

## User manual for software



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# 1. Introduction

Light Stream is a convenient and powerful software for creating light compositions and previewing them in 2D and 3D modes. Light Stream can be used together with Light Stream Player or separately.

## 1.1 Glossary

- **Player** – is an independent controller for controlling lighting, with the ability to play back scenarios created in Light Stream.
- **Converter** – is a device that receives data via the Art-Net protocol and sends it to lighting fixtures. The Converter can be controlled using the Player or a PC with installed Light Stream. Art-Net Converter usually has 2 or more ports for connecting lighting fixtures.
- **Port** – is one of the ports of the Converter, to which lighting fixtures are connected. One port of the Converter can transmit data from one, two, or more universes of DMX depending on the settings of the Converter.
- **DMX** – is a data transmission protocol for controlling lighting fixtures. Data is transmitted in 512-byte units.
- **SPI** – is a serial peripheral interface for transmitting data to control lighting fixtures. Depending on the type of Converter and lighting fixtures, data may be transmitted in blocks of 512, 1024, or 2048 bytes.
- **Art-Net** – is a bi-directional computer communication protocol for transmitting DMX512 and RDM data, allowing connections and data exchange between two or more devices connected to the network via Ethernet cable, as well as using switches or Wi-Fi signals, and also allowing device querying and configuration.
- **Universe** - each space of 512 DMX channels in the Art-Net protocol is called a Universe. Each node (device) can support a maximum of 1024 channels per IP address (2 Universes or super-universe). Every 16 Universes are combined into a subnet (Subnet — do not confuse with a subnet mask). A group of 16 subnets (256 Universes) forms a network (Net). The maximum number of networks is 128. Therefore, in the Art-Net protocol, the maximum number of nodes can reach 32768 (256 Universes x 128 Networks), each with 512 DMX channels.

## 1.2 System requirements

### Minimum system requirements:

- Processor: **Intel i3 / Ryzen 5**
- RAM: **8 Gb**
- Graphics card: **GTX1050 and above or AMD Radeon RX 5000**

### Recommended system requirements:

- Processor: **Intel i7 / Ryzen 7**
- RAM: **16 Gb**
- Graphics card: **GTX1650 and above or AMD Vega 8**

### Support for other components:

Video cards supporting OpenGL 4.6, as well as processors with an integrated graphics core supporting OpenGL 4.6 UHD Graphics for 12th Gen Intel® Processors, Iris® Xe Graphics, Iris® Plus Graphics, HD Graphics 610, Iris® Plus Graphics 550 and above

Including support for the Arc series processor models: all models,

AMD Arctic Islands (RX 500) Series video card models: all models,

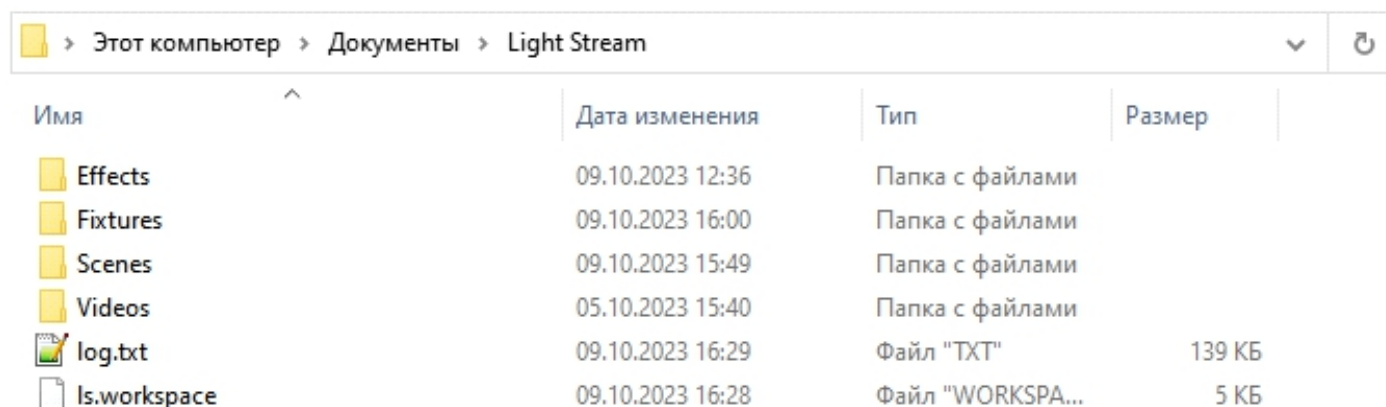
Radeon VII Series video card models: all models

AMD processors with AMD Vega, Navi 1 and above graphics.

### 1.3 System files and paths

After installing the program, a working folder is created in the 'Documents' folder of the user where the program was installed named Light Stream. Other folders are located in this folder.

- **Effects** – library of effects used in the program.
- **Fixtures** – a library of devices that are built into the program, as well as user-defined devices, which are saved to a separate UserFixtures.lslib file.
- **Scenes** – demo projects.
- **Videos** – demo videos.
- **Log.txt** – a file containing the logs of the program, which may be useful for developers in case of any problems.
- **Is.workspace** – a file with configured workspaces.



Имя	Дата изменения	Тип	Размер
Effects	09.10.2023 12:36	Папка с файлами	
Fixtures	09.10.2023 16:00	Папка с файлами	
Scenes	09.10.2023 15:49	Папка с файлами	
Videos	05.10.2023 15:40	Папка с файлами	
log.txt	09.10.2023 16:29	Файл "TXT"	139 КБ
Is.workspace	09.10.2023 16:28	Файл "WORKSPA..."	5 КБ

### 1.4 Links

Official website <https://lightstream.pro>

The latest version of the documentation for the software <http://wiki.lightstream.pro>

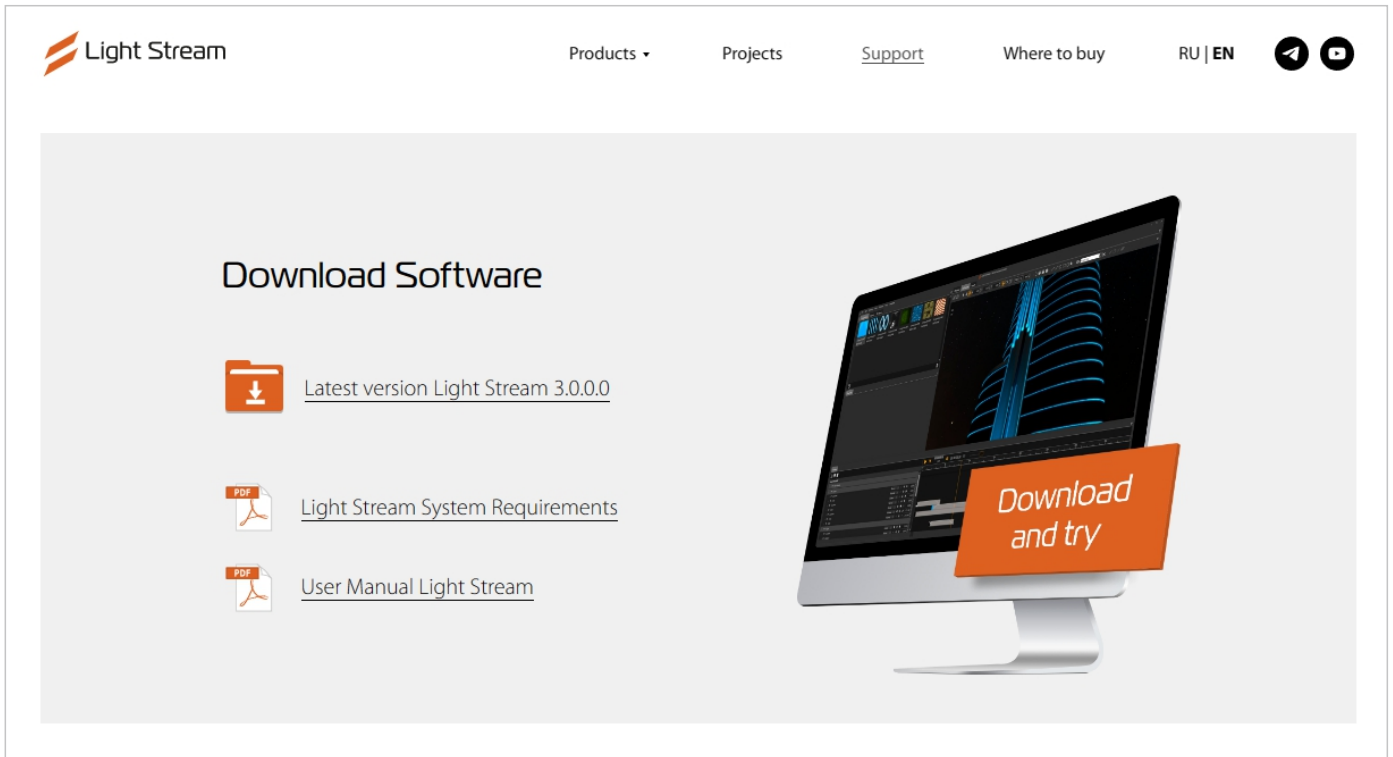
Telegram chat with support <https://t.me/lightstreampro>

Official YouTube channel <https://www.youtube.com/@lightstreampro>

## 2. Quick start

### 2.1 Program loading

The latest version of the program can always be downloaded from the website at the following address <https://lightstream.pro/support>



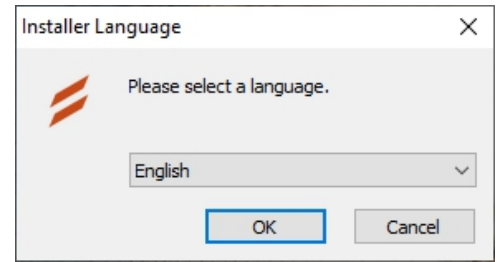
On the same page, below, you can find additional video tutorials on the Light Stream program. To download, click the «**Download and try**» button or the «**Latest vtrsion Light Stream**» icon, select where to save the installation file, and wait for the download to complete.

### 2.2 Program installation

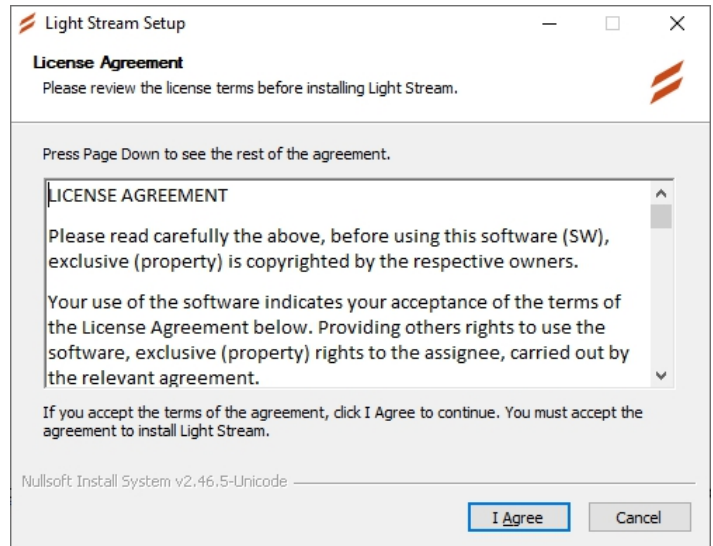
Click the left mouse button on the installation file.



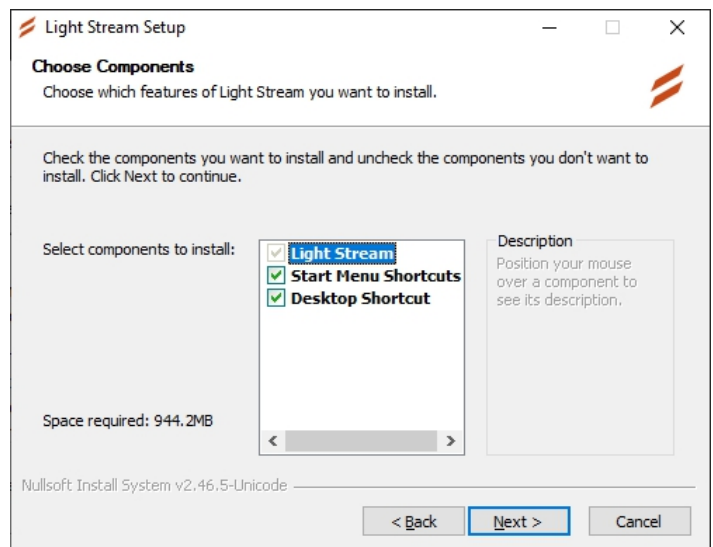
Then, the installation wizard starts, and the first window appears asking for the installation language. Select the desired language and click «**OK**».



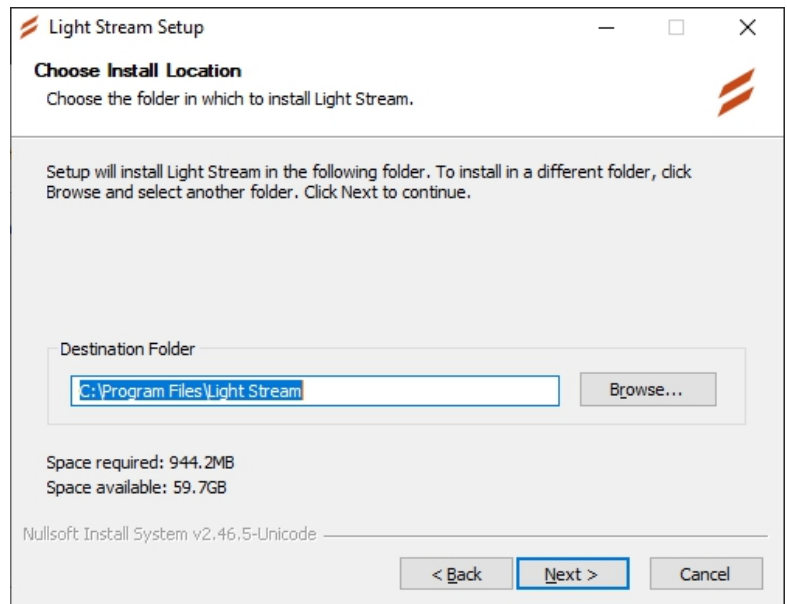
Next, on the first page, there will be a license agreement. Read the agreement and click «**I Agree**».



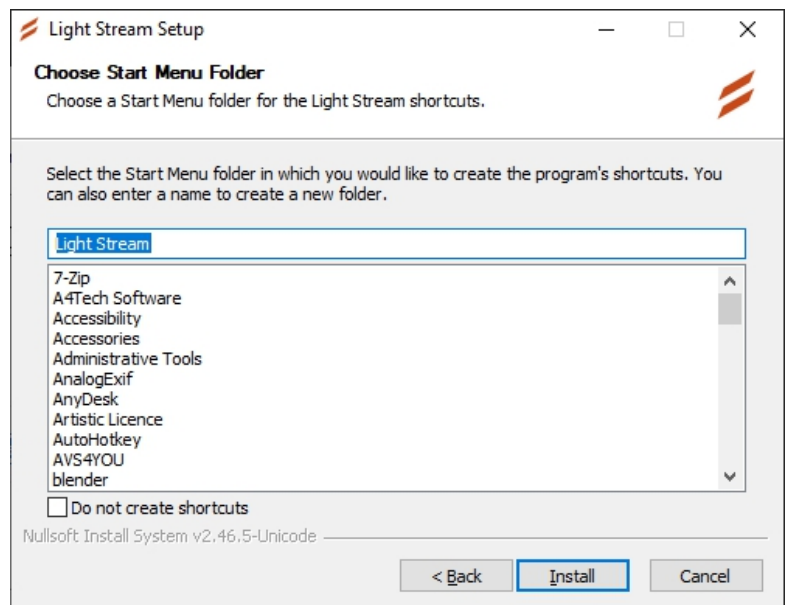
Select the components to be installed. You can leave everything as it is and click «**Next >**».



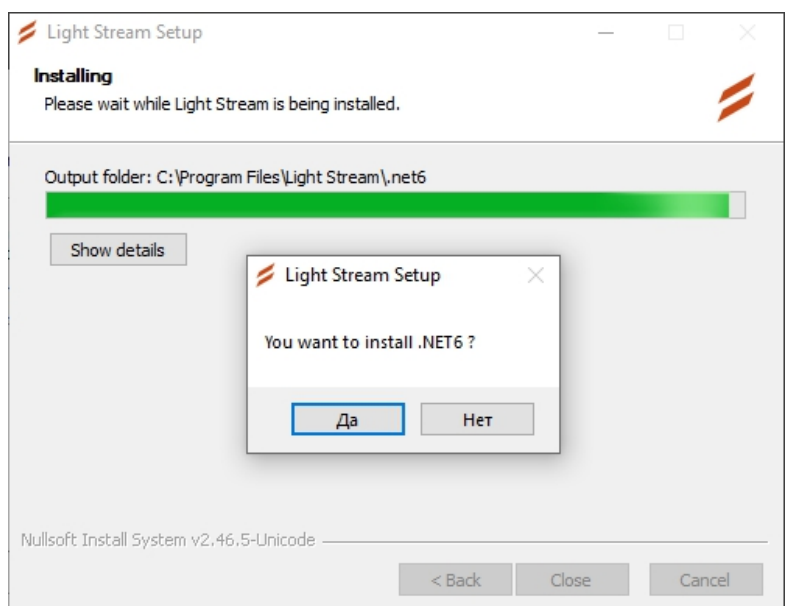
Set the installation path and click **«Next >»**.



Set the name of the folder in the Start menu or click the checkbox below «Do not create shortcuts» to not create such a folder in the Start menu and click **«Install»**.

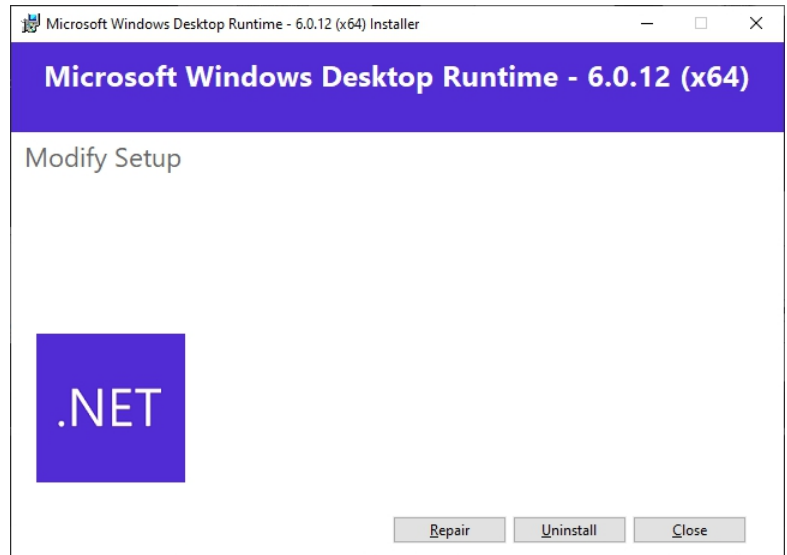


After completing the installation, the program will also ask you to install an additional library Microsoft .NET 6, necessary for the proper work of Light Stream. Click «Yes» to install, or «No» if .NET 6 is already installed. If you are not sure if it is installed, click «Yes».

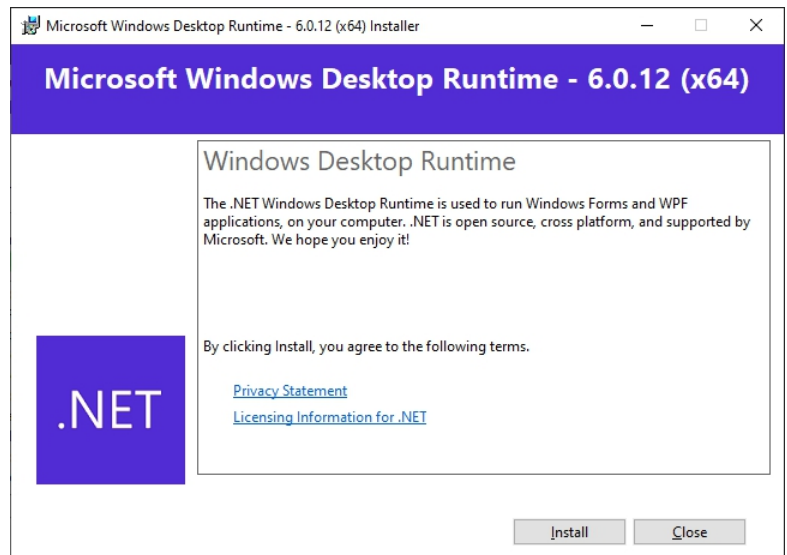




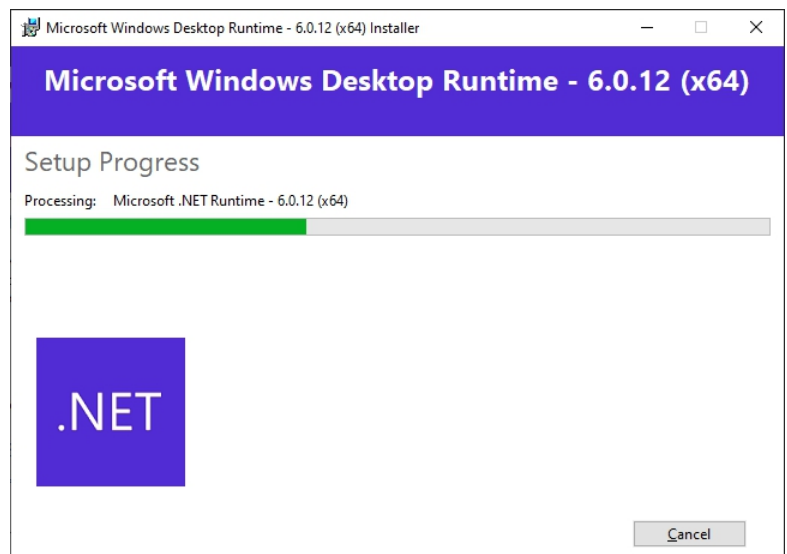
If you already have .NET 6, the special installer will inform you of this and offer you either «Repair» or «Uninstall» this library, in which case you can just click «**Close**».



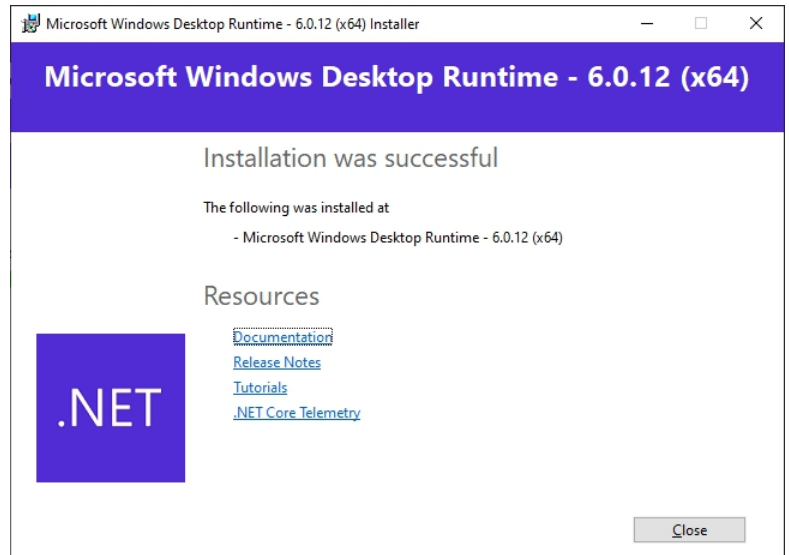
If you have not installed .NET and you clicked «Yes», a window will open up to install .NET 6, click «**Install**».



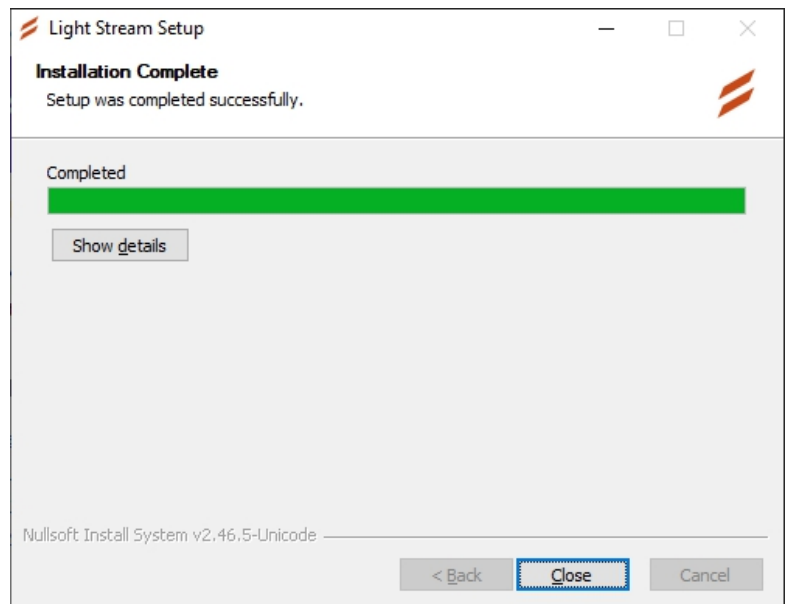
Next, the programme will install .NET 6.



At the end, click «Close».



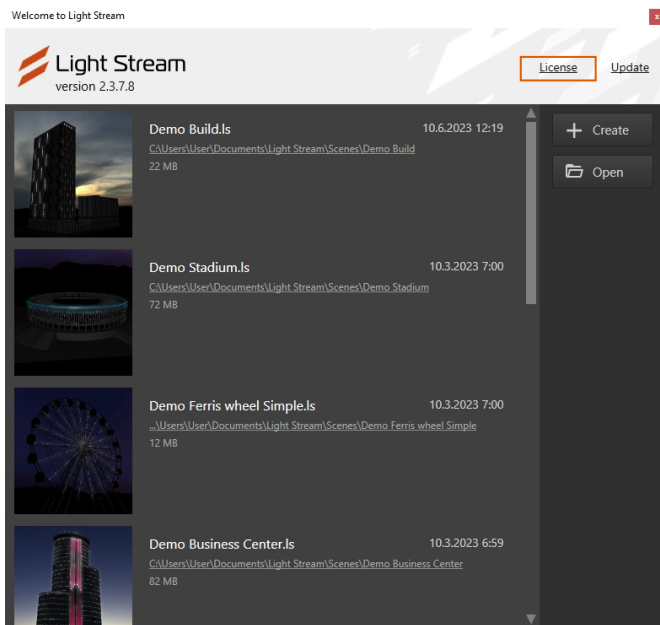
And click «Close» again, but already in the installation file Light Stream



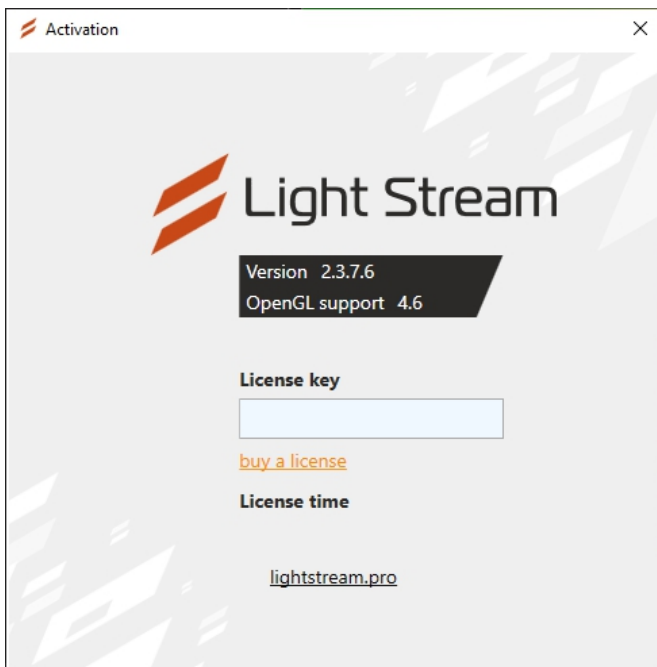
**That's it! The installation of Light Stream is complete, you can now start the program.**

## 2.3 License

To activate the license, you need to start Light Stream, and a welcome window will appear saying «**Welcome to Light Stream**». In the upper right corner of this window, you need to click on «**license**», which will open the license input window.



The «**Activation**» window will open with a field for entering the license. If the license has already been entered, you can view it here, as well as deactivate it to transfer the key to another computer. You can transfer one key up to five times.



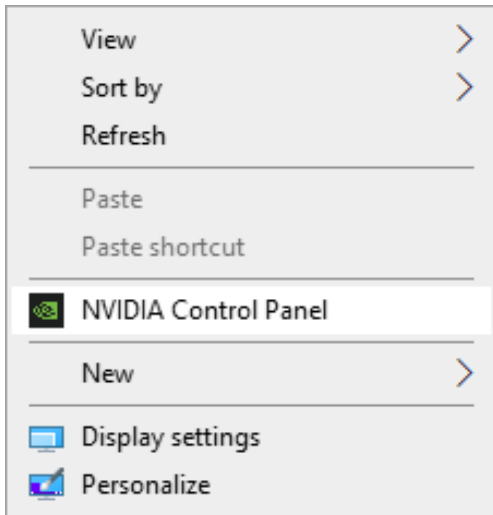
Enter the license key in the «License key» field and the program is immediately activated. If the program is not activated, it can still be used to create and edit projects, but there will be several limitations: you cannot send Art-Net signals directly from the program, exported animations will be empty, and the workspace will turn black every few seconds.

## 2.4 PC performance settings

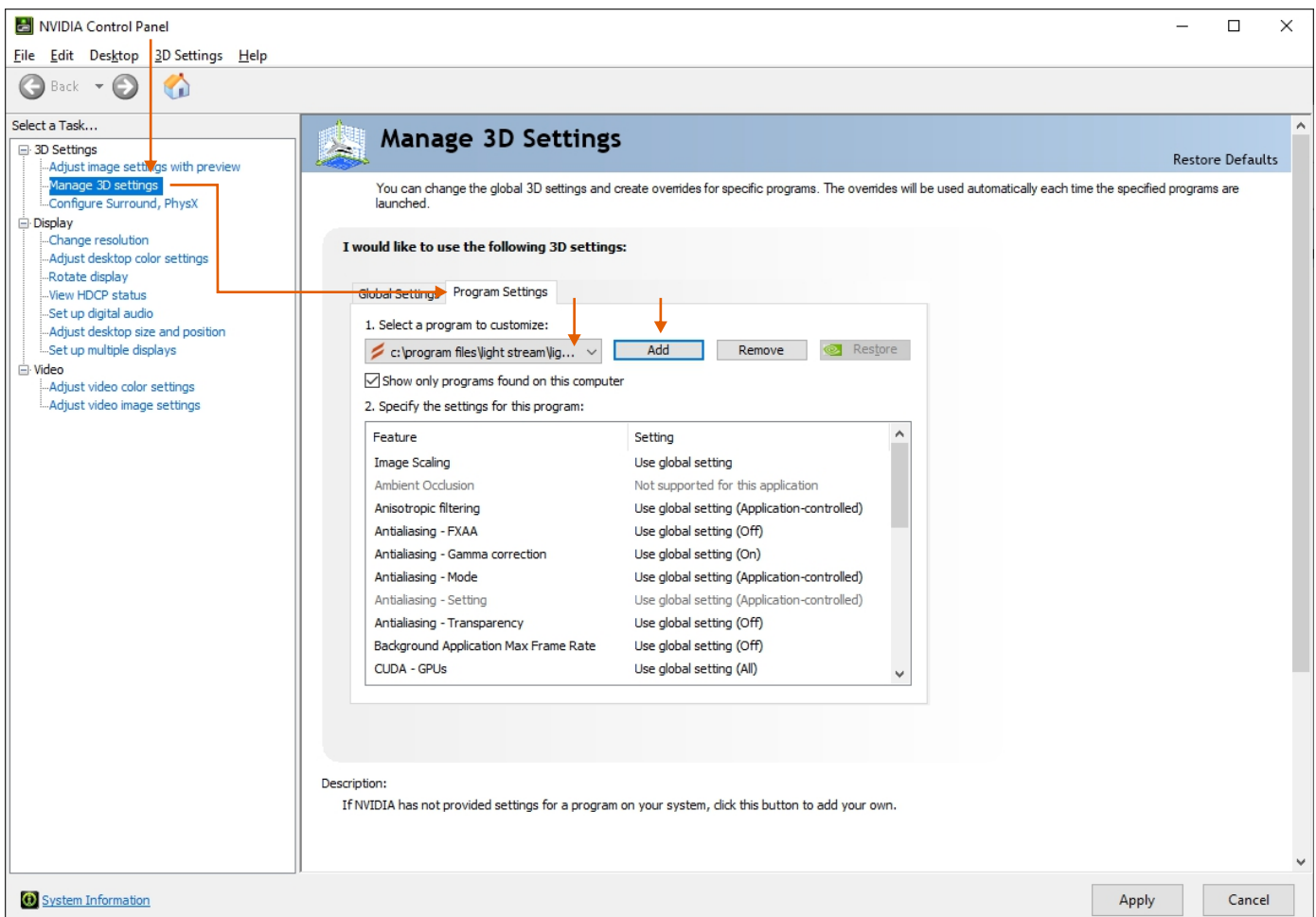
To enhance the graphics settings for NVIDIA graphics cards, you need to open the NVIDIA Control Panel and adjust the desired parameters.

Right-click anywhere on the desktop, and in the context menu that appears, select

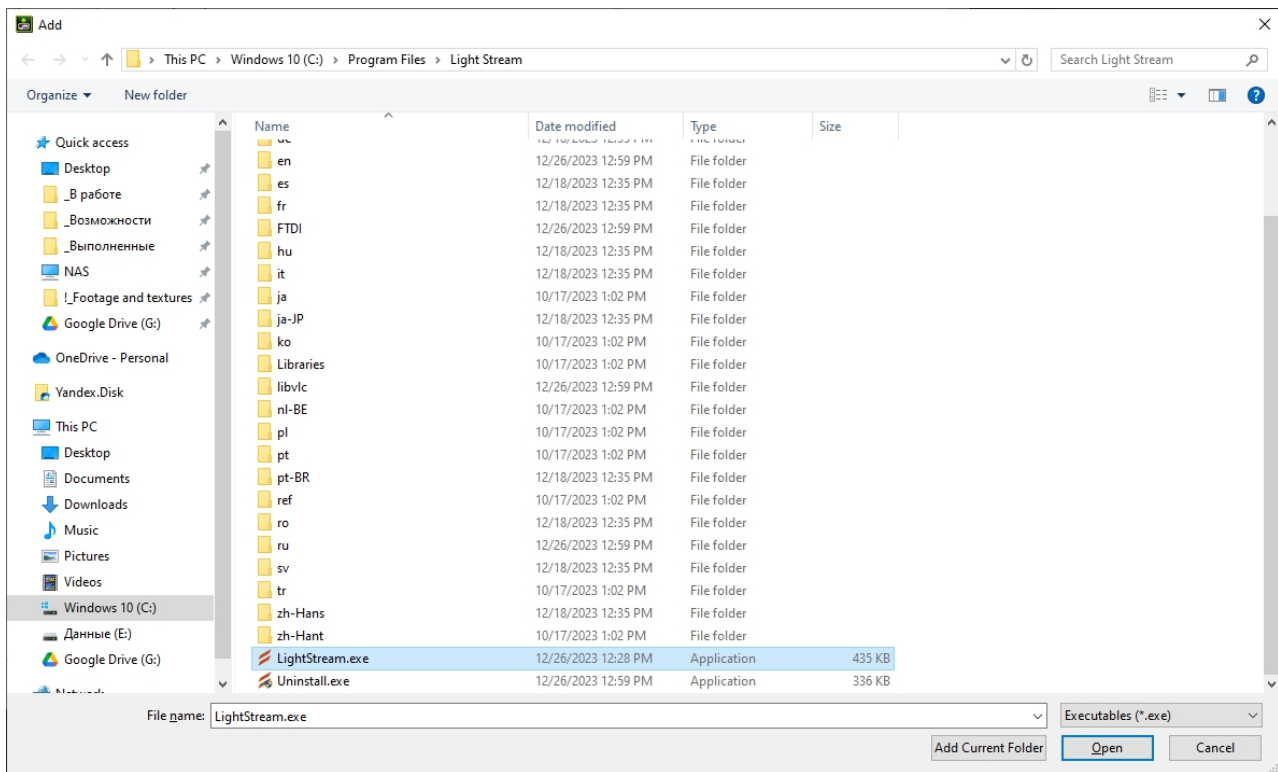
«**NVIDIA Control Panel**».



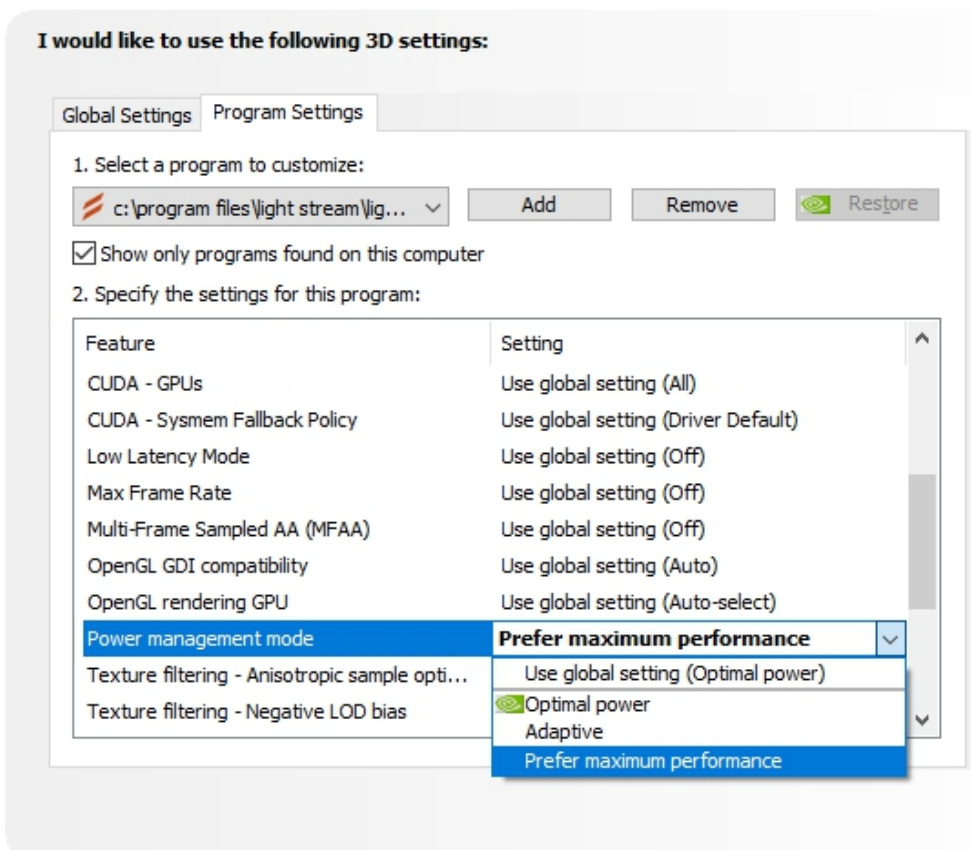
In the opened window, in the left section, select «**NVIDIA Control Panel - Manage 3D Settings** », then in the right section, switch to the «**Program Settings**» tab and select «**Light Stream**» in the list. If «Light Stream» is not in the list, click «**Add**», and a window will open with a program selection.



Go to the folder where the program was installed, by default this is **C:\Program Files\Light Stream**, then select **«LightStream.exe»** and click **«Open»**.

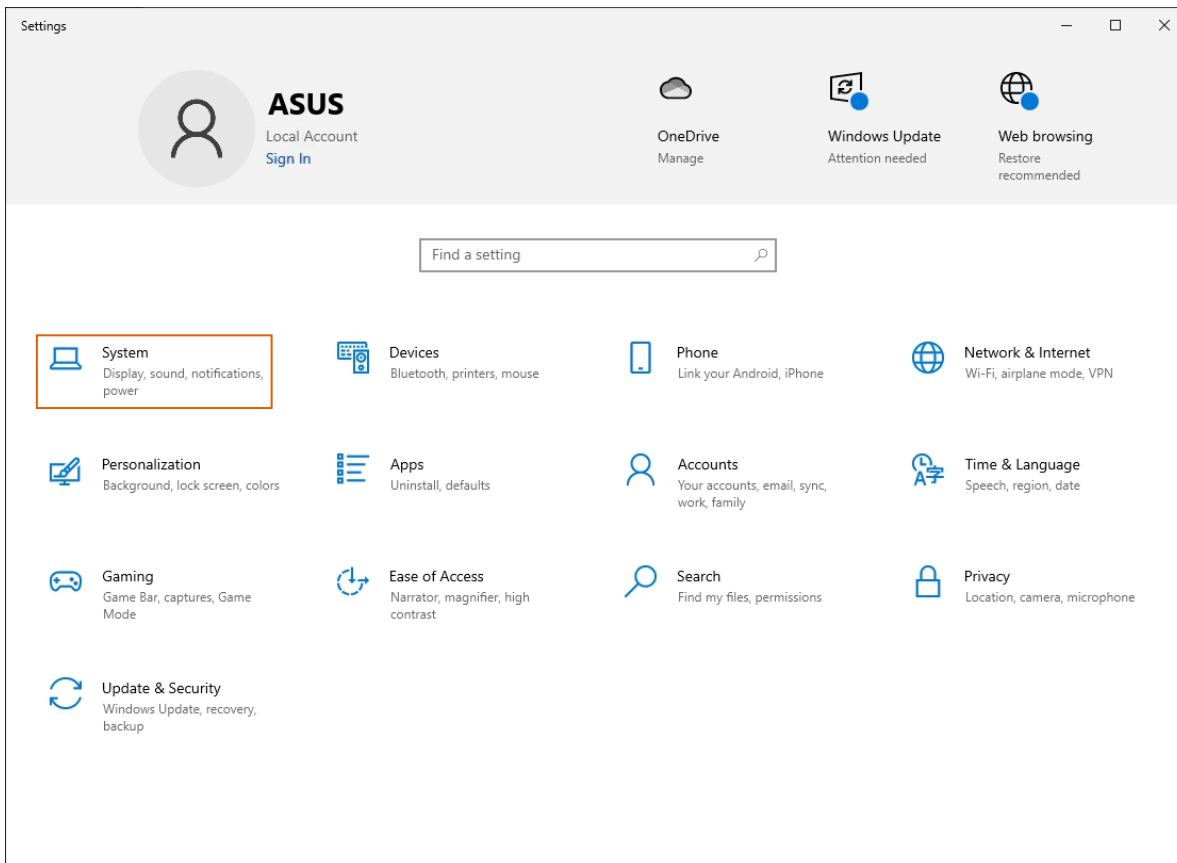


Next, in the list, find the **«Power management mode»** line and select the value **«Prefer maximum performance»**.

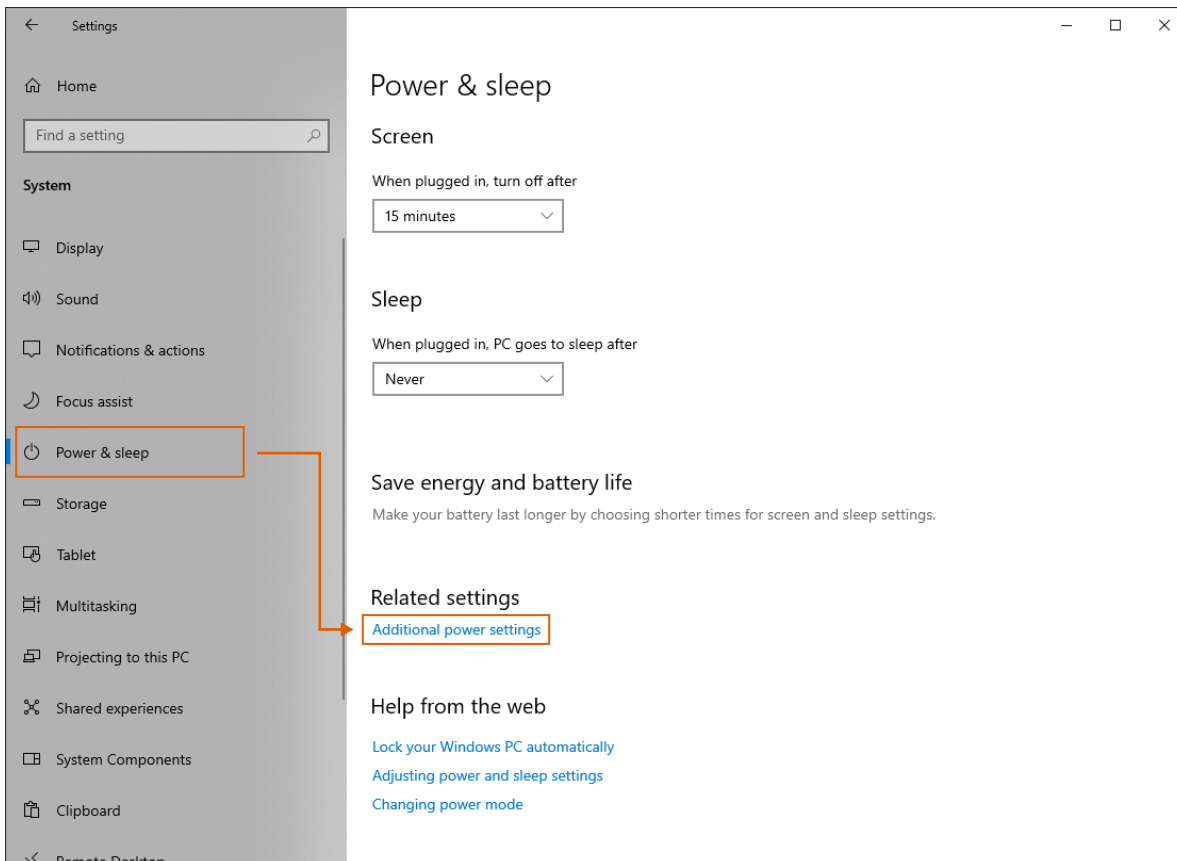


Then click **«Apply»** in the lower right corner and close this settings window.

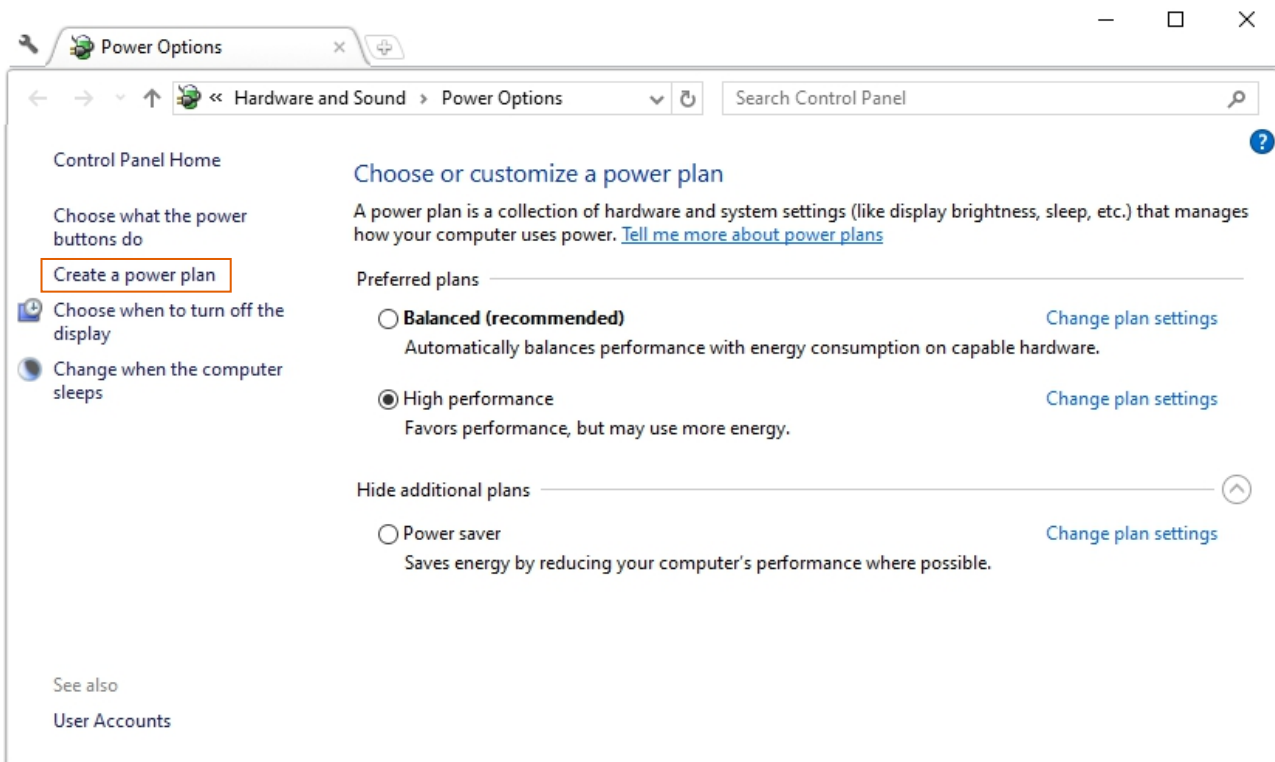
As an additional step to improve performance, you can change the power settings. Go to the settings «**System Preferences (shortcut: Win+I) - System**».



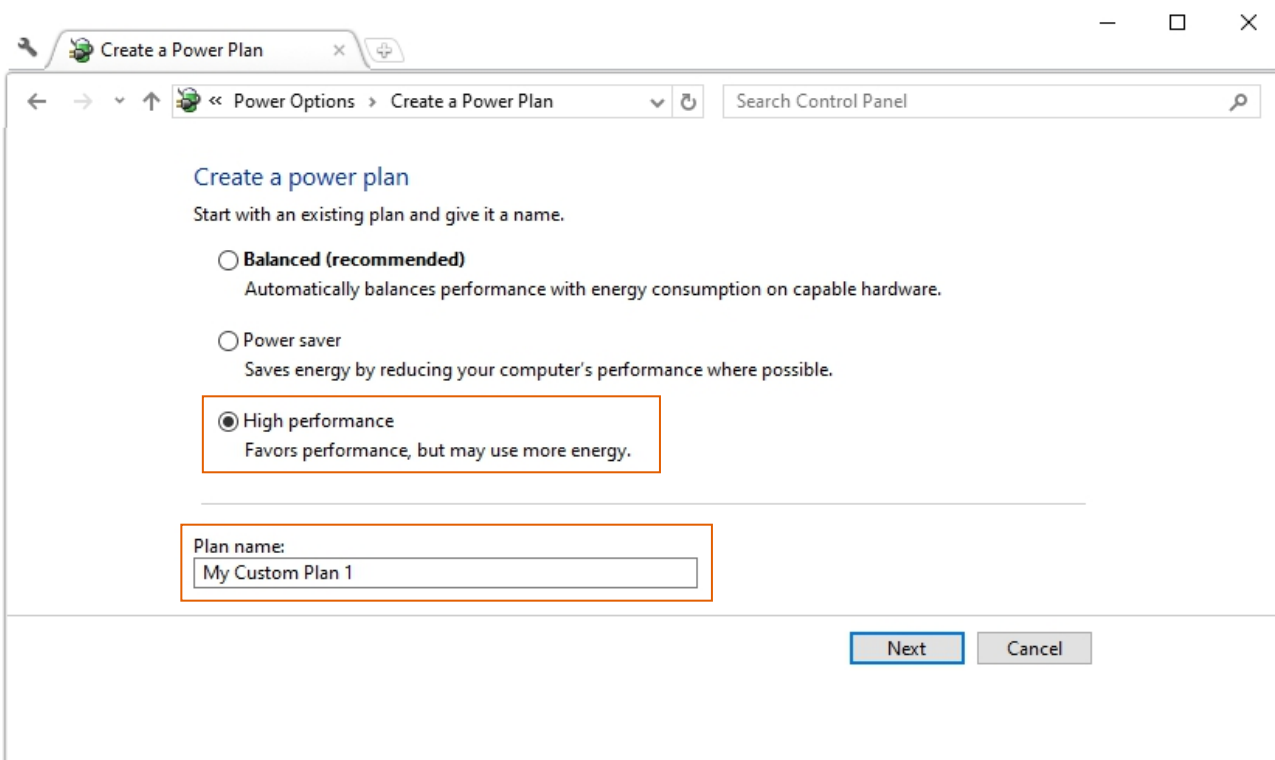
«**Power and sleep mode - (bottom) Additional power settings**»



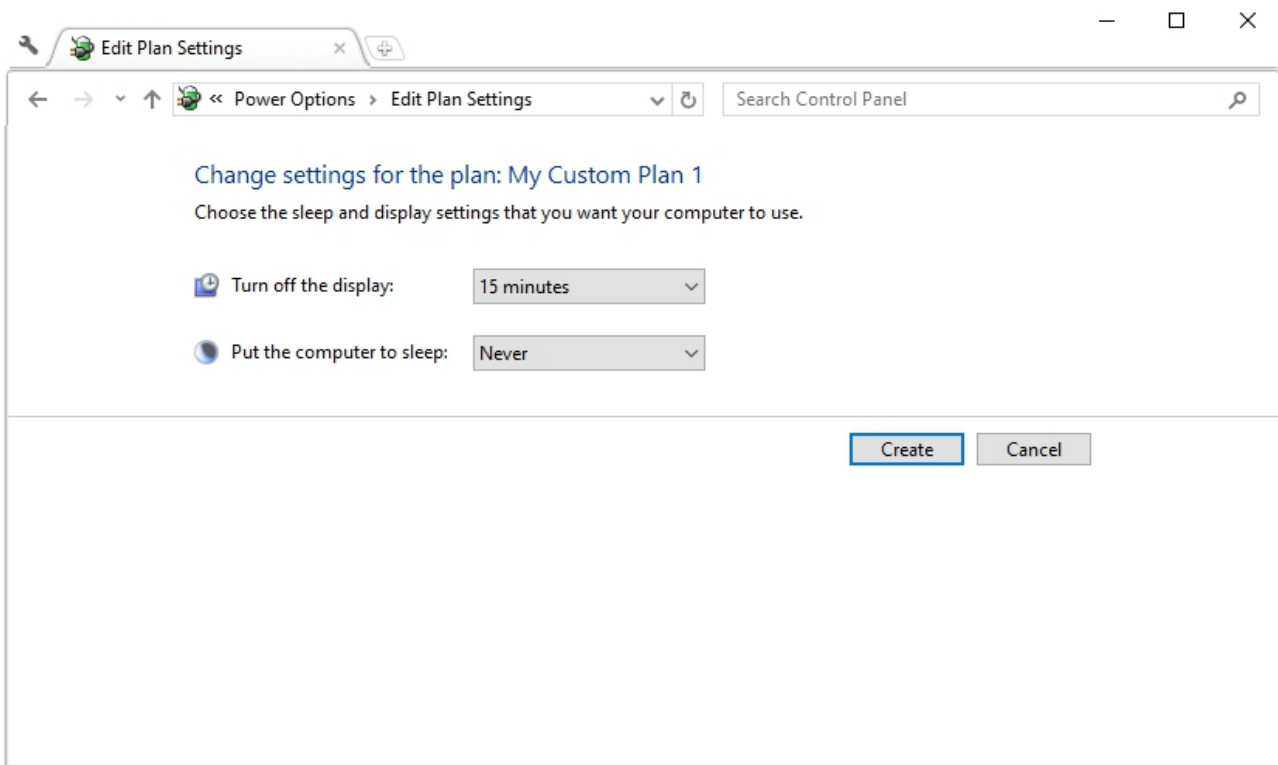
Before us are power settings. By default, the **«Balanced»** scheme is usually selected, but we can switch to another. If you see the **«High Performance»** scheme, simply select it. If it is not there, you can create it by clicking on **«Create a power plan»**.



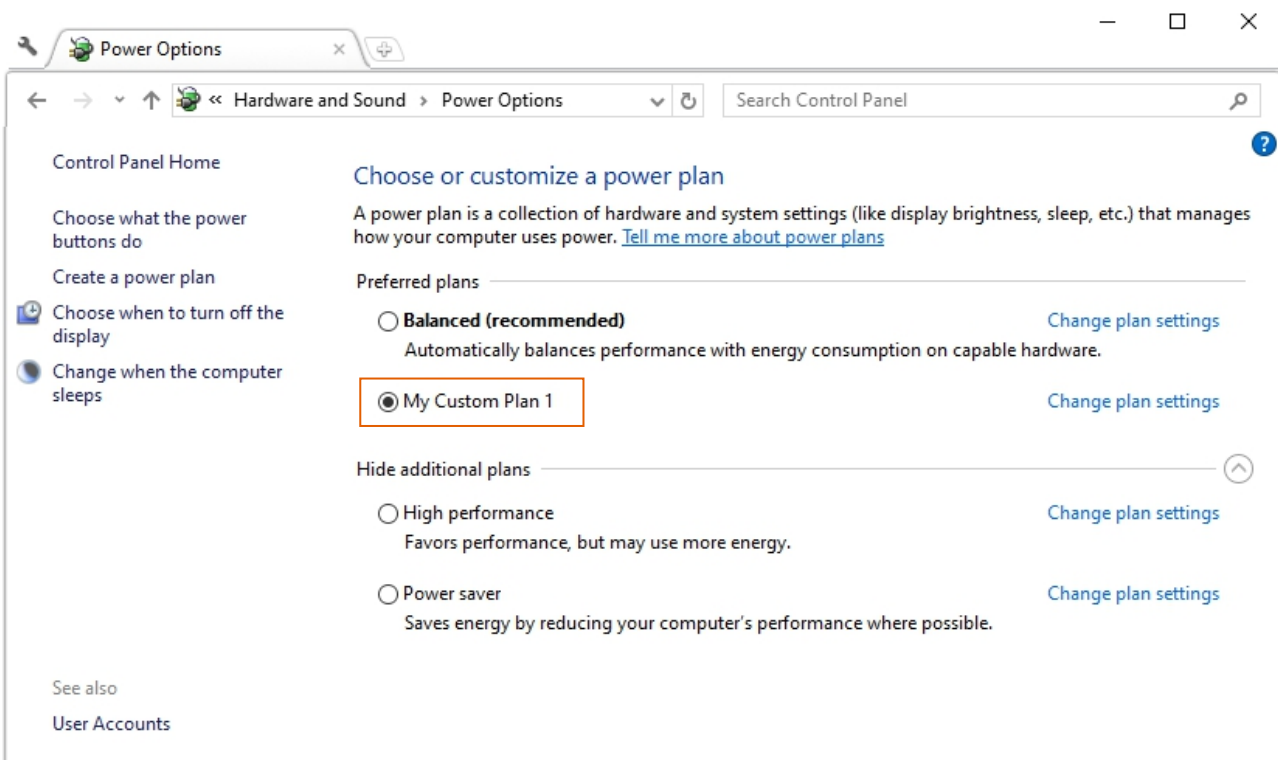
Next, select **«High Performance»** and specify the scheme name as **«My Custom Plan 1»**, click **«Next»**.



And click «**Create**».

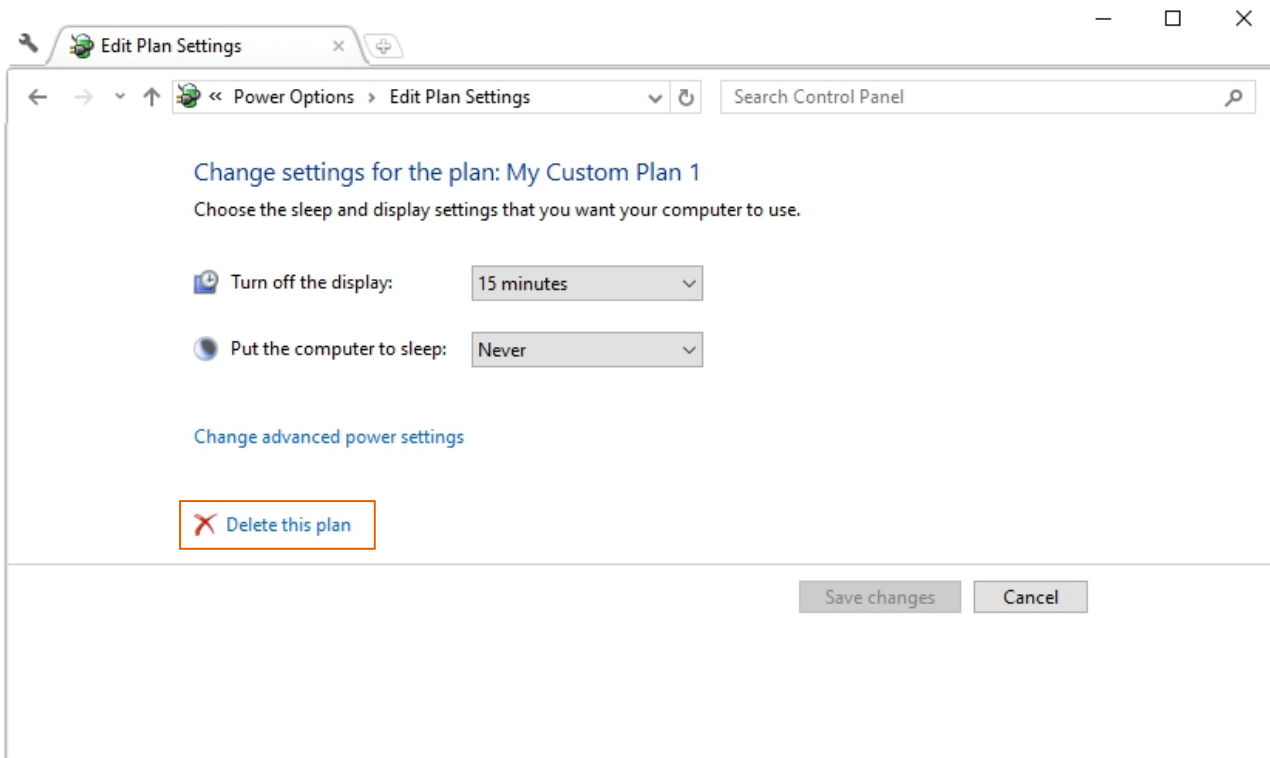


Then select the desired scheme, and that's it, the settings are complete.





If you want to delete this scheme and return the settings to their original state, you need to first select another scheme, for example «**Balanced**», and then click on «**Setting up the power supply circuit**» opposite «**High performance**». This will open the settings for this scheme, and in the lower left corner you can click «**Delete this plan**».



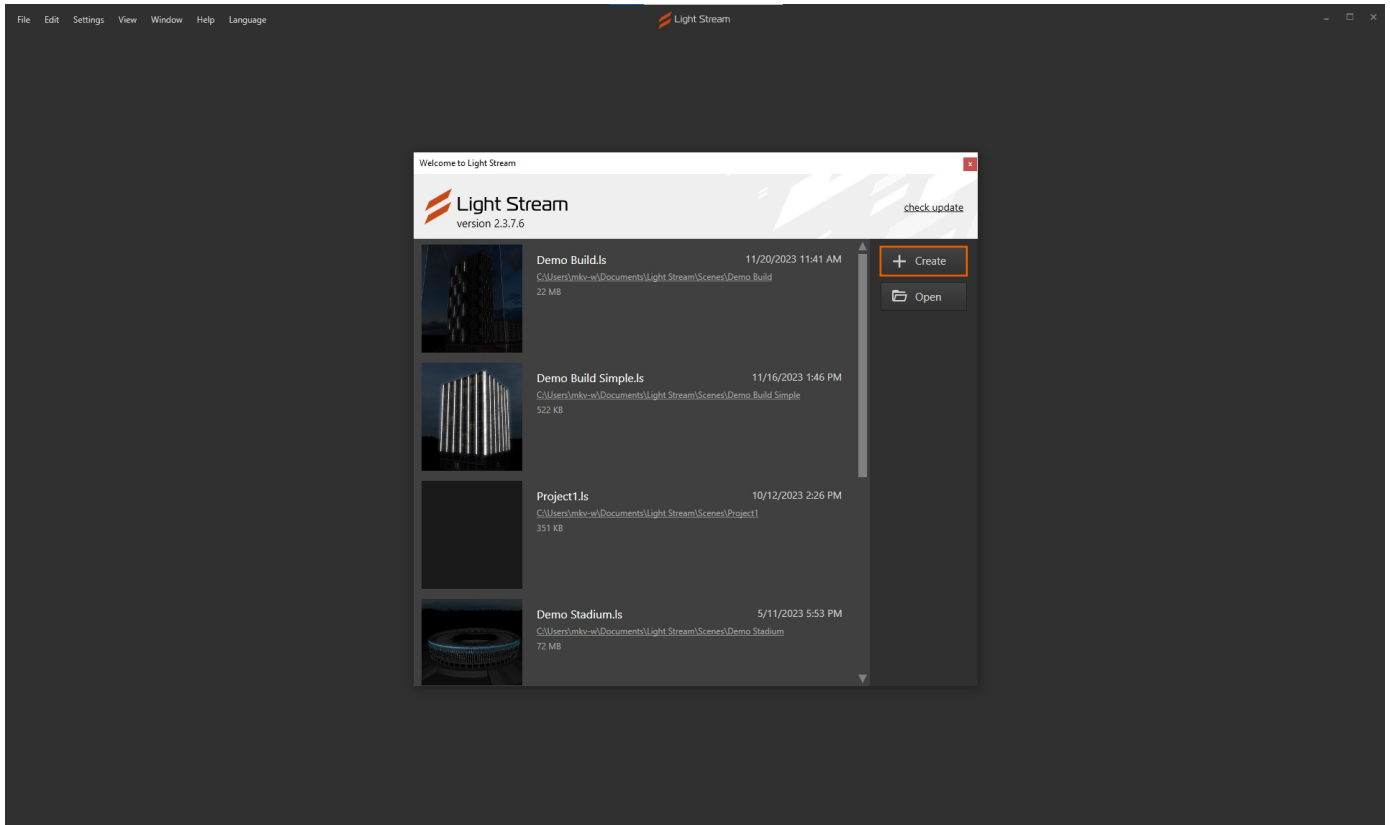
Also, if you have a laptop and there is a battery icon in the system tray, you can click on it and move the slider to the right value «**Performance**».



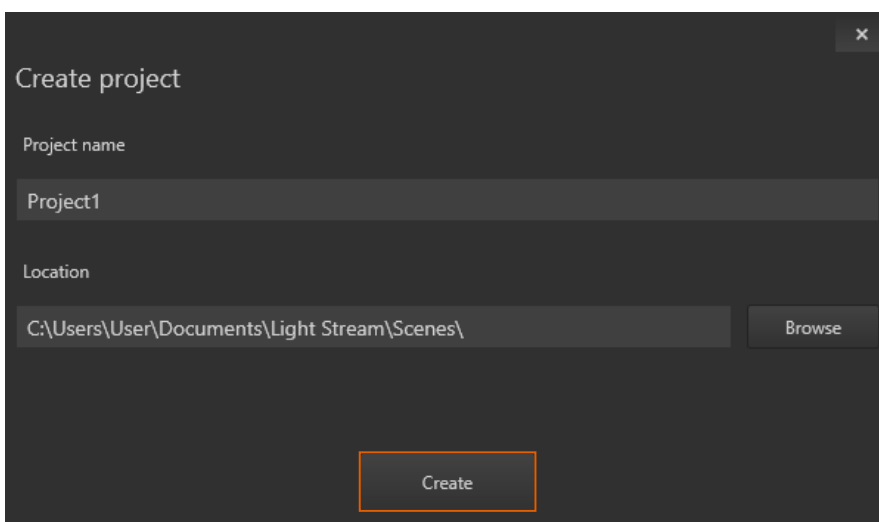
**That's it, the performance settings are complete.**

## 2.5 Workspace

When you open the program, you will see a welcome window that says «**Welcome to Light Stream**». By default, this window shows demo projects, which you can open, view, edit, and modify.



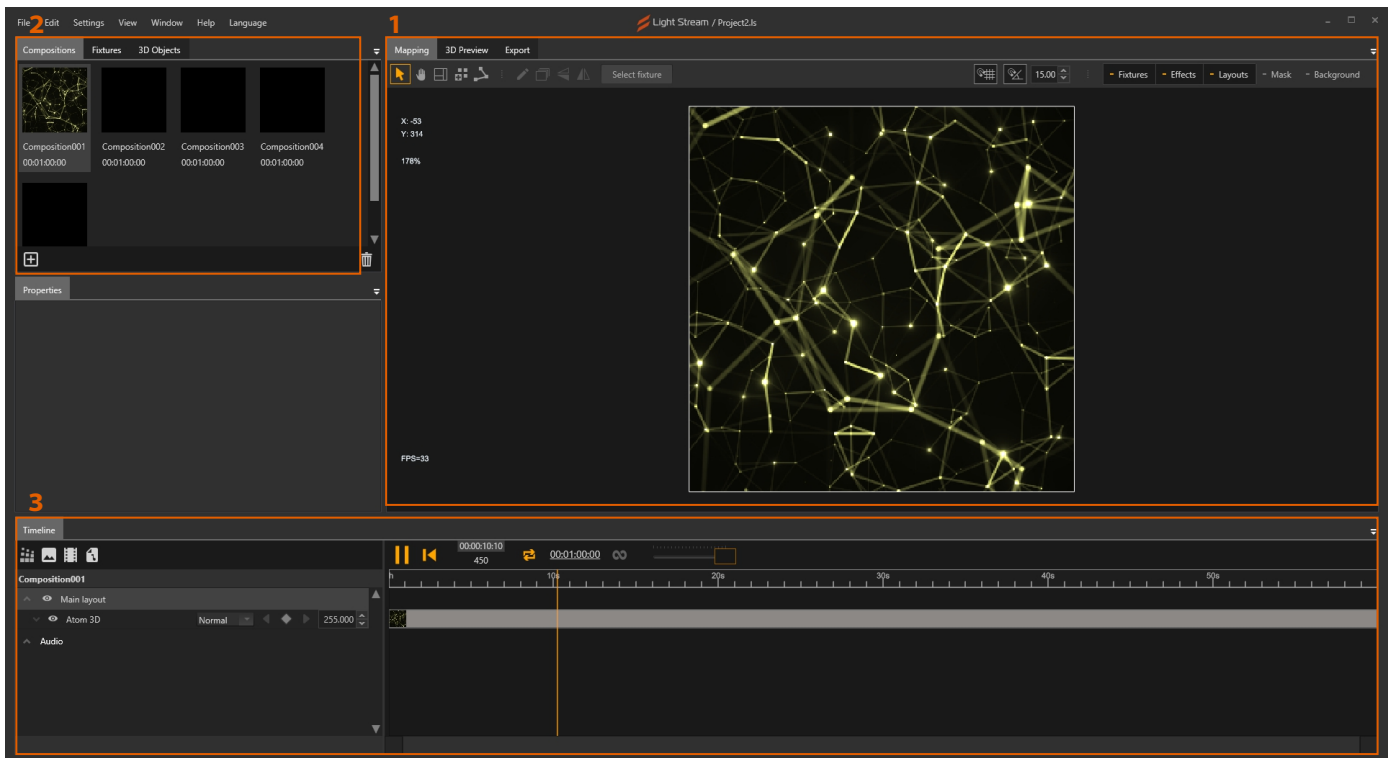
To create a new project, click «**Create**». This will open the «**Create project**» window. You can leave all the fields at their default values and click «**Create**».



**The new project opens before you.**

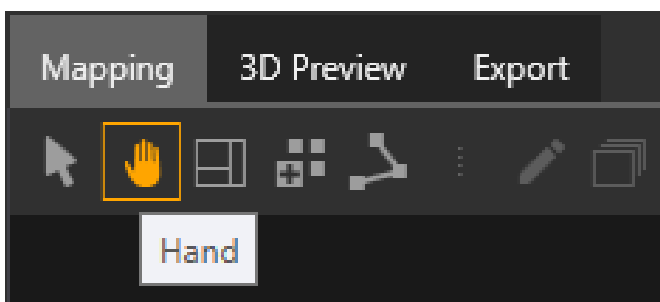
**The Light Stream interface** is divided into different windows and panels, and you can change the location and size of all windows at any time to suit your preferences.

1. In the center is the largest window called **«Mapping»**, which displays effects and contains all the devices added to the project.
2. To the left is the **«Compositions»** window, where all the compositions created in the project are located.
3. At the bottom is the **«Timeline»** window, which also displays effects used in this composition. When creating a project, a specific effect called «Atom 3D» is automatically added to the first composition, which is why we see it here. Effects can be shortened in duration and arranged in any order on top of each other. There are also other tabs of windows, but they are not relevant to us at the moment.



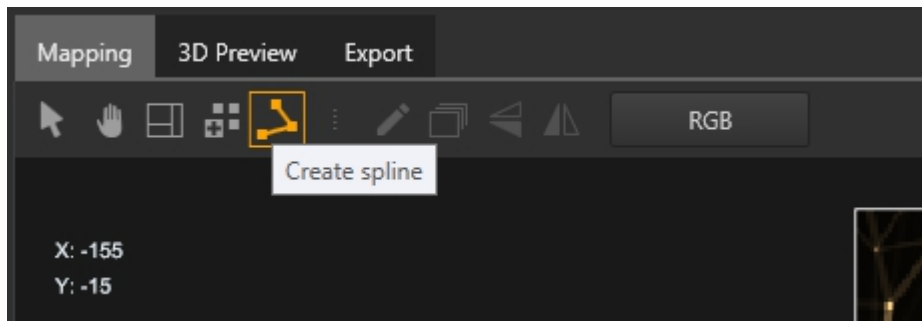
## 2.6 Fixture placement

Devices are created in the **«Mapping»** window and are also displayed in the **«Fixture»** window. All created devices will work within a single project and will be immediately available in all compositions. Moving around the **«Mapping»** window is done by holding down the mouse wheel or using the **«Hand»** tool.

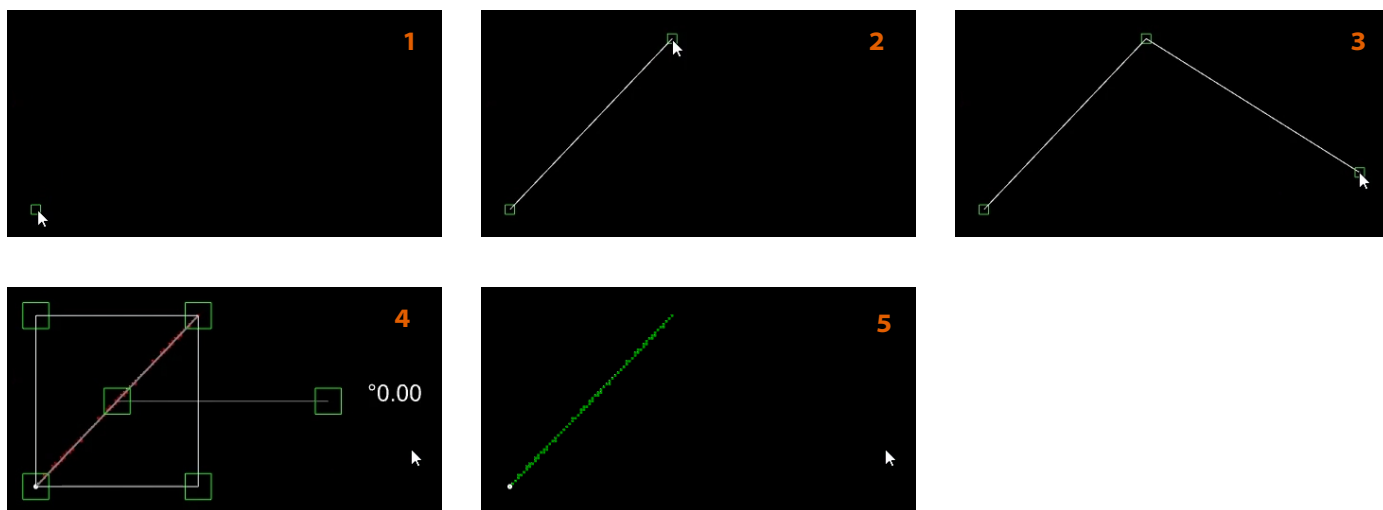


To create a new fixture, you need to select one of the tools. **«Add fixture»** (single fixture) or **«Create spline»** (several devices on a line). By default, RGB fixtures are created, as indicated by the button with the inscription «RGB». For now, we will leave everything as it is.

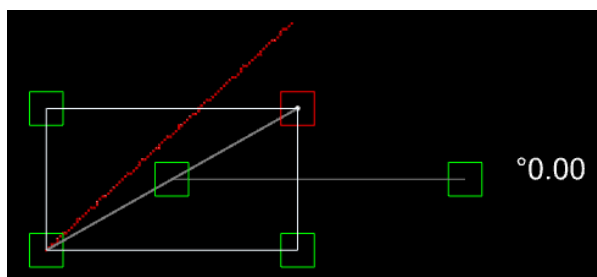
Select **«Create spline»**.



To draw a spline, click and drag the mouse cursor in the **«Mapping»** window at any location, release the mouse button, move the cursor to the desired location, and press the **«Enter»** key to complete the drawing. If you don't press **«Enter»**, you can continue drawing a more complex zigzag line and complete it after creating several bends. If you make a mistake, you can complete the drawing of the spline by pressing the **«Enter»** key and delete the incorrect spline by pressing the **«Delete»** key.



After creating a spline and selecting it, you can edit it. You can drag any of the corners of the selection rectangle for the spline and thus change its size.



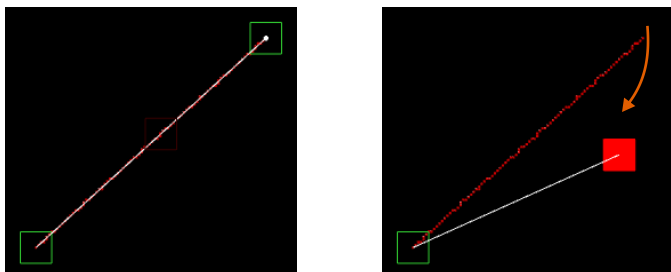
Double-clicking on the selected spline will enter edit mode for its edges.

The same can be done by clicking on the **«Edit spline»** tool.

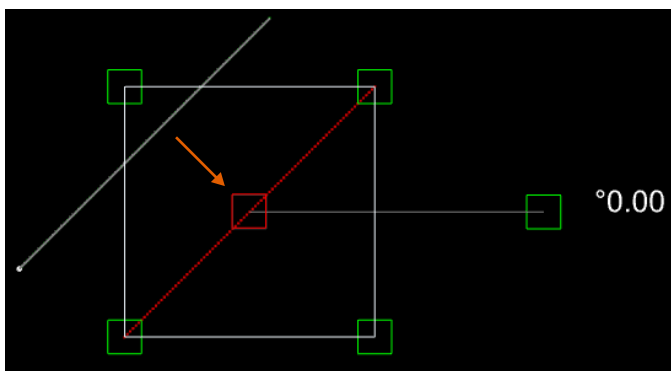



On the toolbar in the **«Mapping»** window.

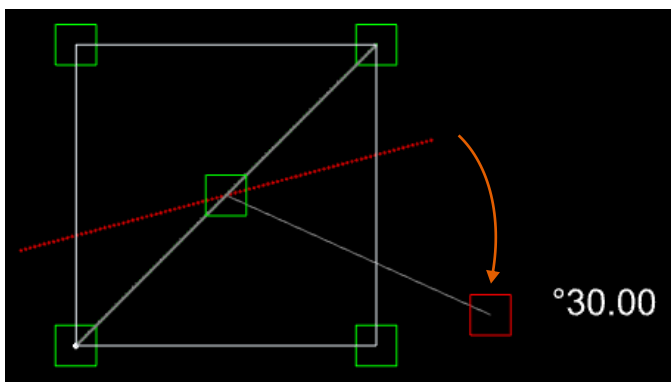
This way you can move edges in any direction separately. To finish editing, press the 'Enter' key or select another tool on the toolbar.

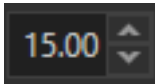


All devices can be freely moved at any time within the «Mapping» window. To do this, you need to drag the square located in the center of the selection rectangle or any place within this area and release it.

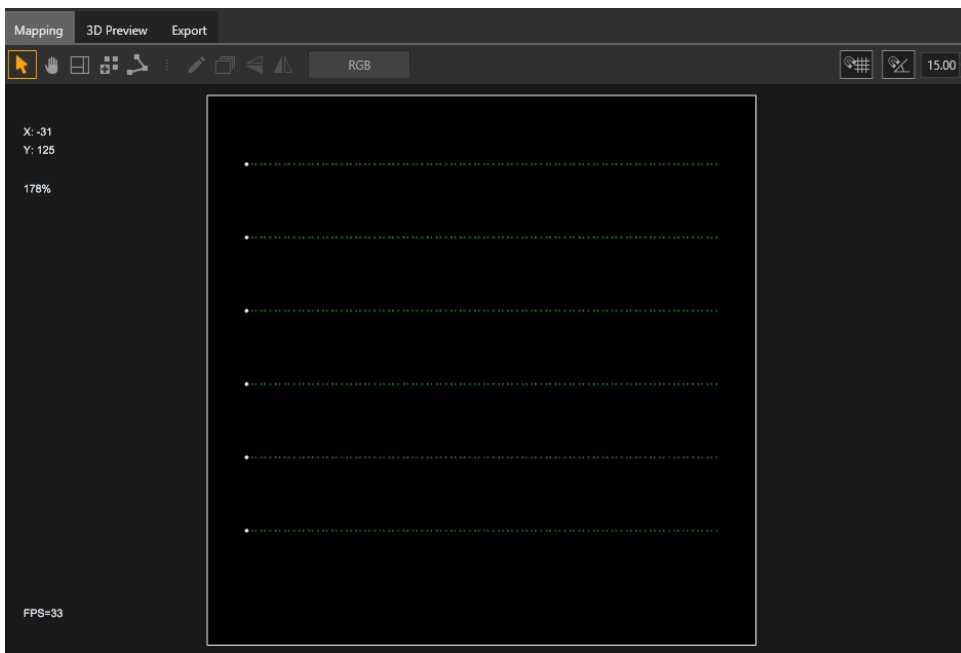


Also, all devices can be freely rotated. To the right of the selection rectangle will be displayed additional information, by default set to 0.00 degrees. If you grab this square and drag it up or down and release it, you can rotate the spline. By default, rotation is tied to 15 degrees, but this attachment to degrees can be adjusted on the «Mapping» window toolbar using the **«Binding turn»** button.  This button turns on and off the attachment of rotation.



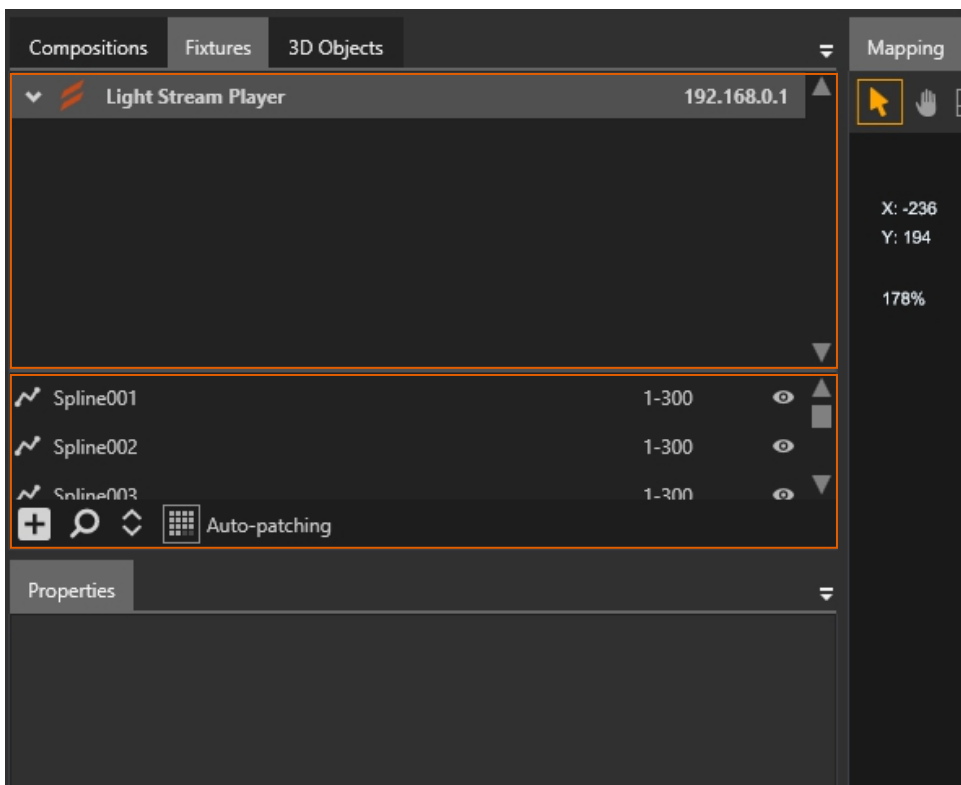
In the adjacent field,  the value in degrees is indicated, at which the rotation will occur.

To create straight lines in this way, you need to hold down the 'Shift' key while drawing and try to follow the desired straight line.

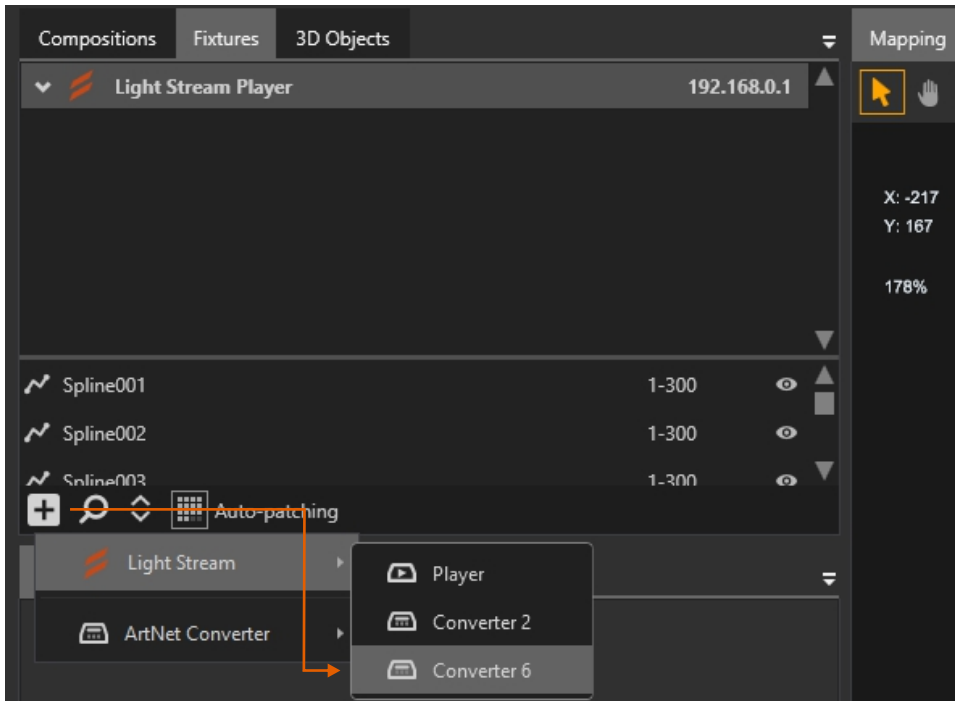


## 2.7 Adding devices to the control system

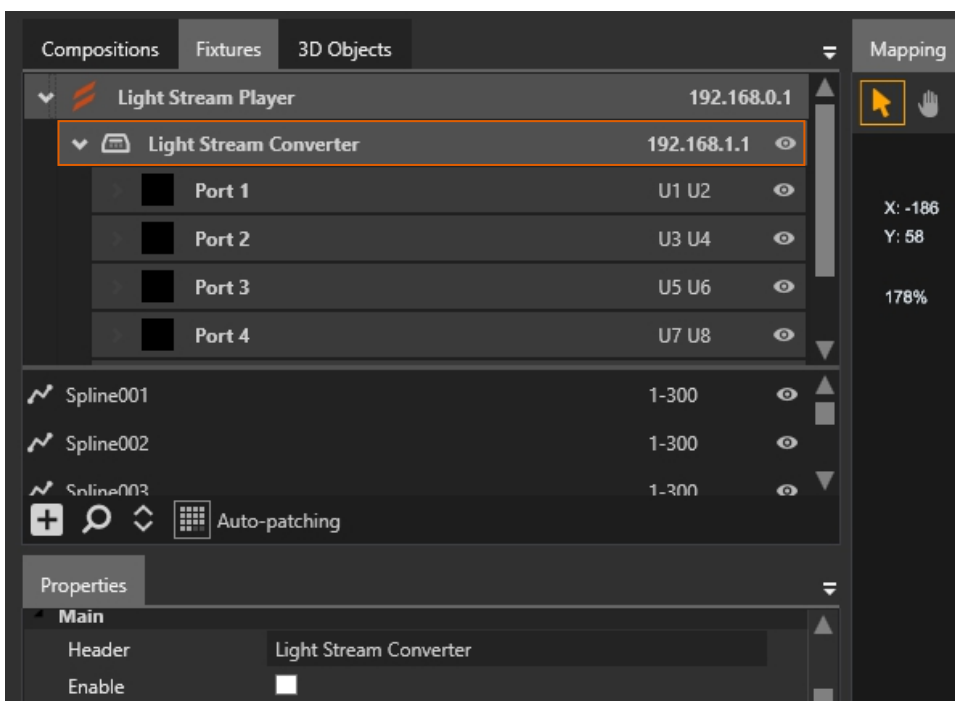
Let's go to the «**Fixtures**» tab, which is located next to the «**Compositions**» tab. This window is divided into two areas. The upper area contains all the devices added to the control system, and the lower area also contains all the devices created in the «**Mapping**» window. The size of the areas, as well as the size of all windows, can be changed and adjusted to suit your preferences.



By default, when creating a new project, a Light Stream Player device is also created. If necessary, multiple Light Stream Player devices can be added to the project through the **«Add device» menu – «Light Stream» – «Player»**. To create a new device, you need to click the **«Add device» button (plus sign in the lower left corner) – «Light Stream» – «Converter 6»**, where 6 is the number of ports of the physical device.

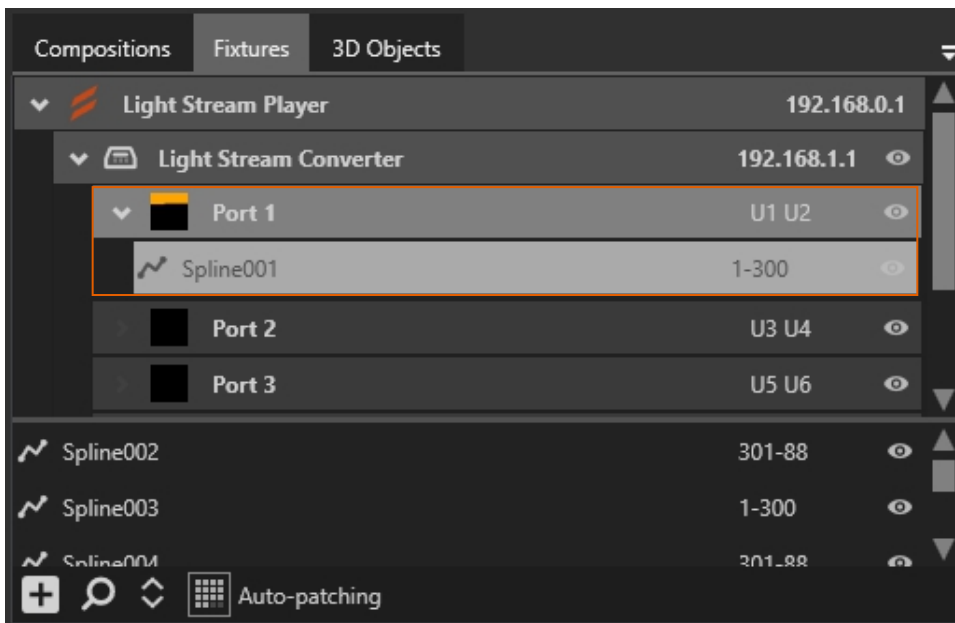
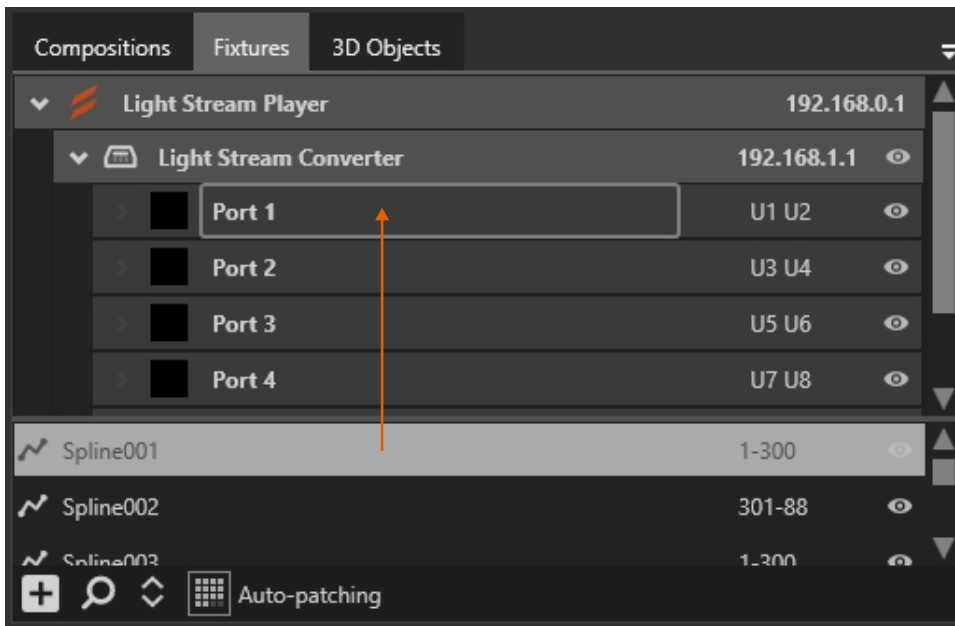


After which a new **Light Stream Converter** is created in the project.



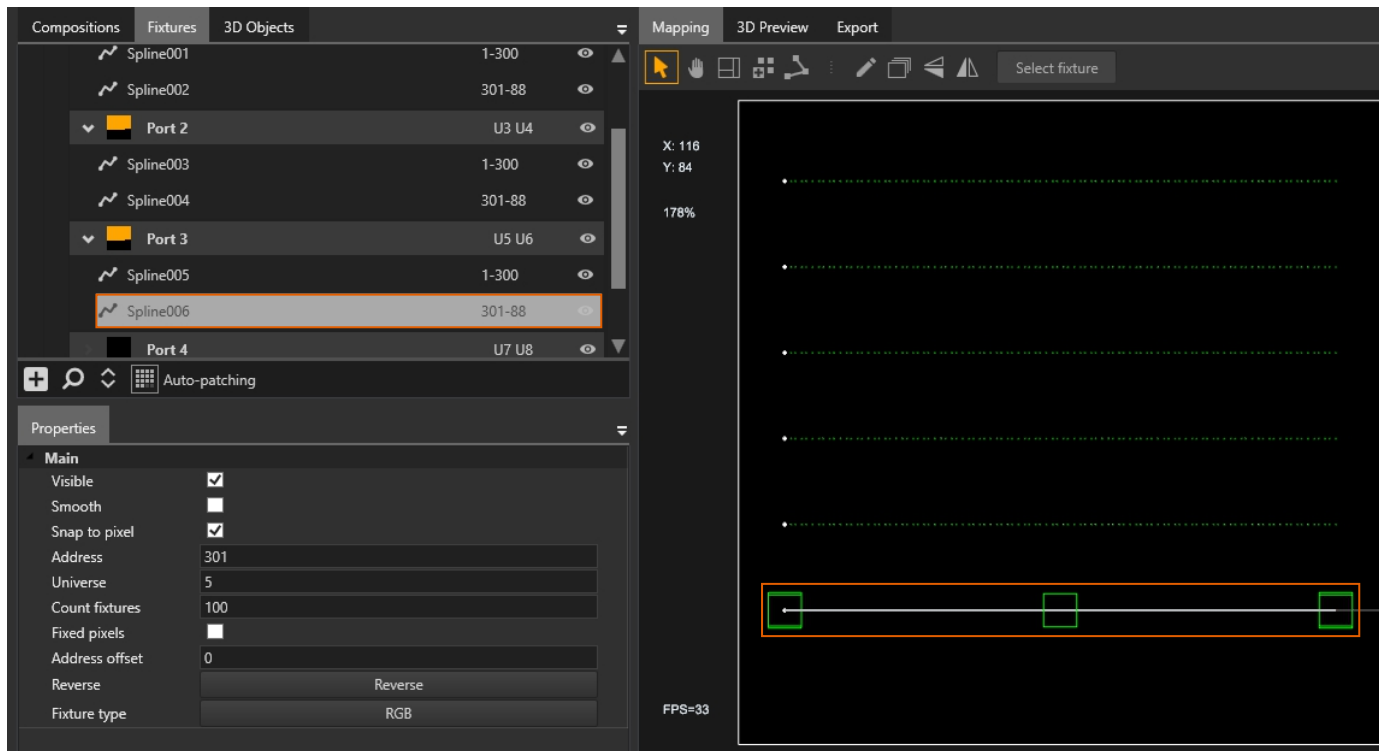
**Patching.** To do this, you need to move the devices from the list below one by one into the ports of the device from the upper area.

To do this, select the first «Spline001»- this is the spline that we drew first on the «Mapping» window, and simply move it inside «Port 1», thus patching. Let's do the same with each of the 6 splines, placing them in the correct places. We need «Spline001» and «Spline002» in «Port 1», «Spline003» and «Spline004» in «Port 2», and «Spline005» and «Spline006» in «Port 3».

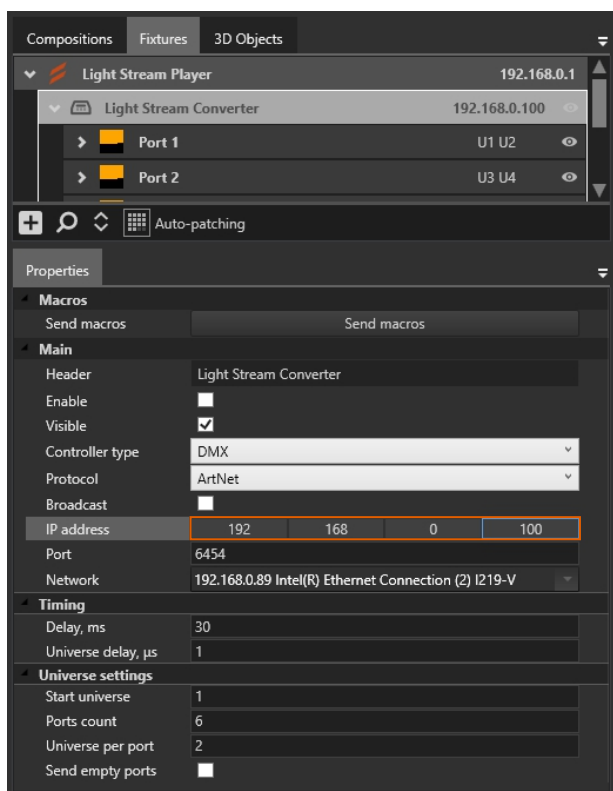




The selected spline on the «Fixtures» window is also highlighted on the «Mapping» window, which makes it easier to navigate the project.



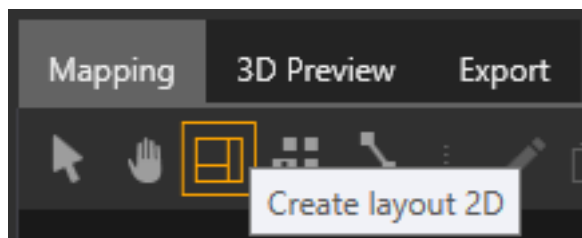
Now let's go to the settings of the Light Stream Converter. To do this, select it in the list on the «Fixtures» window (on the screenshot, I have reduced the «Fixtures» window size and enlarged the «Properties» window by dragging the frame between these two windows so that all the necessary settings fit on the screen). In the «IP address» field, enter the desired address for the Light Stream Converter. In my case, it is 192.168.0.100 since my Light Stream Converter is configured for this address.



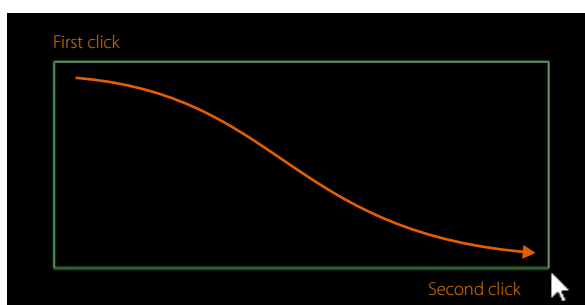
## 2.8 Effects and Layouts

Layouts are pre-defined areas where effects can be placed. They have arbitrary sizes (except for the main layout, which defines the entire work area of the «Mapping» window), and are needed to install different effects on different devices and parts of the project within one composition. There can be any number of layouts in a project, and each layout can contain any number of effects. Layouts are created for the entire project and are reflected in all old and new compositions within the project.

Next, let's create a new layout. To do this, select the **«Create Layout»** tool. Let's create it in such a way that it covers only the bottom two lines. Let's imagine that these devices will be located in another place in our project, and a different animation will play on them.

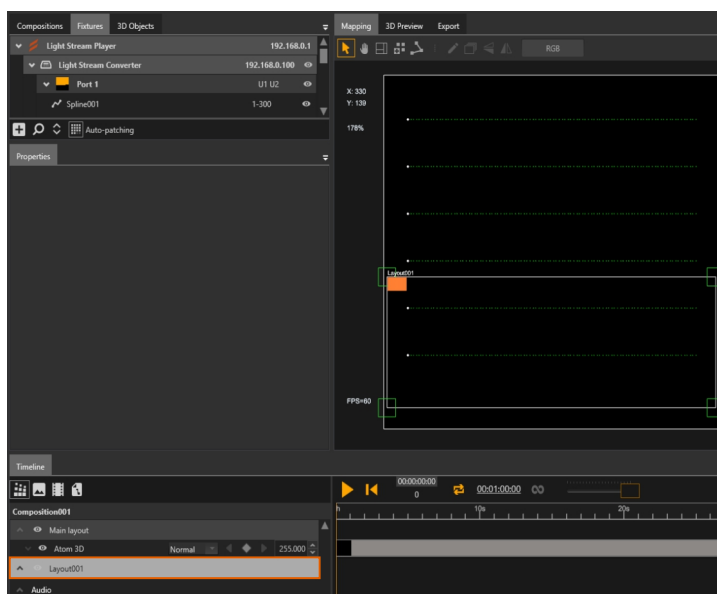


Creating a layout involves drawing a rectangle. Select the appropriate tool, make a click on the «Mapping» window in one place, move the mouse, and make a second click in another place. The layout is created after the second click.

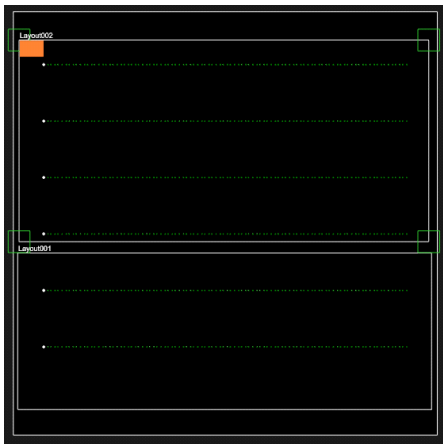


Let's create the first new layout so that it covers only the bottom two lines (as shown below), let's imagine that these devices will be located in another place in the project, and a different animation will play on them.

If you made a mistake when creating a layout, you can move it by dragging the orange triangle or change its size by dragging one of the corners. If you accidentally clicked outside of it and the layout is no longer selected, you can select it on the «Timeline» window and you will be able to edit the layout again. We see that the layout is created not only on the «Mapping» window, but also immediately on the 'Таймлайн' window, where we can place effects inside it.

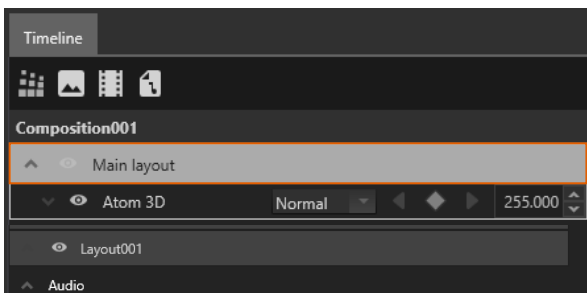



And let's create a second layout so that it covers the top four lines. The new layout will also be automatically placed on the «Timeline» window..

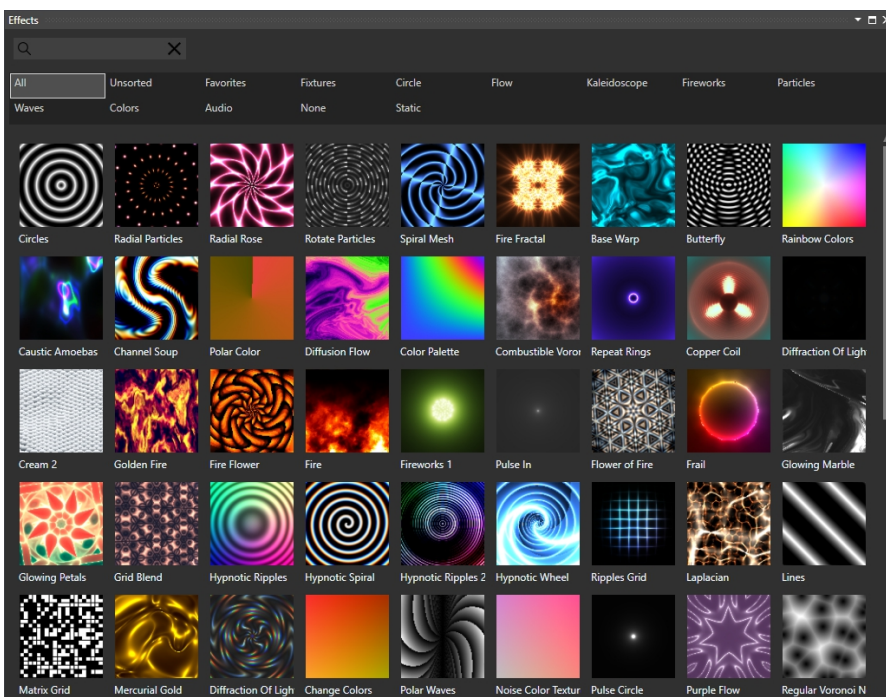


### Now let's add our first effect to the project.

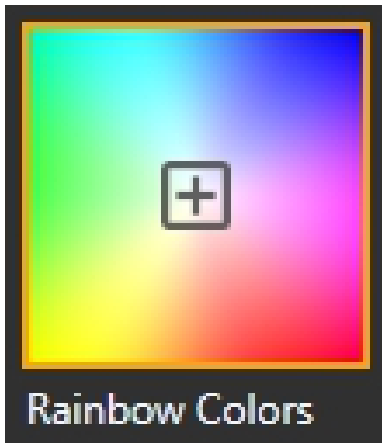
The effect is immediately added to the «Mapping» window and the «Timeline» window, as well as to the currently selected layout. The selected layout is highlighted with a lighter color fill, as shown below. Let's select the «Main layout».



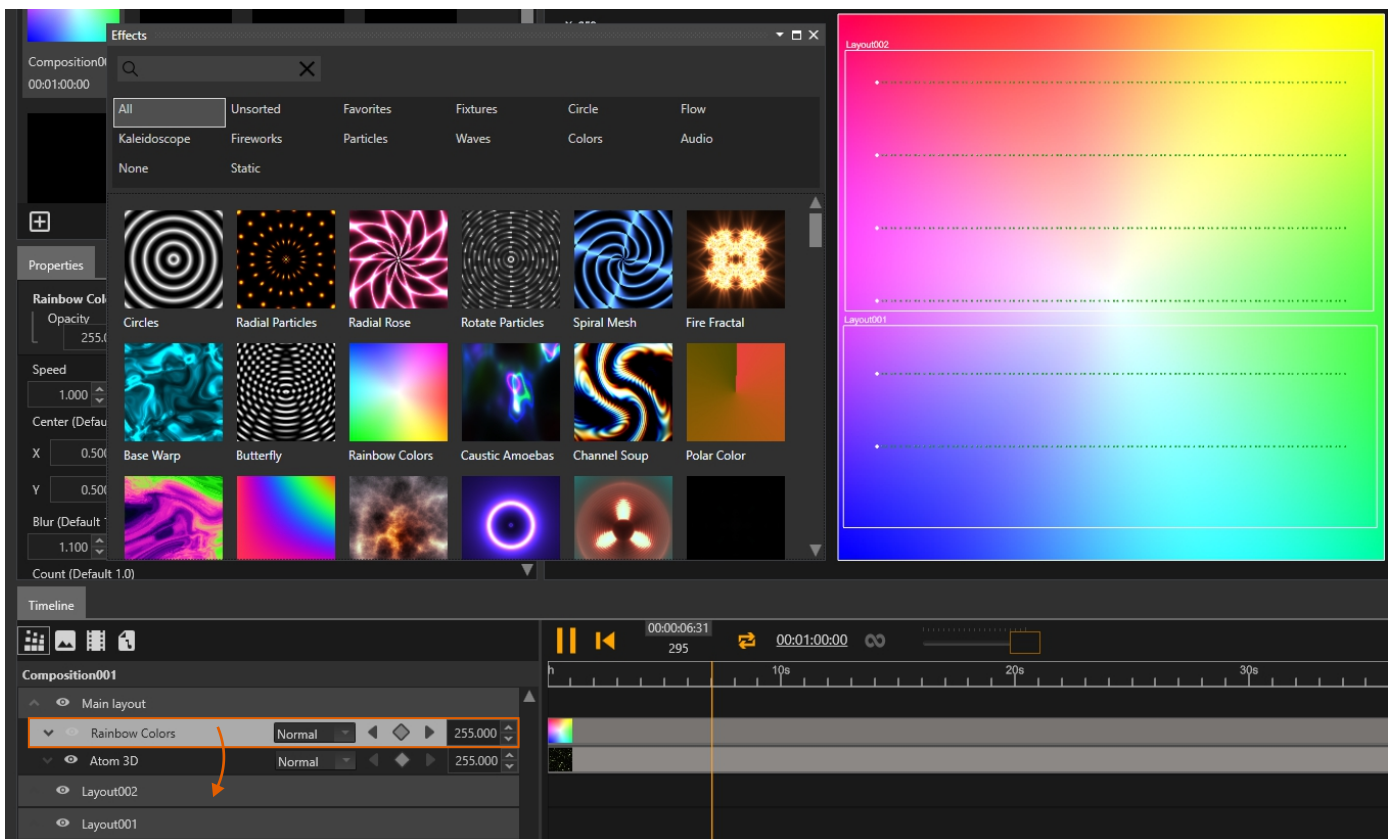
To add an effect, you need to open the effects window. It is opened by clicking on the button on the «Timeline» window.  **«Effects»**.



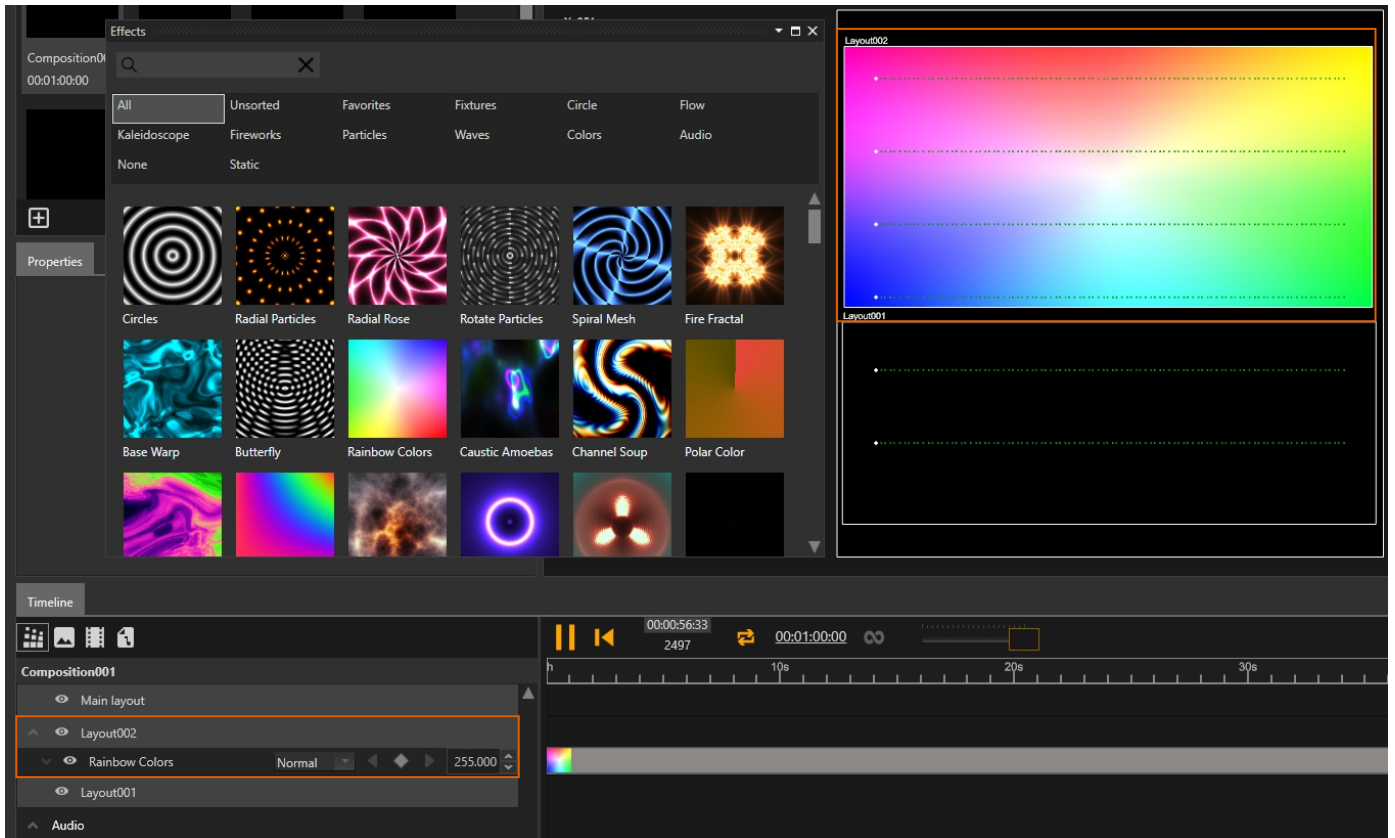
Select any effect you like and double-click on it, or click on the plus sign in the center



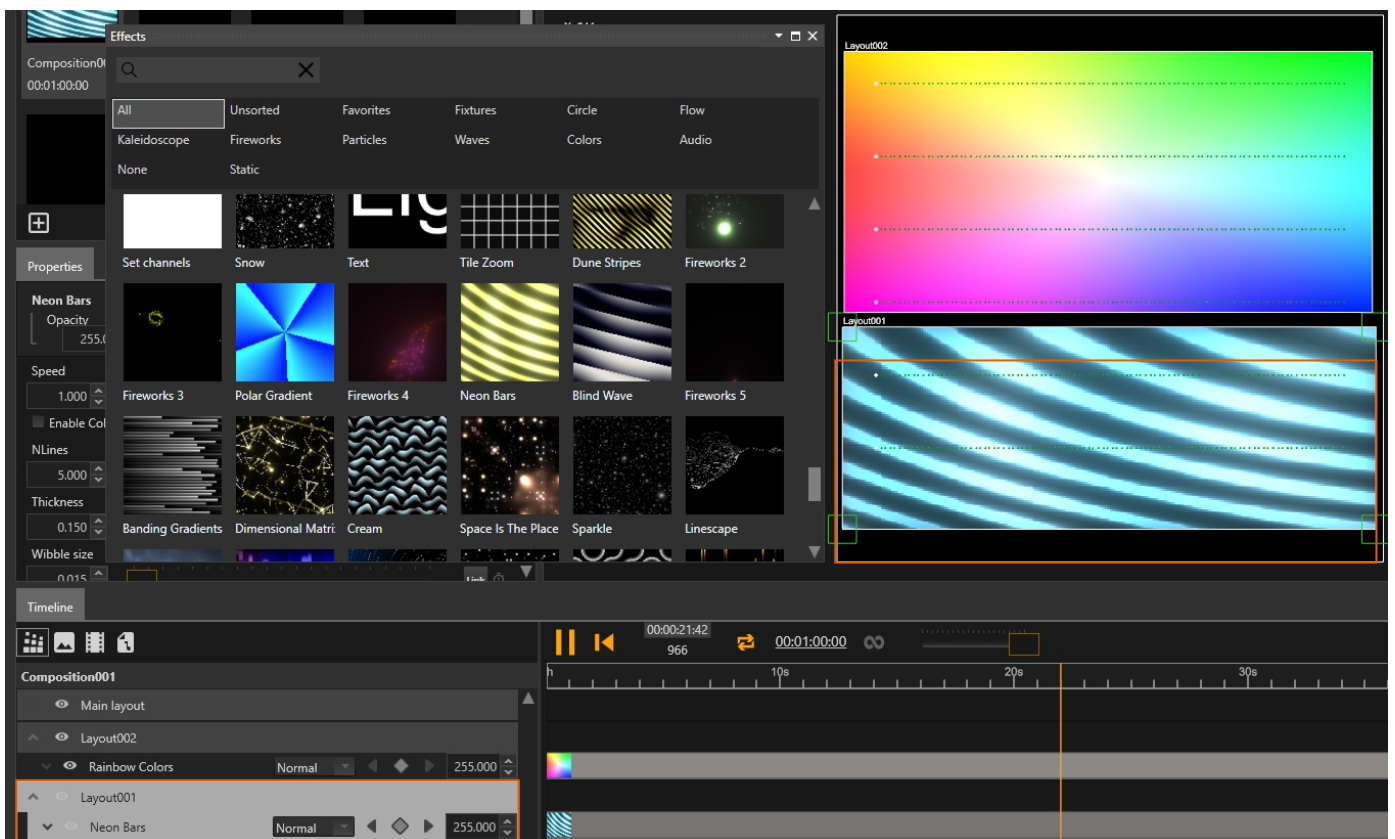
The effect is added to the «Main layout», since we selected it. Then let's move the effect from the «Main layout» to «Layout002», for this we simply grab it and drag it to the new location.



And immediately remove the standard effect «Atom 3D» from the «Main layout» since we don't need it and it hides the effects in other layouts. To remove an effect, you need to select it and press the «Delete» key.

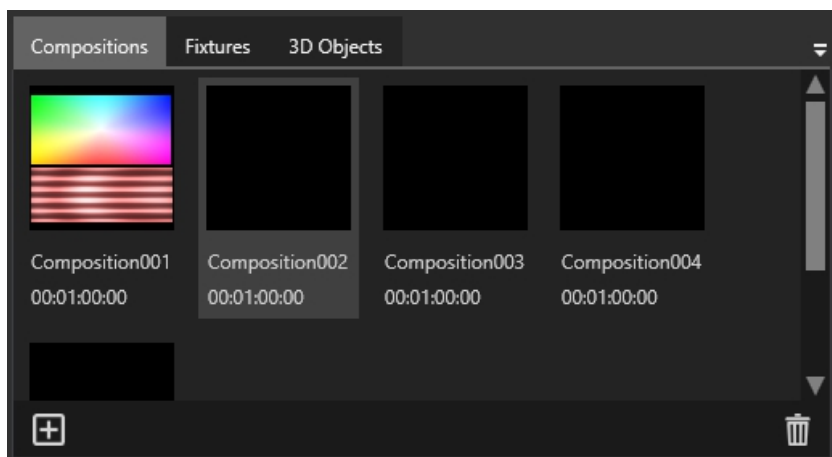


Let's add an effect to «Layout001». To do this, select «Layout001» in advance on the «Timeline» window so that the added effect automatically goes into it. Let's select a different effect and add it. The effect should immediately appear inside «Layout001». If the effect is added to a different layout, you can manually move it to the desired «Layout001» using the same method as we did above.

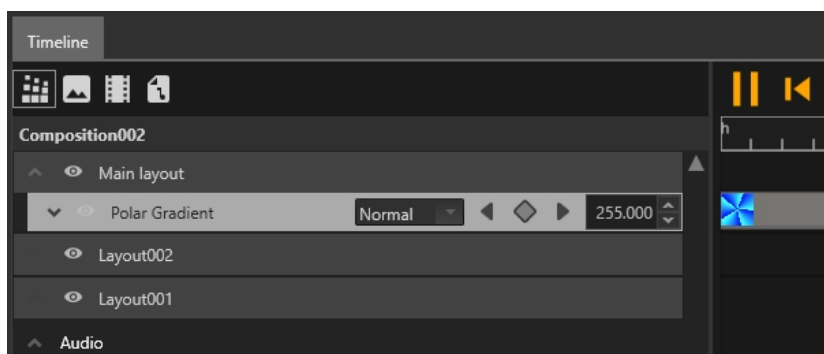


Thus, we have created effects within «Composition001».

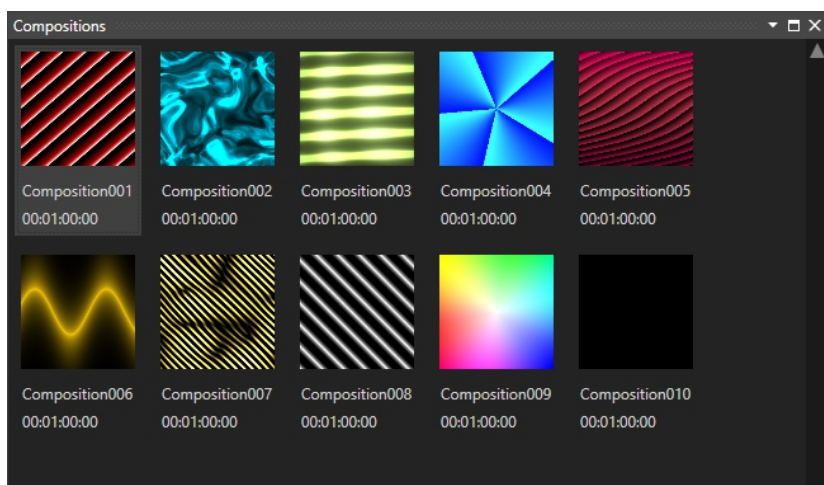
Next, let's try adding effects to other compositions in the same way. Close the «Effects» window, go to the «Composition» panel, and select **«Composition002»**.



Again, open the «Effects» window and add any effect to the composition. If you haven't selected any layout on the «Timeline» window, the effect will be added to the «Main layout» by default. If a specific layout was selected, the effect will be added to it. Let's leave the added effect inside the «Main layout» this time.

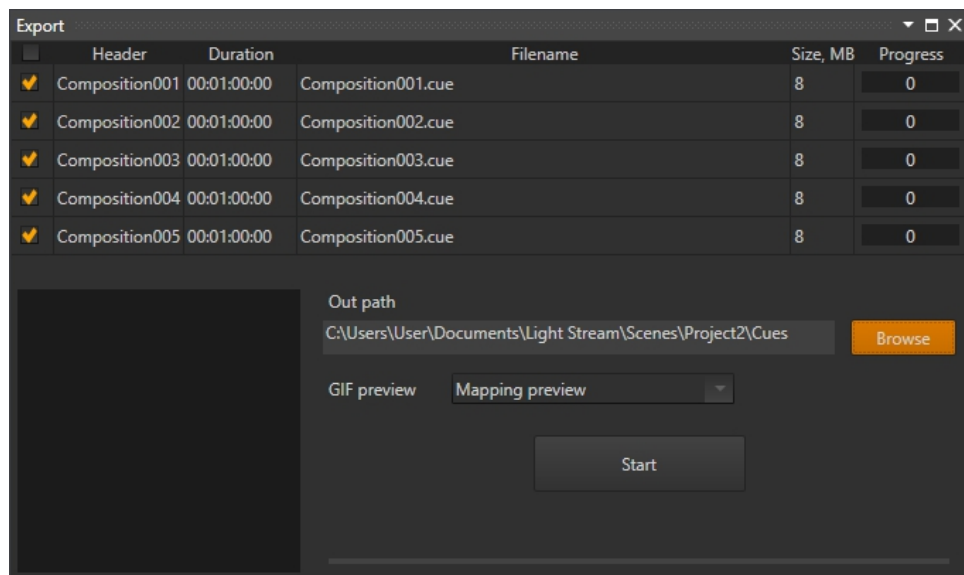


In the same way, let's add effects to other compositions. Effects can be placed in any layouts. I ended up with the following compositions with different effects inside them.

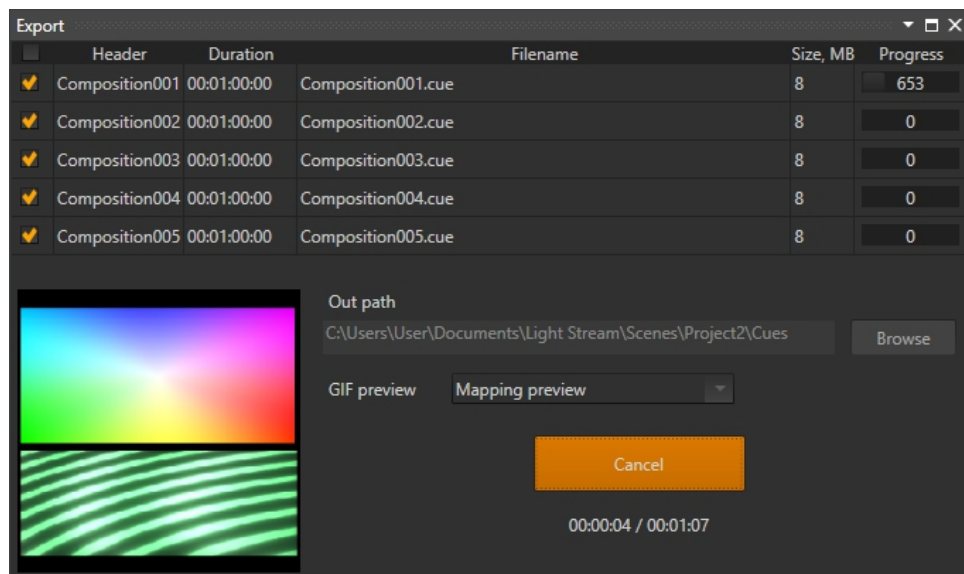


## 2.9 Exporting compositions to cue files

After completing the creation of all compositions, let's export them to \*.cue files. Switch to the «Export» tab. Here you will see the same compositions listed, but with checkmarks to the left indicating that these compositions will be exported to \*.cue files.



Click the «Open» button and select the folder where the compositions will be exported to in the «Out path» field. Leave the GIF preview as is and click the «Start» button. The animation calculations will start, and a preview of the animations will begin to display on the left in the window, which will also be used in the Light Stream Player.

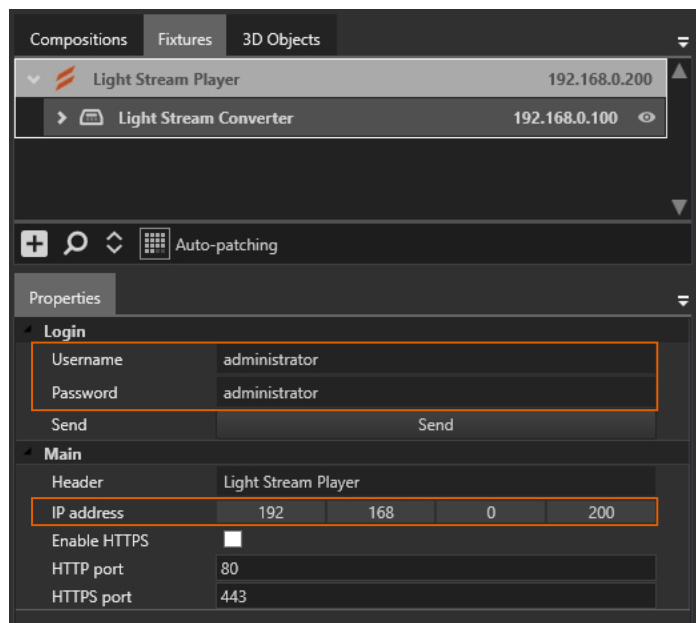


Exporting compositions from Light Stream to \*.cue files takes some time, depending on the complexity of the project, but in general, you usually don't have to wait long. At the end of the export, the preview of the animation will simply stop playing. Exporting a composition from Light Stream to a \*.cue file is now complete.

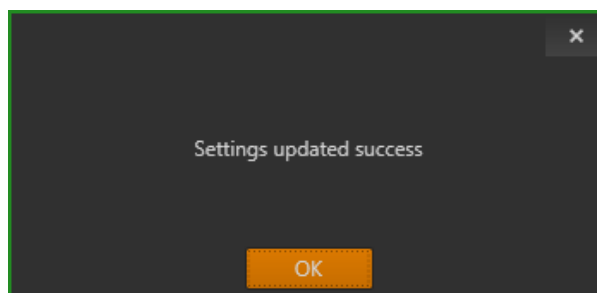
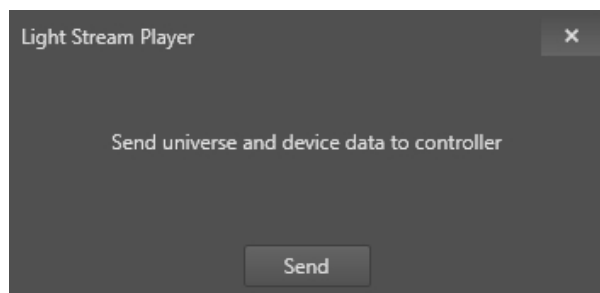
## 2.10 Exporting settings from Light Stream to Light Stream Player

Let's export the settings of the Light Stream Converter, which was previously added to the project, to the Light Stream Player. To do this, open the 'Fixtures' panel and select the Light Stream Player on it.

At the bottom of the selected device «Player», you will see parameters. Let's set the settings as follows: «IP address» 192.168.0.200. I'm specifying this address because my Light Stream Player is configured to use it. In the «Username» and «Password» fields, let's enter administrator / administrator. These are the default access credentials for the Light Stream Player, which I haven't changed.




Then let's click the «Send» button. A warning window will open stating that all universes and devices will be sent to the Light Stream Player. Let's click the «Send» button again. If all the settings are entered correctly and the Light Stream Player device is connected to the computer, a window will appear confirming successful data transfer.

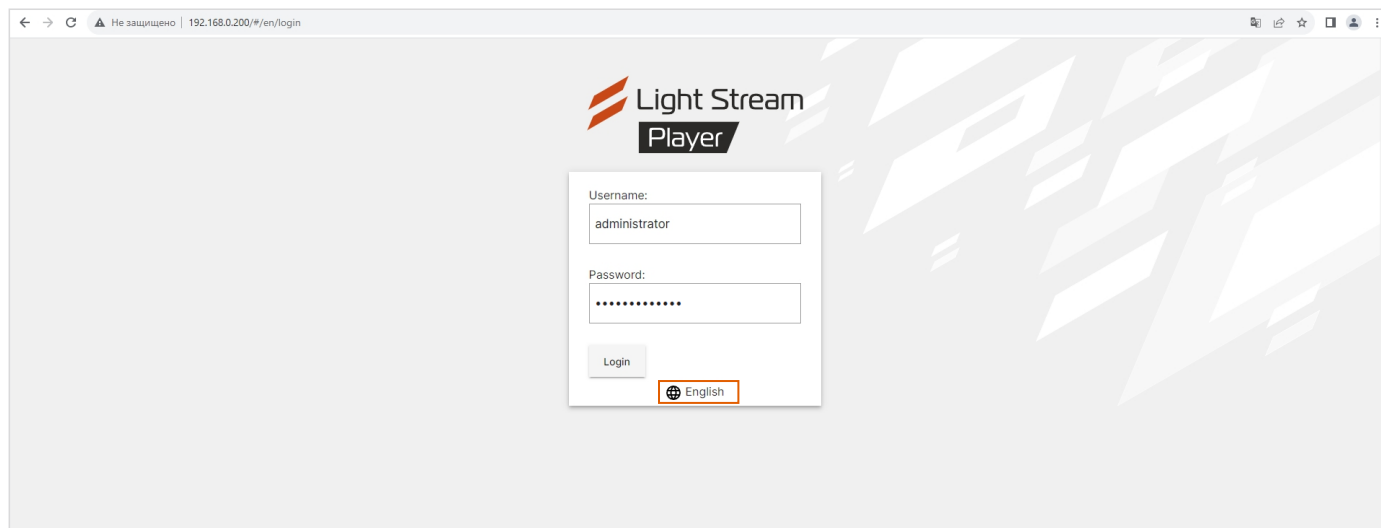


If an error occurs, you need to check the entered parameters or the connection of the Light Stream Player to the computer, as well as its settings.



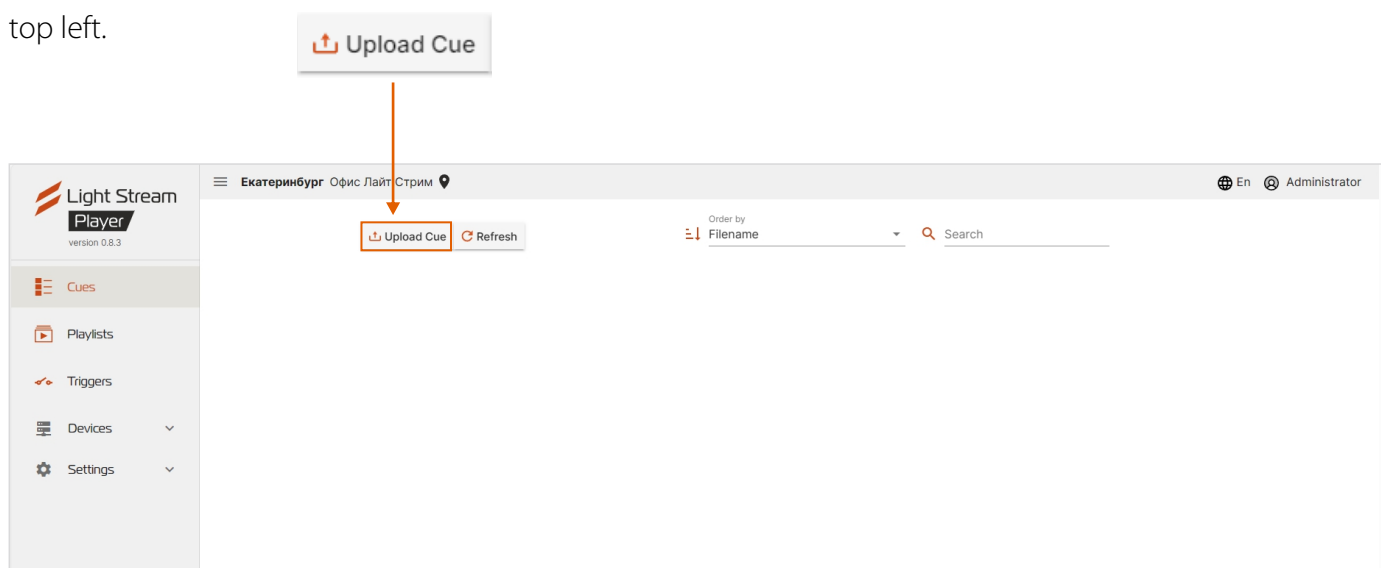
## 2.11 Importing animations into Light Stream Player

Next, to import \*.cue files to Light Stream Player, open a browser and enter the address of our «Player» in the address bar. In my case, it's 192.168.0.200. The page with the login interface of the «Player» will load. If the selected language is not English, you can click on the «Change language»  button and select «English». Then, enter the default access credentials administrator / administrator into the appropriate fields. It is assumed that Light Stream Player is already configured and a license has been uploaded to it at this stage. For more information, you can refer to the [User Manual of Light Stream Player](#).

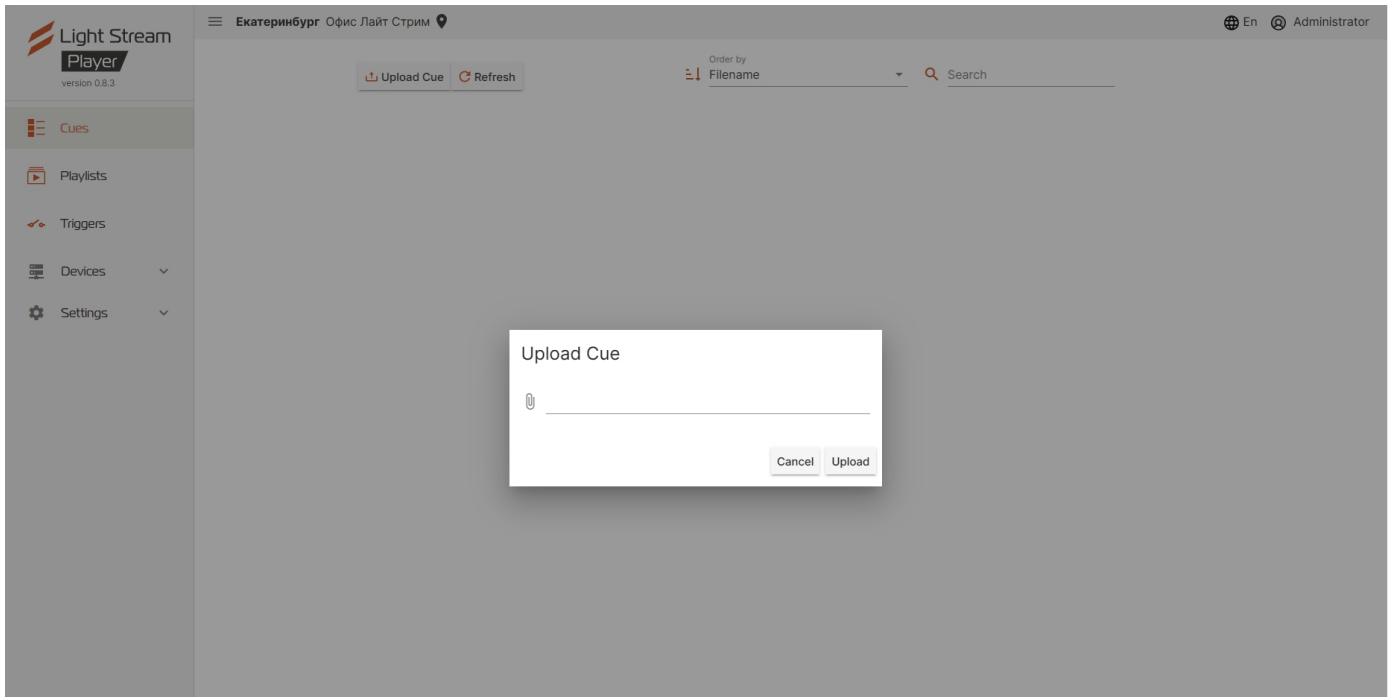


When opening «Player», we may land either in the «Animations» menu or in the «Schedule» menu, depending on which mode «Player» is currently in. If «Schedule» is selected in the menu, click on «Animations».

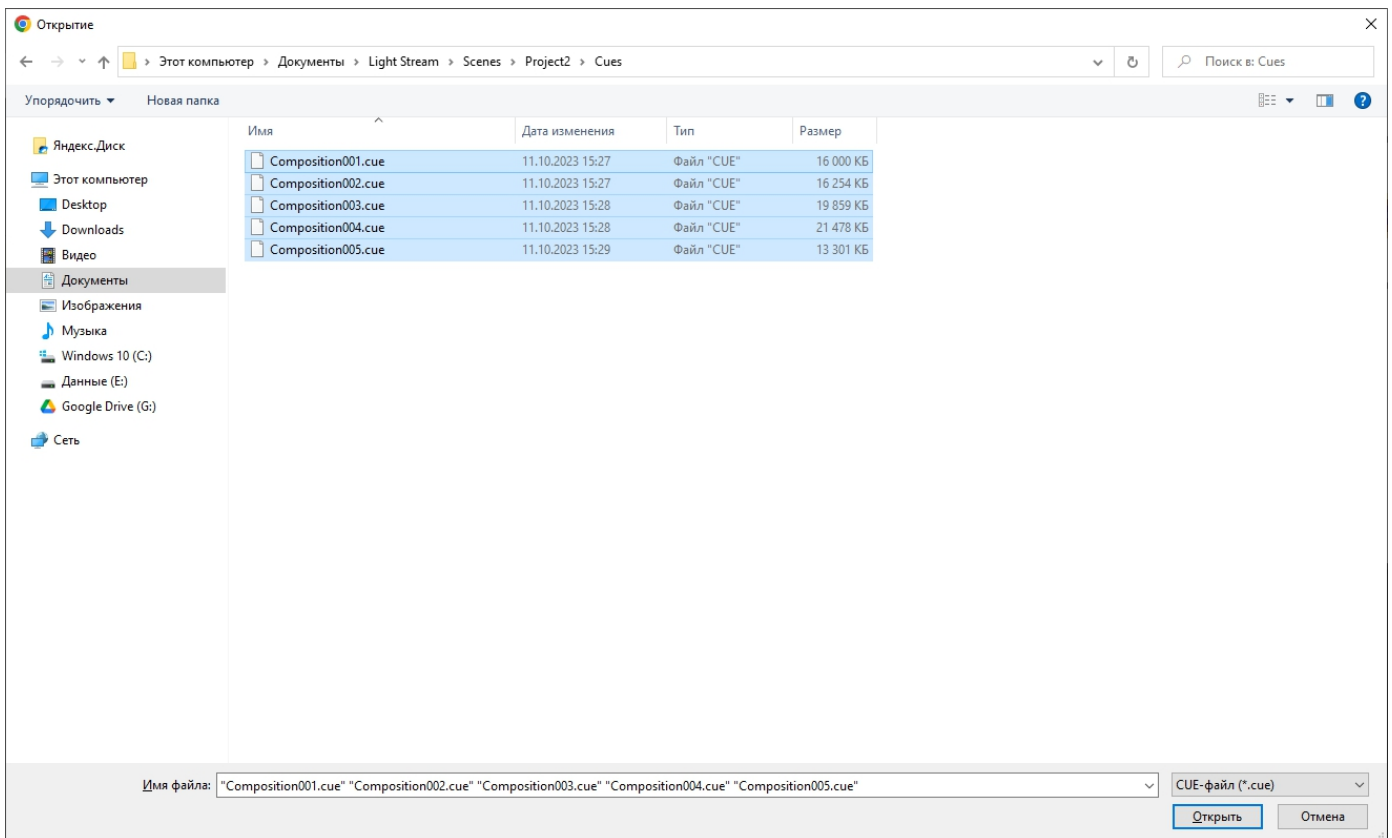
And we will be in the «Animations» section, where we need to click on the «Upload Cue» button at the top left.



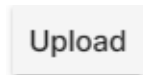
A window will open that allows you to select animations. Let's click on the paperclip icon. 



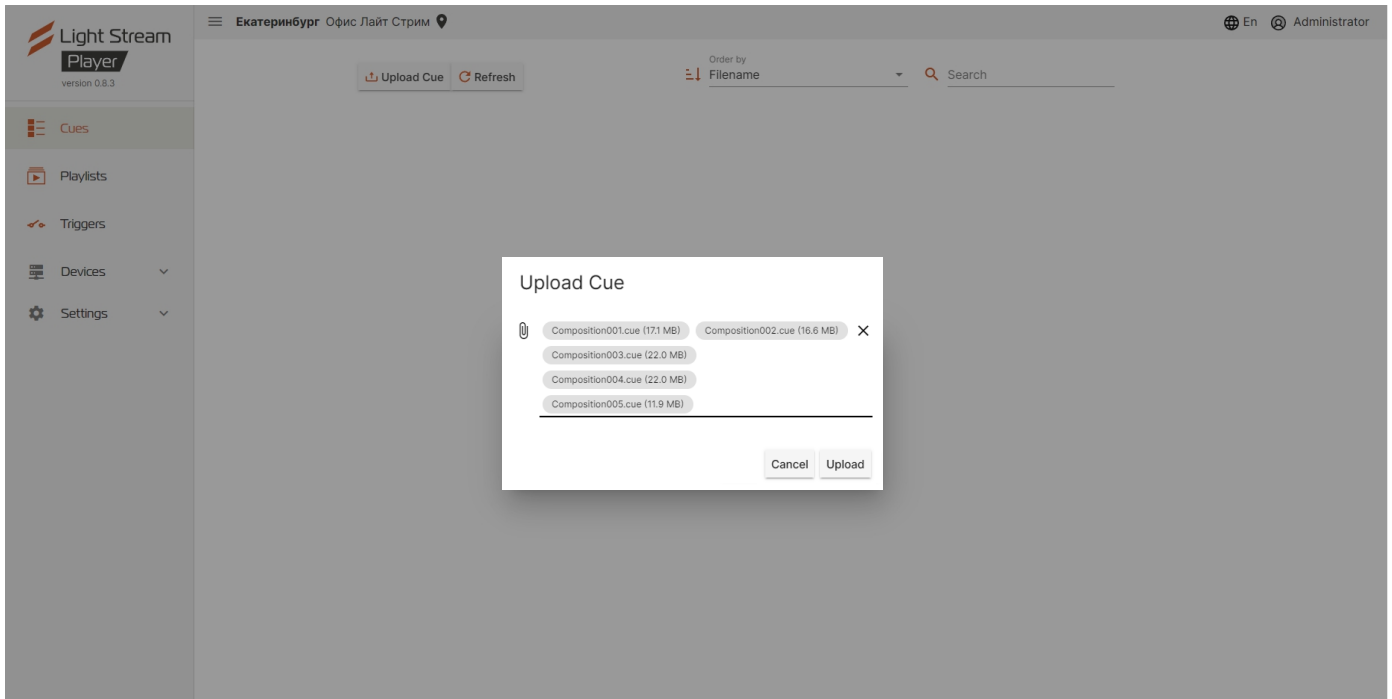
And select the files we exported earlier.



The selected files will appear in the «Upload cue» window, let's click on the button

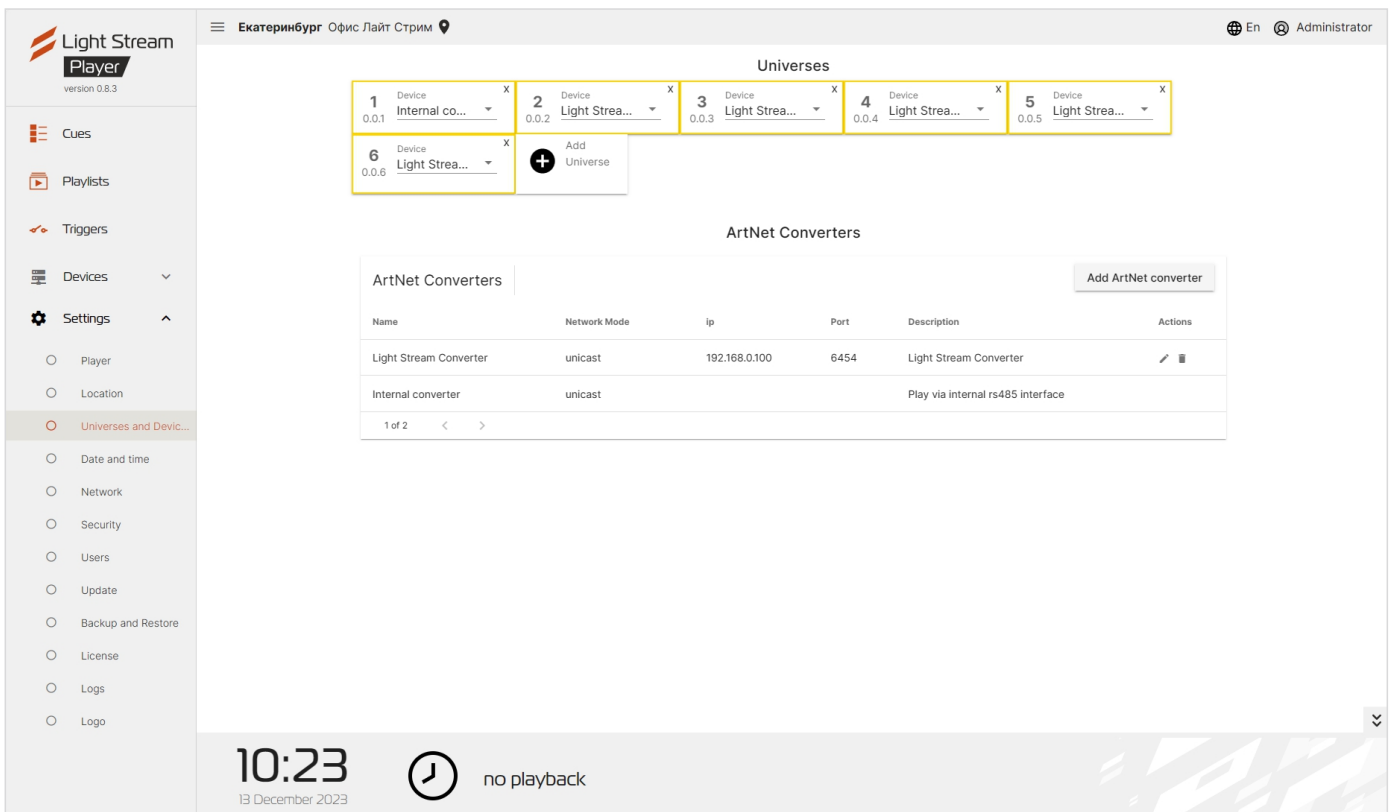


and the animations will be loaded.



At the end of the animation loading, the «Upload cue» window will close automatically, and all loaded animations (cue files) will appear in the «Cues» menu on «Player». Exporting animations is now complete.

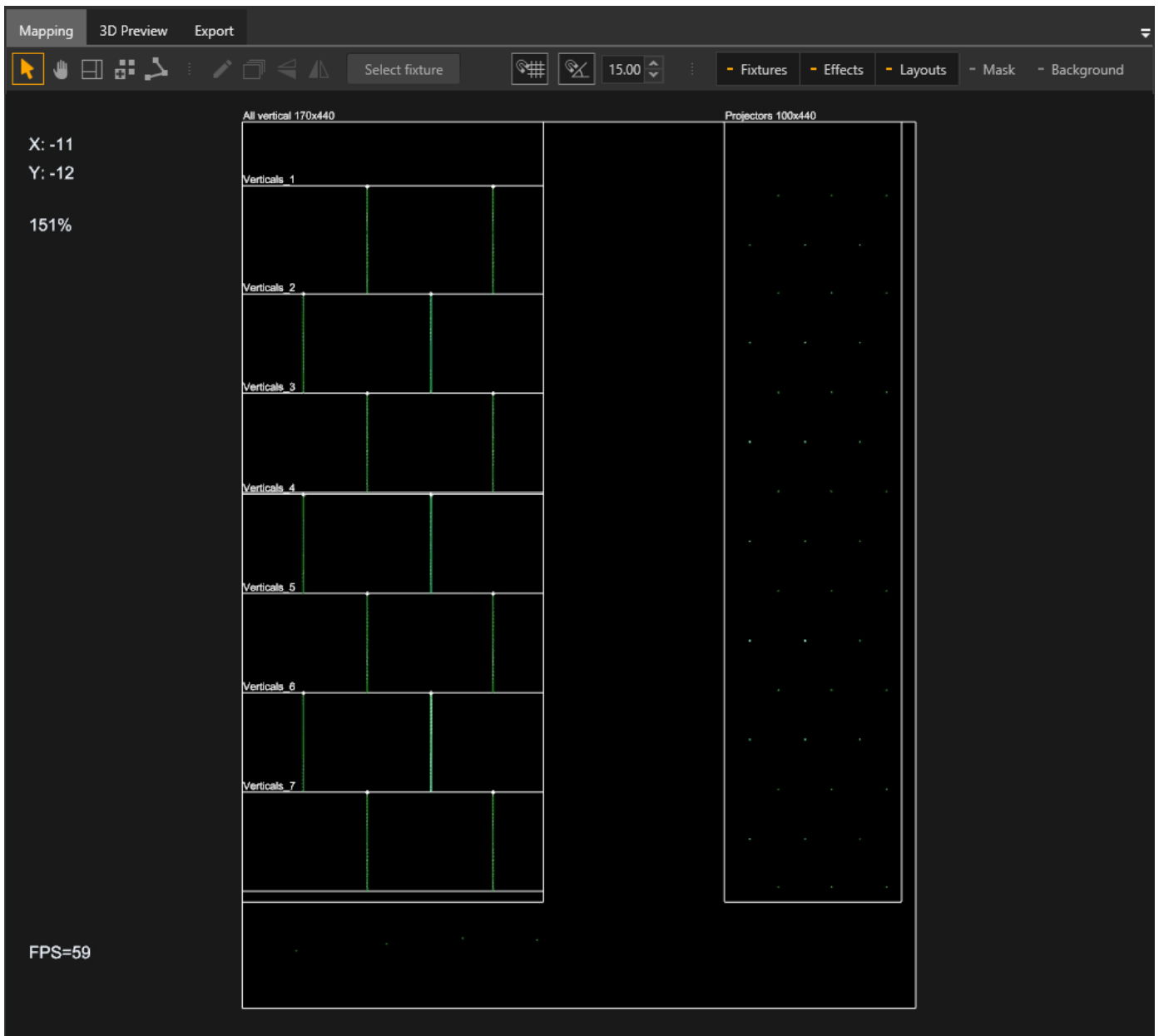
Also, we can go to «Settings - Universes and Converters», where all universes and devices will be displayed. In our case, there will be one Light Stream Converter that we exported from Light Stream.



# 3. Mapping

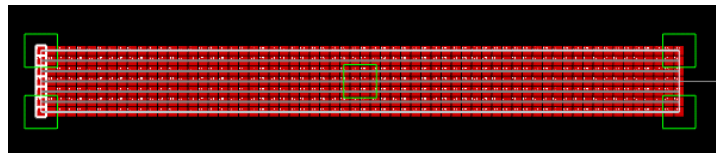
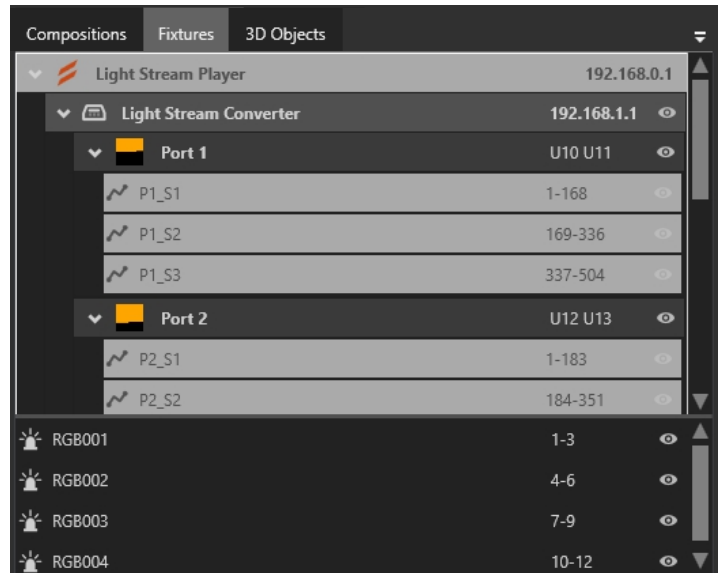
## The «Mapping» window is used in Light Stream for:

- creating and placing fixtures in a 2D projection, such as pixels, single lights (spotlights) or controlled heads
- creating and placing different «layouts»
- adding a background image
- viewing animations and effects both in the overall plan and on created fixtures



To navigate in the «Mapping» window, use the scroll wheel of the mouse. You can zoom in and out using the scroll wheel.

You can select fixtures on the mapping field or in the «Fixtures» window using the mouse.



**At the top of the 'Mapping' window is a toolbar with various tools.**

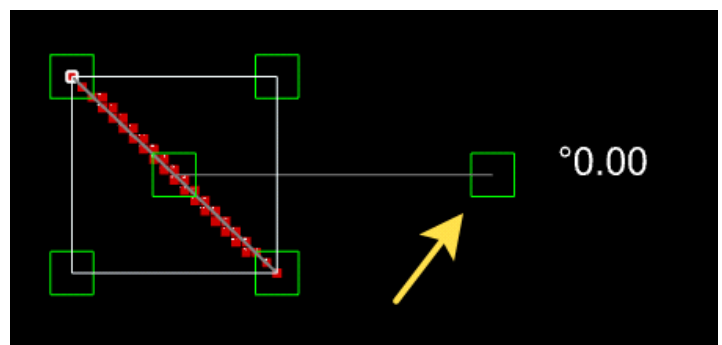


## Tools for control



**Selection and Movement** - tool allows you to select and move fixtures in the «Mapping» window. When multiple fixtures or splines are selected, a scaling frame appears around them. You can change the scale of the fixtures by dragging any of the four squares on the corners.

To change the scale of a spline while preserving its proportions, hold down the «Shift» button. To change the scale of a spline while preserving its proportions relative to the center, hold down the «Shift» and «Alt» buttons. To rotate fixtures, drag the square located to the right of the frame.

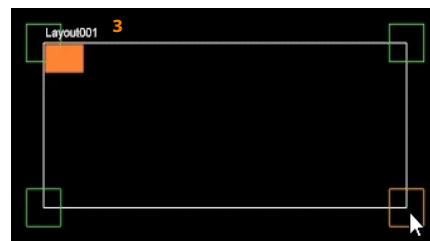
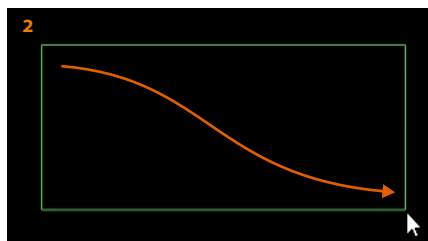
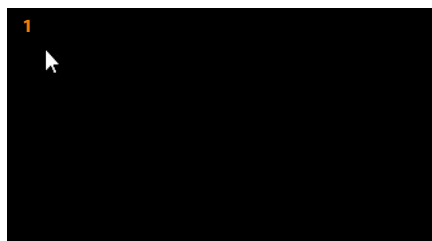


**Hand** - tool allows you to move around the «Mapping» window using the left mouse button, which is convenient if you are working on a laptop using only the touchpad without a mouse

## Drawing tools



**Layout creation** - tool is used to create a new «layout». To create a layout is done by drawing a rectangle from and to the desired points. Select the tool, click the left mouse button once to start drawing a rectangle for a new layout, and click the left mouse button again to finish.

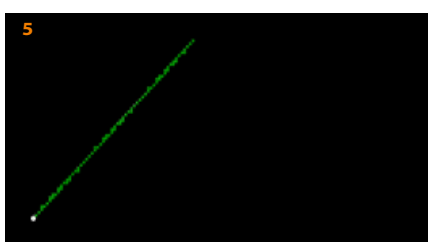
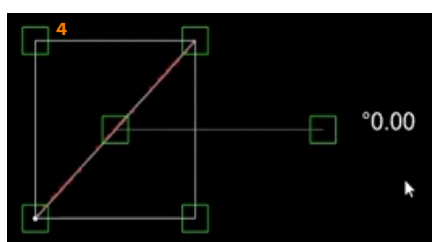
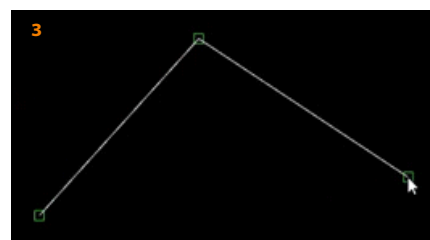
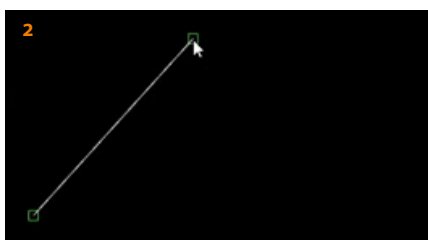
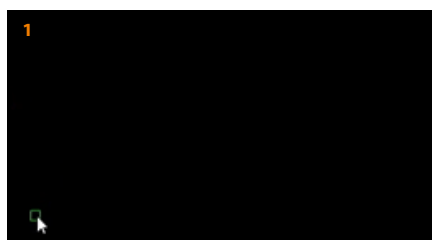


**Add fixture** - tool is used to create single fixtures in the «Mapping» window, such as spotlights or controlled heads. Click anywhere in the window with the left mouse button to add the selected fixture. You can add multiple fixtures by clicking sequentially. Each added fixture automatically receives a unique address.



**Create spline** - allows you to draw 2D splines by drawing straight or broken lines. Lines, used to create long pixel branches, or a single chain of multiple lights.

Choose «Create spline» and draw a spline, for this purpose on the field «Mapping» in any place make a left click, move the mouse aside and make a second click and press «Enter» to complete the drawing. If you don't press «Enter», you can continue drawing a more complex broken line and finish it after creating several knees at once.



## Editing tools



**Edit spline** - allows to edit spline more precisely, create, move and delete its edges to get complex/curved lines.



**Duplicate** - tool is used to create a specified number of copies of the selected spline with the desired parameters.



**Flip vertically** - tool is used to reflect the selected spline or splines vertically..



**Flip horizontally** - tool is used to reflect the selected spline or splines horizontally.

Select fixture

This button allows you to select the desired fixture type before starting to draw fixtures. For example, you can select an RGB or RGBW type fixture, and all newly created fixtures will have this type.



**Snap to grid** - tool is used to attach the vertices of splines or single fixtures to a virtual pixel grid. This is often used simultaneously with the «Snap to pixels» setting for splines.



**Rotation snap** - tool is used to attach the rotation of selected fixtures to a specific value set in the adjacent window. In this case, the rotation will occur

15.00



in steps of 15 degrees.

## Tools for controlling display

These buttons are used to enable or disable the display of selected specific object types.

- Fixtures

**Fixtures** - button is used to enable or disable the visibility of all fixtures.

- Effects

**Effects** - button is used to enable or disable the visibility of all effects.

- Layouts

**Layouts** - button is used to enable or disable the visibility of all layouts.

- Mask

**Mask** - button is used to enable the display of effects only on drawn fixtures, i.e. on the desired pixels.

- Background

**Background** - button is used to enable or disable the display of the background image.

**Additionally, in the «Mapping» window, there is a display of:**

X: -169

Y: 58

Information about the current position of the cursor.

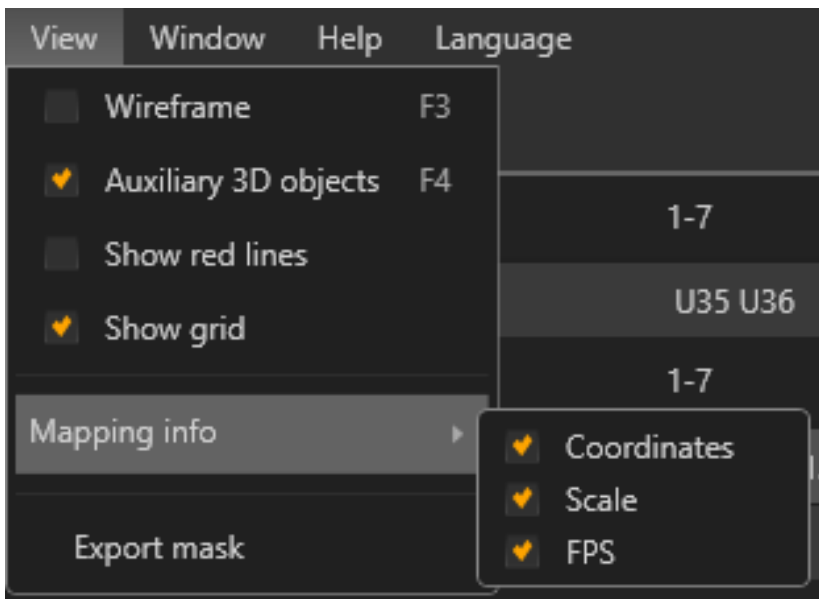
154%

The scale of the work area.

FPS=32

The current FPS at which animations are displayed.

The display of these parameter values can be enabled or disabled in the «View – Information» settings

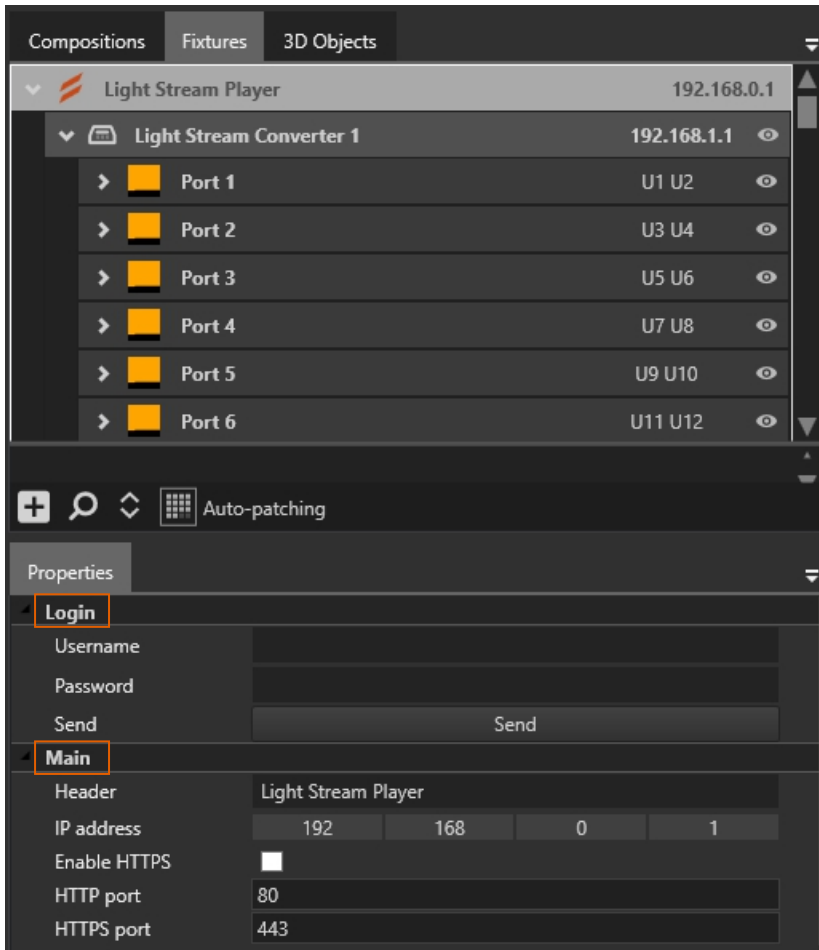




## 4. Player and Converter

In Light Stream, you can adjust the parameters of fixtures within the project, as well as the parameters of externally connected devices. To view the properties of a selected object, you need to highlight it in the «Fixtures» panel.

### 4.1 Light Stream Player parameters



In the «**Login**» section, you need to specify the data for authorization with the connected Player.

The Light Stream Player has few parameters, mainly related to connection settings for transmitting information about fixtures and universes to it.

#### In the «**Main**» section

**Header** – here you need to specify the player name, which will only affect its display in the program.

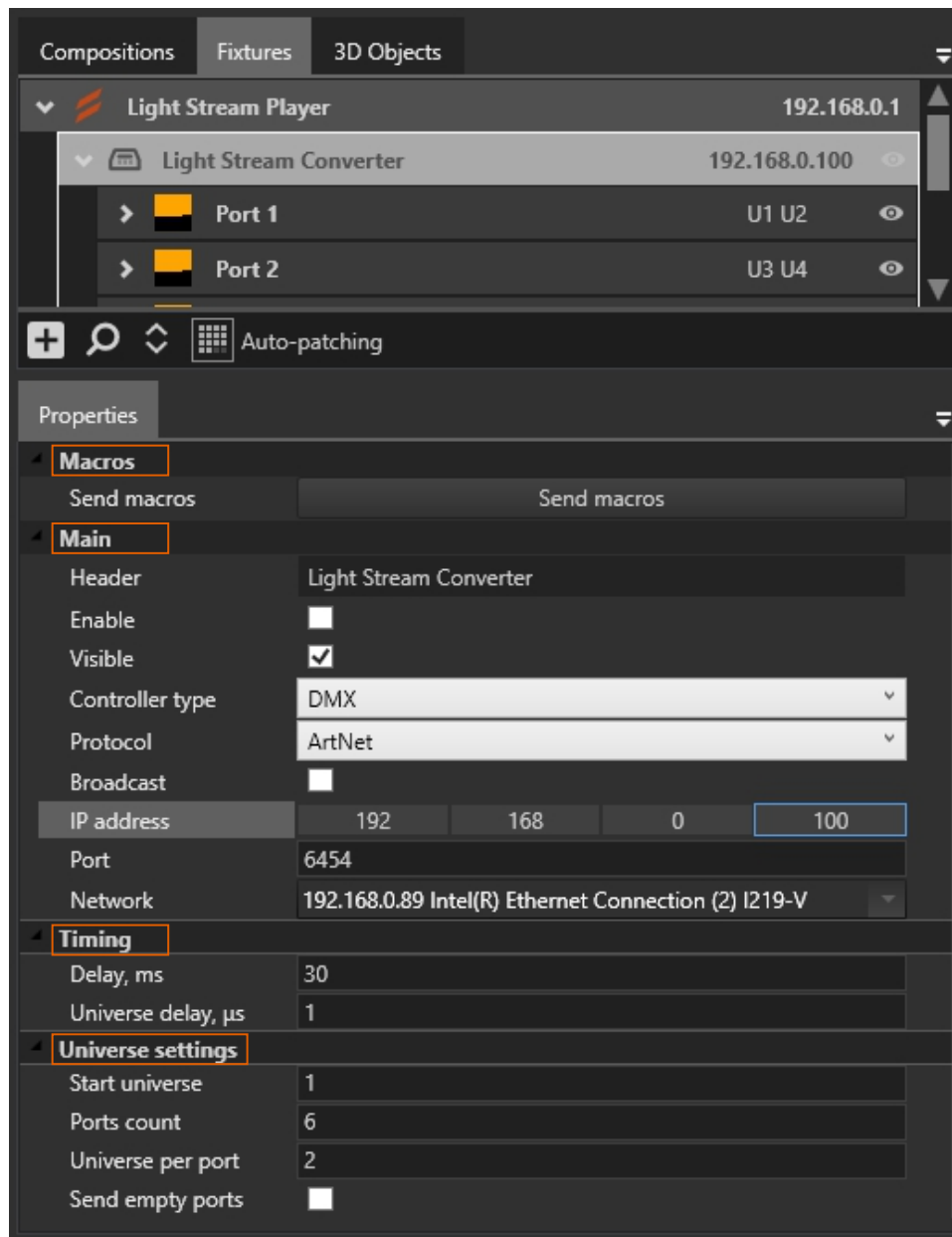
**IP address** – IP address at which the connection to the player will be established for transmitting settings.

**HTTP and HTTPS ports** – settings for the HTTP and HTTPS ports, respectively.

**Enable HTTPS** – setting for enabling data transmission over HTTPS. It needs to be enabled if the same setting is enabled on the Light Stream Player.

## 4.2 Light Stream Converter parameters

Selecting Light Stream Converter on the «Fixtures» panel in the «Properties» window opens its parameters, these parameters affect the sending of Light Stream Converter directly to physical devices Light Stream Converter on a direct connection (cable). That is, there must be a connection «Computer - Converter». Also these parameters affect the downloaded data for exporting settings to Player from the Light Stream programme. Therefore, it is most convenient to configure them in such a way that there is a full correspondence with the physical devices of the Converter.



In the «**Timing**» section, you need to configure the parameters of the transmitted ArtNet signal to the Converter.

In the «**Macros**» section, you can open a window for sending macro commands to the Converter for fine-tuning.

In the «**Universe settings**» section, you need to specify the working settings for the ports and universes of the selected Converter. All universe settings will be exported to the Player during export.

**Start universe** – setting specifies the universe from which the numbering of all other universes will start. For example, if you specify 10, the first port will start with the 10th universe, and then continue in order.

**Ports count** – setting specifies the number of physical ports on the selected Converter. In our case, it is either 2 or 6.

**Universe per port** – setting specifies how many universes a Converter port can handle. The port can work in normal mode, handling one universe per port, or in «Superuniverse» mode, in which case two universes will be sent per port, doubling the volume of data transmitted and doubling the number of fixtures that can be connected to one Converter. Here, a number higher than this may also be specified in case the Converter is operating in SPI mode.

In the «**Main**» section, you need to specify the basic settings of the Converter. These settings will also be exported to the Player during the export of all settings.

**Name** – setting specifies the name of the selected Converter, which is specified for convenience.

**Enable** – setting specifies whether the Converter is enabled or disabled. When enabled, it starts transmitting Art-Net data over the specified IP address and network card, as well as only to the universes that are configured for this Converter.

**Visible** – setting specifies whether the fixtures patched to this Converter are visible or hidden in the «Mapping» window.

**Protocol** – setting specifies the data transmission protocol for this Converter. The options are ArtNet or sACN.

**Controller type** – setting specifies the type of operation of this Converter. The options are DMX or SPI.

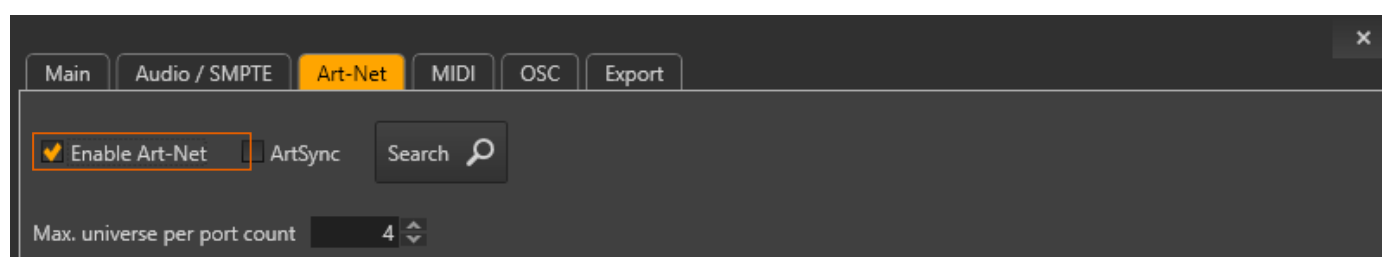
**Broadcast** – setting specifies whether the ArtNet signal is sent over wide broadcast (Broadcast) on the specified network card when enabled. This means that the signal will be sent to all devices on the network.

**IP address** – setting specifies the IP address of this Converter. It needs to match the physical device for proper operation.


**Port** – setting specifies the port for connecting to the Converter.

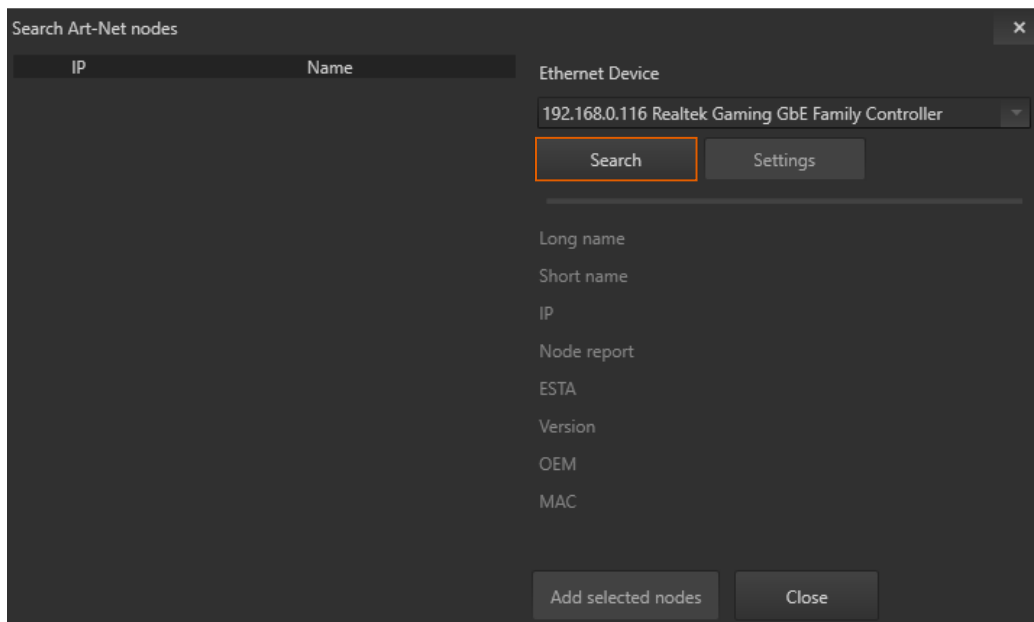
**Network** – the network card through which the ArtNet signal will be transmitted.

Also, to transmit the ArtNet signal, it is necessary to enable the «Art-Net» option in the «Settings – Properties – Art-Net» section by checking the box next to it.

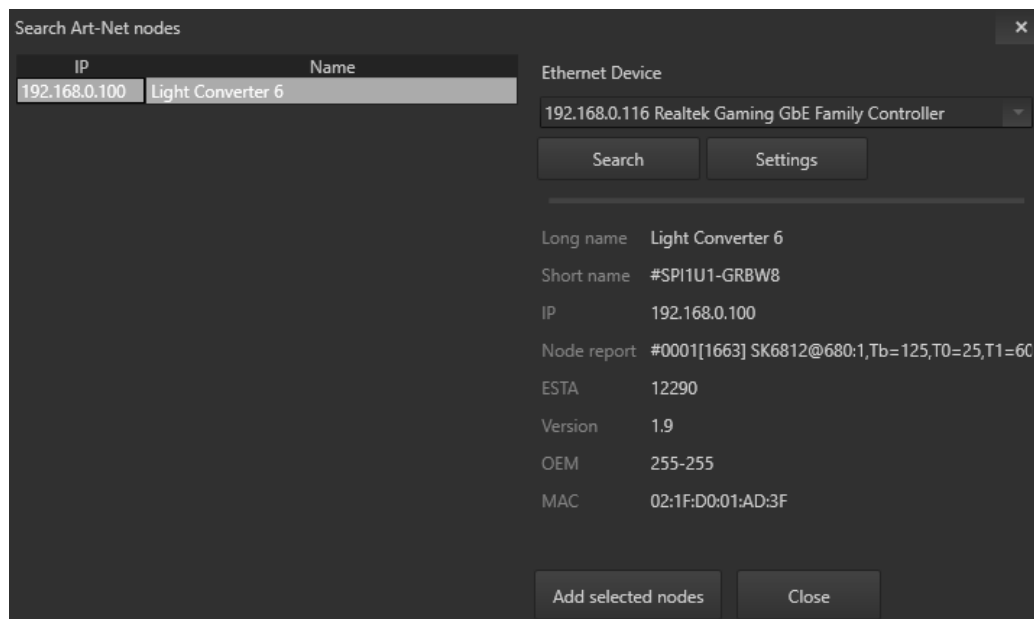


### 4.3 Light Stream Converter settings

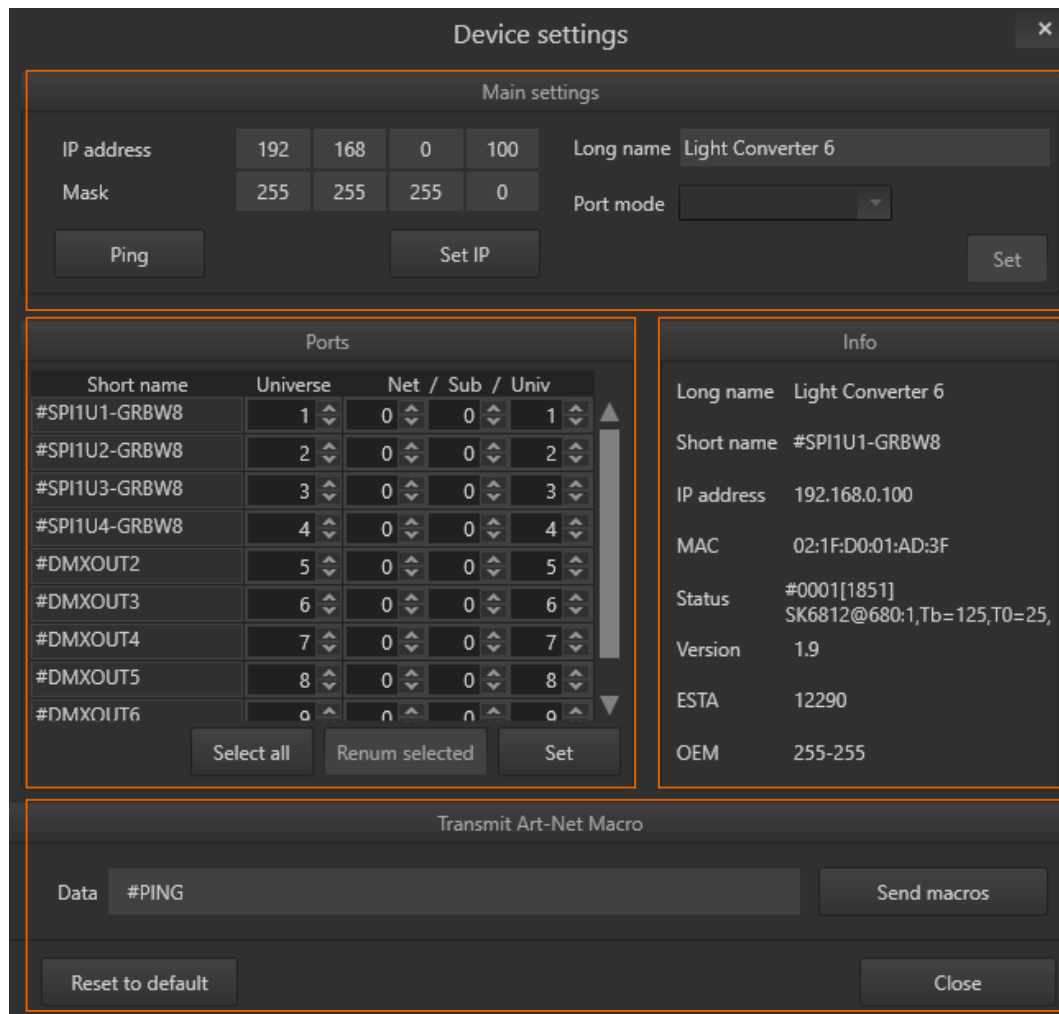
Light Stream Converter can also be programmed using the Light Stream program. To do this, you need to connect the Converter to a computer via an Ethernet cable. Then you need to open the ArtNet device search window, which is located either at the bottom of the «Fixtures» panel and looks like a magnifying glass , or in the «Settings – Properties – Art-Net» section, also a magnifying glass but with the label «Search». By clicking on this button, the ArtNet device search window opens.



In this window, you need to select the network card to which all Light Stream Converter are connected or will be connected, then click the «Search» button. In the current situation, we are assuming that the IP address of the Converter has already been configured previously.



If everything is done correctly and the device is connected to the network, it will appear in the device list. You can select it and some information about it will appear on the right. Then you can click the «Settings» button and the settings window for the selected Converter will open.



### The «Device settings» window is divided into several areas.

**Main settings.** All settings are saved on the physical device of the Converter and stored on it. When changes are made, closed, and reopened, the settings will be loaded directly from the Converter.

**IP address** – address for connection. Here, you can configure the IP address of the Converter, as well as specify the address through which connection to it is established.

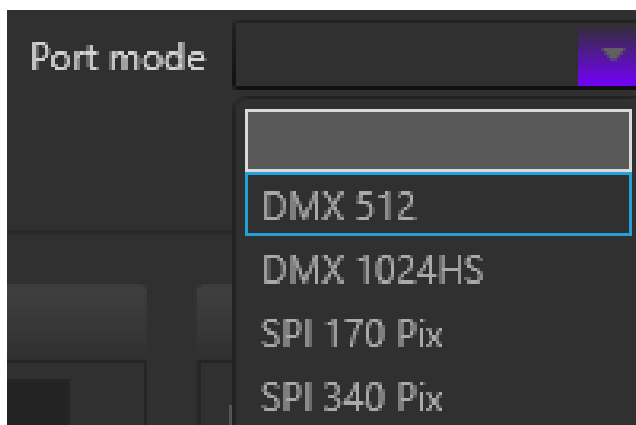
**Mask** – mask for connecting to the Converter.

The **«Set IP»** button applies the specified settings to the Converter. After changing the IP address, it is necessary to close this window and search for the device again, and then open its settings.

The **«Ping»** button sends a #PING macro command to the Converter, and all LEDs start blinking for a few seconds. This is necessary to detect the connection of the Converter and ensure that it is properly connected to the computer.

**Long name** – Converter name.

**Port mode** – port operation mode of all ports of the Converter..



The **«Set»** button sets the specified port mode. After clicking this button, it is necessary to close this settings window, search for the Converter again, and then open its settings again.

**The options to choose from are:**

**DMX 512** – standard port operation mode for DMX, 1 universe per port. A total of 6 universes can be used on the Converter.

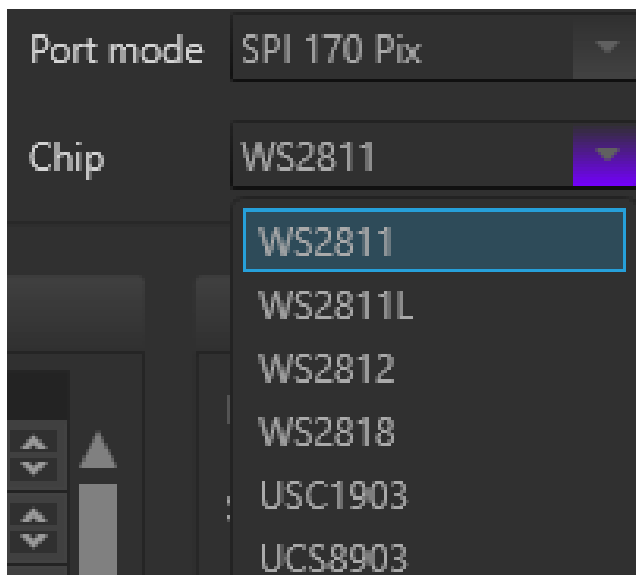
**DMX 1024HS** – extended mode extended port operation mode for DMX, 2 universes per port. A total of 12 universes can be used on the Converter.

**SPI 170 Pix** – standard port operation mode for SPI, 1 universe per port. A total of 6 universes can be used on the Converter.

**SPI 340 Pix** – extended mode extended port operation mode for SPI, 2 universes per port. A total of 12 universes can be used on the Converter.

**SPI 680 Pix x1** – extended and increased port operation mode for SPI, 4 universes per port. A total of 24 universes can be used on the Converter.

When selecting the SPI port mode, a additional menu appears with a choice of Chip for pixels that will be connected to this Converter.



**Ports** . Large window for configuring each port separately. Here you can assign a specific universe to each port.

At the bottom there are 3 buttons.

**Select all** – selects all ports

**Renum selected** – changes the universes on the selected ports. It is convenient to use in combination with the previous button. Select all. Set the initial universe number, the first port will be programmed to it, and then all subsequent ports will be programmed to the next universes.

**Set** – applies the specified settings to the Converter..

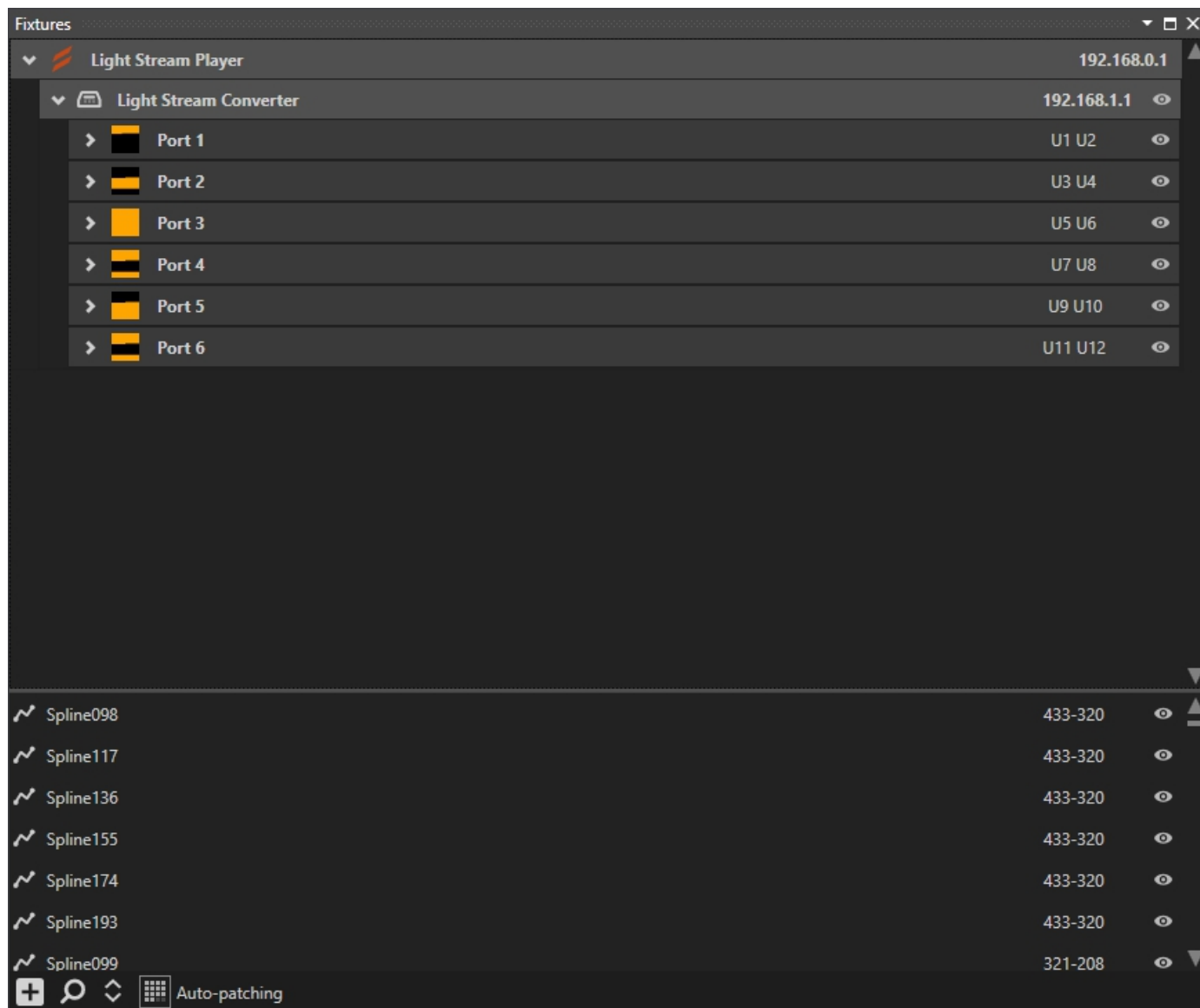
**Info**. Brief basic information about the device

**Transmit Art-Net Macro** The macro transmission window for fine-tuning the Converter, the macro will be sent to this particular Converter at the above IP address.

**Reset to default** – resets all settings of the Converter except its IP address to default settings.

## 5. Fixtures

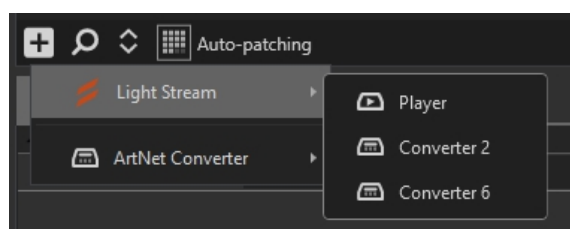
All fixtures created in the program are located both in the «fixtures» window and in the «Mapping» window, and they closely intersect each other. The «Fixtures» window is divided into two areas: upper and lower. In the upper area, devices are located to which instruments are attached. In the lower area, instruments that have not yet been patched (attached) to any devices are located.



### Tools panel in the Fixtures window.



**Add controller** – clicking this button opens a popup menu where you can add a Light Stream device or another ArtNet Converter with a specified number of ports.



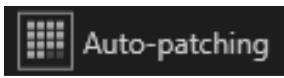




**Search** – opens a window for searching ArtNet devices, through which you can add them to the project as well as configure them.

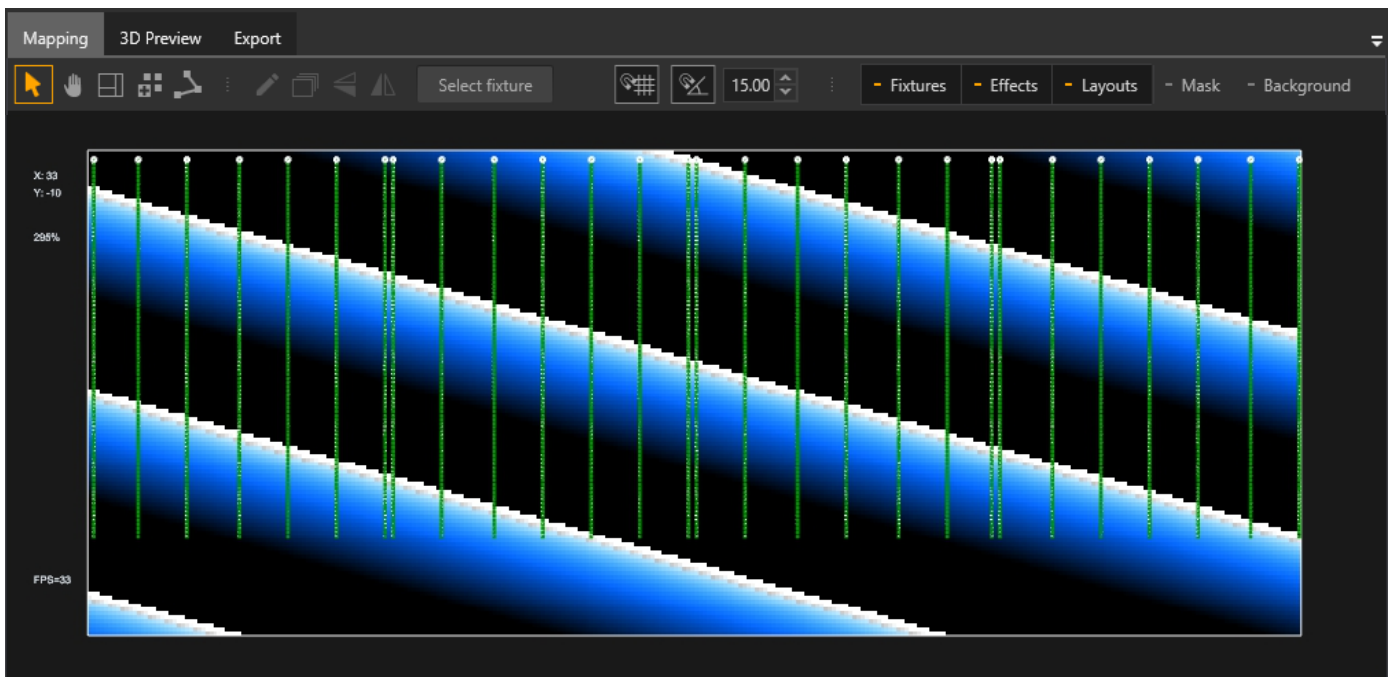


**Wrap** - clicking this button collapses all added devices and their ports.

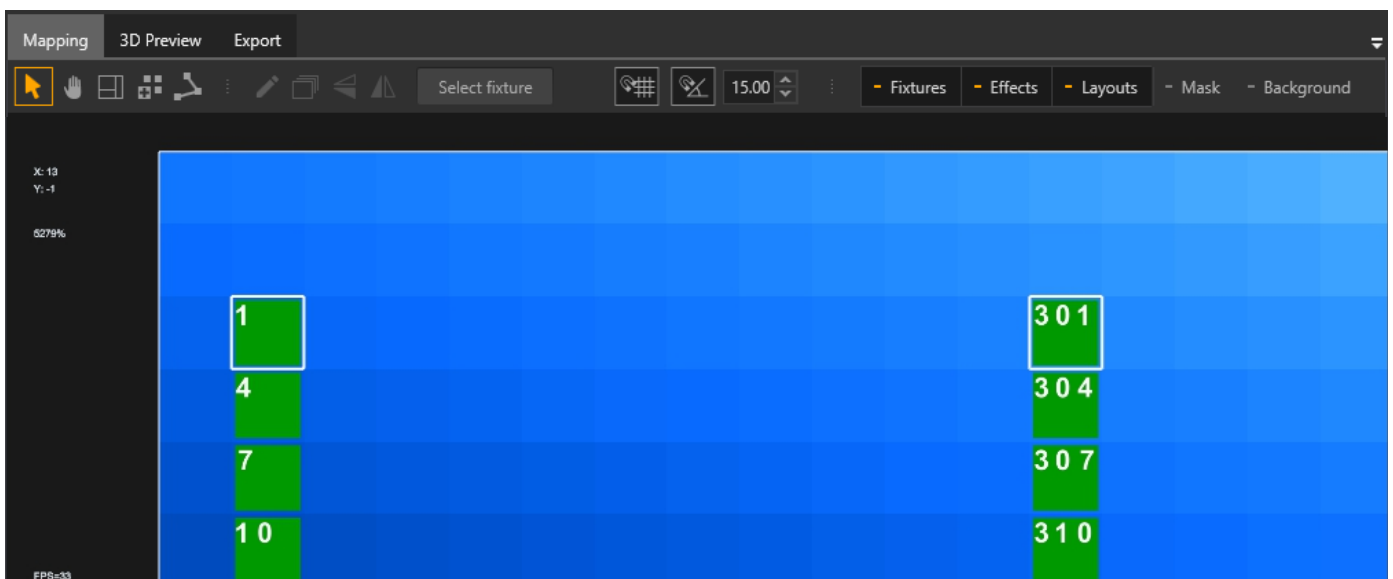


**Auto-patching** – When this button is active during patching, the addressing of instruments will be set strictly in order and sequentially. This helps to speed up patching and create scenes more quickly.

The same fixtures are also located in the mapping window and appear as green pixel lines (splines) or dots (single lights).

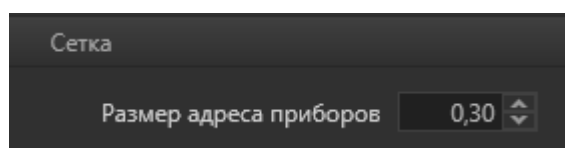


Each device and each pixel has its own address, which can be seen by zooming in on one of the instruments. Addresses may change during patching of instruments to the Converter.



You can also change the size of this font in settings.

### «Settings – Properties – Main – Mapping – Instrument address size».



### All fixtures have their own parameters

Spline parameters in the «Mapping» window.



**Visible** – controls the visibility of the instrument on the «Mapping» panel.

**Snap to pixel** – Controls the binding of pixels to the grid.

**Smooth** – controls «smoothing» of the line, which is used when we want to draw a curved line with rounded edges.

**Address** – first address of the fixtures.

**Universe** – the universe on which the device is located is configured only during patching.

**Count fixtures** – number of instruments in this spline.

**Fixed pixels** – When enabled, sets the number of pixels on this spline to the same as the number of sides on this same spline.

**Address offset** – Address shift allows you to specify a shift between the addresses of each pixel, which is often used to configure the control of the W channel separately.

**Reverse** – Swaps the addressing of the start and end of the spline when clicked.

**Fixture type** – fixtures type clicking this button opens the «Fixtures library» where you can select the necessary device, such as simple RGB or RGBW or from a specific manufacturer.

Single light parameters in the Mapping window.

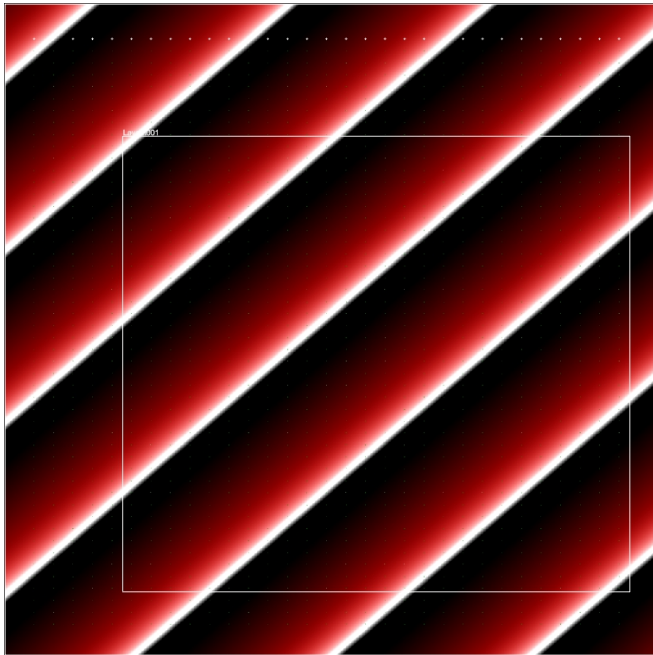


## 6. Effects

Effects are used in the program to create simple or complex animations. You can combine effects, move them on the timeline, shorten or lengthen them, and adjust parameters.

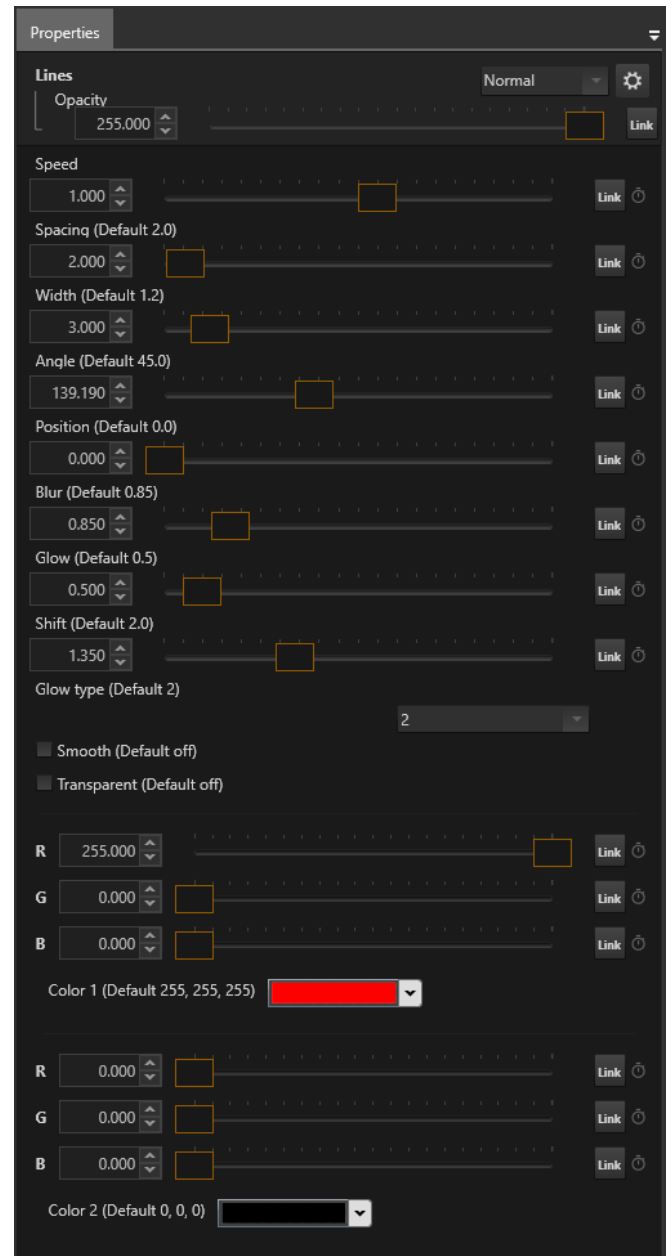
### Examples of effects.

For example, on this image, there are 3 copies of the «Lines» effect with different parameters

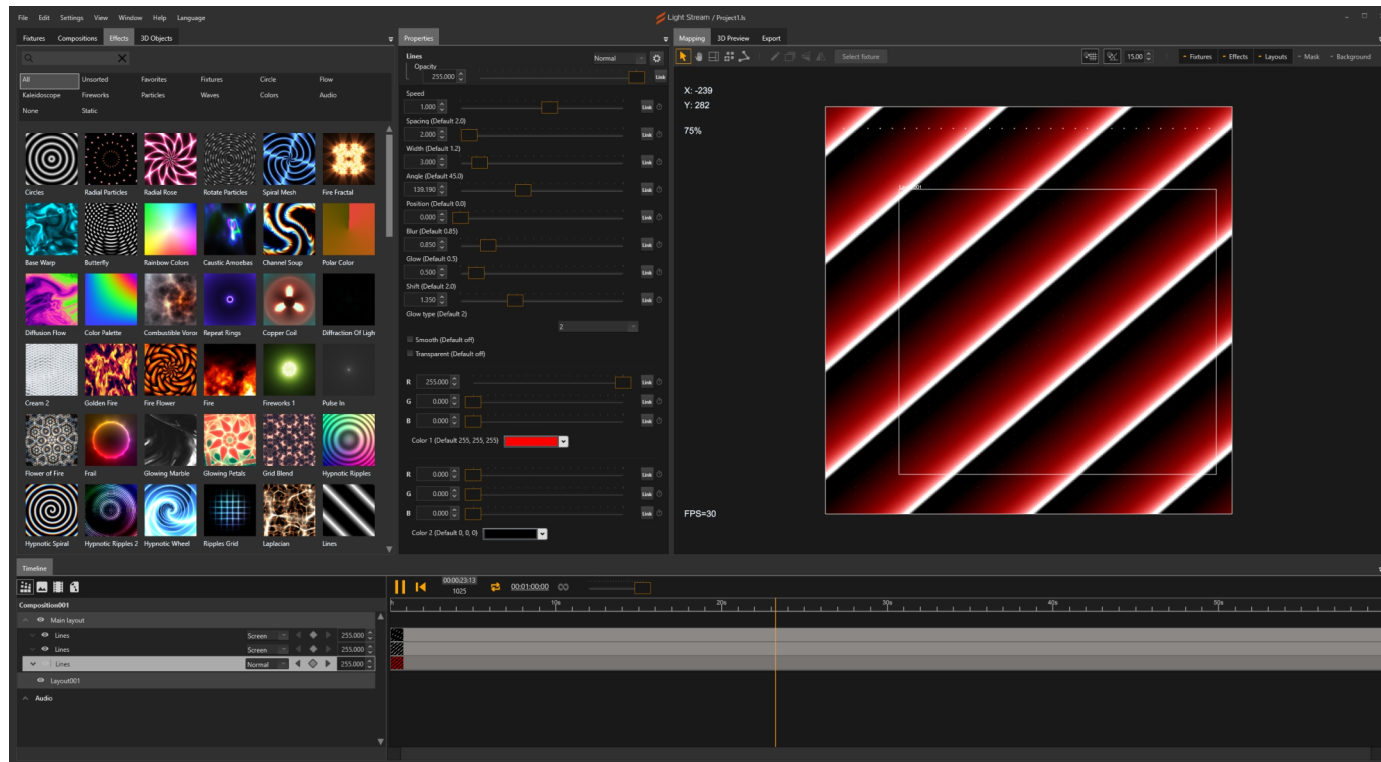


### Effect parameters.

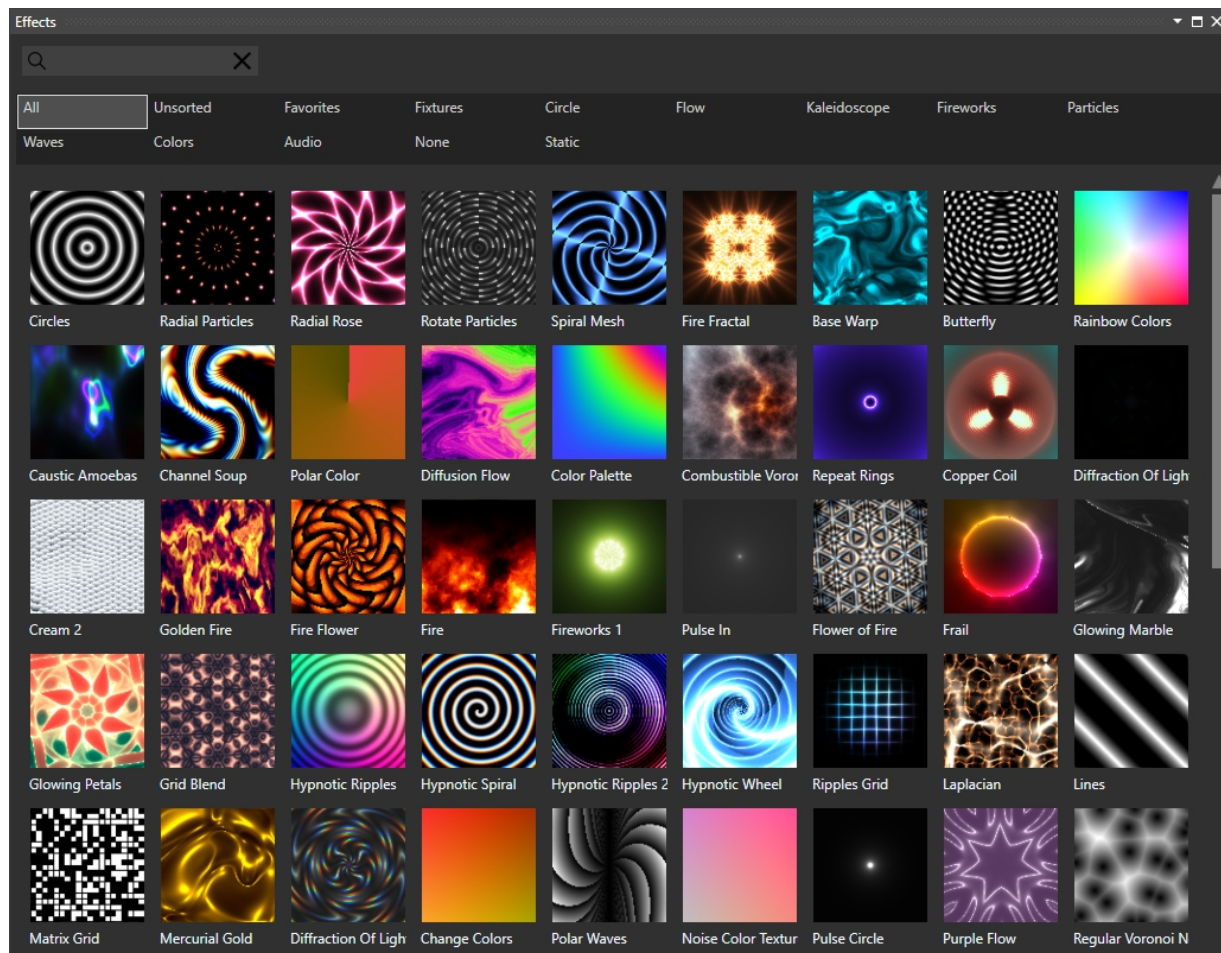
Each effect also has its own unique parameters.



Here is how it looks in the entire program.



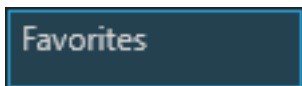
Effects (shaders) panel.



In the «**Effects**» window, all available effects in the program are located, sorted by certain folders (categories), which can be switched at the top of this window, for example:



In the «All» folder, all effects are displayed at once.



The «Favorites» folder can be used to add favorite effects and have quick access to them.



In the «Circles» folder, all «circular» effects are located.

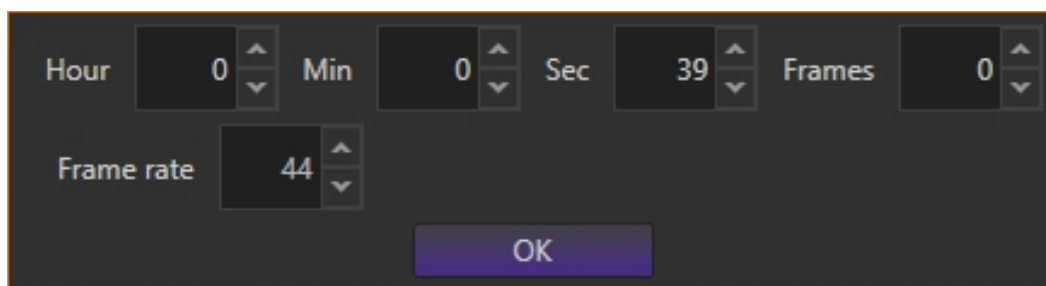


There is a search bar that allows you to search for an effect by name.

## 7. Compositions and timeline

A composition in Light Stream is an entity within which all effects, images, and video are arranged on the 'timeline' with certain settings.

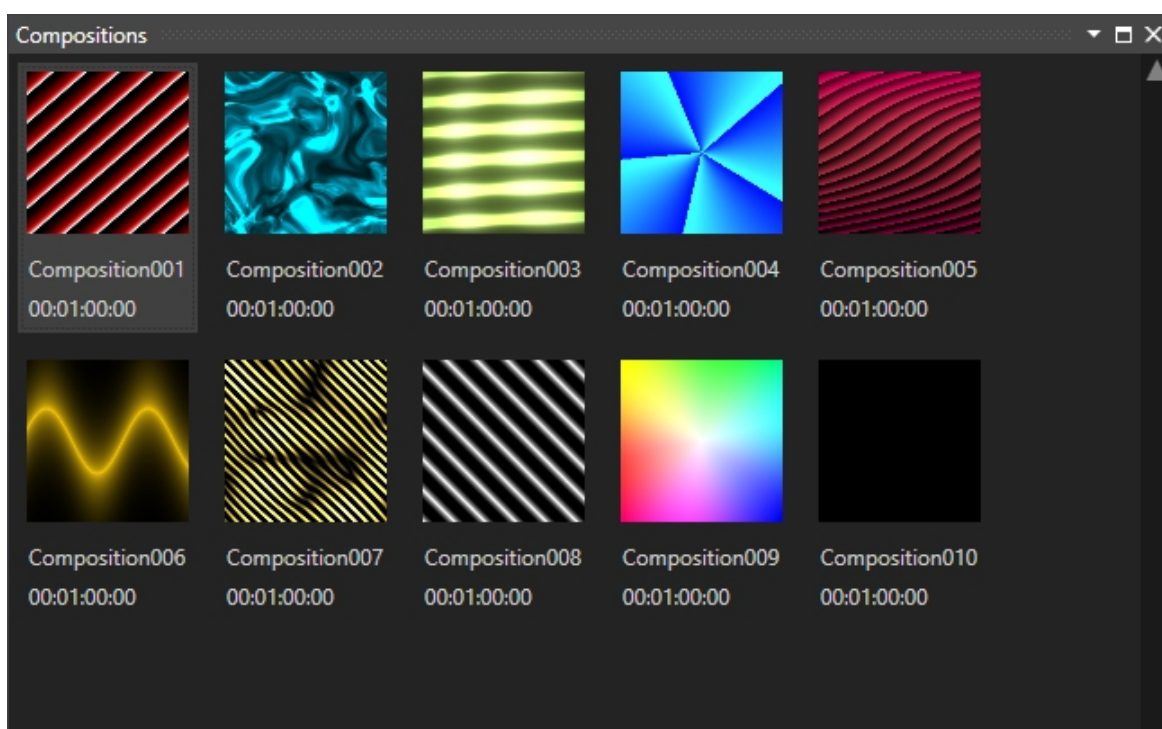
All compositions have certain settings, such as composition duration, playback frequency in frames per second, and name. You can open the settings for composition duration and playback frequency by selecting a composition and clicking on the time indicator on the **«Timeline»** panel. **00:00:17:00**



To rename a composition, you need to double-click on its name in the **«Composition»** window.



### Composition panel



On the composition panel, all compositions created in the project are located.

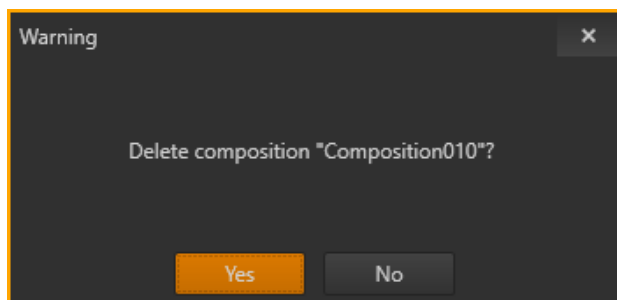
At the bottom, there are 2 buttons.



Create new composition – clicking this button creates a new composition and switches to it immediately.

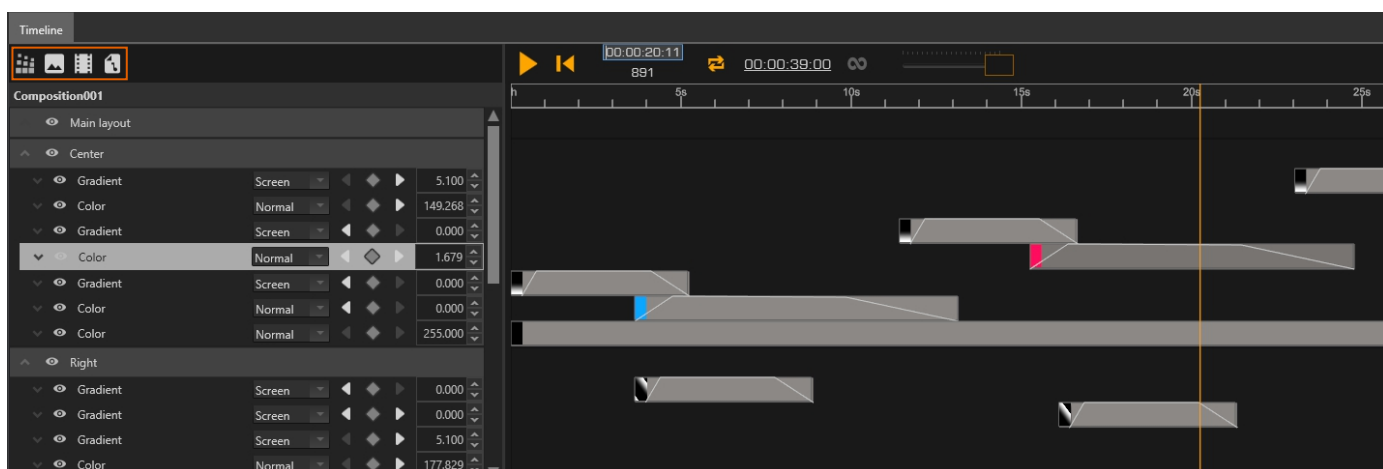


Delete selected composition – clicking this button opens a confirmation window for deleting the selected composition.



### The «Timeline» window is used to:

- adding effects, video, images, and audio.
- arranging effects on the timeline within each composition.
- setting the blending of effects and layers between each other.
- controlling the keys of various parameters of effects.



### Addition tools



Opens the «Effects» panel, where you can select any effects and add them to the timeline.



Used for adding images to the project.



Used for adding video and sequences.



Used for adding audio and music.

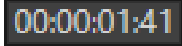
## Playback tools



**Play/Pause** – starts and pauses playback.



**Rewind to the beginning and stop** – sets the playhead to the beginning of the timeline and pauses playback.



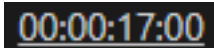
The current playback time of the song. Also marked with the cursor (orange playback line).



Current frame being played in the composition, displayed along with the time.



**Loop** – a button that allows you to loop the playback of a song, if active - when the time comes to an end, the song will start again and so on in a circle. If the button is inactive, when the playback cursor comes to the end, playback will stop.



Composition duration – button that opens a window with composition parameters when clicked. This window allows you to set the duration of the composition and the playback frequency.



**Infinite playback** – if the button is active, playback will continue when the playhead reaches the end of the timeline, rather than starting over from the beginning. This is used in conjunction with effects, so that they do not fade out or repeat their playback from the beginning, but continue playing further along the timeline.

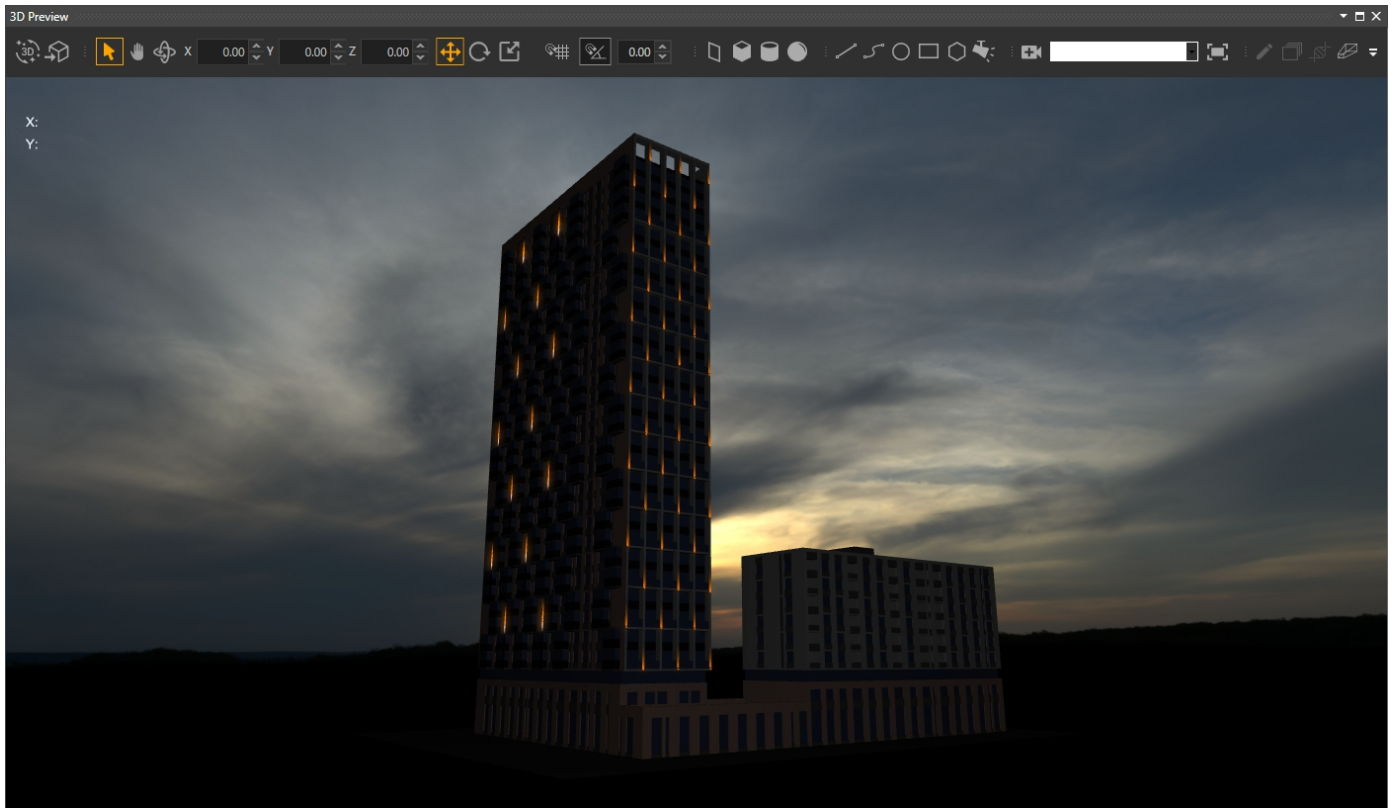


**Transparency master** – slider that controls the transparency of all effects in real time through Art-Net. This parameter does not affect the export of effects, as they are exported ignoring this setting.



## 8. 3D Preview

«**3D Preview**» window is a powerful tool that allows you to create or import 3D models into the project and add lighting effects to them



The «3D Preview» window works closely with the «3D Objects» window. All objects that are in the «3D Preview» window will also be displayed as a list on the «3D Objects» panel.

### Toolbar



**Magic 3D button** – allows you to instantly import all devices from the 'Mapping' field into 3D objects, which simplifies 3D modeling of devices in the project.



**Import obj** – imports 3D models into the project.



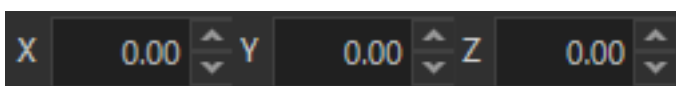
**Selection and movement** – standard tool for selecting 3D objects inside the window and moving them.



**Hand** – used for free navigation in the «3D Preview» window.



**Orbit** – used for free camera rotation inside the 3D window with the mouse.



**Coordinates** – display the coordinates of the selected 3D object, allowing you to change them here.



**Translation (Q)** – tool that allows you to move the selected 3D object inside the 3D window with the mouse.



**Rotation (E)** – tool that allows you to rotate selected 3D objects.

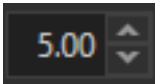


**Scaling (R)** – tool that allows you to scale selected 3D objects.



**Snapping** – tool that allows you to attach the edges of the drawn or edited spline to the vertices of 2D, 3D objects, or models.



**Rotation snapping** - when rotating selected devices, attaches the rotation to the specified number in the adjacent window,  in this case, the rotation will occur in steps of 5 degrees.



**Plane** – creates a 2D plane.



**Cube** – creates a 3D cube.



**Cylinder** – creates a 3D cylinder.



**Sphere** – creates a 3D sphere.



**Line** – creates a straight line.



**Draw spline** – allows you to draw a curved spline with the desired number of sides.



**Circle** – creates a 2D circle.



**Rectangle** – creates a 2D rectangle.



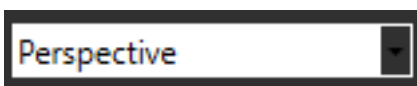
**Hexagon** – creates a 2D hexagon.



**Create from fixture** – creates a 3D device based on the selected device from the «Mapping» panel.



**Camera** – creates a new camera.



**Camera or view selection field** here you can select the main camera (Perspective) as well as all additional ones, they will be arranged at the bottom,

and you can also select one of the views from the desired side, Top, Bottom, Left, Right, Front, Back.



**Fit camera** – when pressed, zooms the camera in on the selected object. The object can be selected in 3D as well as on the 3D Objects panel.



**Edit spline** – allows you to start editing vertices of the selected spline.



**Duplication** – allows you to create a specified number of independent copies of the selected object with a specified positional offset along all three axes.

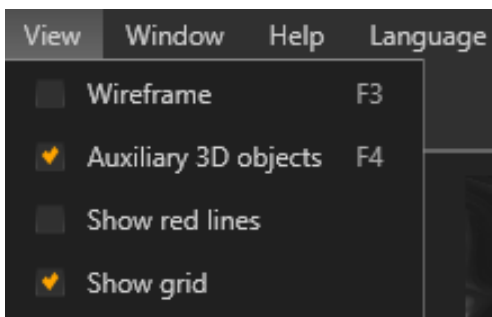


**Spline cloner** – when you select a spline and this tool, it creates a separate 3D object, which creates clones of the selected spline, unlike the «Duplicate» tool, this tool allows you to change all parameters of clones at any time of working with the project. It does not create independent copies of the spline. The copy object can be reselected at any time.



**Projection** – creates a projection in 3D space. It also appears on the 'Timeline' panel as a separate layout layer, inside which you can place effects. The projection takes a complete image of the effect and 'overlays' it on all objects in 3D within the area where it is located.

### Additional display settings can also be found in the View menu

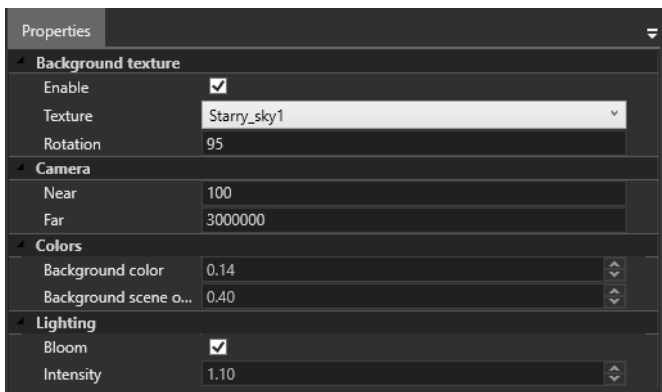


**Wireframe** – displays all objects in a grid representation.

**Auxiliary 3D objects** – displays all additional objects inside the 3D window, such as projections and cameras.

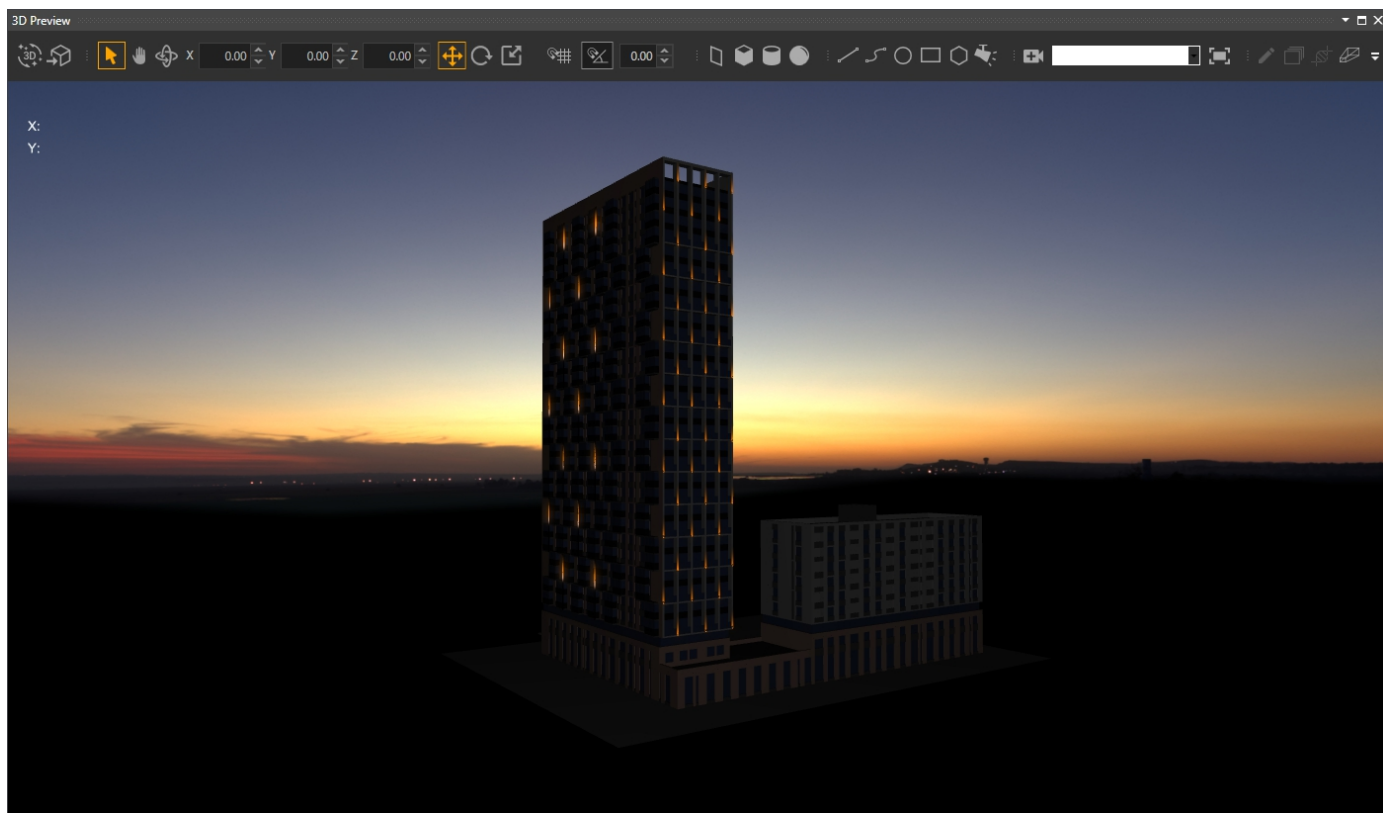
**Show grid** – displays the 2D central grid in 3D.

If you click past any object, the «3D Preview» settings will open in the Properties window.



The **«Camera»** section contains the parameters of the standard camera (Perspective).

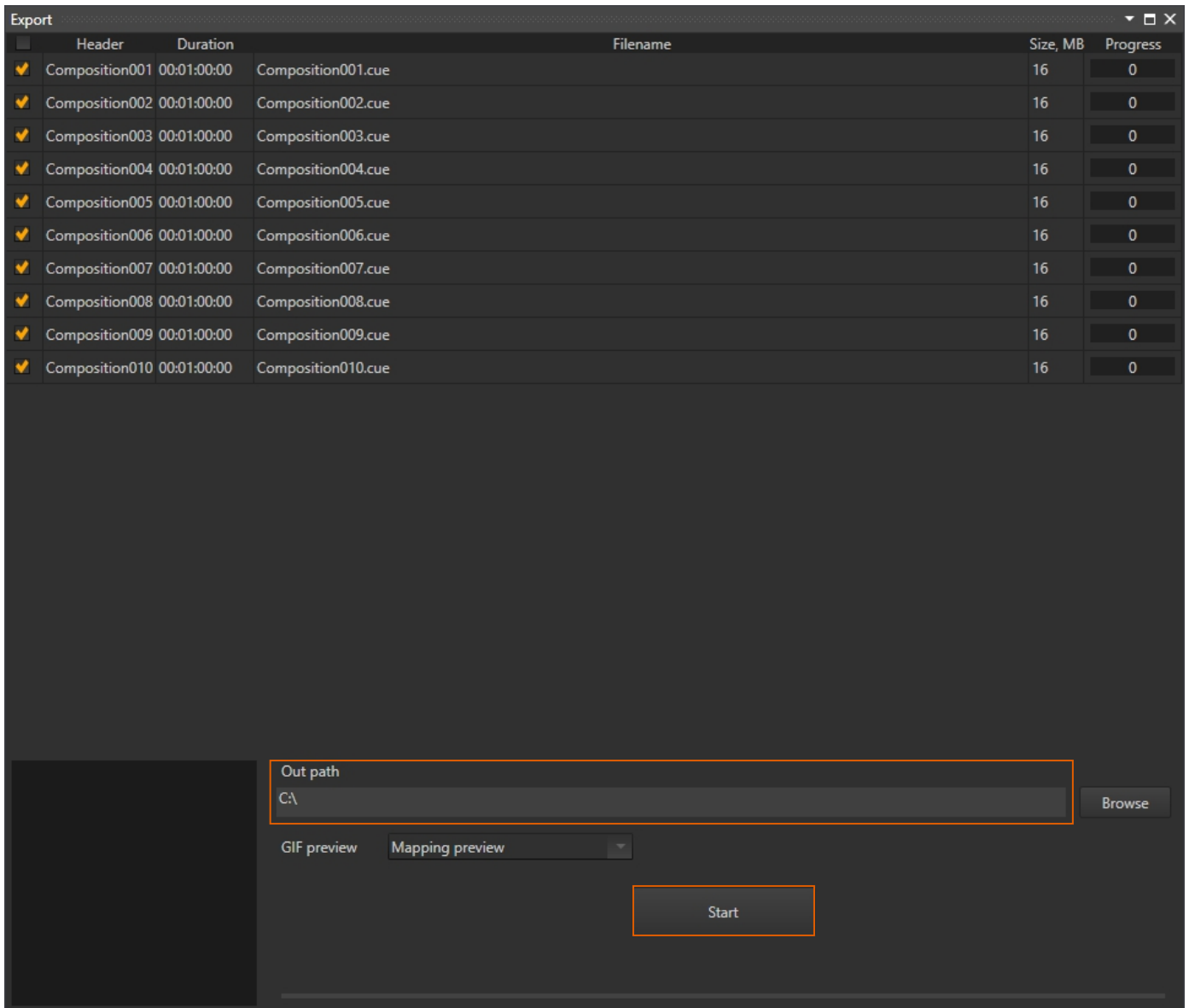
The **«Colours»** section contains parameters of background and objects brightness. The background texture works only when the checkbox at the bottom is enabled. You can select «Texture» and set the rotation angle, which is how it will look in 3D



The **«Lighting»** section contains settings for the lighting of all fixtures.

## 9. Export

The «**Export**» window is used for exporting animations to separate files that need to be loaded into the Light Stream Player in the future.



You can select which compositions will be exported by checking the boxes next to their names in the list.

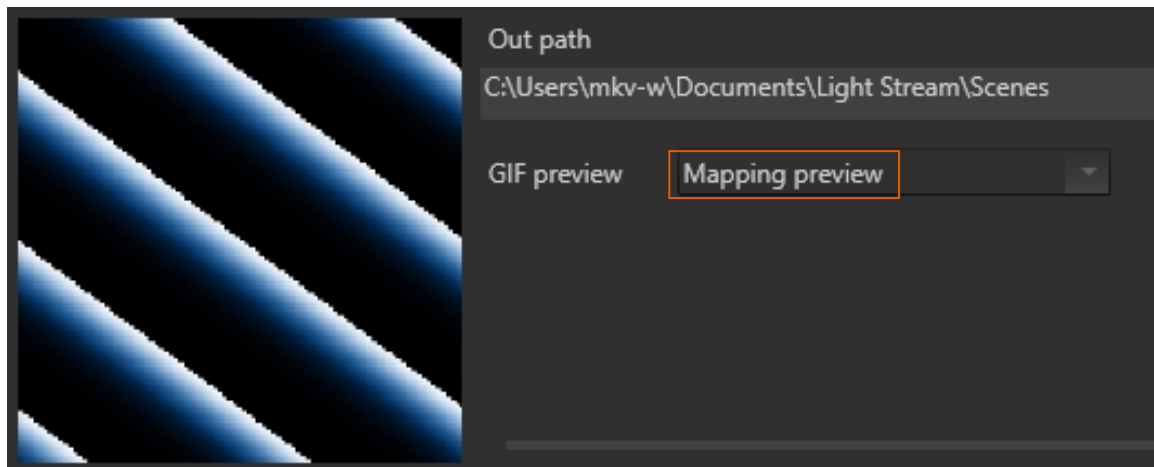
And below are the remaining settings.

**Out path** – the path where animations will be exported.

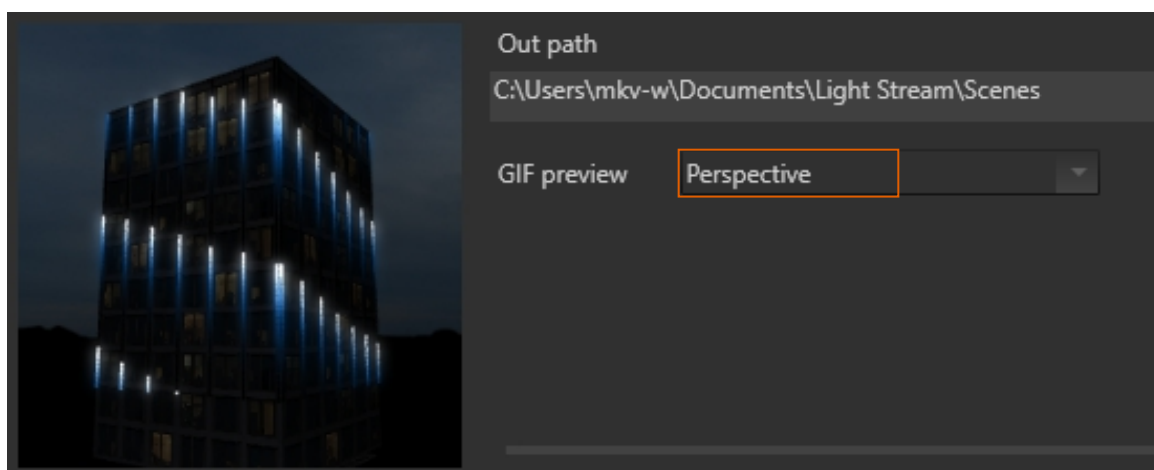
**Start** – the button to start exporting animations. Export can be stopped at any time, but cannot be paused.

After completing the export, cues files containing Art-Net data information, as well as GIF previews of the animation for the Light Stream Player, will be created in the selected folder.

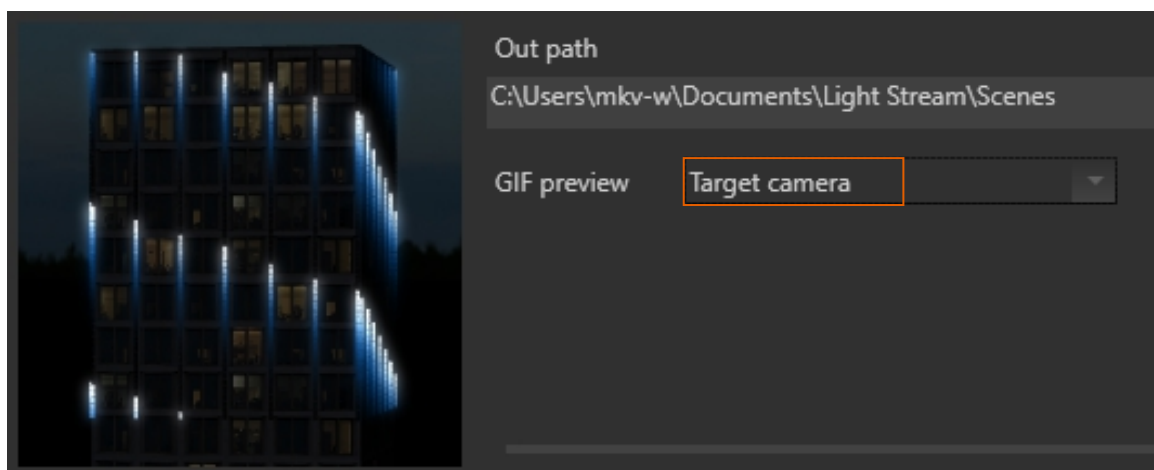
**The square with a preview** – this area contains a GIF preview of the animation, by default nothing is displayed here until the «Start» button is pressed. Once pressed, the preview of the animation will begin to display here. The preview of the animation will depend on the GIF preview settings. If the «Mapping preview» option is selected, the preview of the animation is taken directly from the «Mapping» window.



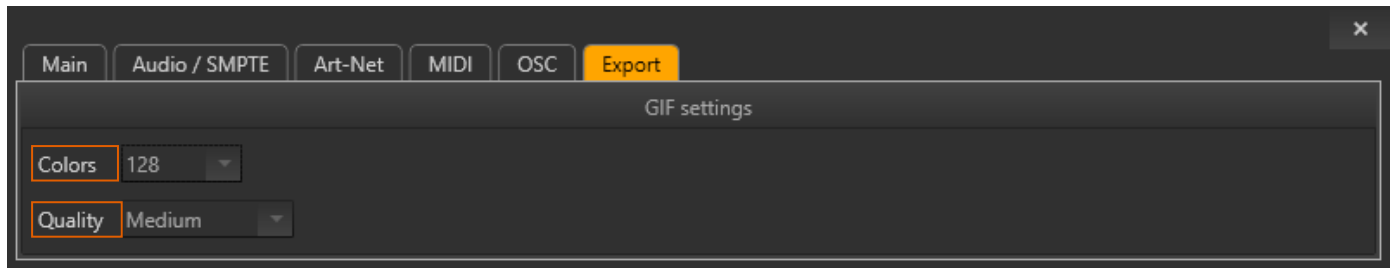
If the «Perspective» option is selected, the preview of the animation is taken from the «3D Preview» window and depends on the position of the camera selected there.



You can also create additional cameras manually to create different views for previewing animations. Below is an example of creating another camera specifically for exporting previews.



Additional settings for GIF previews can be found in «Settings – Properties – Export». Here you can find settings for image quality, by default the optimal values are selected.

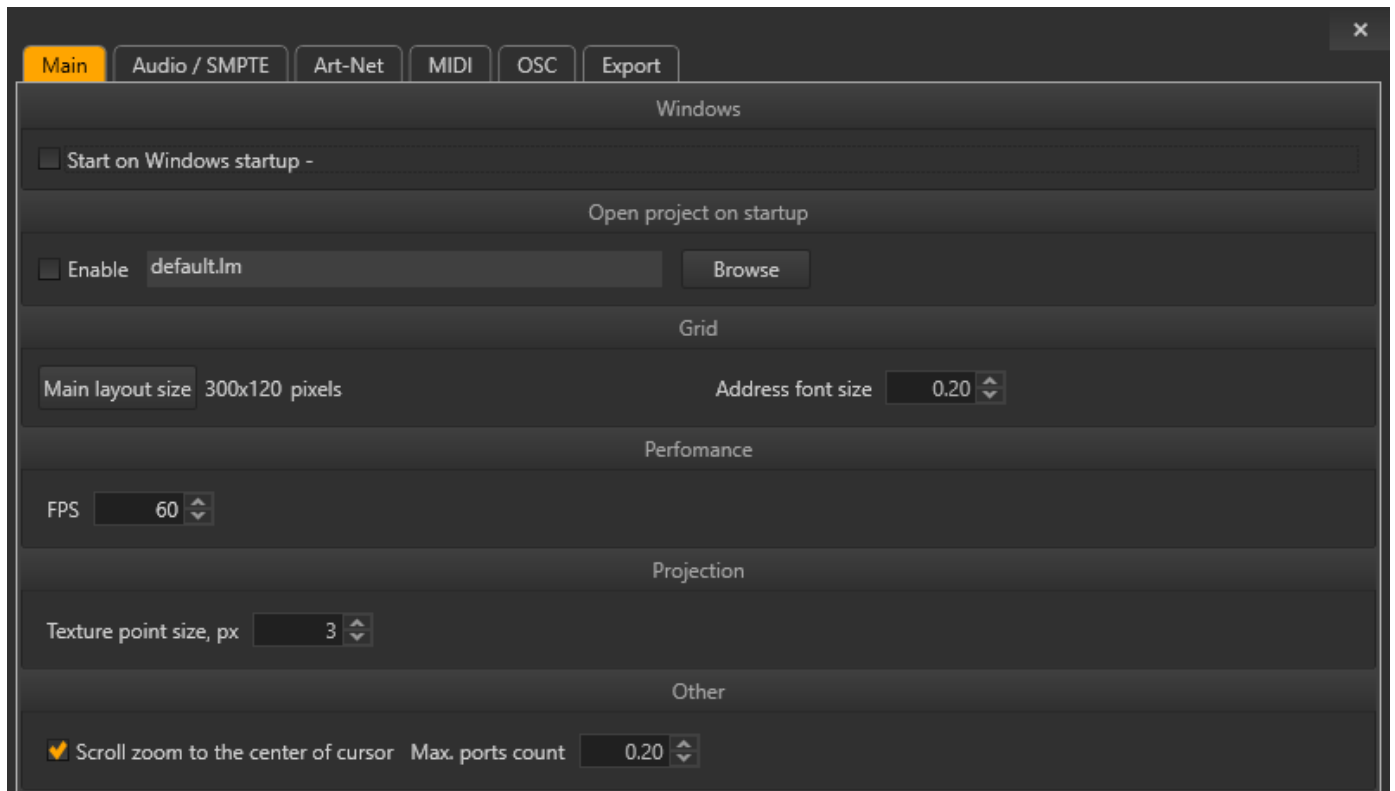


**Colors** – these are the colors used for output GIF animations. The higher the parameter, the more colors will be displayed.

**Quality** – the higher the value, the fewer frames will be skipped, but the output file with the animation will weigh more. The lower the value, the more frames will be skipped, and the output file with the animation will weigh less.

# 10. Settings

Program settings are available through the top menu «Settings – Properties (Ctrl+P)».



## Settings are divided into different tabs and sections.

On the «Main» tab, you can find the main settings of the program.

### In the «Windows» section

«Start on Windows startup», when activated, the program will load after Windows starts when turning on the computer.

### In the «Open project on startup» section

Checkboxes «Enable» and «Browse». If the checkbox is checked, then the selected project will always be launched when the program is started.

### In the «Grid» section, you can find settings for the «Mapping» field.

«Main layout size» – the size of the main «layout». You can click on the button and enter another value.

«Address font size» – the size of the addresses on the device panel in the «Mapping» section.

### In the «Performance» section, you can find settings related to the performance of the program.

Frames per second (FPS) sets the maximum frame rate for animations played.



## In the «Projection settings» section

Texture point size

## In the «Other» section, you can find other settings.

«Scroll zoom to the center of the cursor» – when the checkbox is checked and the mouse wheel is scrolled in the «Mapping» window, the zoom will occur from the center and to the center of the current cursor position. When the checkbox is unchecked, the zoom will occur from the center of the window. «Maximum number of ports» – sets the maximum number of universes on one port, values from 1 to 4.

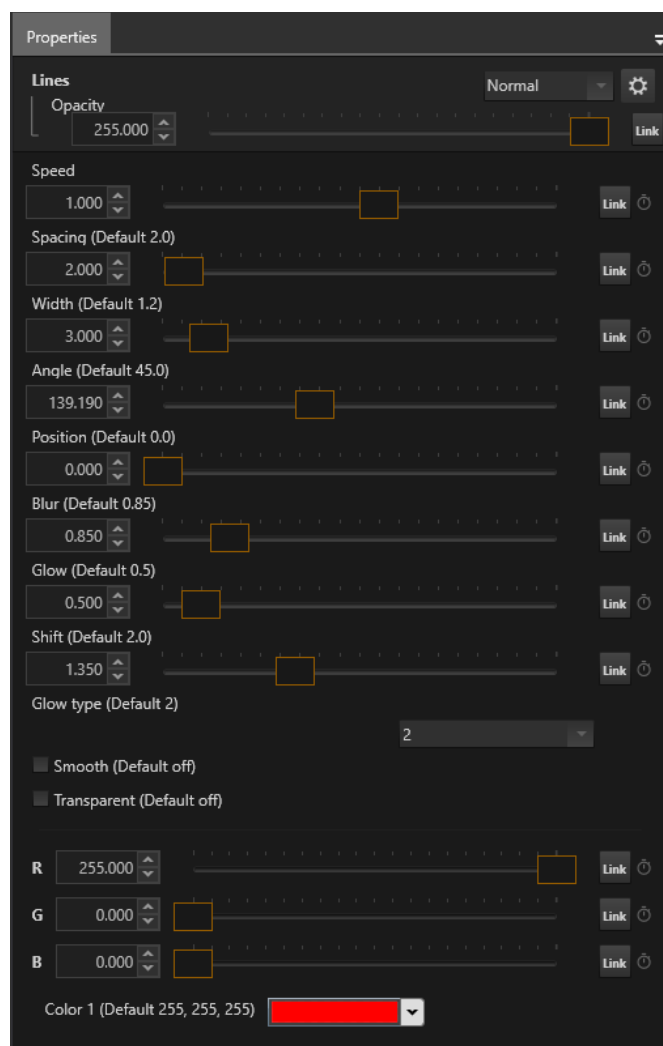
Multi-function window, what exactly will be displayed in this window will depend on which element in the programme was last selected.

If an effect is selected, its parameters will be displayed here..

If a layout is selected, its parameters will be displayed here..

If a device is selected on the «Fixtures» panel, its parameters will be displayed here.

Examples of effect parameters



And layout parameters

