

LightX User Manual

English edition · Windows · Software version 6.0.4.10

Manual version 2.0 | 2 October 2026



Figure 1 Text on a 32 × 16 lamp matrix, with the default LightX logo.

From layout to output

Design the layout → configure controllers and wiring → set sampling → create animation → export controller files or MP4.

This guide uses screenshots of the running application and repeatable procedures. The example project contains 512 lamps. Geometry values use the project coordinate system.

Scope: features available in version 6.0.4.10. Disabled buttons identify functions that are not available in this release.

Reading route and contents

For a first project, read pages 4, 11–14, 16 and 20–22. These cover a lamp layout, text animation and output. For tracing a reference image, also read pages 9–10.

Page	Topic
3	Interface, projects, language and version
4	Quick start: a 32×16 matrix
5–6	Draw lines, circles, paths and Bézier curves
7–8	Radius, spacing, helper grid and editing lamps
9–10	Layers, reference images and two-point calibration
11–13	Controllers, wiring and sampling
14–15	Timeline, effects and video capture
16–17	Text animation: procedure and parameters
18–19	Multi-frame commands and a worked example
20	Generate controller files
21–22	MP4, background music and default logo
23	Troubleshooting and shortcuts

Understand three separate objects

The layout defines where lamps are. Port wiring defines which lamp receives each data value. Animation frames define each lamp's color at a given moment. Check all three.

MP4 is for viewing and sharing. Controller files are for device playback. Music, logos and reference images are video presentation elements; they are not lamp protocol data.

Interface projects and version

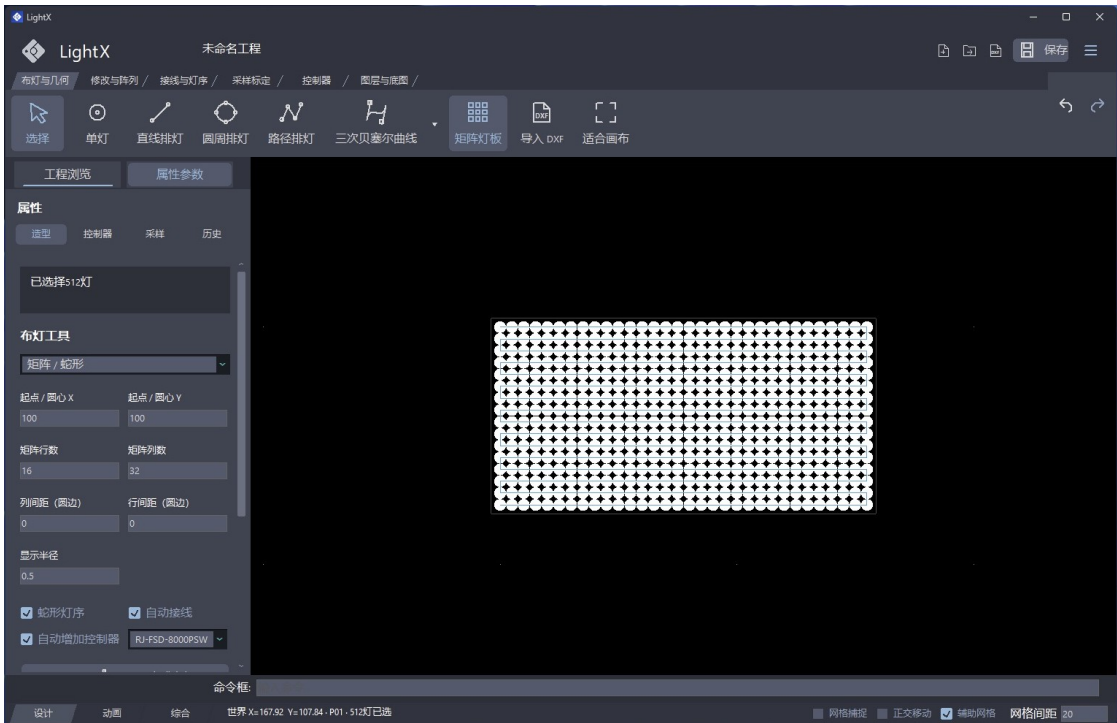


Figure 2 Tools at the top, properties on the left, canvas in the center and workspaces at the bottom. (Chinese interface shown.)

Workspace	Purpose
Design	Create lamps, edit shapes, manage layers, controllers, wiring and sampling.
Animation	Create effects, preview frames, animate text, capture video and edit the timeline.
Output	Check the project, build controller files and export MP4.

The top-right menu provides New, Open, Save, DXF import and language selection. Projects are saved as .zkt. Keep companion files in the project folder when moving or backing it up.

About is below Product in the menu. Open it to view the version and check for updates. Startup also displays a prompt when a newer release is detected. Save the project before updating.

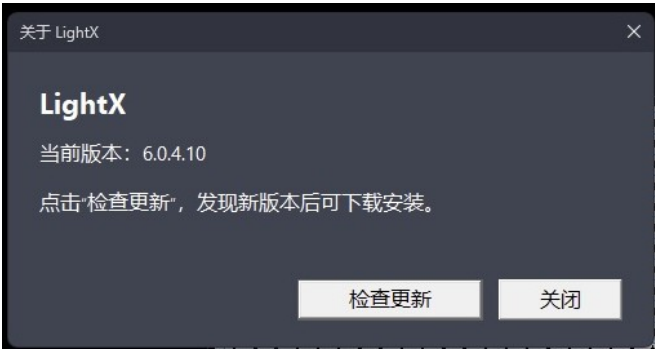


Figure 3 The screenshots in this guide are from version 6.0.4.10. (Chinese interface shown.)

Quick start with a matrix

1. Create and save a project, for example LightX_Manual_Demo.zkt. In Design, select Matrix.
2. Set 16 rows, 32 columns and lamp display radius 0.5. Set the counts and radius first, then set column and row gaps to 0.
3. Set both origin coordinates to 100. Enable Serpentine order, Auto wire and Auto add controller. Select RJ-FSD-8000PSW.
4. Click Generate lamps. The result should contain 512 lamps. Fit the canvas and check rows, columns and serpentine order.
5. In controller properties, confirm WS2811 and P01 usage of 512/1024. Save the project.

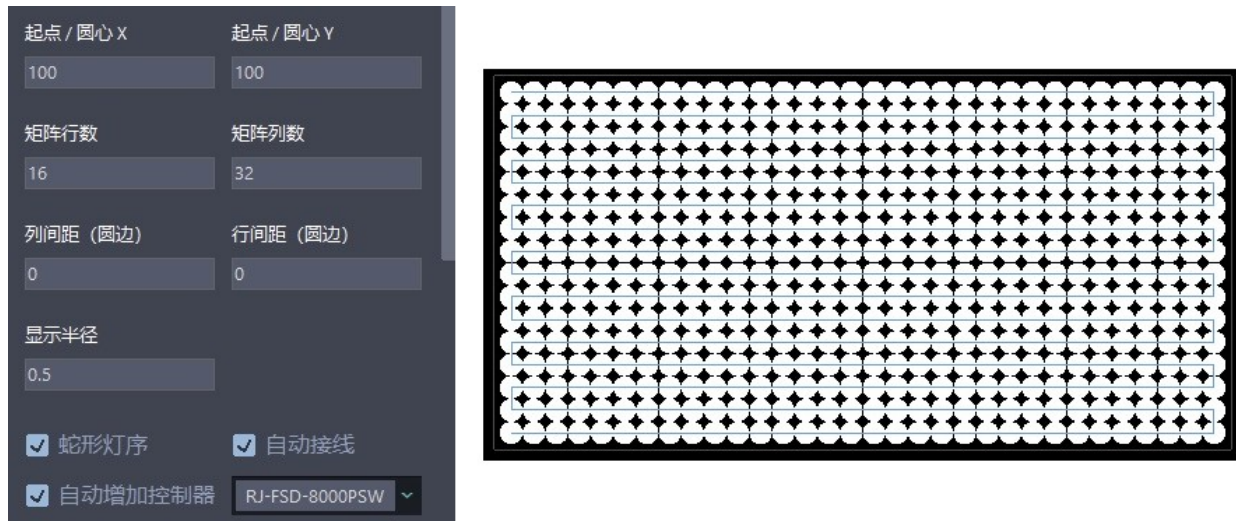


Figure 4 Example parameters and the generated matrix. (Chinese interface shown.)

The center pitch is $2 \times 0.5 + 0 = 1$. Lamp centers span 31×15 units; the displayed circles occupy 32×16 units. A gap of 0 means no edge clearance, not zero center pitch.

Draw lines and circles with the mouse

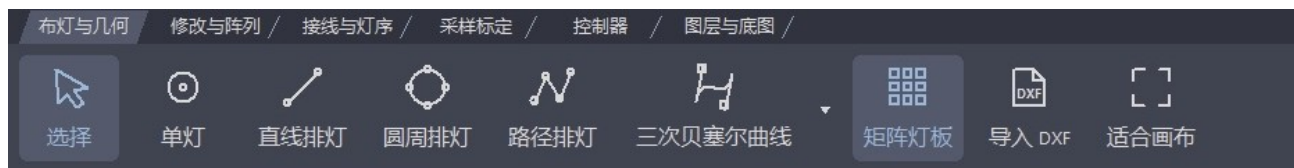


Figure 5 Layout tools include Line, Circle, Path, Bézier and Matrix. (Chinese interface shown.)

Line layout

1. Select Line. Press and drag on the canvas to define its start and end.
2. Adjust count, lamp display radius and spacing in Geometry properties. Enter coordinates for precise placement.
3. Check the draft, then click Generate lamps to commit it.

Circle layout

1. Select Circle. Drag from the center outward to set the overall circle radius.
2. Adjust the center, overall radius, lamp count, start angle and lamp display radius.
3. Check the draft and generate the lamps.

Circle radius controls the overall ring. Lamp display radius controls each lamp's displayed disc. The default display radius of 0.5 does not set the overall ring radius to 0.5.

Mouse drawing creates a draft. Parameter changes update that draft before generation. Changing generator settings does not automatically rebuild lamps that have already been committed.

Paths and Bézier curves

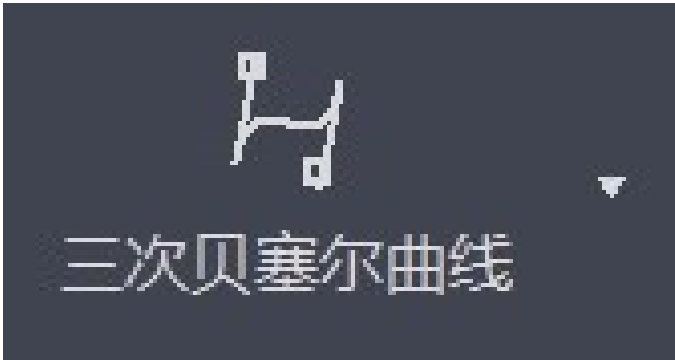


Figure 6 The Bézier type button and its dropdown triangle. (Chinese interface shown.)

Path layout

Select Path. Drag to draw a freehand path, or click successive vertices. At least two distinct points are required. Press Enter to finish a click-defined path.

After defining the path, set lamp count, display radius and spacing in Geometry properties. Check the distribution along the path, then generate lamps.

Bézier curve

Type	Controls
Quadratic Bézier	Two endpoints and one control point; useful for a single arch.
Cubic Bézier	Two endpoints and two control points; controls the direction at both ends.

1. Open the Bézier dropdown and choose Quadratic or Cubic. The button displays the selected type.
2. Drag on the canvas to define endpoints, then adjust control points or handles to shape the curve.
3. Set lamp count, radius and spacing. Check the curve draft and click Generate lamps.

Press Esc to cancel the current draft and return to the selection tool.

Radius spacing and helper grid

Parameter	What it changes	Relationship
Display radius r	The displayed disc of each lamp.	Default 0.5; separate from overall circle radius.
Column gap gx / row gap gy	Clearance between matrix lamp discs.	Center pitch: $px = 2r + gx$; $py = 2r + gy$.
Helper grid size	Spacing of the visual canvas grid.	A positioning aid; it does not rearrange lamps.
Sampling grid step	Scale of the color sampling grid.	Does not change geometry. Grid-center mode quantizes sample positions; text generation also uses it for sampling resolution.

Using the helper grid

In Design, enable Helper grid at the bottom and enter a positive size in the adjacent field. The example uses helper grid size 20 and a separately saved sampling step of 1.

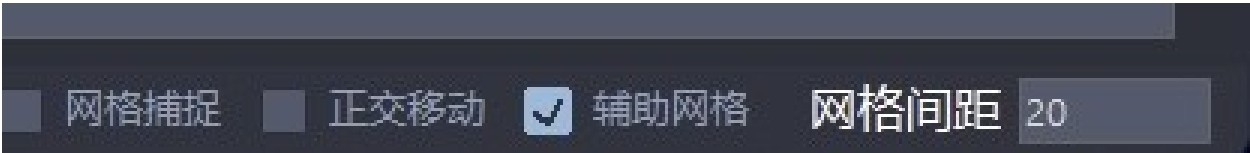


Figure 7 The helper grid switch and size field are at the bottom of Design. (Chinese interface shown.)

If the grid is hard to see, check the switch and zoom level. Adjust the helper grid size if it is too dense or sparse.

Changing counts or radius may recalculate default gaps. Enter counts, then radius, then row and column gaps, and check the draft. Project units are not automatically millimeters.

Select move copy and undo

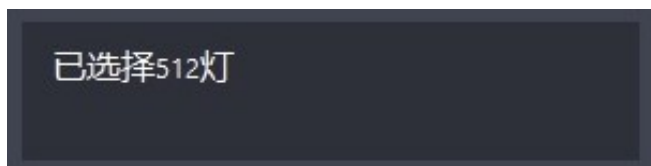


Figure 8 The selected lamp count appears above Geometry properties: 512 in this example. (Chinese interface shown.)

1. Use Select to pick lamps on the canvas, or drag a selection box for several lamps. Check the selected count.
2. Enter ΔX and ΔY , then click Move. Use Copy when the original lamps should remain.
3. Enter a rotation angle and apply rotation. Check both shape and port wiring afterward.
4. Use Ctrl+Z to undo. Use Ctrl+Shift+Z or Ctrl+Y to redo.

Delete removes the current design selection. For timeline frame ranges, use the del command on page 18. When a text field has focus, keys may act on that field first.

Use the wheel to zoom and the middle mouse button to pan. Press F to fit the canvas. View changes do not modify project coordinates.

Layers and reference images



Figure 9 The layer panel: lamp layers, reference images, visibility and locking. (Chinese interface shown.)

Layers organize lamp shapes by area or component. A reference image sits below lamps for manual tracing. It does not automatically detect outlines or create lamps.

1. Open Design → Layers. Create a lamp layer and make it current. New shapes are assigned to the current lamp layer.
2. Choose Import image and select BMP, JPG or PNG. Image data is saved with the project.
3. Select the image layer and unlock it. Set X, Y, width, rotation and opacity, then Apply. The image aspect ratio is preserved.
4. Lock the image again after positioning it. Draw lines, circles, paths or Bézier curves over it.

Visible controls design visibility; Locked prevents editing. Hiding a lamp layer does not delete its frames or wiring and does not disable device output.

Calibrate images and organize layers

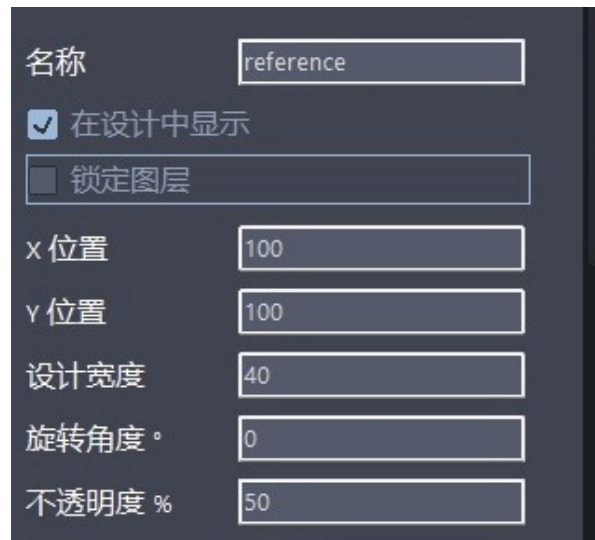


Figure 10 Example image: X=100, Y=100, width=40 and opacity=50%. (Chinese interface shown.)

Two-point calibration

1. Select a visible image layer, unlock it and choose Two-point calibration.
2. Click two points whose distance is known, then enter that positive distance in project units.
3. Confirm, check the scale and lock the image. Calibration sets image scale; it does not automatically relocate existing lamps.

Organization and output

Rename layers, change their order and move selected shapes into a lamp layer. Deleting a lamp layer transfers its shapes to the default layer. Deleting an image layer removes that reference image. Undo can restore the operation.

Show references in animation controls animation preview. MP4 export has a separate Include reference images option. Both are off by default. Controller files contain lamp data only.

Controllers ICs and port capacity

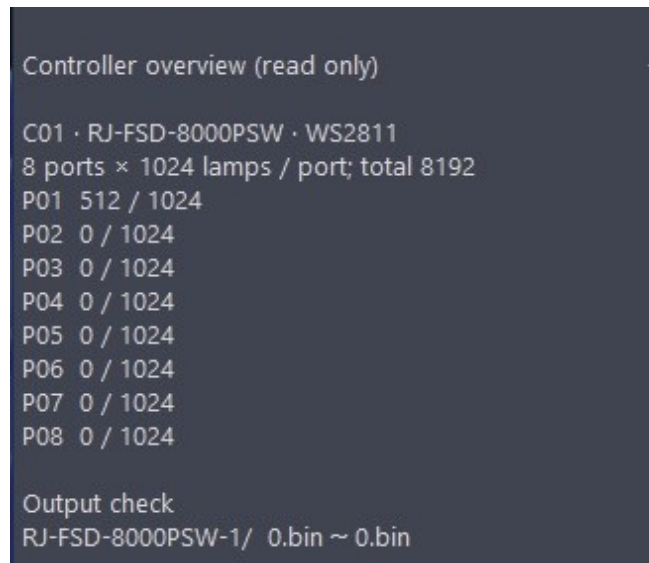


Figure 11 Example controller: RJ-FSD-8000PSW with WS2811.

1. Open Design → Controllers and select or add the model used by the installation.
2. Select the lamp IC and check port count and capacity per port. Use the profile displayed for that model.
3. Check each port's lamp count. This example has 8 ports, 1024 lamps per port, with 512 lamps on P01.
4. Before changing models, review routing and capacity. Confirm the conversion, then check the project again.

The current default model is RJ-FSD-8000PSW with WS2811. RJ-USB-500 provides the IC options used by RJ-FSD-1000. Capacity is determined by the selected profile.

A software model or IC selection does not replace the physical device specification. Before building files, confirm channel order, routing and capacity against the installation.

Wiring and lamp order

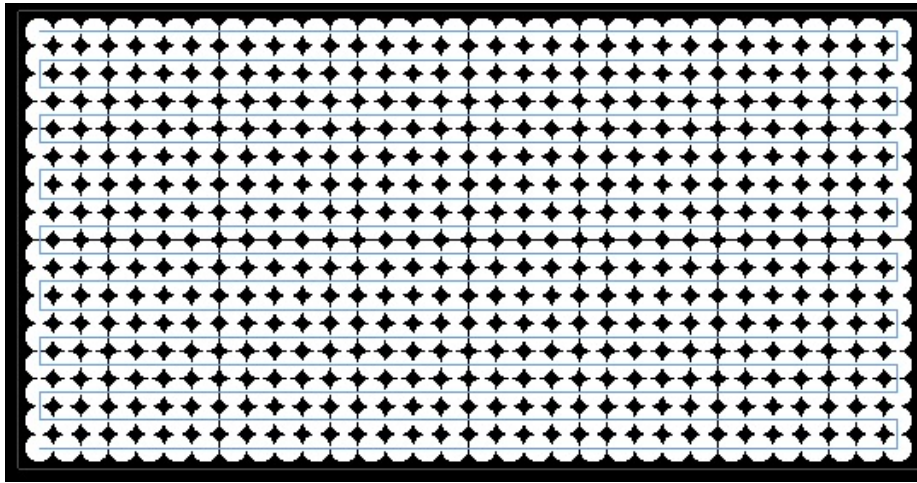


Figure 12 The example matrix uses automatic serpentine wiring. (Chinese interface shown.)

Wiring maps geometric lamps to successive data positions on a controller port. A correct-looking layout does not guarantee correct device data order.

1. Select the target controller and port, then select lamps in the required order.
2. Use Wire in order to build the route. For a matrix, Auto wire and Serpentine order can be enabled during generation.
3. Inspect the first lamp, turns and final lamp. Make sure each port stays within capacity.
4. Use Reverse port if its direction is wrong. To reroute a tail, select the required wired start lamp and follow the tool prompt.
5. Unwire routes that are no longer needed. Save and check the project.

Lamp order must match the physical first lamp and serpentine turns. After editing routes, verify with a simple chase or color effect, rather than judging the outline alone.

Sampling and color mapping



Figure 13 Sampling region, grid step and origin; this example has saved a step of 1. (Chinese interface shown.)

Mode	Meaning
Lamp centers	Sample at actual lamp centers; useful for irregular layouts.
Grid centers	Use the sampling origin and step to snap sample positions to cell centers. The lamps themselves do not move.

1. Open Design → Sampling. Choose a mode and set the region's left, top, width and height. Width and height must be positive.
2. Set the grid step and origin, then click Save mapping. This configuration is separate from the helper grid at the bottom.
3. The example 32×16 matrix has center pitch 1. Set sampling step to 1 and explicitly save the mapping before the text example.
4. When using the project sampling region for text or video, lamps outside the region do not receive colors from that image.

An oversized sampling step compresses a dense matrix into very few sample pixels, making text hard to read. Text auto-fit adapts the bounds but still needs an appropriate sampling step.

Animation workspace and timeline



Figure 14 Playback, frame stepping, playback FPS and the timeline. (Chinese interface shown.)

1. Open Animation and select an effect. Use Add effect when separate content is needed.
2. Add frames with the effect generator, text or video capture. Select the effect and check its frame count.
3. Play to preview, or use Previous frame and Next frame to inspect individual frames. Stop playback before editing.
4. Set playback FPS. The default is 30; the allowed range is 1–120. Save the project.

Frames are numbered from 0. An effect with N frames ends at N–1. For 20 frames the range is 0–19. Video duration is frame count ÷ FPS; 20 frames at 30 FPS is about 0.67 seconds.

Preview FPS controls computer playback. Actual controller timing and playback behavior must be verified on the device.

Multi-track composition and Screen recording are disabled in this release. Use an individual effect timeline. Configure MP4 background music in Output → Export video.

Effect generation and video capture

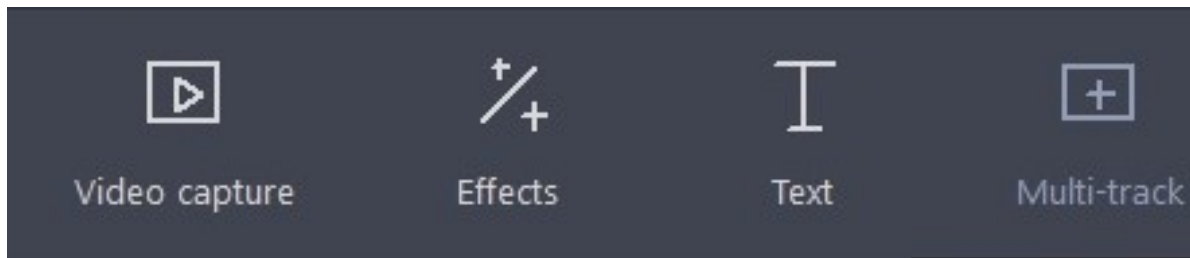


Figure 15 Animation entry points: Video capture, Effects and Text.

Generate an effect

1. Select the target effect and open Effects.
2. Choose an effect and set the color, speed and other parameters it provides.
3. Preview and use the generator controls to produce frames. Return to the timeline and check the resulting count and playback.

Capture lamp animation from video

1. Save the sampling mapping in Design first and check the image region against the lamp positions.
2. Open Animation → Video capture and choose a video that the decoder can read.
3. Preview the video and set the desired capture segment. Select the target effect, start capture and wait for completion.
4. Inspect the first, last and intermediate frames in Animation, then save the project.

Video capture converts video colors into lamp frames. MP4 export converts existing lamp frames into a video. A working video preview does not prove capture has finished; check the resulting timeline.

Text entry preview and capture



Figure 16 Live preview: ZKI, Still, 20 frames and a 32×16 sampling grid. (Chinese interface shown.)

1. Create the 32×16 matrix on page 4. Set sampling step to 1 and click Save mapping as described on page 13.
2. Open Animation, select an effect and click Text. Enter ZKI in the text area.
3. Choose Still, red text and a black background. Select All lamps (fit automatically) and set frame count to 20.
4. Keep the text window open to preview on the animation canvas. Adjust font, size or offsets until the text fits clearly inside the matrix.
5. Click Capture frames. Completion should report 20 added frames, numbered 0–19. Close the text window, inspect playback and save.

Capture frames appends the current text effect to the selected effect; it does not replace existing frames. Live preview alone does not store animation frames. Capture and save them.

Text parameters and scrolling

Parameter	Operation and purpose
Motion	Still, Left, Right, Up or Down; moves the complete text.
Text direction	Horizontal or vertical character layout; independent of motion direction.
Mapping	All lamps (fit automatically), or Project sampling region.
Character gap / line gap	Spacing between characters and between lines or columns.
Horizontal / vertical	Offsets within the sampling area.
Speed	Movement in pixels per frame. Larger values move faster.
Ink threshold	Threshold for sampling the glyph. Adjust it together with the font and sampling scale for thin strokes.
Font / color	Choose font, size, style and text color. Select text before applying local formatting.
Frame count	Frames to capture, from 1 to 30000, also subject to the batch memory limit.

Make a complete scroll

Enter text, choose a motion direction and set speed. Use One cycle to calculate frames for a complete entrance and exit, then capture. Enter a smaller frame count for a shorter segment.

Pause preview stops the live text preview and can be resumed. Close the window to play captured frames on the main timeline. A successful capture can be undone as one operation. Cancellation or failure does not commit a partial batch.

Commands to delete copy and paste frames

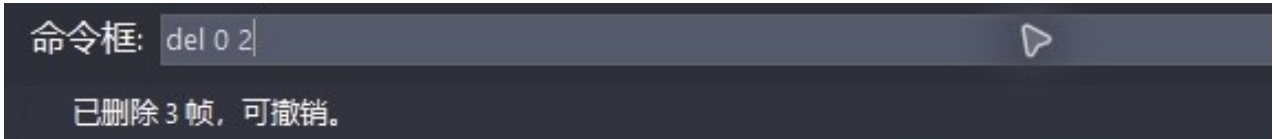


Figure 17 The command box and result message at the bottom of Animation. (Chinese interface shown.)

Stop playback and select an effect. Enter the command in Command and press Enter. Separate parameters with ordinary spaces. Frame numbers start at 0.

Command	Valid range	Result
del x1 x2	$0 \leq x1 \leq x2 < N$	Delete the inclusive range. Later frames move earlier.
copy x1 x2	$0 \leq x1 \leq x2 < N$	Copy the inclusive range into the frame clipboard without changing the timeline.
paste x	$0 \leq x \leq N$	Insert copied frames at x. Existing frame x and later frames shift right. x=N appends.

N is the total frame count before the command. Parameters must be integers. Reversed ranges, negative or out-of-range values, or pasting without a copied range do not modify the timeline.

The copied range can be pasted repeatedly. del and paste can be undone; copy does not change the timeline. The frame clipboard is cleared when projects change. Duplicate frame copies the current single frame and is separate from range-copy commands.

Worked example of frame editing

Use the 20 frames captured on page 16. Execute these commands in order to check inclusive ranges and insertion behavior.

1. copy 2 4 copies frames 2, 3 and 4: three frames. The total remains 20.
2. paste 10 inserts those three frames before the old frame 10. The total becomes 23, ending at frame 22.
3. del 0 2 removes the first three frames. The total returns to 20, ending at frame 19.



Figure 18 Result after copying three frames. (Chinese interface shown.)



Figure 19 The total becomes 23 after insertion. (Chinese interface shown.)



Figure 20 The total returns to 20 after deletion. (Chinese interface shown.)

Save before editing a long range and inspect frames around the edit afterward. Deleting a range renumbers later frames, so choose subsequent ranges using the current timeline.

Generate controller files

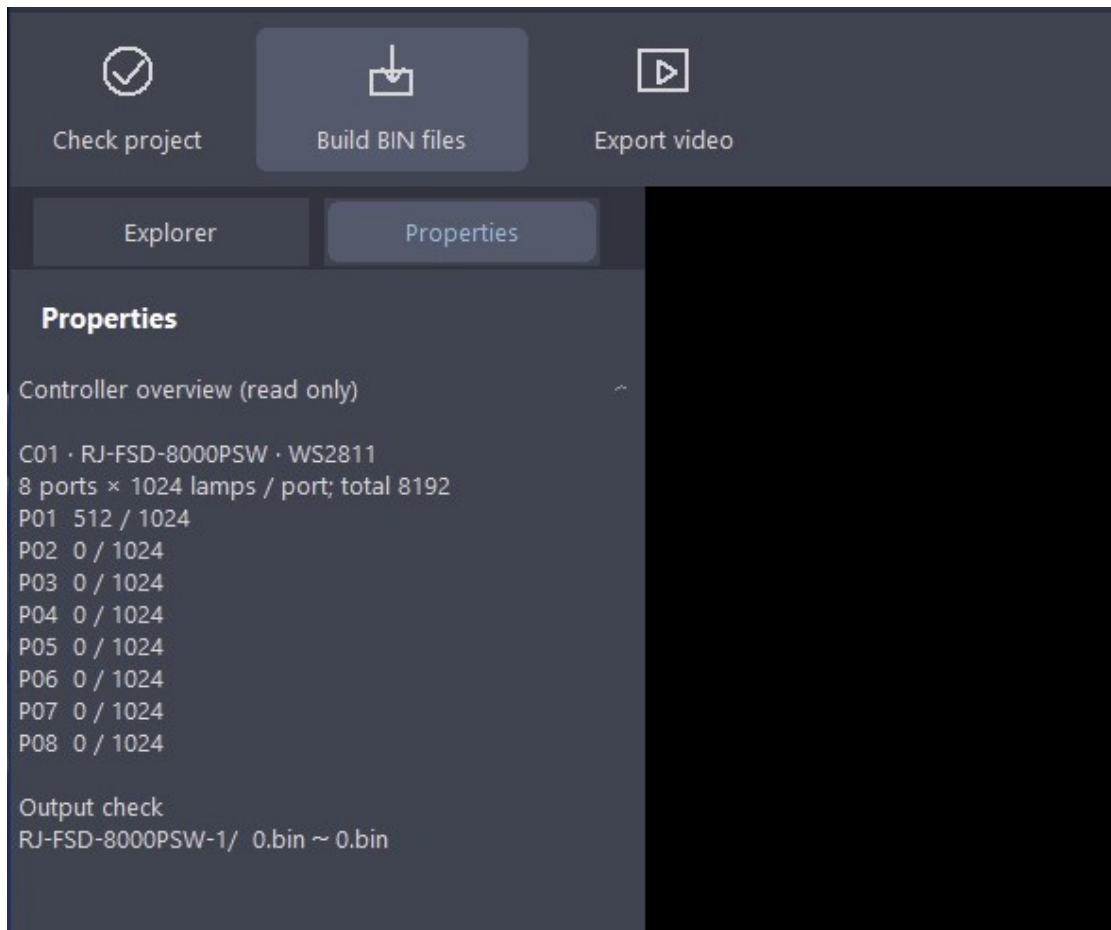


Figure 21 Output shows a read-only controller overview and project checking tools.

1. Save the project and make sure each effect to be exported contains frames.
2. Open Output and click Check project. Resolve routing, capacity, IC or frame-data errors.
3. Confirm the controller model, port counts, channel order and output settings such as brightness and gamma against the device.
4. Click Build BIN. Check completion and the generated folder.
5. Place the BIN files for the target controller onto the required storage medium, then verify order, colors and playback on the device.

The example overview shows RJ-FSD-8000PSW, WS2811 and P01 512/1024. Output folders are separated by controller model and index, with effect files such as 0.bin. Use the folder for the correct controller.

Successful checking and file generation confirm the software workflow. Playback, channel order and load capacity still need verification on the physical controller.

Export a compact MP4

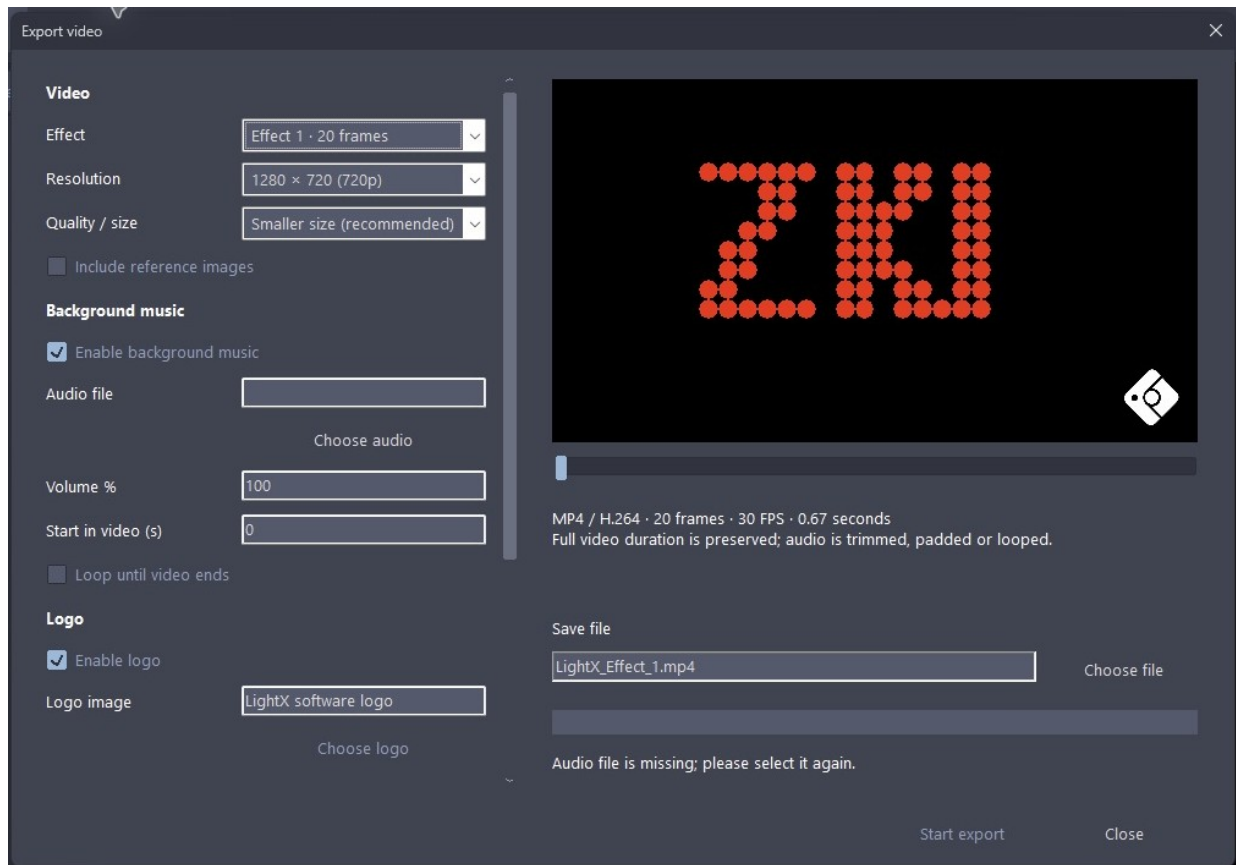


Figure 22 Video export settings. Music is enabled without an audio file, so a missing-file message appears.

1. Open Output → Export video and select an effect. The dialog exports its complete frame sequence.
2. Choose 1280 × 720 (720p) and Smaller size (recommended). Use 1080p or Higher quality when more detail is needed.
3. Move the preview slider to inspect the image. Enable Include reference images if the backdrop should appear in the video.
4. Configure music and logo on page 22, then choose an .mp4 save location.
5. Click Start export and wait for completion. Open the file and check duration, picture and audio.

Output is MP4/H.264, with AAC audio when music is enabled. Duration remains frame count ÷ playback FPS. The preview slider selects a frame to inspect; it does not define a trim range.

Background music and the default logo

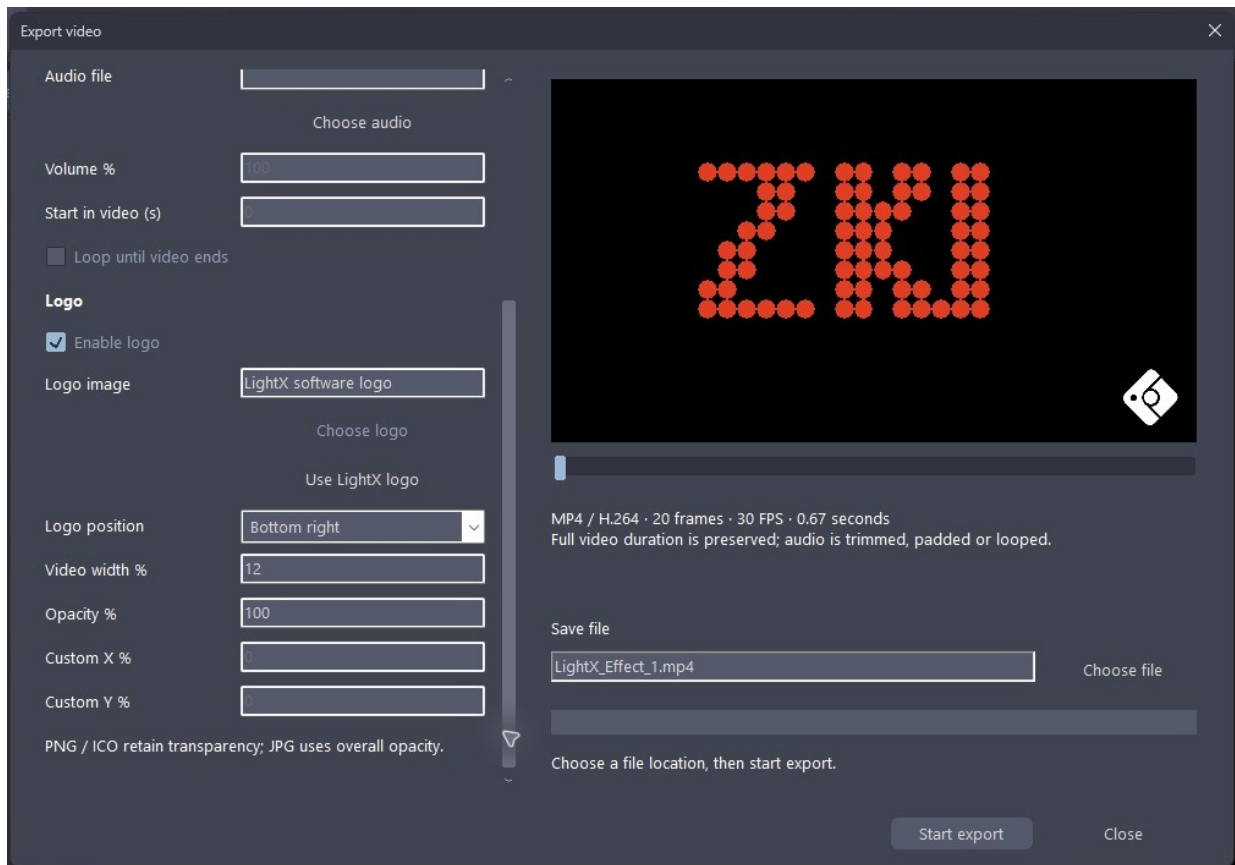


Figure 23 Music volume, start time, loop and software logo controls.

One background audio file

Enable Background music, choose an MP3, WAV, M4A, AAC or FLAC file, then set volume percentage, start time in seconds and Loop to video end if required.

Start time is when music begins in the exported video. Long music is trimmed at the video end. Short music is followed by silence unless looping is enabled. Check the audio path after moving the project.

Volume is 0–100%. Audio start must be earlier than the video end. Logo width is 1–100%; opacity and custom X/Y are 0–100%.

Logo settings

The LightX software logo is enabled by default and can be switched off. Choose a corner or Custom position, then adjust Width % and Opacity %. Custom X and Y are percentage position parameters.

Choose logo is disabled in this release, so custom JPG, ICO or PNG logos cannot be imported. Use Software logo restores the default mark. Defaults are bottom-right, width 12% and opacity 100%.

Logo and background music affect the exported MP4 only. They do not alter lamp frames or controller BIN data.

Troubleshooting and shortcuts

Symptom	Check first
Text is blank or unclear	Lamps and an effect are selected; sampling step is suitable and mapping saved; check font size, contrast, offsets and mapping bounds.
Text previews but no frames appear	Live preview is not capture. Click Capture frames, wait and check the count.
Helper grid is not visible	Design footer switch, grid size and canvas zoom.
Reference image cannot move	Unlock the image layer, change parameters and Apply.
del/copy/paste does not run	Animation workspace, existing frames, integer values, valid ranges and a copied range before paste.
Export cannot start	Frames exist, a save path is selected, enabled music file exists and parameters are valid.
Device order or colors differ	First lamp, serpentine turns, port routes, IC and channel order. Verify a simple effect on the device.
Multi-track, Screen recording or Choose logo is gray	These functions are disabled in the current release.

Canvas and editing shortcuts

Shortcut	Action
Wheel / middle-button drag	Zoom / pan
F	Fit canvas
Esc	Cancel draft and return to Select
Enter	Finish a click-defined path; execute a command in Command
Ctrl+Z	Undo
Ctrl+Shift+Z / Ctrl+Y	Redo
Delete	Delete selected design lamps

Focus the canvas or command field before using its shortcuts. Save the .zkt project and retain source media and companion files.