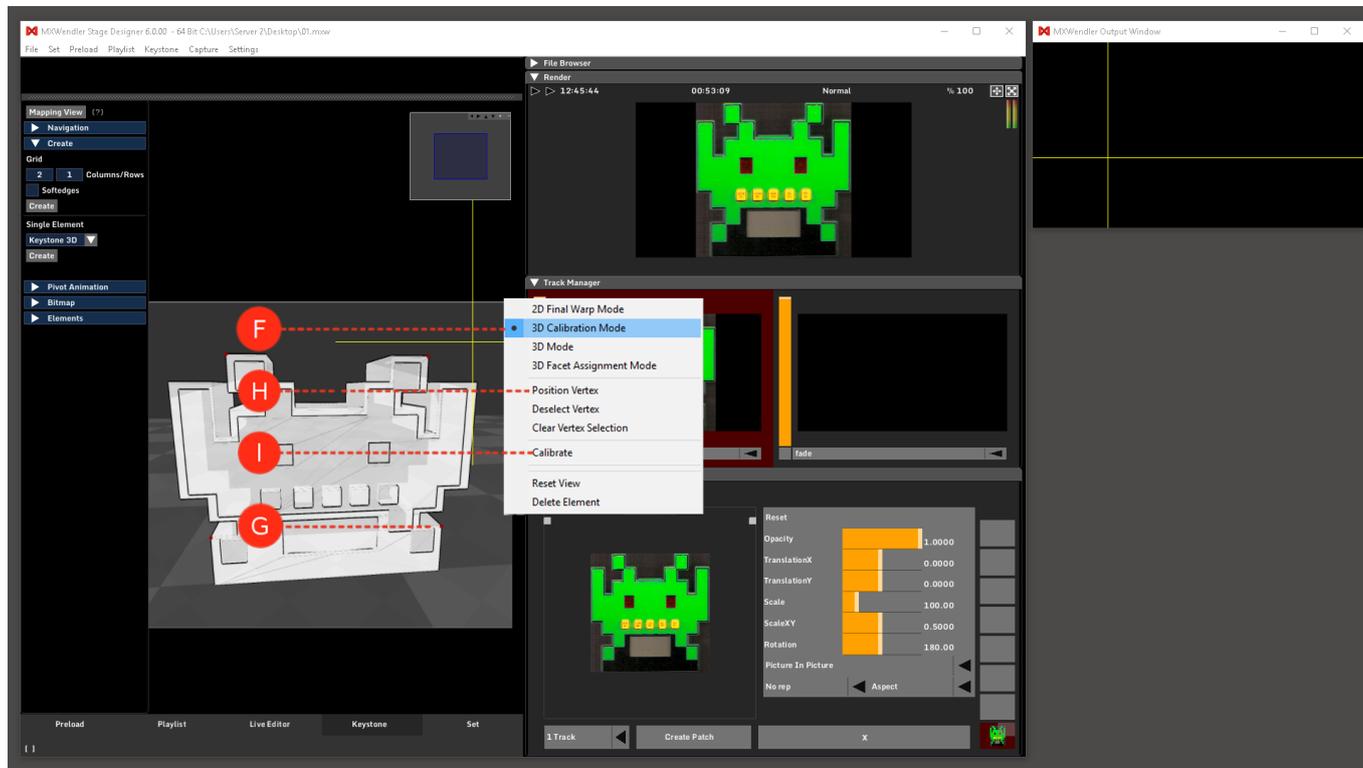
Now we are ready to map our item. Through the calibration, the software will let you do a mapping just by setting up 4 points (Vertices).

1. Right-click on the background and select '3D Calibration Mode'. **(F)**
2. Choose and select four corners of your object.
3. Right-click on one of the red dots. **(G)**
4. Select 'Position Vertex'. **(H)**

Two yellow crossing lines will appear in your output.

Select the corresponding point on the physical object.

5. Repeat for each of the four red dots.
6. Right click on 'Calibrate'. **(I)**

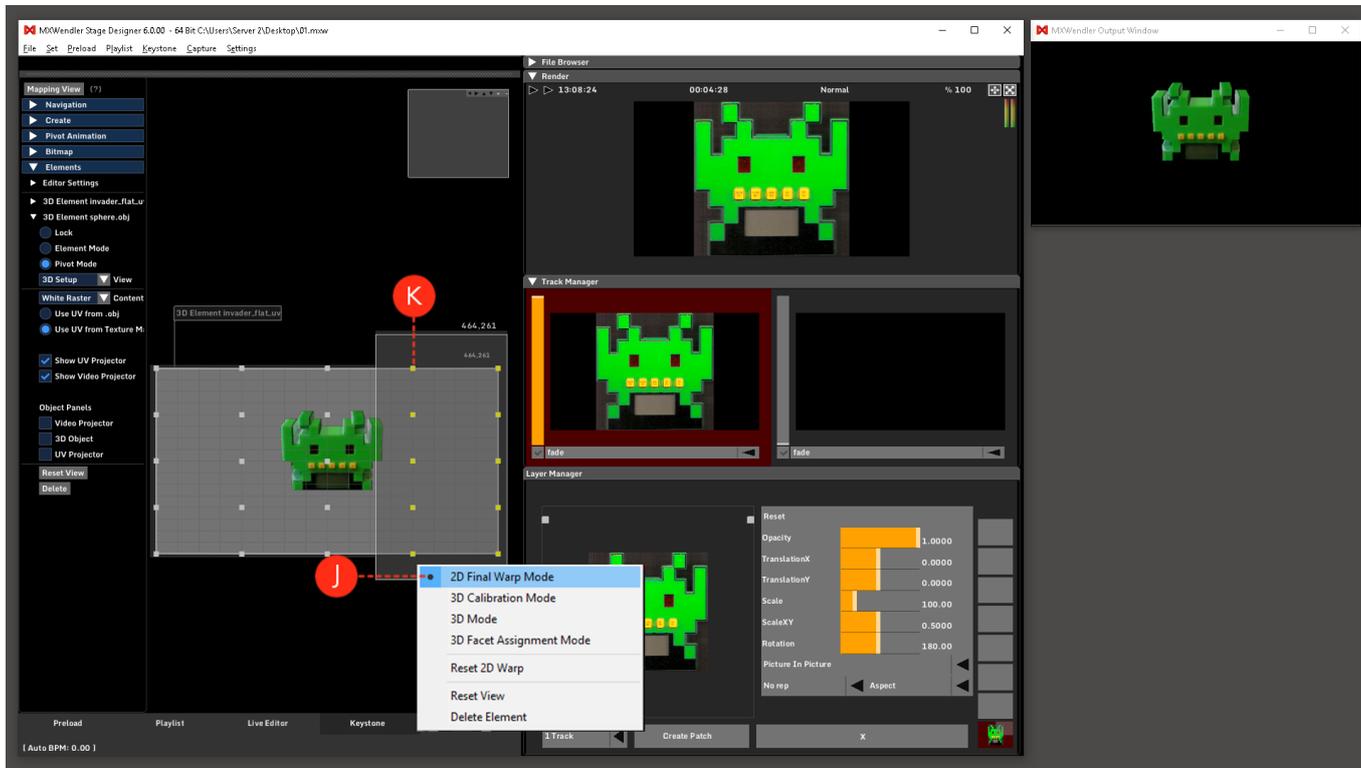


## 2D Final Warp Mode

At this point, our projection should be on the object but we may want to refine our work. For this purpose, we will use our keystone interface.

1. Right-click on the background and select '2D Final Warp Mode'. **(J)**
2. Go to the element sub-menu. **(K)**

Set the values and move the pivots to match your output to the object.



## 3D Facet Assignment Mode

1. Right-click on the background and select '3D Facets'. **(L)**

This section allows the user to assign layers and tracks to specific areas of the model. From the Mapping View, Element menu, open the 3D Element menu: **(M)**

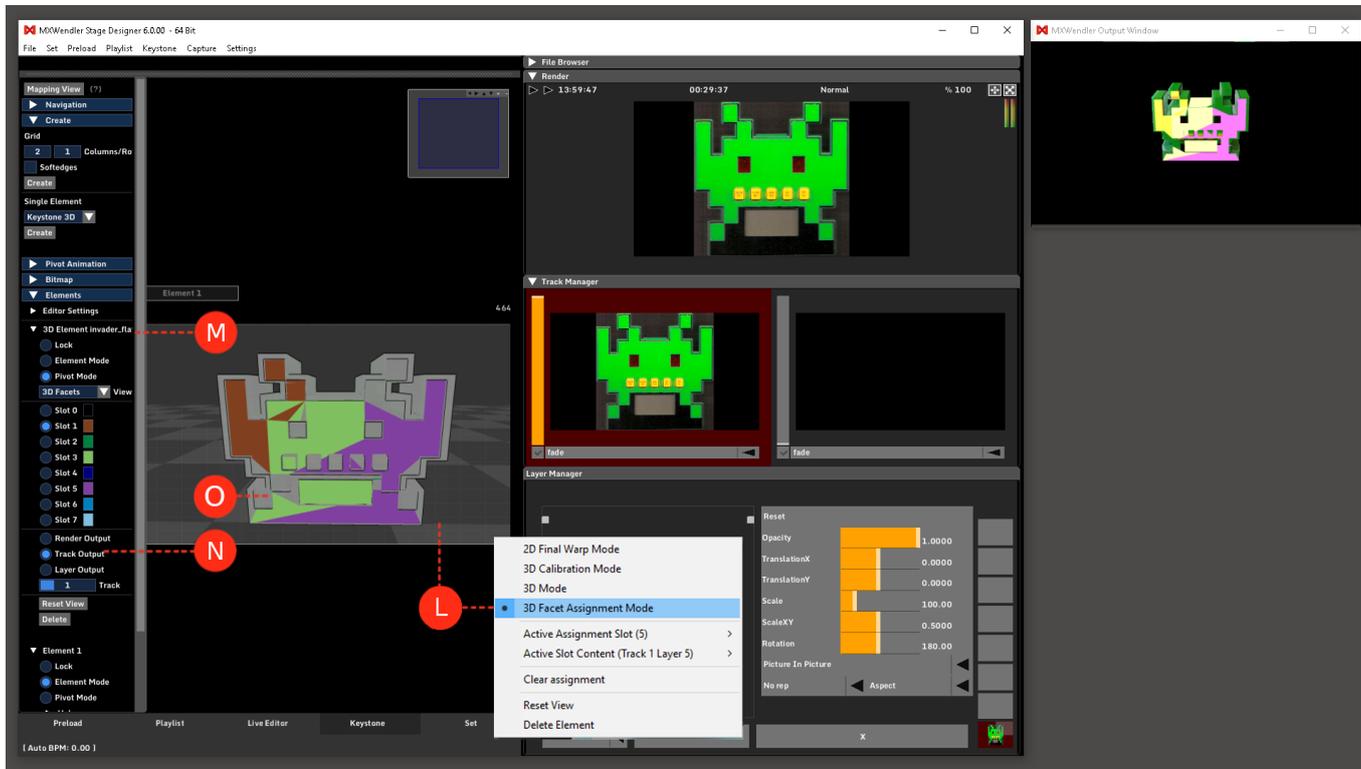
2. First select the Slot you want to assign to the part of the mapping: e.g slot 1.

3. Then select which Track or Layer or a combination of both, or Render Output should be assigned to the slot. e.g Track 1 Layer 4 **(N)**

4. Select further Slots and assign them to different content.

5. Start to map the output on the polygons of the .svg/3D model. **(O)**

6. Switch to 3D Mode to see the result.



# Tutorial Using the Akai APC Mini (Note On/Off)

This tutorial applies to Windows only, and all MXWendler versions.

In this tutorial preload clips are triggered over an Akai APC Mini Controller. Tracks, layers, effect parameters, and the master opacity can be controlled over the sliders.

The second chapter explains how to light up the Akai APC Mini Keyboard.

## Using the Akai APC Mini

Please download first the necessary APC Mini Midi Skin.

1. Install MIDIYoke (MidiYokeSetup.msi needs to be installed in Windows XP compatibility mode!).
2. Install MIDI-OX.
3. Connect the Akai APC Mini to your computer.
4. Open MIDI-OX.
5. Select 'MIDIYoke 1' as Output and 'APC Mini' as Input:

**Options → MIDI Devices → Output = 'MIDIYoke 1' → Input = 'APC Mini'**

6. Select 'apcmini\_mxw\_datamap\_full.oxm' as datamap:

**Options → Data Mapping → new window → Load: apcmini\_mxw\_datamap\_full.oxm**

The window should now be filled with data. This file needs to be loaded only once. The next time you run MIDI-OX it will be loaded automatically.

**Important:**

- Enable TURN MAP ON and confirm it with OK.
- MIDI-OX must be active in the background while working with the Akai APC Mini!
- MIDI-OX converts the **Note-On Data** of the Akai APC Mini into **Control Change**, which MXWendler can process.

7. Open MXWendler.

8. Select 'MIDI' in the IO Settings:

**Settings → IO Devices → DMX/MIDI/Keyboard Events → MIDI**

9. Load the file **Wendler\_standard\_APCmini.midimappings**.

10. Click on 'Apply', confirm it with 'OK' and 'Yes'.

11. Select 'In From MIDI Yoke 1' under MIDI/Generators:

**Settings → IO Devices → MIDI/Generators → In From MIDI Yoke 1**

12. Confirm it with 'OK'.

13. Set the Preload to 8 rows and 8 columns. (Thereby the Preload Tab corresponds to the optic of the Akai APC Mini.)

**Settings → Windows → Preload/Playlist → Default preload cols = 8 → Default preload rows = 8**

14. Restart MXWendler.

Each of the 64 Akai APC Mini buttons will now trigger a Preload Clip *once* in MXWendler.

The round buttons on the side are already programmed in MIDI-OX and can be seized by choice.

- Slider 1,2,3 = Track 1,2,3
- Slider 4,5,6 = Layer 1,2,3 (on the active track)
- Slider 7,8 = Free, can be seized by choice (e.g. effect values)
- Slider 9 = Master Opacity



## Light up the Akai APC Mini keyboard

1. Open MIDI-OX.
2. Select 'Data Mapping' in the Options.

### **Options → Data Mapping**

3. Uncheck 'Turn Map On' and confirm with 'OK'.
4. Change the Output from 'MIDIYoke 1' to 'APC Mini' and confirm with 'OK'.

### **Options → MIDI Devices → Output = 'APC Mini' '**

5. Press all the keys you want to be lit up.
6. Change the Output again. This time from 'APC Mini' to 'MIDIYoke 1' and confirm with 'OK'.

### **Options → MIDI Devices → Output = 'MIDIYoke 1' '**

7. Activate 'Turn Map On' and confirm with 'OK'.

### **Options → Data Mapping → 'Turn Map On'**



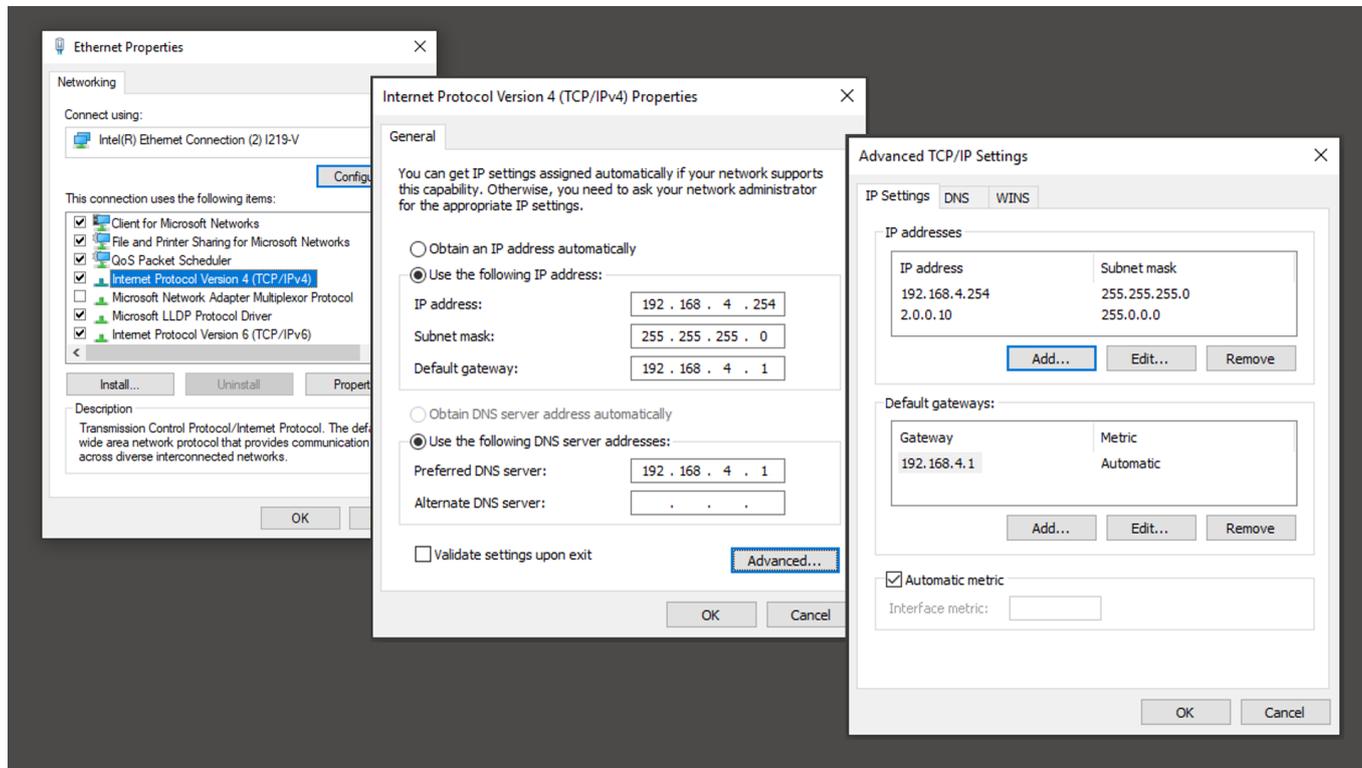
# Tutorial Connecting the grandMA 2Port Node with MXWendler via Art-Net

This tutorial applies to Windows only, and all MXWendler versions.

In this tutorial, we will connect a grandMA onPC software with a grandMA 2Port node. The onPC software will send Art-Net, which will be used to control an MXWendler mediaserver.

## Configure the grandMA on PC System

1. Open the network adapter settings, assign interface a primary MA-Net2 IP address. ( here 192.168.4.254 )
2. Open 'Erweitert...' / 'Extended...'
3. Add a secondary interface IP address in the Art-Net range ( recommended 2.x.x.x ). The netmask of 255.0.0.0 is important.



## Configure the grandMA on PC Software

MA-Net Control (Consoles only) Master 1 X

Invite Enabled

Autojoin Enabled

Sessions				Stations					
ID	Name	Master IP	Speed	IP	Status	Name	Version	Type	Link Speed
	Not connecte			[no items]					
1	newshow	192.168.4.254	Fast						

4. Open MA Setup, create a new session on the MA-Net2 IP ( here 192.168.4.254 )

Setup/Network/MA Network Save to Default Load from Default Master 1 X

Consoles onPC NPU 3D VPU NDP Dimmer DMX Nodes

IP	IP	Name	Mode	Session	Type	XLR A	XLR B
ETHERCON 1(ETH0)	ETHERCON 1						
192.168.4.250	0.0.0.0	MA 2Port Node MX	MA-Net2	1	onPC PRO	Out 1	Out 2
New							

5. Open DMX nodes, add the node, assign it an MA-Net2 IP address ( here 192.168.4.250 ), set Ma-Net2 mode, set session-id that matches the previously created session.

Setup/Network/Network Protocols Master 1 X

Art-Net    ETC Net2    Pathport    sACN    Shownet    Kinet1

Showing 'Art-Net'

Valid	Mode	Destination IP	LocalSt	Amount	Network	Subnet	Universe	Delay (ms)
Yes	OutputAuto		1	8	1	0	0	0.00
New								

Network DMX if Alone  
Art-Net Output Active  
Art-Net Input Active

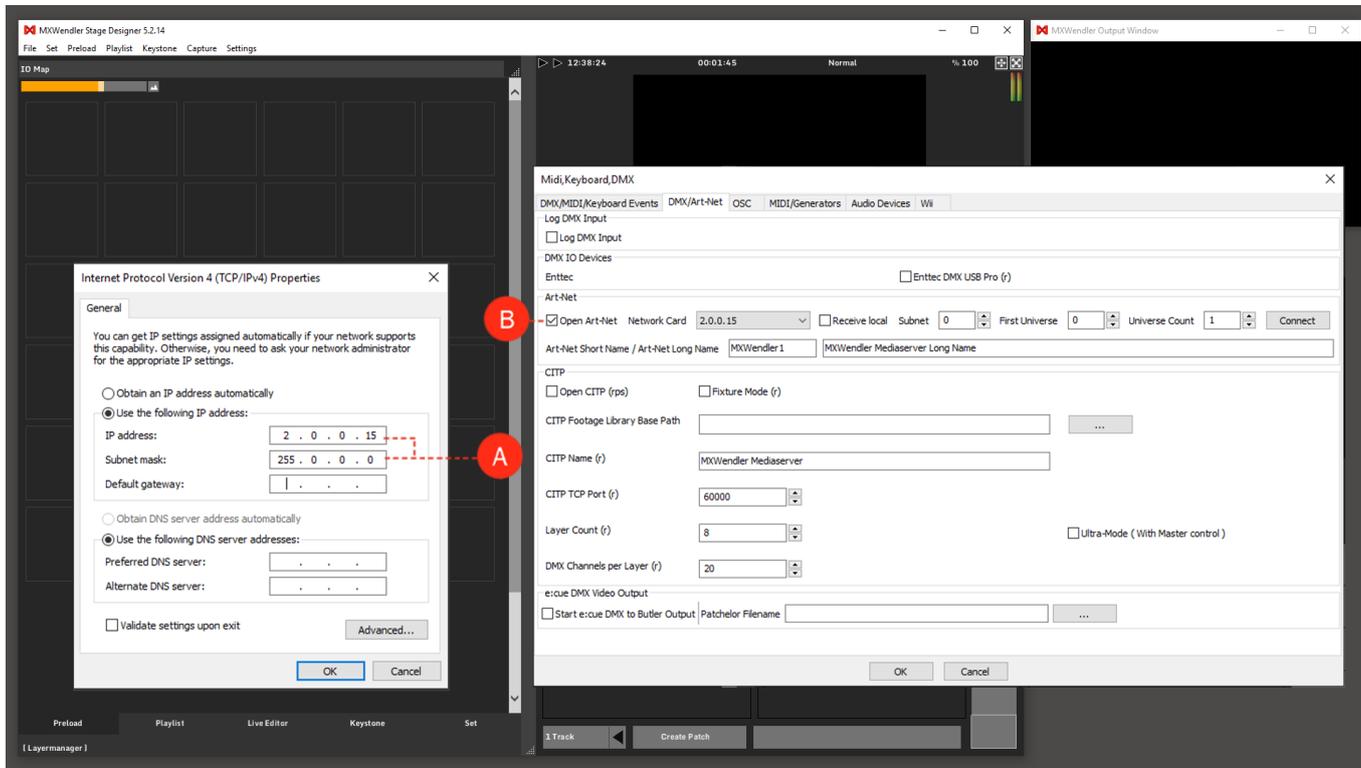
6. Open Network Protocols, enable Art-Net, enable DMX output, set universe and subnet as shown.

## **Configure the MXWendler Mediaserver PC System**

7. Open network adapter settings, enter a valid Art-Net IP address. The subnet mask of 255.0.0.0 is important.  
**(A)**

## **Configure the MXWendler Mediaserver Software**

8. **Open Settings → IO → Art-Net/DMX → Select adapter, universe and subnet as shown. (B)**



# Tutorial Connecting Jands Vista2 with MXWendler via Art-Net

This tutorial applies to all different OS and MXWendler versions.

In this tutorial we will connect Jands Vista2 (we are using the software on a Windows PC) to an MXWendler media server. We will be able to control the media server via Art-Net. If you are not using a Jands console, install Jands Vista2 on the computer that you want to use as controller.

## Import the MXWendler Fixture in the Jands Fixture Editor

1. Launch Vista2 Fixture Type Editor (standalone program, installed with Vista2) or load it through Vista2:

**Menu → Patch → Fixture Editor...**

2. Select 'User Fixture Library' then:

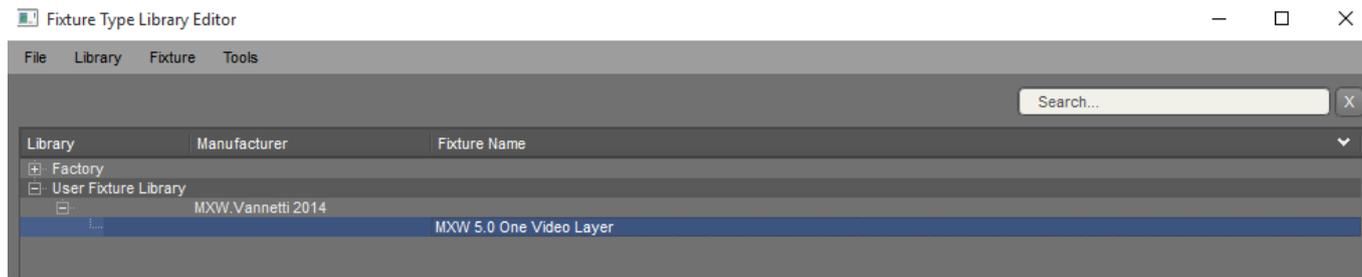
**Menu → Fixture → Import Fixture**

The fixture personality is in the MXW installation folder e.g.:

**C:\Program Files  
(x86)\MXWendlerStageDESIGNER50\DMX\Personalities\Jands\MXW\MXW.Vannetti 2014\MXW**

## 5.0 One Video Layer.fix2

The Fixture is ready to be loaded and used on Vista2.



# Configuration of the MXWendler Media Server

1. Open MXWendler and activate the following options:

**Menu → Settings → Input and Output → DMX/Art-Net**

Art-Net connection **(A)**

CITP **(B)**

Fixture Mode **(C)**

2. Select the desired number of layers in:

Layer Count **(D)**

The media server and the device running Vista2 need to be connected to the same network. eg.:

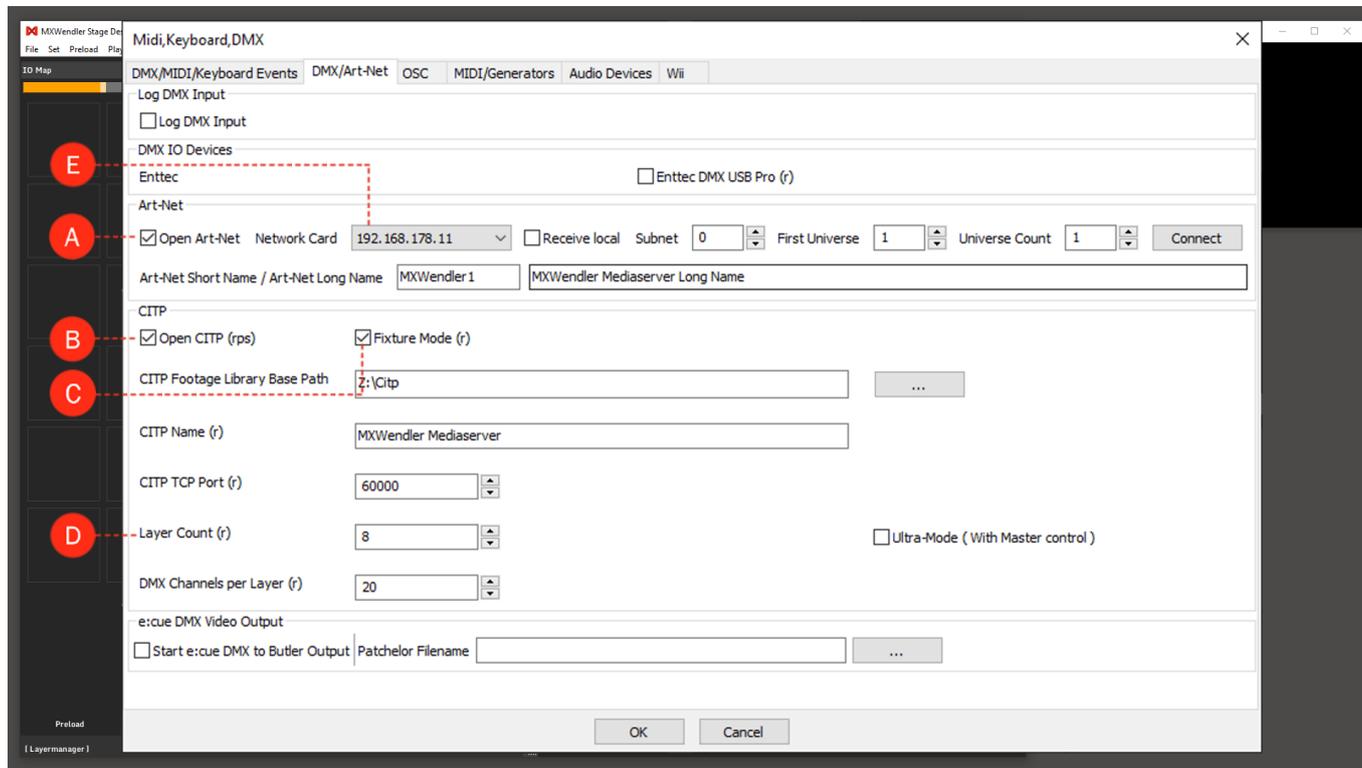
Our media server's IP is: **192.168.4.91 (E)**

Our controlling devices's IP is: **192.168.4.32**

Windows: In case your computer has more network interfaces be sure to select the correct one.

Apple: System will listen on all network interfaces.

Setting of the CITP Footage Library Base Path will be explained later in the CITP paragraph.



3. Load the DMX Mappings:

**Settings → IO → DMX/Midi/Keyboard Events → DMX (A)**

Load eg. **C:\Program Files**

**(x86)\MXWendlerStageDESIGNER50\DMX\Personalities\Jands\MXW\MXWendlerDMXmappings  
(B)**

4. Load the file with the desired number of Layers to control. If you want to control 16 layers with Vista2 load the file

**MXW\_16\_Layers.dmxmappings (C)**

5. Restart MXWendler.

The screenshot displays the MXWendler Stage Designer 5.2.14 interface. The main window is titled "Midi, Keyboard, DMX" and is divided into several sections. On the left, there is a "DMX/MIDI/Keyboard Events" panel with a dropdown menu set to "DMX" (marked with a red circle 'A'). Below this is a table of events with columns for "Event" and "Target".

Event	Target
1/266	/mxw/fixture/8/layer/clip/keyin
1/268	/mxw/fixture/8/layer/clip/keyout
1/270	/mxw/fixture/8/layer/clip/position
1/272	/mxw/fixture/8/layer/clip/mode
1/273	/mxw/fixture/8/layer/opacity
1/274	/mxw/fixture/8/layer/translationx
1/276	/mxw/fixture/8/layer/translationy
1/278	/mxw/fixture/8/layer/rotation
1/280	/mxw/fixture/8/layer/scale
1/282	/mxw/fixture/8/layer/scalexy
1/284	/mxw/fixture/8/layer/file
1/285	/mxw/fixture/8/layer/folder
1/286	/mxw/fixture/8/layer/clip/red
1/287	/mxw/fixture/8/layer/clip/green
1/288	/mxw/fixture/8/layer/clip/blue
1/289	/mxw/fixture/8/layer/clip/effect/bank
1/290	/mxw/fixture/8/layer/clip/effect
1/291	/mxw/fixture/8/layer/clip/effect/1/param/1
1/292	/mxw/fixture/8/layer/clip/effect/1/param/2

Below the table are navigation buttons (up, down, left, right) and action buttons: "Copy", "Re-Index", "Clear All", "Load" (marked with a red circle 'B'), "Insert", "Save", and "Save HTML".

On the right side, a "Select a Filename" dialog box is open, showing a file explorer view of the "DMX > Personalities > Jands > MXW > MXWendlerDMXMappings > 5.2" folder. The file "MXW\_5.2\_16\_Layers.dmxmappings" is selected (marked with a red circle 'C'). The file name field contains "MXW\_5.2\_16\_Layers.dmxmappings" and the file type is set to ".dmxmappings files (\*.dmx)".

The bottom of the interface shows a control bar with "Preload", "Playlist", "Live Editor", "Keystone", and "Set" buttons, along with a BPM indicator showing "Auto BPM: 60.00".

## Configuration of Vista2

1. Open Vista2 and set the Art-Net Connection:

'Connect Universes' **(A)**

In the new DMX Connections window, set the DMX Universe to **1** and

'Add Network Connection' **(B)** (Universe 1)

'Add' **(C)**

2. Select the MXW Fixture Type. One fixture corresponds to one Layer:

'MXW 5.0 One Video Layer' **(D)**

'Quantity' of layers' **(E)**

'Patch' **(F)**

The screenshot displays a lighting control software interface with a grid of 24 DMX universes. Two dialog boxes are open over the grid:

- DMX Connections:** A table for assigning DMX universes to outputs. It has columns for Name, Ports, Host Info, Connected, Device Info, Port Info, and DMX Universe. Two rows are visible:

Name	Ports	Host Info	Connected	Device Info	Port Info	DMX Universe
MXWender1	1	VistaByron_365 * Type: PC (Windo...	✓	IP:192.168.4.91	Sub:2, Unit:1	1
MXWender1	2	VistaByron_365 * Type: PC (Windo...	✓	IP:192.168.4.91	Sub:2, Unit:2	1
- Add Broadcast Port:** A dialog for adding a network connection. It has sections for:
  - Art-Net Broadcast port: Sub-Net (1), Universe (1)
  - Pathport: Quick-Universal port
  - Pathport: xDMX Universe port
  - Streaming ACN

Other interface elements include a top menu bar (File, Edit, Components, Tools, Patch, Console, Chooser, Timeline, View, Help), a toolbar with icons for Save, New, Open, etc., and a right-hand panel with a Fixture Type dropdown (Factory, Generic, User Fixture Library, MXW/Vanner® 2014, MXW S 0 One Video Layer) and a Patch Properties section with fields for Quantity (16), Name (MXW 1 LAYER), Fixture Number (17), Multi Patch (1), Patch (1), DMX Universe (1), DMX Address (457), Absolute Address (457), Spacing (0), and a Patch button.

## Set up the CITP Footage Library on the Media Server

In order to be controlled from Vista2, the footage on the media server has to be organized in a specific order.

The footage has to be on the same hard drive, in the same folder:

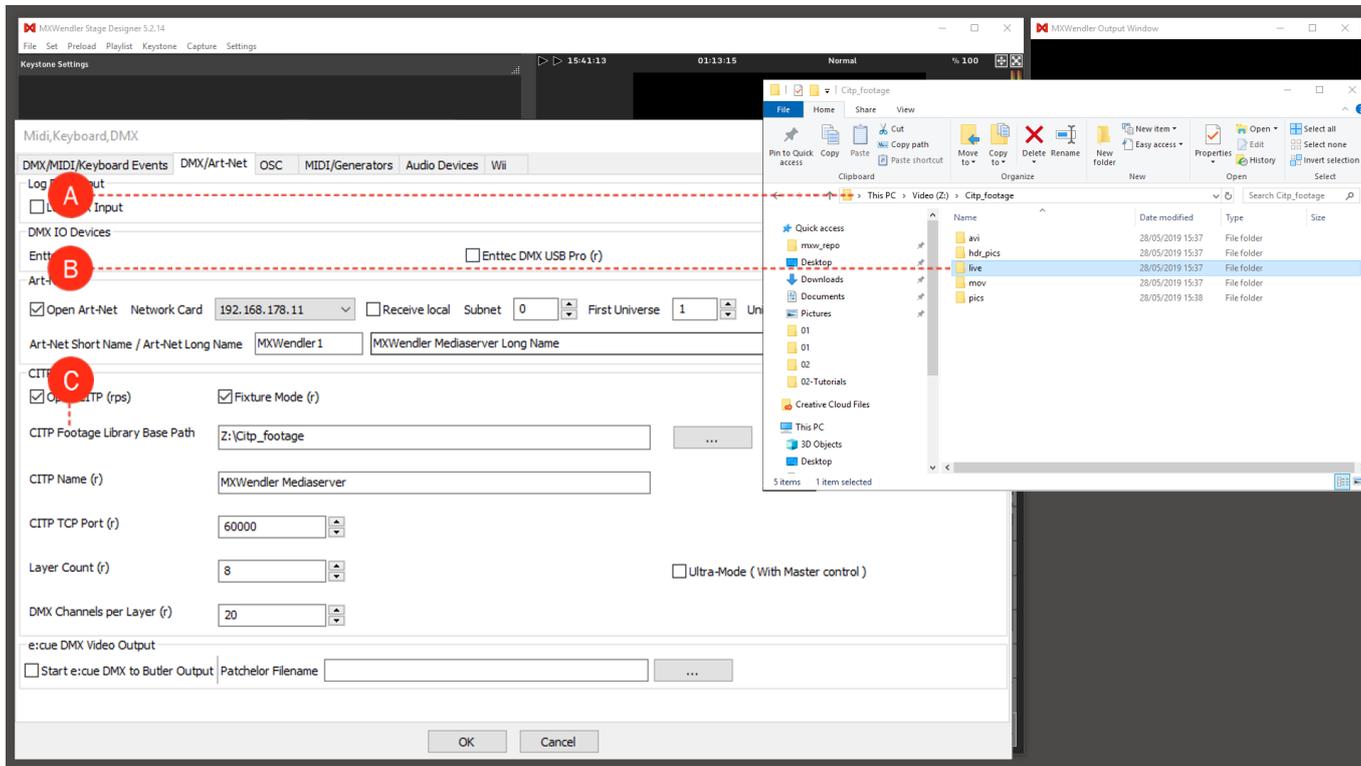
eg. **Z:\citp\_footage (A)**

Inside the CITP folder another directory level must be set to separate the media by type.

A **live** folder must be made. MXWendler will automatically find the folder and let the user control Live Devices from there. **(B)**

'CITP Footage Library Base Path' can be now set on MXWendler: **(C)**

**Menu → Settings → Input and Output → DMX/Art-Net**



## Download and Assign Media Server Thumbnails in Vista2

1. **Menu → Patch → Import Media Server Thumbnails (A)**
2. **Import Thumbnails. (B)**
3. **Left click on the loaded Fixture Type, select 'Use Custom Media'. (C)**
4. **Choose the thumbnails directory, eg. Windows: ...\Documents\Vista Data\UserName\Images\MediaServerThumbnails and select → MXWendler Mediaserver**

The screenshot displays the Vista 2 software interface. The top menu bar includes File, Edit, Components, Tools, Help, Console, Chooser, Timeline, and View. A 'Patch' menu is open, showing options such as 'Show Patch', 'Delete Features', 'Rename Features...', 'Remember Features...', 'Multi-Patch Features...', 'Customize Gobos and Colour Wheels', 'Change Fixture Type', 'Change Fixture Type (All of Selected Type)', 'Clone Features', 'Import Fixture Library...', 'Extract Selected Features To User Library', 'Fixture Editor...', 'Import Patch File...', 'Export Patch File...', 'Import Media Server Thumbnails' (highlighted with a red circle 'A'), 'Check For Updated Fixture Profiles', 'Use Default Media', 'Connect Universes...', 'Strike', 'Douse', 'Reset', 'Park Features', 'Unpark Features', and 'Show Parked Features'. The main workspace shows a table of universes (1-26) and layers (1-16). A 'Ctp' dialog box is open, displaying a table of media servers:

Media Server	Status	Ip Address	Port Number
MXWender Mediaserver	Unconnected	192.168.4.91	60000

The dialog box has buttons for 'Import Thumbnails' (with a red circle 'B'), 'Delete Thumbnails', 'Clear Cache', and 'Close'. On the right, a 'Connect Universes' panel shows a search bar and a list of fixture types, with 'MXW 1 LAYER' selected and highlighted with a red circle 'C'. Below this, a 'Patch' panel shows settings for 'MXW 1 LAYER', including 'Quantity: 10', 'Fixture Number: 17', 'Multi Patch: 1', 'Patch: 1', 'DMX Address: 457', 'Absolute Address: 457', and 'Spacing: 51'.

# Tutorial Set up the CITP Footage Library on the Media Server

This tutorial applies to all different OS and MXWendler versions.

In this tutorial we will create a CITP media folder to upload the footage thumbnails to a light console (E.g. Jands Vista).

In order to be uploaded to a light console, the footage on the media server has to be organized in a specific order.

The footage has to be on the same hard drive, in the same folder:

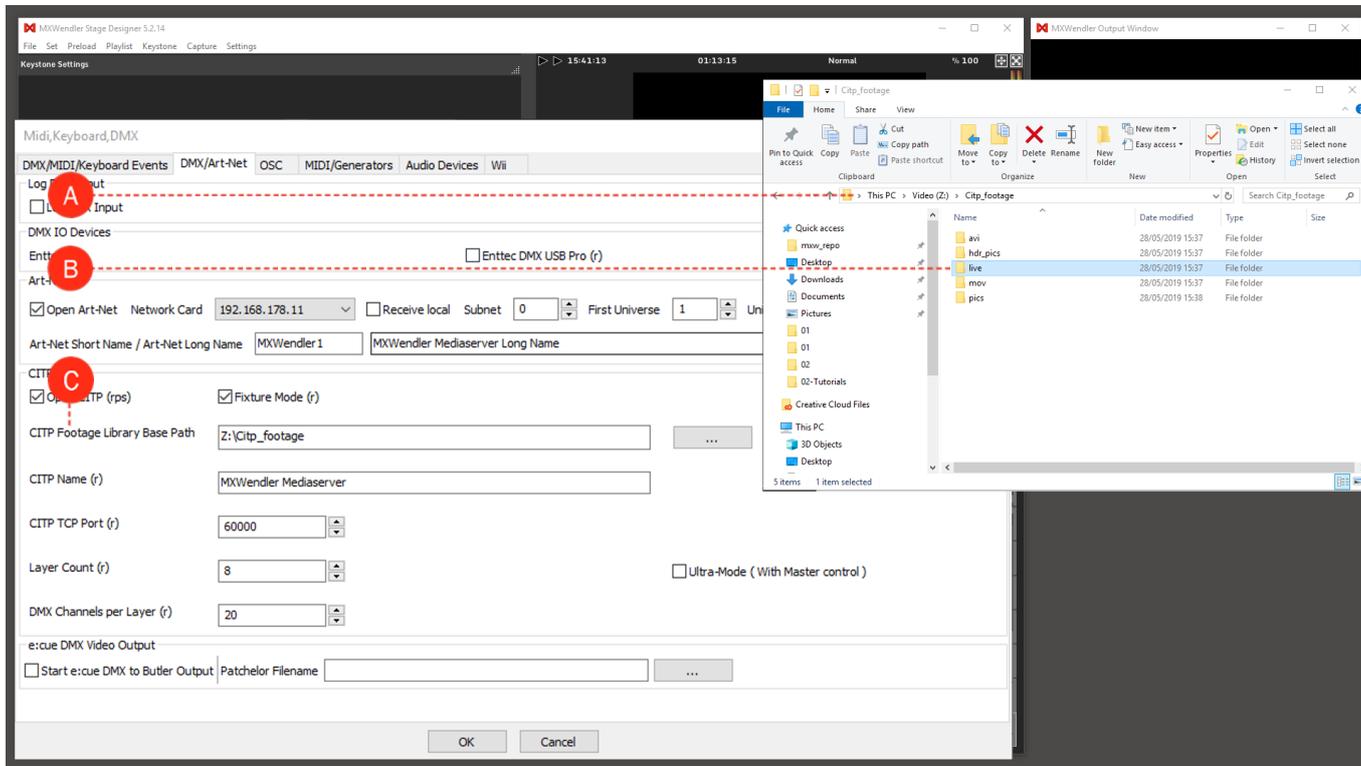
eg. **Z:\citp\_footage (A)**

Inside the CITP folder another directory level must be set to separate the media by type.

A **live** folder must be made. MXWendler will automatically find the folder and let the user control Live Devices from there. **(B)**

'CITP Footage Library Base Path' can be now set on MXWendler: **(C)**

**Menu → Settings → Input and Output → DMX/Art-Net**



# Tutorial Time-sync and sending IO Commands over OSC Protocol

This tutorial applies to all different OS and MXWendler versions. Please note that the screenshots are made with Version 5 User Interface. Version 6 users please consider the differences in Version 6 Playlist.

In this tutorial we will sync two MXWendler systems and simultaneously control the playlist of both the computers by sending IO commands over OSC protocol.

## Pooling MXWendler Systems via time Synchronization

Setting the network:

- To communicate over the OSC protocol, the machines have to be connected to the same network.
- The time signal will go from the computer with the lower IP (*Master*) to the computer with the higher (*Slave*).
- In our case the *Master* has the 192.168.4.32 IP address and the *Slave* has the 192.168.4.91.

Setting the software on both computers:

1. Start MXWendler and go to:

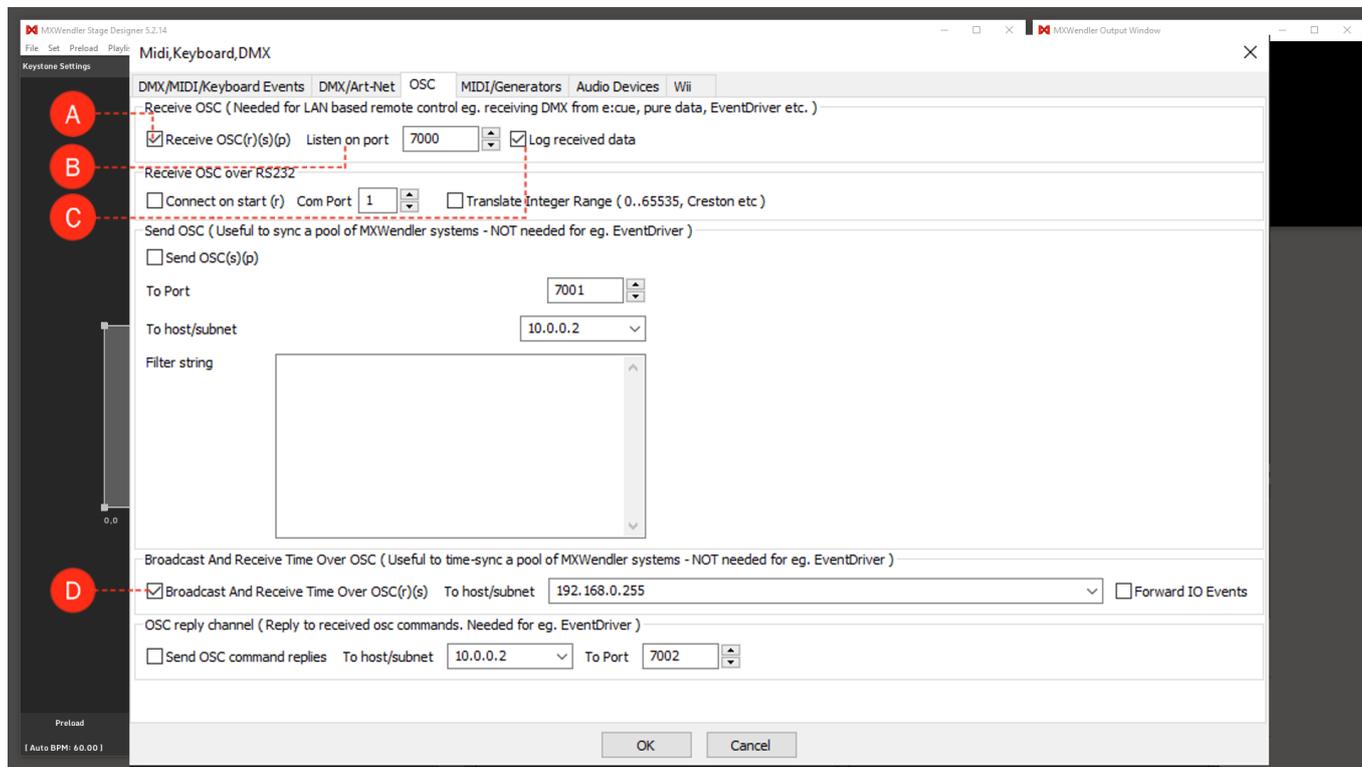
**Menu - Settings - IO - OSC**

2. Check 'Receive OSC'. **(A)**

3. Set port to 7000. **(B)**

4. Check 'Log received data' (this allows the Log Window to display the data stream that the computer is receiving). **(C)**

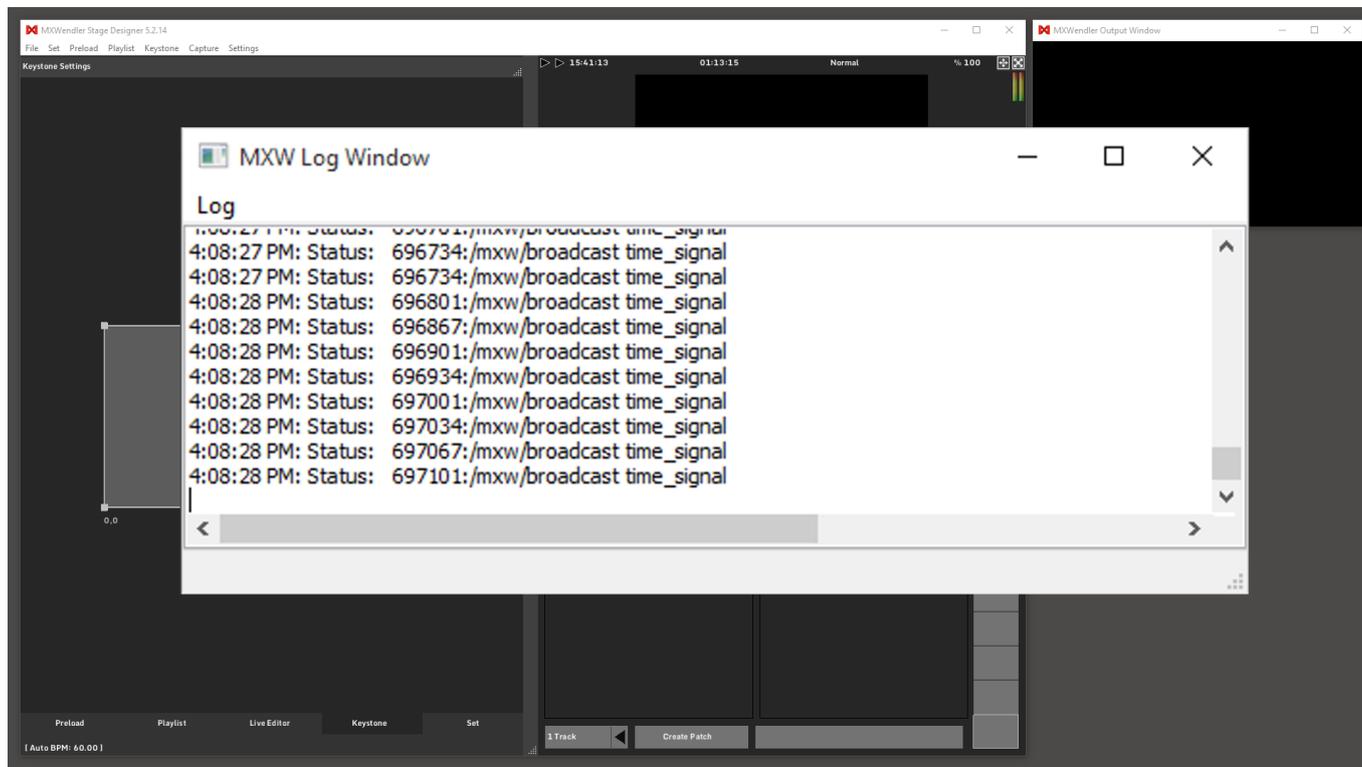
5. Check *Broadcast and receive time* and *Forward IO Events*. **(D)**



Now all the machines will send their time until they start to receive packets from a machine with lower IP, then the ones with a higher IP will switch to receiving.

6. Open the Log Windows of the two computers: the flow of time commands should be displayed on the *Slave* system.

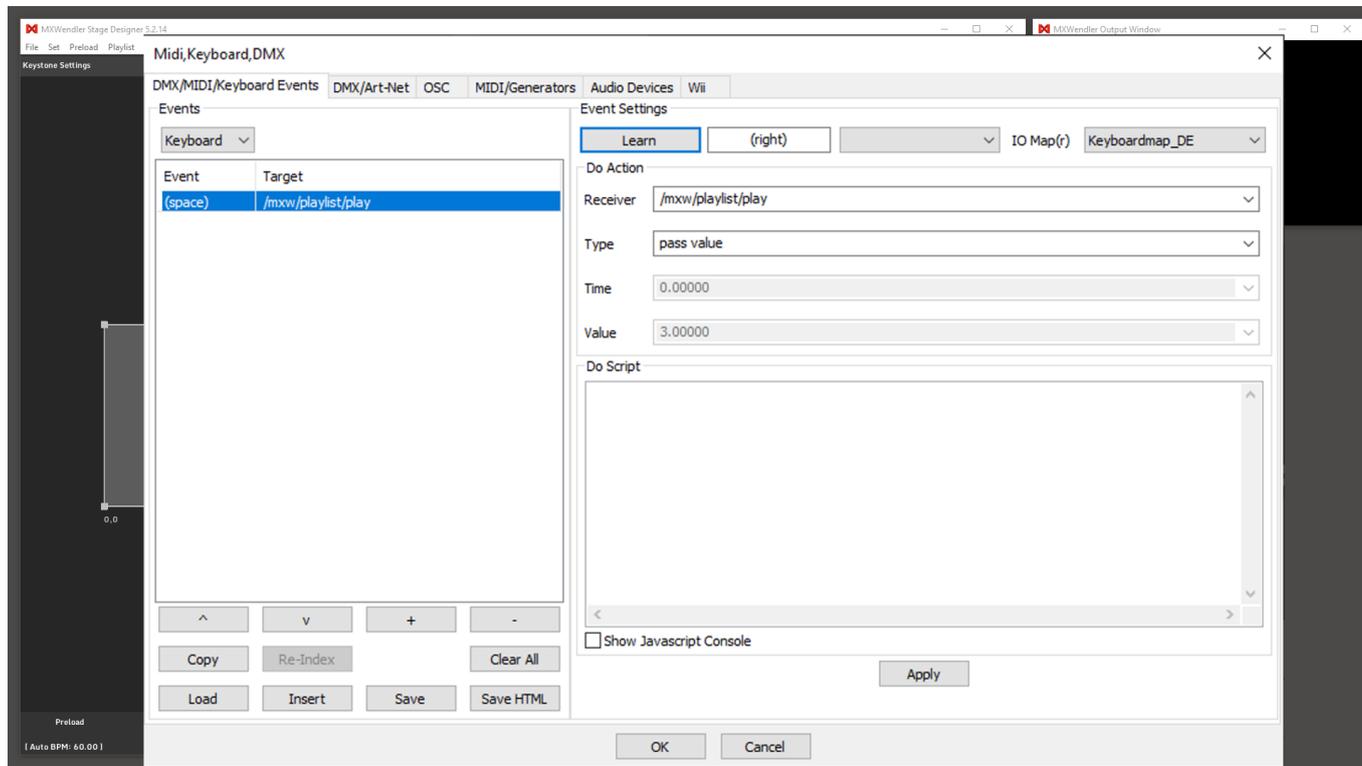
The 2 MXWendler systems are now connected and synchronized.



## Simultaneous Control of 2 Playlists with IO Commands via OSC

1. Set a playlist on both the computers.
2. Create an event on the slave computer to control the playlist's play button, for example with the right arrow key.

eg. **Menu - Settings - IO - DMX/MIDI/Keyboard Events - Keyboard**



3. Set an IO Command in the Master system's playlist.

4. Right-click on the first cell of the second cue, select 'Send IO Command' and then double click to write the command: "Keyboard (right)".

Now, by pressing the play button on the Master computer, the playlist will be simultaneously executed on the Slave.

The screenshot displays the MWendler Stage Designer 5.2.14 interface in Rehearsal Mode. The main window is titled "MWendler Stage Designer 5.2.14" and includes a menu bar with "File", "Set", "Preload", "Playlist", "Keystone", "Capture", and "Settings". The interface is divided into several sections:

- Top Left:** Shows the rehearsal title "01\_mxw\_1080p\_30fps\_h264" and "2 02\_mxw\_1080p\_30fps\_mpeg". Below this is a playback control bar with a timeline from 00:00:02 to 00:00:07.
- Track List (Center Left):** A list of 13 tracks with various colored backgrounds (green, blue, orange, grey).

Track	File Name	Command
1	01_mxw_1080p_30fps_h264_000.hw	IO Command
2	02_mxw_1080p_30fps_mpeg2_000.hw	IO Command
3	04_34_Keyword_WITH.avi	IO Command
4	05_walkingman_outline_loop.avi	IO Command
5	06_TearsOfSteel720p_h265.mkv	IO Command
6	07_Test_Thalia_Text_h264_GOP1.mov	IO Command
7	08_bbb_sunflower_2160p_30fps_nor...	IO Command
8	09_abc.mpg	
9	10_entrada.wmv	
10	11_ORID.mp4	
11	12_34_TikTokSpirale_A.avi	
12	bbb_sunflower_1080p_30fps_normal...	
13		
- Bottom Left:** A "Keyboard (right)" section with the instruction: "I/O command - double click and enter eg. 'Keyboard a' or 'Keyboard (space)'"
- Bottom:** A navigation bar with buttons for "Preload", "Playlist", "Live Editor", "Keystone", and "Set".
- Right Side:** A "MWendler Output Window" showing a live preview of the stage content. Below it is a control panel for the selected track, including a "Reset" button and sliders for "Opacity" (1.0000), "TranslationX" (0.0000), "TranslationY" (0.0000), "Scale" (100.00), "ScaleX" (0.5000), and "Rotation" (180.00). There is also a "Picture In Picture" section with a "No rep" button and a "1:1" ratio.

# Tutorial Connecting a Wiimote to MXWendler

This tutorial applies to Windows only, and all MXWendler versions.

In this tutorial we are going to connect a Wiimote to MXWendler Stage Designer and assign the movement of the controller to a pivot of a keystone element.

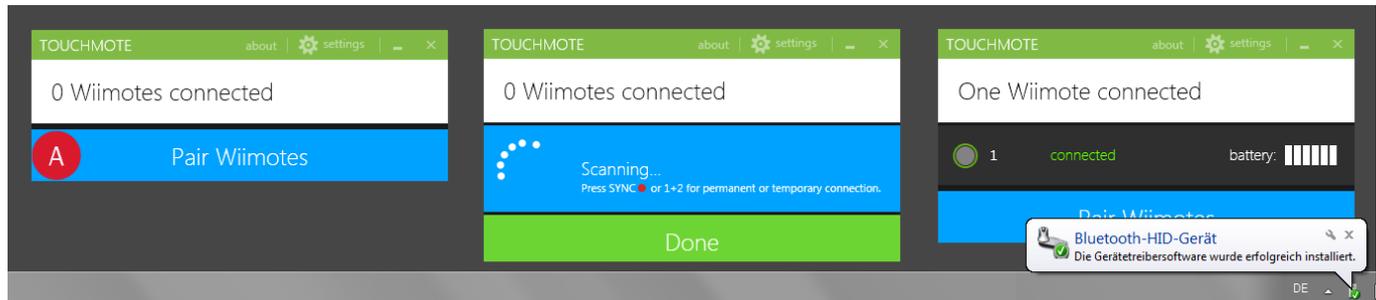
## Connecting the Wiimote to the Operative System

1. Set a Bluetooth connection on your computer. (eg. a normal Bluetooth USB adapter works perfectly)

For this tutorial, we are going to use “Touchmote”.

Download and install “Touchmote”. (<http://touchmote.net/>)

2. Start the software.



### 3. Pair your Wiimote to the software:

Click on 'Pair Wiimotes' **(A)**

Push and hold 'Sync'.

(It is the small red button on the back of the Wiimote, hidden in the battery compartment)

Once the Wiimote is paired, the operative system should recognize it as a Bluetooth device.

### 4. Close Touchmote.

## Configuring the Wiimote to Control Stage Designer

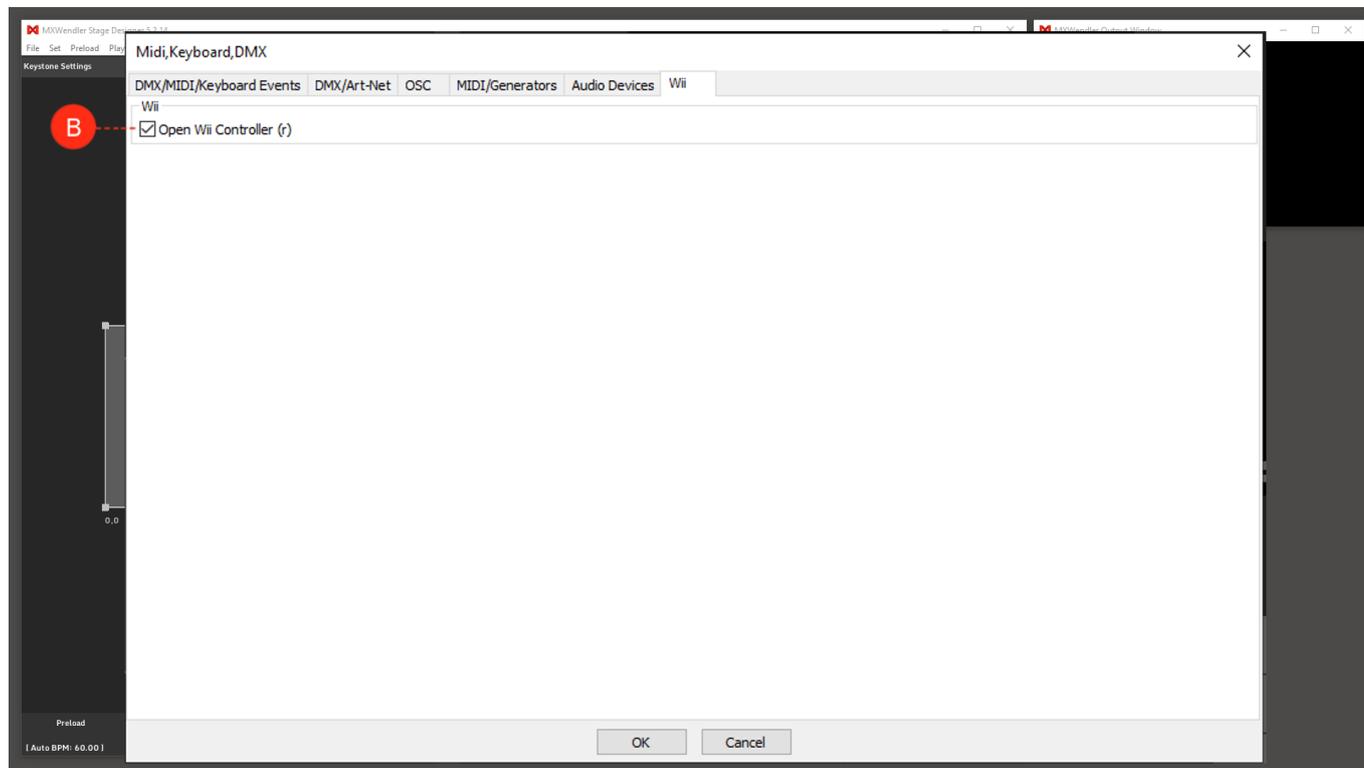
5. Open MXWendler and set the software to communicate with the Wiimote:

**Settings → IO Devices → Wii**

Check 'Open Wii device' **(B)**

6. Restart Stage Designer

MXWendler can now communicate with the Wiimote.



7. Select 'Wii' in the IO Settings: **(C)**

**Settings → IO Devices → DMX/MIDI/Keyboard Events → Wii**

8. Click on '+' to create a new Event. **(D)**

9. Select the event and click 'Learn', you can choose to assign a button or the movement of the Wiimote. **(E)**

*Tip: The Wiimote motion sensor is based on infrared light, if you don't have a sensor bar you can click on 'Learn' and then try to move the Wiimote in front of the flame of a lighter!*

10. Now choose the Receiver, the type of Action and apply. **(F)**

In our case, we connected the position of a Keystone Pivot with the Wiimote infrared sensor.

**IR X1 - /mxw/keystone/element/1/pivot/col/1/row/1/xposition**



# Tutorial Controlling MXWendler via TouchOSC

This tutorial applies to all different OS version, and all MXWendler version 5.0 and above.

## Introduction

In this tutorial, we will connect TouchOSC to a computer running MXWendler Stage Designer. We will be able to control the software via OSC protocol.

TouchOSC is an app available for IOS and Android devices and is fully adaptable to the user's specific needs. With this tutorial, we offer a touch interface designed for fast and intuitive use of our software but we obviously encourage the MXWendler users to change, improve, customize or even design their own template.

### This Tutorial Requires:

1. TouchOSC App

[Playstore](#) | [Appstore](#)

2. TouchOSC MidiBridge and TouchOSC Editor

[hexler.net](#)

3. MXWendler TouchController.touchosc and TouchOSC\_Keystone\_Mappings.midimappings

[Download from MXWendler.net](#)

## TouchOSC on Your Touch Device

1. Download the TouchOSC app from Google Play Store or Apple App Store and install it on your device.
2. Connect the device to the same wireless network of the computer you want to control.
3. Open TouchOSC and click on the first item of the menu: 'OSC' **(A)**
4. Once inside the submenu configure as follows:

**HOST:** IP address of the computer running MXWendler

**Port (Outgoing):** - 7000

5. Then click on the 'MIDI Bridge'. **(B)**
6. And configure as follows:

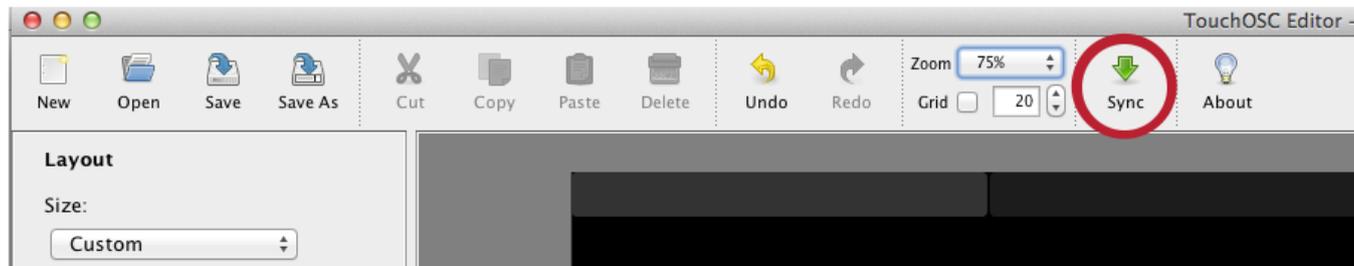
**HOST:** IP address of the computer running MXWendler

Settings	OSC	MIDI Bridge
<b>Connections</b>		
<b>OSC</b> 192.168.178.32 <span style="color: red; font-size: 2em; border-radius: 50%; padding: 2px 8px;">A</span>	Host: 192.168.178.32	Host: 192.168.178.32
<b>MIDI Bridge</b> 192.168.178.32 <span style="color: red; font-size: 2em; border-radius: 50%; padding: 2px 8px;">B</span>	Port (outgoing): 7000	<b>Found Hosts (1)</b>
	Port (incoming): 9000	Admins Mac Pro
<b>Layout</b> 00_StageDesigner_Control	ZeroConf Name: Android	
<b>Options</b>	Local IP Address: 192.168.178.21	
	<b>Found Hosts (0)</b>	

## Configuring the Computer

1. Download the template and the midi mappings from: [MXWendler.net](http://MXWendler.net)
2. Download the TouchOSC Editor and the Midi Bridge from: [hexler.net](http://hexler.net)
3. Launch the Midi Bridge.
4. Open the MXWendler template with the editor and press 'Sync'.
5. Now, on the mobile device, open the third item of the TouchOSC menu to download the template:

**Layout → Add From Editor → Download**



## Setting up Stage Designer

1. Start MXWendler StageDesigner and go to:

**Menu → Settings → IO → OSC**

2. Check 'Receive OSC' **(C)**

3. Set port to 7000

'Log Received Data' can be checked during the setup but, due to performance reasons, it must be **unchecked** during the usage. **(D)**

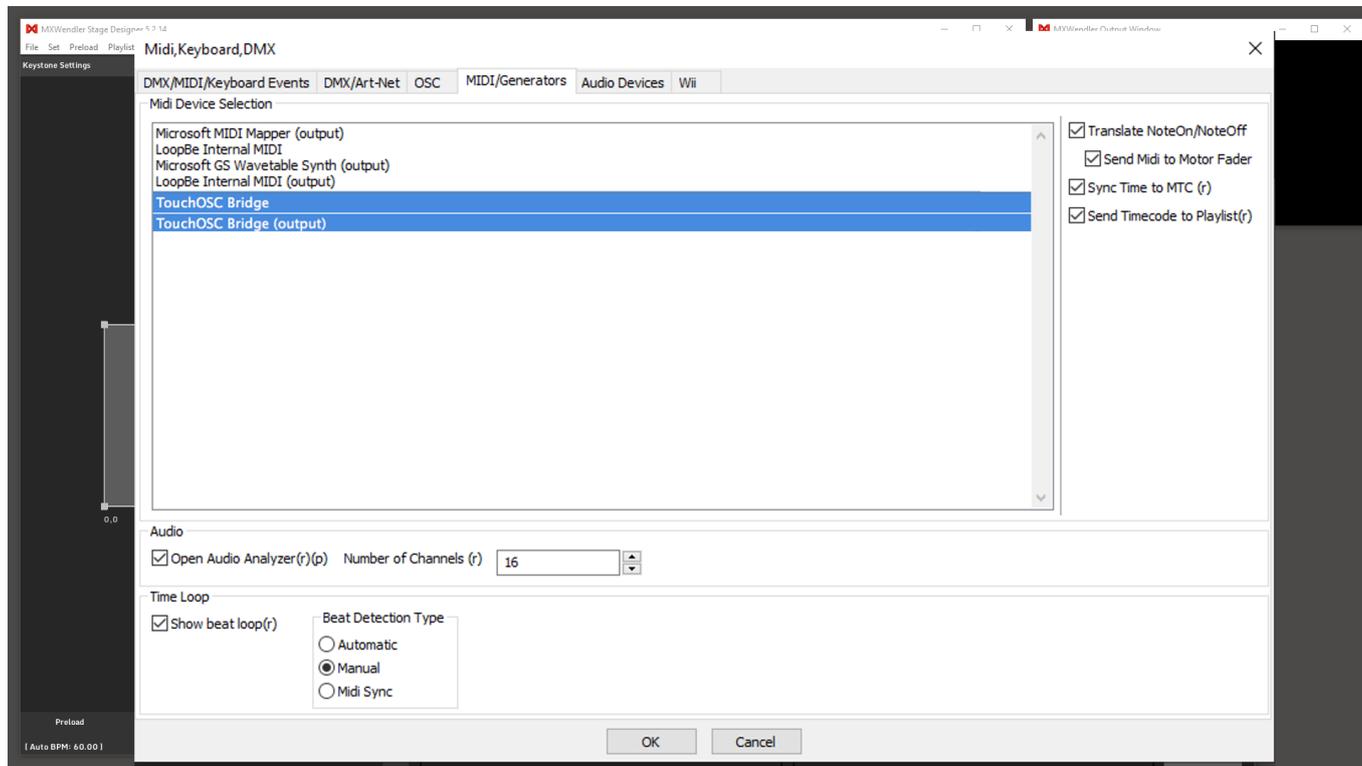
**Menu → Settings → Stability** and set the Log Level to 'Show Nothing' **(E)**

The screenshot shows the 'Midi, Keyboard, DMX' settings window in MXWendler Stage. The window has several tabs: 'DMX/MIDI/Keyboard Events', 'DMX/Art-Net', 'OSC', 'MIDI/Generators', 'Audio Devices', and 'Wii'. The 'OSC' tab is active. On the left side of the main window, there are three red circles labeled 'C', 'E', and 'D'. Red dashed lines connect these circles to specific settings: 'C' points to the 'Receive OSC(r)(s)(p)' checkbox, 'E' points to the 'Receive OSC over RS232' section, and 'D' points to the 'Filter string' text area. The 'Stability and Performance' dialog box is open in the foreground, with its 'Performance' tab selected. A dropdown menu for 'Log Level (p)' is open, showing options: 'Show nothing', 'Show errors', 'Show warnings', and 'Show informations'. The 'Show errors' option is highlighted. The dialog box also contains checkboxes for 'Enable crash reporting (r)', 'Disable power saving (r)', and 'Enable watchdog(r)'. There is a 'Set password' button and a text area for '1. A program(or script) to run and 2. The directory to run in', which contains two paths: 'C:\Program Files (x86)\mxw\_fxserver\_52\MXW.exe' and 'C:\Program Files (x86)\mxw\_fxserver\_52\'. At the bottom of the main window, there are 'OK' and 'Cancel' buttons. The bottom left corner of the main window shows 'Preload' and '( Auto BPM: 60.00 )'.

4. Configure the Midi input:

**Menu → Settings → IO → Midi Generators**

5. Select TouchOSC Midi Bridge input and output and click ok.



6. Load the Midi mappings:

**Menu → Settings → IO → DMX/MIDI/Keyboard Events → Midi (F)**

7. And click the 'Load' button at the left bottom of the page to load the keystone Midi mappings linked in this page. Once the mappings are loaded click 'Apply'. **(G)**

8. Restart MXWendler, load some videos in Preload and make a basic playlist...

You can now start to control Stage Designer through your touch device!

Midi,Keyboard,DMX

File Set Preload Pile

Keystone Settings

DMX/MIDI/Keyboard Events DMX/Art-Net OSC MIDI/Generators Audio Devices Wii

Events

Midi

Event	Target
0/0	/mxw/keystone/element/active/pivot/col/1fro...
0/1	/mxw/keystone/element/active/pivot/col/1fro...
0/2	/mxw/keystone/element/active/pivot/col/2fro...
0/3	/mxw/keystone/element/active/pivot/col/2fro...

Event Settings

Learn [ ] [ ] IO Map(r) Midimap\_Standard

Do Action

Receiver [ ]

Type [ ]

Time [ ]

Value [ ]

Do Script

```
( disabled )
```

Show Javascript Console

Apply

OK Cancel

0.0

Preload

[ Auto BPM: 60.00 ]

F

G

# Tutorial Avolites Titan Art-Net and CTP

This tutorial applies to all different OS versions, all MXWendler version 5.0 and above, and Avolites Titan version 9.

## Introduction

In this tutorial, we will network an MXWendler mediaserver with an Avolites Titan lighting console.

## Pre-requisites:

- Standard Art-Net control:

Simply use the Avolites personality *MXWendler\_MXWendler v5.d4*.

If it is not already present on your console then you can load it as a user personality (on consoles in the folder **D:\Personalities**).

The file *CitpFixtureMapping.xml* is not required in this case.

- Full CITP functionality (auto-patch, thumbnails):

Personality and *CitpFixtureMapping.xml* must reside in the real personality library (usually this folder hidden/system, at **D:\TitanData\Personalities**).

Both files should be included there with a recent library update.

However, when copied there manually, a console software restart is required.

In both cases, MXWendler requires the CITP section activated and set correctly.

# Setup MXWendler

1. Switch on your MXWendler computer and set it to a suitable IP address:

(Usually Art-Net works well with an address like *2.x.x.x* or *10.x.x.x*)

2. Start MXWendler.

## DMX mapping

3. Open the Settings menu and select the first item:

**Menu → Settings → Input/Output → DMX/MIDI/Keyboard events** (Or simply press **Ctrl-1.**)

On this tab, you can map the required actions to Art-Net channels.

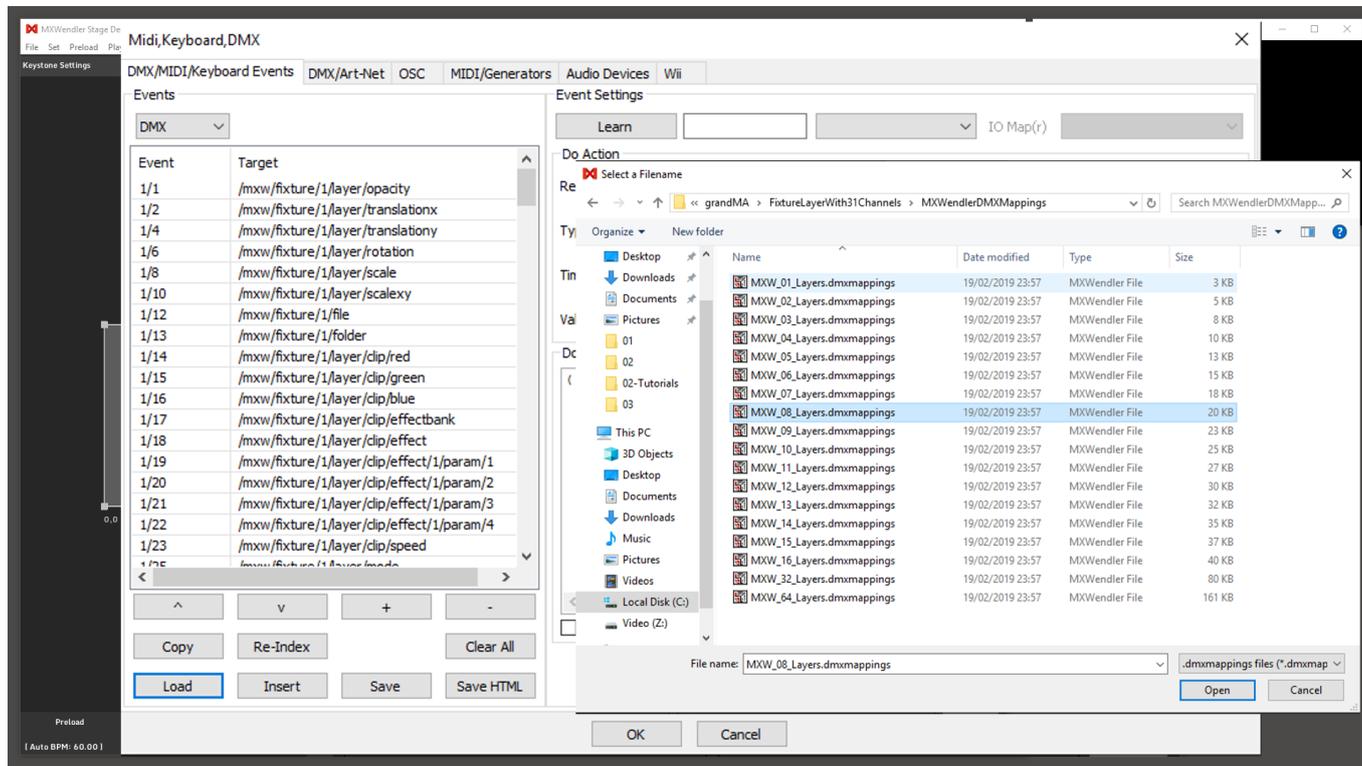
4. Instead of mapping all channels manually, just load the prepared DMX mapping:

Bottom-left click on 'Load' and navigate to:

**C:\Program**

**Files\MXWendlerStageDESIGNER50\DMX\Personalities\grandMA\FixtureLayerWith31Channels\MXWendlerDMXMappings**

Load the file **MXW\_08\_Layers.dmxmappings.**



## Art-Net settings

5. In the same settings menu toggle to the next tab:

**Menu → Settings → Input/Output → DMX/Art-Net**

6. In the Section *Art-Net*:

Check the box 'open Art-Net',

Select the correct network interface,

Uncheck the box *Local*,

Set subnet to **0**,

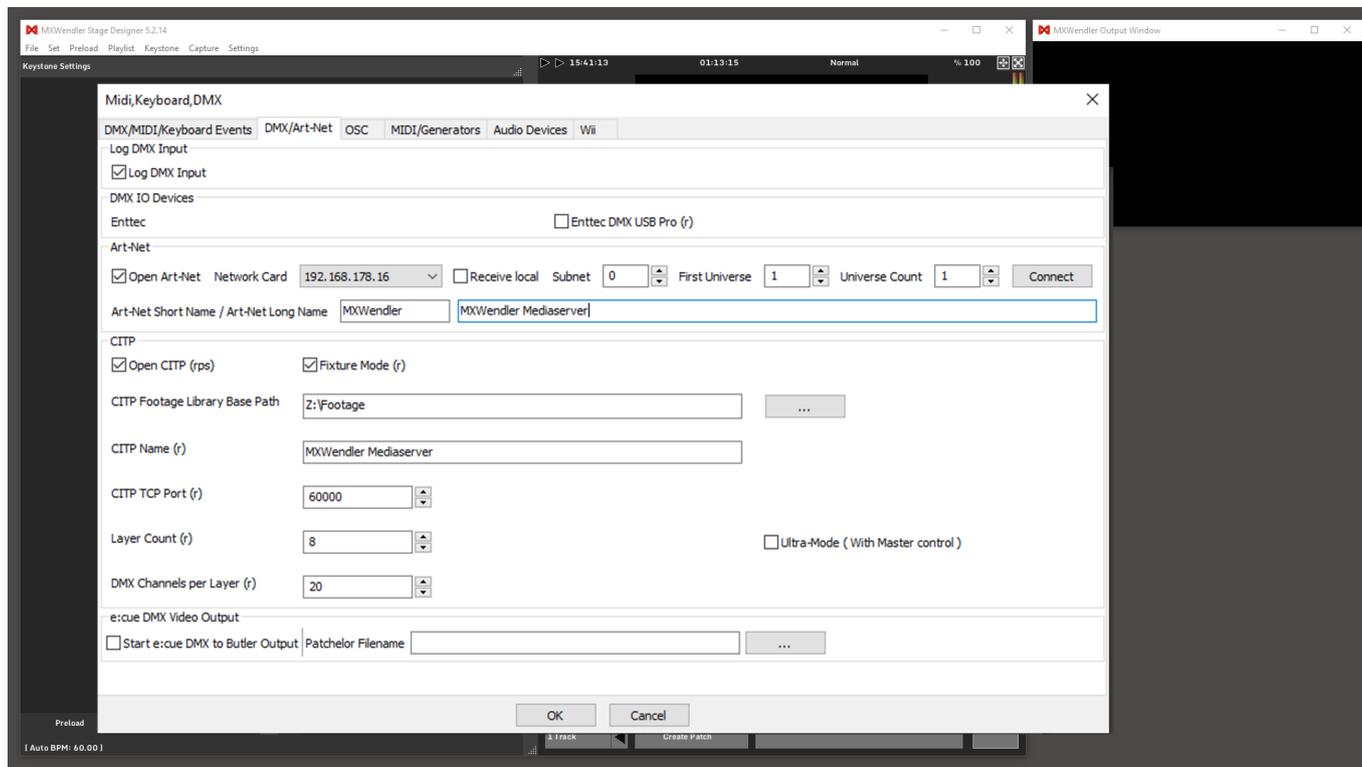
Set DMX start channel to **1**,

Set Number of Universes to **1**,

Click on 'Connect' and confirm the prompt,

Set Art-Net shortname to 'MXWendler',

Set Art-Net longname to *MXWendler Mediaserver*.

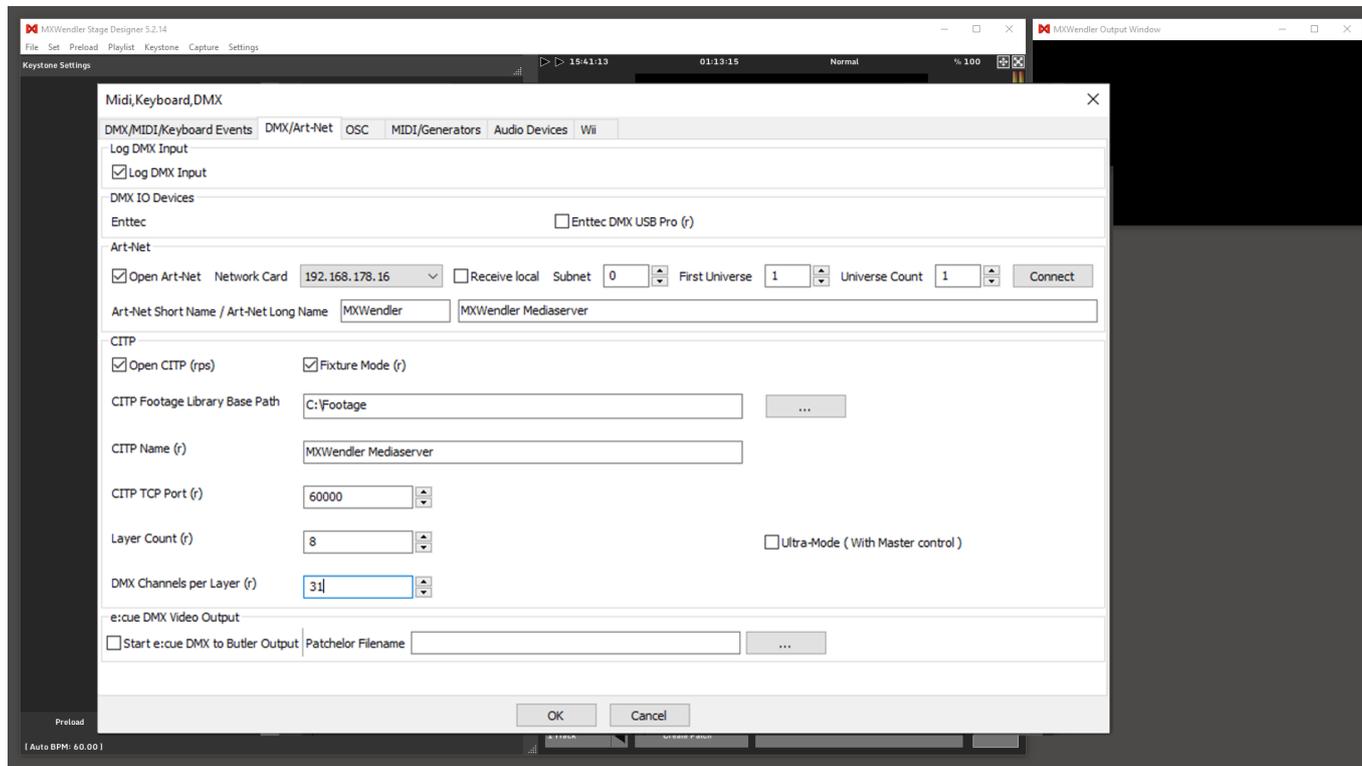


## CITP settings

7. In the section *CITP*:

Check 'Activate CITP' and 'Fixture Mode',  
Set CITP Media Path to a suitable path with the clips you want to use,  
CITP Name must be 'MXWendler Mediaserver',  
Set number of layers to **8**,  
Set DMX channels per layer to **31**.

The CITP settings are mandatory even if you do not want to use CITP on your lighting console. Confirm/close the settings window with OK, and restart MXWendler to activate the settings.



# Setup your Avolites Console

## Basic setup

1. Switch-on your Avolites console. Make sure it is set to a suitable IP address in the same range as the Mediaserver.

It is a good idea to check the network connection at first, i.e. by pinging both devices from each other. If they do not "see" each other then any Art-Net attempts will fail. Debugging a faulty network connection is not covered in this document. It might however include:

- Re-checking network settings (IP address subnet mask),
- Checking the cable, switches or hubs if there are any,
- Making sure firewalls are off,
- Making sure both computers are correctly identified...

## Art-Net setup

1. From the System/Setup menu (hit <Avo> and <Disk>), select DMX Settings.
2. Left, in the Art-Net section, you should be able to see entries like this:

### **MXWendler(IP address): Universe x**

3. Click on the entry with 'Universe 1', then, on the right-hand side, click on 'Line 1', to route the signal from internal line 1 to Art-Net universe 1.
4. Next, make sure that the Art-Net settings are correct:

Left, at the Art-Net line, click on the little **I**

(In newer versions a symbol like this:  )

The correct settings are:

Enable DMX Output = Enabled

Always Broadcast ArtNet = Enabled

Network Adapter = the network adapter which you have configured.

5. Exit the System/Settings menu.

You are now ready to patch and control MXWendler manually: <Patch>, <Fixtures>,

Select manufacturer MXWendler,

Select fixture MXWendler v5,

Select mode Standard...

(If you want to use thumbnails then do not patch manually, but proceed straight to the next section.)

Tools TT-02611 Unsaved Show 12:35 All 4D56:A66FC32C:0000-Standard

### DMX Settings

TitanNet Overview TT-02611

#### Available Dmx Nodes

- Streaming ACN
  - SACN: Universe 1
- Art-Net
  - ArtNetominator(2.0.0.10): Universe 0
  - Broadcast: Universe 0
  - MXWendler1(2.0.0.10): Universe 2
  - Unpolled universe: MXWendler(2.0.0.10):Universe 3
- ExpertDmx

#### Dmx Lines

- Line 1 (ArtNet)
  - MXWendler1(2.0.0.10): Universe 1 ArtNet
- Line 2

#### Dmx Module Properties Art-Net

Name	Value
Enable DMX Output	Enabled
Continuous ArtNet Data Stream	Enabled
Always Broadcast ArtNet	Enabled
DMX Overrun	Disabled
Legacy Compatibility Mode	Disabled
Default Adapter	
Network Adapter	Local Area Connection 2.57.203.112
	Local Area Connection 2 2.57.203.113

#### Workspaces

Groups and Palettes	Fixtures and Groups	Attribute Editor
Effect Editor		

DMX Settings - Edit Art-Net Settings

- Disable Dmx Output 2/2
- Continuous ArtNet Data Stream 2/2
- Always Broadcast ArtNet Data Stream 2/2
- DMX Overrun Disabled 1/2
- Legacy Mode Disabled 1/2
- Network Adapter

Media File

04_BALLS.mp4	03
03_PARTICLE.mp4	02
<b>02_BASE.mp4</b>	<b>01</b>
01_STAIRS.mp4	
1	

Media Folder

I P C G B E S FX

Pages

3

2

1

60

59

Page: 1

## CITP setup

- Restart MXWendler again. This is required to refresh/activate the CITP data exchange.
- On the Avo console, press '<Patch>' and select Active Fixtures.

MXWendler should be shown in the list of available active fixtures:

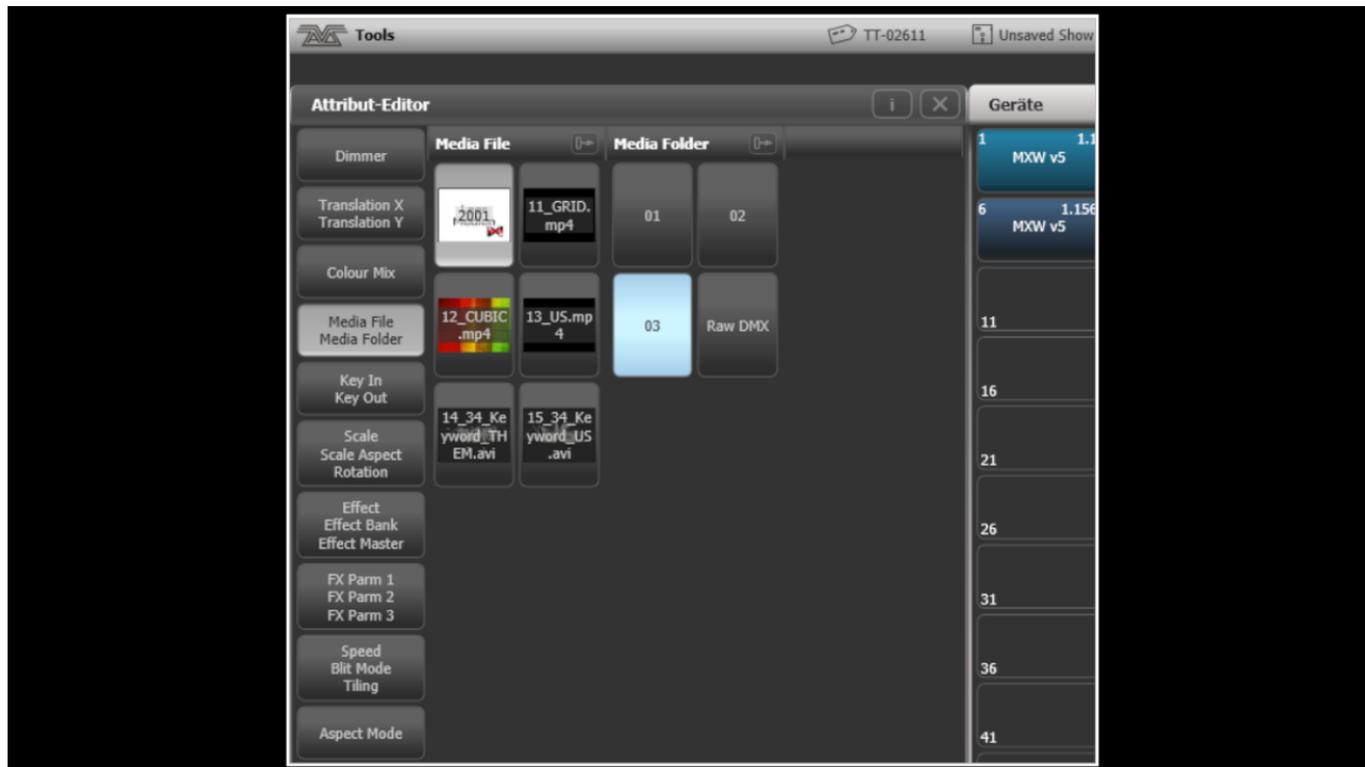


- Click on this button. Usually, the software sends the correct addressing automatically (You can leave the next item on *Use Fixtures Dmx Address*.)  
Simply click on an empty fixture button. 8 layers will automatically be patched:



- In order to see thumbnails of your media select a mediaserver layer,

Open the Attribute Editor (e.g. with <Open>-<Options>), and go to the Gobo bank



# Tutorial Optimum Audio Settings with an Integrated Audio Interface

This tutorial applies to all different OS and MXWendler versions.

In this tutorial, we will go through the settings needed for an optimal audio playback with MXWendler in Windows.

## Files and Formats

All the standard audio file formats and codecs can be played with the software. In order to get the best results, we suggest using the following formats for rendering your audio output (either as an extra audio file or in your video output):

**Sample Rate:** 48.000 Khz

**Bitrate:** 320 Kbps or lossless

**Bit Depth:** 24

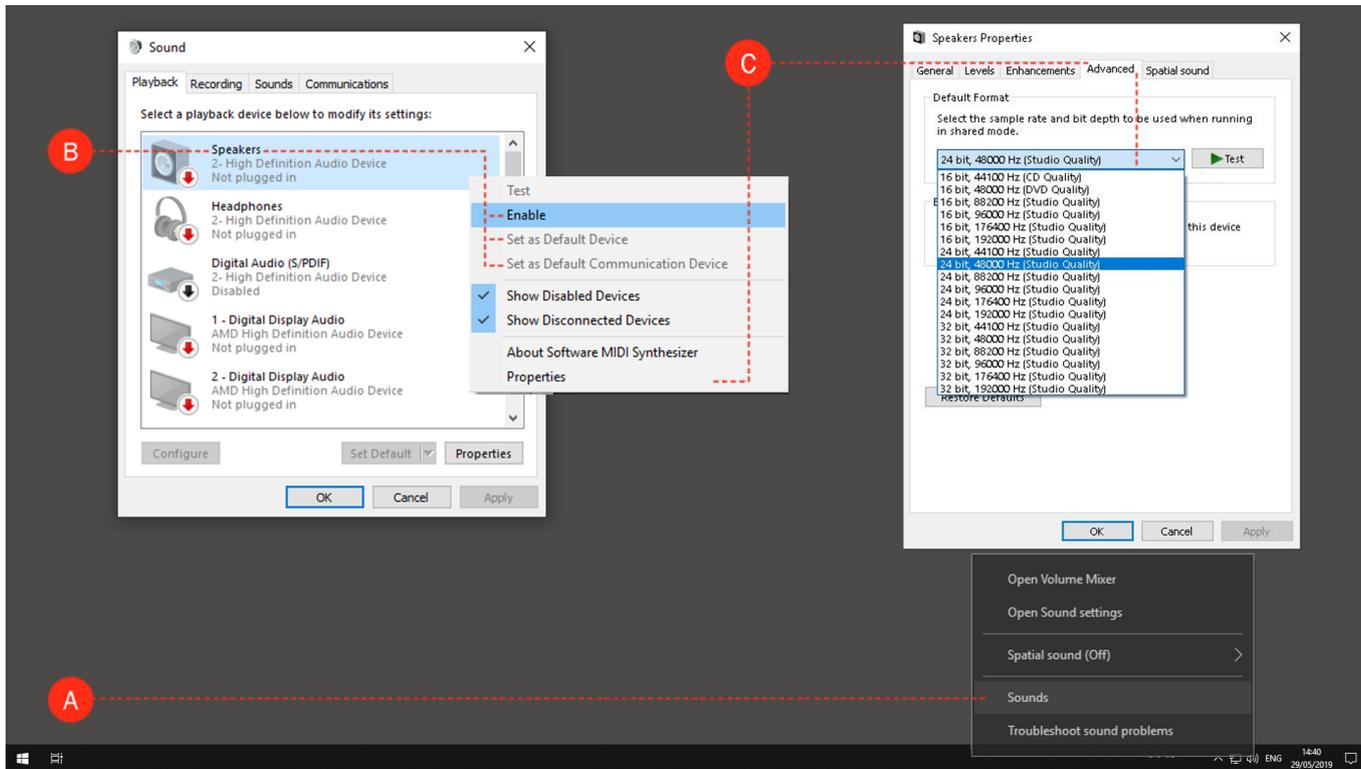
**Codec:** Preferably Aac

*Tip: It is always better to have an extra file for the audio output for the shows since it gives you more flexibility to tweak and solve possible issues.*

*Tip: You can use different sample rates in different situations, but for best performance results you have to always remember to use the same sample rate in your output, in software and windows settings.*

## Settings in Windows

1. Right-click on the 'Audio' sign in 'Taskbar' and select 'Sounds'. (*Or: Click on Win and type mmsys.cpl and hit enter*) **(A)**
2. Go to the Playback tab and find the right audio playback device. (In most cases called 'Speakers Realtek High Definition Audio')
3. Right-click on it and select 'Enable', 'Set as Default Device' and 'Set as Default Communication Device'. **(B)**
4. Right-click on it again and select 'Properties' and go to the Advanced tab.
5. Open the drop-down menu from Default Format and select 24bit and 48.000 Khz and click 'Apply'. (You can do a test if you have signal in the output by clicking on test) **(C)**



# Settings in MXWendler

1. Open MXWendler and go to audio settings

**Settings → Input and Output → Audio Devices (A)**

2. From the drop-down menu of Device choose the proper output device you're using. **(B)**

*In most cases, it is 'Speakers Realtek High Definition Audio'.*

*It is always preferred to use the 'MME' drivers rather than the 'Windows Directsound' drivers.*

3. From the drop-down menu of In-Devices choose the proper output device you're using. **(C)**

*In most cases, it is 'Stereo Mix Realtek High Definition Audio'.*

*It is always preferred to use the 'MME' drivers rather than the 'Windows Directsound' drivers.*

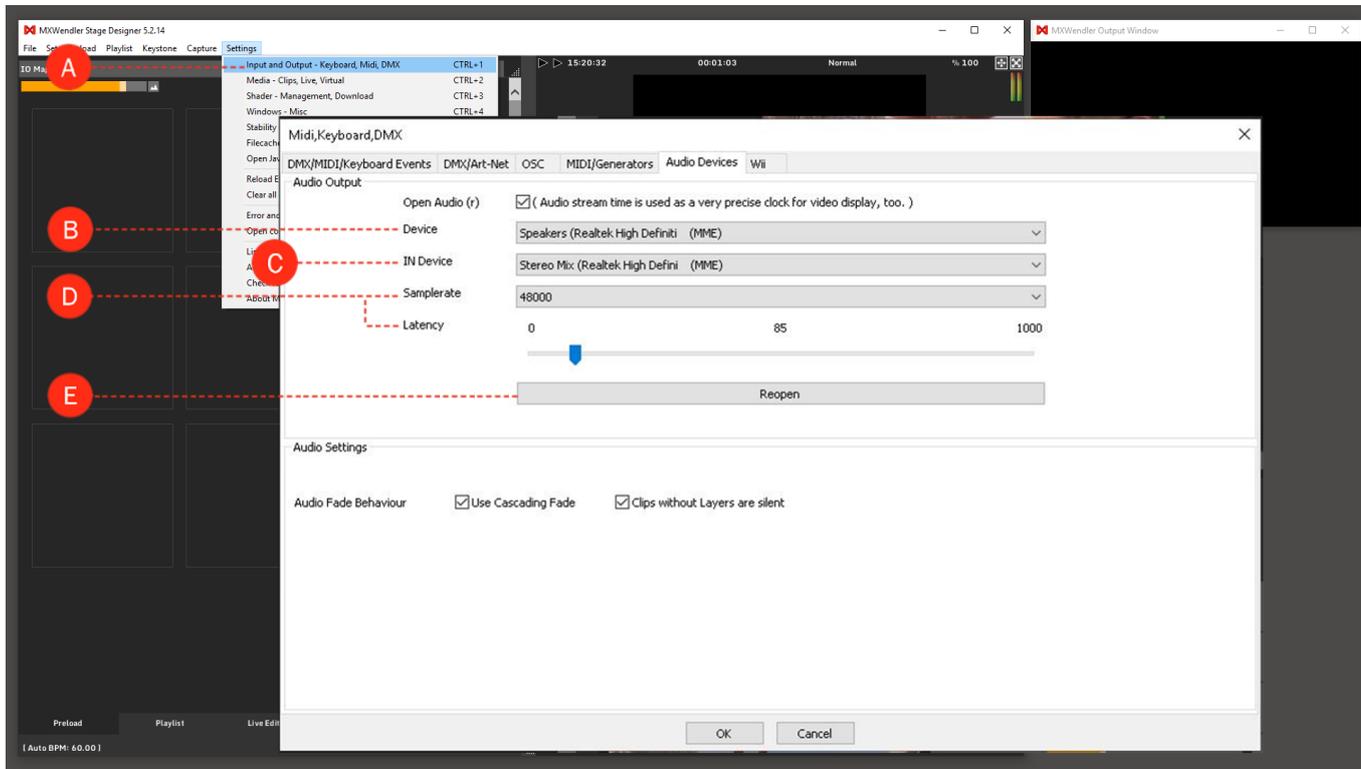
4. Set the sample rate to 48000Khz and latency to something around 64ms. **(D)**

5. Click on 'Reopen' and then Ok to close the window. **(E)**

Audio should be ready to use and you should be able to playback audio files with no trouble.

*Tip: It is always preferred to use an external audio interface for better sound quality or more stable playback.*

*Tip: If you have dropouts or glitches in the audio, try bringing the latency to a higher value, until the playback works well.*



# Tutorial Optimum Audio Settings with an External Audio Interface

This tutorial applies to all different OS and MXWendler versions.

In this tutorial, we will go through the settings needed for an optimal audio playback with MXWendler in Windows.

## Files and Formats

All the standard audio file formats and codecs can be played with the software. In order to get the best results, we suggest using the following formats for rendering your audio output (either as an extra audio file or in your video output):

**Sample Rate:** 48.000 Khz

**Bitrate:** 320 Kbps or lossless

**Bit Depth:** 24

**Codec:** Preferably Aac

*Tip: It is always better to have an extra file for the audio output for the shows since it gives you more flexibility to tweak and solve possible issues.*

*Tip: You can use different sample rates in different situations, but for best performance results you have to always remember to use the same sample rate for your output, in software and windows settings.*

## Settings for Audio Interface

Normally you can use your external audio interface without any issues, with no drivers, or with Asio4all drivers. But we highly recommend installing the latest Asio drivers provided by the manufacturer of your audio interface.

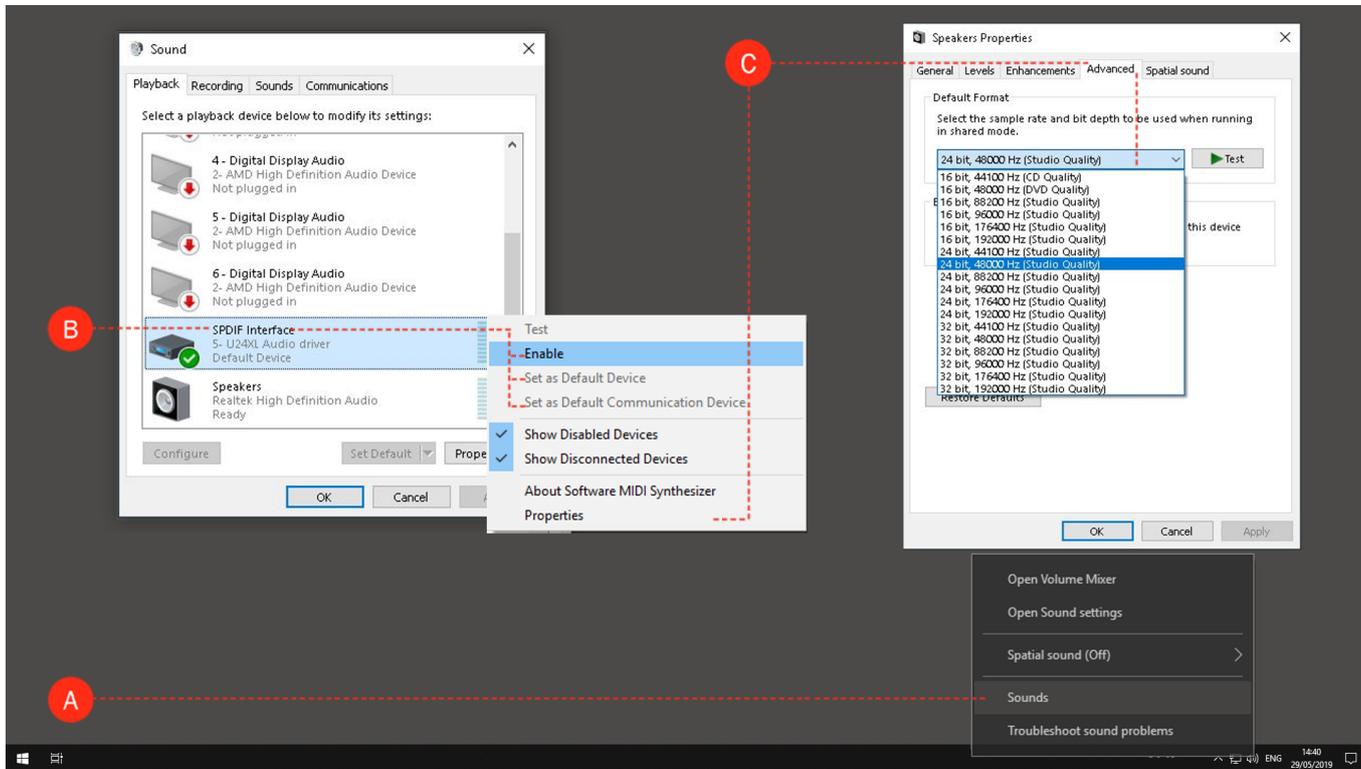
Usually, the drivers come with their own Asio panels. After installing the drivers, you should find and open the Asio panel of your audio interface and select the following settings:

Sample rate to 48.000Khz

Latency to somewhere around 64ms

## Settings in Windows

1. Right-click on the 'Audio' sign in Taskbar and select 'Sounds'. *(Or: Click on Win and type mmsys.cpl and hit enter)* **(A)**
2. Go to the Playback tab and find the right audio playback device. (Normally has the name of your audio interface or the model of it)
3. Right-click on it and select 'Enable', 'Set as Default Device' and 'Set as Default Communication Device'. **(B)**
4. Right-click on it again and select 'Properties' and go to the Advanced tab.
5. Open the drop-down menu from Default Format and select 24bit and 48.000 Khz and click apply. (You can do a test if you have signal in the output by clicking on test) **(C)**



# Settings in MXWendler

1. Open MXWendler and go to audio settings:

**Settings → Input and Output → Audio Devices (A)**

2. From the drop-down menu of Device choose the proper output device you're using. **(B)**

*It is always preferred to use the 'Asio' drivers rather than the 'MME' drivers.*

3. From the drop-down menu of In-Devices choose the proper output device you're using. **(C)**

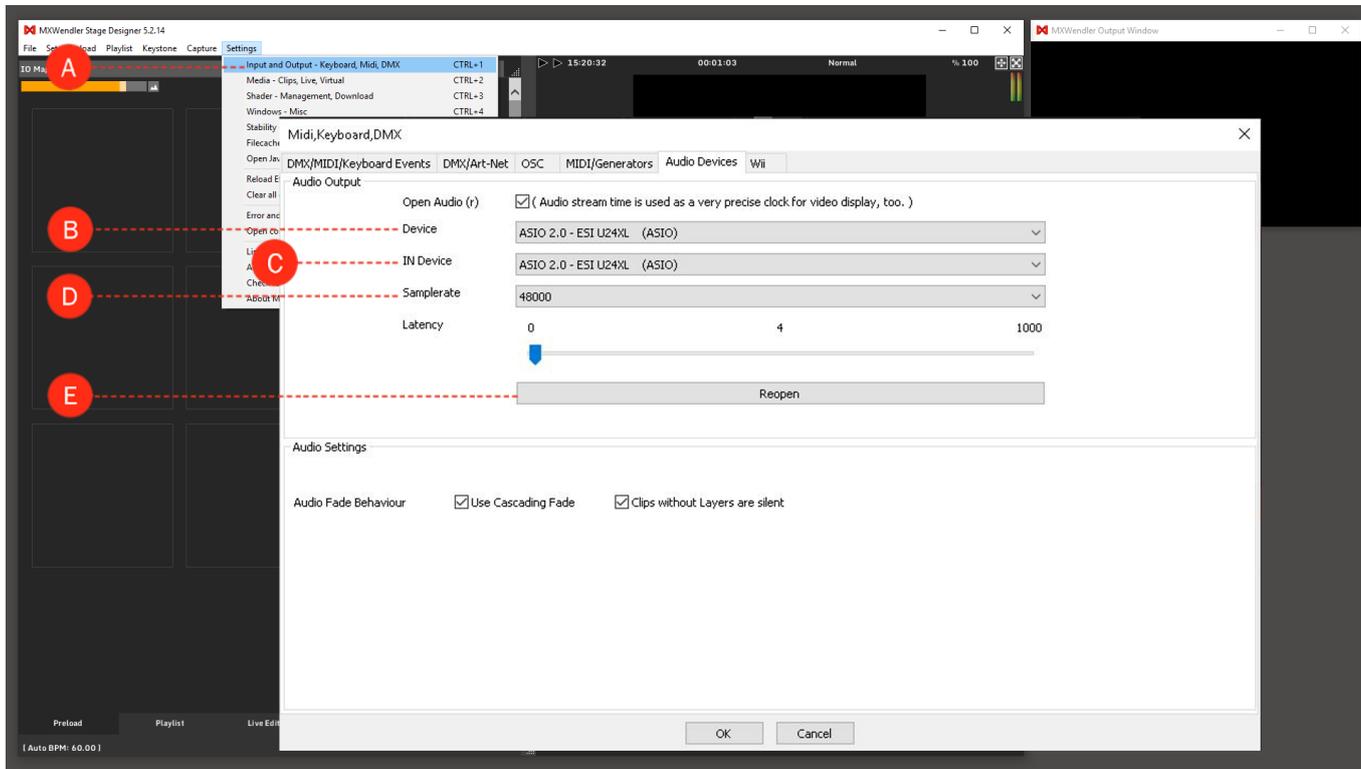
*It is always preferred to use the 'Asio' drivers rather than the 'MME' drivers.*

4. Set the sample rate to 48000Khz. **(D)**

5. Click on 'Reopen' and then Ok to close the window. **(D)**

Audio should be ready to use and you should be able to playback audio files with no trouble.

*Tip: If you have dropouts or glitches in the audio, try bringing the latency to a higher value from your audio interface's Asio panel, until the playback works well.*



# Tutorial FXServer Output Windows

This tutorial applies to all different OS and MXWendler versions.

This tutorial explains how the output windows are set up in FXServer.

First, the arrangement of the displays (number and positioning, definition of the UI monitor) has to be set up in the system preferences (PC/Mac) under display settings. Here you find also the resolution of the connected displays/projectors.

## Wizard Setup

1. Open FXServer Setup in the FXServer Windows Settings: **(A)**

**Menu: SETTINGS → WINDOWS → FXSERVER SETUP**

2. Open 'Wizard..' and insert the number of displays/projectors, the size of the UI monitor and the sizes of the output windows corresponding to the instructions. **(B)**

3. Click 'Finish' to save the settings. **(C)**

4. Restart FXServer to take over the settings.

**Windows Startup Misc**

Window title: FXServer Setup Startup Action Misc Layers Set Track Preload/Playlist SDI Output domeprojection

OpenGL  
Pos: 3355,20  
Size: 464/261  
DPI Scale: 100%

Main GUI  
Pos: 1930,20  
Size: 1426/1044  
DPI Scale: 100%

\\DISPLAY1,  
Pos: 0,0  
Size: 1920/1080  
DPI Scale: 100%

	Pos X	Pos Y	Size X	Size Y	SectX1	SectY1	SectX2	SectY2	Mode
1	3355	20	464	261	0	0	1	1	OpenGL
2									
3									
4									
5									
6									
7									
8									
9									
10									

Render Size: 1920, 1080

Presets: 1H 720p, 1H 1080p, 3H 1080p, Wizard ...

Buttons: Load, Save, Update Preview, < Back, Finish, Cancel

FXServer Window Setup Wizard

Output window size: XGA (1024x768)

Repeat content

Buttons: < Back, Finish, Cancel

# Manual Setup

The output windows can be set up manually over the table below. Each row stands for an output window, the UI monitor is not listed in the table.

On the picture, you can see an example with 2 monitors, which are placed side by side. The 1st monitor is used as UI monitor and is therefore not listed in the table. The 2nd monitor is used for the output. The output is always defined from 0 to 1. 0 marks the start, 1 marks the end of the output (height/width).

## Example with 2 Video Projectors:

Y1..Y2 is always 0..1 (the complete height)

X1..X2 is in the first row 0.0..0.5 (left half)

X1..X2 is in the second row 0.5..1.0 (right half)

**Pos X:** Start position X of the output window. **(A)**

**Pos Y:** Start position Y of the output window. **(B)**

**Size X:** Width of the output window. **(C)**

**Size Y:** Height of the output window. **(D)**

**Sect X1/Sect X2:** Width range of the output section. **(E)**

**Sect Y1/Sect Y2:** Height range of the output section. **(F)**

**Display Mode:** Windows XP: 'OpenGL' or 'DirectX'. Otherwise: always 'OpenGL' **(G)**

MWendler FXServer Multithread Edition 3.2.16  
File Set Preload Playlist Keystone Capture Settings  
Keystone Settings

Windows Startup Misc

Window UI FXServer Setup Startup Action Misc Layers Set Track Preload/Playlist SDI Output domeprojection

OpenGL  
Pos. 3355,20  
Size 464/261  
DPI Scale 100%

\\DISPLAY1,  
Pos. 0,0  
Size 1920/1080  
DPI Scale 100%

Main GUI  
Pos. 1930,20  
Size 1426/1044  
DPI Scale 100%

	Pos X	Pos Y	Size X	Size Y	SectX1	SectY1	SectX2	SectY2	Mode
1	3355	20	464	261	0	0	1	1	OpenGL
2									
3									
4									
5									
6									
7									
8									
9									
10									
..									

Render Size  
1920  
1080  
Update Preview

Presets  
1H 720p 1H 1080p  
3H 1080p Wizard ...  
Load Save

Preload Playlist Live Editor

A B C D E F G OK Cancel

# **Tutorial How to Setup a Datapath Fx4 for MXWendler with the Wall Designer Software**

This tutorial applies to all different OS and MXWendler versions 5.0 and above.

More documentation on the Wall Designer can be found at:  
<https://www.datapath.co.uk/multi-display-products/wall-designer-software>

## Pre-requisites:

- Datapath Fx4 Wall Controller:

With some of the newest FXServer hardware configurations, one or more wall controllers could be included. The device we chose for this tutorial is the Datapath Fx4.

- Datapath Wall Designer software:

The Wall Designer software can be downloaded at:

<https://www.datapath.co.uk/datapath-current-downloads/display-controller-downloads/software-display-controller/493-wall-designer-v2-1-0/file>

(If you have an Fx4 unit with an FXServer the software will probably already be installed and the device already configured for your needs)

- 4 Output devices:

Monitors or projectors supporting 1080p on 60 Hz

(those are needed just to see the final result, the setup can be done also without output devices)

## Connect the Fx4 to the Computer for the Setup

Connecting the Fx4 Wall Controller to your computer is very simple:

1. Connect the power cable. **(A)**
2. Connect a DisplayPort cable to the DisplayPort input of the Fx4 and to the desired output of your graphic card. **(B)**

We highly recommend using a good quality cable for this connection, a sufficient amount of bandwidth is fundamental for a multi-display configuration.

3. For our installations, we use Club 3D DP 1.4 8k cables.
4. Connect the USB cable to the Fx4 and to your computer. **(C)**
5. Turn on the Fx4 and the computer. **(D)**



# Setup Wall Designer

1. Install the Wall Designer application.
2. Run Wall Designer.

## Monitors

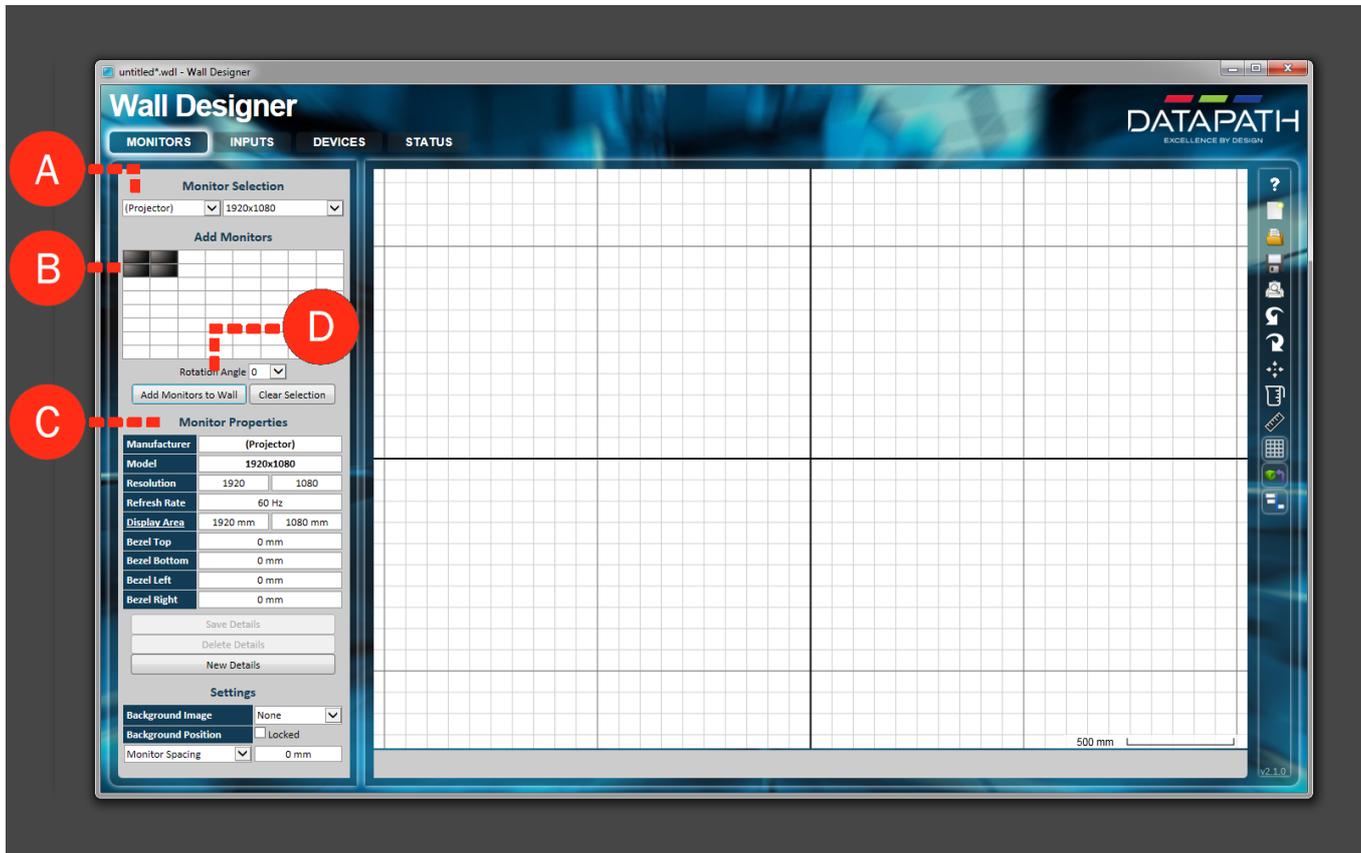
The first tab is there to configure the monitor setup.

We are going to use a standard 4x1080p structure in 16/9 as an example.

3. Choose 'Projector' and '1920x1080' in the Monitor Selection area. **(A)**
4. The four displays have to be set up to form a 16/9 rectangle. **(B)**
5. Check the Monitor Properties: **(C)**

Projector, 1920x1080, 60Hz. (We are not going to use any Bezel setting for this tutorial)

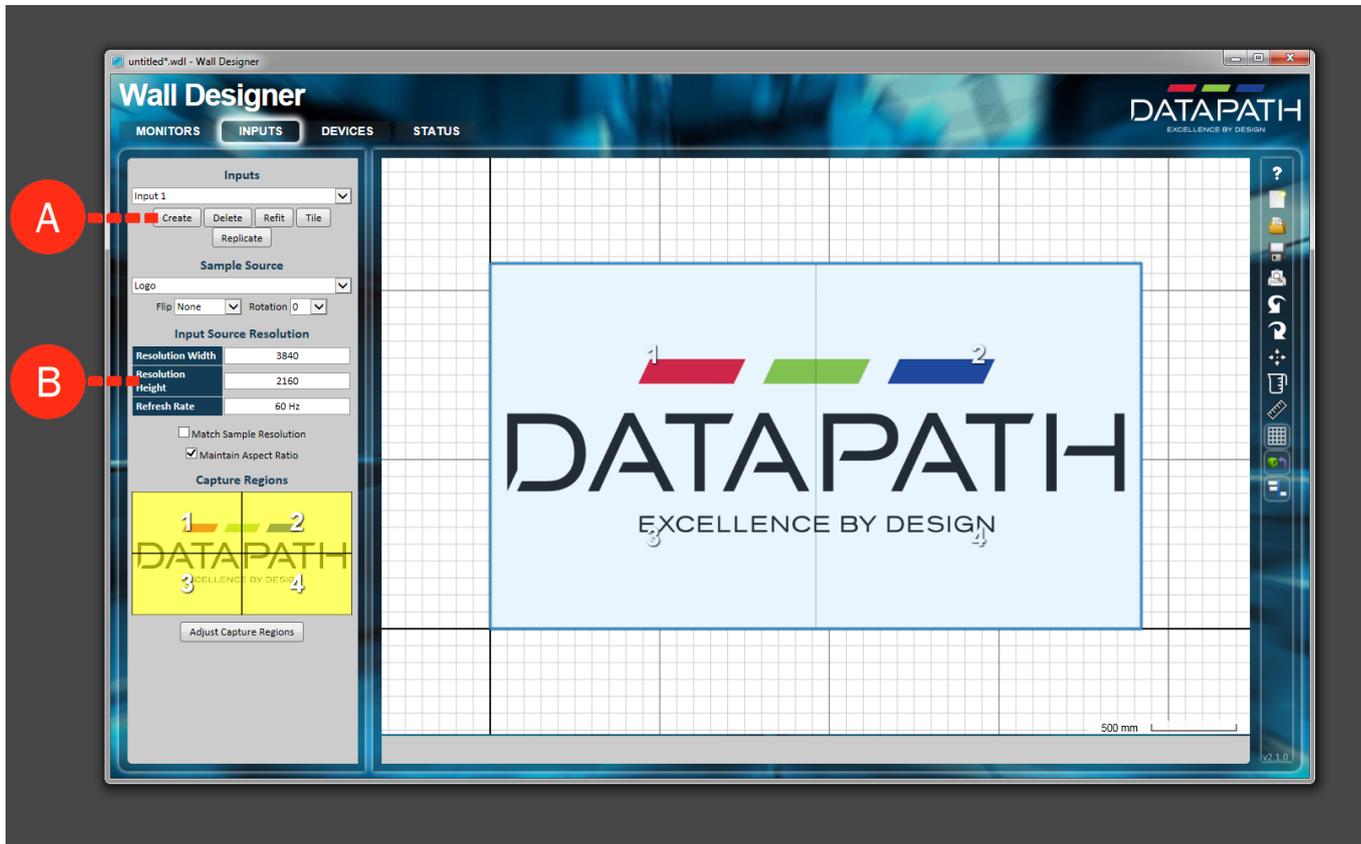
6. Click on 'Add Monitors to Wall'. **(D)**



## Inputs

In the second tab, we will define the input.

7. Click on 'Create' under Inputs. **(A)**
8. Insert '3840' in Resolution Width and '2160' in Resolution Height. **(B)**
9. Check that the Refresh Rate is 60 Hz.

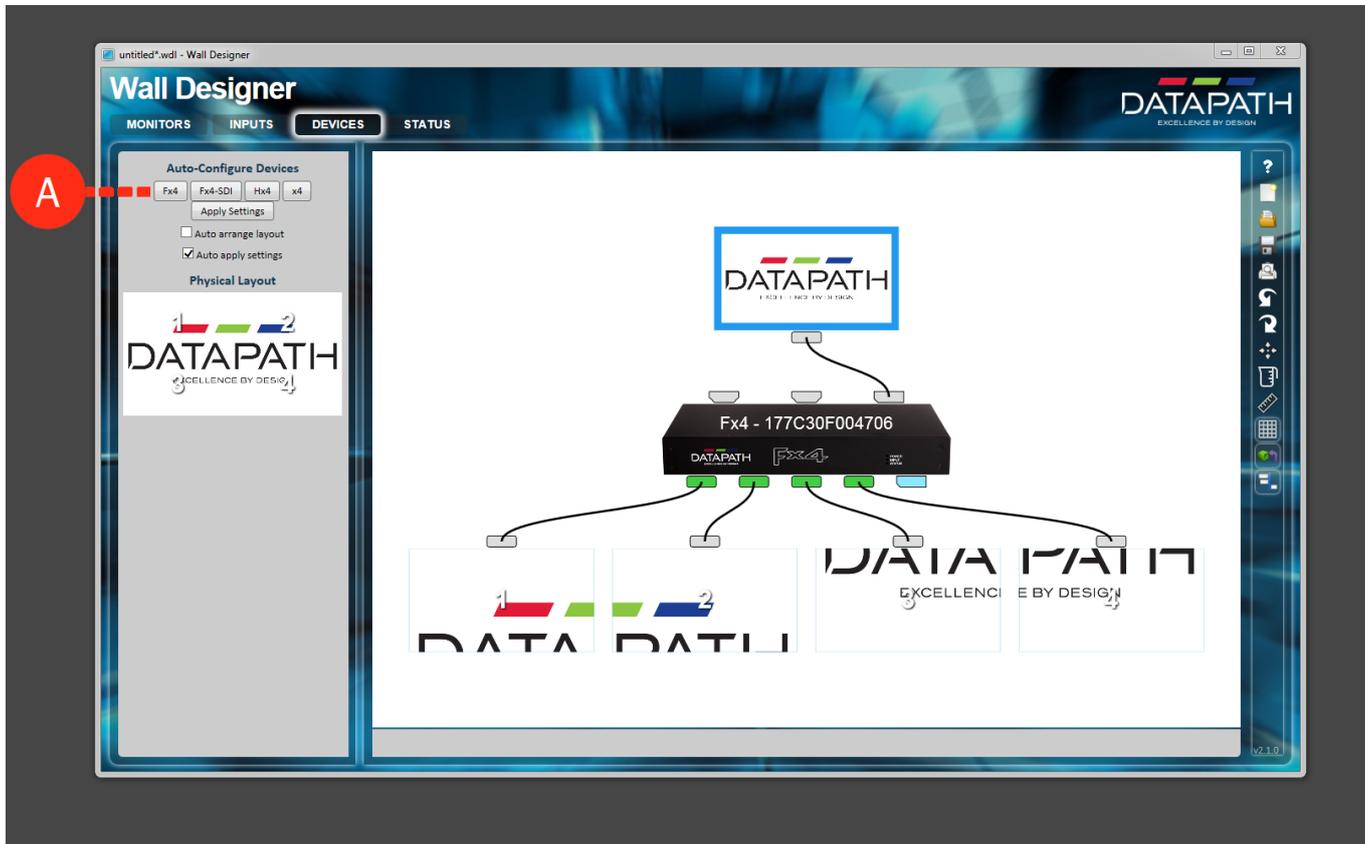


## Device

The third tab is Device, here we will send the information to the Wall Controller.

The following step will determine a Display Re-scan, all the monitors will probably turn black for some seconds.

10. Click on 'Fx4' under Auto-Configure Devices. **(A)**

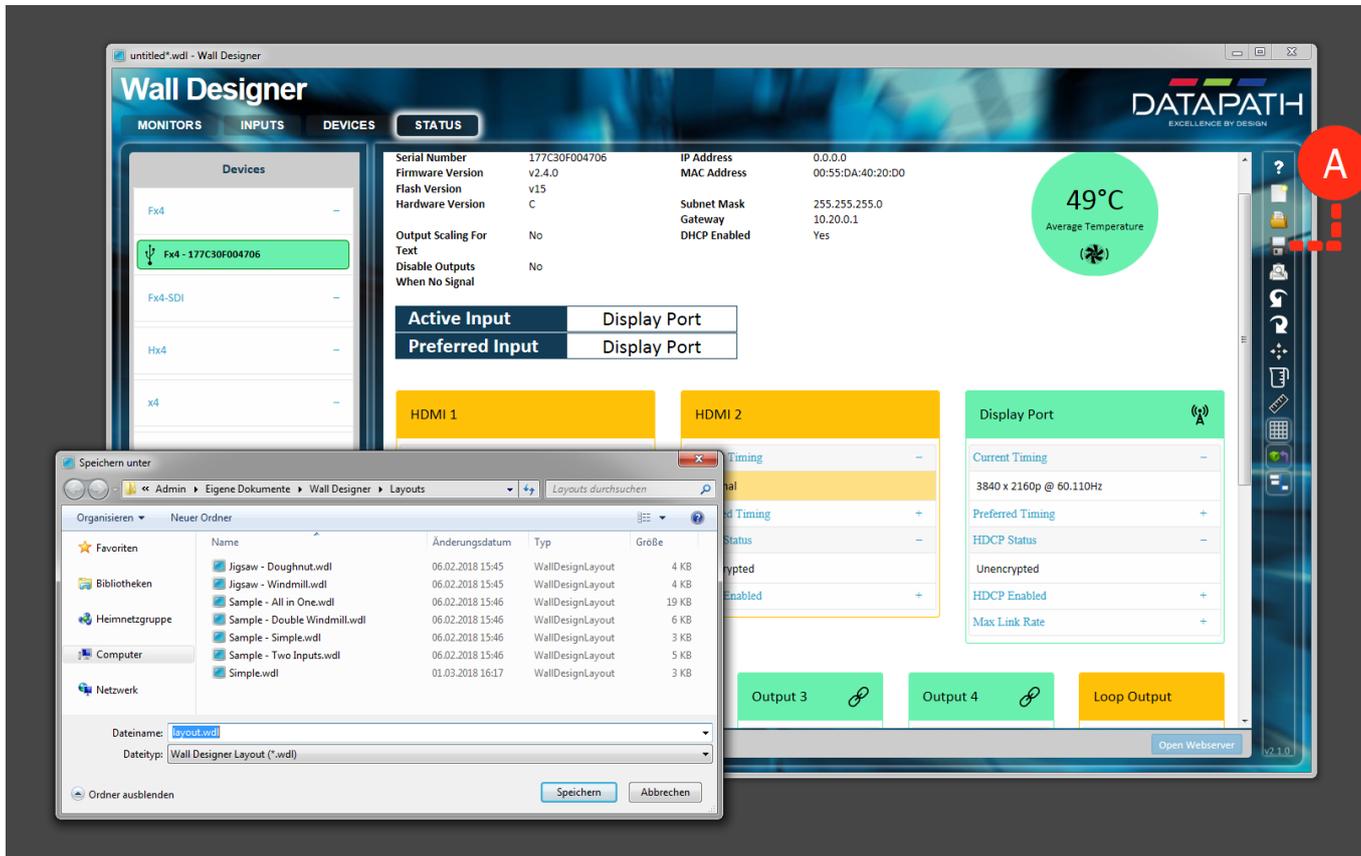


The Fx4 is configured. By opening the Windows Display Settings, you should be able to see a 4k display on the side of your main display.

### **Save Layout File**

A monitor layout can be saved and loaded again when needed.

1. Click on Floppy disc icon on the right of the Wall Designer interface. **(A)**
2. Assign the desired name to the composition and click on save.



## Connect the Output Devices to the Fx4

Now your output devices (displays or projectors) can be connected to the Wall controller. According to the configuration the following connection scheme has to be followed:

- HDMI Input 1: Upper-Left display
- HDMI Input 2: Upper-Right display
- HDMI Input 3: Lower-Left display
- HDMI Input 4: Lower-Right display

## Setup MXWendler

An output window can now be placed on the four displays:

To configure the FXServer output window please check the following link:  
[http://wiki.mxwendler.net/index.php/Tutorial\\_FXServer\\_Output\\_Windows](http://wiki.mxwendler.net/index.php/Tutorial_FXServer_Output_Windows)



# Tutorial How to Optimize Video Footages With Blender

This tutorial applies to all different OS and MXWendler versions 5.0 and above, and Blender version 2.79b.

More documentation on the Blender project can be found at: <https://www.blender.org>

## Pre-requisites:

### Blender

Please download the latest version from:

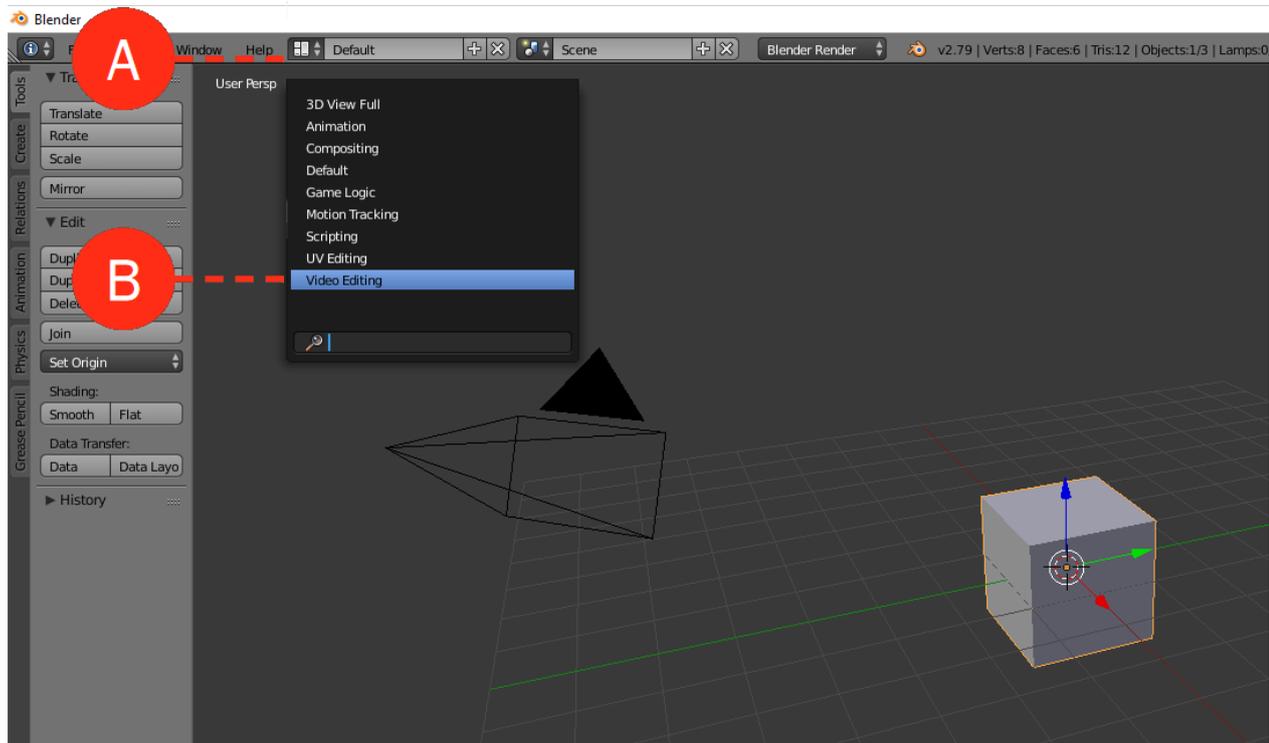
<https://www.blender.org/download/>

Once the installer is downloaded from the Website:

1. Launch the Installer.
2. Follow the instructions until the setup is finished.

## Launch and Configure Blender for Video Editing

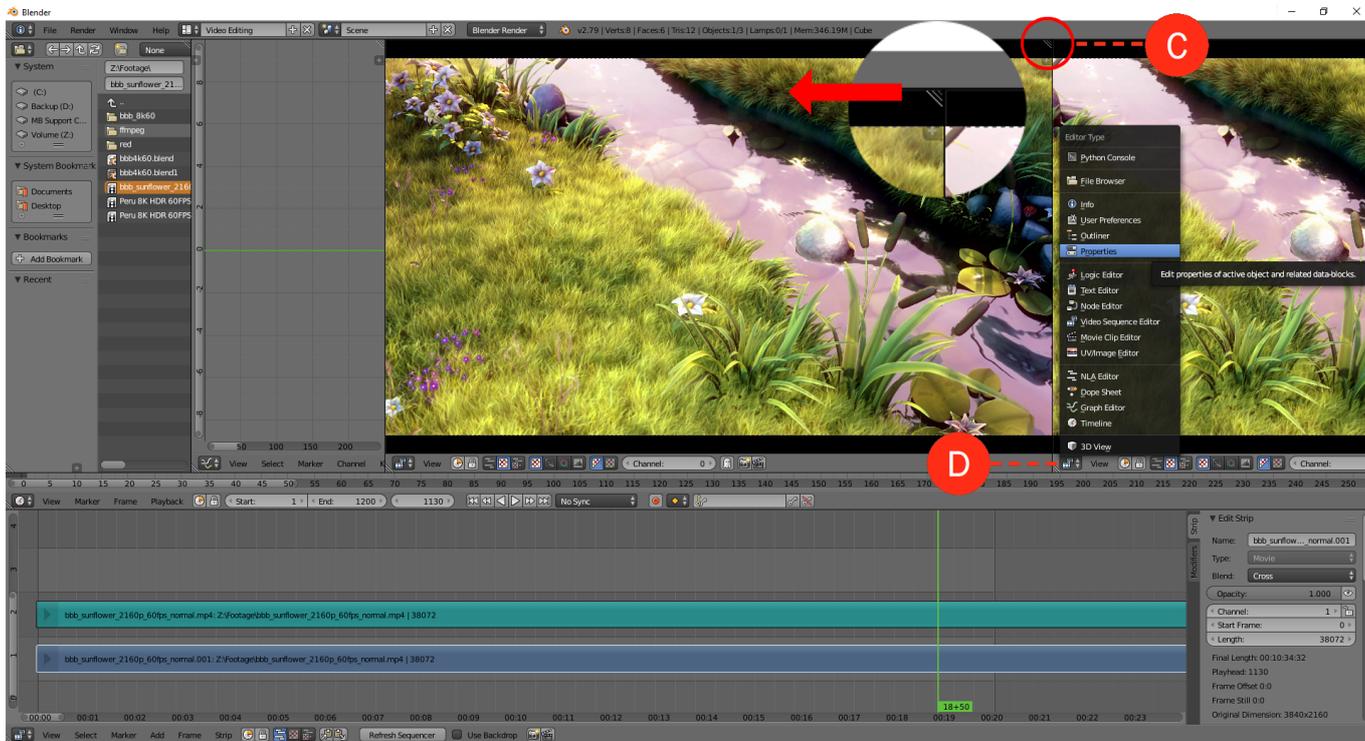
1. Launch the blender application. The app will start in Default mode (3D View + Tools)
2. On the top of the page, open the menu between Help and Default. **(A)**
3. Select 'Video Editing' from the drop-down menu. **(B)**



4. Add the 'Preferences' toolbox:

In order to add a toolbox, a new window needs to be created: drag the upper right corner of the Video Sequence Editor (the video preview) to the left. A copy of the same window will be created. **(C)**  
By dragging the same corner, back to the right (on the new window) the box will disappear.

5. Click on the film-tape icon to open the menu and select 'Properties'. **(D)**



## Set up the Rendering Options

6. Use the following values to have a correctly encoded video.

Framerate: we highly recommend to use a framerate of 30 or 60 (60 requires more performance). To avoid lag and glitches all the footages of a project should have the same amount of fps.

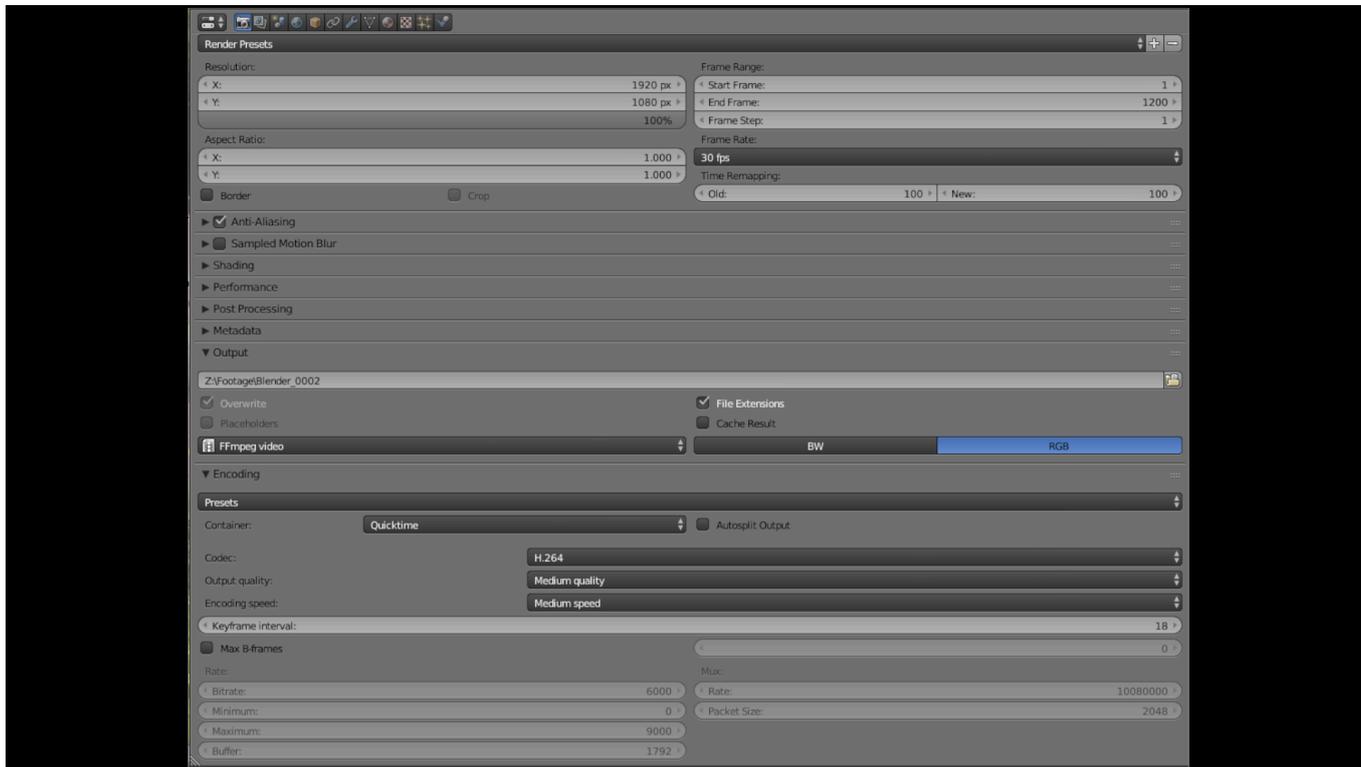
Output: **FFmpeg**

Container: **Quicktime**

Codec: **H264**

Keyframe Interval: **5**

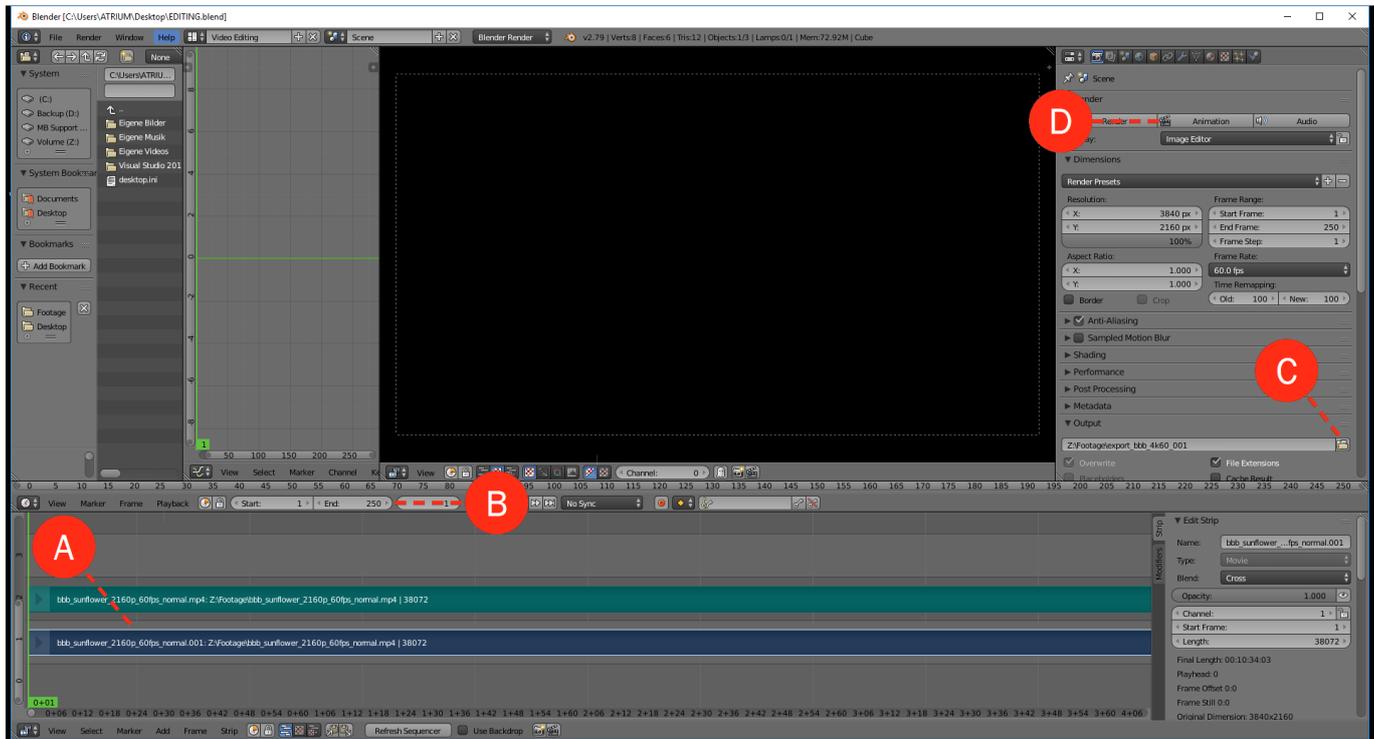
Audio Codec: **AAC**



## Export

Once the right values are set up we just need to:

7. Import the footage (simply drag and drop from the folder to the timeline). **(A)**
8. Set a start and an end frame. **(B)**
9. Set output folder and file name. **(C)**
10. Click on 'Animate' to start the render. **(D)**



# Tutorial Standalone Encoder / Video Batch Encoder

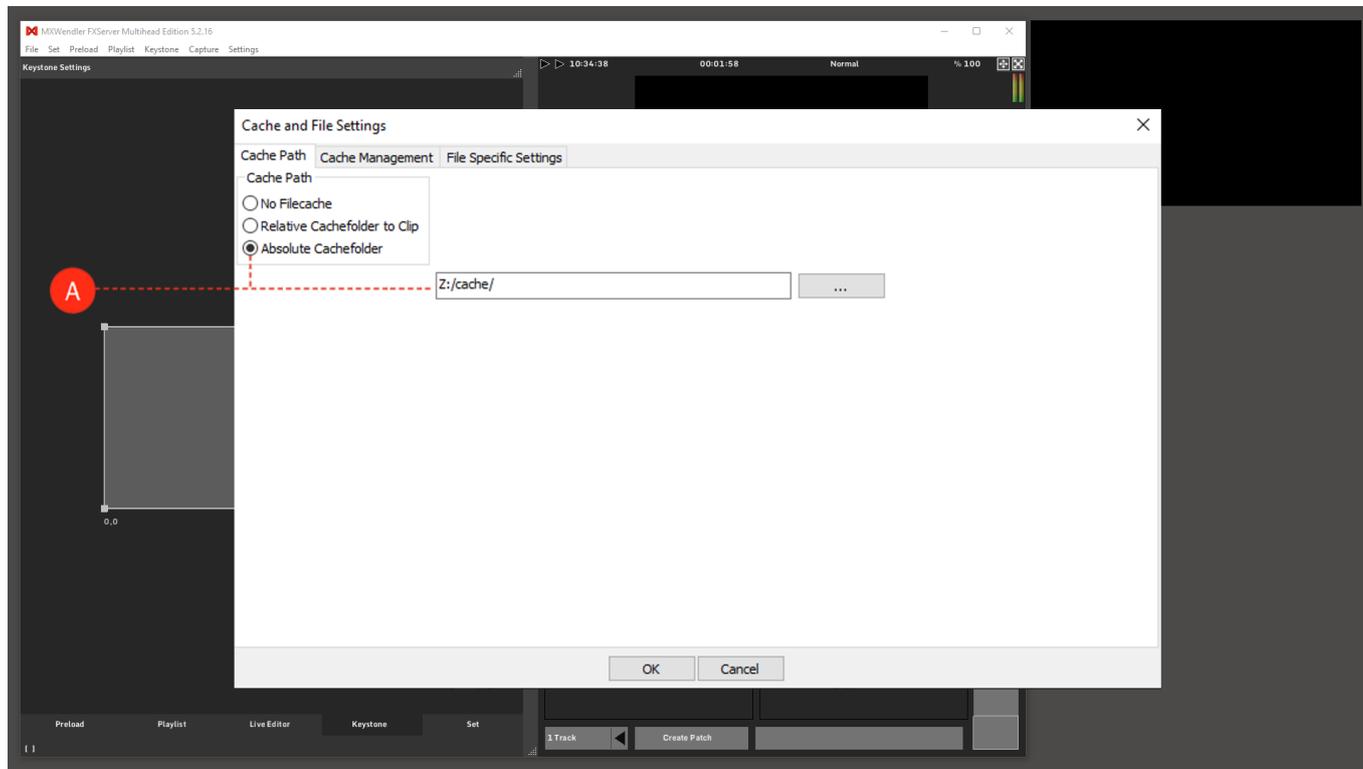
This tutorial applies to all different OS and MXWendler versions.

For the best FXServer performance you can easily convert your video clips into the internal format using the Standalone Encoder. Image sequences are always converted, video formats are either converted automatically (when the FFMpeg engine does not recognize the format), or upon request. This decision is saved for each medium, and can be later changed in the file-specific settings:

1. Launch FXServer and Standalone Encoder from the program directory.
2. Set Cachefolder in FXServer Filecache settings. **(A)**

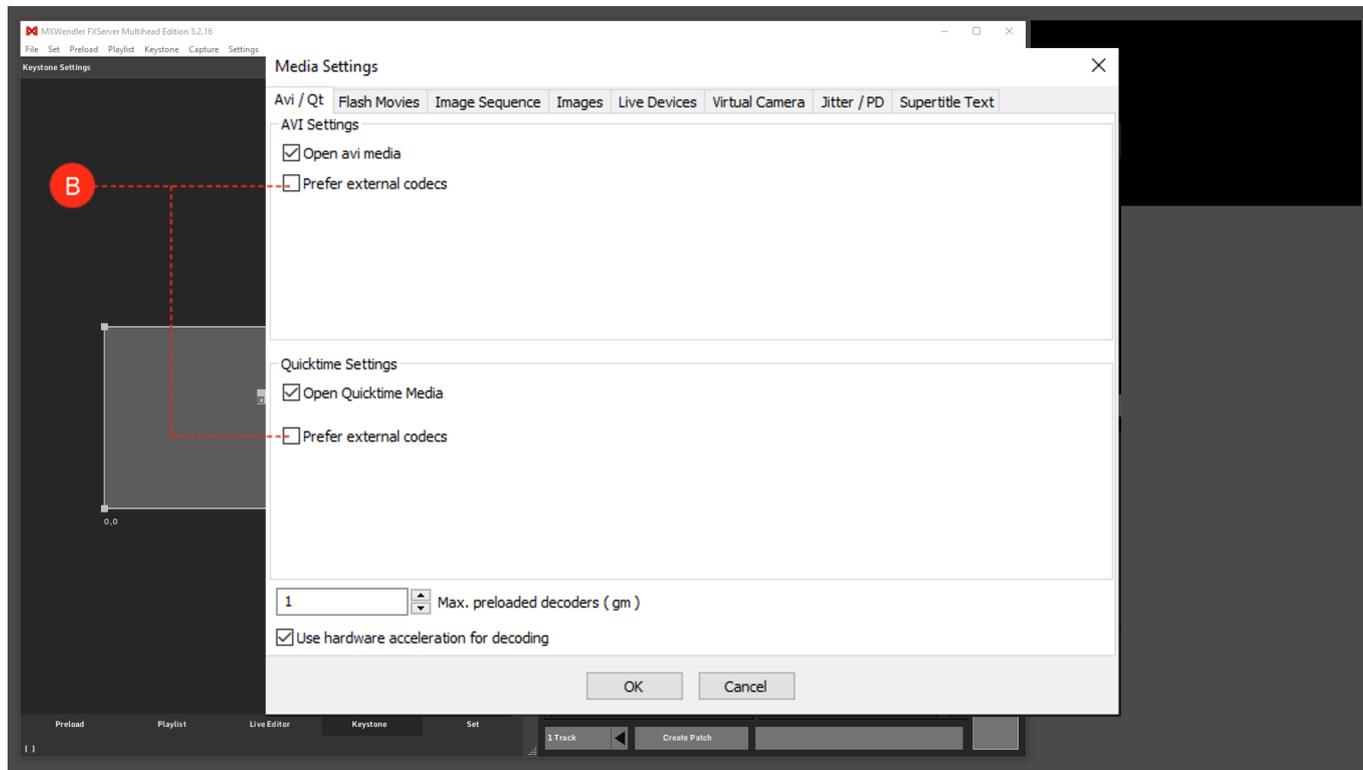
**Menu: Settings → Filecache → Cache Path**

*Tip: The cache directory contains the bulk of the video clip data for later use. This should be created on the fastest hard disk. Cache directories for image sequences are always created directly in the image sequence folder.*



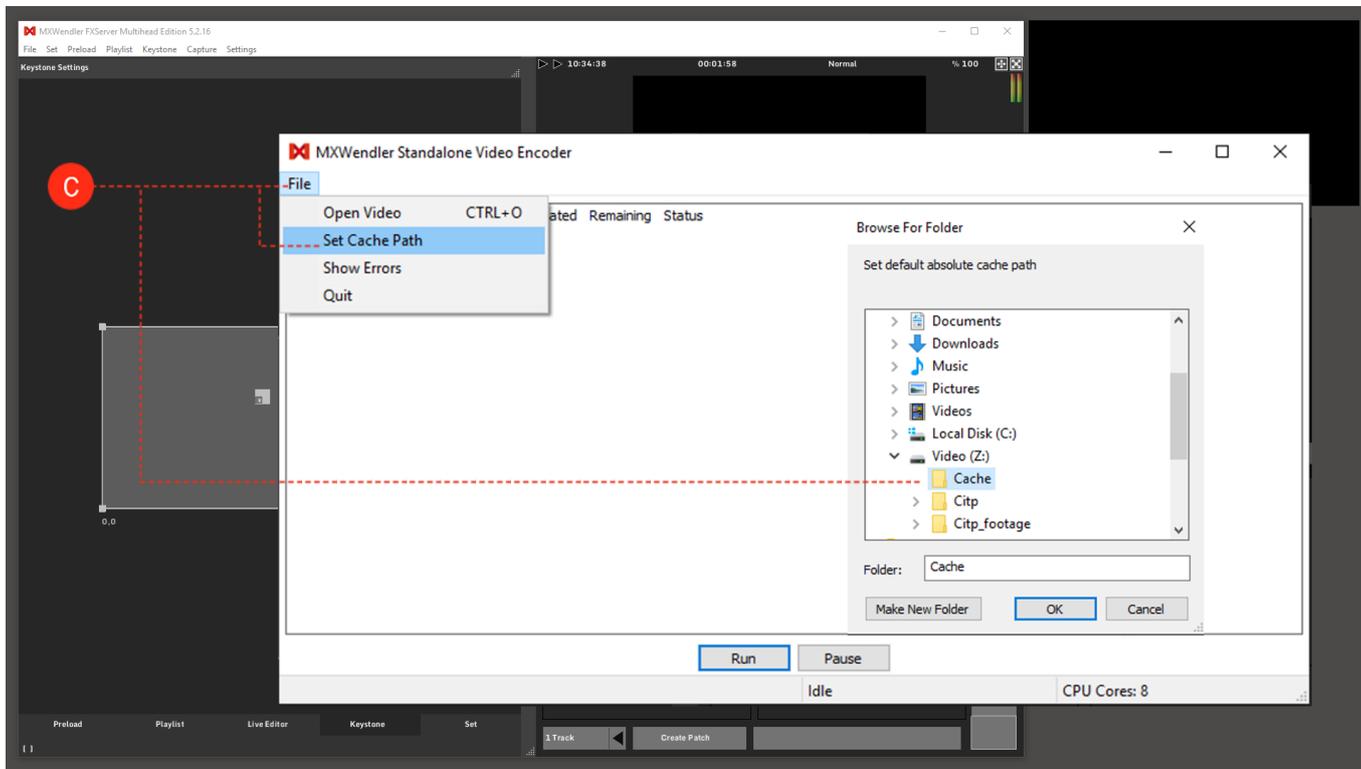
3. Uncheck 'Prefer external codecs' in FXServer Media Settings: **(B)**

**Menu: Settings → Media → Avi/Qt**

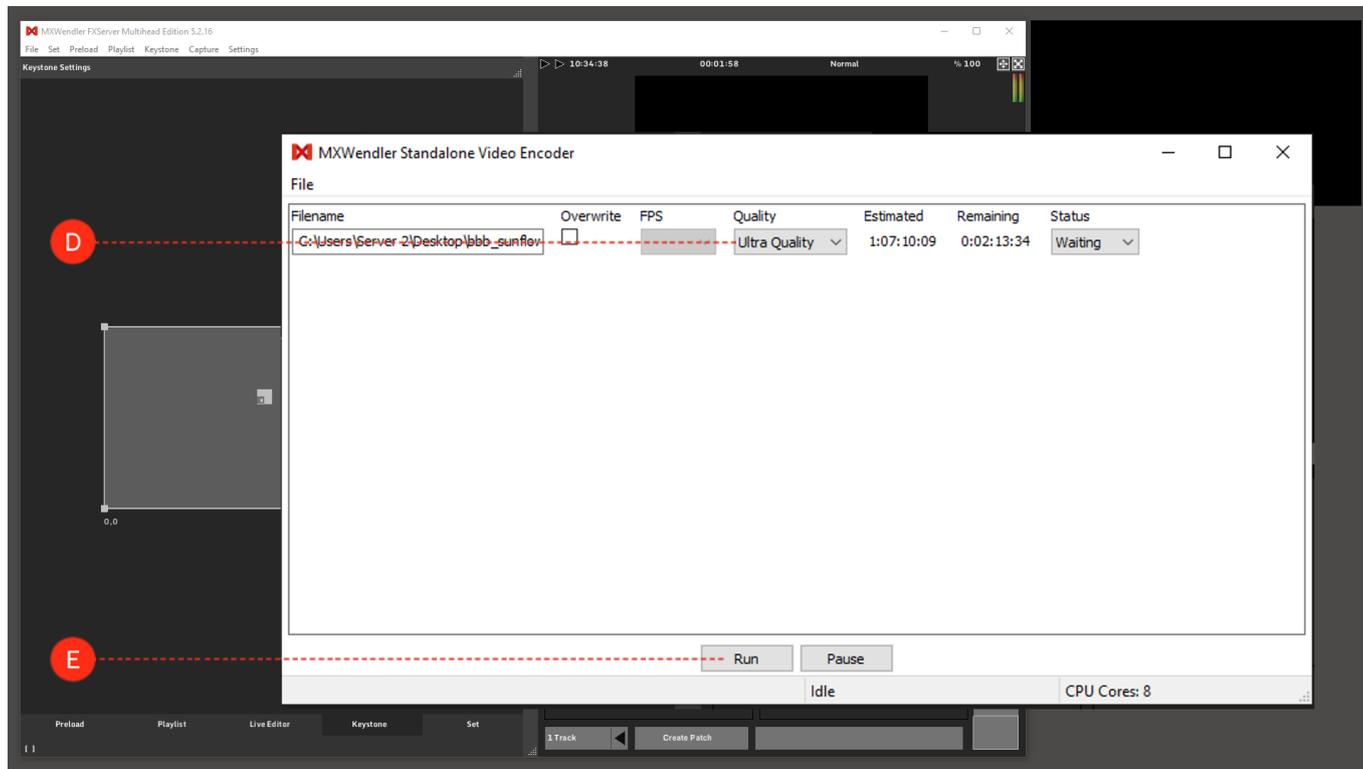


#### 4. Set Cache Path in Standalone Encoder. **(C)**

**Menu: File → Set Cache Path**

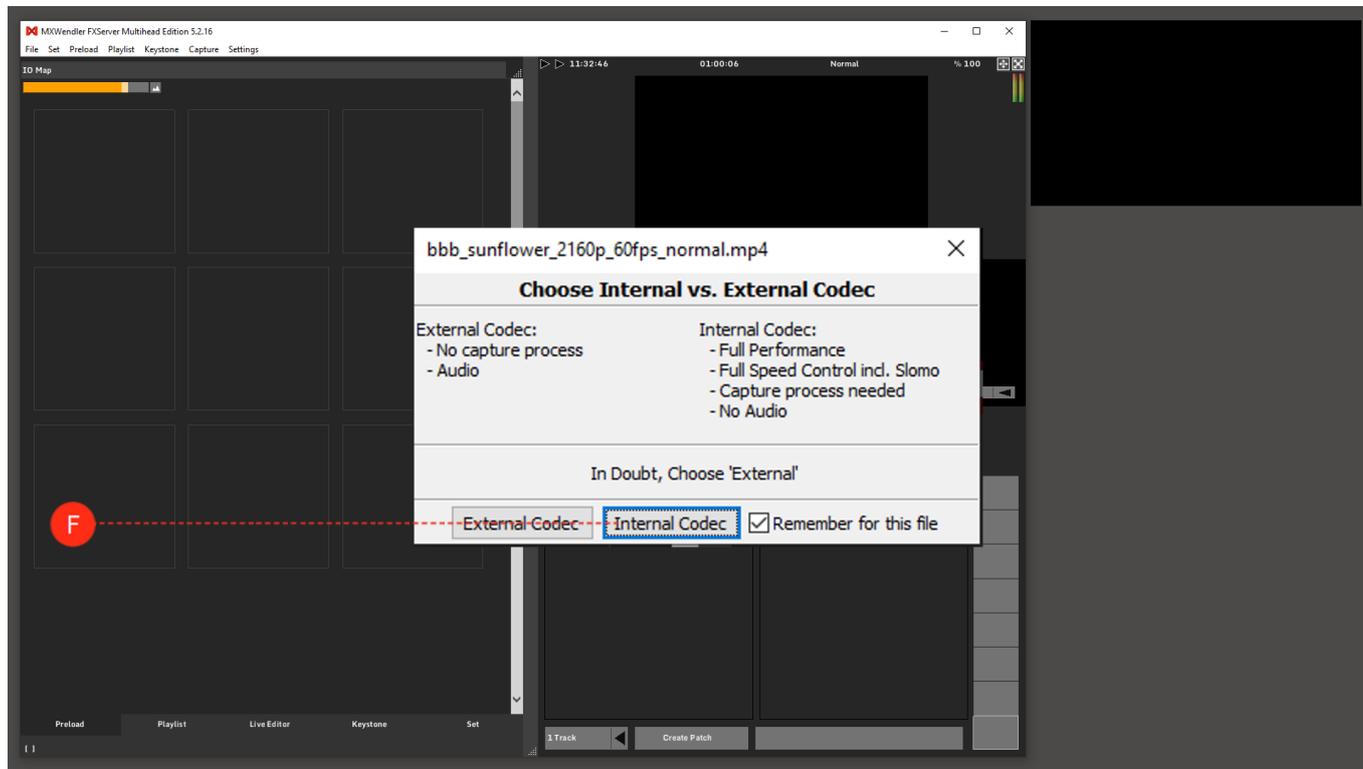


5. Open Video in Standalone Encoder and choose 'Quality Settings'. **(D)**
6. Click on 'Run' to start the conversion. **(E)**



7. Open Movie in FXServer.

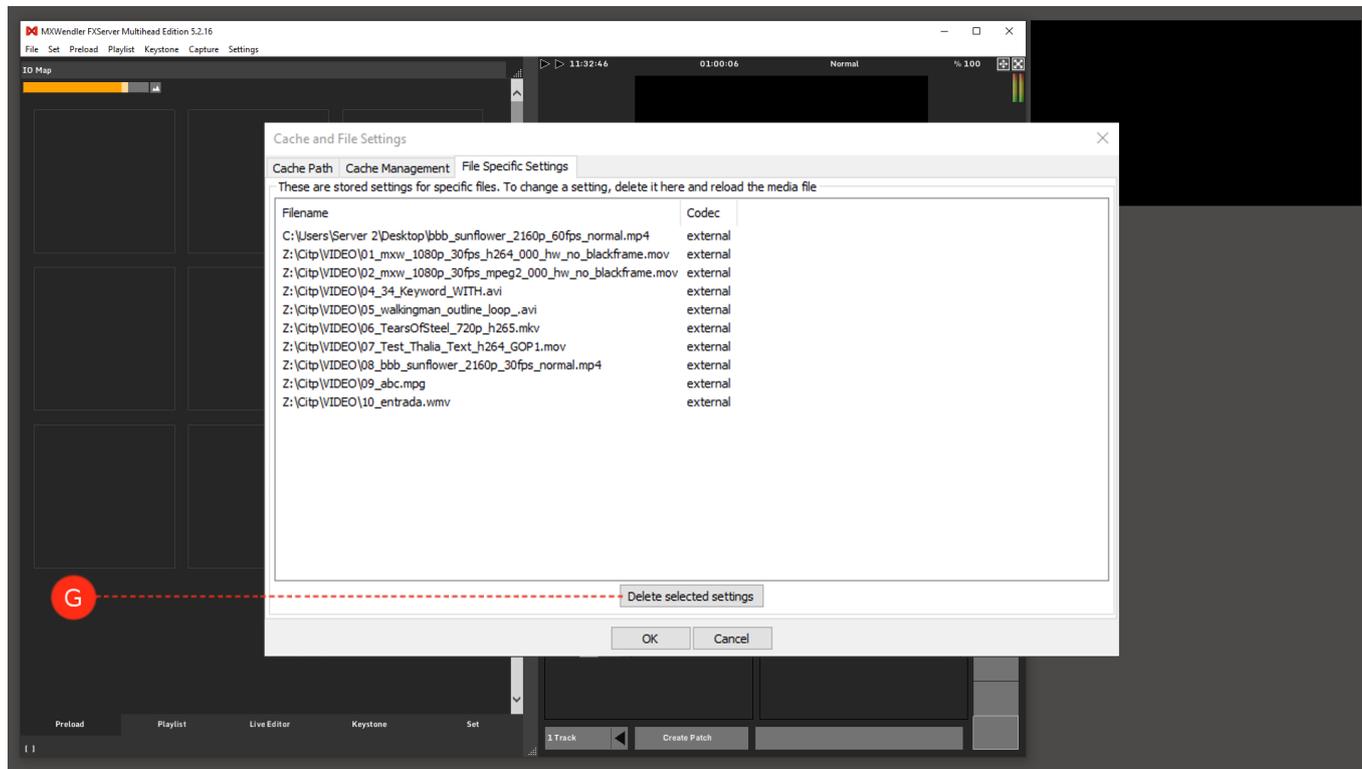
8. Choose 'Internal Codec' on import menu. **(F)**



9. If you want to remove these 'File Specific Settings' you can delete them in the FXServer Filecache. **(G)**

**Menu: Settings → Filecache → File Specific Settings**

Restart FXServer after deleting File Specific Settings!



# Tutorial MXWendler EDID Manager

This tutorial applies to all different OS and MXWendler versions 5.0 and above.

## Introduction

In each situation (live, in a club, in a booth or at home) in which working with multiple displays is necessary, a tool to control the EDID management of your graphic card outputs can be really handy. The MXWendler EDID Manager is fast, easy and effective.

In this tutorial, we will see how to use the EDID Manager to setup and ensure a multi-display installation with the MXWendler FXServer EDID Manager.

## What does EDID mean?

The "Extended Display Identification Data" (EDID) is a data structure provided by a digital display to describe its capabilities to a video source (e.g. graphics card or set-top box). It is what enables a modern personal computer to know what kind of monitors are connected.

## Securing the Display Setup

### 1. Connect and configure:

Before starting to work on the EDID Management connect your displays to the outputs of your graphic card and configure their position and resolution, according to your purpose, in the system's display settings.

### 2. Launch the EDID Manager:

The FXServer EDID Manager can always be found in the FXServer program directory.

Navigate to the MXWendler program folder.

**eg. C:\Program Files (x86)\mxw\_fxserver\_52**

Double click on the EDID Manager to open it:

The filename should be: **MXW\_EDID\_MGR**

### 3. Save the display configuration:

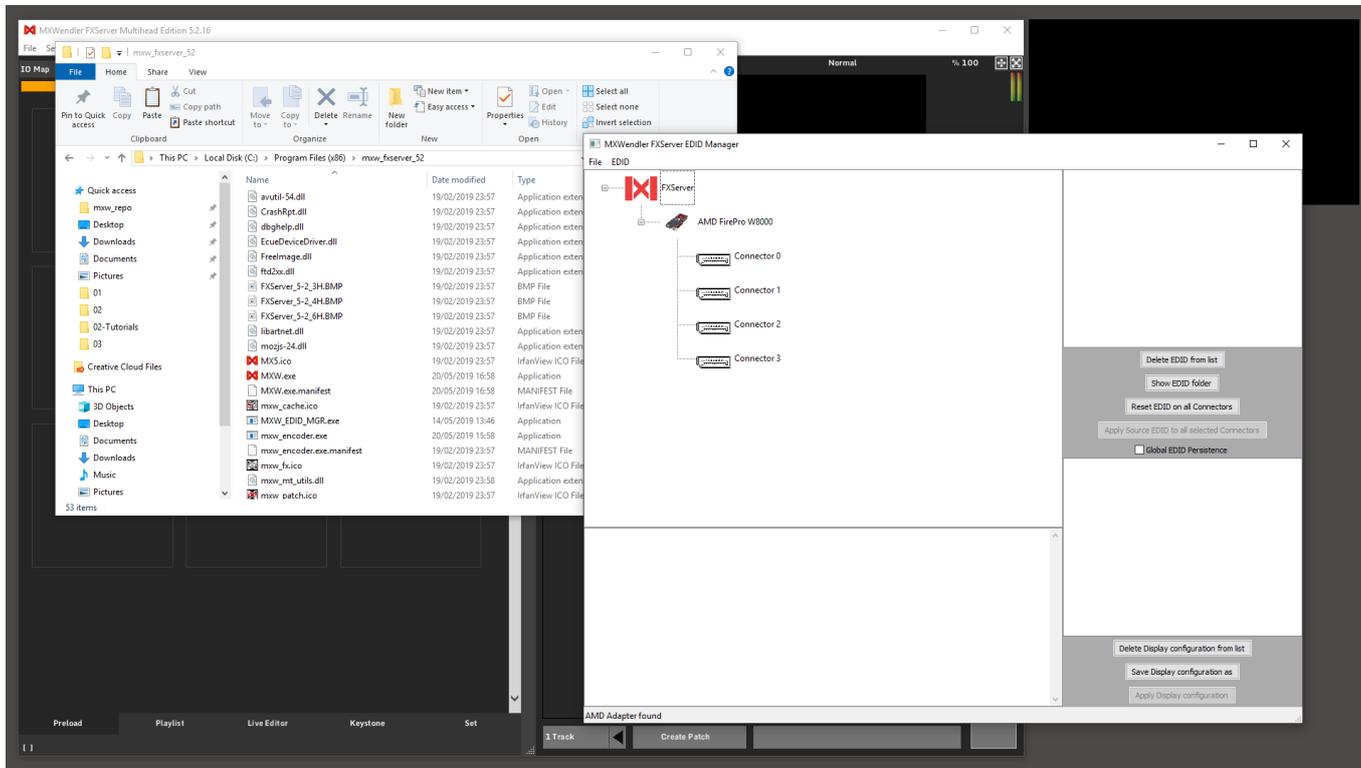
Especially by working with multiple display or projector installations in live events, for instance on stages, losing the display configuration because of the disconnection of a cable could be an annoying problem.

By saving the display configuration the EDID Manager offers two important advantages:

- If a cable is disconnected and reconnected the configuration is not lost, the EDID Manager tricks the computer into thinking that all the displays are still at their place.

The image will be missing just on the disconnected output as long as it stays disconnected.  
(this is possible only until the EDID of the display remains the same. Connecting a different device means new configuration.)

- The saved configuration can be recalled in a couple of seconds. When working in with ten or more displays this can save you a lot of time!



4. Click on the button that says 'Save configuration as' in the lower-right corner of the EDID Manager. **(A)**

Type the desired name and click on ok. **(B)**

5. The saved configuration will appear in the white box on the right and will be selectable with a mouse click. **(C)**

6. Once the saved configuration is selected it will be possible to recall it by clicking: 'Apply Display Configuration'. **(D)**

Try to save your configuration, change the position of your screens in the display settings and confirm. Then load the configuration you saved and your displays will be back in the right place in some seconds!

MXWendler FXServer Multihead Edition 3.2.16

File Set Preload Playlist Keystone Capture Settings

MXWendler FXServer EDID Manager

File EDID

FXServer

- AMD FirePro W8000
  - Connector 0
  - Connector 1
  - Connector 2
  - Connector 3

Connector 1

Display Index : 4  
Display Status : Real Display Connected  
Emulation : OFF

Position : 1920, 0  
Resolution : 1920, 1080  
ColourDepth : 32bit

00:FF:FF:FF:FF:FF:00:4C:2D:3F:0B:48:38:5A:5A  
20:e0:04:03:80:08:80:70:0A:95:64:A6:56:8:3:40:28  
0F:50:54:BF:EF:80:71:4F:81:CO:81:00:81:80:95:00  
A9:CO:83:00:01:01:02:3A:80:18:71:38:2D:40:58:2C  
45:00:CO:0C:11:00:00:1E:01:1D:00:72:51:10:1E:20  
6E:28:55:00:DD:0C:11:00:00:1E:00:00:00:FD:00:32  
4B:1E:51:11:00:04:20:20:20:20:20:00:00:FC  
00:53:32:32:44:33:30:30:0A:20:20:20:20:01:8F  
02:03:11:81:46:90:04:1F:13:12:03:65:03:0C:00:10

Insert name for Display Configuration

Insert name for Display Configuration

Display Configuration 1

OK Cancel

Delete EDID from list

Show EDID folder

Reset EDID on all Connectors

Apply Source EDID to all selected Connectors

Global EDID Persistence

Display Configuration 0

Delete Display configuration from list

Save Display configuration as

Apply Display configuration

Playlist Live Edit

Auto Edit

A B C D

## EDID Emulation

In some cases, a display may be not recognized from the OS.

With the EDID Emulation, the identification data of another display can be copied from a Source and used for the unrecognized display.

1. Right-click on a connector connected to a working display and select: **(A)**

'Use as EDID source for other connectors' the word 'SOURCE' will appear on top of the chosen connector.

2. Select the connector with the unrecognized display. (or more than one, the same EDID can be emulated on multiple outputs) **(B)**

3. Click on 'Apply Source EDID to all selected connectors'. **(C)**

In a few seconds, the display will be recognized from the OS with the characteristics of the source display.

MXWendler FXServer MultiHead Edition 3.2.16

File Set Preload Playlist Keystone Capture

ID Map

MXWendler FXServer EDID Manager

File EDID

FXServer

AMD FirePro W8000

SOURCE Connector 0

EMULATED Connector 1

Connector 2

Connector 3

Use as EDID source for other connectors

Add EDID to EDID list

Reset EDID

EDID 1920x1080 32bit 60FPS

Delete EDID from list

Show EDID folder

Reset EDID on all Connectors

Apply Source EDID to all selected Connectors

Global EDID Persistence

Display Configuration 0

Delete Display configuration from list

Save Display configuration as

Apply Display configuration

Connector 1

Display Index : 4

Display Status : Real Display Connected

Emulation : Always

Position : 1920, 0

Resolution : 1920, 1080

ColourDepth : 32bit

00:FF:FF:FF:FF:FF:00:4C:2D:3F:08:48:38:5A:5A  
 20:18:10:3:80:30:16:78:2A:95:61:A5:55:52:A0:28  
 0F:50:54:8F:6F:60:71:4F:81:C0:81:00:81:80:95:00  
 A9:CD:B3:00:01:01:02:3A:80:18:71:38:2D:40:58:2C  
 45:00:DD:0C:11:00:00:1E:01:1D:00:72:51:D0:1E:20  
 6E:28:55:00:DD:0C:11:00:00:1E:00:00:00:FD:00:32  
 4B:1E:51:11:00:0A:20:20:20:20:20:00:00:00:FC  
 00:53:32:32:44:33:30:30:0A:20:20:20:20:01:8F  
 02:03:11:81:46:90:04:1F:13:12:03:65:03:0C:00:10

Preload Playlist

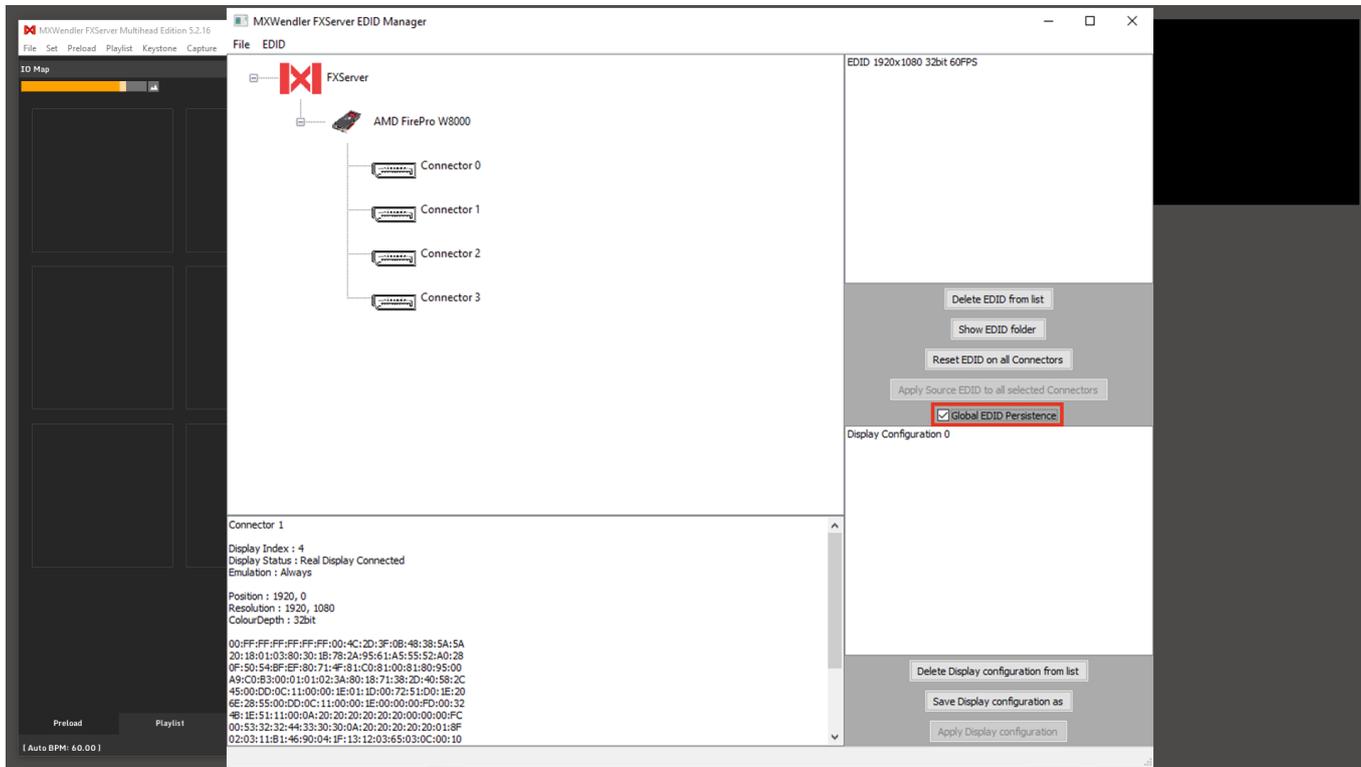
[ Auto BPM: 60.00 ]

## Global Persistence

Through the activation of the Global Persistence function, the EDID Manager forces the computer to keep the display configuration.

This means that until a cable is disconnected and reconnected to the same connector or port, the display configuration will not be changed. The software will keep playing and the content will be missing just in the disconnected output.

As said before, connecting a new display, a different converter or an extender between the display and the connector, will probably cause a re-scan and a new configuration will be needed.



# Tutorial NDI Tools

This tutorial applies to Windows OS and all MXWendler versions.

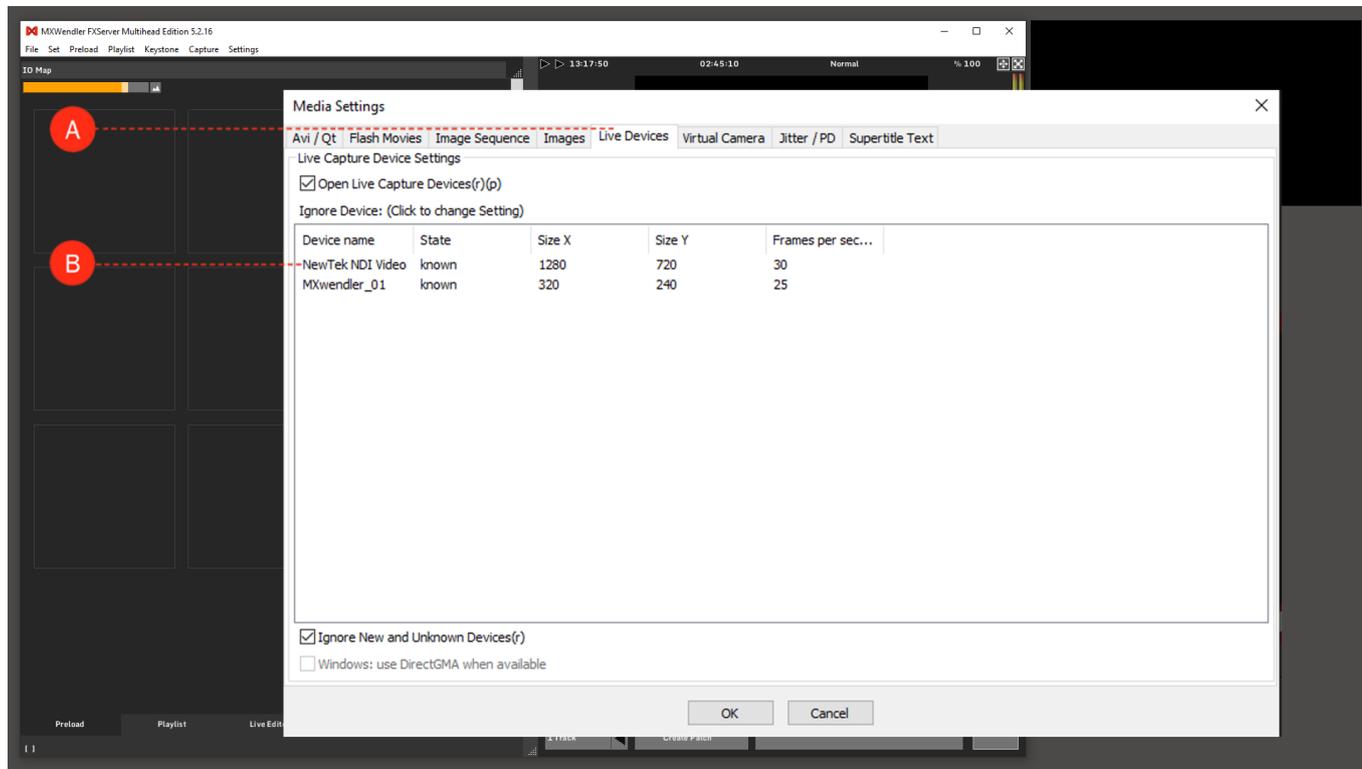
In this tutorial, we will use NDI Tools to have an NDI input as a video source in MXWendler.

## Receiving NDI Video Inputs with MXWendler

1. Download and install NDI Tools from <https://www.newtek.com/ndi/tools/>
2. Open MXWendler and activate NewTek NDI Video as a 'Known' live video source:

**Settings → Media-Clips,Live,Virtual → Live Devices (A)**

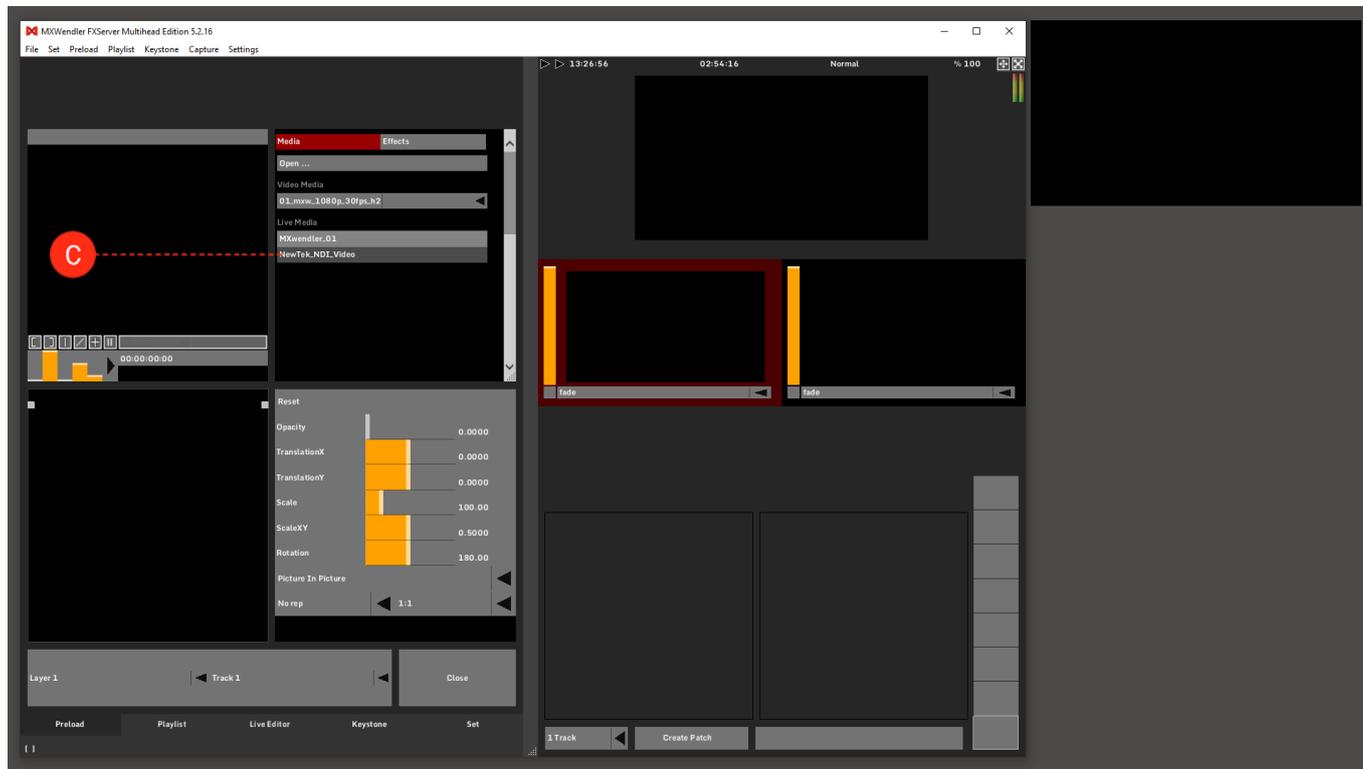
Double click on NewTek NDI Video and change to 'Known' and click Ok. **(B)**



3. Go to Preload tab. Select 'NewTek\_NDI\_Video' as your video source: **(C)**

Click on a Preload to open the Preload setting box,

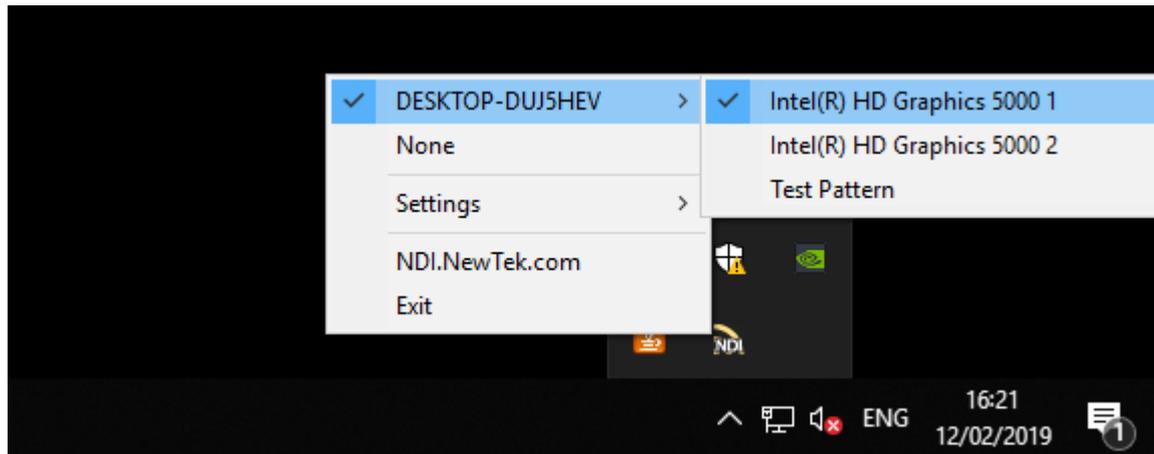
Click on 'Live Media' and from the drop-down menu, choose 'NewTek\_NDI\_Video'



4. Open Virtual Input and select the video source to be routed to MXWendler:

Click on Win and type Virtual Input and open,  
Virtual Input will be opened and active in the System Tray,  
Right click on it and select which input you want to route to MXWendler.

Now MXWendler will receive any video that is being sent via NDI Tools.



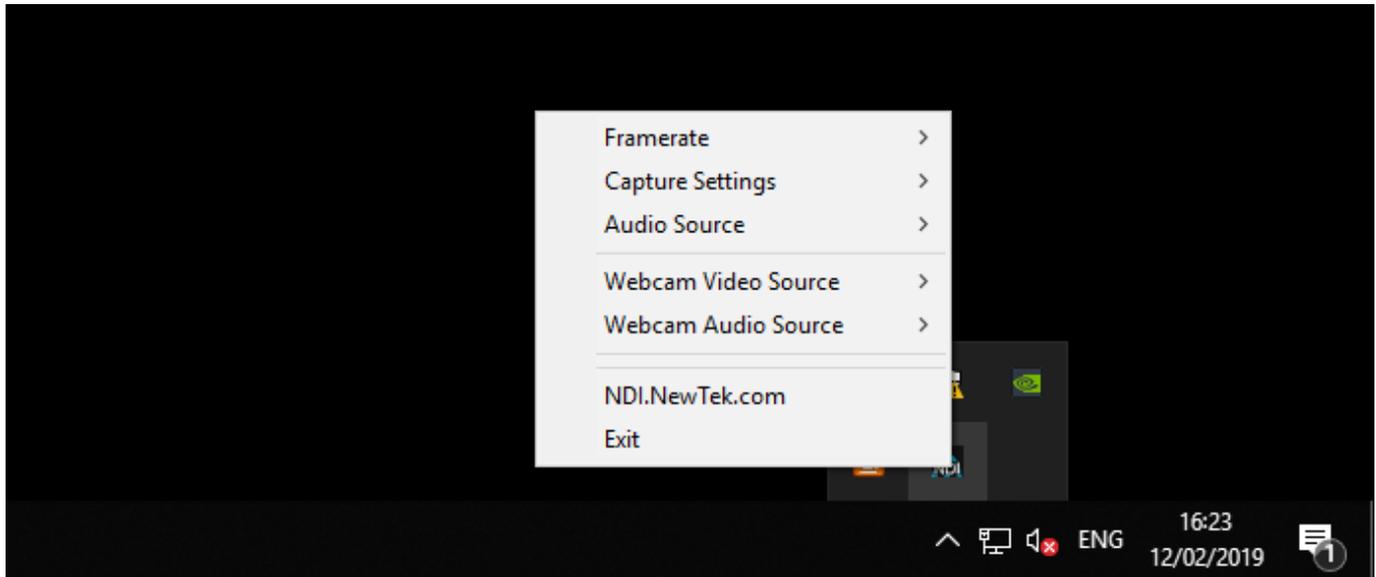
## An Example of the use of NDI Tools

In this example, we will live-stream the desktop of one computer/server, to MXWendler on another computer/server on the same network as Live Media input. NDI Tools must be installed on both systems. The Scan Converter from NDI tools works ONLY with win 8 or newer versions of windows.

### The Source

1. Open Scan Converter and set it to your liking:

Click on Win and type Scan Converter and open,  
Scan Converter will be opened and activated in the System Tray,  
Right-click on it and change the settings (e.g. framerate, capture settings, audio source, ...) as you wish.



## The Receiver

2. Open Virtual Input and select the video source to be routed to MXWendler:

Click on Win and type Virtual Input and open,  
Virtual Input will be opened and active in the System Tray,  
Right-click on it and select the Sender as a source of video to be routed to MXWendler. *Note that if the other server has more than one output monitors you'll be seeing all of them in this list.*

3. Open MXWendler.

4. Go to Preload tab. Select 'NewTek\_NDI\_Video' as your video source:

Click on a preload to open the Preload setting box,

Click on 'Live Media' and from the drop-down menu, choose 'NewTek\_NDI\_Video'.

You now have the live-stream of the desktop of the other server as your Live Input in your Preload.

# Tutorial Sending and Receiving Multiple Video Streams with NDI

This tutorial applies to Windows OS and MXWendler versions 6.0 and above.

In this tutorial, we'll send and receive multiple streams of Video from and to MXWendler using NDI.

## Send NDI Streams

1. Go to streaming settings and activate Start Virtual Capture and Feedback. **(A)**

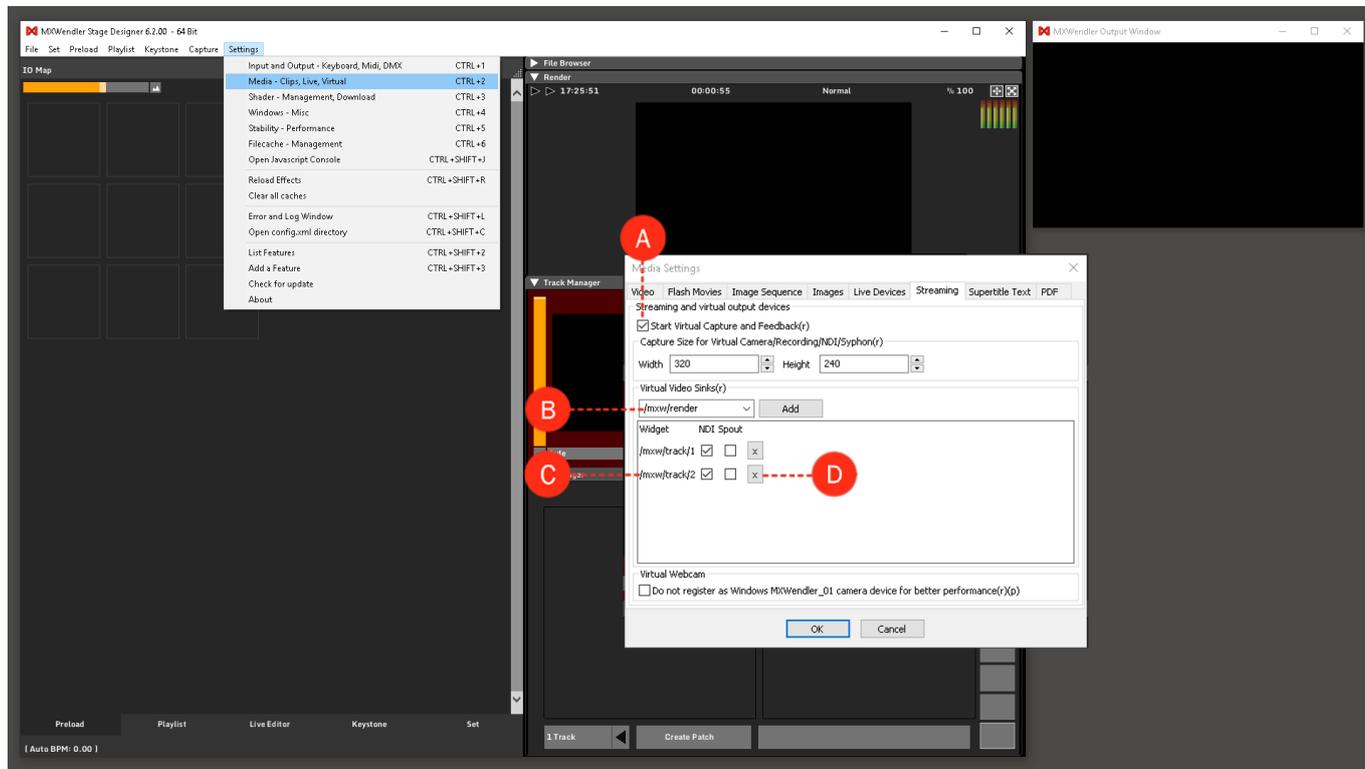
**Settings → Media-Clips,Live,Virtual → Streaming**

2. From the drop-down list, select and add which source of video should be streamed out. You can also type the source you wish to stream out: **(B)**

e.g for the video on the fourth Layer of the Track 2, write `/mxw/track/2/layer/4`

3. Make sure in front of the selected and added widgets the NDI box is selected. **(C)**
4. Delete the unwanted NDI streams by clickin on the X. **(D)**
5. Click Ok and restart MXWendler.

You can stream more than 60 video sources out from MXWendler. These streams can be received through NDI Tools, by any other PC which is on the same Ethernet network. You can monitor these streamed outputs via the Studio Monitor application which is included in the NDI Tools package.



# Receive NDI Streams

To use MXWenlder as an NDI receiver:

1. Go to Live Devices settings and activate Check for NDI Streams. **(A)**

**Settings → Media-Clips,Live,Virtual → Live Devices**

2. Go to Streaming settings and activate Start Virtual Capture and Feedback. (see previous section, point 1)

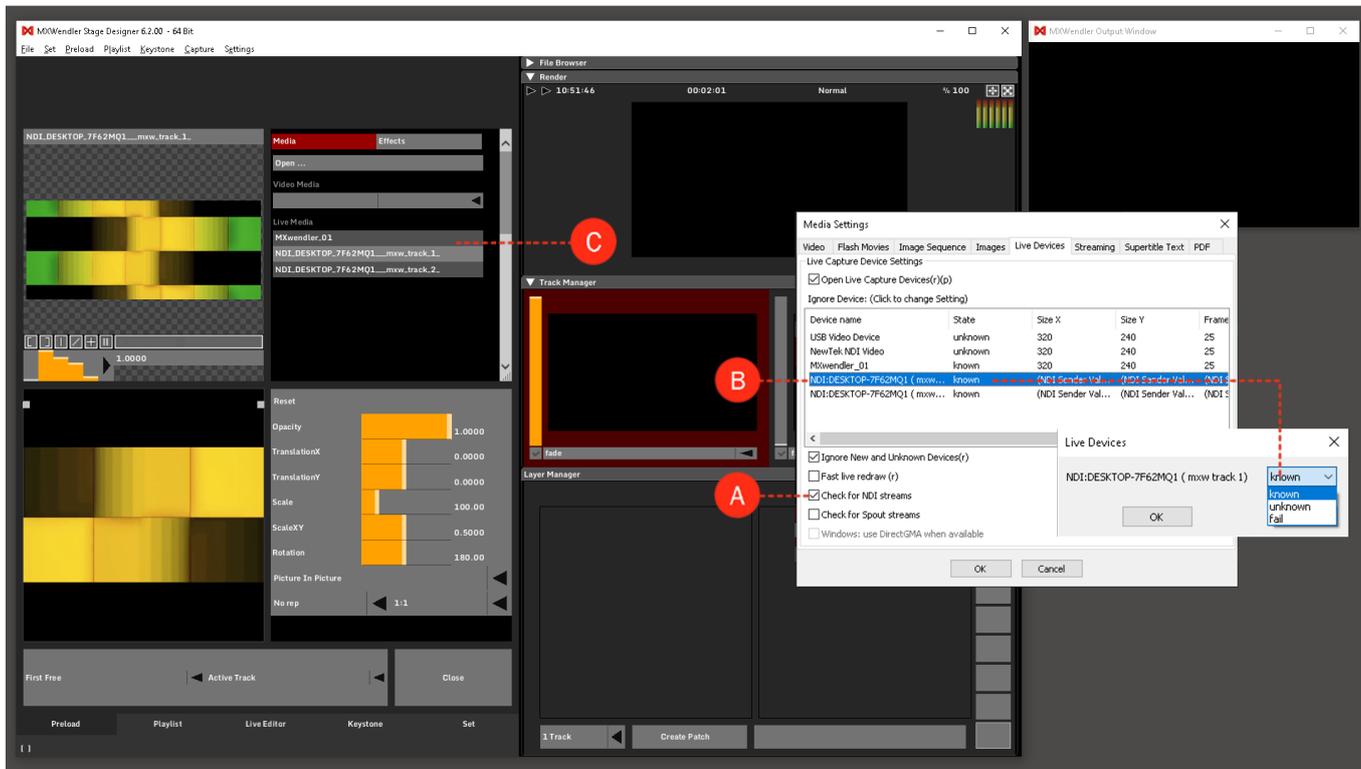
**Settings → Media-Clips,Live,Virtual → Streaming**

3. Click Ok and restart MXWendler.

4. Go to Media Settings and Live Devices. Here in the Devices table, you'll see all the available NDI streams on your network. Double-click on the ones that you want to activate and change from Unknown to Known and click Ok. **(B)**

5. Go to Preload and open a preload cell. Click on Live Media and from the drop-down menu choose the desired NDI stream as your Live Media source. **(C)**

You can monitor the streams via NDI's Studio Monitor and choose and change their settings via NDI Scan Converter.



# Tutorial Sending and Receiving Media Through Spout

This tutorial applies to Windows OS and MXWendler versions 6.0 and above.

## Introduction

Spout is an open source video frame sharing system for Microsoft Windows, which allows sharing of OpenGL textures between applications in a similar way to Syphon for the Mac.

There are multiple numbers of Softwares and Applications which can send and receive video through Spout. Through this interconnectivity of Windows-based video and music application, Spout opens up a wide range of creative use to be applied to MXWendler.

In this tutorial, we will send and receive video through Spout, in and out of MXWendler.

## Spout Software

1. Download and install the latest version of Spout from their website:

<https://spout.zeal.co/>

2. There are two test modules provided by the installation that can send and receive Spout as a way of
-

monitoring your Spout signal flow and connection.

You should be able to find them in C:\Program Files (x86)\Spout2\DEMO (at the time this tutorial is written)

3. SpoutReceiver.exe will receive any Spout signal and show it as an output. In the software you can choose which Spout source you want to monitor. We will use SpoutReceiver to make sure that MXWendler is sending out Spout signal.
4. SpoutSender.exe will send a Spout stream out for you to test your Spout connection in other sotwares. We will use the SpoutSender to send Spout to MXWendler as a sample media.

For more documentation on Spout see:

<https://spout.zeal.co/download/SpoutUserManual.pdf>

# Sending Spout out of MXWendler

1. Open MXWendler and go to Streaming settings **(A)**

**Settings → Media - Clips, Live, Virtual → Streaming**

2. Activate 'Start Virtual Capture and Feedback' and set your desired output size. **(B)**

3. From the drop-down list, select and add which source of video should be streamed out. You can also type in the source you wish to stream out: **(C)**

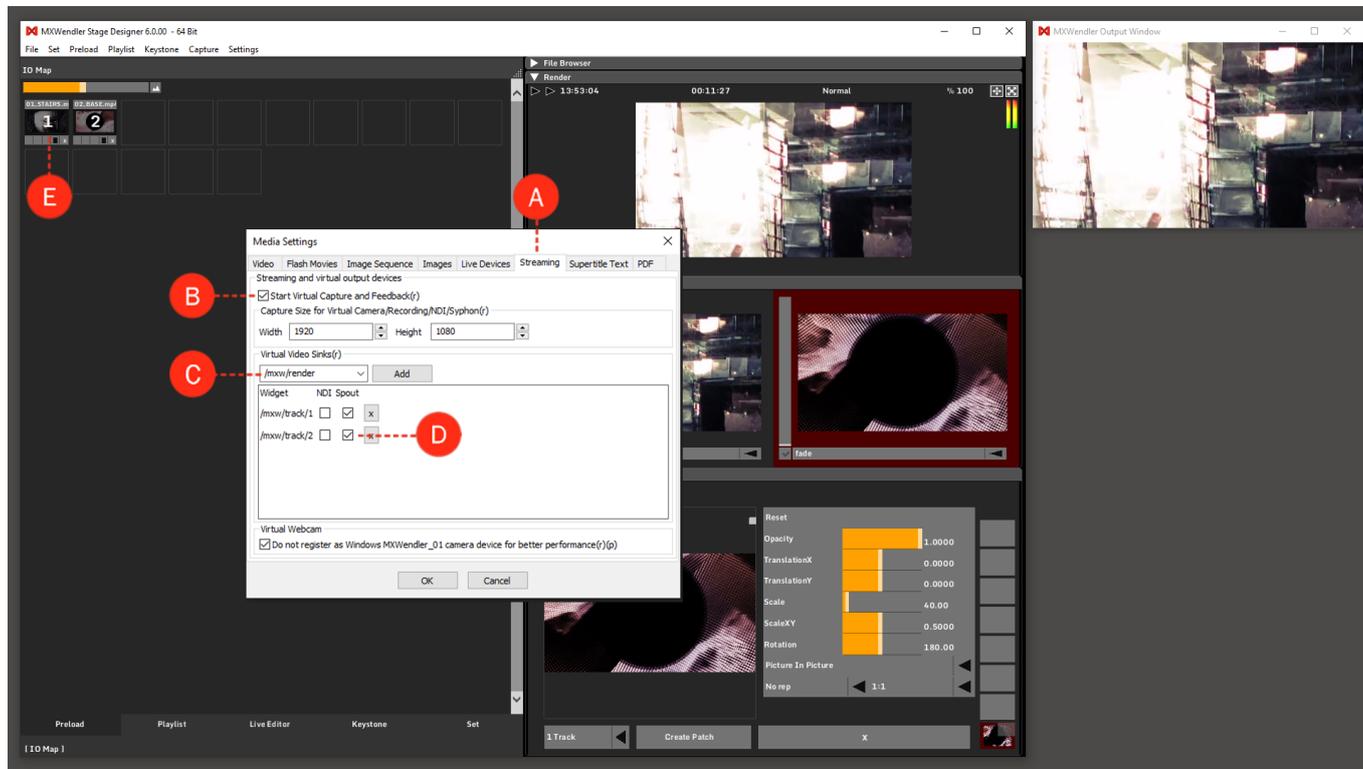
e.g for the video on the fourth Layer of the Track 2, write `/mxw/track/2/layer/4`

3. Make sure in front of the added widgets, the Spout box is selected. **(D)**

4. Click Ok and restart MXWendler.

5. Go to Preload and select some media to be played. **(E)**

You should be able to see the same widget names as Spout source in SpoutReceiver and when you select them, the specified video source will be routed to SpoutReceiver.



## Receiving Spout in MXWendler

1. Open the SpoutSender.exe. It will automatically start sending a Spout video stream.
2. Open MXWendler, go to Streaming settings and activate Start 'Virtual Capture and Feedback', and set your desired output size. (see point 1 and 2 of the above section)

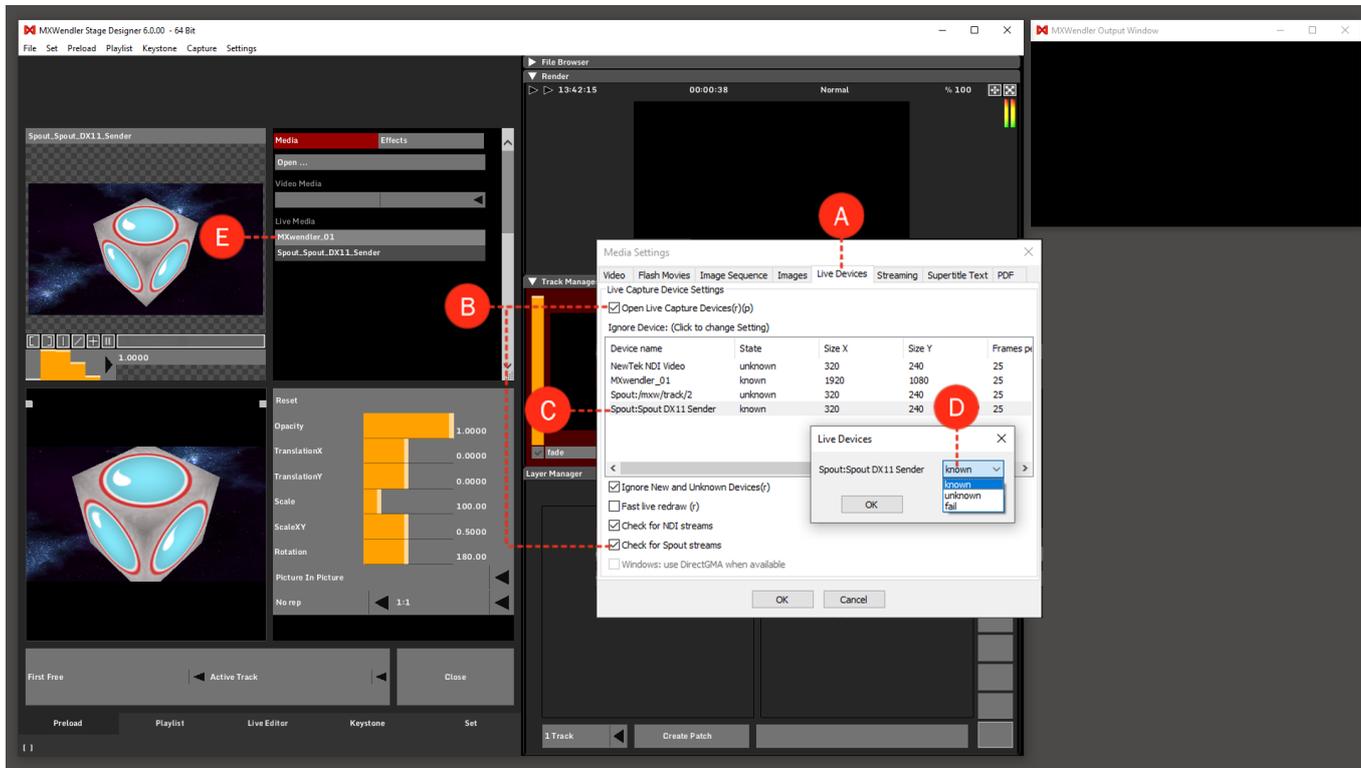
### **Settings → Media - Clips, Live, Virtual → Streaming**

3. Go to Live Devices settings. **(A)**

### **Settings → Media - Clips, Live, Virtual → Live Devices**

4. Activate 'Open Live Capture Devices' and 'Check for Spout Streams'. **(B)**
5. Click Ok and restart MXWendler.
6. Go to Live Devices settings again. In the devices list, you'll be seeing the Spout:SpoutDX11 Sender as a Spout Source. **(C)**
7. Double-click on it and change it from Unknown to Known. **(D)**
8. Go to Preload and click on an empty preload cell, and from the drop-down menu of Live Media, choose SpoutDX11 as your Live Media input. **(E)**

You should be able to see the sample video from the SpoutSender in your Preload Preview.



# Tutorial Connecting Winamp Generative Visuals with MXWendler via Spout

This tutorial applies to Windows OS and MXWendler versions 6.0 and above.

## Introduction

In this tutorial we will use the generative visuals created by Milkdrop plugin in Winamp as Live Media source in MXWendler.

Winamp is a free media player by Nullsoft and Milkdrop is a hardware-accelerated music visualization plugin for Winamp. MilkDrop uses a complex system of interpolation to transition between presets gradually through time, creating a constantly changing visual experience. Users can develop and integrate their own presets or edit the existing presets through the Milkdrop's interface.

## Pre-requisites

1. Download and install the latest version of Winamp and make sure that the Milkdrop plugin is also included in the installation steps.

[www.winamp.com](http://www.winamp.com)

2. Download and install the latest version of Spout software from their website.

<https://spout.zeal.co/>

3. Start Winamp, load an audio file for playback and activate the Milkdrop visuals using Ctrl+Shift+K.

By default the video will be streamed as Spout stream. If not, you could change the settings in the Milkdrop settings page.

4. Control and monitor the Spout output via SpoutReceiver module in the Spout software installation folder.

*Tip: in case you don't receive a Spout signal from Winamp in the SpoutReceiver, look for the included Milkdrop dll file (vis\_milk2.dll) in the Spout installation folder and copy it into Winamp's plugin folder. The folder should be found at this default path: C:\Program Files (x86)\Winamp\Plugins.*

## Receiving Spout Signal in MXWendler

1. Start MXWendler, go to Streaming settings and activate Start 'Virtual Capture and Feedback', and set your desired 'Capture size'. **(A)**

**Settings → Media - Clips, Live, Virtual → Streaming**

3. Go to Live Devices settings. **(B)**

**Settings → Media - Clips, Live, Virtual → Live Devices**

4. Activate 'Open Live Capture Devices' and 'Check for Spout Streams'. **(C)**

5. Click Ok and restart MXWendler.

6. Go to Live Devices settings again. In the devices list, you should see the Spout: WinAmpSpoutSender as a Live Media source. **(D)**

7. Double-click on it and change it from Unknown to Known. **(E)**

8. Go to Preload and click on an empty preload cell, and from the drop-down menu of Live Media, choose SpoutDX11 as your Live Media input. **(F)**

You should be able to see the video signals from Winamp in your Preload Previews.



# About Events

MXWendler enables you to trigger a whole series of events and animations with a keystroke or a MIDI/DMX event. All events work according to the same principle: a trigger activates an event, which sends a specific value to a receiver at a specific time.

Events are managed in the IO Devices Settings:

1. Open 'DMX/MIDI/Keyboard Events' in the settings: **(A)**

**Menu: Settings → IO Devices → DMX/MIDI/Keyboard Events**

2. Determine the trigger by selecting the respective tool: DMX, MIDI, Keyboard, Timer or TUIO (also Wii running Windows). **(B)**
  3. Create an event with the '+' button. **(C)**
  4. Activate an event. **(D)**
  5. Specify the various event settings (receiver / event type / time / value). **(E)**
-

The screenshot shows the 'Midi, Keyboard, DMX' configuration window in MXWendler FXServer. The window title is 'Midi, Keyboard, DMX'. It has several tabs: 'DMX/MIDI/Keyboard Events', 'DMX/Art-Net', 'OSC', 'MIDI/Generators', 'Audio Devices', and 'Wii'. The 'DMX/MIDI/Keyboard Events' tab is active.

**IO Map:** Located on the left, it shows a dark area with a yellow bar at the top. Red circle A points to the top bar, B to the main area, and C to the bottom area.

**Events:** A table with two columns: 'Event' and 'Target'. Red circle E points to the 'Event' column, and red circle D points to the 'Target' column. The table contains the following entries:

Event	Target
(back)	/mxw/playlist/gotostart
(space)	/mxw/playlist/play
q	/mxw/track/active/layer/active/clip/position
1	/mxw/preload/1/Flipflop
2	/mxw/preload/2/Flipflop
a	/mxw/render/runtime
j	/mxw/preload/6/Flipflop
(space)	/mxw/preload/5/Flipflop
p	/mxw/playlist/play

Below the table are navigation buttons: up, down, +, -, Copy, Re-Index, Clear All, Load, Insert, Save, Save HTML.

**Event Settings:** Located on the right, it includes:

- Learn:** A button.
- Event:** A dropdown menu showing '(space)'.
- IO Map(r):** A dropdown menu showing 'Keyboardmap\_DE'.
- Do Action:** A section with:
  - Receiver:** A dropdown menu showing '/mxw/preload/5/Flipflop'.
  - Type:** A dropdown menu showing 'pass value'.
  - Time:** A dropdown menu showing '0.00000'.
  - Value:** A dropdown menu showing '0.00000'.
- Do Script:** A large text area for entering scripts.
- Show Javascript Console
- Apply:** A button.

At the bottom of the window are 'OK' and 'Cancel' buttons.

# Creating events

Events are always created using the same method:

1. Determine a trigger. **(A)**
2. Name the receiver. **(B)**
3. Determine the event type. **(C)**
4. If necessary - specify the time. **(D)**
5. If necessary - specify the value. **(E)**
6. A Javascript can also be specified. Documentation for this can be found in the download area (Javascript Command Reference): [1] **(F)**

The screenshot shows the 'Midi,Keyboard,DMX' configuration window. On the left, a vertical list of red circles labeled A through F points to various elements: A points to the 'Keyboard' dropdown, B to the 'Event' column, C to the 'Target' column, D to the 'Event' list, E to the selected '(space)' event, and F to the 'Do Action' section.

The 'Events' table is as follows:

Event	Target
(back)	/mxw/playlist/gotostart
(space)	/mxw/playlist/play
q	/mxw/track/active/laver/active/dio/position
1	/mxw/preload/1/Flipflop
2	/mxw/preload/2/Flipflop
a	/mxw/renderer/runtime
j	/mxw/preload/6/Flipflop
(space)	/mxw/preload/5/Flipflop
p	/mxw/playlist/play

The 'Event Settings' for the selected '(space)' event are:

- Learn: (space)
- IO Map(r): Keyboardmap\_DE
- Do Action: /mxw/preload/5/Flipflop
- Receiver: /mxw/preload/5/Flipflop
- Type: pass value
- Time: 0.00000
- Value: 0.00000

Buttons at the bottom include 'Apply', 'OK', and 'Cancel'. The status bar at the bottom left shows 'Preload' and 'Playlist' tabs, and 'Auto BPM: 60.00'.

The following event types are available:

<b>TYPE</b>	<b>RESULT</b>	<b>VALUE</b>	<b>TIME</b>
<b>DO NOTHING</b>	Deactivating	(Ignored)	(Ignored)
<b>PASS VALUE</b> (default)	Value of external Controller, converts external to internal values	(Ignored)	(Ignored)
<b>PASS OPPOSITE VALUE</b>	Value of external Controller, sends 1-x	(Ignored)	(Ignored)
<b>GO TO</b>	Reach (Value) in (Time)	Target Value	Duration
<b>GO TO JITTERING</b>	Reach (Value) in (Time), like 'go to' but with Jitter	Target Value	Duration
<b>GO FOR AND LOOP</b>	Move (Value) in (Time), At Limit: Loop	Increment	Duration
<b>GO FOR AND BOUNCE</b>	Move (Value) in (Time), At Limit: Reverse	Increment	Duration
<b>RANDOMLY MOVE</b>	Random Walk (Time)	(Ignored)	Duration



# Events / Widgets and Their Addresses / Intrinsic Values

All so-called "Widgets" (user elements such as buttons, sliders, etc) have an Intrinsic Value", in the range 0 to 1.

A button is pressed at 1 and released at 0.

A slider is fully applied at 1 and closed at 0.

Internally, values are again set to a meaningful value. For example, at position 0.5 (central point), a video with 100 frames is on the 50th frame. The same applies for the playback speed with the slider:

0.0 is 5-times backward;

1.0 is 5-times forwards;

0.5 is stop;

And 0.6 is 1-times forwards, i.e. normal playback speed.

All widgets have a so-called address. This allows specific objects (for example the first layer of a composition) to be always retrievable, even if they are being continuously created on the go or are being recorded with new media. The addressing scheme is as follows:

**`/mxw/track/2/layer/1/opacity`**

This entry applies to the opacity of the bottom layer (Layer 1) of the second track. If there is no layer at this location, nothing will happen. Access can be further simplified by accessing 'active' tracks and layers:

***/mxw/track/active/layer/active/opacity***

The activation of tracks and layers can also be given addresses: Trackmanager switches through available tracks, and Layermanager through available layers.

***/mxw/trackmanager******/mxw/layermanager***

# Examples of events

All events have a so-called address. This allows specific objects (for example the first layer of a composition) to be always retrievable, even if they are being continuously created on the go, or are being recorded with new media.

Fade out the main output with the space key in one second:

```
[Trig] - /mxw/render/opacitiy - Go To - 0.0 - 1000.0
```

Fade in the main output in one second:

```
[Trig] - /mxw/render/opacitiy - Go To - 1.0 - 1000.0
```

Rotate main output ten times in ten seconds:

```
[Trig] - /mxw/render/rotation - Go For and Loop - 10.0 - 10000.0
```

Clip scratch for half a second:

```
[Trig] - /mxw/track/1/layer/1/clip/position - Random - (0.0) - 500.0
```

Trigger Preload 5:

```
[Trig] - /mxw/preload/5/trigger - Pass Value - (0.0) - (0.0)
```

Flipflop Preload 5:

[Trig] - /mxw/preload/5/flipflop - Pass Value - (0.0) - (0.0)

Load Patch 10 from the set:

[Trig] - /mxw/set - Go To - 10.0 - (0.0)

# Triggering Effects with TUIO

TUIO is a protocol intended to connect multitouch environments such as laser scanners, multitouch tables, etc. to interactive installations. It is based on OSC, which itself is the network-based successor to MIDI. Today, many common devices can send TUIO, including iPhones, iPads, Android devices, Kinect Controllers, Wii Controllers and many more.

Using TUIO in your setup is easy. We will use an Android phone for the example setup.

1. First connect the MXWendler server and the Android device over a network, e.g. WLAN.

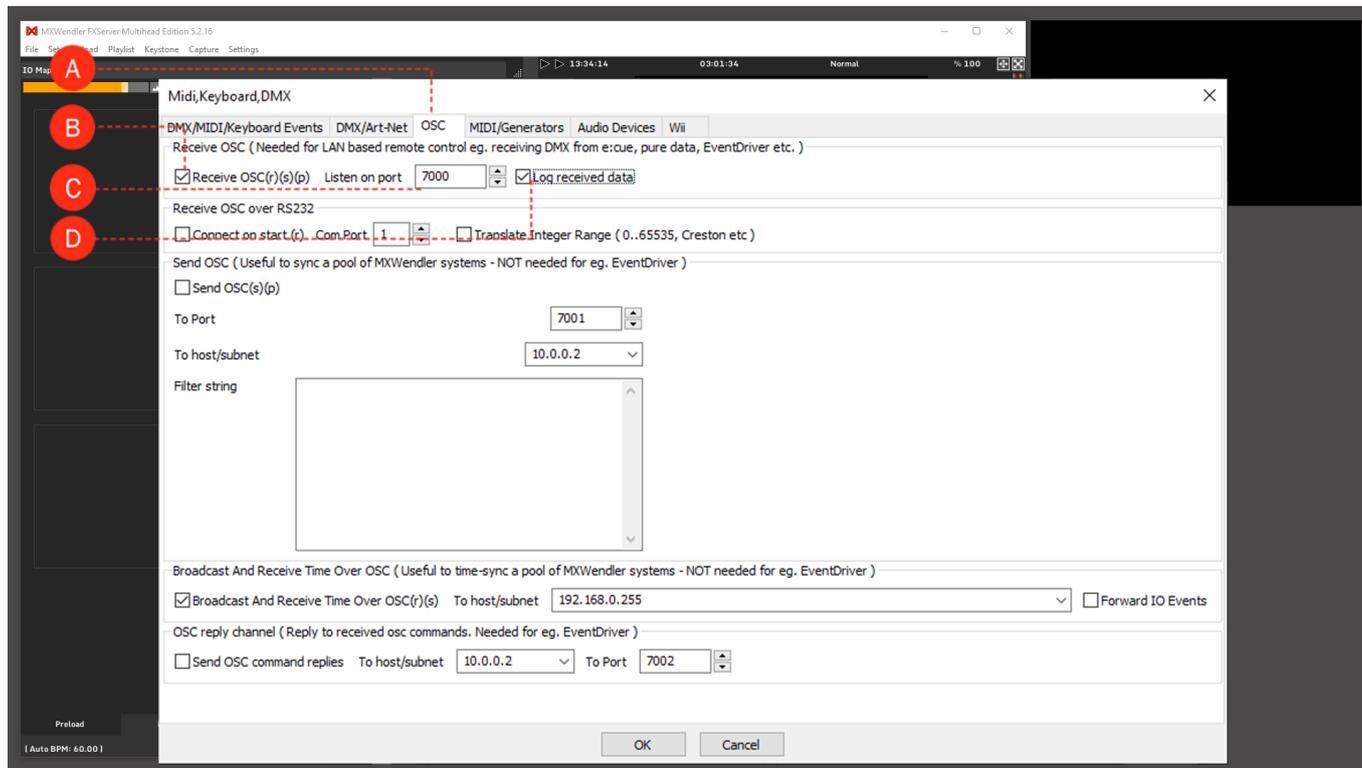
2. Open 'OSC' in the MXWendler IO Devices Settings: **(A)**

**Menu: Settings → IO Devices → OSC**

3. Activate 'Receive OSC'. **(B)**

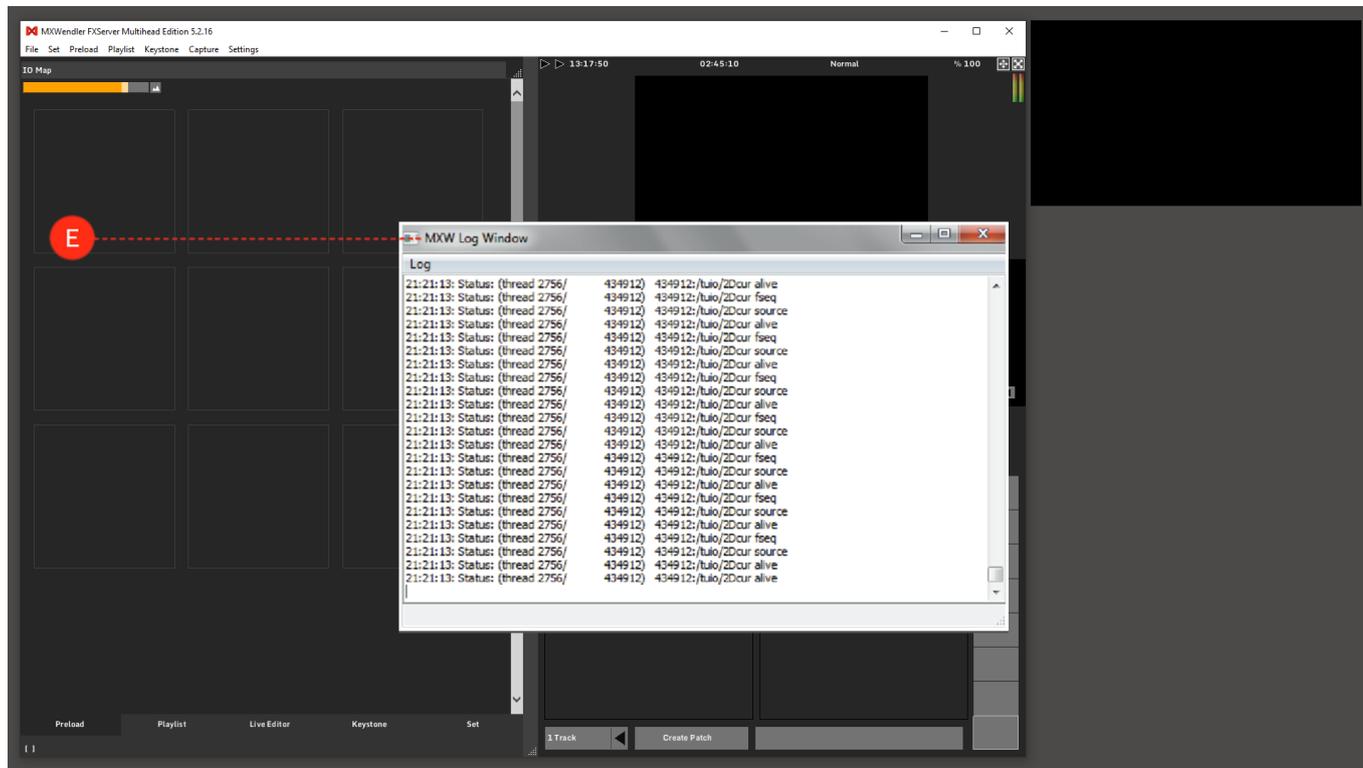
4. Set 'Listen on Port' to '7000' (default). **(C)**

5. Turn on 'Log received Data' (reset later for better performance). **(D)**



6. Start the TUIO App, e.g. TUIOdroid, and change the TUIO port from '3333' to '7000'.
7. Start panning on the Android device.
8. Check successful connection in the log window. **(E)**

**Menu: Settings → Error and log window**



Once the network setup is up and running, you can connect the TUIO command stream to an IO Event of your choice. To connect the first markers X position to the active layers X position, configure the following:

9. Open DMX/MIDI/Keyboard Events in the IO Devices Settings: **(F)**

**Menu: Settings → IO Devices → DMX/MIDI/Keyboard Events**

10. Choose 'Tuio events' as Trigger. **(G)**

11. Create a new event with the '+' button. **(H)**

12. Choose '2Dcur\_Tap00\_x' as event. **(I)**

13. Choose '/mxw/track/active/layer/active/translationx' as receiver. **(J)**

14. Choose 'Pass value' as event type. **(K)**

15. Confirm with 'Apply'. **(L)**

MWendler FXServer Multihead Edition 5.2.16

File Set Preload Playlist Key

Midi, Keyboard, DMX

DMX/MIDI/Keyboard Events DMX/Art-Net OSC MIDI/Generators Audio Devices Wii

IO Map

Events

Tuio

Event	Target
2Dcur_Tap0...	/mxw/track/active/layer/active/translationx

Event Settings

Learn 2Dcur\_Tap00\_x 2Dcur\_Tap00\_x IO Map(r)

Do Action

Receiver /mxw/track/active/layer/active/translationx

Type pass value

Time 0.00000

Value 0.00000

Do Script

Show Javascript Console

Apply

OK Cancel

Preload

1 Track Create Patch

# Performance Problems

This applies to all different OS and MXWendler versions.

There are six different bottlenecks that have to be passed for perfect video playback:

- Disk
- RAM
- CPU
- GPU
- System Busses
- Monitors

## Disk

Videostreams are something from 1 to 100MB/s data transfer, from a standard definition video (480p) to 8K UHD resolutions, and do not forget that having two or more streams reduces the throughput (data transfer rate) exponentially and requires much more resources.

Am I disk limited?

Test

- Open several streams at the same time until the CPU usage does not grow anymore. You've reached the maximum throughput of your disk.

## Solution

- For best disk performance, use a disk array. Use fast disks (  $\geq 10k$  rpm ).
- Use M.2 SSDs, use SSDs in arrays, they perform up to more than 500MB/s.

## RAM

Enough fast RAM is very important for MXW. Normally computer systems have enough RAM ( more than 8gb ) today, so this is generally not a likely source for performance problems.

## CPU

MXW is heavily multithreaded and will use every core that your system has to offer. But there are some situations where CPU-intense tasks cannot be parallelized, eg. creating and opening many movies at once or decoding very large videos (  $\geq 4K$  ).

Am I CPU limited?

Test

Open the task manager.

- On modern multicore systems, the real situation hides behind the figures: if you cannot parallelize a task, and a single core cannot handle the problem in realtime, you are CPU limited.
- Open eg. a movie  $\geq 4k$  ( with demanding content! ) and if it does not play in realtime AND you see a CPU use of ca. 25% on a 4-core system, you are CPU limited.
- Or play a movie ( ideally with sound ) and while it is playing, constantly open and close other clips. If

the first movie starts jittering, you are CPU limited.

## Solution

- The solution is to get a faster CPU (where MHz are in this case more important than the number of cores) or - most of the times easier - reduce server load, eg. split videos, combine outputs, reduce resolutions, etc.

## GPU

MXW renders 100% on the GPU, no pixel color is touched on the CPU side.

The performance of GPUs varies widely, some GPUs have 4 pixels processors, some have 1000s. If you have a recent model ( bought since 2015 ), you should not experience much performance problems on the GPU side. But there are important limits, most notably GPU RAM. This means, the dedicated GPU RAM built onto the graphics device. If you run out of GPU RAM, there will be a severe performance loss.

A lot of GPU RAM is used when there are:

- Many images open,
- images with very large sizes open,
- many effects used,
- extreme large output sizes.

## Am I GPU limited?

### Test

- GPU limitation is reached when it takes a very long time to open eg. dialog boxes.
- Reduce the output size. Use fewer effects. Delete some images, delete some videos. If the performance rises, you are GPU and/or GPU RAM limited.

### Solution

- A solution may be to rework your visual setup.

Use only the resolutions you need, and keep resolutions below certain limits, especially Power-Of-Two limits.

An image with a width of 1024 will be placed in a 1024 texture.

An image with a width of 1025 will be placed in a 2048 texture.

- Try (at least) doubling the GPU RAM usage.
- Under NVidia, for optimal performance, disable the following:

Anisotropic filtering

Antialiasing

Texture filtering

- Use 'Single GPU Performance Mode' in combination with a device to split the video output.
- Be sure your Keystone setup ( in fact, this is geometry ) is not too complex for your graphics board.

## System Busses

Video data has to be carried from the disk to the cpu to the graphics card. At each stage, the video is decompressed, and the data stream will take more bandwidth.

- Be sure that your disk bus is as fast as the disk itself. There is no point in connecting a fast RAID to USB 1.1.
- Always pair fast parts together, e.g use a fast memory on a fast mainboard.

## Monitors

Ideally, videos should be made in 30/60 frames per second and played on monitors or projectors with a 60Hz refresh rate. But this is not always the case, as for example, the fps and refresh rate standards vary in the UK, US, Europe and other parts of the world. You cannot change the performance of your monitor, but you should take care that your whole system is always in sync at a common base frame rate and refresh rate. So as an example, if your videos are rendered in 25fps, make sure that:

- the video engine (e.g. MXWendler) runs also in 25 fps,
- the monitor has a refresh rate frequency of 50Hz.



# Smooth Playback/ Frame Drops and Audio Drivers

This applies to all different OS and MXWendler versions

When we work with more than a single video output (displays, projectors, LED walls), the computer needs to do some extra work: all the outputs have to be in sync!

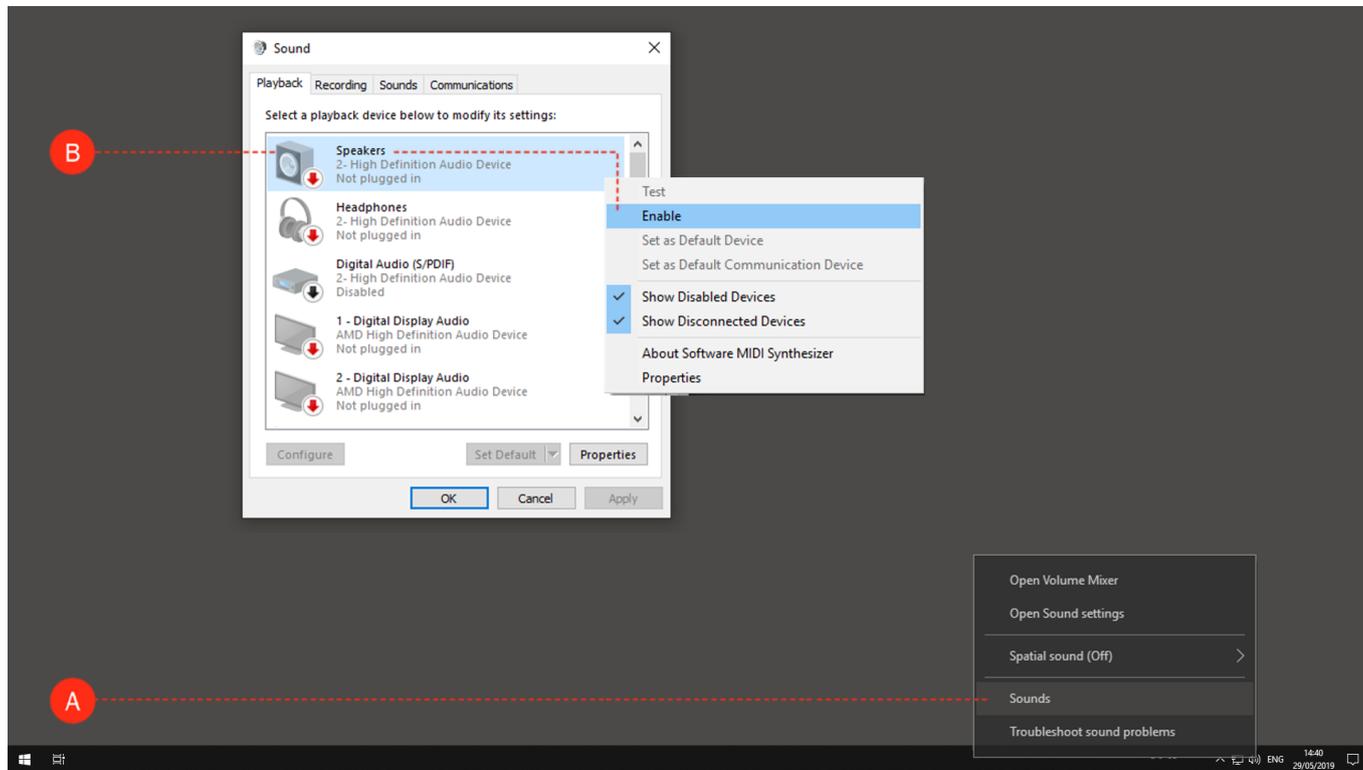
MXWendler, for instance, needs to rely on a "Clock" to be able to send out the frames with the right timing. The audio driver has a way more precise clock than the Windows one, so:

If no Audio driver is selected, the software won't be able to send out frames with extreme precision, and that could lead to some lag in the video output.

## Basic Audio Setup: Windows

1. Right click on: 'Taskbar / Speakers icon' and select 'Sounds'. **(A)**
2. In the new window, select the first tab: 'Playback', enable the speakers and set them as 'Default device'. **(B)**

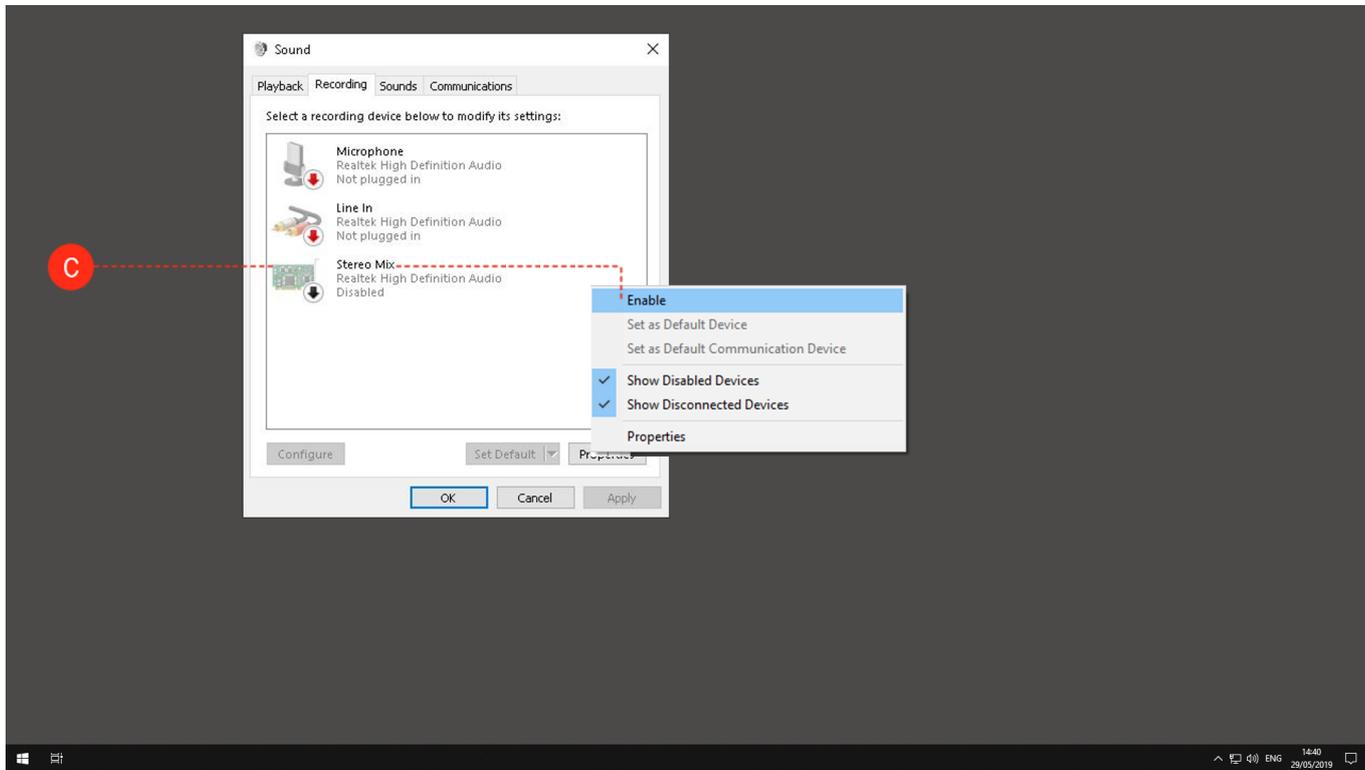
*Tip: Remember to plug a jack cable in the output or windows won't let you enable the output. In case you can't do that, it should be possible to enable the Digital Audio as Default Device. If you have an external Audio Interface, it will perfectly do the job.*



3. Now select the second tab: 'Recording' and enable an input as 'Default device'. **(C)**

The Line In or the Stereo Mix inputs are going to be fine.

*Tip: It is very important that the input and output devices enabled are using the same driver! So, if you have selected an audio interface as Default Output, you should now choose the interface's input. If you are not able to find some of the mentioned audio devices, try right-clicking on the background, check 'Show Disabled Devices' and 'Show Disconnected Devices'.*

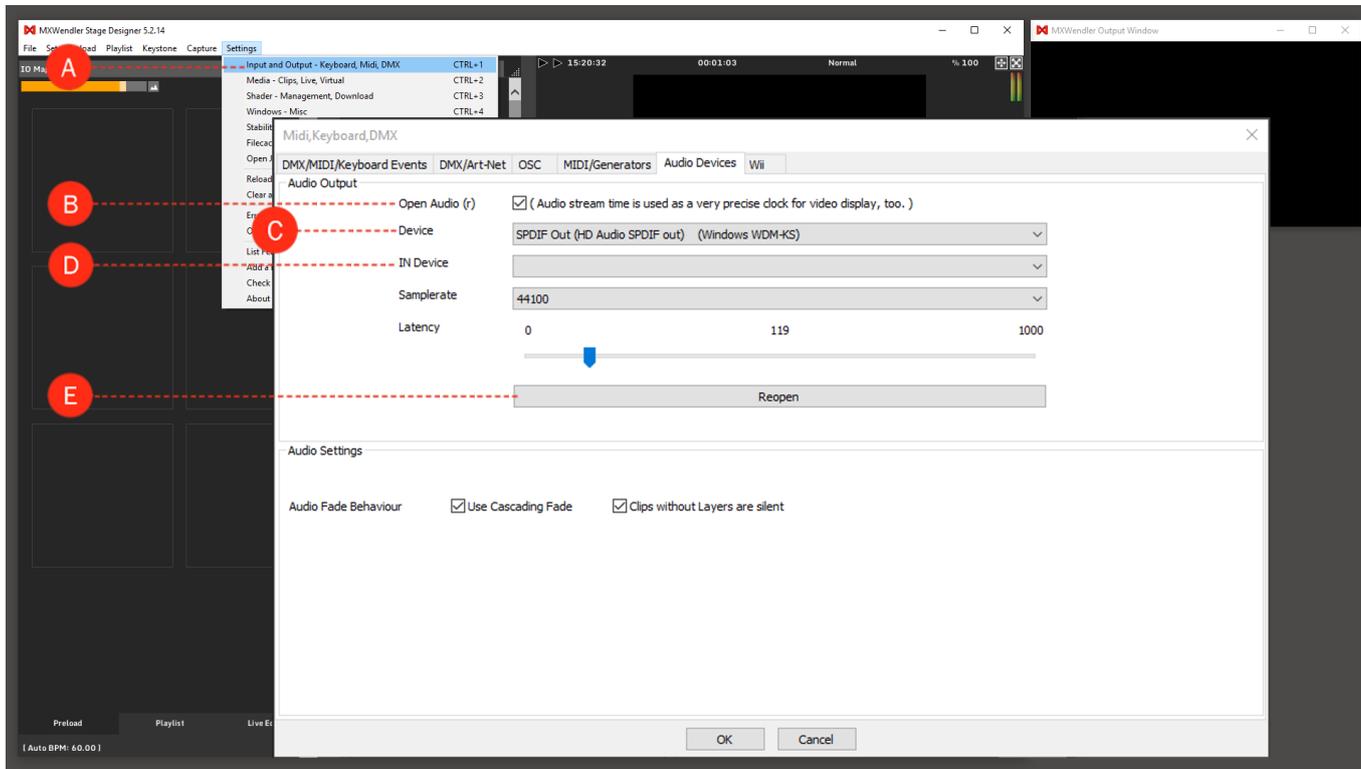


## Basic Audio Setup: MXWendler

If an input and an output are enabled at the first start of the software, MXWendler should automatically recognize them.

Here is what to do if the audio is not activated:

1. Go to: **Menu - Settings - Input and Output - Audio Devices. (A)**
2. Make sure that 'Open Audio (r)' is checked. **(B)**
3. Select the output in 'Device'. **(C)**
4. Select the input in 'IN Device'. **(D)**
5. Click on 'Reopen' then close the window with 'ok'. **(E)**
6. Restart the software.



# Keystone: not Opening

## `./skin/keystone/Video.png: file does not exist`

This applies to all different OS and MXWendler versions lower than 5.2

### Problem

You open a keystone file or project with MXWendler and an error message appears that says *not opening ./skin/keystone/Video.png: file does not exist*

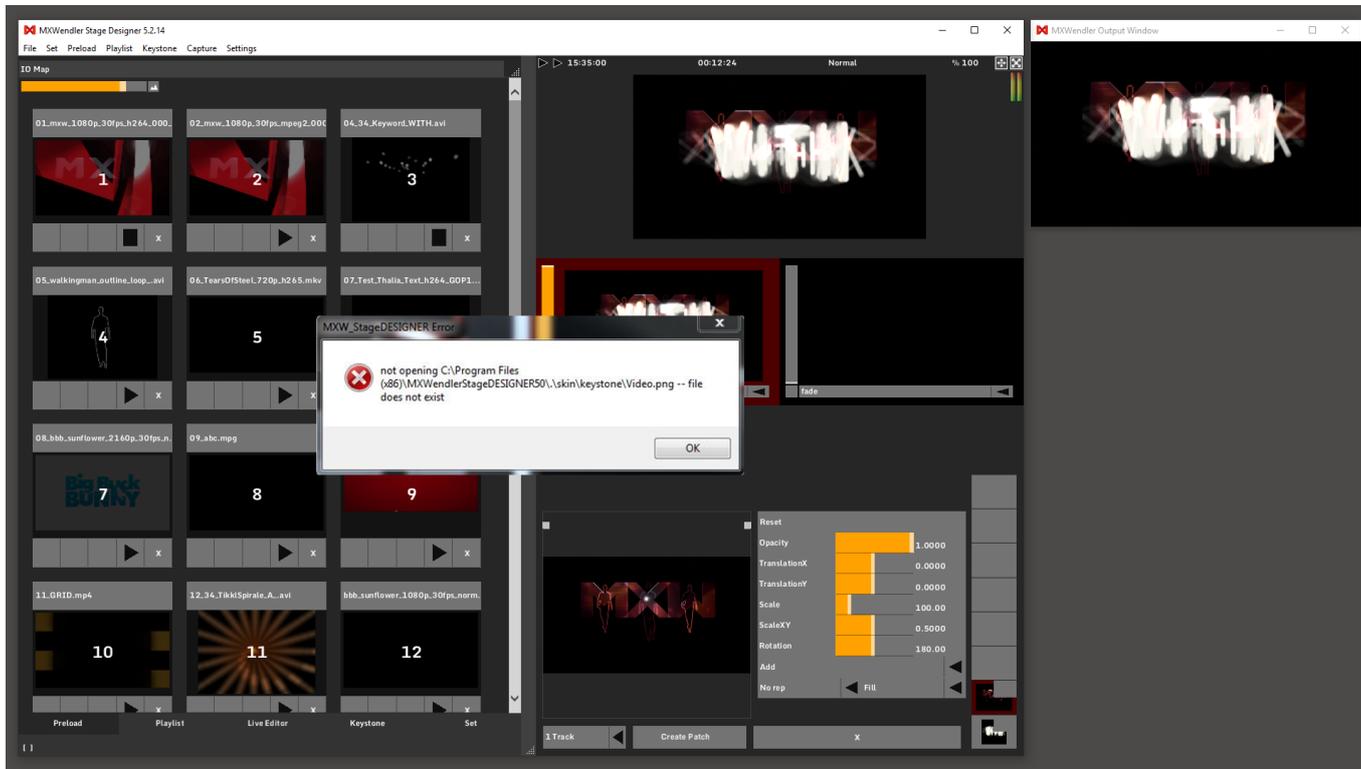
### Solution

Ignore this message. This is not a technical problem. All keystone and other functionalities are still available.

### Background

You saved an .mxw file with Version 5.2 and higher and opened it with a previous version. Version 5.2 and higher change the internal storage format for keystone files. Versions 5.0 and lower are looking for helper textures, in this case, 'Video'. The 'Video' helper texture does not exist in these versions.

Among different versions, forward compatibility is guaranteed, backward compatibility is not. Keep this in mind when programming systems.



# License: Wrong Key Format

This applies to all different OS and MXWendler versions

## **Problem**

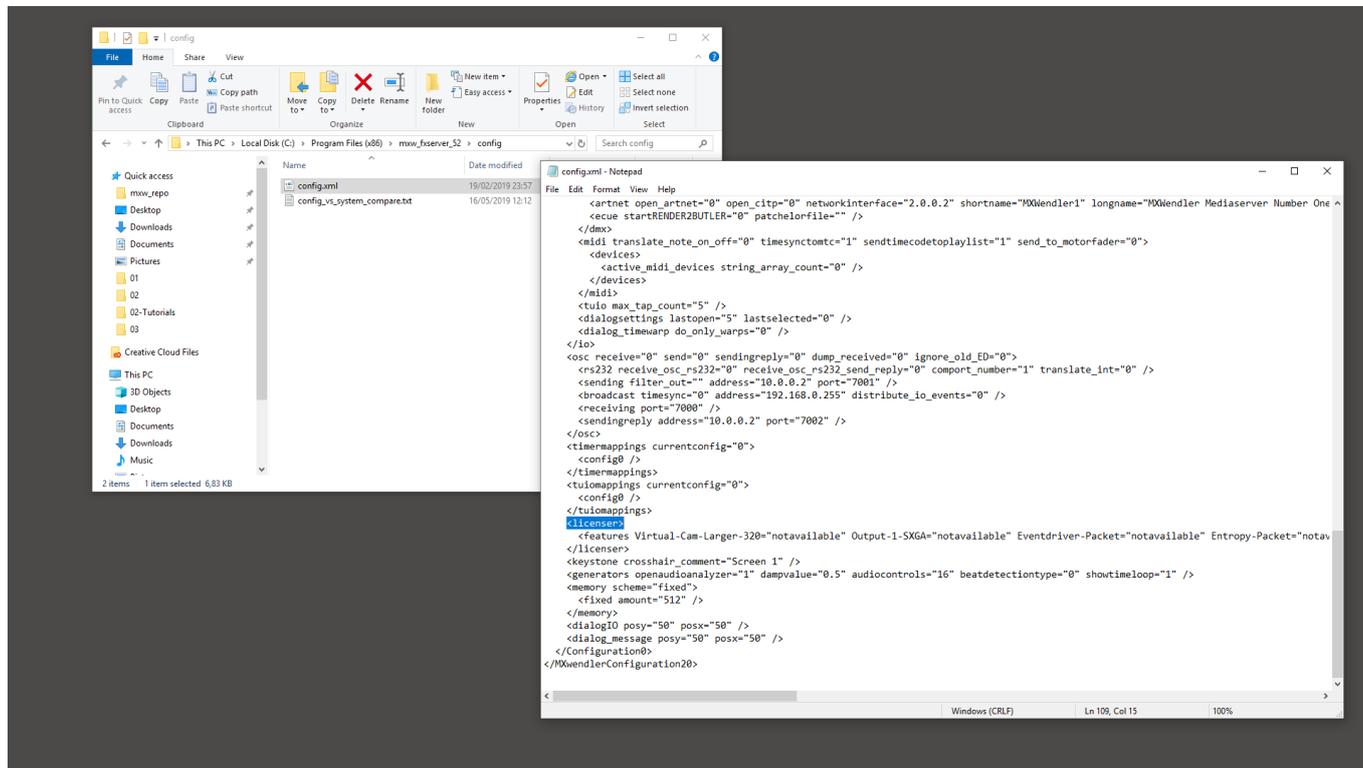
You attached a dongle and checked the licensed features and in multiple locations 'Wrong Key Format' appears.

## **Solution**

1. Open the config.xml file.
2. Manually remove all entries related to the <license>.

## **Background**

Softwarekeys and USB keys can conflict if they are both available. One of them has to be removed.



# Playlist: Crossfading Between Bright Media Becomes Temporarily Dark

This applies to all different OS and MXWendler versions

## Problem

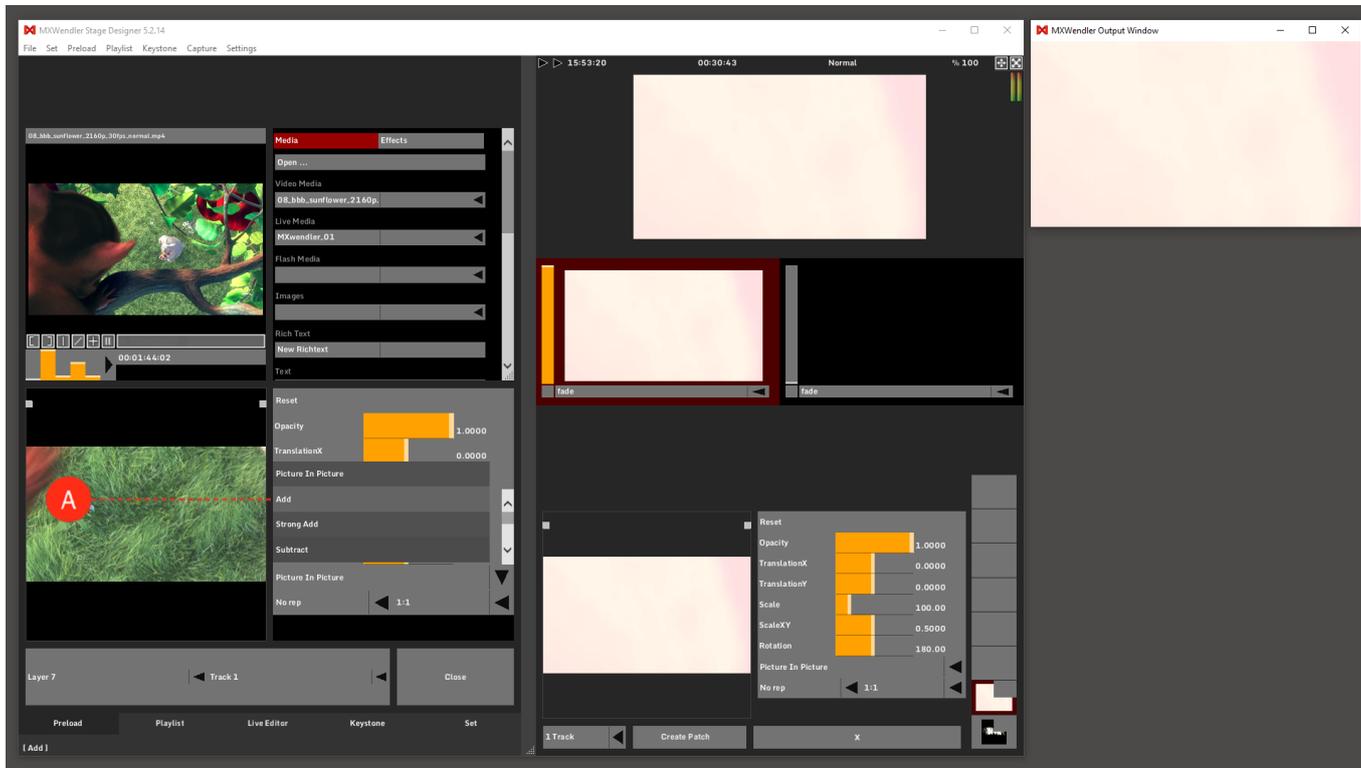
You created a playlist with bright media ( eg. sky footage ) and during cue fades, the resulting image goes temporarily dark.

## Solution

1. Go to the preload tab.
2. Open the playlist preloads.
3. Change the layer mode from 'Picture in Picture' to 'Add'. **(A)**

## Background

'Picture in Picture' is defined by: place media B inside media A with opacity X. During the crossfade between the two layers, the bottom one and the top one are faded to eg. 50% ( 0.5 ), so placing an image with 50% fade inside an image with 50% fade results in a 75% faded result.



# Capture Cards (e.g. BM Decklink Studio2)

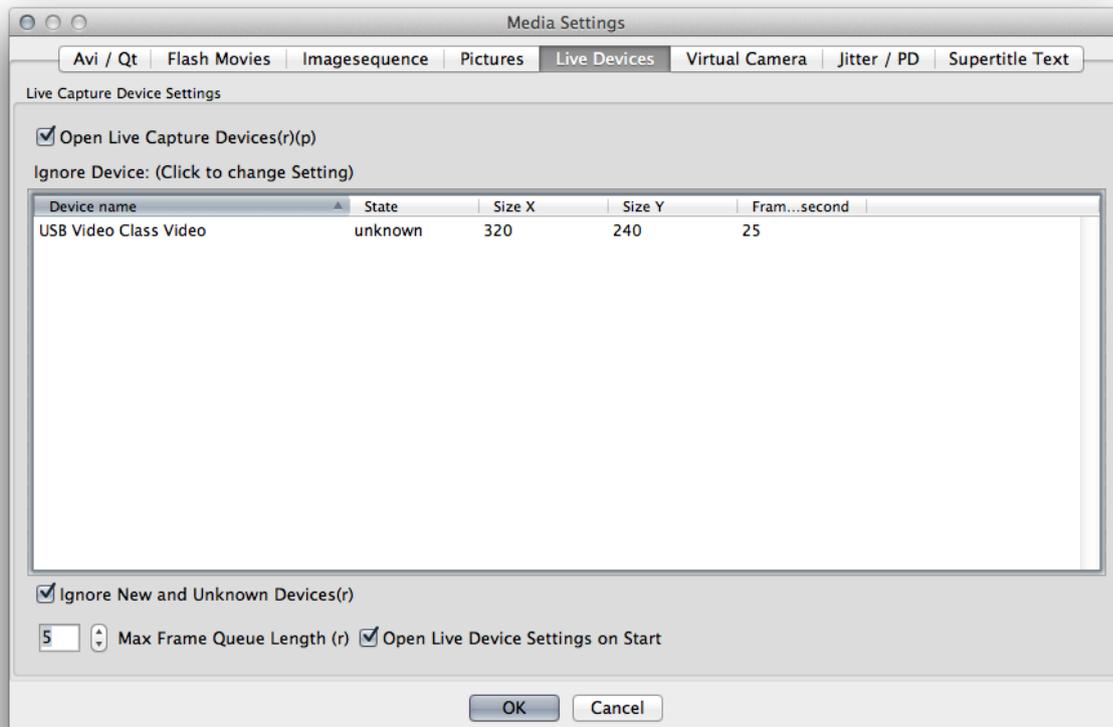
This applies to Mac OS 10.7 and MXWendler version 4.2 and above (for Windows see below)

## **Problem**

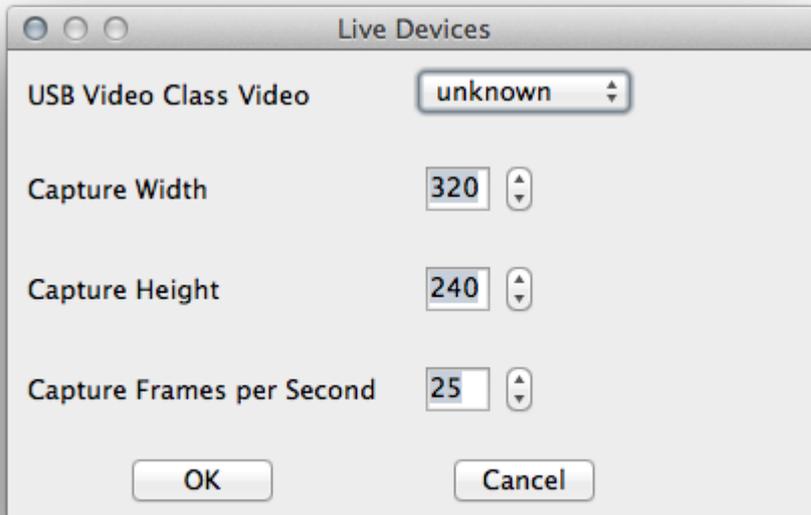
You can find your Capture Cards in Live Devices, but there is no video signal.

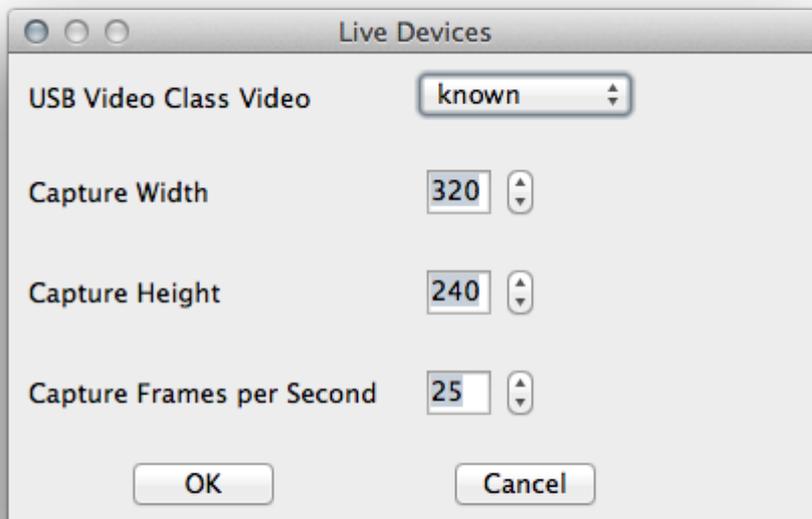
## **Solution**

1. Open 'Live Devices' from 'Settings/Media-Pictures, video and live media'.
2. Mark the Checkbox 'Open Live Device Settings on Start'.

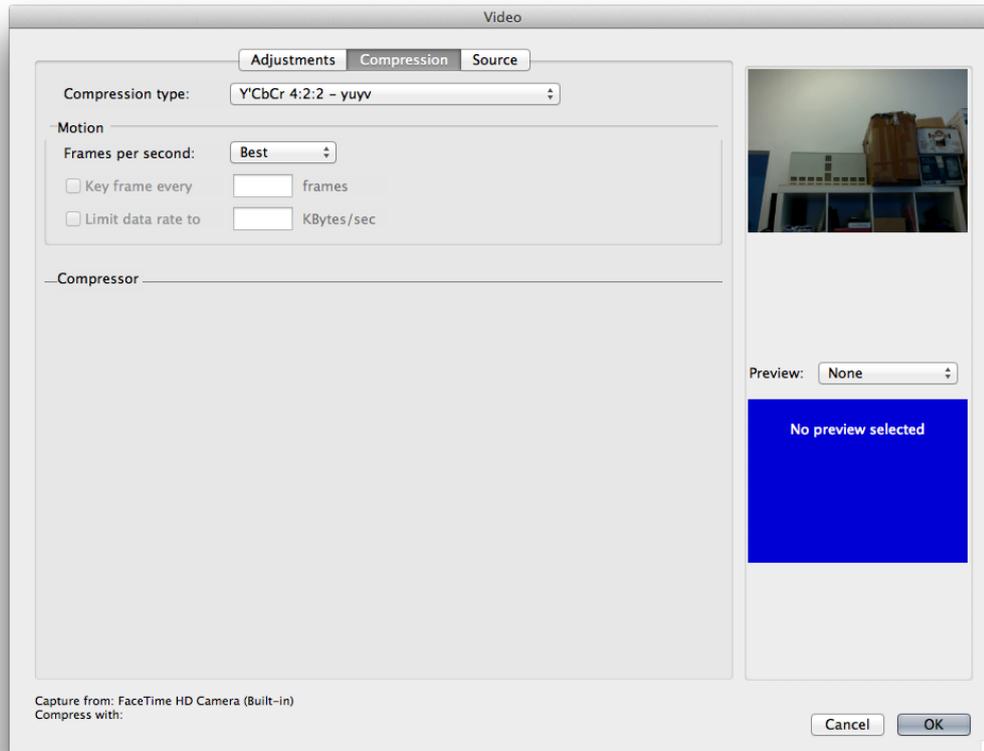


3. Change the state of your Live Device by double-clicking.
4. Set state to 'Known' and enter your Capture values.

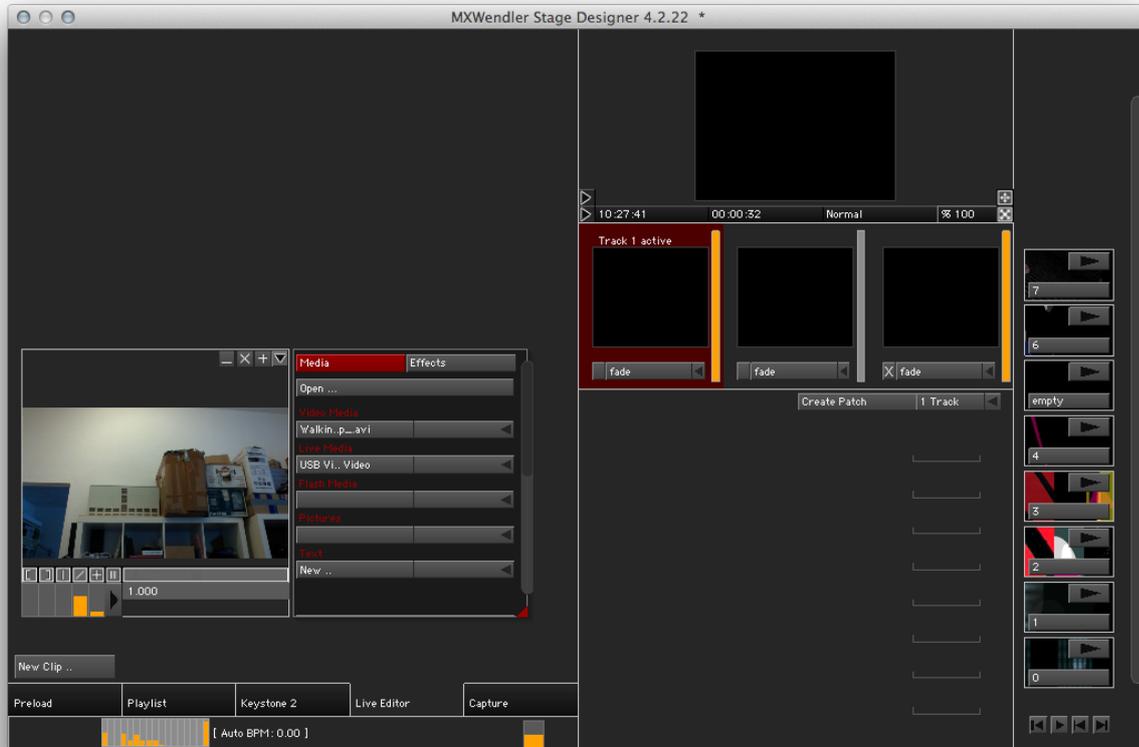




Now a Video dialog should appear with a preview of your live device.

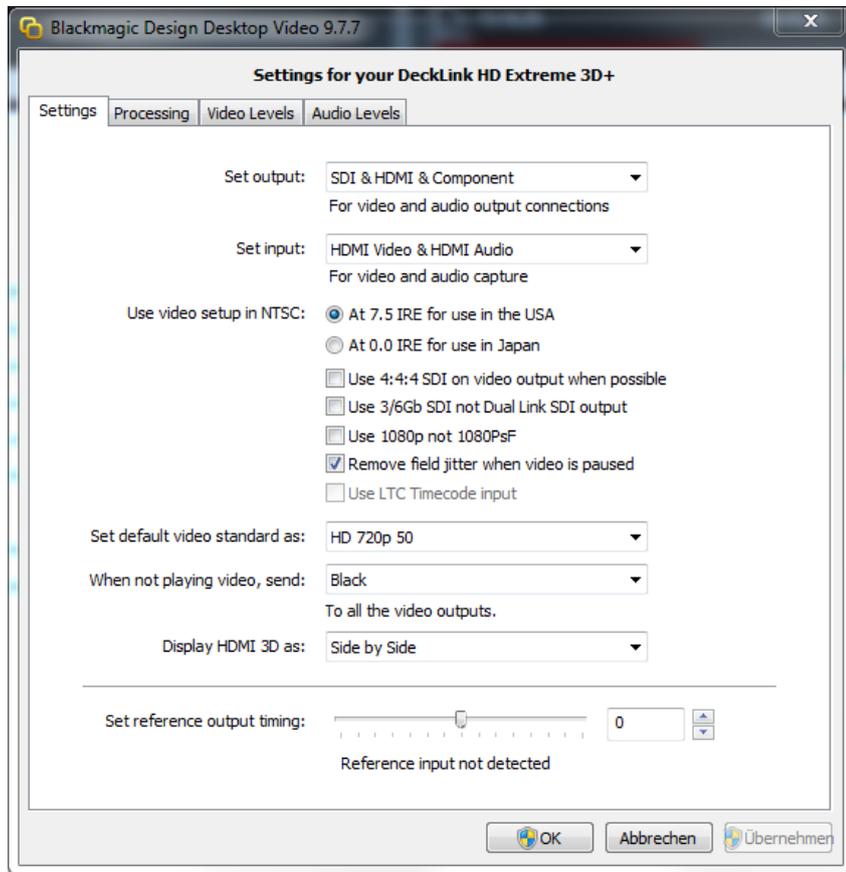


5. Start FXServer/StageDesigner.
6. Open New Clip in Live Editor.
7. Select LiveMedia in DropDown Menu.



## Using BlackmagicDesign Capture Cards with Windows 7

1. Setup your Capture Card in Control Panel 'BlackmagicDesign Control Panel'.
2. Check-in Blackmagic Media Express if there is a signal.
3. If there is a signal in Black Magic Media Express, write down the exact figures eg. 1920 x 1080 x 50p
4. In the Stage Designer live media window, DO NOT use the Blackmagic WDM device, use the Decklink device: **WDM->unknown, Decklink->Known** with the exact figures you noted before.
5. Reduce latency: set Stage Designer / FXServer framerate 'Higher *than capture card latency*.'





# Memory Allocation Error

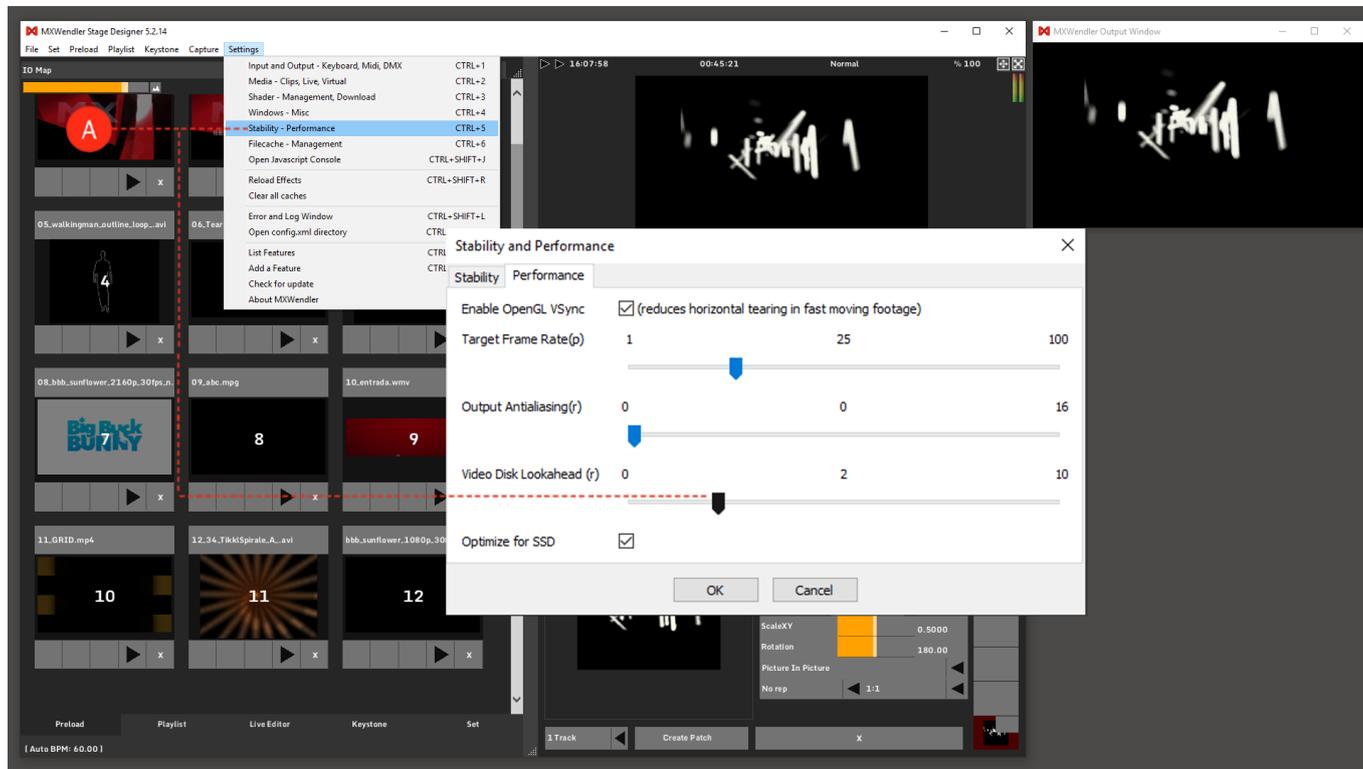
This applies to all different OS and MXWendler version 4.0 and above

## Problem

You load a large project, and loading is very slow and occasionally displays a *memory allocation error*.

## Solution: Decrease memory usage

1. Reduce footage resolution to reasonable amounts. Eg. pictures from digital pictures may have resolutions that are way larger than the actual visual projection.
2. With fast disks and SSD, use less preloading: **Settings → Performance → (Tab)Performance → Video disk lookahead**, change from 8 to 2. **(A)**
3. Reduce the use of lossless cached video and image sequences.



# Time and Event Sync all PCs

This applies to all different OS and MXWendler version 4.2 and above

## Task

Pooling MXWendler systems via time synchronization.

## Tests to do before starting MXWendler

- Can you ping all the computers from one host?
- Can you ping back?
- Does your router/switch allow broadcasting?
- Are the firewalls turned off?
- Does the admin account have a password ( Windows 7)?

## Solution

1. Turn on OSC receiving for **every** machine on port 7000.
2. Create a simple OSC testing application with eg. PD and send some commands to *\*any machine\** from *\*any machine\**.
3. Turn on 'Broadcast and receive time' for **every** machine. all machines will send their time until they receive a

packet from a machine with the lower IP, then they switch to receiving.

4. Broadcast to the subnet: 192.168.1.255 ( subnet may have a different IP ).

5. Broadcast to the ports where the machines are listening ( 7000 ).

Important: sometimes Windows 7 does not allow broadcasting, then address the other machine with its IP directly ( eg. 192.168.1.23 instead of 192.168.1.255 ).

For more information on time and event syncing PCs check 'Tutorial Time-sync and sending IO Commands over OSC Protocol'.

# MXW does not start any more

This applies to all Windows versions and MXWendler versions 4.2 and above

## Problem

MXW starts but after opening a window it stops without any error or it tries to send a .zip file via email.

## Reason

One of the startup files or the config file, or one of the files it links to, has gotten corrupted.

## Solution

1. Find and delete config.xml:

**MXWendler Versions < 5.0** go to **(program folder)/config/** and delete config.xml

**MXWendler Versions > 5.0** go to **C:\Users\Your Username\AppData\Roaming\MXW** and delete config.xml

2. Go to **(program folder)/preload/** and delete default.mxwpreload

## Background

If you delete these files, MXW will start without opening any media files and will rebuild a new configuration file.

# DMX CITP and Image Sequences

This applies to all different OS versions and MXWendler 5.0 and above

## **Problem**

You have MXWendler successfully connected to a lighting console via Art-Net and CITP.

You can select any image, live and video media but not "Image Sequences".

## **Solution**

Switch to video media.

The recovery, enumeration selection and playback of image sequences are not supported by the versions 5.0.

# DMX C1TP and SWF (Shockwave Flash)

This applies to all different OS versions and MXWendler 5.0 and above

## **Problem**

You have MXWendler successfully connected to a lighting console via Art-Net and C1TP.

You can select any image, live and video media but not "SWF (Shockwave Flash)".

## **Solution**

Switch to video media.

The recovery, enumeration selection and playback of SWF (Shockwave Flash) sequences are not supported by the versions 5.0.

# OSC Messages - Correct Text and Value Example

This applies to all different OS versions and MXWendler 5.0 and above

## Problem

You need to send an OSC command to start the Playlist in MXW.

## Solution

1. Use an app or software, capable of sending custom OSC messages.
2. Connect the controller device and the server to the same network and specify the right port.
3. Send the correct OSC message to MXWendler: e.g. **/mxw/playlist/play 1** followed by **/mxw/playlist/play 0**

The playlist Play is a button, therefore a "Press" message (Value '1') needs to be followed by a "Release" message (Value '0')

To be sure that the system understands the values please send simple numbers:

'1' is correct, '1.0' or '1.000' are not.

To understand how the MXWendler Systems works in combination with OSC please read:

The MXWendler OSC Reference: [http://download.mxwendler.net/osc/osc\\_reference.pdf](http://download.mxwendler.net/osc/osc_reference.pdf)

TouchOSC and MXWendler tutorial:

[https://wiki.mxwendler.net/index.php/Tutorial\\_Controlling\\_MXWendler\\_via\\_TouchOSC](https://wiki.mxwendler.net/index.php/Tutorial_Controlling_MXWendler_via_TouchOSC)

# User Interface - outside of the main display

This applies to all different OS and MXWendler versions.

By changing display configuration and especially working with several outputs it could happen to set the User Interface Window on a screen that no is no longer the main screen or not even connected anymore.

In some of this cases the User Interface can be unreachable, here is how to solve this problem:

1. Start the MXWendler Software
2. Press **Alt+Tab**(Windows) or **CMD+Tab**(Mac) until the MXWendler User Interface is selected
3. Open the **Window-Misc** settings page by pressing **Ctrl+4**(Windows) or **CMD+4**(Mac)
4. Now press **Ctrl+Shift**(Windows) or **Alt+Shift**(Mac). This will move the settings page you just opened to the mouse pointer.
5. Now you can change the position values of the User Interface window to make it appear on the main display. (X=20, Y=20)
6. Quit the MXWendler software by right-clicking on the icon on the Taskbar and then on the **X**(Windows) or on **Quit**(Mac).
7. When quitting a small dialog asks if you really want to quit, if you can't see the dialog repeat the step n. 4.

**8.** Restart the software, the User Interface should appear on the main Display.

# Windows 10 + Nvidia and Intel Cards

How to set up the Nvidia drivers to run MXWendler through the Nvidia graphic card in case of multiple graphics.

In many new laptops, equipped with Nvidia graphic cards, to grant battery life and lower energy consumption, the Nvidia "Optimus System" addresses which application has to be used with the main graphic card and which with the integrated GPU.

Some easy steps are required to set up the driver.

- Install the latest Nvidia driver for your card.
- Create a shortcut on your Desktop for the desired MXWendler product.
- Restart the computer after creating the shortcut.
- Open the Nvidia driver by right clicking on the Desktop Background **(A)**

The screenshot shows the NVIDIA Control Panel interface. On the left, a context menu is open, with 'NVIDIA Control Panel' selected (callout A). The main window title is 'NVIDIA Control Panel' (callout B). The 'Manage 3D Settings' window is active, showing a sidebar with '3D Settings' selected (callout C). The main area displays 'Program Settings' for 'StageDesigner\_6.0\_RC3' (callout D). The settings are as follows:

Feature	Setting
Ambient Occlusion	Not supported for this application
Anisotropic filtering	Use global setting (Application-controlled)
Antialiasing - FXAA	Use global setting (Off)
Antialiasing - Gamma correction	Use global setting (On)
Antialiasing - Mode	Use global setting (Application-controlled)
Antialiasing - Setting	Use global setting (Application-controlled)
Antialiasing - Transparency	Use global setting (Off)
CUDA - GPUs	Use global setting (All)

In the Nvidia Control Panel:

- Select "Manage 3D Settings". **(B)**
- Go to the "Program Settings" tab. **(C)**
- Select StageDesigner or FXServer under "1. Select a program to customize:". **(D)**

*Tip: if the desired software does not appear on the list it can be easily added by clicking on the "Add" button and selecting it.*

- Select "High-performance NVIDIA processor" under "2. Select the preferred graphics processor for this program:" **(E)**
- Click on "Apply".

Now the selected MXWendler Product will be running under the Nvidia graphic card.

The screenshot shows the NVIDIA Control Panel interface. The main window is titled "Manage 3D Settings" and contains instructions for customizing 3D settings for specific programs. A red circle with the letter "E" is positioned over the "Add" button in the "Add I would like to use the following 3D settings:" section.

The "Add" dialog box is open, showing a list of programs to select. The list includes:

- MXW.exe
- Google Chrome
- Microsoft Edge
- windows.immersivecontrolpanel
- Microsoft Store
- Application Frame Host
- OptaneTrayIcon
- Windows Search
- Start
- Windows Logon User Interface Host
- Task Manager
- Data Exchange Host
- Consent UI for administrative applications

The "Add Selected Program" button is highlighted in the dialog box.

**Manage 3D Settings**

You can change the global 3D settings and create overrides for specific programs. The

**I would like to use the following 3D settings:**

Global Settings Program Settings

1. Select a program to customize:

VLC media player (vlc.exe) Add Remove

Show only programs found on this computer

2. Select the preferred graphics processor for this program:

Integrated graphics

3. Specify the settings for this program:

Feature	Setting
Ambient Occlusion	Not supported for this application
Anisotropic filtering	Use global setting (Application-controlled)
Antialiasing - FXAA	Use global setting (Off)
Antialiasing - Gamma correction	Use global setting (On)
Antialiasing - Mode	Use global setting (Application-controlled)
Antialiasing - Setting	Use global setting (Application-controlled)
Antialiasing - Transparency	Use global setting (Off)
CUDA - GPUs	Use global setting (All)

Description:

If NVIDIA has not provided settings for a program on your system, click this button to add your

Typical usage scenarios:

- Configure settings for a custom program
- Configure settings for a program not provided in the driver release

System Information

# Windows + How to Deactivate Aero Peek to Prevent Unwanted Output Blackouts

This applies to Windows 10 and all MXWendler version

## What is Aero Peek

Aero Peek is a Windows feature that allows you to temporarily peek at the desktop behind any open program windows. It helps the user to put in evidence a preview from the taskbar when the mouse pointer runs over it. Unfortunately, every other unselected window will become invisible so long that the cursor stays on the preview.

The possibility to turn off the output without even a click can be a major risk during a live show. Follow these easy steps to deactivate this preview function.

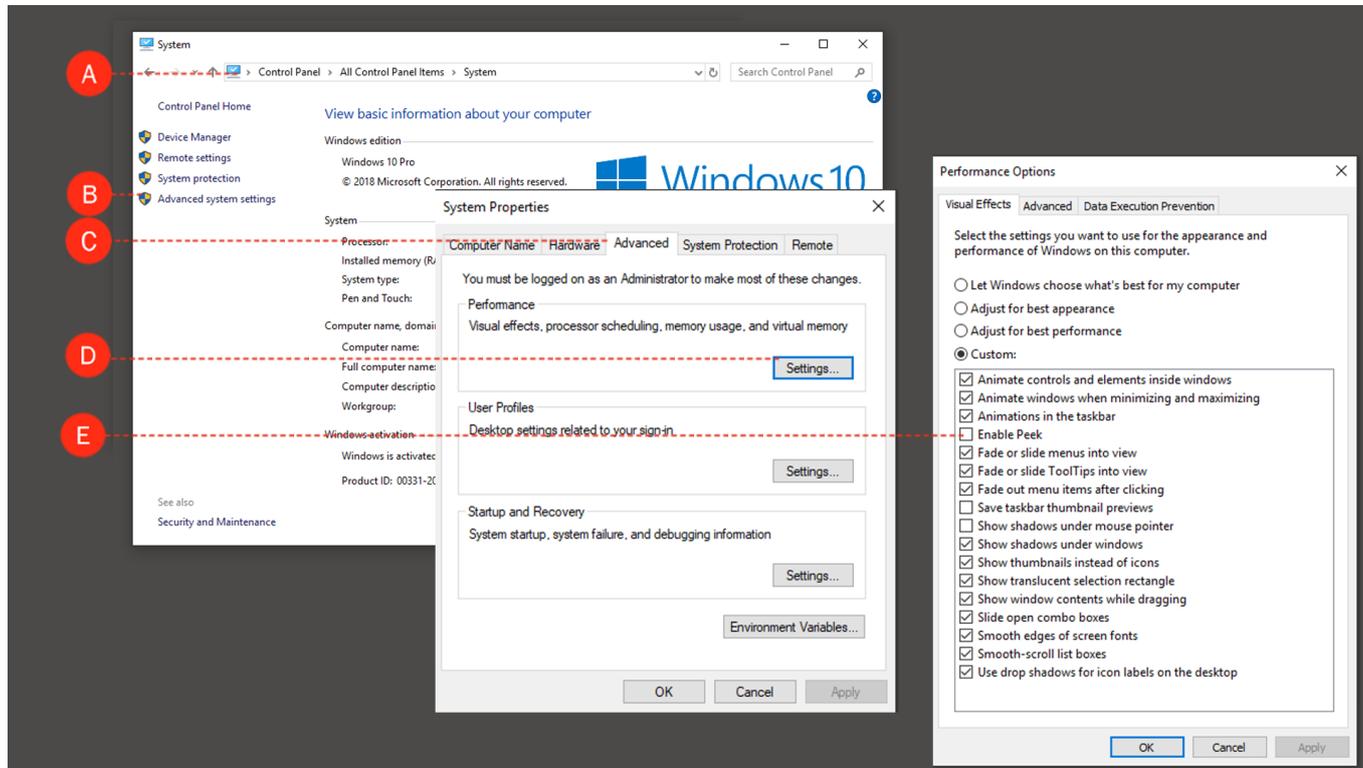
## How to Disable the Taskbar Thumbnail Preview

1. Go to: **Control Panel → System and Security → System. (A)**
2. Click on: 'Advanced system settings'. **(B)**
3. Select the 'Advanced' tab in the new window. **(C)**
4. Click 'Performance' under Settings. **(D)**
5. Uncheck Enable Peek and 'Apply'. **(E)**

### Sources:

<https://superuser.com/questions/1171623/windows-10-disable-desktop-peek-on-hover-over-taskbar-thumbnail>

---



# Windows + Unexpected Output Window Size

This applies to Windows 8, 8.1, 10 and MXWendler version 5.0 and above

## **Problem**

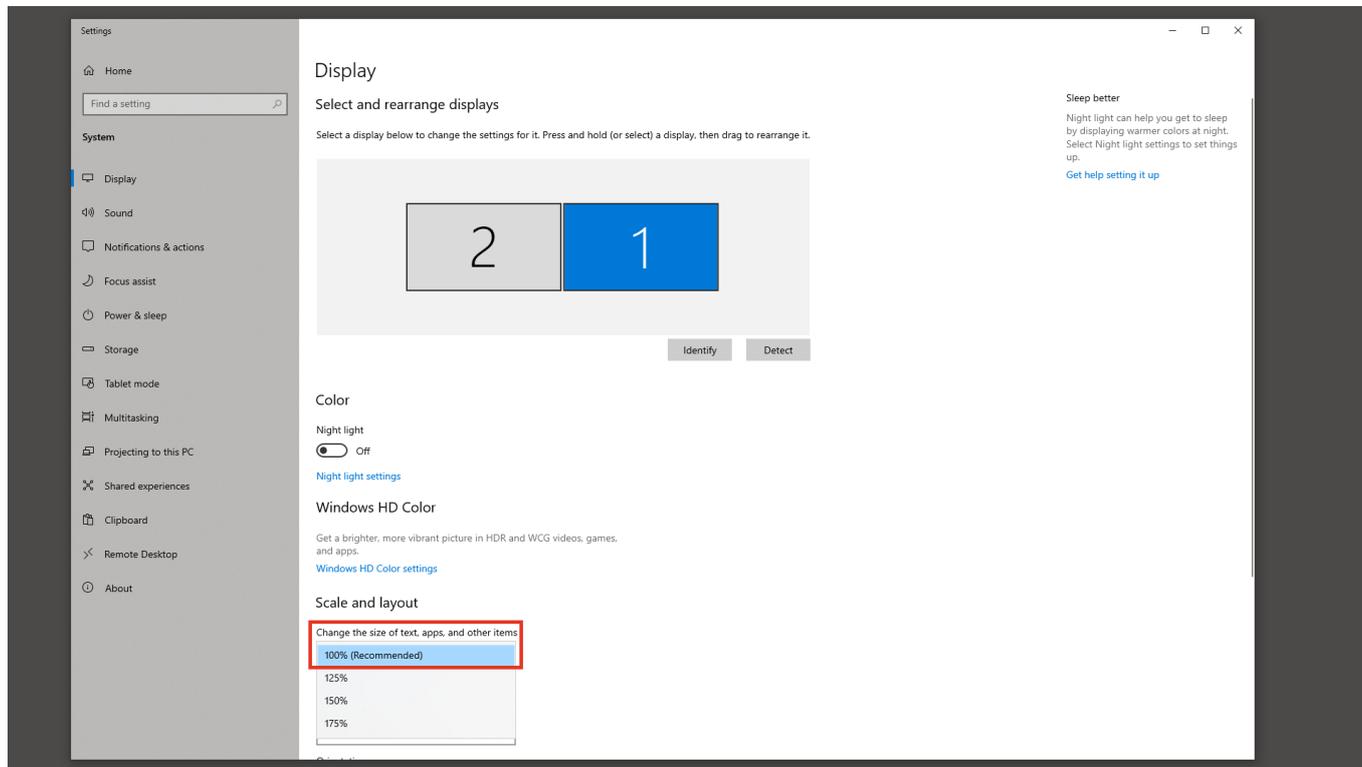
You want to open an output window but the output window does not appear at the expected location and does not have the expected size.

## **Solution**

In 'Display' in 'System Settings' check the setting 'Change the size of app, text, and other items'. Set the slider to 100%.

## **Background**

If the setting is not exactly 100% Windows reports virtual monitor sizes to applications to equalize high-resolution monitor scaling.



The image shows a Windows Settings window titled "Display". On the left is a navigation pane with "System" expanded and "Display" selected. The main content area is divided into sections: "Select and rearrange displays", "Color", "Windows HD Color", and "Scale and layout".

**Display**

Select and rearrange displays

Select a display below to change the settings for it. Press and hold (or select) a display, then drag to rearrange it.

2 1

Identify Detect

**Color**

Night light

Off

[Night light settings](#)

**Windows HD Color**

Get a brighter, more vibrant picture in HDR and WCG videos, games, and apps.

[Windows HD Color settings](#)

**Scale and layout**

Change the size of text, apps, and other items

100% (Recommended)

125%

150%

175%

**Sleep better**

Night light can help you get to sleep by displaying warmer colors at night. Select Night light settings to set things up.

[Get help setting it up](#)

# Windows + No Output in Output Window

This applies to all windows versions and Stagedesigner version 5.0 and above

## Problem

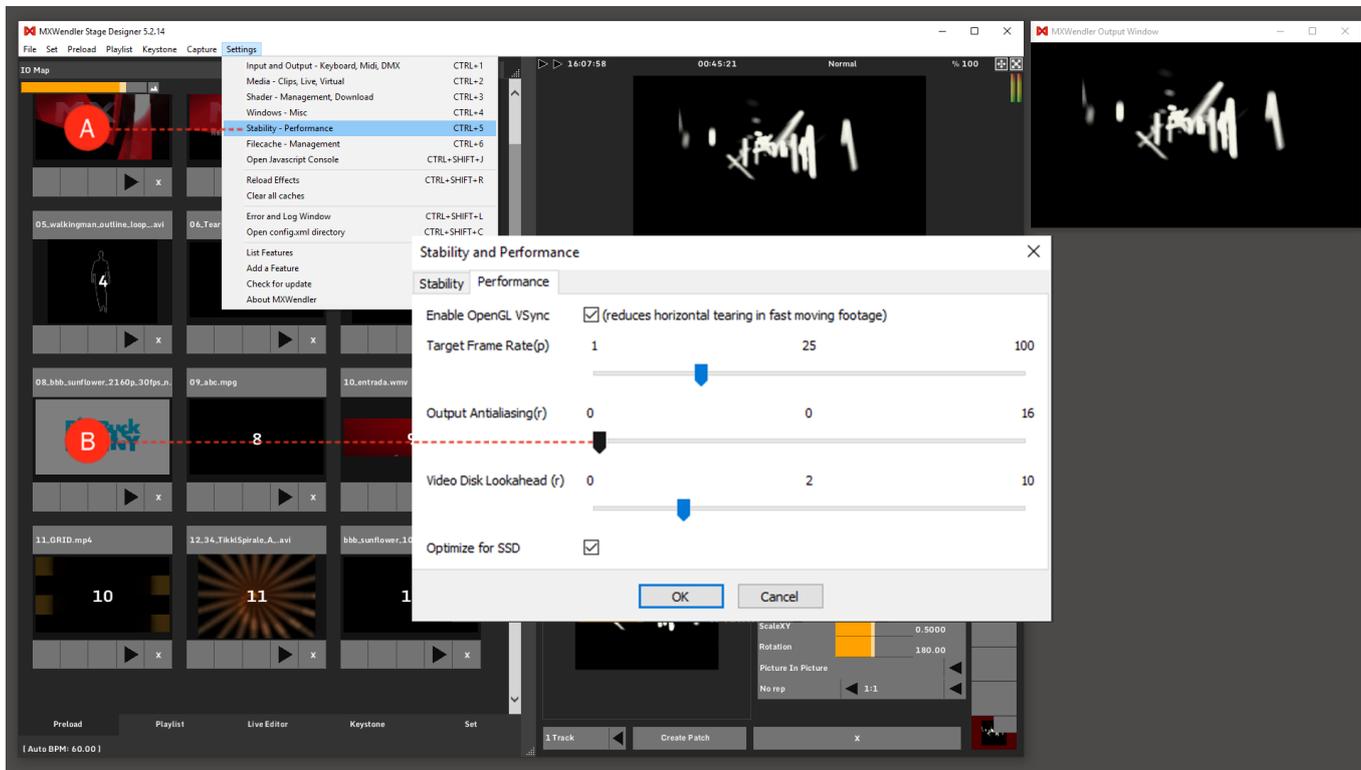
When you playback some media it is not visible in the Output Preview area and/or in Keystone.

## Solution

1. Output Antialiasing may be active. ( **Settings** → **Performance** → **Output Antialiasing** ) **(A)**
2. Set output antialiasing to '0'. **(B)**

## Background

The system needs certain hardware support for output antialiasing, this support may not be available at all used GPUs.



# Windows + Blackmagic Decklink Capture Cards

This applies to Windows 7 and 10 and all MXWendler versions

To use a Blackmagic capture card in MXWendler:

Be sure to install the driver and setup the card correctly.

Test the camera or device you are sending to the input with the Blackmagic Media Express app.

In the Stage Designer live media window, DO NOT use the Blackmagic WDM device, use the Decklink device:  
**WDM->unknown, Decklink->known.**

For more detailed information please check the following link:

[https://wiki.mxwendler.net/index.php?title=Capture\\_Cards\\_\(e.g.\\_BM\\_Decklink\\_Studio2\)](https://wiki.mxwendler.net/index.php?title=Capture_Cards_(e.g._BM_Decklink_Studio2))

# Windows 7 + AMD + Stuttering Output

This applies to Windows 7 and MXWendler version 5.0+ and with ATI/AMD graphics

## Problem

You have an output window that fits exactly the output device and video output is stuttering:

## Test

1. Create output window without window decoration and exact position and size of secondary output.
2. Open MXW, play video. The video out stutters when playing video.

## Solution

1. Create a display group using the Catalyst Control Center.
  2. Display group must contain primary *and* secondary monitor.
- OR
3. Make output window eg. 1 pixel larger than needed, eg. 1921x1080 for Full HD.

## Background

ATI/AMD interprets accelerated fullscreen windows as games and changes the display swap timing to achieve minimal latency times which are important for games. This cannot be turned off separately.

*Note* that NVidia systems may be affected, too.

# Windows 7 + AMD + Output Window On Wrong Screen

This applies to Windows 7 and MXWendler version 5.0+ and with ATI/AMD graphics

## Problem

You have an output window that fits exactly the output device and video output is stuttering:

## Test

1. Create output window without window decoration and exact position and size of secondary output.
2. Open MXW, play video. The video out stutters when playing video.

## Solution

1. Create a display group using the Catalyst Control Center.
  2. Display group must contain primary *and* secondary monitor.
- OR
3. Make output window eg. 1 pixel larger than needed, eg. 1921x1080 for Full HD.

## Background

ATI/AMD interprets accelerated fullscreen windows as games and changes the display swap timing to achieve minimal latency times which are important for games. This cannot be turned off separately.

*Note that NVidia systems may be affected, too.*

# Windows 7 + No Audio

This applies to Windows 7 and above and MXWendler version 4.2 and above

## **Problem**

When there is no audio in or out, it is generally related to a non-existing audio recording device under Windows 7.

## **Test**

1. Is there a default audio recording device?
2. If not, create a default recording device.

## **Solution**

1. Open audio settings, recording devices.
2. Right-click 'Show disabled devices'.
3. 'Enable' the device 'Stereo Mix'.
4. 'Set as default' the device 'Stereo Mix'.

# Windows 7 + Artnet

This applies to Windows 7 and MXWendler version 4.2 and above

## Problem

Art-Net does not start. MXWendler Logwin says 'Network interface 192.168.4.20 not found'.

## Solution

1. Windows offers many network interfaces, let MXWendler know which one is the one you want to use.
2. You need to name the correct network interface by its IP address. To find out your current IP address:

Enter Win+R and type cmd and press enter,

Type ipconfig in the cmd window,

Enter the IP address in the network interface field like 192.168.4.20

3. Make sure that the administrator user account has a password set.
4. Turn off all firewalls.

*Tip: Use the free 'DMX Workshop' from 'Artistic License' to test Art-Net functionality.*  
Also, check Tutorial Connecting the grandMA 2Port Node with MXWendler via Art-Net

# Windows 7 + System Flash

This applies to Windows 7 and MXWendler version 4.2 and above

## **Problem**

If you use MXWendler in Win7, or Flash > Version 9, you'll notice that system flash doesn't work.

## **Reason**

1. Flash.ocx is not found.
2. You installed flash, but using Firefox.

## **Solution**

Install Flash, but install it using the Internet Explorer.

## **Background**

Firefox installs a private plugin .dll, Internet Explorer installs a system-wide ActiveX control ( which is used by mxw ).

# Windows 7 + Richtexteditor Glitches and ClearType

This applies to Windows 7 and MXWendler version 5.0 and above

## **Problem**

1. you are using the MXWendler Richtext feature and your text glitches.
2. ClearType is activated on your Windows 7/Vista system.

## **Solution**

1. Click on Windows 'Start'.
2. Go to System Preferences.
3. In search field enter 'Cleartype'.
4. Click on 'Customize ClearType-Text'.
5. Uncheck checkbox 'Activate ClearType'.
6. Click 'Next' till everything is set up.

# Windows 7 + Configuration (config.xml)

This applies to Windows 7, 8, 8.1, 10 and MXWendler version 4.2 and above

## Problem

You want to store/save/restore/edit your configuration. You are used to editing the config file in **(MXWendler program location)/config/config.xml**, but there is either no file or whatever you change makes no difference to MXWendler.

## Solutions

1. Simple, but not recommended: run MXWendler as Administrator.
2. Simple, but not recommended: Change the User Account Control (UAC) Level.
3. Recommended: Use MXWendler as a standard user. **config.xml** is not in the program files directory anymore, look for it in:

***C:\Users\(*Your Username*)\AppData\Roaming\MXW***

## MXWendler Versions > 5.0

With MXWendler versions 5.2 and above, you can open the current config folder with:

**Settings → Open config.xml directory (CTRL+SHIFT+C)**

## Background

---

Since Vista, Windows uses a so-called "VirtualStore". For security reasons, a program cannot change any file in the program files directory. So the user is redirected to one of the directories stated above.

# Windows 7 + NDI Tools

This applies to Windows 7 64Bit and MXWendler version 5.0 and above

## Problem

The Virtual Input from NDI Tools might not work on some Windows 7 versions due to some problems with windows updates.

When you try to open the Virtual Input in Win 7, you might receive a message that you need to install the Windows Update package KB 3033929 (Or any other Windows security package). When you try to download and install the update package from the Microsoft website manually, the next time you open the Virtual Input, again you'll see the same message and when you try to install it again, windows will tell you that the update is already installed.

## Solution

1. Download the Windows Update KB 3033929 from <https://www.microsoft.com/en-us/download/details.aspx?id=46148>
2. Copy the MSU file into a **c:\kb3033929** folder.
3. Create a **c:\temp\3033929** folder.
4. Click on Windows and type CMD.
5. Use the following command to extract the contents of the MSU file.

**Expand -F:\* c:\kb3033929\Windows6.1-KB3033929-x64.msu c:\temp\3033929**

6. Now use the following command to force installation of the MSU Security package:
-

**DISM.exe /Online /Add-Package /PackagePath:c:\temp\3033929\Windows6.1-KB3033929-x64.cab**

7. Restart your system.
8. Now if you try to open Virtual Input, you'll no longer receive the message about the missing Security Update.

### **Notes**

If you're receiving messages with different package names and numbers, try to find and download the specified package, do the same steps but exchange the name of the package in your commands accordingly.

# Mac and No Default Clip

This applies to all Mac versions post Mac Sierra, and all MXWendler versions

## **Problem**

In Live Editor, trying to insert a clip by clicking on New Clip inserts an empty clip with no video.

## **Background**

Under new versions of OSX, Gatekeeper dislocates unsigned applications to random paths on start resulting some of the software paths to not work.

## **Solution**

You need to disable the App Translocation function of MacOS Gatekeeper. Please follow this troubleshooting: [Mac Sierra 10.12 Disable App Translocation](#)

# Mac and No Translation

This applies to all Mac versions post Mac Sierra, and all MXWendler versions

## **Problem**

You want to switch the Translation on, to use the software in German but it does not work.

## **Background**

Under new versions of OSX, Gatekeeper dislocates unsigned applications to random paths on start resulting some issues.

## **Solution**

You need to disable the App Translocation function of MacOS Gatekeeper. Please follow this troubleshooting: [Mac Sierra 10.12 Disable App Translocation](#)

# Mac and No Shaders Update

This applies to all Mac versions post Mac Sierra, and all MXWendler versions.

## **Problem**

When you try to update Shaders via Shaders Management in Settings you receive an error that you don't have write permission for your user.

## **Background**

Under new versions of OSX, Gatekeeper dislocates unsigned applications to random paths on start resulting some software issues with user privileges.

## **Solution**

You need to disable the App Translocation function of MacOS Gatekeeper. Please follow this troubleshooting: [Mac Sierra 10.12 Disable App Translocation](#)

# Macbook Pro Core 2 Duo with NVidia 9400M

This applies to all Mac and MXWendler version 5.0 and above

## Problem

When playing External videos, colors are unnatural.

## Test

1. Go to **Settings** → **Media** → **Avi/Qt**, and select 'Prefer external codecs'.
2. Open a sample \*.mp4 media file from the installer/footage folder.
3. Colors are wrong - there is no yellow in the video.

## Solution

Use only Internal video on this platform.

## Background

This platform has a bug that prohibits proper hardware accelerated display of external videos.

# Mac Sierra 10.12 Disable App Translocation

This applies to all Mac versions post Mac Sierra, and all MXWendler versions

## **Problem**

You start Stage Designer, and a warning appears that a certain folder could not be created due to a read-only filesystem path.

Some of the default paths in Stagedesigner are not working. e.g the path to the Default Clip.

The application Translation does not work and you cannot use the software in German.

Updating the Shaders in Shader Managment in Settings is not possible and software shows an error.

## **Background**

Under new versions of OSX, Gatekeeper dislocates unsigned applications to random paths on start.



### Stage Designer 5.2.02 Error

Directory '/private/var/folders/9f/  
js3sxf\_545z\_1628b3lx64dh0000gn/T/  
AppTranslocation/3907AA89-F2A0-47FD-  
AD67-0F4470237946/d/Stage Designer.app/  
Contents/Resources/./preload/' couldn't be created  
(error 30: Read-only file system)

OK

## **Solution**

1. Disable Gatekeeper.
2. Open Terminal as Administrator.
3. Type `sudo spctl --master-disable`
4. Reinstall Stage Designer.
5. This may affect your security settings.

## **Long Term Solution**

Switch from OSX to a real operating system.

For more information, please see e.g. <https://www.tekrevue.com/tip/gatekeeper-macos-sierra/>



# Mac Yosemite 10.10 Multimonitor

This applies to Mac OS 10.9, 10.10 and MXWendler version 5.0 and above

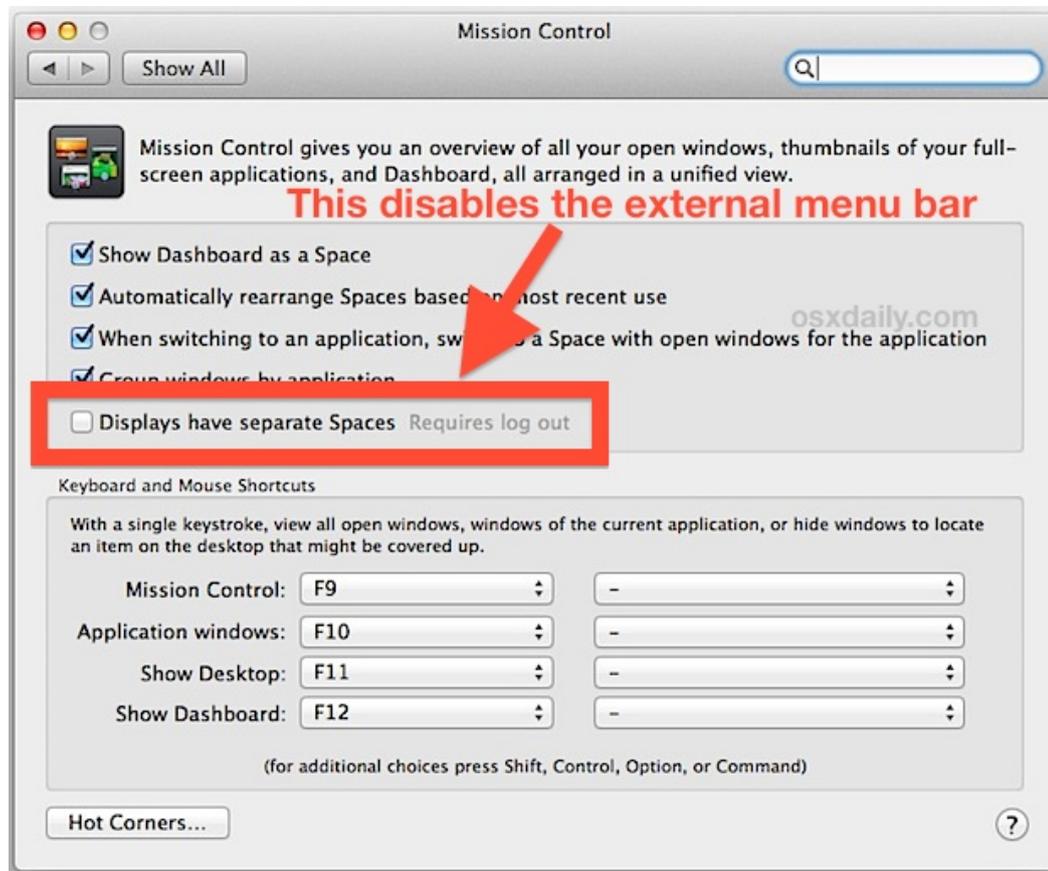
## **Problem**

You want to open an output window across multiple monitors but the output window does not want to grow larger than one single external monitor no matter what values are used for output window position and size.

## **Solution**

In 'Mission Control Settings' in 'System Preferences' disable 'Displays have separate Spaces'. This also disables the menu bar in secondary monitors.

Picture linked from [osxdaily.com](http://osxdaily.com)



# Mac and Internal Cached Video

This applies to all Mac and MXWendler version 5.2 and above

## Problem

Older 'Internal' cached videos do not work anymore.

Creating 'Internal' cached videos with the Stage Designer / FXServer does not work anymore.

## Test

1. Go to **Settings** → **Media** → **Avi/Qt** and deselect 'Prefer external codecs'.
2. Open a new media file.
3. Select 'Internal Codec'.
4. Error ME009 appears: *Internal cached media must be cache complete. Please cache with the standalone encoder.*

## Solution

1. Open the 'Video Batch Encoder'.
2. Drag the media file onto it.
3. Press 'Run'.
4. Open the file in the Stage Designer again.

## **Background**

Creating caches inside Stage Designer / FXServer is not supported anymore. Also, setting a fixed cache path is not supported anymore. All caches are expected in a folder aside from the media files. Use the Standalone Encoder to create the caches.

# Mac and Graphic Card Performance

This applies to Mac OS 10.7 and MXWendler version 4.0 and above

## **Problem**

Sometimes Mac OS is using the inbuild graphics of your MacBook instead of the NVIDIA graphic card.

## **Solution**

For best graphic card performance please go to 'Energy Saver Settings' in 'System Preferences' and 'Disable automatic graphics switching'.

# Mac and Audio

This applies to Mac OS 10.7 and MXWendler version 4.2 and above

## **Problem**

You reinstalled/upgraded MXWendler - even into another folder - and suddenly USB or FireWire audio does not work anymore.

## **Solution**

There are three known possible solutions:

1. Reinstall the USB/FireWire audio driver.
2. Go to 'System Settings', switch to internal speaker and back.
3. Create a new User Account, and open the audio device under this account.

# Mac and DMX

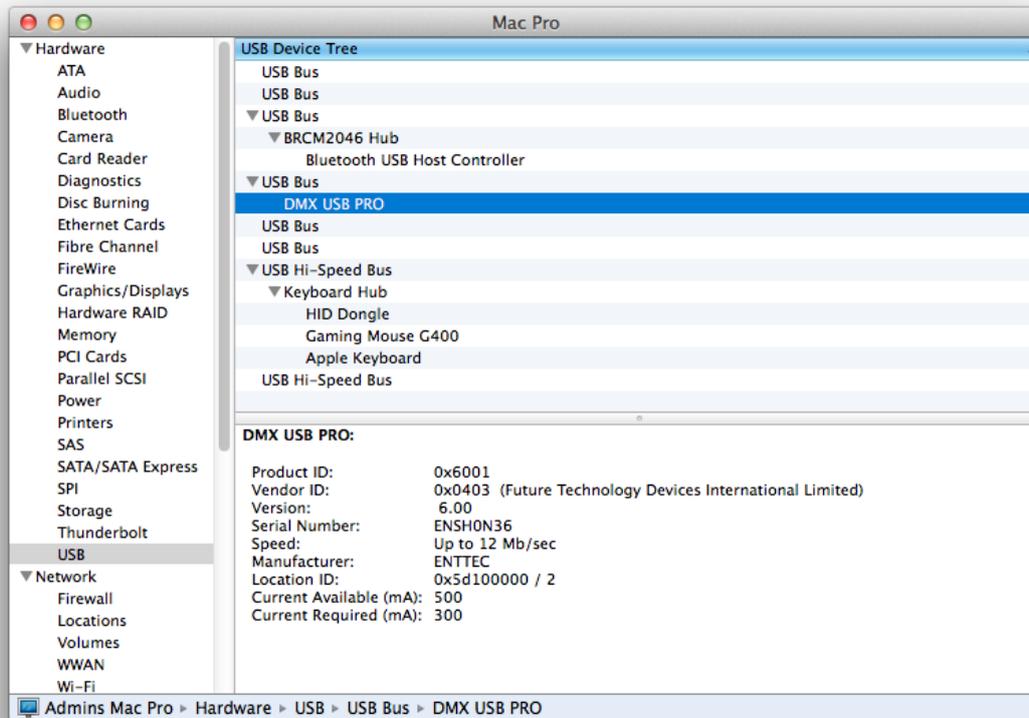
This applies to Mac OS 10.7 and MXWendler version 4.2 and above

## **Problem**

Trouble installing D2XX driver for Mac.

## **Solution**

1. Download PRO-Manager from the ENTTEC website [http://www.enttec.com/?main\\_menu=Products&pn=79003](http://www.enttec.com/?main_menu=Products&pn=79003)
2. Install PRO-Manager on your Machine.
3. Verify if DMX USB PRO is listed under Mac OSX System Information.
4. If it is not installed, download and install FTDI Driver Control from DMXIS website <http://www.dmxis.com/release/FtdiDriverControl.zip>
5. Run the FTDI Driver Control utility as an Administrator and disable the Apple/VCP Driver.
6. Restart your Mac.
7. Verify again, DMX USB PRO is listed under Mac OSX System Information.



## **Note**

It seems like after updating Mac OS, D2XX drivers will be replaced by OS drivers. In this case, you need to repeat the Step-by-Step instructions once again, otherwise, your Enttec device will not be recognized.

**This applies to Mac OS 10.9 and 10.10**

## **Problem**

DMX USB PRO not found?

If PRO-Manager cannot find your DMX USB PRO, your Mac might have a conflicting driver installed.

Download & install this utility, and disable the Apple/VCP Driver:

<http://www.dmxis.com/release/FtdiDriverControl.zip>



1. Simply run the utility, click the button and type in your password.
2. You must be logged into OS X as an admin user (verify this from System Preferences > Users & Groups)
3. You must have a non-blank password configured (see <http://support.apple.com/kb/PH13861> )
4. Once you have disabled Apple/VCP driver, please replug DMX USB PRO into USB port or restart your Mac, and DMX USB PRO will be found as expected
5. Once you have the DMX USB PRO identified as shown in the pictures, you can use PRO-Manager to test your DMX USB PRO

*for further information please visit:*

[http://www.enttec.com/?main\\_menu=Products&pn=70304&show=faq](http://www.enttec.com/?main_menu=Products&pn=70304&show=faq)



# Mac and Soundflower 64ch Audio

This applies to all Mac OS Versions with Soundflower Audio, and all MXWendler versions

## **Problem**

You select Soundflower (64ch) as your In Device and by clicking on 'Reopen' MXWendler crashes.

**Menu → Settings → Input and Output → Audio Devices**

## **Solution**

Soundflower audio for Mac is outdated, but if you need to select it as your IN Device, both Device and IN Device has to be set as Soundflower.

In the Settings, you must first select Soundflower (64ch) as your 'Device' and then select Soundflower (64ch) as your IN Device and then click 'reopen'.



# Hardware

## Building an Optimum System

In general, you can be sure that any dedicated graphics card available today can run the MXWendler software. But there are performance differences, so feel free to ask at [support\[at\]mxwendler.net](mailto:support@mxwendler.net).

### Operating System

- Windows 7, Windows 8, Windows 8.1, Windows 10 - all 32 and 64 Bit
- Max OS X 10.7, 10.8, 10.9

### Processor

- We equally work with AMD and Intel Processors.
- Many PCI devices: The AMD Threadripper series is recommended for the high number of PCI Lanes
- High Core speed: The Intel i7 and i9 series have a usually higher core speed

## Graphic card

- Our reference hardware in matter of graphic cards is AMD, especially the Radeon Pro series.
- NVidia Quadro series.
- More than 2Gb dedicated Memory is recommended.
- SLI or dual-GPU setups are not recommended.

## Disk

- M.2 disks for fast access supported (Samsung 970 Plus)
- SSD
- Raid for HD content supported
- Any disk possible

## External Controller

- Midi supported ( any standard midi )
- Midi motor fader supported
- DMX supported ( Enttec, Soundlight, e:cue )
- OSC supported
- TUIO supported
- Art-Net supported
- Windows: WiiRemote controller supported

## Memory

- Recommended 16GB

## Audio

- Windows: Multichannel ASIO Audio supported
- Windows: System Audio
- Mac: Multichannel Core Audio supported

System resource requirements, based on different performance needs:

### **Minimum**

- CPU: Intel i7 7700k, Amd 1900x
- GPU: AMD: RadeonPro wx3100, NVIDIA: Quadro P620
- Disk: SSD Samsung 970 Evo or SATA 7200 Rpm
- RAM: 8GB

### **Medium**

- CPU: Intel i7 9700k, Amd 2920x
- GPU: AMD: RadeonPro wx7100, NVIDIA: Quadro P2200
- Disk: M.2 Samsung 970 Plus Evo
- RAM: 16GB

### **High**

- CPU: Intel i9 9900k, AMD Ryzen 9 3900x, Amd 2950x
- GPU: AMD: RadeonPro wx8200, NVIDIA: Quadro P4000
- Disk: M.2 Samsung 970 Plus Evo or 970 Pro
- RAM: 32GB+

# Video Codecs

## General

Video is increasingly used in professional event planning as a medium for information and design. This is due in part to improved processing, and ever cheaper and more powerful output devices such as video projectors and LED matrices.

A so-called video stream goes through a number of stages before it is viewed on an output device. Firstly, the data must be read from the hard disk or SSD, then copied into memory, and then unpacked by the CPU, before an unpacked stream is sent to the graphics card. Naturally, each of these stages must have the corresponding capacity to be able to play back the video stream at the highest possible quality.

This is where the so-called codecs come in. Some codecs (e.g. MPEG) involve less compression than other codecs (e.g. H264), but require more hard disk space and a faster hard drive for playback. Conversely, MPEG requires relatively little CPU computing time in comparison to highly compressed formats.

The rule of thumb: more compression = more demand on the CPU = lower bandwidth

## MXWendler Recommendations

The Codec we recommend to use with MXWendler is H.264:

- 30 or 60 FPS
- External Coding

- FHD(1080p), WUXGA(1200p), UHD(2160p) are the most used resolutions. Please keep in mind that the resolution of the video you are going to render should be divisible by 16, 8 or at least 4 to avoid problems.
- Bitrate: there are multiple tutorials and online tools to calculate the perfect bitrate for different video resolutions. To give some examples for the proper bitrates for different resolutions:

HD1080p (1920x1080), 24/25/30 fps → 8 Mbit/s

HD1080p (1920x1080), 48/50/60 fps → 12Mbit/s

4K2160p (3840x2160), 24/25/30 fps → 35–45 Mbit/s

4K2160p (3840x2160), 48/50/60 fps → 53–68 Mbit/s

For smooth video playback, you can use e.g.

Up to FHD (1920x1080)

- PhotoJPEG, 75% and ALAC Audio

FHD size and beyond

- H264 Video and ALAC Audio

Looping footage

- H264 Video with each frame set as a keyframe (GOP=1)

## Framerates

Whenever framerates in different involved components do not match each other, video playback becomes jerky and starts stuttering. The framerates in question are:

- Video framerate
- MXWendler framerate
- Monitor framerate

Today the most video output devices like monitors and video beamers have a 60Hz refresh rate following the tradition of the NTSC standard. Europeans are used to 50Hz PAL framerate, so most of the video material is produced in 25 FPS ( frames per second ). This produces the following situation:

- 25FPS Video
- 25FPS MXWendler
- 60Hz Monitor

Since the monitor and MXWendler does not match, the monitor has to show every 5th image twice, which will look stuttering. A better solution would be to :

- switch the monitor to 75Hz framerate,
  - 25FPS Video
  - 25FPS MXWendler
  - 75Hz Monitor

- Or switch video production to 30Hz framerate,
  - 30/60FPS Video
  - 30/60FPS MXWendler
  - 60Hz Monitor

## **How-tos**

- Optimizing h.264 for 4K: reconvertng clips with AVANTI GUI (Freeware)

# Checklist for Smooth Video Playback

## General

Creating smooth video playback is a challenging task, where many performance factors interact. Video is a data flow and every component in the chain must be able to match the current stream and do its task.

## Content

The footage itself is important, too. You cannot smoothly playback a jerky video file. With 'objects' we mean visible objects in the video frames like eg. text letters.

Good:

- Constant object motion
- Slow object motion ( Without blur: max. 1-2 pixels per frame. This is very important for text scrolling. )
- Objects with soft edges ( This is very important for text scrolling. )
- Motion blur
- Downscaling the footage in the output. Movements look smoother when they are minimized.

Bad

- Jerky object movement
- Fast object movement with hard edges and no motion blur

- Upscaling the footage in the output. Movements look jerkier when they are maximized.

## Codec/Media/Compression

- Use of too much lossless video media like eg. lossless image sequences?
- Oversized footage resolution: do not use a resolution larger than visible

## MXWendler Mediaserver

The settings are project-specific, so there is not general 'good' or 'bad'. But these settings and media facts have an influence on the video framerate

Check:

- Does the framerate match the footage framerate? Check this article [Video Codecs](#)
- Is an audio input device active? Without audio input device, the software uses the system clock, which has a much lower precision.
- Does the framerate match the footage framerate during playback? Check the framerate by moving the mouse to the left of the UI window, the current framerate will be visible in the bottom left of the window
- Is the vertical sync active? Check for vertical sync in drivers, too. Turn it off for more motion smoothnes.
- Does the output window have the correct size? Sometimes setting 'unusual' sizes solves stuttering issues, please see [Windows 7 + ATI + Stuttering Output](#) or [Windows 7 + ATI + Output Window On Wrong Screen](#)
- Is non-internal feedback active?

*Tip:*

*Lower the footage resolution ( Resolution is important. File size and clip length does not matter )*

*Lower the rendering size ( **Settings** → **Output Window** → **Rendering Size** )*

## **System**

Check:

- Is the correct GPU in use? Many systems have more than one GPU. The onboard graphics usually offers the least performance. Using the onboard connector involves and restricts to the onboard GPU.
- Unintended use of multiple GPUs? Be sure you use only one GPU for maximum performance.
- Do all monitors and projectors share a common framerate?



## FXServer Safety Notes

Also refer to the safety notes in the manuals for the device and in the additionally provided documentation.

Your device complies with the relevant safety regulations for data processing equipment.

If you have any questions, contact the manufacturer.

Keep these safety notes and other documentation (e.g. brief guide, operating manual and CD) together with the device. If you pass on the device to third parties, you should also pass on the whole documentation.

Use the original packaging or other suitable packaging, which provides protection against jolts, impacts, moisture and ESD (electrostatic discharge) for reshipping and other transport.

During installation and before operating the device, observe the instructions on environmental conditions in the manuals of the device.

Lay all cables so that nobody can stand on them or trip over them. When connecting cables, observe the relevant notes in the manuals of the device.

Do not drop the device and protect it from severe shocks.

Do not place objects on the device.

Do not store the device, batteries or power adapter near a heat source (e.g. a heater or fireplace). Excessive heating up can cause the device, batteries or power adapter to catch fire or explode.

You may only operate the device, if the voltage for the device is set to the local mains voltage. For stationary devices check the rated voltage of the device; for mobile devices check the rated voltage of the power adapter (see device instructions).

When connecting and disconnecting cables, observe the relevant notes in the manuals of the device.

Ensure that the mains outlet is freely accessible.

The ON/OFF switch, the standby button, the suspend/resume button and the main switch do not disconnect the device from the line voltage. To completely disconnect the mains voltage, remove the power plug from the socket.

Do not use damaged cables (damaged insulation, bare wires).  
A damaged cable represents a danger of electrical shock or fire.

If no suitable power cable was supplied with the device, purchase an approved power cable in your country. The voltage and amperage for which the cable is suited must be higher than the voltage and amperage indicated on the product.

If the device is brought from a cold environment into the operating room, condensed water can form. Before operating the device, wait until it is absolutely dry and has reached approximately the same temperature as the installation site.

In the event of a thunderstorm, all data transfer cables (modem/LAN/PC card modem, CF-LAN card, CF-WLAN card) should be removed at the wall from the telephone or LAN socket. No data transfer cables should be connected or disconnected during a thunderstorm.

Make sure that no objects (e.g. jewellery chains, paper clips, etc.) or liquids get inside the device (danger of electric shock, short circuit).

In emergencies (e.g. damaged casing, elements or cables, penetration of liquids or foreign matter), switch off the device immediately, remove the power connector, remove the battery (if present), and contact your sales outlet or our hotline/help desk.

The device is not waterproof! Never immerse the device in water and protect it from spray water (rain, sea water).

Do not use the device in a damp environment, e.g. near a bathtub, a wash basin or a swimming pool.

Use only CDs in proper condition in the CD/DVD-ROM drive of your unit to prevent data loss, damage to the unit and injuries.

Therefore, check each CD for damage, cracks, breakage etc. before inserting it in the drive. Please note that any additional labels applied may change the mechanical properties of a CD and cause imbalance. Damaged and imbalanced CDs can break at high drive speeds (data loss). Under certain conditions sharp-edged pieces of broken CDs can penetrate the cover of the drive (damage to the unit) and be thrown out of the unit (danger of injury, particularly on uncovered body parts such as the face or neck).

Protect the contacts of all sockets and plugs of the device against static electricity. Avoid touching the contacts. Should touching be unavoidable, take the following safety measures: Touch an earthed object or wear an earthing strap before touching the contacts. This discharges static charges.

Keep other objects 100 mm each away from the system and its power adapter to ensure adequate ventilation.

Do not install the device near heating devices or other sources of heat (e.g. heater, fireplace). Otherwise damage from overheating may result.

If the device is installed in a cabinet or a drawer, sufficient ventilation must be provided. Otherwise damage from overheating may result.

To avoid injuries, be sure to keep the following devices and objects out of the reach of small children: personal computers, workstations, servers, small parts of the device, batteries, cables and packaging materials (e.g. plastic bags).

Do not open the device without written permission from the manufacturer.