# Lighttoys composer

## user manual

v4.3

# Contents

# Introduction

Lighttoys Composer is a light composing software from Pyroterra Lighttoys, created from the ground up to help you with the design of light patterns and image sequences for your Visual and FT devices. With its intuitive interface and powerful feature set, we are convinced it will empower you to create amazing light performances with your Lighttoys equipment!

This manual will guide you through the installation of the software and explain how to use all the features of Lighttoys Composer (further abbreviated "LtComposer").

# System requirements

LtComposer is available for both Windows and macOS operating systems. Our team successfully tested its compatibility with the following OS versions:

- Microsoft Windows 7 (64-bit) and higher
- Apple macOS 10.13 High Sierra and higher

LtComposer relies on the use of Open Graphics Library (OpenGL) and its shading language. Please make sure that your graphics card is running the latest driver from the graphics card manufacturer with a minimum support of:

- OpenGL 3.3

## Compatible devices

LtComposer software is currently compatible with the following products from Pyroterra Lighttoys:

- Visual Poi V3 and V3 MINI
- Visual Poi V4 & V5 MINI, CLASSIC, MAXI, Wand
- Visual Hoop
- all Lighttoys FT & FT2 devices, including Lumi props

# Installation & first run

Installation of the LtComposer software is easy and straightforward, as is shown in the steps below for both operating systems.

## Windows PC

First extract the provided ZIP archive somewhere to your local drive (the folder can be deleted after the installation) and then simply double-click the *.EXE file to run the Install wizard (Setup).
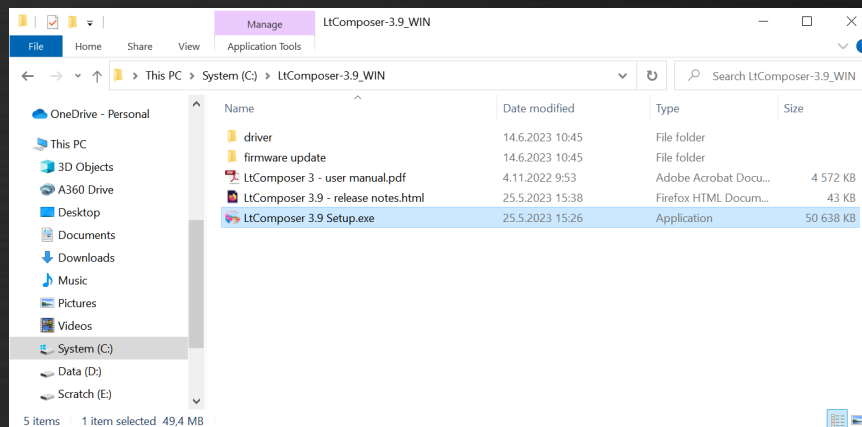


*Installation of LtComposer on Windows*

## MacOS

First unzip the provided ZIP archive and open the included DMG file in the Finder. In the new window, drag the LtComposer3 icon into the Applications folder in order to install it.



*Installation of LtComposer on Mac*

After installation, run LtComposer3 from the Applications folder or from macOS Launchpad. During the first run, you might be warned that the application is downloaded from the Internet. Click **"Open"**.
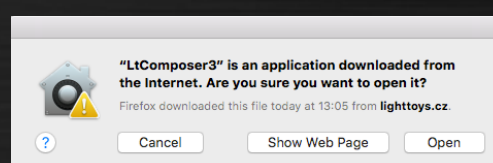


*Security warning during the first run of LtComposer*

# Lighttoys Composer overview

In this chapter we explain the layout of the LtComposer main window and the different tools available to you as a digital artist.

## Layout

- **Menu bar** – menu commands for manipulation of projects, media and tracks
- **Media library** – catalogue of all available images in your currently selected Image Library folder.
- **Preview window** – displays a nice visualization of the elements on the tracks. There are 3 modes available, representing different situations – Static, Animated, Vertical.
- **Toolbar** – contains useful tools for playback, zoom, undo/redo, etc.
- **Edit pane** – is used to fine tune the parameters of the selected element (image or FT element).
- **Track list** – a list of all your tracks ordered vertically. One track represents an image sequence for a single Lighttoys device.
- **Music timeline** – shows a music waveform of your opened music file. Supported formats: MP3 or WAV.
- **Status bar** – shows whether your Lighttoys devices are connected, status messages and other useful project information.
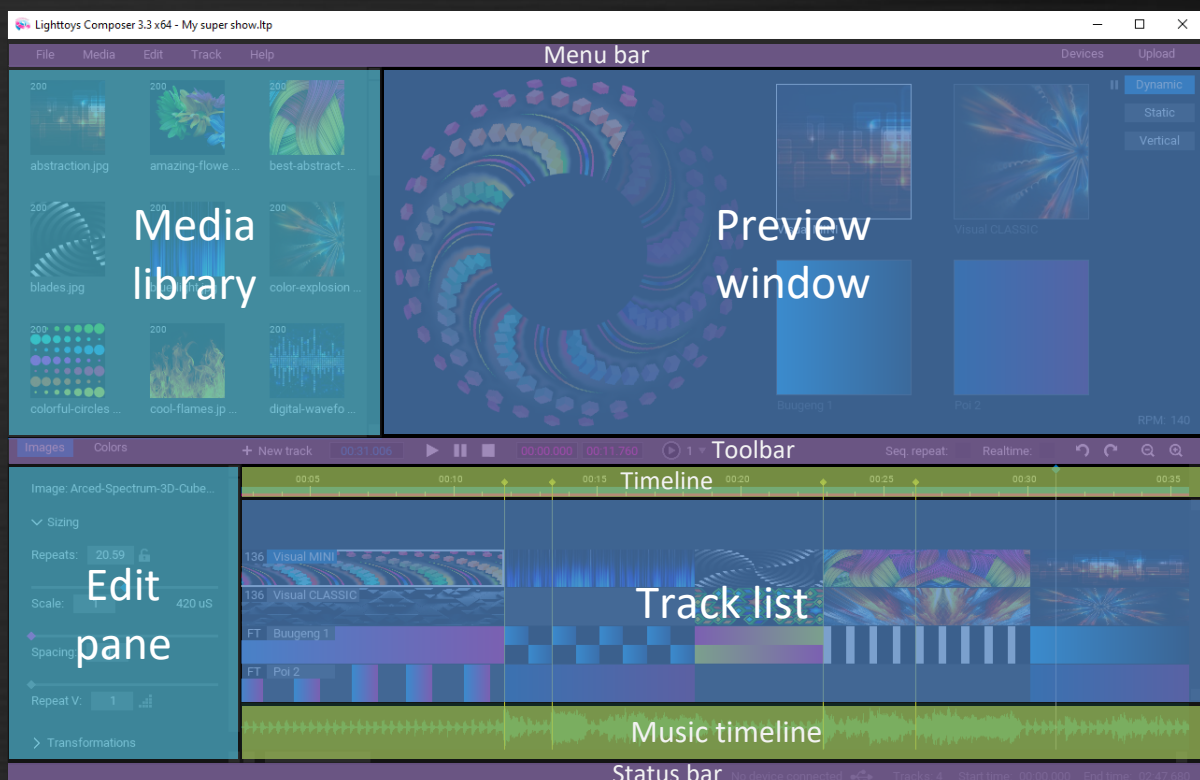


*Lighttoys Composer main window layout*

# Menu options

## File menu
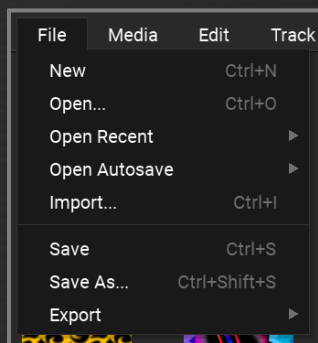
All your media files, tracks, elements and markers (including LtComposer settings) are stored inside an *.ltp project file. You can save your project for future use and then open it to continue with your work.

*.vpp project files from older LtComposer 2 are also supported.

The *.ltp project file is a standard ZIP file and its content can be opened and extracted. The content can be also edited if needed (only recommended for experienced power users).

The **Import** command is useful for adding tracks from different project into your current project (to reuse some content). The menu command "**Export .lsf**" is used to export your FT sequences for uploading with the legacy FT Loader application (no longer supported or recommended).

## Media menu
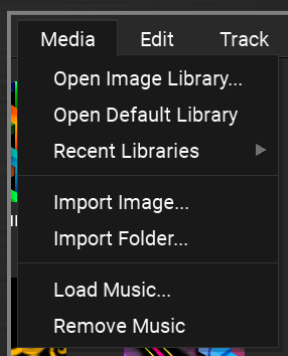
**Media menu** is used to select the active image library (folder with images for Visual Poi). Supported image formats are: JPG, PNG, BMP, GIF or TIFF in sRGB color space, otherwise the application won't show them in the media Library.

To add a picture, you can use the **Import** command or add them manually in Windows Explorer or Mac Finder.

Whenever you add some pictures externally, press **Ctrl/⌘ + R** key shortcut to reload the Image Library, to immediately see the new pictures in the list.

**Load Music** is used to open either MP3 or WAV music file. After opening, a nice waveform will be shown in the music timeline – this is helpful for placing your elements in sync with the music.

After opening the music file, it can take several seconds to finish the processing of the file and to show the waveform. This is indicated by the "buffering..." message shown in the music timeline.

## Edit menu
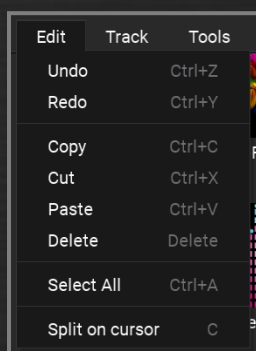
**Edit menu** is useful for undoing / redoing your last step (if you make a mistake and want to return to a previous state). You will also find the standard cut, copy, paste & delete commands in this menu.

Split on cursor is a handy tool that splits all selected elements on track(s) at the current position of the time cursor.

Instead of just using menu options, you can also use keyboard shortcuts, which are generally faster to use. If a shortcut is available for a respective menu command, it is described in a gray color text next to it.

## Track menu

**Track menu** is used to place a new track onto the track list, delete or duplicate an existing track. If you work with many tracks, it may be useful to click the **Collapse View** command, which will make the tracks 50% smaller. Click it again to enlarge it back. Also, if you work with many markers, you can temporarily hide them with the **Hide Markers** command.
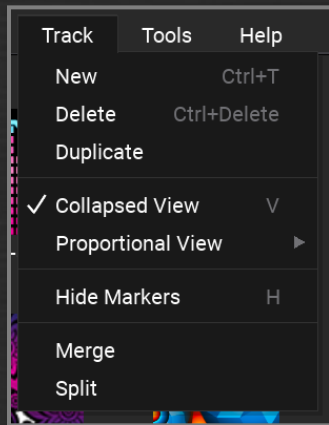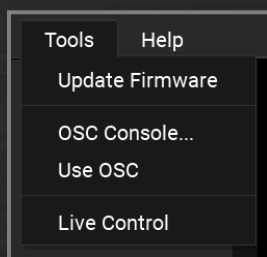
Track menu also enables you to **Merge** several simple tracks into a grouped track. You can also **Split** an existing grouped track into several simple tracks.
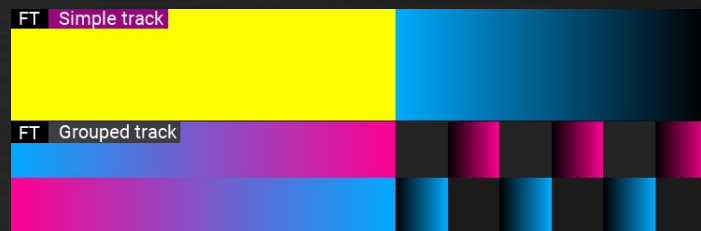
*Difference between simple and grouped track*

## Tools menu

Tools menu contains useful extra tools that expand the basic functionality of LtComposer.

Namely, in this menu you can configure LtComposer for listening to external OSC control commands in the **OSC Console**, or open **Live Control**, which acts as a virtual FT remote for your live DJ sessions and testing patterns.

Firmware update of all your Lighttoys remotes and props is performed using the **Update Firmware** button.

## Help menu
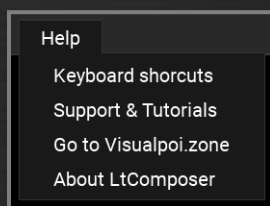
Help menu provides links to useful manuals, tutorials and Lighttoys Academy video guides here.

You can also find thousands of free to use pictures at the VisualPoi.ZONE web page.

## Devices menu
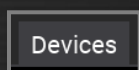
**Devices menu** lets you check the status of all devices (FT remotes, Visual Pois, FT props...) connected either via USB cable or via radio (wireless).

You can check the battery status, uploaded shows, firmware version and perform other service operations with the devices.

# Upload menu
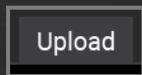
Upload

**Upload menu** opens a new window that facilitates the upload of prepared image sequences into your devices. This functionality will be described in full detail in later chapters.

| Select track: | Select devices: | Active: ☑ | Select bank: | | |
|---|---|---|---|---|---|
| 240 Johny left | 240 Visual Poi V5 MAXI | | 🟪 client demo | | Erase |
| 240 Johny right | 72 Visual Poi V4 MINI | | 🟦 My great show | | Erase |
| FT Adele Poi 1 | | | 🟩 funny | | Erase |
| FT Adele Poi 2 | | | ⬜ Empty | | |

Memory usage:      Erase Chip

Visual Poi V5 MAXI v0.33
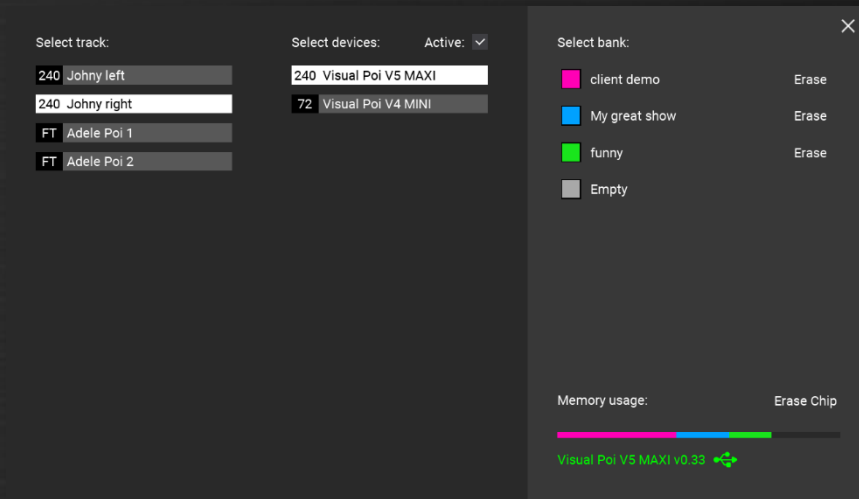
*Upload dialog window opened*

# Working with the application

## Using tracks

**+ New track** To start composing your light sequence, you need to add at least one track to your project. This is done by clicking on the button **"New track"** on the toolbar. From the drop-down menu, select the type of Lighttoys device you want to use.

There are 2 basic types of tracks – an **Image track** (used for Visual Poi, Wand and Hoop sequences) and an **FT track** (used for FT light sequences).

Each track is identified by its track header, displayed in the top left corner of each track:

**136 Image track**   **FT FT track**

*Example of Visual Poi V4 CLASSIC and FT track headers*

You can change the type of the track at any time by clicking on the track header and then using the drop-down menu in the **Track edit pane** on the left side.

To change the name of the track, double click the track header and edit the name to your liking:

**FT My Poi 2**

LtComposer makes it easy to prepare light sequences for multiple Lighttoys devices, using the robust multi-track support. To add more tracks to your project, either click the **"New Track"** button again or select the menu bar option **Tracks > New** or press **Ctrl/⌘ + T**.

To reorder the tracks, click & drag the track header and move it into a new position:

FT My Poi 1

FT My Poi 2

*Reordering of tracks by dragging the track header*

## Using elements

Elements are the basic building blocks that you use to create your light sequence. There are 2 types of elements, available by clicking on the blue tab under Media Library window:

**Images   Colors**

- **Images** – bitmap (pixel) images in your currently opened Image library, used exclusively for Visual Poi, Wand and Hoop sequences
- **Colors** – special color blocks, can be used both for FT and Visual device sequences.

Use click & drag action to move elements from Media Library to the timeline. When you release the mouse button, the start point is set, when you move the mouse horizontally and click again, the end point of the element is set.
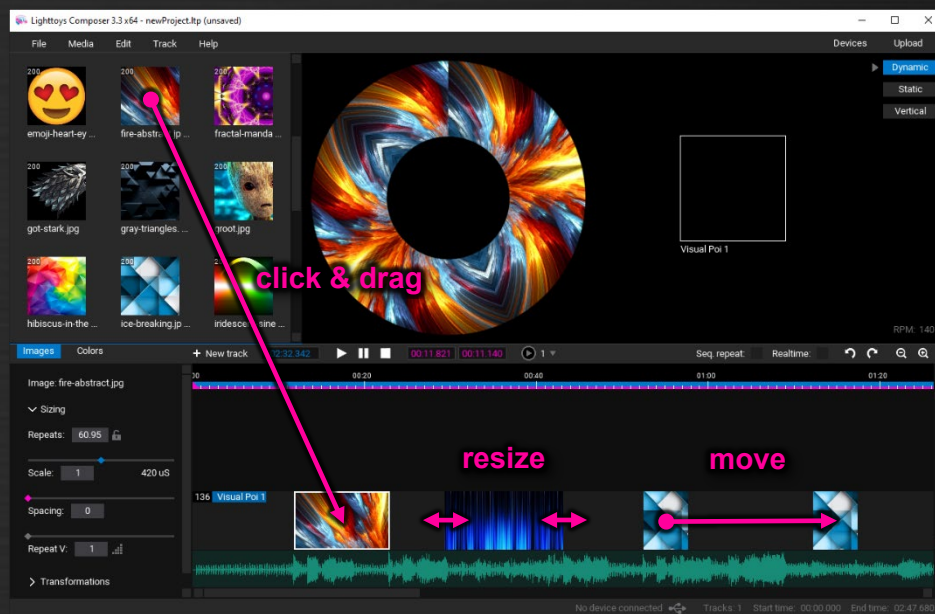


*Working with elements on the timeline*

You can change the position and length of any element on the timeline, in two ways:

- **Using the mouse** – first make sure the element is selected (click on it). Then click & drag one of the vertical edges to change the element duration as needed. By clicking inside the element and dragging you reposition the whole element.

- **From the keyboard** – it is possible to input precise time values from the keyboard into the pink colored time boxes on the toolbar. The format of the input is **MINUTES : SECONDS : HUNDREDTHS OF SECONDS**. The first box is used to set the element start time, the second box is used to set the element duration (length):
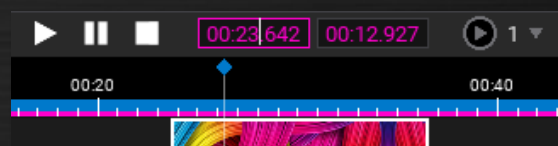


*"Element start" and "Element duration" time boxes (input fields)*

Multiple elements can be selected either with the **Ctrl/⌘ + click** or **Shift + click** command or by drawing the selection rectangle by click & drag action of the mouse. The selected elements have a white outline around them.
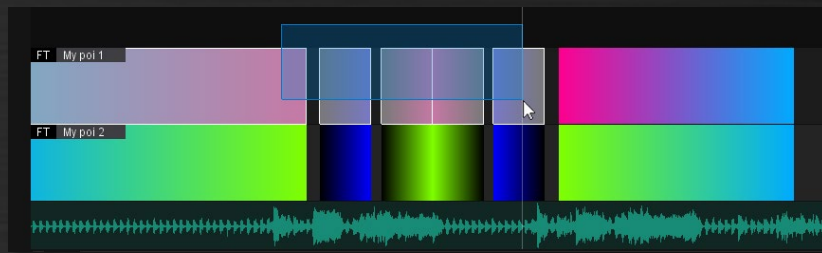
*Selection of multiple elements using the area select*

💡 If you have a very dense track and you need to start the selection rectangle inside an existing element, hold the **Alt** key modifier and then click & drag with your mouse.

You can easily duplicate existing elements to speed up the creation of your light sequences. To duplicate the selected elements(s), use **Ctrl/⌘ + C** to copy (or **Ctrl/⌘ + X** to cut**),** followed by **Ctrl/⌘ + V** to paste, or **Ctrl/⌘ + D** to duplicate element(s). You can alternatively also hold the **Ctrl/⌘** key and then **click & drag** the selected element(s) with your mouse.



*Various methods of element(s) duplication*

## Toolbar options

The toolbar of LtComposer hosts several useful tools for composition and playback control. It is described below:



*LtComposer3 toolbar*

You can control the playback of your show sequence by pressing the buttons ▶ ⏸ ⏹ or **spacebar / enter key**. To move the vertical time cursor, either drag its blue diamond, click onto the timeline or enter a precise value into the blue time box.

The Run Show button ⊙ 1 ▾ is used to start the selected show 1-4 on all FT devices paired to the attached FT remote controller, in sync with LtComposer and the music track.

The Brightness button ☼ 100% ▾ controls the light intensity of the show playback, there are 6 levels to choose from. This feature is currently available for FT2 and also FT1 devices after a firmware update.

You can zoom in/out by pressing the buttons 🔍🔍 , **-** and **=** keys, or by holding **Ctrl/⌘** key while rotating the mouse wheel. To undo / redo the last operation, use the buttons ↶↷ , **Ctrl/⌘ + Z / Ctrl/⌘ + Y** keys or **Edit** menu.

It's important to define the show start and end points. This is done by stretching the pink stripe above the track, either by dragging the pink triangles or by editing the time boxes in the status bar:
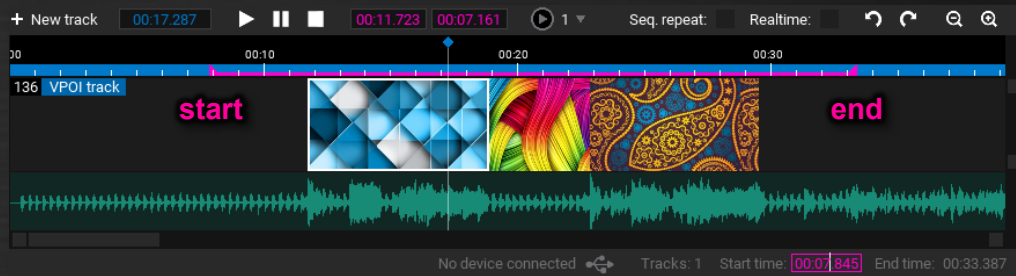


*Beginning and end of the image sequence*

For most situations the left pink triangle will be set to the beginning of the song, but if you plan to start your show from a specific music cue or sound by ear, you want to move the triangle to this point.

**"Sequence repeat"** option will make the image sequence loop indefinitely. This is useful for demo purposes or when you want to repeat an interesting pattern for the whole show.

When you check the "**Realtime**" option, elements on all tracks start being displayed proportionally to the level of timeline zoom. This is helpful for checking number of repetitions of a picture, or if the pattern is properly aligned to the beats of the music.
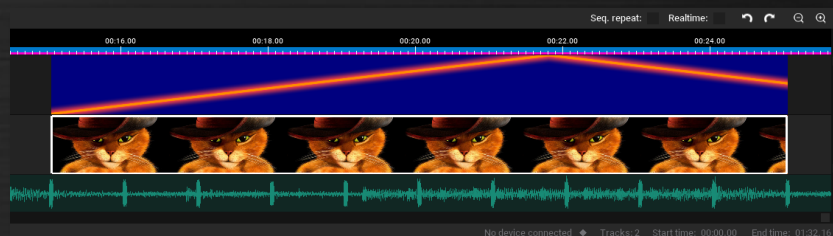


*Example of **Realtime** turned **OFF**, the graphics show like the original*
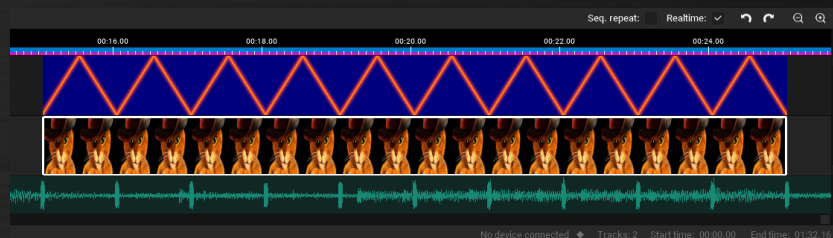


*Example of **Realtime** turned **ON**, the graphics are stretched according to the level of zoom*

## Loading music

For most projects, you want to load a music file as a basis for your timing cues. Supported audio formats are: WAV, MP3.

To load a music file, either click on the  icon, or use the menu option **Media > Load Music…** The software then starts analyzing the file, displaying message **"buffering…"** in the music timeline area. This operation can take several seconds, depending on the track length.

After the loading is finished, a nice waveform with peaks will be displayed:



## Markers

Markers are auxiliary vertical lines, that help with placing and alignment of elements on tracks. The element edge or time cursor will automatically snap to the marker when close to each other.
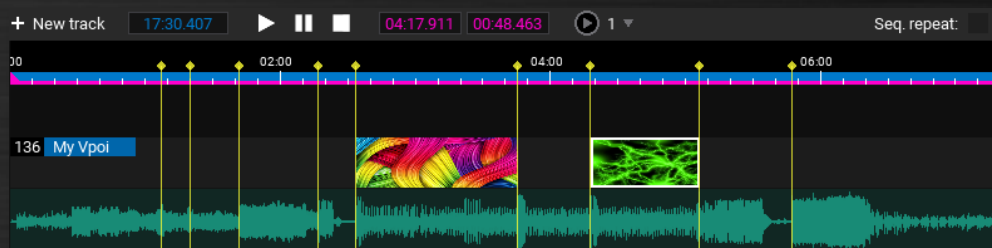


*Example of several markers placed on the timeline*

To place a new marker at the current cursor position, press the "**M**" shortcut key. It is possible to place markers even when the playback is running.
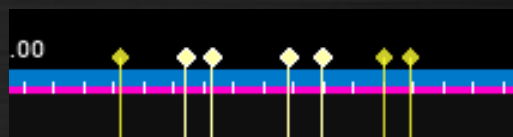


*Example of 4 selected markers*

To move the markers, select them by **Ctrl/⌘ + click** or **Shift + click** on the yellow diamond heads. The selection will turn light yellow. Now you can drag the selection along the timeline or hit **Delete** key to remove it completely.

To toggle the visibility of markers, press the "**H**" shortcut key. This is useful for very dense projects with lots of markers, when you want to get a clearer view of your tracks.

# Visualization (Preview window)

Lighttoys Composer offers several unique visualization modes that simulate how your image patterns will look in real life. When you click an element on the timeline, a preview appears in the preview window:
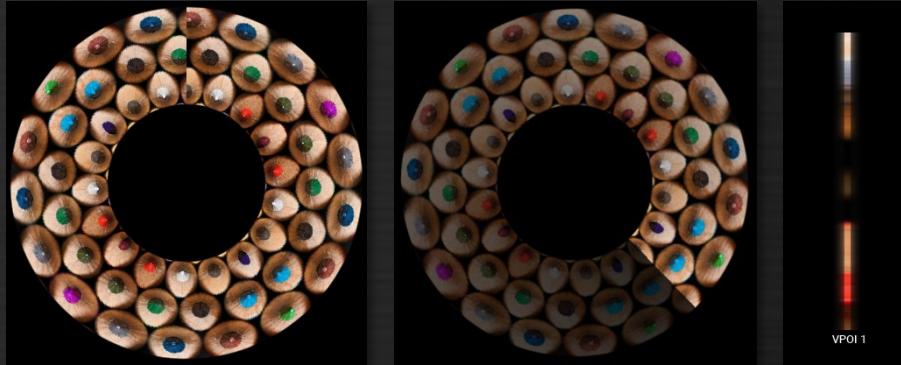


*modes of visualization: dynamic (stop), dynamic (play), vertical*

By clicking on one of the 3 buttons in the top right corner, you can switch between 3 modes of visualization:



- **Dynamic** – shows the device in rotation, can be toggled between playing / stopped state
- **Static** – shows the device in a static state
- **Vertical** – shows all devices at once as vertical lines
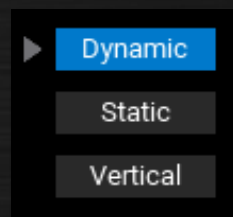
💡 Dynamic mode is best for simulating how the audience will experience the Visual Poi effect, Static mode for fade and ramp effects, when the prop is not spun. Vertical mode is useful for checking light effects of all props interacting together.

RPM: 140    The speed of the Dynamic preview is set to **140 RPM** (rotations per minute) for Visual Pois and **90 RPM** for Visual Hoops. You can edit this value in the bottom right corner.

# Image element tuning

Each image element you put onto the timeline can be fine-tuned for optimal display to the audience in the Edit pane. There are 5 submenus which let you alter the different aspects of your image.

## Sizing



The sizing submenu lets you stretch and space the image, so it fits your desired artistic intent and is synchronized with the tempo of the music. To size the image, you use two sliders located in the Edit pane: "**Scale**" and "**Spacing**". Scale is used to stretch or shorten the image. Spacing is used to set the distance (empty space) between repetitions of the same image.

💡 You can reset the sliders by double-clicking on the diamonds. You can also input precise values into the text boxes. Many text boxes can accept larger range of values, e.g. Scale: 0.01 - 10000.

"R**epeats**" shows the total number of repetitions of the selected image. When you edit this value from a keyboard, the app automatically adjusts the Scale value accordingly.
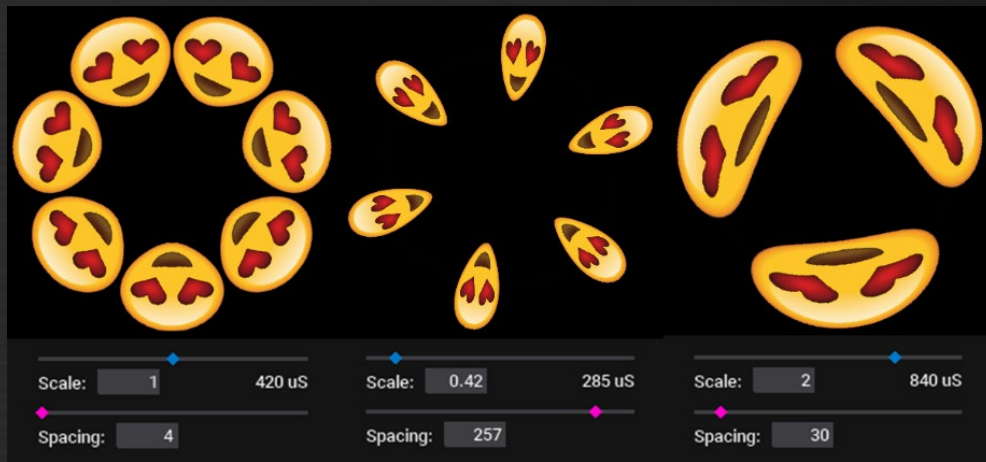


*The effect of scale and spacing parameters on the image visualization*

To see the effect of Scaling and Spacing on all image elements on the timeline, it is recommend to have the "**Realtime**" option on the toolbar activated.

The reset ⟲ button appears in the header whenever any parameter was changed from default. Click it to quickly reset all parameters in the submenu back to default.



When moving images from one type of track to another, the number of repeats changes because of the resolution difference. To prevent that, click on the padlock icon (or press **L** key) to active the **"Lock Sizing"** option.

Also activate this option when you want to have the number of Repeats always fixed when resizing the image on the track horizontally (changing its duration).

To quickly lock the image to useful Repeat values in the range 1-9, use the shortcut **Ctrl/⌘ + 1-9** on your keyboard:



*Example of a triangle image with Repeats locked to 1,2,4 and 8*

Lock sizing plays images at the same pixel speed across all types of Visual devices, but at the cost of some aspect ratio deformations. This option is best used for pulsing graphics (that must be all in sync), for text and logos it is best to leave this option turned off.



**"Repeat V"** slider repeats (duplicates) the picture vertically. This is useful for creating interesting new patterns from the original image or round devices like Visual hoop.

When you click on the triangle icon, **"Keep original resolution"** option is activated. This maps the source picture 1:1 (pixel-for-pixel) to the track resolution without any rescaling and sets the **"Repeat V"** value accordingly.

This option is useful when you are working with very small pictures, pixel art or repeating patterns (< 50 px) and you want to retain the sharpness of the original pixels. Without it, rescaling occurs and the pixels might appear blurred.

## Transformations
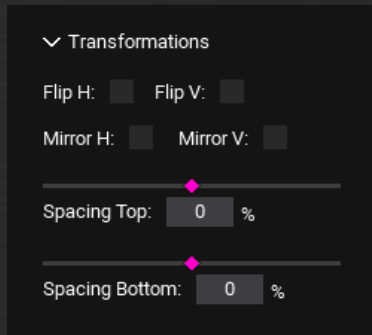
The transformations submenu lets you perform cool transformations – flipping & mirroring effects and spacing of top and bottom edge.

Flip and Mirror can often lead to a more interesting picture than the original, so feel free to experiment with these checkboxes, together with the "Repeat V" slider!

"Flip H" option is useful for making sure the text logo is displayed the right way to the audience when spun, without the need to change the more comfortable spinning direction for the performer.
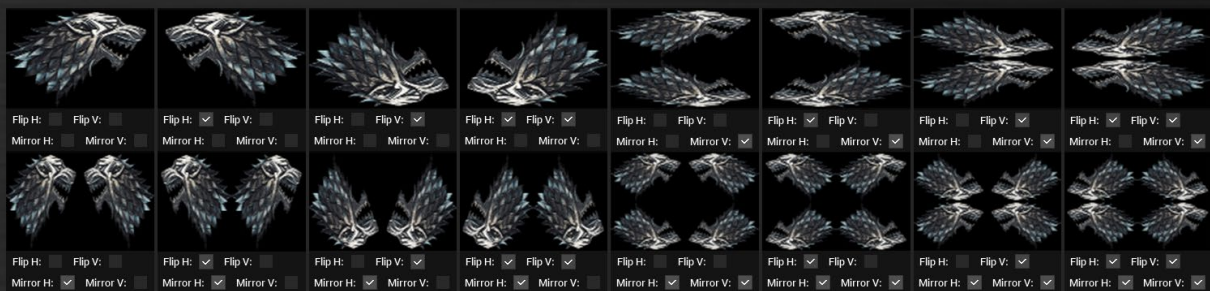


*Examples of different combinations of Flip and Mirror options*

Spacing sliders are useful for cutting unwanted parts of the top and bottom part of an image, or on the contrary, for adding empty space (extend the background), which can be used for artistic purposes or to improve readability of texts or logos (by adding positive bottom spacing).
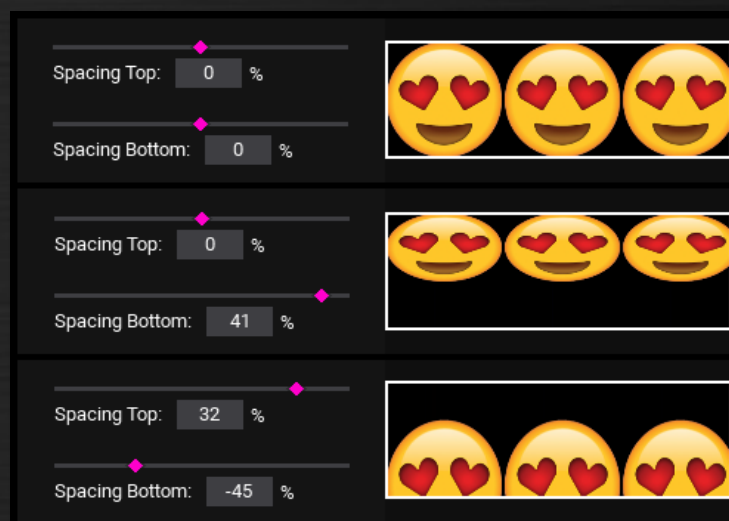


*Examples of different combinations of Spacing Top & Bottom sliders*

# Adjustments



The adjustments submenu lets you change brightness, contrast, saturation and hue (color) of the picture. This is useful in situations, when the source picture is of poor quality or when you want to enhance or boost the picture artistically.

The Recolor slider is a special extension of the Hue shift slider. Turn it on by clicking on the **"off"** button.

Unlike the Hue shift slider, which shifts all colors in the picture by the same amount, the Recolor slider converts all original colors into shades of just a single hue.

This is useful in situations where you want to stick to a specific color theme with your pictures.



Both the Hue shift and Recolor sliders can be combined together. Hue shift slider changes the contrast of different colors in the original picture, making them either pop out or suppressed after recoloring. Try it and experiment!
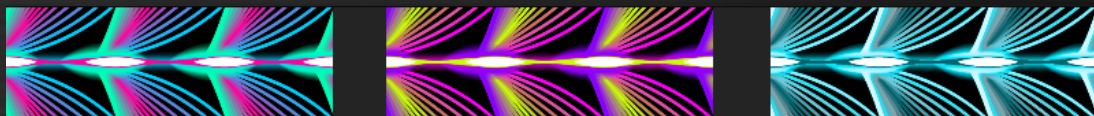


*Color change example – original image (left), hue shift (center) and recolor (right)*
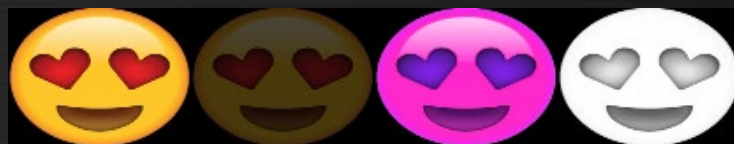


*Example of various adjustments performed on the original image*

# Color element tuning

Each color element placed from the **"Colors"** library can be also tuned to suit your preference. When you click on a color element, the Edit pane changes to show the color edit tools.

Since each type of color element has slightly different settings and options available, we will explain the Edit pane options with the Gradient element selected.

**Color: Gradient**

RGB: 0 171 255

Gradient element has two editable colors, accessible by clicking on the color circles at the top. The larger circle is the one currently selected (press "**X**" key to switch selection).

The arrow icon ⇄ is used to switch the orientation of the gradient element.

Below lies the color wheel. By clicking on the wheel, you edit the selected color value, by clicking inside the triangle you change its saturation and lightness.

Try holding the Shift key to limit the wheel to 12 basic colors (primary + secondary + tertiary colors).

For precise input, you can also use the RGB input fields at the bottom.

Each time you set a new color it will be added to the recently used color list on the right. You can recall the previous colors at any time by simply clicking onto the color rectangles in the list.

## Favorite colors

It is possible to save your top favorite colors for later use under the color wheel. Find a color that you like and simple click on the "**+**" sign under the color wheel to save it.

To update or erase an existing favorite color, right-click the color box and select one of the available menu options – Update, Erase or Reset.

## FPS limit

Each track has a special selectable option called "**FPS limit**". To activate it, first click on the track header (track name field) and enable the checkbox in the Edit pane on the left:

FPS limit: ✓

Frame rate: 100 FPS
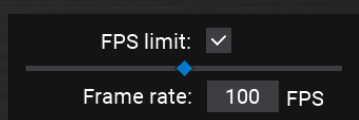
Once activated, all image elements on the track will be recalculated to lower rendering speed once uploaded. **This dramatically reduces show size & upload time.**

It is recommended to enable the FPS limiter for all static or slowly moving Visual / FT2 devices: stage lights, costumes, juggling sticks, etc. with negligible quality impact.

80 FPS limit OFF

80 FPS limit 100
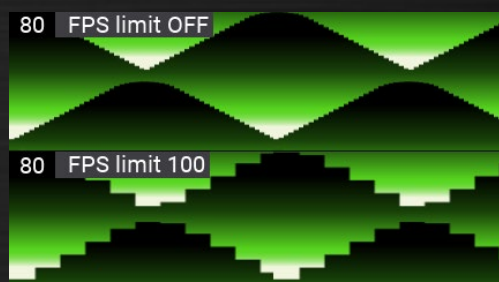
*FPS limiter effect on the image data*
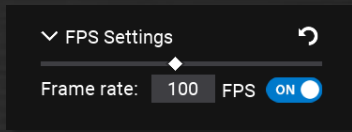
## FPS settings

It is possible to reduce the rendering speed also on individual image elements, using the FPS settings submenu in the Edit pane.

This option is helpful, when you have a mixed show including both static and fast spinning moments.

Elements with individual FPS limit activated will have a small **"FPS"** icon displayed in their bottom right corner.

## Image warp

By their very nature, pictures spun on Visual Poi in circular motion create distorted effect for the audience. Using the Image warp submenu, you can effectively eliminate this problem:



*Visual Poi MAXI with image warping function disabled (left) and enabled (right)*
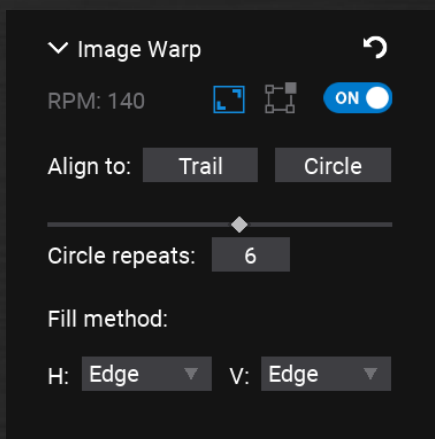
To active the function, press the "**ON**" button in the Image Warp submenu. LtComposer then activates the Edit mode and aligns the image onto the circular trail.

To improve the position and size of the warped image, simply reposition or resize the blue rectangle surrounding the image in the preview window.

Use the **Circle repeats** field to change the number of image repetitions inside one 360° circle, or alternatively change the angle of the white lines in the preview window.
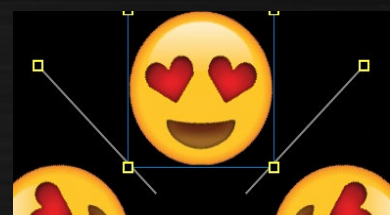
By pressing the **"Circle"** button, warping effect can be also applied across the whole circular area. This is great for pictures that are circular and symmetric, like pizza, wheels, clocks, flowers, faces, etc.

The **Fill method** can be used to generate completely new, fresh looking abstract images. Try it and get creative, it is addicting!
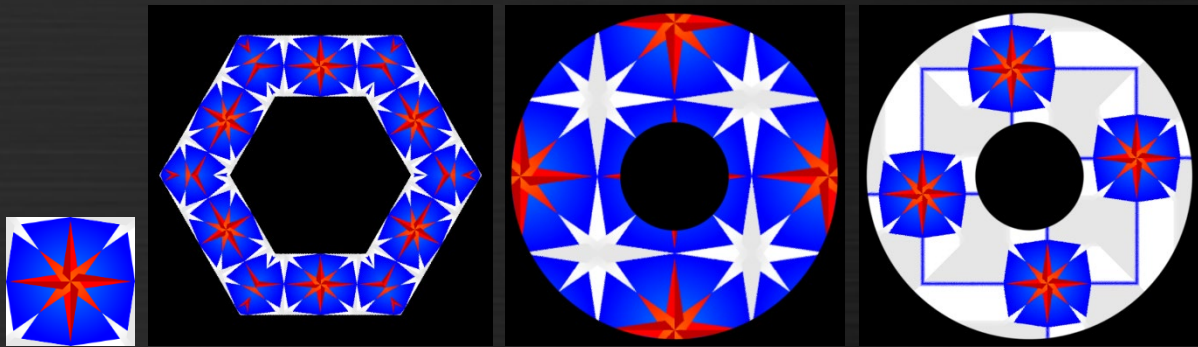
*Original image (on the left) and its several alternations using image warp function*

Image warp currently supports only Visual Poi type of tracks.

For best effect, spin the Visual Poi at the same speed as the RPM value in the bottom right of the preview window. You can measure your personal RPM speed using a video camera and type in this value into the RPM field for best results.

# Uploading to the device

Now having learned the basics, you are ready to upload your first light sequence into your Lighttoys props and enjoy it in real life! Depending on the type of track, the upload process differs, which we will show below.

## Visual & FT2 devices

Connect your Visual device (Visual Poi, Wand, Hoop) or FT2 device to the computer with a USB-C cable and power it on with a long press of the main button.

The device should be successfully detected and the status bar should display a message: Connected devices: X ⚡, where X represents the number of all known attached devices.

💡 If the device is not detected by LtComposer, make sure you have the Visual Poi driver installed (on Windows 7), try a different USB cable and make sure the device is really turned ON.

Now click on the "**Upload**" button in the Menu bar or press the "**u**" key. An upload dialog will appear:
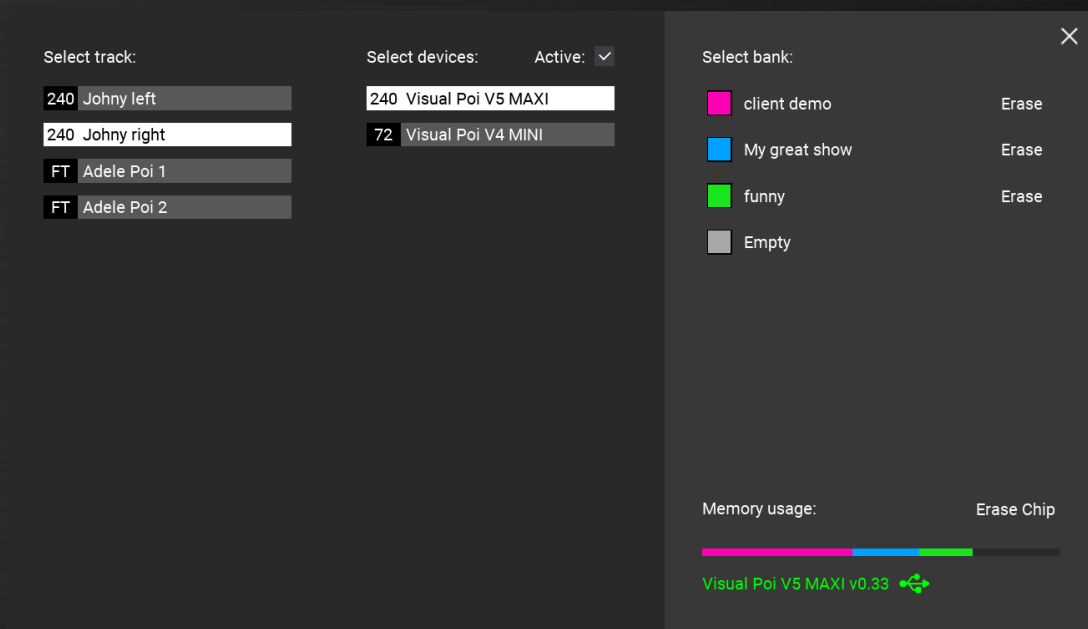


*Upload dialog window*

First select the track which you want to upload in the first column, then select the device which you want to upload to in the second column.

💡 When you click on a device in the second column, the corresponding device will blink momentarily in a white color (ping). This is useful to differentiate one device from another.

At the right side of the upload dialog, you will see the list of available memory banks and if they are occupied with an image sequence or not.

Click on one of the 4 memory banks on the right. Your sequence will be converted into the Visual Poi format and then uploaded, showing a nice progress bar in the upload dialog and also on the device LEDs.

First 16 characters of the track name are used as the memory bank name, stored in the device together with the image sequence. You can rename the track, by double-clicking on its name in the left column.

To upload the same track to multiple devices at once, first **Ctrl/⌘** or **Shift** select the devices in the second column. You can also start a new upload to a different device, even when other uploads are still ongoing!
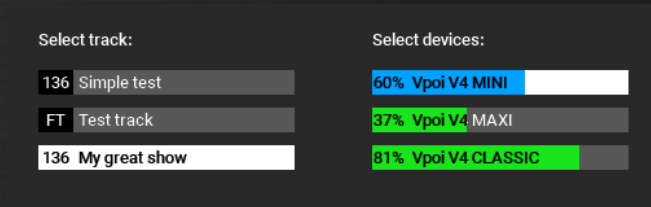


*Concurrent upload to several devices at once*

Once all your image sequences are uploaded, you can close the upload dialog, disconnect the Visual Pois from PC and enjoy the sequences in real life (using the main power button or paired FT remote controller).

## Managing the banks

You can erase unneeded banks (to save memory space or to prevent user error) by clicking on the "**Erase**" button. The bank will be displayed in the list as "Empty".

To completely format the device memory, press the "**Erase chip**" button. All image sequences will be removed and the file system rebuilt. This is useful, should the image data get corrupted.

To see how much space each memory bank currently occupies, check the bottom right corner of the upload dialog with the colored line segments. The device type and firmware version are also displayed here, e.g. Visual Poi V5 MAXI v0.33:
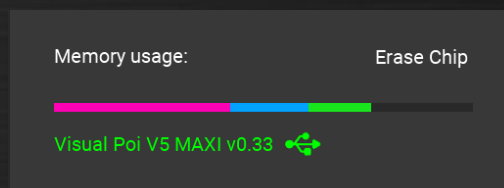


*Memory utilization bar graph*

## FT devices

Connect your FT remote controller to the computer with a USB-C cable and power it on with a long press of the main red button, the blue indicator LED should shine steadily. Make sure at least one FT device is paired to that remote.

If the FT remote is not detected by LtComposer, make sure you have the mcp2200 driver installed (on Windows), try a different USB cable and make sure the FT remote is really turned ON (pulsing blue LED indicates charging, but the remote is still turned off).

The FT remote should be successfully detected and the status bar should display a message: Connected devices: X 🔌, where X represents the number of all known attached devices.

Now click on the "**Upload**" button in the Menu bar or press the "**u**" key. Again, the upload dialog will appear.

All FT devices (in a radio range) paired to all currently attached FT remotes via USB cable will be shown in the device list. Devices which are switched off will display a message "N/A", devices which are currently not in range will be shown in a darker color:



Select track:

| FT | Emilia LEFT |
| FT | Emilia RIGHT |

Select devices:

| FT | My Zebra L |
| FT | My Zebra R |
| FT | N/A |
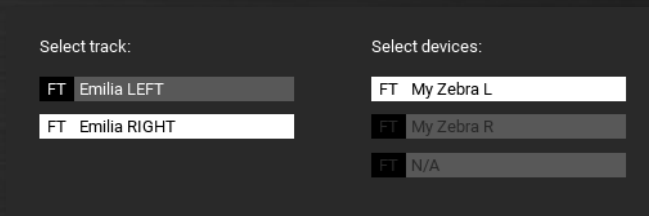
*Example of in range, out of range, turned off FT device*

The rest of the steps is the same as with the Visual device – click on the memory bank on the right side to upload the FT sequence to the FT device, use "**Erase**" button to delete it.

The device type and current firmware are displayed in the bottom right corner of the upload dialog, i.e. Zebra Poi 180813.

💡 You can rename the FT device to your liking by double-clicking on the device name in the second column. This is useful when you are dealing with many devices of the same type.

## Starting shows on devices

LtComposer offers a unique preview feature, which enables you to start light sequences on your Visual, FT & FT2 devices, perfectly in sync with the timeline and music track.

This is very useful in two distinct scenarios:

- you want to check how your colors and light effects look in real life during the creation of your light sequence,
- you want to run your light show and music perfectly synchronized from a single digital device (your computer) in front of the audience.



*Diagram of how the run show on devices works*

1) First, make sure that all your Lighttoys devices are turned on and paired to a single FT remote, and this remote is also turned on and attached to the PC via USB cable.
2) Upload the show to all the devices you want to use in the live preview, to the same memory bank number 1-4

3) Select the same Bank number in the drop-down menu of the Run show button.
4) Press the Run show button (or press **"R"**).
5) Enjoy!
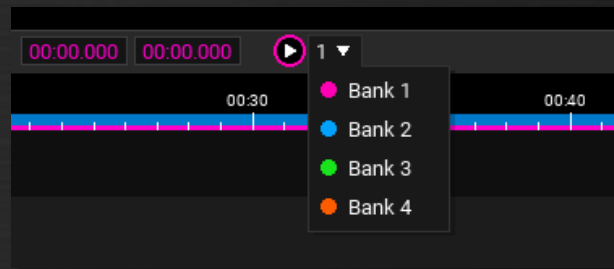


*Run show button and bank number selection*

When the Run show is activated, you can even drag the cursor with your mouse or click different parts of the timeline, and the replay will react and update accordingly.

# Grouped tracks

Grouped tracks are special composite tracks, consisting of 2 or more smaller subtracks. Grouped tracks are especially useful when your LED prop has several distinct physical segments (e.g. juggling club head & handle), opening new possibilities with your light programming:
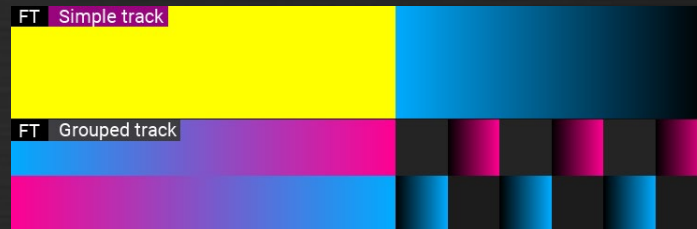


*Difference between simple and grouped track*

Examples of native grouped tracks in LtComposer:

- FT A/B, Club FT2, Buugeng FT2 (full)

Each simple track can be converted to a group track. First select the track header (click on the track name field) and then press the **"Add subtrack"** button in the Edit pane left.

For image tracks, you can also change the vertical resolution of each subtrack in the input boxes. Press the **"Remove"** button to remove the lastly added subtrack.
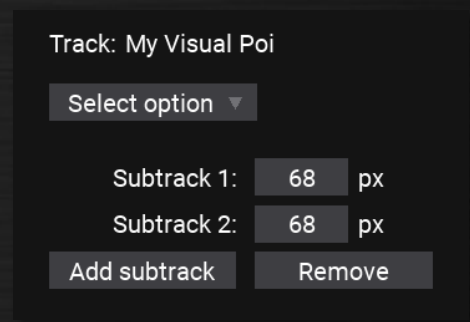


# Live Control

Starting with LtComposer 3.9, we have introduced a new Live Control window, which acts as a virtual FT remote keypad, useful for testing colors & patterns on your Lighttoys props, LIVE performing and impromptu shows.

To use the Live Control, first attach an FT remote with at least one paired Lighttoys device to your computer:



*FT remote with paired device ready to be used with Live Control*

Then open the **Live Control** window from the **Tools** menu or press the "**j**" key:
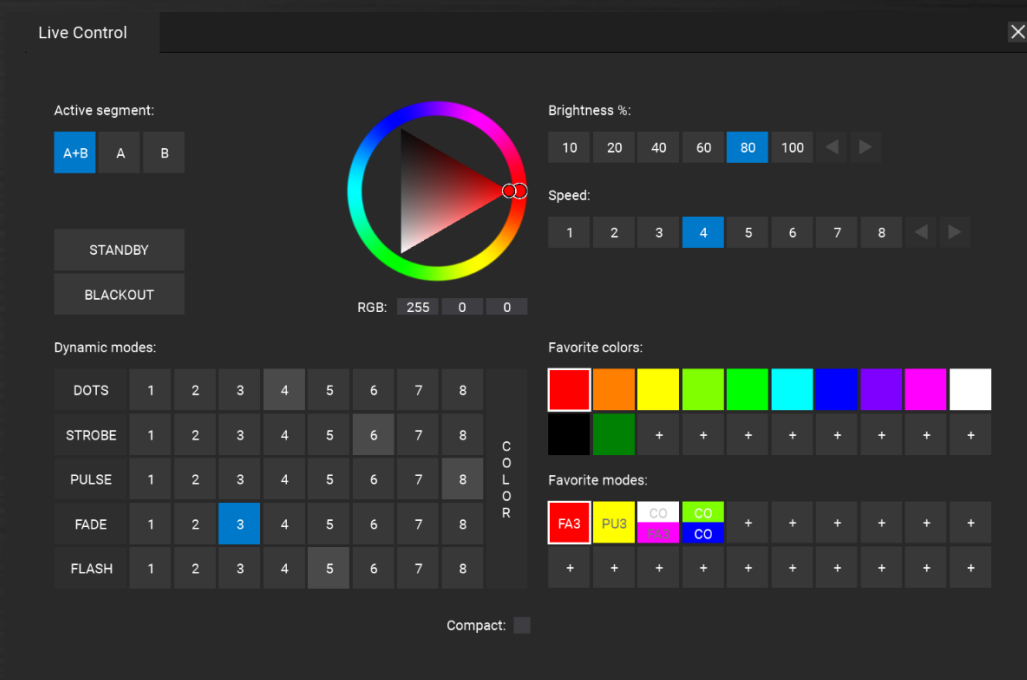
*Live Control window with several favorite colors and favorite dynamic modes*

The window is used similarly to the physical controls on the FT remote. Click the COLOR button to play solid color or click one of the Dynamic mode buttons in the grid. You can change the Brightness, Speed with the sliders and Color using the color wheel. The active segment A+B, A or B can be also changed for props with 2 controlled segments.
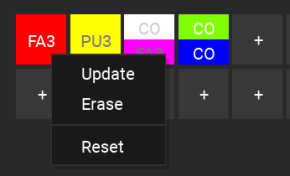


It is possible to store your favorite colors or dynamic modes for later use. Find a setting that you like and then simply click on the **"+"** button.

To **Update** or **Erase** an already saved favorite, use the right-click menu. The **Reset** button will erase everything to default.

# Useful tips & tricks

## Expansion / cloning of elements

To quickly fill gaps between neighbor elements, double-click on the element's vertical edge that you want to expand to its neighbor. To clone the element vertically over all empty (sub)tracks, double-click on the element's horizontal edge.
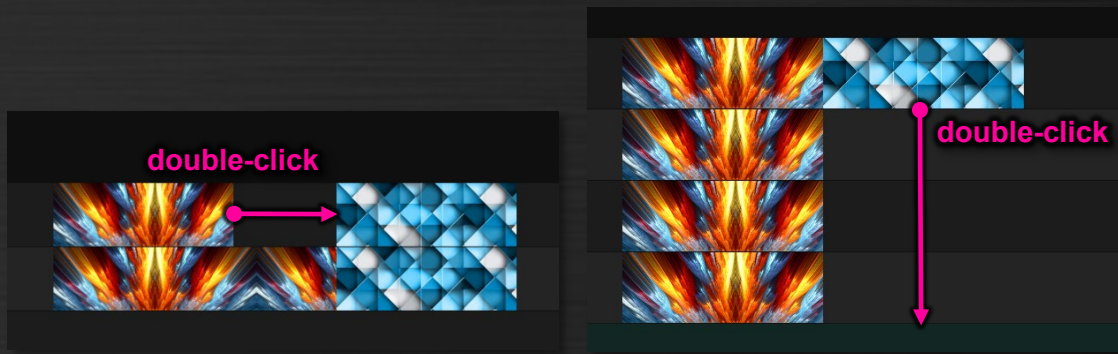
*Expanding elements by double-clicking on the edge*

To create cascading effects that evolve diagonally over multiple tracks, click & drag the horizontal edge of the selected element(s) and start moving it up, down or diagonally. Release the mouse button once you are satisfied with the effect.



*Vertical / diagonal cloning of elements using the edge click & drag*

For animated elements, you might want to stretch the pattern over several (sub)tracks. This is done by holding the Shift key and clicking & dragging the element's horizontal edge.
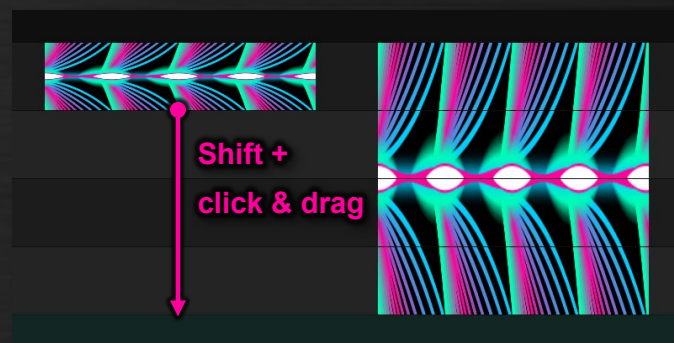


*Stretching of elements over multiple (sub)tracks using the Shift key modifier*

## Proportional resize

Sometimes, parts of your show might be either too long or short for the music beat and you may want to stretch all elements in the selection proportionally. This is done easily by holding the Alt key and clicking & dragging the vertical edge of the selection.
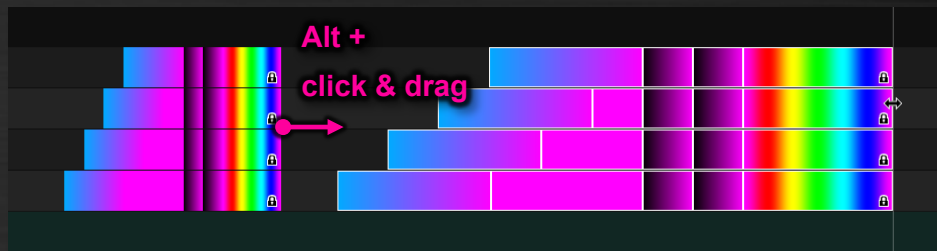
*Proportional resize of elements using the Alt key modifier*

## Element (cross)fade

You can create beautiful image crossfade or fade in/out effect for a more fluid and organic transitions in your shows. Hold the Shift key and click & drag the vertical edge of the element to create the (cross)fade:
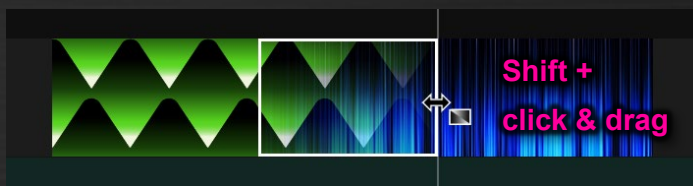


The (cross)fade transition can be also quickly initiated by clicking & dragging the top corner of the element edge:
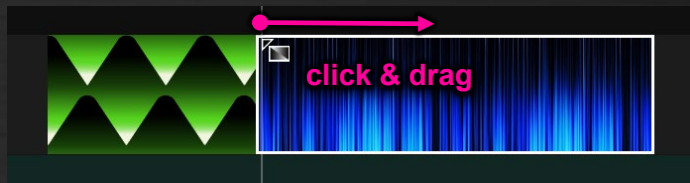


The (cross)fade effect also works with Color elements (Solid, Gradient, Flash, etc.) Depending on the type of the Color element, the logic of the fade effect changes, see several examples below:



*Example of several FT elements created using cross fade function*

For image tracks (e.g. Visual Poi and FT2 devices), crossfade effect takes a lot of memory space, more if the effect duration is long. We recommend to use it sparingly and for short transitions.

## Razor tool

Razor (split) tool may come handy if you need to split existing elements into two parts, at a precise point on the track line. The tool is activated with the **"C"** key at the current time cursor position.
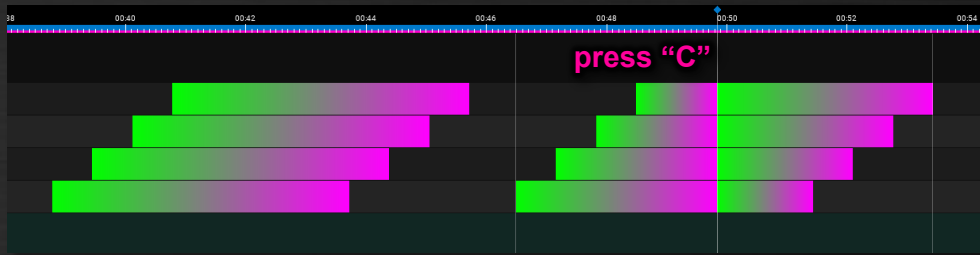
*Razor tool in action*

💡 If you want to perform the split action only on some tracks, preselect the elements that should be split, position the time cursor and press the "C" key. Only the elements in the selection will be split.

## Filtered Views
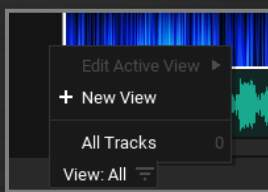


For larger projects with many tracks, the Views functionality will come handy. Filtered Views enable you to create several different subsets of the original tracks and then quickly switch between them.

This removes visual clutter and unnecessary vertical scrolling through the track list. This functionality is accessed from the status bar.

Click on the **"View: All"** button, then select **"+ New View"**. A new window will appear:
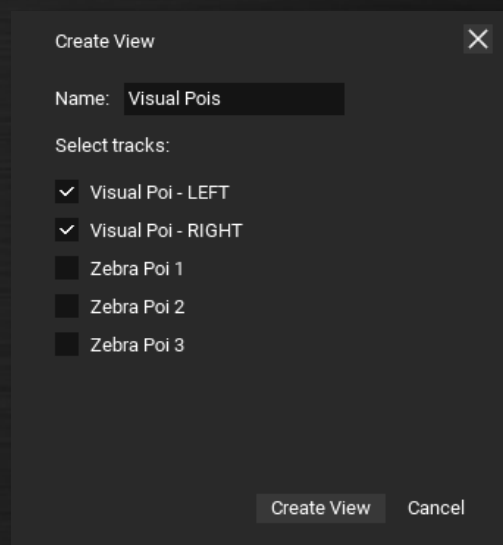


Give this new View a descriptive name, select which tracks will be included in the View and click **"Create View"**.
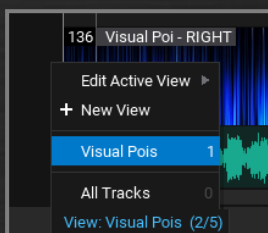


The new View will become available in the menu list, easily activated by a mouse click or a numerical shortcut **0-9**. When a filtered View is active, the Status bar text turns blue color, showing the current View name, and the number of tracks the View contains / number of all tracks, for example View: Visual Pois (2/5).

The current active View can be edited, removed or duplicated by selecting the menu option **"Edit Active View"**.

💡 You can reorder the tracks in each View differently and that ordering will be remembered. You can use this feature to better visualize the props on stage using the Vertical preview option.

# VisualPoi ZONE

Pyroterra Lighttoys has created a community-based web portal, where you can share and download hundreds of pictures for your Visual Poi, Wand and Hoop. All for free! Don't miss it and check it out: http://www.visualpoi.zone/
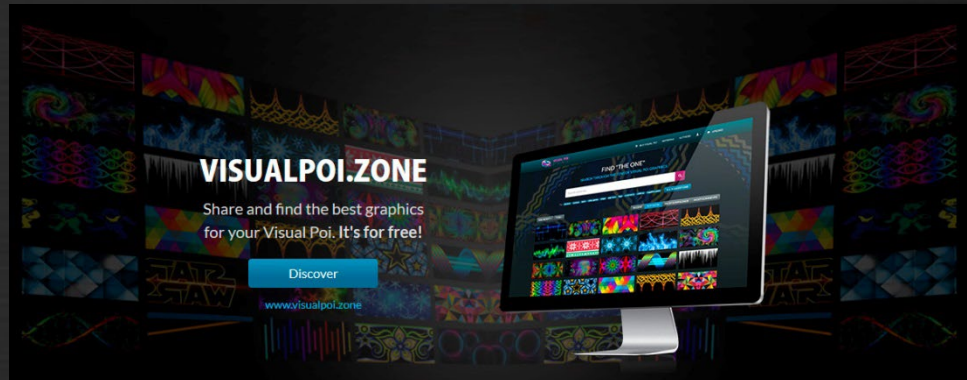


*Looking for pictures for you Halloween party? Searching for Christmas patterns? Or just curious what others have recently uploaded? Head over to VisualPoi ZONE!*

# Staying up to date

To enjoy the latest and greatest version of Lighttoys Composer from Pyroterra Lighttoys, please check the latest official release available from our support page: https://www.lighttoys.cz/support/#downloads

If you would like to follow the bleeding-edge development, please also join our Lighttoys Composer user group.

# Firmware update

Starting with LtComposer version 3.4, the software can perform a complete firmware update of your Lighttoys devices. It also detects if the firmware running in the connected Lighttoys device is out of date (needing update), indicated in the status bar in yellow color:
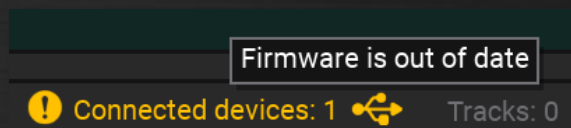


To learn how to perform the firmware update process in detail, please check our PDF manual **"Firmware update guide"** available from our support page:
https://www.lighttoys.cz/support/#manuals

# FT2 control chip setup

[FT2 control chip](#) from Pyroterra Lighttoys is a versatile chip designed to control various digital pixel LED strips available on the market, opening an exciting world of your own custom LED props, costumes & decorations!

For detailed instructions on how to mechanically assemble & electrically connect the FT2 chip, please follow our [FT2 chip manual](#) first. Once finished, continue here with the configuration setup.

## FT2 device configurator

First, make sure the FT2 chip is attached to your computer with a USB cable and turned on. The chip should be detected in the status bar of LtComposer with a green text:



Then click on the **"Devices"** menu at the top, select the FT2 chip in the list and click on the **"Device Config"** button:
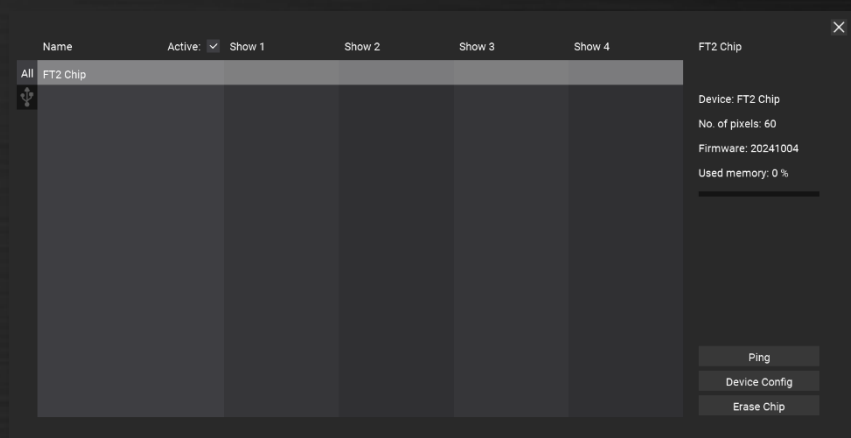
A new FT2 device configurator window will appear, where you perform your initial setup of the FT2 chip:
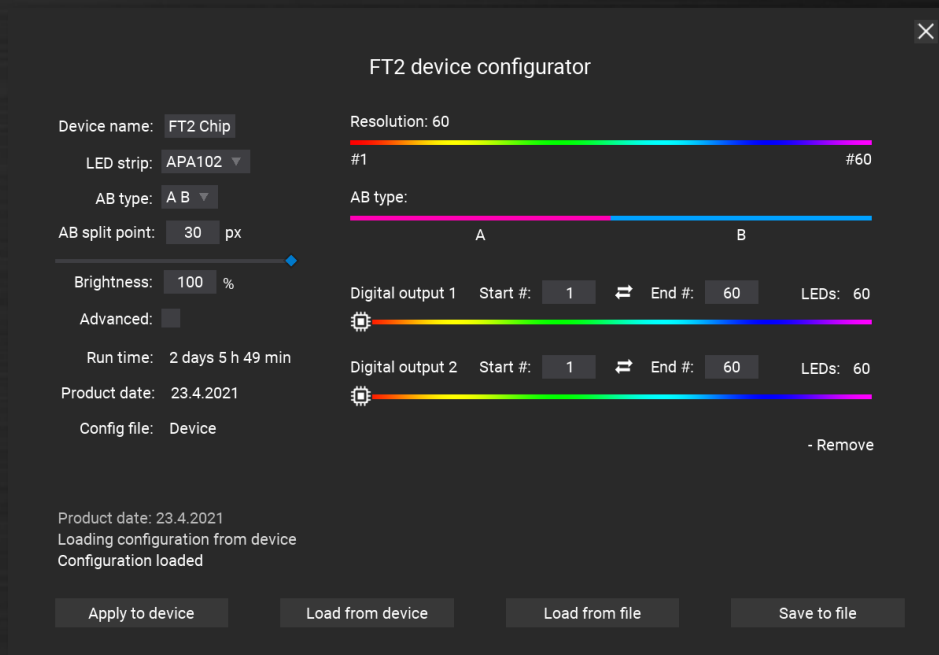


*FT2 device configurator window*

We will now describe all the functions in greater detail.

You can you give the FT2 chip your default factory name in the **Device name** field.

Use the **LED strip** drop-down menu to select the specific digital LED strip type you are using. The available options are listed below:

- **APA102** (compatible variants: SK9822, APA107, HD107s)
- **WS2812** (compatible variants: SK6812)
- **WS2812-invRG** (swapped R and G color channels)
- **WS2812-GBR** (G,B,R channel order)
- **WS2813** (compatible variants: SK6822)

| Device name: | FT2 chip |
| --- | --- |
| LED strip: | APA102 ▼ |
| AB type: | A B ▼ |
| AB split point: | 30 px |
| Brightness: | 100 % |
| Advanced: | |
| Run time: | 2 days 12 h 59 min |
| Product date: | 23.4.2021 |

**AB type** lets you select the preferred spatial configuration of the A and B segments.

The **AB split point** defines the proportions between A and B segments (the position of the dividing point).

💡 AB type and AB split point don't affect the programmed sequences and are not related to (sub)tracks with elements in any way. They only come into action when using the solid colors and dynamic modes on the FT remote controller.

The **Brightness** setting enables you to lower the maximum global brightness of the FT2 chip. This is useful, when you are running very long strips and experiencing color fading or when the battery is too weak to take the full shine.

💡 When the number of total configured LEDs exceeds 150, the FT2 device configurator starts to slowly limit the Brightness value, in line with the maximum current rating of the FT2 chip. You can override this limit, but you risk shutting off of the chip during use.

**Run time** shows the total aggregate time the LED prop was running (turned on) since the manufacture. The **Product date** is the date when LED props was first initiated (manufactured).

## LED strip mapping

The right side of the configurator window is used to map the image data to the physical pixels (LEDs) on the LED strip.

The top Resolution line represents one vertical column from the source image data (rotated 90° clockwise).

Resolution: 60
#1                                          #60

The line dynamically changes based on your numerical input in the digital output fields below.

Use the **Start #** and **End #** fields to define how the source image data will be distributed across the physical LED strip.

Digital output 1    Start #:  1  ⇄  End #:  60    LEDs:  60

+ Add output

The simplest example with only Digital output 1 active is shown above.

To quickly switch the flow (direction) of the data, click on the double-arrow icon: ⇄

Here follows a more complex example, using both the Digital output 1 and 2. In real life, this configuration could represent e.g. a digital LED staff with the chip mounted in the handle:
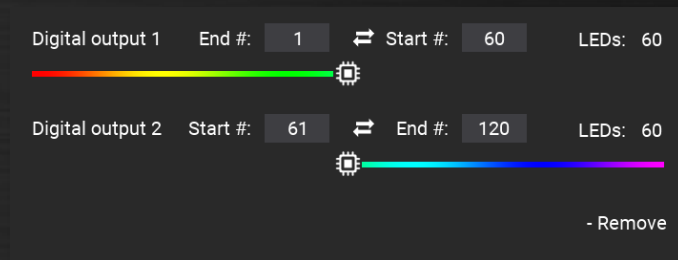


💡 Hover your mouse cursor over any of the rainbow lines, to see a nice dynamic effect of the data flowing from the lowest to the highest pixel!

In some situations, you might need to map the source image data multiple times over the full digital LED strip length, e.g. a digital pixel pole with several parallel strips around the pole doing the same effect in unison.

In that case select the **"Advanced"** checkbox on the left: Advanced: ✓

Now you can create multi-mapping using the small **+** and **–** buttons on the right. Here we show the digital pixel pole example with 4 LED strips (30 pixel each) doing the same effect, physically connected in a zig-zag style:



## Uploading the config

Once you are finished with the LED strip mapping, it is time to upload your configuration to the FT2 chip! For that purpose, there are 4 buttons at the bottom of the window:



| Apply to device | Load from device | Load from file | Save to file |

**"Apply to device"** – click to upload the configuration to the FT2 chip. Once finished, the Status bar will say "Configuration loaded". Unplug the FT2 chip from the USB, turn if OFF and ON. It is ready to be used.

Status:
Product date: 23.4.2021
Loading configuration from device
Configuration loaded

**"Load from device"** – use this button to load the current config stored in the FT2 chip.

**"Load from file"** – reads your previously stored configuration from the computer.

**"Save to file"** – saves your FT2 chip configuration to your computer for future use.

# FT2 custom track

Before you can start programming shows for your newly configured FT2 chip, you also need to spend few moments setting up the FT2 custom track for it.

FT2 custom track is a special flexible track, letting you set many parameters of the track behavior & preview type to your liking, in tune with your planned FT2 chip use.



To add a new FT2 track to your track list, click on the **New track** button on the toolbar and select **FT2 custom**.
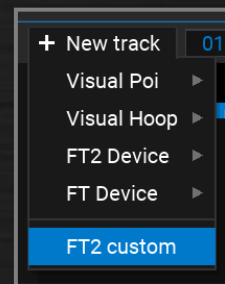
First, click on the orange color track header (track name field) to activate the track options in the left edit pane:



In the **Number of LEDs** field, fill in the same number as the Resolution of the FT2 chip you have set up before.

Use **"Add subtrack"** button to add extra subtrack(s) if needed.

Set up default duration of each pixel (rendering speed) using the **Scale 1** field. The absolute minimum for FT2 chip is 1000 μs (1 ms), for longer LED strips this number might need to be increased substantially.

The goal of the Scale 1 setting is to find a value, which makes pixels approximately square in shape during spinning. For that purpose a checkerboard image is best. For fast spinning devices, we recommend value 1500-3000 μs, for slowly spinning or static devices about 5000 μs.

**FPS limit** is activated by default for FT2 custom tracks, since the majority of DIY FT2 props will be static. Change if needed.

The **Preview setting** lets you setup the behavior of the preview window. Fill in the **LED density** of your digital LED strip in LEDs/meter, the **First LED distance** from the center of rotation and the **Preview type** (Visual Poi, Buugeng or Hoop).

For a complete setting, also do not forget to set the **RPM** (rotations per minute) in the Preview window, according to the speed of rotation of your LED prop:
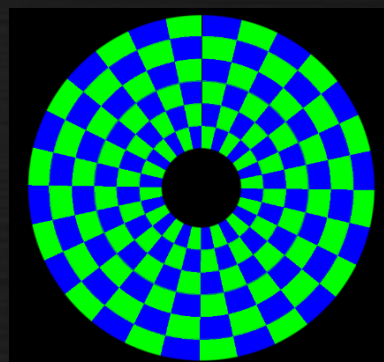




*Example of a properly set up Scale 1 (pixels are roughly square in the preview)*

# OSC control

Open Sound Control (OSC) is a modern protocol for interconnecting various multimedia devices using the UDP/TCP data packets. OSC is quickly gaining ground and becoming the successor to the MIDI standard.

LtComposer supports the OSC protocol in the "listen mode", expecting other devices in the "send mode" to send OSC messages that the LtComposer then interprets.

For maximum compatibility with external devices and applications, LtComposer accepts two methods of OSC message formatting:

1. OSC address + OSC arguments – standard method of input, where address and arguments are transferred separately. Arguments are written down in this document as <data_type:value>, for example: <integer32:6> <float32:0.6279> <string:Hello>

2. OSC address inlining – both the address and argument values are chained together using just the address space of the OSC message.

OSC Message examples – method #1:

- **/lighttoys/ping** – sends PING to all FT devices
- **/lighttoys/brightness <int32:6>** – sets brightness to the 6th level (maximum)
- **/lighttoys/start <int32:1>** – starts show #1 from time 0:00
- **/lighttoys/stop** – stops the running show
- **/lighttoys/start <int32:2>**<int32:2000><int32:5000><int32:1> – starts show #2 from time 2000 milliseconds with 5 second countdown timer and the lowest brightness.

OSC Message examples – method #2:

- **/lighttoys/ping** – sends PING to all FT devices
- **/lighttoys/brightness/6** – sets brightness to the 6th level (maximum)
- **/lighttoys/start/1** – starts show #1 from time 0:00
- **/lighttoys/stop** – stops the running show
- **/lighttoys/start/2**/time/2000/delay/5000/brightness/1 – starts show #2 from time 2000 milliseconds with 5 second countdown timer and the lowest brightness.

The ordering of OSC arguments must be followed for method #1, the optional arguments can be omitted from the right side to the left. When using method #2, the order of optional arguments (e.g. /time/2000, /delay/5000, /brightness/1) is irrelevant and can be swapped.

Currently, LtComposer supports the following OSC commands. The compulsory part of the command is denoted in a **bold** text, the rest is optional. Parentheses e.g. (1-4), denote the accepted range of the value:

| OSC command (method #1 - arguments) | OSC command (method #2 – address inline) | Description |
|---|---|---|
| **/lighttoys/ping** | **/lighttoys/ping** | Sends out the PING command to all paired FT devices. |
| **/lighttoys/blackout** | **/lighttoys/blackout** | Turns off the LED output of all paired FT devices. |
| **/lighttoys/standby** | **/lighttoys/standby** | Brings all paired FT devices to the standby mode. |
| **/lighttoys/start** **\<int32:show(1-4)\>** \<int32:time\> \<int32:delay\> \<int32:brightness(1-6)\> \<int32:duration\> | **/lighttoys/start/(1-4)** /time/(int32) /delay/(int32) /brightness/(1-6) /duration/(int32) | Starts the show on all paired FT devices. 'Time' is a positive offset into the show, 'delay' is a countdown to start, 'duration' clips the show run time. All timing parameters are entered in **milliseconds**. |
| **/lighttoys/start/seconds** **\<int32:show(1-4)\>** \<int32:time\> \<int32:delay\> \<int32:brightness\> \<int32:duration\> | **/lighttoys/start/(1-4)** /timeseconds/(int32) /delayseconds/(int32) /brightness/(1-6) /durationseconds/(int32) | Alternative format to start the show. All timing parameters are are entered in **seconds**. |
| **/lighttoys/stop** | **/lighttoys/stop** | Sends out a command to stop any running show. |
| **/lighttoys/brightness** **\<int32:level(1-6)\>** | **/lighttoys/brightness/(1-6)** | Sets the brightness level 1-6 on all paired FT units. |
| **/lighttoys/color** **\<int32:red1(0-255)\>** **\<int32:green1(0-255)\>** **\<int32:blue1(0-255)\>** **\<int32:red2(0-255)\>** **\<int32:green2(0-255)\>** **\<int32:blue2(0-255)\>** | **/lighttoys/color** /r1/(0-255) /g1/(0-255) /b1/(0-255) /r2/(0-255) /g2/(0-255) /b2/(0-255) | Sends out a command to set the A and B segments to a specific color combination on all paired FT devices. |
| **/lighttoys/dynab** **\<int32:selAB(0-2)\>** | **/lighttoys/dynab/(0-2)** | Sets the currently controlled segment. 0 = AB, 1 = A, 2 = B. |
| **/lighttoys/dyncolorr** **\<int32:level(0-255)\>** | **/lighttoys/dyncolorr/(0-255)** | Sets the red color value of the controlled segment. |
| **/lighttoys/dyncolorg** **\<int32:level(0-255)\>** | **/lighttoys/dyncolorg/(0-255)** | Sets the green color value of the controlled segment. |
| **/lighttoys/dyncolorb** **\<int32:level(0-255)\>** | **/lighttoys/dyncolorb/(0-255)** | Sets the blue color value of the controlled segment. |
| **/lighttoys/dynmode** **\<int32:mode(1-5)\>** \<int32:position(1-8)\> | **/lighttoys/dynmode/(1-5)** /pos/(1-8) | Sets the currently controlled dynamic effect and optionally also the position in it. |
| **/lighttoys/dynpos** **\<int32:position(1-8)\>** | **/lighttoys/dynpos/(1-8)** | Sets the position inside the dynamic effect. |
| **/lighttoys/dynspeed** **\<int32:mode(1-8)\>** | **/lighttoys/dynspeed/(1-8)** | Sets the speed 1-8 of the current dynamic effect. |

| | | |
|---|---|---|
| /lighttoys/newpair | /lighttoys/newpair | Starts a new pairing process (all previously paired units will be forgotten). |
| /lighttoys/addtogroup | /lighttoys/addtogroup | Pairs extra unit(s) to the existing paired group. |
| /lighttoys/stoppair | /lighttoys/stoppair | Stops the ongoing pairing process. |
| /lighttoys/random<br><int32:delay/(1000-)><br><int32:speed(1-8)><br><int32:brightness(1-6)><br><int32:mode(1-3)> | /lighttoys/random<br>/delay/(int32)<br>/speed/(1-8)<br>/brightness/(1-6)<br>/mode/(1-3) | Starts a random shuffle of dynamic effects. 'Delay' is the duration of each effect in milliseconds (default is 8000, minimum 1000).<br>'Mode' selects which segment A+B/A/B will be randomized:<br>type 1 : A+B together<br>type 2 : A & B separately<br>type 3 : random mix of 1 & 2 |

Consult your other controlling software application how to implement the OSC functionality and configure it per the table above.

To enable the OSC protocol in LtComposer and start using it, first go to the menu **Tools** and select **Use OSC**. Active listening to OSC messages will be shown in the status bar:

OSC ON

To configure the OSC local port number and to debug OSC messages & check them for possible errors, open the **OSC Console** in the same Tools menu:
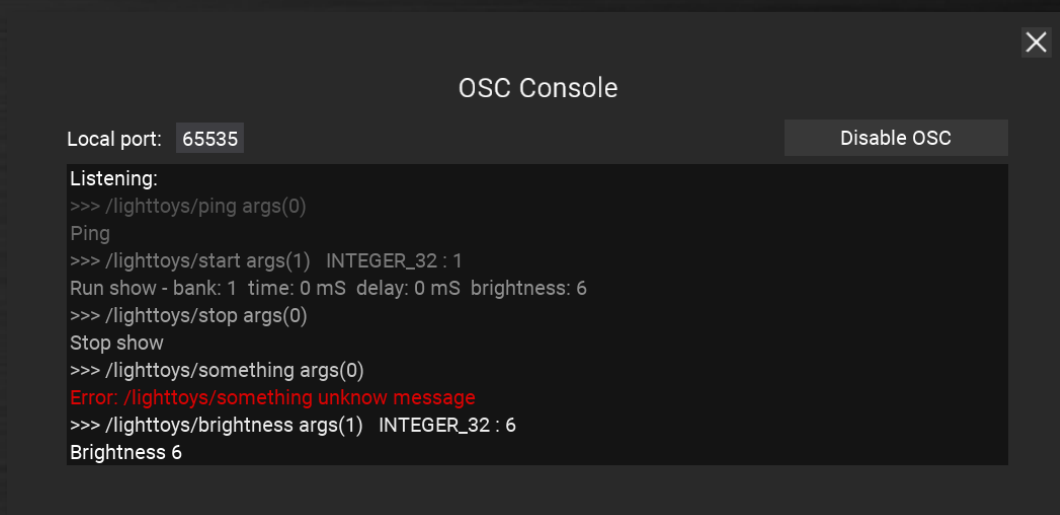


*OSC console with several valid and one invalid command received*

## TouchOSC app

Our team has prepared a simple OSC control interface for the popular TouchOSC software, which can be run on mobile phones, tablets or desktops across various platforms. TouchOSC is a paid software, but we are convinced that the low entry cost is well worth the powerful features.
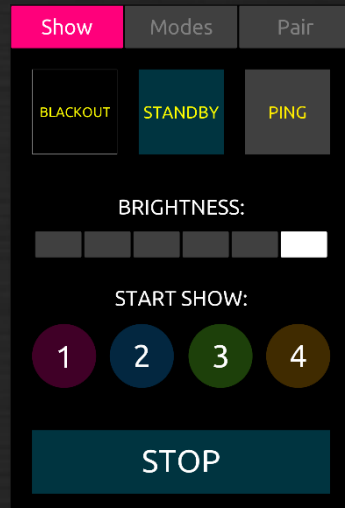


*Lighttoys OSC control v1.1 interface*

You can download the **Lighttoys OSC control v1.1** from here. Please refer to the official TouchOSC manual how to setup the connection. In the **Connections** window, please make sure the UDP protocol is selected, IP address of the host (the computer running LtComposer) is correctly filled in, and that you are using the same Port number in TouchOSC and LtComposer OSC console:
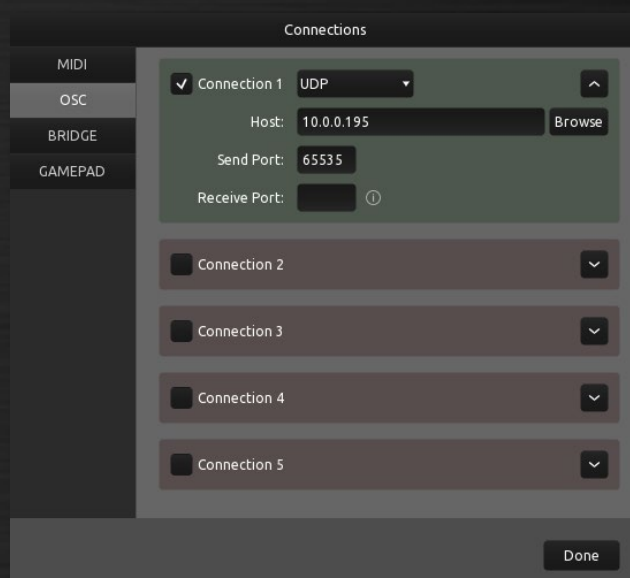


*Example of configured OSC connection in TouchOSC*

After proper setup, when you run the OSC interface using the play button at the top ribbon, clicking on the buttons should register in LtComposer OSC console. The TouchOSC interface is then ready to use.

# Afterword

*"Team Pyroterra Lighttoys wishes you a lot of fun and amazing acts created with the Lighttoys Composer!"*



*www.lighttoys.cz*

# List of keyboard shortcuts

## Windows

**General:**

| | |
|---|---|
| F1 | show help |
| ctrl + n | new project |
| ctrl + o | open project |
| ctrl + s | save project |
| ctrl + shift + s | save project as |
| ctrl + i | import project |
| ctrl + r | refresh image library |
| d | open devices menu |
| j | open live control |

**Composition:**

| | |
|---|---|
| ctrl + t | add new track |
| delete (backspace) | delete element(s) |
| ctrl + delete (backspace) | delete track(s) |
| ctrl + click | add to selection |
| shift + click | range selection |
| ctrl + a | select all elements |
| ctrl + z | undo last step |
| ctrl + y | redo last step |
| ctrl + shift + z | redo last step (secondary) |
| ctrl + c | copy element(s) |
| ctrl + v | paste element(s) |
| ctrl + x | cut element(s) |
| ctrl + d | duplicate element(s) |
| ctrl + mouse drag | duplicate element(s) |

**Timeline:**

| | |
|---|---|
| spacebar | pause / play |
| enter | pause / play (with cursor return) |
| s / shift + spacebar | stop / play from top |
| | |
| arrows | select element |
| ctrl + arrows | move element |
| ctrl + shift + arrows | resize element |
| alt + left/right | precisely move the cursor |
| | |
| page + up/down | scroll timeline |
| home / end | go to beginning / end |
| mouse wheel | scroll timeline to the left / right |
| shift + mouse wheel | scroll timeline vertically |
| | |
| ctrl/alt + mouse wheel, alt + up/down | zoom in / out |

| | |
|---|---|
| m | add marker to the cursor position |
| h | hide / show markers |
| v | collapse / expand tracks |
| c | split elements on time cursor |
| x | toggle edited color |
| shift + x | switch element colors |
| r | run on devices |
| l | toggle lock sizing |
| k | toggle keep original size |
| 0-9 | select active view |
| ctrl + 1-9 | set number of repeats to 1-9x |

**Preview:**

| | |
|---|---|
| p | cycle preview styles |
| \ | pause / play dynamic preview |

**Upload:**

| | |
|---|---|
| u | open upload dialog |
| 1-4 | upload to bank 1-4 |
| up / down | select track |

**Color picker:**

| | |
|---|---|
| shift + mouse drag | limit hue to primary + secondary + tertiary colors of the RYB color model only |

# MacOS

**General:**

| | |
|---|---|
| F1 | show help |
| ⌘ + n | new project |
| ⌘ + o | open project |
| ⌘ + s | save project |
| ⌘ + shift + s | save project as |
| ⌘ + i | import project |
| ⌘ + r | refresh image library |
| d | open devices menu |
| j | open live control |

**Composition:**

| | |
|---|---|
| ⌘ + t | add new track |
| delete (backspace) | delete element(s) |
| ⌘ + delete (backspace) | delete track(s) |
| ⌘ + click | add to selection |
| shift + click | range selection |
| ⌘ + a | select all elements |
| ⌘ + z | undo last step |

| | |
|---|---|
| ⌘ + y | redo last step |
| ⌘ + shift + z | redo last step (secondary) |
| ⌘ + c | copy element(s) |
| ⌘ + v | paste element(s) |
| ⌘ + x | cut element(s) |
| ⌘ + d | duplicate element(s) |
| ⌘ + mouse drag | duplicate element(s) |

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| home / end | go to beginning / end |
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| shift + mouse wheel | scroll timeline vertically |
| | |
| ⌘/alt + mouse wheel, alt + up/down | zoom in / out |
| | |
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| h | hide / show markers |
| v | collapse / expand tracks |
| c | split elements on time cursor |
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| shift + x | switch element colors |
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| p | cycle preview styles |
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**Upload:**

| | |
|---|---|
| u | open upload dialog |
| 1-4 | upload to bank 1-4 |
| up / down | select track |

**Color picker:**

shift + mouse drag

limit hue to primary + secondary + tertiary colors of the RYB color model only